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1 GENERAL INFORMATION

1.1 Recommended tools

1.1.1 Standard tools

- Complete set of allen (hex) wrenches (sizes to 12 mm & 24 mm)
- Hammers (16 oz & 32 oz ball peen)
- Open end /box combination wrenches (spanners) (7 mm to 19 mm, 24 mm, 30 mm, & 36 mm
- Screwdrivers (cross tip & slotted types)
- Measuring tape (metric)
- Pry bars (small & large)
- Feeler/thickness gage set
- T-40 Torx wrench
- Step chain spreader bars (sized to width of escalator)
- Chain assembly tool KM1348767H01

1.1.2 Other tools

- Gear/bearing puller (for drive station outer bearing)
- Retaining ring pliers (large & small)
- Overhead lifting frame
- Hand operated hoist.
- Safety barricades.
- Step band holdbacks (nylon type ratcheting clamps, for chain replacement)
- Lifting strap/sling (nylon, chain, or wire rope)
- Anaerobic Single Fit Adhesive/Sealer
- Thread Retaining Compound (temporary grade)
- Oil level dip stick
- Clearance gauge (step to skirt & comb segment)
- DZ key for Moving Media steps

708-003 (2010-03)

2 SAFETY

2.1 General safety

2.1.1 General safety

Local safety codes and rules must be obeyed at all times.	
Do not take short cuts. There might be a potentially dangerous situation which you have not considered.	
Make sure the power to the main supply cable cannot be turned ON.	
A locking off system for main electric supply isolator or other system must be agreed with main contractor before installation begins. During installation procedures, whenever power is disconnected, the power disconnect box must be locked-out and tagged.	
Personal safety equipment must be available and used as required.	
CAUTION!When your safety harness is not secured to a life line or other approved fixing point, ensure the lanyard does not cause a catching or tripping hazard.	
Do not connect or disconnect any connectors when the power is ON.	
You must never work beneath a suspended load no matter how short the time period.	
Avoid pinch points when handling materials.	
Avoid sharp hazards when handling materials. Wear cut-resistant gloves when handling materials with sharp edges.	
Be aware of all tripping hazards. Make sure all temporary electrical cords and wires are securely taped to surfaces to avoid tripping hazards.	
Rigging and hoisting equipment must be inspected on a daily basis.	
Proper hand signals must be followed when using a crane.	

Cranes or chainfalls used to hoist must be rated for the load that will be put on them.	
Only one designated person should give directions to the crane operator, if a crane is used.	
Make sure slings are positioned and secured in a manner that will prevent the load from shifting or slipping during hoisting.	
Never stand or walk beneath a suspended load.	
Use proper lifting techniques and hoisting equipment when moving heavy equipment.	
Hard hats must be worn at all times when on a construction site.	
Approved footwear must be worn.	
Wear a face shield whenever using power tools which create flying objects.	
Use approved safety equipment when welding, cutting, grinding and drilling.	
Use safety goggles when using power tools.	
Wear appropriate eye protection when cleaning, cutting, and welding.	
Wear hearing protections when drilling and grinding.	
Safety circuits must be kept in operation.	
Use a circuit tester on circuits prior to working on them (Fluke 179 or equivalent).	
Make sure safety earth (ground) is verified before turning the power ON.	
To reduce the danger of electrical shock, always make sure electrical connections are secure. Also, make sure no bare wires are exposed after pulling electrical cable.	
Use properly grounded electrical cords and power equipment.	
Working area must NOT be wet, to avoid the risk of electrocution.	
Turning the main power supply OFF will not necessarily disconnect all electrical power. Be aware of other power sources in controller when the main power supply is turned OFF.	
Take precautions to prevent static discharge when handling, transporting, and storing electrical circuit boards.	
Place adequate barricades at each landing to prevent non-authorized persons from entering the work area.	

Prevent unauthorized persons from entering work and storage areas. Make sure suitable restrictive barricades and signs are posted.	
Never allow equipment or tools to be used by anyone other than qualified company personnel.	
Always use the correct tool for the specific job.	
Clear installation sites of any unnecessary materials or equipment to avoid fire hazards.	
Do not ride the unit with the combplates removed.	
Never allow anyone to ride equipment while work is being performed.	
Never start a unit with anyone on the step band or pallet band.	
Always clean-up any excess oil, and dispose of properly in accordance with governing regulations.	
Inspect construction site and equipment on a regular basis, for unsafe conditions.	
Make sure you are aware of all potential hazards related to various tasks.	
Make sure you are provided with all the necessary safety equipment.	
Always make sure your clothing cannot become caught in rotating equipment. Keep your shirt sleeves buttoned and your shirt tucked into your trousers. Also, always remove loose rags from your pockets.	
Make sure the unit cannot start when access covers are removed. Access cover switches must be operational.	
Before entering step band opening make sure the unit cannot move by engaging the step band lock.	

7-002047 (2009-10)

2.1.2 Danger and operator safety signs

Danger and operator safety signs					
Description	**Sign**	**Description**	**Sign**	**Description**	**Sign**
Electric shock		No entry		Hard hat	
Risk of falling		Do not transport		Safety harness	

Magnetic field		Dispose of oil properly		Safety gloves	
Risk of fire		Lifting hazard		Face protection	
Tripping hazard		Safety goggles		Overalls	
Rotating equipment hazard		Dust mask		Respirator	
Suspended load		Safety shoes		Safety lock and tag out procedure	
Pinch point hazard		Hearing protection		Barricade	
General hazard warning		Cut-resistant gloves			

The words WARNING and CAUTION are used in different kinds of hazardous situations to protect persons or equipment parts in the following way:

WARNING

This is to warn of the most serious hazards where there is a risk to a person's safety.

CAUTION

This is to warn of the risk of an equipment component being damaged, which also may cause risk to a person's safety.

7-000220 (2010-02)

2.2 Method safety

2.2.1 Safety check prior to start-up

In case the unit is stopped, complete the following safety check procedures prior to start-up.

Step	Action	Note
1.	Make sure unit is barricaded.	
2.	Check fault display on the deck or in the controller.	
3.	Check the truss and step band for the following. • Check truss for any obstructions • Check for any foreign objects • Check for switches that may be loose • Check for any loose wires	
4.	Reset the fault message from the controller using reset button.	
5.	Start unit in the DOWN direction using pendant control handset.	
6.	Check incoming voltage. Confirm that voltage is the same as stated on controller.	
7.	Check inspect mode. (Optional: Check pendant control handset for correct operation.) • If the unit fails to continue to run automatically, observe display for fault and follow the fault code corrective actions for that fault.	

Step	Action	Note
8.	Stop the unit using the emergency stop button, and repeat the same procedure in the UP direction. • If the unit fails to continue to run automatically, observe display for fault and follow the fault code corrective actions for that fault.	
9.	Remove pendant control handset if connected.	
10.	Switch to normal run operation.	
11.	Start unit with key start.	
12.	Ride unit and check for smooth operation of the step band before returning unit to service.	

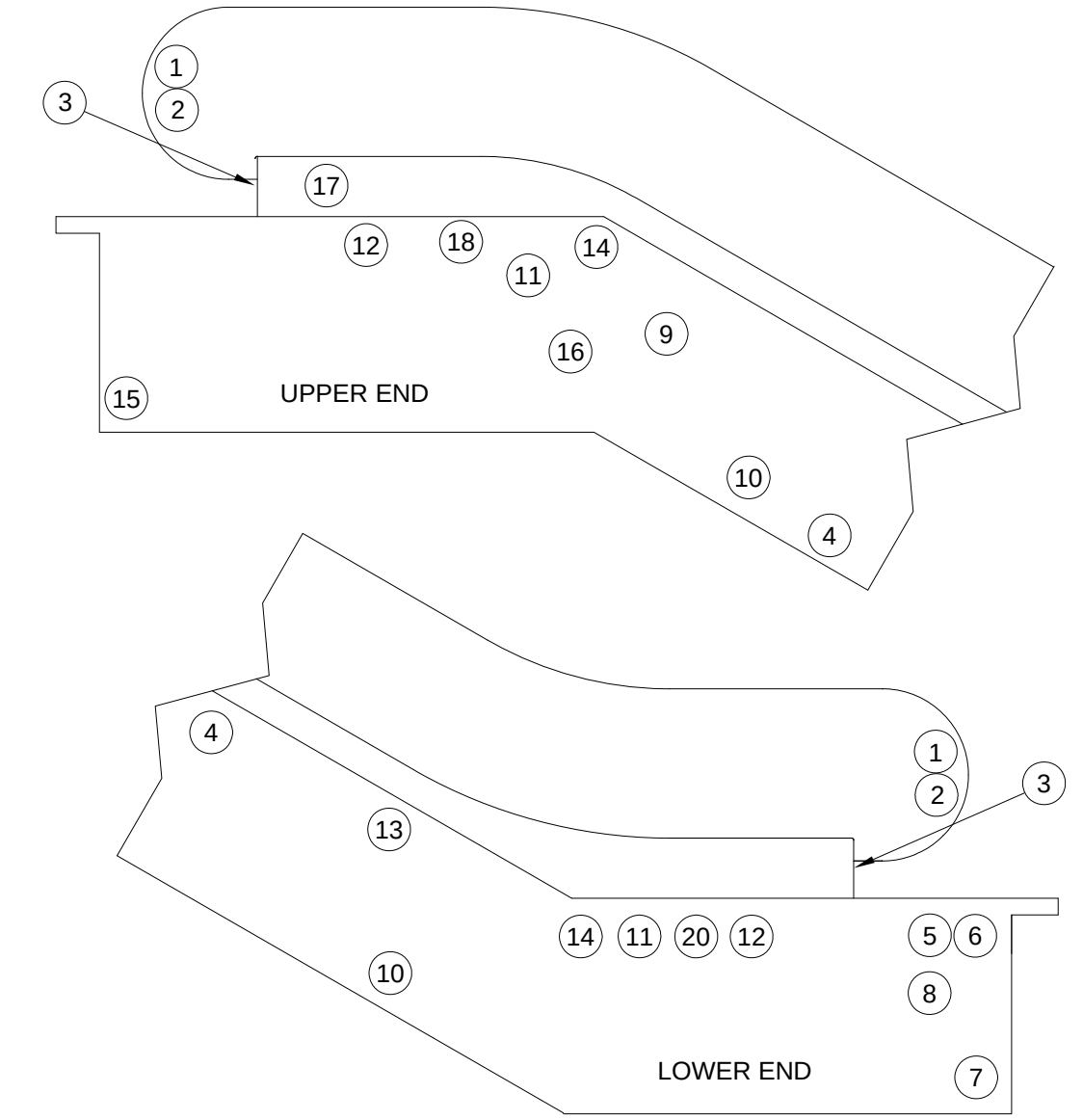
7-002048 (2009-10)

2.2.2 Location of electrical safety devices

Electrical safety devices are located as follows.

1. Upper/lower end key switch
2. Emergency stop button/switch
3. Handrail inlet switch
4. Deteriorated roller sensor
5. Inspection switch (in lower junction box)
6. Lower pit stop switch
7. Upper/lower junction box
8. Broken step-chain switch
9. Motor stop switch
10. Missing step detector
11. Step demarcation lights
12. Upper/lower end skirt switch
13. Step upthrust safety switch
14. Out-of-level step detector
15. Permanent magnet brake
16. Tachometer
17. Handrail speed sensor
18. Combplate impact device

7-002026-20275057 (2011-02)



5024530(2011-02)
5021549(2010-02)

3 PREVENTIVE MAINTENANCE GUIDELINES

The schedule frequency of the following preventive maintenance modules is dependent upon escalator use (12 hours/24 hours), environmental conditions (indoor/outdoor, excessive moisture, excessive dust) and technical characteristics (vertical rise, standard or lube-free chain, presence of automatic chain oilers).

- Basic Module = Six to twelve times per year
- Brake Module = One to two times per year
- Combplate Module = One to two times per year
- Drive Module = One to two times per year
- Guide Module = One to two times per year
- Step chain Module = One to six times per year
- Handrail Module = One to two times per year

3.1 Basic Maintenance Module

6 hours per unit per month

Preventive Maintenance Guidelines	
Basic Maintenance Module	
1. Preparations	Travel to site, check, and install safety barriers
2. Make a visual observation of equipment	
Finishes on balustrade and decks	Check skirts for scratches; rebuff or refinish as required
	Check inner decks for scratches and dents; if scratched, rebuff as required; if dented, repair or replace as required
	Check solid inner panels for scratches and dents; if scratched, rebuff or replace as required; if dented, repair or replace as required
	Check glass inner panels for excessive scratching, chipping, or cracks; replace glass inner panel as required
	Check for missing, worn, or damaged handrail inlet brushes; replace handrail inlet brush as required
	Check frontplate for damages or cracking; replace frontplate as required
	Check for missing, loose, or damaged screws; tighten or replace screws
	Check step demarcation strips for damage; replace step demarcation strips as required
	Check handrail base for loose or misaligned sections; repair or replace handrail base section as required
	Check safety signs (pictographs). Replace as required worn, damaged, or missing safety signs (pictographs).
Lighting	Visually check lighting operation; replace bulbs or lighting elements as required

Preventive Maintenance Guidelines	
Handrail condition externally	Check exterior of handrail for cracks, splits, or deterioration; replace handrail as required
Comb segment condition	Check for warping, broken teeth or loose bolts; tighten bolts and replace comb segment as required. Check function.
Ride comfort	Ride escalator and check for roughness or vibration; determine cause of roughness or vibration and correct cause
3. Check clearances	
Step-to-step clearance	The gap between any two consecutive steps must not exceed 6 mm [15/64 in.}
Step-to-skirt clearance	Nominal gap between step and skirt should be 2 mm [5/64 in.]
Comb segment-to-step clearance	Clearance between comb segment and step should be approximately 4 mm [5/32 in.]
Coverplates	Check for damage, tight DZUS fasteners, and cleanliness.
4. Check external safety devices	
Stop button (emergency stop switch)	Check operation
Handrail inlet switch	Check operation; switch should actuate with 5 mm - 8 mm [3/16 in. - 5/16 in.] movement of handrail brush guard
Combplate impact device	Check function. *For more information on combplate impact device, refer to Preventive Maintenance Modules>Combplate Maintenance Module.*
Skirt brushes	Check for worn or damaged skirt brushes, and remove any foreign material found in skirt brushes. Replace, as required.
Skirt switches	Check operation; skirt switch should actuate with 1.5 mm [1/16 in.] movement of skirt button.
Access cover switch	Check operation each time a cover is removed; escalator should not run with cover removed unless actuator is depressed
Pit stop switches	Check operation
Inspection switches	Check operation
5. Check controller cabinet	Clean, visually check for burn marks and discoloration, tighten any loose connections
6. Check brake stopping distance (brake with brake lever	• If brake stopping distance is between 200 mm [7-7/8 in.] and 350 mm [13-3/4 in.] maximum there is no need to adjust. If adjustment is needed, then the brake should be set to the nominal values. Nominal values are 220 mm [8-11/16 in.]: 0.4 m/s [80 fpm] and 270 mm [10-5/8 in.]: 0.5 m/s [100 fpm]. • **Visual check:** escalator should stop within the length of one half to one step.
7. Clean pits (light cleaning)	Clean pits; there should be no oil or trash in pits (recommended each service)
8. Step chains	Lubricate if necessary *For more information on lubricating step chains, refer to Preventive Maintenance Modules>Step Chain Maintenance Module.*

Preventive Maintenance Guidelines	
9. Automatic oiler	Check and fill reservoir; check brushes for correct adjustment and function *For more information on automatic oiler filling and adjustments, refer to Preventive Maintenance Modules>Step Chain Maintenance Module.*

7-002031-20265053 (2011-02)

3.2 Brake Maintenance Module

Preventive Maintenance Guidelines	
Brake Maintenance Module	
1. Remove steps.	
2. Check brake setting (brake-arm brake)	
Brake lining	Check brake lining thickness; If brake lining thickness is less than 3 mm [1/8 in.], replace the brake arm and lining
Brake arm	Check that brake arm has free up and down movement.
Brake surface	Check brake surface; brake surface should be clear of grease and oil
Stopping distance	If brake stopping distance is between 200 mm [7-7/8 in.] and 350 mm [13-3/4 in.] maximum there is no need to adjust. If adjustment is needed, then the brake should be set to the nominal values. Nominal values are 220 mm [8-11/16 in.]: 0.4 m/s [80 fpm] and 270 mm [10-5/8 in.]: 0.5 m/s [100 fpm].
Brake wear	Check the brake wear reserve by adjusting the space between brake lever and pin to a 2 mm [5/64 in.] air gap.

7-002041 (2009-10)

3.3 Combplate Maintenance Module

Preventive Maintenance Guidelines	
Combplate Maintenance Module	
1. Check combplate impact device	Check operation of combplate impact device according to design of device and version of escalator. *For information on combplate impact devices used with various versions of the escalator, refer to Combplate Maintenance Module.*
2. Check gap between combplate impact device switch and trip arm adjustment screw.	Gap should be approximately 1 mm [1/32 in.].
3. Check for any broken comb segment teeth.	Replace as required.
4. Check clearance between comb segments and steps.	Clearance should be 4 mm (5/32 in.) maximum.

7-002032 (2009-10)

3.4 Drive Maintenance Module

Preventive Maintenance Guidelines	
Drive Maintenance Module	
1. Remove steps.	
2. Check drive machinery	
– Quiet operation	If operation not quiet, investigate and correct as required. If cause cannot be corrected, contact supervisor with all details.
– Oil leaks	Report oil leaks to supervisor
– Air breather	Clean as required
– Drive unit mounting bolts	Check torque once a year- torque for main shaft bolts is 350 Nm [258 lbf-ft]
– Motor	Check motor couplings/grommets.
– Reversing device	Check operation of reversing device.
– Governor over-speed switch	Check operation of governor over-speed switch. Device should actuate in accordance with manufacturer's specifications. Adjust, if required.
– Broken drive chain switch	Check operation of broken drive chain switch. Device should actuate in accordance with manufacturer's specifications. Adjust, if required

Preventive Maintenance Guidelines	
3. Lubricate machinery	
– Step chain sprocket	Grease outboard bearings; must be lubricated with approved grease (Rivolta adhesive lubricant-DEE1479081). Grease indoor escalator once a year
– Gear box	Check oil level; fill if necessary with approved gear box oil
– Ring gear	Check oil level; fill if necessary with approved oil.
– Upper station main bearings	Lubricate per manufacturer's specifications.
– Motor	Lubricate per manufacturer's specifications.
– Handrail drive bearings	Lubricate handrail drive sheave bearings.

7-002033-20265053 (2011-02)

3.5 Guide Maintenance Module

Preventive Maintenance Guidelines	
Guide Maintenance Module	
1. Preparations	Remove and record the step number for five adjacent steps (check numbers on steps and remove different steps every time).
2. Check steps for acceptable & unacceptable conditions	Check step for warp, cracks, loose or damaged rollers, loose or damaged step demarcation strips, and loose hardware; repair or replace as required.
3. Check step band lock switch	Check operation; switch should actuate when handle is lifted and step band lock is engaged with sprocket
4. Check internal safety devices	
Step lift switch	Check operation; switch should actuate after step lift track is lifted approximately 5 mm [3/16 inch], and should reset when step lift track is released
Step upthrust switch	Check operation; switch should actuate after step upthrust track is lifted approximately 5 mm [3/16 in.], and should reset when step upthrust switch track is released.
Step sag switch	Check operation; trip levers must actuate limit switch if a step rises or lowers by more than 5 mm (3/16 inch)
Out-of-level step detectors	Check operation; switch should actuate when a 3.2 mm [1/8 inch] shim is placed between the step riser and switch wand actuator.
Missing step detector	Check operation; sensor should be centered and approximately 6.4 mm [1/4 inch] from tapered flat head screw of trailing wheel.
5. Check step system	
Tracks	Check for any worn, damaged, or misaligned tracks

Preventive Maintenance Guidelines	
Tracks and cross members	Make sure tracks and cross members are free of oil, dirt, and debris (clean)
Bridges and lower reversing station	Check bridges for wear - repair or replace bridges as required. Check lower reversing station for movement - grease sliding parts if necessary
Step guidance button	Check; replace if step guidance buttons are worn past wear indicator
6. Clean - (light cleaning)	
Pits	Clean pits; there should be no oil or trash in pits

7-002042 (2009-10)

3.6 Step Chain Maintenance Module

Preventive Maintenance Guidelines	
Step Chain Maintenance Module	
1. Lubricate step chain	
Automatic oiler	Check & fill; brushes adjusted correctly; oil filled; connections tight with no leaks
Lube-free step chain	If required, the step chain lip track may be moistened by a spray in the running surface area. Use only a high pressure semi-synthetic grease (Rivotta SKD 3602), based on metal soap without solid additives for initial application.
2. Check step chain rollers	Check for wear or damage. Replace as required.
3. Check broken step chain switch	Check operation; switch actuator should be in center of trip bar, and should just touch trip bar surface
4. Step chain tension	Check compressed spring length; spring should be approximately 192 mm +/- 3 mm [7-9/16 in. +/- 1/8 in.] long.

7-002036 (2009-10)

3.7 Handrail Maintenance Module

Preventive Maintenance Guidelines
Handrail Maintenance Module

Preventive Maintenance Guidelines	
1. Clean and check handrail guides	• Vacuum and clean all handrail guides and newel ends • Check alignment of joints, and excessive wear of guides. Adjust and repair as required.
2. Check handrail drive (drive area)	
Handrail drive spring upper end pit	Check compressed spring length; upper spring length should be approximately 47 mm [1-7/8 in.], and lower spring length should be 40 mm [1-9/16 in.] If adjustment is required, make sure handrail does not slip after adjustment.
Handrail drive wheel rubber	Clean any grease and oil from rubber; check for cracks, splits, damaged or worn rubber, replace as required
3. Adjust handrail tension	
Adjust handrail tension - with take-up rollers in drive area	Lift handrail off lower curve handrail guide up to first incline inner panel joint, handrail should be 1 mm [1-32 in.] above handrail guide at lower curve, adjust as required
4. Check handrail speed sensor	Check operation: gap between proximity sensor and roller should be approximately 0.3-0.5 mm [1/64 in.]
5. Check broken handrail monitor	Check operation; remove handrail in lower curve - escalator should not run when broken handrail monitor roller is no longer supported by handrail.
6. Check handrail drive pressure rollers	Check the handrail drive pressure rollers. Adjust to manufacturer's specifications, if required.
7. Clean handrails	After cleaning handrail guides and adjusting handrail tension, clean outer surface of handrails.

7-002034 (2009-10)

3.8 Cleaning Module

Preventive Maintenance Guidelines	
Cleaning Module	
1. Preparing	Remove five steps and insert spreader bars (check numbers on steps and remove different steps every time)
2. Clean pits and step band	Clean upper and lower end pits and anything that can be reached easily within the step band using the five step hole in the step band.
3.	Clean remote control rooms.

7-002035 (2009-10)

4 BASIC MAINTENANCE MODULE

Suggested maintenance schedule for Basic Module is six to twelve times per year, dependent upon escalator use.

4.1 Travel to site and check-in

After traveling to the site, check in with the Customer or Building Representative.

- If your visit is the result of a call out, carefully listen to the Customer or Building Representative explanation of their concerns, and assure them you will investigate. Listen actively, and resolve problems professionally.
- Before you leave the building, re-visit the Customer or authorized Building Representative. Make sure all appropriate paperwork is completed and signed.
- Always thank our Customer for their business.

708-006 (11/99)

4.2 Make visual observation

Check the following equipment with a visual observation.

Condition	Action
Check finishes on balustrade and decks	
Check skirts for scratches.	Rebuff or refinish skirt as required.
Check inner decks for scratches and dents.	If scratched, rebuff or replace inner deck as required. If dented, repair or replace inner deck as required.
Check solid inner panels (if equipped) for scratches and dents.	If scratched, rebuff or replace inner panel as required. If dented, repair or replace inner panel as required.
Check glass inner panels (if equipped) for excessive scratching, chipping, or cracks.	Replace glass inner panel as required.
Check for missing, worn, or damaged handrail inlet brushes.	Replace handrail inlet brush as required.
Check frontplate for damages or cracking.	Replace frontplate as required.
Check for missing, loose, or damaged screws.	Tighten or replace screws.
Check step demarcation strips for damage.	Replace step demarcation strips as required.
Check handrail base for loose or misaligned sections.	Repair or replace handrail base section as required.

Check lighting	
Visually check lighting operation.	Replace bulbs or lighting elements as required.
Check handrail condition externally	
Check exterior of handrail for cracks, splits, or deterioration.	Replace handrail as required.
Check comb segment condition	
Check for warping, broken teeth or loose bolts.	Tighten bolts and replace comb segment as required.
Check ride comfort	
Ride escalator and check for roughness or vibration.	Determine cause of roughness or vibration and correct cause. Some causes may be misaligned or loose track, defective step, defective or stretched step chain, damaged or worn step rollers, or dirt on the tracks.
Check safety signs (pictographs)	
Check safety signs for wear or damage.	If worn or damaged, replace with a new safety sign as required. If safety sign is missing, replace with correct safety sign as required.

708-015 (4/2002)

4.3 Check clearances

Complete the following to check clearances for:

- Step-to-step clearance
- Step-to-skirt clearance
- Comb segment-to-step clearance

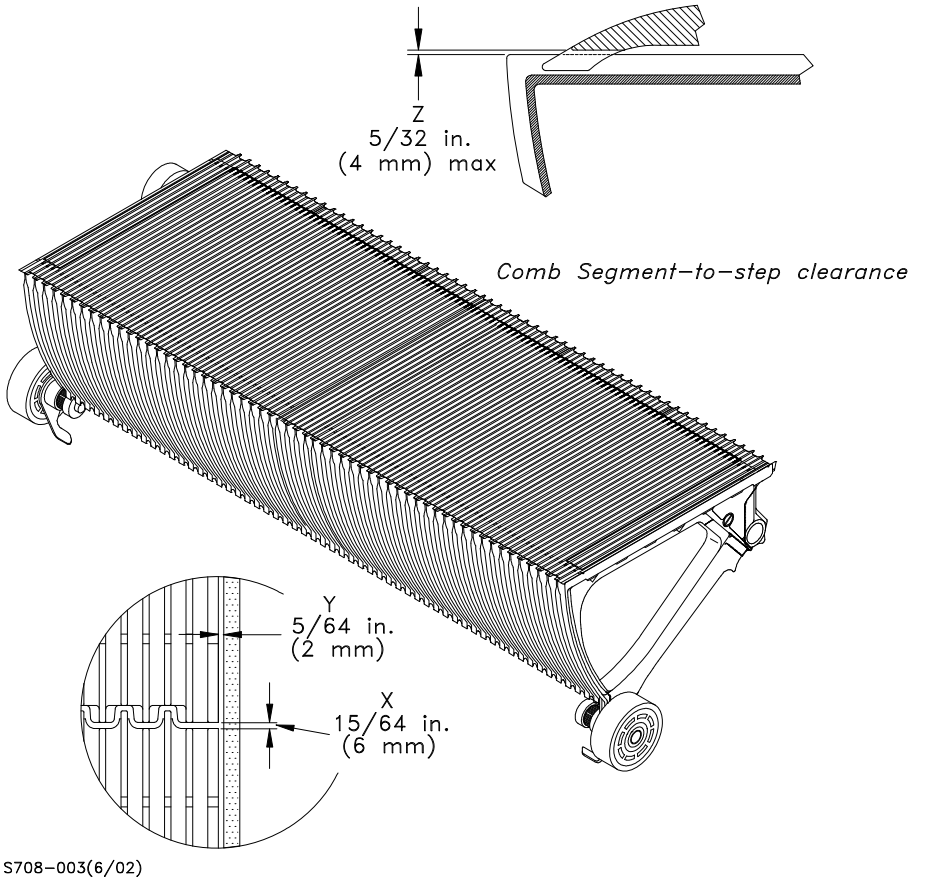
Step	Action	Note
Step-to-step clearance		
1.	Check gap (X) between consecutive steps.	NOTE!The gap between any two consecutive steps must not exceed 6 mm [15/64 in.]. There is no adjustment. If gap is greater than 6 mm [15/64 in.] a thorough inspection of the step chain is needed to determine if step chain must be replaced.

Step	Action	Note
Step-to-skirt clearance		
1.	Check the step to skirt gap (Y) with a step gage tool.	Nominal gap between step and skirt should be 2 mm [5/64 in.].

Step	Action	Note
2.	If nominal gap is not correct, check step guidance buttons on step for wear.	*For more information on step guidance buttons, refer to Step, Brake, Drive, and Chain Module>Checking Step System.*

Step	Action	Note
Comb segment-to-step clearance NOTE! Step riser end of step must be positioned near or under comb segment teeth.		
1.	Insert step gage tool in groove of step and check clearance (Z) between comb segment and step.	• **EN 115:** Clearance between comb segment and step should be 4 mm [5/32 in.]. • **ANSI:** Clearance between comb segment and step should be approximately 4 mm [5/32 in.].
2.	If clearance must be adjusted, adjust combplate up or down until clearance is correct.	

708-014 (5/2002)



4.4 Check external safety devices

Complete the following to check and adjust (if necessary) external safety devices.

NOTE! The procedures in this module describe checking and adjusting procedures. Complete adjusting procedures only when the primary checking procedures indicate an adjustment is necessary.

708-007 (2009-02)

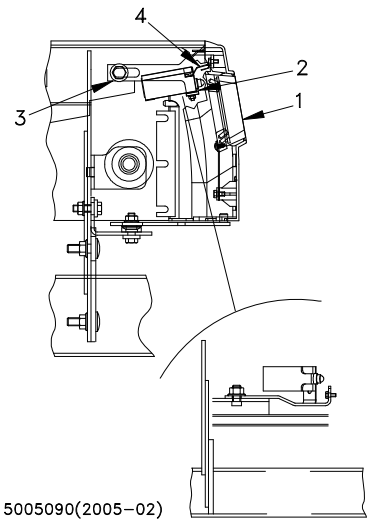
4.5 Check stop button (emergency stop switch)

Step	Action	Note
1.	With the escalator running in DOWN direction, press the stop button. NOTE!Make sure the escalator stops.	
2.	If the emergency stop switch has a plastic cover with an alarm, make sure alarm sounds when plastic cover is lifted.	
3.	Repeat the procedure with the escalator running in UP direction.	

708-008 (2006-08)

4.6 Check and adjust handrail inlet switch

Complete the following to check and adjust handrail inlet switch.

Step	Action	Note
1.	With main power supply OFF, press handrail inlet brush (1) in towards escalator.	
2.	Listen for audible click when switch (2) is tripped, and note the amount of travel for handrail inlet brush (1). — Switch should actuate with 5 mm - 8 mm [3/16 in. - 5/16 in.] movement of handrail inlet brush (1).	
3.	If switch must be adjusted, loosen mounting bolts (3) on switch bracket.	
4.	Adjust switch bracket until switch actuates with 5 mm - 8 mm [3/16 in. - 5/16 in.] movement of handrail inlet brush (1).	
5.	Make sure latch mechanism (4) engages and holds inlet brush (1) when inlet brush is pushed in fully (hits the stop).	
6.	Release latch mechanism (4).	
7.	Make sure step band is clear of personnel and equipment, and turn main power supply ON.	**WARNING!**Serious injury or death can occur from rotating step band. Make sure step band is clear of all personnel and equipment before attempting to start escalator.
8.	Press handrail inlet brush (1) in towards escalator until it latches, and try to run the escalator in BOTH directions on INSPECT. — The escalator should not start.	
9.	Repeat procedure for handrail inlet switch on opposite side of the escalator.	

7-000402 (2005-02)

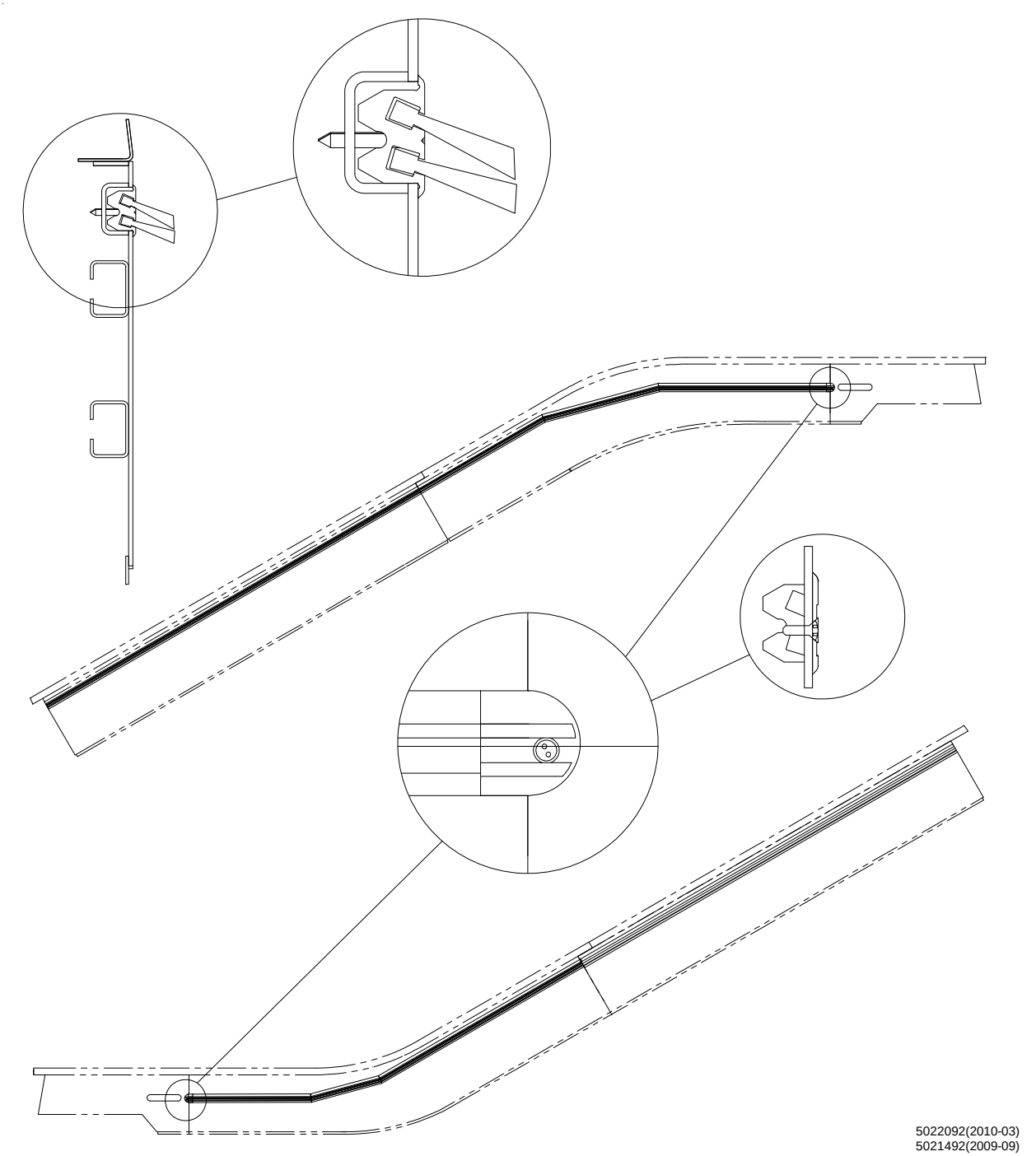
4.7 Check skirt brushes

Check for worn or damaged skirt brushes, and remove any foreign material found in skirt brushes. Replace as required, if worn or damaged.

Skirt brushes should be replaced when the brush material is missing or damaged to the extent that a passenger's leg can easily contact the skirt panel while the unit is in motion, or when missing or damaged skirt brush components present a pinching, cutting, tearing or tripping hazard.

For more information on replacing skirt brushes, refer to Minor Repairs/Replacing skirt brushes.

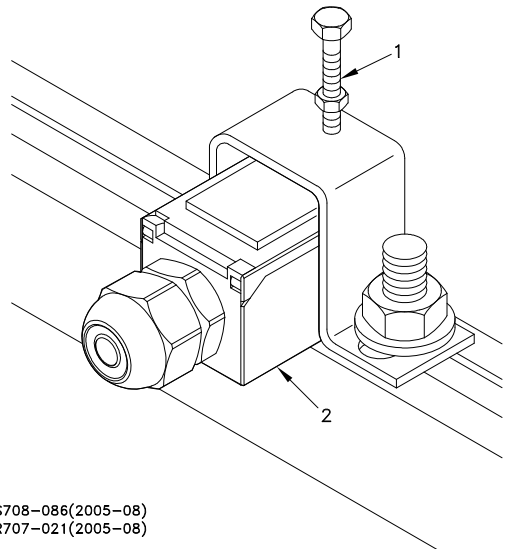
7-002038 (2010-03)



5022092(2010-03)
5021492(2009-09)

4.8 Check and adjust skirt switches

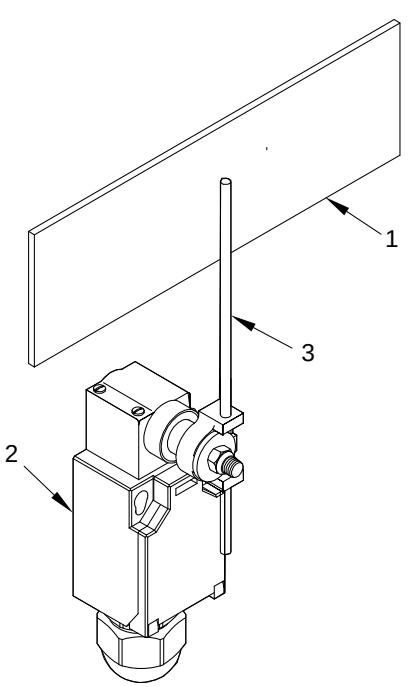
Complete the following to check and adjust skirt switches.

Step	Action	Note
1.	Make sure main power supply is OFF.	 S708–086(2005–08) R707–021(2005–08)
2.	Gently pry skirt button inwards at location of skirt switch. Adjust switch until switch actuates with 1.5 mm [1/16 inch] movement of skirt. Take care to not damage step or skirt.	
3.	If skirt switch must be adjusted, remove inner deck at location of skirt switch.	
4.	Loosen switch hardware (1), and adjust switch (2) in or out to the skirt until switch actuates with 1.5 mm [1/16 inch] movement of skirt button.	
5.	Make sure step band is clear of personnel and equipment, and turn main power supply ON. **WARNING!** Serious injury or death can occur from rotating step band. Make sure step band is clear of all personnel and equipment before attempting to start escalator.	
6.	Place screw driver between SKIRT BUTTON and switch actuator so switch actuates. NOTE!Do not place screwdriver on step side of skirt.	
7.	Try to run the escalator in BOTH directions on INSPECT. • The escalator should not start.	
8.	Replace inner deck.	
9.	Repeat procedure for opposite side of escalator.	

7-002039 (2009-10)

4.9 Check and adjust access cover switches

Complete the following to check and adjust access cover switches.

Step	Action	Note
1.	Check access cover switch operation. • Escalator should not run with cover removed unless actuator is manually depressed.	 C707-157(2006-07)
2.	If switch must be adjusted, loosen switch mounting screws.	
3.	Place straight edge (1) across access frame, next to access cover switch (2).	
4.	Adjust switch so actuator wand (3) is above bottom edge of straight edge (1).	
5.	Tighten switch mounting screws.	

7-002049 (2009-10)

4.10 Check pit stop switches

Turn the key start switch to start unit running in UP or DOWN direction. With the unit running, actuate pit stop switch. The unit should stop. Release pit stop switch by turning it.

707-225 (2007-07)

4.11 Check inspection switches/hand held pendant control

Inspection switches: Before starting the escalator, make sure that no one is in the escalator or on the step band. Check the inspect mode at both ends of the escalator, and verify the proper operation of the following.

- Both upper and lower key start switches are disabled if handset control is used.
- The lower key start switch is disabled when the upper Inspect switch is in the INSPECT position.
- The upper key start switch is disabled when the lower Inspect switch is in the INSPECT position.
- When started, the escalator DOES NOT achieve a holding circuit. Also, the escalator stops when the key start switch is released.

NOTE! When escalator is in inspect mode, the missing step detector, handrail speed sensor, and encoder is disabled.

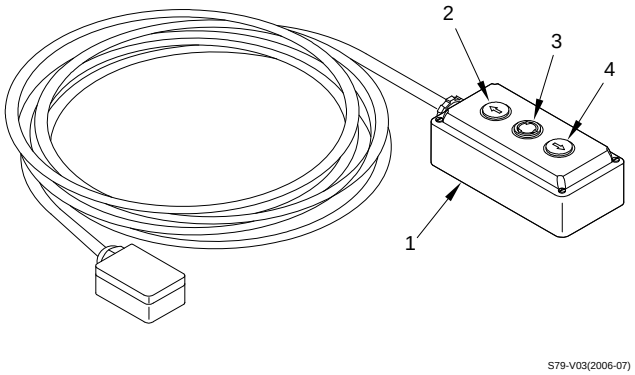
Hand held pendant control: Before starting the escalator, make sure that no one is in the escalator or on the step band. Remove blind plug, and plug pendant control (1) into receptacle at both ends of the escalator in turn, and verify:

- escalator runs by pressing push button up/down (2,4).
- escalator stops when push button up/down (2,4) is released.
- control circuit is interrupted by actuating push button switch (3). Switch locks when actuated.

Verify the proper operation of the following.

- When blind plug is removed from the receptacle, the escalator is placed into inspection mode, and "I _" is indicated on CPU Board display.
- Key switch control and start relay are interrupted.
- Start sequence is interrupted until blind plug is plugged-in again

7-002050 (2009-10)



4.12 Check controller cabinet

Complete the following to check controller cabinet.

Step	Action	Note
1.	Make sure main power supply is OFF.	
2.	Visually inspect controller for any burn marks or discoloration of components.	
3.	Check for any loose wires and tighten any loose connections.	NOTE! Check for power before touching any components in the controller. Make sure power is OFF.
4.	Remove dust from controller using an aerosol container (air dispenser such as used for cleaning keyboards) to blow the dust from the controller.	

708-026-20265053 (2011-02)

5 BRAKE MAINTENANCE MODULE

Suggested maintenance schedule for Brake Module is one to two times per year, dependent upon escalator use.

5.1 Remove steps

Remove steps to form a hole in the step band.

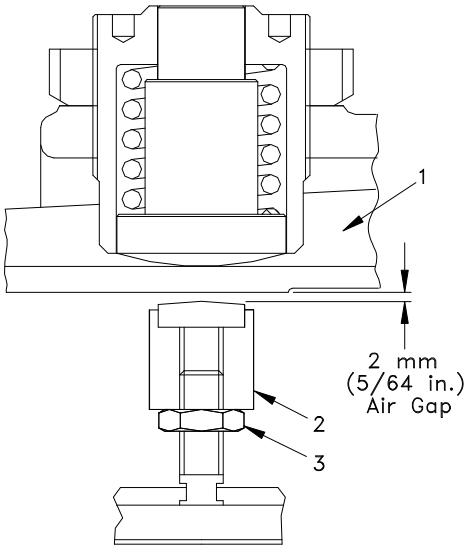
For more information on removing steps, refer to section titled: Guide Maintenance Module>Remove and Replace Steps.

5.2 Check and adjust brake (brake with brake lever)

Check and adjust brake wear

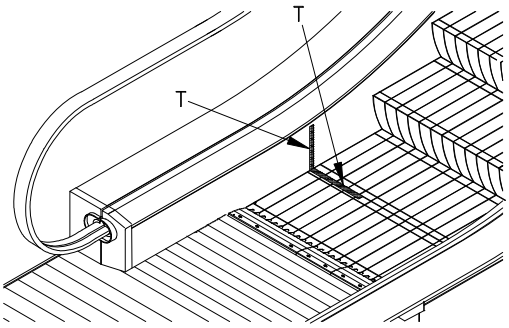
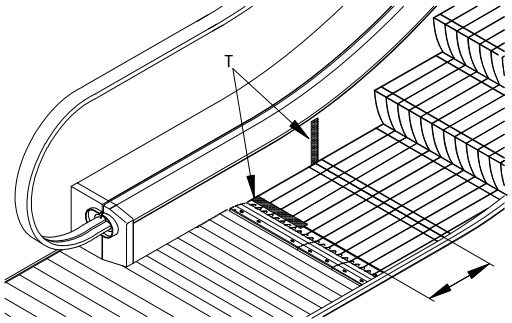
Adjust the brake wear reserve by adjusting the space between brake lever (1) and pin (2) to an air gap as follows.

Step	Action	Note
1.	Move hole in step band above the brake, turn main power supply OFF, and engage step band lock.	
2.	Check brake arm movement and brake lining thickness. • Check that brake arm has free up and down movement. • If brake lining thickness is less than 3 mm [1/8 in.], replace brake arm and lining. *For more information on replacing brake arm and lining, refer to Minor Repairs>Replace brake arm.*	
3.	If brake lining thickness is acceptable, loosen lock nut (3).	
4.	Adjust spacing for an air gap at pin (2). NOTE!It is very important that there is a 2 mm [5/64 in.] air gap spacing at pin (2).	
5.	After adjusting spacing, lock pin (2) with nut (3).	
6.	Check spacing again and readjust if necessary.	

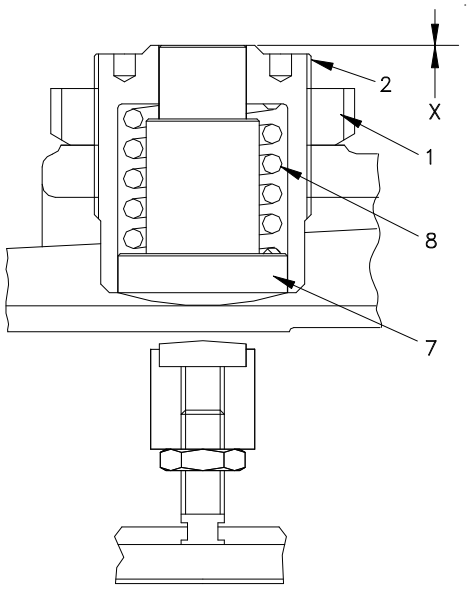


S708–113(2002–10)

Check and adjust brake stopping distance

Step	Action	Note
1.	Check braking surfaces for oil and grease, and remove any impurities with degreasing agents.	 5009170(2005−01)  5009172(2005−01)
2.	Place a piece of tape (T) on step and skirt (aligned with each other) as reference mark.	
3.	Clear the step band of all personnel and tools, disengage step band lock, and turn main power supply ON.	
4.	Using pendant control (or inspect switch), run the escalator in the up and then down direction. Press the stop button when reference marks (tape) on skirt and step are aligned, and measure the stopping distance (distance between tape on skirt and tape on step) when the step band stops. • If brake stopping distance is between 200 mm [7-7/8 in.] and 350 mm [13-3/4 in.] maximum there is no need to adjust. If adjustment is needed, then the brake should be set to the nominal values. Nominal values are 220 mm [8-11/16 in.]: 0.4 m/s [80 fpm] and 270 mm [10-5/8 in.]: 0.5 m/s [100 fpm]. • **Visual check:** escalator should stop within the length of one half to one step. *For more information on brake stopping distance, refer to table titled: Full Load and No Load Stopping Distances.*	
If brake stopping distance must be adjusted, complete the following.		
1.	Loosen groove nut (1).	
2.	Turn in adjusting ring (2) until pin (7) is flush with adjusting ring (dimension x = 0 mm).	

Step	Action	Note
3.	When the maximum brake setting is achieved, lock adjusting ring (2) with groove nut (1).	
4.	Clear the step band of all personnel and tools, disengage step band lock, and turn main power supply ON.	
5.	Start the escalator in the down direction, press stop button, and measure the stopping distance. • If the minimum braking distance cannot be achieved, reduce the braking moment (the pressure exerted by the spring on the pin).	
6.	Carry out stopping distance checks with the escalator unloaded until the minimum stopping distance is achieved. • If dimension X reaches 15.5 mm [5/8 in.], the compression spring (8) is completely relieved and the braking moment is equal to zero. • The smaller dimension X is, the greater the braking moment. The smaller the braking moment is increases the braking distance.	



S708−114(2002−10)

Full load and no load stopping distances		
Speed max.	**Full load down direction**	**Min. no load down direction**
0.4 m/s [80 fpm]	800 mm [32 in.]	200 mm [7-7/8 in.]
0.5 m/s [100 fpm]	1000 mm [40 in.]	200 mm [7-7/8 in.]
0.6 m/s [120 fpm]	1200 mm [48 in.]	250 mm [9-7/8 in.]
0.65 m/s [128 fpm]	1300 mm [52 in.]	300 mm [11-13/16 in.]
0.75 m/s [147 fpm]	1500 mm [60 in.]	350 mm [13-3/4 in.]

708-251 (2005-01)

6 COMBPLATE MAINTENANCE MODULE

Suggested maintenance schedule for Combplate Module is one to two times per year, dependent upon escalator use.

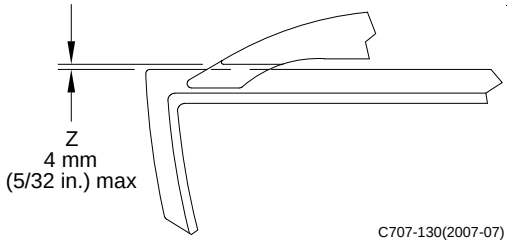
6.1 Check and adjust combplate impact device

Complete the following to check combplate impact device.

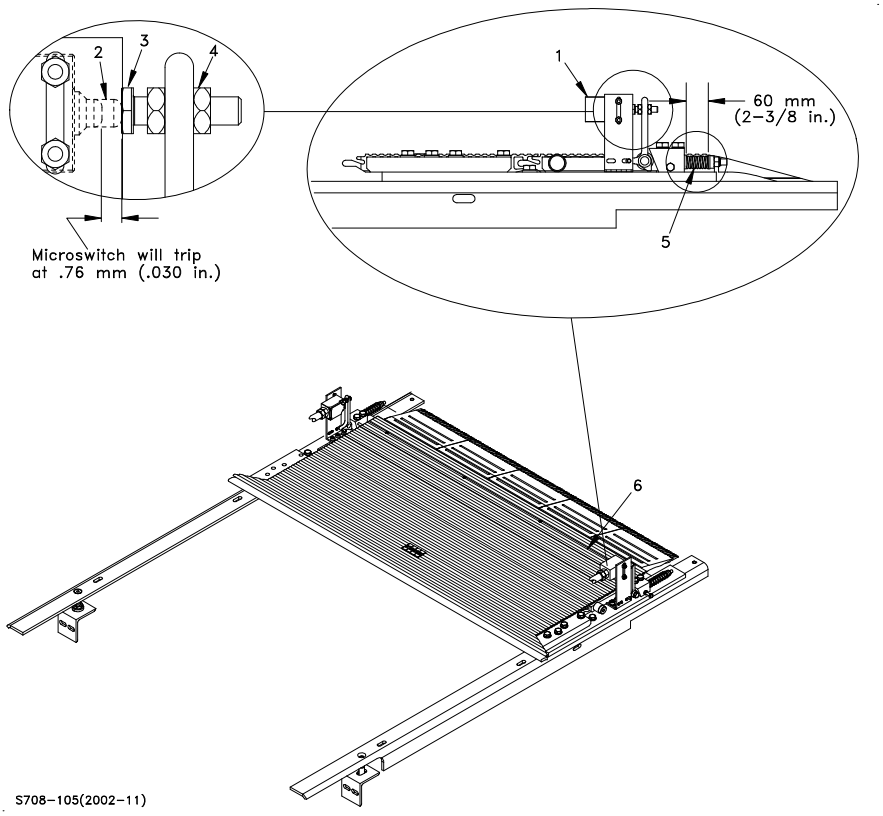
Step	Action	Note
1.	Turn mainline disconnect OFF, and remove end inner decks (left and right) located above the combplate. Store them in a clean and dry area.	
2.	Check initial spring (5) compression setting, and set at 60 mm [2-3/8 in.].	
3.	If necessary, position switch (1) for approximately 1 mm [1/32 in.] gap between switch actuator (2) and trip arm adjustment screw (3).	
4.	Lock adjustment screw in position with 1/4 inch nut (4).	
5.	Position the step band hole approximately 50 mm [2 in.] from the combplate using hand held pendant control or inspection switch.	
6.	Position a wooden hammer handle on the left side of the hole (between step and combplate).	
7.	Make a lever movement with the hammer handle so that an audible click is heard when switch trips as the combplate moves (horizontally and vertically).	
8.	Repeat this procedure with the hammer handle on the right side of the step band hole. **WARNING!**Serious injury or death can occur from rotating step band. Make sure step band is clear of all personnel and equipment before attempting to start escalator.	
9.	Carefully place a screwdriver between switch (2) and screw (3) on the left side to simulate an impact has actuated the switch.	
10.	Turn ON power and try to run escalator. • The escalator should not run.	
11.	Carefully place a screwdriver on right side switch, and repeat this procedure for the right side.	
12.	Turn power OFF.	
13.	If combplate impact device is set, then reinstall the comb segments in the right order, and tighten the comb segment screws. • Check for any broken teeth on comb segment as comb segments are installed. Replace comb segment as necessary. NOTE!Apply screw locking compound on comb segment screws only. NOTE!Apply grease to mounting holes for cover plate (6) before installing cover plate and mounting screws.	

Step	Action	Note
14.	Make sure the clearance between comb segments and steps is correct by inserting a step gauge tool in groove of step. Check the clearance (Z) between comb segment and step (make this check at every comb segment). • Clearance between comb segment and step should be 4 mm [5/32 in.]. • If clearance must be adjusted, adjust combplate up or down until clearance is 4 mm [5/32 in.].	
15.	Using hand held pendant control or inspection switch, run the escalator for one revolution in both directions (up and down directions). Make sure steps do not scrape comb segments.	

7-002051 (2009-10)



Comb segment-to-step clearance

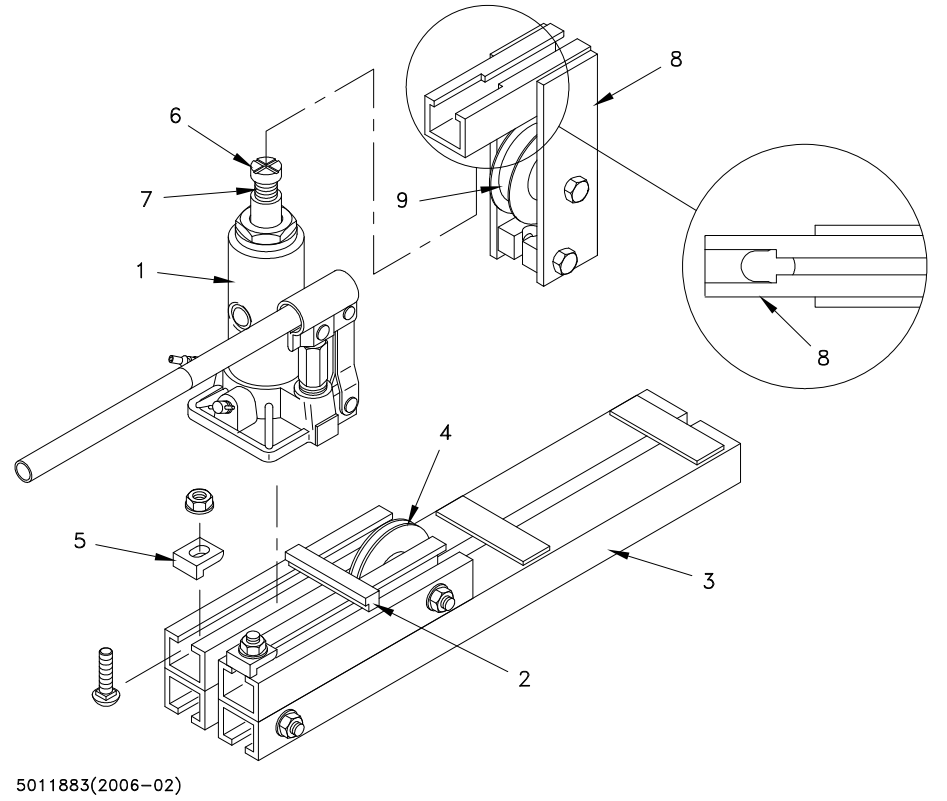


6.2 Check and adjust combplate impact device trip load (ANSI/B44)

NOTE! Combplate impact device tool kit (US521054) **must** be used with KONE Pressure Gauge Kit (US520926).

Assemble combplate impact device kit (US521054)

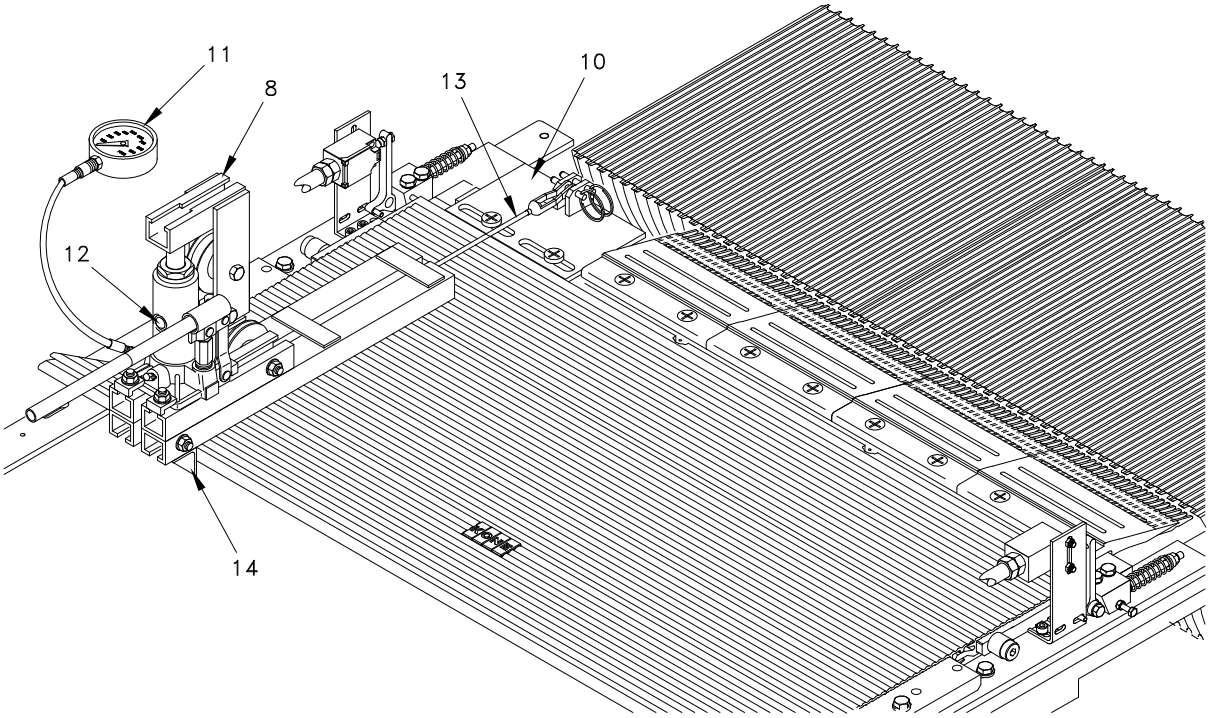
Step	Action	Note
1.	Slide hydraulic jack (1) into rear bracket (2) on base assembly (3). • Position jack with quick connect port and jack handle facing away from sheave (4).	
2.	Install and tighten front retainer clips (5).	
3.	Turn jack extension head (6) out from jack piston (7).	
4.	Slide jack piston extension head (6) through slotted hole in top of lift assembly (8).	
5.	Hand tighten jack piston extension head (6). • Roller (9) on lift assembly rolls on side of jack during use.	



Adjust horizontal combplate impact device switch

Step	Action	Note
1.	Remove left or right side comb segment, and mount comb segment weldment assembly (10).	
2.	Connect pressure gauge (11) to hydraulic jack quick connect port. NOTE!Pressure gauge used **must** be KONE Pressure Gauge Kit (US520926).	NOTE!When a new pressure gauge is used, oil from the hydraulic jack will fill the hose and may deplete the jack hydraulic oil reserve. If necessary, remove rubber plug (12) in hydraulic jack and add hydraulic jack oil (Dexron II) to the jack.
3.	Connect horizontal pull cable (13) to comb segment weldment assembly (10) with clevis and pin. • Horizontal pull cable is approximately 584 mm [23 in.] long. • For units where cable may be too short, use the cable adaptor plate to extend cable length as required.	
4.	Mount ball end of horizontal pull cable (13) to lift assembly (8).	
5.	Position combplate impact device kit on combplate with end angle bracket (14) against end of combplate.	
6.	Take hydraulic pressure readings while slowly and evenly increasing jack pressure. • Refer to table titled Horizontal Force for calibrating values of the horizontal combplate impact device switch.	NOTE!Set trip loads for combplate impact device switches according to local governing Codes.

Horizontal force	
Force (lbs)	**Hydraulic pressure**
112	210
200	375
250	465
300	560
350	655
400	750



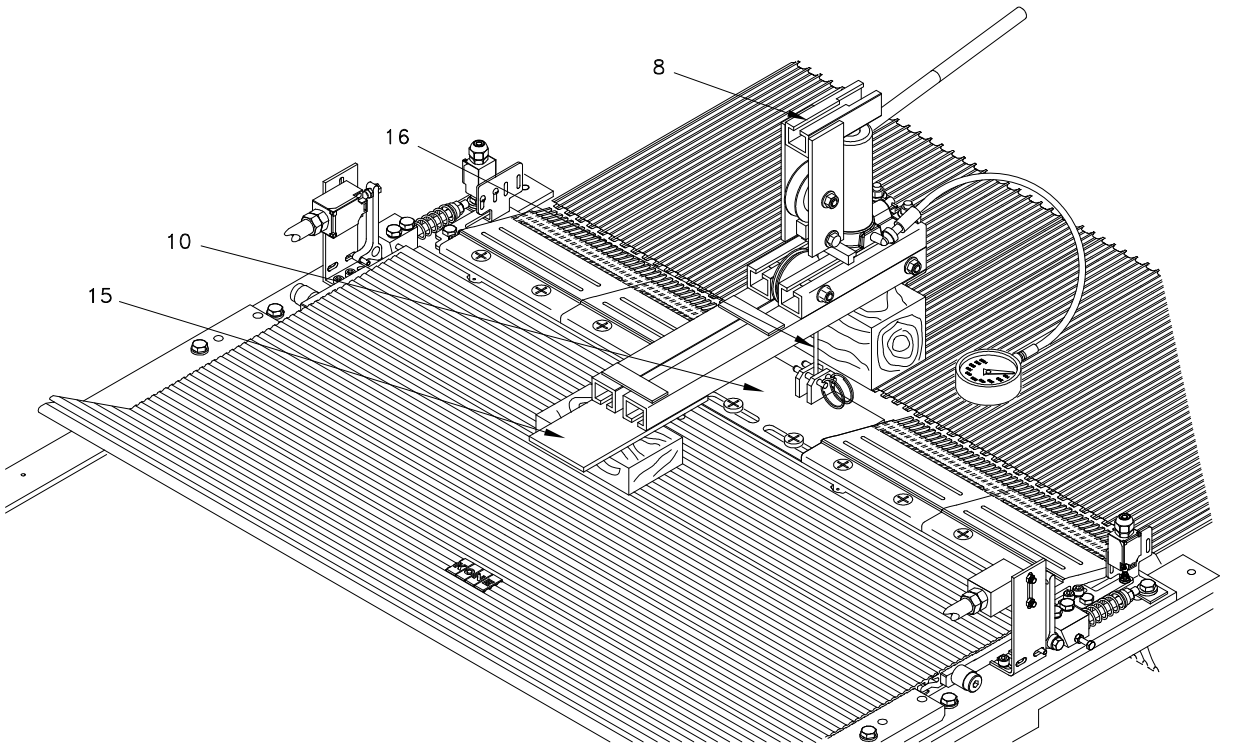
5011884(2006–02)

Adjust vertical combplate impact device switch

Step	Action	Note
1.	Mount end plate extender (15) on base assembly.	
2.	Remove center comb segment, and mount comb segment weldment assembly (10).	
3.	Connect vertical pull cable (16) to comb segment weldment assembly (10) with clevis and pins and lift assembly (8). • Vertical pull cable is approximately 178 mm [7 in.] long. NOTE! Make sure vertical pull cable is located in comb segment weldment assembly (10) bracket between the two pins.	
4.	Connect opposite end of vertical pull cable (16) to lift assembly (8).	
5.	Position combplate impact device kit on combplate. • Block up extender plate end (15) with a small wood block located on combplate. • Block up jack end on large wood block located on step.	
6.	Take hydraulic pressure readings while slowly and evenly increasing jack pressure. • Refer to table titled Vertical Force for calibrating values of the vertical combplate impact device switch.	NOTE!Set trip loads for combplate impact device switches according to local governing Codes.

Vertical force	
Force (lbs)	**Hydraulic pressure**
100	200
110	215
120	235
130	250
140	270
150	285
160	305

7-000641 (2007-05)



5011885(2006–02)

7 DRIVE MAINTENANCE MODULE

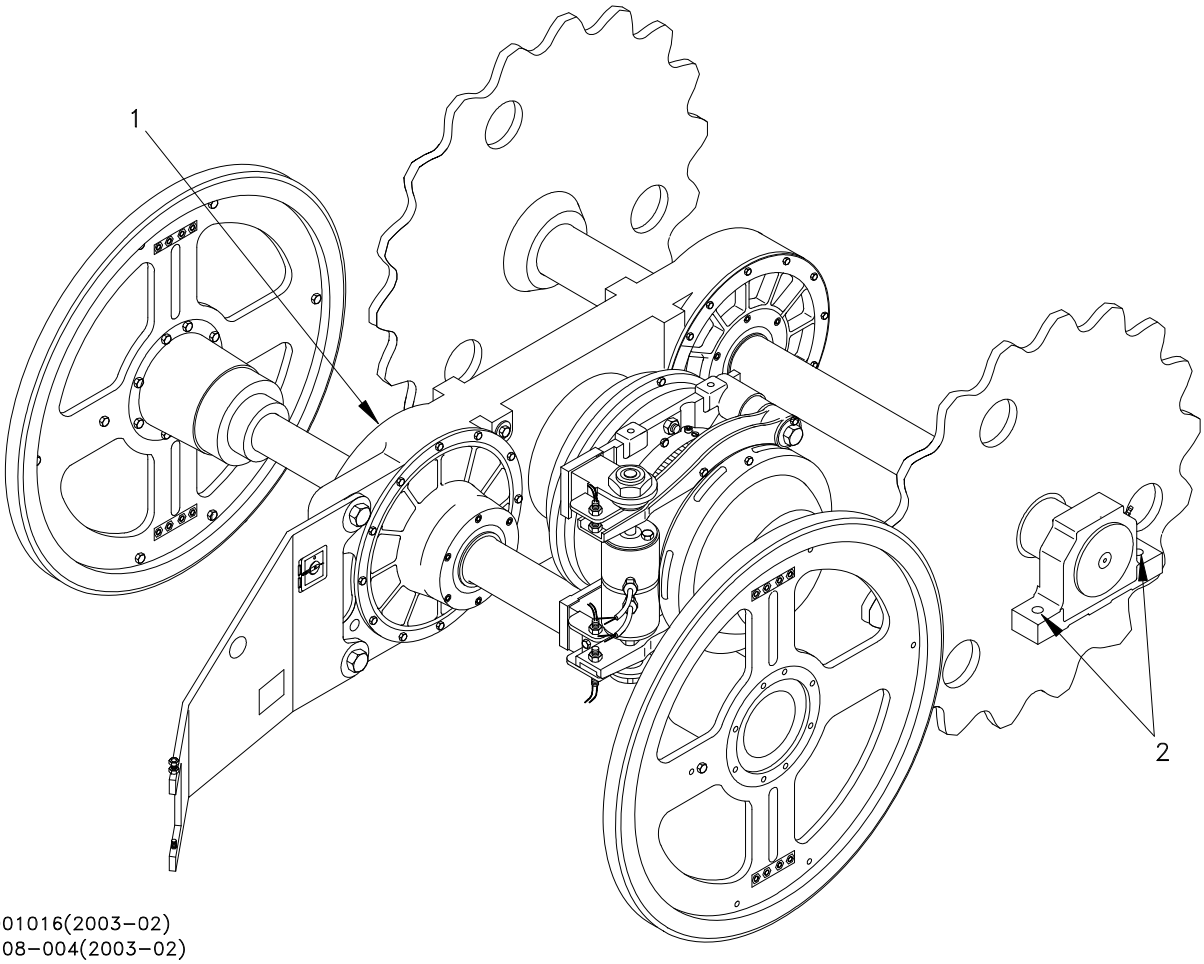
Suggested maintenance schedule for Drive Module is one to two times per year, dependent upon escalator use.

7.1 Check drive unit

Complete the following to check drive station

Step	Action	Note
1.	Check drive unit for quiet operation. • If drive operation is not quiet, investigate cause of the noise and correct as required. • If noise cannot be corrected, contact your supervisor with all details.	
2.	Check drive unit for oil leaks. • Report any leaks to your supervisor.	
3.	Check gear box oil level. For more information on checking gear box oil level, refer to section titled: Lubricate machinery.	
4.	Lubricate drive unit. *For more information on checking gear box oil level, refer to section titled: Lubricate machinery.*	
5.	Clean air breather (1).	
6.	Check drive unit mounting bolts (2). • Torque for main shaft bolts is 350 Nm [258 lbf-ft]	NOTE!Check drive unit mounting bolts once a year.

7-002064 (2009-10)



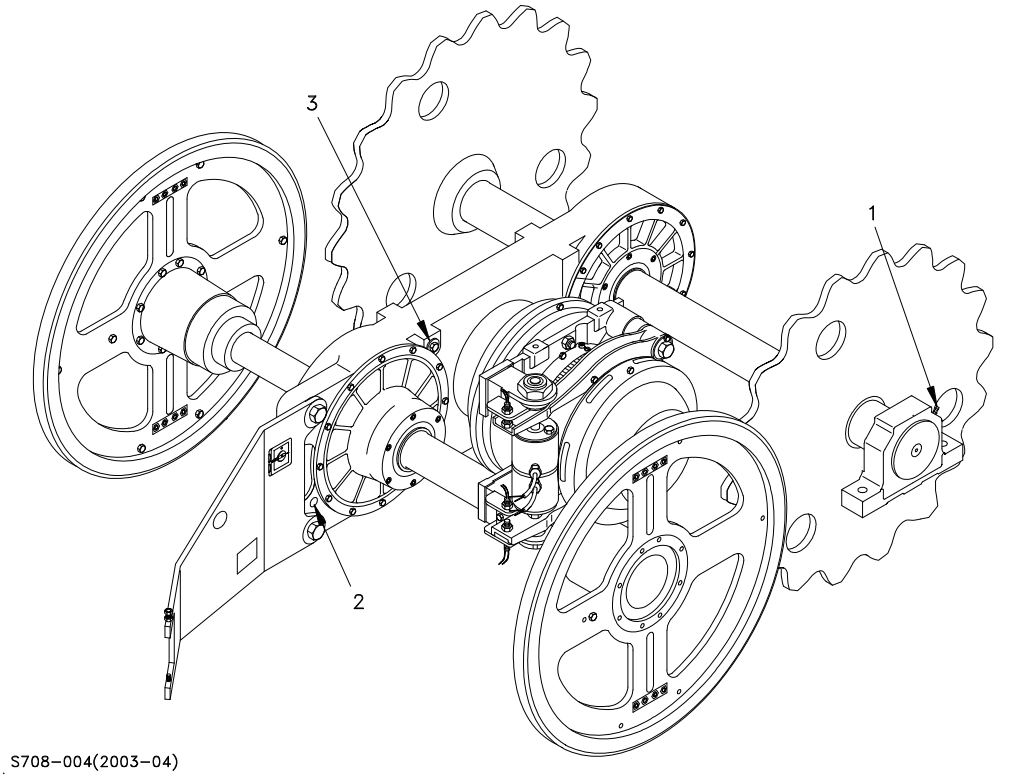
5001016(2003–02)
S708–004(2003–02)

7.2 Lubricate machinery

Step	Action	Note
1.	With the step band hole above the drive machinery, make sure the step band lock is engaged and main power supply is OFF.	
2.	Grease outboard bearings (1) of step chain sprockets. Lubricate until grease weeps.	NOTE! Grease outboard bearings once a year for indoor escalators.

Step	Action	Note
3.	Check oil level at sight glass (2) on bottom right side of drive station. • Oil level should be in the middle of sight glass (2).	NOTE! Gear box capacity is as follows: • **1 drive motor:** Gear box capacity is 7 liters [7.4 quarts] • **2 drive motors:** Gear box capacity is 8 liters [8.5 quarts]
4.	Remove filler cap (3), and add oil using one of the following synthetic oils • Synthetic oil CLPPG 680 (DEE2213667). • Synthetic oil Mobil SHC 634 (US69887003)	
5.	Replace filler cap using a new oil seal.	

708-025 -20265053 (2011-02)



S708–004(2003–04)

8 GUIDE MAINTENANCE MODULE

Suggested maintenance schedule for Guide Module is one to two times per year, dependent upon escalator use

8.1 Preparing

Remove and record the step number for five adjacent steps. Remove five different steps each time this module is completed. Complete the following in preparation for procedures in this module.

- Remove and replace steps
- Check steps for acceptable and unacceptable conditions

708-020 (11/2001)

8.2 Remove and replace steps

The following describes the procedure to remove and replace steps.

NOTE! Steps can be removed at EITHER the upper end or lower end, however, in MOST CASES the steps are removed at the LOWER END.

NOTE! A spreader bar (bar with step pins inserted on ends to simulate width of step) must be inserted in place of a step at every fifth step removed.

WARNING

Personal injury or death can be caused by moving components of the step band. Use extreme care when working near the step band.

The escalator is equipped with inspection switches and hand held pendant control. The following describes moving the escalator on inspection mode and opening and closing the safety circuit.

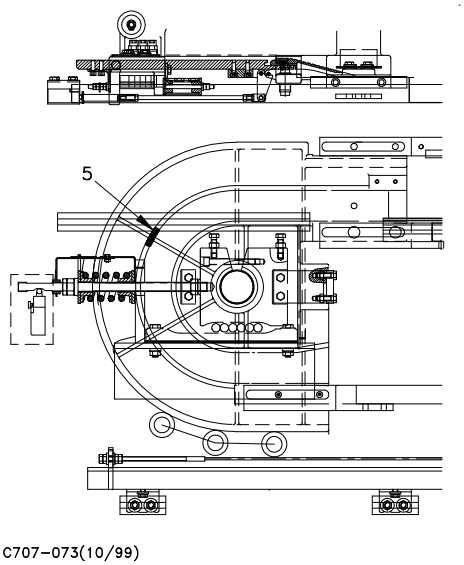
- Pendant control: Use the up/down buttons to move the step band on inspection mode, and use the stop button to open and close the safety circuit.
- inspection switches: Move the escalator on inspection mode using the inspection switch. Open and close the safety circuit using the pit stop switch.

If the escalator is equipped with hand held pendant control, use the up/down buttons to move the step band on inspection mode, and use the stop button to open and close the safety circuit.

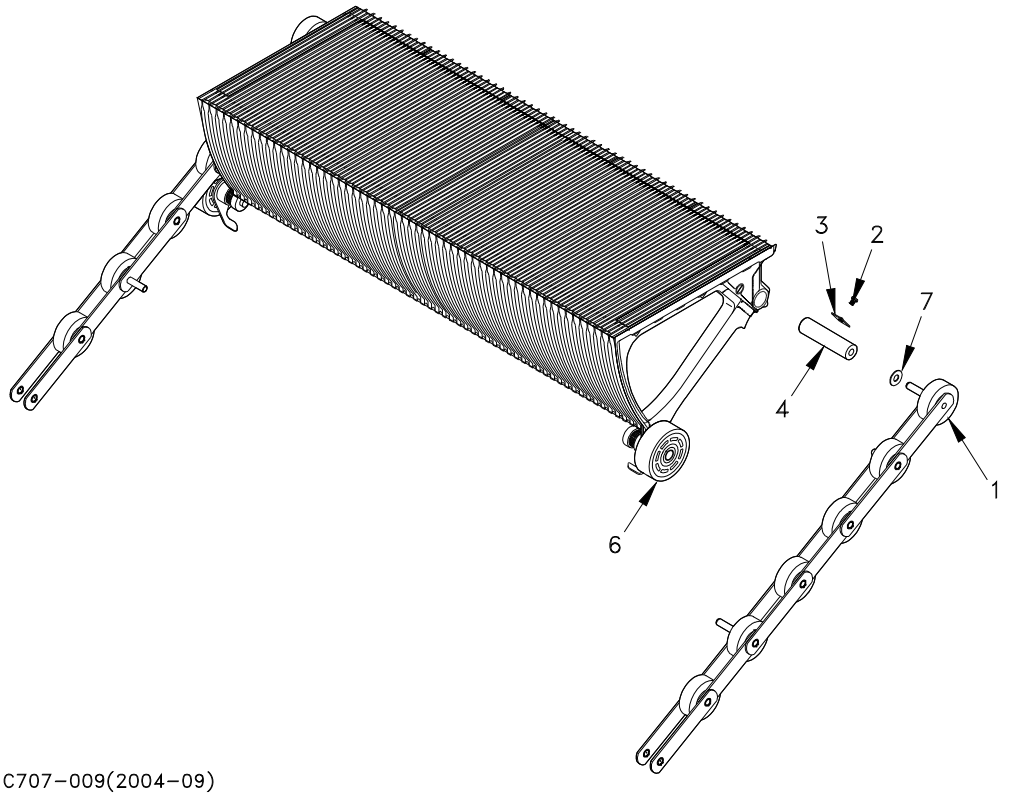
If the escalator is equipped with inspection switches, move the escalator on inspection mode using the inspection switch. Open and close the safety circuit using the pit stop switch.

Step	Action	Note
1.	Loosen fixing (mounting hardware) and remove step guard.	
2.	Move the step band on inspection mode, and position step band with step roller (6) located in a convenient position close to track cutout (5) to gain easy access to step fixing.	
3.	Open the safety circuit.	
4.	Straighten tab washer (3), and loosen screws (2).	
5.	Close the safety circuit, and move the step band on inspection mode until step roller (6) is located at track cut-out (5) in the upper or lower end.	
6.	Open the safety circuit, and slide step connector (4) towards the center of the step.	
7.	Remove step by lifting step and guiding step roller (6) out of track cut-out. NOTE! Make sure step chain pin washer (7) is retained.	
8.	Remove desired amount of steps in the same manner. NOTE! A spreader bar (bar with step pins inserted on ends to simulate width of step) must be inserted in place of a step at every fifth step removed.	
9.	Replace steps in reverse order. NOTE! Always use a new tab washer (3) for the screws (2). Secure the screws by bending up the tab washers. • Tightening torque for screws (2): MA = 25 Am [18.75 ft/lbs].	

7-002052 (2009-10)



Removing step from track cut-out



C707–009(2004–09)

Disconnecting step

8.3 Check steps for acceptable and unacceptable conditions

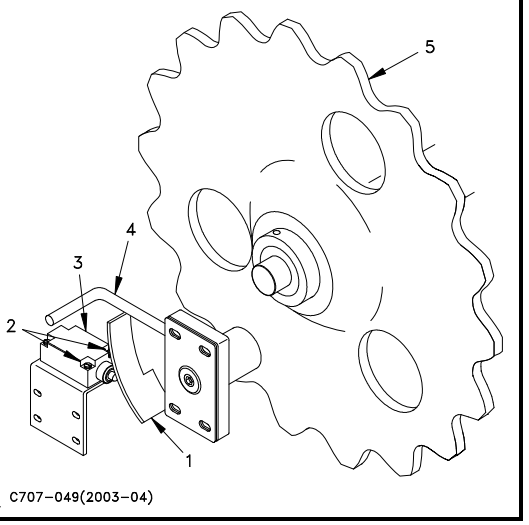
As steps are removed check them for the following.

- Check step for warp, cracks, loose or damaged rollers, loose or damaged step demarcation strips, and loose hardware. Check for damaged ribs and broken rib ends.
- If warped or cracked, replace with new step as required.
- If rollers are loose, tighten hardware. If worn or damaged rollers, replace as required with new rollers.
- If step demarcation strip is loose, tighten mounting hardware. If damaged, replace as required with new step demarcation strip.
- If hardware is loose, tighten hardware.

708-021 (2005-01)

8.4 Check and adjust step band lock

Complete the following to check and adjust step band lock.

Step	Action	Note
1.	Turn main power supply OFF.	
2.	Engage step band lock and make sure actuator (1) actuates the switch (3).	
3.	If switch (3) must be adjusted, loosen mounting hardware (2) on switch.	
4.	Adjust switch in or out to actuator (1) for the following condition. — Switch is actuated when step band lock is engaged with opening in drive sprocket (5) and handle (4) is lowered into locked position.	

7-002053 (2009-10)

8.5 Check internal safety devices

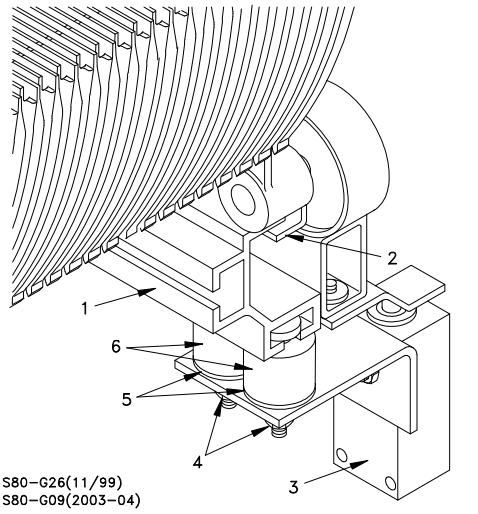
Complete the following to check and adjust (if necessary) the following internal safety devices.

NOTE! The procedures in this module describe checking and adjusting procedures. Complete adjusting procedures only when the primary checking procedures indicate an adjustment is necessary.

708-022 (2009-02)

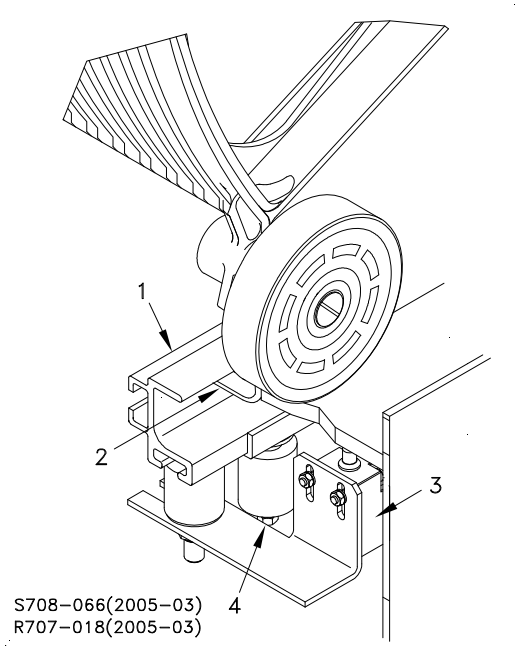
8.6 Check and adjust step lift switch

Complete the following to check and adjust step lift switch.

Step	Action	Note
1.	With one step removed, position opening in step band in lower curve area above step lift switch.	
2.	Turn main power supply OFF, and engage step band lock.	
3.	Check clearance between step lift track (1) and counterguide lug (2), and adjust track if necessary. • Adjust step lift track if clearance is greater than 5 mm [3/16 inch].	
4.	If step lift track is adjusted correctly, manually lift step lift track (1) and check limit switch (3) for the following conditions. • Switch should actuate after step lift track is lifted approximately 6 mm [1/4 inch], and should reset when step lift track is released.	
5.	If switch must be adjusted, loosen nut (4), and add or remove shims (5) under spacer block (6).	

7-002054 (2009-10)

8.7 Check and adjust step upthrust switch

Step	Action	Note
1.	With three steps removed, position hole in step band in lower curve area above step upthrust switch and track.	 S708–066(2005–03) R707–018(2005–03)
2.	Turn main power supply OFF, and engage step band lock.	
3.	Check clearance between step upthrust track (1) and counterguide lug (2), and adjust track if necessary. • Adjust step upthrust track if clearance is greater than 5 mm [3/16 inch].	
4.	If step upthrust track is adjusted correctly, manually lift step upthrust track, and check for the following conditions. • Switch (3) should actuate after step upthrust track is lifted approximately 5 mm [3/16 in.], and should reset when step upthrust switch track is released.	
5.	If track must be adjusted, adjust bolts (4) until switch actuates and resets correctly. • Step upthrust track has adjustment bolts located in three locations - at each end and in the middle of the track.	
6.	Disengage step band lock, and turn main power supply ON.	

708-108 (2007-06)

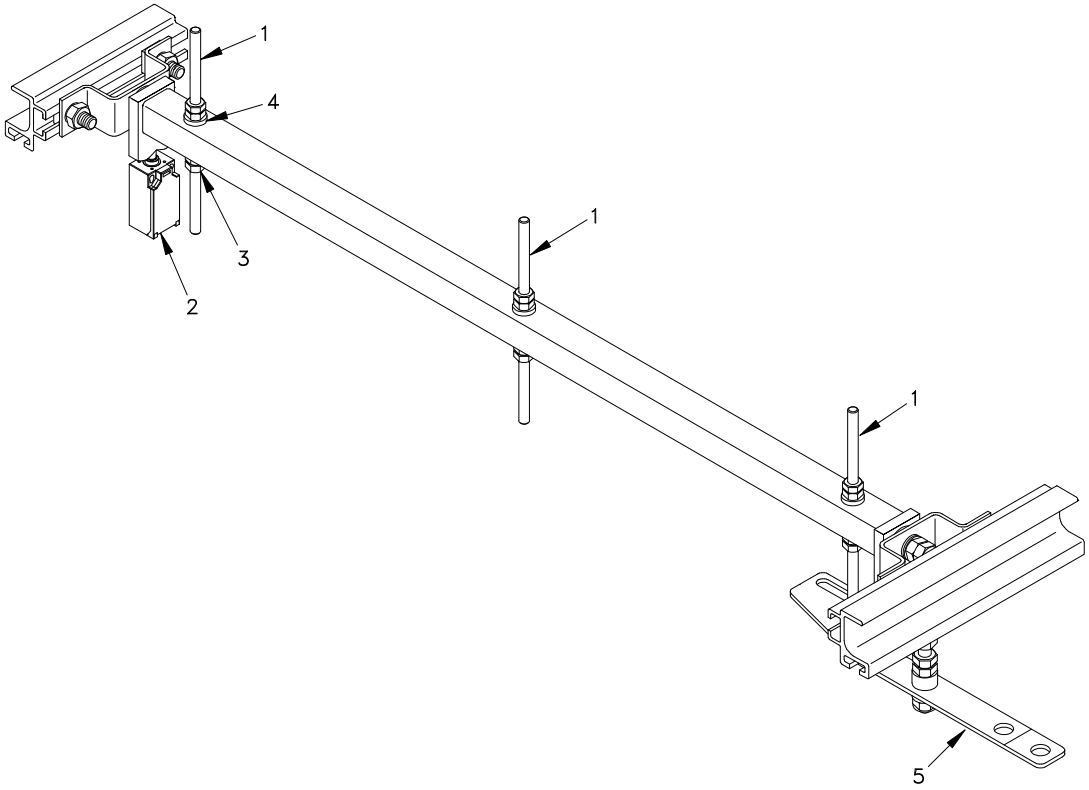
8.8 Check and adjust step sag device

Complete the following to check step sag switch.

Step	Action	Note
1.	Position hole in step band over lower step sag device.	
2.	Turn main power supply OFF, and engage step band lock.	

Step	Action	Note
3.	Measure clearance from trip levers (1) to steps. • Trip levers must actuate limit switch (2) if a step rises or lowers by more than 5 mm (3/16 inch).	
4.	If necessary, adjust for correct clearance between trip levers and step. • To adjust, loosen nuts (3 and 4) and adjust trip levers up or down until clearance to step is 4 mm (5/32 inch).	
5.	Check limit switch (2) operation by actuating limit switch by hand.	
6.	Make sure step band is clear of all personnel and equipment. **WARNING!**Serious injury or death can occur from rotating step band. Make sure step band is clear of all personnel and equipment before attempting to start escalator.	
7.	Disengage step band lock, switch ON main power supply, and try to run the escalator in both directions. • The escalator should NOT run.	
8.	Switch OFF the main power supply, and engage step band lock.	
9.	Reposition reset lever (5) to center position. NOTE!Reset lever is located behind the track sub, and contains a hole in the lever for use in moving lever back to center position.	
10.	Make sure step band is clear of all personnel and equipment.	
11.	With operator outside step band hole, disengage step band lock, and switch ON main power supply. Run the escalator until the step band hole is positioned at the upper step sag device.	
12.	Repeat the above procedure for upper step sag device.	

708-246 (2009-11)



S708–107(2002–11)

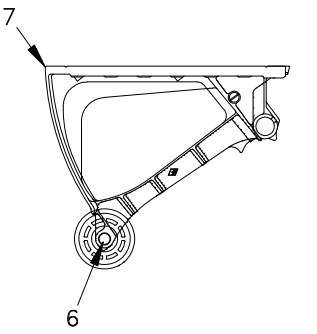
8.9 Adjust step sag device uphill and downhill

With three steps removed, the step sag device trip levers should actuate at the following two locations:

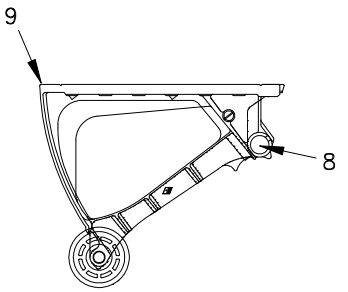
- at location of trailing roller (6) on uphill step (7)
- at location of step chain roller (8) of downhill step (9).

If step sag device does not actuate at these locations, adjust step sag device assembly uphill or downhill a small amount until switch actuates at both locations.

707-185 (2007-06)

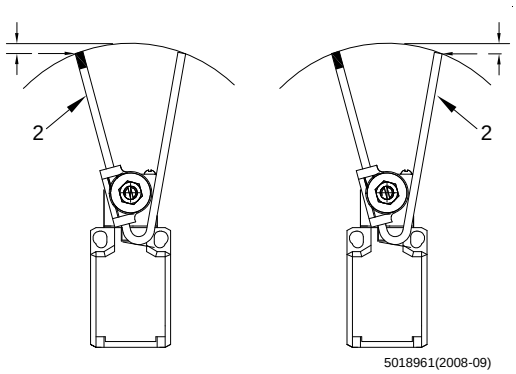
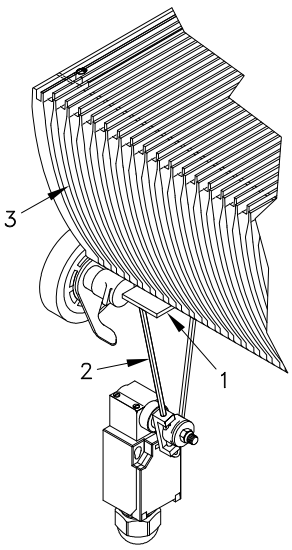


Three steps removed in step band



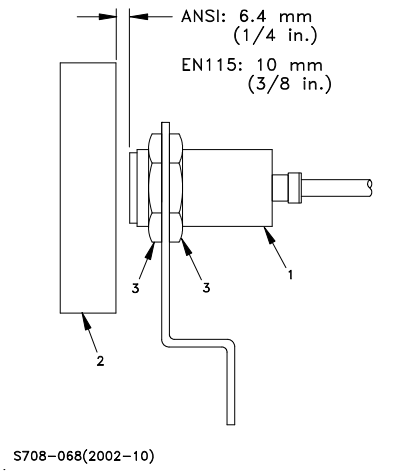
C707–156(6/02)

8.10 Check and adjust out-of-level step detectors

Step	Action	Note
1.	Place a 3.2 mm [1/8 inch] shim (1) between the switch wand actuator (2) and the step riser (3). • The switch should trip. If it does not, adjust in the following manner. NOTE!Contact with a step from either direction will cause the wand (2) to rotate in circular pattern and actuate the switch.	 5018961(2008-09)
2.	Loosen the switch mounting screws connecting the switch to the out-of-level step detector bracket.	
3.	Adjust the switch up or down to achieve a gap of 2.79 mm [7/64 inch] between the step riser and the switch wand actuator. • The switch should actuate when a 3.2 mm [1/8 inch] shim is placed between the step riser and switch wand actuator. If the switch does not actuate, move the switch upward slightly.	 S708–067(2005–07) R707–014(2005–07)
4.	Use same procedure to check and adjust the remaining out-of-level step detector in the same manner.	

708-109 (2008-09)

8.11 Check and adjust missing step detector

Step	Action	Note
1.	With three steps removed, position hole in step band above lower end missing step detector.	
2.	Turn main power supply OFF, and engage step band lock.	
3.	Check clearance between proximity sensor (1) and tapered flat head screw of trailing wheel (2). Sensor should be centered and approximately 6.4 mm [1/4 in.] from tapered flat head screw of trailing wheel.	
4.	If proximity sensor must be adjusted, loosen nuts (3) on sensor, and adjust until sensor is centered and approximately 6.4 mm [1/4 inch] from tapered flat head screw of trailing wheel.	
5.	Tighten nuts (3) on sensor.	
6.	Disengage step band lock, turn main power supply ON, and position hole in step band above the upper end missing step detector.	
7.	Turn main power supply OFF, and engage step band lock.	
8.	Use same procedure to examine and adjust the upper end missing step detector as was used for the lower end missing step detector.	
9.	Make sure step band is clear of personnel and equipment, disengage step band lock, and turn main power supply ON. **WARNING!**Serious injury or death can occur from rotating step band. Make sure step band is clear of all personnel and equipment before attempting to start escalator.	
10.	Run escalator on normal RUN with one step removed from step band, and make sure escalator stops when hole in step band passes each missing step detector.	

7-002040 (2009-10)

8.12 Check step system

Complete the following to check the step system.

Step	Action	Note
1.	Check for any worn, damaged, or misaligned tracks. • If tracks are worn or damaged, repair or replace track section. • If tracks are misaligned, realign and tighten. If necessary, repair or replace track section.	
2.	Make sure tracks and cross members are free of oil, dirt, and debris (clean).	
3.	Check that steps run free through step run-in guide. Adjust as required. • Steps should have approximately 1 mm [1/32 in.] clearance through step run-in guide.	
4.	Check bridges at lower end for wear, and free movement of reversing station. Repair or replace as required. • Repair or replace bridges as required. • If necessary apply grease to sliding surfaces of reversing station.	
5.	Visually check step guidance buttons on step. • If step guidance buttons are worn past wear indicator, replace step guidance buttons. *For more information on replacing step guidance buttons, refer to Minor Mechanical Repair/Replacing Step Guidance Buttons.*	

7-002043 (2009-10)

8.13 Cleaning (light cleaning)

Clean upper and lower end pits.

- There should be no oil or trash (rubbish) in pits.

NOTE! Dispose of oil in approved manner according to local governing codes.

708-016 (11/99)

9 STEP CHAIN MAINTENANCE MODULE

Suggested maintenance schedule for Step chain Module is one to six times per year, dependent upon escalator use.

9.1 Check and adjust automatic oiler

Step	Action	Note
1.	Check brushes (1) for correct position at lubricating points on step chain. Adjust brushes, if necessary.	
2.	Check oil level in reservoir (2). Fill with clean oil. NOTE!Make sure oil is absolutely clean when filling automatic oiler. Use escalator chain oil part number US505660032.	
3.	Check fitting connections for leakage. Tighten connections, if necessary.	
4.	Set pulse length and time delay between pulses.	

7-002057 (2010-02)

9.2 Setting pulse length and delay (501-B control system)

The pulse length and delay between pulses (for automatic oiler) are set by operational parameters in the controller.

Pulse length (lubrication pump on time)

- Set operational parameter 19 (MINUTES) to 00.
- Set operational parameter 20 (SECONDS) to 02.

Delay between pulses (lubrication pump off time)

Delay between pulses is dependent on rise and whether the escalator is indoors or outdoors.

NOTE! Values below are starting point values for an INDOOR escalator with a vertical rise of 4.5 m. Parameters must be checked after first maintenance is completed and adjusted accordingly.

NOTE! Values for escalators that are OUTDOORS and with different vertical rises may be different.

- Set operational parameter 21 (HOURS) to 01.
- Set operational parameter 22 (MINUTES) to 10.
- Set operational parameter 23 (SECONDS) to 00.

707-183 (2002-10)

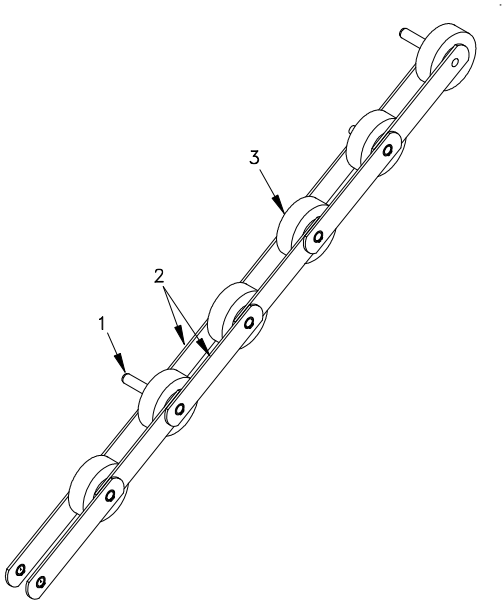
9.3 Lube-free step chain

If required, the step chain lip track may be moistened by a spray in the running surface area.

- Spray application may be required if noise is generated between step chain roller (3) and lip track.
- Spray application may be along the entire length of lip track.
- Spray application should be done once before putting the unit into operation.

NOTE! Use only a high pressure semi-synthetic grease (Rivotta SKD 3602), based on metal soap without solid additives for initial application.

7-002058 (2009-10)



C707–027(7/99)

9.4 Check step chain rollers

Complete the following to check step chain rollers.

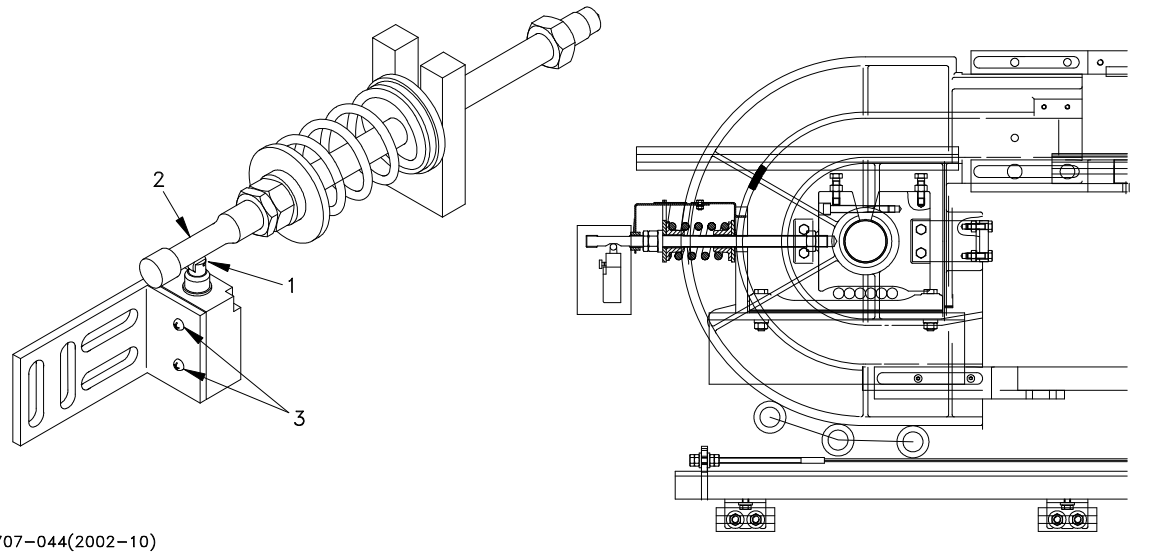
Step	Action	Note
1.	Make sure step band is clear of all personnel and equipment. **WARNING!**Serious injury or death can occur from rotating step band. Make sure step band is clear of all personnel and equipment before attempting to start escalator.	
2.	Disengage step band lock, switch ON main power supply, and run the escalator with hand held pendant control or inspection switch.	
3.	Check for any damage or wear of step chain rollers. Replace as required.	

7-002065 (2009-10)

9.5 Check and adjust broken step-chain switches

Step	Action	Note
1.	With main power supply OFF, physically depress switch actuator (1). Listen for audible click of switch.	
2.	Check location of switch actuator (1) to trip bar (2). • Switch actuator (1) should be in center of trip bar (2), and should just touch trip bar surface.	
3.	If switch must be adjusted, loosen mounting screws (3) and adjust switch actuator until actuator (1) is centered and just touches trip bar (2).	
4.	Tighten mounting screws (3).	
5.	Make sure step band is clear of personnel and equipment, and turn main power supply ON. **WARNING!**Serious injury or death can occur from rotating step band. Make sure step band is clear of all personnel and equipment before attempting to start escalator.	
6.	Place a screw driver between switch actuator (1) and trip bar (2) so switch actuates.	
7.	Try to run the escalator in BOTH directions using hand held pendant control or inspect switch. • The escalator should not start.	

7-002055 (2009-10)



C707–044(2002–10)

9.6 Check and adjust step chain tension (spring pack)

Check and adjust step chain tension as follows.

NOTE! Make sure step chain tension is adjusted uniformly on both sides of the escalator.

1. Position barricades, and remove access covers.
2. Turn main power supply OFF.
3. Engage step band lock.
4. In lower end pit, loosen outer jam nut (1).
5. Loosen inner jam nut (2) to remove spring pack compression and allow washer (3) to be spun freely.
6. Turn inner jam nut (2) until washer (3) touches spring washers (4) (actual dimension of spring pack without compression).
   – Spring washers must lie together backlash-free without any pretension.
7. Measure and record the spring pack length (H) between washer (3) and washer (5).
8. Turn jam nut (2) until the correct tension dimension is set for chain type used.
   – Determine the reduction dimension for chain type being set.
   – Subtract reduction dimension from spring pack length (H) to determine correct tension dimension.

   For more information on reduction dimensions, refer to table titled: Reduction Dimension.

Example only:

The following dimension for (H) is theoretical only.

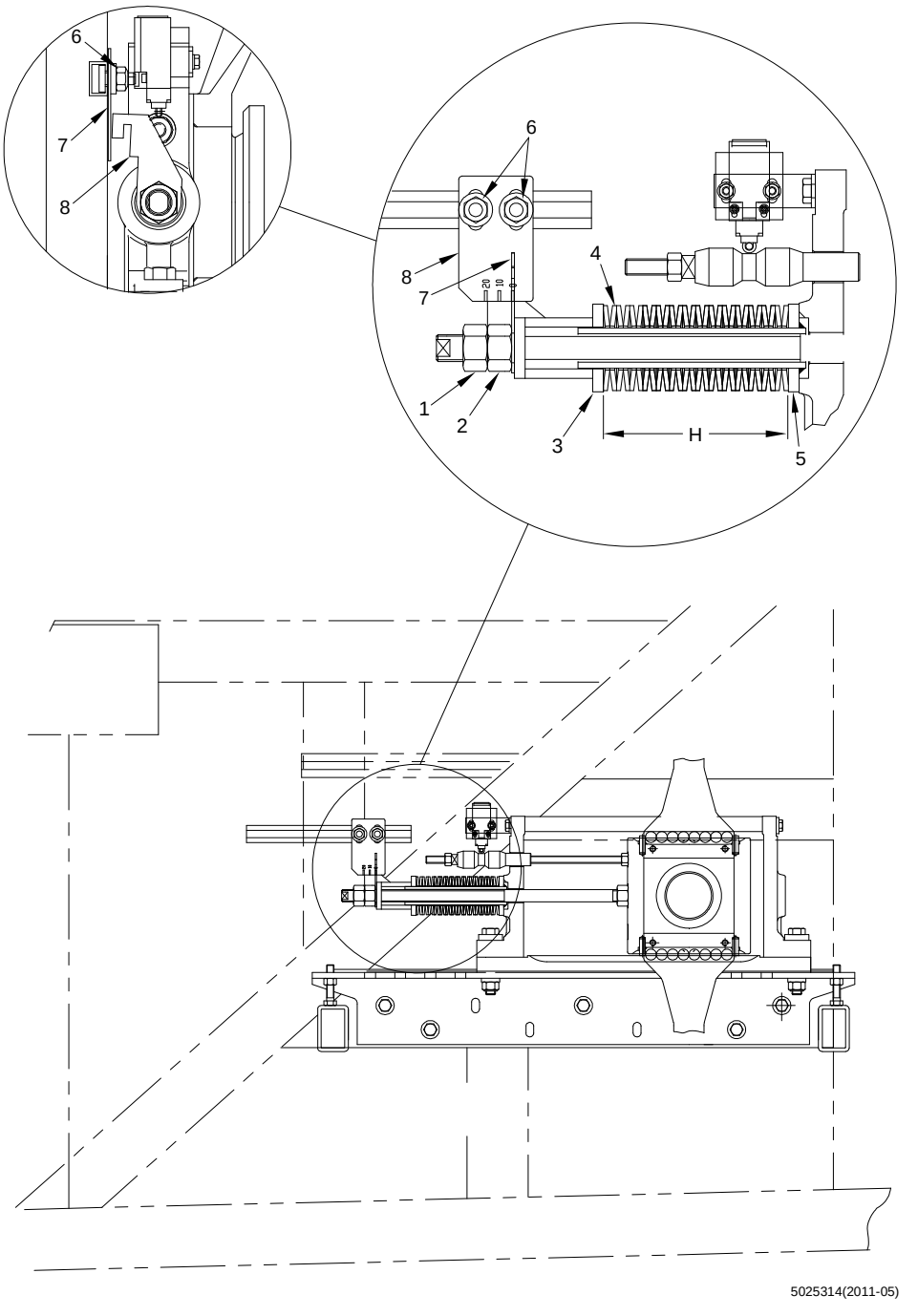
Spring length (H) - reduction dimension = tension dimension

140 mm - 5 mm = 135 mm

9. Tighten outer jam nut (1) to secure inner jam nut (2).
10. Repeat tension procedure for opposite side step chain.
11. Measure and record spring length (H) for both step chains (spring pack under tension dimension).
12. Run the step band for one revolution.
13. Check spring length (H) for both step chains.
    – If spring length differs from recorded dimension (spring pack under tension dimension), reset spring length to recorded dimension.
14. Adjust step chain tension on opposite side of the escalator in the same manner.
15. Loosen hardware (6) and reposition the spring scale (7) so the pointer (8) is set to zero.
16. Disengage step band lock, turn main power supply ON, and replace access covers.
17. Run escalator for at least two revolutions, and make a visual check of the escalator before returning the escalator to service.
18. Remove barricades, and return escalator to service.

Reduction dimension	
Chain type	**Reduction dimension**
16HDV	5 mm
22HDV	6.5 mm
30HDV	8 mm

5025314 (2011-05)



10 HANDRAIL MAINTENANCE MODULE

Suggested maintenance schedule for Handrail Module is one to two times per year, dependent upon escalator use.

10.1 Clean and check handrail guides

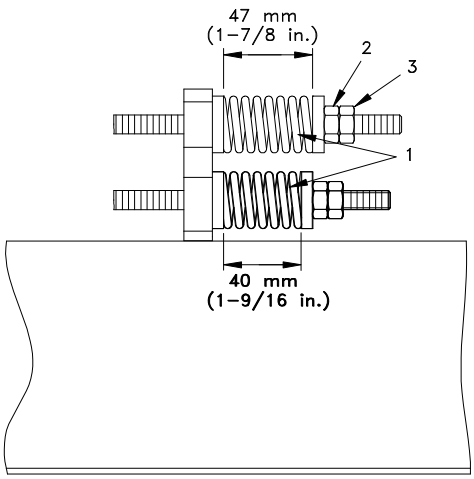
Complete the following to clean handrail guides and newel roller guides.

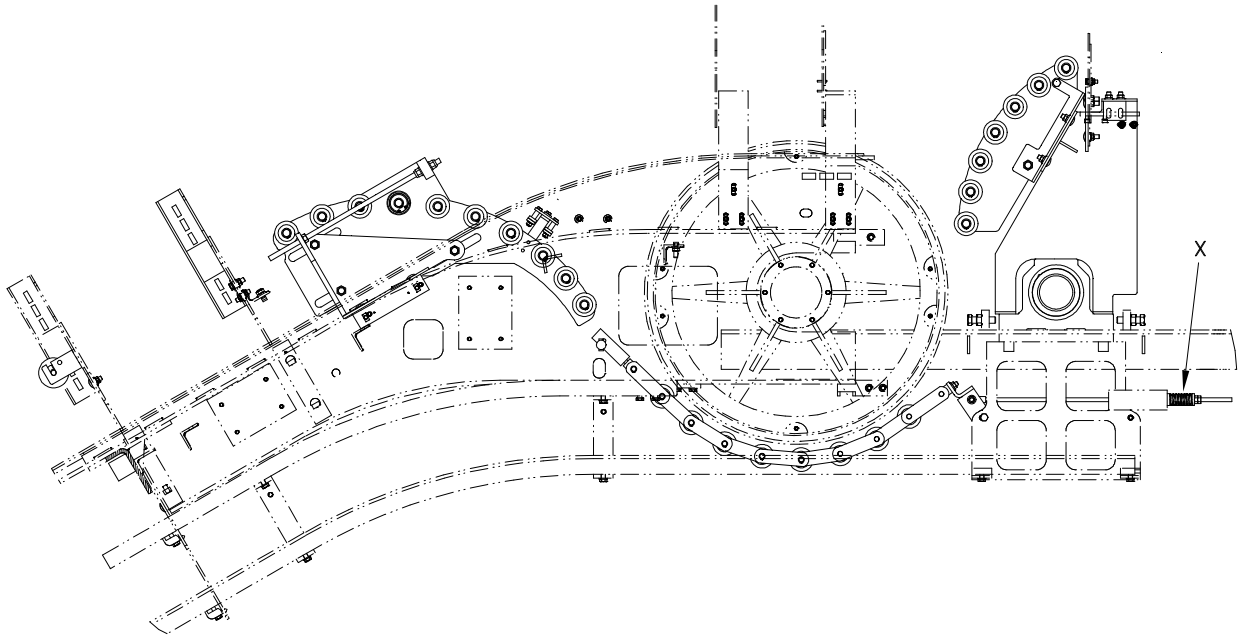
Step	Action	Note
1.	Starting at the lower end, tilt handrail up on one side and remove handrail from handrail guide and newel ends.	
2.	Vacuum and clean exposed section of handrail guide and newel ends.	
3.	Check joints between handrail guide sections. Adjust as required. • Handrail guide joints should be aligned without gaps.	
4.	Check handrail guides for excessive wear. Replace as required. NOTE!Pay special attention to underside of lower end curve and top surface at upper end curve.	
5.	Replace handrail on handrail guide.	

708-030 (2003-02)

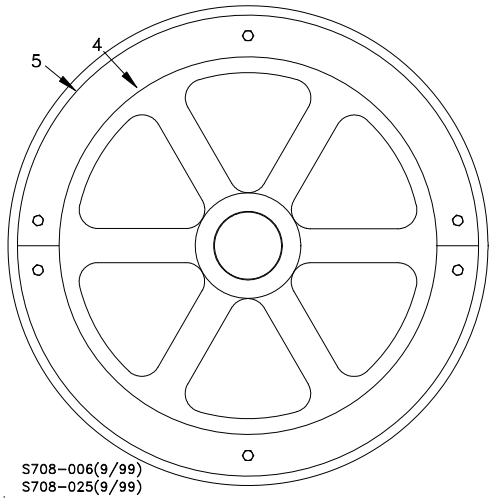
10.2 Check handrail drive pressure rollers (drive area)

Complete the following to check the handrail drive in the drive area.

Step	Action	Note
1.	Check length of handrail drive springs (1) located in upper end pit and adjust if necessary. Upper spring length should be approximately 47 mm [1-7/8 in.], and lower spring length should be 40 mm [1-9/16 in.]	
2.	Adjust spring length by loosening lock nut (2) and adjusting nut (3) until compressed spring length is correct. NOTE!Make sure handrail does not slip after adjusting spring length.	



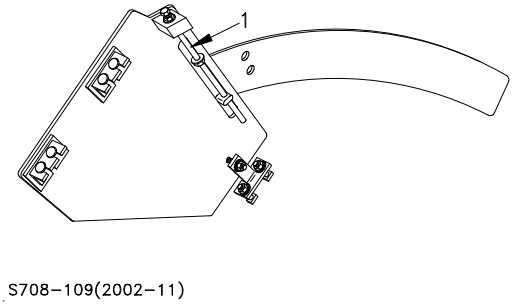
FuReX (ECOMOD): *Set spring length (X) for handrail pressure rollers to 32 mm [1-1/4 in.]*

Step	Action	Note
3.	Remove inner deck in area of handrail drive wheel (4).	
4.	Clean any grease or oil from handrail drive wheel rubber. NOTE!Escalators with inclined solid balustrades have only V-type handrails. The V-type handrail drive wheel does not have have a rubber surface.	
5.	Check rubber (5) on handrail drive wheel for damage, cracks or splits, and wear. • If rubber is damaged, cracked or split, replace handrail drive wheel as required. • If rubber thickness is less than 3 mm [1/8 in.], replace handrail drive wheel segments as required.	

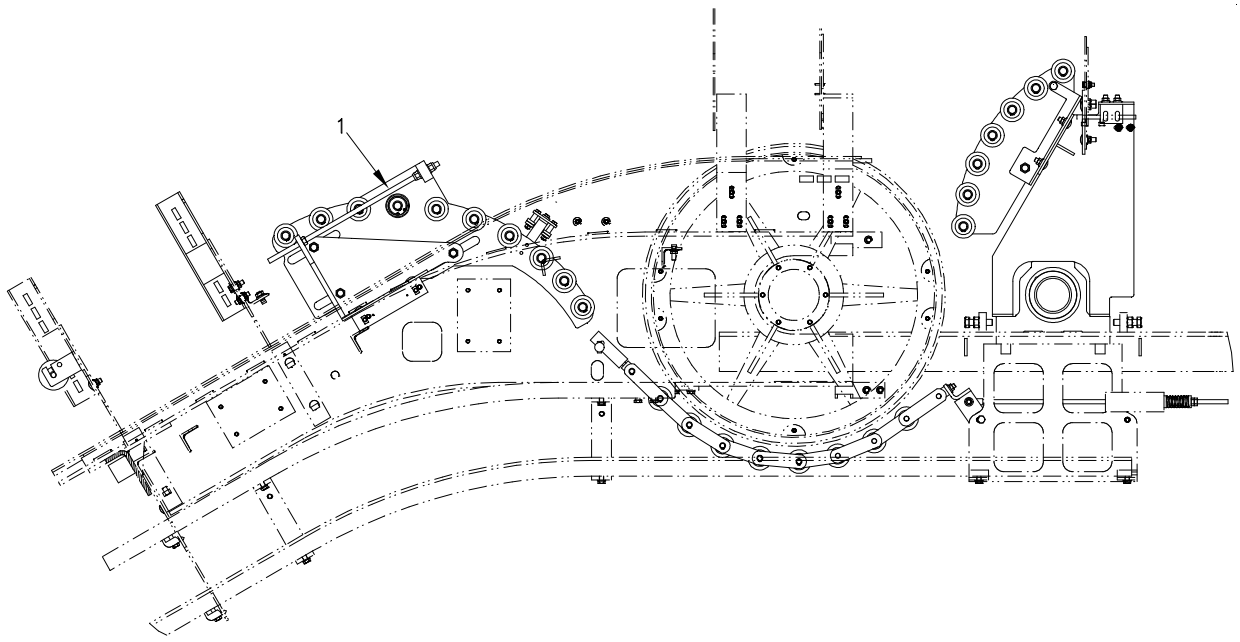
7-002045 (2009-10)

10.3 Adjust handrail tension (with take-up roller in drive area)

Complete the following to check and adjust handrail tension.

Step	Action	Note
1.	To check handrail tension, lift handrail off lower curve handrail guide. • Remove handrail in lower curve up to first incline inner panel joint. • Handrail should be 1 mm [1/32 in.] above handrail guide at lower curve.	
2.	If handrail tension must be adjusted, adjust take-up rollers (1) at upper end handrail drive until handrail raises 1 mm [1/32 in.] above handrail guide at lower curve.	

7-002046 (2009-10)



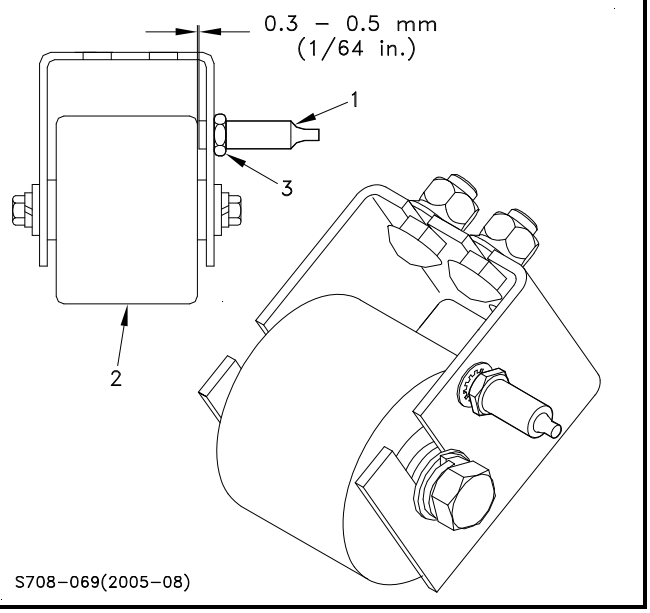
10.4 Clean handrails

After cleaning handrail guides and adjusting handrail tension, clean outer surface of handrails.

Wipe handrail with a cloth dampened with Handrail Cleaner or a mild hand soap and warm water. Then, dry with a cloth.

708-107 (10/2001)

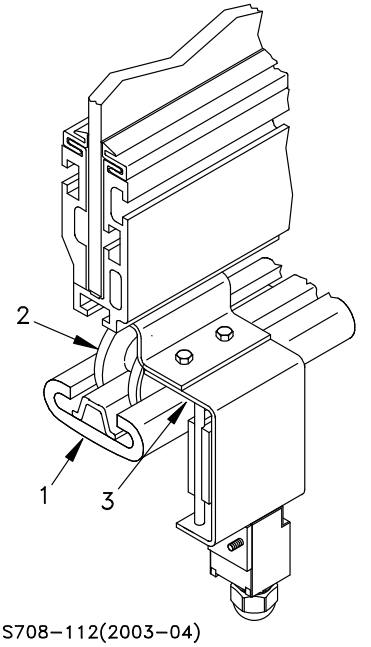
10.5 Check and adjust handrail speed sensor

Step	Action	Note
1.	Remove inner deck over handrail speed sensor area.	
2.	Turn mainline disconnect OFF, and engage step band lock.	
3.	Check gap between proximity sensor (1) and roller (2). • Gap should be approximately 0.3 - 0.5 mm [1/64 in.].	
4.	Adjust gap, if necessary, by loosening nut (3) and adjusting sensor (1) for correct gap.	

708-111 (2003-01)

10.6 Check and adjust broken handrail monitor

Complete the following to check the broken handrail monitor.

Step	Action	Note
1.	Remove handrail (1) from lower curve.	 S708–112(2003–04)
2.	Make sure step band is clear of personnel and equipment, disengage step band lock, and turn main power supply ON. **WARNING!**Serious injury or death can occur from rotating step band. Make sure step band is clear of all personnel and equipment before attempting to start escalator.	
3.	Start escalator in UP direction. • When handrail no longer supports roller (2), the roller will drop and shut the escalator OFF.	
4.	If adjustment must be made, adjust screws (3) for the following. • Roller (2) is supported by handrail, and does not deflect handrail by more than 5 mm [3/16 in.]. NOTE!Handrail tension must be set correctly before adjusting handrail brake monitor. *For more information on handrail tension, refer to Handrail Maintenance Module>Adjust handrail tension (with take-up in drive area).*	

7-002059 (2009-10)

11 CLEANING MODULE

11.1 Clean pits and step band

Complete the following to clean pits and step band with five steps removed.

NOTE! A step spreader bar must be inserted every fifth step that is removed.

WARNING

Serious injury or death can occur from rotating step band. Make sure step band is clear of all personnel and equipment before attempting to start escalator.

Step	Action	Note
1.	Place barricades at both ends of the escalator.	
2.	Remove and check five steps in preparation for cleaning. • Remove five different steps each time this module is completed.	*For more information on removing steps refer to section Guide Maintenance Module>Preparing>Remove and Replace steps.*
3.	Turn main power supply OFF, and engage step band lock.	
4.	Clean anything inside step band that can be easily reached with a five step opening in the step band.	
5.	Turn main power supply ON, and disengage step band lock.	
6.	Reposition step band hole at either the upper or lower end.	
7.	Turn main power supply OFF, and engage step band lock.	
8.	Clean pit with vacuum and approved cleaners. • There should be no oil or trash (rubbish) in pits.	NOTE!Dispose of oil in approved manner according to local governing codes.
9.	Move step band hole to opposite end of the escalator, and clean that pit in the same manner.	

708-053 (11/2001)

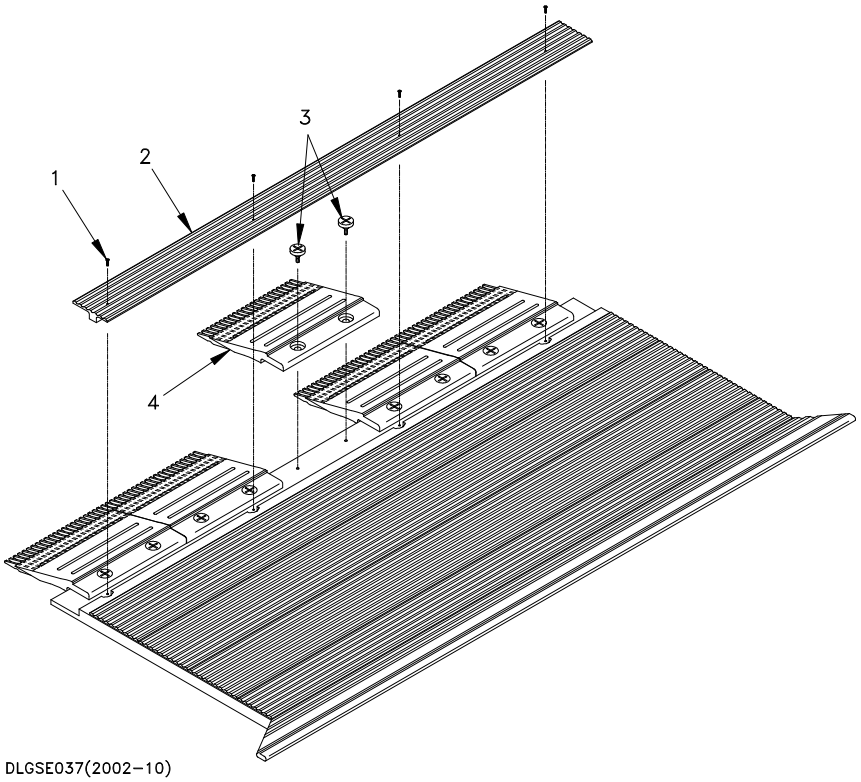
12 MINOR REPAIRS

12.1 Replace comb segments

Complete the following to replace comb segments.

Step	Action	Note
1.	Place barricades at both ends of the unit.	
2.	Remove upper end access cover, turn main power supply OFF.	
3.	Remove mounting screws (1) from cover plate (2), and lift the cover upward, using gentle pressure from a small screw driver.	
4.	Remove mounting screws (3) from comb segment (4), and remove comb segment from combplate.	
5.	Replace comb segment, and complete replacement procedure in reverse order of removal.	

708-033 (3/2002)

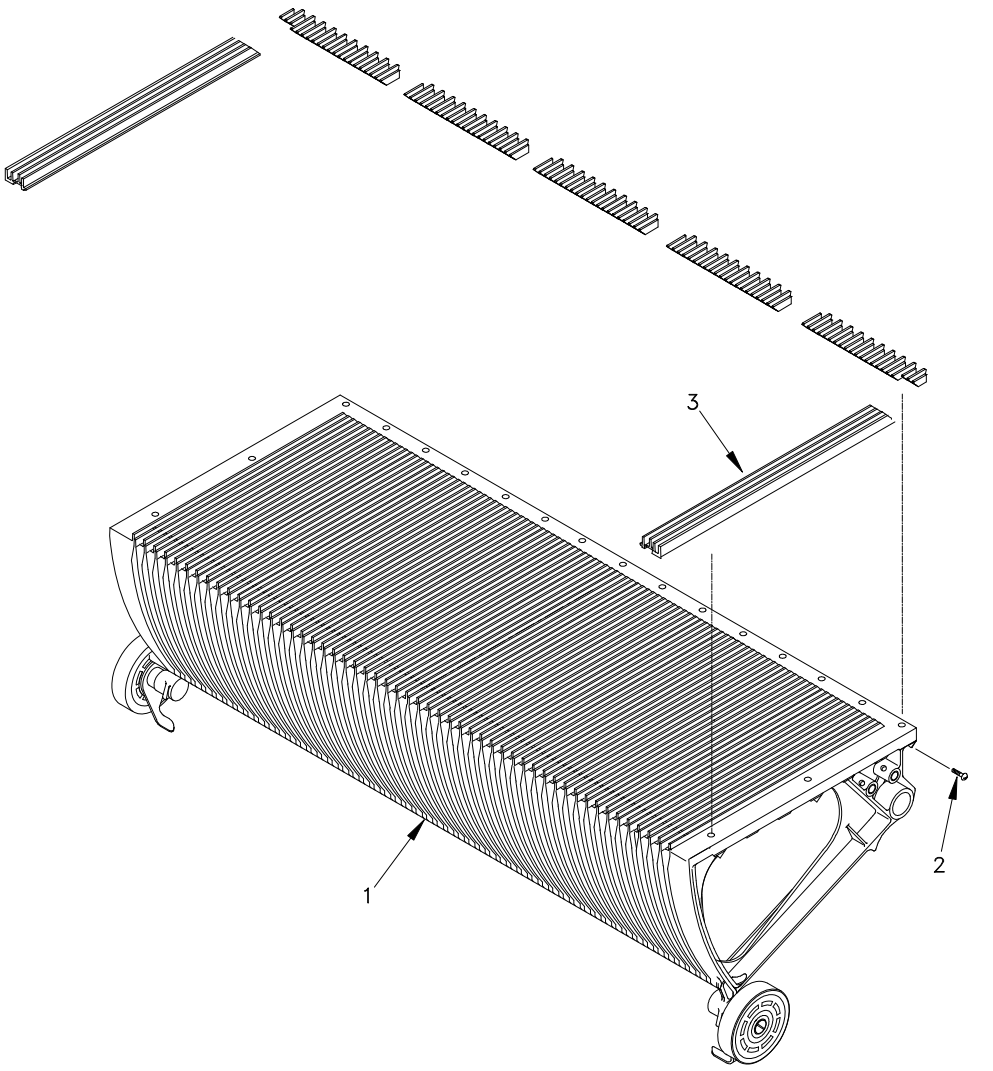


12.2 Replace step demarcation inserts

Complete the following to replace step demarcation inserts.

Step	Action	Note
1.	Remove each step(s) containing step demarcation insert(s) to be replaced.	
2.	Turn the step (1) over, and remove all the fasteners (2) on each insert (3) being removed.	
3.	Remove the insert, and discard if necessary. The fasteners can be reused.	
4.	Position insert on step, and attach to step with screws. NOTE!The screws should be tightened with just enough force to hold the insert securely. Excessive over tightening will cause the insert to fail.	
5.	Replace the step(s) and return the unit to service.	

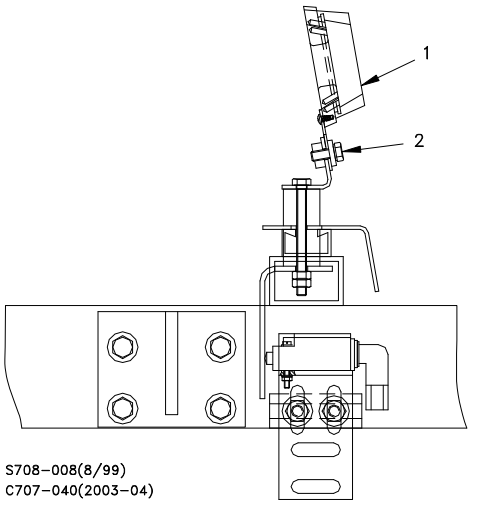
708-035 (2006-11)



S708–070(2005–01)
P707–035(2003–10)

12.3 Change handrail inlet brush guard

Complete the following to replace handrail inlet brush guard.

Step	Action	Note
1.	Place barricades at both ends of the escalator.	
2.	Remove upper end access cover, turn main power supply OFF, and engage step band lock.	
3.	Remove inner deck at location of brush guard being removed.	
4.	Remove frontplates.	
5.	Remove mounting bolts (2) on brush assembly (1) and remove brush.	

708-034 (1/2002)

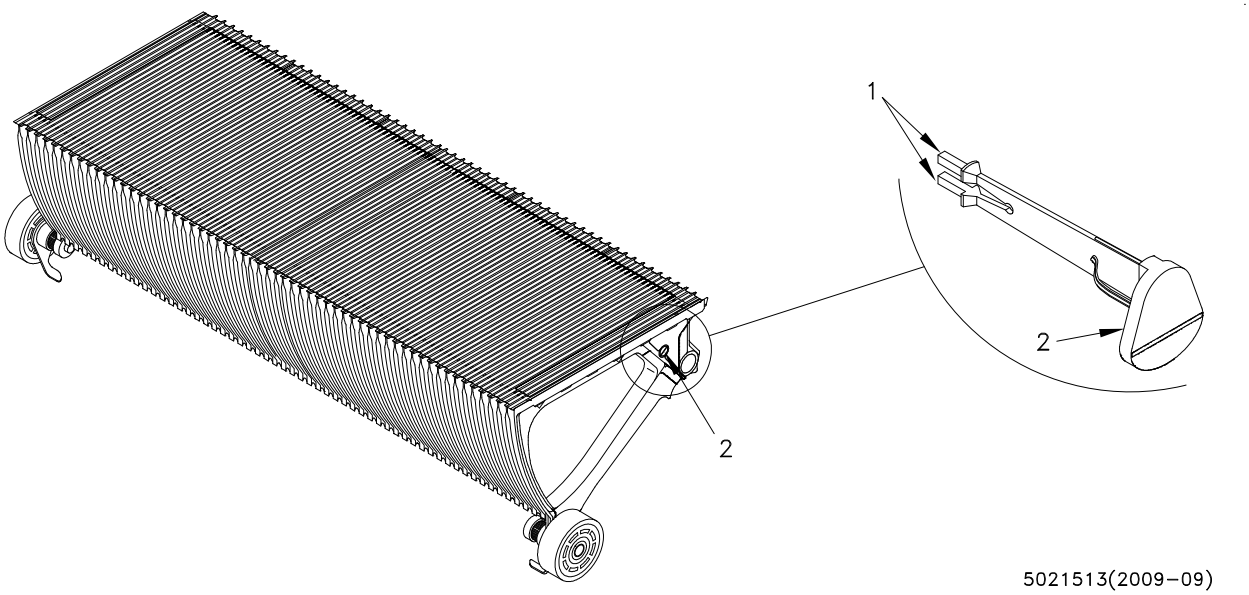
12.4 Replace step guidance buttons

The step guidance button contains a wear indicator groove on the face of the button. After the groove disappears, the step guidance button should be replaced. It is recommended that when replacing step guidance buttons, all buttons should be changed at one time. Complete the following to replace step guidance buttons.

NOTE! The step guidance button can be replaced in either the upper or lower end pits. However, due to space restrictions, it is simpler to replace step guidance buttons in the lower end pit.

Step	Action	Note
1.	Place barricades at both ends of the escalator.	
2.	Remove access covers, and position step containing step guidance button to be replaced in a convenient position.	
3.	Turn main power supply OFF, and engage step band lock.	
4.	Insert screw driver into small slot on side of step guidance button, and pry step guidance button out of step. **ALTERNATE METHOD:** Squeeze the extended tabs (1) toward each other, and push the step guidance button (2) out of the step.	
5.	Push a new step guidance button into position on the step to complete the replacement procedure.	

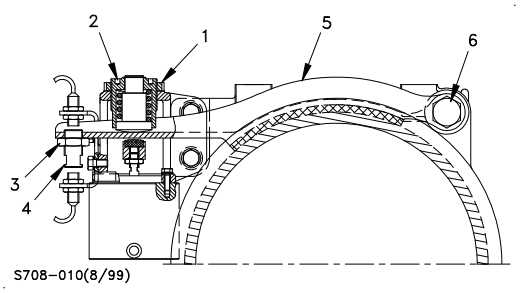
7-002063 (2009-10)



5021513(2009–09)

12.5 Replace brake arm

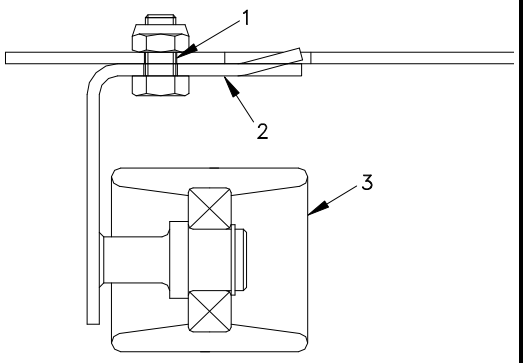
Complete the following to replace brake arm.

Step	Action	Note
1.	Place barricades at both ends of the escalator, and remove both access covers.	
2.	Remove five steps, and position step band hole at the drive area above the brake. NOTE!Make sure a spacer bar is inserted for a step at every fifth step chain pin.	
3.	Turn main power supply OFF, and engage step band lock.	
4.	Disconnect electrical plug connector from the brake assembly.	
5.	Remove groove nut (1) and loosen set collar (2) to relieve spring pressure of plunger on brake arm (5).	
6.	Loosen nut (3) and turn bolt (4) out of brake arm (5).	
7.	Remove pivot bolt (6) and remove brake arm (5).	
8.	Replace brake arm in reverse order of removal. NOTE!Use a thread locking compound (temporary grade) on pivot bolt (6), to prevent it from loosening due to vibration.	
9.	Adjust brake.	

708-037 (2006-11)

12.6 Replace handrail return guide roller

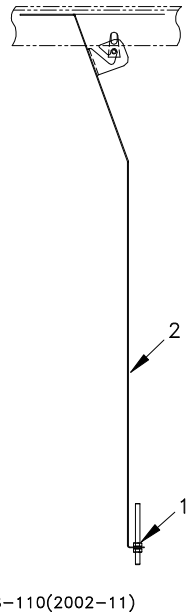
Complete the following to replace handrail return guide roller located along the incline.

Step	Action	Note
1.	Place barricades at both ends of the escalator, remove access cover, and turn main power supply OFF.	
2.	Remove inner deck at location of roller being removed.	
3.	Remove fastening bolt (1) from the roller mounting bracket (2).	
4.	Replace the roller assembly (3).	
5.	Replace the inner deck, and return escalator to service.	

708-038 (10/2001)

12.7 Replace step guards

Complete the following to replace step guards.

Step	Action	Note
1.	Place barricades at both ends of the escalator, and remove access cover.	 S708–110(2002–11)
2.	Turn main power supply OFF.	
3.	Remove fasteners (1) and lift guard (2) from pit.	
4.	Replace in reverse order.	

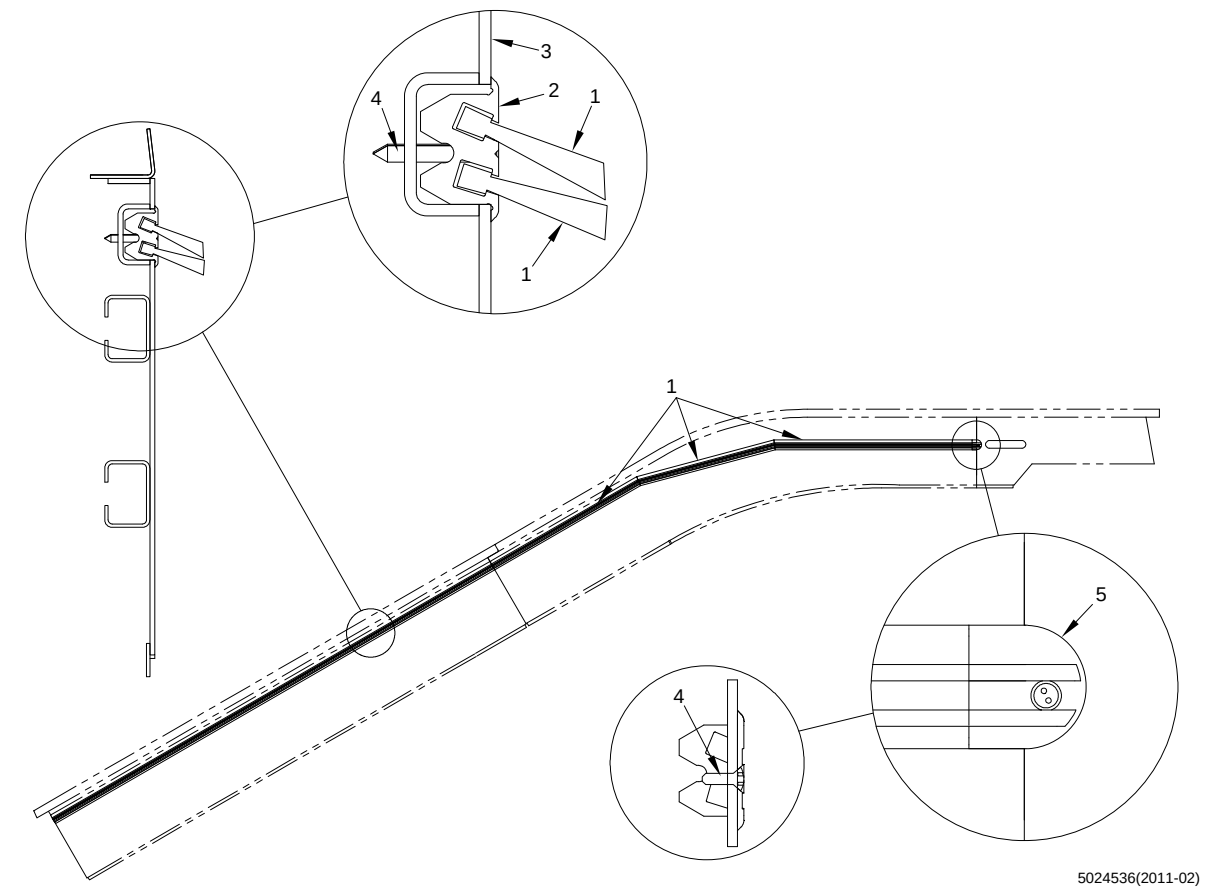
708-039 (11/99)

12.8 Replace skirt brush guards

Skirt brushes (1) are mounted to a plastic profile (2) that is mounted to the skirt (3) with self-tapping screws (4). Complete the following to replace skirt brushes.

Step	Action	Note
1.	Place barricades at both ends of the escalator, and remove upper end access cover.	
2.	Turn main power supply OFF.	
3.	Remove screws (4) from end cap (5) closest to skirt brush being replaced.	
4.	Slide skirt brush out from profile, and slide in new skirt brush.	
5.	Replace end cap (5), turn main power supply ON, replace access cover, and remove barricades.	

7-002060 (2009-10)



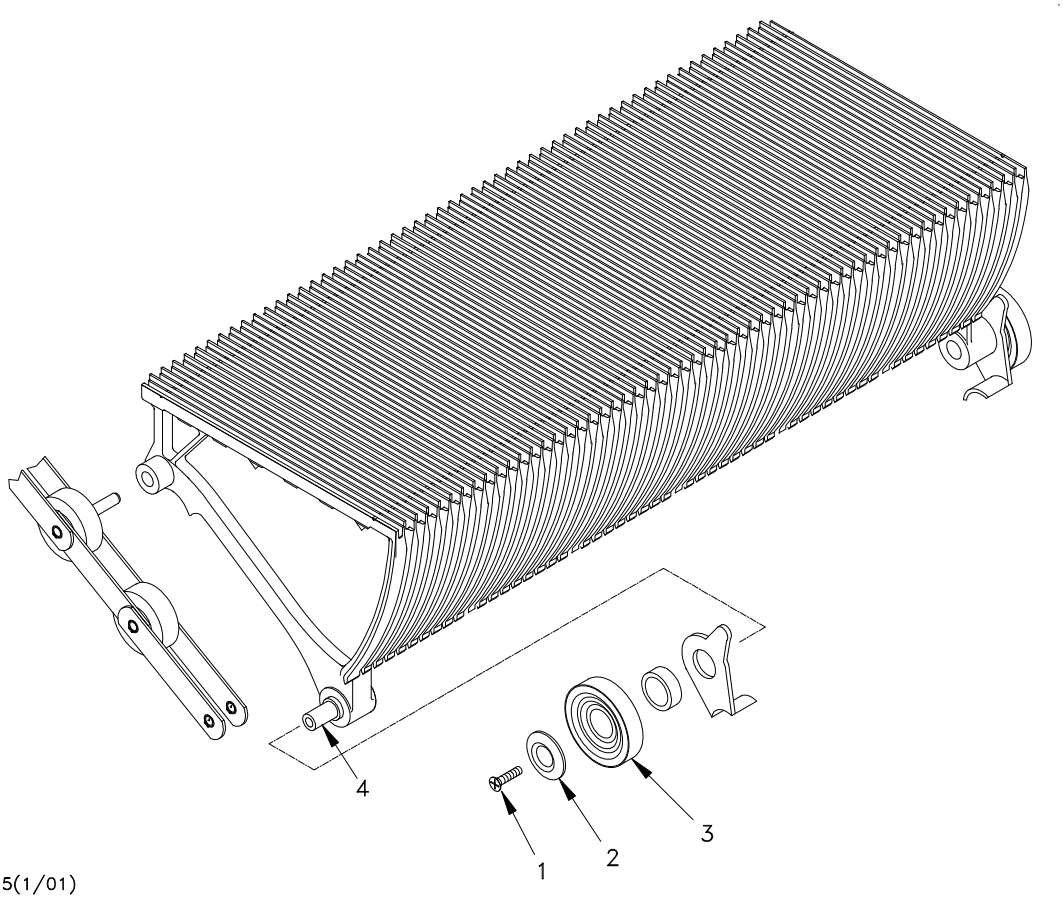
5024536(2011-02)

12.9 Replace step rollers

Complete the following to replace step rollers.

Step	Action	Note
1.	Remove screw (1). NOTE!Always use a new screw (1) when replacing step rollers.	
2.	Remove retaining ring (2).	
3.	Pull wheel (3) off pin (4).	
4.	Replace in reverse order of removal, and tighten screw (1) to 16-17 Nm [11.8-12.5 ft/lbf]. NOTE!Use a thread locking compound (temporary grade) on screw (1).	

708-044 (2003-03)



S708–015(1/01)

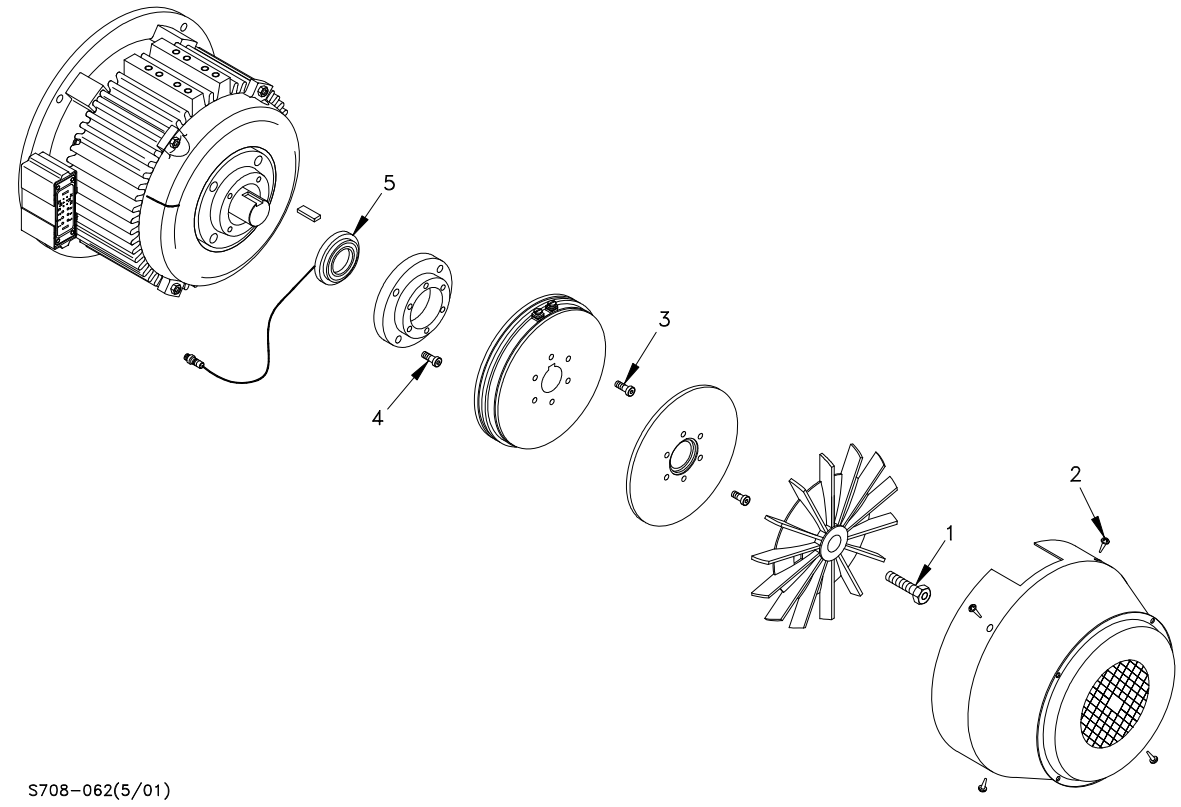
12.10 Replace encoder bearing (permanent magnet brake)

Complete the following to replace encoder bearing (5) located on end of drive motor.

Step	Action	Note
1.	Place barricades at both ends of the escalator.	
2.	Remove access covers at both ends of the escalator.	
3.	Move inspect switch to INSPECTION.	
4.	Remove three steps and move hole in step band to drive motor area at the upper end.	
5.	Turn main power supply OFF, and engage step band lock.	
6.	Remove mounting bolts from air shroud (2), and remove shroud.	
7.	Remove bolt in center of brake armature (1). **WARNING!**Serious injury or death can occur from rotating step band. Make sure step band is clear of all personnel and equipment before turning main power supply ON.	
8.	Make sure step band is clear of equipment and personnel, and turn main power supply ON.	
9.	Turn CONSTRUCT switch ON in the controller to release the brake.	
10.	Remove armature from shaft. • Armature is mounted to shaft with a key. Make sure key does not fall from keyway when armature is removed.	
11.	Turn main power supply OFF.	
12.	Remove wiring to brake. • If wire is sufficient to move brake out of the way without damaging wiring, wiring may not need to be removed.	
13.	Remove bolts (3) connecting brake coil to motor, and remove brake coil.	
14.	Drain gear box oil.	
15.	Remove mounting bolts for motor, and remove motor.	

Step	Action	Note
16.	Install new motor. **Optional method:** Take original motor to machine shop for encoder bearing replacement, and reinstall original motor.	
17.	Check encoder wiring. NOTE!Make sure encoder wiring is correct.	
18.	Refill gear box with oil, and complete replacement procedure in reverse order of removal.	

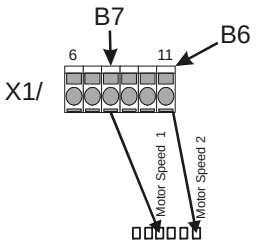
707-123 (1/2002)



S708–062(5/01)

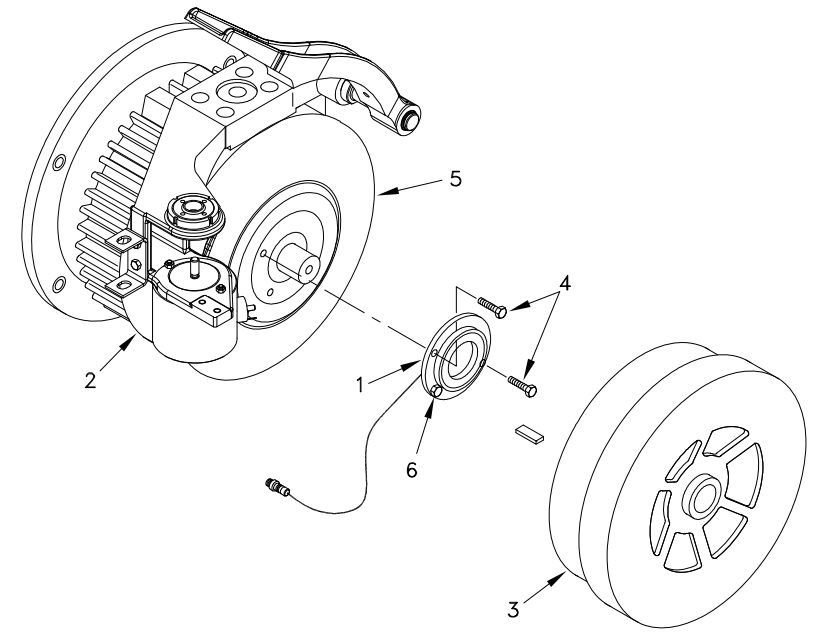
12.11 Replace encoder bearing (brake with brake-arm)

Complete the following to replace encoder bearing (1) located on drive motor.

Step	Action	Note
1.	Place barricades at both ends of the escalator.	
2.	Remove access covers at both ends of the escalator.	
3.	Remove 10 steps, and move hole in step band above drive motor area. NOTE! Insert a spacer bar in step band after five steps are removed.	
4.	Turn main power supply OFF, and engage step band lock.	
5.	Drain gear box oil. Gear box capacity is as follows: • **1 drive motor:** Gear box capacity is 7 liters [7.4 quarts] • **2 drive motors:** Gear box capacity is 8 liters [8.5 quarts]	
6.	Remove drive motor (2).	
7.	Remove brake drum (3) using a gear puller.	
8.	Remove screws (4) mounting encoder bearing (1) to drive motor end plate (5), and remove encoder bearing. NOTE! Remove only the two opposing screws (4). Do not remove third screw (6).	
9.	Place sealant on drive motor end plate (5) where outer mounting surface of encoder bearing will be. • Use sealant DEE0917016.	
10.	Install encoder bearing, and secure with screws (4).	
11.	Install brake drum (3) and secure with M16x10 hardware.	
12.	Install drive motor, and fill gear box with oil.	
13.	Turn motor by hand, and check that green LEDs for Motor Speed 1 and Motor Speed 2 on ECO Main Board flicker.	 S708-117 (2002-11)
14.	Adjust brake.	
15	Install steps.	

Step	Action	Note
16.	Make sure step band is clear of personnel and equipment, and check for correct operation. • If Fault 42 appears, switch wires from terminal X1/8 and X1/11. NOTE! Terminals X1/8 and X1/11 are located on ECO Main Board (EMB 501)	

708-248-20265053 (2011-02)



S708−116(2009−01)

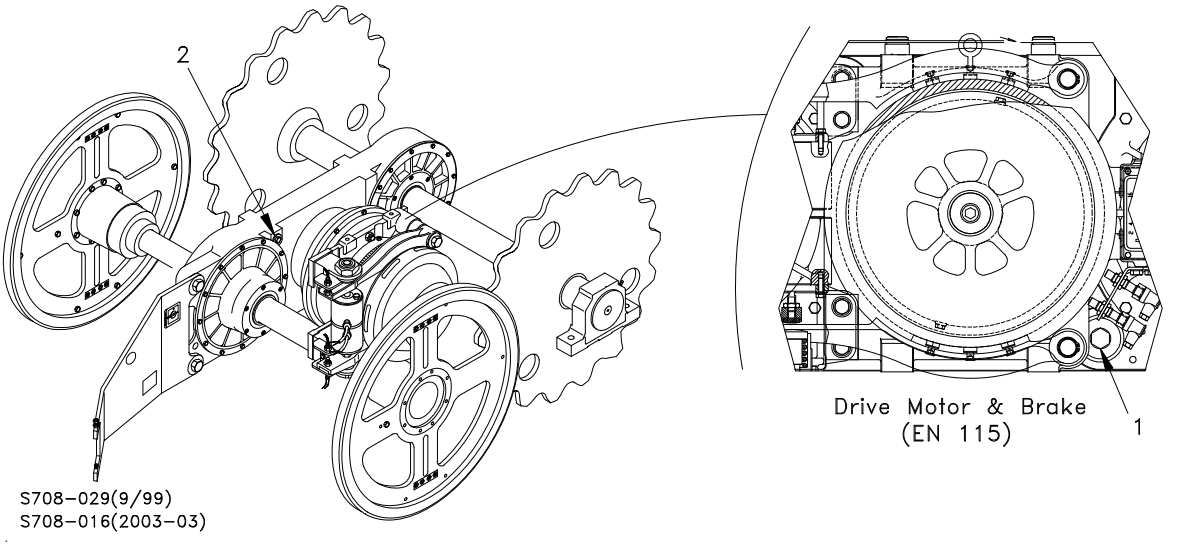
12.12 Change gear box oil

Complete the following to change gear box oil every five years or 25000 hours.

NOTE! If optional chip contact sensor is installed, change gear box oil every five years or 40000 hours.

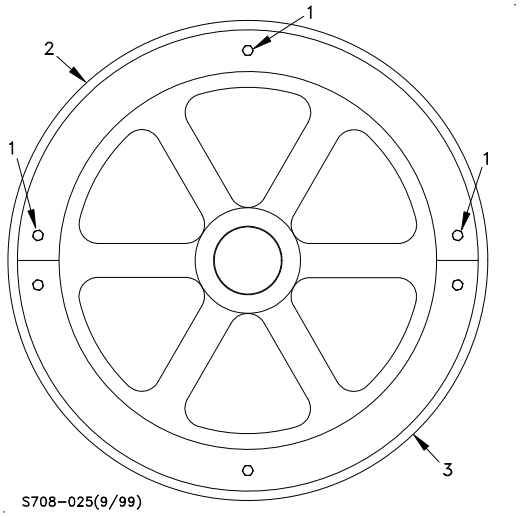
Step	Action	Note
1.	Place barricades at both ends of the escalator.	
2.	Remove four steps, engage step band lock, and turn main power supply OFF.	
3.	Position container that is large enough to hold gear box oil beneath drain plug (1). • Gear box capacity is 7 liters [7.4 quarts].	
4.	Remove drain plug (1), drain gear box oil from gear box, and replace drain plug. NOTE! Dispose of oil according to local governing codes.	
5.	Remove filler plug (2) and fill gear box to proper level with one of the following approved gear box oils. • Use synthetic oil CLPPG 680 (DEE2213667) or • Use synthetic oil Mobil SHC 634 (US69887003) NOTE! Gear box capacity is as follows: • **1 drive motor:** Gear box capacity is 7 liters [7.4 quarts] • **2 drive motors:** Gear box capacity is 8 liters [8.5 quarts]	

708-054-20265053 (2011-02-10)



12.13 Replace handrail drive wheel rim half

Complete the following to replace handrail drive wheel rim half.

Step	Action	Note
1.	Place barricades at both ends of the escalator, and remove inner deck at the upper end curve of the escalator.	
2.	Remove upper end access cover, and rotate step band to position handrail drive wheel. • Position handrail drive wheel so three mounting bolts (1) are accessible.	
3.	Turn OFF main power supply, and remove three mounting bolts (1).	
4.	Rotate the rim half (2) until it will clear the glass support brackets, and remove rim half from the escalator.	
5.	Install new rim half (2). • Tightening torque for bolts (1) is 55 Nm [40.5 lbf ft].	
6.	Rotate handrail drive wheel 180 degrees, and remove second rim half (3).	
7.	Install new rim half (3), and complete replacement procedure in reverse order of removal.	

708-047 (2003-03)

13 APPROVALS AND VERSION HISTORY

Compiled by: Training & Product Information / Moline

Checked by: Escalator Manufacturing / Charles Banks

Approved by: Escalator Manufacturing / Charles Banks

Issue	Date	Description of change	Ref CR	Approved by
-	2009-11-24	First release		Charles Banks
-	2010-03-05	Revisions per owner feedback		Charles Banks
A	2011-02-10	Revisions per owner feedback		Charles Banks
B	2011-05-25	Revisions per owner feedback		Charles Banks

REPAIR INSTRUCTIONS:

for KONE EcoMod

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1 GENERAL INFORMATION

1.1 Recommended tools

1.1.1 Standard tools

- Complete set of allen (hex) wrenches (sizes to 12 mm & 24 mm)
- Hammers (16 oz & 32 oz ball peen)
- Open end /box combination wrenches (spanners) (7 mm to 19 mm, 24 mm, 30 mm, & 36 mm
- Screwdrivers (cross tip & slotted types)
- Measuring tape (metric)
- Pry bars (small & large)
- Feeler/thickness gage set
- T-40 Torx wrench
- Step chain spreader bars (sized to width of escalator)
- Chain assembly tool KM1348767H01

1.1.2 Other tools

- Gear/bearing puller (for drive station outer bearing)
- Retaining ring pliers (large & small)
- Overhead lifting frame
- Hand operated hoist.
- Safety barricades.
- Step band holdbacks (nylon type ratcheting clamps, for chain replacement)
- Lifting strap/sling (nylon, chain, or wire rope)
- Anaerobic Single Fit Adhesive/Sealer
- Thread Retaining Compound (temporary grade)
- Oil level dip stick
- Clearance gauge (step to skirt & comb segment)
- DZ key for Moving Media steps

708-003 (2010-03)

2 SAFETY

2.1 General safety

2.1.1 General safety

Local safety codes and rules must be obeyed at all times.	
Do not take short cuts. There might be a potentially dangerous situation which you have not considered.	
Make sure the power to the main supply cable cannot be turned ON.	
A locking off system for main electric supply isolator or other system must be agreed with main contractor before installation begins. During installation procedures, whenever power is disconnected, the power disconnect box must be locked-out and tagged.	
Personal safety equipment must be available and used as required.	
CAUTION! When your safety harness is not secured to a life line or other approved fixing point, ensure the lanyard does not cause a catching or tripping hazard.	
Do not connect or disconnect any connectors when the power is ON.	
You must never work beneath a suspended load no matter how short the time period.	
Avoid pinch points when handling materials.	
Avoid sharp hazards when handling materials.	
Wear cut-resistant gloves when handling materials with sharp edges.	
Be aware of all tripping hazards.	
Make sure all temporary electrical cords and wires are securely taped to surfaces to avoid tripping hazards.	
Rigging and hoisting equipment must be inspected on a daily basis.	
Proper hand signals must be followed when using a crane.	
Cranes or chainfalls used to hoist must be rated for the load that will be put on them.	
Only one designated person should give directions to the crane operator, if a crane is used.	
Make sure slings are positioned and secured in a manner that will prevent the load from shifting or slipping during hoisting.	
Never stand or walk beneath a suspended load.	
Use proper lifting techniques and hoisting equipment when moving heavy equipment.	

Hard hats must be worn at all times when on a construction site.	
Approved footwear must be worn.	
Wear a face shield whenever using power tools which create flying objects.	
Use approved safety equipment when welding, cutting, grinding and drilling.	
Use safety goggles when using power tools.	
Wear appropriate eye protection when cleaning, cutting, and welding.	
Wear hearing protections when drilling and grinding.	
Safety circuits must be kept in operation.	
Use a circuit tester on circuits prior to working on them (Fluke 179 or equivalent).	
Make sure safety earth (ground) is verified before turning the power ON.	
To reduce the danger of electrical shock, always make sure electrical connections are secure. Also, make sure no bare wires are exposed after pulling electrical cable.	
Use properly grounded electrical cords and power equipment.	
Working area must NOT be wet, to avoid the risk of electrocution.	
Turning the main power supply OFF will not necessarily disconnect all electrical power. Be aware of other power sources in controller when the main power supply is turned OFF.	
Take precautions to prevent static discharge when handling, transporting, and storing electrical circuit boards.	
Place adequate barricades at each landing to prevent non-authorized persons from entering the work area.	
Prevent unauthorized persons from entering work and storage areas. Make sure suitable restrictive barricades and signs are posted.	
Never allow equipment or tools to be used by anyone other than qualified company personnel.	
Always use the correct tool for the specific job.	
Clear installation sites of any unnecessary materials or equipment to avoid fire hazards.	

Do not ride the unit with the combplates removed.	
Never allow anyone to ride equipment while work is being performed.	
Never start a unit with anyone on the step band or pallet band.	
Always clean-up any excess oil, and dispose of properly in accordance with governing regulations.	
Inspect construction site and equipment on a regular basis, for unsafe conditions.	
Make sure you are aware of all potential hazards related to various tasks.	
Make sure you are provided with all the necessary safety equipment.	
Always make sure your clothing cannot become caught in rotating equipment. Keep your shirt sleeves buttoned and your shirt tucked into your trousers. Also, always remove loose rags from your pockets.	
Make sure the unit cannot start when access covers are removed. Access cover switches (if equipped) must be operational.	
Before entering step band opening make sure the unit cannot move by engaging the step band lock (if equipped).	

708-001 (2009-02)

2.1.2 Danger and operator safety signs

Danger and operator safety signs					
Description	**Sign**	**Description**	**Sign**	**Description**	**Sign**
Electric shock		No entry		Hard hat	
Risk of falling		Do not transport		Safety harness	
Magnetic field		Dispose of oil properly		Safety gloves	
Risk of fire		Lifting hazard		Face protection	
Tripping hazard		Safety goggles		Overalls	
Rotating equipment hazard		Dust mask		Respirator	
Suspended load		Safety shoes		Safety lock and tag out procedure	
Pinch point hazard		Hearing protection		Barricade	
General hazard warning		Cut-resistant gloves			

The words WARNING and CAUTION are used in different kinds of hazardous situations to protect persons or equipment parts in the following way:

WARNING

This is to warn of the most serious hazards where there is a risk to a person's safety.

CAUTION

This is to warn of the risk of an equipment component being damaged, which also may cause risk to a person's safety.

7-000220 (2010-02)

2.2 Method safety

2.2.1 Safety check prior to start-up

In case the unit is stopped, complete the following safety check procedures prior to start-up.

Step	Action	Note
1.	Make sure unit is barricaded.	
2.	Check fault display on the deck or in the controller.	
3.	Check the truss and step band for the following. • Check truss for any obstructions • Check for any foreign objects • Check for switches that may be loose • Check for any loose wires	
4.	Reset the fault message from the controller using reset button.	
5.	Start unit in the DOWN direction (using pendant control handset, if equipped).	
6.	Check incoming voltage. Confirm that voltage is the same as stated on controller.	
7.	Check inspect mode. (If equipped, check pendant control handset for correct operation.) • If the unit fails to continue to run automatically, observe display for fault and follow the fault code corrective actions for that fault.	

Step	Action	Note
8.	Stop the unit using the emergency stop button, and repeat the same procedure in the UP direction. • If the unit fails to continue to run automatically, observe display for fault and follow the fault code corrective actions for that fault.	
9.	Remove pendant control handset, if equipped.	
10.	Switch to normal run operation.	
11.	Start unit with key start.	
12.	Ride unit and check for smooth operation of the step band before returning unit to service.	

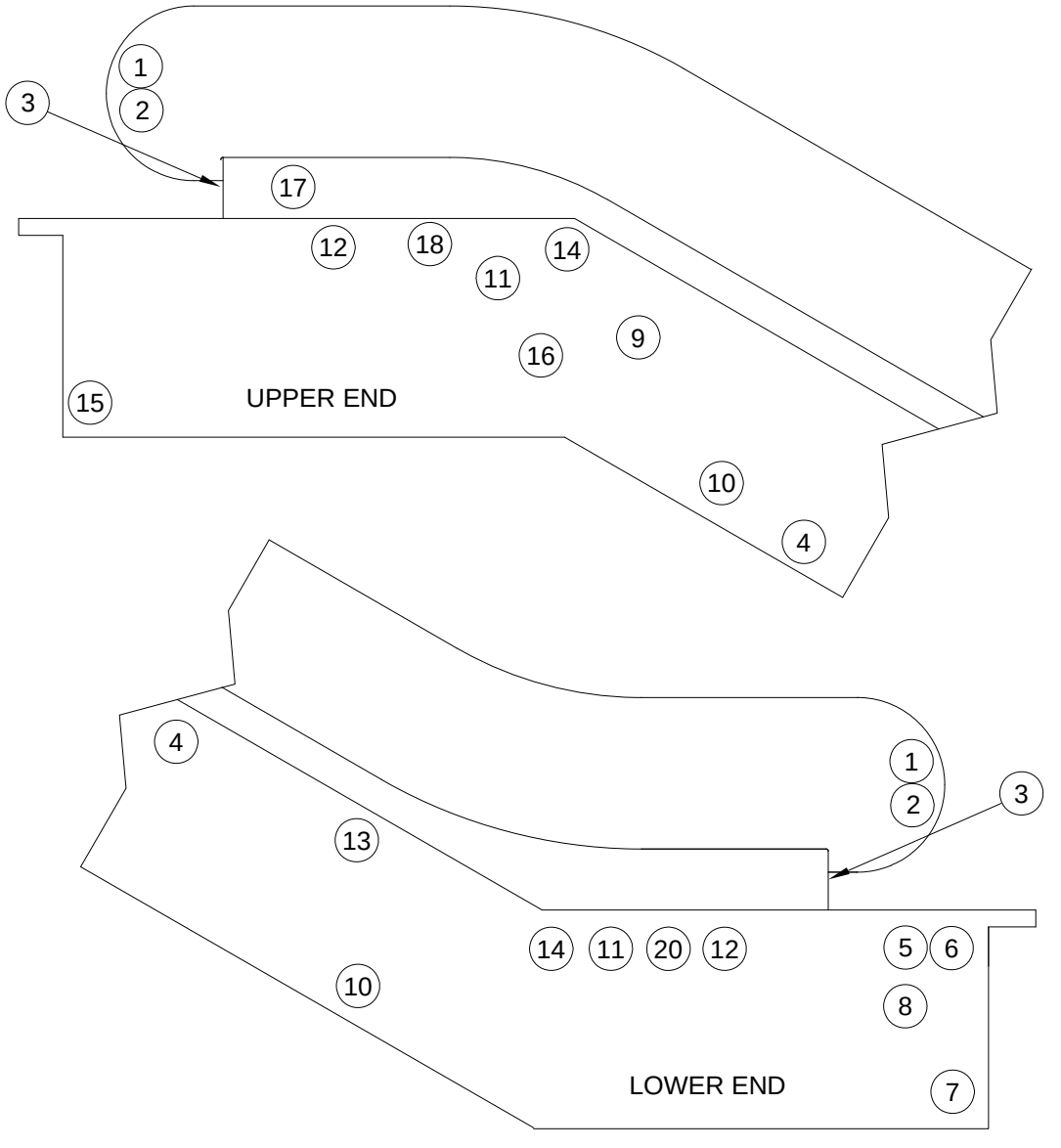
708-002 (3/2002)

2.2.2 Location of electrical safety devices

Electrical safety devices are located as follows.

1. Upper/lower end key switch
2. Emergency stop button/switch
3. Handrail inlet switch
4. Deteriorated roller sensor
5. Inspection switch (in lower junction box)
6. Lower pit stop switch
7. Upper/lower junction box
8. Broken step-chain switch
9. Motor stop switch
10. Missing step detector
11. Step demarcation lights
12. Upper/lower end skirt switch
13. Step upthrust safety switch
14. Out-of-level step detector
15. Permanent magnet brake
16. Tachometer
17. Handrail speed sensor
18. Combplate impact device

7-002026-20275057 (2011-02)



5024530(2011-02)
5021549(2010-02)

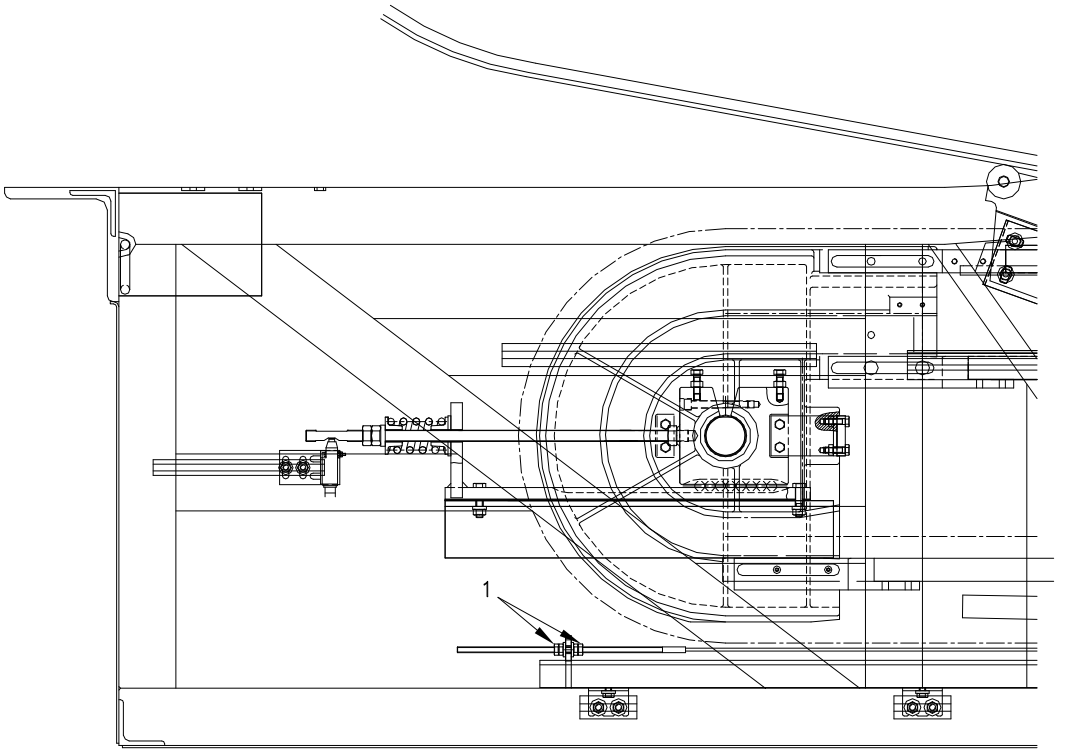
3 MAJOR MAINTENANCE TASKS AND REPAIRS

3.1 Replace handrails

Complete the following to replace handrails.

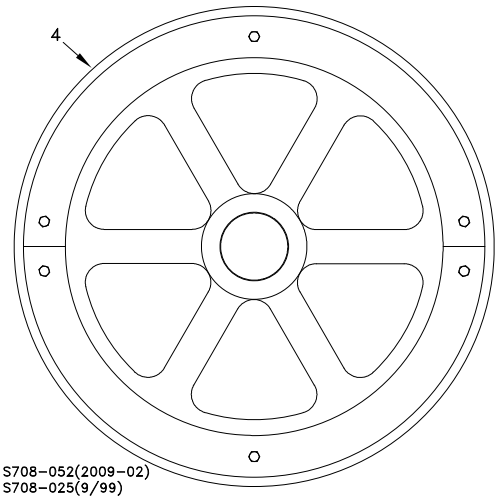
3.1.1 Prepare to remove handrails

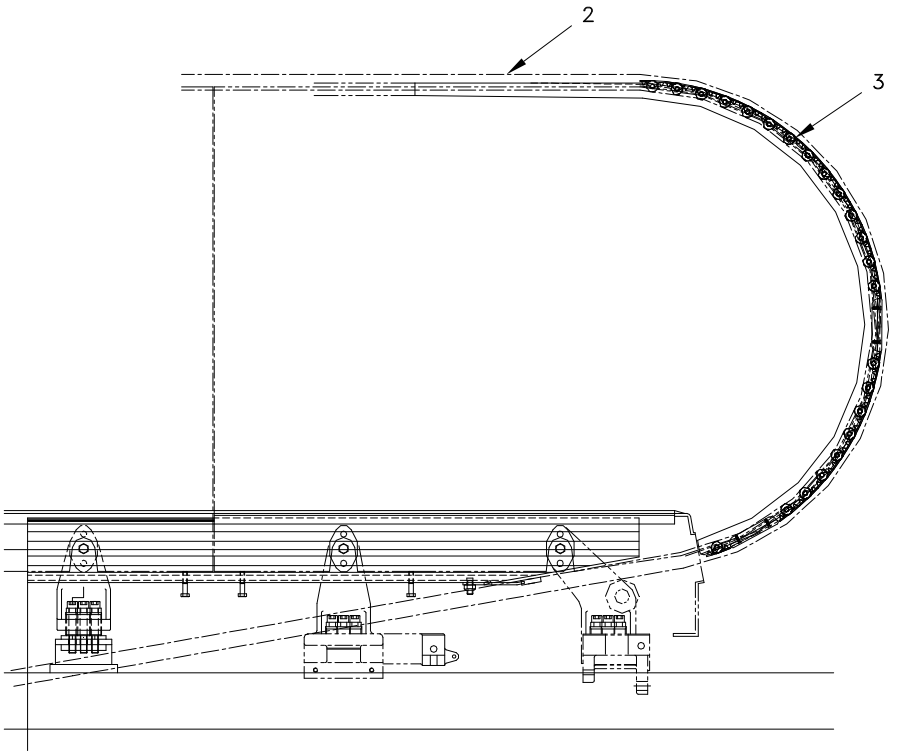
Step	Action	Note
1.	Measure the existing handrail and compare the length to the new one. • The length, along with the width and style should be compared to the new one to make sure that they are the same.	
2.	Place safety barricades at both ends of the escalator.	
3.	Remove both access covers, and turn power OFF.	
3.	Remove all inner decks located above handrail being replaced.	
4.	Remove the inner frontplate and brush guard assemblies at both ends of the escalator.	
5.	Turn power ON.	
6.	Relieve handrail tension by loosening lock nuts (1) located in lower end pit. NOTE!Do not remove spring pressure from adjustment rods in upper end pit at this time. The handrail must have traction to be driven off the handrail drive wheel in the following procedures for removing the handrail.	



S708–050(2009–02)
C707–010(2002–10)

3.1.2 Remove handrail

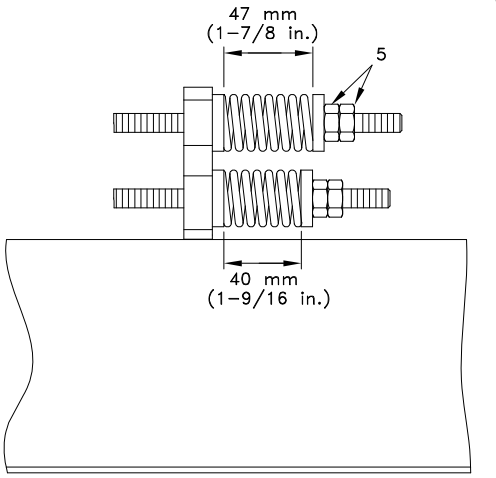
Step	Action	Note
1.	Remove the handrail from the handrail guides along the incline.	
2.	Cut completely through handrail (2) with a hacksaw, at the upper end newel, just before the newel rollers assemblies (3).	
3.	Remove the long section of the handrail (section of handrail below the cut) off of the handrail guides along the incline, and position handrail on the floor at the lower end. NOTE!The handrail drive spring pressure should be left on at this time, to develop enough traction to complete removal of the handrail.	
4.	Run the unit on inspection, in small increments, in the up direction, to remove the handrail from the handrail drive wheel (4). • Check frequently that handrail does not bind or damage other components during the removal procedure.	
5.	After the handrail is completely clear of the handrail drive wheel, remove the handrail at the lower end, by pulling on it, in a forward direction. • As you remove the handrail from the escalator, coil and tie the handrail in a neat bundle, to be disposed of later. It may be necessary to make additional cuts and bundles, to a long handrail. One bundle may be too heavy and large to handle easily.	

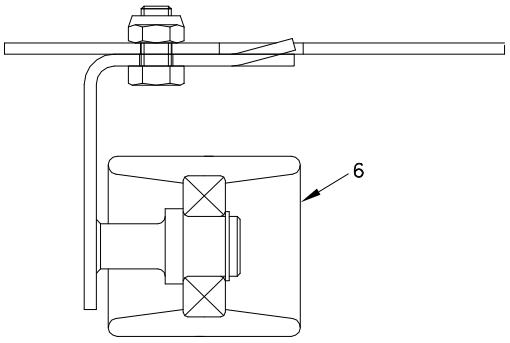


Cutting handrail for removal

3.1.3 Replace handrail

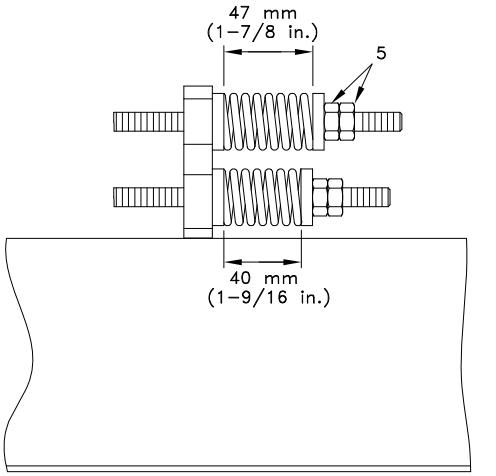
After the handrail is removed, run the steps in the up direction, and position the step band openings above one another, to allow clear access to the drive wheel. Turn main power supply OFF, and engage step band lock.

Step	Action	Note
1.	Remove handrail drive spring pressure, by loosening the adjusting rod nuts (5) on both adjustment rods with a pair of 17 mm wrenches (spanners), and relieving all the spring pressure. • The spring pressure adjustment rods are located in the upper pit area.	 S708–053(2009–02) S708–005(2004–04)
2.	Place the new handrail at the upper end of the escalator, and unpack it.	
3.	Unroll the handrail and inspect it for any defects.	
4.	Pull the handrail loop down the steps, slowly, taking care not to damage the surface of the rubber.	
5.	Position handrail around upper end newel so handrail is supported by the newel. NOTE!It is important in the following procedure to remove only one bracket at a time.	
6.	Place the handrail on top of the uphill cluster roller assembly, and remove the first bracket. Feed the handrail around the bracket, and replace the bracket. NOTE!Make sure bracket is replaced in the same position it was removed.	
7.	Loop the handrail around the handrail drive wheel. Make sure handrail is not caught on any other parts.	

Step	Action	Note
8.	In a similar manner, remove any additional brackets one at a time, position the handrail around the brackets, and replace the brackets one at a time. • The brackets are used to align the upper step track mounting plate, and should be removed and replaced one at a time to keep all track dimensions accurate.	
9.	Loosen or remove each incline return handrail guide roller (6).	 S708–054(2009–02) S708–011(8/99) *Loosen or remove each incline return handrail guide roller*
10.	Remove handrail tension assembly.	
11.	Position the handrail completely along the return side of the incline and at the handrail tension assembly position.	
12.	Reinstall (or tighten) all the return handrail guide rollers (6) along the incline. Reinstall the lower end handrail tension assembly. NOTE!Make sure that the handrail is straight and free of all obstructions.	
13.	Position, but do not install handrail on the upper end newel roller assembly.	
14.	Install handrail on the handrail guides down the incline, to a point just before the lower curve.	
15.	Install the handrail over the lower end newel roller assembly, and install it in the same manner at the upper end newel roller assembly.	
16	Check to make sure that the handrail is straight and free, around all the lower end devices.	

Step	Action	Note
17.	Install the final section of the handrail on the lower curve handrail guides.	

3.1.4 Adjust handrail and complete handrail replacement

Step	Action	Note
1.	Make a thorough inspection of the entire handrail, to make sure there is not any binding, pinching or obstructions before completing adjustments.	
2.	Adjust the handrail tension assembly at the lower end to remove any slack from the handrail. • The handrail should be free to move smoothly, without excessive friction.	
3.	Adjust handrail drive wheel pressure in the upper end pits at jam nuts (5). • Upper spring length should be 47 mm [1-7/8 in.], and lower spring length should be 40 mm [1-9/16 in.].	 S708–053(2009–02) S708–005(2004–04)
4.	After all adjustments and inspections are made, run the escalator in both directions. • Check for any misalignment, making sure that noise and binding are not present. After a reasonable amount of running, without any problems or excessive heat buildup, the final assembly can be completed.	
5.	Complete replacement in reverse order in reverse order of removal, and return escalator to service.	

7-002068 (2009-11)

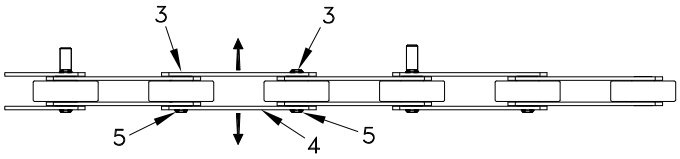
3.2 Replace step chains

Complete the following procedures to replace step chains.

NOTE! When moving the step band during the following procedure, always run the escalator on inspection (use hand held pendant control).

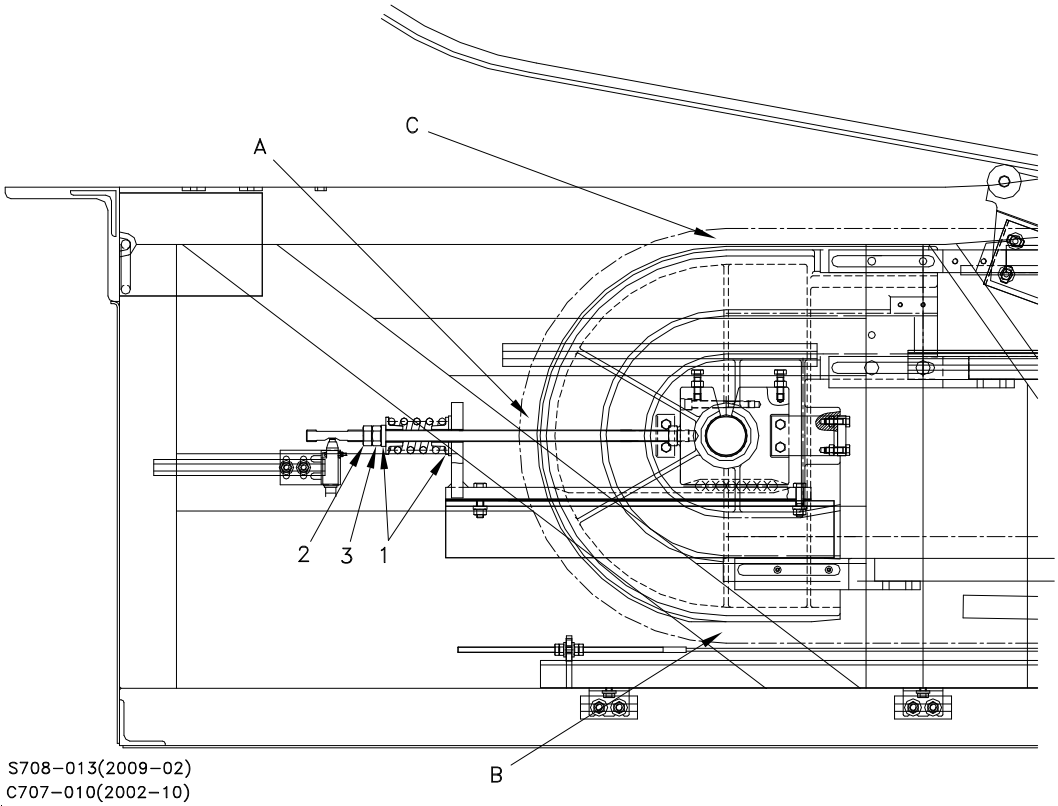
Step	Action	Note
1.	Barricade both ends of the escalator, and remove both access covers.	
2.	Remove all the steps. Install a step chain spacer bar at every fifth step. NOTE!Make sure a spacer bar is inserted for a step at every fifth step chain pin.	
3.	Remove step chain tension device, and slide the lower end turnaround back as far as it will go.	
4.	At the center (A) of lower end turnaround, disconnect step chain by removing snap type retaining rings (3) at step chain side bars (4).	
5.	Tap lightly on chain link pins (5), and remove chain link pins to separate link.	
6.	Assemble the new chain sections as matched pairs to keep the accumulation of tolerances minimal. NOTE!Left number 1 (L1) and left number 2 (L2) should be directly opposite right number 1 (R1) and right number 2 (R2). Continue assembling the chain in the same manner until all sections are assembled. • Step chain sections are usually ten step lengths.	
7.	Attach the new step chains to the return side (B) section of the old step chains, and advance the escalator in small increments, taking care to avoid kinking or damage.	
8.	While advancing the unit, pull on the old chains from the drive side (C) at the lower end, and remove the spreader bars from old step chain as it is removed from the escalator. Install the removed spreader bars on the return side (B) section of the new step chain being installed. NOTE!Make sure a spacer bar is inserted for a step at every fifth step chain pin.	
9.	After new step chain is completely in place, disconnect new chain from old chain at the lower end, and complete replacement procedure in reverse order of removal.	

7-002093 (2010-03)



Lubrication–free chain

S708–014(2009–02)



S708–013(2009–02)
C707–010(2002–10)

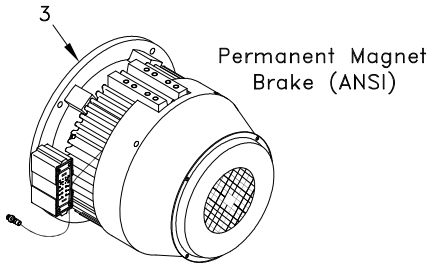
3.3 Replace drive motor

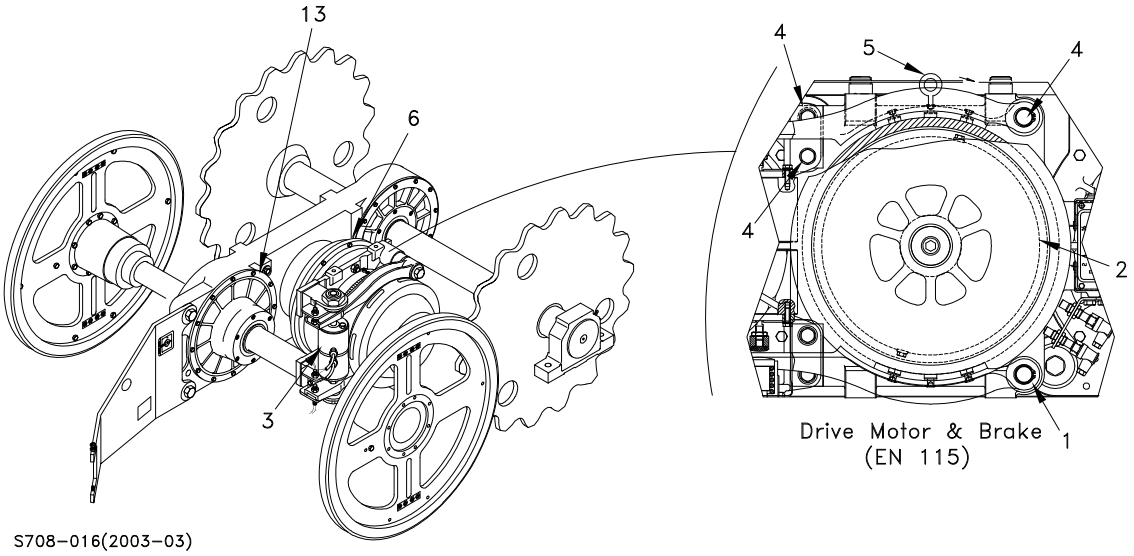
NOTE! When moving the step band during the following procedures, always run the escalator on inspection (use hand held pendant control).

3.3.1 Remove drive motor

Complete the following to remove a drive motor on a single drive escalator.

Step	Action	Note
1.	Position barricades, and remove both access covers.	
2.	Remove ten steps, and position step band opening to allow access to the gear box oil drain plug (1). NOTE!Insert a step spacer bar after the fifth step removed.	
3.	Turn main power supply OFF, and engage step band lock. **WARNING!**Serious injury or death can occur from rotating step band. Make sure main power supply is OFF and step band lock is engaged before working in the step band.	
4.	Remove all comb segments to prevent damage to teeth and gain additional clearance to motor (2).	
5.	Position a suitable drain pan, under the gear box, and remove the oil drain plug (1) to completely drain all lubricant from gear box. NOTE!Install new oil seal on oil drain plug before reinstalling drain plug into gear box.	NOTE!Gear box capacity is as follows: • **1 drive motor:** Gear box capacity is 7 liters [7.4 quarts] • **2 drive motors:** Gear box capacity is 8 liters [8.5 quarts]
6.	Remove drive motor cover, if equipped.	
7.	Disconnect all electrical plugs and harnesses from the motor and brake assembly.	

Step	Action	Note
8.	Remove brake (3) from drive motor.	 S708–065(2008–02)
9.	Erect a suitable overhead lifting device, and install a 12 mm eye bolt (5) in the threaded opening on top of motor.	
10.	Connect the hoist to the eye bolt (5) and apply a minimal lifting force to support the motor's weight.	
11.	Remove the six motor mounting flange nuts (6), and carefully pry the motor (in a horizontal direction only) clear from the housing. Take care not to damage the motor pinion gear. NOTE!The planetary gear may be pulled out form gear box a small amount while drive motor is being removed. Push the planetary gear back into position in the gear box if this happens.	



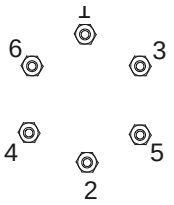
S708–016(2003–03)

3.3.2 Replace drive motor

- If the same motor will be used for replacement, no adjustments are necessary.
- If a different motor is used, the pinion dimensions of the new motor must be checked and reshimmed, if necessary, to ensure proper pinion to planetary gear alignment.

Complete the following to install a new drive motor on a single drive escalator.

Step	Action	Note
1.	Remove pinion gear (7) and brass disk (8) from old drive motor that is being replaced.	
2.	Measure the depth (X) between inner (A) and outer flange (B) of new drive motor with a depth gauge and a straight piece of bar stock.	**Dimensions are examples only based on 180 mm bar stock (actual bar stock used may vary).** (X) 183 mm (Y) 186 mm (Difference between X and Y) 3 mm **Subtract a brass ring dimension that will leave a tolerance of 0.4 mm to 0.9 mm** (Difference between X and Y) 3 mm - (Brass ring dimension) 2.5 mm 0.5 mm **Tolerance of 0.5 mm is within the range of 0.4 mm to 0.9 mm** 5008377 (2004-10)
3.	Measure the depth (Y) at gear box from top of bar (C) to mounting surface of planetary gear (D) with a depth gauge and a straight piece of bar stock.	
4.	Find the difference between the drive motor depth (X) and gear box depth (Y), and add a brass ring dimension that will leave a tolerance of 0.4 mm to 0.9 mm. Brass rings are: • 2 mm (DEE2159148) • 2.5 mm (DEE2159139) • 3 mm (DEE2159140) • 3.5 mm (DEE2159141)	
5.	Install pinion gear (7), and brass ring (8). • Use Loctite on pinion gear mounting screw (9). • After pinion gear is installed, the pinion gear should have an up and down movement on shaft of from 3 to 4 mm [0.11 to 0.15 in.]. • Use a small amount of grease on bottom surface of brass ring to help brass ring stay in position as drive motor is installed.	
6.	Install a new sealing ring (10) between motor and planetary gear. NOTE!Use sealing ring DEE2247034.	
7.	Install drive motor on gearbox. • Turn drive motor by hand until pinion gear teeth are aligned with planetary gear teeth as the drive motor is guided into position on gear box.	

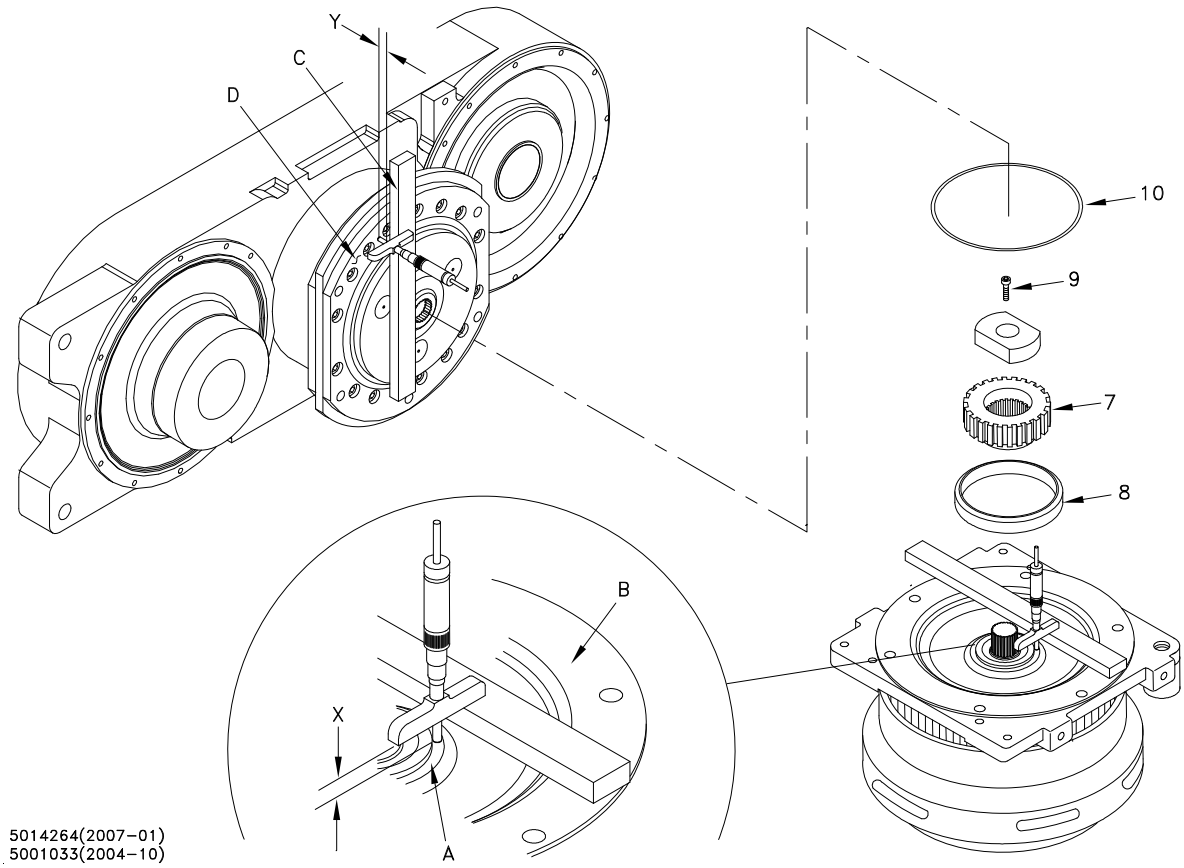
Step	Action	Note
8.	Install two flange nuts on opposite sides of drive motor, and remove hoisting device.	 5001035 (2003-03)
9.	Install remaining flange nuts and tighten all opposing flange nuts in a sequence as shown at the right.	
10.	Reinstall electrical connections and brakes.	
11.	Remove oil fill plug, and replace gear box oil. NOTE!Install new oil seal on oil fill plug before reinstalling fill plug into gear box.	
12.	Reinstall drive motor cover, if equipped.	
13.	Replace comb segments.	

Dual drive escalators: Remove drive motor in the same manner a single drive motor is removed with the following exception.

- Loosen bolts on drive station torque arms.
- Loosen lock ring on of drive sprocket shaft on opposite side of drive motor being removed
- Shift motor to allow drive motor to be removed from the planetary gear.

NOTE! Drive station can be shifted up to 20 mm [13/16 in.].

7-002067 (2010-02)



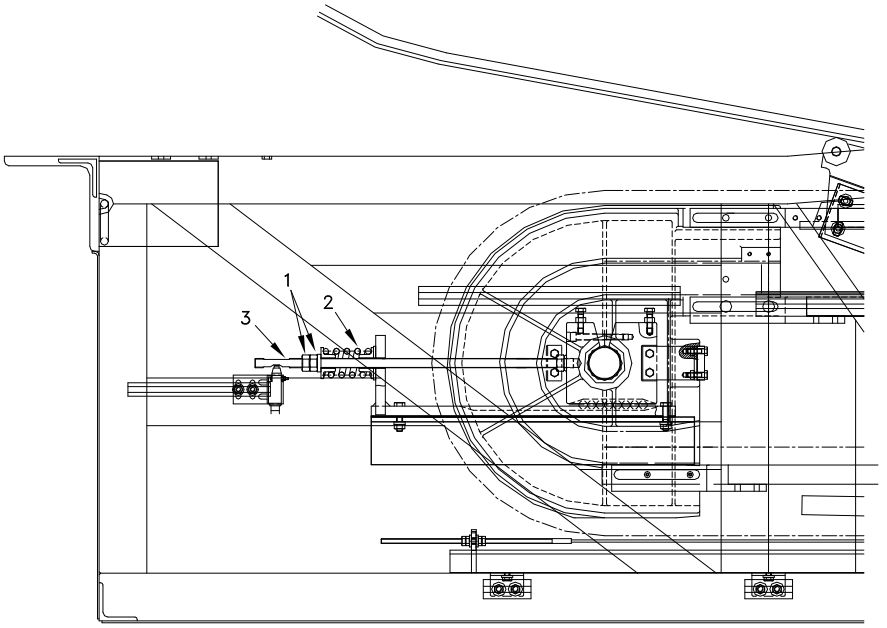
5014264(2007–01)
5001033(2004–10)

3.4 Replace drive unit

NOTE! Before starting the following procedures, barricade the working area at the upper end of the escalator to avoid any hazards to unauthorized persons in the working area.

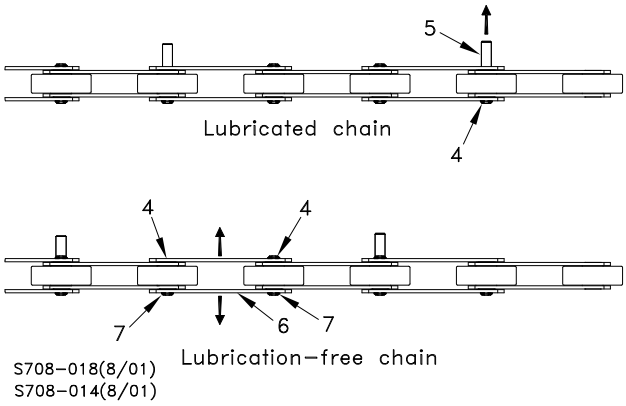
3.4.1 Disconnect step chain

Step	Action	Note
1.	Place barricades at both ends of the escalator, and remove both access covers.	
2.	Remove approximately 20 steps. NOTE!Make sure a spacer bar is inserted for a step at every fifth step chain pin.	
3.	Position hole in step band to equally surround the upper end to allow a clear path for drive unit to be removed.	
4.	Turn main power supply OFF.	
5.	Remove upper end combplate.	
6.	Loosen lock nuts (1) on step chain tension device located in lower end pit, and allow springs (2) to float freely on threaded rod (3).	



S708–017(8/99)
C707–010(2002–10)

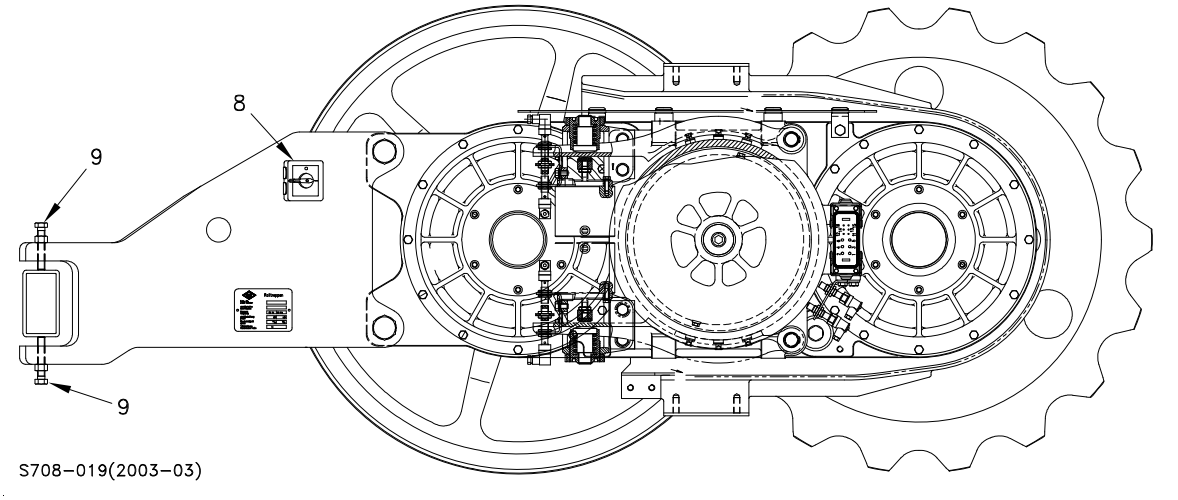
Step	Action	Note
7.	Install a set of four web-type ratchet band clamps, one at each corner of the steps and to a truss cross member. Attach clamps downhill from drive unit at the upper end of the incline. • The web-type ratchet band clamps are used to apply lifting force and support to the remaining step band. This will allow some clearance at the drive sprockets for the step chains to be separated.	
8.	Disconnect step chain by removing snap type retaining rings (4) at step chain side bars (6).	
9.	Tap lightly on chain link pins (7), and remove chain link pins to separate link.	
10.	Position and tie the step chains out of the way to allow the drive sprockets enough clearance to move.	
11.	Remove the step band lock mounting bolts, and position the step band lock out of the way.	



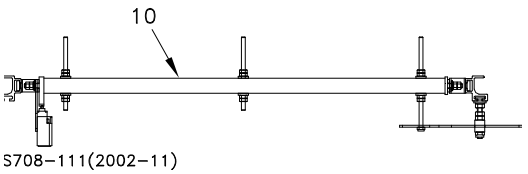
Disconnecting step chain

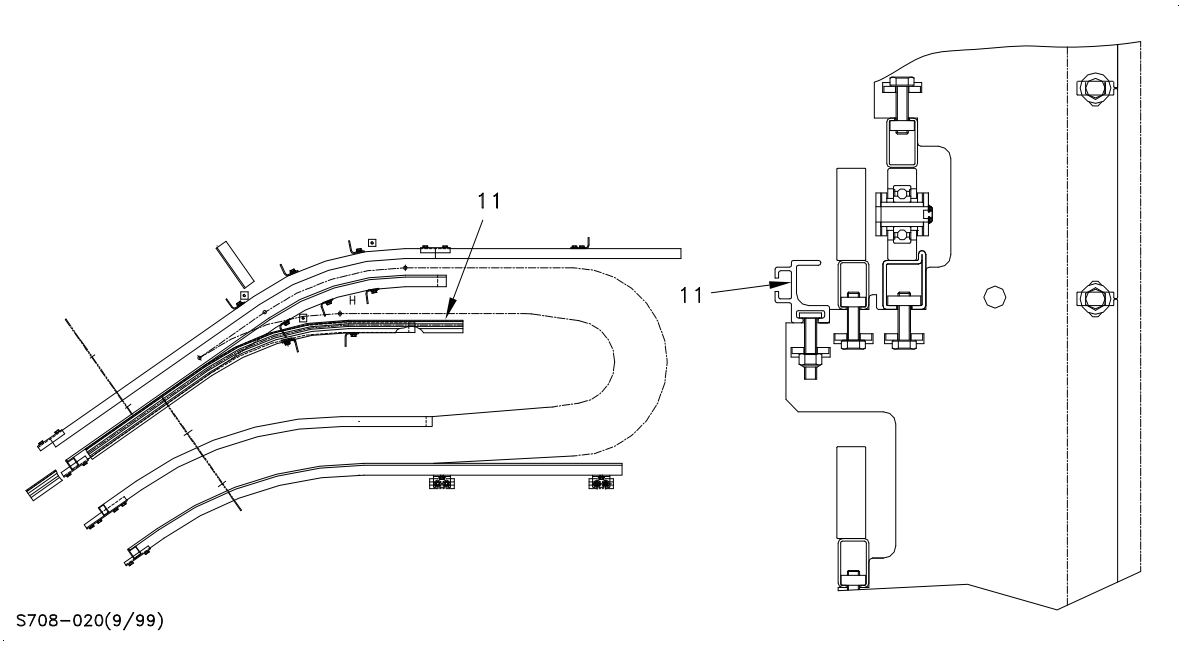
3.4.2 Disconnect and remove drive unit

Step	Action	Note
1.	Remove mounting hardware, and cut tie wraps from the disconnect switch (8).	
2.	Position disconnect switch and wiring harness out of the way.	
3.	Loosen both gear box center support set screws (9), located at the first center truss support, in front of the gear box.	

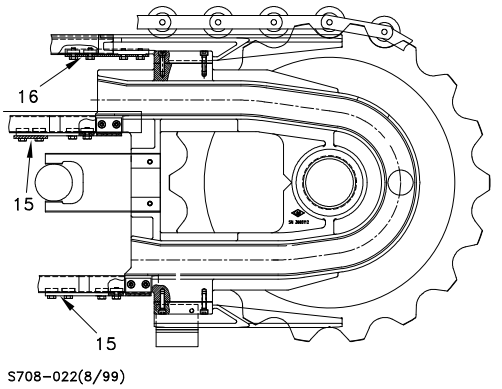


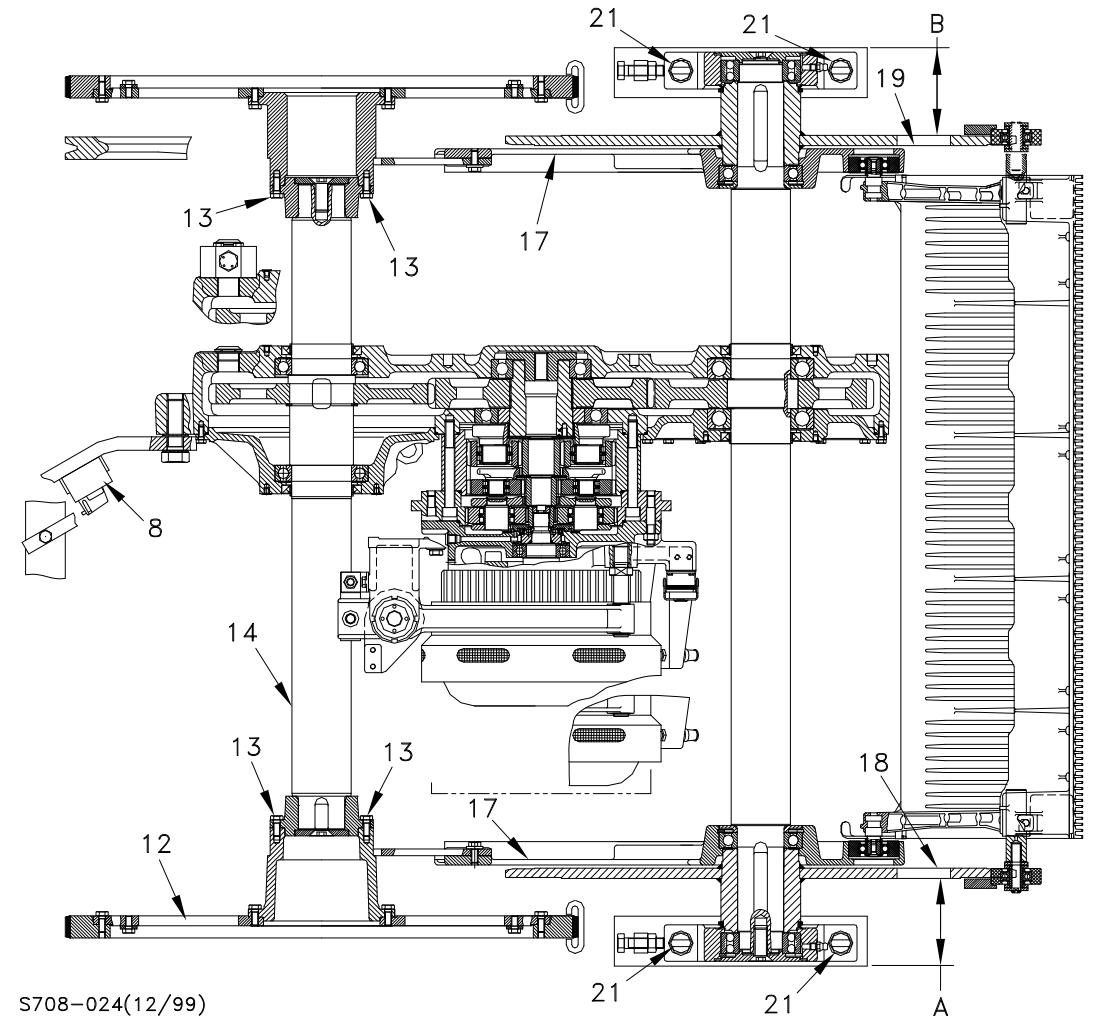
Disconnect stop switch and loosen support set screws

Step	Action	Note
4.	Remove the step sag switch assemblies (10) and both aluminum step lift extrusions (11).	 *Remove step sag switch assemblies*



Remove aluminum step lift extrusions

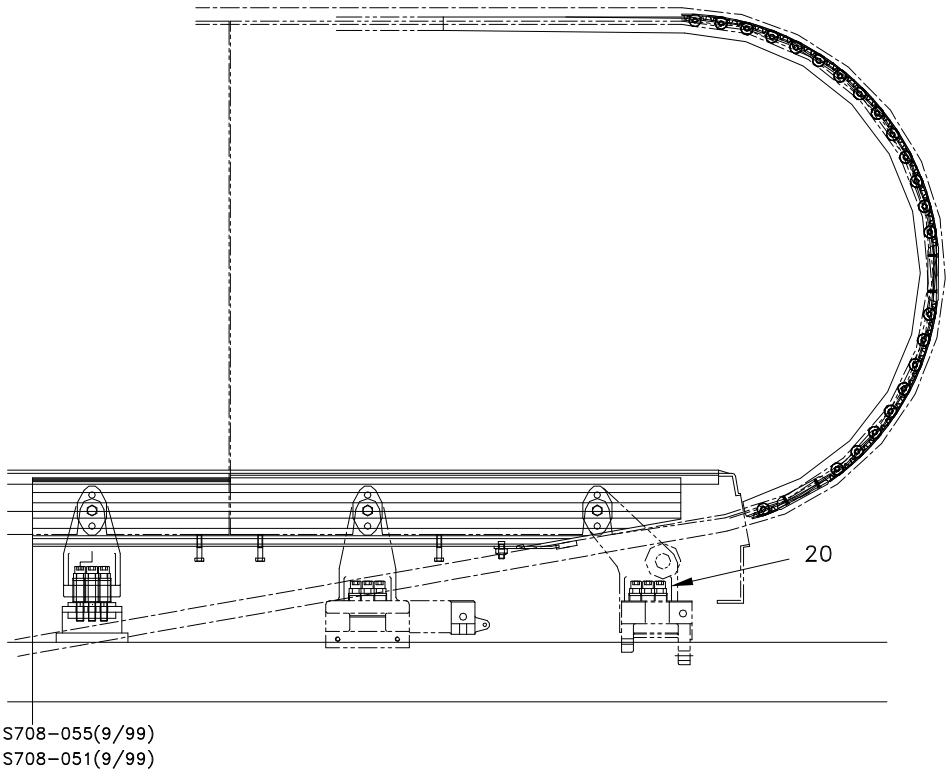
Step	Action	Note
5.	Loosen nuts, located in lower end pit, from the handrail tension device, and release tension on the handrail.	
6.	Remove handrail from the lower end curve to release pressure on the handrail drive wheel (12).	
7.	Remove six mounting bolts (13) that attach the handrail drive shaft (14) to the handrail drive wheel, and pry the wheels outward to clear the shafts.	
8.	Remove both (left and right hand side of the escalator) upper step roller track splice plates (15).	 *Remove step roller and chain roller track splice plates*
9.	Remove both (left and right hand side of the escalator) bottom chain roller splice plates (16).	
10.	Remove both top and bottom turnaround supports (17).	
11.	Measure (A) outside edge of the drive sprocket (18) to a fixed point of the truss and record it for later use when realigning the unit.	
12.	In a similar manner measure (B) the opposite side sprocket (19) and record it for later use.	



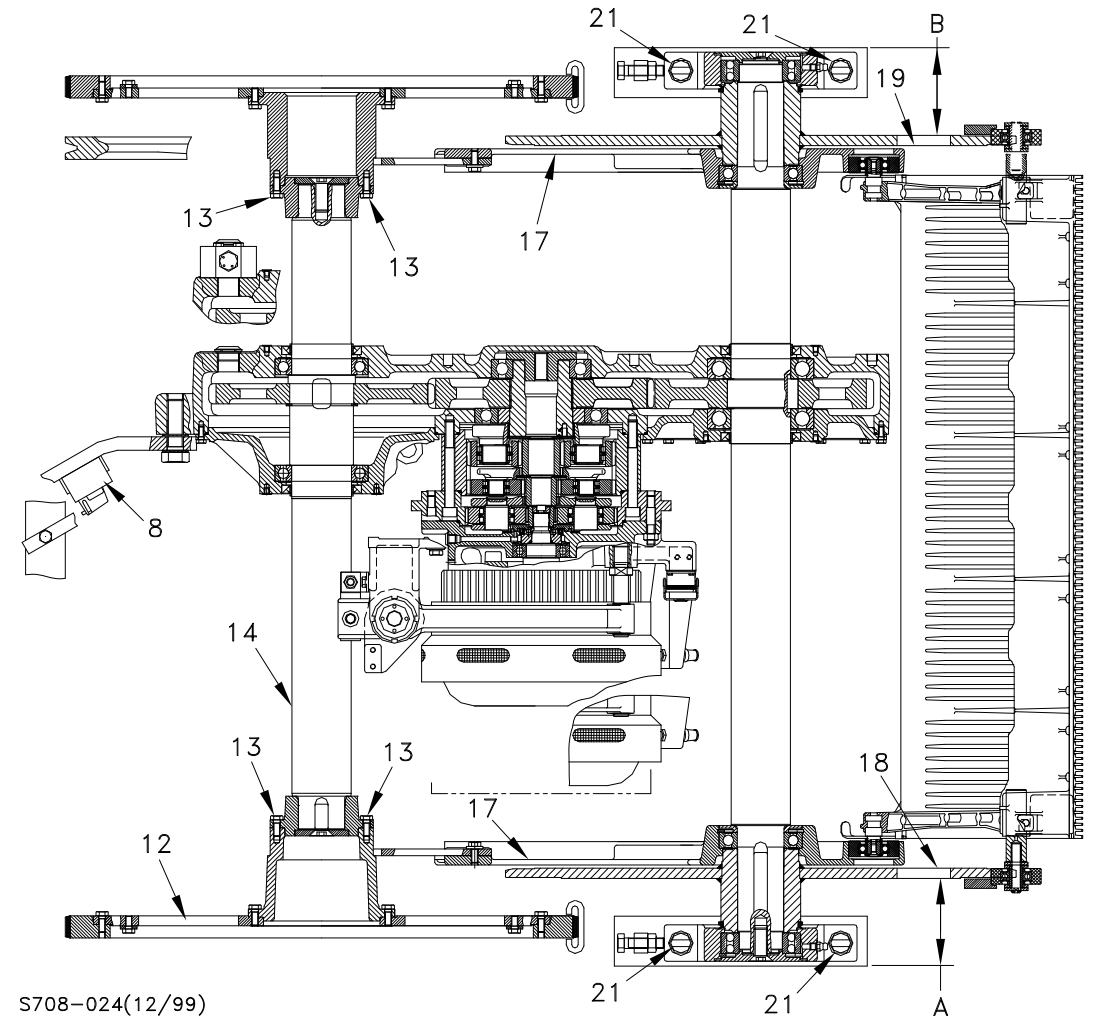
Disconnecting drive unit from truss

Step	Action	Note
13.	Remove both (left and right hand side of the escalator) newel glass support brackets (20). NOTE!There are three brackets on each side of the escalator. Remove only the first bracket (20).	
14.	Remove both handrail cluster roller assemblies.	
15.	Remove outer pillow block bolts (21) from left and right hand side of the escalator, and remove top half of pillow block.	
16.	Attach a 3-point lifting device consisting of three individual hand hoists and a suitable overhead frame to drive unit.	
17.	Lift and maneuver drive unit safely out of the truss.	
18.	Replace drive unit in reverse order of removal procedure.	

7-002069 (2009-11)



Removing newel glass support brackets



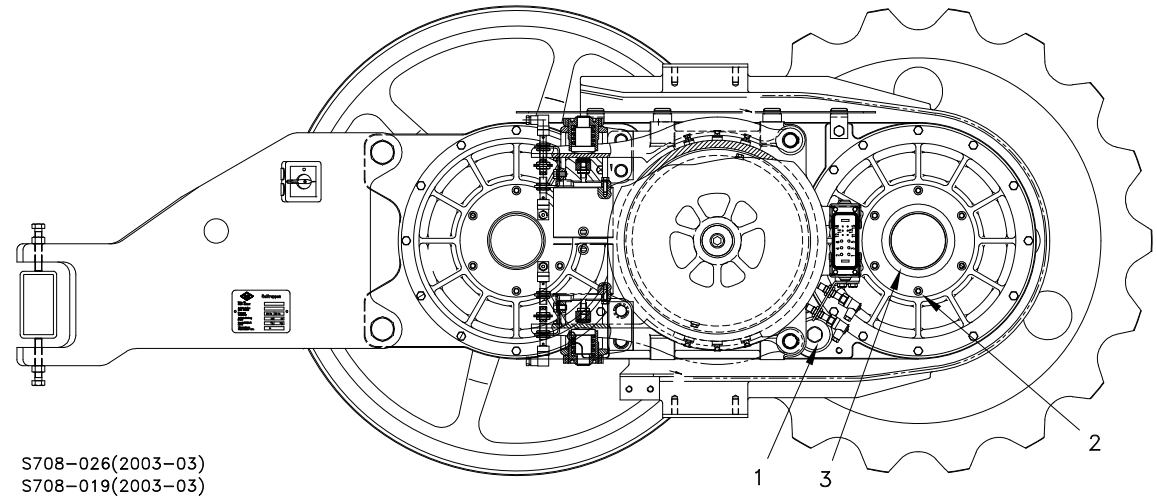
Complete removal of drive unit

3.5 Replace gear box seals

Complete the following to replace gear box seals.

Step	Action	Note
1.	Position barricades, and remove both access covers.	
2.	Remove five steps, and position hole in step band to allow access to the gear box. NOTE! Insert a step spacer bar after every fifth step removed.	
3.	Turn main power supply OFF, and engage step band lock.	
4.	Remove the lubricant from the gear box at drain plug (1).	
5.	Remove the six bolts from seal retaining cover (2).	
6.	Remove the oil seal (3) by tapping it out with a hammer and a small chisel, and discard old oil seal.	
7.	Clean seal seat thoroughly. NOTE! The new split-type seal is installed using a special adhesive that is supplied by the seal manufacturer in a kit form. Follow instructions supplied in the kit for installing the new seal.	
8.	Refill the gear box with fresh lubricant, and check for leaks.	
9.	Complete the replacement procedure in reverse order of removal.	

708-048 (6/2001)



S708–026(2003–03)
S708–019(2003–03)

3.6 Replace balustrade panels

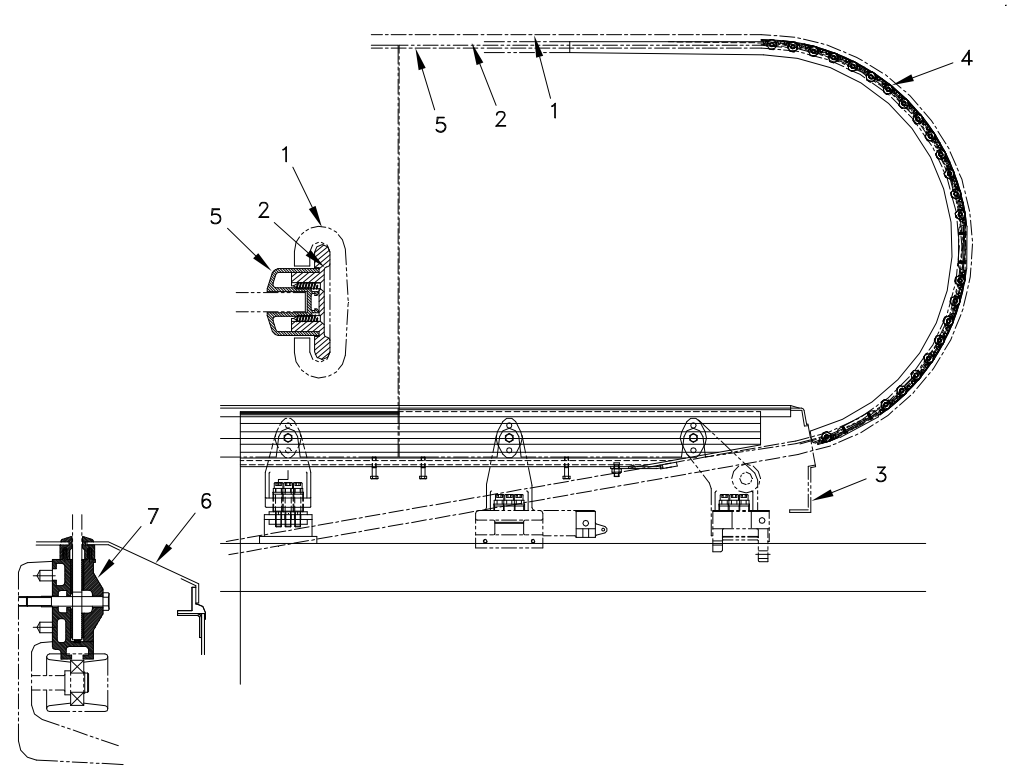
Balustrade panels may be either glass or solid construction. Complete the following to replace end and incline glass panels.

NOTE! If glass panels are being replaced at the upper end of the escalator, barricade the floor below to avoid any potential hazards to persons below the escalator.

Step	Action	Note
1.	Position barricades, and remove upper end access cover.	
2.	Turn main power supply OFF, and engage step band lock.	
3.	Remove the handrail (1) from the handrail guides (2), to release tension on the glass panels.	
4.	Remove frontplate (3) and brush guard assembly, if removing end glass panel.	
5.	Remove newel roller and guides from newel handrail base. • Newel rollers snap out from handrail base (4).	
6.	Remove top handrail guide (2) by removing the square plastic locking clips (pry with a screw driver), and discard them.	
7.	Remove handrail base (4) by first using a heat gun to loosen adhesive, and then, lightly tapping on assembly with wood and a rubber hammer. • Remove handrail base (5) in same manner if removing incline panel.	
8.	Remove the inner deck (6) to gain access to the glass clamps (7).	
9.	Remove any switch brackets, and remove glass clamp (7).	
10.	Slide glass panel upward and out.	

Step	Action	Note
11.	Complete the replacement procedure in reverse order of removal. • Use new glass panel rubber underneath handrail base (5) and newel end rollers (4) to reattach these aluminum profiles to the glass. In some cases a liquid adhesive may be used to adhere rubber to glass. • Use new plastic locking clips to reinstall the handrail guide (2). • Tightening torque for glass clamp (7) bolts is 20 Nm [14.8 ft-lbs].	

708-050 (10/2001)



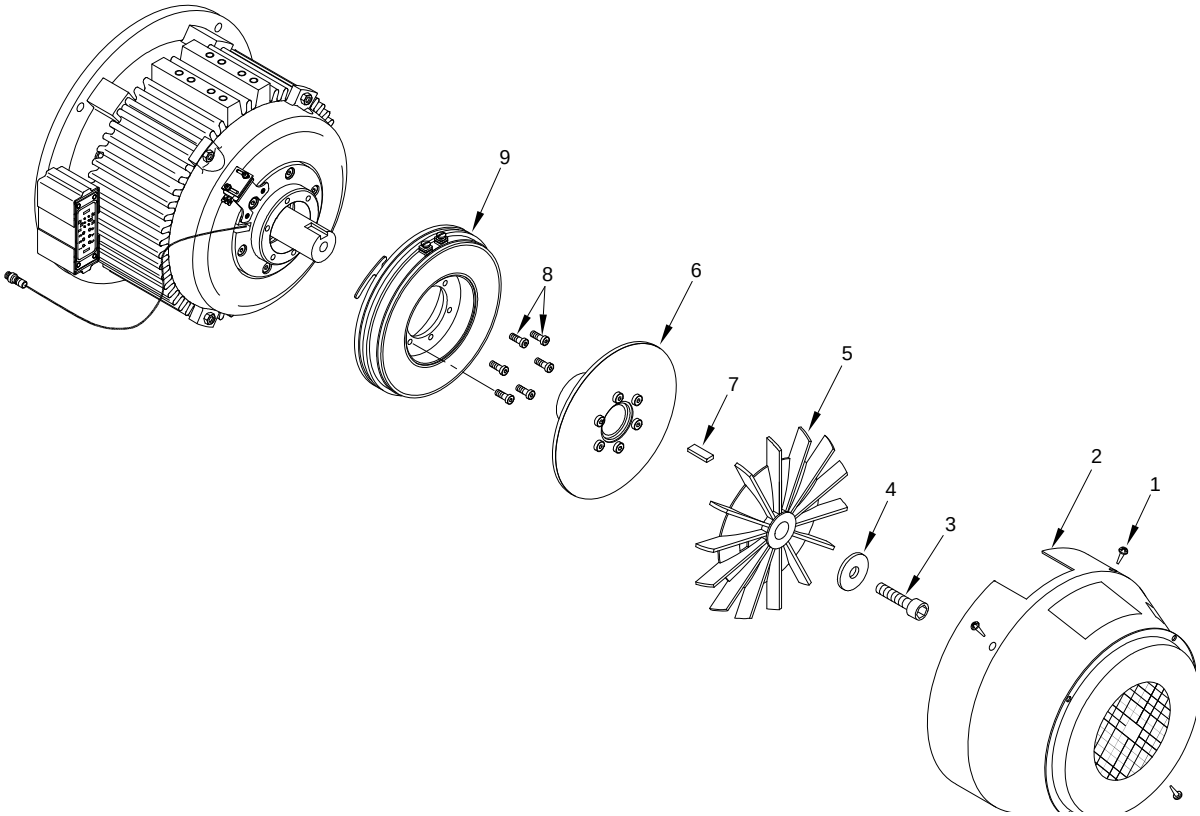
S708–028(1/02)

3.7 Replace permanent magnet brake

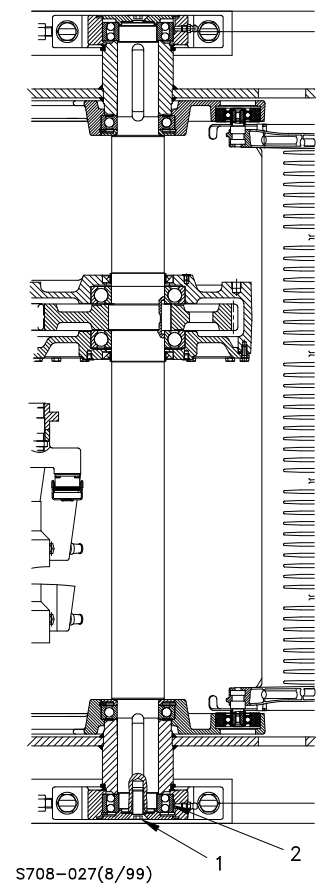
Complete the following to replace permanent magnet brake

Step	Action	Note
1.	Place barricades at both ends of the escalator.	
2.	Remove access covers at both ends of the escalator.	
3.	Switch inspect switch to INSPECTION.	
4.	Remove three steps and move hole in step band to drive motor area at the upper end.	
5.	Turn main power supply OFF, and engage step band lock.	
6.	Remove mounting bolts from air shroud (2), and remove shroud.	
7.	Remove bolt (1) in center of brake armature. **WARNING!** Serious injury or death can occur from rotating step band. Make sure step band is clear of all personnel and equipment before turning main power supply ON.	
8.	Make sure step band is clear of equipment and personnel, and turn main power supply ON.	
9.	Turn CONSTRUCT switch ON in the controller to release the brake.	
10.	Remove armature from shaft. Armature is mounted to shaft with a key. Make sure key does not fall from keyway when armature is removed.	
11.	Turn main power supply OFF.	
12.	Remove wiring to brake.	
13.	Remove bolts connecting brake coil (3) to motor, and remove brake coil.	
14.	Complete replacement procedure in reverse order of removal.	

707-124 (1/2002)



3.8 Replace drive station bearings

Step	Action	Note
1.	Remove the drive unit.	
2.	Remove the bearing end cap screw (1). • Some heat on the screw may need to be applied in order to loosen screw.	
3.	Remove the pillow block and bearing from the shaft. • A suitable sized puller should be used, along with the proper end shaft protection, to remove the pillow block and bearing from shaft. The end protection is used to prevent the threaded end of the shaft from being damaged.	
4.	Clean off excess grease from the assembly, and remove the retaining ring from the block.	
5.	With a soft piece of material (such as brass or aluminum) use a hammer and tap the old bearing (2) out of the block.	
6	Complete the replacement procedure in reverse order of removal. • Use a thread retaining compound (temporary grade) for bearing end cap screw (1), and tighten to 135 Nm [99.5 ft/lbf]. NOTE! Make sure the new bearing is completely filled with new grease.	

708-049 (2006-11)

3.9 Complete major incline clean-down

NOTE! When moving the step band during a major clean-down, always run the escalator on inspection (use hand held pendant control, if equipped).

Step	Action	Note
1.	Place barricades at both ends of the escalator, and remove both access covers.	
2.	Remove half of the total steps. Install spacer bars every fifth step as steps are removed.	
3.	Position step band opening around the lower end equally so drive side and return side of truss are exposed.	
4.	Turn main power supply OFF, and engage step band lock.	
5.	Clean lower pit area, lower end turnaround, truss cross members, step tracks, and truss pan.	
6.	Disengage step band lock and turn main power supply ON.	
7.	Position step band opening around upper end equally so drive side and return side of truss are exposed.	
8.	Turn main power supply OFF, engage step band lock, and clean drive unit, tracks, truss pan, and pit area.	
9.	Clean remaining steps in unit. Clean steps that were removed as they are installed.	Accumulations of dust and lint should be removed with a dry brush and/or rag. Lubricants should be removed with KONE cleaning agent, part number US63043.
10.	Install all steps and remove spacer bars.	
11.	Replace access covers and return escalator to service.	

Major clean-down frequency

This procedure is recommended every five years since the escalator is indoors and has a lube-free chain.

7-002066 (2010-03)

3.10 Locate reference measurements for repair procedures inside step band

If it is necessary to make reference measurements for any repair procedures inside the step band, measure from end angle.

7-002061 (2009-10)

4 APPROVALS AND VERSION HISTORY

Compiled by: Training & Product Information / Moline

Checked by: Escalator Manufacturing / Charles Banks

Approved by: Escalator Manufacturing / Charles Banks

Issue	Date	Description of change	Ref CR	Approved by
-	2009-11-11	First release		Charles Banks
-	2010-03-05	Changes per owner feedback		Charles Banks
A	2011-02-10	Changes per owner feedback		Charles Banks

Escalator PLC Controller:

Allen-Bradley Micrologix 1500

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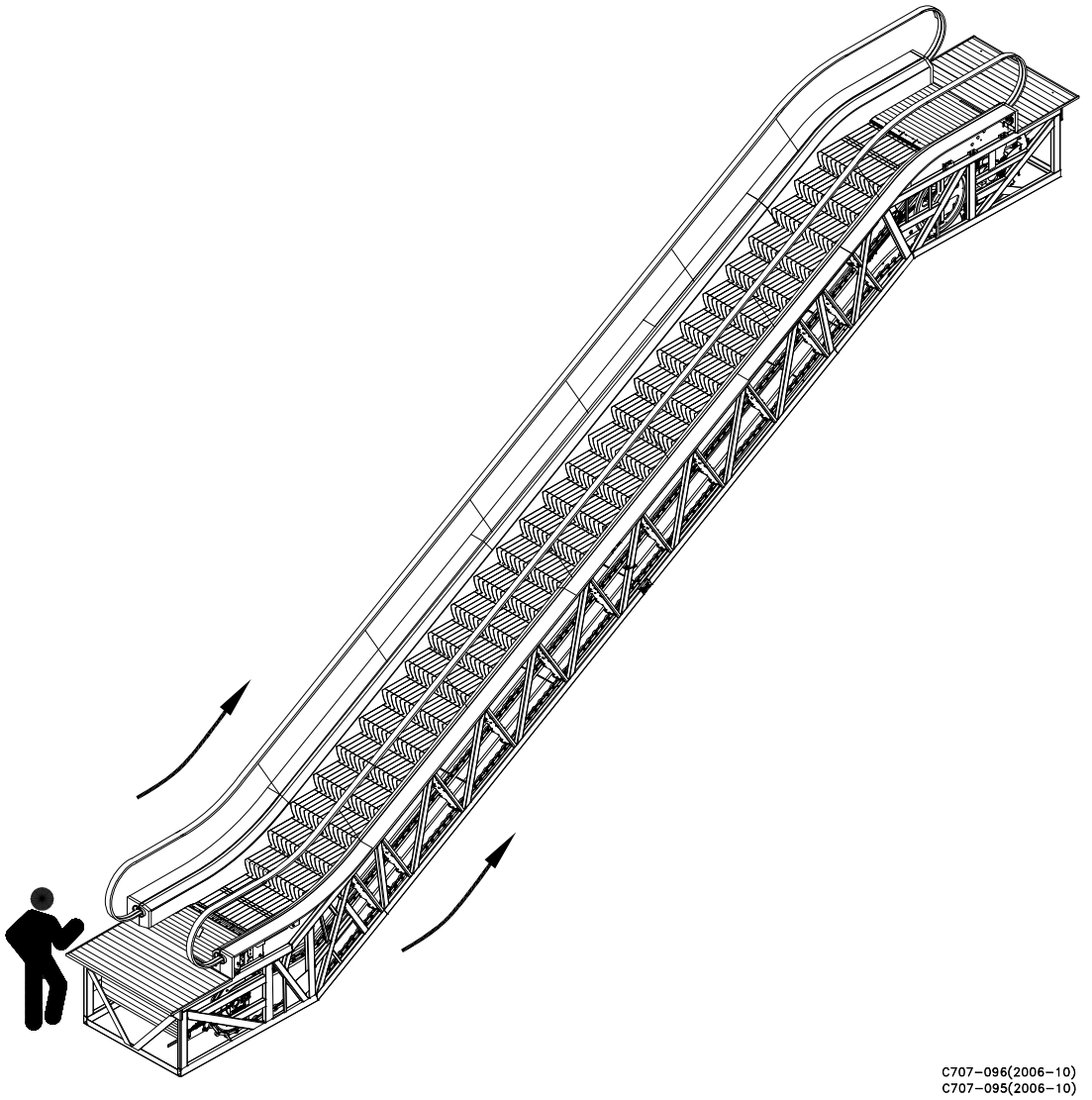
1 GENERAL INFORMATION

1.1 Definition of left hand and right hand

References to right hand and left hand are based on an orientation from the bottom of the escalator, looking up. What you see on your right hand side is RIGHT and on left hand side is LEFT.

7-001043 (2006-12)



C707–096(2006–10)
C707–095(2006–10)

2 SAFETY

2.1 Be aware of safety hazards on-site

Know the safety hazards related to a new construction site. Become familiar with the site to avoid potentially dangerous situations. Safety should always be considered first.

- Make sure the mainline disconnect is OFF, locked out, and tagged any time an individual is in the step band.
- Safety lock and tag out procedures are always required before performing any kind of service, repair, adjustment, lubrication, or inspection of power-driven equipment. These procedures help to prevent injury or death caused by power-driven equipment.

- Always be aware of pinch points and sharp hazards when handling and installing materials.
- Always use the correct tools for specific jobs.
- Always wear safety glasses and a hard hat.

- Always keep controller doors closed after power has been supplied to the controller unit.

- To reduce the danger of electrical shock, always make sure electrical connections are secure. Also, make sure no bare wires are exposed after pulling electrical cable.
- Use a circuit tester to be certain the circuit is not active before touching it.
- Do not ride the unit with the combplates removed.

700-L01 (2008-01)

2.2 Safety symbols

2.2.1 Danger and operator safety signs

Danger and operator safety signs					
Description	**Sign**	**Description**	**Sign**	**Description**	**Sign**
Electric shock		No entry		Hard hat	
Risk of falling		Do not transport		Safety harness	
Magnetic field		Dispose of oil properly		Safety gloves	

Risk of fire		Lifting hazard		Face protection	
Tripping hazard		Safety goggles		Overalls	
Rotating equipment hazard		Dust mask		Respirator	
Suspended load		Safety shoes		Safety lock and tag out procedure	
Pinch point hazard		Hearing protection		Barricade	
General hazard warning		Cut-resistant gloves			

The words WARNING and CAUTION are used in different kinds of hazardous situations to protect persons or equipment parts in the following way:

WARNING

This is to warn of the most serious hazards where there is a risk to a person's safety.

CAUTION

This is to warn of the risk of an equipment component being damaged, which also may cause risk to a person's safety.

7-000220 (2010-02)

2.3 Method safety

Pay particular attention to static electricity and stray voltages when handling PC boards.

⚠ CAUTION

Static electricity and stray voltage hazard. Serious equipment damage can occur. Take precautions to avoid static electricity and stray voltages

8A-000799 (2008-01)

SAFETY INSTRUCTIONS

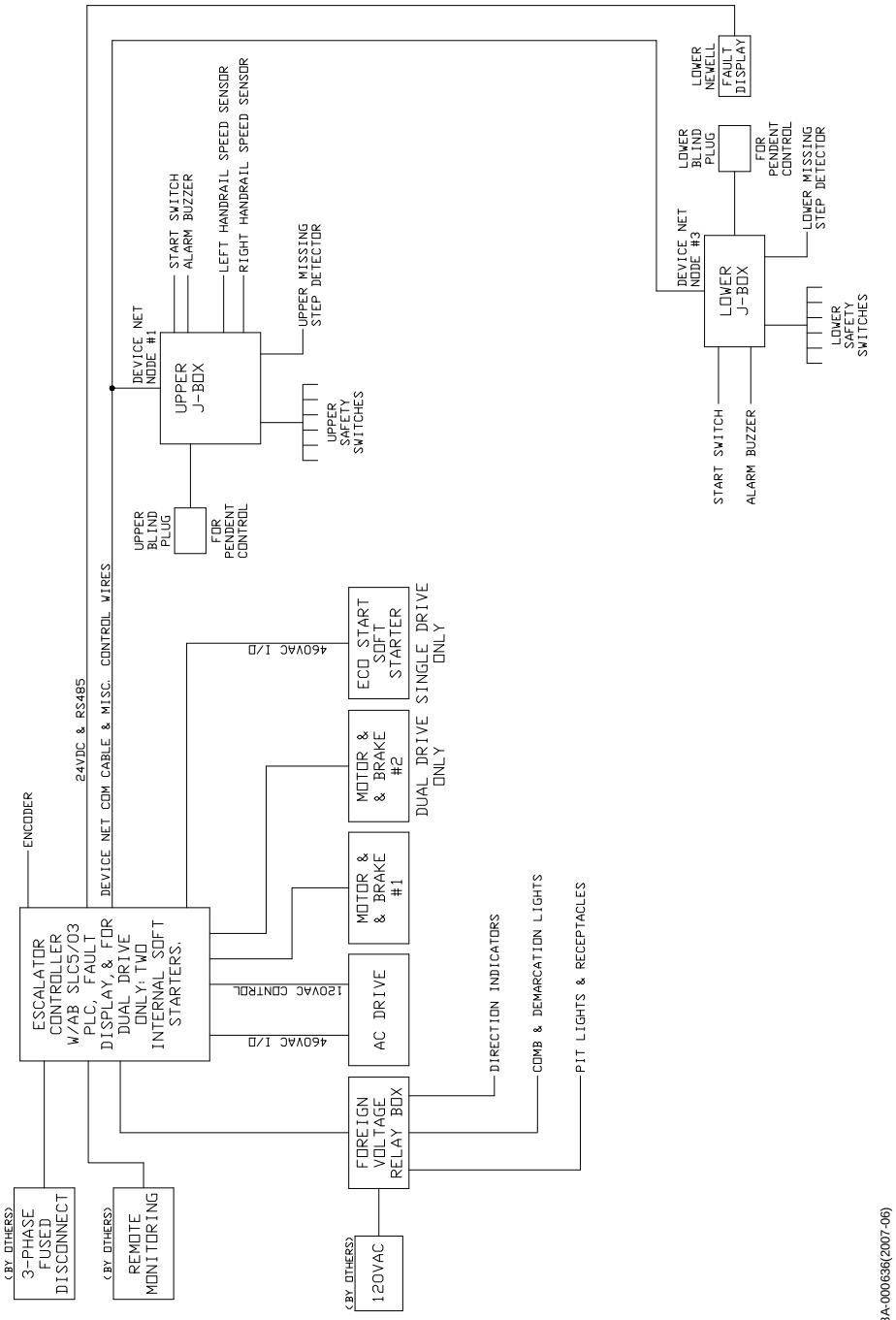
Take the following precautions when handling and storing PC boards, to prevent static electricity and stray voltage hazards.

- Check all operating voltages before inserting PC boards.
- Remove power from equipment before inserting boards.
- Ground yourself to discharge static electricity before handling boards.
- Handle boards by edges. But avoid touching edges that contain copper traces.
- Do not insert boards until they are needed.
- Prevent unwanted voltages to Input boards and Output boards by unplugging terminal blocks and cables during construction.
- Store unused boards in static protective material.

5017434 (2008-01)

3 DESCRIPTION OF CONTROL SYSTEM

3.1 Block diagram of control system



8-000684 (2008-01)

3.2 Description of controller

The controller is the central point for the electrical system, and contains electrical components that control and monitor the operation of the escalator. The controller contains, among other components, an Allen Bradley MicroLogix 1500 PLC. The PLC controls and monitors various devices in the controller and in the truss. Devices such as:

- Brake Controllers
- Contactors
- Relays
- Large fault display in the controller door
- Optional small truss fault display
- Remote CETEK Input Board located in the upper junction box
- Remote CETEK Input Board located in the lower junction box
- Motor encoder
- Handrail Speed sensors
- Safety Switches
- Missing Step Detector sensors
- Relay Interface Board in Controller
- AC Drive
- Soft Starter
- Foreign Voltage Relay Box

The PLC controller also has the following capabilities:

- The PLC monitors one to four brake control cards and two CETEK Input Boards located in the escalator truss by means of a DeviceNet Scanner Card in the PLC assembly and the DeviceNet network.

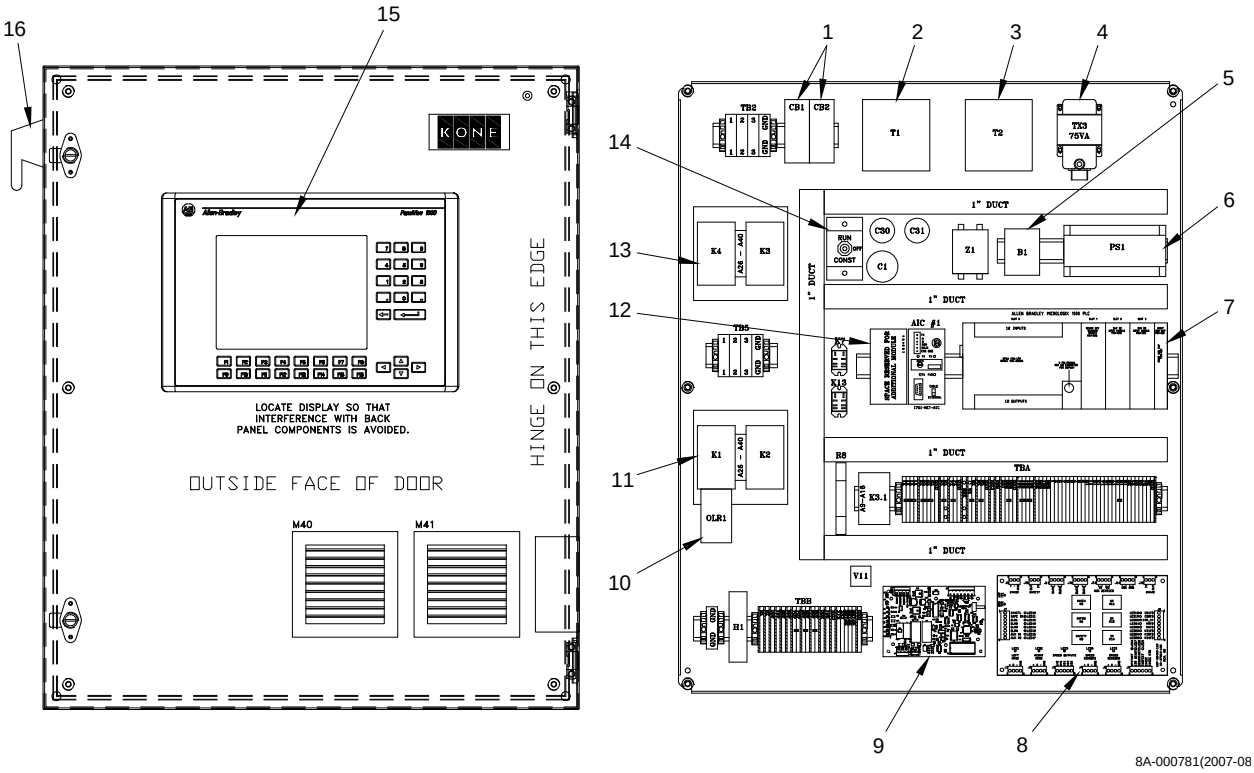
For more information on DeviceNet network, refer to Description of DeviceNet and remote I/O.

- The PLC provides diagnostic information to the customer's Ethernet by means of the NET-ENI Module located in the controller.
- The PLC provides over-speed and under-speed detection by use of an encoder.
- The PLC provides 24vdc power to the Foreign Voltage Relay Box for the escalator's traffic lights.

3.2.1 Controller components - units with single motor

- CB - Circuit breakers (1)
- T1 - Transformer (2)
- T2 - Transformer (3)
- TX3 - Transformer (4)
- B1 - Enclosure thermostat (5)
- PS1 - Power supply (6)
- PLC and power supply (7)
- Relay interface PC board (8)
- Brake controller board (9)
- OLR Overload relay (10)
- K1,K2 Contactors (11)
- AIC Interface (12)
- K3,K4 Contactors (13)
- Construct switch (14)

8-000673-20265061 (2011-02)



8A-000781(2007-08

3.3 Description of DeviceNet and Remote I/O

The PLC in the controller contains a DeviceNet Scanner card which monitors the DeviceNet network. There are three to six nodes on the network:

Node 0: DeviceNet Scanner Card in the PLC assembly.

Node 1: Remote CETEK Input Board is located in the Upper Junction box. Node 1 reads the status of the upper safety switches, including the Upper Missing Step Detector sensor and both Handrail Speed Sensors.

Node 3: Remote CETEK Input Board is located in the Lower Junction box. Node 3 reads the status of the lower safety switches including the Lower Missing Step Detector sensor.

Node 5: Soft Starter located in a separate cabinet. The Soft Starter provides three phase monitor and motor usage data.

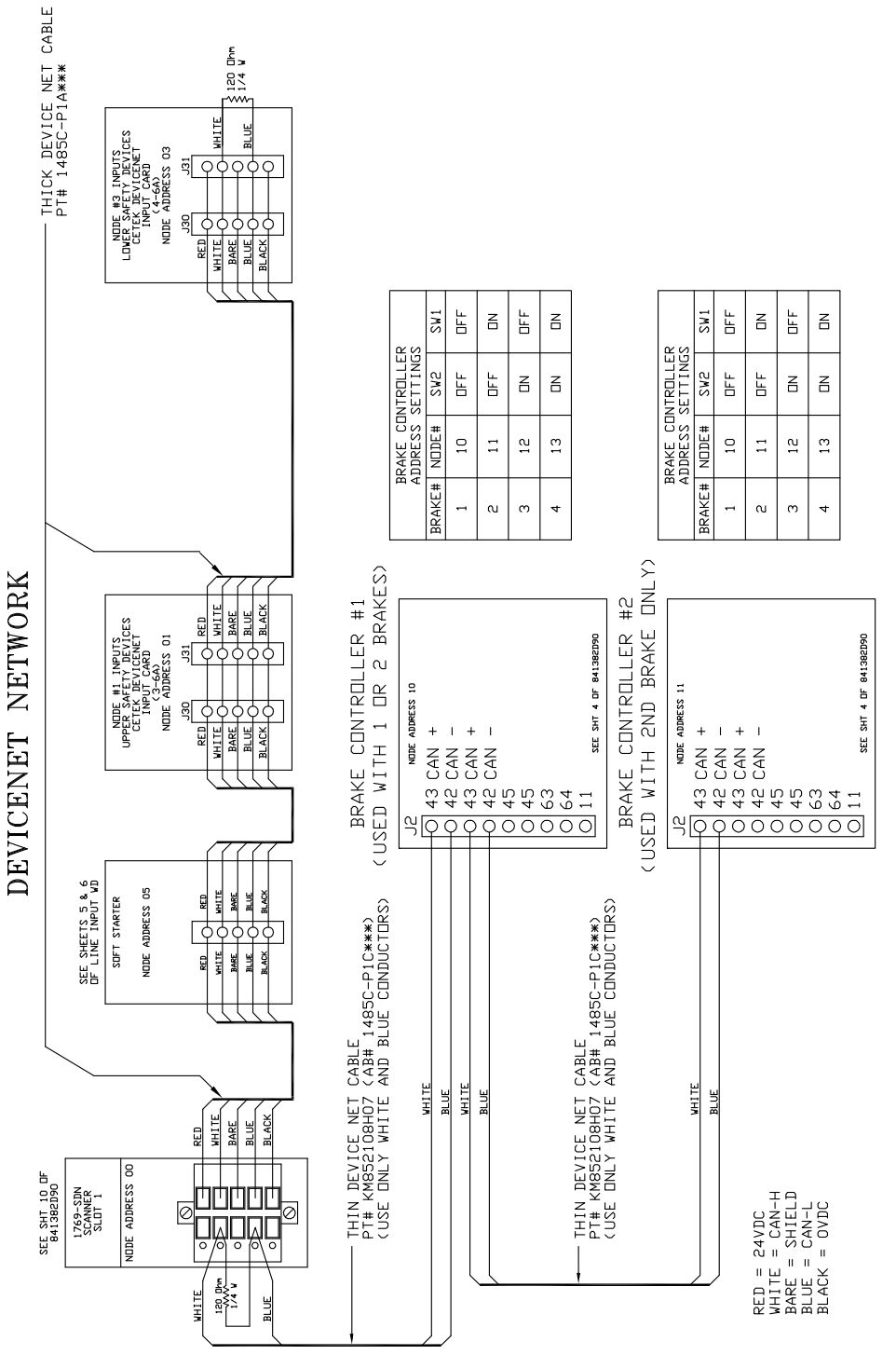
Node 10: Brake Control Card #1 is located in the controller.

Node 11: Optional brake Control Card #2 is located in the controller.

Node 12: Optional brake Control Card #3 is located in the controller.

Node 13: Optional brake Control Card #4 is located in the controller.

8-000674 (2007-09)

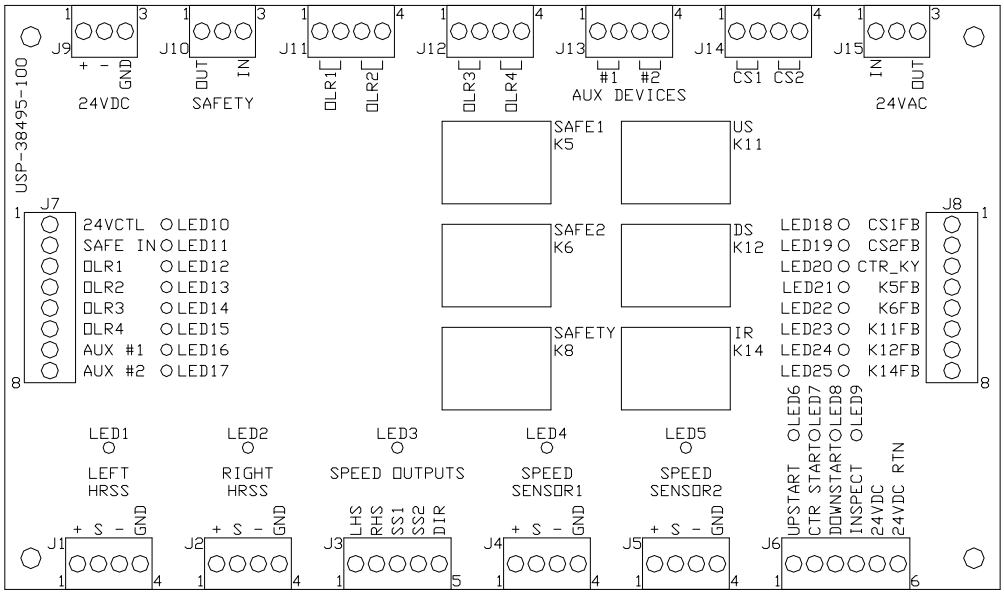


8A-000974(2008-06)

3.4 Description of Relay Interface board

The Relay Interface board has the following functions.

- Provide termination points for the beginning and the end of the Safety Chain.
- Provide termination points for four sets of Overload Relay contacts.
- Provide termination points for two sets of Auxiliary Device Fault contacts.
- Provide termination points for two sets of PLC controlled Computer Safe contacts.
- Provide termination points for two PNP open collector Handrail Speed sensors. (They can be configured for NPN by removing R100 and R102 and installing R101 and R103.)
- Provide termination points for two NPN open collector Motor Speed sensors. (They can be configured for PNP by removing R105 and R107 and installing R104 and R106.)
- Provide termination points for the Start Switch and for the Inspect Mode circuit.
- Provide termination points to Safety Relay contacts.
- Provide output terminals to indicate state of:
  - Safety Chain
  - Overload Relays
  - Auxiliary Device Contacts
  - Computer Safe Relay Contacts
  - Start Switch Center Position Contacts
  - Start Switch Relay Contacts
  - Inspect Relay Contacts
  - Safety Relay Contacts
  - Two Handrail Speed sensors
  - Two Motor Speed sensors
  - One Direction Indicator



S712-025(2006-12)

Relay Interface Board connectors	
Connector	**Description**
J1	Input for Left Handrail Speed sensor
J2	Input for Right Handrail Speed sensor
J3	Output status of the Handrail Speed sensors, encoder and direction indicator to the PLC
J4	Input for Motor Speed sensor #1 or Channel A of encoder
J5	Input for Motor Speed sensor #2 or Channel B of encoder
J6	Input for Start Switch and Inspect (Service) Mode Switch
J7	Output status of 24 vdc, Safety Chain, four overload relays, and two auxiliary devices to the PLC
J8	Output status of Start Switch, Inspect Switch, and control relays to the PLC
J9	Input for 24 vdc
J10	Output and input for Safety Chain
J11	Input for Overload Relays 1 and 2
J12	Input for Overload Relays 3 and 4
J13	Input for two Auxiliary Device contacts
J14	Input for two Computer Safe Relay contacts from the PLC
J15	Output from Safety Relays to motor contactors

Relay Interface Board LEDS	
LED	**Description**
LED1	Indicates status of Left Handrail Speed sensor
LED2	Indicates state of Right Handrail Speed sensor
LED3	Indicates direction of escalator motion
LED4	Indicates status of Motor Speed sensor #1 or Channel A of encoder
LED5	Indicates status of Motor Speed sensor #2 or Channel B of encoder
LED6	Indicates status of the Up Start input
LED7	Indicates status of the Center Start Input
LED8	Indicates status of the Down Start Input
LED9	Indicates status of the Inspect (Service) Mode Input
LED10	Indicates presence of 24 vdc on connector J9
LED11	Indicates status of Safety Chain Input on connector J10
LED12	Indicates status of OLR1 input on connector J11
LED13	Indicates status of OLR2 input on connector J11
LED14	Indicates status of OLR3 input on connector J12
LED15	Indicates status of OLR4 input on connector J12
LED16	Indicates status of AUX #1 input on connector J13
LED17	Indicates status of AUX #2 input on connector J13
LED18	Indicates status of CS1FB input on connector J14
LED19	Indicates status of CS2FB input on connector J14
LED20	Indicates status of the Center Start output to PLC
LED21	Indicates status of the K5 SAFE1 relay
LED22	Indicates status of the K6 SAFE2 relay
LED23	Indicates status of the K11 US relay
LED24	Indicates status of the K12 DS relay
LED25	Indicates status of the K14 IR relay

LED notes

While Relay Interface board is plugged into the PLC, observe the LED indicators on the PLC Input cards for status of inputs.

LEDs 10 through 17 are wired in series.

- When one of these LEDs goes OFF then all of the LEDs down stream will also go OFF. Example: If LED 12 goes OFF then all LEDs from LED 12 through LED 17 will go OFF.
- The input that is faulted is the lowest LED number that is OFF. Example: If LEDs 12 through 17 are OFF then the known fault is associated with LED 12, OLR1.

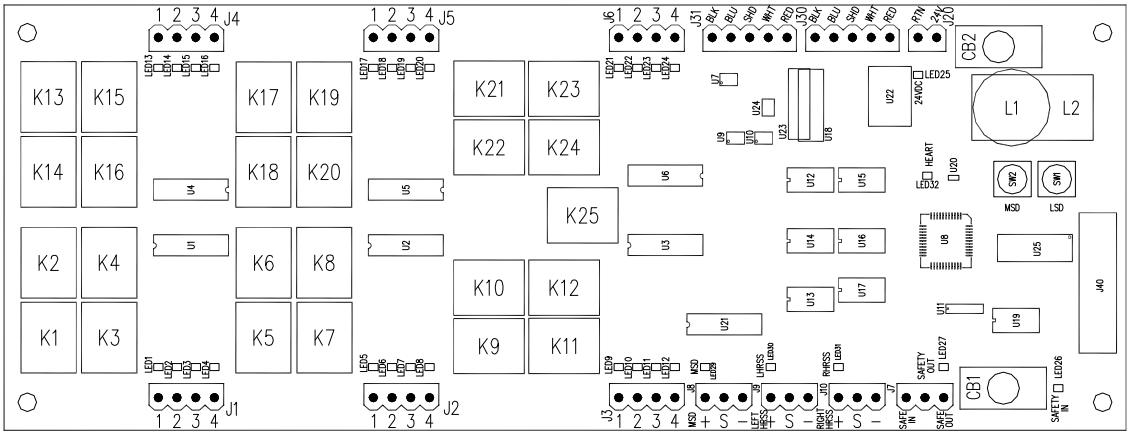
7-001047 (2009-08)

3.5 Description of CETEK Input PC board

The CETEK Input PC board has the following functions.

- Provide termination points for 24 switches and three open collector PNP type sensors, specifically, two Handrail Speed sensors and one Missing Step Detector
- Provide an input and an output of the safety chain that is created by the on-board relays
- Provide visual indication by LEDs as to which switch is open
- Provide communication with the PLC of the status of the board itself and the status of all devices wired to the board

NOTE! Two rotary switches are provided to select the DeviceNet Node address.



8A−000371(2006−10)

CETEK Input PC Board connectors	
Connectors	**Description**
J1	Four poles: An input for four separate safety devices 24 vdc required
J2	Four poles: An input for four separate safety devices 24 vdc required
J3	Four poles: An input for four separate safety devices 24 vdc required
J4	Four poles: An input for four separate safety devices 24 vdc required
J5	Four poles: An input for four separate safety devices 24 vdc required
J6	Four poles: An input for four separate safety devices 24 vdc required
J7	Three poles: Pin 1 = Safety In, Pin 2 = No Connection, and Pin 3 = Safety Out
J8	Three poles: Pin 1 = MSD 24 vdc, Pin 2 = MSD SIGNAL, and Pin 3 = MSD 24 vdc RTN
J9	Three poles: Pin 1 = LHRSS 24 vdc, Pin 2 = LHRSS SIGNAL, and Pin 3 = LHRSS 24 vdc RTN
J10	Three poles: Pin 1 = RHRSS 24 vdc, Pin 2 = RHRSS SIGNAL, and Pin 3 = RHRSS 24 vdc RTN
J20	Two poles: Pin 1 = 24 vdc Input, Pin 2 = 24 vdc RTN
J30	Five poles: DeviceNet Connections: RED, WHITE, SHLD, BLUE, and BLACK
J31	Five poles: DeviceNet Connections: RED, WHITE, SHLD, BLUE, and BLACK

CETEK Input PC Board LEDs	
LED	**Description**
LED1	Indicates status of switch wired to J1 position 1
LED2	Indicates status of switch wired to J1 position 2
LED3	Indicates status of switch wired to J1 position 3
LED4	Indicates status of switch wired to J1 position 4
LED5	Indicates status of switch wired to J2 position 1
LED6	Indicates status of switch wired to J2 position 2
LED7	Indicates status of switch wired to J2 position 3
LED8	Indicates status of switch wired to J2 position 4
LED9	Indicates status of switch wired to J3 position 1
LED10	Indicates status of switch wired to J3 position 2
LED11	Indicates status of switch wired to J3 position 3
LED12	Indicates status of switch wired to J3 position 4
LED13	Indicates status of switch wired to J4 position 1
LED14	Indicates status of switch wired to J4 position 2
LED15	Indicates status of switch wired to J4 position 3
LED16	Indicates status of switch wired to J4 position 4
LED17	Indicates status of switch wired to J5 position 1
LED18	Indicates status of switch wired to J5 position 2
LED19	Indicates status of switch wired to J5 position 3
LED20	Indicates status of switch wired to J5 position 4

CETEK Input PC Board LEDs	
LED	**Description**
LED21	Indicates status of switch wired to J6 position 1
LED22	Indicates status of switch wired to J6 position 2
LED23	Indicates status of switch wired to J6 position 3
LED24	Indicates status of switch wired to J6 position 4
LED25	Labeled 24VDC: indicates status of 24 vdc input on J20 position 1; OFF = CB2 tripped or no power on J20 Position 1; ON = 24 vdc on J20 position 1 and CB2 not tripped
LED26	Labeled SAFETY IN: indicates status of 24 vdc Safety Chain voltage on J7 position 1; OFF = CB1 tripped or no power on J7 Position 1; ON = 24 vdc Safety Chain voltage on J7 position 1 and CB1 not tripped
LED27	Labeled SAFETY OUT: indicates status of Safety Chain; OFF = Safety Chain Open; ON = Safety Chain Completed • If LED26 or any of the LEDs labeled LED1 through LED 24, is OFF, then LED27 will also be OFF
LED29	Indicates status of the MSD signal wired to J8 position 2
LED30	Indicates status of the LHRSS signal wired to J9 position 2
LED31	Indicates status of the RHRSS signal wired to J10 position 2
LED32	Labeled Heart: indicates status on board CPU
• Continuous blinking at a 1 HZ rate indicates that communication between the Input PCB and the PLC is okay. • Continuous two 2 HZ blinks with a 1 second delay between the sets of two blinks indicates that communication Input PCB and the PLC have been lost for more than one second. • Continuous ON or OFF indicates that Input PCB is not functioning.	

LED notes

LED1 through LED24 indicates the status of the associated safety device or switch.

- ON = Switch is Closed
- OFF = Switch is Open

7-001048 (2009-08)

3.6 Description of Brake Controller board

The brake is controlled by the Brake Controller board located inside the controller. One Brake Controller board is required for each brake that is installed on the unit.

The following describes Brake Controller board operation and set-up.

NOTE! Before unplugging Brake Controller, turn OFF power and wait 15 seconds.

3.6.1 LED indications of Brake Controller board

The following are LED indications of the Brake Controller board.

- LED1 ON = 5VDC present on board.
- LED2 ON = 15VDC present on board.
- LED3 ON = 140VDC present on board.
- LED4 ON = Brake Relay K1 energized.
- LED5 ON = Construct input has 24vdc on terminal J3/6.
- LED6 Blinking at 1 Hz = indicates that communication between the Brake Controller and the main CPU board are okay.
- LED6 Continuous two 2 HZ blinks with a 1 second delay between the sets of 2 blinks = indicates that communication between the Brake Controller and the main CPU board have been lost for more than one second.
- LED6 Continuous ON or OFF = indicates that the Brake Controller is not functioning.
- LED7 Blinking = Blinks at rate of encoder pulses.

3.6.2 Brake Controller board DIP switch settings

Each Brake Controller card needs to have its own unique ID. Set each Brake Controller's DIP switches according to the table titled: DIP switch settings.

Brake controller address DIP switch settings			
Brake #	**DeviceNet Node #**	**SW1**	**SW2**
1	10	OFF	OFF
2	11	ON	OFF
3	12	OFF	ON
4	13	ON	ON

3.6.3 Adjusting initial brake current

The following describes the initial brake current adjustment:

- Switch Construct Switch on Power Supply Board to the center (OFF) position.
- Rotate Brake Controller potentiometer R9 fully counter-clockwise.
- Place Leads of a Digital VoltMeter (DVM) on Brake Controller tests points labeled CURRENT + (plus) and CURRENT - (minus).
- Make sure there are no weights or persons on the unit, because the unit may move when the next step is completed.
- Switch Construct Switch to the CONST position.
- Rotate Brake Controller potentiometer R9 clockwise until the DVM reads the following.
  - 8 in. brakes: 280 mA.
  - 12 in. brakes: 235 mA - 250 mA.
- Switch the Construct Switch to the RUN position and start the unit in either direction.
  - The brake should open cleanly without any rubbing sound while the unit continues to run.
  - If the brake fails to open cleanly then slowly adjust potentiometer in either direction until brake stops dragging.
- Stop and restart the unit to be sure that brake opens cleanly.

Brake current adjustment is now complete.

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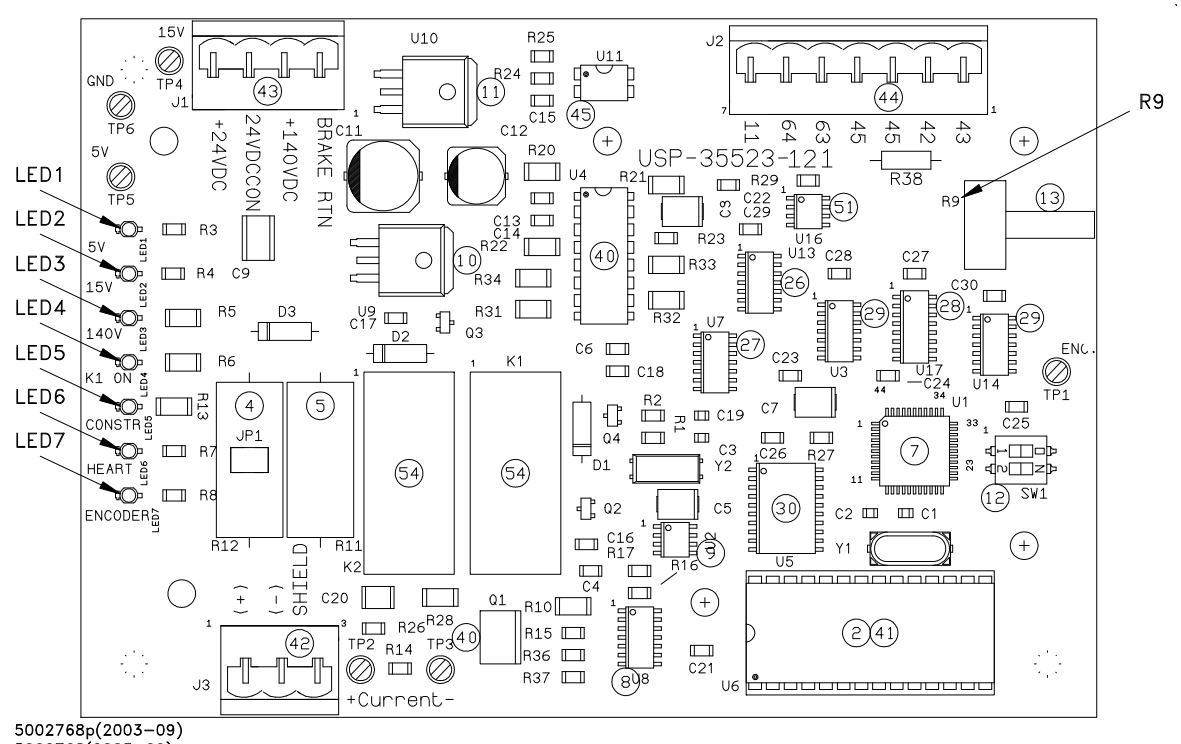

5002768p(2003–09)
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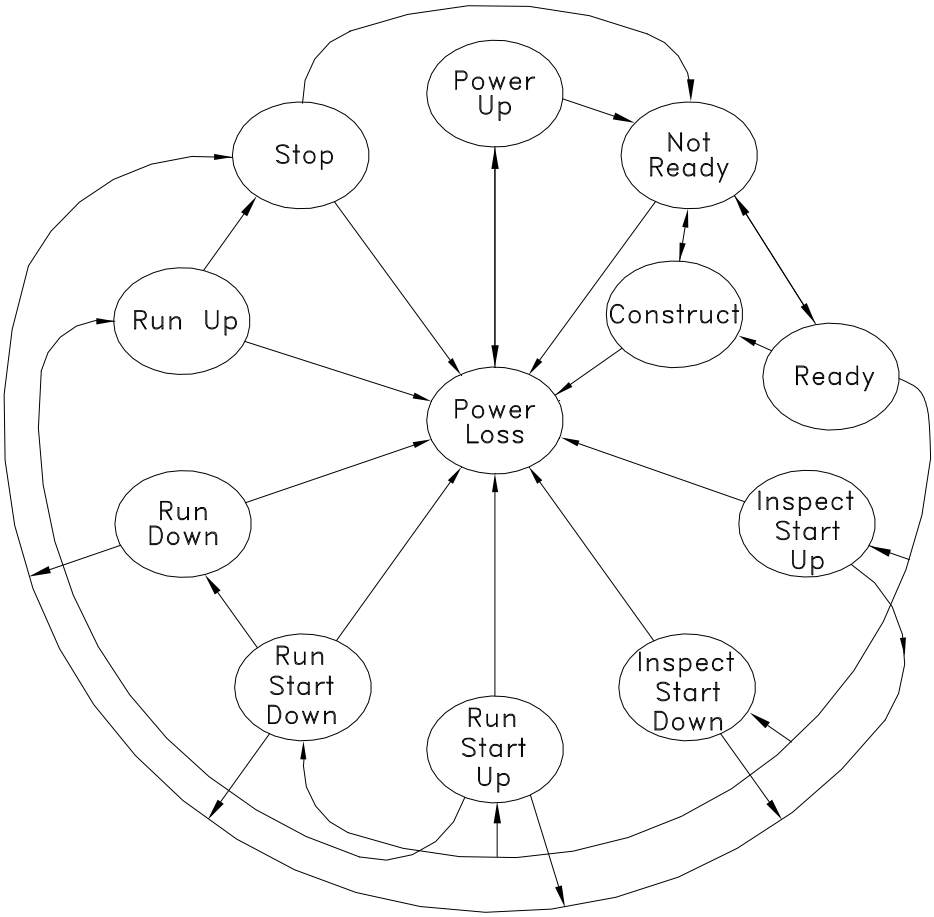
3.7 Description of controller operation modes



3.7.1 Power Up Mode

The Power Up Mode begins program execution and performs initial CPU self checks. This mode follows the Power Loss Mode. Two modes can be entered following this mode - Not Ready Mode and Power Loss Mode.

The following actions are performed by the PLC:

- Open contacts to CS1 (O:0/0) and CS2 (O:0/1) on Relay Interface Board Connector J14.
- De-energize SS2 (O:0/3), K1(O:0/4), K2(O:0/5), [K3, K4, or SS1] (O:0/6), K3.1 (0:0/0 and 0:0/1), K3.2(O:0/9).
- De-energize and/or switch OFF all PLC outputs.
- Perform self-checks such as check sum of ROM and RAM and EEPROM.
- Transmit Power Up status to memory, displays, and remote monitoring.
- Establish communication to Remote I/O blocks and fault displays.

The time duration of Power Up Mode is 45 seconds to 60 seconds.

3.7.2 Not Ready Mode

The Not Ready Mode inhibits the start of the escalator until all state conditions are met to allow the escalator to start. This mode can be entered from four modes - Power Up Mode, Ready Mode, Begin Start Mode, and Stopped Mode. Two modes can be entered following this mode - Ready Mode and Power Loss Mode.

The following actions are performed by the PLC:

- Open contacts to CS1 (O:0/0) and CS2 (O:0/1) on Relay Interface Board Connector J14.
- De-energize SS2 (O:0/3), K1 (O:0/4), K2 (O:0/5), [K3, K4, or SS1] (O:0/6), K3.1 (0:0/0 and 0:0/1) and K3.2 (O:0/9).
- De-energize and/or switch OFF all PLC outputs.
- Transmit reason for not being able to exit Not Ready Mode to memory, displays, and remote monitoring.

For more information refer to section titled: Description of Event/Fault Codes.

- Energize and de-energize the alarm relay (500 mS ON and 500 mS OFF) three times if start input exits or if start switch center position is low.

3.7.3 Ready Mode

The Ready Mode allows the start of the escalator when a start command is given. This mode can be entered from only one mode - Not Ready Mode. Six modes can be entered following this mode - Not Ready Mode, one of four Start Modes, and Power Loss Mode.

The following State Conditions must exist for the Ready Mode:

- All faults have been corrected and reset.
- Outputs SS2 (O:0/3), K1 (O:0/4), K2 (O:0/5), [K3, K4, or SS1] (O:0/6), K3.1 (0:0/0 and 0:0/1) are de-energized and are verified by I:3/0, I:3/1, I:3/3, and I:3/2, but K3.2 (O:0/9) is energized. (Ignore I:3/4.) Aux contact logic is +24VDC when contactors are de-energized and open when contactors are energized.
- The escalator is ready to run.

The following actions are performed by the PLC:

- If Inspect Input is High, Ready Mode status is transmitted to displays and remote monitoring.
- If Inspect Input is Low, Inspect Mode status is transmitted to memory, displays, and remote monitoring.
- If the Inspect Input goes from High to Low, the alarm relay is energized once for 2 seconds.
- If the Inspect Input goes from Low to High, the alarm relay is energized twice for 500 mS.

3.7.4 Inspect Start Mode

The Inspect Start Mode allows running of the escalator in either direction while Under Speed, Over Speed, Handrail Speed, Missing Step Detection, Reverse Direction, and all manual reset faults are ignored. All other safety devices remain active. The escalator does not achieve a holding circuit and stops when the start command terminates. This mode can only be entered while the Inspect input indicates INSPECT.

The following actions are performed by the PLC:

- Energize Relay Interface Board Relay K5 using J14 CS1 (O:0/0) and verify that K5 (I:0/8) has energized.
- Energize Relay Interface Board Relay K6 using J14 CS2 (O:0/1) and verify that K6 (I:0/9) has energized.
- Verify that K3.1 (I:3/2) energized after K5 and K6 are verified as energized.
- Send command to Brake Controllers one at a time to test the PLC Brake Power Relay (O:0/3) (This is the terminal 63 and 64 test in the brake controller). Wait for result of test from brake controller. If all of the tests pass then the PLC is to energize the PLC Brake Power Relay (O:0/3).
- Send command to Brake Controllers to open brakes.
- Energize SS2 (O:0/3), K3.2 (O:0/9) and [K3 or K4 or SS1] (O:0/6). Verify K3 input (I:3/3). Ignore SS2 input (I:3/4).
- Verify that all brakes are released within 500 mS.
- Energize appropriate direction contactor K1 (O:0/4) or K2 (O:0/5) with the condition that O:0/9 (K3.2) and O:0/6 [K3 or K4] are ON. Verify that the contactor (I:3/0 or I:3/1) has energized within 500 mS.

- Ignore MSD inputs.
- Ignore direction escalator is moving.
- Ignore underspeed of escalator, but monitor overspeed of escalator.
- Ignore speed of handrails.
- Ignore manual reset faults.
- The escalator is to continue to RUN as long as the SAFE_IN, OLR1, OLR2, OLR3, OLR4, AUX1, AUX2, CSF1, CSF2, K5FB, AND K6FB remain high and no faults are received from Brake Controllers or Contactors. And as long as the POWER ON Relay K7 is energized and as long as a Start Reference from the start switch remains continuous.

The following alarms are associated with the Inspect Mode.

- The PLC sounds the alarm (O:0/8) once for two seconds when the Inspect input changes from high to low. This alarm indicates that the controller is now in the Inspect Mode. (Removing the dummy plug from the pendent receptacle will cause the Inspect input to go low.)
- The PLC sounds the alarm twice for 1/2 second when the Inspect input changes from low to high. This alarm indicates that the controller is now in the Normal Ready Mode. (Replacing the dummy plug in the pendent receptacle will cause the Inspect input to go high.)
- The PLC sounds the alarm three times for 1 second when a start command is given while the Inspect input is low. This alarm indicates that the escalator is about to start moving.
- The PLC sounds the alarm three times for 1/2 second when a start command is given if the controller is in the Not Ready Mode. This alarm indicates that the escalator cannot start because a fault is pending.

3.7.5 Normal Start Mode (Up or Down)

These two modes allow starting the escalator in either direction with all enabled safety devices active. The escalator achieves a holding circuit after the following has been determined.

- escalator is running in the intended start direction
- escalator is running at least 90% of rated speed
- speed of the handrails are within the code allowed deviation from the speed of the step band
- no fault has occurred

When this mode is exited to Run Mode, the alarm is sounded for 500 mS, a holding circuit is achieved, and the start command can be terminated. This mode can be entered from only one mode - Ready Mode. Three modes can be entered following this mode - Run Mode, Stop Mode, and Power Loss Mode.

The following actions are performed by the PLC:

- Energize Relay Interface Board Relay K5 through J14 CS1 (O:0/0) and verify that K5 (I:0/8) has energized.
- Energize Relay Interface Board Relay K6 through J14 CS2 (O:0/1) and verify that K6 (I:0/9) has energized.
- Verify that K3.1 (I:3/2) energized after K5 and K6 are verified as energized.
- Send command to brake controllers one at a time to test the PLC Brake Power Relay (O:0/3) (This is the terminal 63 and 64 test in the brake controller). Wait for result of test from brake controller. If all of the tests pass then the PLC is to energize the PLC brake

power relay (O:0/3).
- Send command to brake controllers to open brakes.
- Energize SS2 (O:0/3), K3.2 (O:0/9) and [K3 or SS1] (O:0/6). Verify K3 (I:3/3) has energized within 500 mS. Ignore SS2 (I:3/4).
- Verify that all brakes are released within 500 mS.
- Energize appropriate direction contactor K1 (O:0/4) or K2 (O:0/5) with the condition that O:0/9 (K3.2) and O:0/6 (K3) are ON. Verify that contactors (I:3/0 or I:3/1) have energized within 500mS.
- Verify the speed of the handrails is within tolerance. (Ignore if disabled.)
- Very that the missing step detector inputs indicate no steps missing. (Ignore if disabled.)
- Verify that the escalator is moving in the selected direction.
- Verify that the speed of the escalator is greater than (>) 90% and less than (<) 115% within 10 seconds.
- Energize alarm relay (O:0/8) for 500 mS when either of the Run Modes can be entered.

The following alarms are associated with the Normal Start Mode (Up or Down).

- The PLC sounds the alarm (O:0/8) once for 1/2 second to indicate that the start switch can be returned to center. If the start switch is released before the alarm sounds then the no holding circuit will be achieved and the escalator will stop.
- The PLC sounds the alarm (O:0/8) twice for 1/2 second when the Inspect input changes from low to high. This alarm indicates that the controller is now in the Normal Ready Mode. (Replacing the dummy plug in the pendent receptacle will cause the Inspect input to go high.)
- The PLC sounds the alarm (O:0/8) three times for 1/2 second when a start command is given if the controller is in the Not Ready Mode or if a fault occurs while starting. This alarm indicates that the escalator cannot start because a fault is pending.

3.7.6 Run Mode (Up or Down)

These two modes allow running the escalator in either the UP or DOWN direction with all safety devices active. The escalator has achieved a holding circuit and is running in the intended start direction, and the speed of the escalator is greater than (>)20% and less than (<) 115% of rated speed, and no fault has occurred. This mode can be entered from only one mode - Run (Normal) Start Mode. Two modes can be entered following this mode - Stop Mode and Power Loss Mode.

The following State Conditions must exist.

- No faults exist.
- Start Switch returns to the center position within 10 seconds after entering the RUN Mode. After 10 seconds the start switch input is ignored.

The following actions are performed by the PLC:

- Check for faults.
- Check Brake Board status every 100 ms.
- Send Brake Burnish command to each Brake Controller, one at a time, until the number of Burnishes equals the number in the Brake Burnish Parameter Setting.
- Transmit Run Mode status to displays and remote monitoring.
- Transmit the following Status of escalator to displays and remote monitoring.
  •Direction
  •Speed

•Speed of handrails

The following State Conditions and actions are required to exit from the Run Mode and to enter the Stop Mode. (Any of the following items will cause an exit to the Stop Mode.)

- Fault occurs.
- Inspect Input changes state.
- Start switch does not return to the center position within 10 seconds.

The following State Conditions and actions are required to exit either of the two Run Modes and to enter the Power Loss Mode

- Power ON relay de- energizes.

3.7.7 Stop Mode

The Stop Mode begins when a software or hardware stop command is given. The Stop Mode ends when the escalator has stopped and when a 2 second stop timer has timed out. This mode can be entered from one of six modes - Two Inspect Start Modes, two Run (Normal) Start Modes, and two Run Modes. Two modes can be entered following this mode - Not Ready Mode and Power Loss Mode.

The following State Conditions must exist.

- fault has occurred
- start command has disappeared while the escalator is moving

The following actions are performed by the PLC:

- Send Stop Command to Brake Controllers.
- De-energize safety relays K5 and K6 by means of CS1 (O:0/0) and CS2 (O:0/1) relay board inputs.
- De-energize SS2 (O:0/3), K1 (O:0/4), K2(O:0/5), [K3, SS1, or K4) (O:0/6), and auto-oiler relay (O:0/7).
- After 1.5 seconds, switches OFF Brake Power Output O:0/2.
- Calculate stop distance in inches and millimeters.
- Transmits Stop Mode to memory, displays, and remote monitoring.
- Transmits faults (if any) to memory, displays, and remote monitoring.
- Transmits stop distance to memory, displays, and remote monitoring.

The following State Conditions are required to exit from the Stop Mode and to enter the Not Ready Mode:

- Encoder frequency must equal zero for 2 seconds.

The following State Conditions and actions are required to exit from the Stop Mode and to enter the Power Loss Mode:

Power ON relay de- energizes.

3.7.8 Power Loss Mode

The Power Loss Mode is entered whenever the Power ON Relay K7 de-energizes. (Input I:3/7 configured as an interrupt). This mode pulls all outputs low and stores necessary data to EEPROM. This mode can follow any other mode whenever the Power ON Relay K7 de-energizes. Only one mode can be entered following this mode - Power Up Mode.

The following State Conditions must exist.

- Power ON Relay K7 de-energizes.
- All other inputs are do not care.

The following Actions occur.

- Send stop command to Brake Controllers.
- De-energize safety relays K5 and K6 by means of the CS1 and CS2 relay board inputs.
- De-energize SS2 (O:0/3), K1 (O:0/4), K2 (O:0/5), [K3, SS1, or K4) (O:0/6), K3.2 (O:0/9) and auto-oiler relay (O:0/7).
- Pull all outputs low except for brake power output (O:0/2).
- Calculate stop distance in inches and millimeters.
- Transmits Power Loss Mode to memory, displays, and remote monitoring.
- Transmits faults (if any) to memory, displays, and remote monitoring.
- Transmits stop distance to memory, displays, and remote monitoring.

The following State Conditions and actions are required to exit the Power Loss Mode and to enter the Power Up Mode:

- PLC CPU boots up and/or Relay K7 has energized.

3.7.9 Construct Mode

This mode disables the start switches and motor contactors while opening the brake. This mode can be entered from following modes - The Not Ready Mode and the Ready Mode. Two modes can be entered following this mode - The Not Ready Mode and the Power Loss Mode.

The following State Conditions must exist:

- All input states indicate either the Not Ready Mode or the Ready Mode.
- Construct Input (I:2/4) is ACTIVE.

The following actions are performed by PLC:

- Turn on Brake Power (O:4/6).
- Send command to Brake Controllers to open Brakes.
- Transmits Construct Mode status to memory, and to the displays and remote monitoring.
- Transmits any brake faults to Temporary Fault Log but remains in the Construct Mode.

For more information, refer to fault code list for faults that can be generated in this mode.

The following State Condition must exist to exit to the Not Ready Mode:

- Construct Input (I:2/4) is INACTIVE.
- Brake Over Current Fault Occurs.

Actions required by PLC to exit the Construct Mode and to enter the Not Ready Mode:

- Transmit Stop Command to each brake card.

The following State Condition must exist to exit to the Power Loss Mode.

- Power Loss Relay Input goes low.

Actions required by PLC to exit the Construct Mode and to enter the Power Loss Mode:

- Transmit Stop Command to each brake card.

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3.8 Description of resets

3.8.1 Power-up reset

The following occurs during a power-up reset:

- ROM and EEPROM check is performed.
- PLC is reset.
- Communications with Remote Monitoring is reset.
- Communications with Device Net Devices and I/O is reset.
- All outputs are pulled low.

3.8.2 Master reset

The master reset is initiated using the Panel View RESET button, and performs the same functions as the Power-up reset.

3.8.3 Manual reset

A manual reset can only be performed if the detected manual reset type fault has been corrected. If a manual reset is attempted on a fault that has not been corrected (such as a fault that is still active) then the alarm will sound three times.

NOTE! Only one fault can be reset at a time.

1. To reset a manual reset type fault using the Panel View, select the Manual Reset function button on the Panel View located on the controller door.
2. Press the CLEAR key to clear the fault.
   – When the fault clears, the next fault requiring a reset, if any, is displayed.
   – If no other faults need reset, the Panel View displays NONE.

3.8.4 Software COP reset

A software COP reset occurs whenever the software COP timer is not serviced. The following actions are performed:

- All outputs are pulled low.
- Power-up reset is performed.

3.9 Description of data logs

3.9.1 Event Log

The Event Log has a capacity of 100 entries. Each entry includes:

- Entry number
- Status Code
- Name
- Date
- Time Stamp
- Event Code
- Stopping Distance when stopping from full rated speed while in the RUN Mode.

Events include:

- Power Up Mode Status - Recorded whenever Power Up Mode is entered.
- Power Loss Mode Status - Recorded whenever Power Loss Mode is entered.
- Inspect Mode Status - Recorded whenever inspect input goes low or high. (Except on power up or down.)
- Run Up Start Mode Status - NOT recorded whenever the escalator is started in the UP direction while the inspect input is high.
- Run Down Start Mode Status - NOT recorded whenever the escalator is started in the DOWN direction while the inspect input is high.
- Run Up Mode Status - Recorded whenever the Run Up Mode is entered.
- Run Down Mode Status - Recorded whenever the Run Down Mode is entered.
- Switch input designated to be recorded in Event Log - Recorded whenever designated switch input indicates an open switch while in the run mode.

3.9.2 Current Fault Log

The Current Fault Log has a capacity of 20 entries. Each entry includes:

- Entry number
- Status Code
- Name
- Date
- Time Stamp
- Event Code
- Stopping Distance

For more information, refer to section titled: Description of Status Code.

Definition of Current Fault: A fault that has occurred between two start attempts while in the Normal Mode.

Current Faults include:

- Power Loss Mode Status - Recorded whenever Power Loss Mode is entered.
- Any fault which prevents Ready Mode from being entered.
- Any fault which causes the Not Ready Mode to be entered.
- Any fault which causes the Stopped Mode to be entered.

Most current fault is displayed first until display button is pressed to view next fault. The display reverts back to the oldest fault and then back to Mode Status five seconds after the display button is pressed.

- To view active faults while in the Not Ready Mode, press the Clear Faults button to clear the Current Fault Log and to retest for active faults.
  - Only active faults will be displayed after the Clear Faults button is pressed.
  - If no active faults are still present, then the Current Fault will be cleared and no entries will be in the log.
- Active faults are faults still present preventing Ready Mode from being entered.
- After all faults have been corrected the Ready Mode is entered. The Current Fault Log will still contain a record of the faults that have occurred unless the Clear Faults button has been pressed.
- Transient faults are those faults that occur when not running or starting. Transient faults appear and disappear from the Current Fault Log and are not recorded in the Permanent Fault Log.
- Non-transient faults are faults that occurred in the Run mode or while a start command exists.

Clearing the Current Fault Log:

- The Current Fault Log is cleared each time the Run Mode is entered or when the Clear Faults button is pressed.
- Use the Panel View Service Log Key Menu, to reset the Current Fault Log.

For more information, refer to Description of Panel View Menus>Service Log screen.

3.9.3 Permanent Fault Log

The Permanent Fault Log has a capacity of 100 entries. Each entry includes:

- Entry number
- Status Code
- Name
- Date
- Time Stamp
- Event Code
- Stopping Distance

Definition of Permanent Fault: Same as a Current Fault except that the record of the fault is not cleared on start.

Permanent Faults include:

- Power Loss Mode Status - Recorded whenever Power Loss Mode is entered.
- Any non-transient faults. (Non-transient faults are faults that occurred in the Run mode or while in a Normal Start Mode.)

Most recent fault is displayed first in the log.

3.9.4 Clearing Data Logs

Use the Panel View Service Log Key Menu, to reset the Permanent Fault Log.

For more information on clearing Data Logs, refer to Description of Panel View Menus>Service Log screen.

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3.10 Description of Event/Fault Codes

Description of Event/Fault Codes			
Event Code Number	**Description of Event**	**Type Reset**	***Times of Generation**
00	NOT USED		
1 thru 64	Safety String Switches	Variable	1 & 2
	For switch code identification, refer to Section 3.13		
! 32	Lower missing step detector	Manual	1 & 2
! 64	Upper missing step detector	Manual	1 & 2
*** 65	Panel View Stop	Non-manual	When Panel View Reset Button is pressed.
66	Controller Over Temperature	Non-manual	1 & 2 (Open is fault)
! 67	Stop Distance Too Short	Non-Manual	1 & 2
! 68	SS2 Not OFF	Non-manual	Disabled
! 69	SS2 Shut Off	Non-manual	Disabled
70	SPARE		
! 71	Left HRSS	Manual	1 & 2 (ANSI 15% deviation. Allow second of deviation then sound alarm for 3 seconds and then shut down if deviation continues for 3 seconds. If deviation is rectified shut alarm off.)
! 72	Right HRSS	Manual	Same as for Left HRSS
! 73	Left HRSS 5%	No shut down	While in run mode. Deviation must exist for 10 seconds.
! 74	Right HRSS 5%	No shut down	Same as for Left HRSS 5%

***Generation Time Notes:**
1 = Whenever fault or event causes the Stop Mode to be entered.
2 = Whenever fault prevents Ready Mode from being entered.
**** = Recorded in Event Log**
***** = Recorded in Event Log and Fault Log.**
****** = Not Recorded in any Log**
! = Ignored in Inspect Mode

Description of Event/Fault Codes			
Event Code Number	**Description of Event**	**Type Reset**	***Times of Generation**
! 75	Under Speed < 20%	Non-manual	1
! 76	Reverse Direction Detected	Manual	1 & 2
! 77	High Speed Counter Card Fault	Non-manual	1 & 2
! 78	Motor Temp #1 Fault	Non-manual	1 & 2 (Open is fault)
! 79	PTC input #1 Fault	Non-manual	1 & 2 (Open is fault)
! 80	Motor Temp #2 Fault	Non-manual	1 & 2 (Open is fault)
! 81	PTC Input #2 Fault.	Non-manual	1 & 2 (Open is fault)
! 82	Key Switch Not Returned To Center.	Non-manual	1 (If center position does not appear within 10 seconds after Run Mode entered.) & 2 & If start command does not appear within 1 second after center position disappears.
83	Key Switch Malfunction	Non-manual	More than one start reference exists at the same time. [Center + (Start up or down)] or (Start up & Start down.)
84	K1 Not Released	Non-manual	2
! 85	K1 De-energized	Non-manual	1 & 2
86	K2 Not Released	Non-manual	2
! 87	K2 De-energized	Non-manual	1 & 2
88	K3 Not Released	Non-manual	2
89	K3 De-energized	Non-manual	1 & 2
90	K3.1 Not Released	Non-manual	2 K3.1 should be energized if both K5 & K6 are energized.
91	K3.1 De-energized	Non-manual	1 & 2
92	Not Used		
93	K5 Not Released	Non-manual	2
94	K5 De-energized	Non-manual	1 & 2
95	K6 Not Released	Non-manual	2

***Generation Time Notes:**
1 = Whenever fault or event causes the Stop Mode to be entered.
2 = Whenever fault prevents Ready Mode from being entered.
**** = Recorded in Event Log**
***** = Recorded in Event Log and Fault Log.**
****** = Not Recorded in any Log**
! = Ignored in Inspect Mode

Description of Event/Fault Codes			
Event Code Number	**Description of Event**	**Type Reset**	***Times of Generation**
96	K6 De-energized	Non-manual	1 & 2
97	K14 Relay Fault (Center Start ON and K14 OFF)	Non-manual	1 & 2
98	24CTL Missing	Non-manual	1 & 2
99	SAFE_IN fault	Non-manual	1 & 2
101	OLR1 Open	Non-manual	1 & 2
102	OLR2 Open	Non-manual	1 & 2
103	OLR3 Open	Non-manual	1 & 2
104	OLR4 Open	Non-manual	1 & 2
105	AUX #1 Open (Softstart)	Non-manual	1 & 2
106	AUX #2 Open (AC Drive)	Non-manual	1 & 2
! 107	Over Speed > 125%	Manual	1 & 2
! 108	Stop Distance Greater Than 32	Manual	1 & 2
! 110	Brake #1 Wear	Manual	1 & 2
! 111	Brake #2 Wear	Manual	1 & 2
! 112	Brake #3 Wear	Manual	1 & 2
! 113	Brake #4 Wear	Manual	1 & 2
! 114	Brake #1 Under Current	Non-manual	1 & 2
! 115	Brake #2 Under Current	Non-manual	1 & 2
! 116	Brake #3 Under Current	Non-manual	1 & 2
! 117	Brake #4 Under Current	Non-manual	1 & 2
! 118	Brake #1 Over Current	Non-manual	1 & 2
! 119	Brake #2 Over Current	Non-manual	1 & 2
! 120	Brake #3 Over Current	Non-manual	1 & 2
! 121	Brake #4 Over Current	Non-manual	1 & 2

***Generation Time Notes:**
1 = Whenever fault or event causes the Stop Mode to be entered.
2 = Whenever fault prevents Ready Mode from being entered.
**** = Recorded in Event Log**
***** = Recorded in Event Log and Fault Log.**
****** = Not Recorded in any Log**
! = Ignored in Inspect Mode

Description of Event/Fault Codes			
Event Code Number	**Description of Event**	**Type Reset**	***Times of Generation**
! 122	Brake #1 Hardware Fault	Non-manual	1 & 2
! 123	Brake #2 Hardware Fault	Non-manual	1 & 2
! 124	Brake #3 Hardware Fault	Non-manual	1 & 2
! 125	Brake #4 Hardware Fault	Non-manual	1 & 2
! 126	Brake #1 Backup Timer Fault	Non-manual	1 & 2
! 127	Brake #2 Backup Timer Fault	Non-manual	1 & 2
! 128	Brake #3 Backup Timer Fault	Non-manual	1 & 2
! 129	Brake #4 Backup Timer Fault	Non-manual	1 & 2
***! 130	Low Oil - Auto-Oiler	Non-Manual	Reported in EVENT and FAULT Logs. Does not prevent escalator from starting or running. When Oiler Oil Level Input is low the PLC is inhibited from operating Auto-Oiler pump.
! 131	Low Oil - Drive Gear	Non-Manual	Same as for Event 130.
! 132	Fire & Smoke Alarm	Non-Manual	1 & 2
** 133	Power Up Mode	Non-manual	
*** 134	Power Loss Mode	Non-manual	
** 135	Construct Mode	Non-manual	
136	SPARE		
137	SPARE		
!138	Machine Room Door Open	Non-manual	Whenever I:3/10 Low
139	SPARE		
140	SPARE		
** 141	Run Up Mode	Non-manual	
** 142	Run Down Mode		

***Generation Time Notes:**
1 = Whenever fault or event causes the Stop Mode to be entered.
2 = Whenever fault prevents Ready Mode from being entered.
**** = Recorded in Event Log**
***** = Recorded in Event Log and Fault Log.**
****** = Not Recorded in any Log**
! = Ignored in Inspect Mode

Description of Event/Fault Codes			
Event Code Number	**Description of Event**	**Type Reset**	***Times of Generation**
143	SPARE		
144	SPARE		
145	SPARE		
146	SPARE		
** 147	Inspect Input Went Low	Non-Manual	Inspect Mode Entered
** 148	Inspect Input Went High	Non-Manual	Inspect Mode Exited
! 149	Device Net Node #1 Fault	Non-manual	1 & 2
! 150	Device Net Node #2 Fault	Non-manual	1 & 2
! 151	Device Net Node #3 Fault	Non-manual	1 & 2
! 152	Device Net Node #4 Fault	Non-manual	1 & 2
! 153	Device Net Node #5 Fault	Non-manual	1 & 2
! 154	Device Net Node #6 Fault	Non-manual	1 & 2
! 155	Device Net Node #7 Fault	Non-Manual	1 & 2
! 156	SPARE		
! 157	115% < Speed < 125%	Manual	1
! 158	Failed to get up to speed in 20 seconds	Non-Manual	1
159	CS1FB Not Released	Non-Manual	1
160	CS1FB Not Released	Non-Manual	1
161	CS1FB De-energized	Non-Manual	1
162	CS2FB De-energized	Non-Manual	1
163	Spare		
164	Spare		

***Generation Time Notes:**
1 = Whenever fault or event causes the Stop Mode to be entered.
2 = Whenever fault prevents Ready Mode from being entered.
**** = Recorded in Event Log**
***** = Recorded in Event Log and Fault Log.**
****** = Not Recorded in any Log**
! = Ignored in Inspect Mode

Description of Event/Fault Codes			
Event Code Number	**Description of Event**	**Type Reset**	***Times of Generation**
** 165	Power For Heaters OFF	No shut down just indication.	Whenever I:3/11 Low
! 166	Motor Vibration Monitor	No shut down just indication.	Whenever IN13 on DeviceNet Node #2 Delayed detection on power up to prevent erroneous alarms
!167	Upper Safety Board Test Failed	Non-manual	1 & 2
!168	Lower Safety Board Test Failed	Non-manual	1 & 2
! 171	Brake Card #1 Loss Communication (DeviceNet Node #10)	Non-manual	1 & 2 Ignored in Inspect mode but still recorded in Current Fault Log.
! 172	Brake Card #2 Loss Communication (DeviceNet Node #11)	Non-manual	1 & 2 Ignored in Inspect mode but still recorded in Current Fault Log.
! 173	Brake Card #3 Loss Communication (DeviceNet Node #12)	Non-manual	1 & 2 Ignored in Inspect mode but still recorded in Current Fault Log.
! 174	Brake Card #4 Loss Communication (DeviceNet Node #13)	Non-manual	1 & 2 Ignored in Inspect mode but still recorded in Current Fault Log.

***Generation Time Notes:**
1 = Whenever fault or event causes the Stop Mode to be entered.
2 = Whenever fault prevents Ready Mode from being entered.
*** = Recorded in Event Log**
***** = Recorded in Event Log and Fault Log.**
****** = Not Recorded in any Log**
! = Ignored in Inspect Mode

8-000685-20265053 (2011-02)

3.11 Description of parameter list

Parameter list - Equipment Information screen	
Parameter	**Setting**
Equipment Number	(8 digits) The most significant digit 2 is hard coded on Display.
Rated Speed	(Ft/min and M/s)
No Load Motor RPM	(NLR)
Full Load Motor RPM	(FLR)
Encoder Frequency	(Hz) (At rated speed.)
Number of Brakes	(2 digit)
Number of Motors	(1 digit)
Handrail Speed Sensors	(Enable or Disable) (Re-enable after one hour and stop and re-start.)
Missing Step Detectors	(Enable or Disable) (Re-enable after one hour and stop and re-start.)
PTC input #1 (Enable or Disable)	Enable = Check closed contact for PTC input #1
	Disable = Despite state of contact for PTC input #1
PTC input #2 (Enable or Disable)	Enable = Check closed contact for PTC input #2
	Disable = Despite state of contact for PTC input #2
Oiler Pulse Duration (Time ON parameter)	Settings: 0, 1, and 2 seconds
Oiler Pulse Delay (Time between pulses)	Settings: 4 seconds to 30 minutes
Remote Monitoring Time Set	(Enable or Disable)

8-000686 (2010-03)

3.12 Description of switch name library

Description of switch name library			
Switch name		**Description**	
1	Lower Left Chain Tension Switch	33	Upper Step Band Lock Switch
2	Lower Left Horizontal Comb Impact Switches	34	Upper Left Horizontal Comb Impact Switches
3	Lower Left Vertical Comb Impact Switches	35	Upper Left Vertical Comb Impact Switches
4	Lower Left Level Step Switch	36	Upper Left Level Step Switch
5	Lower Left Handrail Inlet Switch	37	Upper Left Handrail Inlet Switch
6	Lower Left Upthrust Switches	38	Upper Left Broken Handrail Switch
7	Lower Left Skirt Switches	39	Upper Left Skirt Switches
8	Lower Middle Left Skirt Switches	40	Upper Middle Left Skirt Switches
9	Lower Pit Stop Switch	41	Motor Area Stop Switch
10	Lower Left Handrail Throw Off Switch	42	Upper E-Stop Switch
11	Lower Left Broken Handrail Switch	43	Upper Pit Stop Switch
12	Lower Access Cover Switches	44	Upper Access Cover Switches
13	Lower Right Chain Tension Switch	45	Upper Right Horizontal Comb Impact Switches
14	Lower Right Horizontal Comb Impact Switches	46	Upper Right Vertical Comb Impact Switches
15	Lower Right Vertical Comb Impact Switches	47	Upper Right Level Step Switch
16	Lower Right Level Step Switch	48	Upper Right Handrail Inlet Switch
17	Lower Right Handrail Inlet Switch	49	Upper Right Broken Handrail Switch
18	Lower Right Handrail Inlet Switch	50	Upper Right Skirt Switches
19	Lower Right Skirt Switches	51	Upper Middle Right Skirt Switches
20	Lower Middle Right Skirt Switches	52	Spare #52
21	Lower E-Stop Switch	53	Upper Left Worn Step Wheel
22	Lower Right Handrail Throw Off Switch	54	Upper Left Worn Chain Wheel
23	Lower Right Worn Step Wheel	55	Braking Resistor
24	Lower Right Worn Chain Wheel	56	Spare #56
32	Lower Missing Step Detector	64	Upper Missing Step Detector
25	Tandem Interlock Switch		
26	Smoke Alarm		
28	Spare		
29	Not Used		
30	Water Level Switch		
31	Motor Vibration Switch		

8-000687 (2010-03)

3.13 Description of default configurations

To perform a default configuration go to the Option Adjust Key menu and select the Default Configuration button.

3.13.1 Lower safety chain default configuration

Lower safety chain default configuration			
Switch Code# / Remote Input #	**Identification**	**Type of Device**	**Type of Reset**
1/J1-1	Lower Left Chain Tension Switch	Limit Switch	Manual
2/J1-2	Lower Left Horizontal Comb Impact Switches	Limit Switch	Manual
3/J1-3	Lower Left Vertical Comb Impact Switches	Limit Switch	Manual
4/J1-4	Lower Left Level Step Switch	Limit Switch	Manual
5/J2-1	Lower Left Handrail Inlet Switch	Limit Switch	Manual
6/J2-2	Lower Left Upthrust Switches	Limit Switch	Non-Manual
7/J2-3	Lower Left Skirt Switches	Limit Switch	Non-Manual
8/J2-4	Lower Middle Left Skirt Switches	Limit Switch	Non-Manual
9/J3-1	* Lower Pit Stop Switch	Limit Switch	Non-Manual
10/J3-2	Lower Left Handrail Throw Off Switch	Limit Switch	Manual
11/J3-3	Lower Left Broken Handrail Switch	Limit Switch	Manual
12/J3-4	Lower Access Cover Switches	Limit Switch	Non-Manual
13/J4-1	Lower Right Chain Tension Switch	Limit Switch	Manual
14/J4-2	Lower Right Horizontal Comb Impact Switches	Limit Switch	Manual
15/J4-3	Lower Right Vertical Comb Impact Switches	Limit Switch	Manual
16/J4-4	Lower Right Level Step Switch	Limit Switch	Manual
17/J5-1	Lower Right Handrail Inlet Switch	Limit Switch	Manual
18/J5-2	Lower Right Upthrust Switches	Limit Switch	Non-Manual
19/J5-3	Lower Right Skirt Switches	Limit Switch	Non-Manual
20/J5-4	Lower Middle Right Skirt Switches	Limit Switch	Non-Manual
21/J6-1	* Lower E-Stop Switch	Limit Switch	Non-Manual
22/J6-2	Lower Right Handrail Throw Off Switch	Limit Switch	Manual
23/J6-3	Lower Right Worn Step Wheel Detector	8 mm Inductive Proximity Switch	Manual
24/J6-4	Lower Right Worn Chain Wheel Detector	8 mm Inductive Proximity Switch	Manual
32/J8-2	Lower Missing Step Detector	30 mm Inductive Proximity Switch	Manual
To perform a default configuration go to the Option Adjust key menu and select the Default Configuration button.			
*** = Event is Recorded in Fault Log and Event Log.**			

3.13.2 Upper safety chain default configuration

Upper safety chain default configuration			
Switch Code# / Remote Input #	**Identification**	**Type of Device**	**Type of Reset**
33/J1-1	Upper Step Band Lock	Limit Switch	Non-Manual
34/J1-2	Upper Left Horizontal Comb Impact Switches	Limit Switch	Manual
35/J1-3	Upper Left Vertical Comb Impact Switches	Limit Switch	Manual
36/J1-4	Upper Left Level Step Switch	Limit Switch	Manual
37/J2-1	Upper Left Handrail Inlet Switch	Limit Switch	Manual
38/J2-2	Upper Left Broken Handrail Switch	Limit Switch	Manual
39/J2-3	Upper Left Skirt Switches	Limit Switch	Non-Manual
40/J2-4	Upper Middle Left Skirt Switches	Limit Switch	Non-Manual
41/J3-1	* Motor Area Stop Switch	Limit Switch	Non-Manual
42/J3-2	* Upper E-Stop Switch	Limit Switch	Non-Manual
43/J3-3	* Upper Pit Stop Switch	Limit Switch	Non-Manual
44/J3-4	Upper Access Cover Switches	Limit Switch	Non-Manual
45/J4-1	Upper Right Horizontal Comb Impact Switches	Limit Switch	Manual
46/J4-2	Upper Right Vertical Comb Impact Switches	Limit Switch	Manual
47/J4-3	Upper Right Level Step Switch	Limit Switch	Manual
48/J4-4	Upper Right Handrail Inlet Switch	Limit Switch	Manual
49/J5-1	Upper Right Broken Handrail Switch	Limit Switch	Manual
50/J5-2	Upper Right Skirt Switches	Limit Switch	Non-Manual
51/J5-3	Upper Middle Right Skirt Switches	Limit Switch	Non-Manual
52/J5-4	#5 2 Spare	Limit Switch	Non-Manual
53/J6-1	Upper Left Worn Step Wheel	8mm Inductive Proximity Switch	Manual
54/J6-2	Upper Left Worn Chain Wheel	8mm Inductive Proximity Switch	Manual
55/J6-3	Braking Resistor	Thermal Switch	Non-Manual
56/J6-4	#5 6 Spare	NA	Non-Manual
64/J8-2	Upper Missing Step Detector	30mm Inductive Proximity Switch	Manual
To perform the above default configuration go to the Option Adjust Key menu and select the Default Configuration button.			
*** Event is Recorded in Fault Log and Event Log.**			

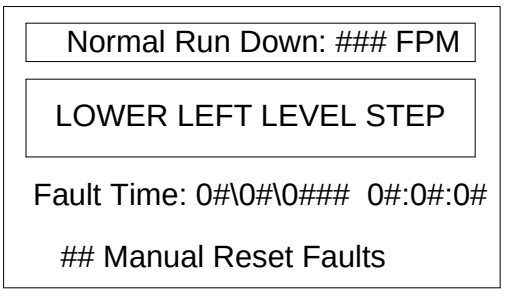
3.13.3 Parameter list default configuration

Parameter default settings	
Parameter	**Setting**
Equipment Number (8 digits)	2|0000000
Rated Speed (Ft/min and m/s)	100 ft/min (0.5 m/s)
No Load Motor RPM (NLR)	1800
Full Load Motor RPM (FLR)	1770
Encoder Frequency (Hz)	80x1800/60=2400 hz
Number of Brakes (2 digit)	2
Number of Motors (2 digit)	2
Enable Handrail Speed Sensors (Only Customer Level 3 or KONE Factory Level 4 Panel View Screen can Modify.)	Enable
Enable Missing Step Detectors (Only Customer Level 3 or KONE Factory Level 4 Panel View Screen can Modify.)	Enable
PTC input #1	Disable
PTC input #2	Disable
Oiler Pulse Duration	1 Second
Oiler Pulse Delay	600 Seconds
Brake Burnish	Enable
To perform the above default configuration go to the Option Adjust Key menu and select the Default Configuration button.	

8-000688 (2010-03)

3.14 Description of truss annunciator display

The truss annunciator display is located either in the skirt inner panel or start switch area in the upper newel. The display is an AB PV300 Micro Screen.



General layout of screen

If a fault occurs, the truss display displays the current fault.

Line 1 of display (top line): Displays one of the following modes.

- Power Up
- Not Ready
- Construct
- Normal Ready
- Inspection Ready
- Inspect Start Up
- Inspect Start Down
- Normal Start Up
- Normal Start Down
- Normal Run Up
- Normal Run Down
- Stopping
- Power Loss

Display speed of escalator follows the mode text.

Line 2 of display: Displays the most recent fault in the Current Fault Log.

Line 3 of display: Displays date and time of fault occurrence.

Line 4 of display: Displays number of manual rest type faults pending.

8-000675 (2009-08)

3.15 Description of panel view diagnostic levels

3.15.1 Customer Level 1

No Password is required for Customer Level 1. The following diagnostic functions can be performed using Customer Level 1.

- Perform master resets
- Perform manual resets
- View logs
- View run time
- View time clock
- View switch table configuration
- View parameters
- View current escalator mode
- View encoder frequency and escalator speed
- View left handrail frequency and speed of left handrail
- View right handrail frequency and speed of right handrail

3.15.2 Customer Level 2

A numeric password code is required for Customer Level 2 (number between 0 and 32000 - Preset to 2222 - does not change on Default). Customer Level 2 performs the following:

- Performs same functions as Level 1 access
- Clear logs
- Reset run time
- Modify time clock
- Can change Level 2 password
- Can Perform a Default Configuration

3.15.3 Customer Level 3 (High Security)

A numeric password code is required for Customer Level 3 (number between 0 and 32000 - Preset to 3333 - does not change on default). Customer Level 3 performs the following:

- Performs same functions as Level 2 access
- Modify switch table configurations
- Modify parameters
- Enable and disable the Missing Step Detectors
- Enable and disable the Handrail Speed Sensors
- Can change Customer Level 2 and 3 passwords

3.15.4 KONE Factory Level 4 and Engineer Level

A factory numeric password code is required for KONE Factory Level 4 (number between 0 and 32000 - does not change on default). Contact Escalator Engineering for initial passwords. KONE Factory Level 4 performs the following:

- Performs same functions as Level 3 access
- Can change Level 4 password
- Cannot change Engineer Password

7-002094 (2010-03)

3.16 Description of panel view screen

The panel view contains the following screens.

- Main Menu Screen
- Status Screen
- Service Log Screen
- Manual Reset Fault Screen
- Log-in Screen
- Option Adjust Key Menu
- Timer Adjust Screen
- Input Device Status Screen
- Soft Start Data Screen
- F8 Master Reset Screen

8-000689 (2008-01)

3.17 Description of Main Menu screen

The Main Menu Screen displays the following available Menus.

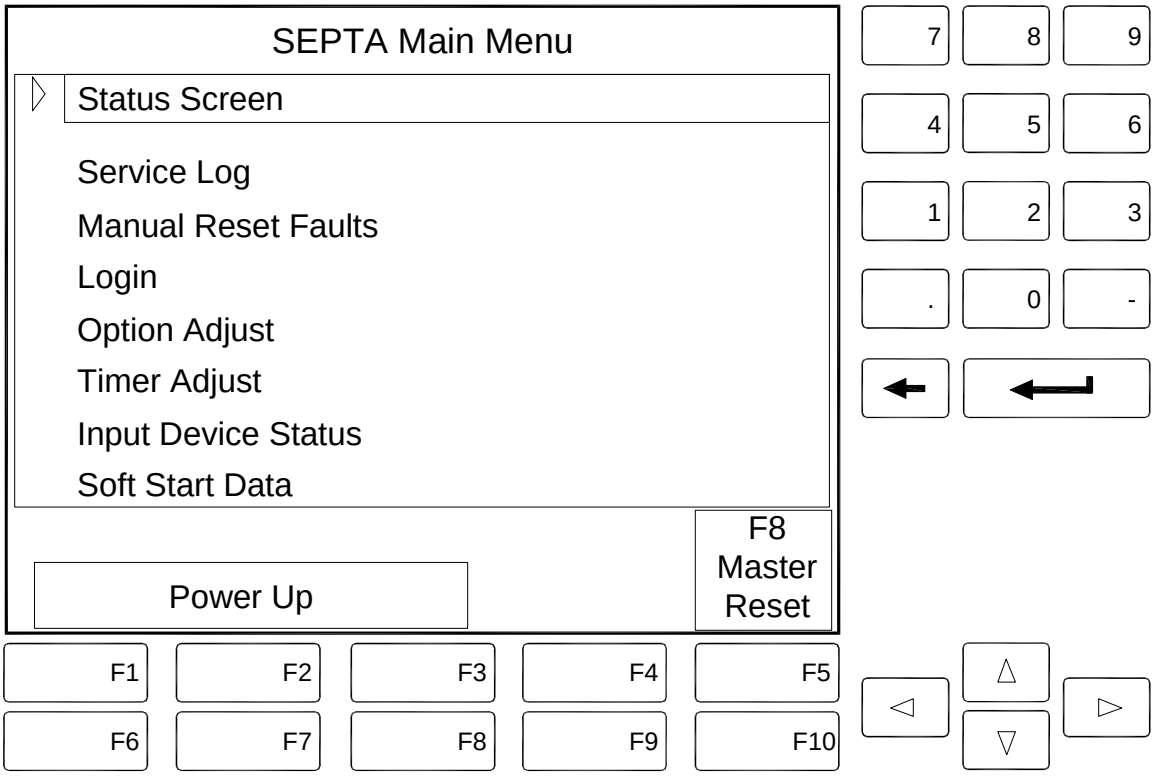
- Status Screen
- Service Log
- Manual Reset
- Login
- Option Adjust
- Timer Adjust
- Input Device Status
- Soft Start Data
  - Use Up and Down Arrow keys to move cursor to highlight desired Menu.
  - Use the large Enter Arrow Key to go to selected highlighted Menu.

The Main Menu Screen also displays the current Escalator Mode.

If F8 (Master Reset) is pressed at the Main Menu Screen the following occurs.

- Performs a CPU reset if escalator is not running.
- Stops the escalator if escalator is running. A Confirmation Screen appears before the escalator is stopped.

8-000690 (2008-01)



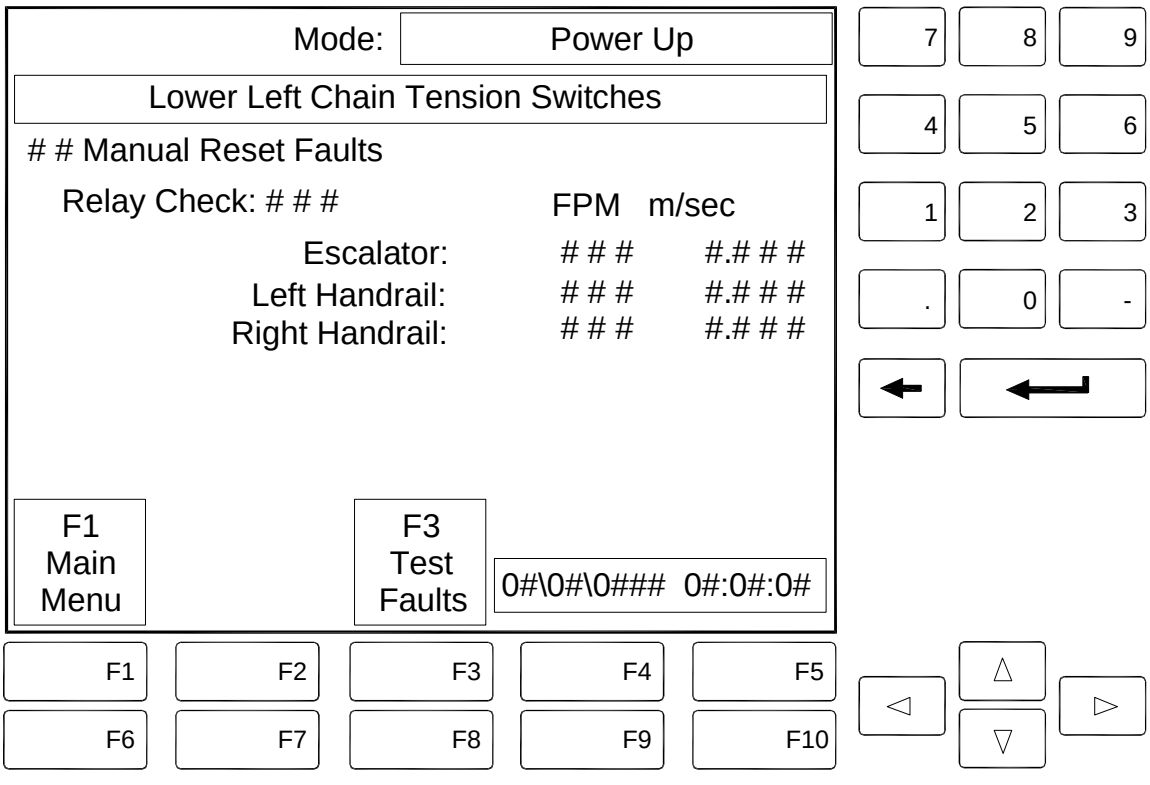
8A-000116(2005-07)

3.18 Description of Status Screen

The Status Screen displays the following.

- Escalator Mode
- Most recent fault in the Current Fault Log
- Number of pending Manual Reset faults
- Status of DeviceNet Input Board Relay Check
- Current Escalator Speed
- Current Left Handrail Speed
- Current Right Handrail Speed
- Date
- Time
  - F1 =Return to Main Menu Screen
  - F3 =Test Faults. CPU will attempt to clear the Current Fault Log. Only active faults will remain in log.

8-000691 (2008-01)



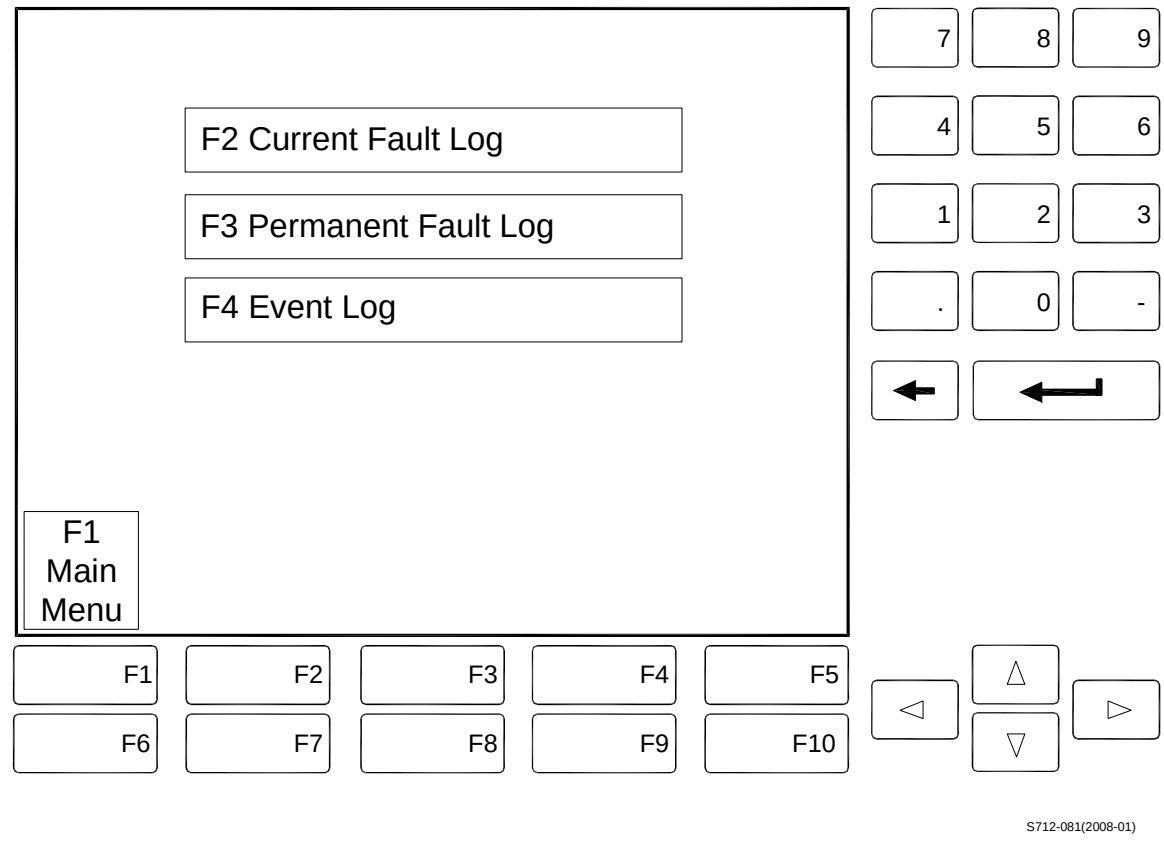
8A-000117(2008-01)

3.19 Description of Service Log Screen

The Service Log Screen displays the following.

- F2 Current Fault Log
- F3 Permanent Fault Log
- F4 Event Log

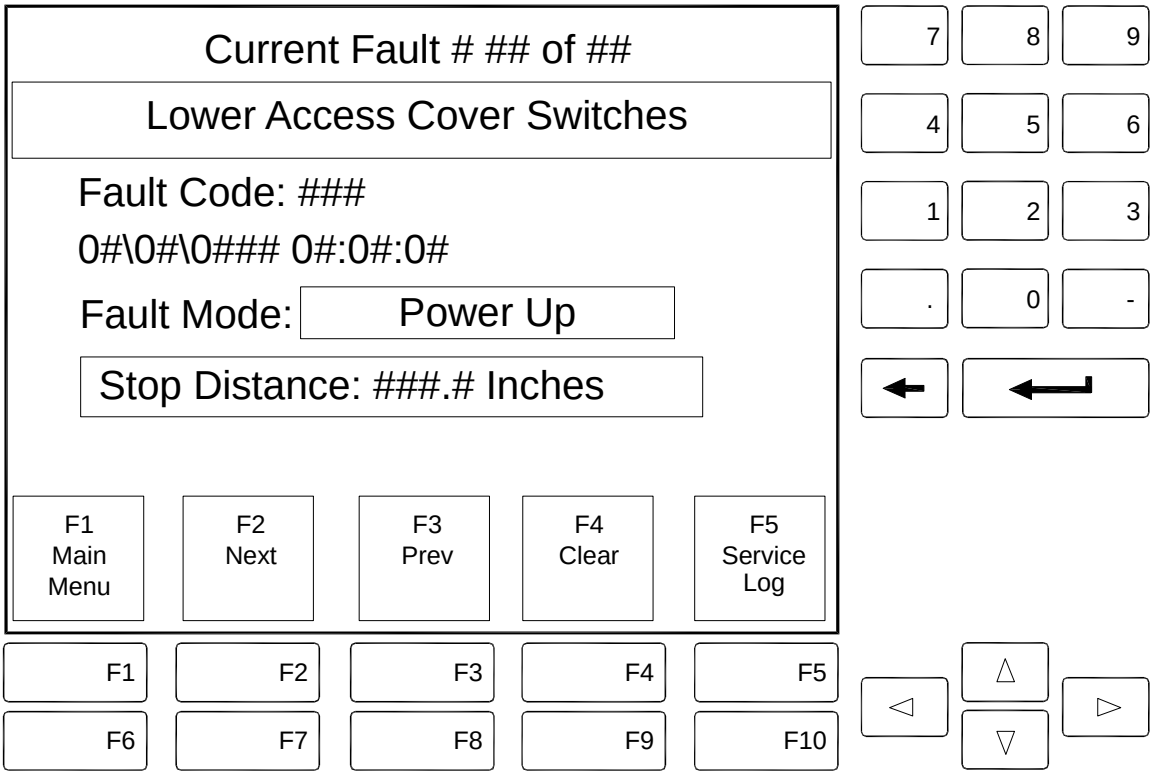
F1 = Return to Main Menu Screen



3.19.1 F2 Current Fault Log

The Current Fault Log displays the following.

- Fault Number of total number of faults in Current Fault Log
- Name of most recent fault in log
- Recent fault information includes; Fault Code Number, Date and Time of Occurrence, Fault Mode, and Stop Distance. (Stop Distance only provided when exiting Normal Run Mode.)
  - F1 = Main Menu (Return to Main Menu Screen)
  - F2 = Next (Displays the next oldest entry in log. Bottom entry is oldest, and scrolling is Round Robin.)
  - F3 = PREV (Displays next newest entry in log. Top entry is newest, and scrolling is Round Robin.)
  - F4 = Clear (Clears Log)
  - F5 = Service Log (Return to Service Log Menu Screen)

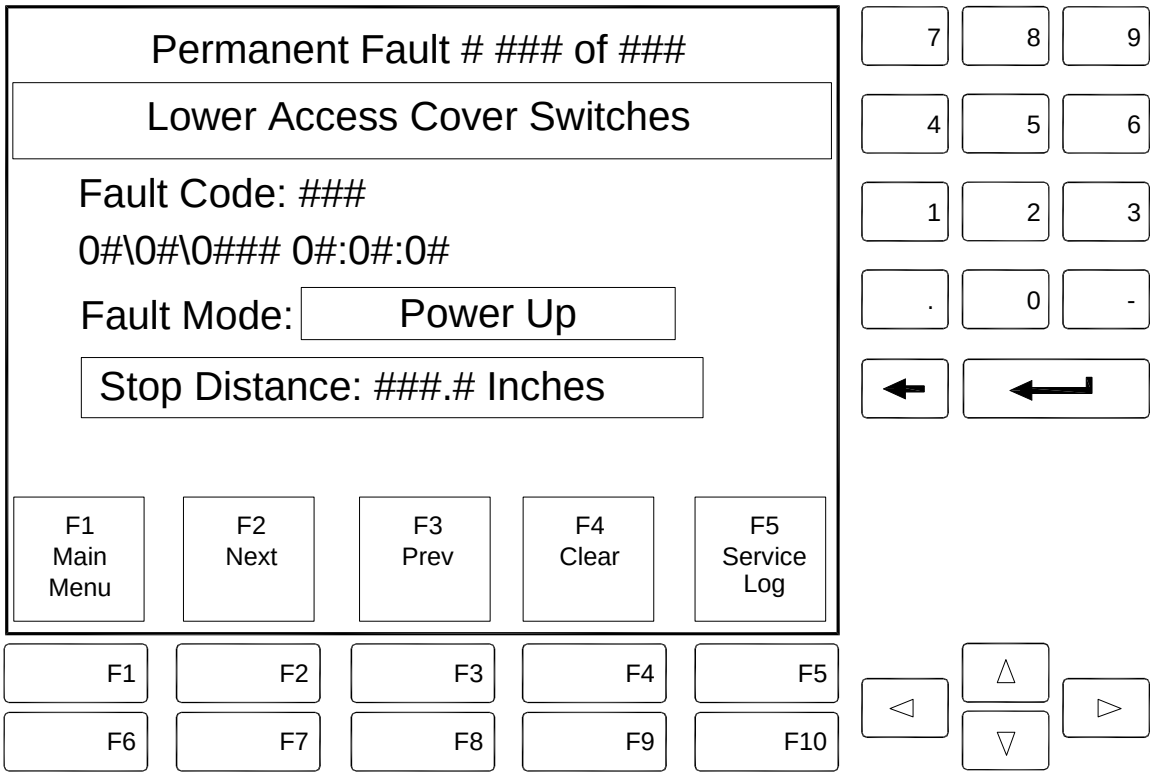


8A-000992(2009-11)

3.19.2 F3 Permanent Fault Log

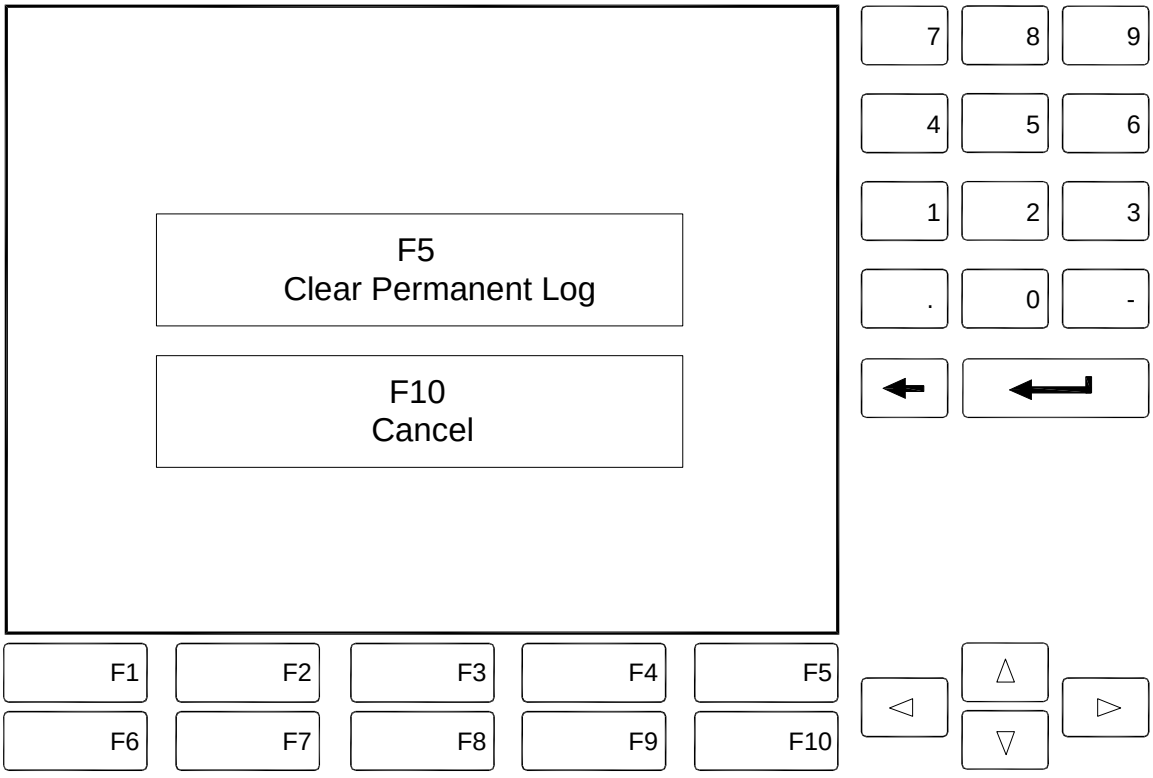
The Permanent Fault Log displays the following.

- Fault Number of total number of faults in Permanent Fault Log
- Name of most recent fault in log
- Recent fault information includes; Fault Code Number, Date and Time of Occurrence, Fault Mode, and Stop Distance. (Stop Distance only provided when exiting Normal Run Mode.)
  - F1 = Main Menu (Return to Main Menu Screen)
  - F2 = Next (Displays the next oldest entry in log. Bottom entry is oldest, and scrolling is Round Robin.)
  - F3 = PREV (Displays next newest entry in log. Top entry is newest, and scrolling is Round Robin.)
  - F4 = Clear (Clears Log) A verification screen will appear to confirm the clearing action.
  - F5 = Service Log (Return to Service Log Menu Screen)



F6 Clear Permanent Fault Log

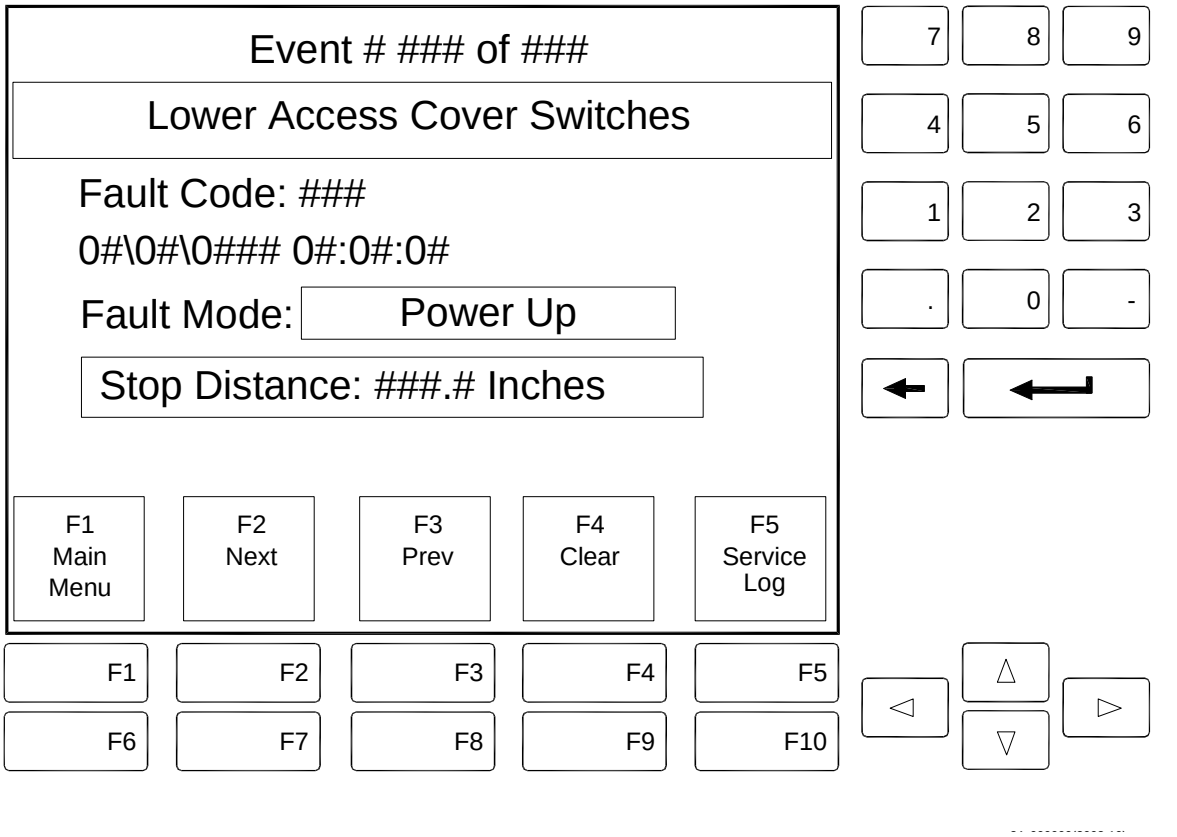
- F5 = Clear Log
- F10 = Cancel clearing action and return to previous screen.



8A-000607(2007-04)

3.19.3 F4 Event Fault Log

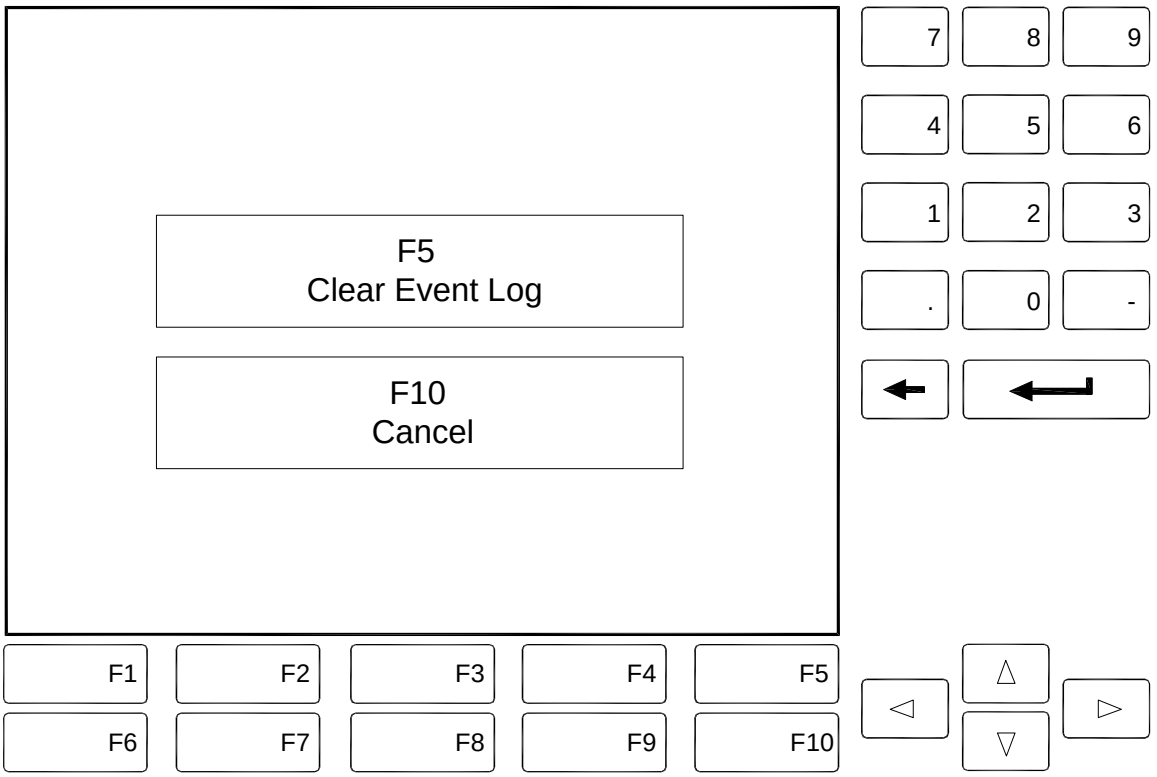
- The Event Log displays the following.
- Event Number of total number of events in Permanent Fault Log
- Name of most recent event in log
- Recent event information includes; Fault Code number, Date and Time of Occurrence, Fault Mode, and Stop Distance. (Stop Distance only provided when exiting Normal Run Mode.)
  - F1 = Main Menu (Return to Main Menu Screen)
  - F2 = Next (Displays the next oldest entry in log. Bottom entry is oldest, and scrolling is Round Robin.)
  - F3 = PREV (Displays next newest entry in log. Top entry is newest, and scrolling is Round Robin.)
  - F4 = Clear (Clears Log) A verification screen will appear to confirm the clearing action.
  - F5 = Service Log (Return to Service Log Menu Screen)



F6 Clear Event Fault Log screen

- F5 = Clear Log
- F10 = Cancel clearing action and return to previous screen.

8-000692 (2008-01)



8A-000635(2008-01)

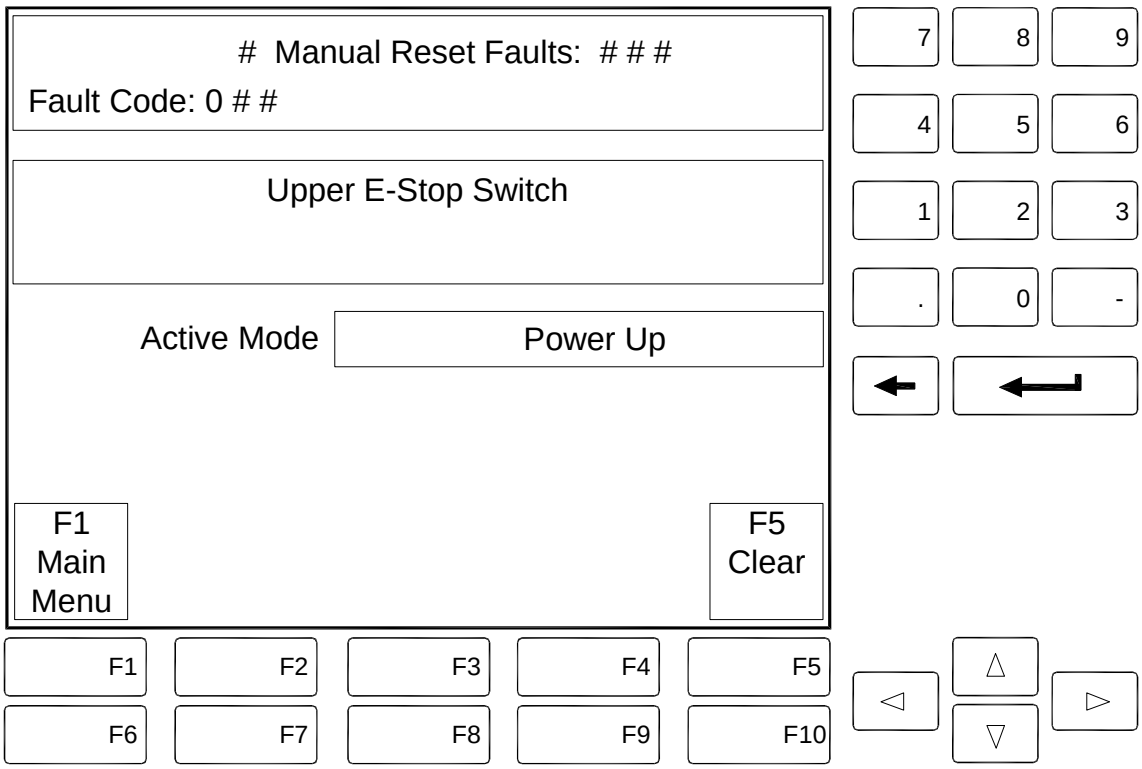
3.20 Description of Manual Reset Fault Screen

The Manual Reset Fault Screen displays the following.

- Manual Resets Faults Pending
- Most Current Manual Reset Fault Pending
- Mode in which Fault occurred

– F1 = Main Menu (Return to the Main Menu Screen)
– F5 = Clear (Reset and Clear Manual Reset Fault Displayed)
  – If fault is still active when F5 is pressed, the alarm buzzer will sound three times and the fault will not be cleared.
  – If fault is no longer active when F5 is pressed, the fault will be cleared and the next (if any) pending manual reset fault will be displayed.

8-000693 (2008-01)

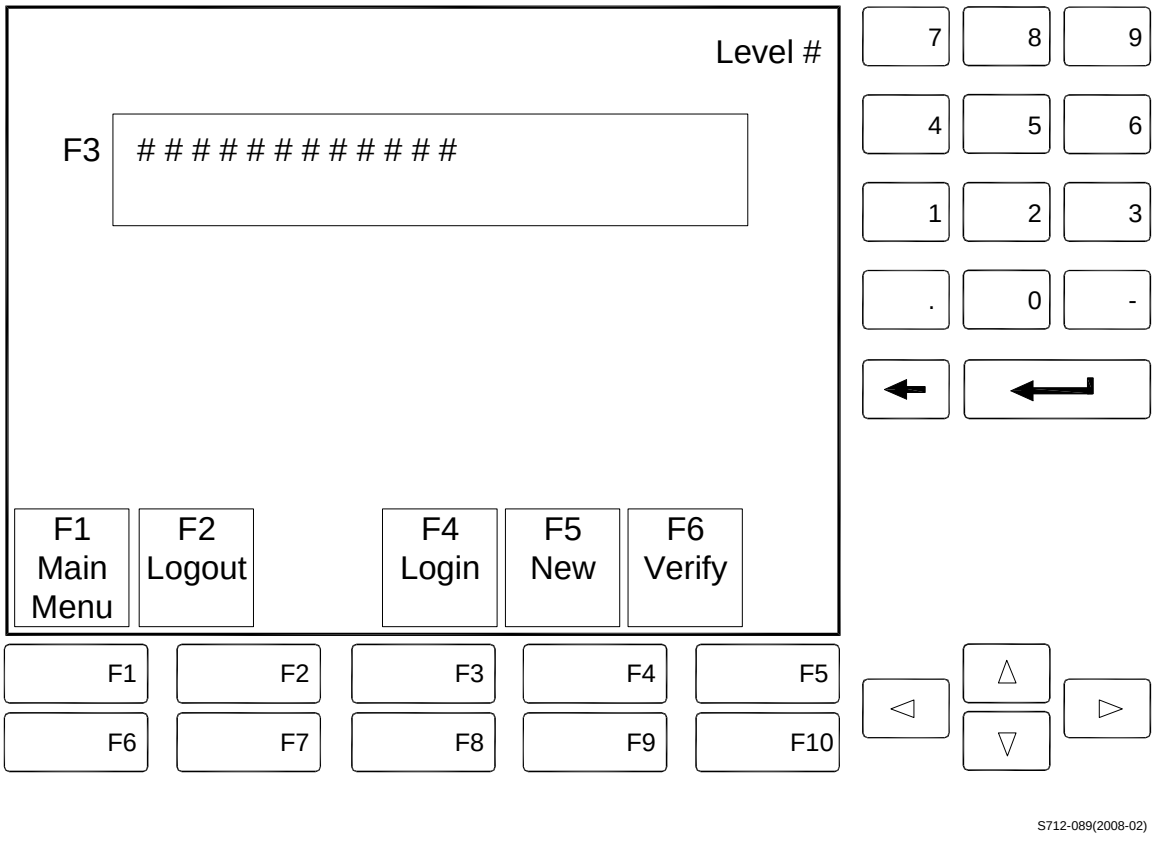


3.21 Description of Login Screen

The Log-in Screen displays the Current Access Level.

- F1= Main Menu (Return to the Main Menu Screen)
- F2 = LOGOUT (Logout of Current Access Level and return to User Level 1 Access.)
- F3 = Display Security Level to log into.
- F4 = LOGIN (Login to Access Level other than Level 1)
- F5 = NEW (New Password for specified level)
- F6 = Verify (Verify New Password)

8-000694 (2008-01)

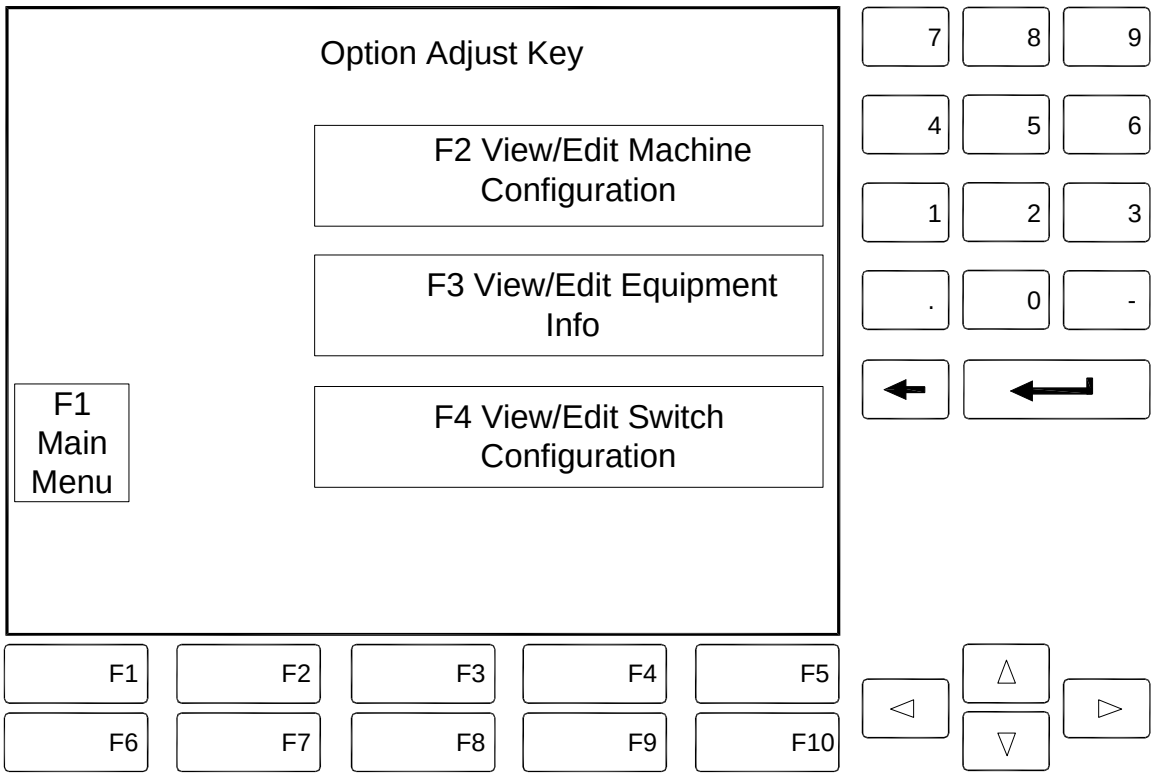


S712-089(2008-02)

3.22 Description of Option Adjust Key Menu Screen

The Option Adjust Key Menu displays the following menu options.

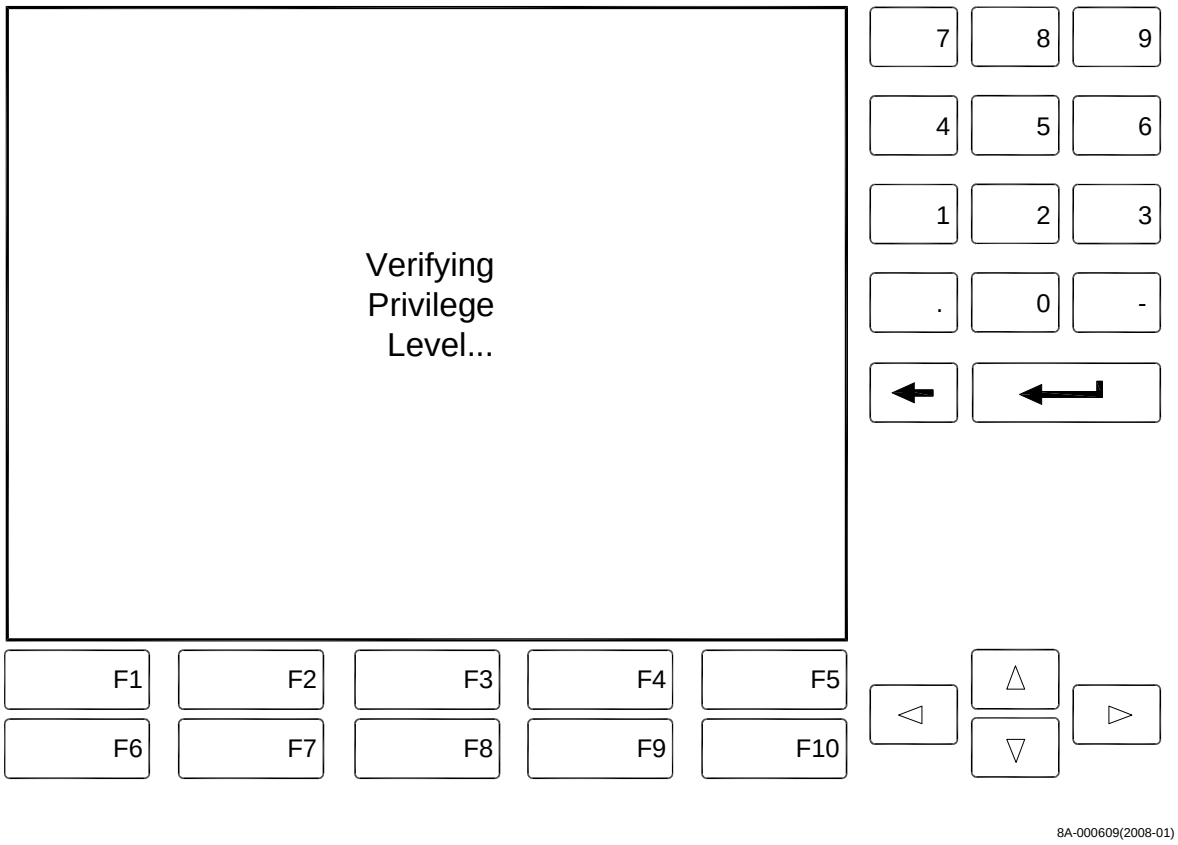
- F2 View/Edit Machine Configuration (from this screen the following parameters can be edited: Handrail Speed Sensor, Missing Step Detectors, PTC Inputs, Oiler Pulse Duration, Oiler Pulse Delay, and Brake Burnish.
- F3 View/Edit Equipment Info
- F4 View/Edit Switch Configuration
- F1 = Main Menu (Return to Main Menu Screen)



S712-090(2008-01)

3.22.1 Password prompt

NOTE! Enter Password when prompted. (Some parameters require security clearance to change.)

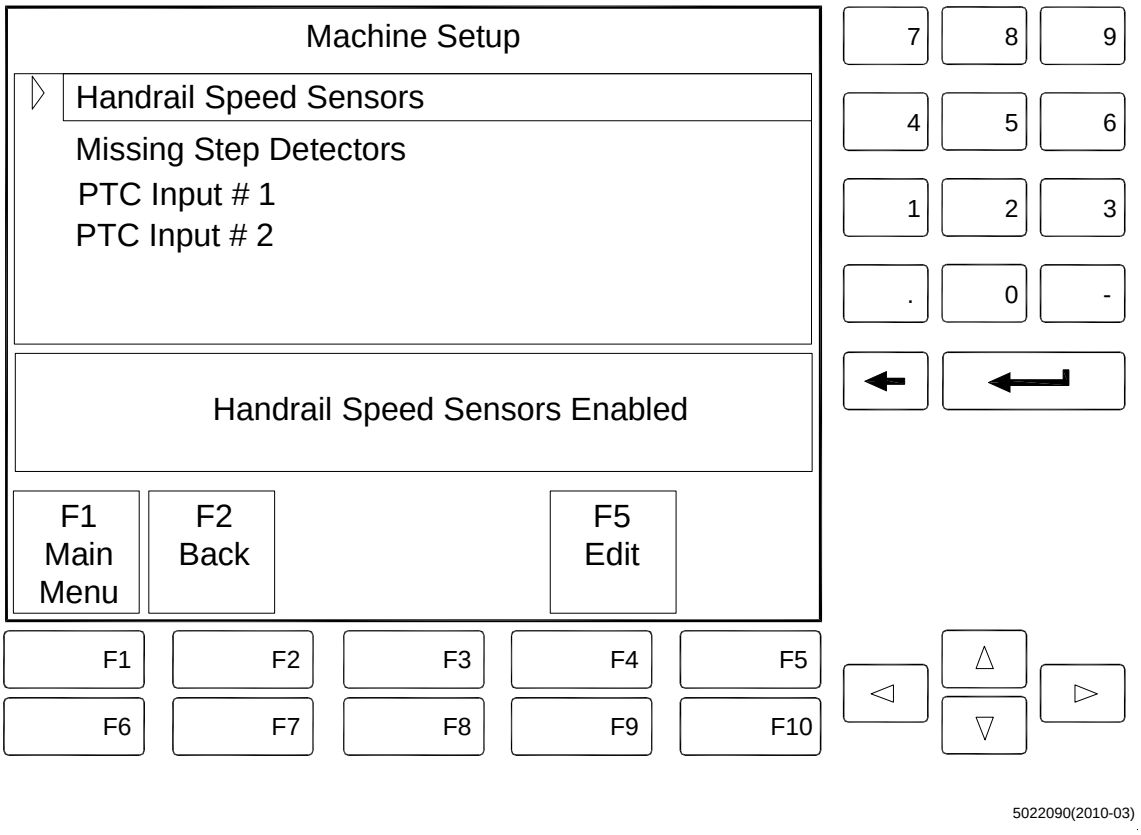


8A-000609(2008-01)

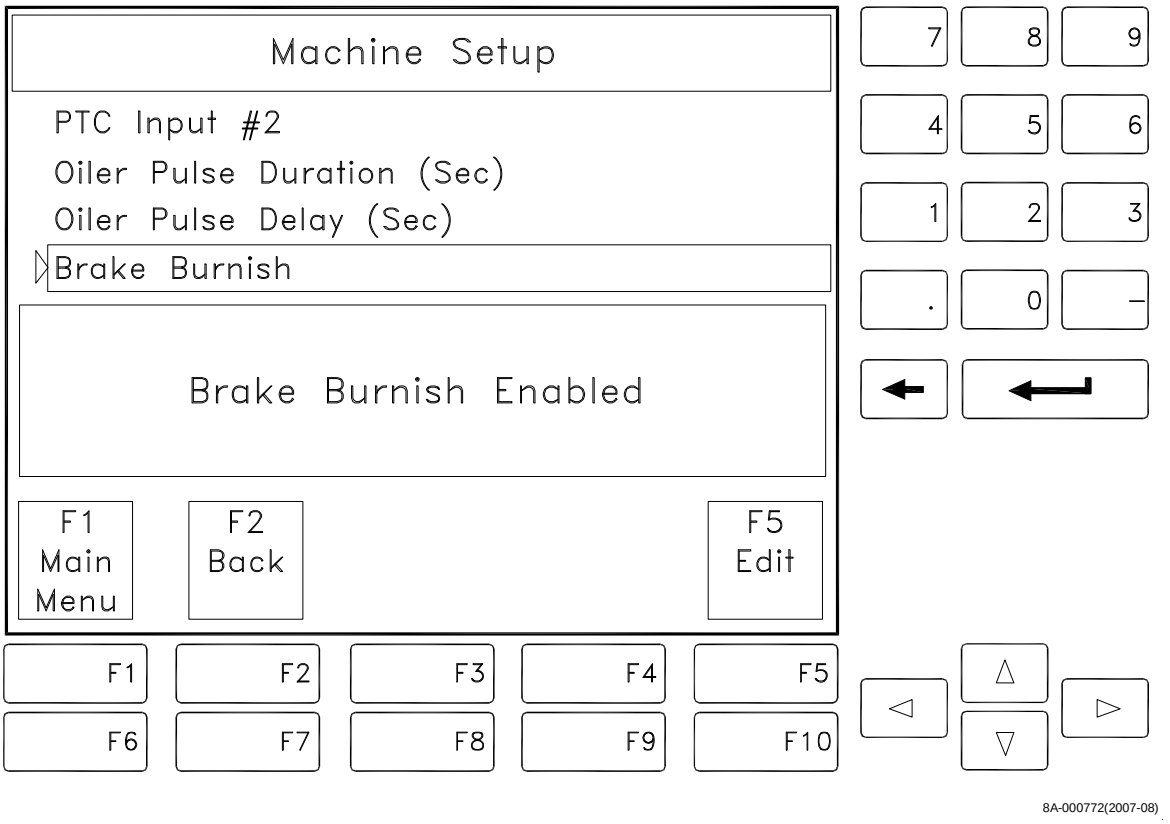
3.22.2 F2 = View/Edit Machine Configuration screen

If F2 View/Edit Machine Configuration screen is pressed at the Option Adjust Key Menu screen, a View Machine Setup screen appears. Use Up and Down arrow keys to move cursor and highlight a desired function.

- Handrail Speed Sensor
- Missing Step Detectors
- PTC Input #1
- PTC Input #2
- Oiler Pulse Duration (Sec)
- Oiler Pulse Delay (Sec)
- Brake Burnish
  - F1 = Main Menu (Return to Main Menu Screen)
  - F2 = Back (Return to Option Adjust Menu Screen)
  - F5 = Edit



A typical Machine Setup screen showing first six functions

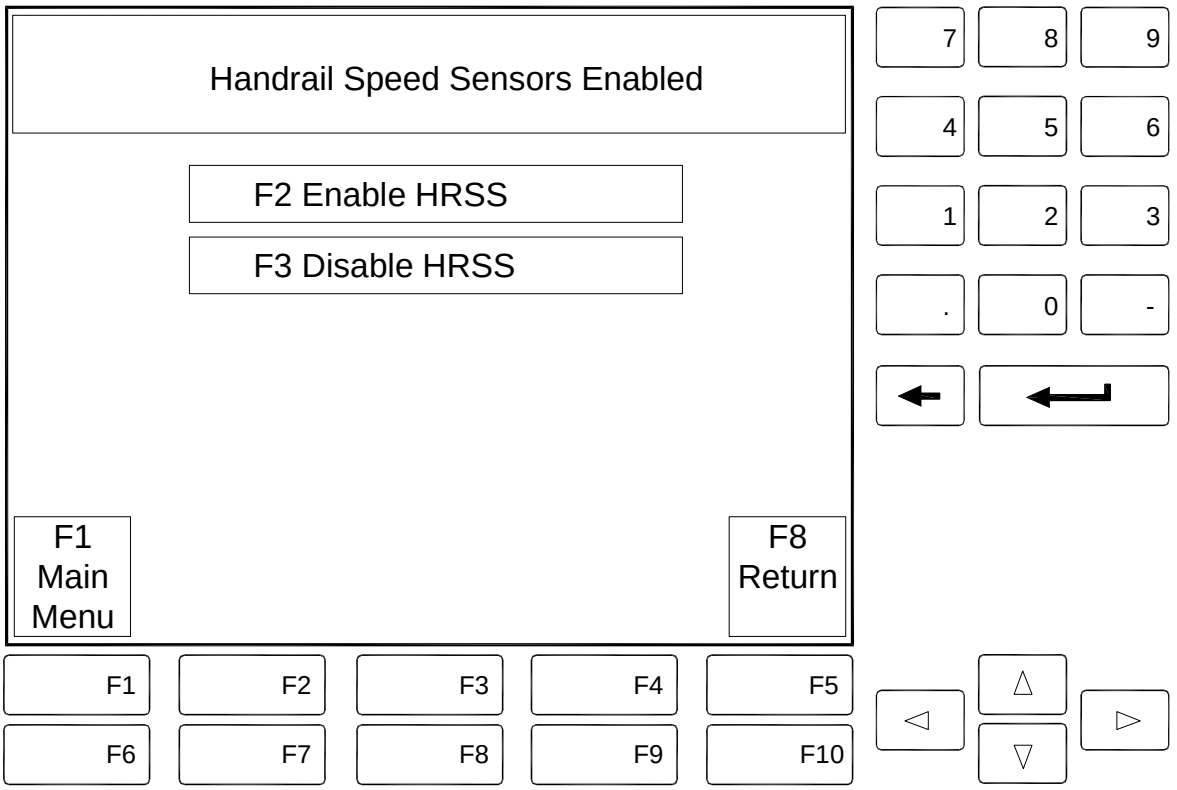


A typical Machine Setup screen showing remaining functions after using Up or Down arrow.

3.22.2.1F5 - Edit Handrail Speed Sensors

If F5 Edit is pressed at the Machine Setup screen with Missing Step Detectors highlighted, the selected function's Edit screen appears displaying the current setting.

- F2 = Enable HRSS
- F3 = Disable HRSS (**Note:** CPU automatically re-enables after one hour on stop.)
– F1 = Main Menu (Return to Main Menu Screen)
– F8 = Return (Back to previous screen)

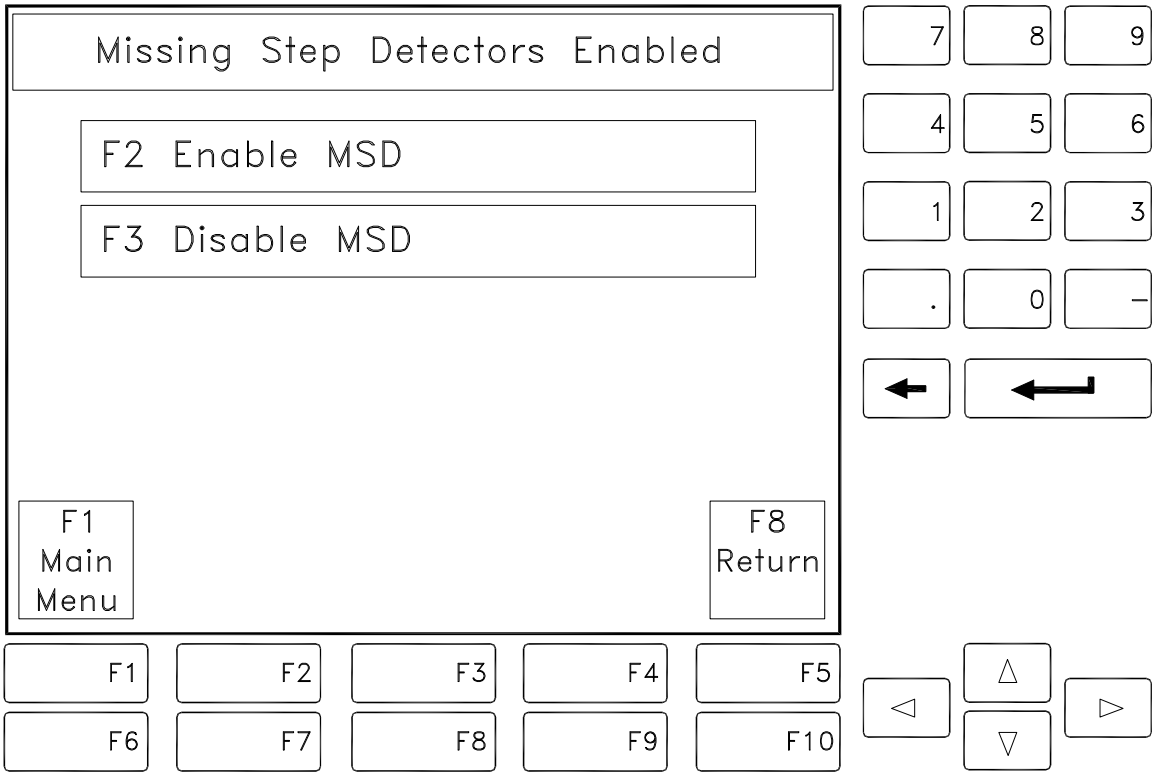


S712-092(2008-01)

3.22.2.2F5 - Edit Missing Step Detector

If F5 Edit is pressed at the Machine Setup screen with Missing Step Detectors highlighted, the selected function's Edit screen appears displaying the current setting.

- F2 = Enable MSD (**Note:** CPU automatically re-enables after one hour on stop.)
- F3 = Disable MSD
- F1 = Main Menu (Return to Main Menu Screen)
- F8 = Return (Back to previous screen)

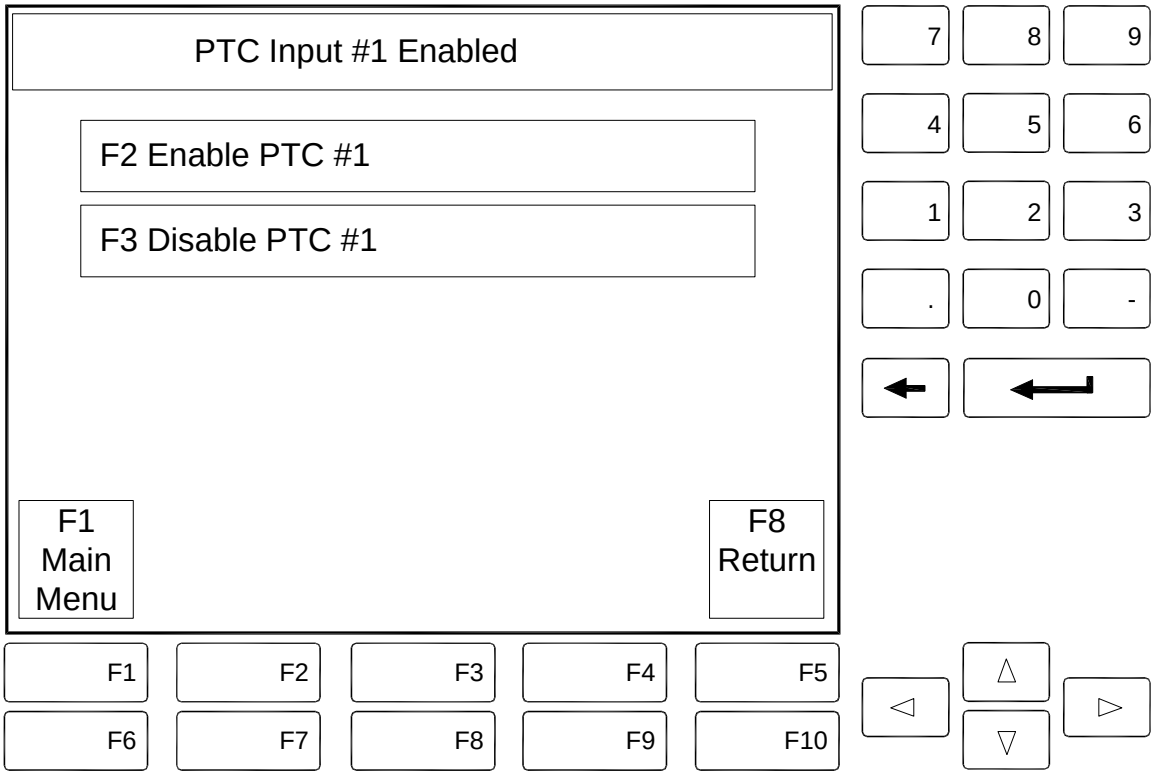


8A–000124(2005–07)

3.22.2.3F5 - Edit PTC #1 screen

If F5 Edit is pressed at the Machine Setup screen with PTC #1 highlighted, the selected function's Edit screen appears displaying the current setting.

- F2 = Enable PTC #1
- F3 = Disable PTC #1
- F1 = Main Menu (Return to Main Menu Screen)
- F8 = Return (Back to previous screen)

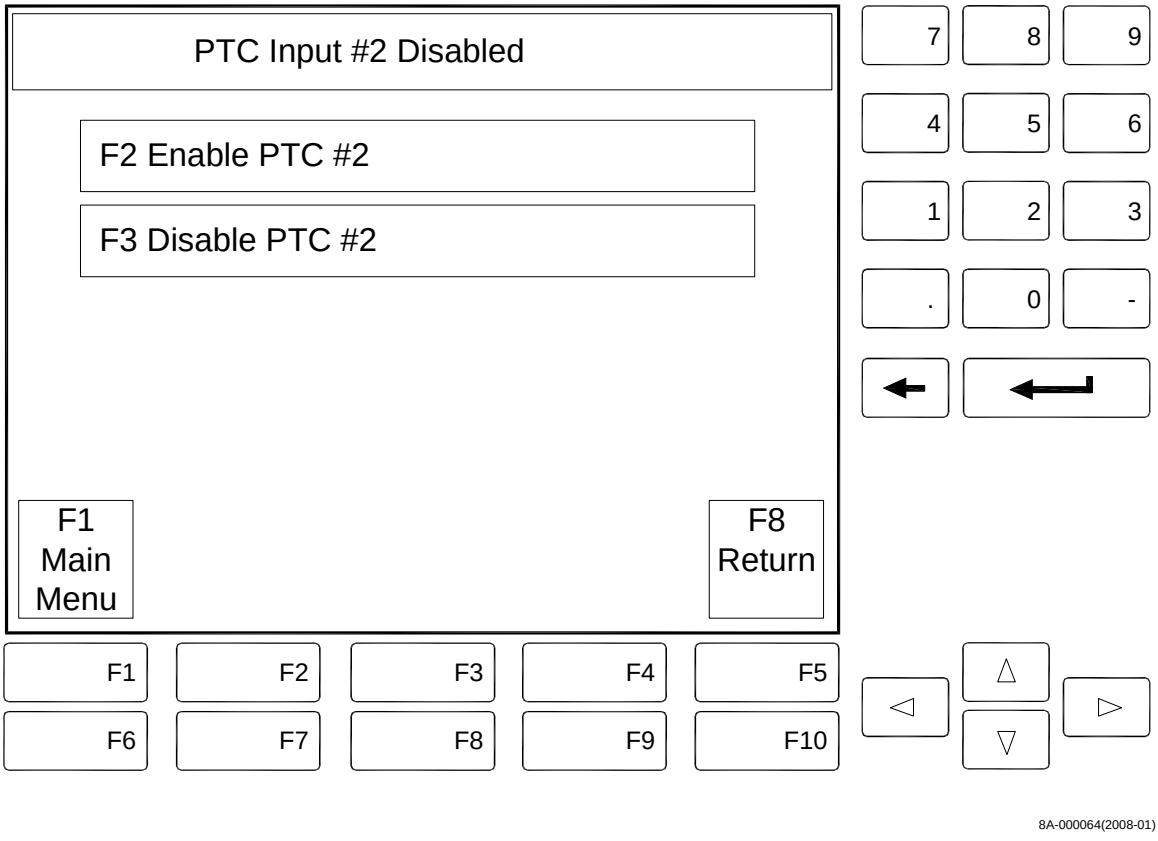


8A-000062(2008-01)

3.22.2.4F5 - Edit PTC #2 screen

If F5 Edit is pressed at the Machine Setup screen with PTC #2 highlighted, the selected function's Edit screen appears displaying the current setting.

- F2 = Enable PTC #2
- F3 = Disable PTC #2
- F1 = Main Menu (Return to Main Menu Screen)
- F8 = Return (Back to previous screen)

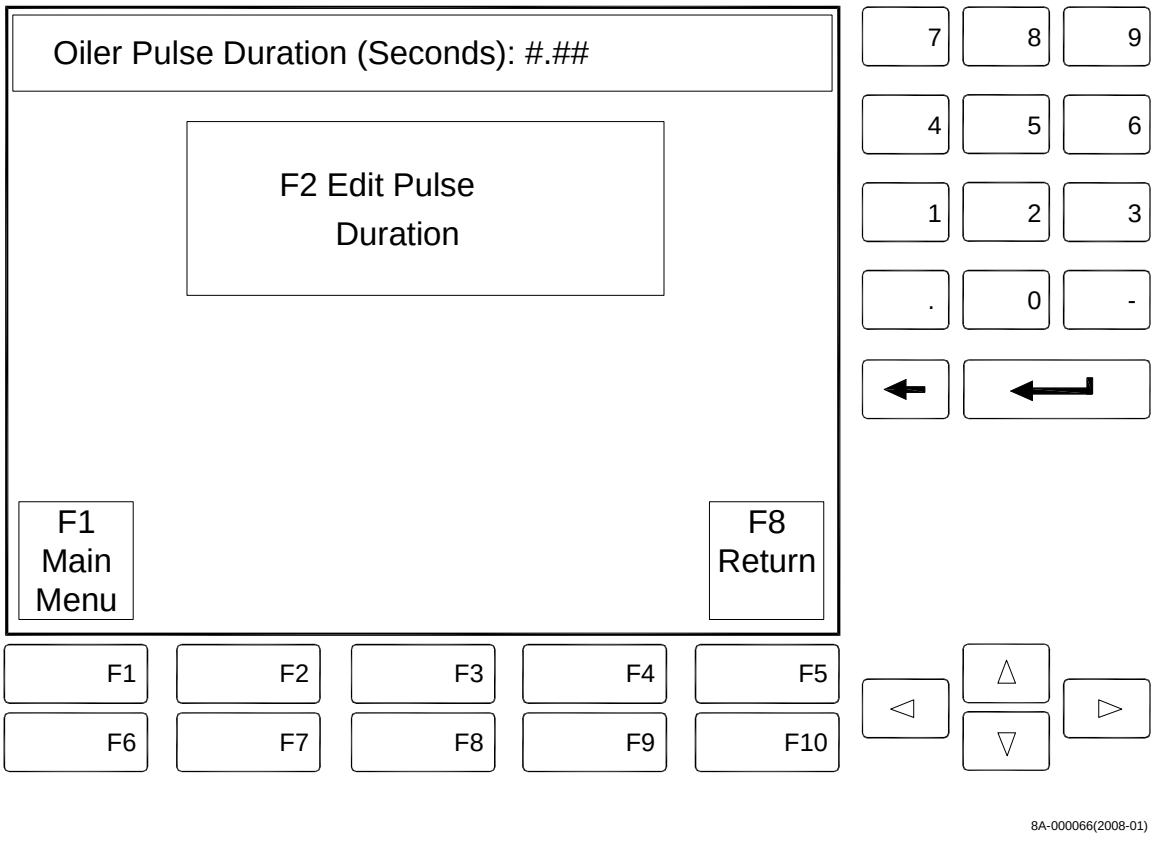


8A-000064(2008-01)

3.22.2.5F5 - Edit Oiler Pulse Duration screen

If F5 Edit is pressed at the Machine Setup screen with Oiler Pulse Duration (Sec) highlighted, the selected function's Edit screen appears displaying the current setting.

- F2 = Edit Oiler Pulse Duration (Sec)
  - Enter Oiler Pulse Duration time.
- F1 = Main Menu (Return to Main Menu Screen)
- F8 = Return (Back to previous screen)

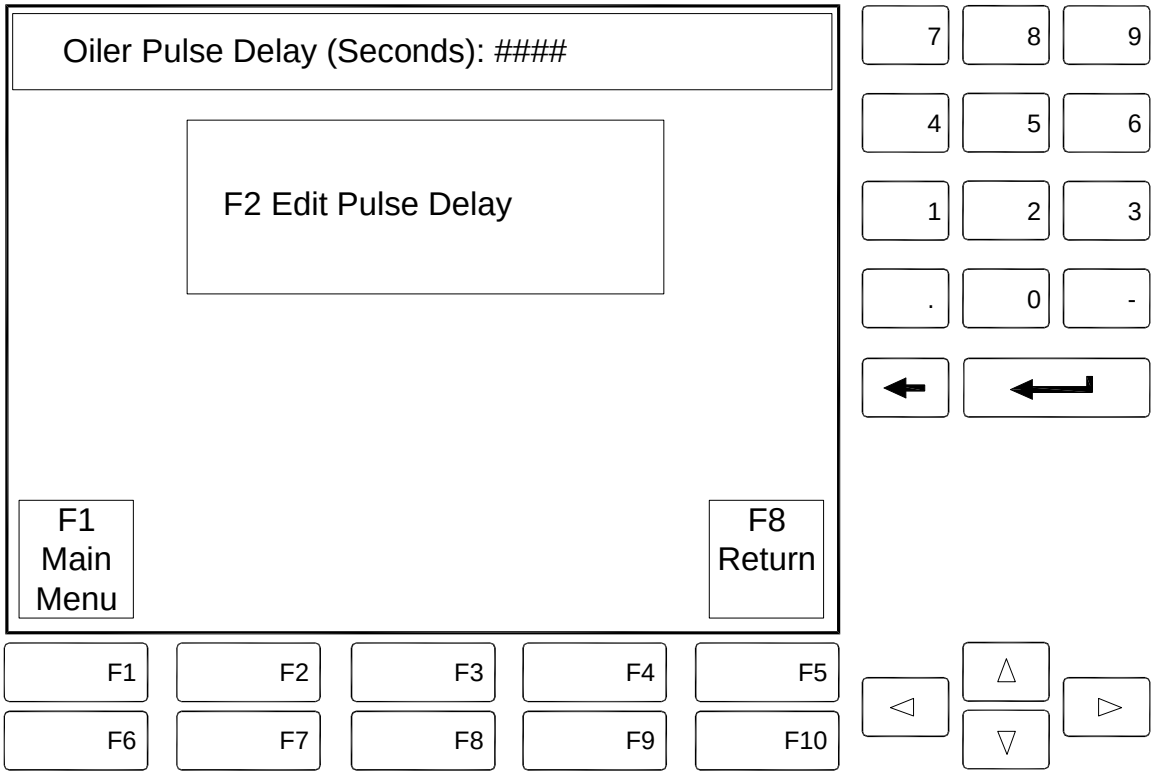


8A-000066(2008-01)

3.22.2.6F5 - Edit Oiler Pulse Delay screen

If F5 Edit is pressed at the Machine Setup screen with Oiler Pulse Delay (Sec) highlighted, the selected function's Edit screen appears displaying the current setting.

- F2 = Edit Oiler Pulse Delay (Sec)
  - Enter Oiler Pulse Delay time.
- F1 = Main Menu (Return to Main Menu Screen)
- F8 = Return (Back to previous screen)

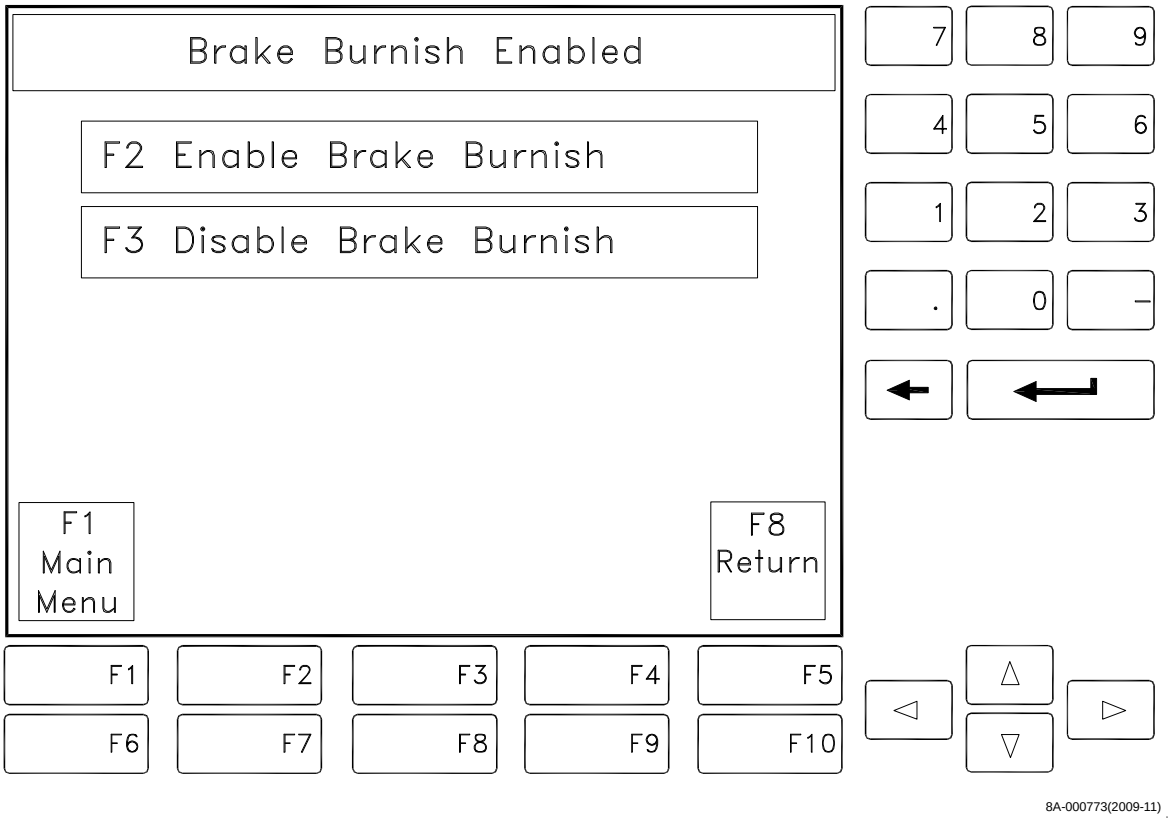


8A-000068(2008-01)

3.22.2.7F5 - Edit Brake Burnish screen

If F5 Edit is pressed at the Machine Setup screen with Brake Burnish highlighted, the selected function's Edit screen appears displaying the current setting.

- F2 = Enable Brake Burnish
- F3 = Disable Brake Burnish
- F1 = Main Menu (Return to Main Menu Screen)
- F8 = Return (Back to previous screen)



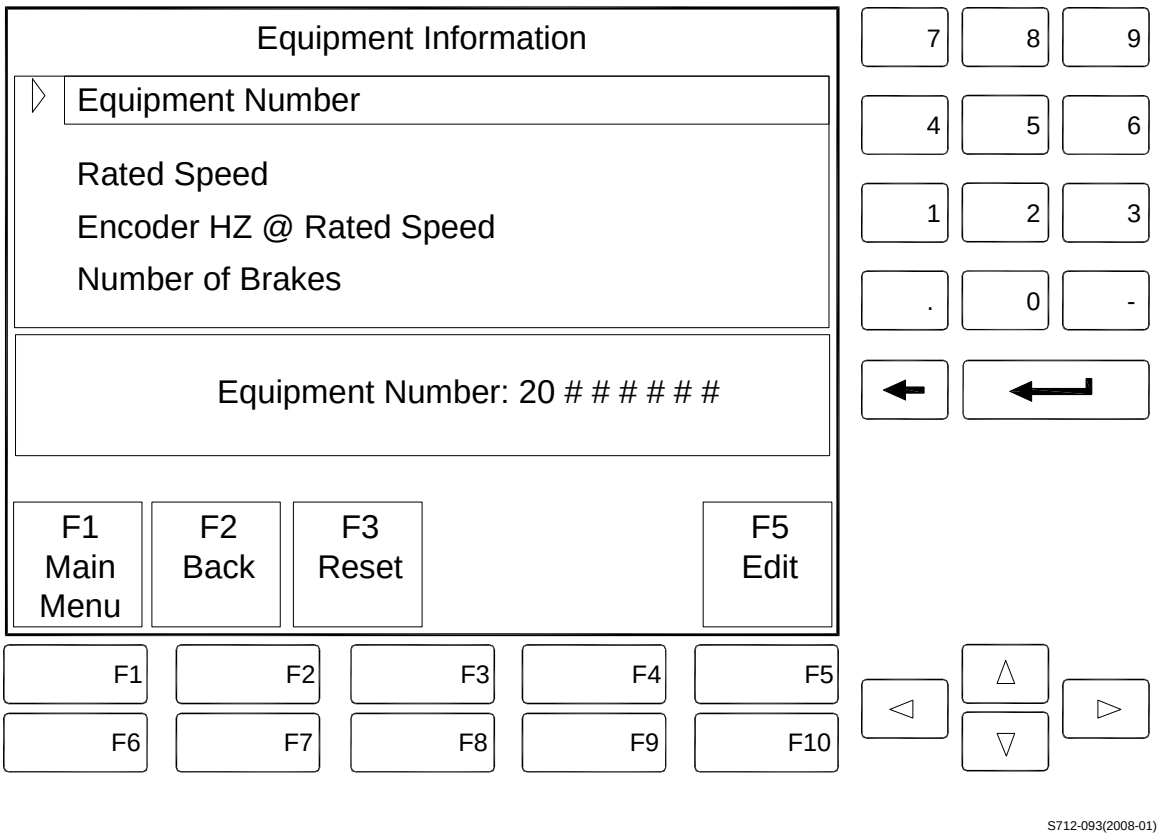
8A-000773(2009-11)

3.22.3 F3 - View/Edit Equipment Info

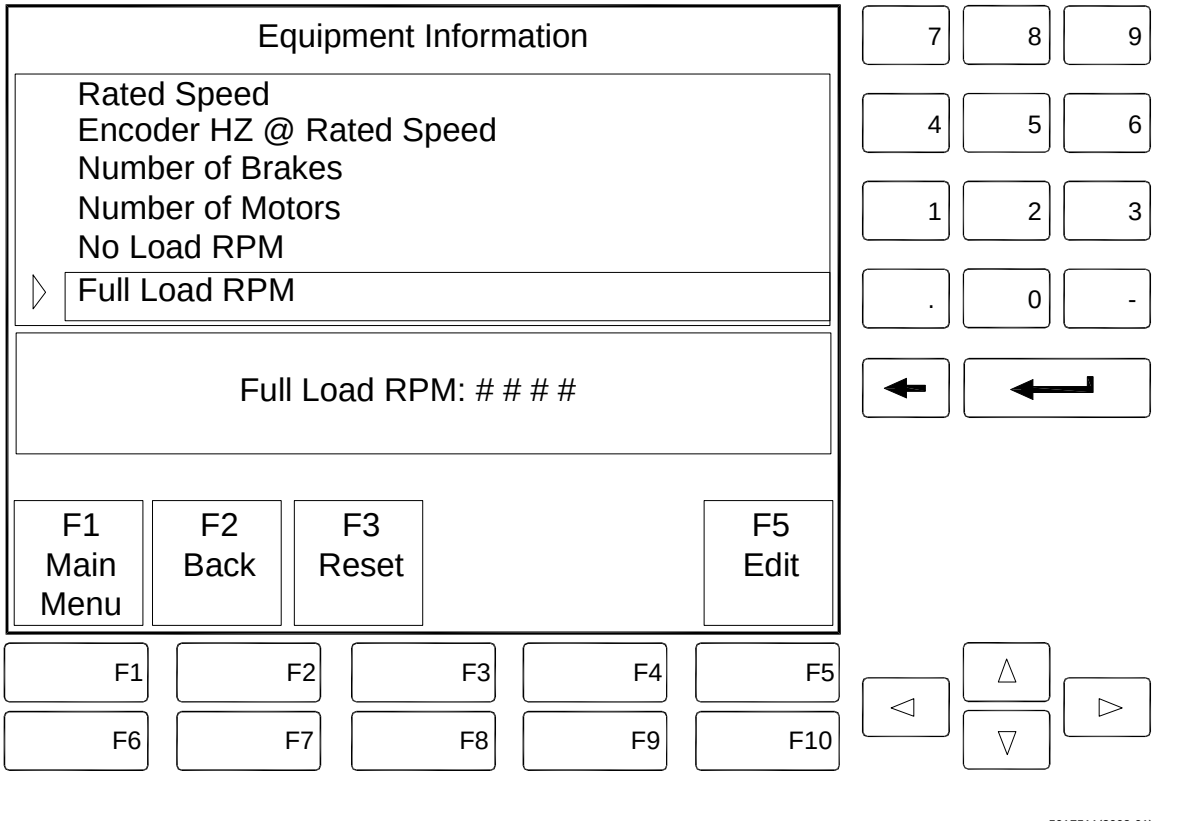
If F3 View/Edit Equipment Info screen is pressed at the Option Adjust Key Menu screen, a View Equipment Information screen appears. Use Up and Down arrow keys to move cursor and highlight a desired function.

- Reset Equipment Information
- Equipment Number
- Rated Speed
- Encoder Frequency
- Number of Brakes
- Number of Motors
- No Load RPM
- Full Load RPM

– F1 = Main Menu (Return to Main Menu Screen)
– F2 = Back (Back to Previous Screen)
– F3 = Reset (Reset Equipment Information to Default Configuration)
– F5 = Edit



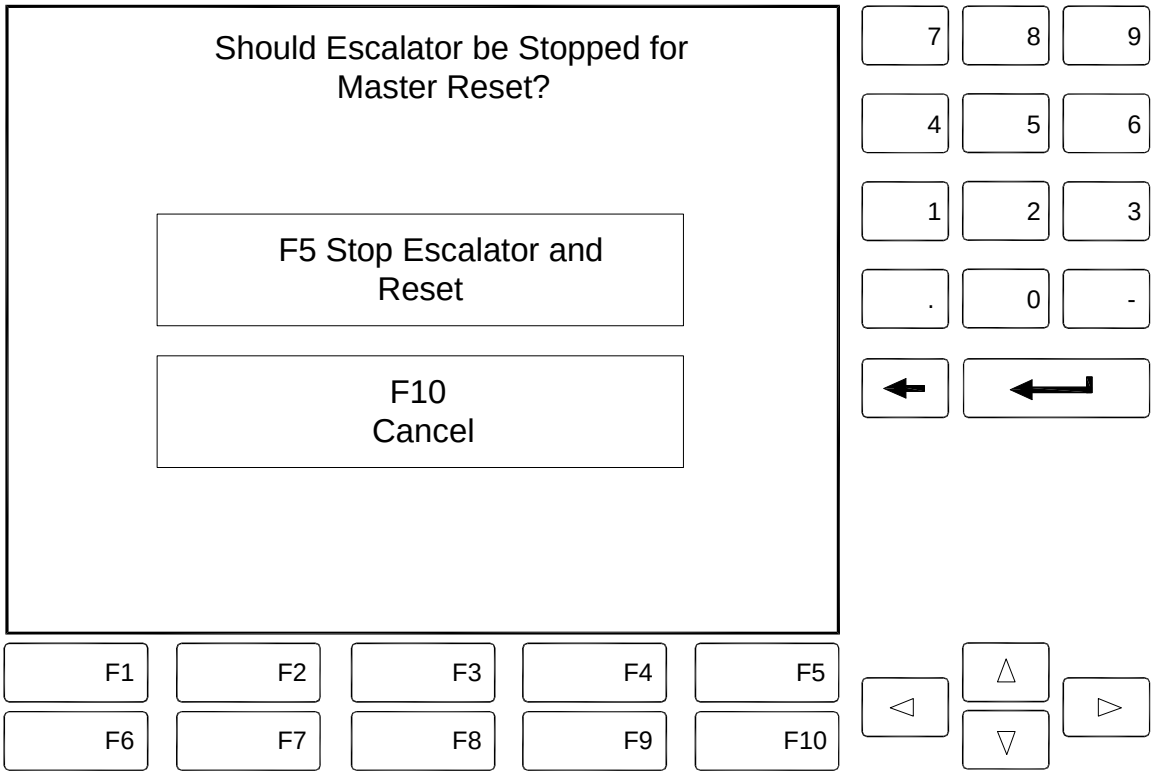
A typical Equipment Information screen showing first six functions



A typical Equipment Information screen showing remaining function after using Up or Down arrow.

3.22.3.1F3 = Reset Confirmation screen

– F5 = Reset Default Configuration
– F10 = Cancel Default Request and return to previous screen

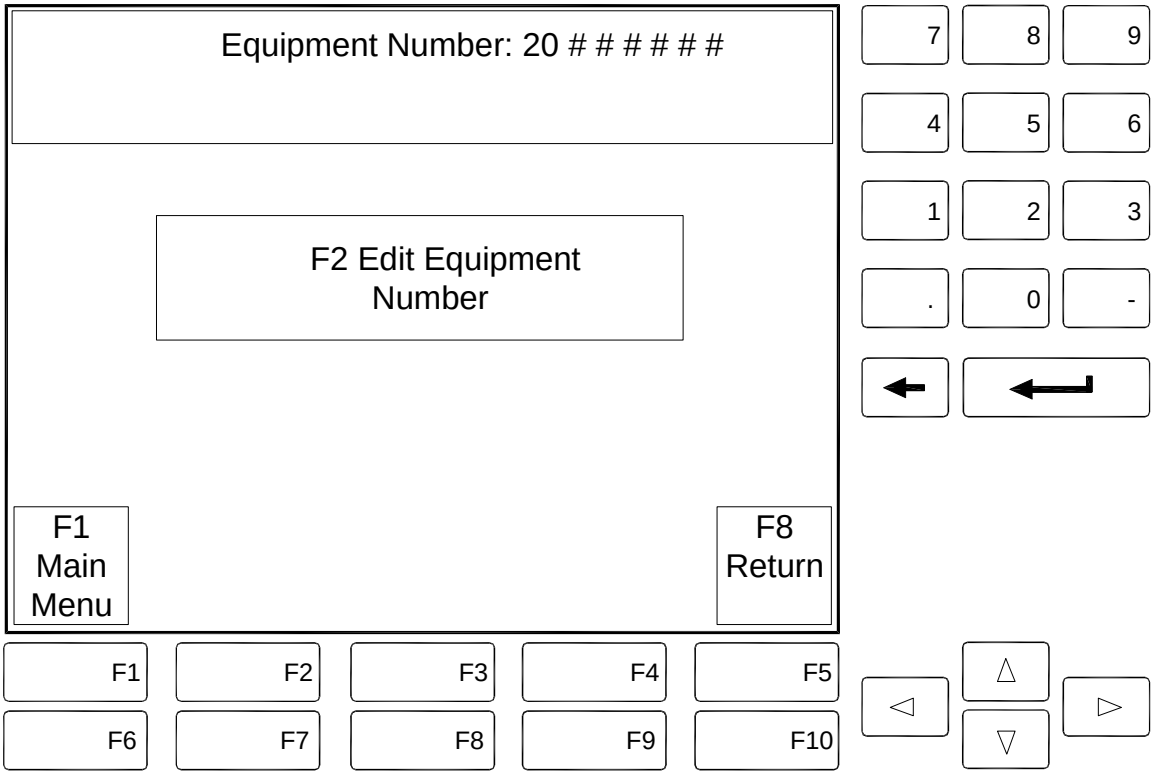


S712-094(2008-01)

3.22.3.2F5 - Edit Equipment Number screen

If F5 Edit is pressed at the Equipment Information screen with Equipment Number highlighted, the selected function's Edit screen appears displaying the current setting.

- F1 = Main Menu (Return to Main Menu Screen)
- F2 = Edit Equipment Number
- F8 = Return (Return to previous screen)

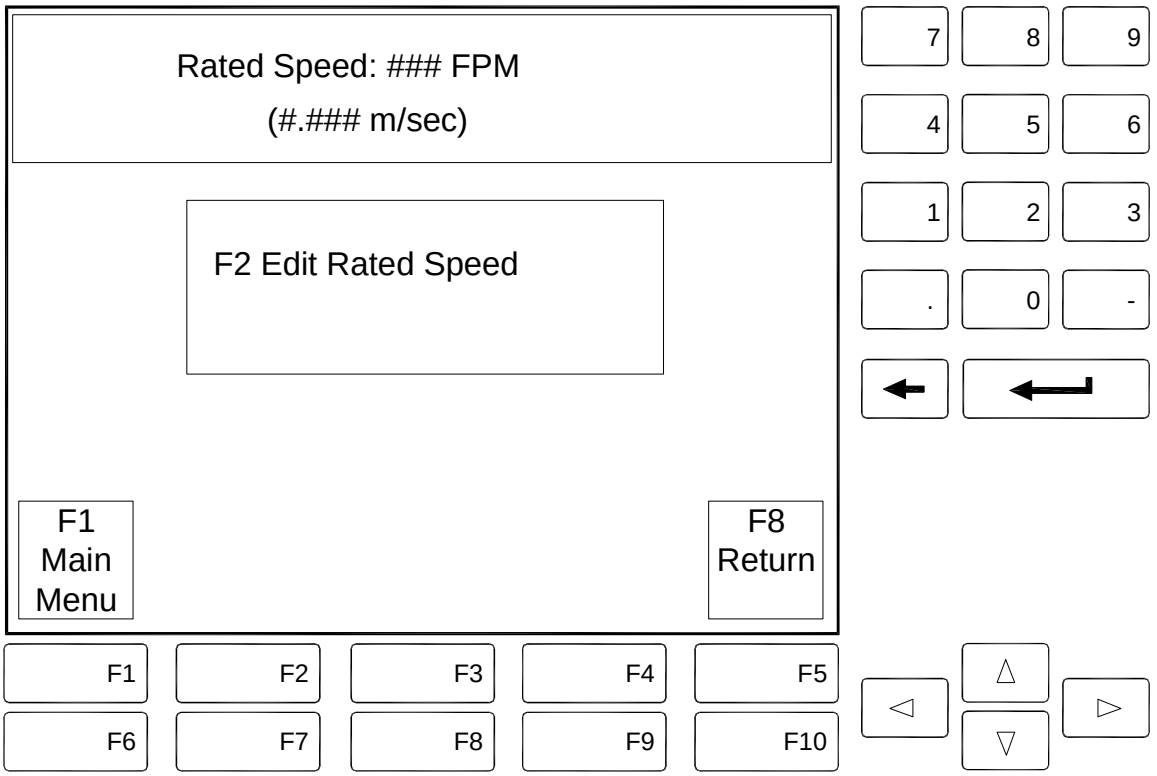


S712-095(2008-01)

3.22.3.3F5 - Edit Rated Speed

If F5 Edit is pressed at the Equipment Information screen with Rated Speed highlighted, the selected function's Edit screen appears displaying the current setting in FPM and m/s.

- F2 = Edit Rated Speed
- F1 = Main Menu (Return to Main Menu Screen)
- F8 = Return (Back to previous screen)

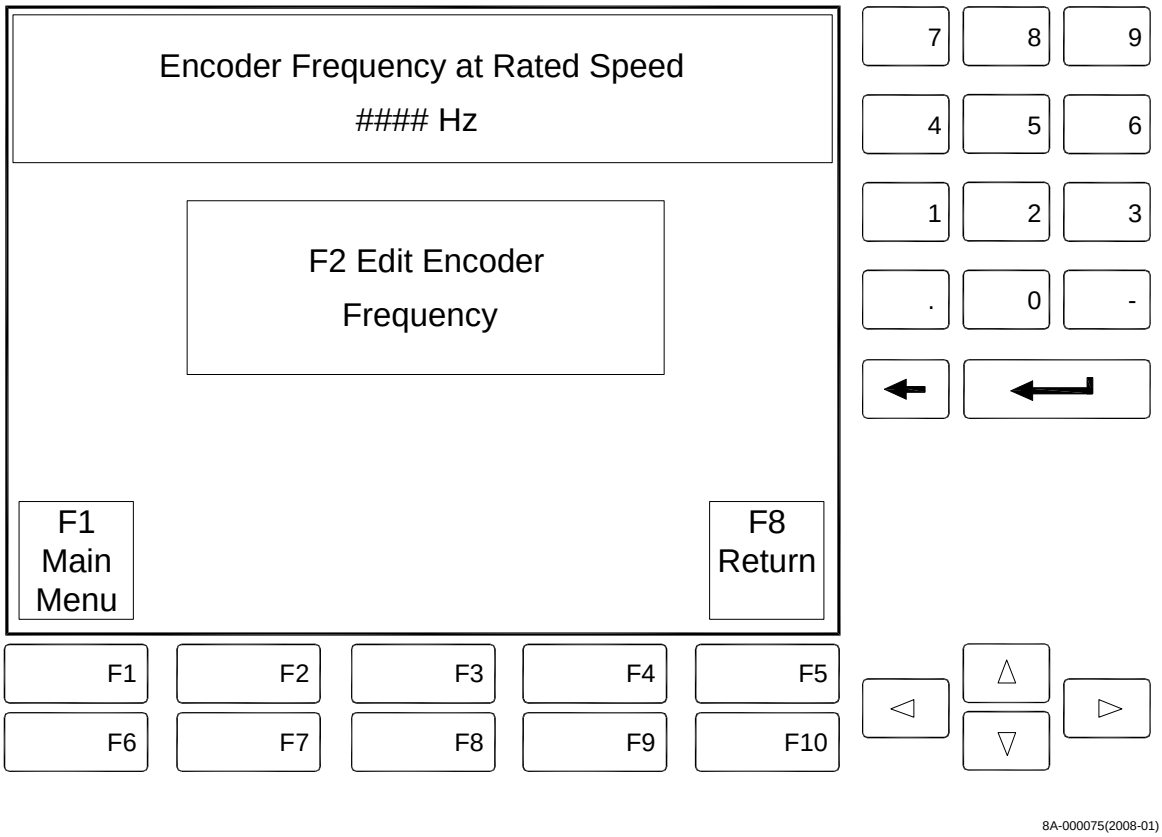


8A-000073(2008-01)

3.22.3.4F5 - Edit Encoder Frequency at Rated Speed

If F5 Edit is pressed at the Equipment Information screen with Encoder Hz @ Rated Speed highlighted, the selected function's Edit screen appears displaying the current setting.

– F2 = Edit Encoder Frequency @ rated speed
– F1 = Main Menu (Return to Main Menu Screen)
– F8 = Return (Back to previous screen)

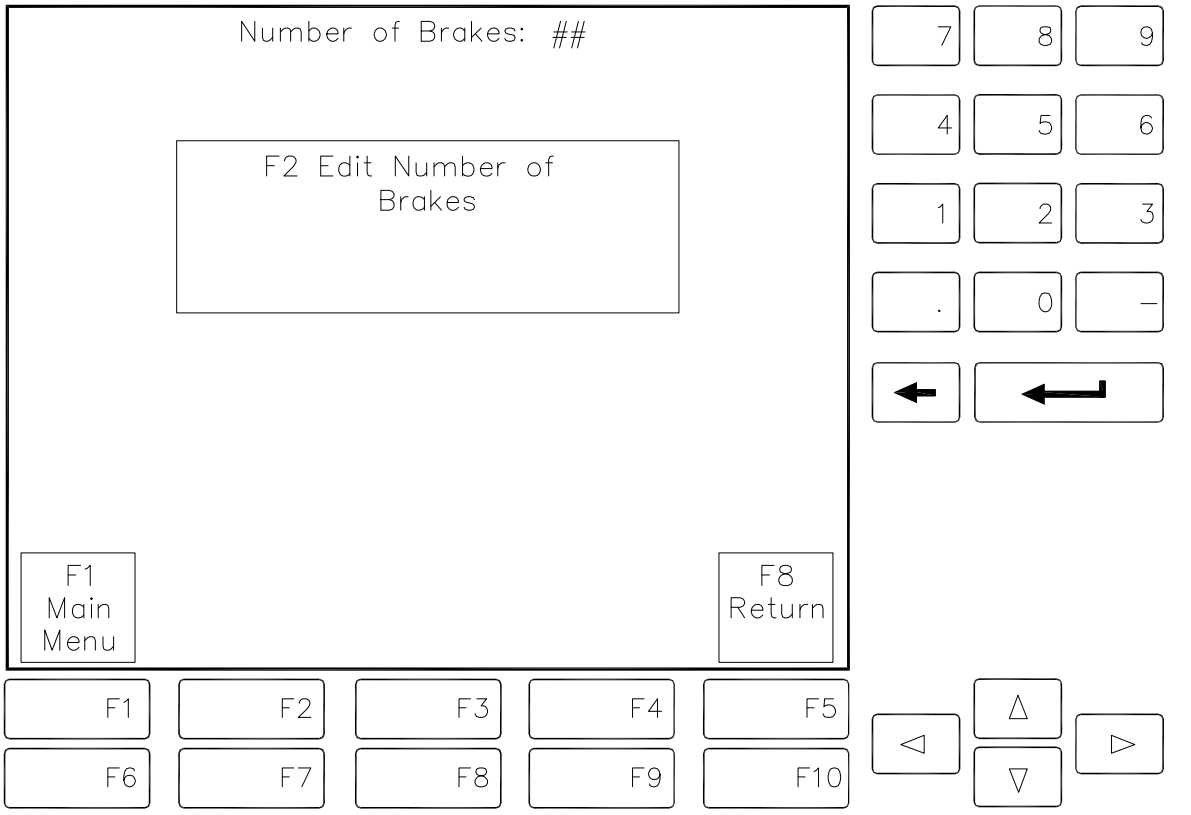


8A-000075(2008-01)

3.22.3.5F5 - Edit Number of Brakes screen

If F5 Edit is pressed at the Equipment Information screen with Number of Brakes highlighted, the selected function's Edit screen appears displaying the current setting.

- F2 = Edit Number of Brakes
- F1 = Main Menu (Return to Main Menu Screen)
- F8 = Return (Back to previous screen)

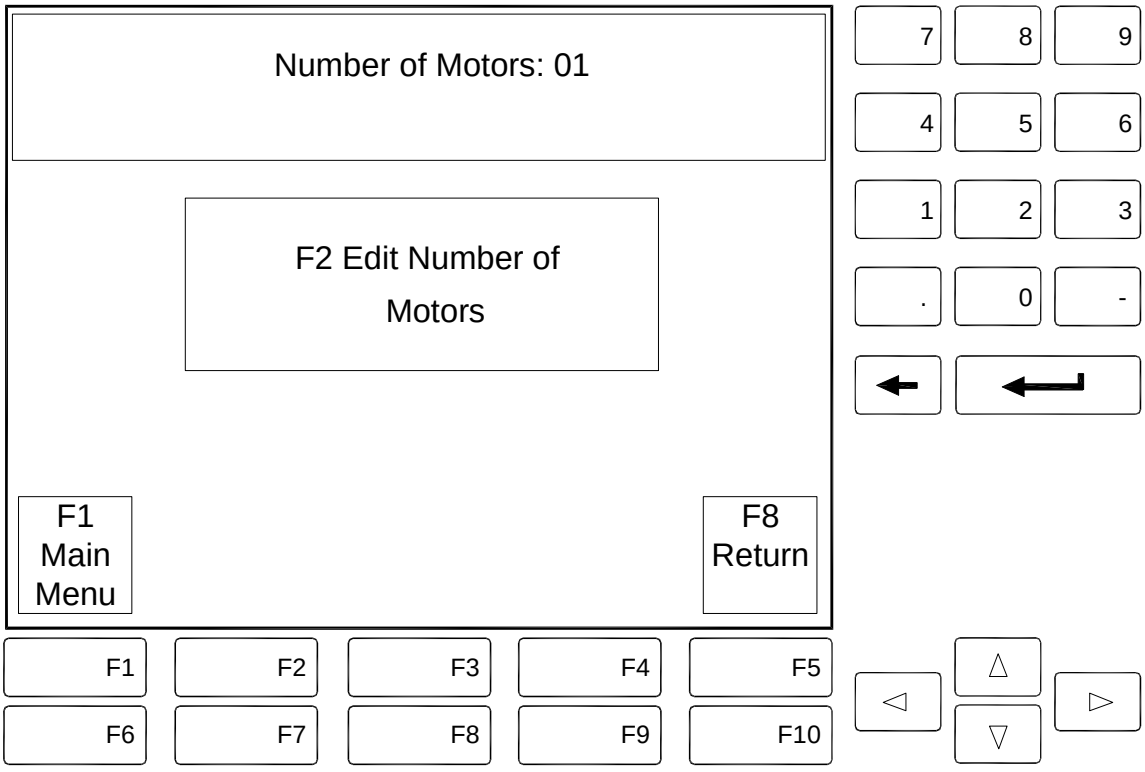


8A–000134(2005–07)

3.22.3.6F5 - Edit Number of Motors

If F5 Edit is pressed at the Equipment Information screen with Number of Motors highlighted, the selected function's Edit screen appears displaying the current setting.

- F2 = Edit Number of Motors
- F1 = Main Menu (Return to Main Menu Screen)
- F8 = Return (Back to previous screen)

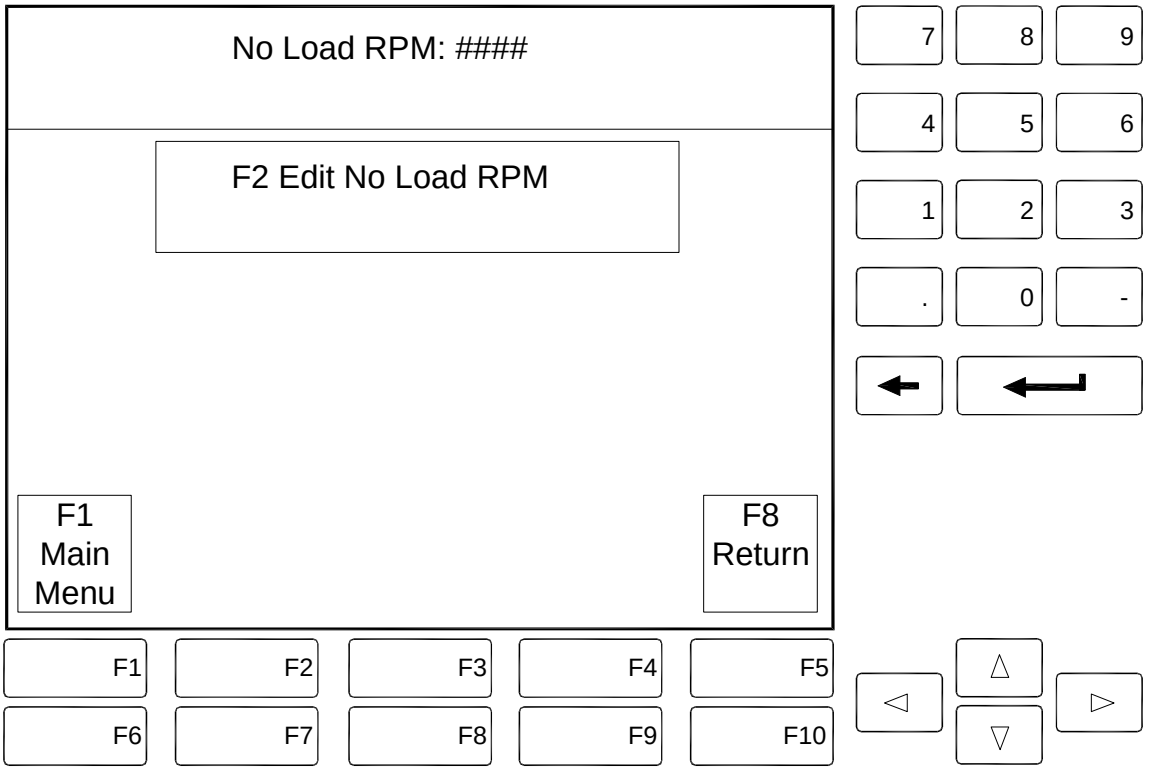


8A-000079(2008-01)

3.22.3.7F5 - Edit No Load RPM screen

If F5 Edit is pressed at the Equipment Information screen with No Load RPM highlighted, the selected function's Edit screen appears displaying the current setting.

- F2 = Edit No Load RPM
- F1 = Main Menu (Return to Main Menu Screen)
- F8 = Return (Back to previous screen)

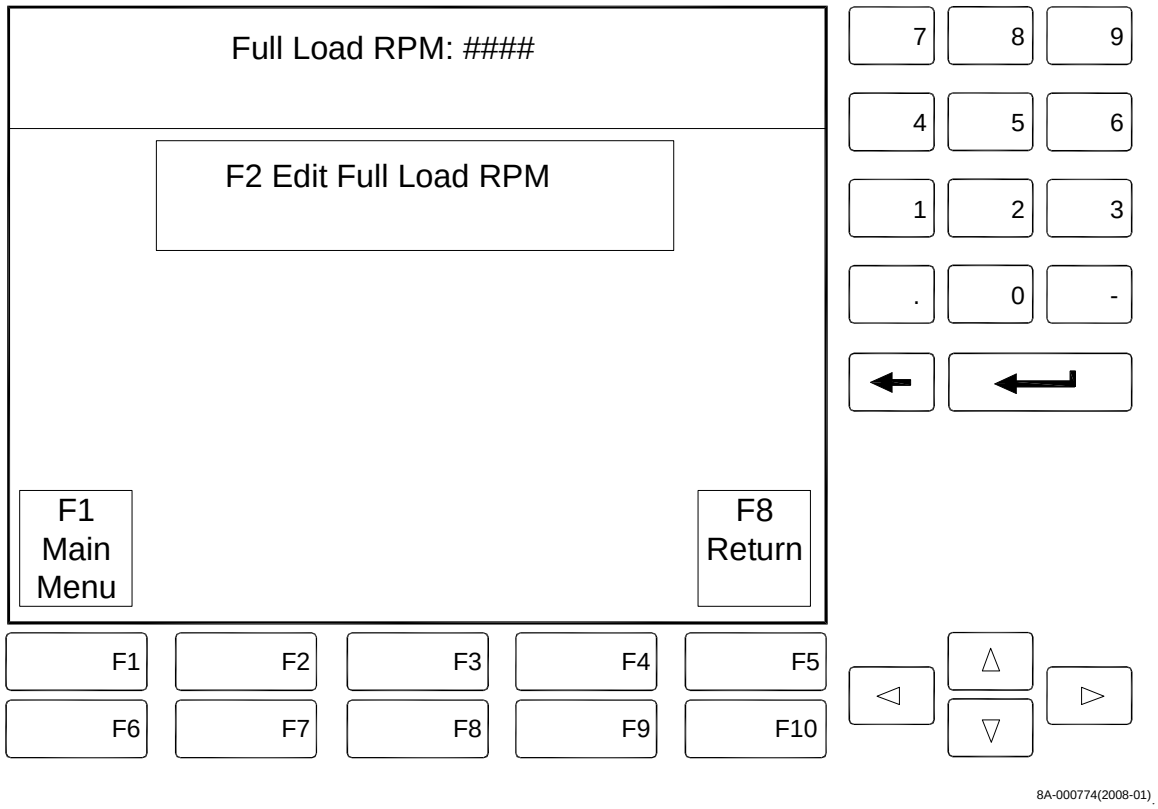


8A-000618(2008-01)

3.22.3.8F5 - Edit Full Load RPM screen

If F5 Edit is pressed at the Equipment Information screen with Full Load RPM highlighted, the selected function's Edit screen appears displaying the current setting.

– F2 = Edit Full Load RPM
– F1 = Main Menu (Return to Main Menu Screen)
– F8 = Return (Back to previous screen)



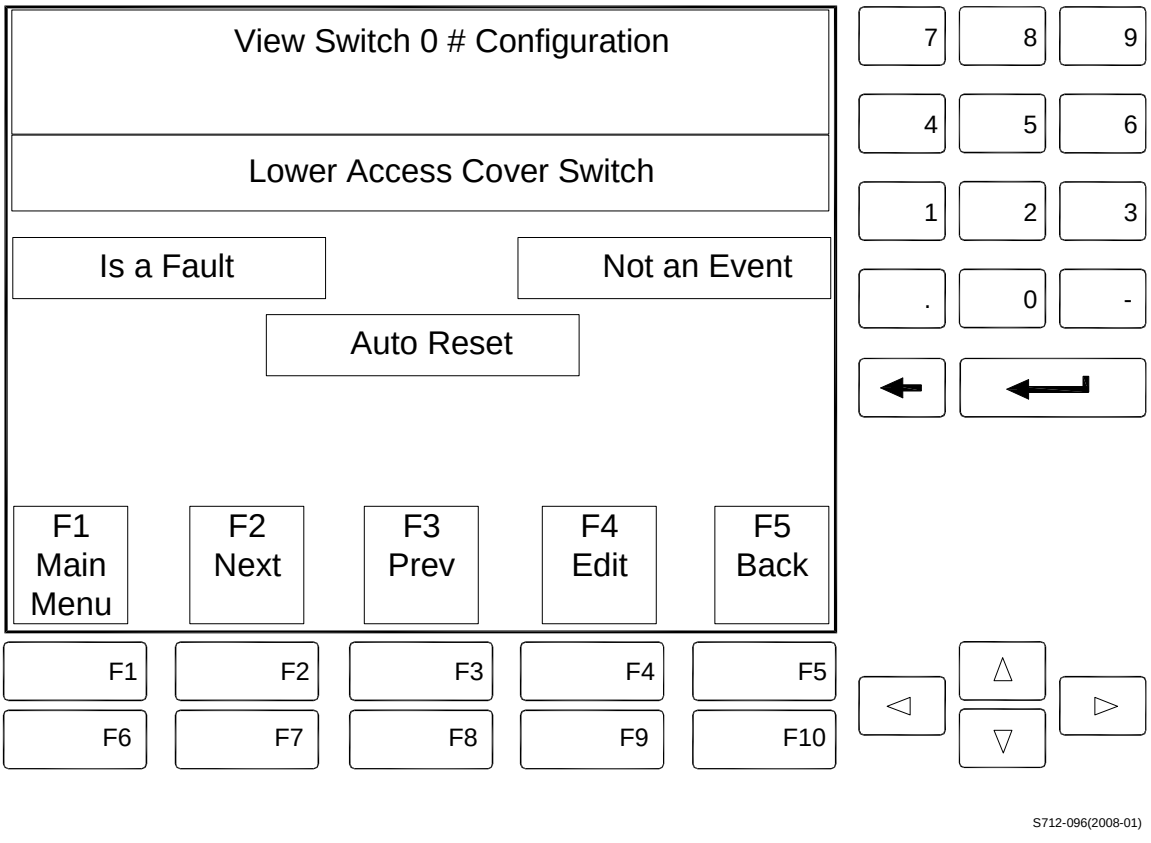
8A-000774(2008-01)

3.22.4 F4 - View/Edit Switch Configuration

If F4 is pressed at the Option Adjust key, The View Switch Configuration screen displays the following.

If F4 View/Edit Switch Configuration is pressed at the Option Adjust Key Menu screen, a View Switch Configuration screen appears. Use F2 and F3 keys to go to the desired switch.

- View first switch name and number in table
- View if switch is configured to be recorded in Fault Log
- View if switch is configured to be recorded in Event Log
- View if switch is configured as a manual reset type fault
  - F1 = Main Menu (Return to Main Menu Screen)
  - F2 = Next (View next switch in table and current configuration)
  - F3 = Prev (View previous switch in table and current configuration)
  - F4 = Edit (Edit configuration of displayed switch)
  - F5 = Back (Return to previous screen)

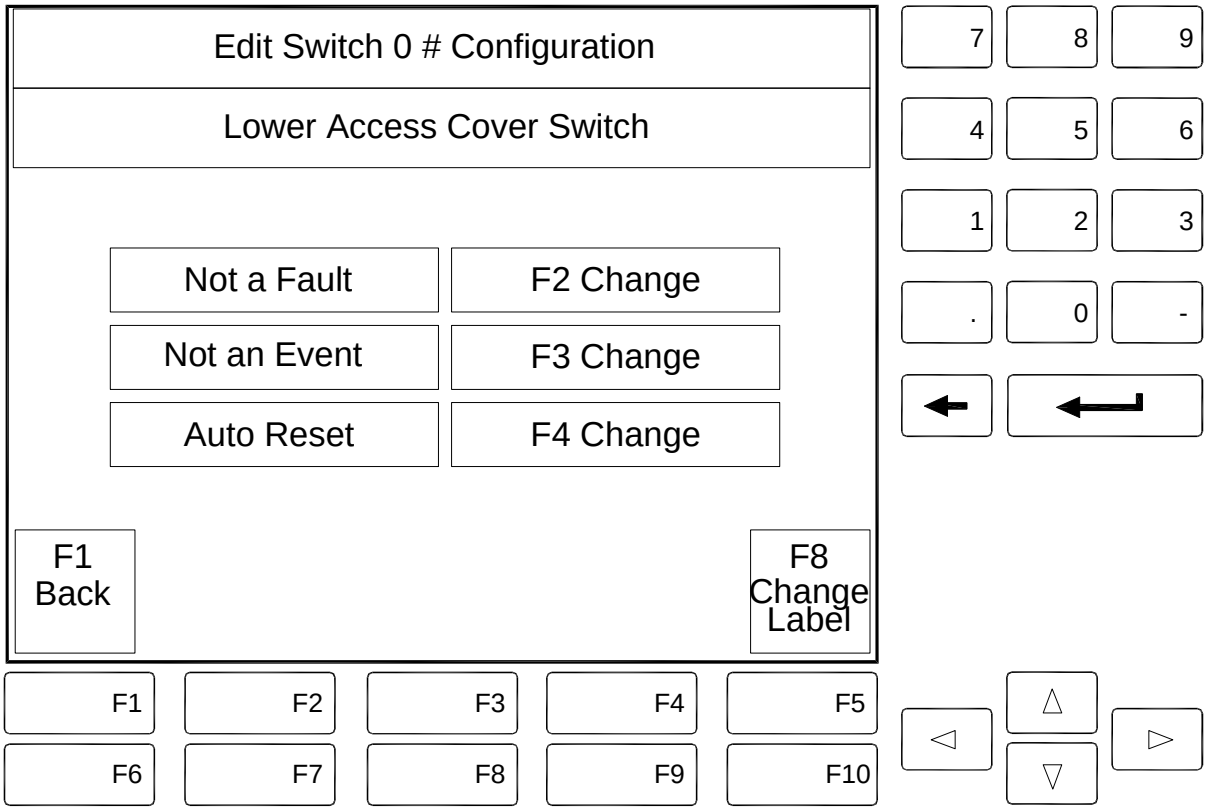


Typical View Switch Configuration screen

3.22.4.1F4 - Edit Switch Configuration screen

If F4 Edit is pressed at the View Switch Configuration screen, the Edit Switch Configuration screen appears.

- F1 = Back (Return to previous screen)
- F2 = Change (Toggle configuration of switch as a fault or not a fault)
- F3 = Change (Toggle configuration of switch as an Event or Not an Event.)
- F4 = Change (Toggle configuration of switch to be Manual Reset or Auto Reset)
- F8 = Change Label (Change switch name label)



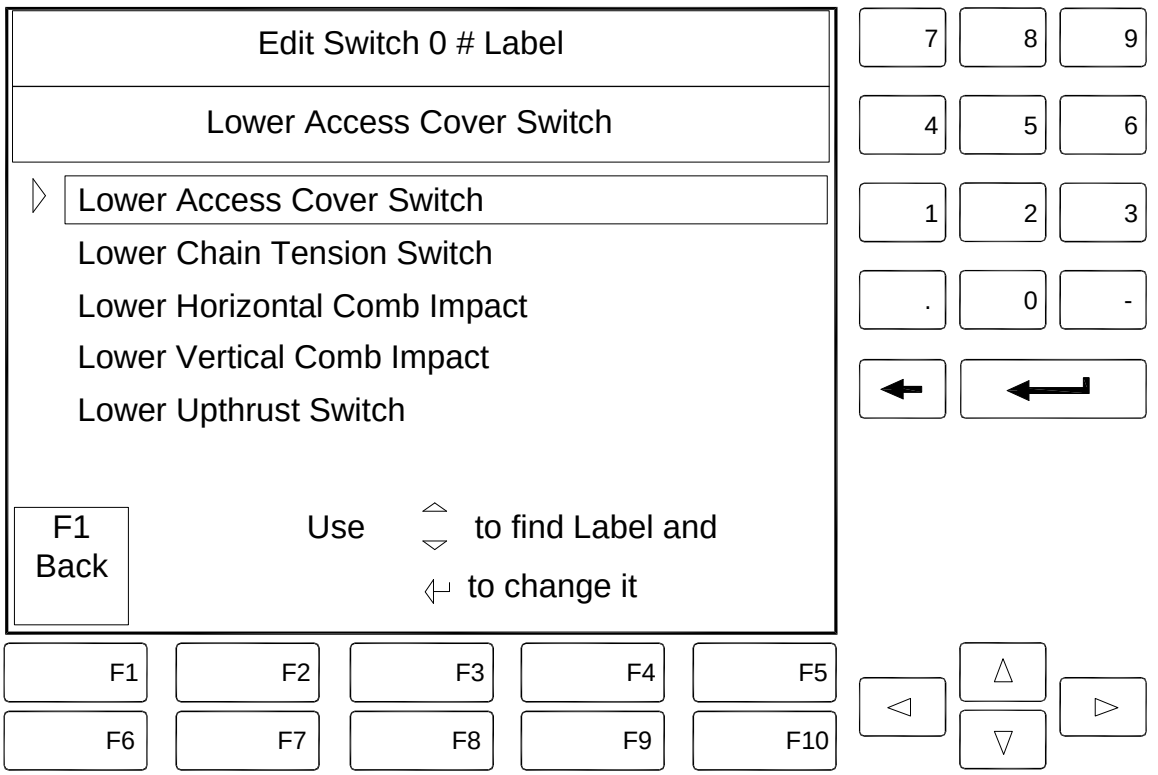
8A-000775(2008-01

3.22.4.2F8 - Change Label screen

If F8 Change Label is pressed at the Edit Switch Configuration screen, the Edit Switch Label screen appears.

1. View current number and name.
2. Use Up and Down Arrow keys to scroll though switch name library.
3. Press Enter key to change current switch name to a name highlighted in name list library.
   – F1 = Back (Return to previous screen)

8-000695 (2010-03)

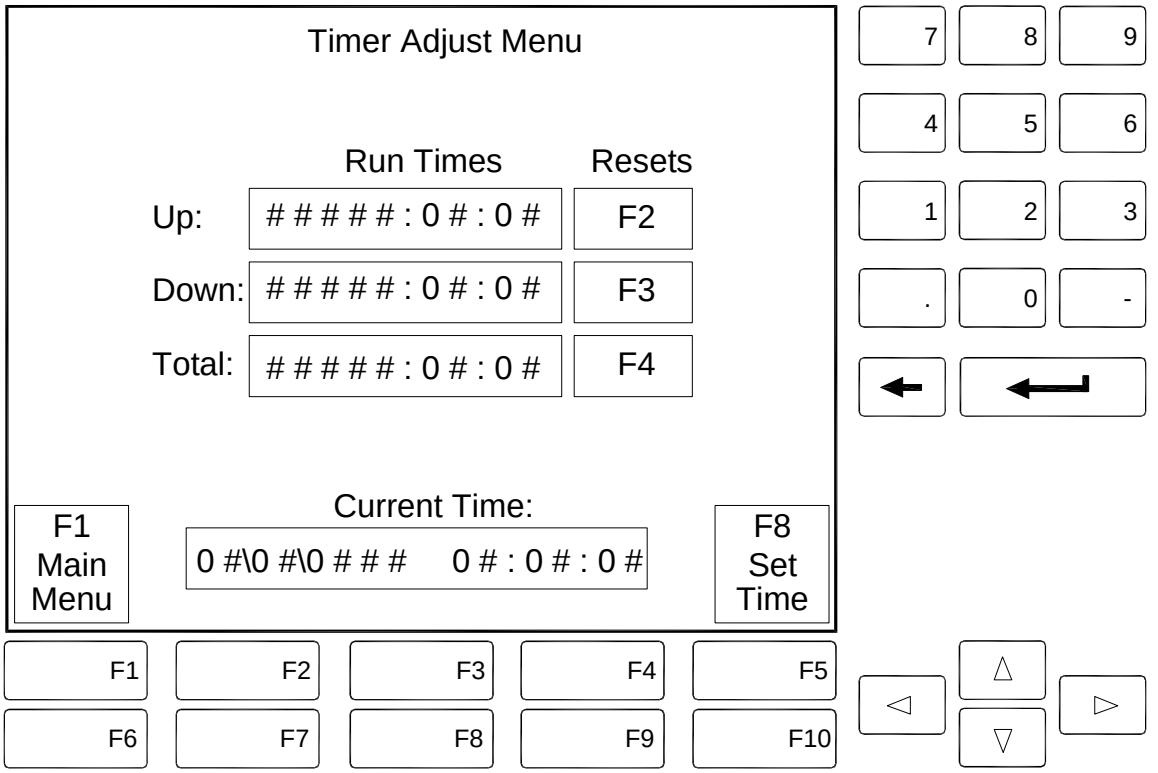


S712-098(2008-01)

3.23 Description of Timer Adjust Screen

The Timer Adjust Screen displays the following:

- Date and Time (Not Valid with the MicroLogix 1500)
- Up Run Time
- Down Run Time
- Total Run Time
  - F1 = Main Menu (Return to Main Menu Screen)
  - F2 = Reset Up Run Time
  - F3 = Reset Down Run Time
  - F4 = Reset Total Run Time
  - F8 = Set Time

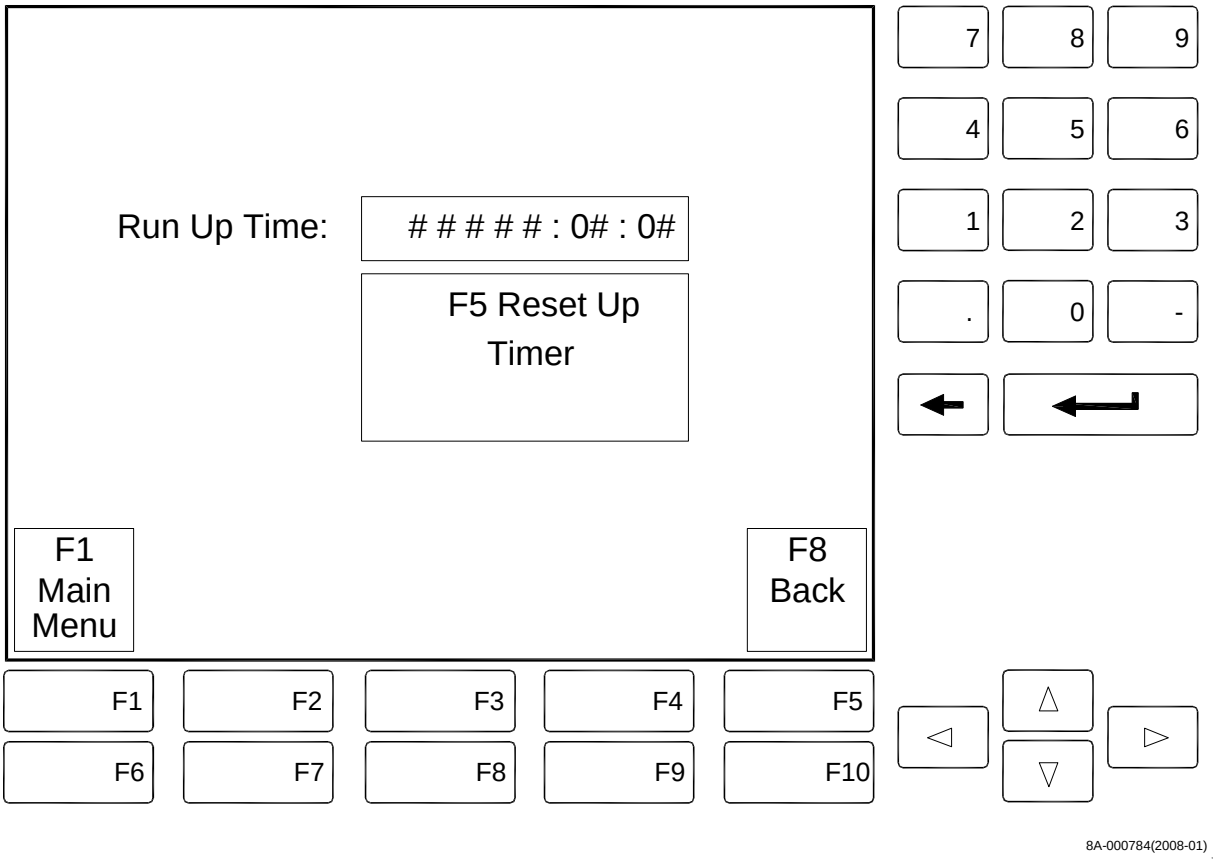


S712-099(2008-01)

3.23.1 F2 - Reset Up Run Time screen

The Reset Up Run Time screen displays Up Run Time.

- F1 = Main Menu (Return to Main Menu Screen)
- F5 = Reset Up Run Time to zero
- F8 = Back (Return to previous screen)

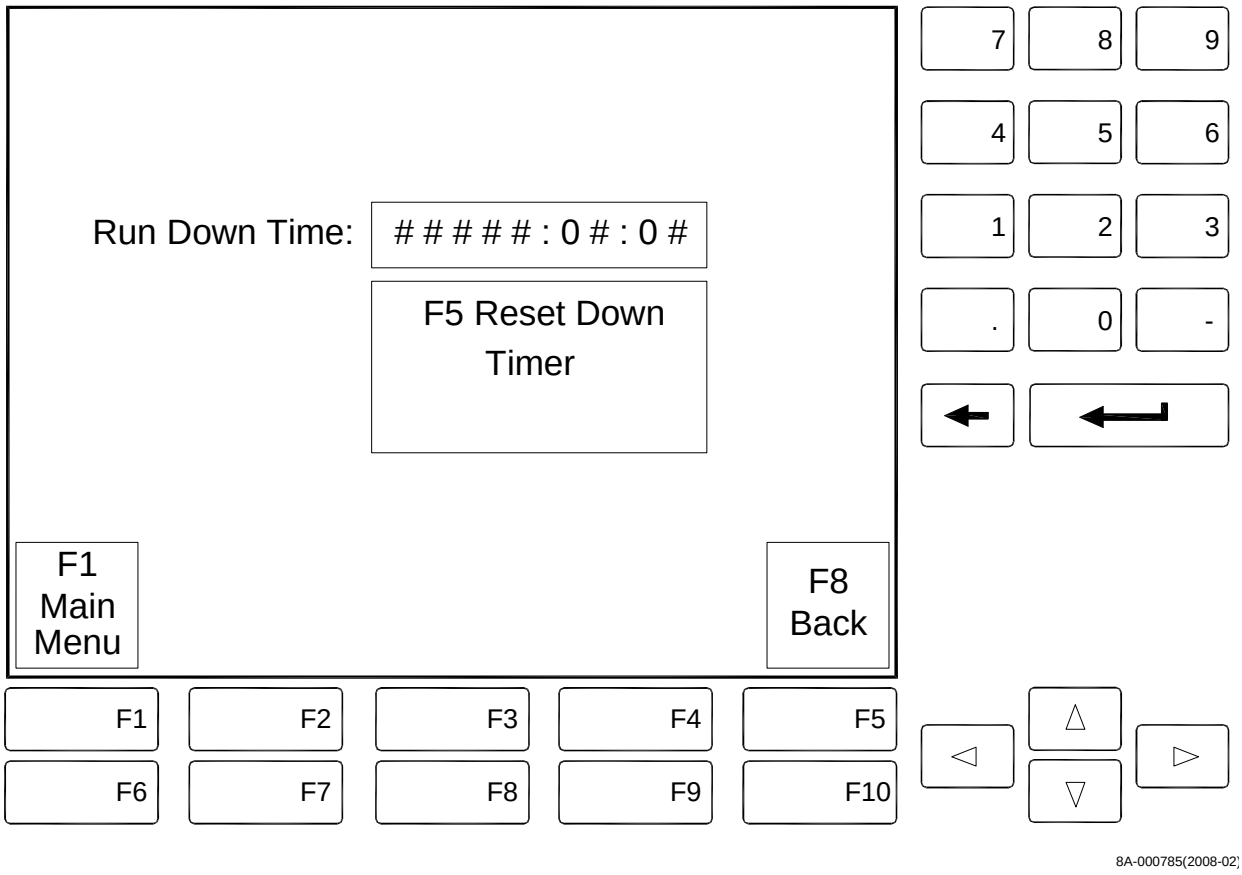


8A-000784(2008-01)

3.23.2 F3 - Reset Down Run Time screen

The Reset Down Run Time screen displays Down Run Time.

- F1 = Main Menu (Return to Main Menu Screen)
- F5 = Reset Down Run Time to zero
- F8 = Back (Return to previous screen)

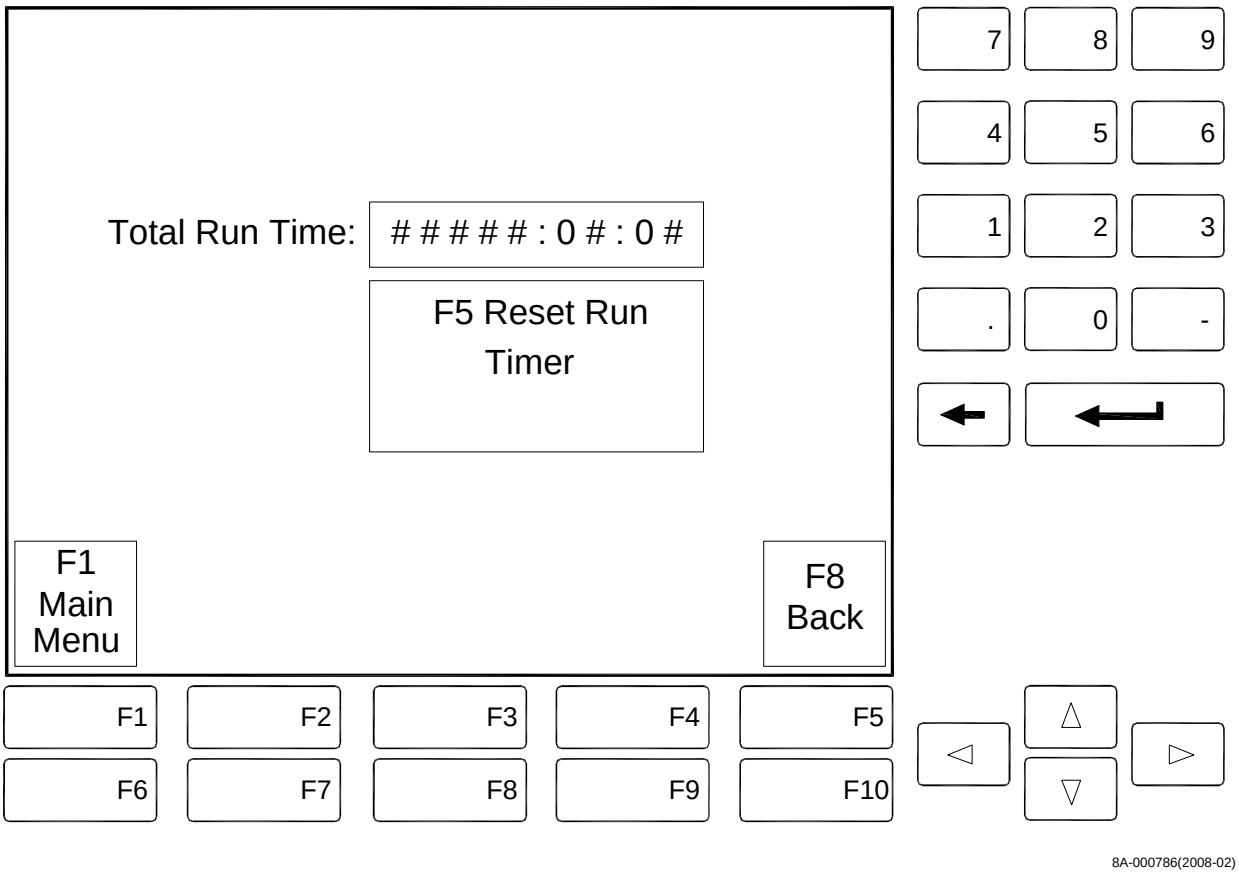


8A-000785(2008-02)

3.23.3 F4 - Reset Total Run Time screen

Reset Total Run Time screen displays Total Run Time.

- F1 = Main Menu (Return to Main Menu Screen)
- F5 = Reset Total Run Time to zero
- F8 = Back (Return to previous screen)



8A-000786(2008-02)

3.23.4 F8 = Set Time screen

The Adjust Clock screen displays Date and Time.

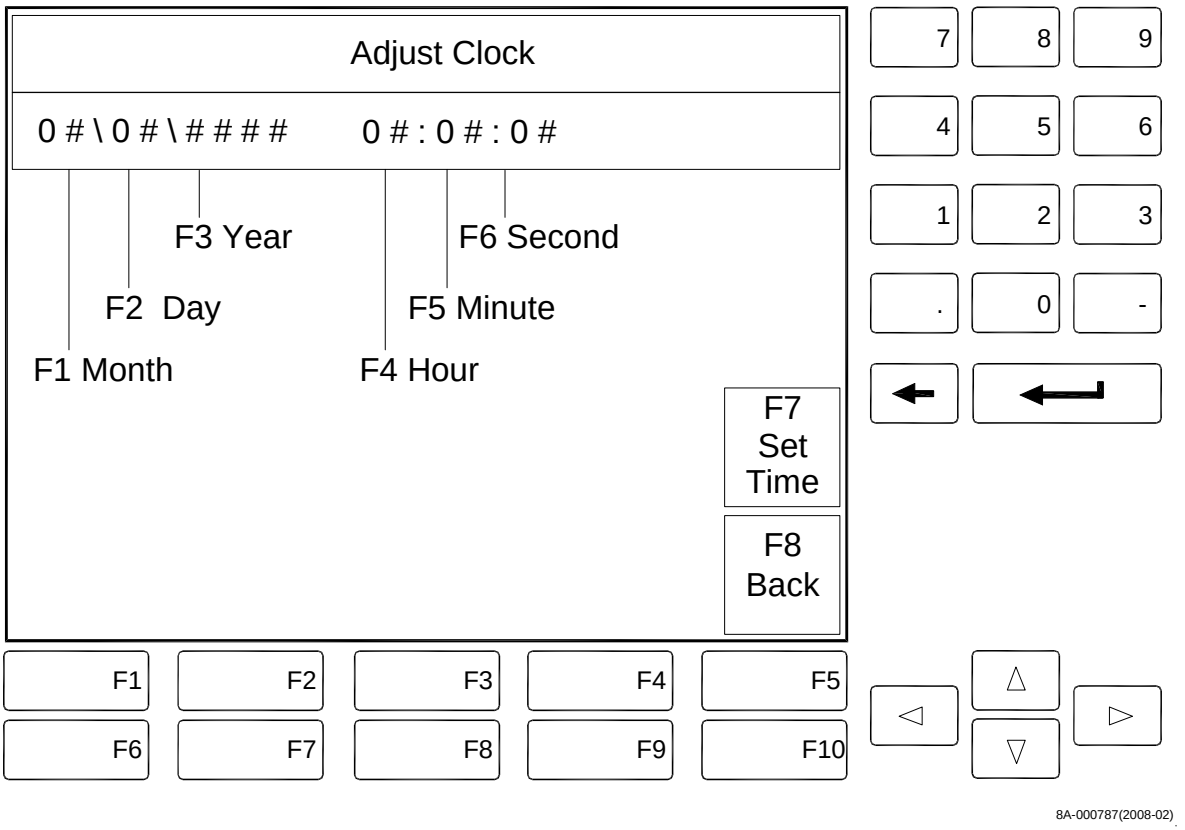
- F1 = Month (Allows edit of month. Enter month using number keys)
- F2 = Day (Allows edit of day. Enter day using number keys)
- F3 = Year (Allows edit of year. Enter year using number keys)
- F4 = Hour (Allows edit of hour. Enter hour using number keys)
- F5 = Minute (Allows edit of minutes. Enter minutes using number keys)
- F6 = Second (Allows edit of seconds. Enter seconds using number keys)
- F7 = Set Time (Accept and update Date and Time to as shown on screen)
- F8 = Back (Return to previous screen)

NOTE! **The time and date can only be set using the Panel View Control Register.**

For more information, refer to Parameter Setup Sheet.

- Use the left and right arrow keys to access the Panel View Control Register.

8-000696 (2010-03)



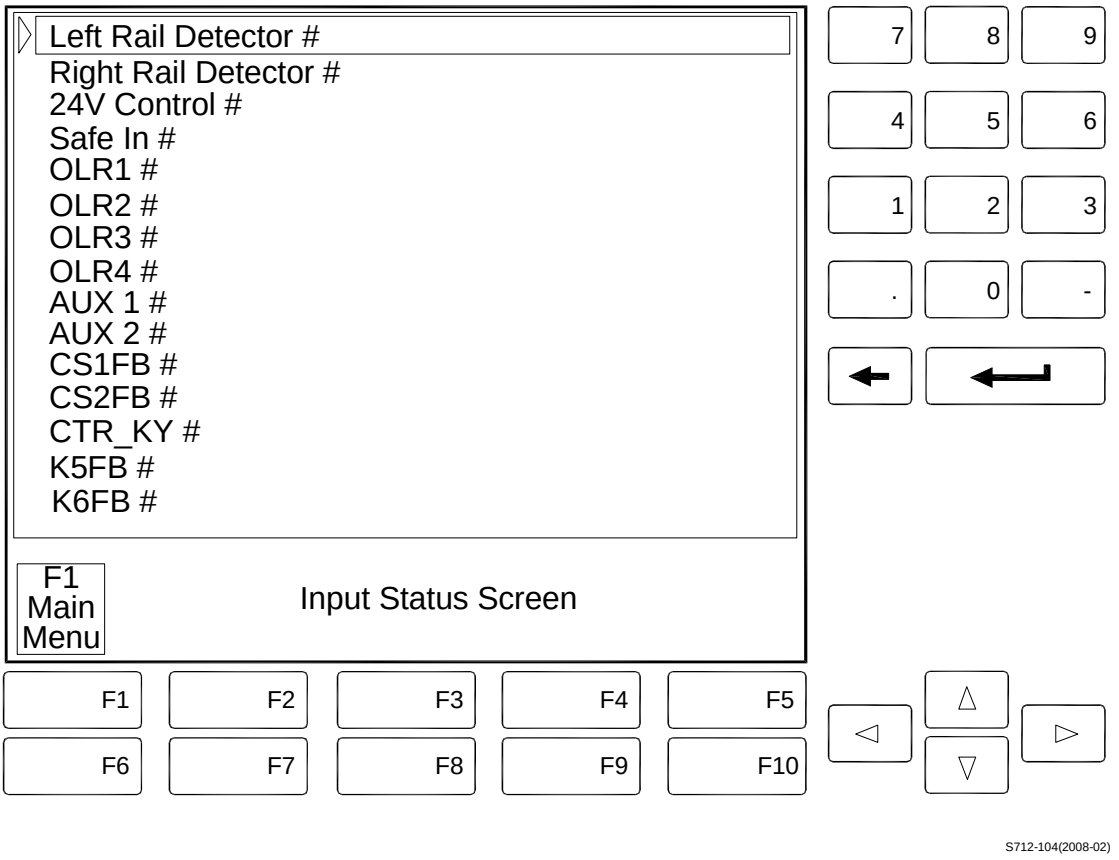
8A-000787(2008-02)

3.24 Description of Input Device Status Screen

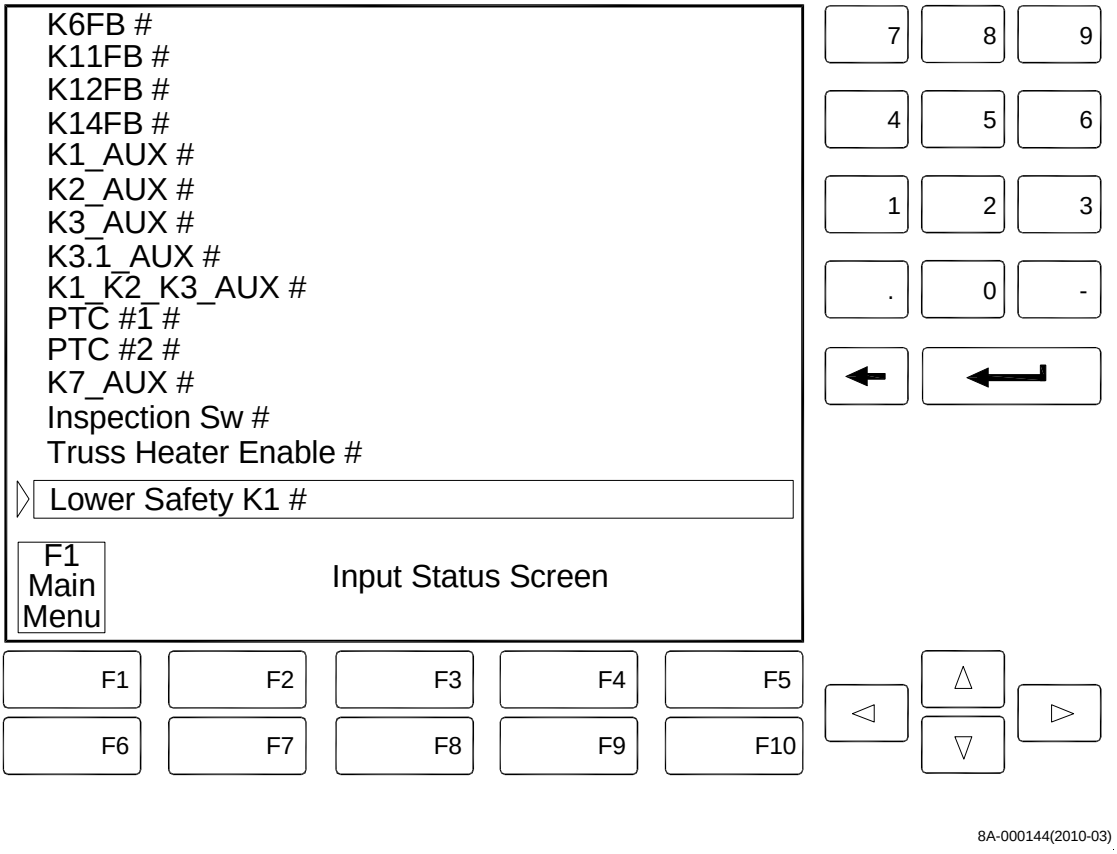
Displays state of all inputs to PLC in controller and all inputs on remote I/O blocks located in the escalator truss. Includes all safety switches, handrail speed sensors, missing step detectors, encoder, motor overload relays, PTC relay, motor contactors, relay interface board, etc.

Use Up and Down Arrow keys to scroll through I/O listing.

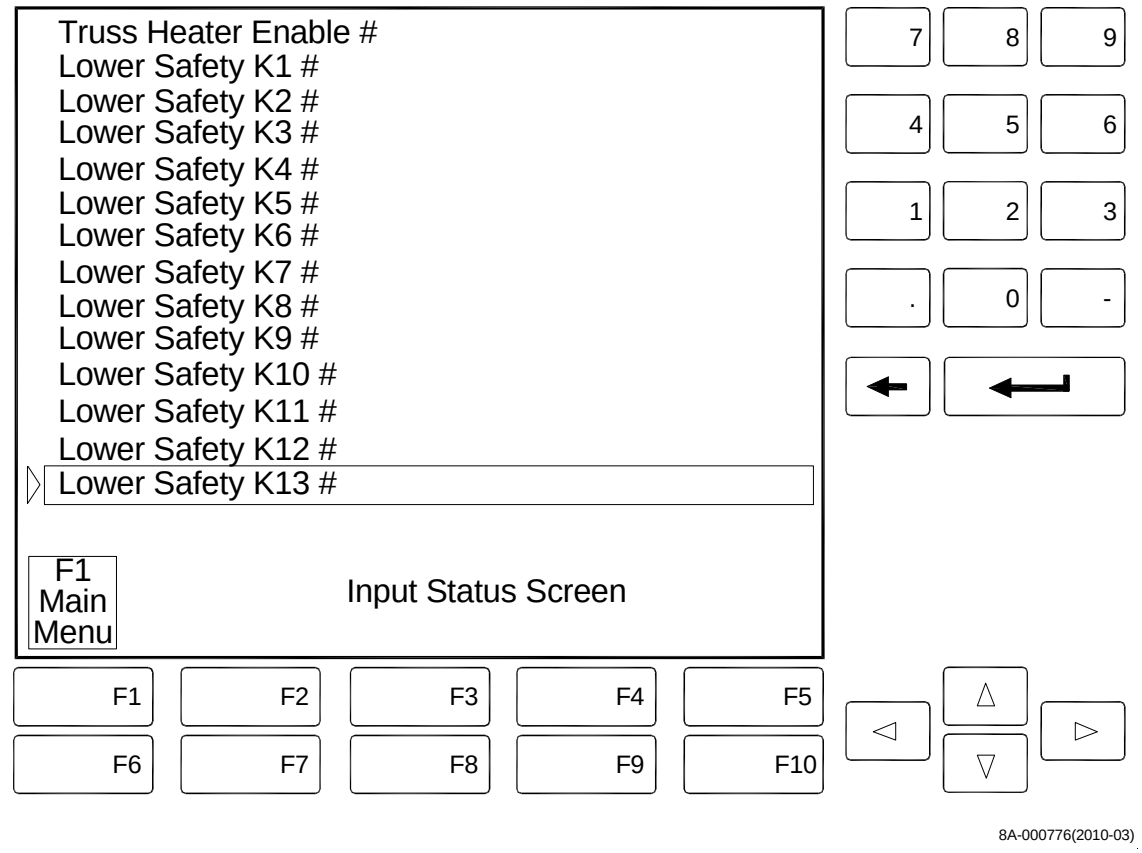
– F1 = Main Menu (Return to Main Menu Screen)



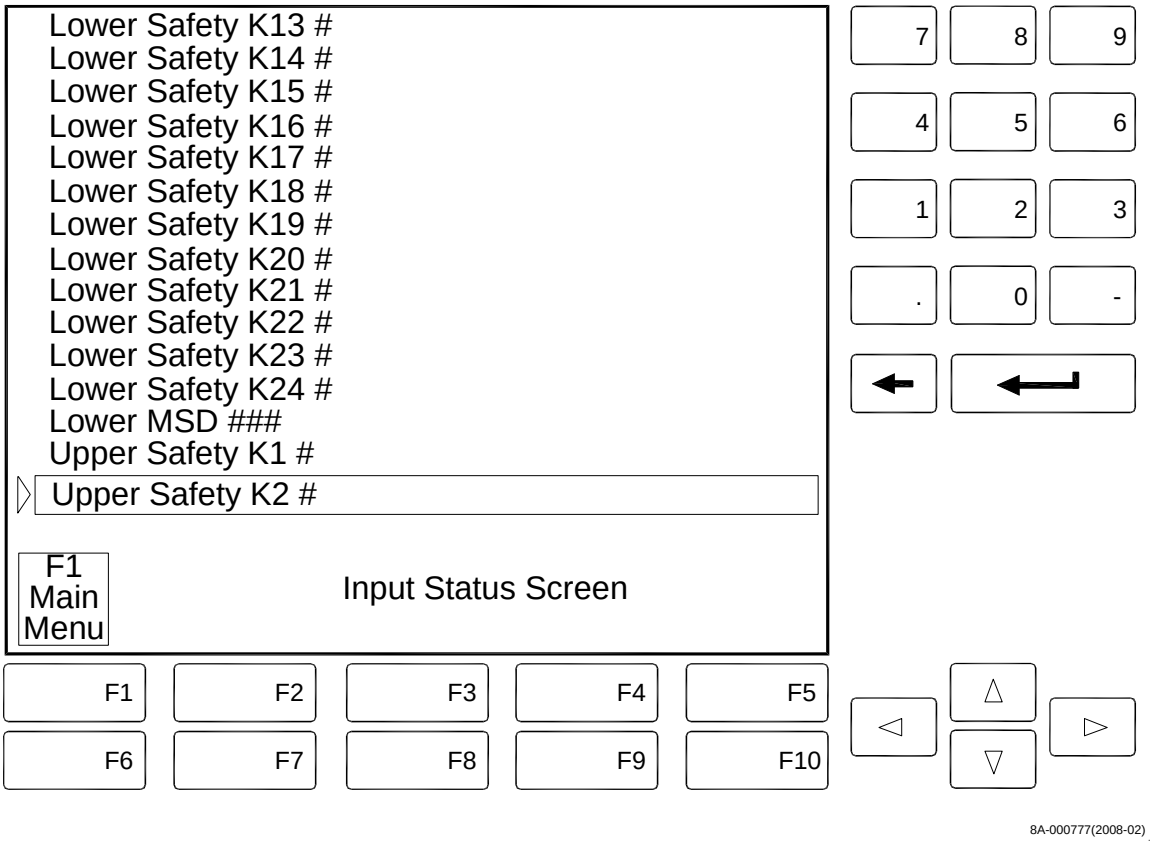
Typical Input Device Status Screen



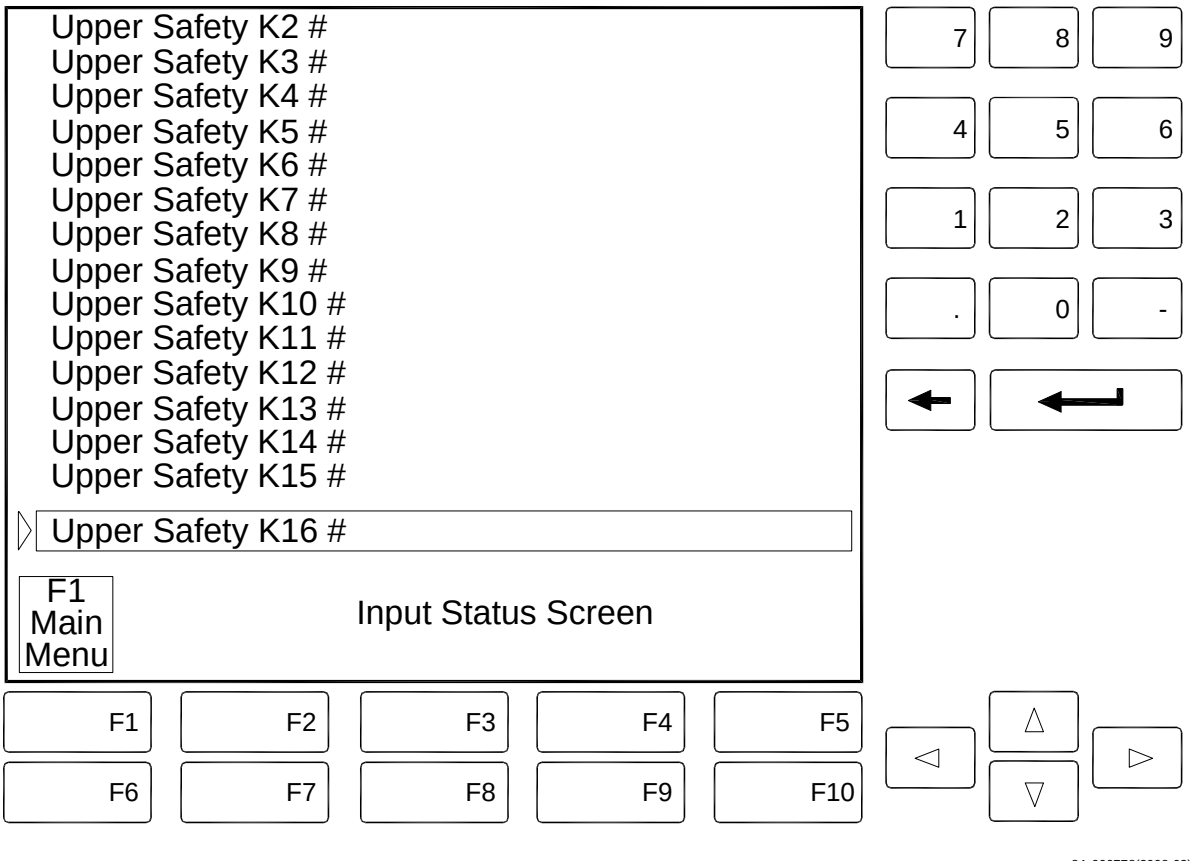
Input Device Status screen shown after scrolling from previous screen.



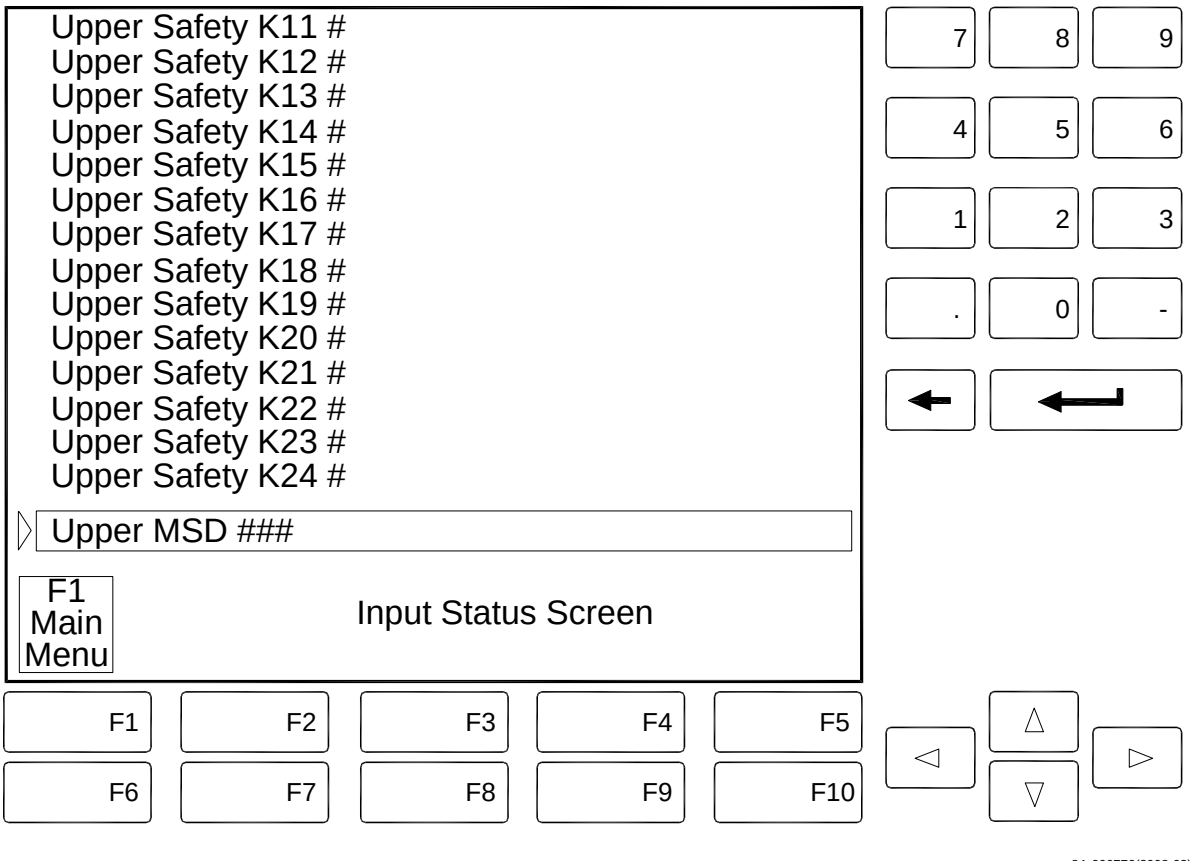
Input Device Status screen shown after scrolling from previous screen.



Input Device Status screen shown after scrolling from previous screen.



Input Device Status screen shown after scrolling from previous screen.



Input Device Status screen shown after scrolling from previous screen.

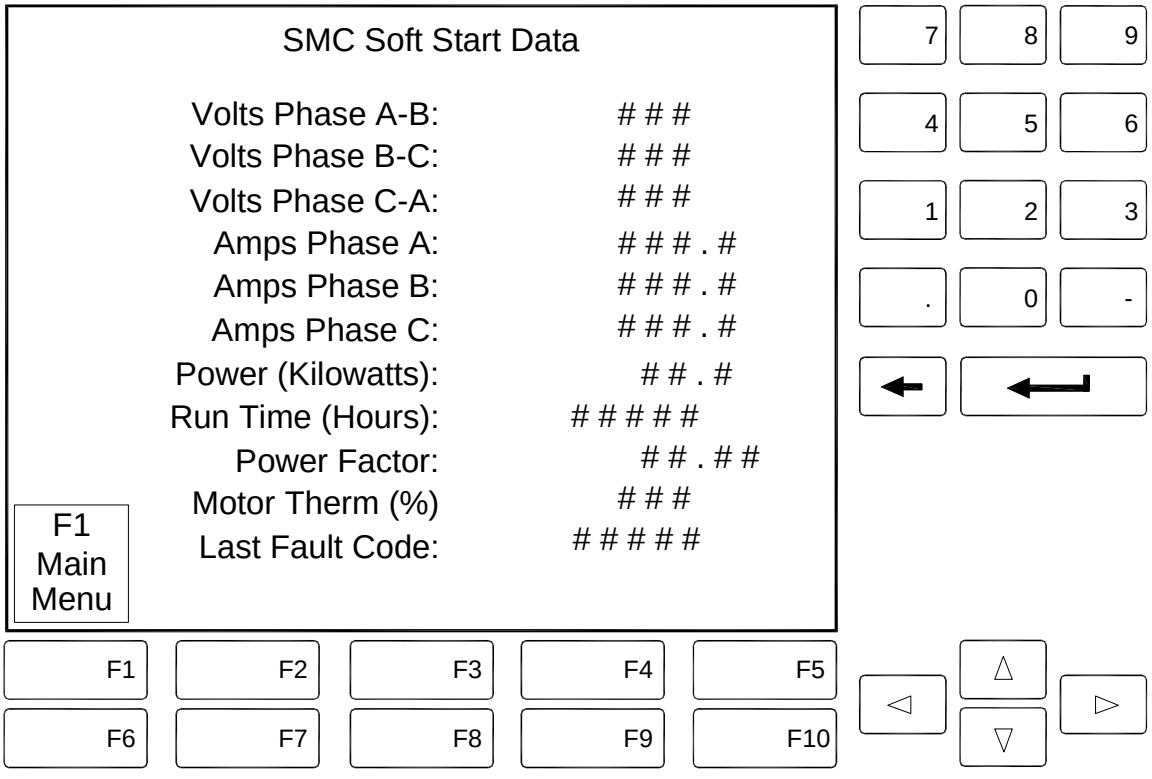
8-000697 (2008-01)

3.25 Description of Soft Start Data Screen

Soft Start Data Screen displays the following.

- Volts Phase A-B:###
- Volts Phase B-C: ###
- Volts Phase C-A:###
- Amps Phase A:###.#
- Amps Phase B:###.#
- Amps Phase C:###.#
- Power (Kilowatts):##.#
- Run Time (Hours):#####
- Power Factor:##.##
- Motor Therm (%):###
- Last Fault Code:#####
  - F1 = Main Menu (Return to Main Menu Screen)

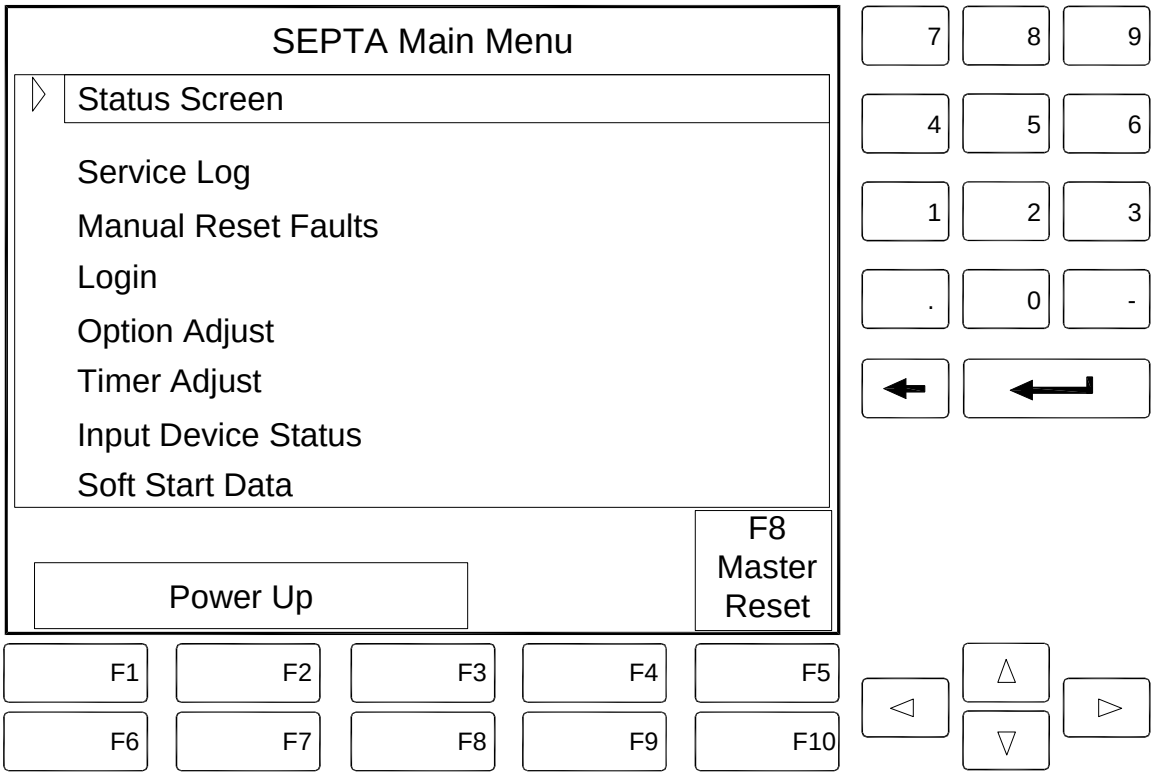
8-000698 (2008-01)



S712-105(2008-02)

3.26 Description of Master Reset screen

If F8 Master Reset is pressed at the Main Menu screen the F8 Master Reset screen appears.

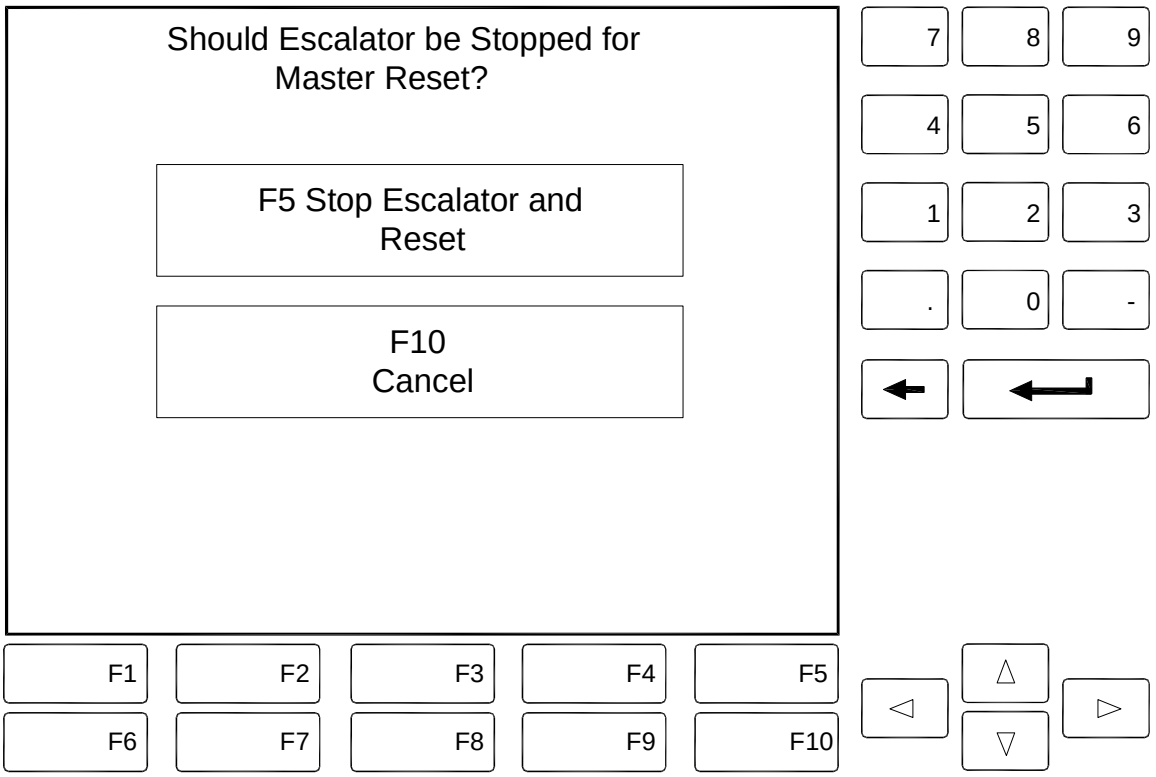


8A-000116(2005-07)

F8 Master Reset screen

- F8 = Master Reset if escalator is not running
- F5 = Stop Escalator if escalator is running
- F10 = Cancel request to reset

8-000699 (2008-06)



S712-106(2008-02)

3.27 Description of Status Code

Faults are recorded only when Start Command exists or when escalator is in the RUN or Stop Mode.

Events are recorded when the event occurs unless the event is also recorded in fault log. In this case, the Event is recorded under the same rules as a Fault.

Status Code	
Value	**Mode in which Fault or Event occurred.**
1	Power Up
2	Not Ready
3	Construct
4	Ready
5	Inspect Start Up
6	Inspect Start Down
7	Normal Start Up
8	Normal Start Down
9	Run Up
10	Run Down
11	Stop
12	Power Loss

712-011 (1/2002)

3.28 Description of alarm buzzer indications

Alarm buzzer indications				
No. of Alarms	**Duration of Alarms**	**Time of Occurrence**	**Indication**	**Notes**
1	2 seconds	While stopped	Inspection Mode entered	Inspect Input went Low
1	2 - 4 seconds	While running	Handrail 15% speed deviation	Alarm stops when deviation is corrected or when deviation exists for 4 seconds. Shut-down occurs at the end of 4 seconds.
1	15 seconds	While running	Fire or Smoke Alarm active	Alarm stops when fire alarm contacts close or when 15 seconds expire. Shut-down occurs at the end of the 15 seconds if fire alarm is still active.
1	1/2 seconds	While starting	Run Mode has been achieved. Start switch must be released	If Start switch has not been released within 10 seconds after the 1/2 second alarm has sounded, the PLC generates a Start Switch Not Returned to Center fault and shuts escalator off.
2	1/2 seconds	While stopped	Normal Mode has been entered from the Inspection Mode	Inspect Input went High
3	1/2 seconds	While starting	Starting while in the Inspect Mode	Indicates the escalator is about to start moving.
			Fault has occurred or fault still exists	Correct and clear all faults before starting. PLC must be in READY Mode to avoid this alarm when starting.

8-000701 (2009-04)

4 INITIAL START-UP

4.1 Initial start-up of the escalator

For more information on safety during initial start-up, refer to section titled: Safety, in this document.

1. Check all wiring according to wiring diagram.
2. Make sure there are no loose or exposed wires.
3. Turn power ON, and allow the controller time to fully boot up and establish communication to all remote I/O blocks and fault displays.
   – This is the Power Up Mode. The controller will remain in the Power Up Mode for almost 60 seconds.
4. Follow instructions for Brake Controller Setup.
   For more information refer to section titled: PM Brake Controller Setup for PLC Controllers, in this document.
5. After the Power Up Mode is exited, correct any reason that is preventing the Ready Mode from being entered.
6. Set PLC Parameters according to contract-specific Parameter Settings sheet.
7. Set AC drive parameters shown on contract-specific wiring diagram.
8. After the Ready Mode is entered, remove pendant control blind plugs, and plug-in the pendant control.
   – Plugging the pendent control in will allow the controller to run in the Inspect Mode only.
9. Make final Brake Current adjustments, by running the escalator in either direction using the pendant control. Make sure the brake opens cleanly without any rubbing sound from the brake.
   – If any brake is not opening cleanly, adjust the brake current while the escalator is running. Slowly rotate the specific brake controller potentiometer R9 in either direction to change current until the brake opens cleanly.
   – If the brake current cannot be adjusted so the brake opens cleanly, there may be a mechanical assembly problem with the brake itself.

NOTE! Make sure the brake opens cleanly without any rubbing sound from the brake.

10. After the brakes are working properly, start the escalator in the DOWN direction.
    – Make sure the escalator starts and moves in the intended direction.

NOTE! Test one motor at a time.

   – If the escalator starts in the wrong direction, verify the AC Drive is providing a correct Direction Output.
   – If AC drive is not providing a correct direction output, check the control wiring to the AC drive and verify correct operation according to wiring diagram.
   – If the AC Drive is providing a forward and reverse output correctly, swap wires T1 and T3 on the OLR for the motor that is running in the wrong direction.
11. After the escalator starts and runs in the Inspect Mode in both directions, stop the escalator.
12. Re-install the pendent control blind plugs.
13. Disconnect all motors but one, and start the escalator in either direction to verify proper rotation.
    – If rotation is opposite of selected direction, and if the correct contactor K1 or K2 is

selected, swap wires T1 and T3 on the OLR for the motor that is running in the wrong direction.
- Verify all motors start in the correct direction, and reconnect all motors.

14. With all motors reconnected, re-verify proper rotation when starting the escalator in the UP or DOWN direction.

NOTE! If the T1 and T3 wires were swapped on the OLRs wired to the AC drive, retest for proper rotation while in the Inspect mode. If direction of rotation is now incorrect, swap T1 and T3 on the AC drive.

15. With the escalator in RUN Mode, start the escalator in either direction.
    - Hold the start switch until the PLC has sounded the alarm for 1/2 second, or until the PLC shuts the escalator off with a fault.
    - If a fault occurs while starting, the alarm will sound three times. The fault is displayed in the Main Status Screen or in the Current Fault Log.
16. Correct any fault that occurs.

4.2 Starting escalator notes

NOTE! Initially, the start switch must be held until the PLC determines the system is functioning properly.

- The PLC checks the status of the control relays and motor starters before the start is allowed.
- The PLC checks the escalator is moving in the correct direction.
- The PLC checks the escalator reaches full rated speed.
- The PLC checks the handrails are moving at the proper speed.
- The PLC checks no opening in the step band caused by a missing step emerging from the combplate after a holding circuit is achieved.

NOTE! An opening in the step band may emerge from under the combplate while the escalator is being started. The attendant must observe the step band while the escalator is being started.

- The PLC checks no faults exist.
- After all checks have been made and no faults exists, the PLC sounds the alarm for 1/2 second. At this time the attendant can release the start switch.
- If the start switch is released before the alarm sounds then the escalator stops, and no holding circuit is achieved.

NOTE! The start switch must be released within 10 seconds after the alarm sounds otherwise the PLC will generate a Key Switch Not Returned To Center fault and shut down the escalator.

8-000678 (2008-06)

5 DIAGNOSTIC GUIDE (EVENT CODE CORRECTIVE ACTIONS)

5.1 Diagnostic guide (event code corrective actions)

5.1.1 Finding an open switch

1. View Current Fault log on controller fault display.
   – Clearing the Current Fault Log will clear only non-manual reset faults that have been corrected physically. All other faults will remain until the fault has been corrected, and all manual reset type faults have been reset from the Manual Reset Screen.
2. View Truss Fault Display if available.
   – Truss Fault Display shows the most recent fault in the Current Fault Log.
3. Look at the CETEK Input Board LEDs.
   – All switch input LEDs are illuminated when the switch is closed.
   – If a switch is open, the associated LED is OFF.

5.1.2 Diagnostic guide

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
00	Not Used	Not Used
01 Through 64	Safety Switch was actuated.	Identify switch that is activated. Determine cause of switch actuation and correct condition.
	All safety switches are closed but switch fault needs to be manually reset.	Perform manual reset fault. **For more information on resetting faults, refer to section titled: Description of Resets.**
	Safety Switch wiring incomplete.	Identify switch node that is open. Determine cause of open circuit and correct condition
32 Lower Missing Step Detector (Manual Reset) (Ignored in Inspect Mode)	Lower MSD sensor is not sensing step trail wheel bolt.	Check for missing step.
		Check adjustment of lower MSD sensor. • Sensor should be adjusted to within 6 mm [1/4 in.] of the trail wheel bolt.
	Lower MSD sensor is not receiving 24 vdc.	Check MSD sensor wiring. *Refer to Wiring Diagram.*
		Check for 24 vdc on the MSD terminals on the CPU board. *Refer to Wiring Diagram.*
	CPU board input for the Lower MSD is not receiving a signal from the Lower MSD.	Check MSD sensor wiring. *Refer to Wiring Diagram.*
		If all of the above items are okay and if signal is still not received, replace sensor.

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
64 Upper Missing Step Detector (Manual Reset) (Ignored in Inspect Mode)	Upper MSD sensor is not sensing step trail wheel bolt.	Check for missing step.
		Check adjustment of upper MSD sensor. • Sensor should be adjusted to within 6 mm [1/4 in.] of the trail wheel bolt.
	Upper MSD sensor is not receiving 24 vdc.	Check MSD sensor wiring. *Refer to Wiring Diagram.*
		Check for 24 vdc on the MSD terminals on the CPU board. *Refer to Wiring Diagram.*
	CPU board input for the Upper MSD is not receiving a signal from the Upper MSD.	Check MSD sensor wiring. *Refer to Wiring Diagram.*
		If all of the above items are okay and if signal is still not received, replace sensor.
65 Panel View Stop (Non-manual Reset)	Stop initiated through the Fault Displays Reset button.	None
66 Not Used	Not Used	Not Used
67 Stop Distance Too Short (Non-Manual Reset) (Ignored in Inspect Mode)	Escalator stopped in a distance shorter than required by code. • Minimum stop distance for escalator rated speed 90 ft/min = 4.5 in. • Minimum stop distance for escalator rated speed 100 ft/ min = 5.55 in. • Minimum stop distance for other escalator rated speeds = (V^2 /6) x 12 in. (V = ft/ second)	Check to make sure parameters, Rated Speed and Encoder Frequency, are set to contract-specific requirements.
		Check for proper operation of brake.
		Adjust brake torque settings according to Brake Torque tag.
68 SS2 Not OFF (Non-Manual Reset) (Ignored in Inspect Mode)	1:3/4 low when O:3/3 OFF	Check wiring to I:3/4. *Refer to Wiring Diagram.*
		Check operation of SS2 Aux contact.
		Check operation of SS2.
69 SS2 Shut OFF (Non-Manual Reset) (Ignored in Inspect Mode)	1:3/3 high when O:3/3 ON	Check wiring to I:3/4. *Refer to Wiring Diagram.*
		Check operation of SS2 Aux contact.
		Check operation of SS2.
70	Not Used	Not Used

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
71 Left Handrail Speed Sensor (Greater than 15% speed deviation) (Manual Reset) (Ignored in Inspect Mode)	Left handrail speed sensor roller had slowed or has stopped.	Check for slowed handrail.
		Check adjustment of handrail speed sensor roller. • Roller should rotate continuously without speed deviation through the entire length of handrail.
		If handrail speed sensor roller does not rotate freely, repair or replace roller assembly.
	Left handrail speed sensor is not sensing the steel pins in the handrail speed sensor roller assembly.	Check roller for steel pins. • Pins should be 12 in number and oriented to the edge of the roller on the side where the sensor is located.
		Check adjustment of sensor. • There should be a maximum gap of 1 mm [3/64 in.] gap between the dowel pin and the sensor.
	Left handrail speed sensor is not receiving 24 vdc.	Check Left handrail speed sensor wiring. *Refer to Wiring Diagram.*
		Check for 24 vdc on the Left handrail speed sensor terminals. *Refer to Wiring Diagram.*
	PLC input for handrail speed sensor is not receiving a signal from the Left handrail speed sensor.	Check Left handrail speed sensor wiring. *Refer to Wiring Diagram.*
		If all of the above items are okay and if signal is still not received, replace sensor.

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
72 Right Handrail Speed Sensor (Greater than 15% speed deviation) (Manual Reset) (Ignored in Inspect Mode)	Right handrail speed sensor roller had slowed or has stopped.	Check for slowed handrail.
		Check adjustment of handrail speed sensor. • Roller should rotate continuously without speed deviation through the entire length of handrail.
		If handrail speed sensor roller does not rotate freely, repair or replace roller assembly.
	Right handrail speed sensor is not sensing the steel pins in the handrail speed sensor roller assembly.	Check roller for steel pins. • Pins should be 12 in number and oriented to the edge of the roller on the side where the sensor is located.
		Check adjustment of sensor. • There should be a maximum gap of 1 mm [3/64 in.] gap between the dowel pin and the sensor.
	Right handrail speed sensor is not receiving 24 vdc.	Check Right handrail speed sensor wiring. *Refer to Wiring Diagram.*
		Check for 24 vdc on the Right handrail speed sensor terminals. *Refer to Wiring Diagram.*
	PLC input for Right handrail speed sensor is not receiving a signal from the handrail speed sensor.	Check Right handrail speed sensor wiring. *Refer to Wiring Diagram.*
		If all of the above items are okay and if signal is still not received, replace sensor.
73 Left Handrail Speed Sensor (Greater than 5% but less than 15% speed deviation.) Deviation must exist continuously for 10 seconds to be recorded. Only one record per start. (Non-manual Reset) (Ignored in Inspect Mode)	Left handrail speed sensor roller had slowed or has slowed.	Check for slowed handrail.
		Check adjustment of handrail speed sensor roller. • Roller should rotate continuously without speed deviation through the entire length of handrail.
		If handrail speed sensor roller does not rotate freely, repair or replace roller assembly.
	Left handrail speed sensor is not consistently sensing the steel pins in the handrail speed sensor roller assembly.	Check roller for steel pins. • Pins should be 12 in number and oriented to the edge of the roller on the side where the sensor is located.
		Check adjustment of sensor. • There should be a maximum gap of 1 mm [3/64 in.] gap between the dowel pin and the sensor.

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
74 Right Handrail Speed Sensor (Greater than 5% but less than 15% speed deviation.) Deviation must exist continuously for 10 seconds to be recorded. Only one record per start. (Non-manual Reset) (Ignored in Inspect Mode)	Right handrail speed sensor roller had slowed or has slowed.	Check for slowed handrail.
		Check adjustment of handrail speed sensor roller. • Roller should rotate continuously without speed deviation through the entire length of handrail.
		If handrail speed sensor roller does not rotate freely, repair or replace roller assembly.
	Right handrail speed sensor is not consistently sensing the steel pins in the handrail speed sensor roller assembly.	Check roller for steel pins. • Pins should be 12 in number and oriented to the edge of the roller on the side where the sensor is located.
		Check adjustment of sensor. • There should be a maximum gap of 1 mm [3/64 in.] gap between the dowel pin and the sensor.
75 Underspeed (Non-manual Reset) (Ignored in Inspect Mode)	Escalator did not attain 95% of rated speed upon start-up.	Check to make sure Rated Speed and Encoder Frequency parameters are set to contract-specific requirements.
		Check for proper operation of brake.
		Check for proper operation of soft start or AC drive. • Ramp up to full rated speed time should be less than or equal to 10 seconds.
		Check for proper operation of motor.
	Escalator had slowed to less than 20% of rated speed after attaining rated speed	Check for proper operation of brake.
		Check for proper operation of soft start or AC drive.
		Check for proper operation of motor.

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
76 Reverse Direction Detected (Manual Reset) (Ignored in Inspect Mode)	Escalator started in the opposite selected direction.	Make sure key switch selected direction matches the associated motor contactor actually selected. (UP = K1, DOWN = K2.)
		Make sure motor rotation matches selected motor contactor. (K1 = UP, K2 = DOWN). • If not correct, swap T1 and T2 motor wires.
	Escalator starts in correct direction but CPU still senses wrong direction.	Make sure key switch selected direction matches the associated motor contactor actually selected. (UP = K1, DOWN = K2.)
		Swap encoder inputs for Channel A and Channel B. *Refer to Wiring Diagram.*
	Escalator rolls backwards when starting in the UP direction during brake load testing.	Increase starting torque on soft start until no roll-back occurs during start.
77 High Speed Counter Card Fault (Non-manual Reset) (Ignored in Inspect Mode)	PLC High Speed Counter Card has faulted.	Power cycle controller.
	PLC High Speed Counter Card has invalid configuration detected.	Reload PLC software.
		Replace High Speed Counter Card.
78 Motor #1 Temp (Non-manual Reset) (Ignored in Inspect Mode)	Motor #1 has over-heated.	Check for over-load condition on escalator.
		Check for single-phase condition on motor.
		Allow more time between consecutive starts during service. Let motor cool.
79 PTC #1 Open (Non-manual Reset) (Ignored in Inspect Mode)	PTC #1 is not required and the Parameter for PTC #1 is ENABLED.	Set PTC #1 parameter to DISABLE.
	Wiring to PTC #1 has become shorted or disconnected.	Check wiring to PTC#1. *Refer to Wiring Diagram.*
	PTC #1 has tripped.	Check for over-load condition on escalator.
		Check for single-phase condition on motor.
		Allow more time between consecutive starts during service. Let motor cool.
		PTC#1 is defective. Replace PTC#1.
80 Motor #2 Temp (Non-manual Reset) (Ignored in Inspect Mode)	Motor #2 has over-heated.	Check for over-load condition on escalator.
		Check for single-phase condition on motor.
		Allow more time between consecutive starts during service. Let motor cool.

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
81 PTC #2 Open (Non-manual Reset) (Ignored in Inspect Mode)	PTC #2 is not required and the Parameter for PTC #2 is ENABLED.	Set PTC #2 parameter to DISABLE.
	Wiring to PTC #2 has become shorted or disconnected.	Check wiring to PTC #2. *Refer to Wiring Diagram.*
	PTC #2 has tripped.	Check for over-load condition on escalator.
		Check for single-phase condition on motor.
		Allow more time between consecutive starts during service. Let motor cool.
		PTC #2 is defective. Replace PTC #2.
82 Key Switch Not Returned to Center (Non-manual Reset) (Ignored in Inspect Mode)	There is no UP or DOWN start signal for a time period greater than one second while start switch is not in the center position. • If the center start switch wiring is incomplete while the start switch is in the center position, the PLC will sound the error alarm every time a start command is given. NOTE! The PLC must see the start switch has returned to center before a start command is considered valid.	Make sure to hold start switch continuously in the start position while starting.
		Check Start Switch wiring. Make sure the proper signal exists on the relay board and on the PLC input card for each of the three start switch positions. *Refer to Wiring Diagram.*
	The Start Switch did not return to the center position within 10 seconds after the escalator started.	Release the start switch after the start buzzer sounds.
		Check for proper operation of start switch.
83 Key Switch Malfunction (Non-manual Reset)	More than one start reference exists at the same time. [Center + (start-up or down)] or (start-up and Start-down.)	Correct wiring to start switch. *Refer to Wiring Diagram.*
84 K1 Not Released (Non-manual Reset)	Wiring error between 24 vdc and the K1 auxiliary contacts and PLC input card.	Correct wiring to K1 auxiliary contacts wired to 24 vdc and the PLC. *Refer to Wiring Diagram.*
	K1 has welded auxiliary contacts.	Repair or replace K1 contactor assembly.

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
85 K1 De- energized (Non-manual Reset)	The Up Motor contactor, K1, de-energized while the escalator was running and the CPU board could not determine the cause of shut-down.	A momentary glitch occurred in the main AC supply. Losing one line cycle will cause AC relays to de-energize.
		A momentary glitch occurred in the safety chain. If problem persists determine cause of glitch and correct problem.
		A momentary glitch occurred in the Inspect Circuit. If problem persists determine cause of glitch and correct problem.
		Check the holding circuit for the K1 contactor. *Refer to Wiring Diagram.*
86 K2 Not Released (Non-manual Reset)	Wiring error between 24 vdc and the K2 auxiliary contacts and PLC input card.	Correct wiring to K2 auxiliary contacts wired to 24 vdc and the PLC. *Refer to Wiring Diagram.*
	K2 has welded auxiliary contacts.	Repair or replace K2 contactor assembly.
87 K2 De- energized (Non-manual Reset)	The Down Motor contactor, K2, de-energized while the escalator was running and the CPU board could not determine the cause of shut-down.	A momentary glitch occurred in the main AC supply. Losing one line cycle will cause AC relays to de-energize.
		A momentary glitch occurred in the safety chain. If problem persists determine cause of glitch and correct problem.
		A momentary glitch occurred in the Inspect Circuit. If problem persists determine cause of glitch and correct problem.
		Check the holding circuit for the K2 contactor. *Refer to Wiring Diagram.*
88 K3 Not Released/SS1 Not Off (Non-manual Reset)	I:3/3 low when O:0/6 OFF. Wiring error between 24 vdc and the K3/SS1 auxiliary contacts and PLC input card.	Check wiring to I:3/3
		Check operation of K3/SS1 Aux contact.
		Check operation of K3/SS1.
89 K3 De- energized/SS1 shut Off (Non-manual Reset)	I:3/3 high when O:0/6 On.	Check wiring to I:3/3
		Check operation of K3/SS1 Aux contact.
		Check operation of K3/SS1.
	K3/SS1 de-energized while the escalator was running and the CPU board could not determine the cause of shut-down.	A momentary glitch occurred in the main AC supply. Losing one line cycle will cause AC relays to de-energize.
		A momentary glitch occurred in the safety chain or Inspect Circuit. If problem persists determine cause of glitch and correct problem.

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
90 K3.1 (Brake Relay) Not Released (Non-manual Reset)	Wiring error between 24 vdc and the K3.1 auxiliary contacts and PLC input card.	Correct wiring to K3.1 auxiliary contacts wired to 24 vdc and the PLC. *Refer to Wiring Diagram.*
	K3.1 has welded auxiliary contacts.	Repair or replace K3.1 relay assembly.
91 K3.1 (Brake Relay) De- energized (Non-manual Reset)	The Brake Relay, K3.1, de-energized while the escalator was running and the CPU board could not determine the cause of shut-down.	A momentary glitch occurred in the main AC supply. Losing one line cycle will cause AC relays to de-energize.
		A momentary glitch occurred in the safety chain. If problem persists determine cause of glitch and correct problem.
		A momentary glitch occurred in the Inspect Circuit. If problem persists determine cause of glitch and correct problem.
		Check the holding circuit for the K3.1 contactor. *Refer to Wiring Diagram.*
92 Not used	Not used	Not used
93 K5 SAFE1 Relay Not Released (Non-manual Reset)	Wiring error between 24 vdc and the PLC output relay and connector J14 on the Relay Interface Board.	Correct wiring between 24 vdc and the PLC output relay and connector J14 on the Relay Interface Board. *Refer to Wiring Diagram.*
	PLC output relay wired to connector J14 on the Relay Interface Board is not functioning properly.	Replace PLC relay output module.
	Relay Interface Board relay K5 has shorted contacts.	Replace K5 relay.
94 K5 SAFE1 Relay De-energized (Non-manual Reset)	Wiring error between 24 vdc and the PLC output relay and connector J14 on the Relay Interface Board.	Correct wiring between 24 vdc and the PLC output relay and connector J14 on the Relay Interface Board. *Refer to Wiring Diagram.*
	PLC output relay wired to connector J14 on the Relay Interface Board is not functioning properly.	Replace PLC relay output module.
	Relay Interface Board relay K5 will not energize.	Replace K5 relay.
95 K6 SAFE2 Relay Not Released (Non-manual Reset)	Wiring error between 24 vdc and the PLC output relay and connector J14 on the Relay Interface Board.	Correct wiring between 24 vdc and the PLC output relay and connector J14 on the Relay Interface Board. *Refer to Wiring Diagram.*
	PLC output relay wired to connector J14 on the Relay Interface Board is not functioning properly.	Replace PLC relay output module.
	Relay Interface Board relay K6 has shorted contacts.	Replace K6 relay.

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
96 K6 SAFE2 Relay De-energized (Non-manual Reset)	Wiring error between 24 vdc and the PLC output relay and connector J14 on the Relay Interface Board.	Correct wiring between 24 vdc and the PLC output relay and connector J14 on the Relay Interface Board. *Refer to Wiring Diagram.*
	PLC output relay wired to connector J14 on the Relay Interface Board is not functioning properly.	Replace PLC relay output module.
	Relay Interface Board relay K6 will not energize.	Replace K6 relay.
97 K14 Relay Fault (Center Start ON and K14 OFF) (Non-manual Reset)	K14 is de-energized but 24 vdc is still present on the Center Start terminal J6-2 on the Relay Interface Board.	Check the blind plug circuit and the start switch circuit. Correct any errors. *Refer to Wiring Diagram.*
98 24 vdc Missing On Relay Interface Board J9- 1 (Non-manual Reset)	Relay Interface Board connector J9 is not wired.	Wire Relay Interface Board Connector J9 to 24 vdc. *Refer to Wiring Diagram.*
	24 vdc Power Supply is not operating.	Make sure the 24 vdc power supply is switched ON.
	Relay Interface Board terminal J7-1 is not wired to the PLC Input Module.	Wire Relay Interface Board terminal J7-1 to the PLC input module. *Refer to Wiring Diagram.*
	Relay Interface Board or PLC Input Module is not functioning properly.	Replace defective component.
99 SAFE_IN Fault (No 24 vdc on Relay Interface Board SAFETY IN terminal 3 on connector J10 and/or J9.) (Non-manual Reset)	Safety chain is open by means other than a detectable safety switch including power glitches.	Check safety chain wiring to and from switch Interface boards. Verify no power glitch has occurred. *Refer to Wiring Diagram.*
	Several safety switches are open at the same time. • If more than six switches are open at a time the CPU board may not be able to identify which switches are open.	Check safety string for open safety switches.
	Relay Interface Board terminal J7-2 is not wired to the PLC Input Module.	Wire Relay Interface Board terminal J7-2 to the PLC input module. *Refer to Wiring Diagram.*
	Missing 24 vdc on Relay Interface Board connector J9.	Follow solutions for Event 98.
101 OLR1 Open (Motor Over Load Relay #1 is tripped.) (Non-manual Reset)	OLR1 contacts appear to be open.	Reset OLR1.
		Check OLR1 contact wiring to Relay Board Connector J11.
		Check wiring from Relay Interface Board terminal J7-3 to the PLC input module. *Refer to Wiring Diagram.*

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
102 OLR2 Open (Motor Over Load Relay #2 is tripped.) (Non-manual Reset)	OLR2 contacts appear to be open.	Reset OLR2. Check OLR2 contact wiring to Relay Board Connector J11. Check wiring from Relay Interface Board terminal J7-4 to the PLC input module. *Refer to Wiring Diagram.*
103 OLR3 Open (Motor Over Load Relay #3 is tripped.) (Non-manual Reset)	OLR3 contacts appear to be open.	Reset OLR3. Check OLR3 contact wiring Relay Board Connector J12. Check wiring from Relay Interface Board terminal J7-5 to the PLC input module. *Refer to Wiring Diagram.*
104 OLR4 Open (Motor Over Load Relay #4 is tripped.) (Non-manual Reset)	OLR4 contacts appear to be open.	Reset OLR4. Check OLR4 contact wiring Relay Board Connector J12. Check wiring from Relay Interface Board terminal J7-6 to the PLC input module. *Refer to Wiring Diagram.*
105 AUX #1 Open (Soft Start Fault Contact is open.) (Non-manual Reset)	Device wired to AUX1 input appears to be open. (Device wired to Relay Interface Board Connector J11 terminals 1 and 2.)	Reset Soft Start or other device wired to Relay Interface Board Connector J11 terminals 1 and 2. *Refer to Soft Start Vendor User Manual for further diagnostics.* Check wiring to Soft Start or other device wired to Relay Interface Board Connector J11 terminals 1 and 2. *Refer to Wiring Diagram.* Check wiring from Relay Interface Board terminal J7-7 to the PLC input module. *Refer to Wiring Diagram.*
106 AUX #2 Open (AC Drive Fault Contact is open.) (Non-manual Reset)	Device wired to AUX2 input appears to be open. (Device wired to Relay Interface Board Connector J11 terminals 3 and 4.)	Reset AC Drive or other device wired to Relay Interface Board Connector J11 terminals 3 and 4. *Refer to AC Drive Vendor User Manual for further diagnostics.* Check wiring to AC Drive or other device wired to Relay Interface Board Connector J11 terminals 3 and 4. *Refer to Wiring Diagram.* Check wiring from Relay Interface Board terminal J7-8 to the PLC input module. *Refer to Wiring Diagram.*

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
107 Over Speed > 125% (Manual Reset) (Ignored in Inspect Mode)	Escalator exceeded the rated speed by more than 125%.	Check to make sure parameters Rated Speed and Encoder Frequency are set to contract-specific requirements.
		Check for possible overload condition on the step band at the time the escalator exceeded 125% of rated speed.
		Check for proper operation of brakes.
		Adjust brake torque settings according to Brake Torque tag.
108 Stop Distance Greater Than 32 in. (Manual Reset) (Ignored in Inspect Mode)	Escalator stopped in a distance greater than 32 in.	Check to make sure parameters Rated Speed and Encoder Frequency are set to contract-specific requirements.
		Check for possible overload condition on the step band at the time the escalator exceeded 125% of rated speed.
		Check for proper operation of brakes.
		Adjust brake torque settings according to Brake Torque tag.
110 through 113 Brake #1 through Brake #4 Wear (Manual Reset) (Ignored in Inspect Mode)	Designated brake wear sensor input appears shorted to ground to the PLC.	If brake is worn-out, replace brake.
		Check operation of the designated brake wear sensor. Replace brake if brake wear sensor is shorted to ground.
		Check wiring of designated brake wear sensor to the PLC remote I/O module. • The I/O module LED indicator should be ON if the brake is not worn and OFF if the brake is worn.
		Pull-up Resistors should be connected to the brake wear inputs. *Refer to Wiring Diagram for specific requirements.*

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
114 through 117 Brake #1 through Brake #4 Under Current. (Non-manual Reset)	Designated brake controller is indicating that when the brake controller attempts to open its associated brake a brake under current condition is being sensed.	Make sure the CONSTRUCT Switch on the power supply board is in the RUN position when trying to start the escalator.
		Check the wiring for continuity from brake controller to brake. *Refer to Wiring Diagram.*
		Check brake coil resistance. • Replace brake if brake coil resistance is greater than 400 ohms for the 8.25 in. Warner brake or greater than 330 ohms for the 12.25 in. Warner brake.
		Brake controller board not receiving 140 vdc. • Check wiring to brake controller connector J1. • Check wiring to power supply board connector J2A terminals 2 and 3. • Check for 120 vac to power supply board connector J1 terminals.
118 through 121 Brake #1 through Brake #4 Over Current. (Non-Manual Reset)	Designated brake controller is indicating that when the brake controller attempts to open its associated brake a brake over current condition is being sensed.	Check the wiring for shorts from brake controller to brake. *Refer to Wiring Diagram.*
		Check brake coil resistance. • Replace brake if brake coil resistance is greater than 400 ohms for the 8.25 in. Warner brake or greater than 330 ohms for the 12.25 in. Warner brake.
122 through 125 Brake #1 through Brake #4 Controller Hardware Fault. (Non-Manual Reset)	Brake controller relay K1 failed to energize. Could be caused by: • Incomplete wiring between PLC and brake control board. • PLC output relay O:0/2 not functioning properly. • Brake control board hardware problem.	Check the wiring from PLC output O:0/2 to power supply power connector J6 to brake controller terminals 63 and 64 on connector J2. Check PLC output O:0/2 to make sure it is switching ON when the CONSTRUCT Switch is placed in the CONSTRUCT position or when a Start Command is given by the start switch.
	On Brake controller: Relay K1 failed to de-energize, Relay K2 failed to energize or de-energize Q1 current transistor current while being switched OFF.	If fault cannot be cleared or reset, or if fault persists, replace the brake controller card.
126 through 129 Brake #1 through Brake #4 Controller Backup Timer Fault. (Non-Manual Reset) (Ignored in Inspect Mode)	Backup brake hardware timer failed to time out within 1.4 seconds (+/- 0.1 seconds). • The timer is checked on every shut-down.	Last resort: If fault cannot be cleared or reset, or if fault persists, replace the brake controller board.

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
130 Low Oil Auto-Oiler (Non Manual Reset) Low Oil in the Auto Oiler will not shut-down escalator or prevent it from start. Low Oil in Auto-Oiler will prevent PLC from actuating Oiler Pump.	Auto-oiler float switch appears open to the PLC remote I/O module.	Check oil level in the auto-oiler reservoir. Check the wiring and the operation of the auto-oiler float switch. *Refer to the wiring diagram.* • The switch is should be open when the reservoir is low. • The normally open switch contacts should be wired to the PLC remote I/O module. • The PLC remote I/O module input LED indicator should illuminate when the float switch is closed and should go OFF when the float switch is open.
131 Low Oil - Drive Gear (Non-manual Reset) Checked only on start before contactors are energized. Ignored after contactors are energized. (Ignored in Inspect Mode)	Drive gear oil level sensor appears open to the PLC remote I/O module.	Check oil level in the gear box. Check the wiring and the operation of the oil level sensor. *Refer to Wiring Diagram.* • The sensor should be OFF when the drive gear oil level is low. • The PLC remote I/O module input LED indicator should illuminate when the sensor senses oil and should go OFF when the sensor senses no oil.
133 Power Up Mode (Recorded in the EVENT Log)	Power was applied to controller.	Not a fault. Check operation and wiring of relay K7 to PLC. *Refer to Wiring Diagram.*
134 Power Loss Mode (Recorded in the EVENT Log and Fault Log.)	Power was removed from controller.	Not a fault. Check operation and wiring of relay K7 to PLC. *Refer to Wiring Diagram.*
135 Construct Mode (Recorded in the EVENT Log)	Construct Mode entered. (Used with permanent magnet brakes only.)	Not a fault.
136 - 140 Spares	Not used	Not used.
141 Run Up Mode (Recorded in the EVENT Log)	Escalator is running in the UP direction. Holding circuit has been made.	Not a fault.
142 Run Down Mode (Recorded in the EVENT Log)	Escalator is running in the DOWN direction. Holding circuit has been made.	Not a fault.
143 Spare	Not used	Not used.
144 Spare	Not used	Not used.

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
145 Spare	Not used	Not used.
146 Spare	Not used	Not used.
147 Inspect Mode Entered (Recorded in the EVENT Log)	Inspect Circuit went low. • When a Blind Plug is removed to install the pendent cable and/or one of the Inspect Switches is switched to Maintenance, the Inspect Circuit will go low and the PLC will sound alarm for 2 seconds.	Not a fault unless all Blind plugs are plugged in and both Upper and Lower Junction box Inspection switches are in the Normal position. Check wiring to Inspect circuit. *Refer to Wiring Diagram.*
148 Inspect Mode Exited (Recorded in the EVENT Log)	Inspect Circuit went high. • When all Blind Plugs are installed and both Upper and Lower Junction box Inspection switches are in the Normal position, the Inspect Circuit will go high and the PLC will sound alarm twice for 1/2 seconds.	Not a fault unless a Blind plug is removed and/or either Inspect Switch is Switched to Maintenance. Check wiring to Inspect circuit. *Refer to Wiring Diagram.*
149 DeviceNet Node #1 Fault (Non-manual Reset) (Ignored in Inspect Mode)	Wiring problem with device cable on Device designated as Node #1. *Refer to wiring diagram sheet which shows the DeviceNet network to determine Node designations.*	Check DeviceNet cable wiring to device designated as Node #1.
		Unplug and plug in device to reboot.
	Device designated as Node #1 needs reset.	Correct the cause of the required reset and perform the reset.
150 through 155 DeviceNet Node #2 Fault through DeviceNet Node #7 Fault (Non-manual Reset) (Ignored in Inspect Mode)	Wiring problem with device cable on Device designated. *Refer to wiring diagram sheet which shows the DeviceNet network to determine Node designations.*	Check DeviceNet cable wiring to device designated.
		Unplug and plug in device to reboot.
	Device designated needs reset.	Correct the cause of the required reset and perform the reset.
157 115% < Overspeed < 125% (Manual Reset) (Ignored in Inspect Mode	Escalator exceeded the rated speed by more than 115% but less than 125%.	Check to make sure parameters Rated Speed and Encoder Frequency are set to contract-specific requirements.
		Check for possible overload condition on the step band at the time the escalator exceeded 115% of rated speed.
		Check operation of brake.

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
158 Failed to Reach Rated Speed in 20 Seconds. (Non-manual Reset) (Ignored in Inspect Mode)	Encoder signal lost	Check encoder function and wiring. *Refer to Wiring Diagram.*
	Ramp-Up-To-Speed-Time set too long on Soft Start or AC Drive.	Shorten Ramp-Up-To-Speed-Time.
	Brakes not lifted.	Check brakes for proper operation.
	Heavy load on steps.	Do not start with load on steps.
	Motor(s) not functioning properly.	Check operation of motors.
		Check operation of Motor Contactors.
		Make sure power is being applied to all three phases of the motor.
159 CS1FB Not Released (Non-manual Reset)	Terminal J8-1 on Relay Board has 24 vdc present when 0 vdc is required.	Check operation of PLC relay contacts wired to Relay Board terminals J14-1 and J14-2. • These two terminals should not be shorted until after a start command is given.
160 CS2FB Not Released (Non-manual Reset)	Terminal J8-2 on Relay Board has 24 vdc present when 0 vdc is required.	Check operation of PLC relay contacts wired to Relay Board terminals J14-3 and J14-4. • These two terminals should not be shorted until after a start command is given and after CS1FB has 24 vdc present.
161 CS1FB De- energized (Non-manual Reset)	Terminal J8-1 on Relay Board has 0 vdc present when 24 vdc is required. • Terminal J8-1 on Relay Board should have 24 vdc present when Terminal J14-1 is hot with 24 vdc and is shorted to Terminal J14-2.	Check wiring between PLC and Relay Board terminals J8-1 and J14-1 and J14-2. *Refer to Wiring Diagram.*
		Check operation of PLC relay contacts wired to Relay Board terminals J14-1 and J14-2. • These two terminals should be shorted after a start command is given.
162 CS2FB De- energized (Non-manual Reset)	Terminal J8-2 on Relay Board has 0 vdc present when 24 vdc is required. • Terminal J8-2 on Relay Board should have 24 vdc present when Terminal J14-3 is hot with 24 vdc and is shorted to Terminal J14-4.	Check wiring between PLC and Relay Board terminals J8-2 and J14-3 and J14-4. *Refer to Wiring Diagram.*
		Check operation of PLC relay contacts wired to Relay Board terminals J14-3 and J14-4. • These two terminals should be shorted after a start command is given.
163 - 164 Spare		
165 Power for Heaters OFF (No Shut-down. Just Logged in EVENT and Fault Log.) (I:3/11 Low = Fault) Always active	I:3/11 Low	In Heater Disconnect Box determine why relay PWR is Off and/or switch CB11 ON. *Refer to Wiring Diagram.*
		Verify wiring to I:3/11 (TB1- A/21). Jumper to 24 vdc if function not required.

Event code corrective actions		
Event # and Description	**Probable causes**	**Solutions**
166 Motor Vibration Monitor (No Shut-down. Just Logged in Fault Log.) (IN13 on DeviceNet Node #2) (Ignored in Inspect Mode)	Motor Vibration Monitor tripped.	Investigate for excessive motor vibration.
		Verify proper mounting and operation of the Motor Vibration Monitor.
	Motor Vibration Monitor wiring problem.	If monitor is required make sure the monitor N.C. contacts are wired to IN15 of the motor pull box DeviceNet I/O block. *Refer to Wiring Diagram.*
		If monitor is not required, make sure IN15 is wired to 24 vdc. *Refer to Wiring Diagram.*
167 Upper Safety Board Test Failure (Non-manual Reset)	SAFETY IN and OUT are shorted on Upper Safety PCB connector J7 pins 1 and 3	Make sure wiring on connector J7 pins 1 and 3 is not shorted together.
	24 vdc is missing on some switch input on connectors J1 - J6	Make sure 24 vdc is applied to all four poles of each connector J1 - J6.
	The Node number is not set correctly or the PCB is bad.	Set the node number correctly. If problem persists, replace PCB.
168 Lower Safety Board Test Failure (Non-manual Reset)	SAFETY IN and OUT are shorted on Lower Safety PCB connector J7 pins 1 and 3	Make sure wiring on connector J7 pins 1 and 3 is not shorted together.
	24 vdc is missing on some switch input on connectors J1 - J6	Make sure 24 vdc is applied to all four poles of each connector J1 - J6.
	The Node number is not set correctly or the PCB is bad.	Set the node number correctly. If problem persists, replace PCB.
169 - 170 Spare	Not used	Not used.
171 through 174 Brake Cards 1 through 4 Communication Loss. (DeviceNet Node #10 Fault through DeviceNet Node #13 Fault.) (Non Manual Reset) (Ignored in Inspect Mode)	DeviceNet wiring problem to designated Brake Control Card.	Check DeviceNet cable wiring to Brake Controller Board designated. *Refer to Wiring Diagram.*
		Make sure the Terminating Resistors have been installed on each end of the DeviceNet Network. *Refer to Wiring Diagram for proper size placement of resistors.*
	Parameter for number of brakes set higher than actual number of brakes.	Set Number of Brakes Parameter to match actual number of brakes.
	Address of brake controller DIP switches not set correctly.	Set the address switches on the Brake Controller Boards according to the Wiring Diagram. *Refer to Brake Controller Address DIP Switch Settings Chart.*

8-000700 (2010-03)

6 DEVICENET

6.1 DeviceNet Troubleshooting Information

6.1.1 Verify Termination Resistors

A Termination Resistor equal to 121 Ohms 1%, 1/4W must be attached at each end of the Trunk cable. The resistors must be connected across the blue and white wires of the DeviceNet cable.

Resistor connection can be verified by disconnecting DeviceNet power and measuring the resistance across the Can_H and Can_L lines (blue and white wire). This can be measured with an Ohm meter.

- The reading should be approximately 60 Ohms.

NOTE! Termination Resistors are very important. The DeviceNet network will not operate correctly without Terminating Resistors.

6.1.2 Check network grounding

The DeviceNet cable must by grounded at only one location. This should be done closest to the center of the network. Connect the network shield and drain wire to an earth ground using #8 AWG wire up to a maximum 3 m [10 ft.] in length. Also connect the V- conductor (black wire) of the network trunk cable and the DC ground of the power supply to this ground connection.

6.1.3 Verify network voltages

The DeviceNet is actually a three wire Differential Voltage network. Communication is accomplished by switching the CAN-H (White wire) and CAN-L (Blue wire) signals relative to the V- line (Black Wire). The CAN-H swings between 2.5 VDC (Recessive State) and 4.0 VDC (Dominant State) while the CAN-L swings between 1.5 VDC (Dominant State) and 2.5 VDC (Recessive State).

Without a network master connected to the DeviceNet, the CAN-H and CAN-L lines should read between 2.5 VDC and 3.0 VDC relative to V- and the voltages should be identical. (Recessive State). Measure these voltages right at the SDN scanner. Use a voltmeter in DC mode.

With a network master connected and polling the network, the CAN-H to V- voltage will be around +3.2 VDC. The CAN-L to V- voltage will be around 2.4 VDC. The reason these values appear a little different than the ranges shown on the scope trace, is that the signals are switching, which slightly affects the DC value being read by the VOM.

If Can-H to V- and Can_L to V- are too low (less than 2.5 V dc and 2.0 V dc respectively), the issue is probably a bad transceiver or bad wiring. To find a bad transceiver, remove one node at a time measuring Can-H and Can-L to V- each time a device is removed.

To check a transceiver (rough test): With everything removed from a device use an ohm meter to measure resistance between V+ and Can-H V+ and Can-L V- and Can-H V- and Can-L. These impedances should all be greater than 1 M ohm.

6.1.4 Check wiring

- Check lead dress in junction boxes.
- Check that connectors are screwed together tightly.
- Check that glands are screwed tightly.
- Check for foreign material (electrical tape, RTV, etc.) in glands.
- Check that nodes are not touching extremely hot or cold surfaces.
- Check that cables are kept a few inches away from power wiring.
- Check that cables are not draped on electric motors, relays, contactors or solenoids.
- Check that cables are not constrained so as to place excessive tension on connectors.
- Wiggle connectors to provoke intermittent failures.

6.1.5 Check nodes

Cycle power to the 24V supply, this will reset the scanner to initialize the network.

Examine the scanner display codes to identify problem nodes.

Blinking GREEN means the node is not being allocated by the scanner.

- Check that the node is in the scan list.
- Check that the scanner is not bus off.
- Check if connection is timing out.

Blinking RED means no communication.

- Check for missing power on all nodes.
- Check if all other nodes are disconnected.
- Check node baud rate.
- Check scanner, if a code 91 is displayed then the communications connection with the node has timed out. Recycle 24V supply and then reset scanner.

6.1.6 More troubleshooting tips

Try to distinguish, as soon as possible, a device problem from a media problem.

Try to reduce the system to the smallest size, which still exhibits the problem. This can be done by removing nodes, drops, taps, or lengths of trunk can do this.

Use substitution where possible to rule things out, but be careful.

6.1.7 Check all connections

Opens or shorts may be the biggest problem. On an idle bus (without traffic) voltages can indicate problems. CAN_L and CAN_H should be about 2.5 to 3.0 volts relative to V-. If there is traffic, CAN_L will be a little lower, CAN_H a little higher.

Use an OHM meter to check resistance between CAN_H and CAN_L when idle. This should be about 60 ohms (two 120 ohm terminators in parallel). This value may be as low as 50 ohms if there are many nodes attached. Make sure all wires are well attached to the right places. The V+ level, relative to V-, should always be between 11 to 25 volts.

6.1.8 DeviceNet cable color codes and signals

DeviceNet Cable Color Codes and Signals		
Wire Color	**Terminal Name**	**Signal**
BLACK	COM	24vdc return
BLUE	CAN_L	Signal Low
Un-insulated	SHIELD	Shield
WHITE	CAN_H	Signal High
RED	VDC+	+24vdc
GREEN	EARTH GROUND	Chassis Ground

6.1.9 DeviceNet Scanner status/error codes

The bicolor (GREEN/RED) module status indicator displays device status. It indicates whether the device has power and is functioning properly.

DeviceNet Scanner Status/Error Codes		
If the MODULE indicator is:	**Then:**	**Take this action:**
OFF	There is no power applied to the module.	Verify power connections and apply power.
Green	The module is operation normally	No action required.
Flashing Green	The module is not configured	Configure the module
Flashing Red	There is an invalid configuration	Check configuration setup.
Red	The module has an unrecoverable fault.	Replace the module.

6.1.10 Network status indicator

The network status indicator is a bicolor (GREEN/RED) LED. The following table provides troubleshooting information about communication links.

Network status indicator			
If the NET indicator is:	**Then**	**Which indicates**	**Take this action**
Off	The device has no power or the channel is disabled for communication due to bus off condition, loss of network power, or has been intentionally disabled.	The channel is disabled for DeviceNet communication.	Power-up the module, provide network power to the channel, and be sure the channel is enabled in both the module configuration table and module command word.
Green	Normal operation	All slave devices in the scan list table are communicating normally with the module.	None.
Flashing Green	The two-digit numeric display for the channel indicates an error code that provides more information about the condition of the channel.	The channel is enabled but no communication is occurring.	Configure the scan list table for the channel to add devices.
Flashing Red	The two-digit numeric display for the channel indicates an error code that provides more information about the condition of the channel.	At least one of the slave devices in the module's scan list table has failed communicate with the module.	Examine the failed device and the scan list table for accuracy.
Red	The communications channel has failed. The two-digit numeric display for the channel displays an error code that provides information about the condition of the channel.	The module may be defective.	Reset module. If failures continue, replace module

6.1.11 1747/1771-SDN Scanner Module numeric indication codes

1747/1771-SDN Scanner Module numeric indication codes		
Numeric Code	**Description**	**Take this action**
0-63	Normal operation. The numeric display indicates the 1747-SDN's node address on the DeviceNet network	None.
70	Module failed to Duplicate Node Address check.	Change the module channel address to another available one. The node address you selected is already in use on that channel.
71	Illegal data in scan list table (node number alternately flashes).	Reconfigure the scan list table and remove any illegal data.
72	Slave device stopped communicating (node number alternately flashes).	Inspect the field devices and verify connections.
73	Device key parameters do not match scan list table entry (node number alternately flashes).	Enter a matching scan list device ID. Make sure that the device at the flashing node address matches the desired key parameters (vendor, product code, product type).
74	Data overrun on port detected.	Modify your configuration and check for invalid data.
75	No scan list is active in the module.	Enter a scan list
76	No direct network traffic for module detected.	None. The module hears other network communication.
77	Data size returned does not match scan lists entry (node number alternately flashes)	Reconfigure your module and change the addressing.
78	Slave device in scan list table does not exist (node number alternately flashes).	Add the device to the network, or delete the scan list entry for that device.
79	Module has filed to transmit a message.	Make sure that your module is connected to a valid network. Check for disconnected cables. Verify baud rate.
80	Module is in IDLE mode.	Enable RUN bit in scanner command register.
81	Module is in FAULT mode.	Check Logic for fault bits being set in scanner.
82	Error detected in sequence of fragmented I/O messages from device (node number alternately flashes).	Check scan list table entry for slave device to make sure that input and output data lengths are correct. Check slave device configuration.

1747/1771-SDN Scanner Module numeric indication codes		
Numeric Code	**Description**	**Take this action**
83	Slave device is returning error responses when module attempts to communicate with it (node number alternately flashes).	Check accuracy of scan list table entry. Check slave device configuration.
84	Module is initializing the DeviceNet channel.	None. This code clears itself once module attempts to initialize all slave devices on the channel.
85	Run time data size returned from slave device is not the size expected.	Check slave device installation and configuration.
86	Device is producing idle state data while the scanner is in Run Mode.	Check device configuration/slave node states.
87	Available for allocation. Scanner has not yet been detected by allocated master or slave mode is enabled but scanner is not allocated to a master.	Monitor scanner to determine if error code clears when master detects scanner. If error remains, check scanner slave mode configuration.
88	This is not an error. At power-up and reset, the module displays all 14 segments of the node address and status display LEDs	None.
89	Auto Device Replacement (ADR) error. Slave device responded with an error to the initialization data sent to it by the scanner, or the configuration table in the scanner's flash memory is not valid for a slave node.	Try the ADR download again. If it still fails, try changing he ADR flash by downloading and empty ADR configuration to the scanner and then try the ADR configuration again.
90	User has disabled communication port	Reconfigure your module. Check the disable bit in the Module Command Register.
91	Bus-off condition detected on comm port. Module is detecting communication errors.	Check DeviceNet connections and physical media integrity. Check system for failed slave devices or other possible sources of network interferences.
92	No network power detected on comm port.	Provide network power. Make sure that module drop cable is providing network power to module comm port.
95	Application FLASH update in progress.	None. Do not disconnect the module while application FLASH is in progress. You will lose any existing data in the module's memory.

1747/1771-SDN Scanner Module numeric indication codes		
Numeric Code	**Description**	**Take this action**
97	Module halted by user command.	Check logic for fault bits in scanner command register.
98	Unrecoverable firmware failure.	Service or repair you module.
99	Unrecoverable software failure.	Service or repair you module.
E9	The scanner has been "flushed" from the command register.	Cycle power to module. Download configuration to module.

6.1.12 Additional DeviceNet Scanner error codes

Additional DeviceNet Scanner Error codes		
Numeric Code	**Description**	**Take this action**
E2	RAM Test Failure	Return/Replace module
E4	Lost Power During FLASH Upgrade	Return/Replace module
E5	No Boot or Main Code	Return/Replace module

6.1.13 DeviceNet Scanner power-up numeric codes

The following describes the power-up numeric codes in order of occurrence and meaning.

- 88 = LED Test (Should be 88)
- 06 = Major Rev Level (Could be any number)
- 02 = Minor Rev Level (Could be any number)
- 01 = Baud Rate (Can be one of three numbers)
  - 00 = 125K Baud
  - 01 = 250K Baud
  - 02 = 500K Baud.

8-000395 (2009-08)

7 PLC

7.1 PLC Status Panel operation

PLC Status Panel Operation		
PLC Output	**Function**	**Operation**
O:0/10	Faulted	ON when PLC in NOT READY Mode. (Otherwise OFF).
O:0/11	Fault Alarm	ON when PLC in NOT READY Mode for more than 3 seconds but less than 13 seconds. (Otherwise OFF).
Refer to Wiring Diagram for Status Panel wiring.		

8-000702 (2008-01)

7.2 PLC automatic oiler output operation

Automatic oiler output operation		
PLC Output	**Function**	**Operation**
O:0/07	Operate Auto-Oiler	Always OFF if Auto-Oiler Oil Level Switch input, Device Net Node 2/ IN8, is LOW. Otherwise, cycles ON and OFF according to Parameter Settings for Pulse Duration and Pulse Delay.
Notes: Refer to Wiring Diagram for Automatic Oiler wiring. Refer to Controller Parameter Setting for Oiler Pulse duration and Delay. When Oiler Oil Level Input (DeviceNet Node 2 input IN8) is low the PLC O:0/07 remains low.		

8-000703 (2008-01)

7.3 PLC backup brake delay timer

Backup brake delay timer		
PLC Output	**Function**	**Operation**
O:0/02	Times Backup Brake Delay Off.	ON when K3.1 ON and K3 ON (I:3/2 and 3 low). OFF 2 seconds after either K3.1 or K3 OFF (I:3/2 or 3 high) OR if any of the following faults occur. • 107 (Speed >125%) • 108 (Stop Distance) • 114 -129 (Brake Lift Faults)
For more information, refer to Wiring Diagram for PLC Backup Brake Timer wiring.		

8-000704 (2008-01)

7.4 Set PLC time using panel view

When using the AB MicroLogix PLC without a clock module, the time cannot be set using Timer Adjust Menu. Instead, the time must be set in the Panel View setup screen.

To enter the Panel View setup screen, press and hold the left and right arrow keys until the setup screen appears.

After the Panel View set up screen has been entered, set the time in the Time Clock Menu.

8-000680 (2009-04)

7.5 Set Panel View display intensity

Enter the Panel View setup screen by pressing and holding the left and right arrow keys until the setup screen appears.

After the Panel View set up screen has been entered:

- Adjust the normal intensity to 70%.
- Adjust the screen saver intensity to 0% or OFF.
- Adjust the screen saver time to 10 minutes.

8-000331 (2009-08)

7.6 PLC and Standby Speed control

Different software is required for the Standby Speed control.

DeviceNet Node 2 inputs IN14 and IN15 are reserved for traffic photo-eyes.

Standby Speed is obtained by not energizing relay K13 using PLC output O:0/03. Normally, O:0/3 is used for switching the 2nd soft starter on and off.

In addition to the addition of traffic control photo-eyes, custom software is also required to be down-loaded into the Panel View and PLC to make the Standby Speed operational.

8-000681 (2009-08)

7.7 PLC I/O tables

7.7.1 PLC base

Slot 0 (PLC base)			
Slot	**I/O Address**	**I/O Name**	**Function**
0	I:0/0	SS1	Encoder Speed Reference Channel A
0	I:0/1	SS2	Encoder Speed Reference Channel B
0	I:0/2	SS1	Encoder Speed Reference Channel A
0	I:0/3	SS2	Encoder Speed Reference Channel B
0	I:0/4	LHS	Left Handrail Speed (Not used reference upper CETEK PCB)
0	I:0/5	RHS	Right Handrail Speed (Not used reference upper CETEK PCB)
0	I:0/6	Escalator_Direction	Encoder Direction input Not Used
0	I:0/7	SAFE_IN	Safety Chain input indication.
0	I:0/8	K5FB	Relay Interface PCB relay K5 feedback.
0	I:0/9	K6FB	Relay Interface PCB relay K6 feedback.
0	I:0/10	Construct_Input	Construct Input (ON = Construct Mode, Off = Not Construct Mode)
0	I:0/11	Spare	Spare
0	O:0/0	CS1 (Computer Safe 1)	Energize K5 relay on Relay Interface PCB
0	O:0/1	CS2 (Computer Safe 2)	Energize K6 relay on Relay Interface PCB
0	O:0/2	Back Up Brake Timer	Redundant timer off to remove power from PM Brakes
0	O:0/3	SS2	Select SS2 soft starter
0	O:0/4	Run Up	Energize K1 Contactor
0	O:0/5	Run Down	Energize K2 Contactor
0	O:0/6	Normal Start	Energize K3 or K4, SS1, or Start AC Drive
0	O:0/7	Oiler	Switch Auto-oiler On and Off.
0	O:0/8	Alarm	Energize K1 Contactor
0	O:0/9	Optional Smoke Alarm Brake Power	Drop primary brakes while AC Drive controls stop rate
0	O:0/10	Faulted Indication	Indicates Faulted condition
0	O:0/11	Fault alarm	Fault alarm output

7.7.2 DeviceNet Scanner Card Inputs

Slot 1 (DeviceNet scanner card inputs)			
Slot	**I/O Address**	**I/O Name**	**Function**
1	I:1.66	Bits 00 - 15 Node 1	State of Node 1 inputs on J1, J2, J3, & J4.
1	I:1.67	Bits 00 - 15 Node 1	State of Node 1 inputs on J5 & J6, Safety Out, CB1 POWER, bits 10 15 not used.
1	I:1.68	Bits 00 - 15 Node 1	Low byte: MSD Accumulator, High byte: LHSS
1	I:1.69	Bits 00 - 15 Node 1	Low byte: RHSS Accumulator, High byte: not used
1	I:1.70	Bits 00 - 15 Node 2	Node #2 Inputs (Node 2 is not used)
1	I:1.71	Bits 00 - 15 Node 3	State of Node 3 inputs on J1, J2, J3, & J4.
1	I:1.72	Bits 00 - 15 Node 3	State of Node 3 inputs on J5 & J6, Safety Out, CB1 POWER, bits 10 15 not used.
1	I:1.73	Bits 00 - 15 Node 3	(Not used on Node 3) Low byte: MSD Accumulator, High byte: LHSS
1	I:1.74	Bits 00 - 15 Node 3	(Not used on Node 3) Low byte: RHSS Accumulator, High byte: not used
1	I:1.75	Bits 00 - 07 Node 10	Inputs From Brake Control #1
1	I:1.76	Bits 00 - 15 Node 10	Inputs From Brake Control #1
1	I:1.77	Bits 00 - 15 Node 10	Inputs From Brake Control #1
1	I:1.78	Bits 00 - 15 Node 10	Inputs From Brake Control #1
1	I:1.79	Bits 00 - 07 Node 10	Inputs From Brake Control #1
1	I:1.80	Bits 00 - 07 Node 11	Inputs From Brake Control #2
1	I:1.81	Bits 00 - 15 Node 11	Inputs From Brake Control #2
1	I:1.82	Bits 00 - 15 Node 11	Inputs From Brake Control #2
1	I:1.83	Bits 00 - 15 Node 11	Inputs From Brake Control #2
1	I:1.84	Bits 00 - 07 Node 11	Inputs From Brake Control #2
1	I:1.85	Bits 00 - 07 Node 12	Inputs From Brake Control #3
1	I:1.86	Bits 00 - 15 Node 12	Inputs From Brake Control #3
1	I:1.87	Bits 00 - 15 Node 12	Inputs From Brake Control #3
1	I:1.88	Bits 00 - 15 Node 12	Inputs From Brake Control #3
1	I:1.89	Bits 00 - 07 Node 12	Inputs From Brake Control #3
1	I:1.90	Bits 00 - 07 Node 13	Inputs From Brake Control #4
1	I:1.91	Bits 00 - 15 Node 13	Inputs From Brake Control #4
1	I:1.92	Bits 00 - 15 Node 13	Inputs From Brake Control #4
1	I:1.93	Bits 00 - 15 Node 13	Inputs From Brake Control #4
1	I:1.94	Bits 00 - 07 Node 13	Inputs From Brake Control #4
1	I:1.95	Bits 00 - 15 Node 5	SMC Dialog Standard
1	I:1.96	Bits 00 - 15 Node 5	SMC Dialog Standard

7.7.3 DeviceNet Scanner Card Outputs

Slot 1 (DeviceNet scanner card outputs)			
Slot	**I/O Address**	**I/O Name**	**Function**
1	O:1.2	Bits 00 - 15 Node 1	Acknowledge State of Node 1 inputs on J1, J2, J3, & J4.
1	O:1.3	Bits 00 - 15 Node 1	Acknowledge State of Node 1 inputs on J5 & J6, Safety Out, CB1 POWER, bits 10 15 not used.
1	O:1.4	Bits 00 - 15 Node 1	Enable Node 1 inputs on J1, J2, J3, & J4.
1	O:1.5	Bits 00 - 15 Node 1	Enable Node 1 inputs on J5 & J6, & K25 Ready Relay, bits 09 15 not used.
1	O:1.6	Bits 00 - 15 Node 3	Acknowledge State of Node 3 inputs on J1, J2, J3, & J4.
1	O:1.7	Bits 16 31 Node 3	Acknowledge State of Node 3 inputs on J5 & J6, Safety Out, CB1 POWER, bits 10 15 not used.
1	O:1.8	Bits 32 47 Node 3	Enable Node 3 inputs on J1, J2, J3, & J4.
1	O:1.9	Bits 48 63 Node 3	Enable Node 3 inputs on J5 & J6, & K25 Ready Relay, bits 09 15 not used.
1	O:1.11	Bits 00 - 07 Node 10	Outputs to Brake Control #1
1	O:1.12	Bits 00 - 15 Node 10	Outputs to Brake Control #1
1	O:1.13	Bits 00 - 15 Node 10	Outputs to Brake Control #1
1	O:1.14	Bits 00 - 15 Node 10	Outputs to Brake Control #1
1	O:1.15	Bits 00 - 07 Node 10	Outputs to Brake Control #1
1	O:1.16	Bits 00 - 07 Node 11	Outputs to Brake Control #2
1	O:1.17	Bits 00 - 15 Node 11	Outputs to Brake Control #2
1	O:1.18	Bits 00 - 15 Node 11	Outputs to Brake Control #2
1	O:1.19	Bits 00 - 15 Node 11	Outputs to Brake Control #2
1	O:1.20	Bits 00 - 07 Node 11	Outputs to Brake Control #2
1	O:1.21	Bits 00 - 07 Node 12	Outputs to Brake Control #3
1	O:1.22	Bits 00 - 15 Node 12	Outputs to Brake Control #3
1	O:1.23	Bits 00 - 15 Node 12	Outputs to Brake Control #3
1	O:1.24	Bits 00 - 15 Node 12	Outputs to Brake Control #3
1	O:1.25	Bits 00 - 07 Node 12	Outputs to Brake Control #3
1	O:1.26	Bits 00 - 07 Node 13	Outputs to Brake Control #4
1	O:1.27	Bits 00 - 15 Node 13	Outputs to Brake Control #4
1	O:1.28	Bits 00 - 15 Node 13	Outputs to Brake Control #4
1	O:1.29	Bits 00 - 15 Node 13	Outputs to Brake Control #4
1	O:1.30	Bits 00 - 07 Node 13	Outputs to Brake Control #4
1	O:1.31	Bits 00 - 15 Node 5	SMC Dialog Standard
1	O:1.32	Bits 00 - 15 Node 5	SMC Dialog Standard

7.7.4 Slot 2 (16 - 24 VDC Inputs)

Slot 2 (16 - 24 VDC Inputs)			
Slot	**I/O Address**	**I/O Name**	**Function**
2	I:2/0	24VCTL	On = 24VDC Applied to Relay Interface PCB, Off = 24VDV Missing
2	I:2/1	Not Used	Not Used
2	I:2/2	OLR1	On = OLR1 Good, Off = OLR1 Faulted
2	I:2/3	OLR2	On = OLR2 Good, Off = OLR2 Faulted
2	I:2/4	OLR3	On = OLR3 Good, Off = OLR3 Faulted
2	I:2/5	OLR4	On = OLR4 Good, Off = OLR4 Faulted
2	I:2/6	AUX #1	On = AUX #1 Good, Off = AUX #1 Faulted (AUX #1 = Soft Starter)
2	I:2/7	AUX #2	On = AUX #2 Good, Off = AUX #2 Faulted (AUX #2 = AC Drive)
2	I:2/8	CS1FB	Monitor state of Relay Interface PCB J14/2 PLC CS1 output
2	I:2/9	CS2FB	Monitor state of Relay Interface PCB J14/4 PLC CS2 output
2	I:2/10	CTR_KY	Monitor state of Relay Interface PCB J6/2 Center Start Switch position
2	I:2/11	K11FB	Monitor state of Relay Interface PCB J8/6 UP Start Relay K11
2	I:2/12	K12FB	Monitor state of Relay Interface PCB J8/7 DOWN Start Relay K12
2	I:2/13	K14FB	Monitor state of Relay Interface PCB J8/8 Inspect Relay K14
2	I:2/14	Not Used	Not Used
2	I:2/15	Not Used	Not Used

7.7.5 Slot 3 (16 - 24 VDC Inputs)

Slot 3 (16 - 24 VDC Inputs)			
Slot	**I/O Address**	**I/O Name**	**Function**
3	I:3/0	UP (K1_Aux)	On = K1 De-energized, Off = K1 Energized
3	I:3/1	DOWN (K2_Aux)	On = K2 De-energized, Off = K2 Energized
3	I:3/2	BRAKE (K3.1_Aux)	On = K3.1 De-energized, Off = K3.1 Energized
3	I:3/3	RUN (K3_K4_Aux)	On = K3 or SS1 De-energized, Off = K3 or SS1 Energized
3	I:3/4	SS2_Aux	On = SS2 De-energized, Off = SS2 Energized
3	I:3/5	PTCR1	On = PTCR okay, Off = PTCR Faulted
3	I:3/6	PTCR2	On = PTCR2 okay, Off = PTCR2 Faulted
3	I:3/7	POWER ON (K7_Aux)	On = K7 ON, Off = K7 Off (K7 indicates Control Power
3	I:3/8	Inspection_Sw	On = Inspect Switch in Run Mode, Off = Inspect Switch in Run Mode
3	I:3/11	Truss_Heater_Enable	On = Truss Heater Power ON, Off = Truss Heater Power Off
3	I:3/12	Spare	Spare
3	I:3/13	Spare	Spare
3	I:3/14	Spare	Spare
3	I:3/15	Auto-Oiler Oil Level Sw	On = Oil Level Good, Off = Oil Level Low

8-000705 (2010-03)

8 APPROVALS AND VERSION HISTORY

Compiled by: Training & Product Information, Moline

Checked by: Tony Boom

Approved by: Tony Boom

Issue	Date	Description of change	Ref CR	Approved by
-	2008-06-12	First issue		Tony Boom
A	2009-11-24	Revisions per owner review		Tony Boom
B	2010-03-05	Revisions per owner review		Tony Boom
C	2011-02-10	Revisions per owner review		Tony Boom

KONE ECOMOD ESCALATOR

Owner's Guide: Description of Operation

Due to our policy of continuing improvement, we reserve the right to alter design and specification without prior notice. The right to make changes to product design and material used, without notice, is reserved. All hardware and software referenced in this publication and/or used in conjunction with equipment described herein is the exclusive property of KONE Corporation whether or not protected by U.S. and/or International Trademark, Copyright and/or Patent Laws.

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1 INTRODUCTION

1.1 KONE EcoMod (E3C/E3H) Escalator

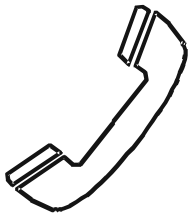
When your escalator is turned over to you, KONE Inc. has made sure the escalator equipment has been installed and adjusted to meet KONE Inc. Standards of Quality.

- All live safety circuits and emergency equipment are in working order.
- The escalator travels smoothly and quietly.

At the time your escalator is turned over to you, you should feel satisfied the following items have been addressed.

- You have been provided a KONE Inc. Branch 24 hour phone number, and the name of a KONE Inc. contact person.
- You have received escalator keys.
- Service and warranty information has been explained to you.
- Necessary information has been communicated to you regarding the safety, operation of the escalator equipment, and use of escalator keys. This communication included a review of the escalator system, and information about how the escalator is shut down and started.

Warranties may be voided if equipment does not receive proper maintenance and care.



5001980 (2003-07)

7-002062 (2009-10)

2 SAFETY

2.1 Escalator safety

Escalator safety is important. It is the Owner's responsibility to actively enforce safe behavior around escalators, enforce posted safety signs, and make sure official periodic safety inspections and tests are performed annually. Additionally, a daily check of escalator equipment is required in the daily start-up and shut-down of escalators.

Safe behavior around escalators

Escalator emergencies can be prevented by actively enforcing posted safety precautions. Maintain passenger safety around your escalator(s) by making sure every passenger follows posted Safety Rules and Cautions. In addition, watch for the following and actively try to prevent their occurrence.

- Do not allow unattended children to play around or on the escalator.
- Do not allow pushchairs (baby strollers), wheelchairs, or people using crutches on an escalator. Recommend they ride the nearest elevator.
- Do not allow passengers to ride the escalator when carrying too many packages or luggage. Recommend they ride the nearest elevator.
- Do not allow anyone to ride on the handrail, or transport heavy items on the handrail.
- Do not allow anyone to pull the handrail up from the handrail guide, or drag the handrail on the handrail guide.
- Do not allow anyone to walk up the down or down the up escalator.
- Do not allow anyone to run up or down the escalator.
- Do not allow anyone to play with emergency stop buttons.
- Do not allow shoes to be run along the skirts when the escalator is moving.
- Do not allow anyone with bare feet to ride on the escalator.
- Encourage people to pick up their feet and step carefully on and off the escalator, and to avoid dragging or sliding their feet off the edge of the escalator.
- Encourage people to stand upright when riding an escalator. Do not allow anyone to sit, kneel, ride with their hands on a moving step, or lean on the side of the escalator.
- Encourage people to keep hands, feet, clothing, and shoe laces clear of the escalator skirts.
- Encourage people to exit promptly from the escalator landing. When someone stops on the landing, they can cause a dangerous pile-up of the people behind them.
- Heavy or bulky goods must not be transported on the escalator.

707-082 (12/99)

2.2 Signs

2.2.1 Safety signs

Your unit should be equipped with Safety signs. If at any time these signs are missing or damaged, have them replaced as soon as possible.

707-083 (1/2002)

5001943(2009-09)

2.3 Inspections and tests

2.3.1 Periodic inspections and tests

Make sure official periodic safety inspections and tests are performed annually. It is recommended that all escalator work be done by qualified escalator personnel with an elevator/escalator service company through a comprehensive maintenance program.

Periodic inspections and tests, for escalators, are done in addition to regular preventive maintenance. Periodic inspections and tests are done annually, and are normally witnessed by the local authority's authorized Inspector.

The Inspector responsible for inspecting the escalator equipment, may request certain tests be performed by a qualified Service Technician.

NOTE! For specific information on periodic inspections and tests, refer to the most recent version of ASME/ANSI A17.1 Safety Code for Elevators and Escalators; or call your local elevator/escalator Inspection authority.

NOTE! Standards set by the ASME/ANSI A17.1 and A17.3 Safety Code are considered minimum requirements. Local codes may have additional standards for periodic inspections and tests. Check with the local governing authority for complete details of Inspections and Tests required in your area.

707-084 (2003-11)

3 OVERVIEW OF SYSTEMS

3.1 Main component groups

The KONE E3C/E3H escalator contains the following main component groups.

Truss (1) - main supporting structure of the escalator.

Tracks (2) - the main guide and support system of the step band in its journey around the escalator truss. There are three main areas of the tracking system. They are the upper end track, lower end track, and incline track.

Drive - machinery composed of the drive motor (3), gear box (4), service brake (5), handrail drive wheels (6), and step chain sprockets (7) that drive the step band and handrails.

Step band and handrails - rotating components used to convey passengers on the escalator. The step band consists of steps (8) and step chain (9) mechanically linked together and driven by the drive through step chain sprockets. The handrail (10) travels in synchronization with the step band and provides a hand-hold for passengers as they are conveyed by the escalator. The handrail travels around the balustrade and is driven by handrail drive wheels.

Return station (11) - turnaround area at the lower end for the step band. Step chain tension is accomplished through spring tension on the return station.

Balustrade - area above the step band consisting of balustrade panels (12), decks (13), newel ends (14), and skirts (15).

Access cover (16) - removable floor plates covering the upper and lower end pits that allow access to the upper end and lower end equipment. Access covers provide the transition from the surrounding floor area at each landing.

Combplates (17) - plates at both landings where passengers enter or exit the step band. Combplates contain removable comb segments (18) that mesh with the moving steps.

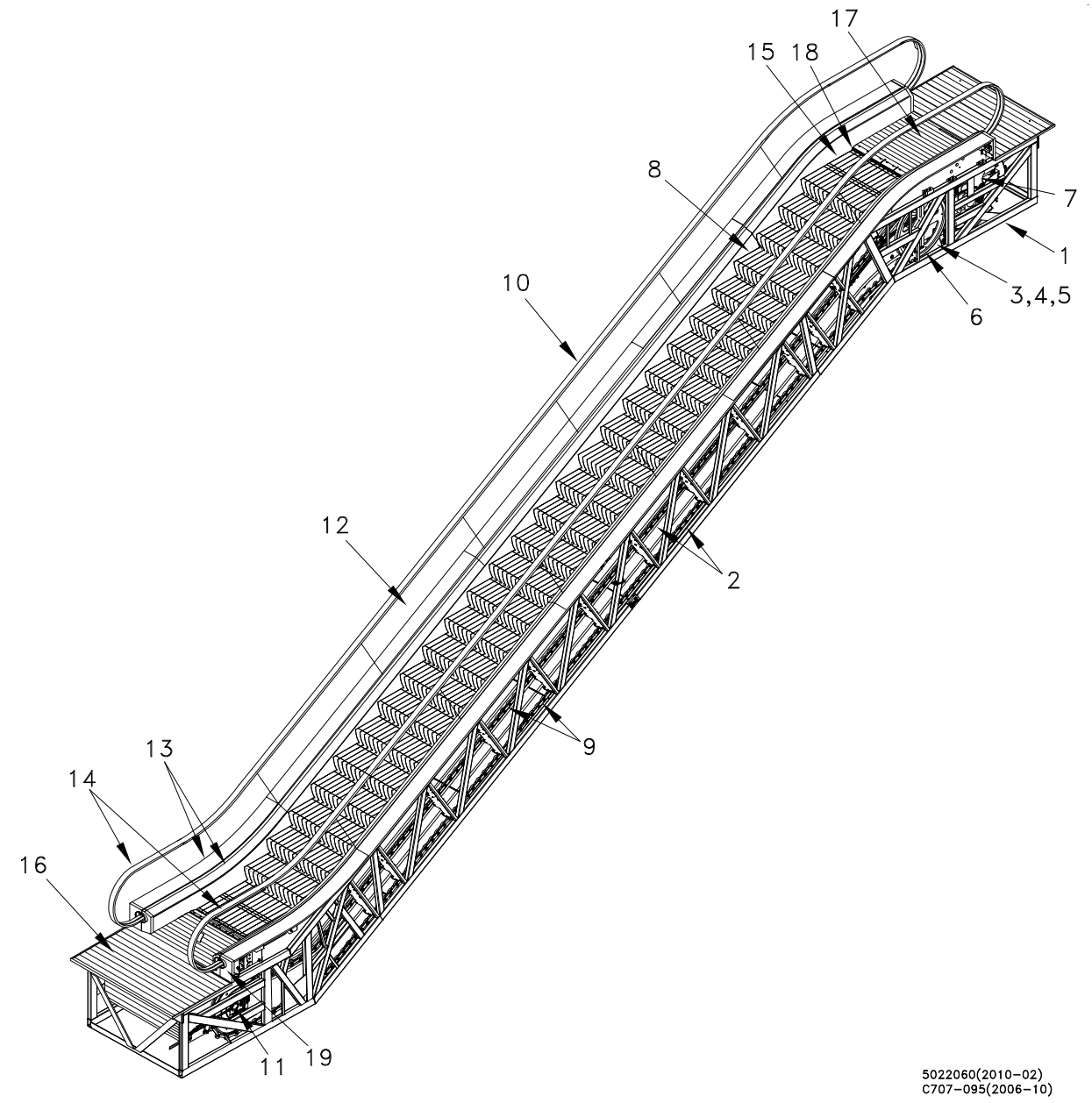
Frontplates (19) - attach to the access cover frame and newel end, and contains the handrail inlet where the handrail enters and exits from the interior of the escalator.

Controller (not shown) - the central point for the electrical system. Controller contains electrical components that control and monitor the unit's operation. The controller is located in a remote control room.

Lighting systems (not shown) - electrical components which are used to provide light at various points of the escalator. The lighting system can contain optional handrail lights, skirt (spot) lights, and comb lights as well as the Code-required step demarcation lights.

Electrical safety devices (not shown) - various additional electrical safety devices are connected in series to safety relays in the controller. Actuation of any one of the electrical safety devices will actuate the safety relays and shut down the unit.

7-002089 (2010-02)



4 MECHANICAL SYSTEM

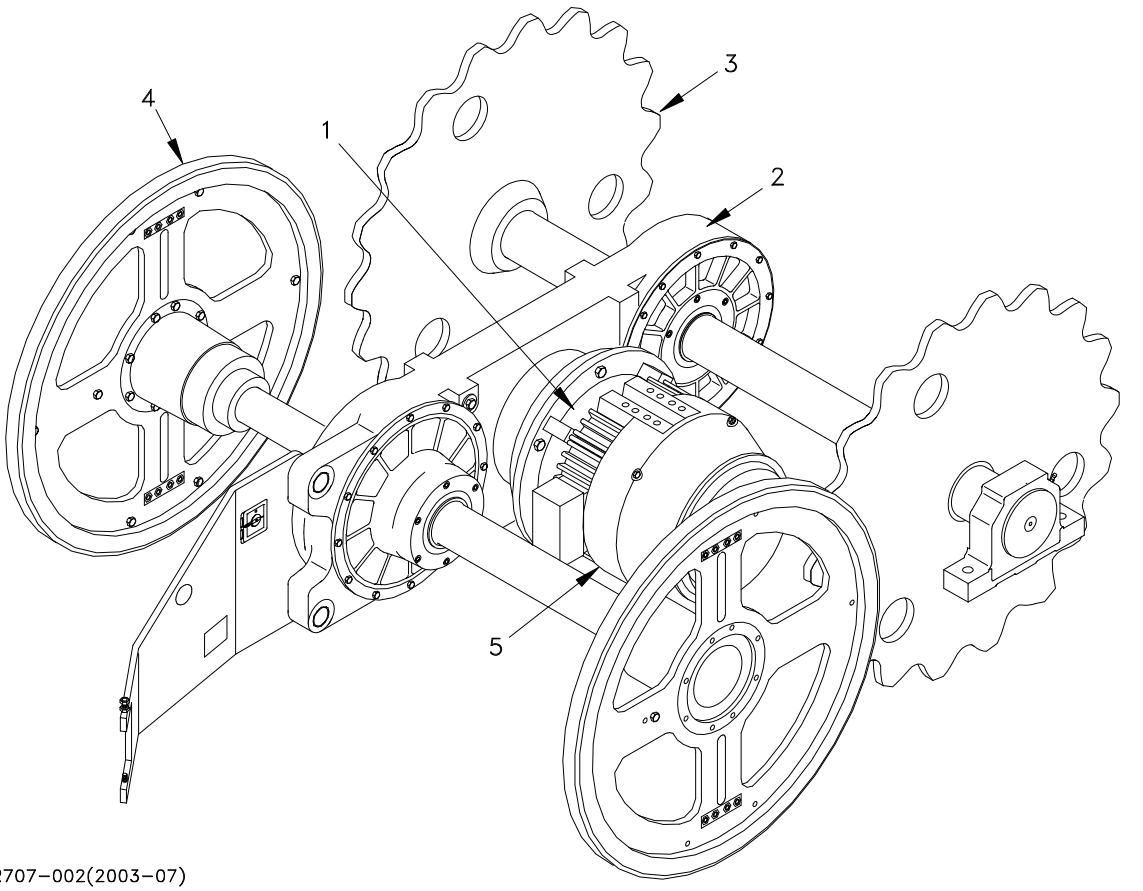
4.1 Drive station

The drive unit is located within the step band in the upper section of the escalator truss, and contains a specially manufactured squirrel cage motor (1) driving a compact planetary reduction gear. The drive to the step chain and handrails is then transmitted using a direct spur gear arrangement. The complete gear box (2) is one compact assembly and all gears are run in a closed oil bath.

The step chain sprocket (3) drives the step chains and the handrail drive wheel (4) drives the handrails.

The brake (5) is mounted to the drive motor and is a closed loop permanent magnet brake.

707-108 (1/2002)

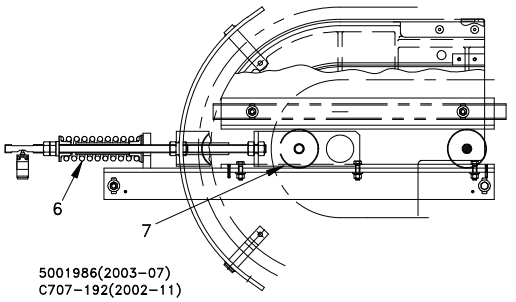


R707–002(2003–07)

4.2 Step band

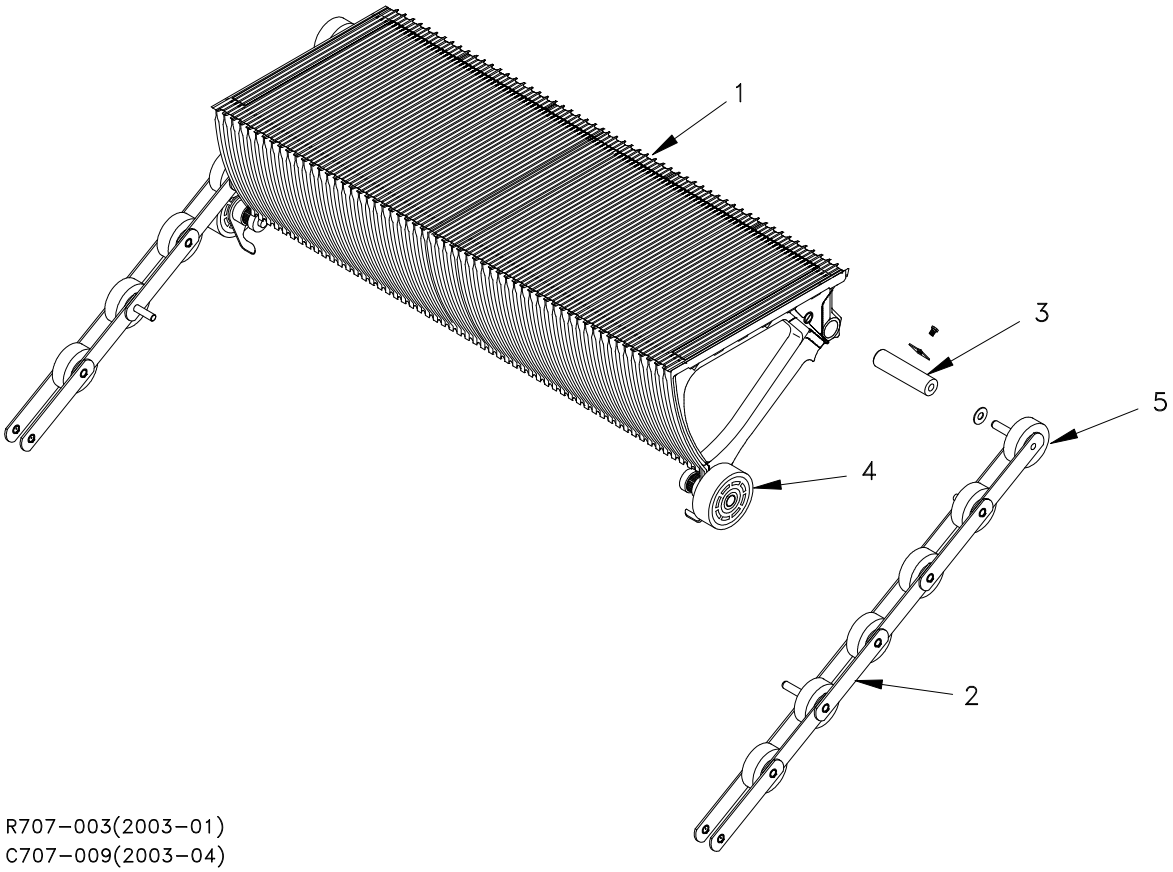
The step band is composed of steps (1) and step chains (2). Step chains are driven by the step chain sprockets of the drive station and steps carry passengers on a moving escalator. Steps are cast aluminum, and are connected to the step chains with seamless steel tube axles (3) at 400 mm pitch. The steps contain a trailing roller (4) mounted to the riser end of the step. Trailing wheels and chain rollers (5) are guided and supported by the internal truss tracking system in a moving escalator.

Step chain tension is set by adjustable springs (6) mounted to the lower end return station (7).



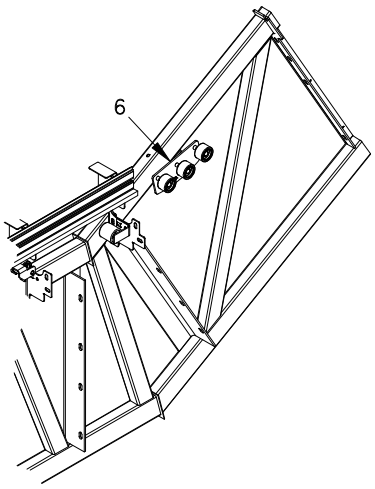
5001986(2003–07)
C707–192(2002–11)

707-109 (1/2001)



R707–003(2003–01)
C707–009(2003–04)

4.3 Handrail system



R707–019(2003–07)

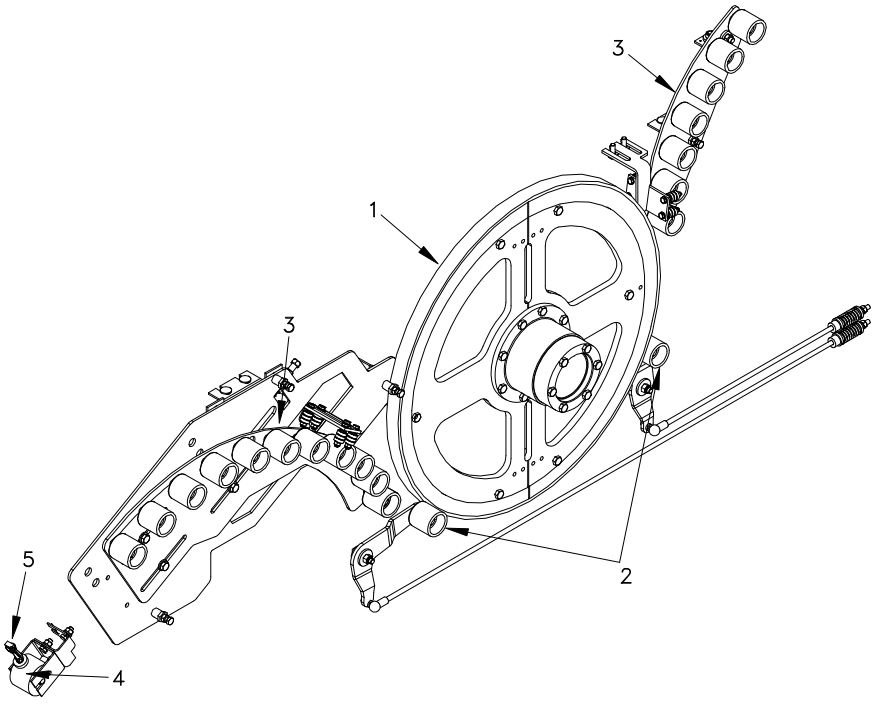
The handrail system is composed of handrails, handrail drive, and handrail guidance system.

Handrail: The handrail is an endless loop of rubber construction that is driven in its route around the balustrade by the handrail drive.

Handrail drive: The handrail drive is located at the upper end of the escalator, within the step band, and is composed of a handrail drive wheel (1), adjustable pressure rollers (2), and adjustable roller cluster assemblies (3). The handrail drive wheel (1) is mounted on a shaft that is driven by the drive station gear box, and drives the handrail through friction between the drive wheel and handrail. This friction is created by two adjustable pressure rollers (2) on each handrail. Handrail roller cluster assemblies (3) are adjustable roller assemblies that can be adjusted for tracking the handrail through the handrail drive wheel area.

Handrail guidance system: The handrail is guided by handrail guides on top of the balustrade, and around each newel by newel roller assemblies. On the return side of the escalator, the handrail is supported by return guide rollers (4) and guided by handrail bearing rollers (5). The handrail is guided and supported in the lower curve by idler rollers (6).

707-110 (2003-11)



5001988(2003–07)

4.4 Inclined solid balustrade

4.4.1 Balustrade panel

Balustrade panels (1) are made in end, curve, and incline sections and are stainless steel construction. Panels are mounted into the trim (2) and handrail base (3). They are secured to the trim and handrail base with spring clips (4).

4.4.2 Outer deck

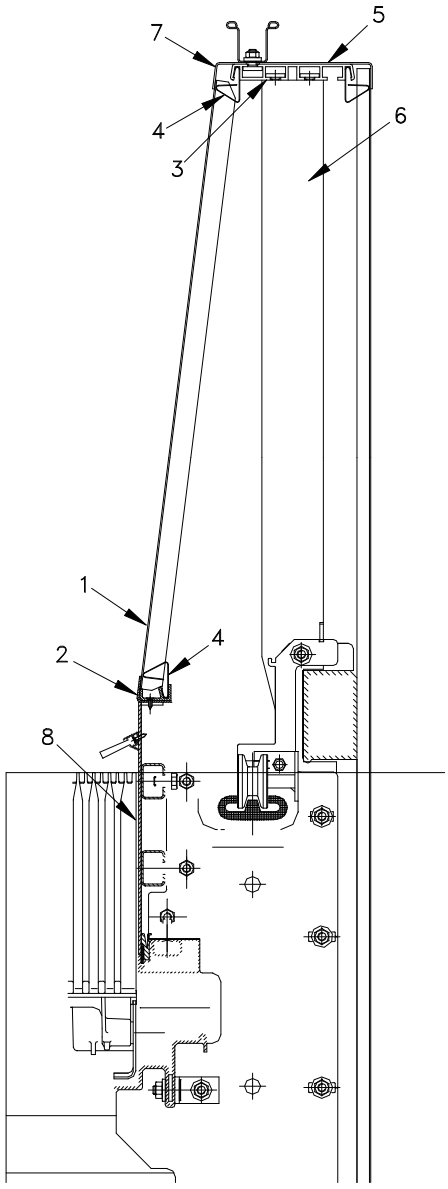
Stainless steel constructed outer decks (5) are made in curve and incline sections. Outer deck sections are located on the outside of the balustrade panel. They are mounted to stanchions (6) and are secured with splice plates at each joint.

4.4.3 Inner deck

Stainless steel constructed inner decks (7) are made in curve and incline sections. Inner deck sections are located directly above the balustrade panel at the handrail base.

4.4.4 Skirt and trim

All-metal constructed skirts (8) are made in end, curve, and incline sections, and are located the full length of the escalator, bordering the steps. Skirts are made with unistrut channels and studs inside of the skirt. They are mounted to guide track and attached to track brackets with a skirt bracket arrangement. All-metal trim sections (2) are mounted at the junction of balustrade panel and skirts.



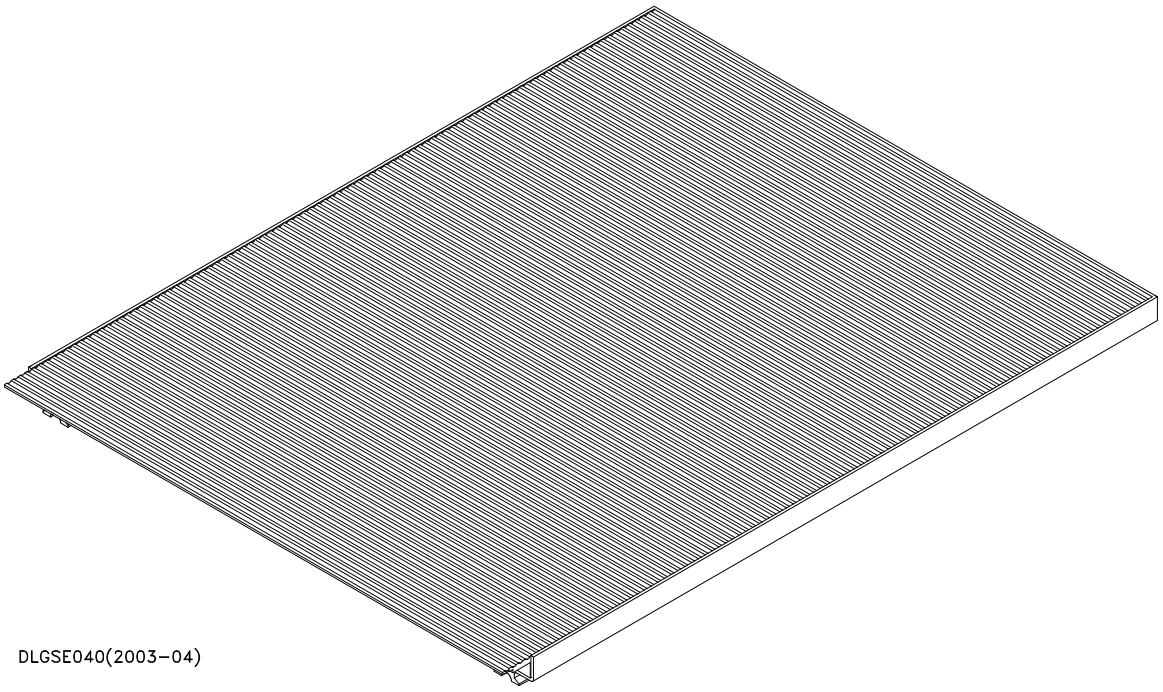
5002024(2003–07)
DL3–003(2002–11)

7-000024 (2003-07)

4.5 Access covers

Access covers are removable floor plates covering the upper and lower end pits that allow access to the upper end and lower end equipment. Access covers provide the transition from the surrounding floor area at each landing, and are constructed from stainless steel sections.

7-002090 (2010-02)



DLGSE040(2003-04)

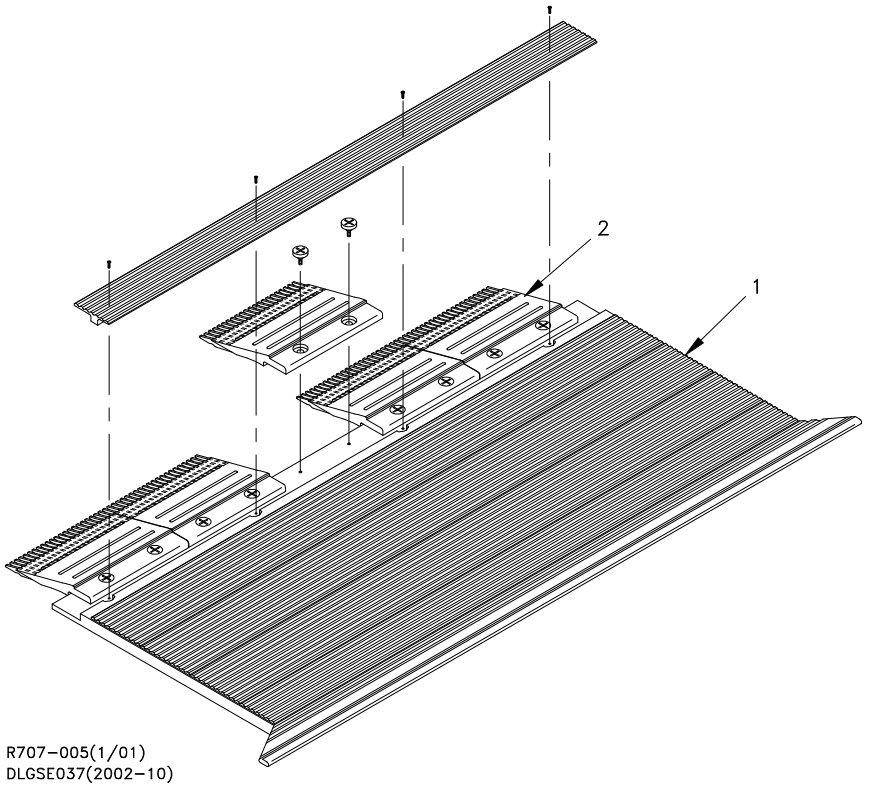
4.6 Combplates and comb segments

Combplates (1) are part of the upper and lower landings, where passengers enter and exit the escalator.

Combplates also support comb segments (2). Comb segment teeth mesh (comb) with the step treads. Comb segments are replaceable sections attached to left, right, and center positions on the combplate. There are five comb segments attached to each combplate on a 1000 mm wide escalator and three comb segments on each 600 mm wide escalator combplate.

Combplate assemblies also contain combplate impact device switches which open the safety circuit and stop the escalator when the combplate is subjected to forces as prescribed by applicable code.

7-002091 (2010-02)

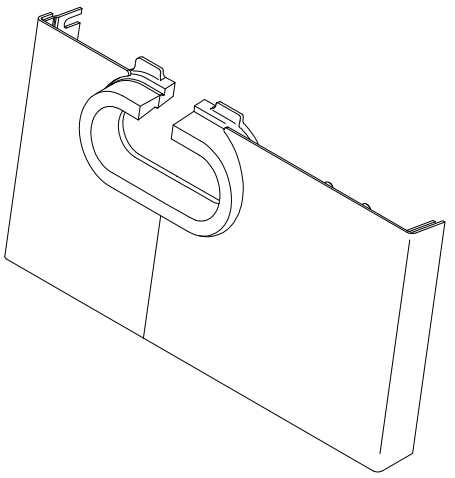


4.7 Frontplates

Frontplates are located at each newel of the escalator. The frontplate assembly contains an inner and outer frontplate section. Frontplate assemblies serve as a safety device to isolate the interior components from the escalator passengers.

Behind the frontplate a handrail inlet switch is installed. The function of the handrail inlet switch is to open the safety circuit if any object follows the handrail path in towards the interior of the escalator.

7-002025 (2010-03)



5021759(2009-11)

Frontplate for inclined, solid balustrade shown

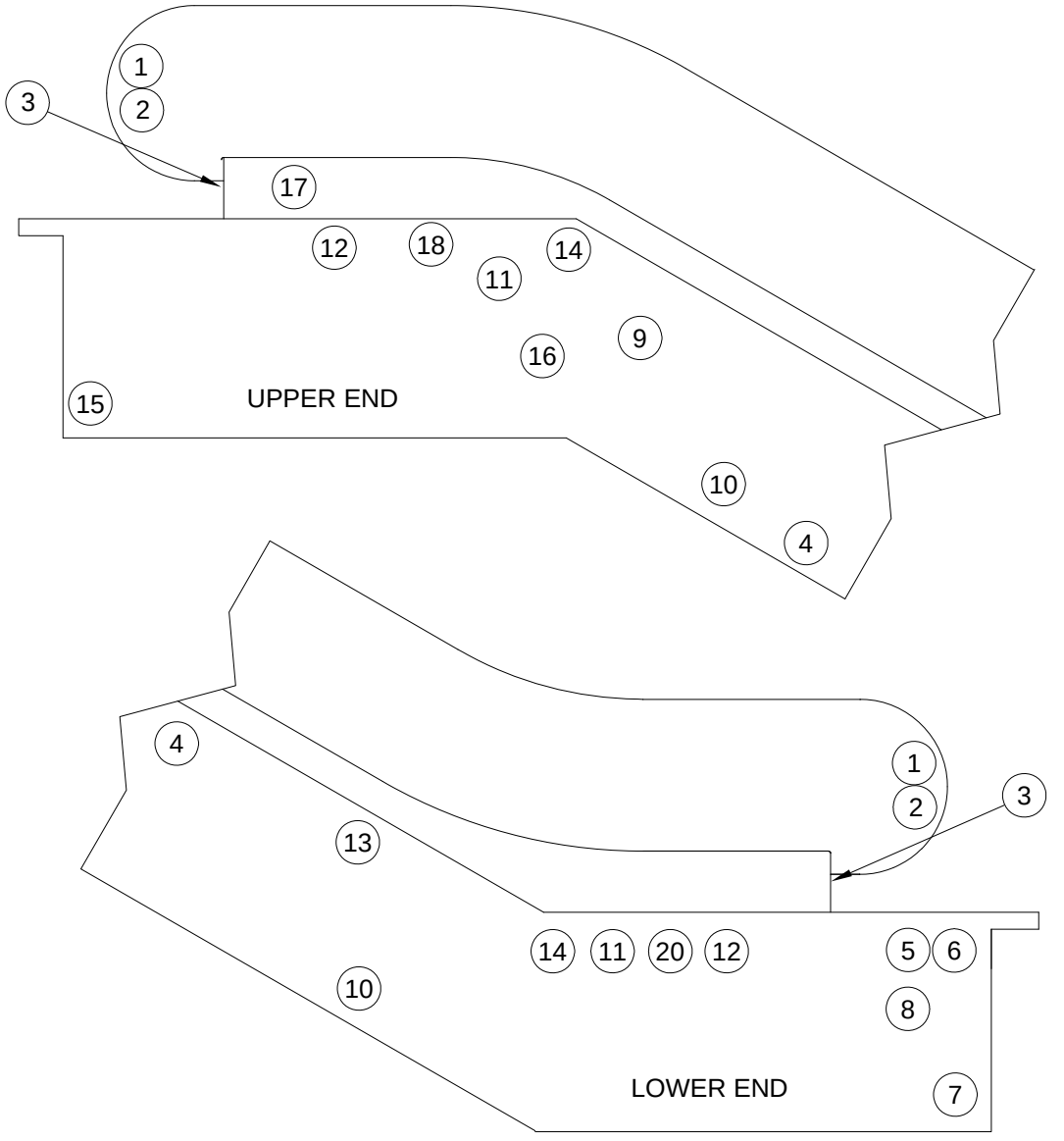
5 ELECTRICAL SYSTEM

5.1 Location of electrical safety devices

Electrical safety devices are located as follows.

1 Upper/lower end key switch
2 Emergency stop button/switch
3 Handrail inlet switch
4 Deteriorated roller sensor
5 Inspection switch (in lower junction box)
6 Lower pit stop switch
7 Upper/lower junction box
8 Broken step-chain switch
9 Motor stop switch
10 Missing step detector
11 Step demarcation lights
12 Upper/lower end skirt switch
13 Step upthrust safety switch
14 Out-of-level step detector
15 Permanent magnet brake
16 Tachometer
17 Handrail speed sensor
18 Combplate impact device

7-002026-20275057 (2011-02)



5024530(2011-02)
5021549(2010-02)

5.2 Description of controller

The controller is the central point for the electrical system, and contains electrical components that control and monitor the operation of the escalator. The controller contains, among other components, an Allen Bradley MicroLogix 1500 PLC. The PLC controls and monitors various devices in the controller and in the truss. Devices such as:

- Brake Controllers
- Contactors
- Relays
- Large fault display in the controller door
- Optional small truss fault display
- Remote CETEK Input Board located in the upper junction box
- Remote CETEK Input Board located in the lower junction box
- Motor encoder
- Handrail Speed sensors
- Safety Switches
- Missing Step Detector sensors
- Relay Interface Board in Controller
- AC Drive
- Soft Starter
- Foreign Voltage Relay Box

The PLC controller also has the following capabilities:

- The PLC monitors one to four brake control cards and two CETEK Input Boards located in the escalator truss by means of a DeviceNet Scanner Card in the PLC assembly and the DeviceNet network.

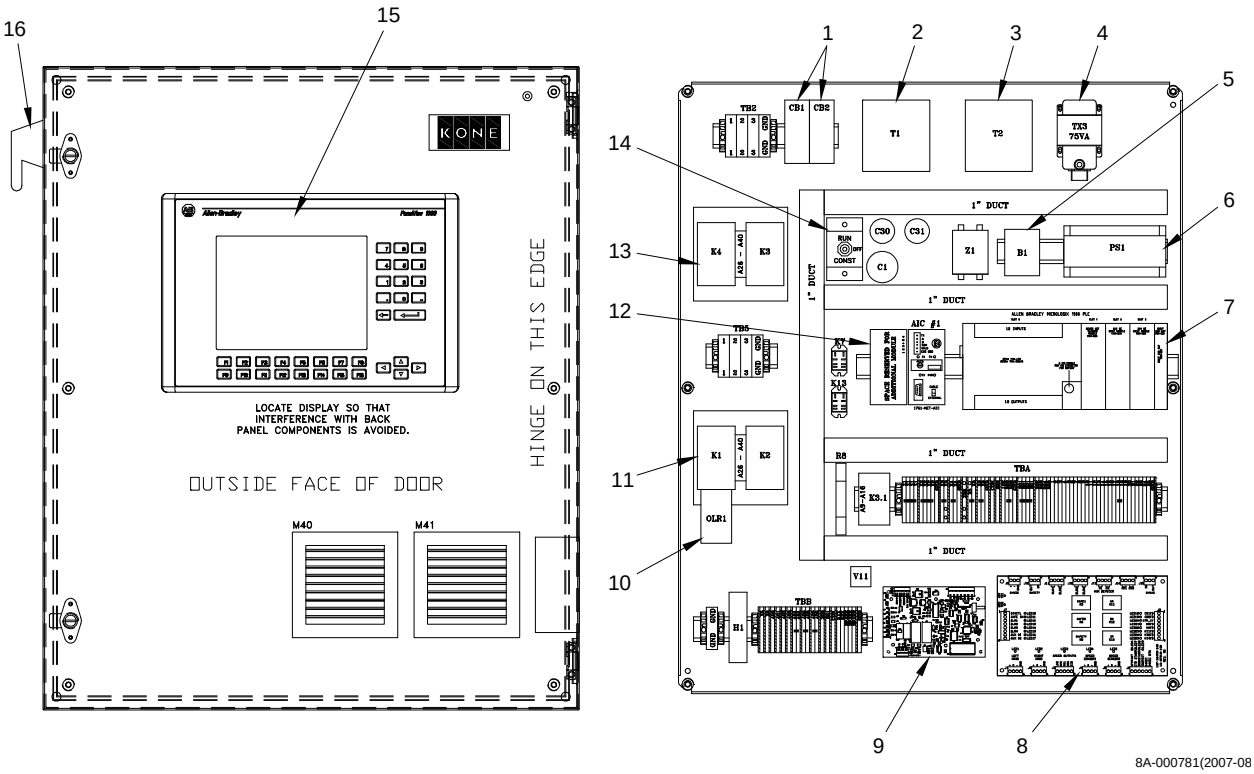
For more information on DeviceNet network, refer to Description of DeviceNet and remote I/O.

- The PLC provides diagnostic information to the customer's Ethernet by means of the NET-ENI Module located in the controller.
- The PLC provides over-speed and under-speed detection by use of an encoder.
- The PLC provides 24vdc power to the Foreign Voltage Relay Box for the escalator's traffic lights.

5.2.1 Controller components - units with single motor

- CB - Circuit breakers (1)
- T1 - Transformer (2)
- T2 - Transformer (3)
- TX3 - Transformer (4)
- B1 - Enclosure thermostat (5)
- PS1 - Power supply (6)
- PLC and power supply (7)
- Relay interface PC board (8)
- Brake controller board (9)
- OLR Overload relay (10)
- K1,K2 Contactors (11)
- AIC Interface (12)
- K3,K4 Contactors (13)
- Construct switch (14)

8-000673-20265061 (2011-02)

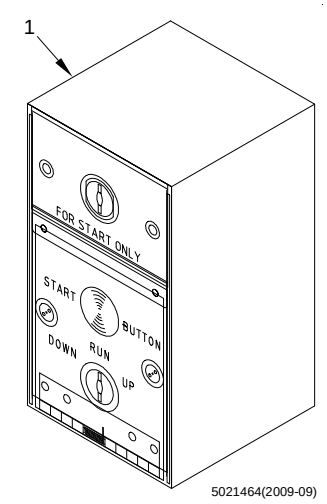


8A-000781(2007-08

5.3 Key start switches

The key start switch is a spring-loaded momentary contact switch, and is designed to start the unit and determine the direction of travel. These switches are located at both ends of the unit.

7-002027-20265057 (2011-02)

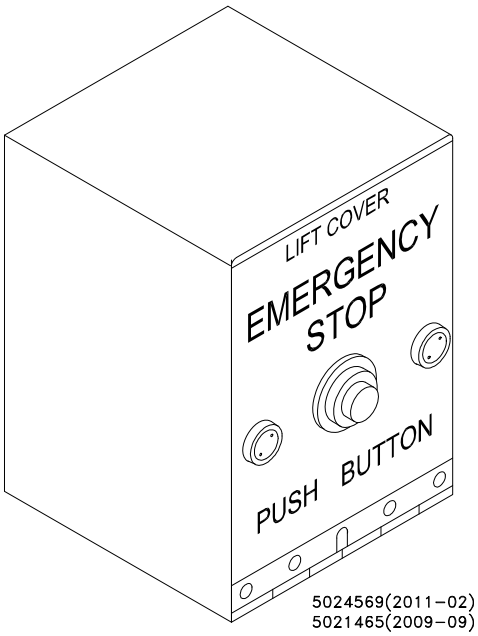


Inclined, solid balustrade, by PTL Corporation

5.4 Emergency stop buttons (switches)

Emergency stop buttons (switches) are manually operated push buttons designed to open the safety circuit which will cause the unit to stop for either routine or emergency use. Stop buttons are located at both ends of the unit. The clear plastic hinged cover, over the stop button, is to discourage nuisance stops.

7-002030 020265053 (2011-02)



5.5 Alarm switches

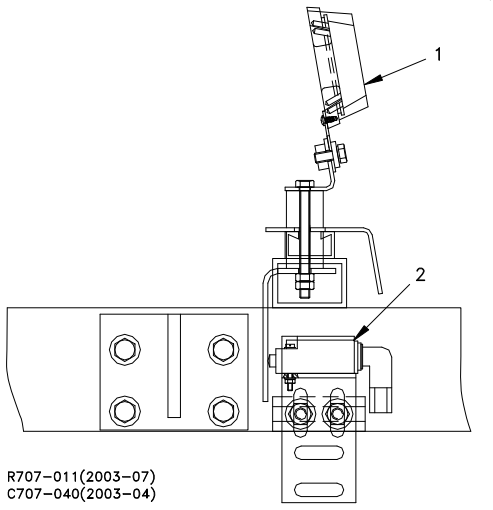
The alarm switch is designed to sound an alarm horn any time the hinged plastic cover over the emergency stop button is lifted. An alarm is mounted at both ends of the unit. The alarm sounds to discourage nuisance stops.

700-L14 (1/2002)

5.6 Handrail inlet switch

Handrail entry to the newels is located at the upper and lower end frontplates. Inlet brushes (1) and handrail inlet switches (2) are located at each entry. When an object attempts to penetrate into the inlet brushes, the limit switch is actuated and opens the escalator safety circuit.

707-116 (1/2001)

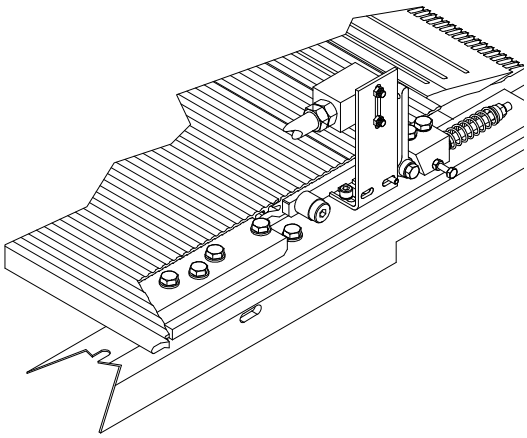


5.7 Combplate impact device

Combplate impact devices are located behind the end skirts on both sides of the combplate at both ends of the unit. The combplate impact device switches actuate and open the safety circuit when any of the following conditions occur. The combplate impact device is a manual reset device.

- A predetermined upward vertical force is applied along the front of the combplate.
- A predetermined horizontal force is applied to the front edge of the combplate.

NOTE! Applied forces are based on applicable code requirements. Check your local governing authority for applied forces required in your area.

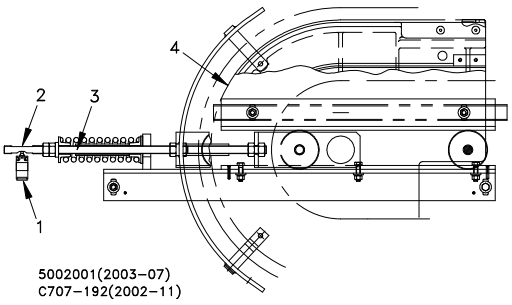


5002000(2003–07)

700-L37 (1/2002)

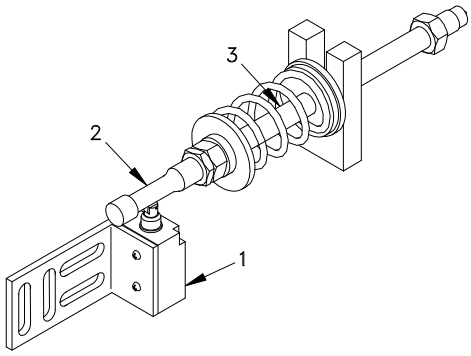
5.8 Broken step-chain switches

The broken step-chain switch (1) is a plunger-type switch. There is one located on each side of the lower end, and they are activated by actuators (2) located on threaded bolts (3) connected to the lower reversing station (4). The broken step-chain switch is designed to open the safety circuit if the lower reversing station moves more than the normal amount in either a forward or backward direction. The broken step-chain switch must be manually reset in the controller after actuation of the switch.



5002001(2003–07)
C707–192(2002–11)

700-L09 (1/2002)



5002002(2003–07)

5.9 Step band speed sensor

The step band speed sensor is an encoder sensor bearing mounted to the drive motor shaft. As the drive motor rotates, pulses are sent to the controller main CPU board and brake control board. The controller uses the pulses to calculate speed and direction of the unit.

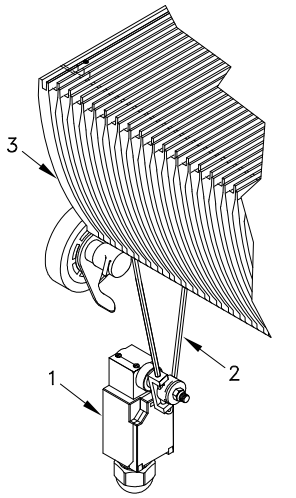
707-117 (1/2002)

5.10 Out-of-level step detectors

Out-of-level step detectors (1) are wand-actuated (2) microswitches located at both upper and lower ends at both ends of step. The switch is designed to open the safety circuit when a step (3) is vertically displaced 3.1 mm [1/8 inch]. After actuation, these switches must be reset in the controller.

NOTE! Out-of-level step detector is a manual reset device.

700-L20 (9/98)

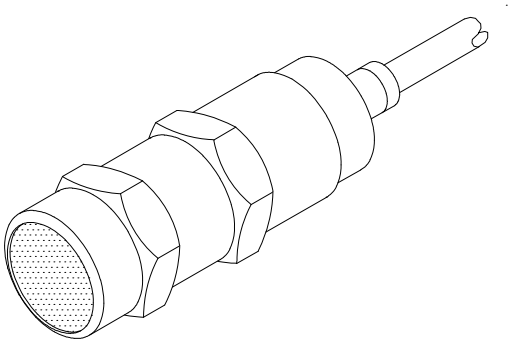


R707-014(2008-03)

5.11 Missing step detector

The missing step detector opens the safety circuit and shuts down the escalator if a step is missing. It is composed of two 30 mm proximity sensors. The 30 mm proximity sensors are mounted on the first half track brackets on the right hand lower return, and on the left hand upper return. The missing step detector is a manual reset device.

73-H49 (4/95)

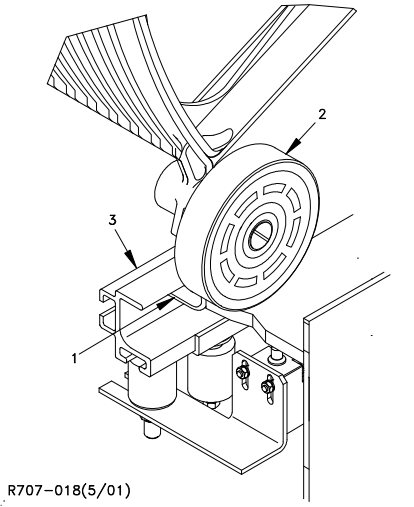


S73H-111(4/94)

5.12 Step upthrust switch

The step upthrust switch is a plunger switch located in the lower curve area on both sides of the escalator. This safety switch is designed to mechanically actuate when a step becomes racked or raises in the lower curve area. The step contains a counter bracket (1) mounted to each trailing wheel (2) axle. If a step rises in the area of the step upthrust switch, the step counter bracket (1) pulls up on the counter guide track (3) and actuates the step upthrust switch. When the lower curve track returns to its normal location, the step upthrust switch is deactivated.

707-118 (2003-11)



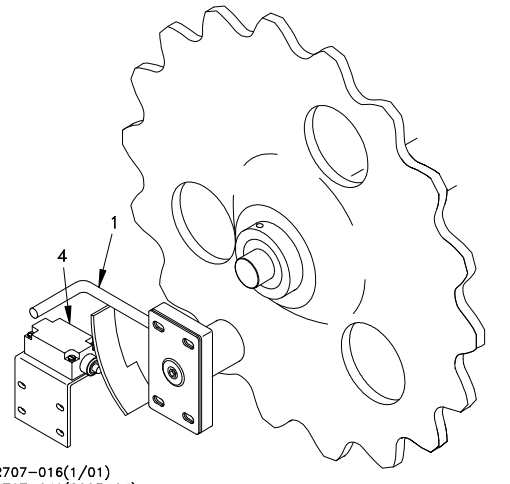
R707–018(5/01)

5.13 Step band lock

The step band lock is used to lock the step band mechanically and electrically when the step band is stationary. The step band switch prevents operation with the lock engaged. When lever (1) is shifted to detent the following occurs.

- The step band is mechanically locked by detent mechanically blocking drive sprocket.
- Limit switch (4) is engaged when step band lock is in detent position. This electrically locks the step band to prevent inadvertent starting of the drive unit.

NOTE! The step band lock must be operated ONLY when the step band is stationary.



R707–016(1/01)
C707–049(2003–04)

CAUTION

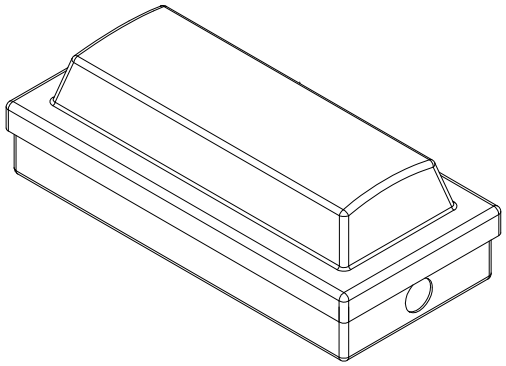
CAUTION: Personal injury or death could occur if step band lock is not engaged when work is being performed with the step band open (steps removed from step band).

80-G16 (2003-07)

5.14 Step demarcation lights

Step demarcation lights are green fluorescent lights located at each landing within the step band and under the comb segments.

700-L21 (2010-02)



R707-023(2003-04)

5.15 Stop and inspect switches

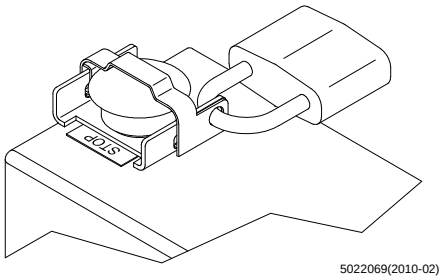
The pit stop switch is a push/pull (OFF/ON) switch that opens the safety circuit and prevents the unit from being started. The pit stop switch is located on top of the terminal box in the upper and lower end pit.

The drive motor area of the unit also contains a push/pull (OFF/ON) stop switch which will open the safety circuit and prevent the unit from being started.

Units also contain an INSPECT/RUN toggle switch at each pit. The inspect switch is also located on top of the terminal box .

The push/pull switch is secured by a locking attachment, part number KM959356H01.

7-002092 (2010-02)



5022069(2010-02)

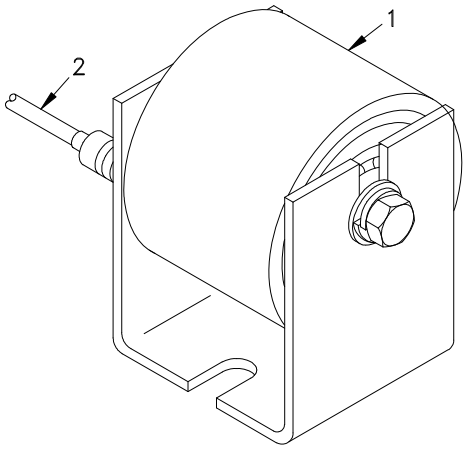
5.16 Handrail speed sensor

The handrail speed sensor employs a roller (1) with 12 steel pins embedded in the roller, and a proximity sensor (2). To monitor the speed of the handrail, the magnetic proximity sensor senses the presence of the cluster roller's steel pins as they pass by the end of the proximity sensor.

The signals from the handrail speed sensors and the step (or pallet) band speed sensor are sent to the controller. If the handrail speed slows by 5 percent to 15 percent in comparison to step (or pallet) band speed for longer than 10 seconds, a 5 percent error is recorded in the Error Log. The unit will continue to run.

If handrail speed varies +/- 15 percent in comparison to step (or pallet) speed, a two second buzzer sounds. If this error persists, the unit will shut down. The error is then recorded in the Error Log.

707-120 (2009-03)

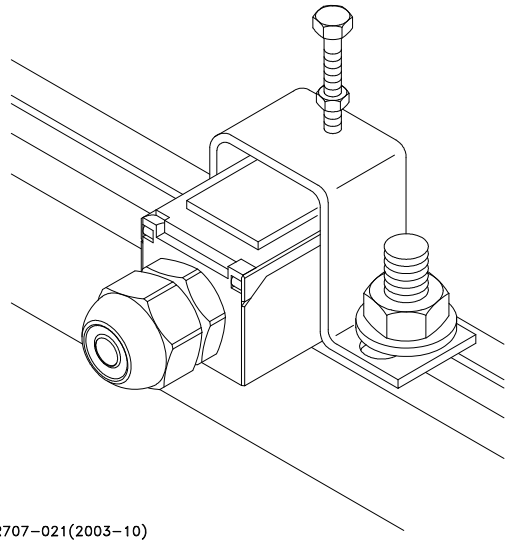


R707-017(2003-04)

5.17 Skirt switches

Skirt switches are microswitches designed to open the safety circuit when something is wedged between the step and skirt in the area of the skirt switch. Skirt switches are also designed to actuate if sufficient pressure is applied to the skirt itself causing the skirt to deflect over a given amount. There are two skirt switches located in the upper end and two located in the lower end.

707-122 (1/2001)



R707-021(2003-10)

5.18 Comb lights

Comb lights are mounted to the end skirts in the area above the comb segments. These lamps are used to illuminate the comb segment area.

7-002029 (2009-10)

6 APPROVALS AND VERSION HISTORY

Compiled by: Training & Product Information / Moline

Checked by: Escalator Manufacturing / Charles Banks

Approved by: Escalator Manufacturing / Charles Banks

Issue	Date	Description of change	Ref CR	Approved by
-	2009-11-11	First release		Charles Banks
-	2010-03-05	Revisions per owner feedback		Charles Banks
A	2011-02-10	Revisions per owner feedback		Charles Banks

DOCUMENT # (6013188035*)	PAGE #	DESCRIPTION
_1	1	FINAL LAYOUT DRAWING
_2	2-3	BRAKE CERTIFICATION & STATEMENT OF COMPLIANCE
_3	4-9	LAYOUT, SEPTA, SINGLE MOTOR & PM BRAKE CNTRL
_4	10-11	DRIVE STATION, TYPE 60, 4.8 KW, SINGLE DRIVE
_5	12	STEP CHAIN, 18KV-SF, 2STR, 4000 LONG
_6	13	SENSOR, UNSHIELD, 30MM INDUCTIVE PROXIMITY, MSD
_7	14	SWITCH, WAND ACUTATOR, OUT-OF-LEVEL-STEP
_8	15	COMB LIGHTING, LED WHITE
_9	16	START STATION, SST#4, W/FRAME
_10	17	STOP STATION, SST#4, W/FRAME, 24V
_11	18	LIGHT, 120VAC DEMARCATION, WP, ECO3000
_12	19	STEP W/ROLLER, TYPE 60
_13	20	STEP, W/O ROLLER, TYPE 60
_14	21-22	RETURN STATION PREASSEMBLY, TYPE 60
_15	23	NEWEL END ARRANGEMENT, SOLID, SEPTA
_16	24-25	ASSY, SKIRT BRUSH, RECESSED SKIRT, 30-2, SEPTA, WH100
_17	26	BRAKE, SPLINE MAGNET
_18	27-28	COMB CARRIER, TYPE 60, FOR SST LINING
_19	29	ROLLER, HANDRAIL SPEED SENSOR
_20	30-31	ASSY, DETERIORATED ROLLER SENSOR, TRAIL WHEEL TRACK
_21	31-32	ASSY, DETERIORATED ROLLER SENSOR, CHAIN TRACK
_22	32-34	WIRING,TRUSS HEATERS,480V
_23	35	WIRING,TRUSS FAULT DISPLAY
_24	36-48	ASSY,DWG,TRUSS ELECTRICAL
_25	49-50	J-BOX, UPPER, PASS-THRU
_26	51	ASSY,DRAWING,J-BOX,CONVERTER TRUSS DISPLAY
_27	52-53	ASSY,DRAWING,TRUSS HEATING
_28	54-59	WIRING DIAGRAM:LINE INPUT,SOFT START,AC DRIVE,1-MOTOR & 1-8" PM BRAKE
_29	60-70	WIRING DIAGRAM:CONTROLLER AND TRUSS INTERFACE
_30	71-77	WIRING DIAGRAM: DEVICENET, SAFETY DEVICES, & POINT TO POINT
_31	78	NO DRAWING
_32	79	INCLINE ASSEMBLY ECOMOD
_33	80-83	UPPER END ASSEMBLY ECOMOD
_34	84-87	LOWER END ASSEMBLY ECOMOD
_35	88	ASSY, DETECTOR ACCESS CVR, SEPTA
_36	89	ASSY, SCALE RETURN, SPRING
_37	90	MACHINE ROOM LAYOUT
_38		TEST, STEP FATIGUE, TYPE 60 ECO
_39		LOWER MODULE, OLNEY, 2 LS, 1st TO TRACK, ECOMOD
_40		UPPER MODULE, OLNEY, 2 LS, 1st TO TRACK, ECOMOD
_41	93-94	HR BREAK/SPEED SENSOR ASSEMBLY, SEPTA MOD

(A) ADDED "_39" TO "_41"

METRIC DIMENSIONS

TOLERANCE UNLESS SHOWN
.X = ±2.5
.XX = ±1.01
.XXX = ±0.381
ANGLES ±1°

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 1.00

REV	DATE	CH'K	APP'D	F
A	02/OCT/07	WPC	SJE	
-	19/JUN/07	WPC	SJE	

DRAWN
SENGER

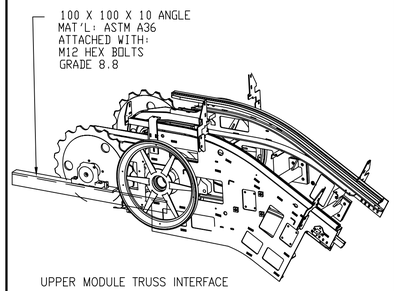
KONE

NAME
OLNEY
STATION, TABLE OF CONTENTS

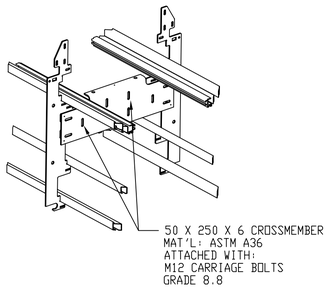
SHEET
-

B

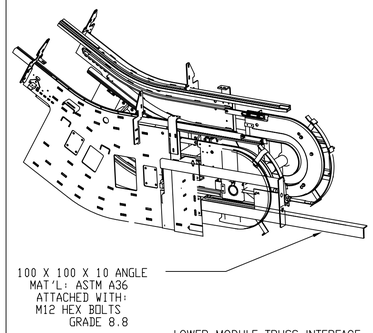
6013188035



UPPER MODULE TRUSS INTERFACE

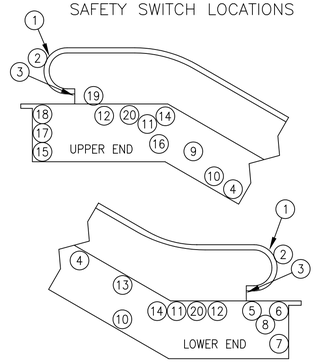


INCLINE MODULE(S) TRUSS INTERFACE



LOWER MODULE TRUSS INTERFACE

SAFETY SWITCH LOCATIONS



1. UPPER / LOWER END KEY SW.
2. EMERGENCY STOP BUTTON
3. HANDRAIL INLET SWS.
4. DETERIORATED ROLLER SENSOR
5. INSPECTION SW. (IN LOWER JUNCTION BOX)
6. LOWER PIT STOP SW.
7. UPPER / LOWER JUNCTION BOX
8. BROKEN STEP-CHAIN SWS.
9. MOTOR STOP SW.
10. MISSING STEP DETECTOR
11. DEMARCATION LIGHTS
12. UPPER / LOWER END SKIRT SW.
13. STEP UPTHRUST SAFETY SW.
14. OUT-OF-LEVEL STEP DETECTOR
15. PERMANENT MAGNET BRAKE
16. TACHOMETER
17. CONTROLLER
18. INSPECTION SW. (IN CONTROLLER)
19. HANDRAIL SPEED SENSOR
20. COMBPLATE IMPACT DEVICE

SUPPORT REACTIONS	
REACTION POINTS	LOAD (lbf)
LOWER SUPPORT	12,760
LOWER INTERMEDIATE	NONE
UPPER INTERMEDIATE	NONE
UPPER SUPPORT	17,995
REACTION TOTAL	30,754

NO DYNAMIC LOAD INCLUDED IN REACTIONS

CONTROLLER OVER-CURRENT PROTECTION

TOTAL HORSEPOWER (HP)	POWER SUPPLY (VOLTS)	FULL LOAD RUNNING AMPS
6.4	460	9.3

CURRENT RATING OF FUSETRON FUSES OR INVERSE TIME CIRCUIT BREAKER

15-20 AMPS

WORK TO BE PERFORMED / ARRANGED BY KONE F.L.

- PROFESSIONAL METAL REFINISHING OF THE ESCALATOR OUTER DECKS.
- INSTALLATION OF PTL START/STOP BOXES IN NEWELS
- INSTALLATION OF TRAFFIC LIGHTS IN NEWELS

GENERAL NOTES

- EXISTING WESTINGHOUSE "M100" SOLID BALUSTRADE UNIT TO BE MODERNIZED UTILIZING KONE ECO3000 MECHANICAL & ELECTRICAL COMPONENTS.

CONTRACT DATA

MACHINE MODEL#:
ECO3000
SPEED (FT/MIN):
100
STEP WIDTH:
24"
POWER SUPPLY:
460 VOLTS 3 PH 60 HZ

MOTOR DATA

H.P.: 1 @ 6.4 HP
R.P.M.: 1800
STARTING AMPS: 18.6
RUNNING AMPS: 9.3

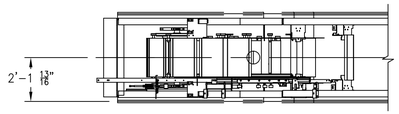
☐ POWER TRANSFORMER
☐ TEFC MOTOR

SELECTED MATERIALS & FINISHES

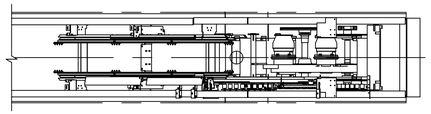
BALUSTRADE INNER PANELS:
STAINLESS STEEL PANELS
SKIRTS:
STAINLESS STEEL
INNER & OUTER DECKING:
STAINLESS, #4 SATIN FINISH
TRIM & MOULDINGS:
ALUMINUM/STAINLESS STEEL
EXTERIOR CLADDING:
BY OTHERS
HANDRAIL COLOR:
BLACK

ADDITIONAL OPTIONS

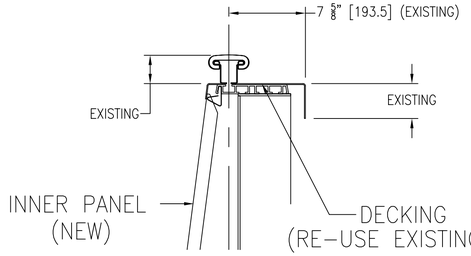
STEP (SILVER) WITH STRIPES
COMB SEGMENTS (YELLOW)
"C" HANDRAILS
#4 STAINLESS STEEL FRONTPLATES
RETAIN EXISTING DECKING
STAINLESS STEEL ACCESS COVERS, DIAMOND PLATE
STAINLESS STEEL LINED COMB CARRIER, NO KONE LOGO
STAINLESS STEEL ACCESS COVER FRAMES
PTL START STATIONS
PTL STOP STATIONS
TRAFFIC LIGHTS



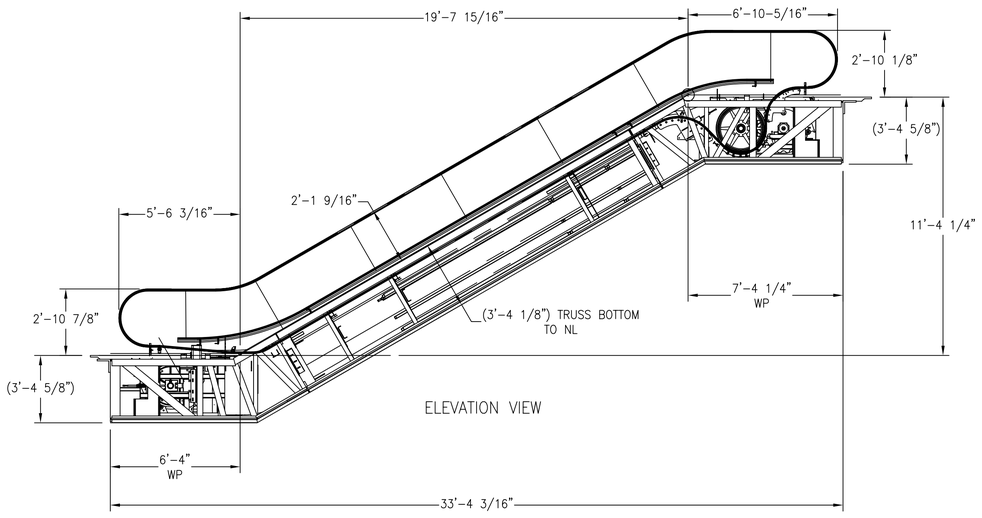
LOWER LEVEL PLAN



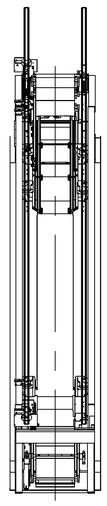
UPPER LEVEL PLAN



BALUSTRADE DETAIL @ INCLINE



ELEVATION VIEW



PROJECT:
SEPTA

LOCATION:
SEPTA OLNEY TRANS CTR
PHILADELPHIA, PA

STATE ESCALATOR NUMBERS:
1ST FLOOR TO TRAIN PLATFORM

NET #: 9030723

SAP INFO

SL NUMBER	UNIT NO.	EQUIPMENT NO.
8023427	1ST-TRAIN	20253146

REVISIONS

DATE	NO.	BY	DESCRIPTION
06/13/07	A	JLR	FINAL
02/22/07	-	SJE	PRELIMINARY

KONE

DRAWN: SJE	DATE: 02/22/07	REV A
SCALE: USE FIGURED DIMENSION		
DWG NO 6013188035_1		SHEET 1

AUTO-CAD ANSI D

Elevators Escalators

June 29, 2007

STATEMENT OF ESCALATOR COMPLIANCE

Subject: ESCALATOR FRONTLINE #: **M-6013188-035**
EQUIPMENT #: **20253146**
PROJECT NAME: **SEPTA, OLNEY STATION**
PROJECT LOCATION: **Philadelphia, PA**

We do hereby attest that the statements that follow are in accordance with the American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks, ASME A17.1 –2002. Testing to confirm KONE, INC. Escalator Division performed code compliance, located in Coal Valley, IL.

Skirt Panel Deflection:
Skirt panel deflection does not exceed 1/16" (0.0625") under a force of 150 lbf, as stated under section 6.1.3.3.6 of the ASME A17.1 – 2002 code.

Step Fatigue Tests:
The Die Cast Step Assembly meets or exceeds the requirements of ASME A17.1 - 2002, Section 6.1.3.5.7, as further described in Section 8.3.11.

The statements of compliance as to rated load and the escalator brake are covered on a separate page entitled "Rated Load Brake Certification", and typically accompany this page.

Steven Enger
Escalator Modernization Engineer I
KONE, Inc.

Elevators Escalators

June 29, 2007

RATED LOAD BRAKE CERTIFICATION

Subject: ESCALATOR FRONTLINE #: **M-6013188-035**
EQUIPMENT #: **20253146**
PROJECT NAME: **SEPTA, OLNEY STATION**
PROJECT LOCATION: **Philadelphia, PA**

We do hereby certify: That the rated load tests, in accordance with the American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks, ASME A17.1-2002, have been performed by KONE, Inc. Escalator Division, located in Coal Valley, IL. That the motor and brake assemblies are designed to stop the escalator from traveling up or down under any load up to the rated load, as prescribed in the above-mentioned codes.

The Brake Rated Loads are calculated from the following equations:

Static Brake Rated Load = 4.6 * **B** * (**W** + 8)

Running Brake Rated Load = 3.5 * **B** * (**W** + 8)

NOTE: W = Escalator Step Width in inches, B = 1.732 x Escalator Rise in Feet.

Unit M-6013188-035 has an 11.35' (3.46 M) rise, and is 24" (600mm) in step width.

The Static Brake Rated Load is 2894 lbs (1313 kg) equivalent to 147 lbs/step (67 kg/step).
The Running Brake Rated Load is 2202 lbs (999 kg) equivalent to 112 lbs/step (51 kg/step).

The Machinery Rated Loads are calculated from the following equations:

Machinery Rated Load = 3.5 * **B** * (**W** + 8)

NOTE: W = Escalator Step Width in inches, B = 1.732 x Escalator Rise in Feet

The Machinery Rated Load is 2202 lbs (999 kg) equivalent to 112 lbs/step (51 kg/step).

Steven Enger
Escalator Modernization Engineer I
KONE, Inc.

DRAWING INDEX	
SHEET NUMBER	DETAIL
4	PANEL LAYOUT
5	LAYOUT DIMENSIONS
6	TERMINAL STRIP LAYOUT
7	DOOR - OUTSIDE VIEW
8	DOOR - INSIDE VIEW
9	CABINET SIDE VIEWS

NOTES:
1) INSTALL COMPONENTS IN LOCATIONS SHOWN AND WIRE PER ITEMS 501 & 502.
2) LABEL ALL COMPONENTS AS SHOWN.
3) DO NOT LABEL WIRE DUCT.
4) FOR HARDWARE INSERTED FROM BACKSIDE OF PANEL USE TREADED HOLES AND STARS LOCK WASHERS BETWEEN PANEL & SCREW/BOLT HEAD.
5) USE SPACERS WITH HARDWARE PROVIDED FOR PCB,ITEM #40. USE FLAT HEAD WASHERS,NOT LOCK WASHERS ON PCB. PCB SHOULD BE HELD FIRMLY AGAINST PAD, ITEM #41, W/O DEFORMING PCB.
6) ELECTRICALLY BOND DIN RAILS TO BACK PANEL, ITEM #59.
7) WIRE DIODE,ITEM 106, TO COIL OF RELAY K13. REFERENCE ITEM 502 FOR WIRING DETAILS.
8) MOUNT AND WIRE RESISTOR ON CAPACITOR TERMINALS.
9) WIRE RESISTOR,ITEM 117, INTO WHITE AND BLUE TERMINALS AS SHOWN IN LOCATION SHOWN IN DETAIL "A".
10) USE 3/8" PINK NON-CONDUCTIVE DOW ETHAFOAM 221 A/S TO SUPPORT PC BOARD AGAINST SUB-PANEL. CUT FOAM TO SAME OUTLINE AS PC BOARD.
11) HARDWARE FOR MOUNTING PC BOARD MUST HAVE MALE THREADS PROTRUDING OUT FROM THE TOP SIDE OF THE PC BOARD TO ALLOW FOR EASY INSTALLATION OF BOARD.
12) N/A
13) REMOVE AND REPLACE THE EPROM IN EACH BRAKE CONTROLLER,WITH EPROM, ITEM 633. DISCARD OLD EPROM'S.

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
-	06/11/07	JLR	SJE	

DRAWN
J.REYMER

KONE

NAME
LAYOUT, SEPTA SINGLE MOTOR & PM BRAKE CNTRL

SHEET 4 D

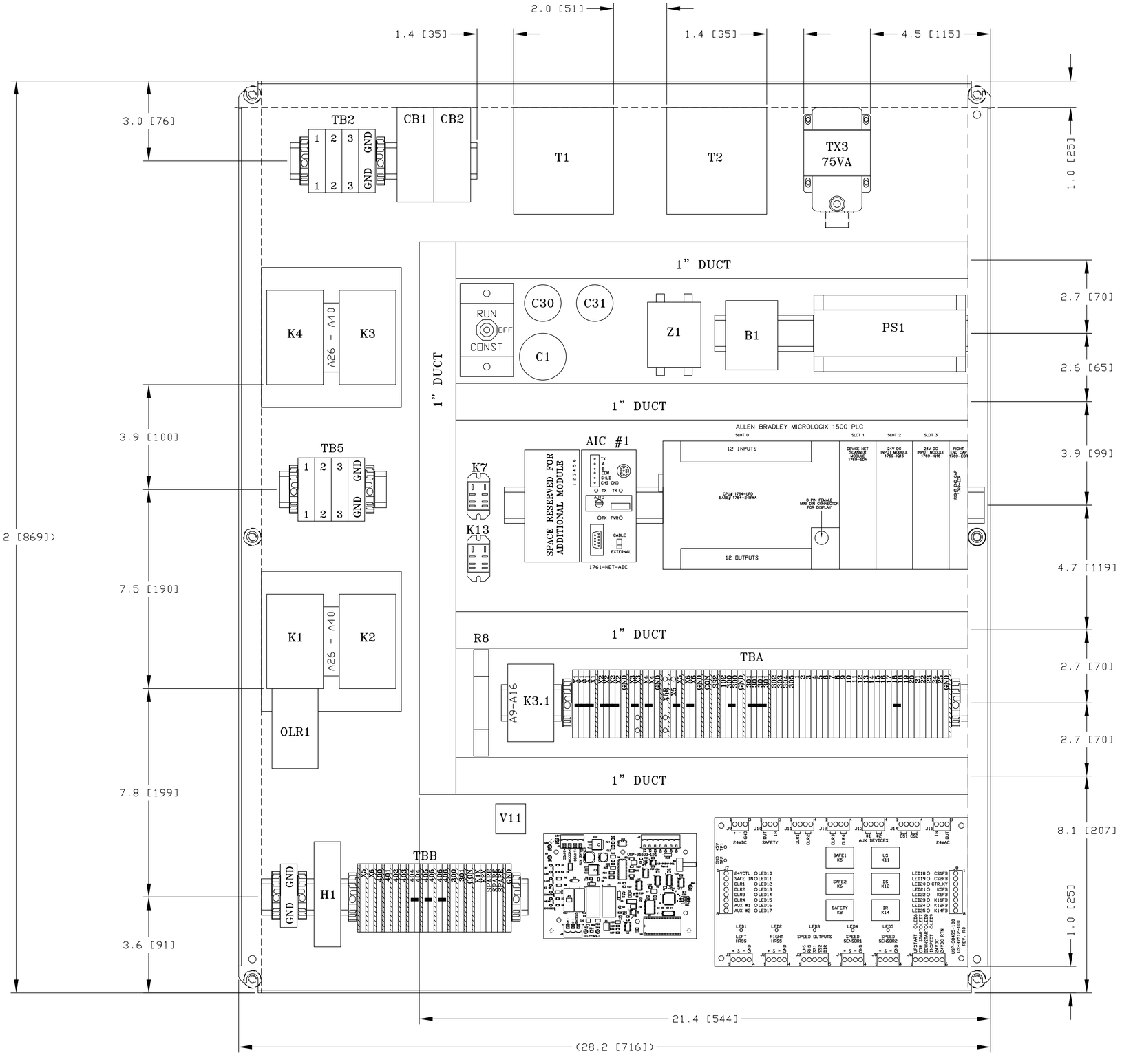
6013188035_3

WAS 841382D57

SHEET 1 OF 6

DRAWING INDEX	
SHEET NUMBER	DETAIL
4	PANEL LAYOUT
5	LAYOUT DIMENSIONS
6	TERMINAL STRIP LAYOUT
7	DOOR - OUTSIDE VIEW
8	DOOR - INSIDE VIEW
9	CABINET SIDE VIEWS

NOTES:
1) SEE NOTES ON SHEET 1.



TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
-	06/11/07	JLR	SJE	

DRAWN J.REYMER

KONE

NAME
LAYOUT, SEPTA SINGLE MOTOR & PM BRAKE CNTRL

SHEET 5 D

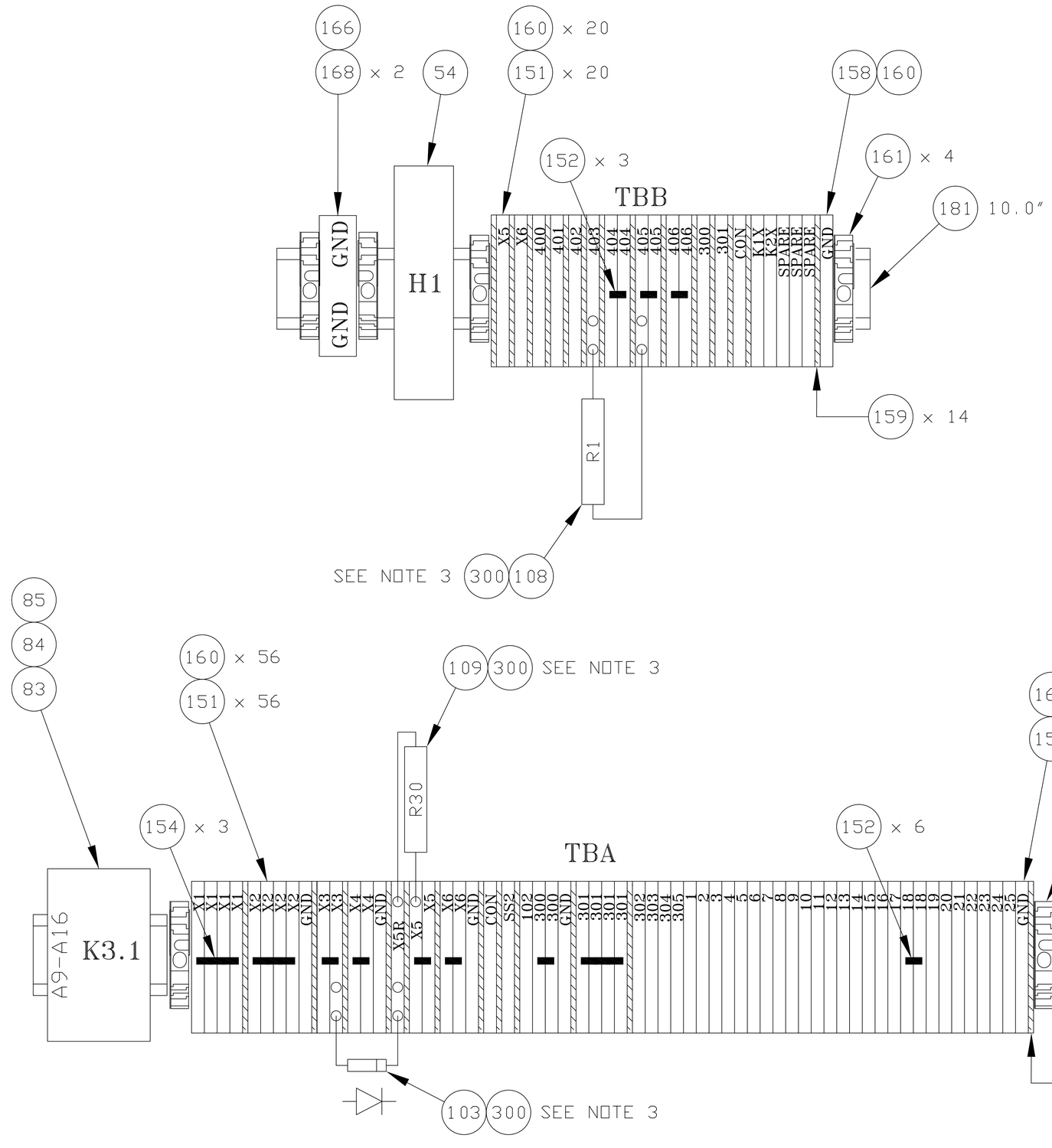
6013188035_3

WAS 841382D57 SHEET 2 OF 6

DRAWING INDEX	
SHEET NUMBER	DETAIL
4	PANEL LAYOUT
5	LAYOUT DIMENSIONS
6	TERMINAL STRIP LAYOUT
7	DOOR - OUTSIDE VIEW
8	DOOR - INSIDE VIEW
9	BACK & SIDE VIEWS

NOTES:

1) ASSEMBLE AND LABEL ALL ITEMS AS SHOWN.
2) LABEL SUBPANEL TO INDICATE, TBA,TBB, TB2, & TB4.
3) WIRE DEVICE INTO TERMINALS, ORIENT AS SHOWN, AND INSULATE LEADS WITH ITEM 300.
4) WIRE AIC MODULES TO PLC PER WIRING DIAGRAM, ITEM #502 SHEET 10.



TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
-	06/14/07	JLR	SJE	

DRAWN J.REYMER

KONE

NAME
LAYOUT, SEPTA SINGLE MOTOR & PM BRAKE CNTRL

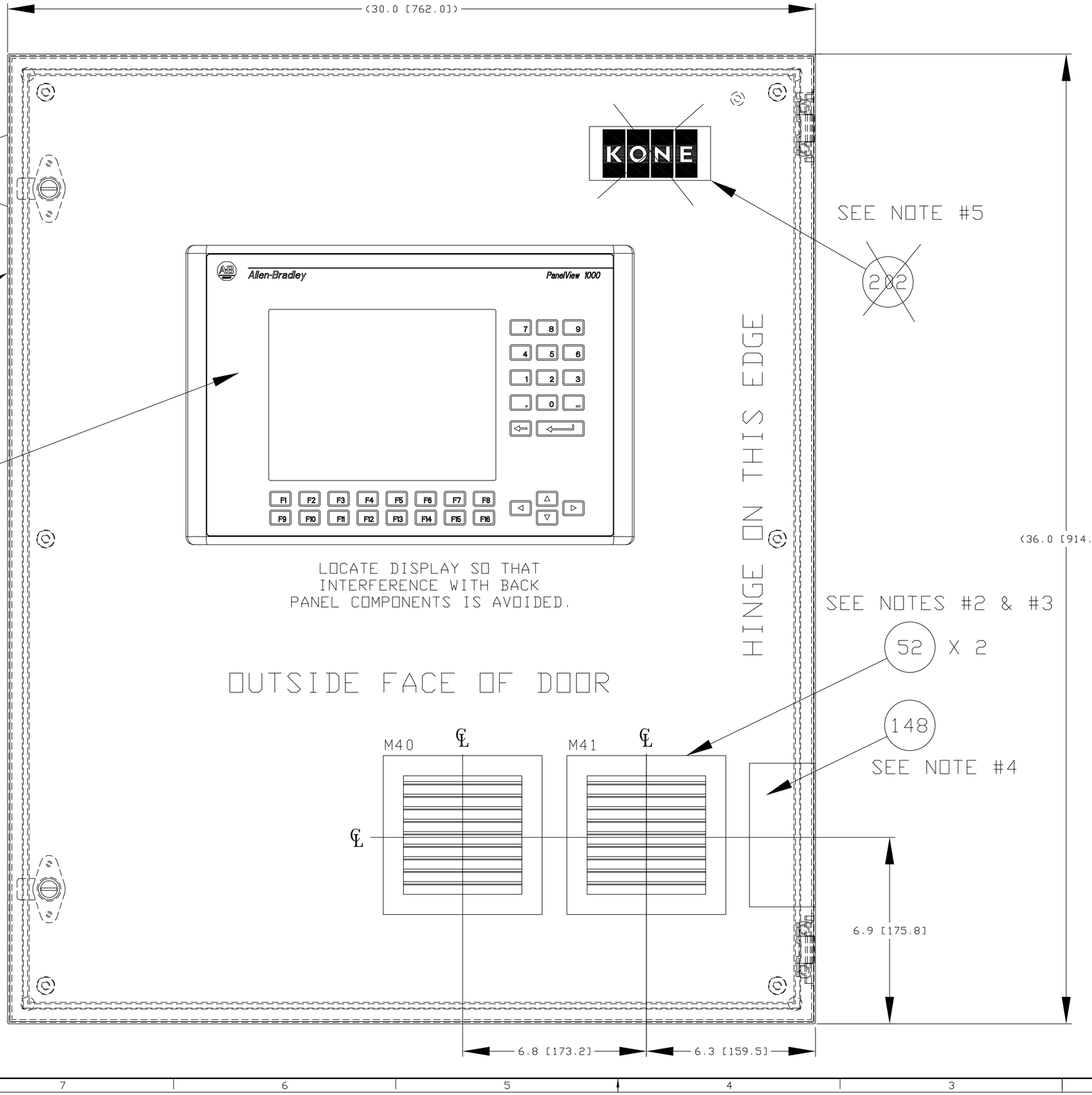
SHEET 6 D

6013188035_3

WAS 841382D57 SHEET 3 OF 6

DRAWING INDEX	
SHEET NUMBER	DETAIL
4	PANEL LAYOUT
5	LAYOUT DIMENSIONS
6	TERMINAL STRIP LAYOUT
7	DOOR - OUTSIDE VIEW
8	DOOR - INSIDE VIEW
9	CABINET SIDE VIEWS

NOTES:
1) INSTALL COMPONENTS TO DOOR AS SHOWN.
2) LOCATE FANS SO THAT INTERFERENCE WITH BACK PANEL COMPONENTS IS AVOIDED.
3) INSTALL FANS TO BLOW INTO CABINET.
4) INSTALL GFI OUTLET ON INSIDE WALL OF CABINET AS SHOWN. INSURE INTERFERENCE WITH BACK PANEL COMPONENTS IS AVOIDED.
5) REMOVE KONE LOGO DURING INSTALLATION OF ESCALATOR.



TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D
-	06/14/07	JLR	SJE

DRAWN J.REYMER

NAME
LAYOUT, SEPTA SINGLE MOTOR & PM BRAKE CNTRL

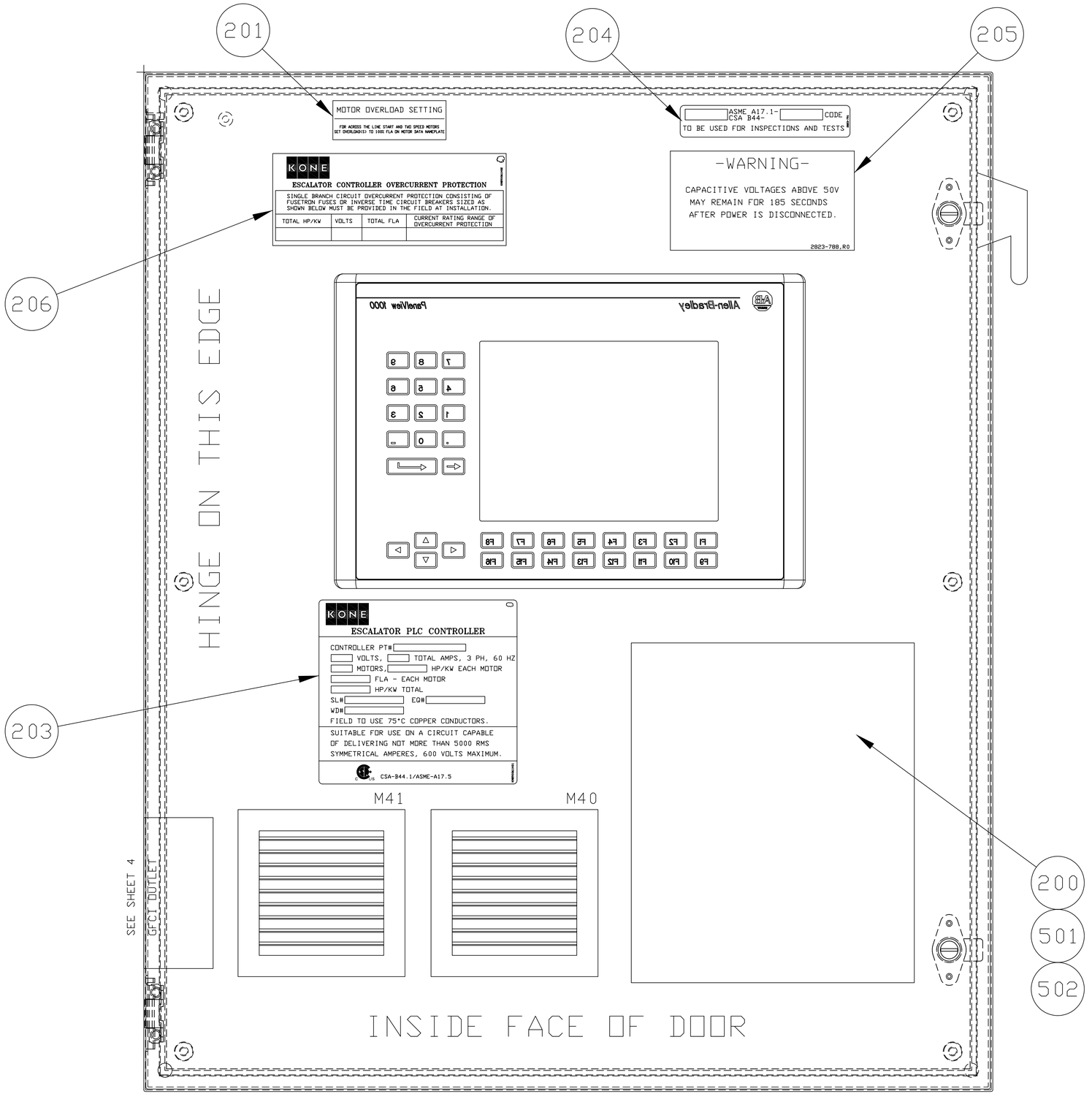
SHEET 7 D

6013188035_3

WAS 841382D57 SHEET 4 OF 6

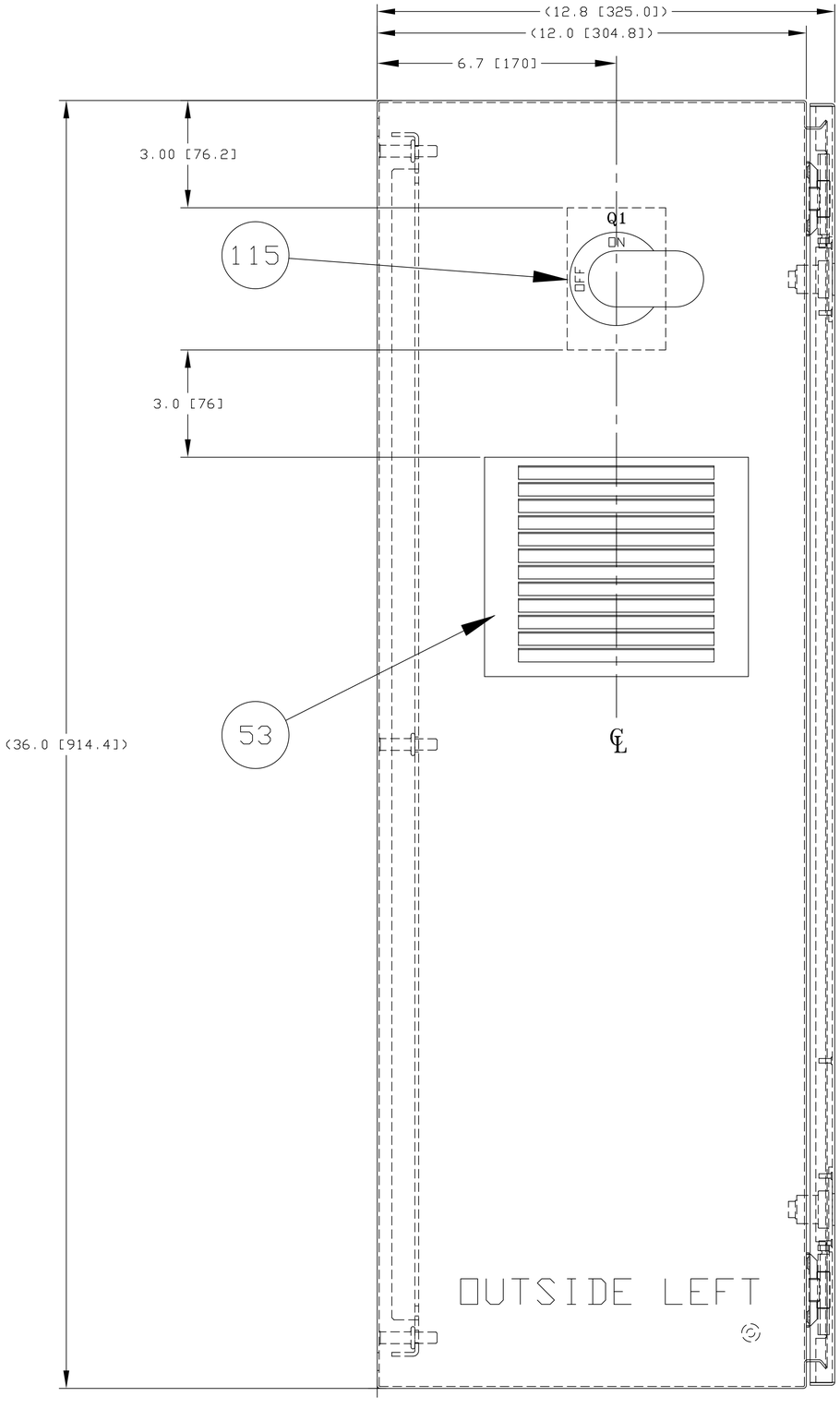
DRAWING INDEX	
SHEET NUMBER	DETAIL
4	PANEL LAYOUT
5	LAYOUT DIMENSIONS
6	TERMINAL STRIP LAYOUT
7	DOOR - OUTSIDE VIEW
8	DOOR - INSIDE VIEW
9	CABINET SIDE VIEWS

NOTES:
1) INSTALL LABELS IN LOCATIONS SHOWN.
2) INSTALL ADHESIVE BACKED ENVELOPE, ITEM 200, IN LOCATION SHOWN.
3) PLACE COPIES OF WIRING DIAGRAMS, ITEMS 501 & 502 INTO ITEM 200.
4) USING PERMANENT BLANK INK, FILL OUT LABELS, ITEMS 203,204,& 206.

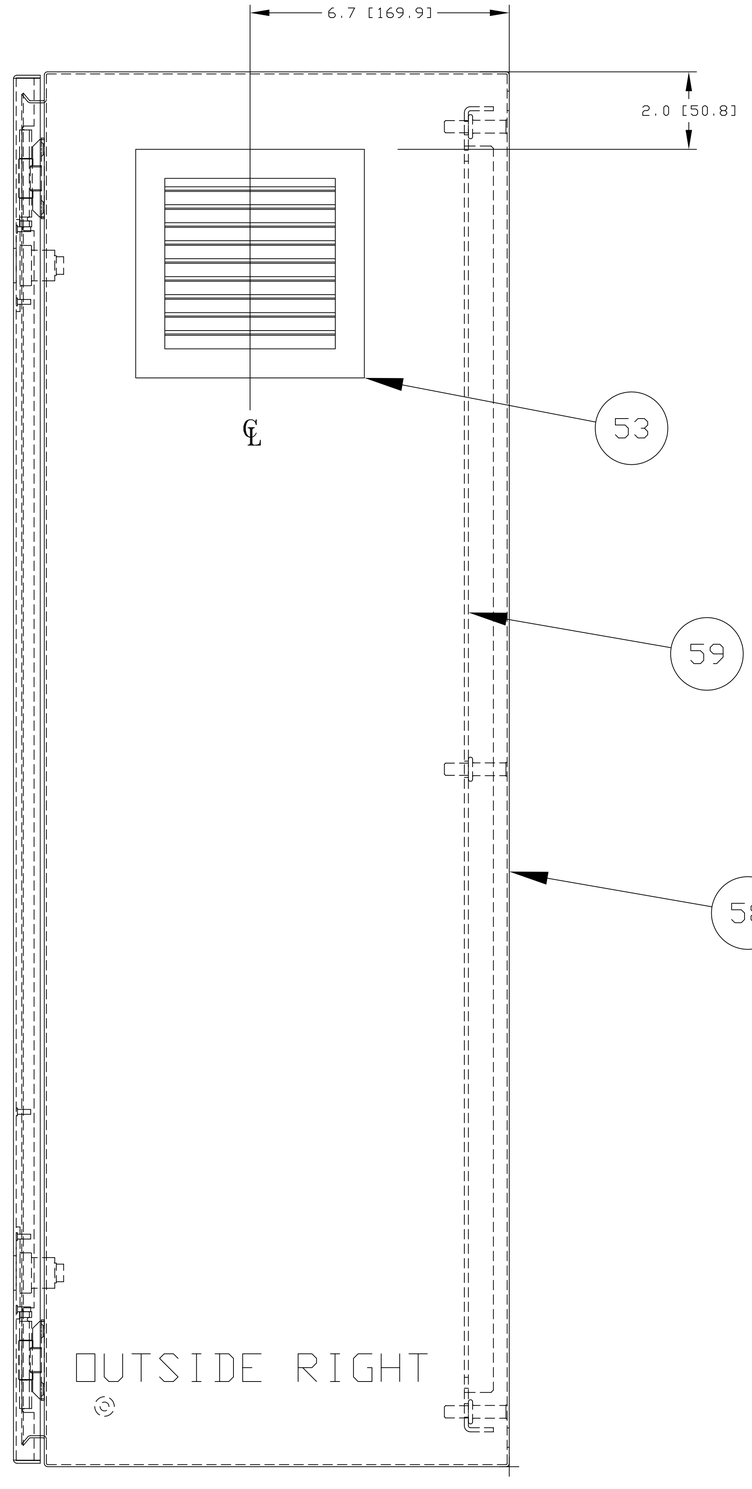


TOLERANCE UNLESS SHOWN				
SOURCE/SPEC#/FINISH/WT				
THIS INFORMATION IS CONFIDENTIAL AND REMAINS THE PROPERTY OF KONE INC. ITS USE, REPRODUCTION OR DISSEMINATION WITHOUT THE EXPRESS PERMISSION OF KONE INC. IS STRICTLY PROHIBITED.				
REV	DATE	CH'K	APP'D	F
-	06/14/07	JLR	SJE	
DRAWN	J.REYMER			
NAME	LAYOUT, SEPTA SINGLE MOTOR & PM BRAKE CNTRL			
SHEET	8			D
6013188035_3				

WAS 841382D57 SHEET 5 OF 6



OUTSIDE LEFT ©



OUTSIDE RIGHT ©

DRAWING INDEX	
SHEET NUMBER	DETAIL
4	PANEL LAYOUT
5	LAYOUT DIMENSIONS
6	TERMINAL STRIP LAYOUT
7	DOOR - OUTSIDE VIEW
8	DOOR - INSIDE VIEW
9	CABINET SIDE VIEWS

NOTES:
1) INSTALL VENTS TO BOTH SIDES OF CABINET AS SHOWN.
2) INSTALL DISCONNECT SWITCH IN SIDE OF CABINET AS SHOWN.

WAS 841382D57 SHEET 6 OF 6

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D
-	06/14/07	JLR	SJE

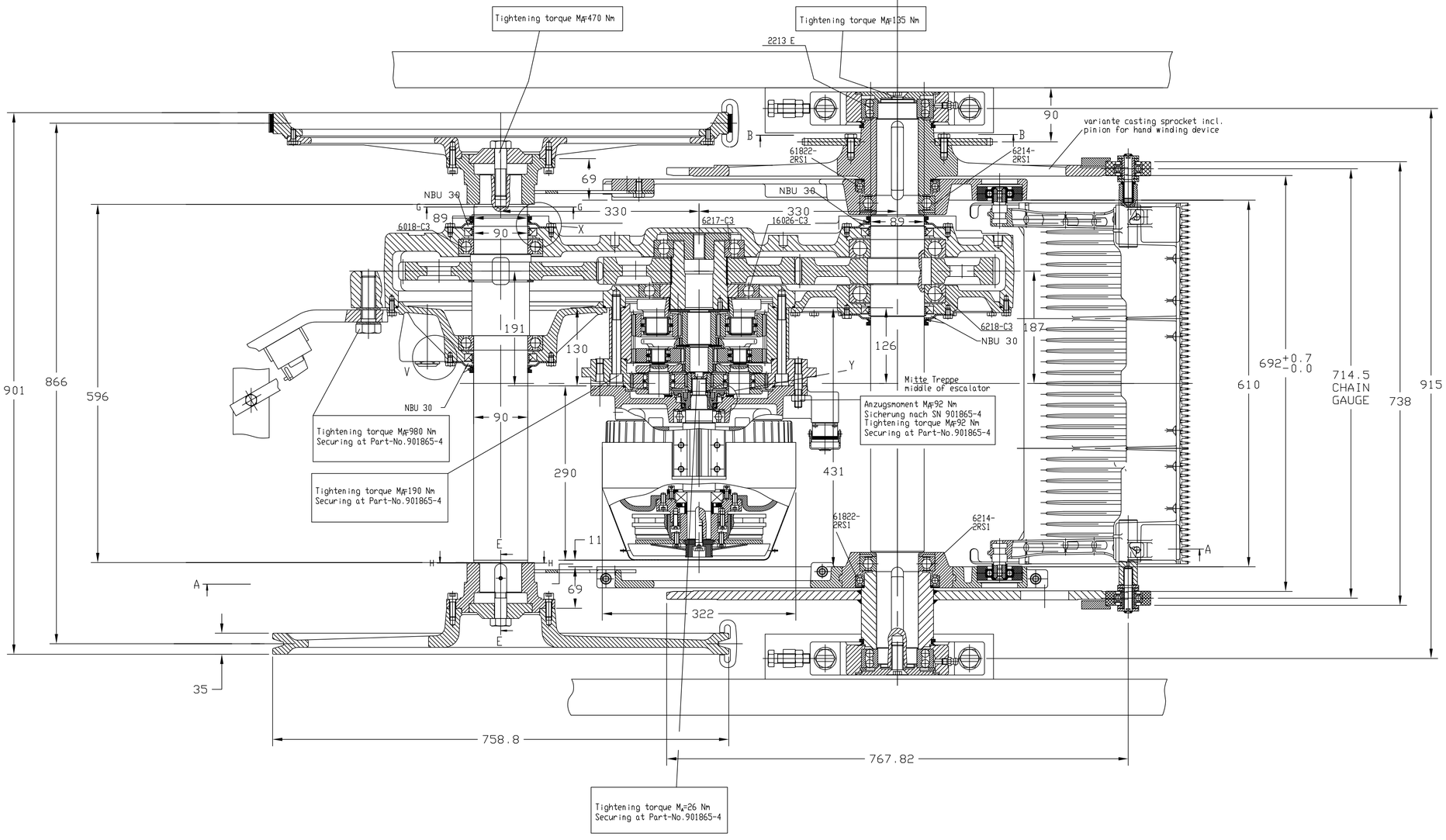
DRAWN J.REYMER

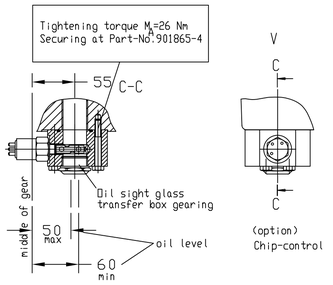
KONE

NAME
LAYOUT, SEPTA SINGLE MOTOR & PM BRAKE CNTRL

SHEET 9 D

6013188035_3





NBU 30

Pos.17
With lock grease STABURAGS NBU 30 Klueber Co. installed.

Remove Pos.140,141,150 following installation and fitting of the guides

Parts 140,141,150 see part-list drive station unit 33*

Internal preservation and gear test running acc. working instruction 2184918-4

Bearing and box (pos.111 and 101/102) Filled for 100 % with bearing grease (pos.34)KLP 3K-25 Part-No.0014063-4.

Parts 101-130 see part-list drive station unit 26*

sections and details see drawing 5060050-0

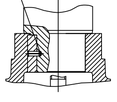
srews item 112 and 121 only secured in device acc. to part-no 901865-4.
Srews item 112 and 121 delivered without secured screws.

test dimension

for chain: -13 KV-C
-13 KV-SF
-20 KV-C
-18 KV-SF

E-E

drilled on assembly Ø6/5 depth



WAS 5060057

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±2.5 .XX = ±1.01 .XXX = ±0.381 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 100.00

REV	DATE	CH'K	APP'D	F
-	04/JUN/07	WPC	SJE	

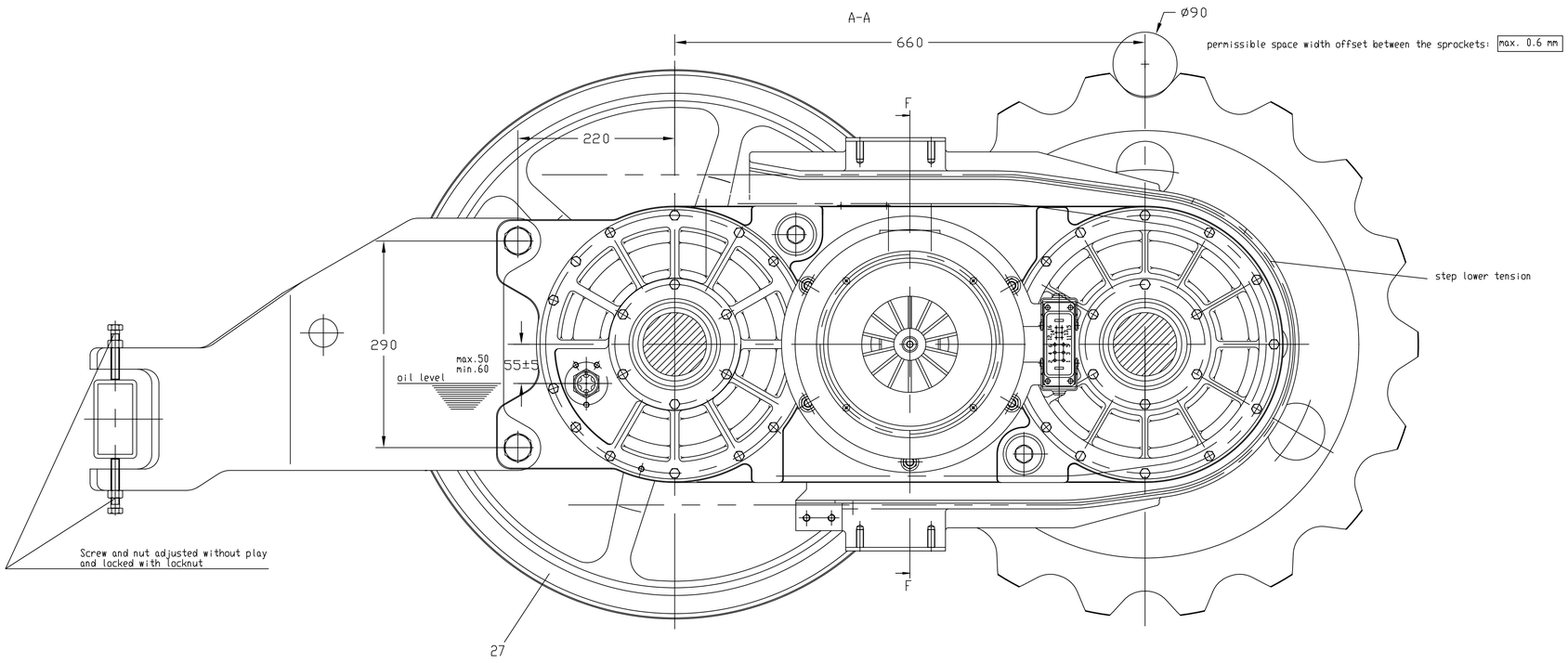
DRAWN
SENGER

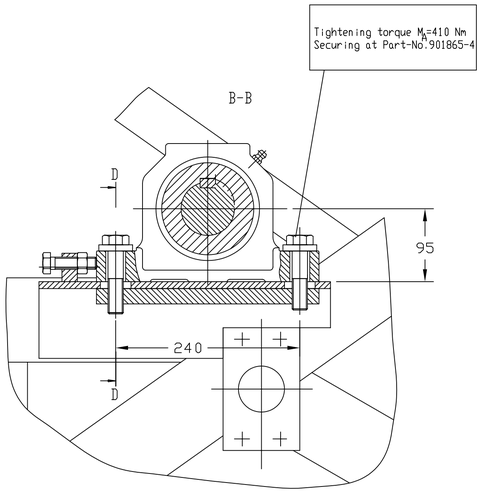
KONE

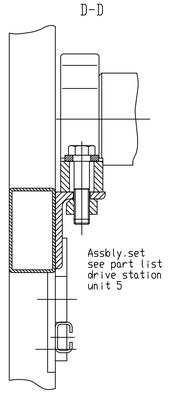
NAME
DRIVE STATION, TYPE 60,4.8 KW, SINGLE

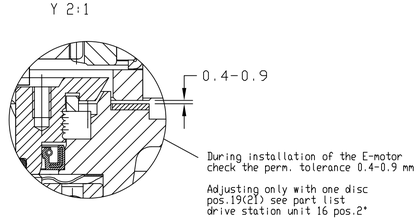
SHEET 10 D

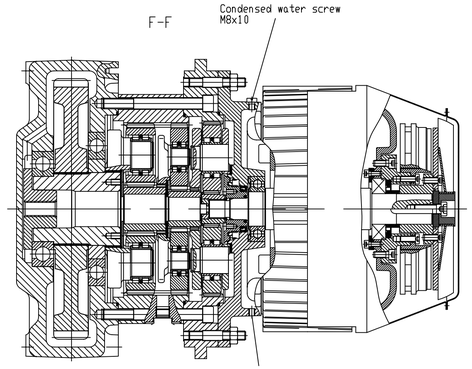
6013188035_4











WAS 5060050

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN
.x = ±2.5
.XX = ±1.01
.XXX = ±0.381
ANGLES ±1°

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 100.00

REV	DATE	CH'K	APP'D
1	04/JUN/07	WPC	SJE

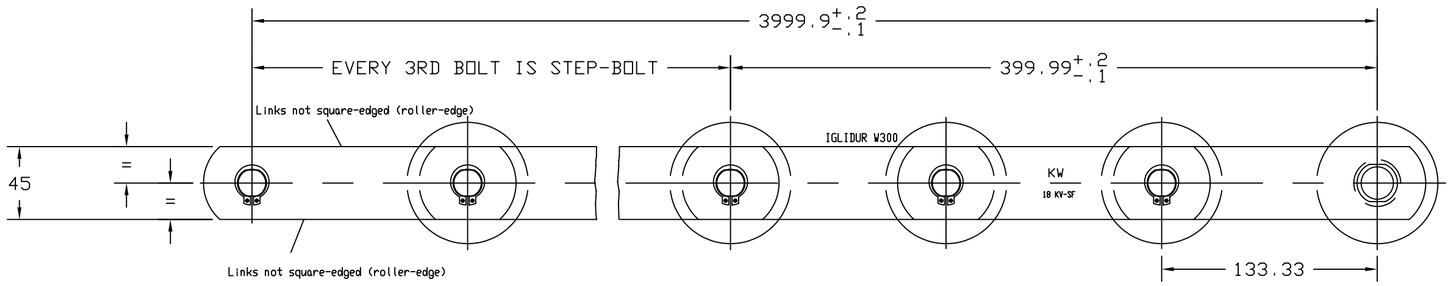
DRAWN
SENGER

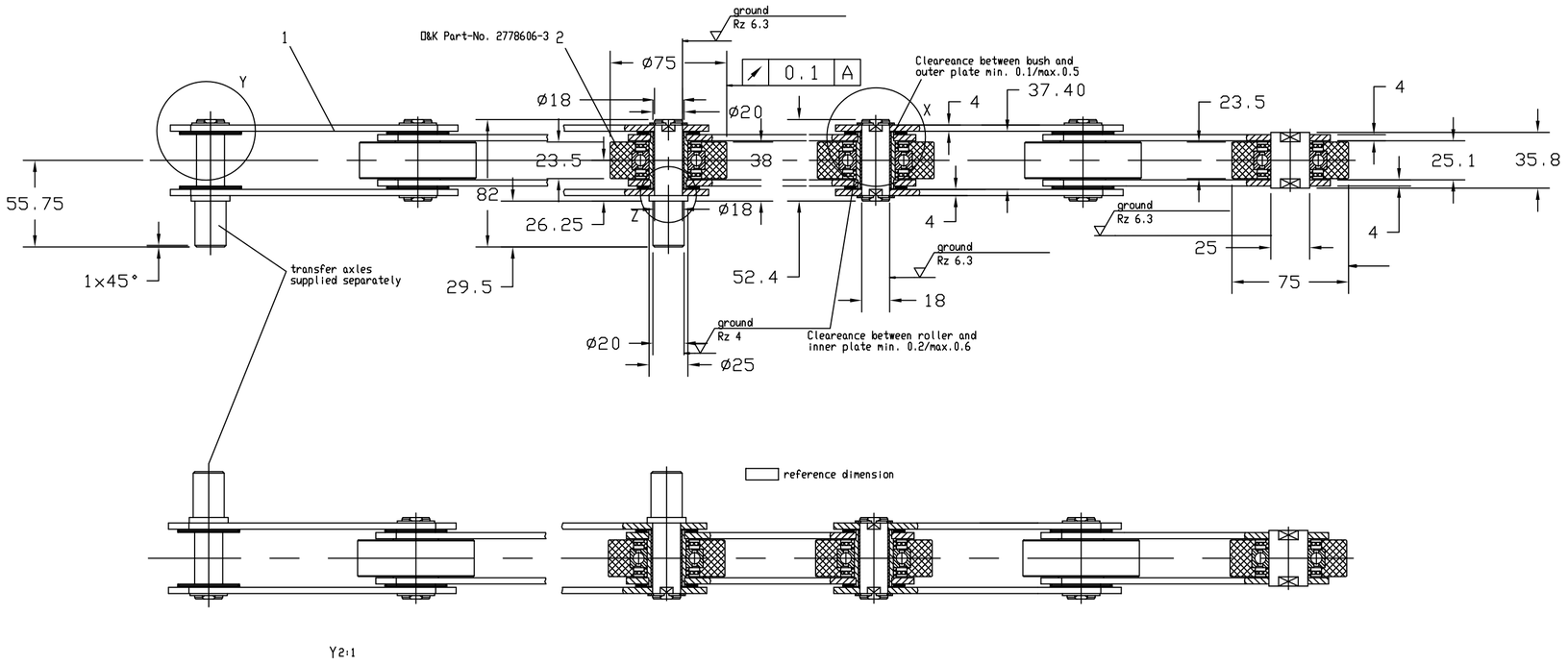
KONE

NAME
DRIVE STATION, TYPE 60,4.8 KW, SINGLE

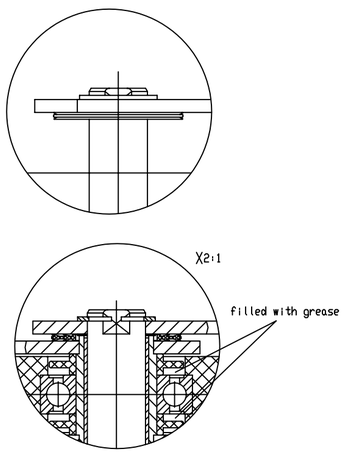
SHEET 11 D

6013188035_4

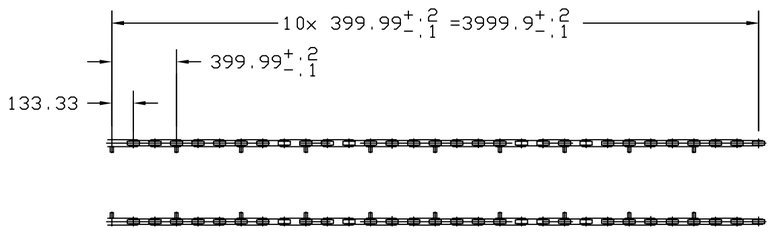




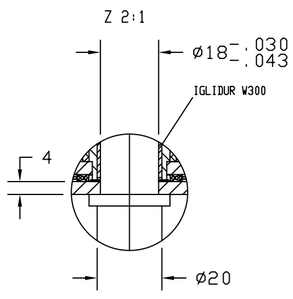
Y2:1



installation plan M1:10



Z 2:1



Technical data

Chain 18 KV-SF 4000 LG		
min. breaking load	173	kN
Step chain unit	2x4000+4 -1	mm
Link surface	6.0	cm²
Weight (per string)	7.4	kg/m

The outer links must be marked with the manufacturer's trade mark and the chain type.*

Quality assurance according to EN 29001.

Lubricating treatment:
All surfaces and seals greased with
Staburags NBU12K - Fa. Kl\uber - on assembly.
Chain not oiled after assembly.

Each chain length must be electrically conductive over the whole length,whereby the electrical resistance must be less than 1 Ohm.

Pos./item 2
suplied by chain manufacturer

For two chains side by side,the tolerance between the single transfer axles to be max. 0.2 mm and for the total chain length of 3999.99 mm between both of the end transfer axles max. 0.5 mm when subjected to a load of 10 KN! The tolerance ±0 must be aimed at!
All transfer axles must be at right angles to both chain axes.
The step chains are mounted in a specific manner.
The clinch bolt side to be marked with consecutive numbering as well as R+L (right or left)*

Clinch bolts	case-hardened and ground chemically nickel-plated HV 10=750+100 EHT =0.6+0.2 *
Chain bolts	case-hardened and ground chemically nickel-plated HV 10=750+100 EHT =0.6+0.2 *
Bushing	from drawn tube (not rolled) case-hardened and ground HV 10=750+100 EHT =0.2+0.3 *
Links	tempered galvanized
Supplier	Fa.Ketten-Wulf D-59889 Eslohe/Kueckelheim
Supplier's drawing -parts list	2-4075

METRIC DIMENSIONS

TOLERANCE UNLESS SHOWN
.X = ±2.5
.XX = ±1.01
.XXX = ±0.381
ANGLES ±1°

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 75.00

REV	DATE	CH'K	APP'D	F
-	06/12/07	JLR	SJE	

DRAWN
J.REYMER

KONE

NAME
STEP CHAIN,
18KV-SF, 2STR,
4000 LONG

SHEET 12

C

WAS 4001017

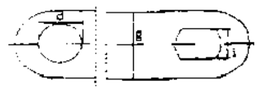
6013188035_5

Certificate of Breaking Load

Subject: chain typ 18 KV-SF
Type of chain: Conveyor chain

Order Nr.:
Pitch: 133,33 mm

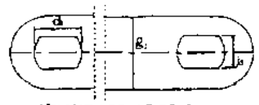
Outside plate



Material: C 60 V
s = 4,00 mm
d = 18,00 mm
l = 16,00 mm
g = 45,00 mm

s = thickness of plate

Inside plate



Material: C 60 V
s_1 = 4,00 mm
d_1 = 25,00 mm
i_1 = 23,00 mm
g_1 = 45,00 mm

s_1 = thickness of plate

1. Outside plates

Number of bearing outside plates per link "n" = 2

The smallest cross-section of the outside plates found by calculation is:

A = (g - d) x s x n = (45,00 mm - 18,00 mm) x 4,00 mm x 2 = 216 sqmm

With a least strength of the material of SZ = 985 N/sqmm results the breaking load with Fb = A x SZ = 216 sqmm x 985 N/sqmm = 212760 N

2. Inside plates

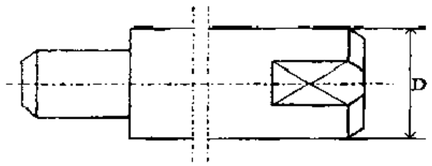
Number of bearing inside plates per link "n_1" = 2

The smallest cross-section of the inside plates found by caculation is:

A = (g_1 - i_1) x s_1 x n_1 = (45,00 mm - 23,00 mm) x 4,00 mm x 2 = 176 sqmm

With a least strength of the material of SZ = 985 N/qsmm results the breaking load with Fb = A x sz = 176 sqmm x 985 N/sqmm = 173360 N

3. Bolt



Material: 16 Mn Cr 5 E
D = 18,00 mm

Number of surface exposed to shearing of the bolt "n" = 2

The cross-section results with $\frac{D^2 \cdot \pi}{4} \cdot n$ = 324 sqmm x 0,785 x 2 = 509 sqmm

With a least resistance to shearing of the material of tS = 500 N/sqmm results the breaking load with Fb = A x tS = 509 sqmm x 500 N/sqmm = 254340 N

Consequently the calculated breaking load of the chain is

FB min. = 173000 N = 17879,37 daN / 0,8 = 3287,87 daN

When the chain was tested in our factory, no objections resulted.

59889 Kückelheim, 27.12.1999

(Signature)

24. Jan. 2000 12:56

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±2.5 .XX = ±1.01 .XXX = ±0.381 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT
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PLOT SCALE: = 75.00

REV	DATE	CH'K	APP'D	F
-	06/12/07	JLR	SJE	

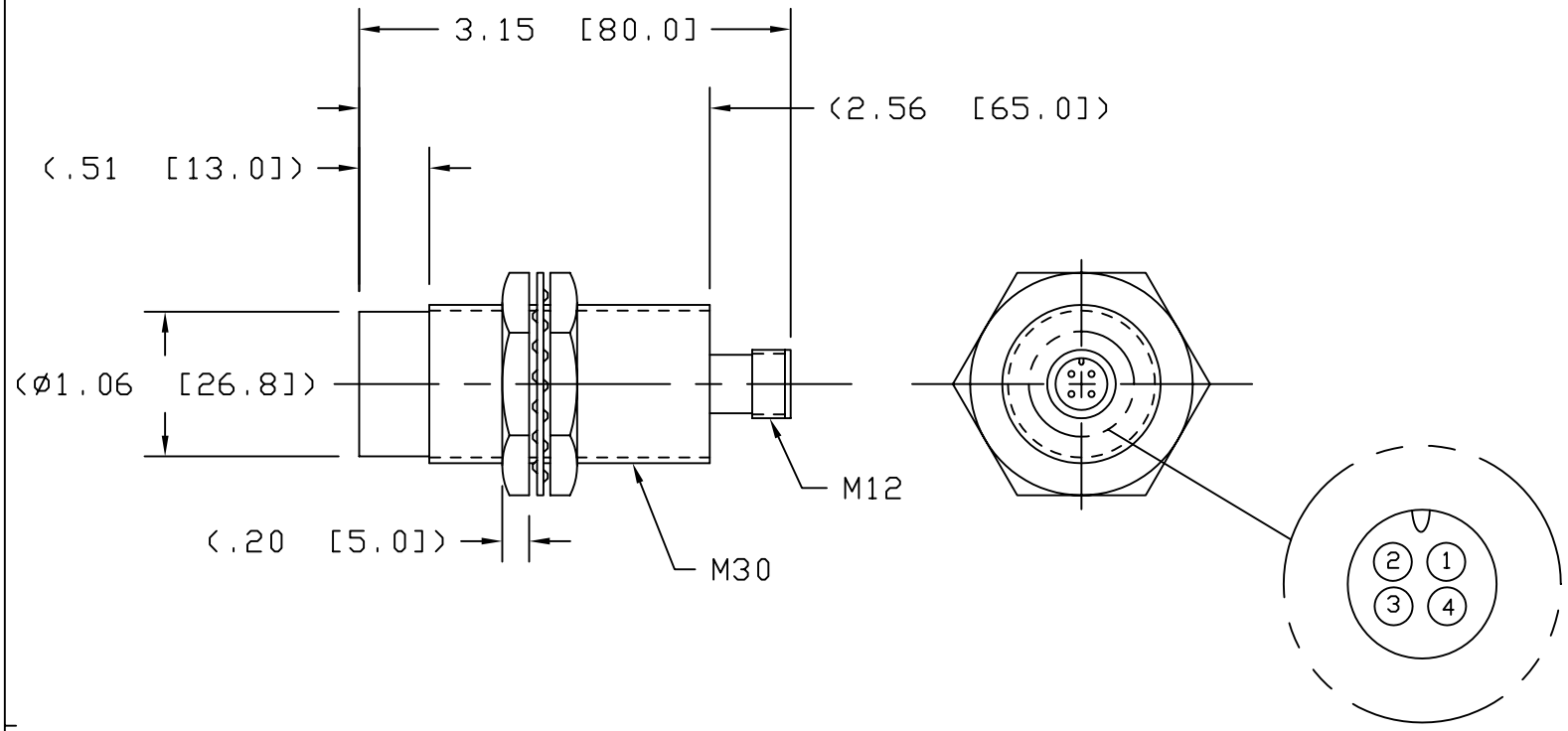
DRAWN
J.REYMER

KONE

NAME
STEP CHAIN,
18KV-SF, 2STR,
4000 LONG

SHEET 12b C

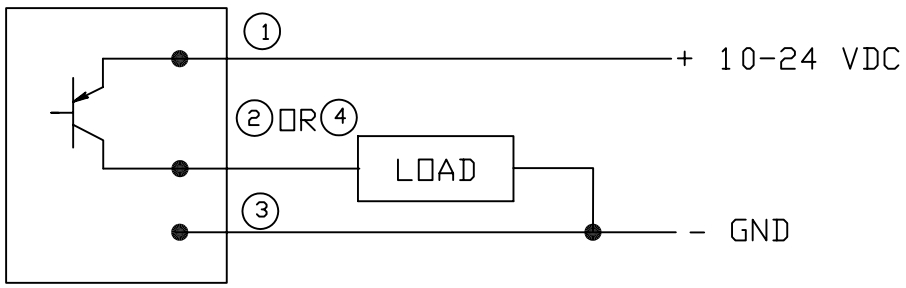
6013188035_5



30MM PNP NORMALLY OPEN UNSHIELDED
INDUCTIVE PROXIMITY SENSOR.

MINIMUM SPECIFICATIONS:
INPUT VOLTAGE: 10-24 VDC
LOAD CURRENT: ≤ 200 mA
SHORT CIRCUIT PROTECTION: YES
LED TO INDICATE TARGET SENSED.
SUPPLY CURRENT: ≤ 13 mA
SENSING DISTANCE: NOMINAL 20 mm
SETTING DISTANCE: NOMINAL 16mm
SWITCHING FREQUENCY: 100 HZ
ENCLOSURE: NEMA 1, 3R, 12, 4

FOUR PIN DC N.O. PNP SWITCH



② :NC ④ :NO

SAME AS US97030001
USED FOR MISSING STEP DETECT.

INCH [METRIC] DIMENSIONS

TOLERANCE UNLESS SHOWN

PER MFG STD

SOURCE/SPEC#/FINISH/WT

OMRON #E2E2-X18MB1-M1

TURCK
#NI15-M30E-AP6X-H1141

PLOT SCALE: = 1.50

REV	DATE	CH'K	APP'D	F
ø	06/12/07	JLR	SJE	

DRAWN
J.REYMER

KONE

NAME
SENSOR, UNSHIELD
30MM INDUCTIVE
PROXIMITY

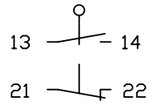
SHEET
13

A

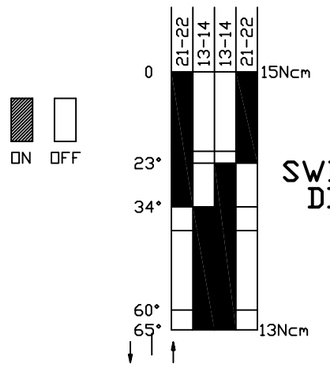
6013188035_6

BERNSTEIN
REFERENCE PART #

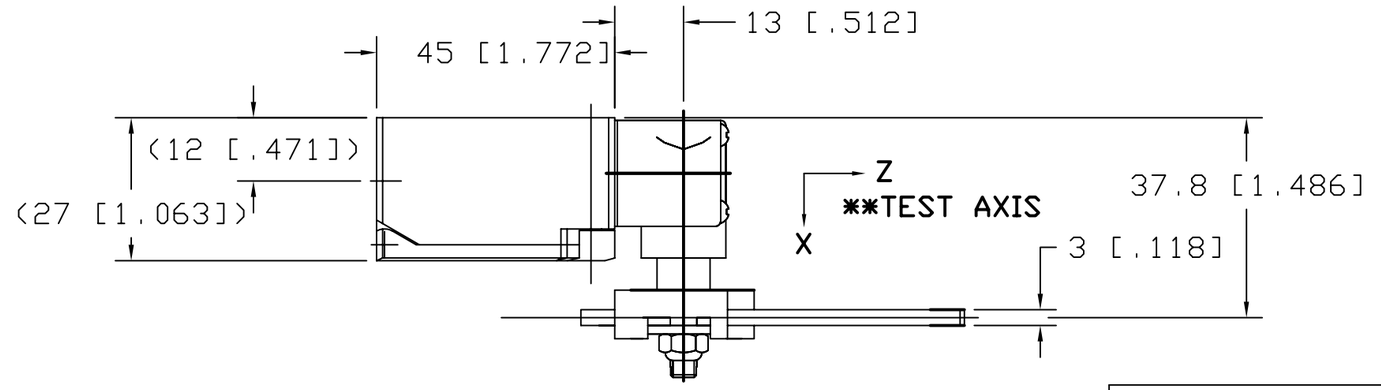
TI2-SU1 ADM
618.8187.022M WITH MODIFIED WAND



SWITCHING SYMBOL



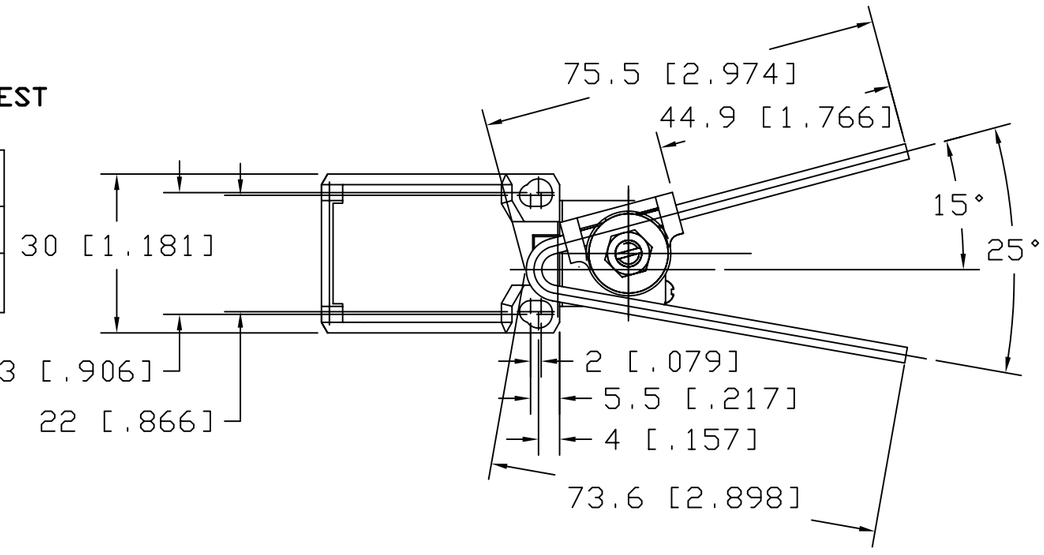
SWITCHING DIAGRAM



POSITIVE OPENING OPERATION ACCORDING TO DIN EN 60947-5-1 IEC 947-5-1

SWITCH IS TO BE ABLE TO WITHSTAND THE FOLLOWING TEST WITHOUT THE INTERRUPTION OF THE N.C. CONTACTS.

ACCELERATION G	IMPULSE FORM	IMPULSE TIME-MSEC	**AXIS\QTY OF SHOCKS
130	HALF SINE	6	X,Z/N=25
143	HALF SINE	6	X,Z/N=10



TOLERANCE: OPERATING POINT ±3.5°;
ACTUATING FORCE ±10%

MECHANICAL FEATURES:
ENCLOSURE: PBT, FIBER GLASS REINFORCED
COVER: PA6.6, BLACK
ACTUATOR: TURRET HEAD, AD-ROD (STEEL)

AMBIENT AIR TEMPERATURE: -30°C UP TO +80°C
CONTACT TYPE: 1 NC-CONTACT, 1 NO-CONTACT (ZB)
MECHANICAL LIFE: 3x10 SWITCH OPERATIONS
SWITCH FREQUENCY: MAX. 100/MIN.
MOUNTING: 2xM4 OR 2xM5 FIXED POSITIONING FOR SAFETY APPLICATIONS
CONNECTION TYPE: 4 SCREW CONNECTIONS (M3.5)
CABLE ENTRY SIZE: M16X1.5 - HOUSING MARKED WITH "M"
WEIGHT: APPROX. 0.07 Kg.

ELECTRICAL FEATURES
MAX. VOLTAGE: 250 VAC
MAX. ENDURING CURRENT: I TH 10A
MAX. INRUSH CURRENT: ACCORDING TO IEC 947-5-1
UTILIZATION CATEGORY: AC 15, A300 240V/3A, 120V/6A / DC 13,Q300 250V/0.27A, 125V/0.55A
STANDARDS: ACCORDING TO EN 60947-1; EN 60947-5-1
PROTECTION CLASS (IP-CODE): IP65 ACCORDING TO EN 60529; DIN VDE 0470 T1
APPROVALS: UL, CSA, CE, AND BG (APPL. FOR)
SHORT CIRCUIT PROTECTION: 6A SLOW-ACTING, 10A QUICK-ACTING
APPROACH POSSIBILITIES
BY LOOSENING 4 SCREWS IT IS POSSIBLE TO TURN THE ACTUATOR THROUGH 90° SO THAT 4 APPROACH POSSIBILITIES CAN BE ACHIEVED.

NOTES:
1) THE MOVING PARTS SHOULD BE OILED PERIODICALLY
2) THE PLANNED PROTECTION CLASS (IP-CODE) IS VALID ONLY AT CLOSED COVER AND WHEN USING AN AT LEAST EQUIVALENT CABLE GLAND.
3) ANY SUBSTIUTIONS MUST BE CSA CERTIFIED AND UL LISTED AND LABELED WITH MONOGRAMS.
4) ANY SUBSTITUTIONS MUST MEET, EXCEED OR CONFORM TO BERNSTEIN PARTS IN FORM, FIT, FUNCTION AND RELIABILITY.

WAS 831398D10

METRIC [INCH] DIMENSIONS

TOLERANCE UNLESS SHOWN
.X = ±2.5 [.1]
.XX = ±1.01 [.04]
.XXX = ±0.381 [.015]
ANGLES ±1°

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 30.00

REV	DATE	CH'K	APP'D	F
-	05/JUN/07	WPC	SJE	

DRAWN
SENGER

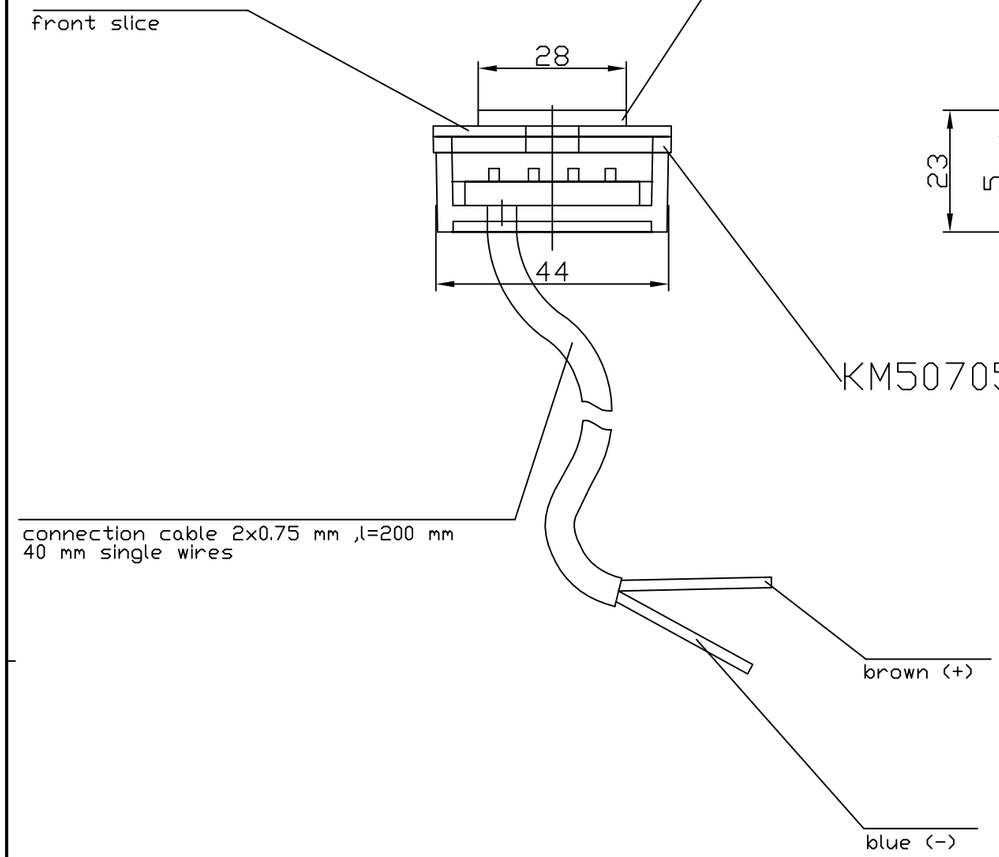
KONE

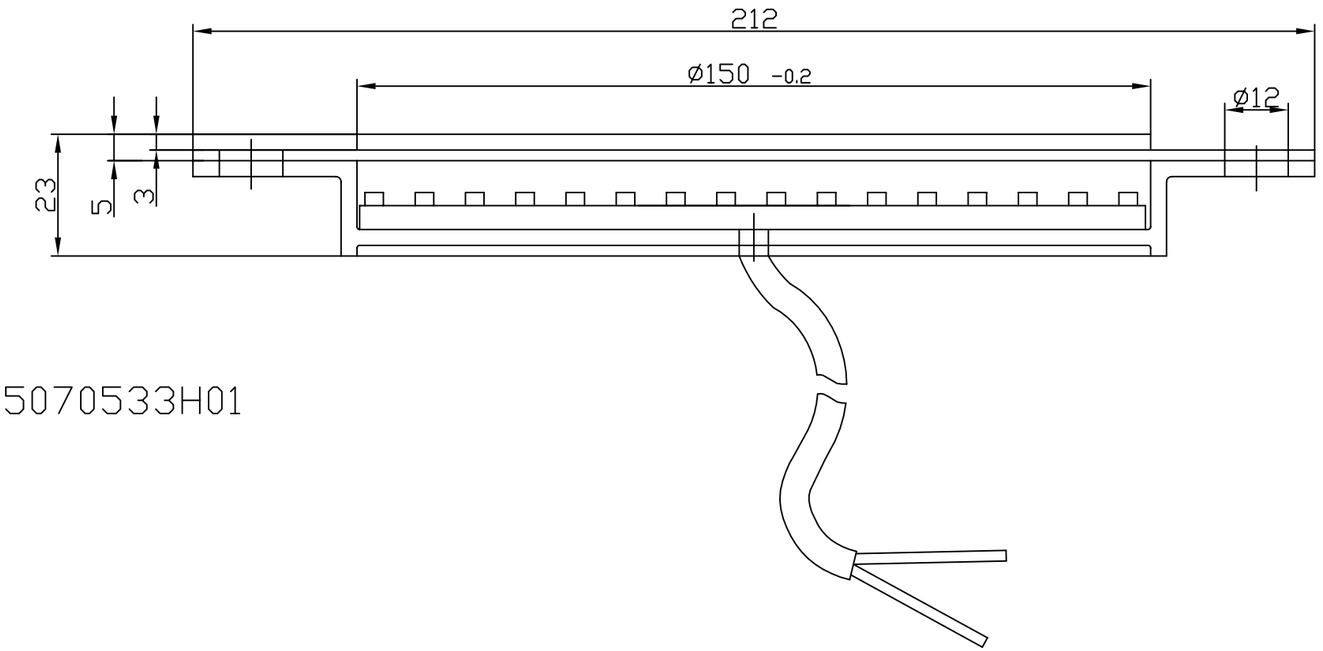
NAME
SWITCH, WAND ACTUATOR, OUT-OF-LEVEL STEP

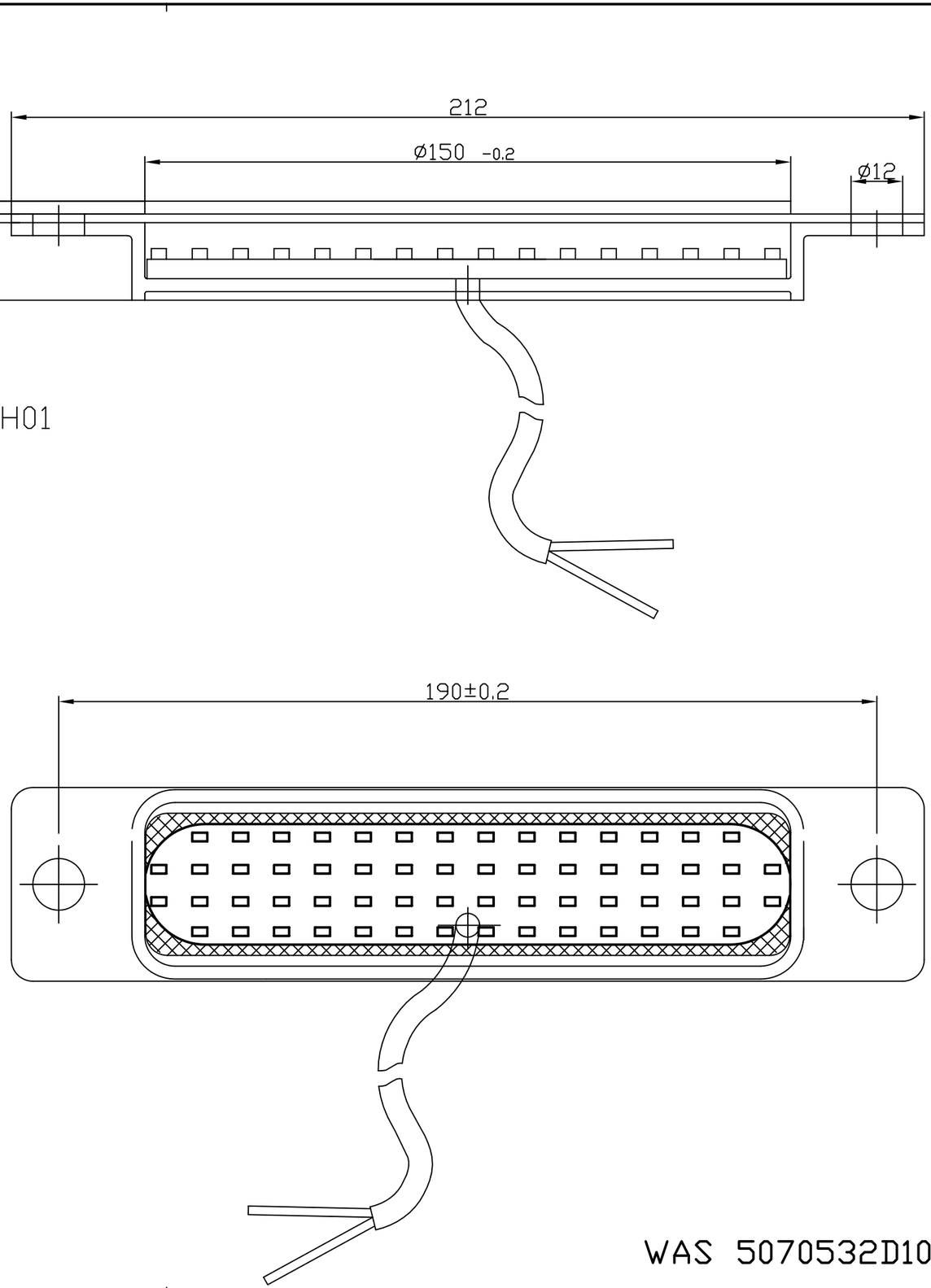
SHEET 14 B

6013188035_7

KM5070507H01







Data LED Spot 28x150mm

number of LED:	60 pieces/white
light intensity:	> 750lx
internal current control:	> 200mA
connection:	connection cable 2x0.75mm ,l=200 mm
front glass:	clear PMMA 5mm
housing:	injection molding part from ABS/black
power supply:	24V AC/DC ±3V
elektronic capping:	intensive heat transfering Epoxydharz
protection class:	IP65 (housing)

integrated overvoltage protaction

WAS 5070532D10

METRIC [INCH] DIMENSIONS

TOLERANCE UNLESS SHOWN
.X = ±2.5 [.1]
.XX = ±1.01 [.04]
.XXX = ±0.381 [.015]
ANGLES ±1°

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 30.00

REV	DATE	CH'K	APP'D	F
-	05/JUN/07	WPC	SJE	

DRAWN
SENGER

KONE

NAME
SWITCH, WAND ACTUATOR, OUT-OF-LEVEL STEP

SHEET 15 B

6013188035_8

ESCALATOR START STATION, FRAME MOUNT

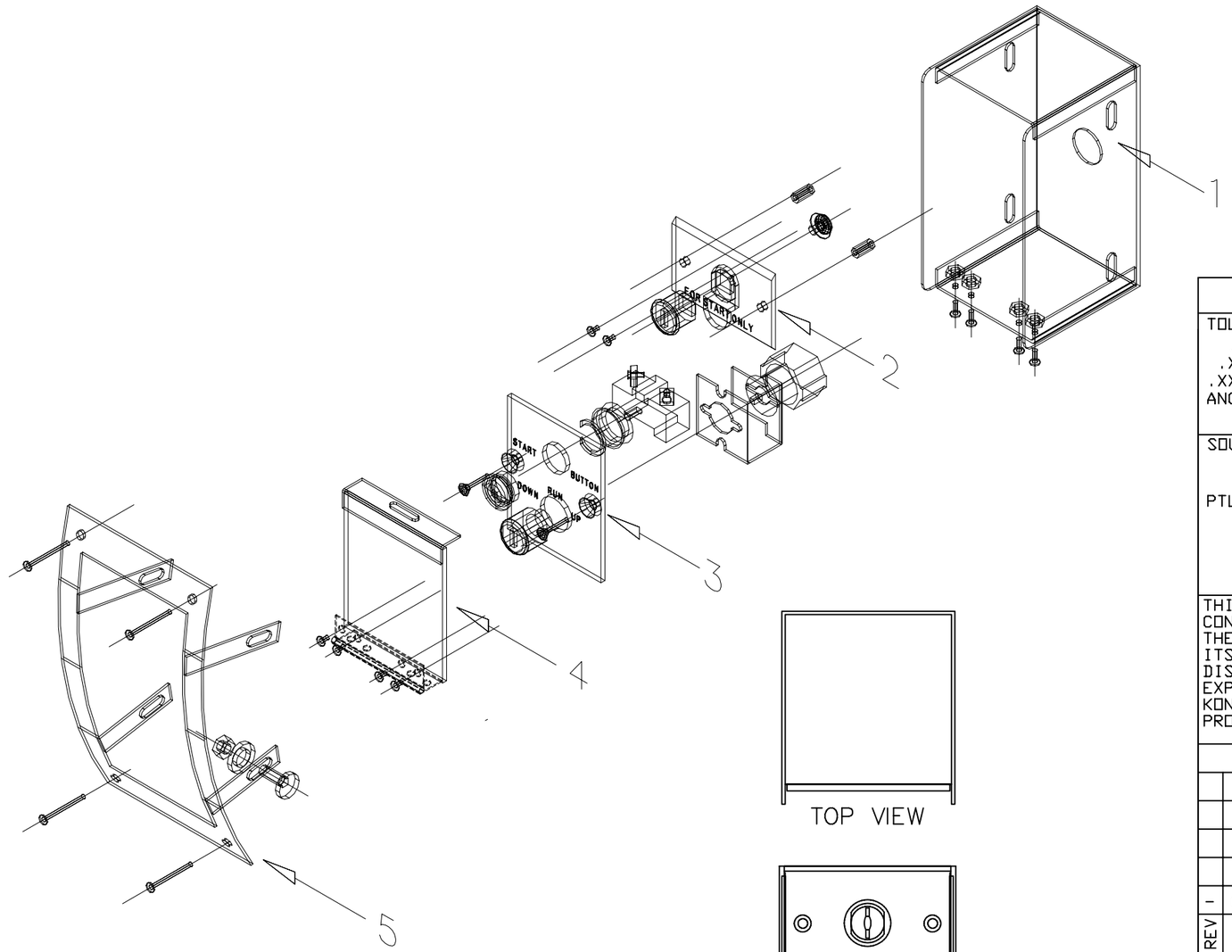
1. 85BXSSTF-SS START BOX

2. 85SAYTHCOV- SS START SWITCH COVER
   85HG03 - 2.75" WIDE SS HINGE
   85PLHSC- SS HINGE COVER PLATE
   (4) 6-32 CINCH SCREWS AND NUTS
   85SCTSLK- SS CAMLOCK CATCH

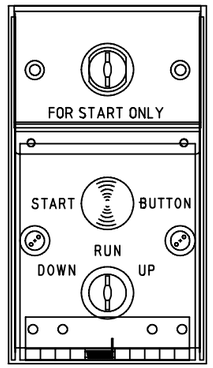
3. 85SAYPLTL- SS START COVER CAM-LOCK PLATE
   45CSH202- SS CAM-LOCK
   (2) 8-32 X 1/2" SECURITY SCREWS

4. 85SAYPLT- SS START SWITCH PLATE
   STARTING BUTTON:
   25KA2M - N.O. SWITCH
   50SN - SS PUSH BUTTON
   70BKPADAP- PLASTIC SWITCH RETAINER
   70RNPT01- PLASTIC SWITCH STABILIZER
   BUTTON RETAINER CLIP
   START KEYSWITCH:
   45LKNE- SS H-202 K/S CYLINDER
   25RTES- MOMENTARY SWITCH
   85BRESCA- CYLINDER BRACKET
   85BRESCB- SWITCH BRACKET
   (2) 8-32 X 1/2" SECURITY SCREWS

5. 85SAYETFLF- SS MOUNTING FRAME
   (4) POP RIVETS- SS
   (4) 1/4-20 CARRIAGE BOLTS, LOCK WASHERS, FLAT WASHERS, NUTS



TOP VIEW



FRONT VIEW
SUGGESTED CUTOUT:
3 1/2" X 6 5/8"

WAS 932918D01

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±2.5 .XX = ±1.01 .XXX = ±0.381 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT PTL PART #10ES2FNYC

PLOT SCALE: = 25.00

REV	DATE	CH'K	APP'D	F
-	05/JUN/07	WPC	SJE	

DRAWN
SENGER

KONE

NAME
START STATION,
SST#4 W/FRAME

SHEET 16 B

6013188035_9

EMERGENCY STOP STATION, FRAME MOUNT

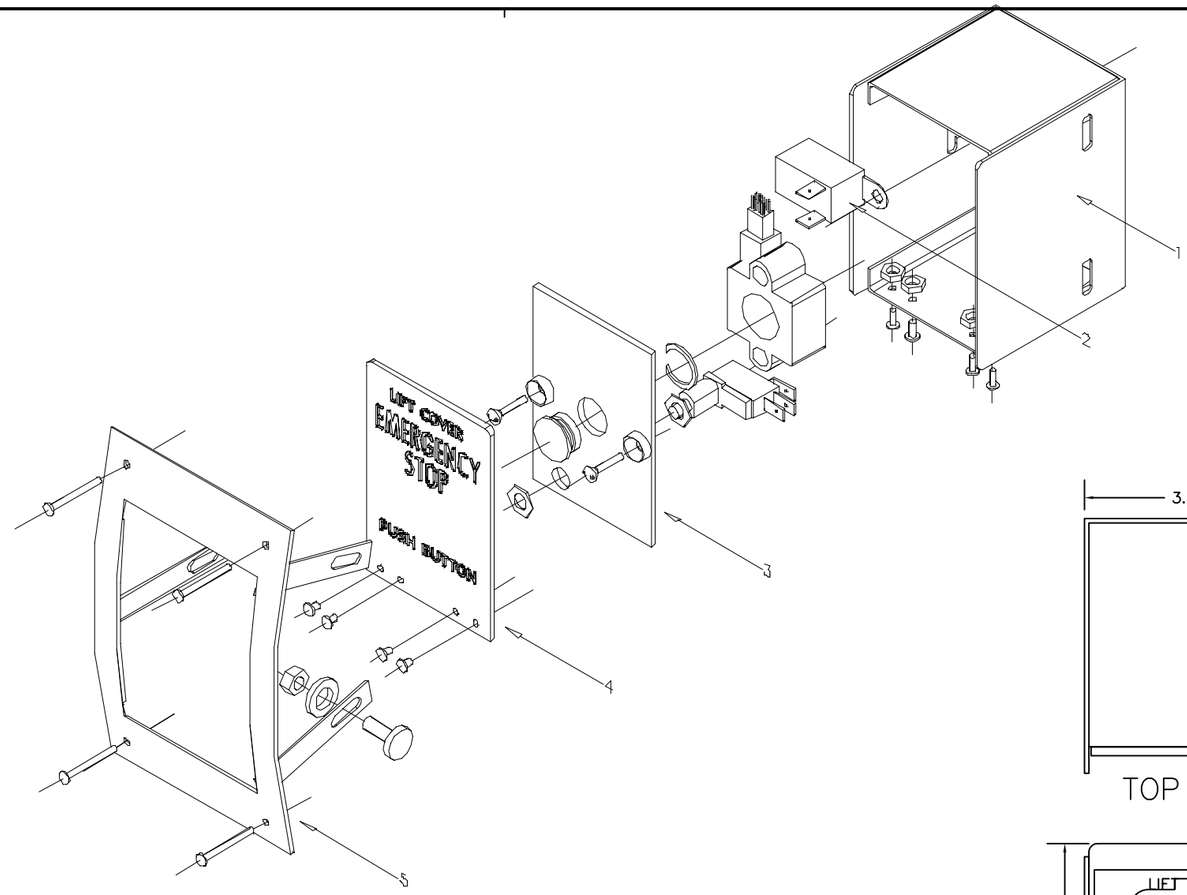
1. 85BXSSPP-SS EMERGENCY STOP BOX

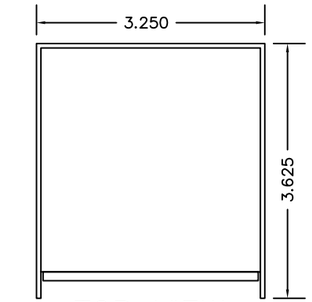
2. ALARM BUZZER
   30BZ024D-24V DC

3. 85SAYPLP- SS STOP BUTTON PLATE
   15MM120- BUTTON SWITCH ASSEMBLY
   25MSTP- MICROSWITCH WITH (2) RETAINER NUTS
   85SBPTS- STAINLESS CENTURION BUTTON (RED)
   BUTTON RETAINER CLIP
   (2) 8-32 X 1/2" SECURITY SCREWS
   (2) DELRIN STANDOFF WASHERS

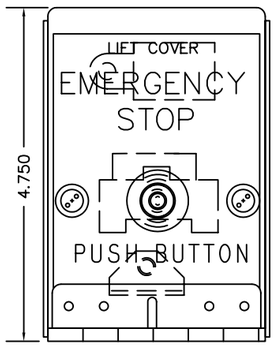
4. 85SAYPHCOV
   85HG03 - 2.75" WIDE SS HINGE
   85PLHSC- SS HINGE COVER PLATE
   (4) 6-32 CINCH SCREWS AND NUTS

5. 85SAYEPFL- SS MOUNTING FRAME
   (4) POP RIVETS- SS
   (4) 1/4-20 CARRIAGE BOLTS, LOCK WASHERS, FLAT WASHERS, NUTS





TOP VIEW



FRONT VIEW

SUGGESTED CUTOUT:
3 1/2" X 4 3/4"

WAS 932916D01

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±2.5 .XX = ±1.01 .XXX = ±0.381 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT PTL PART #10ES1F

PLOT SCALE: = 25.00

REV	DATE	CH'K	APP'D	F
-	05/JUN/07	WPC	SJE	

DRAWN
SENGER

KONE

NAME
STOP STATION,
SST #4,
W/FRAME, 24V

SHEET 17 B

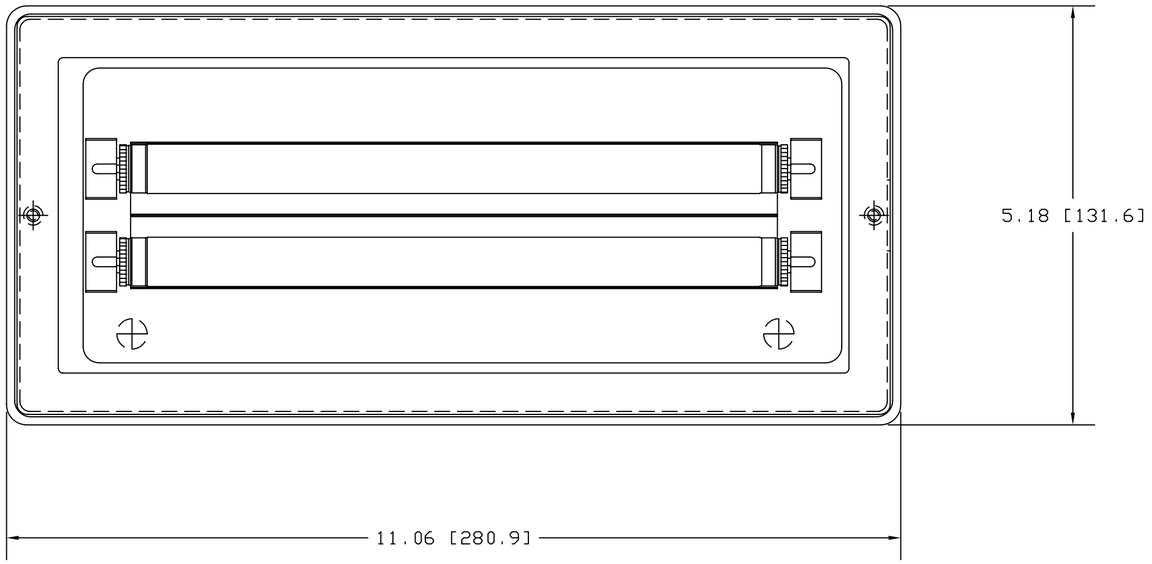
6013188035_10

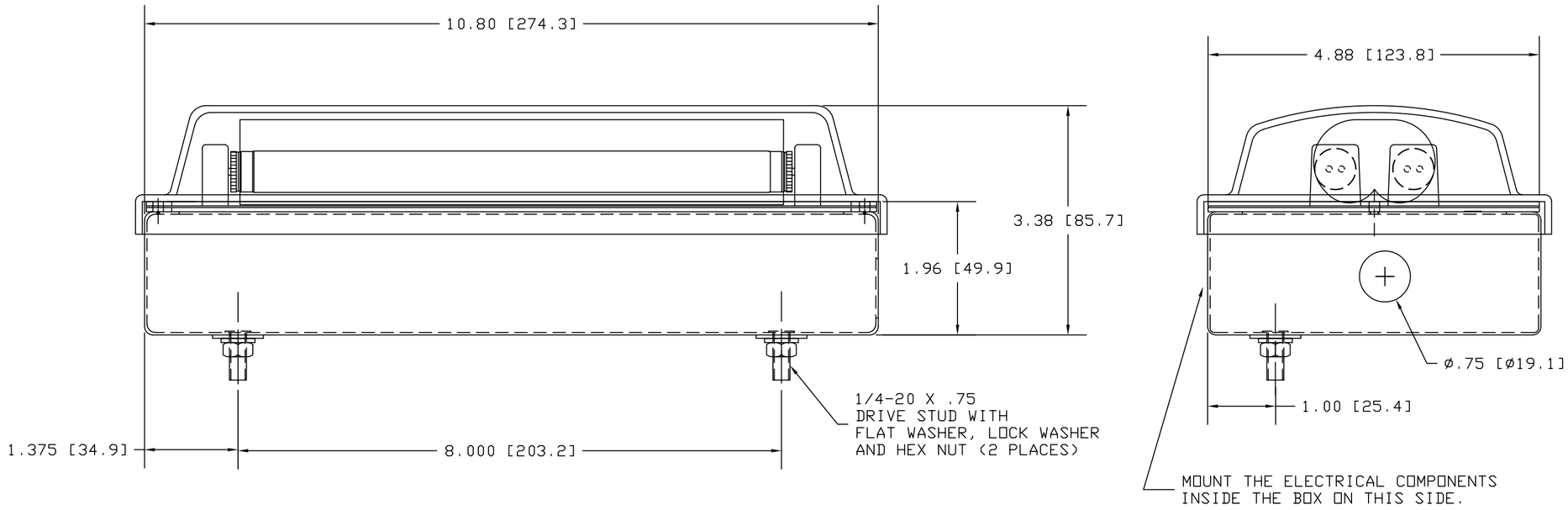
120 VAC WEATHERPROOF DEMARCATION LIGHT
PURCHASED ASSEMBLY INCLUDES:

QTY.	DISCRIPTION
1	MOUNTING CHASSIS
1	REFLECTOR PLATE
1	TUBE GUARD, GREEN
1	CLEAR LENSE
2	LAMPS
2	BALLASTS
2	STARTERS
4	SOCKETS
2	1/4-20 X 3/4 DRIVE STUDS
2	1/4" FLAT WASHERS
2	1/4" SPLIT LOCK WASHERS
2	1/4-20 HEX NUTS
MISC	COMPONENT MOUNTING HARDWARE

ELECTRICAL SPECIFICATIONS:

120 VOLTS 60 HZ. .36 AMPS
MUST BE CSA CERTIFIED,UL LISTED,AND LABELED PER CSA REQUIREMENTS.





INCH [METRIC] DIMENSIONS

TOLERANCE UNLESS SHOWN
.X=±.1 [2.5]
.XX=±.04 [1.0]
.XXX=±.015 [0.38]
angles ±1°

SOURCE/SPEC#/FINISH/WT

MAGNARAY PART #
TSW6D

PLOT SCALE: = 1.50

REV	DATE	CH'K	APP'D	F
Ø	05/JUN/07	WPC	SJE	

DRAWN
SENGER

KONE

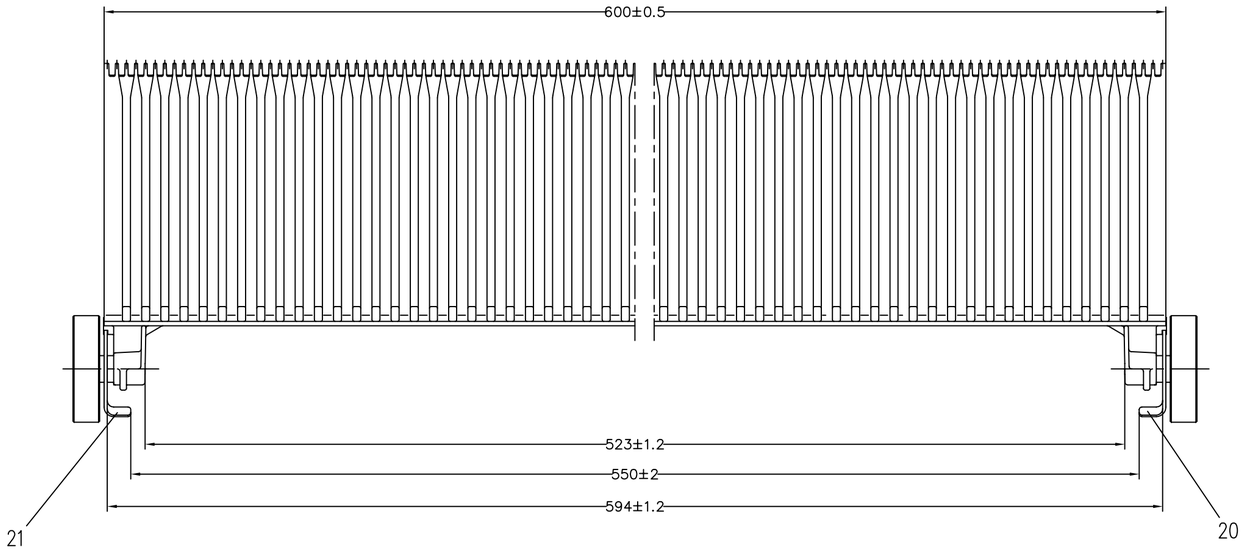
NAME
LIGHT,120VAC
DEMARCATION, WP
ECO3000

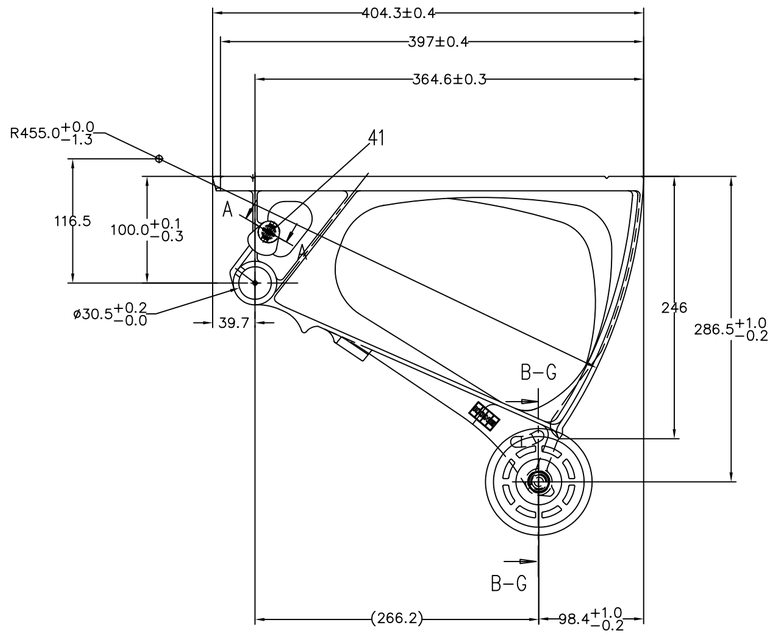
SHEET 18

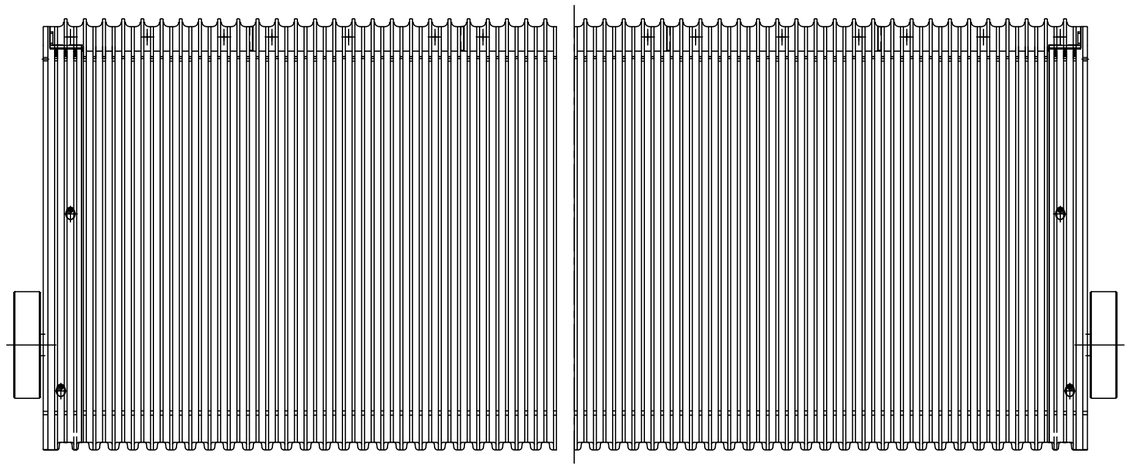
C

WAS US96222002

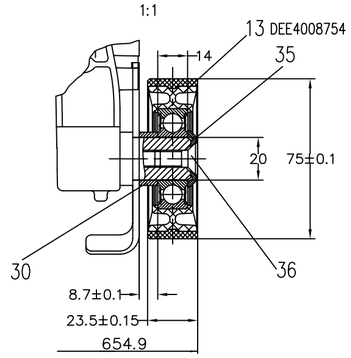
6013188035_11



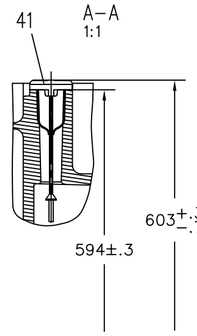




F–F
1:1



A–A
1:1



ITEM	QTY	PART #	DESCRIPTION
13	2	KM3685362	ROLLER, 75 mm
20	1	DEE2146634	COUNTER BRACKET,RT
21	1	DEE2146635	COUNTER BRACKET, LT
30	2	DEE1972874	BUSHING
35	2	DEE2700863	WASHER
36	2	DEE2491248	SCREW, M8X22
41	2	KM5070729H01	SLIDING PIECE

WAS 3723937

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
–	06/JUN/07	WPC	SJE	

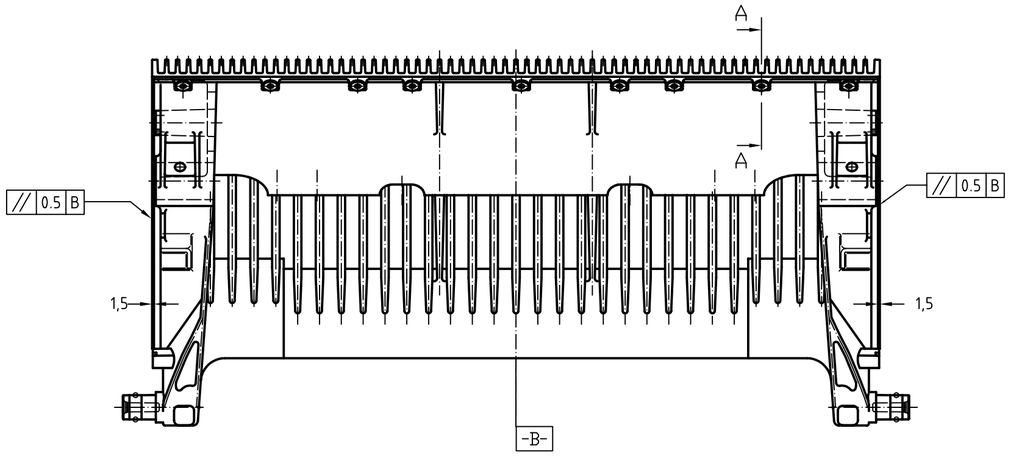
DRAWN
SENGER

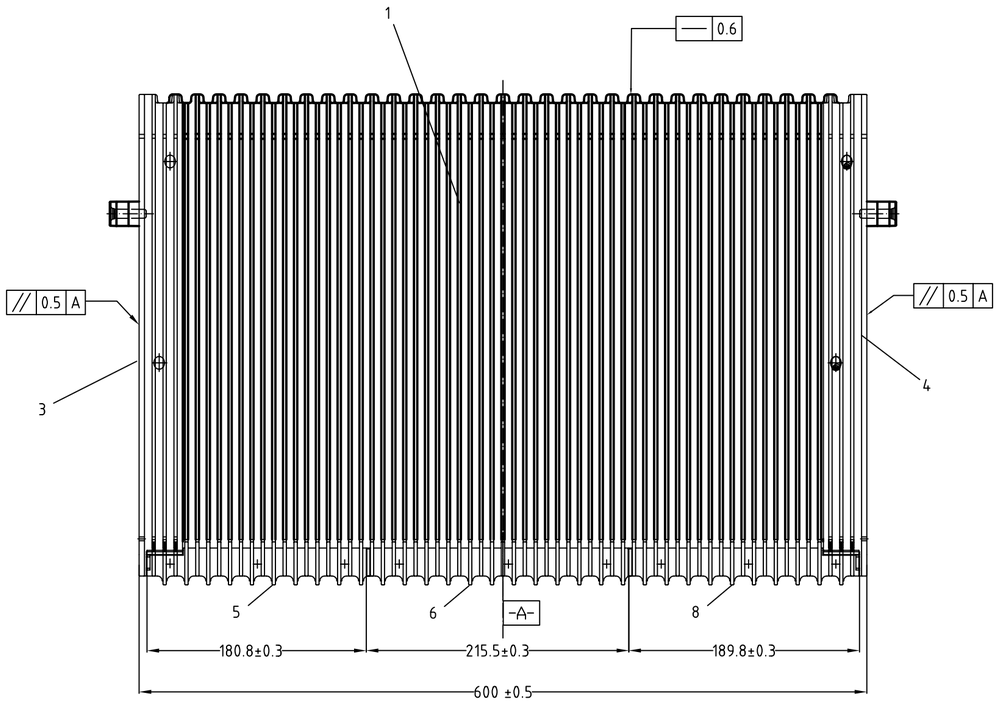
KONE

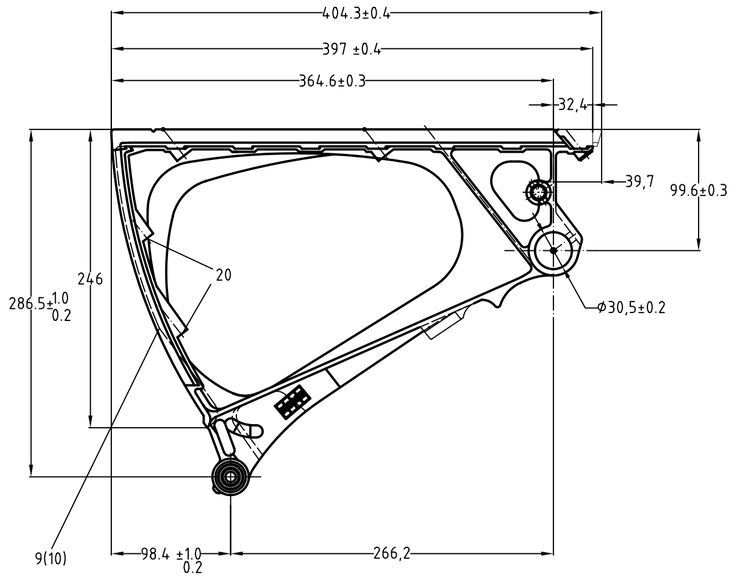
NAME
STEP W/ROLLER, TYPE 600,SILVER, YELLOW DEMARC.

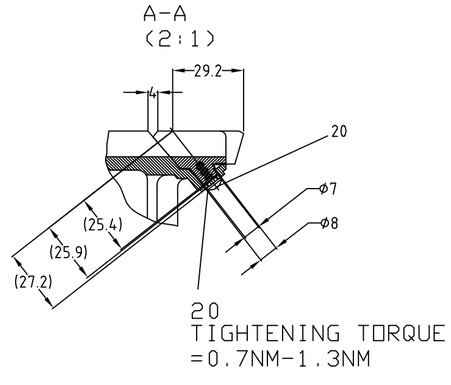
SHEET 19 C

6013188035_12









20
TIGHTENING TORQUE
=0.7NM-1.3NM

ITEM	QTY	PART #	DESCRIPTION
1	1	DEE3704427	STEP SILVER,TYPE 600
3	1	DEE3704414	STRIP, DEMARCATION, LEFT
4	1	DEE3704413	STRIP, DEMARCATION, RIGHT
5	1	DEE2145492	STRIP, DEMARCATION, NOSE
6	1	DEE2145489	STRIP, DEMARCATION, NOSE
8	1	DEE2145491	STRIP, DEMARCATION, NOSE
9	1	DEE3704416	STRIP, DEMARCATION, NOSE
10	1	DEE3704415	STRIP, DEMARCATION, NOSE
20	1	DEE2146634	COUNTTER BRACKET

WAS 3704417

METRIC DIMENSIONS

TOLERANCE UNLESS SHOWN
.X = ±2.5
.XX = ±1.01
.XXX = ±0.381
ANGLES ±1°

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 100.00

REV	DATE	CH'K	APP'D	F
-	06/14/07	WPC	SJE	

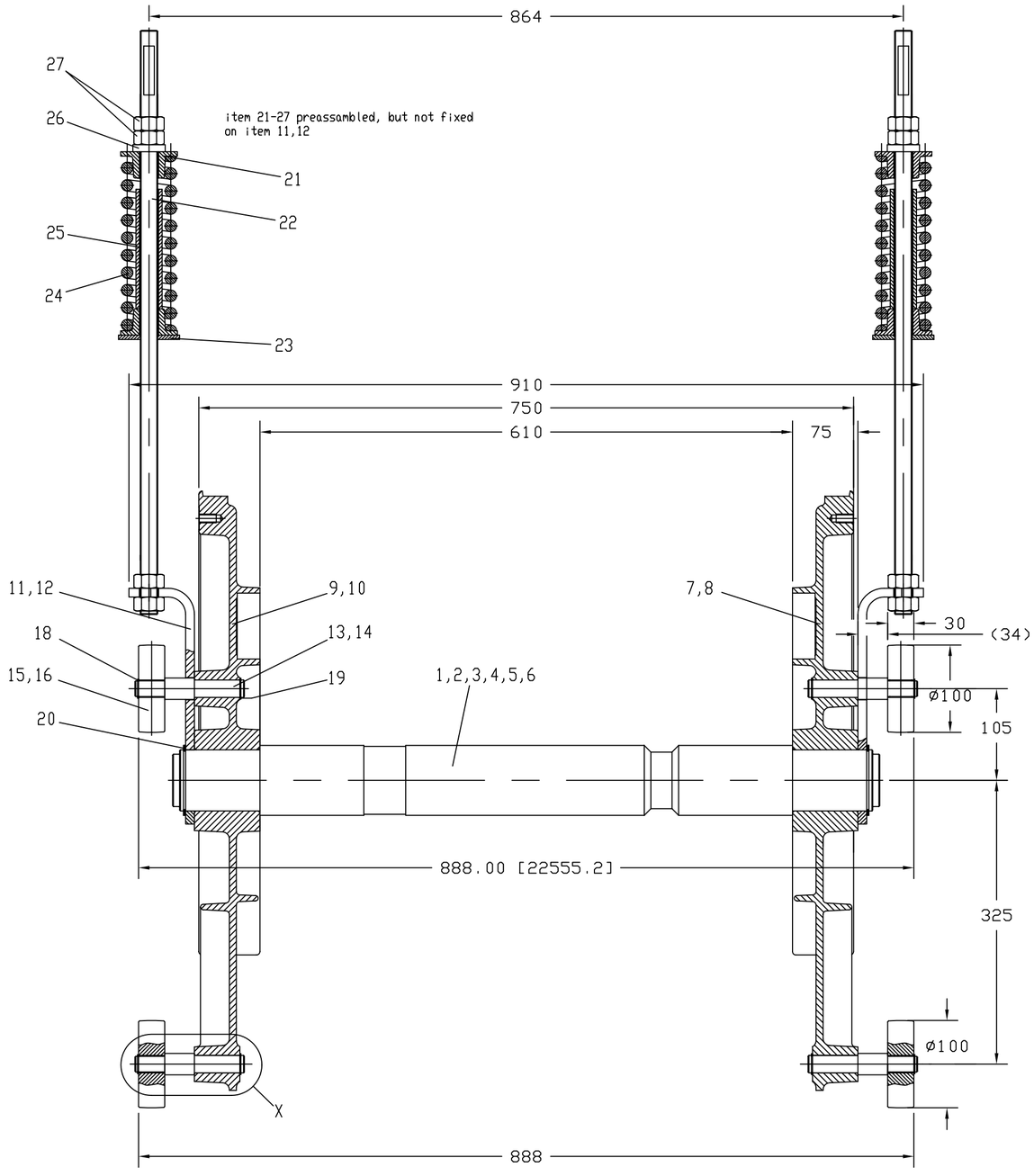
DRAWN
J.REYMER

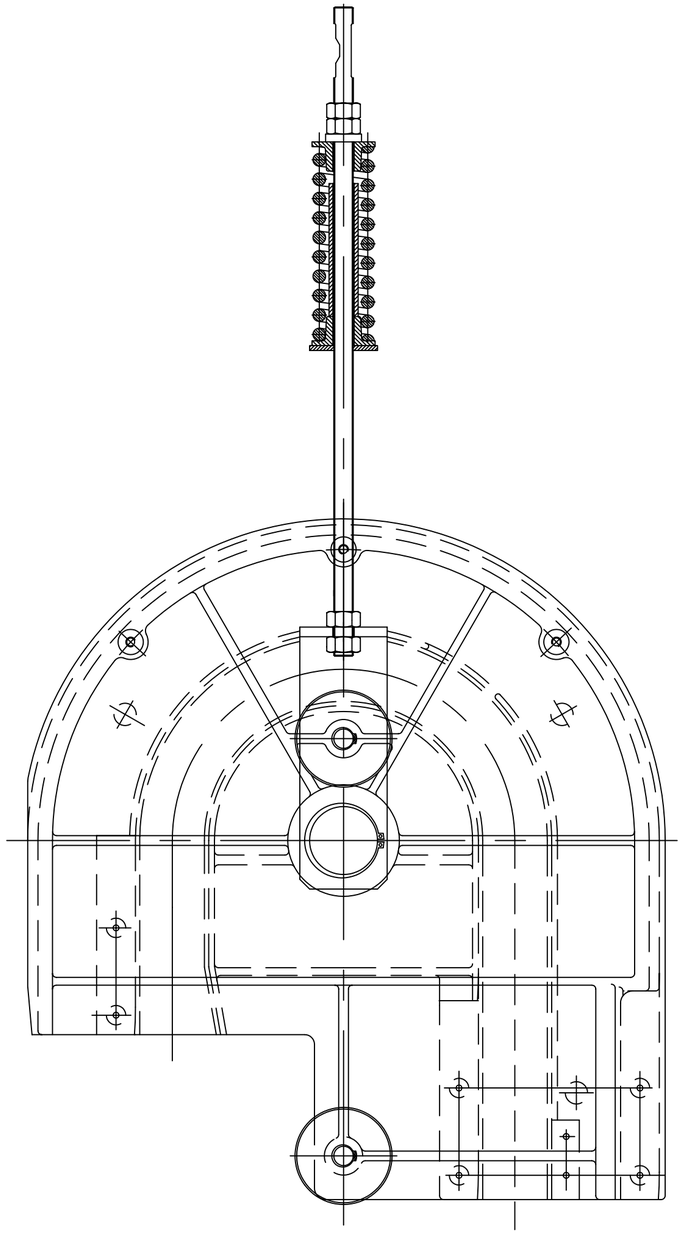
KONE

NAME
STEP W/O ROLLER
TYPE 60

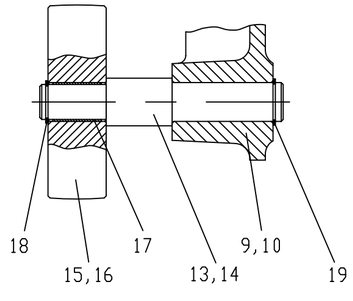
SHEET 20

6013188035_13





X 1:1



WAS 5071520D10

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±2.5 .XX = ±1.01 .XXX = ±0.381 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT
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PLOT SCALE: = 125.00

REV	DATE	CH'K	APP'D	F
-	06/JUN/07	WPC	SJE	

DRAWN
SENGER

KONE

NAME
RETURN STATION
PREASSEMBLY,
TYPE 60

SHEET
21

6013188035_14

ITEM #	QTY	UOM	PART#	DESCRIPTION
4	1	PC	KM5070967H06	AXLE, TYPE 60, OUTDOOR
8	1	PC	KM5070968H02	GUIDE, RETURN, BOTTOM LEFT
10	1	PC	KM5070969H02	GUIDE, RETURN, BOTTOM RIGHT
12	2	PC	KM5070974H02	ANGLE, OUTDOOR
14	4	PC	KM5070973H02	PIN, OUTDOOR
16	4	PC	KM5070975H02	PIN, OUTDOOR
17	4	PC	KM281161	PIN, OUTDOOR
18	4	PC	KM5070875H02	ROLLER, OUTDOOR
19	4	PC	KM113910	RETAINING RING,DIN471
20	2	PC	KM216978	RING, RETINING,70x2.5,DIN 471
21	4	PC	DEE1560229	SPRING SEAT
22	2	PC	KM3691202	ROD, S235JRG2-A3B
23	2	PC	KM3691216	WASHER, 22x70x5, ZINC
24	2	PC	DEE0075549	SPRING, COMPRESSION
25	2	PC	KM5071521H01	HOLLOW ST. TUBE, 30x4x137
26	2	PC	KM255012	WASHER, 21
27	8	PC	KM112904	HEX NUT, M20

WAS 5071520D10

METRIC DIMENSIONS

TOLERANCE UNLESS SHOWN
.X = ±2.5
.XX = ±1.01
.XXX = ±0.381
ANGLES ±1°

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 125.00

REV	DATE	CH'K	APP'D	F
-	06/JUN/07	WPC	SJE	

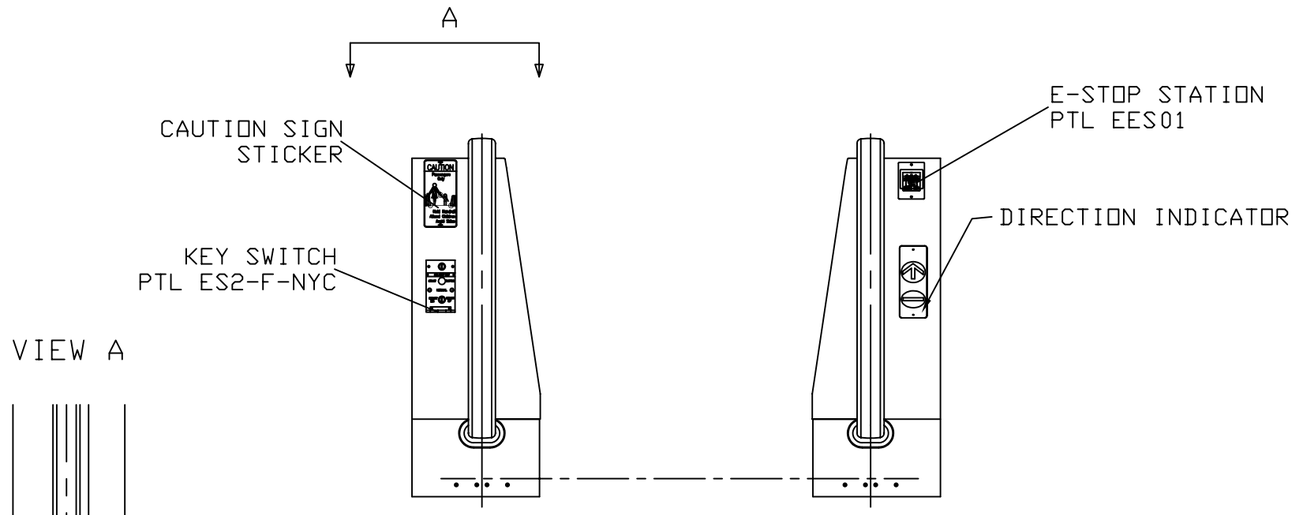
DRAWN
SENGER

KONE

NAME
RETURN STATION PREASSEMBLY, TYPE 60

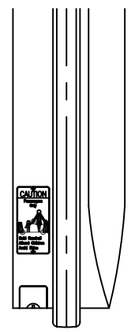
SHEET 22 C

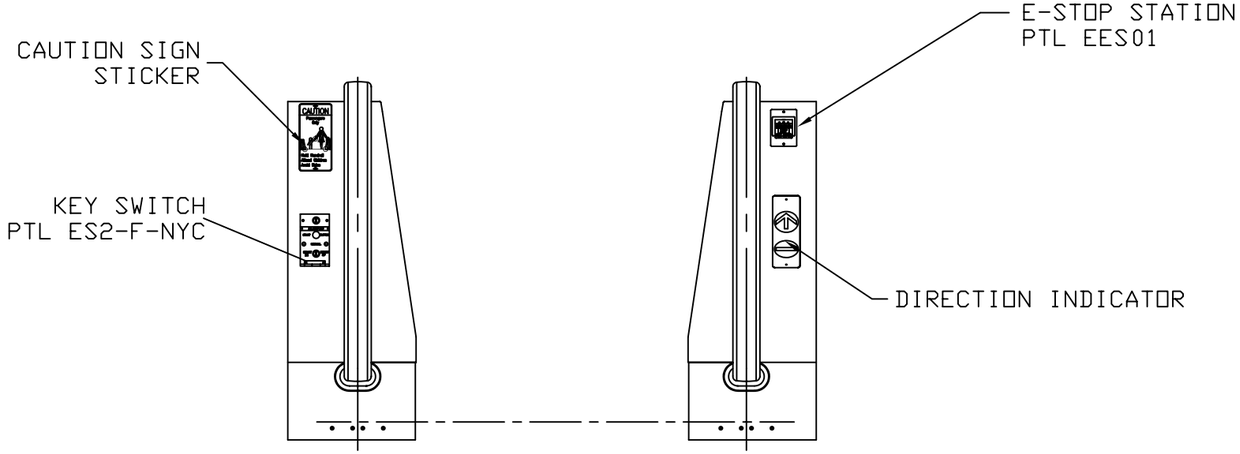
6013188045_14



UPPER END VIEW

VIEW A





LOWER END VIEW

WAS 934212D01

METRIC [INCH] DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±2.5 [.1] .XX = ±1.01 [.04] .XXX = ±0.381 [.015] ANGLES ±1°
SOURCE/SPEC#/FINISH/WT
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PLOT SCALE: = 30.00

REV	DATE	CH'K	APP'D	F
ø	06/20/07	JLR	SJE	

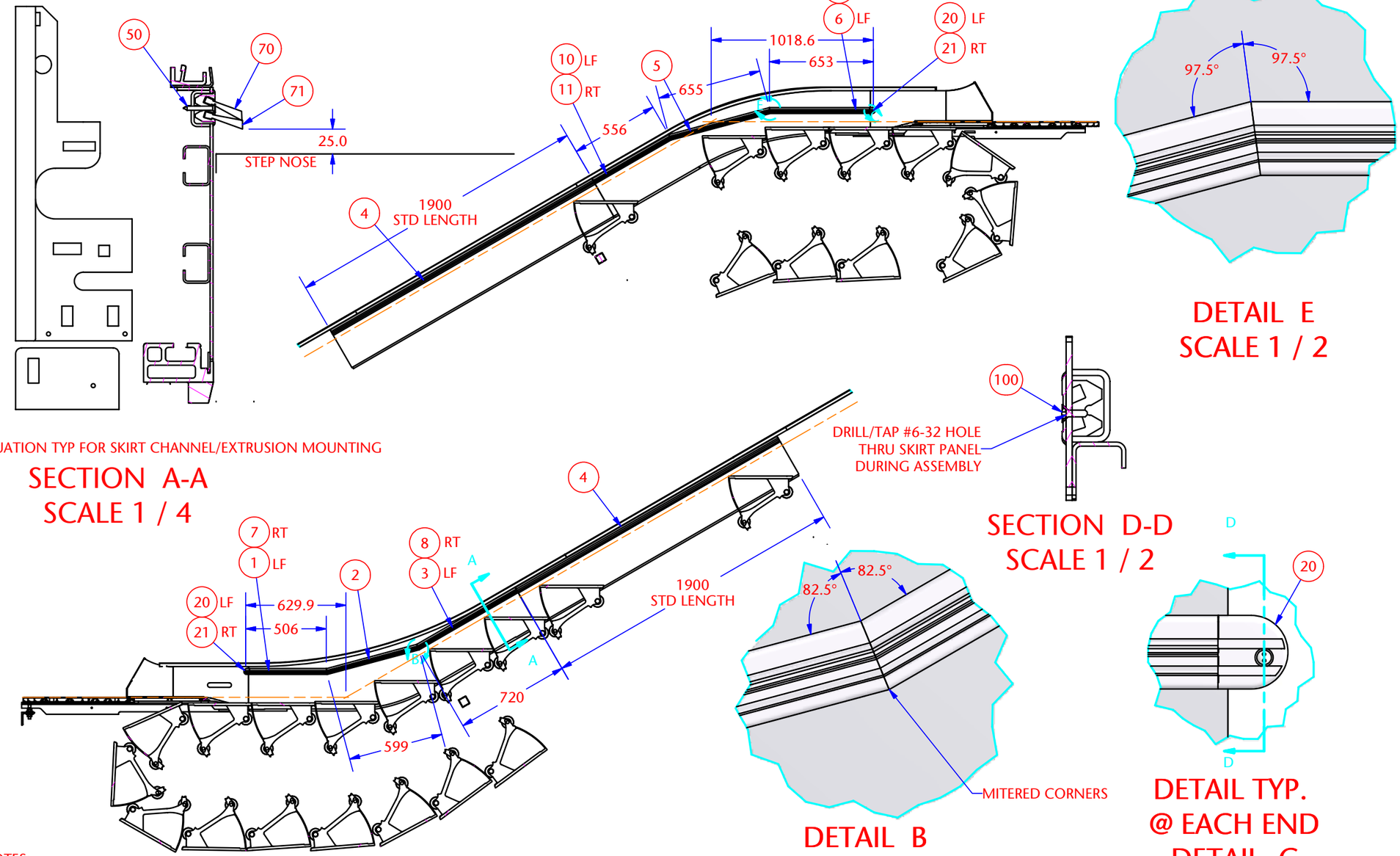
DRAWN
J.REYMER

KONE

NAME
NEWEL END
ARRANGEMENT
SOLID, SEPTA

SHEET 23 B

6013188035_15



NOTES:
1. POSITION EXTRUSION IN SKIRT CHANNEL, AND DRILL Ø4.00 HOLES THRU EXTRUSION. DRILL HOLES 25 mm FROM EACH END AND 300 mm CTR-CTR.
2. DRILL Ø2.00 PILOT HOLES INTO SKIRT CHANNEL, FASTEN EXTRUSION TO SKIRT CHANNEL WITH SCREWS, ITEM 100.

WAS 851702D02

US EcoMod B-size

U.S. Escalator EcoMod

METRIC

TOLERANCE UNLESS SHOWN
.X = ± 1.0
.XX = ± .50
.XXX = ± .250
ANGLES ± 1°

SOURCE / SPEC# / FINISH / WT

REV	DATE	CHK'D	APP'D	REL
D				
C				
B				
A				
-	6/7/2007	WPC	SJE	

DRAWN BY
MKOsEn

DESCRIPTION
ASSY, SKIRT BRUSH, RECESSED SKIRT, 30-2, SEPTA, WH100

SHEET NO. 24

B

6013188035_16

SKIRT BRUSH BILL OF MATERIALS

LOWER END

ITEM #	QTY	UOM	PART #	DESCRIPTION
1	1	PC	KM852130H12	en:ALUM. PROFILE,850151, L=490
2	2	PC	KM852130H02	en:ALUM. PROFILE,850151, L=625
3	1	PC	KM852130H11	en:ALUM. PROFILE,850151, L=710
7	1	PC	KM852130H17	en:ALUM. PROFILE,850151, L=490
8	1	PC	KM852130H16	en:ALUM. PROFILE,850151, L=710
20	1	PC	KM852132H01	en:CAP, LH END SKIRTBRUSH,RTV
21	1	PC	KM852131H01	en:CAP, RH END SKIRTBRUSH,RTV
50	22	PC	US96792006	en:SCREW,FLT/PHST,4.2MM,L=32
70	5.11	M	KM852133	en:BRUSH UPR STRIP, SKIRT, KLEENEZE
71	5.11	M	KM852144	en:BRUSH LOWER STRIP, SKIRT, KLEENEZE
100	2	PC	US68231003	en:SCREW,OH/CS-TP,#6-32,3/8

UPPER END

ITEM #	QTY	UOM	PART #	DESCRIPTION
5	2	PC	KM852130H13	en:ALUM. PROFILE,850151, L=645
6	1	PC	KM852130H14	en:ALUM. PROFILE,850151, L=625
9	1	PC	KM852130H18	en:ALUM. PROFILE,850151, L=625
10	1	PC	KM852130H15	en:ALUM. PROFILE,850151, L=555
11	1	PC	KM852130H19	en:ALUM. PROFILE,850151, L=555
20	1	PC	KM852131H01	en:CAP, RH END SKIRTBRUSH,RTV
21	1	PC	KM852132H01	en:CAP, LH END SKIRTBRUSH,RTV
50	20	PC	US96792006	en:SCREW,FLT/PHST,4.2MM,L=32
70	4.41	M	KM852133	en:BRUSH UPR STRIP, SKIRT, KLEENEZE
71	4.41	M	KM852144	en:BRUSH LOWER STRIP, SKIRT, KLEENEZE
100	2	PC	US68231003	en:SCREW,OH/CS-TP,#6-32,3/8

INCLINE

ITEM #	QTY/SKIRT	UOM	PART #	DESCRIPTION
4	1	PC	KM852130H10	en:ALUM. PROFILE,850151, L=1900
50	5	PC	US96792006	en:SCREW,FLT/PHST,4.2MM,L=32
70	1.9	M	KM852133	en:BRUSH UPR STRIP, SKIRT, KLEENEZE
71	1.9	M	KM852144	en:BRUSH LOWER STRIP, SKIRT, KLEENEZE

WAS KM852147G02
KM852148G02
KM852149G02

U.S. Escalator EcoMod

METRIC

TOLERANCE UNLESS SHOWN
.X = ± 1.0
.XX = ± .50
.XXX = ± .250
ANGLES ± 1°

SOURCE / SPEC# / FINISH / WT

REV	DATE	CHK'D	APP'D	REL
D				
C				
B				
A				
-	6/7/2007	WPC	SJE	

DRAWN BY
MKOsEn

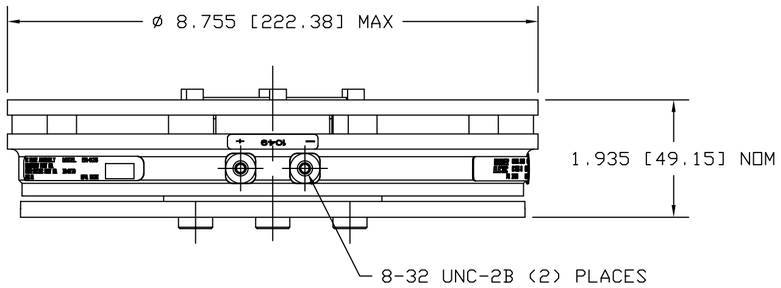
DESCRIPTION
ASSY, SKIRT BRUSH, RECESSED SKIRT, 30-2, SEPTA, WH100

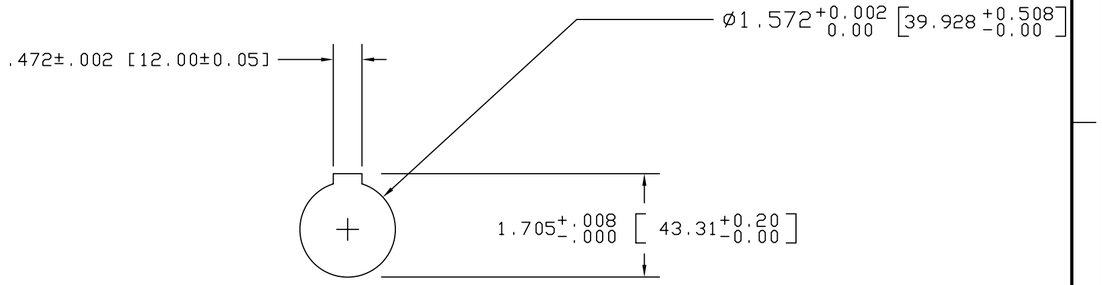
SHEET NO. 25

B

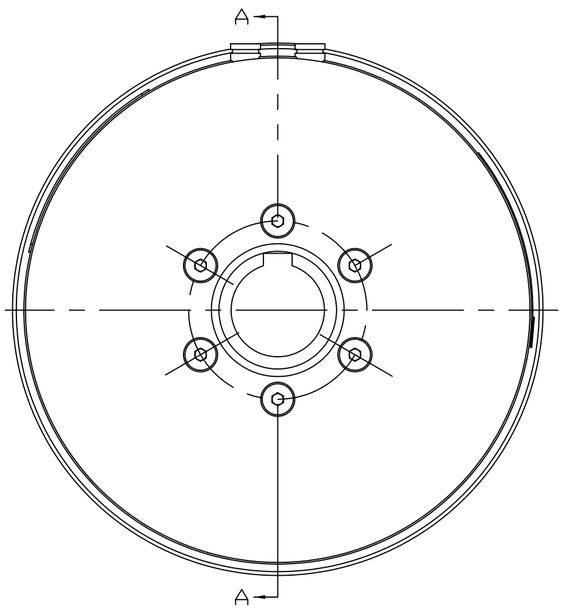
6013188035_16

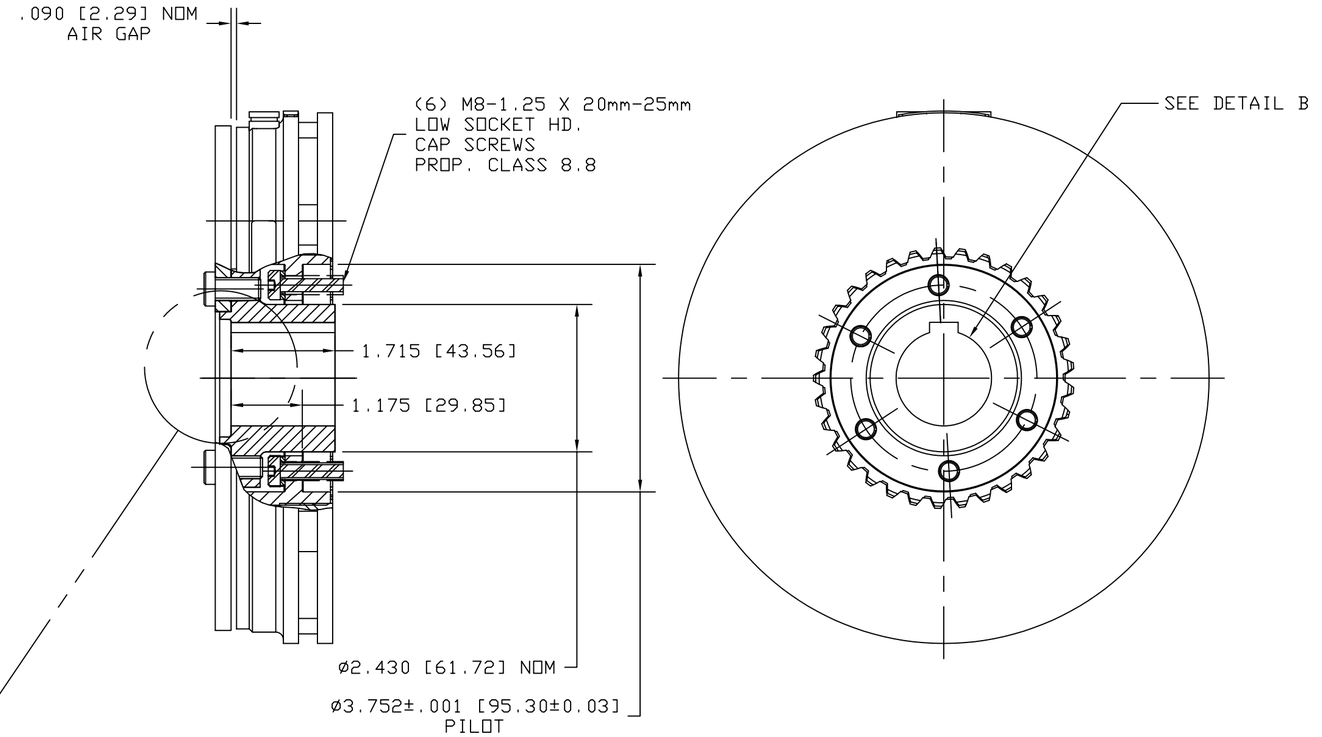
US EcoMod B-size



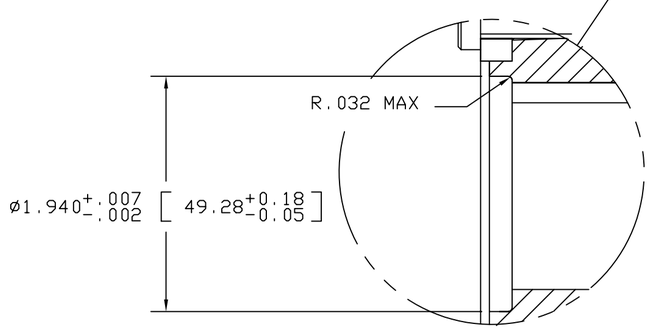


DETAIL B





SECTION A-A



NOTES:

1. STATIC RELEASE AT A MINIMUM .125 FOOT POUNDS.

WAS US96585001

INCH [METRIC]
TOLERANCE UNLESS SHOWN .X=±.1 [2.5] .XX=±.04 [1.0] .XXX=±.015 [0.38] angles ±1°
SOURCE/SPEC#/FINISH/WT WARNER ELECTRIC PREMANENT MAGNET BRAKE PART NUMBER IXS-0779-E
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PLOT SCALE: = 2.00

REV	DATE	CH'K	APP'D	F
Ø	07/JUN/07	WPC	SJE	

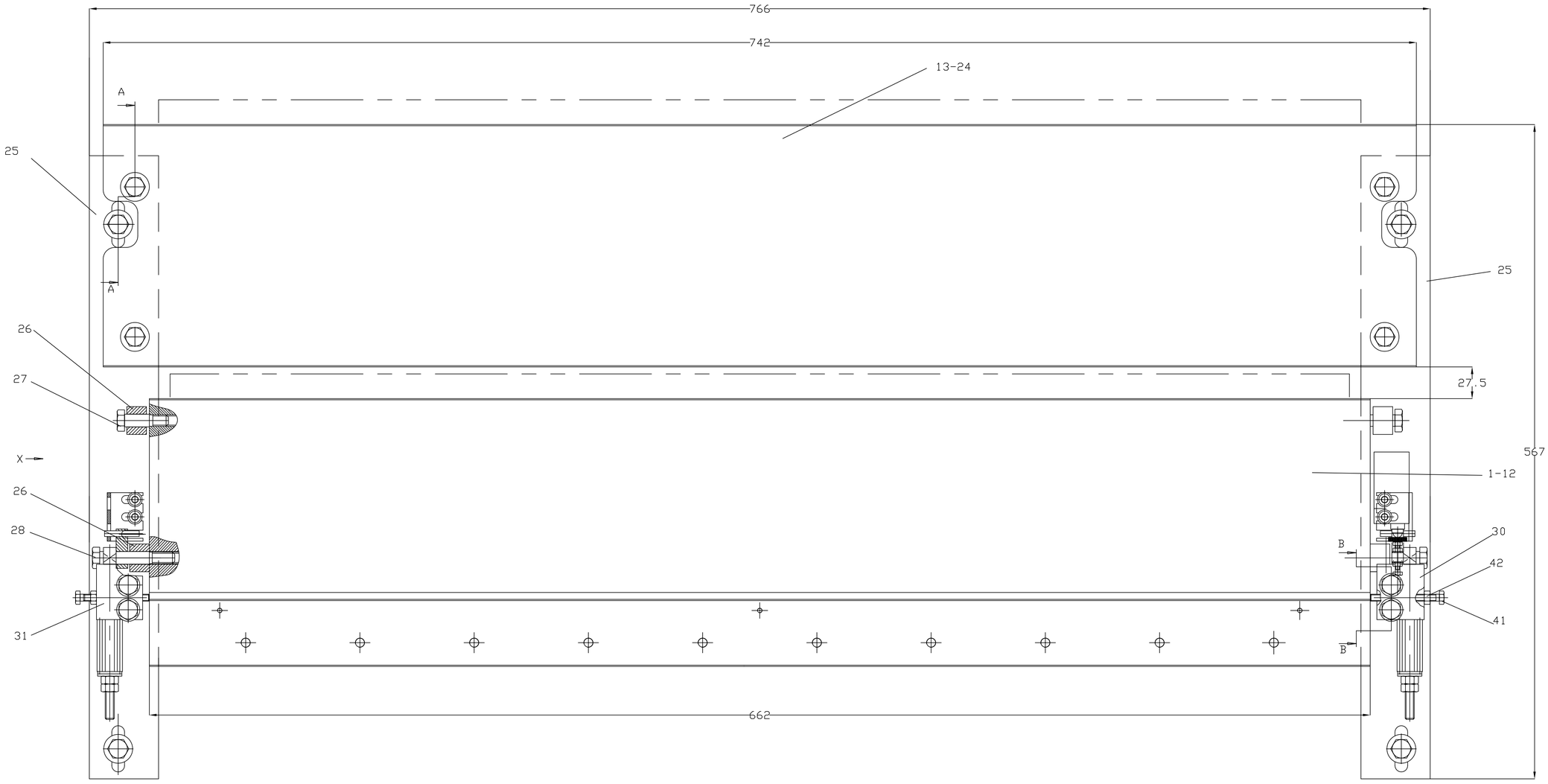
DRAWN
SENGER

KONE TM

NAME
BRAKE, SPLINE MAGNET

SHEET 26

6013188035_17



WAS 5070433D10

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±2.5 .XX = ±1.01 .XXX = ±0.381 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT . . .
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PLOT SCALE: = 50.00

REV	DATE	CH'K	APP'D	F
-	07/JUN/07	WPC	SJE	

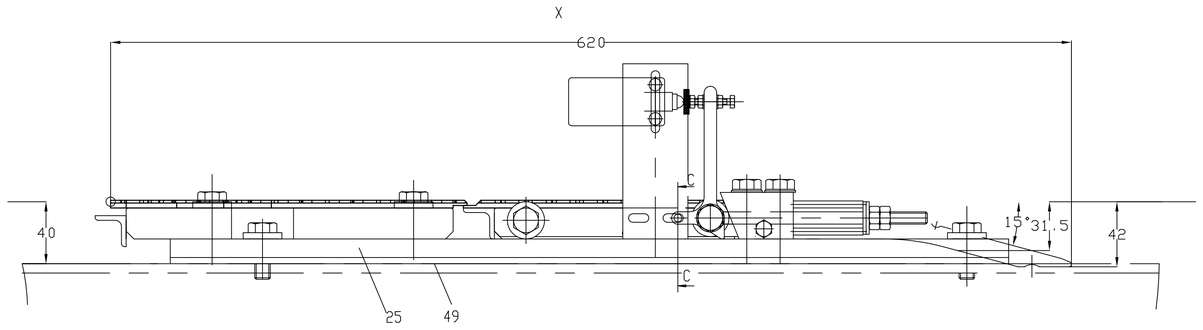
DRAWN
SENGER

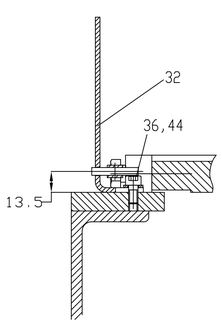
KONE

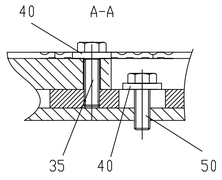
NAME
COMB CARRIER, TYPE 60, FOR SST LINING

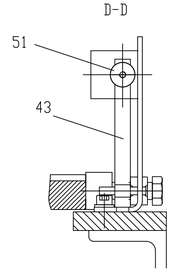
SHEET 27 D

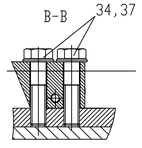
6013188035_18











(....) Pos. f\ur die Gegenseite
(....) items for opposite side

COMB CARRIER B.O.M.

ITEM #	QTY	UOM	PART #	DESCRIPTION
4	1	PC	KM5071678G01	PLATE, 60, PRIMED,
16	1	PC	KM5071679G01	PLATE, 60, PRIMED,
25	2	PC	KM5070434H01	PLATE, COMB CARRIER
26	4	PC	KM5070439H01	ROLLER, COMB CARRIER
27	2	PC	KM280048	HEX SCREW,M10X40 ST 8.8 A3B DIN609
28	2	PC	KM280049	BOLT, HEX, M10x65 DIN609-8.8A3B
29	2	PC	KM5060433	EYEBOLT,DIN 444-A,M8X140,4.6A2, R95
30	1	PC	KM5060450	BLOCK, COMB CARRIER, RIGHT
31	1	PC	KM5060451	BLOCK, COMB CARRIER, LEFT
32	2	PC	KM5070436H01	BRACKET, COMB CARRIER, PRIMED
33	2	PC	KM268103	HEX.HD.CAP SCR.DIN933-M4x30-8.8 A3G
34	4	PC	DEE8403763	LOCK WASHER,16X11X2MM A3C
35	4	PC	KM130245	HEX SCREW,M10X35 ST 8.8 A3G DIN933
36	4	PC	KM247014	SCREW, HHD, M6x12 DIN912-8.8A3G
37	4	PC	KM196717	HEX SCREW, M10X40 ST 8.8 A3G DIN933
38	4	PC	KM256343	FLAT WASHER,M4 ST A3G DIN125B
39	4	PC	KM162172	HEX NUT,M8 8 ST A3G DIN934
40	8	PC	KM259689	FLAT WASHER, 10.5MM A36 DIN7349
41	2	PC	DEE0063294	HEX SCREW,M6X55 ST 8.8 A2B DIN933
42	2	PC	DEE0057125	HEXNUT,M6 DIN 934
43	2	PC	KM5071675G02	LEVER, COMB CARRIER, GALVANIZED
44	4	PC	KM245429	WASHER, 6,4 DIN125-A3G
45	6	PC	KM122408	HEX NUT,M4 8 ST A3G DIN934
46	2	PC	KM856234	COMPRESSION SPRING,4,5X17,5X50MM DIN2098
47	2	PC	KM259689	FLAT WASHER,10.5MM A3G DIN7349
50	4	PC	KM212381	CAP SCREW, HHD, M10x30 DIN933-8.8A3G
51	2	PC	KM283184	KNURLED THUMB NUTS DIN467 M4 ZINC

WAS 5070433D10

METRIC DIMENSIONS

TOLERANCE UNLESS SHOWN
.X = ±2.5
.XX = ±1.01
.XXX = ±0.381
ANGLES ±1°

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 50.00

REV	DATE	CH'K	APP'D	F
1	07/JUN/07	WPC	SJE	

DRAWN
SENGER

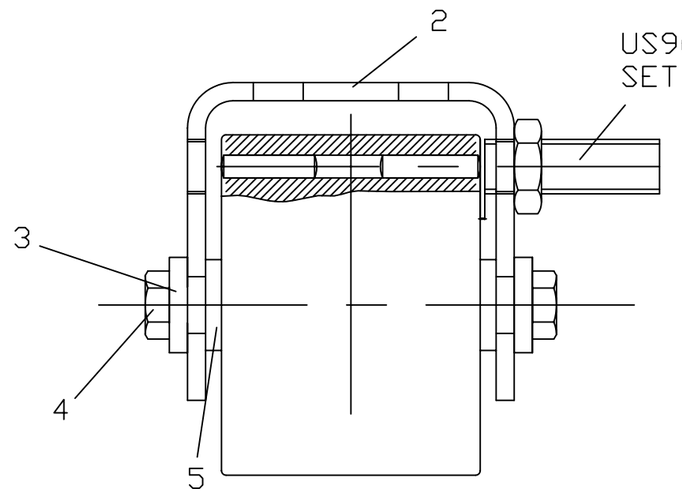
KONE

NAME
COMB CARRIER, TYPE 60, FOR SST LINING

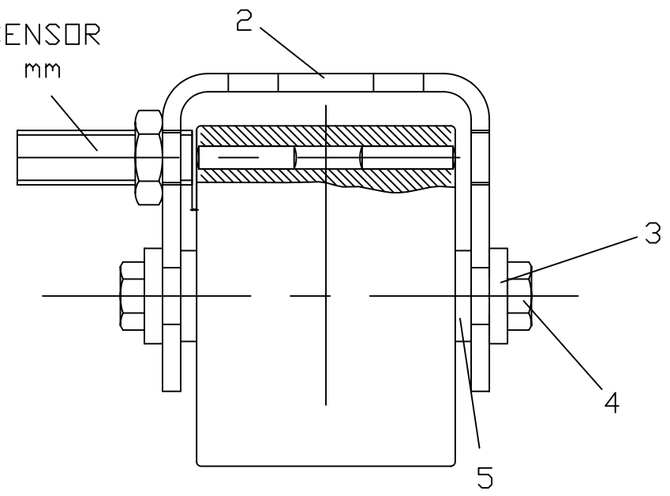
SHEET 28 D

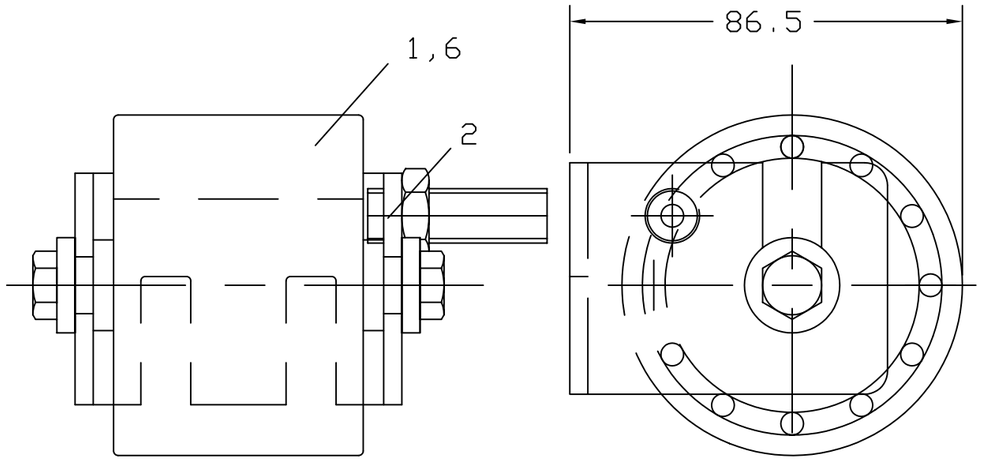
6013188035_18

MOUNTING POSITION, LEFT



MOUNTING POSITION, RIGHT





ITEM #	QTY	UOM	PART #	DESCRIPTION
1	1	PC	KM5076345G01	ROLLER
2	1	PC	KM5071695H01	BRACKET
3	2	PC	DEE0057111	FLAT WASHER,M8 ST A3E DIN7349
4	2	PC	US49389003	SCREW,HHC/G2,5/16-18, 3/4"
5	1	PC	US44486	SPACER,HANDRAIL WHEEL
6	1	PC	US44485	SHAFT,ROLR CLSTR,CRYS,2000

WAS 5071696D10

METRIC DIMENSIONS

TOLERANCE UNLESS SHOWN
.X = ±2.5
.XX = ±1.01
.XXX = ±0.381
ANGLES ±1°

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 35.00

REV	DATE	CH'K	APP'D	F
-	08/JUN/07	WPC	SJE	

DRAWN
SENGER

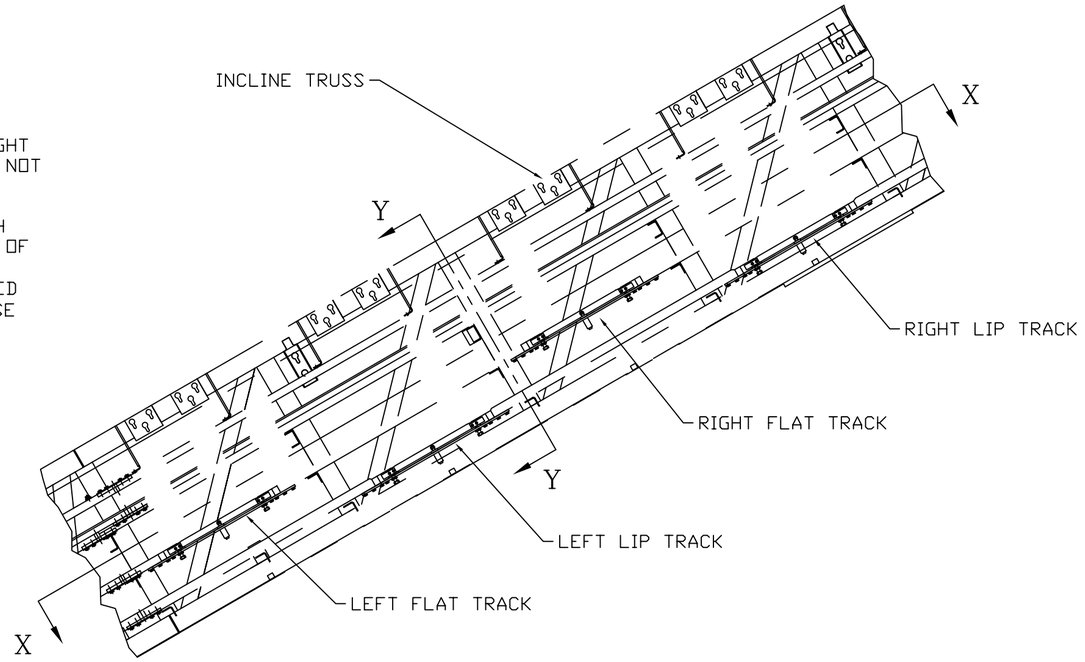
KONE

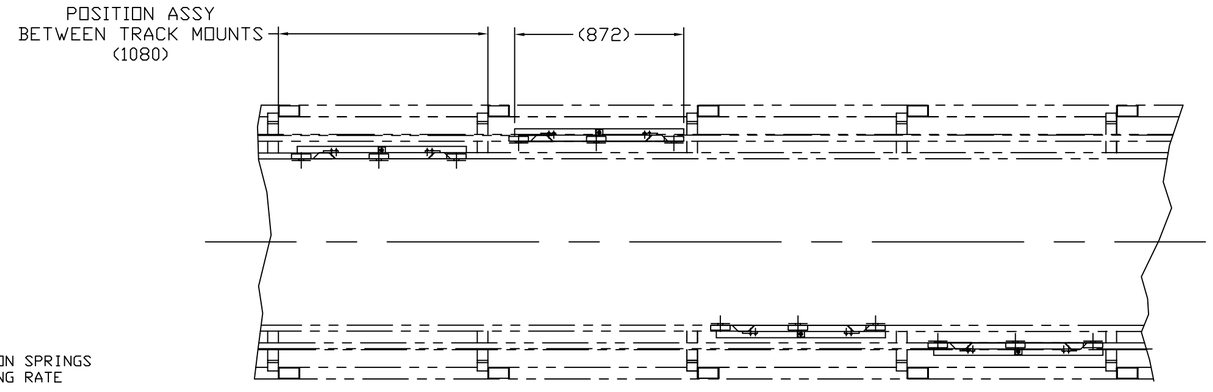
NAME
ROLLER, HANDRAIL SPEED SENSOR

SHEET 29 B

6013188035_19

NOTES:
1. DETERMINE LOCATION OF EACH ASSEMBLY IN THE RETURN OF BOTH THE FLAT AND LIP TRACKS.
2. CUT A SECTION OF TRACK OUT WITH 45° MITER (SEE TOP VIEW A-A).
3. INSTALL THE ASSEMBLY TO THE TRACK WITH APPROPRIATE HARDWARE.
4. FOR LIP TRACKS ATTACH ITEM 101 TO THE UNDERSIDE OF THE BRIDGE PLATE, ITEM 5, AT EACH END. INSTALL CHAIN GUIDE 20.4mm FROM THE INSIDE FACE OF THE LIP TRACK AS SHOWN.
5. INSIDE EDGE OF TRACKS MUST BE FLUSH WITH THE FACE OF THE TRACK ADAPTER, ITEM 3 & 4. WHEN FIT IS SATISFACTORY AND COMPLETE TIGHTEN M10 FASTENERS TO 52 N-m.
6. SET THE BEAM'S SPRING TENSION BY ADJUSTING BOLT, ITEM 9, TO A HEIGHT OF 8-9mm AS SHOWN IN SECTION C-C. THE LIP TRACK ADJUSTMENT SHOULD NOT REQUIRE AS MUCH SPRING COMPRESSION. TIGHTEN LOCKING NUT, ITEM 27, AFTER SETTING SPRING TENSION.
7. INSTALL PROXIMITY SWITCH INTO BRACKET, ITEM 8. LOCK IN PLACE WITH JAM NUT AND WASHER, PROVIDED WITH EACH SENSOR, ON THE BOTTOM SIDE OF MOUNTING SURFACE.
8. CHECK TO SEE THAT A 1mm THICK RUBBER PAD IS MOUNTED ON THE MACHINED NOTCH ON EACH END OF THE BEAM, ITEM 1. THIS PAD IS TO REDUCE NOISE DURING OPERATION.
9. WITH THE BEAM LOADED AND ONE ROLLER RESTING ON IT, ADJUST THE GAP BETWEEN THE PROXIMITY SWITCH AND THE TOP OF THE LINEAR SHAFT, ITEM 7, TO 1.0-1.5mm.
10. REFER TO THE ELECTRICAL WIRING DIAGRAMS FOR CORRECT WIRING OF THE CABLES INTO THE LOWER J-BOX.
11. DO NOT OVERTIGHTEN RUBBER PAD, ITEM 30. TIGHTEN ONLY UNTIL IT RESTS FLAT AND DOES NOT CURL UP AT THE EDGES.





TECHNICAL SPECIFICATIONS:
1. ITEM 29, COMPRESSION SPRINGS: PRECISION COMPRESSION SPRINGS
   MATERIAL: TYPE 302 STAINLESS STEEL, 54LBS/IN SPRING RATE
   OVERALL LENGTH; 7/8"
   WIRE DIAMETER: .48"
2. ITEM 50, RUBBER CUSHION: 1mm THICK RUBBER WITH SELF ADHESIVE BACKING, 80 SHORE 00
3. CHAIN GUIDE FOR LIP TRACK: CAST NYLON GSM OR UHMW PE.
4. PROXIMITY SWITCH: INDUCTIVE, PNP SOURCING, NORMALLY OPEN
   10-30 VDC, 200mA, RANGE Sn 2mm [.078"]
5. ITEM 6, GUIDE MATERIAL: UHMW POLYETHYLENE

SECTION X-X

SCALE 1:5

WAS 841824D10

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN X=±1.5 .X=±.75 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 125.00

REV	DATE	CH'K	APP'D	F
-	6/11/07	WPC	SJE	

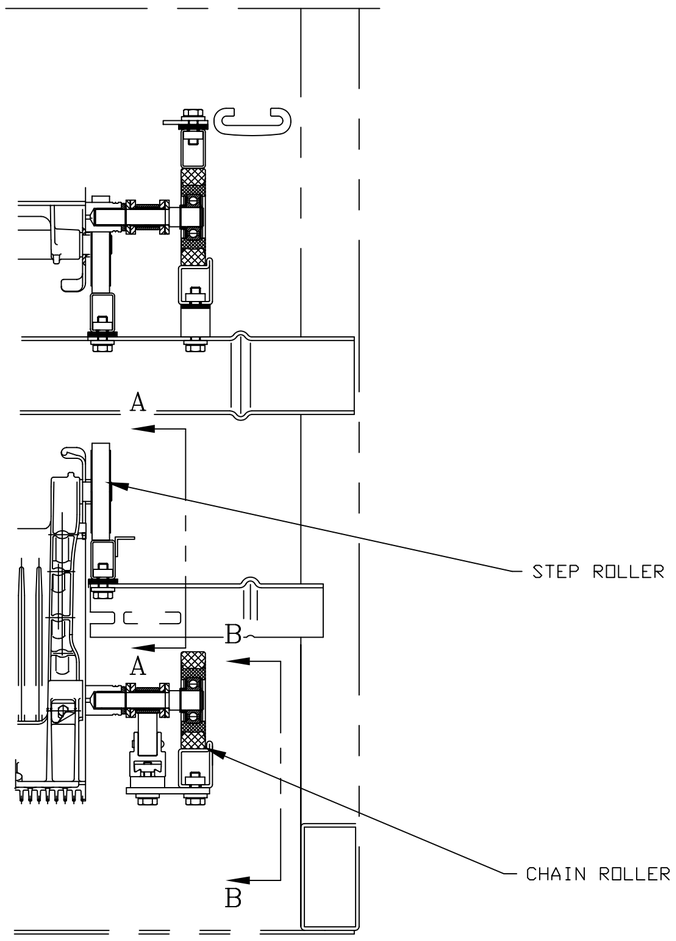
DRAWN
SENGER

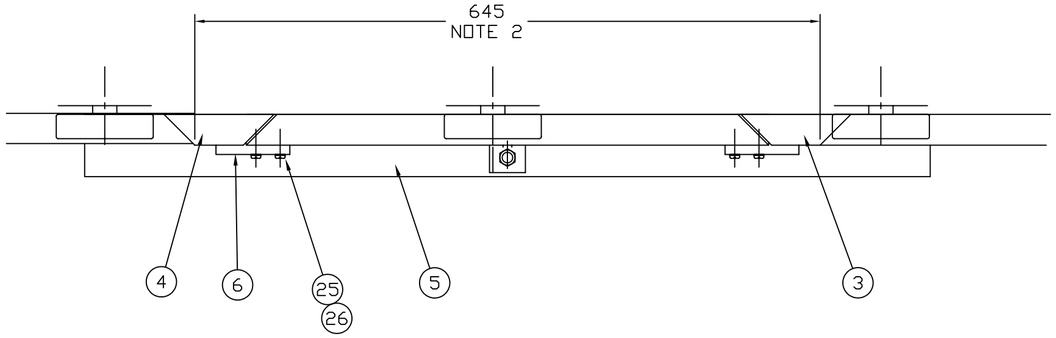
KONE

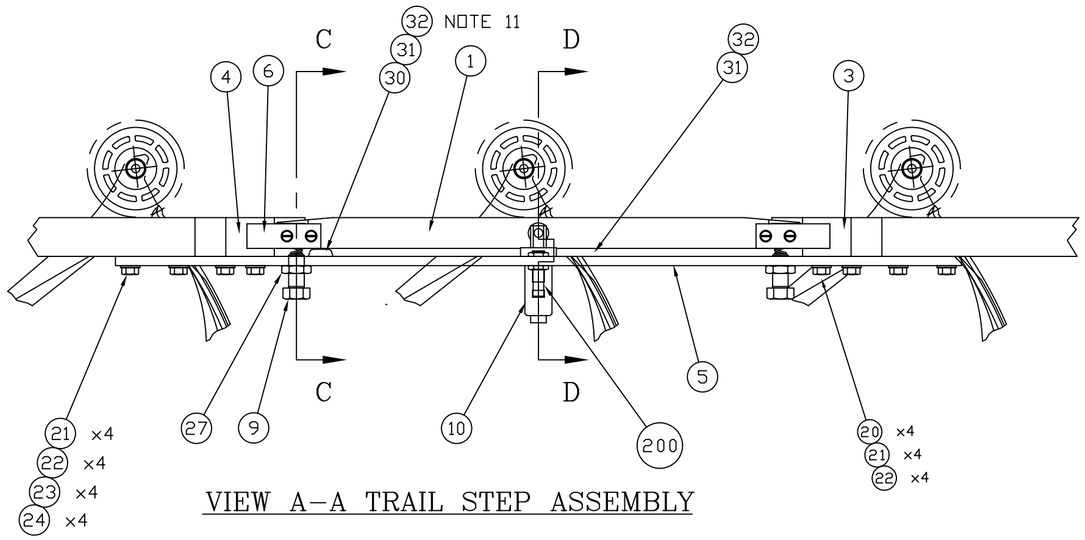
NAME
ASY,DETERIORATED ROLLER SENSOR TRAIL WHEEL TRACK

SHEET 30

6013188035_20



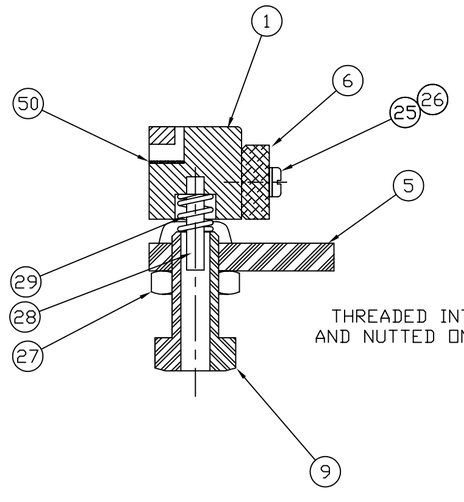




VIEW A–A TRAIL STEP ASSEMBLY

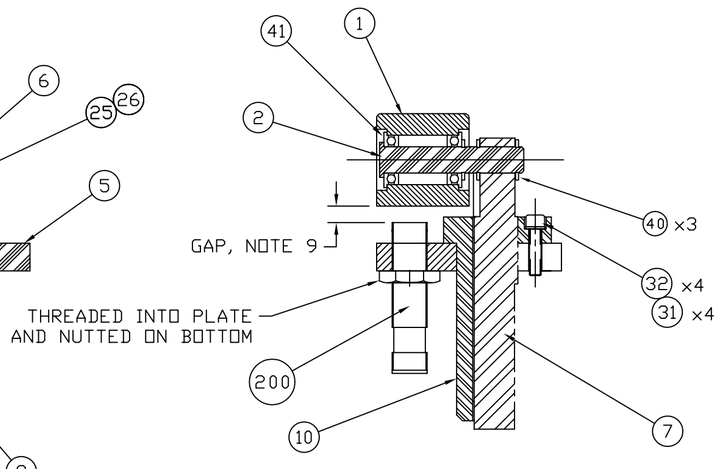
SECTION Y–Y

ITEM #	QTY	UOM	PART #	DESCRIPTION
1	1	PC	KM837510H01	BEAM,ROLLER DTRIORTD SNSR,RTV
2	1	PC	KM837511H01	SHAFT,PIVOT DTRIORTED SNSR,RTV
3	1	PC	KM837512H01	ADAPTER,TRACK DTRTD SNSR,RTV
4	1	PC	KM837513H01	ADAPTER 2,TRACK DTRTD SNSR,RTV
5	1	PC	KM837514H01	PLATE,BRIDGE,DTRIORATED SNSR,RTV
6	2	PC	KM837515H01	GUIDE,BEAM,DTRIORTED SNSR,RTV
7	1	PC	KM837681H01	SHAFT,LINEAR,DTRIORATD SNSR,RTV
9	2	PC	KM83944 2H01	BOLT,SPRING ADJ DTR SNSR,RTV
10	1	PC	KM841813H01	BEARING,LIN FLNG,16mm ID x 70mm L
20	4	PC	DEE0056662	HEX SCREW,M10X35 ST 8.8 A3B DIN933
21	4	PC	DEE0056988	FLAT WASHER,M10 ST 140HV A3E DIN125B
22	4	PC	DEE8403763	LOCK WASHER,16X11X2MM A3C
23	4	PC	DEE0056663	HEX SCREW,M10X40 ST 8.8 A3B DIN933
24	4	PC	DEE2173051	NUT C45-FE/ZN8B
25	4	PC	US68748006	SCREW,PAN/PH,M5,L=20MM
26	4	PC	DEE0725727	SPRING WASHER,M5 A2B DIN128A
27	2	PC	DEE0057133	HEX NUT,M16 8 ST A3B DIN934
28	2	PC	KM253029	SPRING PIN,6X20MM ST DIN1481
29	2	PC	KM841814H01	SPRING,COMPR.,7/8"x.48"
30	2	PC	KM841815H01	BUMPER,RUBBER 31/32"W x 11/32"H
31	6	PC	KM247579	SCREW,HEXHD,SOCKET,M4x16 DIN912-8.8A3G
32	6	PC	DEE0725726	SPRING WASHER,M4 A2B DIN128A
40	3	PC	KM841816H01	SNAP RING,9mm EXTERNAL
41	2	PC	KM841817H01	BEARING,FLNG BALL 9x17x5,DBL SHLD
50	0.1	M	KM3719098	RUBBER 25 x 1
200	1	PC	US96582001	SENSOR,12MM PROX,HRSS
201	1	PC	US96424010	CABLE ASSY,4CON,SHLD,L=10M
202	4	PC	US45812007	TERM,F,TAB,22-18,.020X.187



SECTION C–C

SCALE 3:1



SECTION D–D

SCALE 3:1

WAS 841824D10

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN X=±1.5 .X=±.75 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT
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PLOT SCALE: = 125.00

REV	DATE	CH'K	APP'D	F
-	6/11/07	WPC	SJE	

DRAWN
SENGER

KONE

NAME
ASY,DETERIORATED ROLLER SENSOR TRAIL WHEEL TRACK

SHEET 31

C

6013188035_20

NOTES:

1. CUT A SECTION OF TRACK OUT WITH 45° MITER (SEE DETAIL V).

2. INSIDE EDGES OF TRACK MUST BE FLUSH WITH THE FACE OF THE TRACK ADAPTOR, ITEM 3 &4. WHEN FIT IS SATISFACTORY AND COMPLETETIGHTEN M10 FASTENERS TO 52 N-m

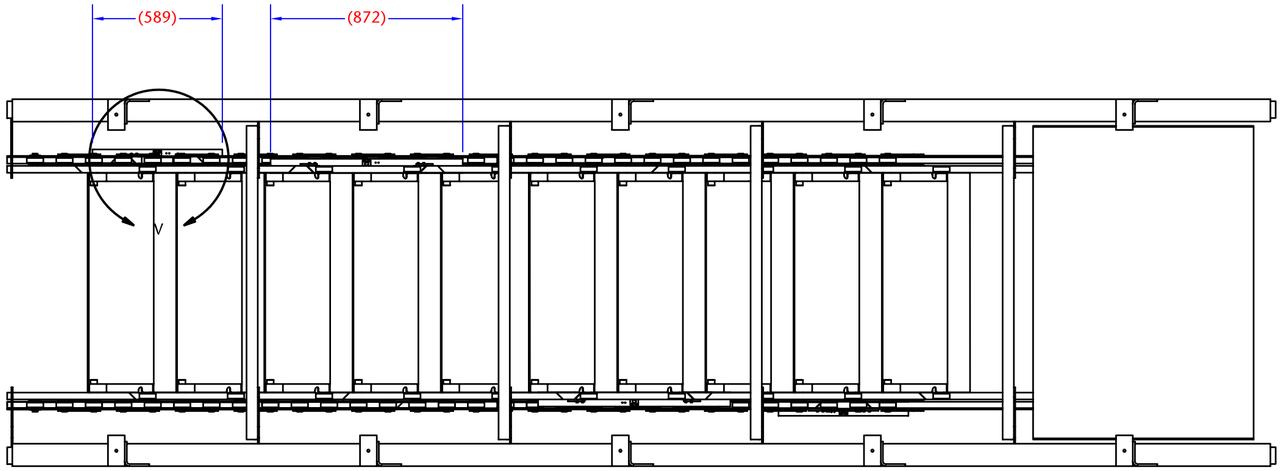
3. WITH THE BEAM LOADED AND ONE ROLLER RESTING ON IT, ADJUST THE GAP BETWEEN THE PROXIMITY SWITCH AND THE TOP OF THE LINEAR SHAFT, ITEM 7, TO 1.0-1.5mm.

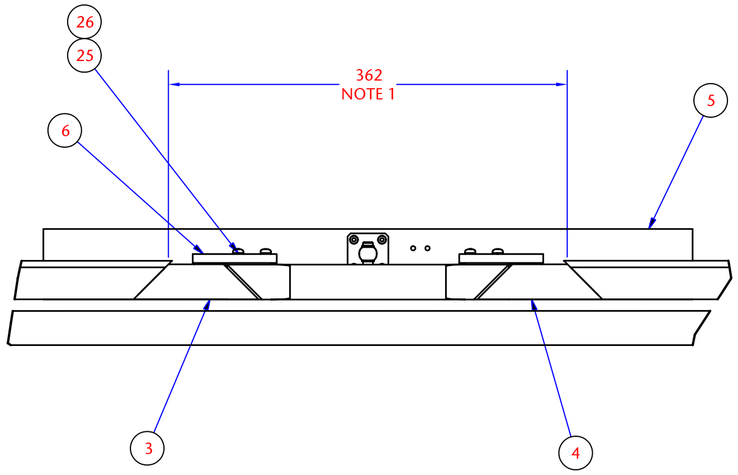
4. REFER TO THE ELECTRICAL WIRING DIAGRAMS FOR CORRECT WIRIRING OF THE CABLES INTO THE LOWER J-BOX.

TECHNICAL SPECIFICATIONS:

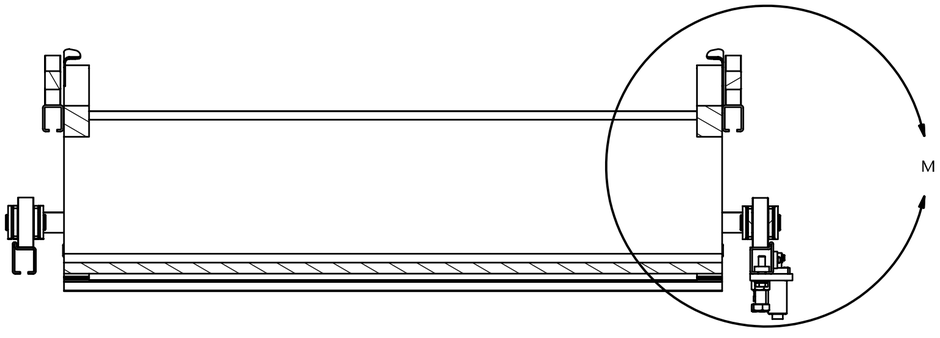
1. ITEM 29, COMPRESSION SPRINGS: PRECISION COMPRESSION SPRINGS
   MATERIAL: TYPE 302 STAINLESS STEEL, 54LBS/IN SPRING RATE
   OVERALL LENGTH: 7/8" - WIRE DIAMETER: .48"

2. PROXIMITY SWITCH: INDUCTIVE, PNP SOURCING, NORMALLY OPEN
   10-30 VDC, 200mA, RANGE Sn 2mm [.078"]

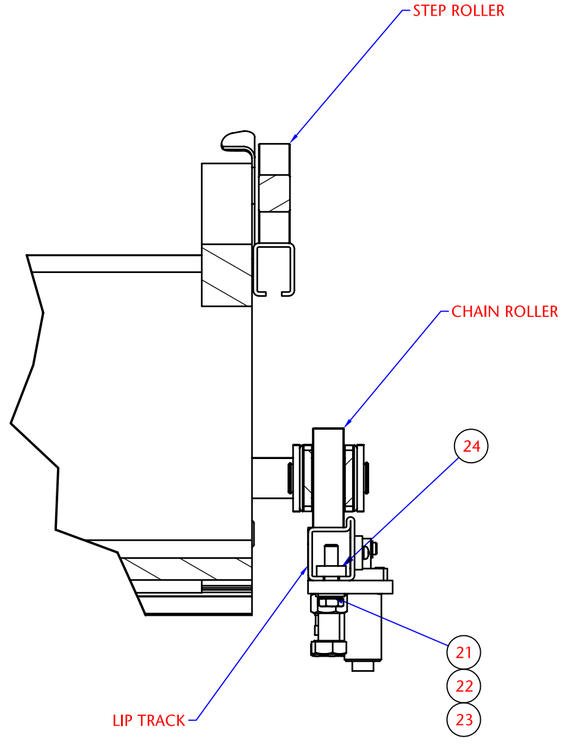




DETAIL V



SECTION K-K



METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±2.5 .XX = ±1.01 .XXX = ±0.381 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 550.00

REV	DATE	CH'K	APP'D	F
-	6/11/07	WPC	SJE	

DRAWN
SENGER

KONE

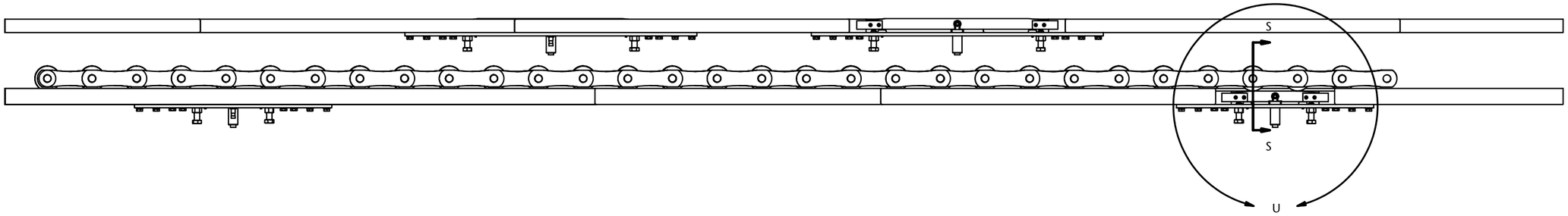
NAME
ASSEMBLY, DETERIORATED ROLLER SENSOR

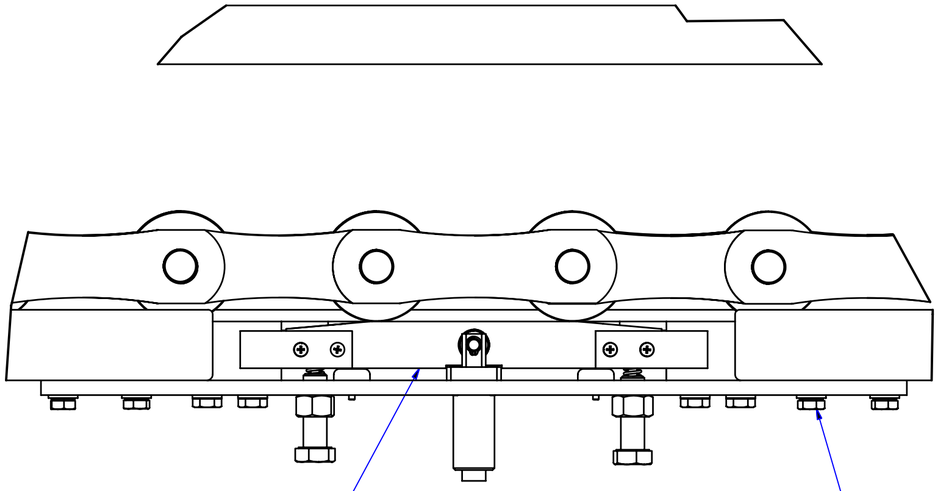
SHEET 31

C

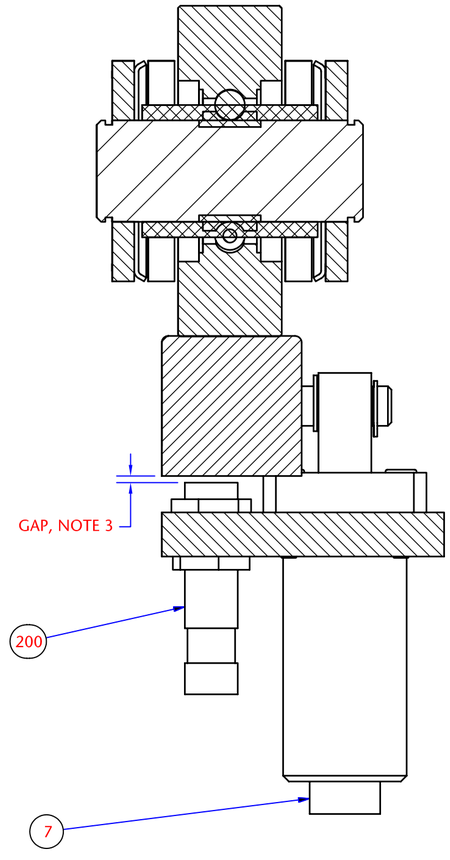
WAS 842066D03

6013188035_21





DETAIL U



DETAIL T

SECTION S-S

ITEM #	QTY	UOM	PART #	DESCRIPTION
11	1	PC	KM841824G02	ASSY,DYNAMIC BEAM,RTV
21	4	PC	DEE0056988	FLAT WASHER,M10 ST 140HV A3E DIN125B
22	4	PC	DEE8403763	LOCK WASHER,16X11X2MM A3C
23	4	PC	DEE0056663	HEX SCREW,M10X40 ST 8.8 A3B DIN933
24	4	PC	DEE2173051	NUT C45-FE/ZN8B
200	1	PC	US96582001	SENSOR,12MM PROX,HRSS
201	1	PC	US96424010	CABLE ASSY,4CON,SHLD,L=10M
202	4	PC	US45812007	TERM,F,TAB,22-18,.020X.187

WAS 842066D03

METRIC DIMENSIONS

TOLERANCE UNLESS SHOWN
.X = ±2.5
.XX = ±1.01
.XXX = ±0.381
ANGLES ±1°

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 550.00

REV	DATE	CH'K	APP'D	
-	6/11/07	WPC	SJE	

DRAWN
SENGER

NAME
ASSEMBLY, DETERIORATED ROLLER SENSOR

SHEET 32

6013188035_21

WIRING: COMBPLATE AND TRUSS HEATERS

WIRING DIAGRAM NO.:	6013188035_22
TRUSS HEATERS:	ONE TO FIFTEEN @ 1KW EACH
TRUSS HTR VOLTAGE:	480VAC
COMBPLATE HEATERS:	TWO @ 300W EACH
COMBPLATE HTR VOLTAGE:	120VAC

INDEX

SHEET DETAILS

32	INDEX
33	480VAC HEATER CONTROL DISCONNECT AND COMPLATE HEATERS
34	480VAC TRUSS HEATER WIRING

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
-	12/JUN/07	WPC	SJE	

DRAWN D. ANDERSON

KONE

NAME WIRING,COMBPLATE & TRUSS HEATERS

SHEET 32 D

6013188035_22

WAS 935412D50

HEATERS – COMBPLATE & TRUSS

FUSE, BREAKER, AND WIRING SIZING						
NO. HEATERS	SUPPLY VOLTAGE	INPUT FUSE	BREAKER CB1	WIRE A	WIRE B	RISE MAX
1-15	480V	25-30A	25A	#10 BLK	#10 GRN	70FT

HEATER DISCONNECT BOX

INCOMING SUPPLY
480V-3PH-60Hz
SLOW BLOW FUSE SIZING SEE CHART

L1
L2
L3

ON/OFF SWITCH

SEE CHART FOR WIRE A

WIRE A
WIRE A
WIRE A

CB1 1 3 5
2 4 6
SEE CHART

K20
WIRE A 1 2
WIRE A 3 4
WIRE A 5 6

CB2 1 3
1/2-A 2 4

CT1
50VA

H1 H2 H3 H4
460VAC 230VAC 208VAC 0VAC
0VAC 120VAC
X1 X2

AUTOMATIC H2
OFF
MANUAL
H1
H6
H4

A K70 B
A1 K20 A2

#14AWG

ESCALATOR TRUSS

SEE CHART FOR WIRE A

WIRE A 1L1
WIRE A 1L2
WIRE A 1L3
WIRE B

SEE SHEET 3 OF 3 (34) FOR HEATER WIRING CONNECTIONS

SEE CHART FOR WIRE B

UPPER END OF ESCALATOR

UJB/H2 HEATER THERMOSTAT UJB/H3

(UAC) K50
UPPER ACCESS COVER RELAY
LOCATED IN UPPER J-BOX
6 4 2

UJB/H6

LJB/H4 UJB/H4

(LAC) K51
6 4 2
LOWER ACCESS COVER RELAY
LOCATED IN LOWER J-BOX

LJB/H6

UJB/H7 LJB/H7

UPPER COMBPLATE HEATER 120VAC 300W 2.5AMPS
LOWER COMBPLATE HEATER 120VAC 300W 2.5AMPS

UJB/N LJB/N

ALL CONTROL WIRING IS 600V #18AWG WIRE UNLESS OTHERWISE NOTED

10A
CB3

BY OTHERS
120VAC
120VAC RTN

BLK L BLK 1 2 #14AWG BLK K20 13 14 BLK H7 #14AWG BLACK
WHT N WHT 3 4 #14AWG WHT N #14AWG WHITE

ESCALATOR CONTROLLER
(TB1/301) 24VDC
(TB1/21)
TRUSS HEATER INDICATION

301
21
K70 5 3

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
-	12/JUN/07	WPC	SJE	

DRAWN D. ANDERSON

KONE

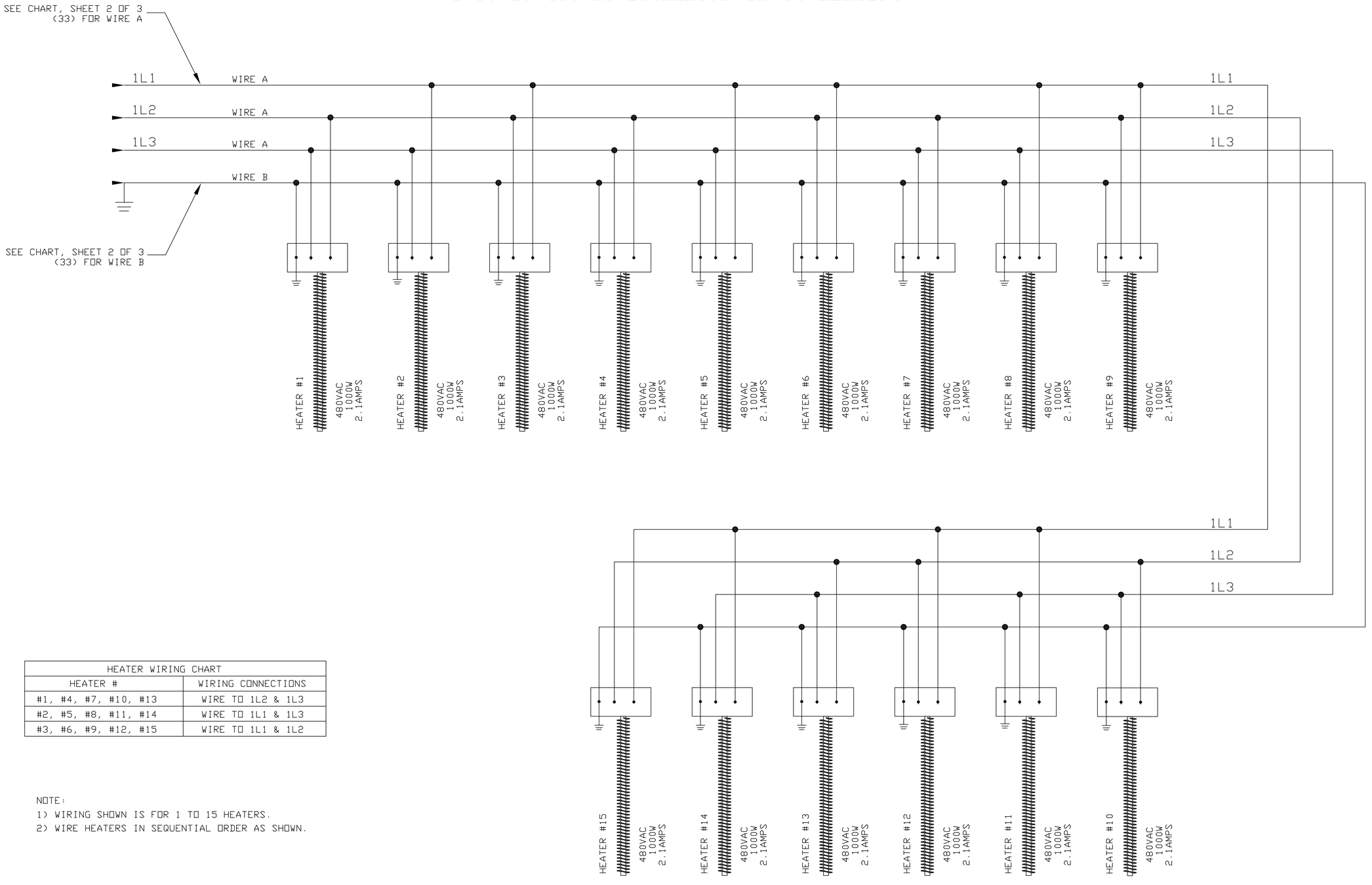
NAME WIRING, COMBPLATE & TRUSS HEATERS

SHEET 33 D

6013188035_22

WAS 935412D50

1 TO 15 480VAC ESCALATOR TRUSS HEATERS



HEATER WIRING CHART	
HEATER #	WIRING CONNECTIONS
#1, #4, #7, #10, #13	WIRE TO 1L2 & 1L3
#2, #5, #8, #11, #14	WIRE TO 1L1 & 1L3
#3, #6, #9, #12, #15	WIRE TO 1L1 & 1L2

NOTE:
1) WIRING SHOWN IS FOR 1 TO 15 HEATERS.
2) WIRE HEATERS IN SEQUENTIAL ORDER AS SHOWN.

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
-	12/JUN/07	WPC	SJE	

DRAWN
D. ANDERSON

KONE

NAME
WIRING,COMBPLATE & TRUSS HEATERS

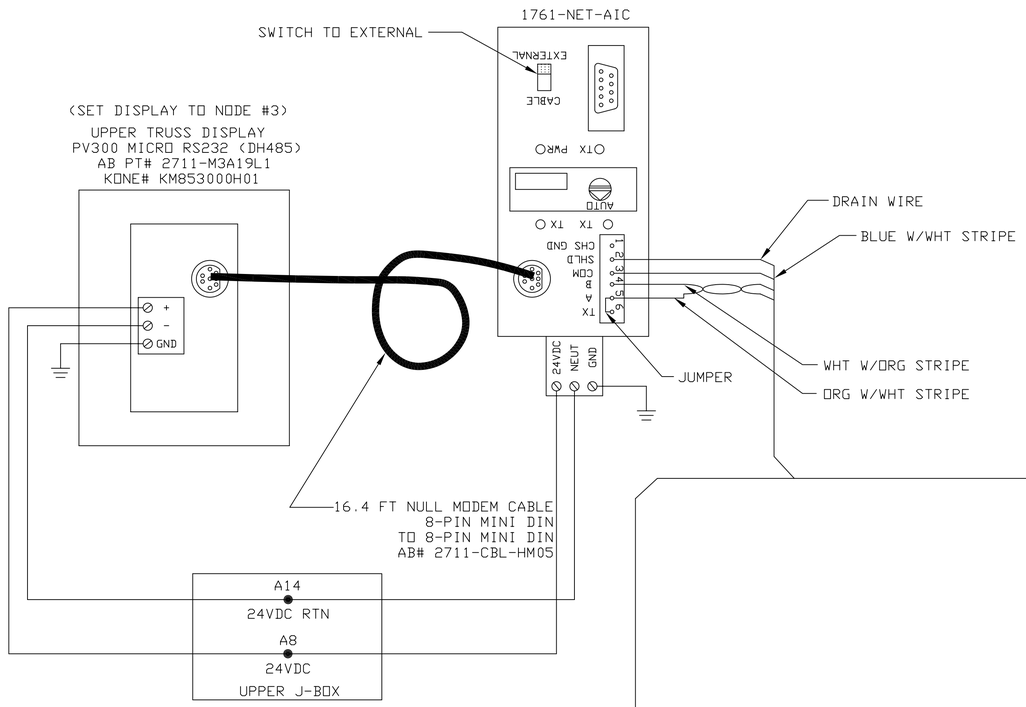
SHEET 34 D

6013188035_22

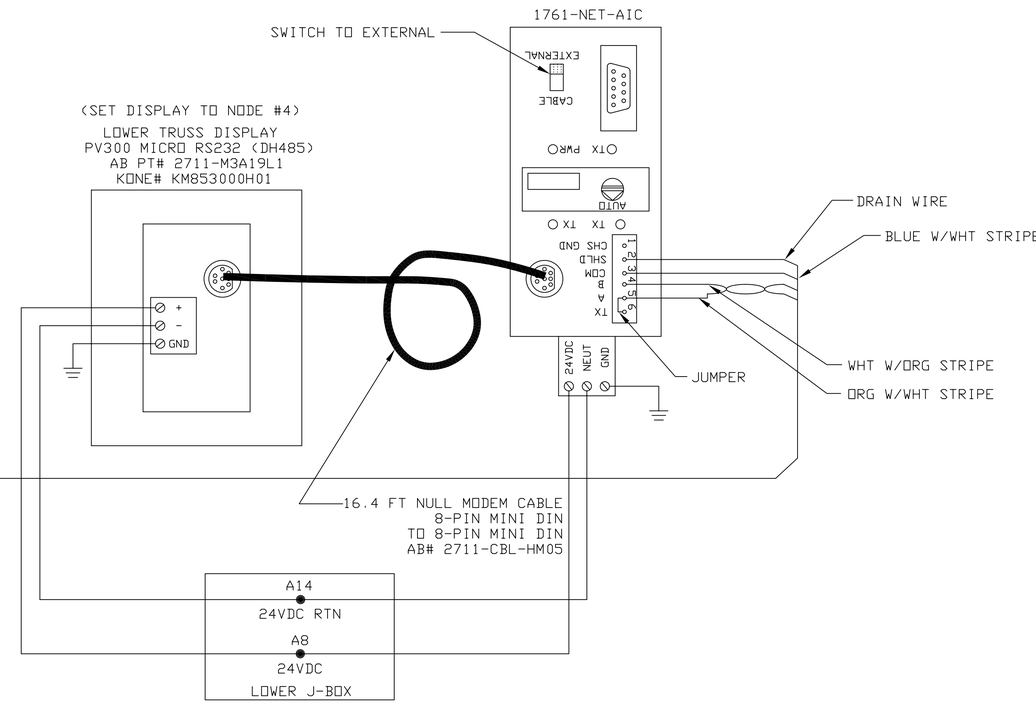
WAS 935412D50

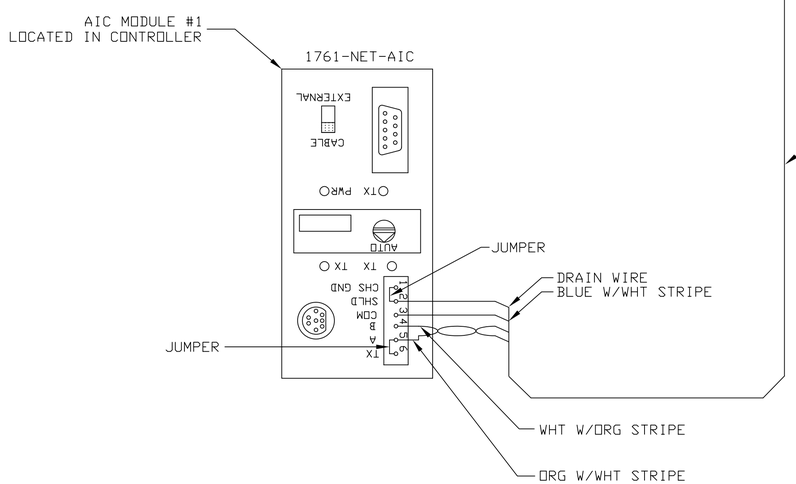
TRUSS FAULT DISPLAY(S)

UPPER END OF ESCALATOR



LOWER END OF ESCALATOR





NOTE:
AVAILABLE TRUSS DISPLAY OPTIONS

1) UPPER END TRUSS DISPLAY ONLY.
2) LOWER END TRUSS DISPLAY ONLY.
3) UPPER END AND LOWER END TRUSS DISPLAYS COMBINED.

SHEET 1 OF 1

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
3				
2				
1				
0	12/JUN/07	WPC	SJE	

DRAWN D. ANDERSON

KONE

NAME
WIRING,PLC
TRUSS FAULT
DISPLAY

SHEET 35 D

6013188035_23

WAS 935412D51

ELECTRICAL ASSEMBLY, TRUSS, SEPTA

ASSEMBLY,ELECTRICAL,TRUSS: 6013188035_24
MOTORS: ONE OR TWO
FRONTLINE NO: 6013188

CONTROLLER TYPE: METRA PLC TYPE: AB MICROLOGIX 1500
CONTROL VOLTAGE: 24VDC CLASS2
BRAKES: WARNER PERMANENT MAGNETIC BRAKE

INDEX

SHEET	DETAILS
36	INDEX
37-38	LAYOUT, ELECTRICAL ROUGH-IN BLOCK DIAGRAM
39	J-BOX, UPPER LEFT E300
40	J-BOX, UPPER RIGHT
41	J-BOX, UPPER LEFT TRANSITION
42	J-BOX, UPPER RIGHT TRANSITION
43	J-BOX, UPPER, 120 VOLTS
44	J-BOX, LOWER LEFT E500
45	J-BOX, LOWER RIGHT
46	J-BOX, LOWER LEFT TRANSITION
47	J-BOX, LOWER RIGHT TRANSITION
48	J-BOX, LOWER, 120 VOLTS

INCH [METRIC] DIMENSIONS
TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 1.00

REV	DATE	CH'K	APP'D
-	12/JUN/07	WPC	SJE

DRAWN
D.ANDERSON

NAME
ASSEMBLY, ELECTRICAL, TRUSS

SHEET 36 D

6013188035_24

WAS 935412D70

ROUGH-IN BLOCK DIAGRAM

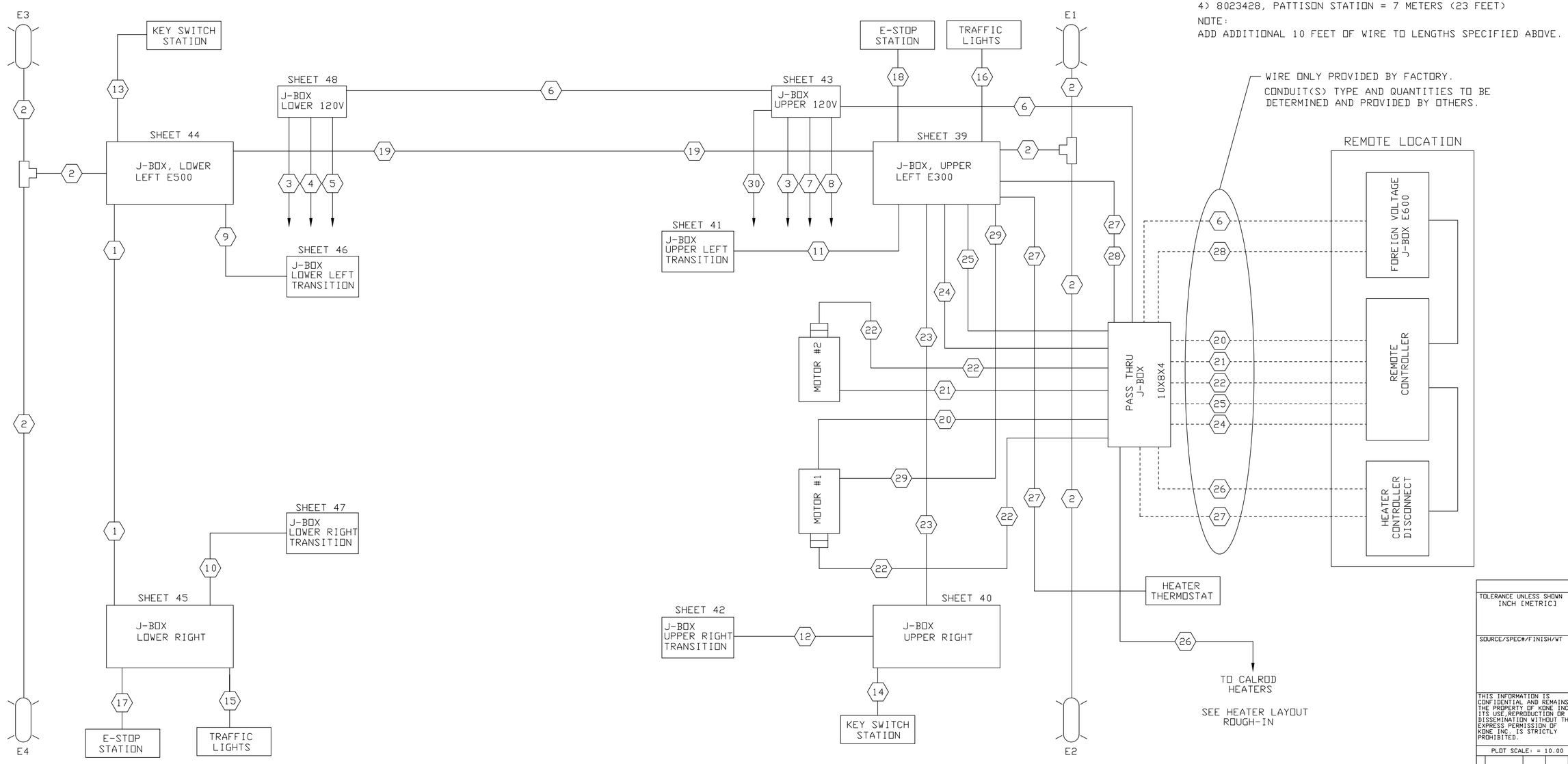
LOWER END OF TRUSS

UPPER END OF TRUSS

WIRE LENGTH = DETERMINED BY CUSTOMER

1) 8023425, 30TH STREET STATION = 6 METERS (20 FEET)
2) 8023426, NORRISTOWN STATION = 10 METERS (33 FEET)
3) 8023427, OLNEY STATION = 4 METERS (13 FEET)
4) 8023428, PATTISON STATION = 7 METERS (23 FEET)

NOTE:
ADD ADDITIONAL 10 FEET OF WIRE TO LENGTHS SPECIFIED ABOVE.



WAS 935412D70

SHEET 2 OF 13

TOLERANCE UNLESS SHOWN
INCH [METRIC]

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 10.00

REV	DATE	CH'K	APP'D	F
-	03-19-07	DA	ASB	

DRAWN
D. ANDERSON

NAME
ASSEMBLY, ELECTRICAL, TRUSS

SHEET 37 D

6013188035_24

(1) 1.25" LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR RIGHT SIDE SAFETY SWITCHES, E-STOP STATION, TRAFFIC LIGHTS AND MISC. CONNECTIONS. REFER TO LISTED ASSIGNED WIRING DIAGRAMS AND ASSEMBLY DOCUMENTS.

(2) .50 LIQUID TIGHT FLEXIBLE METAL CONDUIT(1)-#18AWG BLUE WIRE AND (1)-#18AWG BROWN WIRE FOR COMBPLATE LIGHTING.

(3) .50 LIQUID TIGHT FLEXIBLE METAL CONDUIT(1)-#14AWG BLACK WIRE AND (1)-#14AWG WHITE WIRE FOR COMBPLATE HEATERS.

(4) .50 LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING (1)-#12AWG BLACK WIRE, (1)-#12AWG WHITE WIRE AND (1)-#12AWG GREEN WIRE FOR LOWER RECEPTACLES AND PIT LIGHTS.

(5) .50 LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING (1)-#12AWG BLACK WIRE, (1)-#12AWG WHITE WIRE AND (1)-#12AWG GREEN WIRE FOR LOWER DEMARCATION LIGHTS.

(6) .50 LIQUID TIGHT FLEXIBLE AND RIGID METAL CONDUIT CONTAINING (2)-#12AWG BLACK WIRES, (2)-#12AWG WHITE WIRES AND (1)-#12AWG GREEN WIRE FOR RECEPTACLES, PIT LIGHTS, DEMARCATION LIGHTS AND (1)-#14AWG BLACK WIRE AND (1)-#14AWG WHITE WIRE FOR COMBPLATE HEATERS.

(7) .50 LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING (1)-#12AWG BLACK WIRE, (1)-#12AWG WHITE WIRE AND (1)-#12AWG GREEN WIRE FOR UPPER DEMARCATION LIGHTS.

(8) .50 LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING (1)-#12AWG BLACK WIRE, (1)-#12AWG WHITE WIRE AND (1)-#12AWG GREEN WIRE FOR UPPER RECEPTACLES AND PIT LIGHTS.

(9) 1" LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR LOWER LEFT LEVEL STEP SW., LOWER LEFT UPTHRUST SWITCHES AND LOWER LEFT SKIRT SW.

(10) 1" LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR LOWER RIGHT LEVEL STEP SW., LOWER RIGHT UPTHRUST SWITCHES, LOWER RIGHT SKIRT SW., MISSING STEP DETECTOR AND WORN STEP/CHAIN WHEEL SENSORS.

(11) 1" LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR UPPER LEFT LEVEL STEP SW., UPPER LEFT BROKEN HANDRAIL SW., UPPER LEFT SKIRT SW., MOTOR PIT SW., UPPER LEFT HANDRAIL SPEED SENSOR, MISSING STEP DETECTOR AND WORN STEP/CHAIN WHEEL SENSORS.

(12) 1" LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR UPPER RIGHT LEVEL STEP SW., UPPER RIGHT BROKEN HANDRAIL SW., UPPER RIGHT SKIRT SW., AND UPPER RIGHT HANDRAIL SPEED SENSOR.

(13) .50" LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR LOWER KEY SWITCH.

(14) .50" LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR UPPER KEY SWITCH.

(15) .50" LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR LOWER TRAFFIC LIGHTS.

(16) .50" LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR UPPER TRAFFIC LIGHTS.

(17) .50 LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR LOWER E-STOP AND ALARM SWITCHES.

(18) .50 LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR UPPER E-STOP AND ALARM SWITCHES.

(19) 1.50" LIQUID TIGHT FLEXIBLE AND RIGID METAL CONDUIT (RIGID ON INCLINE) CONTAINING (1)-WHITE WIRE BUNDLE, WIRE NUMBERS 1-25 (#18AWG), WIRE NUMBERS 26-33 (#12AWG) AND (1)-5 CONDUCTOR DEVICE NET CABLE. REFER TO LISTED ASSIGNED WIRING DIAGRAMS.

(20) .50" LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING (1)-2#14AWG SHIELDED PAIR W/JACKET FOR BRAKE COIL #1. (1-PAIR NOT USED)

(21) .50" LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING (1)-2#14AWG SHIELDED PAIR W/JACKET FOR BRAKE COIL #2. (1-PAIR NOT USED)

(22) 1." LIQUID TIGHT FLEXIBLE CONDUIT CONTAINING MOTOR WIRING. REFER TO LISTED ASSIGNED WIRING DIAGRAMS.

(23) 1.25" LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR RIGHT SIDE SAFETY SWITCHES, KEY SWITCH AND MISC. CONNECTIONS. REFER TO LISTED ASSIGNED WIRING DIAGRAM.

(24) 1.50" LIQUID TIGHT FLEXIBLE AND RIGID METAL CONDUIT CONTAINING (1)-YELLOW WIRE BUNDLE, WIRE NUMBERS 1-19 (#18AWG), WIRE NUMBERS 20-25 (#12AWG) AND (1)-5 CONDUCTOR DEVICE NET CABLE.

(25) 1" LIQUID TIGHT FLEXIBLE AND RIGID METAL CONDUIT CONTAINING (1)-4 CONDUCTOR SHIELDED CABLE FOR ENCODER.

(26) .75 LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING WIRING FOR HEATERS.

(27) .50 LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING (2)-#14AWG BLACK WIRES FOR HEATER THERMOSTAT WIRING.

(28) .50 LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING (1)-#18AWG BROWN WIRE, (1)-#18AWG BLACK WIRE AND (1)-#18AWG RED WIRE FOR TRAFFIC LIGHTS AND (1)-#18AWG BROWN WIRE AND (1)-#18AWG BLUE WIRE FOR COMBPLATE LIGHTING.

(29) ENCODER CABLE W/CONNECTOR.

(30) .50 LIQUID TIGHT FLEXIBLE METAL CONDUIT CONTAINING (1)-#12AWG BLACK WIRE, (1)-#12AWG WHITE WIRE AND (1)-#12AWG GREEN WIRE FOR MOTOR AREA RECEPTACLE.

NOTES:

1) ALL WIRING TO REMOTE CONTROL LOCATION IS TO BE AN ADDITIONAL LENGTH IN FEET EXTRA SPECIFIED ON SHEET 37 FROM UPPER END TO ACCOMMODATE FOR REMOTE LOCATED CONTROLLER, FOREIGN VOLTAGE J-BOX E600 AND HEATER DISCONNECT.

2) LOW VOLTAGE WIRING MUST BE IN SEPARATE CONDUIT RUNS FROM HIGH VOLTAGE WIRING.

3) J-BOX(S) BY OTHERS MAY BE INSTALLED IN REMOTE MACHINE ROOM TO ACCOMMODATE FIELD INTERCONNECTION WIRING FROM ESCALATOR TRUSS TO CONTROL ROOM.

4) FOR WIRING, REFER TO LISTED ASSIGNED WIRING DIAGRAMS.

WAS 935412D70

TOLERANCE UNLESS SHOWN
INCH [METRIC]

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 10.00

REV	DATE	CH'K	APP'D
-	03-19-07	DA	ASB

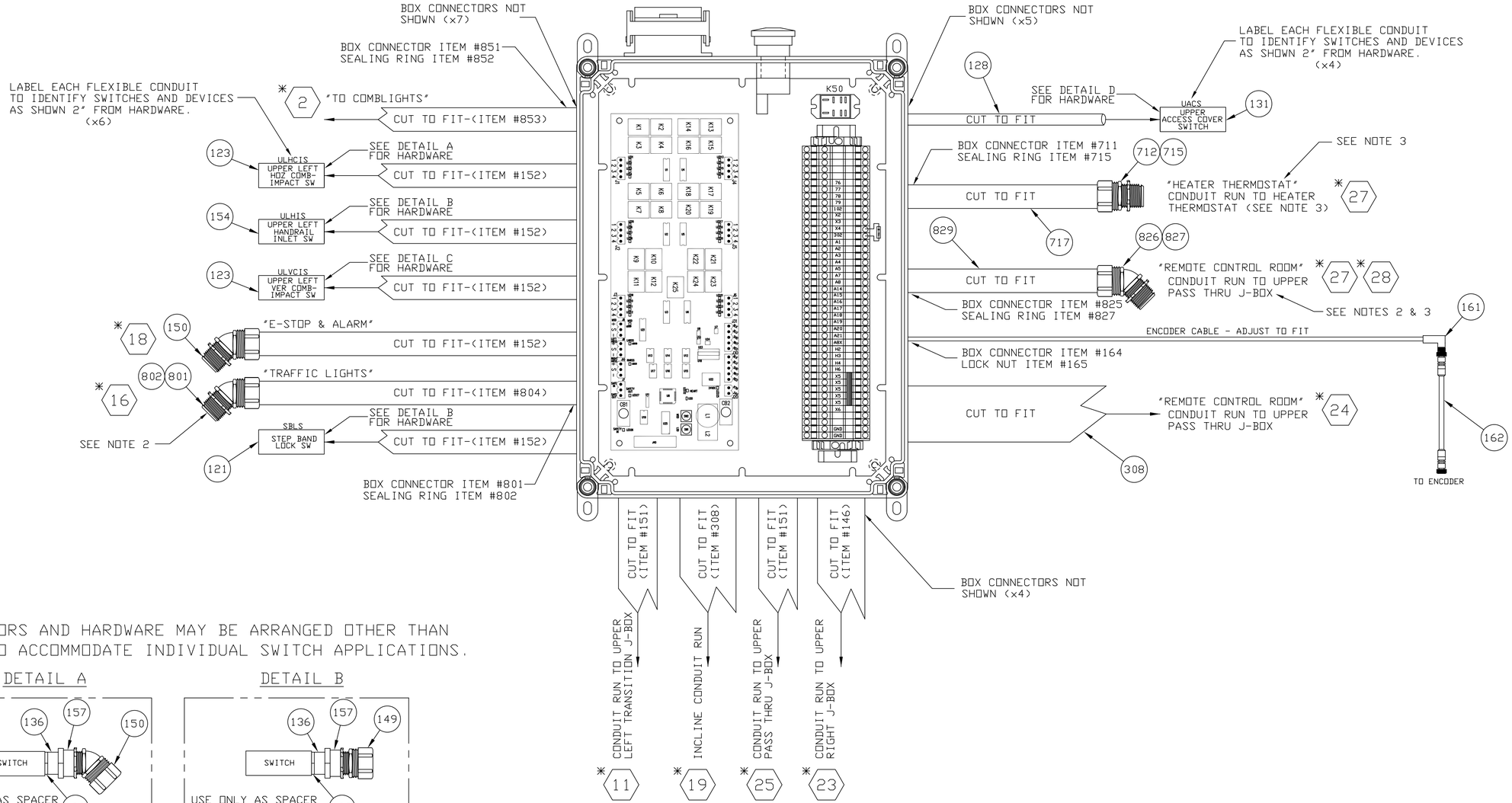
DRAWN
D. ANDERSON

NAME
ASSEMBLY, ELECTRICAL, TRUSS

SHEET 38 D

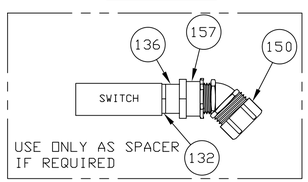
6013188035_24

J-BOX, UPPER LEFT, E300

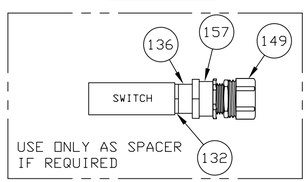


NOTE:
CONNECTORS AND HARDWARE MAY BE ARRANGED OTHER THAN SHOWN TO ACCOMMODATE INDIVIDUAL SWITCH APPLICATIONS.

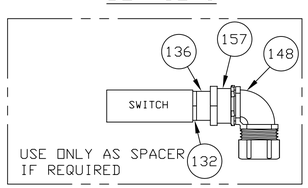
DETAIL A



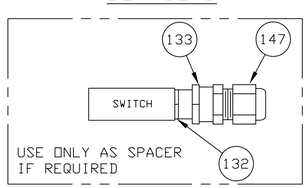
DETAIL B



DETAIL C



DETAIL D



NOTES:

1) ASSEMBLE FLEXIBLE METAL CONDUIT, DEVICES AND HARDWARE AS SPECIFIED.
2) WHEN TRAFFIC LIGHTS NOT REQUIRED, PLUG HOLE IN J-BOX USING ITEM #803.
3) WHEN HEATER THERMOSTAT NOT REQUIRED, PLUG HOLE IN J-BOX USING ITEM #828.
4) ALL LABELS ARE TO BE OIL AND WATER RESISTANT AND ATTACHED TO LOCATIONS SPECIFIED.
5) WIRE PER LISTED ASSIGNED WIRING DIAGRAMS.
*6) SEE SHEETS 2 & 3.

WAS 935412D70

INCH [METRIC] DIMENSIONS	
TOLERANCE UNLESS SHOWN	
SOURCE/SPEC#/FINISH/WT	
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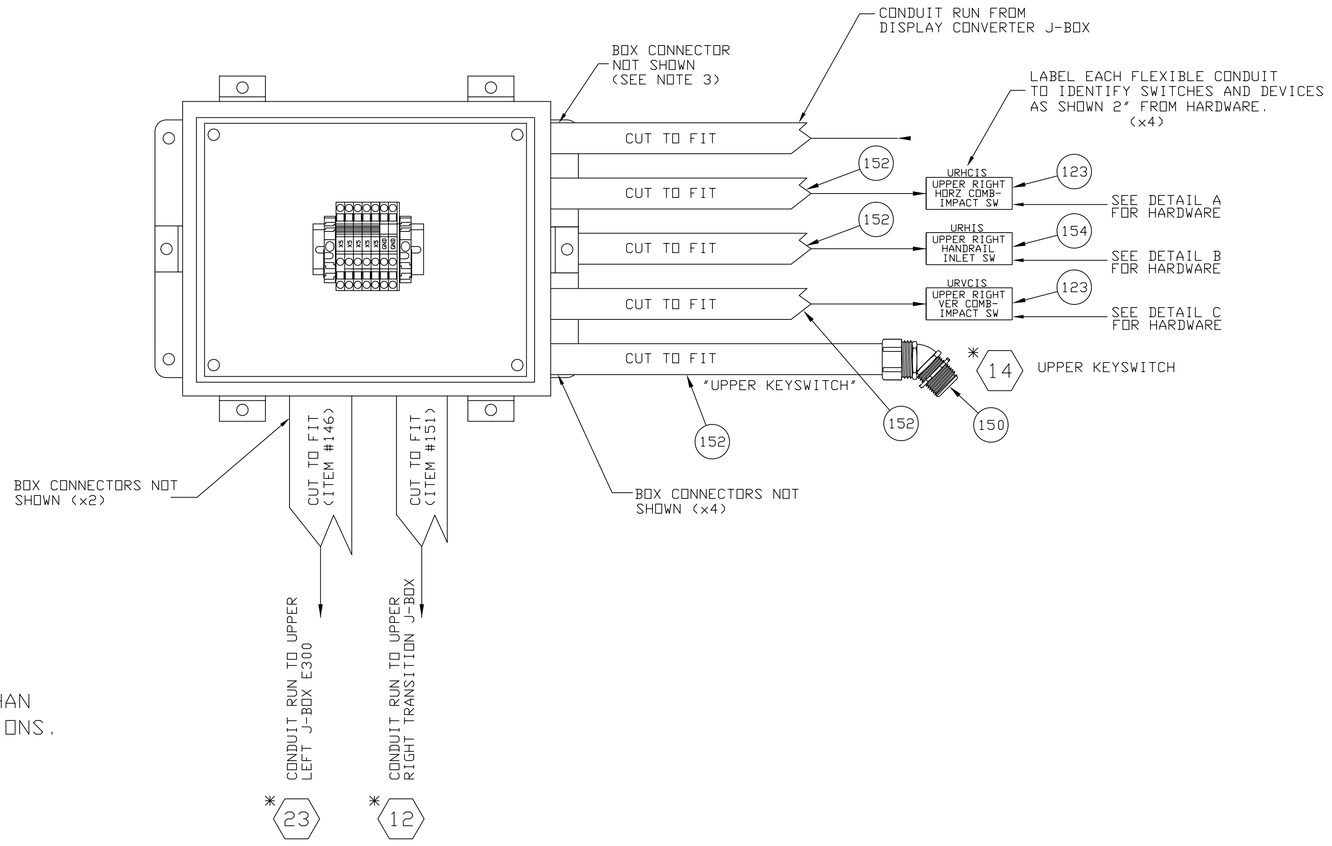
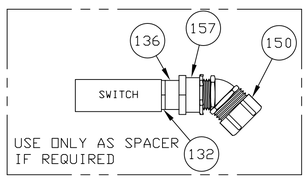
PLOT SCALE: = 2.00	
REV - DATE 03-19-07 CH'K DA APP'D ASB F	
DRAWN D. ANDERSON	
KONE	
NAME ASSEMBLY, ELECTRICAL, TRUSS	
SHEET 39	D
6013188035_24	

J-BOX, UPPER RIGHT

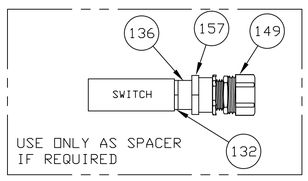


NOTE:
CONNECTORS AND HARDWARE MAY BE ARRANGED OTHER THAN SHOWN TO ACCOMMODATE INDIVIDUAL SWITCH APPLICATIONS.

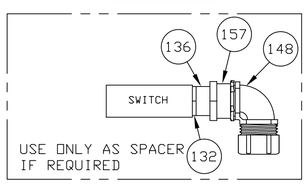
DETAIL A



DETAIL B



DETAIL C



NOTES:

1) ASSEMBLE FLEXIBLE METAL CONDUIT, DEVICES AND HARDWARE AS SPECIFIED.
2) ALL LABELS ARE TO BE OIL AND WATER RESISTANT AND ATTACHED TO LOCATIONS SPECIFIED.
3) WHEN "OPTIONAL" TRUSS DISPLAY NOT REQUIRED, PLUG HOLE USING ITEM #604.
4) WIRE PER LISTED ASSIGNED WIRING DIAGRAMS.
* 5) SEE SHEETS 37 & 38.

WAS 935412D70

SHEET 5 OF 13

INCH [METRIC] DIMENSIONS
TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 2.00

REV	DATE	CH'K	APP'D	F
-	03-19-07	DA	ASB	

DRAWN
D. ANDERSON

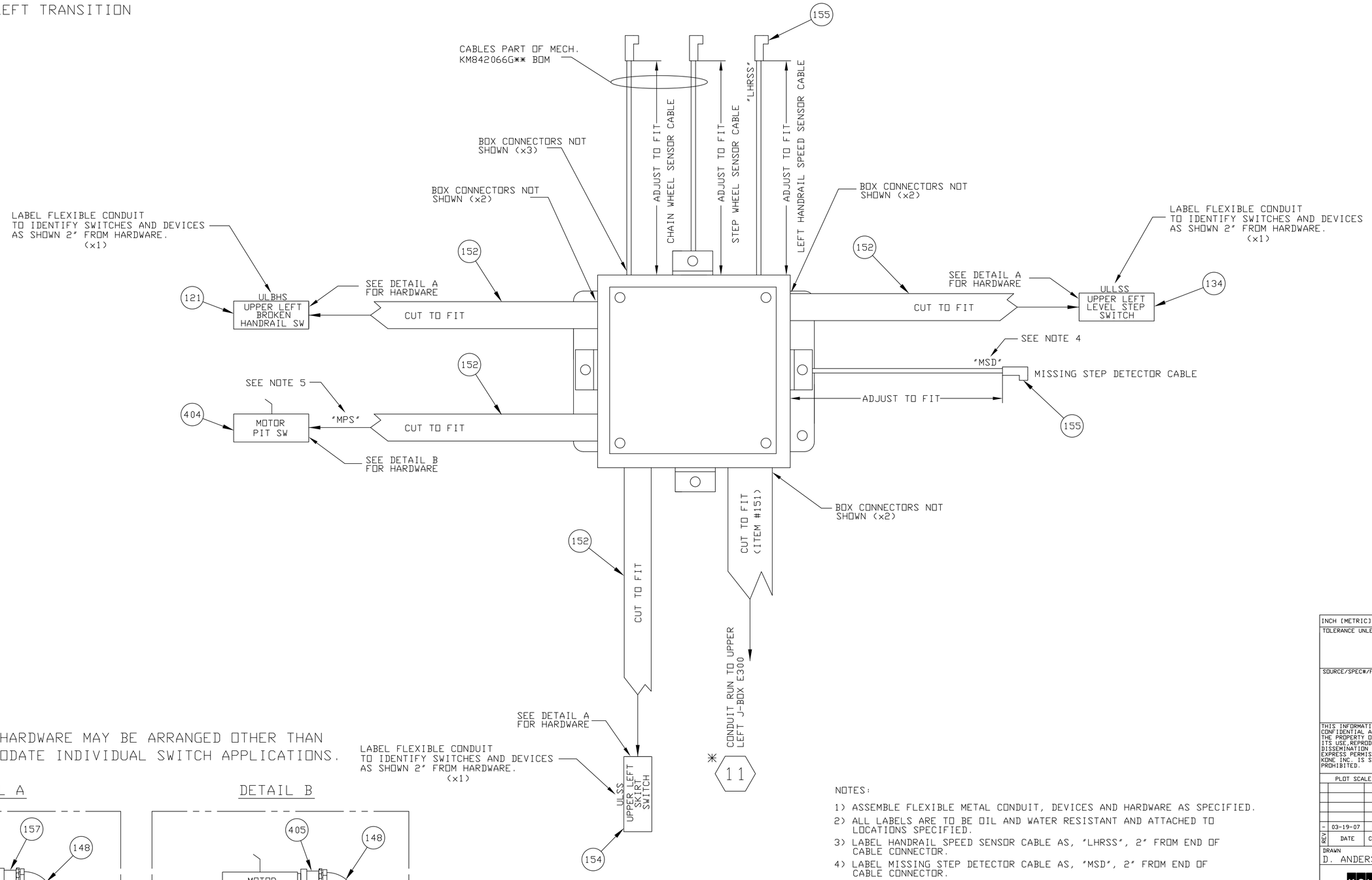
KONE

NAME
ASSEMBLY, ELECTRICAL, TRUSS

SHEET 40 D

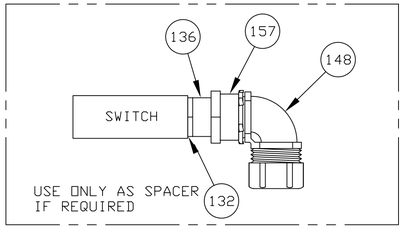
6013188035_24

J-BOX, UPPER LEFT TRANSITION

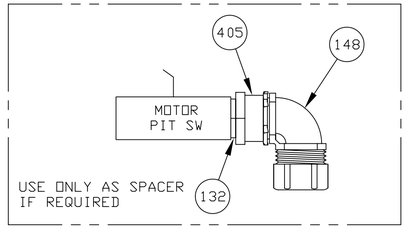


NOTE:
CONNECTORS AND HARDWARE MAY BE ARRANGED OTHER THAN SHOWN TO ACCOMMODATE INDIVIDUAL SWITCH APPLICATIONS.

DETAIL A



DETAIL B



NOTES:

1) ASSEMBLE FLEXIBLE METAL CONDUIT, DEVICES AND HARDWARE AS SPECIFIED.
2) ALL LABELS ARE TO BE OIL AND WATER RESISTANT AND ATTACHED TO LOCATIONS SPECIFIED.
3) LABEL HANDRAIL SPEED SENSOR CABLE AS, "LHRSS", 2" FROM END OF CABLE CONNECTOR.
4) LABEL MISSING STEP DETECTOR CABLE AS, "MSD", 2" FROM END OF CABLE CONNECTOR.
5) LABEL MOTOR PIT SWITCH FLEXIBLE CONDUIT AS, "MPS", 2" FROM SWITCH/CONDUIT HARDWARE
6) WIRE PER LISTED ASSIGNED WIRING DIAGRAMS.
✳ 7) SEE SHEETS 37 & 38.

WAS 935412D70

INCH [METRIC] DIMENSIONS	
TOLERANCE UNLESS SHOWN	
SOURCE/SPEC#/FINISH/WT	
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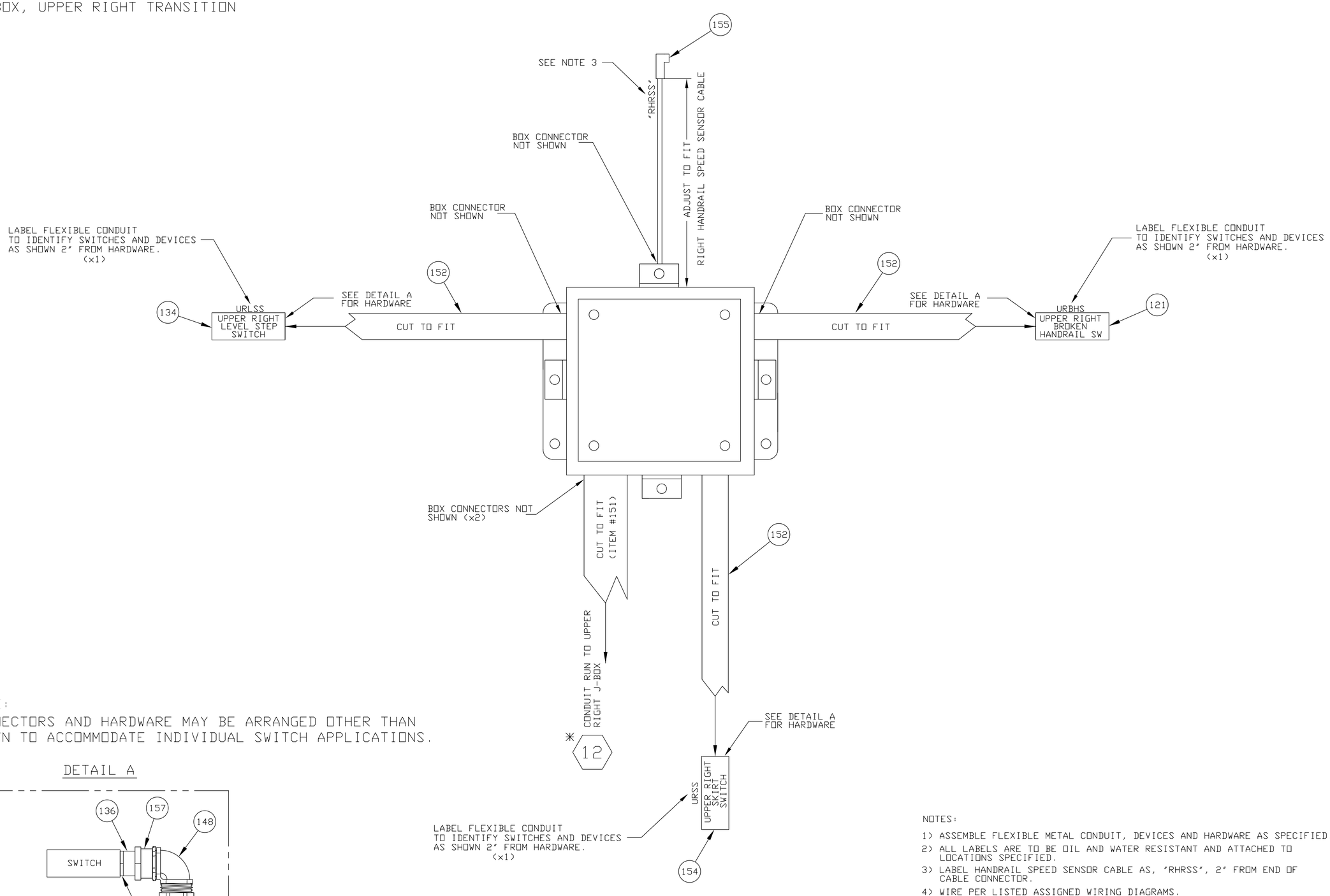
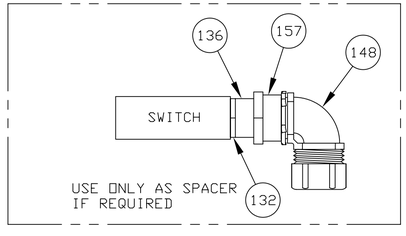
PLOT SCALE: 1.50	
REV	DATE / CH'K / APP'D
-	03-19-07 / DA / ASB
DRAWN	D. ANDERSON
NAME	ASSEMBLY, ELECTRICAL, TRUSS
SHEET	41
SIZE	D
	6013188035_24

J-BOX, UPPER RIGHT TRANSITION



NOTE:
CONNECTORS AND HARDWARE MAY BE ARRANGED OTHER THAN SHOWN TO ACCOMMODATE INDIVIDUAL SWITCH APPLICATIONS.

DETAIL A



NOTES:

1) ASSEMBLE FLEXIBLE METAL CONDUIT, DEVICES AND HARDWARE AS SPECIFIED.
2) ALL LABELS ARE TO BE OIL AND WATER RESISTANT AND ATTACHED TO LOCATIONS SPECIFIED.
3) LABEL HANDRAIL SPEED SENSOR CABLE AS, "RHRSS", 2" FROM END OF CABLE CONNECTOR.
4) WIRE PER LISTED ASSIGNED WIRING DIAGRAMS.
✳5) SEE SHEETS 37 & 38.

WAS 935412D70

SHEET 7 OF 13

INCH [METRIC] DIMENSIONS
TOLERANCE UNLESS SHOWN
SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 1.50

REV	DATE	CH'K	APP'D
F	03-19-07	DA	ASB

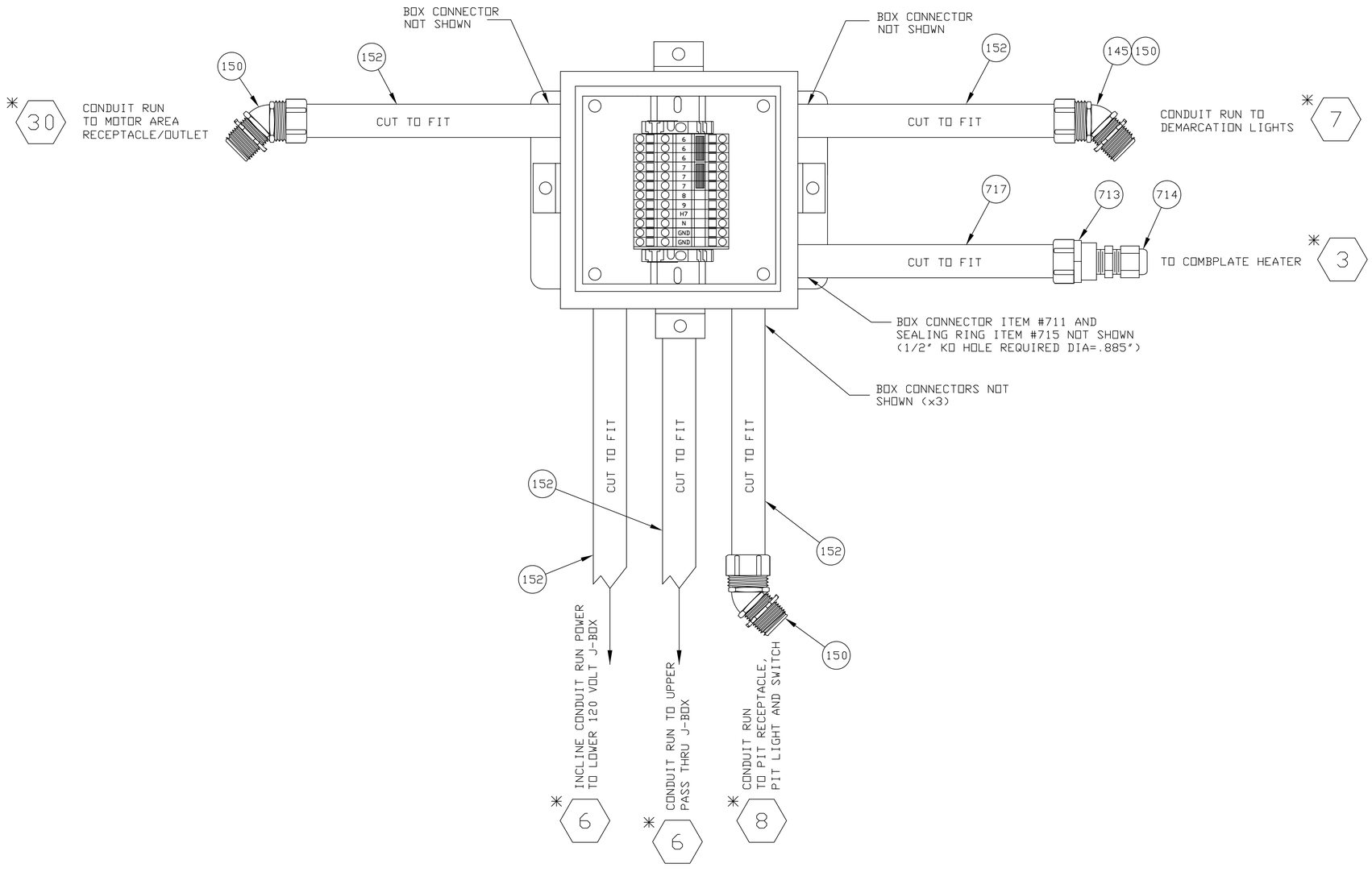
DRAWN
D. ANDERSON

NAME
ASSEMBLY, ELECTRICAL, TRUSS

SHEET 42 D

6013188035_24

J-BOX, UPPER, 120 VOLT



NOTES:

1) INSTALL FLEXIBLE METAL CONDUIT AS SPECIFIED.
2) WIRE PER LISTED ASSIGNED WIRING DIAGRAMS.
3) SEE SHEETS 37 & 38.

WAS 935412D70

SHEET 8 OF 13

INCH [METRIC] DIMENSIONS
TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 1.50

REV	DATE	CH'K	APP'D
-	03-19-07	DA	ASB

DRAWN
D. ANDERSON

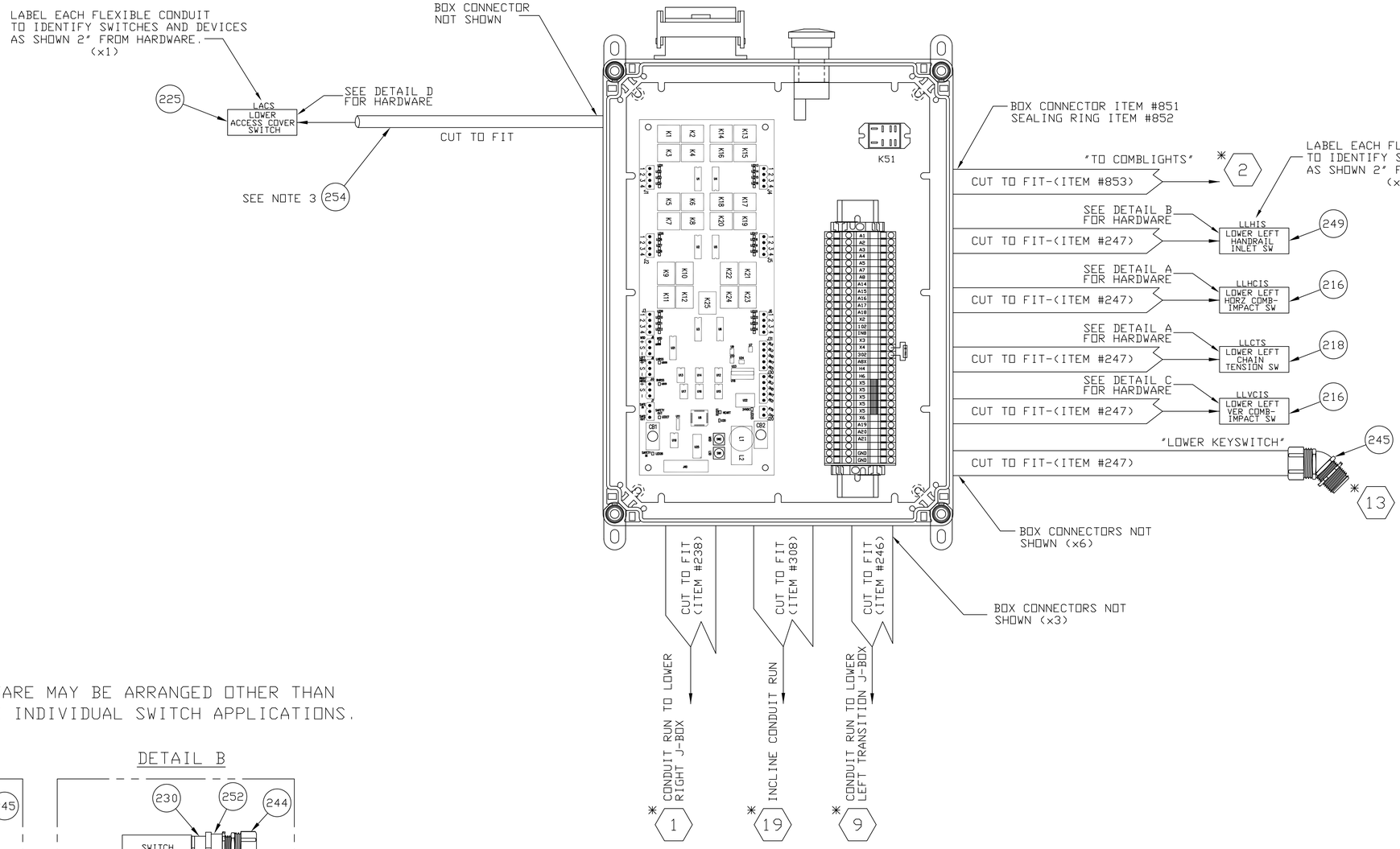
KONE

NAME
ASSEMBLY, ELECTRICAL, TRUSS

SHEET 43 D

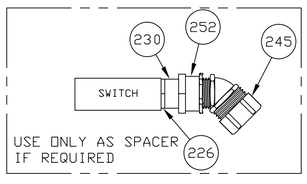
6013188035_24

J-BOX, LOWER LEFT, E500

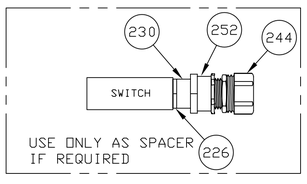


NOTE:
CONNECTORS AND HARDWARE MAY BE ARRANGED OTHER THAN SHOWN TO ACCOMMODATE INDIVIDUAL SWITCH APPLICATIONS.

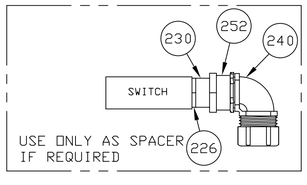
DETAIL A



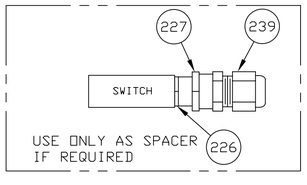
DETAIL B



DETAIL C



DETAIL D



NOTES:

1) ASSEMBLE FLEXIBLE METAL CONDUIT, DEVICES AND HARDWARE AS SPECIFIED.
2) ALL LABELS ARE TO BE OIL AND WATER RESISTANT AND ATTACHED TO LOCATIONS SPECIFIED.
3) CUT CABLE TO LENGTH SPECIFIED PLUS AN ADDITIONAL 24" TO ACCOMMODATE FOR WIRING INSIDE OF J-BOX. STRIP OUTER JACKET OF CABLE 24" FROM END. DO NOT REMOVE JACKETS OF INDIVIDUAL WIRES.
4) WIRE PER LISTED ASSIGNED WIRING DIAGRAMS.
*5) SEE SHEETS 37 & 38.

WAS 935412D70

SHEET 9 OF 13

INCH [METRIC] DIMENSIONS	
TOLERANCE UNLESS SHOWN	
SOURCE/SPEC#/FINISH/WT	
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PLOT SCALE: = 2.00	

REV	DATE	CH'K	APP'D
-	03-19-07	DA	ASB

DRAWN
D. ANDERSON

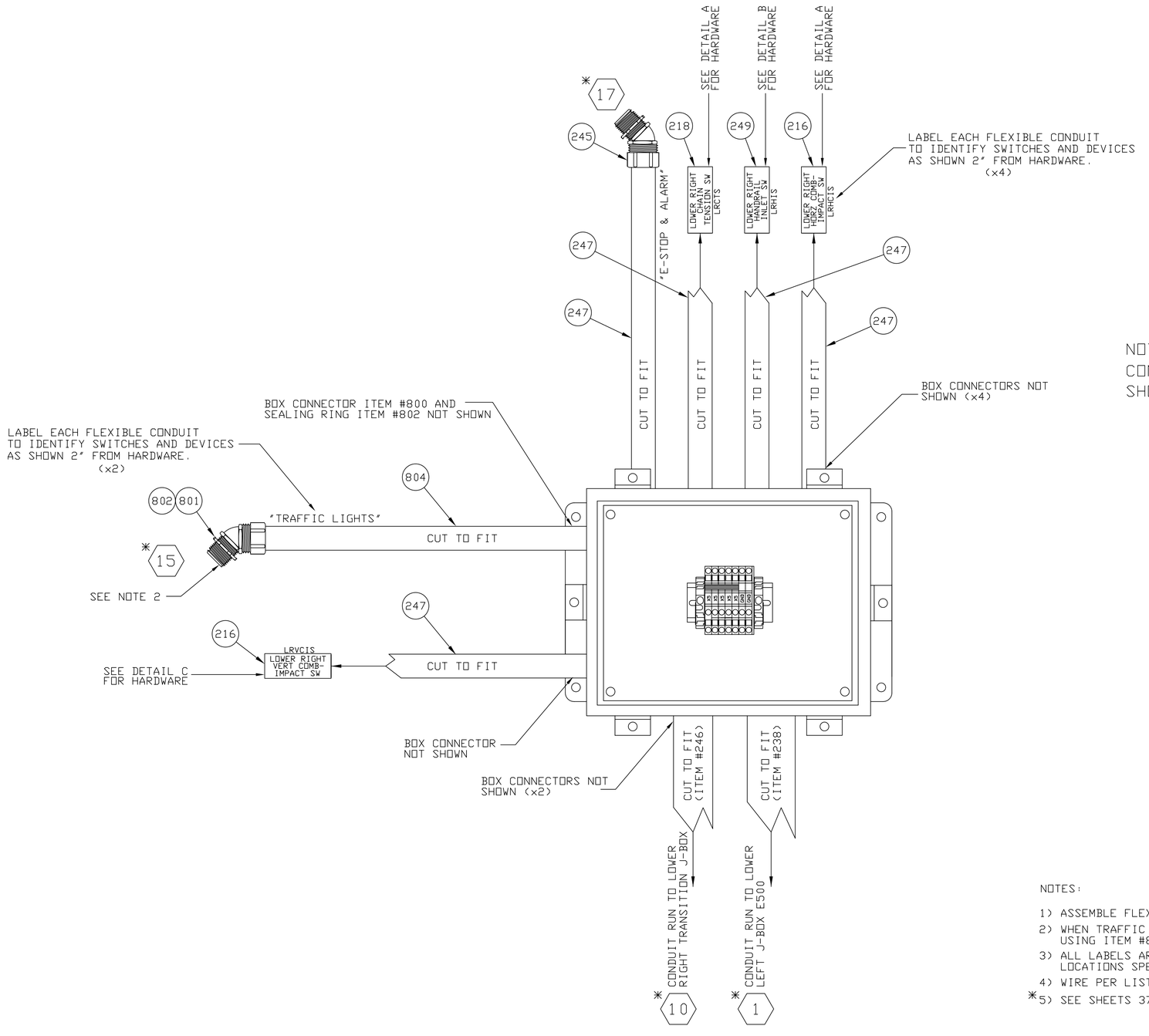
KONE

NAME
ASSEMBLY, ELECTRICAL, TRUSS

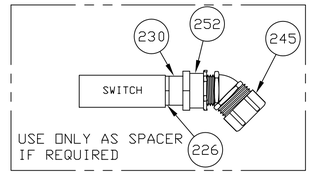
SHEET 44 D

6013188035_24

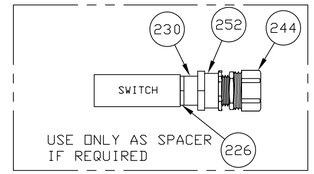
J-BOX, LOWER RIGHT



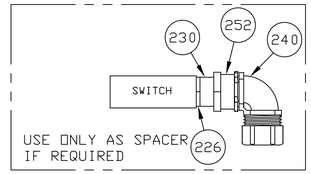
DETAIL A



DETAIL B



DETAIL C



NOTE:
CONNECTORS AND HARDWARE MAY BE ARRANGED OTHER THAN SHOWN TO ACCOMMODATE INDIVIDUAL SWITCH APPLICATIONS.

NOTES:

1) ASSEMBLE FLEXIBLE METAL CONDUIT, DEVICES AND HARDWARE AS SPECIFIED.
2) WHEN TRAFFIC LIGHTS NOT REQUIRED, PLUG HOLE IN J-BOX USING ITEM #803.
3) ALL LABELS ARE TO BE OIL AND WATER RESISTANT AND ATTACHED TO LOCATIONS SPECIFIED.
4) WIRE PER LISTED ASSIGNED WIRING DIAGRAMS.
5) SEE SHEETS 37 & 38.

WAS 935412D70

INCH [METRIC] DIMENSIONS
TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 2.00

REV	DATE	CH'K	APP'D	F
-	03-19-07	DA	ASB	

DRAWN
D. ANDERSON

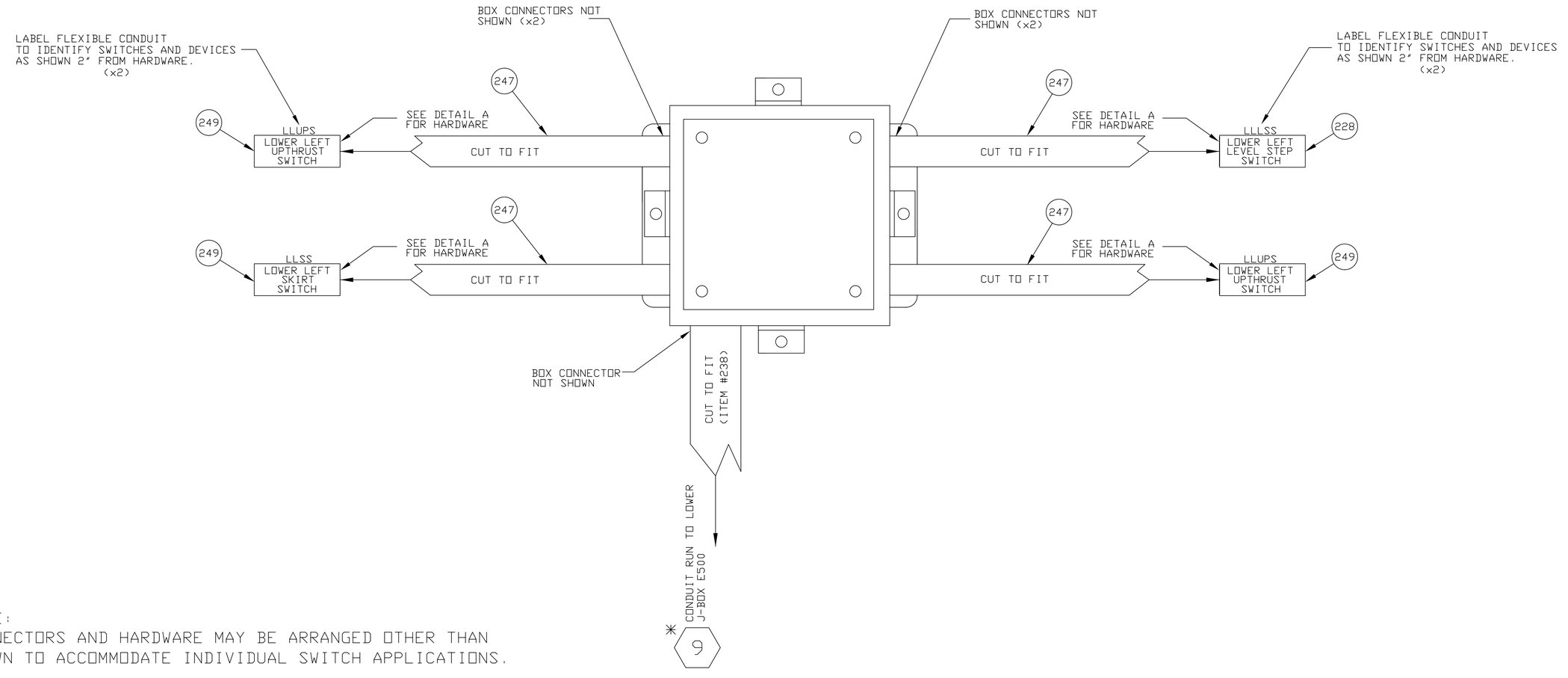
KONE

NAME
ASSEMBLY, ELECTRICAL, TRUSS

SHEET 45 D

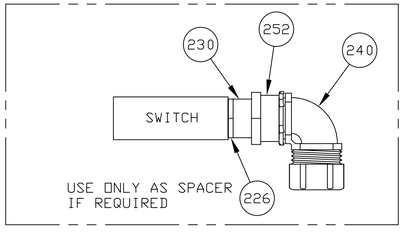
6013188035_24

J-BOX, LOWER LEFT TRANSITION



NOTE:
CONNECTORS AND HARDWARE MAY BE ARRANGED OTHER THAN SHOWN TO ACCOMMODATE INDIVIDUAL SWITCH APPLICATIONS.

DETAIL A



NOTES:

1) ASSEMBLE FLEXIBLE METAL CONDUIT, DEVICES AND HARDWARE AS SPECIFIED.
2) ALL LABELS ARE TO BE OIL AND WATER RESISTANT AND ATTACHED TO LOCATIONS SPECIFIED.
3) WIRE PER LISTED ASSIGNED WIRING DIAGRAMS.
4) SEE SHEETS 37 & 38.

WAS 935412D70

INCH [METRIC] DIMENSIONS
TOLERANCE UNLESS SHOWN
SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 1.50

REV	DATE	CH'K	APP'D
-	03-19-07	DA	ASB

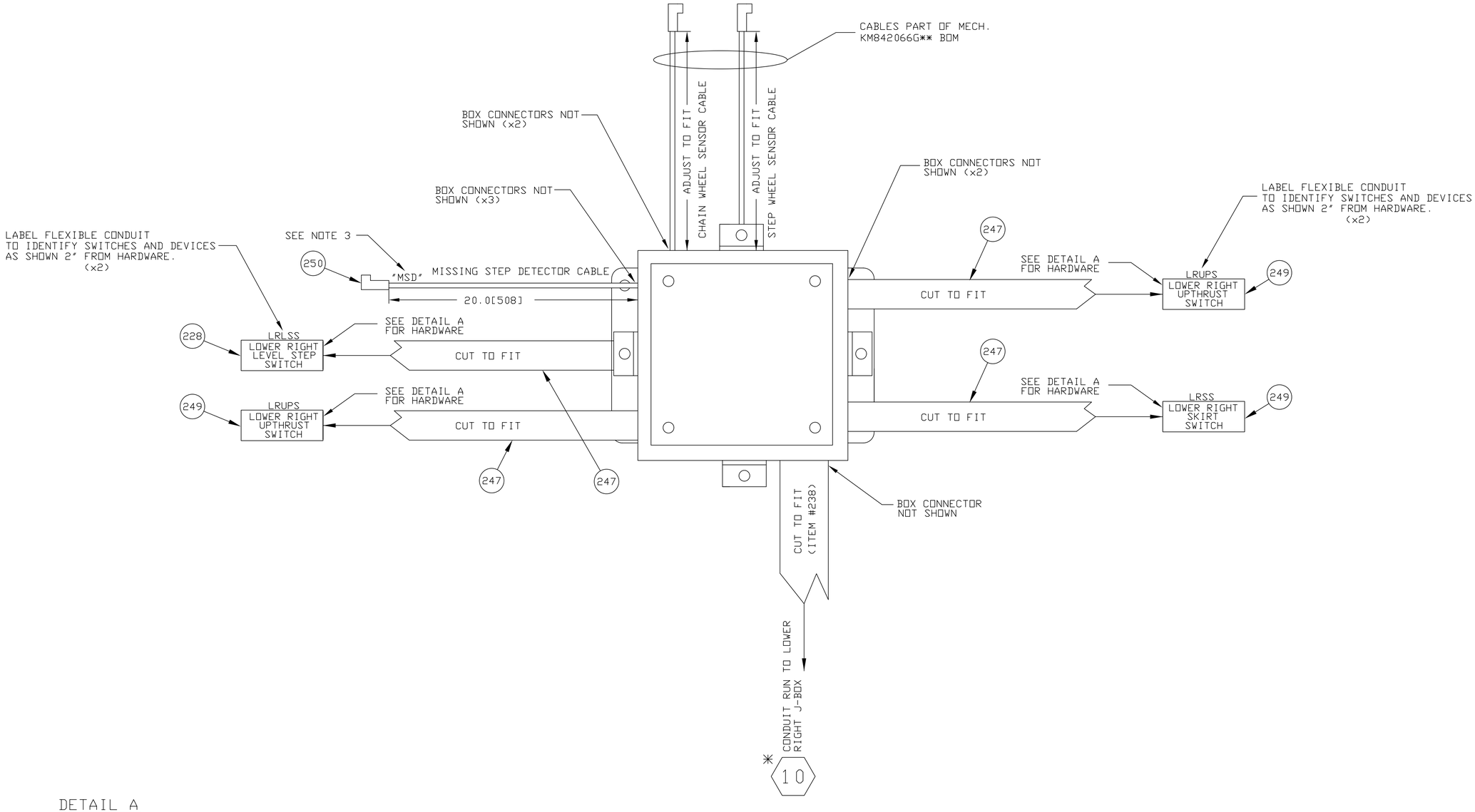
DRAWN
D. ANDERSON

NAME
ASSEMBLY, ELECTRICAL, TRUSS

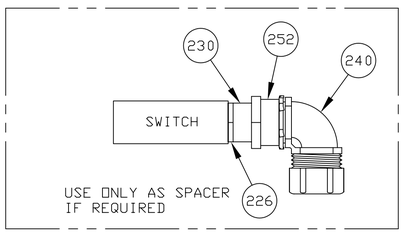
SHEET 46 D

6013188035_24

J-BOX, LOWER RIGHT TRANSITION



DETAIL A



NOTES:

1) ASSEMBLE FLEXIBLE METAL CONDUIT, DEVICES AND HARDWARE AS SPECIFIED.
2) ALL LABELS ARE TO BE OIL AND WATER RESISTANT AND ATTACHED TO LOCATIONS SPECIFIED.
3) LABEL MISSING STEP DETECTOR CABLE AS, "MSD", 2" FROM END OF CABLE CONNECTOR.
4) WIRE PER LISTED ASSIGNED WIRING DIAGRAMS.
✳5) SEE SHEETS 37 & 38.

WAS 935412D70

SHEET 12 OF 13

INCH [METRIC] DIMENSIONS	
TOLERANCE UNLESS SHOWN	
SOURCE/SPEC#/FINISH/WT	
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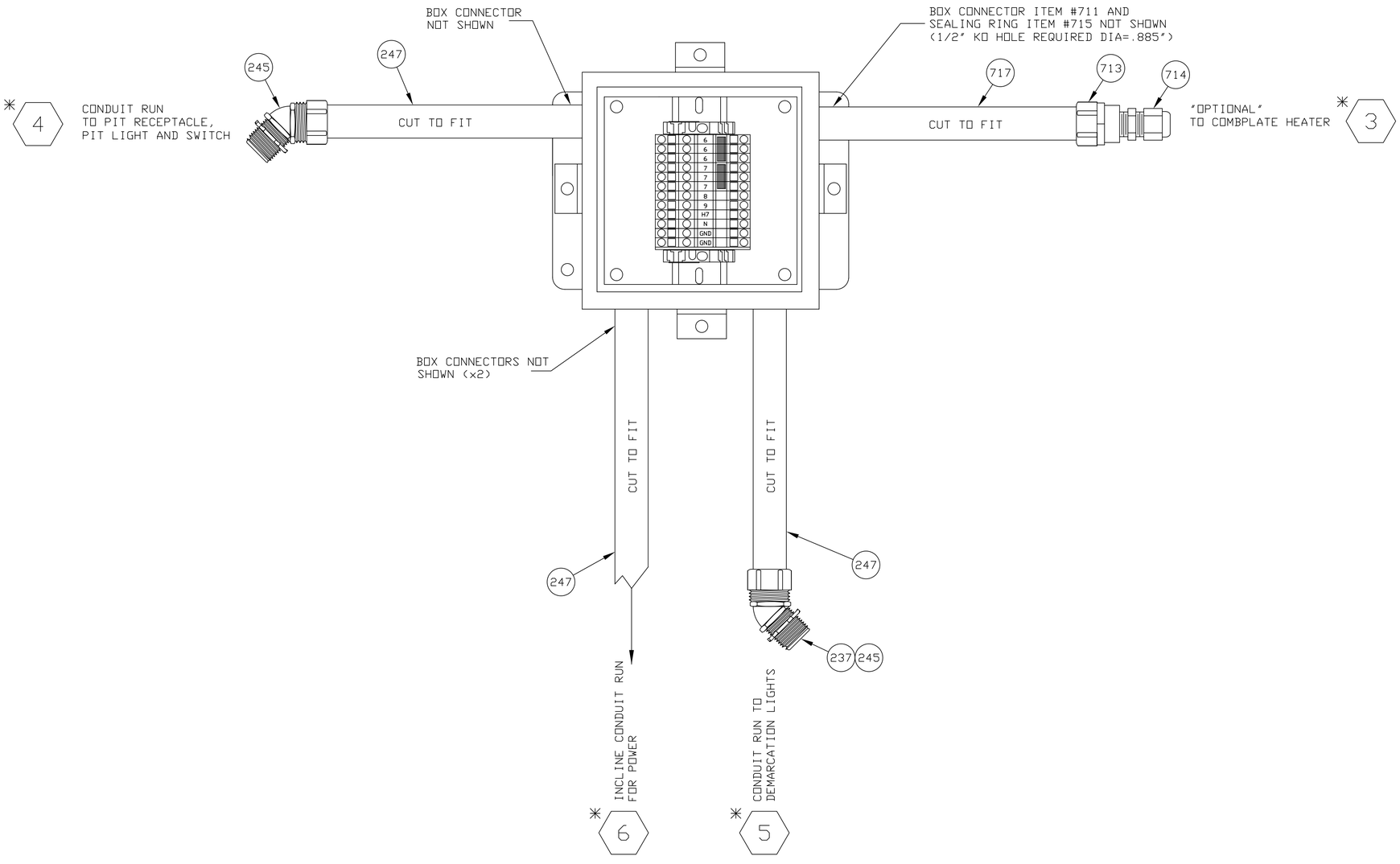
PLOT SCALE: = 1.50	
REV	-
DATE	03-19-07
CH'K	DA
APP'D	ASB
DRAWN	D. ANDERSON
NAME	ASSEMBLY, ELECTRICAL, TRUSS
SHEET	47
SIZE	D
6013188035_24	

J-BOX, LOWER, 120 VOLT



NOTES:

1) INSTALL FLEXIBLE METAL CONDUIT AS SPECIFIED.
2) WIRE PER LISTED ASSIGNED WIRING DIAGRAMS.
3) SEE SHEETS 37 & 38.

WAS 935412D70

SHEET 13 OF 13

INCH [METRIC] DIMENSIONS
TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 1.50

REV	DATE	CH'K	APP'D
F	03-19-07	DA	ASB

DRAWN
D. ANDERSON

NAME
ASSEMBLY, ELECTRICAL, TRUSS

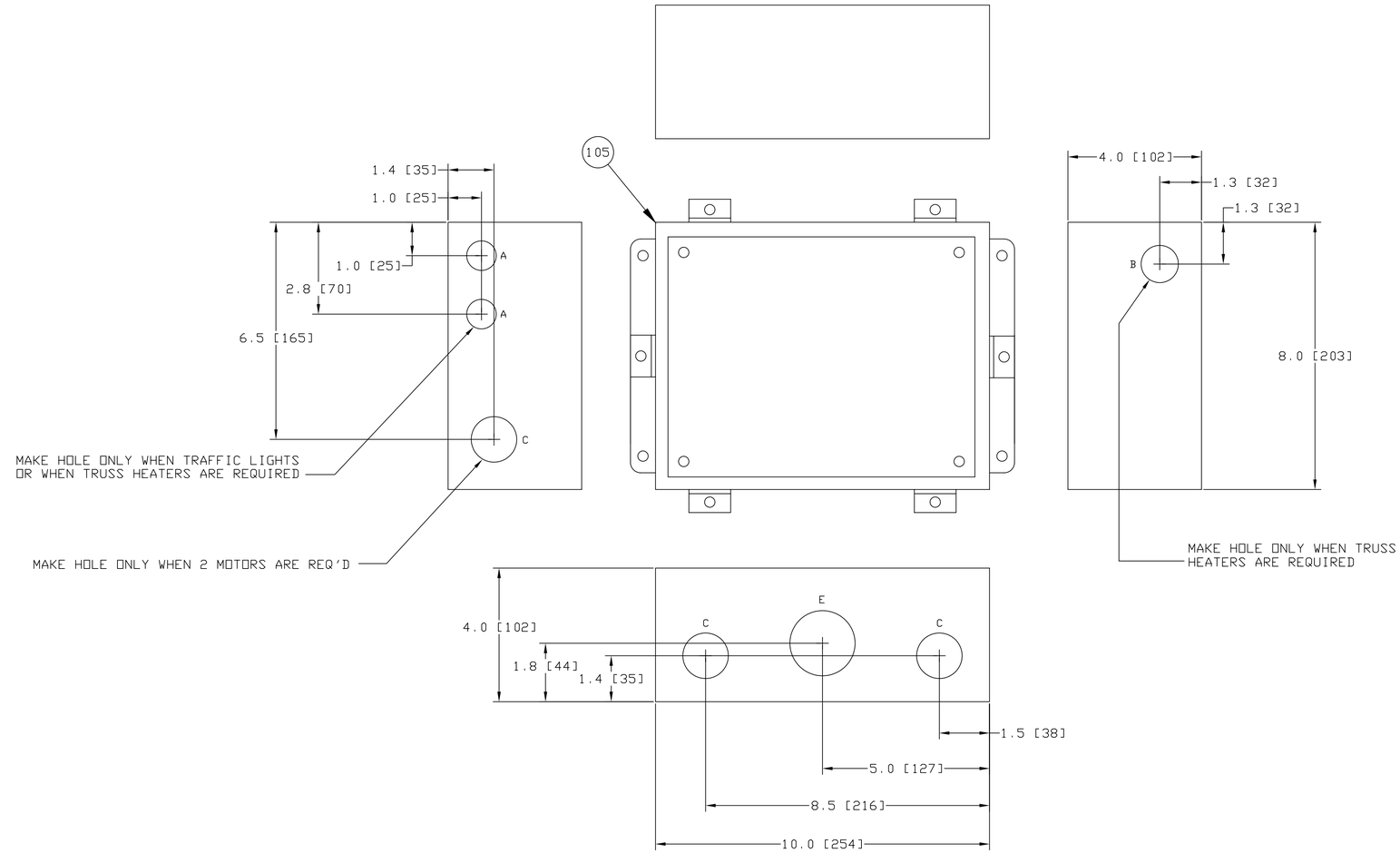
SHEET 48 D

6013188035_24

J-BOX, UPPER PASS THRU

HOLE	KO	DIAMETER
A	.5"	.885"
B	.75"	1.115"
C	1"	1.362"
D	1.25"	1.701"
E	1.50"	1.951"

MAKE HOLES IN LOCATIONS SHOWN



NOTE:

1) ADDITIONAL HOLES MAY BE REQUIRED PER JOB SPECIFIC REQUIREMENTS. MAKE HOLE(S) IN CONVENIENT LOCATION(S) AS NEEDED.

WAS 935412D71

SHEET 1 OF 2

INCH [METRIC] DIMENSIONS
TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 2.00

REV	DATE	CH'K	APP'D	F
-	03-19-07	DA	ASB	

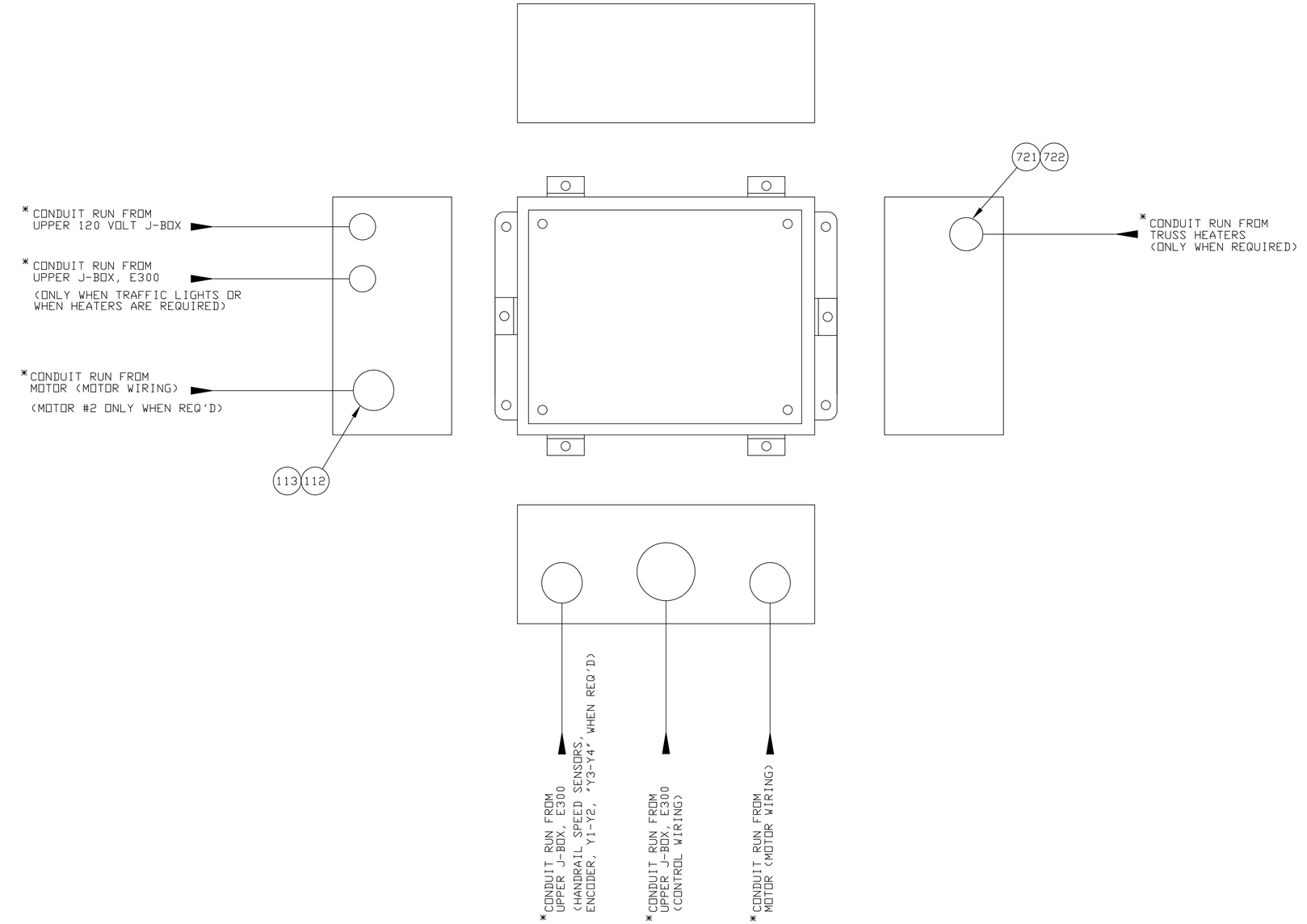
DRAWN
D. ANDERSON

KONE

NAME
J-BOX,
UPPER,
PASS THRU

SHEET 49 D

6013188035_25



INCH [METRIC] DIMENSIONS

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 2.00

REV	DATE	CH'K	APP'D
-	03-19-07	DA	ASB

F

DRAWN
D. ANDERSON

KONE

NAME
J-BOX,
UPPER,
PASS THRU

SHEET 50

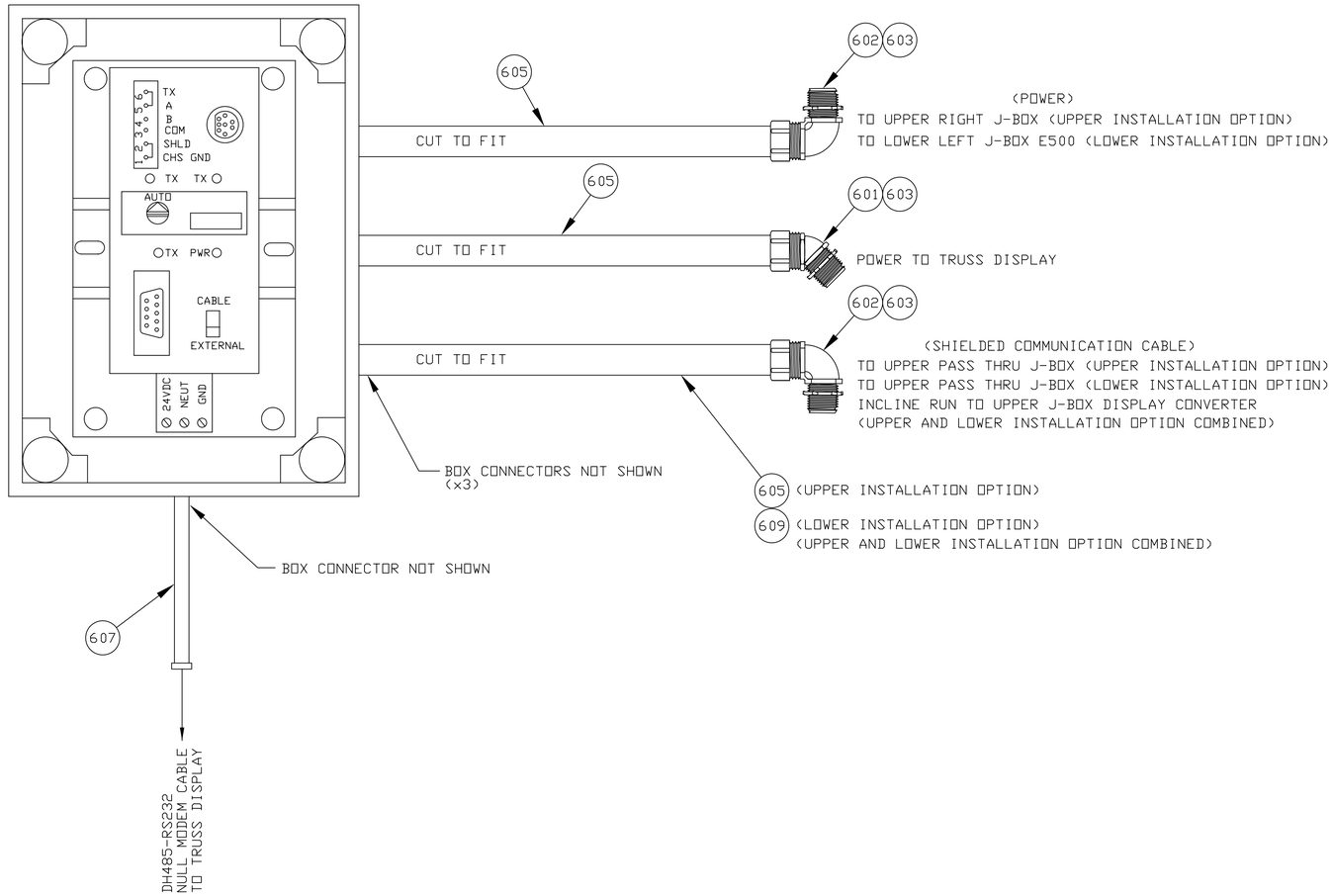
D

6013188035_25

WAS 935412D71

SHEET 2 OF 2

J-BOX, DISPLAY CONVERTER



NOTES:

1) ASSEMBLE FLEXIBLE METAL CONDUIT, TRUSS DISPLAY CABLE AND HARDWARE AS SPECIFIED.
2) WIRE PER LISTED ASSIGNED WIRING DIAGRAM.

WAS 935412D72

SHEET 1 OF 1

INCH [METRIC] DIMENSIONS	
TOLERANCE UNLESS SHOWN	
SOURCE/SPEC#/FINISH/WT	

PLOT SCALE: = 1.00

REV	DATE	CH'K	APP'D
F	03-19-07	DA	ASB

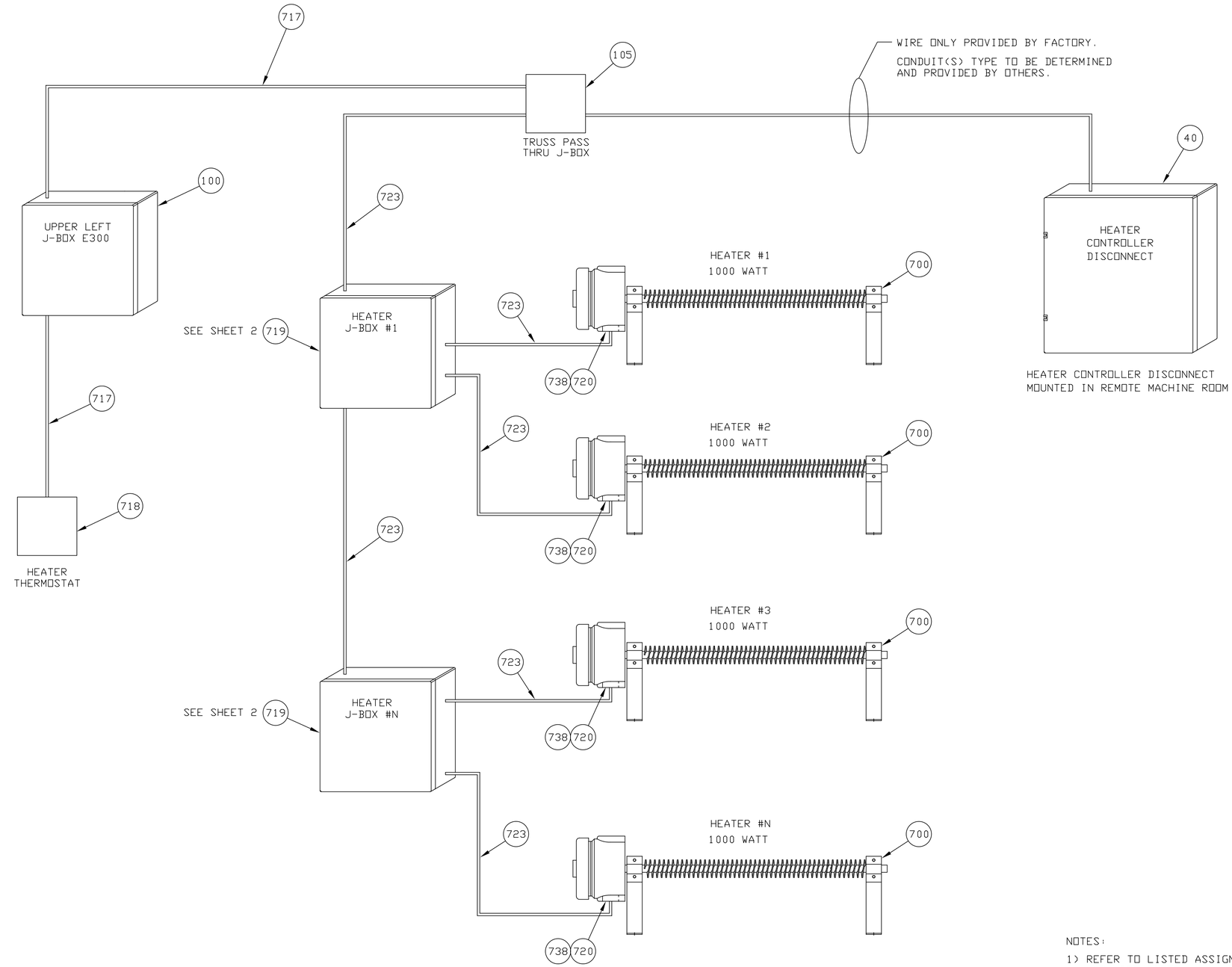
DRAWN
D. ANDERSON

KONE

NAME
J-BOX,
CONVERTER,
DISPLAY

SHEET 51 D

6013188035_26



NOTES:

1) REFER TO LISTED ASSIGNED WIRING DIAGRAM FOR WIRING AND WIRE SIZES.
2) PLUG ANY UNUSED HEATER J-BOX HOLES USING ITEM #724.

WAS 935412D73

SHEET 1 OF 2

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 1.00

REV	DATE	CH'K	APP'D
-	03-19-07	DA	ASB

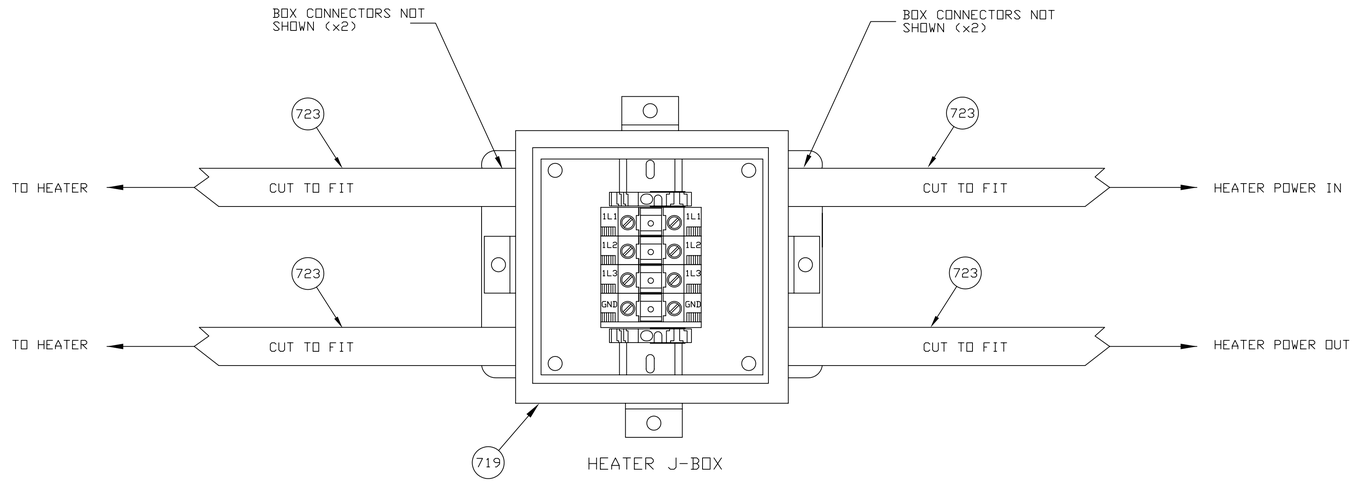
DRAWN
D. ANDERSON

KONE

NAME
ASSEMBLY, CALROD, HEATERS

SHEET 52 D

6013188035_27



NOTES:

1) ASSEMBLE FLEXIBLE METAL CONDUIT AS SPECIFIED.
2) WIRE PER LISTED ASSIGNED WIRING DIAGRAM.

WAS 935412D73

SHEET 2 OF 2

INCH [METRIC] DIMENSIONS
TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 1.50

REV	DATE	CH'K	APP'D	F
-	03-19-07	DA	ASB	

DRAWN
D. ANDERSON

NAME
ASSEMBLY, CALROD, HEATERS

SHEET 53

6013188035_27

ESCALATOR WIRING: LINE INPUT,SOFT START,AC DRIVE,ONE MOTOR & ONE 8" PM BRAKE

WIRING DIAGRAM NO.:	6013188035_28
PROJECT:	SEPTA OLNEY STATION AND 30TH ST. STATION
FRONT LINE NO.:	6013188
EQUIPMENT NO'S:	20253146 & 20253139
SUPPLY LINE NO'S:	8023427 & 8023425
NETWORK NO'S:	9030723 & 9030711

CONTROLLER TYPE :	METRA PLC TYPE: AB MICROLOGIX 1500
CONTROL VOLTAGE :	24VDC CLASS2
SINGLE MOTOR :	480VAC, 3PH, 60HZ
MOTOR POWER :	4.8KW(6.4HP)(EQ#20253146) & 10KW(13.4HP)(EQ#20253139)
BRAKES :	ONE 8" PERMANENT MAGNETIC BRAKE
STARTER :	SOFT START: AB SMC DIALOG PLUS
AC DRIVE :	FOR MAINTENANCE SPEED ONLY
RATED SPEED :	100FT/MIN
MAINTENANCE SPEED :	25FT/MIN

INDEX

SHEET DETAILS

54 INDEX
55 INPUT POWER, MOTOR CONTACTORS, MOTORS, SOFT STARTER, & AC DRIVE
56 BRAKE WIRING
57 AC DRIVE WIRING & PARAMETER SETTINGS
58 SOFT START TO CONTROLLER WIRING
59 SOFT START WIRING & PARAMETER SETTINGS

CONNECTIONS BY OTHERS:

SHEET & LOCATION ID	VOLTAGE	FUSING	FUNCTION
(2-8B)	480VAC - 3PH - 60HZ	SHEET 2 OF 6 (55)	CONTROLLER INPUT POWER

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
-	04/02/07	DA	ASB	

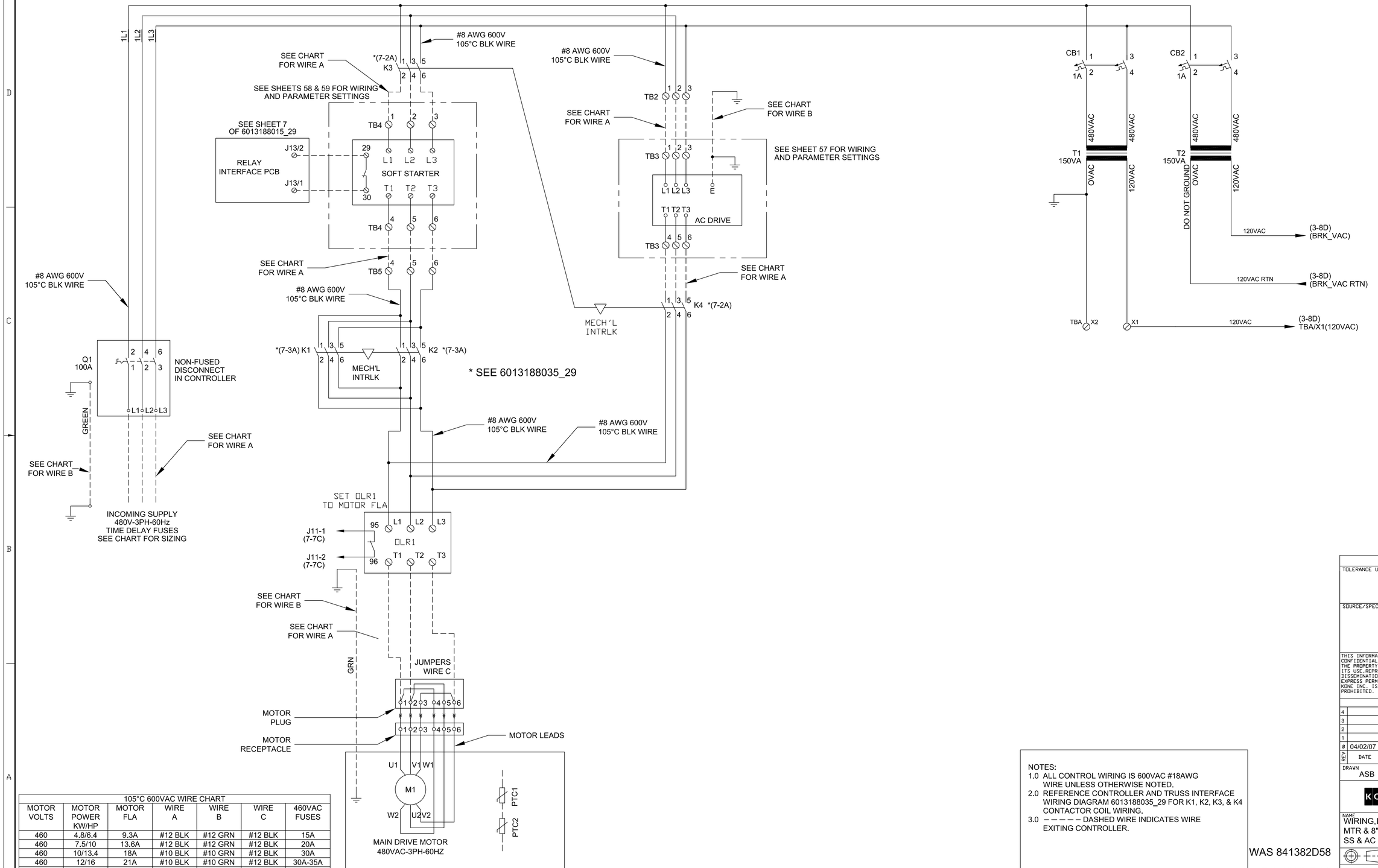
DRAWN ASB

KONE

NAME
WIRING,INPUT,1-MTR & 8'PM BRK, SS & AC DRIVE

SHEET 54 D

6013188035_28



105°C 600VAC WIRE CHART						
MOTOR VOLTS	MOTOR POWER KW/HP	MOTOR FLA	WIRE A	WIRE B	WIRE C	460VAC FUSES
460	4.8/6.4	9.3A	#12 BLK	#12 GRN	#12 BLK	15A
460	7.5/10	13.6A	#12 BLK	#12 GRN	#12 BLK	20A
460	10/13.4	18A	#10 BLK	#10 GRN	#12 BLK	30A
460	12/16	21A	#10 BLK	#10 GRN	#12 BLK	30A-35A
460	15/20	25A	#8 BLK	#8 GRN	#12 BLK	35A-40A

NOTES:
1.0 ALL CONTROL WIRING IS 600VAC #18AWG WIRE UNLESS OTHERWISE NOTED.
2.0 REFERENCE CONTROLLER AND TRUSS INTERFACE WIRING DIAGRAM 6013188035_29 FOR K1, K2, K3, & K4 CONTACTOR COIL WIRING.
3.0 – – – – – DASHED WIRE INDICATES WIRE EXITING CONTROLLER.

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D
4			
3			
2			
1			
ø	04/02/07	DA	ASB

DRAWN
ASB

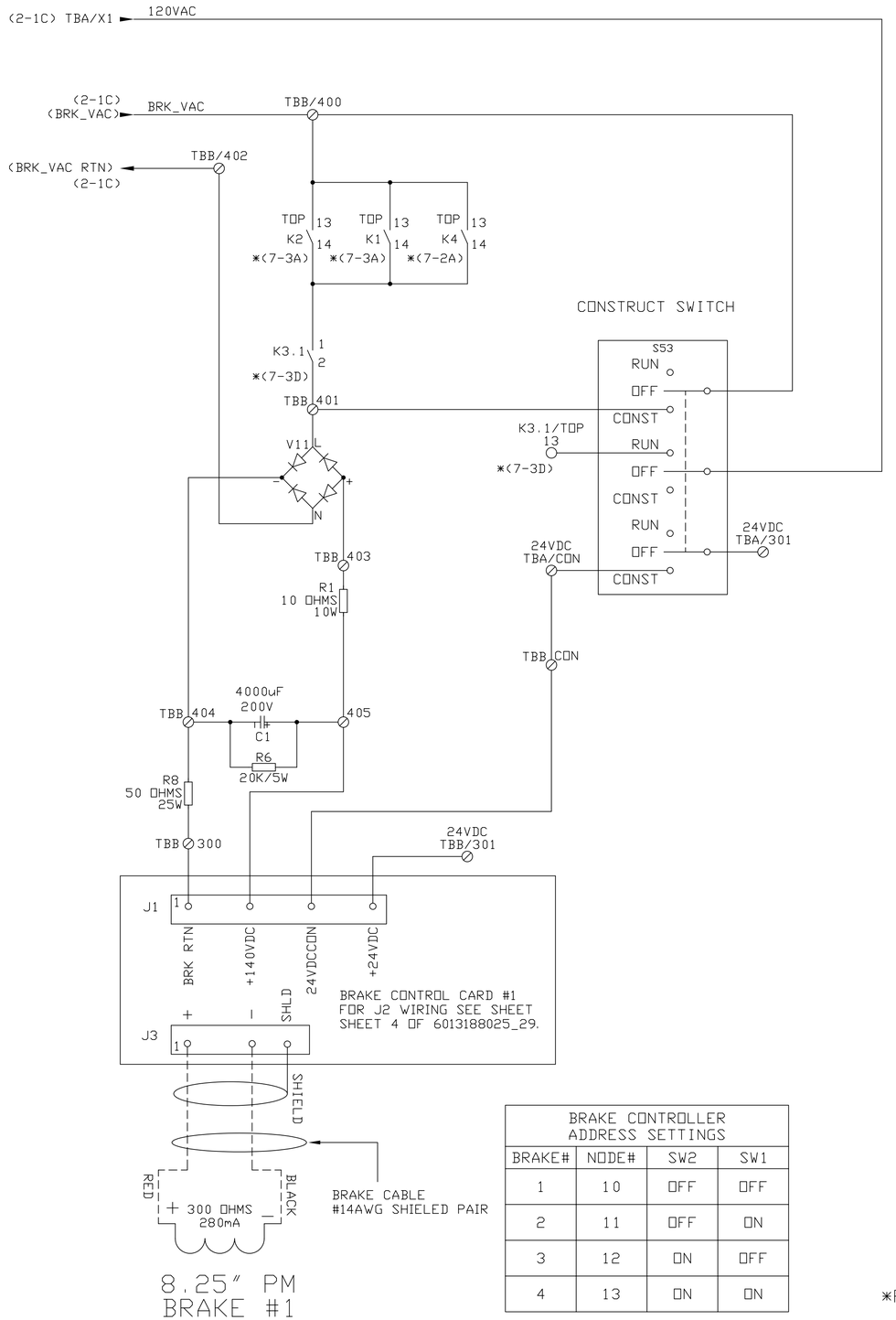
NAME
WIRING,INPUT,1-MTR & 8"PM BRK, SS & AC DRIVE

WAS 841382D58

SHEET 55 D

SHEET 2 OF 6

6013188035_28



BRAKE CONTROLLER ADDRESS SETTINGS			
BRAKE#	NODE#	SW2	SW1
1	10	OFF	OFF
2	11	OFF	ON
3	12	ON	OFF
4	13	ON	ON

NOTES:
1.0 ALL CONTROL WIRING IS 600VAC #18AWG WIRE UNLESS OTHERWISE NOTED.
2.0 REFERENCE 6013188035_29 FOR K1,K2,K3.1, K3, & K4 CONTACTOR COIL WIRING.

*REF CONTROLLER AND TRUSS INTERFACE WIRING DIAGRAM 6013188035_29

WAS 841382D58

SHEET 3 OF 6

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
0	04/02/07	DA	ASB	

DRAWN ASB

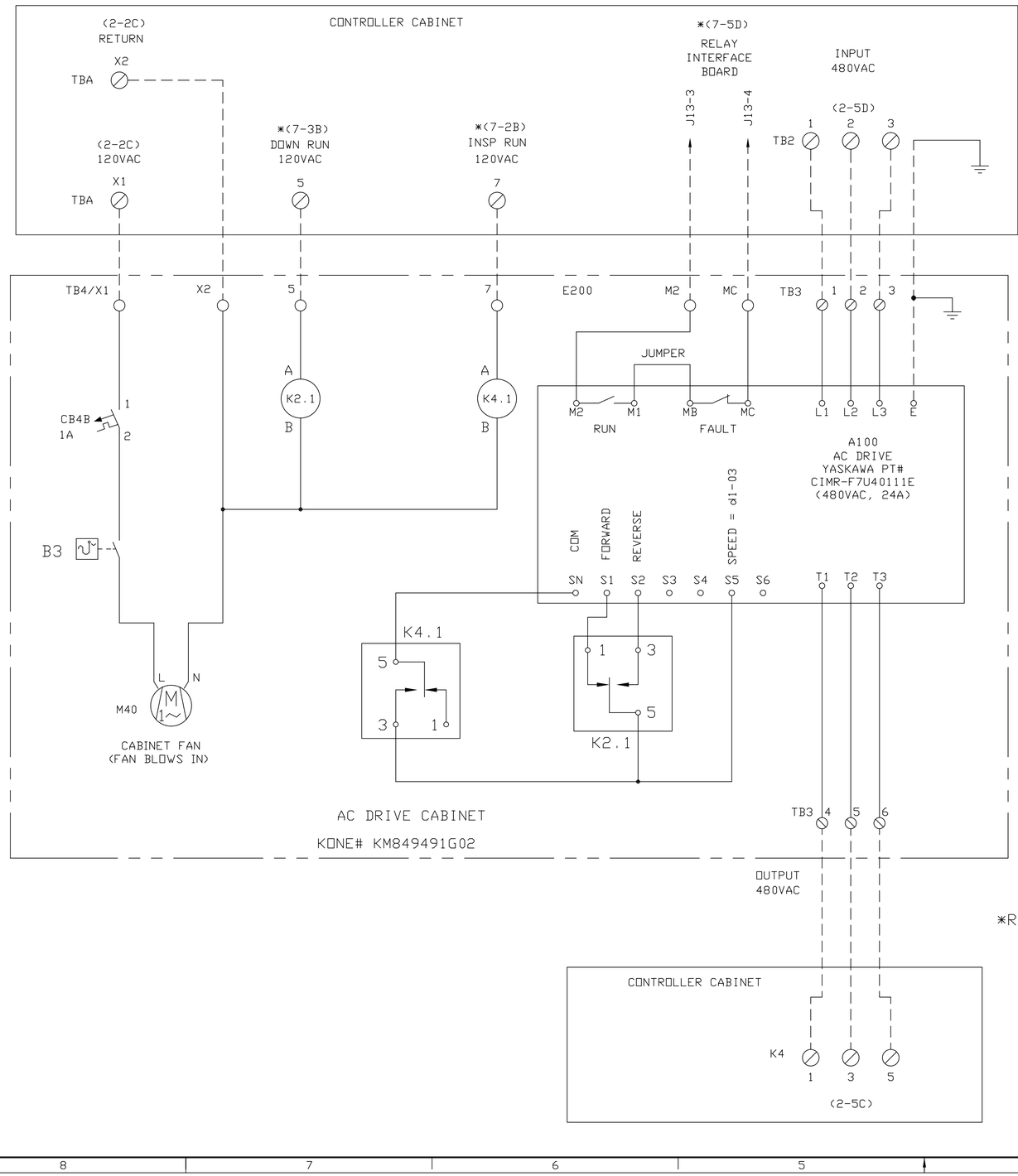
KONE

NAME WIRING, INPUT, 1-MTR & 8"PM BRK, SS & AC DRIVE

SHEET 56 D

6013188035_28

AC DRIVE WIRING & PROGRAMMING NOTES



ALL PARAMETERS ARE TO REMAIN IN THEIR INITIAL DEFAULT STATE EXCEPT AS NOTED IN CHART BELOW.

PARAMETER	SETTING	DESCRIPTION
A1-01	0	SET TO 0 TO MAKE PARAMETERS READ ONLY. SET TO 2 TO MAKE PARAMETERS READ/WRITE.
A1-02	0	CONTROL METHOD: V/F W/O PG
A1-03	2220	OPERATION: 2-WIRE INITIALIZATION
b1-01	0	HZ REF = U1-01 OR d1-02 TO d1-17
b1-03	1	STOPPING METHOD: COAST TO STOP
C1-01	3.0	ACCELERATION TIME IN SECONDS
d1-03	12.0	SPEED REFERENCE 3 IN HZ
E1-01	480VAC	INPUT VOLTAGE TO DRIVE
E1-05	480VAC	MAX OUTPUT VOLTAGE
E2-01	FLA	SET VALUE TO MOTOR FLA
H1-03	4	TERMINAL S5 = MULTI-STEP REFERENCE 2
H1-04	5	TERMINAL S6 = MULTI-STEP REFERENCE 3
H2-01	6	M1 & M2 CONTACTS CLOSE WHEN INVERTER READY AND IN THE DRIVE MODE.
L5-01	10	NUMBER OF AUTO RESET ATTEMPTS
L8-03	1	COAST TO STOP ON FAULT

TO PERFORM A MASTER RESET TO RETURN ALL PARAMETERS TO THE FACTORY DEFAULT SETTINGS, ENTER THE VALUE 2220 INTO PARAMETER A1-03. THE AC DRIVE WILL THEN RESET ALL PARAMETERS TO THE 2-WIRE DEFAULT STATE.
AFTER THE DRIVE HAS BEEN DEFAULTED TO THE 2-WIRE CONFIGURATION, DO THE FOLLOWING:

1) SET PARAMETER A1-01 TO THE VALUE 2.
2) PROGRAM ALL OTHER PARAMETERS SHOWN ABOVE IN CHART.

*REFERENCE CONTROLLER AND TRUSS INTERFACE WIRING DIAGRAM 6013188035_29

WAS 841382D58

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D
4			
3			
2			
1			
@	04/02/07	DA	ASB

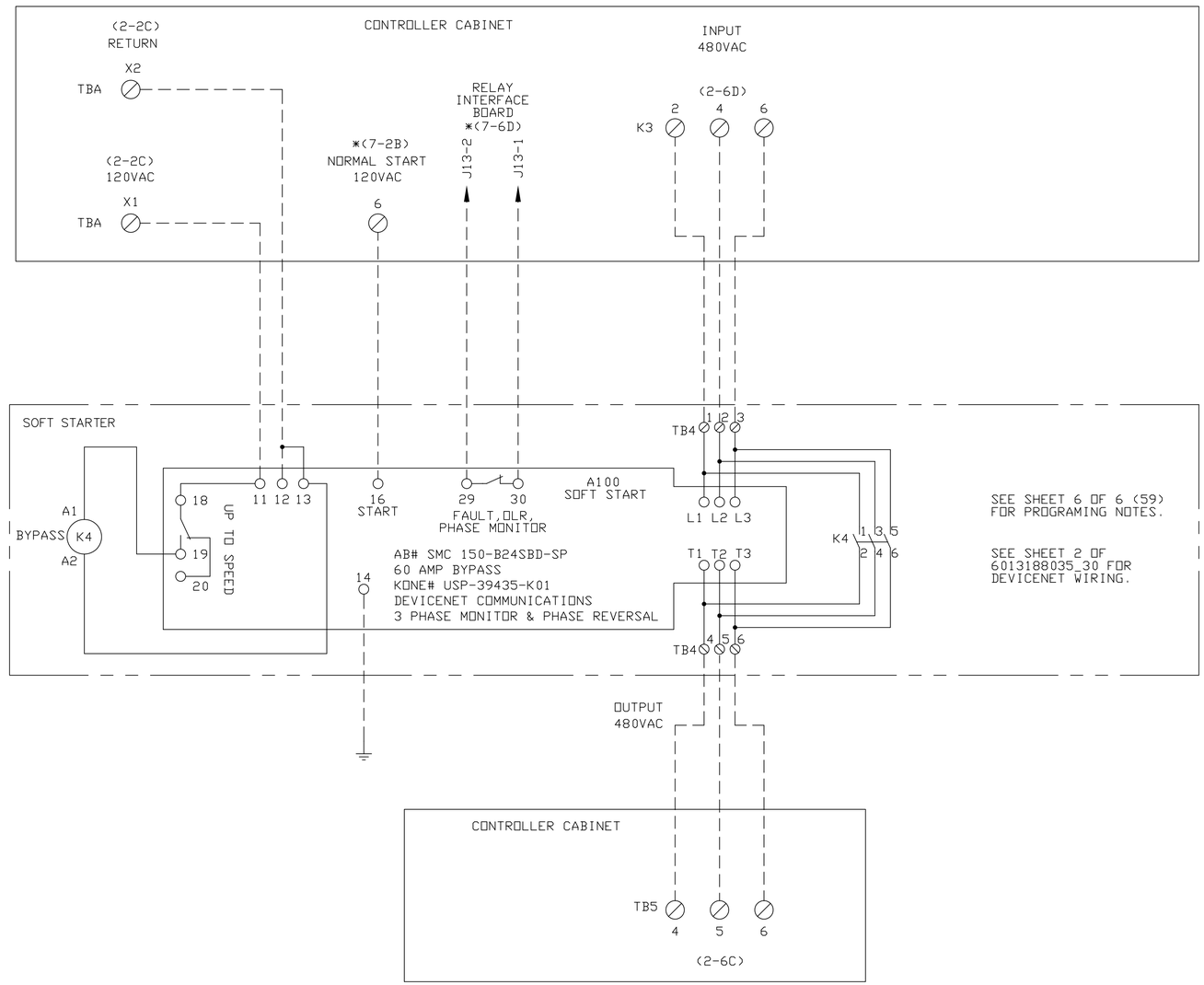
DRAWN ASB

NAME WIRING, INPUT, 1-MTR & 8'PM BRK, SS & AC DRIVE

SHEET 57 D

6013188035_28

SOFT START TO CONTROLLER WIRING



*REFERENCE CONTROLLER AND TRUSS INTERFACE WIRING DIAGRAM 6013188035_29

WAS 841382D58

SHEET 5 OF 6

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
0	04/02/07	DA	ASB	

DRAWN ASB

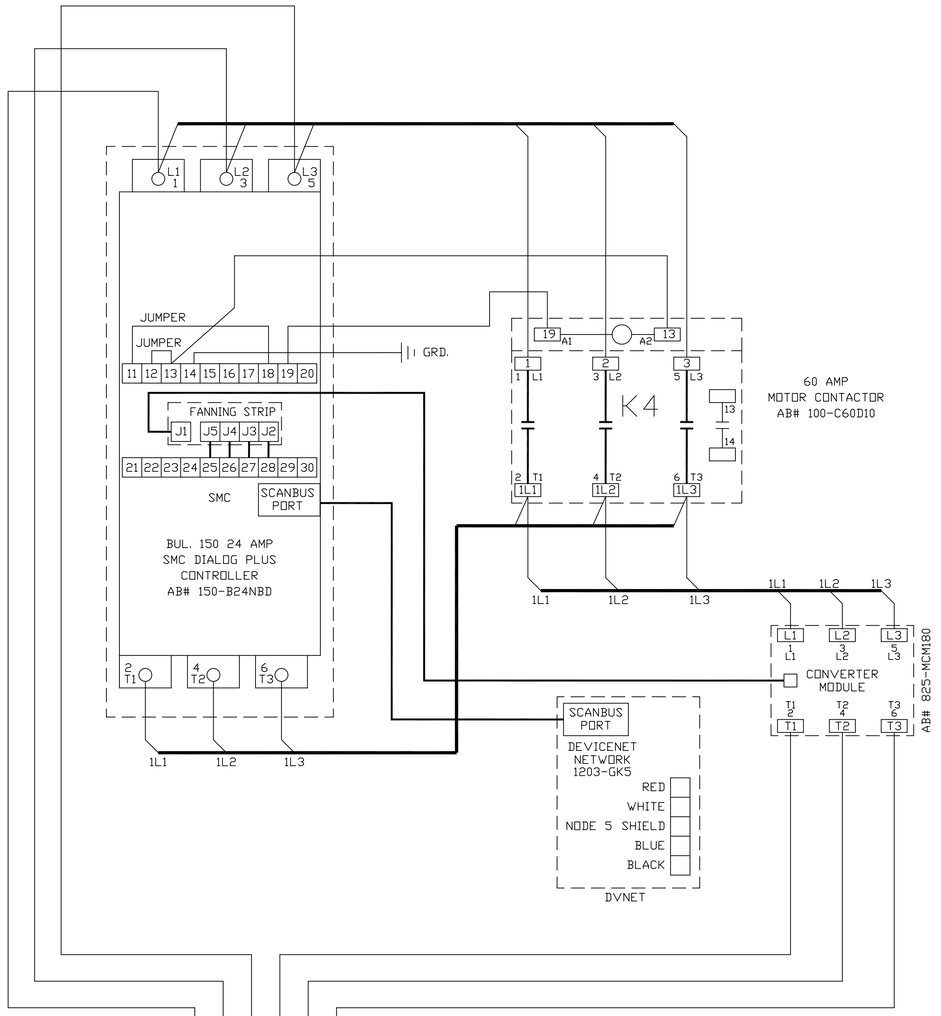
KONE

NAME
WIRING, INPUT, 1-MTR & 8'PM BRK, SS & AC DRIVE

SHEET 58 D

6013188035_28

SOFT STARTER CONNECTION DIAGRAM



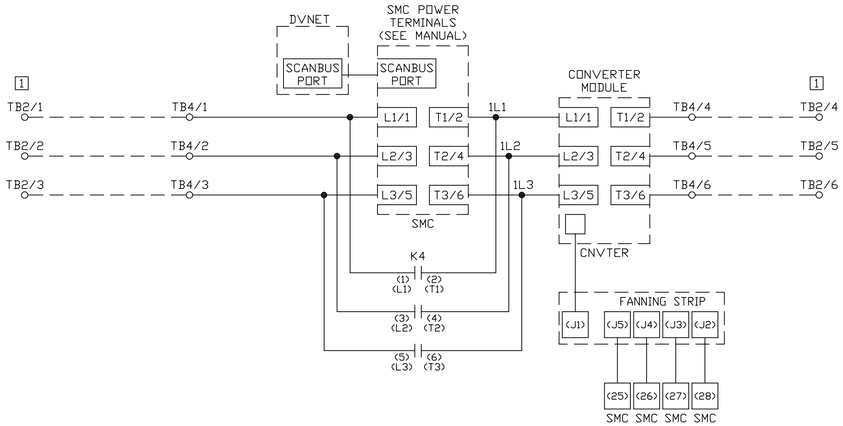
DEVICENET ADAPTER MODULE DIP SWITCH SETTINGS

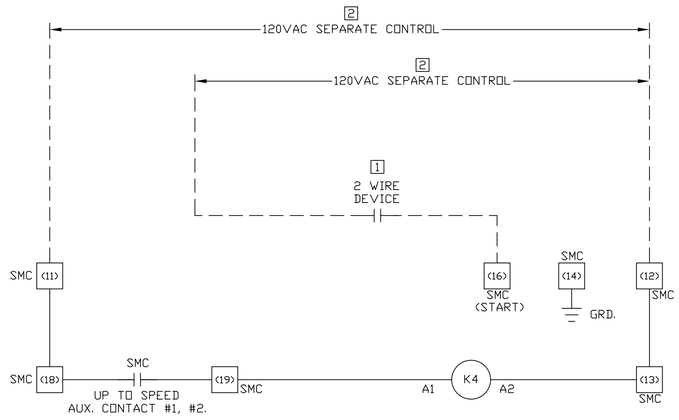
DATA RATE = 250K
NODE = 5

8 SW2 1							
0	1	0	0	0	1	0	1

8 SW1 1							
1	1	1	0	0	0	0	0

SOFT STARTER BOX SCHEMATIC





SEE SHEETS 1 & 5 FOR SOFT START TO CONTROLLER WIRING

NOTES

[1] CUSTOMER SUPPLIED.

[2] NOTE: ADDITIONAL CONTROL CIRCUIT OVERCURRENT PROTECTION MAY BE REQUIRED. REFER TO NATIONAL ELECTRICAL CODE.

THE CURRENT RATINGS OF THE CONTROL CIRCUIT CONDUCTORS FURNISHED WITH THIS DEVICE IS 10 AMP.

PROGRAMMING NOTES

1) MOTOR FLA = SET TO MOTOR FLA
2) LINE VOLTAGE = 480
3) MOTOR KW RATING = SET TO MOTOR KW RATING
4) OVERLOAD RESET = AUTO
5) OVERLOAD CLASS = OFF
6) CT RATIO = 5:5
7) CONVERTER RATING = 180A
8) LRC RATIO = 4.0
9) AUX CONTACTS 1 & 2 = UP TO SPEED.
10) AUX CONTACT 3 = N.C. & FAULT
11) INITIAL TORQUE =25%
12) RAMP TIME = 5 SEC.
13) PHASE REVERSAL = ON.
14) ALL OTHER = FACTORY DEFAULT.

WAS 841382D58

SHEET 6 OF 6

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
0	04/02/07	DA	ASB	

DRAWN ASB

KONE

NAME WIRING, INPUT, 1-MTR & 8'PM BRK, SS & AC DRIVE

SHEET 59 D

6013188035_28

ESCALATOR WIRING: CONTROLLER AND TRUSS INTERFACE

WIRING DIAGRAM NO.:	6013188035_29
PROJECT:	SEPTA ECO PLC MODS
FRONT LINE NO.:	6013188
EQUIPMENT NO'S:	20253138,39,46,& 48
SUPPLY LINE NO'S:	8023428,25,27& 26
NETWORK NO'S:	9030724,11,23,& 22

CONTROLLER TYPE :	METRA PLC TYPE: AB MICROLOGIX 1500
CONTROL VOLTAGE :	24VDC CLASS2
NO. OF MOTORS :	SINGLE AND DUAL
NO. OF BRAKES :	SINGLE AND DUAL
BRAKE TYPE :	WARNER PERMANENT MAGNETIC BRAKE
STARTER :	SOFT START: AB SMC DIALOG PLUS
AC DRIVE :	FOR MAINTENANCE SPEED ONLY
RATED SPEED :	100FT/MIN
MAINTENANCE SPEED :	25FT/MIN

INDEX

SHEET	DETAILS
60	INDEX
61	RELAY COIL AND CONTACT REFERENCE CHART
62	DC POWER SUPPLIES, T3, FANS, & PANEL HEATER
63	ENCODER AND BRAKE CONTROL WIRING
64	RELAY INTERFACE PCB INPUTS TO PLC SLOTS 0
65	MISCELLANEOUS INPUTS TO PLC SLOT 3
66	SAFETY CHAIN SUMMARY AND MAIN MOTOR CONTACTORS
67	SLOT 0 OUTPUTS: BACKUP BRAKE TIMER, ALARM BUZZERS, E-STOP SWITCHES, & OPTIONAL PLC OUTPUTS
68	START SWITCH AND PENDANT CONTROL WIRING
69	CONTROLLER FAULT DISPLAY WIRING
70	FOREIGN VOLTAGE RELAY BOX - PIT RECEPTACLES, COMB LIGHTS,DEMARCATION LIGHTS,& TRAFFIC LIGHTS

CONNECTIONS BY OTHERS:

SHEET & LOCATION ID	VOLTAGE	FUSING	FUNCTION
(11-7B)	120VAC - 1PH - 60HZ	20 - 40 AMPS	TRUSS LIGHTS AND RECEPTACLES

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
-	04/02/07	DA	ASB	

DRAWN ASB

KONE

NAME
WIRING, CONTROLLER AND TRUSS INTERFACE

SHEET 60 D

6013188035_29

WAS 841382D90

							ICE CUBE	FLANGE MOUNT ICE CUBE	ICE CUBE	ICE CUBE	ICE CUBE	FLANGE MOUNT ICE CUBE	ICE CUBE
RELAY	K1	K2	K3	K3.1	K4		K5 & K6	K7	K8	K11	K12	K13	K14
COIL	(7-3A) 120VAC	(7-3A) 120VAC	(7-2A) 120VAC	(7-3D) 24VAC	(7-2A) 120VAC		(7-5A) 24VDC	(3-3C) 120VAC	(7-7B) 24VDC	(9-7D) 24VDC	(9-7D) 24VDC	(6-4A) 24VDC	(9-7C) 24VDC
FUNCTION	RUN UP	RUN DOWN	NORMAL START	BRAKE POWER	INSPECT START		SAFE RELAYS	POWER ON	SAFETY RELAY	START SWITCH (UP)	START SWITCH (DOWN)	INSPECT RELAY	INSPECT (SERVICE)
CONTACT 1	N.O. LINE INPUT WD SHT 2	N.O. LINE INPUT WD SHT 2	N.O. LINE INPUT WD SHT 2	N.O. LINE INPUT WD SHT 3	N.O. LINE INPUT WD SHT 2		(7-4A & 4B)	N.O. (6-4B)	N.O. (7-7B)	N.O. (7-7B)	N.O. (7-7A)	N.O. NOT USED	N.O. (7-7A)
CONTACT 2	N.O. LINE INPUT WD SHT 2	N.O. LINE INPUT WD SHT 2	N.O. LINE INPUT WD SHT 2	N.O. (7-3D)	N.O. LINE INPUT WD SHT 2		NOT USED	N.C. NOT USED	N.O. (7-6B)	N.O. (7-7B)	N.O. (7-7A)	N.C. NOT USED	NOT SHOWN
CONTACT 3	N.O. LINE INPUT WD SHT 2	N.O. LINE INPUT WD SHT 2	N.O. LINE INPUT WD SHT 2	N.O. (NOT USED)	N.O. LINE INPUT WD SHT 2		(7-6B & 7B)	N.O. NOT USED	NOT USED	NOT SHOWN	NOT SHOWN	N.O. NOT USED	NOT SHOWN
CONTACT 4	N.C. - INTRLCK (7-3B)	N.C. - INTRLCK (7-3B)	N.C. - INTRLCK (7-2B)	N.C. - INTRLCK (NOT USED)	N.C. - INTRLCK (7-2B)		(7-6B & 7B)	N.C. (4-2C)	NOT USED	NOT SHOWN	NOT SHOWN	N.C. (7-2B)	NOT SHOWN
CONTACT 5	N.O. - TOP (13 & 14) LINE INPUT WD SHT 3	N.O. - TOP (13 & 14) LINE INPUT WD SHT 3	N.O. - TOP (13 & 14) (7-3B)	N.O. - TOP (13 & 14) (NOT USED)	N.O. - TOP (13 & 14) LINE INPUT WD SHT 3								
CONTACT 6	N.C. - TOP (21 & 22) (NOT USED)	N.C. - TOP (21 & 22) (NOT USED)	N.C. - TOP (21 & 22) (NOT USED)	N.C. - TOP (21 & 22) (NOT USED)	N.C. - TOP (21 & 22) (NOT USED)								
CONTACT 7	N.C. - TOP (31 & 32) (6-7B)	N.C. - TOP (31 & 32) (6-6B)	N.C. - TOP (31 & 32) (6-6C)	N.C. - TOP (31 & 32) (6-6B)	N.C. - TOP (31 & 32) (6-6C)								
CONTACT 8	N.O. - TOP (43 & 44) (11-7C)	N.O. - TOP (43 & 44) (11-7C)	N.O. - TOP (43 & 44) (7-3B)	N.O. - TOP (43 & 44) (NOT USED)	N.O. - TOP (43 & 44) (NOT USED)								
CONTACT 9													
CONTACT 10													

											USED ONLY WITH DUAL MOTORS		
RELAY	K1X	K2X								OLR1	OLR2		
COIL	(11-6C) 24VAC	(11-6C) 24VAC								LINE INPUT WD SHEET 2	LINE INPUT WD SHEET 2		
FUNCTION	FOREIGN VOLT. UP RUN	FOREIGN VOLT. DOWN RUN								MOTOR #1 OLR	MOTOR #2 OLR		
CONTACT 1	N.O. (11-5D)	N.O. (11-5D)								N.C. (7-6C)	N.C. (7-6C)		
CONTACT 2	N.C. (11-5D)	N.C. (11-5D)											
CONTACT 3	N.O. (11-5C)	N.O. (11-5C)											
CONTACT 4	N.O. (11-5B)	N.O. (11-5A)											
CONTACT 5													
CONTACT 6													
CONTACT 7													
CONTACT 8													

RELAY COIL AND CONTACT REFERENCE CHART

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	#	DATE	CH'K	APP'D	F
	4				
	3				
	2				
	1				
	#	04/02/07	DA	ASB	

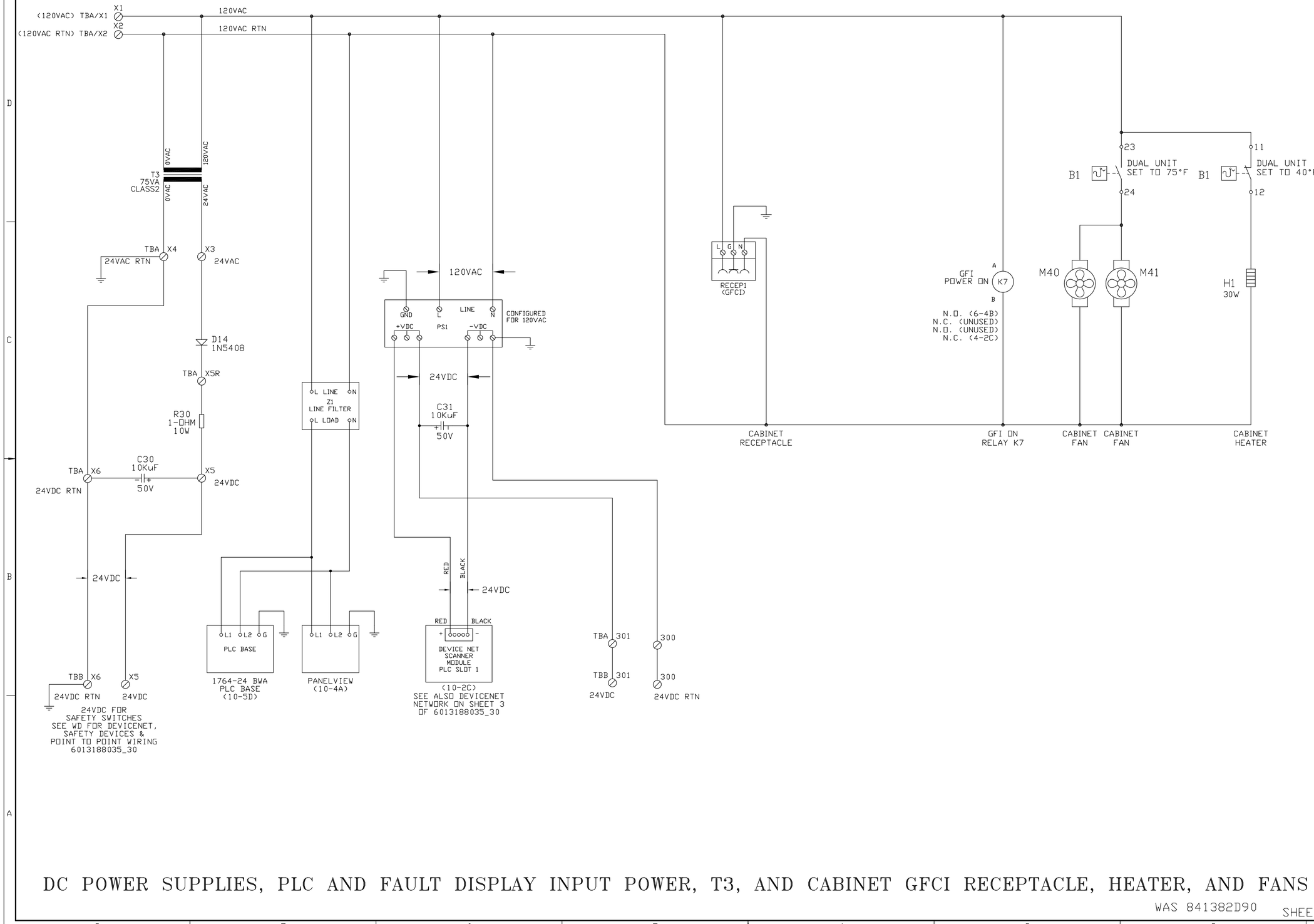
DRAWN ASB

KONE

NAME
WIRING,
CONTROLLER AND
TRUSS INTERFACE

SHEET 61 D

6013188035_29



DC POWER SUPPLIES, PLC AND FAULT DISPLAY INPUT POWER, T3, AND CABINET GFCI RECEPTACLE, HEATER, AND FANS

WAS 841382D90

SHEET 3 OF 11

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
Ø	04/02/07	DA	ASB	

DRAWN ASB

KONE

NAME
WIRING,
CONTROLLER AND
TRUSS INTERFACE

SHEET 62 D

6013188035_29

ENCODER AND BRAKE CONTROL CARD WIRING

24VDC RTN (3-5B) TBA/300

24VDC RTN TBA/300

CONFIGURE AS SINKING

DC COM0 DC COM1 DC COM2

ALLEN BRADLEY
MICROLOGIX 1500
BASE 1764-24BWA
SLOT 0

N/C +24VDC OUT

N/C COM OUT

JUMPER JUMPER

IN0 IN1 IN2 IN3 IN4 IN5 IN6 IN7 IN8 IN9 IN10 IN11

O:0/2

Q:2

VDC:2

CONSTRUCT SWITCH

S53

K3.1/TOP 13 (7-3D)

RUN OFF CONST

120VAC TBA/X1 (3-8D)

24VDC TBA/301 (3-5B)

24VDC TBA/CON

TBB/CON

K7

(3-3C)

RELAY INTERFACE BOARD IN CONTROLLER

J3 LED4 LED5 LED3 LHS RHS SS1 SS2 DIR

J7 SAFE_IN

J8 CS1FB CS2FB CTR_KY K5FB K6FB K1FB K12FB K14FB

LED# 18 19 20 21 22 23 24 25

SEE (5-4B) FOR MORE J8 WIRING

SPEED SENSOR 1 J4 + S - GND

SPEED SENSOR 2 J5 + S - GND

NPN

(7-4C) SAFE1 & SAFE2 J15 IN OUT

RED BLK WHT GRN

UPPER J BOX

76 77 78 GND 79

BRN BLK BLU SHIELD WHT

ENCODER PROTECTOR CABLE

ENCODER

MOTOR ENCODER
80PPR/NPN/QUADRATURE
2400HZ @ 1800RPM

ENCODER AND CABLE PINOUT

PIN	FUNCTION	WIRE COLOR
1	+	BRN
2	CH_B	WHT
3	-	BLU
4	CH_A	BLK

SAFE OUT

J2 1 43 42 43 42 45 45 63 64 11

BRAKE CARD NO. 2
DUAL DRIVE ONLY

SEE SHEET 3 OF MOTOR WD FOR OTHER BRAKE CARD WIRING

THIN DEVICENET CABLE

WHITE BLUE SAFE OUT

J2 1 43 42 43 42 45 45 63 64 11

BRAKE CARD NO. 1

THIN DEVICENET CABLE

SHIELD WHITE BLUE

DEVICE NET SCANNER MODULE PLC SLOT 1

(10-4D)

RED = 24VDC
WHITE = CAN-H
BARE = SHIELD
BLUE = CAN-L
BLACK = 0VDC

BRAKE CONTROLLER ADDRESS SETTINGS

BRAKE#	NODE#	SW2	SW1
1	10	OFF	OFF
2	11	OFF	ON
3	12	ON	OFF
4	13	ON	ON

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
#	04/02/07	DA	ASB	

DRAWN ASB

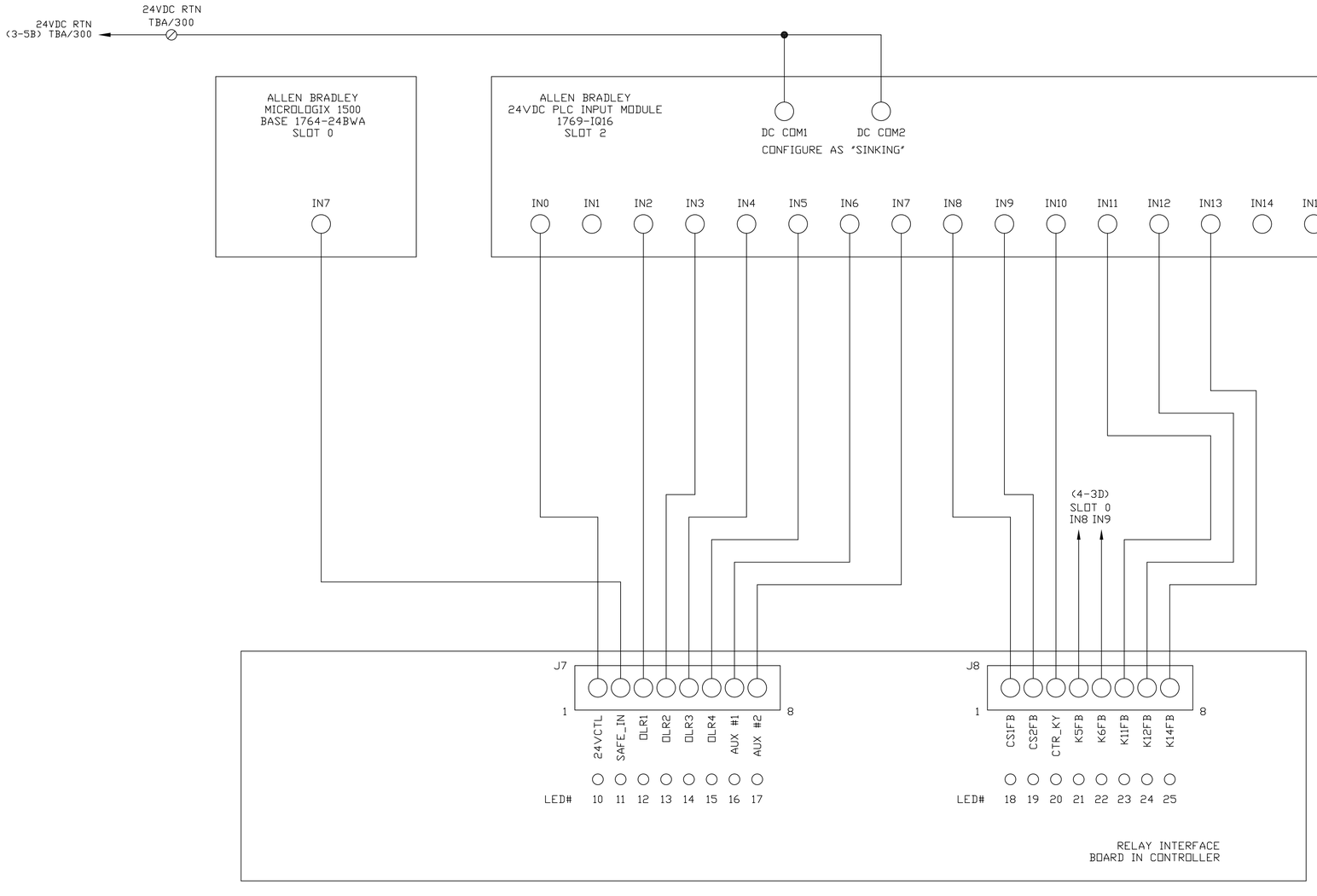
KONE

NAME
WIRING, CONTROLLER AND TRUSS INTERFACE

SHEET 63 D

6013188035_29

WAS 841382D90 SHEET 4 OF 11



RELAY INTERFACE PCB INPUTS TO PLC SLOTS 0 & 2

WAS 841382D90

SHEET 5 OF 11

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

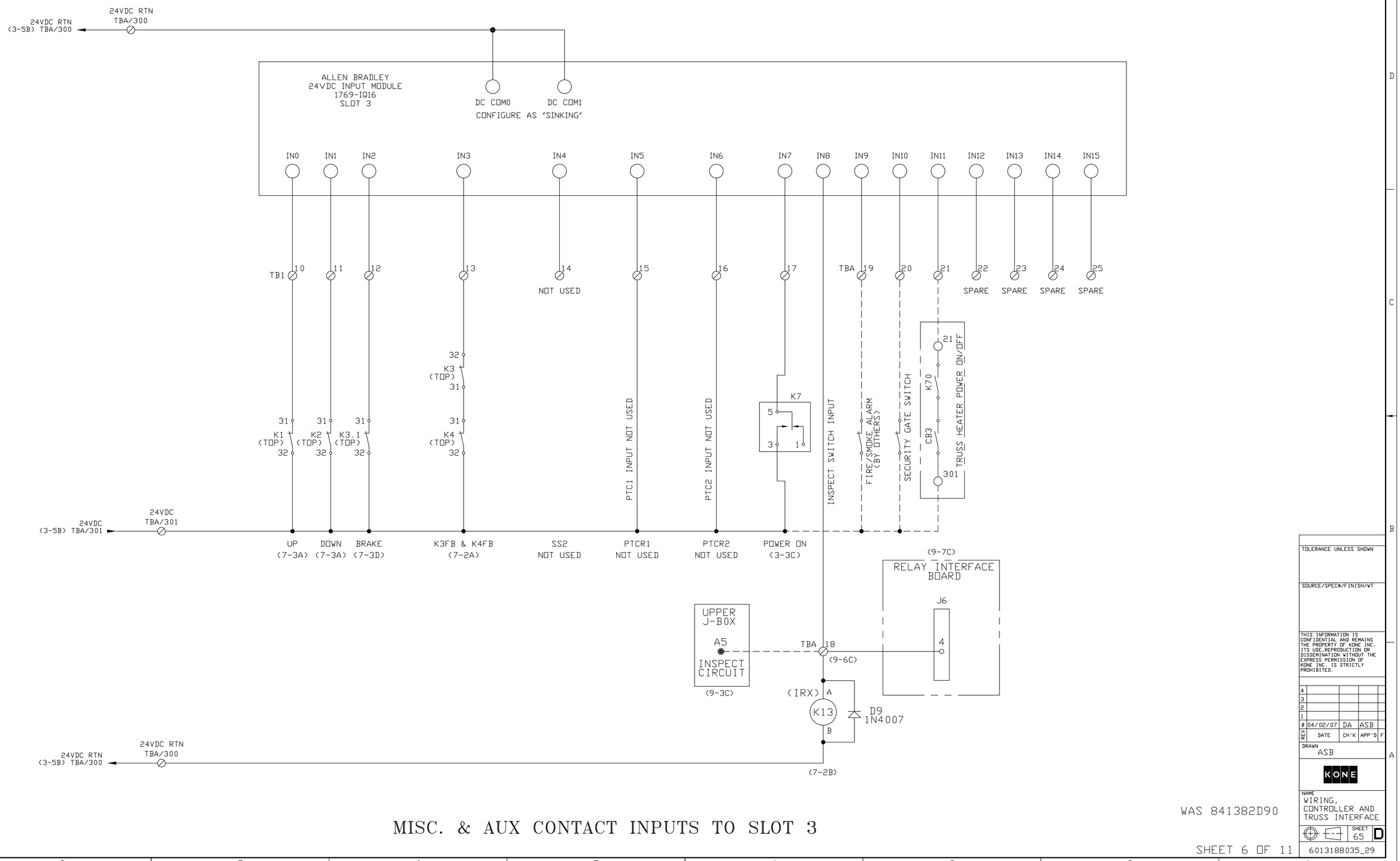
REV	DATE	CH'K	APP'D
4			
3			
2			
1			
0	04/02/07	DA	ASB

DRAWN ASB

NAME
WIRING,
CONTROLLER AND
TRUSS INTERFACE

SHEET 64 D

6013188035_29



MISC. & AUX CONTACT INPUTS TO SLOT 3

WAS 841382D90

SHEET 6 OF 11

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
0	04/02/07	DA	ASB	

DRAWN ASB

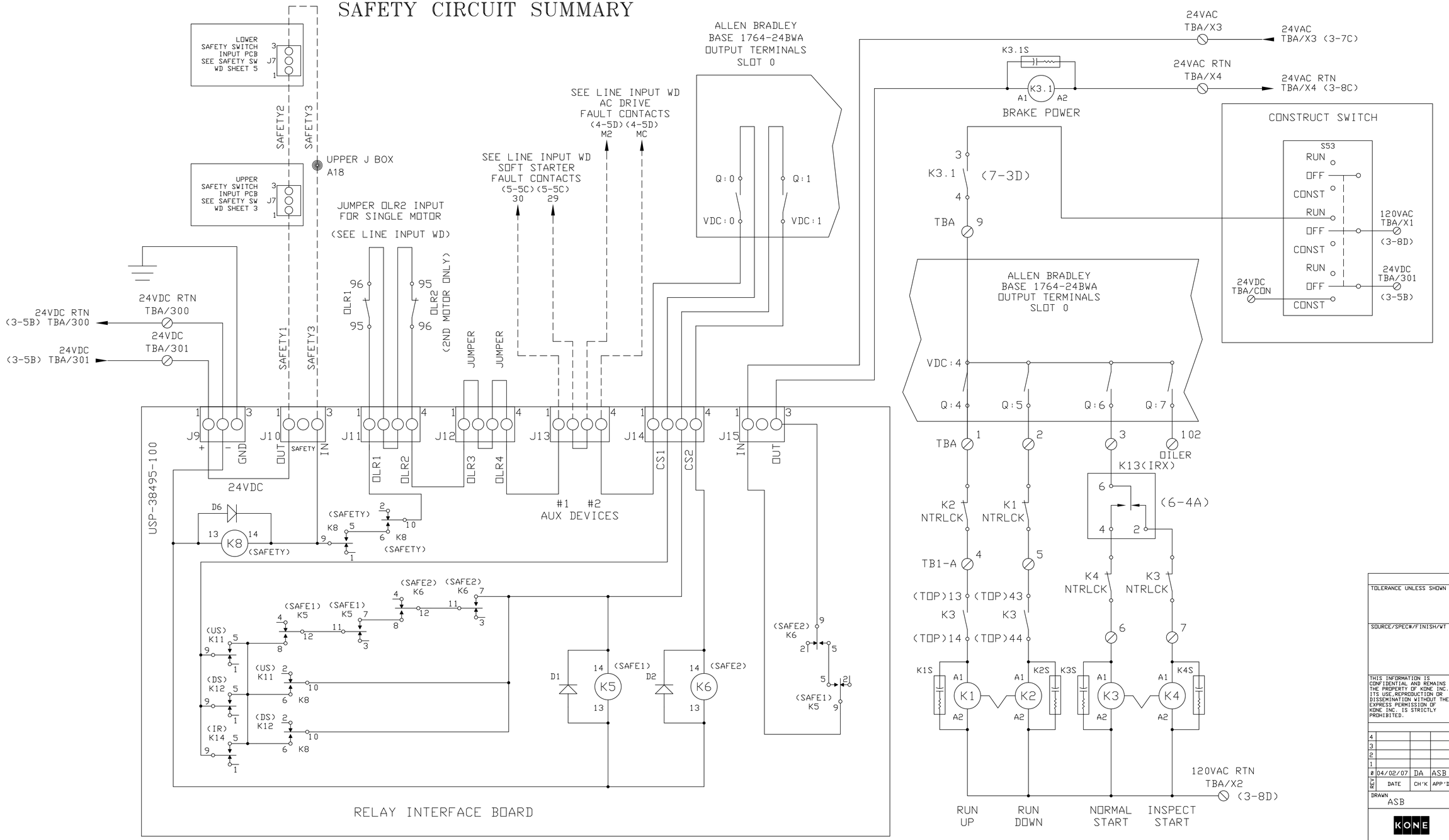
KONE

NAME
WIRING, CONTROLLER AND TRUSS INTERFACE

SHEET 65 D

6013188035_29

SAFETY CIRCUIT SUMMARY



WAS 841382D90

SAFETY CHAIN SUMMARY AND MAIN MOTOR CONTACTORS

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
0	04/02/07	DA	ASB	

DRAWN ASB

KONE

NAME WIRING, CONTROLLER AND TRUSS INTERFACE

SHEET 66 D

6013188035_29

————	WIRE EXTERNAL TO CONTROLLER
⊘	TERMINAL IN CONTROLLER
◉	TERMINAL IN UPPER J-BOX
○	TERMINAL IN LOWER J-BOX
⊗	DEVICENET INPUT PCB TERMINAL

24VAC
(3-7C) TBA/X3

SEE SHEET 7 FOR
MORE SLOT 0 OUTPUTS

ALLEN BRADLEY
BASE 1764-24BWA
OUTPUT TERMINALS
SLOT 0

VDC:2 VDC:3 VDC:5

Q:2 Q:3 Q:8 Q:9 Q:10 Q:11

(4-3D)
BACKUP BRAKE
TIMER CONTACT

SELECT SS2
NOT USED

302 303 304 305 TBA X3

OPTIONAL
SMOKE ALARM
BRAKE POWER

OPTIONAL
FAULTED
INDICATION

OPTIONAL
FAULT
ALARM

ESCALATOR TRUSS

302 X3 302 X3

504M02QA100

ALARM
SWITCH

UPPER
STOP BOX

PT# 60913

UPPER
E-STOP

X5

J2/4
UPPER
DNET PCB

504M02QA100

ALARM
SWITCH

LOWER
STOP BOX

PT# 60913

LOWER
E-STOP

X5

J6/1
LOWER
DNET PCB

X4 X4

24VAC RTN
(3-8C) TBA/X4

TBA/X4

24VAC RETURN

ALARM SWITCH
&
STOP BUTTON STATIONS

SLOT 0 OUTPUTS: ALARM BUZZERS, E-STOP SWITCHES, & OPTIONAL PLC OUTPUTS

WAS 841382D90

SHEET 8 OF 11

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
0	04/02/07	DA	ASB	

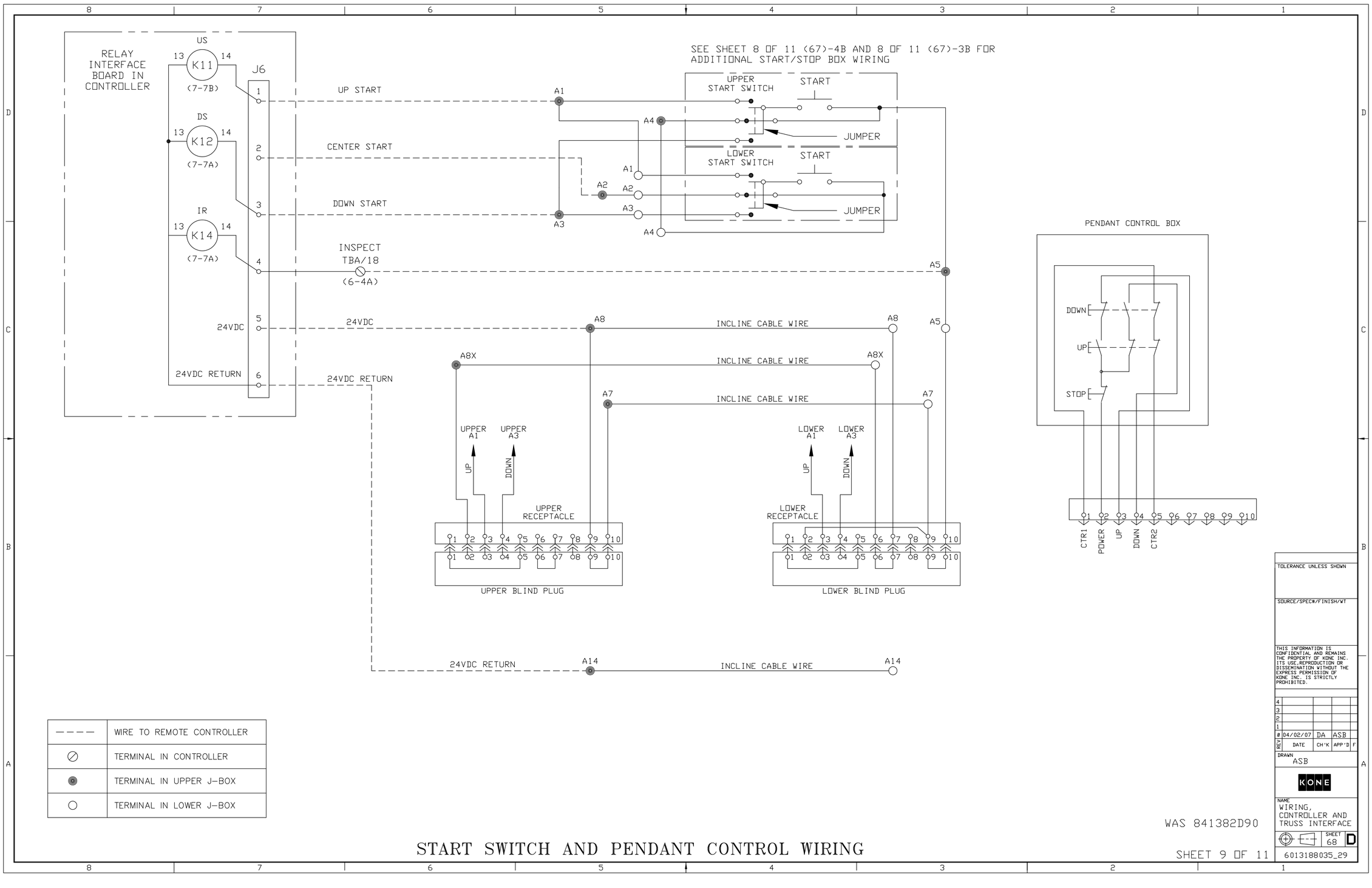
DRAWN
ASB

KONE

NAME
WIRING,
CONTROLLER AND
TRUSS INTERFACE

SHEET 67 D

6013188035_29



– – – –	WIRE TO REMOTE CONTROLLER
⊘	TERMINAL IN CONTROLLER
◉	TERMINAL IN UPPER J-BOX
○	TERMINAL IN LOWER J-BOX

START SWITCH AND PENDANT CONTROL WIRING

WAS 841382D90

SHEET 9 OF 11

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	#	DATE	CH'K	APP'D
	4			
	3			
	2			
	1			
	#	04/02/07	DA	ASB

DRAWN ASB

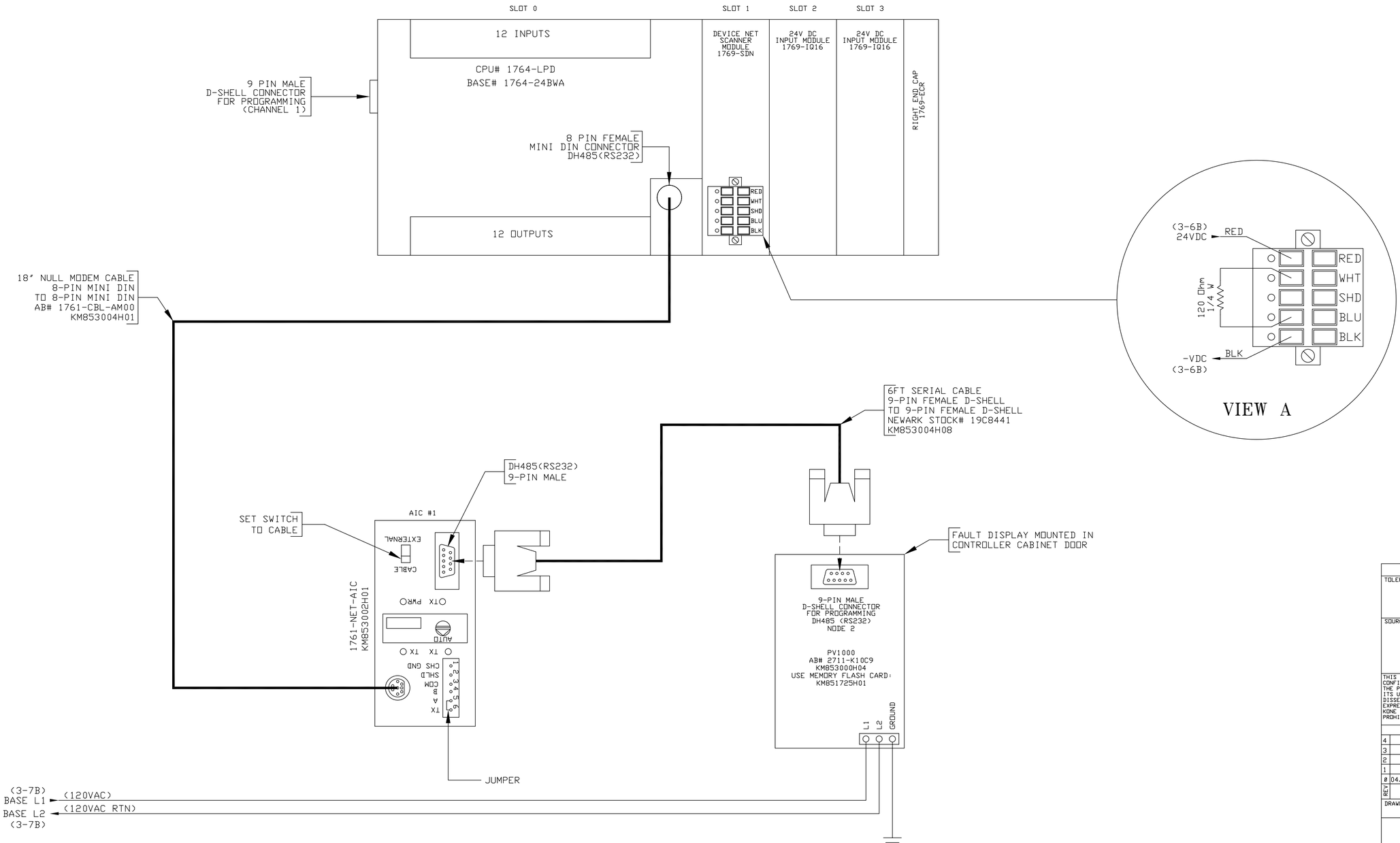
KONE

NAME
WIRING, CONTROLLER AND TRUSS INTERFACE

SHEET 68 D

6013188035_29

ALLEN BRADLEY MICROLOGIX 1500 PLC



PLC LAYOUT, DEVICENET TERMINATING RESISTOR, & OPTIONAL CONTROLLER FAULT DISPLAY WIRING

WAS 841382D90

SHEET 10 OF 11

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
A	04/02/07	DA	ASB	

DRAWN ASB

KONE

NAME WIRING, CONTROLLER AND TRUSS INTERFACE

SHEET 69 D

6013188035_29

E600 – FOREIGN VOLTAGE RELAY BOX

(11-6C) (RUNNING UP) — TB4-12 — 14 — (RUN UP) K1X — 13 — TB4-13 — RUNNING UP INDICATION

(11-6C) (RUNNING DOWN) — TB4-14 — 14 — (RUN DOWN) K2X — 13 — TB4-15 — RUNNING DOWN INDICATION

(11-6C) (STOPPED) — TB4-16 — 22 — (RUN UP) K1X — 21 — (RUN DOWN) K2X — 22 — 21 — TB4-17 — STOPPED INDICATION

DRY CONTACTS FOR STATUS PANEL

24VAC (3-7C) TBA/X3 — 24VAC TBA/X3 — (RUN UP) K1 44 43 (7-3A) — TBB/K1X — TB4-1 — K1XS A1 BLU K1X A2 — (RUN UP)

(RUN DOWN) K2 44 43 (7-3A) — TBB/K2X — TB4-2 — K2XS A1 BLU K2X A2 — (RUN DOWN)

24VAC RTN (3-8C) TBA/X4 — 24VAC RTN TBA/X4 — TB4-3 — BLU

GND

BUILDING POWER SEE CHART ON SHEET 1 — 120VAC — BLK — TB4-4 — BLK

120VAC RETURN — WHT — TB4-5 — WHT

CB7: 2 — 1 — 20A

CB10: 2 — 1 — 20A

K1X 34 33 (11-6C) — K2X 34 33 (11-6C)

BLK — TB4-6 — BLK — WHT — TB4-7 — WHT

BLK — TB4-8 — BLK — WHT — TB4-9 — WHT

T3 75VA CLASS2: 120VAC — 24VAC — 0VAC — 0VAC

TB4-21

(RUN UP) K1X 44 43 (11-6C) — TB4-A19

(RUN DOWN) K2X 44 43 (11-6C) — TB4-A20

TB4-A21

TB4-A17

GFCI RECEPTACLES AND VARIOUS LIGHTS LOCATED IN ESCALATOR

UPPER DEMARCATION LIGHTS — LOWER DEMARCATION LIGHTS

E10 E9 E8 E7 E6 E5 — LJB/7 — LJB/6

BLK — UJB/6 — WHT — UJB/7

GRN

UJB/8 — BLK — LJB/8

X34 GFCI — X35 GFCI — X33 GFCI

Q12 — 910 — E12 PIT LIGHT — UPPER PIT

MOTOR AREA

Q11 — 911 — E11 PIT LIGHT — LOWER PIT

UJB/9 — WHT — LJB/9

SERVICE LIGHTS / OUTLETS

A19 — A20 — A21 — A17

E1 E2 — UPPER COMB LIGHTS

RED GRN — UPPER TRAFFIC LIGHTS

E3 E4 — LOWER COMB LIGHTS

RED GRN — LOWER TRAFFIC LIGHTS

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D
4			
3			
2			
1			
0	04/02/07	DA	ASB

DRAWN ASB

KONE

NAME WIRING, CONTROLLER AND TRUSS INTERFACE

SHEET 70 D

6013188035_29

ESCALATOR WIRING: DEVICENET,SAFETY DEVICES,& POINT TO POINT

WIRING DIAGRAM NO.:	6013188035_30
PROJECT:	SEPTA ECO PLC MODS
FRONT LINE NO.:	6013188
EQUIPMENT NO'S:	20253138,39,46,& 48
SUPPLY LINE NO'S:	8023428,25,27& 26
NETWORK NO'S:	9030724,11,23,& 22

CONTROLLER TYPE :	METRA PLC TYPE: AB MICROLOGIX 1500
CONTROL VOLTAGE :	24VDC CLASS2
NO. OF MOTORS :	SINGLE AND DUAL
NO. OF BRAKES :	SINGLE AND DUAL
BRAKE TYPE :	WARNER PERMANENT MAGNETIC BRAKE
STARTER :	SOFT START: AB SMC DIALOG PLUS
AC DRIVE :	FOR MAINTENANCE SPEED ONLY
RATED SPEED :	100FT/MIN
MAINTENANCE SPEED :	25FT/MIN

INDEX

SHEET DETAILS

71	INDEX
72	DEVICENET NETWORK
73	DEVICENET NODE #1: UPPER SAFETY DEVICES
74	DEVICENET NODE #3: LOWER SAFETY DEVICES
75-77	POINT TO POINT WIRING

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
-	04/02/07	DA	ASB	

DRAWN ASB

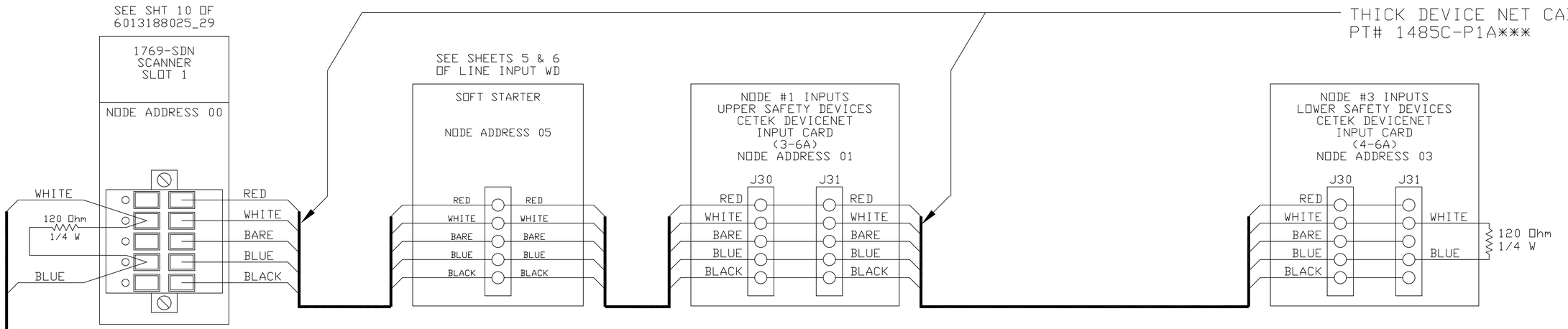
KONE

NAME
WIRING,DEVICENET, SAFETY DEVICES,& POINT TO POINT

SHEET 71 D

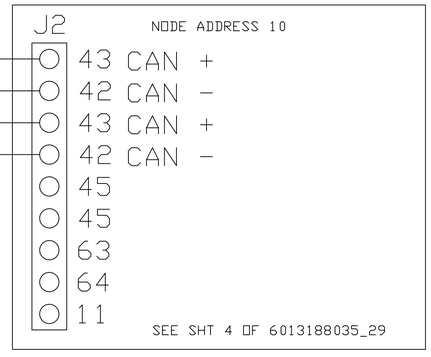
6013188035_30

DEVICENET NETWORK



THIN DEVICE NET CABLE
PT# KM852108H07 (AB# 1485C-P1C***)
(USE ONLY WHITE AND BLUE CONDUCTORS)

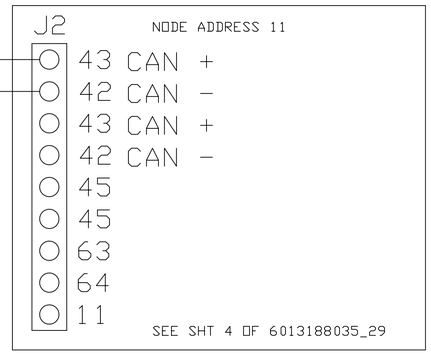
BRAKE CONTROLLER #1
(USED WITH 1 OR 2 BRAKES)



BRAKE CONTROLLER ADDRESS SETTINGS			
BRAKE#	NODE#	SW2	SW1
1	10	OFF	OFF
2	11	OFF	ON
3	12	ON	OFF
4	13	ON	ON

THIN DEVICE NET CABLE
PT# KM852108H07 (AB# 1485C-P1C***)
(USE ONLY WHITE AND BLUE CONDUCTORS)

BRAKE CONTROLLER #2
(USED WITH 2ND BRAKE ONLY)



BRAKE CONTROLLER ADDRESS SETTINGS			
BRAKE#	NODE#	SW2	SW1
1	10	OFF	OFF
2	11	OFF	ON
3	12	ON	OFF
4	13	ON	ON

RED = 24VDC
WHITE = CAN-H
BARE = SHIELD
BLUE = CAN-L
BLACK = 0VDC

WAS 841382D91

SHEET 2 OF 7

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
-	04/02/07	DA	ASB	

DRAWN
ASB

KONE

NAME
WIRING, DEVICENET, SAFETY DEVICES, & POINT TO POINT

SHEET 72 D

6013188035_30

STEP BAND LOCK - #33
UPPER LEFT HORIZONTAL COMB IMPACT - #34
UPPER LEFT VERTICAL COMB IMPACT - #35
UPPER LEFT LEVEL STEP - #36
UPPER LEFT HANDRAIL INLET - #37
UPPER LEFT BROKEN HANDRAIL - #38
UPPER LEFT SKIRT - #39
UPPER MIDDLE LEFT SKIRT - #40
MOTOR AREA STOP SWITCH - #41
UPPER E-STOP - #42
UPPER PIT STOP - #43
UPPER ACCESS COVER - #44
11 12
J1 J2 J3
LED1 LED2 LED3 LED4 LED5 LED6 LED7 LED8 LED9 LED10 LED11 LED12
K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K11 K12
K13 K14 K15 K16 K17 K18 K19 K20 K21 K22 K23 K24
LED13 LED14 LED15 LED16 LED17 LED18 LED19 LED20 LED21 LED22 LED23 LED24
J4 J5 J6
12 11
#45 - UPPER RIGHT HORIZONTAL COMB IMPACT
#46 - UPPER RIGHT VERTICAL COMB IMPACT
#47 - UPPER RIGHT LEVEL STEP
#48 - UPPER RIGHT HANDRAIL INLET
#49 - UPPER RIGHT BROKEN HANDRAIL
#50 - UPPER RIGHT SKIRT
#51 - UPPER MIDDLE RIGHT SKIRT
#52 - SPARE
#53 - UPPER LEFT WORN STEP WHEEL
#54 - UPPER LEFT WORN CHAIN WHEEL
#55 - BRAKING RESISTOR
#56 - SPARE
BRN BLK BLU
(#53) STEP WHEEL
(#54) CHAIN WHEEL
24VDC RTN UJB/X6
PIN OUT OF PROX SENSORS

PIN	FUNCTION	J20 TERMINAL	WIRE COLOR
1	+	+	BRN
2	NOT USED	NOT USED	WHT
3	-	-	BLU
4	SIGNAL	SIGNAL	BLK

SEE WD FOR CONTROLLER & TRUSS INTERFACE SHT 3
24VDC
24VDC RTN
RIB J10-1
SHT5 7B
TBC/X5 #14AWG
UJB/X5 #14AWG
TBC/X6 #14AWG
UJB/X6 #14AWG
TO LWR DNET PCB/J7-1 (SAFETY2)
SAFETY1
SAFETY2
J20 CB2 LED25 24VDC
J7 CB1 LED26 SAFETY IN
IN OUT
LED27 SAFETY OUT
K25 READY
J8 J9 J10
LED29 MSD SIGNAL
LED30 LHRSS SIGNAL
LED31 RHRSS SIGNAL
(#64) UPPER MSD
(#73) LHRSS
(#74) RHRSS
PIN OUT OF PROX SENSORS

PIN	FUNCTION	J20 TERMINAL	WIRE COLOR
1	+	+	BRN
2	NOT USED	NOT USED	WHT
3	-	-	BLU
4	SIGNAL	SIGNAL	BLK

K50 D30 1N4007
A B
UPPER ACCESS COVER RELAY FOR OPTIONAL HEATER THERMOSTAT
FROM DEVICENET SCANNER NODE #0 (2-7C)
TO DEVICENET NODE #2 (4-8D)
DEVICE NET CABLE
RED = 24VDC
WHITE = CAN-H
SHIELD
BLUE = CAN-L
BLACK = 0VDC
J30 J31
RED WHITE SHLD BLUE BLACK
KM873852H01
LED32 HEART
SET NODE ADDRESS TO 0-1
CETEK DEVICENET INPUT CARD

-----	WIRE TO REMOTE CONTROLLER OR WIRE IN ESCALATOR INCLINE
⊘	TERMINAL IN CONTROLLER
◉	TERMINAL IN UPPER J-BOX
○	TERMINAL IN LOWER J-BOX

DEVICENET NODE #1: UPPER SAFETY DEVICES

NOTE: CETEK DEVICENET INPUT CARD LOCATED IN UPPER J-BOX.

TOLERANCE UNLESS SHOWN
SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
-	04/02/07	DA	ASB	

DRAWN ASB

NAME WIRING, DEVICENET, SAFETY DEVICES, & POINT TO POINT

SHEET 73 D

6013188035_30

WAS 841382D91

LOWER LEFT CHAIN TENSION - #1
LOWER LEFT HORIZONTAL COMB IMPACT - #2
LOWER LEFT VERTICAL COMB IMPACT - #3
LOWER LEFT LEVEL STEP - #4
LOWER LEFT HANDRAIL INLET - #5
LOWER LEFT UPTHRUST - #6
LOWER LEFT SKIRT - #7
LOWER MIDDLE LEFT SKIRT - #8
LOWER PIT STOP - #9
LOWER LEFT HANDRAIL THROW OFF - #10
LOWER LEFT BROKEN HANDRAIL - #11
LOWER ACCESS COVER - #12
SEE WD FOR CONTROLLER & TRUSS INTERFACE SHT 3
24VDC
TBC/X5 #14AWG
UJB/X5 #14AWG
LJB/X5 #14AWG
24VDC RTN
TBC/X6 #14AWG
UJB/X6 #14AWG
LJB/X6 #14AWG
FROM UPR DNET PCB/J7-3 (SAFETY2)
SHT3 7B
SAFETY2
SEE WD FOR CONTROLLER & TRUSS INTERFACE SHT 7
RIB J10-3
UJB/A18
SAFETY3
JUMPER
11 12
J1 J2 J3 J4 J5 J6 J20 J7 J8 J30 J31
LED1 LED2 LED3 LED4 LED5 LED6 LED7 LED8 LED9 LED10 LED11 LED12 LED13 LED14 LED15 LED16 LED17 LED18 LED19 LED20 LED21 LED22 LED23 LED24 LED25 LED26 LED27 LED29 LED32
K1 K2 K3 K4 K5 K6 K7 K8 K9 K10 K11 K12 K13 K14 K15 K16 K17 K18 K19 K20 K21 K22 K23 K24
CB2 CB1
IN OUT
K25 READY
K25 READY
LED25 24VDC
LED26 SAFETY IN
LED27 SAFETY OUT
LED29 MSD SIGNAL
LED32 HEART
A K51 B
D30 IN4007
LOWER ACCESS COVER RELAY FOR OPTIONAL HEATER THERMOSTAT
FROM DEVICENET NODE #2 (4-7C)
DEVICE NET CABLE
RED = 24VDC
WHITE = CAN-H
SHIELD
BLUE = CAN-L
BLACK = 0VDC
RED WHITE SHLD BLUE BLACK
120 OHM 1/4W
SET NODE ADDRESS TO 0-3
KM873852H01
CABINET GROUND
#13 - LOWER RIGHT CHAIN TENSION
#14 - LOWER RIGHT HORIZONTAL COMB IMPACT
#15 - LOWER RIGHT VERTICAL COMB IMPACT
#16 - LOWER RIGHT LEVEL STEP
#17 - LOWER RIGHT HANDRAIL INLET
#18 - LOWER RIGHT UPTHRUST
#19 - LOWER RIGHT SKIRT
#20 - LOWER MIDDLE RIGHT SKIRT
#21- LOWER E-STOP
#22 - LOWER RIGHT HANDRAIL THROW OFF
#23 - LOWER RIGHT WORN STEP WHEEL
#24 - LOWER RIGHT WORN CHAIN WHEEL
24VDC RTN LJB/X6
24VDC RTN LJB/X6
BRN BLK BLU
(#23) STEP WHEEL
(#24) CHAIN WHEEL
(#32) LOWER MSD

PIN OUT OF PROX SENSORS

PIN	FUNCTION	J20 TERMINAL	WIRE COLOR
1	+	+	BRN
2	NOT USED	NOT USED	WHT
3	-	-	BLU
4	SIGNAL	SIGNAL	BLK

PIN OUT OF MSD SENSOR

PIN	FUNCTION	J20 TERMINAL	WIRE COLOR
1	+	+	BRN
2	NOT USED	NOT USED	-
3	-	-	BLU
4	SIGNAL	SIGNAL	BLK

— — —	WIRE TO REMOTE CONTROLLER
⊘	TERMINAL IN CONTROLLER
◎	TERMINAL IN UPPER J-BOX
○	TERMINAL IN LOWER J-BOX

DEVICENET NODE #3: LOWER SAFETY DEVICES

CETEK DEVICENET INPUT CARD

NOTE: CETEK DEVICENET INPUT CARD LOCATED IN LOWER J-BOX.

WAS 841382D91

SHEET 4 OF 7

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
-	04/02/07	DA	ASB	

DRAWN ASB

KONE

NAME WIRING, DEVICENET, SAFETY DEVICES, & POINT TO POINT

SHEET 74 D

6013188035_30

POINT TO POINT WIRING SHEET 1 OF 3

SEE 6013188035_29 SHEET 11

FOREIGN VOLTAGE BOX E600 TO CONTROLLER

TERMINALS IN CONTROLLER	TERMINALS IN FOREIGN VOLTAGE BOX	CABLE WIRE #
TBB/K1X	1	#18AWG
TBB/K2X	2	#18AWG
TBA/X4	3	#18AWG

#18AWG GRN

SEE 6013188035_29 SHEET 11

FOREIGN VOLTAGE BOX E600 TO DEMARC LTS

TERMINALS IN FOREIGN VOLTAGE BOX	TERMINALS IN 120V J-BOXES	CABLE WIRE #
6	6	#12AWG BLK
7	7	#12AWG WHT

#12AWG GRN

SEE 6013188035_29 SHEET 11

FOREIGN VOLTAGE BOX E600 TO UPPER J-BOX E300

TERMINALS IN UPPER J-BOX E300	TERMINALS IN FOREIGN VOLTAGE BOX	CABLE WIRE #
A17	A17	#18AWG BLU
A19	A19	#18AWG BLK
A20	A20	#18AWG RED
A21	A21	#18AWG BRN

#18AWG GRN

SEE 6013188035_29 SHEET 11

FOREIGN VOLTAGE BOX E600 TO PIT LTS & RECEPTACLES

TERMINALS IN FOREIGN VOLTAGE BOX	TERMINALS IN 120V J-BOXES	CABLE WIRE #
8	8	#12AWG BLK
9	9	#12AWG WHT

#12AWG GRN

WAS 841382D91

SHEET 5 OF 7

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
-	04/02/07	DA	ASB	

DRAWN ASB

KONE

NAME WIRING, DEVICENET, SAFETY DEVICES, & POINT TO POINT

SHEET 75 D

6013188035_30

POINT TO POINT WIRING SHEET 2 OF 3

CONTROLLER E100 TO UPPER J-BOX E300

	TERMINALS IN CONTROLLER	CABLE WIRE #	TERMINALS IN UPPER J-BOX E300
#18 AWG	RIB/J6-1	YEL 1	A1
#18 AWG	RIB/J6-2	YEL 2	A2
#18 AWG	RIB/J6-3	YEL 3	A3
#18 AWG	TB1/18	YEL 4	A5
#18 AWG	RIB/J6-5	YEL 5	A8
#18 AWG	RIB/J6-6	YEL 6	A14
#18 AWG	RIB/J10/1	YEL 7	J7/1
#18 AWG	RIB/J10/3	YEL 8	A18
#18 AWG	TBA/X2	YEL 9	X2
#18 AWG	TBA/102	YEL 10	102
#18 AWG	TBA/X3	YEL 11	X3
#18 AWG	TBA/X4	YEL 12	X4
#18 AWG	TBA/302	YEL 13	302
#18 AWG	SPARE	YEL 14	SPARE
#18 AWG	SPARE	YEL 15	SPARE
#18 AWG	SPARE	YEL 16	SPARE
#18 AWG	SPARE	YEL 17	SPARE
#18 AWG	SPARE	YEL 18	SPARE
#18 AWG	SPARE	YEL 19	SPARE
#12 AWG	TBC/X5	BRN 20	X5
#12 AWG	TBC/X6	BRN 21	X6
#12 AWG	SPARE	BRN 22	SPARE
#12 AWG	SPARE	WHT 23	SPARE
#12 AWG	SPARE	BLK 24	SPARE
#12 AWG	GND	GRN 25	GND

UPPER J-BOX E300 TO LOWER J-BOX E500

	TERMINALS IN UPPER J-BOX E300	CABLE WIRE #	TERMINALS IN LOWER J-BOX E500
#18 AWG	A1	WHT 1	A1
#18 AWG	A2	WHT 2	A2
#18 AWG	A3	WHT 3	A3
#18 AWG	A4	WHT 4	A4
#18 AWG	A5	WHT 5	A5
#18 AWG	A7	WHT 6	A7
#18 AWG	A8	WHT 7	A8
#18 AWG	A8X	WHT 8	A8X
#18 AWG	A14	WHT 9	A14
#18 AWG	A18	WHT 10	J7/3
#18 AWG	J7/3	WHT 11	J7/1
#18 AWG	X2	WHT 12	X2
#18 AWG	102	WHT 13	102
#18 AWG	X3	WHT 14	X3
#18 AWG	X4	WHT 15	X4
#18 AWG	302	WHT 16	302
		WHT 17	IN8
#18 AWG	A17	WHT 18	A17
#18 AWG	A19	WHT 19	A19
#18 AWG	A20	WHT 20	A20
#18 AWG	A21	WHT 21	A21
#18 AWG	SPARE	WHT 22	SPARE
#18 AWG	SPARE	WHT 23	SPARE
#18 AWG	SPARE	WHT 24	SPARE
#18 AWG	SPARE	WHT 25	SPARE

	TERMINALS IN UPPER J-BOX E300		TERMINALS IN LOWER J-BOX E500
#12 AWG	SPARE	BRN 26	SPARE
#12 AWG	SPARE	BRN 27	SPARE
#12 AWG	SPARE	BRN 28	SPARE
#12 AWG	SPARE	WHT 29	SPARE
#12 AWG	SPARE	WHT 30	SPARE
#12 AWG	X5	BLK 31	X5
#12 AWG	X6	BLK 32	X6
#12 AWG	GND	GRN 33	GND

NOTE: ALL WIRING IS #18AWG UNLESS OTHERWISE NOTED

UPPER J-BOX E300

(SHEET 3)	CETEK INPUT CARD TERMINALS	J-BOX TERMINALS
UPPER STEP BAND LOCK	J1-1	ORA — PUR X5
UPPER LEFT HOZ. COMBIMPACT	J1-2	ORA — PUR X5
UPPER LEFT VERTICAL COMBIMPACT	J1-3	ORA — PUR X5
UPPER LEFT LEVEL STEP	J1-4	ORA — PUR X5
UPPER LEFT HANDRAIL INLET	J2-1	ORA — PUR X5
UPPER LEFT BROKEN HANDRAIL	J2-2	ORA — PUR X5
UPPER LEFT SKIRT	J2-3	ORA — PUR X5
UPPER MIDDLE LEFT SKIRT	J2-4	PUR X5
MOTOR AREA STOP SWITCH	J3-1	ORA — PUR X5
UPPER E-STOP	J3-2	ORA — PUR X5
ACCESS COVER SWITCH(S) (WIRED NORMALLY OPEN HELD CLOSED) UPPER ACCESS COVER	J3-4	WHT — BLK X5
(PREWIRED IN UPPER J-BOX) UPPER PIT STOP SWITCH	J3-3	X5

E300 J-BOX TERMINALS

ALARM & ALARM SWITCH SEE 6013188035_29 SHEET 8	X3	#18AWG RED
	302	#18AWG YEL
ALARM BUZZER SEE 6013188035_29 SHEET 8	X4	#18AWG BLK
	302	#18AWG YEL

UPPER TRAFFIC INDICATOR LIGHTS SEE 6013188035_29 SHEET 11	A19	#18AWG RED	WIRE #1 RED LIGHT
	A20	#18AWG BLK	WIRE #1 GREEN LIGHT
	A17	#18AWG BLU	WIRE #2 GREEN LIGHT
			WIRE #2 RED LIGHT

UPPER RIGHT J-BOX TO UPPER J-BOX E300

(SHEET 3)	TERMINALS IN UPPER J-BOX E300 CETEK INPUT CARD	TERMINALS IN UPPER RIGHT J-BOX
UPPER RIGHT HOZ. COMBIMPACT	J4-1	PUR1 — PUR2 X5
UPPER RIGHT VER. COMBIMPACT	J4-2	PUR3 — PUR4 X5
UPPER RIGHT LEVEL STEP	J4-3	PUR5 — PUR6 X5
UPPER RIGHT HANDRAIL INLET	J4-4	PUR7 — PUR8 X5
UPPER RIGHT BROKEN HANDRAIL	J5-1	PUR9 — PUR10 X5
UPPER RIGHT SKIRT	J5-2	PUR11 — PUR12 X5
UPPER RIGHT MIDDLE SKIRT	J5-3	PUR13 X5
SPARE	J5-4	PUR14 X5
UPPER LEFT WORN STEP WHEEL	J6-1	SEE SHEET 3-4C
UPPER LEFT WORN CHAIN WHEEL	J6-2	SEE SHEET 3-4C
SPARE	J6-3	PUR17 X5
SPARE	J6-4	PUR18 X5

	TERMINALS IN UPPER J-BOX E300	TERMINALS IN UPPER RIGHT J-BOX
(24VDC) X5	WHT36 #12AWG	X5 (24VDC)
GND	GRN40 #12AWG	GND

SPARE	PUR 15	SPARE
SPARE	PUR 16	SPARE
SPARE	PUR 23	SPARE
SPARE	PUR 24	SPARE
SPARE	PUR 25	SPARE
SPARE	PUR 26	SPARE
SPARE	PUR 27	SPARE
SPARE	PUR 28	SPARE
SPARE	PUR 29	SPARE
SPARE	PUR 30	SPARE
SPARE	PUR 31	SPARE
SPARE	PUR 32	SPARE
SPARE	PUR 33	SPARE
SPARE	PUR 34	SPARE
SPARE	PUR 35	SPARE
SPARE	WHT37 #12AWG	SPARE
SPARE	BLK38 #12AWG	SPARE
SPARE	BLK39 #12AWG	SPARE

UPPER KEY SWITCH SEE 6013188035_29 SHEET 9	A1	PUR 19
	A3	PUR 20
	A4	PUR 21
	A5	PUR 22

E300 J-BOX TERMINALS

UPPER LEFT COMBLIGHT SEE 6013188035_29 SHEET 11	A21	#18AWG BRN	LEFT COMBLIGHT BROWN WIRE
	A17	#18AWG BLU	LEFT COMBLIGHT BLUE WIRE
UPPER RIGHT COMBLIGHT SEE 6013188035_29 SHEET 11	A21	#18AWG BRN	RIGHT COMBLIGHT BROWN WIRE
	A17	#18AWG BLU	RIGHT COMBLIGHT BLUE WIRE

WAS 841382D91

SHEET 6 OF 7

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
-	04/02/07	DA	ASB	

DRAWN ASB

KONE

NAME WIRING, DEVICENET, SAFETY DEVICES,& POINT TO POINT

SHEET 76 D

6013188035_30

POINT TO POINT WIRING SHEET 3 OF 3

LOWER J-BOX E500

(SHEET 5) CETEK INPUT CARD TERMINALS		J-BOX TERMINALS
LOWER LEFT CHAIN TENSION	J1-1	ORA — PUR X5
LOWER LEFT HOZ. COMBIMPACT	J1-2	ORA — PUR X5
LOWER LEFT VERTICAL COMBIMPACT	J1-3	ORA — PUR X5
LOWER LEFT LEVEL STEP	J1-4	ORA — PUR X5
LOWER LEFT HANRAIL INLET	J2-1	ORA — PUR X5
LOWER LEFT UPTHRUST	J2-2	ORA — ORA — PUR X5
LOWER LEFT SKIRT	J2-3	ORA — PUR X5
LOWER MIDDLE LEFT SKIRT	J2-4	PUR X5
LOWER LEFT HANDRAIL THROW OFF	J3-2	PUR X5
LOWER LEFT BROKEN HANDRAIL	J3-3	PUR X5
ACCESS COVER SWITCH(S) (WIRED NORMALLY OPEN HELD CLOSED) LOWER ACCESS COVER	J3-4	WHT — BLK X5
(PREWIRED IN LOWER J-BOX) LOWER PIT STOP SWITCH	J3-1	X5

E500 J-BOX TERMINALS

LOWER KEY SWITCH
SEE 6013188035_29 SHEET 11

A1	#18AWG RED
A2	#18AWG BLK
A3	#18AWG BLU
A4	#18AWG BRN

LOWER TRAFFIC INDICATOR LIGHTS
SEE 6013188035_29 SHEET 11

A19	#18AWG RED	WIRE #1 GREEN LIGHT
A20	#18AWG BLK	WIRE #1 RED LIGHT
A17	#18AWG BLU	WIRE #2 GREEN LIGHT, WIRE #2 RED LIGHT

LOWER RIGHT J-BOX TO LOWER J-BOX E500

(SHEET 5) TERMINALS IN LOWER J-BOX E500 CETEK INPUT CARD		TERMINALS IN LOWER RIGHT J-BOX
LOWER RIGHT CHAIN TENSION	J4-1	PUR1 — PUR2 X5
LOWER RIGHT HOZ. COMBIMPACT	J4-2	PUR3 — PUR4 X5
LOWER RIGHT VER. COMBIMPACT	J4-3	PUR5 — PUR6 X5
LOWER RIGHT LEVEL STEP	J4-4	PUR7 — PUR8 X5
LOWER RIGHT HANRAIL INLET	J5-1	PUR9 — PUR10 X5
LOWER RIGHT UPTHRUST	J5-2	PUR11 — ORA — PUR12 X5
LOWER RIGHT SKIRT	J5-3	PUR13 — PUR14 X5
LOWER MIDDLE RIGHT SKIRT	J5-4	PUR15 X5
LOWER E-STOP	J6-1	PUR16 — PUR17 X5
LOWER RIGHT HANDRAIL THROW OFF	J6-2	PUR18 X5
LOWER RIGHT WORN STEP WHEEL	J6-3	SEE SHEET 5-4C
LOWER RIGHT WORN CHAIN WHEEL	J6-4	SEE SHEET 5-4C

TERMINALS IN LOWER J-BOX E500

ALARM & ALARM SWITCH
SEE 6013188035_29 SHEET 8

X3	PUR 21
X4	PUR 22
302	PUR 23

E500 J-BOX TERMINALS

LOWER LEFT COMBLIGHT
SEE 6013188035_29 SHEET 11

A21	#18AWG BRN	LEFT COMBLIGHT BROWN WIRE
A17	#18AWG BLU	LEFT COMBLIGHT BLUE WIRE

LOWER RIGHT COMBLIGHT
SEE 6013188035_29 SHEET 11

A21	#18AWG BRN	RIGHT COMBLIGHT BROWN WIRE
A17	#18AWG BLU	RIGHT COMBLIGHT BLUE WIRE

TERMINALS IN LOWER J-BOX E500		TERMINALS IN LOWER RIGHT J-BOX
(24VDC) X5	WHT36 #12AWG	X5 (24VDC)
GND	GRN40 #12AWG	GND
SPARE	PUR 19	SPARE
SPARE	PUR 20	SPARE
SPARE	PUR 24	SPARE
SPARE	PUR 25	SPARE
SPARE	PUR 26	SPARE
SPARE	PUR 27	SPARE
SPARE	PUR 28	SPARE
SPARE	PUR 29	SPARE
SPARE	PUR 30	SPARE
SPARE	PUR 31	SPARE
SPARE	PUR 32	SPARE
SPARE	PUR 33	SPARE
SPARE	PUR 34	SPARE
SPARE	PUR 35	SPARE
SPARE	WHT37 #12AWG	SPARE
SPARE	BLK38 #12AWG	SPARE
SPARE	BLK39 #12AWG	SPARE

NOTE: ALL WIRING IS #18AWG UNLESS OTHERWISE NOTED

ENCODER WIRING
SEE 6013188035_29
SHEET 4

UPPER LEFT HANRAIL SPEED SENSOR
SEE SHEET 3-2B

UPPER RIGHT HANRAIL SPEED SENSOR
SEE SHEET 3-2A

UPPER LEFT MISSING STEP DETECTOR WIRING
SEE SHEET 3-4B

LOWER RIGHT MISSING STEP DETECTOR WIRING
SEE SHEET 5-4B

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
4				
3				
2				
1				
-	04/02/07	DA	ASB	

DRAWN ASB

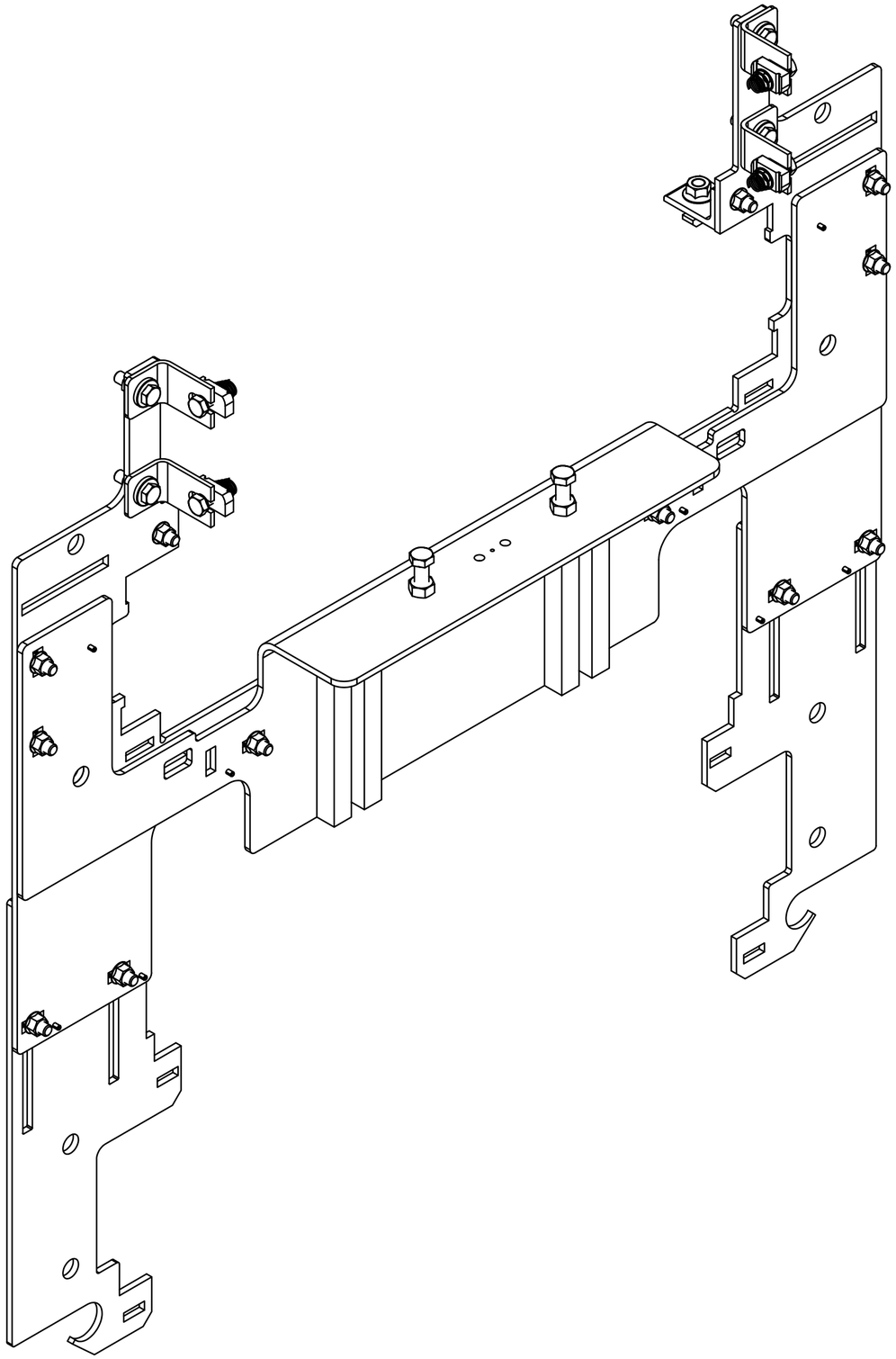
KONE

NAME WIRING, DEVICENET, SAFETY DEVICES, & POINT TO POINT

SHEET 77 D

6013188035_30

WAS 841382D91



WAS 5077502D01

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±2.5 .XX = ±1.01 .XXX = ±0.381 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 75.00

REV	DATE	CH'K	APP'D	F
-	06/15/07	JLR	SJE	

DRAWN
J.REYMER

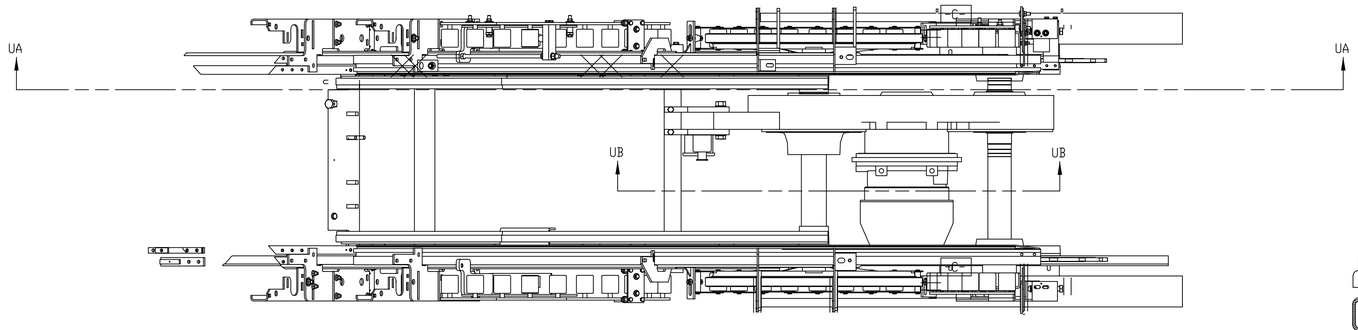
KONE

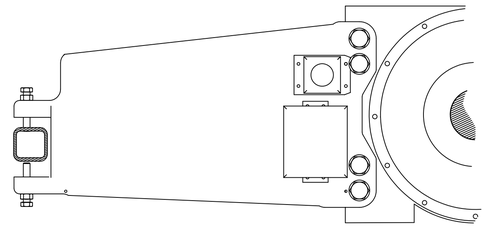
NAME
INCLINE ASSEMBLY
ECOMOD
TYPE 600

SHEET 79

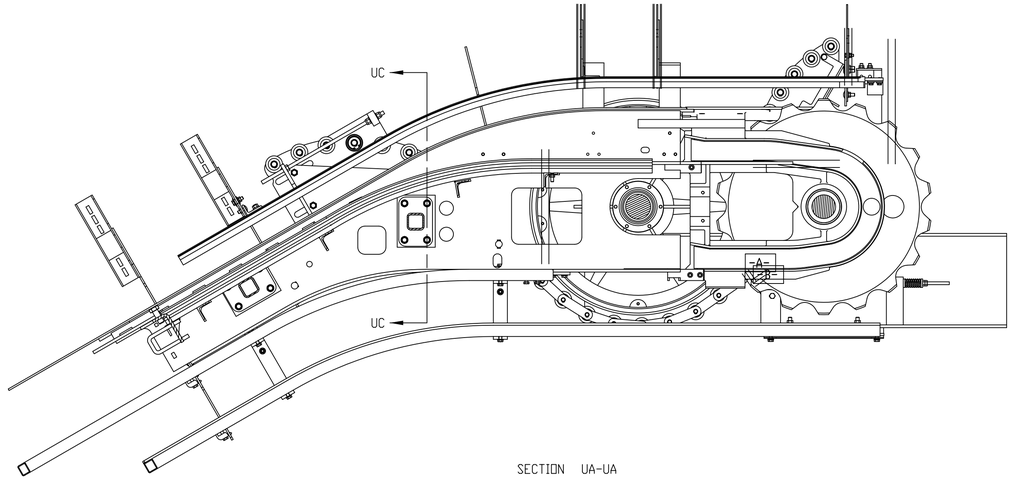
C

6013188035_32

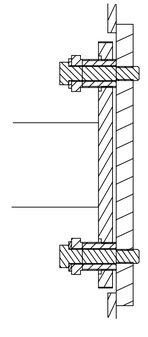




SECTION UB-UB
SCALE 1:5



SECTION UA-UA



SECTION UC-UC
SCALE 1:2
TYP

WAS 5077502D02 SHEET 1 OF 4

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D
-	06/15/07	JLR	SJE

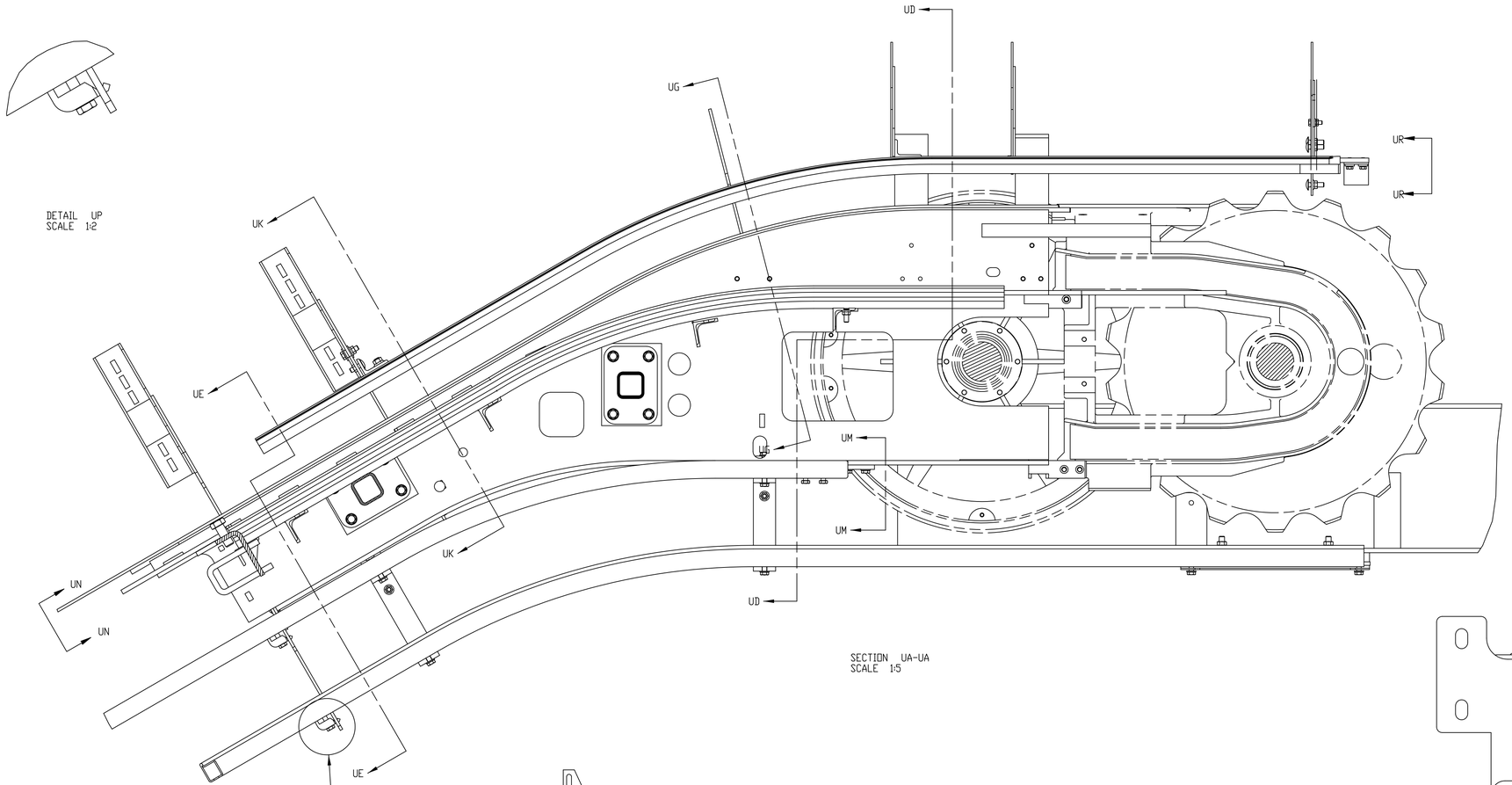
DRAWN
J.REYMER

KONE

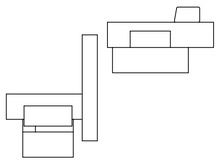
NAME
UPPER END
ASSEMBLY ECOMOD

SHEET 80 D

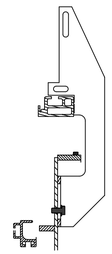
6013188035_33



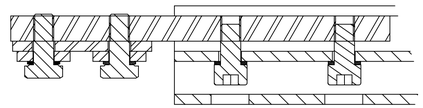
SECTION UA-UA
SCALE 1:5



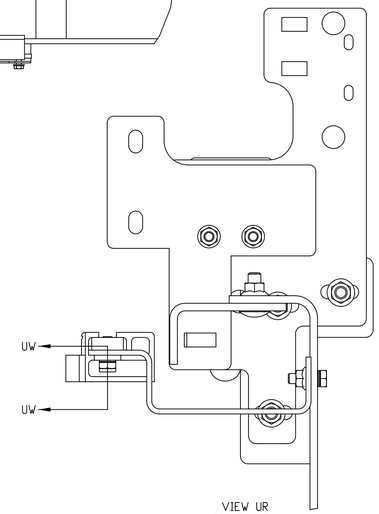
VIEW UN
SCALE 1:1
VIEW OF RIGHT HAND SIDE



SECTION UG-UG
SCALE 1:5



SECTION UW-UW
SCALE 1:1



VIEW UR
SCALE 1:2

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
-	06/15/07	JLR	SJE	

DRAWN J.REYMER

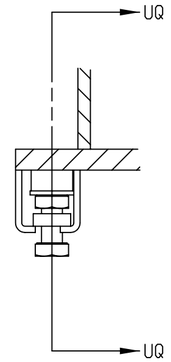
KONE

NAME
UPPER END
ASSEMBLY ECOMOD

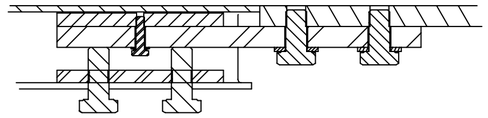
SHEET 81 D

6013188035_33

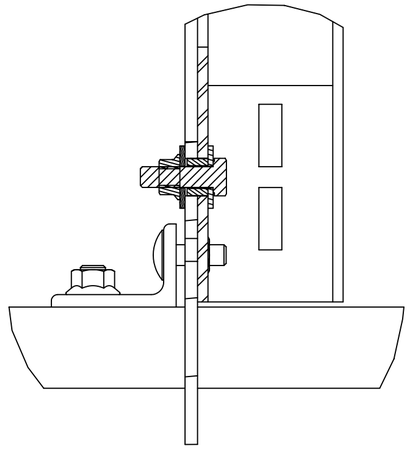
WAS 5077502D02 SHEET 2



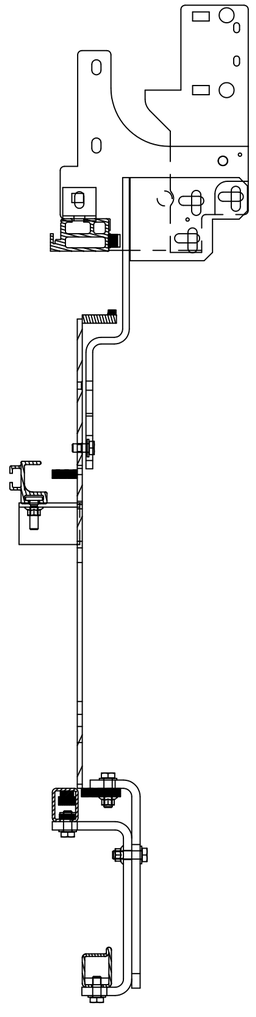
SECTION UM-UM
SCALE 1:2



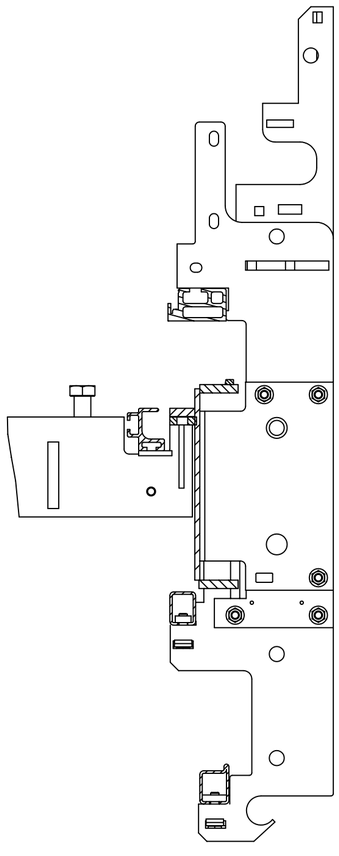
SECTION UQ-UQ
SCALE 1:2



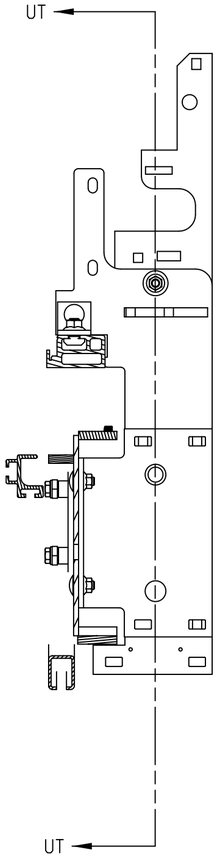
SECTION UT-UT
SCALE 1:2



SECTION UD-UD
SCALE 1:5



SECTION UE-UE
SCALE 1:5



SECTION UK-UK
SCALE 1:5

SHEET 3 OF 4

WAS 5077502D02 SHEET3

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±2.5 .XX = ±1.01 .XXX = ±0.381 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT
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PLOT SCALE: = 75.00

REV	DATE	CH'K	APP'D	F
1	06/15/07	JLR	SJE	

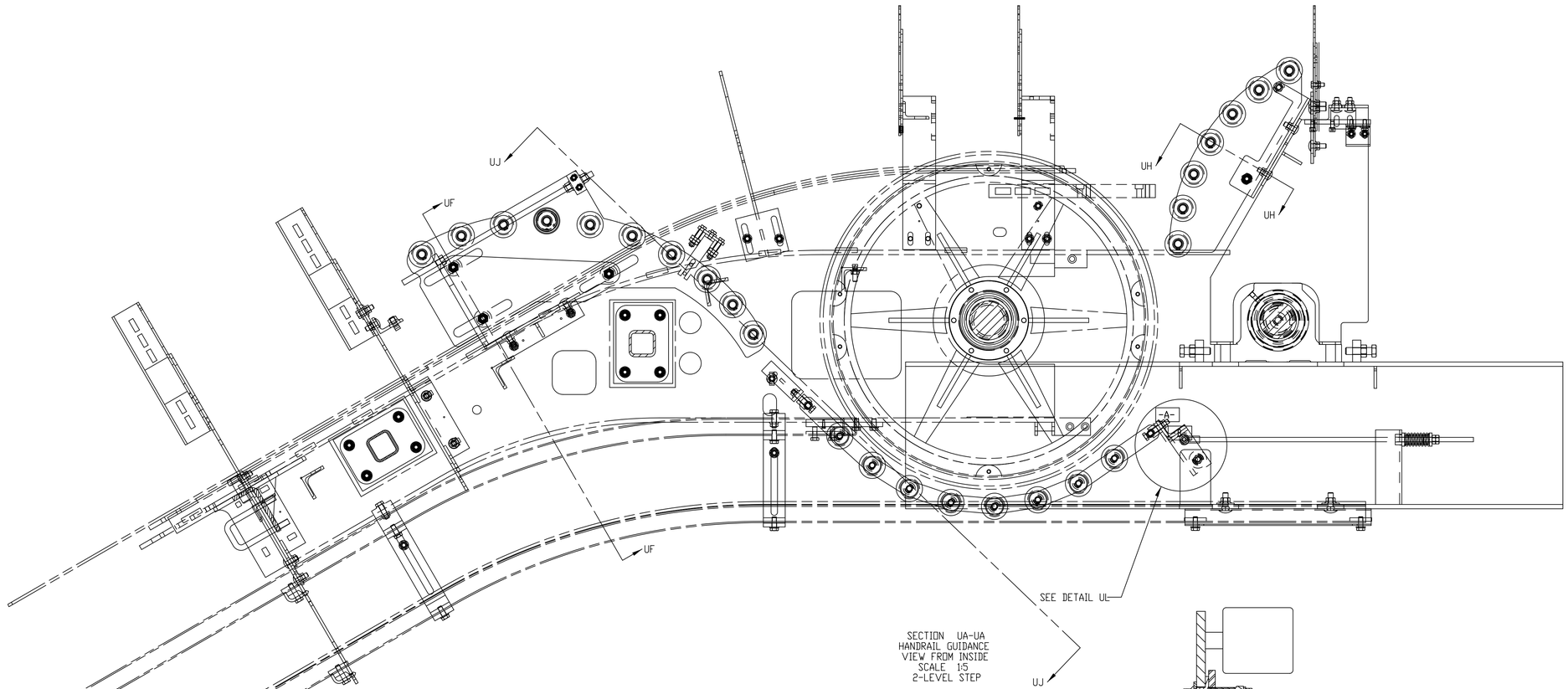
DRAWN
J.REYMER

KONE

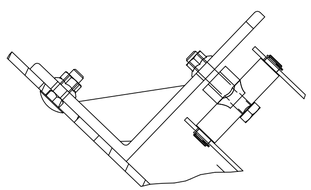
NAME
UPPER END
ASSEMBLY ECOMOD

SHEET 82 C

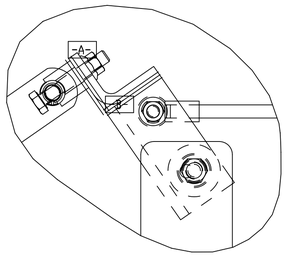
6013188035_33



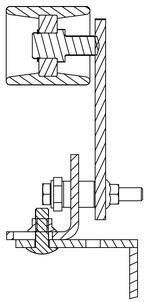
SECTION UA-UA
HANDRAIL GUIDANCE
VIEW FROM INSIDE
SCALE 1:5
2-LEVEL STEP



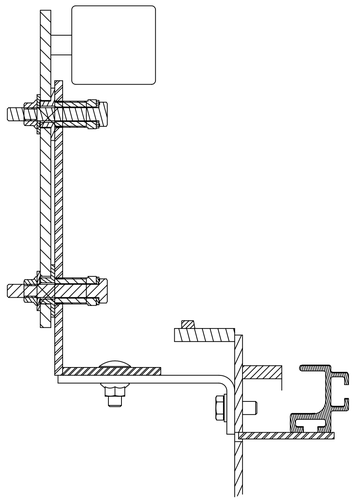
SECTION UJ-UJ
SCALE 1:2



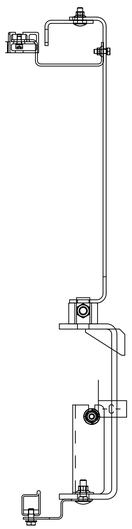
DETAIL UL
SCALE 1:2



SECTION UH-UH
SCALE 1:2



SECTION UF-UF
SCALE 1:2



VIEW UD
SCALE 1:5

SHEET 4 OF 4

WAS 5077502D02 SHEET 4

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D
-	06/15/07	JLR	SJE

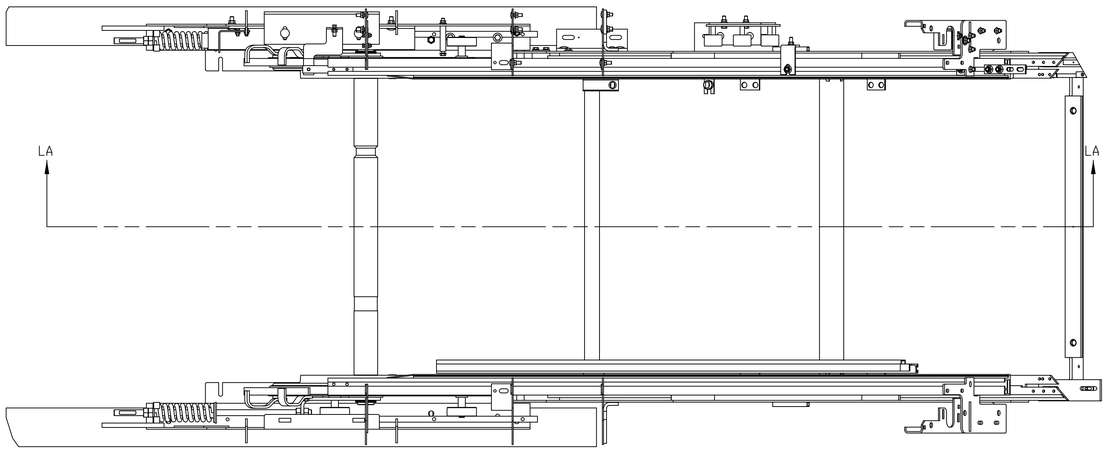
DRAWN J.REYMER

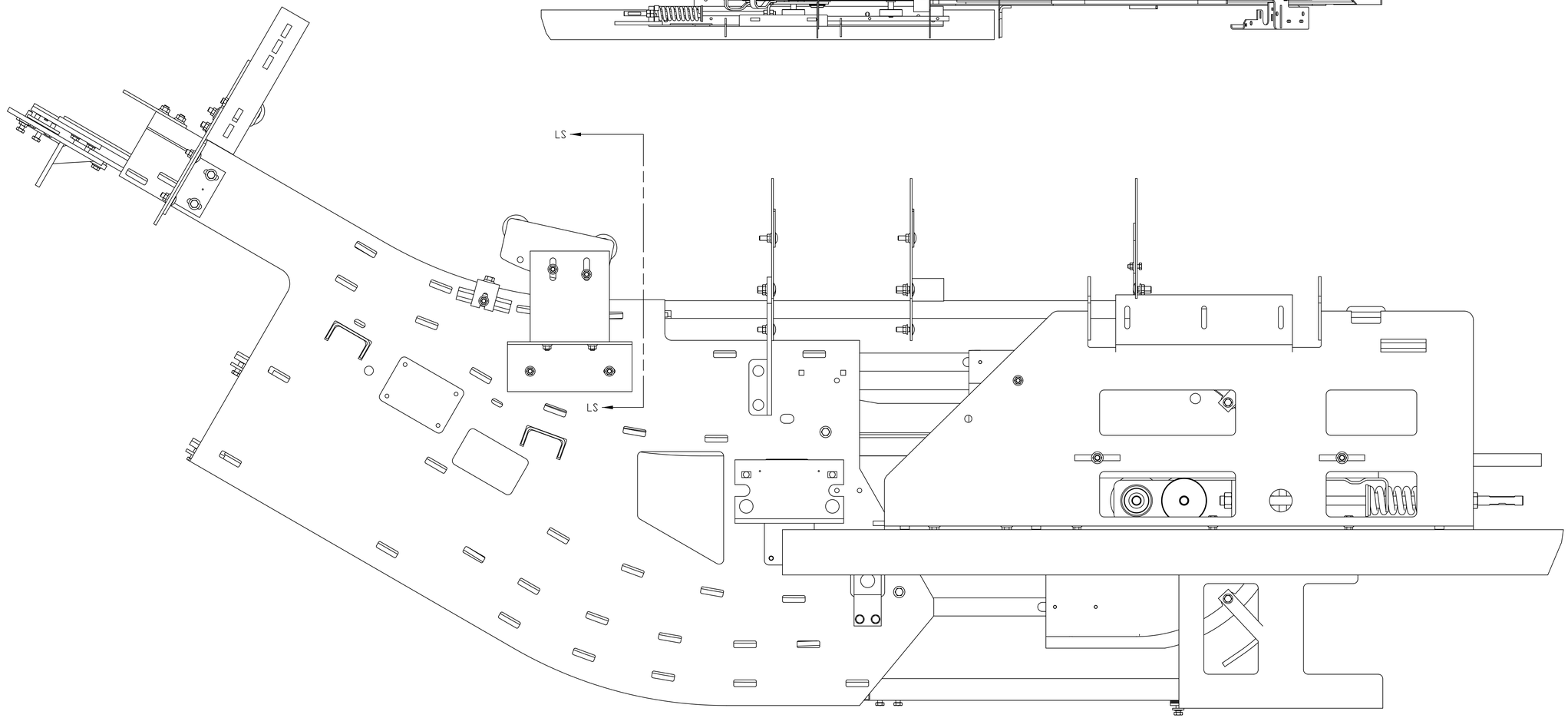
KONE

NAME
UPPER END
ASSEMBLY ECOMOD

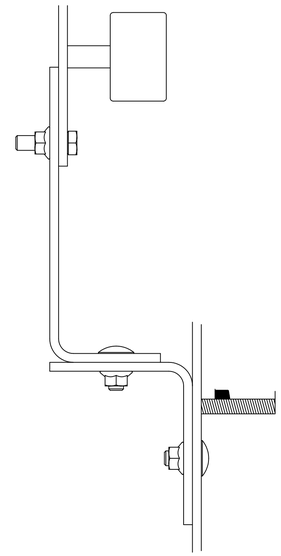
SHEET 83 D

6013188035_33





VIEW FROM OUTSIDE
OF LOWER LEFT HAND SIDE
SCALE 1:5



SECTION LS-LS
SCALE 1:2

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D	F
-	06/15/07	JLR	SJE	

DRAWN
J.REYMER

KONE

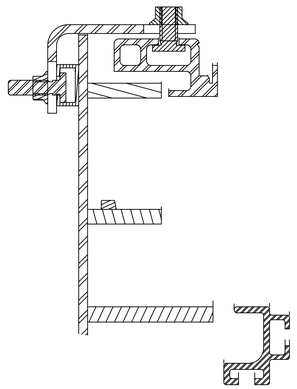
NAME
LOWER END
ASSEMBLY ECOMOD

SHEET 84 D

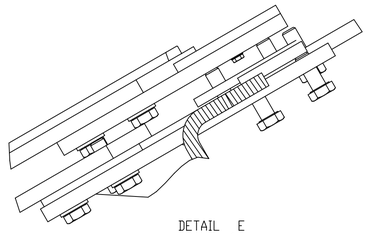
6013188035_34

WAS 5077502D03 SHEET 1

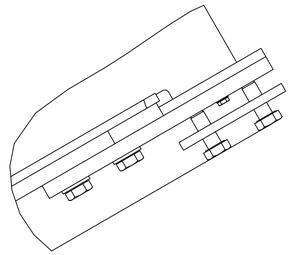
SHEET 1 OF 4



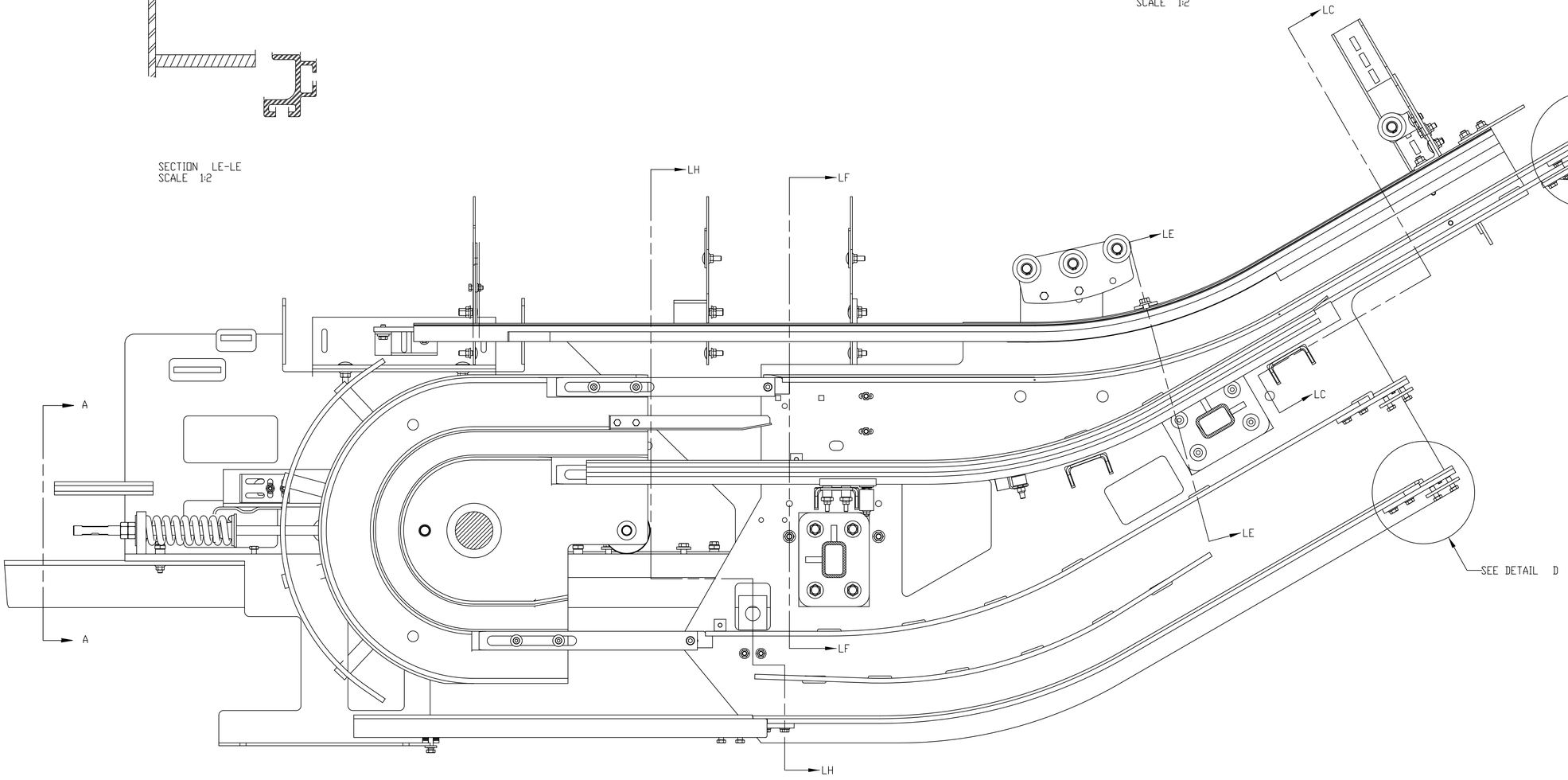
SECTION LE-LE
SCALE 1:2



DETAIL E
SCALE 1:2



DETAIL D
SCALE 1:2



SECTION LA-LA
SCALE 1:5
2-LEVEL

WAS 5077502D03 SHEET 2

SHEET 2 OF 4

TOLERANCE UNLESS SHOWN

SOURCE/SPEC#/FINISH/WT

REV	DATE	CH'K	APP'D
-	06/18/07	JLR	SJE

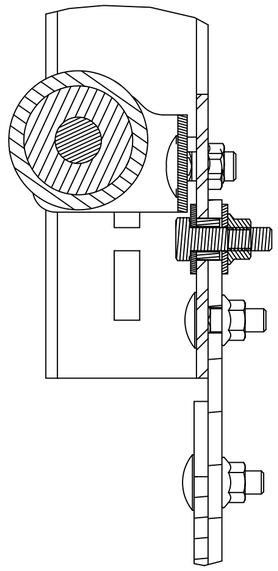
DRAWN
J.REYMER

KONE

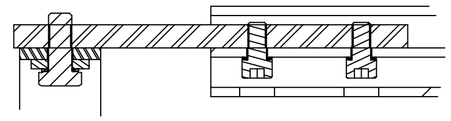
NAME
LOWER END
ASSEMBLY ECOMOD

SHEET 85 D

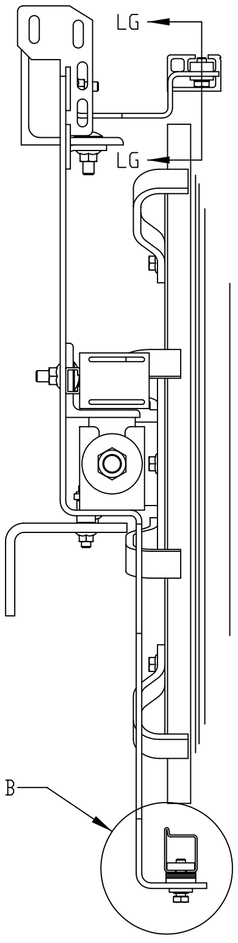
6013188035_34



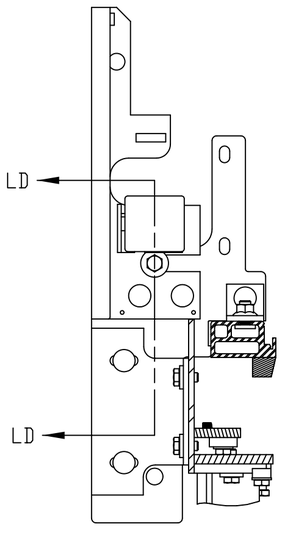
SECTION LD-LD
SCALE 1:2



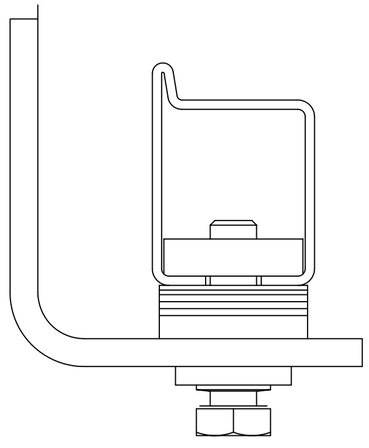
SECTION LG-LG
SCALE 1:2



VIEW A
SCALE 1:5



SECTION LC-LC
SCALE 1:5



DETAIL B
SCALE 1:1
4 PLACES

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±2.5 .XX = ±1.01 .XXX = ±0.381 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 75.00

REV	DATE	CH'K	APP'D	F
-	06/18/07	JLR	SJE	

DRAWN
J.REYMER

KONE

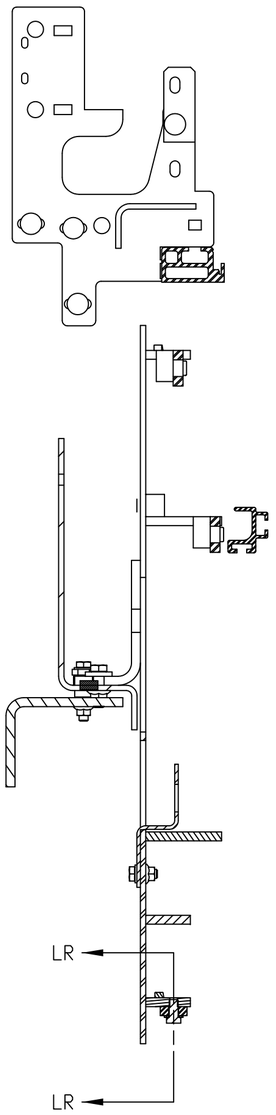
NAME
LOWER END
ASSEMBLY ECOMOD

SHEET 86

6013188035_34

SHEET 3 OF 4

WAS 5077502D03 SHEET 3



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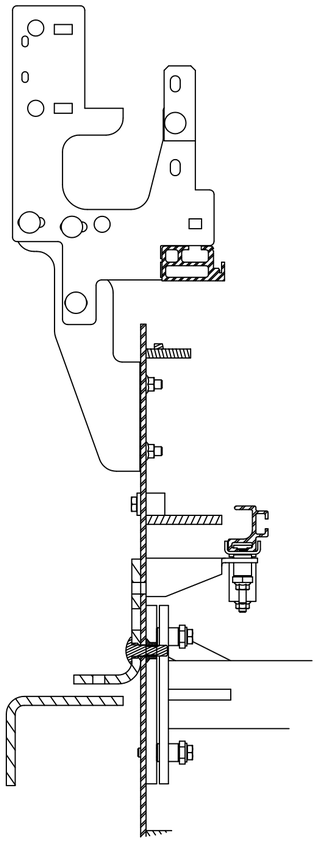
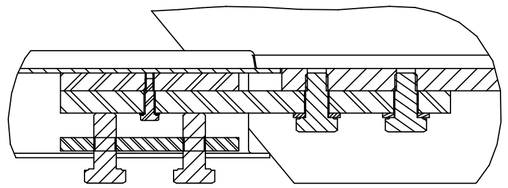


SECTION LF-LF



SECTION LR-LR
SCALE 1:2

SHEET 4 OF 4

WAS 5077502D03 SHEET 4

METRIC DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±2.5 .XX = ±1.01 .XXX = ±0.381 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 75.00

REV	DATE	CH'K	APP'D	F
-	06/18/07	JLR	SJE	

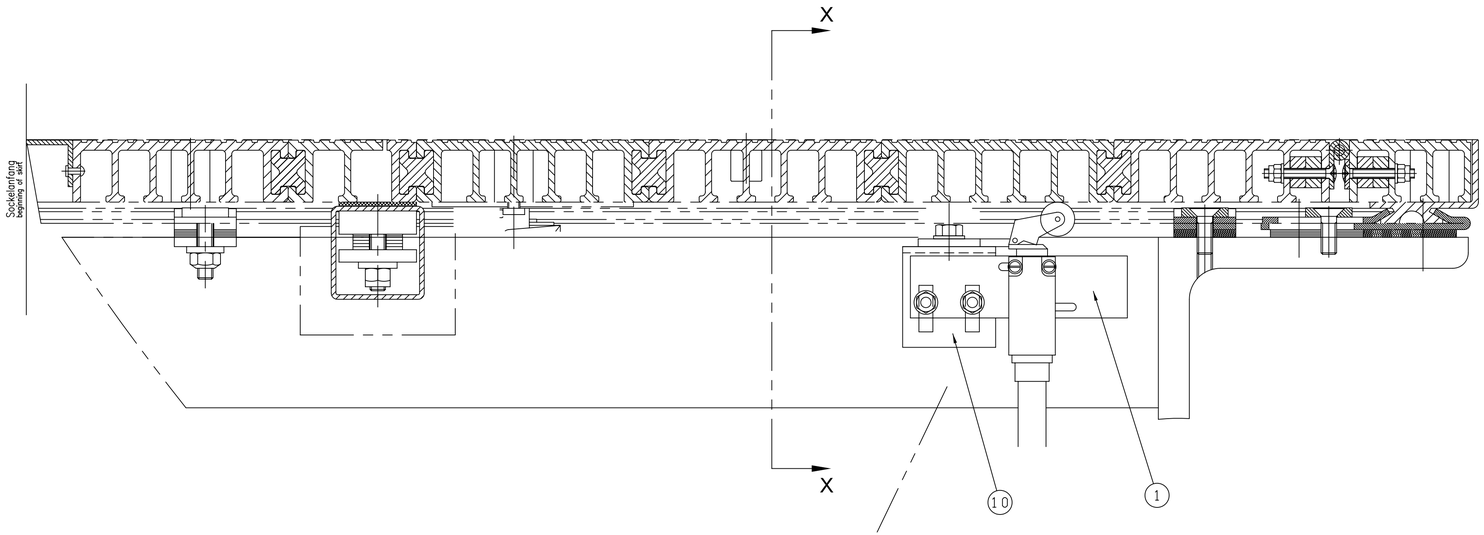
DRAWN
J.REYMER

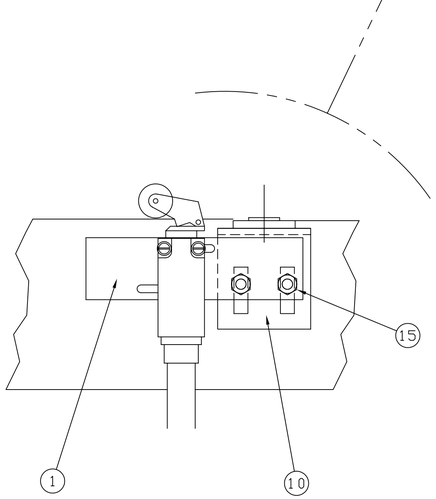
KONE

NAME
LOWER END
ASSEMBLY ECOMOD

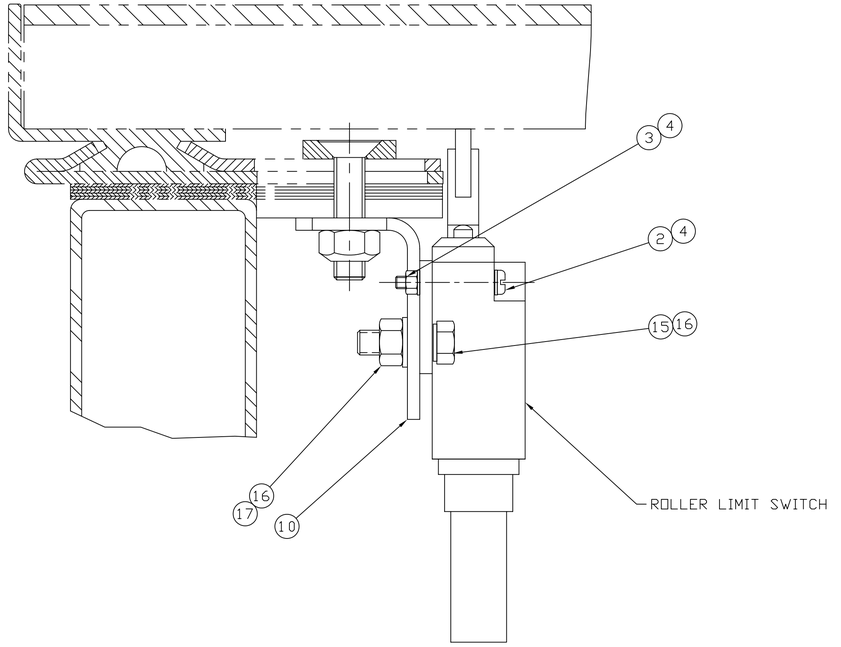
SHEET 87

6013188035_34





ALTERNATE ORIENTATION
FOR SPACE CONSTRAINTS



SECTION X-X
SCALE 2:1

WAS 839710-K10

METRIC DIMENSIONS	
TOLERANCE UNLESS SHOWN X=±1.5 .X=±.75 ANGLES ±1°	
SOURCE/SPEC#/FINISH/WT	
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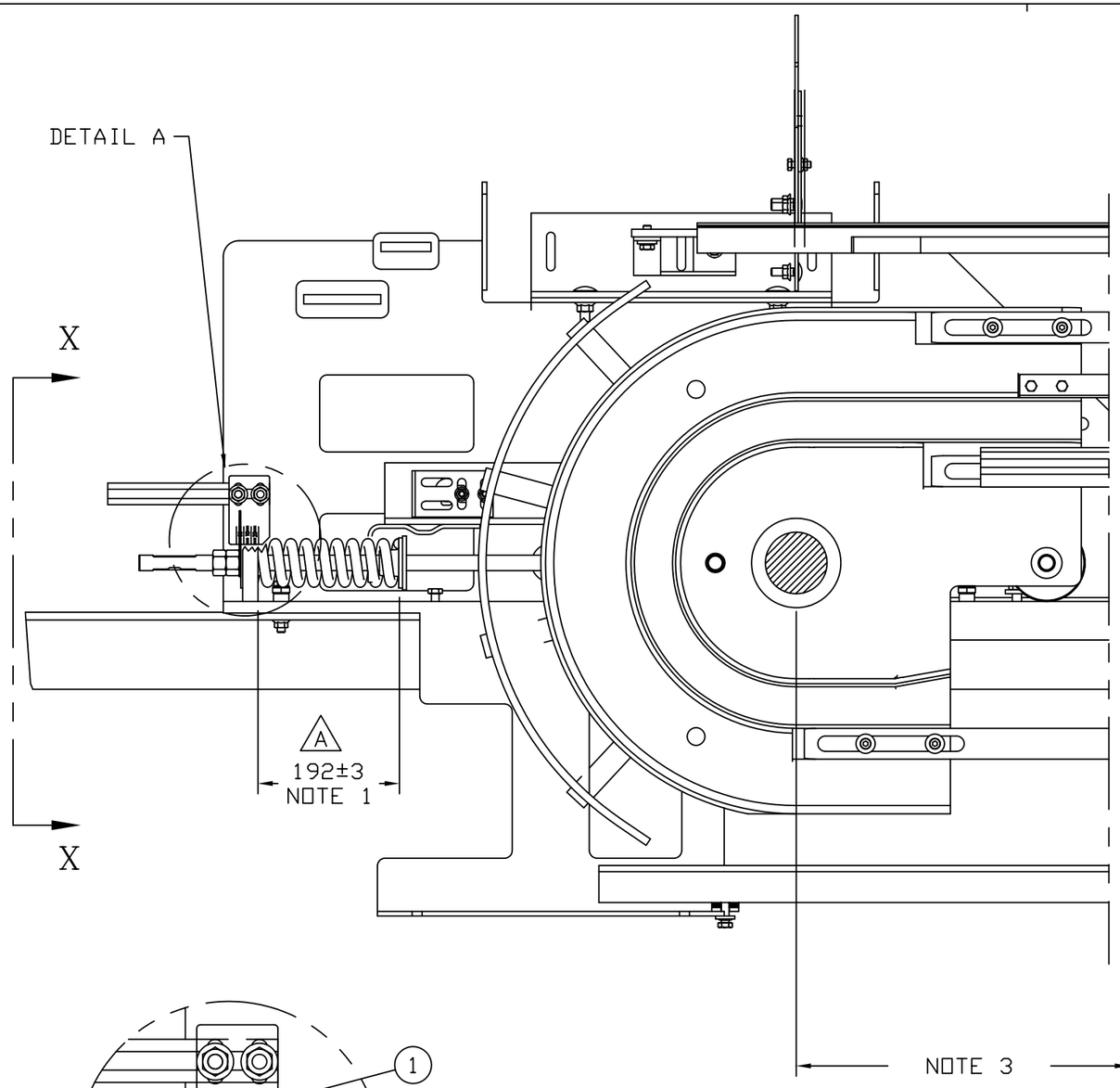
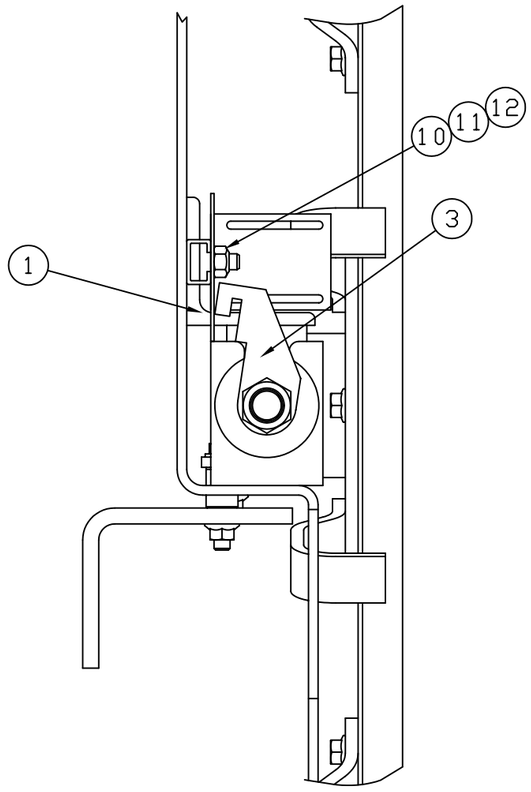
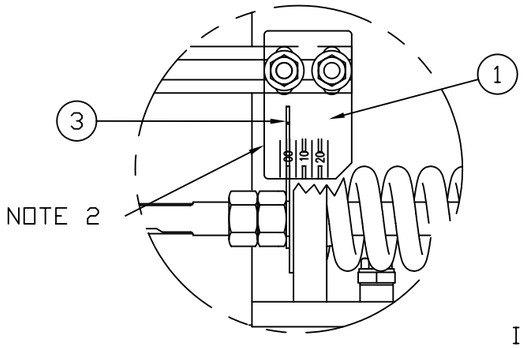
PLOT SCALE: = 50.00	
- 06/15/07 JLR SJE	
REV DATE CH'K APP'D F	
DRAWN J. REYMER	
KONE	
NAME ASSY,DETECTOR ACCESS CVR LIFT SEPTA	
SHEET 88 D	
6013188035_35	





SECTION X–X

SCALE 2:1



DETAIL A

SCALE 2:1

NOTES:

A

1. DIMENSION OF COMPRESSED SPRING.
2. LOCATE SCALE SO THAT INDICATOR IS AT "0"
3. LATERAL POSITION OF SCALE AND INDICATOR WILL VARY ACCORDING TO K-MASS DIMENSION

ITEM#	QTY	UOM	PART#	DESCRIPTION
1	2	PC	KM821708H01	SCALE,SPRG RTRN STATION,HDB
3	2	PC	DEE2484997	INDICATOR RETURN STATION SPRING,5X90MM
10	4	PC	DEE0057201	HAMMER HEAD SCREW,M10X30 ST 5.6 A3B
11	4	PC	DEE0260274	HEX NUT,M10 8 ST A3B DIN6924
12	4	PC	DEE0063677	FLAT WASHER,M10 ST A3E DIN7349

WAS 821605D01

A NOTE 1 WAS "UNCOMPRESSED"

METRIC DIMENSIONS

TOLERANCE UNLESS SHOWN
X=±2

ANGLES ±1°

SOURCE/SPEC#/FINISH/WT

PLOT SCALE: = 200.00

REV	DATE	CH'K	APP'D	F
A	09/26/07	WPC	SJE	
–	06/15/07	WPC	SJE	

DRAWN
SENGER

KONE

NAME
ASSY,SCALE
RETURN SPRING

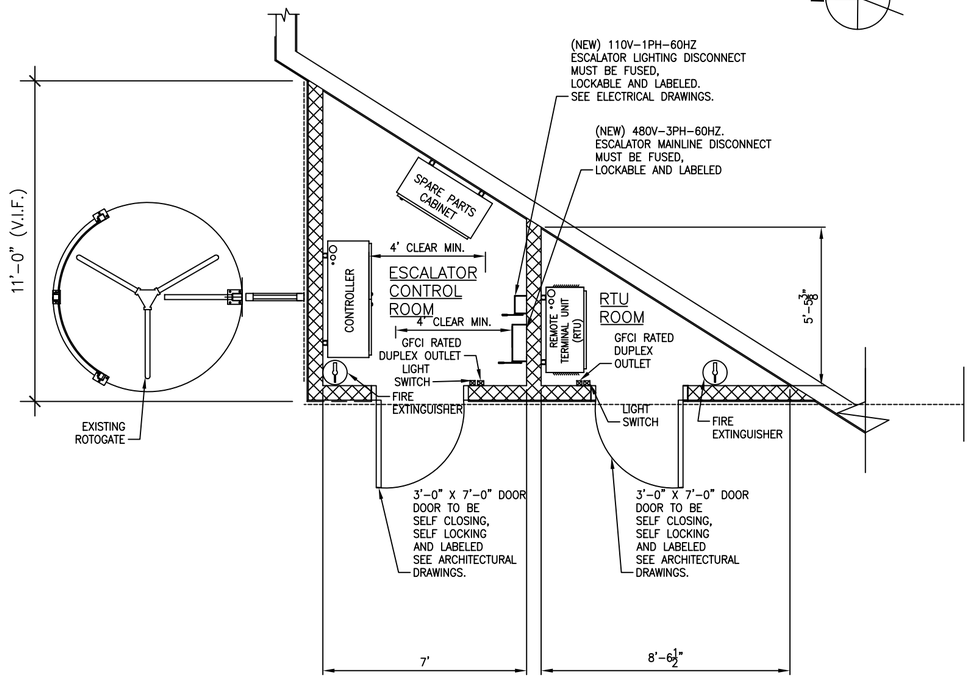
SHEET 89 B

6013188035_36

OLNEY-CONTROL ROOM.jpg

2/V05 ESCALATOR– PROPOSED CONTROLLER AND REMOTE TERMINAL UNIT (RTU) AREA–CONCOURSE LEVEL

SCALE: NOT TO SCALE



1/V05 ESCALATOR–CONTROLLER AND RTU PLAN–CONCOURSE LEVEL

SCALE: 1/2" = 1'-0"

GENERAL NOTES:

1.) PLANS SHOWN ARE GENERIC AND ARE ONLY TO BE USED FOR REFERENCE.

2.) CONTRACTOR SHALL VERIFY ALL PROPOSED CLEARANCES PRIOR TO CONSTRUCTION.

3.) CONTRACTOR SHALL PERFORM FIELD SURVEY OF ALL EQUIPMENT PRIOR TO START OF WORK. SURVEY RESULTS ARE TO BE SUBMITTED TO THE AUTHORITY FOR RECORD.

4.) ALL WATER PIPES (I.E. SPRINKLERS, HOT AND COLD WATER SUPPLIES) ARE TO BE RE–ROUTED CLEAR OF THE CONTROLLER AND RTU AREAS. SEE MECHANICAL DRAWINGS.

5.) ESCALATOR CONTROLLER, SPARE PARTS CABINET AND RTU UNIT ARE REQUIRED TO BE WALL MOUNTED ON UNISTRUT.

6.) SEE ELECTRICAL DRAWINGS FOR ALL INFORMATION ON THE ELECTRICAL SYSTEM & COMPONENTS.

7.) SEE ARCHITECTURAL DRAWINGS FOR ALL INFORMATION ON THE ARCHITECTURAL SYSTEM & COMPONENTS.

8.) SEE MECHANICAL DRAWINGS FOR ALL INFORMATION ON THE MECHANICAL SYSTEM & COMPONENTS.

0 2 4
SCALE IN FEET

INCH DIMENSIONS
TOLERANCE UNLESS SHOWN .X = ±.1 .XX = ±.04 .XXX = ±.015 ANGLES ±1°
SOURCE/SPEC#/FINISH/WT V-05 27 53049
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PLOT SCALE: = 50.00

REV	DATE	CH'K	APP'D	F
-	09/JUL/07	WPC	SJE	

DRAWN
SENGER

KONE

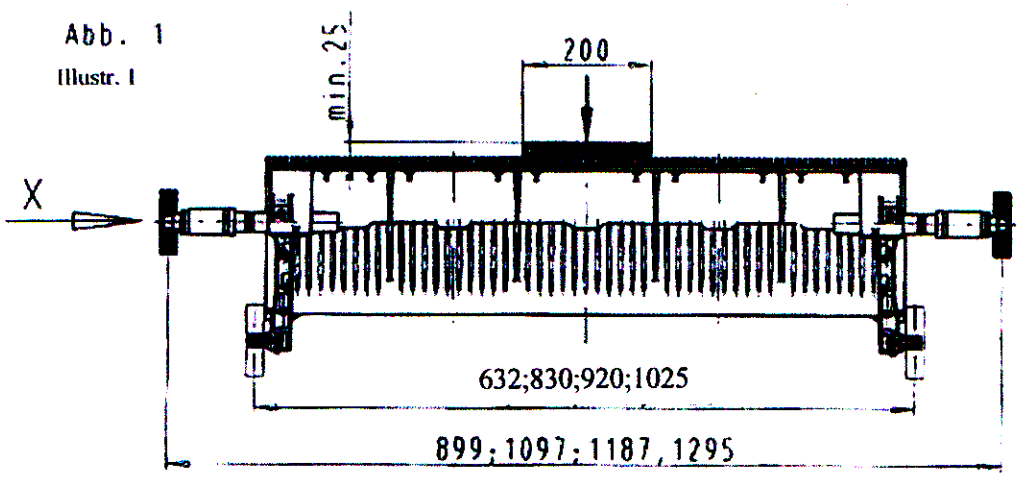
NAME
CONTROLLER ROOM, REMOTE TERMINAL ROOM PLAN

SHEET 90 C

6013188035_37

KONE

Abb. 1
Illustr. 1



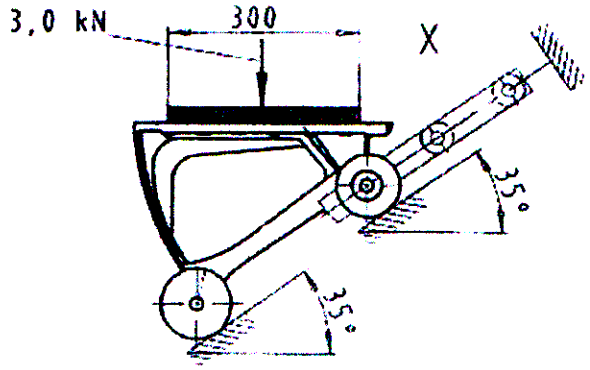
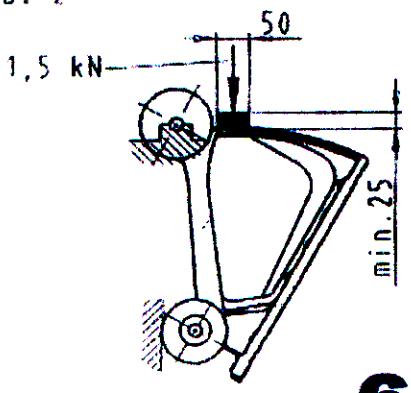


Abb. 2 Illustr. 2



STEP STATIC & DYNAMIC TEST REPORT:

600 mm Step ECO With Demarcation

6013188035_38

Issue 1

Schindler Elevator Corporation

ECO Die Step Testing

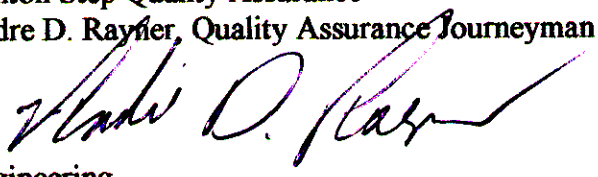
Static Load Testing
And
Dynamic Fatigue Testing
Of the
Kone ECO Step

This report applies to the following steps:

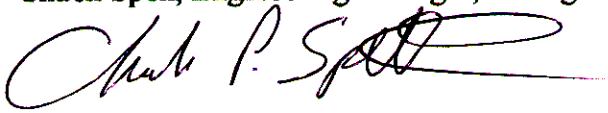
- 600mm ECO Step With Demarcation

August 12, 2004

Submitted by: Clinton Step Quality Assurance
Andre D. Rayner, Quality Assurance Journeyman



Approved by: Engineering
Chuck Spell, Engineering Manager, Manager Step Facility



Executive Summary

Static Load Testing

As required in American Society of Mechanical Engineers (ASME) A17.1-2000 section 6.1.3.9.4 and as prescribed in 6.1.3.10.4, all step widths produced by the ECO-Die at the Clinton Step Facility are subject to the static load testing. This testing would also be in compliance with the testing requirements of EN115: Section 8.2.2.1.1 Pursuant to the requirements in the aforementioned codes, the steps tested were loaded to 3.0 kN on a plate specified by EN 115 and ASME A17.1 and were verify to have a deflection of less than 4mm at any point on the step. Also, the steps were verified to support a load of at least 1500 pounds at any point on the step tread surface using the support plate specified in A17.1. In addition to complying with the aforementioned code specifications, these steps were also tested to the KONE specification 2703819 and were found to exceed an average breaking resistance of greater than 28 kN, with a 3 σ consideration of at least 20 kN of force.

Dynamic Fatigue Testing

As required in American Society of Mechanical Engineers (ASME) A17.1-2000 section 6.1.3.5.7 and as prescribed in 8.3.11, all step widths produced by the ECO-Die at the Clinton Step Facility are subject to dynamic load testing. This testing would also be in compliance with the testing requirements of EN115: Section 8.2.2.2.1. Pursuant to the requirements in the aforementioned codes, the step tested was loaded with constantly varying loads greater than that of 3000N (674.4 lbf) and 500N (112.4 lbf) at a frequency of 10 Hz±5 for no less than 5,000,000 cycles.

Compliance Certification

The **Demarcated 600mm Kone ECO** step produced by the ECO-Die was tested and passed per the standards put forth in ASME Al7.1 Sections 8.3.11, 6.1.3.9.4, and 6.1.3.10.4 and EN 115 Sections 8.2.2.1.1 and 8.2.2.2.1. In addition to code specification compliance, **Demarcated 600mm Kone ECO** step was tested to the Kone Delivery Specification for Aluminum Step Bodies 2703819. The step meets and exceeds the specification prescribed therein. Thus, the step mentioned above produced by the Kone ECO-Die has been certified as having passed the dynamic testing requirements of ASME Al7.1-2000, EN 115-1995 +A1: 1998, and the Kone Delivery Specification for Aluminum Step Bodies 2703819.

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Introduction

The American Society of Mechanical Engineers, (ASME) Safety Code for Elevators and Escalators, - 17.1, specifies in 6.1.3.5.7 that all steps must be subjected to the step fatigue test described in 8.3.11. Similar language exists in the European escalator safety code EN 115 section 8.2.2.2.1, which requires a similar test for each step width. The testing parameters have been selected such that the intersection of the two code parameters would result in certification under both codes.

The testing parameters for ASME are set forth in 8.3.11.1-8.3.11.6. Similarly the testing parameters for EN 115 are set forth in 8.2.2.2.1. A complete copy of the rules from each safety code is included in the appendix.

Likewise, step safety requirements are also outlined in both the ASME A17.1 and the EN 115 code relative to the static loading of the step. Specifically, A17.1 – 2000, Section 6.1.3.9.4 and 6.13.10.4 calls for the step to be designed to support a load of 135 kg (300 lb) times a safety factory of 5 on a 150 mm by 250 mm plate located on any part on the step. Therefore the step must support a load of 675kg (1500 lb) on the plate. The EN 115 code requires the step body to not deflect by more than 4mm at any point of the step tread surface when applying an individual force of 3.0kN to the middle of the tread plate, vertically to the tread surface, by using a steel plate, 200 mm x 300 mm x 25 mm. There must not be any permanent deformation of the step body and the wheel bolts, however, settling tolerances are admissible.

In addition to code specifications compliance, the steps must also meet the static rigidity requirements of the KONE Specification 2703819, where the average breaking resistance must be greater than 28 kN, with a 3 σ consideration of at least 20 kN of force.

Schindler Elevator Corporation Clinton Step Facility, hereafter know as Clinton Step Facility, makes code compliance and safety its number one goal for all escalator applications. The internal testing parameters for all dynamic fatigue testing at the Clinton Step Facility exceeds the requirements of both ASME A17.1 and EN115. In all cases, the load range was greater than the ranges of 500N (112.4 lbf) and 3000N (674.4 lbf) at a frequency of 14.5Hz to 14.67Hz and for a minimum of 5,000,000 cycles. The additional loading was to ensure that all steps meet and exceed the minimum fatigue requirements of the safety codes. The frequency was purposely set at the high end of the range to ensure that the steps are able to withstand the maximum loading capacity for the required amount of time. With the same priority of safety, static testing is an ongoing process at the Clinton Step Facility. Static testing is an integral part of the daily in-process inspection of the casting process.

Fatigue Testing Procedures

Clinton testing parameters

Figure 1 below is a copy of the testing parameters issued for all dynamic fatigue tests performed at the Schindler Step Facility. All step widths manufactured by the ECO-Die are subject to testing using these parameters.

Note that the loading requirements exceed those of ASME A17.1 and EN 115. This was to allow all steps to exceed the minimum requirements of each safety code, which is in conformance with Schindler Elevator's commitment to safety and performance excellence.

Escalator Step Testing Parameters

Schindler Clinton Engineering

Per ASME A17.1 and the EN115 escalator steps must be tested using the following parameters:

a) The load range shall be set 125 lbf (556 N) to 725 lbf (3226 N) not to fall below the testing requirements of EN 115-8.2.2.2 at 112.4 lbf (500 N) to 674.4 lbf (3000 N).

b) The motor shall be set to run between 870 and 880 RPM. This will result in a frequency range of 14.5 and 14.67 Hz.

c) The test shall be run for a minimum of 5,000,000 cycles (96 hours or 4 days continuously.)

d) Check the progress of the test every 6 hours for the first 24 hours, then, every 12 hours for the remainder of the test.

Figure 1

Testing Equipment

For each step width produced by the ECO-Die, a step was randomly selected. In each case, the step was put through a series of pre-test and post-test dimensional checks, to guarantee a fair test, and the use of a step that meets the manufacturing print. This is in compliance with Schindler Elevator's ongoing policy of random dynamic fatigue testing of all steps produced at the Clinton Step Facility.

After a step is randomly selected, the overall flatness of the step is measured using a Zeiss Eclipse Coordinate Measuring Machine (CMM) shown in figure 2. Only steps that conform to the intended manufacturing dimensions are tested. This is checked against the manufacturing print for conformity. Once the pre-test measurements are taken, the dynamic fatigue test is performed based on the previously listed parameters. Next, the post-test measurements, identical to the pre-test, are made. The results of the pre-test and post-test measurements are then compared to determine if the step passed the deformation requirements.

The dynamic fatigue test is governed by a load cell-controller arrangement, shown in figures 3-6. In this setup, a Leeson Speed Master adjustable speed controller is connected to a WEG 4 hp AC motor. This controls the speed of the output shaft of the motor, which is connected to a cam and transfers displacement to a vertical rod to deliver the required loading. A Hettinger Baldwin Messtechnic, (HBM) C2 1-100 kN load cell is attached to the end of the rod and connected to a Newport digital readout. This allows for constant monitoring of the load applied. The speed of the output shaft is confirmed at every reading using a Mitutoyo digital tachometer. This arrangement allows for complete compliance with all requirements for the dynamic fatigue test.

Figure 2 Zeiss Eclipse

Figure 3 Controller, Motor, and Load Cell

Figure 4 Leeson Controller

Figure 5 Newport digital readout

Figure 6 WEG AC motor and Load cell

Pre-Test setup

The complete pre-testing involves measuring basic dimensions, checking for flatness in the step platform, and checking for any cracks or flaws in the structure of the step. Special attention is given to identify any surface blemishes or lamination that may be mistaken as a crack. These are documented for post-test comparison. The step, randomly chosen from the test run to validate the production process, must pass each check before it will be loaded and tested. This is part of Schindler Elevator's continuing commitment to quality and safety.

The flatness dimensional check is completed to establish a baseline reference for before and after measurements. A sample of the data sheet from these tests can be found in the appendix. In each case the dimension is compared to the manufacturing print to confirm that it is within an acceptable tolerance range. This is to guarantee that no step will pass or fail incorrectly.

Surface flaws are identified prior to testing and examined post-test to ensure no propagation occurs. This is done using Magna Flux Spot Check dye penetrating dye and Magna Flux developing spray (Figure 7). In this manner the step is cleaned, sprayed with the penetrating paint, cleaned again, and the developer applied. If a crack exists, the penetrating dye will pool in the crack, and the developer will clearly show the crack. If a crack is identified, the lot is rejected and another random sample is acquired from a subsequent step run after process modifications.

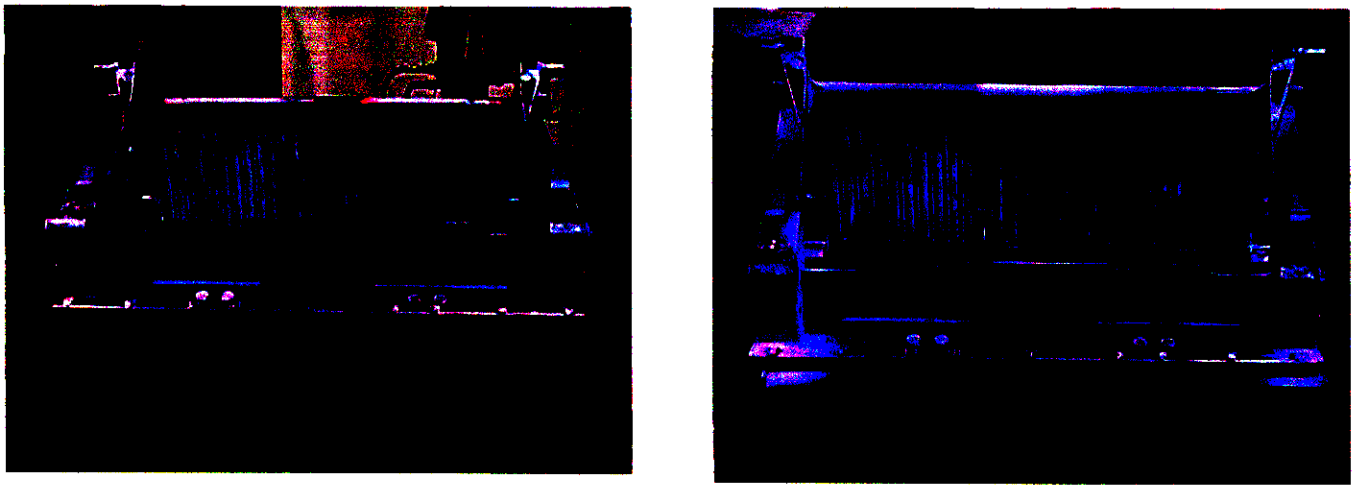


Figure 7 Structural Crack Check

Dynamic Fatigue Testing

Once all pre-test requirements have been met, the step is then loaded into the testing fixture as described in ASME Al7.1. The load is applied per the parameters described previously. At the prescribed times, the setup is checked to maintain the integrity of the test. A sample test log is included in the appendix. The supervising engineer checks the log daily to assure the test complies with both the requirements of ASME Al7.1 and EN115.

All step styles are tested for a minimum of 5,000,000 cycles. The loading parameters are to be set between 556N and 3226N at a frequency of 14.5Hz to l4.67Hz. In the event that the step tested does not maintain the criteria set forth in figure 1, the test will be stopped, and a new sample will be selected for retest. Again, this is to ensure that the steps produced at the Clinton Step Facility maintain the utmost in safety and quality.

Post-Test Analysis

Following the dynamic fatigue test, the step is again measured and tested for overall flatness. The main purpose of these tests is to compare with the pre-test data. This will reveal any changes in the step that may have taken place. Additionally, this could reveal any significant changes in the structural integrity of the step. Furthermore, any deformation must be within the limits prescribe in ASME A17.1. After checking all dimensions, the step is again checked for cracks that may have formed during the testing process. The step must again pass all tests to be declared certified.

All dimensional flatness tests are done using the same equipment, and in the same manner as previously listed. Likewise, the structural crack test is done in the same manner as the pre-test, using the Magnaflux die penetrant. Any changes must be within the prescribed limits of ASME A17.1. Specifically, the step or pallet shall have no fractures or permanent tread surface deflection exceeding 4 mm and no evidence of cracks. This is applied to the **600mm Demarcated Kone ECO Step** produced by the ECO-Die.

Static Testing Procedures

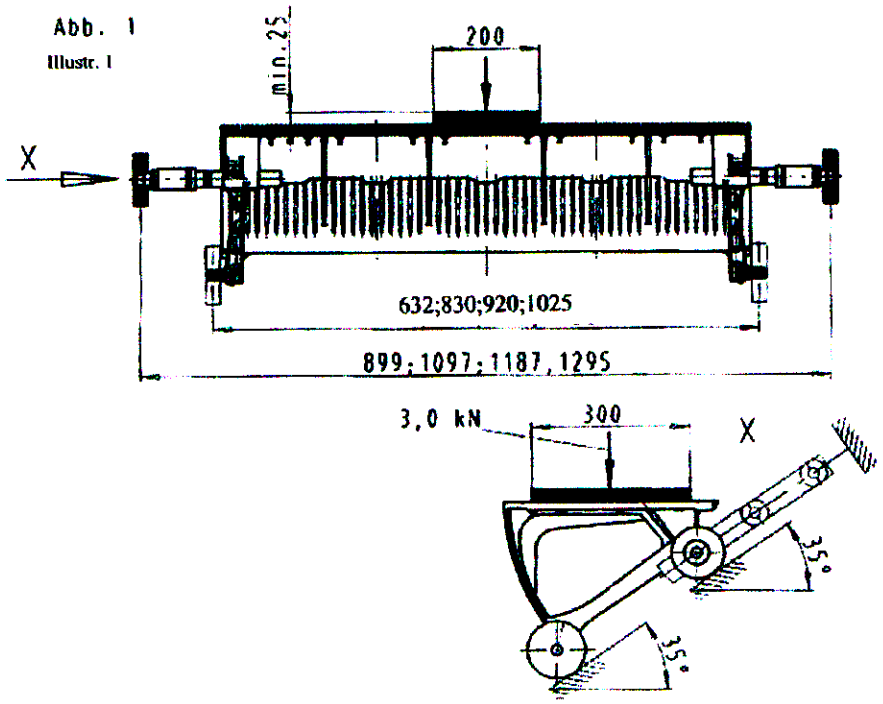
Testing Parameters

As part of Schindler Elevator's commitment to safety and performance excellence, the Clinton Step Facility performs static load testing using three different configurations. Each configuration is designed to meet a specific code requirement or customer specification for the specific step style produced at the Schindler Clinton Step Facility. All steps manufactured by the ECO-Die were subjected to testing using these parameters. They are as follows:

1.) Kone Static Rigidity Test and EN 115 Requirement

The step is tested for deflection with a single force of 3kN or 660 lbs (including weight of plate) applied perpendicular to the tread surface on a 200 mm x 30mm x 25 mm steel plate in the center of the tread surface. The 200 mm edge is arranged parallel to the front edge of the escalator step. When the force is applied, the deflection measured at the tread surface using a dial indicator mounted relative to the tread surface. The deflection measured shall not be more that 4 mm and there shall be no permanent deformation (setting tolerance are permitted).

The step is tested with the rollers (not rotating) and the stub axle shafts in a horizontal position (horizontal support) and at 35 deg. inclination, simulating it in an installed position. This set is shown in Illustration 1 below:



An additional destructive break test is made using this same set up shown in Illustration 1. This test is an additional requirement of the Kone static rigidity test specified in the KONE Specification 2703819. In this test the step is continuously loaded until a fracture of the step body occurs. The breaking point and location is recorded. The average breaking resistance must be greater than 28 kN, with a 3 σ consideration of at least 20 kN of force.

2) ASME A17.1-2000 Step Load Requirement.

This test is set up in much the same manner as that shown in Illustration 1 with exception on the size and location of the plate. In this test, the size of the plate is 150 mm (6in.) x 250 mm (10in.). The plate is aligned with the 150 mm edge parallel to the front edge of the escalator step and can be placed anywhere on the tread surface.
The step must support a load of 35 kg (300 lb) times a safety factor of five as prescribed in section 6.1.3.9.4 & 6.1.3.10.4 of the ASME A17.1-2000 standard. This translates to be a load of at least 1500 pounds to be supported anywhere on the step surface without fracture to the step.

All steps exceed the minimum requirements of each safety code, ASME A17.1 and EN 115

Testing Equipment

For each step width produced by the ECO-Die, steps are randomly selected for testing from each production shift. This is in compliance with Schindler Elevator's procedures for on going in process testing of all steps produced at the Clinton Step Facility.

After a step is pulled from die cast production and is cooled to ambient temperature, the step is weighed and a static test is performed. The static test is performed using a load cell arranged as shown in Figure 8 below. In this setup, a Omega S-type strain gauge connected to a Newport digital readout, mounted on a pneumatically driven hydraulic cylinder, is used to measure and apply force on the code-specified steel plate.

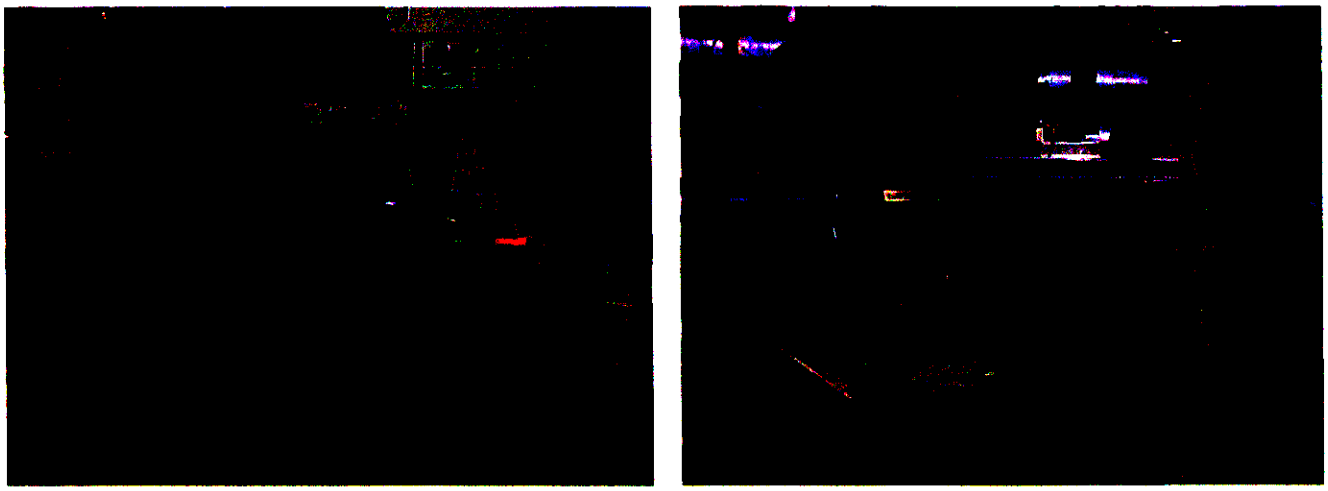


Figure 8

Static Load Test Result

The table on the following page shows the results of static testing of the **KONE 600 mm demarcated ECO** step produced at the Schindler Elevator Clinton Step Facility to date. All results meet and/or exceed the requirements of the aforementioned codes and customer specification for the static load performance. The following is a summary of the data listed on page 15.

Kone Static Rigidity Test and EN 115 Requirement

Average Deflection (4mm max.): **0.59 mm**
Average Residual (0, with admissible settling tolerance): **0.0mm**
Average Break Load (28 kN / 6295 lb. min.): **7060 lbs 31.40 kN)**
3σ consideration (20 kN / 4496 lb. min.)
Therefore 3σ must be less than 2749lb /12.23 kN: **3σ= 786.9 lb (3.5 kN)**
The break load performance is acceptable as long as Cpk is greater than 1: **Cpk = 3.258**
Currently the data shows performance of greater than 6σ considerations
Where 9σ = 9 x 262.3 = 2360.70lbs (10.5N) and 31.40kN (avg. break) –10.5kN =20.9kN.

ASME A17.1-2000 Step Load Requirement

Average Break Load (1500 lb / 6.67 kN min.): **4356.67lbs (19.38kN)**

Average step weight: **18.6lb (8.44kg)**

600mm Eco Step With Demarcation Aug-04

08/07/04	3	2340	0.35	0.00	7300	RT				18.59		ADR
08/07/04	1	2349					4590	LT	LT	18.66		ADR
08/09/04	1	2361					4200	RT	RT	18.47		ADR
08/07/04	1	2350	0.39	0	6780	RT				18.402		ADR
08/07/04	1	2351					4600	LT	LT	18.52		ADR
08/07/04	3	2346					4400	RT	RT	18.82		ADR
08/07/04	3	2345	0.4	0	7100	RT				18.75		ADR
08/09/04	2	2366					4200	LT	LT	18.72		JB
08/10/04	3	2373					4150	RT	RT	18.44		JB
			0.38	**0.00**	**7060.00**		**4356.67**			**18.60**		

Test Results and Conclusions

The **Demarcated 600mm** width step produced on the Kone –ECO Die has been tested in accordance the static and dynamic fatigue test as prescribed in ASME A17.1-8.3.11 and EN115-8.2.2.2.1 and KONE Escalator's Delivery Specification for Aluminum Step Bodies 2703819. All test logs and measurement results will be kept on file with Schindler Elevator Corporation Clinton Quality Assurance Department. Thus, all 600mm steps produced at the Clinton Step Facility under the same parameters on the Kone ECO die are deemed certified.

Letter of Certification for Code Compliance

Manufacturers' Declaration

KONE Escalators Step

Clinton Step Facility declares that the product(s) listed below, were tested to the requirements:

For Static Load Testing:

- American Society of Mechanical Engineers (ASME) A17.1-2000 section 6.1.3.9.4 and 6.1.3.10.4,
- European Escalator Safety Code EN 115, section 8.2.2.1.1

For Dynamic Fatigue Testing:

- American Society of Mechanical Engineers (ASME) A17.1-2000 section 6.1.3.5.7 and as prescribed in 8.3.11
- European Escalator Safety Code EN115: Section 8.2.2.2.1

<u>These products included:</u>

- 600 mm step with demarcation produced on the ECO Die

This letter will serve as a supplement to the detailed report and should be accepted as an official certification for all steps listed above.

Respectfully submitted,

Charles P. Spell, II
Plant Manager
Clinton Step Facility

Andre D. Rayner
Quality Assurance Journeyman
Clinton Step Facility

Schindler Elevator Corporation
821 Industrial Drive
Clinton, NC 28328
910-590-5590

Appendix

ASME A17.1-2000

PART 6
ESCALATORS AND MOVING WALKS

SECTION 6.1 ESCALATORS

6.1.3.9.4 Step.

The step shall be designed to support a load of 135 kg (300 lb) on a 150 mm (6in.) by 250 mm (10in.) plate placed on any part of the step with the 250 mm (10in.) dimension in the direction of step travel.

6.1.3.10.4
For steps, the factor of safety shall be 5, based on not less than the loads designed in 6.1.3.9.4.

6.1.3.5.7 Step Fatigue Tests.

Each step width shall be subjected to the step fatigue test as described in 8.3.1.1.

SECTION 8.3
ENGINEERING TESTS, TYPE TESTS, AND CERTIFICATION

8.3.11 Step and Pallet Fatigue Engineering Test

Step fatigue tests required in 6.1.3.5.7 and pallet fatigue tests required by 6.2.3.5.4 shall be performed as indicated in 8.3.11.1 through 8.3.11.6.

8.3.11.1 The test shall be made at either the manufacturer's facility or at a testing laboratory.

8.3.11.2 Escalator steps shall be mounted in an arrangement that duplicates the conditions on the escalator incline and their attachment to the step chain. Moving walk pallets shall be mounted in an arrangement that duplicates the condition of a horizontal moving walk and their attachment to the pallet chain.

8.3.11.3 The steps shall be subjected to a load varying from 450 N (100 lbf) to 3,000 N (650 lbf) at a frequency of 10 hz ± 5 for 5,000,000 cycles. An undisturbed harmonic force flow shall be achieved.

8.3.11.4 The load shall be applied normal to the tread surface to a plate 25 mm (1 in.) thick, 200 mm (8 in.) wide, and 300 mm (12 in.) long, located at the center of the step or pallet, with the 300 mm (12 in.) dimension in the direction of step travel.

8.3.11.5 The step or pallet shall have no fractures or permanent tread surface deflection exceeding 4 mm (0.16 in) following the completion of the test. The deflection of 4 mm (0.16 in) does not include any set or wear in the supporting wheels.

8.3.11.6 This test is to be performed on each step or pallet width.

EN 115: 1995 + A1: 1998

8.2.2.1 Static Test

8.2.2.1.1 Steps

The step shall be tested for deflection with a single force of 300 N (including weight of plate) applied perpendicular to the tread surface on a steel plate 0.20 m x 0.30 m in size and a least 25 mm thick, in the center of the tread surface. The edge of the plate being 0.20 m long shall be arranged parallel to the front edge of the escalator step, the edge of the plate being 0.30 m long at right angles to the front edge of the step.

During this test, the deflection measured at the tread surface shall not be more that 4 mm. There shall be no permanent deformation (setting tolerance are permitted).

The step shall be tested as a whole together with the rollers (not rotating), axles or stub shafts (if existing) in a horizontal position (horizontal support) and at the maximum inclination (inclined support for which the step is to be applied.

For inclinations smaller than the maximum inclination permitted, a new test is not required. A test of the installed step, i.e. together with the guide rails and the supporting structure of the escalator, is also not necessary.

8.2.2.2 Dynamic Test

8.2.2.2.1 Steps

The step shall be tested at the maximum inclination (inclined support) for which the step is to be applied, together with rollers (not rotating). Axles or stub shafts (if existing). It shall be subjected to a load pulsating between 500 N and 3000 N at a frequency between approximately 5 Hz and 20 Hz for at least 5×10^6 cycles, where by an undisturbed harmonic force flow shall be achieved. The load shall be applied perpendicular to the tread surface on a steel plate 0.20m x 0.30 m in size and at least 25 mm thick, arranged as specified in **8.2.2.1.1**, in the center of the tread surface.

After the test, the step shall show neither fracture nor permanent deformation greater than 4 mm, measured at the tread surface.

If rollers are damaged during the test, it is permissible to replace them.

Excerpt from KONE Escalator's Delivery Specification for Aluminum Step Bodies 2703819

8. Static Rigidity

The step body, forming a unit together with the rollers (however, not rotating) and the shafts must be tested applying the following loads. The test must be performed at an inclination of 35° (inclined support) (see illustration 1).

The step body must be checked for deflection applying and individual force of 3.0kN to the middle of the tread plate, vertically to the tread surface, by using a steel plate, sizes 200 mm x 300 mm x 25 mm.

The edge of the plate having a length of 200 mm must be arranged in parallel with the front edge of the step, and the edge of the plate having a length of 300mm must be rectangular to the front edge of the step (see Ilustr. 1).

During this test, the step body must not deflect by more than 4mm at any point of the step tread surface. (There must not be any permanent deformation of the step body and the wheel bolts, however, settling tolerances are admissible).

The average breaking resistance must be > 28 kN.

Considering 3σ, a breaking force of 20 kN must be ensured. Static proof must be submitted to KONE.

10. Dynamic rigidity according to Din-EN 115 [and ASME A17.1]

The step body, forming a unit together with the rollers (however, not rotating), and the shafts inclined by 35° (inclined support) must be tested by application of the following load (see Illustr. 1.)

Should the rollers be destroyed during the test, they may be replaced.

A type test will be required in which the step body must be tested with a increasing load of between 0.5kN and 3.0 kN, at a frequency of between approximately 5 and 15 Hertz, with at least 5×10^6 load variations; undisturbed, sinusoidal power gradient should be strived for.

The load must be applied to the middle of the tread plate, vertically to the tread plate, by using a steel plate having the sizes 200 mm x 300 mm x 25 mm arranged as indicated in item 9 (see Illustr. 1).

After termination of the test the step body must not show any crack or rupture or any permanent deformation (deflection of the step tread surface) on more that 4 mm.

Flatness Measurement Sample

This is an actual sample of the flatness measurements performed on every step. The Zeiss Eclipse CMM at the Schindler Escalator Plant performed these measurements.

Pre Dynamic Testing Flatness Measurements

Schindler

Plan Name	Workpiece Name	Subject Number:
Kone ECO 600	ECO 600 Step	Pre-Dynamic

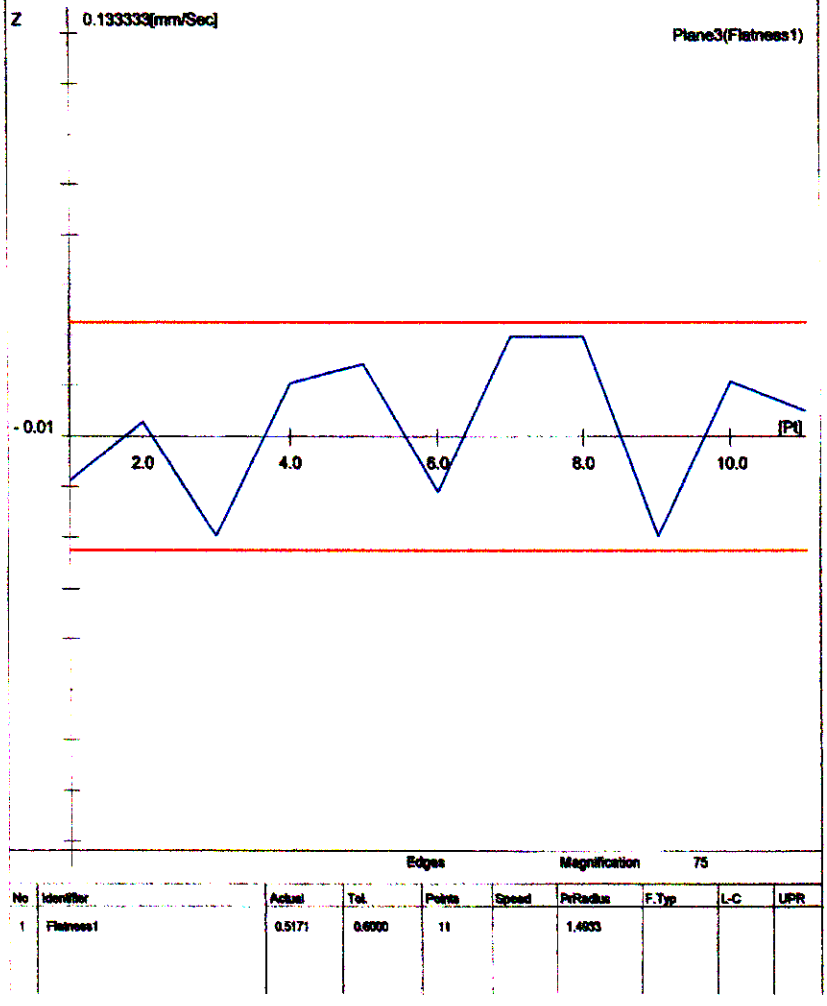
Drawing No.	Date	Time
n/a	August 6, 2004	3:15:32 pm

	Actual	Nominal	Upper Tol. / Lower Tol.	Deviation	Out of Tolerance
Flatness1	0.517	0.000	0.600	0.517	
Z-Value_Point1	-0.158	0.000		-0.158	
Z-Value_Point2	0.027	0.000		0.027	
Z-Value_Point3	-0.295	0.000		-0.295	
Z-Value_Point4	0.076	0.000		0.076	
Z-Value_Point5	0.158	0.000		0.158	
Z-Value_Point6	-0.206	0.000		-0.206	
Z-Value_Point7	0.172	0.000		0.172	
Z-Value_Point8	0.203	0.000		0.203	
Z-Value_Point9	-0.341	0.000		-0.341	

Plan Name	Date	Time
Kone ECO 600	August 6, 2004	3:15:32 pm

	Actual	Nominal	Upper Tol. / Lower Tol.	Deviation
Z-Value_Point10	0.066	0.000		0.066
Z-Value_Point11	-0.042	0.000		-0.042

Calypso 3.5.04	Carl Zeiss	Date	August 6, 2004
		Order	* order *
Part Number: 3	CMM: ECLIPSE	Drawing No.: n/a	Department: Operator: Signature: Master
Plan Name: Kone ECO 600			Flatness1



Edges Magnification 75

No	Identifier	Actual	Tol.	Points	Speed	PrRadius	F.Typ	L-C	UPR
1	Flatness1	0.5171	0.6000	11		1.4933			

Post-Dynamic Testing Flatness Measurements

Schindler

Plan Name	Workpiece Name	Subject Number:
Kone ECO 600	Kone ECO 600	Post-Dynamic

Drawing No.	Date	Time
n/a	August 13, 2004	10:26:18 am

	Actual	Nominal	Upper Tol. / Lower Tol.	Deviation	Out of Tolerance
Flatness1	0.516	0.000	0.600	0.516	
Z-Value_Point1	-0.122	0.000		-0.122	
Z-Value_Point2	-0.010	0.000		-0.010	
Z-Value_Point3	-0.346	0.000		-0.346	
Z-Value_Point4	0.038	0.000		0.038	
Z-Value_Point5	0.142	0.000		0.142	
Z-Value_Point6	-0.242	0.000		-0.242	
Z-Value_Point7	0.110	0.000		0.110	
Z-Value_Point8	0.212	0.000		0.212	
Z-Value_Point9	-0.358	0.000		-0.358	

Plan Name	Date	Time
Kone ECO 600	August 13, 2004	10:26:18 am

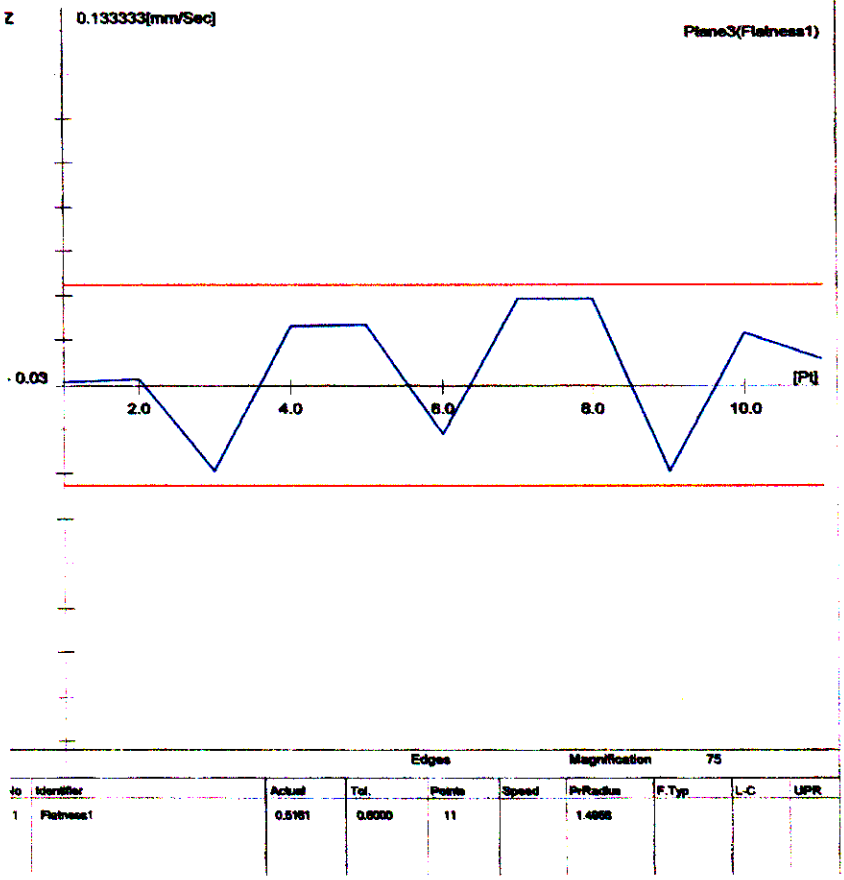
	Actual	Nominal	Upper Tol. / Lower Tol.	Deviation
Z-Value_Point10	0.104	0.000		0.104
Z-Value_Point11	-0.076	0.000		-0.076

Calypso 3.5.04 — Carl Zeiss

Part Number	CMM	Drawing No.	Date	Order
2	ECLIPSE	n/a	August 13, 2004	" order "

Department:
Operator: Master
Signature:

Plan Name: Kone ECO 600
Flatness1



Edges — Magnification 75

No	Identifier	Actual	Tol.	Points	Speed	PrRadius	F.Typ	L-C	UPR
1	Flatness1	0.5161	0.6000	11		1.4668			

Step Fatigue Test Log

Step Type: 600mm Step with Demarcation — **Test start date: 08/7/04**

Cast Date: 08/6/04 — **Test end date: 08/11/04**

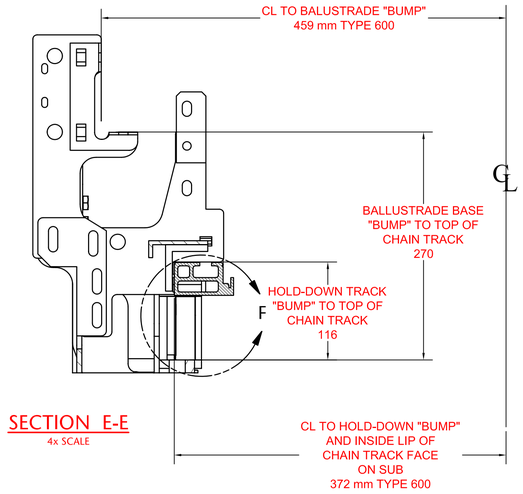
						Test Stopped		
	Log Date & Time	RPM	Avg. Load N	Reason for Stoppage	Upper Load N	Bottom Load N	Time Stopped	Time Restar
Test Start Time	8/7/04 11:00 AM	880	1820	Set Up	620	3290		
1st observation (+6 hrs)	8/7/04 5:00 PM	880	1888	Confirm Setup	554	3188	5:00 PM	5:05 PM
2nd observation (+12 hrs)	8/7/04 11:00 PM	880	1920	Confirm Setup	500	3200	10:20 PM	10:35 PI
		888	1930	Adjustment	575	3290		
3rd observation (+18 hrs)	8/8/04 5:00 AM	880	1930	Confirm Setup	570	3281	6:00 AM	6:05 AM
4th observation (24 hrs)	8/8/04 11:00 AM	880	1870	Confirm Setup	556	3280	12:00 AM	12:10 AI
				Adjustment	555	3190		
5th observation (+36 hrs)	8/8/04 11:00 PM	880	1690	Confirm Setup	508	3080	11:00 PM	11:10 PI
		888	1760	Adjustment	570	3195		
6th observation (+48 hrs)	8/9/04 11:00 AM	880	1750	Confirm Setup	545	3180	12:25 AM	12:30 AI
7th observation (+60 hrs)	8/9/04 11:00 PM	888	1710	Confirm Setup	530	3144	11:10 PM	11:15 PI
8th observation (+72 hrs)	8/10/04 11:00 AM	880	1740	Confirm Setup	542	3190	11:00 AM	11:05 AI
9th observation (+84 hrs)	8/10/04 11:00 PM	880	1735	Confirm Setup	533	3180	10:50 PM	10:55 PI
10th observation (+96 hrs)	8/11/04 11:00 AM	880	1730	Confirm Setup	535	3130	12:00 PM	end

08/12//04

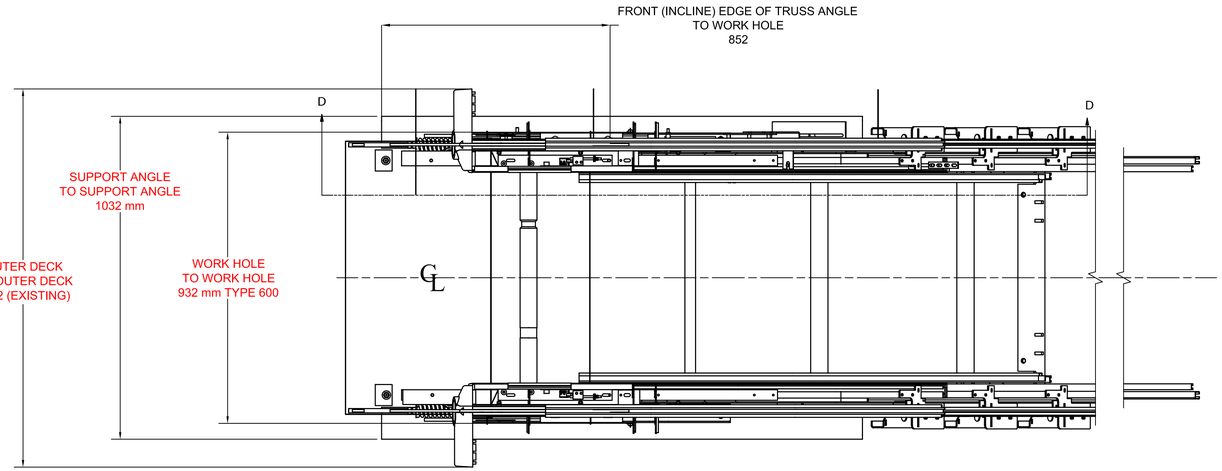
Dimensional Layout Results: Machined Dimensions

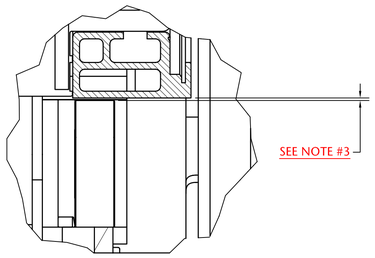
Kone 600 mm With Demarcation — *QA ASSOCIATE: Andre Rayner*

Axle bore size & location			Bore Edge	Guide pad	End	Drilled hole		Axle bore size & location			Bore Edge	Guide pad	End	Drilled hole
364.40	100.14	30.57	296.99	296.98	298.68	276.87	actual	364.52	100.06	30.57	296.83	297.13	298.55	277.15
364.42	100.15	30.52	296.98	296.99	298.72	276.86	actual	364.53	100.10	30.55	296.80	297.15	298.54	277.13
364.44	100.20	30.48	297.10	296.98	298.73	276.89	actual	364.51	100.05	30.54	296.91	297.09	298.53	277.15
364.41	100.09	30.53	297.11	296.70	298.74	276.87	actual	364.54	100.07	30.51	296.80	297.16	298.55	277.10
364.42	**100.14**	**30.52**	**297.05**	**296.91**	**298.72**	**276.87**	average	**364.53**	**100.07**	**30.54**	**296.83**	**297.13**	**298.54**	**277.13**
-0.18	**0.14**	**0.02**	**0.05**	**-0.09**	**0.22**	**-0.13**	dev.	**-0.08**	**0.07**	**0.04**	**-0.17**	**0.13**	**0.04**	**0.13**

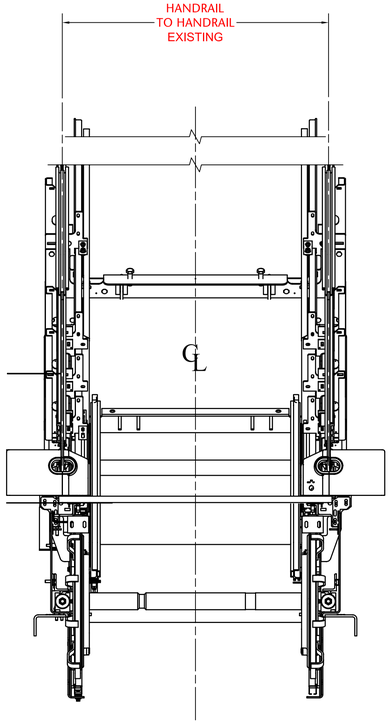


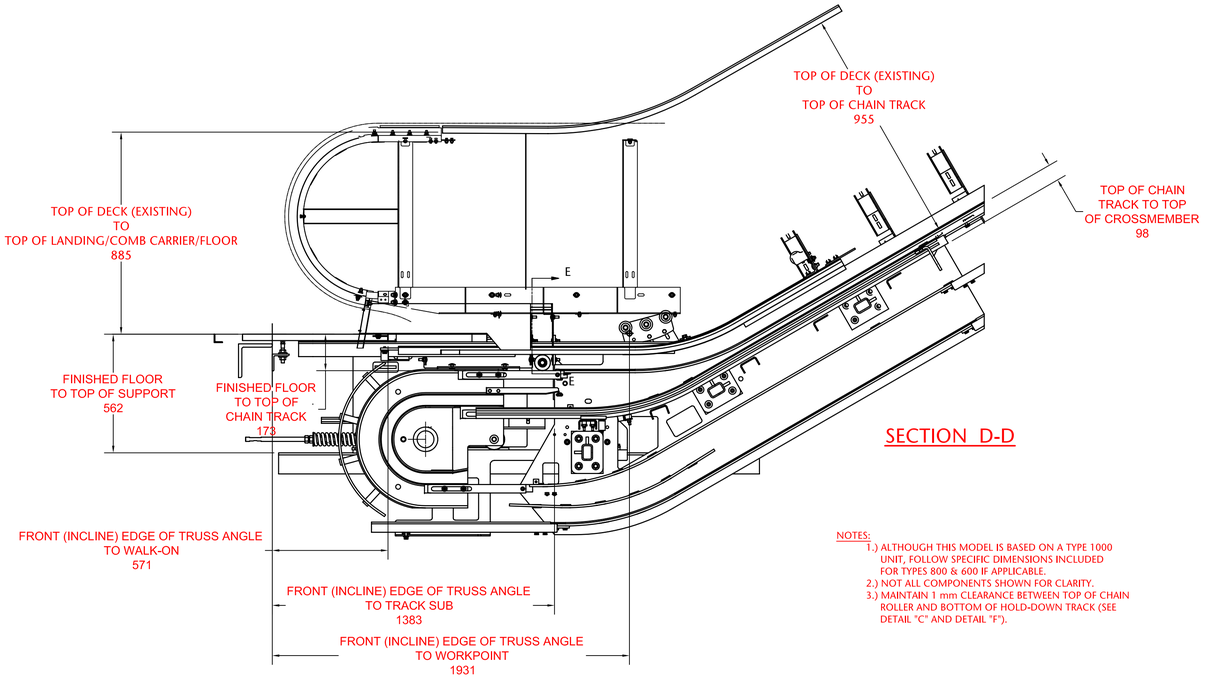
SECTION E-E
4x SCALE





DETAIL F





SECTION D-D

NOTES:
1.) ALTHOUGH THIS MODEL IS BASED ON A TYPE 1000 UNIT, FOLLOW SPECIFIC DIMENSIONS INCLUDED FOR TYPES 800 & 600 IF APPLICABLE.
2.) NOT ALL COMPONENTS SHOWN FOR CLARITY.
3.) MAINTAIN 1 mm CLEARANCE BETWEEN TOP OF CHAIN ROLLER AND BOTTOM OF HOLD-DOWN TRACK (SEE DETAIL "C" AND DETAIL "F").

METRIC

TOLERANCE UNLESS SHOWN
.X = ± 1.0
.XX = ± .50
.XXX = ± .25
ANGLES ± 1°

SOURCE/SPEC#/FINISH/WT

REV	DATE	CHK'D	APP'D	/
-	12/JUL/2007	WPC	SJE	

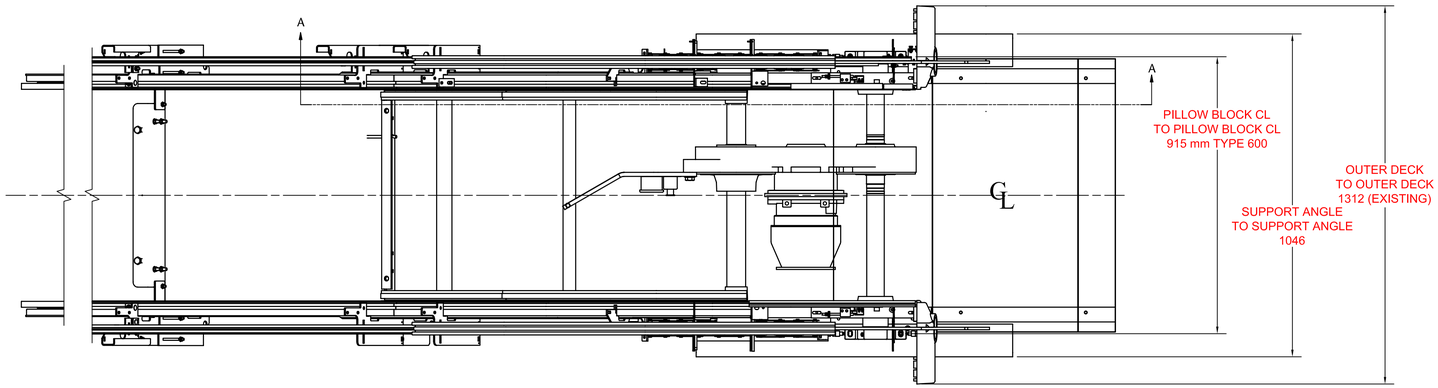
DRAWN
SENGER

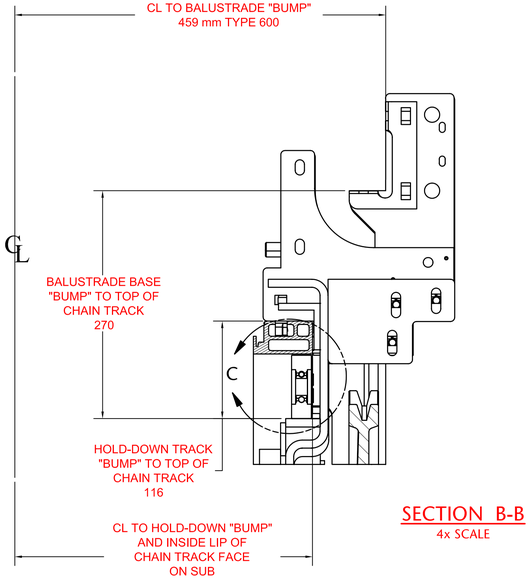
NAME
LOWER MODULE, OLNEY STATION, 1.5 LEVEL STEP, 1st to TRAIN ECOMOD

SHEET NO. 3

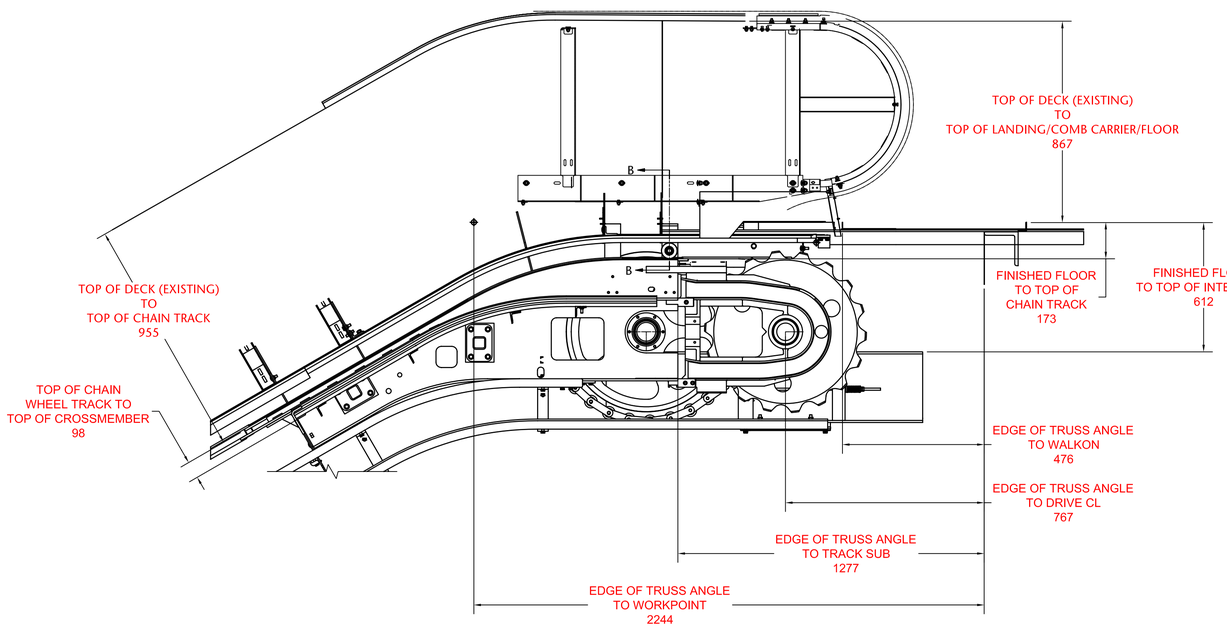
D

6013188035_039

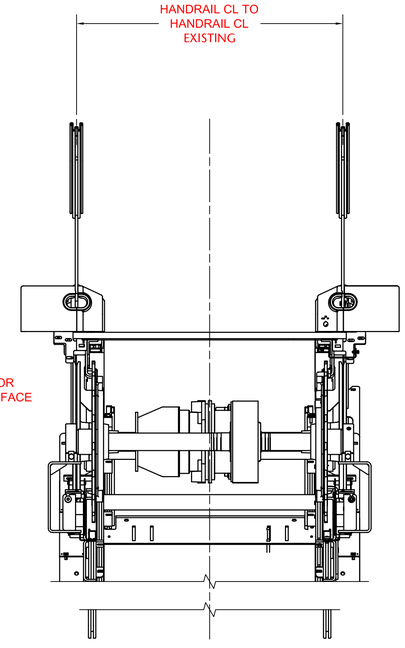


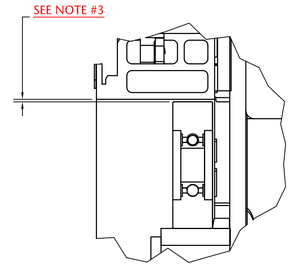


SECTION B-B
4x SCALE



SECTION A-A





DETAIL C

NOTES:
1.) ALTHOUGH THIS MODEL IS BASED ON A TYPE 1000 UNIT, FOLLOW SPECIFIC DIMENSIONS INCLUDED FOR TYPES 800 & 600 IF APPLICABLE.
2.) NOT ALL COMPONENTS SHOWN FOR CLARITY.
3.) MAINTAIN 1 mm CLEARANCE BETWEEN TOP OF CHAIN ROLLER AND BOTTOM OF HOLD-DOWN TRACK (SEE DETAIL "C" AND DETAIL "F").

METRIC

TOLERANCE UNLESS SHOWN
X = ± 1.0
XX = ± .50
.XXX = ± .25
ANGLES ± 1°

SOURCE/SPEC#/FINISH/WT

REV	DATE	CHK'D	APP'D	F
A	13/JUL/2007	WPC	SJE	

DRAWN
SENGER

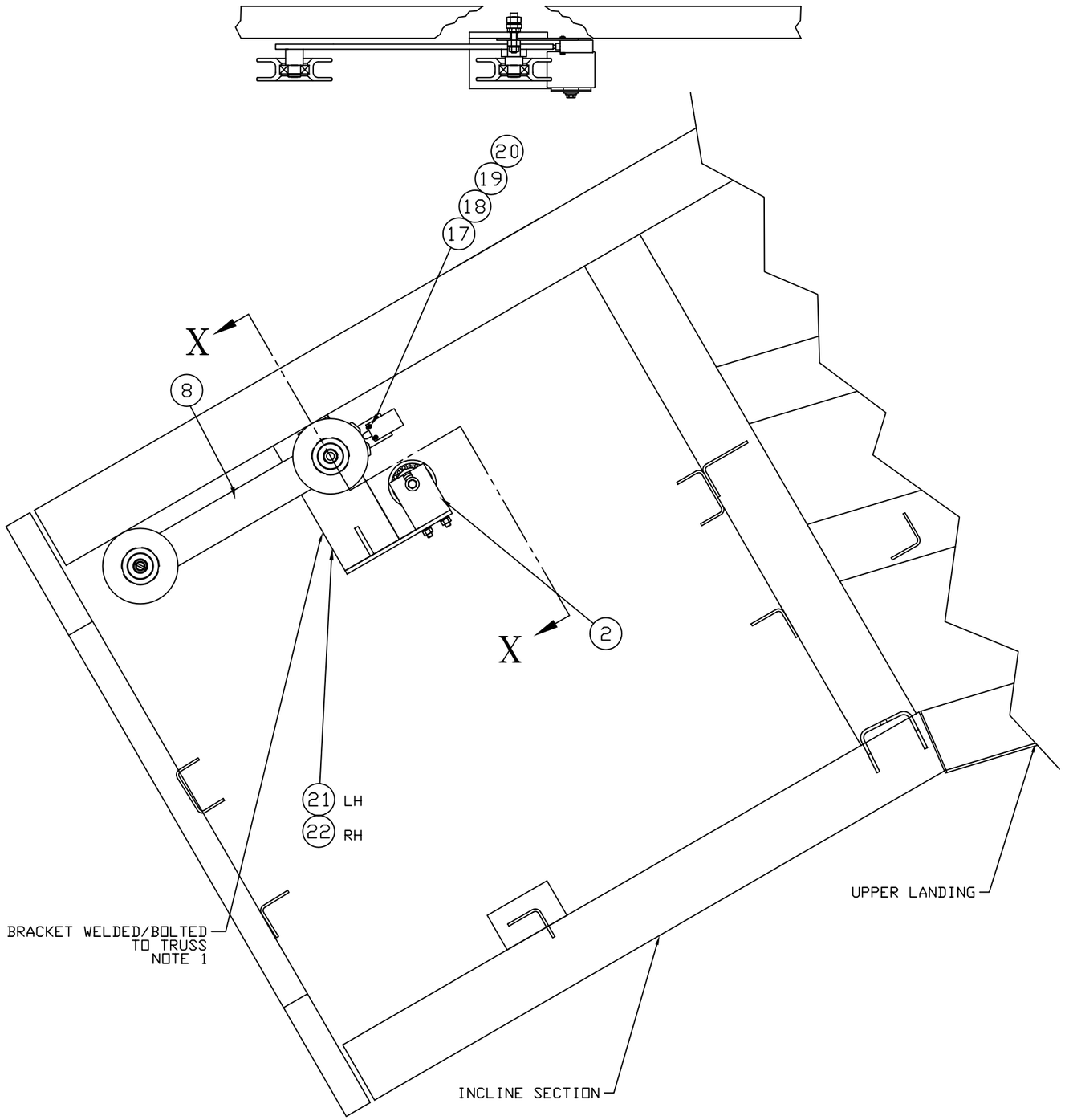
KONE

NAME
UPPER MODULE, OLNEY STATION, 2 LEVEL STEP, 1st TO TRAIN, ECOMOD

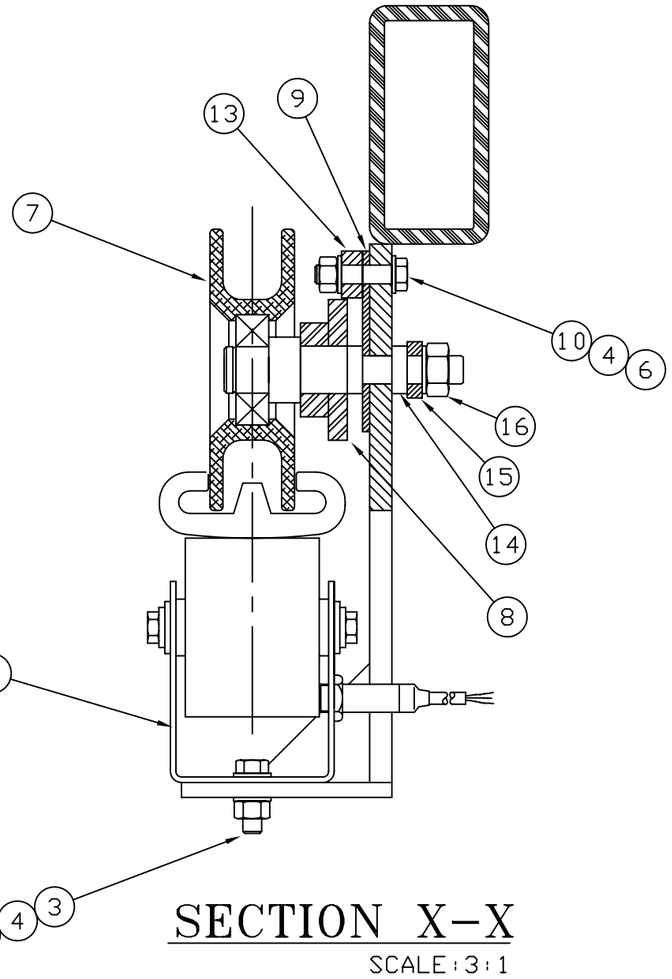
SHEET NO. 3

D

6013188035_40



LH UPPER END TRUSS



SECTION X–X

SCALE : 3 : 1

NOTES:
1. ORIENTATION OF MOUNTING BRACKET MAY BE DIFFERENT DEPENDING ON TRUSS

INCH [METRIC] DIMENSIONS

TOLERANCE UNLESS SHOWN
.X=±.1 [2.5]
.XX=±.04 [1.0]
.XXX=±.015 [0.38]
angles ±1°

SOURCE/SPEC#/FINISH/WT

WAS USP38738000

PLOT SCALE : = 8.00

REV	DATE	CH'K	APP'D	F
–	02/OCT/07	WLS	SJE	

DRAWN
S. ENGER

KONE

NAME
HR SPEED SENSOR ASSEMBLY
SEPTA MOD

SHEET 93 B

6013188035_41

ITEM #	QTY	UOM	PART #	DESCRIPTION
2	2	PC	USP38134001	ROLLER ASSY,HANDRAIL SNSOR
3	4	PC	DEE3670401	BOLT,HEX,ISO 4017-M8X30
4	6	PC	DEE8403762	RETAINING WASHER,13X8X1MM A3C
5	8	PC	DEE0057111	FLAT WASHER,M8 ST A3E DIN7349
6	6	PC	DEE0260272	HEX NUT,M8 8 ST A2B DIN6924
7	2	PC	DEE2278319	PIN, ROLLER
8	2	PC	DEE2278314	LEVER -RTV
9	2	PC	DEE2278313	BRACKET, LIMIT SWITCH
10	2	PC	DEE0055084	HEX SCREW,M8X40 ST 8.8 A2B DIN931
13	2	PC	DEE2278321	SPACER RING,9X20MM S235JRG2 A3B
14	4	PC	DEE0080731	FLAT WASHER,M12 ST A3E DIN7349
15	2	PC	DEE2278320	SPACER RING,13X30X9MM S235JRG2 A3B
16	2	PC	DEE0260275	HEX NUT,M12 8 ST A3B DIN6924
17	4	PC	DEE0726124	SLOTTED SCREW,M4X35 ST 4.8 A2B DIN84
18	8	PC	DEE0056982	FLAT WASHER,M4 ST 140HV A3B DIN125B
19	4	PC	DEE0725726	SPRING WASHER,M4 A2B DIN128A
20	4	PC	DEE0057121	HEX NUT,M4 8 ST A2B DIN934
21	1	PC	USP38748001	RH HANDRAIL SPEED/BROKEN HR MOUNTING BRACKET
22	1	PC	USP38737001	LH HANDRAIL SPEED/BROKEN HR MOUNTING BRACKET

INCH [METRIC] DIMENSIONS

TOLERANCE UNLESS SHOWN
.X=±.1 [2.5]
.XX=±.04 [1.0]
.XXX=±.015 [0.38]
angles ±1°

SOURCE/SPEC#/FINISH/WT

WAS USP38738000

PLOT SCALE: = 8.00

REV	DATE	CH'K	APP'D	F
-	02/OCT/07	WLS	SJE	

DRAWN
S.ENGER

NAME
HR SPEED SENSOR ASSEMBLY
SEPTA MOD

SHEET 94

B

6013188035_41

KONE EcoMod™ Escalator

using Eco3000™ technology

Station: Olney
Contract Number: 6013188
Escalator Number: 1

AR-51.30.001-USK
(B) 2011-05-25

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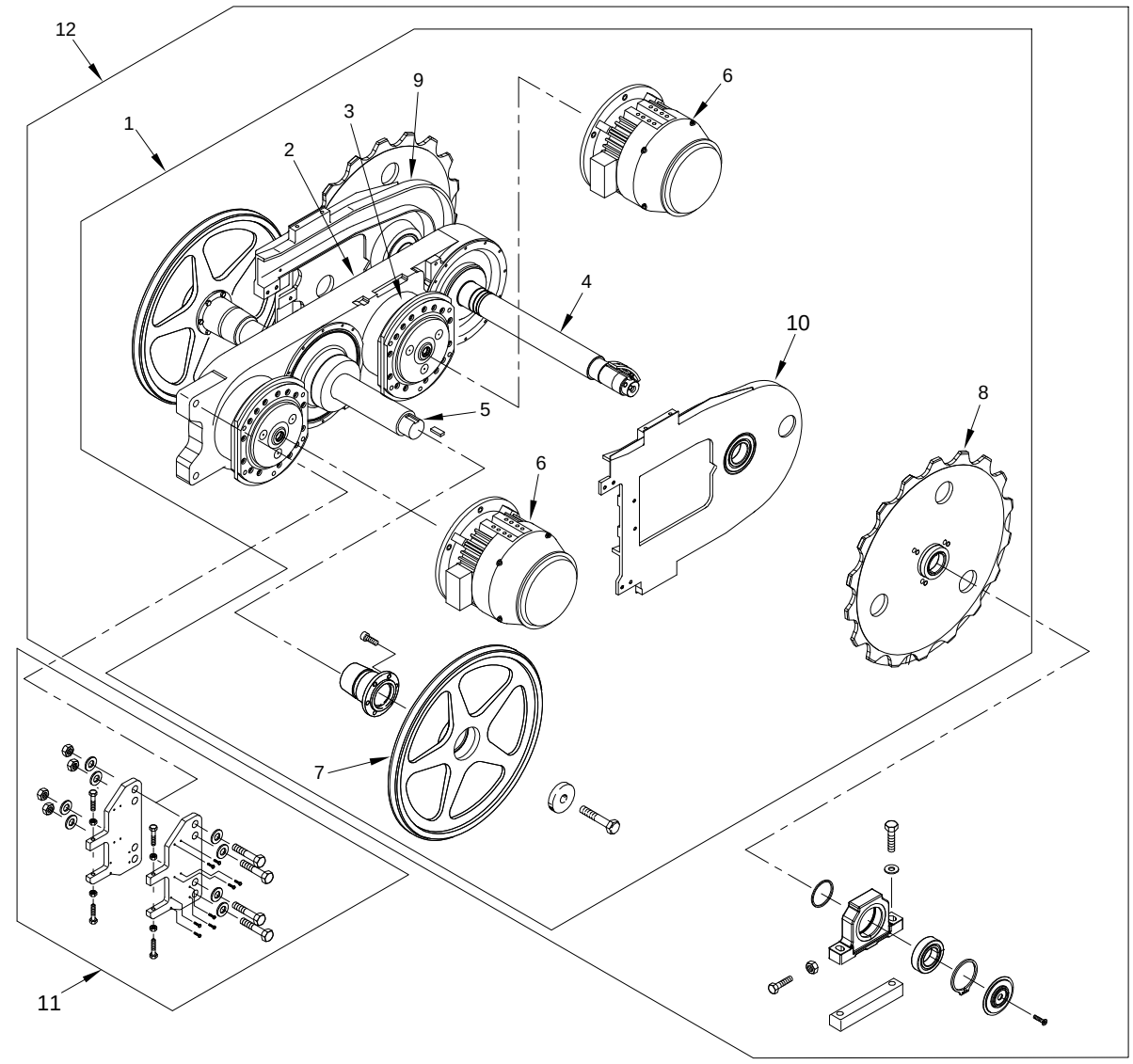
1 DRIVE MACHINERY

1.1 Drive station



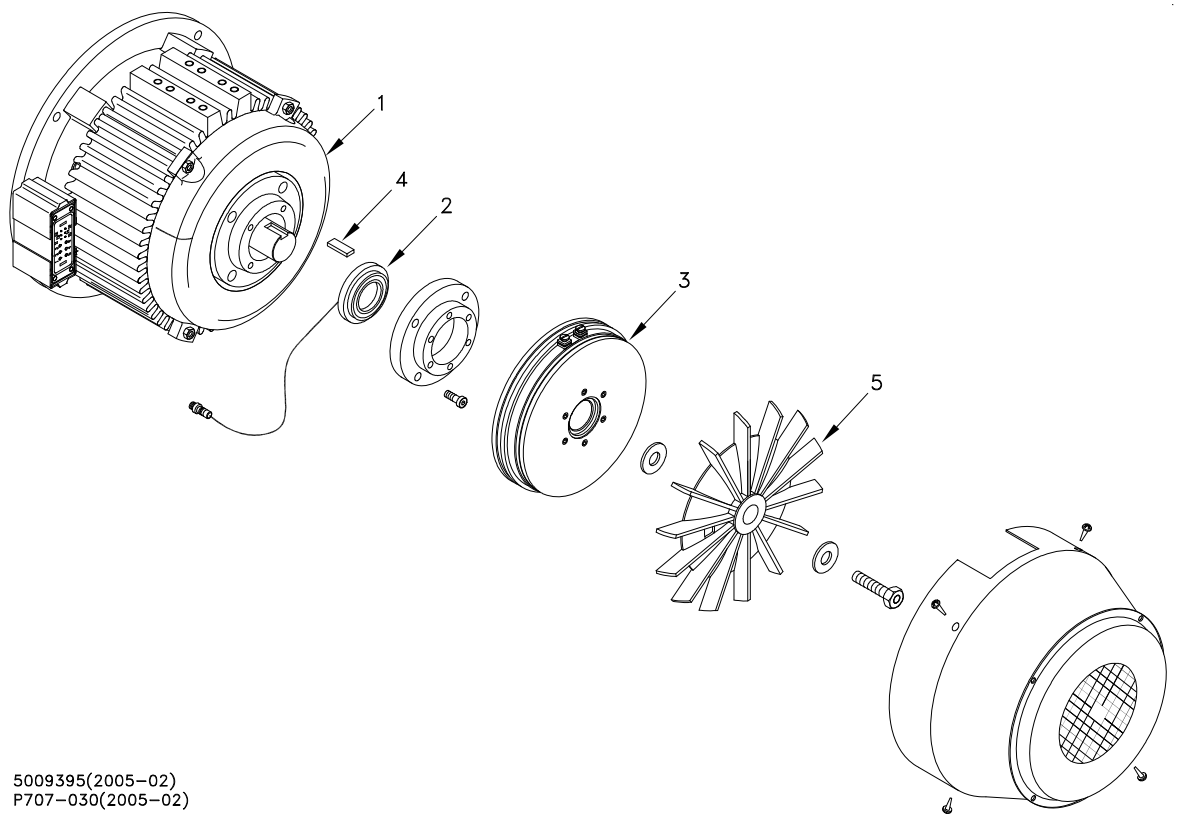
5021898(2009-12)

Table 1: Drive station

KEY	PART NO.	PARTNAME	REMARK
1	KM5062321	Drive unit, assembled	Dual, CFG#34221100002
2	DEE2808160	Gear, distribution	Dual
3	DEE2806810	Gear, planetary	P9.1L145
4	KM5066023	Shaft, drive	ECO3000 M18.2-100 42CR
5	DEE4001097	Shaft, handrail	M18.2-100 S355J2G3
6	KM5060047	Motor, drive	P-9.0KW 460V NZ5060514 R1
7	DEE4001093	Wheel, handrail drive	KPL Ring
8	KM5066007	Sprocket, chain set	KV, welded
9	KM5066020	LH, Return guide	ECO3000 OL split
10	KM5060032	RH, Return guide	ECO3000 OL split
11	See Remarks	Torque arm - dual	Refer to section titled: Torque arm
12	KM5066066	ECO3000 parts	DA M18.2-100ANSI
NS	KM5066022	Bracket, assembly	
NS	DEE2808540	Name plate	KPL
NS	DEE3725903	Paint, gray	Halogen free
NS	DEE2213667	Oil, gear	Halogen free
NS	DEE0014063	Grease	DIN51825-KLP3K-25
NS	KM5203678H01	Label	For gear box oil
NS	DEE0900257	OMNIFIT	Securing Agent

5021898-20265058 (2009-12)

1.2 Drive motor and brake



5009395(2005–02)
P707–030(2005–02)

Table 2: Drive motor and brake

KEY	PART NO.	PARTNAME	REMARK
1	KM5060047	Motor, drive	7.5/9 KW (S1/SV), 460V, 60Hz
2	US96587001	Encoder, Motor	Bearing sensor
3	US96585001	Brake, spline, magnet	Warner
4	See remarks	Key	12 mm wide x 8 mm high x 31 mm long
5	KM826714H10	Fan	

5009395-20265053 (2009-11)

1.3 Torque arm - dual

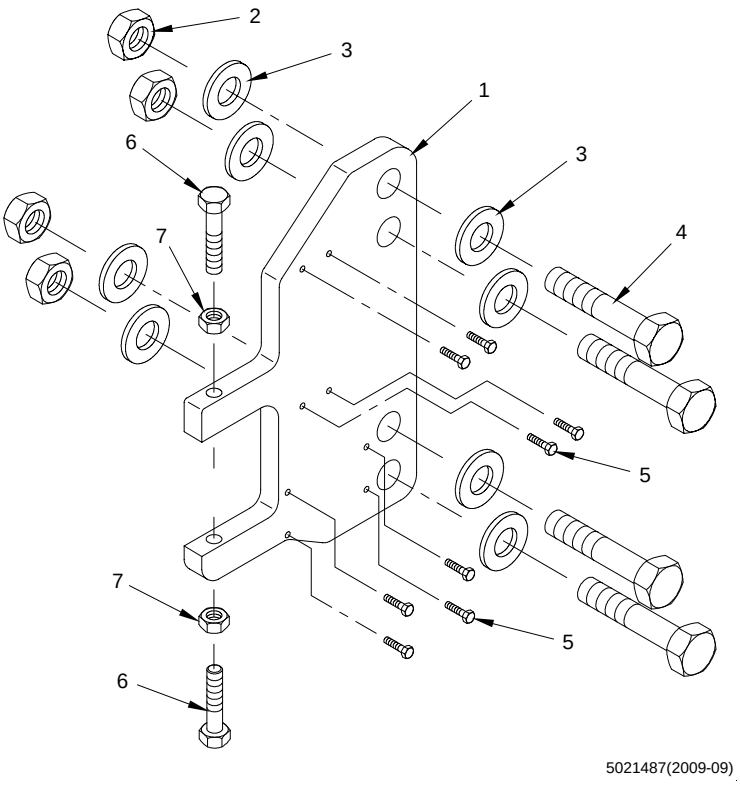


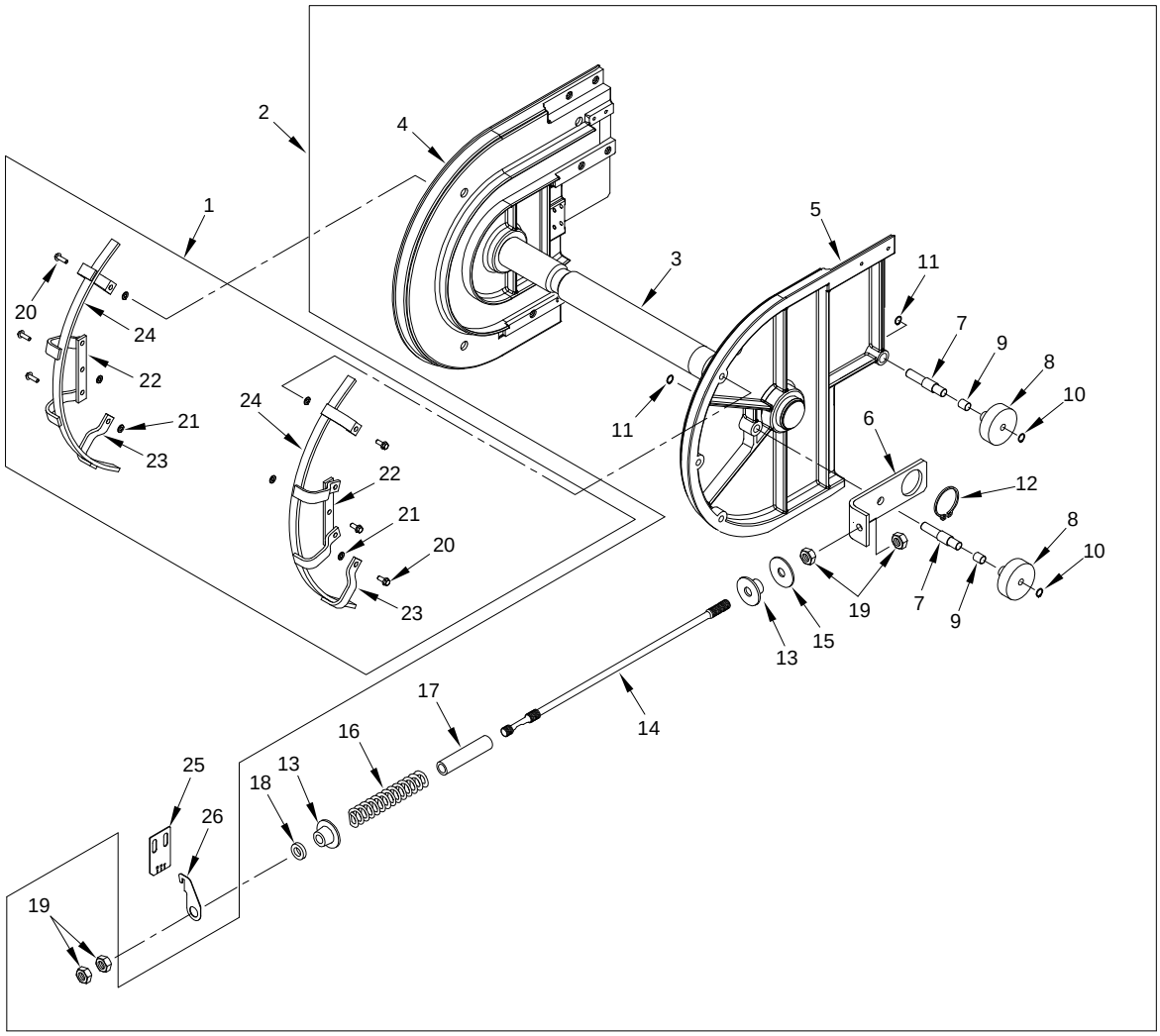
Table 3: Torque arm - dual

KEY	PART NO.	PARTNAME	REMARK
1	KM5075346h01	Torque arm plate, dual drive	
2	DEE0053498	Nut, hex	
3	DEE2479834	Washer, retainer	
4	DEE0251785	Screw, hex	
5	KM196311	Screw, hex	
6	DEE2213576	Screw, hex	
7	DEE0057130	Nut, hex	

5021487-20265053 (2009-11)

2 RETURN STATION AND TRACK

2.1 Return station



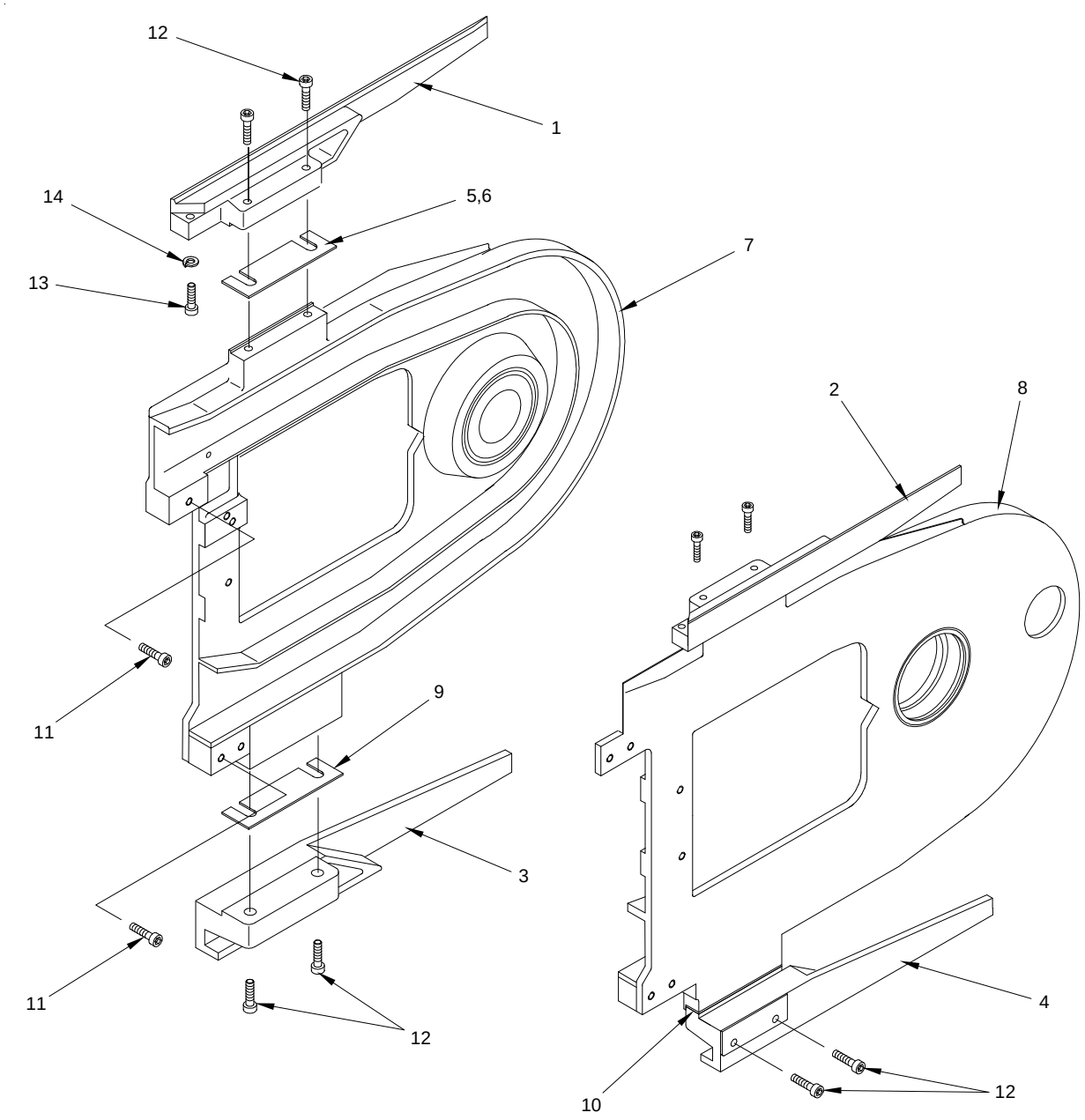
5025315(2011-05)

Table 4: Return station

KEY	PART NO.	PARTNAME	REMARK
1	KM5070970G01	Chain hold-down	Return station, indoor
2	KM5071520G01	Return station, pre-assembled	Type 1000, indoor
3	KM5070967H01	Axle	Return station, Type 1000, indoor
4	KM5070968H01	Turnaround	LH, indoor
5	KM5070969H01	Turnaround	RH, indoor
6	KM5070974H01	Angle, return station	Indoor
7	KM5070973H01	Pin, roller	Indoor, return station
8	KM5070975H01	Roller, return station	Indoor
9	KM281161	Bushing	ISO 4379-C18x20x30-CuSn8P8
10	DEE0012450	Ring, retaining	Shaft, 18x1.2, DIN471 .
11	KM113910	Ring, retaining	Shaft 20x1.2, DIN471
12	KM216978	Retaining, ring	Shaft 70x2.5, DIN471
13	DEE1560229	Spring seat	Chain tension
14	KM3691202	Rod	Chain tension
15	KM3691216	Washer	S355J2G3-FE/ZN8B
16	DEE0075549	Spring, pressure	Chain tension, 65SI7
17	KM5071521H01	Tube, hollow	D30x4, L=137
18	DEE0061808	Washer	21, DIN7349-ST37-A3G
19	DEE0057136	Nut, hex	M20, DIN934-8A3G
20	KM274931	Screw, w/lock	M10x25-8.8-A3G
21	KM276258	Washer, disk	DIN-0000125-B 10,5-140 HV-ST
22	KM5073152H01	Connector	
23	KM5070972H01	Strap	
24	KM5070971H01	Bracket	
25	KM821708H01	Scale, spring	Return station spring scale
26	DEE2484997	Indicator	Indicator - RTV 59, 5X90

5025315 (2011-05)

2.2 Upper end track sub



5021753(2009-11

Table 5: Upper end track sub

KEY	PART NO.	PARTNAME	REMARK
1	KM5060026	Guide, entry, forward	ULH
2	KM5060027	Guide, entry, forward	URH
3	KM3689495	Guide, entry, return	LLH
4	KM3689496	Guide, entry, return	LRH
5	KM5060960	Pad, support	Supp. Plate/pad 0.5x25x170 D-135 E-11/18
6	KM5060961	Pad, support	Supp. Plate/pad 0.2x25x170 E-11/18 ST1203
7	KM5060030	Guide	LH, ECO3000 OL-GG-25 LV R95
8	KM5060031	Guide	RH, ECO3000 OR-GG-25 LV R95
9	DEE3698196	Pad, support	Spacer, support plate, 0.5x25x140
10	KM3698192	Pad, support	Support plate/pad 0.2x25x140 D-100 E-11/18
11	DEE0661806	Socket screw	M10x25 ST 8.8 A3B
12	DEE0718523	Screw, cylinder head	M10x40 ST 8.8 A3B DIN912
13	KM184226	Screw, hex	M10x20 ST 8.8 A3G DIN912
14	DEE8403763	Washer, retaining	16x11x2 mm, A3C

5021753-20265057 (2009-11)

2.3 Upper end multi-purpose brackets

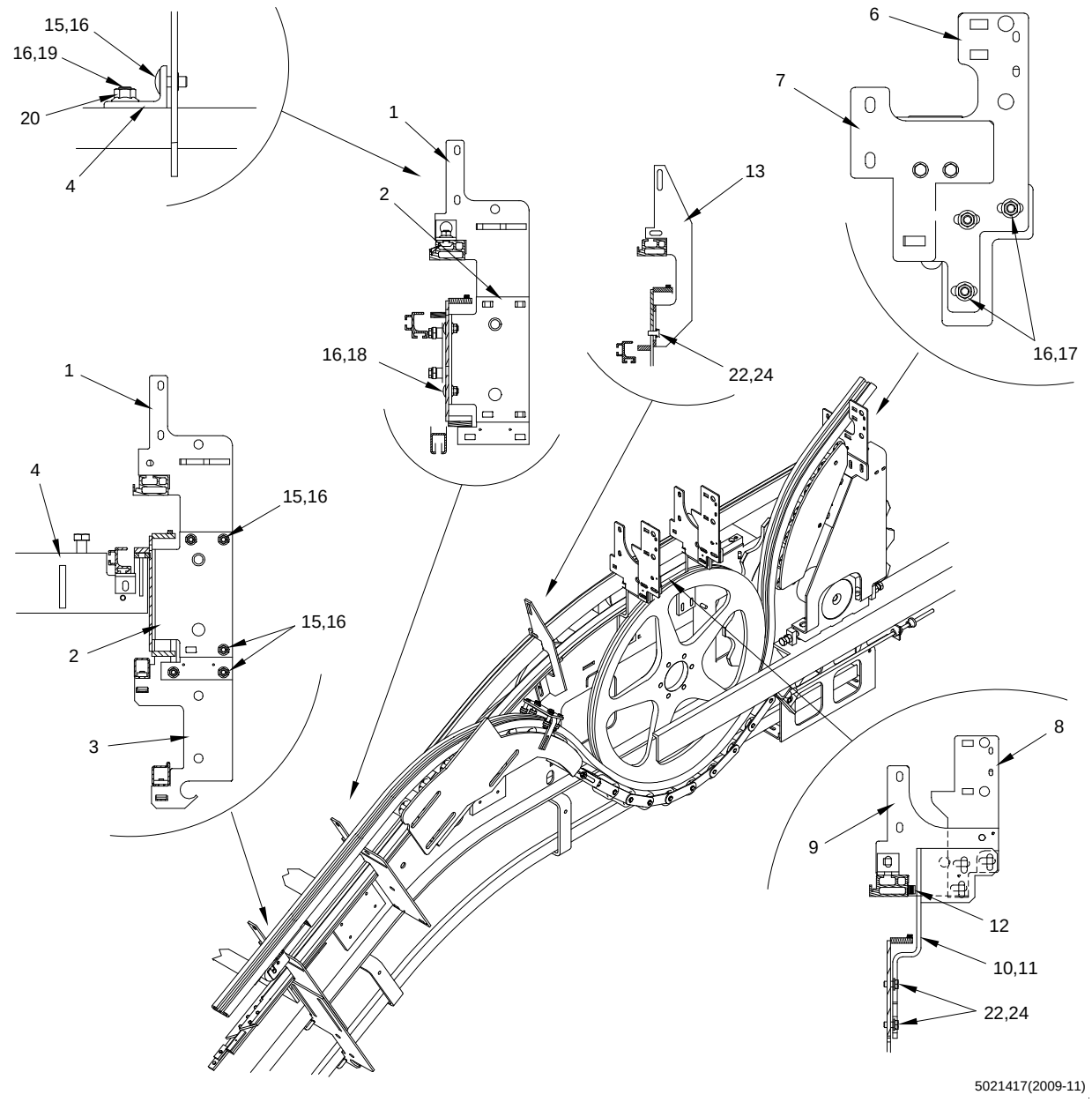


Table 6: Upper end multi-purpose brackets – 1000 mm, V handrail, solid balustrade

KEY	PART NO.	PARTNAME	REMARK
1	KM5077675H01	Bracket, multi-purpose	Upper, 30
1	KM5077675H02	Bracket, multi-purpose	Upper, 30
2	KM5077688H01	Bracket, MPB support	Upper curve
3	KM5077695H01	Bracket, multi-purpose	Incline return
4	KM5072667H01	Bracket, angle	R20
5	KM5077720G13	Crossmember	Upper, incline, 1000
6	KM5070845H01	Bracket, divided	Bracket, divided
7	KM5070486H01	Bracket	Bracket
8	KM5070866H01	Bracket, HD	Divided, upper
9	KM5077740H01	Bracket, HD	Upper
10	KM5077736G03	Bracket assembly	MPB support, LH, V-Handrail
11	KM5077737G03	Bracket assembly	MPB support, RH, V-Handrail
12	KM3710265	Limit stop	Limit stop
13	KM5075876G01	Skirt support, weldment	Skirt support, weldment
14	KM5075348H01	Spacer	Handrail press
15	KM261434	Bolt, cup, square	M10x30 DIN603-8.8 A3G
16	KM280167	Nut, wulock	M10-8-A3G
17	KM3670349	Bolt, carriage	M10x35, DIN603
18	KM3711096	Screw, lock	M10x25 DIN603-8.8-A3G
19	KM3685980	Screw, hammer head	M12x25,. 4 kt
20	KM280168	Nut, lock	M12-8-A3G
21	DEE0056662	Bolt, hex	M10x35 DIN933-838 A3G
22	KM208629	Screw, hex	M10x20 DIN933-4.6A3G
23	KM547568	Washer	A10.5 DIN9021-A3G
24	DEE1389282	Washer, flat	10.5 DIN125-A3G

5021417-20265057 (2009-11)

2.4 Incline track mounting and splices

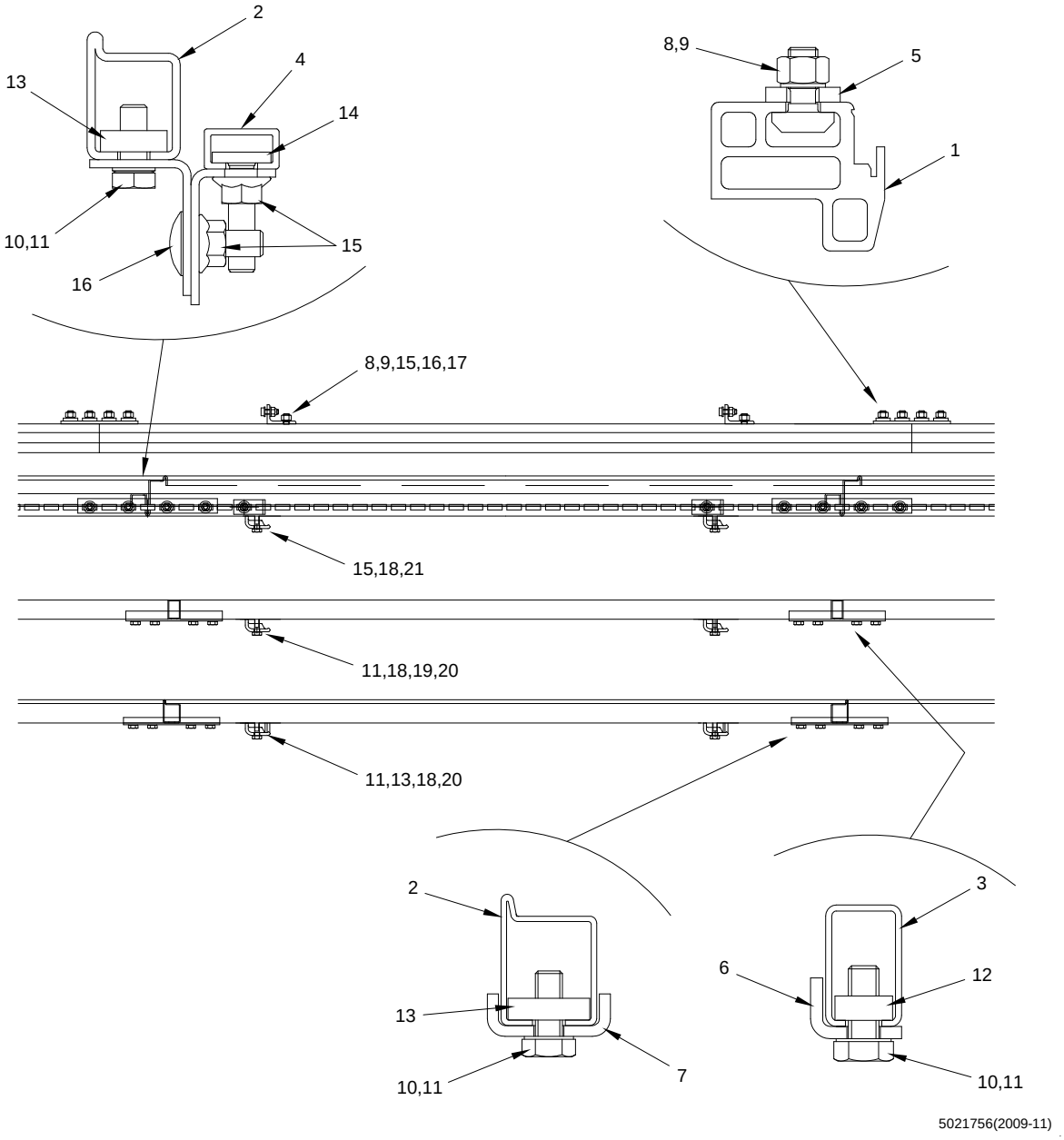
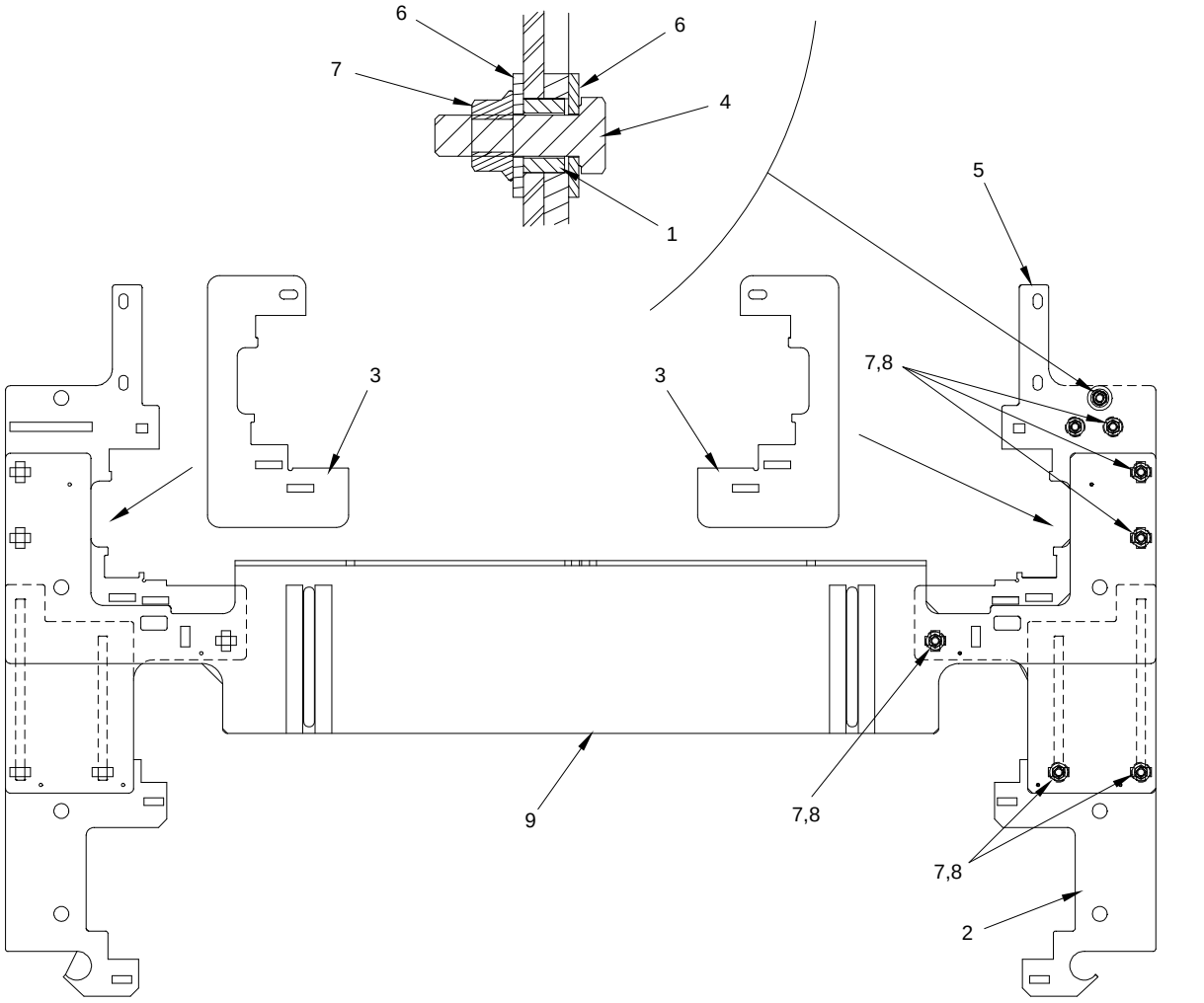


Table 7: Incline track mounting and splices

KEY	PART NO.	PARTNAME	REMARK
1	KM5073150H01	Guide	Chain incline, horizontal
2	DEE2144474	Track, chain wheel	Incline lip, 2mm
2	DEE1787432	Track, upper	Incline lip, 3mm
3	DEE1970342	Track, trail wheel	Incline flat, 2mm
3	DEE1786953	Track, upper	Incline flat, 3mm
4	DEE0936724	Track, unistrut	Unistrut Incline, shallow, 25x15
5	KM5060969	Strap, butt	Incline track
6	DEE1971307	Fishplate, half	Without slots
7	DEE2231223	Fishplate	Incline track
8	KM3685980	Screw, hammer head	M12x30
9	KM280168	Nut, lock	M12
10	KM196410	Screw, hex	DIN933 M10x25
11	KM408031	Washer, retaining	M10, Schnoor-A3G
12	DEE21730151	Nut, square	C-45, M10, 19x30x8
13	DEE1764383	Plate, threaded	10 mm, 25x30x8
14	DEE0057201	Screw, hammer head	M10x30
15	KM280167	Nut, wulock	M10-8-A3G
16	KM261434	Bolt, cup, square	M10x30 DIN603-8.8A3G
17	KM5072667H01	Bracket, angle	60x40x6
18	KM5062102	Bracket, hold-down	Cast track
19	KM5063316	Nut, square	M10, 19x50x8
20	DEE0057202	Screw, hammer head	M10x40
21	DEE1768421	Screw, hammer head	M10x50

5021756-20265057 (2009-11)

2.5 Incline multi-purpose brackets



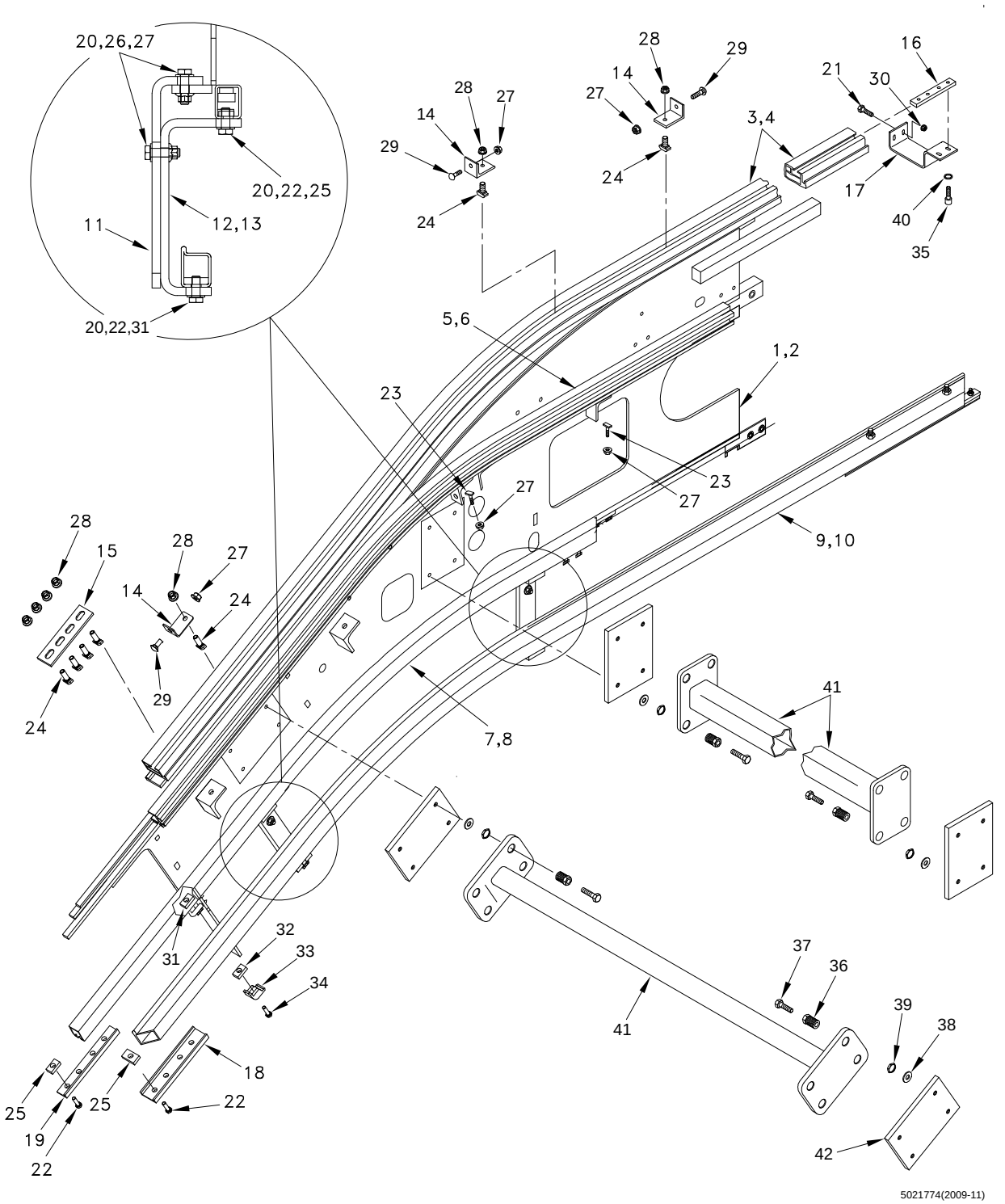
5021769(2009-11)

Table 8: Incline multi-purpose brackets – V handrail, solid balustrade

KEY	PART NO.	PARTNAME	REMARK
1	KM5075348H01	Spacer	Handrail press
2	KM5077695H01	Bracket, multi-purpose	Incline, return
3	KM5077772H01	Bracket, multi-purpose	Shallow track
4	DEE0056662	Bolt, HHC	M10x35 DIN933-8.8 A3G
5	KM5077771H01	Bracket, multi-purpose	Furex pre-asm MPB UP Head 2LSoutdoor
6	KM247568	Washer	A10.5 DIN9021-A3G
7	KM280167	Nut, wulock	M10-8-A3G
8	KM261434	Bolt, cup, square	M10x30 DIN603-8.8A3G
9	KM507772G13	Crossmember	ASM, 1000

5021769-20265058 (2009-11)

2.6 Upper curve track sub



5021774(2009-11)

Table 9: Upper curve track sub – 1000 mm, V handrail, vertical/solid balustrade

KEY	PART NO.	PARTNAME	REMARK
1	KM5077427G45	Track sub, upper curve	LH, indoor
2	KM5077428G45	Track sub, upper curve	RH, indoor
3	KM5077138H45	Guide, step	Extrusion 30-2, ULH
4	KM5077140H45	Guide, step	Extrusion 30-2, URH
5	KM5077139H45	Guide, hold down	30-2,ULH
6	KM5077141H45	Guide, hold down	30-2,URH
7	KM5077136H45	Track trail wheel	30-2, ULH
8	KM5077142H45	Track trail wheel	30-2, URH
9	KM5077137H45	Track, chain	Guide 30-2, ULH
10	KM5077143H45	Track, chain	Guide 30-2, URH
11	KM5077536H02	Bracket	Upper curve track sub
12	KM5077153H02	Bracket	Track support, 215 mm
13	KM5077153H01	Bracket	Track support, 198.9 mm
14	KM5072667H01	Bracket, angle	Upper curve
15	KM5072669H01	Strap, butt	Upper curve
16	KM5063145	Strap, butt	Upper curve
17	KM5077219H01	Bracket	Upper curve
18	DEE2231223	Fishplate	Track connection
19	DEE1971307	Fishplate, half	Track connection
20	DEE1389282	Washer, flat	M10 ST A3B DIN125A
21	DEE0054405	Screw, hex	M8x25 A2B DIN933
22	DEE0056659	Bolt, hex	M10x25 ST8.8 A3B DIN933
23	DEE0057201	Screw, hammer head	M10x30 ST
24	KM3685980	Screw, hammer head	M12x30
25	DEE2173051	Nut, square	C-45, M10, 19x30x8
26	DEE0056662	Bolt, hex	M10x35 ST 8.8 A3B DIN933
27	KM280167	Nut, wulock	M10-8-A3G
28	KM280168	Nut, lock	M12-8-A3B
29	KM261434	Bolt, cup, square	M10x30 DIN603-8.8A3G
30	KM281565	Nut, hex	M8-8 A2B
31	DEE1764383	Plate, threaded	10 mm, 25x30x8
32	KM5063315	Nut, square	M10-C45, 19x50x8
33	KM5062102	Bracket, hold-down	Track support
34	DEE0056663	Screw, hex	M10x40 ST 8A3C DIN933
35	DEE0536953	Screw, cylinder head	M8x16.8 A2B DIN912
36	US69546001	Bushing, threaded	Skid bar
37	DEE0056665	Bolt, hex	M10x50 ST 8.8 A3B DIN933
38	DEE1389282	Washer, flat	M10 ST A3B DIN125A
39	KM249222	Nut, hex	M20x2.5 8 ST A3G DIN439
40	DEE8403762	Washer, retaining	M13x8x1 A3C
41	KM5075390G03	Crossmember 1000 mm	Track sub tube
42	KM5075935H01	Plate	Crossmember attachment

5021774-20265057 (2009-11)

2.7 Lower curve track sub

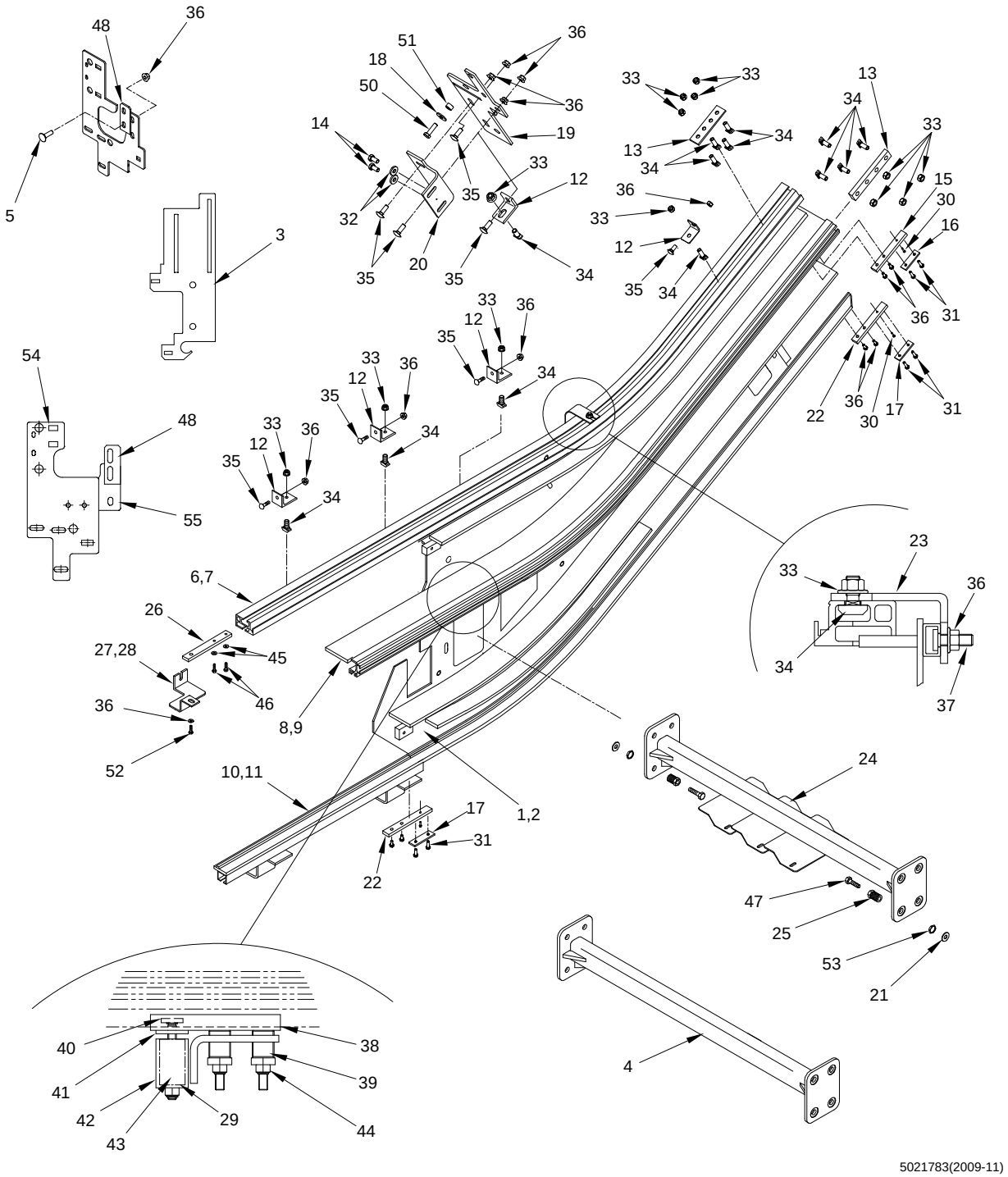


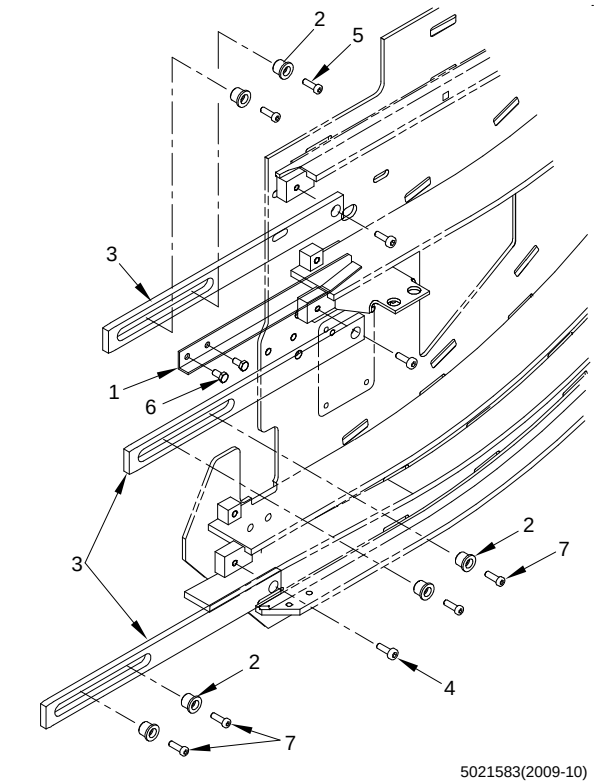
Table 10: Lower curve track sub - 1000 mm, solid balustrade

KEY	PART NO.	PARTNAME	REMARK
1	KM930188G03	Track sub, lower curve	LH
2	KM903189G03	Track sub, lower curve	RH
3	KM5077695H01	Bracket, multi-purpose	RH, glass
4	KM2077469G01	Crossmember	Track sub, type 1000 mm
5	KM3670349	Bolt, carriage	M10x35, DIN603
6	KM5077246H25	Guide, chain	LH, lower curve
7	KM5077244H25	Guide, chain	RH, lower curve
8	KM5077197H20	Guide, trail wheel	LH, lower curve
9	KM5077198H20	Guide, trail wheel	RH, lower curve
10	KM5070895H01	Guide, lower curve	LH, lip track
11	KM5070895H02	Guide, lower curve	RH lip track
12	KM5072667H01	Bracket, angle	Lower curve
13	KM5072669H01	Strap, butt	Lower curve
14	DEE0056656	Screw, HHC	DIN-933-M10X20-8.8-A
15	KM5070898H01	Strap	Lower curve
16	KM5070897H01	Strap	Lower curve
17	KM5070897H02	Strap	Lower curve
18	KM247568	Washer	A10.5 DIN9021-A3G
19	KM5077689H01	Bracket, multi-purpose	Lower curve
20	KM5077690H01	Bracket, MPB support	Lower curve
21	DEE1389282	Washer, flat	M 10 A3B DIN125A
22	KM5070896H02	Strap	Lower curve
23	KM5063388	Bracket	Lower curve
23	KM5077536H02	Bracket	Curve track sub
24	KM872129G07	Crossmember	Lower track sub, type 1000
25	US69546001	Bushing, threaded	Skid bar, adjustment
26	KM5071881H01	Strap	Lower curve
27	KM5071877H01	Bracket, U-shape	LH, lower curve
28	KM5071880H01	Bracket, U-shape	RH, lower curve
29	KM5071874G01	Device, step upthrust	
30	DEE0063269	Screw, hex	DIN933 M4x16
31	DEE0056659	Bolt, hex	DIN 933-M10X25-8.8-A3B
32	DEE0063677	Washer, disk	DIN-7349-10.5 TL-DIN 522
33	KM280168	Nut, lock	M12-8-A3G
34	KM3685980	Screw, hammer head	M12X30
35	KM261434	Screw, hammer head	M10x30 DIN603-8.8A3G
36	KM280167	Nut, wulock	M10-8-A3G
37	KM261434	Screw, hammer head	M10x30 DIN603-8.8A3G
38	DEE2429386	Guide rail	Step upthrust
39	US69546001	Bushing, threaded	Skid bar, adjustment
40	DEE1099821	Screw, hammer head	M8x70-Z 5.6 HS 28/15
41	DEE056992	Washer, flat	DIN 0000125-B
42	DEE2720726	Bushing	RTV-9SMNPB28K-A3B
43	DEE0790684	Spring	FED-ST-DR A

KEY	PART NO.	PARTNAME	REMARK
45	DEE0057111	Washer, flat	DIN 7349-8.4-ST-A3B
46	DEE0536953	Screw, cylinder head	DIN912 M8x16
47	KM248843	Hex screw	M10x55 ST 8.8 A3G DIN933
48	KM5077750H01	Bracket, skirt support	Lower curve
50	DEE0056662	Bolt, hex	DIN 933-M10X35-8.8-A3B
51	KM5075348H01	Spacer	Handrail press
52	DEE0057201	Screw, hammer head	M10 X30
53	KM249222	Nut, hex	M20x2.5 8 ST A3G DIN439
54	KM5070845H01	Bracket, divided	Lower end
55	KM5070846H01	Bracket	Lower end

5021783-20265057 (2009-11)

2.8 Lower end track sub bridges



5021583(2009-10)

Table 11: Lower end track sub bridges

KEY	PART NO.	PARTNAME	REMARK
1	KM3698198	Bracket, angle	Left
2	KM3691227	Bushing	Lower track sub
3	KM5071875H01	Bridge, track	0-40 mm, lower end track sub
4	KM184226	Screw, HHS	DIN912 M10x20
5	KM277140	Screw, HHS	DIN6912 M8x20
6	DEE0054399	Screw, hex	M8x16, DIN933-8.8A3G
7	DEE0830811	Screw, HHS	DIN 6912-M8X25-8.8-A2B

5021583-20265057 (2009-11)

3 FRONTPLATES, COMBPLATES, AND ACCESS COVERS

3.1 Combplate support

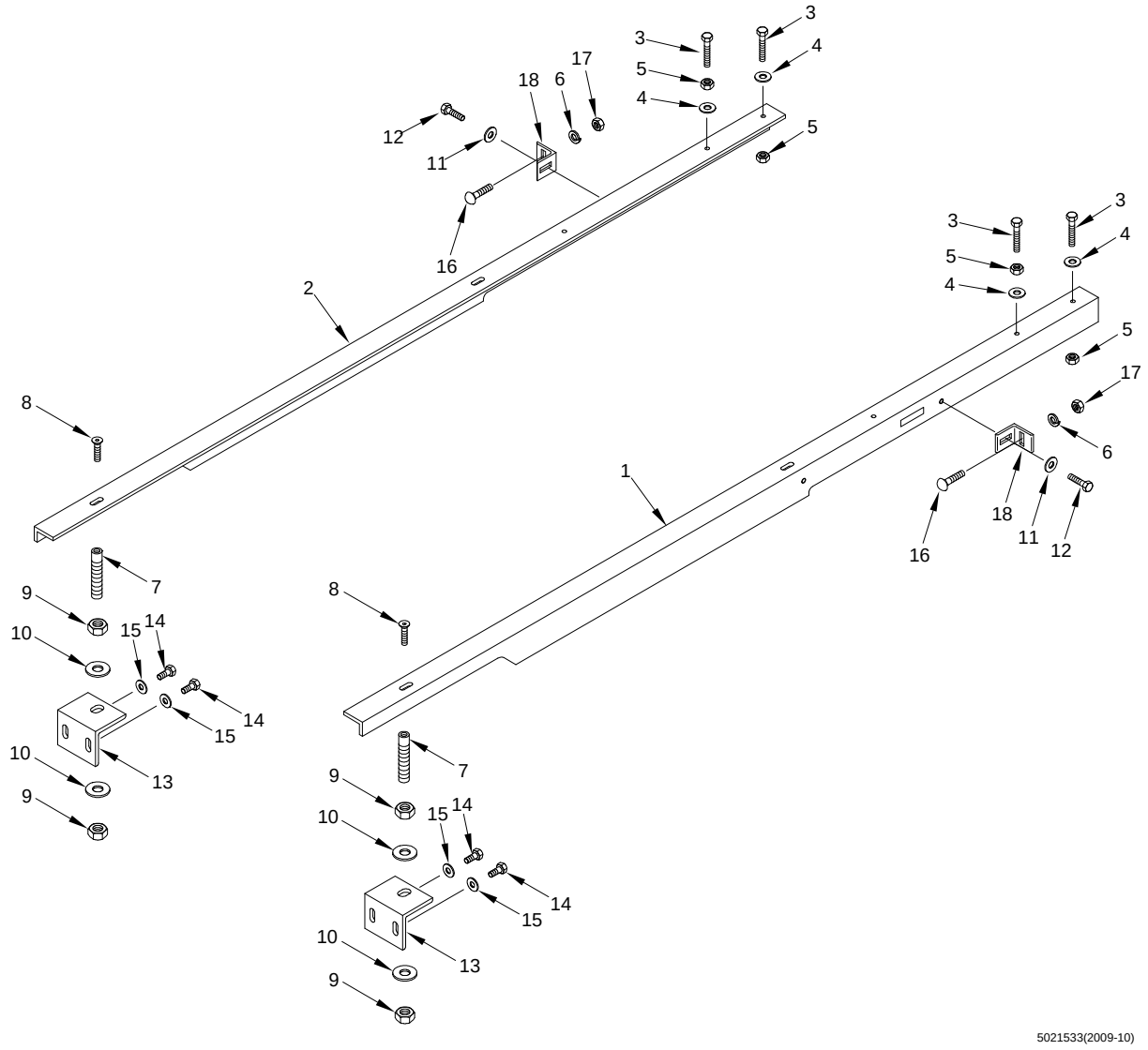


Table 12: Combplate support - standard

KEY	PART NO.	PARTNAME	REMARK
1	KM5077253H34	Angle, landing support	LRH, L=1862 mm
1	KM5077255H03	Angle, landing support	ULH
2	KM5077254H34	Angle, landing support	LLH, L=1862 mm
2	KM5077256H03	Angle, landing support	URH
3	DEE0056665	Bolt, hex	DIN 933 M10X50 A3B
4	DEE0063677	Washer, disk	M10 ST A3E DIN7349
5	DEE0057127	Nut, hex	DIN-934-M10-8-A3B
6	DEE8403763	Washer, retaining	16x11x2 mm, A3C
7	KM5060502	Screw, set	8.8 A3B
8	DEE0718061	Screw, FLT	M10X25-8.8-A
9	DEE0057133	Nut, hex	DIN 834-M16-8.8-A3B
10	DEE0031375	Washer	DIN 7349 16 mm A3B
11	DEE1389282	Washer, flat	M10 A3B DIN125A
12	DEE0056656	Screw, HHC	DIN-933-M10X20-8.8-A
13	KM5077259H01	Bracket, landing support	
14	KM112797	Screw	DIN 933-M12X10-8-8A3G
15	DEE0080731	Washer, disk	DIN-7349-13-ST-A3B
16	KM261434	Bolt, cup, square	M10x30 DIN603-8.8A3G
17	US68736005	Nut, lock, hex	M10 x 1.5
18	KM5060081	Bracket, angle	

5021533-20265057 (2009-11)

3.2 Combplates

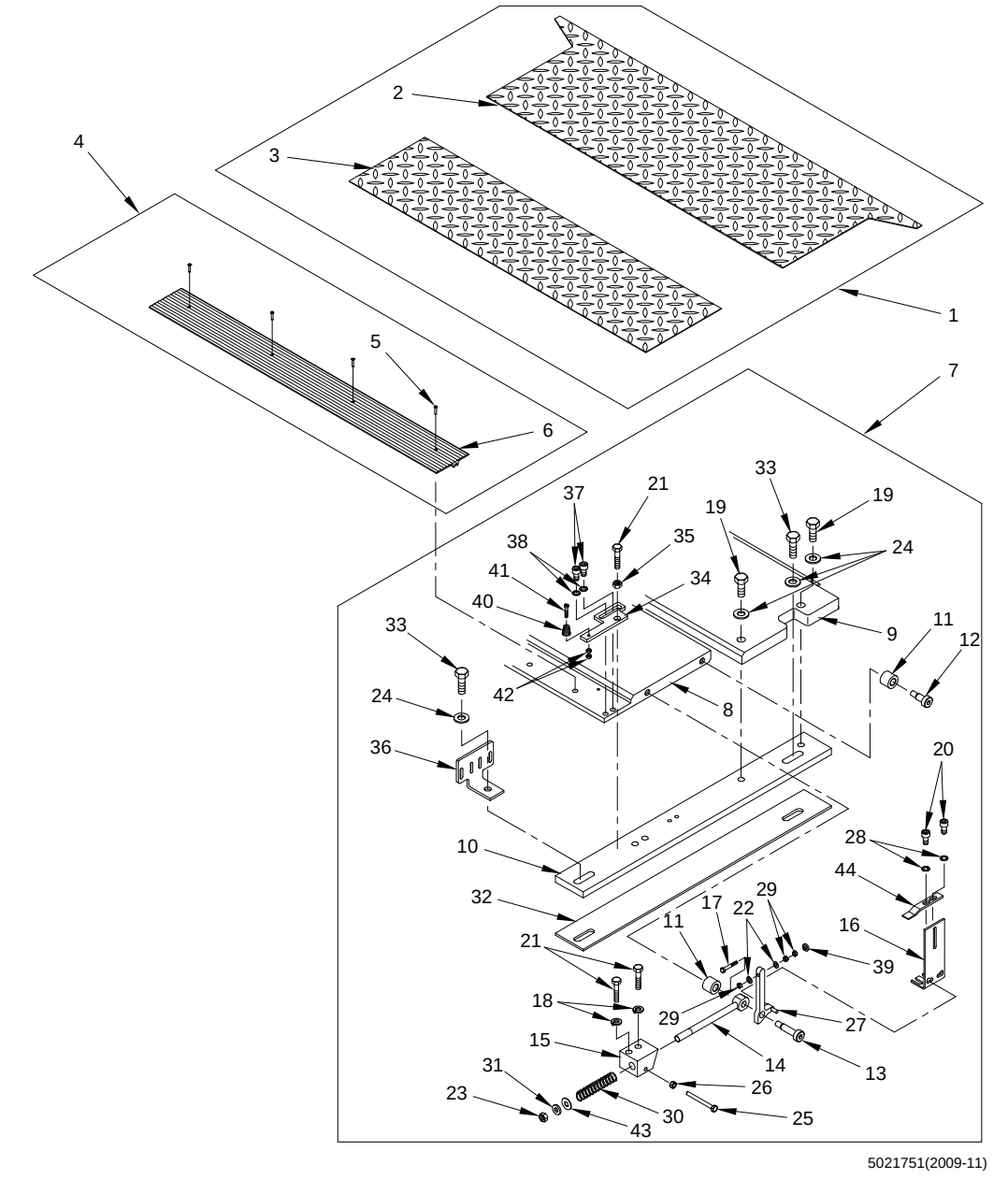


Table 13: Combplates - Type 1000

KEY	PART NO.	PARTNAME	REMARK
1	KM5070445G45	Combplate lining	SS diamond
2	KM937868H01	Plate, Diamond	Comb carrier, L-1040
3	KM937867H01	Plate, Diamond	Comb carrier, L=1040

KEY	PART NO.	PARTNAME	REMARK
4	KM5070445G21	Front cover, combplate	Comb carrier, 100, SS
5	KM3670346	Screw, flat	M4x25 A3 DIN965
6	KM5071673H03	Decking	100 R20
7	KM5072719G09	Assembly, combplate	
8	KM5071676G05	Plate	
9	KM5071679G03	Plate, tail	L-1138
10	KM5070434H01	Plate	R20
11	KM5070439H01	Bearing, roller	Roller R20
12	KM280048	Bolt, hex	M10x40 ST 8.8 A3B DIN609
13	KM280049	Bolt, hex	M10x65 DIN609-838A3B
14	KM5060433	Eyebolt	M8x150 ST 4.6 A3B DIN444 altered
15	KM5072721H01	Block, comb carrier	Comb carrier, LH
15	KM5072722H01	Block, comb carrier	Comb carrier, RH
16	KM572723H01	Bracket	Comb carrier,
17	KM268103	Screw	M4x30 DIN933-838A3B
18	DEE8403763	Washer, retaining	16x11x2 mm A3C
19	KM130245	Screw, hex	M10x35 ST 8.8 A3B DIN933
20	KM116574	Screw, hex	M6x16 ST 838 A3B DIN912
21	KM196717	Screw, HHD	M10x40 ST 8.8 A3B DIN933
22	KM256343	Washer, flat	M4 ST A3B DIN125B
23	KM162172	Nut, hex	M8 mm 8 ST A3B DIN934
24	KM259689	Washer, flat	10.5 mm A3B DIN7349
25	DEE0063294	Screw, hex	M6x55 ST 8.8 A2B DIN933
26	DEE0057125	Nut, hex	M6 DIN934
27	KM5071675G02	Lever	M6 DIN934
28	KM245429	Washer	6.4 mm DIN125-A3B
29	KM122408	Nut, hex	M4 8 ST A3B DIN934
30	KM836505H01	Spring, compression	0.156x1.25O.D.x3.00LGx656LB/IN
31	KM259689	Washer, flat	10.5 mm A3B DIN7349
32	KM5070466H02	Plate	R20
33	KM212381	Screw, hex	M10x30 ST 8.8 A3B DIN933
34	KM5072724H01	Bracket, comb carrier	Comb carrier
35	KM121996	Nut, hex	M10 mm DIN934-8-A3B
36	KM5072639H01	Bracket, switch	
37	KM245404	Screw, socket	M8x12 ST 8.8 A3B DIN912
38	KM245331	Washer	8.4 DIN125-A3B
39	KM283184	Nut, knurled thumb	M4-5 DIN467-A2B
40	US105478H01	Spring, vertical impact	Conical
41	KM247816	Screw	M4x22, DIN84-4.8A2F
42	KM256072	Nut, hex	Thin, BM4, DIN439-4A2G
43	US68777001	Washer, flat	12.7 mm, plated
44	US521202001	Combplate, impact	
NS	KM972664H02	Adhesive, Loctite	Adhesive, H8010,490ML

5021751-20265053 (2010-02)

3.3 Comb segments

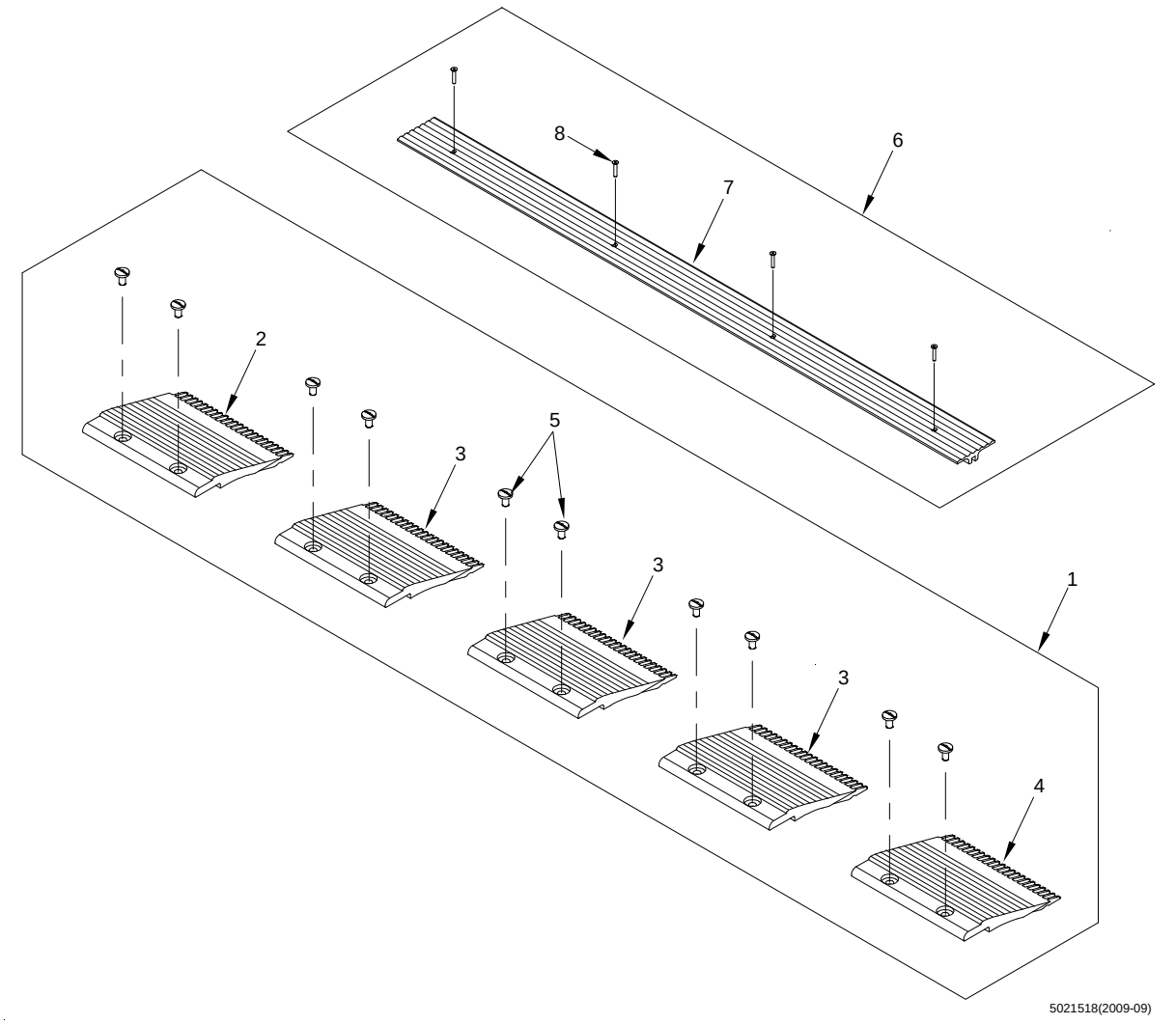
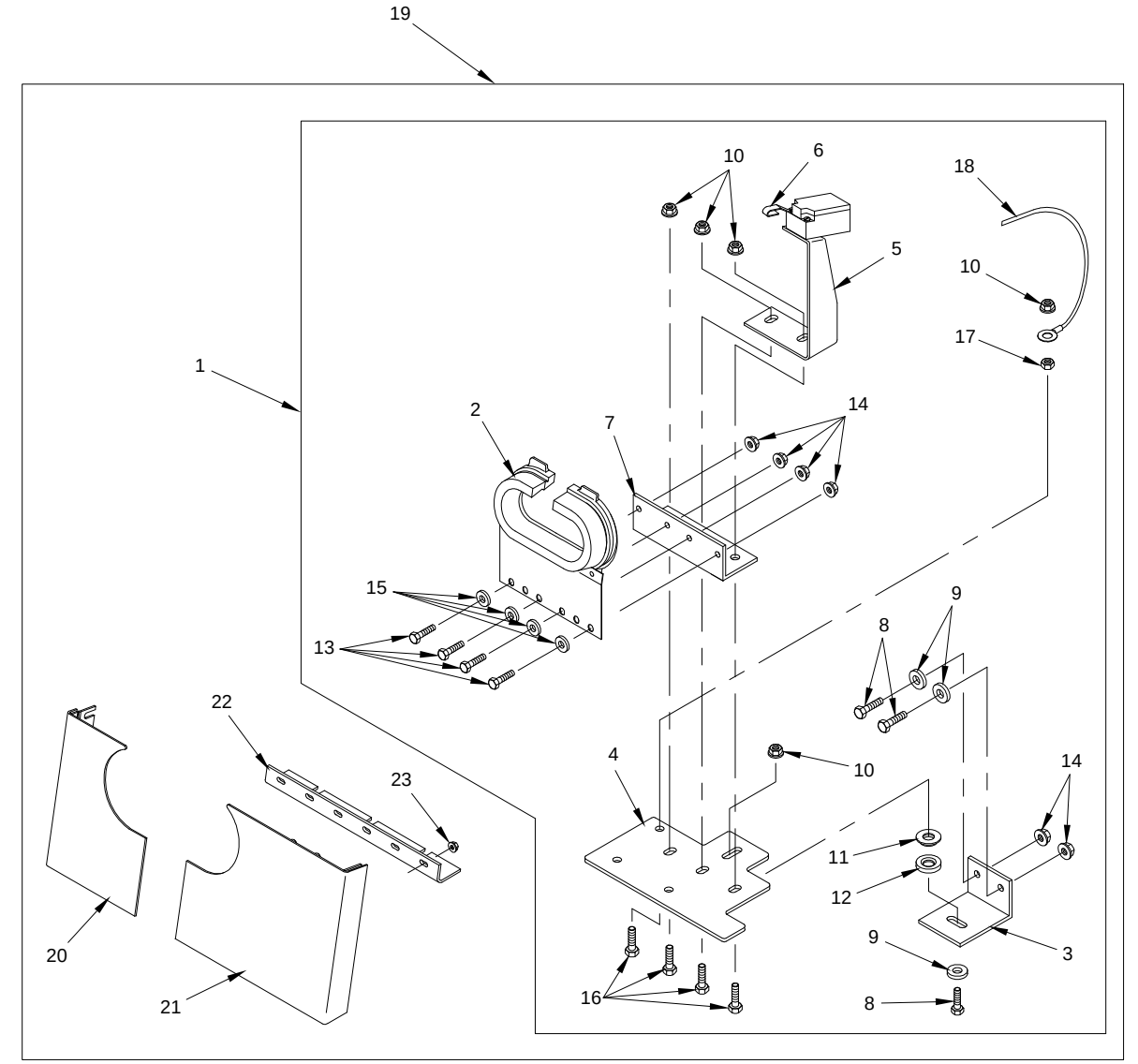


Table 14: Comb segments - Type 1000

KEY	PART NO.	PARTNAME	REMARK
1	KM5052037	Comb segment assembly	1000 mm, yellow, contains comb segments and hardware
2	KM3719605	Comb segment, side	Yellow, lower RH, upper LH
3	KM3719606	Comb segment, center	Yellow
4	KM3719604	Comb segment, side	Yellow, lower LH, upper RH
5	DEE2239393	Screw, fillet head	M8-X12CRMOS17
6	KM5070445G21	Front cover, combplate	Type 1000 mm, SS, includes mounting screws
7	KM5071673H03	Decking	Decking
8	KM3670346	Screw, flat	ISO0007046-2 M4x25

5021518-20265057 (2010-02)

3.4 Frontplate and handrail inlet



5021493(2009-11)

Table 15: Frontplate and handrail inlet - inclined solid balustrade

KEY	PART NO.	PARTNAME	REMARK
1	KM5073243G01	Handrail inlet	ULH/LRH, manual reset
1	KM5073243G03	Handrail inlet	URH/LLH, manual reset
2	KM5072085H01	Brush, inlet	Frontplate
3	KM5072092H01	Bracket, mounting	Frontplate
4	KM5073244H01	Plate, mounting	Frontplate
5	KM5073245H01	Bracket, switch	Handrail inlet, ULH/LRH
5	KM5073245H02	Bracket, switch	Handrail inlet, URH/LLH
6	KM5072741H01	Spring, manual reset	Handrail inlet
7	KM5072933H01	Bracket, inlet mount	Handrail inlet brush
8	KM196444	Screw, hex	M8x30 DIN 933 - 8.8 A3G
9	KM408250	Washer, flat	8.4 mm A3B DIN7349
10	KM280166	Nut, flange	M8-8A3G
11	KM249476	Washer, spherical	C13 DIN6319
12	KM249477	Seat, conical	D14.2 DIN6319
13	KM200816	Screw, hex	M6x20 DIN933-8.8A3G
14	KM280165	Nut, lock	M6-8A3G
15	DEE0063678	Washer	6.4 mm, DIN 7349
16	KM102228	Screw, hex	M8x25-8.8A3G DIN 933
17	KM162172	Nut, hex	M8, DIN934-8A3G
18	DEE2484849	Cable, ground	
19	USP39685185	Frontplate and inlet	LRH/ULH assembly
19	USP39649185	Frontplate and inlet	LLH/URH assembly
20	USP39650K01	Frontplate, inner assembly	LRH/ULH
20	USP39652K01	Frontplate, inner assembly	LLH/URH
21	USP39678185	Frontplate outer assembly	LRH/ULH
21	USP39653185	Frontplate, outer assembly	LLH/URH
22	US105667K01	Angle, frontplate	SS
23	KM281531	Nut, flange	M4-8A3B
NS	KM280165	Nut, lock	M6-8A3G

5021493-20265057 (2009-11)

3.5 Access cover and frame assembly, lower

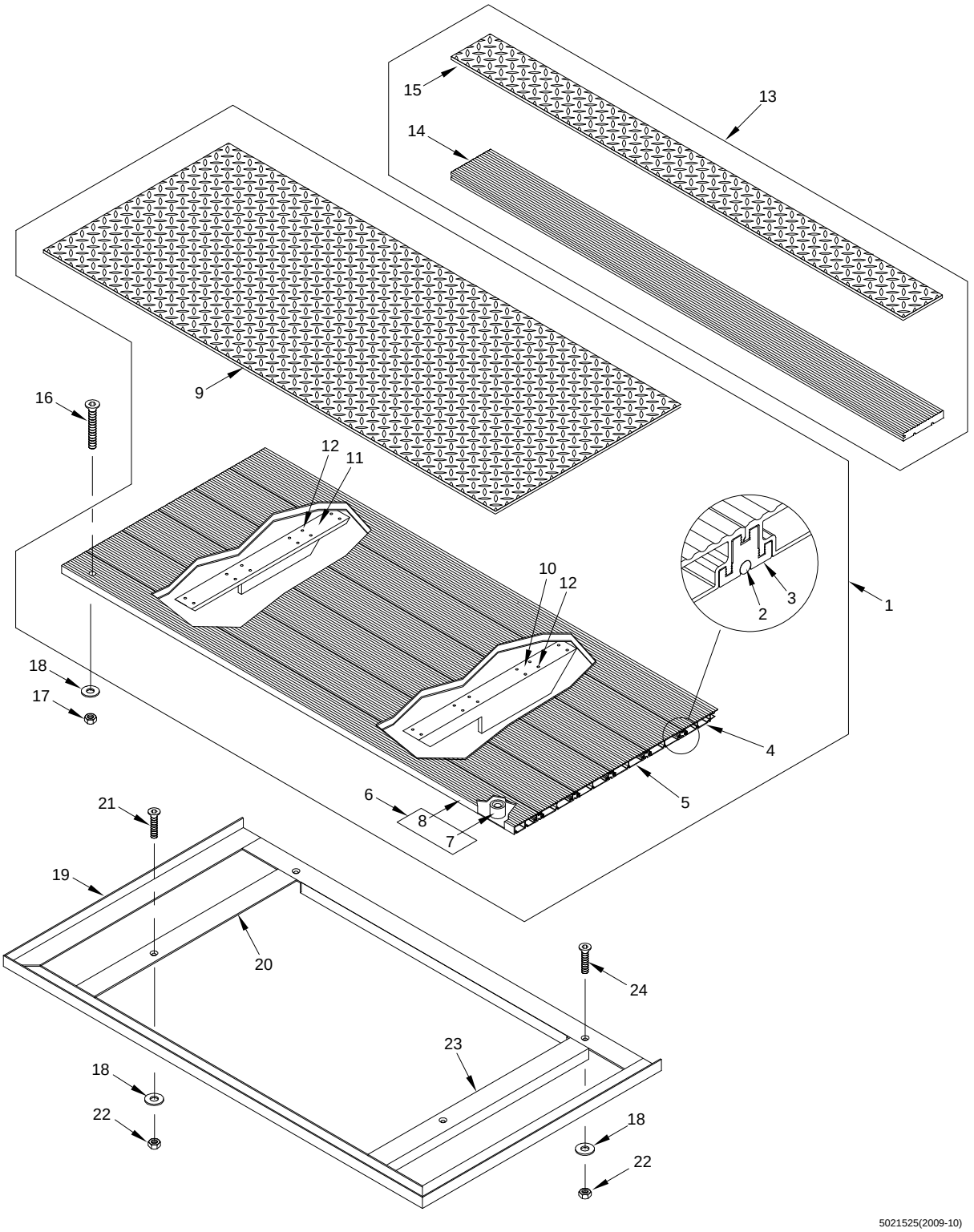


Table 16: Access cover and frame assembly - lower

KEY	PART NO.	PARTNAME	REMARK
1	KM5077277G31	Assembly, access cover, lower landing	SS, W=1616 MM L=635 mm, w/nose
2	US97051001	Rubber cord, access cover	
3	KM5071035H01	Profile	L-50 R20
4	KM5077410H47	Extrusion, access cover	Front
5	KM5077281H47	Extrusion, access cover	160 mm
6	KM5077414G47	Assembly, access cover	Hold down
7	KM5075189H01	Spacer, access cover	Hold down
8	KM5077413H47	Extrusion access cover	Hold down
9	KM937866H23	Lining, access cover	Diamond plate
10	KM5070443H29	Angle, cut	L=487 mm
11	KM5070443H30	Angle, cut	L=487 mm
12	DEE0524272	Rivet	A4 x 12-A2-A2-BK
13	KM5077277G58	Assembly, access cover	Makeup, SS
14	KM5077269H47	Makeup, access cover solid	
15	KM937866H16	Lining, access cover	Diamond plate
16	DEE1185464	Screw, cap	Flat, M8x50-8.8-A2, DIN-0007991
17	DEE0057126	Nut, hex	M8 8 ST A2B DIN934
18	DEE0063677	Washer, Flat	M10 ST A3E DIN7349
19	KM869910H04	Frame	Cut to fit at assembly
20	KM5077257H01	Angle, access cover	Spacer
21	US68728004	Screw, flat	M10, L=30mm
22	DEE0057127	Nut, hex	DIN-934-M10-8-A3B
23	KM5077258H04	Angle, access cover	Spacer
24	KM822161H07	Screw, cap	Flat head
NS	KM972664H02	Adhesive, lining	Loctite

5021525-20265057 (2009-11)

3.6 Access cover and frame assembly, upper

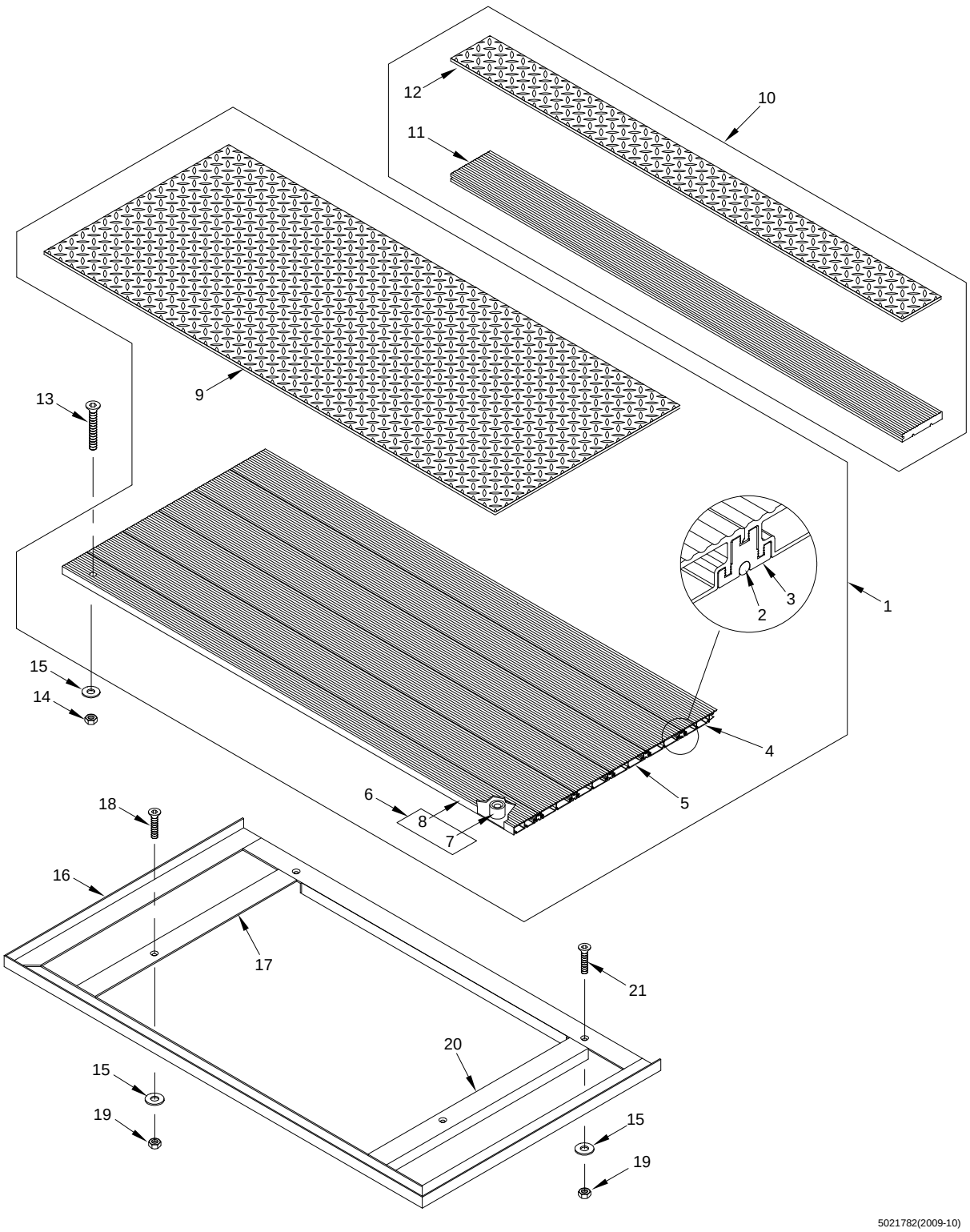
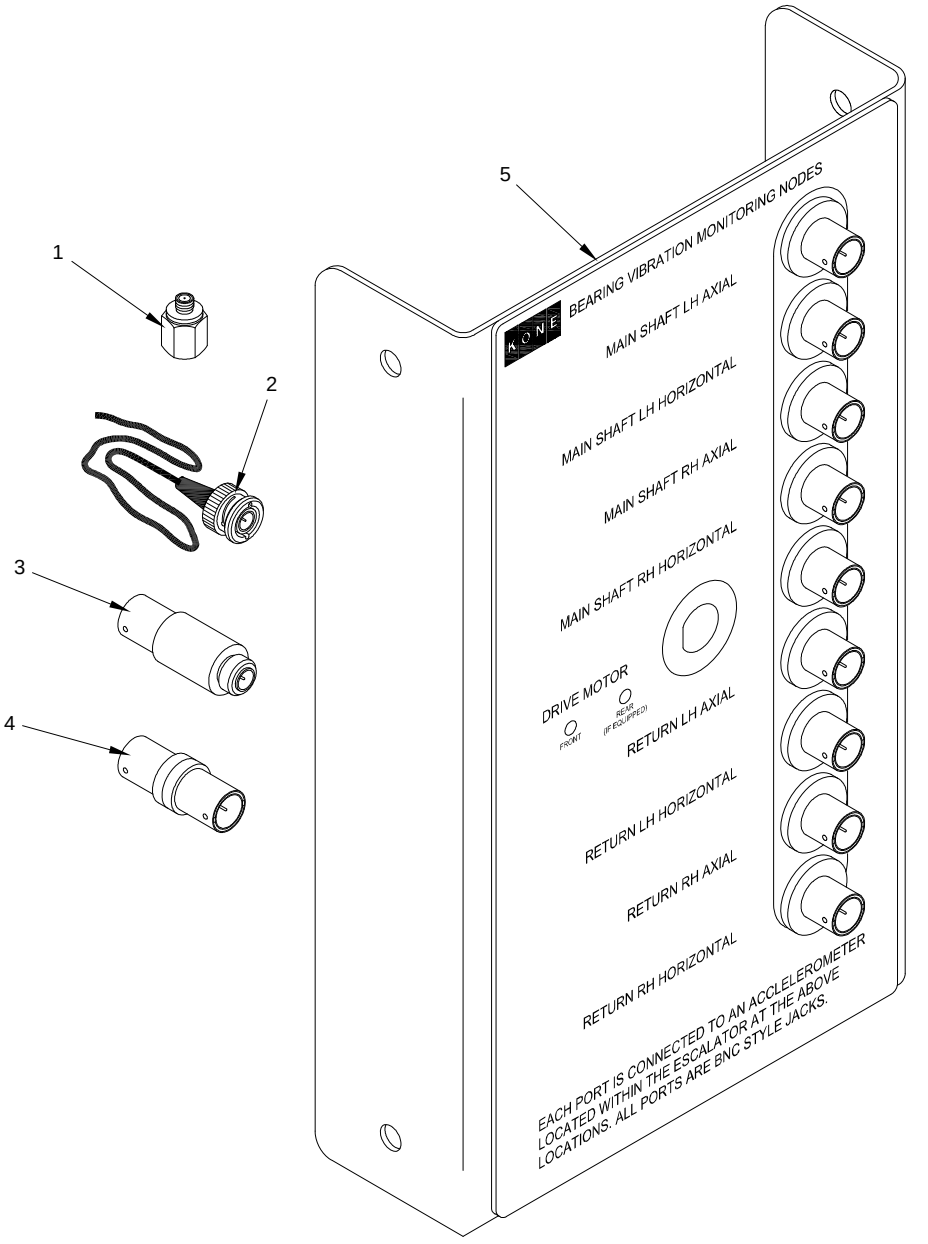


Table 17: Access cover and frame assembly - upper

KEY	PART NO.	PARTNAME	REMARK
1	KM5077277G55	Access cover upper, assembly	SST, with nose, diamond
2	US97051001	Cord, acces cover	Rubber
3	KM5071035H01	Profile	Part L-50
4	KM5077410H47	Access cover	Extrusion front
5	KM5077281H47	Extrusion, access cover	160mm
6	KM5077414G47	Access cover	Assembly, hold-down
7	KM5075189H01	Spacer, access cover	Spacer hold-down
8	KM5077413H47	Access cover	Extrusion, hold down
9	KM937866H23	Access cover	Lining, W=1616 H=475, diamond
10	KM5077277G58	Access cover	SS, W=1616 mm, L=180 mm, diamond
11	KM5077269H47	Access cover	Make-up, upper, solid
12	KM937866H16	Lining, access cover	Diamond
13	DEE1185464	Screw, flat head	DIN-0007991-M8x50-8.8-A2
14	DEE0051726	Nut, hex	M8 8 ST A2B DIN934
15	DEE0063677	Washer, disk	M10 ST A3E DIN7349
16	KM869910H04	Landing frame material	Access cut to fit at assembly, SS, L=3048mm
17	KM5077257H01	Angle, landing cover	Access cover, spacer
18	US68728004	Screw, flat	M10, L30MM
19	DEE0057127	Nut, hex	M10 8 ST A3B DIN934
20	KM5077258H04	Angle, landing cover	Access cover, spacer
21	KM822161H07	Screw, flat head	FLTHD M8x45, DIN7991,Zn PLT
NS	KM972664H02	Adhesive, loctite	H8010, 490 ml

5021782-20253138 (2010-02)

3.7 Bearing monitor drive station



5024510(2011-02)

Table 18: **Bearing monitor drive station**

Key	part no	Partname	Remarks
1	256HX-100	Transducer	Endevco part number
2	KM857235Hxx	Cable, co-axial, double-shielded	xx = length: H01=15 ft.; H02=20 ft.; H03=25 ft.; H04 = 30 ft. L=last 2 digits x 5 + 10
3	KM857344H01	Adapter, plug	BNC/10-32 UNF
4	KM857343H01	Adapter, BNC	Jack-Jack
5	KM8572347G01	Plaque, bearing monitor	Assembly, RTV-HD

5024510-20265053 (2011-02)

4 HANDRAIL SYSTEM

4.1 Handrail take-up and guide

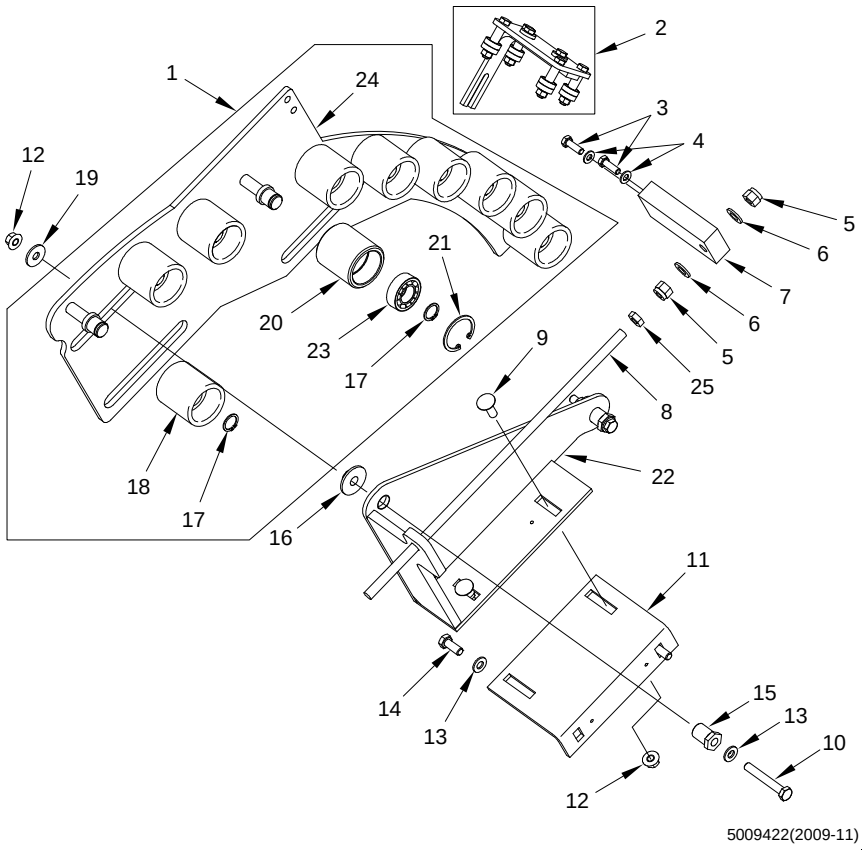
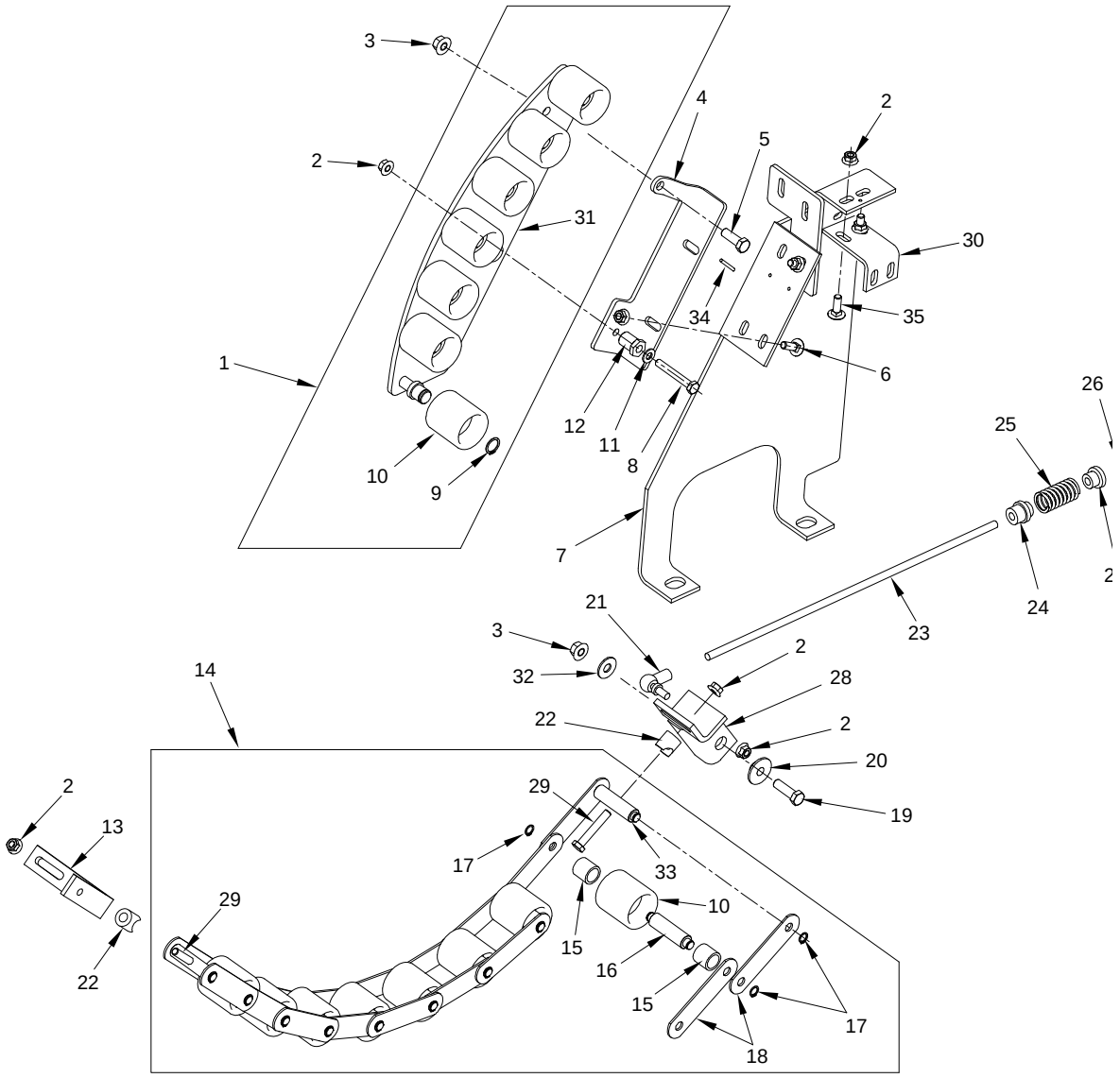


Table 19: Handrail take-up and guide

KEY	PART NO.	PARTNAME	REMARK
1	KM5077454G01	Roller assembly	Handrail take-up, LH, indoor
1	KM5077457G01	Roller assembly	Handrail take-up, RH, indoor
2	KM5071169G01	Guide, handrail	Take-up guide, indoor
3	DEE0054405	Screw, HHC	DIN 933-M8X25-8.8A3G
4	KM245331	Washer	8.4 DIN 125-A3G
5	KM280168	Nut, lock	M12 DIN6924-8A3G
6	KM245661	Washer, flat	A13 DIN125-A3G
7	KM5077523H01	Plate	Handrail take-up, indoor
8	KM5077524H03	Rod, threaded	M12, L=500
9	KM261434	Bolt, cup, square	M10x30 DIN603-8.8A3G
10	KM196063	Screw, hex	M10x70 DIN933-8.8A3G
11	KM5077504G01	Bracket, take-up	Handrail take-up, indoor
12	KM280167	Nut, wulock	M10-8-A3G
13	DEE1389282	Washer, flat	10.5 DIN125-A3G
14	DEE0056659	Bolt, hex	DIN933 M10x25
15	US69546001	Bushing, threaded	Skid bar, adjustment
16	KM5071386H01	Bushing	Handrail guide, ID=12.5
17	KM272825	Circlip	DIN-0000471-20X1.2
18	DEE2173045	Roller	Handrail
19	KM247568	Washer	A10.5 DIN9021-A3G
20	DEE1563846	Roller, handrail	Steel without stud
21	KM175539	Circlip	DIN-0000472-47X1.75-FED-ST
22	KM5077459G01	Plate, handrail take-up	LH, indoor
22	KM5077462G01	Plate, handrail take-up	RH, indoor
23	KM247858	Bearing, ball	6204 2RS, RTV
24	KM5077455G01	Plate, handrail take-up	LH, indoor
24	KM5077458G01	Plate, handrail take-up	RH, indoor
25	DEE0057130	Nut, hex	DIN 934-M12-8-A3B

5009422-20265057 (2009-11)

4.2 Handrail guide and pressure rollers



5021586(2009

Table 20: Handrail guide and pressure rollers - solid balustrade

KEY	PART NO.	PARTNAME	REMARK
1	KM5071177G01	Guide, roller assembly	Upper end, LH, indoor
1	KM5071178G01	Guide, roller assembly	Upper end, RH, indoor
2	KM280167	Nut, wulock	M10-8-A3G
3	KM280168	Nut, lock	M12-8-A3G
4	KM5075844H01	Bracket, roller cluster	RH, indoor, handrail roller cluster mount
4	KM5075837H01	Bracket, roller cluster	LH, indoor, handrail roller cluster mount
5	DEE0063314	Screw, HHC	M12X35, DIN933-8.8A3B
6	KM261434	Bolt, cup, square	M10x30 DIN603-8.8A3G
7	KM5077216G01	Bracket, roller cluster	LH, indoor, handrail cluster mount
7	KM5077217G01	Bracket, roller cluster	RH, indoor, handrail cluster mount
8	KM196063	Screw, hex	M10x70 DIN933-8.8A3G
9	KM272825	Circlip	DIN-0000471-20X1.2
10	DEE2173045	Roller	Handrail
11	DEE1389282	Washer, flat	10.5 DIN125-A3B
12	US69546001	Bushing, threaded	Skid bar, adjustment
13	KM5075946G01	Support, roller cluster	Roller cluster
14	KM5075883G01	Roller cluster assembly, inlet	Indoor
15	KM5075908H01	Spacer	Handrail roller cluster
16	KM5075907H01	Axle, roller cluster	Handrail
17	KM104489	Ring, retaining	12X1, DIN471
18	KM5075909H01	Plate, roller cluster	Handrail
19	DEE0056672	Bolt, hex	M12x40 DIN933-8.A3G
20	KM5071386	Bushing	Handrail guide, ID=12.5
21	DEE0108592	Angle joint	DIN-71802-AS 16-VERZ
22	KM5075915H01	Spacer	Handrail tension
23	DEE2700531	Stud	DIN-976-M10X650-B-5.8-A3B
24	DEE1737241	Guide	Polyamid
25	US2881049	Spring, compression	Handrail drive
26	DEE0057127	Nut, hex	DIN934-M10-8-A3B
27	DEE1737240	Spring seat	Polyamid
28	KM5077156G01	Bracket assembly	LH, indoor, handrail
28	KM5077157G01	Bracket assembly	RH, indoor, handrail
29	KM196030	Screw, hex head	M10x60
30	KM5075838H01	Bracket	Indoor, handrail inlet cluster mount
31	KM5071175G01	Plate	LH, indoor, handrail roller guide
31	KM5071176G01	Plate	RH, indoor, handrail roller guide
32	KM245661	Washer, flat	A13 DIN125-A3G
33	KM5075906H01	Axle roller cluster	Roller cluster axle
34	KM186825	Drive pin	Spring, 4 x 24, DIN1481
35	KM3711096	Screw, lock	M10x25 DIN603 8.8

5021586-20265057 (2009-11)

4.3 Handrail roller guides, lower curve

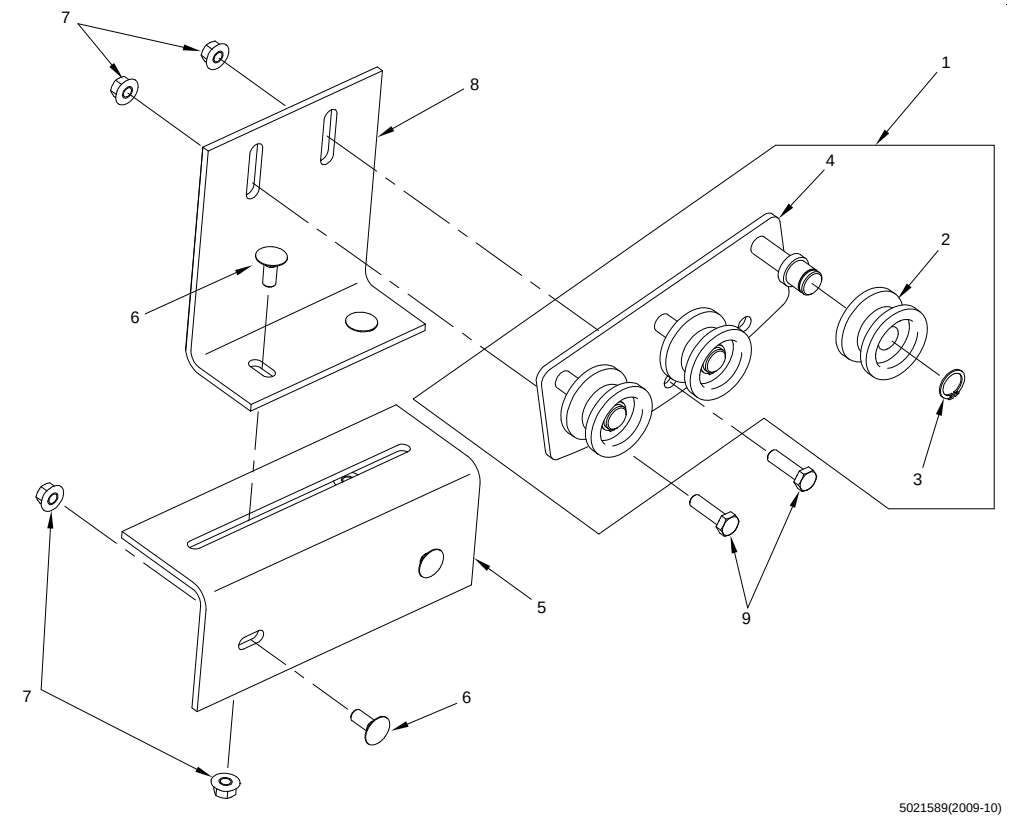
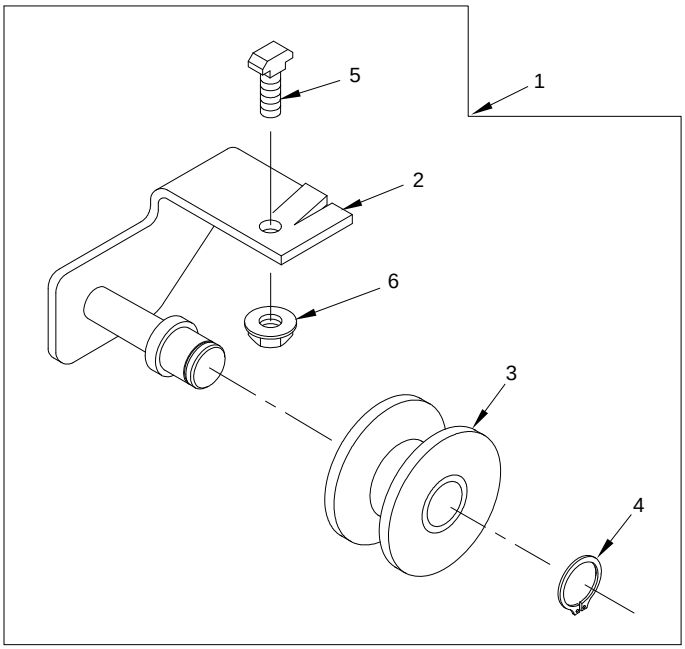


Table 21: Handrail roller guides - lower curve, V type

KEY	PART NO.	PARTNAME	REMARK
1	KM5071237G01	Roller assembly	Lower curve, V-type handrail, indoor
2	KM5071160H01	Roller	Roller
3	KM165340	Circlip	DIN0000471-10x1
4	KM5071236G01	Bracket, roller assembly	V-type
5	KM5077722H01	Bracket, handrail	Lower curve
6	KM277146	Bolt, carriage	M10x25 DIN603-8.8-A3G
7	KM280167	Nut, wulock	M10-8-A3G
8	KM5077723H01	Bracket, handrail	Lower curve
9	DEE0056662	Bolt, hex	DIN 933-M10x35-8.8-A3B

5021589-20265057 (2009-11)

4.4 Handrail roller guides, lower end



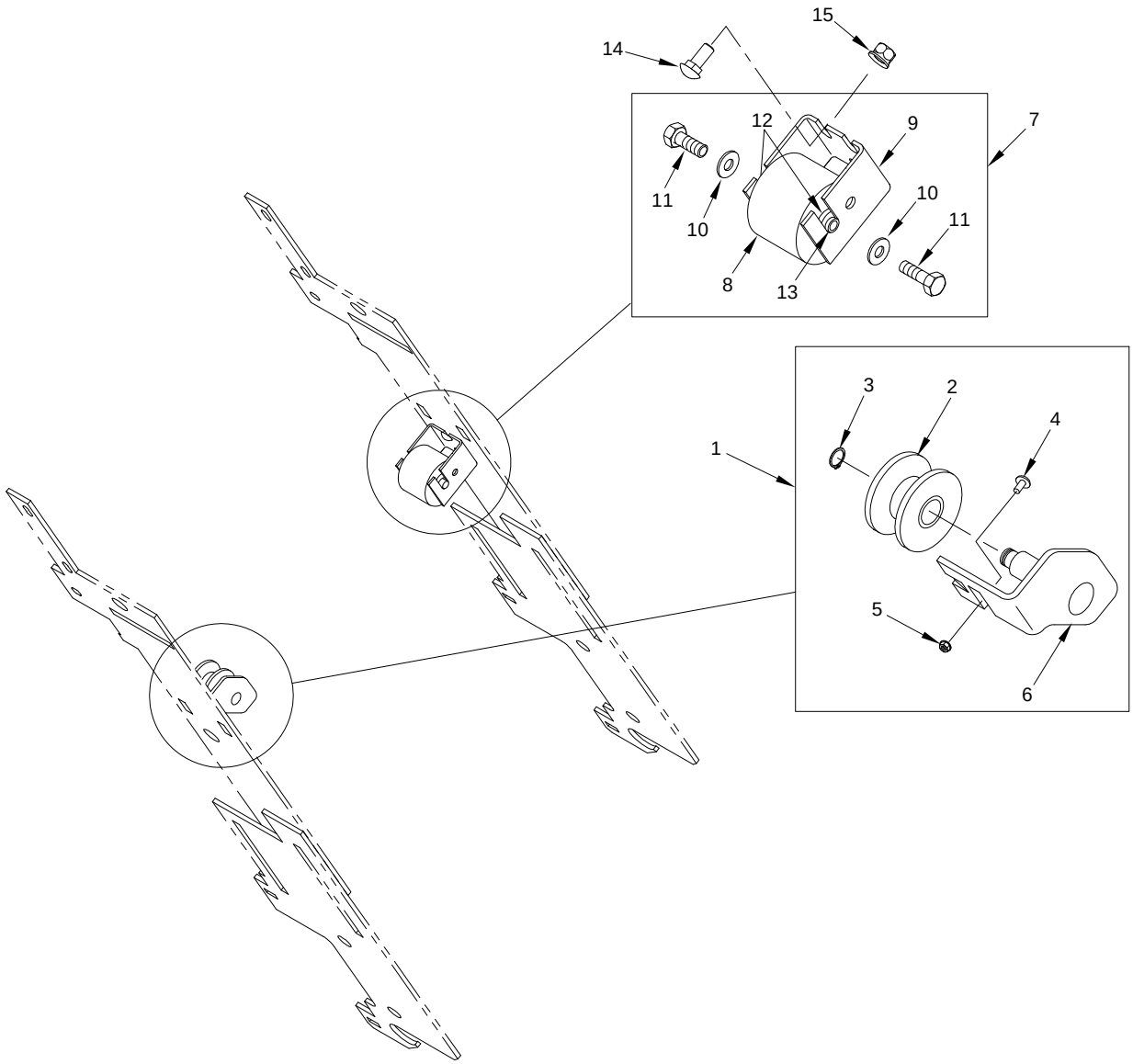
5021592(2009-10)

Table 22: Handrail roller guides - lower end, V type

KEY	PART NO.	PARTNAME	REMARK
1	KM5071242G01	Roller, handrail	Lower end, V-type, indoor
2	KM5071241G01	Bracket, handrail roller	V-type, indoor
3	KM5071160H01	Roller	V-type
4	KM165340	Circlip	DIN-0000471-10x1, V-type roller
5	DEE0933518	Screw, hammer head	M8x20 5.6-A2B
6	KM280166	Nut, flange	M8-8A3G

5021592-20265057 (2009-11)

4.5 Handrail guide rollers, incline



5021437(2009-11)

Table 23: Handrail guide rollers - incline, V type

KEY	PART NO.	PARTNAME	REMARK
1	KM5071245G02	Roller, handrail assembly	LH, outdoor, V-type
1	KM5071248G02	Roller, handrail assembly	RH, outdoor, V-type
2	KM5071160H01	Roller	Handrail guide
3	KM165340	Circlip	Retaining ring, ext 10x1mm ST DIN471
4	KM257344	Bolt, cup, square	M8x20 ST 4.6 A3B DIN603
5	KM280166	Nut, flange	Wulock M8 8A3B
6	KM5071244G02	Bracket, handrail roller	LH, outdoor
6	KM5071247G02	Bracket, handrail roller	RH, outdoor, V-type
7	KM5071696G03	Roller assembly	Roller
8	KM5076345G01	Roller, idler	Roller
9	KM5071695H01	Bracket	R20
10	KM247039	Washer, disk	8,4 DIN7349-St
11	US49389003	Screw, HHC/G2	5/16-18,3/4 class 2A
12	US44486	Spacer, handrail roller	Handrail wheel
13	US44485	Shaft, roller cluster	Crystal, 2000
14	KM277146	Bolt, carriage	M10x25 DIN603-8.8-A3G
15	KM280167	Nut, wulock	M10 8 ST A3G

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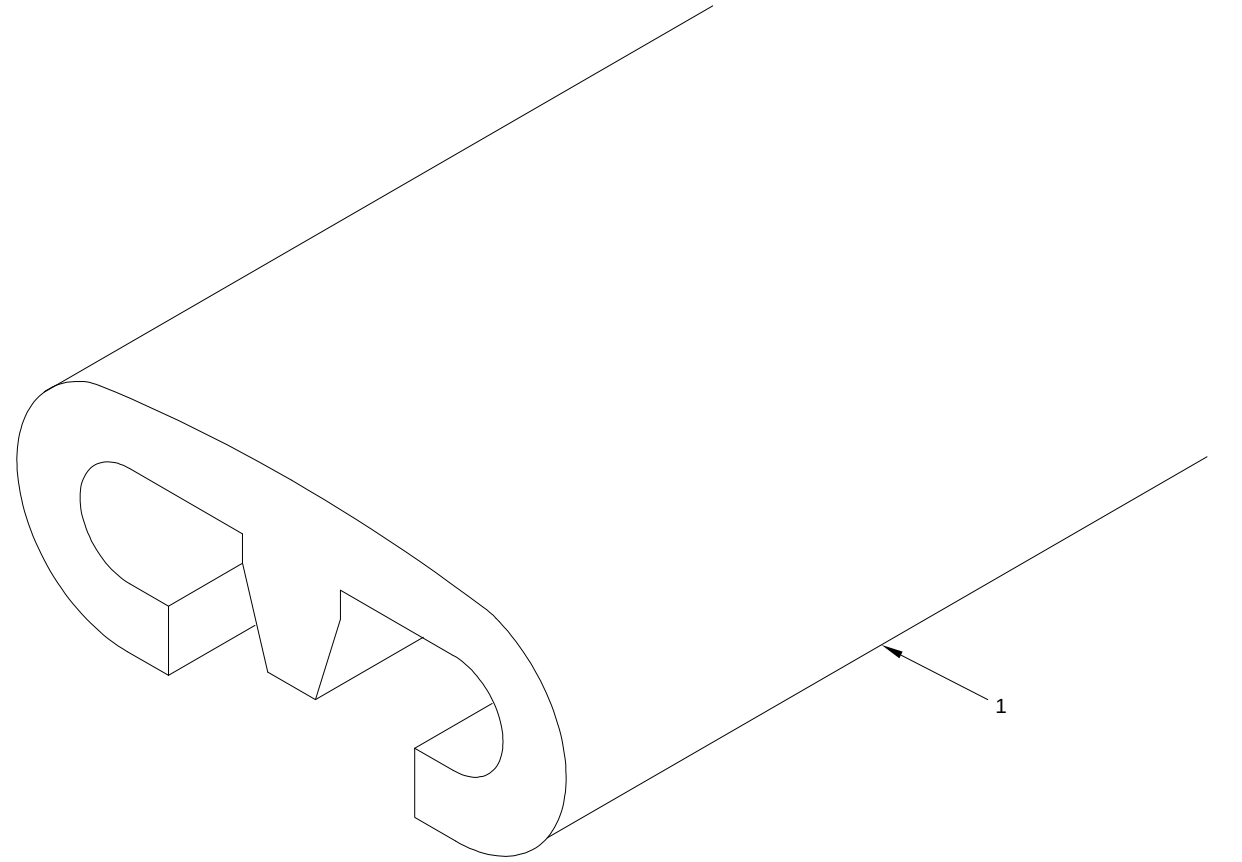
4.6 Handrails



5021439(2009-09)
8A-001136(2009-09)

Table 24: Handrails - V type

KEY	PART NO.	PARTNAME	REMARK
1	DEE2146675	Handrail	V-type

5021439-20265057 (2009-11)

4.7 Handrail drive wheel

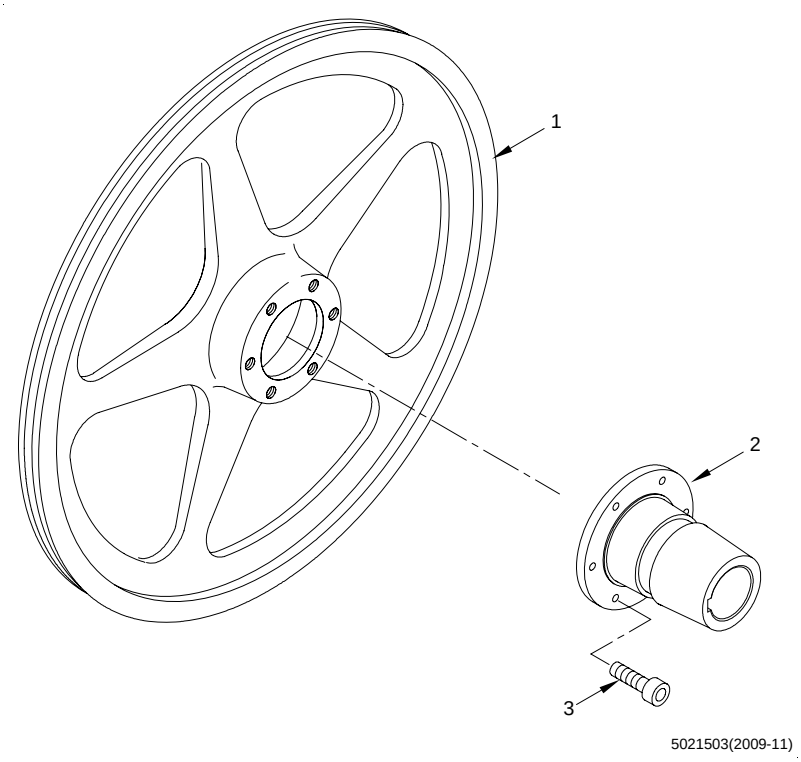


Table 25: Handrail drive wheel - V drive

KEY	PART NO.	PARTNAME	REMARK
1	DEE4001026	Wheel, handrail drive	V drive
2	DEE4001052	Hub	HDVB LV3691183
3	DEE0939137	Screw, socket head cap	M10X30-8.8-A3B DIN-0000912

5021503-20265057 (2009-11)

5 STEP BAND

5.1 Steps

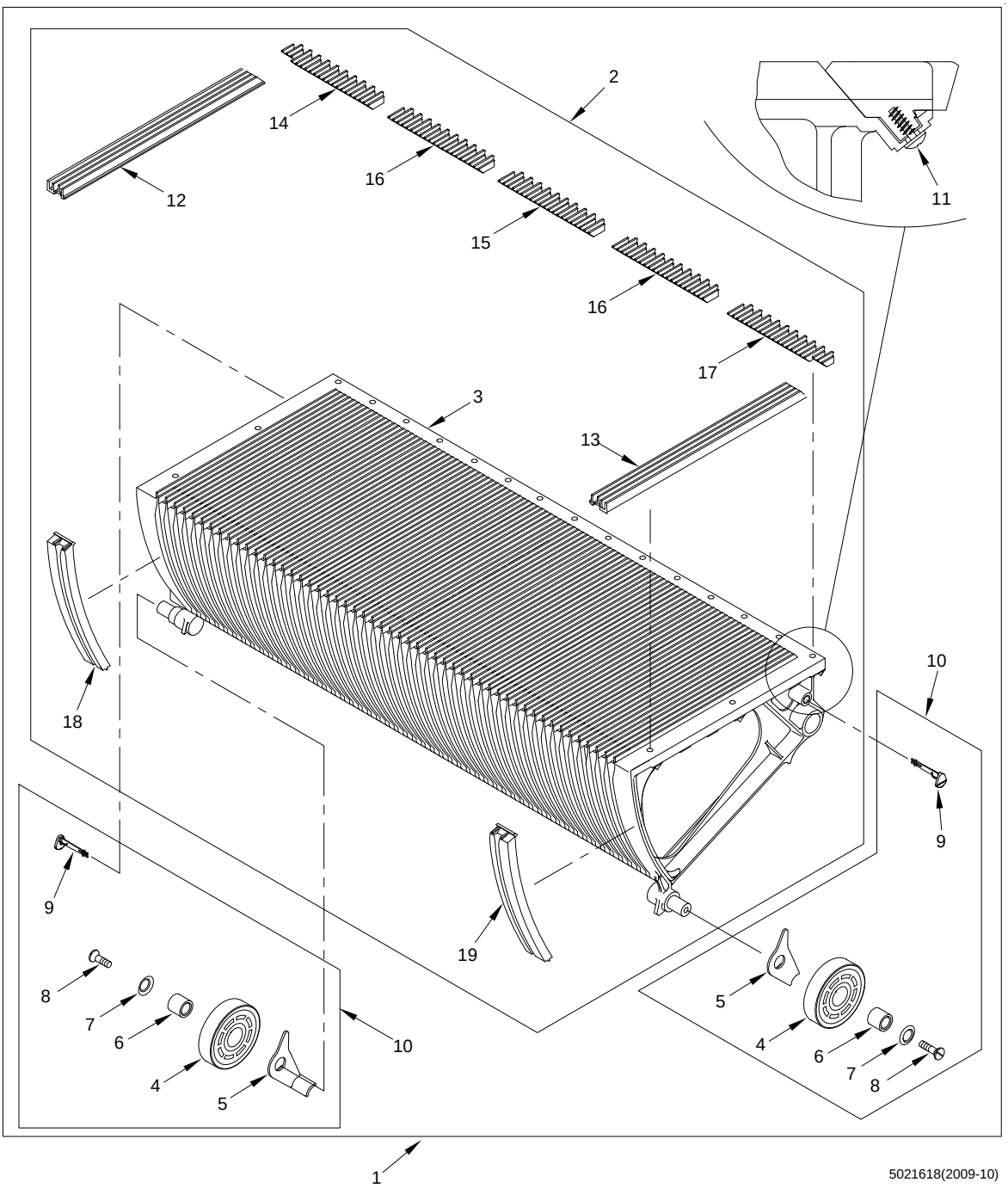
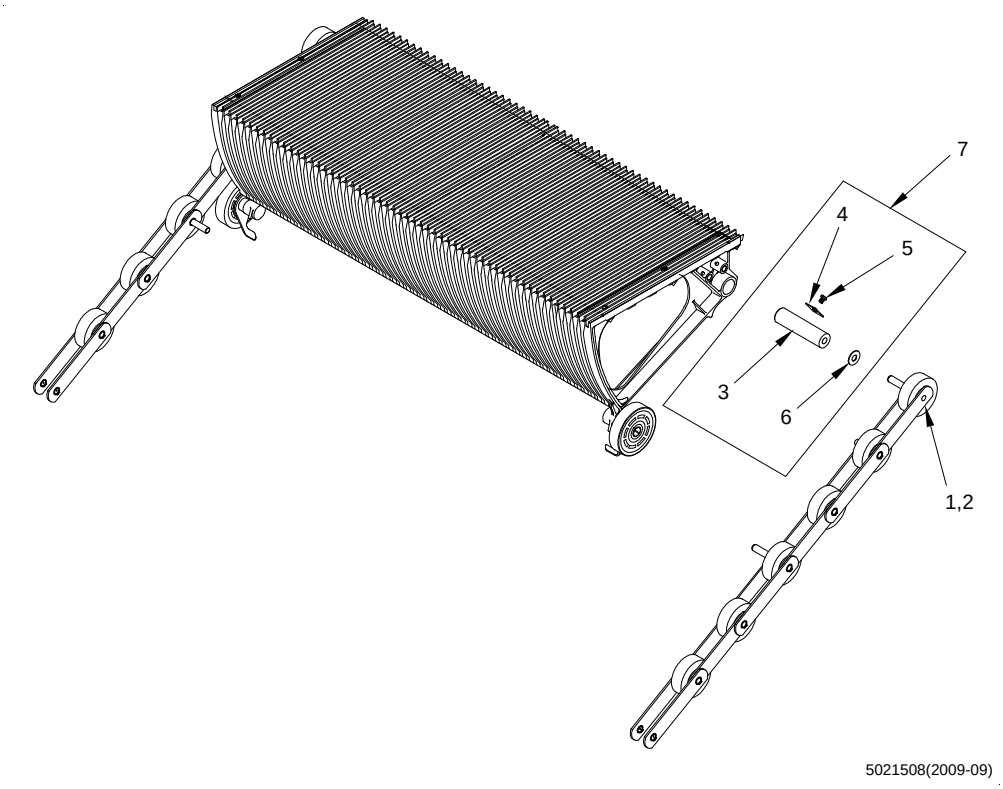


Table 26: Steps - Type 1000

KEY	PART NO.	PARTNAME	REMARK
1	KM3713116	Step, fully assembled	Silver with Yellow step demarcation strips
2	DEE3704422	Step w/demarcation strips	Silver with Yellow step demarcation strips
3	DEE3704423	Step	Silver, 1000 mm
4	DEE4008754	Roller, trailing	75x23.5 PU 6204-H
5	DEE2146634	Bracket, counter	LH
5	DEE2146635	Bracket, counter	RH
6	DEE1972874	Bushing	9SMNPB28K
7	DEE2700863	Washer, disk	D25/13x5 mm ST1203
8	DEE2491248	Screw, torx head	M8x22-ST
9	KM5070729H01	Step guidance button	Included with trailing roller assembly DEE4022514
10	KM972764AR01	Roller, trailing, assembly	75x23.5, outdoor
11	DEE2465357	Screw	AMTEC-10.9-A1B
12	DEE3704414	Strip, step demarcation	Yellow plastic, RH
13	DEE3704413	Strip, step demarcation	Yellow plastic, LH
14	DEE2145492	Strip, step demarcation	Yellow plastic, L=180.8 mm
15	DEE2145489	Strip, step demarcation	Yellow plastic, L=215.5 mm
16	DEE2145490	Strip, step demarcation	Type 1000 mm units only, Yellow plastic, L=197.5 mm
17	DEE2145491	Strip, step demarcation	Yellow plastic, L=189.8 mm
18	DEE3704416	Strip, step demarcation	Yellow plastic, riser, LH
19	DEE3704415	Strip, step demarcation	Yellow plastic, riser, RH

5021618-20265057 (2010-02)

5.2 Step chains and connections



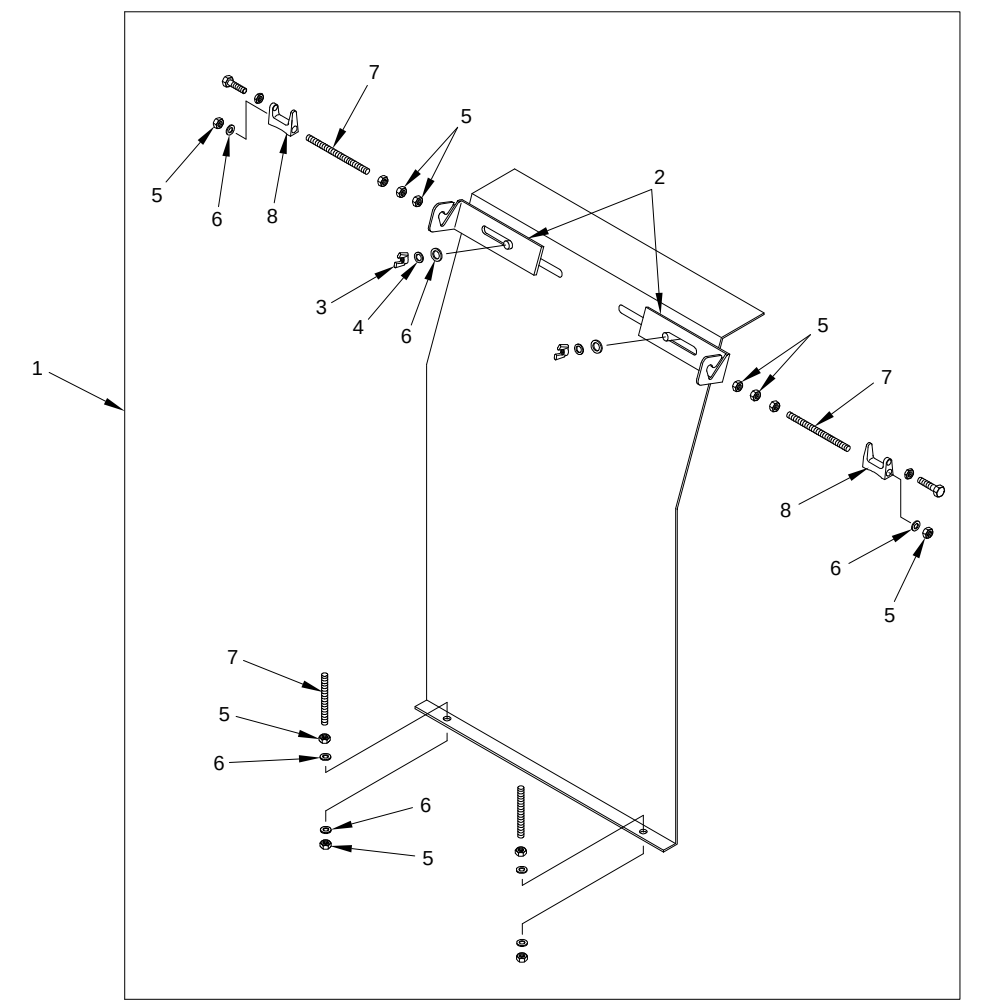
5021508(2009-09)

Table 27: Step chains and connections

KEY	PART NO.	PARTNAME	REMARK
1	KM5071468G01	Step chain, lube-free	23KV-SF-W, L=4000, with sealed bearings
2	KM5071469G01	Step chain, lube-free	23KV-SF-W, L=400, with sealed bearings
3	KM5071456G01	Connector, step chain	
4	DEE2191072	Locking tab	Step connection, X5CRNI1810
5	KM253133	Screw, HHC	DIN 933 M8x30-8.8 ZN25
6	DEE3685405	Washer, disk	30/20, 1x2 CUZN37
7	KM5071458G01	Connection, step chain	Assembly, used with 23KV-SF-W step chain

5021508-20265053 (2009-11)

5.3 Step guard



5021657(2009-11)

Table 28: Step guard

KEY	PART NO.	PARTNAME	REMARK
1	KM5070909G03	Step guard	Type 1000, indoor
2	KM5071878H01	Bracket, step guard	LH
2	KM5071878H02	Bracket, step guard	RH
3	DEE0118072	Wing nut	M8 DIN315
4	DEE0057111	Washer, flat	M8 DIN7349
5	DEE0057126	Nut, hex	M8-8-A2B DIN-934
7	DEE1909894	Rod, threaded	BM8x110 DIN976
8	KM281222	Clamp, locking	M10, step guard

5021657-20265057 (2009-11)

6 INCLINED SOLID BALUSTRADE

6.1 Upper curve skirts

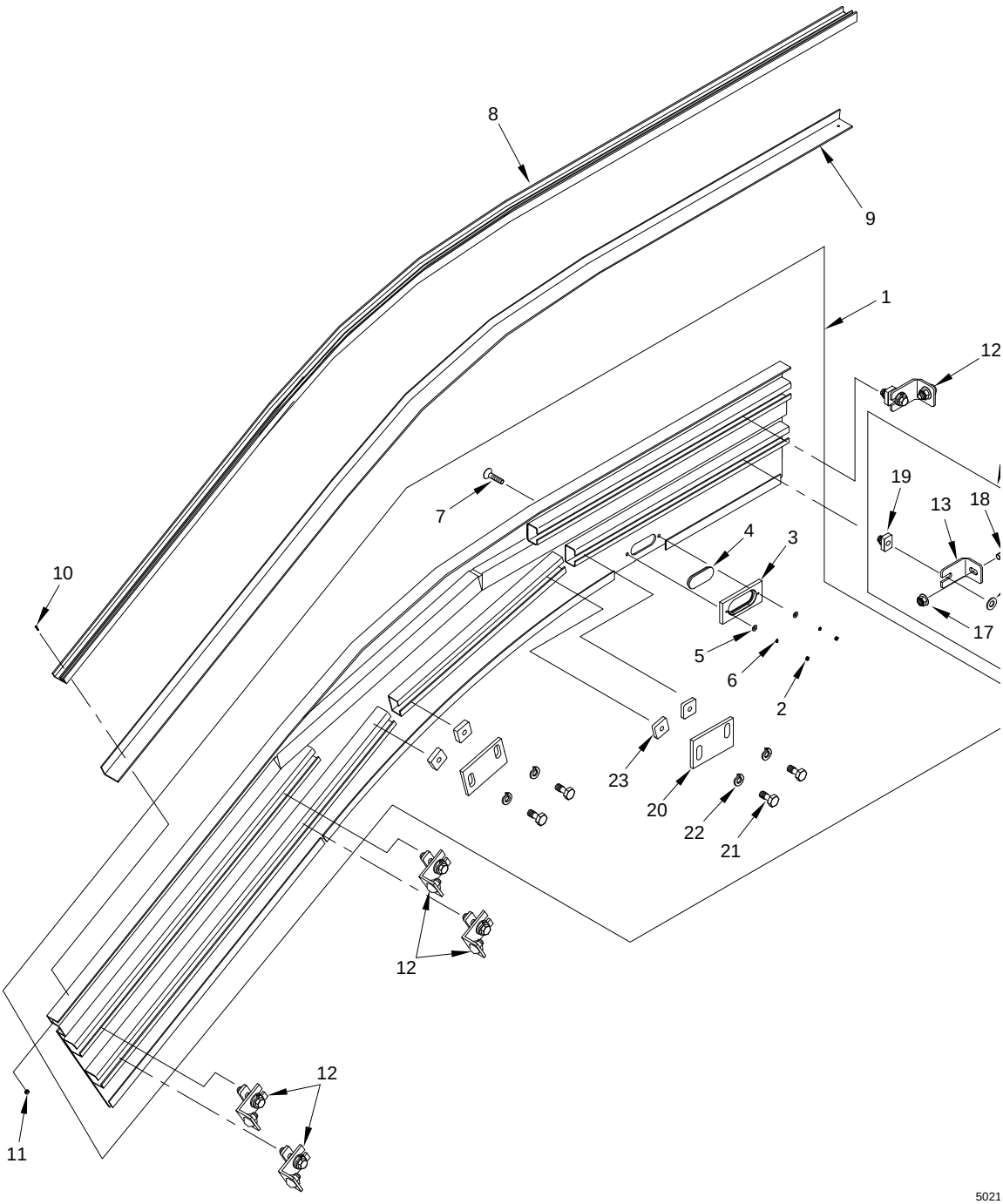


Table 29: Upper curve skirts

KEY	PART NO.	PARTNAME	REMARK
1	KM5077647G20	Skirt, assembly	Upper curve,RH,SS, w/recessed skirt brush
1	KM5077646G20	Skirt, assembly	Upper curve, LH,SS, w/recessed skirt brush
2	KM108654	Nut, hex	DIN-0000934-M3-G-A2B
3	US93193001	Plate, button	Skirt, switch
4	US97882001	Button, skirt switch	Skirt
5	KM164830	Washer	B 3,2-140 HV-ST DIN-0000125
6	KM154377	Washer, spring	A3DIN127-A2
7	KM256044	Screw, socket head cap	M3x16 DIN7991-8
8	KM5071288H02	Trim, extrusion	Curved section 30-2 URH
8	KM5071288H01	Trim, extrustion	Curved section 30-2 ULH
9	KM5071289H02	Angle, trim	Skirt trim curved section 30-2 URH
9	KM5071289H01	Angle, trim	Skirt trim curved section 30-2 ULH
10	KM155218	Screw, hex	M6x20 DIN912
11	KM280165	Nut, lock	M6 SS 8 A3G
12	KM862926G02	Skirt mount kit	For curves and heads
13	KM5070586H01	Bracket, skirt mount	Skirt mount
14	DEE0056656	Screw, hex	M10x20 ST 8.8 A3B
15	DEE8403763	Washer, retaining	16x11x2 mm A3C
16	DEE0063677	Washer, disk	M10 ST A3E DIN7349
17	KM280167	Nut, wulock	M10 8 ST A3B DIN6923
18	KM261434	Bolt, cup, square	M10x30 8.8A3B DIN603
19	KM865701H01	Nut, Square	M10 with spring
20	KM5070587H00	Plate, support	Upper curve skirt support
21	KM253730	Screw, hex	M10X20-8.8A3B DIN933
22	DEE8403763	Washer, retaining	16x11x2 mm A3C
23	DEE2753709	Nut, square	C45-FE/ZN8B

5021726-20265058 (2009-11)

6.2 Lower curve skirts

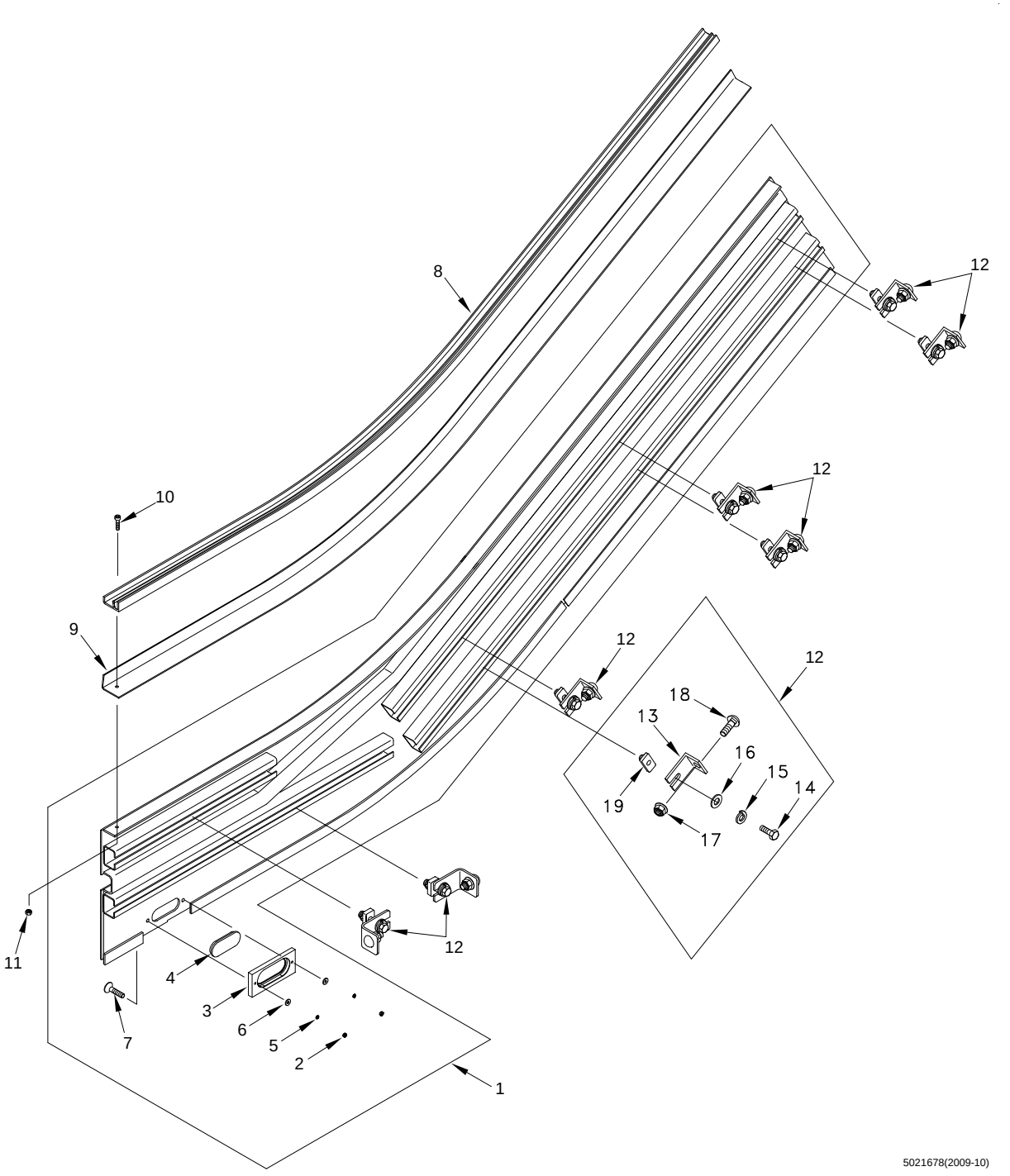


Table 30: Lower curve skirts

KEY	PART NO.	PARTNAME	REMARK
1	KM5077645G21	Skirt, assembly	Lower curve, RH, SS, w/recessed skirt brush
1	KM5077644G21	Skirt, assembly	Lower curve, LH, SS, w/recessed skirt brush
2	KM108564	Nut, hex	DIN-0000934-M3-6-A2B
3	US93193001	Plate, button	Skirt, switch
4	US97882001	Button, skirt switch	Skirt
5	KM164830	Washer	Disk DIN-0000125-B 3,2-140HV-ST
6	KM154377	Washer, spring	A3DIN127-A2
7	KM256044	Screw, socket head cap	M3x16 DIN7991-8
8	KM5071288H04	Trim, extrusion	Curved section 30-2 LRH R20
8	KM5071288H03	Trim, extrusion	Curved section 30-2 LLH R20
9	KM5071289H04	Angle, trim	Skirt trim curved section 30-2 bottom right
9	KM5071289H03	Angle, trim	Skirt trim curved section 30-2 bottom left
10	KM155218	Screw, screw	M6x20 ST 8.8 A3B DIN912
11	KM280165	Nut, lock	M6 SS 8 A3G
12	KM862926G002	Skirt mount kit	For curves and heads
13	KM5070586H01	Bracket, skirt mount	Skirt mount
14	DEE0056659	Bolt, hex	M10x25 ST 8.8 A3B DIN933
15	DEE8403763	Washer, retaining	16x11x2 mm A3C
16	DEE063677	Washer, flat	M10 ST A3E DIN7349
17	KM280167	Nut, wulock	M10 8 ST A3B DIN6923
18	KM261434	Bolt, cup, square	Carriage M10x30 8.8A3B DIN60
19	KM865701H01	Square nut	M10 square nut with spring

5021678-20265058 (2009-11)

6.3 End skirts

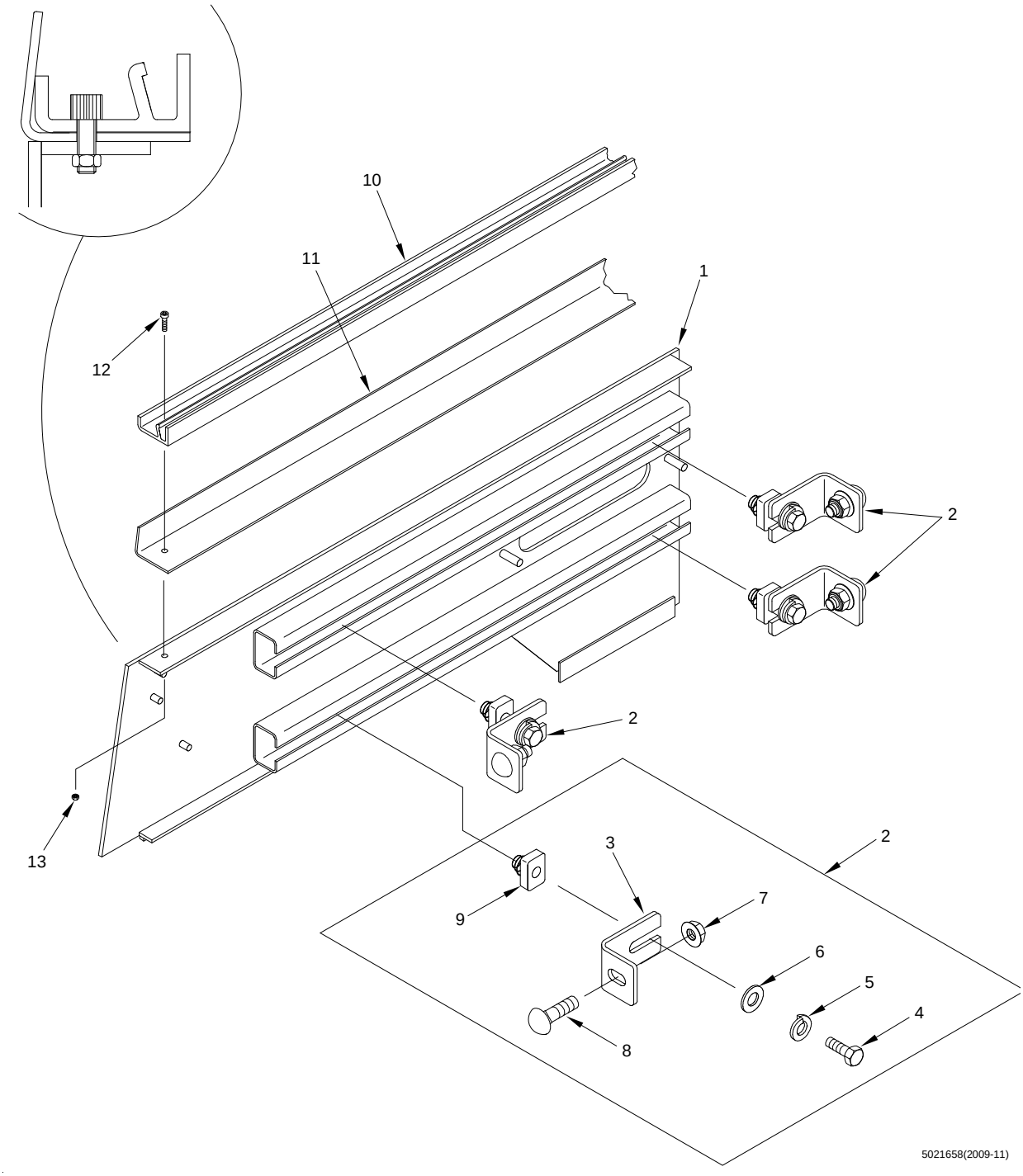


Table 31: End skirts

KEY	PART NO.	PARTNAME	REMARK
1	KM5077639G21	Skirt, assembly	Head, LL/UR, SS, comblight, hi-deck
1	KM5077641G21	Skirt, assembly	Head, LR/UL, SS#4, comblight
2	KM862926G02	Skirt mount kit	Curves and heads
3	KM5070586H01	Bracket, skirt mount	Skirt mount
4	DEE0056659	Bolt, hex	M10x25 ST 8.8 A3B DIN933
5	DEE8403763	Washer, retaining	16x11x2 mm A3C
6	DEE0063677	Washer, disk	M10 ST A3E DIN7349
7	KM280167	Nut, wulock	M10 8ST A3B DIN6923
8	KM261434	Bolt, cup, square	M10x30 8.8A3B DIN603
9	KM865701H01	Nut, square	M10 with spring
10	KM5074015	Trim, extrusion	6000LG-ALMGS10.5F
11	KM5074016	Angle, trim	Skirt, 6000LG-14301-240K
12	KM155218	Screw, hex	M6x20 DIN912
13	KM280165	Nut, lock	M6 SS 8 A3G

5021658-20265058 (2009-11)

6.4 Incline skirts

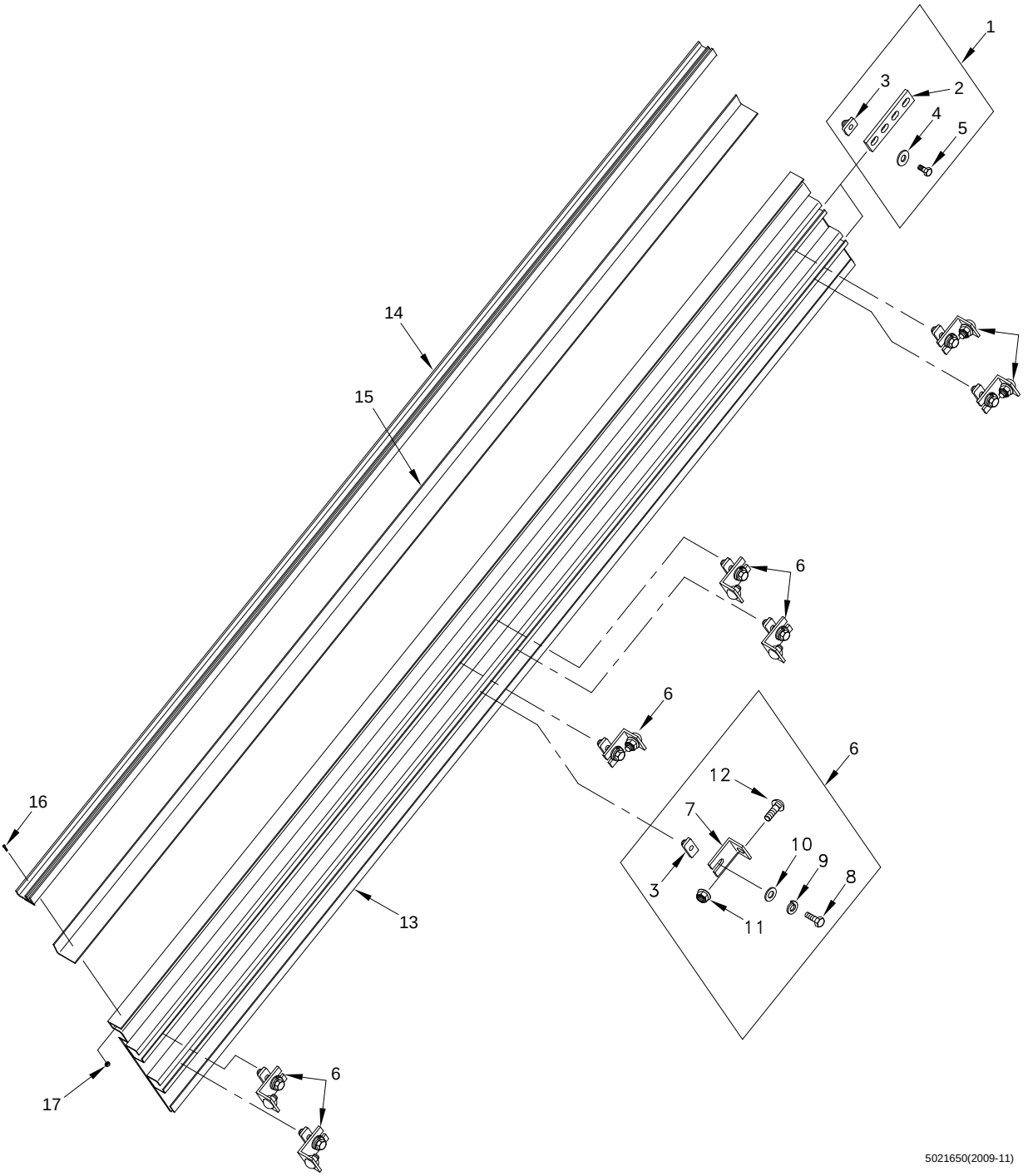


Table 32: Incline skirts

KEY	PART NO.	PARTNAME	REMARK
1	KM865912G02	Skirt splice kit	With spring nut
2	KM5072669H01	Strap, butt	Bracket
3	KM865701H01	Nut, square	M10 with spring
4	KM259689	Washer, flat	10.5 mm A3B DIN7349
5	KM253730	Screw, hex	M10x20-8.8 A3B DIN933
6	KM862926G02	Assembly, skirt mount kit	For curves and heads
7	KM5070586G01	Bracket	Skirt mount
8	DEE0056659	Bolt, hex	M10x25 ST 8.8 A3B DIN933
9	DEE8403763	Washer, retaining	6x11x2 mm A3C
10	DEE0063677	Washer, disk	Flat, M10 ST A3E DIN7349
11	KM280167	Nut, wulock	M10 8 ST A3B, DIN6923
12	KM261434	Bolt, cup, square	M10x30 8.8 A3B DIN603
13	KM5077180G04	Skirt, assembly	Incline, SS#4
14	KM5074015	Trim, extrusion	6000LG-ALMGSIDE.SF13
15	KM5074016	Angle, trim	Skirt, 6000LG-14301-240K
16	KM155218	Screw, hex	M6x20 DIN912
17	KM280165	Nut, lock	M6 SS 8 A3G

5021650-20265058 (2009-11)

6.5 Skirt brushes

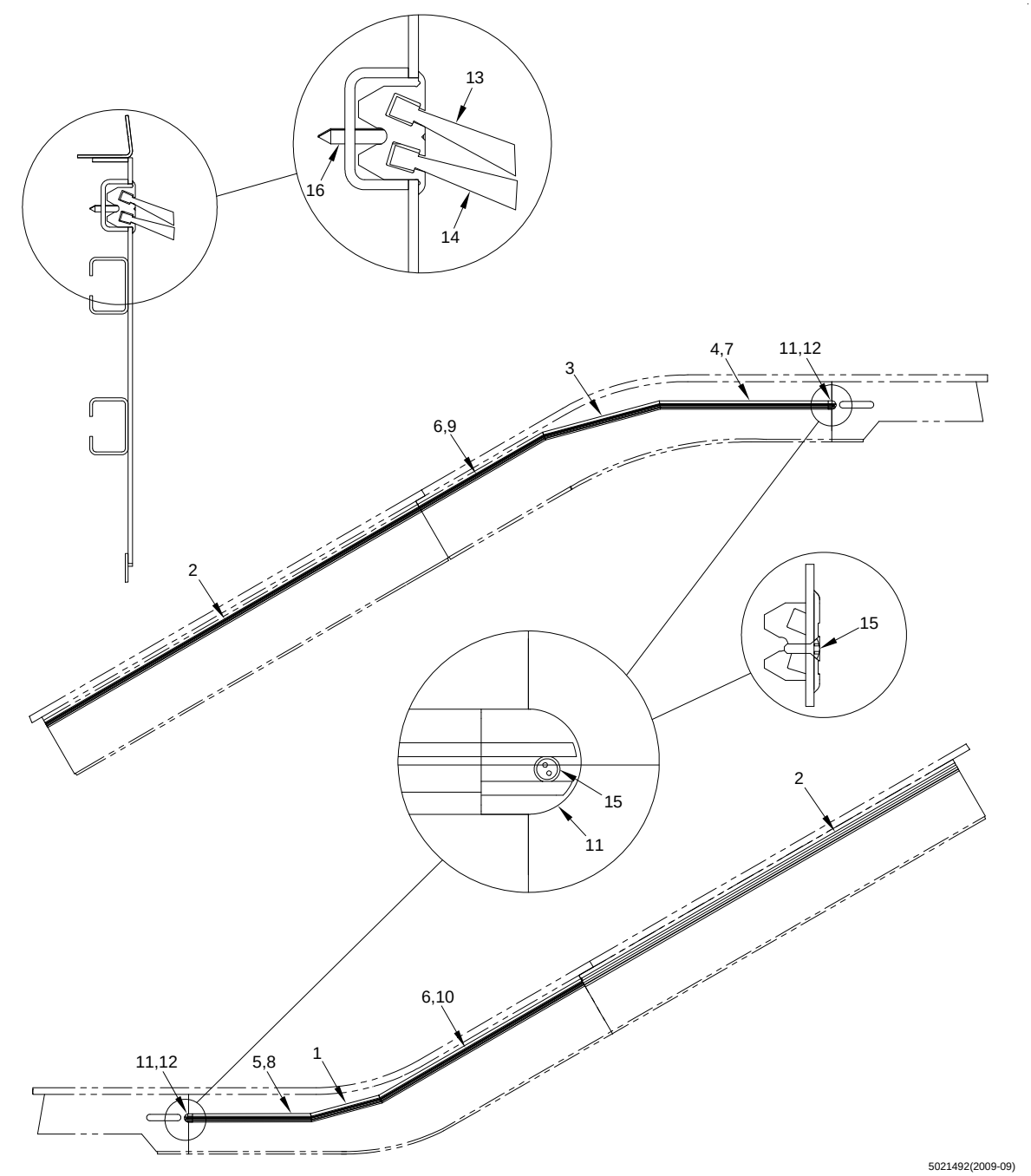


Table 33: Skirt brushes

KEY	PART NO.	PARTNAME	REMARK
1	KM852130H02	Extrusion, skirt brush	Aluminum, for recessed skirts, L=625
2	KM852130H10	Extrusion, skirt brush	Aluminum for recessed skirts, L=1900
3	KM852130H13	Extrusion, skirt brush	Aluminum, for recessed skirts, L=645
4	KM852130H20	Extrusion, skirt brush	Aluminum, for recessed skirts, L=760
5	KM852130H21	Extrusion, skirt brush	Aluminum, for recessed skirts, L=545
6	KM852130H23	Extrusion, skirt brush	Aluminum, for recessed skirts, L=1035
7	KM852130H24	Extrusion, skirt brush	Aluminum, for recessed skirts, L=760
8	KM852130H25	Extrusion, skirt brush	Aluminum, for recessed skirts, L=545
9	KM852130H26	Extrusion, skirt brush	Aluminum, for recessed skirts, L=635
10	KM852130H27	Extrusion, skirt brush	Aluminum, for recessed skirts, L=1035
11	KM852131H01	Cap, end, skirt brush	RH, RTV
12	KM852132H01	Cap, end, skirt brush	LH, RTV
13	KM852133	Brush, skirt	Upper strip
14	KM852144	Brush, skirt	Lower strip
15	US68231003	Screw, oval head	Counter sunk, tamper proof, #6-32, .375
16	US96792006	Screw, flat	Phillips, self tapping, 4.2 mm, L=32

5021492-20265058 (2009-11)

6.6 Newel assembly

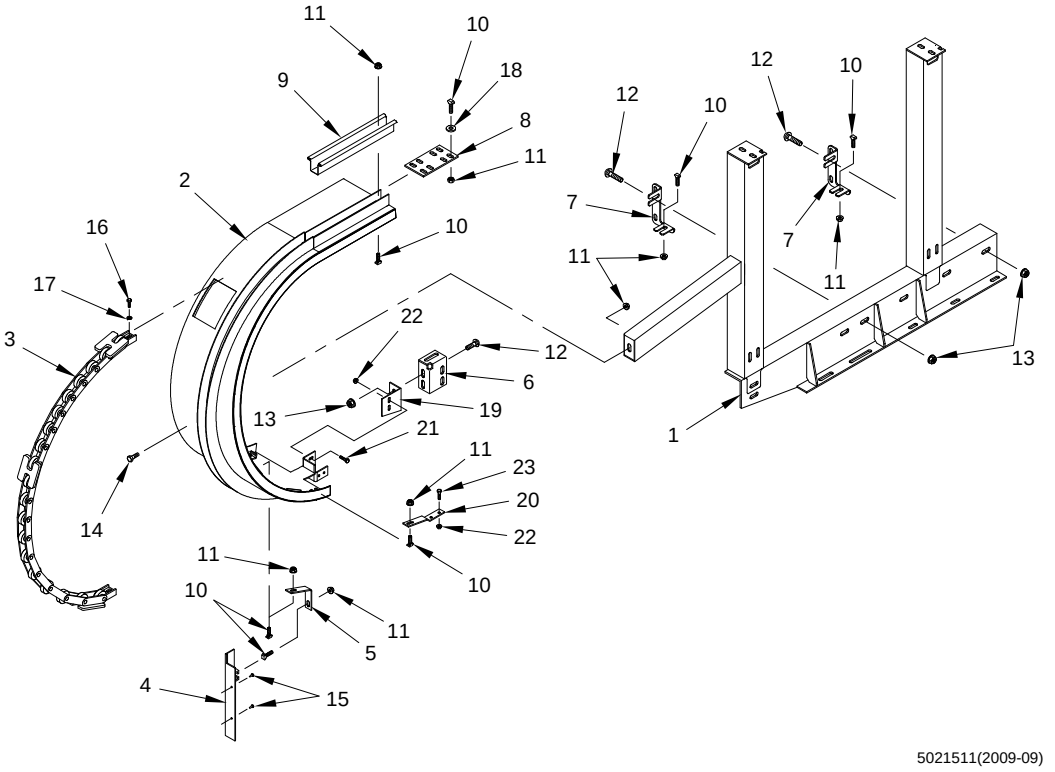


Table 34: Newel assembly

KEY	PART NO.	PARTNAME	REMARK
1	KM5071301G01	Stanchion, newel end	LH, 2L
1	KM5071301G02	Stanchion, newel end	RH, 2L
2	KM5072979G77	Assembly, Newel	URH/LLH
2	KM5072979G78	Assembly, Newel	ULH/LRH
3	KM4060373G01	Reverse guide	Return
4	DEE2407572	Bracket	Newel plate
4	DEE2407571	Bracket	Newel plate
5	DEE2288176	Fastener	Newel plate
6	KM5071329H01	Bracket, stanchion	ULH/LRH
6	KM5071329H02	Bracket, stanchion	LLH/URH
7	KM5070690H01	Bracket, balustrade mounting	LH, stanchion
7	KM5070691H01	Bracket, balustrade mounting	RH, stanchion
8	KM5071296H01	Plate, splice	Connector
9	KM5071319H01	Guide, handrail	Newel assembly
10	DEE0933518	Screw, hammer head	M8x20 5.6
11	KM281565	Nut, hex	M8-8A3G
12	KM3711096	Screw, lock	M10x25 DIN603 8.8
13	KM280167	Nut, wulock	M10-8-A3G
14	DEE0057013	Screw, hex	M8X20-8.8-A2B DIN 933
15	KM172999	Screw, self-tapping	4.2x9.5 DIN7981-A2F
16	KM116574	Screw, hex	M6x16 DIN912 8.8
17	DEE0511788	Washer, lock	A6 DIN128
18	DEE967729	Washer, flat	Disk
19	KM5072444H01	Bracket, mounting	Newel assembly, ULH/LRH
19	KM5072444H02	Bracket, mounting	Newel assembly, URH/LLH
20	KM5072445H01	Bracket, mounting	Newel assembly, ULH/LRH
20	KM5072445H02	Bracket, mounting	Newel assembly, URH/LLH
21	DEE0054379	Screw, hex	M6x16-DIN933-8.8-A3G
22	KM280165	Nut, lock	M6-8A3G
23	DEE0219041	Screw, hex	M6x20-DIN912-8.8-A3G

5021511-20265057 (2009-11)

6.7 Lower curve base, guide, deck and trim

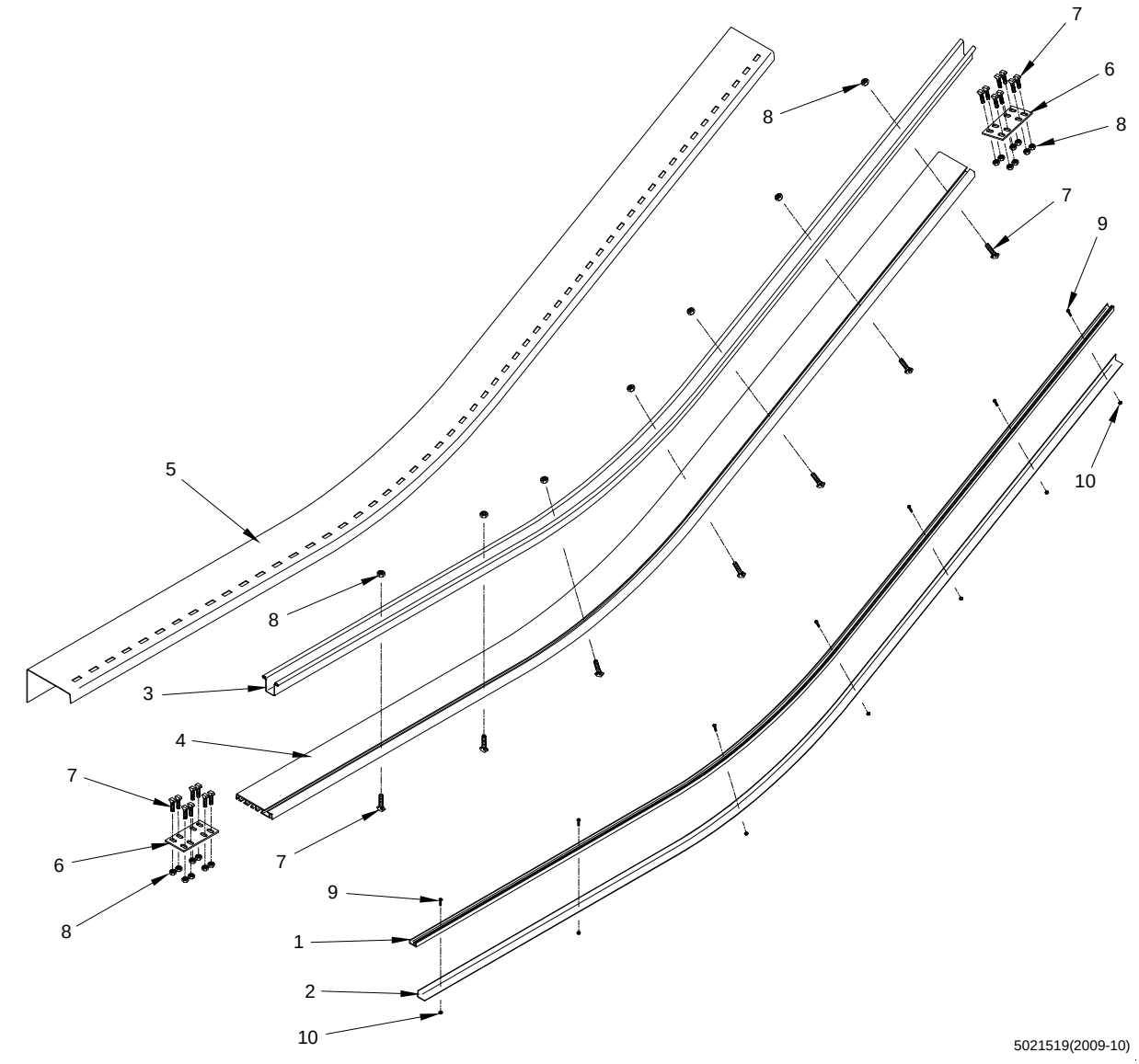


Table 35: Lower curve base, guide, deck and trim

KEY	PART NO.	PARTNAME	REMARK
1	KM5071288H03	Trim	2L, LLH
1	KM5071288H04	Trim	2L, LRH
2	KM5071289H03	Angle, trim	2L, LLH
2	KM5071289H04	Angle, trim	2L, LRH
3	KM5071285H30	Guide, handrail	Lower curve, 2L
4	KM5071287H30	Base, handrail	Lower curve, LLH, 2L
4	KM5071287H31	Base, handrail	Lower curve, LRH, 2L
5	KM879329G14	Deck, inner and outer	Lower curve, LLH, 2L
5	KM879329G15	Deck, inner and outer	Lower curve, LRH, 2L,155 mm width
6	KM5071296H01	Plate, splice	Splice plate
7	DEE0933518	Screw, hammer head	M8x20 5.6
8	KM281565	Nut, hex	M8-8A3G
9	DEE0219041	Screw, hex	M6x20-DIN912-8.8-A3G
10	KM280165	Nut, lock	M6-8A3G
NS	DEE2426327	Tape, adhesive	48 mm x 100 mm

5021519-20265057 (2009-11)

6.8 Upper curve base, guide, deck and trim

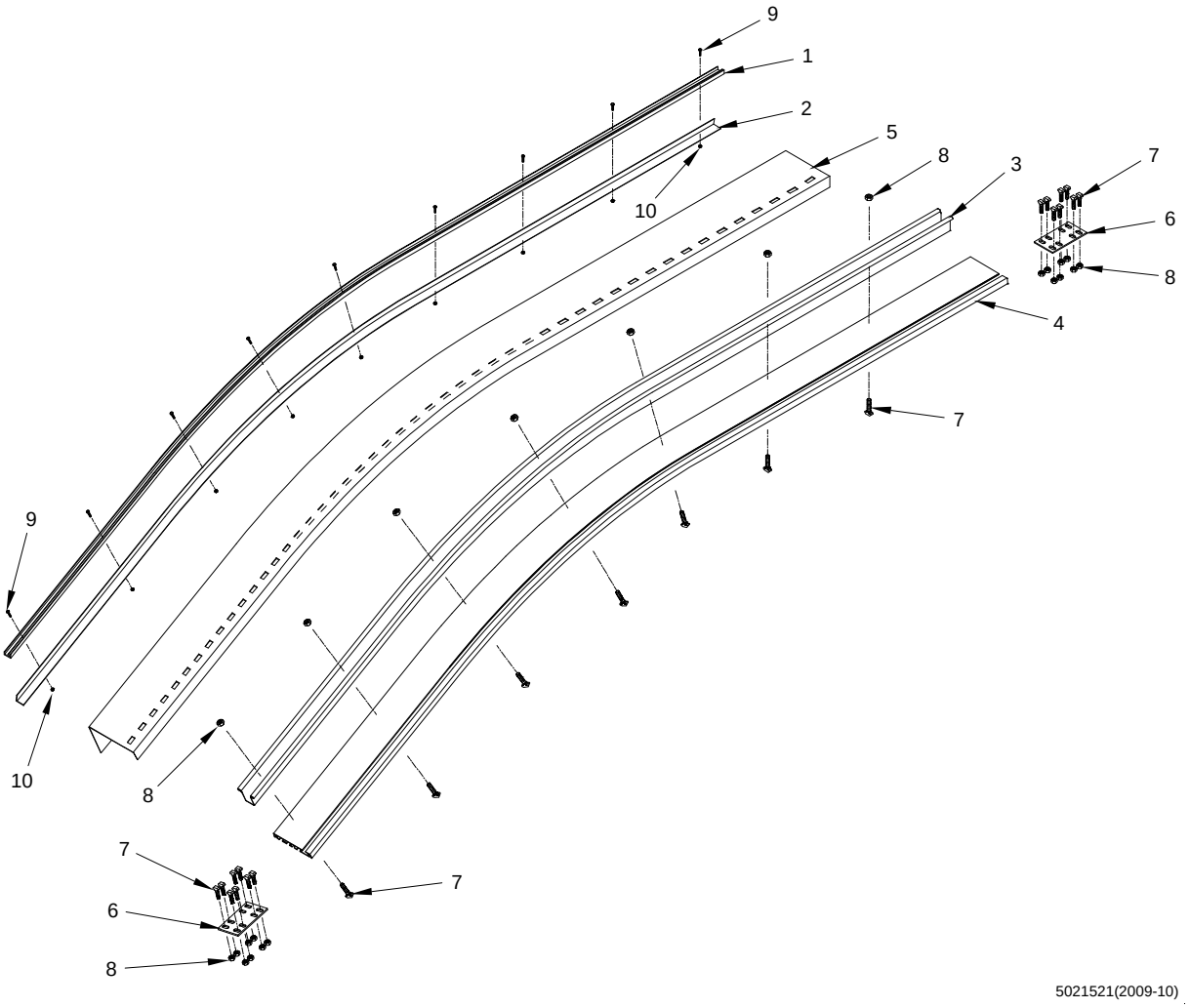
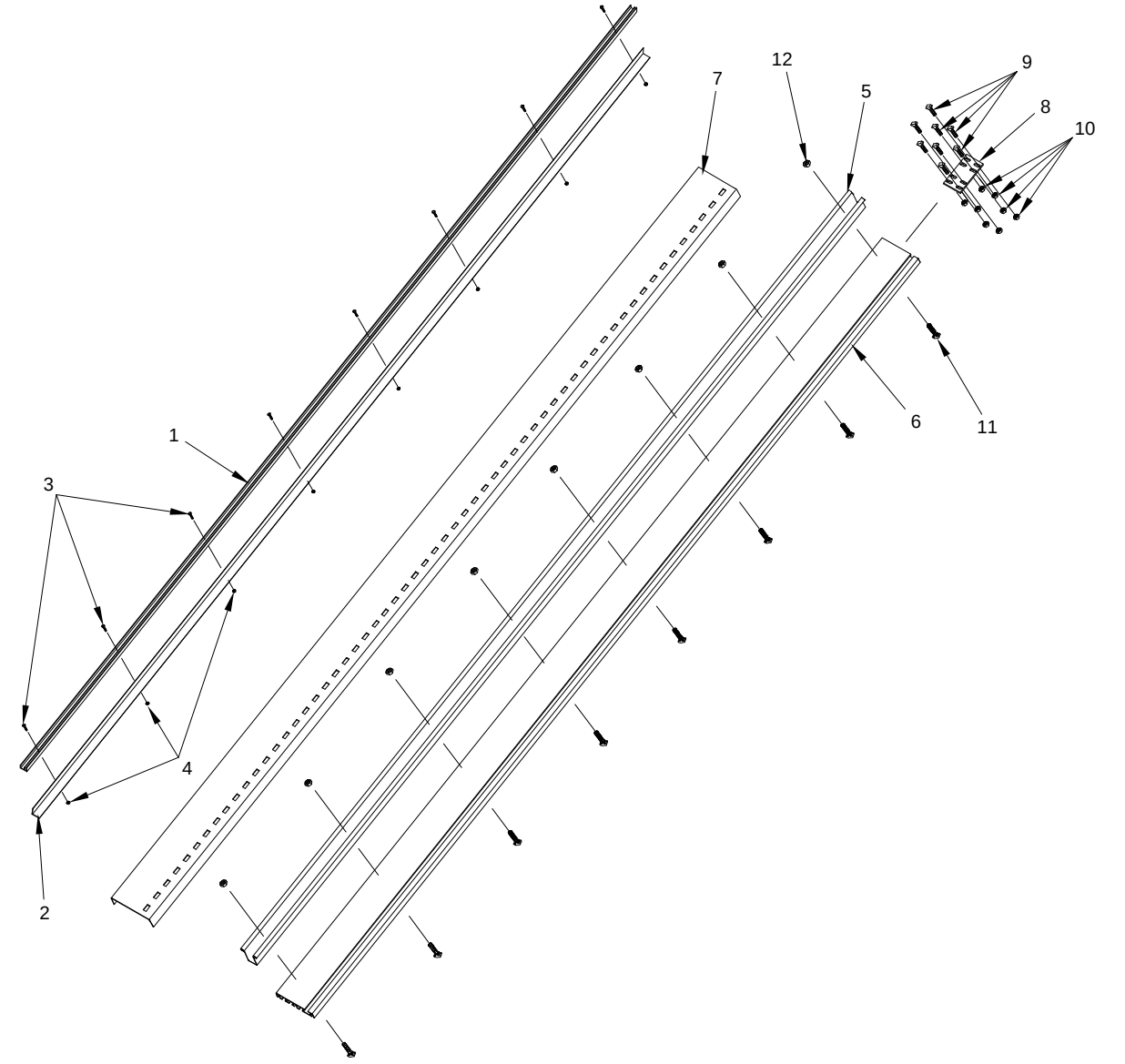


Table 36: Upper curve base, guide, deck and trim

KEY	PART NO.	PARTNAME	REMARK
1	KM5071288H01	Trim	2L, ULH
1	KM5071288H02	Trim	2L, URH
2	KM5071289H01	Angle, trim	2L, ULH
2	KM5071289H02	Angle, trim	2L, URH
3	KM5071285H01	Base and guide, handrail	Upper curve, 2L
4	KM5071287H01	Base, handrail	Upper curve, ULH, 2L
4	KM5071287H02	Base, handrail	Upper curve, URH, 2L
5	KM879329G12	Deck, inner and outer	Upper curve, ULH, 2L, 155 mm width
5	KM879329G13	Deck, inner and outer	Upper curve, URH, 2L, 155 mm width
6	KM5071296H01	Plate, splice	Splice plate
7	DEE0933518	Screw, hammer head	M8x20 5.6
8	KM281565	Nut, hex	M8-8A3G
9	DEE0219041	Screw, hex	M6x20-DIN912-8.8-A3G
10	KM280165	Nut, lock	M6-8A3G
NS	DEE2426327	Tape, adhesive	48 mm x 100 mm

5021521-20265057 (2009-11)

6.9 Incline base, guide, deck and trim



5021539(2009-10)

Table 37: Incline base, guide, deck and trim

KEY	PART NO.	PARTNAME	REMARK
1	KM5074015	Trim	Incline
2	KM5074016	Angle, trim	Incline
3	DEE0219041	Screw, hex	M6x20-DIN912-8.8-A3G
4	KM280165	Nut, lock	M6-8A3G
5	DEE3670573	Guide, handrail	L=6000 mm
6	KM5074017	Base, handrail	Incline, L=6000 mm
7	KM879329G11	Deck, inner and outer	Incline, L=6000 mm, 155 mm width
8	KM5071296H01	Plate, splice	
9	DEE0933518	Screw, hammer head	M8x20 profile 28/15 without nut-5.6-A2B
10	KM281565	Nut, hex	With flange, M8-A2B
11	DEE0933518	Screw, hammer head	M8x20
12	KM281565	Nut, hex	M8-8A3G
NS	DEE2426327	Tape, adhesive	48 mm x 100 mm

5021539-20265057 (2009-11)

6.10 Inner panels

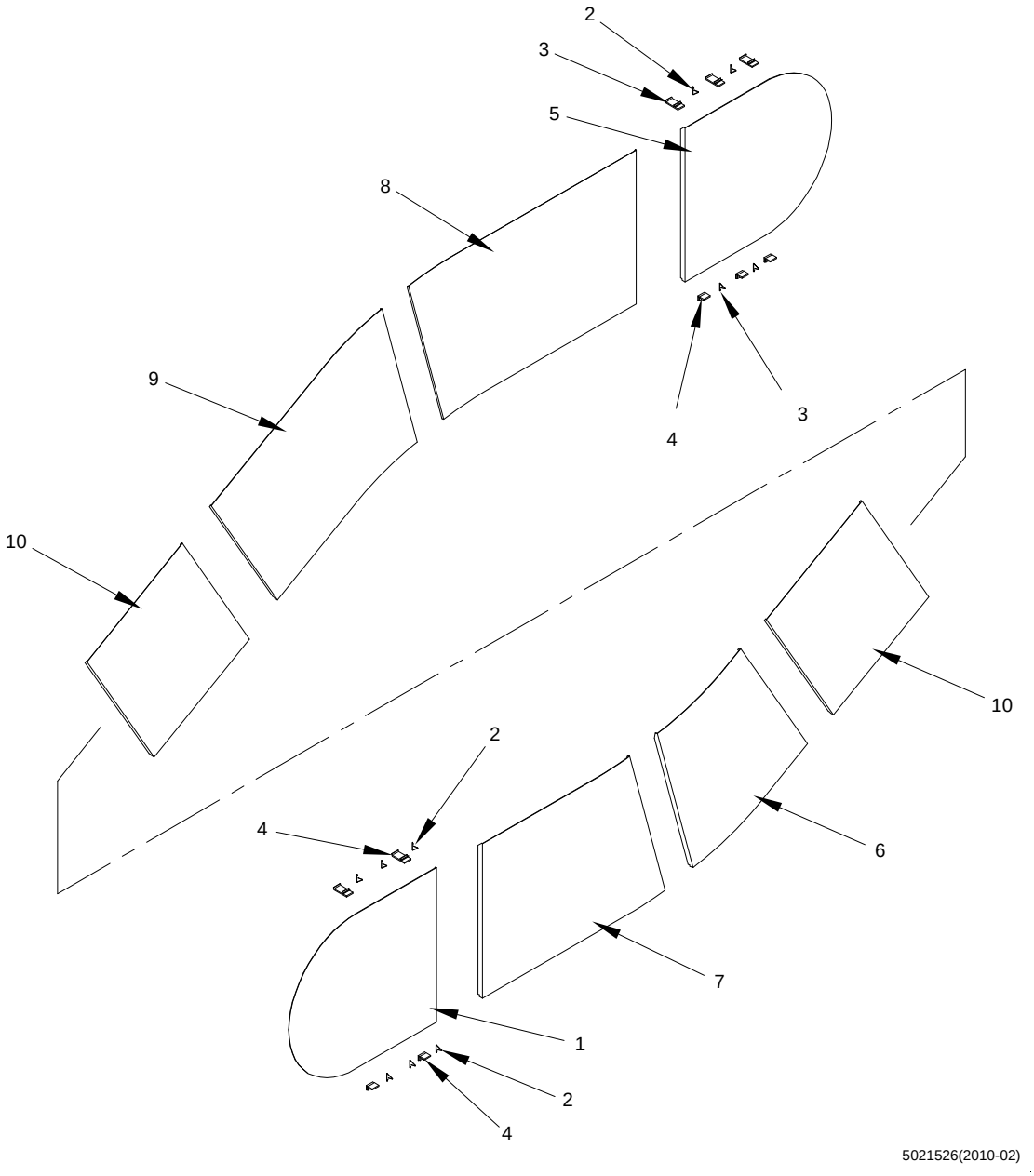
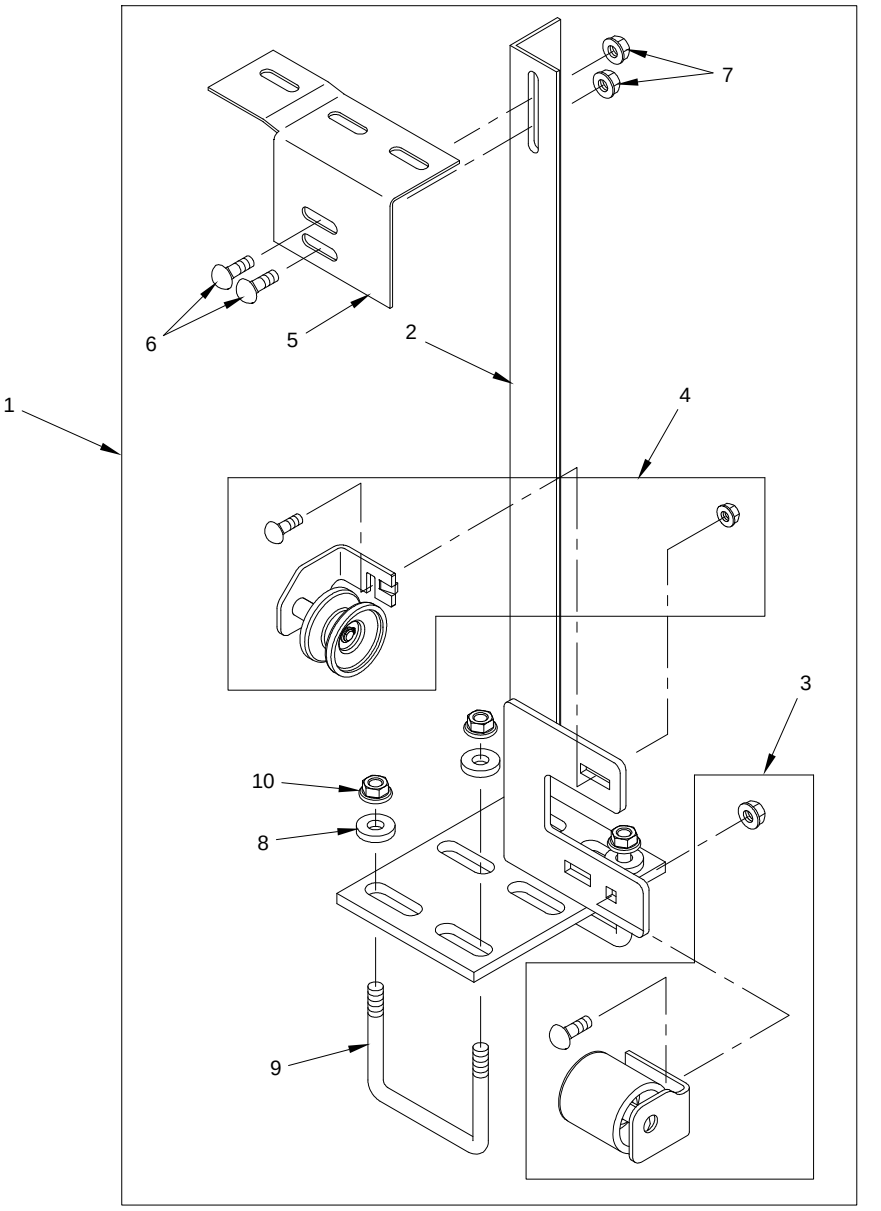


Table 38: Inner panels

KEY	PART NO.	PARTNAME	REMARK
1	KM5071556H01	Inner panel	Lower end, LH, 2L
1	KM5071557H01	Inner panel	Lower end, RH, 2L
2	KM5072443H01	Spring	
3	KM5072998H01	Clip, plastic	
4	KM5072999H01	Clip, plastic	
5	KM5071572H01	Inner panel	Upper end, LH, 2L
5	KM5071573H01	Inner panel	Upper end, RH, 2L
6	USP39654K01	Inner panel	Lower curve, LH
6	USP39655K01	Inner panel	Lower curve, RH
7	USP39656K01	Inner panel	Lower curve, LH
7	USP39657K01	Inner panel	Lower curve, RH
8	USP39659	Inner panel	Upper curve, LH
8	USP39660	Inner panel	Upper curve, RH
9	USP39661K01	Inner panel	Upper curve, LH
9	USP39662K01	Inner panel	Upper curve, RH
10	USP39658K01	Inner panel	Incline, 950 x 698 mm

5021526-20255057 (2010-02)

6.11 Deck support stanchion



5021541(2009-10)

Table 39: Deck support stanchion

KEY	PART NO.	PARTNAME	REMARK
1	USP39645003	Assembly, stanchion, deck support	Solid, incline V-handrail
2	USP39644003	Stanchion, vertical	LH/RH
3	KM5071594G01	Roller, handrail	LLH/URH
4	KM5071245G01	Roller, handrail	ULH/LRH
5	US105654001	Bracket, outer deck	LH
6	KM261434	Bolt, cup, square	M10x30 DIN603-8.8A3G
7	KM280167	Nut, wulock	M10-8-A3G
8	DEE0080731	Washer, disk	M12-04-A3B, DIN 439-B
9	KM888402H02	U-bolt, square	M12, for 4x2 tubes
10	KM274932	Screw, lock	M12X25 8A3B (with tooth)

5021541-20265057 (2009-11)

6.12 Safety signs

5001943(2009-09)

Table 40: Safety signs

KEY	PART NO.	PARTNAME	REMARK
1	US94063003	Sign, caution, flat	English

5001943-20265053 (2009-11)

7 ELECTRICAL SYSTEM

7.1 Controller, PLC

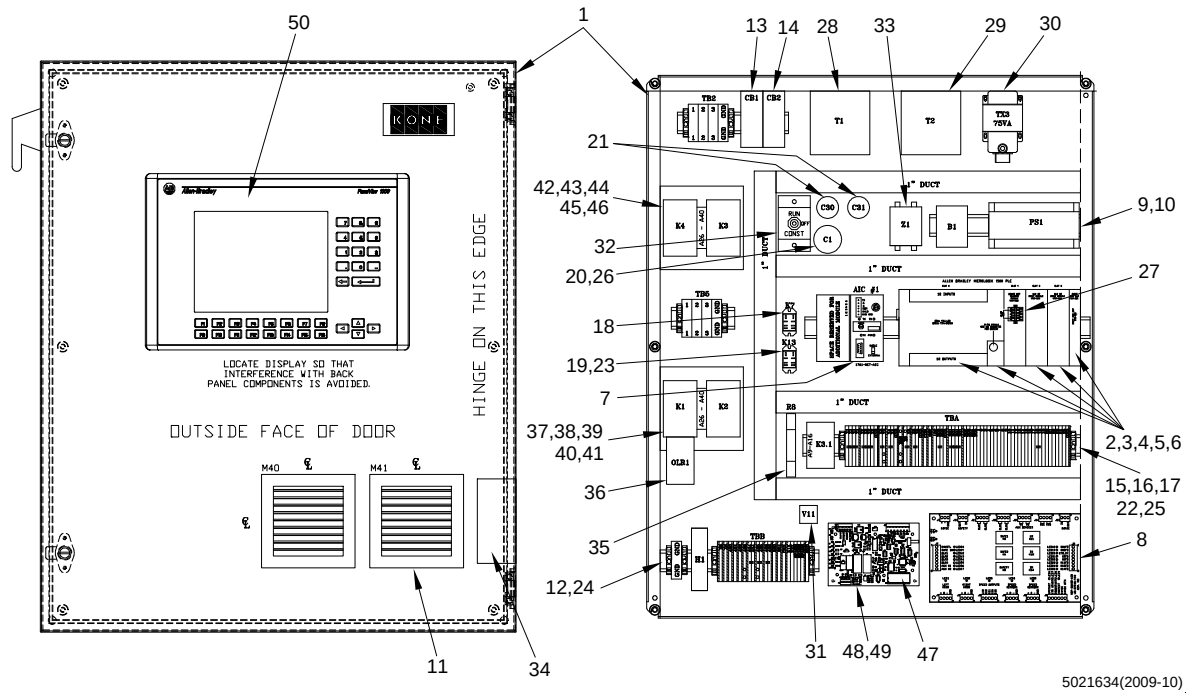


Table 41: Controller - PLC

KEY	PART NO.	PARTNAME	REMARK
1	KM841382G54	Controller	Drive-single 10Kw 460VAC
2	KM852998H02	Base	Micrologix 1500 12 inputs & outputs, Allen-Bradley
3	KM852998H03	Scanner	Device net, Allen-Bradley
4	KM852998H04	Input module	16 point, source or sink, Allen-Bradley
5	KM852998H05	End cap	Right, Allen-Bradley
6	KM852998H01	CPU	CPU, PLC, Micrologix 1500
7	KM853002H01	Module	Interface converter, AIC #1, DH485(RS485) to DH485(RS232)
8	USP38495100	Board, PC	Relay interface, KONE
9	KM85172H02	Power supply	PS1, 120 VAC TO 24 VDC, 90 W, 3.75 A
10	KM5072872H03	Thermostat	Dual unit B1, for enclosure heater and fan
11	KM851727H03	Fan kit	Cooling M40 AND M41, 115VAC, 38CFM, IP55, beige
12	KM851726H01	Heater	Panel H1,120V, 30W
13	KM851442H11	Circuit breaker	CB1, miniature MCCB, 2 pole, 1A
14	KM851442H11	Circuit breaker	CB2, miniature MCCB, 2 pole, 1S

KEY	PART NO.	PARTNAME	REMARK
15	KM851435H01	Contactor	Non-reversing K3.1, 12A, 24VAC coil, 0-NO & 1-NC aux
16	KM851436H01	Contactor	Auxiliary K3.1A, 2N.O., 2 N.C.
17	KM105015H01	Suppressor	Quencharc K3.1S,R-C,125 VAC, 100OHM, .5MFD, 1/2 W
18	KM851438H01	Relay	K7 15AMP, 120VAC coil, DPDT, top mountT
19	KM851438H02	Relay	K13,15 AMP, 24VDC coil, DPDT
20	KM851732H10	Capacitor	C1, 400UF, 200VDC, screw terminal
21	KM851732H51	Capacitor	C30 & C31, 10K UF, 50VDC, screw terminal with Mallory mount VR3A
22	US45546	Diode	D14, general purpose, 1N5408, 3A,1000V PIV
23	US45955	Diode	D9, general purpose, 1N4007, 1A, 1000V PIV
24	US49506100	Resistor	R1, 10 OHM, 10 W, wire wound, 5%
25	US49506010	Resistor	R30, SS1, 1 OHM, 10 W wire wound 5%
26	US65075203	Resistor	R6, 20K OHM, 5W, wire wound 5%
27	US 47514121	Resistor	4 Devicenet, 120 OHM, 1/2 W carbon, 5%
28	KM851440H01	Transformer	T1,460V TO 28 VAC, 150 VA, open style, 30 in. flying leads, class 130 C
29	KM851440H01	Transformer	T2,460V TO 28 VAC, 150 VA, open style, 30 in. flying leads, class 130 C
30	94615001	Transformer	T3, 120V TO 24VAC, class 2, 75VA
31	KM846948H01	Full wave bridge	V11, full wave bridge
32	KM918043H01	3PDT	3PDT, on-off-on, 125VAC, 15A
33	KM890064H01	Filter	RF line Z1, 10A, 250VAC
34	KM890062H01	Receptacle	Recep1, dual utility outlet, GFCI, 125V, 15A
35	US25270025	Resistor	R8, 25 OHM, 25 W, wire wound
36	KM916461H01	Relay	Overload OLR1, OLR2, 13-19 amps w/panel mount
37	KM851434H22	Contactor	Rev K1/K2, 28A, 120 VAC COIL, 0-NO & 1-NC aux each
38	KM851436H01	Contactor	Auxiliary K1A, 2N.O., 2N.C
39	KM105015H01	Suppressor	Quencharc K1S,R-C, 125 VAC, 100 OHM., .5 MFD, 1/2 W
40	KM851436H01	Contactor	Auxiliary K2A, 2N.O., 2N.C.
41	KM105015H01	Suppressor	Quencharc K2S, R-C, 125VAC, 100 0HM, .5 MRD, 1/2 W
42	KM851730H03	Contactor	Mech interlocked K3/K4, 28A, 120 VAC coil, 0-NO 7 1-NC aux
43	KM851436H01	Contactor	Auxiliary K3A, 2 N.O., 2 N.C.
44	KM105015H01	Suppressor	Quencharc K3S, R-C, 125VAC, 100 OHM, .5 MFD, 1/2 W
45	KM851436H01	Contactor	Auxiliary K4A, 2N.O., 2N.C.
46	KM105015H01	Suppressor	Quencharc K4S, R-C, 125 VAC, 100 OHM, .5 MFD, 1/2 W
47	KM860166G03	Controller	Brake Eprom, PLC DNET, 1.5, 2400HZ

KEY	PART NO.	PARTNAME	REMARK
48	KM857340G01	PC board	PC board, brake control ECO30000 R2.1, 8 in. brake, brake 1
49	KM5072298G01	Connector	ECO3000 brake controller board, brake 1
50	KM853000H04	Panel view	1000 key, color, RS232 (DH485)

5021634-20265061 (2011-02)

7.2 Soft Start

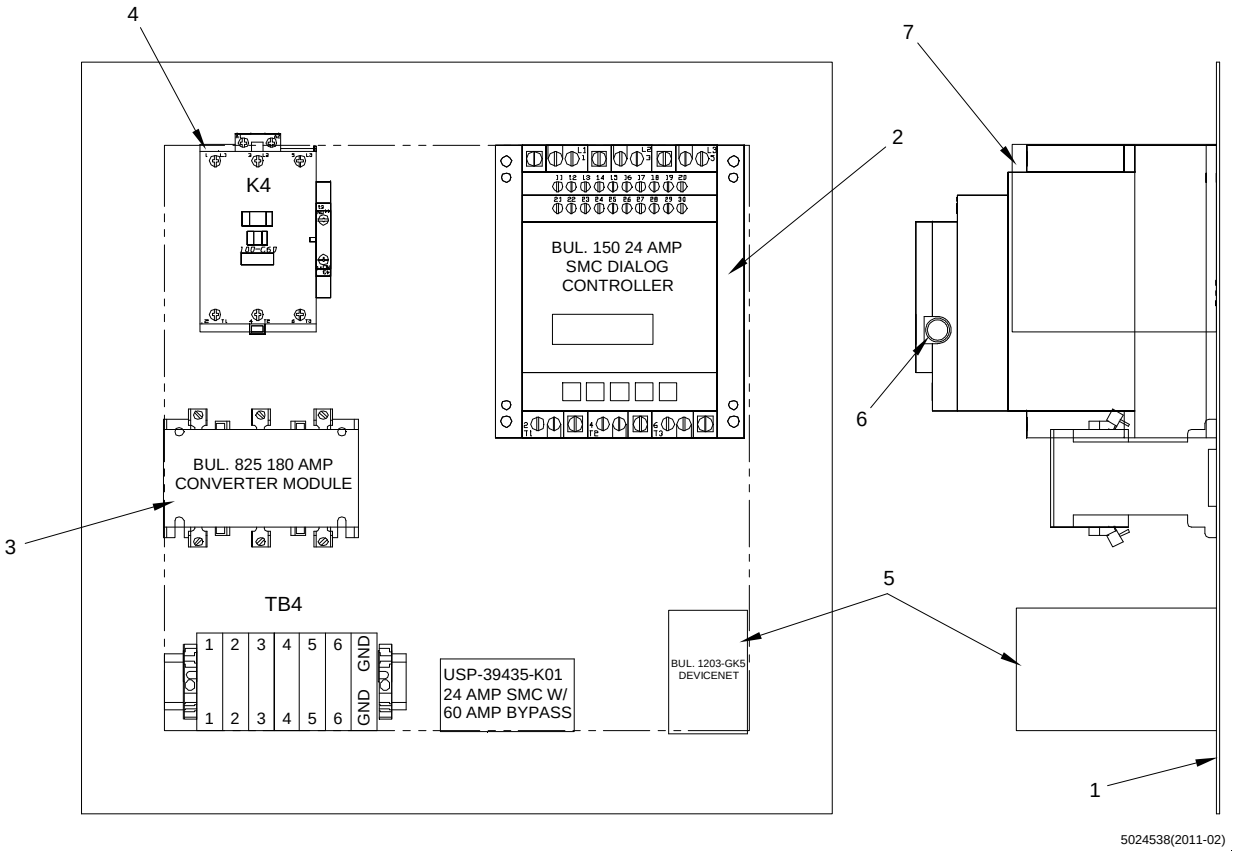


Table 42: **Soft Start**

Key	Part no.	Partname	Remarks
The following are Components of Soft Starter USP39435K01			
1	T198E-P2416T	Plate. mounting	Mounting plate
2	150-B24NBD	Controller, dialog, SMC	SMC, 24A, 120 vac
3	825-MCM180	Converter Module	BUL. 825, 180 AMP
4	100-C60D10	Contactor	MCS 60A Contactor, 120VAC COIL
5	1203-GK5	DeviceNet	DeviceNet Network Adapter
6	1202-C10	Cable, communication.	Scanbus
7	150-N84L	Module	Line Side Protective Module

5024538 (2011-02)

7.3 AC drive

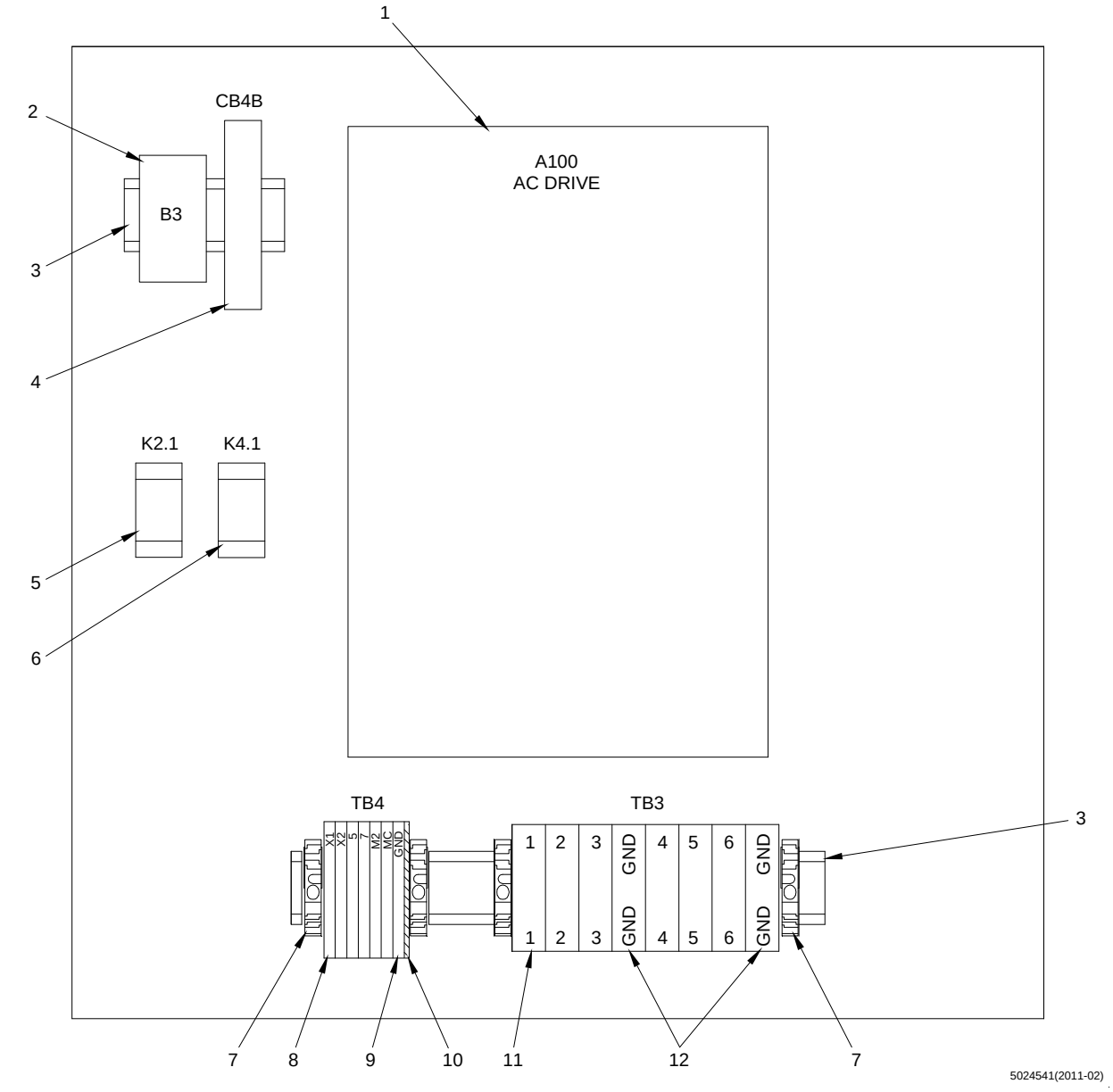


Table 43: **AC Drive**

Key	Part no.	Partname	Remarks
1	KM850070H02	AC drive	460V, 15HP, 24Amp
2	KM5072872H02	Thermostat	N.O. Contacts (For Enclosure Fan)
3	US-92008-001	DIN rail	35mm, Length = 1 x QTY
4	KM851441H01	Circuit breaker	1 Pole, 1A.
5	KM851438H01	Relay K2.1	15 amp,120vac coil, DPDT,flange top mount
6	KM851438H01	Relay K4.1	15 amp,120vac coil, DPDT, flange top mount
7	94812-001	Bracket, end	End bracket
8	94800-003	Terminal block	3 Pole
9	94801-003	Ground block	3 Pole Green/Yellow
10	94809-002	Plate, end	End plate
11	94289-001	Terminal block	2 Pole, 600v, 115A
12	94808-001	Ground block	2 Pole, Green/Yellow, 16mm

5024541 (2011-02)

7.4 Cabinet

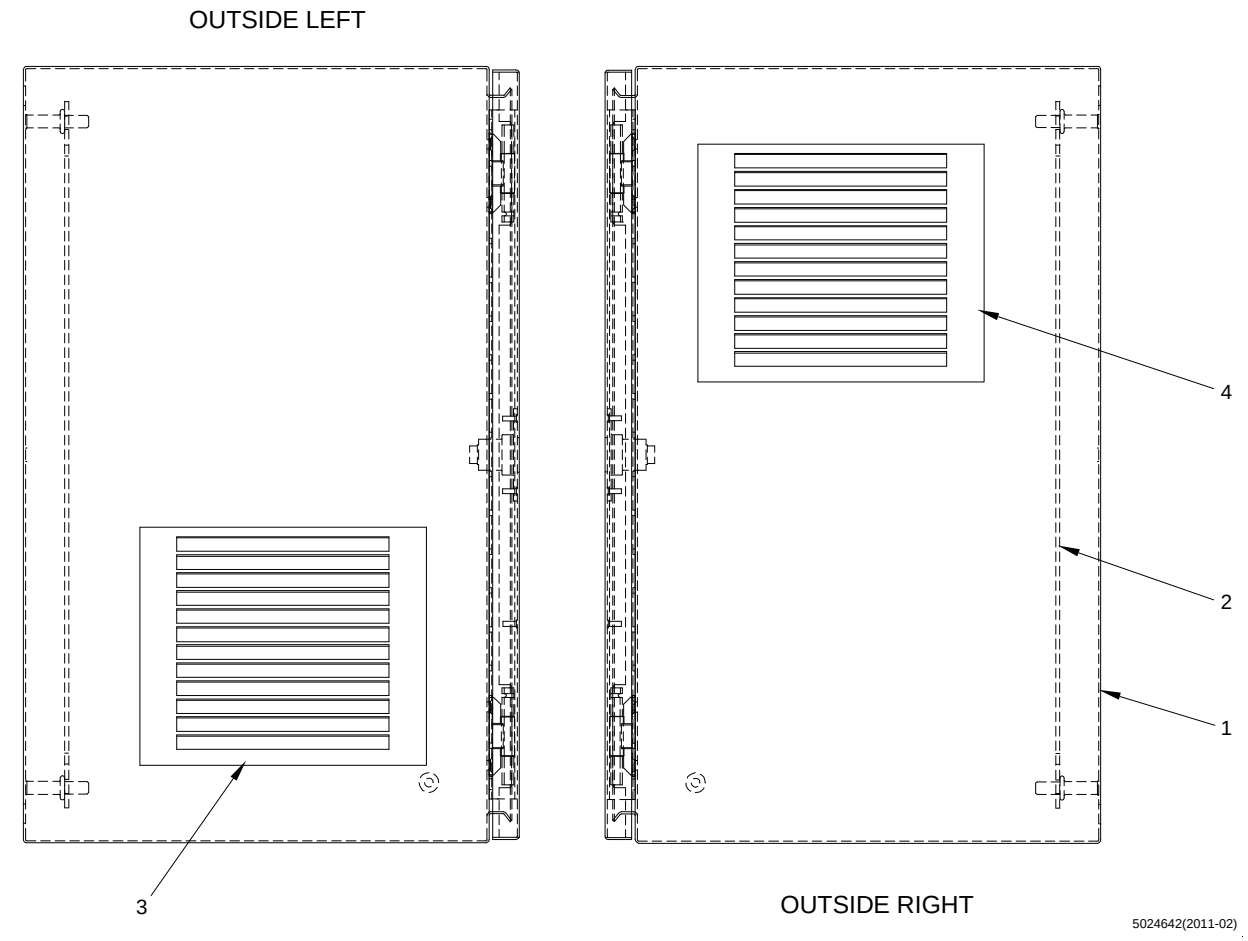


Table 44: **Cabinet**

Key	Part no.	Partname	Remarks
1	C-SD202012SS	Cabinet	Nema 4X, SS, 20H x 20W x 12D, Single Door
2	C-P2020	Subpanel	18.2 x 18.2
3	KM851727H03	Fan Kit, cooling	115vac, 38CFM, IP55, Beige
4	KM851727H04	Grill, exhaust	W/Filter, IP55, Beige

5024542 (2011-02)

7.5 Foreign voltage box

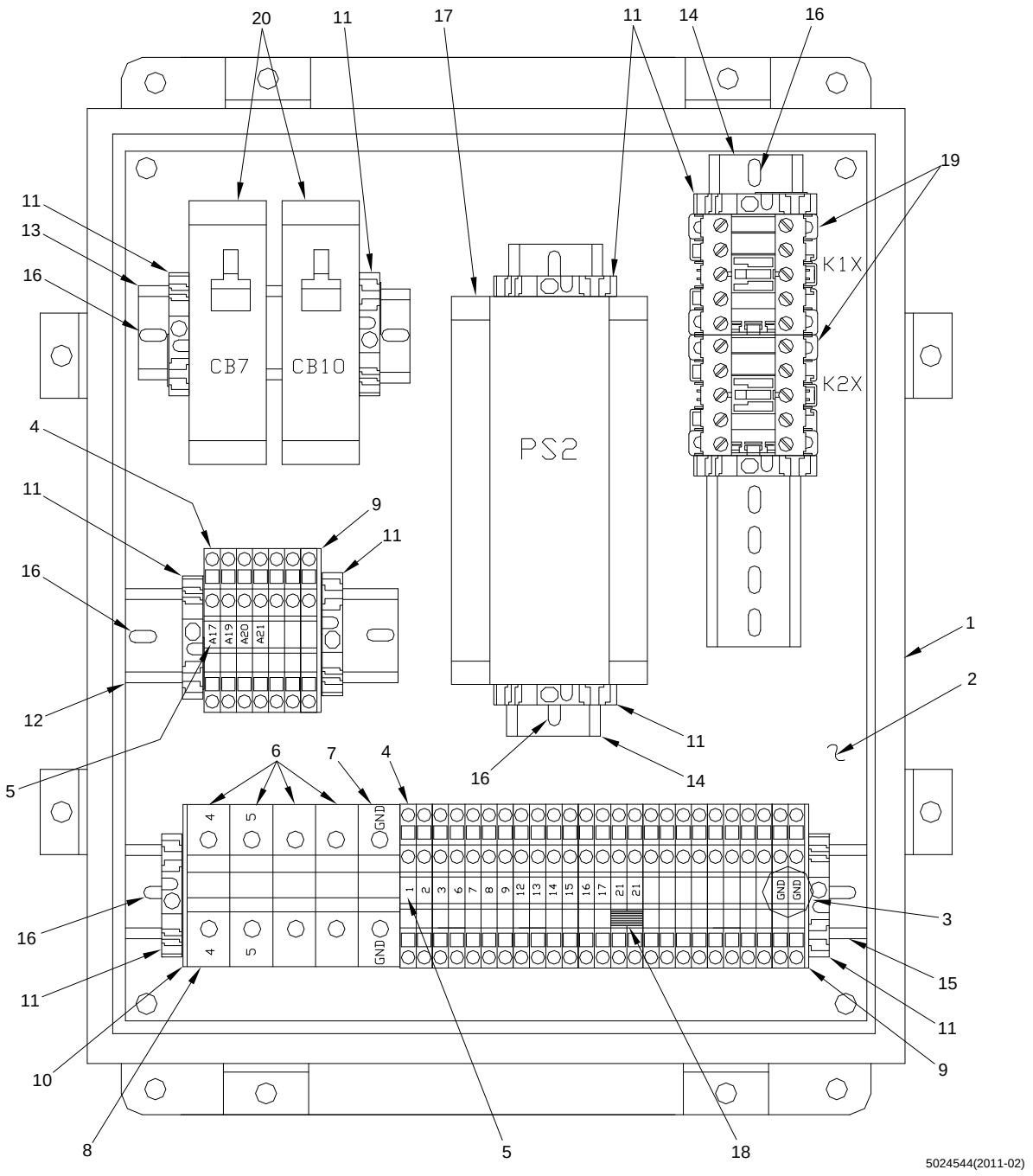
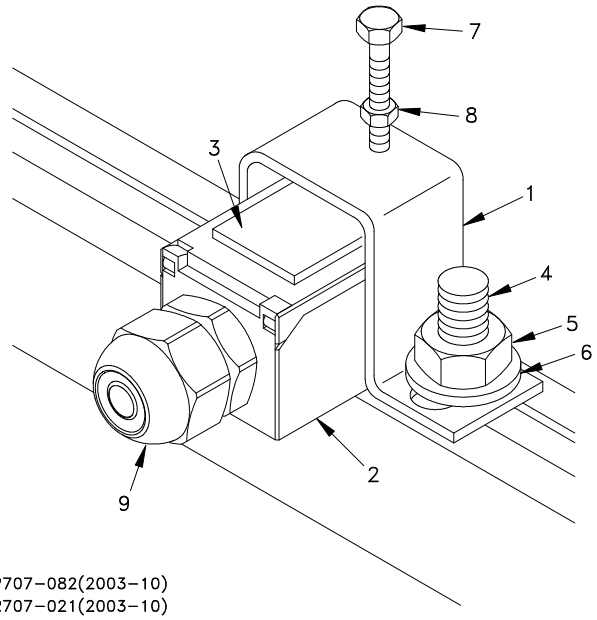


Table 45: **Foreign voltage box**

KEY	PART NO.	PARTNAME	REMARK
1	KM890105H10	Cabinet	Aluminum,14x12x6
2	US90115009	Panel	12.75x10.88,14GA
3	KM890102H02	Ground block	3-pole, angle spring clamp
4	KM890102H01	Terminal block	3-pole, angle spring clamp
5	KM890102H21	Label	Blank, vertical
6	KM890103H01	Terminal block	2-pole, screw clamp, 35mm
7	KM890103H02	Ground block	2-pole, screw clamp, 35mm
8	KM890102H22	Label	Blank, horizontal
9	KM890102H10	End plate	Terminal block, 3-pole
10	KM890103H10	End plate	Terminal blocks, 2-pole, 35mm
11	KM890102H20	End stop	Screwless
12	KM890102H90	Din rail	35mm, plated, quantity = length
13	KM890102H90	Din rail	35mm, plated, quantity = length
14	KM890102H90	Din rail	35mm, plated, quantity = length
15	KM890102H90	Din rail	35mm, plated, quantity = length
16	US61169004	Screw, hex	SLST,#10-24,1/2 in.
17	KM851724H02	Power supply	120Vac/240Vac/24VDC,90w,Class 2
18	KM890102H31	Jumper	2-pole, 2/5 mm^2 terminal block
19	US92246003	Relay	3-NO,1-NC,1-AUX
20	US52958012	Circuit breaker	1-pole, 20A

5024544 (2011-02)

7.6 Skirt switch



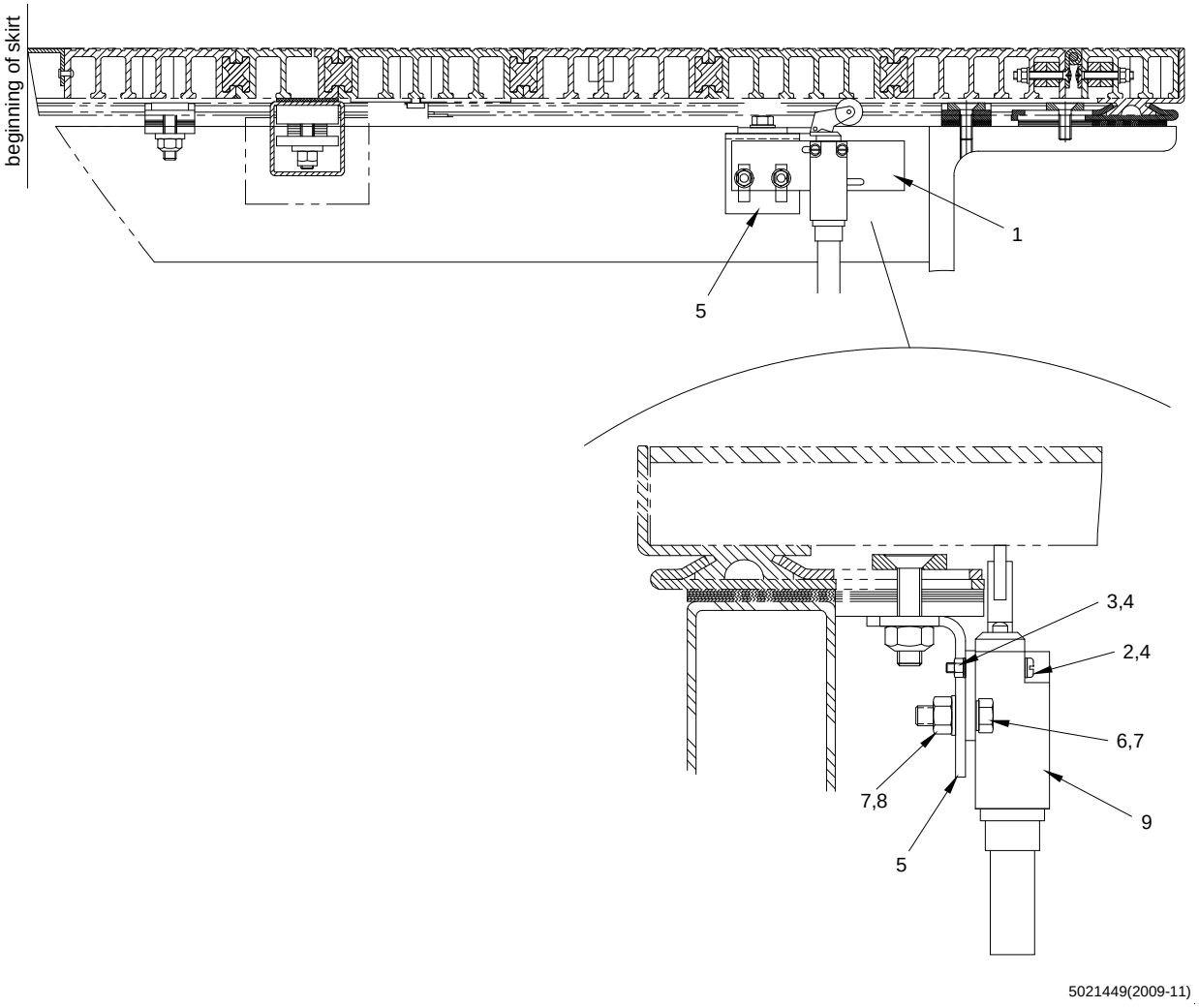
P707–082(2003–10)
R707–021(2003–10)

Table 46: Skirt switch

KEY	PART NO.	PARTNAME	REMARK
1	US97684001	Bracket, switch	Skirt switch
2	US96224002	Switch, pin, plunger	Bernstein
3	US97984001	Shim	Skirt switch
4	KM3685980	Screw, hammer head	M12X30 MIT 4KT-8.8-A3
5	DEE0057130	Nut, hex	DIN 934-M12-8-A3B
6	KM245661	Washer, flat	A13 DIN125-A3G
7	KM245623	Screw, hex	DIN 933- M4x10- 8.8- A2G
8	US61136001	Nut, hex, metric	M4 x 0.7
9	US67064013	Connector	M16 thread
NS	US94392001	Tape, outer deck	L=1 in., used to secure shim to switch

P707-082-20265057 (2009-11)

7.7 Access cover lift detector



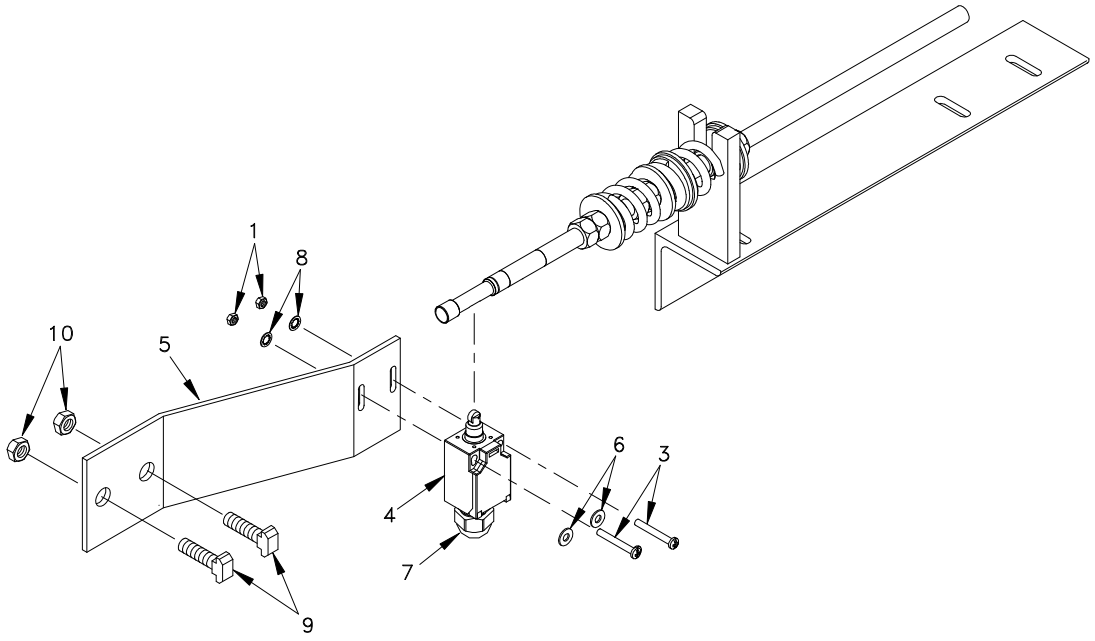
5021449(2009-11)

Table 47: Access cover lift detector

KEY	PART NO.	PARTNAME	REMARK
1	KM839904K01	Bracket	Access cover lift detector
2	DEE0053954	Screw, cylinder head	M4x40, DIN 84
3	DEE0260268	Nut, nylock	M4-8-A2B, DIN 6924
4	DEE0056982	Washer, disk	M4.3-140 HV-ST, DIN-125-B
5	DEE2285220	Bracket	Access cover lift detector
6	DEE0054405	Screw, hex	ISO-4017-M8x25-8.8-A2
7	DEE0063704	Washer, disk	8.4-140 HV-ST, DIN-125-B
8	DEE0057126	Nut, hex	M8-8-A2B, DIN-934
9	US96224002	Switch, access cover	Pin-plunger type

5021449-20265057 (2009-11)

7.8 Broken step-chain switch



P707–078(2003–10)

Table 48: Broken step-chain switch

KEY	PART NO.	PARTNAME	REMARK
1	US61136001	Nut, hex, metric	M4x0.7
3	US68747010	Screw, pan head	Phillips, M4, L= 35 mm
4	US96225002	Switch, roller actuator	Bernstein
5	US96773001	Bracket, switch	Broken step-chain switch, RH
5	US96773002	Bracket, switch	Broken step-chain switch, LH
6	US68722004	Washer, flat	M4, plated
7	US67064013	Connector	M16 thread
8	US68755004	Washer, internal, tooth	M4, plated
9	DEE0057199	Screw, hammer head	M10x25 ST 5.6 A3B
10	US61136005	Nut, hex	Metric, M10 x 1.5

P707-078-20265057 (2009-11)

7.9 Out-of-level step switch

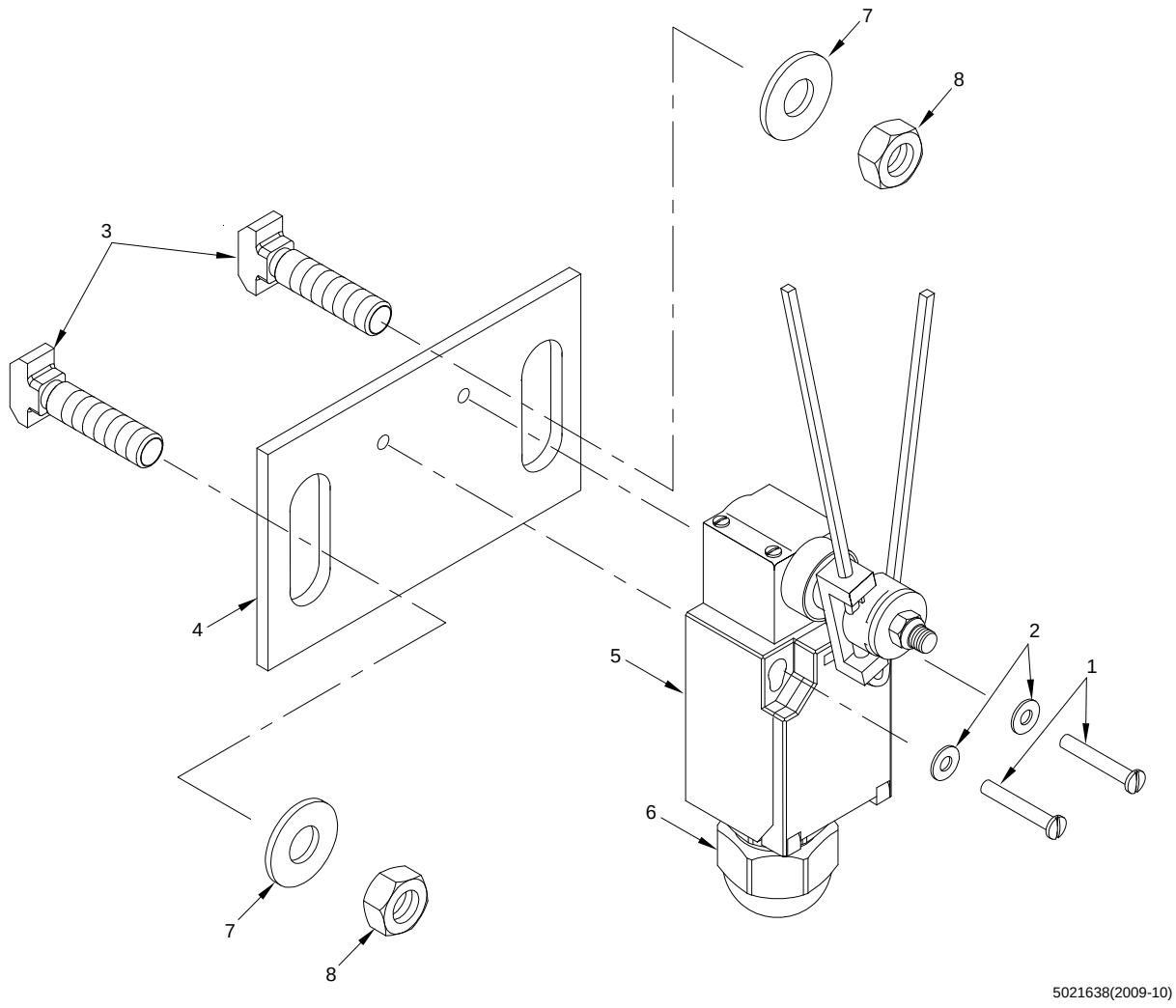


Table 49: Out-of-level step switch

KEY	PART NO.	PARTNAME	REMARK
1	US65818009	Screw, Pan head	Slotted, M4x7, BLK, 25 mm
2	US68722004	Washer, flat	M4, plated
3	DEE0057199	Screw, hammer head	M10x25 ST 5.6 A3B
4	KM831400H01	Bracket, switch	Out of level switch
5	KM831398G01	Switch, wand	Actuator, Metric
6	US67064013	Connector	M16 thread
7	US68722008	Washer, flat	M10, plated
8	DEE0057127	Nut, hex	M10 8 ST A3B DIN934

5021638-20265057 (2009-11)

7.10 Start station

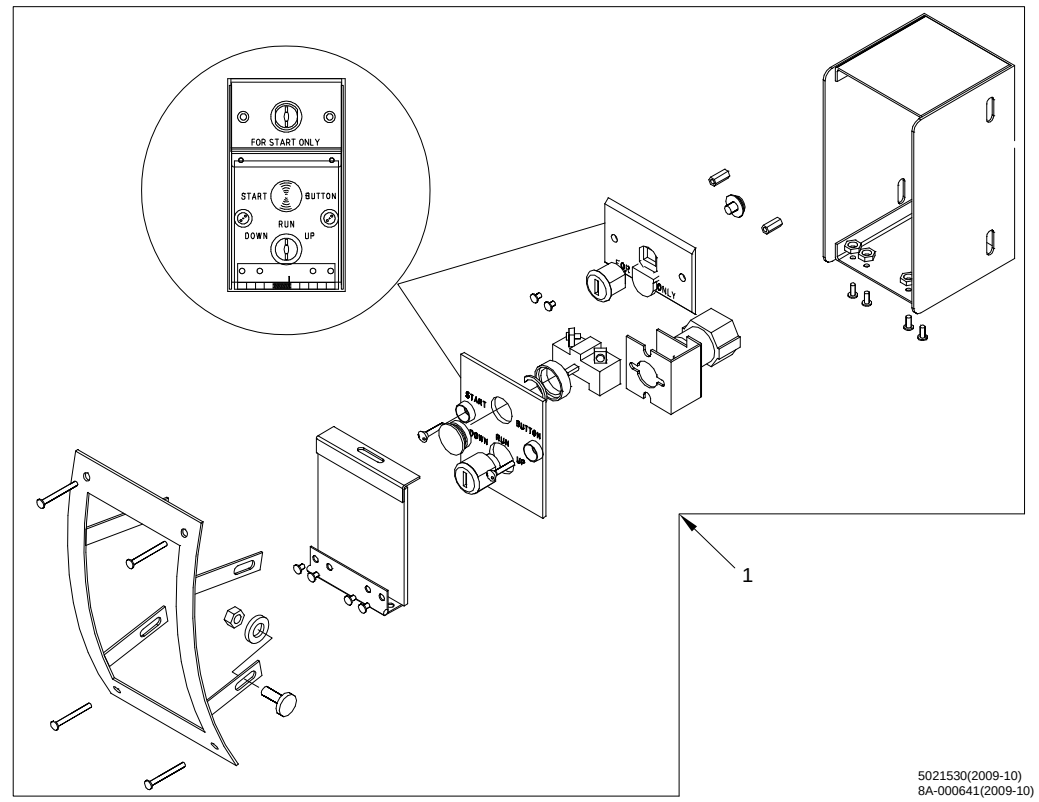
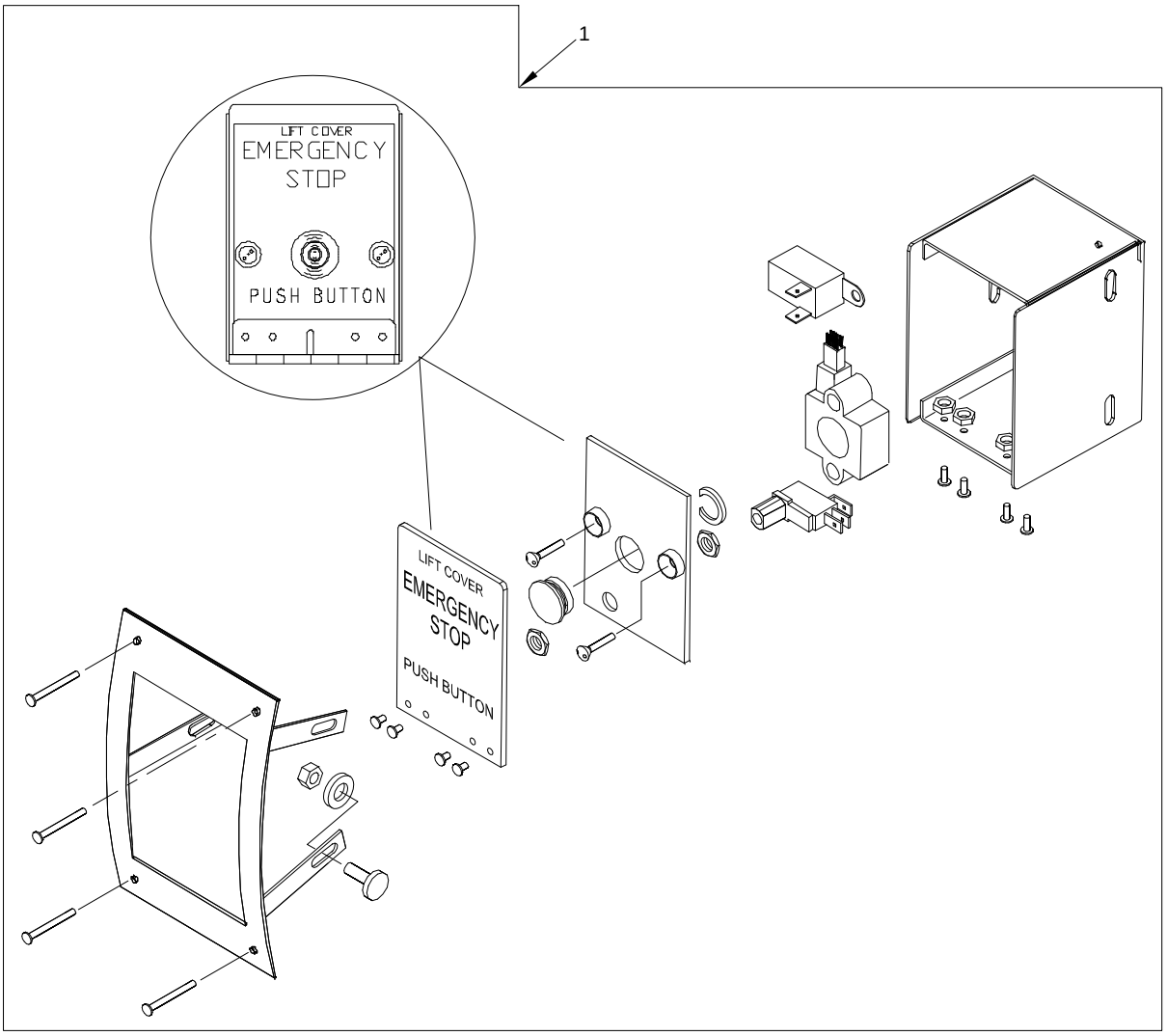


Table 50: Start station (newel mount) - inclined solid balustrade

KEY	PART NO.	PARTNAME	REMARK
1	KM932918G01	Start station	SS #4, with frame, 24 V, PTL Corporation #10ES2FNYC

5021530-20265057 (2010-02)

7.11 Stop station



5021528(2009-10)

Table 51: Stop station (newel mount) - inclined solid balustrade

KEY	PART NO.	PARTNAME	REMARK
1	KM932916G01	Stop station	SS #4, frame mount, 24 V, PTL Corporation #10ES1F

5021528-20265057 (2010-02)

7.12 Step upthrust switch

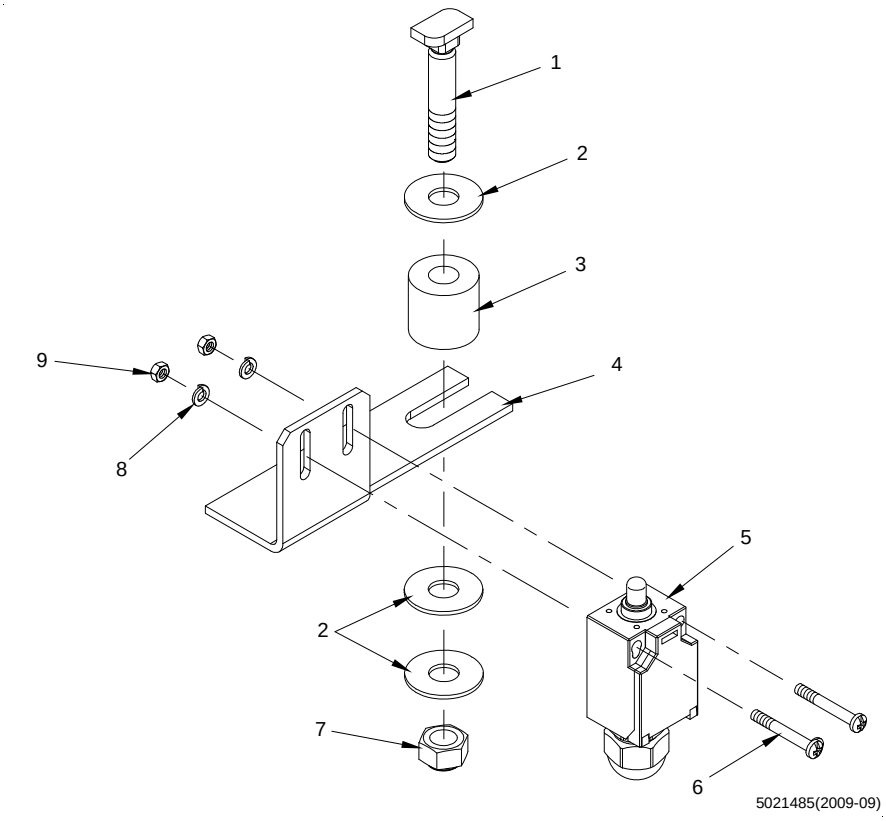


Table 52: Step upthrust switch

KEY	PART NO.	PARTNAME	REMARK
1	DEE1768421	Screw, hammer head	M10x50, ST 8.8 A3B
2	KM247568	Washer	A10.5 DIN9021-A3G
3	DEE2144433	Isolation mount	Elastic element, 60 shore
4	US96842001	Bracket, upthrust	Upthrust switch
5	US96224002	Switch, pin, plunger	Bernstein
6	US68747009	Screw, pan head	Phillips, M4, L=30 mm
7	DEE0057127	Nut, hex	M10-8-A3B DIN-934
8	US68755004	Washer, internal, tooth	M4, plated
9	DEE0057121	Nut, hex	M4-8-A2B DIN 934

5021485-20265057 (2009-11)

7.13 Missing step detector

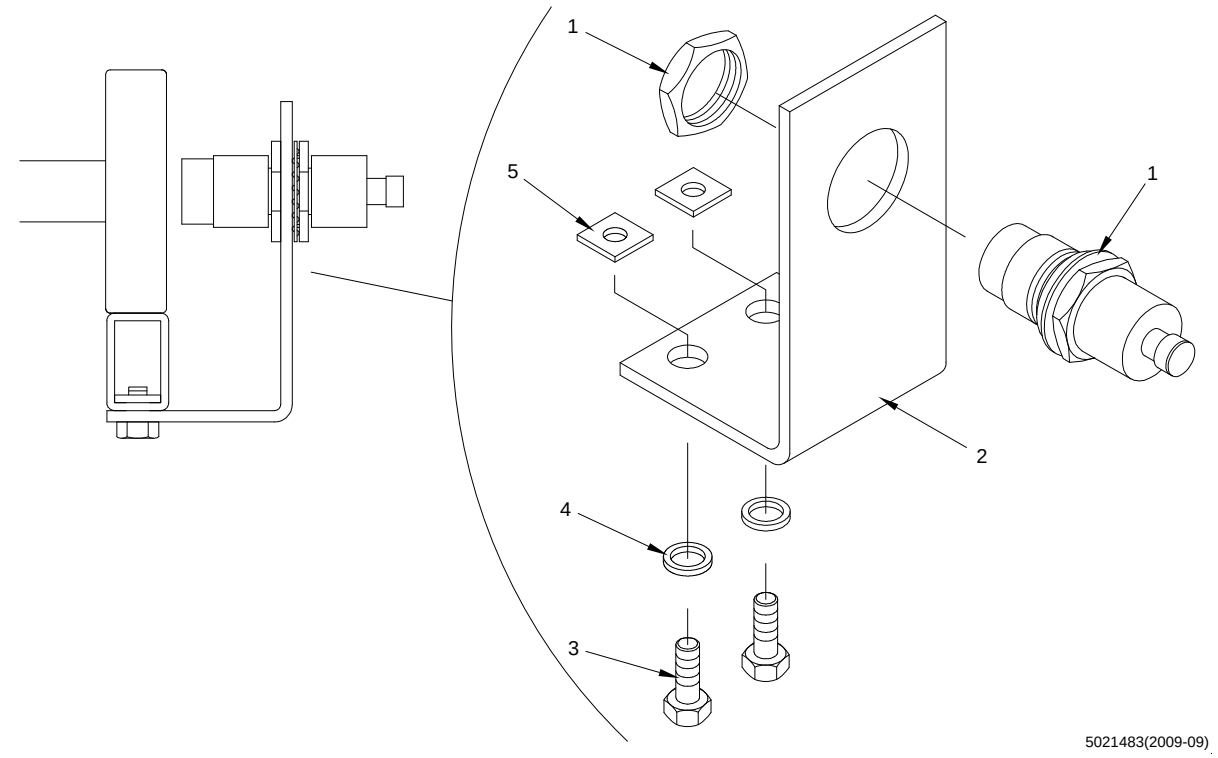


Table 53: Missing step detector

KEY	PART NO.	PARTNAME	REMARK
1	US97030001	Sensor, proximity	Missing step detector, 30mm, w/retaining ring
2	DEE3685984	Bracket, angle	S235JRG2-LV2421470
3	DEE0056659	Bolt, hex	M10x25-8.8-A3B DIN 933
4	DEE8403763	Washer, retaining	16x11x2 mm, A3C
5	DEE1954168	Plate, threaded	M10

5021483-20265057 (2009-11)

7.14 Handrail speed sensor and broken handrail detector

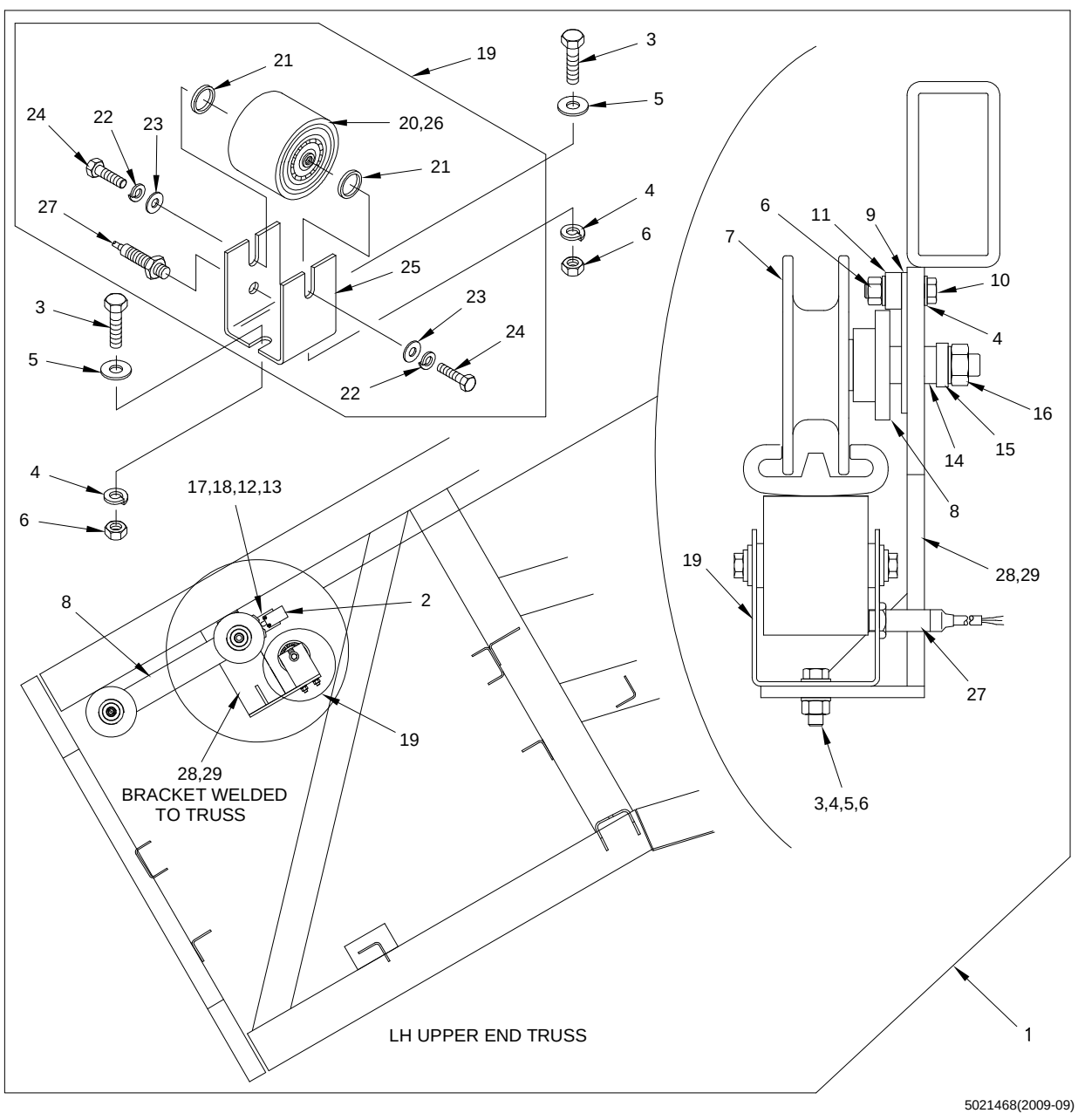
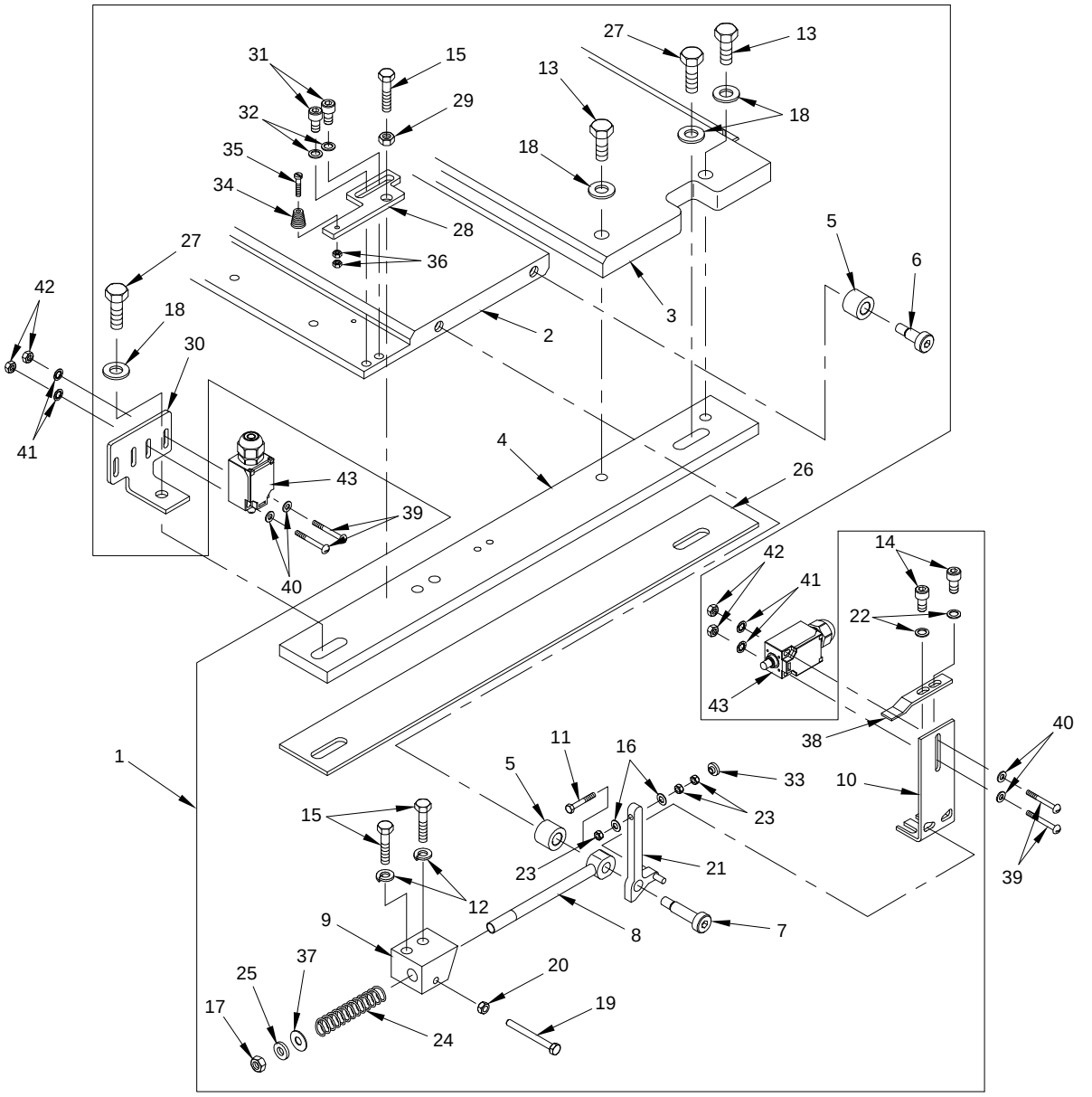


Table 54: Handrail speed sensor and broken handrail detector

KEY	PART NO.	PARTNAME	REMARK
1	USP38738001	Sensor assembly	Handrail speed and broken handrail, RTV
2	KM277323	Switch, limit	Handrail sensor
3	DEE3670401	Bolt, hex	M8X30-8.8-FE, DIN-933
4	DEE8403762	Washer, retaining	VS 8-A3C SOR
5	DEE0057111	Washer, flat	8.4-ST-A3B, DIN 7349
6	DEE0260272	Nut, lock	M8-8-A2B, DIN 6926
7	DEE2278319	Roller assembly	Broken handrail detector
8	DEE2278314	Lever assembly	Broken handrail detector
9	DEE2278313	Bracket	Broken handrail detector
10	DEE0055084	Bolt, hex	M8X40 A2B, DIN 931
11	DEE2278321	Spacer	9x20
12	DEE0725726	Washer, lock	M4
13	DEE0057121	Nut, hex	M4-8-A2BDIN 934
14	DEE0080731	Washer, disk	M4, plated
15	DEE2278320	Spacer	Spacer
16	DEE0260275	Nut, lock	M12-8-A3B, DIN 6924
17	DEE0726124	Screw, cylinder head	M4X35 A2B, DIN 84
18	DEE0056982	Washer, disk	4.3-140 HV-ST, DIN-125-B
19	USP38134001	Roller assembly	Handrail speed sensor
20	US44485	Shaft, roller cluster	Roller cluster, CRYS, 2000
21	US44486	Spacer, handrail roller	Handrail wheel
22	US48731002	Washer, lock, spring	Spring type, 5/16 in.
23	US49114010	Washer, flat	Type A, W, 5/16 in.
24	US61113003	Screw, hex	G5, 5/8-18 x 3/4
25	KM5071695H01	Bracket	10 gauge, 3.37x2.5x2.81
26	KM5076345G01	Roller, idler	Handrail speed sensor, with pins
27	US96582001	Sensor, proximity	Handrail speed sensor, 12 mm
28	USP38748001	Bracket, handrail mounting	RH handrail speed
29	USP38737001	Bracket, handrail mounting	LH handrail speed

5021468-20265057 (2009-11)

7.15 Combplate impact device switch



5021585(2009-11)

Table 55: Combplate impact device switch

KEY	PART NO.	PARTNAME	REMARK
1	KM5072719G09	Combplate assembly	1000, SS, NYC
2	KM5071676G05	Plate	1000, NYC
3	KM5071679G03	Plate, tail	1000, L-1138, R20
4	KM5070434H01	Combplate support	R20

KEY	PART NO.	PARTNAME	REMARK
5	KM5070439H01	Bearing, roller	R20
6	KM280048	Bolt, hex	M10x40 ST 8.8 A3B DIN609
7	KM280049	Bolt, hex	M10x65 DIN609-8.8A3B
8	KM5060433	Eyebolt	M8x150 ST 4.6 A3B DIN444 altered
9	KM5072721H01	Block, comb carrier	LH
9	KM5072722H01	Block, comb carrier	RH
10	KM5072723H01	Bracket, comb carrier	LH/RH
11	KM268103	Screw, hex	M4x30 DIN933-8.8A3B
12	DEE8403763	Washer, retaining	16x11x2 mm, A3C
13	KM130245	Screw, hex	M10x35 DIN 933 - 8.8 A3G
14	KM116574	Screw, hex	M6x16 DIN912 8.8
15	KM196717	Screw, hex	M10x40 ST 8.8 A3B DIN933
16	KM256343	Washer, flat	M4 ST A3B DIN125B
17	KM162172	Nut, hex	M8, DIN934-8A3G
18	KM259689	Washer	10.5, DIN 7349-A3G
19	DEE0063294	Screw, hex	M6x55 ST 8.8 A2B DIN933
20	DEE0057125	Nut, hex	M6-8-A2B DIN-934
21	KM5071675G02	Lever	R20
22	KM245429	Washer	6.4 mm DIN125-A3B
23	KM122408	Nut, hex	M4 8 ST A3B DIN934
24	KM836505H01	Spring, compression	0.156 x 1.25 OD x 3 in. long x 656 lb/in
25	KM259689	Washer	10.5, DIN 7349-A3G
26	KM5070466H02	Plate	R20
27	KM212381	Screw, hex	M10x30, DIN933-8.8A3G
28	KM5072724H01	Bracket, comb carrier	NYC
29	KM121996	Nut, hex	M10-8-A3B DIN934
30	KM5072639H01	Bracket, switch	Plate
31	KM245404	Screw, socket	M8 x 12 ST
32	KM245331	Washer	8.4 DIN 125-A3G
33	KM283184	Nut, knurled thumb	M4-5 DIN467-A2B
34	US105478H01	Sprint, vertical impact	Conical, NYC
35	KM247816	Screw, slotted	M4x22,DIN84-4.8A2F
36	KM256072	Nut, hext	BM4, DIN439
37	US68777001	Washer, flat	M12, plated
38	US521202001	Combplate, impact device	NYC
39	US68747009	Screw, pan head	Phillips, M4, L=30mm
40	US68722004	Washer, flat	M4, plated
41	US68755004	Washer, internal tooth	M4, zinc plated
42	DEE0057121	Nut, hex	M4-8-A2B DIN 934
43	US96224002	Switch, pin, plunger	618.8153.020 Bernstein

5021585-20265057 (2009-11)

7.16 Vertical combplate impact switch

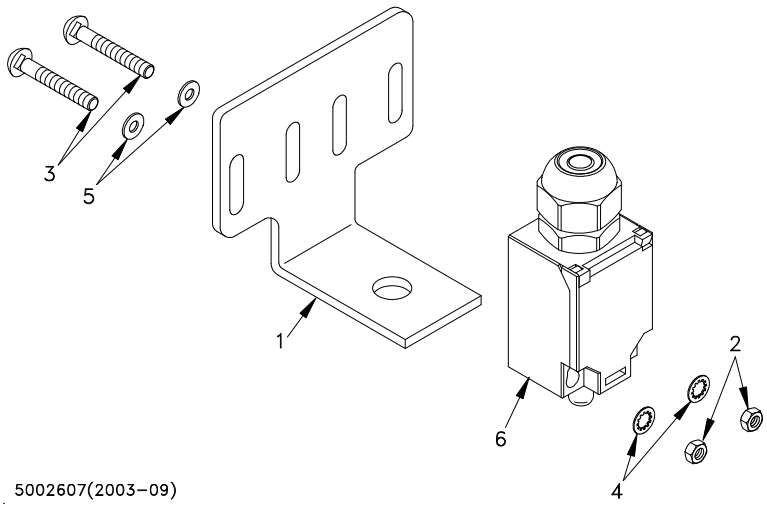
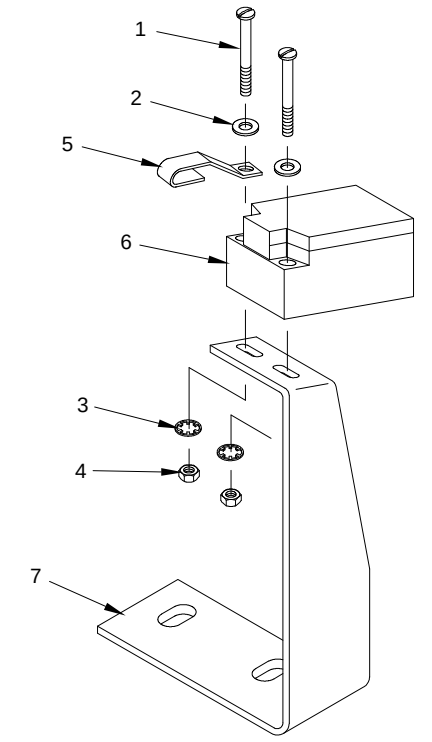


Table 56: Vertical combplate impact switch

KEY	PART NO.	PARTNAME	REMARK
1	KM5072639H01	Bracket, switch	Vertical combplate impact switch
2	US61136001	Nut, hex, metric	M4x0.7
3	US68747010	Screw, pan head	Phillips, M4, L= 35 mm
4	US68755004	Washer, internal, tooth	M4, plated
5	US68722004	Washer, flat	M4, plated, hardened
6	US96224002	Switch, pin, plunger	Bernstein

5002607-20265057 (2009-11)

7.17 Handrail inlet switch



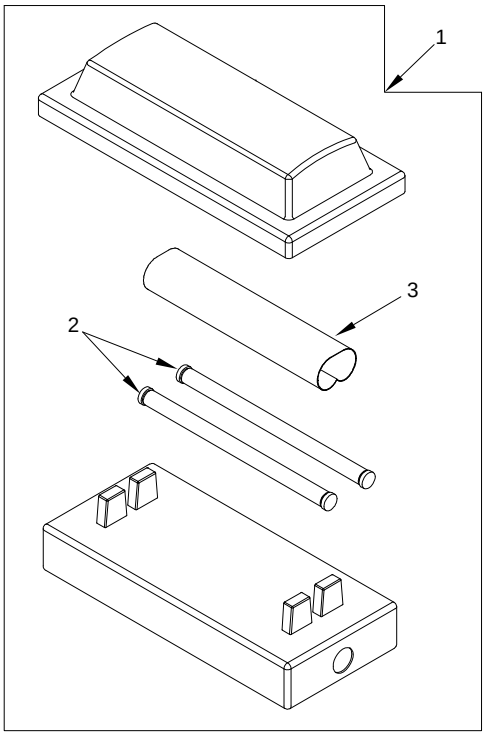
5021497(2009-09)

Table 57: Handrail inlet switch

KEY	PART NO.	PARTNAME	REMARK
1	US68747009	Screw, PAN/PH	M4, L=30mm
2	US68722004	Washer, flat	M4, plated
3	US68755004	Washer, int, tooth	M4, plated
4	DEE0057121	Nut, hex	DIN 934-M4-8-A2B
5	KM5072741H01	Spring, manual reset	Handrail inlet
6	US96224002	Switch, pin, plunger	Bernstein
7	KM5073245H01	Bracket, switch	Handrail inlet, ULH/LRH

5021497-20265057 (2009-11)

7.18 Step demarcation lights



5021472(2009-09)

Table 58: Step demarcation lights

KEY	PART NO.	PARTNAME	REMARK
1	US96222002	Light, demarcation	Step, 120V
2	US96051001	Lamp	6W F6T5/CW, cool white
3	US96223001	Lens	Demarcation light, GSE
NS	US68148001	Ballast	Class 2 light
NS	US68149001	Starter	Class 2 light
NS	US68151001	Lamp holder	Class 2 light
NS	US96052001	Lens	Green, demarcation light

5021472-20265057 (2009-11)

7.19 Motor encoder - bearing sensor

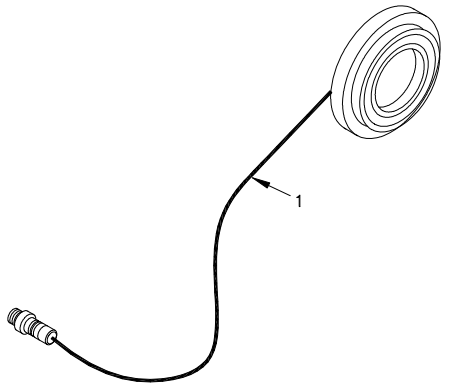
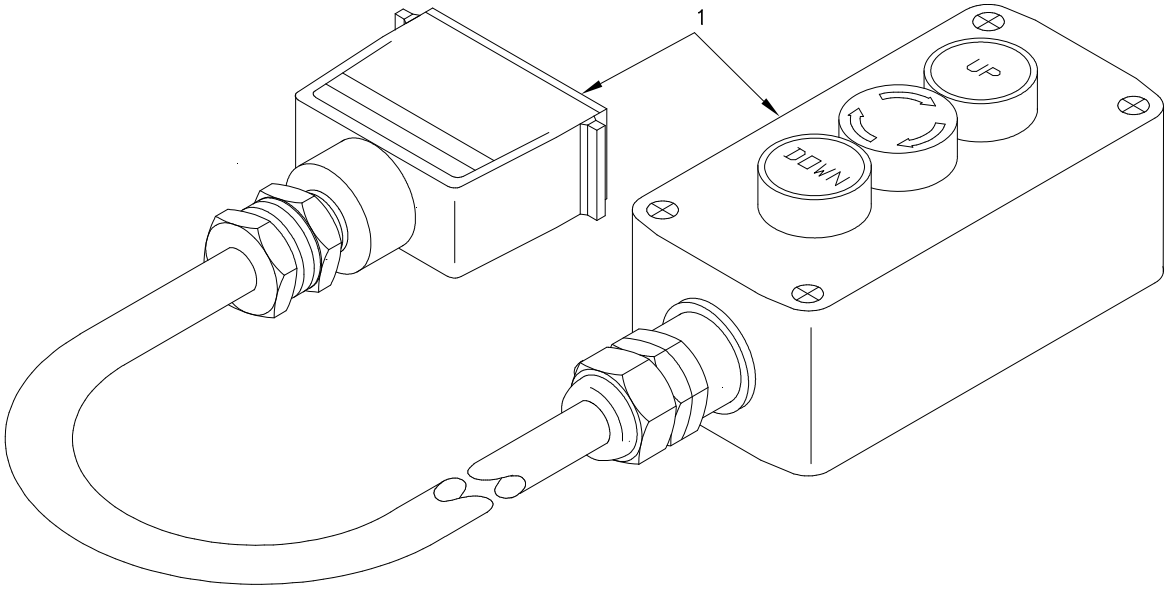


Table 59: Motor encoder - bearing sensor

KEY	PART NO.	PARTNAME	REMARK
1	US96587001	Encoder, Motor	Bearing sensor

P707-084-20265057 (2009-11)

7.20 Pendant control



5021502(2009-09)

Table 60: Pendant control

KEY	PART NO.	PARTNAME	REMARK
1	USP38437001	Control, handheld pendant	Handheld pendant control, 6-AWG #18, 10 feet

5021502-20265057 (2010-03)

7.21 Automatic oiler

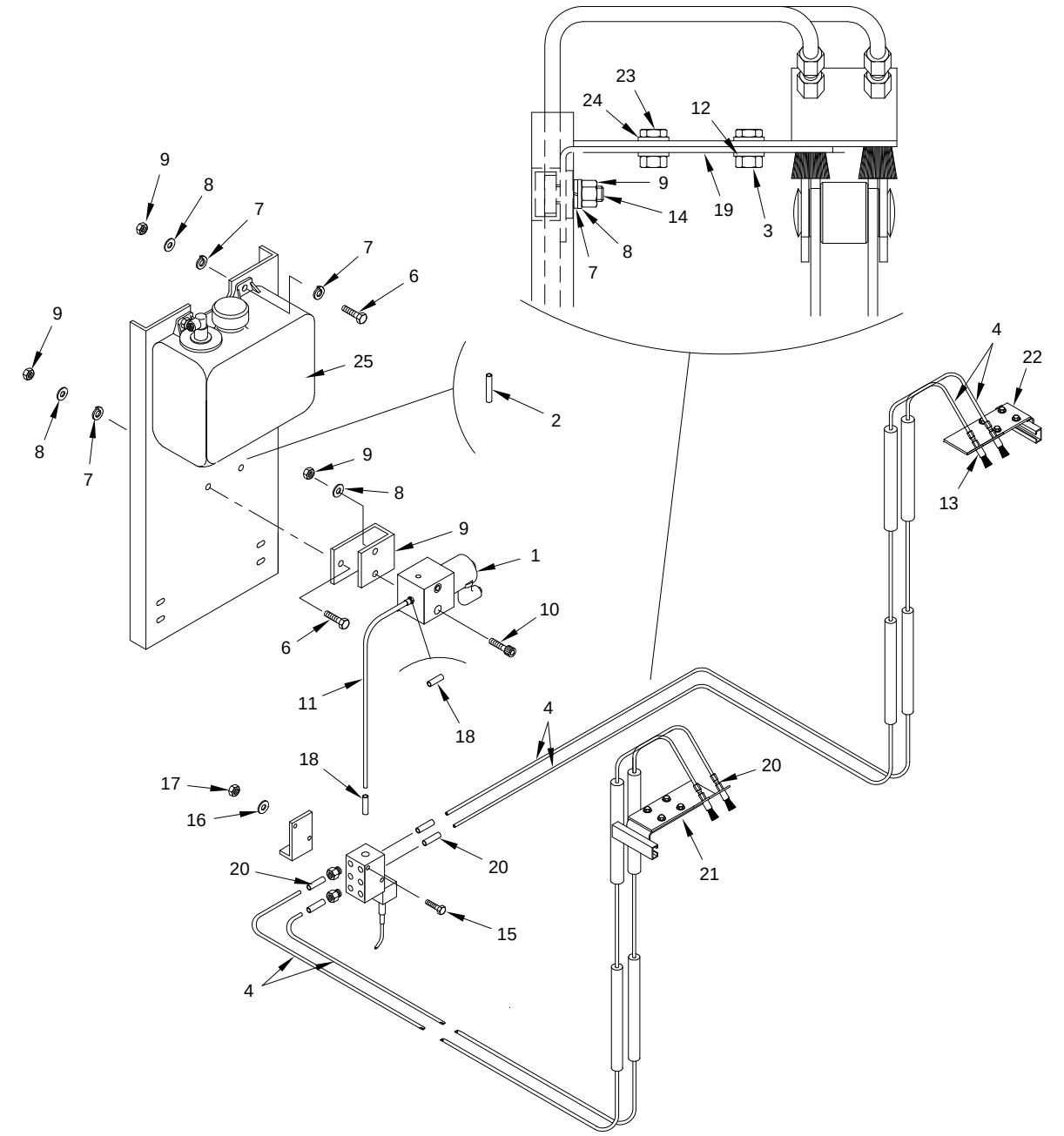
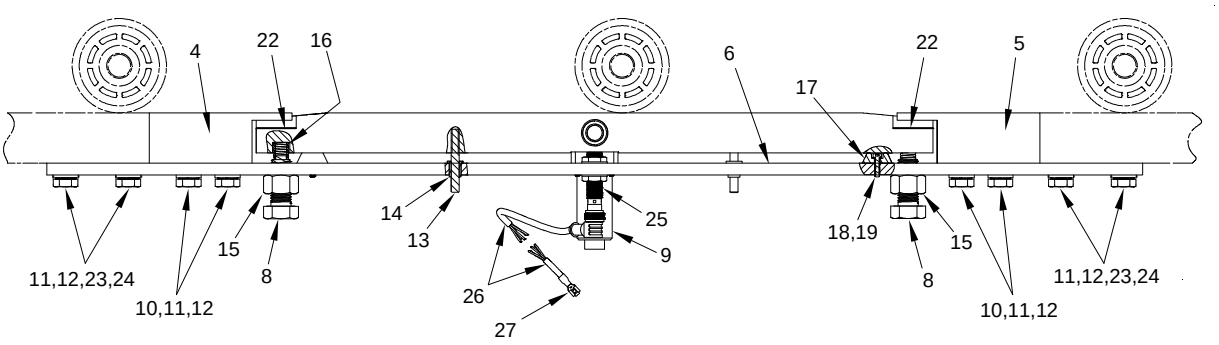


Table 61: Automatic oiler

KEY	PART NO.	PARTNAME	REMARK
1	DEE0597081	Pump, magnetic	MP1-180V GL
2	US3659914	Tubing	For oiler DIN2391 50MM
3	DEE0057125	Nut, hex	M6 DIN 934
4	DEE1590206	Tubing	Plastic oiler tubing M6 x 1
5	DEE1135874	Bracket, oiler	
6	DEE0054405	Screw, HHC	M8x25 DIN 933, A2B
7	DEE8403762	Washer, retaining	VS 8-A3C
8	DEE0057111	Washer, flat	DIN 7349-8.4ST-A3B
9	DEE0057126	Nut, hex	DIN934-M8-8A2B
10	DEE0598481	Screw, cylinder head	DIN-0000912-M8x75-8.8-
11	DEE0991954	Tubing	Oiler tubing M8 x 1.5
12	DEE8403761	Washer, retaining	VS 6-A3C *SOR 9.7 x 6.4mm A3C
13	DEE0970134	Brush, oiler	O-B1 R1
14	DEE0216114	Screw	Hammer head, M8x30
15	DEE0598482	Screw, cylinder head	DIN912 M5x50
16	DEE0725727	Washer, lock	DIN 128-A5-*S-BSG-A2B
17	DEE0063831	Nut, hex	M5, DIN 934
18	DEE1590205	Connector, oiler	Sleeve insert 6mm oiler tubing
19	DEE1135875	Bracket, oiler	HD 60x196
20	DEE0193327	Connector, oiler	Sleeve insert 8mm oiler tubing
21	DEE1135876	Bracket, oiler	HD 113x180
22	DEE1177885	Bracket, oiler	HD
23	DEE0054383	Screw, HHC	Hes hd.cap scr. DIN 933-M6x20-8.8-A2B
24	DEE0063678	Washer	6.4mm, DIN7349
25	DEE1190353	Bottle, oiler	With level indicator
NS	DEE2292682	Distributor	

5021894-20265058 (2009-12)

7.22 Deteriorated roller sensor - trailing wheel



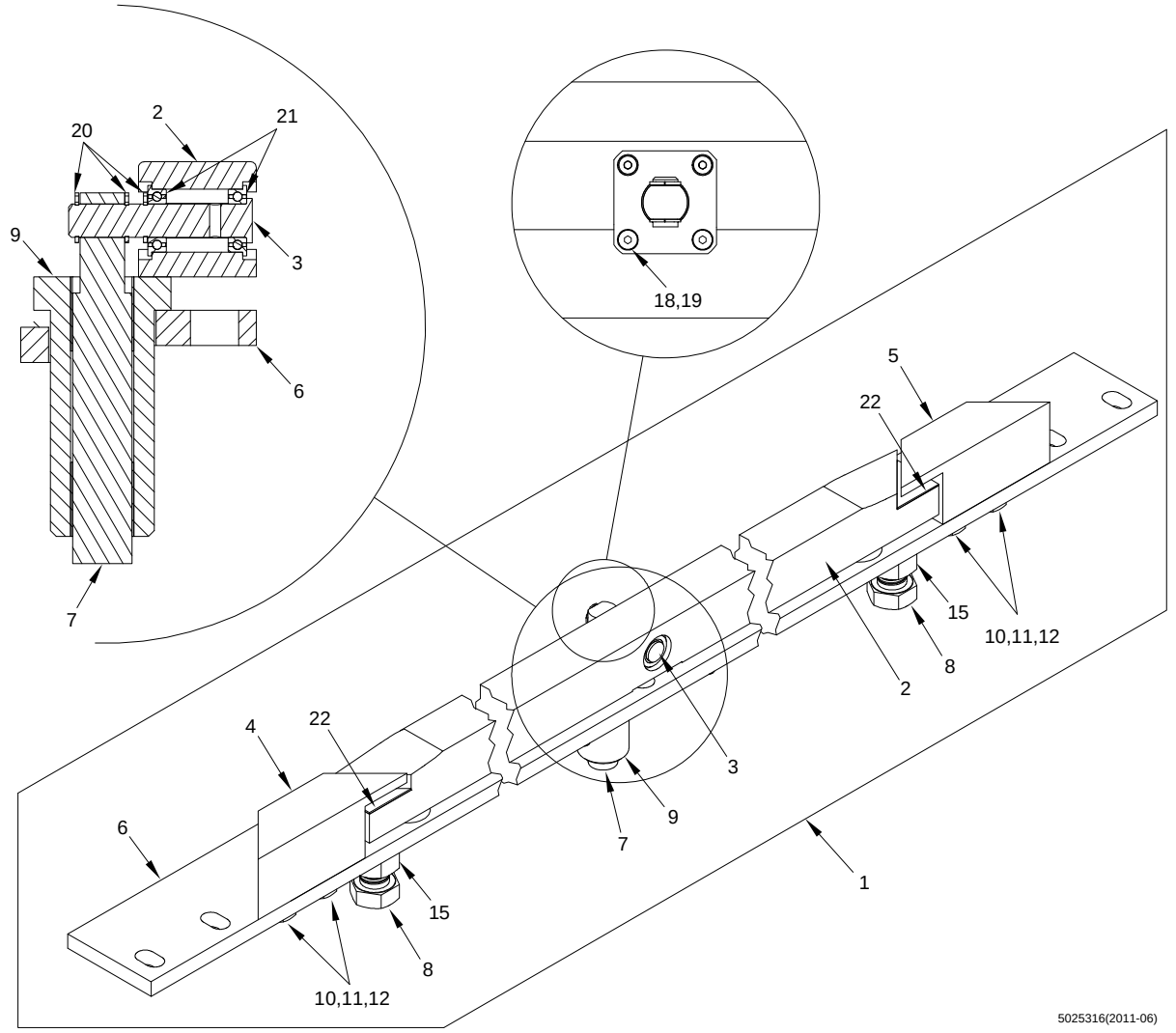


Table 62: Deteriorated roller sensor - trailing wheel

Key	Part no.	Partname	Remarks
Parts listed below are components of Assembly KM842066G01, flat track deteriorated roller sensor assembly, E3X and EcoMod			
1	KM841824G01	Beam, dynamic	Dynamic beam assembly
2	KM837510H01	Beam, roller	Roller beam, deteriorated roller sensor
3	KM837511H01	Shaft, pivot	Pivot shaft,deteriorated roller sensor
4	KM837512H01	Adapter, track	Deteriorated sensor, first
5	KM837513H01	Adapter, track	Deteriorated sensor, second
6	KM837514H01	Plate, bridge	Bridge plate, deteriorated roller sensor
7	KM837681H01	Shaft, linear	Linear shaft, deteriorated roller sensor
8	KM839442H01	Bolt, spring adjust	Spring adjust bolt, deteriorated roller sensor
9	KM841813H01	Bearing, linear	Flanged, 16 mm ID, 70 mm L
10	DEE0056662	Bolt, HHC	DIN 933-M10x35-8.8-A3B
11	DEE1389282	Washer	M10 ST A3B DIN125A
12	DEE8403763	Washer, retaining	Lock washer,16X11X2MM A3C
13	KM961815H01	Stud, threaded	One-ended, threaded stud, 1/4"-20x2"
14	KM961816H01	Bearing, sleeve	Flanged sleeve bearing, 1/4"ID, 3/8"OD, /2"L
15	DEE0057133	Nut, hex	M16-8-A3B DIN 934
16	KM841814H01	Spring	Compression, 7/8x0.48
17	KM841815H01	Bumper, rubber	31/32 in. W, 11/32 in. H
18	KM961799	Screw, socket	Socket Screw, M4X16 ST 8.8 A2K DIN6912
19	DEE0725726	Washer, lock	Spring washer, M4 A2B DIN128A
20	KM841816H01	Ring, snap	External, 9 mm
21	KM841817H01	Bearing, ball	Flanged, 9x17x5, double-shielded
22	KM3719098	Spacer, rubber	25x1
23	DEE0056663	Screw, hex	M10X40 ST 8.8 A3B DIN933
24	DEE2173051	Nut	C45-FE/ZN8B
25	US96582001	Sensor	12MM PROX, HRSS
26	US96424010	Cable assembly	4CON, SHLD, L=10M
27	US45812007	Term, F	TAB, 22-18,. 020 X.187

5025316 (2011-05)

7.23 Deteriorated roller sensor - chain roller

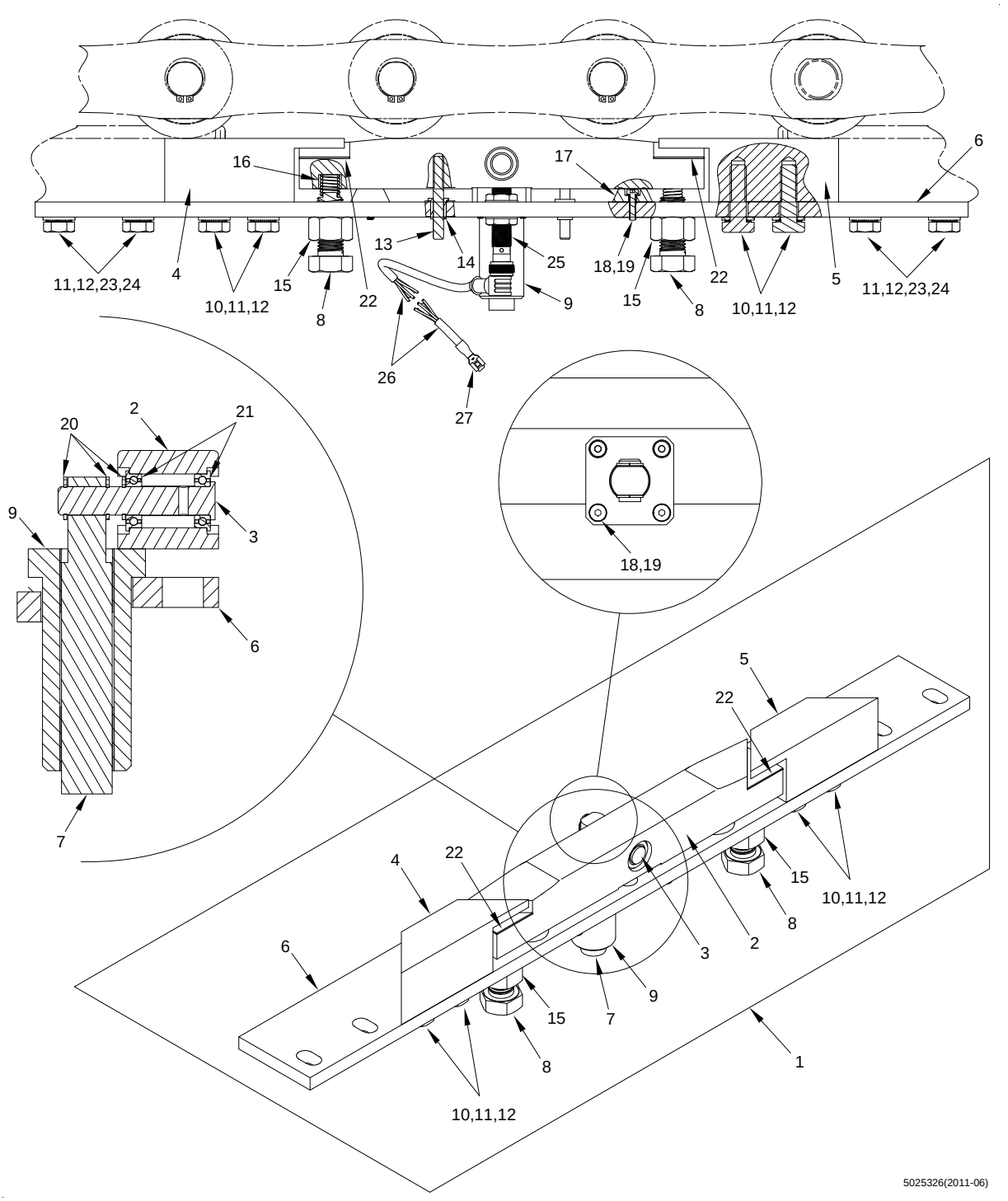
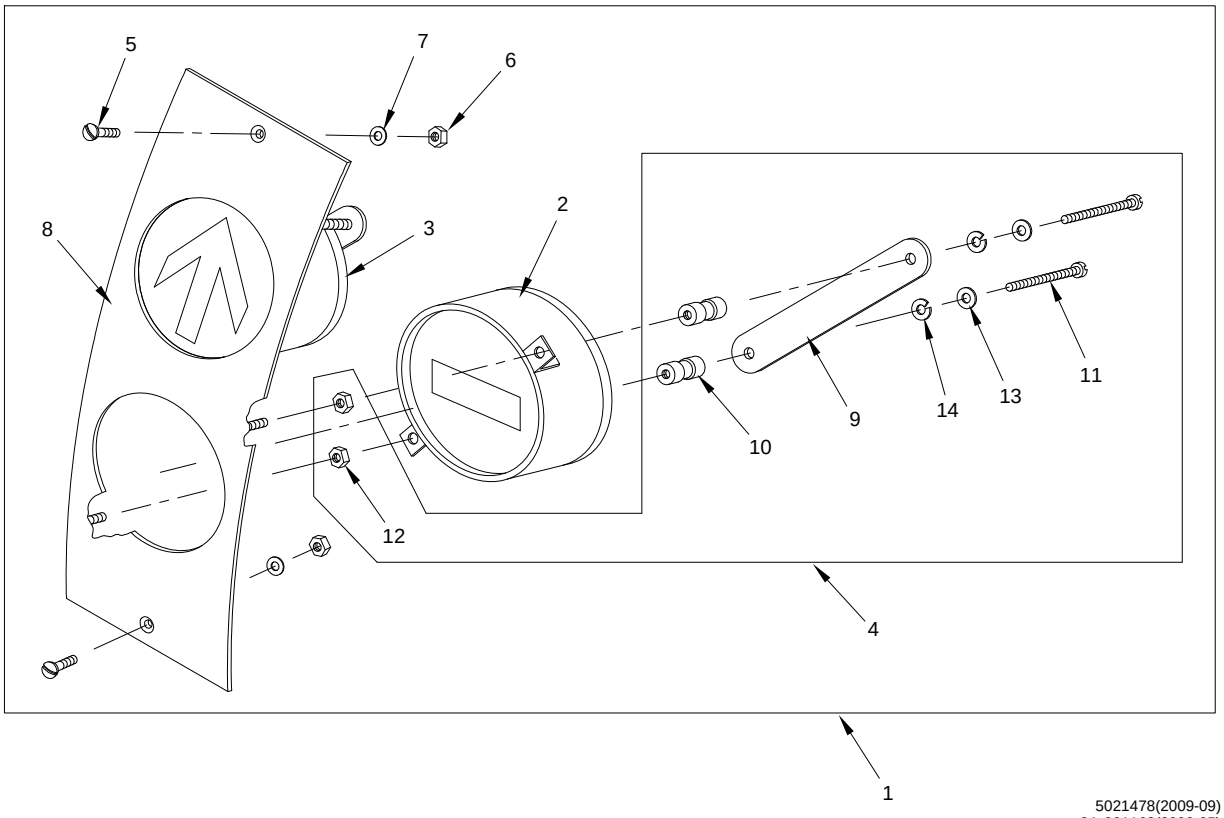


Table 63: Deteriorated roller sensor - chain roller

Key	Part no.	Partname	Remarks
Parts below are components of Assembly KM842066G03, flat track, deteriorated roller sensor, EcoMod			
1	KM841824G02	Assembly, dynamic beam	Dynamic beam assembly
2	KM837510H02	Beam, roller	Roller beam, deteriorated roller sensor
3	KM837511H01	Shaft, pivot	Pivot shaft, deteriorated roller sensor
4	KM837512H01	Adapter, track	Deteriorated sensor, first
5	KM837513H01	Adapter, track	Deteriorated sensor, second
6	KM837514H02	Plate, bridge	Bridge plate, deteriorated roller sensor
7	KM837681H01	Shaft, linear	Linear shaft, deteriorated roller sensor
8	KM839442H01	Bolt, spring adjust	Spring adjust bolt, deteriorated roller sensor
9	KM841813H01	Bearing, linear	Flanged, 16 mm ID, 70 mm L
10	DEE0056662	Bolt, HHC	DIN 933-M10x35-8.8-A3B
11	DEE1389282	Washer	M10 ST A3B DIN125A
12	DEE8403763	Washer, retaining	Lock washer,16X11X2MM A3C
13	KM961815H01	Stud, threaded	One-ended, threaded stud, 1/4"-20x2"
14	KM961816H01	Bearing, sleeve	Flanged sleeve bearing, 1/4"ID, 3/8"OD, /2"L
15	DEE0057133	Nut, hex	M16-8-A3B DIN 934
16	KM841814H01	Spring	Compression, 7/8x0.48
17	KM841815H01	Bumper, rubber	31/32 in. W, 11/32 in. H
18	KM961799	Screw, socket	Socket Screw, M4X16 ST 8.8 A2K DIN6912
19	DEE0725726	Washer, lock	Spring washer, M4 A2B DIN128A
20	KM841816H01	Ring, snap	External, 9 mm
21	KM841817H01	Bearing, ball	Flanged, 9x17x5, double-shielded
22	KM3719098	Spacer, rubber	25x1
23	DEE0056663	Screw, hex	M10X40 ST 8.8, A3B, DIN933
24	DEE2173051	Nut	C45-FE/ZN8B
25	US96582001	Sensor	12MM PROX, HRSS
26	US96424010	Cable assembly	4CON, SHLD, L=10M
27	US45812007	Term, F	TAB, 22-18, .020 X.187

5025326 (2011-05)

7.24 Traffic lights



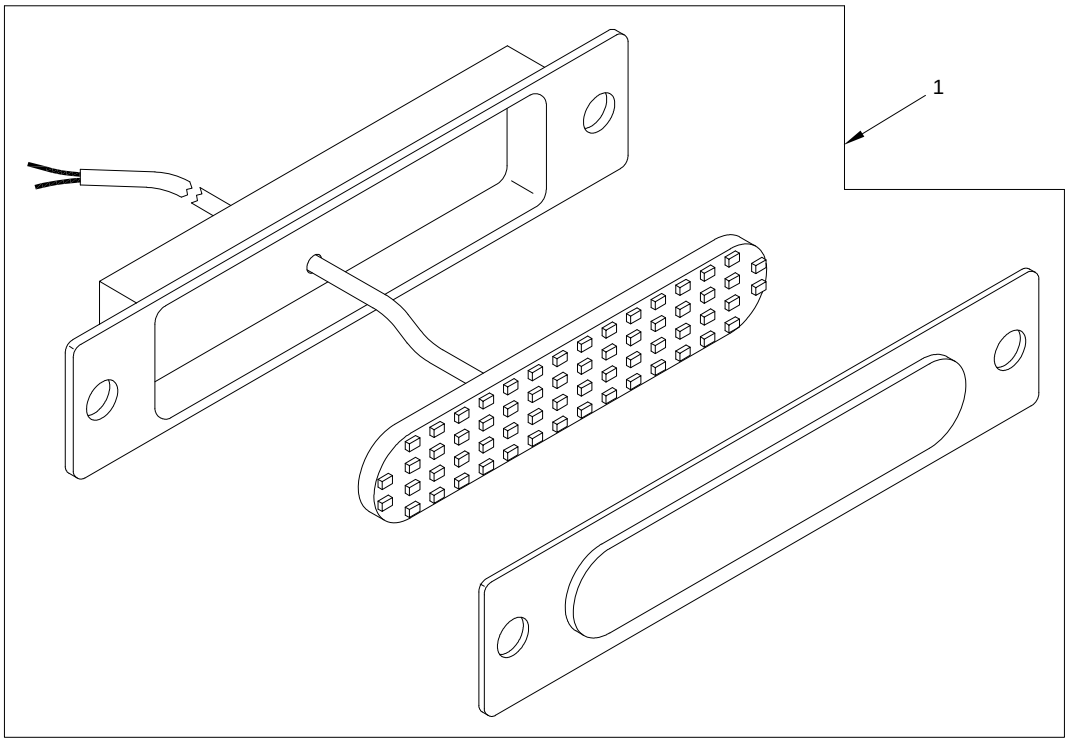
5021478(2009-09)
8A-001162(2009-05)

Table 64: Traffic lights - inclined solid balustrade

KEY	PART NO.	PARTNAME	REMARK
1	KM865812G01	Traffic light assembly	304 stainless steel, RTV
2	DEE4005568	Traffic light	Red, F1N, RD70, 12-28V, AC/DC
3	DEE4012485	Traffic light	Green, F51N RD70 12-28VAC/DC
4	KM5086090G01	Fastening parts	Traffic lights, E3X
5	US68233001	Screw, OVL/PHL	No.10-32, 1/2, SS, tamper proof
6	US61511002	Nut, hex lock	With nylock, No.10-32
7	US49114006	Washer, flat	No.10, type A, W
8	KM865897G01	Plate, cover	Light direction cover, 304 SS
9	DEE4053478	Strap	RTV, 20x125
10	DEE4053479	Bushing	Threaded
11	DEE0726124	Screw, cylinder head	DIN 84, M4x35 A2B
12	DEE0057121	Nut, hex	DIN934-M4-8-A2B
13	US68722004	Washer, flat	M4, plated
14	DEE0725726	Washer, lock	M4

5021478-20265057 (2009-11)

7.25 Comb lights



5021490(2009-09)

Table 65: Comb lights

KEY	PART NO.	PARTNAME	REMARK
1	KM5070532H01	Comb lights	LED spot

5021490-20265057 (2009-11)

8 APPROVALS AND VERSION HISTORY

Compiled by:	Training and Product Information, Moline / Technical Writer	
Checked by:	Escalator Manufacturing / Engineering Manager	Charles Banks
Approved by:	Escalator Manufacturing / Engineering Manager	Charles Banks

Issue	Date	Description of change	Ref CR	Approved by
-	2009-12-18	First release		Charles Banks
-	2010-03-05	Revisions per owner feedback		Charles Banks
A	2011-02-10	Revisions per owner feedback		Charles Banks
B	2011-05-25	Revisions per owner feedback		Charles Banks

9 APPENDIX - PARTS PRICE LIST

SL Order : 8023427
Equipment Number : 20253146 Network Number :
Frontline Ref : 6013188

Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
000010	US_SL_LESC_MD_UNIT	LEGACY MOD ESCALATOR UNIT	1	PC
1 9060	US_ESC_MOD_ADMIN	COSTING MATL, ESC MOD ADMINI	1	PC
1 9070	US_ESC_MOD_FREIGHT	COSTING MATL, ESCALATOR FREI	1	PC
1 9080	US_ESC_MOD_ENG	COSTING MATL, MOD ESC ENG	1	PC
1 9090	US_ESC_MOD_MATL	ESCALATOR MOD MATERIAL	1	PC
000020	US_ESC_MOD_ADMIN	COSTING MATL, ESC MOD ADMINI	1	PC
000030	US_ESC_MOD_FREIGHT	COSTING MATL, ESCALATOR FREI	1	PC
000040	US_ESC_MOD_ENG	COSTING MATL, MOD ESC ENG	1	PC
000050	US_ESC_MOD_MATL	ESCALATOR MOD MATERIAL	1	PC
000060	US_EMOD_UPPER_SUB	ECOMOD UPPER SUB ASSEMBLY	1	PC
1 0010		US_EMOD_UPPER_SUB	1	PC
		ADDITIONAL ELECTRICAL WIRING		
1	KM864906H01	PROTECTOR, ENCODER WIRING	1	PC
1 0040		BRAKE/MONITOR	1	PC
1	US96585001	BRAKE,SPLINE MAGNET	1	PC
1 0060		CROSSMEMBER REINFORCEMENT	1	PC
		DEMARCATION LIGHTING MTG UPPER		
1	US97758004	BRACKET,2 DEMARC LIGHT MNT,SEPTA,1 DRIVE	1	PC
1	KM4064984H02	BRACKET,DEMARC. LIGHT MNT,1 LIGHT,SEPTA	1	PC
1	DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B DIN933	8	PC
1 0100		DRAWINGS	1	PC
		FIXED TRANS ASSYS		
1	KM5062317	DRIVE, SINGLE, 60, CFG#14111100002	1	PC
1 0130		HANDRAIL DRIVE SHEAVE SPACER	1	PC

1	KM5075849H02	SPACER, WESTINGHOUSE, M100		2	PC
1	KM5070689H01	ANGLE	R20	2	PC
1	KM3711096	LOCK SCREW,M10X25 ST 8.8 A3B DIN603		10	PC
1	DEE0057199	HAMMER HEAD SCREW,M10X25 ST 5.6 A3B		10	PC

SL Order : 8023427
Equipment Number : 20253146 Network Number :
Frontline Ref : 6013188

Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
1	KM280167	NUT,WULOCK M10 8 ST A3G	20	PC
1	KM5070690H01	BRACKET LH	R20 2	PC
1	KM5070691H01	BRACKET, RH, INDOOR	2	PC
1	KM245826	BOLT, CARRIAGE, M12x40 DIN603-5.8A3G	4	PC
1	KM247143	FLAT WASHER,M12 ST A3G DIN9021	4	PC
1	KM280168	NUT,WULOCK M12 8 ST A3G	4	PC
1 0240		HARDWARE FOR UPPER CURVE	1	PC
1	KM258788	HEX SCREW,M20X80 ST 10.9 BLACK DIN961	2	PC
1	KM245827	BOLT, CARRIAGE, M12x70 DIN603-5.8A3G	4	PC
2 0010	DEE2213576	HEX SCREW,M12X70 ST 8.8 A3B	4	PC
1	KM280168	NUT,WULOCK M12 8 ST A3G	4	PC
1	KM276431	THREADING SCREW,M10X20 ST 8.8 A3G	4	PC
1	KM274933	LOCK SCREW,M12X40 ST 8.8 A3E	4	PC
1 0300		HDWARE FOR MOUNTING TORQUE A	1	PC
1	DEE2213576	HEX SCREW,M12X70 ST 8.8 A3B DIN933	2	PC
1	DEE2213576	HEX SCREW,M12X70 ST 8.8 A3B DIN933	2	PC
1	DEE0057130	HEX NUT,M12 8 ST A3B DIN934	2	PC
1	DEE0460212	HEX SCREW,M24X80 ST 10.9 DIN933	2	PC
1	DEE2781955	WASHER,40X25X3.6MM ST	4	PC

1		KM5071525H04	SCREW LOCK FLUESSIG MITTELFEST LV	1	PC
2	0010	DEE0900257	OMNIFIT SECURING AGENT	0.040	KG
3	0010	US91476004	ADHESIVE,REMOVABLE,250ML	4.170	PC
1		DEE0901865	Working instruction - screw lock liquid	1	PC
1	0380		MISC	1	PC
1		KM5077423G05	CROSSMEMBER, UPPER, INCLINE, 600	1	PC
1	0400		SHIPPING	1	PC
1		US94098002	PLATE,SERIAL NUMBER	1	PC
1	0420		SHIPPING CONTAINERS	1	PC

SL Order : 8023427
Equipment Number : 20253146 Network Number :
Frontline Ref : 6013188

Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	KM879330H02	SHIPPING PALLET, 58"x120", TRACK SUB	1	PC
1 0440		TORQUE PLATE	1	PC
1	KM5075345H01	TORQUE PLATE,SINGLE,30-2, R1.5	1	PC
1	KM196311	HEX SCREW,M5X10 ST 8.8 A3G DIN933	8	PC
1 0470		TRUSS INTERFACE ATTACHMENT	1	PC
		TRUSS INTERFACE PARTS		
1	US105606K01	WH100 INTERFACE ANGLE - ULH	1	PC
1	US105612K01	WH100 INTERFACE ANGLE - ULH	1	PC
1	US105613K01	WH100 INTERFACE ANGLE - URH	1	PC
1	US105607K01	WH100 INTERFACE ANGLE - URH	1	PC
1	US105650K01	WH100 INTERFACE ANGLE - ULH	1	PC
1	US105651K01	WH100 INTERFACE ANGLE - URH	1	PC
1	USP39633K01	WH100 INTERFACE BRACKET - ULH	1	PC
1	USP39634K01	WH100 INTERFACE BRACKET	1	PC
1	DEE0056672	HEX SCREW,M12X40 ST 8.8 A3B DIN933	50	PC

1		KM277230	WASHER, A13 ST A3F DIN125	50	PC
1		KM280168	NUT,WULOCK M12 8 ST A3G	50	PC
1	0600		UPPER-CURVE MPB	1	PC
			CURVE >TSUB		

BRACKETS

1		KM5077675H01	BRACKET, MULTIPURPOSE, UPPER CURVE	4	PC
2	0010	KM5077675H02	BRACKET, MULTIPURPOSE, UPPER	4	PC
1		KM5077688H01	BRACKET, MPB SUPPORT, UPPER CURVE	4	PC
1		KM5077695H01	BRACKET, MULTIPURPOSE, INCLINE, RETURN	2	PC
1		KM887460H02	SKIRT MOUNT BRACKET NARROW CHORDS SOLID	2	PC
1	0660		BG-17, AG-10 HANDRAIL GUIDE	1	PC
1		KM5077454G01	ROLLER ASM. HANDRAIL TAKE UP, LH	1	PC
2	0001	DEE2173045	ROLLER -RTV-A3K SCHWARZ	9	PC
3	0001	DEE2218790	ROLLER -NZ 2173045-3 T1-A3K	1	PC

SL Order : 8023427
Equipment Number : 20253146 Network Number :
Frontline Ref : 6013188

Item Level	Material Sub-Item	Technical Details Text	Qty	UoM
3 0002	US16604	BEARING,BALL,SEALED,1 ROW	1	PC
2 0002	DEE1563846	STEEL HNDRL RLLR W/O STUD	1	PC
2 0003	KM247858	BALL BEARING, DEEP GROOVE, 6	1	PC
3 0010	US16604	BEARING,BALL,SEALED,1 ROW	1	PC
2 0004	KM5077455G01	PLATE ASM. HANDRAIL TAKE UP,	1	PC
2 0005	DEE0012488	CIRCLIP DIN-0000472-47X1.75-	1	PC
2 0006	KM272825	CIRCLIP, DIN471-20X1.2	10	PC
1	KM5077457G01	ROLLER ASM. HANDRAIL TAKE UP, RH	1	PC
2 0001	DEE2173045	ROLLER -RTV-A3K SCHWARZ	9	PC

3	0001	DEE2218790	ROLLER -NZ 2173045-3 T1-A3K	1	PC
3	0002	US16604	BEARING,BALL,SEALED,1 ROW	1	PC
2	0002	DEE1563846	STEEL HNDRL RLLR W/O STUD	1	PC
2	0003	KM247858	BALL BEARING, DEEP GROOVE, 6	1	PC
3	0010	US16604	BEARING,BALL,SEALED,1 ROW	1	PC
2	0004	KM5077458G01	ROLLER ASM. HANDRAIL TAKE UP	1	PC
2	0005	DEE0012488	CIRCLIP DIN-0000472-47X1.75-	1	PC
2	0006	DEE0012452	CIRCLIP DIN-0000471-20X1.2	9	PC
1		US69546001	SCREW,LOCKING,SKID BAR	6	PC
1		KM196063	HEX SCREW,M10X70 ST 8.8 A3G DIN933	6	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	6	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	6	PC
1		KM247568	FLAT WASHER,M10 ST A3E DIN9021	6	PC
1		KM5071386H01	BUSHING R20	6	PC
1		KM5077459G01	BRACKET ASM. HANDRAIL, LH	1	PC
1		KM5077462G01	BRACKET ASM. HANDRAIL, RH	1	PC
1		KM5077524H03	THREADED ROD, M12, L=500	2	PC
2	0010	US68734200	THREADED ROD,M12,L=2000MM	0.500	PC
1		KM245661	FLAT WASHER, A13 ST A3G DIN125	4	PC

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Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
2	0010 DEE0063701	FLAT WASHER,M12 ST 140HV A3B	4	PC
1	KM280168	NUT,WULOCK M12 8 ST A3G	2	PC
1	DEE0057130	HEX NUT,M12 8 ST A3B DIN934	4	PC
1	KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	4	PC
1	KM280167	NUT,WULOCK M10 8 ST A3G	4	PC

1		KM5077504G01	BRACKET ASM, HANDRAIL	2	PC
1		KM5077523H01	PLATE, HANDRAIL TAKEUP	2	PC
2	0010	KM5077523H02	PLATE, HANDRAIL TAKEUP, OUTD	2	PC
1		DEE0054405	HHCS,M8X25 DIN 933,A2B	4	PC
1		KM245331	WASHER 8.4 DIN125-A3G	4	PC
1		DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B DIN933	4	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	4	PC
1		KM5071169G01	GUIDE, HANDRAIL,30/35,BOW,TOP,INDOOR	2	PC
1		KM5071696G03	ROLLER, ECO3000 2.0	2	PC
2	0001	KM5076345G01	ROLLER	2	PC
3	0010	US16604	BEARING,BALL,SEALED,1 ROW	4	PC
2	0002	KM5071695H01	BRACKET	2	PC
2	0003	DEE0057111	FLAT WASHER,M8 ST A3E DIN734	4	PC
2	0004	US61113003	SCREW,HHC/G5,5/16-18,3/4"	4	PC
2	0005	US44486	SPACER,HANDRAIL WHEEL	4	PC
2	0006	US44485	SHAFT,ROLR CLSTR,CRYS,2000	2	PC
1		KM3711096	LOCK SCREW,M10X25 ST 8.8 A3B DIN603	4	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	4	PC
1		DEE3691555	HANDRAIL ROLLER GUIDE	2	PC
2	0001	KM3698893	BUSHING,9SMNPB28	2	PC
2	0002	KM276402	HAMMER HEAD SCREW,M10X60	2	PC
2	0003	DEE1389282	FLAT WASHER,M10 ST A3B DIN12	2	PC
2	0004	DEE0530815	WING NUT,M10 ST 8.8 A3B DIN3	2	PC

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Level	Sub-Item	Text		

2	0005	DEE0057039	HEX NUT,M10 4 ST A3B DIN439B	2	PC
2	0006	DEE0012445	CLIP,CIR,DIN 471-15X1	4	PC
2	0010	DEE0274876	DEEP GROOVE BALL BEARING,600	2	PC
1		KM5075359H01	BRACKET HANDRAIL R20	2	PC
1		KM257344	LOCK SCREW,M8X20 ST 4.6 A3G DIN603	4	PC
1		KM281565	HEX NUT,M8 8 A2B	4	PC
1		KM5071592G01	HANDRAIL ROLLER, ULH/LRH, MID LH, INDOOR	1	PC
2	0001	KM5071592G02	HANDRAIL ROLLER, ULH/LRH, MI	1	PC
1		KM5071594G01	HR ROLLER LOW LE, UPP RI, MID RI, IN R20	1	PC
2	0001	KM5071594G02	HANDRAIL ROLLER, URH/LLH, MI	1	PC
1		KM3711096	LOCK SCREW,M10X25 ST 8.8 A3B DIN603	2	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	2	PC
1	1010		HARDWARE:MPB >HRAIL GUI	1	PC
UP					
1		KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	8	PC
1		DEE0056662	HEX SCREW,M10X35 ST 8.8 A3B DIN933	4	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	12	PC
1		KM247568	FLAT WASHER,M10 ST A3E DIN9021	8	PC
1		KM5075348H01	SPACER, HANDRAIL PRESS	4	PC
1		KM186825	SPRING PIN, 4X24 DIN1481	8	PC
1	1080		>TSUB	1	PC
HARDWARE:MPB					
1		KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	24	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	24	PC
1		KM186825	SPRING PIN, 4X24 DIN1481	16	PC
1	1120		RETURN CHAIN & TRAIL TRACK S	1	PC
1		DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B DIN933	16	PC
1		DEE2173051	NUT C45-FE/ZN8B	4	PC
1		DEE8403763	LOCK WASHER,16X11X2MM A3C	16	PC

1		DEE1971307	STRAP -S235JRG2 FE/ZN8B	2	PC

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Item		Material	Technical Details	Qty	UoM
Level		Sub-Item	Text		
2	0001	DEE1758258	COIL STEEL BAND DIN-0001016-	0.400	M
1		DEE2231223	BUTT STRAP S235JRG2-FE/ZN8B	2	PC
2	0001	DEE2213599	HS EN-0010051-60X4-COIL-S235	0.400	M
1	1180		RETURN CHAIN & TRAIL TRACK S	1	PC
1		DEE1764383	THREADED PLATE -S235JRG2-FE/ZN8B	2	PC
2	0001	DEE0050466	FLAT STEEL DIN-0001017-25X8-	0.060	M
1		KM5063315	SQUARE NUT,M10 S355J2G3 FE/ZN8B	2	PC
1		KM5062102	BRACKET GGG-40-FE/ZN8B	4	PC
1		DEE0056663	HEX SCREW,M10X40 ST 8.8 A3B DIN933	4	PC
1		DEE8403763	LOCK WASHER,16X11X2MM A3C	4	PC
1	1240		TRACKS & EXTRUSION	1	PC
1		KM5077136H33	GUIDE, WH100	1	PC
2	0010	KM5077136H07	GUIDE	1	PC
3	0010	DEE1786953	PROFILE -40X31X3-FEE250G-Z27	2.400	M
1		KM5077142H33	GUIDE, WH100	1	PC
2	0010	KM5077142H07	GUIDE	1	PC
3	0010	DEE1786953	PROFILE -40X31X3-FEE250G-Z27	2.400	M
1		KM5077137H33	GUIDE, WH100	1	PC
2	0010	KM5077137H07	GUIDE	1	PC
3	0010	DEE1787432	TRACK,3MM LIP CHAIN GD	6.000	M
1		KM5077143H33	GUIDE, WH100	1	PC
2	0010	KM5077143H07	GUIDE	1	PC

3	0010	DEE1787432	TRACK,3MM LIP CHAIN GD	6.000	M
1		KM5077138H19	GUIDE 30-2 R1500 UPCRV	1	PC
2	0010	KM5077138H07	EXTRUSION, STEP GUIDE	1	PC
3	0010	KM5061527	PROFILE 5063062 3.66LG-HART	3.660	M
4	0010	KM5061483	PROFILE 5063062 6000LG-ALMGS	1.000	M
1		KM5077139H19	COUNTERGUIDE 30-2 R1500 UPCRV	1	PC

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Item Level	Material Sub-Item	Technical Details Text	Qty	UoM
2 0010	KM5077139H07	EXTRUSION, HOOK HOLDDOWN	1	PC
3 0010	US96339Q00	6063-T6 ALUM ALLOY EXTRUSION	1	PC
1	KM5077140H19	GUIDE 30-2 R1500 UPCRV	1	PC
2 0010	KM5077140H07	EXTRUSION, STEP GUIDE	1	PC
3 0010	KM5061527	PROFILE 5063062 3.66LG-HART	3.660	M
4 0010	KM5061483	PROFILE 5063062 6000LG-ALMGS	1.000	M
1	KM5077141H19	COUNTERGUIDE 30-2 R1500 UPCRV	1	PC
2 0010	KM5077141H07	EXTRUSION, HOOK HOLDDOWN	1	PC
3 0010	US96339Q00	6063-T6 ALUM ALLOY EXTRUSION	1	PC
1	KM5077153H01	BRACKET	2	PC
1	KM5077153H02	BRACKET	2	PC
1	KM5077536H02	BRACKET, TRACK SUB	4	PC
1	DEE0056662	HEX SCREW,M10X35 ST 8.8 A3B DIN933	8	PC
1	KM280167	NUT,WULOCK M10 8 ST A3G	8	PC
1	DEE2173051	NUT C45-FE/ZN8B	4	PC
1	DEE1764383	THREADED PLATE -S235JRG2-FE/ZN8B	4	PC
2 0001	DEE0050466	FLAT STEEL DIN-0001017-25X8-	0.120	M
1	DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B DIN933	8	PC

1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	16	PC
1		KM5077219H01	BRACKET	2	PC
1		KM5063145	STRAP S235JRG2-FE/ZN8B R95	2	PC
1		DEE0054405	HHCS,M8X25 DIN 933,A2B	8	PC
1		DEE0536953	SOCKET SCREW,M8X16 ST 8.8 A2B DIN912	4	PC
1		KM281565	HEX NUT,M8 8 A2B	4	PC
1		DEE8403762	RETAINING WASHER,13X8X1MM A3C	12	PC
1		DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B DIN933	4	PC
1	1490		STEP GUIDE SPLICES	1	PC
1		KM5072667H01	BRACKET R20	6	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	KM5072669H01	BRACKET R20	2	PC
1	KM3685980	HAMMER HEAD SCREW,M12X30 ST 8.8 A3B	20	PC
1	KM280168	NUT,WULOCK M12 8 ST A3G	20	PC
1	1540	STEP GUIDE SUPPORT	1	PC
1	KM5072667H01	BRACKET R20	8	PC
1	KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	12	PC
1	KM280167	NUT,WULOCK M10 8 ST A3G	12	PC
1	KM3685980	HAMMER HEAD SCREW,M12X30 ST 8.8 A3B	12	PC
1	KM280168	NUT,WULOCK M12 8 ST A3G	12	PC
1	1600	UPPER CURVE	1	PC
		KM5077427G19 KM5077428G19		
1	KM5077427G19	WELDMENT TRACK SUB 30-2 R1500 ULH	1	PC
2	0010 KM5074014	PROFILE 5070931D10 6000LG-S2	2.060	M

1		KM5077428G19	WELDMENT TRACK SUB 30-2 R1500 URH	1	PC
2	0010	KM5074014	PROFILE 5070931D10 6000LG-S2	2.060	M
1		KM5075390G01	WELDMENT, CROSSMEMBER, 600	1	PC
1		US69546001	SCREW,LOCKING,SKID BAR	16	PC
1		DEE0056665	HEX SCREW,M10X50 ST 8.8 A3B DIN933	16	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	16	PC
1		KM249222	HEX NUT,M20X2.5 8 ST A3G DIN439	16	PC
1	1680		UPPER END, TRUSS HEAD	1	PC
1		KM5060026	GUIDE ENTRY ULH	1	PC
1		KM5060027	GUIDE ENTRY URH	1	PC
1		KM3689495	GUIDE ENTRY, LLH	1	PC
1		KM3689496	GUIDE, ENTRY, LRH	1	PC
1		KM5060960	SUPP.PLATE/PAD 0.5X25X170 D-135 E-11/18	2	PC
1		KM5060961	SUPP.PLATE/PAD 0.2X25X170 E-11/18 ST1203	6	PC
1		DEE3698196	SPACER, SUPPORT PLATE, 0.5X25X140	2	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	KM3698192	SUPP.PLATE/PAD -0.2X25X140 D-100 E-11/18	6	PC
1	DEE0061806	SOCKET SCREW,M10X25 ST 8.8 A3B	6	PC
1	DEE0718523	SOCKET SCREW,M10X40 ST 8.8 A3B DIN912	12	PC
1	KM184226	HEX SCREW, M10X20 ST 8.8 A3G DIN912	2	PC
1	DEE8403763	LOCK WASHER,16X11X2MM A3C	2	PC
1 1810		HARDWARE: HEAD BRACKETS >	1	PC
1	KM3670349	LOCK SCREW,M10X35 ST 8.8 A3B DIN603	26	PC
1	KM280167	NUT,WULOCK M10 8 ST A3G	26	PC

1		KM208629	HEX SCREW, M10X20 ST 4.6 A3G DIN933	4	PC
2	0010	DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B	4	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	4	PC
1		KM186825	SPRING PIN, 4X24 DIN1481	16	PC
1		KM5077750H01	PLATE, SKIRT SUPPORT	2	PC
1	1880		HARDWARE:HEAD >TS BRACKETS	1	PC
1		KM208629	HEX SCREW, M10X20 ST 4.6 A3G DIN933	6	PC
2	0010	DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B	6	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	6	PC
1		KM186825	SPRING PIN, 4X24 DIN1481	8	PC
1	1920		HARDWARE:LANDING BRACKETS	1	PC
1		KM208629	HEX SCREW, M10X20 ST 4.6 A3G DIN933	6	PC
2	0010	DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B	6	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	6	PC
1		KM186825	SPRING PIN, 4X24 DIN1481	2	PC
1	1960		UPPER-HEAD MPB HEAD >TSUB BRACKETS	1	PC
1		KM5077698G01	BRACKET ASM, MPB SUPPORT, LH	1	PC
1		KM5077699G01	BRACKET ASM, MPB SUPPORT, RH	1	PC
1	2000		HANDRAIL DRIVE CLUSTER	1	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	KM5075883G01	ASSEMBLY, ROLLER CLUSTER	2	PC
2 0010	DEE2173045	ROLLER -RTV-A3K SCHWARZ	16	PC

3	0001	DEE2218790	ROLLER -NZ 2173045-3 T1-A3K	2	PC
3	0002	US16604	BEARING,BALL,SEALED,1 ROW	2	PC
2	0020	KM5075906H01	AXLE, ROLLER CLUSTER	4	PC
2	0030	KM5075907H01	AXLE, ROLLER CLUSTER	16	PC
2	0040	KM5075908H01	SPACER, ROLLER CLUSTER	32	PC
2	0050	KM5075909H01	PLATE, ROLLER CLUSTER	36	PC
2	0060	KM104489	RETAINING RING FOR SHAFT, SH	40	PC
2	0070	DEE0067975	HEX SCREW,M10X60 ST 8.8 A3B	4	PC
1	2020		REPLACE ROLLER CLUSTER BRACK	1	PC
1		KM5092253H02	BRACKET, ROLLER CLUSTER	2	PC
1	2040		HARDWARE:INLET CLUSTER->SUPP	1	PC
1		US69546001	SCREW,LOCKING,SKID BAR	2	PC
1		KM196063	HEX SCREW,M10X70 ST 8.8 A3G DIN933	2	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	4	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	2	PC
1		DEE0063314	HEX SCREW,M12X35 ST 8.8 A3B DIN933	2	PC
1		KM280168	NUT,WULOCK M12 8 ST A3G	2	PC
1	2110		HARDWARE:SUPPORT BRACKET1->S	1	PC
1		KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	4	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	8	PC
1		KM186825	SPRING PIN, 4X24 DIN1481	2	PC
1	2150		TO TRACKSUB	1	PC
1		KM5075915H01	SPACER, HRAIL TENSION	2	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	2	PC
1		KM5075946G01	ASSY, ROLLER CLUSTER SUPPORT	2	PC
1		KM3711096	LOCK SCREW,M10X25 ST 8.8 A3B DIN603	2	PC

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Item		Material	Technical Details	Qty	
Level		Sub-Item	Text		UoM
1		KM280167	NUT,WULOCK M10 8 ST A3G	2	PC
1	2210		BG-17, AG-14 HANDRAIL GUIDE	1	PC
			INLET CLUSTER		
1		KM925302G01	WESTINGHOUSE HANDRAIL INLET CLUSTER, UL	1	PC
2	0001	KM925301G01	WESTINGHOUSE, HANDRAIL INLET	1	PC
2	0002	DEE2173045	ROLLER -RTV-A3K SCHWARZ	6	PC
3	0001	DEE2218790	ROLLER -NZ 2173045-3 T1-A3K	1	PC
3	0002	US16604	BEARING,BALL,SEALED,1 ROW	1	PC
2	0003	KM272825	CIRCLIP, DIN471-20X1.2	6	PC
1		KM925302G02	WESTINGHOUSE HANDRAIL INLET CLUSTER, UR	1	PC
2	0001	KM925301G02	WESTINGHOUSE, HANDRAIL INLET	1	PC
2	0002	DEE2173045	ROLLER -RTV-A3K SCHWARZ	6	PC
3	0001	DEE2218790	ROLLER -NZ 2173045-3 T1-A3K	1	PC
3	0002	US16604	BEARING,BALL,SEALED,1 ROW	1	PC
2	0003	DEE0012452	CIRCLIP DIN-0000471-20X1.2	6	PC
1		DEE2173045	ROLLER -RTV-A3K SCHWARZ	6	PC
2	0001	DEE2218790	ROLLER -NZ 2173045-3 T1-A3K	6	PC
2	0002	US16604	BEARING,BALL,SEALED,1 ROW	6	PC
1		KM272825	CIRCLIP, DIN471-20X1.2	6	PC
1	2270		SUPPORT BRACKET 1	1	PC
1		KM5075837H01	BRACKET, HR INLET CLUSTER MOUNT, ULH	1	PC
2	0010	KM5075837H02	BRACKET, HR INLET CLUSTER MO	1	PC
1		KM5075844H01	BRACKET, HR INLET CLUSTER MOUNT, URH	1	PC
1	2300		SUPPORT BRACKET 2	1	PC
1		KM5077216G01	BRACKET ASM, HR INLET CLUSTER MOUNT,ULH	1	PC
1		KM5077217G01	BRACKET ASM, HR INLET CLUSTER MOUNT,URH	1	PC

1		KM5075838H01	BRACKET, HR INLET CLUSTER MOUNT	2	PC
2	0010	KM5075838H02	BRACKET, HR INLET CLUSTER MO	2	PC

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1	KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	4	PC
1	KM280167	NUT,WULOCK M10 8 ST A3G	4	PC
1 2360		TO TENSIONER	1	PC
1	KM5075915H01	SPACER, HRAIL TENSION	2	PC
1	KM280167	NUT,WULOCK M10 8 ST A3G	2	PC
1	KM5077156G01	BRACKET ASM. HANDRAIL, LH	1	PC
1	KM5077157G01	BRACKET ASM. HANDRAIL, RH	1	PC
1	KM5071386H01	BUSHING R20	2	PC
1	DEE0108592	ANGLE JOINT,DIN-0071802-AS 16	2	PC
1	KM280167	NUT,WULOCK M10 8 ST A3G	2	PC
1	DEE2700531	STUD DIN-0000976-M10X650-B-5.8-A3B	2	PC
2 0010	US68733200	THREADED ROD,M10,L=2000MM	0.666	PC
1	US2881049	SPRING,COMP,750LBS,2-7/8"L	2	PC
1	DEE1737240	SPRING SEAT, POLYAMID	2	PC
1	DEE1737241	PLASTIC SPRING SEAT 2-SIDED	2	PC
1	DEE0056672	HEX SCREW,M12X40 ST 8.8 A3B DIN933	2	PC
1	KM245661	FLAT WASHER, A13 ST A3G DIN125	2	PC
2 0010	DEE0063701	FLAT WASHER,M12 ST 140HV A3B	2	PC
1	KM280168	NUT,WULOCK M12 8 ST A3G	2	PC
1	DEE0057127	HEX NUT,M10 8 ST A3B DIN934	6	PC
1 2520		LANDING BRACKETS	1	PC

1		KM5077702G01	BRACKET ASM, LANDING SUPPORT, LH	1	PC
1		KM5077703G01	BRACKET ASM, LANDING SUPPORT, RH	1	PC
1	2550		UPPER MISSING STEP DETECTOR	1	PC
1		DEE3685984	BRACKET, ANGLE	1	PC
1		DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B DIN933	2	PC
1		DEE1954168	PLATE,M10 THREADED,8MM TRK	2	PC
1		DEE8403763	LOCK WASHER,16X11X2MM A3C	2	PC

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Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
1	2600	MPBS IN HEAD	1	PC
1	KM5070861H02	BRACKET, HD, UPPER, FE/ZN8B	4	PC
1	KM5070866H01	BRACKET, HD, DIVIDED, UPPER	4	PC
1	KM5070845H01	BRACKET HD R20	2	PC
1	KM5070846H01	BRACKET HD R20	2	PC
1	KM5075876G01	WELDMENT, SKIRT SUPPORT	2	PC
2	0010 KM5075876G02	WELDMENT, SKIRT SUPPORT, OUT	2	PC
1	KM3710265	LIMIT STOP POM	6	PC
1	2670	DROPPING THE UPPER PAN	1	PC
		UPPER TSUB RETURN TRACK SPLICE		
1	KM5070898H01	STRAP R20	2	PC
1	KM208629	HEX SCREW, M10X20 ST 4.6 A3G DIN933	4	PC
2	0010 DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B	4	PC
1	DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	4	PC
1	KM5070896H02	STRAP R20	2	PC
1	DEE0063269	HEX SCREW,M4X16 ST 8.8 A2B DIN933	2	PC
1	KM919768G01	TRACK MOUNTING, SPLICE TIGHTENER, ASM #6	2	PC

2	0001	KM5070897H02	STRAP R20		2	PC
2	0002	DEE0056661	HEX SCREW,M10X30 ST 8.8 A3B		4	PC
1		DEE8403763	LOCK WASHER,16X11X2MM A3C		4	PC
1	2760		UPPER TSUB UPPER LIP TRACK S		1	PC
1		KM5070898H01	STRAP R20		2	PC
1		KM208629	HEX SCREW, M10X20 ST 4.6 A3G DIN933		4	PC
2	0010	DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B		4	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A		4	PC
1		KM5070896H02	STRAP	R20	2	PC
1		DEE0063269	HEX SCREW,M4X16 ST 8.8 A2B DIN933		2	PC
1		KM919768G01	TRACK MOUNTING, SPLICE TIGHTENER, ASM #6		2	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
2 0001	KM5070897H02	STRAP R20	2	PC
2 0002	DEE0056661	HEX SCREW,M10X30 ST 8.8 A3B	4	PC
1	DEE8403763	LOCK WASHER,16X11X2MM A3C	4	PC
1 2840		UPPER TSUB RETRUN TRACK FLAT	1	PC
1	KM861954G01	MOUNTING	2	PC
2 0001	DEE1971307	STRAP -S235JRG2 FE/ZN8B	2	PC
3 0001	DEE1758258	COIL STEEL BAND DIN-0001016-	0.400	M
2 0002	DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B	8	PC
2 0003	DEE8403763	LOCK WASHER,16X11X2MM A3C	8	PC
2 0004	DEE2173051	NUT C45-FE/ZN8B	8	PC
1 2860		UPPER TSUB RETURN TRACK LIP	1	PC
1	KM861920G01	PLATE	2	PC

2	0001	DEE2231223	BUTT STRAP S235JRG2-FE/ZN8B	2	PC
3	0001	DEE2213599	HS EN-0010051-60X4-COIL-S235	0.400	M
2	0002	DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B	8	PC
2	0003	DEE8403763	LOCK WASHER,16X11X2MM A3C	8	PC
2	0004	DEE1764383	THREADED PLATE -S235JRG2-FE/	8	PC
3	0001	DEE0050466	FLAT STEEL DIN-0001017-25X8-	0.060	M
1	2880		WELDED PARTS FOR DRIVE KM507	1	PC
			UPPER, CURVE		
1		KM5075388H01	SPACER, CROSSMEMBER	4	PC
1		KM121582	HEX SCREW, M20X50 ST 8.8 A3G DIN933	2	PC
1		KM249222	HEX NUT,M20X2.5 8 ST A3G DIN439	2	PC
1	2930		UPPER, HEAD	1	PC
1		KM5077112G09	WELDMNT,DRIVE SUPPORT,L.H. OUTDOOR,L=102	1	PC
1		KM5077114G09	WELDMENT,DRIVE SUPPORT,RH OUT DOOR,L=102	1	PC
1		KM5077113G01	WELDMENT, DRIVE SUPPORT	1	PC
1		KM5077115G01	WELDMENT, DRIVE SUPPORT	1	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	DEE0061828	HEX SCREW,M16X60 ST 8.8 A3B DIN933	4	PC
1	DEE0057133	HEX NUT,M16 8 ST A3B DIN934	4	PC
1	DEE0119593	HEX SCREW,M20X90 ST 8.8 A3B DIN931	4	PC
1	DEE2778629	WASHER,FE/ZN8B	4	PC
1	KM5077561H01	BRACKET, RETURN TRACK SUPPORT	2	PC
000070	US_EMOD_LOWER_SUB	ECOMOD LOWER SUB ASSEMBLY	1	PC
1 0010		US_EMOD_LOWER_SUB	1	PC
		ADDITIONAL LOWER CROSSMEMBER		

BG-20 CHAIN GUIDE KM5077446C01
LOWER
CHAIN GUIDE, LOWER HEAD

1		KM5070939G03	CHAIN GUIDE HD LOW K-DIM. 81-120	R20	1	PC
2	0010	KM3698198	ANGLE BRACKET LINKS-S235JRG2		1	PC
2	0020	KM3698199	ANGLE BRACKET RECHTS-S235JRG		1	PC
2	0030	KM3691227	BUSHING -CUZN39PB3		12	PC
2	0040	KM5071875H03	CONNECTION K-DIM. 81MM-12		6	PC
2	0050	DEE0054399	HEX SCREW,M8X16 ST 8.8 A2B D		4	PC
2	0060	KM277140	SOCKET SCREW,M8X20 ST 8.8 A3		4	PC
2	0070	DEE0830811	CYL.HD.SCR. DIN-0006912-M8X2		8	PC
2	0080	KM184226	HEX SCREW, M10X20 ST 8.8 A3G		6	PC
1	0070		CHAIN TENSION MNT LOWER		1	PC
1		DEE2265427	BRACKET -RTV-S235JRG2-FE/ZN8B		2	PC
2	0001	DEE2213599	HS EN-0010051-60X4-COIL-S235		0.350	M
1		KM5069243H01	BRACKET		2	PC
1		DEE0933518	HAMMER HEAD SCREW,M8X20 ST 5.6 A2B		4	PC
1		KM281565	HEX NUT,M8 8 A2B		4	PC
1		KM5070689H01	ANGLE	R20	2	PC
1		KM3711096	LOCK SCREW,M10X25 ST 8.8 A3B DIN603		10	PC
1		DEE0057199	HAMMER HEAD SCREW,M10X25 ST 5.6 A3B		10	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G		20	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	KM5070690H01	BRACKET LH	R20 2	PC
1	KM5070691H01	BRACKET, RH, INDOOR	2	PC
1 0180		HARDWARE FOR LOWER CURVE	1	PC

1		KM258788	HEX SCREW,M20X80 ST 10.9 BLACK DIN961	2	PC
1		KM245827	BOLT, CARRIAGE, M12x70 DIN603-5.8A3G	4	PC
2	0010	DEE2213576	HEX SCREW,M12X70 ST 8.8 A3B	4	PC
1		KM280168	NUT,WULOCK M12 8 ST A3G	4	PC
1		KM276431	THREADING SCREW,M10X20 ST 8.8 A3G	4	PC
1		KM259182	HEX NUT,M20X1.5 8 ST A3G DIN439	2	PC
1		KM249222	HEX NUT,M20X2.5 8 ST A3G DIN439	2	PC
1		KM5075388H01	SPACER, CROSSMEMBER	4	PC
1	0260		HARDWARE FOR LOWER HEAD	1	PC
1		DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	6	PC
1		KM280168	NUT,WULOCK M12 8 ST A3G	8	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	12	PC
1		US69546001	SCREW,LOCKING,SKID BAR	6	PC
1		KM247811	HEX SCREW,M10X60 ST 8.8 A3G DIN931	6	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	6	PC
1		KM245826	BOLT, CARRIAGE, M12x40 DIN603-5.8A3G	8	PC
1		KM5077674H01	BUSHING	2	PC
1		KM196634	HEX SCREW,M10X120 ST 8.8 A3G DIN931	2	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	4	PC
1		DEE0057127	HEX NUT,M10 8 ST A3B DIN934	2	PC
1	0380		CHAIN GUIDE SPLICES, INCLINE	1	PC
1		KM5072669H01	BRACKET R20	2	PC
1		KM3685980	HAMMER HEAD SCREW,M12X30 ST 8.8 A3B	8	PC
1		KM280168	NUT,WULOCK M12 8 ST A3G	8	PC
1	0420		RETURN CHAIN TRACK SUPPORT H	1	PC

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Item	Material	Technical Details	Qty

Level		Sub-Item	Text		UoM
1		DEE2173051	NUT C45-FE/ZN8B	4	PC
1		DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	4	PC
1		DEE8403763	LOCK WASHER,16X11X2MM A3C	4	PC
1		DEE0056663	HEX SCREW,M10X40 ST 8.8 A3B DIN933	4	PC
1		DEE0703358	SUPPORT PLATE,PAD 5X32X35MM S235JRG2	4	PC
2	0001	DEE2213977	HS EN-0010051-35X5-COIL-S235	0.128	M
1		DEE0075124	SUPP.PLATE/PAD -1,50X32X35 D11 E21.5-ST1	12	PC
2	0001	DEE2247211	COIL STEEL BAND DIN-0001016-	0.384	M
1		DEE0075123	SUPP.PLATE/PAD -1X32X35 D11 E21.5-ST1203	12	PC
2	0001	DEE2247210	COIL STEEL BAND DIN-0001016-	0.384	M
1	0500		HANDRAIL GUIDE IN TRUSS, LOW	1	PC
1		KM5071599G01	ROLLER BOW, 30/35, BOTTOM, INDOOR, 2.0	2	PC
1		KM5077722H01	BRACKET, HANDRAIL	2	PC
1		KM5077723H01	BRACKET, HANDRAIL	2	PC
1		DEE0056662	HEX SCREW,M10X35 ST 8.8 A3B DIN933	4	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	4	PC
1		KM3711096	LOCK SCREW,M10X25 ST 8.8 A3B DIN603	4	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	4	PC
1		KM5071592G01	HANDRAIL ROLLER, ULH/LRH, MID LH, INDOOR	2	PC
2	0001	KM5071592G02	HANDRAIL ROLLER, ULH/LRH, MI	2	PC
1		KM5071594G01	HR ROLLER LOW LE, UPP RI, MID RI, IN R20	2	PC
2	0001	KM5071594G02	HANDRAIL ROLLER, URH/LLH, MI	2	PC
1		DEE3691555	HANDRAIL ROLLER GUIDE	2	PC
2	0001	KM3698893	BUSHING,9SMNPB28	2	PC
2	0002	KM276402	HAMMER HEAD SCREW,M10X60	2	PC
2	0003	DEE1389282	FLAT WASHER,M10 ST A3B DIN12	2	PC
2	0004	DEE0530815	WING NUT,M10 ST 8.8 A3B DIN3	2	PC

2	0005	DEE0057039	HEX NUT,M10 4 ST A3B DIN439B	2	PC

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Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
2	0006 DEE0012445	CLIP,CIR,DIN 471-15X1	4	PC
2	0010 DEE0274876	DEEP GROOVE BALL BEARING,600	2	PC
1	0610	HANDRAIL GUIDE IN TRUSS, LOW	1	PC
1	KM5071604G01	HANDRAIL ROLLER, 30/35,HEAD,BOTT, INDOOR	2	PC
1	0630	AMOUNT FOR 1 MPB in LOWER HE	1	PC
1	KM5077247H06	COUNTER GUIDE, LOW, 30-2, R1, LH	1	PC
2	0010 KM5077247H07	COUNTER GUIDE LOW, 30-2, R1	1	PC
3	0010 US96339Q00	6063-T6 ALUM ALLOY EXTRUSION	0.500	PC
1	KM5077248H06	COUNTER GUIDE, LOW, 30-2, R1, RH	1	PC
2	0010 KM5077248H07	COUNTER GUIDE LOW, 30-2, R1	1	PC
3	0010 US96339Q00	6063-T6 ALUM ALLOY EXTRUSION	0.500	PC
1	KM5071874G01	UP THRUST DEVICE R20	6	PC
2	0001 DEE2429386	GUIDE RAIL,RTV-FE/ZN8B	6	PC
2	0002 US69546001	SCREW,LOCKING,SKID BAR	12	PC
2	0003 KM281565	HEX NUT,M8 8 A2B	18	PC
2	0004 DEE1909821	HAMMER HEAD SCREW,M8X80 ST 5	6	PC
2	0005 DEE0056992	FLAT WASHER,M16 ST 140HV A3B	6	PC
2	0006 DEE2720726	BUSHING,RTV-9SMNPB28K-A3B	6	PC
2	0007 DEE0790684	SPRING, FED-ST-DR A	6	PC
1	DEE2209579	LIMIT STOP,ST37K-A3B	6	PC
2	0001 DEE0051714	ROUND STEEL DIN-0000668-16-S	0.150	M
1	0680	LOWER MISSING STEP DETECTOR	1	PC
1	KM5060936	BRACKET	1	PC

1		DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B DIN933	2	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	2	PC
1		DEE0056988	FLAT WASHER,M10 ST 140HV A3E DIN125B	2	PC
1	0730		LOWER RETURN CHAIN TRACK AT	1	PC
1		KM5070895H01	GUIDE 2-STEPS LI R20	1	PC

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Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
2	0010 DEE2144474	PROFILE -RTV 48X35X2-FEE250G	1.000	M
3	0010 US96461Q00	SAE 1008/1010 HD GALV TRK,58	0.180	PC
1	KM5070895H02	GUIDE 2-STEPS RE	R20 1	PC
2	0010 DEE2144474	PROFILE -RTV 48X35X2-FEE250G	1.000	M
3	0010 US96461Q00	SAE 1008/1010 HD GALV TRK,58	0.180	PC
1	0760	BG-15 REVERSER KM5075723C02	1	PC
1	KM5071520G03	RETURN STATION ,TYPE 60, INDOOR	1	PC
2	0001 KM5071520G02	RETURN STAT.PREASSEMBLY TYP	1	PC
3	0001 KM5071520G01	RETURN STATION ,TYPE 100, IN	1	PC
4	0001 KM5070967H01	AXLE TYPE-100 INDOOR	1	PC
1	KM5069238H01	ANGLE OUTDOOR	2	PC
1	KM5070964H01	SLIDE STRIP, INDOOR	2	PC
1	DEE0080731	FLAT WASHER,M12 ST A3E DIN7349	2	PC
1	KM280168	NUT,WULOCK M12 8 ST A3G	4	PC
1	DEE0063314	HEX SCREW,M12X35 ST 8.8 A3B DIN933	2	PC
1	DEE2753728	HAMMER HEAD SCREW,M12X35 ST 8.8 A3B	4	PC
1	DEE0056662	HEX SCREW,M10X35 ST 8.8 A3B DIN933	6	PC
1	DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	6	PC

1		KM280167	NUT,WULOCK M10 8 ST A3G	6	PC
1		KM5070970G01	CHAIN SECURING, INDOOR	2	PC
2	0001	KM5070971H01	BRACKET	2	PC
2	0002	KM5070972H01	STRAP	8	PC
2	0003	KM5073152H01	connecting piece	2	PC
2	0004	KM274931	SCREW,WULOCK M10X25 ST 8.8 A	6	PC
2	0005	DEE1389282	FLAT WASHER,M10 ST A3B DIN12	6	PC
1		KM5071524H01	LUBRICANT,MINERAL COMPOUND,ANTI-RUST	1	PC
2	0010	DEE0244905	WHITE LITHIUM GREASE 16 OZ.-	0.033	PC
1		KM5071525H01	SCREW THREAD LOCK FLUID, LV	1	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
2 0010	DEE0900257	OMNIFIT SECURING AGENT	0.005	KG
3 0010	US91476004	ADHESIVE,REMOVABLE,250ML	4.170	PC
1	DEE0901865	Working instruction - screw lock liquid	1	PC
1	DEE0054168	SPRING PIN,6X32MM ST DIN1481	4	PC
1 0920		ASSY, SPRING SCALE, RETURN S	1	PC
		ASSEMBLE SIMILAR TO DWG 821605D01		
1 0930		ASSEMBLE SIMILAR TO DWG 8216	1	PC
1	KM821605G01	ASSY,SPRING SCALE,RETURN STATION,RTV-HDB	1	PC
2 0001	KM821708H01	SCALE,SPRG RTRN STATION,HDB	2	PC
2 0003	DEE2484997	INDICATOR RETURN STATION SPR	2	PC
2 0010	DEE0057201	HAMMER HEAD SCREW,M10X30 ST	4	PC
2 0011	US68736005	NUT,LOCK,HEX,METRC.M10X1.5	4	PC
2 0012	DEE0063677	FLAT WASHER,M10 ST A3E DIN73	4	PC
1	KM5077243H06	CHAIN GUIDE LOW CURVE 30-2 R1 LH	1	PC

2	0010	KM5061527	PROFILE 5063062 3.66LG-HART	3.660	M
3	0010	KM5061483	PROFILE 5063062 6000LG-ALMGS	1.000	M
1		KM5077244H06	CHAIN GUIDE LOW CURVE 30-2 R 1 RH	1	PC
2	0010	KM5061527	PROFILE 5063062 3.66LG-HART	3.660	M
3	0010	KM5061483	PROFILE 5063062 6000LG-ALMGS	1.000	M
1		KM5072667H01	BRACKET R20	6	PC
1		KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	6	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	6	PC
1		KM3685980	HAMMER HEAD SCREW,M12X30 ST 8.8 A3B	6	PC
1		KM280168	NUT,WULOCK M12 8 ST A3G	6	PC
1		KM5063388	BRACKET 50X148 S235JRG2-LV2421470 R9	2	PC
1		KM3685980	HAMMER HEAD SCREW,M12X30 ST 8.8 A3B	2	PC
1		KM280168	NUT,WULOCK M12 8 ST A3G	2	PC
1		DEE0057201	HAMMER HEAD SCREW,M10X30 ST 5.6 A3B	2	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	KM280167	NUT,WULOCK M10 8 ST A3G	2	PC
1	KM5071877H01	BRACKET LI R20	1	PC
1	KM5071880H01	BRACKET RE R20	1	PC
1	DEE0057201	HAMMER HEAD SCREW,M10X30 ST 5.6 A3B	2	PC
1	KM280167	NUT,WULOCK M10 8 ST A3G	2	PC
1	KM5071881H01	STRAP R20	2	PC
1	DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B DIN933	2	PC
1	DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	2	PC
1	DEE8403763	LOCK WASHER,16X11X2MM A3C	2	PC

1		DEE0536953	SOCKET SCREW,M8X16 ST 8.8 A2B DIN912	4	PC
1		KM5077539H01	TRAIL WHEEL HOLD DOWN	2	PC
1		KM276105	TAPPING SCREW,M4.8X25 A2F DIN7983	12	PC
1	1180		LOWER TSUB LOWER RETURN FLAT	1	PC
1		KM5070898H01	STRAP R20	2	PC
1		KM208629	HEX SCREW, M10X20 ST 4.6 A3G DIN933	4	PC
2	0010	DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B	4	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	4	PC
1		KM5070896H02	STRAP R20	2	PC
1		DEE0063269	HEX SCREW,M4X16 ST 8.8 A2B DIN933	2	PC
1		DEE8403763	LOCK WASHER,16X11X2MM A3C	4	PC
1		KM919769G01	TRACK MOUNTING, SPLICE TIGHTENER, ASM #3	2	PC
2	0001	KM5070897H01	STRAP R20	2	PC
2	0002	DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B	4	PC
1	1260		LOWER TSUB LOWER HOLD DOWN S	1	PC
1		KM861922G01	STRAP	2	PC
2	0001	KM5060969	BUTT STRAP FE/ZN8B R95	2	PC
3	0010	KM5072669H01	BRACKET R20	2	PC
2	0002	KM3685980	HAMMER HEAD SCREW,M12X30 ST	8	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
2 0003	KM280168	NUT,WULOCK M12 8 ST A3G	8	PC
1 1280		LOWER TSUB LOWER RETURN LIP	1	PC
1	KM5070898H01	STRAP R20	2	PC
1	KM208629	HEX SCREW, M10X20 ST 4.6 A3G DIN933	4	PC
2 0010	DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B	4	PC

1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A		4	PC
1		KM5070896H02	STRAP	R20	2	PC
1		DEE0063269	HEX SCREW,M4X16 ST 8.8 A2B DIN933		2	PC
1		DEE8403763	LOCK WASHER,16X11X2MM A3C		4	PC
1		KM919768G01	TRACK MOUNTING, SPLICE TIGHTENER, ASM #6		2	PC
2	0001	KM5070897H02	STRAP R20		2	PC
2	0002	DEE0056661	HEX SCREW,M10X30 ST 8.8 A3B		4	PC
1	1360		LOWER TSUB UPPER LIP TRACK S		1	PC
1		KM5070898H01	STRAP R20		2	PC
1		KM208629	HEX SCREW, M10X20 ST 4.6 A3G DIN933		4	PC
2	0010	DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B		4	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A		4	PC
1		KM5070896H02	STRAP	R20	2	PC
1		DEE0063269	HEX SCREW,M4X16 ST 8.8 A2B DIN933		2	PC
1		KM919768G01	TRACK MOUNTING, SPLICE TIGHTENER, ASM #6		2	PC
2	0001	KM5070897H02	STRAP R20		2	PC
2	0002	DEE0056661	HEX SCREW,M10X30 ST 8.8 A3B		4	PC
1		DEE8403763	LOCK WASHER,16X11X2MM A3C		4	PC
1	1440		CHAIN GUIDE, LOWER CURVE		1	PC
1		KM5077193G61	TRACK SUB, LOW, 30-2, R1		1	PC
2	0010	KM5074014	PROFILE 5070931D10 6000LG-S2		3.500	M
1		KM5077194G61	TRACK SUB, LOW, 30-2, R1, RH		1	PC
2	0010	KM5074014	PROFILE 5070931D10 6000LG-S2		3.500	M

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Item Level	Material Sub-Item	Technical Details Text	Qty UoM

1		KM5077210H02	BRACKET,TRACK SUB SUPPORT,FRONT, LOW	2	PC
1		KM245826	BOLT, CARRIAGE, M12x40 DIN603-5.8A3G	8	PC
1		KM280168	NUT,WULOCK M12 8 ST A3G	8	PC
1		KM247143	FLAT WASHER,M12 ST A3G DIN9021	16	PC
1		DEE0057130	HEX NUT,M12 8 ST A3B DIN934	16	PC
1		DEE0056672	HEX SCREW,M12X40 ST 8.8 A3B DIN933	4	PC
1		DEE0080731	FLAT WASHER,M12 ST A3E DIN7349	4	PC
1		KM280168	NUT,WULOCK M12 8 ST A3G	4	PC
1		KM5077469G03	ASSY, CROSS MBR, LOW TRK SUB, TYPE 600	1	PC
1		KM872129G05	ASSY,CROSS MBR,LOW TRK SUB,TYPE 60,SEPTA	1	PC
1		US69546001	SCREW,LOCKING,SKID BAR	16	PC
1		KM248843	HEX SCREW,M10X55 ST 8.8 A3G DIN933	16	PC
1		KM249222	HEX NUT,M20X2.5 8 ST A3G DIN439	16	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	16	PC
1	1610		HARDWARE: LOWER CURVE MPB -	1	PC
1		KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	4	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	6	PC
1		DEE0056662	HEX SCREW,M10X35 ST 8.8 A3B DIN933	2	PC
1		KM247568	FLAT WASHER,M10 ST A3E DIN9021	4	PC
1		KM5075348H01	SPACER, HANDRAIL PRESS	2	PC
1		KM186825	SPRING PIN, 4X24 DIN1481	4	PC
1	1680		HARDWARE: LOWER CURVE MPB -	1	PC
1		DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B DIN933	4	PC
1		DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	4	PC
1		KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	4	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	4	PC
1		KM186825	SPRING PIN, 4X24 DIN1481	6	PC
1	1740		LOWER-CURVE MPB	1	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	KM5077689H01	BRACKET, MULTIPURPOSE, LOWER CURVE	2	PC
1	KM5077690H01	BRACKET, MPB SUPPORT, LOWER CURVE	2	PC
1	KM887460H02	SKIRT MOUNT BRACKET NARROW CHORDS SOLID	2	PC
1	KM5077451G12	CROSSMEMBER, LOWER, INCLINE, 600	1	PC
1 1780		HARDWARE: LOWER-HEAD MPB	1	PC
1	KM3670349	LOCK SCREW,M10X35 ST 8.8 A3B DIN603	30	PC
1	KM280167	NUT,WULOCK M10 8 ST A3G	30	PC
1	KM3710265	LIMIT STOP POM	4	PC
1	KM186825	SPRING PIN, 4X24 DIN1481	20	PC
1 1830		LOWER-HEAD MPB	1	PC
1	KM5070845H01	BRACKET HD R20	2	PC
1	KM5070846H01	BRACKET HD R20	2	PC
1	KM5070848G01	BRACKET HD LOW LEFT	1	PC
1	KM5070848G02	BRACKET HD LOW RIGHT	1	PC
1	KM5070844H01	BRACKET 30° LOWER	2	PC
1	KM5071604G01	HANDRAIL ROLLER, 30/35,HEAD,BOTT, INDOOR	2	PC
1	KM5077232H01	BRACKET, MPB SUPPORT, LOW, HEAD, LH	1	PC
1	KM5077233H01	BRACKET, MPB SUPPORT, LOW, HEAD, RH	1	PC
1	KM5077750H01	PLATE, SKIRT SUPPORT	6	PC
1 1930		LOWER, CURVE	1	PC
		SHIPPING CONTAINERS		
1	KM879330H02	SHIPPING PALLET, 58"x120", TRACK SUB	1	PC
1 1960		TRUSS INTERFACE PARTS	1	PC

1		DEE0056672	HEX SCREW,M12X40 ST 8.8 A3B DIN933	50	PC
1		KM277230	WASHER, A13 ST A3F DIN125	50	PC
1		KM280168	NUT,WULOCK M12 8 ST A3G	50	PC
1		US105620K01	WH100 INTERFACE ANGLE - LLH	1	PC
1		US105621K01	WH100 INTERFACE ANGLE - LRH	1	PC

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Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
1	US105614K01	WH100 INTERFACE ANGLE - LLH	1	PC
1	US105615K01	WH100 INTERFACE ANGLE - LRH	1	PC
1	US105652K01	WH100 INTERFACE ANGLE - LRH	1	PC
1	US105653K01	WH100 INTERFACE ANGLE - LLH	1	PC
1	USP39635K01	WH100 INTERFACE BRACKET - LLH	1	PC
1	USP39636K01	WH100 INTERFACE BRACKET - LRH	1	PC
1 2080		WELDED PARTS FOR REVERSER KM	1	PC
		LOWER, HEAD		
1	KM5077706G01	WELDMENT, RETURN SUPPORT, LH	1	PC
2 0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	0.210	M
1	KM5077707G01	WELDMENT, RETURN SUPPORT, RH	1	PC
2 0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	0.210	M
1	KM5077467H12	ANGLE, RETURN SUPPORT, LH	1	PC
1	KM5077468H12	ANGLE, RETURN SUPPORT, RH	1	PC
1	KM5069242H01	FASTENING ANGLE	2	PC
000080	US_EMOD_INCL_BRKTS	ECOMOD INCLINE BRACKET ASSEM	1	PC
1 0010		US_EMOD_INCLINE_BRKTS	1	PC
		INCLINE IMPB		
1	KM5070666H01	BRACKET, INDOOR	8	PC

1		KM3670349	LOCK SCREW,M10X35 ST 8.8 A3B DIN603	8	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	8	PC
1	0060		HARDWARE: >MPB UP	1	PC
CM			___		
1		KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	30	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	30	PC
1		KM186825	SPRING PIN, 4X24 DIN1481	16	PC
1	0100		HARDWARE: >TRUSS	1	PC
CM			___		
1		KM186965	HEX SCREW,M12X100 ST 8.8 A3G DIN933	8	PC
1		DEE0970401	HEX HD.CAP SCR. DIN 933-M12X50-8.8-A3B	8	PC

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Level	Sub-Item	Text		
1	US51307014	SCREW,HHC/G8.8,M12,L=80MM	8	PC
1	KM245827	BOLT, CARRIAGE, M12x70 DIN603-5.8A3G	16	PC
2	0010 DEE2213576	HEX SCREW,M12X70 ST 8.8 A3B	16	PC
1	KM247143	FLAT WASHER,M12 ST A3G DIN9021	16	PC
1	DEE0057130	HEX NUT,M12 8 ST A3B DIN934	30	PC
1	0170	HARDWARE:MPB >HRAIL GUI	1	PC
UP		___		
1	KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	16	PC
1	KM280167	NUT,WULOCK M10 8 ST A3G	30	PC
1	KM186825	SPRING PIN, 4X24 DIN1481	16	PC
1	DEE0056662	HEX SCREW,M10X35 ST 8.8 A3B DIN933	8	PC
1	KM247568	FLAT WASHER,M10 ST A3E DIN9021	16	PC
1	KM5075348H01	SPACER, HANDRAIL PRESS	8	PC

1	0240		HARDWARE:MPB >MPB LOW UP	1	PC
1		KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	16	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	16	PC
1		KM186825	SPRING PIN, 4X24 DIN1481	16	PC
1	0280		HORZ GUIDE MOUNTING	1	PC
1		KM861914G01	MOUNTING PARTS	8	PC
2	0001	KM5072667H01	BRACKET R20	8	PC
2	0002	KM280168	NUT,WULOCK M12 8 ST A3G	8	PC
2	0003	KM3685980	HAMMER HEAD SCREW,M12X30 ST	8	PC
2	0004	KM280167	NUT,WULOCK M10 8 ST A3G	8	PC
2	0005	KM261434	BOLT, CARRIAGE M10X30 8.8A3G	8	PC
1	0300		BG-19 MULTI-PURPOSE BRACKET INCLINE MPB	1	PC
1		KM5077720G11	CROSSMEMBER, ASM, 600	4	PC
1		KM5077695H01	BRACKET, MULTIPURPOSE, INCLINE, RETURN	8	PC
1		KM887460H02	SKIRT MOUNT BRACKET NARROW CHORDS SOLID	8	PC

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1	KM5077771H01	BRACKET, MULTIPURPOSE	8	PC
1	0360	BG-17, AG-08 MOUNTING SET FO	1	PC
1	KM5071592G01	HANDRAIL ROLLER, ULH/LRH, MID LH, INDOOR	4	PC
2	0001 KM5071592G02	HANDRAIL ROLLER, ULH/LRH, MI	4	PC
1	KM5071594G01	HR ROLLER LOW LE, UPP RI, MID RI, IN R20	4	PC
2	0001 KM5071594G02	HANDRAIL ROLLER, URH/LLH, MI	4	PC

1		KM3711096	LOCK SCREW,M10X25 ST 8.8 A3B DIN603	8	PC
1		KM280167	NUT,WULOCK M10 8 ST A3G	8	PC
1	0410		SKIRT MOUNT PARTS INCLINE	1	PC
1		KM862926G02	SKIRT MOUNT KIT FOR CURVES AND HEADS	16	PC
2	0001	KM5070586H01	BRACKET, SKIRT MOUNT	16	PC
2	0002	DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B	16	PC
2	0003	KM865701H01	M10 SQUARE NUT WITH SPRING	16	PC
2	0004	DEE8403763	LOCK WASHER,16X11X2MM A3C	16	PC
2	0005	DEE0063677	FLAT WASHER,M10 ST A3E DIN73	16	PC
2	0006	KM280167	NUT,WULOCK M10 8 ST A3G	16	PC
2	0007	KM261434	BOLT, CARRIAGE M10X30 8.8A3G	16	PC
000090		US_EMOD_CRATER_PCK	ECOMOD CRATER PACK PARTS	1	PC
1	0010		US_EMOD_CRATER_PCK	1	PC
			BRAKE TORQUE TEST TOOL		
1	0020		BRAKE TORQUE TEST TOOL	1	PC
1		KM836887H01	tool, brake torque test, ANSI, 600 width	1	PC
1	0040		BG-23 CONNECTION KM5072281C0	1	PC
1		KM5071457G02	CONNECTION, 18KV/20KV/EL R20	53	PC
2	0020	KM5071456G01	CONNECTOR D=20 X=50	106	PC
2	0030	DEE0064618	HEX HD.CAP SCR. DIN 933-M8X3	106	PC
2	0040	DEE2191072	LOCKING DEVICE/FUSE -X5CRNI1	106	PC
3	0001	DEE2781595	COIL STEEL BAND EN-0010051-6	0.795	M

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2 0050	DEE3685405	WASHER,30/20.1 X 2 -CUZN37	106	PC
2 0060	KM5071459H02	GREASE, STABURAGS NBU 12K *K	0.212	KG

3	0010	DEE2292331	GREASE, BERULUB FH28 BECH	53	KG
1	0060		FALL THRU PROTECTION HARDWAR	1	PC
1		KM873755G01	Assy, splice, fall-thru protection	2	PC
2	0010	DEE2231223	BUTT STRAP S235JRG2-FE/ZN8B	2	PC
3	0001	DEE2213599	HS EN-0010051-60X4-COIL-S235	0.400	M
2	0020	DEE0057199	HAMMER HEAD SCREW,M10X25 ST	8	PC
2	0030	KM280167	NUT,WULOCK M10 8 ST A3G	8	PC
1	0080		Handrail Base Adhesive	1	PC
1		US60034	SEALANT, CLEAR, DOW 732	6	PC
1	0100		HARDWARE KIT	1	PC
1		KM865911G01	ECOMOD HARDWARE KIT	1	PC
2	0001	KM5062102	BRACKET GGG-40-FE/ZN8B	10	PC
2	0002	KM3711096	LOCK SCREW,M10X25 ST 8.8 A3B	10	PC
2	0003	KM261434	BOLT, CARRIAGE M10X30 8.8A3G	20	PC
2	0004	DEE0056663	HEX SCREW,M10X40 ST 8.8 A3B	10	PC
2	0005	KM276402	HAMMER HEAD SCREW,M10X60	20	PC
2	0006	DEE0057201	HAMMER HEAD SCREW,M10X30 ST	30	PC
2	0007	DEE0063314	HEX SCREW,M12X35 ST 8.8 A3B	10	PC
2	0008	KM3685980	HAMMER HEAD SCREW,M12X30 ST	10	PC
2	0009	KM257344	LOCK SCREW,M8X20 ST 4.6 A3G	10	PC
2	0011	DEE0057202	HAMMER HEAD SCREW,M10X40 ST	10	PC
2	0012	DEE0057199	HAMMER HEAD SCREW,M10X25 ST	20	PC
2	0013	DEE1768421	HAMMER HEAD SCREW,M10X50 ST	10	PC
2	0015	KM280167	NUT,WULOCK M10 8 ST A3G	30	PC
2	0016	KM5063316	SQUARE NUT,M10 S355J2G3 FE/Z	10	PC
2	0017	US68736005	NUT,LOCK,HEX,METRC.M10X1.5	10	PC

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Item		Material	Technical Details	Qty	
Level		Sub-Item	Text		UoM
2	0018	DEE0057127	HEX NUT,M10 8 ST A3B DIN934	10	PC
2	0019	KM280168	NUT,WULOCK M12 8 ST A3G	20	PC
2	0021	KM281565	HEX NUT,M8 8 A2B	10	PC
2	0022	US68722008	WASHER,FLAT,M10,PLATED	10	PC
3	0010	DEE1389282	FLAT WASHER,M10 ST A3B DIN12	1	PC
2	0023	DEE8403763	LOCK WASHER,16X11X2MM A3C	10	PC
2	0024	US32497001	SHIM,1x1.25,9/16SLOT,.015"	25	PC
2	0025	US32497002	SHIM,1x1.25,9/16SLOT,.031"	25	PC
2	0026	US32497003	SHIM,1x1.25,9/16SLOT,.062"	25	PC
2	0027	US32497004	SHIM,1x1.25,9/16SLOT,.125"	25	PC
2	0028	DEE0791162	PLATE,SUPPORT,SHIM	10	PC
3	0001	DEE2268653	PL EN 0010152-1X500X3000-DC0	0.015	M2
2	0029	KM5070729H01	SLIDING PIECE	10	PC
1	0120		CHAIN TRACK RETURN MOUNTING	1	PC
1		KM861893G01	MOUNTING PARTS	8	PC
2	0001	DEE1764383	THREADED PLATE -S235JRG2-FE/	8	PC
3	0001	DEE0050466	FLAT STEEL DIN-0001017-25X8-	0.240	M
2	0002	KM5062102	BRACKET GGG-40-FE/ZN8B	8	PC
2	0003	DEE0056663	HEX SCREW,M10X40 ST 8.8 A3B	8	PC
2	0004	DEE8403763	LOCK WASHER,16X11X2MM A3C	8	PC
1		KM861893G01	MOUNTING PARTS	8	PC
2	0001	DEE1764383	THREADED PLATE -S235JRG2-FE/	8	PC
3	0001	DEE0050466	FLAT STEEL DIN-0001017-25X8-	0.240	M
2	0002	KM5062102	BRACKET GGG-40-FE/ZN8B	8	PC
2	0003	DEE0056663	HEX SCREW,M10X40 ST 8.8 A3B	8	PC
2	0004	DEE8403763	LOCK WASHER,16X11X2MM A3C	8	PC

1	0150		CHAIN TRACK TOP MOUNTING	1	PC
			DETERIORATED ROLLER SENSOR, ASSY PER 842		

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Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
1	0155	DETERIORATED ROLLER	1	PC
1	0160	SENSOR, ASSY PER 842066D03/D	1	PC
1	KM842066G01	ASSY,FLT TRACK,DTRD SENSR,RTV	2	PC
2	0011 KM841824G01	ASSY,DYNAMIC BEAM,RTV	2	PC
3	0001 KM837510H01	BEAM,ROLLER DTRIORTD SNSR,RT	2	PC
3	0002 KM837511H01	SHAFT,PIVOT DTRIORTED SNSR,R	2	PC
3	0003 KM837512H01	ADAPTER,TRACK DTRTD SNSR,RTV	2	PC
3	0004 KM837513H01	ADAPTER 2,TRACK DTRTD SNSR,R	2	PC
3	0005 KM837514H01	PLATE,BRIDGE,DTRIORATED SNSR	2	PC
3	0006 KM837515H01	GUIDE,BEAM,DTRIORTED SNSR,RT	4	PC
3	0007 KM837681H01	SHAFT,LINEAR,DTRIORATD SNSR,	2	PC
3	0009 KM839442H01	BOLT,SPRING ADJ DTR SNSR,RTV	4	PC
4	0010 DEE0066872	HEX SCREW,M16X35 ST 10.9 A3B	2	PC
3	0010 KM841813H01	BEARING,LIN FLNG,16mm ID x 7	2	PC
3	0020 DEE0056662	HEX SCREW,M10X35 ST 8.8 A3B	8	PC
3	0021 DEE1389282	FLAT WASHER,M10 ST A3B DIN12	8	PC
3	0022 DEE8403763	LOCK WASHER,16X11X2MM A3C	8	PC
3	0025 US68748006	SCREW,PAN/PH,M5,L=20MM	8	PC
3	0026 DEE0725727	SPRING WASHER,M5 A2B DIN128A	8	PC
3	0027 DEE0057133	HEX NUT,M16 8 ST A3B DIN934	4	PC
3	0028 KM253029	SPRING PIN,6X20MM ST DIN1481	4	PC

3	0029	KM841814H01	SPRING,COMPR.,7/8"x.48"	4	PC
3	0030	KM841815H01	BUMPER,RUBBER 31/32"W x 11/3	4	PC
3	0031	KM247579	HEX SOCKET HEAD SCREW,M4X16	12	PC
3	0032	DEE0725726	SPRING WASHER,M4 A2B DIN128A	12	PC
3	0040	KM841816H01	SNAP RING,9mm EXTERNAL	6	PC
3	0041	KM841817H01	BEARING,FLNG BALL 9x17x5,DBL	4	PC
3	0050	KM3719098	RUBBER 25 x 1 EINSEITIG SELB	0.200	M

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Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
3	0070 KM841824D10	ASSY,DETERIORATED SENSOR,RTV	2	PC
2	0021 DEE1389282	FLAT WASHER,M10 ST A3B DIN12	8	PC
2	0022 DEE8403763	LOCK WASHER,16X11X2MM A3C	8	PC
2	0023 DEE0056663	HEX SCREW,M10X40 ST 8.8 A3B	8	PC
2	0024 DEE2173051	NUT C45-FE/ZN8B	8	PC
2	0200 US96582001	SENSOR,12MM PROX,HRSS	2	PC
2	0201 US96424010	CABLE ASSY,4CON,SHLD,L=10M	2	PC
2	0202 US45812007	TERM,F,TAB,22-18,.020X.187	8	PC
2	0210 KM841824D10	ASSY,DYNAMIC BEAM,RTV	2	PC
2	0220 KM841824D10	ASSY,DETERIORATED SENSOR,RTV	2	PC
1	KM842066G03	ASSY,LIP TRACK,DTRD SENSR,ECOMOD	2	PC
2	0011 KM841824G02	ASSY,DYNAMIC BEAM,RTV	2	PC
3	0001 KM837510H02	BEAM,ROLLER DETERIORATED SEN	2	PC
3	0002 KM837511H01	SHAFT,PIVOT DTRIORTED SNSR,R	2	PC
3	0003 KM837512H01	ADAPTER,TRACK DTRTD SNSR,RTV	2	PC
3	0004 KM837513H01	ADAPTER 2,TRACK DTRTD SNSR,R	2	PC
3	0005 KM837514H02	PLATE, BRIDGE, DETERIORATED	2	PC

3	0006	KM837515H01	GUIDE,BEAM,DTRIORTED SNSR,RT	4	PC
3	0007	KM837681H01	SHAFT,LINEAR,DTRIORATD SNSR,	2	PC
3	0009	KM839442H01	BOLT,SPRING ADJ DTR SNSR,RTV	4	PC
4	0010	DEE0066872	HEX SCREW,M16X35 ST 10.9 A3B	2	PC
3	0010	KM841813H01	BEARING,LIN FLNG,16mm ID x 7	2	PC
3	0020	DEE0056662	HEX SCREW,M10X35 ST 8.8 A3B	8	PC
3	0021	DEE1389282	FLAT WASHER,M10 ST A3B DIN12	8	PC
3	0022	DEE8403763	LOCK WASHER,16X11X2MM A3C	8	PC
3	0025	US68748006	SCREW,PAN/PH,M5,L=20MM	8	PC
3	0026	DEE0725727	SPRING WASHER,M5 A2B DIN128A	8	PC
3	0027	DEE0057133	HEX NUT,M16 8 ST A3B DIN934	4	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
3	0028 KM253029	SPRING PIN,6X20MM ST DIN1481	4	PC
3	0029 KM841814H01	SPRING,COMPR.,7/8"x.48"	4	PC
3	0030 KM841815H01	BUMPER,RUBBER 31/32"W x 11/3	4	PC
3	0031 KM247579	HEX SOCKET HEAD SCREW,M4X16	12	PC
3	0032 DEE0725726	SPRING WASHER,M4 A2B DIN128A	12	PC
3	0040 KM841816H01	SNAP RING,9mm EXTERNAL	6	PC
3	0041 KM841817H01	BEARING,FLNG BALL 9x17x5,DBL	4	PC
3	0050 KM3719098	RUBBER 25 x 1 EINSEITIG SELB	0.200	M
2	0021 DEE1389282	FLAT WASHER,M10 ST A3B DIN12	8	PC
2	0022 DEE8403763	LOCK WASHER,16X11X2MM A3C	8	PC
2	0023 DEE0056663	HEX SCREW,M10X40 ST 8.8 A3B	8	PC
2	0024 DEE2173051	NUT C45-FE/ZN8B	8	PC

2	0200	US96582001	SENSOR,12MM PROX,HRSS	2	PC
2	0201	US96424010	CABLE ASSY,4CON,SHLD,L=10M	2	PC
2	0202	US45812007	TERM,F,TAB,22-18,.020X.187	8	PC
2	0210	KM842066D03	ASSEMBLY, DETERIORATED ROLLE	2	PC
2	0220	KM842066D03	ASSEMBLY, DETERIORATED ROLLE	2	PC
1	0190		TRAIL WHEEL RETURN MOUNTING	1	PC
1		KM861918G01	TRAIL WHEEL RETURN MOUNTING	8	PC
2	0001	KM5063315	SQUARE NUT,M10 S355J2G3 FE/Z	8	PC
2	0002	KM5062102	BRACKET GGG-40-FE/ZN8B	8	PC
2	0003	DEE0056663	HEX SCREW,M10X40 ST 8.8 A3B	8	PC
2	0004	DEE8403763	LOCK WASHER,16X11X2MM A3C	8	PC
1	0210		TRAILWHEEL TOP MOUNTING	1	PC
1		KM5063315	SQUARE NUT,M10 S355J2G3 FE/ZN8B	8	PC
1		KM5062102	BRACKET GGG-40-FE/ZN8B	8	PC
1		DEE0056663	HEX SCREW,M10X40 ST 8.8 A3B DIN933	8	PC
1		DEE8403763	LOCK WASHER,16X11X2MM A3C	8	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	0260	LOCKING DEVICE	1	PC
1	DEE2258589	LEVER - RTV	1	PC
2	0001 DEE2258591	ROD -RTV	1	PC
3	0001 DEE0051714	ROUND STEEL DIN-0000668-16-S	0.324	M
2	0002 DEE2258590	PIPE BEND RTV 52X124,5-S235J	1	PC
3	0001 DEE0050950	STEEL PLATE 4' X 8' X 1/4	0.007	M2
2	0700 DEE2292514	GRUNDIERUNG RAL 3020 VERKEHR	0.050	KG
1	DEE0797326	BEARING -GGG-40	1	PC

2	0001	DEE0794915	BEARING -ROH-GGG-40	1	PC
1		DEE2231146	PIN -RTV-E295+CR FE/ZN8B	1	PC
2	0001	DEE0051774	ROUND STEEL DIN-0000668-40-S	0.108	M
1		DEE2231147	SUPP.PLATE/PAD -RTV-K 95X160-ST1203-FE/Z	9	PC
2	0001	DEE0219212	PL EN-0010131-1X1250X2500-ST	0.180	M2
1		KM5069533H01	BRACKET, STEP BAND LOCKING	1	PC
1		DEE0063316	HEX SCREW,M12X45 ST 8.8 A3B DIN933	4	PC
1		DEE8403764	RETAINING WASHER,18X13X2MM A3C	4	PC
1		DEE0080731	FLAT WASHER,M12 ST A3E DIN7349	4	PC
1		DEE0583879	SOCKET SCREW,M6X40 ST 8.8 A2B DIN912	1	PC
1		DEE8403761	RETAINING WASHER,9.7X6.4MM A3C	1	PC
1		DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B DIN933	2	PC
1		DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	2	PC
1		DEE0726124	SLT CHS HD SCREW,M4X35 ST 4.8 A2B DIN84	2	PC
1		KM256343	FLAT WASHER,M4 ST A3G DIN125B	4	PC
2	0010	US68722004	WASHER,FLAT,M4,PLATED	4	PC
3	0010	DEE0056982	FLAT WASHER,M4 ST 140HV A3B	4	PC
1		DEE0260268	HEX NUT,M4 8 ST A2B DIN6924	2	PC
2	0010	US68736001	NUT,LOCK,HEX,METRIC,M4X0.7	2	PC
1		DEE0014063	GREASE, LUBRICATION, KLP-25	0.010	KG

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Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
1	0430	BG-17, AG-08 MOUNTING SET FO	1	PC
1		DEE3691555 HANDRAIL ROLLER GUIDE	8	PC
2	0001	KM3698893 BUSHING,9SMNPB28	8	PC

2	0002	KM276402	HAMMER HEAD SCREW,M10X60	8	PC
2	0003	DEE1389282	FLAT WASHER,M10 ST A3B DIN12	8	PC
2	0004	DEE0530815	WING NUT,M10 ST 8.8 A3B DIN3	8	PC
2	0005	DEE0057039	HEX NUT,M10 4 ST A3B DIN439B	8	PC
2	0006	DEE0012445	CLIP,CIR,DIN 471-15X1	16	PC
2	0010	DEE0274876	DEEP GROOVE BALL BEARING,600	8	PC
1	0450		BG-77 ELEC. BRACKET MOUNTS K	1	PC
			OUT OF LEVEL SWITCH MOUNTING LOWER		
1		KM831400H01	BRACKET, OUT OF LEVEL SWITCH	2	PC
1		DEE0057199	HAMMER HEAD SCREW,M10X25 ST 5.6 A3B	4	PC
1		DEE0057127	HEX NUT,M10 8 ST A3B DIN934	4	PC
1		US68722004	WASHER,FLAT,M4,PLATED	4	PC
2	0010	DEE0056982	FLAT WASHER,M4 ST 140HV A3B	4	PC
1		US68722008	WASHER,FLAT,M10,PLATED	4	PC
2	0010	DEE1389282	FLAT WASHER,M10 ST A3B DIN12	4	PC
1		US65818009	SCREW,PAN/SL,M4x.7BLK,25MM	4	PC
1	0530		OUT OF LEVEL SWITCH MOUNTING	1	PC
1		KM831400H01	BRACKET, OUT OF LEVEL SWITCH	2	PC
1		DEE0057199	HAMMER HEAD SCREW,M10X25 ST 5.6 A3B	4	PC
1		DEE0057127	HEX NUT,M10 8 ST A3B DIN934	4	PC
1		US68722004	WASHER,FLAT,M4,PLATED	4	PC
2	0010	DEE0056982	FLAT WASHER,M4 ST 140HV A3B	4	PC
1		US68722008	WASHER,FLAT,M10,PLATED	4	PC
2	0010	DEE1389282	FLAT WASHER,M10 ST A3B DIN12	4	PC
1		US65818009	SCREW,PAN/SL,M4x.7BLK,25MM	4	PC

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Item	Material	Technical Details	Qty

UoM Level		Sub-Item	Text		
1	0600		SAFETY SIGNS	1	PC
1		US94063003	DECAL,CAUTION SIGN,ENGLISH	2	PC
1	0620		SERVICE STEP	1	PC
1		DEE1791138	TILTING STEP -G-601	2	PC
1	0640		SHIPPING CONTAINERS	1	PC
1		US94316001	BOX,CRATER,PACKER,48X18X24	1	PC
1	0660		SKIRT SWITCH MNT ALL	1	PC
1		US97684001	BRACKET,SKIRT SWITCH,MNT	4	PC
1		US97984001	SHIM,SKIRT SAFETY SWITCH	4	PC
2	0010	US57319	BAR,HRS,FLAT,1/8X1	7.160	IN
1		US94392001	TAPE,OUTER DECK,L=1"	4	PC
2	0010	US104525Q00	TAPE, OUTER DECK, 32918.4 mm	104	MM
1		KM245623	HEX SCREW,M4X10 ST 8.8 A3G DIN933	4	PC
1		KM3685980	HAMMER HEAD SCREW,M12X30 ST 8.8 A3B	8	PC
1		DEE0057130	HEX NUT,M12 8 ST A3B DIN934	8	PC
1		KM245661	FLAT WASHER, A13 ST A3G DIN125	8	PC
2	0010	DEE0063701	FLAT WASHER,M12 ST 140HV A3B	8	PC
1	0740		BLACK TOUCH UP MARKER	1	PC
1		US60900335	BLACK PAINT MARKERS	1	PC
1	0760		STEP GUARD	1	PC
1		KM5070909G01	STEP COVERING TYPE 60/EXT, INDOO R20	2	PC
1		KM5071878H01	BRACKET LEFT R20	2	PC
1		KM5071878H02	BRACKET RIGHT R20	2	PC
1		DEE0118072	WING NUT,M8 ST A2B DIN315	4	PC
1		DEE0057111	FLAT WASHER,M8 ST A3E DIN7349	4	PC
1		DEE0057126	HEX NUT,M8 8 ST A2B DIN934	20	PC
1		DEE8403762	RETAINING WASHER,13X8X1MM A3C	16	PC

1		DEE1909894	STUD DIN 976-BM8X	8	PC

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Item		Material	Technical Details	Qty	UoM
Level		Sub-Item	Text		
1		KM281222	CLAMP,M10	4	PC
1	0860		TRACK LUBRICANT	1	PC
1		DEE3670019	GREASE, HIGH PERF. RIVOLTA S.K.D. 3602	2	PC
1	0880		CHAIN RETURN SPLICE	1	PC
1		KM861920G01	PLATE	20	PC
2	0001	DEE2231223	BUTT STRAP S235JRG2-FE/ZN8B	20	PC
3	0001	DEE2213599	HS EN-0010051-60X4-COIL-S235	4.000	M
2	0002	DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B	80	PC
2	0003	DEE8403763	LOCK WASHER,16X11X2MM A3C	80	PC
2	0004	DEE1764383	THREADED PLATE -S235JRG2-FE/	80	PC
3	0001	DEE0050466	FLAT STEEL DIN-0001017-25X8-	0.600	M
1	0900		TRACK SPLICES	1	PC
			HORZ STEP GUIDE SPLICES		
1		KM861922G01	STRAP	10	PC
2	0001	KM5060969	BUTT STRAP FE/ZN8B R95	10	PC
3	0010	KM5072669H01	BRACKET R20	10	PC
2	0002	KM3685980	HAMMER HEAD SCREW,M12X30 ST	40	PC
2	0003	KM280168	NUT,WULOCK M12 8 ST A3G	40	PC
1	0930		TRAIL WHEEL RETURN SPLICE	1	PC
1		KM861954G01	MOUNTING	20	PC
2	0001	DEE1971307	STRAP -S235JRG2 FE/ZN8B	20	PC
3	0001	DEE1758258	COIL STEEL BAND DIN-0001016-	4.000	M
2	0002	DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B	80	PC

2	0003	DEE8403763	LOCK WASHER,16X11X2MM A3C	80	PC
2	0004	DEE2173051	NUT C45-FE/ZN8B	80	PC
1	0950		TRUSS INTERFACE ATTACHMENT	1	PC
1		KM5077548H01	ANGLE	16	PC
2	0010	US56291	ANGLE, 1/4X2-1/2X2-1/2	64.320	IN

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	DEE0970401	HEX HD.CAP SCR. DIN 933-M12X50-8.8-A3B	32	PC
1	DEE0080731	FLAT WASHER,M12 ST A3E DIN7349	64	PC
1	DEE0057130	HEX NUT,M12 8 ST A3B DIN934	32	PC
1 1000		UPTHRUST SWITCH MNT LOWER	1	PC
1	US96842001	BRACKET,UPTHRUST,SWICH,MNT	2	PC
1	DEE1768421	HAMMER HEAD SCREW,M10X50 ST 8.8 A3B	2	PC
1	DEE0057127	HEX NUT,M10 8 ST A3B DIN934	2	PC
1	KM247568	FLAT WASHER,M10 ST A3E DIN9021	4	PC
1	US68747009	SCREW,PAN/PH,M4,L=30MM	4	PC
1	DEE0057121	HEX NUT,M4 8 ST A2B DIN934	4	PC
1	US68755004	WASHER,INT,TOOTH,M4,PLATED	4	PC
1	DEE2144433	ELASTIC ELEMENT,60 SHORE	2	PC
1	DEE0057121	HEX NUT,M4 8 ST A2B DIN934	4	PC
1 1100		LOOSE PARTS	1	PC
1	KM5077772H01	BRACKET, INCLINE,EXT BAY, STD	2	PC
1	DEE0056665	HEX SCREW,M10X50 ST 8.8 A3B DIN933	2	PC
1	DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	2	PC
1	DEE0057127	HEX NUT,M10 8 ST A3B DIN934	2	PC

1		KM5072667H01	BRACKET R20	2	PC
1		KM861918G01	TRAIL WHEEL RETURN MOUNTING	4	PC
2	0001	KM5063315	SQUARE NUT,M10 S355J2G3 FE/Z	4	PC
2	0002	KM5062102	BRACKET GGG-40-FE/ZN8B	4	PC
2	0003	DEE0056663	HEX SCREW,M10X40 ST 8.8 A3B	4	PC
2	0004	DEE8403763	LOCK WASHER,16X11X2MM A3C	4	PC
000100		US_EMOD_CHAIN	ECOMOD CHAIN	1	PC
1	0010		US_EMOD_CHAIN	1	PC
			BG-21 CHAIN KM5072218C02		
1		DEE4001017	CHAIN 18 KV-SF-W 4000 LG	5.200	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	DEE4001018	CHAIN 18 KV-SF-W 400LG	1	PC
1 0050		SPREADER BAR	1	PC
1	USP39624001	SPREADER BAR, 600mm	1	PC
2 0001	DEE2231223	BUTT STRAP S235JRG2-FE/ZN8B	1	PC
3 0001	DEE2213599	HS EN-0010051-60X4-COIL-S235	0.200	M
2 0002	US105591001	LIP TRACK,600mm,MATL US96461	1	PC
3 0010	US96461Q00	SAE 1008/1010 HD GALV TRK,58	0.100	PC
2 0003	DEE0064618	HEX HD.CAP SCR. DIN 933-M8X3	2	PC
2 0004	DEE0057111	FLAT WASHER,M8 ST A3E DIN734	2	PC
2 0005	DEE4001406	CONNECTOR	2	PC
3 0001	DEE4001407	PIN 9SMNPB28K-A6G	1	PC
3 0002	DEE2734346	SLIDE BEARING IGLIDUR W300 W	1	PC
3 0004	DEE3721426	PRESSURE SPRING	1	PC
3 0800	DEE1547522	GREASE,14 OZ TUBE	0.002	KG

3	0998		:00 :	1	PC
1	0070		A	1	PC
000110		US_EMOD_TRACK	ECOMOD TRACK	1	PC
1	0010		US_EMOD_TRACK	1	PC
1		KM861441	PROFILE, CHAIN GUIDE, INCLINE, L=3000mm	5	PC
2	0010	KM5073150H10	Alum Extrsn, Chain Guide, Ra	5	PC
1	0030		FALL THRU PROTECTION	1	PC
1		DEE0936724	PROFILE,28X15X2.5 S235JRG2	6.920	M
2	0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	6.920	M
1		DEE1786953	PROFILE -40X31X3-FEE250G-Z275MB-2123525	14.000	M
1		DEE1787432	TRACK,3MM LIP CHAIN GD	14.000	M
1	0070		INCLINE	1	PC
			TRACK PROFILES		
1		DEE1786953	PROFILE -40X31X3-FEE250G-Z275MB-2123525	14.000	M

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	DEE1787432	TRACK,3MM LIP CHAIN GD	14.000	M
1 0110		SHIPPING CONTAINERS	1	PC
1	US60921	CARTON,SHIPPING,126x17x18"	1	PC
000120	US_EMOD_CRATR_PCK2	ECOMOD CRATER PACK 2 PARTS	1	PC
1 0010		US_EMOD_CRATER_PCK2	1	PC
		ANTI-SLIDE KNOBS BG-59 FRONT PLATES KM5077434C01 ATTACHMENT PARTS FRONTPLATE COMPONENTS		
1	US60133	FRONTPLT,PLASTIC DR,C	4	PC
1	US94777001	PLATE,SW,FRNTPLT,ADJUST	4	PC

2	0007	US49114004	WASHER, FLAT TYPE A W NO.6	8	PC
1		US94778001	U-BOLT,SWITCH MNT,FPLATE	4	PC
1		US49114004	WASHER, FLAT TYPE A W NO.6	8	PC
1		US46662003	NUT, KEP ZINC PLATED NO-6-32 W=0.25IN	8	PC
1		US48731015	WASHER,LOCK,SPRING, #6	8	PC
1		DEE0057121	HEX NUT,M4 8 ST A2B DIN934	16	PC
1		US49118008	WASHER,FLAT,.500"OD,#8	16	PC
2	0010	US49114005	FLAT WASHER, 0.164IN ANSI-B2	16	PC
1		USP39686001	MODULAR PHONE JACK, W/BLACK TRIM BEZEL	1	PC
2	0001	US105702001	PHONE JACK, MODULAR, RJ11 TY	1	PC
2	0002	US105703001	BEZEL PHONE JACK, MODULAR, B	1	PC
1		US104938H02	PLATE,1W7R4 DN-RUN-UP SWIT	2	PC
2	0010	US104938K02	PLATE,1W7R4 DN-RUN-UP SWIT	2	PC
1	0160		SKIRT TRIM	1	PC
			TRIM, INCLINE		
1		KM5074015	PROFILE 5071281D10 6000LG-ALMGSI0,5F13	14.000	M
1		DEE0219041	HHC,SCREW M6X20 DIN 912	30	PC
1		KM280165	NUT, WULOCK, M6 SS 8 A3G	30	PC
1	0210		TRIM LOWER CURVE	1	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	KM879509H01	SKIRT TRIM, EXTRUSION, SOLID, LOW CURVE	2	PC
2 0010	KM5074015	PROFILE 5071281D10 6000LG-AL	6.400	M
1	DEE0219041	HHC,SCREW M6X20 DIN 912	20	PC
1	KM280165	NUT, WULOCK, M6 SS 8 A3G	20	PC
1 0250		TRIM UPPER CURVE	1	PC

1		KM879503H01	SKIRT TRIM, EXTRUSION, SOLID, UP CURVE	2	PC
2	0010	KM5074015	PROFILE 5071281D10 6000LG-AL	5.000	M
1		DEE0219041	HHC,SCREW M6X20 DIN 912	20	PC
1		KM280165	NUT, WULOCK, M6 SS 8 A3G	20	PC
1		DEE2426327	ADHESIVE TAPE,48MMX100M	100.000	M
1	0300		NEWEL ROLLER CHAIN	1	PC
1		US520156	CHAIN, ROLLER NEWEL SWE/SWU	4	PC
1	0320		BG-69 HANDRAIL INLET ASSEMBL	1	PC
1		KM5073243G05	INLET, HANDRAIL, US	2	PC
2	0001		CUT BRUSH PER DWG 873756D10	2	PC
2	0003	KM5073244H01	PLATE	4	PC
2	0004	KM5073245H01	BRACKET UPP LE , LOW RI	2	PC
2	0005	KM5073245H02	BRACKET UPP RI , LOW LE	2	PC
2	0007	KM5072933H01	BRACKET	4	PC
2	0010	KM281565	HEX NUT,M8 8 A2B	12	PC
2	0014	DEE0054383	HEX HD. CAP SCR. DIN 933-M6X	16	PC
2	0016	DEE0063678	WASHER, 6 MM	16	PC
2	0017	DEE0054405	HHCS,M8X25 DIN 933,A2B	16	PC
2	0018		ASSM PER DWG 5073243D10 G01,	2	PC
2	0020	KM5072745G02	INLET, HANDRAIL, US	2	PC
3	0001	KM5070884G02	HR INLET	2	PC
4	0001	KM5072085H01	HR INLET BRUSH	4	PC
4	0002	KM5072092H01	bracket frontplate mount	4	PC

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Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		

4	0003	KM5072089G01	FRONTPLATE BRACKET ASSY.LL/U	2	PC
4	0004	KM5072090G01	FRONTPLATE BRACKET ASSY.LR/U	2	PC
4	0005	KM5072744H01	bracket low lh / upp rh	2	PC
4	0006	KM5072743H01	bracket low rh / upp lh	2	PC
4	0007	KM5072741H01	ELASTIC ELEMENT R20	4	PC
4	0008	DEE0057199	HAMMER HEAD SCREW,M10X25 ST	4	PC
4	0009	KM280167	NUT,WULOCK M10 8 ST A3G	4	PC
4	0010	DEE0064618	HEX HD.CAP SCR. DIN 933-M8X3	12	PC
4	0011	DEE0057111	FLAT WASHER,M8 ST A3E DIN734	12	PC
4	0012	KM249476	Sphericalwasher C13 DIN6319	4	PC
4	0013	KM249477	CONICAL SEAT,D14.2 ST DIN631	4	PC
4	0014	KM281565	HEX NUT,M8 8 A2B	12	PC
4	0015	KM196311	HEX SCREW,M5X10 ST 8.8 A3G D	12	PC
4	0016	DEE0515449	FLAT WASHER,M5 ST A3B DIN734	12	PC
4	0017	KM245623	HEX SCREW,M4X10 ST 8.8 A3G D	4	PC
4	0018	US68722004	WASHER,FLAT,M4,PLATED	4	PC
5	0010	DEE0056982	FLAT WASHER,M4 ST 140HV A3B	2	PC
1	0340		BG-29 - SKIRT SPLICES 30DEG,	1	PC
1		KM865912G02	SKIRT SPLICE KIT W/ SPRING NUT	12	PC
2	0001	KM5072669H01	BRACKET R20	12	PC
2	0002	KM865701H01	M10 SQUARE NUT WITH SPRING	48	PC
2	0003	DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B	48	PC
2	0004	DEE0063677	FLAT WASHER,M10 ST A3E DIN73	48	PC
1	0360		SHIPPING CONTAINERS	1	PC
1		US60921	CARTON,SHIPPING,126x17x18"	2	PC
1		US60920	CARTON,SHIPPING,145x17x36"	1	PC
1		US94316001	BOX,CRATER,PACKER,48X18X24	1	PC
1	0400		SKIRT MOUNT PARTS (BOTH SIDE	1	PC

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Item Level		Material Sub-Item	Technical Details Text	Qty	UoM
1		KM862926G02	SKIRT MOUNT KIT FOR CURVES AND HEADS	50	PC
2	0001	KM5070586H01	BRACKET, SKIRT MOUNT	50	PC
2	0002	DEE0056656	HEX SCREW,M10X20 ST 8.8 A3B	50	PC
2	0003	KM865701H01	M10 SQUARE NUT WITH SPRING	50	PC
2	0004	DEE8403763	LOCK WASHER,16X11X2MM A3C	50	PC
2	0005	DEE0063677	FLAT WASHER,M10 ST A3E DIN73	50	PC
2	0006	KM280167	NUT,WULOCK M10 8 ST A3G	50	PC
2	0007	KM261434	BOLT, CARRIAGE M10X30 8.8A3G	50	PC
1	0420		MARKERS	1	PC
1		US104033001	KIT,TEFLON PAINT W/BRUSHES	2	PC
1	0440		TAMPERPROOF SCREWS FOR PTL S	1	PC
1		US68231003	SCREW,OH/CS-TP,#6-32,3/8	20	PC
1	0450		BALUSTRADE PANEL STIFFENERS	1	PC
1	0460		INCLINE	1	PC
1		KM865413G04	ASSY,INNER INCLINE PANEL REINFORCE,ECOMO	20	PC
2	0031	KM873754H01	BRACKET,LWR PANEL SUPPORT,EC	20	PC
2	0032	KM865412H02	BRACKET,E3C, INCLINED BALUST	20	PC
2	0035	DEE2742768	SUPPORT,INR PNL L=610MM	20	PC
3	0001	DEE0936724	PROFILE,28X15X2.5 S235JRG2	12.200	M
4	0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	20.000	M
3	0002	DEE0561015	RUBBER STRIP 2x19mm (50' / 1	12.200	M
2	0115	DEE0075123	SUPP.PLATE/PAD -1X32X35 D11	80	PC
3	0001	DEE2247210	COIL STEEL BAND DIN-0001016-	0.640	M
2	0117	DEE0075125	SUPP.PLATE/PAD -2X32X35 D11	80	PC

3	0001	DEE2247212	COIL STEEL BAND DIN-0001016-	0.640	M
2	0201	DEE0216114	HAMMER HEAD SCREW,M8X30 ST 5	120	PC
2	0291	KM281565	HEX NUT,M8 8 A2B	120	PC
2	0301	DEE0062543	WASHER DIN 9021 8.4MM A3B	120	PC

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Item Level	Material Sub-Item	Technical Details Text	Qty	UoM
1 0480		LANDING AREAS	1	PC
1	KM865413G03	ASSY,LANDING PANEL REINFORCE, ECOMOD	10	PC
2 0031	KM873754H01	BRACKET,LWR PANEL SUPPORT,EC	10	PC
2 0032	KM865412H02	BRACKET,E3C, INCLINED BALUST	10	PC
2 0035	DEE2742767	SUPPORT,INR PNL L=645MM	10	PC
3 0001	DEE0936724	PROFILE,28X15X2.5 S235JRG2	6.450	M
4 0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	10.000	M
3 0002	DEE0561015	RUBBER STRIP 2x19mm (50' / 1	6.450	M
3 0900	DEE2742767	DRAWING	10	PC
2 0115	DEE0075123	SUPP.PLATE/PAD -1X32X35 D11	40	PC
3 0001	DEE2247210	COIL STEEL BAND DIN-0001016-	0.320	M
2 0117	DEE0075125	SUPP.PLATE/PAD -2X32X35 D11	40	PC
3 0001	DEE2247212	COIL STEEL BAND DIN-0001016-	0.320	M
2 0201	DEE0216114	HAMMER HEAD SCREW,M8X30 ST 5	60	PC
2 0291	KM281565	HEX NUT,M8 8 A2B	60	PC
2 0301	DEE0062543	WASHER DIN 9021 8.4MM A3B	60	PC
1 0500		SKIRT BRUSH PARTS	1	PC
1 0505		INSTALL PER 851702D02	1	PC
1	KM852147G02	ASSY,LWR SKRTBRSH,2L,WESTINGHOUSE 100	1	PC

2	0001	KM852130H12	ALUM. PROFILE,850151, L=490	1	PC
3	0010	KM850151	PROFILE,AL. RECESSED SKIRT B	0.490	M
2	0002	KM852130H02	ALUM. PROFILE,850151, L=625	2	PC
3	0001	KM850151	PROFILE,AL. RECESSED SKIRT B	0.625	M
2	0003	KM852130H11	ALUM. PROFILE,850151, L=710	1	PC
3	0010	KM850151	PROFILE,AL. RECESSED SKIRT B	0.710	M
2	0007	KM852130H17	ALUM. PROFILE,850151, L=490	1	PC
3	0010	KM850151	PROFILE,AL. RECESSED SKIRT B	0.490	M
2	0008	KM852130H16	ALUM. PROFILE,850151, L=710	1	PC

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Item Level	Material Sub-Item	Technical Details Text	Qty	UoM
3	0010 KM850151	PROFILE,AL. RECESSED SKIRT B	0.710	M
2	0020 KM852132H01	CAP, LH END SKIRTBRUSH,RTV	1	PC
2	0021 KM852131H01	CAP, RH END SKIRTBRUSH,RTV	1	PC
2	0050 US96792006	SCREW,FLT/PHST,4.2MM,L=32	22	PC
2	0070 KM852133	BRUSH UPR STRIP, SKIRT, KLEE	5.110	M
2	0071 KM852144	BRUSH LOWER STRIP, SKIRT, K	5.110	M
2	0100 US68231003	SCREW,OH/CS-TP,#6-32,3/8	2	PC
2	0110 KM851702D02	ASSY,SKIRTBRUSH,30-2, WESTIN	1	PC
2	0130 KM851702D02	ASSY,SKIRTBRUSH,30-2, WESTIN	1	PC
1	KM852148G02	ASSY,UPR SKIRTBRSH, 2L,WESTINGHOUSE M100	1	PC
2	0005 KM852130H13	ALUM. PROFILE,850151, L=645	2	PC
3	0010 KM850151	PROFILE,AL. RECESSED SKIRT B	0.645	M
2	0006 KM852130H14	ALUM. PROFILE,850151, L=625	1	PC
3	0010 KM850151	PROFILE,AL. RECESSED SKIRT B	0.625	M
2	0009 KM852130H18	ALUM. PROFILE,850151, L=625	1	PC

3	0010	KM850151	PROFILE,AL. RECESSED SKIRT B	0.625	M
2	0010	KM852130H15	ALUM. PROFILE,850151, L=555	1	PC
3	0010	KM850151	PROFILE,AL. RECESSED SKIRT B	0.555	M
2	0011	KM852130H19	ALUM. PROFILE,850151, L=555	1	PC
3	0010	KM850151	PROFILE,AL. RECESSED SKIRT B	0.555	M
2	0020	KM852131H01	CAP, RH END SKIRTBRUSH,RTV	1	PC
2	0021	KM852132H01	CAP, LH END SKIRTBRUSH,RTV	1	PC
2	0050	US96792006	SCREW,FLT/PHST,4.2MM,L=32	20	PC
2	0070	KM852133	BRUSH UPR STRIP, SKIRT, KLEE	4.410	M
2	0071	KM852144	BRUSH LOWER STRIP, SKIRT, K	4.410	M
2	0100	US68231003	SCREW,OH/CS-TP,#6-32,3/8	2	PC
2	0110	KM851702D02	ASSY,SKIRTBRUSH,30-2, WESTIN	1	PC
2	0130	KM851702D02	ASSY,SKIRTBRUSH,30-2, WESTIN	1	PC

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Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
1	KM852149G02	ASSY,INCLINE SKRTBRSH,L=1900	6	PC
2	0004 KM852130H10	ALUM. PROFILE,850151, L=1900	6	PC
3	0010 KM850151	PROFILE,AL. RECESSED SKIRT B	11.400	M
2	0050 US96792006	SCREW,FLT/PHST,4.2MM,L=32	30	PC
2	0070 KM852133	BRUSH UPR STRIP, SKIRT, KLEE	11.400	M
2	0071 KM852144	BRUSH LOWER STRIP, SKIRT, K	11.400	M
2	0080 KM851702D02	ASSY,SKIRTBRUSH,30-2, WESTIN	6	PC
2	0100 KM851702D02	ASSY,SKIRTBRUSH,30-2, WESTIN	6	PC
000130	US_EMOD_CRATR_PCK3	ECOMOD CRATER PACK 3 PARTS	1	PC
1	0010	US_EMOD_CRATER_PCK3	1	PC

			FRONTPLATE SST ULH/LRH INNER & OUTER		
1	0030		ULH/LRH INNER & OUTER	1	PC
1		KM928278G07	FRONTPLATE ASSY. UL/LR WH MOD RETAINING	2	PC
2	0001	KM928275G07	LR/UL WH INNER FRONTPLATE AS	2	PC
3	0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	0.200	M
2	0002	KM921885G01	FRONTPLATE ASSY, UL/LR, OUTE	2	PC
2	0003	US48380008	NUT,HEX,MACH,G2,PLT, #8-32	14	PC
2	0004	US68722004	WASHER,FLAT,M4,PLATED	14	PC
3	0010	DEE0056982	FLAT WASHER,M4 ST 140HV A3B	2	PC
1	0050		LLH/URH INNER & OUTER	1	PC
1		KM928269G02	FRONTPLATE ASSY, LL/UR WESTINGHOUSE	2	PC
2	0010	KM921885G02	FRONTPLATE ASSY, LL/UR OUTER	2	PC
2	0020	KM928272G02	LL/UR WH INNER FRONTPLATE AS	2	PC
2	0030	US48380008	NUT,HEX,MACH,G2,PLT, #8-32	14	PC
2	0040	US68722004	WASHER,FLAT,M4,PLATED	14	PC
3	0010	DEE0056982	FLAT WASHER,M4 ST 140HV A3B	2	PC
1	0070		BG-18 HANDRAIL (AS A SEPARAT	1	PC
1		US97780001	HANDRAIL	643.475	MM

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Item Level	Material Sub-Item	Technical Details Text	Qty	UoM
1	US97780001	HANDRAIL	643.475	MM
1 0100		INNER PANELS, INCLINE	1	PC
1	KM886386G09	INNER PANEL ASSY,INCLINE,WEST M100,SEPTA	8	PC
2 0010	DEE0798550	PROFILE -ST-VERZ	12.800	M
3 0010	DEE0936724	PROFILE,28X15X2.5 S235JRG2	8.000	M
4 0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	8.000	M

1	0120		INNER PANELS, LOWER CURVE, L	1	PC
1		KM891091G02	LLH LOW CURVE PANEL ASSY,WEST 100,SEPTA	1	PC
2	0010	DEE0798550	PROFILE -ST-VERZ	1.600	M
3	0010	DEE0936724	PROFILE,28X15X2.5 S235JRG2	1.000	M
4	0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	1.000	M
1		KM891095G02	LLH UP CURVE PANEL ASSY,WEST M100,SEPTA	1	PC
2	0010	DEE0798550	PROFILE -ST-VERZ	1.400	M
3	0010	DEE0936724	PROFILE,28X15X2.5 S235JRG2	1.000	M
4	0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	1.000	M
1	0150		INNER PANELS, LOWER CURVE, R	1	PC
1		KM891093G02	LRH LOW CURVE PANEL ASSY,WEST 100,SEPTA	1	PC
2	0010	DEE0798550	PROFILE -ST-VERZ	1.600	M
3	0010	DEE0936724	PROFILE,28X15X2.5 S235JRG2	1.000	M
4	0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	1.000	M
1		KM891097G02	LRH UP CURVE PANEL ASSY,WEST M100,SEPTA	1	PC
2	0010	DEE0798550	PROFILE -ST-VERZ	1.400	M
3	0010	DEE0936724	PROFILE,28X15X2.5 S235JRG2	1.000	M
4	0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	1.000	M
1	0180		INNER PANELS, UPPER CURVE, L	1	PC
1		KM891087G02	ULH LOWER CURVE PANEL ASSY,WH100,SEPTA	1	PC
2	0010	DEE0798550	PROFILE -ST-VERZ	1.300	M
3	0010	DEE0936724	PROFILE,28X15X2.5 S235JRG2	1.000	M

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
4	0010 DEE0055194	PROFILE 2467302-S235JRG2 2M	1.000	M

1		KM891083G02	ULH TOP CURVE PANEL ASSY,WEST M100,SEPTA	1	PC
2	0010	DEE0798550	PROFILE -ST-VERZ	1.100	M
3	0010	DEE0936724	PROFILE,28X15X2.5 S235JRG2	1.000	M
4	0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	1.000	M
1	0210		INNER PANELS, UPPER CURVE, R	1	PC
1		KM891089G02	URH LOWER CURVE PANEL ASSY,WH100,SEPTA	1	PC
2	0010	DEE0798550	PROFILE -ST-VERZ	1.300	M
3	0010	DEE0936724	PROFILE,28X15X2.5 S235JRG2	1.000	M
4	0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	1.000	M
1		KM891085G02	URH TOP CURVE PANEL ASSY,WEST M100,SEPTA	1	PC
2	0010	DEE0798550	PROFILE -ST-VERZ	1.100	M
3	0010	DEE0936724	PROFILE,28X15X2.5 S235JRG2	1.000	M
4	0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	1.000	M
1	0240		INNER PANELS, NEWEL FILLER	1	PC
1		KM934943H01	INNER PANEL,HEAD,FILLER.,WEST M100,SEPTA	4	PC
1	0252		INNER PANEL, NEWEL HEAD	1	PC
1		KM891080H01	INNER PANEL, UL/LR HEAD, WEST M100	2	PC
1		KM891082H01	INNER PANEL, UR/LL HEAD, WEST M100	2	PC
1	0260		PTL START BOX	1	PC
1		KM932918G01	START STATION, SST#4,W/FRAME,#10ES2FNYC	2	PC
1	0280		PTL STOP BOX	1	PC
1		KM932916G01	STOP STATION,SS#4,FRAME MNT,24VAC,10ES1F	2	PC
1	0300		SKIRT ASSEMBLIES,HEAD,LLH	1	PC
1		KM886380G07	SKIRT HEAD, LLH, COMBLIGHT, SS#4	1	PC
2	0010	KM3670233	PROFILE-3689357 6000LG-FEP02	0.200	M
2	0020	DEE0936724	PROFILE,28X15X2.5 S235JRG2	0.200	M
3	0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	1.000	M

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Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
1 0320		SKIRT ASSEMBLIES,HEAD,LRH	1	PC
1	KM886380G08	SKIRT, HEAD, LRH, COMB LIGHTS, SS#4	1	PC
2 0010	KM3670233	PROFILE-3689357 6000LG-FEP02	0.200	M
2 0020	DEE0936724	PROFILE,28X15X2.5 S235JRG2	0.200	M
3 0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	1.000	M
1 0340		SKIRT ASSEMBLIES,HEAD,ULH	1	PC
1	KM886378G07	SKIRT HEAD, ULH, COMB LIGHTS, SS#4	1	PC
2 0010	KM3670233	PROFILE-3689357 6000LG-FEP02	0.200	M
2 0020	DEE0936724	PROFILE,28X15X2.5 S235JRG2	0.200	M
3 0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	1.000	M
1 0360		SKIRT ASSEMBLIES,HEAD,URH	1	PC
1	KM886378G08	SKIRT, HEAD, URH, COMB LIGHT, SS#4	1	PC
2 0010	KM3670233	PROFILE-3689357 6000LG-FEP02	0.200	M
2 0020	DEE0936724	PROFILE,28X15X2.5 S235JRG2	0.200	M
3 0010	DEE0055194	PROFILE 2467302-S235JRG2 2M	1.000	M
1 0380		SKIRT ASSEMBLIES,INCLINE	1	PC
		KM879262G04 SKIRT ASSEMBLIES,LC,LH KM886371G04 SKIRT ASSEMBLIES, LC, RH KM886371G05 SKIRT ASSEMBLIES,UC,LH KM886363G04 SKIRT ASSEMBLIES,UC,RH KM886363G05		
1	KM879262G04	SKIRT ASSY, INCLINE,SS, SEPTA	6	PC
2 0010	KM3670233	PROFILE-3689357 6000LG-FEP02	22.800	M
1 0395		SKIRT ASSEMBLIES,LC,LH	1	PC
1	KM886371G04	SKIRT ASSY, LOWER CURVE,LH,SS, SEPTA	1	PC

2	0010	KM3670233	PROFILE-3689357 6000LG-FEP02	3.400	M
1	0405		SKIRT ASSEMBLIES, LC, RH	1	PC
1		KM886371G05	SKIRT ASSY, LOWER CURVE,RH,SS, SEPTA	1	PC

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Item Level	Material Sub-Item	Technical Details Text	Qty	UoM
2 0010	KM3670233	PROFILE-3689357 6000LG-FEP02	3.400	M
1 0415		SKIRT ASSEMBLIES,UC,LH	1	PC
1	KM886363G04	SKIRT ASSY, UPPER CURVE,LH,SS,SEPTA	1	PC
2 0010	KM3670233	PROFILE-3689357 6000LG-FEP02	3.000	M
1 0425		SKIRT ASSEMBLIES,UC,RH	1	PC
1	KM886363G05	SKIRT ASSY, UPPER CURVE,RH,SS,SEPTA	1	PC
2 0010	KM3670233	PROFILE-3689357 6000LG-FEP02	3.000	M
1	KM925307H01	CUSTOM SKIRT TRIM, UC, SS#4	2	PC
1	KM925308H03	CUSTOM SKIRT TRIM,LOWER CURVE,SS#4,SEPTA	2	PC
1	KM925306H01	CUSTOM SKIRT TRIM, INCLINE, SS#4	6	PC
1	KM893995H01	WESTINGHOUSE HANDRAIL NYLATRON TRIM	4	PC
1 0520		Oil/water separator	1	PC
1	KM5071027G01	OIL SEPARATOR	1	PC
2 0010	DEE2240980	HPS-2467302 X 315-S235JRG2	2	PC
3 0001	DEE0055194	PROFILE 2467302-S235JRG2 2M	0.320	M
000140	US_EMOD_LANDINGS	ECOMOD LANDINGS	1	PC
1 0010		BG-31, COMB CARRIER, LOWER K	1	PC
1	KM863460G04	COMBPLATE LINING, 60, SS	1	PC
2 0006	KM5071671H01	PLATE, SS, B=644	1	PC
2 0009	KM863451H03	LINING,COMB CARRIER NOSE,60,	1	PC
2 0012	KM5070447H04	PLATE, ALUMINUM, 60, A=784,	1	PC

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 2  0018 KM863450H03        LINING,COMB CARRIER,SST,60,N                    1  PC

 2  0037 DEE2268809         SEALING AGENT 600ML-EMFIMAST                 1.100  PC

 3  0001 DEE2719912         RUBATEX ADHESIVE R-27780                     0.160
GLU

 1  0030                    GLUE LINING TO COMB CARRIER                     1  PC

 1       KM5070433G07       COMB CARRIER, STAINLESS, 60                     1  PC

 1       KM5052035          COMB SEGMENT, YELLOW PLASTIC, 60                1  PC

 2  0010 KM3719605          STEP COMB ECO3000 B GELB NZ3                    1  PC
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Item     Material           Technical Details                    Qty
UoM
Level    Sub-Item                      Text
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 2  0020 KM3719606          STEP COMB ECO3000 C GELB NZ3                    1  PC

 2  0030 KM3719604          STEP COMB ECO3000 A GELB NZ3                    1  PC

 2  0040 DEE2239393         SCREW, LENS HEAD, SLOT, M8X1                    6  PC

 1       KM5070445G19       COVER, COMB CARRIER, 60, STAINLESS              1  PC

 1       KM5070466H02       PLATE, COMB CARRIER, GALVANIZED                 2  PC

 1       KM836505H01        SPRING, 0.156x1.25O.D.x3.00LGx656LB/IN          2  PC

 1  0090                    BG-31, COMB CARRIER, UPPER K                    1  PC

 1       KM863460G04        COMBPLATE LINING, 60, SS                        1  PC

 2  0006 KM5071671H01       PLATE, SS, B=644                                1  PC

 2  0009 KM863451H03        LINING,COMB CARRIER NOSE,60,                    1  PC

 2  0012 KM5070447H04       PLATE, ALUMINUM, 60, A=784,                     1  PC

 2  0018 KM863450H03        LINING,COMB CARRIER,SST,60,N                    1  PC

 2  0037 DEE2268809         SEALING AGENT 600ML-EMFIMAST                 1.100  PC

 3  0001 DEE2719912         RUBATEX ADHESIVE R-27780                     0.160
GLU

 1  0110                    GLUE LINING TO COMB CARRIER                     1  PC
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1		KM5070433G07	COMB CARRIER, STAINLESS, 60	1	PC
1		KM5052035	COMB SEGMENT, YELLOW PLASTIC, 60	1	PC
2	0010	KM3719605	STEP COMB ECO3000 B GELB NZ3	1	PC
2	0020	KM3719606	STEP COMB ECO3000 C GELB NZ3	1	PC
2	0030	KM3719604	STEP COMB ECO3000 A GELB NZ3	1	PC
2	0040	DEE2239393	SCREW, LENS HEAD, SLOT, M8X1	6	PC
1		KM5070445G19	COVER, COMB CARRIER, 60, STAINLESS	1	PC
1		KM5070466H02	PLATE, COMB CARRIER, GALVANIZED	2	PC
1		KM836505H01	SPRING, 0.156x1.25O.D.x3.00LGx656LB/IN	2	PC
1	0170		LOWER LANDINGS	1	PC
			LANDING COVER SUPPORT (FRAME) LOWER		
1	0180		LANDING COVER SUPPORT (FRAME	1	PC
1		KM5077257H01	ANGLE, LANDING COVER SPACER	2	PC

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Item	Material	Technical Details	Qty	UoM
Level	Sub-Item	Text		
1	US68728004	SCREW,FLT/SK,M10,L=30MM	4	PC
1	DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	4	PC
1	DEE0057127	HEX NUT,M10 8 ST A3B DIN934	4	PC
1	0230	LANDING COVER SUPPORT (FRAME	1	PC
1	KM5077258H01	ANGLE, LANDING COVER SPACER	2	PC
1	US68728004	SCREW,FLT/SK,M10,L=30MM	4	PC
1	DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	4	PC
1	DEE0057127	HEX NUT,M10 8 ST A3B DIN934	4	PC
1	0280	BG-35, LANDING COVER LOWER K	1	PC
		LANDING COVER, CONFIG LOWER		
1	0290	LANDING COVER, CONFIG LOWER	1	PC

1		KM5077277G60	ASSY, LANDING COVER, LOWER, SST	1	PC
2	0001	US97051001	CORD,RUBBER,ACCESS COVER	12	PC
3	0010	US9705100F	CORD,RUBBER,ACCESS COVER	0.200	FT
2	0002	KM5071035H01	PROFILE PART L-50	12	PC
3	0010	US96857Q01	6063-T6 AL.ALLOY,PROF# 36877	0.010	PC
2	0003	KM5077410H48	EXTRUSION, LANDING COVER, FR	1	PC
3	0010	US96854Q0M	6063 - T6 ALUMINUM PROFILE 3	1,294	MM
2	0004	KM5077411H48	EXTRUSION, LANDING COVER, TA	1	PC
3	0010	KM5074006	PROFILE 5070456D10 5300LG-AL	1.294	M
2	0005	KM5077412H48	EXTRUSION, LANDING COVER, 80	1	PC
3	0010	KM3670407	PROFILE -3710311	1.294	M
2	0006	KM5077414G48	ASSY, LANDING COVER, HOLD DO	1	PC
3	0001	KM5075189H01	SPACER, LANDING COVER HOLD D	2	PC
3	0002	KM5077413H48	EXTRUSION, LANDNG COVER, HOL	1	PC
4	0010	US96855Q0M	ACCESS COVER,PROFILE 3710307	1,294	MM
2	0008	KM937866H01	LINING, ACCESS COVER, DIAMON	1	PC
2	0009	KM972664H02	ADHESIVE, LOCTITE H8010, 490	0.300	PC

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	KM822161H07	CP SCRW,FLTHD M8x45,DIN7991,Zn PLT	2	PC
2 0010		(dev.1991) use instead 50mm	2	PC
2 0020	DEE1185464	FLAT HEAD SCREW DIN-0007991-	2	PC
1	KM5077277G61	ASSY, LANDING COVER, MAKE-UP, SST	1	PC
2 0001	KM5077269H48	LANDING COVER, MAKE-UP, SOLI	1	PC
3 0010	US97974Q00	6063-T6 ALUMINUM ALLOY, 4822	0.270	PC

2	0003	KM937866H02	LINING, ACCESS COVER, DIAMON	1	PC
2	0004	KM972664H02	ADHESIVE, LOCTITE H8010, 490	0.100	PC
1		DEE1185464	FLAT HEAD SCREW DIN-0007991-M8X50-8.8-A2	2	PC
1		DEE0057126	HEX NUT,M8 8 ST A2B DIN934	1	PC
1		DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	2	PC
1	0360		BG-35, LANDING COVER UPPER K	1	PC
			LANDING COVER, CONFIG UPPER		
1	0370		LANDING COVER, CONFIG UPPER	1	PC
1		KM5077277G60	ASSY, LANDING COVER, LOWER, SST	1	PC
2	0001	US97051001	CORD,RUBBER,ACCESS COVER	12	PC
3	0010	US9705100F	CORD,RUBBER,ACCESS COVER	0.200	FT
2	0002	KM5071035H01	PROFILE PART L-50	12	PC
3	0010	US96857Q01	6063-T6 AL.ALLOY,PROF# 36877	0.010	PC
2	0003	KM5077410H48	EXTRUSION, LANDING COVER, FR	1	PC
3	0010	US96854Q0M	6063 - T6 ALUMINUM PROFILE 3	1,294	MM
2	0004	KM5077411H48	EXTRUSION, LANDING COVER, TA	1	PC
3	0010	KM5074006	PROFILE 5070456D10 5300LG-AL	1.294	M
2	0005	KM5077412H48	EXTRUSION, LANDING COVER, 80	1	PC
3	0010	KM3670407	PROFILE -3710311	1.294	M
2	0006	KM5077414G48	ASSY, LANDING COVER, HOLD DO	1	PC
3	0001	KM5075189H01	SPACER, LANDING COVER HOLD D	2	PC
3	0002	KM5077413H48	EXTRUSION, LANDNG COVER, HOL	1	PC

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Item Level	Material Sub-Item	Technical Details Text	Qty	UoM
4 0010	US96855Q0M	ACCESS COVER,PROFILE 3710307	1,294	MM
2 0008	KM937866H01	LINING, ACCESS COVER, DIAMON	1	PC

2	0009	KM972664H02	ADHESIVE, LOCTITE H8010, 490	0.300	PC
1		KM822161H07	CP SCRW,FLTHD M8x45,DIN7991,Zn PLT	2	PC
2	0010		(dev.1991) use instead 50mm	2	PC
2	0020	DEE1185464	FLAT HEAD SCREW DIN-0007991-	2	PC
1		KM5077277G61	ASSY, LANDING COVER, MAKE-UP, SST	1	PC
2	0001	KM5077269H48	LANDING COVER, MAKE-UP, SOLI	1	PC
3	0010	US97974Q00	6063-T6 ALUMINUM ALLOY, 4822	0.270	PC
2	0003	KM937866H02	LINING, ACCESS COVER, DIAMON	1	PC
2	0004	KM972664H02	ADHESIVE, LOCTITE H8010, 490	0.100	PC
1		DEE1185464	FLAT HEAD SCREW DIN-0007991-M8X50-8.8-A2	1	PC
1		DEE0057126	HEX NUT,M8 8 ST A2B DIN934	1	PC
1		DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	2	PC
1	0440		BG-30, SUPPORT BEAM, LOWER K	1	PC
1		KM5077253H01	ANGLE, LANDING SUPPORT, LRH	1	PC
1		KM5077254H01	ANGLE, LANDING SUPPORT, LLH	1	PC
1		DEE0056665	HEX SCREW,M10X50 ST 8.8 A3B DIN933	4	PC
1		DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	2	PC
1		DEE0057127	HEX NUT,M10 8 ST A3B DIN934	2	PC
1		DEE8403763	LOCK WASHER,16X11X2MM A3C	2	PC
1		KM5060502	SET SCREW 8.8 A3B R95	2	PC
1		DEE0718061	SOCKET SCREW,M10X25 ST 8.8 A DIN7991	2	PC
1		DEE0057133	HEX NUT,M16 8 ST A3B DIN934	4	PC
1		DEE0031375	FLAT WASHER,M16 ST A3B DIN7349	4	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	2	PC
1		KM5077259H01	BRACKET, LANDING SUPPORT	2	PC
1		KM112797	HEXAGON SCREW M12x20 DIN933-8.8A3G	4	PC

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Item		Material	Technical Details	Qty	
UoM Level		Sub-Item	Text		
1		DEE0080731	FLAT WASHER,M12 ST A3E DIN7349	4	PC
1		DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	4	PC
1		KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	2	PC
1		DEE0260274	HEX NUT,M10 8 ST A3B DIN6924	2	PC
1		DEE0056655	HEX SCREW,M10X16 ST 8.8 A3B DIN933	2	PC
1		KM5060081	BRACKET LV2421470 R9	2	PC
1	0640		UPPER LANDINGS KM5075788C02	1	PC
			BG-30, SUPPORT BEAM, UPPER		
1	0650		BG-30, SUPPORT BEAM, UPPER	1	PC
1		KM5077255H02	ANGLE, LANDING SUPPORT, ULH	1	PC
1		KM5077256H02	ANGLE, LANDING SUPPORT, URH	1	PC
1		DEE0056665	HEX SCREW,M10X50 ST 8.8 A3B DIN933	4	PC
1		DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	2	PC
1		DEE0057127	HEX NUT,M10 8 ST A3B DIN934	2	PC
1		DEE8403763	LOCK WASHER,16X11X2MM A3C	2	PC
1		KM5060502	SET SCREW 8.8 A3B R95	2	PC
1		DEE0718061	SOCKET SCREW,M10X25 ST 8.8 A DIN7991	2	PC
1		DEE0057133	HEX NUT,M16 8 ST A3B DIN934	4	PC
1		DEE0031375	FLAT WASHER,M16 ST A3B DIN7349	4	PC
1		DEE1389282	FLAT WASHER,M10 ST A3B DIN125A	2	PC
1		KM5077259H01	BRACKET, LANDING SUPPORT	2	PC
1		KM112797	HEXAGON SCREW M12x20 DIN933-8.8A3G	4	PC
1		DEE0080731	FLAT WASHER,M12 ST A3E DIN7349	4	PC
1		DEE0063677	FLAT WASHER,M10 ST A3E DIN7349	4	PC
1		KM261434	BOLT, CARRIAGE M10X30 8.8A3G DIN603	2	PC
1		DEE0260274	HEX NUT,M10 8 ST A3B DIN6924	2	PC

1	DEE0056655	HEX SCREW,M10X16 ST 8.8 A3B DIN933	2	PC
1	KM5060081	BRACKET LV2421470 R9	2	PC

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1 0850		A	1	PC
000150	US_EMOD_STEPS	ECOMOD STEPS	1	PC
1 0010		BG-25 STEPS KM5072281C04	1	PC
1	KM3713112	STEP,TYPE600,SILVER/YELLOW	53	PC
2 0020	DEE3704414	STRIP,STEPFACE,R,LEXAN,YEL	53	PC
2 0030	DEE3704413	STRIP,STEPFACE,L,LEXAN,YEL	53	PC
2 0040	DEE2145492	STRIP,L-180.8,LEXAN,YELLO	53	PC
2 0050	DEE2145489	STRIP,L-215.5,LEXAN,YELLO	53	PC
2 0060	DEE2145491	STRIP,L-189.8,LEXAN,YELLO	53	PC
2 0070	DEE3704416	STRIP BOGEN LI GRILLON BT40Z	53	PC
2 0080	DEE3704415	STRIP BOGEN RE GRILLON BT40Z	53	PC
2 0090	DEE2465357	SCREW,M3.5X10 ST 10.9 A1B	901	PC
2 0100	KM3685362	ROLLER,75X23.5,PU6204-HF	106	PC
2 0110	DEE2146634	COUNTER-BRACKET -RE	53	PC
3 0001	DEE1740944	COIL STEEL BAND DIN-0001016-	2.650	M
2 0120	DEE2146635	COUNTER-BRACKET LI	53	PC
3 0001	DEE1740944	COIL STEEL BAND DIN-0001016-	2.650	M
2 0130	DEE1972874	BUSHING -9SMNPB28K	106	PC
2 0140	DEE2700863	WASHER,D25/13X5MM ST1203	106	PC
2 0150	DEE2491248	SCREW,M8X22 ST	106	PC
2 0160	KM5070729H01	SLIDING PIECE	106	PC

000160	USC_ASSEMBLY_80	ASSEMBLY, CUSTOM DESIGN		1	PC
1 0011	DEE0054383	HEX HD. CAP SCR. DIN 933-M6X		44	PC
1 0012	DEE0054387	HEX SCREW,M6X30 ST 8.8 A2B D		16	PC
1 0013	DEE0054405	HHCS,M8X25 DIN 933,A2B		8	PC
1 0014	DEE0056659	HEX SCREW,M10X25 ST 8.8 A3B		8	PC
1 0015	DEE0056661	HEX SCREW,M10X30 ST 8.8 A3B		88	PC
1 0016	DEE0057125	HEXNUT,M6 DIN 934		60	PC

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1 0017	DEE0057127	HEX NUT,M10 8 ST A3B DIN934	88	PC
1 0018	DEE0063678	WASHER, 6 MM	88	PC
1 0019	DEE0068841	NYLOCK NUT DIN 6926-M8-8-A2B	8	PC
1 0020	DEE0118539	HEX NUT,M8 10 ST A3B DIN934	16	PC
1 0021	DEE0216114	HAMMER HEAD SCREW,M8X30 ST 5	8	PC
1 0022	DEE1131960	BRACKET,RST37-2	8	PC
1 0023	DEE2217883	RECEPTACLE 20-AMP 2091S BROW	1	PC
1 0024	DEE2217934	DIE CAST SINGLE GANG BOX FSC	1	PC
1 0025	DEE2217936	DIE CAST GFCI W/PRF COVER 45	1	PC
1 0026	DEE2259941	CIRCUIT BREAKER	1	PC
1 0027	DEE2264063	RETAINER GUIDE BRACKET RTV	2	PC
1 0028	DEE2292252	PLUG INSERT,40A/16A 6/6	1	PC
1 0029	DEE2296212	MTW #18 RED	145.000	FT
1 0030	DEE2296217	MTW #18 BLUE	110.000	FT
1 0031	DEE2296222	MTW #18 YELLOW	80.000	FT
1 0032	DEE2296227	WIRE,MTW/AWM 18MM 600V ORANG	130.000	FT

1	0033	DEE2296232	MTW #18 BROWN	185.000	FT
1	0034	DEE2296237	MTW #18 BLACK	195.000	FT
1	0035	DEE2296533	CABLE CONDUCTOR SHIELDED,18	25.000	FT
1	0036	DEE2477625	REDUCING BUSHING,13MM-1/2IN	2	PC
1	0038	DEE2719053	WIRE,MTW/THHN 12MM 600V GREE	40.000	FT
1	0039	DEE2719055	MTW/THHN #12 BLACK-SOLID	40.000	FT
1	0040	DEE2719059	MTW/THHN #12 WHITE-SOLID	40.000	FT
1	0041	DEE2719329	STRAIN RELIEF,1/2",.25-.13	2	PC
1	0042	DEE2719670	PG16 PLASTIC PLUG #12.9734	2	PC
1	0043	DEE2719702	THERMOSTAT,NEMA 4	1	PC
1	0044	DEE2719709	LIQ TIGHT 1/2 STRAIGHT CONNE	1	PC
1	0045	DEE2719773	WIRE,AWG18MM 600V PURPLE	130.000	FT

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Item / Level	Material / Sub-Item	Technical Details / Text	Qty	UoM
1	0046 DEE3659991	PIPE CLAMP,FITS 1/2IN PIPE	15	PC
1	0047 DEE8403761	RETAINING WASHER,9.7X6.4MM A	60	PC
1	0048 DEE8403762	RETAINING WASHER,13X8X1MM A3	8	PC
1	0049 KM256344	FLAT WASHER,M6 ST A3G DIN125	32	PC
1	0050 KM277323	LIMIT SWITCH,30X30X110MM	2	PC
1	0051 US60248003	WIRE,#10,THWN,BLACK,QTY=FT	275.000	FT
1	0052 DEE2719770	WIRE,MTW/AWM 10MM 600V GREEN	95.000	FT
1	0053 KM5070532H01	LIGHT, LED SPOT, COMB COLOUR	4	PC
1	0054 KM5070620H01	NUT,LOCK,NYLON,THRD=M16	32	PC
1	0055 KM5072284H01	ADAPTER,MTL,M-F,M20-.5"NPT	2	PC
1	0056 KM830895H01	BUTT SPLICE,22-18 AWG	8	PC
1	0057 KM831398G01	SWITCH,WAND ACTUATR,METRIC	4	PC

1	0058	KM839710K01	ASSY,ACCESS COVER LIFT SWITC	2	PC
1	0059	KM848160H01	LABELS,WIRE MARKER	2	PC
1	0060	KM851723H11	CABLE ASSY,5PIN,4CON,22AWG,6	1	PC
1	0061	KM853000H01	PANEL VIEW 300 MICRO, KEY, R	1	PC
1	0062	KM853004H05	CABLE, 8PIN/8PIN MINI W/ NUL	1	PC
1	0063	KM864513H01	HEATER, FINNED TUBULAR,1000W	4	PC
1	0064	KM864906H01	PROTECTOR, ENCODER WIRING	1	PC
1	0065	US104134K01	DEVICE NET CABLE	85.000	FT
1	0069	US104600001	ADAPTER,METAL,M16-PG11	28	PC
1	0070	US105198K13	CABLE, SHIELDED PAIR, & 1-CO	40.000	FT
1	0071	US105259K01	T-FITTING, METAL, 3X, 1/2"NP	8	PC
1	0072	US105435K0F	CBL,2#14AWG,SHLD PRS W/DRN,X	45.000	FT
1	0073	US2823256	LABEL,CSA,WARNING,CONTROL	2	PC
1	0074	US3659044	HALFEN BRACKET FOR FLEX COND	2	PC
1	0075	US3659090	PIT LIGHT SWITCH AND RECPTAC	1	PC
1	0076	US3659092	COMBPLATE HEATER 120V 300W	2	PC

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1	0077 US3659176	HEAT SHRINK .375 ID TO .187	1	PC
1	0078 US3659286	#12AWG 600V THHN STRND BLACK	320.000	FT
1	0079 US3659287	#12AWG 600V THHN STRND WHITE	170.000	FT
1	0080 US3659288	#12AWG 600V THHN STRND GREEN	125.000	FT
1	0081 US3659355	WIRE BUNDLE WHT/BRN/WHT/BLK/	55.000	FT
1	0082 US3659357	WIRE BUNDLE YEL/BRN/WHT/BLK/	30.000	FT
1	0083 US3659489	SEALING FITTING 1/2	35	PC

1	0084	US3659490	SEALING FITTING 1	1	PC
1	0085	US3659495	SIDE ENTRY HOOD 1	1	PC
1	0086	US3659503	WIRE BUNDLE PURPLE/WHT/BLK/G	100.000	FT
1	0087	US3659940	HEATER SHROUD FOR 1KW	4	PC
1	0088	DEE3659953	HEAT SHRINK .063 ID TO .031	4.000	FT
1	0089	US48549005	SCREW,HX,SD,W,TEK,1/4,1.25	54	PC
1	0090	US48799024	TERM,NO-INS,RNG#12#10W#10	4	PC
1	0091	US50230050	NUT,LOCK,1/2"CONDUIT FIT	3	PC
1	0092	US5023700A	TAPE,PLAS,ELEC,3/4W,20'ROL	3	PC
1	0093	US50258001	WIRE TIE,W/O MOUNT,L=4"	40	PC
1	0094	US50258004	CABLE TIE, W/O MNT L=6-3/4IN	16	PC
1	0095	US50258008	WIRE TIE,W/O MNT	75	PC
1	0096	US50260	WIRE TIE,MOUNT,W/ADHESIVE BA	35	PC
1	0097	US50258001	WIRE TIE,W/O MOUNT,L=4"	25	PC
1	0098	US50623001	WIRE NUT,YELLOW,#18-#10,UL	8	PC
1	0099	US50623002	WIRE NUT,RED,#16-#10, UL	18	PC
1	0100	US50623004	WIRE NUT,BLUE,#12-#6, UL	8	PC
1	0101	US5168000A	TAPE,TEFLON,THD SEAL,L=520	4	PC
1	0102	US59554001	RING,SEALING,COND,3/8&1/2"	57	PC
1	0103	US59554003	RING,SEALING,CONDUIT, 1"	1	PC
1	0104	US60248001	WIRE,#14,THWN,BLACK,QTY=FT	545	PC

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Level	Sub-Item	Text		
1	0105	US60248010	WIRE,#14,THWN,WHITE,QTY=FT	85	PC
1	0106	US6255200F	CONDUIT,FLEX,1-1/4",QTY=FT	20.000	FT
1	0107	US67064001	CONNECTOR,.170-.47",1/2NPT	7	PC

1	0108	US67432004	CORD,SO,#18-2,L=4'	2	PC
1	0109	US67775002	FITTING,90DEG,METAL,1/2	31	PC
1	0110	US67775004	FITTING,90DEG,METAL,1	1	PC
1	0111	US67776002	ADAPTER,FL-MTL,CDUIT,1/2	8	PC
1	0112	US67776005	ADAPTER,FL-MTL,CDUIT,1-1/4	1	PC
1	0113	US67776006	ADAPTER,FL-MTL,CDUIT,1-1/2	4	PC
1	0114	US68678002	FITTING,FLX CDUIT,.500	18	PC
1	0115	US68678006	FITTING,FLX CDUIT,1.500	2	PC
1	0116	US68679002	FITTING,FLX CDUIT,.500	30	PC
1	0117	US68679005	FITTING,FLX CDUIT, 1.25	1	PC
1	0118	US92308001	RIGID CONDUIT,1/2",L=10FT	3	PC
1	0119	US92308004	RIGID CONDUIT,1.5",L=10FT	3	PC
1	0120	US9231500F	CONDUIT,1" LQD-TITE,QTY=FT	115.000	FT
1	0121	US9231700F	CONDUIT,1/2",LQDTT,QTY=FT	430.000	FT
1	0122	US92320003	BUSHING,REDUCING,.75"-.50"	4	PC
1	0123	US9233800F	CONDUIT,1-1/2",LQTT,QTY=FT	30.000	FT
1	0124	US92377001	PLUG, 1/2" RUBBER KO HOLE	8	PC
1	0125	US94706006	PIPE STRAP,STAMPED,1.25	4	PC
1	0126	US94706007	PIPE STRAP,STAMPED,1.50	20	PC
1	0127	US96222002	LIGHT,DEMARC,120VAC,ECO	6	PC
1	0128	US96224002	SWITCH,PIN PLUNGER,METRIC	27	PC
1	0129	US96225002	SWITCH,ROLLER ACT,METRIC	2	PC
1	0130	US96424010	CABLE ASSY,4CON,SHLD,L=10M	4	PC
1	0131	US96582001	SENSOR,12MM PROX,HRSS	2	PC
1	0132	US97030001	SENSOR,30MM PROX,MSD	2	PC

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Item		Material	Technical Details	Qty	
Level		Sub-Item	Text		
1	0133	US97050001	ADAPTER,PG11-.5" NPT	23	PC
1	0134	US97164100	PLATE,PIT RECEPTACLE,RTV-HD	4	PC
1	0135	USP38437001	PENDENT BOX, ECO3000	1	PC
1	0136		KONE FURNISHED MATERIAL TO I	1	PC
1	0137	KM873852H01	INPUT PCB,CETEK DEVICENET, C	2	PC
1	0138	USP38495100	RELAY INTERFACE BOARD	1	PC
1	0139	KM860166G03	EPROM,BRAKE CNTRLR,PLC DNET,	1	PC
1	0140	KM857340G01	ASSEMBLY,BRAKE CONTROLLER,EC	1	PC
1	0141		TRUSS J-BOXES	1	PC
1	0142	KM935412G17	J-BOX,HEATER TERMINALS	2	PC
1	0143	KM935413G01	KIT,J-BOXES,ICM	1	PC
1	0144		CONTROLLER,AC DRIVE AND SOFT	1	PC
1	0145	KM849491G02	AC DRIVE,15HP,460VAC,21FLA,W	1	PC
1	0146	USP39435K01	SOFT STARTER,24AMP,60AMP BYP	1	PC
1	0147	KM841382G53	CNTRL,ECO MOD PLC,1-4.8KW MT	1	PC
1	0148		FIELD DOCUMENTS	1	PC
1	0149		935412D50 WIRING,TRUSS HEATI	1	PC
1	0150		935412D51 WIRING,TRUSS FAULT	1	PC
1	0151		935412D70 ASSY,DWG,TRUSS ELE	1	PC
1	0152		935412D71 ASSY,DWG,J-BOX PAS	1	PC
1	0153		935412D72 ASSY,DWG,J-BOX TRU	1	PC
1	0154		935412D73 ASSY,DWG,TRUSS HEA	1	PC
1	0155		841382D58 WIRING,MOTOR AND B	1	PC
1	0156		841382D90 WIRING,CNTRL AND T	1	PC
1	0157		841382D91 WIRING,DEVICENET,P	1	PC
1	0158		935412D20 WORKSHEET,ELECTRIC	1	PC

1	0159		TRAFFIC LIGHTS	1	PC
1	0160	DEE4005568	TRAFFIC LIGHT, F1N, Ø70, 12-	2	PC

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1	0161	DEE4012485	TRAFFIC LIGHT F51N RD70 12-2	2	PC
1	0162	KM5072132G01	FASTENING TRAFFIC LIGHT	2	PC
1	0163	KM930199G01	UPPER ELECTRICAL PANEL ECO-M	1	PC
1	0164	KM930201G01	LOWER ELECTRICAL PANEL ECO-M	1	PC
000170		KM937860R01	KIT, SPARE PARTS, SEPTA, 202	1	PC