4.7 Handrail and Handrail Drive Components Removal and Replacement

The following instructions will guide the worker through removal and replacement of the following components:

- Handrail
- Reinstalling a partially removed handrail
- Handrail Drive Sheave Sprocket
- Take-up Device
- Handrail Drive Chain
- Pressure Rollers

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**CAUTION!**

THE FOLLOWING TASKS SHOULD BE DONE ONLY BY A CERTIFIED ESCALATOR TECHNICIAN

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4.7.1 Handrail Removal and Replacement

The following instructions will guide the worker through the removal and replacement of the handrail.

1. Remove the landing plates in the upper or lower truss and attach the maintenance pendant to the service box. (See paragraph 4.1.2.3.)
2. Remove half of the steps to clear access to the skirt panel. (See paragraph 4.2.2.1.)
3. Turn off the main power at the main disconnect.
4. Remove all skirt panels and “D” molding. This is to gain access to the handrail return guides. (See paragraph 4.5.)
5. Remove the lower and upper handrail entry devices. (See paragraph 4.13.18.)
6. Raise the handrail tension device to its uppermost position.
7. Loosen the pressure on the tension rollers that hold the handrail against the sheave.
8. Remove the handrail guides on the return side by loosening the nut and sliding the handrail out through the open slot in the bracket.
9. Remove the handrail at the lower curve by peeling the handrail off of the handrail steel guide.
10. Continue to remove the handrail by peeling from the steel guide. Once the handrail is free of the guide, remove from the truss.
11. To reinstall the handrail, follow the removal directions in reverse order.
4.7.1.1 Reinstalling a Partially Removed Handrail

If the handrail comes off the exposed section of balustrade, use the following procedure to put the handrail back into position.

1. While the handrail is off, check the condition of the handrail and guides per the preventive maintenance in Section 6 of this manual.

2. If the handrail has come off past the handrail entry device, remove the handrail guard per paragraph 4.6.

3. Slip the handrail back on the steel guides in the following order:
   - Slip the handrail over the steel guides on the lower newel.
   - Slip the handrail over the steel guides in the lower curve.
   - Slip the handrail over the steel guides on the upper newel.
   - Slip the handrail over the steel guides on the incline working up to the upper curve.
   - Slip the handrail over the steel guides on the upper curve. This will require some extra force. Pull on the handrail to get the slack on the upper curve side to aid in slipping over the steel guide.

4. Check the handrail tension and lead/lag. (See paragraph 4.6.2.1.)
4.7.2 Handrail Drive Sheave Removal and Replacement

The following instructions will guide the worker through the removal and replacement of the handrail drive sheave. See Figure 4-19 and Figure 4-20 for illustration.

1. Remove five to six steps. (See paragraph 4.2.2.1.)
2. Position the opening over the handrail drive section. Make sure that the master links for the handrail drive chains are accessible.
3. Turn off the main power at the main disconnect.
4. Remove the “D” molding and interior panel at the upper curve section. (See paragraph 4.4.)
5. Remove the handrail drive chain. (See paragraph 4.7.5.)
6. To release the spring force on the handrail-retaining roller, loosen the jam nut and adjust the retaining roller away from the handrail drive sheave.
   • Remember that there are three retaining roller assemblies.
7. Remove the eight bolts that hold the sheave to the hub.
8. Remove the handrail drive chain. Break the chain at the master link.
9. Remove the C-clip from the handrail drive sheave axle.
10. Slide the handrail drive sprocket off the shaft and remove from the truss.
11. To reinstall, follow the removal directions in reverse order.
HOW TO ADJUST FOLLOWING:
HANDRAIL DRIVE SHEAVE, IDLER SPROCKETS

1) ADJUST THREADED INSERT TO PROPER DIMENSIONS BY MEASURING AS SHOWN IN DETAIL "A"

2) JAM INSERT BY DAMAGING THE THREADS WHICH TOUCH THE PLATE ON THE INSIDE OF THE TRUSS BY HITTING THEM WITH A HAMMER & SCREWDRIVER ON THE TOP, BOTTOM, LEFT AND RIGHT SIDES OF THE INSERT.

3) SET HANDRAIL DRIVE SHEAVE, IDLER SPROCKET

4) CHECK TO CONFIRM DIMENSION "X"

5) IF WRONG RE-ADJUST INSERT AFTER LOOSENING THE SETTING BOLT.

GUIDE ROLLER ASSEMBLY

HANDRAIL DRIVE SHEAVE

GUIDE ROLLER ASSEMBLY

HANDRAIL PINCH ROLLER

HANDRAIL RETAINING ROLLER SPRING

BEFORE OPERATIONS, SET 110mm

TO ADJUST HANDRAIL DRIVE (AT TIME:
1) ADJUST THE SPRING LENGTH OF HANDRAIL RETAINING ROLLER.
2) CONFIRM THE HANDRAIL DRIVE FRAME AT THE DRIVER NEEL SCTION IS 110mm OR MORE (DOWN OPERATION).

Figure 4-19 Handrail Drive Sheave - Overview
Figure 4-20 Handrail Drive Sheave - Detail
4.7.3 Handrail Drive Sheave Pressure Rollers

The following instructions will guide the worker through the removal and replacement of the Handrail Drive Sheave Pressure Rollers. See Figure 4-21 for illustration.

1. Remove the landing plates in the upper or lower truss and attach the maintenance pendant to the service box. (See paragraph 4.1.2.3.)

2. Remove 8 to 12 steps and move the opening to the location of the pressure rollers. (See paragraph 4.2.2.1.)

3. Loosen the jam nut and turn the adjusting nut to reduce pressure on drive sheave.

4. Remove 4 bolts mounting the pressure rollers to the mounting bracket.

5. Replace in reverse order of removal.

6. Adjust spring length to 3.19”.

7. Replace steps and landing plates and disconnect the maintenance pendant.

Figure 4-21 Pressure Roller
4.7.4 Handrail Take-up Device Removal and Replacement

The following steps will guide the worker in the removal and replacement of the Take-up device. See Figure 4-22 for illustration.

1. Remove the landing plates at the lower truss and attach the maintenance pendant to the service box. (See paragraph 4.1.2.3.)
2. Remove the interior panel and skirt panel adjacent to the take-up device. (See paragraph 4.4.2 and 4.5.)
3. Remove 5 to 8 steps and move the opening to the location of the take-up device. (See 4.2.2.1.)
4. Loosen the lock nut and put enough slack in the handrail to remove it from the take-up device.
5. Remove the 4 mounting bolts and remove the take-up device.
6. To replace the take-up device, follow the removal procedures in reverse. (For handrail adjustment see paragraph 4.6.2.)

Figure 4-22 Take-up Device
4.7.5 Handrail Drive Chain Removal and Replacement

The following steps will guide the worker in the removal and replacement of the handrail drive chain.

1. Remove the floorplate at the upper truss and connect the maintenance pendant to the service box. (See paragraph 4.1.2.3.)

2. Remove 8 to 12 steps and move the opening to the location of the handrail drive sheave. (See paragraph 4.2.2.1.)

3. Remove the skirt panel that is over the handrail drive sheave area. (See paragraph 4.5)

4. Move the escalator until the master link is accessible.

5. Loosen the drive chain tension by moving the adjustment sprocket to its highest position.

6. Disconnect the chain by removing the clip that is holding the retaining plate in position. After removing the clip, remove the retaining plate and remove the master link from the chain.

7. Replace the drive chain in reverse order of removal.

8. Replace the steps and landing plates and disconnect the maintenance pendant.