

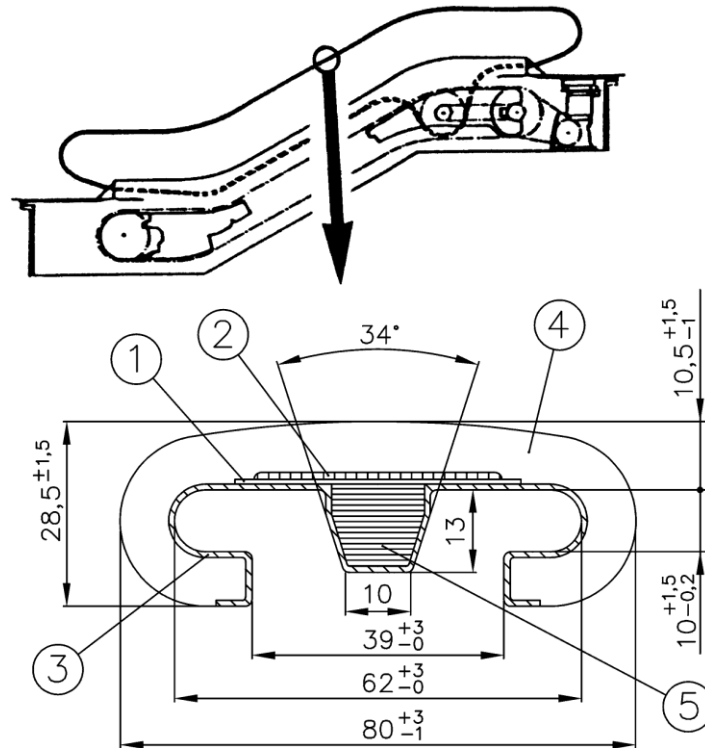
# 11 Maintenance of Handrail Section

## 11.1 V-Type Handrail – Q 409 603

### 1 Description and Mode of Operation

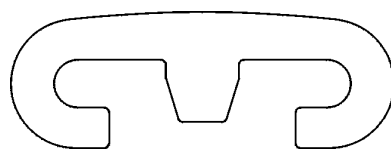
- The handrail is provided with a multilayered, prestretched fabric lining (1). The tensile forces are absorbed by the steel cord reinforcement (2) embedded between the fabric linings.
- The gliding layer (3) is made of synthetic material.
- The outer layer (4) of **black** handrails is made of rubber with embedded white dots.

Fig. 603-01



- 1) Fabric linings (cord)
- 2) Steel cord reinforcement
- 3) Gliding layer
- 4) Outer layer
- 5) V-shape

- Breaking load of the handrail: min. 28,000 N
- V-shape design



EHC Handrail, Type 78 VWNQSF

## 2 Maintenance

### 2.1 Condition Check

#### 2.1.1 Condition of Outer Layer

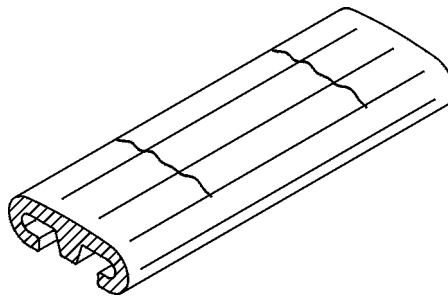
- Check for cracks in outer layer



#### Hint!

Due to aging of handrail

Fig. 603-02



#### 2.1.2 Condition of Lips

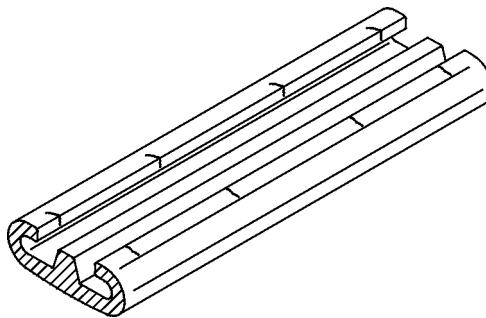
- Check for lip cracks



#### Hint!

Due to overtensioned or aged handrail

Fig. 603-03



## 2.2 Cleaning

### 2.2.1 Cleaning the Gliding Layer

- Clean the gliding layer (3) with a vacuum cleaner.

Fig. 603-04



3) Gliding layer

### 2.2.2 Cleaning the Outer Layer

- Clean dirty or dingy handrails as follows:
  - Soak a rag in water with diluted dishwashing soap (not dishwasher detergent).
  - Vigorously rub the outer layer of the handrail.
  - Polish it with a soft, dry rag.
- If the handrail is extremely dirty and/or the surface is extremely mat, use the care set including cleanser and preserver.



Observe the instructions which come with the care set!



#### **Warning: No benzene!**

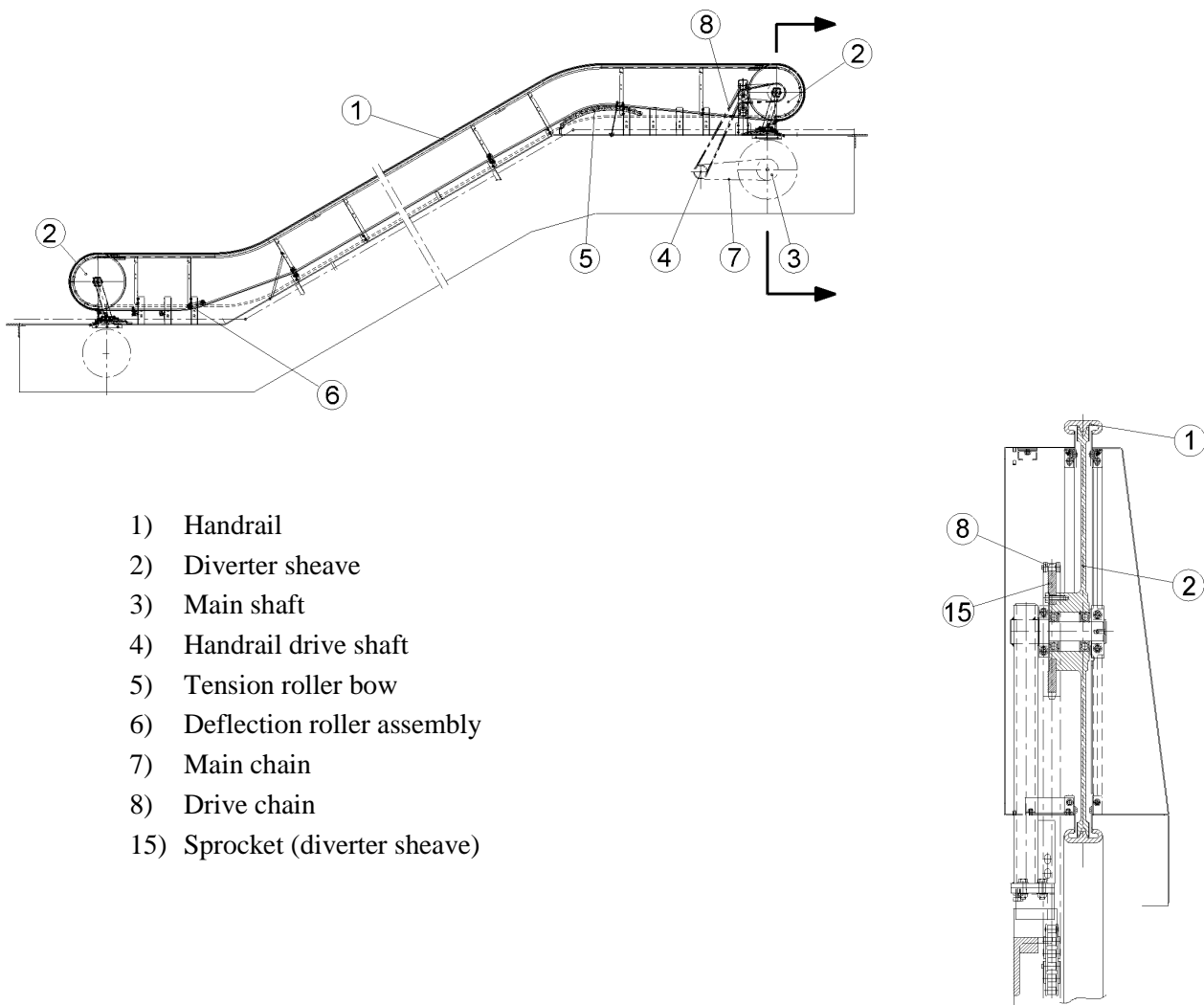
Do not use benzene, benzene-containing solvents, or aggressive cleansers! If these are used, the outer layer will age and crack prematurely!

## 11.2 Handrail Drive, Handrail Guide Profiles – Q 409 639

### 1 Description and Mode of Operation

- The handrail drive is located in the balustrade newel of the drive station. The handrail (1) is driven by the diverter sheave (2) designed as a V-belt pulley.
- The V-type belt pulley made of cast iron and mounted on the diverter sheave drives the handrail. The handrail is guided via handrail guide profiles and plastic rollers (guide and support rollers) which are located in the escalator's incline and in the transition curves. The tension roller bow is composed of a steel base plate with mounted plastic rollers and is vertically movable.

Fig. 639-01



- 1) Handrail
- 2) Diverter sheave
- 3) Main shaft
- 4) Handrail drive shaft
- 5) Tension roller bow
- 6) Deflection roller assembly
- 7) Main chain
- 8) Drive chain
- 15) Sprocket (diverter sheave)

- The handrail (1) is guided via the tension roller bow (5) into the incline and then via the deflection roller assembly (6) onto the diverter sheave (2) of the tension station.
- The handrail is tensioned by the pivoted tension roller bow (5).

## 2 Maintenance

### 2.1 Handrail Tension



**Hint!**

The handrail is propelled solely by the engagement of the handrail's V-shaped part in the diverter sheave (= handrail drive wheel) located in the balustrade newel of the drive station.



**Warning: Excessively high handrail tension!**

An excessively high handrail tension improves propulsion for a short time, but damages the handrail in the long run:

- Contraction of the handrail → increased friction in the guiding system
- Increased flexing when running over the rollers of the tension roller bow (5)



**Warning: Shrinkage of handrails!**

Due to the pretensioned steel cord reinforcement, handrails may shrink in length by max. 0.05%.

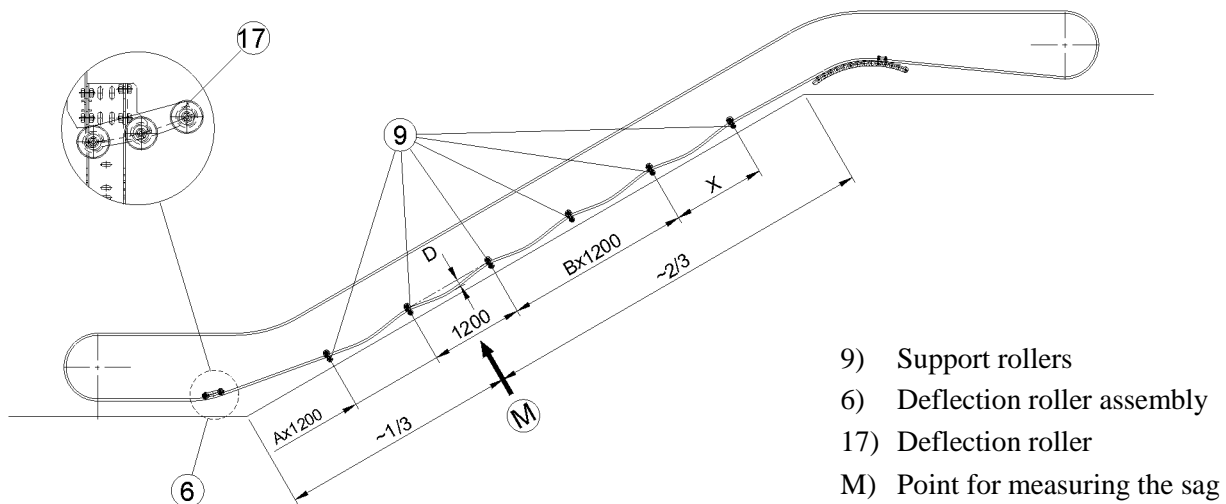
#### 2.1.1 Checking the Handrail Tension



**Hint!**

To perform the check, remove the one inner cladding panel of the transition curve (for the position of the panel Fig. 639-02).

Fig. 639-02



- Check the sag of the handrail.
  - Run the escalator for a complete cycle in the **upward** direction.
  - Measure the sag "D" between two support rollers (12) spaced 1200 mm apart.
  - "D" should measure 8-12 mm.

### 2.1.2 Tensioning the Handrail

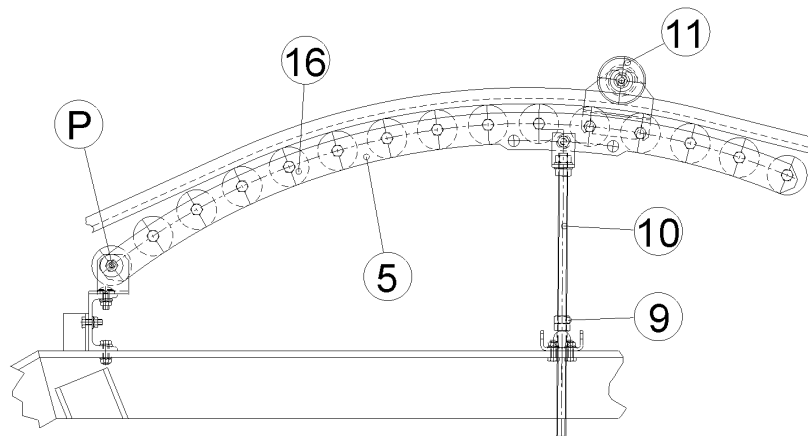


#### Hint!

Due to the handrail's **tendency to shrink**, it may also be required to **relieve** the tension.

- Run the escalator for a complete cycle in the **upward** direction.

Fig. 639-03



- |                       |                          |
|-----------------------|--------------------------|
| 5) Tension roller bow | 11) Lateral guide roller |
| 9) Nut/counternut     | 16) Roller               |
| 10) Push rod          | P) Pivot                 |

- Loosen the counternut (9) and raise or lower the tension roller bow (5) by means of the second nut so that the sag "D" measures approx. 10 mm (see Fig. 639-02).

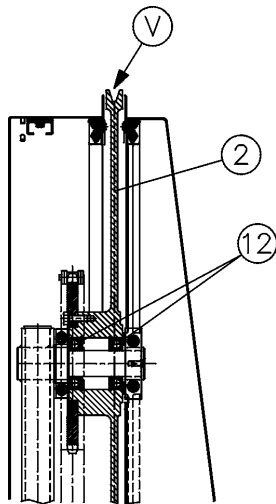
## 2.2 Diverter Sheave



### Hint!

In the tension station, the diverter sheave also acts as the handrail drive wheel.

Fig. 639-04



- 2) Diverter sheave
- V) V-shaped groove
- 12) Ball bearings

- Clean the V-shaped groove (V) of the diverter sheave (25).
- Check whether the ball bearings (26) produce noise.

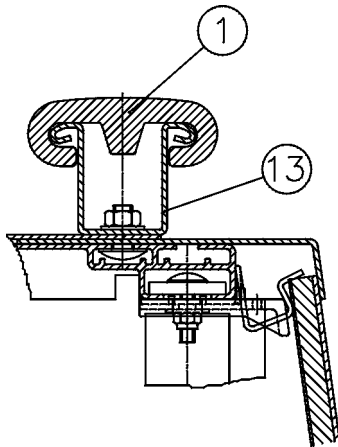


### Hint!

The ball bearings themselves are sealed and lubricated for their entire service life.

## 2.3 Handrail Guide Profiles

Fig. 639-05



- 1) Handrail
- 13) Handrail guide profile

### 2.3.1 Checking the Handrail Guide Profiles

- Check the guide profiles for abrasion: especially at the transition curves at the drive and tension stations.
- Check the joints for true alignment.

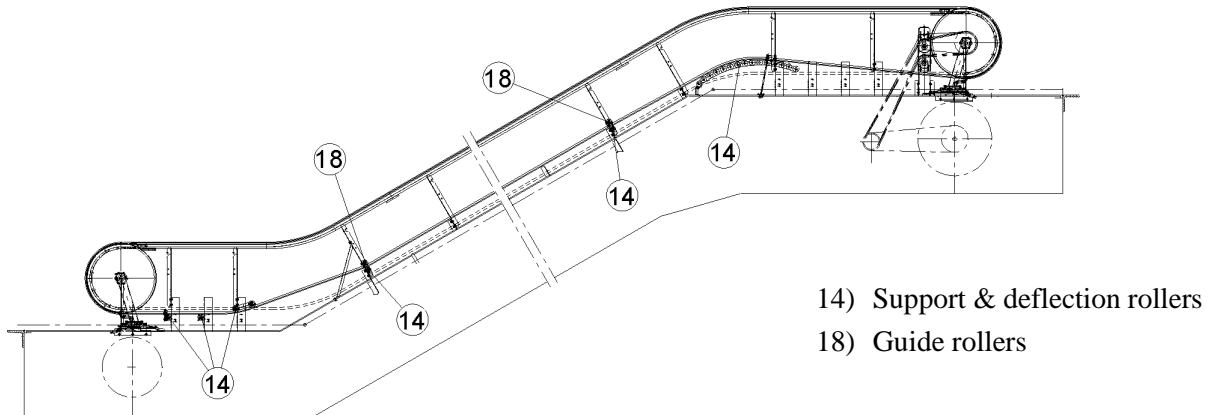
### 2.3.2 Cleaning the Handrail Guide Profiles

- Vacuum clean the profiles to remove dust and abrasive matter.



## 2.4 Support Rollers, Deflection Rollers

Fig. 639-06



- 14) Support & deflection rollers
- 18) Guide rollers

### 2.4.1 Checking the Rollers for Free Movement



#### Hint!

The ball bearings are sealed and lubricated for their entire service life.



#### Warning: Squeaking noise!

Blocked rollers damage the handrail and produce squeaking noises.

### 2.4.2 Cleaning the Rollers

- Dust/abrasive matter may accumulate on the surface of the rollers.



#### Warning: Soiling!

Dirt may get onto the handrail.