



**CONVEYOR ROLLERS
TECHNICAL INFORMATION
SHAFTS**

GENERAL TECHNICAL INFORMATION SHAFTS

Shafts

Shaft material

Interroll offers shafts made of three different materials or finishings:

- Uncoated steel
- Zinc-plated steel
- Stainless steel

All shafts are manufactured from cold-drawn steel. Interroll recommends to match the shaft material to the material of the side profile.

Zinc-plated shafts are cut from galvanized zinc-plated rod material, thus the front faces of the female threaded or spring-loaded shafts are always without zinc plating.

Male threaded shafts cannot be zinc-plated, otherwise they pose a risk of blocked threads due to the zinc layer. For this reason, Interroll recommends selecting either male threaded or flatted shafts in stainless steel to obtain adequate corrosion protection.

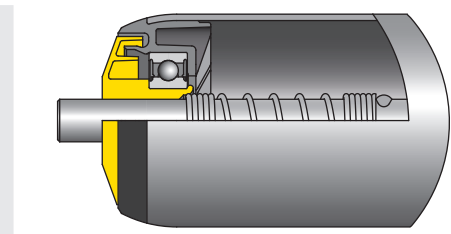
Manufacturing process

After the sawing process, the shafts are milled. Milling reduces deformations of the shaft ends or damages on the side profile during installation to a minimum. Furthermore, milling removes sharp burrs, thereby ruling out a risk of injuries. Hence, this creates not only safe, but also perfectly manageable rollers.

For threaded holes, the centering holes are drilled in a first step to ensure precisely centered threaded holes in the shaft.

Versions

Spring-loaded shaft

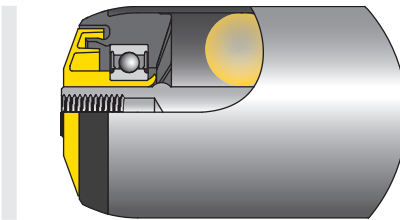


Spring-loaded shafts can be manufactured from round material or hex material.

- Simple shaft design
- Very fast and simple installation and removal
- Suitable crosslinks have to be provided between the side profiles to reinforce the conveyor.

- With driven rollers, play between the shaft and the mounting hole (inevitably due to oblique installation) will create noise, particularly when starting and stopping the turning motion (especially at hex shafts).
- Depending on the selection of material pairing (shaft/side profile) and dimensions (size of hole and spring-loaded shaft), it may lead to wear of the shaft (hexagon loses its edges) or the side profile.
- Shield for zinc-plated shaft material is not zinc-plated

Female threaded shaft



Female threaded shafts can be manufactured from round material or hex material.

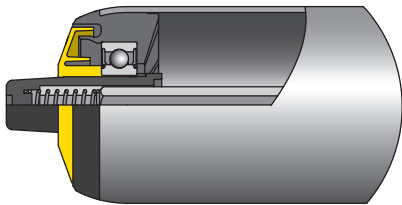
- Lead to a very stable frame construction – generally, no use of crosslinks is required
- A firm connection causes a lot less noise than shafts that are not firmly screwed together.
- The roller shaft and side profile stabilize each other resulting in the conveyor rollers having a greater load capacity than loosely fitted rollers.
- Wear-free towards spring-loaded shafts due to firm connection in the side profile
- Medium-fast installation and removal
- Shield for zinc-plated shaft material not zinc-plated
- Safe discharge of static charges (anti-static design)

Interroll offers the following threads and thread depths:

Thread	Thread depths [mm]
M5	12
M6	15
M8	15
M10	20
M12	20, 25
M16	25

GENERAL TECHNICAL INFORMATION SHAFTS

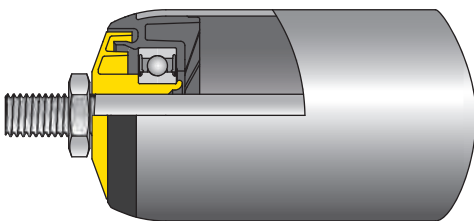
Shaft with shaft-shuttle



Shafts with shaft-shuttle are made of 8-mm hex material. Both ends are fitted with the shaft-shuttle made of polyamide. The conical shaft-shuttle reduces the hex surface towards the shaft end.

- Very fast and simple installation and removal
- Similar low noise level as female threaded shafts
- Wear-free towards spring-loaded shafts due to zero-clearance seating of the shaft free in the side profile (11 mm hex hole, $+0.3/+0.8$ mm)
- Anti-static version
- Particularly suited for modernizing systems; side profiles that have been in use for a long time generally show high tolerances in the holes
- Evenly aligned, anti-rotation shuttles (positioning one side is sufficient)
- Both shaft ends can be pushed in
- Suitable crosslinks have to be provided between the side profiles to reinforce the conveyor
- No scratching of high-quality side profiles during installation and removal

Male threaded shaft

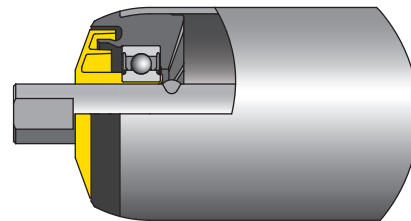


Male threaded shafts are made of round material.

Male threaded shafts feature a thread cut onto the shaft ends. In each case, a nut is screwed onto the shaft in front of the seal. The two nuts are subtracted from the dimension of the "lane width" during the production of the roller. They shorten the usable length of the roller compared to rollers with female threaded shafts.

- A firm connection causes a lot less noise than shafts that are not screwed together
- Very stable frame construction – generally, no use of crosslinks is required
- The roller shaft and side profile stabilize each other resulting in the conveyor rollers having a greater load capacity than loosely fitted rollers.
- Wear-free towards spring-loaded shafts due to firm connection in the side profile
- The two nuts at the seal and two nuts with washers for fastening are part of the scope of delivery
- Available only in the versions uncoated steel or stainless steel

Flatted shaft



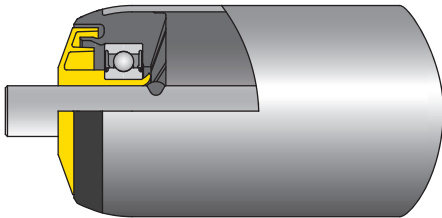
Flatted shafts are made of round material. They have two lateral, parallel milled sections at the shaft ends, which fit into corresponding side profile holes, e.g. into side profiles with open longitudinal holes.

- Very fast and simple installation and removal
- Suitable crosslinks have to be provided between the side profiles to reinforce the conveyor.
- Lower noise level than spring-loaded shafts since only minor play is required (no oblique installation)

A flat shaft can be created on both sides as well as on one side only (D shaft). The flat shaft can be defined in increments of 0.5 mm. Minimum and maximum dimensions depend on the selected shaft diameter.

GENERAL TECHNICAL INFORMATION SHAFTS

Fixed shaft



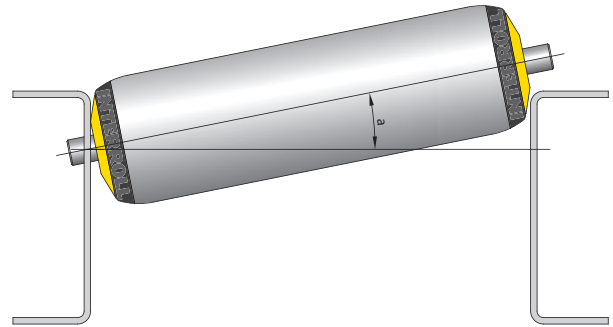
Fixed shafts can be manufactured from hexagon or round material. It is possible to fit the round shafts with a flat shaft. The shafts are mostly inserted in fastening holes in the side profile that are open at the top. To rule out that the shaft turns inside the guide of the side profile, Interroll recommends the use of hexagon shafts or round flattened shafts in corresponding side profiles intended for this purpose.

- Shields, or flat shafts if needed, are not zinc-plated for zinc-plated shaft material.
- Simple shaft design
- Very fast and simple installation and removal with fastening holes open to the top
- Suitable crosslinks have to be provided between the side profiles to reinforce the conveyor
- With driven rollers, play between the shaft and the mounting hole will create noise, particularly when starting and stopping the turning motion. For this reason, Interroll recommends the lowest play possible.

Installation instructions

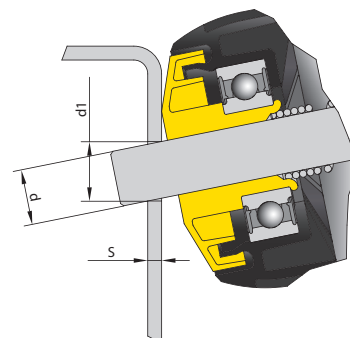
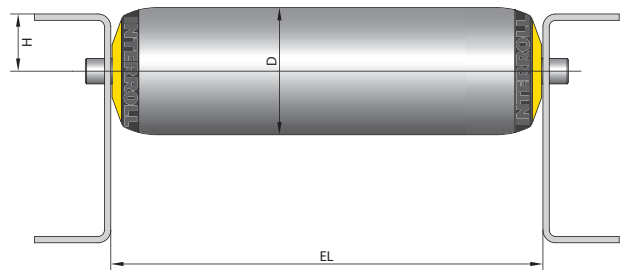
The following should be considered in relation to the selection of a shaft and construction of the side profiles:

1. The hole dimension of the side profile should be as small as possible on conveyor rollers with female threaded shafts. Larger holes can lead to a higher tolerance of the roller pitch and to the height differences of several conveyor rollers. The function of the roller conveyor can be affected by the hole and screw selection.
2. For softer side profiles made out of aluminum or thick powder coatings, female threaded shafts should always be selected with the largest possible diameter and the smallest possible thread. This minimizes the risk of the shaft penetrating the aluminum profile.
3. The installation of conveyor rollers with spring-loaded shaft must be done in an oblique way. That is the spring-loaded shaft must be inserted in a hole of the side profile. Afterwards, the other roller end is moved from an oblique to a horizontal position. The spring-loaded shaft can be inserted into the hole on the opposite side only in the horizontal position. Too small a hole could make installation significantly more difficult.



The following formula and the drawings should provide support in sufficiently dimensioning the fastening hole. For this purpose, an oversize of 0.5 mm of d1 compared to the shaft diameter is sufficient in most cases. In case of side profiles with different heights, the dimension H of the higher profile must always be used for the calculation.

$$d1 = \frac{S \cdot (H + D/2)}{(EL - 1)} + d$$



GENERAL TECHNICAL INFORMATION SHAFTS

Scope of delivery

Material required for fastening the rollers is not part of the scope of delivery, such as washers, nuts, screws.

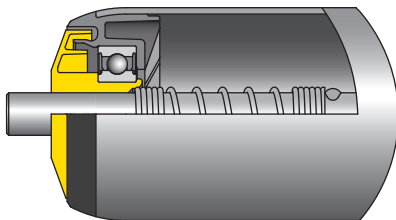
Exceptions

Product	Scope of delivery
Rollers with male threaded shafts	Nuts and washers
Rollers of series 3500KXO light	Taper disks and ball sockets

Labeling

All shafts starting with a length of 100 mm are labeled with the respective production order number. The number is located on the shaft inside the tube. It allows users to order an identical roller without having to provide information about the product, such as the length.

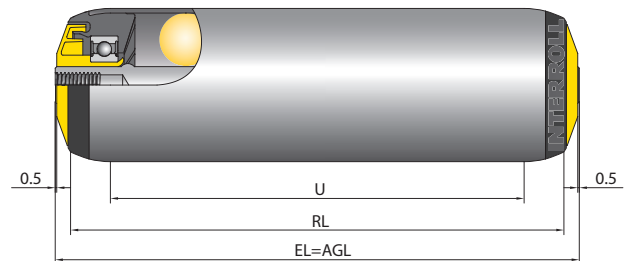
Axial play



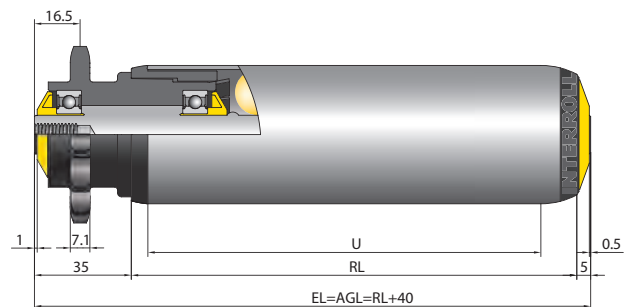
Conveyor rollers must not be warped during installation or operation. This means that play must exist between the seal of the roller and the side profile. The roller must move in axial direction under load.

The axial play must not be too high. Rollers with tapered shaft-shuttle or RollerDrive with tapered spring-loaded shaft are designed so that they have the best possible fit for the hole in the side profile, even in cases of high hole tolerances. This reduces wear and possible noise. If the axial play is too high, it may pose the risk of insufficient positioning of the hexagon in the hole, which leads to wear and noise.

The maximum play is already taken into account during the manufacture of the rollers.



Example: At the time of ordering, a lane width (EL = installation length) of 500 mm is specified for a roller of series 1700 with female threaded shaft. The dimension from seal to seal measures approx. 499 mm. Hence, the roller has an axial play of approx. 1 mm (see figure above).



The axial play under consideration depends on roller series and roller version. For example, an axial play of approx. 1 mm on the drive side and 0.5 mm on the other side is taken into account for a roller of series 3500 with sprocket head (see figure above).

The axial play stated is only a guide value. There may be slight deviations from this figure in individual cases when production tolerances are added. The function of a correctly installed and used conveyor roller is not being impacted.

Variable shaft length

A deviation of the standard shaft length is possible for all roller series. The shafts can be shortened or lengthened. The axial support of a roller via the seal must be ensured at all times. For some roller series, this requires taking appropriate measures in case of a shaft lengthening.

A length change is possible for the following shaft versions:

- Female threaded shaft
- Male threaded shaft
- Fixed shaft
- Spring-loaded shaft
- Flatted shaft

