

## NOTES ON GUIDE ELEMENTS

### Precision slide guide, sintered ferrites

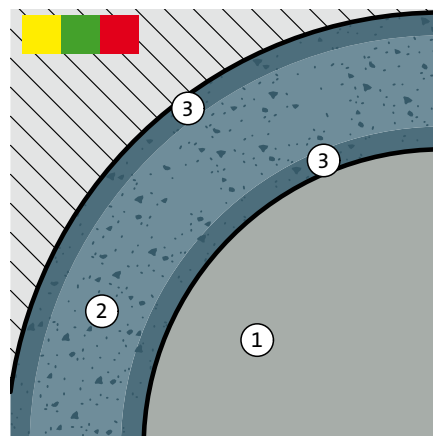
**This guide type consists of self-lubricating sintered ferrites with carbonitrided surface.**

The sintered material used has a porosity content of 18-20 by volume that is filled with an oil under vacuum. In ongoing operation, this oil enters the sliding zone, facilitating long-term lubrication (depending on the usage conditions). As initial and additional lubrication, a suitable grease can be filled into the supply grooves, which reduces the maintenance intervals.

Carbonitriding - a case hardening process - considerably increases the wear resistance of the sliding layer. The precision ground running surface achieves very high quality in terms of dimensional and shape tolerances and low roughness. The guidance accuracy can be changed via pairing classification.

 For bearing clearance ranges, see chapter D.

(1) Guide pillar (2) Sintered ferrite guide bush (3) Carbonitriding



### Precision slide guide, bronze-coated

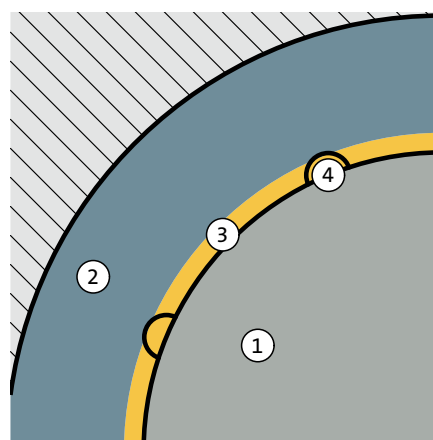
**This guide type consists of a steel body with bronze-coated running surface with helical oil groove and a lubricating nipple for ongoing lubrication.**

The steel body used ensures a high level of intrinsic stability even with high side and edge loads due to its high tensile strength.

The bronze running surface is optimally connected to the steel body and has very good emergency running properties. A permanent lubricant supply with grease is necessary for reliable continuous operation.

The precision ground running surface achieves very high quality in terms of dimensional and shape tolerances and low roughness.

(1) Guide pillar (2) Guide bushing (3) Bronze coating (4) Oil groove



### Slide guide, bronze-coated (ECO-LINE)

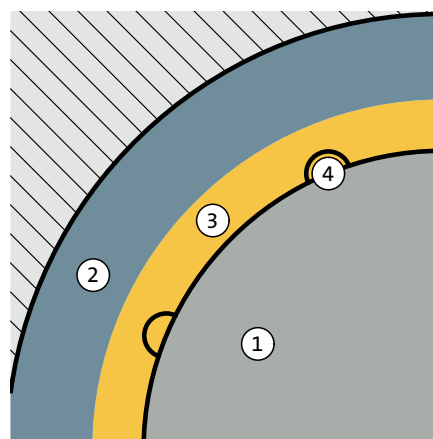
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The precision ground running surface achieves high quality in terms of dimensional and shape tolerances and low roughness.

(1) Guide pillar (2) Guide bushing (3) Bronze coating (4) Oil groove




### Slide guide with solid lubrication rings (ECO-LINE)

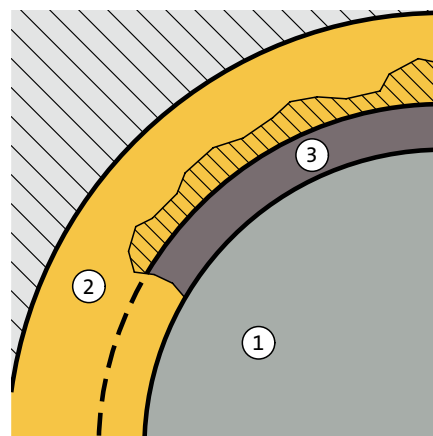
**This low-maintenance guide type consists of a copper alloy with integrated solid lubrication rings.**

The base frame material used offers good guide stability and very good emergency running properties. Following initial lubrication, the solid lubrication is slowly distributed into the sliding zone in ongoing operation of the solid lubrication and provides low-maintenance operation (depending on the usage conditions). The solid lubrication rings take up 25-35% of the total guide surface (depending on the design) and only permit linear movements.

The ground running surface achieves good quality in terms of dimensional and shape tolerances and optimal roughness.

 see low-maintenance sliding elements - description

(1) Guide pillar (2) Guide bushing (3) Solid lubrication ring




## NOTES ON GUIDE ELEMENTS

### Slide guide with non-liquid lubricant pockets

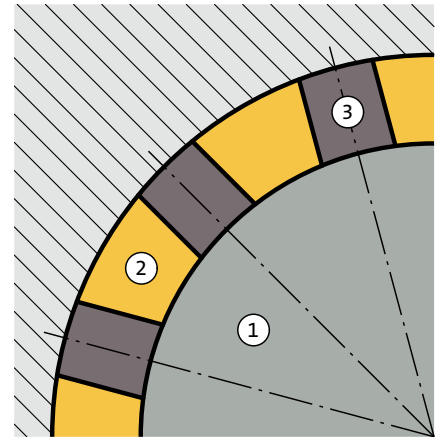
**This low-maintenance guide type consists of a copper alloy with integrated non-liquid lubricant pockets.**

The base frame material used offers good guide stability and very good emergency running properties. Following initial lubrication, the solid lubrication slowly enters the sliding zone in ongoing operation of the solid lubrication and provides low-maintenance operation (depending on the usage conditions). The non-liquid lubricant pockets take up 25-35% of the total guide surface (depending on the design) and permit linear and/or rotational movements (depending on the organisation of the non-liquid lubricant pockets).

The ground running surface achieves good quality in terms of dimensional and shape tolerances and optimal roughness.

 see low-maintenance sliding elements - description

(1) Guide pillar (2) Guide bushing (3) Non-liquid lubricant pocket




### Precision roller bearing

**This guide type is backlash-free with high stability due to pre-stressed roll barrels (balls) and suitable for maximum speeds thanks to the low rolling friction.**

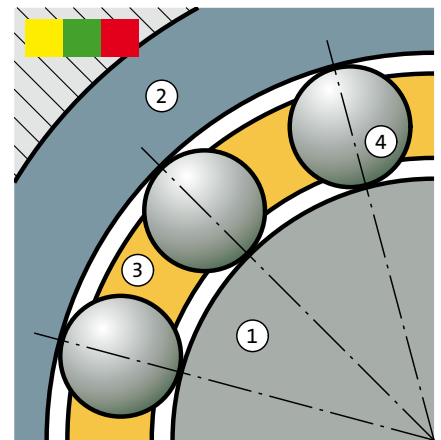
The base frame material used for the guide bushes offers very good guide stability. Together with the hardened precision balls and corresponding gliding pins, this creates smooth-running and precise guidance. Due to the point contact of the rollers, this is not completely rigid under load, however. This can be influenced via the pairing classification.

The ball cages are made from brass or aluminium and due to the high number of rollers have a high dynamic load index – a significant factor for long service life.

The precision ground running surface achieves very high quality in terms of dimensional and shape tolerances and minimal roughness.

 For bearing clearance ranges, see chapter D.

(1) Guide pillar (2) Guide bushing (3) Brass or aluminium cage (4) Ball



### Precision roller guide

**This guide type is backlash-free with very high stability due to pre-stressed roll barrels (rolls) and suitable for maximum speeds thanks to the low rolling friction.**

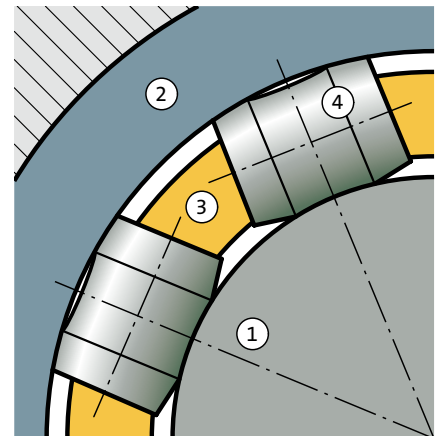
The guide bushes for ball guides are also used here. Together with the hardened precision rollers and corresponding gliding pins, this creates smooth-running and very precise guidance. Due to the linear contact of the rollers this is not completely rigid under load, but is considerably more stable than ball guides.

The roller cages are made from brass and due to the optimum number of rollers have a high dynamic load index – a significant factor for long service life.

The precision ground running surface achieves very high quality in terms of dimensional and shape tolerances and minimal roughness.

To achieve optimal bias, only gliding pins red = .30 and gliding pins yellow = .10 are used!

(1) Guide pillar (2) Guide bushing (3) Cage (4) Roller



### Precision needle roller guide (Million Guide)

**This guide type is back-lash free with maximum stability due to pre-stressed roll barrels (needle rolls) and suitable for maximum speeds due to the low rolling friction.**

The Million Guide units represent the tip of the guide units. Together with the hardened precision needle rollers and corresponding gliding pins and bushes, this creates smooth-running and maximum precision guidance. Due to the linear contact of the rollers this is not completely rigid under load, but is more stable than roller guides.

The needle roller cages are made from plastic and due to the optimum number of rollers have a high dynamic load index – a significant factor for long service life.

The high-precision ground running surface achieves maximum quality in terms of dimensional and shape tolerances and very low roughness.

The components of this guide unit are coordinated with one another and for optimum bias.

(1) Guide pillar (2) Guide bushing (3) Plastic ball cage (4) Needle roller

