

Please read these Operational Instructions carefully and follow them accordingly!

Ignoring these Instructions may lead to malfunctions or to clutch failure, resulting in damage to other parts.
These Installation and Operational Instructions (I + O) are part of the clutch delivery.
Please keep them handy and near to the clutch at all times.

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Safety and Guideline Signs

DANGER



Immediate and impending danger which can lead to severe physical injuries or to death.

CAUTION



Danger of injury to personnel and damage to machines.



Please Observe!
Guidelines on important points.

Safety Regulations

These Installation and Operational Instructions (I + O) are part of the clutch delivery.
Please keep them handy and near to the clutch at all times.



It is forbidden to start use of the product until you have ensured that all applicable EU directives and directives for the machine or system into which the product has been installed have been fulfilled.
At the time these Installation and Operational Instructions go to print, the ROBA[®]-slip hubs accord with the known technical specifications and are operationally safe at the time of delivery.
Without a conformity evaluation, this product is not suitable for use in areas where there is a high danger of explosion. This statement is based on the ATEX directive.

DANGER



- ☐ If the ROBA[®]-slip hubs are modified.
- ☐ If the relevant standards for safety and / or installation conditions are ignored.

User-implemented Protective Measures

- ☐ Cover all moving parts to protect against seizure, dust or foreign body impact.
- ☐ Do not breathe in the friction lining deposits. Remove the dust when cleaning by means of a vacuum cleaner.
- ☐ During slipping, the ROBA[®]-slip hubs heat up. On contact => Danger of burns.

To prevent injury or damage, only professionals and specialists should work on the devices, following the relevant standards and directives. Please read the Installation and Operational Instructions carefully before installation and initial operation of the device.

These Safety Regulations are user hints only and may not be complete!

Installation and Operational Instructions for ROBA®-slip hubs Sizes 0 – 12

(B.1.0.GB)

ROBA®-slip hub
Type series 100

ROBA®-max
Type series 170

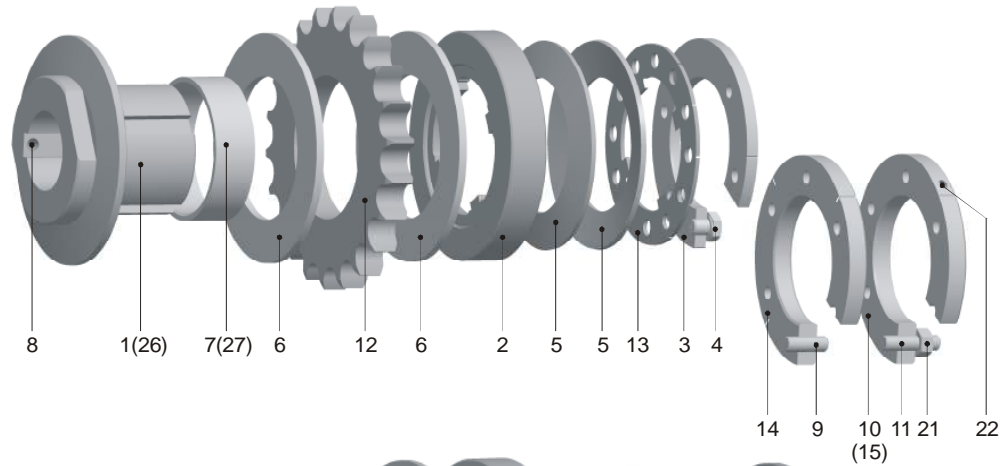


Fig. 1

ROBA®-min
Type series 121
Type series 123

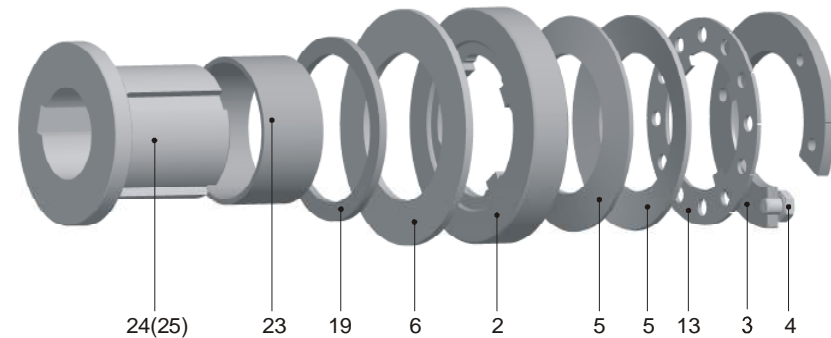


Fig. 2

**ROBA®-slip hub
with needle bearing**
Type series 160

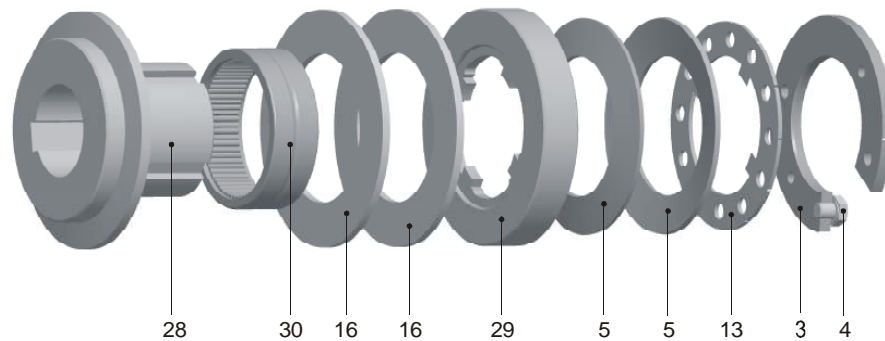


Fig. 3

Parts List (Only use mayr® original parts)

- | | |
|---|-----------------------------------|
| 1 Hub (Type 100) | 16 Friction lining (Type 160) |
| 2 Thrust washer | 17* Friction lining No. 2 |
| 3 Adjusting nut 0 (Sizes 0 - 5) | 18* Rustproof washer |
| 4 Locking screw | 19 Friction lining (ROBA®-min) |
| 5 Cup springs | 20* Friction lining Nos. 4/5 |
| 6 Friction lining No. 1 | 21 Hexagon nut |
| 7 Bearing bushing (Type 100) | 22 Set screw for mould protection |
| 8 Adjusting screw | 23 Bearing bushing (ROBA®-min) |
| 9 Cup spring suspension bolt (Sizes 6 - 12) | 24 Hub (Type 121) |
| 10 Adjusting nut 2 (Sizes 3 - 5) | 25 Hub (Type 123) |
| 11 Set screw (for torque adjustment) | 26 Hub (Type 170) |
| 12 Sprocket wheel | 27 Bearing bushing (Type 170) |
| 13 Lock washer | 28 Hub (Type 160) |
| 14 Adjusting nut 0 (Sizes 6 - 12) | 29 Thrust washer (Type 160) |
| 15 Adjusting nut 1 (Sizes 0 - 5) | 30 Needle bearing |

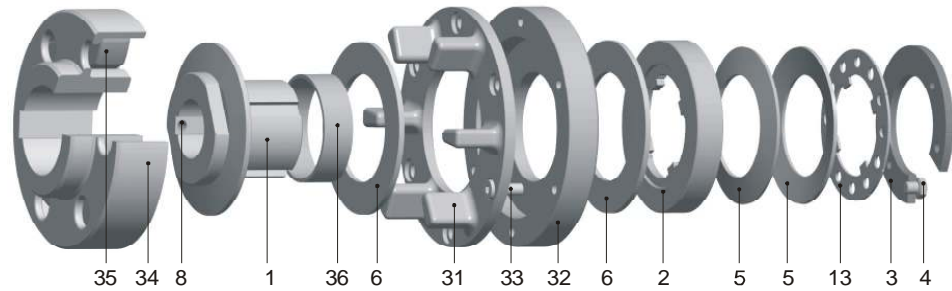
* See pages 4 and 5

When ordering replacement parts, please state the complete Type designation and the Size.

Order example: ROBA®-slip hub Type 100.210, Size 1, 1 set (2 pieces) of friction linings Item 6.

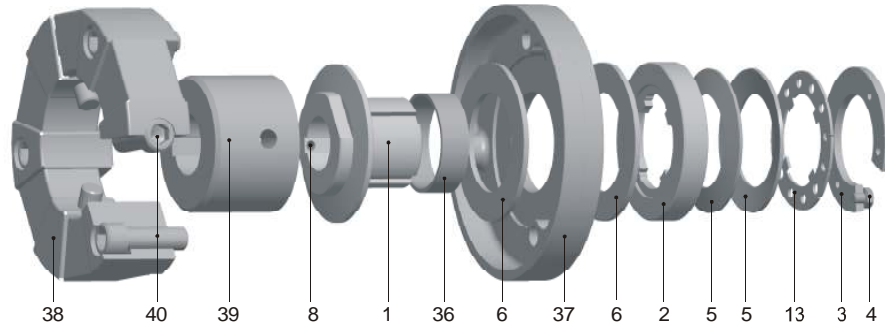
ROBA®-lastic
Type series 135

Fig. 4



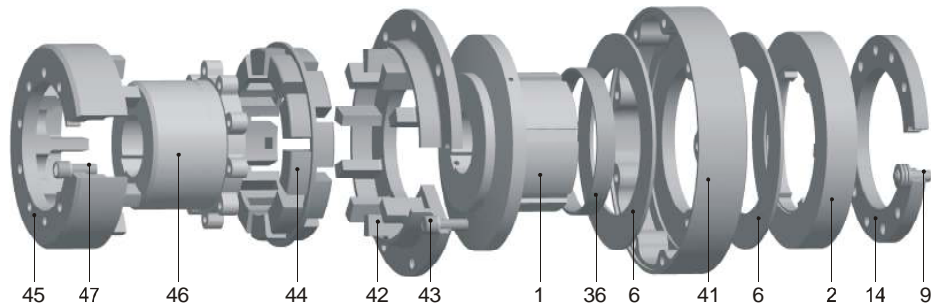
ROBA®-lastic
Type series 131

Fig. 5



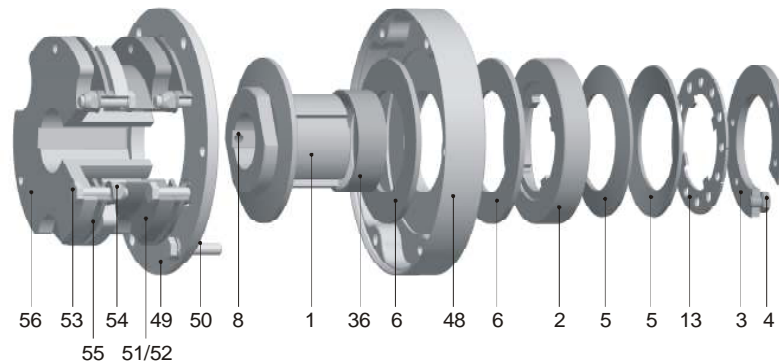
ROBA®-lastic
Type series 132

Fig. 6



ROBA®-LD
Type series 133, 134

Fig. 7



Parts List (Only use mayr® original parts)

- | | | |
|-----------------------------------|--|----------------------------------|
| 1 Hub | 35 Damping buffer | 47 Cap screws (Type 132) |
| 2 Thrust washer | 36 Bearing bushing | 48 Connection flange (ROBA®-LD) |
| 3 Adjusting nut 0 | 37 Flange (Type 131) | 49 Connection washer (ROBA®-LD) |
| 4 Locking screw | 38 Flexible ring (Type 131) | 50 Hexagon head screw (ROBA®-LD) |
| 5 Cup springs | 39 Hub for elastomeric clutch (Type 131) | 51 Sleeve 0 (Type 133) |
| 6 Friction lining | 40 Cap screws (Type 131) | 52 Sleeve 1 (Type 134) |
| 8 Adjusting screw | 41 Transmission flange (Type 132) | 53 Fitting bolts |
| 13 Lock washer | 42 Clutch flange (Type 132) | 54 Hexagon nuts |
| 31 Claw element (Type 135) | 43 Cap screws (Type 132) | 55 Disk pack |
| 32 Transmission flange (Type 135) | 44 Flexible intermediate ring (Type 132) | 56 Hub (ROBA®-D) |
| 33 Cap screws (Type 135) | 45 Claw ring (Type 132) | |
| 34 Pocket element (Type 135) | 46 Flange hub (Type 132) | |

When ordering replacement parts, please state the complete Type designation and the Size.

Order example: ROBA®-lastic Type 135.210, Size 1, 1 set (2 pieces) of friction linings Item 6.

Function (Fig. 1)

ROBA®-slip hubs are used to protect against overload in machine drives with sprocket wheels or toothed wheels. The drive element (sprocket wheel or similar) is pushed onto the bearing bushing (7) and clamped between the friction linings (6) using the thrust washer (2), the cup springs (5) and the adjusting nut (3) with lock washer (13).

The more the cup springs (5) are compressed by the adjusting nut (3), the higher is the torque at which the drive element slips. For an exact description of the torque adjustment, please see pages 7 and 8.

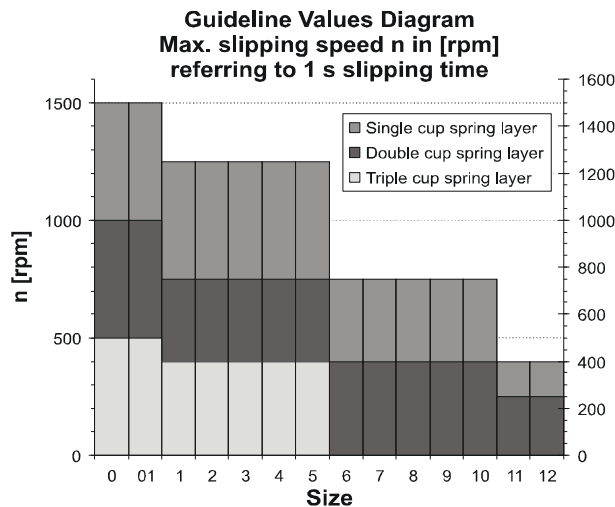
The ROBA®-slip hub is subjected to thermal loads depending on the slipping speed, slipping time and the set torque. The friction performance parameters must not be exceeded so that the friction linings on the ROBA®-slip hub are not overheated or destroyed.

The values presented in the reference value diagram are reference values, and represent maximum slipping speed limits. These speed limits refer to a max. slipping speed of 1 s. The slipping speed must be reduced for longer slipping times. If in doubt, please carry out application-related friction work calculations.



If the permitted slipping duration is exceeded, the ROBA®-slip hub will be subjected to overload => Destruction of the friction linings

Use a slip monitor (speed monitor) to monitor the slipping speed.



State of Delivery

ROBA®-slip hubs are delivered pre-assembled.

The cup spring layering or the number of friction linings are dependent on the Type and correspond to the respective order data stipulated by the customer.

ROBA®-slip hubs in standard delivery feature a finish bore (bore tolerance H7) and a keyway acc. DIN 6885 (keyway tolerance JS9).

We recommend a k6 tolerance for the shaft.

For other tolerances, please contact the manufacturers.

If the order does not contain any information on the installation width of the drive element (sprocket wheel or similar), the bearing bushing (7) is delivered with maximum width.

Additional Instructions for Types 13_ _ _

For all Types 13_ _ _ , additional instructions regarding installation, permitted shaft misalignments and further technical data for the shaft coupling are part of the delivery.

The following Additional Instructions are included in delivery:

For Type 131: **B.1.3.GB**

For Type 132: **B.1.1.GB**

For Type 133: **B.9.0.GB**

For Type 134: **B.9.0.GB**

For Type 135: **B.1.7.GB**

Friction Linings

Table 1 (see below) shows the four different types of friction linings that are available.

The torque and speed values stated in the slip hubs catalogue refer to standard friction linings in dry running. For all other friction linings, please see Table 1 for the corresponding values, or request the values for the respective application.



We recommend that you replace the friction linings at the latest after they have worn down by 0,5 x dimension "s" (see Table 4 / page 6) per friction lining.

Table 1

Friction lining	Application	Achieved torques of M_{max}
1	Standard for dry running	100 %
2	Rustproof friction pairing	100 %
4	Bronze friction lining for oil running	30 %
5	Special sliding material (only for single cup spring layering and reduced friction power)	50 %

Table 2

Size	Limit torque for overload [Nm]		
	Type 100.1 - -	Type 100.2 - -	Type 100.3 - -
0	2 – 10	10 - 20	18 - 30
01	6 – 30	30 - 60	60 - 90
1	14 – 70	70 - 130	130 - 200
2	26 – 130	130 - 250	250 - 400
3	50 – 250	250 - 550	550 - 800
4	110 – 550	550 - 1100	1100 - 1600
5	140 – 700	700 - 1400	1400 - 2100
6	240 – 1200	1200 - 2400	-
7	400 – 2000	2000 - 4000	-
8	680 – 3400	3400 - 6800	-
9	1200 – 6000	6000 - 12000	-
10	2000 – 10000	10000 - 20000	-
11	3400 – 17000	17000 - 34000	-
12	5000 – 25000	25000 - 50000	-

Rustproof Friction Pairing

The standard friction lining might establish a rust connection with grey iron and steel surfaces. This could increase the slip torque substantially.

Therefore, it is possible to equip ROBA®-slips with a rustproof friction pairing (friction lining No. 2).

This pairing consists of two rustproof steel washers (Item 18), which are braced in the slip hub, and two special friction linings (Item 17), which do not stick (Fig. 8).

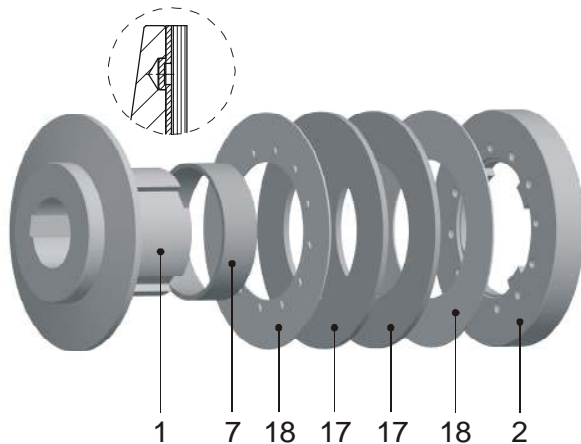


Fig. 8

Important Installation Guidelines

- ❑ The bores, shafts, friction linings and friction surfaces on the drive element must be free of grease and oil.
- ❑ Shaft surface: finely turned or ground ($R_a = 0,8 \mu\text{m}$)
Shaft material: yield point at least 350 N/mm^2 .

Installation

The installation sequence can be seen in the exploded drawings Figs. 1 to 7, or Fig. 9 for needle bearing design.

For adjusting nut (Item 3) installation, the adjusting nut thread and the lock washer must be greased lightly.



Please make sure that the cup spring layering is correct (see also section Cup Spring Layering)!
Make sure that no grease gets onto the friction linings!

When installing ROBA®-lastic Types, please also use the Installation Instructions for the flexible coupling.

The slip hub can be secured axially onto the motor shaft end using a set screw (Item 8, Fig. 1) or, as shown in Fig. 11, using a press cover.

ROBA®-slip hubs in standard delivery feature a finish bore (bore tolerance H7) and a keyway acc. DIN 6885 (keyway tolerance JS9).

We recommend a k6 tolerance for the shaft (see Fig. 11).

Please make sure that the drive element is plane parallel and has a finely ground surface in the bore area or in the area of the friction linings (see Fig. 10 and Table 3).

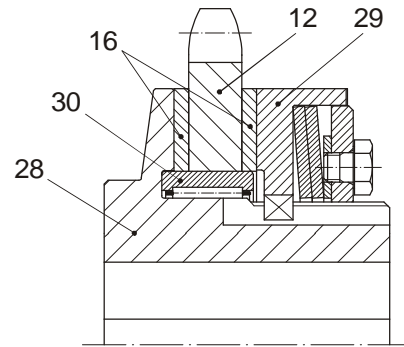


Fig. 9

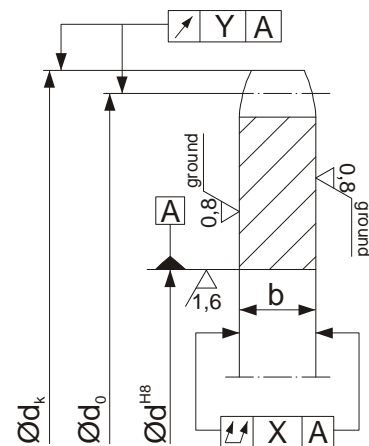


Fig. 10

Table 3

Size	X [mm]	Y [mm]
0 - 2	0,05	0,10
3 - 5	0,08	0,15
6 - 8	0,10	0,20
9 - 12	0,12	0,30

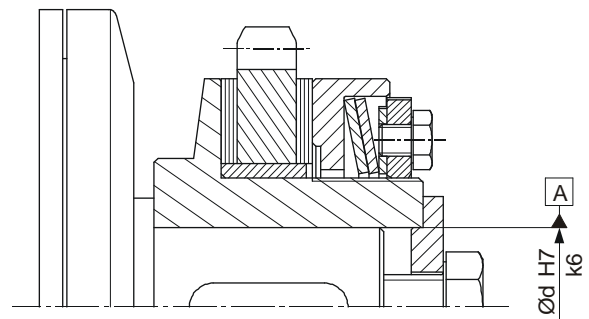


Fig. 11

Bearing Bushing (Items 7, 23, 27)

If the order does not contain any information on the installation width of the drive element (sprocket wheel or similar), the bearing bushing (7) is delivered for a maximum installation width (b_{max}).

If a lower installation width value than b_{max} is required, the bearing bushing must be shortened at the end without an inside chamfer.

The bearing bushing must be mounted with the inner chamfer facing forward, as shown in Fig. 12.

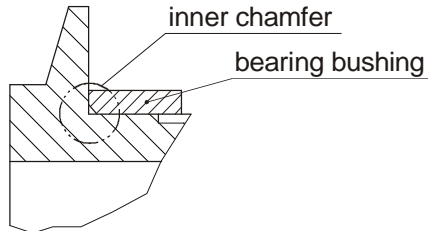


Fig. 12

Bearing bushing width standard friction pairing =
installation width + 1,5 x friction lining width + 0,5 mm

Bearing bushing width rustproof friction pairing =
installation width + 1,5 x friction lining width
+ 2x width rustproof washer + 0,5 mm

At high radial loads and high slipping frequency, we recommend using a slip hub with needle bearing.

Needle Bearing (30)

As it is not possible to adjust the needle bearing (30) length to the installation width "b", the installation width "b" on Type 160 is predefined (see Table 4).

Please bore the drive element using a bore tolerance of N7, and press it onto the needle bearing as shown in Fig. 9.

Table 4

Size	Friction lining width "s" [mm]	Width of the drive element "b" Type 160 [mm]
1	3	7
2	3	10,3
3	4	12,5
4	4	16
5	5	18

Cup Spring Layering

Correct cup spring layering is a prerequisite for problem-free clutch function and torque adjustment.

In Figs. 13 to 19, the respective cup spring layering arrangements dependent on the size are shown.

Rule-of-thumb:

ROBA®-slip hub Type 1__1__ for large friction work and low torque values (cup springs are single-layered, single contact pressing force);

ROBA®-slip hub Type 1__2__ for medium friction work and higher torque values (cup springs are double-layered, double contact pressing force);

ROBA®-slip hub Type 1__3__ for low friction work and high torque values (cup springs are triple-layered, triple contact pressing force);

Fig. 13
Sizes 0 - 5
Single layering

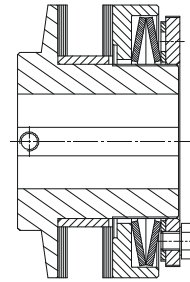


Fig. 14
Sizes 0 - 5
Double layering

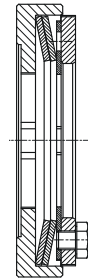


Fig. 15
Sizes 0 - 2
Triple layering

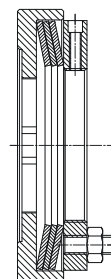
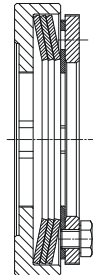


Fig. 16

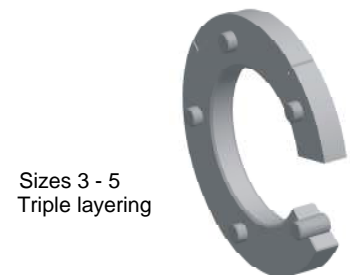


Fig. 17

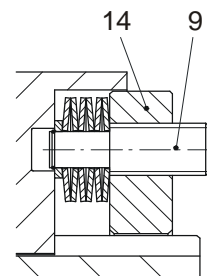


Fig. 18
Single layering

Sizes
6 - 12

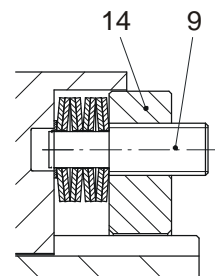


Fig. 19
Double layering

Torque Adjustment Sizes 0 - 5

Both ambient conditions and longer downtimes can influence the set slip torque.

On triple layering, more slip torque scattering might occur specific to the respective load.

The values in the Adjustment Table are only guideline values.

During initial adjustment, please let the ROBA®-slip hub slip several times at 50 % of the maximum torque in order to achieve a clear friction lining wear pattern.

Due to wear on the lining, occasional re-adjustment may be necessary depending on the slipping frequency.



Due to cup spring tolerances, the torque adjustment values can only be considered guideline values.

Torque adjustment on standard adjusting nut (3) cup springs (5) single- or double-layered

There are 12 markings engraved on the thrust washer (2) facing side (Size 0: 24 markings), and 4 markings engraved on the adjusting nut (3) (Fig. 20). The adjusting nut (3) inc. lock washer (13) is pushed manually up to contact onto the cup springs (5). The 4 markings and the markings on the thrust washer (2) must match.

Continue to turn the adjusting nut (3) by the number of graduation lines which accords with the required slip torque. An Adjustment Table is adhered to the clutches Sizes 01 to 5, which indicate the number of graduation lines that need to be adjusted dependent on the torque.

For Size 0, the Adjustment Table is printed in the Installation Instructions (Table 5).

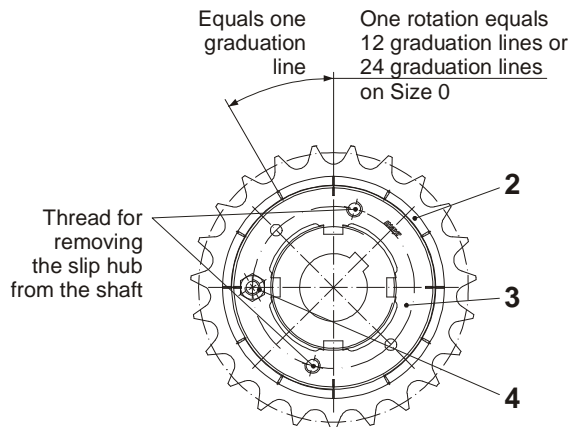


Fig. 20

Example:

On a slip hub Size 0 with single-layered cup springs, a torque of 5 Nm must be adjusted.

Table 5 shows that 8 graduation lines are required for this.

After torque adjustment is completed, the adjusting nut must be secured by screwing in the locking screw (4).

Table 5: Adjustment Table for Size 0 / Type 1 __.10

ROBA-RN Size 0	Single cup spring / \	Nm	2	4	5	6	8	10
		Lines	4	6	8	10	13	16
	Double cup springs //	Nm		9	12	15	17	20
		Lines		4	5	6	7	8
	Triple cup springs ///	Nm			18	23	26	30
		Lines			5	6	7	8

Torque adjustment on cup springs triple-layered Sizes 0 - 5 (Figs. 15 and 16)

The ROBA-slip hubs with triple cup spring layering do not have an Adjustment Table adhered to them.

For these Types, the Adjustment Tables on pages 10 and 11, as well as Table 5 for Size 0, are valid.

Adjustment Sizes 0 - 2

Type 1 __.310 adjusting nut 0

There are 12 markings engraved on the thrust washer (2) facing side and 4 markings engraved on the adjusting nut (3) (Fig. 20). The adjusting nut (3) inc. lock washer (13) is pushed manually up to contact onto the cup springs (5). The 4 markings and the markings on the thrust washer (2) must match. Continue to turn the adjusting nut (3) using a face wrench by the number of graduation lines which accords with the required slip torque. For the number of graduation lines that need to be adjusted dependent on the torque, please see Tables 5, 12 and 13.

After torque adjustment is completed, the adjusting nut (3) must be secured by turning in the locking screw (4).

Adjustment Sizes 0 - 2

Type 1 __.311 adjusting nut 1 (for radial adjustment using hook wrench)

The distance dimension "a" in Fig. 21 indicates the size of the adjusted slip torque independent of friction lining wear. The clutch delivery includes an Adjustment Diagram, which indicates dimensions "a" dependent on the cup spring layering for a certain slip torque.

After torque adjustment is completed, the adjusting nut (15) must be secured by turning the radially arranged set screw (22) into a hub keyway. Clamping the thread as in Fig. 24 is not permitted. If necessary, the adjusting nut (15) may have to be turned.

Adjustment Sizes 3 - 5

Type 1 __.312 adjusting nut 2

Tighten the adjusting nut (10) until dimension "b", as stated in the Adjustment Table (Tables 16 - 18) is reached.

The adjusting nut must be secured by turning the radially arranged set screw (22) into a hub keyway. Clamping the thread as in Fig. 24 is not permitted. If necessary, the adjusting nut (10) may have to be turned.

Tighten the individual set screws (11) in the adjusting nut (10) evenly in steps of approximately 1/4 turn until dimension "a" as stated in the Adjustment Table or the required torque is reached. Counter the set screw with hexagon nuts (21).

The respective keys for torque adjustment on slip hubs are available at the place of manufacture.

Torque adjustment on adjustment nut for radial adjustment Sizes 01 - 5

These ROBA®-slip hubs do not have Adjustment Tables adhered to them.

The distance dimension "a" (see Fig. 21) indicates the size of the adjusted slip torque independent of friction lining wear. For the respective required dimension "a" dependent on the cup spring layering for a certain slip torque, please see the Adjustment Tables on page 9 (Tables 6 - 11).

After torque adjustment is completed, the adjusting nut must be secured by turning the radially arranged set screw into a hub keyway. Clamping the thread as in Fig. 24 is not permitted. If necessary, the adjusting nut may have to be turned.

Torque Adjustment Sizes 6 - 12 on standard adjusting nut (14)

During initial adjustment, please let the ROBA®-slip hub slip several times at 50 % of the maximum torque in order to achieve a clear friction lining wear pattern.

Due to wear on the lining, occasional re-adjustment may be necessary depending on the slipping frequency.

On slip hubs Sizes 6 - 12, the distance dimension "a" indicates the size of the adjusted slip torque (Fig. 22).

For Sizes 6 - 8, dimension "a" is indicated in the Adjustment Table adhered onto the clutch.

For Sizes 9 - 12, an adjustment diagram must be requested if required. Adjust the adjusting nut (14) inc. relaxed cup spring suspension bolts (the suspension bolts (9) protrude from the adjusting nut (14)) to the required dimension "a" using a face wrench. Here, the face wrench pilots must be inserted into two hexagon sockets of the cup spring suspension bolts (9) in order to turn the adjusting nut (14).



Do not continue to turn the cup spring suspension bolts (19) against the snap ring resistance (Fig. 22).

After adjustment is completed, the adjusting nut (14) must be secured by screwing the radially arranged set screw (22) into one of the 4 hub keyways. Clamping the thread as in Fig. 24 is not permitted. If necessary, the adjusting nut (14) may have to be turned.

Then the cup spring suspension bolts (9) are turned in evenly, in steps of approximately 1/4 turns, until they are flush with the adjusting nut (14) (Fig. 23).



The torque adjustment tables can only be considered as guideline values, as they can vary substantially due to cup spring tolerances, friction value fluctuations and surface characteristics or the run-in condition of the output element. Exact torque adjustment requires manufacturer-side adjustment on a test stand (preferably using the customer-side provided output element) or direct torque measurement on the installed clutch or system.

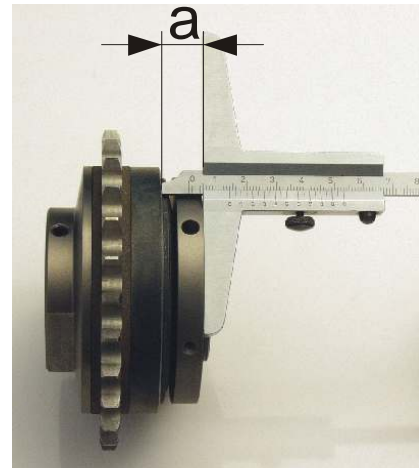


Fig. 21

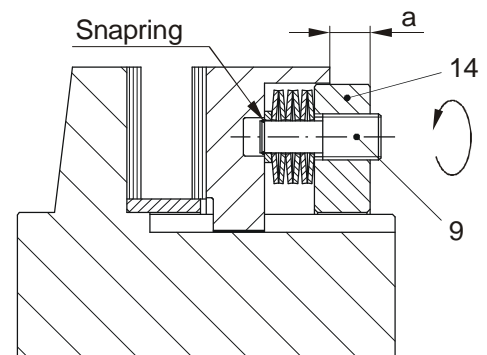


Fig. 22

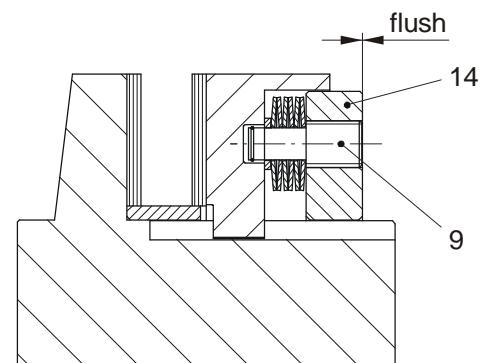


Fig. 23

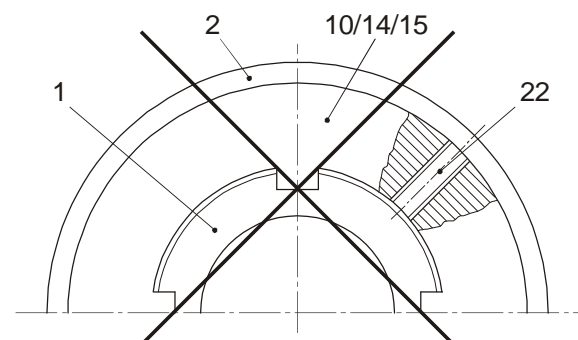
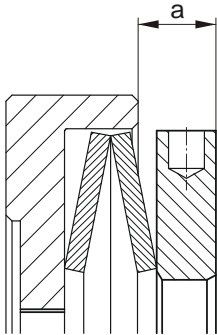


Fig. 24

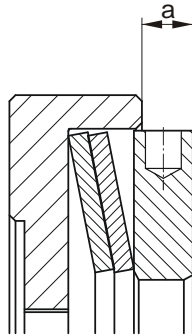
Adjustment Tables for Radial Adjustment on Sizes 01 to 5



The values stated in the Adjustment Tables are only guideline values.
Due to manufacturing tolerances, the actual torque values can in part deviate **substantially** from the values stated in the Table.



Single cup spring layering
Type 1__111



Double cup spring layering
Type 1__211

Table 6: Adjustment Table for Size 01 with Radial Adjusting Nut (15)

Single cup spring layering	Torque [Nm]	6	10	17	21	24,5	27	29	30
	Dimension "a" [mm]	9,8	9,6	9,2	9	8,7	8,5	8,2	8
Double cup spring layering	Torque [Nm]				20	35	46	53	60
	Dimension "a" [mm]				8,2	8,1	8	7,9	7,7

Table 7: Adjustment Table for Size 1 with Radial Adjusting Nut (15)

Single cup spring layering	Torque [Nm]	15	24	32	39	44	48	53	60	70
	Dimension "a" [mm]	11,1	10,7	10,3	10	9,6	9,2	8,8	8,4	8,1
Double cup spring layering	Torque [Nm]			70	85	100	110	120	125	130
	Dimension "a" [mm]			9,1	9	8,8	8,7	8,6	8,5	8,3

Table 8: Adjustment Table for Size 2 with Radial Adjusting Nut (15)

Single cup spring layering	Torque [Nm]	25	36	52	70	80	95	110	120	130
	Dimension "a" [mm]	13,4	13,2	13	12,8	12,5	12,1	11,8	11,4	11
Double cup spring layering	Torque [Nm]			120	148	175	200	220	235	250
	Dimension "a" [mm]			10,4	10,3	10,2	10	9,9	9,8	9,7

Table 9: Adjustment Table for Size 3 with Radial Adjusting Nut (15)

Single cup spring layering	Torque [Nm]	50	62	80	100	130	150	200	235	250
	Dimension "a" [mm]	13,9	13,8	13,5	13,3	13	12,8	12,5	12,3	12
Double cup spring layering	Torque [Nm]	250	295	340	375	420	450	480	520	550
	Dimension "a" [mm]	10,2	10	9,9	9,8	9,7	9,5	9,4	9,3	9,2

Table 10: Adjustment Table for Size 4 with Radial Adjusting Nut (15)

Single cup spring layering	Torque [Nm]	220	255	290	335	365	400	440	480	510	535	550
	Dimension "a" [mm]	16,9	16,8	16,4	16,1	15,8	15,4	14,9	14,4	13,9	13,7	13,3
Double cup spring layering	Torque [Nm]		550	605	630	760	825	860	950	1000	1050	1100
	Dimension "a" [mm]		13,1	12,9	12,7	12,6	12,4	12,2	12,1	11,9	11,7	11,4

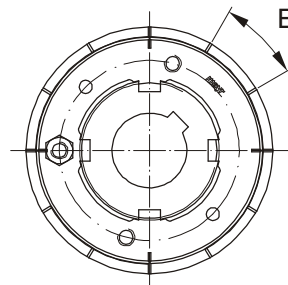
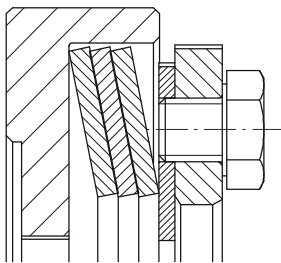
Table 11: Adjustment Table for Size 5 with Radial Adjusting Nut (15)

Single cup spring layering	Torque [Nm]	120	190	265	330	395	465	530	570	620	660	700
	Dimension "a" [mm]	19,4	19,1	18,7	18,4	18,1	17,7	17,4	17,1	16,7	16,4	15,9
Double cup spring layering	Torque [Nm]		440	600	700	800	900	1000	1100	1200	1300	1400
	Dimension "a" [mm]		14,5	14,3	14,2	14	13,8	13,7	13,5	13,3	13,2	13

Adjustment Tables for Triple Layering on Sizes 1 and 2 and Type 1___.310:



The values stated in the Adjustment Tables are only guideline values.
Due to manufacturing tolerances, the actual torque values can in part deviate **substantially** from the values stated in the Table.



Equals one graduation line

One rotation
equals 12 graduation lines

Table 12: Adjustment Table for Size 1 / Type 1___.310

Torque [Nm]	120	140	155	165	175	185	192	200
Graduation lines	7	8	9	10	11	12	13	14

Table 13: Adjustment Table for Size 2 / Type 1___.310

Torque [Nm]	220	250	285	320	350	380	410
Graduation lines	6	7	8	9	10	11	12

Adjustment Tables for Triple Layering on Sizes 1 and 2 and Type 1___.311:



The values stated in the Adjustment Tables are only guideline values.
Due to manufacturing tolerances, the actual torque values can in part deviate **substantially** from the values stated in the Table.

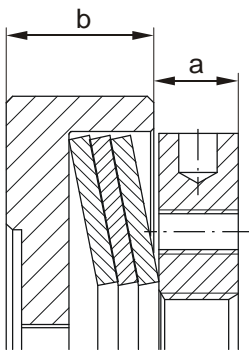


Table 14: Adjustment Table for Size 1 / Type 1___.311

Torque [Nm]	100	120	140	160	180	195	205
Dimension "a" [mm]	11,1	11,0	10,9	10,8	10,7	10,6	10,5
Dimension "b" [mm]	10,3						

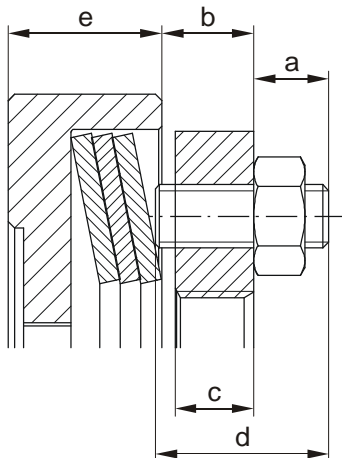
Table 15: Adjustment Table for Size 2 / Type 1___.311

Torque [Nm]	220	245	270	290	320	350	370	385	400
Dimension "a" [mm]	12,9	12,8	12,7	12,6	12,5	12,4	12,3	12,2	12,1
Dimension "b" [mm]	10,7								

Adjustment Tables for Triple Layering on Sizes 3 to 5:



The values stated in the Adjustment Tables are only guideline values.
Due to manufacturing tolerances, the actual torque values can in part deviate **substantially** from the values stated in the Table.



Size	e	C	d
3	14,5	9	M8 x 20
4	17,5	11	M10 x 25
5	19,8	12	M10 x 25

Fig. 29

Table 16: Adjustment Table for Size 3 / Type 1_ _312

Torque [Nm]	110	225	330	425	505	580	655	710	755	800
Dimension "a" [mm]	10,5	10,3	10,1	9,9	9,7	9,5	9,3	9,1	8,9	8,7
Dimension "b" [mm]	14									

Table 17: Adjustment Table for Size 4 / Type 1_ _312

Torque [Nm]	485	600	710	820	930	1050	1150	1250	1330	1410	1505	1600
Dimension "a" [mm]	13,0	12,9	12,8	12,7	12,6	12,5	12,4	12,3	12,2	12,1	12,0	11,9
Dimension "b" [mm]	17,5											

Table 18: Adjustment Table for Size 5 / Type 1_ _312

Torque [Nm]	530	660	800	985	1160	1300	1455	1620	1785	1940	2100
Dimension "a" [mm]	11,9	11,8	11,7	11,6	11,5	11,4	11,3	11,2	11,1	11,0	10,9
Dimension "b" [mm]	19,5										

Disposal

Our slip hub components must be disposed of separately as they consist of different materials.

All metal components: Steel scrap (Code No. 160117)

Friction linings: Brake linings (Code No. 160112)
(Compression materials)

Friction linings: Plastic (Code No. 160119)
(Plastic)

Elastomers: Plastic (Code No. 160119)