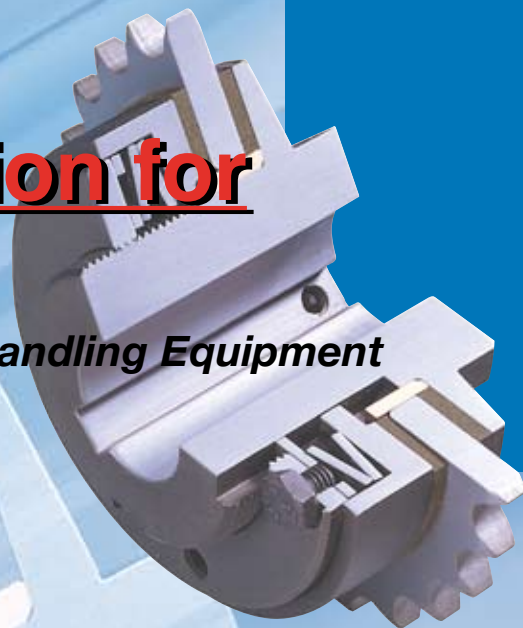


Cost Effective Overload Protection for

*Production Machinery
Conveyors and Material Handling Equipment
Packing Machinery
Construction Machinery
Textile Machinery*



ROBA[®] - slip hubs

Frictionally-locking Safety Clutches

- *Robust and reliable*
- *Load holding*
- *Easy installation and operation*
- *Suitable for high friction work and high torques*

ROBA[®] is a trade name which has been the symbol of quality and experience in clutch construction for decades. A comprehensive range of torque limiters has originated from the robust jaw clutches (ROBA[®]-safety slip clutch).

ROBA[®]-slip hub devices are simple to use. The Table makes it possible to set the torque according to a scale and offers considerably simplified installation. ROBA[®]-slip hub devices are reasonably-priced drive elements which protect machinery and equipment against costly damage, and against downtimes resulting from time-consuming

Application

ROBA[®]-slip hub devices are used as overload protection for machine drives with chain sprockets, toothed wheels or pulleys. The ROBA[®]-slip hub is used wherever expensive and sensitive motors, gearboxes or machinery components need to be protected against overloads. If overload occurs, the drive element slips and, therefore, limits the torque. ROBA[®]-slip hub devices are used in packing machines,

Design

Despite their simple construction, ROBA[®]-slip hub devices are high-quality machine components. The ROBA[®]-slip hub is fully machined and phosphated and, therefore, protected against rust. It is a fully enclosed construction, so that dirt is prevented from reaching internal components. The ROBA[®]-slip hub, which is a rotating component, fits very easily into all drive systems as a result of its smooth construction. It is particularly suitable for attachment to the

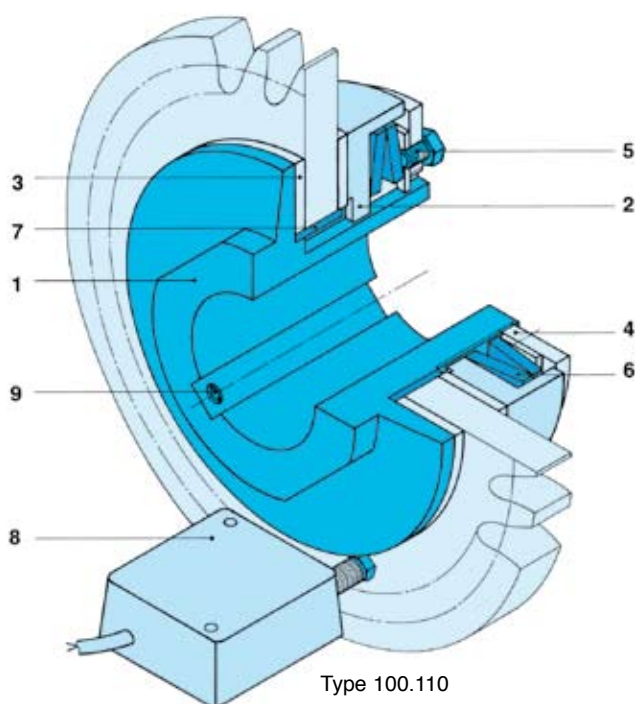
repairs. As a result of their high-strength materials and careful manufacture with optimum utilisation of space, ROBA[®]-slip hub devices are smaller than similar clutches on the market.

Ten different designs and combinations are available. We have a solution for all drive units.

However, if any of your wishes remain unanswered, please contact us. **ROBA[®]** stands for: trust in safety.

transport systems and equipment, construction machinery, textile machinery, agricultural machinery, mechanical handling equipment, feed units, loading systems, in equipment for the chemical industry and in machinery and equipment in general industrial engineering.

outside of machines and for those systems which must be kept clean easily, e.g. in the food industry. ROBA[®]-slip hub devices are designed in such a way that they can be adapted very easily to the most varied of working conditions, e.g. high slipping frequency and low torque or low friction work and extremely high torque, as well as all intermediate stages of torque and friction work, and the desired lifetime.



Type 100.110

Fig. 1

- 1** The short, robust hub ensures compact overall dimensions for the complete slip hub, together with easy assembly and fitting.
- 2** Four wide claws engage in the external keyways of the hub and guarantee reliable torque transmission even under impact loads or reversing load conditions.
- 3** Asbestos-free friction linings with a large surface area and a low wear rate ensure a long lifetime.
- 4** Adjusting nut together with a graduation scale for simple torque and wear adjustment.
- 5** Positive-locking torque adjustment secured via the lock washer and the locking screw to prevent the adjusting nut loosening.
- 6** Low cup spring characteristic curve keeps torque reduction due to wear low. Alternative spring layerings ensure a wide torque range per size.
- 7** The bronze bearing bushing width can be shortened to suit the width of the drive element.
- 8** A speed monitor (available on request) prevents excessively long drive element slippage or serves to monitor the chain drive against breakage.
- 9** The set screw applies pressure onto the keyway of the shaft, preventing axial movement of the slip hub.

Functional Description

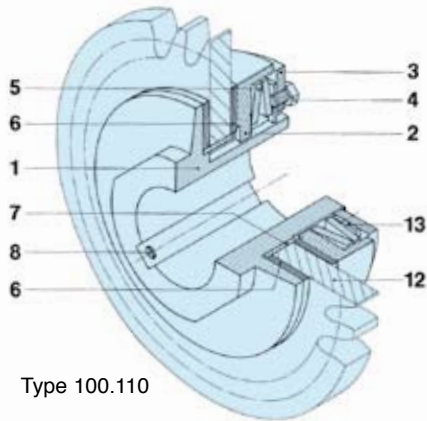


Fig. 2 Type 100.110

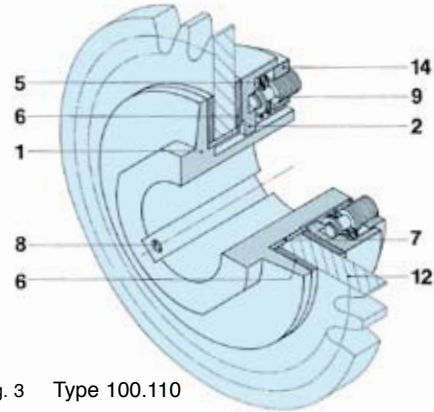


Fig. 3 Type 100.110

Parts List – sizes 0 – 5

- | | |
|-------------------|--------------------|
| 1 Hub | 6 Friction linings |
| 2 Thrust washer | 7 Bearing bushing |
| 3 Adjusting nut 0 | 8 Set screw |
| 4 Locking screw | 12 Chain sprocket |
| 5 Cup springs | 13 Lock washer |

Parts List – sizes 6 – 12

- | | |
|--------------------|------------------------------|
| 1 Hub | 8 Set screw |
| 2 Thrust washer | 9 Cup spring suspension bolt |
| 5 Cup springs | 12 Chain sprocket |
| 6 Friction linings | 14 Adjusting nut 0 |
| 7 Bearing bushing | |

Function

The drive element (12) (chain sprocket or V-belt pulley) is placed on the bushing (7) as shown in Figure 2 and clamped between the friction linings (6) with the aid of the thrust washer (2), the cup springs (5) and the adjusting nut (3) with the lock washer (13). The more powerfully the cup springs (5) are compressed by the adjusting nut (3), the higher the torque at which the drive element (12) slips. The precise torque adjustment operation is described on page 20.

It should also be noted that the difference in torque after friction lining wear is lowest with single cup spring layering and highest with triple cup spring layering. In addition, a torque setting in the uppermost quarter of the maximum torques gives a particularly even setting (the spring characteristic curve has its smallest increase in this area). Other friction linings are also available for special applications (see further details on page 18).

The ROBA®-slip hub is available for three different torque ranges.

Rule of thumb:

ROBA®-slip hub for high friction work and low torque (single-layer cup springs, single contact force).

ROBA®-slip hub for medium friction work and higher torque (double-layer cup springs, double contact force).

ROBA®-slip hub for low friction work and very high torque (triple-layer cup springs, triple contact force).

Please Observe: Please observe the operating speed or slip speed (see Explanation page 18)!

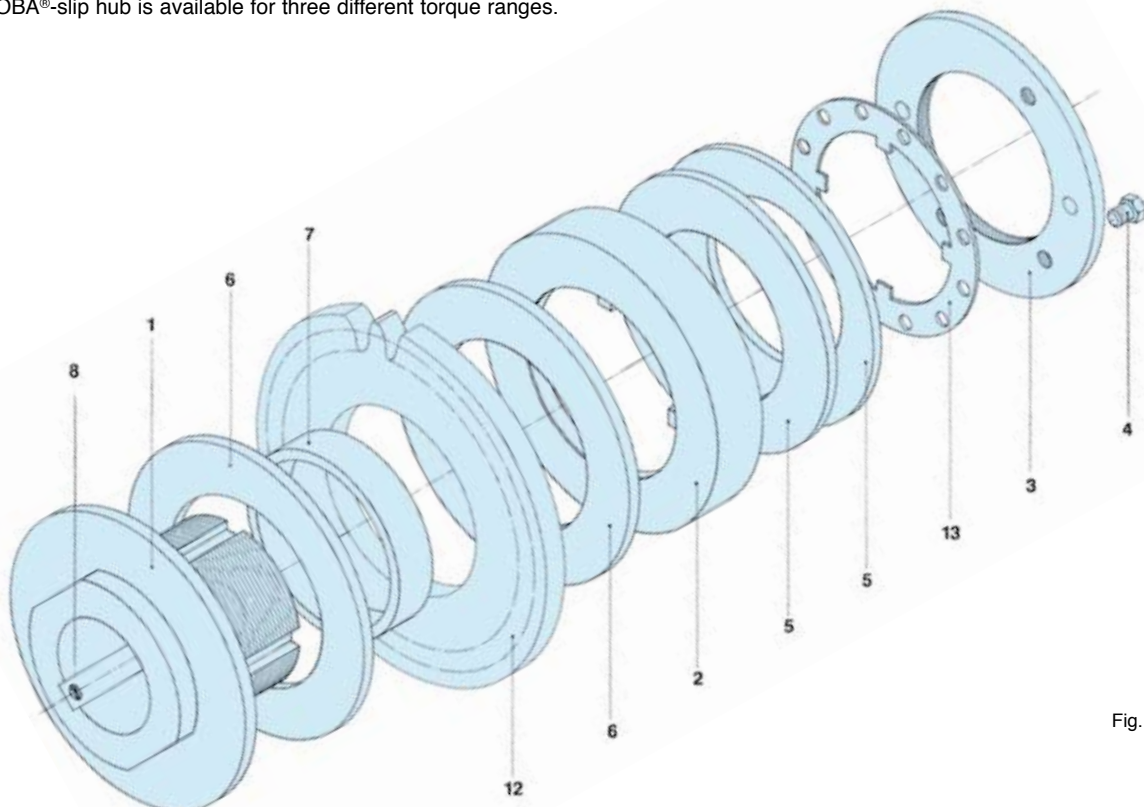
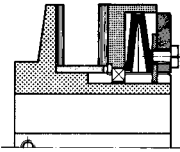
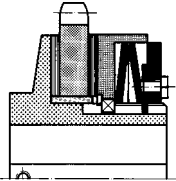
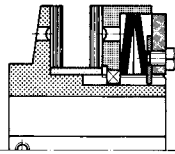
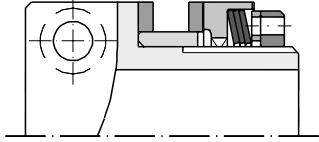
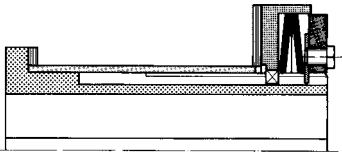
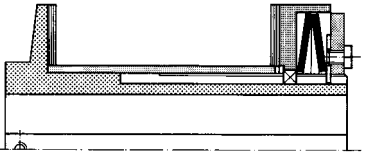
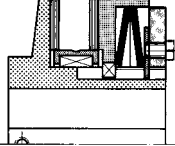
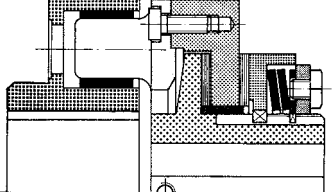
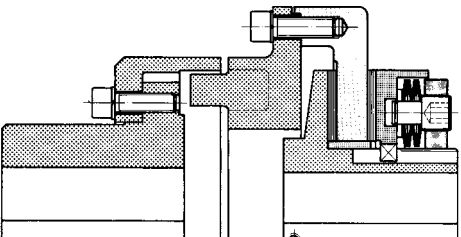
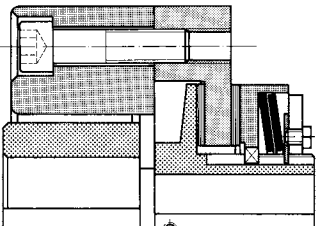
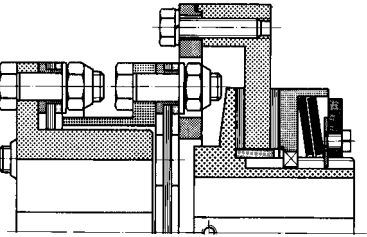


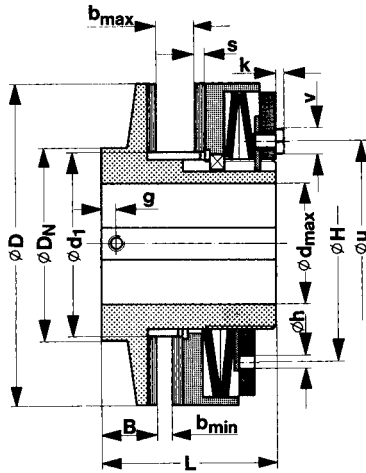
Fig. 4

ROBA [®] -slip hub	Torque [Nm]	Application	Type	Page
ROBA [®] -standard slip hub	2 ÷ 50 000	Safety clutch for machine drives requiring protection against overloads. When the preset overload torque is reached, the drive element slips, preventing damage to the drive system.	100.____	Page 6
				
ROBA [®] -slip hub with standard chain sprocket	6 ÷ 1 400	Slip hub complete with chain sprocket as a reasonably-priced drive element with a high safety factor for all chain drives.	100.____	Page 8
				
ROBA [®] -slip hub with rustproof friction lining	6 ÷ 2 400	For drives in open air installations, particularly wet ambient conditions or for long downtimes.	100._2_	Page 9
				
ROBA [®] -clamp	2 ÷ 400	For shaft ends without a keyway. Enables easy and fast shaft installation. The keyless slip hub is better suited to larger shafts than the standard design.	106.____	Page 10
				
ROBA [®] -min	8 ÷ 1 100	For drive elements with particularly small diameters and very large installation widths. Larger installation width than Type 100, but only capable of transmitting lower torques.	121.____ 123.____	Page 11
				
ROBA [®] -max	2 ÷ 2 100	For drive elements (chain sprockets, toothed wheels etc.) with particularly large installation widths (e.g. double-row chain sprockets). Same product width as Type 123, but is capable of transmitting higher torques.	170.____	Page 12
				

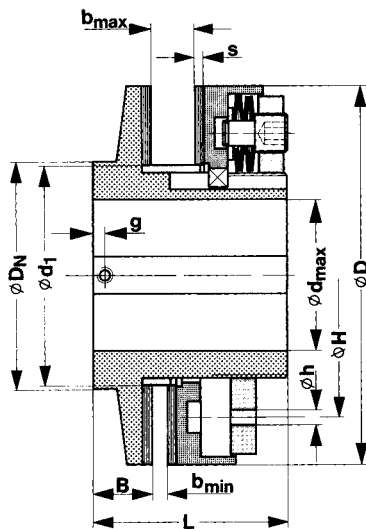
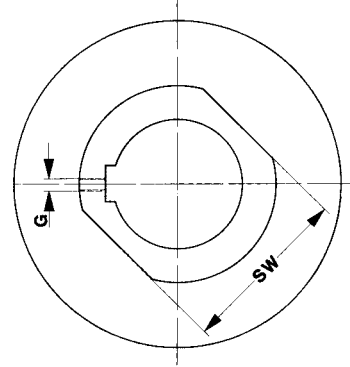
Summary of Structural Shape

ROBA [®] -slip hub	Torque [Nm]	Application	Type	Page
<p>ROBA[®]-slip hub with needle bearing</p> 	9 ÷ 1 260	For drive elements with larger radial loads, a higher slipping frequency and increased shaft run-out accuracy (e.g. toothed wheels).	160.____	Page 13
<p>ROBA[®]-lastic – torsionally flexible</p> 	2 ÷ 1 400	Torsionally flexible safety clutch for connection of two shafts. The flexible coupling component is designed as a simple plug-in coupling.	135.____	Page 14
<p>ROBA[®]-lastic – positive</p> 	240 ÷ 50 000	Positive-locking, torsionally flexible safety clutch for connection of two shafts. Flexible coupling component designed as a torsionally flexible plug-in coupling.	132.____	Page 15
<p>ROBA[®]-lastic – highly flexible</p> 	2 ÷ 2 400	Highly flexible safety clutch for connection of two shafts. Flexible coupling component with high damping characteristics.	131.____	Page 16
<p>ROBA[®]-LD – torsionally rigid</p> 	14 ÷ 6 800	<p>Torsionally stiff safety clutch for connection of two shafts. Flexible coupling component is designed as a torsionally stiff flexible all-steel coupling.</p> <p>Type 133 is designed with a short, torsionally stiff coupling.</p> <p>Type 134 is designed with a long, torsionally stiff coupling.</p>	133.____ 134.____	Page 17

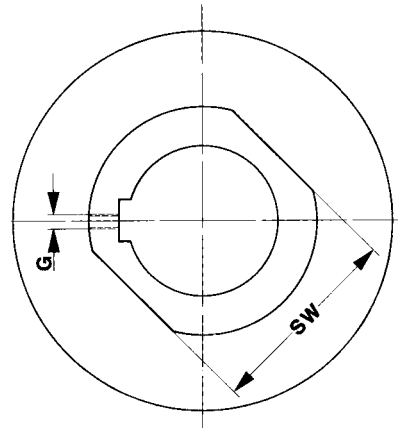
Sizes 0 – 12 Type 100.1___ , 100.2___
 Sizes 1 – 5 Type 100.3___



Type 100.110 sizes 0 – 5



Type 100.110 sizes 6 – 12



Order Example:

Please state on order:	Size	Type	Bore $\varnothing d^{H7}$	Keyway to DIN	Width of drive element b
Order Number:		100. ___			

- 0 ÷ 12 →
- * Lower torque range 1
- * Medium torque range 2
- * High torque range ⁶⁾ 3
- Standard friction lining 1
- Friction lining for oil running ⁷⁾ 4
- Special low-friction material ⁷⁾ 5
- Adjusting nut standard 0
- Adjusting nut with radial adjustment ⁸⁾ 1
- Adjusting nut for triple layering 2
(for high torque range: sizes 3 ÷ 5)

Dependent on size: if not specified, we deliver the bearing bushing for maximum installation width b_{max} . For narrower drive elements, the bearing bushing is shortened, see page 19.

6885-1
 6885-3
 Dependent on size

* See Technical Data, limit torque on overload
 6) Only sizes 0 ÷ 5
 7) Available torques on request
 8) Only sizes 0 ÷ 5

ROBA®-standard slip hub

Technical Data

Size	Limit torque on overload				Operating speed ⁶⁾ n _{max} rpm	Weight pilot bored kg
	Type 100.11_ Nm	Type 100.21_ Nm	Type 100.3_ sizes 0-2 Nm	Type 100.3_2 sizes 3, 4, 5 Nm		
0	2 – 10	10 – 20	18 – 30	–	8500	0.3
01	6 – 30	30 – 60	60 – 90	–	6600	0.6
1	14 – 70	70 – 130	130 – 200	–	5600	0.9
2	26 – 130	130 – 250	250 – 400	–	4300	1.6
3	50 – 250	250 – 550	–	550 – 800	3300	3.1
4	110 – 550	550 – 1100	–	1100 – 1600	2700	5.4
5	140 – 700	700 – 1400	–	1400 – 2100	2200	9.0
6	240 – 1200	1200 – 2400	–	–	1900	12.4
7	400 – 2000	2000 – 4000	–	–	1600	21.2
8	680 – 3400	3400 – 6800	–	–	1300	30.7
9	1200 – 6000	6000 – 12000	–	–	1100	79
10	2000 – 10000	10000 – 20000	–	–	920	125
11	3400 – 17000	17000 – 34000	–	–	780	179
12	5000 – 25000	25000 – 50000	–	–	690	278

Dimensions

Size	B	b _{min}	b _{max}	D	D _N	d ₁ ^{H8*}	d _{min}	d _{max}	G
0	8.5	2	6	45	45	35	7	20 ¹⁾	M4
01	16	3	8	58	40	40	12	22	²⁾
1	17	3	10	68	45	44	12	25	^{2.1)}
2	19	4	12	88	58	58	15	35	³⁾
3	21	5	15	115	75	72	19	45	⁴⁾
4	23	6	18	140	90	85	25	55	M8
5	29	8	20	170	102	98	30	65	M8
6	31	8	23	200	120	116	40	80	M8
7	33	8	25	240	150	144	48	100	M10
8	35	8	25	285	180	170	60	120	M10
9	53	12	28	350	225	237	57	140	M12
10	60	15	35	415	255	270	80	160	M12
11	73	20	45	490	285	305	90	180	M16
12	79	25	55	555	315	335	100	200	M16

Size	g	H	h	k	L	SW	s	u	v
0	3	37	3	– ⁵⁾	33	–	2.5	37	2 ⁵⁾
01	4	46	5	– ⁵⁾	45	32	3	46	2.5 ⁵⁾
1	5	50	5	1.3 ⁵⁾	52	41	3	50	3 ⁵⁾
2	5	67	6	3	57	50	3	67	10
3	5	84	6	5.5	68	65	4	84	13
4	6	104	7	5.5	78	80	4	97	13
5	8	125	8	5.5	92	90	5	109	13
6	8	150	10	–	102	105	5	–	–
7	8	185	10	–	113	135	5	–	–
8	8	230	10	–	115	165	5	–	–
9	9	290	10	–	162	220	6	–	–
10	9	340	10	–	185	250	6	–	–
11	11	400	10	–	222	280	7	–	–
12	11	450	10	–	250	310	7	–	–

1) Up to Ø 19 keyway to DIN 6885-1
Over Ø 19 keyway DIN 6885-3
(Only on size 0)

2) Up to Ø 12 M4
Over Ø 12 M5

2.1) Up to Ø 12 M4
Over Ø 12 up to Ø 17 M5
Over Ø 17 M6

3) Up to Ø 17 M5
Over Ø 17 M6

4) Up to Ø 22 M6
Over Ø 22 M8

5) Hexagon socket
countersunk head
cap screw to DIN
7991

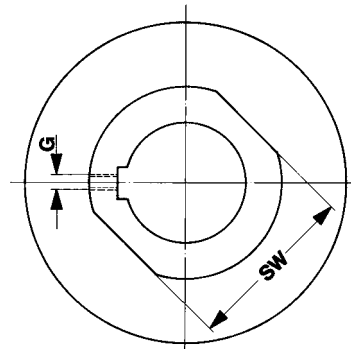
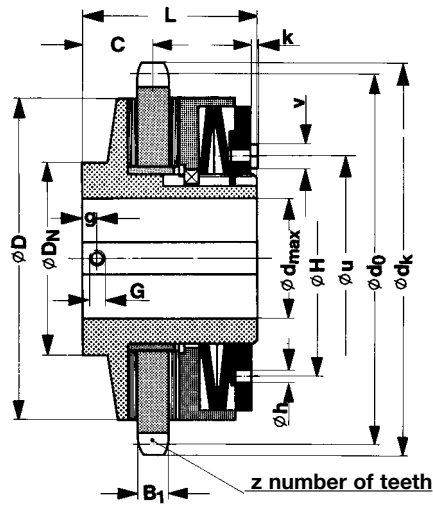
6) See Explanation page 18

* Tolerance value H8 refers to output element bore.

We reserve the right to make
dimensional and constructional alterations.

With standard chain sprocket

Sizes 01 – 5 Type 100.1__ , 100.2__



Type 100.110

The smallest possible chain sprocket was chosen for each slip hub in the ROBA[®]-slip hub series range. Please Observe: it is very important that the tooth number “z” and the data for the chain for the standard chain sprocket are stated on order (or that the necessary data is found in the Table below).

The ROBA[®]-slip hub with standard chain sprocket is the most cost-effective drive element of all chain drives which place high emphasis on safety. All available chain sprockets can be used with this design, observing the installation dimensions for the ROBA[®]-slip hub.

Technical Data and Dimensions

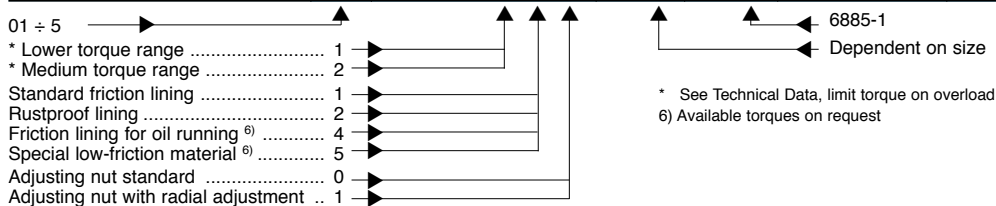
Size	Limit torque on overload		Operating speed n _{max} ⁵⁾ rpm	Weight pilot bored kg	B ₁	C	D	D _N	d _{min}	d _{max}	d ₀
	Type 100.11_ Nm	Type 100.21_ Nm									
01	6 – 30	30 – 60	6600	0.7	5.0	18.5	58	40	12	22	69.95
1	14 – 70	70 – 130	5600	1.1	7.0	20.5	68	45	12	25	89.24
2	26 – 130	130 – 250	4300	1.9	7.0	22.5	88	58	15	35	109.40
3	50 – 250	250 – 550	3300	3.8	10.5	26.25	115	75	19	45	133.86
4	110 – 550	550 – 1100	2700	6.9	15.3	30.65	140	90	25	55	170.43
5	140 – 700	700 – 1400	2200	11.2	15.3	36.65	170	102	30	65	194.59

Size	d _k	G	g	H	h	k	L	SW	u	v	Standard chain sprocket	
											Min. number of teeth	For chains DIN 8187
01	74	¹⁾	4	46	5	– ⁴⁾	45	32	46	2.5 ⁴⁾	23	^{3/8} ” x ^{7/32} ”
1	95	^{1.1)}	5	50	5	1.3 ⁴⁾	52	41	50	3 ⁴⁾	22	^{1/2} ” x ^{5/16} ”
2	115	²⁾	5	67	6	3	57	50	67	10	27	^{1/2} ” x ^{5/16} ”
3	142.5	³⁾	5	84	6	5.5	68	65	84	13	22	^{3/4} ” x ^{7/16} ”
4	182	M8	6	104	7	5.5	78	80	97	13	21	1” x 17 mm
5	206	M8	8	125	8	5.5	92	90	109	13	24	1” x 17 mm

1) Up to Ø 12 M4 Over Ø 12 M5 1.1) Up to Ø 12 M4 Over Ø 12 up to Ø 17 M5 Over Ø 17 M6 2) Up to Ø 17 M5 Over Ø 17 M6 3) Up to Ø 22 M6 Over Ø 22 M8 4) Hexagon socket countersunk head cap screw to DIN 7991 5) See Explanation page 18 We reserve the right to make dimensional and constructional alterations.

Order Example:

Please state on order:	Size	Type	Bore Ød H7	Keyway to DIN	Tooth number z	Chain for standard chain sprocket
Order Number:		100.____				

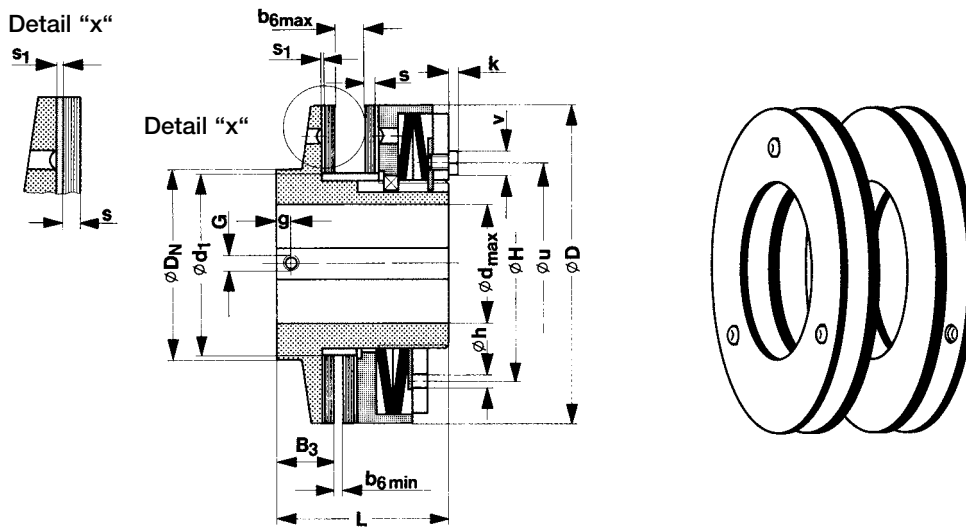


Example: Order number: 3 / 100.211 / 40 / 6885-1 / 22 / ^{3/4}” x ^{7/16}”

ROBA[®]-slip hub

With rustproof friction lining

Sizes 01 – 6 Type 100.12 _ , 100.22 _



Type 100.120

Used in conjunction with cast iron and steel surfaces, the friction linings can form a rust compound which increases the friction value and therefore the torque considerably. However, a high increase in torque makes the machine unsafe.

ROBA[®]-slip hubs with rustproof friction linings offer higher security on drives operating in open air conditions, in particularly wet conditions or those which are subject to long downtimes.

For this reason, ROBA[®]-slip hubs have been equipped with disks made of rustproof steel, which do not stick to the friction lining and form rust compounds.

Technical Data and Dimensions

Size	Max. torque on overload		Operating speed $n_{max}^{5)}$ rpm	Weight pilot bored kg	B_3	$b_6 \text{ min}$	$b_6 \text{ max}$	D	D_N	$d_1^{H8^*}$
	Type 100.12_ Nm	Type 100.22_ Nm								
01	6 – 30	30 – 60	6600	0.6	17	1	6	58	40	40
1	14 – 70	70 – 130	5600	0.9	18	1	8	68	45	44
2	26 – 130	130 – 250	4300	1.7	20	2	10	88	58	58
3	50 – 250	250 – 550	3300	3.2	22	3	13	115	75	72
4	110 – 550	550 – 1100	2700	5.5	24.5	3	15	140	90	85
5	140 – 700	700 – 1400	2200	9.2	30.5	5	17	170	102	98
6	240 – 1200	1200 – 2400	1900	12.9	32.5	5	20	200	120	116

Size	d_{min}	d_{max}	G	g	H	h	k	L	s	s_1	u	v
01	12	22	1)	4	46	5	– ⁴⁾	45	3	1	46	2.5 ⁴⁾
1	12	25	1.1)	5	50	5	1.3 ⁴⁾	52	3	1	50	3 ⁴⁾
2	15	35	2)	5	67	6	3	57	3	1	67	10
3	19	45	3)	5	84	6	5.5	68	4	1	84	13
4	25	55	M8	6	104	7	5.5	78	4	1.5	97	13
5	30	65	M8	8	125	8	5.5	92	5	1.5	109	13
6	40	80	M8	8	150	10	–	102	5	1.5	–	–

1) Up to Ø 12 M4
Over Ø 12 M5

1.1) Up to Ø 12 M4
Over Ø 12 up to Ø 17 M5
Over Ø 17 M6

2) Up to Ø 17 M5
Over Ø 17 M6

3) Up to Ø 22 M6
Over Ø 22 M8

4) Hexagon socket countersunk head
cap screw to DIN 7991

5) See Explanation page 18

We reserve the right to
make dimensional and
constructional alterations.

* Tolerance value H8 refers to output element bore

Order Example:

Please state on order:	Size	Type	Bore Ø d^{H7}	Keyway to DIN	Width of drive element b_6
Order Number:		100.22			

01 ÷ 6

* Lower torque range 1

* Medium torque range 2

Adjusting nut standard 0

Adjusting nut with radial adjustment⁶⁾ 1

* See Technical Data, limit torque on overload

6) Only sizes 01 ÷ 5

Dependent on size: if not specified, we deliver the bearing bushing for maximum installation width b_{6max} . For narrower drive elements, the bearing bushing is shortened, see page 19.

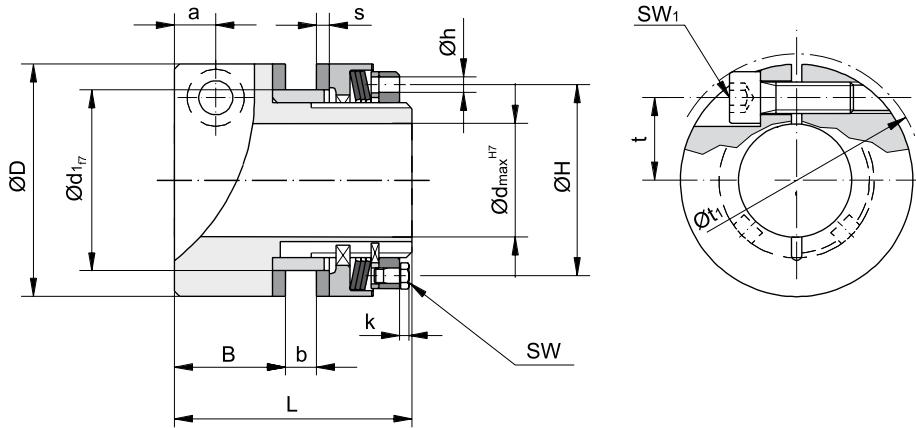
6885-1

Dependent on size

Example: Order number 4 / 100.220 / 50 / 6885-1 / 12

Sizes 0 – 2

Type 106. _ _ _



Type 106.310

ROBA[®]-clamp devices are used to provide overload protection in machine drives with shaft ends without a keyway. The frictionally-locking, backlash-free clamping hub is attached to the shaft by tightening one single screw. This means that axial attachment using a shaft collar, set screws or a press cover are unnecessary. The ROBA[®]-clamp is used in packing machines, transport machines

and devices, construction machinery, textile machinery, agricultural machinery, conveyor systems, feed devices, loading systems, in chemical industry machines as well as in devices and systems for general mechanical engineering.

Technical Data

Size	Limit torque on overload			Operating speed ⁷⁾ rpm		Weight pilot bored kg	Tightening torque for clamping screw SW ₁ Nm
	Type 106.11_ Nm	Type 106.21_ Nm	Type 106.31_ Nm	n _{max}	Max. differential speed		
0	2 – 10	10 – 20	18 – 30	8500	500	0.5	16
01	6 – 30	30 – 60	60 – 90	6600	500	0.85	41
1	14 – 70	70 – 130	130 – 200	5600	500	1.25	83
2	26 – 130	130 – 250	250 – 400	4300	500	2.3	145

Dimensions

Size	a	B	b _{min}	b _{max}	D	d ₁ ^{H8*}	d _{min} ³⁾		d _{max}
							from ⁵⁾	from ⁶⁾	
0	8	21.5	2	6	45	35	7	12	22
01	10	26	3	8	58	40	–	12	25
1	12	30	3	10	68	44	12	20	28
2	14	34	4	12	88	58	15	20	40

Size	H	h	k	L	SW	SW ₁	s	t	t ₁
0	37	3	–	46	2	5	2.5	16	50
01	46	5	–	55	2.5	6	3	19	62
1	50	5	1.3	65	3	8	3	22	74
2	67	6	3	72	10 ¹⁾	10	3	30	93

* Tolerance value H8 refers to the output element bore

We reserve the right to make dimensional and constructional alterations.

Order Example:

Please state on order:	Size	Type	Bore Ø d ^{H7}	Width of drive element b
Order Number:		106. _ _ _		

0 ÷ 2

- * Lower torque range..... 1
- * Medium torque range 2
- * Higher torque range..... 3
- Standard friction lining..... 1
- Friction lining for oil running ²⁾..... 4
- Special low-friction material⁴⁾..... 5
- Adjusting nut standard..... 0
- Adjusting nut with radial adjustment..... 1

Dependent on size: if not specified, we deliver the bearing bushing for the maximum installation width b_{max}. For narrower drive elements, the bearing bushing is shortened.

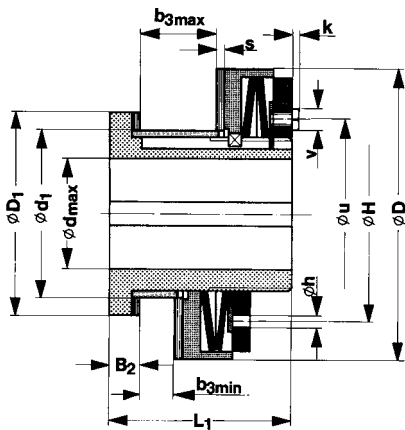
Dependent on size

- 1) Hexagon head screws DIN 933
- 2) Available torque: 30 % of Type 106.31_
- 3) Observe the shaft load
- 4) Only permitted for lower torque range (Type 106.11_); available torque 50 %
- 5) Transmittable limit torque = 60 % of Type 106.31_
- 6) Transmittable limit torque = 100 % of Type 106.31_
- 7) See Explanation page 18

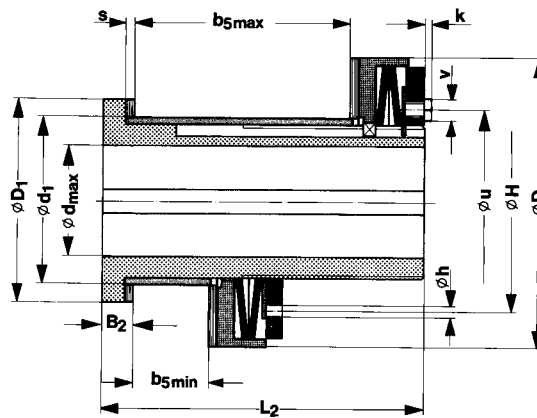
Example: Order number 2 / 106.210 / 30 / 10

ROBA[®]-min

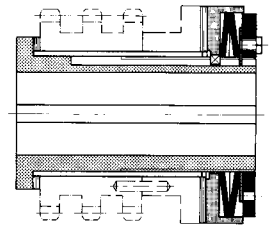
Sizes 1 – 5 Type 121.1 ___, 121.2 ___
 Sizes 1 – 5 Type 123.1 ___, 123.2 ___



Type 121.110



Type 123.110



Installation Example
Type 123.110

ROBA[®]-min Types 121 and 123 are slip hubs for drive elements, chain sprockets or toothed wheels with especially small diameters. ROBA[®]-min devices are used in particular for high transmission ratios or also for double or triple-row chain sprockets or wide toothed

wheels. When compared with the standard Type 100, the ROBA[®]-min Types 121 and 123 transmit lower torques. An advantage of Types 121 and 123 is that the drive element comes very close to the shaft bearing as a result of the short hub collar.

Technical Data

Size	Max. torque on overload		Operating speed ²⁾ n _{max} rpm	Weight pilot bored	
	Type 121.11_ Type 123.11_ Nm	Type 121.21_ Type 123.21_ Nm		Type 121. ___ kg	Type 123. ___ kg
1	8 – 40	40 – 80	2800	0.8	1.0
2	16 – 80	80 – 160	2200	1.6	2.2
3	40 – 200	200 – 400	1600	3.2	4.2
4	80 – 400	400 – 800	1400	5.7	7.9
5	110 – 550	550 – 1100	1100	9.1	13.5

Dimensions

Size	B ₂	b _{3 min}	b _{3 max}	b _{5 min}	b _{5 max}	D	D ₁	d ₁ ^{H8 *}	d _{min}
1	8	10	15	15	43	68	59	44	12
2	10	12	19.5	19.5	53.5	88	77	58	15
3	13.5	15	27	27	62	115	89.5	72	19
4	16	18	38	38	91.5	140	104	85	25
5	18	20	44	44	126	170	119.5	98	30

Size	d _{max}	H	h	k	L ₁	L ₂	s	u	v
1	25	50	5	1.3 ¹⁾	48	76	3	50	3 ¹⁾
2	35	67	6	3	56	90	3	67	10
3	45	84	6	5.5	73	108	4	84	13
4	55	104	7	5.5	93	146.5	4	97	13
5	65	125	8	5.5	107	188.5	5	109	13

1) Hexagon socket countersunk head cap screw to DIN 7991

2) See Explanation page 18
* Tolerance value H8 refers to output element bore

We reserve the right to make dimensional and constructional alterations.

Order Example:

Please state on order:	Size	Type	Bore Ø d ^{H7}	Keyway to DIN	Width of drive elements b ₃ or b ₅
Order Number:		12			

1 ÷ 5 →

- Short hub 1 →
- Long hub 3 →
- * Lower torque range 1 →
- * Medium torque range 2 →
- Standard friction lining 1 →
- Friction lining for oil running ³⁾ 4 →
- Special low-friction material ³⁾ 5 →
- Adjusting nut standard 0 →
- Adjusting nut with radial adjustment ... 1 →

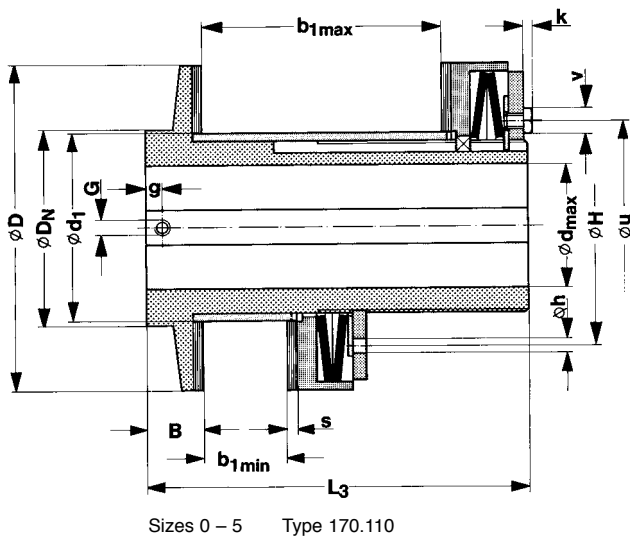
Dependent on size: if not specified, we deliver the bearing bushing for maximum overall width b_{3max} or b_{5max}. For narrower drive elements, the bearing bushing is shortened, see page 19.

6885-1
Dependent on size

Example: Order number 2 / 123.210 / 30 / 6885-1 / 50

* See Technical Data, limit torque on overload
3) Available torques on request

Sizes 0 – 5 Type 170.1 __ , 170.2 __
 Sizes 1 – 5 Type 170.3 __



ROBA[®]-slip hubs are used to provide overload protection in machine drives with chain sprockets, V-belt pulleys or toothed wheels. Type 170 has a longer hub than the standard Type 100. As a result, Type 170 is particularly suitable for wide drive elements. The permissible limit torques and the diameter correspond to the standard model. ROBA[®]-max Type 170 can transmit a higher torque than a ROBA[®]-min Type 123 with the same installation width. Type 170 can be used for all mechanical engineering applications.

Technical Data

Size	Limit torque on overload				Operating speed ⁶⁾ n _{max} rpm	Weight pilot bored kg
	Type 170.11_ Nm	Type 170.21_ Nm	Type 170.31_ sizes 0, 01, 1, 2 Nm	Type 170.312 sizes 3, 4, 5 Nm		
0	2 – 10	10 – 20	18 – 30	–	8500	0.4
01	6 – 30	30 – 60	60 – 90	–	6600	0.8
1	14 – 70	70 – 130	130 – 200	–	5600	1.2
2	26 – 130	130 – 250	250 – 400	–	4300	2.4
3	50 – 250	250 – 550	–	550 – 800	3300	4.6
4	110 – 550	550 – 1100	–	1100 – 1600	2700	8.5
5	140 – 700	700 – 1400	–	1400 – 2100	2200	14.9

Dimensions

Size	B	b _{1 min}	b _{1 max}	D	D _N	d _{min}	d _{max}	d ₁ ^{H8*}	G	g	H	h	k	L ₃	s	u	v
0	8.5	9	25	45	45	10	20 ¹⁾	35	M4	3	37	3	–	50	2.5	37	2 ⁵⁾
01	16	12	33	58	40	12	22	40	2) ²⁾	4	46	5	– ⁵⁾	70	3	46	2.5 ⁵⁾
1	17	15	43	68	45	12	25	44	2.1) ³⁾	5	50	5	1.3 ⁵⁾	85	3	50	3 ⁵⁾
2	19	19.5	53.5	88	58	15	35	58	3) ⁴⁾	5	67	6	3	99	3	67	10
3	21	27	62	115	75	20	45	72	4) ⁵⁾	5	84	6	5.5	115.5	4	84	13
4	23	38	91.5	140	90	25	55	85	M8	6	104	7	5.5	153.5	4	97	13
5	29	44	126	170	102	30	65	98	M8	8	125	8	5.5	199.5	5	109	13

1) Up to Ø 19 keyway to DIN 6885-1
 Over Ø 19 keyway to DIN 6883-3
 (Only for size 0)

2) Up to Ø 12 M4
 Over Ø 12 M5

2.1) Up to Ø 12 M4
 Over Ø 12 up to Ø 17 M5
 Over Ø 17 M6

3) Up to Ø 17 M5
 Over Ø 17 M6

4) Up to Ø 22 M6
 Over Ø 22 M8

5) Hexagon socket countersunk head cap screw to DIN 7991

6) See Explanation page 18

We reserve the right to make dimensional and constructional alterations.

* Tolerance value H8 refers to output element bore

Order Example:

Please state on order:	Size	Type	Bore Ø d ^{H7}	Keyway to DIN	Width of drive element b ₁
Order Number:		170. _ _ _			

0 ÷ 5 →

* Lower torque range 1 →

* Medium torque range 2 →

* High torque range 3 →

Standard friction lining 1 →

Rustproof linings⁸⁾ 2 →

Friction lining for oil running⁷⁾ 4 →

Special low-friction material⁷⁾ 5 →

Adjusting nut standard 0 →

Adjusting nut with radial adjustment ... 1 →

Adjusting nut for triple layering 2 →
 (for high torque range: sizes 3 ÷ 5)

Dependent on size: if not specified, we deliver the bearing bushing for maximum installation width b_{1max}. For narrower drive elements, the bearing bushing is shortened, see page 19.

6885-1

6885-3

Dependent on size

* See Technical Data, limit torque on overload

7) Available torques on request

8) Only sizes 01 ÷ 5

Example: Order number: 4 / 170.210 / 50 / 6885-1 / 80

ROBA[®]-slip hub

with needle bearing

Sizes 1 – 5 Type 160.1_ , 160.2_ _

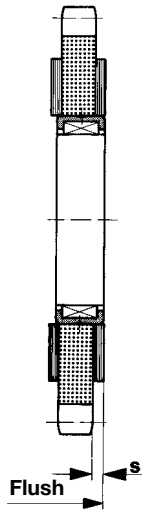


Fig. 1

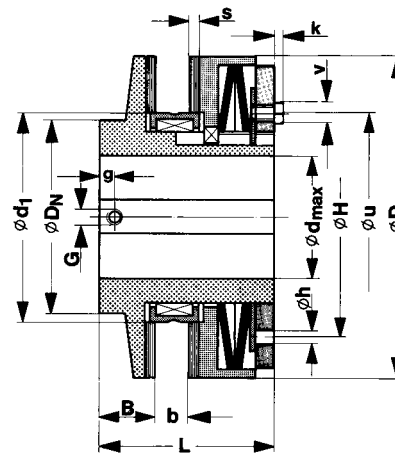


Fig. 2 Type 160.110

ROBA[®]-slip hubs are used to provide overload protection in machine drives with chain sprockets, V-belt pulleys or toothed wheels. The difference between Type 160 and the standard Type 100 is that the former has a needle bearing instead of a bronze bearing bushing. As a result, Type 160 is particularly suitable for applications with high radial loads, high slipping frequencies and increased shaft run-out accuracy (toothed wheels).

The drive element is pressed onto the needle bearing as shown in Fig. 1. Please ensure that the right-hand side of the needle bearing is flush with the right-hand side of the friction lining. The needle bearing with the drive element and the two friction linings are then pushed onto the hub. Type 160 can be used throughout the mechanical engineering industry.

Technical Data and Dimensions

Size	Limit torque on overload		Operating speed ⁴⁾ n _{max} rpm	Weight pilot bored kg	B	b ^{±0.5}	D	D _N
	Type 160.11_ Nm	Type 160.21_ Nm						
1	9 – 45	45 – 90	4200	0.9	17	7	68	45
2	23 – 115	115 – 230	3200	1.7	19	10.3	88	75
3	46 – 230	230 – 460	2400	3.3	21	12.5	115	89.5
4	80 – 400	400 – 800	2000	5.5	23	16	140	90
5	126 – 630	630 – 1260	1600	9.2	29	18	170	102

Size	d _{min}	d _{max}	d ₁ N7 *	G	g	H	h	k	L	s	u	v
1	11	25	47	¹⁾	5	50	5	1.3 ³⁾	52	3	50	3 ³⁾
2	15	35	63	²⁾	5	67	6	3	57	3	67	10
3	15	45	78	M6	5	84	6	5.5	68	4	84	13
4	25	55	95	M8	6	104	7	5.5	78	4	97	13
5	30	65	110	M8	8	125	8	5.5	92	5	109	13

1) Up to Ø 12 M4
Over Ø 12 up to Ø 17 M5
Over Ø 17 M6

2) Up to Ø 17 M5
Over Ø 17 M6

3) Hexagon socket
countersunk head cap
screw to DIN 7991
4) See Explanation page 18

* Tolerance value N7 refers to the
output element bore

We reserve the right to make
dimensional and constructional
alterations.

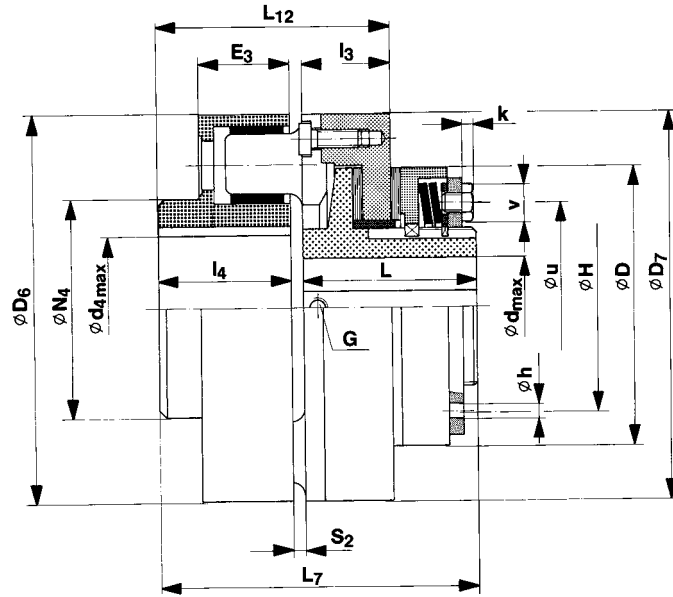
Order Example:

Please state on order:	Size	Type	Bore Ø d ^{H7}	Keyway to DIN
Order Number:		160. _ _ _		

- 1 ÷ 5 →
 - * Lower torque range 1 →
 - * Medium torque range 2 →
 - Standard friction lining 1 →
 - Special low-friction material ⁵⁾ 5 →
 - Adjusting nut standard 0 →
 - Adjusting nut with radial adjustment ... 1 →
- 6885-1
← Dependent on size
- * See Technical Data, limit torque on overload
5) Available torques on request

Example: Order number: 3 / 160.210 / 40 / 6885-1

Sizes 0 – 5 Type 135.1__ , 135.2__



Type 135.210

ROBA[®]-lastic Type 135 is a flexible safety clutch with adjustable torque for connecting two shafts. The flexible coupling element is designed as a simple plug-in coupling.

The torque is transmitted via flexible rubber buffers made of wear and oil-resistant plastic material insensitive to temperature changes.

Technical Data and Dimensions

Size	Limit torque on overload		Operating speed ⁷⁾ n _{max} rpm	Weight pilot bored kg	D	D ₆	D ₇	d _{min}	d _{max}	d _{4 min}	d _{4 max}
	Type 135.11_ Nm	Type 135.21_ Nm									
0	2 – 10	10 – 20	7000	1.3	45	80	80	7	20 ¹⁾	11	30
01	6 – 30	30 – 60	6500	3.0	58	105	105	12	22	11	42
1	14 – 70	70 – 130	5600	3.2	68	105	105	12	25	11	42
2	26 – 130	130 – 250	4300	6.5	88	135	135	15	35	13	60
3	50 – 250	250 – 550	3300	10.1	115	160	160	19	45	25	60
4	110 – 550	550 – 1100	2700	19.5	140	198	198	25	55	30	75
5	140 – 700	700 – 1400	2200	23.4	170	198	208	30	65	50	75

Size	E ₃	G	H	h	k	L	L ₇	L ₁₂	l ₃	l ₄	N ₄	S ₂	u	v
0	23	M4	37	3	– ⁵⁾	33	66	48	14	30	50 _{h11}	4	37	2 ⁵⁾
01	32	²⁾	46	5	– ⁵⁾	45	91	68	22	42	65 _{h11}	4	46	2.5 ⁵⁾
1	32	^{2.1)}	50	5	1.3 ⁵⁾	52	98	69	23	42	65 _{h11}	4	50	3 ⁵⁾
2	36	³⁾	67	6	3	57	116	86	27	55	85 _{h11}	4	67	10
3	38	⁴⁾	84	6	5.3	68	129	92	31	55	90	4	84	13
4	47	M8	104	7	5.3	78	166	121	33	82	115	4	97	13
5	47	M8	125	8	5.3	92	180	127	39	82	115	4	109	13

1) Up to Ø 19 keyway to DIN 6885-1
Over Ø 19 keyway to DIN 6883-3
(Only for size 0)

2) Up to Ø 12 M4
Over Ø 12 M5
2.1) Up to Ø 12 M4
Over Ø 12 up to Ø 17 M5
Over Ø 17 M6

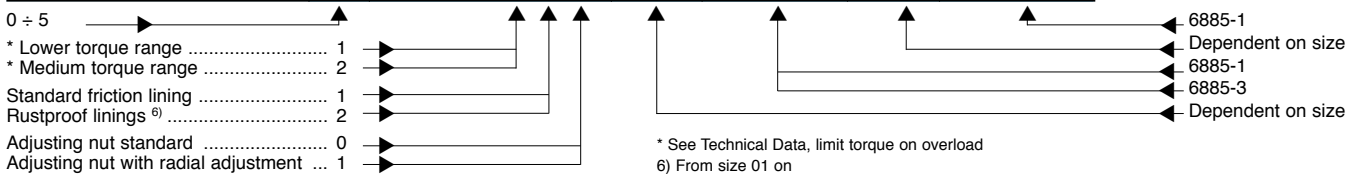
3) Up to Ø 17 M5
Over Ø 17 M6
4) Up to Ø 22 M6
Over Ø 22 M8

5) Hexagon socket countersunk head cap screw to DIN 7991
7) See Explanation page 18

We reserve the right to make dimensional and constructional alterations.

Order Example:

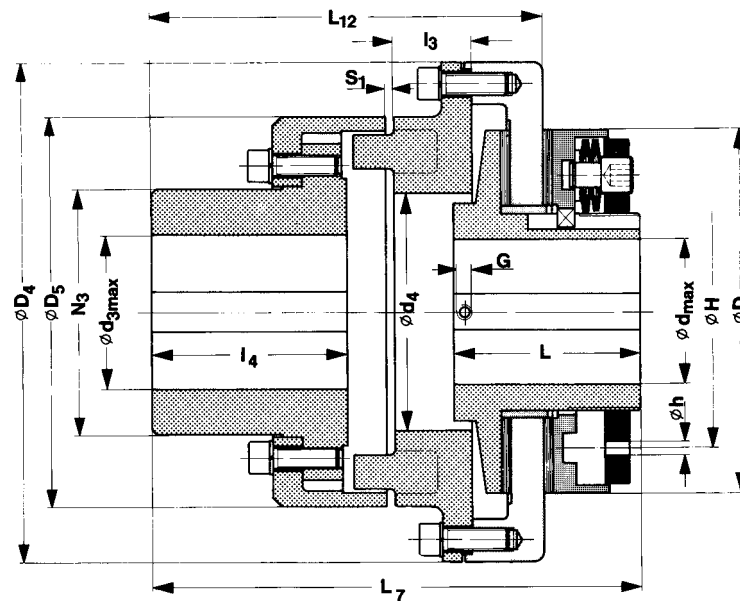
Please state on order:	Size	Type	Bore Ø d ^{H7}	Keyway to DIN	Bore to Ø d ₄ ^{H7}	Keyway to DIN
Order Number:		135. _ _ _ _				



Example: Order number: 5 / 135.210 / 60 / 6885-1 / 60 / 6885-1

ROBA[®]-lastic – positive

Sizes 6 – 12 Type 132.1_0, 132.2_0



Type 132.110

ROBA[®]-lastic Type 132 is a positive-locking, flexible safety clutch with adjustable torque for connecting two shafts. The flexible coupling component is designed as a positive-locking claw coupling. The input

and output can be disconnected without dismantling the clutch. The torque is transmitted via an interchangeable, flexible intermediate ring made of highly-damping, oil-resistant material insensitive to temperature changes.

Technical Data and Dimensions

Size	Limit torque on overload		Operating speed ³⁾ n _{max} rpm	Weight pilot bored kg	D	D ₄	D ₅	d _{min}	d _{max}
	Type 132.11_ Nm	Type 132.21_ Nm							
6	240 – 1200	1200 – 2400	1900	48	200	274	214	40	80
7	400 – 2000	2000 – 4000	1600	70	240	314	240	48	100
8	680 – 3400	3400 – 6800	1300	98	285	344	265	60	120
9	1200 – 6000	6000 – 12000	1100	200	350	430	330	57	140
10	2000 – 10000	10000 – 20000	920	330	415	500	415	80	160
11	3400 – 17000	17000 – 34000	780	506	490	615	480	90	180
12	5000 – 25000	25000 – 50000	690	738	555	692	575	100	200

Size	d _{3 min}	d _{3 max}	d ₄	G	H	h	L	L ₇	L ₁₂	l ₃	l ₄	N ₃	S ₁
6	50	95	130	M8	150	10	102	267	216	42	107	135.5	4 ± 2
7	50	100	145	M10	185	10	113	307	247	45	117	146	4 ± 2
8	60	115	160	M10	230	10	115	337	282	50	137	164	5.5 ± 2.5
9	70	135	200	M12	290	10	162	416	332	56	156	208	8 ± 2.5
10	85	180	270	M12	340	10	185	478	383	65	196	275	8 ± 2.5
11	85	190	320	M16	400	10	222	537	423	65	220	289	8 ± 2.5
12	110	240	400	M16	450	10	250	585	454	65	240	368	8 ± 2.5

We reserve the right to make dimensional and constructional alterations.

Order Example:

Please state on order:	Size	Type	Bore Ø d ^{H7}	Keyway to DIN	Bore Ø d ₃ ^{H7}	Keyway to DIN
Order Number:		132. __ _ 0				

6 ÷ 12

- * Lower torque range 1
- * Medium torque range 2
- Standard friction lining 1
- Rustproof linings¹⁾ 2
- Friction lining for oil running²⁾ 4
- Special low-friction material²⁾ 5

- 6885-1
- Dependent on size
- 6885-1
- Dependent on size

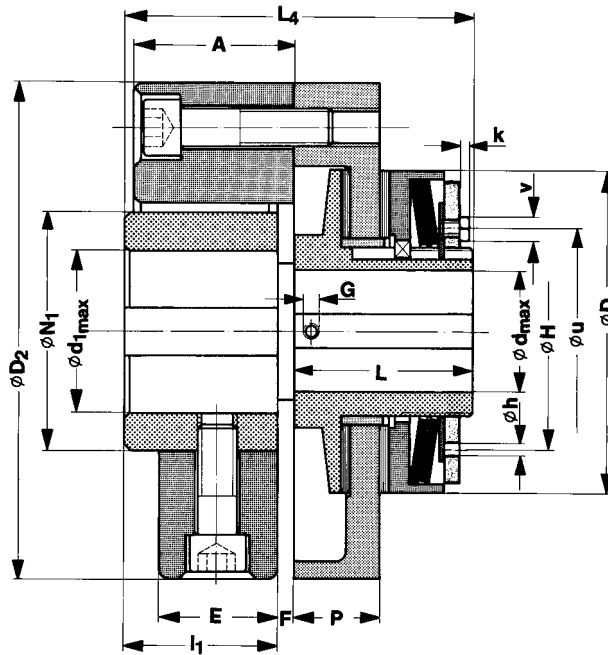
* See Technical Data, limit torque on overload

1) Rustproof linings only for size 6

2) Available torques on request

3) See Explanation page 18

Example: Order number: 6 / 132.210 / 60 / 6885-1 / 80 / 6885-1



Type 131.110

ROBA[®]-lastic Type 131 is a highly flexible safety clutch with adjustable torque for connecting two shafts. The polygon-shaped rubber element on the flexible coupling has a considerable misalignment compensation capability and damps torques, vibrations and impacts.

Technical Data and Dimensions

Size	Limit torque on overload		Operating speed ⁹⁾ n _{max} rpm	Weight pilot bored kg	A	D	D ₂	d _{min}	d _{max}	d _{1 min}	d _{1 max}
	Type 131.11_ Nm	Type 131.21_ Nm									
0	2 – 10	10 – 20	8500	1.0	24	45	85	7	20 ¹⁾	10	26
1	14 – 70	70 – 130	5600	3.0	32	68	120	12	25	12	38
2	26 – 130	130 – 250	4300	5.1	42	88	150	15	35	15	48
3	50 – 250	250 – 550	3300	12.6	58	115	200	19	45	20	65
4	110 – 550	550 – 1100	2700	25.5	70	140	260	25	55	30	85
5	140 – 700	700 – 1400	2200	29.5	70	170	260	30	65	30	85
6	240 – 1200	1200 – 2400	1900	55.4	85	200	340	40	80	40	115

Size	E	F	G	H	h	k	L	L ₄	I ₁	N ₁	P	u	v
0	20	4	M4	37	3	–	33	65	28	40	14.3	37	2 ⁵⁾
1	28	4	²⁾	50	5	1.3 ⁵⁾	52	98	42	60	24	50	3 ⁵⁾
2	36	6	³⁾	67	6	3	57	113	50	70	26	67	10
3	50	8	⁴⁾	84	6	5.5	68	142	66	100	31.5	84	13
4	62	8	M8	104	7	5.5	78	166	80	125	38.3	97	13
5	62	8	M8	125	8	5.5	92	180	80	125	44.3	109	13
6	77	8	M8	150	10	–	102	210	100	160	49	–	–

1) Up to Ø 19 keyway to DIN 6885-1
Over Ø 19 keyway to DIN 6883-3
(Only for size 0)

2) Up to Ø 12 M4
Over Ø 12 up to Ø 17 M5
Over Ø 17 M6

3) Up to Ø 17 M5
Over Ø 17 M6
4) Up to Ø 22 M6
Over Ø 22 M8

5) Hexagon socket
countersunk head cap
screw to DIN 7991
9) See Explanation page 18

We reserve the right to make
dimensional and constructional
alterations.

Order Example:

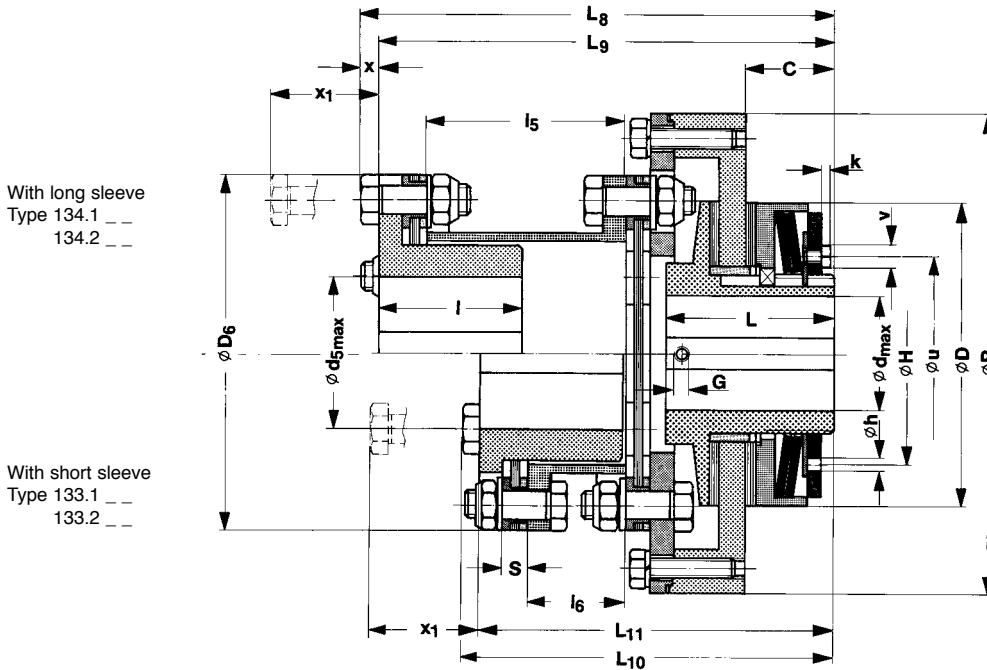
Please state on order:	Size	Type	Bore Ø d ^{H7}	Keyway to DIN	Bore Ø d ₁ ^{H7}	Keyway to DIN
Order Number:		131.110				

0 ÷ 6	→	↑	↑	↑	↑	↑	←	6885-1
* Lower torque range.....	1	→	→	→	→	→	←	Dependent on size
* Medium torque range	2	→	→	→	→	→	←	6885-1
Standard friction lining.....	1	→	→	→	→	→	←	6885-3
Rustproof friction linings ⁸⁾	2	→	→	→	→	→	←	Dependent on size
Friction lining for oil running ⁶⁾	4	→	→	→	→	→	←	
Special low-friction material ⁶⁾	5	→	→	→	→	→	←	
Adjusting nut standard.....	0	→	→	→	→	→	←	
Adjusting nut with radial adjustment ⁷⁾ ..	1	→	→	→	→	→	←	

* See Technical Data, limit torque on overload
6) Available torque on request
7) Only sizes 0 ÷ 5
8) From size 1

ROBA[®]-LD – torsionally rigid

Sizes 1 – 8 Type 133.1 __ , 133.2 __
Type 134.1 __ , 134.2 __



The ROBA[®]-LD is a combination of the ROBA[®]-slip hub and the ROBA[®]-D coupling for connection of two shafts with angular and radial misalignment. As a supplement to the ROBA[®]-elastic (slip hub with flexible coupling), the ROBA[®]-LD offers all the advantages of a torsionally stiff flexible all-steel coupling. The ROBA[®]-LD Type 133 differs from Type 134 only in the construction length. On ROBA[®]-LD Type 133, a short sleeve is used (Dimension l_6), and on Type 134, a long sleeve is used (Dimension l_5).

Technical Data and Dimensions

Size	Limit torque on overload		Operating speed ⁹⁾ n_{max} rpm	Weight pilot bored Type 133. __ kg	Weight pilot bored Type 134. __ kg	C	D	D_6	d_{min}	d_{max}	d_5
	Type 133.11_ Type 134.11_	Type 133.21_ Type 134.21_									
	Nm	Nm									
1	14 – 70	70 – 130	5600	4.5	4.6	28	68	102	12	25	25 – 45 ¹⁾
2	26 – 130	130 – 250	4300	8.9	9.2	28	88	128	15	35	25 – 55
3	50 – 250	250 – 550	3300	12.7	13.1	37	115	145	19	45	30 – 65
4	110 – 550	550 – 1100	2700	24.3	24.9	40	140	180	25	55	35 – 80
5	140 – 700	700 – 1400	2200	36.7	37.6	48	170	200	30	65	40 – 85
6	240 – 1200	1200 – 2400	1900	49	50	51	200	215	40	80	45 – 90
7	400 – 2000	2000 – 4000	1600	76	78	60	240	250	48	100	50 – 100
8	680 – 3400	3400 – 6800	1300	119	122	55	285	300	60	120	60 – 115

Size	G	H	h	k	L	L_8	L_9	L_{10}	L_{11}	l	l_5	l_6	R	S	u	v	x	x_1
1	²⁾	50	5	1.3 ⁵⁾	52	150	146	119	115	45	64	33	135	8 ± 0.2	50	3 ⁵⁾	4	29
2	³⁾	67	6	3	57	176.5	171	140.5	135	55	74	38	168	11 ± 0.3	67	10	5.5	37.5
3	⁴⁾	84	6	5.5	68	204.5	199	158.5	153	65	94	48	185	11 ± 0.3	84	13	5.5	37.5
4	M8	104	7	5.5	78	245	237	191	183	80	110	56	230	15 ± 0.4	97	13	8	53
5	M8	125	8	5.5	92	264	254	210	200	80	110	56	270	15 ± 0.4	109	13	10	60
6	M8	150	10	–	102	298	288	239	229	90	120	61	290	20 ± 0.4	–	–	10	65
7	M10	185	10	–	113	332	319	271	258	100	124	63	335	23 ± 0.5	–	–	13	83
8	M10	230	10	–	115	373	358	301	286	115	146	74	400	27 ± 0.6	–	–	15	95

1) Up to $\varnothing 42$ keyway to DIN 6885-1
Over $\varnothing 42$ keyway to DIN 6883-3

2) Up to $\varnothing 12$ M4
Over $\varnothing 12$ up to $\varnothing 17$ M5
Over $\varnothing 17$ M6

3) Up to $\varnothing 17$ M5
Over $\varnothing 17$ M6

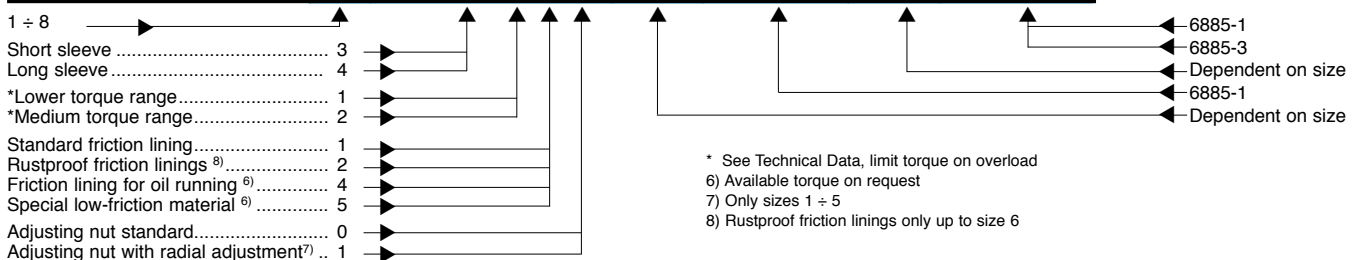
4) Up to $\varnothing 22$ M6
Over $\varnothing 22$ M8

5) Hexagon socket
countersunk head cap
screw to DIN 7991
9) See Explanation page 18

We reserve the right to
make dimensional and
constructional alterations.

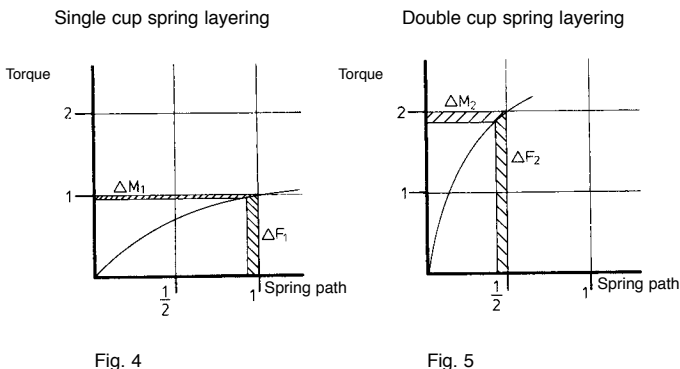
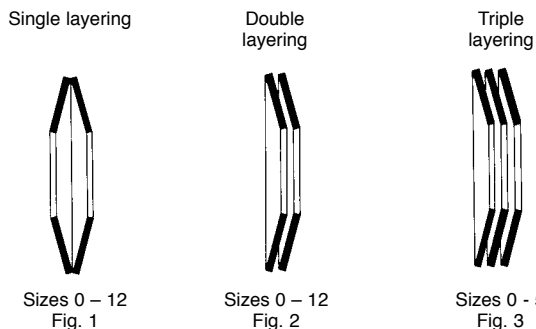
Order Example:

Please state on order:	Size	Type	Bore $\varnothing d^{H7}$	Keyway to DIN	Bore $\varnothing d_5^{H7}$	Keyway to DIN
Order Number:		13				



Example: Order number 2 / 133.211 / 35 / 6885-1 / 50 / 6885-1

Technical Explanations



Torques – Cup Spring Layering

The cup spring layering in Figs. 1 – 3 show our ROBA[®]-slip hub standard design.

Each layering results in a different spring characteristic curve or spring force (torque). A rule of thumb when using ROBA[®]-slip hubs:

- ROBA[®]-slip hub for high friction work and low torque; single-layer cup spring.
- ROBA[®]-slip hub for medium friction work and larger torques; double-layer cup springs.
- ROBA[®]-slip hub for low friction work and very high torques; triple-layer cup springs.

The torque behaviour of the ROBA[®]-slip hub on friction lining wear is clearly shown in Figs. 4 and 5. With single cup spring layering, the torque reduction on wear is very low (Fig. 4). With double cup spring layering, the change in torque is larger (Fig. 5), and with triple cup spring layering, the torque reduction is highest. However, the cup springs are designed with a relatively flat characteristic curve so that large wear paths can occur without larger drops in torque.

For special applications, weaker cup springs are available for the individual slip hub sizes, with which the minimum torques can be under-run.

Other cup spring layerings can be produced (e.g. combinations of double and single-layering) individually for special applications. In Figs. 4 and 5 it is shown that a torque adjustment in the uppermost quarter of the spring characteristic curve (torque) produces a particularly even torque, as the spring characteristic curve has its smallest increase in this area.

Warning! The torques given in the Table “Technical Data” refer to drive elements made of steel or cast iron! During the start-up phase (matching the friction surfaces), after long downtimes and during or after long slipping occurrences, the friction lining wear pattern and the friction coefficients may change. This can lead to changes in torque.

Friction Linings

As shown in the Table below, four different friction linings are available.

The torque and the speed values in the slip hub catalogue are applicable for the standard friction lining during dry running. For other friction linings, please find the correct values in Table 1 or ask the manufacturers for special application values:

Friction lining number	Application	Available torque from M_{max}
1	standard for dry running	100 %
2	rustproof friction linings	100 %
4	bronze friction lining for oil running	30 %
5	special low-friction material (only for single CS-layering and with reduced friction)	50 %

Speeds

The ROBA[®]-slip hub is thermally affected depending on the slipping speed, slip time and the set torque.

So that the ROBA[®]-slip hub friction linings are not overheated or destroyed, the specified friction parameters must not be exceeded. The recommended values in the Reference Values Table show the maximum slipping speed limits.

These speed limits refer to a maximum slip time of 1 second.

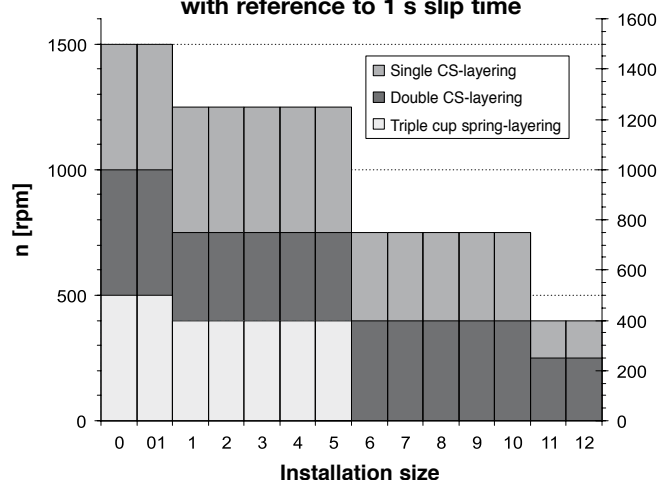
For longer slip times, the slipping speed must be reduced.

If in doubt, please carry out the friction work calculations for the respective application.

If the permitted slipping duration is exceeded, the ROBA[®]-slip hub will be overloaded. → Destruction of the friction linings.

A speed monitor prevents the drive elements slipping for an excessively long time. Please ask the manufacturers for devices adapted for your system.

Reference Values Table
Max. slipping speed n in rpm with reference to 1 s slip time



ROBA®-slip hub

Technical Explanations

Adjusting nuts

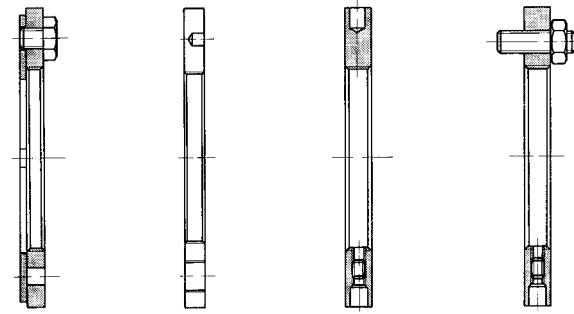


Fig. 6
Adjusting
nut 0
Sizes 0 – 5

Fig. 7
Adjusting
nut 0
Sizes 6 – 12

Fig. 8
Adjusting
nut 1
Sizes 0 – 5

Fig. 9
Adjusting
nut 2
Sizes 3 – 5

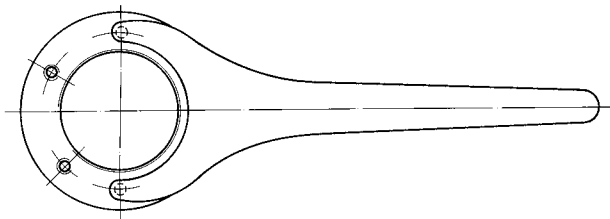


Fig. 10

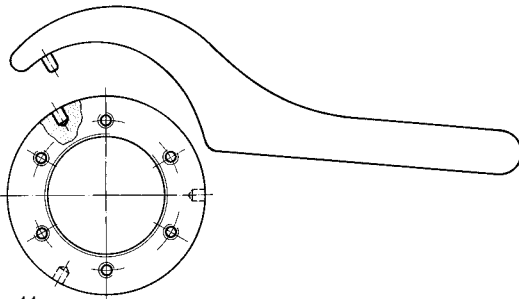


Fig. 11

The standard adjusting nut for sizes 0 – 5 (adjusting nut 0, Fig. 6) is adjusted using a face wrench (Fig. 10). The adjusting nut is secured using a lock washer with four projections as well as a hexagon head screw which is screwed through the adjusting nut onto the lock washer bores. The standard adjusting nut for sizes 6 – 12 (adjusting nut 0, Fig. 7) has no lock washer. It is secured against twisting with a radial set screw. Additionally, we provide an adjusting nut for radial adjustment for sizes 0 – 5. Adjustment takes place here using a hook wrench (see Fig. 11). On this design (adjusting nut 1, Fig. 8), the thrust washer must be shortened.

The device is additionally secured against twisting using a radial screw-in set screw, which is pressed into one of the four hub keyways.

For triple-layering on the ROBA®-slip hub size 0 – 2, the adjusting nut 0 or 1 is used. On sizes 3 – 5, the adjusting nut 2 is used (Fig. 9). The adjusting nut 2 for the ROBA®-slip hub varies from the adjusting nut 0 for the ROBA®-slip hub as it has six axial set screws for torque adjustment. As with adjusting nut 1, it is secured using a radial set screw.

For high torque adjustments, it may be necessary to lengthen the lever on the face wrench or hook wrench (e.g. extension using a pipe).

Bearing bushing

If the drive element installation width is not specified on order, we deliver the bearing bushing (Fig. 12) for the maximum installation width (b_{max}).

If a smaller installation width is required, the bearing bushing must be shortened accordingly on the end without the inner chamfer, see the adjacent Example. The bearing bushing is to be installed with the inner chamfer facing forwards, see Fig. 12.

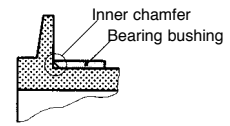


Fig. 12

Shortening the bearing bushing: Example: *

*Please Observe: the total length of the clutch is not affected by the reduction in bearing bushing length.

The ROBA®-slip hub, size 3, Type 100.210 (see page 6)

Drive element = chain sprocket disk 1" x 17 mm, z = 26

chain sprocket width B1 = 15.3 mm

Bearing bushing width l [mm] according to the formula below:

$$l = b + 1.5 \cdot s + 0.5$$

$$l = 15.3 + 1.5 \cdot 4 + 0.5$$

$$l = 21.8_{-0.2} \text{ mm}$$

Bearing bushing width:

$$l = b + 1.5 \cdot s + 0.5 \quad [\text{mm}]$$

$$l_1 = b + 1.5 \cdot s + 2 \cdot s_1 + 0.5 \quad [\text{mm}] \text{ for Type } 100.120 \text{ and } 100.220$$

l [mm] = bearing bushing width (Tolerance – 0.2 mm)

l_1 [mm] = bearing bushing width for slip hubs with rustproof friction linings (see page 9)

b [mm] = maximum installation width for drive elements (nominal dimension + tolerance)

s [mm] = Friction lining strength (see page 7)

s_1 [mm] = Strength of rustproof disk (see page 9)

For high radial load and high slipping frequency, we recommend the ROBA®-slip hub with needle bearing Type 160 (page 13).

Maintenance - Installation

Due to its smooth construction, the ROBA®-slip hub is easy to clean. As the friction linings wear down, the ROBA®-slip hub must be re-adjusted or, if they are very worn, the friction linings must be replaced. Apart from this, the ROBA®-slip hub needs no maintenance.

During installation, please ensure that no grease or oil comes into contact with the friction surfaces. In the area of the friction surfaces, the drive element surface must be finely polished and have exactly plane parallel surfaces (see Fig. 13 and Table 2).

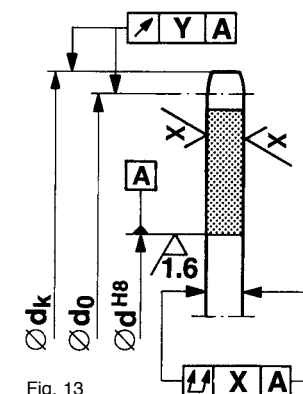


Fig. 13

Size	x	y
0 – 2	0.05	0.10
3 – 5	0.08	0.15
6 – 8	0.10	0.20
9 – 12	0.12	0.30

Table 2

$$\sqrt{x/y} = \sqrt{0.8} \text{ Polished}$$

Torque Adjustment

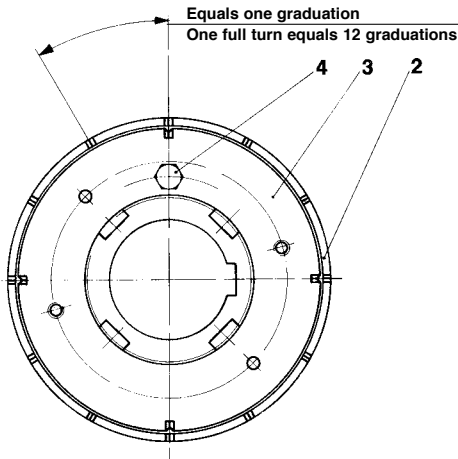


Fig. 14 Sizes 0 – 5

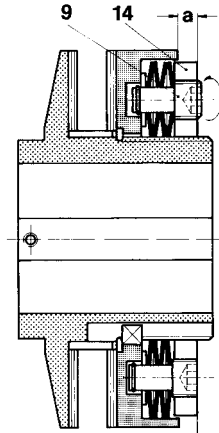
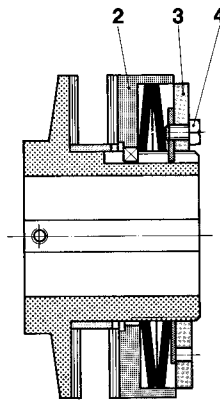


Fig. 15 Sizes 6 – 12

On the ROBA[®]-slip hub devices sizes 1 – 5, the rear side of the thrust washer (Item 2) is engraved with 12 markings (24 markings on size 0), and the adjusting nut (Item 3) is engraved with four markings (see Fig. 14).

The adjusting nut with locking washer is adjusted by hand up to the contact on the cup springs. The four notches on the adjusting nut and the four notches on the thrust washer must align. Then the adjusting nut should be turned by the number of graduations which equal the required torque.

An Adjustment Table (Fig. 16) is adhered to the clutch, from which

the number of graduations necessary for the required torque can be read. If a required torque value lies between two graduations, please adjust to the smaller value (positive spring force tolerance). After the torque adjustment has been made, please secure the adjusting nut by turning the locking screw (Item 4).

On ROBA[®]-slip hub devices sizes 6 – 12, the dimension “a” (see Fig. 15) can be found in the adhered Table (Fig. 17) and can be adjusted accordingly (see Fig. 15) using the adjusting nut (Item 14). Finally, the cup spring suspension bolts (Item 9) should be turned stepwise evenly c. 1/4 turn until they are flush with the adjusting nut.

<p>power transmission D-87665 Mauerstetten</p>	<p>ROBA[®]-slip hub Size 3</p> <p>Surface-ground chain sprocket for friction lining No. 1, run-in condition</p>	<p>Turn the nut up to the CS contact, then count the grads. 12 grads. = 1 turn</p>	<p>Single CS</p>	Torque Nm	50	62	80	100	130	150	200	235	250	
				Graduations	9	10	12	14	16	18	20	22	24	
				Torque Nm	250	295	340	375	420	450	480	520	550	
				Graduations	10	11	12	13	14	15	16	17	18	
			<p>Double CS</p>											

Fig. 16

<p>power transmission D-87665 Mauerstetten</p>	<p>ROBA[®]-slip hub Size 6</p> <p>Surface-ground chain sprocket for friction lining No. 1, run-in condition</p>	<p>Spring bolt flush</p>	<p>Single CS</p>	M [Nm]	240	300	420	540	660	780	900	1020	1140	1200
				a =	14.9	14.8	14.4	14.0	13.6	13.2	12.7	12.2	11.7	11.4
				Double CS	M [Nm]	600	840	1080	1320	1560	1800	2040	2280	2400
				a =	12.6	12.4	12.2	12.0	11.8	11.6	11.4	11.1	10.9	

Fig. 17

The ROBA[®]-slip hub with triple cup spring layering has no Adjustment Table adhered to it. Torque adjustment is carried out in the following way:

Please tighten the adjusting nut without using a lot of force. Then adjust the individual screws in the adjusting nut evenly in c. 1/4 turns to the specified dimensions “b” or “a” shown in the Adjustment Diagram (if necessary, please order the Table from the manufacturers). In this way the required torque is obtained.

For initial adjustment, the ROBA[®]-slip hub should slip several times at 50 % of the torque specified in the Catalogue, in order to achieve a clean wear pattern on the friction lining. Depending on the slipping frequency, occasional re-adjustment is necessary due to friction lining wear. The ROBA[®]-slip hub can of course be delivered complete with a drive element at extra cost, pre-adjusted to the set torque.

Please Observe: For clutch Types with no adhered Adjustment Table, feel free to ask the manufacturers for Adjustment Diagrams!

ROBA[®]-slip hub

Installation Examples

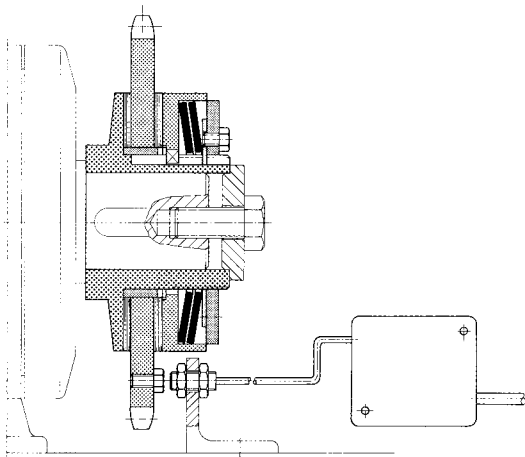


Fig. 18

- Design:** ROBA[®]-slip hub standard
Type: 100.210
Features: Simple, robust and reasonably priced torque limitation for protection against overload damages.
Application: Protection of drives with narrow drive elements, e.g. single chain sprocket.
Tech. Details: Axial attachment onto the shaft is carried out via a press cover and a screw, screwed into the central thread of the shaft. Slip monitoring is carried out by a speed monitor (available on request) with an external initiator.

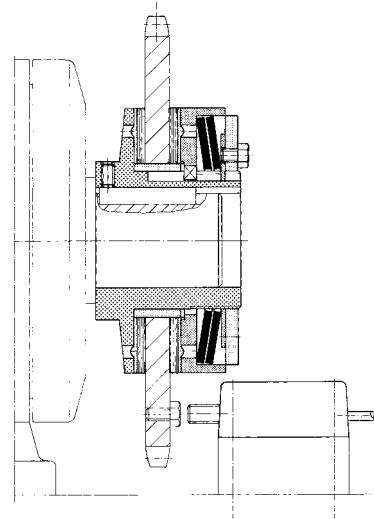


Fig. 19

- Design:** ROBA[®]-slip with rustproof friction lining
Type: 100.220
Features: Slip hub with disks made of stainless steel to prevent the friction linings rusting.
Application: Overload protection for machines operating in open air conditions, in particularly wet conditions or machines subject to long downtimes.
Tech. Details: The slip hub is held on the shaft via a set screw which applies pressure onto the keyway. The rustproof disks do not adhere to the friction lining and do not form rust compounds. A speed monitor (available on demand) prevents excessively long slippage on overload.

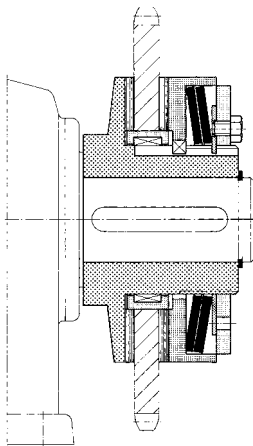


Fig. 20

- Design:** ROBA[®]-slip hub with needle bearing
Type: 160.210
Features: Needle bearing in place of the standard bearing bushing; suitable for continuous slipping at low speeds and torques.
Application: Drives with high radial loads, high slipping frequency and increased shaft run-out accuracy.
Tech. Details: Axial attachment onto the shaft is carried out via a set screw and a press cover, or, as indicated in the drawing, via a locking ring. The width of the drive element is not variable due to the fixed needle bearing length.

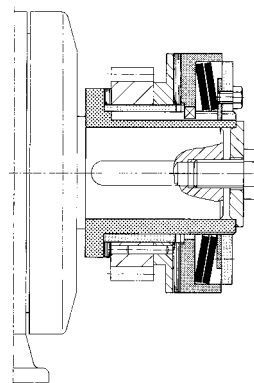


Fig. 21

- Design:** ROBA[®]-min
Type: 121.210
Features: Slip hub with a standard friction lining and a small bronze friction lining on the hub collar side.
Application: For drive elements with very small outer diameters and large installation widths.
Tech. Details: The hub collar and the corresponding friction lining are of reduced diameter. On the side with the standard friction lining, an intermediate flange is additionally attached between lining and drive element and pinned to the drive element.

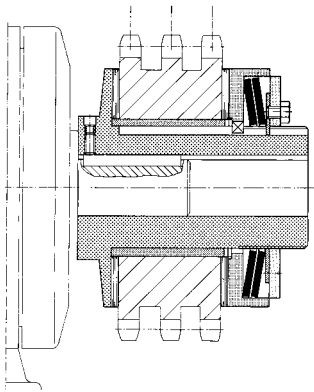


Fig. 22

- Design: ROBA[®]-max
 Type: 170.210
 Features: Slip hub with a long hub, the transmittable torques correspond to the standard ROBA[®]-slip hub.
 Application: For very wide drive elements, e.g. multiple-row-chain sprockets.
 Tech. Details: The ROBA[®]-max can take drive elements with a large width range. The bearing bushing is modified to the required installation width. Attachment onto the shaft is carried out via a set screw which applies pressure onto the keyway.

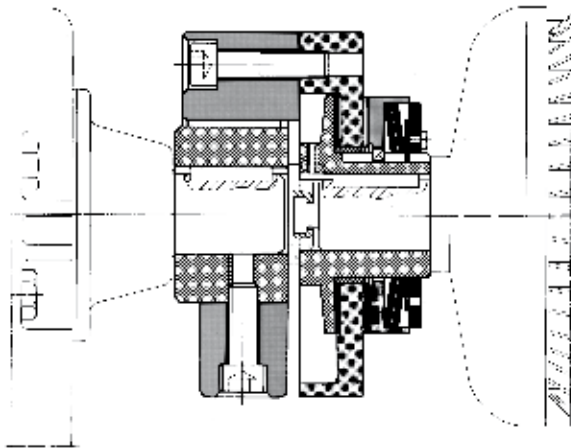


Fig. 23

- Design: ROBA[®]-lastic
 Type: 131.210
 Features: Slip hub for connection of two shafts with polygon-shaped, highly flexible rubber elements.
 Application: Overload protection, connection of two shafts in drives with large shaft misalignments, impacts and torsional vibrations.
 Tech. Details: The slip hub is attached onto the shaft using a press cover. The flexible coupling hub sits without attachment frictionally-locked on the shaft. Torque transmission takes place via a rubber element which has a high misalignment compensation capability and damps torsional vibrations and impacts.

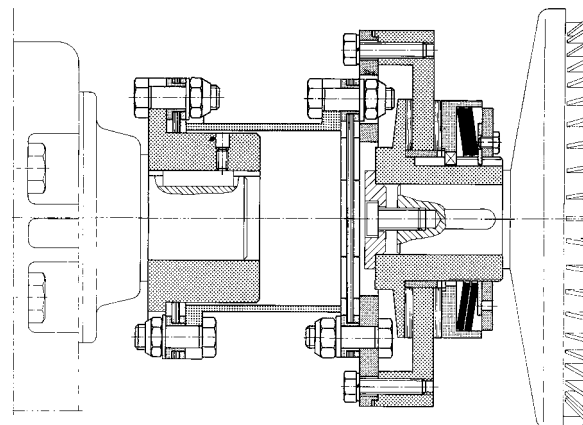


Fig. 24

- Design: ROBA[®]-LD – torsionally rigid
 Type: 134.210
 Features: Slip hub combined with a torsionally stiff flexible all-steel coupling (ROBA[®]-D coupling).
 Application: Overload protection, connection of two shafts and shaft misalignment compensation with low torsional backlash torque transmission.
 Tech. Details: The slip hub is attached using a press cover. The ROBA[®]-D hub is attached using a set screw onto the shaft. The ROBA[®]-D coupling transmits the torque backlash-free. Low torsional backlash results from the thrust washer jaw backlash in the slip hub outer keyways.

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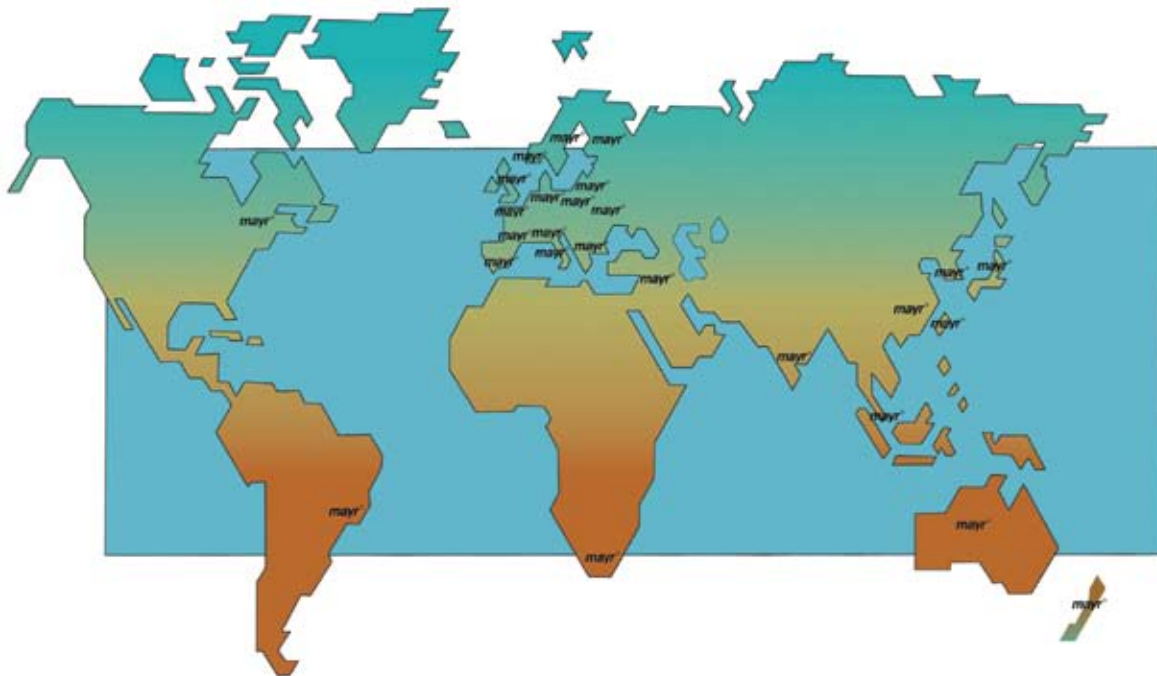
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Turkey

Note:
If a country is not
shown, please refer
to headquarters or
our web site to be
advised of the
nearest responsible
agent.

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your reliable partner

Product Summary



Safety Clutches/ Overload Clutches

- **EAS[®]-Compact[®]/EAS[®]-NC**
Positive locking and completely backlash-free torque limiting clutches
- **EAS[®]-smartic[®]**
Cost-effective torque limiting clutches, quick installation
- **EAS[®]-element clutch/EAS[®]-elements**
Load-disconnecting protection against high torques
- **EAS[®]-axial**
Exact limitation of tensile and compressive forces
- **EAS[®]-Sp/EAS[®]-Sm/EAS[®]-Zr**
Load-disconnecting torque limiting clutches with switching function
- **ROBA[®]-slip hub**
Load holding, frictionally locked torque limiting clutches
- **ROBA[®]-contitorque**
Magnetic continuous slip clutches

Shaft Couplings

- **smartflex[®]**
Perfect precision couplings for servo and stepping motors
- **ROBA[®]-ES**
Backlash-free and damping for vibration-sensitive drives
- **ROBA[®]-DS/ROBA[®]-D**
Backlash-free, torsionally rigid all-steel couplings
- **EAS[®]-control-DS**
Cost-effective torque-measuring couplings-

Electromagnetic Brakes/Clutches

- **ROBA-stop[®] standard**
Multifunctional all-round safety brakes
- **ROBA-stop[®]-M motor brakes**
Robust, cost-effective motor brakes
- **ROBA-stop[®]-S**
Water-proof, robust monoblock brakes
- **ROBA-stop[®]-Z/ROBA-stop[®]-silenzio[®]**
Doubly safe elevator brakes
- **ROBA[®]-diskstop[®]**
Compact, very quiet disk brakes
- **ROBA[®]-topstop[®]**
Brake systems for gravity loaded axes
- **ROBA[®]-linearstop**
Backlash-free brake systems for linear motor axes
- **ROBATIC[®]/ROBA[®]-quick/ROBA[®]-takt**
Electromagnetic clutches and brakes, clutch brake units

DC Drives

- **tendo[®]-PM**
Permanent magnet-excited DC motors
- **tendo[®]-SC**
1 quadrant and 4 quadrant transistor controllers