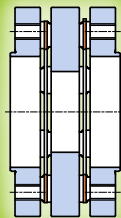
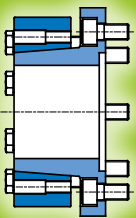
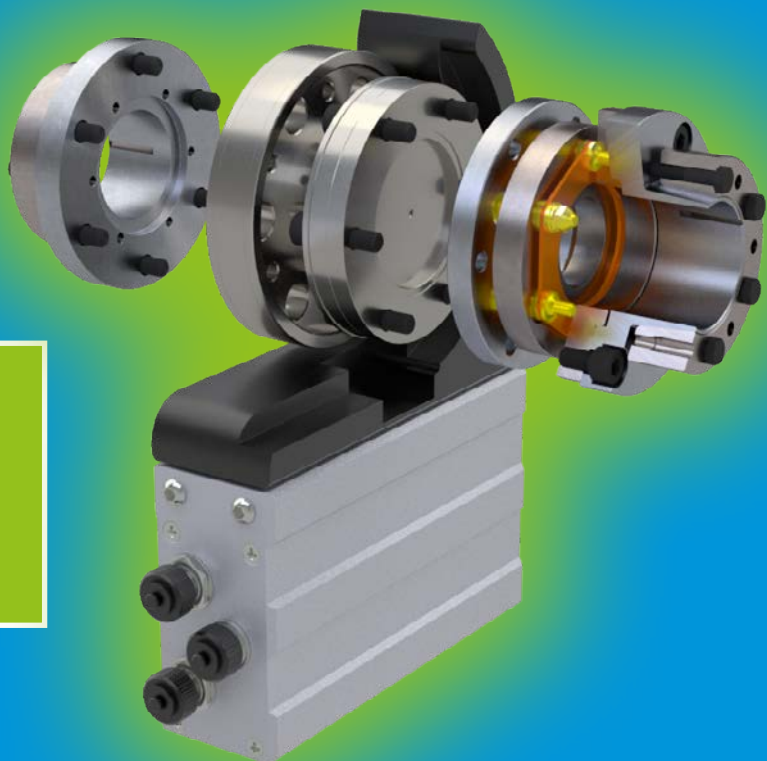




## ROBA<sup>®</sup>-DS 9110 / 9210



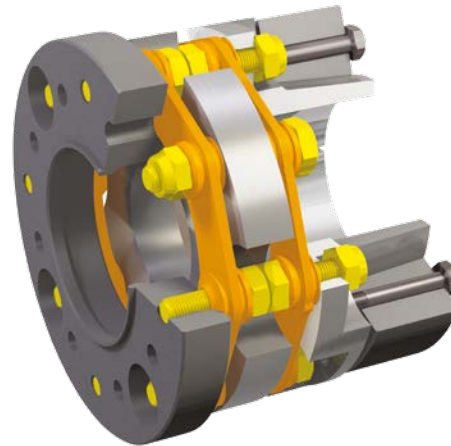
Backlash-free shaft couplings  
for torque transducers



# ROBA®-DS - the backlash-free, torsionally rigid shaft coupling for HBM torque transducers

## Characteristics and Advantages

- High precision and reliability
- Optimum running smoothness
- High speeds
- Robust and highly dynamic
- Different designs for optimum set-up



## Design

ROBA®-DS disk pack couplings of the type series 9110 and 9210 are especially adapted for the attachment of HBM torque transducers. Different types of construction and flexible combination possibilities permit the integration of measurement flanges in almost every test stand and drive constellation (see the Installation and Operational Instructions B.9110.\_.\_).

## Function

ROBA®-DS disk pack couplings compensate for **axial, radial and angular shaft misalignments**. Torque measurement flanges are precision transducers, using which the measurement of extremely small measurement uncertainties can be realised. However, for this purpose several prerequisites are necessary. One of the most important is the minimisation of the parasitic loads affecting the transducer, which amongst other things are caused by alignment errors in the drive line. The use of the ROBA®-DS as a torsionally rigid and backlash-free compensating coupling provides the optimum prerequisites in order to achieve the exact measurement results of the torque transducer.

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## Designs

### Standard constructional designs - Type 9110.\_ :

The couplings are balanced according to DIN ISO 1940 to a balance quality of G 2,5 at n = 3000 rpm

#### Preferred type of construction (shrink disk hub external)

- Compact and low mass moment of inertia design
- Quick installation
- External clamping of the shrink disks

**Preferred variant** is the shortest and most rigid design

#### Type of construction, shrink disk hub internal

- When the set-up of the measurement line from the load side is only possible via a shrink disk hub with internal clamping
- Complex installation in comparison to “Preferred type of construction” as a result of the intermediate flange required
- Higher mass moment of inertia compared to the “Preferred type of construction”

#### Sandwich construction

- Type of construction with maximum shaft misalignment compensation whilst simultaneously being the shortest possible type of construction
- External clamping of the shrink disks
- Complex installation in comparison to the “Preferred type of construction” as a result of the intermediate flange required
- Higher mass moment of inertia compared to the “Preferred type of construction”

### High-speed constructional design for high speeds - Type 9210.\_ :

The individual parts are manufactured to a high level of accuracy (Quality IT5), with restricted shaft run-out and axial run-out tolerance.

The balance quality of the coupling is G 2,5 at n = 5000 rpm according to DIN ISO 1940.

## Assignment of the torque transducers

Measurement flange by HBM		ROBA®-DS Size
TB2	500 Nm	64
	1000 Nm	64
	2000 Nm	300
	3000 Nm	300
	5000 Nm	500
	10000 Nm	850
T10FS	100 Nm	16 F
	200 Nm	16
	500 Nm	64
	1000 Nm	64
	2000 Nm	300
	3000 Nm	300
	5000 Nm	500
	10000 Nm	850
T12	100 Nm	16 F
	200 Nm	16
	500 Nm	64
	1000 Nm	64
	2000 Nm	300
	3000 Nm	300
	5000 Nm	500
	10000 Nm	850
T40B <sup>1)</sup>	50 Nm	16 F
	100 Nm	16 F
	200 Nm	16
	500 Nm	64
	1000 Nm	64
	2000 Nm	300
	3000 Nm	300
	5000 Nm	500
10000 Nm	850	

1) Also valid for T40

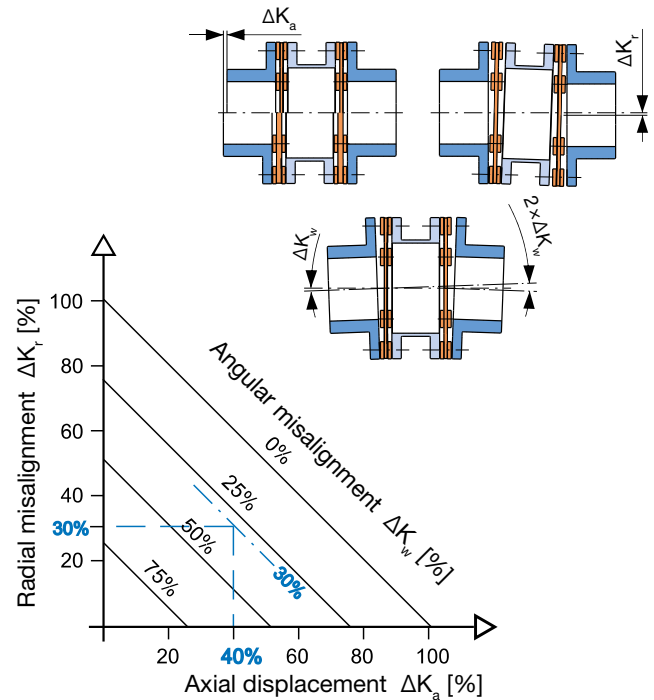


The "shrink disk hub internal" construction and the "sandwich construction" are not possible for the torque transducer T40.

## Technical Explanations

### Permitted misalignment of the shaft ends

Should several types of misalignment occur simultaneously, they will influence each other, i.e. the permitted misalignment values are dependent on one another. The sum of the actual misalignment as a percentage of the maximum value must not exceed 100 %, see example



### Example: ROBA®-DS Size 300, Type 9210.11100

An axial displacement of  $\Delta K_a = 0,16$  mm equates to 40 % of the permitted maximum value  $\Delta K_a = 0,4$  mm.

A simultaneously occurring angular misalignment in the disk pack of  $\Delta K_w = 0,048^\circ$  equates to 30 % of the permitted maximum value  $\Delta K_w = 0,16^\circ$ .

From this, a still-permitted radial misalignment of  $\Delta K_r = 30$  % results from the maximum value  $\Delta K_r = 0,08$  mm, i.e. maximum 0,024 mm is permitted.

### Valid standards:

Coupling characteristic values according to DIN 740, Part 2, Section 2.1.

Stress dimensions according to DIN 740, Part 2, Sections 2.2 and 3 (dimensioning of the coupling for special applications). Coupling dynamically balanced according to ISO 1940.

### General guidelines on installation

The disk packs of the coupling may not be overexpanded beyond the stated permitted flexibilities!

### Installation Position

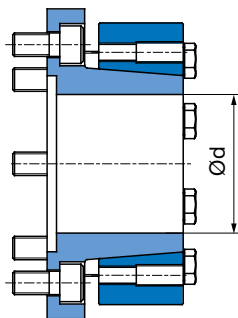
The ROBA-DS® shaft coupling with the torque measurement flange can be operated in any installation position (horizontal or vertical). In case of vertical operation, please observe that the permitted axial force is not exceeded by the test stand-side masses.

## Frictionally-locking transmittable torques

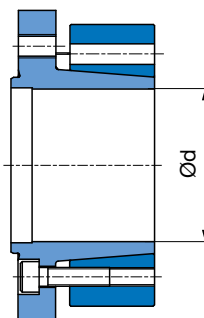
Shrink disk hubs	Bore Ød	Size					
	[mm]	16 F	16	64	300	500	850
Frictionally-locking transmittable torques $T_R$ [Nm]	25	320	320	-	-	-	-
	28	368	368	-	-	-	-
	30	403	403	-	-	-	-
	32	442	442	-	-	-	-
	35	506	506	-	-	-	-
	38	579	579	-	-	-	-
	40	632	632	-	-	-	-
	42	689	689	-	-	-	-
	45	782	782	1452	-	-	-
	50	-	-	1681	3101	-	-
	55	-	-	1943	3472	-	-
	60	-	-	2241	3883	4679	-
	65	-	-	2577	4340	5136	-
	68	-	-	2797	4637	5430	-
	70	-	-	2953	4845	5635	7726
	75	-	-	-	5402	6177	8354
	80	-	-	-	6016	6768	9088
	85	-	-	-	6687	7411	9850
	90	-	-	-	-	8107	10670
	100	<b>Attention!</b>	-	-	-	9674	12500
110	Please observe the permitted coupling torques of the coupling size used.	-	-	-	-	14606	
120	-	-	-	-	-	17008	

## Shrink disk hubs

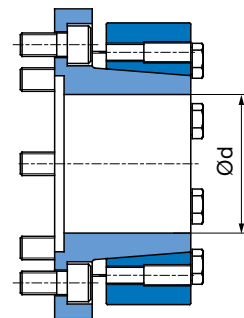
Clamping external	Clamping internal	“High-Speed”
Order Number	Order Number	Order Number
Size __/Type 9110.10000/Bore __	Size __/Type 9110.20000/Bore __	Size __/Type 9210.10100/Bore __



Bore area, see page 5  
Dimensions, see page 8



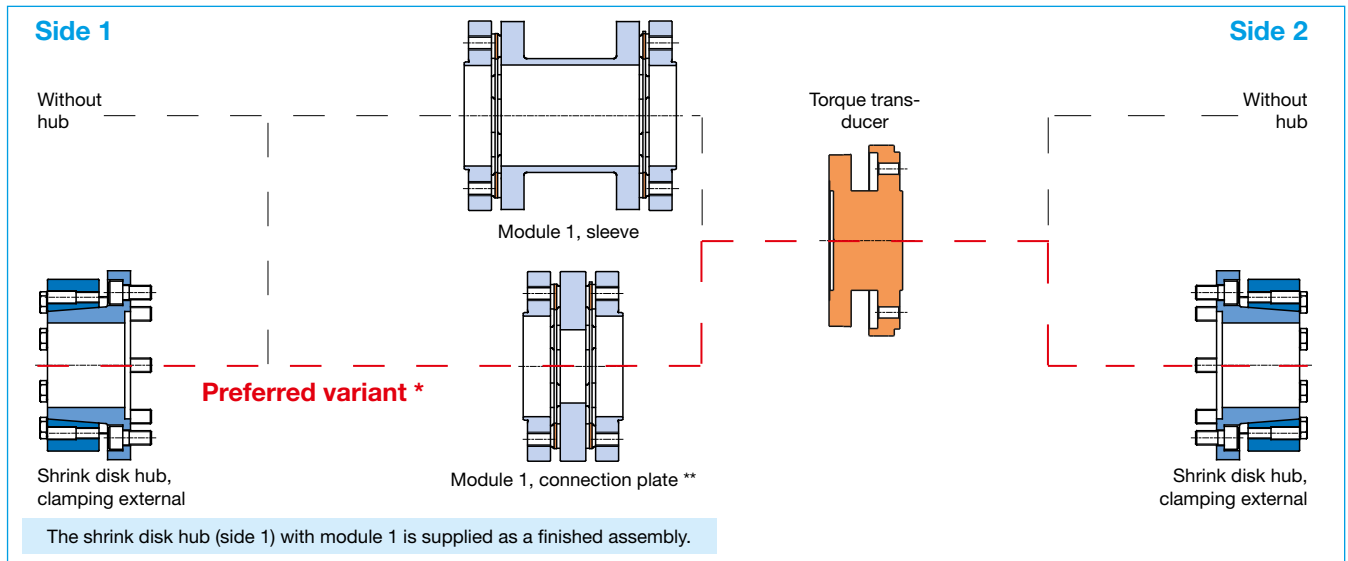
Bore area, see page 6  
Dimensions, see page 8



Bore area, see page 10  
Dimensions, see page 11

## Preferred type of construction (shrink disk hub external)

Standard design  
Type 9110. \_ \_ \_ 00



\* The "preferred variant" is the shortest and most rigid design.  
\*\* Does not correspond to the former HBM ID. number 1-4411.011\_ (see page 11)

The depicted connection screws are included in delivery.  
The screws for the left flange of the torque transducer are not included in delivery.

## Technical Data

ROBA®-DS Size		16 F	16	64	300	500	850		
Nominal torque	$T_{KN}$	[Nm]	190	300	1100	3500	5800	10000	
Peak torque <sup>1)</sup>	$T_{KS}$	[Nm]	285	450	1650	5250	8700	14250	
Oscillation range acc. DIN 50100 (peak - peak)	$T_{KSB}$	[Nm]	380	600	2200	7000	11600	20000	
Outer diameter	D	[mm]	102	102	132	178	210	252	
Minimum hub bore	$d_{min}$	[mm]	25 H6	25 H6	45 H6	50 H6	60 H6	70 H6	
Maximum hub bore	$d_{max}$	[mm]	45 H6	45 H6	70 H6	85 H6	100 H6	120 H6	
Maximum speed <sup>2)</sup>	$n_{max}$	[rpm]	18000	18000	15000	12000	10000	8000	
Permitted misalignments	Perm. angular misalignment <sup>3)</sup>	$\Delta K_w$	[°]	1,0	0,7	0,6	0,5	0,5	0,5
	Perm. axial displacement <sup>4)</sup>	$\Delta K_a$	[mm]	1,1	0,8	1,1	1,2	1,4	1,6
	Perm. radial misalignment <sup>4)</sup>	$\Delta K_{VP}$	[mm]	0,30	0,20	0,25	0,25	0,35	0,40
Spring rigidities	Torsion <sup>4)</sup>	$C_{T,VP}$	[10 <sup>3</sup> Nm/rad]	72,5	90	600	1740	5950	10300
		$C_{T,HL}$	[10 <sup>3</sup> Nm/rad]	65	78,5	463	1176	3312	5006
	Angular spring rigidity <sup>3)</sup>		[Nm/rad]	229	285	1850	6980	11250	18580
Mass moments of inertia	Shrink disk hub, clamping external (with max. bore)		[10 <sup>-3</sup> kgm <sup>2</sup> ]	1,53	1,53	8,49	34,47	81,00	203,74
	Module 1, connection plate		[10 <sup>-3</sup> kgm <sup>2</sup> ]	1,86	1,85	10,78	50,46	110,42	274,68
	Module 1, sleeve		[10 <sup>-3</sup> kgm <sup>2</sup> ]	2,19	2,18	14,04	68,70	150,99	369,21
Weights	Shrink disk hub, clamping external (with max. bore)		[kg]	1,16	1,16	3,34	8,03	13,36	23,36
	Module 1, connection plate		[kg]	1,44	1,43	4,06	11,51	17,49	30,03
	Module 1, sleeve		[kg]	1,77	1,76	5,31	15,77	24,50	42,99

1) Valid for unchanging load direction, max. load cycle  $\leq 10^5$

2) For speeds more than 5000 rpm, a limitation of the misalignment to max. 30 % is necessary.

3) The values refer to 1 disk pack.

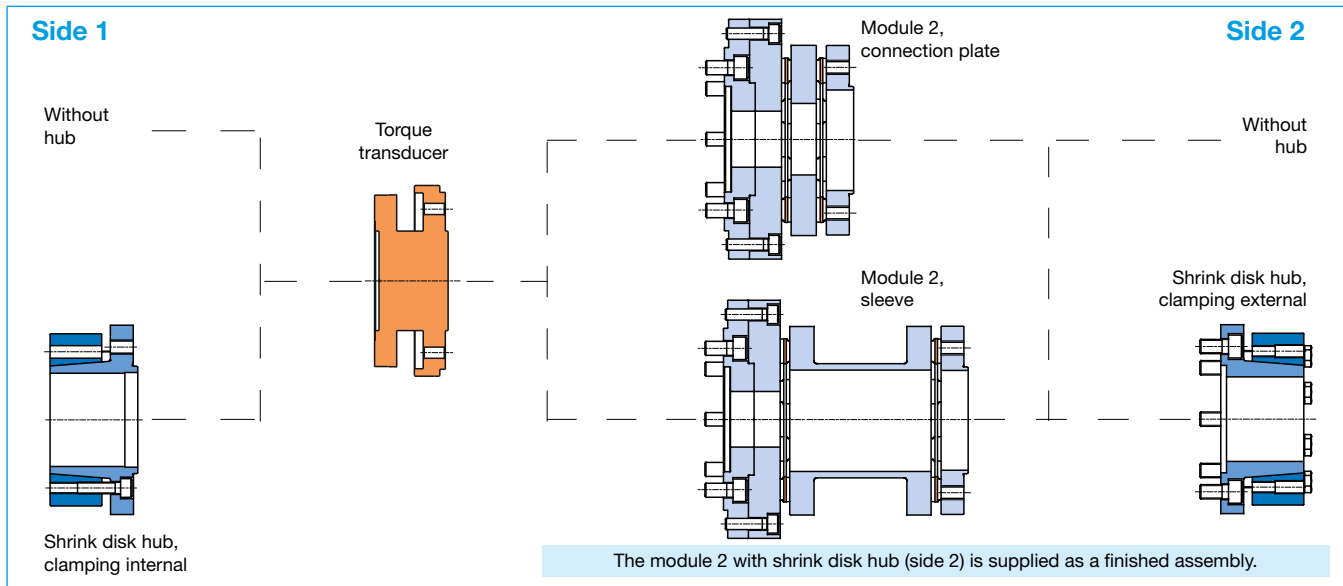
4) The values refer to couplings with 2 disk packs.

## Order Number

Sizes 16 F to 850	Hub side 1 Without Shrink disk hub, clamping external	0 1	0 1	Hub side 2 Without Shrink disk hub, clamping external	Bore side 1 Ød	Bore side 2 Ød
__ / 9	1	1	0	__	__	0 0 / __ / __
Attachment measurement flange side 1						
Module 1, connection plate ** 1						
Module 1, sleeve 2						

# Type of construction, shrink disk hub internal

Standard design  
Type 9110.\_ \_ 0\_0



The depicted connection screws are included in delivery.  
The screws for the left flange of the torque transducer are not included in delivery.

## Technical Data

ROBA®-DS Size			16 F	16	64	300	500	850		
Nominal torque	$T_{KN}$	[Nm]	190	300	1100	3500	5800	10000		
Peak torque <sup>1)</sup>	$T_{KS}$	[Nm]	285	450	1650	5250	8700	14250		
Oscillation range acc. DIN 50100 (peak - peak)	$T_{KSB}$	[Nm]	380	600	2200	7000	11600	20000		
Outer diameter	D	[mm]	102	102	132	178	210	252		
Minimum hub bore	$d_{min}$	[mm]	25 H6	25 H6	45 H6	50 H6	60 H6	70 H6		
Maximum hub bore	$d_{max}$	[mm]	45 H6	45 H6	70 H6	85 H6	100 H6	120 H6		
Maximum speed <sup>2)</sup>	$n_{max}$	[rpm]	18000	18000	15000	12000	10000	8000		
Permitted misalignments	Perm. angular misalignment <sup>3)</sup>	$\Delta K_w$	[°]	1,0	0,7	0,6	0,5	0,5	0,5	
	Perm. axial displacement <sup>4)</sup>	$\Delta K_a$	[mm]	1,1	0,8	1,1	1,2	1,4	1,6	
	Perm. radial misalignment <sup>4)</sup>	$\Delta K_{VP}$	[mm]	0,30	0,20	0,25	0,25	0,35	0,40	
Spring rigidities	Torsion <sup>4)</sup>	Module 2, connection plate	$C_{T,VP}$	[10 <sup>-3</sup> Nm/rad]	72,5	90	600	1740	5950	10300
		Module 2, sleeve	$C_{T,HL}$	[10 <sup>-3</sup> Nm/rad]	65	78,5	463	1176	3312	5006
	Angular spring rigidity <sup>3)</sup>			[Nm/rad]	229	285	1850	6980	11250	18580
Mass moments of inertia	Shrink disk hub, clamping external (with max. bore)		[10 <sup>-3</sup> kgm <sup>2</sup> ]	1,53	1,53	8,49	34,47	81,00	203,74	
	Shrink disk hub, clamping internal (with max. bore)		[10 <sup>-3</sup> kgm <sup>2</sup> ]	1,51	1,51	8,03	32,33	78,33	198,19	
	Module 2, connection plate		[10 <sup>-3</sup> kgm <sup>2</sup> ]	7,73	7,72	31,46	77,37	233,86	540,13	
	Module 2, sleeve		[10 <sup>-3</sup> kgm <sup>2</sup> ]	8,07	8,06	34,71	130,96	274,43	634,67	
Weights	Shrink disk hub, clamping external (with max. bore)		[kg]	1,16	1,16	3,34	8,03	13,36	23,36	
	Shrink disk hub, clamping internal (with max. bore)		[kg]	1,17	1,17	3,16	7,55	12,94	22,65	
	Module 2, connection plate		[kg]	3,78	3,77	9,18	20,32	31,19	50,27	
	Module 2, sleeve		[kg]	4,11	4,10	10,43	24,62	38,20	63,22	

1) Valid for unchanging load direction, max. load cycle  $\leq 10^5$   
 2) For speeds more than 5000 rpm, a limitation of the misalignment to max. 30 % is necessary.

3) The values refer to 1 disk pack.  
 4) The values refer to couplings with 2 disk packs.

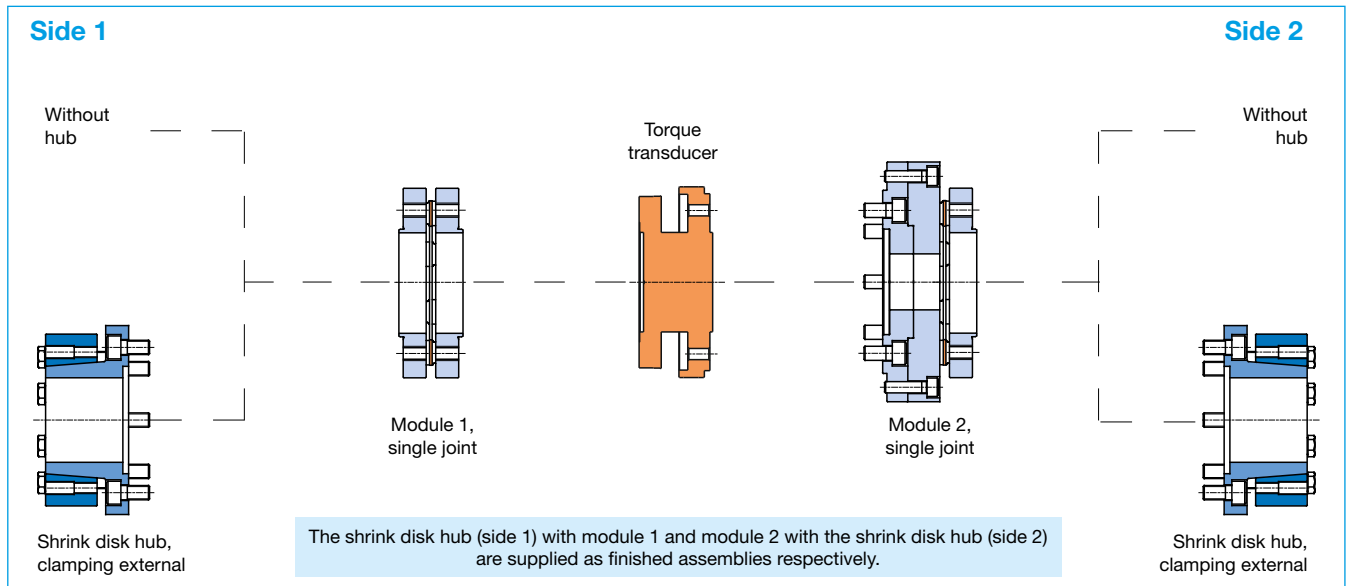
## Order Number

Sizes 16 F to 850	Hub side 1 Without Shrink disk hub, clamping internal	0 2	0 1	Hub side 2 Without Shrink disk hub, clamping external	Bore side 1 Ød	Bore side 2 Ød									
__	/	9	1	1	0	.	__	__	0	__	0	/	__	/	__

Attachment measurement flange side 2  
 1 Module 2, connection plate  
 2 Module 2, sleeve

# Sandwich construction

# Standard design Type 9110.\_ \_330



The depicted connection screws are included in delivery.  
The screws for the left flange of the torque transducer are not included in delivery.

## Technical Data

ROBA®-DS Size			16 F	16	64	300	500	850	
Nominal torque	$T_{KN}$	[Nm]	190	300	1100	3500	5800	10000	
Peak torque <sup>1)</sup>	$T_{KS}$	[Nm]	285	450	1650	5250	8700	14250	
Oscillation range acc. DIN 50100 (peak - peak)	$T_{KSB}$	[Nm]	380	600	2200	7000	11600	20000	
Outer diameter	D	[mm]	102	102	132	178	210	252	
Minimum hub bore	$d_{min}$	[mm]	25 H6	25 H6	45 H6	50 H6	60 H6	70 H6	
Maximum hub bore	$d_{max}$	[mm]	45 H6	45 H6	70 H6	85 H6	100 H6	120 H6	
Maximum speed <sup>2)</sup>	$n_{max}$	[rpm]	18000	18000	15000	12000	10000	8000	
Permitted misalignments	Perm. angular misalignment <sup>3)</sup>	$\Delta K_w$	[°]	1,0	0,7	0,6	0,5	0,5	0,5
	Perm. axial displacement <sup>4)</sup>	$\Delta K_a$	[mm]	1,1	0,8	1,1	1,2	1,4	1,6
	Perm. radial misalignment <sup>4) 5)</sup>	$\Delta K_r$	[mm]	1,6	1,1	1,1	1,1	1,3	1,5
Spring rigidities	Torsion <sup>4)</sup> Modules 1 and 2 <sup>6)</sup>	$C_T$	[10 <sup>3</sup> Nm/rad]	72,5	90	600	1740	5950	10300
	Angular spring rigidity <sup>3)</sup>		[Nm/rad]	229	285	1850	6980	11250	18580
Mass moments of inertia	Shrink disk hub, clamping external (with max. bore)		[10 <sup>-3</sup> kgm <sup>2</sup> ]	1,53	1,53	8,49	34,47	81,00	203,74
	Module 1, single joint		[10 <sup>-3</sup> kgm <sup>2</sup> ]	1,37	1,37	6,52	31,92	71,86	177,88
	Module 2, single joint		[10 <sup>-3</sup> kgm <sup>2</sup> ]	7,24	7,24	27,20	94,14	195,30	443,34
Weights	Shrink disk hub, clamping external (with max. bore)		[kg]	1,16	1,16	3,34	8,03	13,36	23,36
	Module 1, single joint		[kg]	0,96	0,96	2,35	7,35	11,11	19,46
	Module 2, single joint		[kg]	3,30	3,30	7,48	16,19	24,81	39,69

1) Valid for unchanging load direction, max. load cycle  $\leq 10^5$   
 2) For speeds more than 5000 rpm, a limitation of the misalignment to max. 30 % is necessary.  
 3) The values refer to 1 disk pack.

4) The values refer to couplings with 2 disk packs.  
 5) The values refer to the length of the measurement flange T40B.  
 6) The torque transducer is not taken into consideration.

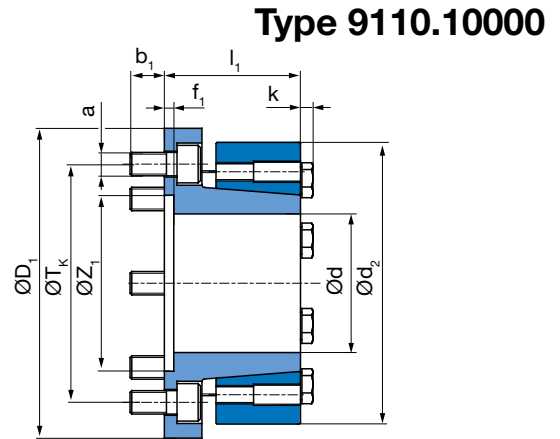
## Order Number

Sizes 16 F to 850	Hub side 1 Without Shrink disk hub, clamping external		Hub side 2 Without Shrink disk hub, clamping external		Bore side 1 Ød	Bore side 2 Ød
	0	1	0	1		
	9	1	1	0	.	
			3	3	0	/
						/



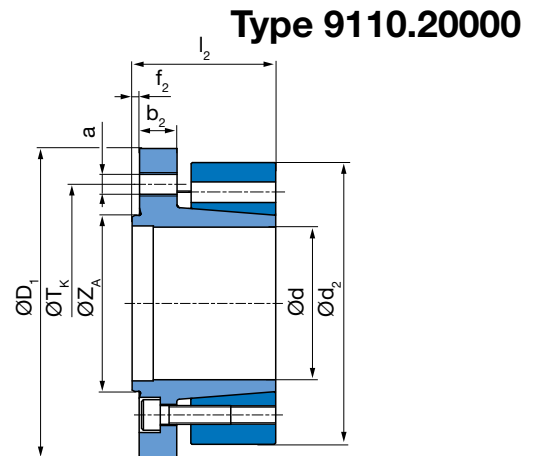
## Shrink disk hub, clamping external

Size	16 F	16	64	300	500	850
a	6x M8	6x M8	8x M10	8x M12	8x M14	8x M16
b <sub>1</sub>	9,6	9,6	14,6	21	20	21,6
d <sub>2</sub>	77	77	120	164	198	234
f <sub>1</sub>	3,5	3,5	4	5	4	4
k	3,5	3,5	5,3	5,3	6,4	7,5
l <sub>1</sub>	38	38	58	70	80	98
D <sub>1</sub>	102	102	132	167	193	238
T <sub>k</sub>	84	84	101,5	130	155,5	196
Z <sub>1</sub>	57 H6	57 H6	75 H6	90 H6	110 H6	140 H6



## Shrink disk hub, clamping internal

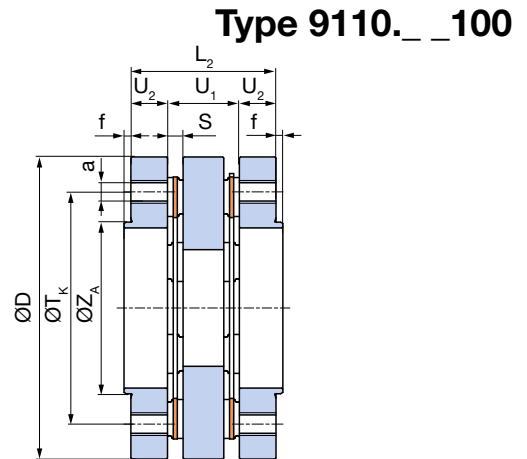
Size	16 F	16	64	300	500	850
a	6x M8	6x M8	8x M10	8x M12	8x M14	8x M16
b <sub>2</sub>	13	13	16	21	25	30
d <sub>2</sub>	77	77	120	164	198	234
f <sub>2</sub>	3	3	3	3	2,5	3
l <sub>2</sub>	41	41	61	72	82,5	101
D <sub>1</sub>	102	102	132	167	193	240
T <sub>k</sub>	84	84	101,5	130	155,5	196
Z <sub>A</sub>	57 g6	57 g6	75 g6	90 g6	110 g6	140 g6



## Module 1, connection plate\*

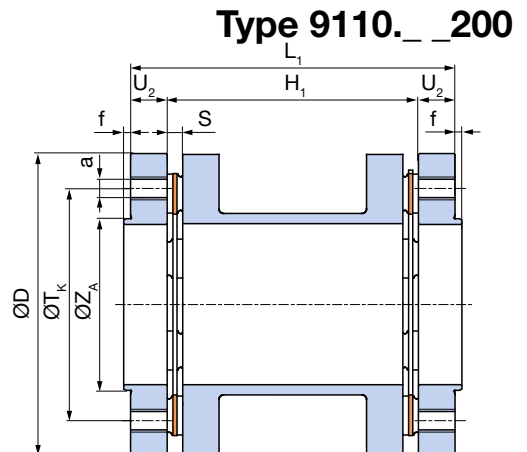
\* Does not correspond to the former HBM ID. number 1-4411.\_\_\_\_ (see page 11)

Size	16 F	16	64	300	500	850
a	6x M8	6x M8	8x M10	8x M12	8x M14	8x M16
f	3	3	3	2,5	2,5	3
D	99	99	132	178	210	252
L <sub>2</sub>	46,2	41,2	63,4	88	100	116
S	7,1	4,6	6,8	11,2	12	14
T <sub>k</sub>	84	84	101,5	130	155,5	196
U <sub>2</sub>	10	10	16	22	25,5	29
U <sub>1</sub>	26,2	21,2	31,4	44	49	58
Z <sub>A</sub>	57 g6	57 g6	75 g6	90 g6	110 g6	140 g6



## Module 1, sleeve

Size	16 F	16	64	300	500	850
a	6x M8	6x M8	8x M10	8x M12	8x M14	8x M16
f	3	3	3	2,5	2,5	3
D	99	99	132	178	210	252
L <sub>1</sub>	90,2	85,2	142,6	204,4	221	278
S	7,1	4,6	6,8	11,2	12	14
T <sub>k</sub>	84	84	101,5	130	155,5	196
H <sub>1</sub>	70,2	65,2	110,6	160,4	170	220
U <sub>2</sub>	10	10	16	22	25,5	29
Z <sub>A</sub>	57 g6	57 g6	75 g6	90 g6	110 g6	140 g6

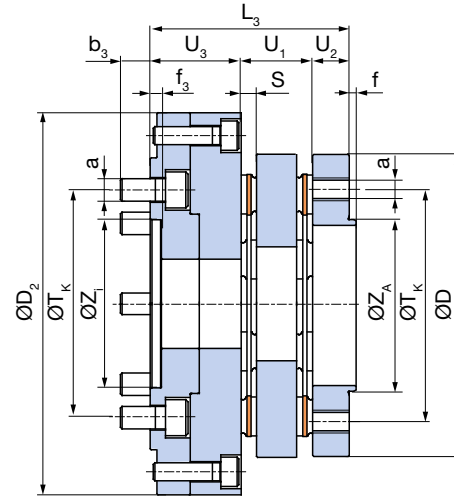




## Module 2, connection plate

Size	16 F	16	64	300	500	850
a	6x M8	6x M8	8x M10	8x M12	8x M14	8x M16
b <sub>3</sub>	10	10	13,2	21,2	24	28
f	3	3	3	2,5	2,5	3
f <sub>3</sub>	4	4	5	3	3,5	6
D	99	99	132	178	210	252
D <sub>2</sub>	132	132	170	220	250	300
L <sub>3</sub>	66,2	61,2	87,8	111,3	127	144
S	7,1	4,6	6,8	11,2	12	14
T <sub>k</sub>	84	84	101,5	130	155,5	196
U <sub>1</sub>	26,2	21,2	31,4	44	49	58
U <sub>2</sub>	10	10	16	22	25,5	29
U <sub>3</sub>	30	30	40,4	45,3	52,5	57
Z <sub>A</sub>	57 g6	57 g6	75 g6	90 g6	110 g6	140 g6
Z <sub>I</sub>	57 H6	57 H6	75 H6	90 H6	110 H6	140 H6

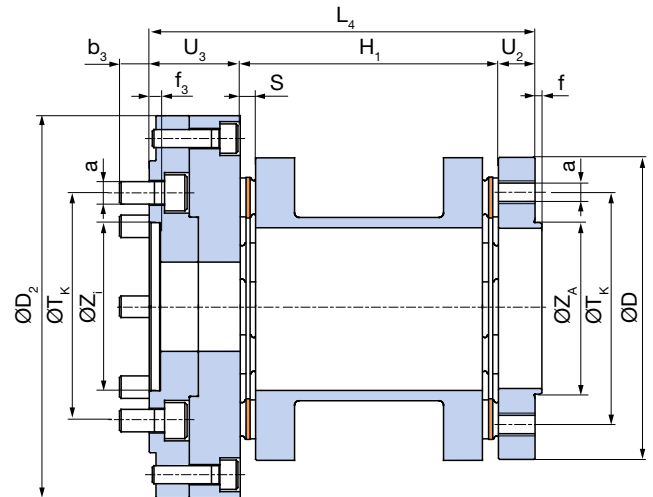
## Type 9110.\_ \_010



## Module 2, sleeve

Size	16 F	16	64	300	500	850
a	6x M8	6x M8	8x M10	8x M12	8x M14	8x M16
b <sub>3</sub>	10	10	13,2	21,2	24	28
f	3	3	3	2,5	2,5	3
f <sub>3</sub>	4	4	5	4	3,5	6
D	99	99	132	178	210	252
D <sub>2</sub>	132	132	170	220	250	300
H <sub>1</sub>	70,2	65,2	110,6	160,4	170	220
L <sub>4</sub>	110,2	105,2	167	227,7	248	306
S	7,1	4,6	6,8	11,2	12	14
T <sub>k</sub>	84	84	101,5	130	155,5	196
U <sub>2</sub>	10	10	16	22	25,5	29
U <sub>3</sub>	30	30	40,4	45,3	52,5	57
Z <sub>A</sub>	57 g6	57 g6	75 g6	90 g6	110 g6	140 g6
Z <sub>I</sub>	57 H6	57 H6	75 H6	90 H6	110 H6	140 H6

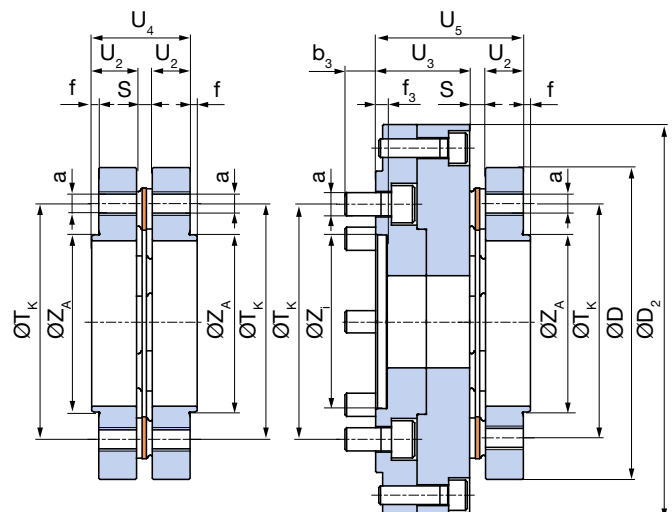
## Type 9110.\_ \_020



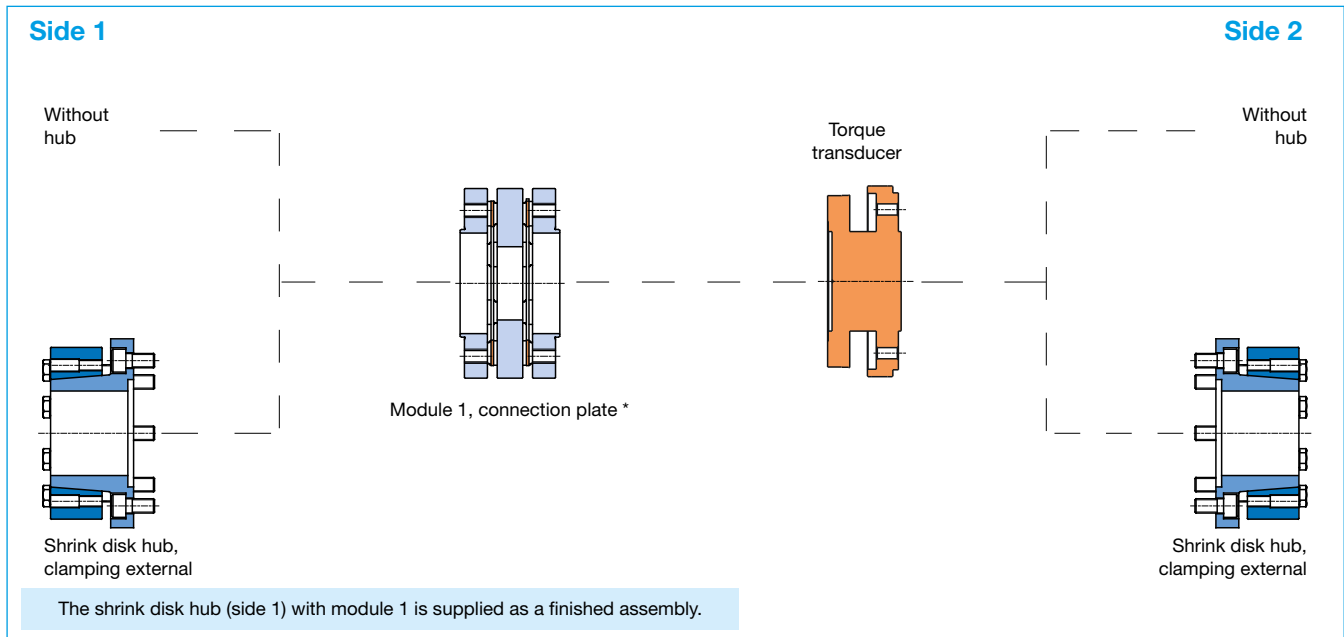
## Module 1, single joint / module 2, single joint for integrated measurement flange

Size	16 F	16	64	300	500	850
a	6x M8	6x M8	8x M10	8x M12	8x M14	8x M16
b <sub>3</sub>	10	10	13,2	21,2	24	28
f	3	3	3	2,5	2,5	3
f <sub>3</sub>	4	4	5	4	3,5	6
D	99	99	132	178	210	252
D <sub>2</sub>	132	132	170	220	250	300
S	7,1	4,6	6,8	11,2	12	14
T <sub>k</sub>	84	84	101,5	130	155,5	196
U <sub>2</sub>	10	10	16	22	25,5	29
U <sub>3</sub>	30	30	40,4	45,3	52,5	57
U <sub>4</sub>	27,1	24,6	38,8	55,2	63	72
U <sub>5</sub>	47,1	44,6	63,2	78,5	90	100
Z <sub>A</sub>	57 g6	57 g6	75 g6	90 g6	110 g6	140 g6
Z <sub>I</sub>	57 H6	57 H6	75 H6	90 H6	110 H6	140 H6

## Type 9110.\_ \_330



# High-speed constructional design Type 9210.\_ \_100



\* Does not correspond to the former HBM ID. number 1-4411.011\_ (see page 11)

The depicted connection screws are included in delivery.  
The screws for the left flange of the torque transducer are not included in delivery.

## Technical Data

ROBA®-DS Size			16 F	16	64	300	500	850	
Nominal torque	$T_{KN}$	[Nm]	190	300	1100	3500	5800	10000	
Peak torque <sup>1)</sup>	$T_{KS}$	[Nm]	285	450	1650	5250	8700	14250	
Oscillation range acc. DIN 50100 (peak - peak)	$T_{KSB}$	[Nm]	380	600	2200	7000	11600	20000	
Outer diameter	D	[mm]	102	102	132	178	210	252	
Minimum hub bore	$d_{min}$	[mm]	25 H5	25 H5	45 H5	50 H5	60 H5	70 H5	
Maximum hub bore	$d_{max}$	[mm]	45 H5	45 H5	70 H5	85 H5	100 H5	120 H5	
Maximum speed	$n_{max}$	[rpm]	30000	30000	25000	20000	16000	13000	
Permitted misalignments	Perm. angular misalignment <sup>2)</sup>	$\Delta K_w$	[°]	0,3	0,2	0,2	0,16	0,16	0,16
	Perm. axial displacement <sup>3)</sup>	$\Delta K_a$	[mm]	0,2	0,2	0,3	0,4	0,4	0,5
	Perm. radial misalignment <sup>3)</sup> Module 1, connection plate	$\Delta K_{VP}$	[mm]	0,06	0,06	0,08	0,08	0,11	0,13
Spring rigidities	Torsion <sup>3)</sup> Module 1, connection plate	$C_{T,VP}$	[10 <sup>3</sup> Nm/rad]	72,5	90	600	1740	5950	10300
	Angular spring rigidity <sup>2)</sup>		[Nm/rad]	229	285	1850	6980	11250	18580
Mass moment of inertia	Shrink disk hub, clamping external (with max. bore)		[10 <sup>-3</sup> kgm <sup>2</sup> ]	1,53	1,53	8,49	34,47	81,00	203,74
	Module 1, connection plate		[10 <sup>-3</sup> kgm <sup>2</sup> ]	1,86	1,85	10,78	50,46	110,42	274,68
Weights	Shrink disk hub, clamping external (with max. bore)		[kg]	1,16	1,16	3,34	8,03	13,36	23,36
	Module 1, connection plate		[kg]	1,44	1,43	4,06	11,51	17,49	30,03

1) Valid for unchanging load direction, max. load cycle  $\leq 10^5$

2) The values refer to 1 disk pack.

3) The values refer to couplings with 2 disk packs.

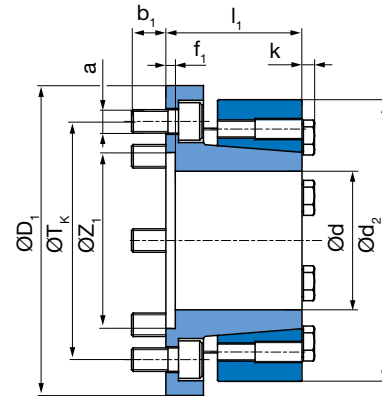
## Order Number

Sizes 16 F to 850	Hub side 1 Without Shrink disk hub, clamping external		0 0	Hub side 2 Without Shrink disk hub, clamping external		Bore side 1 Ød	Bore side 2 Ød
__ / 9 2 1 0 . __	0	1	0	1	0 0	__ / __	__ / __

## Shrink disk hub, clamping external

Size	16 F	16	64	300	500	850
a	6x M8	6x M8	8x M10	8x M12	8x M14	8x M16
b <sub>1</sub>	9,6	9,6	14,6	21	20	21,6
d <sub>2</sub>	77	77	120	164	198	234
f <sub>1</sub>	3,5	3,5	4	5	4	4
k	3,5	3,5	5,3	5,3	6,4	7,5
l <sub>1</sub>	38	38	58	70	80	98
D <sub>1</sub>	102	102	132	167	193	238
T <sub>k</sub>	84	84	101,5	130	155,5	196
Z <sub>1</sub>	57 H5	57 H5	75 H5	90 H5	110 H5	140 H5

## Type 9210.10100

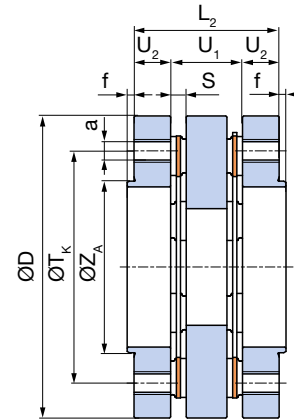


## Module 1, connection plate \*

\* Does not correspond to the former HBM ID. number 1-4411.011\_ (see page below)

Size	16 F	16	64	300	500	850
a	6x M8	6x M8	8x M10	8x M12	8x M14	8x M16
f	3	3	3	2,5	2,5	3
D	99	99	132	178	210	252
L <sub>2</sub>	46,2	41,2	63,4	88	100	116
S	7,1	4,6	6,8	11,2	12	14
T <sub>k</sub>	84	84	101,5	130	155,5	196
U <sub>2</sub>	10	10	16	22	25,5	29
U <sub>1</sub>	26,2	21,2	31,4	44	49	58
Z <sub>A</sub>	57 g5	57 g5	75 g5	90 g5	110 g5	140 g5

## Type 9210.\_ \_100 \*



## Module according to former HBM ID. number 1-4411.011\_

These designs can still be obtained for replacement directly from *mayr*<sup>®</sup> power transmission.

<i>mayr</i> <sup>®</sup> article no.	8200430	8198450	8195550	8200508	8200434
HBM article no.	1-4411.0112	1-4411.0111	1-4411.0110	1-4411.0114	1-4411.0113
ROBA <sup>®</sup> -DS size	16	64	300	500	850
Dimensions on request					



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