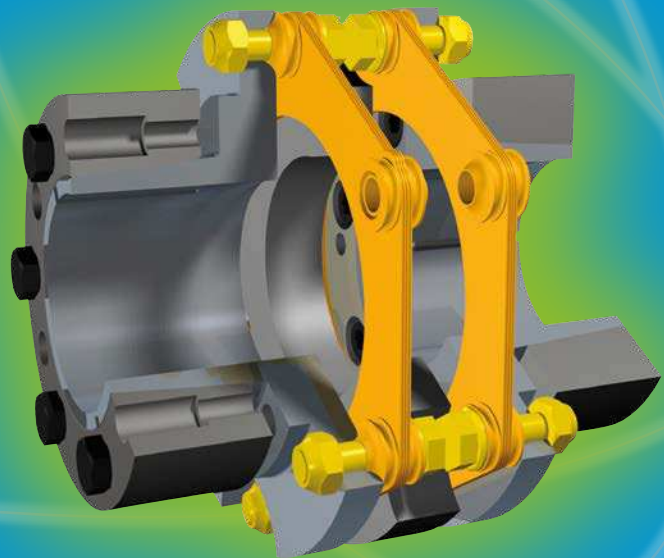




*your reliable partner*

## ROBA<sup>®</sup>-DS

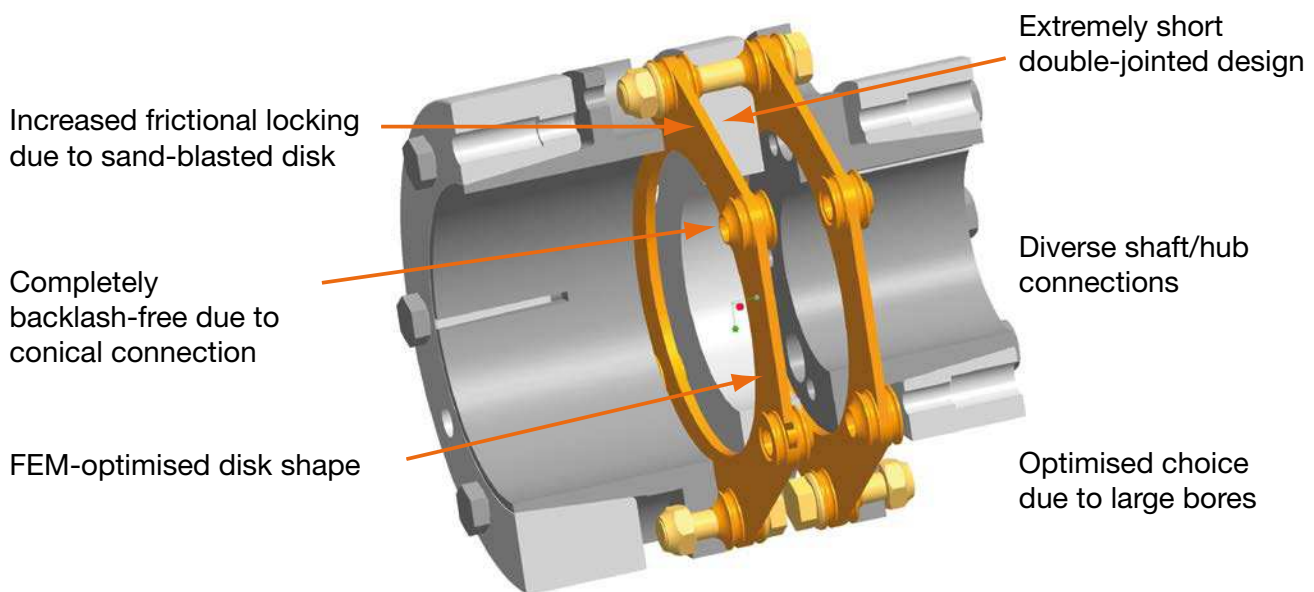
Torsionally Rigid Shaft Couplings



# ROBA<sup>®</sup>-DS

## Technologically superior

- Non-sensitive to alternating loads of up to 100 % of the nominal torque
- Low mass inertia due to high performance density
- Completely backlash-free up to nominal torque
- High misalignment compensation capability at low restoring forces
- High torsional rigidity up to nominal torque
- Completely wear and maintenance-free
- Optimum construction shape due to large variant range



The ROBA<sup>®</sup>-DS transmits drive torques up to the nominal torque completely backlash-free and with permanently high torsional spring rigidity. Problems to be found on other commercially available couplings, such as denting the disks or overcoming the frictional locking, are not a problem on our couplings. The specified shaft misalignments can be 100 % utilized without affecting the transmittable torque. This guarantees unlimited use.

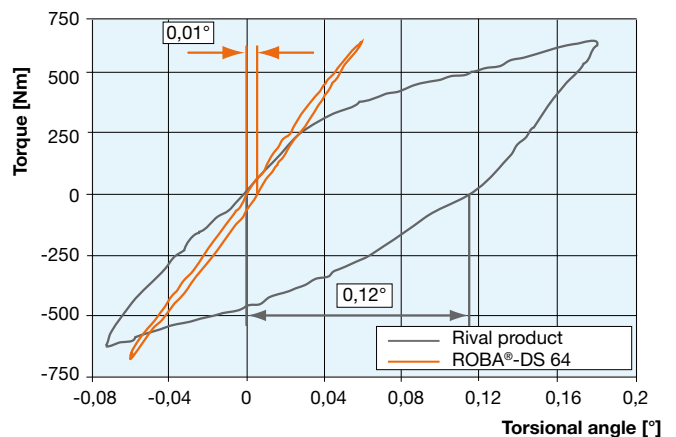


Diagram: A ROBA<sup>®</sup>-DS coupling rigidity characteristic curve in comparison to a typical rival product with frictionally-locking/positively-locking torque transmission.



**ROBA<sup>®</sup>-DS couplings are also available in ATEX design according to the directive 94/9 EC (ATEX 95).**

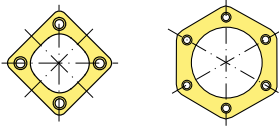


**ROBA<sup>®</sup>-DS couplings are also available in rustproof design.**

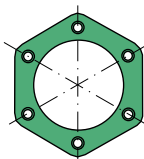


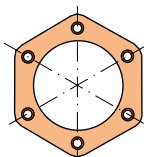
**According to German notation, decimal points in this catalogue are represented with a comma (e.g. 0,5 instead of 0.5). We reserve the right to make dimensional and constructional alterations.**

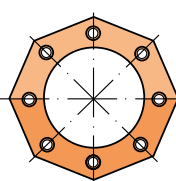
**Backlash-free servo couplings (Aluminium) Page 8** ▷

<p><b>Sizes 3 to 15</b></p> <p>Nominal torques <b>35 to 150 Nm</b></p> <p>Bores <b>10 to 45</b></p> <p><b>Angular misalignment 1°</b></p>	<p><b>Disk pack-Servo</b> with 4x divisions and 6x divisions</p> 	<p><b>Shaft connection</b></p> <p>Clamping hub Hub with tapered bore Split clamping hub Shrink disk hub</p>	<p>Page 8 ▷</p> <p>Page 8 ▷</p> <p>Page 10 ▷</p> <p>Page 12 ▷</p>
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**Backlash-free all-steel couplings Page 14** ▷

<p><b>Sizes 16 to 160</b></p> <p>Nominal torques <b>300 to 2600 Nm</b></p> <p>Bores <b>14 to 110</b></p> <p><b>Angular misalignment 0,7°</b></p>	<p><b>Disk pack-HT</b> with 6x divisions</p> 	<p><b>Shaft connection</b></p> <p>Key hub Key hub large Clamping hub Shrink disk hub external clamping External shrink disk hub Shrink disk hub external/internal clamping Shrink disk hub large Flange</p>	<p>Page 14 ▷</p> <p>Page 16 ▷</p> <p>Page 18 ▷</p> <p>Page 20 ▷</p> <p>Page 21 ▷</p> <p>Page 22 ▷</p> <p>Page 24 ▷</p> <p>Page 26 ▷</p>
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<p><b>Sizes 16 to 160</b></p> <p>Nominal torques <b>190 to 1600 Nm</b></p> <p>Bores <b>14 to 110</b></p> <p><b>Angular misalignment 1°</b></p>	<p><b>Disk pack-HF</b> with 6x divisions</p> 	<p><b>Shaft connection</b></p> <p>Key hub Key hub large Clamping hub Clamping ring hub Shrink disk hub external clamping External shrink disk hub Shrink disk hub external/internal clamping Shrink disk hub large Split clamping hub Flange</p>	<p>Page 28 ▷</p> <p>Page 30 ▷</p> <p>Page 32 ▷</p> <p>Page 34 ▷</p> <p>Page 36 ▷</p> <p>Page 37 ▷</p> <p>Page 38 ▷</p> <p>Page 40 ▷</p> <p>Page 42 ▷</p> <p>Page 44 ▷</p>
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<p><b>Sizes 180 to 2200</b></p> <p>Nominal torques <b>2100 to 24000 Nm</b></p> <p>Bores <b>40 to 170</b></p> <p><b>Angular misalignment 0,5°</b></p>	<p><b>Disk pack</b> with 8x divisions</p> 	<p><b>Shaft connection</b></p> <p>Key hub Shrink disk hub external clamping External shrink disk hub Split clamping hub Flange</p>	<p>Page 46 ▷</p> <p>Page 48 ▷</p> <p>Page 49 ▷</p> <p>Page 50 ▷</p> <p>Page 52 ▷</p>
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<p><b>Sizes 2200 to 11000</b></p> <p>Nominal torques <b>22 to 110 kNm</b></p> <p><b>Angular misalignment 0,4°</b></p>	<p><b>Shaft connection</b></p> <p>Customer-specific adaptations e. g. : key hub, shrink disk hub, flange</p>	<p>Page 54 ▷</p>
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**Variable Length Sleeve S/CFRP Sleeve/Options and variants on intermediate shafts Page 56** ▷

**Safe Against Overload Page 59** ▷

**Transmittable Torques for Shrink disk, Split clamping, Clamping ring, Clamping and Key hubs Page 60** ▷

**Installation Examples Page 62** ▷

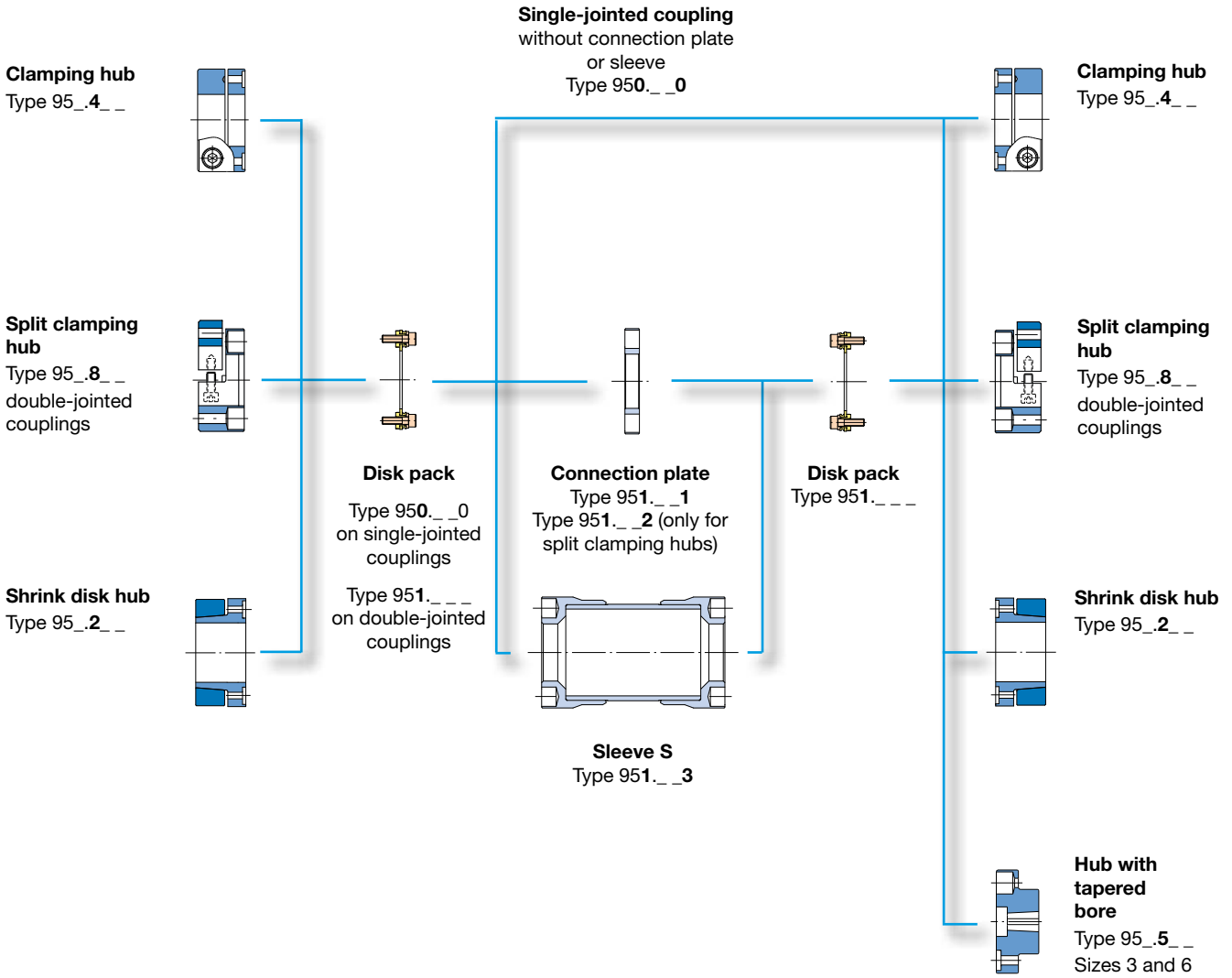
**Integrated Torque Measurement Page 64** ▷

**Dimensioning, Size Selection Page 68** ▷

**Technical Explanations Page 69** ▷

# ROBA<sup>®</sup>-DS backlash-free servo couplings

## Configuration Possibilities/Standard Designs



## ROBA<sup>®</sup>-DS backlash-free servo couplings

### Type Key/Order Number

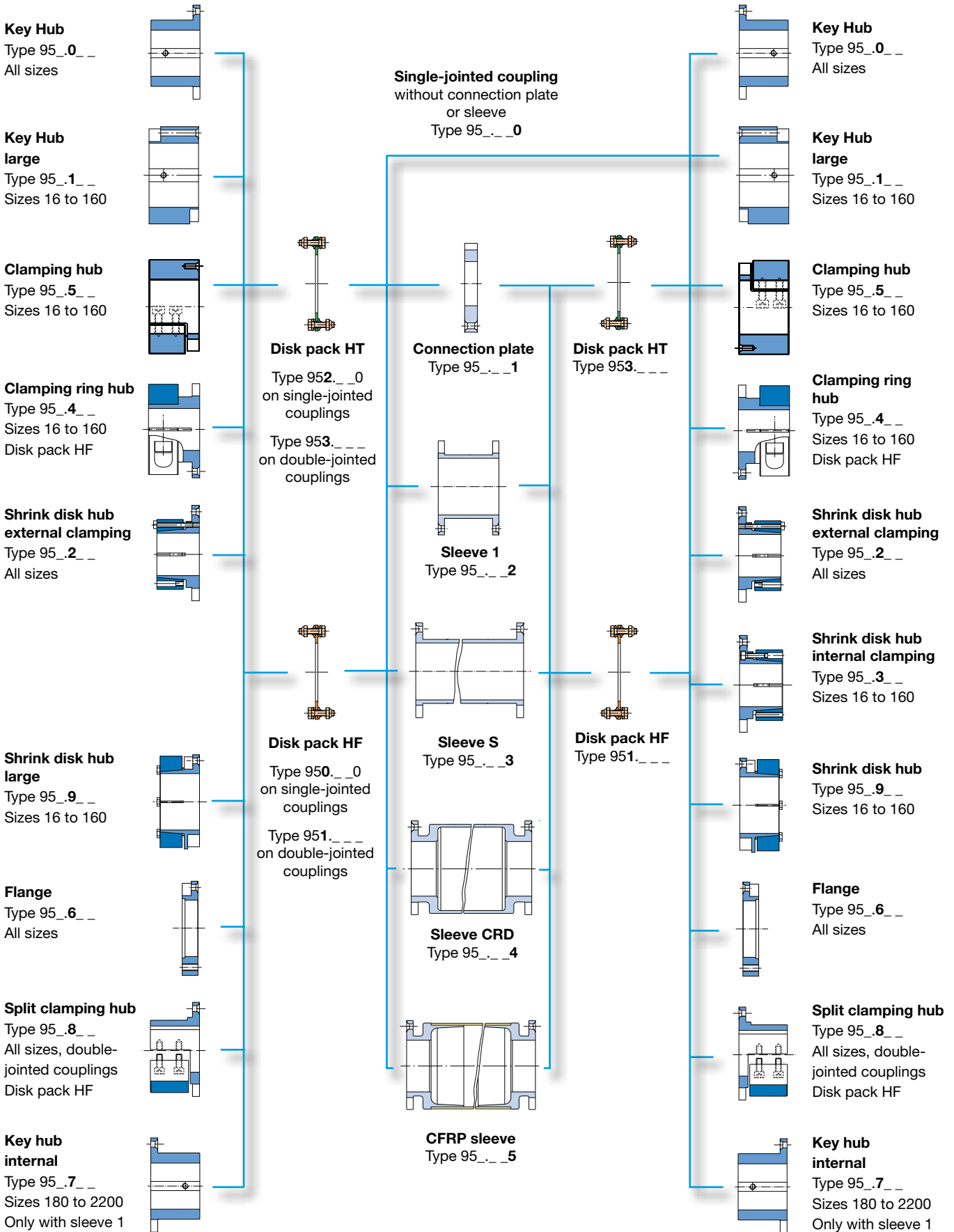
#### Sizes 3 to 15

Type Key/Order Number														
		Hub 1	Hub 2											
Shrink disk hub		2	2	Shrink disk hub										
Clamping hub		4	4	Clamping hub										
Split clamping hub		8	8	Hub with tapered bore										
				Split clamping hub										
		▽	▽											
_	/	9	5	_	.	_	_	_	/	_	/	_	/	_
△			△			△		△		△		△		△
Size	Single-jointed coupling	0	Single-jointed coupling	0	Bore Hub 1 ø	Bore Hub 2 ø	Operating Speed [rpm]							
3							for Sleeve S							
6														
10	Double-jointed coupling	1	Double-jointed coupling											
15			Connection plate	1										
			Connection plate HSK	2										
			Sleeve S	3										



# ROBA<sup>®</sup>-DS backlash-free all-steel couplings

## Configuration Possibilities/Standard Designs



## ROBA®-DS backlash-free all-steel couplings

### Type Key/Order Number

#### Sizes 16 to 160

#### Type Key/Order Number

		Hub 1	Hub 2					
	Key hub, standard	0	0		Key hub, standard			
	Key hub, large	1	1		Key hub, large			
	Shrink disk hub, external clamping	2	2		Shrink disk hub, external clamping			
					Shrink disk hub, internal clamping			
	Clamping ring hub	4	4		Clamping ring hub			
	Clamping hub	5	5		Clamping hub			
	Flange	6	6		Flange			
	Split clamping hub	8	8		Split clamping hub			
	Shrink disk hub, large	9	9		Shrink disk hub, large			

Size	Single-jointed coupling	0	Single-jointed coupling	0	Bore Hub 1 $\varnothing$	Bore Hub 2 $\varnothing$	Operating Speed [rpm]
16	Disk pack HF		Connection plate	1			for
25	Double-jointed coupling	1	Sleeve 1	2			Sleeve S
40	Disk pack HF		Sleeve S	3			Sleeve CRD
64	Single-jointed coupling	2	Sleeve CRD	4			CFRP sleeve
100	Disk pack HT		CFRP sleeve	5			
160	Double-jointed coupling	3					
	Disk pack HT						

#### Sizes 180 to 2200

#### Type Key/Order Number

		Hub 1	Hub 2					
	Key hub, standard	0	0		Key hub, standard			
	Shrink disk hub, external clamping	2	2		Shrink disk hub, external clamping			
	Flange	6	6		Flange			
	Key hub, internal	7	7		Key hub, internal			
	Split clamping hub	8	8		Split clamping hub			

Size	Single-jointed coupling	0	Single-jointed coupling	0	Bore Hub 1 $\varnothing$	Bore Hub 2 $\varnothing$	Operating Speed [rpm]
180	Double-jointed coupling	1	Connection plate	1			for
300			Sleeve 1	2			Sleeve S
500			Sleeve S	3			Sleeve CRD
850			Sleeve CRD	4			CFRP sleeve
1400			CFRP sleeve	5			
2200							



# ROBA®-DS Sizes 3 to 15

## Single-jointed coupling with clamping hubs

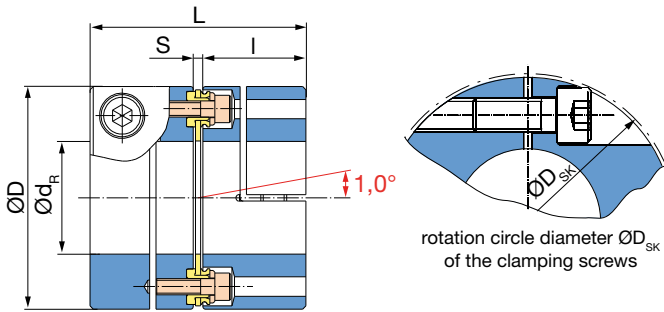


Fig. 1: Type 950.440

## Alternative shaft connection Hub with tapered bore

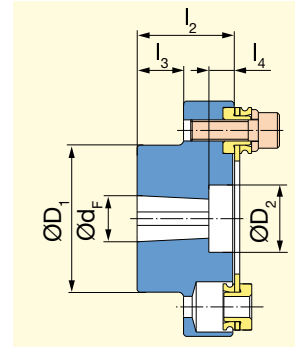


Fig. 2: Type 95...\_5  
(only Sizes 3 and 6)  
e.g. for Fanuc motors

Technical Data and Main Dimensions				Size				
				3	6	10	15	
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	35	60	100	150		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	52	90	150	225		
Alternating torque	$T_{KW}$	[Nm]	21	36	60	90		
Outer diameter	D	[mm]	45	56	69	79		
Minimum hub bore <sup>3) 4)</sup>	$d_R^{H7_{min}}$	[mm]	10	14	19	25		
Maximum hub bore <sup>3) 4)</sup>	$d_R^{H7_{max}}$	[mm]	20	28	35	42		
Maximum speed <sup>5)</sup>	with clamping hub	$n_{max}$	[rpm]	13500	10800	9000	7800	
	with hub with tapered bore	$n_{max}$	[rpm]	22500	18000	15000	13000	
Permitted misalignments <sup>6)</sup>	permitted axial displacement <sup>7) 8)</sup>		$\Delta K_a$	[mm]	0,5	0,7	0,9	1,1
	permitted radial misalignment <sup>7)</sup>	with connection plate	$\Delta K_r$	[mm]	0,15	0,15	0,2	0,2
		with sleeve S	$\Delta K_{rH}$	[mm]	$(H_s - S) \times 0,0174$			
Spring rigidity	torsion <sup>9)</sup>	disk pack	$C_{TLP}$	[10 <sup>3</sup> Nm/rad]	17	35	60	145
		tube sleeve S	$C_{THrel.}$	[10 <sup>6</sup> Nm mm/rad]	3,3	6,8	12	19
	angular spring rigidity <sup>10)</sup>			[Nm/rad]	43	64	76	229

### Dimensions [mm]

Size	3	6	10	15				
$D_{SK}$	47	-	71	-				
$d_3$	17	22,5	35,5	40				
$H_s$	acc. customer specifications							
$h_2$	40	50	60	70				
L	48,5	52,6	66,9	69,9				
$L_2$	59	64,7	79,3	82,8				
$L_6$	dependent on $H_s$							
I	23	25	32	33,5				
S	2,5	2,6	2,9	2,9				
U	28	32	40	46				
$U_1$	13	14,7	15,3	15,8				
Hub with tapered bore	$d_F^{\pm 0,05}$	11	14	11	14	16	-	-
	$D_1$	27	27	35	35	35	-	-
	$D_2$	16	21	16	25	25	-	-
	$l_2$	23	30	23	30	40	-	-
	$l_3$	13	20	11	18	28	-	-
	$l_4$	6	10	6	10	10	-	-

### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	3	6	10	15
Disk pack <sup>11)</sup>	0,006	0,018	0,035	0,077
Clamping hub <sup>12)</sup>	0,021	0,054	0,164	0,295
Hub with tapered bore <sup>12)</sup>	0,012	0,039	-	-
Connection plate	0,018	0,050	0,121	0,208
Sleeve S with $H_s = 1000$ mm	0,349	0,755	1,373	2,341
Sleeve S per 1000 mm tube	0,323	0,682	1,175	1,981

### Weight [kg]

Size	3	6	10	15
Disk pack <sup>11)</sup>	0,023	0,041	0,050	0,077
Clamping hub <sup>12)</sup>	0,070	0,112	0,221	0,297
Hub with tapered bore <sup>12)</sup>	0,053	0,121	-	-
Connection plate	0,063	0,111	0,161	0,218
Sleeve S with $H_s = 1000$ mm	1,009	1,361	1,678	2,079
Sleeve S per 1000 mm tube	0,938	1,231	1,443	1,762

- 1) Valid for max. permitted shaft misalignment.
- 2) Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- 3) Recommended hub/shaft tolerance: H7/k6
- 4) Preferred bores and transmittable torques dependent on bore see page 61.
- 5) Not valid for coupling with sleeve S.
- 6) The permitted misalignments may not simultaneously reach their maximum values.
- 7) The values refer to couplings with 2 disk packs.

- 8) Only permitted as a static or virtually static value.
- 9) The  $C_r$ -value of a double-jointed coupling can be roughly calculated as follows:
 
$$C_{T_{tot.}} = \frac{1}{\frac{2}{C_{TLP}} + \frac{H_s [\text{mm}] - 2S [\text{mm}]}{C_{THrel.}}}$$
- 10) The values refer to 1 disk pack.
- 11) Mass moments of inertia and weights are valid for 1 disk pack.
- 12) Mass moments of inertia and weights are valid for maximum bore.



## ROBA<sup>®</sup>-DS Sizes 3 to 15

### Double-jointed coupling with connection plate and clamping hubs

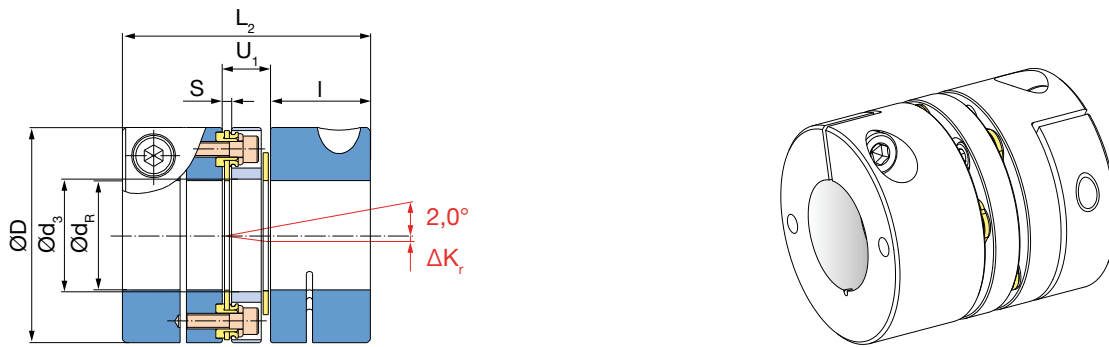


Fig. 3: Type 951.441

### Double-jointed coupling with sleeve S (special length) and clamping hubs

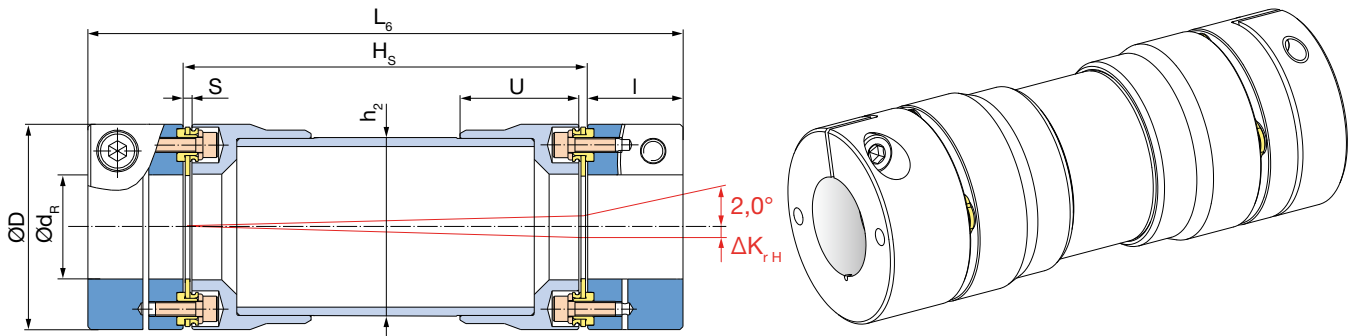


Fig. 4: Type 951.443 (Sleeve S: H<sub>s</sub>, L<sub>θ</sub>)

Order Number															
HUB 2															
4 Clamping hub**															
5 Hub with tapered bore***															
▼															
△	/	9	5	△	.	4	△	/	△	/	△	/	△	/	△
<b>Sizes</b> 3 to 15		Single-jointed coupling	0			Single-jointed coupling	0		<b>Bore*</b> Hub 1 ø (Dim. page 8)		<b>Bore*</b> Hub 2 ø (Dim. page 8)		<b>Sleeve length</b> H <sub>s</sub> [mm]		<b>Operating speed</b> n <sub>s</sub> [rpm]
		Double-jointed coupling	1			Connection plate	1								
						Sleeve S	3								for special sleeve S

Example: 10 / 951.441 / Hub 1 – ø 25<sup>H7</sup> / Hub 2 – ø 25<sup>H7</sup>

\* Standard H7, other tolerances possible  
\*\* Clamping hub also available with keyway  
\*\*\* Only Sizes 3 and 6

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# ROBA®-DS Sizes 3 to 15

## Double-jointed coupling with connection plate and split clamping hubs

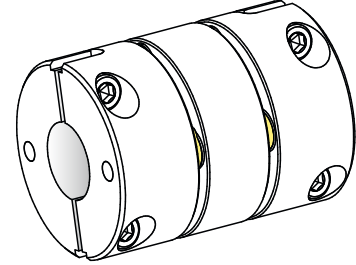
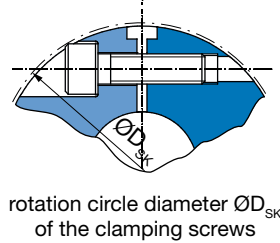
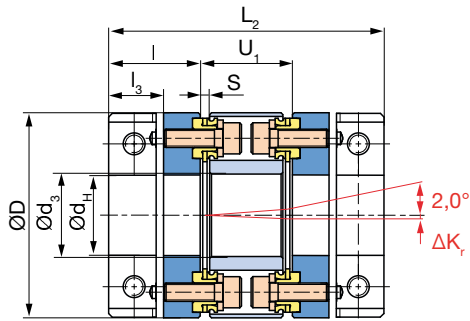


Fig. 5: Type 951.882

**Optional keyway design** according to DIN 6885/1 possible (up to bore  $d_H = 18$  mm on Size 3, up to bore  $d_H = 22$  mm on Size 6, for all bores on Sizes 10 and 15)

Technical Data and Main Dimensions				Size				
				3	6	10	15	
Nominal torque <sup>1)</sup>		$T_{KN}$	[Nm]	35	60	100	150	
Peak torque <sup>2)</sup>		$T_{KS}$	[Nm]	52	90	150	225	
Alternating torque		$T_{KW}$	[Nm]	21	36	60	90	
Outer diameter		D	[mm]	45	56	69	79	
Minimum hub bore <sup>3) 4)</sup>		$d_{H\ min}^{H7}$	[mm]	10	14	19	25	
Maximum hub bore <sup>3) 4)</sup>		$d_{H\ max}^{H7}$	[mm]	20	28	35	42	
Maximum speed <sup>5)</sup>		$n_{max}$	[rpm]	3000	3000	3000	3000	
Permitted misalignments <sup>6)</sup>	permitted axial displacement <sup>7) 8)</sup>	$\Delta K_a$	[mm]	0,5	0,7	0,9	1,1	
	permitted radial misalignment <sup>7)</sup>	with connection plate HSK	$\Delta K_{T\ HSK}$	[mm]	0,35	0,4	0,45	0,5
with sleeve S		$\Delta K_{T\ H}$	[mm]	$(H_s - S) \times 0,0174$				
Spring rigidity	torsion <sup>9)</sup>	disk pack	$C_{T\ LP}$	[ $10^3$ Nm/rad]	17	35	60	145
		tube sleeve S	$C_{T\ H\ rel.}$	[ $10^6$ Nm mm/rad]	3,3	6,8	12	19
	angular spring rigidity <sup>10)</sup>			[Nm/rad]	43	64	76	229

### Dimensions [mm]

Size	3	6	10	15
$D_{SK}$	47	-	71	-
$d_3$	17	22,5	35,5	40
$H_s$	acc. customer specifications			
$h_2$	40	50	60	70
$L_2$	69	75,2	93,8	100,8
$L_6$	dependent on $H_s$			
I	23	25	32	33,5
S	2,5	2,6	2,9	2,9
U	28	32	40	46
$U_1$	23	25,2	29,8	33,8

### Mass Moments of Inertia J [ $10^{-3}$ kgm<sup>2</sup>]

Size	3	6	10	15
Disk pack <sup>11)</sup>	0,006	0,018	0,035	0,077
Split clamping hub <sup>12)</sup>	0,018	0,048	0,143	0,266
Connection plate HSK	0,017	0,044	0,119	0,264
Sleeve S with $H_s = 1000$ mm	0,349	0,755	1,373	2,341
Sleeve S per 1000 mm tube	0,323	0,682	1,175	1,981

### Weight [kg]

Size	3	6	10	15
Disk pack <sup>11)</sup>	0,023	0,041	0,050	0,077
Split clamping hub <sup>12)</sup>	0,060	0,098	0,195	0,270
Connection plate HSK	0,057	0,096	0,161	0,270
Sleeve S with $H_s = 1000$ mm	1,009	1,361	1,978	2,079
Sleeve S per 1000 mm tube	0,938	1,231	1,443	1,762

1) Valid for unchanging load direction as well as for max. permitted shaft misalignment. When the load direction changes, max. 60% of the stated nominal torque is permitted.  
 2) Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .  
 3) Recommended hub/shaft tolerance: H7/g6  
 4) Preferred bores and transmittable torques dependent on bore see page 60.  
 5) Not valid for coupling with sleeve S.  
 6) The permitted misalignments may not simultaneously reach their maximum values.  
 7) The values refer to couplings with 2 disk packs.  
 8) Only permitted as a static or virtually static value.

9) The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T\ ges.} = \frac{1}{\frac{2}{C_{T\ LP}} + \frac{H_s [mm] - 2 S [mm]}{C_{T\ H\ rel.}}}$$

10) The values refer to 1 disk pack.  
 11) Mass moments of inertia and weights are valid for 1 disk pack.  
 12) Mass moments of inertia and weights are valid for maximum bore.

## ROBA®-DS Sizes 3 to 15

### Double-jointed coupling with sleeve S (special length) and split clamping hubs

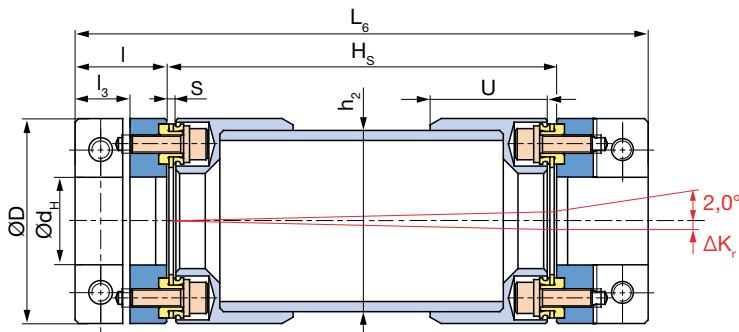
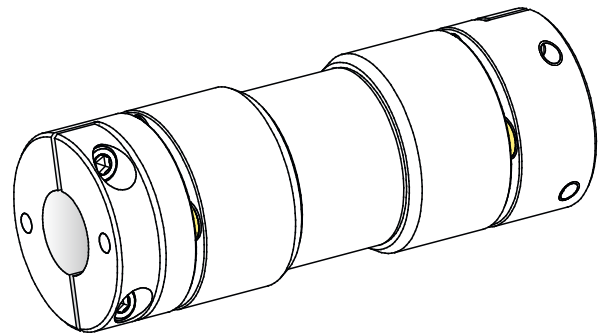


Fig. 6: Type 951.883 (Sleeve S:  $H_s$ ,  $L_6$ )



**Optional** keyway design according to DIN 6885/1 possible  
 (up to bore  $d_H = 18$  mm on Size 3,  
 up to bore  $d_H = 22$  mm on Size 6,  
 for all bores on Sizes 10 and 15)

### Order Number

—	/	9	5	1	.	8	8	—	/	—	/	—	/	—	/	—
▲								▲		▲		▲		▲		▲
Sizes 3 to 15							Connection plate HSK Sleeve S	2 3		Bore* Hub 1 $\phi$ (Dim. page 10)		Bore* Hub 2 $\phi$ (Dim. page 10)		Sleeve length $H_s$ [mm]		Operating speed $n_s$ [rpm]
														for special sleeve S		

Example: 10 / 951.882 / Hub 1 –  $\phi 25$  <sup>H7</sup> / Hub 2 –  $\phi 25$  <sup>H7</sup>

\* Standard H7, other tolerances possible

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## ROBA®-DS Sizes 3 to 15

### Single-jointed coupling with shrink disk hubs

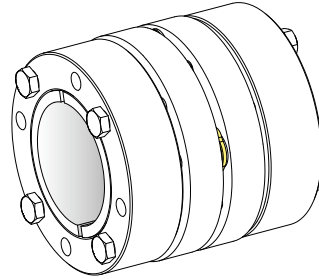
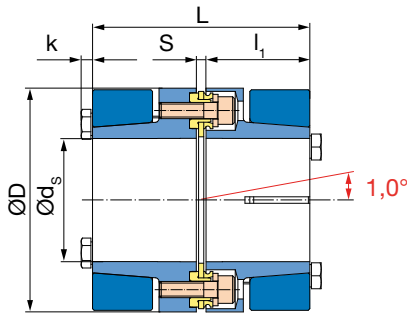


Fig. 7: Type 950.220

Technical Data and Main Dimensions			Size					
			3	6	10	15		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	35	60	100	150		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	52	90	150	225		
Alternating torque	$T_{KW}$	[Nm]	21	36	60	90		
Outer diameter	D	[mm]	45	56	69	79		
Minimum hub bore <sup>3) 4) 5)</sup>	$d_{S \min}^{H7}$	[mm]	10	14	19	25		
Maximum hub bore <sup>3) 4)</sup>	$d_{S \max}^{H7}$	[mm]	20	28	38	45		
Maximum speed <sup>6)</sup>	$n_{\max}$	[rpm]	22500	18000	15000	13000		
Permitted misalignments <sup>7)</sup>	permitted axial displacement <sup>8) 9)</sup>		$\Delta K_a$	[mm]	0,5	0,7	0,9	1,1
	permitted radial misalignment <sup>8)</sup>	with connection plate	$\Delta K_r$	[mm]	0,15	0,15	0,2	0,2
		with sleeve S	$\Delta K_{rH}$	[mm]	$(H_s - S) \times 0,0174$			
Spring rigidity	torsion <sup>10)</sup>	disk pack	$C_{TLP}$	[10 <sup>3</sup> Nm/rad]	17	35	60	145
		tube sleeve S	$C_{T H \text{ rel.}}$	[10 <sup>6</sup> Nm mm/rad]	3,3	6,8	12	19
	angular spring rigidity <sup>11)</sup>			[Nm/rad]	43	64	76	229

#### Dimensions [mm]

Size	3	6	10	15
$d_s$	17	22,5	35,5	40
$H_s$	acc. customer specifications			
$h_2$	40	50	60	70
k	2,8	3,5	3,5	3,5
L	50,5	58,6	66,9	77,9
$L_2$	61	70,7	79,3	90,8
$L_6$	dependent on $H_s$			
$l_1$	24	28	32	37,5
S	2,5	2,6	2,9	2,9
U	28	32	40	46
$U_1$	13	14,7	15,3	15,8

#### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	3	6	10	15
Disk pack <sup>12)</sup>	0,006	0,018	0,035	0,077
Shrink disk hub <sup>13)</sup>	0,043	0,129	0,303	0,605
Connection plate	0,018	0,050	0,121	0,208
Sleeve S with $H_s = 1000$ mm	0,349	0,755	1,373	2,341
Sleeve S per 1000 mm tube	0,323	0,682	1,175	1,981

#### Weight [kg]

Size	3	6	10	15
Disk pack <sup>12)</sup>	0,023	0,041	0,050	0,077
Shrink disk hub <sup>13)</sup>	0,142	0,254	0,379	0,570
Connection plate	0,063	0,111	0,161	0,218
Sleeve S with $H_s = 1000$ mm	1,009	1,361	1,678	2,079
Sleeve S per 1000 mm tube	0,938	1,231	1,443	1,762

1) Valid for max. permitted shaft misalignment.

2) Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .

3) Recommended hub/shaft tolerance: H7/g6

4) On shrink disk hubs, the preferred bores are identical to the preferred bores on the clamping hubs (see preferred bores clamping hubs page 61).

5)  $\phi 10$ : frictionally locking transmittable torque = 80 % of  $T_{KS}$ .

6) Not valid for coupling with sleeve S.

7) The permitted misalignments may not simultaneously reach their maximum values.

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

9) Only permitted as a static or virtually static value.

10) The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{TLP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{T H \text{ rel.}}}}$$

11) The values refer to 1 disk pack.

12) Mass moments of inertia and weights are valid for 1 disk pack.

13) Mass moments of inertia and weights are valid for maximum bore.

## ROBA<sup>®</sup>-DS Sizes 3 to 15

### Double-jointed coupling with connection plate and shrink disk hubs

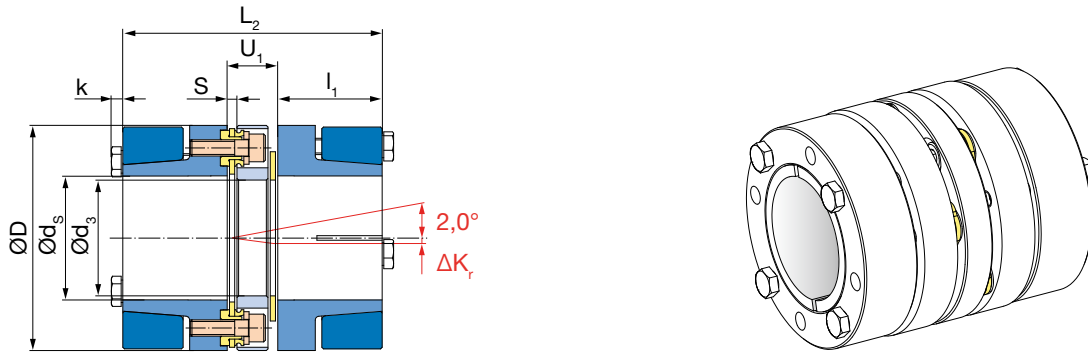


Fig. 8: Type 951.221

### Double-jointed coupling with sleeve S (special length) and shrink disk hubs

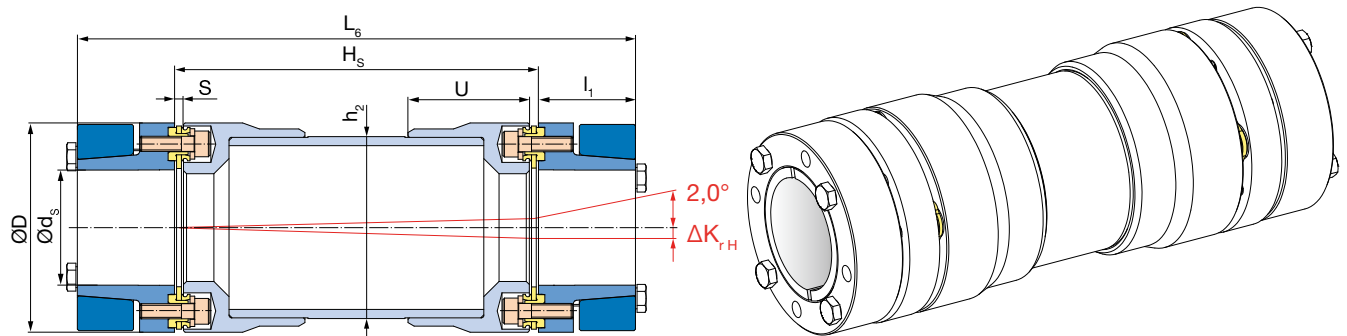


Fig. 9: Type 951.223 (Sleeve S:  $H_s$ ,  $L_\theta$ )

Order Number										
_ / 9 5 _ . 2 2 _ / _ / _ / _ / _										
▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲										
<b>Sizes</b> 3 to 15	Single-jointed coupling	0	Single-jointed coupling	0	<b>Bore*</b> Hub 1 $\phi$	<b>Bore*</b> Hub 2 $\phi$	<b>Sleeve</b> <b>length</b>	<b>Operating</b> <b>speed</b>		
	Double-jointed coupling	1	Connection plate	1	(Dim. page 12)	(Dim. page 12)	$H_s$ [mm]	$n_s$ [rpm]		
			Sleeve S	3			for special sleeve S			

Example: 10 / 951.221 / Hub 1 –  $\phi$  25<sup>H7</sup> / Hub 2 –  $\phi$  25<sup>H7</sup>

\* Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HT

## Single-jointed coupling with key hubs

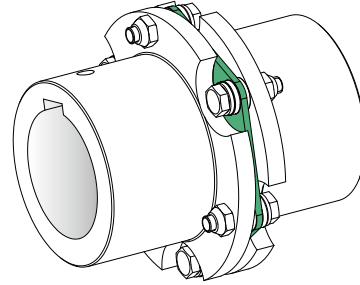
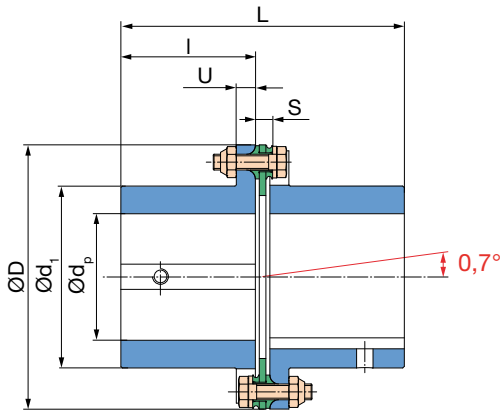


Fig. 10: Type 952.000

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	300	420	650	1100	1600	2600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	450	630	975	1650	2400	3900		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore <sup>3)</sup>	$d_{p.min}$	[mm]	16	20	25	30	35	40		
Maximum hub bore <sup>3)</sup>	$d_{p.max}$	[mm]	32	40	50	55	70	80		
Maximum speed <sup>4)</sup>	$n_{max}$	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>	$\Delta K_a$	[mm]	0,8	0,9	1,1	1,3	1,5	1,7	
		permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_r$	[mm]	0,2	0,2	0,25	0,3	0,3
	with sleeve 1		$\Delta K_{r,H}$	[mm]	0,7	0,8	1	1,25	1,45	1,5
	with sleeve S		$\Delta K_{r,H}$	[mm]	(H <sub>s</sub> - S) x 0,0122					
Spring rigidity	torsion <sup>8)</sup>	disk pack	$C_{T LP}$	[10 <sup>3</sup> Nm/rad]	180	290	320	1350	1900	2950
		tube sleeve S	$C_{T H rel.}$	[10 <sup>6</sup> Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>9)</sup>		[Nm/rad]	285	305	875	1285	2025	3260	

### Dimensions [mm]

Size	16	25	40	64	100	160
d <sub>1</sub>	50	60	70	80	100	115
d <sub>3</sub>	33	41	46	51	66	76
H <sub>1</sub>	65	75,6	91,4	112,8	133,2	135,2
H <sub>s</sub>	acc. customer specifications					
h <sub>1</sub>	50	60	70	80	100	110
L	84,6	95	116,1	138	158,6	179,2
L <sub>2</sub>	101,2	112	136,2	164	185,2	210,4
L <sub>4</sub>	145	165,6	201,4	242,8	283,2	305,2
L <sub>6</sub>	dependent on H <sub>s</sub>					
l	40	45	55	65	75	85
S	4,6	5	6,1	8	8,6	9,2
U	7	7	8	10	10	12
U <sub>1</sub>	21,2	22	26,2	34	35,2	40,4

### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>10)</sup>	0,08	0,13	0,30	0,81	1,36	3,43
Hub <sup>11)</sup>	0,27	0,55	1,16	2,58	6,18	12,51
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with H <sub>s</sub> = 1000 mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>10)</sup>	0,08	0,09	0,16	0,32	0,39	0,71
Hub <sup>11)</sup>	0,46	0,69	1,02	1,72	2,83	4,25
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with H <sub>s</sub> = 1000 mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

- Valid for changing load direction as well as for max. permitted shaft misalignment.
- Valid for unchanging load direction, max. load cycles ≤ 10<sup>5</sup>.
- Transmittable torques dependent on bore, see page 61.
- Not valid for coupling with sleeve S.
- The permitted misalignments may not simultaneously reach their maximum values.
- The values refer to couplings with 2 disk packs.
- Only permitted as a static or virtually static value.
- The C<sub>T</sub>-value of a double-jointed coupling can be roughly calculated as follows:
 
$$C_{T tot.} = \frac{1}{\frac{2}{C_{T LP}} + \frac{H_s [mm] - 2 S [mm]}{C_{T H rel.}}}$$

- The values refer to 1 disk pack.
- Mass moments of inertia and weights are valid for 1 disk pack.
- Mass moments of inertia and weights are valid for maximum bore.

## ROBA®-DS Sizes 16 to 160 – disk pack-HT

### Double-jointed coupling with connection plate and key hubs

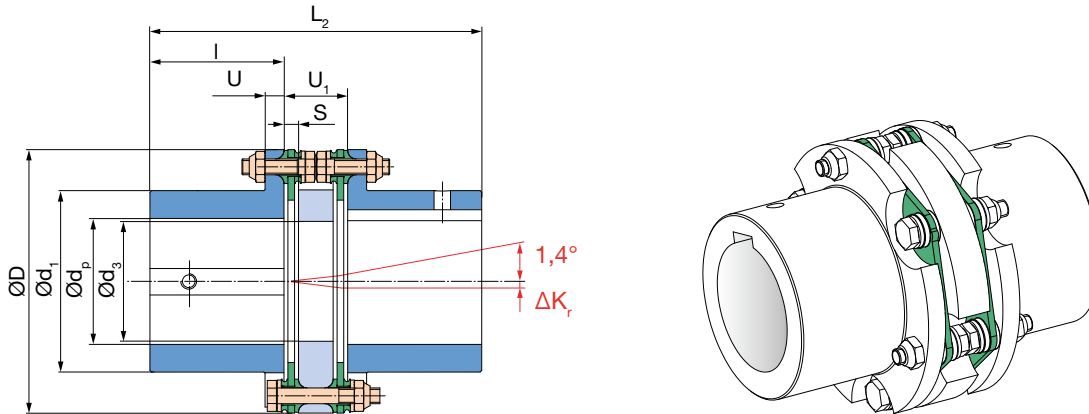


Fig. 11: Type 953.001

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and key hubs

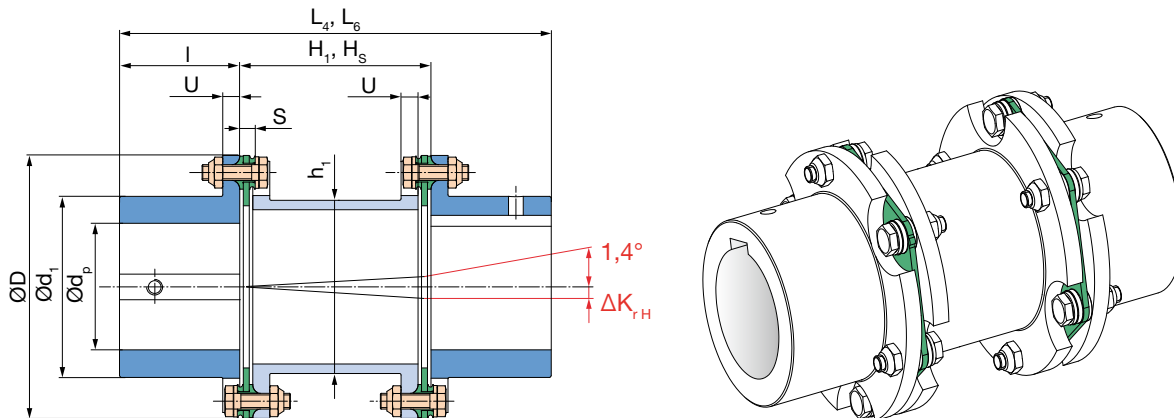


Fig. 12: Type 953.002 (Sleeve 1:  $H_1, L_4$ ), Type 953.003 (Sleeve S:  $H_S, L_6$ )

### Order Number

Order Number		Order Number		Order Number		Order Number		Order Number								
—	/	9	5	—	.	0	0	—	/	—	/	—	/	—	/	—
▲			▲			▲		▲		▲		▲		▲		▲
<b>Sizes</b> 16 to 160	Single-jointed coupling	2	Single-jointed coupling Connection plate	0	<b>Bore*</b> Hub 1 ø (Dim. page 14)	1	<b>Bore*</b> Hub 2 ø (Dim. page 14)	2	<b>Sleeve length</b> $H_S$ [mm]	3	<b>Operating speed</b> $n_s$ [rpm]	4	for special sleeves S / CRD / CFRP			
	Double-jointed coupling	3	Sleeve 1	2				Sleeve S	3							
			Sleeve CRD (page 56)	4				Sleeve CFRP (page 56)	5							

Example: 100 / 952.000 / Hub 1 – ø 50 <sup>H7</sup> / Hub 2 – ø 60 <sup>H7</sup>

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HT

## Single-jointed coupling with key hubs, large

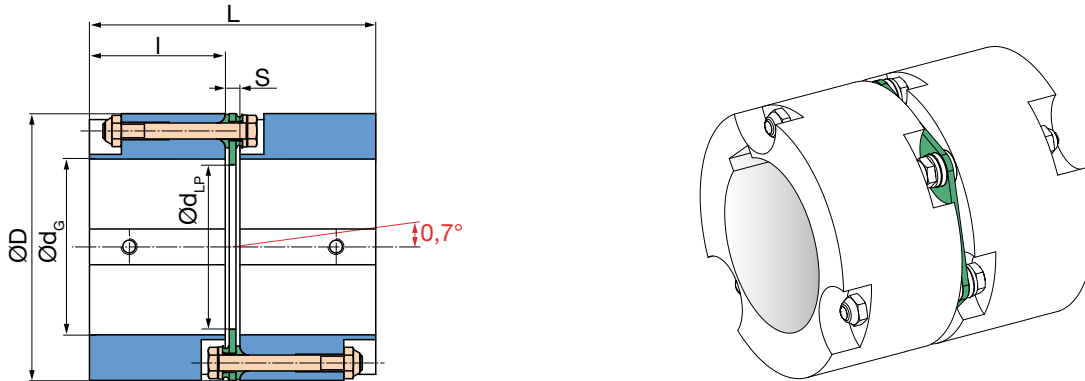


Fig. 13: Type 952.110

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	300	420	650	1100	1600	2600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	450	630	975	1650	2400	3900		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore	$d_{G \min}$	[mm]	30	35	45	55	65	75		
Maximum hub bore	$d_{G \max}$	[mm]	45	55	65	75	95	110		
Maximum speed <sup>3)</sup>	$n_{\max}$	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments <sup>4)</sup>	permitted axial displacement <sup>5) 6)</sup>	$\Delta K_a$	[mm]	0,8	0,9	1,1	1,3	1,5	1,7	
		$\Delta K_r$	[mm]	0,2	0,2	0,25	0,3	0,3	0,35	
	permitted radial misalignment <sup>5)</sup>	with connection plate	$\Delta K_{r,H}$	[mm]	0,7	0,8	1	1,25	1,45	1,5
		with sleeve S	$\Delta K_{r,H}$	[mm]	$(H_s - S) \times 0,0122$					
Spring rigidity	torsion <sup>10)</sup>	disk pack	$C_{T LP}$	[ $10^3$ Nm/rad]	180	290	320	1350	1900	2950
		tube sleeve S	$C_{T H rel.}$	[ $10^6$ Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>7)</sup>			[Nm/rad]	285	305	875	1285	2025	3260

### Dimensions [mm]

Size	16	25	40	64	100	160
$d_3$	33	41	46	51	66	76
$d_{H1}$	43	54	62	71	92	98
$d_{LP}$	45	55	65	74	88	103
$H_1$	65	75,6	91,4	112,8	133,2	135,2
$H_s$	acc. customer specifications					
$h_1$	50	60	70	80	100	110
L	84,6	95	116,1	138	158,6	179,2
$L_2$	101,2	112	136,2	164	185,2	210,4
$L_4$	145	165,6	201,4	242,8	283,2	305,2
$L_6$	dependent on $H_s$					
l	40	45	55	65	75	85
S	4,6	5	6,1	8	8,6	9,2
U	7	7	8	10	10	12
$U_1$	21,2	22	26,2	34	35,2	40,4

- Valid for changing load direction as well as for max. permitted shaft misalignment.
- Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- Not valid for coupling with sleeve S.
- The permitted misalignments may not simultaneously reach their maximum values.
- The values refer to couplings with 2 disk packs.
- Only permitted as a static or virtually static value.
- The values refer to 1 disk pack.
- Mass moments of inertia and weights are valid for 1 disk pack.
- Mass moments of inertia and weights are valid for maximum bore.

### Mass Moments of Inertia J [ $10^{-3}$ kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,13	0,30	0,81	1,36	3,43
Hub <sup>9)</sup>	0,86	1,71	3,89	8,98	18,12	36,00
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with $H_s = 1000$ mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,16	0,32	0,39	0,71
Hub <sup>9)</sup>	0,87	1,26	2,08	3,47	4,94	7,23
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with $H_s = 1000$ mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

- The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{T LP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{T H \text{ rel.}}}}$$

## ROBA®-DS Sizes 16 to 160 – disk pack-HT

### Double-jointed coupling with connection plate and key hubs, large

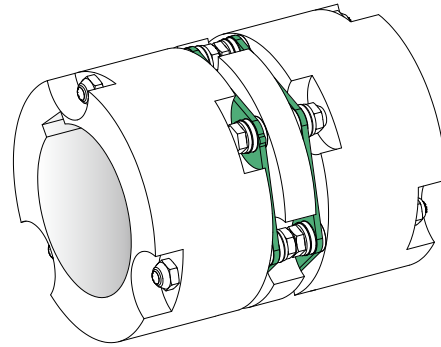
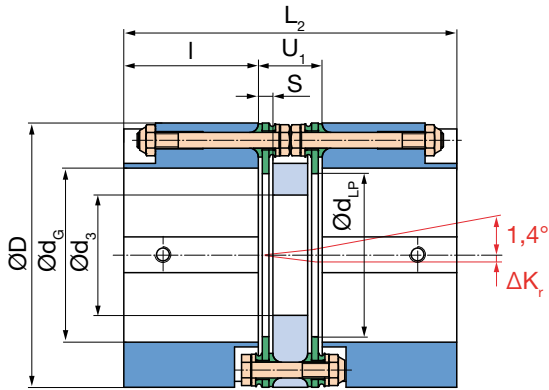


Fig. 14: Type 953.111

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and key hubs large

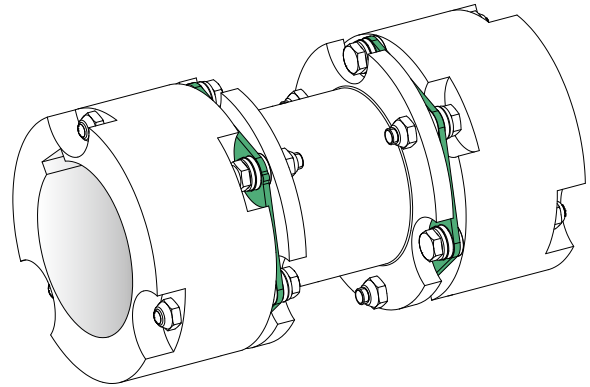
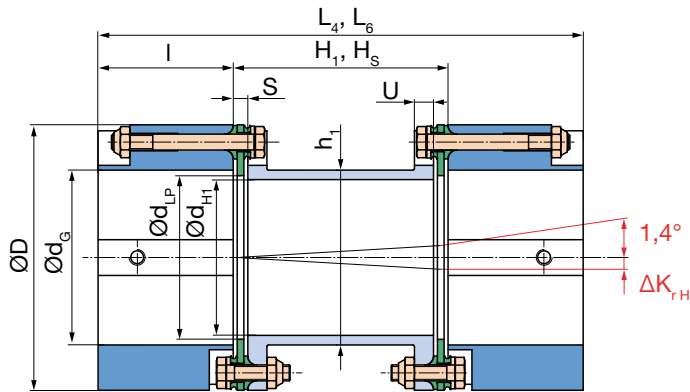


Fig. 15: Type 953.112 (Sleeve 1: H<sub>1</sub>, L<sub>4</sub>), Type 953.113 (Sleeve S: H<sub>S</sub>, L<sub>6</sub>)

#### Order Number

—	/	9	5	—	.	1	1	—	/	—	/	—	/	—	/	—
▲				▲				▲	▲	▲	▲	▲	▲			▲
<b>Sizes</b> 16 to 160		Single-jointed coupling	2	Single-jointed coupling Connection plate		0	<b>Bore*</b> <b>Hub 1 ø</b> (Dim. page 16)	<b>Bore*</b> <b>Hub 2 ø</b> (Dim. page 16)		<b>Sleeve length</b> <b>H<sub>s</sub></b> [mm]		<b>Operating speed</b> <b>n<sub>s</sub></b> [rpm]				for special sleeves S / CRD / CFRP
		Double-jointed coupling	3	Sleeve 1		1										
				Sleeve S		2										
				Sleeve CRD (page 56)		3										
				Sleeve CFRP (page 56)		4										
						5										

Example: 100 / 952.110 / Hub 1 – ø 70<sup>H7</sup> / Hub 2 – ø 80<sup>H7</sup>

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HT

## Single-jointed coupling with clamping hubs

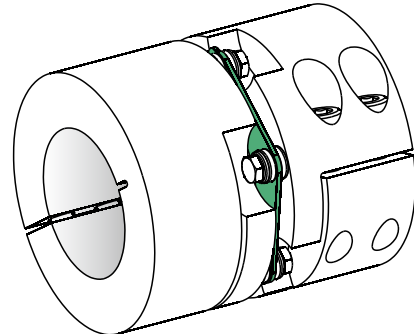
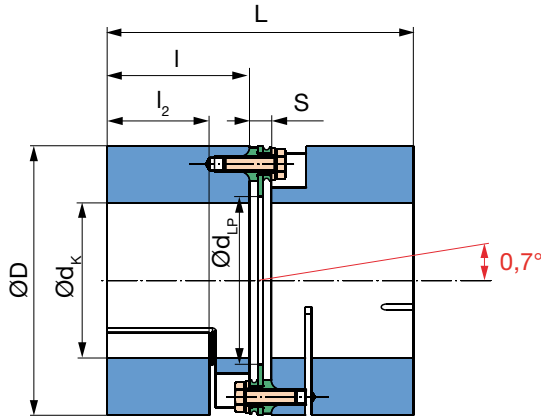


Fig. 16: Type 952.550

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	300	420	650	1100	1600	2600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	450	630	975	1650	2400	3900		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore <sup>3)</sup>	$d_{K\ min}$	[mm]	20	22	25	28	32	40		
Maximum hub bore <sup>3)</sup>	$d_{K\ max}$	[mm]	45	52	60	70	90	100		
Maximum speed <sup>4)</sup>	$n_{max}$	[rpm]	9500	8200	7000	6000	5100	4300		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>	$\Delta K_a$	[mm]	0,8	0,9	1,1	1,3	1,5	1,7	
	permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_r$	[mm]	0,2	0,2	0,25	0,3	0,3	0,35
	with sleeve 1	$\Delta K_{r,H}$	[mm]	0,7	0,8	1	1,25	1,45	1,5	
	with sleeve S	$\Delta K_{r,H}$	[mm]	$(H_s - S) \times 0,0122$						
Spring rigidity	torsion <sup>11)</sup>	disk pack	$C_{T\ LP}$	[ $10^3$ Nm/rad]	180	290	320	1350	1900	2950
		tube sleeve S	$C_{T\ H\ rel.}$	[ $10^6$ Nm mm/rad]	19	34	71	108	217	415
		angular spring rigidity <sup>8)</sup>		[Nm/rad]	285	305	875	1285	2025	3260

### Dimensions [mm]

Size	16	25	40	64	100	160
$d_3$	33	41	46	51	66	76
$d_{H1}$	43	54	62	71	92	98
$d_{LP}$	45	55	65	74	88	103
$H_1$	65	75,6	91,4	112,8	133,2	135,2
$H_s$	acc. customer specifications					
$h_1$	50	60	70	80	100	110
L	84,6	95	116,1	138	158,6	179,2
$L_2$	101,2	112	136,2	164	185,2	210,4
$L_4$	145	165,6	201,4	242,8	283,2	305,2
$L_6$	dependent on $H_s$					
I	40	45	55	65	75	85
$I_2$	27	32	39,6	44,8	54,5	60
S	4,6	5	6,1	8	8,6	9,2
U	7	7	8	10	10	12
$U_1$	21,2	22	26,2	34	35,2	40,4

- Valid for changing load direction as well as for max. permitted shaft misalignment.
- Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- Transmittable torques dependent on bore, see page 61.
- Not valid for coupling with sleeve S.
- The permitted misalignments may not simultaneously reach their maximum values.
- The values refer to couplings with 2 disk packs.
- Only permitted as a static or virtually static value.
- The values refer to 1 disk pack.
- Mass moments of inertia and weights are valid for 1 disk pack.

### Mass Moments of Inertia J [ $10^{-3}$ kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,13	0,30	0,81	1,36	3,43
Hub <sup>10)</sup>	0,74	1,49	3,64	8,42	16,94	34,32
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with $H_s = 1000$ mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,16	0,32	0,39	0,71
Hub <sup>10)</sup>	0,73	1,11	2,05	3,43	4,82	6,94
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with $H_s = 1000$ mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

10) Mass moments of inertia and weights are valid for maximum bore.

11) The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T\ tot.} = \frac{1}{\frac{2}{C_{T\ LP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{T\ H\ rel.}}}$$

## ROBA<sup>®</sup>-DS Sizes 16 to 160 – disk pack-HT

### Double-jointed coupling with connection plate and clamping hubs

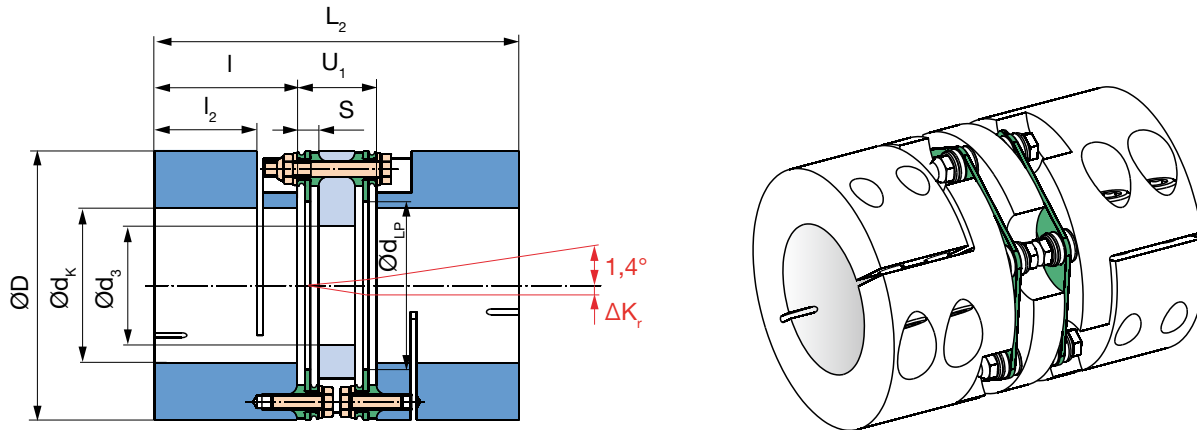


Fig. 17: Type 953.551

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and clamping hubs

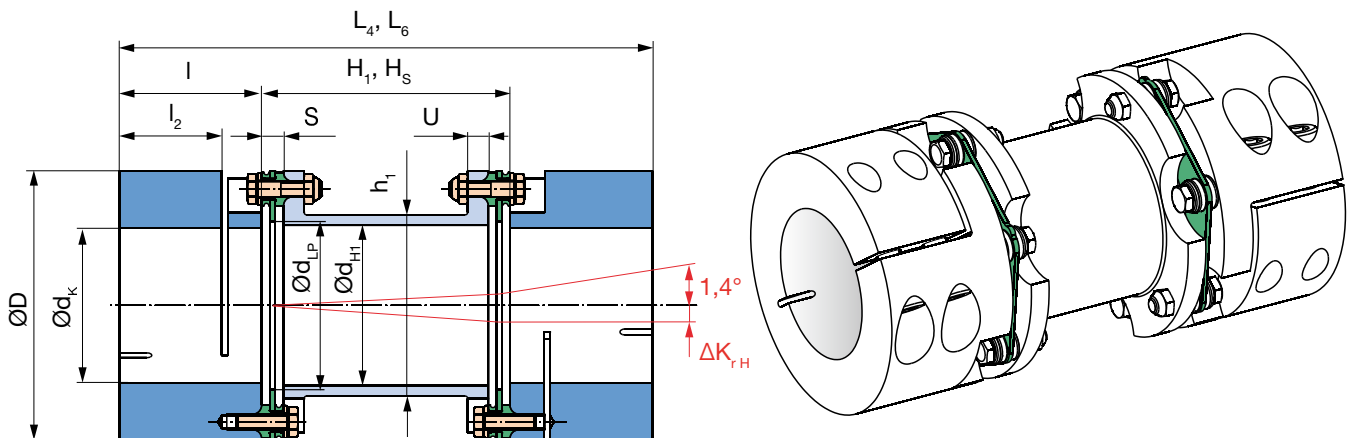


Fig. 18: Type 953.552 (Sleeve 1:  $H_1, L_4$ ), Type 953.553 (Sleeve S:  $H_s, L_6$ )

### Order Number

	9	5	.	5	5		/		/		/		/		
	△		△			△		△		△		△		△	
<b>Sizes</b> 16 to 160	Single-jointed coupling	2	Single-jointed coupling Connection plate	0	<b>Bore*</b> <b>Hub 1 ø</b> (Dim. page 18)	<b>Bore*</b> <b>Hub 2 ø</b> (Dim. page 18)	<b>Sleeve length</b> $H_s$ [mm]	<b>Operating speed</b> $n_s$ [rpm]							
	Double-jointed coupling	3	Sleeve 1	1											
			Sleeve S	2											
			Sleeve CRD (page 56)	3											
			Sleeve CFRP (page 56)	4											
				5											

Example: 100 / 952.550 / Hub 1 – ø 75<sup>H7</sup> / Hub 2 – ø 90<sup>H7</sup>

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HT

## Single-jointed coupling with shrink disk hubs, external clamping

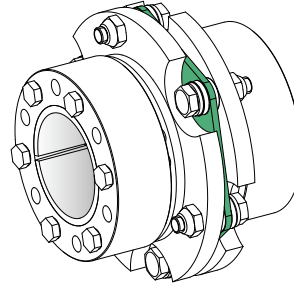
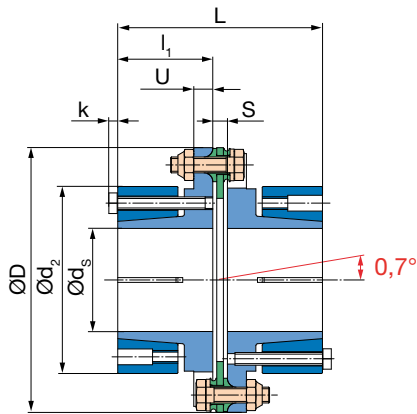


Fig. 19: Type 952.220

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	300	420	650	1100	1600	2600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	450	630	975	1650	2400	3900		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore <sup>3)</sup>	$d_{Smin}$	[mm]	14	20	25	30	35	40		
Maximum hub bore <sup>3)</sup>	$d_{Smax}$	[mm]	26	36	45	45	55	65		
Maximum speed <sup>4)</sup>	$n_{max}$	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>		$\Delta K_a$	[mm]	0,8	0,9	1,1	1,3	1,5	1,7
		permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_r$	[mm]	0,2	0,2	0,25	0,3	0,3
	with sleeve 1		$\Delta K_{rH}$	[mm]	0,7	0,8	1	1,25	1,45	1,5
	with sleeve S		$\Delta K_{rH}$	[mm]	(H <sub>s</sub> - S) x 0,0122					
Spring rigidity	torsion <sup>11)</sup>	disk pack	$C_{TLP}$	[10 <sup>3</sup> Nm/rad]	180	290	320	1350	1900	2950
		tube sleeve S	$C_{THrel.}$	[10 <sup>6</sup> Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>8)</sup>			[Nm/rad]	285	305	875	1285	2025	3260

### Dimensions [mm]

Size	16	25	40	64	100	160
d <sub>2</sub>	53	64	74	84	104	118
d <sub>3</sub>	33	41	46	51	66	76
H <sub>1</sub>	65	75,6	91,4	112,8	133,2	135,2
H <sub>s</sub>	acc. customer specifications					
h <sub>1</sub>	50	60	70	80	100	110
k	3,5	3,5	3,5	4	5,5	5,5
L	74,6	85	96,1	108	118,6	129,2
L <sub>2</sub>	91,2	102	116,2	134	145,2	160,4
L <sub>4</sub>	135	155,6	181,4	212,8	243,2	255,2
L <sub>6</sub>	dependent on H <sub>s</sub>					
I <sub>1</sub>	35	40	45	50	55	60
S	4,6	5	6,1	8	8,6	9,2
U	7	7	8	10	10	12
U <sub>1</sub>	21,2	22	26,2	34	35,2	40,4

### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,13	0,30	0,81	1,36	3,43
Hub <sup>10)</sup>	0,27	0,57	1,15	2,46	5,59	11,14
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with H <sub>s</sub> = 1000 mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,16	0,32	0,39	0,71
Hub <sup>10)</sup>	0,49	0,71	1,03	1,71	2,73	3,99
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with H <sub>s</sub> = 1000 mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

- 1) Valid for changing load direction as well as for max. permitted shaft misalignment.
- 2) Valid for unchanging load direction, max. load cycles ≤ 10<sup>5</sup>.
- 3) Transmittable torques dependent on bore, see page 60.
- 4) Not valid for coupling with sleeve S.
- 5) The permitted misalignments may not simultaneously reach their maximum values.
- 6) The values refer to couplings with 2 disk packs.
- 7) Only permitted as a static or virtually static value.
- 8) The values refer to 1 disk pack.
- 9) Mass moments of inertia and weights are valid for 1 disk pack.
- 10) Mass moments of inertia and weights are valid for maximum bore.

11) The C<sub>T</sub>-value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{TLP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{THrel.}}}$$

## ROBA®-DS Sizes 16 to 160 – disk pack-HT

Double-jointed coupling with connection plate and shrink disk hubs, external clamping

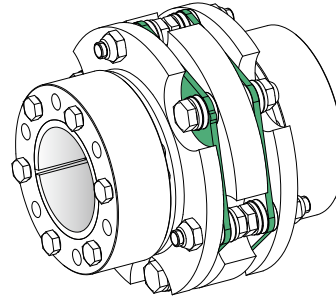
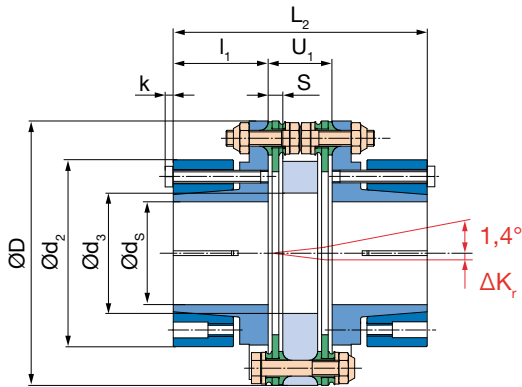


Fig. 20: Type 953.221

Double-jointed coupling with sleeve 1 or sleeve S (special length) and shrink disk hubs, external clamping

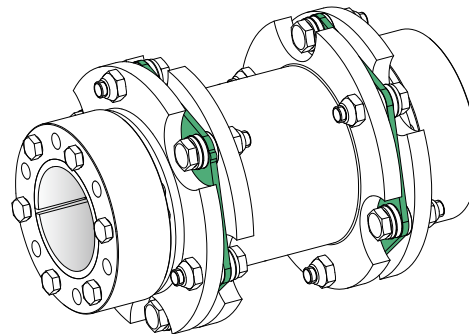
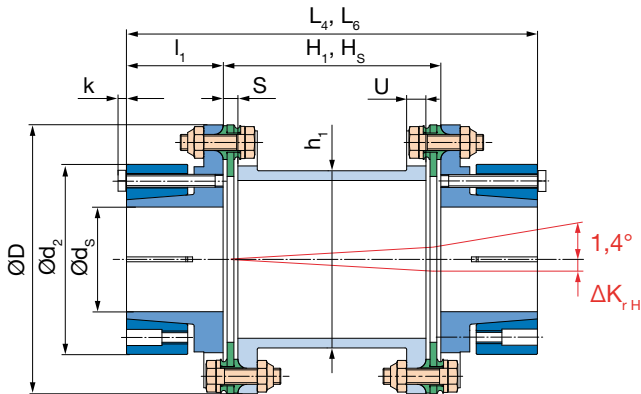


Fig. 21: Type 953.222 (Sleeve 1: H<sub>1</sub>, L<sub>4</sub>), Type 953.223 (Sleeve S: H<sub>S</sub>, L<sub>6</sub>)

### Order Number

—	/	9	5	—	.	2	2	—	/	—	/	—	/	—	/	—
▲			▲			▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
<b>Sizes</b> 16 to 160	Single-jointed coupling Double-jointed coupling			<b>2</b> <b>3</b>	Single-jointed coupling Connection plate Sleeve 1 Sleeve S Sleeve CRD (page 56) Sleeve CFRP (page 56)			<b>0</b> <b>1</b> <b>2</b> <b>3</b> <b>4</b> <b>5</b>	<b>Bore*</b> <b>Hub 1 ø</b> (Dim. page 20)	<b>Bore*</b> <b>Hub 2 ø</b> (Dim. page 20)	<b>Sleeve length</b> <b>H<sub>S</sub></b> [mm]	<b>Operating speed</b> <b>n<sub>s</sub></b> [rpm]	for special sleeves S / CRD / CFRP			

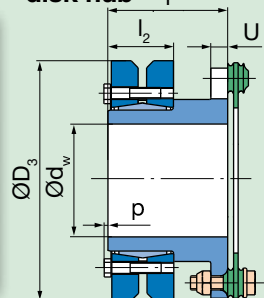
Example: 40 / 953.221 / Hub 1 – ø 30<sup>H7</sup> / Hub 2 – ø 30<sup>H7</sup>

\*Standard H7, other tolerances possible

### Additional Option:

### External shrink disk hub

Size	d <sub>w</sub>	D <sub>3</sub>	l	l <sub>2</sub>	p
16	28/30	72	40	27,5	2,5
	32	75	40	28,5	3,5
25	32/35	80	45	29,5	-
	38/40/42	90	45	31,5	1,5
40	42/45/48	100	55	34,5	-
64	50/55/60	115	65	34,5	-
100	55/60/65	138	75	38	-
160	65/70/75	155	85	44,5	-



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## ROBA®-DS Sizes 16 to 160 – disk pack-HT

Single-jointed coupling with shrink disk hubs, external clamping and internal clamping

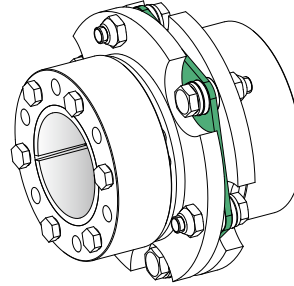
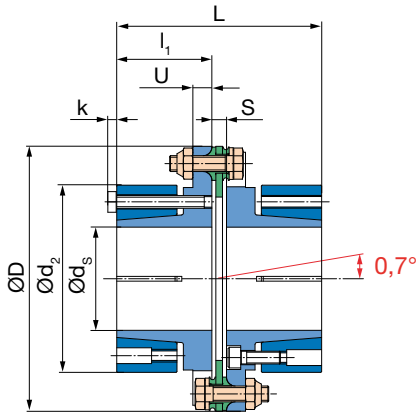


Fig. 22: Type 952.230

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	300	420	650	1100	1600	2600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	450	630	975	1650	2400	3900		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore <sup>3)</sup>	$d_{S\ min}$	[mm]	14	20	25	30	35	40		
Maximum hub bore <sup>3)</sup>	$d_{S\ max}$	[mm]	26	36	45	45	55	65		
Maximum speed <sup>4)</sup>	$n_{max}$	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>	$\Delta K_a$	[mm]	0,8	0,9	1,1	1,3	1,5	1,7	
		$\Delta K_r$	[mm]	0,2	0,2	0,25	0,3	0,3	0,35	
	permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_{rH}$	[mm]	0,7	0,8	1	1,25	1,45	1,5
		with sleeve S	$\Delta K_{rH}$	[mm]	(H <sub>s</sub> - S) x 0,0122					
Spring rigidity	torsion <sup>11)</sup>	disk pack	$C_{T\ LP}$	[10 <sup>3</sup> Nm/rad]	180	290	320	1350	1900	2950
		tube sleeve S	$C_{T\ H\ rel.}$	[10 <sup>6</sup> Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>8)</sup>			[Nm/rad]	285	305	875	1285	2025	3260

### Dimensions [mm]

Size	16	25	40	64	100	160
d <sub>2</sub>	53	64	74	84	104	118
d <sub>3</sub>	33	41	46	51	66	76
H <sub>1</sub>	65	75,6	91,4	112,8	133,2	135,2
H <sub>s</sub>	acc. customer specifications					
h <sub>1</sub>	50	60	70	80	100	110
k	3,5	3,5	3,5	4	5,5	5,5
L	74,6	85	96,1	108	118,6	129,2
L <sub>2</sub>	91,2	102	116,2	134	145,2	160,4
L <sub>4</sub>	135	155,6	181,4	212,8	243,2	255,2
L <sub>6</sub>	dependent on H <sub>s</sub>					
I <sub>1</sub>	35	40	45	50	55	60
S	4,6	5	6,1	8	8,6	9,2
U	7	7	8	10	10	12
U <sub>1</sub>	21,2	22	26,2	34	35,2	40,4

### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,13	0,30	0,81	1,36	3,43
Hub <sup>10)</sup>	0,27	0,57	1,15	2,46	5,59	11,14
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with H <sub>s</sub> = 1000 mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,16	0,32	0,39	0,71
Hub <sup>10)</sup>	0,49	0,71	1,03	1,71	2,73	3,99
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with H <sub>s</sub> = 1000 mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

- 1) Valid for changing load direction as well as for max. permitted shaft misalignment.
- 2) Valid for unchanging load direction, max. load cycles ≤ 10<sup>5</sup>.
- 3) Transmittable torques dependent on bore, see page 60.
- 4) Not valid for coupling with sleeve S.
- 5) The permitted misalignments may not simultaneously reach their maximum values.
- 6) The values refer to couplings with 2 disk packs.
- 7) Only permitted as a static or virtually static value.
- 8) The values refer to 1 disk pack.
- 9) Mass moments of inertia and weights are valid for 1 disk pack.
- 10) Mass moments of inertia and weights are valid for maximum bore.

11) The C<sub>T</sub>-value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T\ tot.} = \frac{1}{\frac{2}{C_{T\ LP}} + \frac{H_s [mm] - 2 S [mm]}{C_{T\ H\ rel.}}}$$



## ROBA®-DS Sizes 16 to 160 – disk pack-HT

Double-jointed coupling with connection plate and shrink disk hubs, external clamping and internal clamping

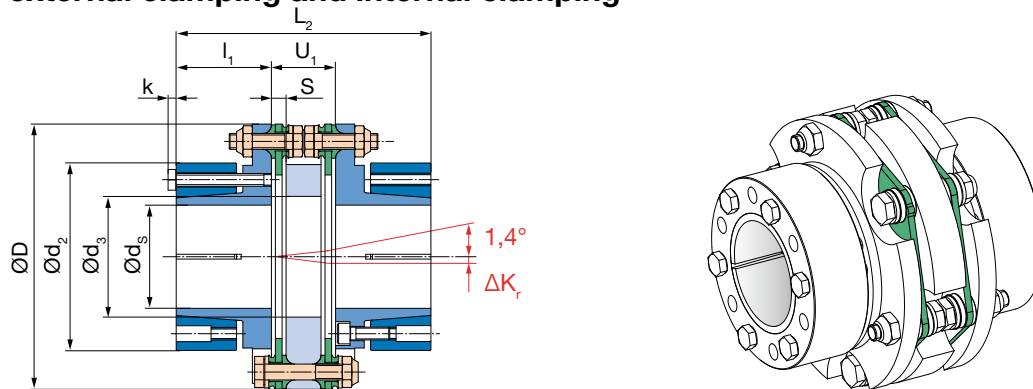


Fig. 23: Type 953.231

Double-jointed coupling with sleeve 1 or sleeve S (special length) and shrink disk hubs, external clamping and internal clamping

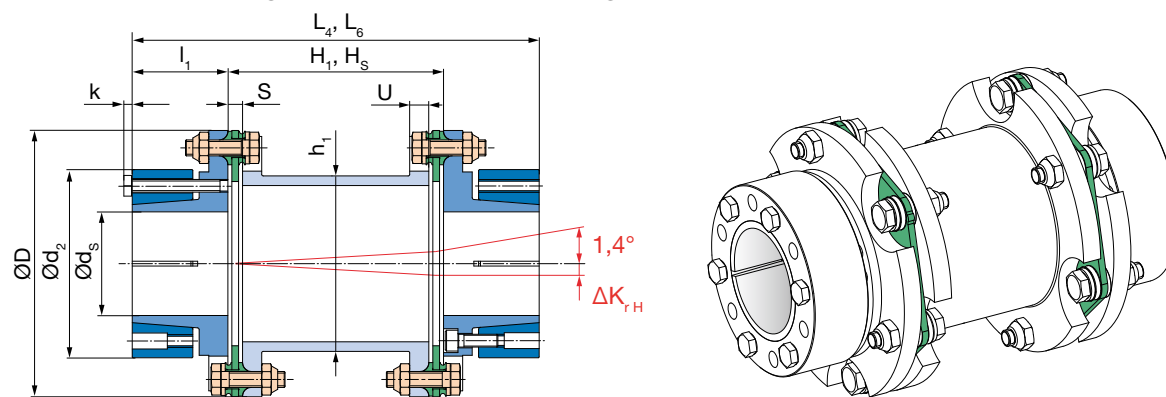


Fig. 24: Type 953.232 (Sleeve 1: H<sub>1</sub>, L<sub>4</sub>), Type 953.233 (Sleeve S: H<sub>s</sub>, L<sub>6</sub>)

### Order Number

—	/	9	5	—	.	2	3	—	/	—	/	—	/	—	/	—
▲				▲				▲	▲	▲	▲	▲	▲	▲	▲	▲
<b>Sizes</b> 16 to 160	Single-jointed coupling		2	Single-jointed coupling Connection plate		0	<b>Bore*</b> <b>Hub 1 ø</b> (Dim. page 22)	<b>Bore*</b> <b>Hub 2 ø</b> (Dim. page 22)	<b>Sleeve length</b> <b>H<sub>s</sub></b> [mm]	<b>Operating speed</b> <b>n<sub>s</sub></b> [rpm]						
	Double-jointed coupling		3	Sleeve 1		1			for special sleeves S / CRD / CFRP							
				Sleeve S		2										
				Sleeve CRD (page 56)		3										
				Sleeve CFRP (page 56)		4										
						5										

Example: 64 / 953.231 / Hub 1 – ø 35<sup>H7</sup> / Hub 2 – ø 40<sup>H7</sup>

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HT

## Single-jointed coupling with shrink disk hubs, large

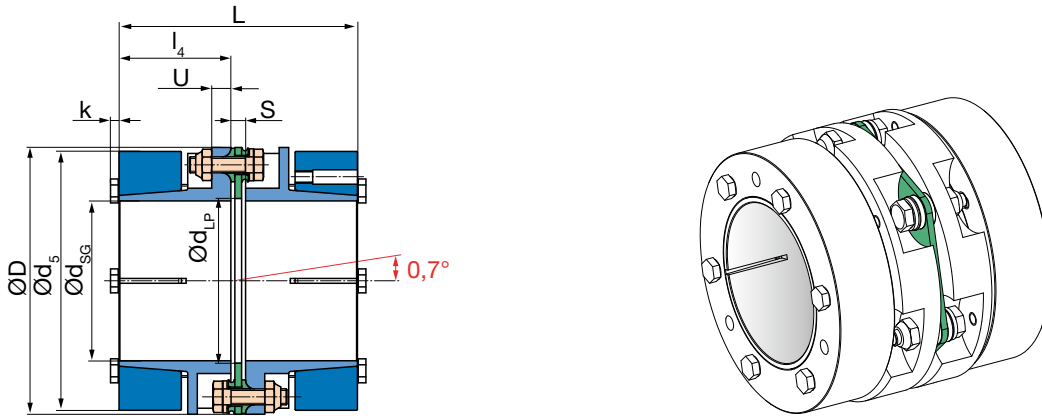


Fig. 25: Type 952.990

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	300	420	650	1100	1600	2600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	450	630	975	1650	2400	3900		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore <sup>3)</sup>	$d_{SG\ min}$	[mm]	25	32	40	45	55	65		
Maximum hub bore <sup>3)</sup>	$d_{SG\ max}$	[mm]	45	52	60	70	90	100		
Maximum speed <sup>4)</sup>	$n_{max}$	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>	$\Delta K_a$	[mm]	0,8	0,9	1,1	1,3	1,5	1,7	
		$\Delta K_r$	[mm]	0,2	0,2	0,25	0,3	0,3	0,35	
	permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_{rH}$	[mm]	0,7	0,8	1	1,25	1,45	1,5
		with sleeve S	$\Delta K_{rH}$	[mm]	(H <sub>s</sub> - S) x 0,0122					
Spring rigidity	torsion <sup>11)</sup>	disk pack	$C_{T\ LP}$	[10 <sup>3</sup> Nm/rad]	180	290	320	1350	1900	2950
		tube sleeve S	$C_{T\ H\ rel.}$	[10 <sup>6</sup> Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>8)</sup>		[Nm/rad]	285	305	875	1285	2025	3260	

### Dimensions [mm]

Size	16	25	40	64	100	160
$d_3$	33	41	46	51	66	76
$d_5$	77	82	100	115	143	162
$d_{H1}$	43	54	62	71	92	98
$d_{LP}$	45	55	65	74	88	103
$H_1$	65	75,6	91,4	112,8	133,2	135,2
$H_s$	acc. customer specifications					
$h_1$	50	60	70	80	100	110
k	3,5	3,5	3,5	4	5,5	5,5
L	84,6	95	106,1	118	128,6	149,2
$L_2$	101,2	112	126,2	144	155,2	180,4
$L_4$	145	165,6	191,4	222,8	253,2	275,2
$L_6$	dependent on H <sub>s</sub>					
$l_4$	40	45	50	55	60	70
S	4,6	5	6,1	8	8,6	9,2
U	7	7	8	10	10	12
$U_1$	21,2	22	26,2	34	35,2	40,4

- Valid for changing load direction as well as for max. permitted shaft misalignment.
- Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- Transmittable torques dependent on bore, see page 60.
- Not valid for coupling with sleeve S.
- The permitted misalignments may not simultaneously reach their maximum values.
- The values refer to couplings with 2 disk packs.
- Only permitted as a static or virtually static value.
- The values refer to 1 disk pack.

### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,13	0,30	0,81	1,36	3,43
Hub <sup>10)</sup>	0,78	1,23	2,88	5,81	13,77	27,35
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with H <sub>s</sub> = 1000 mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,16	0,32	0,39	0,71
Hub <sup>10)</sup>	0,79	1,02	1,71	2,53	3,92	6,08
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with H <sub>s</sub> = 1000 mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

- Mass moments of inertia and weights are valid for 1 disk pack.
- Mass moments of inertia and weights are valid for maximum bore.

11) The C<sub>T</sub>-value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T\ tot.} = \frac{1}{\frac{2}{C_{T\ LP}} + \frac{H_s [mm] - 2 S [mm]}{C_{T\ H\ rel.}}}$$

## ROBA<sup>®</sup>-DS Sizes 16 to 160 – disk pack-HT

### Double-jointed coupling with connection plate and shrink disk hubs, large

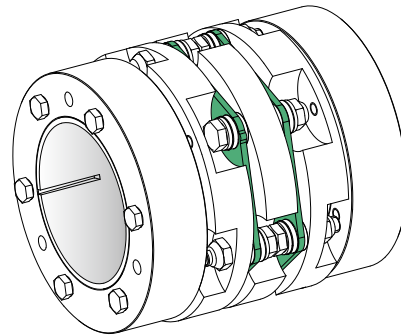
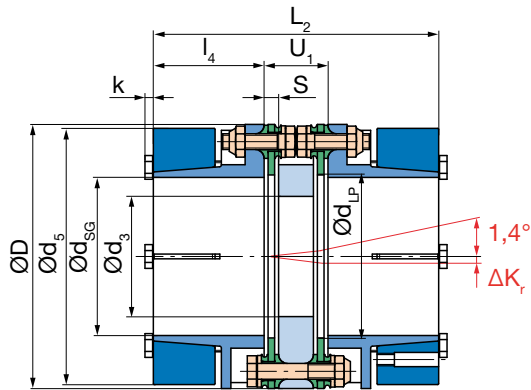


Fig. 26: Type 953.991

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and shrink disk hubs, large

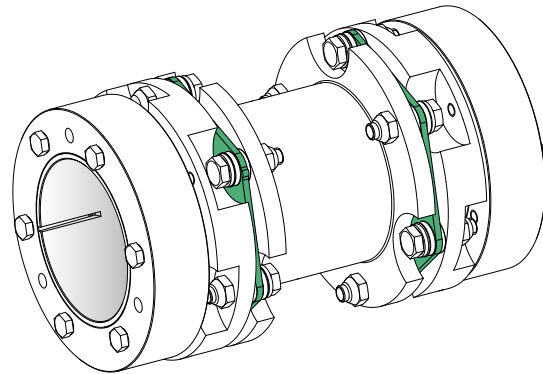
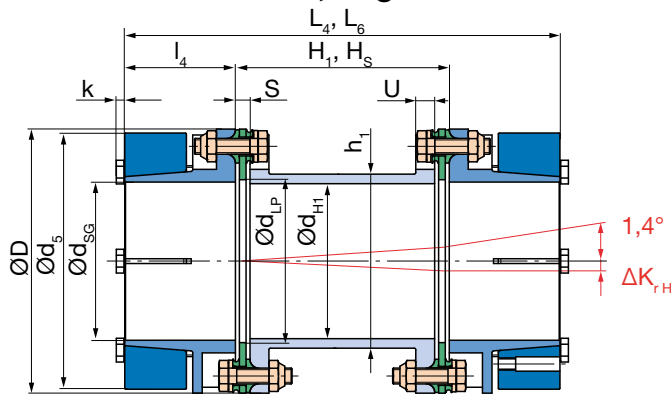


Fig. 27: Type 953.992 (Sleeve 1: H<sub>1</sub>, L<sub>4</sub>), Type 953.993 (Sleeve S: H<sub>S</sub>, L<sub>6</sub>)

Order Number										
—	/	9	5	—	.	9	9	— / — / — / — / —		
▲			▲				▲	▲ ▲ ▲ ▲ ▲		
<b>Sizes</b> 16 to 160	Single-jointed coupling		2	Single-jointed coupling		0	<b>Bore*</b> Hub 1 ø (Dim. page 24)	<b>Bore*</b> Hub 2 ø (Dim. page 24)	<b>Sleeve length</b> H <sub>S</sub> [mm]	<b>Operating speed</b> n <sub>s</sub> [rpm]
	Double-jointed coupling		3	Connection plate		1				
				Sleeve 1		2				
				Sleeve S		3				
				Sleeve CRD (page 56)		4				
				Sleeve CFRP (page 56)		5				
										for special sleeves S / CRD / CFRP

Example: 16 / 953.991 / Hub 1 – ø 35<sup>H7</sup> / Hub 2 – ø 35<sup>H7</sup>

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HT

## Single-jointed coupling with flanges

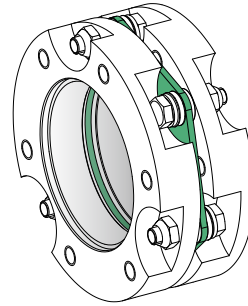
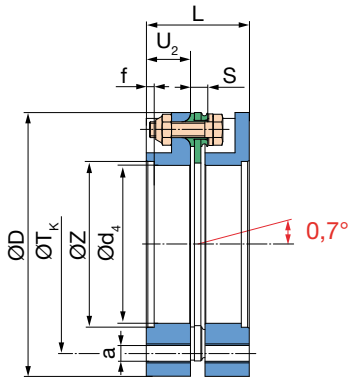


Fig. 28: Type 952.660

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	300	420	650	1100	1600	2600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	450	630	975	1650	2400	3900		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Centering bore	$Z^{H7}$	[mm]	45	55	65	75	92	105		
Maximum speed <sup>3)</sup>	$n_{max}$	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments <sup>4)</sup>	permitted axial displacement <sup>5) 6)</sup>	with connection plate	$\Delta K_a$	[mm]	0,8	0,9	1,1	1,3	1,5	1,7
		with sleeve 1	$\Delta K_{r,H}$	[mm]	0,2	0,2	0,25	0,3	0,3	0,35
		with sleeve S	$\Delta K_{r,H}$	[mm]	0,7	0,8	1	1,25	1,45	1,5
Spring rigidity	torsion <sup>7)</sup>	disk pack	$C_{TLP}$	[10 <sup>3</sup> Nm/rad]	180	290	320	1350	1900	2950
		tube sleeve S	$C_{THrel.}$	[10 <sup>6</sup> Nm mm/rad]	19	34	71	108	217	415
		angular spring rigidity <sup>8)</sup>		[Nm/rad]	285	305	875	1285	2025	3260

### Dimensions [mm]

Size	16	25	40	64	100	160
a	6 x M8	6 x M8	6 x M10	6 x M10	6 x M12	6 x M14
$d_3$	33	41	46	51	66	76
$d_4$	40	50	60	70	85	100
f	4	4	4	5	5	5
$H_1$	65	75,6	91,4	112,8	133,2	135,2
$H_s$	acc. customer specifications					
$h_1$	50	60	70	80	100	110
L	34,6	35	42,1	48	48,6	66,2
$L_2$	51,2	52	62,2	74	75,2	97,4
$L_4$	95	105,6	127,4	152,8	173,2	192,2
$L_6$	dependent on $H_s$					
S	4,6	5	6,1	8	8,6	9,2
$T_k$	62	75	86	103	116	140
U	7	7	8	10	10	12
$U_1$	21,2	22	26,2	34	35,2	40,4
$U_2$	15	15	18	20	20	28,5

### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,13	0,30	0,81	1,36	3,43
Flange	0,23	0,43	0,89	1,95	3,87	9,48
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with $H_s = 1000$ mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,16	0,32	0,39	0,71
Flange	0,26	0,34	0,52	0,82	1,16	2,10
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with $H_s = 1000$ mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

1) Valid for changing load direction as well as for max. permitted shaft misalignment.

2) Valid for unchanging load direction, max. load cycles  $\leq 10^6$ .

3) Not valid for coupling with sleeve S.

4) The permitted misalignments may not simultaneously reach their maximum values.

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

6) Only permitted as a static or virtually static value.

7) The  $C_r$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T \text{ tot}} = \frac{1}{\frac{2}{C_{TLP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{THrel.}}}$$

8) The values refer to 1 disk pack.

9) Mass moments of inertia and weights are valid for 1 disk pack.

## ROBA<sup>®</sup>-DS Sizes 16 to 160 – disk pack-HT

### Double-jointed coupling with connection plate and flanges

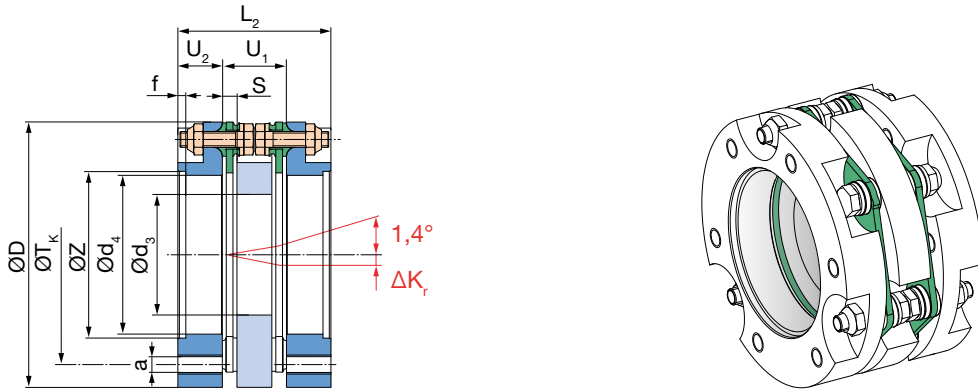


Fig. 29: Type 953.661

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and flanges

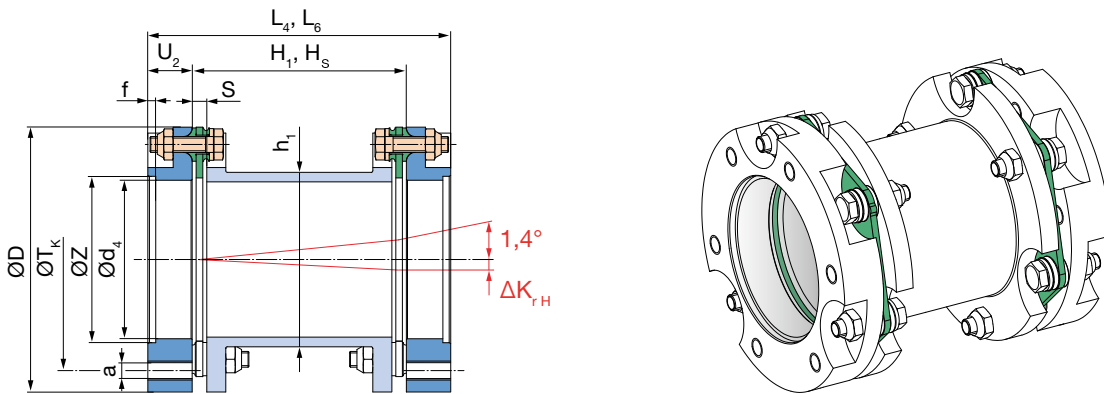


Fig. 30: Type 953.662 (Sleeve 1: H<sub>1</sub>, L<sub>4</sub>), Type 953.663 (Sleeve S: H<sub>S</sub>, L<sub>6</sub>)

Order Number											
—	/	9	5	—	.	6 6	—	/	—	/	—
▲				▲			▲		▲		▲
<b>Sizes</b> 16 to 160		Single-jointed coupling	2	Single-jointed coupling Connection plate	0				<b>Sleeve length</b> H <sub>S</sub> [mm]		<b>Operating speed</b> n <sub>s</sub> [rpm]
		Double-jointed coupling	3	Sleeve 1	1				for special sleeves S / CRD / CFRP		
				Sleeve S	2						
				Sleeve CRD (page 56)	3						
				Sleeve CFRP (page 56)	4						
					5						

Example: 40 / 953.661

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# ROBA®-DS Sizes 16 to 160 – disk pack-HF

## Single-jointed coupling with key hubs

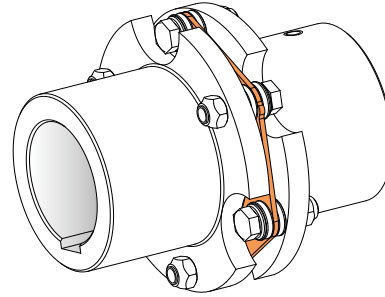
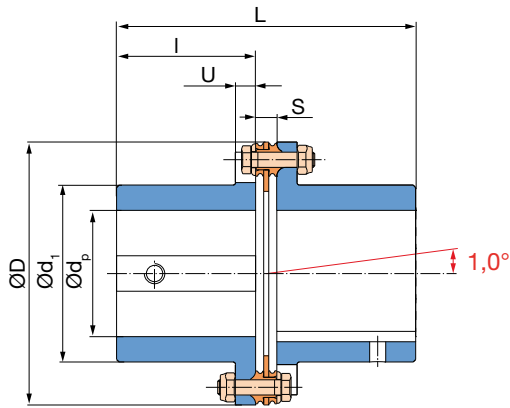


Fig. 31: Type 950.000

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	190	290	450	720	1000	1600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	285	435	675	1080	1500	2400		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore <sup>3)</sup>	$d_{p\ min}$	[mm]	16	20	25	30	35	40		
Maximum hub bore <sup>3)</sup>	$d_{p\ max}$	[mm]	32	40	50	55	70	80		
Maximum speed <sup>4)</sup>	$n_{max}$	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>		$\Delta K_a$	[mm]	1,1	1,3	1,5	1,8	2,1	2,5
	permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_r$	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
		with sleeve 1	$\Delta K_{rH}$	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	$\Delta K_{rH}$	[mm]	$(H_s - S) \times 0,0174$					
Spring rigidity	torsion <sup>8)</sup>	disk pack	$C_{T\ LP}$	[ $10^3$ Nm/rad]	145	280	301	748	1135	1920
		tube sleeve S	$C_{T\ H\ rel.}$	[ $10^6$ Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>9)</sup>			[Nm/rad]	229	248	298	876	1089	1990

### Dimensions [mm]

Size	16	25	40	64	100	160
$d_1$	50	60	70	80	100	115
$d_3$	33	41	46	51	66	76
$H_1$	70	80	96	116	136	140
$H_s$	acc. customer specifications					
$h_1$	50	60	70	80	100	110
L	87,1	97,2	118,4	139,6	160	181,6
$L_2$	106,2	116,4	140,8	167,2	188	215,2
$L_4$	150	170	206	246	286	310
$L_6$	dependent on $H_s$					
l	40	45	55	65	75	85
S	7,1	7,2	8,4	9,6	10	11,6
U	7	7	8	10	10	12
$U_1$	26,2	26,4	30,8	37,2	38	45,2

### Mass Moments of Inertia J [ $10^{-3}$ kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>10)</sup>	0,08	0,12	0,26	0,74	1,19	3,27
Hub <sup>11)</sup>	0,27	0,55	1,16	2,58	6,18	12,51
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with $H_s = 1000$ mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>10)</sup>	0,08	0,09	0,15	0,29	0,35	0,67
Hub <sup>11)</sup>	0,46	0,69	1,02	1,72	2,83	4,25
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with $H_s = 1000$ mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

1) Valid for changing load direction as well as for max. permitted shaft misalignment.

2) Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .

3) Transmittable torques dependent on bore, see page 61.

4) Not valid for coupling with sleeve S.

5) The permitted misalignments may not simultaneously reach their maximum values.

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

7) Only permitted as a static or virtually static value.

8) The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T\ tot.} = \frac{1}{\frac{2}{C_{T\ LP}} + \frac{H_s [mm] - 2 S [mm]}{C_{T\ H\ rel.}}}$$

9) The values refer to 1 disk pack.

10) Mass moments of inertia and weights are valid for 1 disk pack.

11) Mass moments of inertia and weights are valid for maximum bore.

## ROBA®-DS Sizes 16 to 160 – disk pack-HF

### Double-jointed coupling with connection plate and key hubs

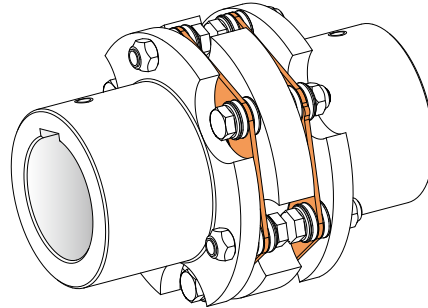
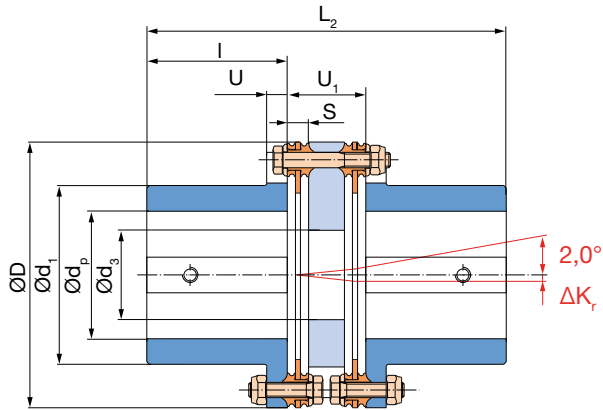


Fig. 32: Type 951.001

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and key hubs

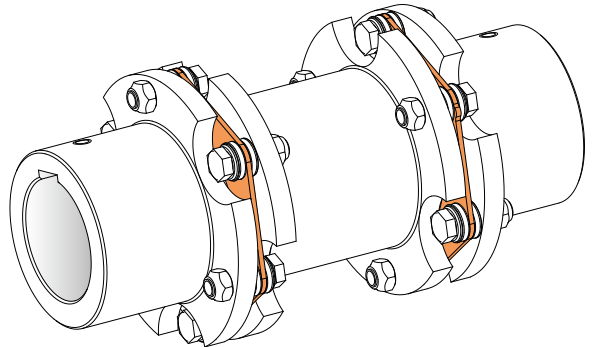
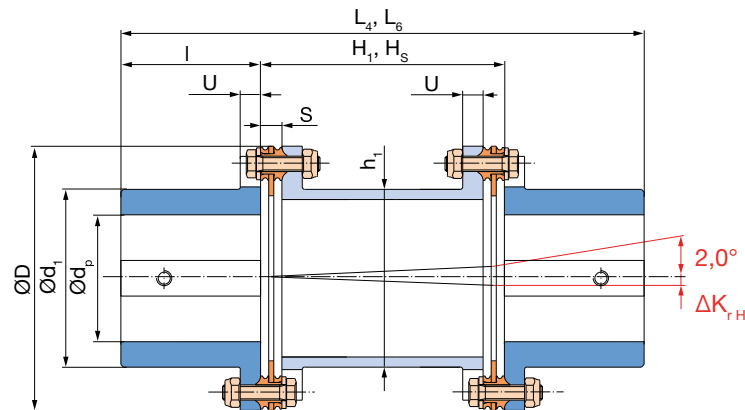


Fig. 33: Type 951.002 (Sleeve 1:  $H_1, L_4$ ), Type 951.003 (Sleeve S:  $H_S, L_6$ )

#### Order Number

Order Number		Order Number		Order Number		Order Number		Order Number	
△	△	△	△	△	△	△	△	△	△
<b>Sizes 16 to 160</b>	Single-jointed coupling	0	Single-jointed coupling	0	<b>Bore* Hub 1 ø</b>	<b>Bore* Hub 2 ø</b>	<b>Sleeve length <math>H_s</math></b>	<b>Operating speed <math>n_s</math></b>	
	Double-jointed coupling	1	Connection plate	1	(Dim. page 28)	(Dim. page 28)	[mm]	[rpm]	
			Sleeve 1	2			for special sleeves S / CRD / CFRP		
			Sleeve S	3					
			Sleeve CRD (page 56)	4					
			Sleeve CFRP (page 56)	5					

Example: 16 / 951.001 / Hub 1 – ø 25 <sup>H7</sup> / Hub 2 – ø 25 <sup>H7</sup>

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HF

## Single-jointed coupling with key hubs, large

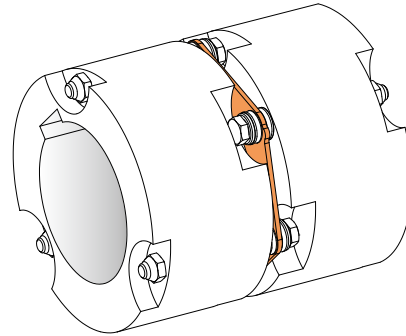
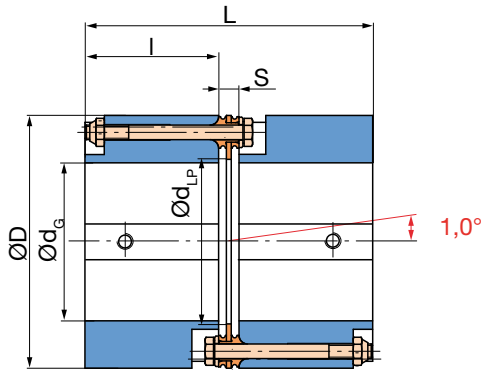


Fig. 34: Type 950.110

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	190	290	450	720	1000	1600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	285	435	675	1080	1500	2400		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore	$d_{G \min}$	[mm]	30	35	45	55	65	75		
Maximum hub bore	$d_{G \max}$	[mm]	45	55	65	75	95	110		
Maximum speed <sup>3)</sup>	$n_{\max}$	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments <sup>4)</sup>	permitted axial displacement <sup>5) 6)</sup>	with connection plate	$\Delta K_a$	[mm]	1,1	1,3	1,5	1,8	2,1	2,5
		with sleeve 1	$\Delta K_{r,H}$	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
		with sleeve S	$\Delta K_{r,H}$	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
Spring rigidity	torsion <sup>10)</sup>	disk pack	$C_{T LP}$	[ $10^3$ Nm/rad]	145	280	301	748	1135	1920
		tube sleeve S	$C_{T H rel.}$	[ $10^6$ Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>7)</sup>			[Nm/rad]	229	248	298	876	1089	1990

### Dimensions [mm]

Size	16	25	40	64	100	160
$d_3$	33	41	46	51	66	76
$d_{H1}$	43	54	62	71	92	98
$d_{LP}$	45	55	65	74	88	103
$H_1$	70	80	96	116	136	140
$H_s$	acc. customer specifications					
$h_1$	50	60	70	80	100	110
L	87,1	97,2	118,4	139,6	160	181,6
$L_2$	106,2	116,4	140,8	167,2	188	215,2
$L_4$	150	170	206	246	286	310
$L_6$	dependent on $H_s$					
l	40	45	55	65	75	85
S	7,1	7,2	8,4	9,6	10	11,6
U	7	7	8	10	10	12
$U_1$	26,2	26,4	30,8	37,2	38	45,2

### Mass Moments of Inertia J [ $10^{-3}$ kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,12	0,26	0,74	1,19	3,27
Hub <sup>9)</sup>	0,86	1,71	3,89	8,98	18,12	36,00
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with $H_s = 1000$ mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,15	0,29	0,35	0,67
Hub <sup>9)</sup>	0,87	1,26	2,08	3,47	4,94	7,23
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with $H_s = 1000$ mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

- Valid for changing load direction as well as for max. permitted shaft misalignment.
- Valid for unchanging load direction, max. load cycles  $\leq 10^6$ .
- Not valid for coupling with sleeve S.
- The permitted misalignments may not simultaneously reach their maximum values.
- The values refer to couplings with 2 disk packs.
- Only permitted as a static or virtually static value.
- The values refer to 1 disk pack.
- Mass moments of inertia and weights are valid for 1 disk pack.
- Mass moments of inertia and weights are valid for maximum bore.

10) The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{T LP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{T H rel.}}}$$

## ROBA<sup>®</sup>-DS Sizes 16 to 160 – disk pack-HF

### Double-jointed coupling with connection plate and key hubs, large

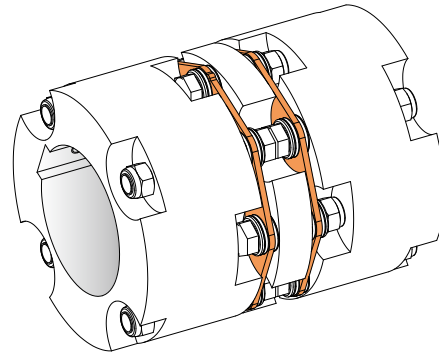
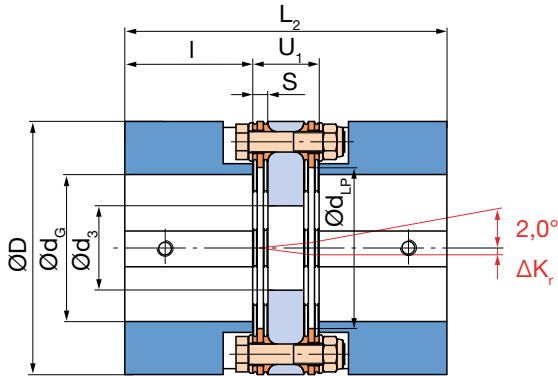


Fig. 35: Type 951.111

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and key hubs, large

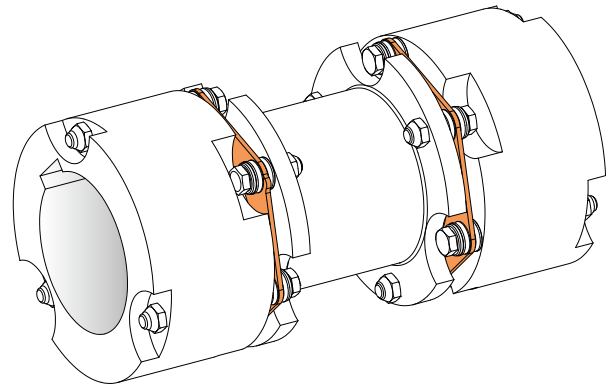
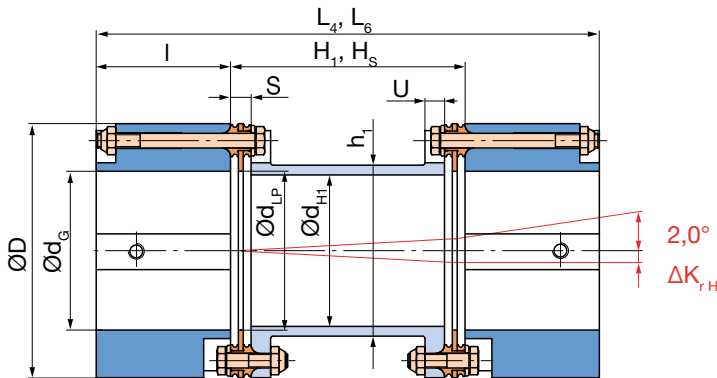


Fig. 36: Type 951.112 (Sleeve 1: H<sub>1</sub>, L<sub>4</sub>), Type 951.113 (Sleeve S: H<sub>S</sub>, L<sub>6</sub>)

#### Order Number

— / 9 5 — . 1 1 — / — / — / — / —										
▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲										
<b>Sizes</b> 16 to 160	Single-jointed coupling Double-jointed coupling	0 1	Single-jointed coupling Connection plate Sleeve 1 Sleeve S Sleeve CRD (page 56) Sleeve CFRP (page 56)	0 1 2 3 4 5	<b>Bore*</b> <b>Hub 1 ø</b> (Dim. page 30)	<b>Bore*</b> <b>Hub 2 ø</b> (Dim. page 30)	<b>Sleeve length</b> <b>H<sub>S</sub></b> [mm] for special sleeves S / CRD / CFRP	<b>Operating speed</b> <b>n<sub>s</sub></b> [rpm]		

Example: 25 / 950.110 / Hub 1 – ø 45<sup>H7</sup> / Hub 2 – ø 45<sup>H7</sup>

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HF

## Single-jointed Ø coupling with clamping hubs

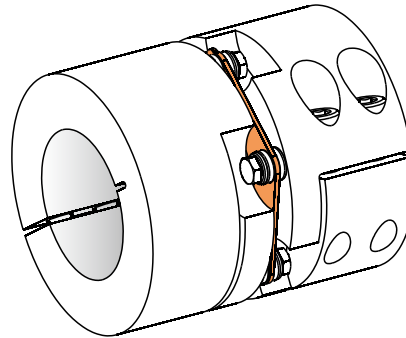
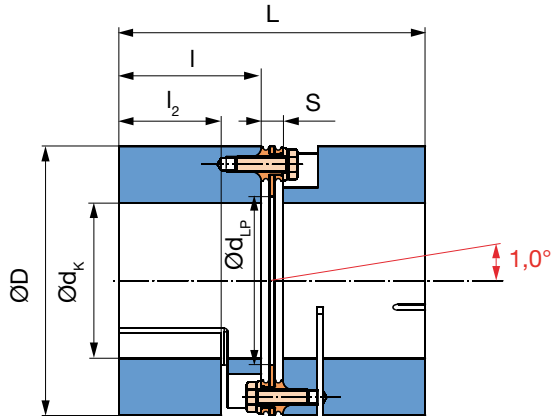


Fig. 37: Type 950.550

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	190	290	450	720	1000	1600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	285	435	675	1080	1500	2400		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore <sup>3)</sup>	$d_{Kmin}$	[mm]	20	22	25	28	32	40		
Maximum hub bore <sup>3)</sup>	$d_{Kmax}$	[mm]	45	52	60	70	90	100		
Maximum speed <sup>4)</sup>	$n_{max}$	[rpm]	9500	8200	7000	6000	5100	4300		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>	$\Delta K_a$	[mm]	1,1	1,3	1,5	1,8	2,1	2,5	
		$\Delta K_r$	[mm]	0,3	0,3	0,4	0,45	0,45	0,55	
	permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_{rH}$	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	$\Delta K_{rH}$	[mm]	$(H_s - S) \times 0,0174$					
Spring rigidity	torsion <sup>11)</sup>	disk pack	$C_{TLP}$	[ $10^3$ Nm/rad]	145	280	301	748	1135	1920
		tube sleeve S	$C_{THrel.}$	[ $10^6$ Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>8)</sup>			[Nm/rad]	229	248	298	876	1089	1990

### Dimensions [mm]

Size	16	25	40	64	100	160
$d_3$	33	41	46	51	66	76
$d_{H1}$	43	54	62	71	92	98
$d_{LP}$	45	55	65	74	88	103
$H_1$	70	80	96	116	136	140
$H_s$	acc. customer specifications					
$h_1$	50	60	70	80	100	110
L	87,1	97,2	118,4	139,6	160	181,6
$L_2$	106,2	116,4	140,8	167,2	188	215,2
$L_4$	150	170	206	246	286	310
$L_6$	dependent on $H_s$					
l	40	45	55	65	75	85
$l_2$	27	32	39,6	44,8	54,5	60
S	7,1	7,2	8,4	9,6	10	11,6
U	7	7	8	10	10	12
$U_1$	26,2	26,4	30,8	37,2	38	45,2

- Valid for changing load direction as well as for max. permitted shaft misalignment.
- Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- Transmittable torques dependent on bore, see page 61.
- Not valid for coupling with sleeve S.
- The permitted misalignments may not simultaneously reach their maximum values.
- The values refer to couplings with 2 disk packs.
- Only permitted as a static or virtually static value.
- The values refer to 1 disk pack.
- Mass moments of inertia and weights are valid for 1 disk pack.
- Mass moments of inertia and weights are valid for maximum bore.
- Mass moments of inertia and weights are valid for maximum bore.

### Mass Moments of Inertia J [ $10^{-3}$ kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,12	0,26	0,74	1,19	3,27
Hub <sup>10)</sup>	0,74	1,49	3,64	8,42	16,94	34,32
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with $H_s = 1000$ mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,15	0,29	0,35	0,67
Hub <sup>10)</sup>	0,73	1,11	2,05	3,43	4,82	6,94
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with $H_s = 1000$ mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

- The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{TLP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{THrel.}}}$$

## ROBA®-DS Sizes 16 to 160 – disk pack-HF

### Double-jointed coupling with connection plate and clamping hubs

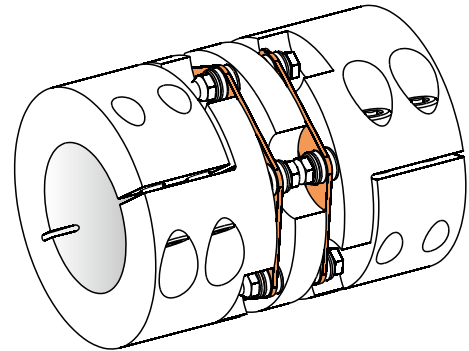
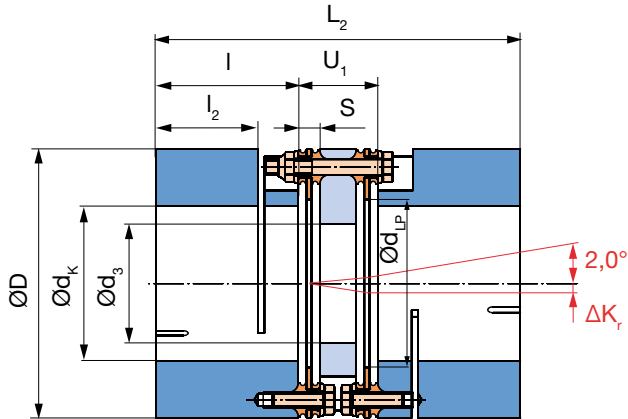


Fig. 38: Type 951.551

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and clamping hubs

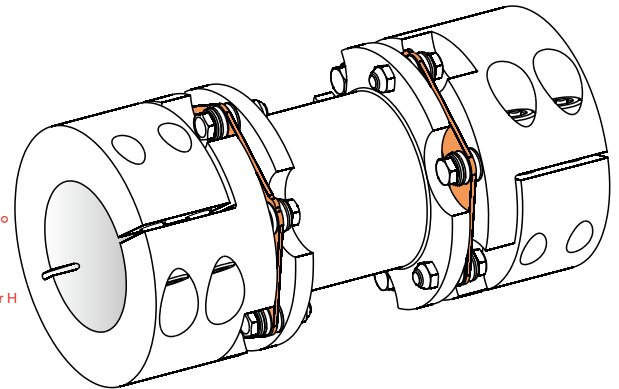
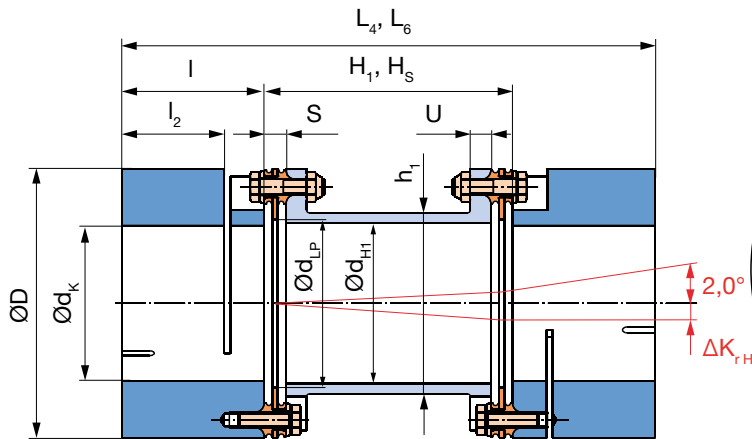


Fig. 39: Type 951.552 (Sleeve 1:  $H_1, L_4$ ), Type 951.553 (Sleeve S:  $H_s, L_6$ )

#### Order Number

Order Number		Order Number		Order Number		Order Number		Order Number	
△	△	△	△	△	△	△	△	△	△
<b>Sizes 16 to 160</b>	Single-jointed coupling	0	Single-jointed coupling	0	<b>Bore* Hub 1 <math>\sigma</math></b>	<b>Bore* Hub 2 <math>\sigma</math></b>	<b>Sleeve length <math>H_s</math></b>	<b>Operating speed <math>n_s</math></b>	
	Double-jointed coupling	1	Connection plate	1	(Dim. page 32)	(Dim. page 32)	[mm]	[rpm]	
			Sleeve 1	2			for special sleeves S / CRD / CFRP		
			Sleeve S	3					
			Sleeve CRD (page 56)	4					
			Sleeve CFRP (page 56)	5					

Example: 16 / 951.551 / Hub 1 –  $\sigma$  45<sup>H7</sup> / Hub 2 –  $\sigma$  45<sup>H7</sup>

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HF

## Single-jointed coupling with clamping ring hubs

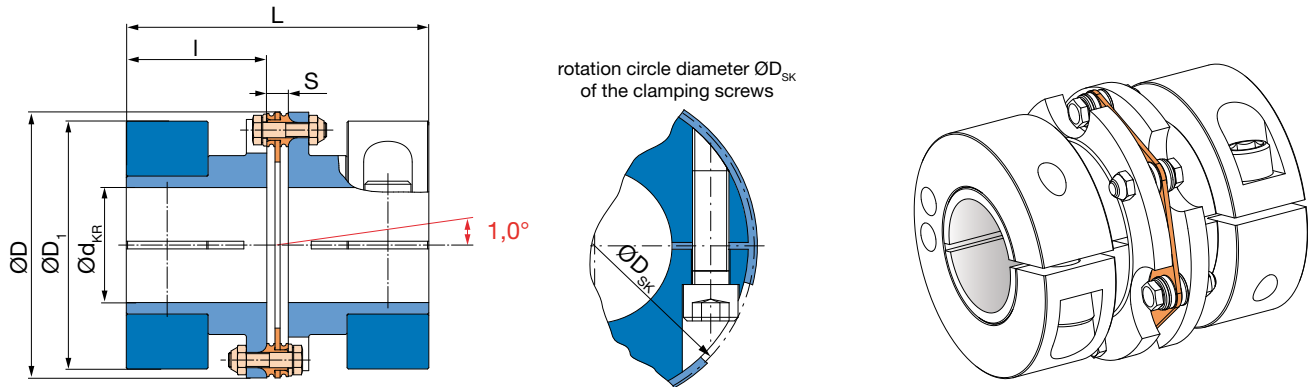


Fig. 40: Type 950.440

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	190	290	450	720	1000	1600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	285	435	675	1080	1500	2400		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore <sup>3)</sup>	$d_{KR \min}$	[mm]	20	22	25	28	32	40		
Maximum hub bore <sup>3)</sup>	$d_{KR \max}$	[mm]	35	40	45	55	68	80		
Maximum speed <sup>4)</sup>	$n_{\max}$	[rpm]	9500	8200	7000	6000	5100	4300		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>	$\Delta K_a$	[mm]	1,1	1,3	1,5	1,8	2,1	2,5	
		$\Delta K_r$	[mm]	0,3	0,3	0,4	0,45	0,45	0,55	
	permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_{r,H}$	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	$\Delta K_{r,H}$	[mm]	$(H_s - S) \times 0,0174$					
Spring rigidity	torsion <sup>11)</sup>	disk pack	$C_{T LP}$	[10 <sup>3</sup> Nm/rad]	145	280	301	748	1135	1920
		tube sleeve S	$C_{T H \text{ rel.}}$	[10 <sup>6</sup> Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>8)</sup>		[Nm/rad]	229	248	298	876	1089	1990	

### Dimensions [mm]

Size	16	25	40	64	100	160
$D_1$	73	84	97	115	135	158
$D_{SK}$	77	89	103	122	143	167
$d_3$	33	41	46	51	66	76
$H_1$	70	80	96	116	136	140
$H_s$	acc. customer specifications					
$h_1$	50	60	70	80	100	110
L	87,1	97,2	118,4	139,6	160	181,6
$L_2$	106,2	116,4	140,8	167,2	188	215,2
$L_4$	150	170	206	246	286	310
$L_6$	dependent on $H_s$					
I	40	45	55	65	75	85
S	7,1	7,2	8,4	9,6	10	11,6
U	7	7	8	10	10	12
$U_1$	26,2	26,4	30,8	37,2	38	45,2

### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,12	0,26	0,74	1,19	3,27
Hub <sup>10)</sup>	0,63	1,29	2,84	6,3	13,49	28,71
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with $H_s = 1000$ mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,15	0,29	0,35	0,67
Hub <sup>10)</sup>	0,76	1,20	2,00	3,17	4,90	7,61
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with $H_s = 1000$ mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

- 1) Valid for changing load direction as well as for max. permitted shaft misalignment.
- 2) Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- 3) Transmittable torques dependent on bore, see page 60.
- 4) Not valid for coupling with sleeve S.
- 5) The permitted misalignments may not simultaneously reach their maximum values.
- 6) The values refer to couplings with 2 disk packs.
- 7) Only permitted as a static or virtually static value.
- 8) The values refer to 1 disk pack.
- 9) Mass moments of inertia and weights are valid for 1 disk pack.
- 10) Mass moments of inertia and weights are valid for maximum bore.

11) The  $C_T$ -value of a double-jointed coupling can be roughly calculated

$$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{T LP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{T H \text{ rel.}}}}$$

## ROBA<sup>®</sup>-DS Sizes 16 to 160 – disk pack-HF

### Double-jointed coupling with connection plate and clamping ring hubs

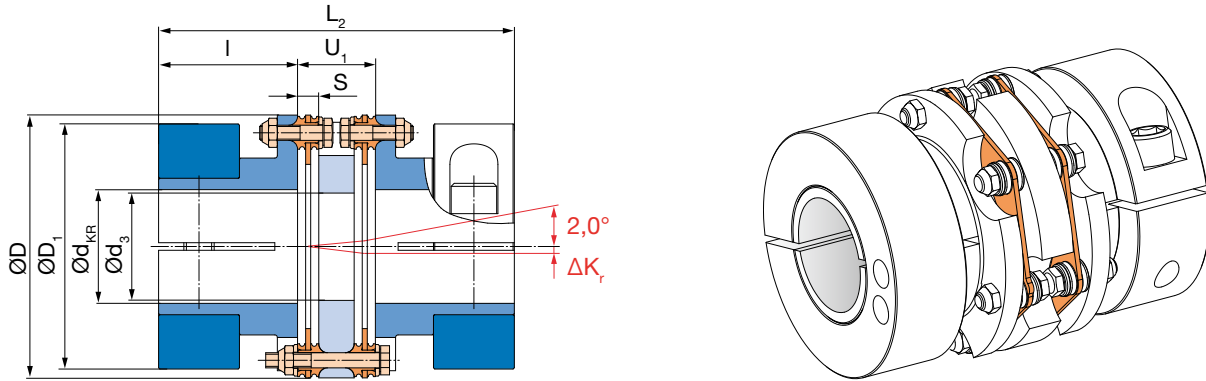


Fig. 41: Type 951.441

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and clamping ring hubs

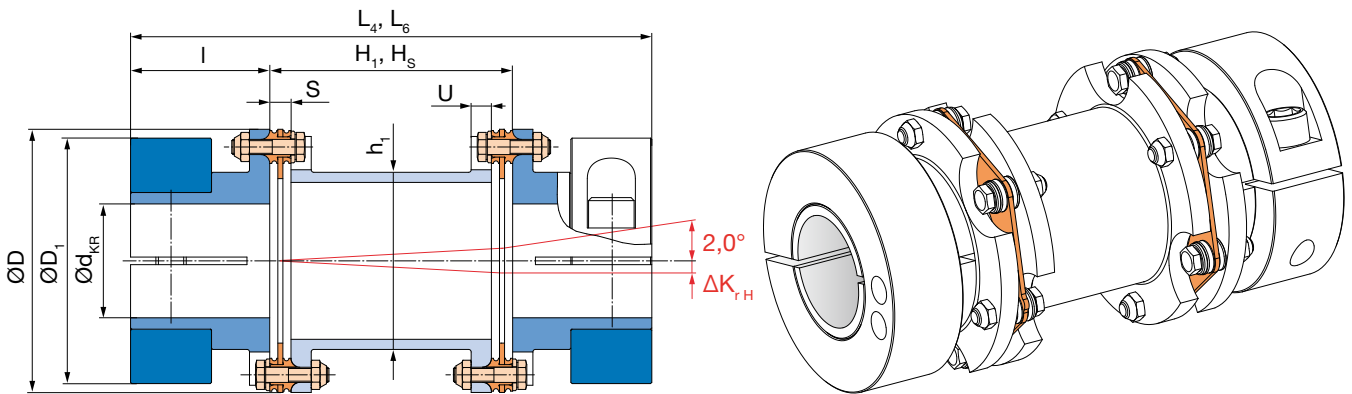


Fig. 42: Type 951.442 (Sleeve 1: H<sub>1</sub>, L<sub>4</sub>), Type 951.443 (Sleeve S: H<sub>S</sub>, L<sub>6</sub>)

#### Order Number

Order Number		Order Number		Order Number		Order Number		Order Number								
—	/	9	5	—	.	4	4	—	/	—	/	—	/	—	/	—
▲				▲				▲	▲	▲	▲	▲	▲	▲	▲	▲
<b>Sizes</b> 16 to 160		Single-jointed coupling	0	Single-jointed coupling Connection plate		1	2	<b>Bore*</b> <b>Hub 1 ø</b> (Dim. page 34)		<b>Bore*</b> <b>Hub 2 ø</b> (Dim. page 34)		<b>Sleeve length</b> <b>H<sub>S</sub></b> [mm]		<b>Operating speed</b> <b>n<sub>s</sub></b> [rpm]		
		Double-jointed coupling	1	Sleeve 1		3	4									
				Sleeve S		4	5									
				Sleeve CRD (page 56)												
				Sleeve CFRP (page 56)												

Example: 16 / 951.441 / Hub 1 – ø 25<sup>H7</sup> / Hub 2 – ø 25<sup>H7</sup>

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HF

## Single-jointed coupling with shrink disk hubs, external clamping

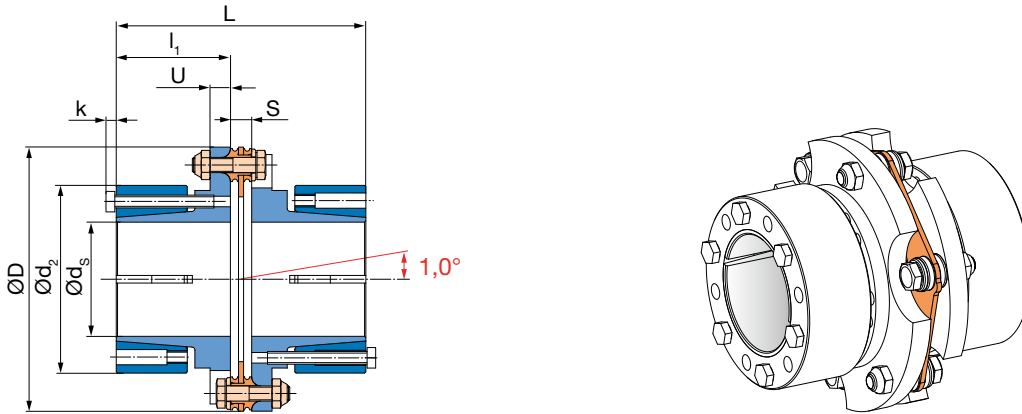


Fig. 43: Type 950.220

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	190	290	450	720	1000	1600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	285	435	675	1080	1500	2400		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore <sup>3)</sup>	$d_{S\ min}$	[mm]	14	20	25	30	35	40		
Maximum hub bore <sup>3)</sup>	$d_{S\ max}$	[mm]	26	36	45	45	55	65		
Maximum speed <sup>4)</sup>	$n_{max}$	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>	$\Delta K_a$	[mm]	1,1	1,3	1,5	1,8	2,1	2,5	
		$\Delta K_r$	[mm]	0,3	0,3	0,4	0,45	0,45	0,55	
	permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_{r,H}$	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	$\Delta K_{r,H}$	[mm]	$(H_s - S) \times 0,0174$					
Spring rigidity	torsion <sup>11)</sup>	disk pack	$C_{T\ LP}$	[10 <sup>3</sup> Nm/rad]	145	280	301	748	1135	1920
		tube sleeve S	$C_{T\ H\ rel.}$	[10 <sup>6</sup> Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>8)</sup>			[Nm/rad]	229	248	298	876	1089	1990

### Dimensions [mm]

Size	16	25	40	64	100	160
$d_2$	53	64	74	84	104	118
$d_3$	33	41	46	51	66	76
$H_1$	70	80	96	116	136	140
$H_s$	acc. customer specifications					
$h_1$	50	60	70	80	100	110
k	3,5	3,5	3,5	4	5,5	5,5
L	77,1	87,2	98,4	109,6	120	131,6
$L_2$	96,2	106,4	120,8	137,2	148	165,2
$L_4$	140	160	186	216	246	260
$L_6$	dependent on $H_s$					
$I_1$	35	40	45	50	55	60
S	7,1	7,2	8,4	9,6	10	11,6
U	7	7	8	10	10	12
$U_1$	26,2	26,4	30,8	37,2	38	45,2

### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,12	0,26	0,74	1,19	3,27
Hub <sup>10)</sup>	0,27	0,57	1,15	2,46	5,59	11,14
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with $H_s = 1000$ mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,15	0,29	0,35	0,67
Hub <sup>10)</sup>	0,49	0,71	1,03	1,71	2,73	3,99
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with $H_s = 1000$ mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

- 1) Valid for changing load direction as well as for max. permitted shaft misalignment.
- 2) Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- 3) Transmittable torques dependent on bore, see page 60.
- 4) Not valid for coupling with sleeve S.
- 5) The permitted misalignments may not simultaneously reach their maximum values.
- 6) The values refer to couplings with 2 disk packs.
- 7) Only permitted as a static or virtually static value.
- 8) The values refer to 1 disk pack.
- 9) Mass moments of inertia and weights are valid for 1 disk pack.
- 10) Mass moments of inertia and weights are valid for maximum bore.

11) The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T\ tot.} = \frac{1}{\frac{2}{C_{T\ LP}} + \frac{H_s [mm] - 2 S [mm]}{C_{T\ H\ rel.}}}$$



## ROBA<sup>®</sup>-DS Sizes 16 to 160 – disk pack-HF

Double-jointed coupling with connection plate and shrink disk hubs, external clamping

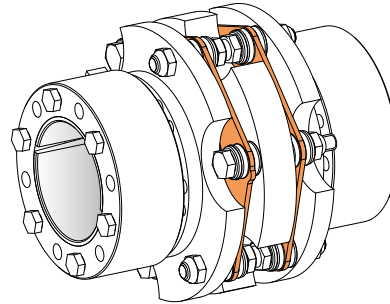
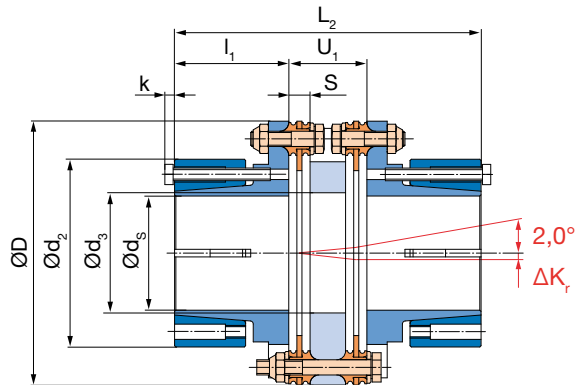


Fig. 44: Type 951.221

Double-jointed coupling with sleeve 1 or sleeve S (special length) and shrink disk hubs, external clamping

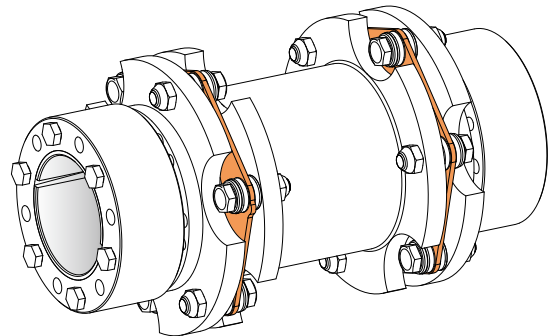
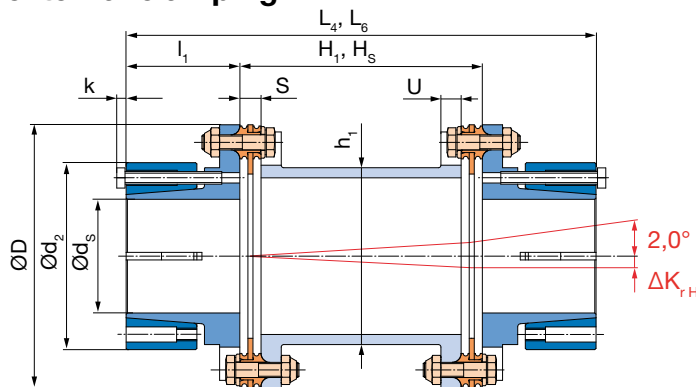


Fig. 45: Type 951.222 (Sleeve 1: H<sub>1</sub>, L<sub>4</sub>), Type 951.223 (Sleeve S: H<sub>s</sub>, L<sub>6</sub>)

Order Number																
—	/	9	5	—	.	2	2	—	/	—	/	—	/	—	/	—
▲				▲				▲	▲	▲	▲	▲	▲	▲	▲	▲
<b>Sizes</b> <b>16</b> <b>to</b> <b>160</b>	Single-jointed coupling			<b>0</b>	Single-jointed coupling			<b>0</b>	<b>Bore*</b>	<b>Bore*</b>	<b>Sleeve length</b>	<b>Operating speed</b>				
	Double-jointed coupling			<b>1</b>	Connection plate			<b>1</b>	<b>Hub 1 ø</b>	<b>Hub 2 ø</b>	<b>H<sub>s</sub></b>	<b>n<sub>s</sub></b>				
					Sleeve 1			<b>2</b>	(Dim. page 36)	(Dim. page 36)	[mm]	[rpm]				
					Sleeve S			<b>3</b>					for special sleeves S / CRD / CFRP			
					Sleeve CRD (page 56)			<b>4</b>								
					Sleeve CFRP (page 56)			<b>5</b>								

Example: 100 / 951.221 / Hub 1 – ø 45<sup>H7</sup> / Hub 2 – ø 45<sup>H7</sup>

\*Standard H7, other tolerances possible

Additional Option:						External shrink disk hub	
Size	d <sub>w</sub>	D <sub>3</sub>	l	l <sub>2</sub>	p		
16	24/25	60	40	25	-		
	28/30	72	40	27,5	2,5		
25	32/35	80	45	29,5	-		
	38/40/42	90	45	31,5	1,5		
40	42/45/48	100	55	34,5	-		
64	50/55/60	115	65	34,5	-		
100	55/60/65	138	75	38	-		
160	65/70/75	155	85	44,5	-		

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## ROBA®-DS Sizes 16 to 160 – disk pack-HF

Single-jointed coupling with shrink disk hubs, external clamping and internal clamping

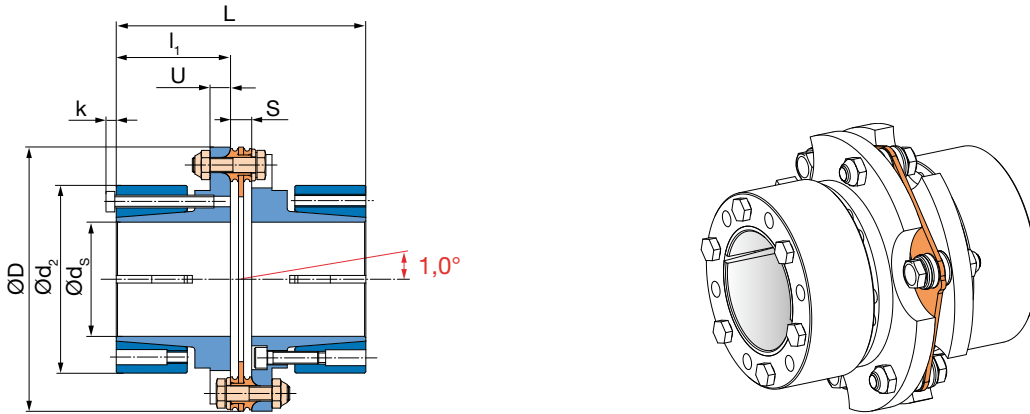


Fig. 46: Type 950.230

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	190	290	450	720	1000	1600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	285	435	675	1080	1500	2400		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore <sup>3)</sup>	$d_{S\ min}$	[mm]	14	20	25	30	35	40		
Maximum hub bore <sup>3)</sup>	$d_{S\ max}$	[mm]	26	36	45	45	55	65		
Maximum speed <sup>4)</sup>	$n_{max}$	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>	$\Delta K_a$	[mm]	1,1	1,3	1,5	1,8	2,1	2,5	
		$\Delta K_r$	[mm]	0,3	0,3	0,4	0,45	0,45	0,55	
	permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_{rH}$	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	$\Delta K_{rH}$	[mm]	(H <sub>s</sub> - S) x 0,0174					
Spring rigidity	torsion <sup>11)</sup>	disk pack	$C_{T\ LP}$	[10 <sup>3</sup> Nm/rad]	145	280	301	748	1135	1920
		tube sleeve S	$C_{T\ H\ rel.}$	[10 <sup>6</sup> Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>8)</sup>		[Nm/rad]	229	248	298	876	1089	1990	

### Dimensions [mm]

Size	16	25	40	64	100	160
$d_2$	53	64	74	84	104	118
$d_3$	33	41	46	51	66	76
H <sub>1</sub>	70	80	96	116	136	140
H <sub>s</sub>	acc. customer specifications					
h <sub>1</sub>	50	60	70	80	100	110
k	3,5	3,5	3,5	4	5,5	5,5
L	77,1	87,2	98,4	109,6	120	131,6
L <sub>2</sub>	96,2	106,4	120,8	137,2	148	165,2
L <sub>4</sub>	140	160	186	216	246	260
L <sub>6</sub>	dependent on H <sub>s</sub>					
I <sub>1</sub>	35	40	45	50	55	60
S	7,1	7,2	8,4	9,6	10	11,6
U	7	7	8	10	10	12
U <sub>1</sub>	26,2	26,4	30,8	37,2	38	45,2

### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,12	0,26	0,74	1,19	3,27
Hub <sup>10)</sup>	0,27	0,57	1,15	2,46	5,59	11,14
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with H <sub>s</sub> = 1000 mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,15	0,29	0,35	0,67
Hub <sup>10)</sup>	0,49	0,71	1,03	1,71	2,73	3,99
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with H <sub>s</sub> = 1000 mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

- 1) Valid for changing load direction as well as for max. permitted shaft misalignment.
- 2) Valid for unchanging load direction, max. load cycles ≤ 10<sup>5</sup>.
- 3) Transmittable torques dependent on bore, see page 60.
- 4) Not valid for coupling with sleeve S.
- 5) The permitted misalignments may not simultaneously reach their maximum values.
- 6) The values refer to couplings with 2 disk packs.
- 7) Only permitted as a static or virtually static value.
- 8) The values refer to 1 disk pack.
- 9) Mass moments of inertia and weights are valid for 1 disk pack.
- 10) Mass moments of inertia and weights are valid for maximum bore.

11) The C<sub>T</sub>-value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T\ tot.} = \frac{1}{\frac{2}{C_{T\ LP}} + \frac{H_s [mm] - 2 S [mm]}{C_{T\ H\ rel.}}}$$

## ROBA<sup>®</sup>-DS Sizes 16 to 160 – disk pack-HF

Double-jointed coupling with connection plate and shrink disk hubs, external clamping and internal clamping

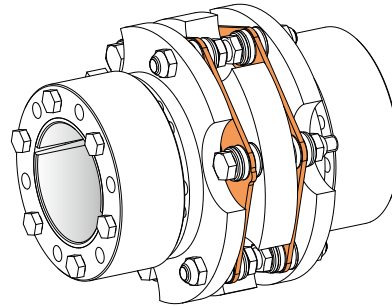
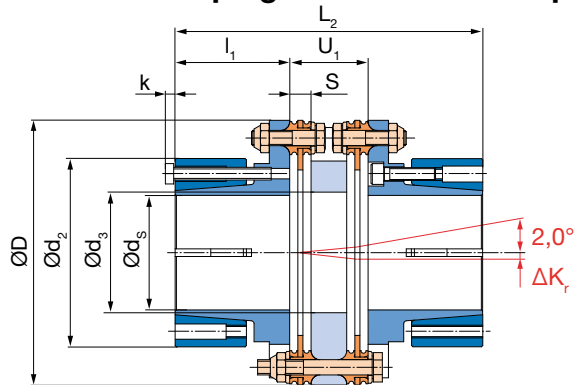


Fig. 47: Type 951.231

Double-jointed coupling with sleeve 1 or sleeve S (special length) and shrink disk hubs, external clamping and internal clamping

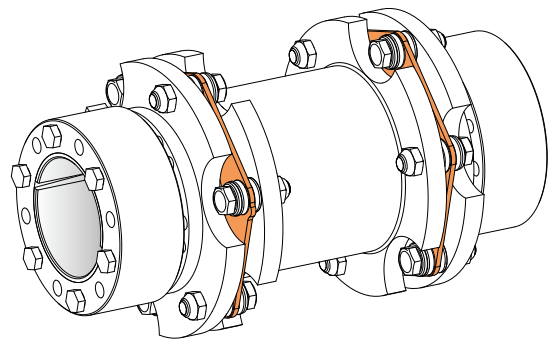
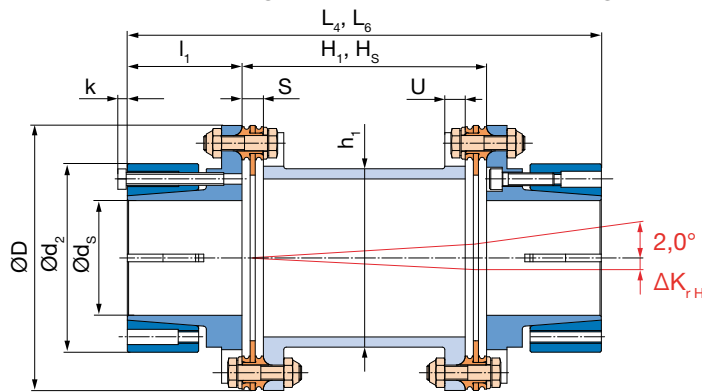


Fig. 48: Type 951.232 (Sleeve 1: H<sub>1</sub>, L<sub>4</sub>), Type 951.233 (Sleeve S: H<sub>s</sub>, L<sub>6</sub>)

### Order Number

_ / 9 5 _ . 2 3 _ / _ / _ / _ / _									
▲		▲		▲		▲		▲	
<b>Sizes</b> 16 to 160	Single-jointed coupling Double-jointed coupling	0 1	Single-jointed coupling Connection plate Sleeve 1 Sleeve S Sleeve CRD (page 56) Sleeve CFRP (page 56)	0 1 2 3 4 5	<b>Bore*</b> <b>Hub 1 ø</b> (Dim. page 38)	<b>Bore*</b> <b>Hub 2 ø</b> (Dim. page 38)	<b>Sleeve length</b> <b>H<sub>s</sub></b> [mm] for special sleeves S / CRD / CFRP	<b>Operating speed</b> <b>n<sub>s</sub></b> [rpm]	

Example: 64 / 951.231 / Hub 1 – ø 35<sup>H7</sup> / Hub 2 – ø 40<sup>H7</sup>

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HF

## Single-jointed coupling with shrink disk hubs, large

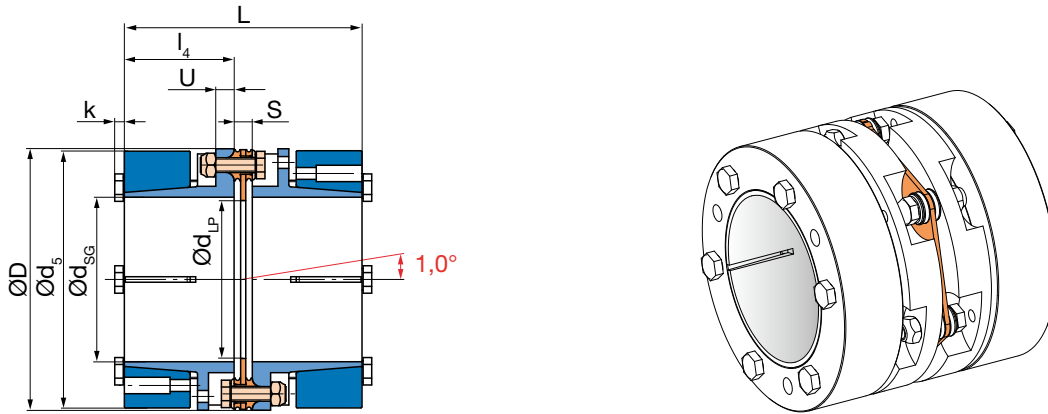


Fig. 49: Type 950.990

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	190	290	450	720	1000	1600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	285	435	675	1080	1500	2400		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore	$d_{SG\ min}$	[mm]	25	32	40	45	55	65		
Maximum hub bore	$d_{SG\ max}$	[mm]	45	52	60	70	90	100		
Maximum speed <sup>3)</sup>	$n_{max}$	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments <sup>4)</sup>	permitted axial displacement <sup>5) 6)</sup>	with connection plate	$\Delta K_a$	[mm]	1,1	1,3	1,5	1,8	2,1	2,5
		with sleeve 1	$\Delta K_{rH}$	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
	permitted radial misalignment <sup>5)</sup>	with sleeve S	$\Delta K_{rH}$	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		disk pack	$(H_s - S) \times 0,0174$							
Spring rigidity	torsion <sup>10)</sup>	disk pack	$C_{T\ LP}$	[ $10^3$ Nm/rad]	145	280	301	748	1135	1920
		tube sleeve S	$C_{T\ H\ rel.}$	[ $10^6$ Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>7)</sup>		[Nm/rad]	229	248	298	876	1089	1990	

### Dimensions [mm]

Size	16	25	40	64	100	160
$d_3$	33	41	46	51	66	76
$d_5$	77	82	100	115	143	162
$d_{H1}$	43	54	62	71	92	98
$d_{LP}$	45	55	65	74	88	103
$H_1$	70	80	96	116	136	140
$H_s$	acc. customer specifications					
$h_1$	50	60	70	80	100	110
k	3,5	3,5	3,5	4	5,5	5,5
L	87,1	97,2	108,4	119,6	130	151,6
$L_2$	106,2	116,4	130,8	147,2	158	185,2
$L_4$	150	170	196	226	256	280
$L_6$	dependent on $H_s$					
$l_4$	40	45	50	55	60	70
S	7,1	7,2	8,4	9,6	10	11,6
U	7	7	8	10	10	12
$U_1$	26,2	26,4	30,8	37,2	38	45,2

- 1) Valid for changing load direction as well as for max. permitted shaft misalignment.
- 2) Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- 3) Not valid for coupling with sleeve S.
- 4) The permitted misalignments may not simultaneously reach their maximum values.
- 5) The values refer to couplings with 2 disk packs.
- 6) Only permitted as a static or virtually static value.
- 7) The values refer to 1 disk pack.
- 8) Mass moments of inertia and weights are valid for 1 disk pack.

### Mass Moments of Inertia J [ $10^{-3}$ kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>8)</sup>	0,08	0,12	0,26	0,74	1,19	3,27
Hub <sup>9)</sup>	0,78	1,23	2,88	5,81	13,77	27,35
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with $H_s = 1000$ mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>8)</sup>	0,08	0,09	0,15	0,29	0,35	0,67
Hub <sup>9)</sup>	0,79	1,02	1,71	2,53	3,92	6,08
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with $H_s = 1000$ mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

- 9) Mass moments of inertia and weights are valid for maximum bore.
- 10) The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T\ tot.} = \frac{1}{\frac{2}{C_{T\ LP}} + \frac{H_s [mm] - 2 S [mm]}{C_{T\ H\ rel.}}}$$

## ROBA<sup>®</sup>-DS Sizes 16 to 160 – disk pack-HF

### Double-jointed coupling with connection plate and shrink disk hubs, large

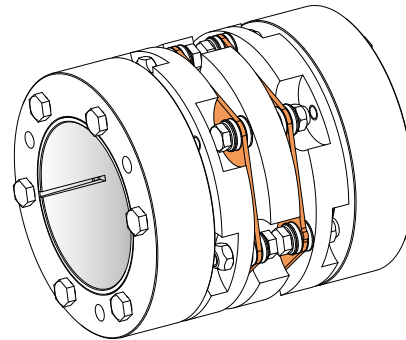
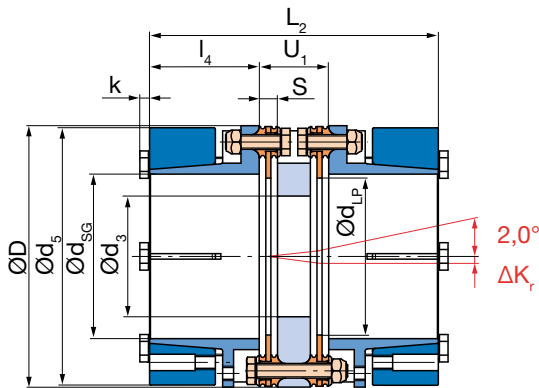


Fig. 50: Type 951.991

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and shrink disk hubs, large

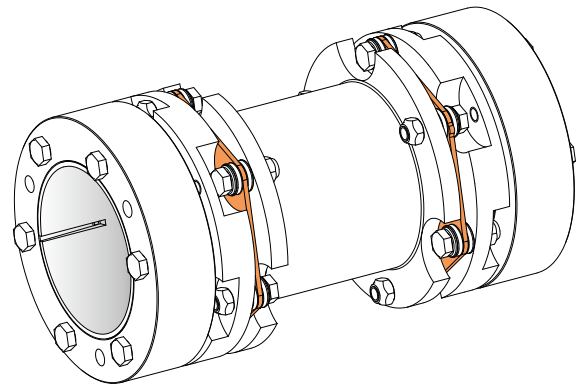
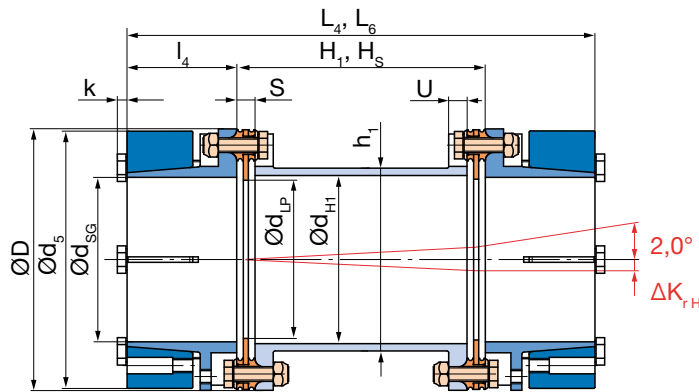


Fig. 51: Type 951.992 (Sleeve 1: H<sub>1</sub>, L<sub>4</sub>), Type 951.993 (Sleeve S: H<sub>s</sub>, L<sub>6</sub>)

#### Order Number

—	/	9	5	—	.	9	9	—	/	—	/	—	/	—	/	—
▲				▲				▲	▲	▲	▲	▲	▲			
<b>Sizes</b> 16 to 160	Single-jointed coupling		0	Single-jointed coupling		0	<b>Bore*</b> <b>Hub 1 ø</b> (Dim. page 40)	<b>Bore*</b> <b>Hub 2 ø</b> (Dim. page 40)	<b>Sleeve</b> <b>length</b> <b>H<sub>s</sub></b> [mm]	<b>Operating</b> <b>speed</b> <b>n<sub>s</sub></b> [rpm]						
	Double-jointed coupling		1	Connection plate		1			for special sleeves S / CRD / CFRP							
				Sleeve 1		2										
				Sleeve S		3										
				Sleeve CRD (page 56)		4										
				Sleeve CFRP (page 56)		5										

Example: 16 / 951.991 / Hub 1 – ø 35<sup>H7</sup> / Hub 2 – ø 35<sup>H7</sup>

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HF

## Double-jointed coupling with connection plate and split clamping hub

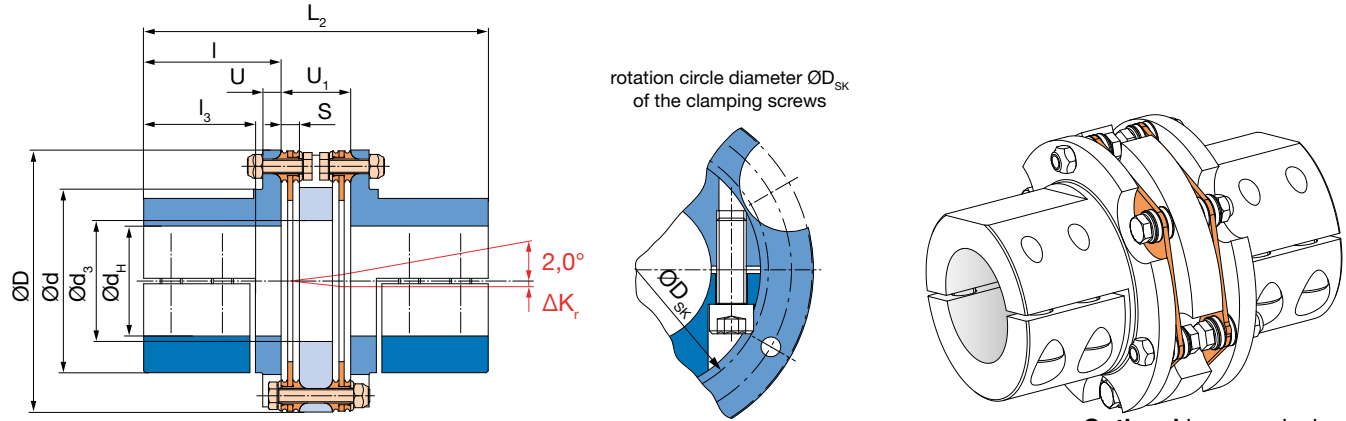


Fig. 52: Type 951.881

Optional keyway design according to DIN 6885 possible

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	190	290	450	720	1000	1600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	285	435	675	1080	1500	2400		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore <sup>3)</sup>	$d_{Hmin}$	[mm]	18	22	25	30	35	40		
Maximum hub bore <sup>3)</sup>	$d_{Hmax}$	[mm]	28	32	40	45	60	75		
Maximum speed <sup>4)</sup>	$n_{max}$	[rpm]	9500	8200	7000	6000	5100	4300		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>		$\Delta K_a$	[mm]	1,1	1,3	1,5	1,8	2,1	2,5
		permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_r$	[mm]	0,3	0,3	0,4	0,45	0,45
	with sleeve 1		$\Delta K_{rH}$	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
	with sleeve S		$\Delta K_{rH}$	[mm]	$(H_s - S) \times 0,0174$					
Spring rigidity	torsion <sup>11)</sup>	disk pack	$C_{TLP}$	[ $10^3$ Nm/rad]	145	280	301	748	1135	1920
		tube sleeve S	$C_{THrel}$	[ $10^6$ Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>8)</sup>			[Nm/rad]	229	248	298	876	1089	1990

### Dimensions [mm]

Size	16	25	40	64	100	160
$D_{sk}$	55	67	76	87	108	122
d	50	60	70	80	100	115
$d_3$	33	41	46	51	66	76
$H_1$	70	80	96	116	136	140
$H_s$	acc. customer specifications					
$h_1$	50	60	70	80	100	110
$L_2$	106,2	116,4	140,8	167,2	188	215,2
$L_4$	150	170	206	246	286	310
$L_6$	dependent on $H_s$					
l	40	45	55	65	75	85
$l_3$	31	35	43	51	61	69
$l_A$	25,7	30,8	40	51,2	56,6	58,6
S	7,1	7,2	8,4	9,6	10	11,6
U	7	7	8	10	10	12
$U_1$	26,2	26,4	30,8	37,2	38	45,2

- Valid for unchanging load direction as well as for max. permitted shaft misalignment. When the load direction changes, max. 60% of the stated nominal torque is permitted.
- Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- Transmittable torques dependent on bore, see page 60.
- Not valid for coupling with sleeve S.
- The permitted misalignments may not simultaneously reach their maximum values.
- The values refer to couplings with 2 disk packs.
- Only permitted as a static or virtually static value.
- The values refer to 1 disk pack.
- Mass moments of inertia and weights are valid for 1 disk pack.

### Mass Moments of Inertia J [ $10^{-3}$ kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,12	0,26	0,74	1,19	3,27
Hub <sup>10)</sup>	0,25	0,54	1,20	2,63	6,31	12,49
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with $H_s = 1000$ mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,15	0,29	0,35	0,67
Hub <sup>10)</sup>	0,47	0,76	1,21	1,96	3,17	4,45
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with $H_s = 1000$ mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

10) Mass moments of inertia and weights are valid for maximum bore.

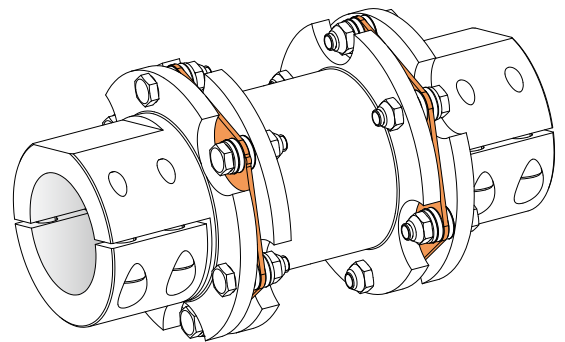
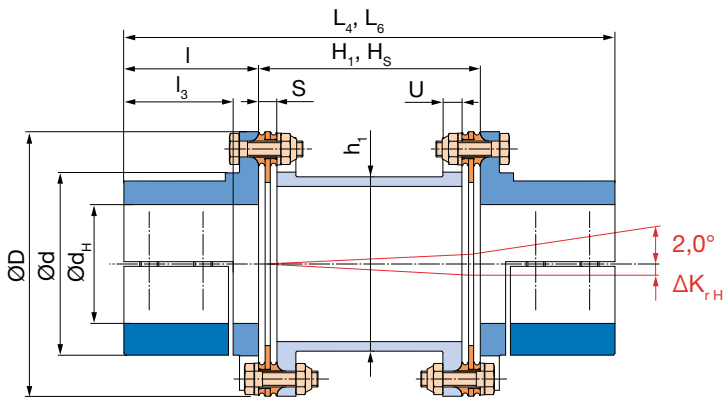
11) The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{TLP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{THrel}}}$$



## ROBA®-DS Sizes 16 to 160 – disk pack-HF

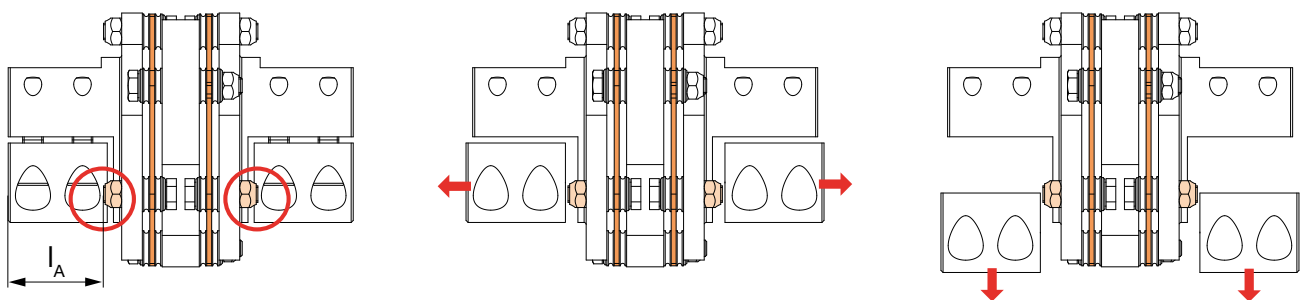
Double-jointed coupling with sleeve 1 or sleeve S (special length) and split clamping hubs



**Fig. 53:** Type 951.882 (Sleeve 1:  $H_1, L_4$ ),  
Type 951.883 (Sleeve S:  $H_S, L_6$ )

Optional keyway design according to DIN 6885 possible

### Installation coupling with split clamping hubs



**Fig. 54:** Axial displacement of the half-shells during radial assembly/disassembly (only necessary on Type 951.881).

### Order Number

— / 9 5 1 . 8 8 — / — / — / — / —																															
▲ ▲ ▲ ▲ ▲																															
Sizes 16 to 160	<table border="0"> <tr> <td>Connection plate</td> <td>1</td> <td>Bore*</td> <td>Bore*</td> <td>Sleeve length</td> <td>Operating speed</td> </tr> <tr> <td>Sleeve 1</td> <td>2</td> <td>Hub 1 <math>\phi</math></td> <td>Hub 2 <math>\phi</math></td> <td><math>H_S</math></td> <td><math>n_s</math></td> </tr> <tr> <td>Sleeve S</td> <td>3</td> <td>(Dim. page 42)</td> <td>(Dim. page 42)</td> <td>[mm]</td> <td>[rpm]</td> </tr> <tr> <td>Sleeve CRD (page 56)</td> <td>4</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sleeve CFRP (page 56)</td> <td>5</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>for special sleeves S / CRD / CFRP</p>	Connection plate	1	Bore*	Bore*	Sleeve length	Operating speed	Sleeve 1	2	Hub 1 $\phi$	Hub 2 $\phi$	$H_S$	$n_s$	Sleeve S	3	(Dim. page 42)	(Dim. page 42)	[mm]	[rpm]	Sleeve CRD (page 56)	4					Sleeve CFRP (page 56)	5				
Connection plate	1	Bore*	Bore*	Sleeve length	Operating speed																										
Sleeve 1	2	Hub 1 $\phi$	Hub 2 $\phi$	$H_S$	$n_s$																										
Sleeve S	3	(Dim. page 42)	(Dim. page 42)	[mm]	[rpm]																										
Sleeve CRD (page 56)	4																														
Sleeve CFRP (page 56)	5																														

Example: 100 / 951.881 / Hub 1 –  $\phi 50^{H7}$  / Hub 2 –  $\phi 50^{H7}$

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 16 to 160 – disk pack-HF

## Single-jointed coupling with flanges

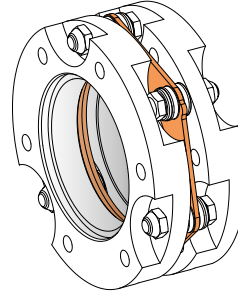
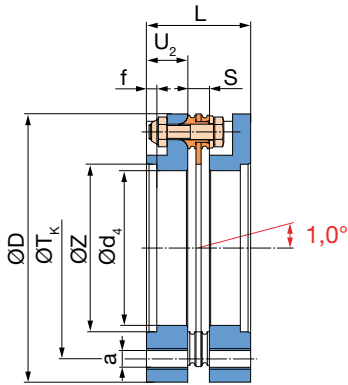


Fig. 55: Type 950.660

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	190	290	450	720	1000	1600		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	285	435	675	1080	1500	2400		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Centering bore	$Z^{H7}$	[mm]	45	55	65	75	92	105		
Maximum speed <sup>3)</sup>	$n_{max}$	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments <sup>4)</sup>	permitted axial displacement <sup>5) 6)</sup>	$\Delta K_a$	[mm]	1,1	1,3	1,5	1,8	2,1	2,5	
		with connection plate	$\Delta K_r$	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
	permitted radial misalignment <sup>5)</sup>	with sleeve 1	$\Delta K_{rH}$	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	$\Delta K_{rH}$	[mm]	$(H_s - S) \times 0,0174$					
Spring rigidity	torsion <sup>7)</sup>	disk pack	$C_{TLP}$	[10 <sup>3</sup> Nm/rad]	145	280	301	748	1135	1920
		tube sleeve S	$C_{THrel.}$	[10 <sup>6</sup> Nm mm/rad]	19	34	71	108	217	415
	angular spring rigidity <sup>8)</sup>			[Nm/rad]	229	248	298	876	1089	1990

### Dimensions [mm]

Size	16	25	40	64	100	160
a	6 x M8	6 x M8	6 x M10	6 x M10	6 x M12	6 x M14
$d_3$	33	41	46	51	66	76
$d_4$	40	50	60	70	85	100
f	4	4	4	5	5	5
$H_1$	70	80	96	116	136	140
$H_s$	acc. customer specifications					
$h_1$	50	60	70	80	100	110
L	37,1	37,2	44,4	49,6	50	68,6
$L_2$	56,2	56,4	66,8	77,2	78	102,2
$L_4$	100	110	132	156	176	197
$L_6$	dependent on $H_s$					
S	7,1	7,2	8,4	9,6	10	11,6
$T_k$	62	75	86	103	116	140
U	7	7	8	10	10	12
$U_1$	26,2	26,4	30,8	37,2	38	45,2
$U_2$	15	15	18	20	20	28,5

### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,12	0,26	0,74	1,19	3,27
Flange	0,23	0,43	0,89	1,95	3,87	9,48
Connection plate	0,23	0,44	0,95	2,30	4,60	9,72
Sleeve 1	0,32	0,61	1,38	3,02	6,10	12,96
Sleeve S with $H_s = 1000$ mm	2,11	3,77	7,81	12,62	24,98	49,43
Sleeve S per 1000 mm tube	1,93	3,43	7,12	10,86	21,86	41,61

### Weight [kg]

Size	16	25	40	64	100	160
Disk pack <sup>9)</sup>	0,08	0,09	0,15	0,29	0,35	0,67
Flange	0,26	0,34	0,52	0,82	1,16	2,10
Connection plate	0,31	0,43	0,68	1,19	1,96	2,96
Sleeve 1	0,39	0,54	0,93	1,46	2,04	3,38
Sleeve S with $H_s = 1000$ mm	3,63	4,42	6,82	8,09	10,22	16,83
Sleeve S per 1000 mm tube	3,48	4,22	6,51	7,50	9,47	15,34

- Valid for changing load direction as well as for max. permitted shaft misalignment.
- Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- Not valid for coupling with sleeve S.
- The permitted misalignments may not simultaneously reach their maximum values.
- The values refer to couplings with 2 disk packs.
- Only permitted as a static or virtually static value.

- The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{TLP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{THrel.}}}$$

- The values refer to 1 disk pack.
- Mass moments of inertia and weights are valid for 1 disk pack.

## ROBA®-DS Sizes 16 to 160 – disk pack-HF

### Double-jointed coupling with connection plate and flanges

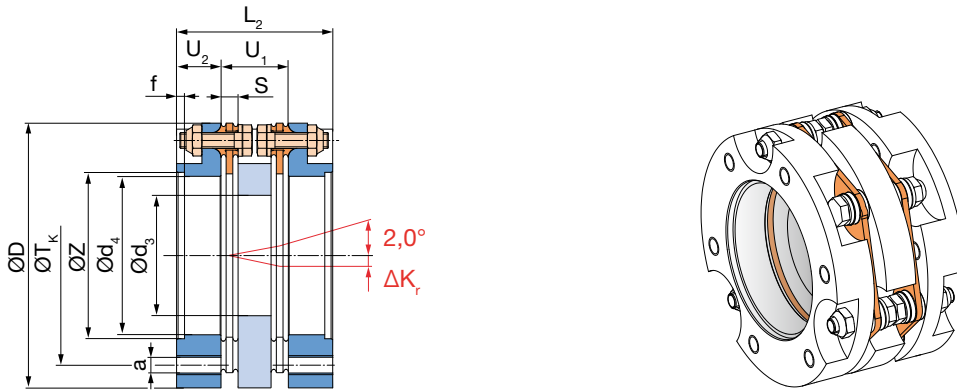


Fig. 56: Type 951.661

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and flanges

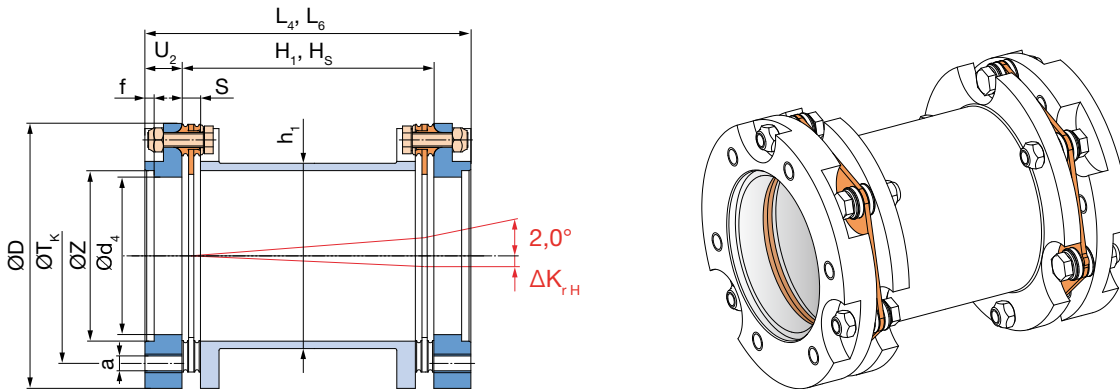


Fig. 57: Type 951.662 (Sleeve 1:  $H_1, L_4$ ), Type 951.663 (Sleeve S:  $H_S, L_6$ )

Order Number						
_ / 9 5		_ . 6 6		_ / _ / _		
▲		▲		▲ ▲ ▲		
<b>Sizes</b>	Single-jointed coupling	<b>0</b>	Single-jointed coupling	<b>0</b>	<b>Sleeve length</b>	<b>Operating speed</b>
<b>16</b>	Double-jointed coupling	<b>1</b>	Connection plate	<b>1</b>	<b><math>H_s</math></b>	<b><math>n_s</math></b>
<b>to</b>			Sleeve 1	<b>2</b>	[mm]	[rpm]
<b>160</b>			Sleeve S	<b>3</b>	for special sleeves	
			Sleeve CRD (page 56)	<b>4</b>	S / CRD / CFRP	
			Sleeve CFRP (page 56)	<b>5</b>		

Example: 40 / 951.661

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# ROBA®-DS Sizes 180 to 2200

## Single-jointed coupling with key hubs

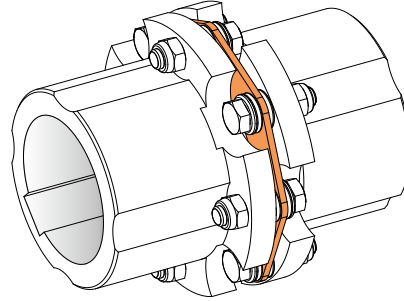
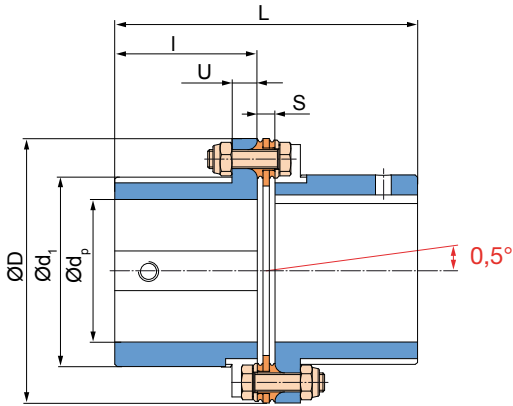


Fig. 58: Type 950.000

Technical Data and Main Dimensions			Size							
			180	300	500	850	1400	2200		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	2100	3500	5800	9500	15000	24000		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	3150	5250	8700	14250	22500	36000		
Outer diameter	D	[mm]	143	167	198	234	274	314		
Minimum hub bore <sup>3)</sup>	$d_{p,min}$	[mm]	40	45	55	65	75	90		
Maximum hub bore <sup>3)</sup>	$d_{p,max}$	[mm]	75	90	105	120	140	170		
Maximum speed <sup>4)</sup>	$n_{max}$	[rpm]	7300	6200	5200	4400	3800	3300		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>		$\Delta K_a$	[mm]	1,0	1,2	1,4	1,6	1,9	2,2
	permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_r$	[mm]	0,25	0,25	0,35	0,4	0,5	0,55
		with sleeve 1	$\Delta K_{r,H}$	[mm]	1,2	1,25	1,35	1,7	2	2,6
		with sleeve S	$\Delta K_{r,H}$	[mm]	$(H_s - S) \times 0,00873$					
Spring rigidity	torsion <sup>11)</sup>		$C_{T,LP}$	[ $10^3$ Nm/rad]	3000	3480	11900	20600	30150	46800
	disk pack		$C_{T,H,rel.}$	[ $10^6$ Nm mm/rad]	250	415	894	1690	2734	4961
	angular spring rigidity <sup>8)</sup>			[Nm/rad]	3890	6980	11250	18580	26120	28520

### Dimensions [mm]

Size	180	300	500	850	1400	2200
$d_1$	104	121	141	164	190	230
$d_3$	54	61	66	76	86	110
$d_{pi,min}$	40	45	55	65	75	90
$d_{pi,max}$	55	70	85	95	110	130
$H_1$	150	160	170	220	266	320
$H_s$	acc. customer specifications					
$h_1$	92,5	111	132	150	174	206
$h_s$	92	110	130	150	165	190
L	181,2	191,2	212	264	316	377,8
$L_1$	178	192	206	260	310	370
$L_2$	212,4	224,4	252	315	374	443,6
$L_4$	320	340	370	470	566	680
$L_6$	dependent on $H_s$					
I	85	90	100	125	150	180
S	11,2	11,2	12	14	16	17,8
U	14	16	18	20	22	25
$U_1$	42,4	44,4	52	65	74	83,6

### Mass Moments of Inertia J [ $10^{-3}$ kgm<sup>2</sup>]

Size	180	300	500	850	1400	2200
Disk pack <sup>9)</sup>	2,64	5,60	14,58	36,85	83,86	132,19
Hub key <sup>10)</sup>	6,45	13,14	28,21	63,01	134,49	323,57
Hub key: internal <sup>10)</sup>	4,26	9,18	20,64	46,85	95,76	207,12
Connection plate	3,91	8,60	21,54	53,27	114,26	241,16
Sleeve 1	6,85	14,22	29,94	67,40	149,09	341,78
Sleeve S with $H_s = 1000$ mm	28,41	51,24	109,74	210,27	364,62	705,89
Sleeve S per 1000 mm tube	25,08	41,61	89,57	169,22	273,78	496,68

### Weight [kg]

Size	180	300	500	850	1400	2200
Disk pack <sup>9)</sup>	0,73	1,15	2,14	3,92	6,52	7,51
Hub key <sup>10)</sup>	2,80	4,01	6,25	10,51	16,62	28,46
Hub key: internal <sup>10)</sup>	2,38	3,32	5,36	9,00	14,44	23,26
Connection plate	1,53	2,44	4,48	8,04	12,64	19,55
Sleeve 1	2,61	3,66	5,38	9,32	15,62	26,98
Sleeve S with $H_s = 1000$ mm	14,37	17,45	27,01	38,66	53,84	77,23
Sleeve S per 1000 mm tube	13,64	15,34	23,97	34,36	46,78	64,41

1) Valid for changing load direction as well as for max. permitted shaft misalignment.

2) Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .

3) Transmittable torques dependent on bore, see page 61.

4) Not valid for coupling with sleeve S.

5) The permitted misalignments may not simultaneously reach their maximum values.

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

7) Only permitted as a static or virtually static value.

8) The values refer to 1 disk pack.

9) Mass moments of inertia and weights are valid for 1 disk pack.

10) Mass moments of inertia and weights are valid for maximum bore.

11) The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T,tot.} = \frac{1}{\frac{2}{C_{T,LP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{T,H,rel.}}}$$

## ROBA<sup>®</sup>-DS Sizes 180 to 2200

### Double-jointed coupling with connection plate and key hubs

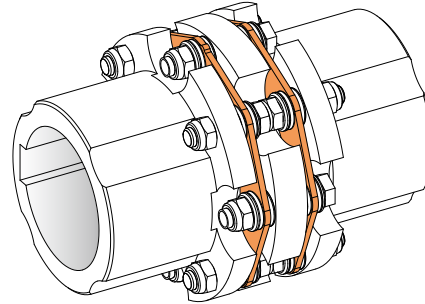
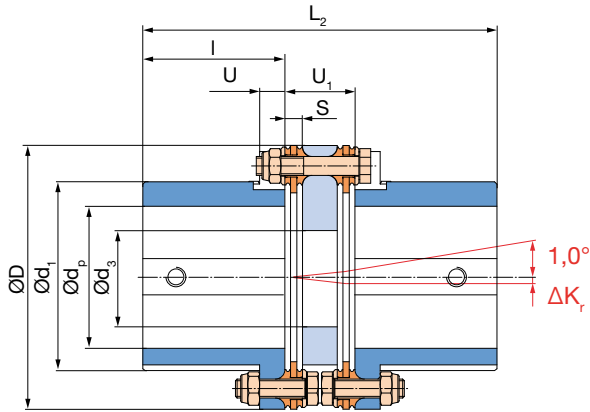


Fig. 59: Type 951.001

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and key hubs

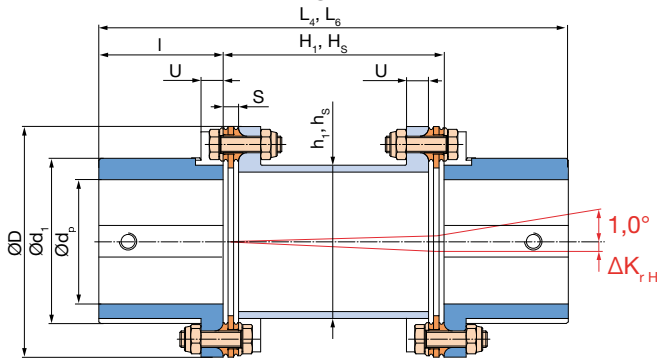


Fig. 60: Type 951.002 (Sleeve 1:  $H_1, h_1, L_4$ ),  
Type 951.003 (Sleeve S:  $H_s, h_s, L_6$ )

### Double-jointed coupling with sleeve 1 and key hubs (internal/internal)

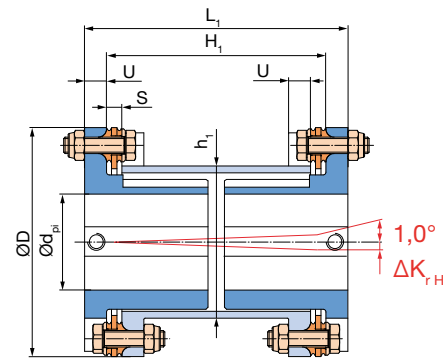


Fig. 61: Type 951.772 (Sleeve 1:  $H_1, L_1$ )

### Order Number

		HUB 1		HUB 2							
Key hub Standard		0		0		Key hub Standard					
Key hub internal (Fig. 61)		7		7		Key hub internal (Fig. 61)					
		▽		▽							
		9		5							
		△		△		△		△		△	
<b>Sizes</b>	Single-jointed coupling	0	Single-jointed coupling	0	<b>Bore*</b>	<b>Bore*</b>	<b>Sleeve</b>	<b>Operating</b>			
<b>180</b>	Double-jointed coupling	1	Connection plate	1	<b>Hub 1 <math>\phi</math></b>	<b>Hub 2 <math>\phi</math></b>	<b>length</b>	<b>speed</b>			
<b>to</b>			Sleeve 1	2	(Dim.	(Dim.	<b><math>H_s</math></b>	<b><math>n_s</math></b>			
<b>2200</b>			Sleeve S	3	page 46)	page 46)	[mm]	[rpm]			
			Sleeve CRD (page 56)	4			for special sleeves				
			Sleeve CFRP (page 56)	5			S / CRD / CFRP				

Example: 300 / 951.001 / Hub 1 –  $\phi 50^{H7}$  / Hub 2 –  $\phi 60^{H7}$

\*Standard H7, other tolerances possible

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# ROBA®-DS Sizes 180 to 2200

## Single-jointed coupling with shrink disk hubs, external clamping

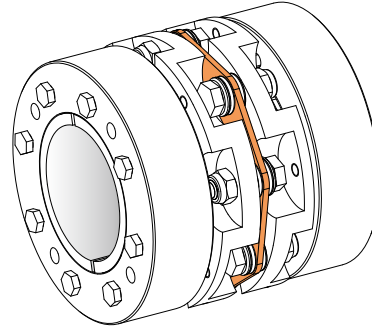
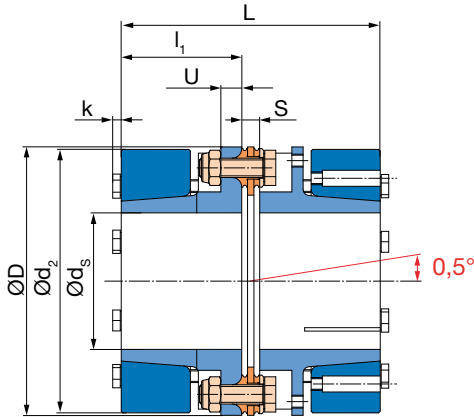


Fig. 62: Type 950.220

Technical Data and Main Dimensions			Size							
			180	300	500	850	1400	2200		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	2100	3500	5800	9500	15000	24000		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	3150	5250	8700	14250	22500	36000		
Outer diameter	D	[mm]	143	167	198	234	274	314		
Minimum hub bore <sup>3)</sup>	$d_{Smin}$	[mm]	42	50	60	70	80	100		
Maximum hub bore <sup>3)</sup>	$d_{Smax}$	[mm]	75	85	100	120	140	170		
Maximum speed <sup>4)</sup>	$n_{max}$	[rpm]	7300	6200	5200	4400	3800	3300		
Permitted misalignments <sup>5)</sup>	permitted axial displacement <sup>6) 7)</sup>	$\Delta K_a$	[mm]	1,0	1,2	1,4	1,6	1,9	2,2	
		$\Delta K_r$	[mm]	0,25	0,25	0,35	0,4	0,5	0,55	
	permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_{r,H}$	[mm]	1,2	1,25	1,35	1,7	2	2,6
		with sleeve S	$\Delta K_{r,H}$	[mm]	$(H_s - S) \times 0,00873$					
Spring rigidity	torsion <sup>11)</sup>	disk pack	$C_{TLP}$	[10 <sup>3</sup> Nm/rad]	3000	3480	11900	20600	30150	46800
		tube sleeve S	$C_{THrel}$	[10 <sup>6</sup> Nm mm/rad]	250	415	894	1690	2734	4961
	angular spring rigidity <sup>8)</sup>			[Nm/rad]	3890	6980	11250	18580	26120	28520

### Dimensions [mm]

Size	180	300	500	850	1400	2200
$d_2$	141	164	198	234	274	314
$d_3$	54	61	66	76	86	110
$H_1$	150	160	170	220	266	320
$H_s$	acc. customer specifications					
$h_1$	92,5	111	132	150	174	206
$h_s$	92	110	130	150	165	190
k	5,3	5,3	6,4	7,5	8,8	8,8
L	141,2	161,2	202	244	276	317,8
$L_2$	172,4	194,4	242	295	334	383,6
$L_4$	280	310	360	450	526	620
$L_6$	dependent on $H_s$					
$l_1$	65	75	95	115	130	150
S	11,2	11,2	12	14	16	17,8
U	10	13	18	20	22	25
$U_1$	42,4	44,4	52	65	74	83,6
$U_H$	14	16	18	20	22	25

### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	180	300	500	850	1400	2200
Disk pack <sup>9)</sup>	2,64	5,60	14,58	36,85	83,86	132,19
Hub <sup>10)</sup>	14,41	31,64	83,82	192,23	409,20	723,01
Connection plate	3,91	8,60	21,54	53,27	114,26	241,16
Sleeve 1	6,85	14,22	29,94	67,40	149,09	341,78
Sleeve S with $H_s = 1000$ mm	28,41	51,24	109,74	210,27	364,62	705,89
Sleeve S per 1000 mm tube	25,08	41,61	89,57	169,22	273,78	496,68

### Weight [kg]

Size	180	300	500	850	1400	2200
Disk pack <sup>9)</sup>	0,73	1,15	2,14	3,92	6,52	7,51
Hub <sup>10)</sup>	4,65	7,61	14,12	23,00	35,72	49,20
Connection plate	1,53	2,44	4,48	8,04	12,64	19,55
Sleeve 1	2,61	3,66	5,38	9,32	15,62	26,98
Sleeve S with $H_s = 1000$ mm	14,37	17,45	27,01	38,66	53,84	77,23
Sleeve S per 1000 mm tube	13,64	15,34	23,97	34,36	46,78	64,41

- 1) Valid for changing load direction as well as for max. permitted shaft misalignment.
- 2) Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- 3) Transmittable torques dependent on bore, see page 60.
- 4) Not valid for coupling with sleeve S.
- 5) The permitted misalignments may not simultaneously reach their maximum values.
- 6) The values refer to couplings with 2 disk packs.
- 7) Only permitted as a static or virtually static value.
- 8) The values refer to 1 disk pack.

- 9) Mass moments of inertia and weights are valid for 1 disk pack.
- 10) Mass moments of inertia and weights are valid for maximum bore.
- 11) The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{TLP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{THrel}}}$$

## ROBA®-DS Sizes 180 to 2200

### Double-jointed coupling with connection plate and shrink disk hubs, external clamping

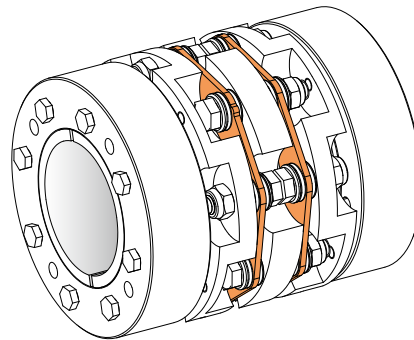
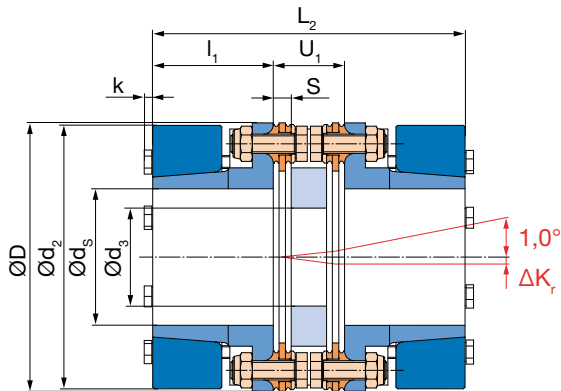


Fig. 63: Type 951.221

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and shrink disk hubs, external clamping

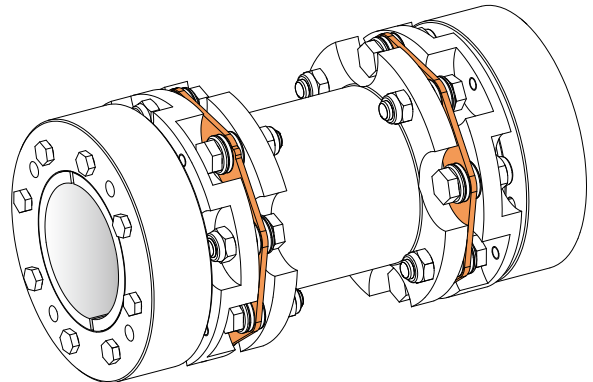
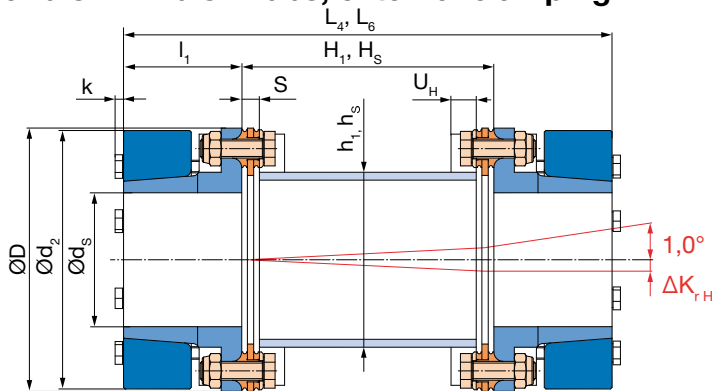


Fig. 64: Type 951.222 (Sleeve 1:  $H_1, h_1, L_4$ ), Type 951.223 (Sleeve S:  $H_S, h_S, L_6$ )

### Order Number

—	/	9	5	—	.	2	2	—	/	—	/	—	/	—	/	—
▲				▲				▲	▲	▲	▲	▲	▲	▲	▲	▲
<b>Sizes</b> 180 to 2200	Single-jointed coupling		0	Single-jointed coupling Connection plate		0	<b>Bore*</b> Hub 1 $\phi$	<b>Bore*</b> Hub 2 $\phi$	<b>Sleeve length</b> $H_s$	<b>Operating speed</b> $n_s$						
	Double-jointed coupling		1	Sleeve 1		1	(Dim. page 48)	(Dim. page 48)	[mm]	[rpm]						
				Sleeve S		3			for special sleeves S / CRD / CFRP							
				Sleeve CRD (page 56)		4										
				Sleeve CFRP (page 56)		5										

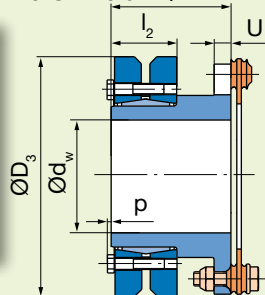
Example: 100 / 951.221 / Hub 1 –  $\phi 45^{H7}$  / Hub 2 –  $\phi 45^{H7}$

\*Standard H7, other tolerances possible

### Additional Option:

Size	$d_w$	$D_3$	$l$	$l_2$	$p$
180	65/70	145	85	39	-
300	75/80	170	90	50	-
500	80/85	185	100	57	-
850	95/100/105	230	125	82	4
1400	110/115	265	150	88	-
2200	130/135	300	180	98	-

### External shrink disk hub



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# ROBA®-DS Sizes 180 to 2200

## Double-jointed coupling with connection plate and split clamping hub

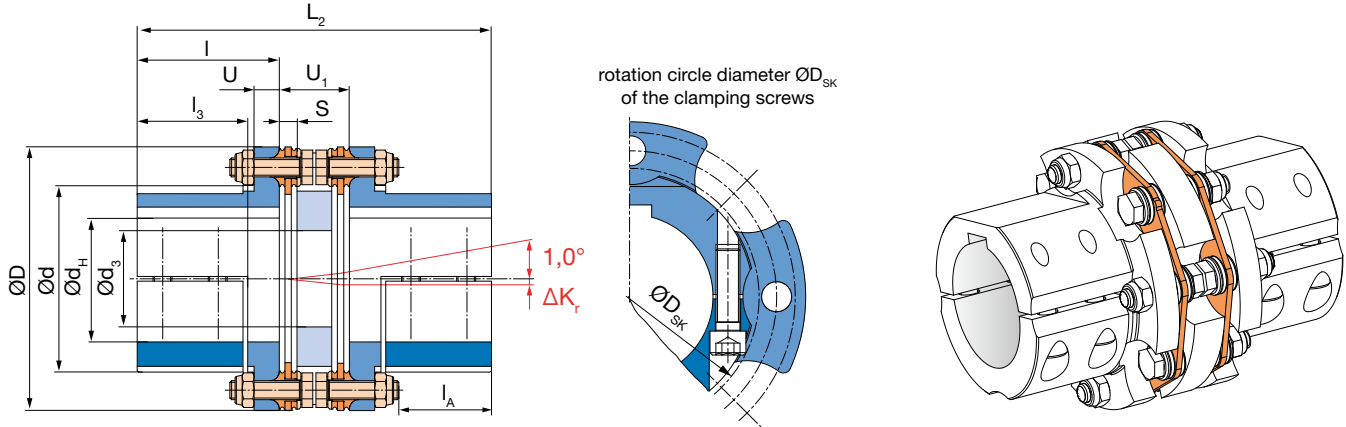


Fig. 65: Type 951.881

Only available with keyway acc. DIN 6885!

Technical Data and Main Dimensions			Size							
			180	300	500	850	1400	2200		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	2100	3500	5800	9500	15000	24000		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	3150	5250	8700	14250	22500	36000		
Outer diameter	D	[mm]	143	167	198	234	274	314		
Minimum hub bore	$d_{Hmin}$	[mm]	42	50	60	70	80	100		
Maximum hub bore	$d_{Hmax}$	[mm]	65	80	95	110	120	150		
Maximum speed <sup>3)</sup>	$n_{max}$	[rpm]	5100	4300	3600	3100	2600	2300		
Permitted misalignments <sup>4)</sup>	permitted axial displacement <sup>6) 7)</sup>	$\Delta K_a$	[mm]	1,0	1,2	1,4	1,6	1,9	2,2	
		$\Delta K_r$	[mm]	0,25	0,25	0,35	0,4	0,5	0,55	
	permitted radial misalignment <sup>6)</sup>	with connection plate	$\Delta K_{rH}$	[mm]	1,2	1,25	1,35	1,7	2	2,6
		with sleeve S	$\Delta K_{rH}$	[mm]	$(H_s - S) \times 0,00873$					
Spring rigidity	torsion <sup>5)</sup>	disk pack	$C_{TLP}$	[10 <sup>3</sup> Nm/rad]	3000	3480	11900	20600	30150	46800
		tube sleeve S	$C_{THrel.}$	[10 <sup>6</sup> Nm mm/rad]	250	415	894	1690	2734	4961
	angular spring rigidity <sup>8)</sup>			[Nm/rad]	3890	6980	11250	18580	26120	28520

### Dimensions [mm]

Size	180	300	500	850	1400	2200
$D_{sk}$	107	128	150	173	200	-
d	102	121	141	164	190	230
$d_3$	54	61	66	76	86	110
$H_1$	150	160	170	220	266	320
$H_s$	acc. customer specifications					
$h_1$	92,5	111	132	150	174	206
$h_s$	92	110	130	150	165	190
$L_2$	212,4	224,4	252	315	374	443,6
$L_4$	320	340	370	470	566	680
$L_6$	dependent on $H_s$					
I	85	90	100	125	150	180
$I_3$	68	70	77	97	117	147
$I_A$	58,7	58,7	65,1	83,2	100,6	127,3
$I_B$	64,6	66,5	72	92,5	113	140
S	11,2	11,2	12	14	16	17,8
U	14	16	18	20	22	25
$U_1$	42,4	44,4	52	65	74	83,6

### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	180	300	500	850	1400	2200
Disk pack <sup>9)</sup>	2,64	5,60	14,58	36,85	83,86	132,19
Hub <sup>10)</sup>	6,61	14,02	30,01	65,69	146,71	352,20
Connection plate	3,91	8,60	21,54	53,27	114,26	241,16
Sleeve 1	6,85	14,22	29,94	67,40	149,09	341,78
Sleeve S with $H_s = 1000$ mm	28,41	51,24	109,74	210,27	364,62	705,89
Sleeve S per 1000 mm tube	25,08	41,61	89,57	169,22	273,78	496,68

### Weight [kg]

Size	180	300	500	850	1400	2200
Disk pack <sup>9)</sup>	0,73	1,15	2,14	3,92	6,52	7,51
Hub <sup>10)</sup>	3,19	4,66	7,20	11,70	20,26	33,95
Connection plate	1,53	2,44	4,48	8,04	12,64	19,55
Sleeve 1	2,61	3,66	5,38	9,32	15,62	26,98
Sleeve S with $H_s = 1000$ mm	14,37	17,45	27,01	38,66	53,84	77,23
Sleeve S per 1000 mm tube	13,64	15,34	23,97	34,36	46,78	64,41

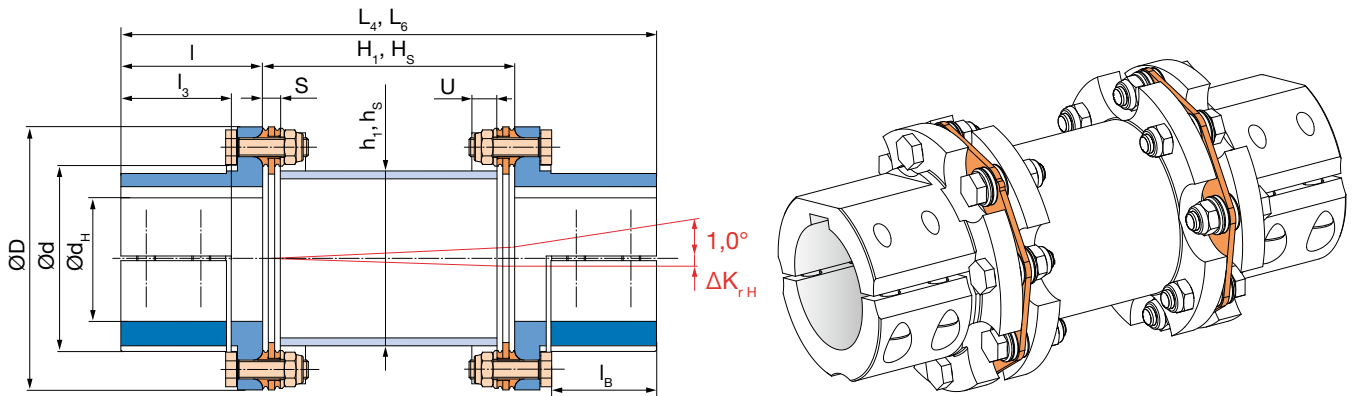
- Valid for unchanging load direction as well as for max. permitted shaft misalignment.
- Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- Not valid for coupling with sleeve S.
- The permitted misalignments may not simultaneously reach their maximum values.
- The  $C_T$ -value of a double-jointed coupling can be roughly calculated as follows:
 
$$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{TLP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{THrel.}}}$$

- The values refer to couplings with 2 disk packs.
- Only permitted as a static or virtually static value.
- The values refer to 1 disk pack.
- Mass moments of inertia and weights are valid for 1 disk pack.
- Mass moments of inertia and weights are valid for maximum bore.



## ROBA®-DS Sizes 180 to 2200

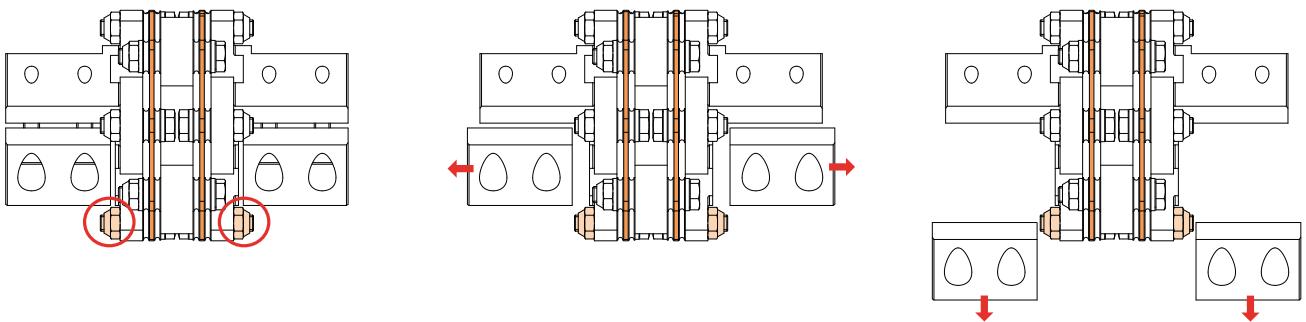
Double-jointed coupling with sleeve 1 or sleeve S (special length) and split clamping hubs



**Fig. 66:** Type 951.882 (Sleeve 1:  $H_1, h_1, L_4$ )  
Type 951.883 (Sleeve S:  $H_S, h_S, L_6$ )

Only available with keyway acc. DIN 6885!

### Installation coupling with split clamping hubs



**Fig. 67:** Axial displacement of the half-shells during radial assembly/disassembly  
Please observe dimensions  $l_A$  and  $l_B$ !

### Order Number

—	/	9	5	1	.	8	8	—	/	—	/	—	/	—	/	—
▲								▲		▲		▲		▲		▲
<b>Sizes</b> 180 to 2200								Connection plate	<b>1</b>	<b>Bore*</b> Hub 1 $\phi$	<b>Bore*</b> Hub 2 $\phi$	<b>Sleeve length</b> $H_S$ [mm]	<b>Operating speed</b> $n_S$ [rpm]			
								Sleeve 1	<b>2</b>	(Dim. page 50)	(Dim. page 50)					
								Sleeve S	<b>3</b>							
								Sleeve CRD (page 56)	<b>4</b>							
								Sleeve CFRP (page 56)	<b>5</b>							
																for special sleeves S / CRD / CFRP

Example: 100 / 951.881 / Hub 1 –  $\phi 50$  H7 / Hub 2 –  $\phi 50$  H7

\*Standard H7, other tolerances possible



Only available with keyway acc. DIN 6885! The hubs transmit only 30 – 40 % of the value  $T_{KN}$  using frictional locking. Larger torques are transmitted via positive locking with the key. The hubs are not suitable for changing load direction.

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## ROBA®-DS Sizes 180 to 2200

### Single-jointed coupling with flanges

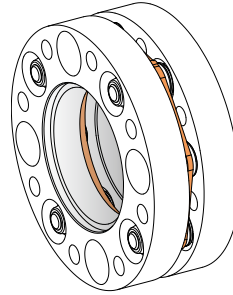
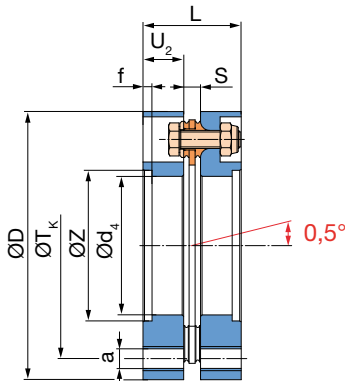


Fig. 68: Type 950.660

Technical Data and Main Dimensions			Size							
			180	300	500	850	1400	2200		
Nominal torque <sup>1)</sup>	$T_{KN}$	[Nm]	2100	3500	5800	9500	15000	24000		
Peak torque <sup>2)</sup>	$T_{KS}$	[Nm]	3150	5250	8700	14250	22500	36000		
Outer diameter	D	[mm]	153	178	210	250	290	336		
Centering bore	Z <sup>H7</sup>	[mm]	85	100	120	140	160	180		
Maximum speed <sup>3)</sup>	$n_{max}$	[rpm]	7300	6200	5200	4400	3800	3300		
Permitted misalignments <sup>4)</sup>	permitted axial displacement <sup>5) 6)</sup>		$\Delta K_a$	[mm]	1,0	1,2	1,4	1,6	1,9	2,2
	permitted radial misalignment <sup>5)</sup>	with connection plate	$\Delta K_r$	[mm]	0,25	0,25	0,35	0,4	0,5	0,55
		with sleeve 1	$\Delta K_{r,H}$	[mm]	1,2	1,25	1,35	1,7	2	2,6
		with sleeve S	$\Delta K_{r,H}$	[mm]	$(H_s - S) \times 0,00873$					
Spring rigidity	torsion <sup>7)</sup>	disk pack	$C_{TLP}$	[10 <sup>3</sup> Nm/rad]	3000	3480	11900	20600	30150	46800
		tube sleeve S	$C_{THrel.}$	[10 <sup>6</sup> Nm mm/rad]	250	415	894	1690	2734	4961
	angular spring rigidity <sup>8)</sup>			[Nm/rad]	3890	6980	11250	18580	26120	28520

#### Dimensions [mm]

Size	180	300	500	850	1400	2200
a	8 x M12	8 x M16	8 x M16	8 x M20	8 x M24	8 x M30
d <sub>3</sub>	54	61	66	76	86	110
d <sub>4</sub>	77	92	112	132	150	170
f	6	6	6	6	6	6
H <sub>1</sub>	150	160	170	220	266	320
H <sub>s</sub>	acc. customer specifications					
h <sub>1</sub>	92,5	111	132	150	174	206
h <sub>s</sub>	92	110	130	150	165	190
L	57,2	65,2	84	102	118	129,8
L <sub>2</sub>	88,4	98,4	124	153	176	195,6
L <sub>4</sub>	196	214	242	308	368	432
L <sub>6</sub>	dependent on H <sub>s</sub>					
S	11,2	11,2	12	14	16	17,8
T <sub>k</sub>	125	150	175	210	240	275
U	14	16	18	20	22	25
U <sub>1</sub>	42,4	44,4	52	65	74	83,6
U <sub>2</sub>	23	27	36	44	51	56

- 1) Valid for changing load direction as well as for max. permitted shaft misalignment.
- 2) Valid for unchanging load direction, max. load cycles ≤ 10<sup>6</sup>.
- 3) Not valid for coupling with sleeve S.
- 4) The permitted misalignments may not simultaneously reach their maximum values.
- 5) The values refer to couplings with 2 disk packs.
- 6) Only permitted as a static or virtually static value.

#### Mass Moments of Inertia J [10<sup>-3</sup> kgm<sup>2</sup>]

Size	180	300	500	850	1400	2200
Disk pack <sup>9)</sup>	2,64	5,60	14,58	36,85	83,86	132,19
Flange	6,26	13,08	34,04	79,39	162,60	359,24
Connection plate	3,91	8,60	21,54	53,27	114,26	241,16
Sleeve 1	6,85	14,22	29,94	67,40	149,09	341,78
Sleeve S with H <sub>s</sub> = 1000 mm	28,41	51,24	109,74	210,27	364,62	705,89
Sleeve S per 1000 mm tube	25,08	41,61	89,57	169,22	273,78	496,68

#### Weight [kg]

Size	180	300	500	850	1400	2200
Disk pack <sup>9)</sup>	0,73	1,15	2,14	3,92	6,52	7,51
Flange	1,70	2,61	4,79	7,88	12,24	20,54
Connection plate	1,53	2,44	4,48	8,04	12,64	19,55
Sleeve 1	2,61	3,66	5,38	9,32	15,62	26,98
Sleeve S with H <sub>s</sub> = 1000 mm	14,37	17,45	27,01	38,66	53,84	77,23
Sleeve S per 1000 mm tube	13,64	15,34	23,97	34,36	46,78	64,41

- 7) The C<sub>r</sub>-value of a double-jointed coupling can be roughly calculated as follows:

$$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{TLP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{THrel.}}}$$

- 8) The values refer to 1 disk pack.
- 9) Mass moments of inertia and weights are valid for 1 disk pack.

## ROBA<sup>®</sup>-DS Sizes 180 to 2200

### Double-jointed coupling with connection plate and flanges

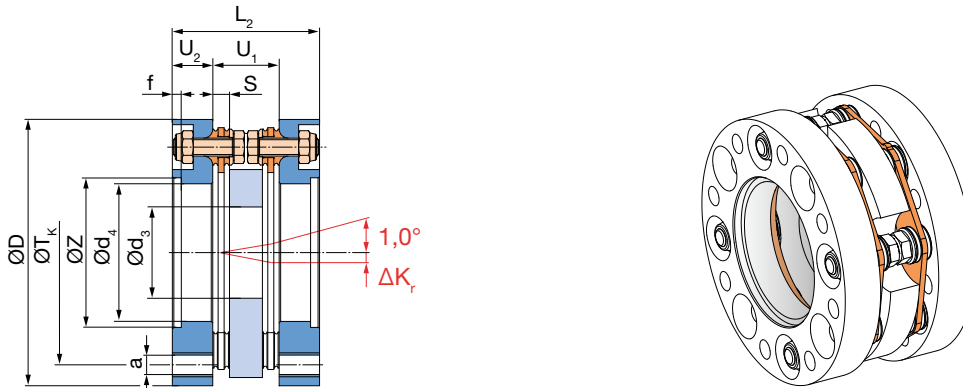


Fig. 69: Type 951.661

### Double-jointed coupling with sleeve 1 or sleeve S (special length) and flanges

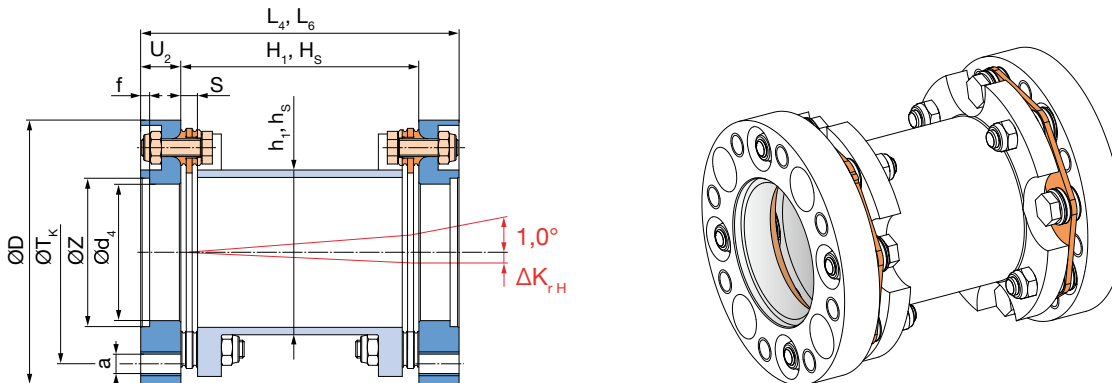


Fig. 70: Type 951.662 (Sleeve 1:  $H_1$ ,  $h_1$ ,  $L_4$ ), Type 951.663 (Sleeve S:  $H_s$ ,  $h_s$ ,  $L_6$ )

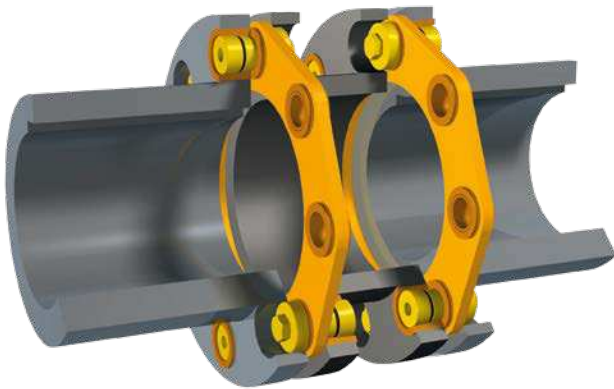
Order Number											
—	/	9	5	—	.	6 6	—	/	—	/	—
▲				▲			▲	▲			▲
<b>Sizes</b> 180 to 2200		Single-jointed coupling	0	Single-jointed coupling		0	<b>Sleeve</b> <b>length</b>		<b>Operating</b> <b>speed</b>		
		Double-jointed coupling	1	Connection plate		1	$H_s$		$n_s$		
				Sleeve 1		2	[mm]		[rpm]		
				Sleeve S		3	for special sleeves				
				Sleeve CRD (page 56)		4	S / CRD / CFRP				
				Sleeve CFRP (page 56)		5					

Example: 40 / 950.661

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## ROBA<sup>®</sup>-DS for high torques - Sizes 2200 to 11000

### ROBA<sup>®</sup>-DS with cone connection

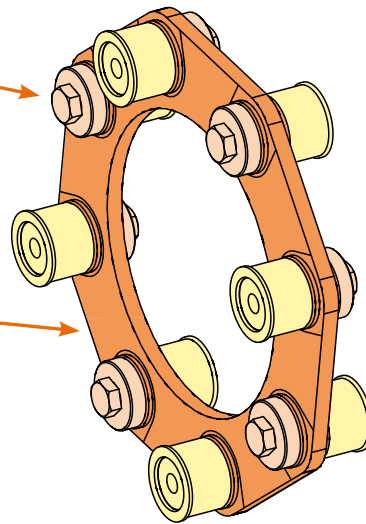


On the ROBA<sup>®</sup>-DS with cone connection, the disk pack is connected via positive locking with the hubs, flanges or sleeves. On the outside conical bolts are pulled through tensioning screws into cone-shaped holes on the mounting parts and the collar bushings on the disk packs. The cone shape causes forces to be generated, which widen the collar bushings and mounting parts radially flexibly, thus guaranteeing backlash-free connection of the disk pack.

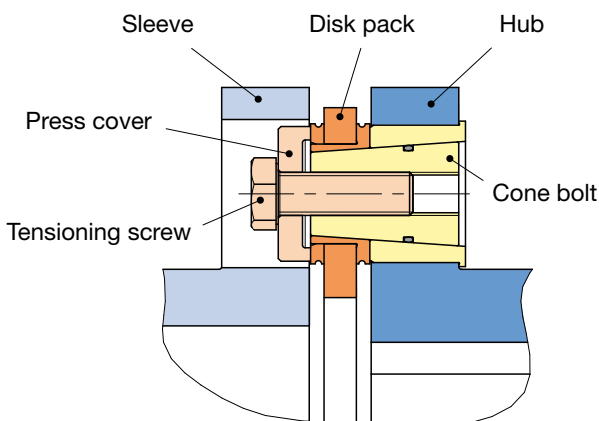
For this backlash-free, positive locking connection, far lower screw tightening torques are required in comparison to standard frictionally locking connections. This makes installation substantially easier.

The disk packs and sleeves can be radially installed or de-installed without having to move the respective aggregates.

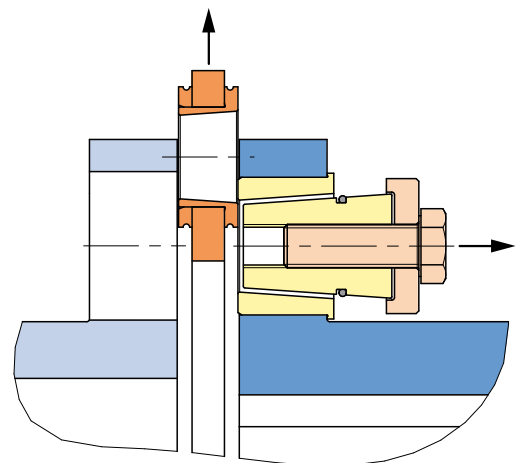
- Low screw tightening torques
- Can be installed / de-installed radially
- Easy and quick installation / de-installation
- No hydraulic installation tools required; can be installed with a torque wrench
- Backlash-free torque transmission
- FEM-optimized disk shape
- High torsional rigidity
- High performance density
- Compensation of axial, angular and radial misalignments
- Wear and maintenance-free
- High flexibility through customer-specific hubs and sleeves



### Easy installation and de-installation



**Cone connection in installed condition**



**De-installation**

In installed condition, the cone bolt is pulled through the tensioning screw into the conical bores. In order to de-install the disk pack, the tensioning screw is screwed out and then screwed in with the press cover onto the opposite side of the cone bolt. This loosens the cone bolt and allows it to be pulled back axially. Disk packs and sleeves can be de-installed radially in this way.

# ROBA®-DS for high torques - Sizes 2200 to 11000

## Single-jointed coupling with key hubs

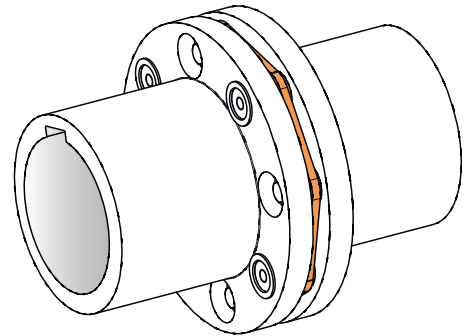
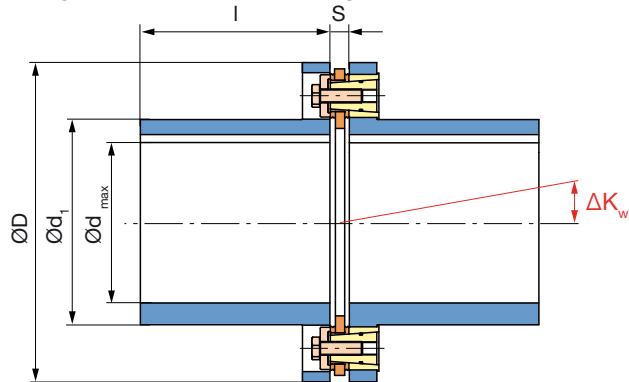


Fig. 71

## Double-jointed coupling with sleeve and key hubs

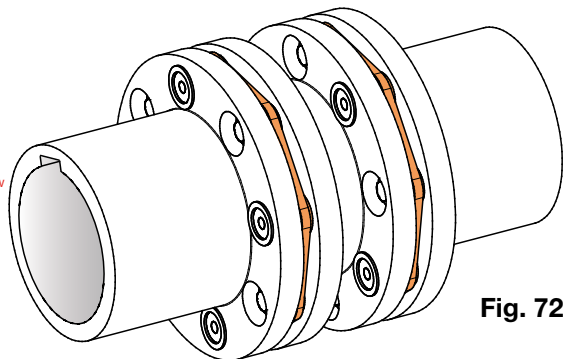
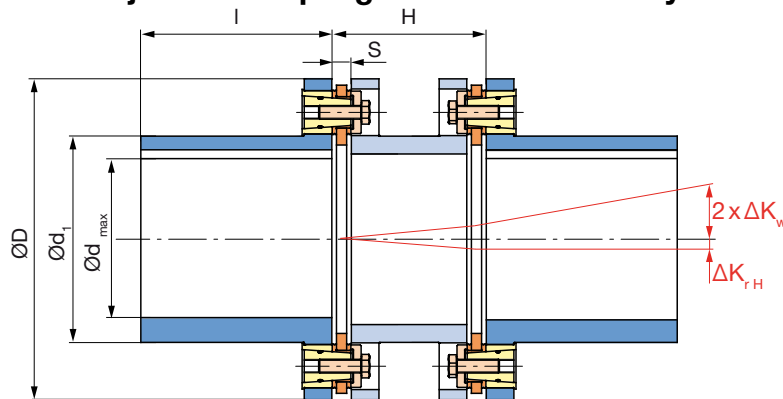


Fig. 72

Backlash-free shaft-hub connection with a shrink disk is possible.

Technical Data		Size					
		2200	3300	5000	7300	11000	
Alternating torque <sup>1)</sup>	$T_{KW}$ [Nm]	14 700	22 000	33 300	48 700	73 300	
Nominal torque <sup>2)</sup>	$T_{KN}$ [Nm]	22 000	33 000	50 000	73 000	110 000	
Peak torque <sup>3)</sup>	$T_{KS}$ [Nm]	44 000	66 000	100 000	146 000	220 000	
Outer diameter	D [mm]	290	332	378	431	492	
Maximum hub bore <sup>6)</sup>	$d_{max}$ [mm]	150	170	190	220	250	
Maximum speed	$n_{max}$ [rpm]	3600	3100	2700	2400	2100	
Hub	$d_1$ [mm]	186	215	243	279	321	
	l [mm]	175	200	225	265	310	
Minimum sleeve length	$H_{min}$ [mm]	156	166	182	208	223	
Distance dimension	S [mm]	17,8	19	23	24,2	26,5	
Permitted misalignments <sup>4)</sup>	perm. axial displacement <sup>5)</sup>	$\Delta K_a$ [mm]	1,6	1,7	2,1	2,3	2,3
	perm. radial misalignment with special sleeve	$\Delta K_{r,H}$ [mm]	$(H - S) \times 6,98 \times 10^{-3}$				
	perm. angular misalignment	$\Delta K_w$ [°]	0,4	0,4	0,4	0,4	0,3

1) Valid for changing load direction as well as for max. permitted shaft misalignment.

2) Valid for unchanging load direction as well as for max. permitted shaft misalignment.

3) Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .

4) The permitted misalignments may not simultaneously reach their maximum values.

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

6) Transmittable torques dependent on bore, see page 61.

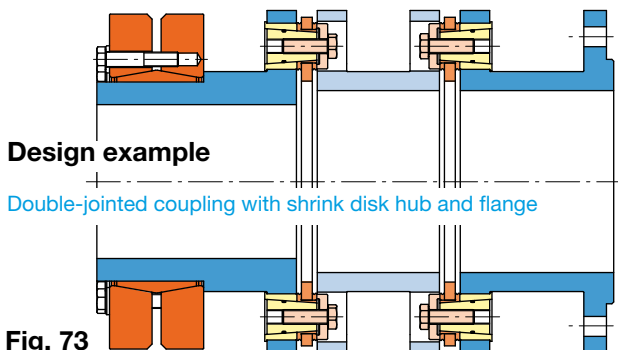


Fig. 73

### Order Number

— / 9 5 6 . —



Size  
2200  
to  
11000

The design of the hubs and sleeves is carried out according to the customer's requirements. Please contact the manufacturer.

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Transmittable Torques for Key Hubs Page 61 ▷

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Dimensioning, Size Selection Page 68 ▷

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## Variable Sleeve S

### Variable Length Sleeves (Cardan Shaft Replacement)

The operational demands on variable length sleeves vary greatly. Using various sleeve construction shapes, the shaft coupling ROBA®-DS can offer the optimum solution for any problem. The product is able to fulfil the usual demands placed upon conventional cardan shafts. At the same time, the constructional shape all-steel coupling presents decided advantages:

- Backlash-free function
- Completely maintenance-free function
- Suitable for high speeds

By replacing conventional disk packs, the coupling misalignment capability can be enlarged by 2 – 3° / compensating level (please contact the manufacturers about availability and Technical Data).

### Type Identification and Technical Comparison – Variable Length Sleeves

#### Standard design Type 951.\_ 3 / 953.\_ 3

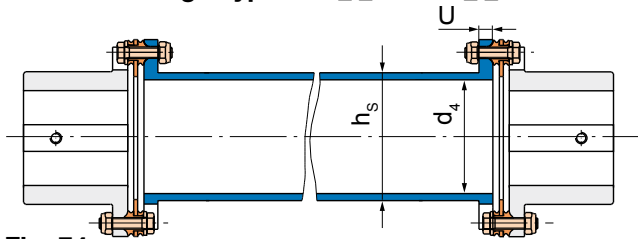


Fig. 74

#### Cranked tube (CRD) Type 951.\_ 4 / 953.\_ 4

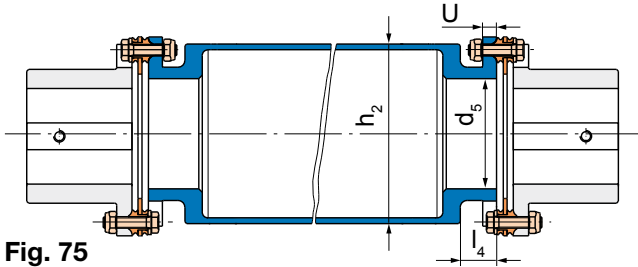


Fig. 75

#### CFRP sleeve Type 951.\_ 5 / 953.\_ 5

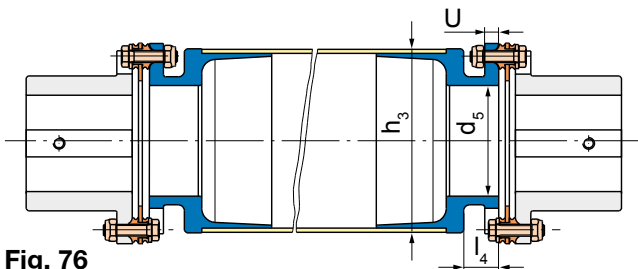


Fig. 76

Selection Aid: Variable Length Sleeves			
Type	951._ 3	951._ 4	951._ 5
Speed	+	++	+++
Torsional rigidity	++	+++	+
Weight	++	+++	+
Mass moment of inertia	++	+++	+
Corrosion resistance	++	++	+++
Changes in length due to temperature	+++	+++	+
Costs	+	++	+++
Operational focuses	<ul style="list-style-type: none"> <li>• conventional applications</li> </ul>	<ul style="list-style-type: none"> <li>• medium speeds</li> <li>• high torsional rigidity</li> </ul>	<ul style="list-style-type: none"> <li>• high speeds</li> <li>• low mass</li> </ul>

+ = low, ++ = medium, +++ = high

#### Vertical support special sleeves

##### Attention!

On vertically installed ROBA®-DS couplings with long sleeves, it is necessary to provide a vertical support for absorbing the sleeve's own weight.

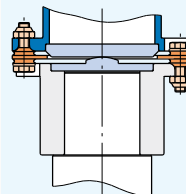


Fig. 77

#### Dimensions [mm]

Size	16	25	40	64	100	160	180	300	500	850	1400	2200
d <sub>4</sub>	43	54	62	71	92	98	79	95	111	127	137	157
d <sub>5</sub>	45	48	58	68	88	95	75	90	110	123	144	167
h <sub>s</sub>	50	60	70	80	100	110	92	110	130	150	165	190
h <sub>2</sub>	x	x	x	x	x	155	130	155	170	220	250	x
h <sub>3</sub>	73	86	96	118	138	160	138	160	192	224	266	315
l <sub>4</sub>	15,5	15,5	20	24	24	30	32	36	40	48	54	61
U	7	7	8	10	10	12	14	16	18	20	22	25

x = Technical Data available on demand

## CFRP sleeve

### ROBA<sup>®</sup>-DS with CFRP sleeves (Carbon-fibre reinforced plastic)

Sleeves made of CFRP offer unique advantages and open up new application possibilities for torsionally rigid disk pack couplings.

- Up to 80 % lower own weight
- Reduced mass inertia
- High speeds
- Wide bearing distances
- Low thermal expansion
- Corrosion resistance
- Low vibration
- Temperature resistance

#### Low weight

The lower own weight (up to 80 %) of CFRP material in comparison to steel makes handling and installation much easier and safer.

#### Reduced inertia

The reduction in weight is combined with a large reduction in mass inertia. Braking and accelerating procedures are quicker or require lower drive performance.

#### Higher speeds

The optimum rigidity / weight ratio sets the critical bending speed far higher than with conventional sleeves.

#### Wide bearing distances

Due to the high critical bending speed, large bearing distances can be bridged without further intermediate bearings being necessary.

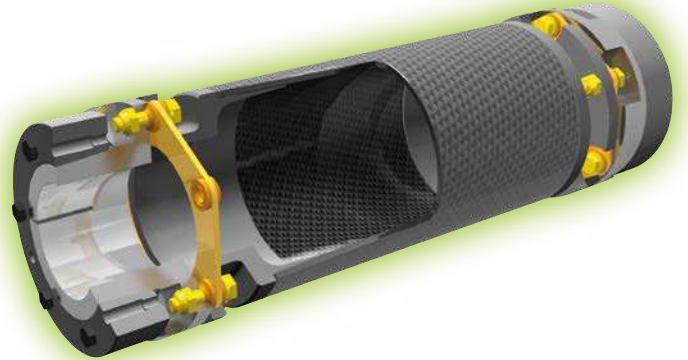


Fig. 78

#### Low thermal expansion

CFRP sleeves expand approx. 90 % less than steel in response to temperature fluctuations. The disk packs are therefore placed under far less strain, especially when using long sleeves.

#### Corrosion resistance

Additional corrosion protection for hubs and sleeve parts ensure a very high corrosion resistance for the entire coupling.

#### Low vibration

The far higher self-damping capacity of CFRP material minimises production of vibrations and damps existing vibrations more effectively.

#### Temperature resistance

Couplings with CFRP sleeves can be used at temperatures of -20 °C up to +80 °C

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## ROBA<sup>®</sup>-DS Options

### Options and Variants on Intermediate Shafts

#### Intermediate shafts

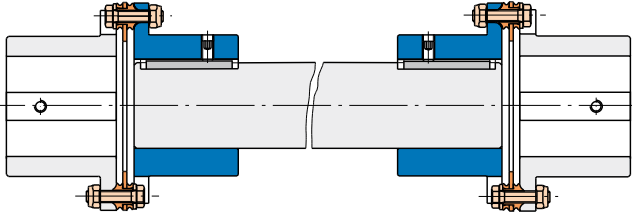


Fig. 79

Variable bridges over any shaft distances via adapted steel solid shafts, mounted between two standard hubs.  
Please observe the critical bending speeds!

#### GFRP sleeves

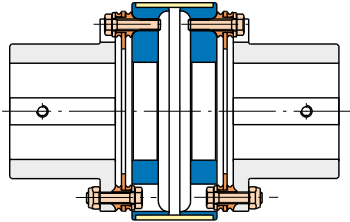


Fig. 80

Glass-fibre reinforced plastic sleeves for couplings in leakage current-isolated design.  
Fulfills the highest demands on insulation quality (CTI 600).

#### Axial separable sleeves

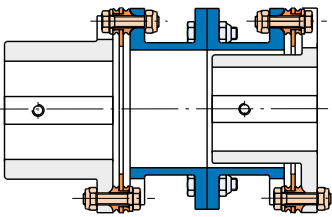


Fig. 81

This design allows radial disassembling of input and output without axial displacement.  
Preferred solution on large coupling in connection with inner key hubs

#### Poly-cardanic design

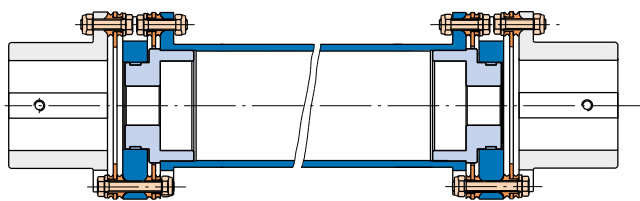


Fig. 82

For applications with large axial displacement, e.g. caused by:

- Normal load or overload on the connected system parts
- Ground changes between the foundations
- Temperature differences
- Axial backlash due to wear on the bearing

## Safe Against Overload

### Safe Against Overload Damage

#### Combination with EAS®-Compact®

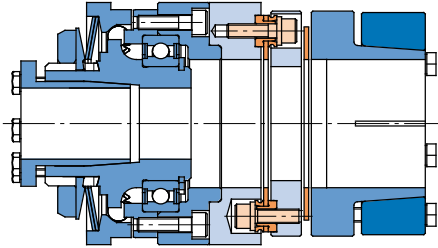


Fig. 83

- Safety clutches in the construction Types Ratchetting, Synchronous or Overload
- Flexible adaptation of construction length for connection of shafts with different shaft distances
- Perfectly suited for demands of high torsional rigidity or high speeds

Torque range	5 – 3 000 Nm
Switch-off accuracy	± 5 %
Load disconnecting	
Number of overload occurrences	high
Time demand for repeat operation start-up	0
Danger of drive shaft damage	no

#### Combination with EAS®-element coupling

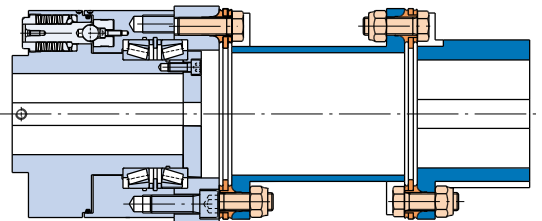


Fig. 84

- Complete separation of input and output on overload
- Particularly suitable for heavy, fast-running drives with large rotating masses
- Maximum torsional rigidity at highest performance density

Torque range	250 – 110 000 Nm
Switch-off accuracy	± 5 %
Load disconnecting	
Number of overload cases	high
Time demand for repeat operation start-up	1 minute
Danger of drive shaft damage	no

#### Combination with ROBA®-slip hub

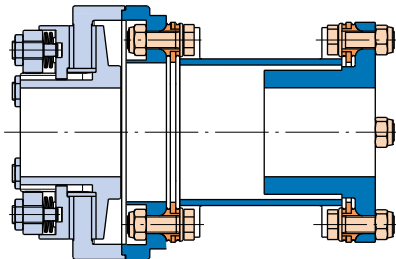


Fig. 85

- Overload protection with load holding function
- Compensation of individual dynamic peaks (resonances, start-up peaks) without operational interruptions
- Slip control recommended for protection against thermic overload

Torque range	2 – 110 000 Nm
Switch-off accuracy	± 20 %
Load holding	
Number of overload cases	very high
Time demand for repeat operation start-up	0
Danger of drive shaft damage	no

#### Shrink disk hub with integrated overload protection

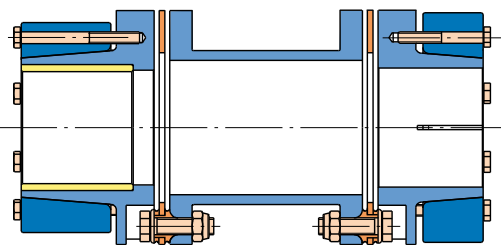


Fig. 86

- Modified shrink disk hub with integrated slip bushing
- Suitable for protection against individual, very short dynamic torque peaks
- Not suitable for longer slipping times / high slipping speeds

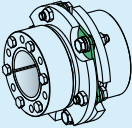
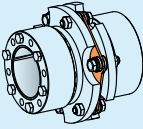
Torque range	190 – 110 000 Nm
Switch-off accuracy	± 20 % <sup>1)</sup>
Load holding	
Number of overload cases	very low
Time demand for repeat operation start-up	de-installation and installation of coupling
Danger of drive shaft damage	yes

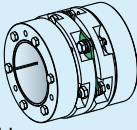
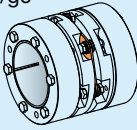
1) Tolerance only in limited application conditions – please contact the manufacturer.

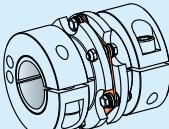
◀ Backlash-free Servo Couplings	Page 8
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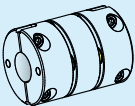
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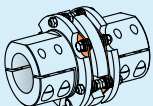
## Transmittable Torques

Shrink disk hubs		Bore	Size														
			16	25	40	64	100	160	180	300	500	850	1400	2200			
 <p>Frictionally-locking transmittable torques</p> <p>Shrink disk hubs</p> <p>Suitable for H7/g6</p> 	$T_R$	Ø14	158	-	-	-	-	-	-	-	-	-	-	-	-	-	
		Ø16	186	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Ø20	240	283	-	-	-	-	-	-	-	-	-	-	-	-	-
		Ø22	269	320	-	-	-	-	-	-	-	-	-	-	-	-	-
		Ø25	312	375	429	-	-	-	-	-	-	-	-	-	-	-	-
		Ø28	-	428	495	-	-	-	-	-	-	-	-	-	-	-	-
		Ø30	-	468	546	704	-	-	-	-	-	-	-	-	-	-	-
		Ø32	-	509	600	769	-	-	-	-	-	-	-	-	-	-	-
		Ø35	-	568	669	863	1057	-	-	-	-	-	-	-	-	-	-
		Ø38	-	-	741	960	1176	-	-	-	-	-	-	-	-	-	-
		Ø40	-	-	796	1031	1269	1783	-	-	-	-	-	-	-	-	-
		Ø42	-	-	852	1104	1366	1919	2234	-	-	-	-	-	-	-	-
		Ø45	-	-	932	1206	1500	2107	2453	-	-	-	-	-	-	-	-
		Ø50	-	-	-	-	1692	2400	2794	3569	-	-	-	-	-	-	-
		Ø55	-	-	-	-	1889	2680	3150	4024	-	-	-	-	-	-	-
		Ø60	-	-	-	-	-	2967	3488	4500	5970	-	-	-	-	-	-
		Ø65	-	-	-	-	-	3263	3835	5177	6629	-	-	-	-	-	-
		Ø68	-	-	-	-	-	-	4072	5658	7108	-	-	-	-	-	-
		Ø70	-	-	-	-	-	-	4255	6334	7500	10723	-	-	-	-	-
		Ø75	-	-	-	-	-	-	4627	7348	8156	11719	-	-	-	-	-
Ø80	-	-	-	-	-	-	-	8453	8830	12750	17942	-	-	-	-		
Ø85	-	-	-	-	-	-	-	9652	9523	13750	19444	-	-	-	-		
Ø90	-	-	-	-	-	-	-	-	-	10234	14777	21000	-	-	-		
Ø100	-	-	-	-	-	-	-	-	-	11542	16665	23683	29036	-	-		
Ø110	-	-	-	-	-	-	-	-	-	-	18607	26442	32418	-	-		
Ø120	-	-	-	-	-	-	-	-	-	-	-	20603	29279	35896	-		
Ø130	-	-	-	-	-	-	-	-	-	-	-	-	32195	39471	-		
Ø140	-	-	-	-	-	-	-	-	-	-	-	-	35191	43144	-		
Ø150	-	-	-	-	-	-	-	-	-	-	-	-	-	46920	-		
Ø160	-	-	-	-	-	-	-	-	-	-	-	-	-	50798	-		
Ø170	-	-	-	-	-	-	-	-	-	-	-	-	-	54783	-		

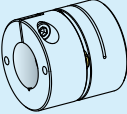
Shrink disk hubs, large		Bore	Size					
			16	25	40	64	100	160
 <p>Frictionally-locking transmittable torques</p> <p>Shrink disk hubs, large</p> <p>Suitable for H7/g6</p> 	$T_R$	Ø25	339	-	-	-	-	-
		Ø28	404	-	-	-	-	-
		Ø30	448	-	-	-	-	-
		Ø32	492	526	-	-	-	-
		Ø35	558	602	-	-	-	-
		Ø38	620	679	-	-	-	-
		Ø40	659	730	873	-	-	-
		Ø42	694	780	937	-	-	-
		Ø45	738	851	1036	1268	-	-
		Ø48	-	913	1132	1394	-	-
		Ø50	-	948	1195	1480	-	-
		Ø52	-	978	1255	1565	-	-
		Ø55	-	-	1338	1691	2074	-
		Ø60	-	-	1454	1890	2366	-
		Ø65	-	-	-	2065	2658	3246
		Ø70	-	-	-	2204	2943	3618
		Ø75	-	-	-	-	3213	3991
		Ø80	-	-	-	-	3458	4353
		Ø85	-	-	-	-	3666	4695
		Ø90	-	-	-	-	3828	5007
Ø100	-	-	-	-	-	5497		

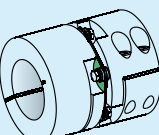
Clamping ring hubs		Bore	Size				
			16	25	40	64	100
 <p>Frictionally-locking transmittable torques</p> <p>Clamping ring hubs</p> <p>Suitable for H7/h6</p>	$T_R$	Ø20	126	-	-	-	-
		Ø22	138	199	-	-	-
		Ø25	168	226	327	-	-
		Ø28	201	253	366	523	-
		Ø30	216	290	420	561	-
		Ø32	230	325	470	598	785
		Ø35	251	355	515	700	859
		Ø38	-	386	559	798	932
		Ø40	-	406	588	840	1050
		Ø45	-	-	661	945	1240
		Ø50	-	-	-	1050	1378
		Ø55	-	-	-	1155	1516
		Ø60	-	-	-	-	1654
		Ø65	-	-	-	-	1792
		Ø68	-	-	-	-	1874
Ø70	-	-	-	-	2470		
Ø80	-	-	-	-	2822		

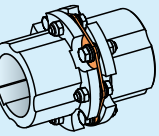
Split clamping hubs		Bore	Size			
			3	6	10	15
 <p>Frictionally-locking transmittable torques</p> <p>Split clamping hubs</p> <p>Suitable for H7 / g6</p>	$T_R$	Ø10	31	-	-	-
		Ø12	38	-	-	-
		Ø14	44	44	-	-
		Ø15	47	47	-	-
		Ø16	50	50	-	-
		Ø18	57	57	-	-
		Ø19	60	60	115	-
		Ø20	63	63	121	-
		Ø22	-	69	133	-
		Ø24	-	75	145	-
		Ø25	-	79	151	151
		Ø28	-	88	169	169
		Ø30	-	-	181	181
		Ø32	-	-	193	193
		Ø35	-	-	211	211
Ø38	-	-	230	230		
Ø40	-	-	242	242		
Ø42	-	-	254	254		

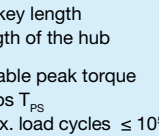
Split clamping hubs		Bore	Size				
			16	25	40	64	100
 <p>Frictionally-locking transmittable torques</p> <p>Split clamping hubs</p> <p>Suitable for H7 / g6</p>	$T_R$	Ø18	130	-	-	-	-
		Ø20	144	-	-	-	-
		Ø22	158	198	-	-	-
		Ø25	180	225	326	-	-
		Ø28	202	252	365	-	-
		Ø30	-	270	391	623	-
		Ø32	-	288	418	665	-
		Ø35	-	-	457	727	897
		Ø38	-	-	496	790	973
		Ø40	-	-	522	831	1025
		Ø42	-	-	-	873	1076
		Ø45	-	-	-	935	1153
		Ø50	-	-	-	-	1281
		Ø55	-	-	-	-	1409
		Ø60	-	-	-	-	1537
Ø65	-	-	-	-	1979		
Ø68	-	-	-	-	2071		
Ø70	-	-	-	-	2131		
Ø75	-	-	-	-	2284		

## Transmittable Torques

Clamping hubs (Sizes 3 – 15)		Bore	Size				
			3	6	10	15	
Frictionally-locking transmittable torques <b>Clamping hubs</b> Suitable for a temperature range of -20°C to +40°C, at temperatures over 40°C, reduce frictionally-locking transmittable torques by 10 % / 10 °C. Suitable for H7/k6		Ø10	27	-	-	-	-
		Ø12	32	-	-	-	-
		Ø14	37	46	-	-	-
		Ø15	39	51	-	-	-
		Ø16	42	56	-	-	-
		Ø18	47	65	-	-	-
		Ø19	49	70	99	-	-
		Ø20	52	74	105	-	-
		Ø22	-	84	116	-	-
		Ø24	-	92	128	-	-
		Ø25	-	95	135	143	-
		Ø28	-	107	151	163	-
		Ø30	<b>Attention!</b>	-	-	162	177
		Ø32	<b>Please observe permitted peak torques for selected coupling size and Type</b>	-	-	173	191
		Ø35		-	-	189	211
		Ø38		-	-	-	229
		Ø40		-	-	-	241
Ø42		-	-	-	253		

Clamping hubs (Sizes 16 – 160)		Bore	Size					
			16	25	40	64	100	160
Frictionally-locking transmittable torques <b>Clamping hubs</b> Suitable for H7 / h6		Ø20	183	-	-	-	-	-
		Ø22	202	354	-	-	-	-
		Ø25	229	402	604	-	-	-
		Ø28	257	450	677	821	-	-
		Ø30	275	483	725	880	-	-
		Ø32	293	515	773	938	1102	-
		Ø35	321	563	846	1026	1205	-
		Ø38	348	611	918	1114	1309	-
		Ø40	367	643	967	1173	1378	1839
		Ø42	385	676	1015	1232	1447	1931
		Ø45	412	724	1087	1319	1550	2069
		Ø48	-	772	1160	1407	1653	2207
		Ø50	-	804	1208	1466	1722	2299
		Ø52	-	836	1257	1525	1791	2391
		Ø55	-	-	1329	1613	1894	2529
		Ø60	-	-	1450	1759	2066	2759
		Ø65	-	-	-	1906	2239	2989
		Ø68	-	-	-	1994	2342	3127
		Ø70	-	-	-	2053	2411	3219
		Ø75	-	-	-	-	2583	3449
Ø80	<b>Attention!</b>	-	-	-	2755	3679		
Ø85	<b>Please observe permitted peak torques for selected coupling size and Type</b>	-	-	-	2927	3909		
Ø90		-	-	-	3100	4139		
Ø95		-	-	-	-	4369		
Ø100		-	-	-	-	4599		

Key hubs (Sizes 16 – 2200)		Bore	Size												
			16	25	40	64	100	160	180	300	500	850	1400	2200	
transmittable torques <b>Key hubs</b> Suitable for: • unchanging load direction • supporting key length = entire length of the hub		Ø16	121	-	-	-	-	-	-	-	-	-	-	-	-
		Ø19	225	-	-	-	-	-	-	-	-	-	-	-	-
		Ø20	247	243	-	-	-	-	-	-	-	-	-	-	-
		Ø22	279	289	-	-	-	-	-	-	-	-	-	-	-
		Ø24	425	446	-	-	-	-	-	-	-	-	-	-	-
		Ø25	446	469	487	-	-	-	-	-	-	-	-	-	-
		Ø28	510	540	590	-	-	-	-	-	-	-	-	-	-
		Ø30	551	588	645	663	-	-	-	-	-	-	-	-	-
		Ø32	595	637	705	749	-	-	-	-	-	-	-	-	-
		Ø35	-	697	781	840	858	-	-	-	-	-	-	-	-
		Ø38	-	757	857	926	983	-	-	-	-	-	-	-	-
		Ø40	-	893	1005	1095	1165	1181	1202	-	-	-	-	-	-
		Ø42	-	-	1054	1157	1233	1282	1304	-	-	-	-	-	-
		Ø45	-	-	1447	1595	1708	1794	1823	1842	-	-	-	-	-
		Ø48	-	-	1549	1701	1835	1935	1963	1989	-	-	-	-	-
		Ø50	-	-	1618	1772	1923	2028	2057	2088	-	-	-	-	-
		Ø55	-	-	-	2411	2609	2777	2825	2865	2979	-	-	-	-
		Ø60	-	-	-	-	3061	3281	3332	3401	3548	-	-	-	-
		Ø65	-	-	-	-	3316	3553	3609	3691	3880	4159	-	-	-
		Ø70	-	-	-	-	3971	4234	4325	4401	4648	5193	-	-	-
		Ø75	-	-	-	-	-	4533	4657	4705	4979	5611	6059	-	-
		Ø80	-	-	-	-	-	5694	-	5899	6229	7085	7685	-	-
		Ø85	-	-	-	-	-	-	-	6287	6611	7583	8246	-	-
		Ø90	-	-	-	-	-	-	-	7253	7589	8719	9549	10343	-
Ø100	-	-	-	-	-	-	-	-	10695	12247	13634	14827	-		
Ø110	-	-	-	-	-	-	-	-	-	13519	15023	16547	-		
Ø120	-	-	-	-	-	-	-	-	-	18457	20392	22746	-		
Ø130	<b>Attention!</b>	-	-	-	-	-	-	-	-	-	22262	24737	-		
Ø140	<b>Please observe permitted nominal and peak torques for selected coupling size and Type</b>	-	-	-	-	-	-	-	-	-	26883	29669	-		
Ø150		-	-	-	-	-	-	-	-	-	-	31889	-		
Ø160		-	-	-	-	-	-	-	-	-	-	40667	-		
Ø170		-	-	-	-	-	-	-	-	-	-	43557	-		

Key hubs (Sizes 2200 – 11000)		Bore	Size										
			2200	3300	5000	7300	11000	2200	3300	5000	7300	11000	
transmittable torques <b>Key hubs Type 956...</b> Suitable for: • unchanging load direction • supporting key length = entire length of the hub  The transmittable peak torque of the key hubs $T_{PS}$ is valid for max. load cycles $\leq 10^5$ .			transmittable nominal torque $T_{PN}$					transmittable peak torque $T_{PS}$					
		Ø 110	17558	-	-	-	-	21758	-	-	-	-	-
		Ø 120	25337	-	-	-	-	31397	-	-	-	-	-
		Ø 130	29353	28523	-	-	-	36374	35346	-	-	-	-
		Ø 140	36455	36098	-	-	-	45175	44732	-	-	-	-
		Ø 150	39572	40912	39949	-	-	49037	50697	49505	-	-	-
		Ø 160	-	53337	53203	-	-	-	66094	65929	-	-	-
		Ø 170	-	57373	59457	58021	-	-	71095	73679	71899	-	-
		Ø 180	-	-	75822	75519	-	-	-	93958	93582	-	-
		Ø 190	<b>Attention!</b>	-	80941	83439	-	-	<b>Attention!</b>	100303	103396	-	-
		Ø 200	<b>Please observe permitted nominal torques for selected coupling size and Type</b>	-	-	91877	89251	-	-	<b>Please observe permitted peak torques for selected coupling size and Type</b>	113853	110599	-
		Ø 220		-	-	120749	122742	-	-		149630	152100	-
		Ø 240		-	-	-	149904	-	-		-	185759	-
		Ø 250		-	-	-	157602	-	-		-	195298	-

## ROBA<sup>®</sup>-DS Installation Examples

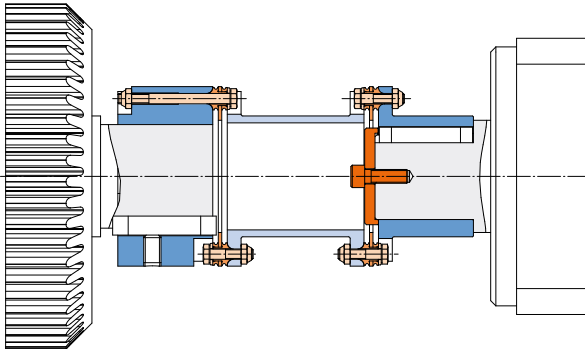


Fig. 87

### Axial securement of key hubs via press cover

When using key hubs with transition fit and clearance fit, additional securement of the hubs is necessary. A positive-locking, extremely robust securement is achieved via press cover and clamping screw.

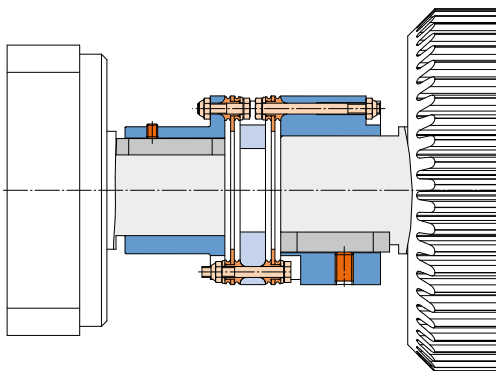


Fig. 88

### Axial securement of key hubs via adjusting screw

When using adjusting screws, radial force is achieved on the key via positive locking. This securement is of advantage in particular for partly assembled couplings and limited space conditions.

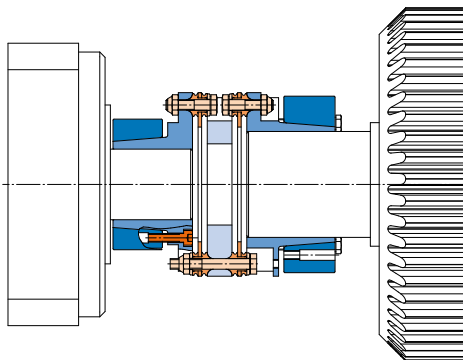


Fig. 89

### Hub installation directly next to the housing wall with internally-clamping shrink disk hub

The ROBA<sup>®</sup>-DS coupling can be installed directly next to the housing wall by using an internally-clamping shrink disk hub. For this, a backlash-free shaft/hub connection is achieved in very limited space conditions.

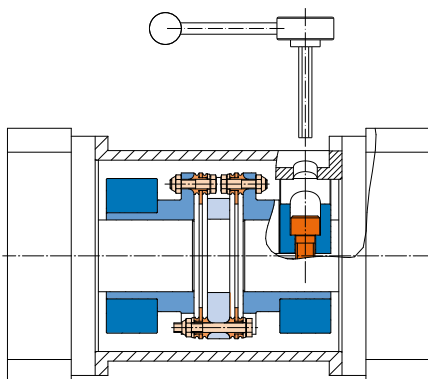


Fig. 90

### Coupling installation in closed housing

By using clamping ring hubs, ROBA<sup>®</sup>-DS couplings can even be installed in areas very difficult to reach. A positive-locking connection to the shaft is achieved via a radial socket set screw. An opening in the gear bell housing is to be designed for the Allen wrench.

## ROBA<sup>®</sup>-DS Installation Examples

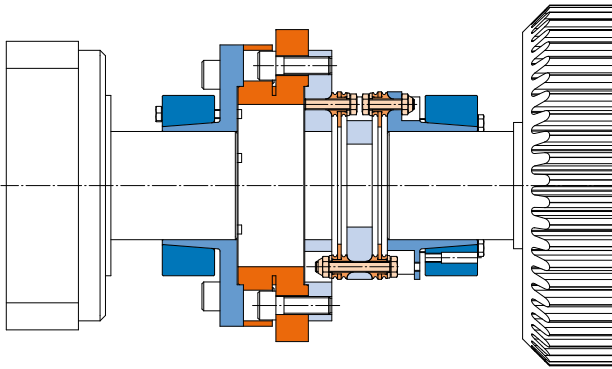


Fig. 91

### Integration of measuring flange with adaptor flanges

By using special adaptor flanges, different measuring flanges (for torque measurement) can be integrated into ROBA<sup>®</sup>-DS couplings.

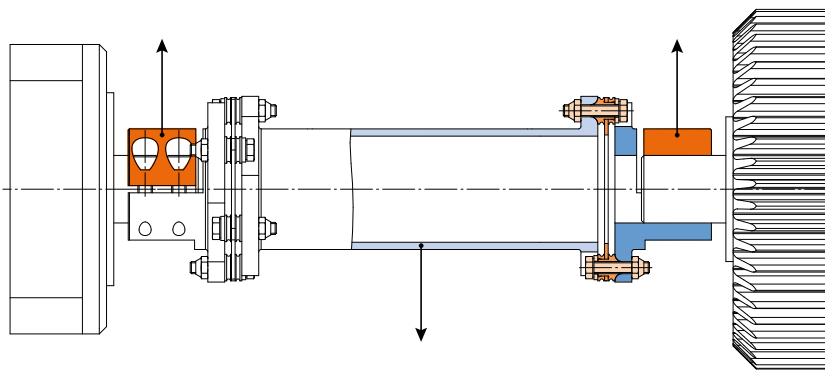


Fig. 92

### Radial assembly/disassembly with split clamping hubs

By using split clamping hubs, it is possible to assemble or disassemble ROBA<sup>®</sup>-DS couplings radially without misaligning the motor or gear box.

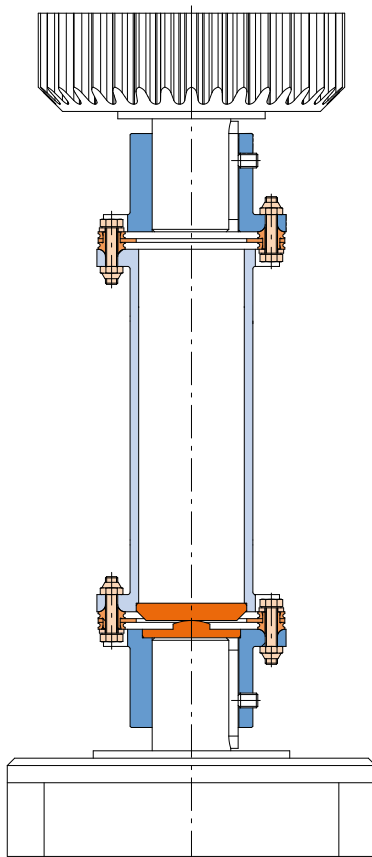


Fig. 93

### Vertical support for special sleeve

For vertical or sloping installation of ROBA<sup>®</sup>-DS couplings with long intermediate sleeves, a “vertical support” is required. Using this device, the sleeve weight force is transferred directly from the sleeve onto the hub instead of via the disk packs onto the hub.

Integrated Torque Measurement	Page 64	▷
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◁ Backlash-free Servo Couplings	Page 8	
◁ Backlash-free All-steel Couplings	Page 14	
◁ Variable length Sleeve S/CFRP sleeve/Options	Page 56	
◁ Safe Against Overload	Page 59	



## ROBA®-DSM – the Measuring Machine Element

The torque measuring shaft coupling ROBA®-DSM is based on the tried and tested backlash-free ROBA®-DS disk pack coupling. The areas of application for this torque measurement coupling range from test stand construction through use in serial production machines right up to condition monitoring. The system permits uncomplicated condition monitoring of machines and systems. Machines can be optimally utilised through evaluation of the coupling data.

### Valuable data for maximum productivity

The ROBA®-DSM monitors machines and records the measurement values<sup>1)</sup>. From this data, important information can be obtained for the user:

- Machine performance data
- Unpermitted operating conditions lying outside the specifications (in case of a defect or reclaim)
- Utilisation or runtime of the machine
- Current operating conditions and condition changes to the machine for preventative maintenance purposes
- Dynamic maintenance intervals dependent on the utilisation

### Highlights and system advantages

- Direct PC connection possible (USB connection)
- Software for visualisation of the measurement values available as an option
- Use without bearings
- Wide temperature range from -20 °C to +70 °C
- Simple installation and set-up
- Low space requirements on the drive line, no torque support required
- Resistant to vibrations and distance changes on the energy transmitter
- Housing and plug-in connector suitable for industrial purposes (protected against water spray)
- High measuring rate of 7000 measurements per second permits the recording of highly-dynamic loads
- Operation of strain sensor without battery via contactless power supply



Fig. 94

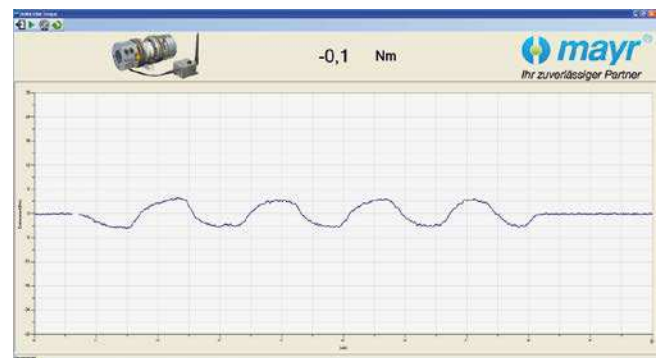


Fig. 95

### Order Number

	Hub 1	Hub 2	
Key hub, standard (page 28)	0	0	Key hub, standard (page 28)
Key hub, large (page 30)	1	1	Key hub, large (page 30)
Shrink disk hub / external clamping (page 36)	2	2	Shrink disk hub / external clamping (page 36)
Clamping ring hub (page 34)	4	4	Clamping ring hub (page 34)
Clamping hub (Figs. 94, 96 and page 32)	5	5	Clamping hub (Figs. 94, 96 and page 32)
Flange (page 44)	6	6	Flange (page 44)
Split clamping hub <sup>3)</sup> (page 42)	8	8	Split clamping hub <sup>3)</sup> (page 42)
Shrink disk hub, large (page 40)	9	9	Shrink disk hub, large (page 40)

_ / 9 7 1 . _	_ 5 / _ / _	
▲	▲ ▲	
<b>Sizes</b> 16 to 160	<b>Bore<sup>2)</sup></b> <b>Hub 1 ø</b> (See Dimensions sheets pages 28 – 44)	<b>Bore<sup>2)</sup></b> <b>Hub 2 ø</b> (See Dimensions sheets pages 28 – 44)
<b>Example: 16 / 971.005 / Hub 1 – ø 25<sup>H7</sup> / Hub 2 – ø 30<sup>H7</sup></b>		



For detailed information, detailed technical data and dimensions, please see our brochure P.971005.V\_ \_ \_ \_

- 1) Recording of the measurement values possible only with the aid of appropriate software
- 2) Standard H7, other tolerances possible
- 3) For Type 971.885 (double-sided split clamping hub), radial assembly/disassembly is not possible as the hubs are offset at an angle.



## ROBA®-DSM

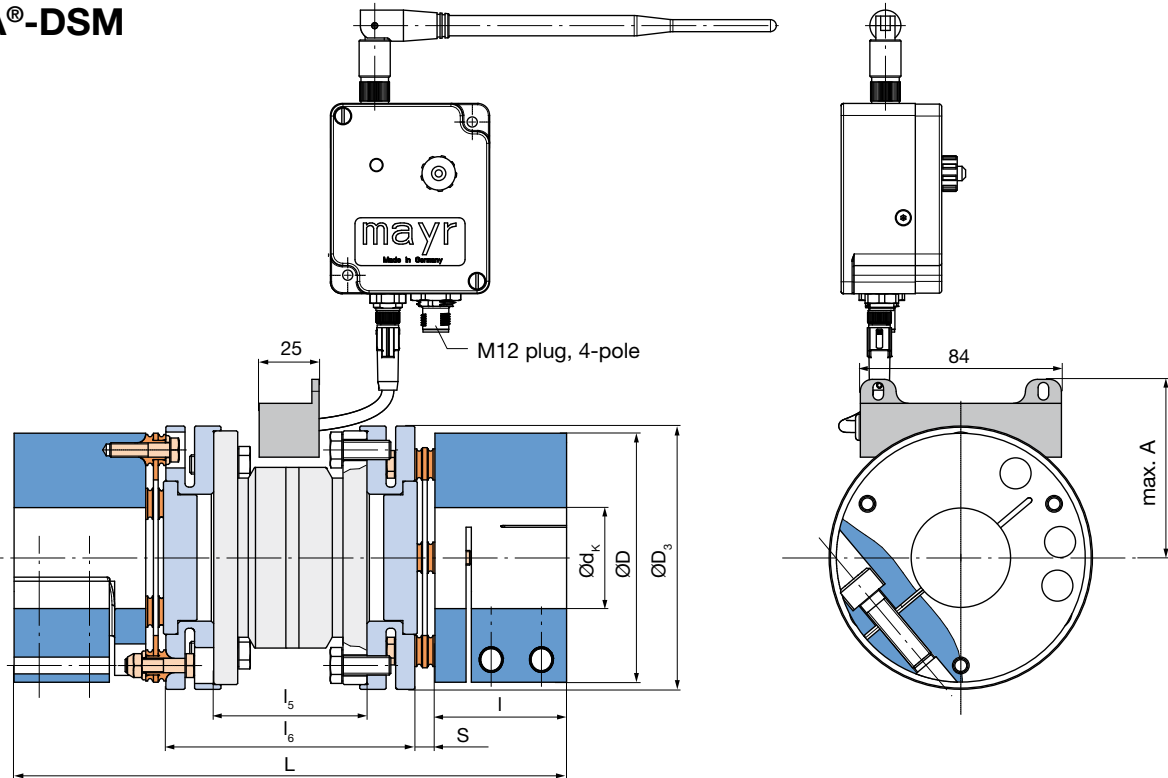


Fig. 96: Type 971.555 (for other mounting variants, see pages 28 – 44)

Technical Data and Main Dimensions			Size				
			16	40	100	160	
Nominal torque <sup>1) 2)</sup>	$T_{KN}$	[Nm]	190	450	800	1600	
Peak torque <sup>3)</sup>	$T_{KS}$	[Nm]	285	675	1200	2400	
Ultimate torque	$T_{KB}$	[Nm]	570	1350	2400	4800	
Minimum hub bore Type 971.555 (Figs. 94 and 96) <sup>4) 5)</sup>	$d_{K\ min}$	[mm]	20	25	32	40	
Maximum hub bore Type 971.555 (Figs. 94 and 96) <sup>4) 5)</sup>	$d_{K\ max}$	[mm]	45	60	90	100	
Maximum speed	$n_{max}$	[rpm]	9500	7000	5100	4300	
Permitted misalignments <sup>6)</sup>	Permitted axial displacement <sup>7) 8)</sup>	$\Delta K_a$	[mm]	0,8	1,1	1,5	1,7
	Permitted angular misalignment <sup>9)</sup>	$\Delta K_w$	[mm]	0,7	0,7	0,7	0,7
	Permitted radial misalignment <sup>7)</sup>	$\Delta K_r$	[mm]	1,1	1,3	1,6	1,8
Spring rigidities	Total torsional rigidity		[10 <sup>3</sup> Nm/rad]	36,2	114,3	320	585
	Angular spring rigidity <sup>9)</sup>		[Nm/rad]	229	298	1089	1990

### Mass Moments of Inertia J [10<sup>-3</sup>kgm<sup>2</sup>]

	Size	16	40	100	160
Clamping hub <sup>5) 10)</sup>		0,74	3,64	16,94	34,32
Disk pack		0,08	0,26	1,19	3,27
Adaptor flange		0,38	1,67	7,06	15,36
Strain sensor		0,51	2,21	7,97	20,04

### Weights [kg]

	Size	16	40	100	160
Clamping hub <sup>5) 10)</sup>		0,73	2,05	4,82	6,94
Disk pack		0,08	0,15	0,35	0,67
Adaptor flange		0,43	1,11	2,44	3,89
Strain sensor		0,58	1,34	2,91	4,27

### Dimensions [mm]

Size	A	D	D <sub>3</sub>	I <sup>9)</sup>	I <sub>5</sub>	I <sub>6</sub>	L <sup>5)</sup>	S
16	55,5	77	82	40	54	84	178,2	7,1
40	63,7	104	110	55	64	104	230,8	8,4
100	74,3	143	150	75	72	122	292	10
160	87,5	167	175	85	78	136	329,2	11,6

- 1) Other torques and construction sizes available on request.
- 2) Valid for changing load direction as well as for max. permitted shaft misalignment. The following applies for split clamping hubs (Type 971.8\_5): Valid for unchanging load direction as well as for max. permitted shaft misalignment. When the load direction changes, max. 60% of the stated nominal torque is permitted.
- 3) Valid for unchanging load direction, max. load cycles  $\leq 10^5$ .
- 4) Transmittable torques dependent on bore, see page 61.
- 5) For technical data on alternative mounting variations, see pages 28 – 44.
- 6) The permitted misalignments must not simultaneously reach their maximum values.
- 7) The values refer to couplings with 2 disk packs.
- 8) Only permitted as a static or virtually static value.
- 9) The values refer to 1 disk pack.
- 10) Mass moments of inertia and weights are valid for maximum bore.

Dimensioning, Size Selection [Page 68](#) ▷

Technical Explanations [Page 69](#) ▷

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◁ Backlash-free All-steel Couplings [Page 14](#)

◁ Safe Against Overload [Page 59](#)

◁ Installation Examples [Page 62](#)

## ROBA®-DSM measuring system

### ROBA®-DSM receiver

The ROBA®-DSM receiver establishes the contactless connection to the strain sensor and supplies it with energy via the ROBA®-DSM stator.

### ROBA®-DSM stator

The stator must be aligned centrally to the strain sensor. The radial distance can total between 1 mm and 5 mm. If installed correctly, the LED on the ROBA®-DSM receiver lights up green and indicates that the data transmission works. The strain sensor is rotated slowly by 360° for inspection purposes.

If the LED lights up red at different angular positions, please select a different mounting place for the ROBA®-DSM receiver.

### Technical data

Supply voltage:	24 VDC ( $\pm 10\%$ )
Max. current consumption:	1 A
Measuring signal output:	0 ... $\pm 10$ V (rotational direction right positive, 10 V refers to $T_{KN}$ )
Nominal temperature range:	-20 °C to +70 °C
Temperature drift, zero point:	0,04 % of final value / K
Temperature drift, measured value:	0,03 % of final value / K
Max. total errors:	< 1 % of final value (< 0,5 % via USB)
Bandwidth:	3 kHz (-3 dB)
Max. dyn. load:	100 % of $T_{KN}$
Protection:	Receiver / stator IP65 Strain sensor IP52
Permitted speed:	0 ... $n_{max}$ (Techn. data, page 65)

### Detail drawing

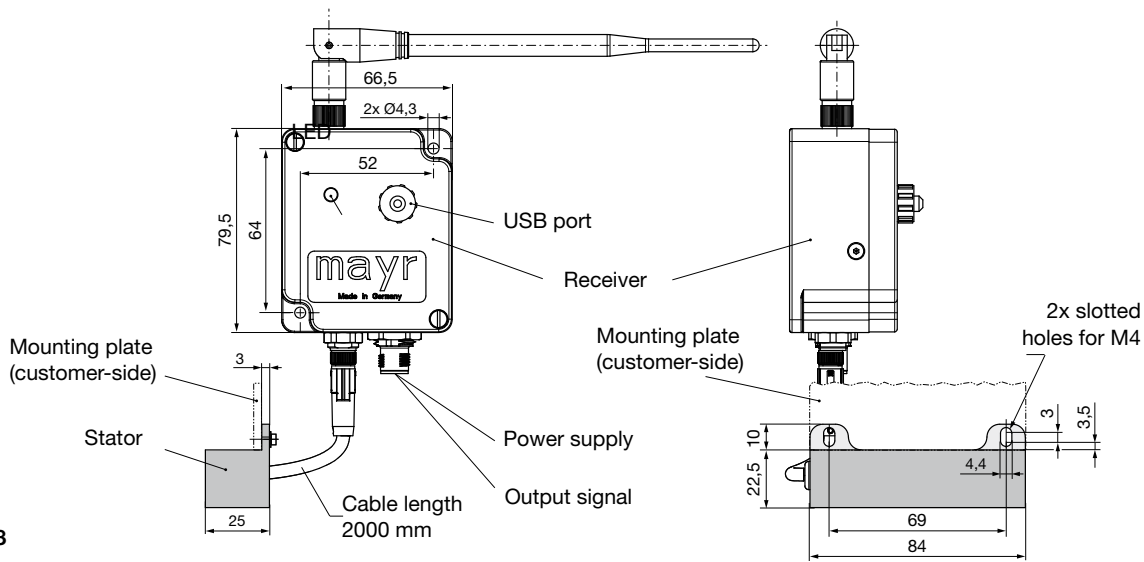


Fig. 98

### Electrical connection (Fig. 97)

- ❑ The ROBA®-DSM receiver is equipped manufacturer-side with a firmly installed 4-pole, A-encoded M12 plug.
- ❑ The voltage supply takes place via Pin 1 = +24 V  $\pm 10\%$  and Pin 3 = GND.
- ❑ The output signal is provided to Pin 4 =  $U_a$  torque 0 ...  $\pm 10$  V and Pin 2 = GND
- ❑ The digital measurement data can be read into a PC directly via the USB port using the *mayr*®-software.
- ❑ The radio ID and the radio channel can be set and the offset compensation can be carried out via the USB port using the service software.

### Recommended accessories (please include in your order)

Connection cable, 4-wire, shielded, 3 m long

Article-No. 8233264

USB cable, bayonet lock, IP65, 2 m long

Article-No. 8233265

Only when using original accessories, the receiver has Protection IP65 also when the USB cable is connected. Non-original mini USB plugs might not be compatible mechanically.

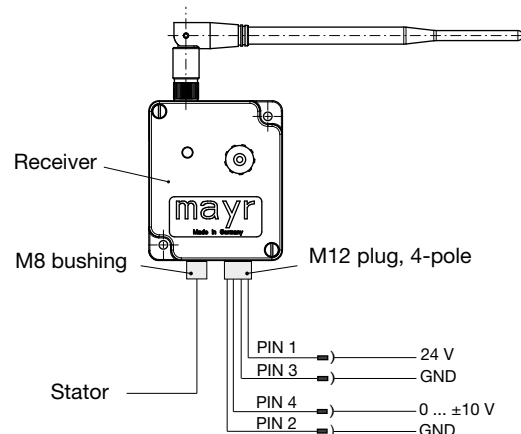


Fig. 97

## ROBA<sup>®</sup>-DSM configuration possibilities/standard designs

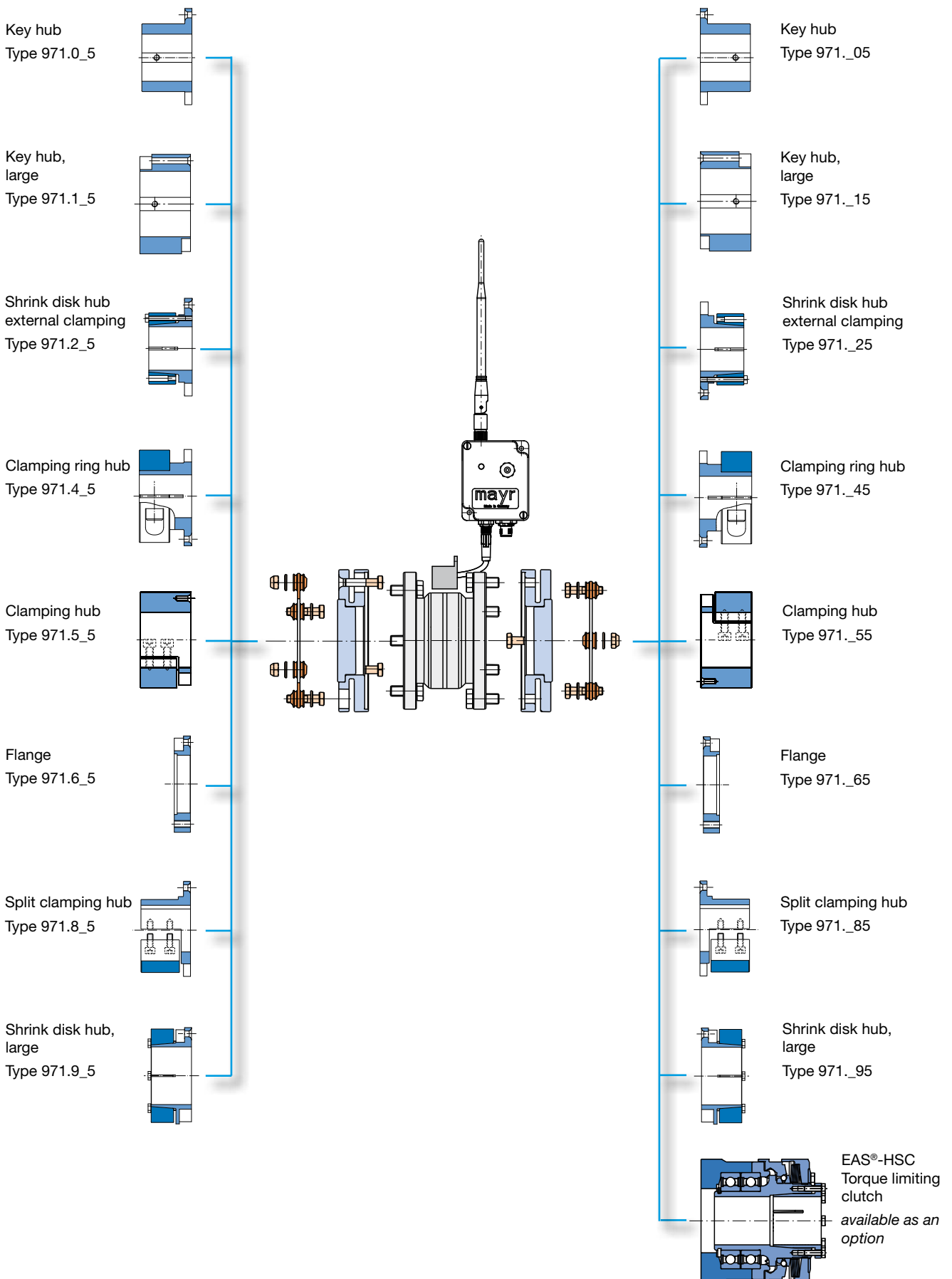


Fig. 99

## Dimensioning, Size Selection

### Coupling size selection

#### 1. Direct coupling selection

If the user knows all the torques affecting the coupling during operation and if temperatures do not rise above 175 °C (100 °C on sizes 3 to 15), a coupling should be selected whose nominal torque lies above the maximum in-operation torques according to the catalogue.

*If shaft misalignment is present, no further limitations are necessary.*

*For ROBA®-DS couplings from size 16 onwards, no further limitations are necessary if alternating torques are present.*

Please observe the alternating torques shown on page 4 for coupling sizes 3 to 15.

Please also observe the level and torsional direction of the start-up torque. This may be maximum 1,5 x the permitted coupling nominal torque. The torsional direction should remained unchanged, the maximum permitted amount of load cycles must be smaller than  $1 \times 10^5$ .

#### 2. Calculation for coupling selection using drive performance and service factor $f_B$

If the user knows the application data of his drive line, we recommend dimensioning using performance and speed of the main engine as well as the service and temperature factors.

$$T_{KN} \geq \frac{9550 \times P \times f_B \times f_t}{n}$$

Term definitions:

$T_{KN}$ [Nm]	Coupling nominal torque
$P$ [kW]	Main engine nominal performance
$f_B$	Service factor according to Table 2, page 69
$f_t$	Temperature factor according to Fig. 100, page 68
$n$ [rpm]	Drive machine nominal speed

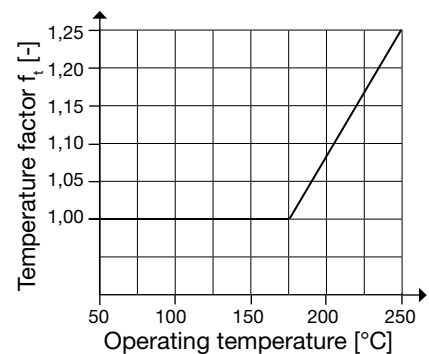


Fig. 100: Temperature factor  $f_t$

#### Calculation Example

The ROBA®-DS coupling is to be dimensioned for a piston pump drive run via an electromotor. The following application data is available:

<b>Main engine:</b>	<b>Electromotor</b>
Nominal capacity	$P = 13$ kW
Nominal speed	$n = 1450$ rpm
Max. start-up torque	$T_{Amax} = 2,5$ x the motor nominal torque

<b>Main engine:</b>	<b>Piston pump</b>
Maximum ambient temperature	60 °C

= > Required coupling nominal torque  $T_{KN}$ :

$$T_{KN} \geq \frac{9550 \times 13 \times 1,9 \times 1,0}{1450}$$

$$T_{KN} \geq 162,7 \text{ Nm}$$

Load class from Table 1, page 69:	III
Service factor $f_B$ from Table 2, page 69:	1,9
Temperature factor $f_t$ from Fig. 100, page 68:	1,0

= > Required coupling peak torque  $T_{KS}$ :

$$T_{Nom} = \frac{9550 \times 13}{1450}$$

$$T_{Nom} = 85,6 \text{ Nm}$$

$$T_{Amax} = 2,5 \times T_{Nom}$$

Max. start-up torque:  $T_{Amax} = 2,5$  x the motor nominal torque

$$T_{KS} \geq T_{Amax} \geq 214,1 \text{ Nm}$$

= > Selected coupling size:

**ROBA®-DS 16** with a nominal torque  $T_{KN}$  of **190 Nm** and a peak torque  $T_{KS}$  of **285 Nm**.

Classification of Work Machines into Load Classes	
<b>Construction machinery</b>	
- Concrete blenders	II
- Chain conveyors	III
- Chain carriages	III
- Crushers	III
<b>Chemical industry</b>	
- Mixers (thick fluids)	II
- Mixers (thin fluids)	I
- Centrifuges	II
- Blenders	II
<b>Fans/vents</b>	
	II
<b>Generators/convertors</b>	
- Frequency convertors	I
- Generators	II
<b>Foodstuffs machines</b>	
- Kneading machines	II
- Mills	III
- Packaging machines	II
<b>Paper machines</b>	
	III
<b>Compressors</b>	
	II
<b>Conveyor systems</b>	
- Conveyor belts	II
- Sloping elevators	III
- Goods elevators	II
- Passenger elevators	II
<b>Wood/plastic processing</b>	
- Planing machines	II
- Reciprocating saws	III
- Extruders	II
- Blenders	II
<b>Crane systems</b>	
	II
<b>Metal processing</b>	
- Punching/Pressing	III
- Machine tools	II
<b>Pumps</b>	
- Centrifugal pump (thin fluids)	I
- Centrifugal pump (thick fluids)	II
- Pistons/plunger pumps	III
<b>Textile machines</b>	
	II
<b>Washing machines</b>	
	II

Table 1: Load Classes

Service factor $f_B$	Work Machine Load Class			
	I	II	III	
Main engine	<b>Electromotor, turbine, hydraulic motor</b>	1,1	1,4	1,9
	<b>Piston machine</b> with more than 3 cylinders	1,4	1,7	2,2
	<b>Piston machine</b> with up to 3 cylinders	1,7	2,0	2,5

Table 2: Service factor  $f_B$

## Technical Explanations

### Permitted shaft misalignments

- ROBA<sup>®</sup>-DS single-jointed couplings (Type 950.\_ \_ \_ and Type 952.\_ \_ \_) compensate for angular and axial shaft misalignments.
- ROBA<sup>®</sup>-DS double-jointed couplings (Type 951.\_ \_ \_ and Type 953.\_ \_ \_) compensate for angular, radial and axial shaft misalignments (Fig. 101).
- If more than one kind of misalignment takes places simultaneously, they influence each other. The permitted misalignment values are dependent on one another, see Fig. 102. The sum total of the actual misalignments – in percent of the maximum value – may not exceed 100 %.

#### Example (see Table on page 28 and Fig. 102):

ROBA<sup>®</sup>-DS, size 40, Type 951.002

= > **Axial displacement** occurrence:  $\Delta K_a = 0,6$  mm equals **40 %** of the permitted maximum value  $\Delta K_a = 1,5$  mm

= > **Angular misalignment** occurrence in the disk pack:  $\Delta K_w = 0,3^\circ$  equals **30 %** of the permitted maximum value  $\Delta K_w = 1,0^\circ$

= > **Permitted radial misalignment:**  
 $\Delta K_r = 30\%$  of the permitted maximum value  $\Delta K_r = 1,5$  mm  $\Rightarrow \Delta K_r = 0,45$  mm

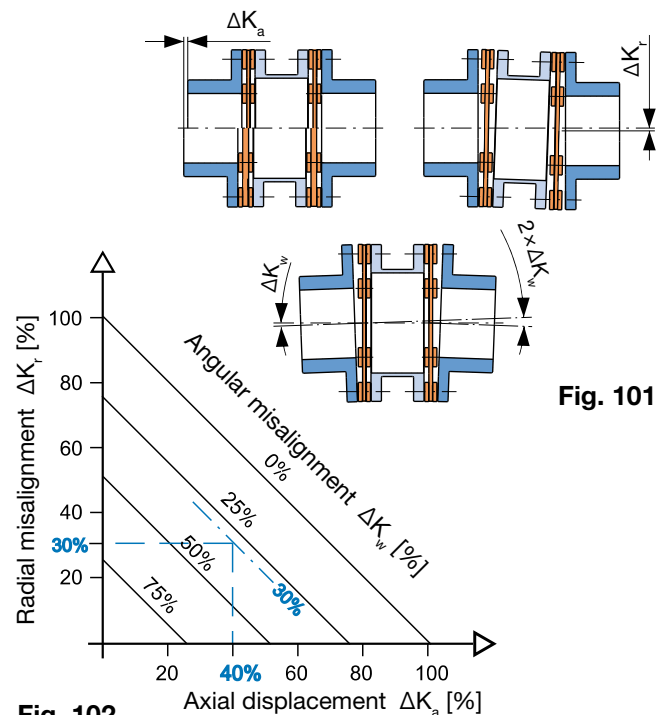


Fig. 101

Fig. 102

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## Technical Explanations

### Permitted Speeds (Critical Bending Speeds) on Sleeve S, CRD Sleeve, CFRP Sleeve (Figs. 103, 104, 105)

#### Permitted speed on special sleeve ROBA<sup>®</sup>-DS Type 95\_..\_3 (Sleeve S)

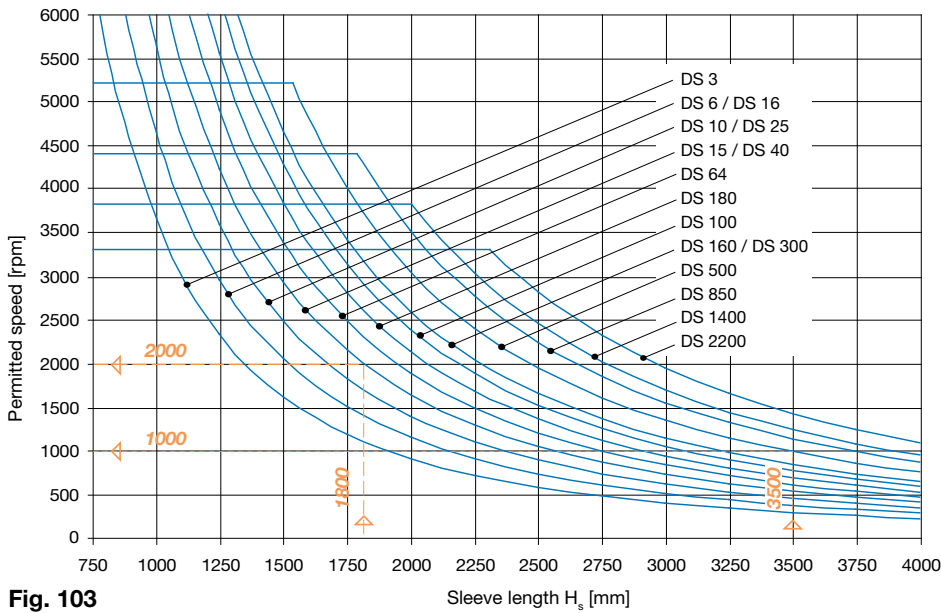


Fig. 103

#### Examples (Fig. 103)

- ROBA<sup>®</sup>-DS, Size 40:

Sleeve length:  $H_s = 1800 \text{ mm}$   
=> permitted speed:  
**2000 rpm**

- ROBA<sup>®</sup>-DS, Size 500:

Sleeve length:  $H_s = 3500 \text{ mm}$   
=> permitted speed:  
**1000 rpm**

#### Permitted speed on special sleeve ROBA<sup>®</sup>-DS Type 95\_..\_4 (Sleeve CRD)

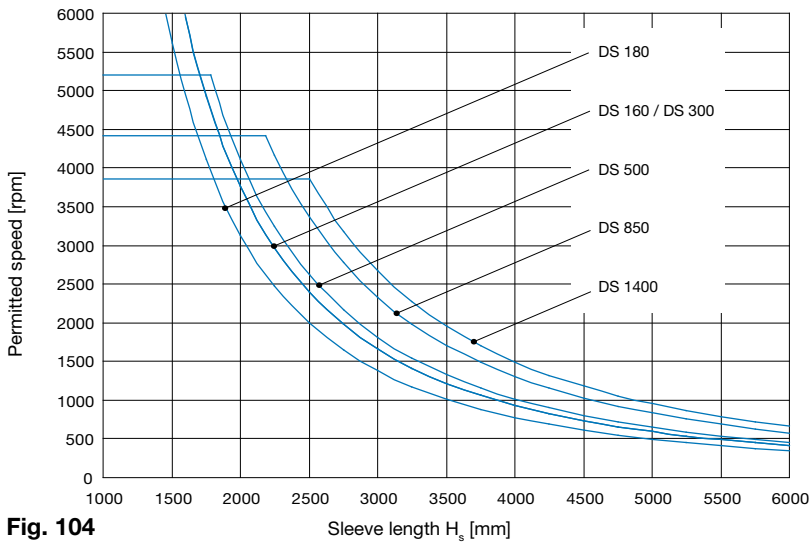


Fig. 104

#### Permitted speed on special sleeve ROBA<sup>®</sup>-DS Type 95\_..\_5 (Sleeve CFRP)

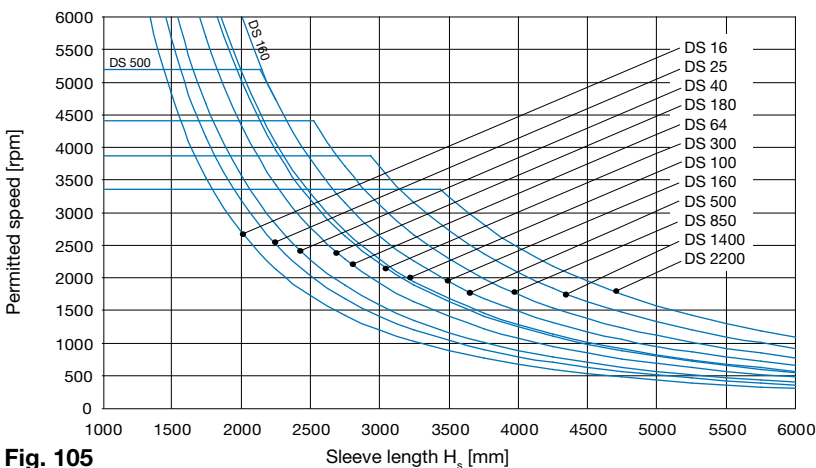


Fig. 105

#### Using the coupling at high speeds

- Please keep to the maximum speeds defined in the catalogue. Higher speeds are only permitted after contacting the manufacturers.
- Please operate designs with sleeve S, CRD sleeves and CFRP sleeves at subcritical levels (see Figs. 103, 104 and 105).
- Both hub variants clamping hub/clamping ring hub and split clamping hub may only be used within a limited speed range. At very high speeds, shrink disk hubs and key hubs (press fit) should be used.
- We recommend balancing the coupling in individual parts or complete.
- Shafts misalignments should be kept as low as possible for smoother system running.
- When using double cardanic shafts, axial animation of the middle coupling part is possible due to operating speed and misalignment. In order to avoid this animation, please minimise the shaft misalignment.
- When connecting very high mass inertias via ROBA<sup>®</sup>-DS couplings (in particular double-jointed couplings with long sleeves), the torsion-critical natural frequency and speeds must be observed.

## Technical Explanations

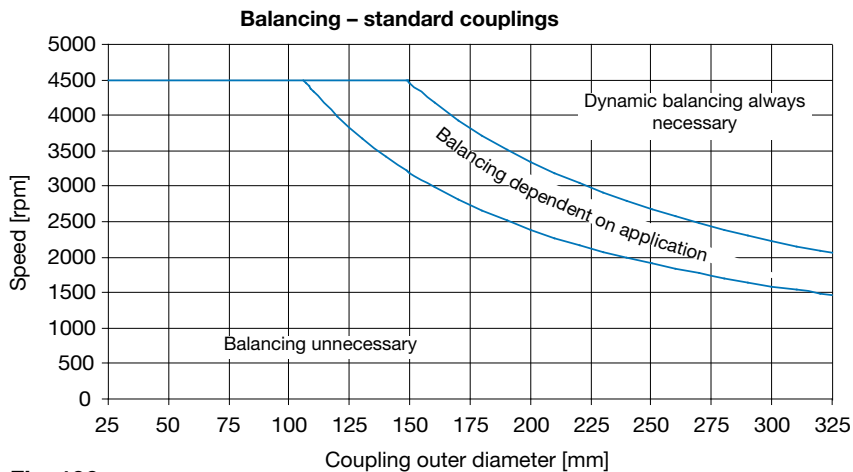


Fig. 106

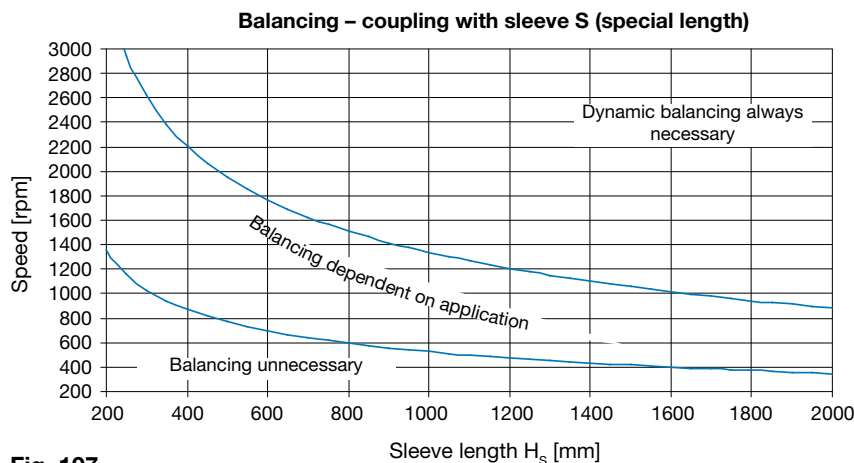


Fig. 107

### Balancing the Coupling

- Not necessary for most applications.
- The following points are crucial when deciding whether the coupling needs balancing:
  - Coupling circumferential speed (Fig. 106)
  - Length of special sleeve (Fig. 107)
  - Required balance quality
- The smooth running of a machine is not only ensured by the coupling balance quality, but is influenced, to at least the same extent, by parameters such as:
  - rigidity and distance to the adjacent bearing,
  - sensitivity and mass of the entire construction

Figs. 106 or 107 only show reference values as recommendations for balancing.

- All parts of the ROBA®-DS couplings, except for the sleeve S are machined on all sides. They are therefore in the range G 6.3 according to ISO DIN 1940 at medium speeds.
- When ordering the coupling with a special sleeve, please always state the coupling operating speed.
- If higher demands are placed on the balance quality, it is possible to balance individual parts or the entire installed coupling. The hubs should be designed with a finish bore.

### State of Delivery

- Delivery in partly assembled parts and /or individual parts
- Corrosion protection: phosphation, disk pack made of rustproof steel.
- Hub designs: pilot bored or finish bored.
- Bore: tolerance H7 (other tolerances possible)
- Shaft run-out and axial run-out tolerances: 0,03 mm (Fig. 108)
- Key hub: keyway according to DIN 6885 pages 1 or 3

### Temperature Resistance

- Temperature resistant in range -40 °C up to +250 °C (-20 °C up to +100 °C for sizes 3 to 15).
- At temperatures above +120 °C, the self-locking hexagon nuts should be replaced by self-locking all-steel nuts according to EN ISO 7042.
- Couplings with CFRP sleeves can be used at temperatures of -20 °C up to +80 °C

### Installation Position

- Horizontal installation
- On vertical or sloping installations and when using long sleeves, we recommend using vertical supports (Fig. 93, page 63).
- The vertical support and the hub centerings in the hub and the sleeve are produced manufacturer-side.

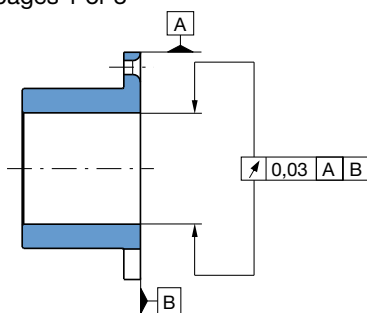


Fig. 108

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## Technical Explanations

### Short Description – Hub Installation

Please find a detailed installation description in the Installation and Operational Instructions for the product.

#### Hub installation Types 95\_0\_\_ or 95\_1\_\_ (hubs with keyway, Fig. 109)

- Mount the hubs onto the shaft using a suitable device.
- Axial securement:
  - a set screw (adjusting screw) presses radially onto the key,
  - a press cover and screw are screwed into the shaft threaded centre hole.
- The shaft tolerance should be adapted to the application:
  - alternating rotational direction: press fit,
  - operation in one direction: transition fit or clearance fit

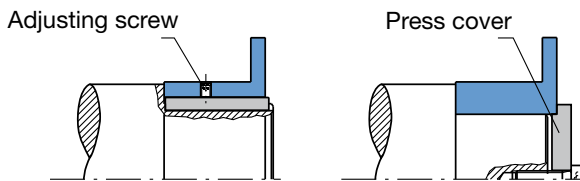


Fig. 109

#### Hub installation Types 95\_2\_\_ / 95\_3\_\_ / 95\_9\_\_ (hubs with shrink disk) / 95\_4\_\_ (hubs with clamping ring) / 95\_5\_\_ (clamping hubs)

- Mount the hubs onto the shafts using a suitable device and bring them into the correct position.
- **Types 95\_2\_\_ / 95\_3\_\_ / 95\_9\_\_ :**  
Tighten the tensioning screws one after the other in 3 to max. 6 tightening sequences using a torque wrench.
- **Types 95\_4\_\_ / 95\_5\_\_ :**  
Tighten the clamping screws using a torque wrench.



- The contact surfaces between the shrink disk and the hub and the clamping ring and hub have been greased manufacturer-side.
- The hub bores and shaft ends are grease-free.
- Greasy or oily bores or shafts do not transmit the maximum coupling torque.
- The shaft must not have a keyway.
- Shaft surface: finely turned or ground ( $R_a = 0,8 \mu\text{m}$ ).
- Shaft material: yield point at least 350 N/mm<sup>2</sup>, e.g. St60, St70, C45, C60.
- Recommended shaft tolerance: Dependent on application and hub Type. See Table of frictionally-locking transmittable torques on pages 60/61.

#### Hub or coupling installation Type 95\_8\_\_ (split clamping hubs)

- Partly assemble the coupling, observing the Point "Coupling Installation" (page 72).
- Loosen the partly assembled half shells from the hub.
- Place the coupling from above onto the shafts and partly assemble with the half shells (Fig. 110).
- Tighten the tensioning screws crosswise in several procedures. Please ensure that the gap "X" on both sides of the hub is the same (Fig. 111).

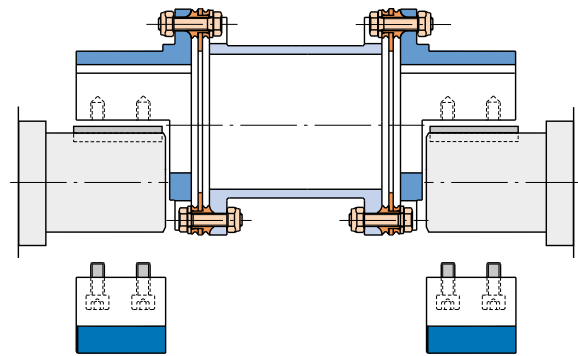


Fig. 110

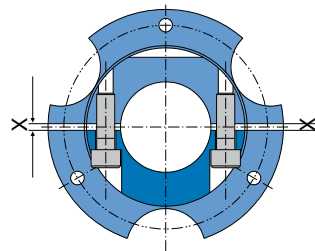


Fig. 111

### Short Description – Coupling Installation

Please find a detailed installation description in the Installation and Operational Instructions for the product. The following installation description is for the ROBA®-DS couplings from size 16 up to size 2200.

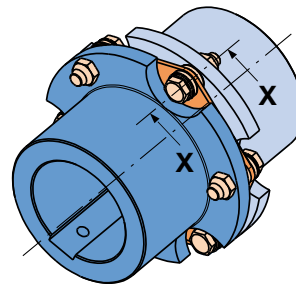


Fig. 112

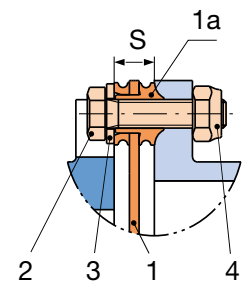


Fig. 113 Detail „X“

- Screw the disk packs (1, Fig. 113) over lightly-oiled hexagon head screws (2), washers (3) and hexagon nuts (4) alternately with the sleeve and the hubs.
- The generation of pre-tension force on the disk pack (1) generally takes place\* via the hexagon nut (4). The disk pack (1) must not be distorted when applying the pre-tension force (secure screw (2) against turning).
- The hexagon nuts (4) or hexagon head screws (2) must be tightened crosswise and in several sequences to the full tightening torque  $M_a$ . For the appropriate tightening torques for each sequence, please see the appropriate Installation and Operational Instructions.



The radius of the collar bushings (Part 1a, Fig. 113, Detail "X") must lie in the grooves of hubs and sleeves.

\*The head of the hexagon head screw (2) with the washer (3) must always lie against the disk pack (1).

## System solution for machine tools

### **ROBA<sup>®</sup>-DS spindle coupling with integrated cooling lubricant feedthrough**

**A new development on the ROBA<sup>®</sup>-DS allows cooling lubricant to be fed directly into the tool, even over long distances, thereby increasing the lifetime, the cutting speed as well as the cutting performance.**

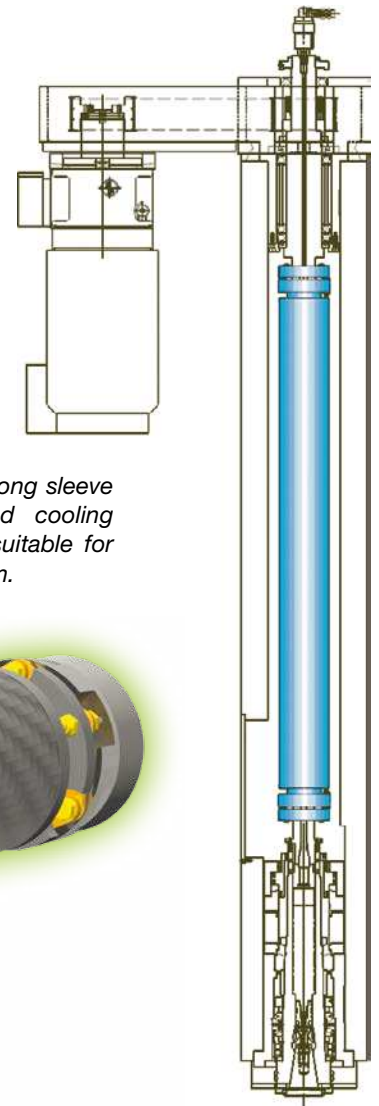
ROBA-DS<sup>®</sup> spindle couplings have proved their worth for years in manifold ways in large machining centres. They impress in particular with their high performance density, which allows the application of both high torques and high speeds. Complex constructions with multiple bearing-supported intermediate shafts are often replaced by the substantially more torsionally-rigid, but nevertheless lighter sleeves, resulting in easier installation and increased running smoothness.

Due to the long spindle construction on these machines, the cooling lubricant is in most cases applied to the tool from the outside. In particular in deep drilling applications, this limits the cutting speed and the lifetime of the tool. A new development on the ROBA-DS<sup>®</sup> allows cooling lubricant to be fed into the spindle and therefore into the tool, even over long distances.

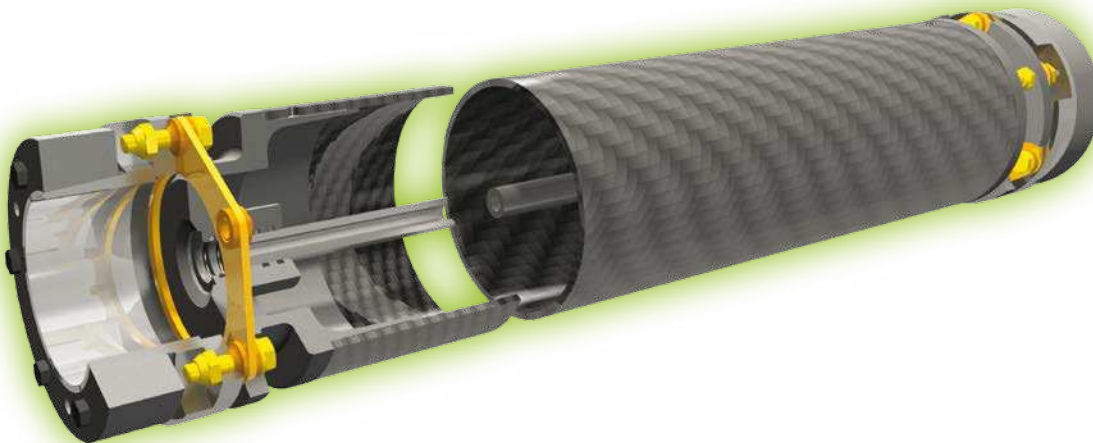
The integrated cooling lubricant feedthrough consists of an inner tube with multiple supports, and only needs to be plugged into the shaft-side adaptor on the upper and lower ends.

It is possible to pump cooling lubricant through the entire spindle into the tool using high pressure. It cools the blade directly, supports chip breaking and removes the chips. The machining times are shortened, the tool lifetime is extended.

This design has proved its worth already in numerous applications. Due to the reduced weight of the carbon fibre reinforced sleeves, even high speeds are not problematic. The new ROBA-DS<sup>®</sup> spindle coupling therefore opens up new possibilities in the race for technology leadership.



*ROBA<sup>®</sup>-DS with 2,5 m long sleeve (CFRP), with integrated cooling lubricant feedthrough, suitable for speeds up to 10.000 rpm.*



## System solution for wind power plants

### ROBA<sup>®</sup>-DS Wind power module

The *mayr*<sup>®</sup> company's decades of experience in shaft couplings and overload systems for all areas of mechanical engineering forms a strong basis for our wind power module.

The wind power module has the following characteristics:

#### ● Safe overload protection

An integrated ROBA<sup>®</sup>-slip bushing produced from a specially-developed bushing material ensures reliable overload protection against short-circuit torques due to its minimal torque tolerance.

#### ● Electrical insulation

The electrical insulation through the sleeve made of glass fibre-reinforced plastic prevents damage to bearings and toothings.

#### ● Compensation of shaft misalignments

Specially-developed rustproof steel disks allow compensation of extremely high axial, radial and angular shaft misalignments. This means that only low restoring forces are generated.

#### ● Integrated brake disk

A brake disk can be integrated into the wind power module according to customer-specific requirements.

#### ● Ease of installation

The disk packs and the intermediate sleeve can be mounted and de-installed radially without axial displacement of the hubs being required.

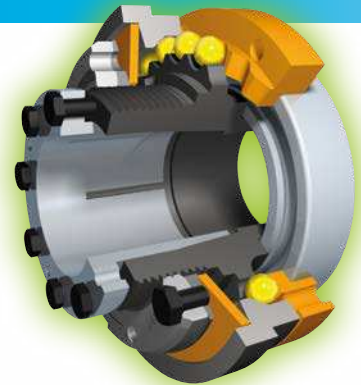
It is possible to install the disk packs with low tightening torques by using special clamping nuts.



## Product Summary

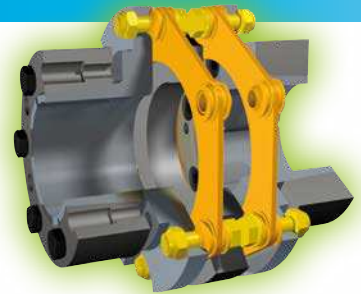
### Safety Clutches/Overload Clutches

- ❑ **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®/primeflex®**  
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
- ❑ **ROBA®-DSM**  
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
- ❑ **ROBA®-guidestop**  
Backlash-free holding brake for profield rail guides
- ❑ **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

