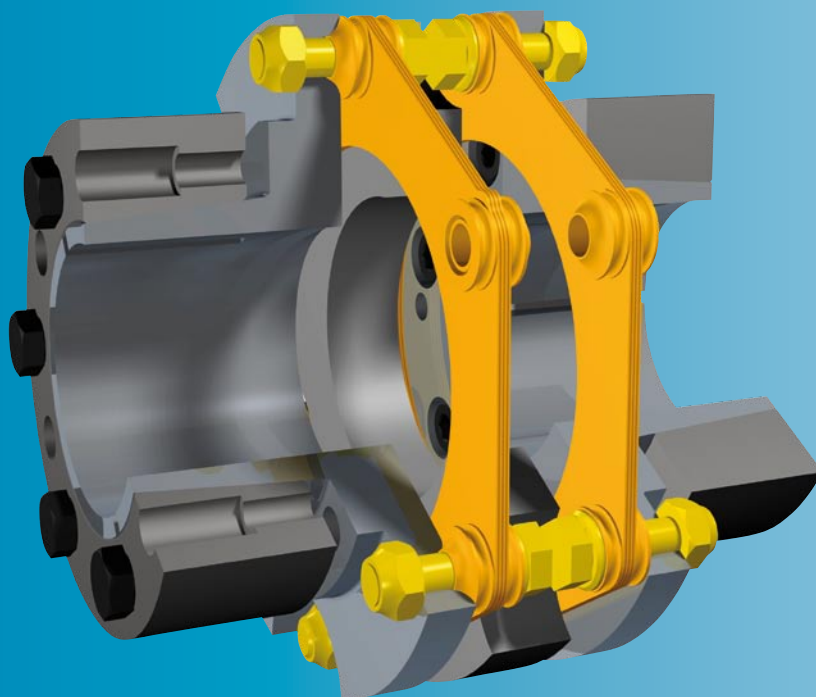


ROBA[®]-DS

Torsionally Rigid Shaft Couplings



- *High torsional spring rigidity*
- *Extremely high alternating torques*
- *Large variant range*
- *Low mass inertia*

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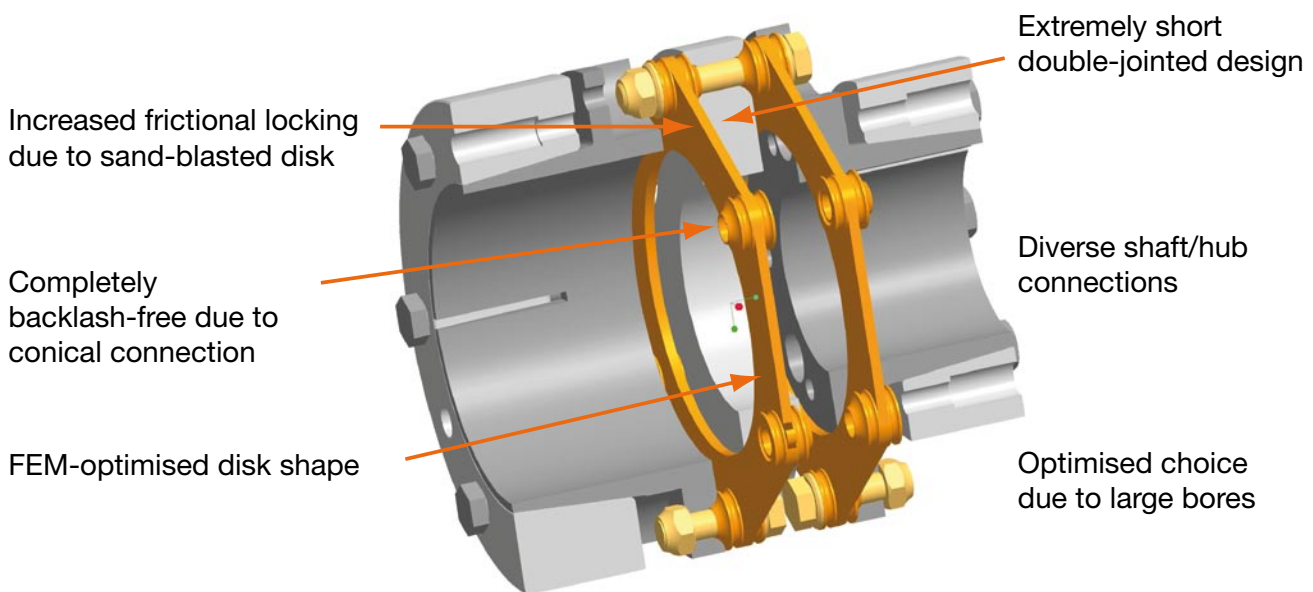
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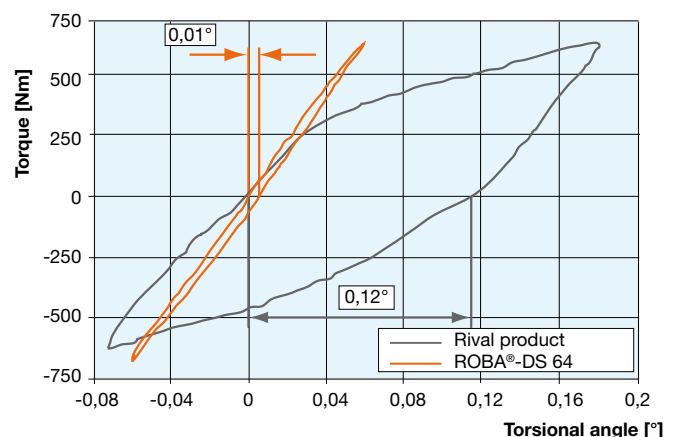
ROBA®-DS

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®-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.



ROBA®-DS couplings are also available in rustproof steel and in ATEX design according to the directive 94/9 EC (ATEX 95).

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

Please Observe:

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

Sizes 3 to 15

Nominal torques

35 to 150 Nm

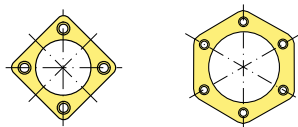
Bores

10 to 45

Angular

misalignment 1°

Disk pack-Servo with 4x divisions and 6x divisions



Shaft connection

Clamping hub
Hub with tapered bore
Shrink disk hub

Page 8
Page 8
Page 10

Backlash-free all-steel couplings Page 12

Sizes 16 to 160

Nominal torques

300 to 2600 Nm

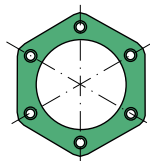
Bores

14 to 110

Angular

misalignment 0,7°

Disk pack-HT with 6x divisions



Shaft connection

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

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Sizes 16 to 160

Nominal torques

190 to 1600 Nm

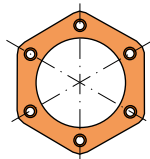
Bores

14 to 110

Angular

misalignment 1°

Disk pack-HF with 6x divisions



Shaft connection

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

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Page 42

Sizes 180 to 2200

Nominal torques

2100 to 24000 Nm

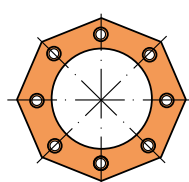
Bores

40 to 170

Angular

misalignment 0,5°

Disk pack with 8x divisions



Shaft connection

Key hub
Shrink disk hub external clamping
External shrink disk hub
Split clamping hub
Flange

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Page 48
Page 50

Variable Length Sleeve S/CRP Sleeve/Options and variants on intermediate shafts Page 52

Safe Against Overload Page 55

Transmittable Torques for Clamping, Clamping ring, Shrink disk and Split clamping hubs Page 56

Installation Examples Page 58

Integrated Torque Measurement Page 60

Dimensioning, Size Selection Page 62

Technical Explanations Page 63

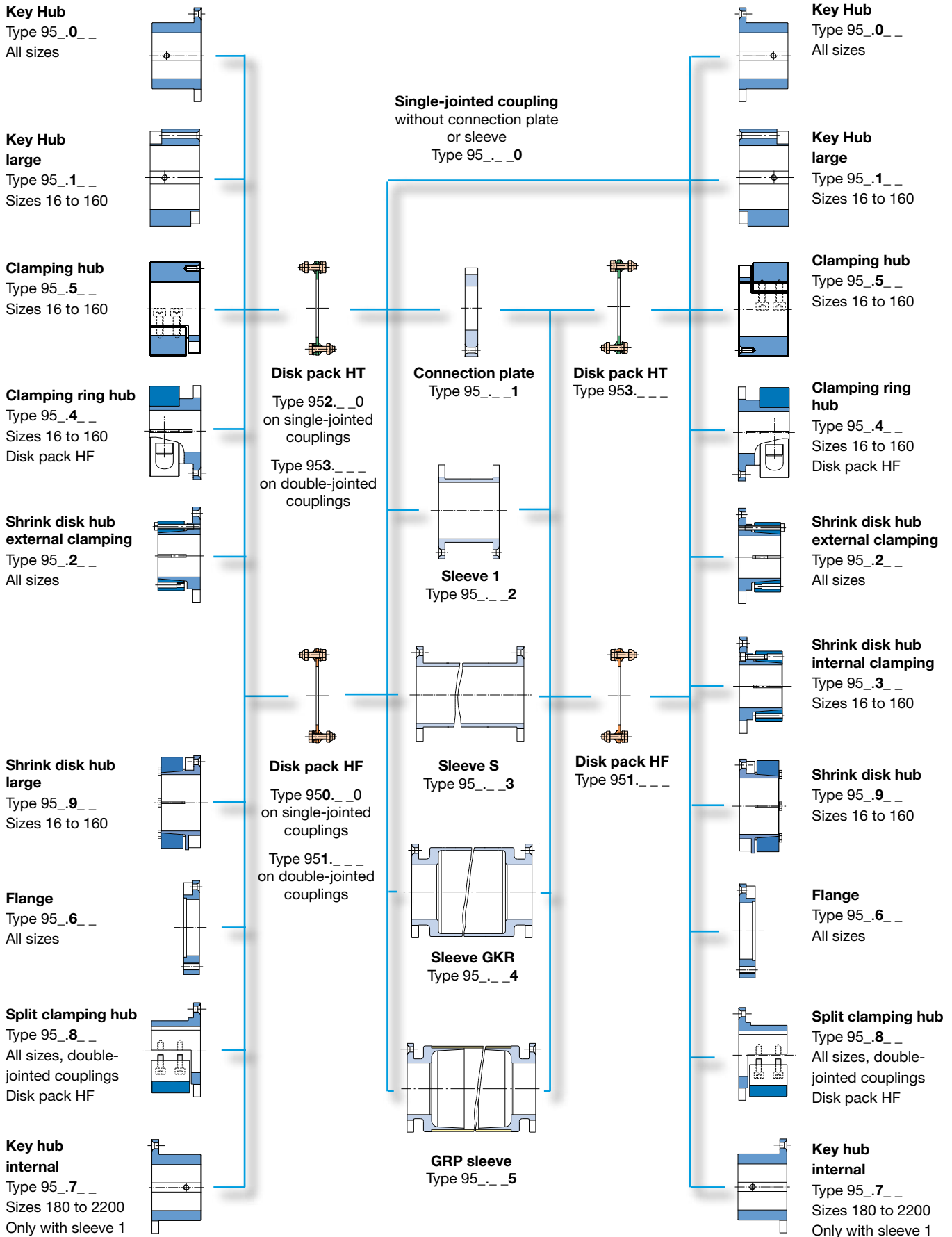
The diagram illustrates different shaft-hub connection configurations for Type 95 couplings, centered around a main assembly consisting of a **Connection plate** (Type 951.__1) and a **Sleeve S** (Type 951.__3). The connections are categorized as follows:

- Single-jointed coupling without connection plate or sleeve** (Type 950.__0): Shown at the top center.
- Clamping hub** (Type 95._4__): Located at the top right and middle left.
- Shrink disk hub** (Type 95._2__): Located at the middle right and bottom left.
- Hub with tapered bore** (Type 95._5__): Located at the bottom right.
- Disk pack**: Two variants are shown on either side of the central assembly:
 - Type 950.__0 on single-jointed couplings.
 - Type 951.__1 on double-jointed couplings.

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				
				5	Hub with tapered bore				
— / 9 5 — . — — — / — / — / —									
▲ ▲ ▲ ▲ ▲ ▲									
Size	Single-jointed coupling	0	Single-jointed coupling	0	Bore Hub 1 ø	Bore Hub 2 ø	Operating Speed [rpm]		
3									
6									
10	Double-jointed coupling	1	Double-jointed coupling						
15			Connection plate	1					
			Sleeve S	3					

Configuration Possibilities/Standard Designs



Single-jointed coupling with clamping hubs

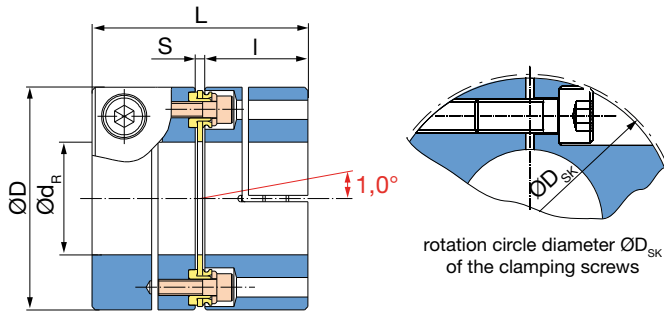


Fig. 1: Type 950.440

Alternative shaft connection Hub with tapered bore

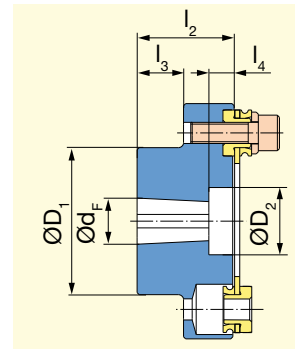


Fig. 2: Type 95..._5_ (only Sizes 3 and 6)
e.g. for Fanuc motors

Technical Data and Main Dimensions				Size			
				3	6	10	15
Nominal torque ¹⁾	T_{KN}	[Nm]		35	60	100	150
Peak transient torque ²⁾	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 ^{3) 4)}	$d_{R \min}^{H7}$	[mm]		10	14	19	25
Maximum hub bore ^{3) 4)}	$d_{R \max}^{H7}$	[mm]		20	28	35	42
Maximum speed ⁵⁾	with clamping hub	$n_{\max}$	[rpm]	13500	10800	9000	7800
	with hub with tapered bore	$n_{\max}$	[rpm]	22500	18000	15000	13000
Permitted misalignments ⁶⁾	permitted axial misalignment ^{7) 8)}	ΔK_a	[mm]	0,5	0,7	0,9	1,1
	permitted radial misalignment ⁷⁾	ΔK_r	[mm]	0,15	0,15	0,2	0,2
	with connecting plate with sleeve S	ΔK_{rH}	[mm]	$(H_s - S) \times 0,0174$			
Spring stiffness	torsion ⁹⁾	$C_{T LP}$	[10 ³ Nm/rad]	17	35	60	145
	disk pack	$C_{T H rel.}$	[10 ⁶ Nm mm/rad]	3,3	6,8	12	19
	angular spring stiffness ¹⁰⁾		[Nm/rad]	43	64	105	229

Dimensions [mm]

Size	3		6		10		15	
D _{sk}	47		-		71		-	
d ₃	17		22,5		33,5		40	
H _s	acc. customer specifications							
h ₂	40		50		60		70	
L	48,5		52,6		67		69,9	
L ₂	59		64,7		79,5		82,8	
L ₆	dependent on H _s							
I	23		25		32		33,5	
S	2,5		2,6		3		2,9	
U	28		32		40		46	
U ₁	13		14,7		15,5		15,8	
Hub with tapered bore	d _F ± 0,05	11	14	11	14	16	-	-
	D ₁	27	27	35	35	35	-	-
	D ₂	16	21	16	25	25	-	-
	I ₂	23	30	23	30	40	-	-
	I ₃	13	20	11	18	28	-	-
	I ₄	6	10	6	10	10	-	-

- 1) Valid for max. permitted shaft misalignment.
- 2) Valid for one rotational direction, max. stress $\leq 10^5$.
- 3) Recommended hub/shaft tolerance: H7/k6
- 4) Preferred bores and transmittable torques dependent on bore see page 57.
- 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.

Mass moments of Inertia J [10⁻³ kgm²]

Size	3	6	10	15
Disk pack ¹¹⁾	0,006	0,018	0,035	0,077
Clamping hub ¹²⁾	0,021	0,054	0,164	0,295
Hub with tapered bore ¹²⁾	0,012	0,039	-	-
Connecting 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 ¹¹⁾	0,023	0,041	0,050	0,077
Clamping hub ¹²⁾	0,070	0,112	0,221	0,297
Hub with tapered bore ¹²⁾	0,053	0,121	-	-
Connecting 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

- 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:

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

Double-jointed coupling with connecting plate and clamping hubs

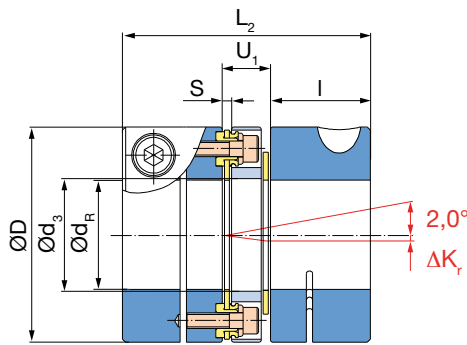


Fig. 3: Type 951.441

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

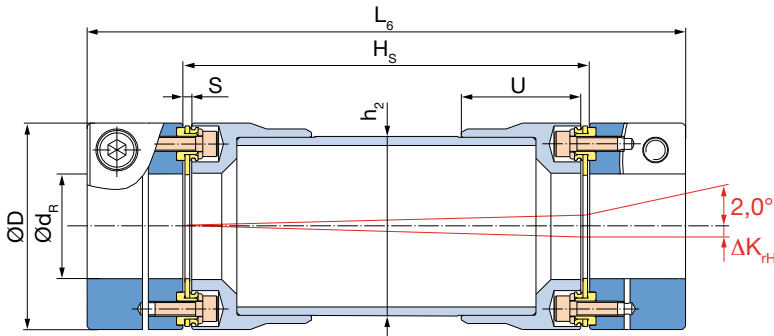


Fig. 4: Type 951.443 (Sleeve S: H_s, L₆)

Order Number															
HUB 2															
4 Clamping hub**															
5 Hub with tapered bore***															
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Example: 10 / 951.441 / Hub 1 – ø 25^{H7} / Hub 2 – ø 25^{H7}

* Standard H7, other tolerances possible

** Clamping hub also available with keyway

*** Only sizes 3 and 6

Backlash-free All-steel Couplings	Page 12 ▷
Safe Against Overload	Page 55 ▷
Transmittable Torques for Clamping Hubs	Page 57 ▷
Installation Examples	Page 58 ▷
Dimensioning, Size Selection	Page 62 ▷
Technical Explanations	Page 63 ▷

Single-jointed coupling with shrink disk hubs

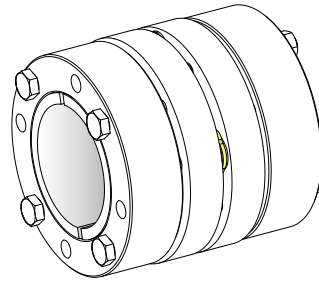
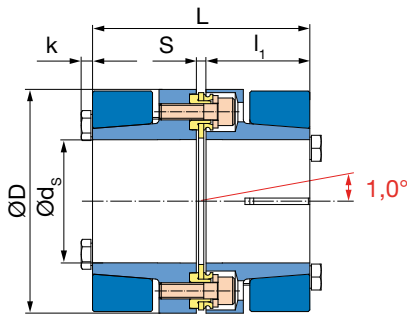


Fig. 5: Type 950.220

Technical Data and Main Dimensions				Size			
				3	6	10	15
Nominal torque ¹⁾	T_{KN}	[Nm]		35	60	100	150
Peak transient torque ²⁾	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 ^{3) 4) 5)}	$d_{S \min}^{H7}$	[mm]		10	14	19	25
Maximum hub bore ^{3) 4)}	$d_{S \max}^{H7}$	[mm]		20	28	38	45
Maximum speed ⁶⁾	$n_{\max}$	[rpm]		22500	18000	15000	13000
Permitted misalignments ⁷⁾	permitted axial misalignment ^{8) 9)}	ΔK_a	[mm]	0,5	0,7	0,9	1,1
	permitted radial misalignment ⁸⁾ with connecting plate	ΔK_r	[mm]	0,15	0,15	0,2	0,2
	with sleeve S	ΔK_{rH}	[mm]	$(H_s - S) \times 0,0174$			
Spring stiffness	torsion ¹⁰⁾ disk pack	C_{TLP}	[10 ³ Nm/rad]	17	35	60	145
	tube sleeve S	$C_{THrel.}$	[10 ³ Nm mm/rad]	3,3	6,8	12	19
	angular spring stiffness ¹¹⁾		[Nm/rad]	43	64	105	229

Dimensions [mm]

Size	3	6	10	15
d_3	17	22,5	33,5	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	67	77,9
L_2	61	70,7	79,5	90,8
L_6	dependent on H_s			
l_1	24	28	32	37,5
S	2,5	2,6	3	2,9
U	28	32	40	46
U_1	13	14,7	15,5	15,8

Mass moments of Inertia J [10⁻³ kgm²]

Size	3	6	10	15
Disk pack ¹²⁾	0,006	0,018	0,035	0,077
Shrink disk hub ¹³⁾	0,043	0,129	0,303	0,605
Connecting 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 ¹²⁾	0,023	0,041	0,050	0,077
Shrink disk hub ¹³⁾	0,142	0,254	0,379	0,570
Connecting 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 one rotational direction, max. stress $\leq 10^5$.

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 57).

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:

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

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.

Double-jointed coupling with connecting plate and shrink disk hubs

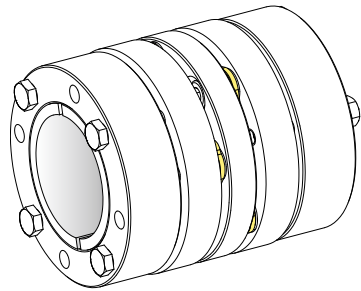
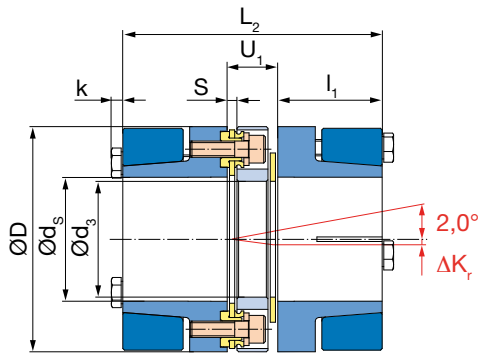


Fig. 6: Type 951.221

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

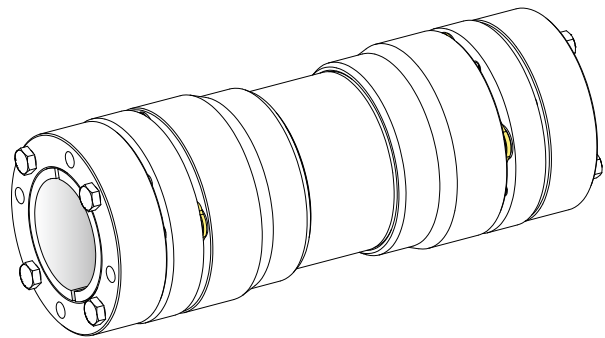
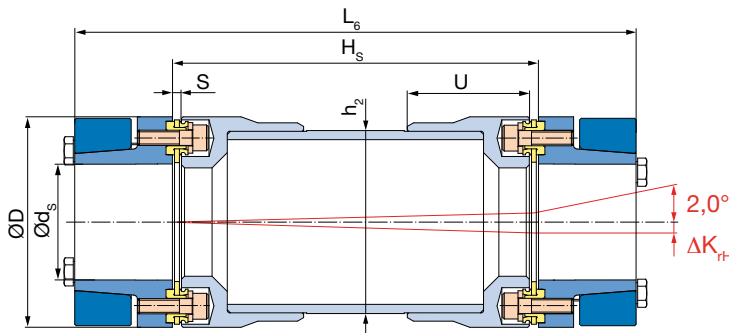


Fig. 7: Type 951.223 (Sleeve S: H_s, L₆)

Order Number								
—	/	9	5	—	.	2	2	— / — / — / — / —
▲				▲			▲	▲ ▲ ▲ ▲ ▲
Sizes 3 to 15	Single-jointed coupling		0	Single-jointed coupling		0	Bore* Hub 1 ø	Bore* Hub 2 ø
	Double-jointed coupling		1	Connecting plate		1	(Dim. page 10)	(Dim. page 10)
				Sleeve S		3		Sleeve length H_s
								[mm]
								Operating speed n_s
								[rpm]
								for special sleeve S

Example: 10 / 951.221 / Hub 1 – ø 25^{H7} / Hub 2 – ø 25^{H7}

* Standard H7, other tolerances possible

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Single-jointed coupling with key hubs

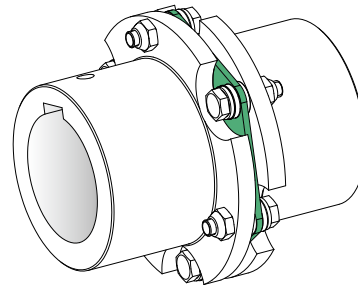
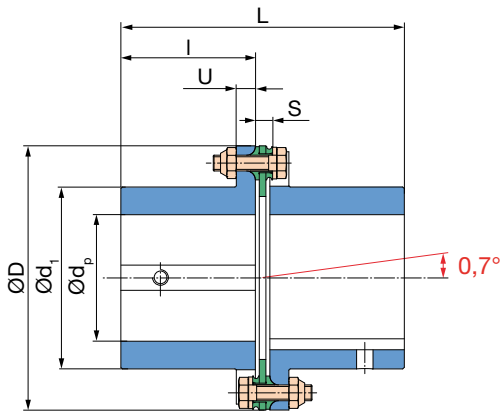


Fig. 8: Type 952.000

Technical Data and Main Dimensions				Size					
				16	25	40	64	100	160
Nominal torque ¹⁾	T _{KN}	[Nm]		300	420	650	1100	1600	2600
Peak transient torque ²⁾	T _{KS}	[Nm]		450	630	975	1650	2400	3900
Outer diameter	D	[mm]		77	89	104	123	143	167
Minimum hub bore	d _{p min}	[mm]		16	20	25	30	35	40
Maximum hub bore	d _{p max}	[mm]		32	40	50	55	70	80
Maximum speed ³⁾	n _{max}	[rpm]		13600	11800	10100	8500	7300	6200
Permitted misalignments ⁴⁾	permitted axial misalignment ^{5) 6)}	ΔK _a	[mm]	0,8	0,9	1,1	1,3	1,5	1,7
	permitted radial misalignment ⁵⁾	with connecting plate	ΔK _r	[mm]	0,2	0,2	0,25	0,3	0,3
		with sleeve 1	ΔK _{rH}	[mm]	0,7	0,8	1	1,25	1,45
		with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,0122				
Spring stiffness	torsion ⁷⁾	disk pack	C _{T LP}	[10 ³ Nm/rad]	180	290	320	1350	1900
		tube sleeve S	C _{T H rel.}	[10 ⁶ Nm mm/rad]	19	34	71	108	217
	angular spring stiffness ⁸⁾			[Nm/rad]	285	305	875	1285	2025

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	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
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

1) Valid for alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress ≤ 10⁵.

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_T-value of a double-jointed coupling can be roughly calculated as follows:

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

Mass moments of Inertia J [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ⁹⁾	0,08	0,13	0,30	0,81	1,36	3,43
Hub ¹⁰⁾	0,27	0,55	1,16	2,58	6,18	12,51
Connecting 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 ⁹⁾	0,08	0,09	0,16	0,32	0,39	0,71
Hub ¹⁰⁾	0,46	0,69	1,02	1,72	2,83	4,25
Connecting 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

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.

Double-jointed coupling with connecting plate and key hubs

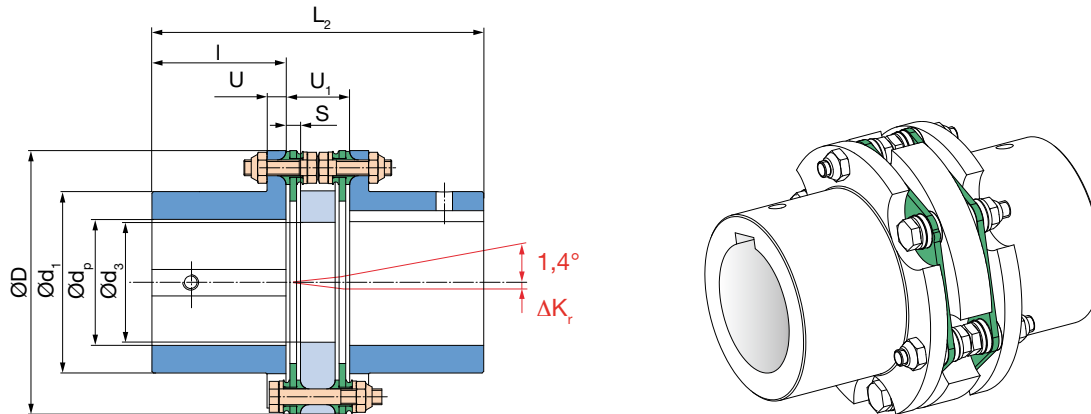


Fig. 9: Type 953.001

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

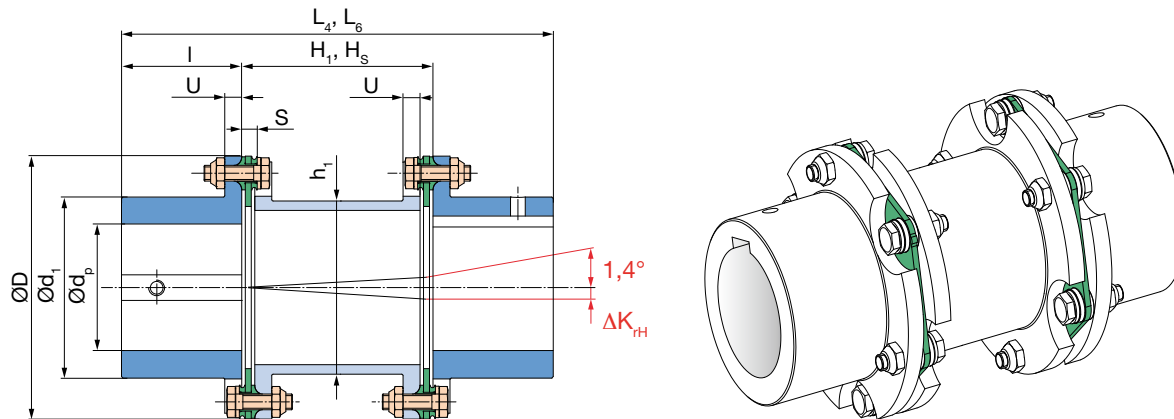


Fig. 10: Type 953.002 (Sleeve 1: H₁, L₄), Type 953.003 (Sleeve S: H_S, L₆)

Order Number

—	/	9	5	—	.	0	0	—	/	—	/	—	/	—	/	—
▲				▲				▲	▲	▲	▲	▲	▲	▲	▲	▲
Sizes 16 to 160		Single-jointed coupling	2			Single-jointed coupling	0		Bore*		Bore*		Sleeve		Operating	
		Double-jointed coupling	3			Connecting plate	1		Hub 1 ø		Hub 2 ø		length		speed	
						Sleeve 1	2		(Dim.		(Dim.		H_s		n_s	
						Sleeve S	3		page 12)		page 12)		[mm]		[rpm]	
						Sleeve GKR (page 52)	4						for special sleeves			
						Sleeve CRP (page 52)	5						S / GKR / CRP			

Example: 100 / 952.000 / Hub 1– ø 50 ^{H7} / Hub 2 – ø 60 ^{H7}

*Standard H7, other tolerances possible

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Single-jointed coupling with key hubs, large

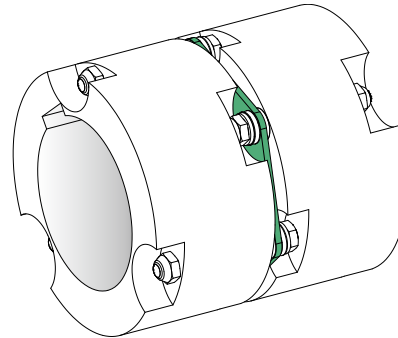
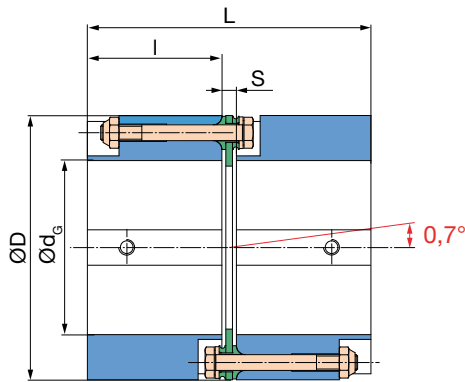


Fig. 11: Type 952.110

Technical Data and Main Dimensions				Size					
				16	25	40	64	100	160
Nominal torque ¹⁾	T _{KN}	[Nm]		300	420	650	1100	1600	2600
Peak transient torque ²⁾	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 ³⁾	n _{max}	[rpm]		13600	11800	10100	8500	7300	6200
Permitted misalignments ⁴⁾	permitted axial misalignment ^{5) 6)}	ΔK _a	[mm]	0,8	0,9	1,1	1,3	1,5	1,7
	permitted radial misalignment ⁵⁾	ΔK _r	[mm]	0,2	0,2	0,25	0,3	0,3	0,35
	with connecting plate	ΔK _{rH}	[mm]	0,7	0,8	1	1,25	1,45	1,5
	with sleeve S	ΔK _{rH}	[mm]	(H _S - S) x 0,0122					
Spring stiffness	torsion ⁷⁾	C _{T LP}	[10 ³ Nm/rad]	180	290	320	1350	1900	2950
	disk pack	C _{T H rel.}	[10 ⁶ Nm mm/rad]	19	34	71	108	217	415
	angular spring stiffness ⁸⁾		[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
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

Mass moments of Inertia J [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ⁹⁾	0,08	0,13	0,30	0,81	1,36	3,43
Hub ¹⁰⁾	0,86	1,71	3,89	8,98	18,12	36,00
Connecting 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 ⁹⁾	0,08	0,09	0,16	0,32	0,39	0,71
Hub ¹⁰⁾	0,87	1,26	2,08	3,47	4,94	7,23
Connecting 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 alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress ≤ 10⁵.

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.

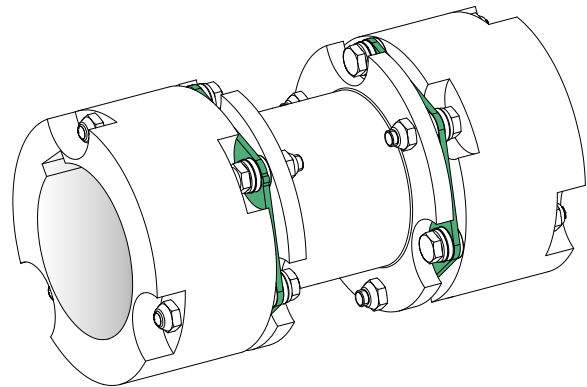
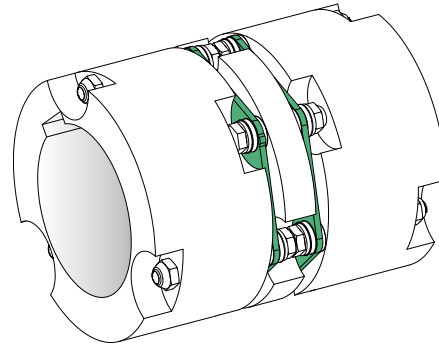
7) The C_T-value of a double-jointed coupling can be roughly calculated as follows:

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

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.



Single-jointed coupling with clamping hubs

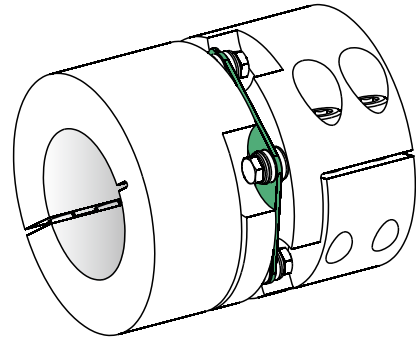
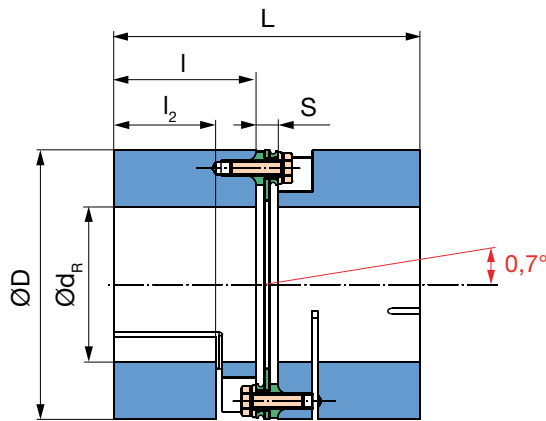


Fig. 14: Type 952.550

Technical Data and Main Dimensions				Size					
				16	25	40	64	100	160
Nominal torque ¹⁾	T _{KN}	[Nm]		300	420	650	1100	1600	2600
Peak transient torque ²⁾	T _{KS}	[Nm]		450	630	975	1650	2400	3900
Outer diameter	D	[mm]		77	89	104	123	143	167
Minimum hub bore ³⁾	d _{R min}	[mm]		20	22	25	28	32	40
Maximum hub bore ³⁾	d _{R max}	[mm]		48	54	60	70	95	110
Maximum speed ⁴⁾	n _{max}	[rpm]		9500	8200	7000	6000	5100	4300
Permitted misalignments ⁵⁾	permitted axial misalignment ^{6) 7)}	ΔK _a	[mm]	0,8	0,9	1,1	1,3	1,5	1,7
	permitted radial misalignment ⁶⁾	ΔK _r	[mm]	0,2	0,2	0,25	0,3	0,3	0,35
	with connecting plate	ΔK _{rH}	[mm]	0,7	0,8	1	1,25	1,45	1,5
	with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,0122					
Spring stiffness	torsion ⁹⁾	C _{T LP}	[10 ³ Nm/rad]	180	290	320	1350	1900	2950
	disk pack	C _{T H rel.}	[10 ⁶ Nm mm/rad]	19	34	71	108	217	415
	angular spring stiffness ⁸⁾		[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
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

- 1) Valid for alternating loads as well as max. permitted shaft misalignment.
 2) Valid for one rotational direction, max. stress ≤ 10⁵.
 3) Transmittable torques dependent on bore see page 57.
 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:

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

Mass moments of Inertia J [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ¹⁰⁾	0,08	0,13	0,30	0,81	1,36	3,43
Hub ¹¹⁾	0,74	1,49	3,64	8,42	16,94	34,32
Connecting 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 ¹⁰⁾	0,08	0,09	0,16	0,32	0,39	0,71
Hub ¹¹⁾	0,73	1,11	2,05	3,43	4,82	6,94
Connecting 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) 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.

Double-jointed coupling with connecting plate and clamping hubs

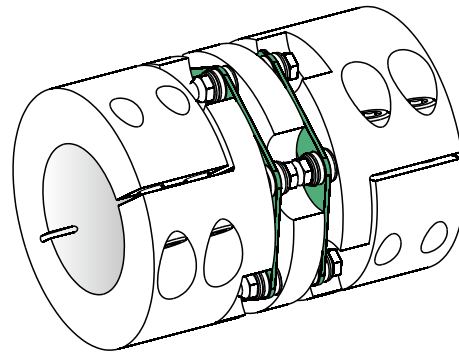
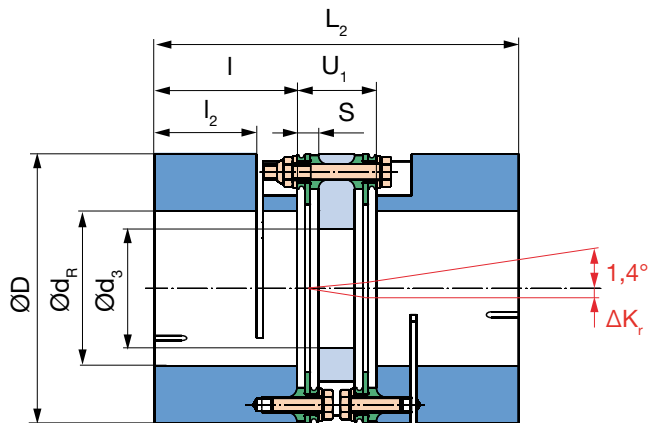


Fig. 15: Type 953.551

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

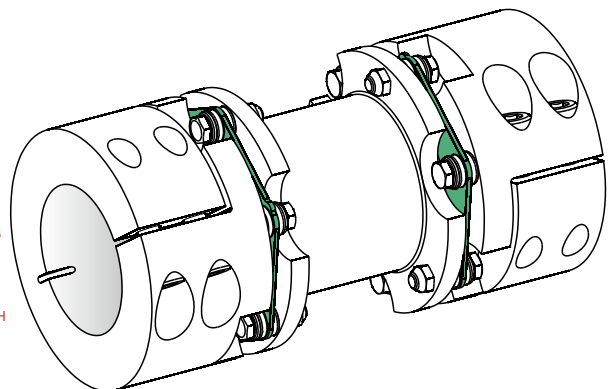
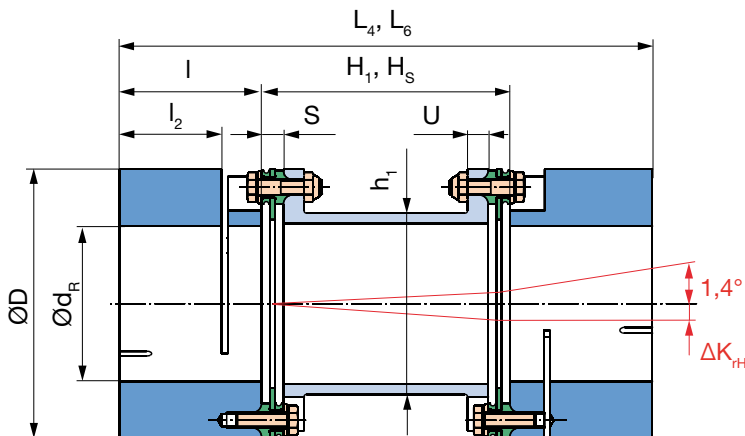


Fig. 16: Type 953.552 (Sleeve 1: H_1 , L_4), Type 953.553 (Sleeve S: H_S , L_6)

Order Number								
—	/	9	5	—	.	5	5	— / — / — / — / —
▲				▲				▲
Sizes 16 to 160	Single-jointed coupling		2	Single-jointed coupling		0	Bore* Hub 1 ø (Dim. page 16)	Bore* Hub 2 ø (Dim. page 16)
	Double-jointed coupling		3	Connecting plate		1		
				Sleeve 1		2		
				Sleeve S		3		
				Sleeve GKR (page 52)		4		
				Sleeve CRP (page 52)		5		
								Sleeve length H_S [mm]
								Operating speed n_s [rpm]
								for special sleeves S / GKR / CFK

Example: 100 / 952.550 / Hub 1– ø 75 ^{H7} / Hub 2 – ø 90 ^{H7}

*Standard H7, other tolerances possible

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Single-jointed coupling with shrink disk hubs, external clamping

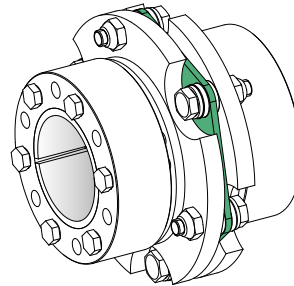
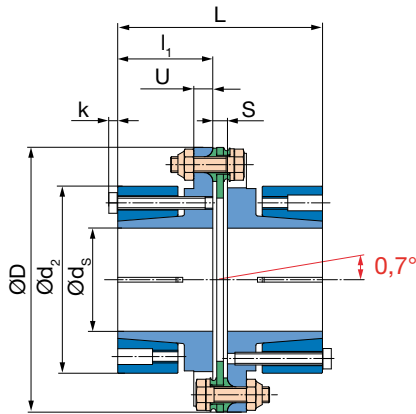


Fig. 17: Type 952.220

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque ¹⁾		T _{KN}	[Nm]	300	420	650	1100	1600	2600	
Peak transient torque ²⁾		T _{KS}	[Nm]	450	630	975	1650	2400	3900	
Outer diameter		D	[mm]	77	89	104	123	143	167	
Minimum hub bore ³⁾		d _{S min}	[mm]	14	20	25	30	35	40	
Maximum hub bore ³⁾		d _{S max}	[mm]	26	36	45	45	55	65	
Maximum speed ⁴⁾		n _{max}	[rpm]	13600	11800	10100	8500	7300	6200	
Permitted misalignments ⁵⁾	permitted axial misalignment ^{6) 7)}		ΔK _a	[mm]	0,8	0,9	1,1	1,3	1,5	1,7
	permitted radial misalignment ⁶⁾	with connecting plate	ΔK _r	[mm]	0,2	0,2	0,25	0,3	0,3	0,35
		with sleeve 1	ΔK _{rH}	[mm]	0,7	0,8	1	1,25	1,45	1,5
		with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,0122					
Spring stiffness	torsion ⁸⁾	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 stiffness ⁹⁾			[Nm/rad]	285	305	875	1285	2025	3260

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	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	74,6	85	96,1	108	118,6	129,2
L_2	91,2	102	116,2	134	145,2	160,4
L_4	135	155,6	181,4	212,8	243,2	255,2
L_6	dependent on H_s					
I_1	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_1	21,2	22	26,2	34	35,2	40,4

Mass moments of Inertia J [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ¹⁰⁾	0,08	0,13	0,30	0,81	1,36	3,43
Hub ¹¹⁾	0,27	0,57	1,15	2,46	5,59	11,14
Connecting 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 ¹⁰⁾	0,08	0,09	0,16	0,32	0,39	0,71
Hub ¹¹⁾	0,49	0,71	1,03	1,71	2,73	3,99
Connecting 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 alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress $\leq 10^5$.

3) Transmittable torques dependent on bore see page 56.

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:

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

9) The values refer to 1 disk pack.

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

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

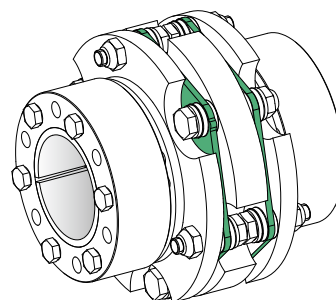
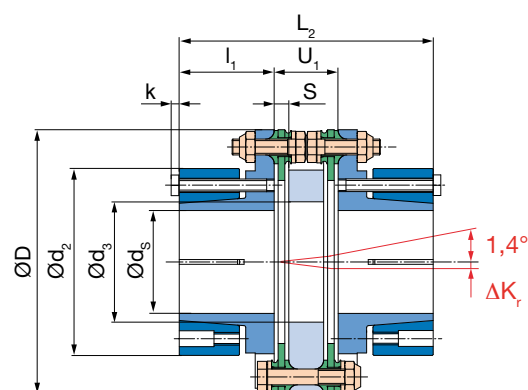
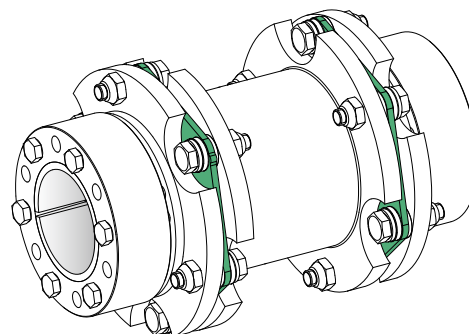
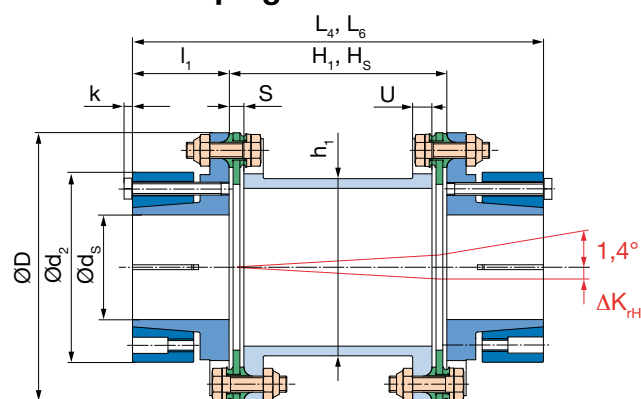


Fig. 18: Type 953.221

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

Fig. 19: Type 953.222 (Sleeve 1: H₁, L₄), Type 953.223 (Sleeve S: H_S, L₆)

Order Number

Order Number	Order Number	Order Number	Order Number	Order Number	Order Number	Order Number	Order Number	Order Number
— / 9 5 — . 2 2 — / — / — / — / —	— / 9 5 — . 2 2 — / — / — / — / —	— / 9 5 — . 2 2 — / — / — / — / —	— / 9 5 — . 2 2 — / — / — / — / —	— / 9 5 — . 2 2 — / — / — / — / —	— / 9 5 — . 2 2 — / — / — / — / —	— / 9 5 — . 2 2 — / — / — / — / —	— / 9 5 — . 2 2 — / — / — / — / —	— / 9 5 — . 2 2 — / — / — / — / —
▲	▲	▲	▲	▲	▲	▲	▲	▲
Sizes 16 to 160	Single-jointed coupling Double-jointed coupling	2 3	Single-jointed coupling Connecting plate Sleeve 1 Sleeve S Sleeve GKR (page 52) Sleeve CRP (page 52)	0 1 2 3 4 5	Bore* Hub 1 ø (Dim. page 18)	Bore* Hub 2 ø (Dim. page 18)	Sleeve length H _S [mm] for special sleeves S / GKR / CRP	Operating speed n _s [rpm]

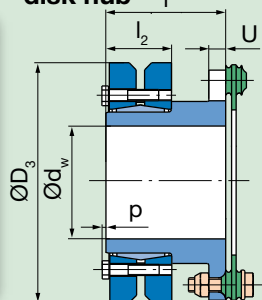
Example: 40 / 953.221 / Hub 1 – ø 30^{H7} / Hub 2 – ø 30^{H7}

*Standard H7, other tolerances possible

Additional Option:

Size	d _w	D ₃	l	l ₂	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	-

External shrink disk hub



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

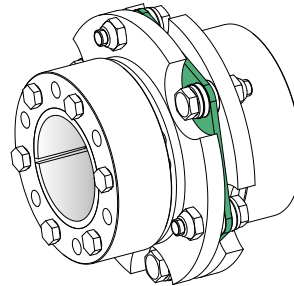
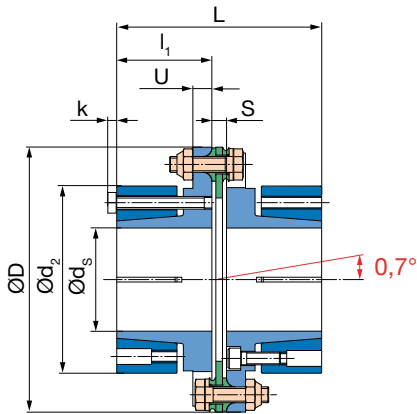


Fig. 20: Type 952.230

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque ¹⁾		T _{KN}	[Nm]	300	420	650	1100	1600	2600	
Peak transient torque ²⁾		T _{KS}	[Nm]	450	630	975	1650	2400	3900	
Outer diameter		D	[mm]	77	89	104	123	143	167	
Minimum hub bore ³⁾		d _{S min}	[mm]	14	20	25	30	35	40	
Maximum hub bore ³⁾		d _{S max}	[mm]	26	36	45	45	55	65	
Maximum speed ⁴⁾		n _{max}	[rpm]	13600	11800	10100	8500	7300	6200	
Permitted misalignments ⁵⁾	permitted axial misalignment ^{6) 7)}		ΔK _a	[mm]	0,8	0,9	1,1	1,3	1,5	1,7
		with connecting plate	ΔK _r	[mm]	0,2	0,2	0,25	0,3	0,3	0,35
	permitted radial misalignment ⁶⁾	with sleeve 1	ΔK _{rH}	[mm]	0,7	0,8	1	1,25	1,45	1,5
		with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,0122					
Spring stiffness	torsion ⁸⁾	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 stiffness ⁹⁾			[Nm/rad]	285	305	875	1285	2025	3260

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	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	74,6	85	96,1	108	118,6	129,2
L_2	91,2	102	116,2	134	145,2	160,4
L_4	135	155,6	181,4	212,8	243,2	255,2
L_6	dependent on H_s					
I_1	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_1	21,2	22	26,2	34	35,2	40,4

Mass moments of Inertia J [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ¹⁰⁾	0,08	0,13	0,30	0,81	1,36	3,43
Hub ¹¹⁾	0,27	0,57	1,15	2,46	5,59	11,14
Connecting 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 ¹⁰⁾	0,08	0,09	0,16	0,32	0,39	0,71
Hub ¹¹⁾	0,49	0,71	1,03	1,71	2,73	3,99
Connecting 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 alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress $\leq 10^5$.

3) Transmittable torques dependent on bore see page 56.

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_r -value of a double-jointed coupling can be roughly calculated as follows:

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

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.

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

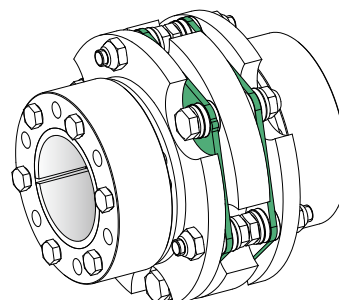
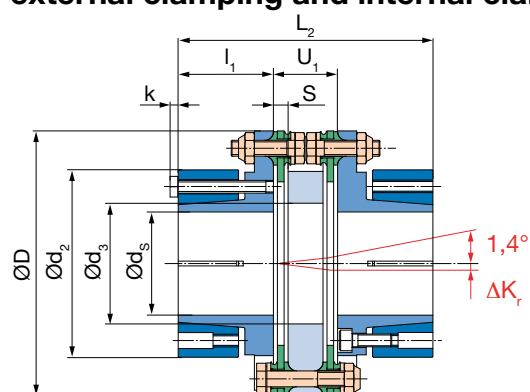


Fig. 21: Type 953.231

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

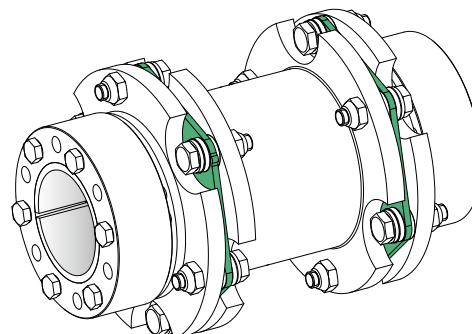
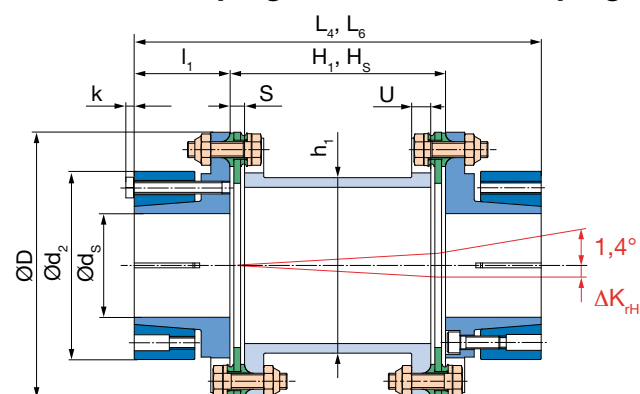


Fig. 22: Type 953.232 (Sleeve 1: H_1 , L_4), Type 953.233 (Sleeve S: H_S , L_6)

Order Number

Order Number								
—	/	9	5	—	.	2	3	— / — / — / — / —
▲			▲	▲		▲	▲	▲
Sizes 16 to 160		Single-jointed coupling	2	Single-jointed coupling		0	Bore* Hub 1 ø (Dim. page 20)	Bore* Hub 2 ø (Dim. page 20)
		Double-jointed coupling	3	Connecting plate		1		
				Sleeve 1		2		
				Sleeve S		3		
				Sleeve GKR (page 52)		4		
				Sleeve CRP (page 52)		5		
								Sleeve length H_S [mm] for special sleeves S / GKR / CRP
								Operating speed n_s [rpm]

Example: 64 / 953.231 / Hub 1 – ø 35 ^{H7} / Hub 2 – ø 40 ^{H7}

*Standard H7, other tolerances possible

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Single-jointed coupling with shrink disk hubs, large

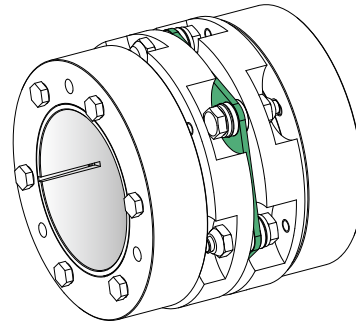
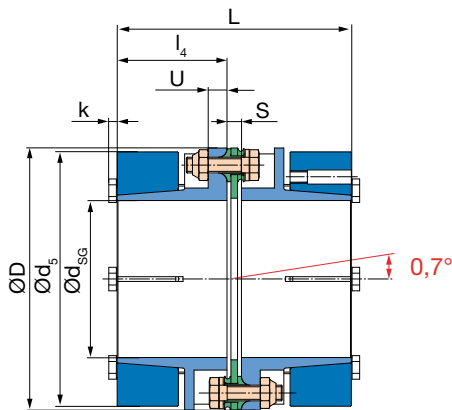


Fig. 23: Type 952.990

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque ¹⁾	T _{KN}	[Nm]	300	420	650	1100	1600	2600		
Peak transient torque ²⁾	T _{KS}	[Nm]	450	630	975	1650	2400	3900		
Outer diameter	D	[mm]	77	89	104	123	143	167		
Minimum hub bore ³⁾	d _{SG min}	[mm]	25	32	40	45	55	65		
Maximum hub bore ³⁾	d _{SG max}	[mm]	45	52	60	70	90	100		
Maximum speed ⁴⁾	n _{max}	[rpm]	13600	11800	10100	8500	7300	6200		
Permitted misalignments ⁵⁾	permitted axial misalignment ^{6) 7)}		ΔK _a	[mm]	0,8	0,9	1,1	1,3	1,5	1,7
	permitted radial misalignment ⁶⁾	with connecting plate	ΔK _r	[mm]	0,2	0,2	0,25	0,3	0,3	0,35
		with sleeve 1	ΔK _{rH}	[mm]	0,7	0,8	1	1,25	1,45	1,5
		with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,0122					
Spring stiffness	torsion ⁸⁾	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 stiffness ⁹⁾			[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
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_s					
I_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

Mass moments of Inertia J [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ¹⁰⁾	0,08	0,13	0,30	0,81	1,36	3,43
Hub ¹¹⁾	0,78	1,23	2,88	5,81	13,77	27,35
Connecting 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 ¹⁰⁾	0,08	0,09	0,16	0,32	0,39	0,71
Hub ¹¹⁾	0,79	1,02	1,71	2,53	3,92	6,08
Connecting 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 alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress $\leq 10^5$.

3) Transmittable torques dependent on bore see page 56.

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:

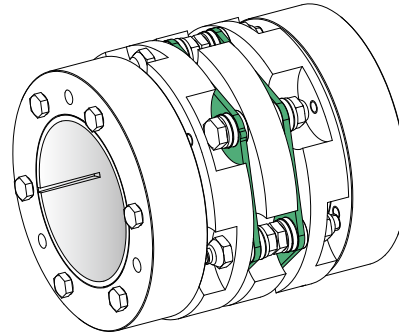
$$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{TLP}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{THrel}}}$$

9) The values refer to 1 disk pack.

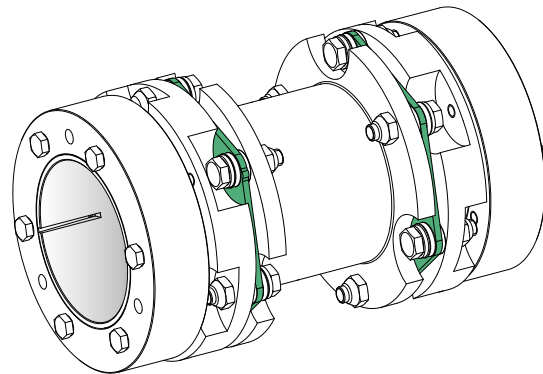
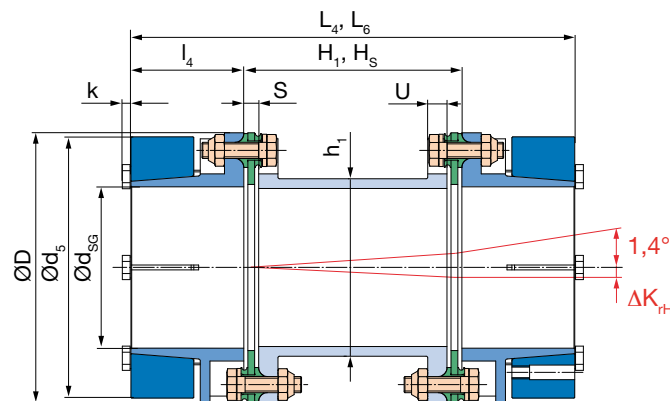
10) Mass moments of inertia and weights are valid for 1 disk pack.

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

Technical drawing of a shaft-hub assembly. The drawing shows a shaft (green) with a key (yellow) and a hub (blue). The shaft has a diameter of $\varnothing d_5$ and a length of L_2 . The hub has a diameter of $\varnothing D$ and a length of L_1 . The key has a width of k and a height of S . The shaft is secured with a lock nut and washers. The drawing includes dimensions for the shaft diameter $\varnothing d_5$, the hub diameter $\varnothing D$, the key width k , the key height S , the shaft length L_2 , and the hub length L_1 . A detail view shows a conical surface with a $1,4^\circ$ angle and a tolerance ΔK_r .



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



Order Number									
— / 9 5		— . 9 9		— / — / — / — / —					
▲		▲		▲		▲		▲	
Sizes 16 to 160	Single-jointed coupling	2	Single-jointed coupling Connecting plate	0	Bore* Hub 1 ø (Dim. page 22)	Bore* Hub 2 ø (Dim. page 22)	Sleeve length H_s [mm]	Operating speed n_s [rpm]	
	Double-jointed coupling	3	Sleeve 1	2					
			Sleeve S	3					
			Sleeve GKR (page 52)	4					
			Sleeve CRP (page 52)	5					
							for special sleeves S / GKR / CRP		

*Standard H7, other tolerances possible

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Single-jointed coupling with flanges

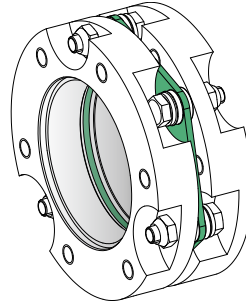
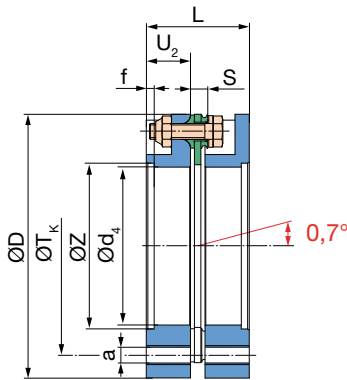


Fig. 26: Type 952.660

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque ¹⁾		T _{KN}	[Nm]	300	420	650	1100	1600	2600	
Peak transient torque ²⁾		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 ³⁾		n _{max}	[rpm]	13600	11800	10100	8500	7300	6200	
Permitted misalignments ⁴⁾	permitted axial misalignment ^{5) 6)}	ΔK _a	[mm]	0,8	0,9	1,1	1,3	1,5	1,7	
		with connecting plate	ΔK _r	[mm]	0,2	0,2	0,25	0,3	0,3	0,35
	permitted radial misalignment ⁵⁾	with sleeve 1	ΔK _{rH}	[mm]	0,7	0,8	1	1,25	1,45	1,5
		with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,0122					
Spring stiffness	torsion ⁷⁾	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 stiffness ⁸⁾			[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	65,2
L ₂	51,2	52	62,2	74	75,2	96,4
L ₄	95	105,6	127,4	152,8	173,2	191,2
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

Mass moments of Inertia J [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ⁹⁾	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
Connecting 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 ⁹⁾	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
Connecting 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 alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress ≤ 10⁵.

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_T-value of a double-jointed coupling can be roughly calculated as follows:

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

8) The values refer to 1 disk pack.

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

Double-jointed coupling with connecting plate and flanges

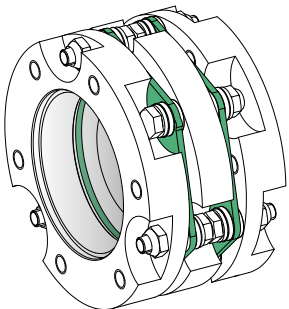
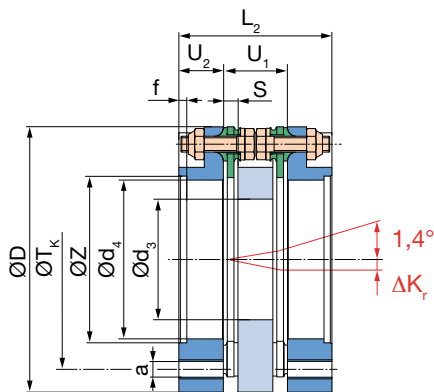


Fig. 27: Type 953.661

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

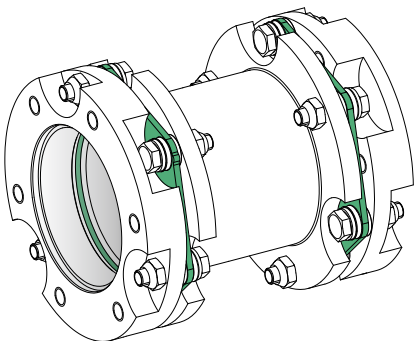
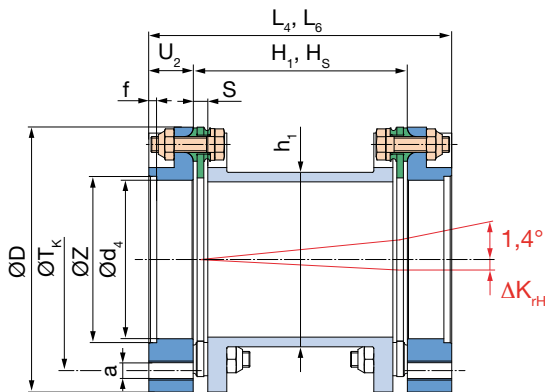


Fig. 28: Type 953.662 (Sleeve 1: H₁, L₄), Type 953.663 (Sleeve S: H_S, L₆)

Order Number						
—	/	9	5	—	.	6 6 — / — / —
▲			▲		▲	▲
Sizes 16 to 160	Single-jointed coupling		2	Single-jointed coupling		0
	Double-jointed coupling		3	Connecting plate		1
				Sleeve 1		2
				Sleeve S		3
				Sleeve GKR (page 52)		4
				Sleeve CRP (page 52)		5
				Sleeve length H_s [mm]	Operating speed n_s [rpm]	
				for special sleeves S / GKR / CRP		

Example: 40 / 953.661

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Single-jointed coupling with key hubs

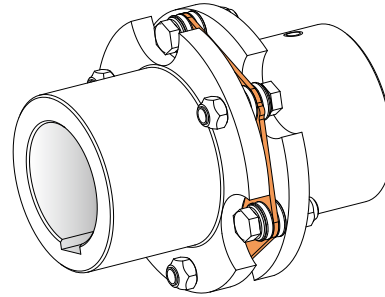
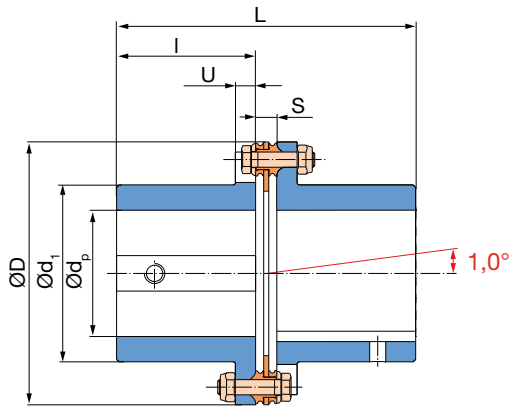


Fig. 29: Type 950.000

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque ¹⁾		T _{KN}	[Nm]	190	290	450	720	1000	1600	
Peak transient torque ²⁾		T _{KS}	[Nm]	285	435	675	1080	1500	2400	
Outer diameter		D	[mm]	77	89	104	123	143	167	
Minimum hub bore		d _{p min}	[mm]	16	20	25	30	35	40	
Maximum hub bore		d _{p max}	[mm]	32	40	50	55	70	80	
Maximum speed ³⁾		n _{max}	[rpm]	13600	11800	10100	8500	7300	6200	
Permitted misalignments ⁴⁾	permitted axial misalignment ^{5) 6)}		ΔK _a	[mm]	1,1	1,3	1,5	1,8	2,1	2,5
	permitted radial misalignment ⁵⁾	with connecting plate	ΔK _r	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
		with sleeve 1	ΔK _{rH}	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,0174					
Spring stiffness	torsion ⁷⁾	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 stiffness ⁸⁾			[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					
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 [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ⁹⁾	0,08	0,12	0,26	0,74	1,19	3,27
Hub ¹⁰⁾	0,27	0,55	1,16	2,58	6,18	12,51
Connecting 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 ⁹⁾	0,08	0,09	0,15	0,29	0,35	0,67
Hub ¹⁰⁾	0,46	0,69	1,02	1,72	2,83	4,25
Connecting 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 alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress $\leq 10^5$.

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

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

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.

Double-jointed coupling with connecting plate and key hubs

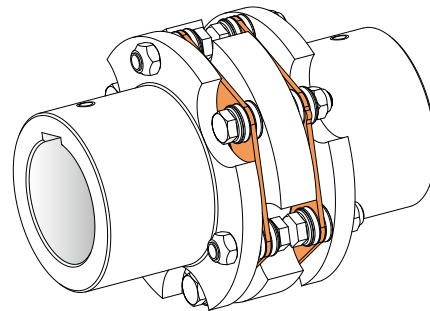
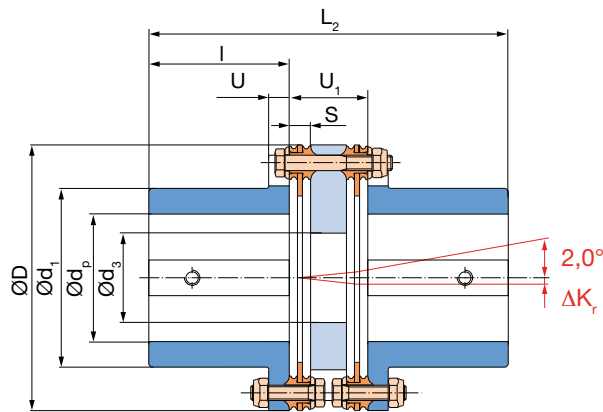


Fig. 30: Type 951.001

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

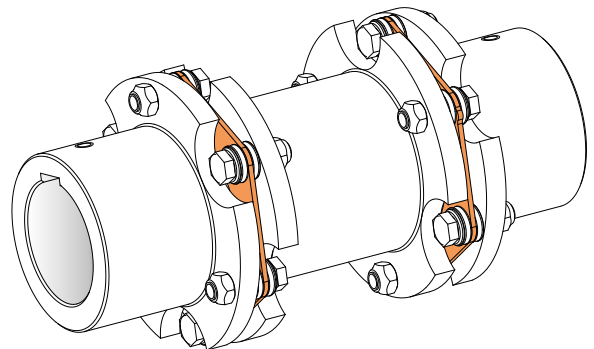
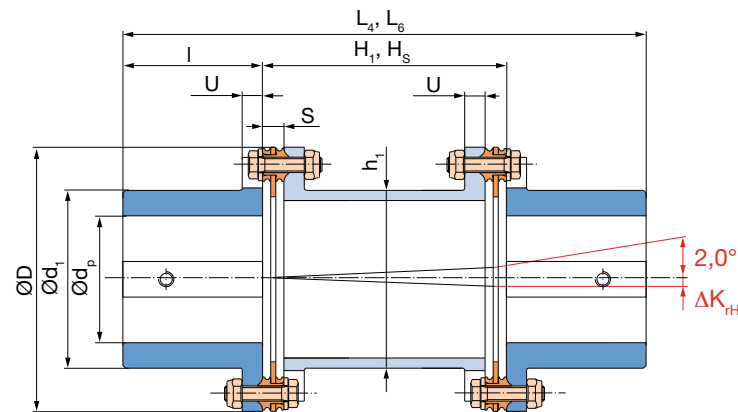


Fig. 31: Type 951.002 (Sleeve 1: H₁, L₄), Type 951.003 (Sleeve S: H_s, L₆)

Order Number								
—	/	9	5	—	.	0	0	— / — / — / — / —
▲			▲			▲	▲	▲
Sizes 16 to 160	Single-jointed coupling	0	Single-jointed coupling	0	Bore* Hub 1 ø (Dim. page 26)	Bore* Hub 2 ø (Dim. page 26)	Sleeve length H_s [mm]	Operating speed n_s [rpm]
	Double-jointed coupling	1	Connecting plate	1				
			Sleeve 1	2				
			Sleeve S	3				
			Sleeve GKR (page 52)	4				
			Sleeve CRP (page 52)	5				
								for special sleeves S / GKR / CRP

Example: 16 / 951.001 / Hub 1 – ø 25^{H7} / Hub 2 – ø 25^{H7}

*Standard H7, other tolerances possible

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Single-jointed coupling with key hubs, large

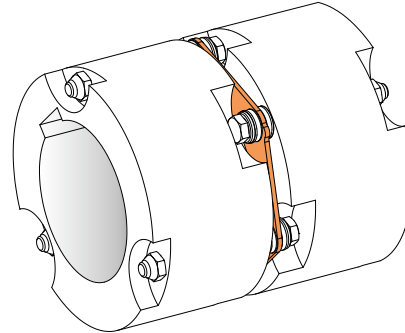
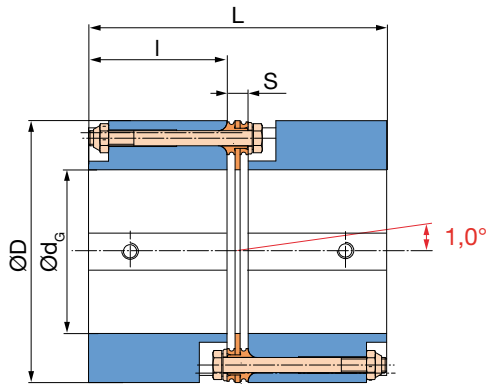


Fig. 32: Type 950.110

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque ¹⁾		T _{KN}	[Nm]	190	290	450	720	1000	1600	
Peak transient torque ²⁾		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 ³⁾		n _{max}	[rpm]	13600	11800	10100	8500	7300	6200	
Permitted misalignments ⁴⁾	permitted axial misalignment ^{5) 6)}	ΔK _a	[mm]	1,1	1,3	1,5	1,8	2,1	2,5	
		with connecting plate	ΔK _r	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
	permitted radial misalignment ⁵⁾	with sleeve 1	ΔK _{rH}	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,0174					
Spring stiffness	torsion ⁷⁾	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 stiffness ⁸⁾			[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
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

- 1) Valid for alternating loads as well as max. permitted shaft misalignment.
- 2) Valid for one rotational direction, max. stress ≤ 10°.
- 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_T-value of a double-jointed coupling can be roughly calculated as follows:

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

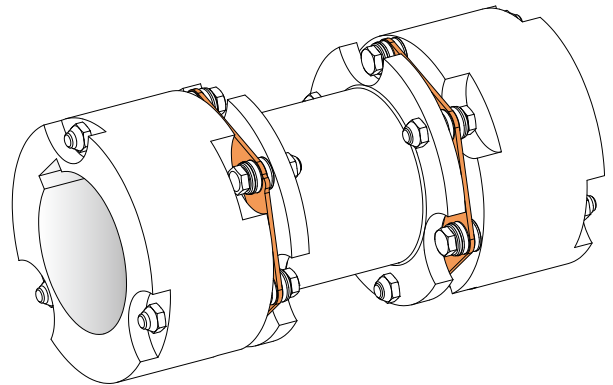
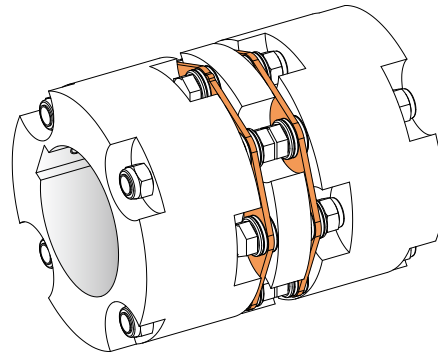
Mass moments of Inertia J [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ⁹⁾	0,08	0,12	0,26	0,74	1,19	3,27
Hub ¹⁰⁾	0,86	1,71	3,89	8,98	18,12	36,00
Connecting 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 ⁹⁾	0,08	0,09	0,15	0,29	0,35	0,67
Hub ¹⁰⁾	0,87	1,26	2,08	3,47	4,94	7,23
Connecting 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

- 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.



— / 9 5 — . 1 1 — / — / — / — / —									
									
Sizes	Single-jointed coupling	0	Single-jointed coupling	0	Bore*	Bore*	Sleeve length	Operating speed	
16	Double-jointed coupling	1	Connecting plate	1	Hub 1 ø	Hub 2 ø	H_s	n_s	
to			Sleeve 1	2	(Dim.	(Dim.	[mm]	[rpm]	
160			Sleeve S	3	page 28)	page 28)			
			Sleeve GKR (page 52)	4					
			Sleeve CRP (page 52)	5					
									for special sleeves S / GKR / CRP

*Standard H7, other tolerances possible

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Single-jointed coupling with clamping hubs

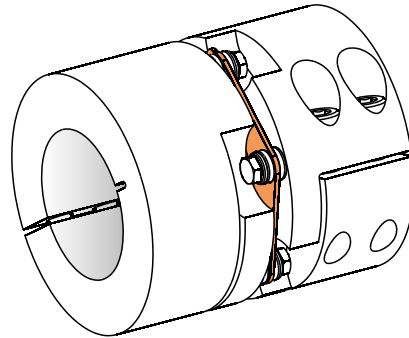
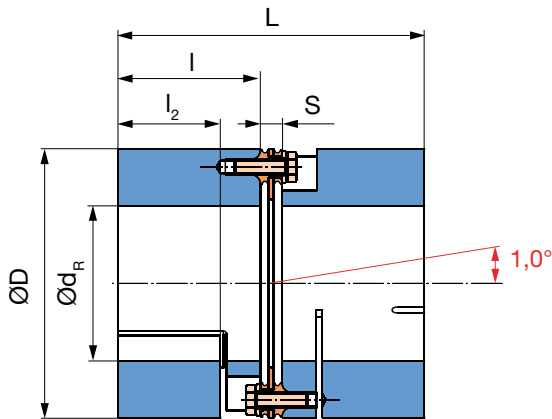


Fig. 35: Type 950.550

Technical Data and Main Dimensions				Size					
				16	25	40	64	100	160
Nominal torque ¹⁾	T_{KN}	[Nm]		190	290	450	720	1000	1600
Peak transient torque ²⁾	T_{KS}	[Nm]		285	435	675	1080	1500	2400
Outer diameter	D	[mm]		77	89	104	123	143	167
Minimum hub bore ³⁾	$d_{R min}$	[mm]		20	22	25	28	32	40
Maximum hub bore ³⁾	$d_{R max}$	[mm]		48	55	60	70	95	110
Maximum speed ⁴⁾	n_{max}	[rpm]		9500	8200	7000	6000	5100	4300
Permitted misalignments ⁵⁾	permitted axial misalignment ^{6) 7)}	ΔK_a	[mm]	1,1	1,3	1,5	1,8	2,1	2,5
		ΔK_r	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
	permitted radial misalignment ⁶⁾	with connecting plate	ΔK_r	[mm]	0,3	0,3	0,4	0,45	0,55
		with sleeve 1	ΔK_{rH}	[mm]	1,0	1,2	1,5	1,8	2,1
Spring stiffness	torsion ⁸⁾	with sleeve S	ΔK_{rH}	[mm]	$(H_s - S) \times 0,0174$				
		disk pack	$C_{T LP}$	[10 ³ Nm/rad]	145	280	301	748	1135
	angular spring stiffness ⁹⁾	tube sleeve S	$C_{T H rel.}$	[10 ⁶ Nm mm/rad]	19	34	71	108	217
				[Nm/rad]	229	248	298	876	1089

Dimensions [mm]

Size	16	25	40	64	100	160
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	216,2
L_4	150	170	206	246	286	310
L_6	dependent on H_s					
I	40	45	55	65	75	85
I_2	27	32,5	39,4	44,6	54,6	59
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 kgm²]

Size	16	25	40	64	100	160
Disk pack ¹⁰⁾	0,08	0,12	0,26	0,74	1,19	3,27
Hub ¹¹⁾	0,74	1,49	3,64	8,42	16,94	34,32
Connecting 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 ¹⁰⁾	0,08	0,09	0,15	0,29	0,35	0,67
Hub ¹¹⁾	0,73	1,11	2,05	3,43	4,82	6,94
Connecting 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 alternating loads as well as max. permitted shaft misalignment.
- Valid for one rotational direction, max. stress $\leq 10^5$.
- Transmittable torques dependent on bore see page 57.
- 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:

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

- 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.

Double-jointed coupling with connecting plate and clamping hubs

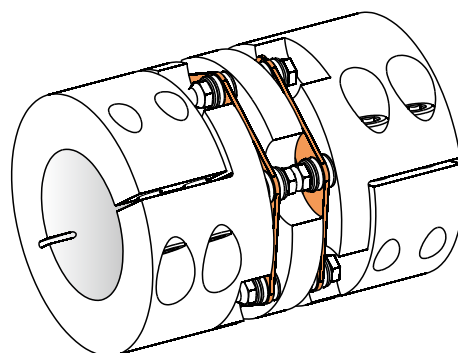
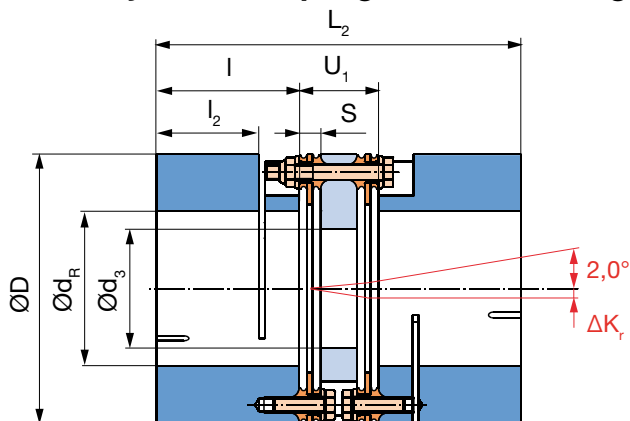


Fig. 36: Type 951.551

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

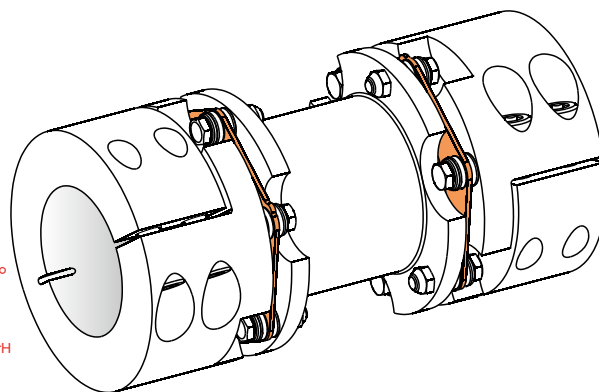
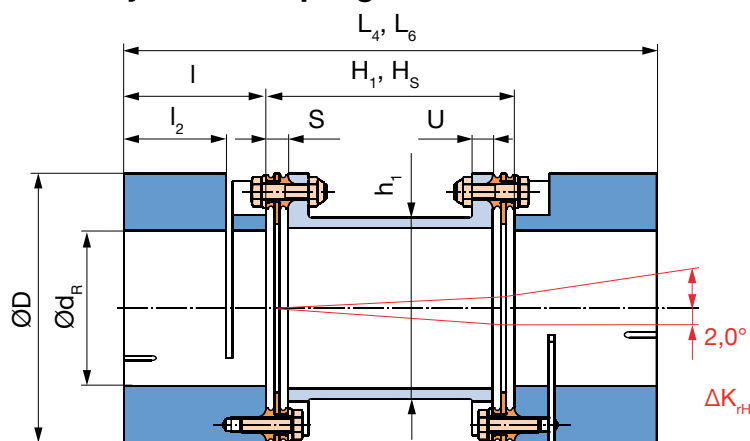


Fig. 37: Type 951.552 (Sleeve 1: H_1, L_4), Type 951.553 (Sleeve S: H_S, L_6)

Order Number

Order Number								
—	/	9	5	—	.	5	5	— / — / — / — / —
▲				▲				▲
Sizes 16 to 160		Single-jointed coupling	0		Single-jointed coupling	0	Bore* Hub 1 ø (Dim. page 30)	Bore* Hub 2 ø (Dim. page 30)
		Double-jointed coupling	1		Connecting plate	1		
					Sleeve 1	2		
					Sleeve S	3		
					Sleeve GKR (page 52)	4		
					Sleeve CRP (page 52)	5		
								Sleeve length H_S [mm]
								Operating speed n_s [rpm]
								for special sleeves S / GKR / CFK

Example: 16 / 951.551 / Hub 1 – ø 45 ^{H7} / Hub 2 – ø 45 ^{H7}

*Standard H7, other tolerances possible

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Single-jointed coupling with clamping ring hubs

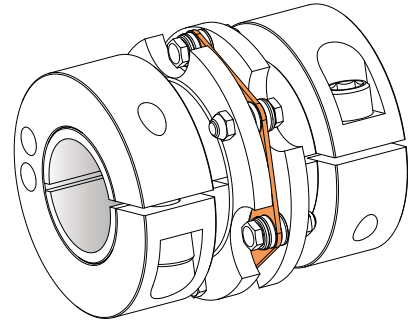
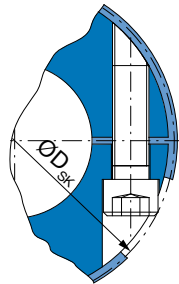
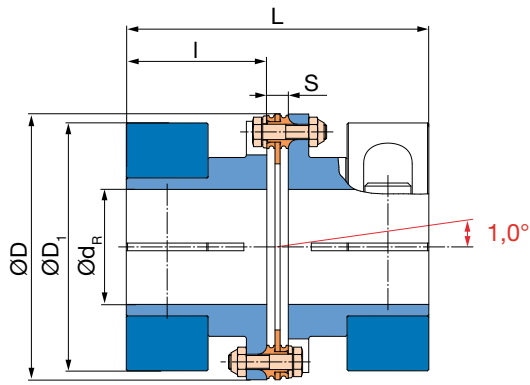


Fig. 38: Type 950.440

rotation circle diameter ØD_{sk}
of the clamping screws

Technical Data and Main Dimensions				Size					
				16	25	40	64	100	160
Nominal torque ¹⁾	T_{KN}	[Nm]		190	290	450	720	1000	1600
Peak transient torque ²⁾	T_{KS}	[Nm]		285	435	675	1080	1500	2400
Outer diameter	D	[mm]		77	89	104	123	143	167
Minimum hub bore ³⁾	$d_{\text{R min}}$	[mm]		20	22	25	28	32	40
Maximum hub bore ³⁾	$d_{\text{R max}}$	[mm]		35	40	45	55	68	80
Maximum speed ⁴⁾	n_{max}	[rpm]		9500	8200	7000	6000	5100	4300
Permitted misalignments ⁵⁾	permitted axial misalignment ^{6) 7)}	ΔK_a	[mm]	1,1	1,3	1,5	1,8	2,1	2,5
		ΔK_r	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
	permitted radial misalignment ⁶⁾	with connecting plate	ΔK_{rH}	[mm]	1,0	1,2	1,5	1,8	2,1
		with sleeve S	ΔK_{rH}	[mm]	$(H_s - S) \times 0,0174$				
Spring stiffness	torsion ⁸⁾	disk pack	$C_{T LP}$	[10 ³ Nm/rad]	145	280	301	748	1135
		tube sleeve S	$C_{T H rel.}$	[10 ⁶ Nm mm/rad]	19	34	71	108	217
	angular spring stiffness ⁹⁾			[Nm/rad]	229	248	298	876	1089

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 [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ¹⁰⁾	0,08	0,12	0,26	0,74	1,19	3,27
Hub ¹¹⁾	0,63	1,29	2,84	6,3	13,49	28,71
Connecting 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 ¹⁰⁾	0,08	0,09	0,15	0,29	0,35	0,67
Hub ¹¹⁾	0,76	1,20	2,00	3,17	4,90	7,61
Connecting 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 alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress $\leq 10^5$.

3) Transmittable torques dependent on bore see page 57.

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

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

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.

Double-jointed coupling with connecting plate and clamping ring hubs

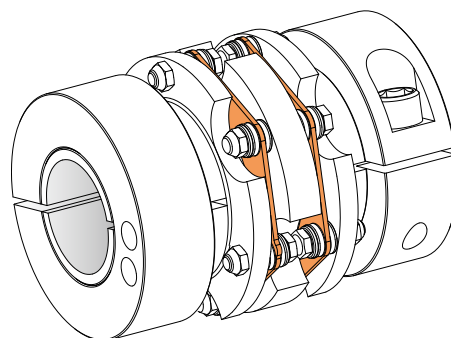
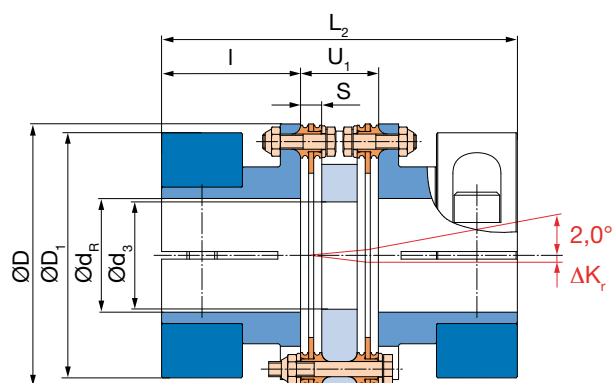


Fig. 39: Type 951.441

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

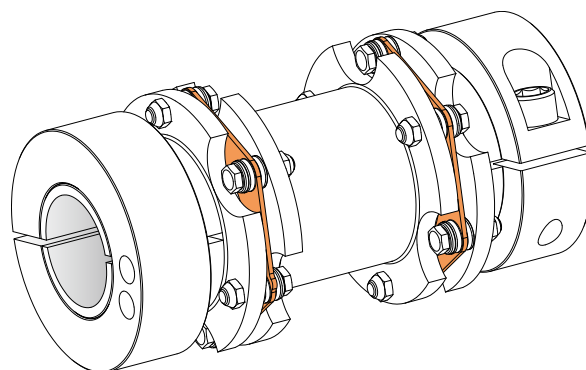
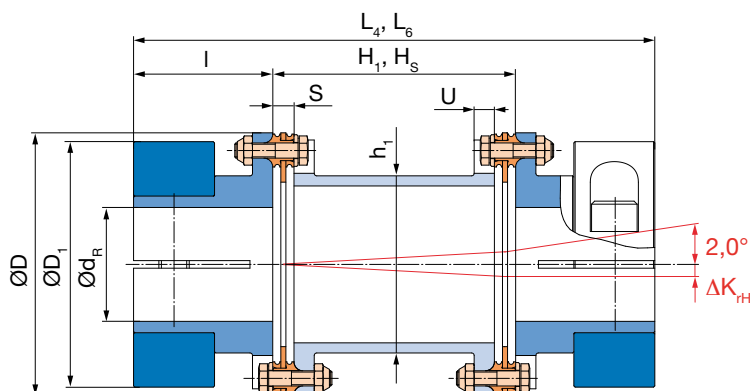


Fig. 40: Type 951.442 (Sleeve 1: H_1 , L_4), Type 951.443 (Sleeve S: H_S , L_6)

Order Number									
— / 9 5 — . 4 4 — / — / — / — / —									
      									
Sizes 16 to 160	Single-jointed coupling	0	Single-jointed coupling	0	Bore* Hub 1 ø (Dim. page 32)	Bore* Hub 2 ø (Dim. page 32)	Sleeve length H _s [mm]	Operating speed n _s [rpm]	
	Double-jointed coupling	1	Connecting plate	1					
			Sleeve 1	2					
			Sleeve S	3					
			Sleeve GKR (page 52)	4					
			Sleeve CRP (page 52)	5					
							for special sleeves S / GKR / CRP		

Example: 16 / 951.441 / Hub 1 – $\varnothing 25^{H7}$ / Hub 2 – $\varnothing 25^{H7}$

*Standard H7, other tolerances possible

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Single-jointed coupling with shrink disk hubs, external clamping

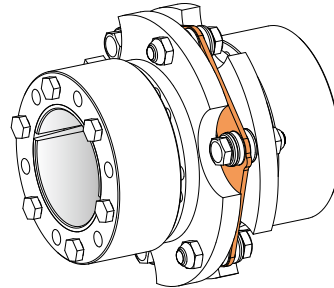
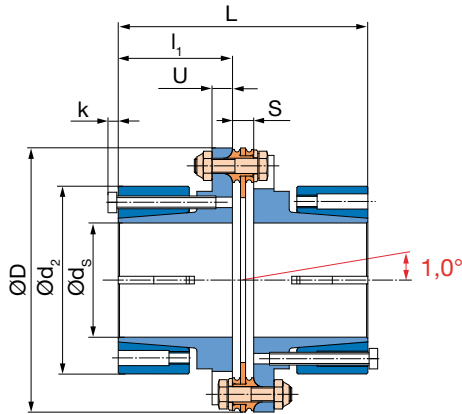


Fig. 41: Type 950.220

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque ¹⁾		T _{KN}	[Nm]	190	290	450	720	1000	1600	
Peak transient torque ²⁾		T _{KS}	[Nm]	285	435	675	1080	1500	2400	
Outer diameter		D	[mm]	77	89	104	123	143	167	
Minimum hub bore ³⁾		d _{S min}	[mm]	14	20	25	30	35	40	
Maximum hub bore ³⁾		d _{S max}	[mm]	26	36	45	45	55	65	
Maximum speed ⁴⁾		n _{max}	[rpm]	13600	11800	10100	8500	7300	6200	
Permitted misalignments ⁵⁾	permitted axial misalignment ^{6) 7)}		ΔK _a	[mm]	1,1	1,3	1,5	1,8	2,1	2,5
	permitted radial misalignment ⁶⁾	with connecting plate	ΔK _r	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
		with sleeve 1	ΔK _{rH}	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,0174					
Spring stiffness	torsion ⁸⁾	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 stiffness ⁹⁾			[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 [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ¹⁰⁾	0,08	0,12	0,26	0,74	1,19	3,27
Hub ¹¹⁾	0,27	0,57	1,15	2,46	5,59	11,14
Connecting 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 ¹⁰⁾	0,08	0,09	0,15	0,29	0,35	0,67
Hub ¹¹⁾	0,49	0,71	1,03	1,71	2,73	3,99
Connecting 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 alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress $\leq 10^5$.

3) Transmittable torques dependent on bore see page 56.

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_r -value of a double-jointed coupling can be roughly calculated as follows:

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

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.

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

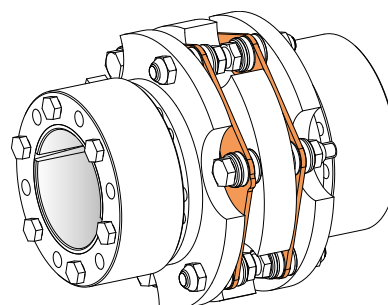
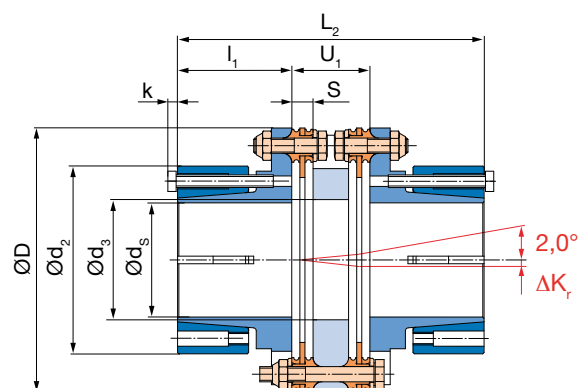
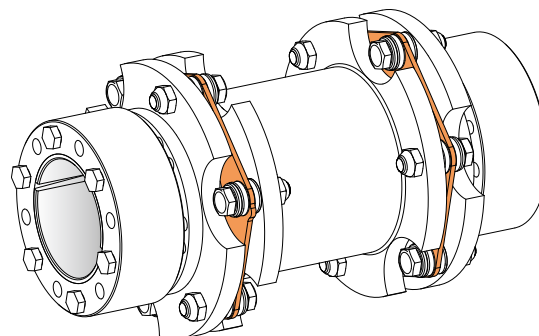
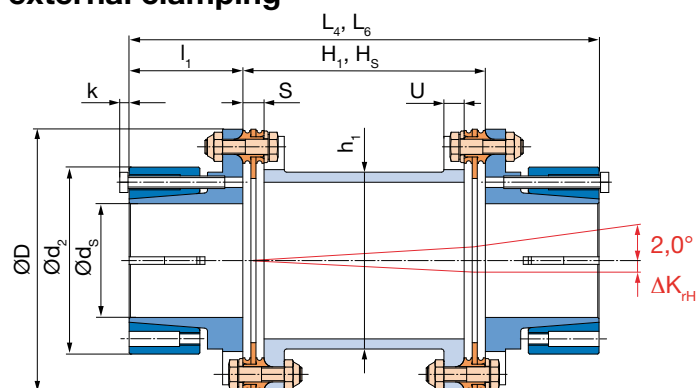


Fig. 42: Type 951.221

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


Fig. 43: Type 951.222 (Sleeve 1: H₁, L₄), Type 951.223 (Sleeve S: H_S, L₆)

Order Number																
—	/	9	5	—	.	2	2	—	/	—	/	—	/	—	/	—
▲				▲				▲		▲		▲		▲		▲
Sizes 16 to 160	Single-jointed coupling			0	Single-jointed coupling			0	Bore* Hub 1 ø (Dim. page 34)	Bore* Hub 2 ø (Dim. page 34)	Sleeve length H _s [mm]	Operating speed n _s [rpm]				
	Double-jointed coupling			1	Connecting plate			1								
					Sleeve 1			2								
					Sleeve S			3								
					Sleeve GKR (page 52)			4								
					Sleeve CRP (page 52)			5								
												for special sleeves S / GKR / CRP				

Example: 100 / 951.221 / Hub 1 – ø 45^{H7} / Hub 2 – ø 45^{H7}

*Standard H7, other tolerances possible

Additional Option:						External shrink disk hub	
Size	d _w	D ₃	l	l ₂	p	ØD ₃	U
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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Single-jointed coupling with shrink disk hubs, external clamping and internal clamping

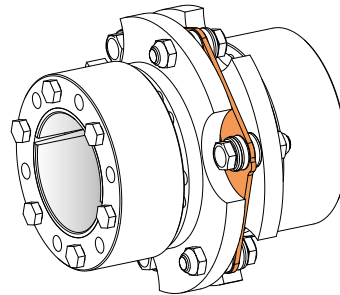
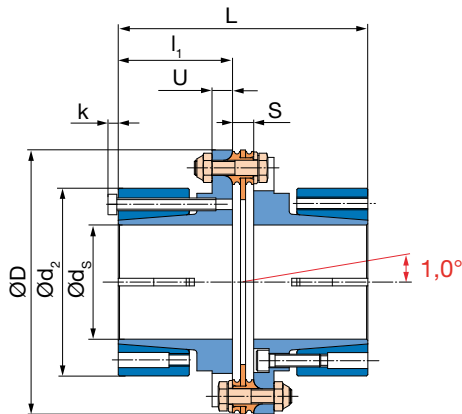


Fig. 44: Type 950.230

Technical Data and Main Dimensions			Size							
			16	25	40	64	100	160		
Nominal torque ¹⁾		T _{KN}	[Nm]	190	290	450	720	1000	1600	
Peak transient torque ²⁾		T _{KS}	[Nm]	285	435	675	1080	1500	2400	
Outer diameter		D	[mm]	77	89	104	123	143	167	
Minimum hub bore ³⁾		d _{S min}	[mm]	14	20	25	30	35	40	
Maximum hub bore ³⁾		d _{S max}	[mm]	26	36	45	45	55	65	
Maximum speed ⁴⁾		n _{max}	[rpm]	13600	11800	10100	8500	7300	6200	
Permitted misalignments ⁵⁾	permitted axial misalignment ^{6) 7)}		ΔK _a	[mm]	1,1	1,3	1,5	1,8	2,1	2,5
		with connecting plate	ΔK _r	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
	permitted radial misalignment ⁶⁾	with sleeve 1	ΔK _{rH}	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,0174					
Spring stiffness	torsion ⁸⁾	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 stiffness ⁹⁾			[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 [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ¹⁰⁾	0,08	0,12	0,26	0,74	1,19	3,27
Hub ¹¹⁾	0,27	0,57	1,15	2,46	5,59	11,14
Connecting 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 ¹⁰⁾	0,08	0,09	0,15	0,29	0,35	0,67
Hub ¹¹⁾	0,49	0,71	1,03	1,71	2,73	3,99
Connecting 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 alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress $\leq 10^5$.

3) Transmittable torques dependent on bore see page 56.

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_r -value of a double-jointed coupling can be roughly calculated as follows:

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

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.

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

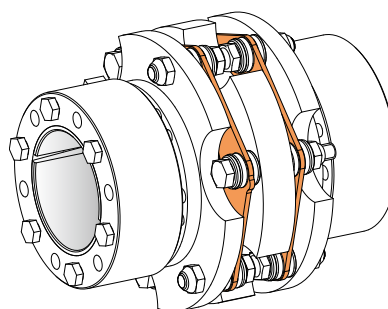
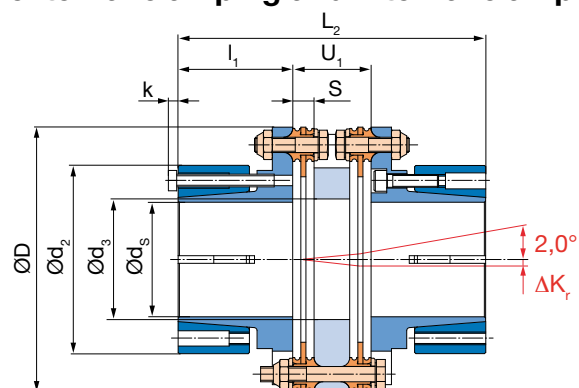


Fig. 45: Type 951.231

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

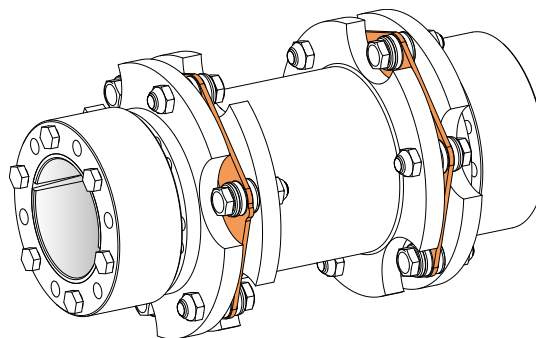
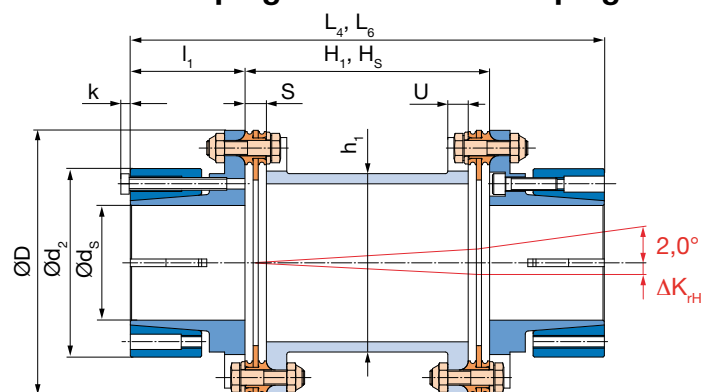


Fig. 46: Type 951.232 (Sleeve 1: H_1 , L_4), Type 951.233 (Sleeve S: H_S , L_6)

Order Number								
—	/	9	5	—	.	2	3	— / — / — / — / —
▲				▲			▲	▲
Sizes 16 to 160	Single-jointed coupling		0	Single-jointed coupling		0	Bore* Hub 1 ø (Dim. page 36)	Bore* Hub 2 ø (Dim. page 36)
	Double-jointed coupling		1	Connecting plate		1		
				Sleeve 1		2		
				Sleeve S		3		
				Sleeve GKR (page 52)		4		
				Sleeve CRP (page 52)		5		
								Sleeve length H_S [mm] for special sleeves S / GKR / CRP
								Operating speed n_s [rpm]

Example: 64 / 951.231 / Hub 1 – ø 35 ^{H7} / Hub 2 – ø 40 ^{H7}

*Standard H7, other tolerances possible

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Single-jointed coupling with shrink disk hubs, large

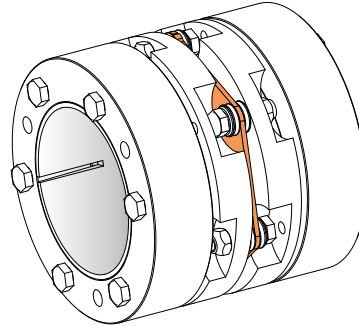
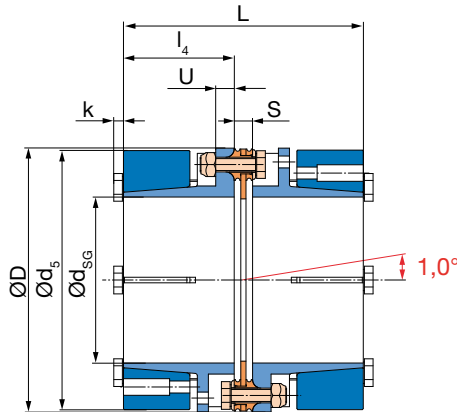


Fig. 47: Type 950.990

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque ¹⁾		T _{KN}	[Nm]	190	290	450	720	1000	1600	
Peak transient torque ²⁾		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 ³⁾		n _{max}	[rpm]	13600	11800	10100	8500	7300	6200	
Permitted misalignments ⁴⁾	permitted axial misalignment ^{5) 6)}		ΔK _a	[mm]	1,1	1,3	1,5	1,8	2,1	2,5
		with connecting plate	ΔK _r	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
	permitted radial misalignment ⁵⁾	with sleeve 1	ΔK _{rH}	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,0174					
Spring stiffness	torsion ⁷⁾	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 stiffness ⁸⁾			[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
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					
I_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 alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress $\leq 10^5$.

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 C_r -value of a double-jointed coupling can be roughly calculated as follows:

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

Mass moments of Inertia J [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ⁹⁾	0,08	0,12	0,26	0,74	1,19	3,27
Hub ¹⁰⁾	0,78	1,23	2,88	5,81	13,77	27,35
Connecting 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 ⁹⁾	0,08	0,09	0,15	0,29	0,35	0,67
Hub ¹⁰⁾	0,79	1,02	1,71	2,53	3,92	6,08
Connecting 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

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.

A detailed technical drawing of a high-pressure cell assembly. The assembly consists of a cylindrical body with a flange on the left side, secured by several bolts. Inside the cylinder, there is a piston and a sample holder. The drawing shows the internal components and the external structure, including the flange and bolts.

This diagram shows an exploded view of a mechanical assembly. It features a central shaft with a keyway. On the left, there is a flange-like component with a central hole and a key. On the right, there is another flange-like component with a central hole and a key. The shaft is positioned between these two components, and the keys are aligned to fit into the keyways on the shaft and the holes in the flanges. The components are shown in a perspective view, with the shaft and flanges highlighted in a light blue color.

— / 9 5 — . 9 9 — / — / — / — / —									
Sizes 16 to 160	Single-jointed coupling Double-jointed coupling	0 1	Single-jointed coupling Connecting plate Sleeve 1 Sleeve S Sleeve GKR (page 52) Sleeve CRP (page 52)	0 1 2 3 4 5	Bore* Hub 1 ø (Dim. page 38)	Bore* Hub 2 ø (Dim. page 38)	Sleeve length H_s [mm]	Operating speed n_s [rpm]	
								for special sleeves S / GKR / CRP	

*Standard H7, other tolerances possible

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Double-jointed coupling with connecting plate and split clamping hub

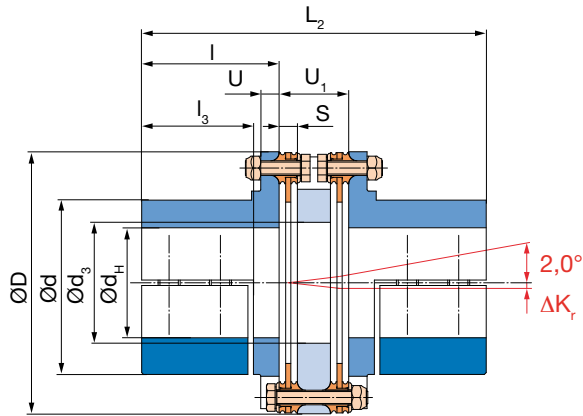
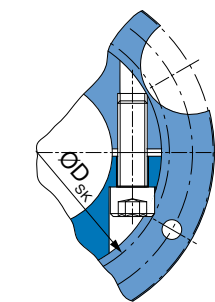
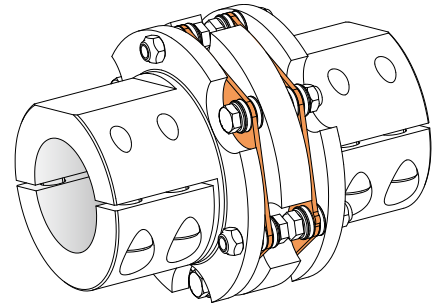


Fig. 50: Type 951.881



rotation circle diameter ØD_{sk}
of the clamping screws



Optional keyway design
according to DIN 6885 possible

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque ¹⁾		T _{KN}	[Nm]	190	290	450	720	1000	1600	
Peak transient torque ²⁾		T _{KS}	[Nm]	285	435	675	1080	1500	2400	
Outer diameter		D	[mm]	77	89	104	123	143	167	
Minimum hub bore ³⁾		d _{H min}	[mm]	18	22	25	30	35	40	
Maximum hub bore ³⁾		d _{H max}	[mm]	28	32	40	45	60	75	
Maximum speed ⁴⁾		n _{max}	[rpm]	9500	8200	7000	6000	5100	4300	
Permitted misalignments ⁵⁾	permitted axial misalignment ^{6) 7)}		ΔK _a	[mm]	1,1	1,3	1,5	1,8	2,1	2,5
		with connecting plate	ΔK _r	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
	permitted radial misalignment ⁶⁾	with sleeve 1	ΔK _{rH}	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,0174					
Spring stiffness	torsion ⁸⁾	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 stiffness ⁹⁾			[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					
I	40	45	55	65	75	85
I_3	31	35	43	51	61	69
I_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 alternating loads as well as max. permitted shaft misalignment.
- Valid for one rotational direction, max. stress $\leq 10^5$.
- Transmittable torques dependent on bore see page 56.
- 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:

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

Mass moments of Inertia J [10⁻³ kgm²]

Size	16	25	40	64	100	160
Disk pack ¹⁰⁾	0,08	0,12	0,26	0,74	1,19	3,27
Hub ¹¹⁾	0,25	0,54	1,20	2,63	6,31	12,49
Connecting 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 ¹⁰⁾	0,08	0,09	0,15	0,29	0,35	0,67
Hub ¹¹⁾	0,47	0,76	1,21	1,96	3,17	4,45
Connecting 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 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.

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

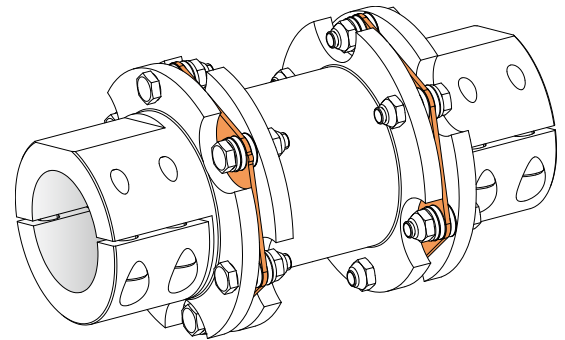
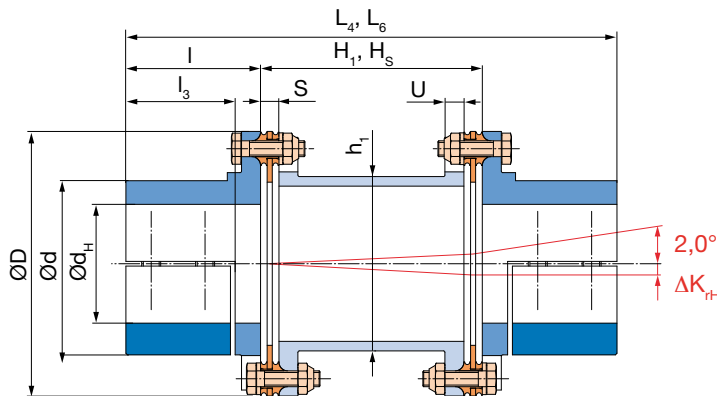


Fig. 51: Type 951.882 (Sleeve 1: H_1, L_4),
Type 951.883 (Sleeve S: H_S, L_6)

Optional keyway design according to DIN 6885 possible

Installation coupling with split clamping hubs

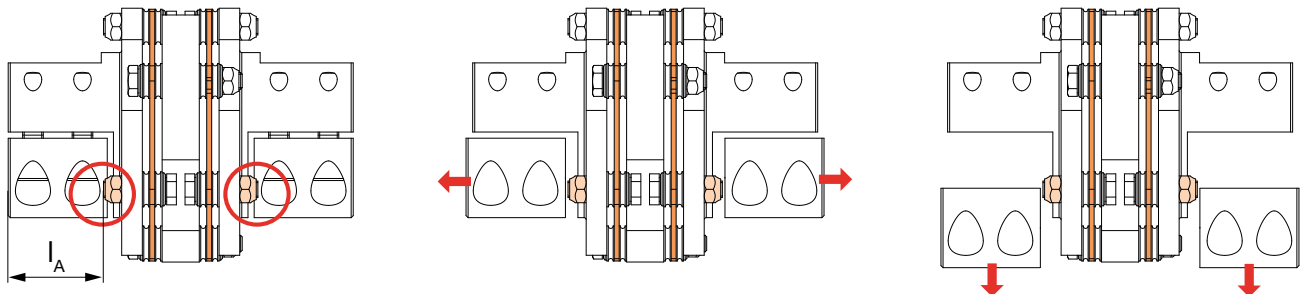


Fig. 52: Axial displacement of the split clamping hubs during radial installation/dismantling (only necessary on Type 951.881).

Order Number

— / 9 5 1 . 8 8 — / — / — / — / —									
▲					▲	▲	▲	▲	▲
Sizes 16 to 160	Connecting plate				1	Bore* Hub 1 ø (Dim. page 40)	Bore* Hub 2 ø (Dim. page 40)	Sleeve length H_s [mm] for special sleeves S / GKR / CRP	Operating speed n_s [rpm]
	Sleeve 1				2				
	Sleeve S				3				
	Sleeve GKR (page 52)				4				
	Sleeve CRP (page 52)				5				

Example: 100 / 951.881 / Hub 1 – ø 50 ^{H7} / Hub 2 – ø 50 ^{H7}

*Standard H7, other tolerances possible

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Single-jointed coupling with flanges

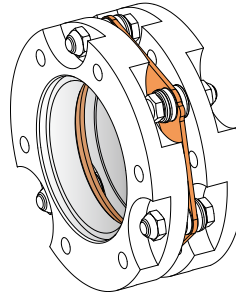
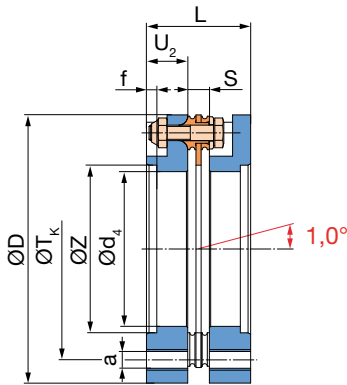


Fig. 53: Type 950.660

Technical Data and Main Dimensions				Size						
				16	25	40	64	100	160	
Nominal torque ¹⁾		T _{KN}	[Nm]	190	290	450	720	1000	1600	
Peak transient torque ²⁾		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 ³⁾		n _{max}	[rpm]	13600	11800	10100	8500	7300	6200	
Permitted misalignments ⁴⁾	permitted axial misalignment ^{5) 6)}		ΔK _a	[mm]	1,1	1,3	1,5	1,8	2,1	2,5
	permitted radial misalignment ⁵⁾	with connecting plate	ΔK _r	[mm]	0,3	0,3	0,4	0,45	0,45	0,55
		with sleeve 1	ΔK _{rH}	[mm]	1,0	1,2	1,5	1,8	2,1	2,2
		with sleeve S	ΔK _{rH}	[mm]	(H _S - S) x 0,0174					
Spring stiffness	torsion ⁷⁾	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 stiffness ⁸⁾			[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	67,6
L_2	56,2	56,4	66,8	77,2	78	101,2
L_4	100	110	132	156	176	196
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

Mass moments of Inertia J [10^{-3} kgm²]

Size	16	25	40	64	100	160
Disk pack ⁹⁾	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
Connecting 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 ⁹⁾	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
Connecting 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 alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress $\leq 10^5$.

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 C_r -value of a double-jointed coupling can be roughly calculated as follows:

8) The values refer to 1 disk pack.

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

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

Double-jointed coupling with connecting plate and flanges

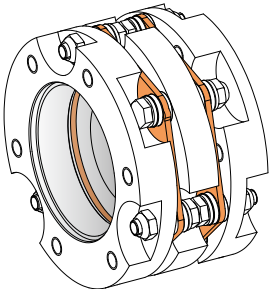
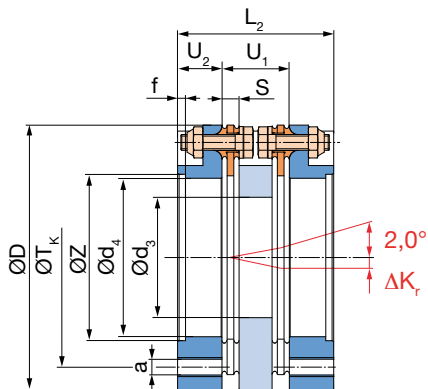


Fig. 54: Type 951.661

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

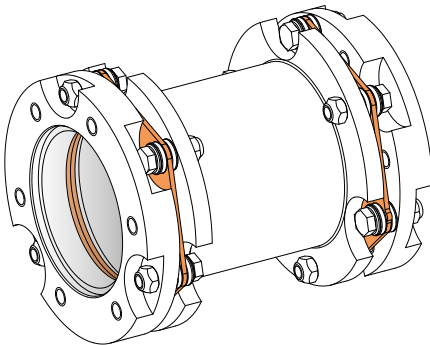
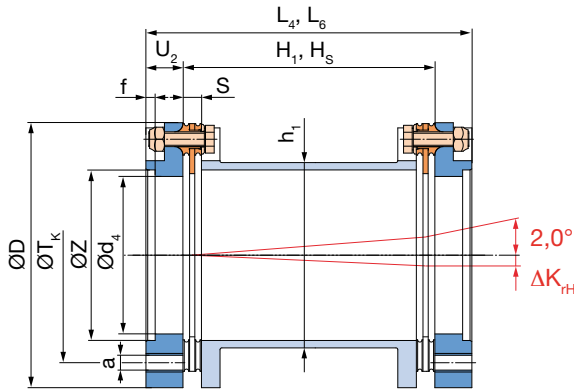


Fig. 55: Type 951.662 (Sleeve 1: H_1 , L_4), Type 951.663 (Sleeve S: H_S , L_6)

Order Number									
—	/	9	5	—	.	6	6	—	/ — / —
▲				▲			▲	▲	▲
Sizes 16 to 160	Single-jointed coupling		0	Single-jointed coupling		0	Sleeve length		Operating speed
	Double-jointed coupling		1	Connecting plate		1	H_S		n_s
				Sleeve 1		2	[mm]		[rpm]
				Sleeve S		3	for special sleeves S / GKR / CRP		
				Sleeve GKR (page 52)		4			
				Sleeve CRP (page 52)		5			

Example: 40 / 951.661

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Single-jointed coupling with key hubs

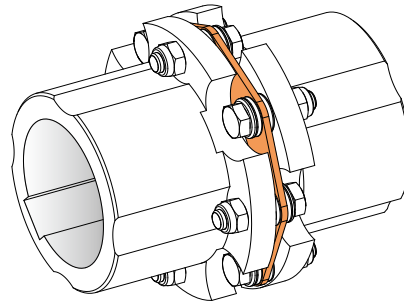
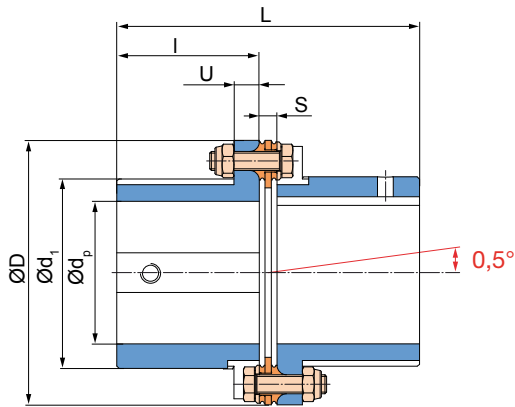


Fig. 56: Type 950.000

Technical Data and Main Dimensions				Size						
				180	300	500	850	1400	2200	
Nominal torque ¹⁾		T _{KN}	[Nm]	2100	3500	5800	9500	15000	24000	
Peak transient torque ²⁾		T _{KS}	[Nm]	3150	5250	8700	14250	22500	36000	
Outer diameter		D	[mm]	143	167	198	234	274	314	
Minimum hub bore		d _{p min}	[mm]	40	45	55	65	75	90	
Maximum hub bore		d _{p max}	[mm]	75	90	105	120	140	170	
Maximum speed ³⁾		n _{max}	[rpm]	7300	6200	5200	4400	3800	3300	
Permitted misalignments ⁴⁾	permitted axial misalignment ^{5) 6)}		ΔK _a	[mm]	1,0	1,2	1,4	1,6	1,9	2,2
	permitted radial misalignment ⁵⁾	with connecting plate	ΔK _r	[mm]	0,25	0,25	0,35	0,4	0,5	0,55
		with sleeve 1	ΔK _{rH}	[mm]	1,2	1,25	1,35	1,7	2	2,6
		with sleeve S	ΔK _{rH}	[mm]	(H _s - S) x 0,00873					
Spring stiffness	torsion ¹⁰⁾	disk pack	C _{T LP}	[10 ³ Nm/rad]	3000	3480	11900	20600	30150	46800
		tube sleeve S	C _{T H rel.}	[10 ⁶ Nm mm/rad]	250	415	894	1690	2734	4961
	angular spring stiffness ⁷⁾			[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
$d_{p \min}$	40	45	55	65	75	90
$d_{p \max}$	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

1) Valid for alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress $\leq 10^5$.

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.

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

Mass moments of Inertia J [10⁻³ kgm²]

Size	180	300	500	850	1400	2200
Disk pack ⁸⁾	2,64	5,60	14,58	36,85	83,86	132,19
Hub key ⁹⁾	6,45	13,14	28,21	63,01	134,49	323,57
Hub key: internal ⁹⁾	4,26	9,18	20,64	46,85	95,76	207,12
Connecting 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 ⁸⁾	0,73	1,15	2,14	3,92	6,52	7,51
Hub key ⁹⁾	2,80	4,01	6,25	10,51	16,62	28,46
Hub key: internal ⁹⁾	2,38	3,32	5,36	9,00	14,44	23,26
Connecting 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

10) The $C_{T \text{ tot.}}$ value of a double-jointed coupling can be roughly calculated as follows:

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

Double-jointed coupling with connecting plate and key hubs

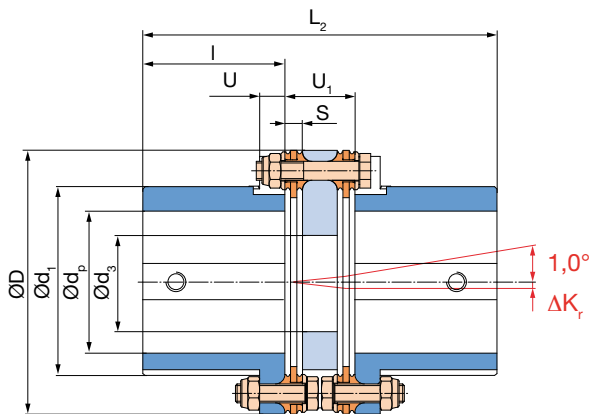
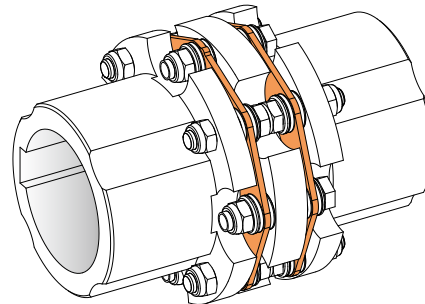
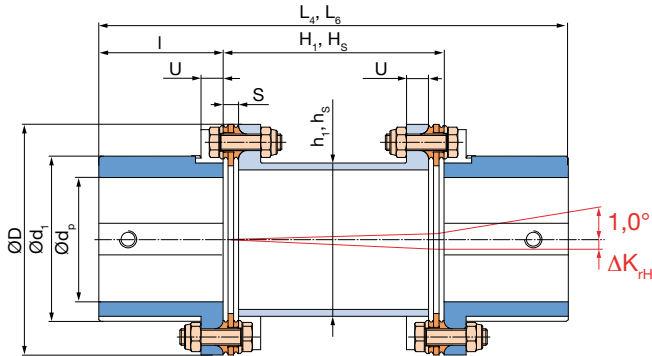


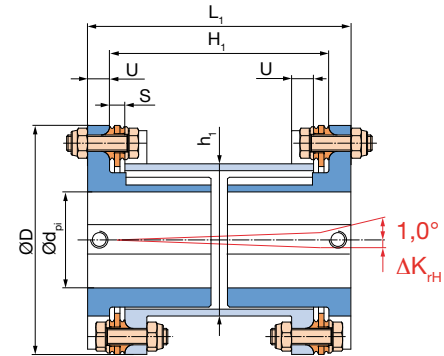
Fig. 57: Type 951.001



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


Fig. 58: 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. 59: 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. 59)		7		7		Key hub internal (Fig. 59)							
		▽		▽									
— / 9 5 — . — — — / — / — / — / —													
△		△		△		△		△		△		△	
Sizes 180 to 2200	Single-jointed coupling	0	Single-jointed coupling	0	Bore* Hub 1 ø (Dim. page 44)	Bore* Hub 2 ø (Dim. page 44)	Sleeve length H _s [mm]	Operating speed n _s [rpm]					
	Double-jointed coupling	1	Connecting plate	1									
			Sleeve 1	2									
			Sleeve S	3									
			Sleeve GKR (page 52)	4									
			Sleeve CRP (page 52)	5									
									for special sleeves S / GKR / CRP				

Example: 300 / 951.001 / Hub 1 – ø 50 ^{H7} / Hub 2 – ø 60 ^{H7}

*Standard H7, other tolerances possible

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Single-jointed coupling with shrink disk hubs, external clamping

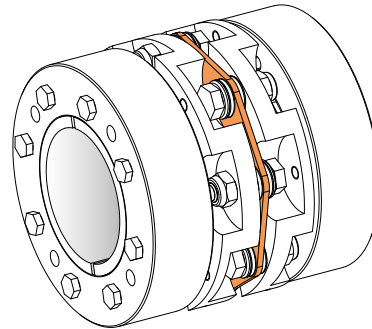
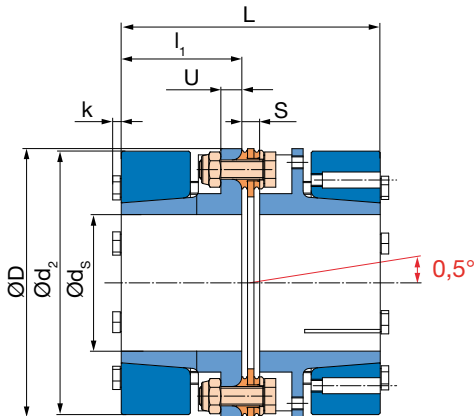


Fig. 60: Type 950.220

Technical Data and Main Dimensions				Size						
				180	300	500	850	1400	2200	
Nominal torque ¹⁾		T _{KN}	[Nm]	2100	3500	5800	9500	15000	24000	
Peak transient torque ²⁾		T _{KS}	[Nm]	3150	5250	8700	14250	22500	36000	
Outer diameter		D	[mm]	143	167	198	234	274	314	
Minimum hub bore ³⁾		d _{S min}	[mm]	42	50	60	70	80	100	
Maximum hub bore ³⁾		d _{S max}	[mm]	75	85	100	120	140	170	
Maximum speed ⁴⁾		n _{max}	[rpm]	7300	6200	5200	4400	3800	3300	
Permitted misalignments ⁵⁾	permitted axial misalignment ^{6) 7)}		ΔK _a	[mm]	1,0	1,2	1,4	1,6	1,9	2,2
		with connecting plate	ΔK _r	[mm]	0,25	0,25	0,35	0,4	0,5	0,55
	permitted radial misalignment ⁶⁾	with sleeve 1	ΔK _{rH}	[mm]	1,2	1,25	1,35	1,7	2	2,6
		with sleeve S	ΔK _{rH}	[mm]	(H _S - S) x 0,00873					
Spring stiffness	torsion ¹¹⁾	disk pack	C _{T LP}	[10 ³ Nm/rad]	3000	3480	11900	20600	30150	46800
		tube sleeve S	C _{T H rel.}	[10 ⁶ Nm mm/rad]	250	415	894	1690	2734	4961
	angular spring stiffness ⁸⁾			[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

- 1) Valid for alternating loads as well as max. permitted shaft misalignment.
- 2) Valid for one rotational direction, max. stress $\leq 10^5$.
- 3) Transmittable torques dependent on bore see page 56.
- 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.

Mass moments of Inertia J [10⁻³ kgm²]

Size	180	300	500	850	1400	2200
Disk pack ⁹⁾	2,64	5,60	14,58	36,85	83,86	132,19
Hub ¹⁰⁾	14,41	31,64	83,82	192,23	409,20	723,01
Connecting 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 ⁹⁾	0,73	1,15	2,14	3,92	6,52	7,51
Hub ¹⁰⁾	4,65	7,61	14,12	23,00	35,72	49,20
Connecting 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

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

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

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

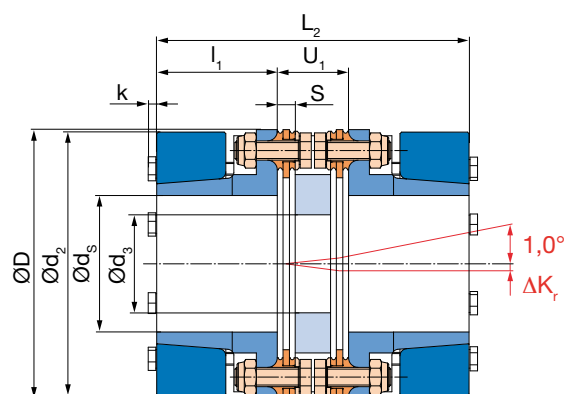
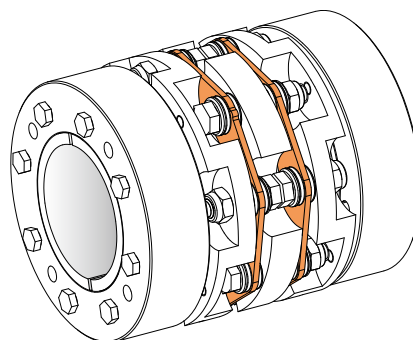


Fig. 61: Type 951.221



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

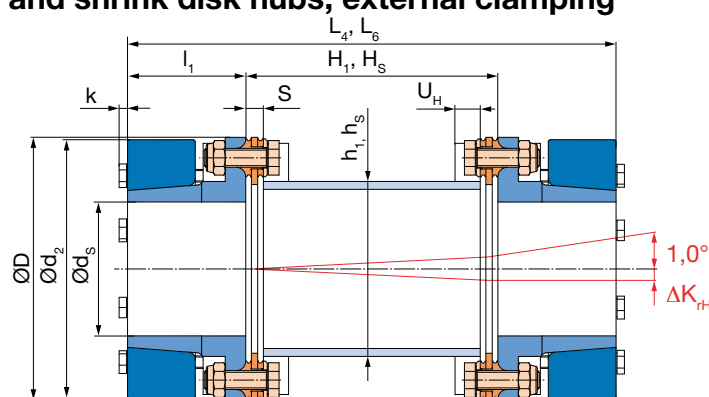
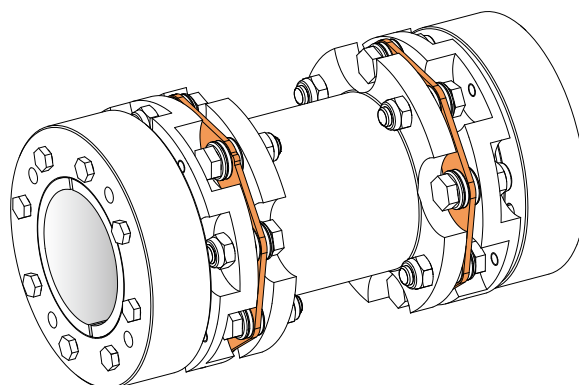


Fig. 62: Type 951.222 (Sleeve 1: H₁, h₁, L₄), Type 951.223 (Sleeve S: Hₛ, hₛ, L₆)



Order Number

—	/	9	5	—	.	2	2	—	/	—	/	—	/	—	/	—
▲				▲				▲	▲	▲	▲	▲	▲	▲	▲	▲
Sizes 180 to 2200	Single-jointed coupling			0	Single-jointed coupling			0	Bore*		Bore*		Sleeve length		Operating speed	
	Double-jointed coupling			1	Connecting plate			1	Hub 1 ø		Hub 2 ø		Hₛ		nₛ	
					Sleeve 1			2	(Dim. page 46)		(Dim. page 46)		[mm]		[rpm]	
					Sleeve S			3								
					Sleeve GKR (page 52)			4								
					Sleeve CRP (page 52)			5							for special sleeves S / GKR / CRP	

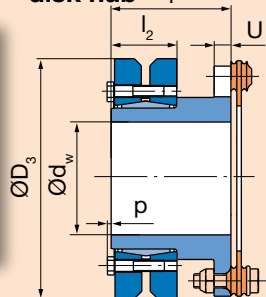
Example: 100 / 951.221 / Hub 1 – ø 45 H7 / Hub 2 – ø 45 H7

*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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Double-jointed coupling with connecting plate and split clamping hub

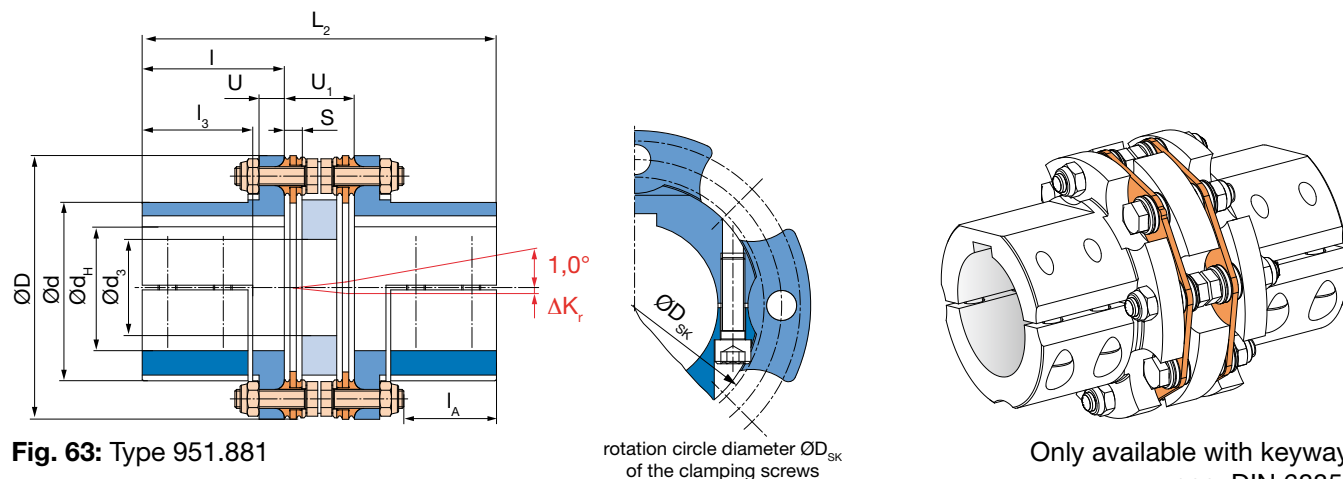


Fig. 63: Type 951.881

rotation circle diameter $\varnothing D_{SK}$
of the clamping screws

Only available with keyway
acc. DIN 6885!

Technical Data and Main Dimensions				Size						
				180	300	500	850	1400	2200	
Nominal torque ¹⁾		T _{KN}	[Nm]	2100	3500	5800	9500	15000	24000	
Peak transient torque ²⁾		T _{KS}	[Nm]	3150	5250	8700	14250	22500	36000	
Outer diameter		D	[mm]	143	167	198	234	274	314	
Minimum hub bore		d _{H.min}	[mm]	42	50	60	70	80	100	
Maximum hub bore		d _{H.max}	[mm]	65	80	95	110	120	150	
Maximum speed ³⁾		n _{max}	[rpm]	5100	4300	3600	3100	2600	2300	
Permitted misalignments ⁴⁾	permitted axial misalignment ^{6) 7)}		ΔK _a	[mm]	1,0	1,2	1,4	1,6	1,9	2,2
		with connecting plate	ΔK _r	[mm]	0,25	0,25	0,35	0,4	0,5	0,55
	permitted radial misalignment ⁶⁾	with sleeve 1	ΔK _{rH}	[mm]	1,2	1,25	1,35	1,7	2	2,6
		with sleeve S	ΔK _{rH}	[mm]	(H _S - S) x 0,00873					
Spring stiffness	torsion ⁵⁾	disk pack	C _{T LP}	[10 ³ Nm/rad]	3000	3480	11900	20600	30150	46800
		tube sleeve S	C _{T H rel.}	[10 ⁶ Nm mm/rad]	250	415	894	1690	2734	4961
	angular spring stiffness ⁸⁾			[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
d₃	54	61	66	76	86	110
H₁	150	160	170	220	266	320
H_S	acc. customer specifications					
h₁	92,5	111	132	150	174	206
h_S	92	110	130	150	165	190
L₂	212,4	224,4	252	315	374	443,6
L₄	320	340	370	470	566	680
L₆	dependent on H _S					
I	85	90	100	125	150	180
I₃	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
U₁	42,4	44,4	52	65	74	83,6

Mass moments of Inertia J [10^{-3} kgm²]

Size	180	300	500	850	1400	2200
Disk pack ⁹⁾	2,64	5,60	14,58	36,85	83,86	132,19
Hub ¹⁰⁾	6,61	14,02	30,01	65,69	146,71	352,20
Connecting 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 ⁹⁾	0,73	1,15	2,14	3,92	6,52	7,51
Hub ¹⁰⁾	3,19	4,66	7,20	11,70	20,26	33,95
Connecting 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 alternating loads as well as max. permitted shaft misalignment.
 - 2) Valid for one rotational direction, max. stress $\leq 10^5$.
 - 3) Not valid for coupling with sleeve S.
 - 4) The permitted misalignments may not simultaneously reach their maximum values.
 - 5) The C_T -value of a double-jointed coupling can be roughly calculated as follows:
- $$C_{T \text{ tot.}} = \frac{1}{\frac{2}{C_{T \text{ IP}}} + \frac{H_s [\text{mm}] - 2 S [\text{mm}]}{C_{T \text{ Hrel}}}}$$

- 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.

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

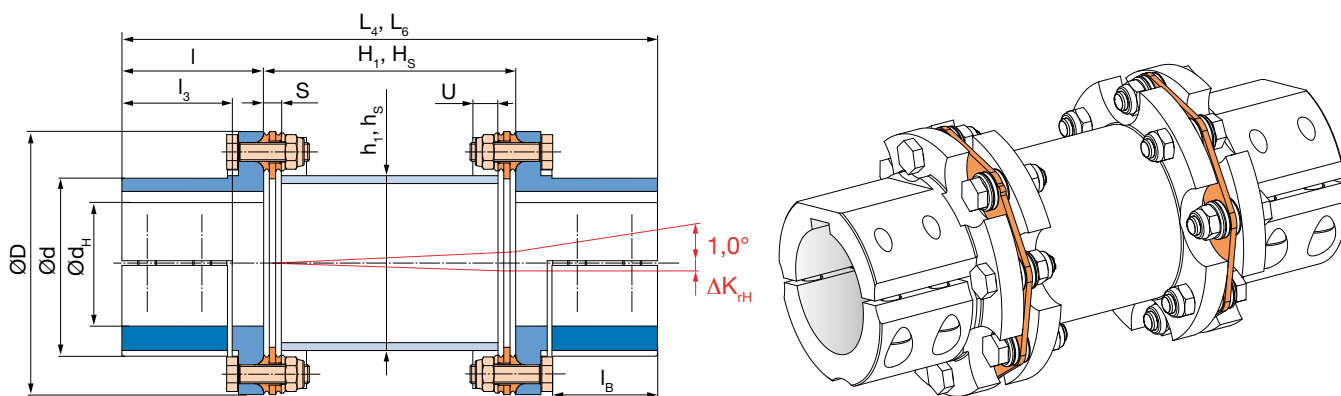


Fig. 64: Type 951.882 (Sleeve 1: H_1, h_1, L_4)
Type 951.883 (Sleeve S: H_S, h_S, L_6)

Only available with keyway acc. DIN 6885!

Installation coupling with split clamping hubs

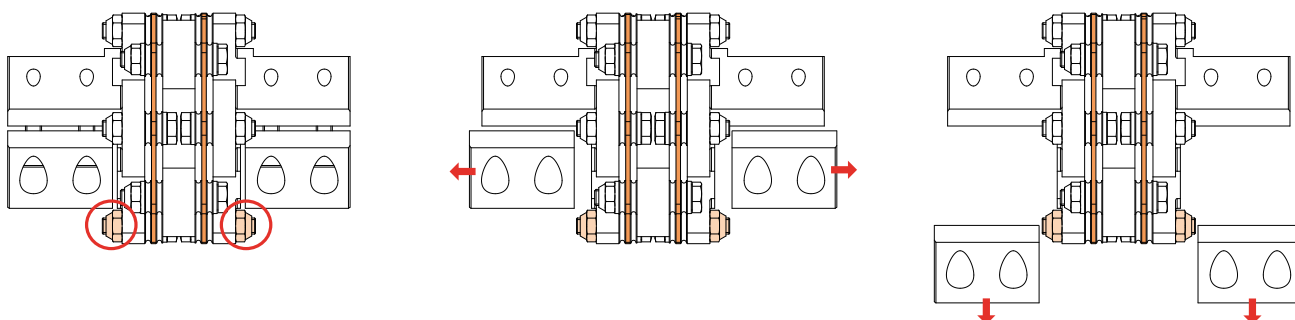


Fig. 65: Axial displacement of split clamping hubs during radial installation/dismantling
Please observe dimensions l_A and l_B !

Order Number

— / 9 5 1 . 8 8 — / — / — / — / —						— / — / — / — / —					
▲						▲ ▲ ▲ ▲ ▲ ▲					
Sizes 180 to 2200						Connecting plate Sleeve 1 Sleeve S Sleeve GKR (page 52) Sleeve CRP (page 52)	1 2 3 4 5	Bore* Hub 1 ø (Dim. page 48)	Bore* Hub 2 ø (Dim. page 48)	Sleeve length H_S [mm]	Operating speed n_s [rpm]
						for special sleeves S / GKR / CRP					

Example: 100 / 951.881 / Hub 1 – ø 50 ^{H7} / Hub 2 – ø 50 ^{H7}

*Standard H7, other tolerances possible

Please Observe! 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.

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Single-jointed coupling with flanges

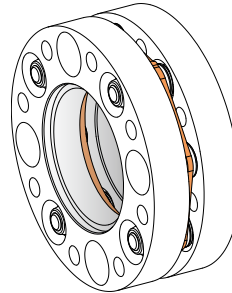
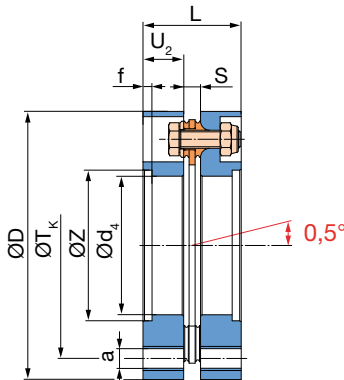


Fig. 66: Type 950.660

Technical Data and Main Dimensions				Size					
				180	300	500	850	1400	2200
Nominal torque ¹⁾	T_{KN}	[Nm]		2100	3500	5800	9500	15000	24000
Peak transient torque ²⁾	T_{KS}	[Nm]		3150	5250	8700	14250	22500	36000
Outer diameter	D	[mm]		153	178	210	250	290	336
Centering bore	Z ^{H7}	[mm]		85	100	120	140	160	180
Maximum speed ³⁾	n_{max}	[rpm]		7300	6200	5200	4400	3800	3300
Permitted misalignments ⁴⁾	permitted axial misalignment ^{5) 6)}	ΔK_a	[mm]	1,0	1,2	1,4	1,6	1,9	2,2
	permitted radial misalignment ⁵⁾ with connecting plate	ΔK_r	[mm]	0,25	0,25	0,35	0,4	0,5	0,55
	with sleeve 1	ΔK_{rH}	[mm]	1,2	1,25	1,35	1,7	2	2,6
	with sleeve S	ΔK_{rH}	[mm]	$(H_s - S) \times 0,00873$					
Spring stiffness	torsion ⁷⁾ disk pack	C_{TLP}	[10 ³ Nm/rad]	3000	3480	11900	20600	30150	46800
	tube sleeve S	$C_{THrel.}$	[10 ⁶ Nm mm/rad]	250	415	894	1690	2734	4961
	angular spring stiffness ⁸⁾		[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 ₃	54	61	66	76	86	110
d ₄	77	92	112	132	150	170
f	6	6	6	6	6	6
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	57,2	65,2	84	102	118	129,8
L ₂	88,4	98,4	124	153	176	195,6
L ₄	196	214	242	308	368	432
L ₆	dependent on H _s					
S	11,2	11,2	12	14	16	17,8
T _k	125	150	175	210	240	275
U	14	16	18	20	22	25
U ₁	42,4	44,4	52	65	74	83,6
U ₂	23	27	36	44	51	56

Mass moments of Inertia J [10⁻³ kgm²]

Size	180	300	500	850	1400	2200
Disk pack ⁹⁾	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
Connecting 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 ⁹⁾	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
Connecting 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 alternating loads as well as max. permitted shaft misalignment.

2) Valid for one rotational direction, max. stress ≤ 10⁵.

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_T-value of a double-jointed coupling can be roughly calculated as follows:

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

8) The values refer to 1 disk pack.

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

Double-jointed coupling with connecting plate and flanges

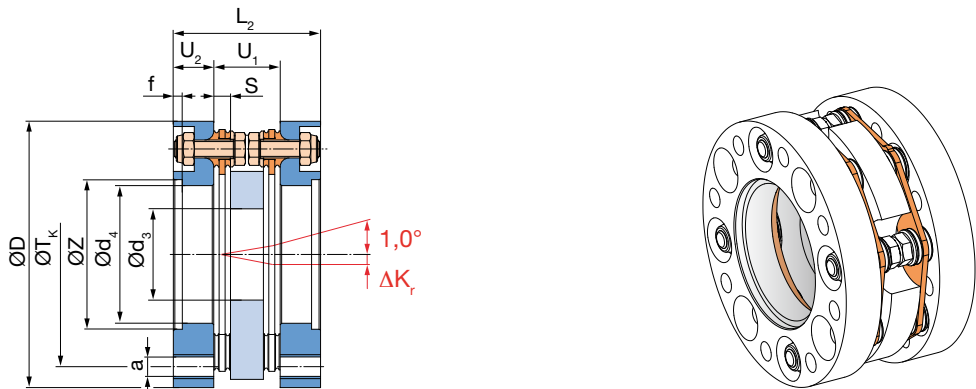


Fig. 67: Type 951.661

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

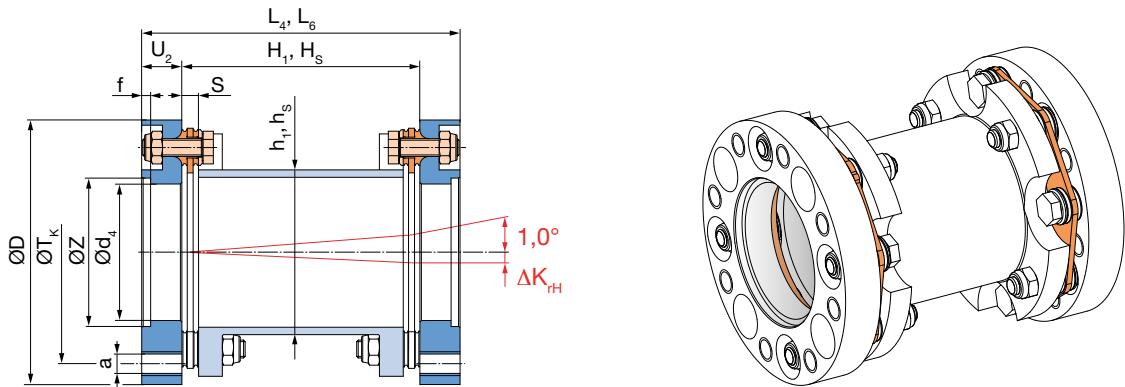


Fig. 68: Type 951.662 (Sleeve 1: H_1 , h_1 , L_4), Type 951.663 (Sleeve S: H_s , h_s , L_6)

Order Number						
—	/	9	5	—	.	6 6 — / — / —
▲			▲	▲		▲
Sizes 180 to 2200	Single-jointed coupling	0	Single-jointed coupling	0	Sleeve length H_s [mm]	Operating speed n_s [rpm]
	Double-jointed coupling	1	Connecting plate	1	for special sleeves S / GKR / CRP	
			Sleeve 1	2		
			Sleeve S	3		
			Sleeve GKR (page 52)	4		
			Sleeve CRP (page 52)	5		

Example: 40 / 950.661

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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

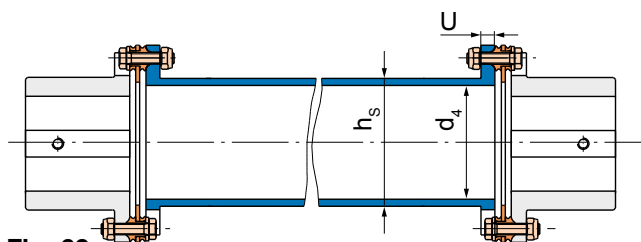


Fig. 69

Depressed tube (GKR) Type 951._.4 / 953._.4

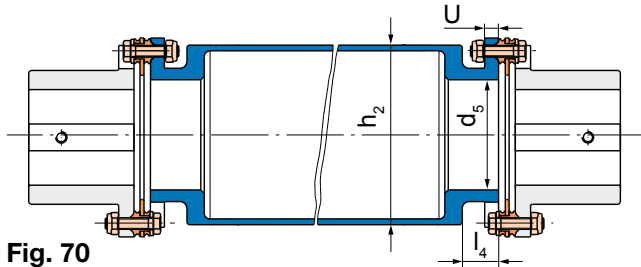


Fig. 70

CRP sleeve Type 951._.5 / 953._.5

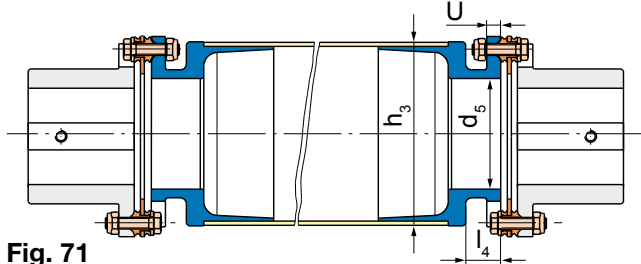


Fig. 71

Selection Aid: Variable Length Sleeves

Type	95_._.3	95_._.4	95_._.5
Speed	+	++	+++
Torsional rigidity	++	+++	+
Weight	++	+++	+
Mass moment of inertia	++	+++	+
Corrosion-resistance	++	++	+++
Changes in length due to temperature	+++	+++	+
Costs	+	++	+++
Operational focuses	• conventional applications	• medium speeds • high torsional rigidity	• high speeds • low mass

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

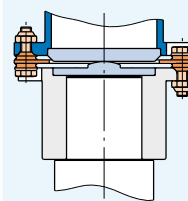


Fig. 72

Vertical support special sleeves Warning!

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

Dimensions [mm]

Size	16	25	40	64	100	160	180	300	500	850	1400	2200
d ₄	43	54	62	71	92	98	79	95	111	127	137	157
d ₅	45	48	58	68	88	95	75	90	110	123	144	167
h _s	50	60	70	80	100	110	92	110	130	150	165	190
h ₂	x	x	x	x	x	155	130	155	170	220	250	x
h ₃	73	86	96	118	138	160	138	160	192	224	266	315
l ₄	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

ROBA®-DS with CRP sleeves

(Carbon-fibre reinforced plastic)

Sleeves made of CRP 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 CRP 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 stiffness / weight ratio sets the bend-critical speed far higher than with conventional sleeves.

Wide bearing distances

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



Fig. 73

Low thermal expansion

CRP sleeves expand c. 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 CRP material minimises production of vibrations and damps existing vibrations more effectively.

Temperature resistance

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

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Options and Variants on Intermediate Shafts

Intermediate shafts

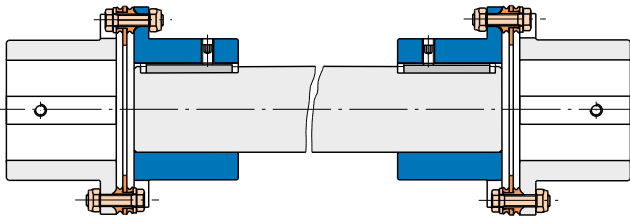


Fig. 74

Variable bridges over any shaft distances via adapted steel solid shafts, mounted between two standard hubs.

Please observe the bend-critical speeds!

GRP sleeves

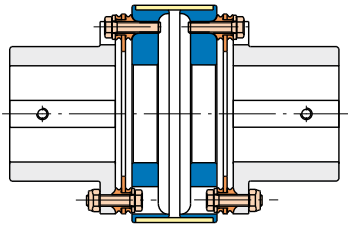


Fig. 75

Glass-fibre reinforced plastic sleeves for couplings in leakage current-isolated design.

Fulfills the highest demands on insulation quality (CTI 600).

Axial separable sleeves

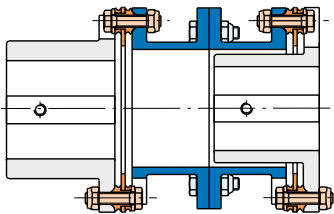


Fig. 76

This design allows radial dismantling of input and output without axial misalignment.

Preferred solution on large coupling in connection with inner key hubs

Poly-cardanic design

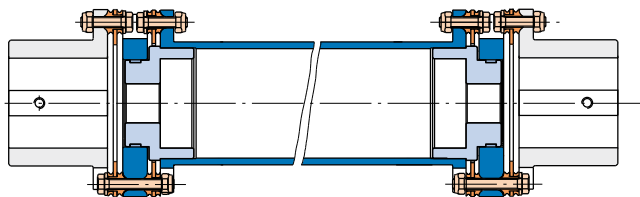


Fig. 77

For applications with large axial misalignment, 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 Damage

Combination with EAS®-Compact®

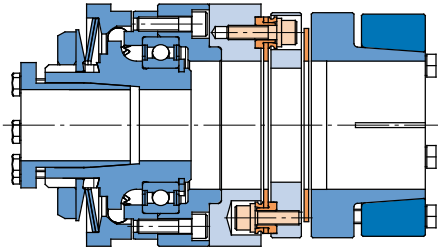


Fig. 78

- 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 - 3000 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

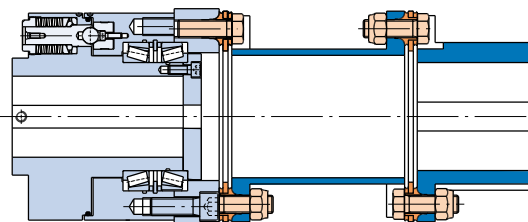


Fig. 79

- 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 - 24000 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

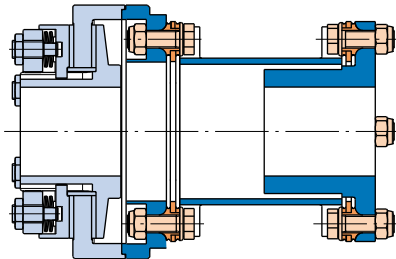


Fig. 80

- 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 - 24000 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

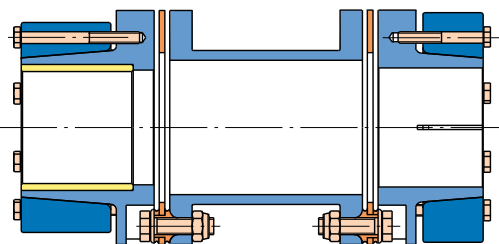


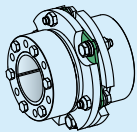
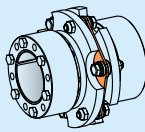
Fig. 81

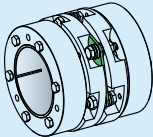
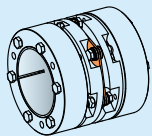
- Modified shrink disk hub with integrated slip bushing
- Suitable for protection against individual, very short dynamic torque peaks
- Not suitable for longer slipping times / high slipping speeds

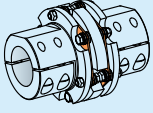
Torque range	190 - 24000 Nm
Switch-off accuracy	± 20 % ¹⁾
Load holding	
Number of overload cases	very low
Time demand for repeat operation start-up	dismantling and installation of coupling
Danger of drive shaft damage	yes

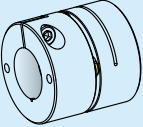
¹⁾ Tolerance only in limited application conditions – please contact the manufacturer.

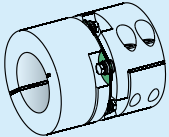
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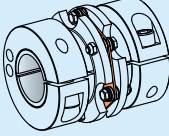
Shrink disk hubs			Bore	Size											
				16	25	40	64	100	160	180	300	500	850	1400	2200
 Frictionally-locking transmittable torques Shrink disk hubs Suitable for H7/g6 	T_R	[Nm]	Ø14	157	-	-	-	-	-	-	-	-	-	-	
			Ø16	179	-	-	-	-	-	-	-	-	-	-	-
			Ø20	240	280	-	-	-	-	-	-	-	-	-	-
			Ø22	269	308	-	-	-	-	-	-	-	-	-	-
			Ø25	312	375	438	-	-	-	-	-	-	-	-	-
			Ø28	-	428	491	-	-	-	-	-	-	-	-	-
			Ø30	-	468	526	708	-	-	-	-	-	-	-	-
			Ø32	-	509	600	756	-	-	-	-	-	-	-	-
			Ø35	-	568	669	826	1090	-	-	-	-	-	-	-
			Ø38	-	-	741	960	1184	-	-	-	-	-	-	-
			Ø40	-	-	796	1031	1246	1794	-	-	-	-	-	-
			Ø42	-	-	852	1104	1320	1884	1817	-	-	-	-	-
			Ø45	-	-	932	1206	1500	2019	2281	-	-	-	-	-
			Ø50	-	-	-	-	1692	2400	2881	3505	-	-	-	-
			Ø55	-	-	-	-	1889	2680	3150	3855	-	-	-	-
			Ø60	-	-	-	-	-	2967	3488	4500	5844	-	-	-
			Ø65	-	-	-	-	-	3263	3835	5177	6331	-	-	-
			Ø68	-	-	-	-	-	-	4072	5658	6623	-	-	-
			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	29323
			Ø110	-	-	-	-	-	-	-	-	-	18607	26442	32609
			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	
 Frictionally-locking transmittable torques Shrink disk hubs, large Suitable for H7/g6 	T _R	[Nm]	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			

Split clamping hubs			Bore	Size				
				16	25	40	64	100
Frictionally-locking transmittable torques Split clamping hubs Suitable for H7/g6 	T_R	[Nm]	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	-	-	-	-	-
			Ø68	-	-	-	-	-
			Ø70	-	-	-	-	-
			Ø75	-	-	-	-	-

Clamping hubs (Size 3–15)		Bore	Size			
			3	6	10	15
Frictionally-locking transmittable torques Clamping hubs 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		T _R [Nm]	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
			Ø28	-	107	151
			Ø30	-	-	162
			Ø32	Please Observe!		173
			Ø35	Please observe permitted peak-transient torques for selected coupling size and Type		189
			Ø38			229
			Ø40			241
			Ø42			253

Clamping hubs (Size 16–160)		Bore	Size					
			16	25	40	64	100	160
Frictionally-locking transmittable torques Clamping hubs Suitable for H7 / h6		T _R [Nm]	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
			Ø42	385	676	1015	1232	1447
			Ø45	412	724	1087	1319	1550
			Ø48	-	772	1160	1407	1653
			Ø50	-	804	1208	1466	1722
			Ø52	-	836	1257	1525	1791
			Ø55	-	-	1329	1613	1894
			Ø60	-	-	1450	1759	2066
			Ø65	-	-	-	1906	2239
			Ø68	-	-	-	1994	2342
			Ø70	-	-	-	2053	2411
			Ø75	-	-	-	-	2583
			Ø80	Please Observe!		-	-	2755
			Ø85	Please observe permitted peak-transient torques for selected coupling size and Type		-	-	2927
			Ø90			-	-	3100
			Ø95			-	-	4369
			Ø100			-	-	4599

Clamping ring hubs		Bore	Size					
			16	25	40	64	100	160
Frictionally-locking transmittable torques Clamping ring hubs Suitable for H7/h6		T _R [Nm]	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	Please Observe!		-	-	1654
			Ø65	Please observe permitted peak-transient torques for selected coupling size and Type		-	-	1792
			Ø68			-	-	1874
			Ø70			-	-	2470
			Ø80			-	-	2822

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Installation Examples

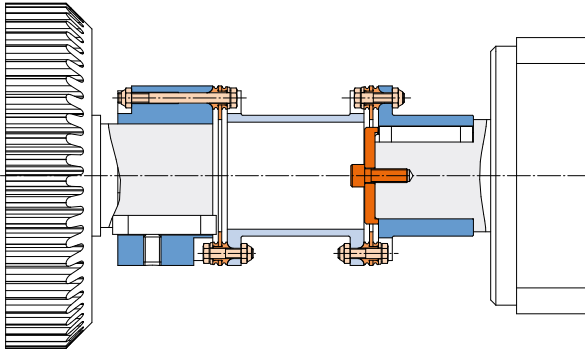


Fig. 82

Axial securement of key hubs via press cover

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

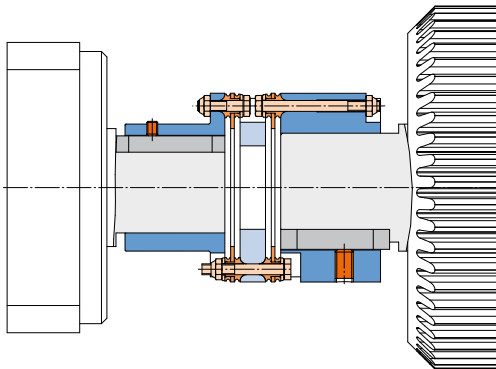


Fig. 83

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.

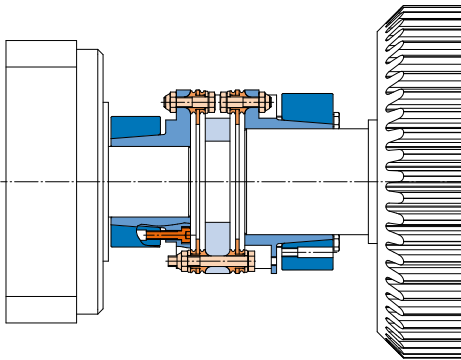


Fig. 84

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

The ROBA®-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.

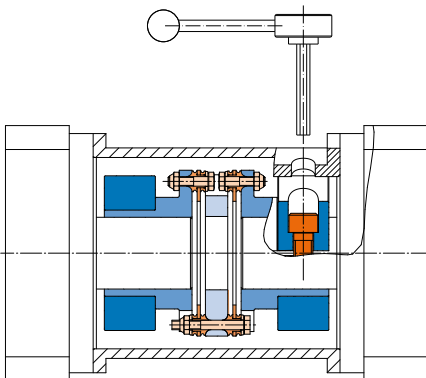


Fig. 85

Coupling installation in closed housing

By using clamping ring hubs, ROBA®-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.

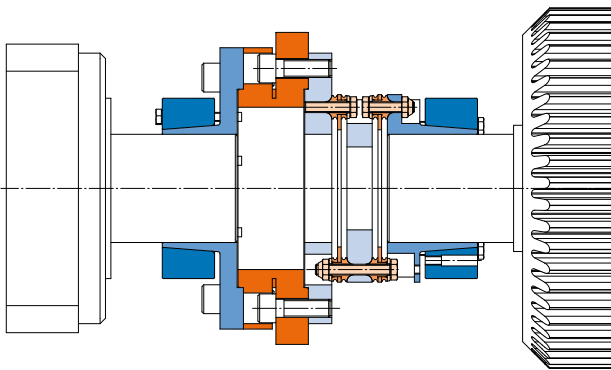


Fig. 86

Integration of measuring flange with adapting flanges

By using special adapting flanges, different measuring flanges (for torque measurement) can be integrated into ROBA®-DS couplings.

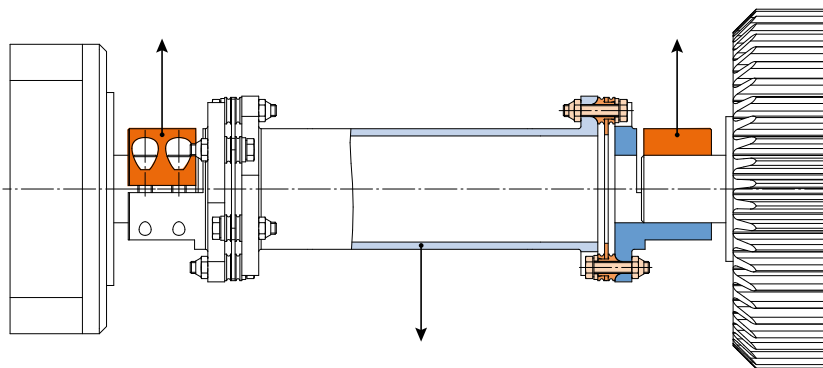


Fig. 87

Radial installation/dismantling with split clamping hubs

By using split clamping hubs, it is possible to install or dismantle ROBA®-DS couplings radially without misaligning the motor or gear box.

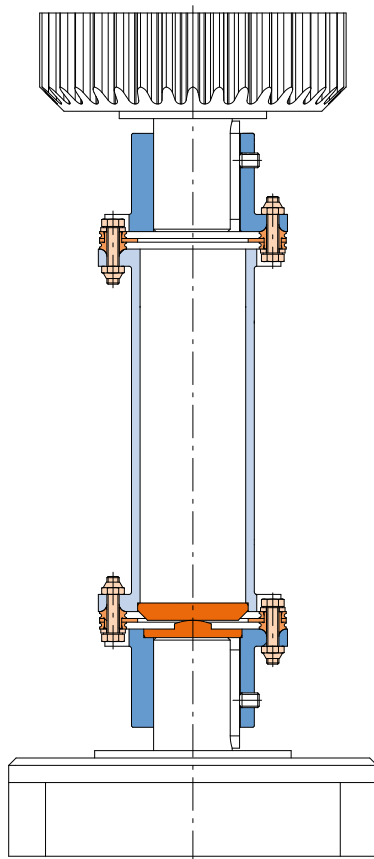


Fig. 88

Vertical support for special sleeve

For vertical or sloping installation of ROBA®-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.

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Compact and Robust Torque Measurement Coupling

- Integrated in proved and tested backlash-free shaft misalignment compensation couplings
- Simple electrical and mechanical installation
- Robust and reliable machine element
- Completely maintenance-free

Application fields

- Process control
- Quality management
- Machine monitoring
- Test stands

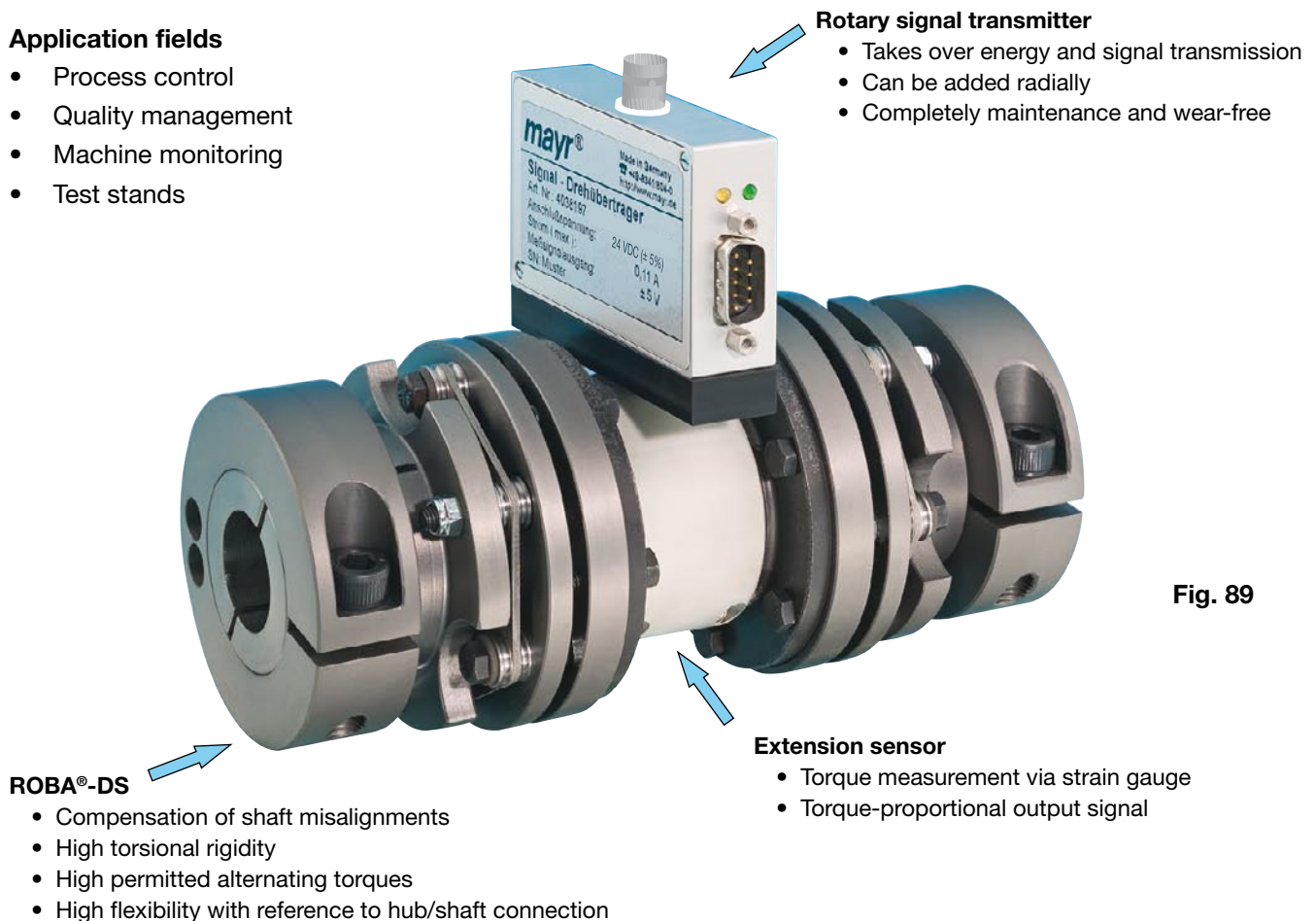


Fig. 89

Order Number

	HUB 1	HUB 2	
Key hub standard (page 26)	0	0	Key hub standard (page 26)
Key hub large (page 28)	1	1	Key hub large (page 28)
Shrink disk hub/external clamping (page 34)	2	2	Shrink disk hub/external clamping (page 34)
Clamping ring hub (page 32)	4	4	Clamping ring hub (page 32)
Clamping hub (page 30)	5	5	Clamping hub (page 30)
Flange (page 42)	6	6	Flange (page 42)
Shrink disk hub large (page 38)	9	8	Split clamping hub (page 40)
		9	Shrink disk hub large (page 38)

—	/	9	7	1	.	—	—	4	/	—	/	—
△							△			△		△
Sizes							Bore*			Bore*		
16							Hub 1 ø			Hub 2 ø		
40							(see dimensions			(see dimensions		
160							pages 26 to 42)			pages 26 to 42)		

Example: 16 / 971.004 / Hub 1 – ø 25 ^{H7} / Hub 2 – ø 30 ^{H7}

*Standard H7, other tolerances possible

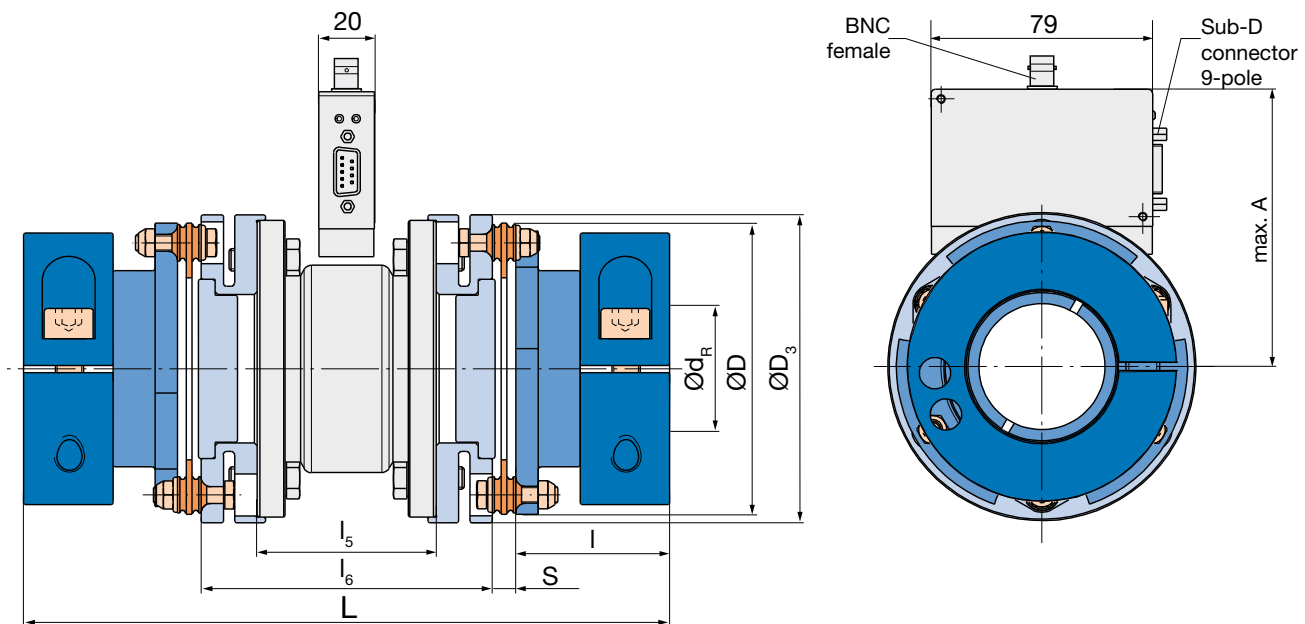


Fig. 90: Type 971.444 (for other shaft/hub connections possibilities, please see pages 26 - 42)

Technical Data and Main Dimensions			Size		
			16	40	160
Nominal torque ^{1) 2)}	T_{KN}	[Nm]	190	450	1600
Peak transient torque ³⁾	T_{KS}	[Nm]	285	675	2400
Minimum hub bore Type 971.444 (Figs. 89 and 90) ^{4) 5)}	$d_{R min}$	[mm]	20	25	40
Maximum hub bore Type 971.444 (Figs. 89 and 90) ^{4) 5)}	$d_{R max}$	[mm]	35	45	80
Maximum speed	n_{max}	[rpm]	9500	7000	4300
Permitted misalignments ⁶⁾	permitted axial misalignment ^{7) 8)}	ΔK_a	0,8	1,0	1,7
	permitted angular misalignment ⁹⁾	ΔK_w	0,7	0,7	0,7
	permitted radial misalignment ⁷⁾	ΔK_r	1,1	1,3	1,8
Spring stiffnesses	total torsional stiffness	[10 ³ Nm/rad]	36,2	114,3	585
	angular spring stiffness ⁹⁾	[Nm/rad]	229	298	1990

Dimensions [mm]

Size	16	40	160
A	93	101	125
D	77	104	167
D ₃	82	110	175
I ⁵⁾	40	55	85
I ₅	54	64	78
I ₆	84	104	136
L ⁵⁾	178,2	230,8	329,2
S	7,1	8,4	11,6

Mass moments of Inertia J [10⁻³kgm²]

Size	16	40	160
Clamping ring hub ^{5) 10)}	0,63	2,84	28,71
Disk pack	0,08	0,26	3,27
Adapting flange	0,38	1,67	15,36
Strain gauge	0,51	2,21	20,04

Weight [kg]

Size	16	40	160
Clamping ring hub ^{5) 10)}	0,76	2,00	7,61
Disk pack	0,08	0,15	0,67
Adapting flange	0,43	1,11	3,89
Strain gauge	0,58	1,34	4,27

Technical Data for measuring system

- Supply voltage: 24 VDC (±5 %)
- Max. current consumption: 0,11 A
- Measuring signal output: 0 ... ±5 V (dependent on rotational direction, 5 V refers to T_{KN})
- Nominal temperature range: 0...+70 °C
- Temperature drift zero point: 0,04 % / K
- Temperature drift measurement value: 0,03 % / K
- Band: 0...1 kHz (-3 dB)
- Max. data transmission distance: 3 mm
- Protection: IP 54
- Max. dyn. load capability: 100 % of T_{KN}
- Connection: Sub-D connection, 9-pole
- Permitted speed: 0 - n_{max}
- Max. total errors: 1 % von T_{KN}

- Other torques and construction size available on request.
- Valid for alternating loads as well as max. permitted shaft misalignment.
- Valid for one rotational direction, max. stress ≤10⁵.
- Transmittable torques dependent on bore see page 57.
- For Technical Data for alternative hub connections please see pages 26 - 42.
- 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 maximum bore.

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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 remain unchanged, the maximum permitted amount of stress must be smaller than 1×10^5 .

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 63
f_t	Temperature factor according to Fig. 91, page 62
n [rpm]	Drive machine nominal speed

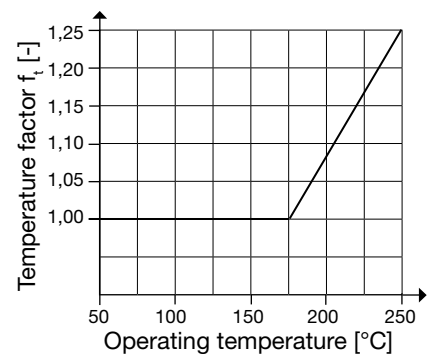


Fig. 91: Temperature factor f_t

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:

Main engine:	Electromotor
Nominal capacity	$P = 13$ kW
Nominal speed	$n = 1450$ rpm
Max. start-up torque	$T_{Amax} = 2,5 \times$ the motor nominal torque
Main engine:	Piston pump
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 63:	III
Service factor f_B from Table 2, page 63:	1,9
Temperature factor f_t from Fig. 91, page 62:	1,0

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

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

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

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

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

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

= > Selected coupling size:

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

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

Table 1: Load Classes

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

Table 2: Service factor f_B

Technical Explanations

Permitted shaft misalignments

- ROBA®-DS single-jointed couplings (Type 950._ _ _ and Type 952._ _ _) compensate for angular and axial shaft misalignments.
- ROBA®-DS double-jointed couplings (Type 951._ _ _ and Type 953._ _ _) compensate for angular, radial and axial shaft misalignments (Fig. 92).
- If more than one misalignment type occurs simultaneously, they affect each other. The permitted misalignment values are dependent on one another, see Fig. 93. The sum of the actual misalignments – in percent of the maximum value – may not exceed 100 %.

Example (see Table on page 26 and Fig. 93):

ROBA®-DS, size 40, Type 951.002

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

= > **Angular misalignment** occurrence: in disk pack: $\Delta K_w = 0,3^\circ$, which is **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 => $\Delta K_r = 0,45$ mm

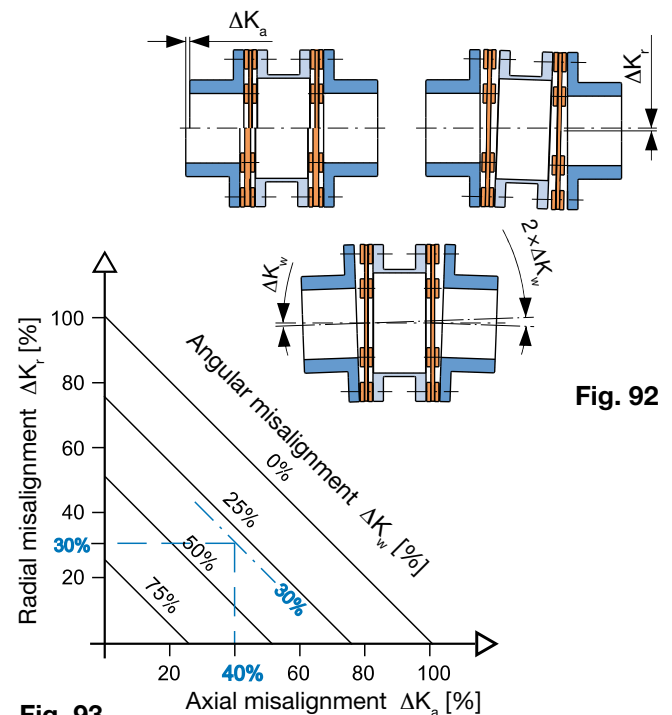


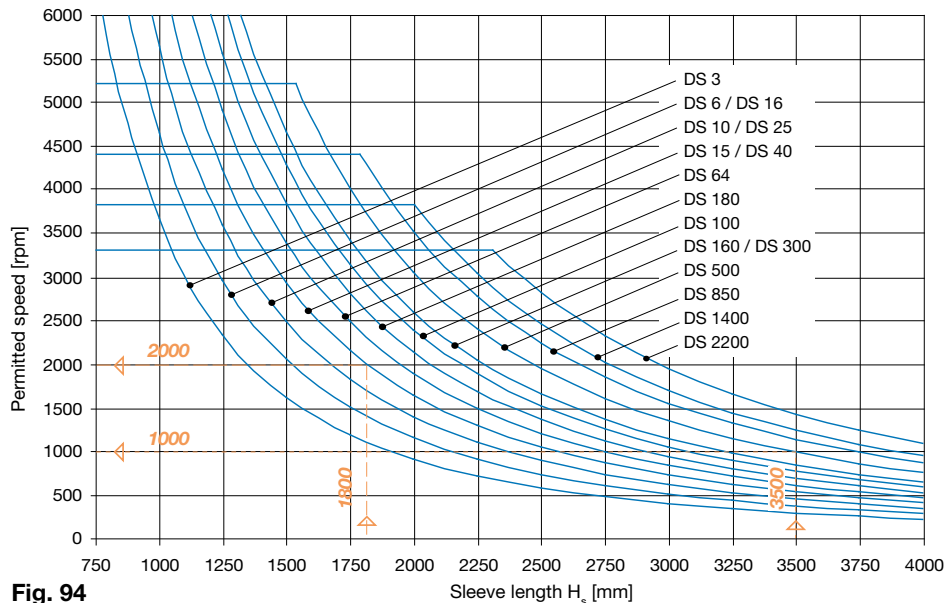
Fig. 92

Fig. 93

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Permitted Speeds (Bend-critical Speeds) on Sleeve S, GKR Sleeve and CRP Sleeve (Figs. 94, 95, 96)

Permitted speed on special sleeve ROBA®-DS Type 95_ _ 3 (Sleeve S)



Examples (Fig. 94)

- ROBA®-DS, Size 40:

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

- ROBA®-DS, Size 500:

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

Fig. 94

Permitted speed on special sleeve ROBA®-DS Type 95_ _ 4 (Sleeve GKR)

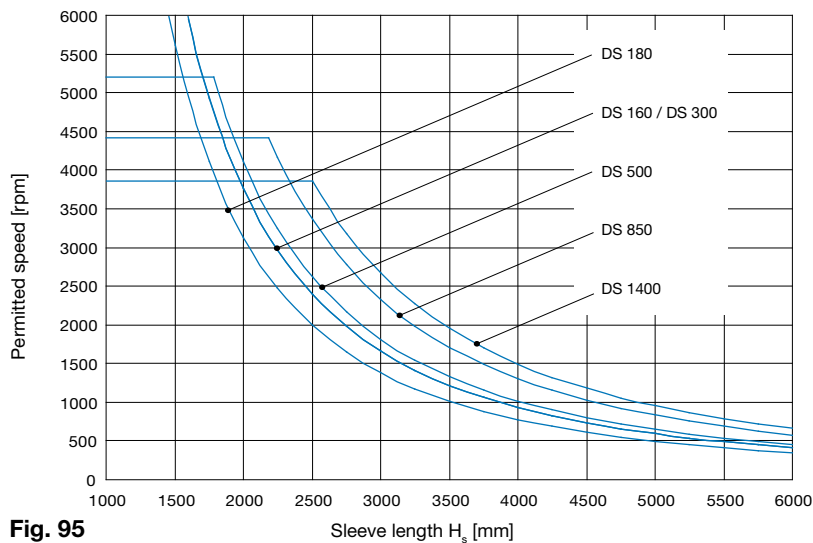


Fig. 95

Permitted speed on special sleeve ROBA®-DS Type 95_ _ 5 (Sleeve CFK)

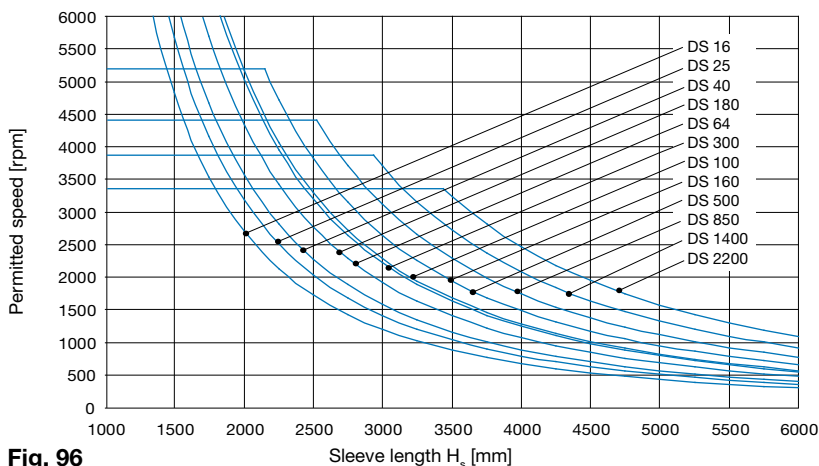


Fig. 96

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, GKR sleeves and CRP sleeves at sub-critical levels (see Figs. 94, 95 and 96).
- 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 tolerance) 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®-DS couplings (in particular double-jointed couplings with long sleeves), the torsion-critical natural frequency and speeds must be observed.

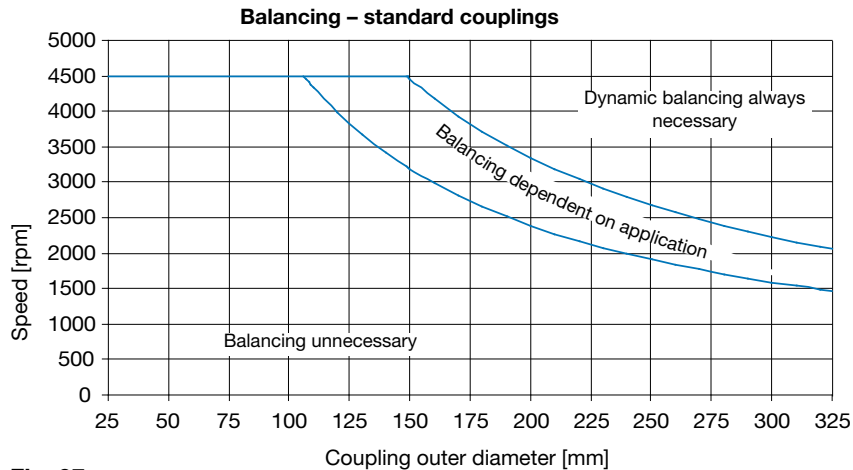


Fig. 97

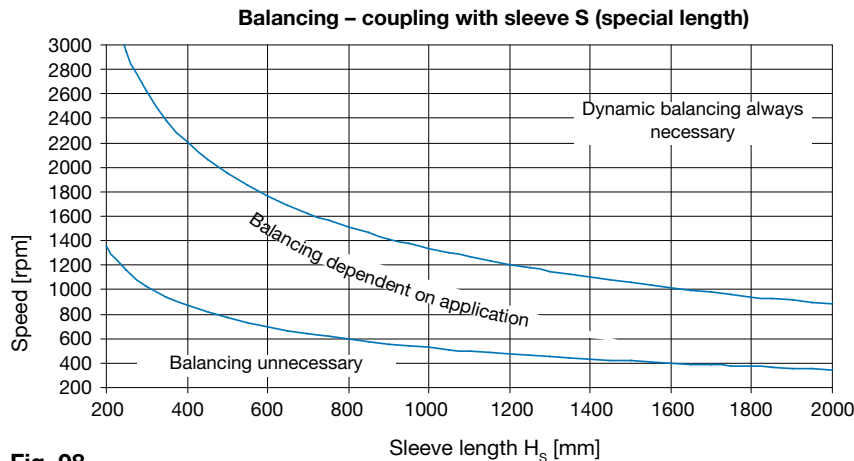


Fig. 98

Balancing the Coupling

- Not necessary for most applications.
- For a decision whether balancing must take place, please evaluate the following points:
 - Coupling circumferential speed (Fig. 97)
 - Length of special sleeve (Fig. 98)
 - Necessary balance quality
- The smooth running of a machine is not only maintained due to the balance quality of the coupling, but also, to at least the same extent, to parameters such as:
 - stiffness and distance from the adjacent bearing,
 - sensitivity and mass of the whole system

Figs. 97 or 98 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.
- When there are higher demands on the balance quality, balancing individual parts of the complete installed coupling is possible. 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. 99)
- Key hub: keyway according to DIN 6885 pages 1 or 3

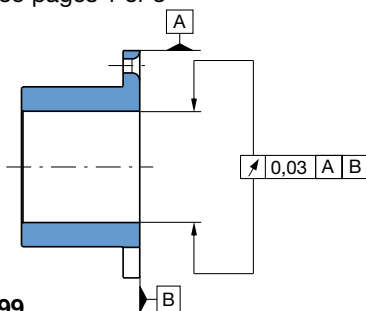


Fig. 99

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 CRP 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. 88, page 59).
- The vertical support and the hub centerings in the hub and the sleeve are produced manufacturer-side.

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Short Description – Hub Installation

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

Hub installation 95..0.. or 95..1.. (hubs with keyway, Fig. 100)

- 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 tolerance,
 - operation in one direction: transition tolerance or backlash tolerance

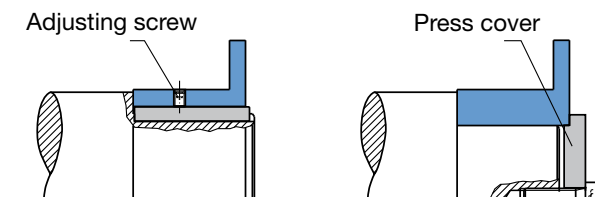


Fig. 100

Hub installation 95..2.. / 95..3.. / 95..9.. (Hubs with shrink disk) 95..4.. (hubs with clamping ring)

- Mount the hubs onto the shafts using a suitable installation device and bring them into the correct position.
- Tighten the clamping screws one after the other in 3 to max. 6 tightening turns using a torque wrench.

Guidelines!

- 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^2 , e.g. St60, St70, C45, C60.
- Recommended shaft tolerance:
Dependent on application and hub Type. See Table of frictionally-locking torques on pages 56/57.

Hub or coupling installation Type 95..8.. (Split clamping hubs)

- Partly assemble the coupling, observing the Point "Coupling Installation" (page 66).
- Loosen the partly assembled split shells from the hub.
- Place the coupling from above onto the shafts and partly assemble with the split shells (Fig. 101).
- Tighten the clamping screws crosswise in several procedures. Please ensure that the gap "X" on both sides of the hub is the same (Fig. 102).

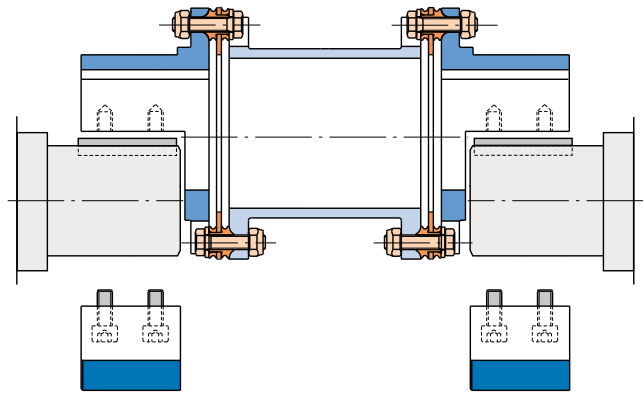


Fig. 101

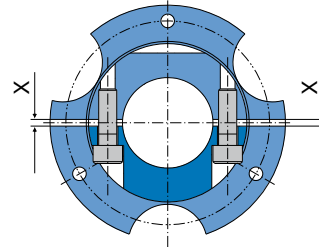


Fig. 102

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.

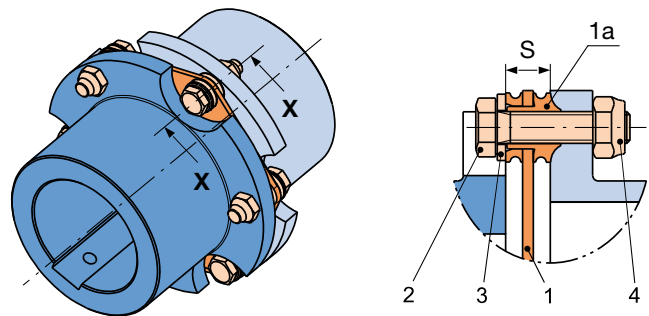


Fig. 103

Fig. 104 Detail „X“

- Screw the disk packs (1, Bild 104) over lightly-oiled hexagon head screws (2), washers (3) and hexagon nuts (4) alternately with the sleeve and the hubs.
- Producing the pre-tension force on the disk pack (1) usually takes place* via the hexagon nut (4). Please avoid twisting the disk pack (1) (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.

Please Observe!

The radius of the collar bushings (Part 1a, Fig. 104, Detail "X") must lie in the hub and sleeve grooves.

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



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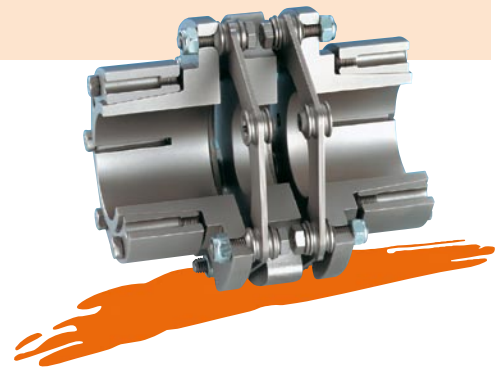
Safety Clutches/Overload Clutches

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



Shaft Couplings

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



Electromagnetic Brakes/Clutches

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



DC Drives

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

