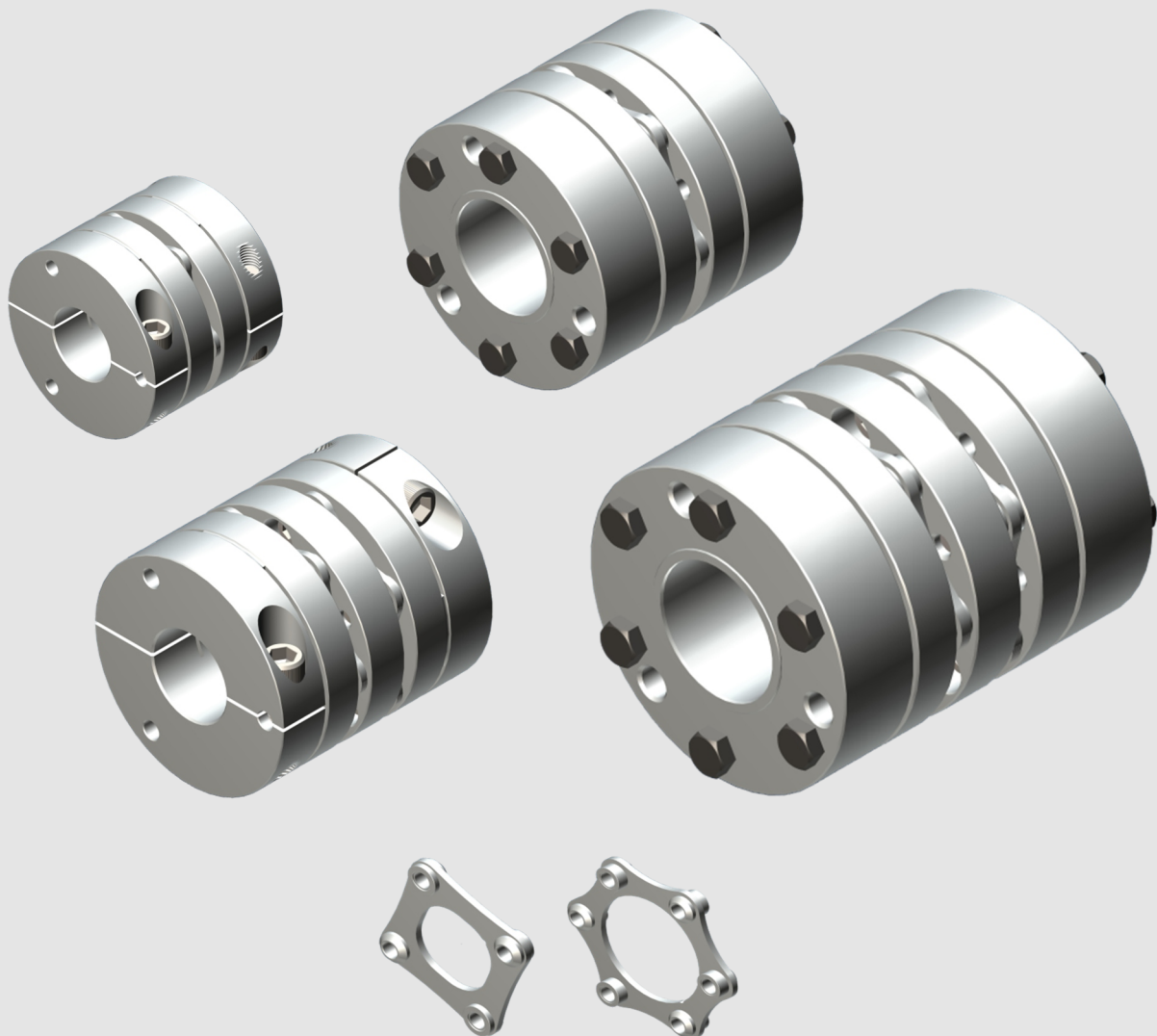




APEX DYNAMICS, INC.

Backlash-Free Servo Coupling

Disc Type



5 Years Warranty !

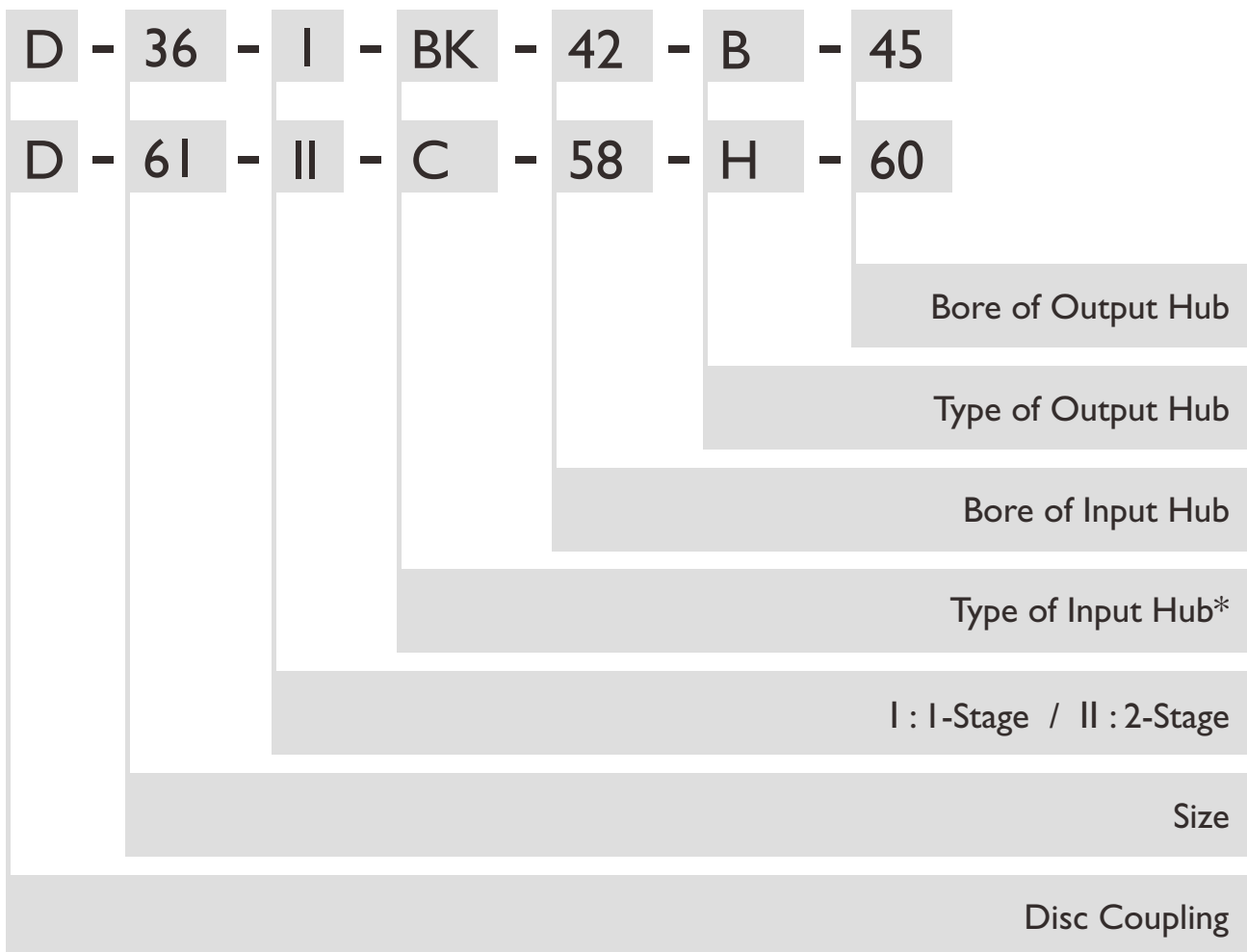
Coupling - Disc Type

▶ Features:

- ▶ High Precision / Backlash Free
- ▶ High Torque / High Torsional Rigidity
- ▶ High Speed / Low Inertia
- ▶ Permissible Eccentric Angle
- ▶ Shock Absorption for Motor High Gain
- ▶ High Frequency Reciprocating
- ▶ Multiple Choice of Hubs for Input and Output Shaft
- ▶ Easy Axial Installation



Ordering Code - Disc Type



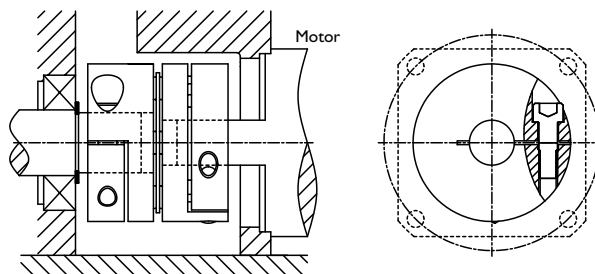
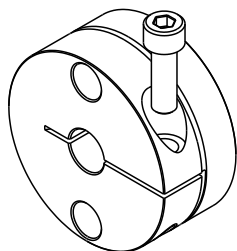
* K for Keyway



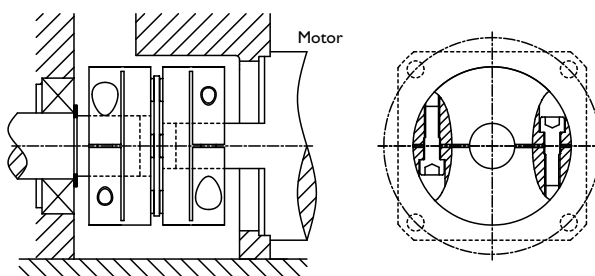
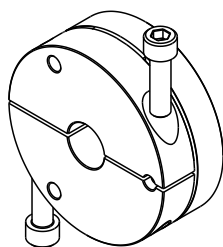
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Type of Hubs

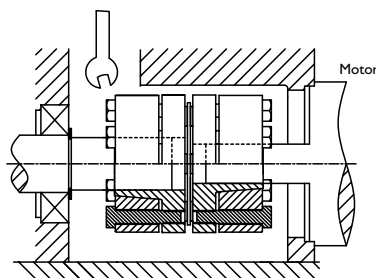
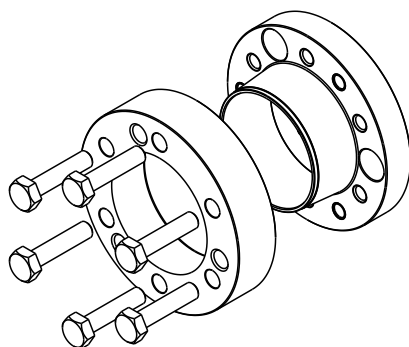
B / BK Type



C / CK Type



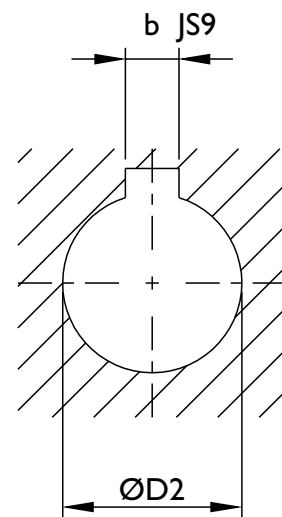
H Type



Keyway Dimension

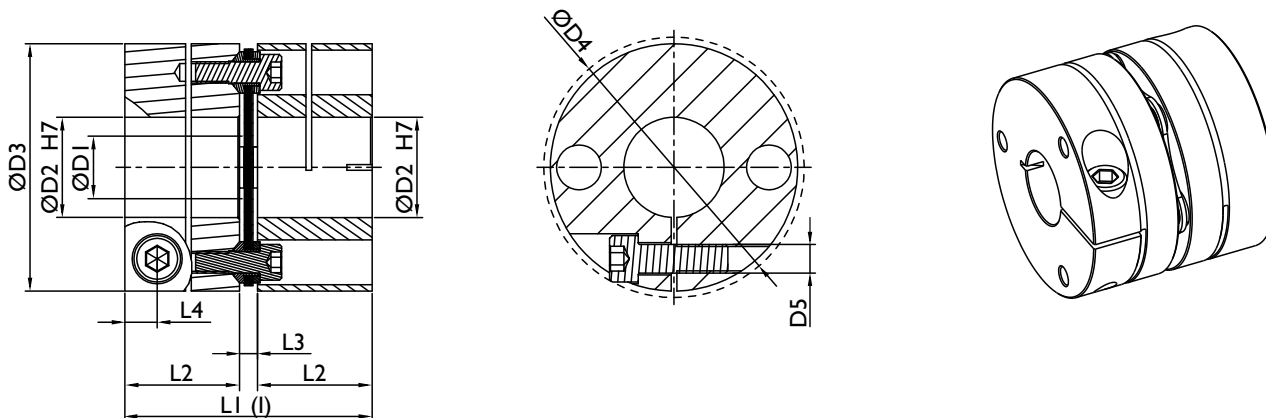
b	Dimension	b	Dimension
2	$6 \leq \text{ØD2} \leq 8$	14	$44 < \text{ØD2} \leq 50$
3	$8 < \text{ØD2} \leq 10$	16	$50 < \text{ØD2} \leq 58$
4	$10 < \text{ØD2} \leq 12$	18	$58 < \text{ØD2} \leq 65$
5	$12 < \text{ØD2} \leq 17$	20	$65 < \text{ØD2} \leq 75$
6	$17 < \text{ØD2} \leq 22$	22	$75 < \text{ØD2} \leq 85$
8	$22 < \text{ØD2} \leq 30$	25	$85 < \text{ØD2} \leq 95$
10	$30 < \text{ØD2} \leq 38$	28	$95 < \text{ØD2} \leq 110$
12	$38 < \text{ØD2} \leq 44$	32	$110 < \text{ØD2} \leq 130$

* Finish bore with keyway which $>\text{Ø}6$, acc. to DIN 6685/1 JS9.

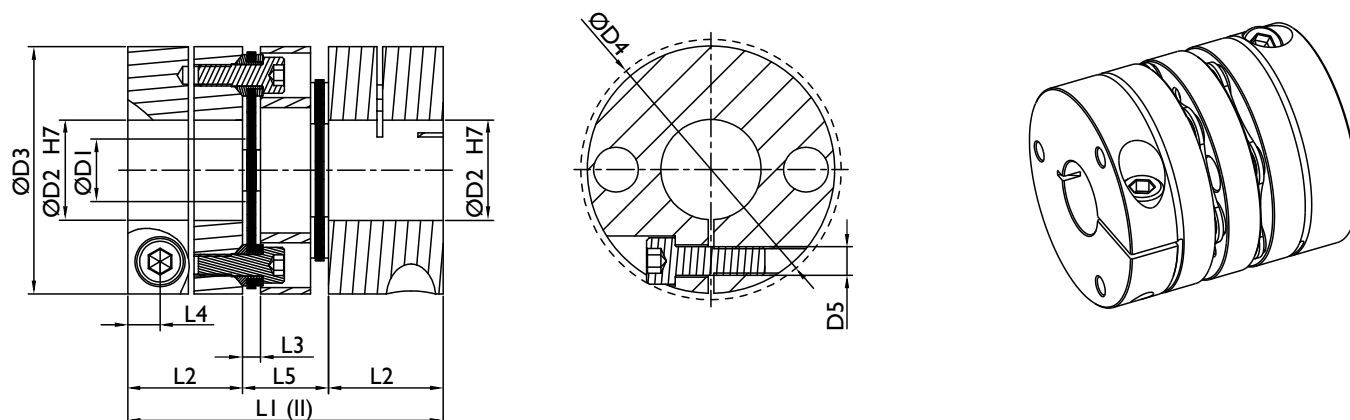


B / BK Type Hub

Type I : 1 Stage



Type II : 2 Stage



Material:
Hub: Aluminum.
Spacer: Aluminum.
Disc: Stainless Steel.

SIZE	Dimensions [mm]										Clamping Screws ISO 4762		Mass moment of inertia [$\times 10^{-3} \text{ kgm}^2$]	
	D1	D2 max	D3	D4	L1 I-Stg.	L1 2-Stg.	L2	L3	L4	L5	D5	T _A [Nm]	Type I I-Stg.	Type II 2-Stg.
05	12	12	26	26	26.5	34	12	2.5	3.5	10	M2.5	0.8	0.003	0.004
10	14.5	15	35	35	35	44	16	3	5	12	M4	3	0.013	0.016
16	19.5	20	46	49	47	58	22	3	6.8	14	M6	10	0.052	0.064
21	24	30	58	59	53.5	69	25	3.5	6.8	19	M6	10	0.150	0.191
26	30	38	69	73	69	88	32	5	9	24	M8	25	0.390	0.493
36	48	45	84	87	74.8	93.6	35	4.8	10.5	23.6	M10	49	0.969	1.203
37	48	50	89	92	74.8	93.6	35	4.8	10.5	23.6	M10	52	1.202	1.434

B / BK Type Hub

SIZE	T _{KN} [Nm]	T _K max [Nm]	Max Speed [rpm]	Torsional Rigidity [Nm/rad]		Displacements of Type I / 1-Stg.			Displacements of Type II / 2-Stg.		
				1-Stg.	2-Stg.	Radial [mm]	Axial [mm]	Angular [degree]	Radial [mm]	Axial [mm]	Angular [degree]
05	2.5	5	18,300	2,400	1,200	-	±0.2	1	0.13	±0.4	2
10	7.5	15	13,600	5,600	2,800	-	±0.4	1	0.16	±0.8	2
16	35	53	10,500	20,000	10,000	-	±0.5	1	0.19	±1.0	2
21	70	105	8,500	40,000	20,000	-	±0.6	1	0.27	±1.2	2
26	120	180	7,000	84,000	42,000	-	±0.8	1	0.33	±1.6	2
36	340	510	5,700	280,000	140,000	-	±1.0	1	0.32	±2.0	2
37	340	510	5,700	280,000	140,000	-	±1.0	1	0.32	±2.0	2

Bore and Transmittable Torques TR* [Nm]																
SIZE	HOLE**	Ø3	Ø5	Ø8	Ø10	Ø12	Ø14	Ø15	Ø16	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30
05	2.5	1.2	1.9	2.8	3.5	4.1										
10	4.5		4.9	7.5	9.1	10	12	12.7								
16	5.5				26	30	34	36	38	44	46					
21	7.5					37	40	42	44	50	52	56	60	61	69	71

Bore and Transmittable Torques TR* [Nm]																		
SIZE	HOLE**	Ø15	Ø16	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50
26	9.5	80	84	97	100	108	115	119	129	136	142	154	160					
36	11.5			164	171	183	196	201	219	230	241	260	269	274	280	288		
37	13.5					207	221	227	247	259	271	288	302	308	314	323	331	337

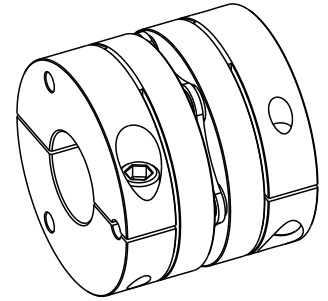
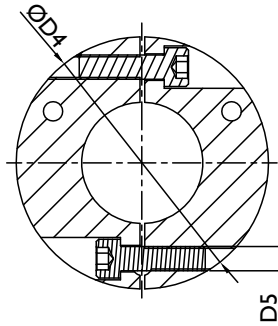
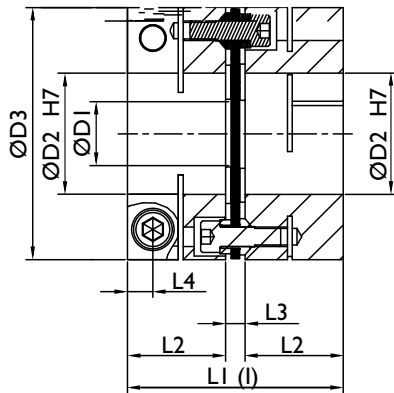
* The transmittable torques TR is given based on clamping force, without considering key/keyway.

** The preset pilot bore diameter, in mm based on tolerance standard DIN ISO 2768-1.

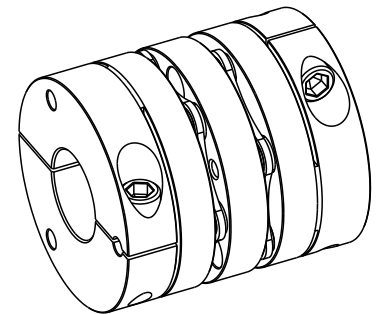
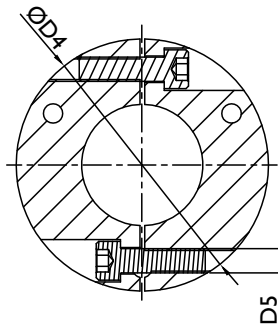
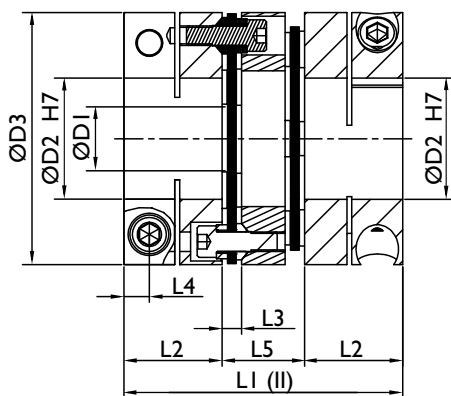
*** When the ØD2<6, keyway type is not supported.

C / CK Type Hub

Type I : 1 Stage



Type II : 2 Stage



Material:
Hub: Aluminum.
Spacer: Aluminum.
Disc: Stainless Steel.

SIZE	Dimensions [mm]										Clamping Screws ISO 4762		Mass moment of inertia [$\times 10^{-3} \text{ kgm}^2$]	
	D1	D2 max	D3	D4	L1 I-Stg.	L1 2-Stg.	L2	L3	L4	L5	D5	T _A [Nm]	Type I I-Stg.	Type II 2-Stg.
43	61	55	104	104	89	115	40.5	8	10.5	34	M10	49	2.762	3.538
51	73	70	124	130	108	138	50	8	14	38	M14	135	6.973	8.845
61	88	80	144	148.5	118	150	54	10	16	42	M16	210	13.612	17.108

C / CK Type Hub

SIZE	T _{KN} [Nm]	T _{K max} [Nm]	Max Speed [rpm]	Torsional Rigidity [Nm/rad]		Displacements of Type I / 1 Stg.			Displacements of Type II / 2 Stg.		
				1-Stg.	2-Stg.	Radial [mm]	Axial [mm]	Angular [degree]	Radial [mm]	Axial [mm]	Angular [degree]
43	600	900	8,100	510,000	255,000	-	±1.1	1	0.45	±2.2	2
51	1,300	1,950	6,700	920,000	460,000	-	±1.25	1	0.52	±2.5	2
61	2,000	3,000	6,100	1,500,000	750,000	-	±1.3	1	0.62	±2.6	2

Bore and Transmittable Torques TR* [Nm]																				
SIZE	HOLE**	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø58	Ø60	Ø65	Ø70	Ø75	Ø80
43	15	255	264	292	311	329	355	381	398	415	440	465	481	521						
51	28				651	689	746	802	839	875	928	981	1016	1101	1152	1185	1266	1360		
61	30							1096	1147	1198	1271	1346	1394	1512	1583	1630	1743	1856	1964	2073

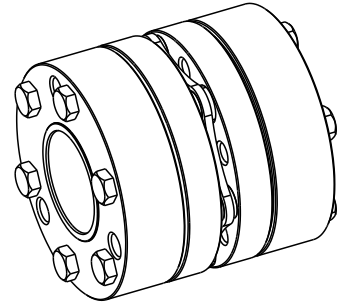
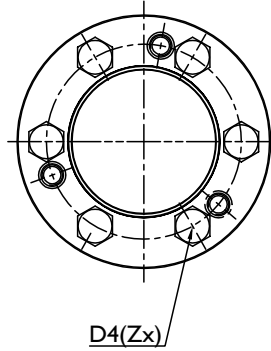
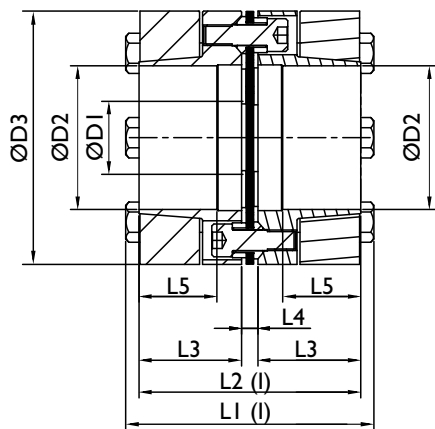
* The transmittable torques TR is given based on clamping force, without considering key/keyway.

** The preset pilot bore diameter, in mm based on tolerance standard DIN ISO 2768-1.

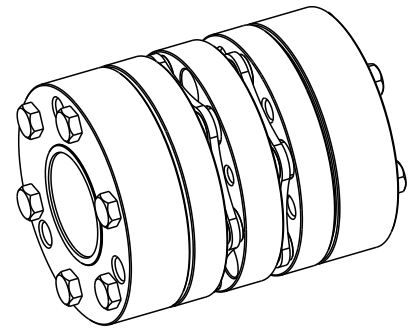
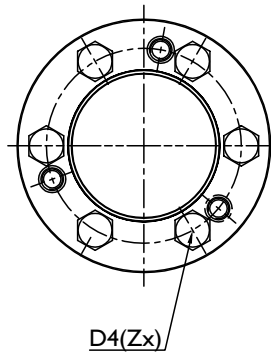
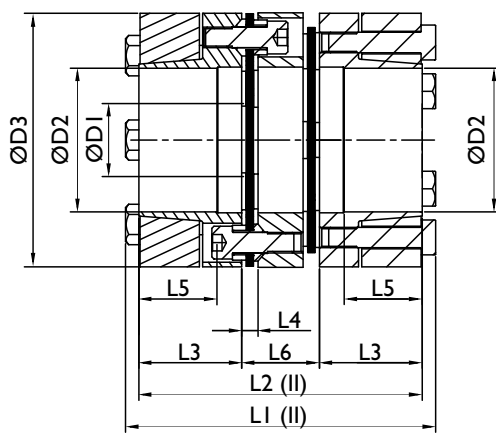
*** Finished bore diameter >Ø6 keyway, according to DIN 6885/1, dimensional tolerance is JS9, dimensions see Page 7.

H Type Hub

Type I : 1 Stage



Type II : 2 Stage



Material:
Hub: Aluminum.
Spacer: Aluminum.
Disc: Stainless Steel.

SIZE	Dimensions [mm]											Clamping Screws ISO 4017			Mass moment of inertia [$\times 10^{-3} \text{ kgm}^2$]	
	D1	D2 max	D3	L1 1-Stg.	L1 2-Stg.	L2 1-Stg.	L2 2-Stg.	L3	L4	L5	L6	D4	z	T _A [Nm]	Type I 1-Stg.	Type II 2-Stg.
16	19.5	20	46	57	68	51	62	24	3	18	14	M5	4	6	0.062	0.074
21	24	28	58	65.7	81.2	59.5	75	28	3.5	22	19	M6	4	10	0.180	0.221
26	30	35	69	81.8	100.8	77	96	36	5	28	24	M5	8	6	0.465	0.568
36	48	42	84	100.8	119.6	90.8	109.6	43	4.8	35	23.6	M8	6	25	1.290	1.523
43	61	60	104	110	136	100	126	46	8	35	34	M8	6	25	3.257	4.056
51	73	70	124	121	151	108	138	50	8	38	38	M10	6	49	7.327	9.205
61	88	80	144	135	167	120	152	55	10	43	42	M12	6	85	14.345	17.785

H Type Hub

SIZE	T _{KN} [Nm]	T _K max [Nm]	Max Speed [rpm]	Torsional Rigidity [Nm/rad]		Displacements of Type I / 1 Stg.			Displacements of Type II / 2 Stg.		
				1-Stg.	2-Stg.	Radial [mm]	Axial [mm]	Angular [degree]	Radial [mm]	Axial [mm]	Angular [degree]
16	35	53	31,150	20,000	10,000	-	±0.5	1	0.19	±1.0	2
21	70	105	24,700	40,000	20,000	-	±0.6	1	0.27	±1.2	2
26	120	180	20,800	84,000	42,000	-	±0.8	1	0.33	±1.6	2
36	340	510	17,100	280,000	140,000	-	±1.0	1	0.32	±2.0	2
43	600	900	13,800	510,000	255,000	-	±1.1	1	0.45	±2.2	2
51	1,300	1,950	11,600	920,000	460,000	-	±1.25	1	0.52	±2.5	2
61	2,000	3,000	10,000	1,500,000	750,000	-	±1.3	1	0.62	±2.6	2

Bore and Transmittable Torques TR [Nm]																											
SIZE	Tolerance	Ø10	Ø12	Ø14	Ø15	Ø16	Ø19	Ø20	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60	Ø65	Ø70	Ø75	Ø80	
16	H7/h6	39	35	55	66	53	82	95																			
	H7/k6	42	41	60	71	60	90	102																			
21	H7/h6	34	53	79	95	76	117	134	133	149	201																
	H7/k6	40	59	84	99	84	124	140	144	159	207																
26	H7/h6				116	136	204	166	265	294	311	370	334	423													
	H7/k6				128	148	217	184	280	307	328	384	359	443													
36	H7/h6							256	404	447	498	589	559	703	680	775	877										
	H7/k6							284	428	469	523	611	594	729	719	809	904										
43	H7/h6									507	663	779	748	930	908	1029	980	1159	1354	1230	1337	1678					
	H7/k6									537	689	802	784	957	949	1064	1027	1198	1383	1280	1423	1736					
51	H7/h6											828	945	974	1185	1337	1280	1507	1753	1603	1968	2229	2205	2655			
	H7/k6											867	988	1026	1230	1337	1333	1551	1787	1659	2032	2286	2299	2714			
61	H7/h6													973	1190	1348	1313	1553	1516	1675	1923	1895	2337	2393	2502	2961	
	H7/k6													1030	1238	1388	1366	1594	1575	1725	1993	2005	2409	2492	2618	3035	

* If ØD2≥55 and the tolerance is G7/h6,G7/m6.

COUPLING SELECTION ACCORDING TO DIN 740 PART II WITH SPECIFIC FACTORS

Glossary

Rated torque of coupling T_{KN}	Nm	Torque to be continuously transmitted over the entire permissible speed range, taking into account the factors.
Friction torque T_R	Nm	The torque transmitted when the shaft is securely connected to the sleeve.
Rated torque of driving side T_{AN}	Nm	Constant driving torque from the motor.
Peak torque of machine T_S	Nm	Peak torque on the coupling.
Peak torque of driving side T_{AS}	Nm	The peak torque generated when the motor starts or stops.
Mass moment inertia of driving side J_A	kgm ²	Total of moments of inertia existing on the driving side referring to the coupling speed
Mass moment inertia of load side J_L	kgm ²	Total of moments of inertia existing on the load side referring to the coupling speed.
Rotational inertia coefficient of driving side M_A		Factor considering the mass distribution with shocks and vibrations generated on the driving or load side.
Temperature factor S_t		Temperature requirements for the couplings.
Operating factor S_b		Factor for different application.
Starting factor S_z		The number of start-ups per hour.

COUPLING SELECTION ACCORDING TO DIN 740 PART II WITH SPECIFIC FACTORS

Coefficient / Factor

Temperature Factor S_t	
$\leq 120^\circ\text{C}$	1.0
$\leq 200^\circ\text{C}$	1.1

Operating Factor S_B	
Uniform Motion	1.5
Unequal Motion	2.0
Shock Motion	2.5~4.0
For servo motor	1.5~2.0

Starting Factor S_z	
Starting Frequency / Hour	
< 20	1.0
< 60	1.2
< 120	1.4
< 180	1.6
< 240	1.8
≥ 240	2.0

Calculation

The rated torque T_{KN} of the coupling must be greater than or equal to the rated torque of the equipment T_{AN} , taking into account the temperature coefficient S_t and the operating coefficient S_B .

$$T_{KN} \geq T_{AN} \times S_t \times S_B$$

The rated torque T_{KN} of the coupling must be greater than or equal to the maximum torque T_s applied to the coupling, taking into account the temperature coefficient S_t and the operating coefficient S_B .

$$T_{KN} \geq T_s \times S_t \times S_B$$

Rotational inertia coefficient at the drive side M_A

$$M_A = J_L / (J_A + J_L)$$

Maximum torque at the drive side T_s

$$T_s = T_{AS} \times M_A \times S_z$$

Under any operation conditions, the friction torque on the coupling bore may not be exceeded.

$$T_R > T_{AS}$$



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