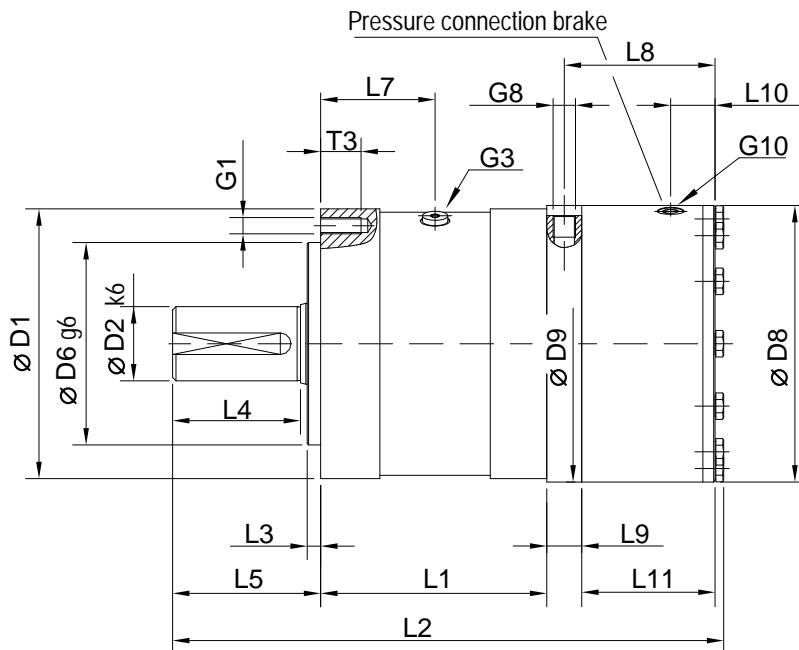


Technical data of the standard rotary actuators HSB 01 to HSB 05

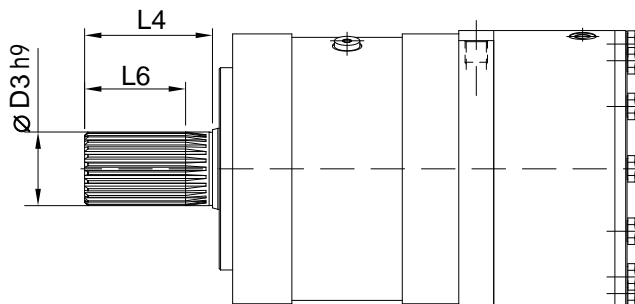
Page 1 of 2
Status 2009-10-05

Technical data		BG	01/V	02/V	03/V	04/V	05/H	05/V
theor. specific torque	M_{sp}	[Nm/bar]	1,19	2,05	3,83	7,88	15,53	15,53
max. operating pressure	$p_{N max}$	[bar]	200	200	200	200	200	200
min. release pressure of the brake	$p_{lü min}$	[bar]	33	38	26	23	50	50
max. angle of rotary	φ_{max}	[grd.]	250	250	250	250	260	260
max. radial force	$F_{r max}$	[kN]	1,0	1,4	2,5	3,5	5,0	5,0
max. axial force	$F_{ax max}$	[kN]	1,0	1,25	1,5	2,0	2,5	2,5
specific swept volume	v_{sp}	[cm ³ /grd.]	0,21	0,36	0,67	1,38	2,71	2,71
max. static holding torque	$M_{\dot{U} stat}$	[Nm]	300	380	700	1500	1250	2500
weight ca.	m	[kg]	12	16	25	52	61	68

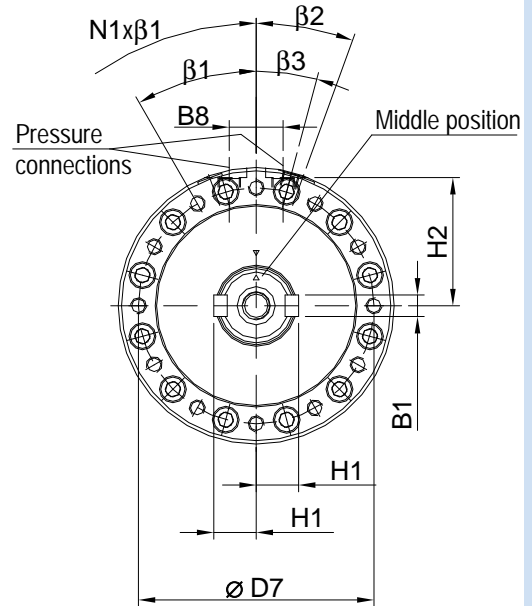
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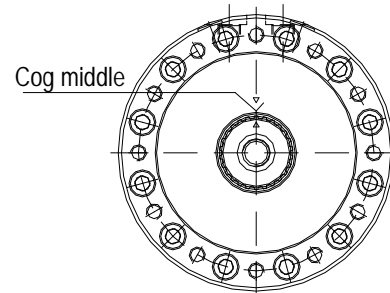
The views show the shaft in middle position.
Subject to technical modifications!



Type P: Shaft end with parallel keys to DIN 6885 T1 Form B



Type Z: Shaft end with involute spline shaft section to DIN 5480



Technical data of the standard rotary actuators HSB 01 to HSB 05

hense
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Fluidische Antriebstechnik
Schwenkmotoren
Hub-Schwenksysteme
Prüfstandstechnik (Torsion)

Page 2 of 2
Status 2009-10-05

Measurement table	BG	01/V	02/V	03/V	04/V	05/H	05/V
B1	[mm]	6	8	10	14	16	16
B8	[mm]	25	25	25	40	40	40
D1	[mm]	95	115	130	175	200	200
D2	[mm]	22	30	35	45	55	55
D3	[mm]	21,75	29,75	34,75	44,6	54,6	54,6
D6	[mm]	65	75	90	120	150	150
D7	[mm]	80	95	110	150	175	175
D8	[mm]	120	130	155	205	180	205
D9	[mm]	120	130	155	205	200	205
G1	---	M 6	M 8	M 8	M12	M12	M12
G3	---	---	---	---	---	G1/4	G1/4
G8	---	G1/4	G1/4	G1/4	G3/8	G3/8	G3/8
G10	---	M12x1,5	M12x1,5	M12x1,5	M12x1,5	M12x1,5	M12x1,5
H1	[mm]	13,5	18,0	20,5	26,0	31,5	31,5
H2	[mm]	55	60	73	95	92	95
L1	[mm]	76	86	111	128	168	168
L2	[mm]	219,5	238,5	286,5	347	397	410
L3	[mm]	5	5	5	10	10	10
L4	[mm]	36	45	58	80	95	95
L5	[mm]	45	54	67	95	110	110
L6	[mm]	25	30	40	60	75	75
L7	[mm]	---	---	---	---	85	85
L8	[mm]	83	83	93	104	99	112
L9	[mm]	21	21	21	26	26	26
L10	[mm]	27,0	27,0	30,5	33,0	33,0	33,0
L11	[mm]	72	72	82	91	86	99
N1	---	10	10	10	10	12	12
T3	[mm]	15	15	15	25	30	30
β1	[grd.]	36	36	36	36	30	30
β2	[grd.]	---	---	---	---	20	20
β3	[grd.]	15	15	15	15	15	15

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Hense Systemtechnik GmbH & Co. KG
Reg. Office: Flottmannstr. 55, 44807 Bochum
Bochum District Court, HRA 4063
VAT ID No.: DE 812782196
Tax No.: 306/5714/1185

General partner:
Hense Beteiligungsgesellschaft mbH
Reg. Office: Flottmannstr. 55, 44807 Bochum
Bochum District Court, HRB 4080

Communication:
Telephone: 0234-95388-0
Fax Sales: 0234-95388-20
Fax Purchasing: 0234-95388-50
Mail: service@hense-systeme.de
Web: www.hense-systeme.de

Managing Directors:
Dipl. Ing.
Dipl. Wirtsch. Ing.
Frank Hense

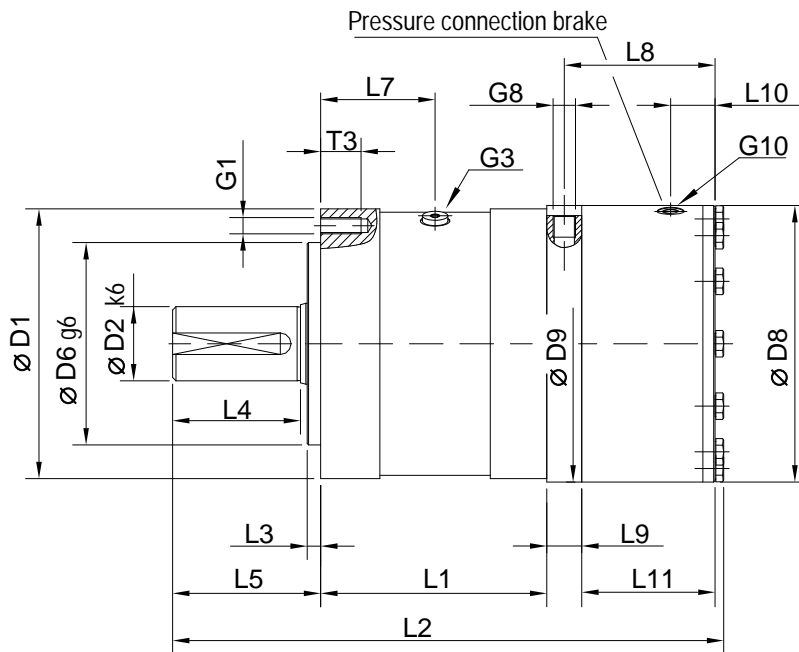
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Commerzbank AG Bochum
Bank code 430 400 36
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Technical data of the standard rotary actuators HSB 06 to HSB 08

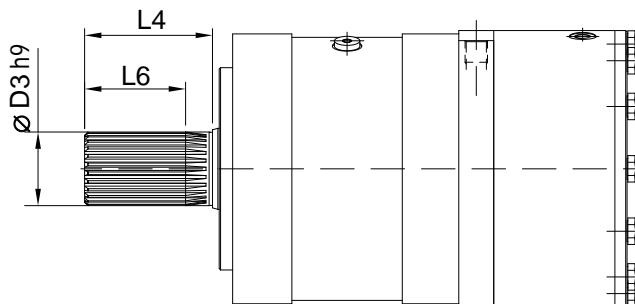
Page 1 of 2
Status 2009-10-05

Technical data		BG	06/H	06/V	07/H	07/V	08/H	08/V
theor. specific torque	M_{sp}	[Nm/bar]	28,31	28,31	55,13	55,13	98,9	98,9
max. operating pressure	$p_{N max}$	[bar]	200	200	160	160	160	160
min. release pressure of the brake	$p_{lü min}$	[bar]	50	50	50	50	50	50
max. angle of rotary	φ_{max}	[grd.]	270	270	280	280	290	290
max. radial force	$F_{r max}$	[kN]	10,0	10,0	15,0	15,0	20,0	20,0
max. axial force	$F_{ax max}$	[kN]	5,0	5,0	7,5	7,5	10,0	10,0
specific swept volume	v_{sp}	[cm ³ /grd.]	4,94	4,94	9,62	9,62	17,26	17,26
max. static holding torque	$M_{\dot{U} stat}$	[kNm]	2,5	5,0	5,0	10,0	10,0	15,0
weight ca.	m	[kg]	104	114	165	185	310	330

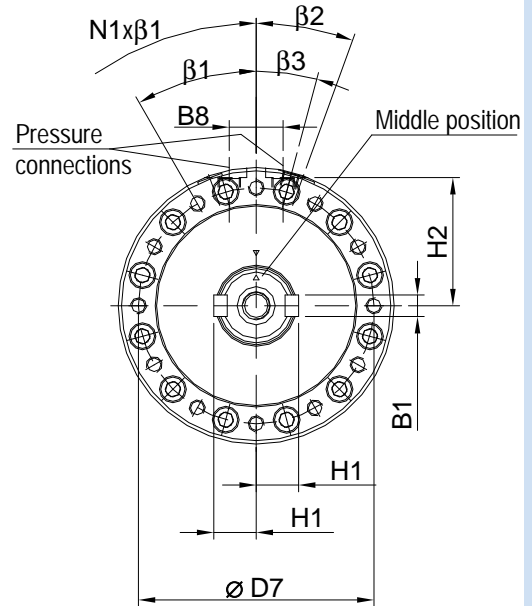
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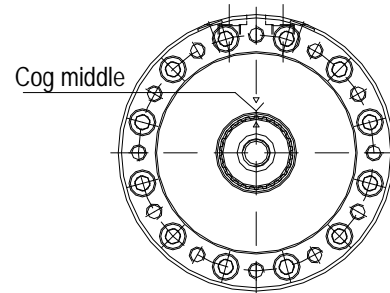
The views show the shaft in middle position.
Subject to technical modifications!



Type P: Shaft end with parallel keys to DIN 6885 T1 Form B



Type Z: Shaft end with involute spline shaft section to DIN 5480



Technical data of the standard rotary actuators HSB 06 to HSB 08

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Fluidische Antriebstechnik
Schwenkmotoren
Hub-Schwenksysteme
Prüfstandstechnik (Torsion)

Page 2 of 2
Status 2009-10-05

Measurement table	BG	06/H	06/V	07/H	07/V	08/H	08/V
B1	[mm]	20	20	25	25	32	32
B8	[mm]	50	50	50	50	60	60
D1	[mm]	240	240	280	280	350	350
D2	[mm]	75	75	95	95	120	120
D3	[mm]	74,4	74,4	94,4	94,4	119,0	119,0
D6	[mm]	170	170	200	200	250	250
D7	[mm]	210	210	250	250	310	310
D8	[mm]	205	245	245	290	290	345
D9	[mm]	240	245	280	290	350	350
G1	---	M16	M16	M16	M16	M20	M20
G3	---	G1/4	G1/4	G1/4	G1/4	G1/4	G1/4
G8	---	G1/2	G1/2	G1/2	G1/2	G3/4	G3/4
G10	---	M12x1,5	M12x1,5	M12x1,5	M12x1,5	M12x1,5	M12x1,5
H1	[mm]	42,0	42,0	52,5	52,5	67,0	67,0
H2	[mm]	112	115	134	139	168	168
L1	[mm]	218	218	263	263	325	325
L2	[mm]	475	489	559	588	706	717
L3	[mm]	10	10	10	10	15	15
L4	[mm]	105	105	130	130	165	165
L5	[mm]	120	120	145	145	190	190
L6	[mm]	80	80	100	100	130	130
L7	[mm]	110,0	110,0	132,5	132,5	162,5	162,5
L8	[mm]	114	127	127	155	161	171
L9	[mm]	31	31	31	31	42	42
L10	[mm]	33,0	36,5	36,5	41,0	41,0	44,5
L11	[mm]	99	112	112	140	140	150
N1	---	12	12	12	12	12	12
T3	[mm]	35	35	40	40	40	40
β1	[grd.]	30	30	30	30	30	30
β2	[grd.]	19	19	18	18	15	15
β3	[grd.]	15	15	15	15	15	15

Subject to technical modifications!

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Dipl. Wirtsch. Ing.
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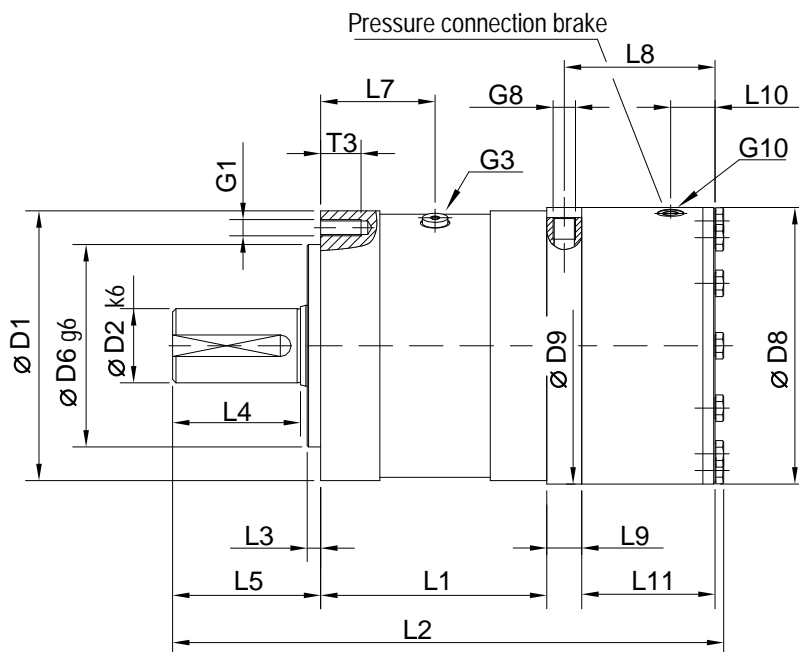
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Technical data of the standard rotary actuators HSB 09 to HSB 11

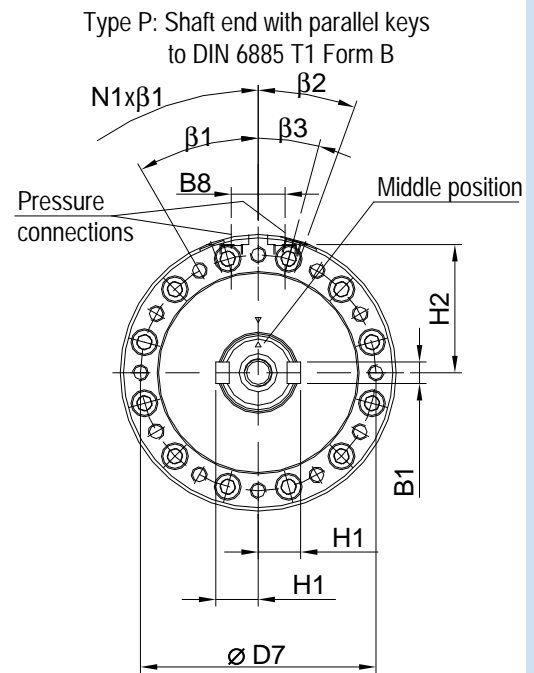
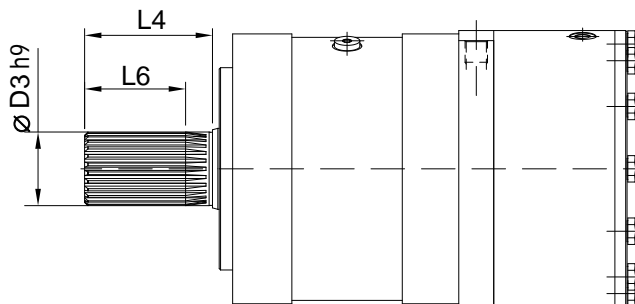
Page 1 of 2
Status 2009-10-05

Technical data		BG	09/H	09/V	10/H	10/V	11/H	11/V
theor. specific torque	M_{sp}	[Nm/bar]	164,6	164,6	275,4	275,4	468,8	468,8
max. operating pressure	$p_{N\ max}$	[bar]	160	160	120	120	120	120
min. release pressure of the brake	$p_{lü\ min}$	[bar]	50	50	50	50	50	50
max. angle of rotary	φ_{max}	[grd.]	290	290	290	290	290	290
max. radial force	$F_{r\ max}$	[kN]	25,0	25,0	30,0	30,0	40,0	40,0
max. axial force	$F_{ax\ max}$	[kN]	12,5	12,5	15,0	15,0	20,0	20,0
specific swept volume	v_{sp}	[cm ³ /grd.]	28,73	28,73	48,07	48,07	81,82	81,82
max. static holding torque	$M_{\dot{U}\ stat}$	[kNm]	15	25	15	30	30	60
weight ca.	m	[kg]	440	490	540	590	900	1050

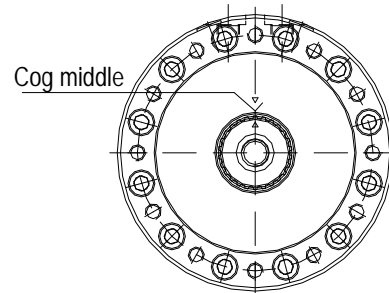
Subject to technical modifications!



The views show the shaft in middle position.
Subject to technical modifications!



Type Z: Shaft end with involute spline shaft section to DIN 5480



Technical data of the standard rotary actuators HSB 09 to HSB 11

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Schwenkmotoren
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Prüfstandstechnik (Torsion)

Page 2 of 2
Status 2009-10-05

Measurement table	BG	09/H	09/V	10/H	10/V	11/H	11/V
B1	[mm]	32	32	36	36	40	40
B8	[mm]	70	70	75	75	75	75
D1	[mm]	385	385	420	420	520	520
D2	[mm]	130	130	140	140	170	170
D3	[mm]	129	129	139	139	169	169
D6	[mm]	280	280	300	300	400	400
D7	[mm]	345	345	380	380	460	460
D8	[mm]	345	400	345	400	400	555
D9	[mm]	385	400	420	420	520	555
G1	---	M20	M20	M20	M20	M24	M24
G3	---	G1/4	G1/4	G1/4	G1/4	G1/4	G1/4
G8	---	G3/4	G3/4	G1	G1	G1	G1
G10	---	M12x1,5	M18x1,5	M12x1,5	M18x1,5	M18x1,5	M18x1,5
H1	[mm]	72	72	78	78	94	94
H2	[mm]	185	192	200	200	250	270
L1	[mm]	400	400	455	455	500	500
L2	[mm]	827	830	895	923	1008	1073
L3	[mm]	15	15	20	20	20	20
L4	[mm]	200	200	200	200	240	240
L5	[mm]	225	225	230	230	270	270
L6	[mm]	160	160	160	160	190	190
L7	[mm]	200,0	200,0	227,5	227,5	250,0	250,0
L8	[mm]	171	174	175	203	203	262
L9	[mm]	42	42	50	50	50	52
L10	[mm]	44,5	63,0	44,5	58,0	58,0	75,0
L11	[mm]	150	153	150	178	178	236
N1	---	16	16	16	16	16	16
T3	[mm]	50	50	50	50	55	55
β1	[grd.]	22,5	22,5	22,5	22,5	22,5	22,5
β2	[grd.]	15	15	15	15	15	15
β3	[grd.]	15	15	15	15	15	15

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Managing Directors:
Dipl. Ing.
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Commerzbank AG Bochum
Bank code 430 400 36
Acc. No.: 2 11 82 06
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