Planetary gears GSB

Low-backlash high-end gears set new standards in torque.

Our GSB line stands for high performance in combination with low backlash and high precision. Helical gears ensure a minimum noise level and smooth running. The GSB line aligns economic efficiency with flexibility and is your perfect fit for a multitude of applications.

You benefit from:

- Low backlash for high precision,
  standard as low as <=3 arcmin,
  optional as low as <= 1 arcmin
- High torque level
- Best corrosion protection also for output side
- Low noise level up to <56 dB (A)
- Long product lifetime up to 30,000 h
- High torsional rigidity

Precision ground helical gearing

Maximum precision and smoothness as well as minimization of operating noises.

Full needle bearing

Torques that beat the competition for units of the same size.

One-piece housing

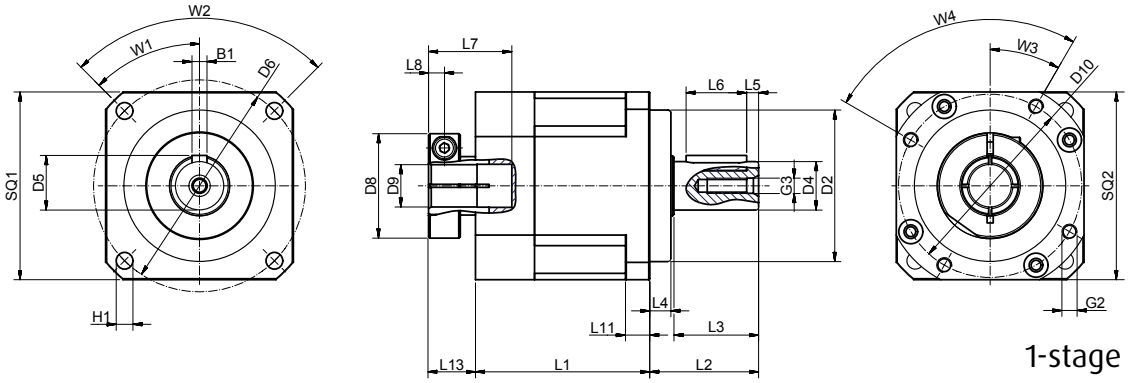
High gearbox rigidity and absorption of high radial and axial loads.

Typical application example

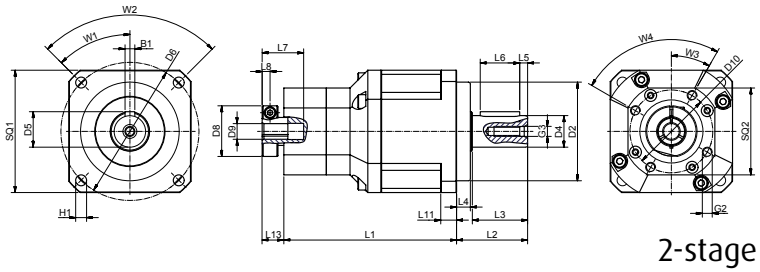
IML robot

In the in-mould labelling process (IML), pre-cut plastic films are inserted into an injection mould using a handling device. By applying a vacuum or static charge, the labels are fixed and then back-injected with plastic. The IML robots, which are equipped with a GSB065, handle the exact label loading of the moulds. IML robots are generally of modular design - the high positioning accuracy, fast availability and excellent price/performance ratio were crucial factors in the decision in favor of the GSB series.

ISO-projection metric



1-stage



2-stage

Planetary gears GSB • Dimensions

			Stage	GSB044	GSB062	GSB090	GSB120	GSB142	GSB180
Centering diameter output	D_2	h7		35	50	80	110	130	160
Output shaft diameter	D_4	h6		13	16	22	32	40	55
Shaft height including feather key	D_5			15	18	24.5	35	43	59
Hole circle diameter output	D_6			50	70	100	130	165	215
Clamping system diameter	D_8		1	27	40	49	67	80	107
			2	27	27	40	49	67	80
Max. motor shaft diameter	D_9	F7	1	11	19	24	28	35	55
			2	11	11	19	24	28	35
Hole circle diameter input	D_{10}		1	42	60.5	90	120	145	186
			2	42	42	60.5	90	120	145
Housing length	L_1		1	53	65.5	90	104.5	133	172
			2	79	87.5	111	149.5	171	217
Shaft length output	L_2			26	36	48	65	92	106
Shaft length from shoulder	L_3			20	28	36	50	74	82
Centering depth output	L_4			5	7	10	12	15	20
Distance from shaft end	L_5			2.5	4	3	5	5	6
Feather key length	L_6			15	20	30	40	65	70
Max. input length motor shaft	L_7		1	21	27.5	50	57	74.5	103
			2	21	21	27.5	50	57	74.5
Distance to center of screw	L_8		1	4.5	6	7	9	10.5	11
			2	4.5	4.5	6	7	9	10.5
Flange thickness output	L_{11}			5	8	10	12	15	16
Distance clamping ring - housing	L_{13}		1	11	15.5	17.5	25.5	25.5	34
			2	11	11	15.5	17.5	25.5	25.5
Square housing output	SQ_1			44	62	90	120	142	180
Square housing input	SQ_2		1	44	62	90	120	142	180
			2	44	44	62	90	120	142
Feather key width	B_1	h9		5	5	6	10	12	16
Min. mounting thread x depth	G_2	4 x	1	M4 x 8	M5 x 11	M6 x 12	M8 x 16	M10 x 20	M12 x 24
			2	M4 x 8	M4 x 8	M5 x 11	M6 x 12	M8 x 16	M10 x 20
Min. mounting thread x depth	G_3			M4 x 11	M5 x 14	M8 x 20	M10 x 23	M12 x 28	M14 x 32
Hole bore	H_1	4 x		4.5	5.5	6.8	9	11	13
Angle in °	W_1			45	45	45	45	45	45
x times angle in °	W_2			4 x 90	4 x 90	4 x 90	4 x 90	4 x 90	4 x 90
Angle in °	W_3			30	30	30	30	30	30
x times angle in °	W_4			4 x 90	4 x 90	4 x 90	4 x 90	4 x 90	4 x 90

Find more information regarding flanges and reduction sleeves for all common motor types on pages 48-50.

			GSB044	GSB062	GSB090	GSB120	GSB142	GSB180	Stage
Service lifetime*1	t_L	h	30000						
Nominal input speed	n_1	rpm	5000	5000	4000	4000	3000	3000	
Max. input speed	$n_{1\,max.}$	rpm	10000	10000	8000	8000	6000	6000	
Standard backlash	j_t	arcmin	<= 3 (opt. <= 1)						1
			<= 5 (opt. <= 3)						2
Noise level*2	Q_g	dB (A)	<= 56	<= 58	<= 60	<= 63	<= 65	<= 67	
Efficiency	η	%	>= 97						1
			>= 94						2
Protection class			IP65						
Torsional rigidity	c_t	Nm/arcmin	3	7	14	27	60	145	
Max. radial force*3	F_{2r}	N	780	1530	3250	6800	9400	15600	
Max. axial force*3	F_{2a}	N	390	765	1625	3700	4700	7800	
Operating temperature	T_B	°C	-25°C - +90°C						
Lubrication			Synthetic grease (lifetime-lubricated)						
Weight with flange*4	m_g	kg	0.6	1.28	3.6	8	14.3	28.3	1
			0.6	1.73	4.6	9.42	17.2	34.1	2
Mounting position			Any						

Output torques			GSB044	GSB062	GSB090	GSB120	GSB142	GSB180	Ratio	Stage
Nominal output torque*5	T_{2N}	Nm	20	62	173	352	656	1266	3	1
			17	54	153	315	583	1122	4	1
			17	50	168	350	649	1248	5	1
			16	47	156	324	602	1163	7	1
			14	45	150	313	581	1124	8	1
			15	45	148	309	576	1112	10	1
			20	62	173	352	656	1266	15	2
			17	54	153	315	583	1122	20	2
			17	50	168	350	649	1248	25	2
			16	47	159	327	612	1174	30	2
			16	47	156	324	602	1163	35	2
			17	50	168	350	649	1248	50	2
			16	47	156	327	612	1174	60	2
			15	45	150	324	602	1163	70	2
			15	45	150	313	581	1124	80	2
			15	45	148	309	576	1112	100	2
Max. acceleration torque*6	T_{2B}	Nm	36	112	311	634	1181	2279	3	1
			31	97	275	567	1049	2020	4	1
			31	90	302	630	1168	2246	5	1
			29	85	281	583	1084	2093	7	1
			25	81	270	563	1046	2023	8	1
			27	81	266	556	1037	2002	10	1
			36	112	311	634	1181	2279	15	2
			31	96	275	567	1049	2020	20	2
			31	90	302	630	1168	2246	25	2
			29	85	286	589	1102	2113	30	2
			29	85	281	583	1084	2093	35	2
			29	90	302	630	1168	2246	50	2
			29	85	281	588	1102	2113	60	2
			27	81	270	583	1084	2093	70	2
			26	81	270	563	1045	2022	80	2
			27	81	266	556	1037	2002	100	2
Emergency stop torque*7	T_{2Not}	Nm	60	186	519	1056	1968	3798	3	1
			51	162	459	945	1749	3366	4	1
			51	150	504	1050	1947	3744	5	1
			48	141	468	972	1806	3489	7	1
			42	135	450	939	1743	3372	8	1
			45	135	444	927	1728	3336	10	1
			60	186	519	1056	1968	3798	15	2
			51	162	459	945	1749	3366	20	2
			51	150	504	1050	1947	3744	25	2
			48	141	477	981	1836	3522	30	2
			48	141	468	972	1806	3489	35	2
			48	150	504	1050	1947	3744	50	2
			48	141	468	980	1836	3522	60	2
			45	135	450	972	1806	3489	70	2
			44	135	450	939	1742	3371	80	2
			45	135	444	927	1728	3336	100	2

Mass moment of inertia			GSB044	GSB062	GSB090	GSB120	GSB142	GSB180	Ratio	Stage
Mass moment of inertia*8	J_1	kgcm²	0.03	0.16	0.61	3.25	9.21	28.98	3	1
			0.03	0.14	0.48	2.74	7.54	23.67	4	1
			0.03	0.13	0.47	2.71	7.42	23.29	5	1
			0.03	0.13	0.45	2.62	7.14	22.48	7	1
			0.03	0.13	0.44	2.58	7.07	22.59	8	1
			0.03	0.13	0.44	2.57	7.03	22.51	10	1
			0.03	0.03	0.14	0.46	2.63	7.30	15	2
			0.03	0.03	0.14	0.46	2.63	7.30	20	2
			0.03	0.03	0.14	0.46	2.63	7.10	25	2
			0.03	0.03	0.14	0.46	2.43	7.10	30	2
			0.03	0.03	0.14	0.44	2.43	7.10	35	2
			0.03	0.03	0.14	0.44	2.43	6.92	50	2
			0.03	0.03	0.14	0.43	2.39	6.72	60	2
			0.03	0.03	0.14	0.43	2.39	6.72	70	2
			0.03	0.03	0.14	0.43	2.39	6.72	80	2
			0.03	0.03	0.14	0.40	2.39	6.72	100	2

*1 Load factor K_A=1, n_2=100 rpm ,at room temperature T=20°C in new condition
*2 Sound pressure level at 1m distance, measured for an input speed of 3000 rpm without load
*3 On the center of the output shaft
*4 Deviation of up to 10 % possible
*5 Service life: 30,000 h, n_2=100 rpm
*6 Max 1000 cycles per hour. Acceleration torque proportion < 5% of the total operation time
*7 Max 1000 cycles over the gear service life
*8 Related to the input shaft