

Gearheads

We offer a wide selection of planetary, right-angle, and strain wave gearheads. Planetary gearheads combine high power density with our motors. Options for quieter operation, reduced backlash, or higher torque ensure perfect adaptation to the required application. Ultra-performance planetary gearheads deliver high efficiency and long service life. For specialized requirements, we offer right-angle gearheads in various sizes that can be customized to customer needs. Strain wave gearheads, in turn, enable precise motion control and high torque transmission in a compact space—meeting the highest integration demands in robotics and high-end systems.



Strain Wave Gearheads

Standard specification no. 102	101
Terminology explanations	327
GSW 20 HP Ø20 mm, 0.6–1.2 Nm	NEW 390
GSW 30 HP Ø30 mm, 2.8–4.3 Nm	NEW 391
GSW 40 HP Ø40 mm, 6.6–11.6 Nm	NEW 392
GSW 55 A Ø55 mm, 4.8–7.7 Nm	393
GSW 62 A Ø62 mm, 18.0–27.0 Nm	394
GSW 70 A Ø70 mm, 24.0–34.0 Nm	NEW 395



Highly precise, compact and efficient. Particularly suitable for applications that require exact motion control and high torque transfer in the smallest of spaces.

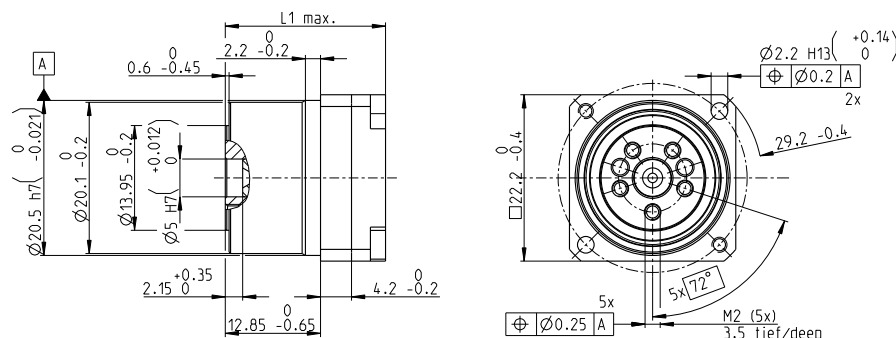
GSW 20 HP Ø20 mm, strain wave gearheads

Zero backlash

NEW



M 1:1



	Stock program	Part numbers									
	Standard program										
	Special program (on request)										
		910896	878757								
Gearhead data (provisional)											
1	Reduction		50:1	100:1							
2	Max. continuous torque	Nm	0.6	1.2							
3	Max. intermittent torque	Nm	1.1	1.8							
4	Max. overload torque	Nm	2.2	3.5							
5	Max. continuous input speed	rpm	6500	6500							
	Max. intermittent input speed	rpm	10 000	10 000							
6	Max. efficiency	%	72	74							
7	Weight	g	32	32							
8	Mass moment of inertia	gcm ²	0.75	0.75							
9	Gearhead length L1	mm	21.5	21.5							
10	Mech. positioning accuracy	arcmin	2.4	2.4							
11	Mech. repeatability	arcmin	0.3	0.3							
12	Hysteresis loss	arcmin	3.0	3.0							
13	Torsional rigidity C1	10 ⁴ Nm/rad	0.013	0.020							
	Torsional rigidity C2	10 ⁴ Nm/rad	0.018	0.027							
	Torsional rigidity C3	10 ⁴ Nm/rad	0.025	0.030							
14	Torque M1	Nm	0.075	0.075							
	Torque M2	Nm	0.220	0.220							
15	Starting torque, no load	mNm	4.0	3.0							
16	Backdriving torque, no load	Nm	0.21	0.27							
17	Ratcheting torque	Nm	3.8	4.6							
18	Buckling torque	Nm	9.8	9.8							
Technical data			Modular system								
19	Bearing at output	Deep groove ball bearing	BLDC Motors								
20	Tilting rigidity	0.2 Nm/arcmin	133-134_ECX FLAT 22								
21	Max. tilting torque	0.9 Nm/arcmin	182_ECX PRIME 16 M								
22	Max. radial load	100 N	184_ECX PRIME 16 L								
23	Max. axial load	300 N	213_ECX FLAT 22 S								
24	Dynamic load rating	1456 N	214-215_ECX FLAT 22 S HT								
25	Static load rating	1060 N	216-217_ECX FLAT 22 L HT								
26	Distance rolling bearing center to output	4.5 mm									
27	Pitch diameter	15 mm	DC Motors								
28	Ambient temperature	-40...+100 °C	279-280_DCX 19 S								
			281-282_DCX 22 S								

Additional information

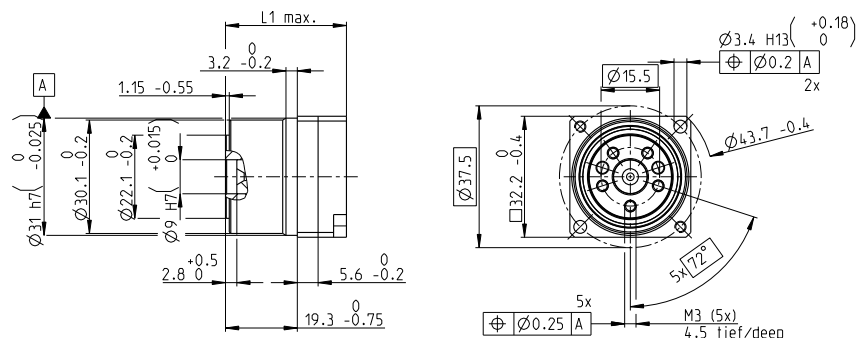
Explanation of the line numbers and additional information on page 358.

Zero backlash

Strain Wave Gearheads



M 1:2



Stock program		Part numbers									
Standard program		927301	912544								
Special program (on request)											
Gearhead data (provisional)											
1	Reduction		50:1	100:1							
2	Max. continuous torque	Nm	2.8	4.3							
3	Max. intermittent torque	Nm	4.0	6.2							
4	Max. overload torque	Nm	7.9	11.7							
5	Max. continuous input speed	rpm	3500	3500							
	Max. intermittent input speed	rpm	8500	8500							
6	Max. efficiency	%	72	74							
7	Weight	g	110	110							
8	Mass moment of inertia	gcm ²	4.2	4.2							
9	Gearhead length L1	mm	32.3	32.3							
10	Mech. positioning accuracy	arcmin	2.0	2.0							
11	Mech. repeatability	arcmin	0.2	0.2							
12	Hysteresis loss	arcmin	3.0	3.0							
13	Torsional rigidity C1	10 ⁴ Nm/rad	0.044	0.090							
	Torsional rigidity C2	10 ⁴ Nm/rad	0.067	0.104							
	Torsional rigidity C3	10 ⁴ Nm/rad	0.084	0.120							
14	Torque M1	Nm	0.29	0.29							
	Torque M2	Nm	0.75	0.75							
15	Starting torque, no load	mNm	0.80	0.60							
16	Backdriving torque, no load	Nm	0.55	0.75							
17	Ratcheting torque	Nm	14.4	18.2							
18	Buckling torque	Nm	35.0	35.0							
Technical data		Modular system									
19	Bearing at output	deep groove ball bearing	BLDC Motors								
20	Tilting rigidity	0.8 Nm/arcmin	135–136_ECX FLAT 32								
21	Max. tilting torque	4 Nm	186_ECX PRIME 22 M								
22	Max. radial load	300 N	188_ECX PRIME 22 L								
23	Max. axial load	650 N	197–200_EC-i30								
24	Dynamic load rating	1416 N	218–220_ECX FLAT 32 S								
25	Static load rating	1160 N	221–222_ECX FLAT 32 L								
26	Distance rolling bearing center to output	5 mm									
27	Pitch diameter	23.5 mm	DC Motors								
28	Ambient temperature	–40...+100 °C	285–286_DCX 26 L								

Additional information

Explanation of the line numbers and additional information on page 358.

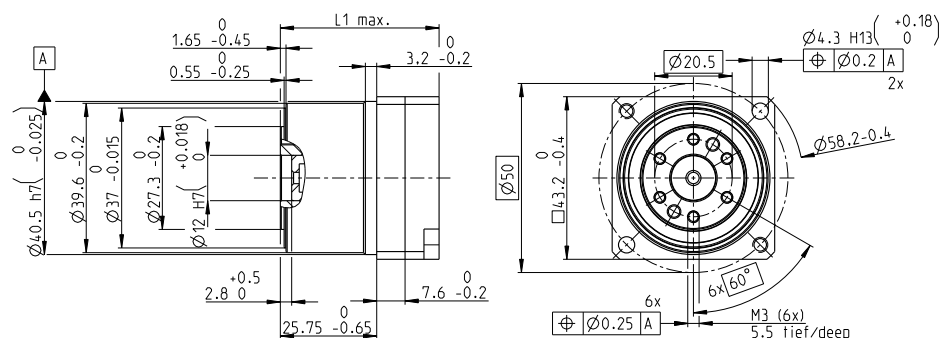
GSW 40 HP Ø40 mm, strain wave gearheads

Zero backlash

NEW



M 1:2



	Stock program	Part numbers									
	Standard program										
	Special program (on request)	951450	885707								
Gearhead data (provisional)											
1	Reduction		50:1	100:1							
2	Max. continuous torque	Nm	6.6	11.6							
3	Max. intermittent torque	Nm	10.0	14.3							
4	Max. overload torque	Nm	20.4	32.5							
5	Max. continuous input speed	rpm	3500	3500							
	Max. intermittent input speed	rpm	8500	8500							
6	Max. efficiency	%	72	74							
7	Weight	g	240	240							
8	Mass moment of inertia	gcm ²	30	30							
9	Gearhead length L1	mm	42.3	42.3							
10	Mech. positioning accuracy	arcmin	2.0	1.5							
11	Mech. repeatability	arcmin	0.2	0.2							
12	Hysteresis loss	arcmin	2.0	2.0							
13	Torsional rigidity C1	10 ⁴ Nm/rad	0.221	0.267							
	Torsional rigidity C2	10 ⁴ Nm/rad	0.300	0.333							
	Torsional rigidity C3	10 ⁴ Nm/rad	0.320	0.432							
14	Torque M1	Nm	0.80	0.80							
	Torque M2	Nm	2.00	2.00							
15	Starting torque, no load	mNm	20.0	15.0							
16	Backdriving torque, no load	Nm	1.44	1.95							
17	Ratcheting torque	Nm	40.8	55.9							
18	Buckling torque	Nm	90.0	90.0							
Technical data		Modular system									
19	Bearing at output	BLDC Motors									
	Double-row angular ball bearing	137-138_ECX FLAT 42									
20	Tilting rigidity	3.5 Nm/arcmin	190_ECX PRIME 30 L								
21	Max. tilting torque	7.5 Nm	201-206_EC-i 40								
22	Max. radial load	1000 N	223-225_ECX FLAT 42 S								
23	Max. axial load	1100 N	226-227_ECX FLAT 42 M								
24	Dynamic load rating	5470 N									
25	Static load rating	4810 N	DC Motors								
26	Distance rolling bearing center to output	6 mm	288_DCX 35 L								
27	Pitch diameter	31 mm									
28	Ambient temperature	-40...+100 °C									

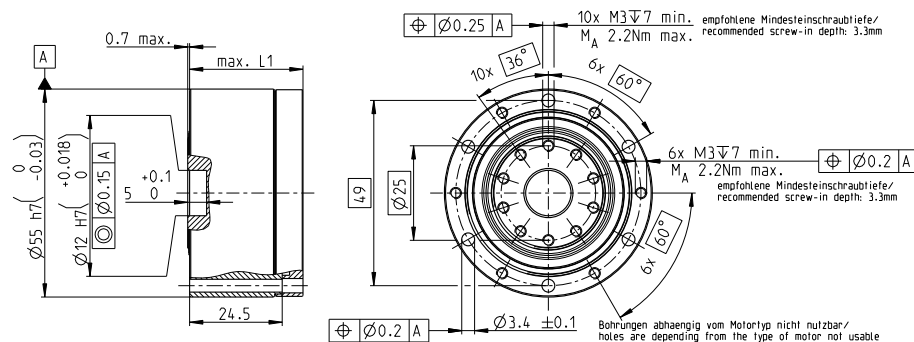
Additional information

Explanation of the line numbers and additional information on page 358.

Zero backlash



Strain Wave Gearheads



M 5:2

Stock program		Part numbers									
Standard program		863427	863428	863429							
Special program (on request)											
Gearhead data											
1	Reduction		50:1	80:1	100:1						
2	Max. continuous torque	Nm	4.8	7.7	7.7						
3	Max. intermittent torque	Nm	12.0	16.0	19.0						
4	Max. overload torque	Nm	24.0	35.0	35.0						
5	Max. continuous input speed	rpm	3500	3500	3500						
	Max. intermittent input speed	rpm	8500	8500	8500						
6	Max. efficiency	%	72	72	75						
7	Weight	g	300	300	300						
8	Mass moment of inertia	gcm ²	43.0	42.0	42.0						
9	Gearhead length L1 ¹	mm	30.3	30.3	30.3						
10	Mech. positioning accuracy	arcmin	1.5	1.5	1.5						
11	Mech. repeatability	arcmin	0.10	0.10	0.10						
12	Hysteresis loss	arcmin	1.0	1.0	1.0						
13	Torsional rigidity C1	10 ⁴ Nm/rad	0.29	0.40	0.40						
	Torsional rigidity C2	10 ⁴ Nm/rad	0.37	0.44	0.44						
	Torsional rigidity C3	10 ⁴ Nm/rad	0.47	0.61	0.61						
14	Torque M1	Nm	1.6	1.6	1.6						
	Torque M2	Nm	3.2	3.2	3.2						
15	Starting torque, no load	mNm	33.0	28.5	21.0						
16	Backdriving torque, no load	Nm	2.0	2.0	2.3						
17	Ratcheting torque	Nm	60	75	55						
18	Buckling torque	Nm	190	190	190						
Technical data		Modular system									
19	Bearing at output	cross roller bearings	BLDC Motors								
20	Tilting rigidity	9.0 Nm/arcmin	137-138_ECX FLAT 42								
21	Max. tilting torque	28.0 Nm	190_ECX PRIME 30 L								
22	Max. radial load	1650 N	201-206_EC-i 40								
23	Max. axial load	3300 N	207-208_EC-i 52								
24	Dynamic load rating	1890 N	226-227_ECX FLAT 42 M								
25	Static load rating	2140 N									
26	Distance rolling bearing center to output	10 mm									
27	Pitch diameter	34.7 mm									
28	Ambient temperature	-40...+100 °C									

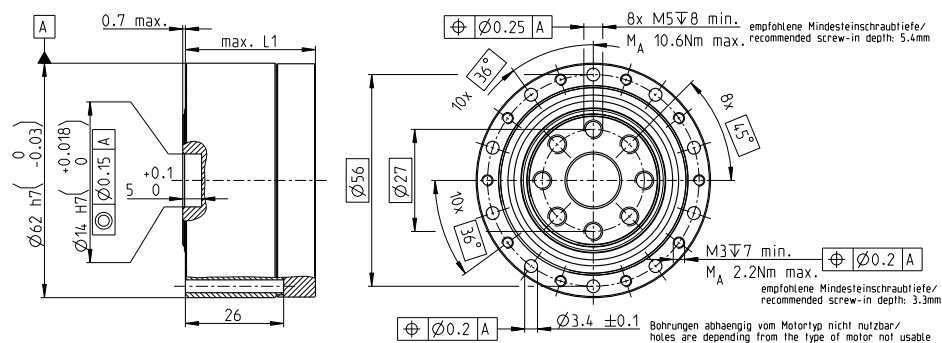
Additional information

Explanation of the line numbers and additional information on page 358.

¹This length may vary depending on the configuration and choice of motor. The effective length is calculated at the end of the configuration process.

GSW 62 A Ø62 mm, strain wave gearhead

Zero backlash



M 5:2

- ☒ Stock program
☐ Standard program
☐ Special program (on request)

Part numbers

867137	867132	867073

Gearhead data

1	Reduction		50:1	80:1	100:1
2	Max. continuous torque	Nm	18.0	19.0	27.0
3	Max. intermittent torque	Nm	23.0	29.0	37.0
4	Max. overload torque	Nm	48.0	61.0	71.0
5	Max. continuous input speed	rpm	3500	3500	3500
	Max. intermittent input speed	rpm	7300	7300	7300
6	Max. efficiency	%	72	72	75
7	Weight	g	460	460	460
8	Mass moment of inertia	gcm ²	88.0	85.0	85.0
9	Gearhead length L1 ¹	mm	32.4	32.4	32.4
10	Mech. positioning accuracy	arcmin	1.5	1.5	1.5
11	Mech. repeatability	arcmin	0.10	0.10	0.10
12	Hysteresis loss	arcmin	2.0	1.5	1.5
13	Torsional rigidity C1	10 ⁴ Nm/rad	0.67	0.84	0.84
	Torsional rigidity C2	10 ⁴ Nm/rad	0.88	0.94	0.94
	Torsional rigidity C3	10 ⁴ Nm/rad	1.20	1.30	1.30
14	Torque M1	Nm	3.9	3.0	3.0
	Torque M2	Nm	12.0	7.0	7.0
15	Starting torque, no load	mNm	50.3	33.0	28.5
16	Backdriving torque, no load	Nm	2.5	2.0	2.3
17	Ratcheting torque	Nm	105	140	110
18	Buckling torque	Nm	330	330	330

Technical data

19	Bearing at output	cross roller bearings
20	Tilting rigidity	17 Nm/arcmin
21	Max. tilting torque	42.0 Nm
22	Max. radial load	2030 N
23	Max. axial load	4075 N
24	Dynamic load rating	2060 N
25	Static load rating	2640 N
26	Distance rolling bearing center to output	10 mm
27	Pitch diameter	42.7 mm
28	Ambient temperature	-40...+100 °C

Modular system

BLDC Motors
138_ECX FLAT 42
207-208_EC-i 52
226-227_ECX FLAT 42
229-231_EC 60 flat
Servo Motors
109-111_IDX 56 IE
119-121_IDX 56

Additional information

Explanation of the line numbers and additional information on page 358.

¹This length may vary depending on the configuration and choice of motor. The effective length is calculated at the end of the configuration process.

Zero backlash

Strain Wave Gearheads



M 5:2

Gearheads

Additional information

Explanation of the line numbers and additional information on page 358.

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