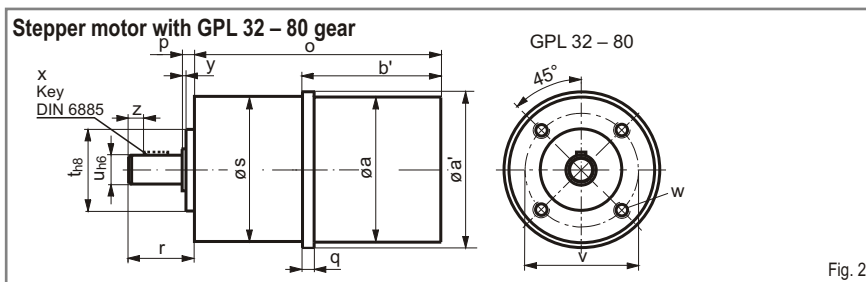
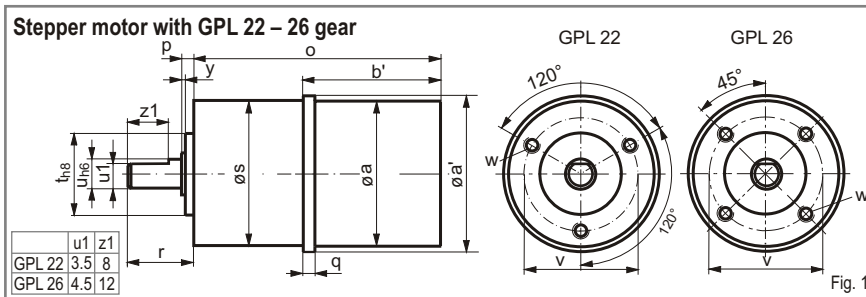


Stepper Motor with GPL Planetary Gear



Gear	Stepper motor	Dimensions in mm																	
		1						2						3					
		a	a'	b'	stages			o	p	q	r	s	t	u	v	w	x	y	z
22	ZSS 19	19	22	29	50	57	64	2.5	4.5	15	22	12	4	16	M2.5x4	-	0.5	-	
	ZSS 20	45.5	66.5	73.5	80.5														
	ZSS 25	25	25.5	33.5	54.5	61.5	68.5												5
	ZSS 26	49.5	70.5	77.5	84.5														
26	ZSS 25	25	26	33.5	59	67	75	2.5	5	17	26	14	5	20	M3x4	-	0.5	-	
	ZSS 26	49.5	75	83	91														
32	ZSS 32	32	33	40.5	69.5	78.5	87.5	4	5	20	32	20	6	26	M3x5	-	1	-	
	ZSS 33	59.5	88.5	97.5	106.5														
42	ZSS 41	42	43	53	88	100.5	113	4	7	22.5	42	25	8	32	M4x8	3x3x14	1	2.25	
	ZSS 42	68	103	115.5	128														
	ZSS 43	83	118	130.5	143														
52	ZSS 52	52	53	82.5	123.5	138	152.5	4	9	24	52	32	12	40	M5x8	4x4x16	1	2	
	ZSS 56	56.4	57	74	115	130	144												
	ZSS 57	90	131	145	160														
80	RSS 79	80	80	125	168.5	186.5	204.5	5	23.1	35	80	50	14	65	M6x12	5x5x20	2.5	5	
	RSH 79	190.5	208.5	226.5															
	RSS 80	80	80	147	190.5	208.5	226.5												

Gear	Weight without motor			perm. radial load (center of shaft)	Permissible axial load	Protection class Gear	Protection class Gear + Motor	
	1-stage	2-stage	3-stage				IP 40	IP 44
GPL 22	50 g	75 g	100 g	30 N	24 N	IP 44	IP 40	IP 44
GPL 26	70 g	90 g	115 g	50 N	40 N	IP 44	IP 40	IP 44
GPL 32	135 g	180 g	250 g	80 N	65 N	IP 54	IP 40	IP 44
GPL 42	275 g	350 g	425 g	150 N	120 N	IP 54	IP 43	IP 65
GPL 52	475 g	600 g	725 g	250 N	200 N	IP 54	IP 43	IP 65
GPL 80	1.5 kg	2.1 kg	2.75 kg	400 N	320 N	IP 54	IP 54	IP 65

Technical Information

- Stepper motor mounted gear
- 200-step
2-phase powerful stepper motor
- 1- to 3-stage planetary gear
- Low gear backlash
– Standard: 20 to 50 angular minutes
– Low-backlash: 6 to 15 angular minutes
- Maximum permanent torque 0.1 to 38 Nm
- 100% permissible short-term overload
- Adapted for permanent, alternate or intermittent operation
- Ideal for combination with toothed belt modules
- 4:1 to 256:1 reduction ratios
(depending on the gear type)
- High efficiency
- Low gear inertia
- Permissible temperature range
–30 to +90 °C

Mechanical Characteristics

Gear	Stepper motor	Mechanical Gear Characteristics											
		Stages	Reduction ratios	standard			low-backlash			Torsional stiffness	Average mass inertia at drive	Efficiency	
				No-load backlash	Nominal torque (S1)	Emergency stop torque (S1)	No-load backlash	Nominal torque (S5)	Emergency stop torque (S5)				
				Nm			Nm						Nm/arcmin
GPL 22	ZSS 19	1	4:1 5:1	7:1	20'	0.1	0.2	-	-	-	0.19	0.008	96
	ZSS 20	2	16:1 20:1	35:1 49:1	35'	0.5	1	-	-	-	0.21	0.006	90
	ZSS 25		28:1										
	ZSS 26	3	64:1 80:1 112:1	140:1 196:1 245:1	50'	1.5	3	-	-	-	0.2	0.004	85
GPL 26	ZSS 25	1	3.5:1 4.33:1	6:1 7.67:1	20'	0.3	0.6	-	-	-	0.24	0.012	96
	ZSS 26	2	12.25:1 18.78:1	33.22:1 46:1	35'	1	2	-	-	-	0.26	0.010	90
			26:1										
		3	81.37:1 112.67:1 143.96:1	199.33:1 276:1	50'	3	6	-	-	-	0.25	0.0095	85
GPL 32	ZSS 32	1	4:1 4.5:1 5.2:1	6.25:1 8:1	20'	0.4	0.8	6'	0.8	1.6	0.3	0.015	96
	ZSS 33	2	16:1 18:1	32:1 36:1	35'	2	4	10'	4	6	0.32	0.012	90
			20.8:1 25:1 29:1	41.6:1 50:1									
		3	72:1 81:1 100:1 130:1	144:1 200:1 225:1 256:1	50'	6	12	15'	6	12	0.3	0.011	85
GPL 42	ZSS 41	1	4:1 5:1	6:1	20'	0.7	1.4	6'	1.4	3	0.4	0.03	96
	ZSS 42	2	14:1 16:1	20:1	35'	4	8	10'	8	12	0.42	0.024	90
	ZSS 43		56:1 64:1 80:1 100:1	120:1 144:1 184:1									
		3	72:1 81:1 100:1 130:1	144:1 200:1 225:1 256:1	50'	12	24	15'	12	24	0.4	0.024	85
GPL 52	ZSS 52	1	4:1 4.5:1 5.2:1	6.25:1 8:1	20'	1.5	3	6'	3	6	1.2	0.06	96
	ZSS 56	2	16:1 18:1	32:1 36:1	35'	10	20	10'	20	30	1.3	0.055	90
	ZSS 57		20.8:1 25:1 29:1	41.6:1 50.1:1									
		3	72:1 81:1 100:1 130:1	144:1 200:1 225:1 256:1	50'	30	60	15'	30	60	1.35	0.05	85
GPL 80	RSS 79	1	4:1		20'	3	6	6'	6	12	1.5	0.12	96
	RSH 79	2	14:1 16:1	20:1 24:1	35'	15	30	10'	30	38	1.5	0.08	90
	RSS 80												
	RSH 80	3	56:1	64:1	50'	38	75	15'	38	75	1.4	0.075	85

Material

Gear housing:
 GPL 22: stainless steel
 GPL 26 – 80: rustproof for normal environmental conditions
 Output shaft bearing: 2 deep groove ball bearings

Grease Lubrication

Maintenance-free permanent lubrication with grease of the highest quality.
 After three years or every 10,000 hours of operation we recommend servicing.

Operating Modes

S1: Continuous operation

The gear box's operating time exceeds 15 minutes without a break or the duty cycle is more than 60%. In no case the gear box housing temperature may exceed 70 °C.

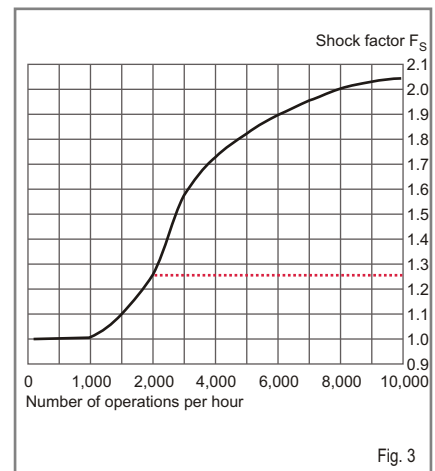
S5: Cyclical operation

The gear box's duty cycle is less than 60%. The number of operations per hour can range anywhere from a few to several thousand.

If the number of operations exceeds 1000 per hour, the maximum torque occurring has to be multiplied by a shock factor (fig. 3) to take into account the additional dynamic load.

The data in this publication are based on software models and empirical values for the S1 and S5 modes and on a shock factor of 1.25.

Shock Factor



Ordering Data

	ZSS32.200.1,2-GPL32/16 SPA
Stepper motor ¹	
Gear	GPL 22, 26, 32, 42, 52 or 80
Reduction ratio	depending on gear type
Backlash	ST = standard SPA = low-backlash
¹ Motor types and options: see motor data sheet	