

Technical data Lever gearboxes for open-close duty

Valve		Gearbox					
Max. valve torque	Gearbox/primary reduction gearing	Reduction ratio	Factor ¹⁾	Turns for 90°	Input shaft ²⁾	Max. input torques	Weight ³⁾
to [Nm]					[mm]	[Nm]	GF + VZ/GZ [kg]
500	GF 50.3	51:1	16.7	12.75	16	30	10
1,000	GF 63.3	51:1	16.7	12.75	20	60	23
2,000	GF 80.3	53:1	18.2	13.25	20	110	29
4,000	GF 100.3	52:1	18.7	13	30/(20)	214	58
	GF 100.3/ VZ 2.3	126:1	42.8	31.5	20	93	64
	GF 100.3/ VZ 3.3	160:1	54.0	40	20	74	64
	GF 100.3/ VZ 4.3	208:1	70.7	52	20	57	64
8,000	GF 125.3	52:1	19.2	13	30	417	89
	GF 125.3/ VZ 2.3	126:1	44.0	31.5	30/(20)	182	95
	GF 125.3/ VZ 3.3	160:1	56.0	40	30/(20)	143	95
	GF 125.3/ VZ 4.3	208:1	72.7	52	20	110	95
11,250	GF 160.3	54:1	21	13.5	30	536	139
	GF 160.3/ GZ 160.3 - 4:1	218:1	76	54.5	30/(20)	148	150
	GF 160.3/ GZ 160.3 - 8:1	442:1	155	110.5	20	73	150
22,500	GF 200.3	53:1	20.7	13.25	40	1,087	258
	GF 200.3/ GZ 200.3 - 4:1	214:1	75	53.5	30	300	278
	GF 200.3/ GZ 200.3 - 8:1	434:1	152	108.5	30/(20)	148	278
	GF 200.3/ GZ 200.3 - 16:1	864:1	268	216	20	84	288
45,000	GF 250.3	52:1	20.3	13	50	2,217	467
	GF 250.3/ GZ 250.3 - 4:1	210:1	74	52.5	40/(30)	608	490
	GF 250.3/ GZ 250.3 - 8:1	411:1	144	109	30	313	490
	GF 250.3/ GZ 250.3 - 16:1	848:1	263	212	30/(20)	171	502

1) – 3) Refer to notes on page 3.

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Gearbox/primary reduction gearing	Reduct. ratio	Possible combinations with multi-turn actuators												Multi-turn actuator	Input mounting flange for mounting multi-turn actuator		Max. weight ⁴⁾		
		Operating time for 50 Hz ⁹⁾ in seconds for 90° at actuator output speed in rpm													Actuator for max. input torque	EN ISO 5210		DIN 3210	GF+VZ/ GZ+SA [kg]
		4	5.6	8	11	16	22	32	45	63	90	125	180						
GF 50.3	51:1	191	137	96	70	48	35	24	17	– ⁶⁾	– ⁶⁾	– ⁶⁾	– ⁶⁾	SA 07.2	F07 F10	G0	30.1		
GF 63.3	51:1	191	137	96	70	48	35	24	17	– ⁶⁾	– ⁶⁾	– ⁶⁾	– ⁶⁾	SA 07.6	F07 F10	G0	44.1		
GF 80.3	53:1	199	142	99	72	50	36	25	18	– ⁶⁾	– ⁶⁾	– ⁶⁾	– ⁶⁾	SA 10.2	F07 F10	G0	54.4		
GF 100.3	52:1	195	149	98	71	49	35	24	17	– ⁶⁾	– ⁶⁾	– ⁶⁾	– ⁶⁾	SA 14.2	F10 F14	G0 G1/2	110.1		
GF 100.3/ VZ 2.3	126:1	473	338	236	172	118	86	59	42	30	21	– ⁶⁾	– ⁶⁾	SA 10.2	F10	G0	89.4		
GF 100.3/ VZ 3.3	160:1	600	429	300	218	150	109	75	53	38	27	19	– ⁶⁾	SA 07.6	F10	G0	85.1		
GF 100.3/ VZ 4.3	208:1	780	557	390	284	195	142	98	69	50	35	25	17 ⁷⁾	SA 07.6	F10	G0	85.1		
GF 125.3	52:1	195	149	98	71	49	35	24	17	– ⁶⁾	– ⁶⁾	– ⁶⁾	– ⁶⁾	SA 14.6	F14	G1/2	147.1		
GF 125.3/ VZ 2.3	126:1	473	338	236	172	118	86	59	42	30	21	– ⁶⁾	– ⁶⁾	SA 14.2	F10 F14	G0 G1/2	147.1		
GF 125.3/ VZ 3.3	160:1	600	429	300	218	150	109	75	53	38	27	19	– ⁶⁾	SA 10.2	F10	G0	120.4		
GF 125.3/ VZ 4.3	208:1	780	557	390	284	195	142	98	69	50	35	25	17 ⁷⁾	SA 10.2	F10	G0	120.4		
GF 160.3	54:1	203	145	104	74	51	37	25	18	– ⁶⁾	– ⁶⁾	– ⁶⁾	– ⁶⁾	SA 16.2	F14	G1/2	197.1		
GF 160.3/ GZ 160.3 - 4:1	218:1	818	584	409	297	204	149	102	73	52	36	26	18	SA 14.2	F10 F14	G0 G1/2	202.1		
GF 160.3/ GZ 160.3 - 8:1	442:1	–	–	829	603	414	301	207	147	105	74	53	37 ⁷⁾	SA 10.2	F10	G0	175.4		
GF 200.3	53:1	199	142	99	72	50	36	25	18	– ⁶⁾	– ⁶⁾	–	–	SA 25.1	F16 F25	G3 –	413.1		
GF 200.3/ GZ 200.3 - 4:1	214:1	803	573	401	292	201	146	100	71	51	36	26	18	SA 14.6	F14	G1/2	336.1		
GF 200.3/ GZ 200.3 - 8:1	434:1	–	–	814	592	407	296	203	145	103	72	52	36	SA 14.2	F10 F14	G0 G1/2	330.1		
GF 200.3/ GZ 200.3 - 16:1	864:1	–	–	–	–	810	589	405	288	206	144	104	72 ⁷⁾	SA 10.2	F10	G0	313.4		
GF 250.3	52:1	195	149	98	71	49	35	24	– ⁶⁾	– ⁶⁾	– ⁶⁾	–	–	SA 30.1	F25 F30	–	665.6		
GF 250.3/ GZ 250.3 - 4:1	210:1	788	563	394	286	197	143	98	70	50	35	25	– ⁶⁾	SA 16.2	F14 F16	G1/2 G3	578.4		
GF 250.3/ GZ 250.3 - 8:1	411:1	–	–	771	560	385	280	193	137	98	69	49	34	SA 14.6	F14	G1/2	548.1		
GF 250.3/ GZ 250.3 - 16:1	848:1	–	–	–	–	795	578	398	283	202	141	102	71 ⁷⁾	SA 14.2	F10 F14	G0 G1/2	554.1		

4) – 7) Refer to notes on page 3.

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General information

For motor or manual operation of valves (e.g. butterfly valves, ball and plug valves). Specific sizing is required for special applications e.g. dampers or gas diverters. For special applications, please consult AUMA.

Notes to table on pages 1 + 2

1) Factor	Conversion factor from output torque to input torque to determine the actuator size For new gearboxes, input torques increased by 15 % are required due to lower efficiency.
2) Input shaft	Depending on the required input torque
3) Weight	Specified weight includes coupling (without bore) and grease filling in the gear housing
4) Max. weight	Specified weight contains coupling (without bore) and grease filling in the gear housing, multi-turn actuator with 3-phase AC motor, standard electrical connection, output drive type B3 and handwheel.
5) Operating time for 50 Hz	Standard values at 50 Hz; at 60 Hz, the indicated operating time is reduced by 17 %.
6)	Refer to Technical Data GF 50.3 – GF 250.3 for modulating duty and shorter operating times; heed maximum valve torque
7)	Observe max. output torque of multi-turn actuator

Features and functions

Worm wheel material	Spheroidal cast iron										
Version	Standard:	Clockwise rotation RR, counterclockwise rotation LL									
	Option:	RL or LR									
Housing material	Standard:	Cast iron (GJL-250)									
	Option:	Spheroidal cast iron (GJS-400-15)									
Self-locking	The gearboxes are self-locking when at standstill under normal service conditions; strong vibration may cancel the self-locking effect. While in motion, safe braking is not guaranteed. If this is required, a separate brake must be used.										
End stops	Positive for both end positions by travelling nut, sensitive adjustment										
Strength of end stop	Guaranteed strength of end stop (in Nm) for input side operation										
	Type	GF 50.3	GF 63.3	GF 80.3	GF 100.3			GF 125.3			
	Primary reduction gearing	–	–	–	VZ 2.3	VZ 3.3	VZ 4.3	VZ 2.3	VZ 3.3	VZ 4.3	
	[Nm]	250	450	450	500			250			
	Type	GF 160.3		GF 200.3			GF 250.3				
	Primary reduction gearing	GZ 160.3		GZ 200.3			GZ 250.3				
	Reduction ratio	4:1	8:1	4:1	8:1	16:1	4:1	8:1	16:1		
[Nm]	500	450	500			500					
Swing angle GF 50.3 – GF 125.3	Standard:	Fixed swing angle between 10° and max. 100°; set in the factory to 92° unless ordered otherwise.									
	Options:	Adjustable in steps of: 10° – 35°, 35° – 60°, 60° – 80°, 80° – 100°, 100° – 125°, 125° – 150°, 150° – 170°, 170° – 190° Swing angle > 190°, refer to Technical data GF 50.3 – GF 250.3 for modulating duty and shorter operating times									
Swing angle GF 160.3 – GF 250.3	Standard:	Adjustable 80° – 100°; set in the factory to 92° unless ordered otherwise.									
	Options:	Adjustable in steps of: 0° – 20°, 20° – 40°, 40° – 60°, 60° – 80°, 90° – 110°, 110° – 130°, 130° – 150°, 150° – 170°, 170° – 190° Swing angle > 190°, refer to Technical data GF 50.3 – GF 250.3 for modulating duty and shorter operating times									
Mechanical position indicator	Standard:	No position indicator (protection cover)									
	Option:	Pointer cover instead of protection cover for continuous position indication									
Input shaft	Cylindrical with parallel key according to DIN 6885-1 (refer to table on page 1)										

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Operation												
Motor operation	<ul style="list-style-type: none"> With electric multi-turn actuator, directly or through VZ/GZ primary reduction gearing Input mounting flanges for multi-turn actuator (refer to table page 2) 											
Type of duty	<ul style="list-style-type: none"> Short-time duty S2 - 15 min (open-close duty) 											
Manual operation	Available handwheel diameters according to EN 12570, selection according to output torque:											
	Type	GF 50.3	GF 63.3	GF 80.3	GF 100.3			GF 125.3				
	Primary reduction gearing	–	–	–	–	VZ 2.3	VZ 3.3	VZ 4.3	–	VZ 2.3	VZ 3.3	VZ 4.3
	Handwheel Ø [mm]	160 200 250	250 315	315 400	400 500	315 400	250 315	500 630 800	400 500	315 400		
	Type	GF 160.3			GF 200.3			GF 250.3				
	Primary reduction gearing	–	GZ 160.3		–	GZ 200.3		–	GZ 250.3			
	Handwheel Ø [mm]	630 800	400	315	–	500 630	400	315	–	800	500 630	400
Standard:	<ul style="list-style-type: none"> Handwheel made of aluminium Handwheel with ball handle 											
Options:	<ul style="list-style-type: none"> Handwheel made of GJL-200 Handwheel lockable 											

Primary reduction gearing	
Primary reduction gearing	<ul style="list-style-type: none"> VZ and GZ types as planetary gears with various reduction ratios for reducing the input torques (refer to table page 1). Combination with GK bevel gearbox directly on GF or on GF with VZ/GZ possible (90° deflection of input shaft)

Base and lever	
Base	Made of spheroidal cast iron; for mounting to base, 4 holes for fastening screws are available.
Lever	Made of spheroidal cast iron; with 2 or 3 bores for fixing lever arrangement. Considering the ambient conditions, the lever may be mounted to the output shaft in any desired position.
Ball joints	Two ball joints matching the lever, as an option including lock nuts and 2 welding nuts; suitable for pipe according to dimension sheet

Service conditions	
Mounting position	Any position
Ambient temperature	Standard: –40 °C to +80 °C
	Options: –60 °C to +60 °C 0 °C to +120 °C
Enclosure protection according to EN 60529	Standard: IP68-8, dust and water tight up to max. 8 m head of water
	Options: IP68-20, dust and water tight up to max. 20 m head of water
Corrosion protection	Standard: KN Suitable for installation in industrial units, in water or power plants with a low pollutant concentration
	Options: KS Suitable for installation in industrial units, in water or power plants with a low pollutant concentration as well as for installation in occasionally or permanently aggressive atmospheres with a moderate pollutant concentration (e.g. wastewater treatments plants, chemical industry)
	KX Suitable for installation in extremely aggressive atmospheres with high humidity and high pollutant concentration
Paint	Standard: GF 50.3 – GF 125.3: Two-component iron-mica combination GF 160.3 – GF 250.3: primer coated
	Option: GF 160.3 – GF 250.3: Two-component iron-mica combination
Colour	Standard: AUMA silver-grey (similar to RAL 7037)
	Option: Other colours are possible on request.

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Lifetime	Lifetime for 90° swing movement				
	Gearbox size	GF 50.3/ GF 63.3	GF 80.3/ GF 100.3/VZ	GF 125.3/VZ – GF 200.3/GZ	GF 250.3/GZ
	Number of cycles for max. torque	10,000	5,000	2,500	1,000

AUMA lever gearboxes meet or even exceed the lifetime requirements of EN 15714-2. Detailed information can be provided on request.

Accessories	
Valve position indicators	<ul style="list-style-type: none"> • WSG valve position indicator (hall sensors) for position and end position signalling to ensure precise and low-backlash feedback for swing angles ranging between 82° and 98°. • WGD valve position indicator (counter gear mechanism) for position and end position signalling for swing angles > 180°

Special features for use in potentially explosive atmospheres																			
Explosion protection in accordance with ATEX 94/9/EC	Standard: II2G c IIC T4 II2D c T130 °C																		
	Options: II2G c IIC T3 II2D c T190 °C IM2 c																		
Type of duty	Short-time duty S2 – 15 min., max. 3 cycles (OPEN - CLOSE - OPEN) 90°, with the following average output torques																		
	<table border="1"> <tr> <td>Gearbox size</td> <td>GF 50.3</td> <td>GF 63.3</td> <td>GF 80.3</td> <td>GF 100.3</td> <td>GF 125.3</td> <td>GF 160.3</td> <td>GF 200.3</td> <td>GF 250.3</td> </tr> <tr> <td>Average output torque [Nm]</td> <td>250</td> <td>500</td> <td>1,000</td> <td>2,000</td> <td>4,000</td> <td>8,000</td> <td>16,000</td> <td>32,000</td> </tr> </table>	Gearbox size	GF 50.3	GF 63.3	GF 80.3	GF 100.3	GF 125.3	GF 160.3	GF 200.3	GF 250.3	Average output torque [Nm]	250	500	1,000	2,000	4,000	8,000	16,000	32,000
	Gearbox size	GF 50.3	GF 63.3	GF 80.3	GF 100.3	GF 125.3	GF 160.3	GF 200.3	GF 250.3										
Average output torque [Nm]	250	500	1,000	2,000	4,000	8,000	16,000	32,000											
Then cool-down to ambient temperature																			
Ambient temperature	Standard: –40 °C to +60 °C (II2G c IIC T4; II2D c T130 °C)																		
	Options: –50 °C to +60 °C (II2G c IIC T4; II2D c T130 °C) –60 °C to +60 °C (II2G c IIC T4; II2D c T130 °C) –40 °C to +40 °C (II2G c IIC T4; II2D c T130 °C) –40 °C to +80 °C (II2G c IIC T3; II2D c T190 °C) 0 °C to +120 °C (II2G c IIC T3; II2D c T190 °C) –20 °C to +40 °C (IM2 c)																		

Further information	
EU Directives	ATEX Directive: (94/9/EC) Machinery Directive: (2006/42/EC)
Reference documents	Product description Electric actuators for industrial valve automation Dimensions GF 50.3 – GF 125.3, GF 160.3 – GF 250.3 Dimensions Ball joints Technical data SA 07.2 – SA 16.2 with 3-phase AC motors Technical data WSG 90.1 Technical data WGD 90.1