Technical data Lever gearboxes and primary reduction gearings, version with worm wheel made of bronze for modulating application

GF 50.3 – GF 125.3/VZ
GF 160.3 – GF 250.3/GZ
Bronze

Application

Manual operation and motor operation of valves via lever arrangement (e.g. butterfly valves)
For special applications, please consult AUMA.

Lever gearboxes GF 50.3 – GF 125.3 with primary reduction gearings VZ 2.3 – VZ 4.3

Valve		Gearboxes						
Max. permissible valve torque		Gearbox/ prim.red. gearing	Reduction ratio	Factor[2]	Turns for 90°	Input shaft[3]	Max. input torques[4]	Weight
in Nm up to	Modulating torque[1] in Nm up to					mm	in Nm	GF+VZ kg
350	125	**GF 50.3**	51:1	17.9	12.75	16	20	10
700	250	**GF 63.3**	51:1	17.3	12.75	20	41	23
1,400	500	**GF 80.3**	53:1	19.3	13.25	20	73	29
2,800	1,000	**GF 100.3**	52:1	20.2	13	30/(20)	139	58
		GF 100.3/ VZ 2.3	126:1	44.4	31.5	20	63	64
		GF 100.3/ VZ 3.3	160:1	55.5	40	20	50	64
		GF 100.3/ VZ 4.3	208:1	77	52	20	37	64
5,600	2,000	**GF 125.3**	52:1	20.8	13	30	269	89
		GF 125.3/ VZ 2.3	126:1	45.4	31.5	20/(30)	123	95
		GF 125.3/ VZ 3.3	160:1	57.9	40	20/(30)	97	95
		GF 125.3/ VZ 4.3	208:1	77	52	20	73	95

Gearbox/ prim.red. gearing	Possible combinations with multi-turn actuators: Operating times for 50 Hz[5] in seconds for 90° at actuator speed in rpm								Multi-turn actuator: Actuator for max. input torque	Flange[3] for mounting of multi-turn actuator		Max. weight[6]
	4	5,6	8	11	16	22	32	45		EN ISO 5210	DIN 3210	GF+VZ+SA max. kg
GF 50.3	192	137	96	70	48	35	24	17	**SAR 07.1**	(F07) / F10	G0	30.1
GF 63.3	192	137	96	70	48	35	24	17	**SAR 07.5**	(F07) / F10	G0	44.1
GF 80.3	199	142	100	72	50	36	25	18	**SAR 10.1**	(F07) / F10	G0	54.4
GF 100.3	195	140	98	71	49	35	24	17	**SAR 14.1**	(F10) / F14	(G0) / G1/2	110.1
GF 100.3 VZ 2.3	472	337	236	172	118	86	59	42	**SAR 10.1**	F10	G0	89.4
GF 100.3 VZ 3.3	600	429	300	218	150	109	75	53	**SAR 07.5**	F10	G0	85.1
GF 100.3 VZ 4.3	780	577	390	284	195	142	98	69	**SAR 07.5**	F10	G0	85.1
GF 125.3	195	140	98	71	49	35	24	17	**SAR 14.5**	F14	G1/2	147.1
GF 125.3 VZ 2.3	472	337	236	172	118	86	59	42	**SAR 14.1**	(F10) / F14	(G0) / G1/2	147.1
GF 125.3 VZ 3.3	600	429	300	218	150	109	75	53	**SAR 10.1**	F10	G0	120.4
GF 125.3 VZ 4.3	780	557	390	284	195	142	98	69	**SAR 10.1**	F10	G0	120,4

1) Modulating torque = permissible, average torque for modulating duty
2) Conversion factor from output torque to input torque to determine the actuator size
3) Depending on the required input torque
4) In new condition approx. 15 % higher input torque required
5) Standard values at 50 Hz; at 60 Hz, the indicated operating time is reduced by 17 %.
6) With grease filling in the gear housing, multi-turn actuator AUMA NORM with 3-phase AC motor, standard electrical connection, output drive type B3 and handwheel

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Issue **1.10**

Y000.355/002/en

GF 50.3 – GF 125.3/VZ GF 160.3 – GF 250.3/GZ Bronze

Technical data Lever gearboxes and primary reduction gearings, version with worm wheel made of bronze for modulating application

Lever gearboxes GF 160.3 – GF 250.3 with primary reduction gearings GZ 160.3 – GZ 250.3

Valve		Gearboxes						
Max. permissible valve torque		Gearbox/ prim. red. gearing	Reduction ratio	Factor[2]	Turns for 90°	Input shaft[3]	Max. input torques[4]	Weight
in Nm up to	Modulating torque[1] in Nm up to					mm	in Nm	GF+GZ kg
11,250	4,000	**GF 160.3**	54:1	22,7	13.5	30	496	139
		GF 160.3/ GZ 4:1	218:1	83	54.5	30/(20)	136	150
		GF 160.3/ GZ 8:1	442:1	167	110.5	20	68	150
22,500	8,000	**GF 200.3**	53:1	22.3	13.25	40	1,009	258
		GF 200.3/ GZ 4:1	214:1	81.3	53.5	30	277	278
		GF 200.3/ GZ 8:1	434:1	165	108.5	30/(20)	137	278
		GF 200.3/ GZ 16:1	864:1	308	216	20	73	288
45,000	16,000	**GF 250.3**	52:1	21.9	13	50	2,060	467
		GF 250.3/ GZ 4:1	210:1	80	52.5	40/(30)	563	490
		GF 250.3/ GZ 8:1	411:1	156	109	30	289	490
		GF 250.3/ GZ 16:1	848:1	305	212	30/(20)	148	502

	Possible combinations with multi-turn actuators								Multi-turn actuator	Flange[3] for mounting of multi-turn actuator		Max. weight[6]
Gearbox/ primary red. gearing	Operating times for 50 Hz[5] in seconds for 90° at actuator speed in rpm								Actuator for max. input torque			
	4	5,6	8	11	16	22	32	45		EN ISO 5210	DIN 3210	GF+GZ+SA max. kg
GF 160.3	203	145	102	74	51	37	25	18	**SAR 14.5**	F14	G1/2	197.1
GF 160.3 GZ 4:1	818	584	409	297	204	149	102	73	**SAR 14.1**	(F10) F14	(G0) G1/2	202.1
GF 160.3 GZ 8:1	–	–	829	603	414	301	207	147	**SAR 10.1**	F10	G0	175.4
GF 200.3	199	142	100	72	–	–	–	–	**SAR 25.1**	(F16) F25	(G3) –	413.1
GF 200.3 GZ 4:1	803	573	401	292	201	146	100	71	**SAR 14.5**	F14	G1/2	336.1
GF 200.3 GZ 8:1	–	–	814	592	407	296	203	145	**SAR 14.1**	(F10) F14	(G0) G1/2	330.1
GF 200.3 GZ 16:1	–	–	–	–	810	589	405	288	**SAR 10.1**	F10	G0	313.4
GF 250.3	195	140	98	71	–	–	–	–	**SAR 30.1**	(F25) F30	–	665.6
GF 250.3 GZ 4:1	788	563	394	286	197	143	98	70	**SAR 16.1**	(F14) F16	(G1/2) G3	578.4
GF 250.3 GZ 8:1	–	–	773	562	386	281	193	137	**SAR 14.5**	F14	G1/2	548.1
GF 250.3 GZ 16:1	–	–	–	–	795	578	398	283	**SAR 14.1**	(F10) F14	(G0) G1/2	554.1

1) Modulating torque = permissible, average torque for modulating duty
2) Conversion factor from output torque to input torque to determine the actuator size
3) Depending on the required input torque
4) In new condition approx. 15 % higher input torque required
5) Standard values at 50 Hz; at 60 Hz, the indicated operating time is reduced by 17 %.
6) With grease filling in the gear housing, multi-turn actuator AUMA NORM with 3-phase AC motor, standard electrical connection, output drive type B3 and handwheel

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GF 50.3 – GF 125.3/VZ
GF 160.3 – GF 250.3/GZ
Bronze

Features and functions

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 stand-still under normal service conditions; strong vibrations may cancel the self-locking effect. While in motion, safe breaking 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		
Prim. red. 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	500		250

Type	GF 160.3		GF 200.3			GF 250.3		
Primary red. 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

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°, multi-turn version without end stops, GSD version
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°, multi-turn version without end stops, GSD version Special sizing required
Mechanical position indicator	Standard: No position indicator (protection cover) Options: Pointer cover instead of protection cover for continuous position indication
Input shaft	Cylindrical with parallel key according to DIN 6885.1 (refer to tables page 1 and page 2)

Operation

Motor operation	With electric multi-turn actuator, directly or through primary reduction gearing VZ/GZ Flanges for mounting of actuator (refer to tables page 1 and page 2).
Type of duty	Intermittent duty S4 - 25 % (modulating duty) Push-to-run operation: max. 10 steps in one direction and max. 30 starts permissible
Manual operation	Via handwheel in aluminium, directly or through primary reduction gearing VZ/GZ Available handwheel diameters, selection according to the max. output torque:

Type	GF 50.3	GF 63.3	GF 80.3	GF 100.3				GF 125.3			
Primary red. 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	315 400	250 315	500 630 800	400 500	400 500	315 400

Type	GF 160.3			GF 200.3				GF 250.3			
Primary red.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: Without ball handle Option: - With ball handle - Handwheel material GJL-200

Primary reduction gearing

Primary reduction gearing	- Types VZ and GZ as planetary gear with various reductio ratios for reducing the input torques (refer to tables page 1 and page 2). - Combination with GK bevel gearbox directly on GS or on GS with VZ/GZ possible

Base and lever

Base	Made of spheroidal cast iron, for mounting to base, 4 bores for fastening screws are available
Lever	Made of spheroidal cast iron, with 2 or 3 bores for fixing a lever arrangement. Considering the environmental conditions, the lever may be mounted to the output drive shaft in any desired position

Ball joints	2 ball joints suitable for lever as an option, including lock nuts and 2 welding nuts; suitable for tubes according to dimension sheet		
Service conditions			
Mounting position	Any position		
Enclosure protection according to EN 60529	Standard:	IP 67	
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 occasionally or permanently aggressive atmosphere with a moderate pollutant concentration (e.g. in wastewater treatment plants, chemical industry)
		KX	Suitable for installation in extremely aggressive atmosphere 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 coating
	Option:	GF 160.3 – GF 250.3:	Two-component iron-mica combination
Colour	Standard:	AUMA silver-grey (similar to RAL 7037) if finish painted	
	Option:	Other colours on request	
Ambient temperature	Standard:	–40 °C to +80 °C	
	Optionen:	–60 °C to +60 °C, version EL	
		–0 °C to +120 °C, version H	
Lifetime	Modulating duty: 2.5 million modulating steps[7)]		
Accessories			
Valve position indicator	WSG valve position indicator for signalling intermediate and end positions to ensure precise and low-backlash feedback for swing angles ranging from 82° – 98° (refer to separate data sheet)		
	WGD valve position indicator for signalling intermediate and end positions for swing angles > 180° (refer to separate data sheet)		
Special features for use in potentially explosive atmospheres			
Explosion protection	II2G c IIC T4 according to ATEX 94/9/EC		
Type of duty[8)]	Intermittent duty S4 - 25 % up to the maximum modulating torque		
Swing angle	Swing angle > 90 ° on request		
Ambient temperature	Standard:	–40 °C to +60 °C	
	Options	–50 °C to +60 °C	
		–60 °C to +60 °C	
Further information			
EU directives	ATEX directive: (94/9/EC)		
	Machinery directive: (2006/42/EC)		
Reference documents	Product description Lever gearboxes GF 50.3 – GF 250.3		
	Dimension sheets GF 50.3 – GF 125.3, GF 160.3 – GF 250.3		
	Dimension sheet Ball joints		
	Technical data SA, SAR, WSG, WGD		
Part-turn gearboxes	Refer to separate documents		

7) The lifetime depends on the load and the number of starts. A high starting frequency will rarely improve the modulating accuracy. To reach the longest possible maintenance and fault-free operating time, the number of starts per hour chosen should be as low as possible for the process.

8) The type of duty must not be exceeded.