

Technical data Multi-turn gearboxes

General information

Spur gearboxes for motor or manual operation of valves (e.g. gate valves and globe valves).

Valve				Gearbox							
Max. valve torque		Valve attach- ment		Type	Reduction ra- tio	Max. input torque		Factor ¹⁾	Input shaft ²⁾		Weight ³⁾
Nominal torque [Nm]	Modulating torque ⁴⁾ [Nm]	Stand- ard EN ISO 5210	Option DIN 3210			Nominal torque [Nm]	Modulating torque [Nm]		Standard [mm]	Option [mm]	
120	60	F10	G0	GST 10.1	1:1	135	66	0.9	20	–	14
					1.4:1	95	46	1.3	20	–	
					2:1	67	33	1.8	20	–	
250	120	F14	G1/2	GST 14.1	1.4:1	198	92	1.3	30	–	26
					2:1	139	66	1.8	20	30	
					2.8:1	99	48	2.5	20	30	
					4:1 ⁵⁾	70	35	3.6	20	–	
500	200	F14	G1/2	GST 14.5	2:1	278	111	1.8	30	–	26
250					2:1 ⁵⁾	140	111	1.8	20	–	
500					2.8:1	198	80	2.5	30	–	
350					2.8:1 ⁵⁾	140	80	2.5	20	–	
500					4:1	139	50	3.6	20	–	
1,000	400	F16	G3	GST 16.1	2.8:1	397	160	2.5	30	–	40
350	350				2.8:1 ⁵⁾	140	140	2.5	20	–	
1,000	400				4:1	278	111	3.6	30	–	
500	400				4:1 ⁵⁾	140	111	3.6	20	–	
1,000	400				5.6:1	198	80	5.0	30	–	
700	400				5.6:1 ⁵⁾	140	80	5.0	20	–	
2,000	800	F25	G4	GST 25.1	3:1	740	296	2.7	30	40	82
					4:1	556	222	3.6	30	40	
					5.6:1	397	160	5.0	30	40	
3,000	1,600	F30	G5	GST 30.1	8:1	278	111	7.2	30	40	115
4,000					3.28:1 ⁵⁾	1,020	552	2.9	40	–	
2,800					5.6:1	794	320	5.0	40	–	
4,000					5.6:1 ⁵⁾	560	320	5.0	30	–	
4,000	2,800	F35	G6	GST 35.1	8:1	556	222	7.2	30	40	195
8,000					11:1	404	162	9.9	30	40	
8,000					7:1 ⁵⁾	1,270	444	6.3	50	–	
4,030					8:1	1,111	389	7.2	40	50	
8,000					8:1 ⁵⁾	560	389	7.2	30	–	
8,000					9.25:1 ⁵⁾	965	337	8.3	40	–	
8,000					11:1	808	283	9.9	40	50	
5,540					11:1 ⁵⁾	560	283	9.9	30	–	
8,000					16:1	556	194	14.4	40	50	
11,500	5,600	F40	G7	GST 40.1	8:1 ⁵⁾	1,600	778	7.2	50	–	255
16,000					11:1	1,616	566	9.9	50	–	
10,900					11:1 ⁵⁾	1,100	566	9.9	40	–	
12,900					14.33:1 ⁵⁾	1,000	434	12.9	40	–	
16,000					16:1	1,111	389	14.4	40	50	
16,000					22:1	808	283	19.8	40	50	

- 1) 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) Depending on the required input torque.
- 3) Specified weight includes output drive sleeve (without bore) and grease filling in the gear housing.
- 4) Modulating torque = permissible, average torque for modulating duty.
- 5) Special reduction ratio: on request

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Type	Possible combinations with multi-turn actuators			Reduction ratio	Suitable AUMA multi-turn actuator ¹⁾
	Input mounting flange for mounting multi-turn actuator		Permissible actuator weight		
	EN ISO 5210	DIN 3210	Max. [kg]		
GST 10.1	F10	G0	40	1:1	SA 10.2/SAR 10.2
	F14	G1/2	80		SA 14.2/SAR 14.2
	F10	G0	40	1.4:1	SA 10.2/SAR 10.2
	F10	G0	40	2:1	SA 07.6/SAR 07.6 SA 10.2/SAR 10.2
GST 14.1	F14	G1/2	80	1.4:1	SA 14.2/SAR 14.2
	F10	G0	40	2:1	SA 10.2/SAR 10.2
	F14	G1/2	80		SA 14.2/SAR 14.2
	F10	G0	40	2.8:1	SA 10.2/SAR 10.2
	F10	G0	40	4:1 ²⁾	SA 10.2/SAR 10.2
GST 14.5	F14	G1/2	80	2:1	SA 14.2/SAR 14.2 SA 14.6
	F14	G1/2	80	2:1 ²⁾	SA 14.2
	F14	G1/2	80	2.8:1	SA 14.2/SAR 14.2
	F14	G1/2	80	2.8:1 ²⁾	SA 14.2
	F10	G0	40	4:1	SA 10.2/SAR 10.2
	F14	G1/2	80		SA 14.2/SAR 14.2
GST 16.1	F14	G1/2	80	2.8:1	SA 14.6/SAR 14.6
	F14	G1/2	80	2.8:1 ²⁾	SA 14.2/SAR 14.2
	F14	G1/2	80	4:1	SA 14.2/SAR 14.2 SA 14.6/SAR 14.6
	F14	G1/2	80		SA 14.2/SAR 14.2
	F14	G1/2	80	4:1 ²⁾	SA 14.2/SAR 14.2
	F14	G1/2	80	5.6:1	SA 14.2/SAR 14.2
	F14	G1/2	80	5.6:1 ²⁾	SA 14.2/SAR 14.2
GST 25.1	F14	G1/2	80	3:1	SA 14.6/SAR 14.6 SA 16.2/SAR 16.2
	F16	G3	160		SA 14.6/SAR 14.6
	F14	G1/2	80	4:1	SA 16.2/SAR 16.2
	F16	G3	160		SA 14.6/SAR 14.6
	F14	G1/2	80	5.6:1	SA 14.2/SAR 14.2
	F14	G1/2	80	8:1	SA 14.6
GST 30.1	F16	G3	160	3.28:1 ²⁾	SA 16.2/SAR 16.2
	F16	G3	160	5.6:1	SA 16.2/SAR 16.2
	F16	G3	160	5.6:1 ²⁾	SA 16.2/SAR 16.2
	F14	G1/2	80		SA 14.6/SAR 14.6
	F16	G3	160	8:1	SA 16.1
	F14	G1/2	80	11:1	SA 14.6/SAR 14.6
GST 35.1	F16	G3	160	7:1 ²⁾	SA 16.2
	F25	G4	300		SA 25.1
	F16	G3	160	8:1	SA 16.2
	F25	G4	300		SA 25.1
	F16	G3	160	8:1 ²⁾	SA 16.2
	F25	G4	300		SA 25.1
	F16	G3	160	9.25:1 ²⁾	SA 16.2
	F25	G4	300		SA 25.1
	F16	G3	160	11:1	SA 16.2
	F16	G3	160	11:1 ²⁾	SA 16.2
	F25	G4	300		SA 25.1
	F14	G1/2	80	16:1	SA 14.6
GST 40.1	F16	G3	160		SA 16.2
	F25	G4	300	8:1 ¹⁾	SA 25.1
	F25	G4	300	11:1	SA 25.1
	F16	G3	160	11:1 ¹⁾	SA 16.2
	F25	G4	300		SA 25.1
	F16	G3	160	14.33:1 ¹⁾	SA 16.2
	F16	G3	160		SA 16.2
	F25	G4	300	16:1	SA 25.1
	F16	G3	160	22:1	SA 16.2

1) Standard flange according to EN ISO 5210.

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2) Special reduction ratio: on request

Features and functions	
Type of duty	- Short-time duty S2 - 15 min (open-close duty) - Intermittent duty S4 - 25 % (modulating duty)
Direction of rotation	Standard: Clockwise rotation at input shaft results in clockwise rotation at output drive Option: GST 10.1 – GST 30.1: Reversal of direction of rotation by GW 14.1 reversing gearbox
Stages	Single stage: GST 10.1 – GST 16.1 Double stage: GST 25.1 – GST 40.1
Input shaft	For standard reduction ratio, the input shaft is made of stainless steel. Exception: GST 16.1: 5.6:1 GST 40.1: 22:1 and 16:1 Standard: Cylindrical with parallel key according to DIN 6885-1 (refer to table on page 1), without second shaft end Options: Square: - conical (DIN 3233) - cylindrical With respect to size, please contact AUMA - Input shaft with second shaft end - Input shaft with second shaft end and protective cap

Operation																																																				
Motor operation	- With electric multi-turn actuator (maximum permissible input speed (240 rpm)) - Input mounting flanges for multi-turn actuator (refer to table page 2)																																																			
Manual operation	Available handwheel diameters according to EN 12570, selection according to output torque:																																																			
	<table><tr><th>Type</th><th colspan="3">GST 10.1</th><th colspan="4">GST 14.1</th><th colspan="3">GST 14.5</th><th colspan="6">GST 16.1</th></tr><tr><td>Reduction ratio</td><td>1:1</td><td>1.4:1</td><td>2:1</td><td>1.4:1</td><td>2:1</td><td>2.8:1</td><td>4:1</td><td>2:1</td><td>2.8:1</td><td>4:1</td><td>2.8:1</td><td>4:1</td><td>5.6:1</td><td>2.8:1</td><td>4:1</td><td>5.6:1</td></tr><tr><td>Handwheel Ø [mm]</td><td colspan="3">200</td><td colspan="2">315</td><td colspan="2">250</td><td colspan="3">315</td><td colspan="3">400</td><td colspan="3">315</td></tr></table>	Type	GST 10.1			GST 14.1				GST 14.5			GST 16.1						Reduction ratio	1:1	1.4:1	2:1	1.4:1	2:1	2.8:1	4:1	2:1	2.8:1	4:1	2.8:1	4:1	5.6:1	2.8:1	4:1	5.6:1	Handwheel Ø [mm]	200			315		250		315			400			315		
	Type	GST 10.1			GST 14.1				GST 14.5			GST 16.1																																								
	Reduction ratio	1:1	1.4:1	2:1	1.4:1	2:1	2.8:1	4:1	2:1	2.8:1	4:1	2.8:1	4:1	5.6:1	2.8:1	4:1	5.6:1																																			
	Handwheel Ø [mm]	200			315		250		315			400			315																																					
	<table><tr><th>Type</th><th colspan="4">GST 25.1</th><th colspan="4">GST 30.1</th><th colspan="7">GST 35.1</th></tr><tr><td>Reduction ratio</td><td>3:1</td><td>4:1</td><td>5.6:1</td><td>8:1</td><td>5.6:1</td><td>8:1</td><td>11:1</td><td>3.28:1</td><td>8:1</td><td>11:1</td><td>16:1</td><td>7:1</td><td>9.25:1</td><td colspan="3"></td></tr><tr><td>Handwheel Ø [mm]</td><td colspan="4">500</td><td colspan="4">500</td><td colspan="7">500</td></tr></table>	Type	GST 25.1				GST 30.1				GST 35.1							Reduction ratio	3:1	4:1	5.6:1	8:1	5.6:1	8:1	11:1	3.28:1	8:1	11:1	16:1	7:1	9.25:1				Handwheel Ø [mm]	500				500				500								
	Type	GST 25.1				GST 30.1				GST 35.1																																										
	Reduction ratio	3:1	4:1	5.6:1	8:1	5.6:1	8:1	11:1	3.28:1	8:1	11:1	16:1	7:1	9.25:1																																						
	Handwheel Ø [mm]	500				500				500																																										
	<table><tr><th>Type</th><th colspan="5">GST 40.1</th></tr><tr><td>Reduction ratio</td><td>11:1</td><td>16:1</td><td>22:1</td><td>8:1</td><td>14.33:1</td></tr><tr><td>Handwheel Ø [mm]</td><td colspan="5">500</td></tr></table>	Type	GST 40.1					Reduction ratio	11:1	16:1	22:1	8:1	14.33:1	Handwheel Ø [mm]	500																																					
	Type	GST 40.1																																																		
	Reduction ratio	11:1	16:1	22:1	8:1	14.33:1																																														
	Handwheel Ø [mm]	500																																																		
	Standard:	- Handwheel made of aluminium - Handwheel with ball handle																																																		
Options:	- Handwheel made of GJL-200 - Handwheel lockable - WSH limit switching device for signalling position and end positions																																																			
Power tool emergency operation (input shaft with square)	Maximum permissible input speed: 240 rpm																																																			

Valve attachment	
Valve attachment	A, B1, B2, B3, B4 according to EN ISO 5210 A, B, D, E according to DIN 3210 C according to DIN 3338 Special valve attachments: AF, AK, AG, IB1, IB3, IB4

We reserve the right to alter data according to improvements made. Previous documents become invalid with the issue of this document. For further information on the product, refer to www.auma.com.

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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 in accordance with IEC 60529	IP68		
	According to AUMA definition, enclosure protection IP68 meets the following requirements: • Depth of water: maximum 8 m head of water • Continuous immersion in water: maximal 96 hours • Up to 10 operations during immersion • Modulating duty is not recommended during immersion.		
Corrosion protection	Standard:	KS	Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.
	Option:	KX	Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.
Coating	Double layer powder coating Two-component iron-mica combination		
Colour	Standard:	AUMA silver-grey (similar to RAL 7037)	
	Option:	Available colours on request	
Lifetime	AUMA multi-turn gearboxes meet or exceed the lifetime requirements of EN ISO 22109. Detailed information can be provided on request.		

Accessories

Reversing gearboxes	GW reversing gearbox for reversal of rotation direction for manual and motor operation
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Special features for use in potentially explosive atmospheres

Explosion protection in accordance with ATEX 2014/34/EU	Standard:	II2G c IIC T4 II2D c T130 °C												
	Options:	II2G c IIC T3 II2D c T190 °C IM2 c												
Type of duty	Open-close duty:	Short-time duty S2 - 15 min with the following average output torques:												
	Type	GST 10.1			GST 14.1			GST 14.5			GST 16.1			
	Reduction ratio	1:1	1.4:1	2:1	1.4:1	2:1	2.8:1	2:1	2.8:1	4:1	2.8:1	4:1	5.6:1	
	Average output torque in [Nm]	60			125			150	150	250	300	–		
	Type	GST 25.1				GST 30.1			GST 35.1			GST 40.1		
	Reduction ratio	3:1	4:1	5.6:1	8:1	5.6:1	8:1	11:1	8:1	11:1	16:1	11:1	16:1	22:1
	Average output torque in [Nm]	1,000				2,000			4,000			8,000		
	Modulating duty:	Intermittent duty S4 - 25 % with modulating torque												
Ambient temperature	Standard:	–40 °C to +40 °C (II2G c IIC T4; II2D c T130 °C) –40 °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)												
	Options:	–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)												

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Further information	
EU Directives	ATEX Directive 2014/34/EU Machinery Directive 2006/42/EC
Reference documents	Dimensions GST 10.1 – GST 40.1 Technical data SA 07.2 – SA 16.2 Technical data SAR 07.2 – SAR 16.2 Technical data WSH 10.2 – WSH 16.2 Technical data GW 14.1