

Technical data Multi-turn gearboxes

Valve				Gearbox							
Max. valve torque		Valve attachment		Type	Reduction ratio	Max. input torque		Factor ¹⁾	Input shaft ²⁾		Weight ³⁾
Nominal torque [Nm]	Modulating torque ⁴⁾ [Nm]	Stand- ard EN ISO 5210	Op- tion DIN 3210			Nominal torque [Nm]	Modulating torque [Nm]		Standard [mm]	Option [mm]	[kg]
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	
					8:1	278	111	7.2	30	40	
3,000	1,600	F30	G5	GST 30.1	3.28:1 ⁵⁾	1,020	552	2.95	40	–	115
4,000					5.6:1	794	320	5.0	40	–	
2,800					5.6:1 ⁵⁾	560	320	5.0	30	–	
4,000					8:1	556	222	7.2	30	40	
4,000	On request	F35	G6	GST 35.1	11:1	404	162	9.9	30	40	195
8,000					7:1 ⁵⁾	1,270	On request	6.3	50	–	
8,000					8:1	1,111		7.2	40	50	
4,030					8:1 ⁵⁾	560		7.2	30	–	
8,000					9.25:1 ⁵⁾	965		8.3	40	–	
8,000					11:1	808		9.9	40	50	
5,540					11:1 ⁵⁾	560		9.9	30	–	
8,000					16:1	556	14.4	40	50		
11,500	On request	F40	G7	GST 40.1	8:1 ⁵⁾	1,600	On request	7.2	50	–	255
16,000					11:1	1,616		9.9	50	–	
10,900					11:1 ⁵⁾	1,000		9.9	40	–	
12,900					14.33:1 ⁵⁾	1,000		12.9	40	–	
16,000					16:1	1,111		14.4	40	50	
16,000					22:1	808		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.

Technical data Multi-turn gearboxes

- 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 ration on request.

Possible combinations with multi-turn actuators					
Type	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	1:1	SA 10.2/SAR 10.2	F10	G0	40
		SA 14.2/SAR 14.2	F14	G1/2	80
	1.4:1	SA 10.2/SAR 10.2	F10	G0	40
	2:1	SA 07.6/SAR 07.6	F10	G0	40
		SA 10.2/SAR 10.2			
GST 14.1	1.4:1	SA 14.2/SAR 14.2	F14	G1/2	80
	2:1	SA 10.2/SAR 10.2	F10	G0	40
		SA 14.2/SAR 14.2	F14	G1/2	80
	2.8:1	SA 10.2/SAR 10.2	F10	G0	40
	4:1 ²⁾	SA 10.2/SAR 10.2	F10	G0	40
GST 14.5	2:1	SA 14.2/SAR 14.2	F14	G1/2	80
		SA 14.6			
	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	F14	G1/2	80
		SA 14.2/SAR 14.2	F14	G1/2	80
	4:1	SA 10.2/SAR 10.2	F10	G0	40
GST 16.1	2.8:1	SA 14.6/SAR 14.6	F14	111	80
	2.8:1 ²⁾	SA 14.2/SAR 14.2	F14	G1/2	80
		SA 14.2/SAR 14.2			80
	4:1 ²⁾	SA 14.2/SAR 14.2	F14	G1/2	80
		SA 14.6/SAR 14.6			80
	5.6:1	SA 14.2/SAR 14.2	F14	G1/2	80
	5.6:1 ²⁾	SA 14.2/SAR 14.2	F14	G1/2	80
GST 25.1	3:1	SA 14.6/SAR 14.6	F14	G1/2	80
		SA 16.2/SAR 16.2	F16	G3	160
	4:1	SA 14.6/SAR 14.6	F14	G1/2	80
		SA 16.2/SAR 16.2	F16	G3	160
	5.6:1	SA 14.6/SAR 14.6	F14	G1/2	80
	8:1	SA 14.2/SAR 14.2	F14	G1/2	80
		SA 14.6			
GST 30.1	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	F16	G3	160
		SA 14.6/SAR 14.6			
	8:1	SA 16.1	F16	G3	160
	11:1	SA 14.6/SAR 14.6	F14	G1/2	80

Technical data Multi-turn gearboxes

Possible combinations with multi-turn actuators					
Type	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 35.1	7:1 ²⁾	SA 16.2	F16	G3	160
		SA 25.1	F25	G4	300
	8:1	SA 16.2	F16	G3	160
		SA 25.1	F25	G4	300
	8:1 ²⁾	SA 16.2	F16	G3	160
		SA 25.1	F25	G4	300
	9.25:1 ²⁾	SA 16.2	F16	G3	160
		SA 25.1	F25	G4	300
	11:1	SA 16.2	F16	G3	160
	11:1 ²⁾	SA 16.2	F16	G3	160
		SA 25.1	F25	G4	300
	16:1	SA 14.6	F14	G1/2	80
		SA 16.2	F16	G3	160
GST 40.1	8:1 ^{NaN)}	SA 25.1	F25	G4	300
	11:1	SA 25.1	F25	G4	300
	11:1 ^{NaN)}	SA 16.2	F16	G3	160
		SA 25.1	F25	G4	300
	14.33:1 ^{NaN)}	SA 16.2	F16	G3	160
		SA 16.2	F16	G3	160
	16:1	SA 25.1	F25	G4	300
		SA 16.2	F16	G3	160

1) Standard flange according to EN ISO 5210

2) Special reduction ratio on request.

General information

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

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	

Technical data Multi-turn gearboxes

Operation																																																				
Motor operation	- Mit elektrischem Drehantrieb (maximal zulässige Eingangs-drehzahl (240 1/min)) - 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>Handrad Ø [mm]</td><td colspan="3">200</td><td colspan="4">315</td><td colspan="3">250</td><td colspan="3">315</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	Handrad Ø [mm]	200			315				250			315			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																																			
	Handrad Ø [mm]	200			315				250			315			315																																					
	<table><tr><th>Type</th><th colspan="4">GST 25.1</th><th colspan="4">GST 30.1</th><th colspan="5">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></tr><tr><td>Handrad Ø [mm]</td><td colspan="4">500</td><td colspan="4">500</td><td colspan="5">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	Handrad 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																																						
	Handrad 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>Handrad 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	Handrad Ø [mm]	500																																					
Type	GST 40.1																																																			
Reduction ratio	11:1	16:1	22:1	8:1	14,33:1																																															
Handrad 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

Service conditions							
Mounting position	Any position						
Ambient temperature	Refer to multi-turn gearbox name plate						
Enclosure protection according to EN 60529	IP68 According to AUMA definition, enclosure protection IP68 meets the following requirements: - Depth of water: maximum 8 m head of water - Duration of continuous immersion in water: Max. 96 hours - Up to 10 operations during continuous immersion - Modulating duty is not possible during continuous immersion						
Corrosion protection	<table><tr><td>Standard:</td><td>KS</td><td>Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.</td></tr><tr><td>Option:</td><td>KX</td><td>Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.</td></tr></table>	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.
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	<table><tr><td>Standard:</td><td>AUMA silver-grey (similar to RAL 7037)</td></tr><tr><td>Option:</td><td>Available colours on request</td></tr></table>	Standard:	AUMA silver-grey (similar to RAL 7037)	Option:	Available colours on request		
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 15714-2. Detailed information can be provided on request.						

Technical data Multi-turn gearboxes

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)											
		Option:	–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: (2014/34/EU) Machinery Directive: (2006/42/EC)
Reference documents	Brochure Electric actuators for industrial valve automation Brochure Electric actuators for the automation of valves in the oil and gas industry Dimensions GST 10.1 – GST 40.1 Technical data SA 07.2 – SA 16.2 with 3-phase AC motors Technical data SAR 07.2 – SAR 16.2 with 3-phase AC motors Technical data WSH 10.2 – WSH 16.2 Technical data GW 14.1