

## Technical data Multi-turn gearboxes

## General information

Worm gearboxes for motor operation of industrial valves (e.g. gate valves and globe valves) and special valves (e.g. louvre dampers, stack dampers, diverters, weirs, and sluice gates).

| Type       | Reduction ratio | Factor <sup>1)</sup> | Torque characteristics in accordance with EN ISO 22109 |                        | Constant torque characteristics across 100 % of the travel |                                      | Valve attachment                |                          | Input shaft | Weight <sup>2)</sup> |
|------------|-----------------|----------------------|--------------------------------------------------------|------------------------|------------------------------------------------------------|--------------------------------------|---------------------------------|--------------------------|-------------|----------------------|
|            |                 |                      | Max. output torque [Nm]                                | Max. input torque [Nm] | Max. run torque [Nm]                                       | Max. input torque <sup>3)</sup> [Nm] | Flange according to EN ISO 5210 | Max. shaft diameter [mm] | [mm]        | [kg]                 |
| GHT 320.3  | 10 : 1          | 8                    | 32,000                                                 | 4,000                  | 20,800                                                     | 2,600                                | F48                             | 185                      | 60          | 477                  |
|            | 15,5 : 1        | 12.4                 |                                                        | 2,600                  |                                                            | 1,680                                |                                 |                          |             |                      |
|            | 20 : 1          | 16                   |                                                        | 2,000                  |                                                            | 1,300                                |                                 |                          |             |                      |
| GHT 500.3  | 10,25 : 1       | 8.2                  | 50,000                                                 | 6,100                  | 32,500                                                     | 3,960                                | F60                             | 180                      | 80          | 765                  |
|            | 15 : 1          | 12                   |                                                        | 4,200                  |                                                            | 2,710                                |                                 |                          |             |                      |
|            | 20,5 : 1        | 16.4                 |                                                        | 3,100                  |                                                            | 1,980                                |                                 |                          |             |                      |
| GHT 800.3  | 12 : 1          | 9.6                  | 80,000                                                 | 8,300                  | 51,900                                                     | 5,410                                | F60                             | 180                      | 100         | 995                  |
|            | 15 : 1          | 12                   |                                                        | 6,700                  |                                                            | 4,330                                |                                 |                          |             |                      |
| GHT 1200.3 | 10,25 : 1       | 8.2                  | 120,000                                                | 14,600                 | 77,900                                                     | 9,500                                | F60                             | 200                      | 100         | 1,280                |
|            | 20,5 : 1        | 16.4                 |                                                        | 7,300                  |                                                            | 4,750                                |                                 |                          |             |                      |

- 1) Conversion factor from output torque to input torque to determine the actuator size. The specified factor ( $\pm 10\%$ ) is reached after running-in and meets the requirements of ISO 22109.
- 2) Indicated weight includes gearbox with an input shaft, output drive type B, largest possible input mounting flange and standard lubricant.
- 3) Verify actuator sizing for running times > 2 minutes and high output speeds. For long running times, the output torques of the actuators will be reduced.

## Possible combinations with multi-turn actuators

| Type       | Reduction ratio | Suitable AUMA multi-turn actuator for | Input mounting flange for multi-turn actuators | Output speed in rpm for a multi-turn actuator speed of 50 Hz |     |     |     |     |     |                   |                   |     |     |
|------------|-----------------|---------------------------------------|------------------------------------------------|--------------------------------------------------------------|-----|-----|-----|-----|-----|-------------------|-------------------|-----|-----|
|            |                 | Output torque                         | EN ISO 5210                                    | 4                                                            | 5.6 | 8   | 11  | 16  | 22  | 32                | 45                | 63  | 90  |
| GHT 320.3  | 10 : 1          | SA 30.1                               | F25, F30                                       | 0.4                                                          | 0.6 | 0.8 | 1.1 | 1.6 | 2.2 | 3.2               | 4.5               | 6.3 | 9.0 |
|            | 15,5 : 1        | SA 30.1                               |                                                | –                                                            | 0.4 | 0.5 | 0.7 | 1.0 | 1.4 | 2.1               | 2.9               | 4.1 | 5.8 |
|            | 20 : 1          | SA 25.1                               |                                                | –                                                            | –   | 0.4 | 0.6 | 0.8 | 1.1 | 1.6               | 2.3               | 3.2 | 4.5 |
| GHT 500.3  | 10,25 : 1       | SA 35.1                               | F25, F30, F35                                  | 0.4                                                          | 0.5 | 0.8 | 1.1 | 1.6 | 2.1 | 3.1 <sup>1)</sup> | 4.4 <sup>1)</sup> | –   | –   |
|            | 15 : 1          | SA 30.1                               |                                                | –                                                            | 0.4 | 0.5 | 0.7 | 1.1 | 1.5 | 2.1               | 3.0               | 4.2 | 6.0 |
|            | 20,5 : 1        | SA 30.1                               |                                                | –                                                            | –   | 0.4 | 0.5 | 0.8 | 1.1 | 1.6               | 2.2               | 3.1 | 4.4 |
| GHT 800.3  | 12 : 1          | SA 35.1                               | F35, F40                                       | 0.3                                                          | 0.5 | 0.7 | 0.9 | 1.3 | 1.8 | 2.7 <sup>1)</sup> | 3.8 <sup>1)</sup> | –   | –   |
|            | 15 : 1          | SA 35.1                               |                                                | –                                                            | 0.4 | 0.5 | 0.7 | 1.1 | 1.5 | 2.1 <sup>1)</sup> | 3.0 <sup>1)</sup> | –   | –   |
| GHT 1200.3 | 10,25 : 1       | SA 40.1                               | F35, F40                                       | 0.4                                                          | 0.5 | 0.8 | 1.1 | 1.6 | 2.1 | 3.1 <sup>1)</sup> | –                 | –   | –   |
|            | 20,5 : 1        | SA 35.1                               |                                                | –                                                            | –   | 0.4 | 0.5 | 0.8 | 1.1 | 1.6 <sup>1)</sup> | 2.2 <sup>1)</sup> | –   | –   |

- 1) SA not self-locking

## Features and functions

|                       |                  |                                                                                                                                                                                                                        |  |
|-----------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Worm wheel material   | Bronze           |                                                                                                                                                                                                                        |  |
| Direction of rotation | Standard:        | RR = Worm shaft right, clockwise rotation at input shaft results in clockwise rotation at output shaft<br>LL = Worm shaft left, clockwise rotation at input shaft results in counterclockwise rotation at output shaft |  |
|                       | Options:         | RL = Worm shaft right, clockwise rotation at input shaft results in counterclockwise rotation at output shaft<br>LR = Worm shaft left, clockwise rotation at input shaft results in clockwise rotation at output shaft |  |
| Housing material      | Standard:        | Cast iron (EN-GJL-250)                                                                                                                                                                                                 |  |
|                       | Option:          | Spheroidal cast iron (EN-GJS-400-15)                                                                                                                                                                                   |  |
| Self-locking          | Not self-locking |                                                                                                                                                                                                                        |  |
| Input shaft           | Standard:        | Cylindrical with parallel key according to DIN 6885-1                                                                                                                                                                  |  |
|                       | Option:          | Second shaft end<br>Cylindrical with parallel key according to DIN 6885-1                                                                                                                                              |  |

## Operation

|              |                  |                                                                                                                                                              |
|--------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of duty | Open-close duty: | Short-time duty S2 - 15 min, classes A and B according to EN ISO 22109<br>Short-time duty S2 - 30 min, classes A and B according to EN ISO 22109, on request |
|              | Modulating duty: | Intermittent duty S4 - 25 %, class C according to EN ISO 22109, on request                                                                                   |

## Technical data Multi-turn gearboxes

| Operation                                               |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                              |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Motor operation                                         | Directly via electric multi-turn actuator<br>Flanges for mounting the multi-turn actuator, refer to table                                                                                                                                                                                                                                                 |                                                                                                                                                              |
| Maximum input speed                                     | 90 rpm                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                              |
| Valve attachment                                        |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                              |
| Output drive types                                      | Standard:                                                                                                                                                                                                                                                                                                                                                 | B based on EN SO 5210                                                                                                                                        |
|                                                         | Options:                                                                                                                                                                                                                                                                                                                                                  | C based on EN ISO 5210<br>A according to ISO 5210<br>AF                                                                                                      |
| Service conditions                                      |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                              |
| Mounting position                                       | Any position                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                              |
| Ambient temperature                                     | Standard:                                                                                                                                                                                                                                                                                                                                                 | −40 °C to +80 °C                                                                                                                                             |
|                                                         | Options:                                                                                                                                                                                                                                                                                                                                                  | −60 °C to +60 °C<br>0 °C to +120 °C                                                                                                                          |
| Enclosure protection according to EN 60529              | IP68                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                              |
|                                                         | According to AUMA definition, enclosure protection IP68 meets the following requirements: <ul style="list-style-type: none"><li>• Depth of water: maximum 8 m head of water</li><li>• Continuous immersion in water: maximum 96 hours</li><li>• Up to 10 operations during immersion</li><li>• Modulating duty is not possible during immersion</li></ul> |                                                                                                                                                              |
| Corrosion protection                                    | Standard:                                                                                                                                                                                                                                                                                                                                                 | KS<br>Suitable for use in areas with high salinity, almost permanent condensation, and high pollution.                                                       |
|                                                         | Option:                                                                                                                                                                                                                                                                                                                                                   | KX<br>Suitable for use in areas with extremely high salinity, permanent condensation, and high pollution.                                                    |
| 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                                             |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                              |
| Stem protection tube                                    | On request                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                              |
| Eyebolts                                                | 2 eyebolts for transport                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                              |
| Use in potentially explosive atmospheres                |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                              |
| Explosion protection in accordance with ATEX 2014/34/EU | Standard:                                                                                                                                                                                                                                                                                                                                                 | II 2G Ex h IIC T3 Gb<br>II 2D Ex h IIIC T190°C Db                                                                                                            |
|                                                         | Option:<br>(On request)                                                                                                                                                                                                                                                                                                                                   | II 2G Ex h IIC T4 Gb<br>II 2D Ex h IIIC T130°C Db                                                                                                            |
| Type of duty                                            | Open-close duty:                                                                                                                                                                                                                                                                                                                                          | Short-time duty S2 - 15 min, classes A and B according to EN ISO 22109<br>Short-time duty S2 - 30 min, classes A and B according to EN ISO 22109, on request |
|                                                         | Modulating duty:                                                                                                                                                                                                                                                                                                                                          | Intermittent duty S4 - 25 %, class C according to EN ISO 22109, on request                                                                                   |
| Maximum input speeds                                    | GHT 320.3: 90 rpm<br>GHT 500.3: 45 rpm<br>GHT 800.3: 45 rpm<br>GHT 1200.3: 32 rpm<br>Further input speeds on request                                                                                                                                                                                                                                      |                                                                                                                                                              |
| Ambient temperature                                     | Standard:                                                                                                                                                                                                                                                                                                                                                 | −40 °C to +80 °C (II 2G Ex h IIC T3 Gb; II 2D Ex h IIIC T190°C Db)                                                                                           |
|                                                         | Option:<br>(On request)                                                                                                                                                                                                                                                                                                                                   | −40 °C to +60 °C (II 2G Ex h IIC T4 Gb; II 2D Ex h IIIC T130°C Db)                                                                                           |
| Further information                                     |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                              |
| EU Directives                                           | ATEX Directive 2014/34/EU<br>Machinery Directive 2006/42/EC                                                                                                                                                                                                                                                                                               |                                                                                                                                                              |

Technical data Multi-turn gearboxes

| Further information |                                                                                                                                                                                                                                                       |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reference documents | Dimensions GHT 320.3 – GHT 1200.3<br>Dimensions Output drive type A 25.2 – A 60.2<br>Technical data SA 25.1 – SA 48.1 with 3-phase AC motors<br>Technical data SAR 25.1 – SAR 30.1 with 3-phase AC motors<br>Technical data Grease and oil quantities |