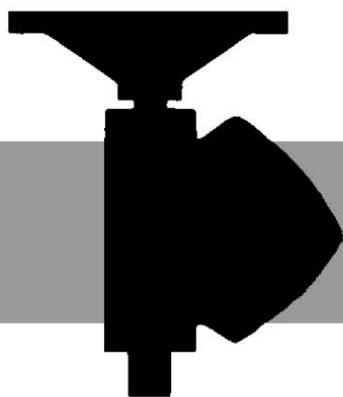


auma® india

Operation & Instructions Manual

Worm Gear Operator GS 40.2 - GS 125.2



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Warnings and notes

Failure to observe the warnings and notes may lead to serious injuries or damage. Qualified personnel must be thoroughly familiar with all warnings and notes in these operation instructions.

Correct transport, proper storage, mounting and installation, as well as careful commissioning are essential to ensure a trouble-free and safe operation.

The following references draw special attention to safety-relevant procedures in these operation instructions. Each is marked by the appropriate pictograph.



This pictograph means : Note!

"Note" marks activities or procedures which have major influence on the correct operation.

Non-observance of these notes may lead to consequential damage.



This pictograph means : Warning!

"Warning" marks activities or procedures which, if not carried out correctly can affect the safety of persons or material.

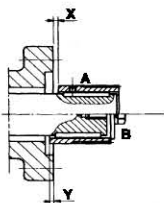


Figure 1

Type	X max.	Y max.
GS 40.2	8	0
GS 63.2	10	5
GS 80.2	20	0
GS 100.2	20	5
GS 100/VZ 4		
GS 125.2	30	10
GS 125/VZ 4		

TYPE GS

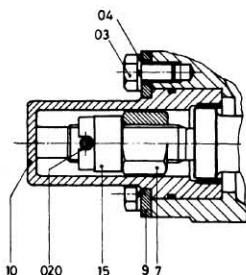


Figure 2

8.8	
Ma (Nm)	
M 8	25
M 10	50
M 12	86
M 16	220
M 20	420
M 24	720

Table 1



Figure 3

TYPE GSV

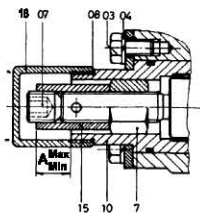


Figure 4

Type	A min.	A max.
GS 40.2	15	23
GS 63.2	9	23
GS 80.2	10	23
GS 100.2	16	40
GS 100/VZ 4	16	40
GS 125.2	24	44
GS 125/VZ 4	24	44

1. Transport and Storage

Transport:

- Transport to the place of installation (till the last destination)
- Avoid packages from exposing to open atmospheres during transit
- Protect against rains

Storage:

- Store in well ventilated and dry rooms
- Protect against humidity from floor by storage on wooden frame, on pallets, in cage boxes or on shelves
- Cover Gearboxes with plastic foil to protect against dust and dirt etc.
- Protect suitably against mechanical damages
- During long time storage, protect bright surfaces especially output drive parts and mounting surface by applying long life corrosion protection agent. Also check once in six months for corrosion. If corrosion has started, clean and apply corrosion protection agent.

2. Mounting

2.1 **Degrease** mounting flange thoroughly.

2.2 Put coupling sleeve on to valve shaft and secure it (ref. fig. 1 detail A or B).
Assure that dimensions X and Y are observed.

2.3 **Apply non-acid grease** at involute splines of coupling.

2.4 Mount worm gearbox. Take care of spigot at mounting flange.

2.5 Fasten with bolts of minimum quality 8.8. using spring washers.
Fasten bolts crosswise to torque Ma shown in table 1.

3. **Setting of end stop** (manual operation, ref. fig. 2)

3.1 **End position CLOSED**

- Loosen hexagon bolts (03) slightly (approx. 1 turn)
- Move valve to end position CLOSED.
- If limit stop (10) has not yet turned, turn it clockwise up to stop.
- Fasten bolts (03) crosswise with torque shown in table 1.
- Loosen the bolt at pointer cover and turn it till arrow corresponds with the sign CLOSED (fig. 3), then fasten bolt.

3.2 **End position OPEN**

- The required angle of rotation for type GS and GSV has been set in our works. There is no need to re-adjust it.
For setting of end stop for gearboxes with GS 160 to GS 500 electric actuator, refer to detailed operation instruction.

4. **Changing angle of rotation**

This is possible with gearboxes type GSV (ref. fig. 4)

4.1 Screw off protection cover (16) at end stop housing.

4.2 Loosen grub screw (07) at face of worm shaft while holding end stop nut (15) with spanner; if necessary, use extension tube.

4.3 **To increase angle of rotation** (max. 120° - GS 125 max 106°).

- Turn end stop nut (15) anti-clockwise; take care of dimension A max.
- Bring valve into required position.
- Turn end stop nut (15) clockwise, till it is in contact with the travelling nut (7).

4.4 **To decrease angle of rotation** (min. 80°).

- Bring valve into required position.
- Turn end stop nut (15) clockwise, till it is in contact with travelling nut; take care of dimension A min.

4.5 Attention : Face of grub screw (07) must be free of grease.

- Tighten grub screw (07).
Torque GS 40 - 80 = 85 Nm; GS 100 - 125 = 220 Nm.


4.6 Check O-ring (08) and replace it, if necessary.

4.7 Put protection cover (16) and tighten it.

4.8 If gearbox is equipped with electric actuator, limit switching has to be re-adjusted. (Refer Operation Instruction SA6 - SA100)

5.  **Attention**

At correct setting, valve is either closed or open as soon as travelling nut is at end stop. By increasing manual force at handwheel, tightness of butterfly valves will not be improved. More input torque after reaching the end stop may cause damages to worm gearbox.

 6. **Maintenance**

Worm-gear operators require only little maintenance if operated under normal conditions. After running for approx. 100 hours, mounting screws may be checked for tightness and retightened if necessary.

7. **Lubrication**

Worm-gear operators and primary reductions are supplied filled with grease. If no other specification was given when placing the order, the grease is suitable for ambient temperature from -20°C to +80°C. Liquids and gases passing through the valve may have temperatures up to 200°C. For higher temperatures, please enquire.

"AUMA supplies valve gearboxes, which might see small amount of grease (EPO / EP00) seeping out in some cases. After the initial seeping, stabilization takes place and further seeping stops. The gearboxes have enough grease inside so a proper function of the gearbox is guaranteed."

 7.1 **Lubrication Instructions for GS :**

Grease should be changed :
if operated frequently, after approx. 3 years
if operated rarely, after approx. 5 years

7.2 **Working sequence for changing grease :**

Reference document : exploded view GS 40 - 125.2

(in the text, part numbers are mentioned in brackets)

For changing grease, the worm-gear operator has to be taken off the valve.

 **Note :** With butterfly valves the system must be without pressure.

If ball valves are under pressure, they must either be fully opened or fully closed.

7.2.1 Mark the mounting position of the worm-gear operator on the valve and of the coupling sleeve in the hub.

7.2.2 Remove the fixing bolts / nuts and take off the worm-gear operator.

7.2.3 Remove bolts (01) and take off the mounting flange (2) from the worm-gear operator.

7.2.4 Remove old grease completely and clean the chamber. Kerosene or some other suitable cleaning agent may be used.

7.2.5 Clean mounting faces at housing and mounting flange.

7.2.6 Fill new grease in correct quantity (see table below)

GS	40.2	63.2	80.2	100.2	100.2/VZ4	125.2	125.2/VZ4
Kg.	0.2	0.3	0.5	1.4	1.6	2	2.2

7.2.7 Grease used at works (for ambient temperature -20°C to 80°C)

IOCL Servogem EP0

For other versions see table of lubricants

 **Note :** Use only suitable grease !

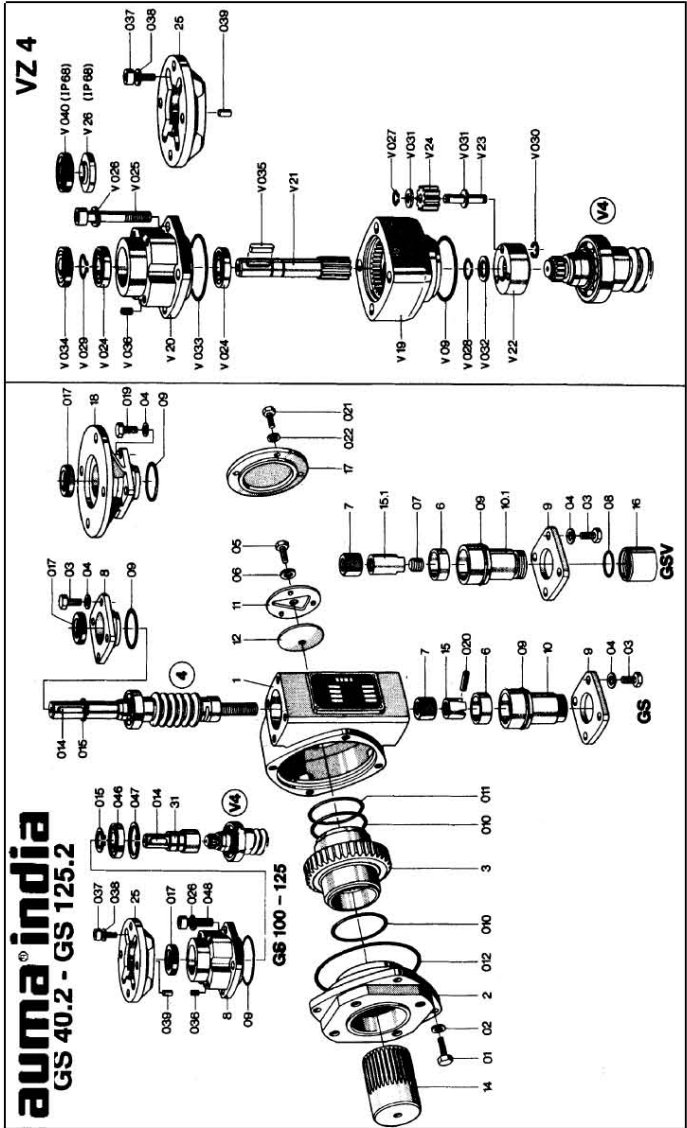
Do not mix different greases !

7.2.8 To improve adhesion and to prevent radial movement during operation, apply Loctite 307 (or similar products) on mounting faces at housing and on mounting flange.

- 7.2.9 Use new o-rings 010, 011, 012
- 7.2.10 Replace mounting flange to gearhousing, turn in bolts with spring washers (01/02) and tighten them uniformly crosswise.
- 7.2.11 Replace worm-gear box to the valve, check correct position (see marking).
- 7.2.12 Check setting of end stops by manual drive; if necessary readjust.
- 7.2.13 If operated with actuator, check in manual operation that limit switches operate in correct position in both end positions.

8 Mounting multiturn actuator SA/SAR to the gearbox

! Do not attach ropes or hooks for the purpose of lifting the actuator by hoist to the handwheel. If multi-tum actuator is mounted on gearbox, attach ropes or hooks for the purpose of lifting by hoist to gearbox and not to multi-tum actuator



LIST OF PARTS

Part No.	Designation	Part No.	Designation	Part No.	Designation
1	Housing	05	Hexagon bolt	V 19	Housing
2	Mounting flange	06	Washer	V 20	Cover
3	Worm wheel	07	Grub screw	V 21	Pinion shaft
4	Worm shaft complete	08	O-ring	V 22	Sun wheel
6	Bushing	09	O-ring	V 23	Planet wheel axle
7	Travelling nut	010	O-ring	V 24	Planet wheel
8	Bearing cover	011	O-ring	V 26	Support washer
9	Retainer plate	012	O-ring	V 09	O-ring
10	Limit stop housing - G S	014	Parallel key	V 024	Ball bearing
10.1	Limit stop housing - G S V	015	Circlip	V 025	Hex. socket head cap screw
11	Pointer cover	017	Radial seal	V 026	Spring washer
12	Clamping washer	019	Hexagon bolt	V 027	Circlip
14	Coupling	020	Clamping sleeve	V 028	Circlip
15	End stop nut - G S	021	Hexagon bolt	V 029	Circlip
15.1	End stop nut - G S V	022	Spring washer	V 030	Securing washer
16	Cap	026	Spring washer	V 031	Support washer
17	Lid for buried service	036	Grub screw	V 032	Support washer
18	Actuator mounting flange	037	Hex.socket head cap screw	V 033	O-ring
25	Actuator mounting flange	038	Spring washer	V 034	Radial seal
31	Input shaft	039	Dowel pin	V 035	Parallel Key
01	Hexagon bolt	046	Ball bearing	V 036	Grub screw
02	Spring washer	047	Circlip	V 040	Radial seal
03	Hexagon bolt	048	Hex. socket head cap screw		
04	Spring washer	V 4	Worm shaft compl.		