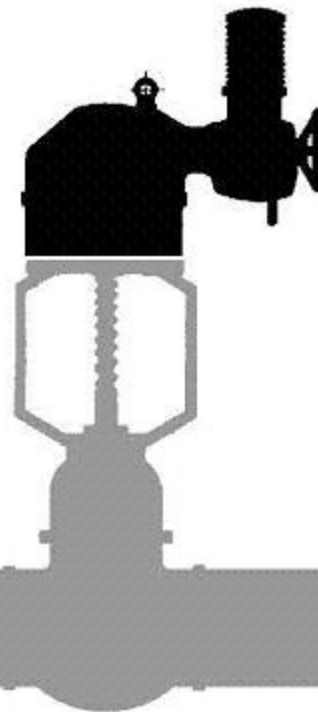


# auma® india

## Operation & Instructions Manual

**Bevel Gear Boxes type GK 10.1 - GK 35.1  
and  
Spur Gear Boxes type GST 12 - GST 1600**



## **auma® india pvt ltd**

**Registered Office & Works :**

PLOT NO. 39-B, II PHASE, PEENYA INDUSTRIAL AREA, BANGALORE - 560 058.  
PHONE : 080-28394656 / 28392808 FAX : 080-28392809 E-MAIL : [Info@auma.co.in](mailto:Info@auma.co.in)

**Branches :**

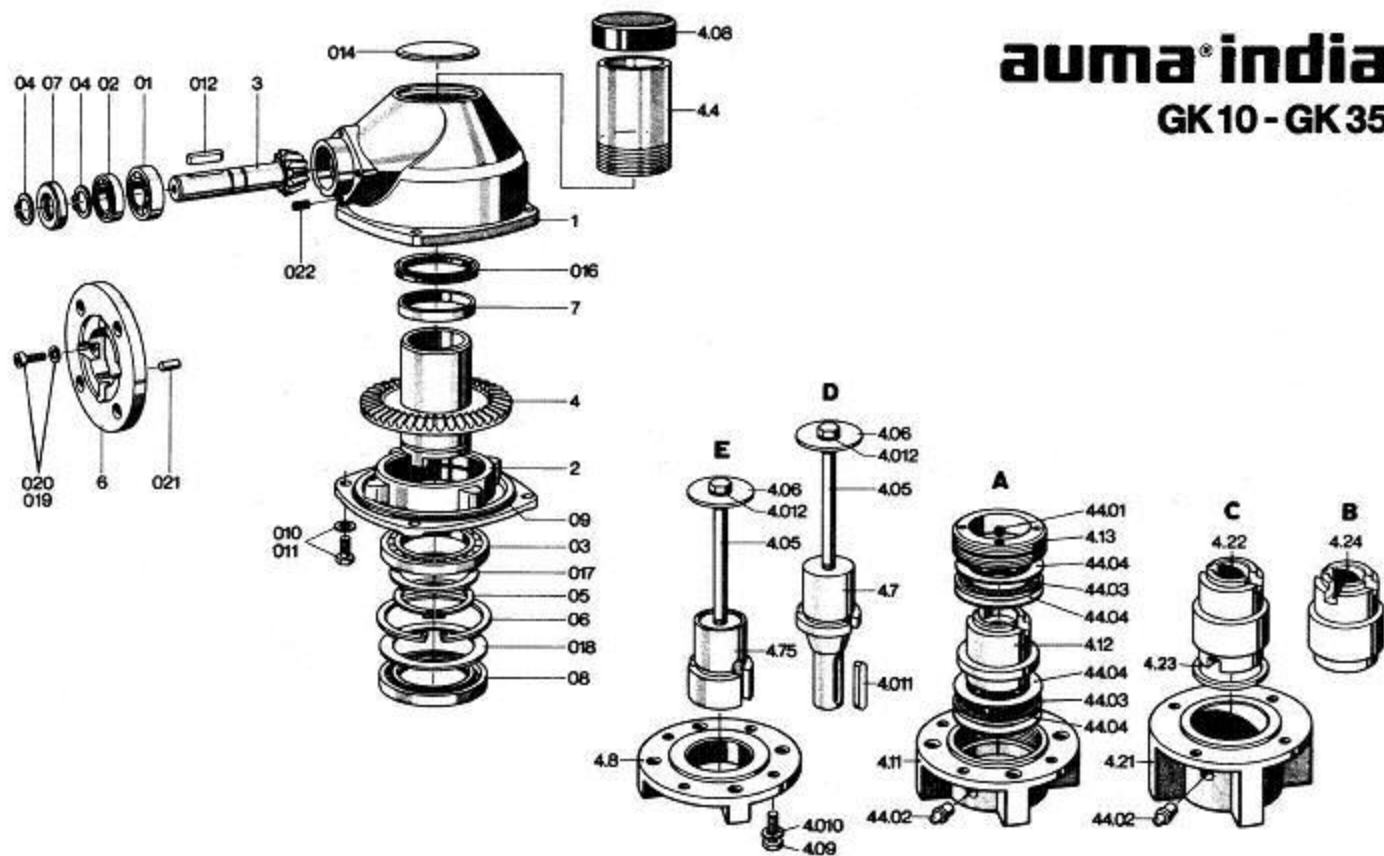
NEW DELHI : 8-C, BLOCK-B-H, MUNIRKA, NEW DELHI - 110 067  
PHONE : 011 - 28187063 FAX : 011 - 26109637 E-MAIL : [aumandl@auma.co.in](mailto:aumandl@auma.co.in)  
PUNE : 712, 713, BLDG. NO.1, SIDDHARTH TOWERS, KOTHRUD, PUNE - 411038  
PHONE : 020-25410465 FAX : 020-25443186 E-MAIL : [aumapune@auma.co.in](mailto:aumapune@auma.co.in)



Certificate Registration No: 44 100 950202-03

# auma® india

## GK10 - GK35



### LIST OF PARTS

Part No.	Designation	Part No.	Designation
1	Housing	021	Dowel pin
2	Bearing flange	022	Grub screw
3	Bevel pinion shaft	4.4	Stem protection tube
4	Bevel Wheel	4.08	Cap
6	Actuator mounting flange	4.7	Stub shaft (type D)
7	Bearing bush	4.8	Mounting flange (type D & E)
01	Ball bearing	4.11	Mounting flange (type A)
02	Ball bearing	4.12	Stem nut (type A)
03	Ball bearing	4.13	Bearing locknut
04	Circlip	4.21	Mounting flange (type B & C)
05	Circlip	4.22	Dog drive sleeve (type C)
06	Circlip	4.23	Thrust ring
07	Radial seal	4.24	Keyway drive sleeve (type B)
08	Radial seal	4.75	Drive socket (type E)
09	O-ring	4.05	Hexagon bolt
010	Hexagon bolt	4.06	Washer
011	Spring washer	4.09	Hexagon bolt
012	Parallel key	4.010	Spring washer
014	Lid	4.011	Parallel key
016	Quadring	4.012	Spring washer
017	Shim ring	44.01	Set screw
018*	Shim ring	44.02	Grease nipple
019	Hex. Socket head cap screw	44.03	Thrust bearing
020	Spring washer	44.04	Thrust bearing race

\*Only required for some gear operators



### LIST OF PARTS

Part No.	Designation	Part No.	Designation
1	Housing	01	Hex. Socket head cap screw
2	Housing cover	02	Spring washer
3	Cover	03	Hex. Socket head cap screw
4	Hollow shaft	04	Spring washer
4.11	Mounting flange (type A)	05	Grub screw
4.12	Stem nut (type A)	06	Circlip
4.13	Threaded ring	07	Circlip
4.21	Mounting flange (type B & C)	08	Washer
4.22	Sleeve (type B)	09	Washer
4.23	Thrust washer	010	Thrust washer
4.24	Dog coupling (type C)	011	Bearing sleeve
4.7	Sub shaft (type D)	012	Bearing sleeve
4.75	Socket (type E)	013	Parallel key
4.8	Mounting flange (type D & E)	014	Parallel key
5	Input shaft	015	Parallel key
5.07	Cap	020	Bearing sleeve
5.3	Stem protection tube	1.04	Hexagon bolt
6	Intermediate shaft	1.010	Spring washer
8	Intermediate wheel	4.011	Parallel key
9	Spur gear	44.01	Grub screw
11	Pinion	44.02	Grease nipple
16	Flange for actuator	44.03	Thrust bearing
18	Plug	44.04	Thrust bearing ring
20	Thrust washer		

Gear Boxes can be driven manually with a handwheel or by actuator for remote control.

Having the same mounting dimensions and reduction ratios, Spur Gear Boxes and Bevel Gear Boxes are interchangeable.

### 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.

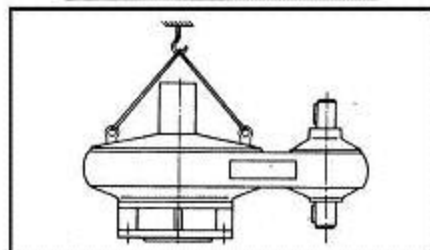


Fig. 1

### 1. Transport and Storage

Gear Boxes of size GST 200 and above have 2 threaded holes for eye bolts at the top side. This makes lifting and transporting with hoists easy.

Permissible loads when using eye bolts C 15 according to DIN 580: IS: 4190

1 x M 12 - GK 25.1

1 x M 16 - GK 30.1

1 x M 20 - GK 35.1

2 x M 12 (for GST 200 - 400)

2 x M 16 (for GST 800 - 1600)

The eye bolts must be well tightened.

The rope should form an angle of not less than 45° (fig.1).

#### 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 & 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.

Type of enclosure is mentioned on the nameplate.

### 2. Mounting

In order to obtain satisfactory function over a long period, the following directions should be observed:

2.1 If driven by hydraulic or pneumatic motor (max. 500 rpm) a flexible shaft coupling must be used to connect the motor shaft to the input shaft of the Gear Box (fig.2).

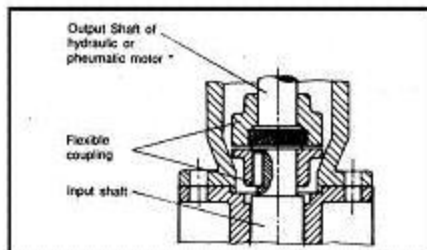


Fig. 2

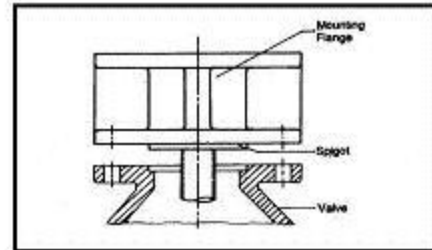


Fig. 3

**2.2** Bore in coupling flange must have sliding fit on the input shaft. Excessive seating may damage the Gear Box during fitting.

**2.3** Positioning the Gear Box on the valve is made easy by a spigot on the mounting flange (fig.3).

The corresponding seating should be made to grade H8. Check for proper seating.

**2.4** Output drive types plug sleeve and bore (type B and E according to DIN 3210) must be in true alignment with the valve axis. Otherwise, excessive radial forces may lead to undue wear of bearings.

**2.5** Fix Gear Box on valve with bolts of min. quality 8.8 (8G) and spring washers.

**2.6** Check tightness of bolts after about 200 operating hours and, if necessary, tighten them.

**2.7** The Gear Box should not move tangentially when being reversed. Loctite

No.307 (or similar) may be applied to the flange face prior to mounting, in order to get better adherence.

### 3. Notice

**3.1** The Gear Boxes can be mounted in any position.

**3.2** The Gear Boxes are suitable for short-time duty only.

**3.3** The maximum rated torque should not be applied over the full range of travel, except for valves with a short stroke.

**3.4** Maximum admissible values for axial and radial loads at the output shaft must not be exceeded (see table).

**3.5** When using Gear Boxes with mounted self-locking actuators, it is necessary to change over to manual operation prior to removing the housing cover. Thus, any remaining torque will be released. If the Gear Box cover is removed without releasing torque, wheels may tilt,

causing damage to the gear teeth.

**3.6** Subsequent mounting of an actuator on manually driven Gear Box GST is easy to perform. Cover at input shaft must be replaced by flange, on which an actuator with output drive type E (according to DIN 3210) can be fixed.

### 4. Maintenance

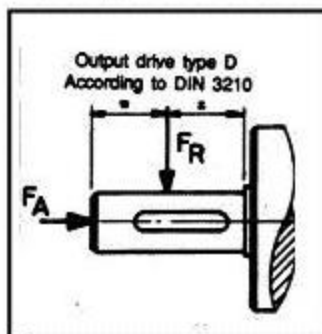
Spur Gear Boxes and Bevel Gear Boxes do not require much maintenance if operated under normal conditions. They have enclosure IP 54 (on request IP 65) which protects against penetration of dust and damaging effects of sprayed water.

### 5. Paint

The housing and cover receive a primary coat of a zinc based paint and the unit is sprayed with epoxy paint after assembly.

### 6. Lubrication

Upon delivery, the Gear Boxes are provided with the required quantity of



Gear operator	GST	12	25	50	100	200	400	800	1600
Type A	kN	60	120	160	190	320	320	820	1650
FA max.	Mp	6	12	16	19	32	32	82	165
Types B,C,D+E	kN	1	3	3	5	10	10	20	20
F <sub>Amax</sub>	Mp	0.1	0.3	0.3	0.5	1	1	2	2
Types D+E	kN	3.5	5	5	8	10	10	15	15
F <sub>Amax</sub>	Mp	0.35	0.5	0.5	0.6	1	1	1.5	1.5

1 kN = 225 lbs / 1kN = 100 kp / 1Mp = 1000 kp

Gear box	GK	10.1	14.1	16.1	25.1	30.1	35.1
Type A	kN	60	160	190	320	450	820
FA max.	Mp	6	16	19	32	45	82
Types B,C,D+E	kN	1	3	5	10	15	20
F <sub>Amax</sub>	Mp	0.1	0.3	0.5	1	1.5	2
Types D+E	kN	3.5	5	8	10	12	15
FR <sub>max</sub>	Mp	0.35	0.5	0.6	1	1.2	1.5



Servogem EPO grease. If no other specification was given when placing the order, the grease is suitable for normal ambient temperatures (from -20°C to +80°C). When using other grease subsequently, the old grease must be removed completely. Kerosene or some other suitable cleaning agent can be used.



Mixing different greases should be avoided.

## 6.1 Lubrication Instructions

**6.1.1 Bearings :** Shafts run in dry bearings with life time lubrication and need not be regreased.



**6.1.2 Gear wheels :** are provided with grease at factory. Regreasing is necessary after approximately 6 years if operated rarely and within shorter intervals or if operated frequently by motor drive. Remove housing cover when regreasing (observe para 3.5).

Quantity of Grease for GK Series :

GK	10.1	14.1	16.1	25.1	30.1	35.1
Kg.	0.8	1.2	1.5	3.7	4.6	3

For GST Type Gear boxes : the gear wheels are smeared with anti-seize compound.



**6.1.3 Output drive :** mounting flanges according to DIN 3210 (type A - stem nut, type B - plug sleeve, type C - dog coupling) are provided with grease nipples. Regreasing with grease gun should be done at regular intervals, depending on frequency of operation.



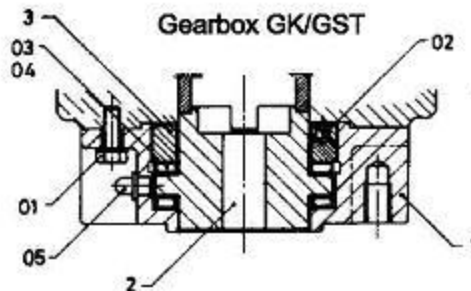
**6.1.4 Stem :** Valves with rising stem must be regreased with appropriate grease

occasionally.

## 7. Assembly Instructions - Output Drive "A"

**7.1 Gear Boxes GK & GST** for valves with Raising stem will be supplied with "A" type output drive.

Stem nut will be supplied with pilot bore, further threading to suit valve shaft will be done at customer end.



**7.2 For threading the Stem Nut,** stem nut is to be removed from output drive. The following sequences are to be followed :

**7.2.1** Remove output drive from Gear Box by unscrewing the Hex Bolt (01).

**7.2.2** Turn ring nut (3) Anticlockwise to unlock stem nut (2).

**7.2.3** Remove thrust bearing races and thrust bearing (03/04) from flange (1).

**7.2.4** Remove stem nut (2) and do the threading

**7.2.5** Place stem nut (2) into the flange (1)

with the transverse slot facing up.

**7.2.6** Place the bearing race (04) over Stem nut (2) making sure it is sitting flat on the shoulder of the nut.

**7.2.7** Add one needle bearing (03) and one more bearing race (04).

**7.2.8** Loosen set screw (02) in the top side of the ring nut (3).

**7.2.9** Screw the ring nut, tighten clockwise until snug, then back - off anticlockwise a quarter turn.

**7.2.10** Tighten the set screw (02) to lock ring in place.



If the assembly is correct, there will be slight radial movement of the stem nut (2) possible by hand but no axial movement.

**7.3** Lubricate through grease nipple (05) with bearing grease.

**7.4** It is recommended that the upper and lower surface of the mounting flange (1) be cleaned and a small amount of sealant material be applied to maintain water tightness before mounting to valve and gear box.

**7.4.1** Retighten all Hex Bolts (01) after putting back, output flange on to gear box.

## 8. Mounting Multi-turn Actuators SA/SAR



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