

RADICON POWERBUILD
Series J



Installation & Maintenance Manual



GEARED MOTORS · GEARBOXES · GEAR ASSEMBLIES · DRIVE SOLUTIONS

Cat.No.: IMJ-3.00INP0917

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1. Installation of Hollow Shaft Gear Box

The hollow shaft gear is normally mounted on a shaft with js6 tolerance. The shaft bore has H7 tolerance.

The gear unit is lifted using suitable holes for the purpose: J11-J72, using torque arm hole, J100-J190 using torque arm hole or lifting lug supplied.

The shaft must be lubricated with Molycote BR2 grease or any other equivalent grease, before fitting the gear unit. The gear unit must not be driven onto the shaft by force.

When fitting a pulley wheel without a compression bushing the threaded hole in the input shaft must be used. A threaded hole in the shaft is not standard on size J11-J32. The pulley wheel must not be driven on the shaft with force. The pulley wheel stop screw must be countersunk in the key. The stop screw must be locked.

The torque arm must be positioned so that it is in tension. This is determined by the direction of rotation of the output shaft. If rotation is anticlockwise the torque arm must be placed on the right (see fig1.) If the direction is reversible or unit is operating under harsh conditions then two torque arms must be fitted.

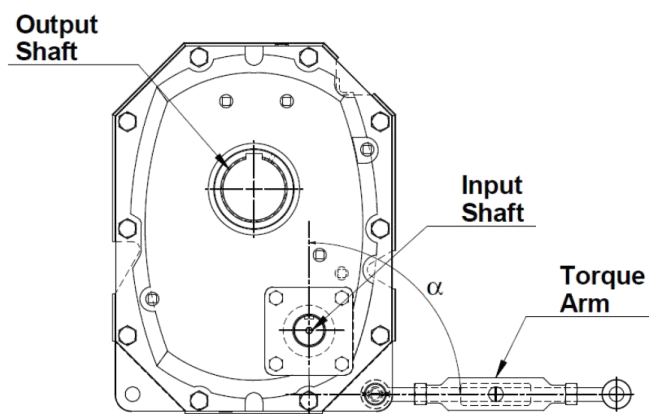


Fig. 1

The torque arm should be located in $90^{\circ} +0^{\circ} / -45^{\circ}$.

If a backstop is fitted, the direction of rotation of the motor must be checked before fitting the pulley belts. For applications with heavy duty and/or when speed reducer is mounted in angle of inclination from horizontal machine shaft, locking washer must be used.

2. Lubrication

The Oil filling system of the Series J - Speed Reducers means simplified maintenance and oil exchange. Front and Back (on some sizes even sides) of reducer are equipped with oil level plugs.

The first oil change shall be made after 2500 operating hours. At operation temperatures up to 70°C we recommend oil change after 8000 operating hours or every 2 years. At operation temperatures above 70°C , oil must be changed twice a year. These recommendations apply for operations without shocks.

When mounting reducer on vertical shaft or when the gearbox is working above or below recommended output speed please contact POWERBUILD or the local representative.

SERIES J

Series J - Speed Reducers are normally delivered without oil. Different mounting positions need different oil volumes.

Recommended type of oil and grade of viscosity is according ISO VG.

| Lubricant | Ambient Temperature Range | | |
|--|-------------------------------------|-------------|--------------|
| | 5°C to 20°C (E) -30°C to 20°C(H) | 0°C to 35°C | 20°C to 50°C |
| EP Mineral Oil (Type E) | 5E (VG 220) | 6E (VG 320) | 7E (VG 460) |
| Polyalphaolefin based synthetic (Type H) | 5H (VG 220) | 5H (VG 220) | 6H (VG 320) |

At other ambient temperatures, please contact POWERBUILD or our local representative.

2.1 Oil quantities and oil level plugs

The figures in the first column under each respective mounting position, shown in the table, refer to the approximate quantities of oil for gear units mounted according to these positions. If it is required to mount a gear unit in any other position, please contact to POWERBUILD or our local representative.

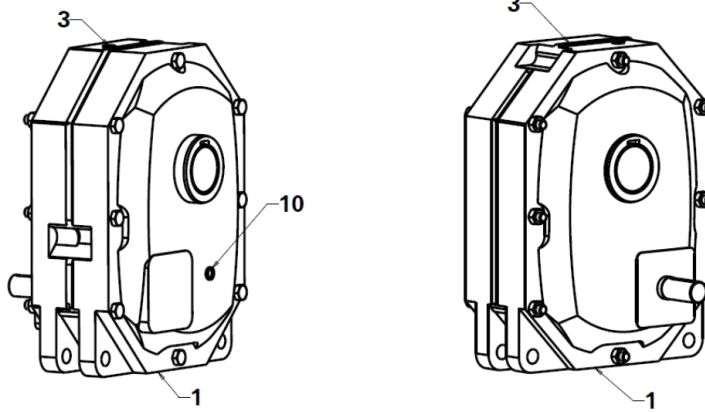
| Mounting | Approximate Quantity of oil | | | | | | | | | | | |
|-------------|-----------------------------|--------------------|------------------------|--------------------|--------|--------|--------|--------------------|--------|--------------------|--------|--------------------|
| | H1 | | H2 | | H3 | | H4 | | H5 | | H6 | |
| | Litres | Oil Level Plug No. | Litres | Oil Level Plug No. | Litres | Litres | Litres | Oil Level Plug No. | Litres | Oil Level Plug No. | Litres | Oil Level Plug No. |
| J11A / J11B | 0,9 | 10 | 0,8 | 10 | 0,9 | 3 | 0,4 | 3 | 0,3 | * | 1,5 | * |
| J21A/J21B | 1,1 | 10 | 1,3 | 10 | 1,0 | 3 | 0,3 | 3 | 0,6 | * | 2,3 | * |
| J31A/J31B | 2,4 | 10 | 2,1 | 10 | 2,2 | 3 | 1,1 | 3 | 1,6 | * | 3,9 | * |
| J51A/J51B | 4,3 | 5 | 3,5 | 9 | 3,9 | 3 | 1,9 | 3 | 2,2 | * | 6,3 | * |
| J71A/J71B | 5,9 | 6 | 5,3 | 5 | 5,4 | 12 | 2,5 | 11 | 2,8 | * | 8,6 | * |
| J12A/J12B | 1,0 | 10 | 0,4 | 10 | 0,8 | 3 | 0,4 | 3 | 1,2 | * | 1,3 | * |
| J22A/J22B | 1,6 | 10 | 0,6 | 10 | 1,4 | 3 | 0,6 | 3 | 1,9 | * | 2,1 | * |
| J32A/J32B | 2,4 | 10 | 1,1 | 10 | 1,0 | 3 | 0,9 | 3 | 3,1 | * | 3,4 | * |
| J52A/J52B | 4,5 | 5 | 1,6 | 9 | 3,7 | 3 | 1,9 | 3 | 4,8 | * | 5,6 | * |
| J72A/J72B | 5,7 | 6 | 2,4 | 5 | 5,1 | 12 | 2,4 | 11 | 7,5 | * | 8,3 | * |
| J100 1-step | 11 | 6 | 11,5 | 4 | 9 | 3 | 3 | 10 | 14 | 13 | 16 | 13 |
| J110 1-step | 20 | 6 | 15,5 | 4 | 3,5 | 3 | 7 | 10 | 28 | 13 | 29 | 13 |
| J125 1-step | 38 | 6 | 26,5 | 4 | 9,5 | 3 | 5 | 10 | 37 | 13 | 38 | 13 |
| J100 2-step | 10 | 6 | >50rpm 4,5 <50rpm 9 | 2 4 | 8 | 3 | 3 | 10 | 12,5 | 14 | 14,5 | 13 |
| J110 2-step | 20,5 | 6 | 8 | 2 | 11,5 | 3 | 7 | 10 | 25,5 | 14 | 25,5 | 13 |
| J125 2-step | 24 | 6 | 15 | 2 | 9 | 3 | 4,5 | 10 | 34 | 14 | 35 | 13 |
| J140 2-step | 38 | 6 | 13 | 2 | 24 | 3 | 11 | 10 | 45 | 14 | 45 | 13 |
| J160 2-step | 52 | 6 | 21 | 2 | 36 | 3 | 17 | 10 | 67 | 14 | 64 | 13 |
| J190 2-step | 65 | 6 | 23 | 2 | 46 | 3 | 27 | 5 | 108 | 14 | 112 | 13 |

Table - 1

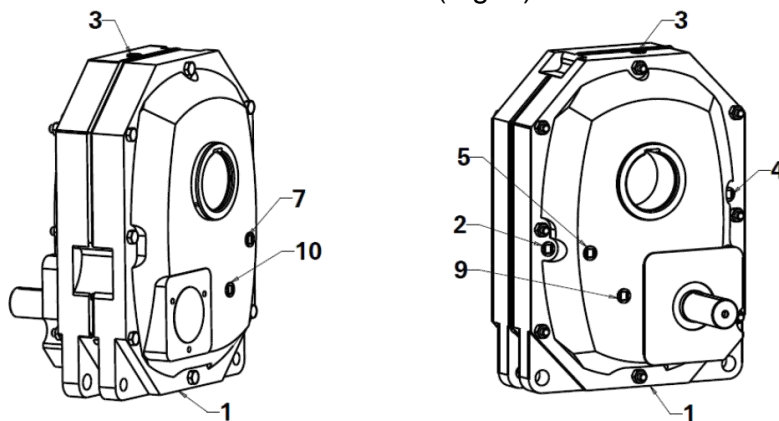
For Oil Level Plug No., please refer Fig. 2, 3, 4 & 5 with reference to Model.

(*) Oil Gauge Tube

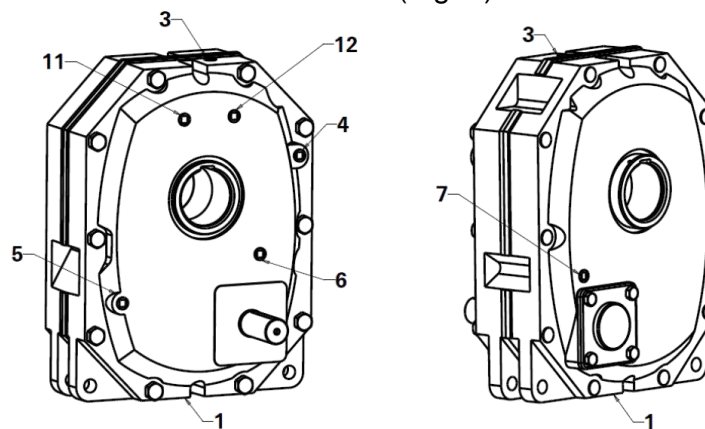
Model: J11 – J32 (Fig. 2)



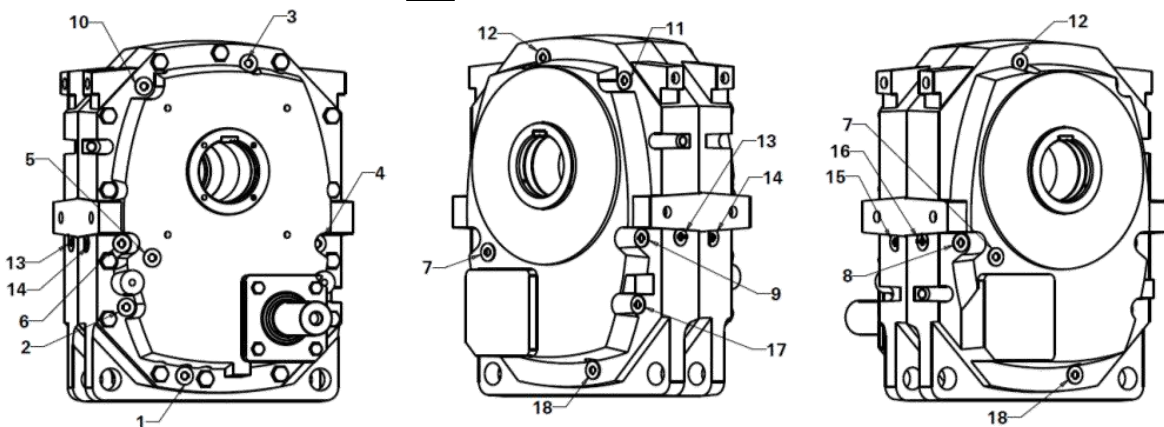
Model: J52 (Fig. 3)



Model: J72 (Fig. 4)



Model: J100- J190 (Fig. 5)



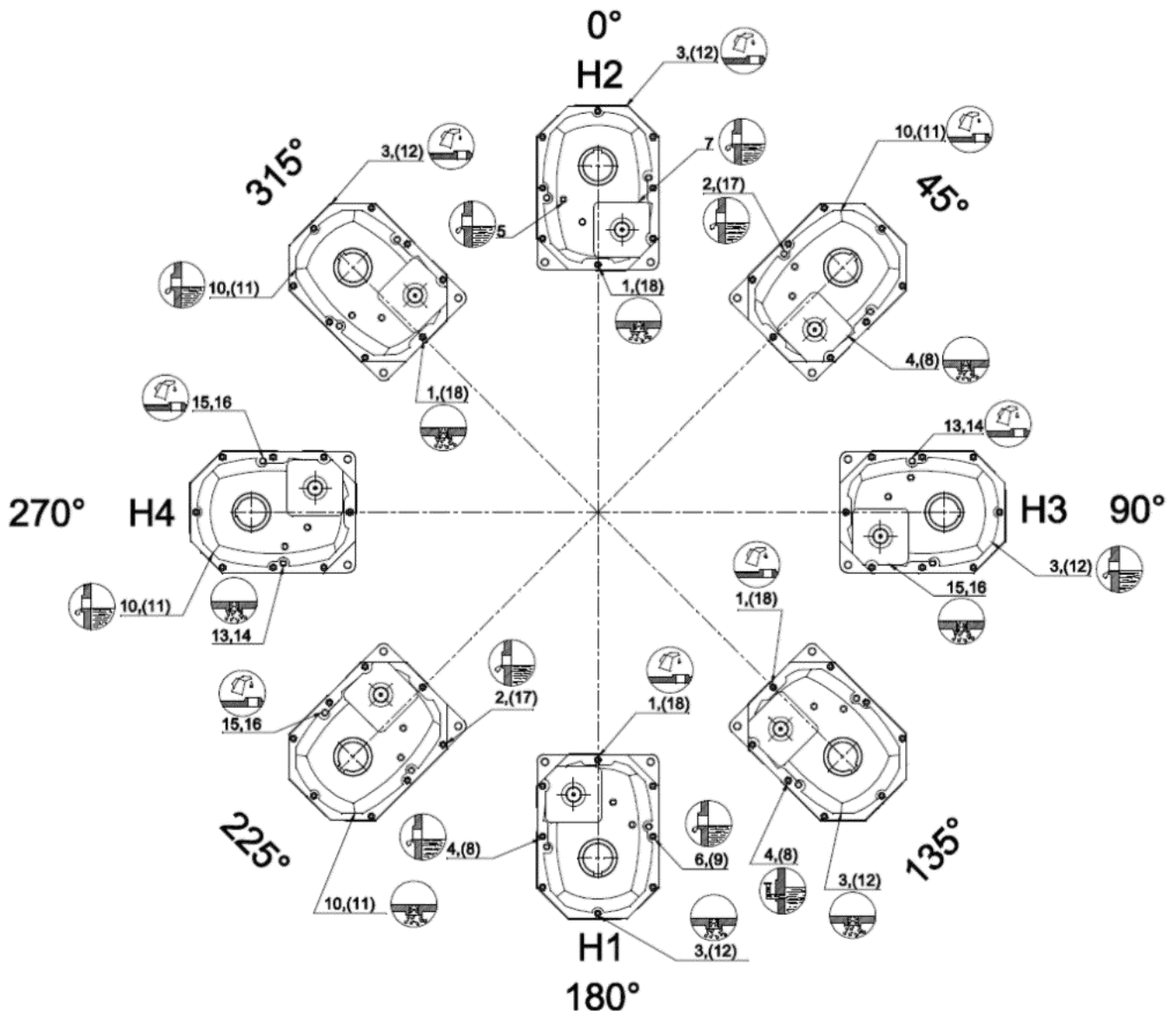


Fig. 6

On J11-32 there is only one oil level plug.
 All Series J Speed Reducers are prepared for Synthetic oil type Polyalphaolefin.

Note!

Oil of mineral type should not be mixed with oil of synthetic type.
 Always check oil level when changing oil.
 Series J - hollow shaft gears are supplied without lubricant.

3. KIBO-Mounting

For Correct mounting of speed reducer it is very important that both bushings get the same squeezing force.

1. Mount the inner bushing with the nut in its outer position. The bushing shall be mounted against the shoulder or circlip. Where the shoulder should not exceed inside of nut.
2. Put the key in the keyway.
3. Mount the reducer on the machine shaft and press it against the inner bushing.
4. Mount the outer bushing with the nut in its inner position. Check that the bushing is not squeezed but the nut is in contact with the shaft sleeve.
5. Mount the washer with its bolt. Tighten the bolt with correct torque. The inner bushings are now locked.
6. Loosen the bolt, so the outer bushing is loose. Turn the nut on the bushing, in its outer position.
7. Tighten the bolt once again with correct torque. The outer bushing is now locked. The thicker washer may be changed to the thinner one in order to gain more space at the hollow shaft end. The thinner washer should be tightened with a torque of 25% of the value given in the table -1 as per below. (only valid for gear size J11-72)
8. Screw the nuts against the hollow shaft by hand, mounting is completed.

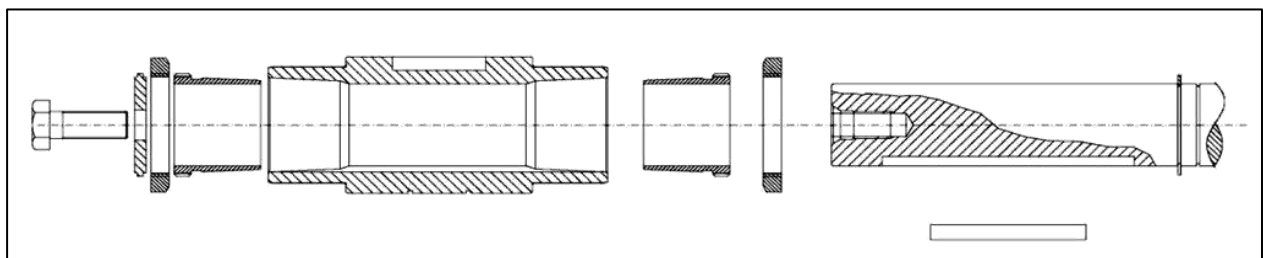


Fig. 7

Tightening Torque: -

| Size | Shaft Sleeve Dia. D (mm) | Screw | Tightening torque, Nm |
|-----------|-----------------------------|-------|--------------------------|
| J11 / J12 | 35 | M12 | 53 |
| | 45 | M16 | 59 |
| J21 / J22 | 45 | M16 | 130 |
| | 55 | M20 | 110 |
| J31 / J32 | 55 | M20 | 150 |
| | 65 | M20 | 120 |
| J51 / J52 | 60 | M20 | 200 |
| | 75 | M20 | 180 |
| J71 / J72 | 70 | M20 | 290 |
| | 85 | M20 | 170 |
| J100 | 100 | M24 | 510 |
| J110 | 110 | M24 | 380 |
| J125 | 125 | M24 | 370 |
| J140 | 140 | M30 | 510 |
| J160 | 160 | M30 | 430 |
| J190 | 190 | M30 | 650 |

Table 2

Note!

If reducer is mounted in a corrosive environment, ensure machine shaft bushings and nuts are oiled or greased.

Do NOT use lubricants based upon molybdendisulphide.

Dismounting:-

1. Loosen the bolt and take away the washer.
2. Pull out the outer bushing with the nut, by turning the nut with a adequate tool. Take out the bushing.
3. Press the reducer from the inner bushing with the nut, dismounting is completed.

4. Installing of Shaft Sleeve**➤ J100-J190 (Fig. 8A)**

Installation kit consists of 2 pcs insert sleeves, 1 pcs special key and 2 stop screws.

1. Fit the insert sleeve (4) on the shaft (1).
2. Line up the key (2) with the keyway (3) in the shaft.
3. Fit the remaining insert sleeve (4) in the shaft sleeve (3).
4. Fit the gear with sleeve on the machine shaft so that the shaft sleeve slides over the insert sleeve..
5. Screw the two stop screws (6) through the shaft sleeve, through the inner insert sleeve and against the machine shaft.
6. Press the outer insert sleeve in position; assemble circlip (33), washer (31) and screw (35).

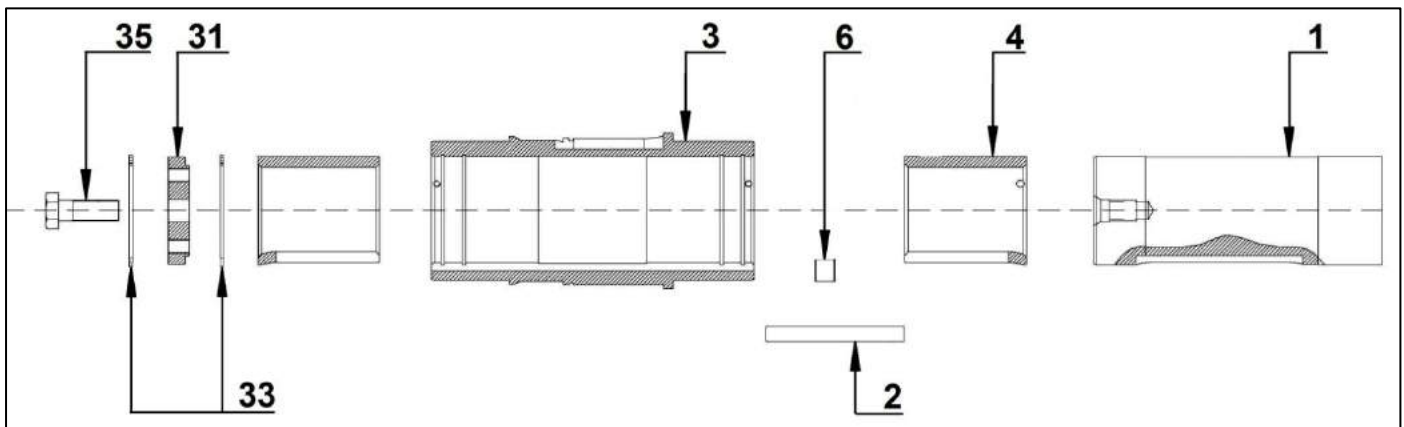


Fig. 8A

➤ **J11-J72 (Fig. 8B)**

1. Fit the insert sleeve (4) on the machine shaft (1)
2. Line up the key (2) with the keyway in the machine shaft.
3. Fit the remaining insert sleeve (4), the spacer (6) and locking ring (33) in the shaft sleeve (5).
4. Fit the gear unit on the shaft so that the shaft sleeve slides over the insert sleeve.
5. Lock the gear unit by tightening the bolt (35) against the washer (31) and circlip (33).

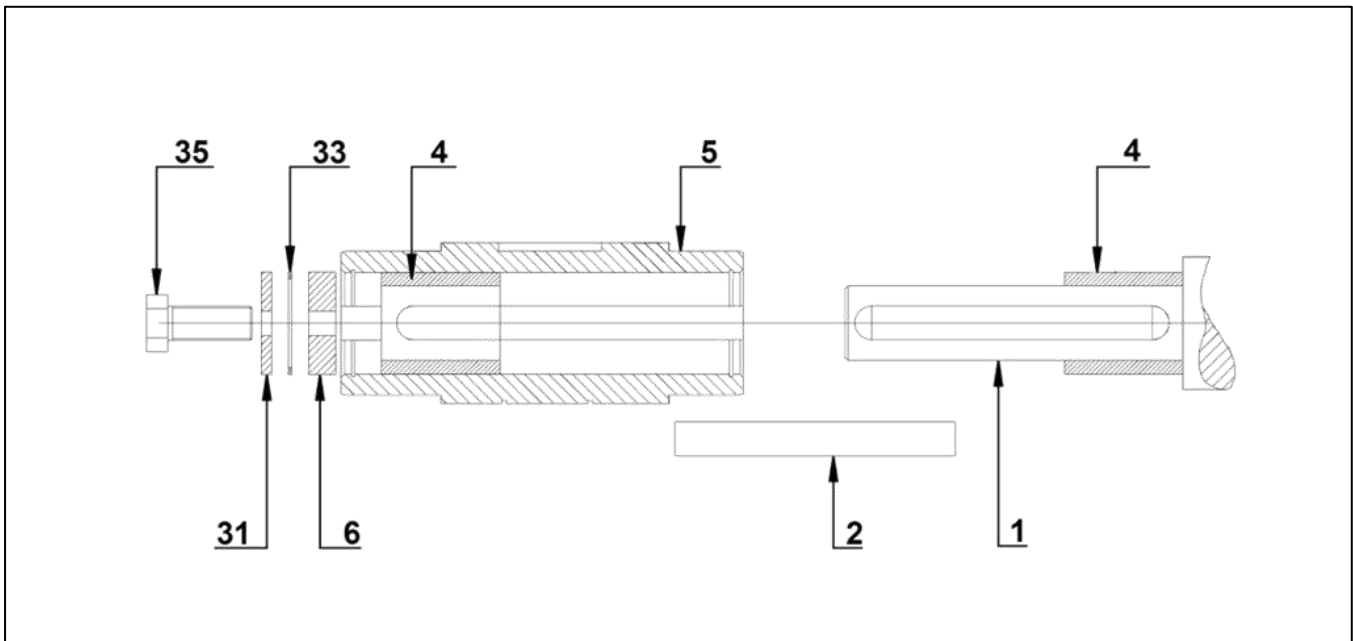


Fig. 8B

Removing of Gear from Machine Shaft:

➤ J11A-J32B

Alternative: 1

1. Remove End screw, Washer and Torque arm.
2. Use a Puller of such size that it goes round on the back of gearbox to pull it off the Machine shaft.

Alternative: 2

1. Remove End screw, Washer and Torque arm.
2. With use of Dismounting items (Ref. Fig. 9 & 10), to remove gear from Machine shaft.

➤ J51A-J72B

1. Remove End screw, Washer, Circlip, Spacer (some sizes) and Torque arm.
2. With use of Dismounting items (Ref. Fig. 9 & 10), to remove gear from Machine shaft.

➤ J100-J190 (Ref. Fig. 11)

1. Remove End screw and Torque arm.
2. Check that Circlip is placed in outer groove.
3. Screw 2 fully threaded Screws into the pre threaded holes in End washer.
4. Turn the two screws diagonally until the gear is removed from Machine shaft.

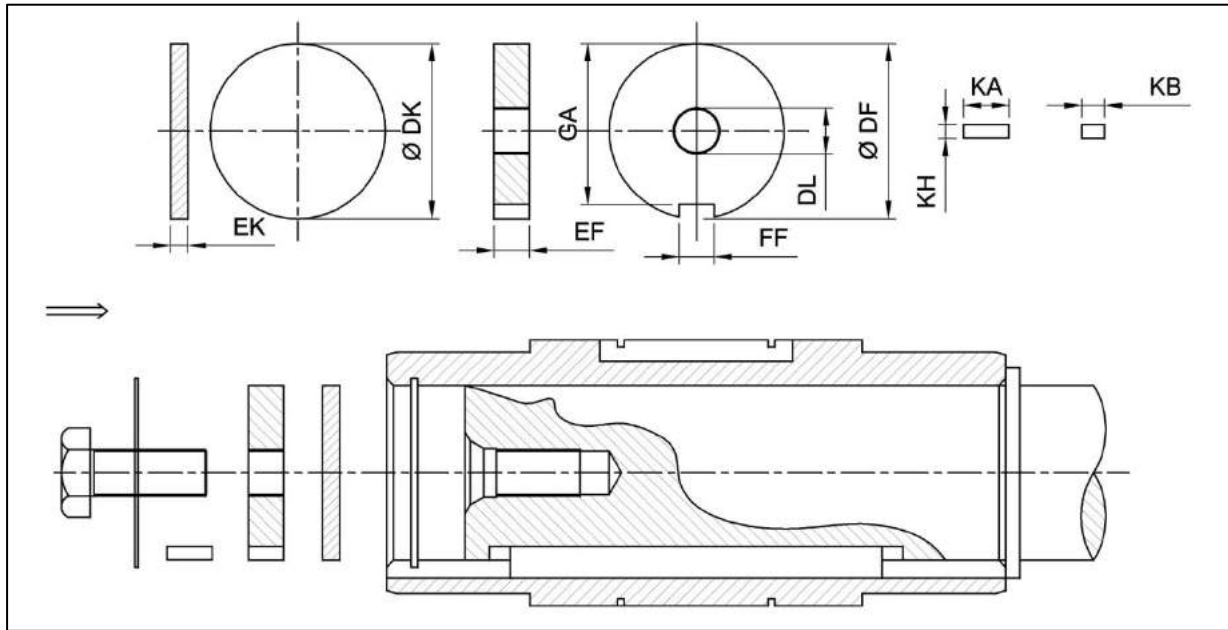


Fig 9

| J | DF | DK | DL | EF | EK | FF | GA | KA | KB | KH |
|-----|----|----|-----|----|----|----|------|----|----|----|
| 12A | 35 | 35 | M12 | 10 | 6 | 10 | 30 | 20 | 10 | 8 |
| 12B | 45 | 45 | M12 | 10 | 6 | 14 | 40 | 20 | 10 | 8 |
| 22A | 45 | 45 | M12 | 10 | 6 | 14 | 40 | 20 | 14 | 8 |
| 22B | 55 | 55 | M16 | 10 | 6 | 16 | 50 | 20 | 14 | 8 |
| 32A | 55 | 55 | M16 | 12 | 6 | 16 | 50 | 25 | 16 | 9 |
| 32B | 65 | 65 | M20 | 12 | 6 | 18 | 58 | 25 | 16 | 9 |
| 52A | 60 | 60 | M20 | 16 | 6 | 18 | 53 | 25 | 18 | 11 |
| 52B | 75 | 75 | M20 | 16 | 6 | 20 | 68,5 | 25 | 18 | 11 |
| 72A | 70 | 70 | M20 | 20 | 6 | 20 | 62,5 | 20 | 20 | 12 |
| 72B | 85 | 85 | M24 | 20 | 6 | 22 | 76 | 20 | 20 | 12 |

Table 3

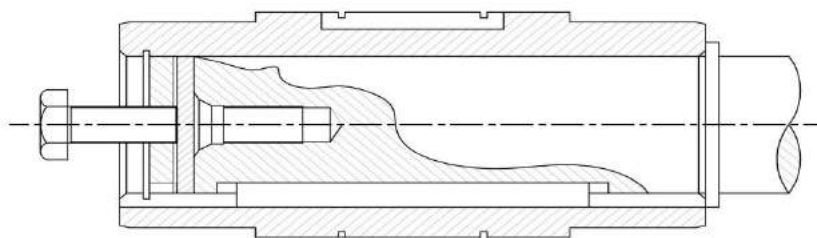


Fig. 10

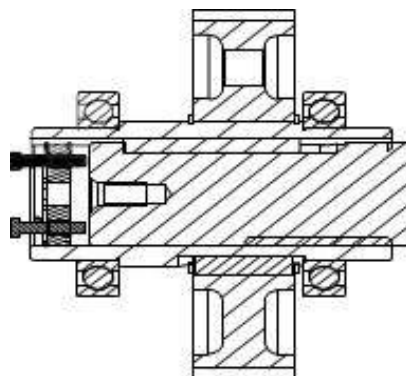


FIG. 11

5. General information about Backstop

Before the backstop is fitted, the torque and input speed should be checked against the table. Torque may reach 2.5 x value shown for brief periods.

| Size | Backstop Type | Max. Input torque (Nm) | Min. Input speed (rpm) | Max. Input speed (rpm) |
|--------|---------------|------------------------|------------------------|------------------------|
| J12A/B | ASNU15EP | 75 | - | 2400 |
| J22A/B | ASNU17EP | 112 | - | 2300 |
| J32A/B | ASNU20EP | 160 | - | 2100 |
| J52A/B | ASNU30EP | 500 | - | 1400 |
| J72A/B | ASNU35EP | 750 | - | 1200 |
| J100 | RSCI40 | 1600 | 720 | 7600 |
| J110 | RSCI45 | 1800 | 665 | 6600 |
| J125 | RSCI50 | 2800 | 610 | 6100 |
| J140 | RSCI60 | 4700 | 490 | 6100 |
| J160 | RSCI70 | 6100 | 480 | 4500 |
| J190 | RSCI80 | 9000 | 450 | 4000 |

Table 4

See hollow shaft gear against input shaft and decide the direction of rotation of the output shaft: anticlockwise BV, or clockwise BH.

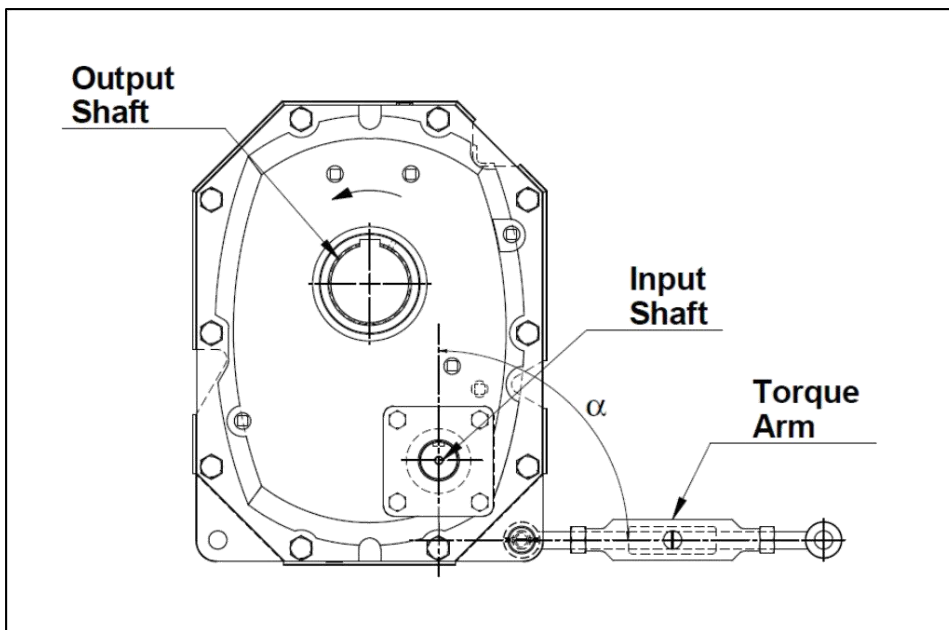


Fig. 12

Picture shows counter clockwise rotation (BV)

Always state the direction of rotation when ordering gear unit with backstop.

5.1 Instructions for backstop J12-J72

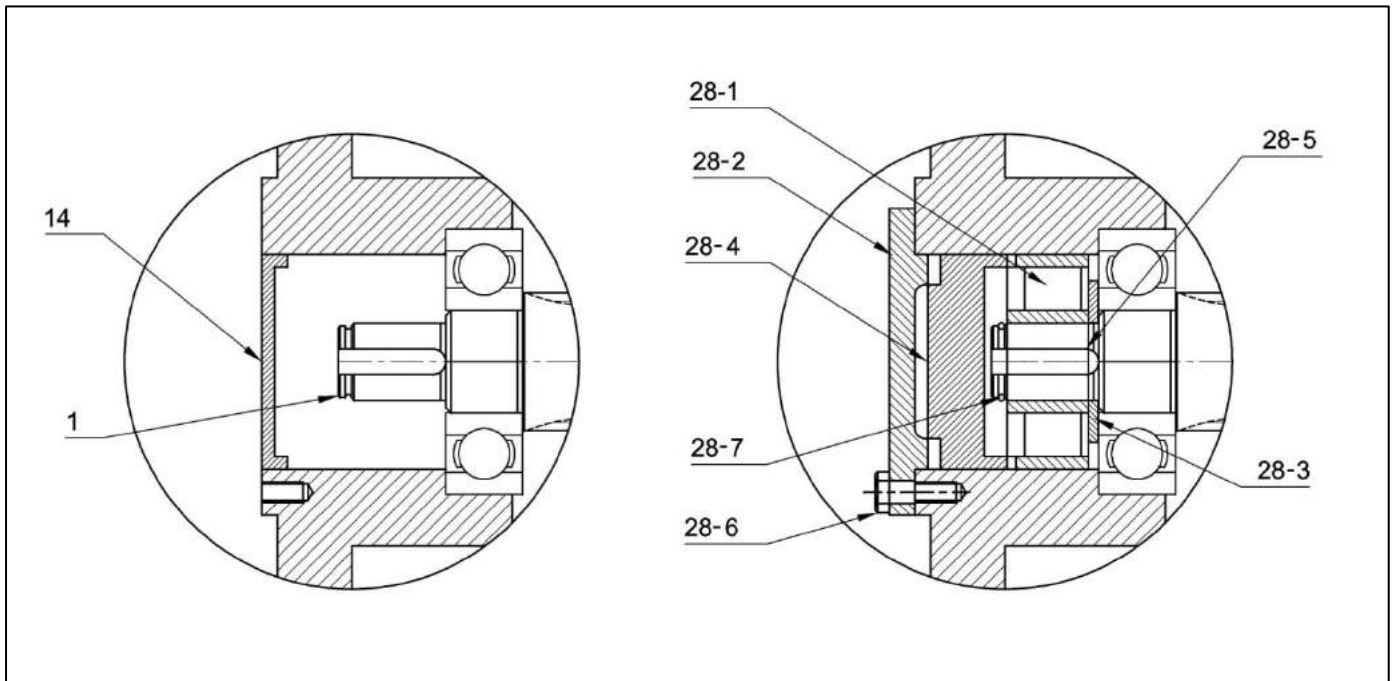


Fig. 13

Permissible working temperature in steady operation is -30°C to $+100^{\circ}\text{C}$.

Backstop is supplied with corrosion protection; DO NOT REMOVE.

1. Remove cover (14) from the gear.
2. Fit the support ring (28-3) against the bearing. (Only applies to J52)
3. Grease the shaft on which the backstop is to be mounted and fit the key (28-5) in the shaft keyway. In case of J72, fit also locking ring (28-7).
4. Determine the direction of rotation of the backstop (28-1) and slide this onto the shaft (1).
5. Fit the special key (28-4) in the cover (28-2) and screw (28-6) cover on the reducer.

5.2 Instructions for backstop J100-J190

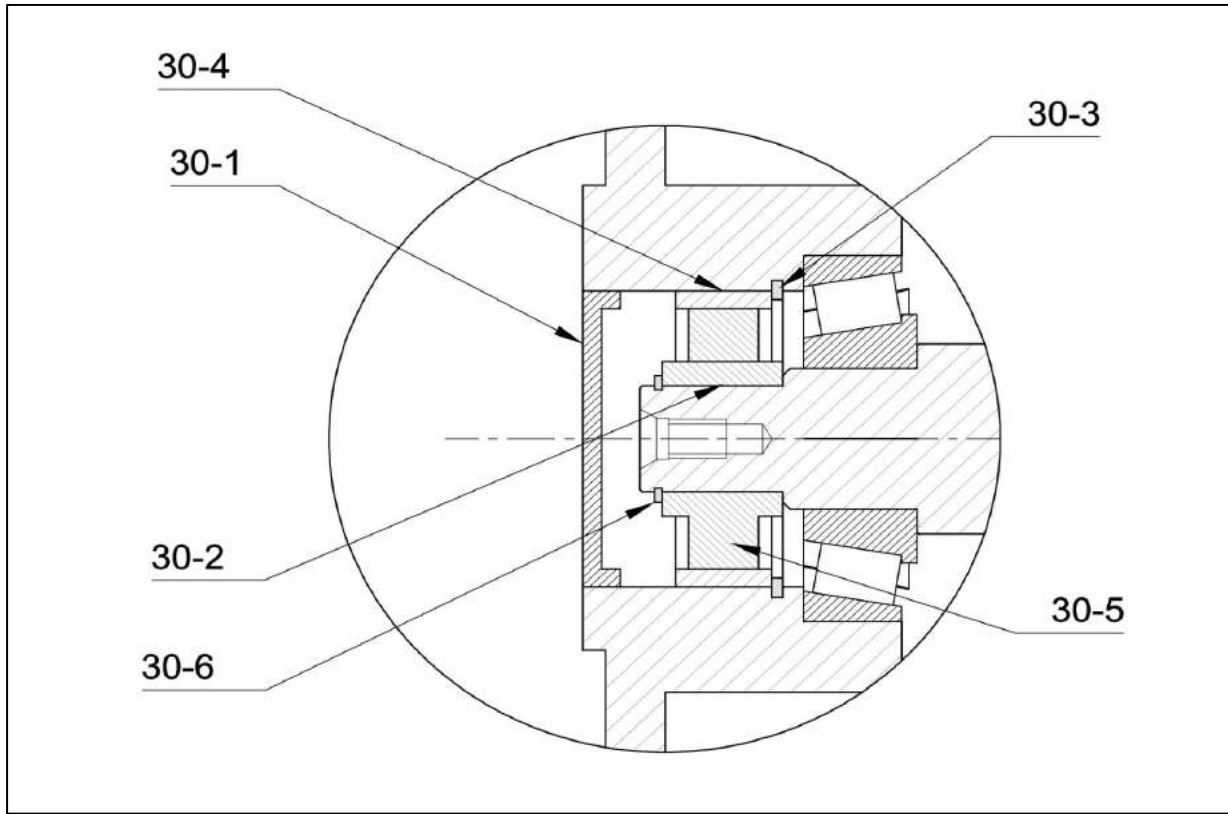


Fig. 14

Permissible working temperature in steady operation is -30°C to $+100^{\circ}\text{C}$.

Backstop is supplied with corrosion protection; DO NOT REMOVE.

1. Dismantle the cover part (30-1*) from standard reducer.
2. Assemble the snap ring part (30-3*) in gear housing.
3. Grease shaft end where back stop is to be fitted and put Key part (30-2*) into the keyway.
4. Determine direction of rotation and remove outer race part (30-4*) of backstop and fit it gently against the snap ring part (30-3*) in gear housing. (Direction of rotation is changed if back stop is reversed.)
5. Mount the inner part of back stop, part (30-5*) into guiding ring, (ordered separately).
6. Now press by hand the guiding ring with back stop against the outer race, part (30-4*) and push back stop against shaft shoulder.
7. Remove the guiding ring and fit snap ring, part (30-6*) on gear shaft.
8. Fit new cover, part (30-1*), and fill up with oil before starting.

* As shown in spare parts list.



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