

Involute Powergear Pvt. Ltd.

Star Export House Recognized by Government of India
ISO 9001-2008 Certified Systems



**BT Series
Shaft Mounted Gear Unit**



POWERGEAR™



POULIGEAR^{fr}

The **POWERGEAR BT-Series Round Shaft Mounted Gear Unit** is a versatile gearbox developed on special demand from our customers worldwide.

The gear unit is compact in size mounting directly on to the driven shaft, thus eliminating the need of a foundation and coupling.

The torque arm anchors the gear unit and provides easy and quick method of adjustment of V-belts by means of a turnbuckle. All our units are supplied with a torque arms.

The units are available in 8 sizes from **BT35 to BT100** upto a torque ratings of 11,000 Nm with a reduction ratio of **15:1**.

Reduction ratios from 5:1 to 30:1 are available on special request.

BT123 is a special size with reduction ratio of **5:1**, developed for high speed applications. The unit can be directly secured on the drive using 3 mounting holes.

A wider range of final speed ratios may be achieved by use of pulley combinations. The gearbox is suitable for both forward and reverse motion.

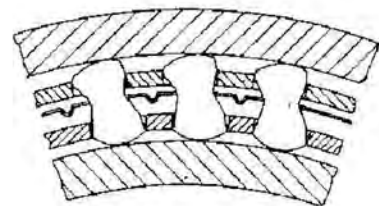
Accessories:

Anti-Roll Back Adapters / Backstops: A simple accessory that prevents reversal of the speed reducer and is ideal for inclined conveyors.



Benefits:

- ✱ Hardened and Ground Gearing
- ✱ CNC Machined Cast Iron Housings
- ✱ Compact and Low Cost
- ✱ High Efficiency of 96%
- ✱ Multiple Bore Sizes
- ✱ Backstop Provision in All Models
- ✱ Interchangeable with Leading Brands



Backstop Sprag Clutch

Interchangeability Chart Based on Torque Ratings

POWERGEAR Round - BT Series	BONFIGLIOLI TA	SITI RP2
BT35 Diameterφ: 30 / 35	TA35 Diameterφ: 35	RP2 71/2 Diameterφ: 25 / 35 / 38 / 40
BT40 Diameterφ: 35 / 40 / 45	TA40 Diameterφ: 40 / 45	RP2 91/2 Diameterφ: 30 / 38 / 40 / 45
		RP2 111/2 Diameterφ: 40 / 45 / 50 / 55
BT45 Diameterφ: 45 / 50 / 55	TA45 Diameterφ: 45 / 50 / 55	RP2 131/2 Diameterφ: 50 / 55 / 60
BT50 Diameterφ: 50 / 55 / 60 / 65	TA50 Diameterφ: 50 / 55 / 60	RP2 151/2 Diameterφ: 50 / 55 / 60 / 65 / 70
BT60 Diameterφ: 60 / 65 / 70 / 75	TA60 Diameterφ: 60 / 70	RP2 181/2 Diameterφ: 60 / 70 / 75 / 80 / 85
BT70 Diameterφ: 70 / 75 / 80 / 85	TA70 Diameterφ: 70 / 85	-
BT80 Diameterφ: 80 / 85 / 100	TA80 Diameterφ: 80 / 100	RP2 221/2 Diameterφ: 80 / 100
BT100 Diameterφ: 85 / 100 / 125	TA100 Diameterφ: 100 / 125	RP2 260/2 Diameterφ: 100 / 125



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Selection Procedure

1. Determine Required Output Speed
2. Determine Power Absorbed by the Drive

$$\text{Absorbed Power (KW)} = \frac{\text{Absorbed Torque (Nm)} \times \text{Machine Speed (rpm)}}{9550}$$

3. Determine Service Factor from Table
4. Multiply the Absorbed Power by the Service Factor
5. Using the Table for Power Rating select the smallest gear unit that is suitable for transmitting this power at the Output Speed

For Example:

A torque of 500 Nm is required to be transmitted on the brick press at 70 rpm

The brick press is under heavy load and operates for 17 hours per day

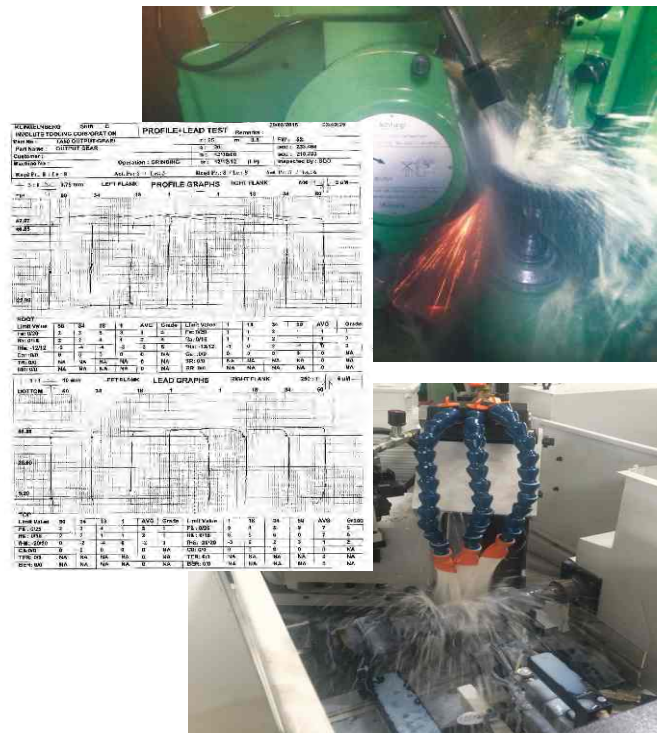
Absorbed Power = $(500 \times 70) / 9550 = 3.66 \text{ kW}$
 Service Factor from Table = 2.0
 Selection Power = $3.66 \times 2.0 = 7.33 \text{ kW}$

From Power Rating chart at 70 rpm size "BT45" double reduction speed reducer at 9.80 kW is the smallest for this application.

Driven Machine Types Service	Daily Operating Hours		
Factors	Below 10 Hours	Between 10-16 Hours	Above 16 Hours
UNIFORM LOAD Liquid And Semi Liquid Mixers Centrifugal Discharged Equipments Bottling Machine Fixed Load Carrier Ovens Washing Machines Centrifugal And Gear Pumps Wire Drawing Machines	1.0	1.12	1.25
MODERATE SHOCK Variable Density Mixers Variable Load Conveyors Cranes, Movable Carriers And Lifters Rolling Machines Heavy Load Elevators Drying Stoves Drying Machines Lifting Machines Piston Pumps With 3 Or More Cylinders Pulp Machines Drying Machines Homing Cylinders Wet Pressing Machines Small Mixers Rotary Screens Textile Machines	1.25	1.4	1.5
HEAVY SHOCK Brick Press Briquette Manufacturing Machine Conveyor Band Moving Forward / Backward And Shaking Breaking Machines Hammer Mill Piston Pumps With 1 Or 2 Cylinders Extruders Vibrators Forging Mills	1.6	1.8	2.0

Power (kW) & Torque (Nm) Rating

RPM	BT35	BT40	BT45	BT50	BT60	BT70	BT80	BT100
20	0.8	2.0	3.1	5.1	7.9	8.9	14.0	24.0
30	1.2	3.1	4.8	7.7	13.0	11.2	21.0	38.0
40	1.6	3.4	5.9	9.2	14.9	18.0	28.0	45.0
50	2.0	4.4	6.8	11.0	18.2	20.0	35.0	55.0
60	2.4	5.3	8.3	12.9	22.0	25.0	42.0	66.0
70	2.8	6.1	9.8	14.8	25.0	30.0	46.0	72.0
80	3.2	6.9	11.0	16.9	28.5	34.0	52.5	83.0
90	3.6	7.7	12.3	19.0	32.0	39.0	59.0	94.0
100	4.0	8.1	13.5	21.0	35.4	44.0	65.0	105.3
Nm	420	950	1400	2300	3600	48.3	7000	11000

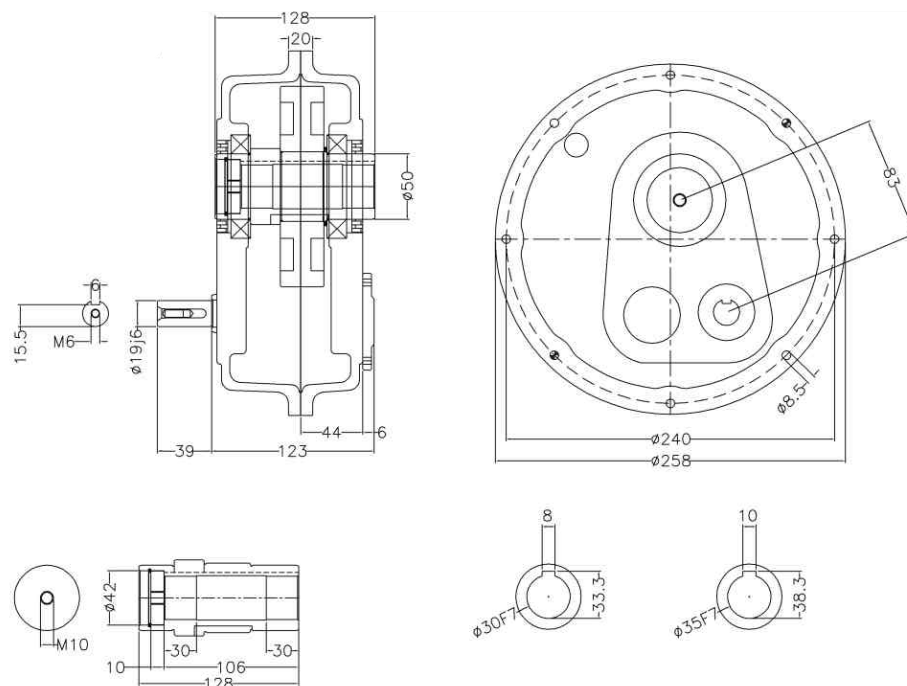


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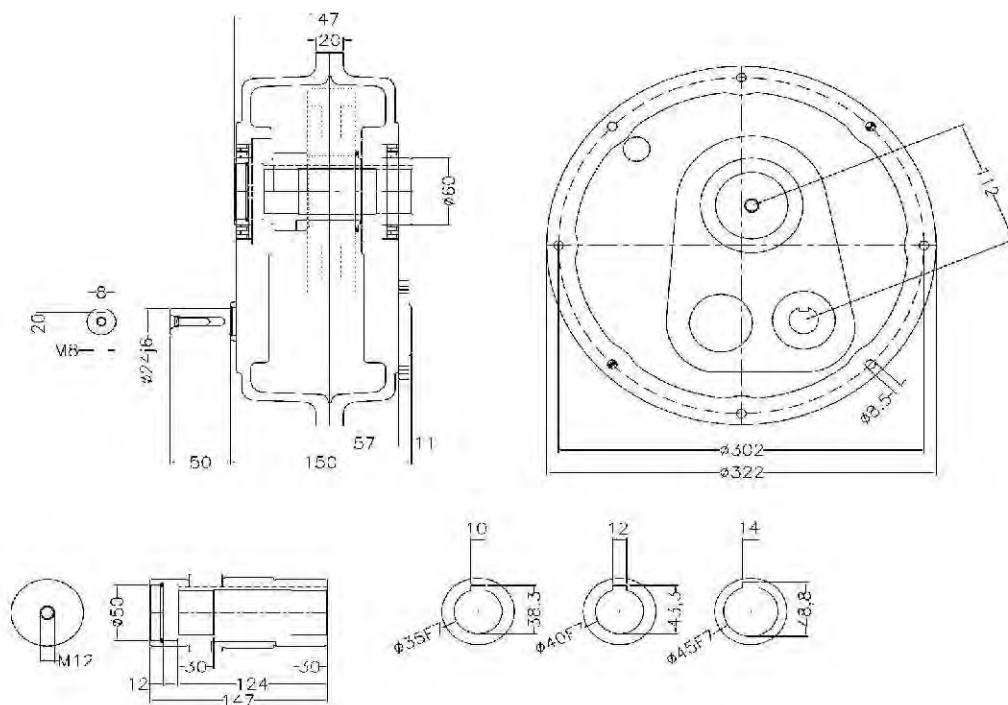
BT 35



KG

18

BT 40



KG

30

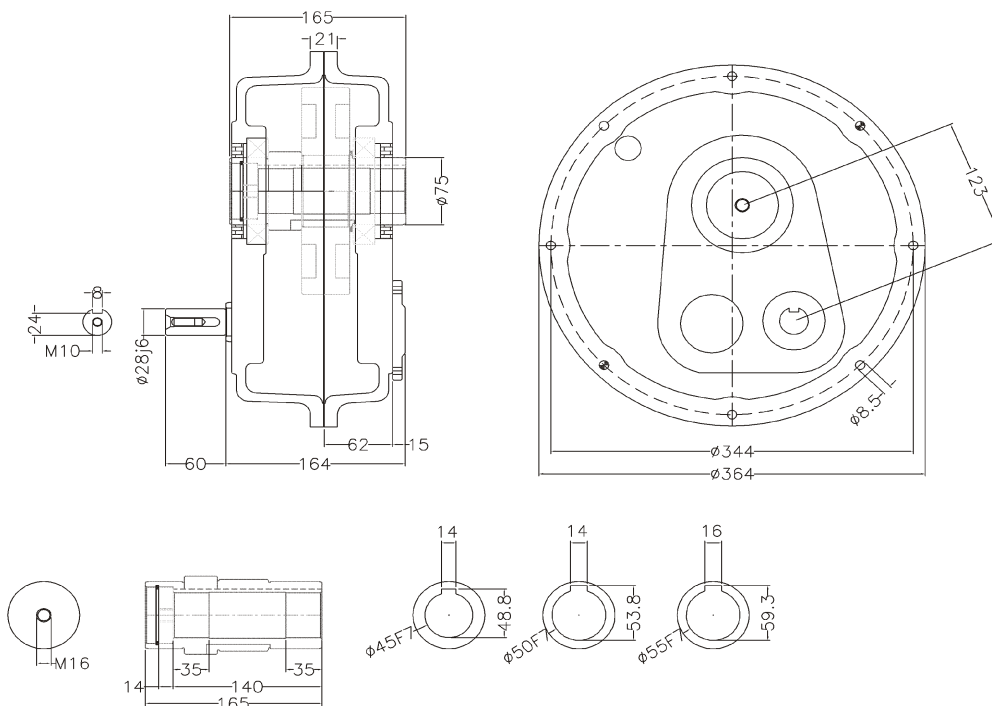


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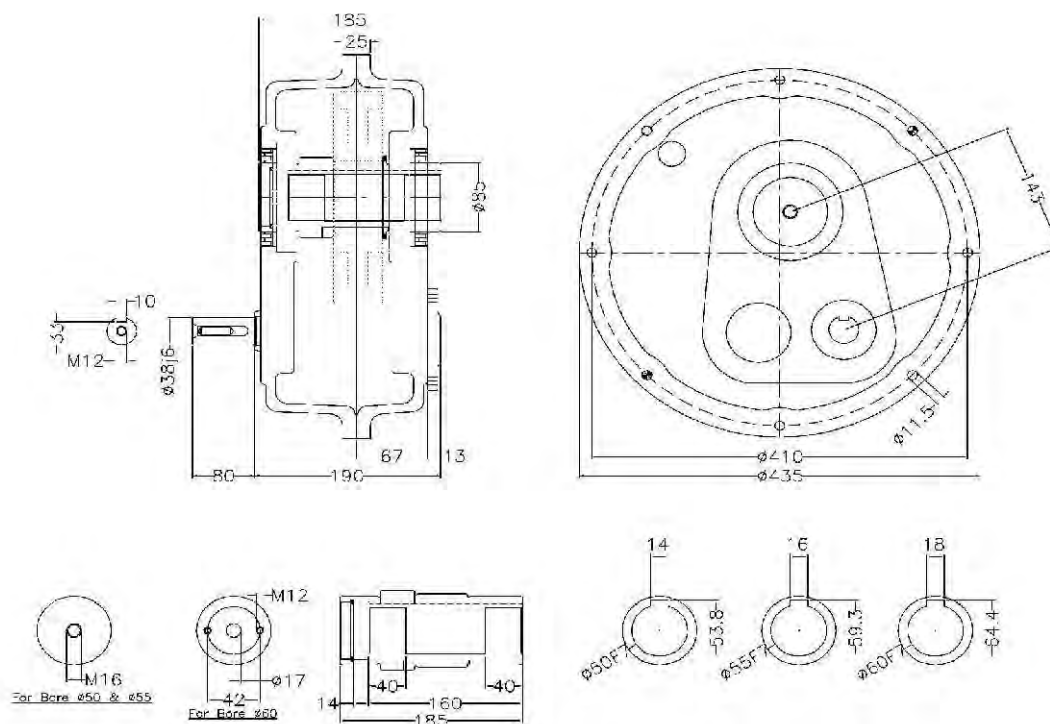
BT 45



KG

40

BT 50



KG

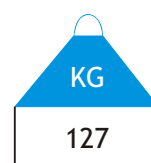
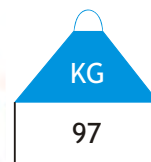
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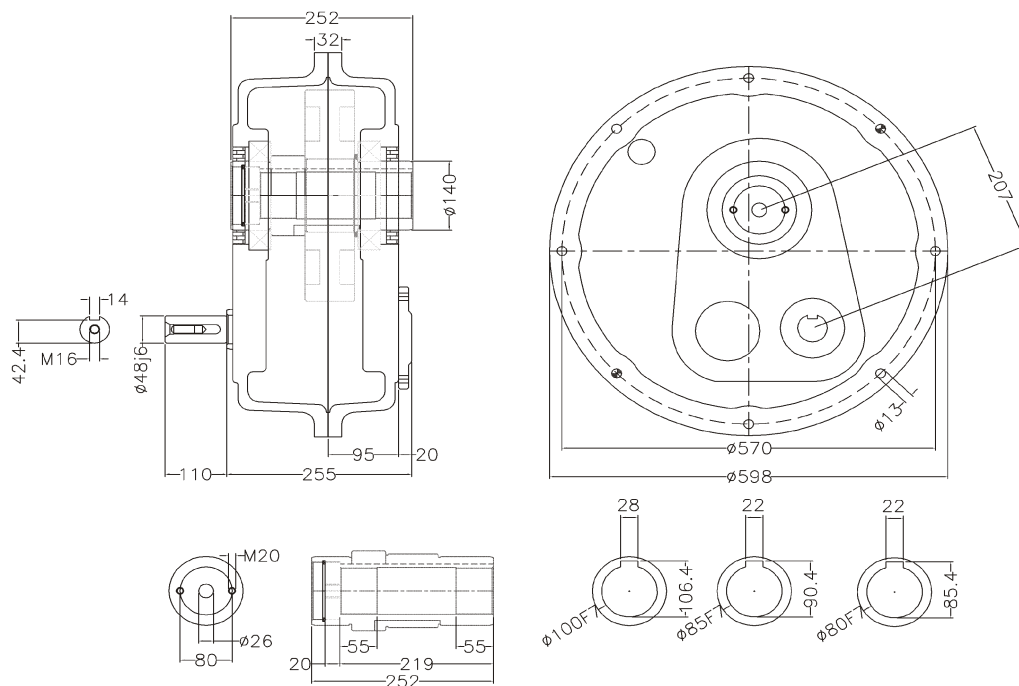
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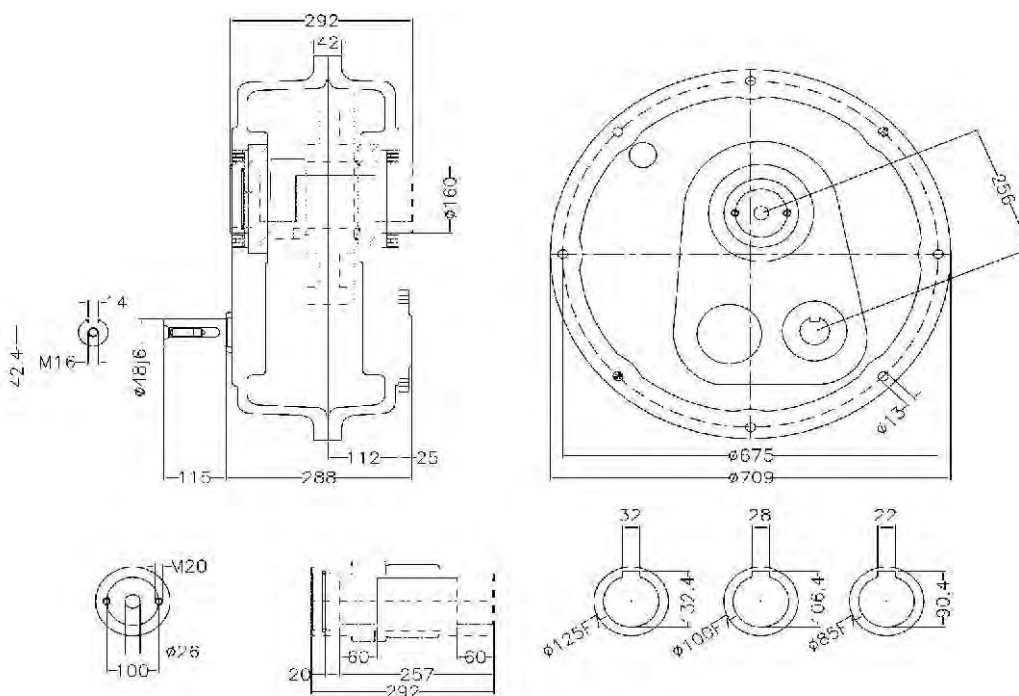
BT 80



KG

170

BT 100



KG

290



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BT Series - Shaft Mounted Gear Unit - Installation

BT Series Shaft Mounted Gear Units are supplied **without oil** and must be filled with the recommended quantity of lubricant before use. Correct quantity and type of oil being used is essential to ensure correct operation and long life of the gear unit.

The **recommended tolerance** for the drive shaft for installing the gear unit is “h7”

A **breather plug** must be used to ensure no pressure builds up inside the gear unit such that subsequent oil seal failure does not occur. A breather plug is always supplied with the gear unit.

Make sure that the gear unit is securely installed on the drive to avoid sudden shocks and vibrations. The **torque arm must be installed in tension** to avoid sudden jerks on drive start-up.

Viscosity of oil for various ambient temperatures and reducer **input** speeds are shown below:-

Ambient Temp deg. C	Viscosity (mm ² /s (cSt) at 40 deg. C)	
	Input speed r.p.m.	
	500 to 1,000 r.p.m.	1,000 to 2,000
-10 to + 5	VG 100	VG 100
0 to + 40	VG 320	VG 220
+35 to + 45	VG 460	VG 320

Recommended Synthetic Oils :-

BP EnerSyn HTX	Castrol AlphaSyn T - range	Esso	Kluber Klubersynth Gh6	Mobil SHC SHC-XMP	Shell Tivela WA / WB
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Recommended Mineral Oils :-

BP Energol GR-XP	Castrol Alpha ZN / SP	Esso Spartan EP	Kluber Kluberoil GEM 1	Mobil Mobilgear	Shell Omala
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Casing Bolt Size	M8	M10	M12	M16
Tightening Torque (Nm)	25 Nm	50 Nm	85 Nm	215 Nm

Maintenance:-

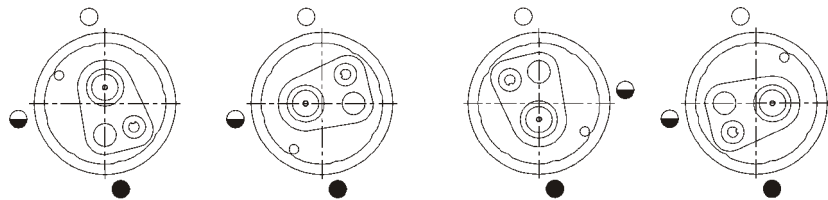
Running in Period : After 500 hours drain oil and refill.
Synthetic Oil : Replace every 12,000 hours use.
Mineral Oil : Replace every 2,500 hours use.

Quantity of lubricant and position of breather, sight glass and drain plug are shown in diagrams and table below:-

Mounting Positions

Key

- Filling / Breather Plug
- Sight Glass
- Drain Plug



Backstop Installation

- ✱ Drain off oil from gear unit, if filled.
- ✱ Remove backstop cover on the intermediate stage.
- ✱ Fit the bush on the intermediate pinion shaft with a key.
- ✱ Gear Unit sizes BT40 to BT50 require a hardened ring to be fitted into the backstop cover. Other sizes have hardened backstop covers, supplied separately in the backstop kit.
- ✱ Take the sprag clutch and fit it in the backstop cover. Use a gasket on the backstop cover.
- ✱ Feed assembly into the intermediate stage while rotating the input shaft.
- ✱ Determine the direction of rotation while inserting the assembly.

Oil Quantity (Liters)

BT35	BT40	BT45	BT50	BT60	BT70	BT80	BT100	BT123
1.1	1.8	3.5	7.2	10	14	11	18	0.5

Comprehensive Shaft Mount Range



Involute Powergear Pvt. Ltd.

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