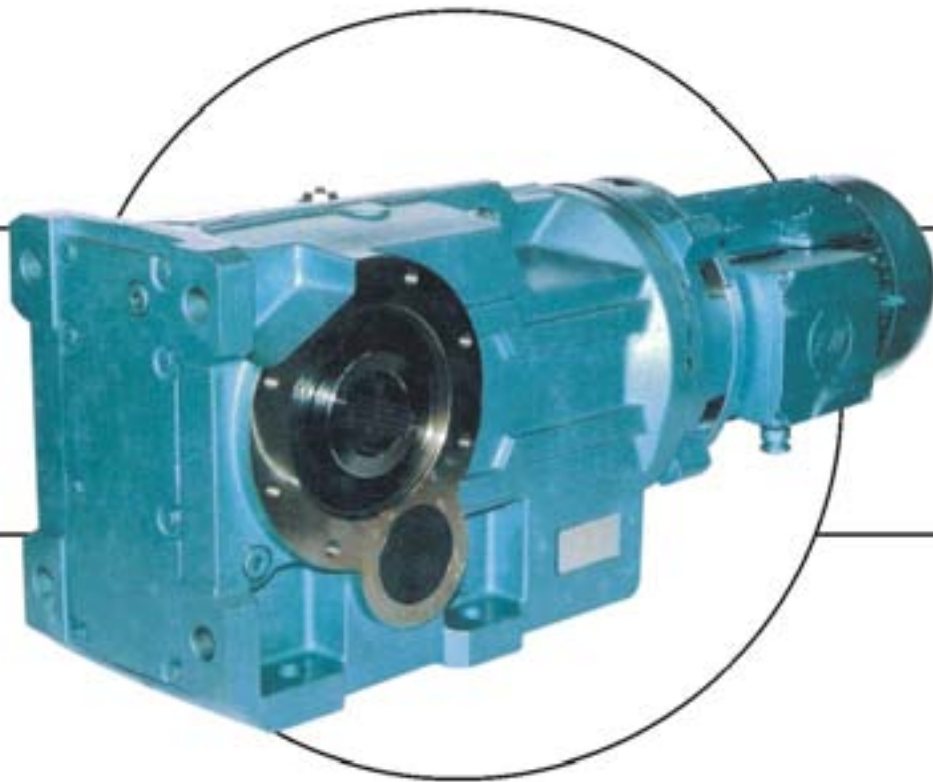


**Series K**



# **INSTALLATION & MAINTENANCE**



**POWER BUILD LIMITED**



**IMPORTANT**

**Product Safety Information**

**General** - The following information is important in ensuring safety. It **must** be brought to the attention of personnel involved in the selection of Power Build Limited equipment, those responsible for the design of the machinery in which it is to be incorporated and those involved in its installation, use and maintenance.

Power Build Limited equipment will operate safely provided it is selected, installed, used and maintained properly. As with any power transmission equipment **proper precautions must** be taken as indicated in the following paragraphs, to ensure safety.

**Potential Hazards** - these are **not** necessarily listed in any order of severity as the degree of danger varies in individual circumstances. It is important therefore that the list is studied in its entirety:-

- 1) Fire/Explosion
  - (a) Oil mists and vapour are generated within gear units. It is therefore dangerous to use naked lights in the proximity of gearbox openings, due to the risk of fire or explosion.
  - (b) In the event of fire or serious overheating (over 300 °C), certain materials (rubber, plastics, etc.) may decompose and produce fumes. Care should be taken to avoid exposure to the fumes, and the remains of burned or overheated plastic/rubber materials should be handled with rubber gloves.
- 2) Guards - Rotating shafts and couplings must be guarded to eliminate the possibility of physical contact or entanglement of clothing. It should be of rigid construction and firmly secured.
- 3) Noise - High speed gearboxes and gearbox driven machinery may produce noise levels which are damaging to the hearing with prolonged exposure. Ear defenders should be provided for personnel in these circumstances.
- 4) Lifting - Where provided (on larger units) only the lifting points or eyebolts must be used for lifting operations (see maintenance manual or general arrangement drawing for lifting point positions). Failure to use the lifting points provided may result in personal injury and/or damage to the product or surrounding equipment. Keep clear of raised equipment.
- 5) Lubricants and Lubrication
  - (a) Prolonged contact with lubricants can be detrimental to the skin. The manufacturer's instruction must be followed when handling lubricants.
  - (b) The lubrication status of the equipment must be checked before commissioning. Read and carry out all instructions on the lubricant plate and in the installation and maintenance literature. Take notice of all warning tags. Failure to do so could result in mechanical damage and in extreme cases risk of injury to personnel.
- 6) Electrical Equipment - Observe hazard warnings on electrical equipment and isolate power before working on the gearbox or associated equipment, in order to prevent the machinery being started.
- 7) Installation, Maintenance and Storage
  - (a) In the event that equipment is to be held in storage, for a period exceeding 6 months, prior to installation or commissioning, Power Build Limited must be consulted regarding special preservation requirements. Unless otherwise agreed, equipment must be stored in a building protected from extremes of temperature and humidity to prevent deterioration.  
The rotating components (gears and shafts) must be turned a few revolutions once a month (to prevent bearings brinelling).
  - (b) External gearbox components may be supplied with preservative materials applied, in the form of a "waxed" tape overwrap or wax film preservative. Gloves should be worn when removing these materials. The former can be removed manually, the latter using white spirit as a solvent.  
  
Preservatives applied to the internal parts of the gear units do not require removal prior to operation.
  - (c) Installation must be performed in accordance with the manufacturer's instructions and be undertaken by suitably qualified personnel.
  - (d) Before working on a gearbox or associated equipment, ensure that the load has been removed from the system to eliminate the possibility of any movement of the machinery and isolate power supply. Where necessary, provide mechanical means to ensure the machinery cannot move or rotate. Ensure removal of such devices after work is complete.
  - (e) Ensure the proper maintenance of gearboxes in operation. Use only the correct tools and Power Build Limited approved spare parts for repair and maintenance. Consult the Maintenance Manual before dismantling or performing maintenance work.
- 8) Hot Surfaces and Lubricants
  - (a) During operation, gear units may become sufficiently hot to cause skin burns. Care must be taken to avoid accidental contact.
  - (b) After extended running the lubricant in gear units and lubrication systems may reach temperatures sufficient to cause burns. Allow equipment to cool before servicing or performing adjustments.
- 9) Selection and Design
  - (a) Where gear units provide a backstop facility, ensure that back-up systems are provided if failure of the backstop device would endanger personnel or result in damage.
  - (b) The driving and driven equipment must be correctly selected to ensure that the complete machinery installation will perform satisfactorily, avoiding system critical speeds, system torsional vibration, etc.
  - (c) The equipment must not be operated in an environment or at speeds, powers, torques or with external loads beyond those for which it was designed.
  - (d) As improvements in design are being made continually the contents of this catalogue are not to be regarded as binding in detail, and drawings and capacities are subject to alterations without notice.

The above guidance is based on the current state of knowledge and our best assessment of the potential hazards in the operation of the gear units.

Any further information or clarification required may be obtained by contacting Power Build Limited.



SECTION	DESCRIPTION	PAGE No
1	Unit Identification _____	1
2	General Information _____	2
3	Fitting of Components to Shafts _____	2
4	Weather Protection _____	2
5	Installation	
5.1	Motorised and Reducers _____	3
5.2	Fixing to Customers Equipment _____	3
5.3	Motor Connections _____	3
5.4	Foot Mounted Units _____	4
5.5	Shaft Mounted Units _____	4
5.6	Replacement of Oil Seals _____	4
6	Lubrication and Maintenance	
6.1	Lubrication _____	5
6.2	Periodic Inspection _____	5
6.3	Lubricant Changes _____	5
6.4	Temperature Limitations _____	5
6.5	Grease Lubrication _____	5
6.6	Ventilator _____	5
6.7	Lubrication Quantities _____	5 - 6
7	Starting Up _____	6
8	Operation	
8.1	Noise _____	6
8.2	General Safety _____	6
9	Cleaning _____	6
<b>APPENDIX</b>		
1	Mounting Positions _____	7
	Plug Positions _____	8
	Unit Handings _____	8
2	Three Phase Induction Motor Installation _____	9
3	Shaft Alignment _____	10 - 11
4	Assembly onto Shaft - Customer Shaft Detail _____	12
	Disassembly Method from Shaft _____	13
	Alternative Shaft Fixing Methods _____	13
5	Torque Bracket Fixing _____	14



# SERIES K INSTALLATION AND MAINTENANCE

## 1 UNIT IDENTIFICATION

When requesting further information, or service support quote the following information from the nameplate:

- Unit Type
- Sr. Number

				<b>POWER BUILD LIMITED</b>			
VALLABH VIDYANAGAR-388120				GUJARAT-INDIA			
UNIT TYPE							
Sr. No.				OIL GRADE			
INPUT KW				ASSEMBLY POSITION			
RATIO				OUTPUT RPM			

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
*	K																			
Example	K	0	8	3	2	5	0	.	B	M	C	-	1	D	.	1	8	A	-	-

### 20 - Additional Gearbox Features

Double Oil Seal, Motorised Backstop Etc

eg   F

### 1 - Series K

Range  K

### 2, 3 - Size of Unit

0  3 Through  1  2

### 4 - No of Reductions

3 Through  5

### 5 - Revision Version

2 For Sizes 03 to 08  
 1 For Sizes 09 to 12

### 6, 7, 8 - Nominal Overall Ratio

eg  5  0  .

### 9 - Unit Version

Standard Unit with Feet  B

STD Unit with Output Flange  F on Left \*\*  H on Right \*\*

STD Unit with Torque Bracket  T on Left \*\*  Q on Right \*\*

### 10 - Type of Unit

- M - Motorised with IEC standard motor
- G - Unit to allow fitting of IEC Standard motor
- R - Reducer unit
- S - Reducer unit with fan kit
- W - Reducer unit with backstop CCW rotation
- X - Reducer unit with backstop CW rotation
- Y - Reducer unit with fan and backstop CW rotation
- Z - Reducer unit with fan and backstop CCW rotation

\* This Page May Be Photocopied Allowing The Customer To Enter Their Order

\*\* Looking on Inputshaft Mounting Position 1

### 19 - Additional Motor Features

eg   A

For Types Without Motor Enter  -

### 18 - No of Motor Poles

- No motor

4 Pole (Std) 1500 rpm  A <sup>50 Hz</sup>

6 Pole (Std) 1000 rpm  C

2 Pole 3000 rpm  E

8 Pole 750 rpm  G

S Dual speed or special motor

### 15, 16, 17 - Geared Motor Powers

Motor Power Required

eg  .  7  5

For reducer and non standard

motor types enter  -  -  -

### 13, 14 - Mounting Position

eg  2  B

### 12 - Motor Adaptor For Unit Types Column 10 Entries M or G

For All Other Types Enter  -

### 11 - OUTPUT SHAFT

Standard Single Extension  C on Left \*\*  E on Right \*\*

Standard Double Extension  D

Extended Shaft for Flange Mounted Units  F

Standard Hollow Shaft  H



**2 GENERAL INFORMATION**

The following instructions will help you achieve a satisfactory installation of your Power Build Limited Series K unit, ensuring the best possible conditions for a long and trouble free operation.

All units are tested and checked prior to despatch, a great deal of care is taken in packing and shipping arrangements to ensure that the unit arrives at the customer in the approved condition.

**3 FITTING OF COMPONENTS TO EITHER THE UNIT INPUT OR OUTPUT SHAFT**

The input or output shaft extension diameter tolerance is to ISO tolerance k6 (for shaft diameter ≤ 50mm) and m6 (for shaft diameter > 50mm) and the fitted components should be to ISO tolerance M7 (for bore diameter ≤ 50mm) and K7 (for bore diameter > 50 mm).

- Clean shaft extensions.
- Items (such as gears, sprockets, couplings etc) should not be hammered onto these shafts since this would damage the shaft support bearings.
- The item should be pushed onto the shaft using a screw jack device fitted into the threaded hole provided in the end of the shaft.
- Items being fitted may be heated to 80/100°C to aid assembly further.

THREADED HOLE DETAILS

UNIT SIZE	INPUT SHAFT	OUTPUT SHAFT
K0332	M5 x 0.8, 12 deep	M10 x 1.5, 22 deep
K0432	M5 x 0.8, 12 deep	M12 x 1.75, 28 deep
K0532	M6 x 1.0, 16 deep	M16 x 2, 36 deep
K0632	M6 x 1.0, 16 deep	M16 x 2, 36 deep
K0732	M8 x 1.25, 19 deep	M16 x 2, 36 deep
K0832	M10 x 1.5, 22 deep	M20 x 2.5, 42 deep
K0931	M12 x 1.75, 28 deep	M20 x 2.5, 42 deep
K1031	M16 x 2.0, 36 deep	M20 x 2.5, 42 deep
K1231	M20 x 2.5, 42 deep	M24 x 3, 55 deep

**4 WEATHER PROTECTION OF UNIT**

All Series K units are provided with protection against normal weather conditions. Where units are to operate in extreme conditions, or where they are to stand for long periods without running, eg during plant construction, we should be notified when ordering so that arrangements for adequate protection can be made.



**5 INSTALLATION**

**5.1 MOTORISED AND REDUCERS (SIZES 03, 04, 05, 06 & 07)**

Motorised and Reducer types of sizes 03, 04, 05, 06 & 07 are supplied ready filled with the appropriate amount of lubricant for the mounting position identified in the original order. (If the unit is to be mounted in a different position to that originally intended then the amount of lubricant in the unit will require amending

- See Lubrication Section 6 for the revised quantities
- Sizes K06 & K07 have several oil fill and drain plugs to cater for all mounting positions. See Appendix 1 for plug positions.

**MOTORISED AND REDUCERS (SIZES 08, 09, 10, 13 & 14)**

Motorised and Reducer types of sizes 08, 09, 10 & 12 are shipped less oil, for the customer to fill on site once installed. The different mounting positions are indicated in Appendix 1 with the appropriate oil fill quantities in Lubrication Section 6. The units have several oil fill and drain plugs to cater for all mounting positions. See Appendix 1 for plug positions.

**5.2 FIXING TO CUSTOMER EQUIPMENT**

Fixing gear unit flange facings or feet to the customer's equipment use set screws to ISO grade 8.8 minimum.

Torque tighten to:-

Set Screw Size	Tightening Torque	
	Holding Down Bolts / Output Flange Bolts	Motors to Gearhead
M6	10 Nm	10 Nm
M8	25 Nm	18 Nm
M10	50 Nm	37 Nm
M12	85 Nm	64 Nm
M16	200 Nm	150 Nm
M20	350 Nm	260 Nm
M24	610 Nm	-
M30	1220 Nm	-
M36	2150 Nm	-

**5.3 MOTOR CONNECTIONS**

**TO MAINS**

Connection of the electric motor to the mains supply should be made by a qualified person. The current rating of the motor will be identified on the motor plate, and correct sizing of the cables to electrical regulations is essential.

**MOTOR TERMINAL CONNECTION**

Circuit diagrams for the correct wiring of the motor terminal box are included as Appendix 2 of this document if the motor is of Power Build Limited plating.

Alternatively if the motor is supplied separately or if fitted with a motor from a different manufacturer, then this should have appropriate documentation provided with it.



**5.4 FOOT-MOUNTED UNITS**

The following procedure is recommended for all foot mounted units.

Foot mounted units are supplied either as free standing units, or if required, mounted on a standard baseplate with a foot mounted motor correctly aligned and connected by a Power Build Limited flexible coupling.

- a) Clean shaft extensions and ventilator when fitted.
- b) Secure unit, or baseplate if fitted to a rigid foundation using heavy duty bolts to ISO grade 8.8 minimum.
- c) Ensure baseplate is not distorted  
Note: Units not supplied on baseplates should if possible be mounted on the same bedplate as the prime mover.
- d) Align unit (see Appendix 3)  
Note: It is important to ensure when aligning unit on baseplate that all machined mounting points are supported over their full area.  
If steel packings are used these should be placed either side of the foundation bolt as close as possible. During the finale bolting ensure the unit or baseplate is not distorted this will cause strains in the gear case resulting in errors of alignment of shafts and gearing.
- e) For units mounted on bedplates after alignment select any two diagonally opposite feet, drill ream and dowel in position.
- f) Fit guards in accordance with the factory acts.
- g) Check motor wiring for correct direction of rotation this is important when a backstop device is fitted.
- h) Fill gear unit with oil (if not factory filled) as detailed in Section 6.

**5.5 SHAFT MOUNTED UNITS**

The following procedure is recommended for all shaft and foot/shaft mounted units with a standard output bore for other shaft bore options see Appendix 5 for Kibo Bush, Appendix 6 for Taper Release and Appendix 7 for Shrink Disc.

- a) Clean shaft extensions and output line bore of the unit.
- b) Spray the gear unit bore with Rocol DFSM anti fretting compound or similar.
- b) Locate the unit in position onto the head shaft by the most convenient method shown in Appendix 4, ensuring it is as close as possible to the bearing on the driven machine.
- c) Anchor the unit to a secure point on the structure by means of the torque arm (reference Appendix 8 for more detail).
- d) Fit guards in accordance with the factory acts.
- e) Check motor wiring for correct direction of rotation this is important when a backstop device is fitted.
- f) Fill gear unit with oil (if not factory filled) as detailed in Section 6.

**5.6 REPLACEMENT OF OIL SEALS**

- a) Clean and drain the unit.
- b) Remove any equipment from the outputshaft such as couplings and remove the output key.
- c) Remove the old seal
- d) Smear oil seals with grease (NLGI Grade 2 grease).
- e) Fit replacement seal on a seal guide, slide it along the shaft and press the seal into the housings.
- f) Fill with the correct amount of an approved lubricant, see Lubrication Section 6.



**6 LUBRICATION AND MAINTENANCE**

**6.1 LUBRICATION**

Gear units 03, 04, 05, 06 & 07 will be supplied filled with a quantity of EP mineral oil (TPT Grade 6E) appropriate to the intended mounting position. However if, as requested, the unit is supplied without lubricant then the oil quantity required is obtained from Table 2. Gear units 08, 09, 10 & 12 are supplied without lubricant (unless factory filled by request). Recommended lubricants are listed in the Approved Lubricant scheme booklet.

NOTE: Clients wishing to use food compatible or biodegradable lubricants should contact Power Build Limited for further information.

**6.2 PERIODIC INSPECTION**

Check oil level every 3000 hours or 6 months whichever is sooner on sizes K06, 07, 08, 09, 10 and 12 and if necessary top up with the recommended grade of lubricant.

**6.3 OIL CHANGES**

- Sizes 03, 04 and 05 units are lubricated for life.
- All other sizes of Series K will require an oil change:
  - 10,000 hours for mineral oil
  - 20,000 hours for synthetic oil

**6.4 TEMPERATURE LIMITATIONS**

The standard lubricant is suitable for operation in ambient temperatures of 0° to 35°C, outside of this consult Table 1 or Power Build Limited Application Engineers.

**TABLE 1 OIL GRADES**

LUBRICANT	AMBIENT TEMPERATURE RANGE		
	-5°C to 20°C (type E) -30°C to 20°C (type 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 with EP additive (type H)	5H (VG 220)	5H (VG 220)	6H (VG 320)

**6.5 GREASE LUBRICATION**

Where re-greasing points are provided add 2 shots monthly of NLGI 2 grade grease.

**6.6 VENTILATOR**

If a ventilator plug is supplied with the unit, remove the filler plug as indicated in Appendix 1, mounting positions page, and fit the ventilator plug in that position.

**6.7 LUBRICATION QUANTITIES**

**TABLE 2 LUBRICANT QUANTITY (Litres) TRIPLE REDUCTION**

K03, K04 & K05 - fill with correct quantity of lubricant

K06, K07, K08, K09, K10 & K12 - fill gearbox until oil escapes from level plug hole

TRIPLE REDUCTION										
Unit Size		K0332	K0432	K0532	K0632	K0732	K0832	K0931	K1031	K1231
MOUNTING POSITION	1	0.8	1.0	1.5	1.7	3.5	4.5	8.8	14	22
	2	1.0	1.3	1.85	2.8	5.8	8.0	15	24	36
	3	1.0	1.3	1.85	2.8	5.8	8.0	15	24	36
	4	1.3	1.7	2.4	3.3	6.8	9.1	17.5	28.6	41
	5	1.7	2.2	3.1	4.2	8.7	10.4	20.9	33	49
	6	1.0	1.3	1.9	2.9	5.8	9.1	16.3	25.6	35.9





**TABLE 3 LUBRICANT QUANTITY (Litres) QUINTUPLE REDUCTION**

QUINTUPLE REDUCTION					
Unit Size	K0652		K0752		
	* Primary	Secondary	* Primary	Secondary	
	M0420	K0632	M0420	K0732	
MOUNTING POSITION	1	0.6	1.7	0.6	3.5
	2	0.6	2.8	0.6	5.8
	3	0.6	2.8	0.6	5.8
	4	0.6	3.3	0.6	9.1
	5	1.4	4.2	1.4	10.4
	6	1.6	2.9	1.6	9.1

QUINTUPLE REDUCTION									
Unit Size	K0852		K0951		K1051		K1251		
	* Primary	Secondary	* Primary	Secondary	* Primary	Secondary	* Primary	Secondary	
	M0620	K0832	M0620	K0931	M0720	K1031	M0820	K1231	
MOUNTING POSITION	1	1.7	4.5	1.7	8.8	2.8	14.0	4.6	22.0
	2	1.7	9.3	1.7	15.0	2.8	24.0	4.6	36.0
	3	1.7	6.2	1.7	15.0	2.8	24.0	4.6	36.0
	4	1.7	9.1	1.7	17.5	2.8	28.6	4.6	41.0
	5	3.5	10.4	3.5	20.9	5.2	33.0	10.0	49.0
	6	3.2	9.1	3.2	16.3	6.0	25.6	9.6	35.9

\* NOTE: Primary units filled with Power Build Limited Grade 6E lubricant suitable for all ambient temperatures between 0°C and 35°C

## **7 STARTING UP**

### **7.1 PRIOR TO STARTING UP**

- a) ensure ventilator is fitted (K06 & above)
- b) check oil level (K06 & above) top up if necessary
- c) ensure all safety devices are in place (ie guards fitted)
- d) remove any safety devices fitted to prevent machine rotation

### **7.2 Starting up should be performed or supervised by suitably qualified personnel**

Caution: any deviation from normal operating conditions, (increased temperature, noise, vibrations, power consumption etc) suggest a malfunction, inform maintenance personnel immediately.

## **8 OPERATION**

### **8.1 NOISE**

The range of Series K product satisfies a noise (sound pressure level) of 85 dB(A) or less when measured at 1 metre from the unit surface.

Measurements taken in accordance with B.S.7676 Pt1 : 1993 (ISO 8579-1 : 1993).

### **8.2 GENERAL SAFETY**

Potential hazards which can be encountered during installation, maintenance and operation of drives is covered in greater detail in the product safety page at the front of this booklet.

Advice is also given on sensible precautions which need to be taken to avoid injury or damage.

**PLEASE READ !**

## **9 CLEANING**

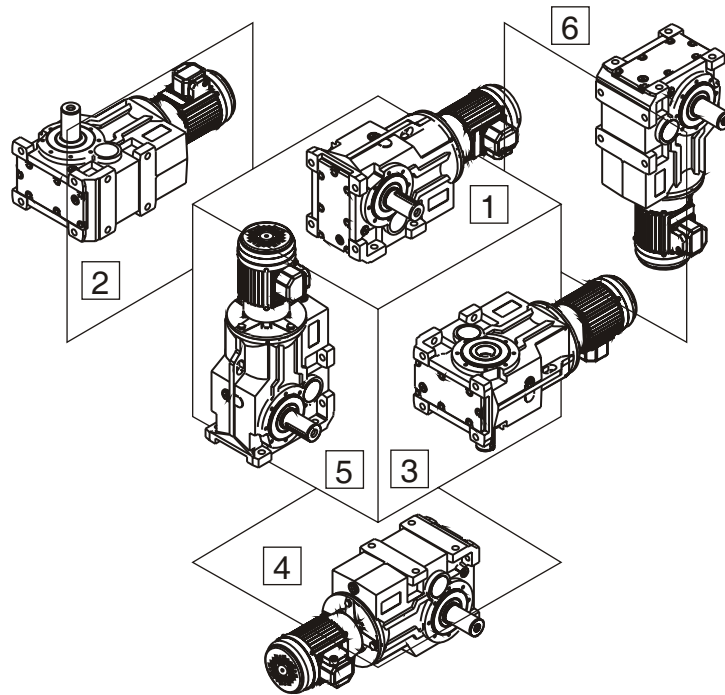
With the drive stationary periodically clean any dirt or dust from the gear unit and the electric motor cooling fins and fan guard to aid cooling.

Any further information or clarification required may be obtained by contacting Power Build Limited, Please see contact details at the back of this booklet.

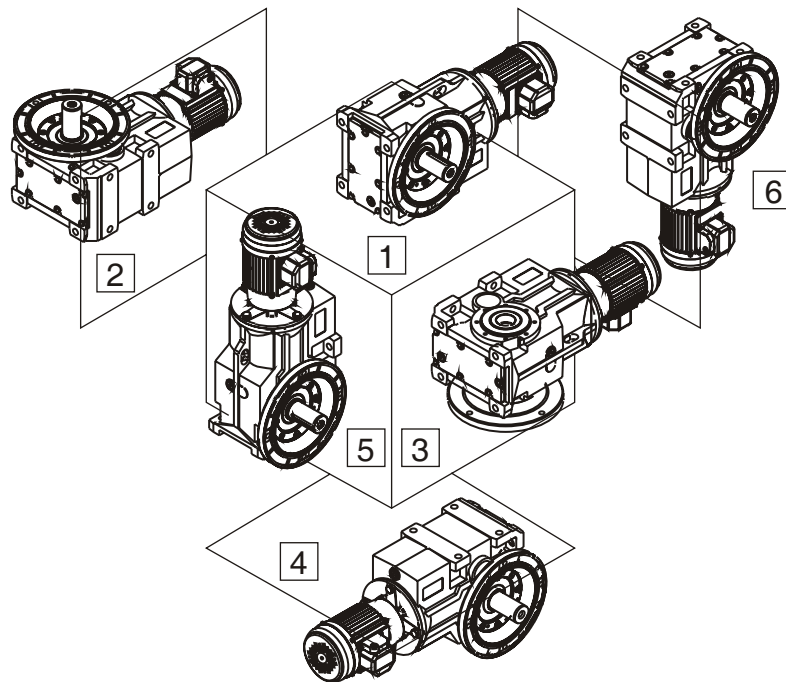


**COLUMN 13 ENTRY**

**Base Mounted Units**



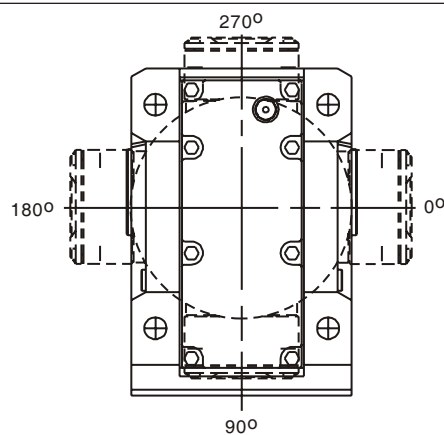
**Flange Mounted Units**



**MOUNTING POSITIONS - SHOWN AS MOTORISED - APPLIES ALSO FOR REDUCERS**

**COLUMN 14 ENTRY**

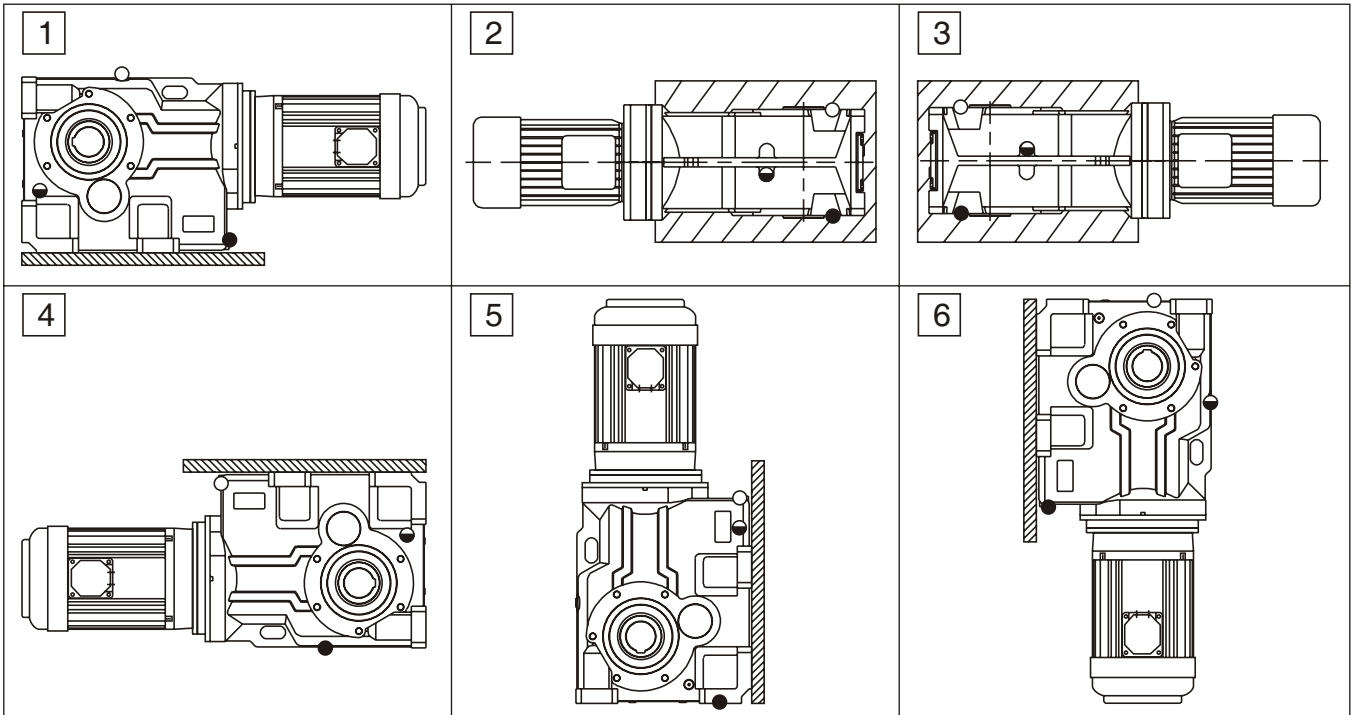
ALL MOTORS



Column 14 Entry	Terminal Box Position
A	0°
B	90°
C	180°
D	270°
-	Reducer or no motor fitted



PLUG POSITIONS



- Ventilator / Filling Position
- ◐ Level Position
- Drain Position

UNIT HANDINGS

Column 9 Entry Unit Version	Left	Right
Std Unit with Output Flange	F	H
Std Unit with Torque Bracket	T	Q

Column 11 Entry	Metric	
	Left	Right
Single Output Shaft	C	E
Double Output Shaft	D	
Hollow Shaft	H	
Kibo	Column 11 entry depends on shaft bore diameter, please see page 15	
Taper Release	W	V
Shrink Disc	X	Y

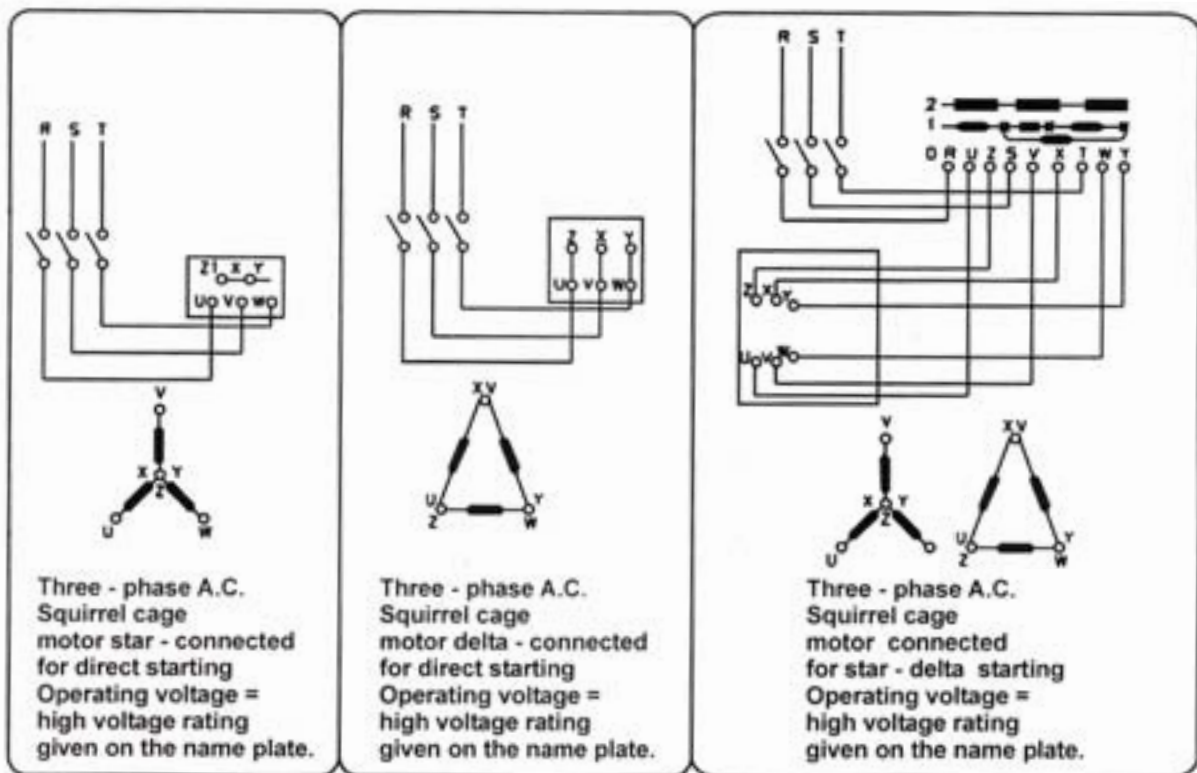
**Connetion to Power System**

All geared motors are factory-adjusted for maximum voltage if not stipulated otherwise. Make sure that the voltage on the installation site coincides with that indicated on the rating plate of the motor. The direction of rotation may be changed by interchanging two phases of the mains.

The geared motors are connected to the power supply system like any other three-phase A.C. Motors. There are no special instructions for Geared Motors beyond applicable for standard electric motors. The feed lines should be of sufficient diameter to avoid any notable drop of voltage upon starting the geared motors.

It is advisable to fit a protective motor switch with adjustable overload relays. This switch, which is adjusted to the motor rating, cuts out all three phases in case of overload or failure of one phase. The normal fuses can not give sufficient overload protection.

The connection diagram given below shows the usual types of connection of three phase A.C. Squirrel cage motors.



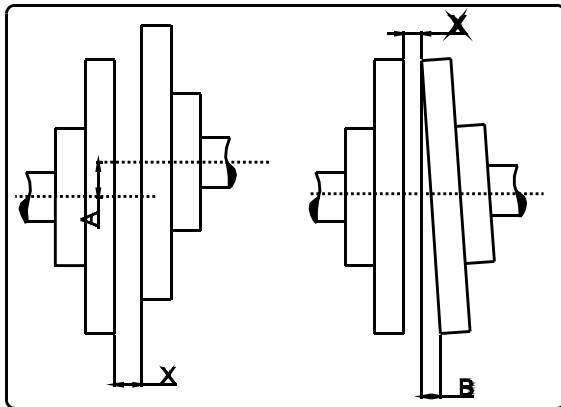
Geared Motors with pole and voltage changing system as well as motors for braking gears are provided with special connection diagrams which will be found on the inside of the terminal box of each motor.

**Connection with the Driven Machine**

Since output shaft (low-speed shaft) and input shaft (high-speed shaft) are protected with rust preventive coating, remove it with thinner or a similar solvent.

**1. Direct Connection**

- (a) When the input shaft of the driven machine and the output shaft (low-speed shaft) of the geared motor/reducer are coupled directly, use a “flexible coupling” and make sure that both ends are in alignment. (Refer to Fig. 1.)



<b>Allowance of Dimension A</b>	<b>0.05 mm</b>
<b>Allowance of Dimension B</b>	<b>0.04 mm</b>
<b>Dimension X</b>	<b>Specified by coupling maker</b>

Fig. 1 Accuracy of alignment of direct coupling connection

2. When the machine is driven by V-belt, chain or gearing.

Make arrangement to ensure that the shaft of driven machine and that of geared motor/reducer is positioned parallel. When the machine is driven by V-belt or chain, ensure that the center distance is not too long by setting the proper distance and belt and chain are stretched at right angle. When the machine is driven by gearing, geared motor/reducer should be installed setting up the accurate center distance and avoiding partial bearing of gears, and the output shaft is pushed downward.

- (a) Point of load application on the output shaft :

When load (overhung load) is applied on the tip of the shaft, it may cause damage to the shaft. The gearing or chain sprocket wheel must be mounted such that the point of load application is as near as possible to the face of the unit to minimize overhung load.

- (b) Tension of chain:

When using chain, it is necessary to give suitable slack to chain. If the tension of chain is too loose, excessive shock will be generated at starting or load fluctuations, which may damage both the geared motor/reducer and the driven machine. Generally, the recommended amount of slack is 2% of span distance. (Refer to Fig. 2.)

**CONNECTION WITH THE DRIVEN MACHINE**

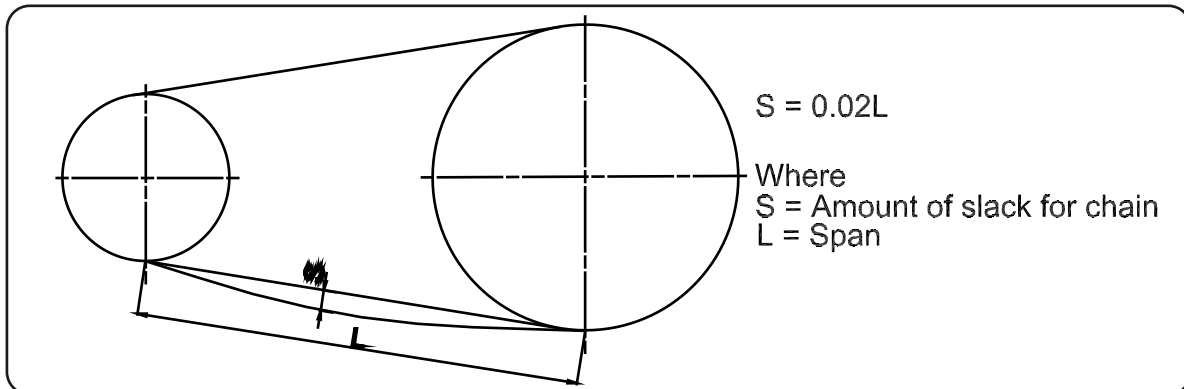


Fig. 2

(c) Layout of chain driving:

When using chain horizontally for connection with the drive and the driven machine, arrange shafts so as to give tension to the upper side of chain. Shaft arrangement of vertical transmission is not recommended, however, if necessary, the large wheel should be positioned at lower end.

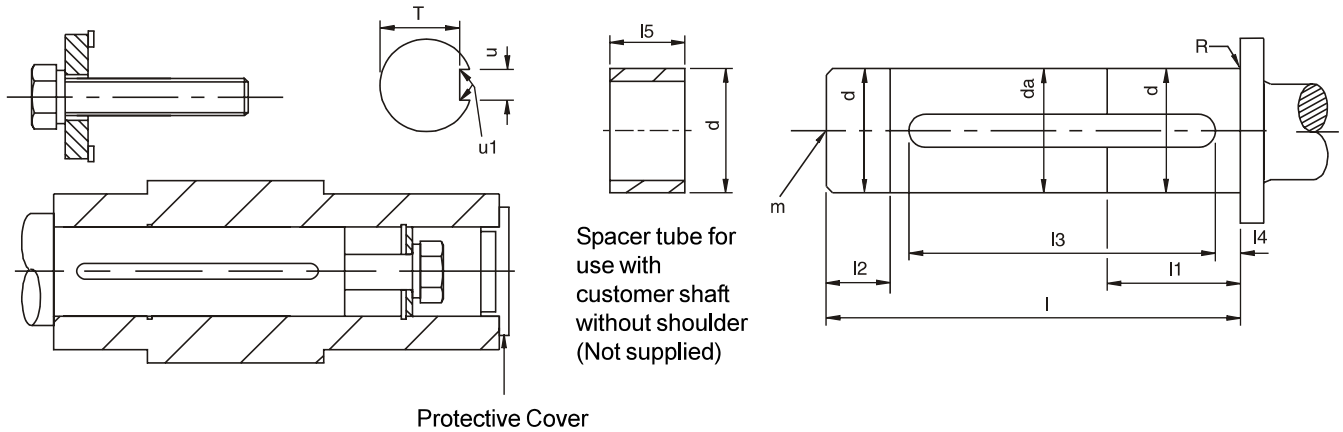
(d) When load (overhung load) is applied on the output shaft, please make sure that it is within the limit of allowable value. Allowable value of overhung load is shown in graph of catalogue.

**3. Dimension of keyway**

Dimension of the shaft end keyway is in accordance with DIN 6885.



**ASSEMBLY ONTO SHAFT - CUSTOMERS SHAFT DETAIL**



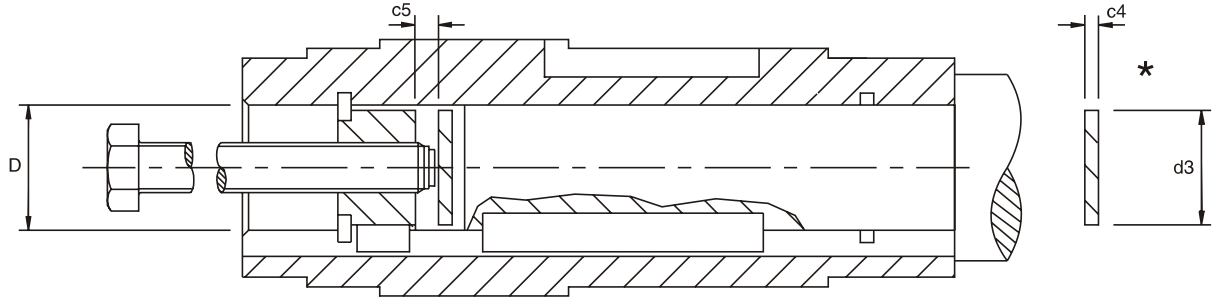
SIZE	d	da	l	l1	l2	l3	l4	l5	m	N	R	T	u	u1
<b>K03</b>	29.993/	29.6	82	45	15	70.3	3	23	M10 x 1.5 22 deep	15 Nm	0.8R	26.0	8.000 /	0.16
	29.980					70.0						25.8	7.964	0.25R
<b>K04</b>	34.991/	34.6	109	60	20	90.5	3	23	M12 x 1.75 30 deep	20 Nm	0.8R	30.0	10.000 /	0.16
	34.975					90.0						29.8	9.964	0.25R
<b>K05</b>	39.991/	39.6	112	60	20	92.5	3	30	M16 x 2 38 deep	45 Nm	0.8R	35.0	12.000 /	0.4
	39.975					92.0						34.8	11.957	0.25R
<b>K06</b>	39.991/	39.6	126	75	25	100.5	3	30	M16 x 2 38 deep	45 Nm	0.8R	35.0	12.000 /	0.4
	39.975					100.0						34.8	11.957	0.25R
<b>K07</b>	49.991/	49.6	153	90	30	130.5	3	30	M16 x 2 38 deep	45 Nm	0.8R	44.5	14.000 /	0.4
	49.975					130.0						44.3	13.957	0.25R
<b>K08</b>	59.990 /	59.6	173	90	143	148.5	3	37	M20x 2.5 42 deep	85 Nm	0.8R	53	18.000 /	0.4
	59.971					148.0						52.8	17.957	0.25R
<b>K09</b>	69.990 /	69.6	232	105	197	161.5	3	38	M20 x 2.5P 42 deep	85 Nm	0.8R	62.5	20.000 /	0.6
	69.971					161.0						62.3	19.948	0.4R
<b>K10</b>	79.990 /	79.6	275	120	235	188.5	5	37	M20 x 2.5P 42 deep	85 Nm	0.8R	71	22.000 /	0.6
	79.971					188.0						70.8	21.948	0.4R
<b>K12</b>	99.988/	99.6	327	150	277	238.5	10	46	M24 x 3 50 deep	200 Nm	0.8R	90	28.000/	0.4
	99.966					238.0						89.8	27.948	0.4R

**Assembly Instructions**

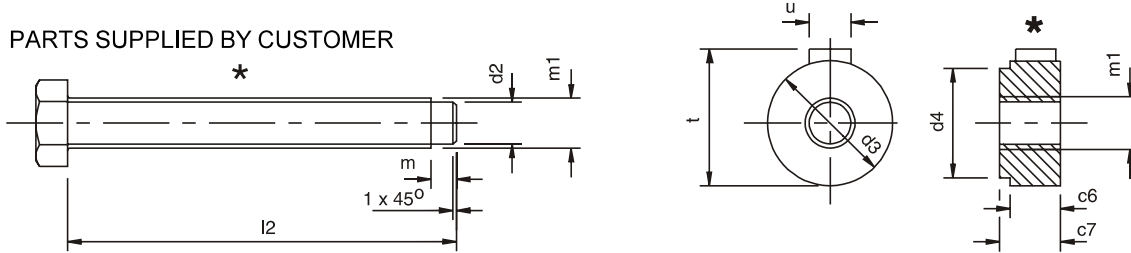
1. Spray the hollow shaft bore and mating diameter of the output shaft with Rocol DFSM or equivalent anti-scuffing spray.
2. Fit key into shaft.
3. Fit the circlip into the output sleeve.
4. Fit the spacer tube only if the output shaft has no shoulder, then fit the output shaft into the output sleeve.
5. Secure in place with the washer and bolt. Torque tighten to the values stated in column N of the above table.
6. Fit plastic protective cover.

**APPENDIX 4 - STANDARD DISASSEMBLY / ALTERNATIVE SHAFT FIXING METHODS**

**DISASSEMBLY METHOD FROM SHAFT**

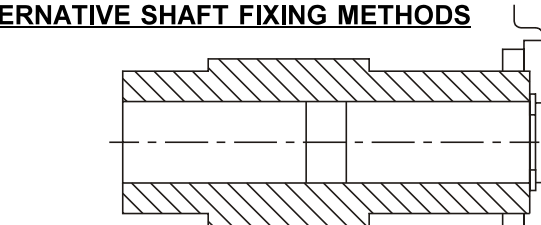


\* PARTS SUPPLIED BY CUSTOMER

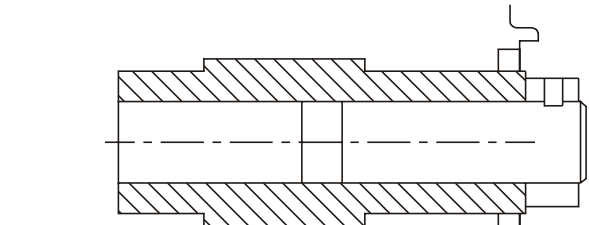


SIZE	c4	c5	c6	c7	D	d2	d3	d4	l2	m	m1	t	u1
K03	5	3.00	15	17	30	13	29.9	20.8	130	3	M16 x 1.5	33	8
K04	5	3.00	15	17	35	13	34.9	25.2	160	3	M16 x 1.5	38	10
K05	5	4.00	20	23	40	20	39.9	29.9	190	3	M24 x 1.5	43	12
K06	5	4.00	20	23	40	20	39.9	29.9	190	3	M24 x 1.5	43	12
K07	5	4.00	20	23	50	20	49.9	39.0	220	3	M24 x 1.5	53.5	14
K08	8	5.00	24	27	60	26	59.9	47.4	250	5	M30 x 1.5	64	18
K09	8	6.05	24	27	70	26	69.9	56.4	310	5	M30 x 1.5	74.5	20
K10	8	6.00	24	27	80	26	79.9	75.3	360	5	M30 x 1.5	95	22
K12	8	8.00	30	34	100	32	99.9	84.1	420	5	M36 x 1.5	116	28

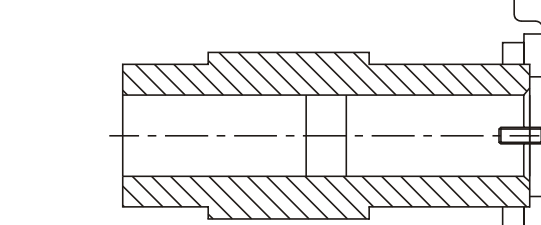
**ALTERNATIVE SHAFT FIXING METHODS**



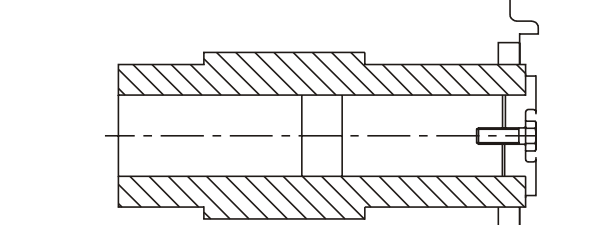
SHAFT MOUNT UNITS RETAINED WITH A CIRCLIP



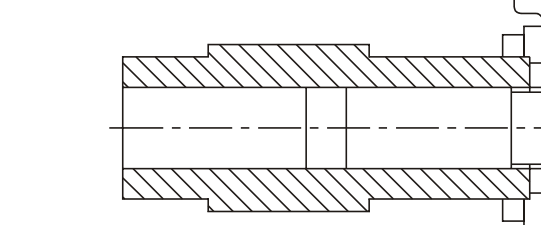
SHAFT MOUNT UNITS RETAINED WITH A COLLAR AND GRUBSCREW



SHAFT MOUNT UNITS RETAINED WITH A BOLT AND PLATE



SHAFT MOUNT UNITS RETAINED WITH A RECESSED PLATE AND BOLT



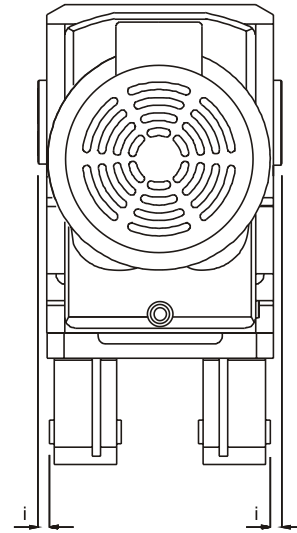
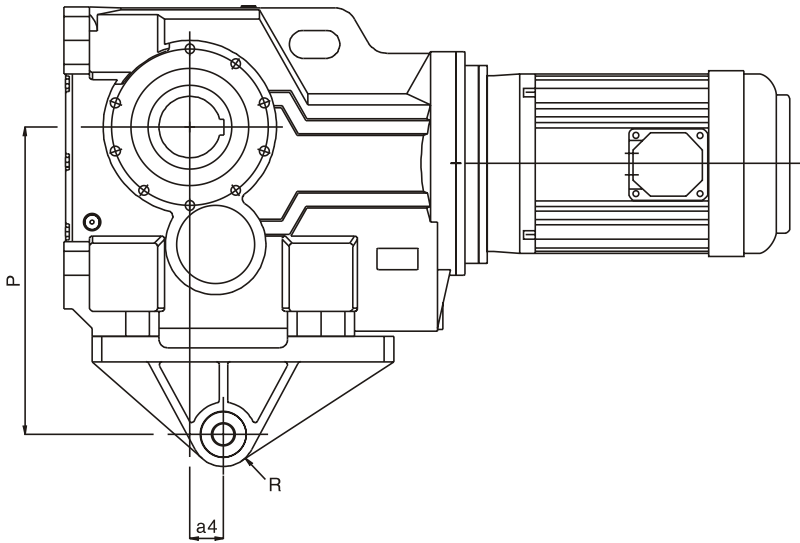
SHAFT MOUNT UNITS RETAINED WITH A LOCKNUT



# SERIES K

## APPENDIX 5

### DIMENSIONS TORQUE BRACKET



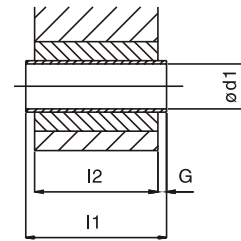
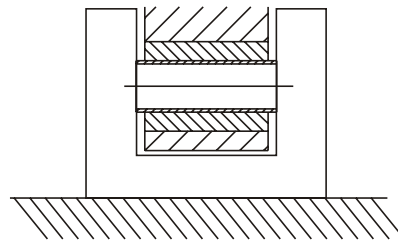
**Column 9 Entry**

**Column 9 Entry**

**T** Torque bracket on left

**Q** Torque bracket on right

The torque arm requires a Stirrup type anchoring



SIZE	a4	d1	G	i	l1	l2	P	R
<b>K03</b>	23.5	10.5 10.3	2	20	36	32	140	20
<b>K04</b>	30	10.5 10.3	2	20	36	32	160	20
<b>K05</b>	40	16.5 16.3	2	18	60	56	192	35
<b>K06</b>	45	16.5 16.3	2	25	60	56	200	35
<b>K07</b>	52.5	16.5 16.3	2	25	60	56	250	35
<b>K08</b>	60	25.25 24.75	5	30	80	70	300	40
<b>K09</b>	70	25.25 24.75	5	40	100	90	350	40
<b>K10</b>	74	25.25 24.75	5	45	100	90	450	40
<b>K12</b>	60	38.25 37.75	8	10	126	110	550	58

**NOTES:**

It is recommended that the torque arm is fitted on the side of the unit adjacent to the driven machine.

The use of a fitted bolt is recommended.



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