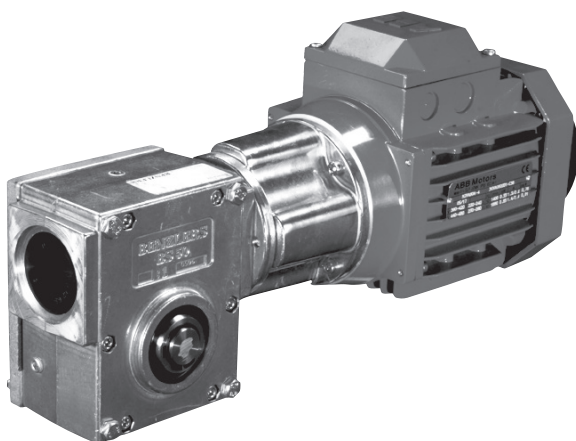


# benzlers

with you at every turn

Series BS


Installation & Maintenance



# radicon

with you at every turn



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# INFORMATION

## 1.1 General information

The following instructions will help you achieve a satisfactory installation of your Benzlers or Radicon gear 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.

Series BS gear units will perform satisfactorily if subjected to full load immediately after installation. However optimum performance is best achieved by a process of gradual load increments, up to the full value, over the first 50 hours or so of their working life. During these early stages of running, sensible temperature may occur over many hours until the unit has reached its highest efficiency.

The gear unit must not be used until the machine it is incorporated in, has been shown to comply with EEC Machinery Directive 2006/42/EC.

## 1.2 Safety warning Symbols

There are four different warning symbols used at the manual to mark out the hazardous moments that may cause risk of human injury or equipment injuries.



**Danger!**  
Could result in serious, slight or minor injuries.



**Electrical Hazard!**  
Could result in death or serious injury.



**Danger (Touch Hazard)**  
Could result in death or serious injury.



**Hot surfaces!**  
Parts of the equipment will become very hot during running and may cause serious burns at contact.

## 1.3 Weather Protection of Unit

All series BS 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, e.g. during plant construction, please consult your local sales office so that arrangements for adequate protection can be made.

Gear units that are installed outdoors or have to work under adverse conditions, for example in hot, dusty or damp premises, must be fitted with appropriate protection. The circulation of air around the gear unit must not be obstructed, however.

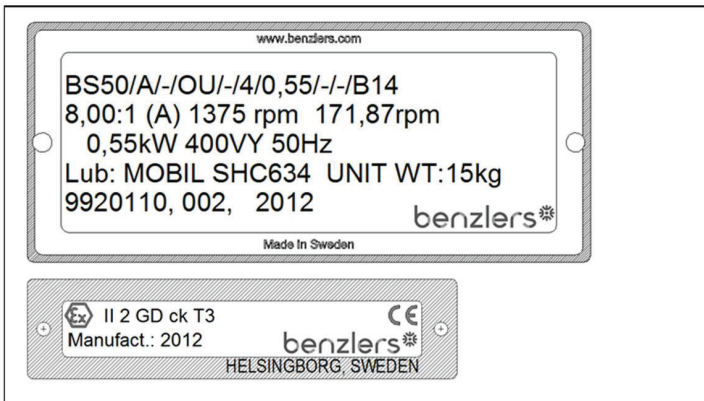
## 1.4 Reading the Nameplate

### 1.4.1 Unit Identification

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

Unit type (Model No.)

Order Number / Year of Manufacture



## 1.5 Lubrication Grade


Series BS worm gear units are supplied lubricated for life. (Factory filled with synthetic lubricant.)

The lubrication grade is marked on the nameplate. See Appendix 4 for type and quantity of lubricant.

# INFORMATION

## 1.6 Marking



Gear units with -marking are especially selected for use as a component of an industrial system operating in a potentially explosive atmosphere.

Provided they are correctly installed in accordance with these instructions (gear units only) they comply with the EU directive 94/9/EC (ATEX 100a).

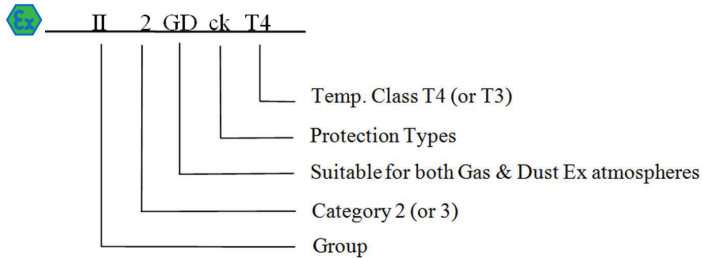
The units must be selected for use in potentially explosive atmospheres classified as Group II Cat 2 (zones 1 & 21) or Group II Cat 3 (zones 2 & 22).

Motors, couplings, or any other equipment fitted to the gear unit must also comply with this directive.

If the gear unit is supplied as a geared motor package it is important to check that the nameplates of the gear unit and the motor (or any other equipment fitted) corresponds with the classification of the potentially explosive atmosphere in which the unit is to be installed.

### 1.6.1 Understanding EU Directive 94/9/EC (ATEX 100a) Markings.

The product will be typically marked as shown:



*Note: Customer to specify Temperature Class T3 or T4, & Category 2 or 3.*

## 2 Installation

### 2.1 Safety Warning



#### **NOTE!**

The customer shall be responsible for the proper use of articles supplied by Benzlers or Radicon, particularly rotating shafts between the driving and driven members, and the provision of safety guarding. They shall not be responsible for any injury or damage sustained as a result of the improper use of the articles supplied.



Attention is hereby drawn to the danger of using naked lights in proximity to openings in gearboxes and gear units supplied by Benzlers or Radicon, and they shall not be liable for any claim for injury or damage arising from any action in contravention of this warning.

### 2.2 Prior to Installation

1. Check that there are no damages at the gear unit.
2. Check that the gear unit and the motor name plate, matches the requirements of the machine the unit is to be installed into.
3. Thoroughly clean the gearbox mounting surfaces that are to be used and the shafts of paint and anti-corrosion agents, using a commercially available solvent. Ensure solvent does not make contact with the oil seals.

### 2.3 Fitting of components to either the unit input or output shaft

The input or output shaft extension diameter tolerance is to ISO tolerance j6 (for shaft diameter  $\leq 40$  mm) and k6 (for shaft diameter  $> 40$  mm). Fitted components should be to ISO tolerance K7.

1. Ensure shaft extensions, bores & keys etc are cleaned.
2. Items (such as gears, sprockets, couplings etc.) should not be hammered onto these shafts since this would damage the shaft support bearings.
3. Items being fitted may be heated to 80/100°C to aid assembly.



#### **NOTE!**

You must absolutely not use any violent forces!

# INSTALLATION

## 2.4 Lifting

The gear motor must never be lifted by the lifting eye on the motor alone.



### **NOTE!**

The gear motor must never be lifted by the lifting eye on the motor alone.

## 2.5 Foot mounted or flange mounted units

1. Ensure the base foundation mounting surface is flat<sup>1</sup>, vibration absorbing and torsionally rigid.

Note! Units on baseplates should, if possible, be mounted on the same bedplate as the prime mover.

2. If a chain sprocket is fitted to the output shaft, the direction of pull should be chosen so that the gear housing is pressed against the foundation.

3. Align unit (See Appendix 1).

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 final bolting ensure the unit or baseplate is not distorted as this would cause strains in the gear case resulting in errors of alignment of shafts and gearing.

Check all mounting points are fully supported and adjust if necessary by using steel packings.

Torque tighten bolts to torque specified in Table 1 below.

4. Secure unit, or baseplate if fitted, to a rigid foundation using heavy duty bolts to ISO grade 8.8 minimum or Class 8.

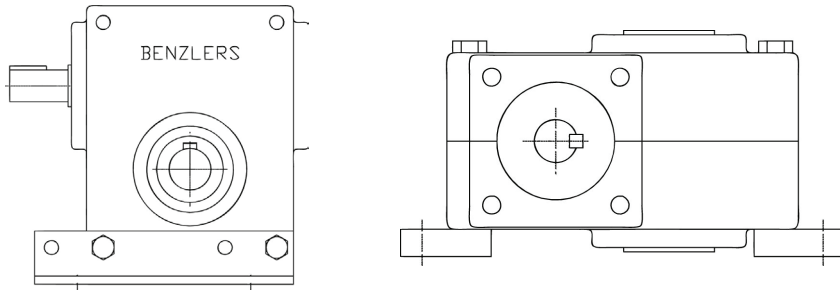
<sup>1</sup>) Maximum permissible flatness error for mounting surface is 0.12 mm.



Set Screw Size	Tightening Torque according to quality class 8.8
	Holding Down Bolts/ Output Flange Bolts
M4	2.8 Nm = 25 Lbf.in
M5	5.5 Nm = 49 Lbf.in
M6	10 Nm = 89 Lbf.in
M8	25 Nm = 221 Lbf.in
M10	50 Nm = 442 Lbf.in
M12	85 Nm = 752 Lbf.in
M16	200 Nm = 1770 Lbf.in

Table 1

## 2.5.1 Foot Mounting



The gear housing for BS40-BS71 with a vertical secondary shaft will have separate feet.

When fitting the angle feet for BS40-BS71, locking washers (DIN 6797) must be fitted to the bolts between the gear housing and the angle feet. When tightened, the gear housing should be pressed against the mating surface of the feet.

## 2.5.2 Flange Mounting

When installing with a secondary flange, you must ensure that no stress is exerted on the gear unit when the flange mounting bolts are tightened.

# INSTALLATION

## Follow the mounting procedure below:

1. Fit the flange or flange adaptor without tightening the bolts.
2. Fit the locking ring for the extra bearing on the shaft.
3. Fix the bearing on the shaft with Loctite 641 or an equivalent before sliding it up against the locking ring.
4. Fit the keys and all locking rings except the outermost locking ring on the shaft.
5. Lubricate the shaft with Molykote BR2 corrosion inhibitor or equivalent before mounting.
6. Fit in the rear locking ring and tighten the bolts to the correct torque, see Table 1, in Section 2.5. If necessary, fit shims between the flange and gear housing. Alignment tolerances must comply with DIN 42955.
7. Fit the connecting ring, if used.

## 2.6 Shaft mounted units

The gear unit is normally mounted on a shaft with tolerance of h6-js6. The hollow shaft has a tolerance of H7.

1. Grease the shaft with Molykote BR2 or an equivalent before fitting the gear unit.



### NOTE!

The gear unit must not be driven onto the shaft with force.

2. Assembly of gear unit on to the machine shaft (See Appendix 2).
3. Anchor gear unit to a secure point on the structure by means of torque arm (See Appendix 2A).

## 2.7 Units for use in a potentially explosive atmosphere

2. Remove all transport fixtures and packings. Check that it has the appropriate - marking prior to start up.



### NOTE!

If the unit has been damaged in transit, do not use.

2. Check name plate of unit corresponds with the sites potentially explosive atmosphere classification.
4. Check ambient temperature falls within lubricant grade recommendations.
5. Make sure no potentially explosive atmosphere exists during installation.
6. Make sure that gear unit is sufficiently ventilated with no external heat input - cooling air temperature should not exceed 40°C.
7. Check motors, couplings or any other equipment fitted to the gear unit has ATEX approval. Check information listed on nameplates correspond to the environmental conditions of the site.
8. Ensure gearbox is not subjected to any loading greater than those marked on the nameplate.
9. For units operated with inverter drives, check motor suitability for use with the inverter. Ensure that the inverter parameters do not exceed those of the motor.
10. For belt driven units, check all belts fitted are of sufficient electrical leakage resistance ( $<10^9\Omega$ ).
11. Ensure gear unit and other equipment is electrically grounded (Earthed).
12. Check and adjust guards and covers so that there is no ignition source from sparks that may be thrown by moving parts making contact with guards etc. Ensure coupling guards, covers etc. are dust tight or are designed in such a way that a buildup of dust deposits cannot form when the unit is used in Zone 21 & Zone 22 classification areas.
13. Units fitted with plastic protection covers are only suitable for Category 3 (Zone 2 & 22).

## **3 Lubrication**

### **3.1 General**

BS40-BS71 gear units are supplied with synthetic oil MOBIL SHC 634. These lubricants are specially suited to worm gears. During normal operation, the lubricant will never require replacement. Ambient temperature range  $\pm 30^{\circ}\text{C}$ .

### **3.2 Ventilator**

Clean and secure the ventilator in the correct location for the required mounting position (See Appendix 4).

### **3.3 Approved lubricants**

#### **3.3.1 Oils**

Mobil SHC 634

# START UP

## 4 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.



### **High voltage!**

Caution when working with the mains.

### Motor terminal connection

Circuit diagrams for the correct wiring of the motor terminal box are included as Appendix 3 of this document 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.

### Motor Fitting

For BS40-BS71 a motor flange and elastic coupling are used.

## 5 Starting Up

### 5.1 Prior to starting up

Starting up should only be performed or supervised by suitably qualified personnel.

1. Ensure ventilator is fitted (if supplied) see lubrication section 3.2
2. Check that oil is topped up.
3. Ensure all safety devices are in place (i.e. guards fitted). Check and adjust guards and covers so that there is no ignition source from sparks that may be thrown by moving parts making contact with guards etc. Ensure coupling guards, covers etc. are dust tight or are designed in such way that a build up of dust deposits cannot form when the unit is used in Zone 21 and Zone 22 classification areas.
4. Remove any safety devices fitted to prevent machine rotation.
5. Units fitted with backstop, ensure motor is correctly wired for free direction of rotation.



### **Caution!**

Any deviation from normal operating conditions (increased temperature, noise, vibrations, power consumption etc.) suggests a malfunction, inform maintenance personnel immediately.

### 5.2 Running-in

The gear unit should be run-in under partial load for the first 10-30 hours. The load can then be gradually increased to full load. If it is not possible to run under partial load, the gear unit should be run for several hours under no load. The gear unit should then be run under load but stopped at regular intervals to cool down. The gear unit can then be considered as fully run-in and ready for normal operation.

Under an increasing load the temperature of the gear unit may exceed ambient temperature by 60-70 °C. The grease temperature and temperature of the gear unit may reach 90 °C without effecting its operation. At higher temperatures special measures must be taken.

Gear units that are not used for a long period should if possible be run for a brief period about once every three months.

## **6 Operation**

### **6.1 Noise**

The range of product satisfies a noise (sound pressure level) of 85 dB(A) or less when measured at 1 meter from the unit surface. Measurements taken in accordance with ISO 8579-1:2002.

### **6.2 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. (See chapter 1 Information).

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

### **6.3 Initial start up for gear units operating in a potentially explosive atmosphere**

After 3 hours of operation check the gear unit surface temperature. This temperature should not exceed 110 degrees. If temperature exceeds this limit, shut down immediately and contact your local sales office.



#### **Hot surfaces!**

The gear unit becomes very hot during operation. Use protective gloves.

# MAINTENANCE

## 7. Maintenance

### 7.1 Prior to any maintenance operations

1. De-energize the drive and secure against unintentional switch-on.
2. Wait until the unit has cooled down.



#### Hot Surfaces!

Danger of skin burns & pressure build-up.

### 7.2 Oil plugs / Ventilator

1. Prior to removing plugs, ensure that the unit has cooled sufficiently so that oil will not burn on units without ventilator.



#### Danger!

Do not stand over plug whilst removing, as pressure build-up may cause it to eject when removed.

2. Place a container below the oil drain plug to be removed.  
*Note!* It is recommended that the oil should be slightly warm (40–50°C) when drained.  
(Cooler oil will be more difficult to drain correctly).
3. Top-ups or refills should be done (where possible) through the ventilator position.
4. Remember to refit all plugs and torque, tighten to Table M1 below.

Plug Size	Tightening Torque
1/8"	10 Nm
1/4"	25 Nm
3/8"	50 Nm

Table M1

5. Clean away any oil spillage.

### 7.3 Maintaining lubrication

#### 7.3.1 Periodic inspection

For units fitted with level indicating device, check the oil level every 1000 hours or 6 months, whichever is sooner and if necessary, top up with the recommended type of lubricant.

## 7.3.2 Oil changes

Smaller BS worm gear units are supplied lubricated for life except for the following conditions: Units that are required to work in explosive atmosphere (94/9/EC ATEX 100a Group II Category 2 Zones 1 & 21 & Category 3 Zones 2 & 22) should be drained and refilled with correct quantity of lubricant in accordance with the renewal period of Table M2. See Appendix 4 for correct oil quantity.

Following factors should be used to determine the frequency at which oil changes are carried out:

- a. Oil temperature – unit operating under load
- b. Type of oil
- c. Environment – humidity, dust, etc.
- d. Operating conditions – shock, loading, etc.

At elevated temperatures the effective life of the oil is very much reduced. To prevent damage to the unit through lubricant breakdown the oil should be renewed as detailed in Table M2.

Unit Operating Temperature °	Renewal Period
	Synthetic Oil
65 or less	26000 Hours or 3 years
70	26000 Hours or 3 years
75	22000 Hours or 3 years
80	15000 Hours or 3 years
85	10500 Hours or 3 years
90	7500 Hours or 2.5 years
95	6000 Hours or 2 years
100	4500 Hours or 18 months
Note! INITIAL FILL OF OIL SHOULD BE CHANGED IN A NEW GEAR UNIT AFTER 1000 HOURS OPERATION OR ONE YEAR OR HALF THE ABOVE LIFE, WHICHEVER IS THE SOONEST	

**Table M1**

*Note!* Figures quoted are for oil temperatures when the unit has attained normal running temperature when operating under load. These figures are based on normal running but where conditions are particularly severe it may be necessary to change the oil more frequently. When changing lubricant, if same lubricant is not used the unit must be flushed out and filled with one type of lubricant.


# MAINTENANCE



## Warning!

Do not mix Synthetic with Mineral lubricants.  
Do not overfill the unit as this can cause leakage and overheating.

### 7.4 Bearings

Bearings should be replaced every 5 years for  marked units.

### 7.5 Oil Seals

Oil seals have dimensions:

Unit	Input Shaft Resp.		Output Shaft
BS 40	20 x 47 x 7	47 x 6.5*)	30 x 47 x 7
BS 50	20 x 47 x 7	47 x 6.5*)	40 x 52 x 7
BS 63	30 x 62 x 10	62 x 7*)	45 x 60 x 8
BS 71	35 x 72 x 10	72 x 9*)	50 x 72 x 8

Table 3

\*) Sealing Cover

and must be mounted with grommet and mandrel

input shaft, sealing ring            4 mm (BS40 3 mm)

input shaft, cover                    0 mm

output shaft, sealing ring           3.5 mm

inside the gear house.

Before mounting, the seal lip must be greased by a grease of Lithium type NLGI, class 1-2.

### 7.6 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.

Ensure that the build-up of dirt or dust does not exceed 5 mm (maximum).



## 8 Fault diagnosis

### 8.1 Gear unit problems

Symptom	Possible Causes	Remedy
Output shaft does not rotate, even though the motor is running or the input shaft is rotating.	Drive between shafts interrupted in the gear unit.	Return the gear unit / geared motor for repair.
Unusual, regular running noise	a) A meshing or grinding sound: damage to bearings. b) A knocking sound: irregularity in the gearing.	a) Check oil (See Inspection and Maintenance). b) Contact your local sales office for more details.
Unusual, irregular running noise	Foreign matter present in the oil	a) Check oil (See Inspection and Maintenance). b) Stop the unit, contact your local sales office.
Oil leaking <sup>1)</sup> • from gear unit cover • from motor flange • from gear unit flange • from output end oil seal	a) Defective gasket on gear unit cover b) Defective gasket c) Gear unit not ventilated	a) Retighten screws on gear unit cover and observe gear unit. If oil still leaks, contact your local sales office. b) Contact your local sales office for more details c) Vent the gear unit. (See Appendix 4 – Mounting position).
Oil leaking from the ventilator	a) Gear unit over-filled with oil b) Gear unit installed in an incorrect mounting position c) Frequent cold starts (oil foaming) and/or high oil level	a) Correct the oil level (See Lubrication). b) Fit the ventilator in the correct position (See Appendix 4 –Mounting positions) and check oil level (See Lubrication). c) Check the oil level (See Lubrication).

**Table 4**

<sup>1)</sup> It is normal for small amounts of oil / grease to leak out of the oil seal during the running in period (24 hours running time).

When contacting your local sales office, please have the following information available:

- Nameplate data (complete)
- Type and extent of the problem encountered
- The time and the circumstances the problem occurred
- A possible cause

Any further information or clarification required may be obtained by contacting your sales office, or the see contact details at the back of this booklet.

# APPENDIX 1

## Shaft Alignment

Errors of alignment fall into categories of angularity (See Figure 1) and eccentricity (see Figure 2), or a combination of both.

Errors of angularity should be checked for, and corrected, before errors of eccentricity.

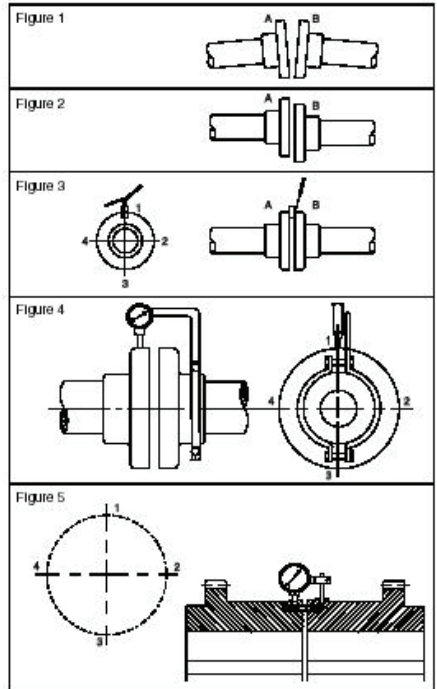
Alignment in accordance with the following procedure will ensure vibration levels meeting those set out in ISO 10816 Part 1

### Errors of Angularity

If the faces are perfectly true, the angularity can be checked by keeping both shafts stationary and taking measurements with a block gauge and feelers at the four points 1, 2, 3 and 4 as shown in Figure 3. The difference between the readings 1 and 3 will give the error of alignment in the vertical plane, over the length of the shaft equal to the diameter of the coupling flanges, and from this the difference in the relative heights of the feet of the motor or other connected machine can be found by proportion. Similarly, the difference between the reading 2 and 4 gives the amount of sideways adjustment necessary to correct any errors of alignment in the horizontal plane.

Generally, however, the coupling faces will not be absolutely true and whilst any errors so found, could be allowed for in checking angularity by the stationary method an easier method presents itself. This consists in making the points 1 on both "A" and "B" and rotating both half couplings, keeping the marked points together. By taking measurements each quarter-revolution the errors in the vertical and horizontal planes are again found.

*NOTE!* Check the alignment after running the unit until it has attained its normal working temperature. Any discrepancies can then be rectified.



The permitted angularity error is as follows:

Type of Coupling	Allowable Gap (G) (mm)
Rigid Coupling	G = 0.0005 D
All other types	Please see appropriate Installation and Maintenance Manual for coupling type fitted.

**Table 5**

*Note!* D is the diameter (mm) at which the gap is measured.

**Errors of Eccentricity**

The procedure for measuring eccentricity is precisely analogous to that used for angularity. In this case, however, the measurements are taken in a radial direction and the most convenient and accurate means of doing this utilises a dial indicator suitably clamped to one half coupling, and bearing on the hub or flange of the other, as shown in Figure 4 and Figure 5 on Page 22.

Care however must be taken to ensure the support for the dial indicator is sufficiently rigid to prevent the weight of the indicator from causing deflection and, in consequence, inaccurate readings. Extra care should be taken where taper roller bearings are fitted to ensure that alignment is checked with shafts in mid-point position and a final check made with the unit at operating temperature.

The permitted eccentricity error which can be accommodated in addition to that of the angularity error is as follows:

Type of Coupling	Allowable Eccentricity (mm)
Rigid Coupling	0.025
All other types	Please see appropriate Installation and Maintenance Manual for coupling type fitted.

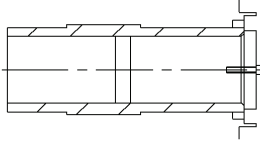
**Table 6**

*SPECIAL NOTE CONCERNING RIGID COUPLINGS*

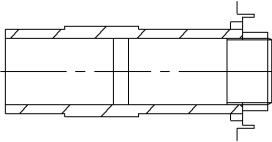
In lining up elements involving rigid couplings it is important that no attempt is made to correct errors of alignment or eccentricity greater than those above by tightening of the coupling bolts. (This applies when the system is cold or at operating temperature). The result is misalignment and the setting up of undue stresses in the shaft, coupling and bearings. This will be revealed by the springing apart of the coupling faces if the bolts are slackened off. A check on the angularity of a pre-assembled job, after bolting down, can be obtained in the case of rigid couplings by slackening off the coupling bolts, when any misalignment will cause the coupling faces to spring apart. This check may not, however, reveal any strains due to eccentricity owing to the constraint restrain imposed by the spigot.

# APPENDIX 2

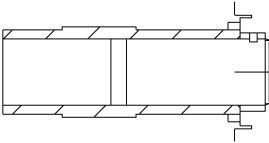
## Alternative Shaft Fixing Methods



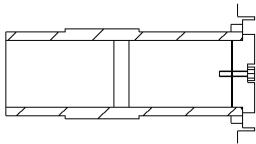
SHAFT MOUNT UNITS RETAINED  
WITH A BOLT AND PLATE



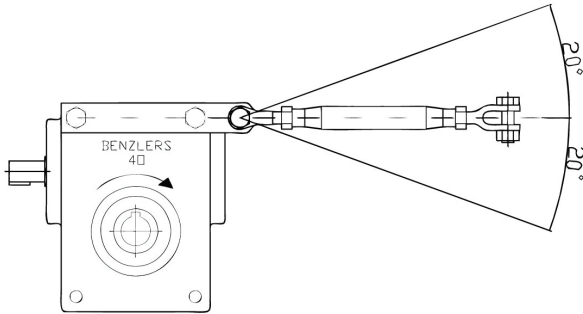
SHAFT MOUNT UNITS RETAINED  
WITH A LOCKNUT



SHAFT MOUNT UNITS RETAINED  
WITH A COLLAR AND GRUBSCREW



SHAFT MOUNT UNITS RETAINED  
WITH A RECESSED PLATE AND BOLT

**Torque Arm Details BS**

The torque arm should be fitted on that side of the gear unit which is adjacent to the driven machine

**Caution!**

The angle between the torque arm and the high speed shaft must not exceed 20°. The torque arm must be positioned so that it is loaded in tension i.e. in the direction of torque reaction, which is opposite to the direction of shaft rotation, as shown above.

For reversing applications two torque arms must be fitted in opposite mounting positions.

Gear units must be locked axially when mounted in position, and supported by the low speed sleeve for a minimum of 90% of the bore length.

# APPENDIX 3

## Three Phase Induction Motor Installation

### Connection to Mains Power Supply

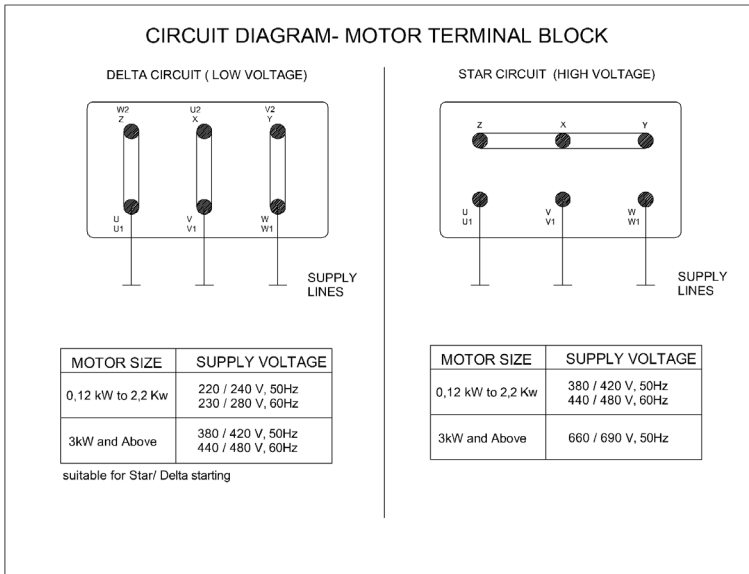


**Note**

Connection of the electric motor to the mains supply should be done by a qualified person. Connect motor terminals in accordance with the diagram inside the terminal box cover. (Also identified in Figure MI 1 below).

*Note!* It is important that the mains supply details are checked against the motor nameplate data and that they are connected as indicated on the nameplate. The correct sizing of the cables to electrical regulations is essential.

- To change the direction of rotation of the electric motor, one of the three main line terminals should be changed with the other.
- Connect the earth conductors to the marked earth terminals.



*Note!* This instruction only applies to Benzlers and Radicon plated motors. Motors fitted by the customer or requested by the customer of Benzlers or Radicon from a different manufacturer will have separate documentation provided with it.

**Approved Lubrication**

**Lubricant and Quantity**

The oil grade is stamped on the name plate. BS40, BS50, BS63 and BS71 are filled with a certain oil quantity and have no oil level plug. See Table 7 and Table 8:

<b>Unit</b>	<b>Quantity (liter)</b>
<b>BS40</b>	<b>0.20</b>
<b>BS50</b>	<b>0.25</b>
<b>BS63</b>	<b>0.40</b>
<b>BS71</b>	<b>0.75</b>

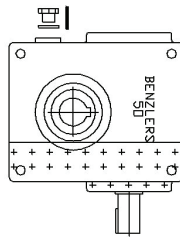
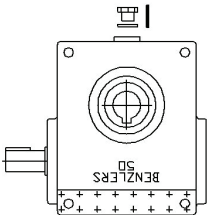
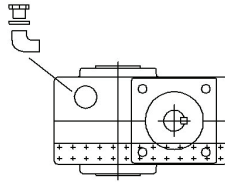
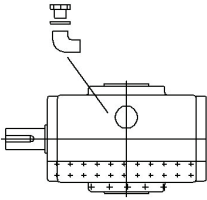
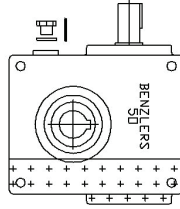
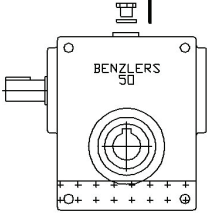
**Table 7:** Lubricant quantity (liters) Single units BS40 – BS71.  
Applicable for all mounting positions.

<b>Unit</b>	<b>Quantity (liter)</b>
<b>BS40</b>	<b>0.25</b>
<b>BS50</b>	<b>0.35</b>
<b>BS 63</b>	<b>0.55</b>
<b>BS 71</b>	<b>0.75</b>

**Table 8:** Lubricant quantity (liters) Double units BS40 – BS71.  
Applicable for all mounting positions.

# APPENDIX 4

## Ventilator Position for BS40 – BS71







B70704-60\_B\_EN  
2012-01-12

## DECLARATION OF CONFORMITY

Products:

**Series BS - Worm Reducers**  
**Series C, F, K & M - Gearbox**  
**Series BS, C, F, K & M - Geared Motors**  
**Series G & J - Industrial Reducers**

AB Benzlers hereby declares that products listed above have been designed in accordance with the following Directives and Standards:

- The Machinery Directive 2006/42/EC
- EN ISO 12100-1,2 The Safety of Machinery
- Conforms to all other harmonised standards, tests, and specifications, (In as much as they apply to our products)

## DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

According to machinery directive 2006/42/EC annex IIB

This product must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the machinery directive 2006/42/EC.

The equipment shall only be loaded within the framework of our recommendations, and installed and operated in accordance with our installation and maintenance instructions.

The company hereby draws attention to the dangers of improper use of this equipment and particularly warns users against operating with inadequate guarding of rotating parts and the use of naked lights in close proximity to the equipment.

AB Benzlers will, on a reasoned request from national authorities, transmit relevant information on the partly completed machinery.

The signatory is empowered to compile the relevant technical documentation according to annex VII B.

Signed by:

Helsingborg, 2012-01-12

Lars-Göran Linderöth  
Engineering Manager

**benzlers**

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