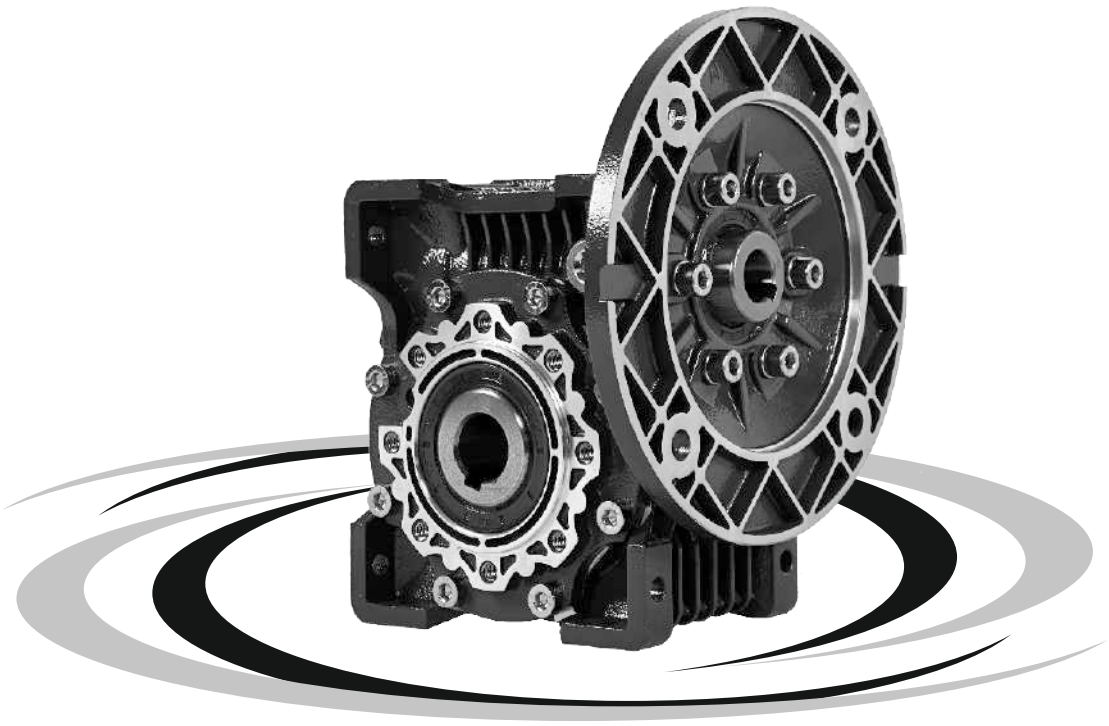
RADICON POWERBUILD

Series PBWR

Installation & Maintenance Manual



GEARED MOTORS · GEARBOXES · GEAR ASSEMBLIES · DRIVE SOLUTIONS

Discover the power of PBL Worm Gear Reducer Today!

IM_PBWR-1.00INP0723

INSTALLATION & MAINTENANCE

SERIES PBWR

POWER BUILD PVT LTD

Leaders in Power Transmission Solutions

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 Pvt. Ltd. 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 Pvt. Ltd. is not liable for damage arising from non-compliance of the operating manual.

The operating manual is a part of the product.

- Always keep the operating manual ready to hand near the product as it contains important information.
- Pass on the operating manual if the product is supplied with main equipment / machine.

Power Build Pvt. Ltd. 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.

Instructions on the protective measures to be taken by the user, including where appropriate, the personal protective equipment to be provided.

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 Pvt. Ltd. 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.

b) The rotating components (gears and shafts) must be turned a few revolutions once a month (to prevent bearings brinelling). External gearbox components may be supplied with reservative 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 Pvt. Ltd. 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, and torques or with external loads beyond those for which it was designed.

Unintended use includes:

- Overloading the gearbox or exceeding the limits that are defined in the technical data;
- Converting or modifying the gearbox;
- Using the gearbox for an application that it was not designed for.

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.

10) Waste Disposal

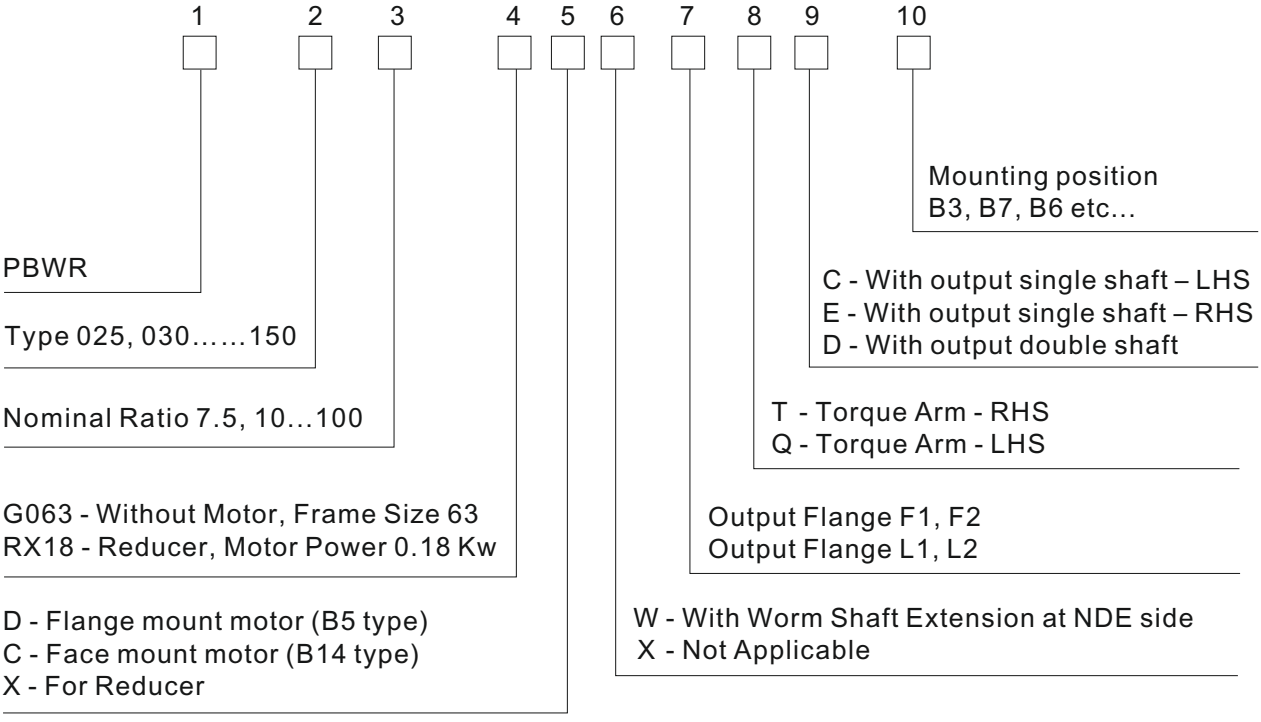
Waste (Used oil, Rubber items, Packing material etc) should be disposed as per local rules of disposal.

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 Pvt. Ltd.

CONTENTS

1 UNIT DESIGNATION



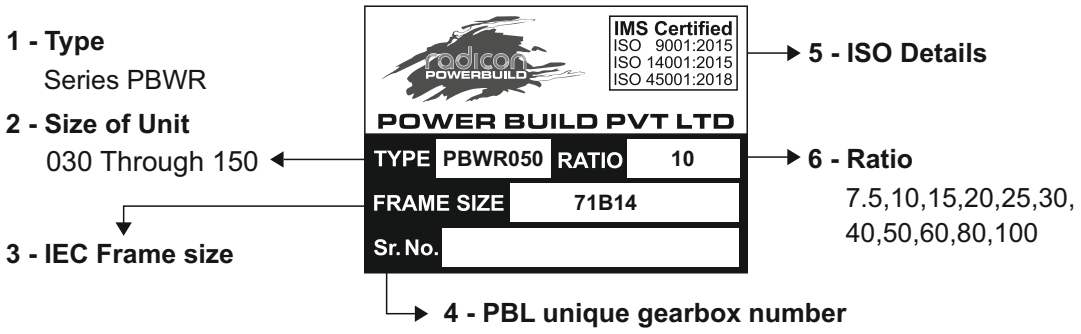
Kindly Note that digits 7 to 9 are omitted when not required.

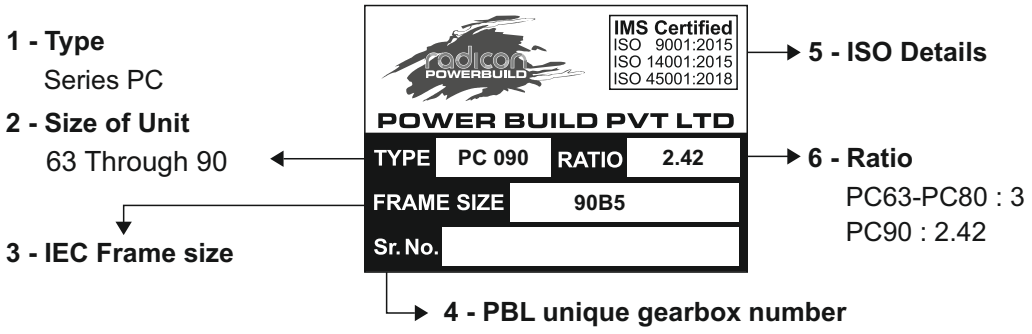
Sign Explanation:

PBWR	With input flange (using with electric motor)
25-30-40-50-63-75-90-110-130-150	Type(centre distance)(SIZE 25 to be provide on request)
7.5-10-15-20-25-30-40-50-60-80-100	Nominal ratio
G063	Without Motor, Frame Size 63
RX18	Reducer, Motor Power 0.18 Kw
F.....(1-2).L.....(1-2)	Output flange and mounting position (Right Side / Left Side)
T	T - Torque Arm - RHS,Q - Torque Arm - LHS
W	With Worm Shaft Extn at NDE side
C,E	With output single shaft – LHS,With output single shaft – RHS
D	With output double shaft
1 TO 6	Mounting - 1(B3), 2(B7), 3(B6), 4(B8), 5(V5), 6(V6).

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

- Unit Type
- Sr. Number





2 DESCRIPTION

The input type of reducers includes hollow shaft input , solid shaft input and extension worm shaft type ; output type includes hollow shaft output single shaft output and double shaft output.

3 BASIC PERFORMANCE

- The rotational speed of the worm gearbox is less than or equal to 1500 rpm.
- There are 9 types of centre distance: 30,40,50,63,75,90,110,130,150.
- There are 9 types of speed ratio of single reducer:7.5,10,15,20,25,30,40,50,60,80 and 100, Where the center distance of 25 (on request to be provided) has a speed ratio of 7.5, 10, 15, 20, 30, 40, 50, or 60.

The reducer can run in both clockwise and anti-clockwise directions.
They also can be used as combination.

4 INSTALLATION

- Several installation types can be applied subject to the actual requirements.
  All of six sides can be used for installation.
- The installation must be firm and reliable.
- The operating mechanism of prime mover and reducer shall be aligned carefully;
  The deviation shall not exceed the allowable compensation of coupling.
- After installation, the machine shall be agile without jamming when manually turned.

5 APPLICATION AND REPLACEMENT OF LUBRICANT

- For worm pairs after running for 150~400 hours since the first usage or newly replaced, the lubricant shall be replaced, and the subsequent lubricant change period shall be less than or equal to 4000 hours.
- Check the volume and quality of oil regularly, keep sufficient lubricant and timely replace the oil mixed with impurities or transformed.
- The volume of filled shall follow the requirement tabulated.
  It is forbidden to mix the oil of different brands, while the mixture of oil of the same brand but different viscosities is allowed.
- The operating ambient temperature of reducer is between -40℃ and + 40℃.
  When the ambient temperature is below 0℃, the lubricant shall be heated above 0℃ before startup or apply the lubricant with low freezing point.

6 PRECAUTIONS

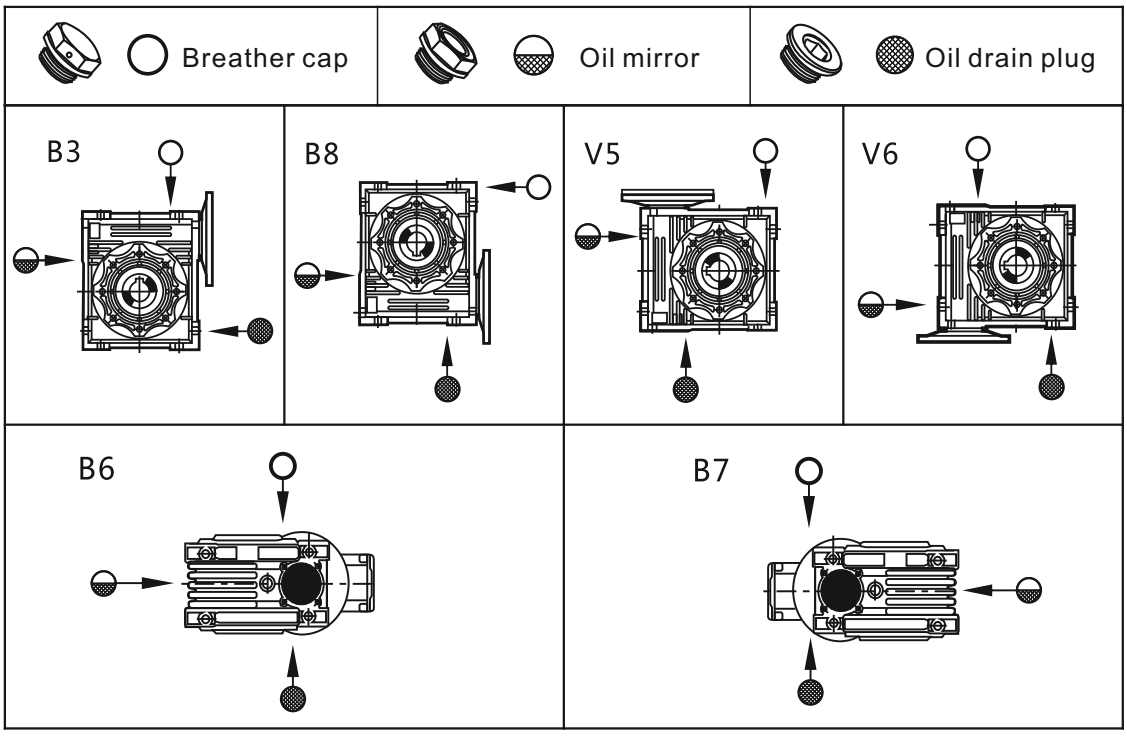
- About change breather cap before startup.

  For PBWR25, PBWR30, PBWR40,PBWR50,PBWR63,PBWR75,
  we have added appropriate amount of synthetic oil,it is no need to change the breather cap.

  For PBWR90,PBWR110,PBWR130,PBWR150,
  we have added Mineral oil,so it is necessary to change breather cap.
- Do not hammer the housing of reducer to avoid damage.
- Regularly check whether the mounting base, sealing elements andtransmission shaft are normal.
- Under normal operation, the highest temperature of reducer shall be lower than 85℃.
  If the oil temperature rises unusually and causes abnormal noises, please immediately stop the machine for troubleshooting,don't use until the malfunction is excluded.
- The newly-replaced spare part can not be officially put into use before running in and load test.

7 MOUNTING POSITION OF REDUCER & THEIR HOLE LOCATIONS

Installation type of reducer and the corresponding breather cap,oil mirror and oil drain plug



8 LUBRICANT

- PBWR25,PBWR30,PBWR40,PBWR50,PBWR63,PBWR75
  we add synthetic oil.
- PBWR90,PBWR110,PBWR130,PBWR150
  we add Mineral oil.

9 OIL VOLUME OF REDUCER (Liters)

Installation / Size	B3	B8	V5	B6	B7	V6
PBWR25	0.02					
PBWR30	0.04					
PBWR40	0.08					
PBWR50	0.15					
PBWR63	0.3					
PBWR75	0.55					
PBWR90	1.0					
PBWR110	3	2.2	3	2.5	2.5	2.2
PBWR130	4.5	3.3	4.5	3.5	3.5	3.3
PBWR150	7	5.1	7	5.4	5.4	5.1

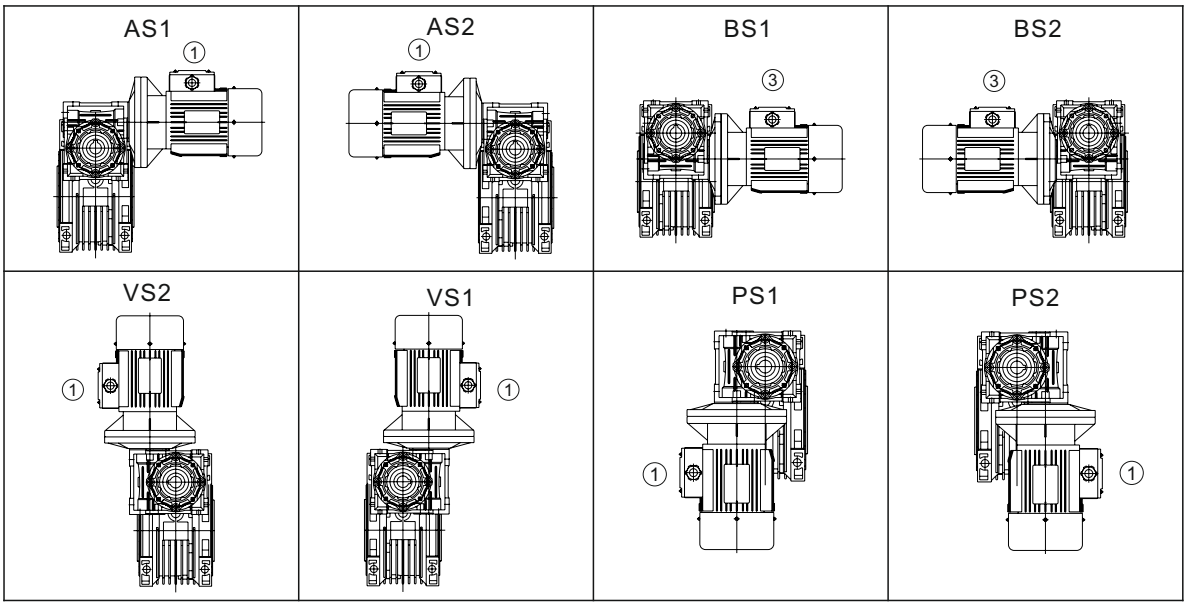
10 COMMON MALFUNCTIONS ANALYSIS

Malfunction		Possible reasons	Solution
Oil leakage	flange junction	bolt looseness	retighten
		O-type sealring damage	change O-type seal ring
	oil seal place of worm shaft	oil seal is damaged	change oil seal
	output shaft place	oil seal is damaged	change oil seal
	oil plug place	loose	fastening
	breather vent place	too much oil	correct oil level
		frequent cold start (the oil produced foam)	to replace the breather vent with exhaust valve
Abnormal noise	regular impact noise	poor meshing of worm shaft and worm wheel	please contact us after checking
	stable grinding noise	bearing is damaged	please contact us after checking
	irregularnoise	oil deterioration or lack of oil	replace or add lubricant
motor in operation but output shaft doesn't run		key is damaged or worm wheel badly worned	please contact us after checking

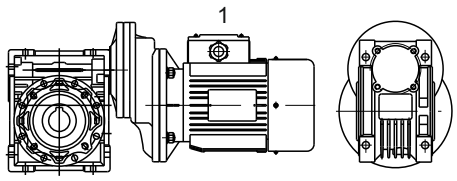
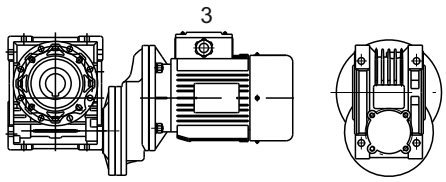
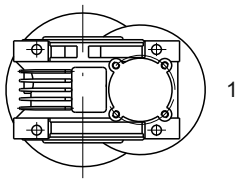
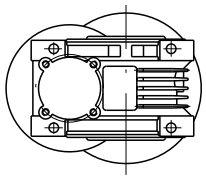
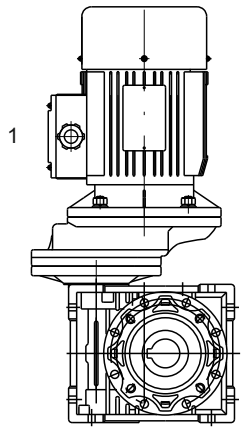
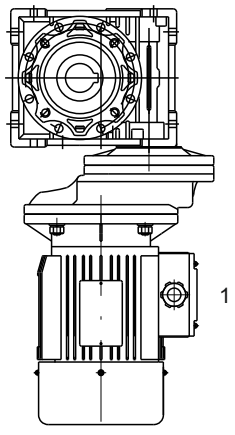
11 WARRANTY

- We promise to uphold the warranty's conditions in full and to offer high-quality items in accordance with our commitments.
- When a client has a concern with the quality of our product, we will react in 24 hours and, if necessary, dispatch a service professional to the customer's location in 48 hours to resolve the problem.
- In order to provide the best pre- and post-sale support, we will plan accordingly and consult with customers.

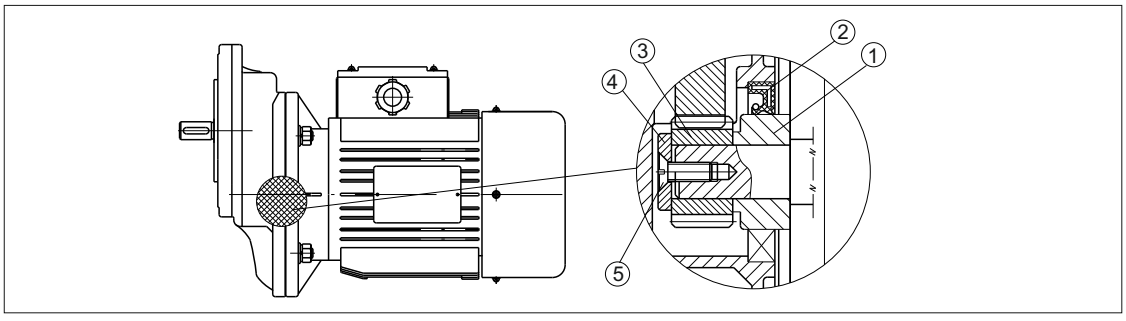
12 MOUNTING POSITION OF DOUBLE STAGE WORM GEAR REDUCER



13 MOUNTING POSITION OF PC KIT WITH SINGLE WORM GEAR REDUCER

B3		B8	
B6		B7	
V5		V6	

14 INSTALLATION OF THE MOTOR ON THE PC KIT GEAR REDUCER



The motor's attachment to the PC kit gear reducer
Please follow the steps below to properly install the pinion on the motor shaft :

- Thoroughly clean the motor's output shaft.
- Remove the output shaft's flat key.
- According to the diagram, heat the sleeve (1) to between 100°C and 120°C, then fix it to the output shaft.
- Adjust the pinion (3), making reference to the procedure for adjusting the sleeve (1).
- Install the washer (4) and fasten the countersunk head screws (5) (in order to prevent looseness, the countersunk head screws must be covered with screw-fixing adhesive).
- Carefully remove the sealing end cover at (2) in the diagram because the PC kit gear reducer has been filled with oil. This operation is unnecessary because the PC kit gear reducer comes with a motor when it leaves the factory.
- Make sure to avoid damaging the oil seal when replacing the motor and oil seal at position (2) in the diagram.

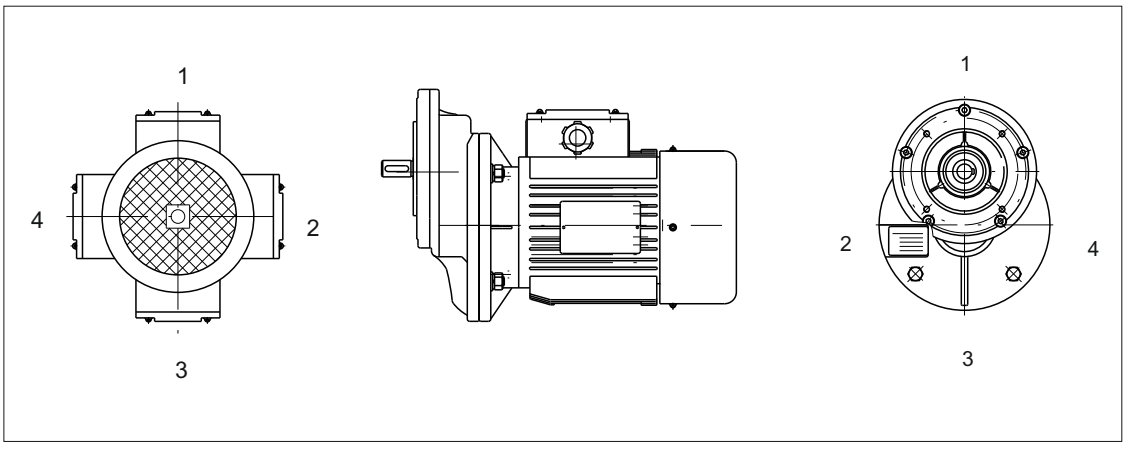
15 LUBRICATING OIL DETAILS OF THE PC SERIES GEAR REDUCER

- PC Series reducer adopts No.2 extreme pressure lithium lubricating grease(long-term) for lubrication; andthe reducer may be fixed according to the position indicated on the specification
- No.2 extreme pressure lithium lubricating grease adopted on PC Series reducer has the working range from -20℃~+50℃

Type	PC 063	PC 071	PC 080	PC 090
B3、B8 B6、B7 V5、V6	0.05L	0.07L	0.15L	0.15L

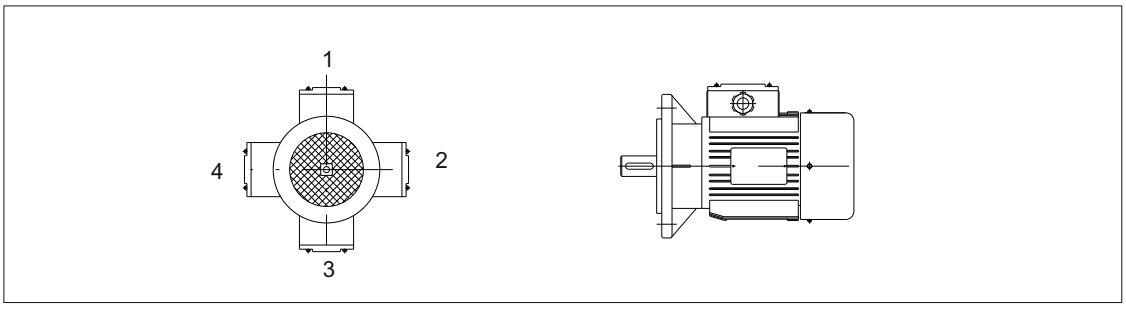
Note: The unit of lubricant oil is liter (L).

16 POSITION OF MOTOR TERMINAL BOX - PC SERIES



Notice : For specific requirements, indicate the position of the terminal box based on the diagram shown.

Position of Motor Terminal Box



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