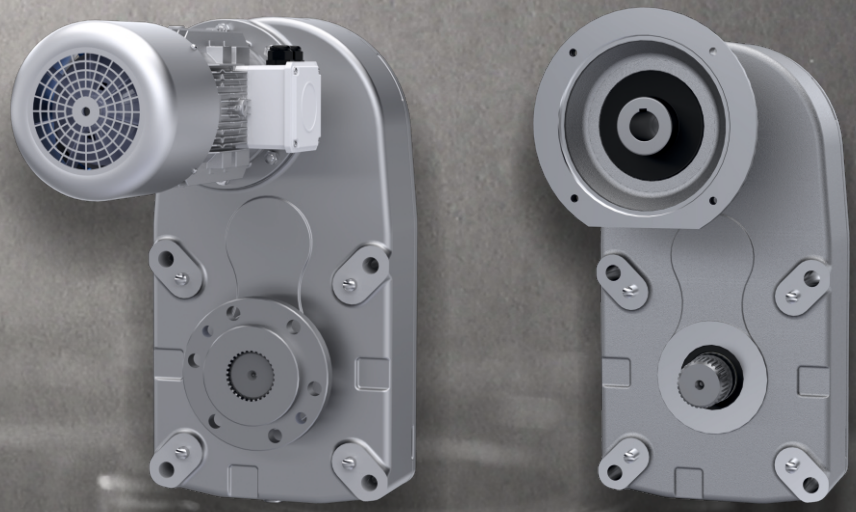
MAINTENANCE AND OPERATION INSTRUCTIONS | EN

PCS SERIES

Crane Gear Units

GEAR UNIT WITH MOTORS / WITHOUT MOTORS



ATEX

PGR®
DRIVE TECHNOLOGIES

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PGR®
DRIVE TECHNOLOGIES

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1.1 Important Warnings

Take into consideration the listed safety warnings and information signs below!

Table 1: Safety Alerts and Information Signs

EXPLOSION !
Indicates an immediate danger, which may result in death or serious injury.
Contains important information regarding explosion protection.

ATTENTION !
Dangerous situation and possible outcome
Mild or major/minor injuries
This indicates that minor personal injury may occur if proper precautions are not taken.

NOTE !
Advice and useful information for the user
This indicates that property damage may occur if proper precautions are not taken.

DANGER !
Harmful situation and possible outcome
Damage occurs in the reducers and the environment.
If proper precautions are not taken, serious damage on the gearbox may occur, death or serious personal injury will result.

DANGER OF ELECTRICITY !
Electrical shock hazard and possible outcome
Death and serious injuries

DANGER !
Danger and possible outcome
Death and serious injuries

Table 2: General Warnings

ISO	ANSI	WARNINGS
		Warning - Dangerous Electrical Voltage
		Warning - Explosives
	---	Warning - Jamming Hazard
	---	Warning - Hot Surfaces
	---	Warning - Irritant or Harmful Substances
	---	Warning - Corrosive Substance Hazard
	---	Warning - Suspended Load
	---	Warning - Hand Injuries
		ATEX Certificate

1.2 General Information

This user guide is prepared by our firm to provide information about safety transportation of gear unit/gear unit with motors, storage, installion / mounting, connection, operating, maintenance and repair processes. All the purchase and technical datas are positioned at product catalogues. Beside engineering applications, the informations which placed in this instruction, should be well read and applicated. The documents must be protected and to get ready for controlling by authorized person. The information about electrical motor could be found by guidance which prepared by motor - producing firm.
In case of loss of usage guide or becoming in unusable position it could be redemanded from PGR.

EXPLOSION !

All the informations those boxes include would only state proper goods to the instruction of ATEX 2014/34/EU.
Processes which related to these regulations should only be made by personnel (qualified) who has expertise regarding security in the fields that has the probability of being exploded.

1.3 Correct Use

EXPLOSION !

Only components which comply with the applicable regulations of Directive 2014/34/EU may be fitted and operated.
Observe the Declaration of Conformity and all safety information for the components.

These gear units generate a rotational movement and are intended for use in commercial systems. They satisfy the explosion protection requirements of Directive 2014/34/EU for the product category indicated on the type plate. No mixture from categories IID and IIG may be present during operation. The ATEX approval is void in case of a hybrid mixture.

Commissioning (start of proper operation) is prohibited until it has been established that the machine complies with the local laws and directives. The EMC Directive 2014/30/EU and the Machinery Directive 2006/42/EC in their currently valid scope of application must be complied with in particular.

DANGER !

Danger to persons:

Appropriate safety measures must be taken in the case of applications in which failure of a gear unit or geared motor may cause a hazard to persons.
Safeguard a wide area around the hazard zone.

1.4 Safety Information

EXPLOSION !

Explosion hazard: Failure to comply may cause severe, or even fatal injuries.
All work, e.g. transportation, storage, installation, electrical connection, commissioning, servicing and maintenance must be performed in a non-explosive atmosphere.

EXPLOSION !

In environments with potentially explosive atmospheres, only ATEX units are allowed, after verifying their certification limits. In case of non-ATEX units, or ATEX units with certification non-compliant with environmental conditions, it is compulsory to disconnect the unit power supply. Adopt all the necessary measures of environmental safety.

Safety information

In gear units / gear units with motors and motors, there could be pieces subjected to voltage, movable pieces and hot areas. During all the works to be done; transportation, storage, placing, mountage, connection, operating, maintenance - repair processes could be implemented by qualified employees and responsible managers.

All the processes to be implemented during the working period;

- Related Use and Maintenance Instructions / catalog data of the relevant product,
- Warning and Safety Tags in gear unit / gear unit with motor,
- Instructions and Requirements related to the system,
- Local and International requirements for safety and accidential protection,
- Disassembly of gearbox should only be made by authorized personnels.

Our Firm is not responsible where the listed items are implemented below:

- Violation of work health and safety rules in gear unit / gear unit with motors,
- Improper usage (The usage which stated out of bounds in guidance and all the usages except tag/catalogue values especially usage in high moment and different cycle) and mismounting and misusage of gear unit/ gear unit with motor in plant,
- Extremely dirty and maintenance free of gear unit / gear unit with motor,
- Unlubricated usage,
- Usage of product other than out of tag / catalogue values,
- Wrong motor selection,
- Take out of the necessary protective plugs,
- Disuse of original pieces in gear unit / gear unit with motor,
- The using, mounting, maintaining and taking place of the uneducated, unauthorized and unqualified 3. persons,
- Additional dangers that could be generated during power cut can be prevented by materials such as brake/ key.

1.5 Responsibility

PGR accepts no liability if the following occurs:

- Use of reducers that do not comply with national laws on safety and accident prevention,
- Work done by unqualified personnel,
- Wrong installation,
- Tampering with the product (making changes),
- It does not accept any liability for non-observance or inaccuracy of the instructions in the manual, for damage or malfunctions resulting from non-observance of these operating instructions.
- To follow the signs indicated on the product labels of the reducers incorrectly or inappropriately,
- Wrong electrical energy for geared motor reducers,
- Incorrect connections and/or use of temperature sensors (if any),
- Oil-free use of the reducer,
- The content of this guide has been reviewed to ensure consistency with the documents such as catalog etc. We cannot guarantee full consistency, as dynamic required by the system cannot be completely blocked. However, the information in this manual is regularly reviewed and corrections are made in subsequent editions.

Since products supplied by PGR are designed to be included in "complete machines", commissioning them is prohibited until the full machine has been declared compatible.

Restarting the reducer:

When installing the reducer on machines or systems, the machine or system manufacturers must ensure that the regulations, notes and descriptions contained in this operating manual are included in their operating manual.

DANGER !

Only the configurations found in the product catalog are allowed. Do not use the product contrary to the indications given in the product. The instructions given in this manual do not replace the obligations of current laws regarding safety regulations and do not compensate for any damages.

1.6 Transportation

1.6.1 Transportation and Freightage;

- Take into consideration of the article stated on package during the product delivery.
- During the delivery, product should be controlled about possible damages in carrying period.
- The firm should be informed about possible damages.
- The damaged products should not be put into use.
- Lifting flanged eyebolts must be tightened. These flanged eyebolts sized to carry the weight of only gear unit/ gear unit with motor. The additional weight should not be added. The flanged eyebolts must be suitable to the DIN 580 norm.
- If there are 2 lifting flanged eyebolts in gear unit with motor, both of them could be used in carrying process upon the size of gear unit and motor. In necessary situations, the suitable and adequated-size carrier should be used.
- Carrying safeties should be removed before the start of operating.
- The weights of the movable gear units/gear units with motors are placed in product catalogues.
- The dangerous area should be got into the secure to prevent damage to the persons.
- During the carrying process, to stand under the gear unit could cause danger of death.
- The damage of gear unit must be prevented. The crushes to the free input shafts could damaged into the gear unit.

1.6.2 Package Transportation;

- There could be no loads on packages or the shelved surfaces should be prepared.
- The necessary carrying equipments should be prepared.
- The carrying and lifting equipments should be larged-enough to the sufficient capacity.
- The calculations should be made to the connection points and center of gravity.
- If necessary, this information should be written on the package.
- The carrying equipments (steel rope, belt, chain etc.) must be robust and suitable to the applied weight.
- During the carrying process, the load centering could be done without oscillation.

1.6.3 Equipment Transportation;

- The connection carrying point should be appointed.
- The carrying equipments (hook, chain, belt) must be prepared. To the alternative, pallet must be used for the load-lifting.
- If the Crane will be used, it could be lifted perpendicular from inside to the outside of the package.
- If the forklift or palletized carrying equipment will be used, the product which removed from package should be placed on the pallet.
- The fork of the equipment should be carried out the way that gripped the pallet.
- The weight must be lifted both with slowly and constant speed and must take measure to the sudden oscillation.

ATTENTION !

During the carrying process, the fixings like the lifting lug, hook, belt, rope, locked hook must be sufficient to the load and have conformity certificate.The weights of the movable gear unit/gear unit with motor have given in product cataloque.

NOTE !

In all carrying processes, there should be avoided from both sudden movements and sudden liftings.

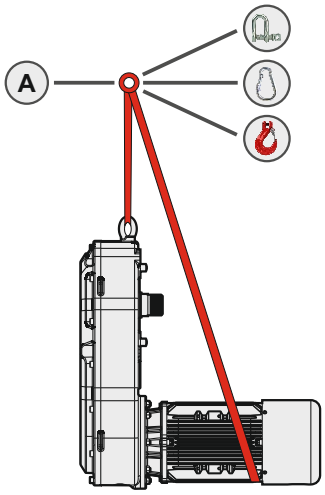
ATTENTION !

If the connection tool is coupling between electric motor and gear unit, lifting eyebolt should not be used.

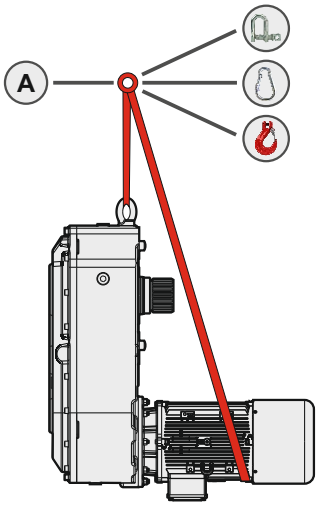
1.6.4 Transport of Gearboxes;

Figure 1: Transport of Gearboxes

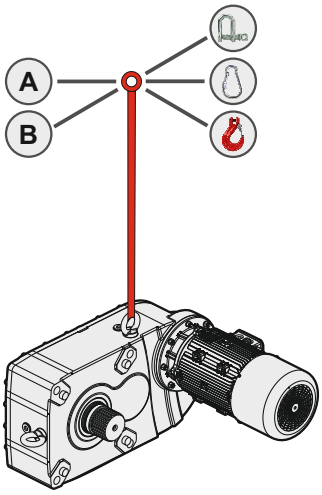
PCS



PCS 1-3-5-10-20



PCS 25-40-50-60



PCS 25-40-50-60

A Hoop equipped (swab)

B Hoop equipped (chain)

Load hook

Screw hook

Locked hook

Lifting eyebolts

Manuel lifting (Weight ≤ 15 kg)
(ref. ILO Contract)
Not valid for the continuous carrying.

1.7 Storage

The certain suggestions have given about the storage conditions of the gear unit/gear unit with motor below;

- In clear and moist-airs, the storage should not be made.
- The gear unit/gear units with motor should not directly be contacted to the ground.
- The place must be moveless where the both gear unit/gear units with motors are contacted. Otherwise there could be damage during the movement.
- The gear unit should be got into the secure to the falling.
- The processed surfaces of the gear units and both solid and hollow shafts must be lubricated with protective oil.
- Gear unit/Gear units with motors must be in the place where there will be no big temperature differences between -5°C and +40°C.
- Relative humidity must be less than %60.
- Not directly be exposed to sunlight and infraded light.
- Must be kept away from the abrasive materials which causes corrosion (dirty weather, ozon, gases, solvents, acids, salts, radioactivity, etc.) in environment.
- The protective oil SHELL ENSIS or similar product should be used on the corrodible pieces.
- If the gear unit is without oil, it must be filled with lubrication oil.

EXPLOSION !

Gearboxes during storage;
Provide protection of unpainted and processed areas by lubricant. In case of areas getting rusted, ATEX certificate will be no longer valid.

EXPLOSION !

These processes should be made far away from explosive atmosphere.
If there is an unproper oil inside of gearbox to operate, this oil must be discharged and be cleaned.

SECURITY MEASURES !

Precautions to be taken when returning the gear unit to service after storage:

The output shafts and external surfaces must be thoroughly cleaned of all rustproofing product, contaminants and other impurities (use a standard commercial solvent).

Do this outside the explosion hazard area. The solvent must not touch the seal rings as this may damage them, causing them to leak.

If the oil or protective material used during storage is not compatible with the synthetic oil used during the machine's operation, the interior of the unit must be thoroughly cleaned before filling with the operating oil.

The service life of the bearing grease is reduced if the unit is stored for more than 1 year. The bearing grease must be synthetic.

1.7.1 Long Term Storage Suggestions;

NOTE !

- In the long-term storage or during the short-term storage, if the excessive temperature differences occur, the oil in the gear unit must be changed before the operating.
- In the fully oil filled gear unit, the oil level should be reduced according to the mounting position.

ATTENTION !

- The incorrect and excessive long storage could cause the gearbox getting defected.
- Please control not to exceed allowed storage period before starting up the gearbox.

NOTE !

- PGR, recommends long-term storage option for periods of more than 9 months holding and pausing times.
- By paying attention both to the long-term storage option and precautions which listed below, the holding of goods up to 2 years could be possible. Because of real efficiency of gearboxes depending on local conditions widely, these periods could be seen solely guide values.

Long term storage suggestions;

- Mineral oil or synthetic oil according to mounting position is filled of getting available for operating. Despite this, the oil level should be controlled before operating.
- The VCI Corrosion protected tool are mixed into the gear unit's oil.
- The carrying safety of the ventilation plug must not be removed during the storage.
- The gear unit must be closed to the shape of unleaked.

2.1 Gear Unit Label

EXPLOSION !

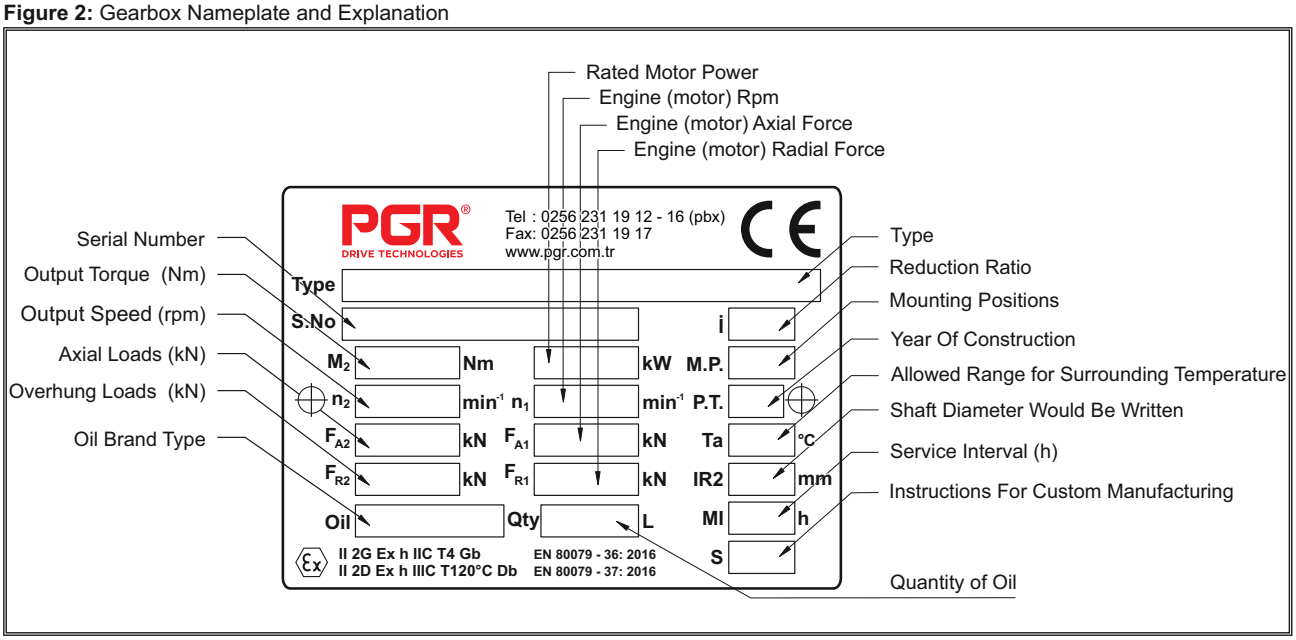
Explosion hazard: Failure to comply may cause severe, or even fatal injuries.
It must be checked and ensured that the gear unit type, all technical data and the ATEX labelling conform to the planning of the plant or the machine.

The type plate must be firmly attached to the gear unit and must not be subjected to permanent soiling. Please contact the PGR service department if the type plate is illegible or damaged.

EXPLOSION !

Gearboxes that are suitable to 2014/34/EU instruction; have "ATEX" label which is at the standard of EN ISO 80079-36:2016, EN ISO 80079-37:2016 and also proper to stated contents. **An example is given below:**

Figure 2: Gearbox Nameplate and Explanation



Marking according to ATEX (EN ISO 80079-36:2016, EN ISO 80079-37:2016):

1. Group (Always **II**, quarries are not included)
2. Category (for gas **2G-3G**, for powder **2D-3D**)
3. If firing protective type (**c**) is put
4. Implementing explosive group (**IIC, IIB**)
5. Temperature Class (for gas **T1-T3** or **T4**) or maximum surface heat (for example for powder **125 °C**) or specific maximum surface heat, look at private documents. (**TX**)
6. Temperature measurement during access to a plant. (**X**)

2.2 Compatibility Declaration

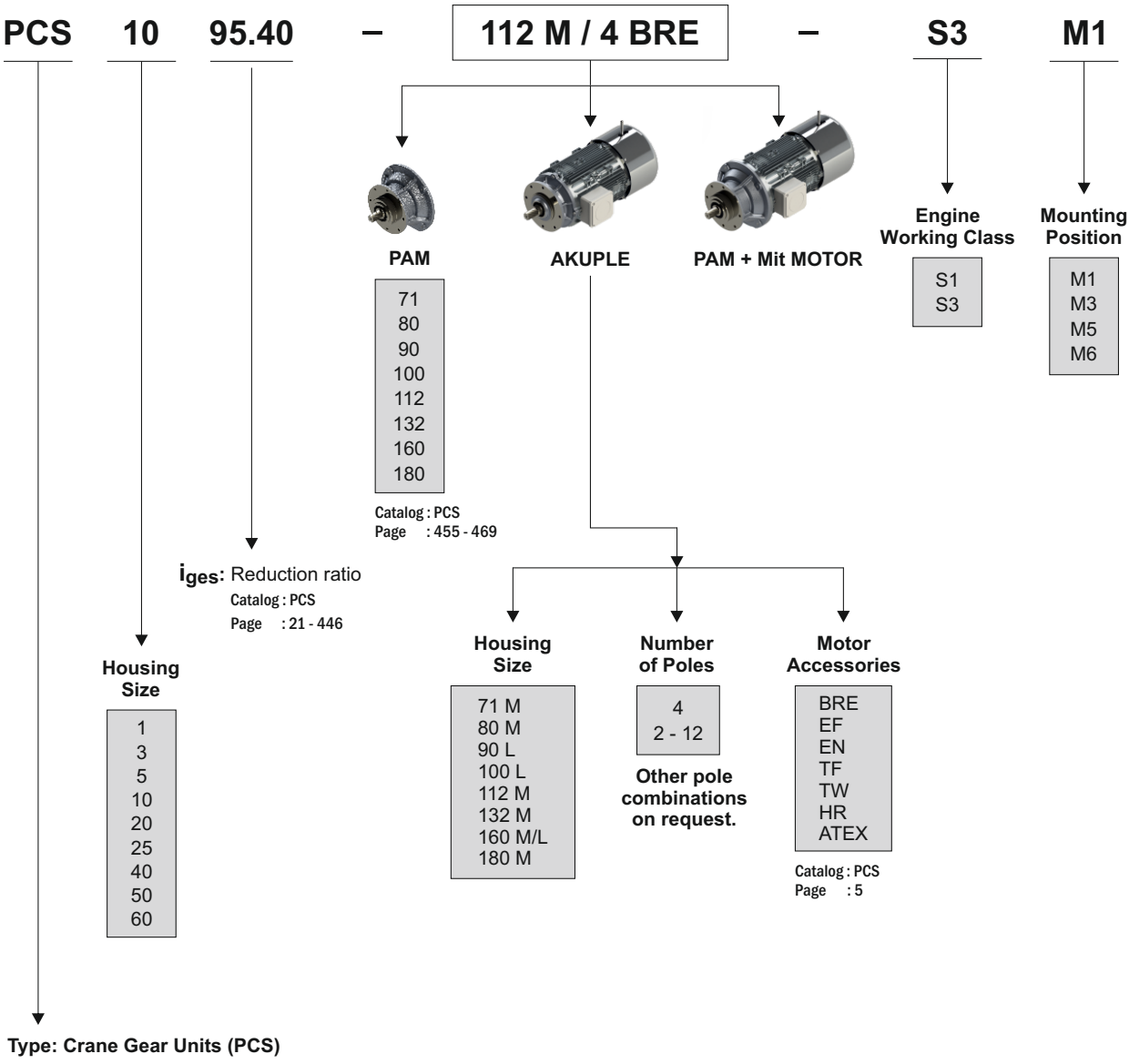
All gear units or gearmotors (when supplied with electric motor) are designed in compliance with the provisions of applicable Essential Health and Safety Requirements, the "Machinery Directive" 2006/42/EC and, if requested, can be supplied with a Manufacturer's Declaration-Annex IIB as provided by said Directive.

EXPLOSION !

The nameplate specifications regarding the maximum surface temperature, refer to readings taken in normal ambient and installation conditions.
Even minimal variations to said conditions (e.g. smaller mounting cabinet) may have a significant effect on the unit's heat output.

2.3 Explanations

Table 3: Product Description



3.1 Prerequisites of Assembly

EXPLOSION !

Explosion hazard: Failure to comply may cause severe, or even fatal injuries.
Care must be taken that drive elements attached to the gear unit, such as clutches, pulleys etc. and drive motors are also ATEX-compliant.

Prerequisites of assembly:

Take into the consideration which listed below;

- The informations placed on gear unit with motor in accordance with current network voltage.
- There could be no damage in the gear unit.
- At standard gear units; the ambient temperature should be fitted temperature values given in the "Lubricant" part.

EXPLOSION !

The bearings, gear wheels, shafts and housing may be damaged by incorrect fitting.

- Observe the assembly instructions.
- The push-on gear unit must be fitted onto the shaft using a suitable puller, which will not exert damaging axial forces on the gear unit. In particular, do not hit the gear unit with a hammer.

In applications where an incorrect rotational direction may result in damage or potential risk, the correct rotational direction of the output shaft is to be established by test running the drive when uncoupled and guaranteeing such for subsequent operation.
Gears with integrated return stops are marked with arrows on the drive/driven sides. The arrows point in the rotation direction of the gear unit. When connecting the motor and during motor control, it must be ensured that the gear unit can only operate in the direction of rotation.

NOTE !

For gear units with an integrated back stop, switching the drive motor to the blocked direction of rotation, i.e. incorrect direction of rotation, may result in damage to the gear unit.
Take care that the direction of rotation of the gear unit is correct when connecting the motor and the motor control unit.

EXPLOSION !

Before access to a plant, those belows should be controlled and be secured:

- During assembly of gearbox, whatever any explosion danger such as due to lubricant, acid, gas and steam radiation, could not be happened and there should not be powder accumulation at gearbox more than 5 mm.
- During operating process, gearbox should be put in a well-vented room and not to be exposed in an effect of substantially heat radiation from outside.
- During operating process, the temperature of cooling air should not exceed 40 °C.
- Controlling of lubricant and both discharging plugs and valves must be easily accessible.
- Several other devices belong to gearbox, seperately from their own functions should have an ATEX Certificate. (Protective electrical working substance against explosion)
- The setting of gearboxes which have hollow shafts (even if there may be a friction preventer connection or may not) should be made properly according to an instructions at this hand guide.
- After set up process is completed, cleaning of gearbox would be required.
- Please be sure that all parts expanding and shifting with help of machine operator or all operating devices which prevent unwanted contacts between gearbox gaskets, would be operativeness.

DANGER !

The Gear unit must not be mounted in the ambient conditions listed below:

- Explosive atmosphere, high corrosive and / or oils, acids, gases, steams, radiation,
- Places directly contacted to the food.

Please note that for geared motors (gear units with attached electric motors) the electric motor has its own type plate and separate ATEX designation. The motor labelling must also comply with data for the planning of the plant or the machine.

The lowest explosion protection level on the gear unit and the motor labelling applies for the geared motor unit.

If the electric motor is driven with a frequency inverter, the motor requires ATEX approval for inverter operation. If the motor is operated with an inverter, significant differences between the nominal speeds on the type plates of the motor and the gearbox are normal and permissible. For operation of the motor with the mains supply, differences of the nominal speeds on the motor and the gear unit of up to ± 60 rpm are permissible.

EXPLOSION !

Explosion hazard: Failure to comply may cause severe or even fatal injuries.

- The gear unit may only be operated in the stated version.
- The permissible version is stated on the type plate (IM…). If an X is present in the field IM, the special documentation, whose number is in field S, must be observed. (Section 4.1 "Control and Periodic Maintenance" page 27-28) or the special documentation, shows the configuration of the individual types of gear units.
- It must be checked and ensured that the configuration as stated on the type plate complies with the installation orientation and that the installation orientation does not change during operation.

Please heed the Operating Instructions for the motor, in particular with regard to the chosen version.

Gearboxes are either dispatched without motor or motors by ATEX are assembled to a gearbox after getting supplied from electrical motor manufacturer. Electric connection belongs to end user.

At special applications the configuration of gear unit/gear unit with motor are realized convenient to the ambient conditions. Output shafts, processed surfaces, corrosion preventive material on the solid shaft / hallow shaft, jerks etc. must be cleaned.
Extensive usage-solvent must be used. The solvent should not be contacted to the bearing houses and sealing components.
In the abrasive ambient conditions, both output shaft, sealing components must be protected to the wearing Connection flanges must be attached to the hollow shaft/solid shaft according to DIN 332.

The situations where the wrong direction of rotation could caused to damages and dangers, before the mounting, the test work should implemented to the gear unit so the right direction of rotation could be determined and must got into the secure for the next operating.
In the one-way locked gear units, nibs are placed at the entry and exit side of the gear unit. The ends of the nibs shows the direction of rotation of the gear unit. During the motor connection and motor-operating with the help of magnetic field, the gear unit must be operated just at the direction of rotation.

DANGER !

In the one-way locked gear units, the gear unit must be operated at the direction of lock rotation, otherwise the damage could be occured.

Around the mounting position, there must be sured that there are not any materials fused to metal, lubricating tool or elastomers which causes corrosion or will not be emerged.

EXPLOSION !

Maximum surface temperature states gotten measurements in normal setup and usage conditions.
If the usage conditions of gearbox are different from those, surface temperature could up to higher values.
In that case oil circulating cooling unit must be used.

EXPLOSION !

In case of below actions that were taken, the ATEX Certificate will be invalid.

- Different using other than label values based on the gearbox.
- Use in more dangerous area (explosive environment) other than stated level at the label of gearbox.
- Use of gearbox in the area whose equipment class is I. (quarries under dangerous originated by fire-damp).
- Use of gearbox at diffrent forces apart from gotten one.
- Changing of assembly position.

3.2 Gear Unit Mounting

EXPLOSION !

Explosion hazard: Failure to comply may cause severe, or even fatal injuries.

- No explosive atmosphere must be present when installing the gear unit.
- The cooling air supplied to the gear unit/geared motor must be within the permissible temperature range stated on the type plate.
- In case of direct sunlight falling onto the gear unit, the cooling air supplied to the gear unit/geared motor must be at least 10℃ below the highest permissible temperature of the ambient temperature range Tu, which is stated on the type plate.

DANGER !

Danger of Burns:
The surfaces of gear units or geared motors may become hot during or shortly after operation.
Hot surfaces which can be touched directly must be protected with a contact guard.

DANGER !

Damage to the gear unit due to overheating.

The lifting eyebolts screwed to gear unit must be used in gear unit mounting.

- Mounting of gear unit/gear unit with motor to the machine and selection of mounting place are crucial.
- The convenient connection points must be determined for gear unit type. (Foot mounted or Flange mounted)
- Ventilation plug must be opened after the carrying process.
- The connection tools which attached during the mounting to the machine must be tightened convenient to the torc given at the table.
- Because of the voltage, for to avoid transferring additional forces to the gear unit, both the gear unit and driven machine shaft must be aligned.
- There should not be any welding process on the gear unit. In the welding processes, the gear unit must not be used as a bracket. Otherwise bearing and gear part could damaged.

ATTENTION !

Check that there is no radial or axial run-out of the coupling element between the PAM and the output shaft.

- The gear unit/gear unit with motor only could be mounted according to determined mounting position. After the delivery, in the case of changing mounting position the change of lubrication level and other precautions could be needed. Any failures to comply to the determined mounting position could damaged gear unit. Please consult to PGR.
- The gear unit/gear unit with motor have to be structured to stand against motor weight and operating voltages. The machine which will be connected has to be structured to stand against the weight of the gear unit with motor and operating voltage. The surface where the gear unit is to be fixed must be straight, vibrationless and protected against torsion.
- The machine which gear unit/gear unit with motor will be connected, there must be sured that it is closed and not to be operated without intention.
- The sphere of the movable pieces out of the gear unit must be closed with the safety cabinet kit.
- The sunlight and the impact of the weather conditions must be prevented during the mountage of the gear unit to the outside machine. However the air circulation needed to be provided to the unit.
- Depending on the type of used gearbox, all the foot and flange bolts must be used completely. Bolts must be tightened with proper tightening moments.

NOTE !

Easy access to oil level plug, drain plug and vent plug should be provided.

The proper oil filling should be controlled according to mounting position. (Could be viewed on "lubricators/oil filling quantities" part or the values written on gear unit) The necessary amount of oil has filled to the gear unit/gear unit with motor by our firm.The slight deviations in oil level plug are resulted because of the mounting position and within the production tolerances.

If there is any danger of the electro-chemical corrosion between gear unit and machine, plastic pieces (2-3 mm) must be mounted between the connections. The electrical discharge resistance of used plastic material must be <10 Ω.
Electro-chemical corrosion could be occured between the different metals like cast iron and stainless steel. Also plastic washer should be used in bolts!



EXPLOSION !

Additional procedures for ATEX units:

- Check all nameplate data to ensure they are consistent with the application: group, category, area, maximum surface temperature, P1, n1 and M2 maximum limits, installation position, ambient temperature.
- Check for the absence of solar radiation or other heat sources.
- In case of expected ambient temperatures <-20 °C or >40 °C contact in advance the Technical Service by PGR.
- Check there are no fumes or abrasive and/or corrosive dust.
- Make sure not to be in close proximity to sources of ultrasound and/or ionizing radiation.
- Check that the facility has adequate protection from lightning fall.
- Check for any leakage of lubricant (if detected, stop the installation and consult the Technical Service by PGR).
- Eliminate any traces of dirt from the shafts and from the areas around the oil seal, using materials that do not generate electrostatic charges.
- Check that the environment has been cleared from the presence of a potentially explosive atmosphere, and that such a condition is maintained for the whole duration of the installation.
- Check that the components connected to the unit at both the input and output are ATEX approved.
- Use the torque arms that can be supplied.
- Ensure proper cooling of the motor through a good flow of air from the fan side; check that there are no obstructions or covers preventing the cooling of the unit.
- Check the accessibility to the warning light (or dipstick) for oil level check.
- Install the unit and connect to appropriate intervention system, any sensor thermal protection, supplied separately and when provided for. Specific instructions are given in the Annex to the manual.

EXPLOSION !

- It is vital to determine surface temperature of unit during operation under conditions provided by implementation. Observation should be repeated periodically as shown at "CONTROL and MAINTENANCE" table.
- The surface temperature must be measured around intake of action or in the connection area between motor and unit and in any case should be at a place where airstream is lesser.
- The difference between measured surface temperature (Ts) plus allowed maximum ambient temperature (Tam) and measured ambient temperature (Ta) would be at least 10 °C lower than allowed maximum surface temperature. (Tc, stated at label): Ts + (Tam-Ta) < Tc -10 C

Please stop operation of gearbox at improper temperatures and be consult to PGR Technical Service.

3.3 Bolt Tightening Torque Value

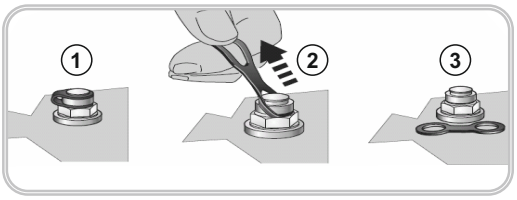
Table 4: Bolt Tightening Moments

Bolt Tightening Moments [Nm]						
Dimensions	Bolt Quality			Cover Bolts	Coupling Bolts	Protective Cover Connection Bolts
	8.8	10.9	12.9			
M4	3.2	5	6	-	-	-
M5	6.4	9	11	-	2	-
M6	11	16	19	-	-	6.4
M8	27	39	46	11	10	11
M10	53	78	91	11	17	27
M12	92	135	155	27	40	53
M16	230	335	390	35	-	92
M20	460	660	770	-	-	230
M24	790	1150	1300	80	-	460
M30	1600	2250	2650	170	-	-
M36	2780	3910	4710	-	-	1600
M42	4470	6290	7540	-	-	-
M48	6140	8640	16610	-	-	-
M56	9840	13850	24130	-	-	-
G½	-	-	-	75	-	-
G¾	-	-	-	110	-	-
G1	-	-	-	190	-	-
G1¼	-	-	-	240	-	-
G1½				300		-

3.4 Gear Unit Ventilation

In moist places or in open air usage, the gear unit which is resistant to corrosion is recommended. The damages in paint (in ventilation plug) must soon be corrected.
The carrying safety of the ventilation plug on the gear unit is to be remove. If ventilation plug was sent seperately, it has to be inserted.

Figure 3: Activation of Vent Plug



1. The carrying secured ventilation plug,
2. Remove the carrying safety,
3. The ventilation safety is active.

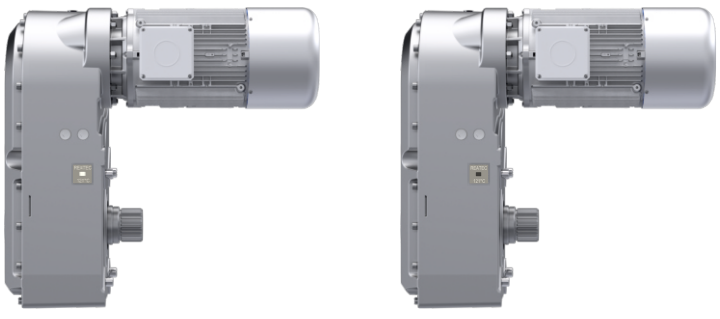
3.5 Temperature Sticker

Ex	**EXPLOSION !**
	Explosion hazard: due to lack of labelling. Failure to comply may cause severe, or even fatal injuries. With temperature class **T4** gear units or gear units with a maximum surface temperature of less than **135 °C**, the supplied self-adhesive temperature sticker (printed with value **121 °C**) must be affixed to the gear unit housing.

The temperature class or the maximum surface temperature can be seen from the ATEX labelling in the last line of the type plate.
Examples: II 2G c IIC T4 X or II 3D 125 °C X

The temperature sticker must be affixed next to the oil level screw and (please see chapter 4.8 "Temperature Measurement" page 31) towards the motor. For gear units with an oil level vessel, the temperature sticker must be affixed in the same position as for gear units without an oil level vessel. For gear units which are lubricated for life, without oil maintenance, the temperature sticker should be affixed next to the type plate.

Figure 4: Temperature Sticker 1



Midpoint **White:**
Temperature is normal.

Midpoint **Black:**
Temperature is very high.

3.5.1 Visual Inspection of the Temperature Sticker

EXPLOSION !

Explosion hazard: Failure to comply is likely to cause severe or even fatal injuries.

- Check whether the temperature sticker has turned black.
- If the temperature sticker has turned black, the gear unit has become too hot.

The cause of overheating must be established. Please contact the PGR service department immediately. The drive unit must not resume operation before the cause of overheating has been remedied and renewed overheating can be ruled out. Before putting into operation again, a new temperature-sensitive adhesive label must be attached to the gear unit. Remove dust
(only necessary for category 2D)

EXPLOSION !

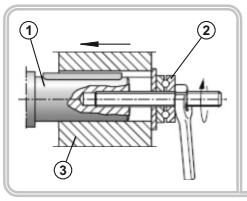
Explosion hazard: Failure to comply is likely to cause severe or even fatal injuries.

- Dust deposits on the gear unit housing must be removed if they are more than 5 mm thick.

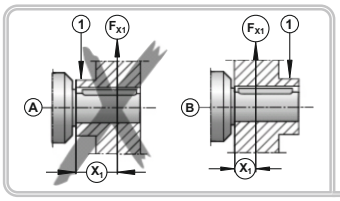
3.6 The Mountage of the Connection Tool to the Output Shaft

For the mountage of the output shaft tools look at the schema below.

Figure 5: The Mountage of the Connection Tool to the Output Shaft



1) The gear unit shaft end
2) The axial bearing
3) The connection tool



1) Connection unit
A) False
B) True

* To prevent high radial forces: the gear and sprocket must be mounted as seen in shape B.

For the mounting of the connection tools only pulling device must be used. For the position adjustment the bearing strip which is at output shaft end must be used.

NOTE !

The belt and pulleys, couplings, gears and etc. Must not be installed with hammering to the shaft end. Otherwise there could be a damage in body, bearings and shaft. In belt and pulleys, the rightness of the belt voltage must be paid attention. (suitable to the producer's data). For the not emerging of disallowed radial and axial forces, balance adjustment of the connection tool must be made.

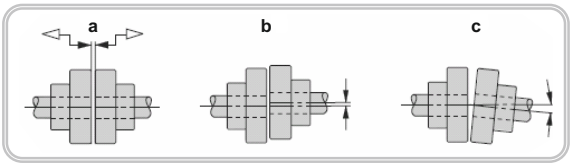
NOTE !

With smearing a little amount of grease or heating the connection tool in a short-time (80….100 °C), the mounting easiness may be provided.

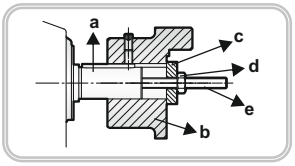
3.7 The Mountage of the Couplings

While the couplings are mounting, it's balances must be made suitable to the datas of the producers. Must be implemented with suitable clamping device. Before mounting with the smearing of corrosion oil material to the solid output shaft / hollow shaft, mounting and demounting processes may be easened.

Figure 6: The Mountage of the Coupling



a. Maximum and minimum distance
b. Axial displacement
c. Angular displacement



A basical clamping device example;

a. The solid output shaft
b. The coupling
c. The washer
d. The nut
e. The stud

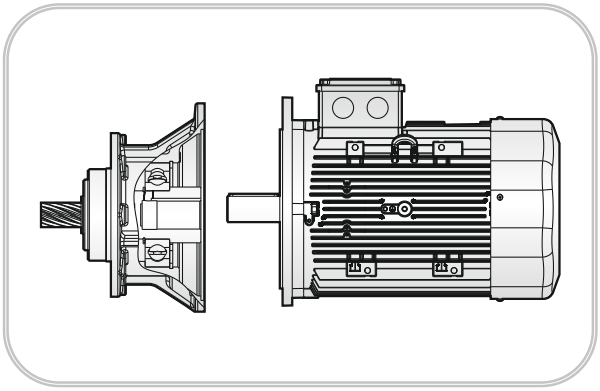
ATTENTION !

The belt-pulley, chain and gear drives must be protected from the contact of the external effects.

3.8 The Mountage of the Standard B5 Motor to the PAM Gear Unit

1. The motor and the solid output shaft of the motor with PAM adapted, flange surfaces must be cleaned and damage control must be made. The sizes and tolerances of the motor fixing elements must be suitable to EN 60079-0.
2. Must be pushed till to stand to the block of motor solid output shaft.
3. If the mountage is to be done in open air and the environment is wet, it is recommended that the surfaces of the motor flange and PAM adaptor have to be isolated. Before and after the motor mounting, in the shape of flange is isolated, loctite 574 or loxeal 58-14 surface isolation material should be used to flange surfaces.
4. The motor, must be installed to PAM adaptor.
5. The bolt of the PAM adaptor has to be mounted with suitable tightening moment.

Figure 7: The Mountage of the Standard B5 Motor to the PAM Gear Unit



EXPLOSION !

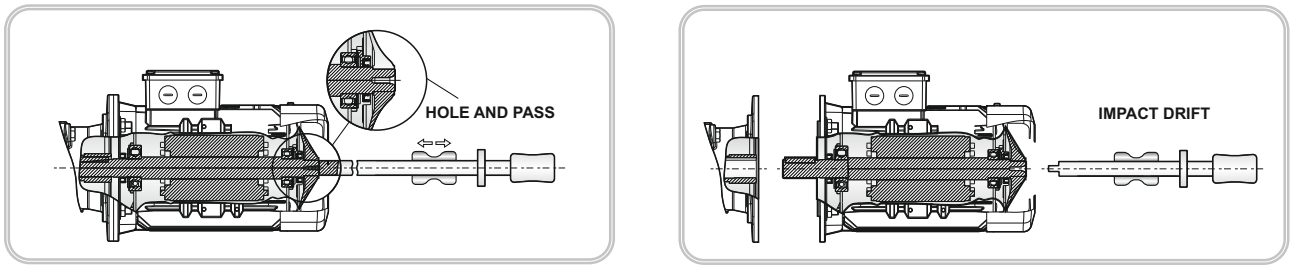
- If all controls that were stated above are positive and all instructions were performed completely/properly, electric motor could be set up with ATEX protection that is suitable to the gearbox and in the same way 2014/34/EU regulation adaptable a gearbox motor could be generated.

Although during the connection of motor and gearbox, in the use of a process which is not stated in this handbox and/or not follow a single or more instructions, the operator should calculate analysis and must define by himself that the risk could emerge from motor-gearbox connection. In the situation of gearbox would be feeding motor, this risk analysis will always be required.
Only just in this manner, complete system would be subject to both certificate of manufacturer and 2014/34/EU regulation adaptable gearbox.

3.9 The Demountage of the Electrical Motor (PAM)

During the operating, it is crucial that the surface of the connection tool between the motor and gear unit is not rusted, for the removal of the motor not to exercise excessive load is necessary. During the seperation of motor from the gear unit without forcing, the method at the below must be implemented. Must be avoided the implementations that causes strain and harm to the gear unit.

Figure 8: The Demountage of the Electrical Motor (PAM)



1. By fan with drilling the motor solid output shaft, the thread cutting must be opened.
2. The impact drift has to be installed to the threaded place.
3. The connection screws batwean the motor and gear unit must be removed.
4. By the help of impact drift inertial force, the motor must be seperated from the gear unit.

The use of slots in the body of PAM, with the help of screwdriver or lever in a way that the motor is not harmed, may be removed by pushing back.

3.10 Gear Unit Operating

- The gear unit is tested firstly at our firm. (leakproofing test, noise test, torc test)
- For the confirmation of direction of rotation of gear unit, it is needed to be operated before machine mounting.
- The mounting of gear unit to the machine is needed to be convenient to 2006/42/EC and other safety standards.
- The electrical motor is needed to cover EN 60204-1 and EN 60079-0 standard.
- The mounting position of the gearbox must be the same as the nameplate.
- The datas in power units should be tolerated (plus, minus) %10 according to values specified in tag.
- There must not be any oil leakage in gear unit.
- There should not be excessive vibration and the acceptable sound level for gearboxes should not be exceeded.
- In case of long-term non-use, proper storage conditions must be met.
- The oil position must be controlled for the mounting position specified in catalogue.
- The oil level must be controlled.
- Before the operating, the carrying safety of the ventilation plug on the gear unit is needed to be removed.
- If the gearbox is shipped without oil, the first oil filling should be done according to the amount of oil specified in the oil tables.
- The gearbox is not allowed to operate in explosion-sensitive areas. However, special motors are available for these conditions. Please consult to our firm.

EXPLOSION !

Explosion hazard: Failure to comply may cause severe, or even fatal injuries.

EXPLOSION !

Additional procedures for ATEX units:

- Check the level of external cleaning of the units, especially in the areas most affected by cooling.
- Check for leaks of lubricant, especially in areas of the sealing rings.
- To clean, use materials that do not generate electrostatic discharges.
- Check for correct amount of oil through the appropriate level indicator, or dipstick, if any. In life lubricated units, without the level control (ATEX 3GD), the right quantity of oil is ensured by PGR. Should it be necessary to top up with lubricant follow the instructions on section 6. LUBRICATION.
- In case of any abnormal noise and vibration, or high overheating, immediately stop the motor and contact the Technical Service by PGR.
- It is recommended to run in the unit at reduced load (approx. max. 40% of nominal) for 24 hours. In the running-in phase the unit is subject, for a short time, to condition of internal friction, and therefore temperature, higher than the usual ones, but still compatible with the specified limits. It is normal during this phase to detect a small release of grease from the oil seals.
  PLEASE NOTE ! In the event of prolonged storage at low temperature it is necessary to bring the oil to the normal fluidity with a gradual dry start. Only after bringing the surface of the unit to at least 10°C, proceed, necessarily, to the above-mentioned running in phase.
- After about 3 hours of operation at full load, it is necessary to measure the surface temperature as indicated in section SURFACE TEMPERATURE. In the event that the rating value is exceeded, immediately shut off the motor and contact the Technical Service by PGR.
- In case of need, after stopping the motor, wait 30' before disassembly.

ATTENTION !

The temperature data on the nameplate indicate maximum admissible values on the unit, referring to the ambient temperature between -20 °C and +40 °C: operation is not allowed at different ambient temperatures.
If necessary contact the Technical Service.

EXPLOSION !

Use of sticky heat sensitive detectors (if available), surface temperature could also be detected by using sticky indicators. Those could be provided for private branches or optional.

Midpoint **White:**
Temperature is normal.

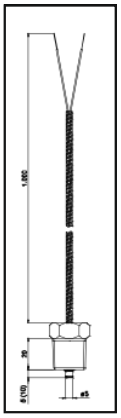
Midpoint **Black:**
Temperature is very high.

EXPLOSION !

Thermal protector (when present);

It is a PTC probe (see Figure 9) with a trigger temperature of 120 °C.
The customer shall perform the electric connection to the main electric panel to ensure the resistance thermometer correct operation regardless of the connections necessary for the system operation.
The connection must apply the positive safety logic.
Main powerboard, connections and logic must, taken together, provide a locking system to prevent, in the event of a shutdown, the unwanted start-up of the device.
In case of intervention of the PTC probe, wait about 10 min. before resetting the main powerboard.

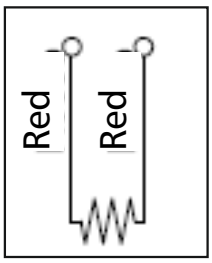
Figure 9: PTC Probe



Unit Electric Characteristics

Power to sensor	**< 280 mW**
Voltage to sensor	**< 30 Vdc**
Current to sensor	**< 8 mA**

Connection:



ATTENTION !

Do not use the unit:

- In an environment with fumes or abrasive and/or corrosive dust;
- In direct contact with food products in bulk.

Dangerous zone,

The dangerous area of the unit is the rotating shaft extension where any person could be subject to mechanical risks from direct contact (cutting, dragging, crushing).
Make the machine compliant with DIRECTIVE 2006/42/EC providing a safety guard when the unit works in accessible zones.

4.1 Control and Periodic Maintenance

EXPLOSION !

Explosion hazard: Failure to comply may cause severe or even fatal injuries.
Before commissioning, the oil level must be checked with the supplied dipstick.

NOTE !

The maintenance and periodic maintenance works are performed by qualified person/ operator who is well-educated and is sufficient in electric and mechanic issues; the rules convenient to job health and safety and specific environmental problems are performed as protected.

DANGER !

Before the start of the maintenance work of the gear unit, gear unit should be closed at first (get into the voltage-free position), be sured service-free, needed to take measures against any accident or spinning items with the help of unexpected external load. Also all environmental safety precautions must be taken.

- Before the maintenance process, all safety equipments are needed to get ready and if necessary the outside personal should be warned.The border around the unit must be specified and must prevented equipment entrance to the area. If any failures to comply to these conditions, the situations which causes harm to health and safety could be occured.
- Worn items only must be changed with original and unused items.
- The lubricators ,which recommended by our company, should be used. (see. **6.3 Lubrication Table**, page 38)
- The leakproofing items on the gear unit must be changed with original items.
- If the bearing is needed to be changed please contact to our firm.
- After the maintenance work, we recommend to change the lubrication oil.

All above informations were given for the purpose of efficient and confidential operating of gearboxes.
Our firm is not responsible for substitute product and unroutined maintenance that causes damages and woundings.
When purchasing gear unit,should be noted that it is original product and has technical informations written in catalogue.

NOTE !

The polluted oil and rusted items must not be left to the environment after the maintenance. These items must be disposed convenient to the regulations.

Control and Periodic Maintenance Board

Table 5: Control and Periodic Maintenance Board

Frequency	Object	Check	Operation
Weekly	Vent Plug.	Obstruction Due to the Presence of Dust. For the Positions of the Plugs Please Refer to the Operating Positions.	Release the Vent Plug.
1000h / 5 months	Oil.	Level.	Topping up.
	Sealing Rings, Gaskets and Plugs.	Oil leaks and ageing.	Replacement.
	Torque Arm and Rubber Buffer.	Ageing.	Replacement.
4000h / 3 years	Mineral Oil, (gear reducers non-lubricated "for life").	None.	Replacement.
8000h / 6 years	Synthetic Oil, (gear reducers non-lubricated "for life").	None.	Replacement.

EXPLOSION !

Atex Certified Products

Frequency, type of checks and related operations are shown in Table Maintenance Checks And Operations. Their respect is essential for the maintenance of the ATEX certification. All operations involving replacement of components must be reported in the "REDUCER MAINTENANCE SHEET" (enclosed with the reducer), filling in all the fields provided.

Observe the following precautions:

- On units equipped with cover plate for any reason not to remove the said cover.
- All operations involving the removal of covers and/or flanges should be made by experts from the Technical Centres by PGR authorized to Atex maintenance.
- Always use official Motovario spare parts. For the request of the components, follow the instructions given in the spare parts section of the specific unit.

In case you need to replace the oil seals be sure to replace only those externally accessible without removing covers and/or flanges. For other oil seals, contact an authorized Technical Service authorized to ATEX maintenance.

Replacement Procedure of External Sealing Rings

Locate the seal to be replaced and proceed as follows:

- Remove the sealing ring taking the utmost care not to cause any kind of damage to the seat and to the shaft (scratches, dents, etc.).
- The new seals which will be mounted should be as same as previous one. Before assembly, the new ring should be greased on the lip (the one with double lip TC also in the space between the two sealing lips) which lip must slide always on a protection if on the shaft there are slots for keyways and/or grooves for elastic rings (e.g., spinner, ...). the grease used must be clean and free of dust, shavings and other impurities, the recommended grease to be used is AGIP-MU EP 2 (For sealing rings with double lip in VITON use the special grease TECNOLUBE BC 101).
- Be careful not to match the position of the lip in the same position of the seal lip just gotten off.
- Never insert any kind of lubricant in the outer area of the oil seal in as it would facilitate the release and make sure that the housing is clean and free of grease.
- Clean the surface of the reducer with materials that do not generate electrostatic discharges.
- After 24-hour check for leaks, in the case of oil leakage contact an authorized Technical Service by PGR authorized for Atex maintenance.

4.2 Visual Inspection

EXPLOSION !

Explosion hazard: Failure to comply may cause severe, or even fatal injuries.
All work, e.g. transportation, storage, installation, electrical connection, commissioning, servicing and maintenance must be performed in a non-explosive atmosphere.

The drive unit must be inspected and may only be installed if:

- No damage, e.g. due to storage or transport is apparent. In particular the radial seals, the sealing caps and the covers must be inspected for damage.
- No leakage or no oil loss is visible.
- No corrosion or other indications of incorrect or damp storage is apparent.
- The packaging material has been completely removed.

Controlling whether there is any oil leakage exists or not should be made at gearbox.
There must be controlled that if there is oil filled or not in gear unit. Should be controlled that if there is any damage in gear unit's items and whether if the connection spots are rusted.
Also must be controlled that if any cracks could emerge in hose connection lines and in rubber wedges.
Leakproofing likes of dripping of gear unit's oil or dripping of cooling water and in damages and cracks, repair of the gear unit must be provided. Like these situations please get in contact with PGR.

The PAM bearings of the gearboxes are bearings with two covers that provide lubrication in their own body. (ZZ or 2RS) These are with the inner ring, form long sealing space. By this way the bearing operates almost frictionlessly. Losses could be minimized and in these bearings the temperature rises could not be seen.

Because of the storage and carrying, before the operation of gear unit and during at first operation, low amount of grease could flow out from bearing, this type of oil leak could not create any technical failure, the safety of gear unit and bearing operation could not be effected.

4.3 Check for Running Noises

EXPLOSION !

Explosion hazard: Failure to comply is likely to cause severe or even fatal injuries.
If the gear unit produces unusual running noises and/or vibrations, this could indicate damage to the gear unit. In this case the gear should be shut down and a general overhaul carried out.

The emerge of unusual operation voice or vibrations in gear units could mean damages. In this type of situations, the gear unit must be stopped and overall revision must be made.

4.4 Control of the Lubricant and Lubricant Level

EXPLOSION !

Explosion hazard: Failure to comply is likely to cause severe or even fatal injuries.
The gear unit must be checked for leaks. Attention should be paid to escaping gear oil and traces of oil on the exterior or underneath the gear unit. In particular, the radial seals, cover caps, screw plugs, hoses and housing joints should be checked.

- Regular oil level controlling must be made.
- The electrical connection of motor must be cut and must got into safety form to prevent for reactivating.
- Must be waited until the gear unit got cooled.
- If the mounting position is changed, the section of "the mounting of gear unit" must be got into attention.
- A little amount of oil must be taken out of the oil drain plug. The quality of oil must be controlled.
- The oil must be changed when the sign of extremely oil pollution is seen.

4.5 Changing the Oil

EXPLOSION !

Explosion hazard: Failure to comply may cause severe, or even fatal injuries.
When changing oil or filling for the first time, the type of lubricant stated on the type plate must be used.

To prevent the emergence of the danger of burning, must be waited until the gear unit got cooled. The oil level, draining and position of ventilation plugs are dependent on mounting position. For the mounting position, related pages from catalagoue could be seen. When the oil-changing process, the gear unit should be at operating temperature. The electric connection of motor driving unit must be cut and got into safety for re-activation.

NOTE !

Because of the coldness of oil will affected the flowing and venting, the gear unit must not be cooled fully.

Changing the oil;

- Oil level plug, oil draining plug and ventilation plug must be removed.
- Both the oil is completely drained and the cleaning of gear unit must be made with proper solvent.
- The leakproofing elements on gear unit must be changed with original items.
- The oil draining plug must be put back to it's own place again.
- If the oil draining and level plug's gear part are damaged, instead of these, the new plug must be used.
- Before putting on the plugs, the sticky must be applied to the gear part like Loctite 242. If the aluminum washer is damaged, the new one must be used.
- The aluminum washer must be put lower and oil draining bolt must be bolted with proper moment.
- The oil according to mounting position must be filled from the vent hole with the proper draining device to the amount which is shown in cataloque. (could be filled from hole which is on the oil level). If the oil type is changed. Must be consulted to our firm.
- After the filling process, all plugs should be closed.
- 30 minutes after the oil filling, oil level must be controlled.

NOTE !

At high temperatures or at hard working conditions (high humidity, corrosive environment or high temperature fluctuations), the oil changing ranges must be reduced by half.

4.6 Oil Plugs Squeezing Torc Chart

Table 6: Oil Plugs Squeezing Torc Chart

Plug	Torc [Nm]
1/4”	7
3/8”	7
1/2”	12

4.7 Change of the Ventilation Plug

In excessive pollution situations, ventilation plug must be dismantled and got cleaned or with aluminum washer, the new ventilation plug must be mounted.

4.8 Temperature Measurement

The details of the ATEX temperature class or the maximum surface temperature are based on normal installation conditions (please see chapter 3.5 "Temperature Sticker" page 21). Even small changes to the installation conditions can have a significant effect on the temperature of the gear unit.

EXPLOSION !

Explosion hazard: Failure to comply may cause severe, or even fatal injuries.
On commissioning, a surface temperature measurement of the gear unit must be made under maximum load. (This does not apply to gear units which are labelled as temperature class **T4** or a maximum surface temperature of **130 °C** in the last line of the type plate.)

For the temperature measurement, a normal temperature measuring device is required, with a measurement range from 0 °C to 130 °C and a precision of at least ± 4 °C and which enables the measurement of the surface temperature and the temperature of the air. Temperature measurement procedure:

1. Allow the gear unit to run at maximum speed under maximum load for approx. 4 hours.
2. Following warm-up, the temperature of the gear unit housing surface "T_{gm}" must be measured close to the temperature indication label .
3. Measure the temperature of the air "T_{um}" in the immediate vicinity of the gear unit.

EXPLOSION !

Explosion hazard: Failure to comply may cause severe, or even fatal injuries.
The gear unit must be shut down and PGR must be consulted if any of the following criteria do not apply.

- The measured air temperature "T_{um}" is within the permissible range stated on the type plate;
- The measured temperature of the surface of the gear unit housing "T_{gm}" is below 121 °C and the temperature indication label has not turned black (see Figure 10).
- The measured temperature of the surface of the gear unit housing plus the difference between the highest permissible air temperature "T_u" stated on the type plate and the measured air temperature must be at least 15 °C lower than the maximum permissible surface temperature, i.e.:

ATEX labelling:	II 2G Ex h IIC T4 Gb :	$T_{gm} + T_u - T_{um} < 135\ °C - 15\ °C$
ATEX labelling:	II 2D Ex h IIIC T120°C Db :	$T_{gm} + T_u - T_{um} < T_{max} - 15\ °C$

T_{gm} : Measured temperature of the surface of the gear unit housing in °C
T_{um} : Measured air temperature in °C
T_{max} : Maximum surface temperature according to gear unit type plate (ATEX labelling) in °C
T_u : Upper value of the permissible ambient temperature range according to the type plate in °C

Figure 10: Temperature Sticker 2

Midpoint **White:**
Temperature is normal.

Midpoint **Black:**
Temperature is very high.

4.9 Checking the Gear Unit

During a test run under full load, the gear unit should be checked for:

- Unusual noises, such as grinding, knocking or rubbing noises,
- Unusual vibrations, oscillations or other movements,
- Production of steam or smoke.

After the test run, the gear unit should be checked for:

- Leaks.

4.9.1 Checklist

Table 7: Checklist

CHECKLIST	
Subject of Check	**Information see Section**
Is any transportation damage or damage apparent?	**4.2**
Does the labelling on the type plate conform to the specifications?	**2.1**
Does the configuration on the type plate conform to the actual installation?	**3.1**
Is the pressure vent screwed in?	**3.4**
Are the external gear shaft forces within permitted limits (chain tension)?	**3.1**
Are contact guards fitted to rotating components?	**4.6**
Does the motor also have a relevant ATEX approval?	**4.1**
Is the temperature sticker affixed?	**3.5**
Has the correct oil level for the configuration been checked?	**4.1** **4.4**
Has the temperature measurement been carried out?	**3.5** **3.5.1**
Has the centre of the temperature sticker turned black?	**4.8**

4.10 Change of the Oil Seal and Oil Cover

- The electric connection of motor drive unit must be cut and got into safety for mistakenly re-activation.
- At the time oil seal is changing, the sufficient amount of grease must be found between leakproofing lips and should be paid attention that the surface is not dirty and dusty.
- When the double seal is used, 3/2 of the part which remained between two seal must be filled with grease convenient to the oil type inside the gear unit.
- During the change of the oil seal the proper devices must be used for not to harm the body and shaft.
- During the change of the oil seal and oil filler cup, the original product must be used.

4.11 The Bearing Greases

- To the bearings of motorized gearboxes, greases should be used which are available at the grease table given by our company.
- Our company (PGR) recommends also replacing of grease while changing lubricant at the greased bearings.

4.12 General Overhaul

EXPLOSION !

Explosion hazard: Failure to comply is likely to cause severe or even fatal injuries.

- No explosive atmosphere must be present during servicing and repair work. Servicing and maintenance work must only be performed by qualified specialist personnel.
- When cleaning the gear unit, do not use procedures or materials which may cause electrostatic charging of the gear unit or adjacent non-conducting components.

ATTENTION !

Severe personal injury:

- Severe injury and material damage may be caused by incorrect servicing and maintenance work.
- Servicing and maintenance work must only be performed by qualified specialist personnel. Wear the necessary protective clothing for servicing and maintenance work (e.g. industrial footwear, protective gloves, goggles, etc.)

PATLAMA !

Explosion hazard: Failure to comply may cause severe or even fatal injuries.

- The general overhaul must be carried out by qualified personnel in a specialist workshop with appropriate equipment in observance of national regulations and laws. We urgently recommend that the general overhaul is carried out by PGR Service.

The gear unit must fully be dismantled and works written below have to be done respectively.

- All parts of the gear unit must be cleaned.
- The damage control must be done to all parts of the gear unit.
- The damaged parts must be changed with orginal part.
- All roller bearings must be changed.
- If there are, locks must be changed.
- All oil seals and nilos caps must be changed.

All plastic and elastomer parts of the motor coupling must be changed.

NOTE !

The general revision should be made by the qualified personnel with considering the international laws and regulations in the plants which has the required equipments. We recommend that the general revision has to be made at the PGR service.

4.11 The Maintenance of the Motor

Our firm recommends to change the grease in greased bearings.
Before the start of motor maintenance, the operator should closed the unit, must be sured that it is out of service and must taken all the measures against any accident or unexpected load.

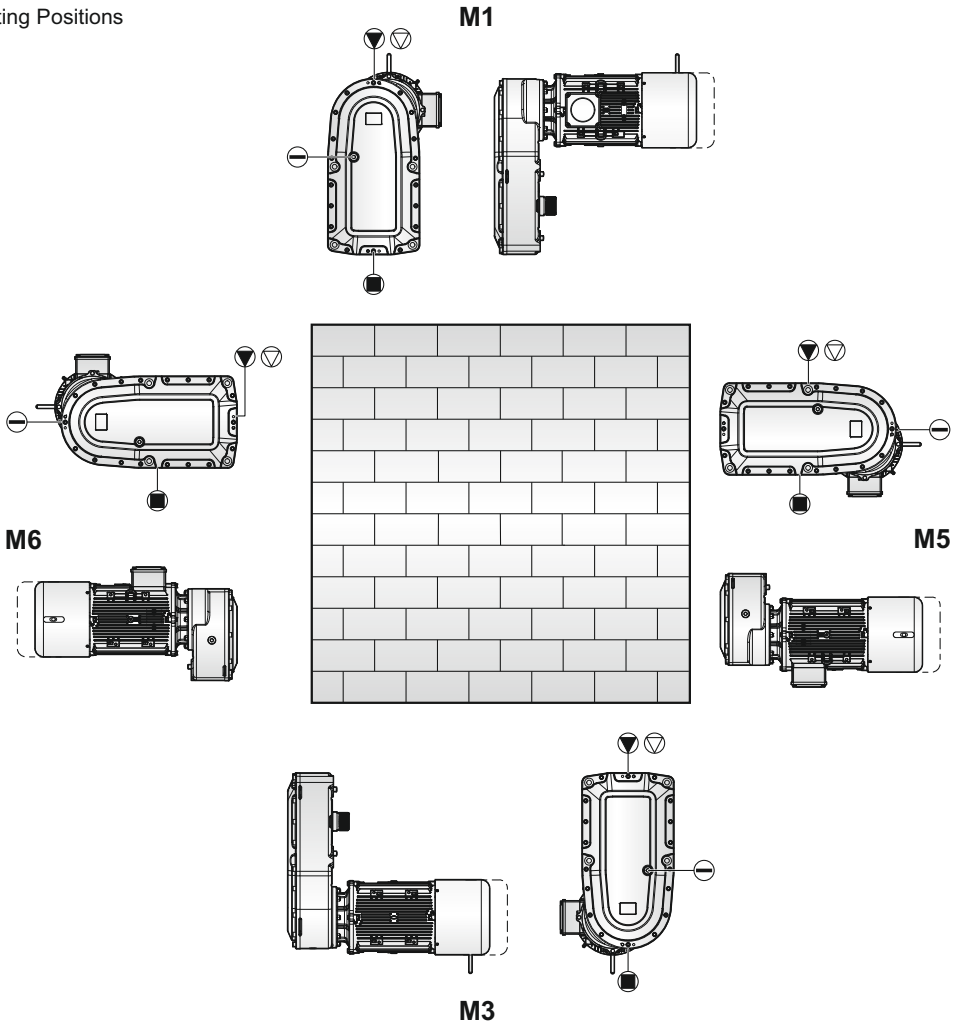
- To prevent overheating, if there is, the dust coat on it must be cleaned.
- The bearings must be dismantled, cleaned and greased.
- Grease should be used as 1/3 of the bearing in terms of volume.
- The proper grease must be selected from the oil tables.
- Motor oil seals must be changed.

5.1 Mounting Positions

Install the gearbox at the projected mountage position. For the other mountage positions except this one, please consult to our Technical Service.

PCS

Figure 11: Mounting Positions



PCS
PCS 1
PCS 3
PCS 5
PCS 10
PCS 20
PCS 25
PCS 40
PCS 50
PCS 60

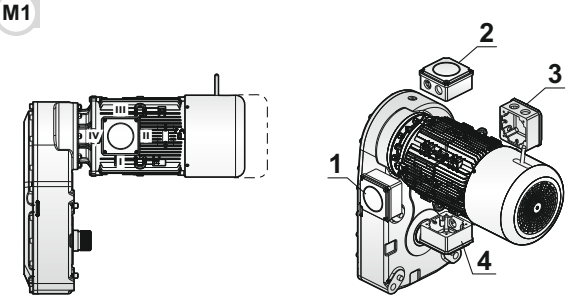
▼ Filling Plug ▽ Vent Plug ⊖ Oil Level Plug ■ Drain Plug

5.2 Terminal Box and Cable Entrance Sides

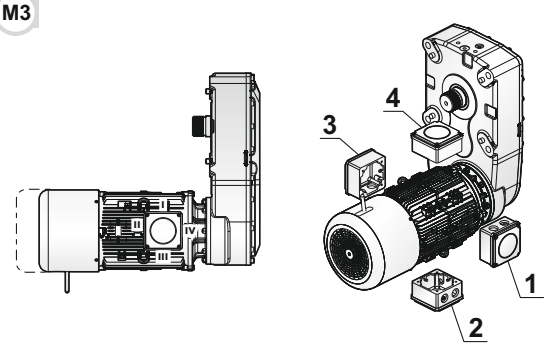
Table 8: Terminal Box and Cable Entrance Sides

PCS

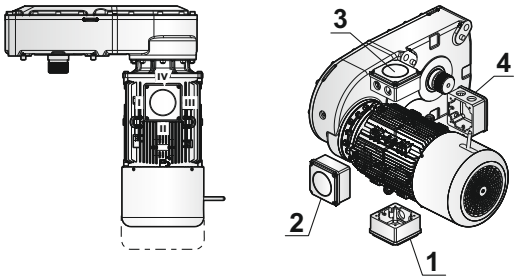
M1



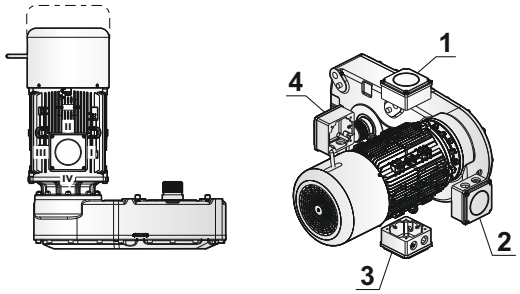
M3



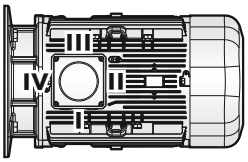
M5



M6

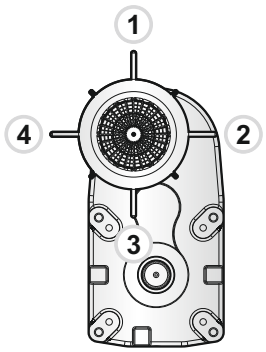
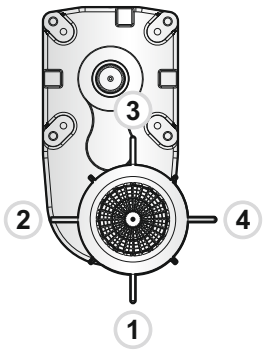
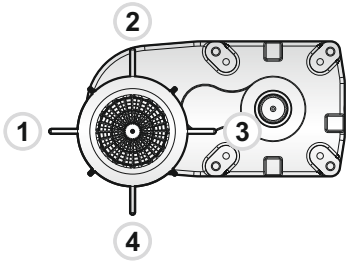
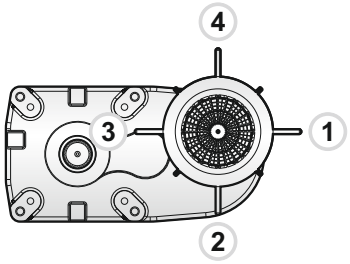


* **1 - 2 - 3 - 4 :** Shows terminal box position.
* **I - II - III - IV:** Shows cable entry position.



5.3 Directions of Manual Arm

Table 9: Directions of Manual Arm

PCS	
M1 	M3 
M5 	M6 

6.1 Lubrication

Before operating the gear unit, please check the oil level. If it is required, te same type of oil (shown on the label) should be added again (see. **6.3 Lubrication Table**, page 38), when the gear unit is brought to the predetermined mounting position. In case it can not be used, please contact PGR Technical Service.
For possible use of different type of oils, replace the oil completely (after consulting PGR Technical Service).
If synthetic oil will be used, it can be used after the oil in the gear unit has been drained and after the inside of the gear unit has been washed. The amount of oil to be used for oil-free gearboxes; After determining the required amount of oil according to the mounting position, fill the reducer with oil by using the appropriate type of oil.

DANGER !

In the situations of not using the stated amount of oil out of the table the probability of emerging a damage at the gearbox could be high.

6.2 Lubricant Fill Quantities

PCS

Table 10: Lubricant Fill Quantities

Mounting Positions / Litre (L)					
	**TYPE**	**M1**	**M3**	**M5**	**M6**
	PCS 1	1.2	0.9	0.8	0.9
	PCS 3	2.2	1.5	1.7	1.4
	PCS 5	4.7	4.2	4	3.5
	PCS 10	11.1	6.2	7.6	7
	PCS 20	15	10	10	9.8
	PCS 25	17.8	11.5	13.5	11.3
	PCS 40	36.5	25.5	25.5	24.5
	PCS 50	35.8	28.7	27.9	24.8
	PCS 60	62.5	43.5	44	40

NOTE: With backstop, the amount of oil should be increased!
NOTE: Before oil discharging, please disassemble all other equipments from gearbox.

6.3 Lubrication Table

At below table, registered brands or names of goods have been showed according to gearbox lubricant type which stated on product label (see. **2.1 Gear Unit Label**, page 14). This situation means that just a product should be used convenient to the lubricant type that shown on the label. In particular situations, stated product's name is shown on gearbox product label.

Table 11: Lubrication Table

Type of gearbox	Type of Lubricant	Ambient Temp. °C	ISO viscosity class	Shell	Mobil	bp	Esso	DEA	ARAL	Castrol	TRIBOL	KLÜBER LUBRICATION
Helical Gear-boxes	Mineral oil	- 5...40 Normal -15...25 # - 50...-15	ISO VG 220 ISO VG 100 ISO VG 15	Shell Omala Oel 220 Shell omala Oel 100 Shell Tellus Oel T 15	Mobilgear 600 XP 220 Mobilgear 600 XP 150 Mobil DTE 10 Excel 15	Energol GR-XP 220 Energol GR-XP 100 Bartran HV 15	Spartan EP 220 Spartan EP 100 Univis J 13	Deagear DX SAE 85W-90 Falcon CLP 220 Deagear DX SAE 80W Falcon CLP 150 Alrkraft Hydraulic Oil 15	Degol BG 220 Degol BG 100 Vitamol 1010	Alpha SP 220 Alpha MW 220 Alpha MAX 220 Alpha SP 100 Alpha MW 100 Alpha MAX 220 Hyspin AWS 15 Hyspin SP 15 Hyspin ZZ 15	Tribol 1100/220 Tribol 1100/100 Tribol 770	Klüberoil GEM 1-220 Klüberoil GEM 1-100 Isoflex MT 30 rot
	Synthetic oil	- 25...80	ISO VG 220	Shell Tivela Oel WB	Mobil Glygoyle 30	Enersyn SG-XP 220	ESSO Glycolube 220	Polydea PGLP 220	Degol GS 220	Alphasyn PG 220	Tribol 800/220	Klübersynth GH 6 - 220
	Bio-degradable oil	- 25...80	ISO VG 220					Plantogear 220 S	Bio-Degol S 220	Carelube GES 220	Tribol Bio Top1418/220	Klüber - Bio GM 2 - 220
	Food - grade oil	- 25...80	ISO VG 220	Cassida 220	Mobil SHC Cibus 220		GEAR OIL FM 220	Renolin 220	Degol FG 220	OPTIMOL optileb GE 220	Tribol Food Proof 1810/220	Klüberoil 4UH1 - 220
	Synthetic fluid grease	- 35...60			Shell Tivela compound A	Enersyn GSF	Fliessfett S 420	Glissando 6833 EP 00	Aralub SKA 00	Alpha Gel 00	Tribol 800/1000	Klübersynth GE 46 -1200
Anti Friction Bearings	Mineral oil grease	- 30...60 Normal # 50...110		Alvania Fett R 3 oder Alvania Fett RL 3	Mobil SHC Polyrex 005 Mobilux 3 Mobilux 2	Energrease LS 3 Energrease LS 2	Beacon 3 Beacon 2	Glissando 30 Glissando 20 Glissando FT 3	Aralub HL 3 Aralub HL 2 Aralub BAB EP 2	Spheerol AP 3 Spheerol AP 2 LZV - EP Spheerol EPL 2	Tribol 3030/100-2 Tribol 4020/220-2 Tribol 3785	Centoplex 3 Centoplex 2
	Synthetic grease	# - 50...110		Aero Shell Grease 16 oder 7	Mobiltemp SHC 32		Beacon 325	Discor 8 - EP 2	Aralub SKL 2	Product 783/46	Tribol 3499	Isoflex Topas NB52

DANGER !

The synthetic and mineral oils must not be mixed with eachother.

NOTE !

At ambient temperatures under -30° degree and above 60° degree for leakproofing element inside the shaft, special quality material must be used.

NOTE !

This table shows the oil types of different companies. Oils of different companies should not be mixed. Please contact PGR if you want to change the oil type and viscosity class. Otherwise we provide no guarantee for the function of the gearbox.

7.1 Sliding Shaft (DIN 5480) Connection Dimensions and Tolerances

Dimensions of multiple wedged output shaft and tolerance values are given below. Please obey to given tolerance values for correct output shaft connection.

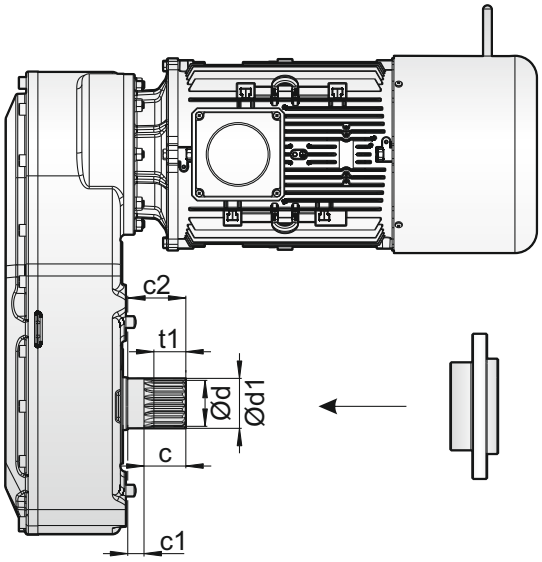


Figure 12: Sliding Shaft (DIN 5480) Connection Dimensions and Tolerances

Table 12: Sliding Shaft (DIN 5480) Connection Dimensions and Tolerances

Sliding Shaft (DIN 5480) Connection Dimensions and Tolerances						
Type	**c**	**c1**	**c2**	**d**	**d1**	**t1**
PCS 1	35	5	40	W30x1.5x27x18x8f DIN 5480	Ø31 (h6)	25
PCS 3	36	14	50	W40x2x36x18x8f DIN 5480	Ø43 (h6)	27.5
PCS 5	32	16	48	W45x2x42x21x8f DIN 5480	Ø48 (h6)	27
PCS 10	43	13	56	W65x2x62x31x8f DIN 5480	Ø68 (h6)	35
PCS 20	52	15	67	W75x2x72x36x8f DIN 5480	Ø78 (h6)	44
PCS 25	54	21.6	75.6	W90x2x88x44x8f DIN 5480	Ø92 (h6)	46
PCS 40	75	35	110	W110x4x104x26x8f DIN 5480	Ø115 (h6)	67
PCS 50	76	20.9	96.9	W110x2x108x54x8f DIN 5480	Ø113 (h6)	67
PCS 60	83	41	124	W120x4x112x28x8f DIN 5480	Ø130 (h6)	75

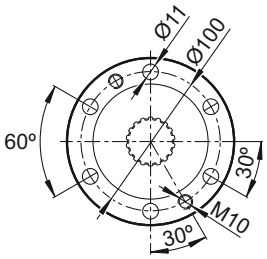
7.2 Drum Connection Flange

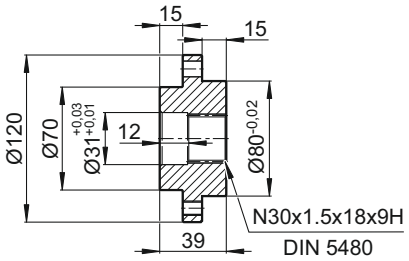
Please control dimensions of drum connection flange which are adaptable (optional) to the PCS series multiple wedged output shafts.

Table 13: Dimensions of Drum Connection Flange and Tolerances

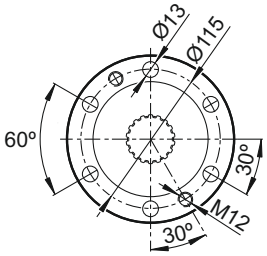
Dimensions of Drum Connection Flange and Tolerances

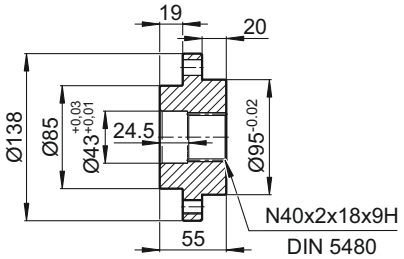
PCS 1



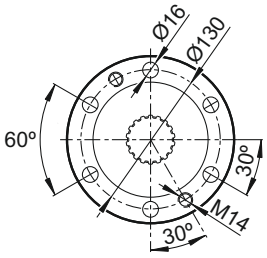


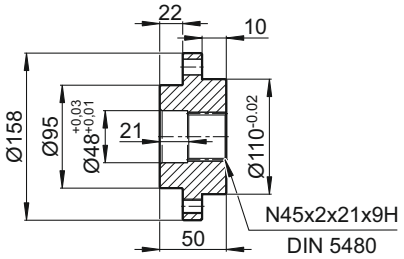
PCS 3



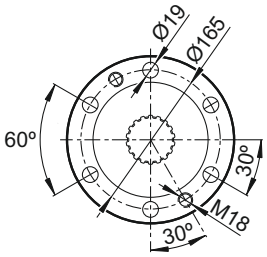


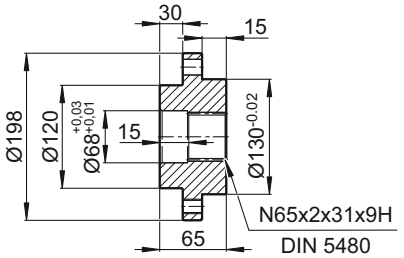
PCS 5



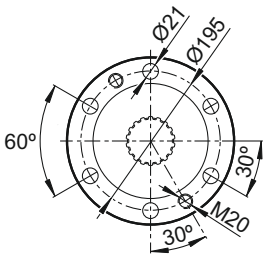


PCS 10





PCS 20



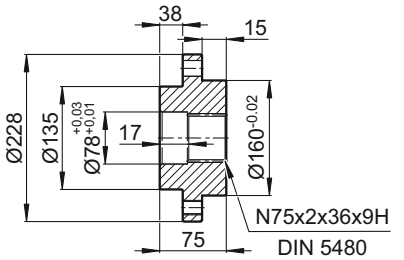
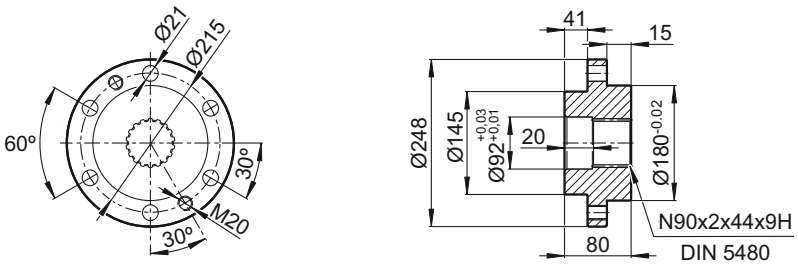


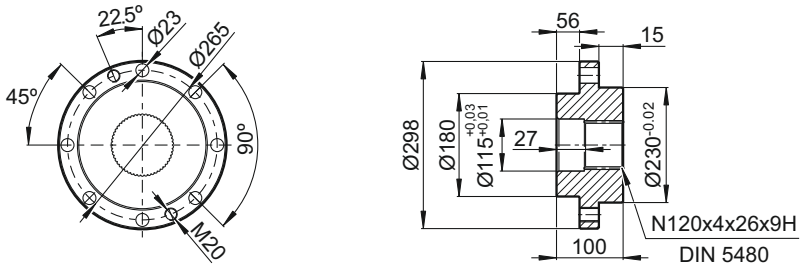
Table 13: Dimensions of Drum Connection Flange and Tolerances

Dimensions of Drum Connection Flange and Tolerances

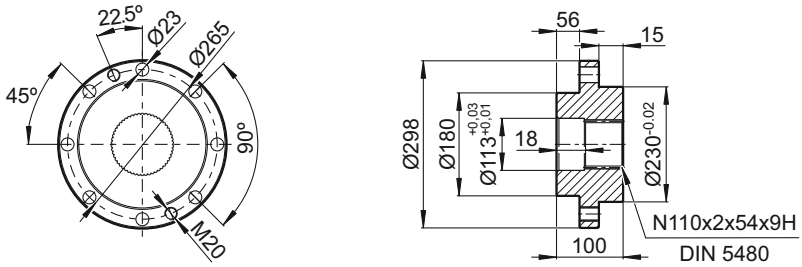
PCS 25



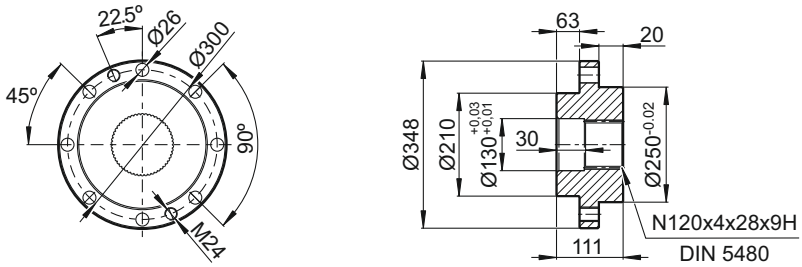
PCS 40



PCS 50



PCS 60



7.3 Backstop

Backstop prevents output shaft from rotation in the wrong direction. Depending on the type and size of the gearbox, the backstop can be installed to the case, input flange or motor. It is important to specify the required output rotation direction.

NOTE !

- The action of the motor in locking direction could cause fracturing of the lock.
- The motor absolutely must not rotated to the direction of locking. To provide specified direction of rotation, it must be careful that the motor is supplied by direct current.
- As a control, the output shaft/hollow shaft of the gearbox should be turned half a turn against the backstop direction.

The allowed direction of rotation is marked on the gear unit.
If the backstop direction is wrong, please contact PGR.

8.1 Product Disposal

Dismantle the machine, separating the parts following the instructions given in this manual.
You must group the parts according to the materials they are made of: iron, aluminium, copper, plastic and rubber.
The parts must be disposed of by the relative centres in full compliance with the laws and force on the matter of dismantling and demolishing industrial waste.

Waste Oil: At the disposal of waste oil, please obey both to the environmental protection laws as well as rules and regulations those are in force into countries which the machine has been using of.

8.1.1 Disposal

The valid regulations must be taken into the consideration for the waste materials.

Table 14: Disposal Table

GEAR UNIT COMPONENTS	MATERIAL
Toothed wheels, shafts, rolling bearings, parallel keys, locking rings,...	Steel
Gear unit housing, housing components,...	Grey cast iron
Light alloy gear unit housing, light alloy gear unit housing components,...	Aluminium
Worm gears, bushes,...	Bronz
Radial seals, sealing caps, rubber components,…	Steel spring and elastomer material
Coupling components	Plastic with steel
Flat seals	Asbestos - free sealing material
Gear oil	Additive mineral oil
Synthetic gear oil (rating plate code: CLP PG)	Polyglycol - based lubricants
Cooling channel, Serpentine cooling resistances and resistance connection equipment, screw connection.	Copper, epoxy, yellow brass

NOTE !

Please do not diffuse any biologically indivisible materials, oil and noninclusive components (PVC,rubber,resins and etc.) to the environment.

ATTENTION !

Do not reuse damaged parts during inspection, only should be changed by expert personnels.

8.2 Troubleshooting

Table 15: Troubleshooting

NO	PROBLEM	OBSERVED	SOLUTION
1	Gearbox does not work.	The noise is not coming from gearbox. Output shaft of the gearbox is not rotating. Driver / frequency invertor is not be used.	Check the connection of electric motor, voltage and frequency. The values could be same with the values which are on the motor label. Look at to the motor usage guide. If the solution is not found look to the article 50.
2	Gearbox does not work.	The noise is not coming from gearbox. Output shaft of the gearbox is not rotating. Driver / frequency invertor is used.	Look to the guide of driver / frequency invertor or driver usage guide. Determine that error is not originated from driver / frequency invertor by seperating electric motor either from driver and frequency invertor and making direct connection to the motor.
3	Gearbox does not work.	A different noise is coming out of the gearbox. But earbox and motor shaft are not rotating. Driver / frequency invertor or magnetic brake are not used.	The first thing to do is to check whether the electric motor connection, voltage and frequency are the same as the motor label values. If there is not any problem, to pull out gearbox from the machine and try to operate in neutral. If gearbox works, the power of motor may not be enough to operate system. If the motor which connected to the gearbox is monophase, take off capacitors should be controlled. Even the motor does not work despite all tests and examinations, look at to the article 50.
4	Gearbox does not work.	A different noise is coming out of the gearbox. But gearbox and motor shaft are not rotating. Driver / frequency invertor or magnetic brake are used.	The frequency invertor or driver usage guide should be examined. Determine that error is originated whether from driver / frequency invertor by seperating electric motor either from driver and frequency invertor and making direct connection to the motor. If the gearbox does not work, look at to the article 50.
5	Gearbox does not work.	A different noise is coming out of the gearbox. But gearbox and motor shaft are not rotating. Magnetic brake is used.	It is necessary to check whether electric motor connection, voltage and frequency are identical with motor label values. Look at to the motor usage guide. Be sure that brake is working. If the brake is assembled by us to check whether it is made correctly according to the schema at the usage and maintenance instructions. If the error is not found to check whether the brake is operating by making direct connection to the brake appropriate to the brake voltage. When the electric is given, the noise of the opening of brake will come. If the brake is not working even by giving electric, the diode of brake could be in failure. To feed the motor directly according to the informations on the label when the brake is seperated from disc. If the problem is continuing, the power of the motor may not be enough. Look to the article 50.
6	Gearbox does not work at low speeds / frequencies.	Use driver / frequency invertor.	The motor feeding frequency is declining at low speeds. For the operating of motor at very low frequencies, it is essential to adjust motor parameters and frequency invertor parameters very well. Besides for the low speeds, there could be big changes even at the gearbox efficiency. To enlarge motor power and invertor or for to reach your requested cycle range, change the gearbox ratio.

NO	PROBLEM	OBSERVED	SOLUTION
7	Gearbox does not work after long awaitings or at mornings.	Environmental temperatures are dropping below -5˚C.	The gearbox oil is not suitable to the environmental temperatures where it works. It is necessary to use low viscocity oils or to protect gearbox group from cold. To find proper oil look to usage guide or examine lubricating pages from the product catalogs. To work at higher environmental temperatures could be a solution. If the problem is continuing, the motor power should be increased.
8	Gearbox is very heating up.	You use worm screw type gearbox and environmental temperature is under +40˚C.	When the gearbox is working under the full load, gauge gearbox surface temperature with heat meter. If it is under +90˚C it is normal and no harm to gearbox. All worm screw and ATEX compatible helical gearboxes could be used up to the +120˚C surface temperatures. If the temperature is above the +120˚C and gearbox is ATEX compatible immediately stop gearbox and inform to PGR. Look to the article 50. If it is the product without ATEX, to check the oil amount according to the mountage position. Be sure that the mounting position written on the label and mounting position which gearbox is working should be identical. If not look to the article 50. To the gearboxes without worm screw types at heatings above +80˚C, look to the articles 9 and 50.
9	Gearbox is very heating up.	You use helical gearboxes and environmental temperature is under +40˚C.	When the gearbox is working under the full load, gauge gearbox surface temperature with heat meter.If it is under +90˚C it is normal and no harm to the gearbox. All gearboxes with ATEX are designed to work at maximum +120˚C. If the temperature is above +120˚C and gearbox is ATEX compatible immediately stop gearbox and inform to PGR. The gearboxes without ATEX are designed to work at maximum +90˚C temperature values. If the gearbox temperature is above the +90˚C, control the oil amount according to mounting position. Be sure that the mounting position written on the label and mounting position which gearbox is working should be identical. If there is inconsistency look to the article 50.
10	Gearbox is very heating up.	Environmental temperature is above +40˚C.	The standard gearboxes are designed to work at maximum +40˚C. Temperatures above +40˚C, special applications and additions should be done. In these situations please consult to PGR.
11	Gearbox is working noisy.	Noise is regular and perpetual.	Control the mobile machine elements. Operate gearbox without load by seperating from the system. If you hear the same noise, bearings which belong to gearbox or motor could be in failure. Look to the article 50.
12	Gearbox is working noisy.	Noise is irregular.	Control the mobile machine elements. Operate gearbox without load by seperating from the system. If the same noise is continuing, foreign objects could be in the oil. Change the oil and control the foreign objects in the oil. If the metal piece is found into the controlled oil, the gearbox could be damaged. Look to the article 50.

NO	PROBLEM	OBSERVED	SOLUTION
13	Gearbox is working noisy.	Noise is regular with clicking.	Control the mobile machine elements. Operate gearbox without load by seperating from the system. If the same noise is continuing, gearbox parts could be damaged. Look to the article 50.
14	Gearbox is working noisy.	Noise is regular and fluctuating.	Control the flexure of connection elements which connect to output shaft. Seperate element which is connected to output shaft and operate gearbox without load. If the same noise is continuing, look to the article 50.
15	Gearbox is working noisy.	Gearbox has motor with brake and noise is coming from the brake side.	The noises could be coming from the brake like in the shape of low level randomly tickings and it is normal. If the noise level is disturbing, brake could be damaged or there may be a problem at the gap adjustment between lining and disc. Look to the article 50.
16	Gearbox is working noisy.	You use frequency invertor and the noise is changing every time by the change of cycle.	Frequency invertor parameters may not be compatible with your used motor. Examine frequency invertor usage guide and if the same problem is continuing look to the article 50.
17	Oil leakage is existing.	Oil leakage from the seal.	If the environmental temperature is above +40˚C and there is continious working over 16 hours, according to the mounting position pull out a plug which is on the top and use ventilation plug instead of it. If your situation is not suited to this, seal could be damaged. Look to the article 50.
18	Oil leakage is existing.	Oil is leaking from the plug.	If you use the ventilation plug, be sure that the plug is at the right position. According to the mounting position of the gearbox, plug which is on the top could be ventilation plug. The plug may loosened, clean the surface and plug itself and squeeze it again. If the same problem is continuing, look to the article 50.
19	Oil leakage is existing.	Oil is coming out of the the housing.	To observe where the oil is exactly coming from. It is leaking from the oil plug, oil cover or seal and could flow onto the housing. If the situation is like this, look to the article 18 and 19. If you sure that oil is coming out of the housing there could be cracks and fractures at the housing. Look to the article 50.
20	Oil leakage is existing.	Oil is coming out of the the cover.	A gasket that is used between cover and housing is not performing its leaktightness duty. Dismantle the cover clean the bottom side and assemble cover to its place by smearing liquid gasket. If the problem continues look to the article 50.
21	Gearbox is making regular vibrations when it is worked at the assemble point.	You use torc arm.	The reason of the vibration of gearbox is originated from the shaft flexure which gearbox is connected. When the torc arm is used, it has no harm to gearbox and it is usual situation.

NO	PROBLEM	OBSERVED	SOLUTION
22	Gearbox is making random vibrations when it is worked at the assemble point.	You use torc arm.	The reason of the vibration of gearbox is because of shaft flexure which the gearbox is connected and passing gap between shaft and bushing. Control your shaft hole passing tolerance. When the torc arm is used, it has no harm to gearbox and it is usual situation.
23	Motor is warming a lot.	Motor is working above its normal ampere. Environment is clear.	There may be an overload problem or the motor power is insufficient. Motor could be in failure. Look to the article 50.
24	Motor is warming a lot.	Environment is dusty.	Be sure of whether motor fan bowl and motor cooler cores are clean for the air passing. If you use extra fan be sure that it is working. If there is invertor usage at the motor and works at low frequencies, the motor fan may not be sufficient. Use extra fan in these situations. If the problem continues look to the article 50.
25	Motor shaft is rotating but gearbox shaft is not.	Friction noise is coming from inside of gearbox or only there is motor noise.	There could be a damage at the gearbox parts. Look to the article 50.
26	Motor shaft is rotating but gearbox shaft is not.	You use chain geared or pinion geared at the output shaft of gearbox.	The damage could be originated of poligon impact formed by chain geared or from the radial load. Gearbox connection points may not be rigid enough. Be sure that you are able to use proper chain geared and pinion geared for used gearbox. Recalculate maximum allowable radial load according to this position. Look to the article 50.
27	Output shaft is cut.	You use either chain geared or pinion geared.	The damage could be originated of poligon impact formed by chain geared or from the radial load. Gearbox connection points may not be rigid enough. Be sure that you are able to use proper chain geared and pinion geared for used gearbox. Recalculate maximum allowable radial load according to this position. Look to the article 50.
28	Gearbox is stopping too late.	You use motor with brake	Control the electric connection schema of brake. Be sure that there is not assembled delayed diode onto the brake. If there is delayed diode, it could be changed. (Hoisting gearboxes are excluded PCS)
50	Service is required.	Informing of PGR Company.	Please contact with PGR company. Communication informations are given at the usage guides,catalogs. Mechanical parts can only be changed either by PGR or within the knowledge. Any change that is to be made without the knowledge of PGR would cancel both guarantee of product and all certificate decrelations and remove the responsibilities of PGR over the product.

If there are problems or malfunctions different to the onesdescribed here contact a PGR Industries Assistance Centre.

9.1 Authorized Service

They are skill and qualified people, which are determined by company. They have education about electricaland mechanical subject.

NOTE !

At below; the list took in place decided by our firm, authorized service and customer (user) which is about control and maintenance criterias / applications. Must be obliged to the informations which were given in the list. To the contrary that Usage and Maintenance directions become invalid.

Table 16: Authorized Service

No	CRITERIA	MANUFACTURER (PGR)	AUTHORIZED SERVICE	CUSTOMER (USER)
1	Disassembly of geared unit	✓	✓	X
1.1	Case changing	✓	✓	X
1.2	Gear changing	✓	✓	X
1.3	Solid / shaft changing	✓	✓	X
1.4	Changing of all consumable material except sealing materials	✓	✓	X
2	Oil cup changing	✓	✓	✓
3	Seal changing	✓	✓	✓
4	Oil changing	✓	✓	✓
5	Motor montage to PAM type	✓	✓	✓
6	Disassembly of motor from PAM type	✓	✓	✓

✓ **: SUITABLE**
X : NOT SUITABLE

2-3 : Send to the contaminated waste disposal (licensed firm).
4 : Send to the licensed firm for the purpose of disposal.

10.1 Declaration of Conformity

PGR® DRIVE TECHNOLOGIES

DECLARATION OF CONFORMITY

COMPANY
NAME : **POLAT GRUP REDÜKTÖR** SAN. VE TİC. A.Ş.
ADDRESS: Ata OSB Mah. Astim 1.Cad. No: 4, PK 105 Efeler / Aydın / TÜRKİYE
PHONE : +90 256 231 19 12 - 16 (pbx)
FAX : +90 256 231 19 17

PRODUCT
NAME : **CRANE GEAR UNITS**
TYPE : PCS
BRAND : PGR
MODEL : **PCS** 1 ... 60

APPLIED REGULATIONS:

Machinery Directive	2006/42/EC
ATEX	2014/34/EU
Low Voltage Directive	2014/35/EU

APPLIED HARMONIZED STANDARDS:

TS EN ISO 12100:2010
TS EN ISO 13857
TS EN 60204
TS EN ISO 80079-36:2016
TS EN ISO 80079-37:2016

Our products comply with the regulations and standards described above. When our products are fitted with an electric motor, we fulfill the requirements to the extent that the Low Voltage Regulation is included in the application area 2014/35/EU.

CE

Applied Person
Neclet DEMİR
General Manager

Date: 11 July 2016

10.2 ATEX Document

[1] **CERTIFICATE OF RECEIPT OF TECHNICAL FILE**

ACCORDING TO ATEX 2014/34/EU DIRECTIVE

[2] According to Article 13.1 b (ii), Directive 2014/34/EU, we confirm the receipt of documentation to retain it.

[3] Receipt Number: SCA18TDEX006

[4] Technical File Number: PGRATEX18 / Rev.00

[5] Date: 22.03.2018

[6] Equipment or Protective System: GEARBOX - GEAR UNIT
Models: P,PA,PF,PD,PM,PKD,PSH,P/+A,PMRV,PMRV Plus,A,F,D,M,K,PL,PLB,PH,PB,PYK,PRC/PRCF,PEX,PCS

[7] Manufacturer: POLAT GROUP REDUKTOR SAN. VE TIC. A.S.

[8] Address : ATA MAH. ASTIM. OSB 1. CADDE , NO:4 EFELER-AYDIN/TURKEY

[9] SCA, notified body that no. 2336, in accordance with the Council Directive 2014/34/EU of 26 February 2014, herewith acknowledges receipt, from the Manufacturer, of the technical documents (Technical File).

[10] This acknowledgement is an evidence about fulfillment of manufacturer duties concerning communicate the dossier of technical documentation to notified body in accordance with clause Article 13.1 b (ii) of Directive 2014/34/EU ATEX. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system.

[11] SCA holds the Technical File for at least ten years from the date of the last manufactured apparatus. In case of lack of a written acknowledgement from the manufacturer about the intention of maintaining the Technical File deposit, SCA will hold the TECHNICAL FILE in its archives for 10 years, starting from the date this receipt is confirmed.

[12] This receipt can be reproduced only entirely and with no change.

[13] Reference standards:
EN ISO 80079-36:2016 , EN ISO 80079-37:2016

[14] Marking of the equipment or protective system according to manufacturer's declaration :

II 2G Ex h IIC T4 Gb
II 2D Ex h IIIC T120°C Db

Digitally signed by İSMAİL OĞLAKCIOĞLU
CONFIRMATION

Issue Date : 26.03.2018
Translation Date : 20.06.2019

İsmail OĞLAKCIOĞLU
SCA Technical Manager

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FR.51/01.06.2018/00 01/01

11.1 Contact Information

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