

BONENG



R/J/T Product instruction

04/2023



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Important notes

During installation, please pay attention to the safety notes and warning in this book!



Electricity danger
Possible result: death or serious injury



Dangerous situations
Possible result: minor injury



Harmful situations:
Possible result: damage transmission device and the environment



Application suggestions and useful information



If you conform to the regulations in this manual, there won't be any fault, at the same time, it can satisfy the requirements of quality defect claim. So before the transmission device starts working, please read this instruction.

This instruction book contains important installation and maintenance notes, please keep this instruction book in a place near the device for reference.

1.Safety information

Safety information mainly involve the applications of gear unit. When running gear unit, please note the relevant notes.

This instruction is an integral part of the gear unit supplied.

All persons involved in the installation, operation, maintenance and repair of the gear unit must have read the instructions and comply with them.

Conforming to the instruction strictly is a necessity for realizing non-fault running and performing any quality assurance requirement.

Under the premise of conforming to instruction, please pay attention to:

National (Local) regulations for relevant safety and accident preventions;

Special regulations and requirements of relevant devices;

Warning and safety mark on device.

The following situations will cause human injury and property loss:

Incorrect running;

Wrong installation or operation;

Disassemble the protect cover or housing against the instructions.

Any damage or stop caused by disregarding this instruction book will not be responsible by the company.

To seek for technical advance, we reserve the rights to modify the instructions. With continuous improvements, we will further improve its performance and safety performances on the foundation of keeping the basic characteristics.

2. Technical information

2.1 The name plate information

⊕ BONENG ⊕	
Type	
n ₂	RPM
P ₁ kW	T ₂ N · m
n ₁ RPM	i
Oil	Wt. kg
NO.	Date
⊕ ⊕	

Product type

Output speed (only for directly connected motor)

Rated input power kW (it means motor power for directly connected motor)

Rated output torque N · m

Rated input speed RPM(it means motor speed for directly connected motor)

Nominal ratio

Lubrication oil viscosity

Weight

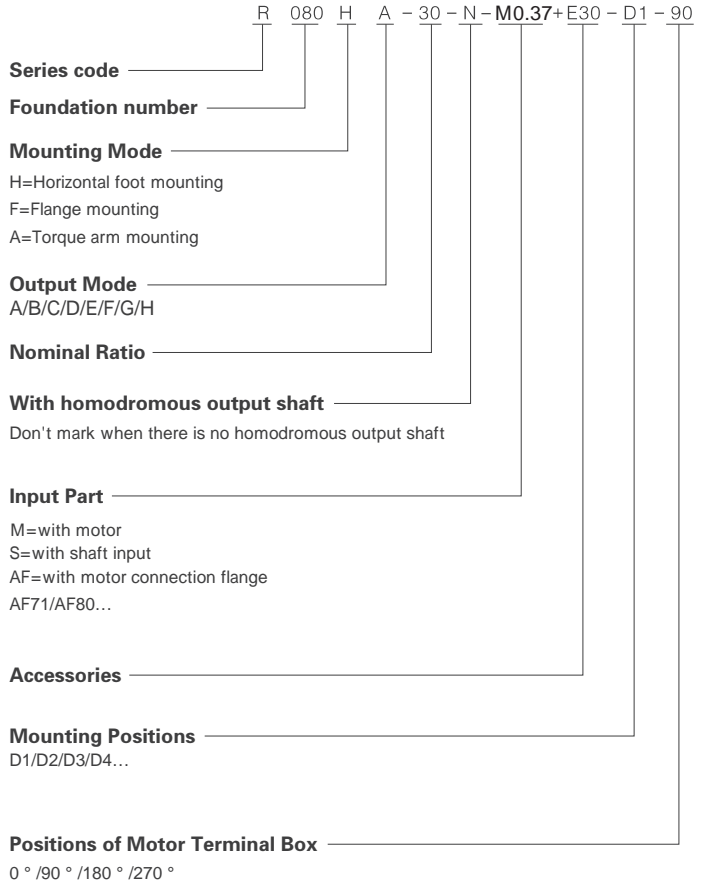
Product number

Production date

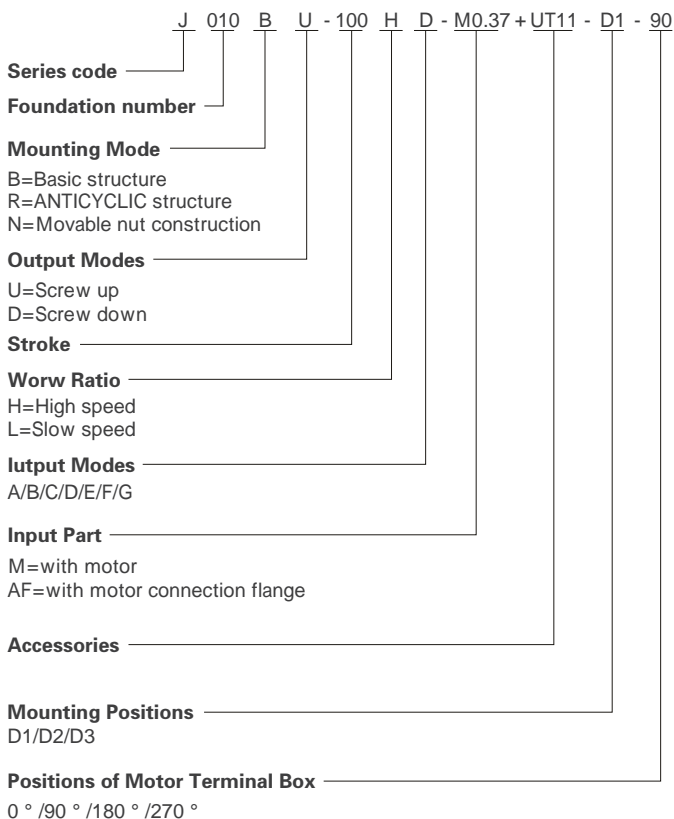
Data on nameplate are very important, please read them carefully and keep them clean. When services are needed, please provide the product number, used time and fault details.

2.2 Type instruction

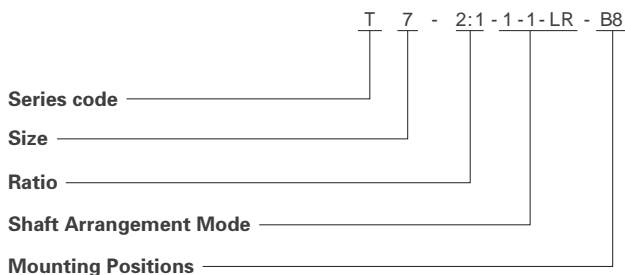
2.2.1 R Series



2.2.2 J Series



2.2.3 T Series



Type designation is only for customer references. For special supply category, please consult;

2.3 Noise level

This means noise level of the gear unit when the distance is 1m. Noise level means, when gear unit is under heat engine state, when input speed is n_1 , input power is P_1 . If several numbers are marked at the same time, the highest speed and power will be applied. Noise power level can be seen in table 1.

Table 1 Noise power level

Unit : dB(A)

Motor level	R	J	T
4、6、8level	73	72	73

2.4 Temperature rising

Temperature rise produced during running of gear unit should not be larger than the regulations in table 2, highest temperature of oil tank should not exceed 90 .

Table 2 Temperature rise of oil tank

Unit :

Motor level	Loading form	R	J	T
4,6,8 level	Empty loading	42	40	42
	Loading	44	42	44

2.5 Notes (Following notes are related to the use of gear units)

When conveying gear unit, prevent colliding shaft end, when hoisting gear unit, the hanging ring bolt should not be hung on screw of shaft end.

When storing gear unit and any unique component, take anti-rust measures, prevent rusts; When storing it, the components should not be piled together with gear unit; the gear unit should be laid on dry wooden foundation with no vibration, take dust and water prevention measures.

For gear units with long storage time (one to two years), with regular package check, you should also check cleanness of the machine, the completeness of mechanical damage and anti-rust layer.

The gear unit should not be stored or should not work in environments with acid and alkaline, low temperature, high temperature, damp or heavy air pollution. (except for the ones specially regulated in order).

Working environment of the gear unit should not be higher than 40 , temperature rise should be lower than 50 . (except for the special regulations in order).

The gear unit should be used in allowable torque range, if the torque is exceeded, install safety device on output shaft to reduce damage of the gear unit.

The gear unit is appropriate for continuous running (except J series jack), it allowed positive and negative running (except the ones with backstop).

If the mounting direction changes, change oil lens, oil plug, ventilation cap.

The gear unit should not be cleaned with high pressure cleaning equipment.

Installation, maintenance and repair to gear unit should be done when the gear unit is not working.

If there is any abnormal situation during running of the gear unit (for example, overheating or abnormal noise, etc), stop the machine immediately to check, contact with Boneng if necessary.

Welding should not be done on gear unit, it can't be used as joint for welding. Welding will caused irreparable damage to fine tooth and bearings.

The rotating components should be equipped with appropriate protection cover to prevent accident contact of staffs. For example, coupler, fluid coupling, gear wheel, driving belt wheel, etc.

Conform to the additional instructions on gear unit, for example, warning brand on brand, arrow indicating direction, etc; these brands and marks should not have dust and paint on them.

During assembling or disassembling work, the broken bolts should be changed with bolts with the same strength and category.

According to operation condition of the gear unit, the surface, lubrication oil and components of gear unit may reach high temperature, prevent burning.

When changing lubrication oil, be careful, avoid being burnt by hot oil.

When installing J jack, bore on bench surface should be as small as possible under the premise that the screw rod can pass through.

J jack can ' t make continuous running, loading time should not exceed 20%ED (working loading time rate);

When the jack is making normal loading work, it can't be stopped manually, otherwise, the jack maybe seriously damaged;

Components and spare parts should be bought from Boneng, avoid running danger and unnecessary mechanical damage caused by installation of accessories of other companies;

3. Installation and dismantlement

3.1 Notes before installation



Confirm the gear unit is in good condition (no damage during transporting or storing);

Confirm site environment condition the same with nameplate;

Standard environment temperature of gear unit: -10 - +40 ; no oil, acid, harmful gas, steam, radioactive substances, etc;

Gear unit of special form: be allocated according to environment condition;



When installed outdoor, avoid direct sunshine, avoid concentration of heat which may influence normal performances of the gear unit;

Worm gear unit: you can't impose large reversed external inertia moment to the gear units with self-locking functions, avoid damaging gear unit;

3.2 Preparations

Completely clean the preservatives, dirt, etc on the surface of input shaft and flange; avoid the solvent from immersing and damaging oil seal;

If the gear unit is stored for more than one year, the lifespan of lubrications in bearing will shorten;

Preparation of tools/materials: a group of spanners, torque spanner, assembly clamp, input and output fixing device, lubricants (anti-rust oil), medium for sealing bolts (screw lock);

3.3 Installation of gear unit

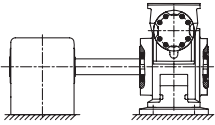
The gear unit can only be installed on flat, damping, rigid, torsion resistant supporting structure; at the same time, the parts being installed will not be moved even under maximum loading.

Central height should be correctly aligned during foot-mounted ; coaxiality should be calibrated when coupling connect; run-out should keep within permissible values when flexible coupling connect, while rigid coupling connect ; contour and position tolerance should be guaranteed. And when long coupling, rigidity of shaft should be enough.

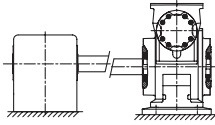
correct

incorrect

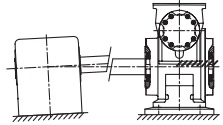
incorrect



Gear units central height is on the same level with driven machine central height



Gear units central height isn't on the same level with driven machine central height

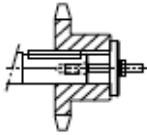


Mounting surface is not on the same level between the driven machine and gear unit.

Press the adapting piece into the shaft end threaded hole by suitable lifting device, knock should be avoided.



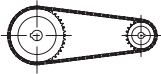
Correct



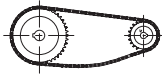
Incorrect



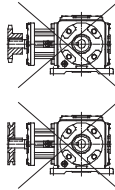
Avoid unallowable radical force (belt wheel, chain installation):



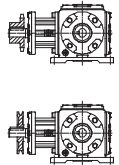
Incorrect



Correct



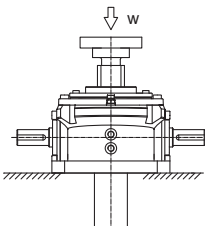
Incorrect



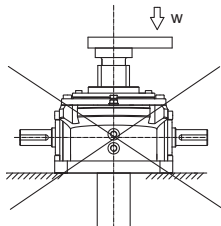
Correct

Avoid un-uniformed loading;

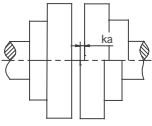
Correct



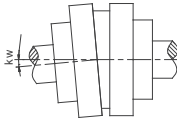
Incorrect



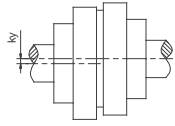
When installing the coupling, make absolutely certain that the following points are accurately aligned :



a) Axial misalignment



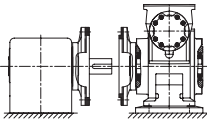
b) Angular misalignment



c) Radial misalignment

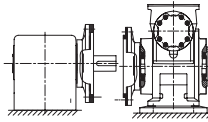
Flange - mount installation. Protruding (or concave) steps should inosculate with the housing:

correct



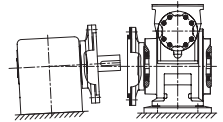
Connection parts should be coaxial.

incorrect



coupling is not coaxial with flange

incorrect



Flange mounting surface is not vertical with the connect shaft.



If you first paint lubricant on output parts, or heat to 80 to 100 in short time, you can assemble easily.

When installing driving components on gear unit (for example, couplings, gear wheel, chain, etc), if pre - heating is needed, you should protect oil sealing on shaft, reduce thermal radiation with heat shielding screen.



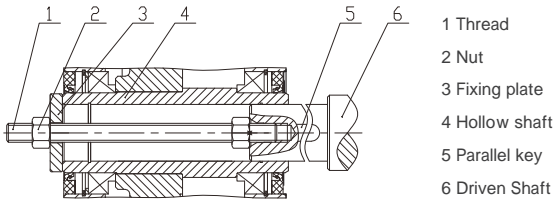
Belt wheel, small wheel and couplings can't be covered on shaft end with hammer clicking, otherwise, bearing, cover and shaft may be damaged; Please assemble with clamp and the central holes with threaded hole.

When installation belts, please pay attention to the right tension of the belt. (according to regulation of the manufacturer)

3.4 Assembly of hollow shaft of gear unit

When hollow shaft is connected with solid shaft, clean and put anti - rust oil (hollow shaft must be exactly aligned with the machine shaft).

Instead of the nut and threaded spindle shown in the diagram, other types of equipment such as a hydraulic lifting equipment can be used.



Generally fixing bolts adopt 8.8level,in case of high temperature or vibration impact, please take anti - loosing measures on screw joints.The screw torque of each fastening bolt as follows.

Bolt size (mm)	Tighten torque (N · m)	Bolt size (mm)	Tighten torque (mm)
M6	15	M30	2000
M8	36	M36	3560
M10	72	M42	5720
M12	123	M48	8640
M16	295	M56	13850
M20	580	M64	14300
M24	1000	M72	20800



When applying cleaning agent with solvents, you should apply sufficient ventilation measures, you should pay attention to the firing danger of solvents.

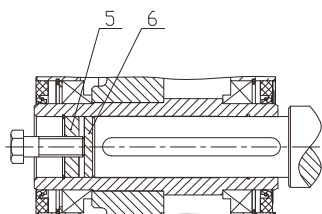
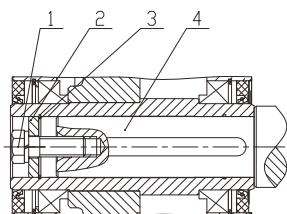
Driving and output components, such as belt wheel, couplings, etc should be with contact protection cover plate.

3.5 Disassembly of hollow shaft of gear unit

Disassembly of hollow shaft

Remove the bolt , pressure plate and outer circlip;

Install the assistant plate and the nut between the circlip and the driven shaft , then thread the bolt into the plate to remove driven shaft .



1.Bolt

2.Pressure plate

3.Circlip

4.Driven shaft

5.Nut

6.Assistant plate



Note:

The Assistant plate and the Nut are not in the range of delivery.

(Arrangement and dimension of screw hole of hollow shaft end can refer to technical diagram of BONENG)

4 Mounting position

4.1 General description of mounting position

The mounting position details and type selection, please refer BONENG selection manual.

4.2 Specified description of mounting position

The symbol of mounting position and its meaning:

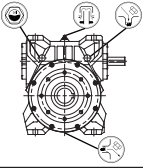
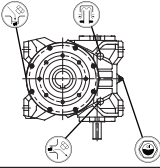
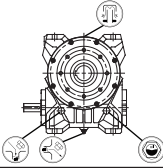
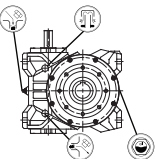
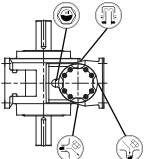
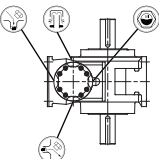
Symbol		Meaning	
		Breather	Oil inlet
		Oil ruler	Oil glass
		Oil drain plug	

R050-080 Square housing

D1	D2	D3
D4	D5	D6

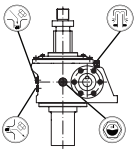
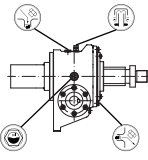
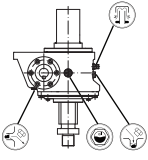
R050-080 Round housing

D1	D2	D3
D4	D5	D6

R100 ~ 250		
D1	D2	D3
		
D4	D5	D6
		

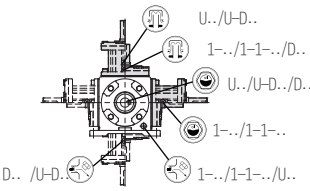
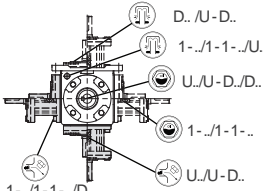
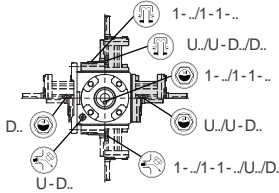
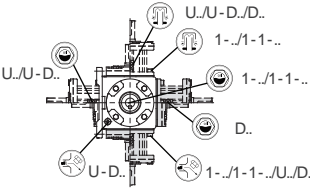
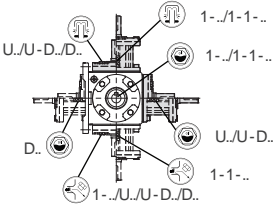
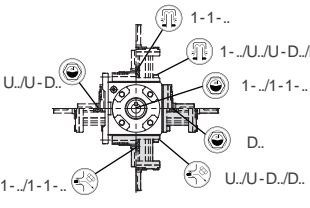
4.2.2 Mounting position of J series screw elevator

J010 - 1000 (J010 - 150 has been filled with extreme pressure lubrication grease, with no oil lens)

D1	D2	D3
		

4.2.3 Mounting position of T series bevel gear box

T06 ~ T25 - 1 - .. / U .. / D .. / 1 - 1 - .. / U - D .. (ARA1/ARA2/ARA4/T04 has been filled with 000# lithium - based grease when delivered, no oil lens)

B3	B8
 <p>U../U-D.. 1-../1-1-../D.. U../U-D../D.. 1-../1-1-.. D../U-D.. 1-../1-1-../U.. 1-../1-1-../U..</p>	 <p>D../U-D.. 1-../1-1-../U.. U../U-D../D.. 1-../1-1-.. U../U-D.. 1-../1-1-../U.. 1-../1-1-../D..</p>
B6	B7
 <p>1-../1-1-.. U../U-D../D.. 1-../1-1-.. D.. U../U-D.. U-D.. 1-../1-1-../U../D..</p>	 <p>U../U-D../D.. 1-../1-1-.. U../U-D.. 1-../1-1-.. D.. U-D.. 1-../1-1-../U../D..</p>
V5	V6
 <p>U../U-D../D.. 1-../1-1-.. 1-../1-1-.. D.. U../U-D.. 1-1-.. 1-../U../U-D../D..</p>	 <p>1-1-.. 1-../U../U-D../D.. U../U-D.. 1-../1-1-.. D.. 1-1-.. 1-../1-1-..</p>



1-LR-..., 1-UD-..., U-LR-..., D-LR-..., 1-1-LR-..., 1-1-UD-..., U-D-LR-... are configuration forms of different kinds of input/output shafts (each category has 6 kinds, 42 kinds in total)
Customers can select different types according to actual installation requirements, when necessary, consult the technical department of BONENG.

5 Lubrication/ Cooling/ Heating

5.1 Lubrication selection

Under the premise of the same viscosity level and category, you can choose internationally famous brand.If you need to change the recommended viscosity level,please consult.

Boneng lubrication oil selection are listed in following table

Product series	Applicable product specification	Lubrication oil (grease) brand number	Ambient temperature
R	R050~R080	000# Extreme pressure lubrication grease	-10 ~ +40
	R100~R250	VG680 (worm oil)	-20 ~ +50
T	T01~T04	000# Extreme pressure lubrication grease	-10 ~ +40
	T06~T25	VG460 (heavy loading industrial gear oil)	+30 ~ +50
	T06~T16	VG220 (heavy loading industrial gear oil)	-20 ~ +40
	T20/T25	VG320 (heavy loading industrial gear oil)	-20 ~ +40
J	J010~J150	000# Extreme pressure lubrication grease	-10 ~ +40
	J200~J1000	VG220 (worm oil)	-20 ~ +40



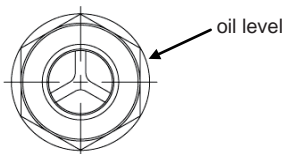
When ambient temperature is lower than -10 , you have to use synthetic oil.

To ensure lifespan of the products, we recommend synthetic oil.

When ambient temperature exceeds the above range, please consult technical department of BONENG.

5.2 Quantity of lubrication oil fill

This quantity is a recommended value. According to the difference of gear unit level and ratio, the oil filling quantity is different. Please pay attention to oil ruler scale as the indication of oil filling. Please refer the oil glass level and fill the oil to the middle level of oil glass.



For the products not set or not installed with oil lens, the oil injection quantity should refer to the product sample instruction book.

For products of the same category, under different installation direction, oil injection quantity is not the same.

Following table lists the suggested oil value according to the gearmotor mounting position.

5.2.1 R series oil quantity reference (unit: L)

Type Installation position	R050	R063	R080	R100	R125	R160	R200	R250
D1, D3	0.1	0.2	0.38	1	8.1	15	30	51
D2, D4	0.12	0.25	0.46	1.2	10	18	33	57
D5, D6	0.04	0.6	0.12	0.4	3.3	5.5	9.4	17

5.2.2 J series of oil filling quantity reference (unit: L)

Type Installation position	J010	J025	J050	J100	J150	J200	J300	J500	J750	J1000
D1, D3	0.1	0.12	0.15	0.22	0.25	0.6	2.5	5.5	9.5	14
D2	0.1	0.12	0.15	0.22	0.25	0.5	2	4.5	7.5	8

Note: Elevator operation process screw(nut) need to grease

5.2.3 the T series of oil filling quantity reference (unit: L)

Type Installation position	ARA1	ARA2	ARA4	T04	T06	T07	T08	T10	T12	T16	T20	T25
B3/B8/B6 /B7/V5/V6	Injected	Injected	Injected	Injected	0.95	1.5	1.9	3.5	7	10	11	18

5.3 Lubrication oil change

Change oil with the same type and manufactured in the same factory.

Before filling the new oil, please clean the sediments, metal particles and remained oil in the housing off.

5.4 Heating

For standard gear unit, the working ambient temperature is -10 ~ +40 , when the temperature is under -10 , it needs to be preheated or running without load.

When the gear unit temperature is over -10 , gear unit can be operated with load.

5.5 Backstop

Gear unit with shrink disc. Before assembly or running, please check the transmission machine running direction. To avoid wrong direction running, if necessary, please consult technical person. Backstop do not need maintenance.

6.Application

6.1 Fill the lubrication oil

Our products are not filled with lubrication oil when delivered.You should fill lubrication oil according to instruction book before running.



On the position marked with this symbol, fill lubrication oil into gear unit.

6.2 Check the device

Check oil level.

For the gear unit equipped with backstop device, inspect whether wiring of motor is correct.

Inspect whether shaft sealing is effective.

Check whether the rotating components contact with other components.

6.3 Start

Check whether the running direction under free status is correct (supervise whether there is abnormal grinding noise when the shaft is running).

During running inspection, you should ensure no output component on shaft, open relevant supervision and protection device at the same time.

If there is abnormal running phenomenon (for example, temperature rise, noise, vibration, etc), you should turn off the motor and check out the reason.

Contact with BONENG when necessary.

7 Checks and maintenance

7.1 Check and maintenance regularly

Users should make regular maintenance to gear unit. Check the status of lubrication oil regularly, clean ventilation cap, fan, cooling coil and the surface of gear unit, keep the gear unit clean, ensure normal running of gear unit.

7.2 Periods of checks and maintenance

Check oil temperature	Daily
Check abnormal noise of gear unit	Daily
Check oil level	Monthly
Check gear unit for leaks	Monthly
Check oil for water content	After working 400 hours, at least once a year
First oil change after starting	After working 400 hours
Subsequent oil changes	After every 5000 hours
Clean the breather	Every 3 months
Clean gear unit housing	Do with oil changing
Check tightness of fastening bolts	The first time after changing oil, then change oil every two times
Carry out complete inspection of gear unit	About every 2 years, do with oil changing

7.3 Notes for checks and maintenance:

Cut off power source, prevent electric shock, wait for cooling of gear unit.

Inspection of oil level: Please refer the oil glass level and fill the oil to the middle level of oil glass .

Oil inspection: remove oil drain plug, take some samples, inspect oil viscosity index; if the oil is not clean, change it.

Oil changing:

It is forbidden to mix different lubricants.

After cooling, oil viscosity will increase, it is harder to drain off oil. change before cooling.

Put an oil picking plate under oil plug, tear down oil plug ventilation cap, install oil plug after removing oil.

Inject new oil of the same brand, oil quantity should be the same with installation direction (see nameplate); if the brand number is different, consult after-sales department.

Inspect oil level at oil glass, install vent cap.

8 Fault treatment

Fault	Reason	Measure
Noise change of gear unit	Fastening is loose	Tighten bolts/nuts to prescribed torque Replace damaged bolts/nuts
	Damage to gear unit	Contact customer service Check all teeth and replace any damaged parts
	Excessive bearing play	Contact customer service Adjust bearing play
	Bearing defective	Contact customer service Replace defective bearings
Operating temperature too high	Oil level in gearmotor housing too high or too low	Check oil level and, if necessary, adjust
	Oil too old	Contact customer service Check date of last oil change if necessary, change
	Oil badly contaminated	Contact customer service Change oil
Increased vibration amplitudes at the bearing points	Bearing defective	Contact customer service Check and, if necessary, replace bearings
	Gear defective	Contact customer service Check gears and, if necessary replace
Oil leakage from gear unit	Inadequate sealing of housing covers or joints	Check and, if necessary, replace seals, seal joints
	Radial shaft sealing rings defective	Contact customer service Replace radial shaft sealing rings
Water in the oil	Oil foams in sump	Check state of oil by the test - tube method for water contamination. Have oil analysed by laboratory
	Gear unit exposed to cold air from machine - room ventilator	Protect gearmotor with suitable heat insulation. Close air outlet or alter its direction by structural measures



Note: For the faults can't be removed by customers, please contact with after-sales department of the company.

After-sale service

For the various kinds of transmission devices, if there is any quality problem, don't tear down components, you should illustrate the situation, then contact with after-sales department of the company, confirm about the problems, then apply ideal method to deal with them.

Type: _____

Production date: _____

Number: _____

Time being used: _____

Site or main machine name: _____

Manufacturer of main machine: _____

Quality problem description: _____

User company: _____

Address: _____

Telephone: _____ Fax: _____

Postcode: _____ Contact: _____

After-sales service telephone of Boneng: _____

Fax: _____

NOTE: _____

BONENG