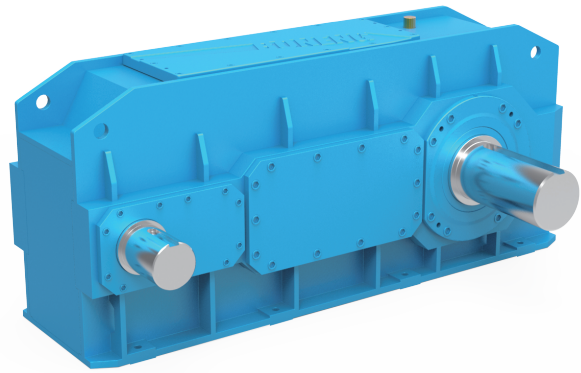
BONENG



HK Heavy Duty Gear Box manual

08/2021

Contents

Important notes

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

Suggestions and useful information

Harmful situations:

Possible result: damage transmission device and the environment

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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 gearbox. When running gear box, please note the relevant notes.

◆ This instruction is an integral part of the gearbox supplied.
◆ All persons involved in the installation, operation, maintance and repair of the gearbox 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;
→ Dismatle 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

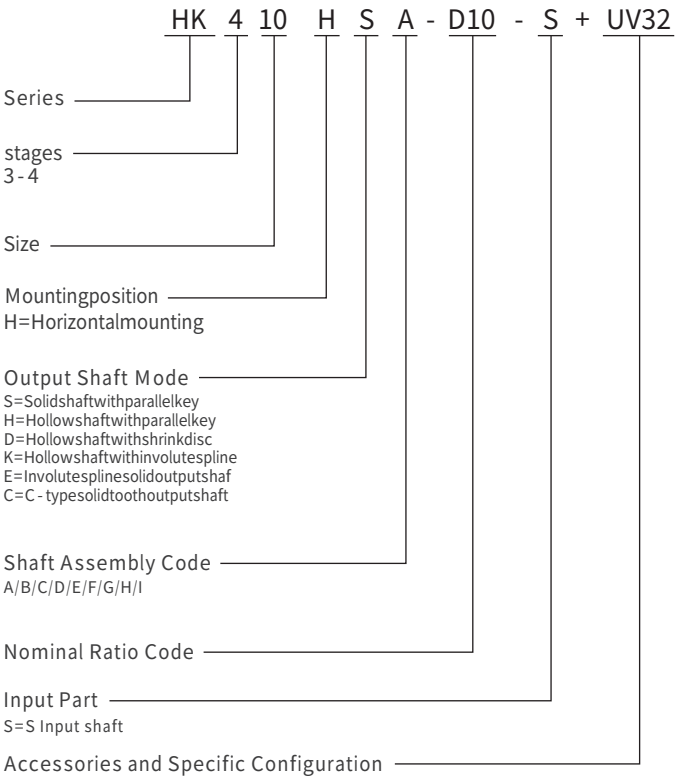
⊕ BONENG					⊕
Type			①		
n_2			②		RPM
P_1	③	kW	T_2	④	N · m
n_1	⑤	RPM	i	⑥	
Oil	⑦		Wt.	⑧	kg
NO.	⑨		Date	⑩	
⊕					⊕

① Product type
② Output speed (only for directly connected motor)
③ Rated input power kW (it means motor power for directly connected motor)
④ Rated output torque N · m
⑤ Rated input speed RPM(it means motor speed for directly connected motor)
⑥ Nominal ratio
⑦ Lubrication oil viscosity
⑧ Weight
⑨ Product number
⑩ 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 description

Type designation：



2.3 Noise level of gear box

Noise level conforms to relevant national standard, industrial standard and enterprise standard.

Inspection of noise is done according to sound density theory, it is inspected in a distance of 1 meter (the surface noise region).

Noise level is tested when gear box is under good working situation with regulated rated input speed n1 and rated input power p1 stated on the name plate. If several figures are given, the highest speed and power values apply.

If the repeated measurement can't get the final result, you should apply the inspection result obtained from the test platform of our company.

Measurement of surface noise level doesn ' t include the noise of accessories of lubrication device

Measuring–surface noise level LPA in dB(A)for gearbox

Type	Ratio	Speed r/min	Measuring - surface noise level LPA in dB(A) for heavy duty gear box size																	
			05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22
HK3	14 - 22.4	1450	68	69	73	74	74	75	77	77	78	79	81	81	82	83	83	84	85	86
		960	63	65	68	69	69	71	72	73	73	74	76	77	77	78	79	79	81	81
		710	60	61	65	65	65	67	69	69	70	71	73	73	74	75	75	76	77	78
	25 - 35.5	1450	65	67	70	71	71	73	74	75	76	76	78	79	79	80	81	81	83	83
		960	1)	62	65	66	66	68	69	70	71	72	73	74	75	75	76	77	78	78
		710	1)	1)	62	63	63	65	66	67	67	68	70	71	71	72	73	73	75	75
	40 - 63	1450	62	64	67	68	68	70	71	72	73	74	76	76	77	78	78	79	80	81
		960	1)	1)	62	63	63	65	66	67	68	69	71	72	73	73	73	74	75	76
		710	1)	1)	1)	1)	1)	62	63	64	65	66	68	68	68	70	70	71	72	72
HK4	22.4 - 45	1450	63	65	66	67	68	69	70	71	72	73	75	75	76	76	77	78	78	78
		960	1)	1)	62	63	63	64	65	66	67	68	70	70	71	72	72	73	73	74
		710	1)	1)	1)	1)	v	61	62	63	64	64	66	67	68	68	69	69	70	70
	50 - 100	1450	1)	62	64	65	66	66	68	68	69	70	72	73	73	74	74	75	75	76
		960	1)	1)	1)	60	61	62	63	64	64	65	67	68	68	69	70	70	71	71
		710	1)	1)	1)	1)	1)	1)	60	61	61	62	64	64	65	66	66	67	67	68
	112 - 250	1450	1)	1)	64	62	63	64	65	66	67	67	69	70	70	71	72	72	73	73
		960	1)	1)	1)	1)	1)	1)	60	61	62	63	64	65	66	66	67	68	68	68
		710	1)	1)	1)	1)	1)	1)	1)	1)	1)	1)	61	62	62	63	64	64	65	65

1)LPA<60dB(A)

2.4 Notes
(Following notes is related to the use of gearbox):

- When installed outdoor, direct sunlight should be avoided, otherwise concentrated heat will affect the gearbox performance.
- The gearbox performance. must not be cleaned using high-pressure cleaning equipment.
- All work such as inspection, maintenance and installation on gearbox should be done when gearbox is not in operation.
- No welding work should be done on gearbox, the gear- box musn ' t be used as an earthing point for welding work. Welding will cause irreparable damage to fine gear wheel and bearings.
- If any changes are found during operation (for example, over heating or abnormal noise, etc), you should switch off driving device immediately.
- All the rotating components should be equipped with protective cover to prevent accidental contact of staffs,such as couplings, hydraulic coupler, gear wheel, driving belt wheel, etc.
- You should conform to the instructions on gearbox, for example, nameplate, arrow of the direction, etc. These nameplates and marks must be kept free from dirt and paint out all times.
- During assembly or disassembly work, the damaged bolts should be changed with new bolts with the same strength and category.
  The bad results caused by unreasonable application of couplings, self-modification to gearbox and application of the components of other companies are not included in " three-guarantee " services.
- Depending on operation conditions of gearbox, the surface, lubrication oil and components of gearbox may reach high temperature, avoid being burnt.
- When changing lubrication oil, take care to prevent scalding by hot oil.Gearbox should be laid on dry wooden foundation with no vibration and be covered well. When storing the gearbox and any independent components, you should take anti-rust measures, avoid rusting, the gearbox should not be piled together when stored.
- Unless there are other regulations in ordering contract, gearbox should not be stored or work in sites with strong acid, alkali, low temperature, high temperature and heavy polluted air, damp and the places with chemical articles.
- When shifting the gearbox, take care to avoid the shaft ends knocked, otherwise the gearbox may be damaged. When lifting, don't use the front threads at the shaft ends to attach eyebolts for transport.
- Spare parts must be purchased from BONENG.

3 Installation and dismantlement

3.1 Notes before installation

- Confirm the gearbox in good condition(no damage during transporting or storing);
- Confirm site environment conforms to nameplate content;
- Standard ambient temperature of gearbox: -20°C~+40°C; no oil, acid, harmful gas, steam, radioactive substances. etc;
- If the storage time of the gear box is more than one year, the service life of the lubricant in the bearing will be shortened.

- Installing outdoor should avoid direct sunshine. In case of concentrated heat to influence smooth running of gearbox;
- Special gearbox: allocated according to ambient condition;
- During planning period, you should reserve enough space to maintain or repair;
- If the gearbox is fitted with a fan, there should be sufficient space for air intake.

3.2 Preparations

- Completely clean the preservative and pollutants, etc on the surface of input/output shaft and flange; be sure not to damage the oil sealing by solvents immersion;
- If the gearbox is stored for more than one year, the life of lubricant in bearing will be shortened;
- Preparation of tools/materials: one group of spanner, torque spanner, assembly clamp tools, input and output fastening device, lubricant (anti-rust oil), medium of sealing bolts (thread locking adhesives).

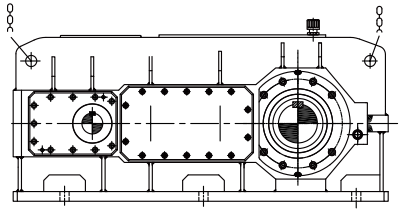
3.3 Installation of gear box

Foundation

- Prepare rigid foundation or stable platform to install transmission device, at the same time, you should consider that the position of all parts will not change even if maximum torque is loaded on box.
- The foundation of gear box should be horizontal and leveled. It must be designed in such a way that no resonance vibrations are set up and no vibration are transmitted from adjucent foundations steel structures on which the box is to be mounted must be rigid. It must be designed according to the mass and torque taking into account the forces acting on the gear box.
- Fastening bolts or nuts must be tightened to the prescribed torque.
- For the correct torque, we recommend customer to use the bolts of the minimum strength class 8.8.

Lifting position

For the gear box not installed with accessories, you should apply the four holes on gear box to lift.



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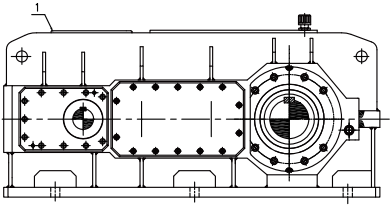
⚠ Note: Forbid to use the shaft end screw as the hoisting point after it is installed with hoisting ring.

Installation procedures of gear box:

◆ The initial alignment of the gear box (the position marked in diagram) in a horizontal direction is done by the surfaces of the inspeetion of assembly cover:



Initial alignment surface

◆ The final fine aligment with the assembies on the in-and-output side must be carried out accurately, by the shaft axes using: · Ruler · spirit level · dial indicator · feeler gauge, etc ;

◆ Only then should the gear box be fastened and re-check the alignment situation.Instruction: the precision degree of alignment is a very important factor to determine lifespan of shaft, bearing, couplings. Ensure the alignment tolerance to be zero.

According to different installation forms, you should pay attention to:

◆ For foundation installation, central height should be correct aligned, when connecting couplings, you should calibrate the coaxiality of the two shafts; for flexible couplings, the flotation value should not exceed the permissible range of couplings, for rigid connection,you should ensure form tolerance of each installation and connection; you should ensure shaft with enough rigidity for long shaft connection.

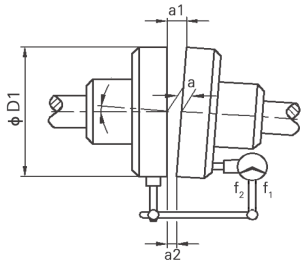
◆ When installing flange, protruding (or concave) steps should inosculate with housing. For flange installation and ollow shaft connection, ensure the contour and position tolerance for connection.

◆ When installing torque arm, hollow shaft should be exactly aligned with the machine shaft, machine shaft swiveling and the gear box vibration shouldn't exceed the flexible range, the arm should be fixed and tightened.
Torque arm should be installed in the gear box side, ensure no force. As showed in diagram:

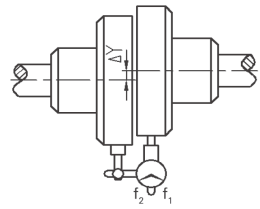
◆ When solid shaft is installed with coupling, belt pulleys gear, chain wheels and sprocket, etc, please don ' t make heavy clicking. The outer screw hole of output shaft should be pressed into connecting piece. Belt pulleys,gear wheels, and pug mill should consider about the radial force.

3.4 Assembly of coupling

- ◆ The input drive end of gear box should apply flexible coupling or hydraulic coupling.
- ◆ When output shaft of gear box is solid shaft, you should apply flexible coupling.
- ◆ If rigid coupling or other input and output elements which generate additional radial force or axial force (for example, gear wheel, belt wheel, fly wheel, hydraulic coupling, etc) are tobe used, this should be marked in contract.
- ◆ When input shaft is connected with driving shaft, ensure input shaft has the same axial center with driving shaft. Coaxiality deviation will increase mechanical vibration, cause damage to bearing and influence gear wheel contact. As shown in the following diagram, after input shaft is connected with driving shaft through coupling, you should adjust it with meter, after relevant inspection parameter satisfies the requirements in the following table “ Coaxiality accuracy table ”, the equipment can be used.



Angle deviation inspection



Deviation inspection

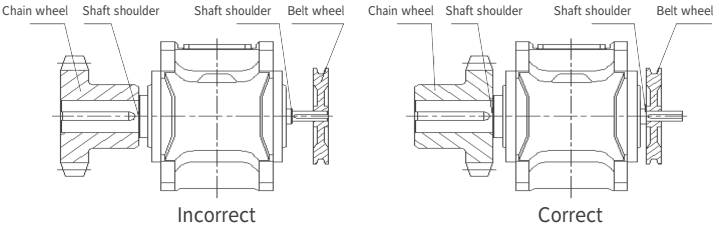
Coaxiality accuracy table:

Outer diameter	n<500r/min		500～1500r/min		>1500r/min	
	a1 - a2	△Y	a1 - a2	△Y	a1 - a2	△Y
D≤100	0.05	0.05	0.04	0.04	0.03	0.03
100<D≤200	0.06	0.06	0.05	0.05	0.04	0.04
200<D≤400	0.12	0.10	0.10	0.08	0.08	0.06
400<D≤800	0.20	0.16	0.16	0.12	0.12	0.10

Instruction:
When circular velocity of coupling outer diameter is 30m/s or below, if should be statically balanced. When circular velocity of outer diameter exceeds 30m/s, it must be dynamically balanced.

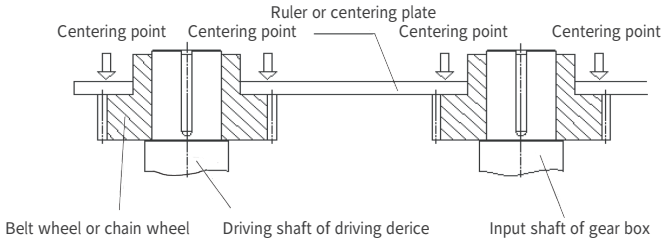
3.5 Assembly of belt wheel or chain wheel

◆ When input shaft and output shaft of gear box are installed with belt wheel or chain wheel, make sure the force transmission part of belt wheel or chain wheel be close to shaft shoulder as possible. As shown in the following diagram:



Incorrect　　Correct

◆ When installing belt wheel or chain wheel, ensure input shaft is centered to driving device, ensure maximum axial deviation tolerance value of the four centering points in diagram be 1mm every 1000mm.

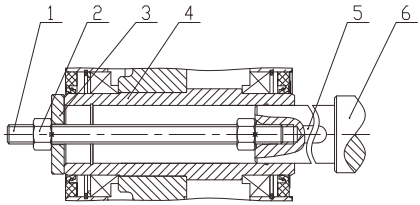


◆ When installing belt wheel or chain wheel, ensure belt wheel and chain with certain tonus.

Incorrect　　Correct

3.6 Assembly of hollow shaft of gear box

◆ When hollow shaft is connected with solid shaft clean and put anti-rust oil (hollow shaft must be exactly aligned with the machine shaft). Insted of the nuts and bolts shown in diagram, other types of equipment such as a hydraulic lifting equipment can be used.

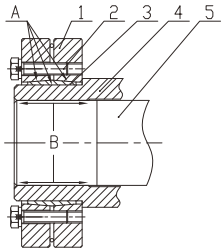


1.Thread
2.Nut1
3.Fixing plate
4.Hollow shaft
4.Parallel key
5.Driven Shaft

◆ When hollow shaft of gear box is equipped with locking plate, you should first cover locking plate on hollow shaft, then finish the installation of driving shaft of driven device, you should not screw the fastening bolts on locking plate before installing the driving shaft of driven device.

→ The locking plate being supplied can be directly installed, you can ' t tear it down before the first stress.

→ Before installing locking plate, ensure the bore of hollow shaft and the machine shaft must be absolutely free of grease in the area of the shrink disk seat.



1 Outer ring
2 Fastering bolt
3 Inner ring
4 Hollow shaft
5 Driving shaft of driven device
A Greased
B Absolutely grease free

◆ When screwing the bolts on locking plate, it is forbidden to screw it according to adjacent order, you should screw fastening bolts along with equilateral triangle order according to installation requirements of locking plate. During each circulated screwing process, each bolt can only screw 1/4 circle.

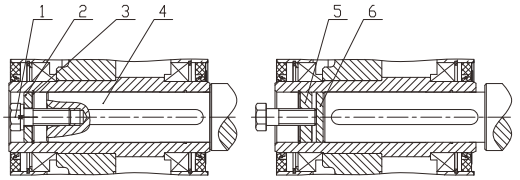
◆ Generally fixing bolts adopt 8.8 level, In case of high temperature or vibration impact, please take anti-loosing measures on screw joints. The screw torque of each fastening bolt as follows:

Bolt dimersion (mm)	Tighten torque (N · m)	Bolt size (mm)	Tighten torque (N · m)
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

3.7 Disassembly of hollow shaft of gear box

Disassembly of hollow shaft

Depending on the facilities available on site, the gear box can be forced off the machine shaft using forcing screws in and end plate, acentral threaded spindle or preferably a hydraulic lifting unit. Each end face of hollow shaft are equipped with 2 screw holes to screw in bolts used to fixing end plate.



1. Bolt
2. Pressure plate
3. Circlip
4. Driven shaft
5. Nut
6. Assistant plate

Note:
The pressure plate and auxiliary plate are not in the range of delivery. (Arrangement and dimension of screw hole of hollow shaft end can refer to technical diagram of BONENG)

When disassembling the hollow shaft of gear box equipped with locking plate, the loosing of locking plate is reversed to fastening direction. Finish disassembly of driving shaft of driven device according to the above method after tearing down locking plate.

When disassembling locking plate, you should pay attention :

→ It is forbidden to loose bolts according to the adjacent order.
→ When outer ring of licking plate can't separate from inner ring, you can screw a few bolts into disassembly screw, separate inner ring from outer ring.

3.8 Assembly of accessories

- The technical data of the involved accessories can refer to equipment list of specific order.
- Electrical and controlling device should be wired according to instruction of device supplier.
- For operation and maintenance, The operating instructions provided specifically for the order ' s instruction.

Gear box equipped with water cooling lubrication oil

- Before connecting cooling coil of cooling water, the end cap on water pipe should be taken down and washed clean.
- Install inflow and outflow pipeline of cooling water. For water flow direction and joint position, please consult.
- Electrically connect pressure inspection device.

Gear box equipped with heating device

- Electrically connect temperature monitor.
- Electrically connect heating element.

Gear box equipped with oil temperature measuring device

- Electrically connect resistive thermometer with evaluating instrument (be prepared by customers).

Gear box equipped with oil–level monitoring

- Electrically connect oil - level monitor.

Gear box equipped with speed transmitter

- Electrically connect speed transmitter.

3.9 Final work

- After installing gear box, check all screw connections for tight fit.
- After screwing down fasteners, you should check whether the alignment changes.
- Inspect whether the removed devices are installed according to device list and the attached drawing.

4 Installation information

4.1 HK installation position information

◆ The mounting position details and type selection of gear box , please refer BONENG selection manual (HK series).

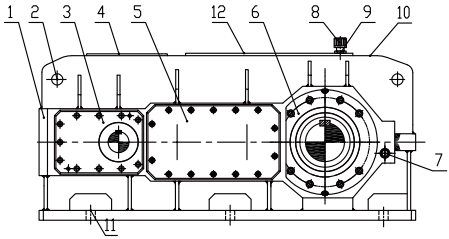
4.2 HK Installation direction diagram

◆ The symbol of mounting position and its meaning:

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

4.3 General information

The housing is equipped with adequately dimensioned lifting eyes, inspection and assembly cover with appropriate dimensions. The lubrication oil height in gear box can be inspected with inspection oil ruler or observation oil lens. The housing is equipped with oil drain ruler, oil plug, oil lens and a vent cap.



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1 Housing
2 Lifting eyes
3 Cover
4 Cover
5 Cover
6 Cover
7 Oil indicator
8 Brenther
9 Oil drain plug
10 Nameplate
11 Fastener of gear box
12 Inspection or assembly cover
13 Alignment surface
14 Fastener of torque arm
15 Cover

5 Lubrication/Cooling/Heating

5.1 Lubrication

◆ 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.

◆ The following table lists the lubrication oil brand and ambient temperature corresponding to product speficiation.

Ambient temperature°C	-20°C～+40°C	+30°C～+50°C
Viscosity brand number	VG320	VG460

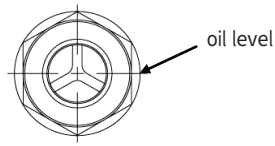
◎ When ambient temperature is lower than -10°C, you have to use synthetic oil.

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

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

Quantity of lubricantion oil fill:

◆ This quantity is a recommended value. According to the difference of gear box level and ratio, the oil filling quantity is different. Please pay attention to oil level scale as the indication of oil filling.



◆ For the products without oil ruler, oil filling quantity should according to product catalogue.

◆ For products of the same type, under different installation directions, the oil filling quantity is different.

◆ The following table lists suggested oil filling quantity for different installation directions of various series.

Oil quantity table(L)																		
size	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22
HK3	20	24	36	44	56	67	95	128	153	190	235	225	290	375	415	500	700	710
HK4	20	24	35	42	55	65	90	125	150	187	235	220	290	375	440	510	695	705

5.2 Cooling

- If required,gearbox are fitted either with oil - water coolers or oil - air coolers. The required water connection must be provided by the user.
- To ensure optimum cooling performance,the specified direction of flow in the cooling unit must be obeserved.The cooling - water inlet and outlet must not be reversed.The pressure of the cooling water must not exceed 8 bar.
- If the gear box is out of work for a longer period or if there is a danger of the water freezing ,it must be drained off.Remove any remaining water with compressed air.

5.3 Heating

- For standard gearbox, the working ambient temperature is -20°C - +50°C, hen the temperature is under -10°C，it needs to be preheated or unning without load. When the gearmotor temperature is over -10°C，gearmotor can be operated with lod.

5.4 Backstop

- Gearbox 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 box.

6.2 Check the device

◆ Check oil level, cooling of lubrication oil or the sealingness of oil supply system.
◆ Inspect the status of cooling device and check the shut-off valve.
◆ For the gear box 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

◆ For the gear box equipped with motor oil pump, make sure open oil pump motor before starting the device.
◆ 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 box. Check the status of lubrication oil regularly,clean vent cap, fan, cooling coil and the surface of gear box, keep the gear box clean,ensure normal running of gear box.

7.2 Periods of checks and maintenance

Check oil temperature	Daily
Check abnormal noise of gearbox	Daily
Check oil level	Monthly
Check for leaks gearbox	Monthly
Check oil for water content	After working 400 hours, at least once a year
First oil chang after starting	After working 400 hours
Subsequent oil changes	After every 5000 hours
Clean oil filter	Every 3 months
Clean ventilation cap	Every 3 months
Clean fan, fan cowl and gearbox cabinet	Do with oil changing
Check cooling coil for deposits	About every 2 years, do with oil changing
Check lubrication oil air cooler	Do with oil changing
Check lubrication oil water cooler	Do with oil changing
Check tightness of fastening bolts	The first time after changing oil, then change oil every two times
Full - aspect inspection to gearbox	About every 2 year, do with oil changing
Clean ventilation screw	Every 3 months

⚠ The listed periods are determined on working condition of gear box. These periods are average values under the following conditions:

→ Daily working hour: 24 hours
→ Loading factor: 100%
→ Speed of input device 1800 RPM
→ Maximum temperature 90°C (only mineral oil)
→ 100°C (only synthetic oil)

7.3 Notes for checks and maintenance:

◆ Cut off power source, prevent electric shock, wait for cooling of gearbox.
◆ Inspection of oil level: screw down oil ruler, inspect oil level.Products which use oil glass 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, inpsect 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/oil ruler/vent cap, install oil plug after removing oil.
→ Inject new oil of the same brand, oil quantiy should be the same with installation direction (see nameplate); if the brand number is different,consult after - sales department.
→ Inspect oil level at oil ruler or oil glass, install oil ruler and vent cap.

◆ Cut off power source, prevent electric shock, wait for cooling of gearbox.
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◆ Oil changing:

8 Fault treatment
8.1 Fault, reason and measures

Maintenance work should be done by qualified staff.

Fault	Reason	Measure
Big noise at the fastener of gear box	Fastner looses	Tighten bolt/nut to regulated torque. Replace the damaged bolt/nut.
Noise change of gear box	Teeth of gear is damaged	**Contact wth customer service department** → Check all the gears, change the damaged components.
	Bearing interval is too large	**Contact wth customer service department** →Adjust bearing interval.
	Bearing is damaged	**Contact wth customer service department** →Change the damaged bearings.
Operating temperature is too high	Oil level in cabinet is too high.	Check oil level, if necessary, adjust it.
	Oil is too old.	**Contact wth customer service department** → Check the last time of oil changing, if necessary, change it.
	Oil is badly contamined.	**Contact wth customer service department** → Change oil
	On gear box equipped with lubrication oil cooling system: Flow of coolant is too low or too high	Adjust the valve of inflow and outflow pipelines. Check free flow of water cooling device.
	Temperature of coolant is too high	Check the temperature and adjust according to requirements
	Oil flows through water cooling device is too low, reason: Oil filter is seriously clogged	Clean oil filter
	Mechanical fault of oil pump	**Contact wth customer service department** → Check whether the function of oil pump is normal. → Repair or change into a new one.
	On gear box equipped with fan: Air inlet and/or cabinet of fan cover are badly contamined	Clean fan cover and cabinet
	Gear box equipped with cooling coil: Residues dirt in cooling coil	**Contact wth customer service department** → Clean or change cooling coil.

Fault	Reason	Measure
Temperature of bearing is too high	Oil level in gearbox cabinet is too high or too low	Check oil level under room temperature and topup oil according to requirements。
	Oil is too old	**Contact with customer service department** → Check the last time of oil changing.
	Mechanical fault of oil pump	**Contact with customer service department** → Check whether oil pump works normally. Repair or change a new oil pump
	Bearing is damaged	**Contact with customer service department** → Check the data obtained from vibration measurement by operators → Check and change bearing according to requirements
Amplitude of bearing rises	Bearing is damaged	**Contact with customer service department** → Check and change bearing according to requirements.
	Gear is damaged	**Contact with customer service department** → Check and change gear according to requirements.
Temperature of backstop device is too high Backstop is ineffective.	Backstop device is damaged.	**Contact with customer service department** → Check and change backstop device according to requirements.
Gear box leaks oil	Sealing at cabinet cover or joint is not good	Check sealing part and the joint, if necessary, change into a new one. Seal the joint part.
	Radial shaft sealing ring is ineffective.	**Contact with customer service department** → Change into a new radial sealing.
There is water in oil	Oil fams in pump	Check water contamination with test tube. Analyze oil in lab.
	Lubrication oil cooler or cooling coil is ineffective	**Contact with customer service department** → Find out and repair the leaking part. → Change cooler or cooling coil.
	Gearbox occurs the cold air from ventilation, thus forming frost.	Protect the gearbox with appropriate thermal insulation material. Close air outlet or change its direction on structure.
Pressure supervision device alarms (gear - box equipped with pressure lubrication,lubrication oil water cooling device and aircooling device)	Oil pressure is less than 0.5bar	Check oil height under room temperature,fill in oil according to requirements. Check oil filter, change according to requirements. **Contact with customer service department** → Check whether oil pump function is normal. → Repair or change oil pump.
Indicator of double changing filter sends alarms	Double changing filter clogged	Change the filter according to instructions, remove clogged filter elemont and clean it.
Fault of oil supply system		Check the instructions of oil supply system in instruction book.

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 compant, 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: _____

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