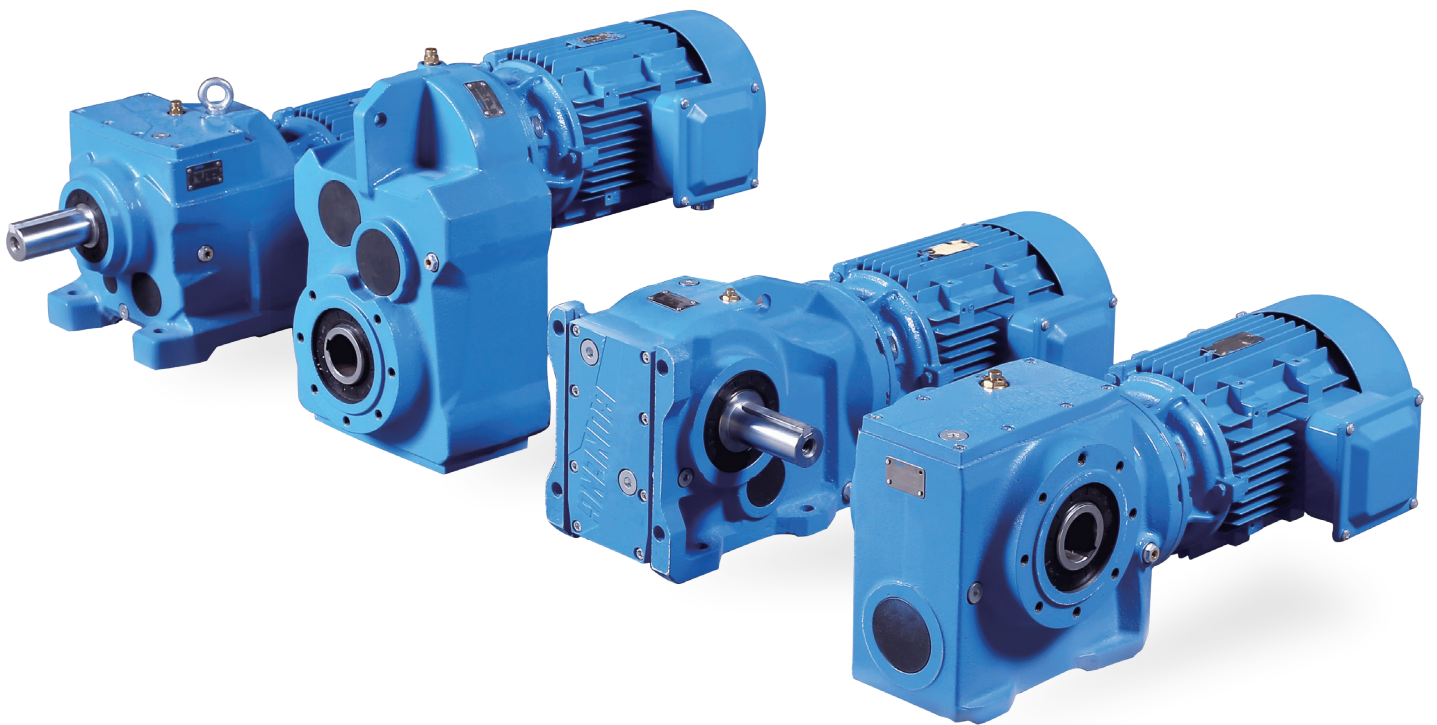


BONENG



博能 CR/F/K/S Gearmotor Instruction
CR/F/K/S 齿轮马达 使用说明书

4/2019

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Important notes

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



Suggestions and useful information

重要提示

在安装操作过程中，请注意本说明书中的安全提示和警告提示！

使用建议和有用的信息



Harmful situations:

Possible result: damage transmission device and the environment

有害情况：

可能产生的后果：损坏传动装置和环境



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;

遵守本手册的规定可以让装置无故障运行，同时也满足质量缺陷索赔的要求，因此在使用传动装置进行工作之前，请您先阅读本说明书；

本说明书包含重要的安装维护提示，请将说明书保管在靠近设备的位置，以便安装维护参阅。

1 Safety information

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

This instruction is an integral part of the gearmotor supplied. All persons involved in the installation, operation, maintenance and repair of the gearmotor 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			
n ₂	RPM		
P ₁	kW	T ₂	N · m
n ₁	RPM	i	
Oil		Wt.	kg
NO.		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.

1 安全说明

安全说明主要涉及齿轮马达的使用。当使用齿轮马达时，请注意说明书中的相关安全提示！

使用说明书为本公司所供齿轮马达的有机组成部分。齿轮马达的安装、操作、维护和修理人员均需认真阅读本说明书并遵守其中的规定。

严格遵循说明书中的规定是实现产品无故障运行和履行任何质量保证要求的必要条件。

在遵循说明书规定的前提下还要注意：

相关安全和事故防范的国家（地区）规定；

相关设备的特别规定和要求；

设备装置上的安全警告和安全标志牌。

下列情况会导致人身伤害和财产损失：

使用不当；

安装或操作失误；

违反规定拆除必要的防护罩或机壳。

若因违反本说明书的规定而造成的任何损伤或停机，本公司概不负责。

为不断追求技术进步，我们保留对其进行修改的权力。通过不断改进，将在保持基本特性的基础上，有利于进一步提高其使用性能和工作安全性。

2 技术说明

2.1 铭牌说明

Product type	产品型号
Output speed (only for directly connected motor)	输出转速
Rated input power kW (it means motor power for directly connected motor)	(直联电机时才有) 额定输入功率 kW
Rated output torque N · m	(直联电机时指电机功率) 额定输出扭矩 N · m
Rated input speed RPM (it means motor speed for directly connected motor)	额定输入转速 RPM (直联电机时是指电机转速)
Nominal ratio	公称减速比
Lubrication oil viscosity	润滑油粘度
Weight	重量
Product number	产品编号
Production date	出厂日期

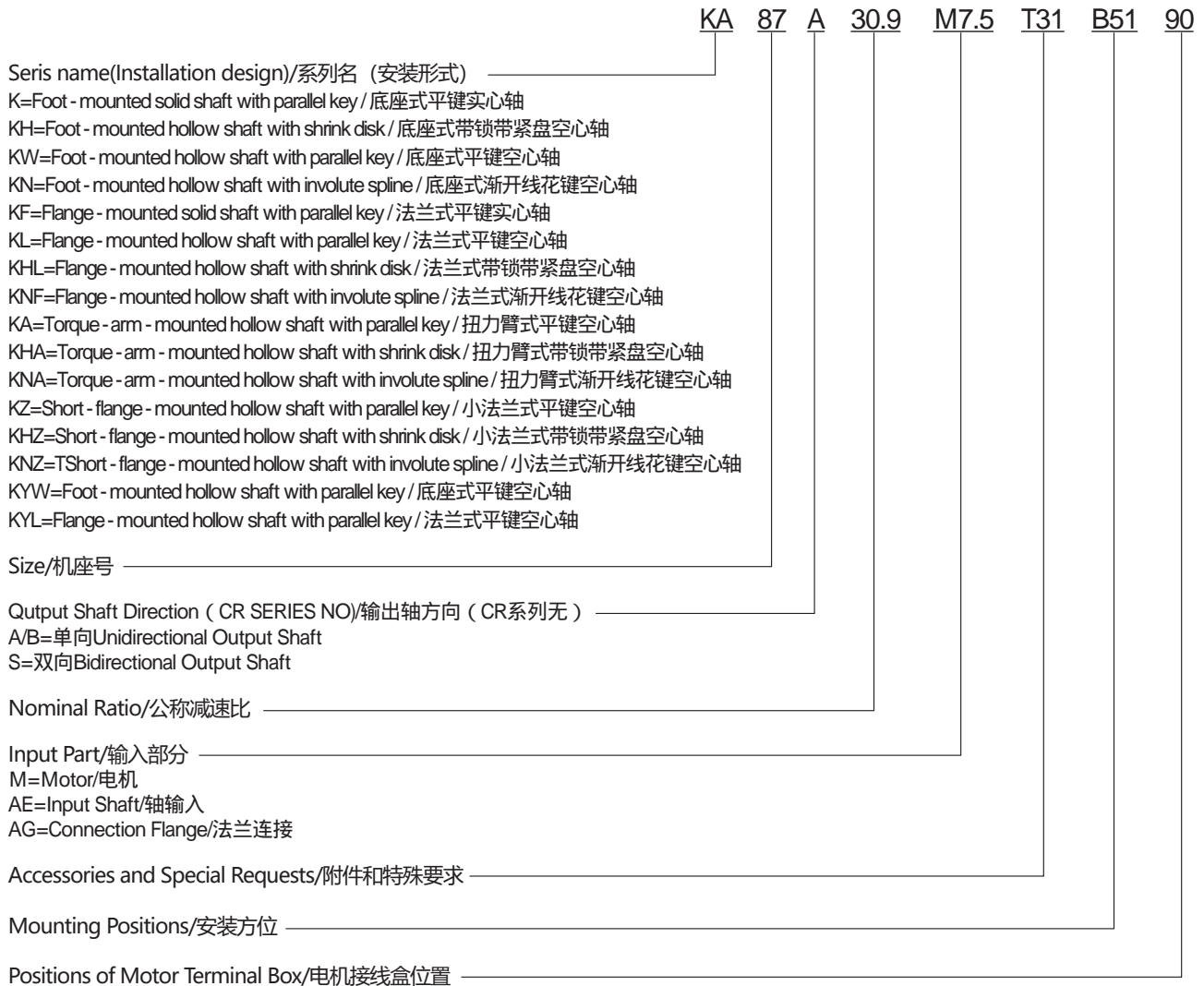
铭牌上的数据十分重要，请仔细阅读，并保持其整洁，当需要服务时，请提供铭牌上的产品编号、使用时间及故障类型。

2.2 Type designation

For example: KA87A-30.9-M7.5+T31-B51-90

2.2 型号表示方法

举例: KA87A-30.9-M7.5+T31-B51-90



2.3 Noise level of gearmotor

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 gearmotor 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.

A class noise power of gearmotor should not exceed 80dB(A).

2.3 齿轮马达的噪声水平

噪声符合相关的国家标准，行业标准及企业标准。噪声的检测根据声强法进行，距声源处（所检测表面噪声区域）1 m的距离检测。

噪声水平是指齿轮马达在良好工况条件下正常运行，在标牌上规定的额定输入转速n1、额定输入功率P1条件下工作时，检测得到的噪声水平。如果给出不同的参数，则选择最高转速和最大功率值。由于所采用的检测技术使重复测量无法得到最终结果，则应采用本公司试验台上得到的检测结果。齿轮马达的A级全噪声功率级不应大于80dB(A)。

2.4 Temperature rising

When the ambient temperature is 40 , the running gearmotor oil temperature is not exceeded 85 .
The allowed highest oil temperature for operating gearmotor, Maximum oil temperature of 90oC (mineral oil only) and 100 (synthetic oil only)

2.5 Notes (Following notes is related to the use of gearmotor):

When installed outdoor, direct sunlight should be avoided, otherwise concentrated heat will affect the gearmotor performance.

The gearmotor must not be cleaned using high-pressure cleaning equipment.

All work such as inspection, maintenance and installation on gearmotor should be done when gearmotor is not in operation.

No welding work should be done on gearmotor, the gearmotor 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 gearmotor, 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 gearmotor and application of the components of other companies are not included in " three-guarantee " services.

Depending on operation conditions of gearmotor, the surface, lubrication oil and components of gearmotor may reach high temperature, avoid being burnt.

When changing lubrication oil, take care to prevent scalding by hot oil.

Gearmotor should be laid on dry wooden foundation with no vibration and be covered well. When storing the gearmotor and any independent components, you should take anti-rust measures, avoid rusting, the gearmotor should not be piled together when stored.

Unless there are other regulations in ordering contract, gearmotor 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 gearmotor, take care to avoid the shaft ends knocked, otherwise the gearmotor 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.

2.4 温升

齿轮马达运转时产生的温升环境温度为40 时，油池最高温度不超过85 。
齿轮马达运转时允许的最高油温：矿物油一般为90 ，合成油可允许100 。

2.5 注意事项(下述注意事项与齿轮马达的使用有关):

在户外安装时应避免阳光直射，一定要避免热力集中影响齿轮马达的正常性能。

一定不能用高压清理设备清洁齿轮马达。

对齿轮马达所进行检修、保养、维护、安装都必须在齿轮马达不工作的情况下进行。

在齿轮马达上不得进行焊接工作，也不得用作焊接工作的接地点。焊接会造成精密轮齿和轴承不可修复的损坏。

如果在齿轮马达的运行过程中发现了任何异常现象(例如过热或者不正常的噪声等)，应该立即关闭驱动装置。

凡是旋转的零部件必须配备合适的防护罩以防止人员的意外接触，例如联轴器、液力偶合器、齿轮、驱动皮带轮等。

一定要遵守齿轮马达上所附加的说明，例如铭牌、指示方向的箭头等。这些铭牌和标记上面不得有灰尘和油漆。

在组装或者拆卸工作中损坏了的螺栓一定要用同等强度和类型的新螺栓更换。

本公司对不合理使用联轴器、私自对齿轮马达进行修改，以及使用非本公司零部件的情况，所造成的不良后果不在‘三包’服务之内。

根据齿轮马达的操作条件，齿轮马达的表面、润滑油和零部件可能会达到相当高的温度，小心烫伤！

当更换润滑油的时候，要谨慎小心，不要被热油烫伤。

齿轮马达应该放置在不振动的干燥木制基座上并遮盖好。当储存齿轮马达和任何单独零部件的时候一定要做好防锈措施，以免生锈，储存时不得将齿轮马达叠放在一起。

除订货合同中另外有所规定，否则齿轮马达不得储存或工作在强酸、强碱、低温、高温和重度的空气污染、潮湿以及具有化学物品的场所。

在搬运齿轮马达时，一定要特别小心，防止轴端被撞击，因为这样将有可能造成齿轮马达的损坏。在吊运齿轮马达时，不得将吊环螺钉安装在轴端处的螺纹上。配件一定要从BONENG公司购买。

3 Installation and dismantlement

3.1 Notes before installation



Confirm the gearmotor in good condition (no damage during transporting or storing). Confirm site environment conforms to the name plate data.
Standard working ambient temperature of gearmotor is -20 ~ +40 , no oil, no acid, no harmful gas, no steam and radioactive substance etc.
When gearmotor is stored over 1 year, the lubrication life on bearings will be short.



Installing outdoor should avoid direct sunshine. In case of concentrated heat to influence smooth running of gearunit;
Special gearmotor: allocated according to ambient condition;
During planning period, you should reserve enough space to maintain or repair.

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;
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 安装与拆卸

3.1 安装前的注意事项

确认齿轮马达完好无损（在运输或储存过程中未损坏）；
确认现场环境条件与铭牌内容相符；
标准齿轮马达使用环境温度为：-20 ~ +40 ；无油、酸、有害气体、蒸汽、放射性物质等；
若齿轮马达储存时间在一年以上，轴承内润滑剂的使用寿命将缩短。

在户外安装时应该避免阳光直射，一定要避免热力集中影响齿轮马达的正常性能；
特殊形式齿轮马达：是根据环境条件配置的；
在进行规划阶段就应该预留足够的空间进行维护保养和修理工作。

3.2 准备工作

彻底清除输出输入轴和法兰表面的防腐剂、污物等；注意不要让溶剂浸入并损坏油封；
工具/材料的准备：一组扳手、扭矩扳手、装配夹具、输入和输出紧固装置、润滑剂(防锈油)、密封螺栓的介质(螺纹锁固剂)。

3.3 Installation of gearmotor

The gearmotor foundation must be horizontal and level, no resonance vibrations, good rigid and anti-torque forces. When installing the drive transmission on position the rigid base frame, make adequately on consideration that the individual components cannot be changed even if putting the max load on.

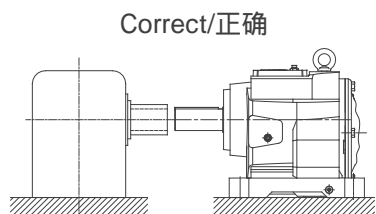
Lift the gearmotor through the fasten bolt on the gearbox.



Note. Shaft end screw bolt is prohibited for the lifting fasten bolt.

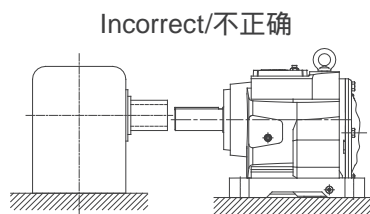
Central height should be correctly aligned during foot-mounted; coaxiality should be calibrated when coupling connect; run-out should keep within permissible values when flexible coupling while rigid coupling; contour and position tolerance should be guaranteed. And when long coupling, rigidity of shaft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

Gearmotor central height should be aligned when it is foot mounted :



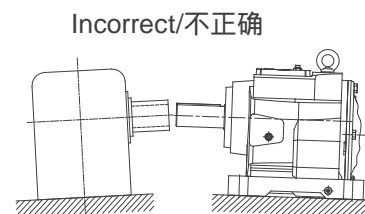
Correct/正确
Gearmotor central height is on the same level with driven machine central height

被驱动设备与齿轮马达中心高一致



Incorrect/不正确
Gearmotor central height isn't on the same level with driven machine central height

被驱动设备与齿轮马达中心高不一致



Incorrect/不正确
Mounting surface is not on the same level between the driven machine and gearmotor.

安装面的平行度不好

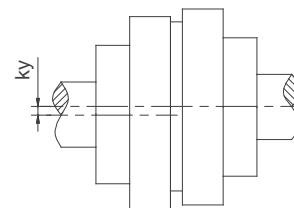
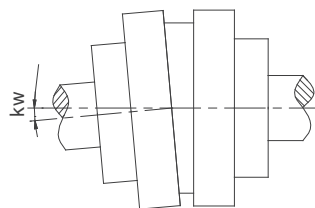
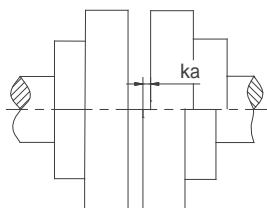
When installing the coupling, make absolutely certain that the following points are accurately aligned :

安装联轴器时应该校正下列各点：

a) Axial misalignment/最大和最小间距

b) Angular misalignment/角度偏差

c) Radial misalignment/轴线偏差



3.3 齿轮马达的整机安装

齿轮马达只能按规定的安装位置安装在平的、减振的、刚性好的、抗扭的支撑结构上；同时也需充分考虑即使加上最大载荷不至于改变装配好后各部件的位置。

应使用安装在箱体上的吊环进行吊装；

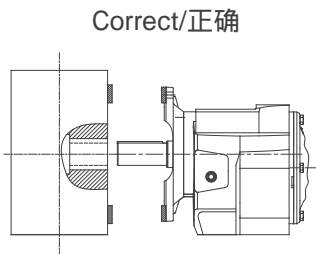
注：禁止使用轴端螺纹安装吊环后做为起吊点。

底座式安装应校准中心高；联轴器联接时应校准两轴的同轴度；柔性联轴器时浮动量不超过联轴器的允许范围；刚性连接时保证各安装联接的形位公差；长轴联接还要考虑轴的足够刚度。

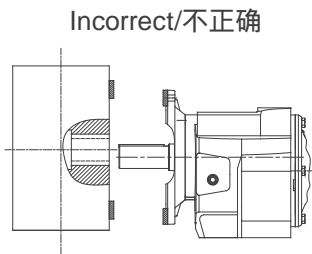
底座式安装时应校准中心高：

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

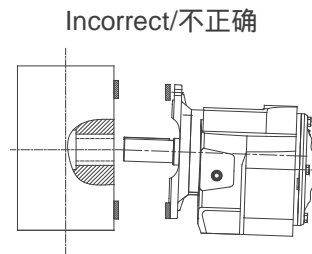
法兰式安装，凸肩（或凹肩）应配合良好，以免错位；



Connection parts should be coaxial.
安装止口应保证足够的同心度



coupling is not coaxial with flange
联轴器与安装法兰的同心度不好



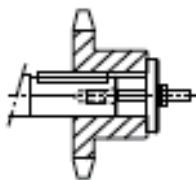
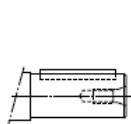
Flange mounting surface is not vertical with the connect shaft.
法兰安装面与连接轴的垂直度不好

When gearmotor input or output is coupled with the couplings, belt pulleys, gear wheels and sprocket, must meet following requirement.

在齿轮马达的输入或输出轴上安装联轴器、皮带轮、齿轮、链轮等时，必须符合以下要求：

Press the drive components into the outer screw of output shaft, knock should be avoided.

使用合适升降装置利用轴端螺纹孔，压入连接件，严禁直接使用锤子敲击。

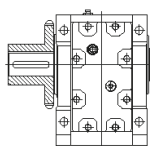


Correct/正确

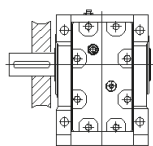
Incorrect/错误

When using belt pulley, sprocket and pug mill, make consider the radial force. See the figure.

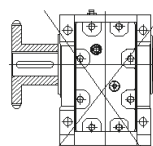
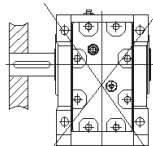
皮带轮、链轮、搅拌式还需考虑径向力，如图示。



Correct/正确



Incorrect/错误



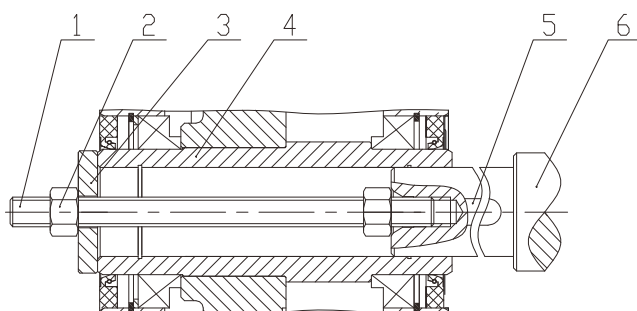
Correct/正确



Incorrect/错误

3.4 Assembly of hollow shaft of gearmotor

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.



- 1 Thread/螺杆
- 2 Nut/螺母
- 3 Fixing plate/端板
- 4 Hollow shaft/空心轴
- 5 Parallel key/平键

3.4 齿轮马达空心轴的安装

齿轮马达空心轴与被驱动设备的实心轴连接时,应清理干净并涂防锈油(空心轴一定要精密对中)。除了在图中所示的螺母和螺杆的方法安装以外,还可以使用其它类型的装置安装,例如液压提升装置等。

When hollow shaft of gearmotor 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.

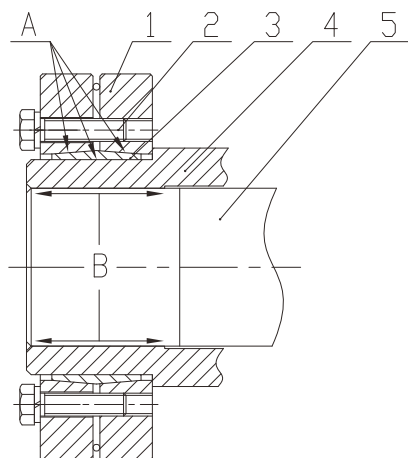
当齿轮马达空心轴配置锁紧盘时,应先在空心轴上套上锁紧盘,再按上述方法完成被驱动设备的驱动轴的安装,在安装被驱动设备的驱动轴之前不要拧紧锁紧盘上的紧固螺栓。



- 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.

所供货的锁紧盘是可直接安装的,在首次受力之前一定不能拆卸下来。

安装锁紧盘前,要确保空心轴孔和被驱动设备的驱动轴在锁紧盘区域不能有润滑油。



- 1 Outer ring/外环
- 2 Fastening bolt/紧固螺栓
- 3 Inner ring/内环
- 4 Hollow shaft/空心轴
- 5 Driven shaft /被驱动轴
- A Greased/有润滑脂的部位
- B Absolutely grease-free/绝对不能有润滑脂的部位

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.

拧紧锁紧盘上的螺栓时，严禁按相邻顺序逐个拧紧，应按锁紧盘安装要求，按等边三角形顺序逐次拧紧紧固螺栓，每次循环拧紧过程中，每个螺栓只能拧紧螺丝的1/4圈。

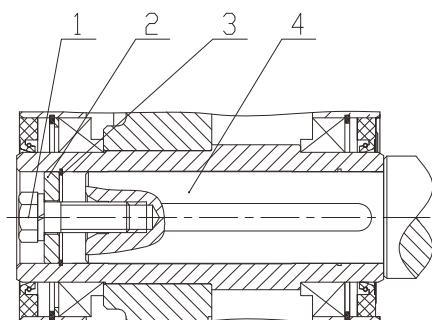
安装螺栓一般情况下采用8.8级，如果有高温或者振动冲击等情况，请在螺纹连接处作好防松措施。各个紧固螺栓的拧紧扭矩见下表：

Bolt size (mm) 螺栓大小	Tighten torque (N · m) 预紧力矩	Bolt size (mm) 螺栓大小	Tighten torque (N · m) 预紧力矩
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

3.5 Disassembly of hollow shaft of gearmotor

Disassembly of hollow shaft

Depending on the facilities available on site, the gearunit can be forced off the machine shaft using forcing screws in and end plate, a central 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 / 固定螺栓

2. Pressure plate / 压板

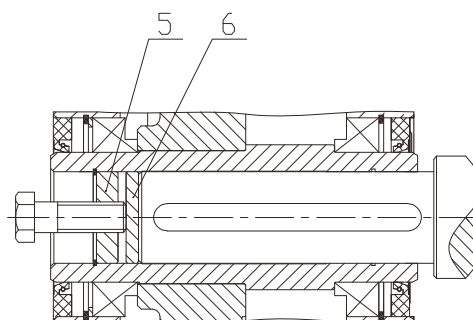
3. Circlip / 孔用弹性挡圈

4. Driven shaft / 被驱动轴

3.5 齿轮马达空心轴的拆卸

空心轴的拆卸

根据现场实际上可以使用的设备，可以用在端板上的螺杆、中心螺杆或者液压提升装置将减速机从被驱动设备的驱动轴上脱下来。空心轴的每个端面都配备了2个螺丝孔可以拧入固定端板的螺栓。



5. Nut / 防松螺母

6. Assistant plate / 辅助板

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)

注：

辅助板不在供货范围内。(空心轴端螺纹孔的分布和大小请参照BONENG公司技术图纸)



When disassembling the hollow shaft of gearmotor equipped with locking plate, the loosening 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.

配置了锁紧盘的齿轮马达空心轴拆卸时，锁紧盘松开的过程与紧固的方向相反，拆掉锁紧盘后再按上述方法完成被驱动设备驱动轴的拆卸。

When disassembling locking plate, you should pay attention :

拆卸锁紧盘时应注意：

It is forbidden to loose bolts according to the adjacent order.

拆卸时严禁按照相邻的顺序松开螺栓。

When outer ring of locking plate can't separate from inner ring, you can screw a few bolts into disassembly screw, separate inner ring from outer ring.

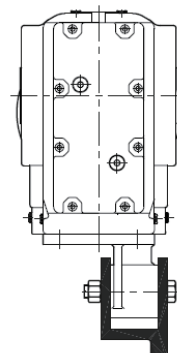
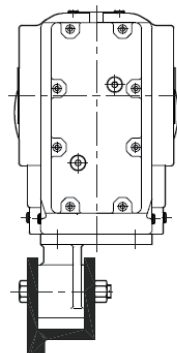
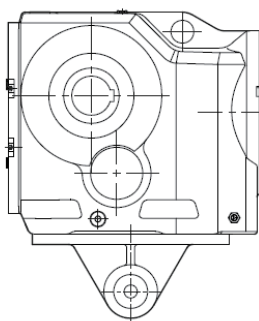
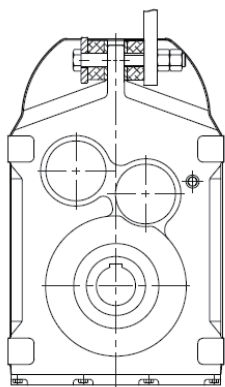
锁紧盘外环与内环不能分离时，可将几个螺栓拧入拆卸螺丝，将内环和外环分开。

3.6 Torque arm assembly

Torque arm assembly , The hollow shaft must be exactly aligned with the machine shaft. Machine shaft swiveling and the gearmotor vibration shouldn't exceed the flexible range. Torque arm should be fixed and tightened.

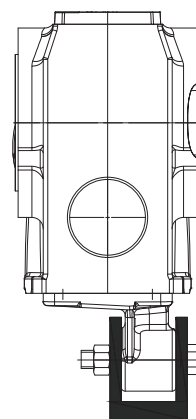
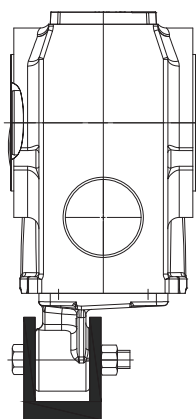
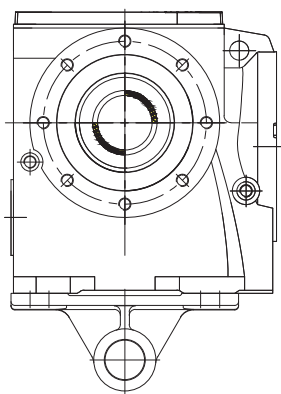
3.6 扭力臂的安装

扭力臂安装，空心轴与工作轴应配合良好，工作轴的浮动或设备振动应小于弹性块允许的范围，力臂应固定并锁紧。



Torque arm B direction
扭力臂B向

Torque arm A direction
扭力臂A向



Torque arm B direction
扭力臂B向

Torque arm A direction
扭力臂A向

3.7 Gearmotor input shaft connection with motor

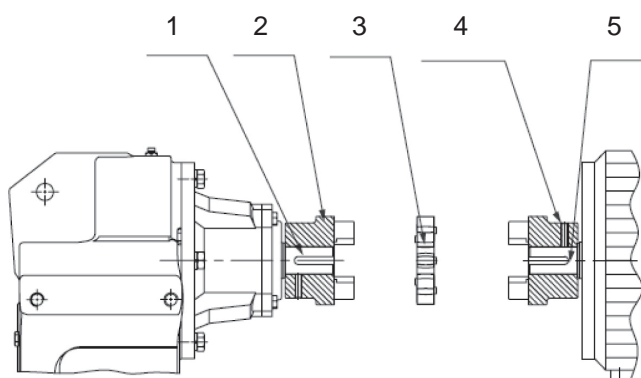
3.7 输入部分和电机间的安装

3.7.1 AE solid shaft connection with motor

3.7.1 AE和电机间的安装

Clean the motor shaft, motor flange and coupling, remove the key on the motor shaft and change the new one. Heat the half of coupling to 100℃, put it on motor shaft or AE solid shaft step position, fix the key and half of coupling with the tightening screw on motor shaft and AE shaft, connect the motor shaft with coupling device and make sure the two half of coupling is meshed well (see following figures). Flexible block can't be heated.

清洁电机轴和电机法兰及联轴器的表面；除去电机轴上的键，更换新键；将半联轴器加热至100℃左右，然后套入电机轴或AE轴，分别装至电机或AE轴台阶处；将键和联轴器半体用紧定螺钉紧固于电机轴或AE轴上；将电机装到联轴器装置上，要确保两个半联轴器相互啮合（参见下图）。弹性块不可以加热。



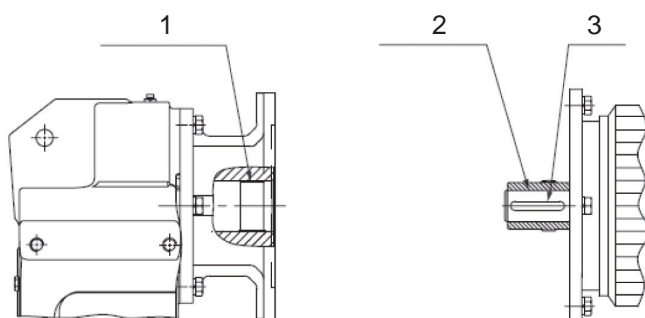
- 1 AE solid shaft / AE轴
- 2 coupling / 联轴器
- 3 flexible block / 弹性块
- 4 tightening screw / 紧定螺钉
- 5 motor shaft / 电机轴

3.7.2 AG flange connection with motor

3.7.2 AG和电机间的安装

Clean the motor shaft and motor flange, remove the key on the motor shaft and change the new one. Put the external involute splines sleeve to the motor shaft stage position and assemble the motor with AG flange, make sure the involute splines are meshed well.

清洁电机轴和电机法兰的表面；除去电机轴上的键，更换新键；将外花键轴套装至电机轴台阶处；将电机装到AG法兰上，要确保花键轴间的相互啮合（参见下图）。



- 1 internal involute spline input shaft/内花键输入轴
- 2 external involute splines sleeve/外花键轴套
- 3 motor shaft/电机轴

3.8 Dismantlement of gearmotor

3.8 齿轮马达的拆卸

Depending on the facilities available on site, the gearmotor can be forced off the machine shaft and please pay attention to protect the output shaft.

根据现场实际可使用的设备，将齿轮马达从安装平台上拆卸下来，拆卸时注意不要对输出轴表面造成损伤。

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:





4 安装方位

4.1 安装方位的说明

齿轮马达的具体安装方位及选型可参见BONENG公司产品选型手册。

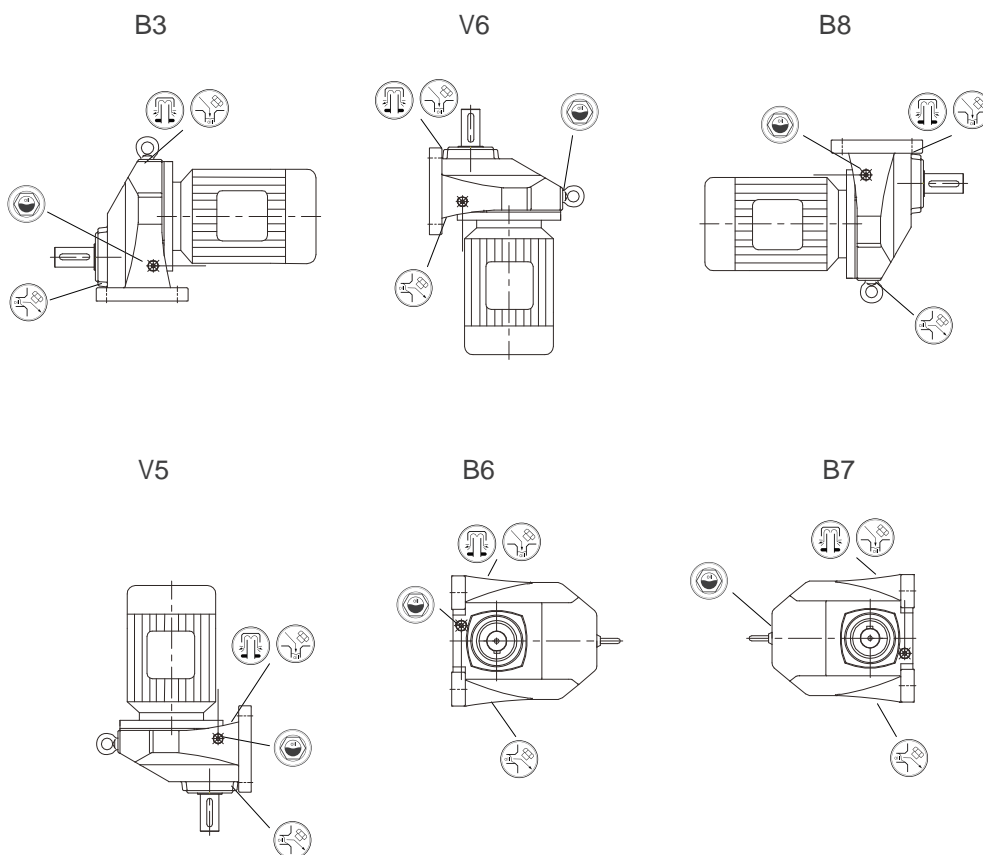
4.2 安装方位页面的说明

齿轮马达的安装方位页面中使用的图形符号及其含义：

symbol/图形符号		Meaning/含义	
		Breather/通气帽	Oil inlet/进油孔
		Oil glass/油 镜	
		Oil drain plug/放油孔/	

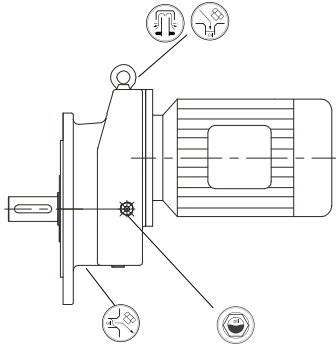
CR helical gearmotor mounting position

CR斜齿齿轮马达的安装方位 CW31 ~ 101

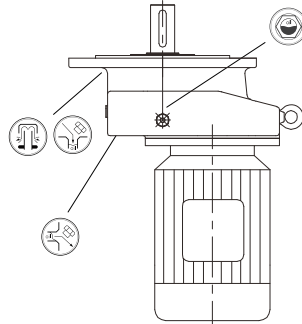


CL31 ~ 101

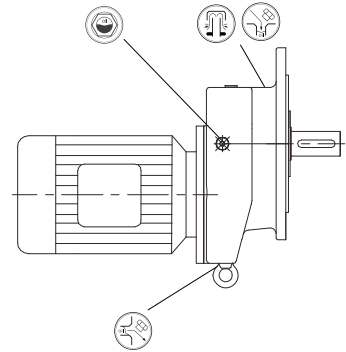
B5



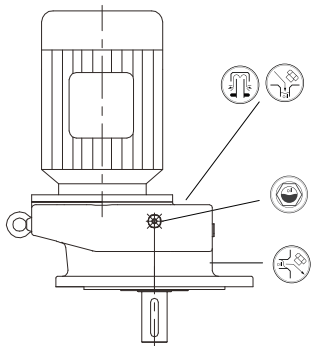
V3



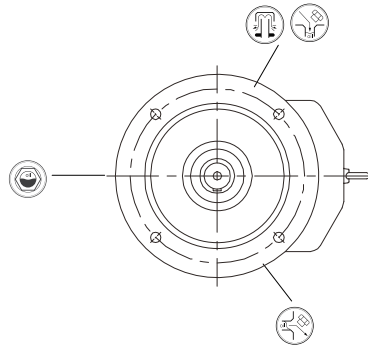
B51



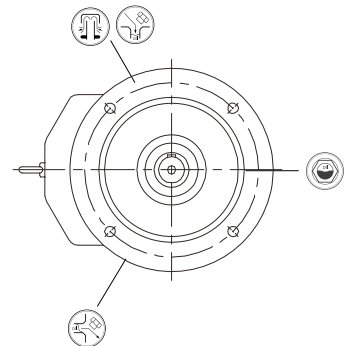
V1



B65

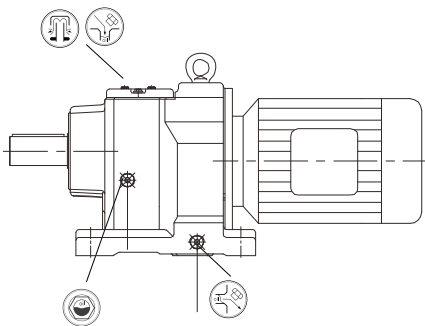


B75

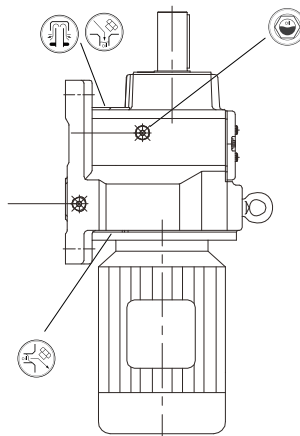


CRW37 ~ 167

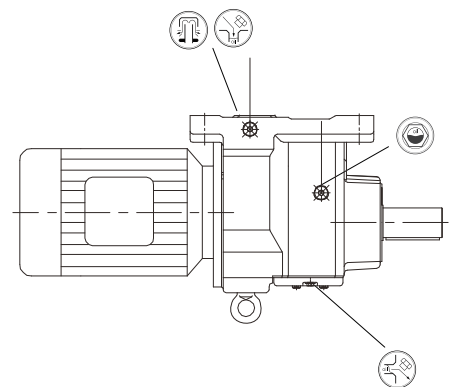
B3



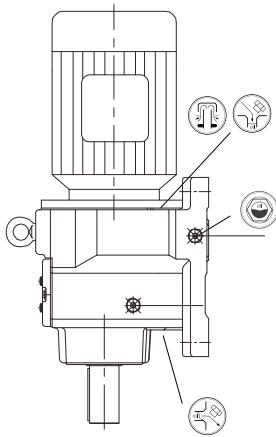
V6



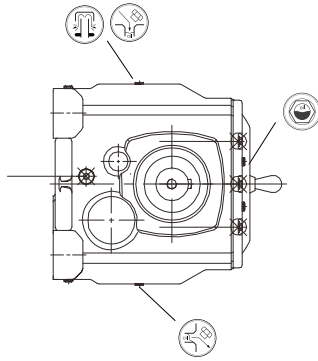
B8



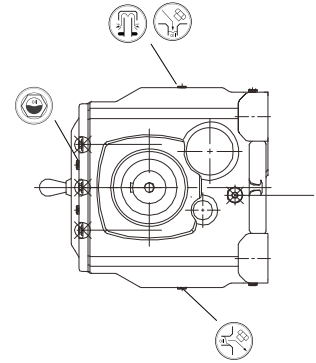
V5



B6

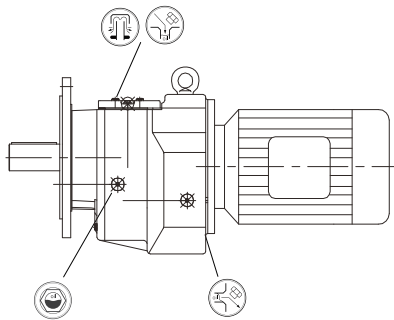


B7

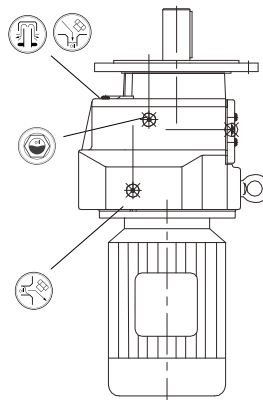


CRL37 ~ 167, CRM67 ~ 167

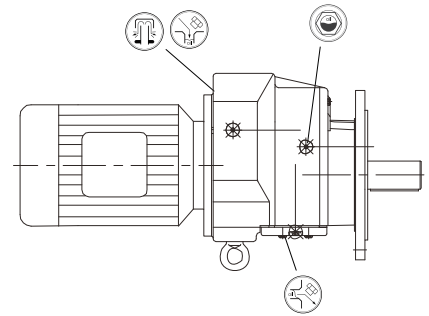
B5



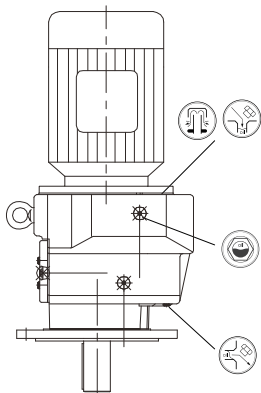
V3



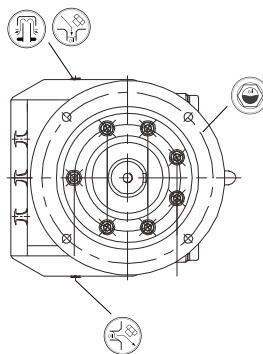
B51



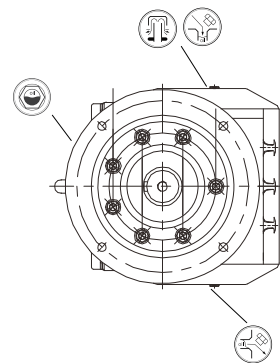
V1



B65



B75

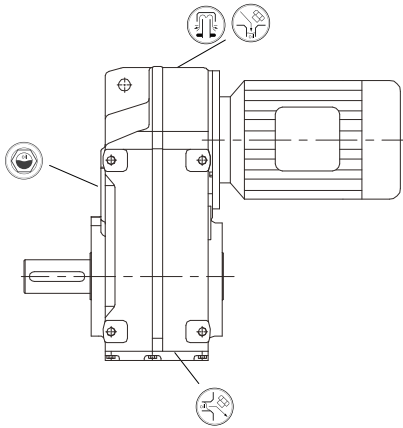


F parallel gearmotor mounting position

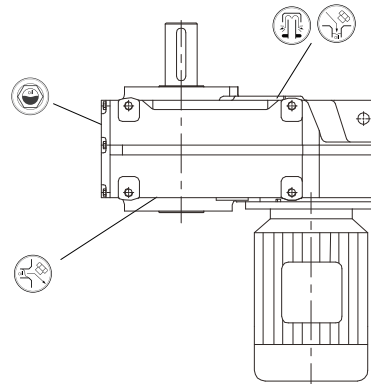
F平行轴齿轮马达的安装方位

F/FH/FW/FF/FL/FHL/FA/FZ/FHZ37 ~ 157 , FN/FNA/FNZ37 ~ 107

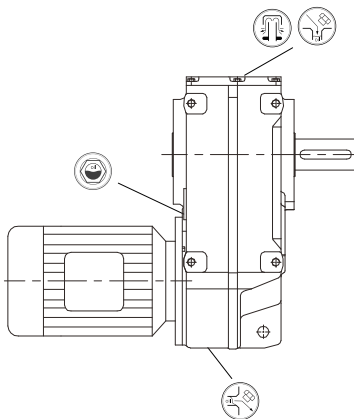
B5、B6、H1



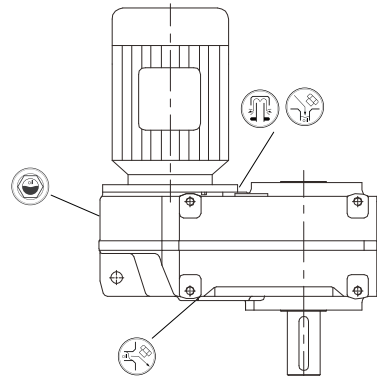
V3、V6、H6



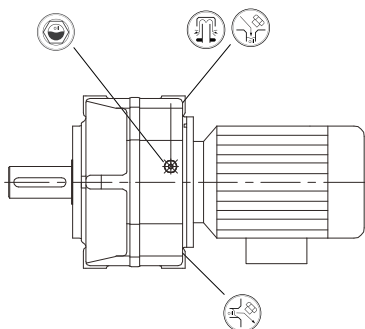
B51、B61、H2



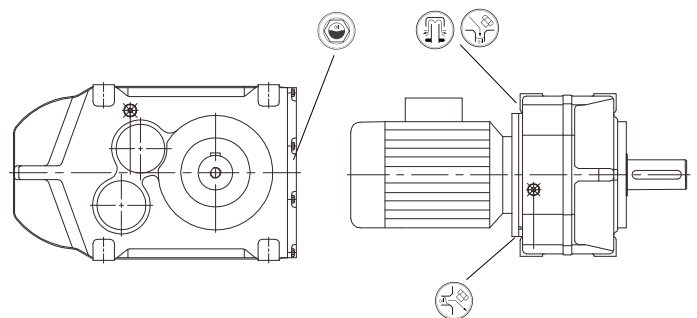
V1、V5、H5



B3、B52、H4



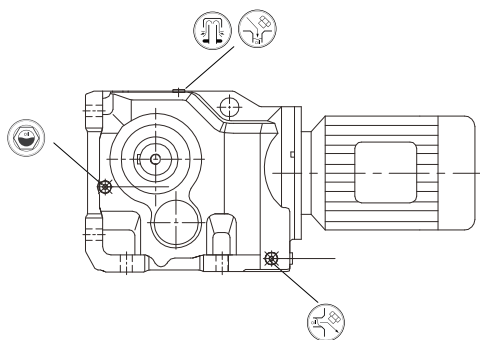
B31、B53、H3



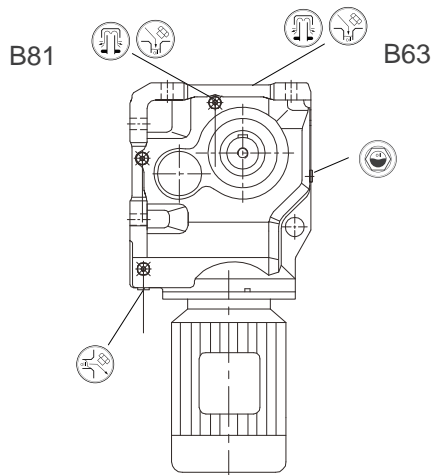
K helical - bevel gearmotor mounting position
 K/KH/KW37 ~ 157 , KN37 ~ 107 , KYW67 ~ 127

K斜齿 - 锥齿齿轮马达的安装方位

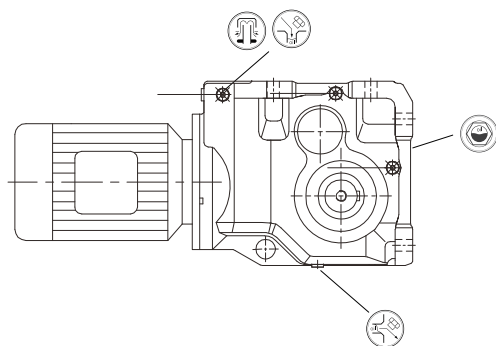
B3、 B61



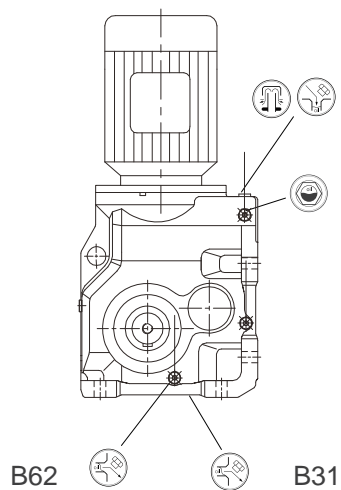
B63、 B81



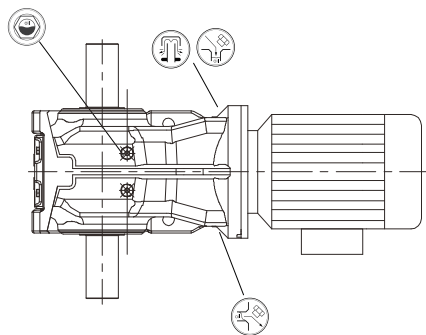
B8



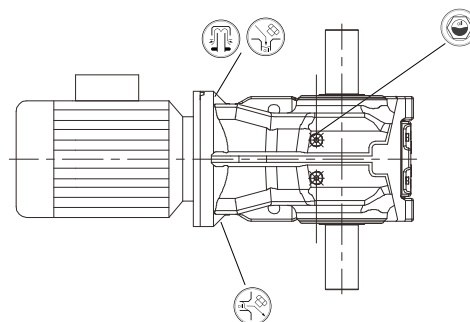
B31、 B62



V5、 V51

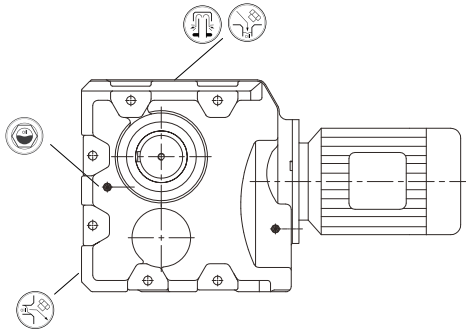


V6、 V61

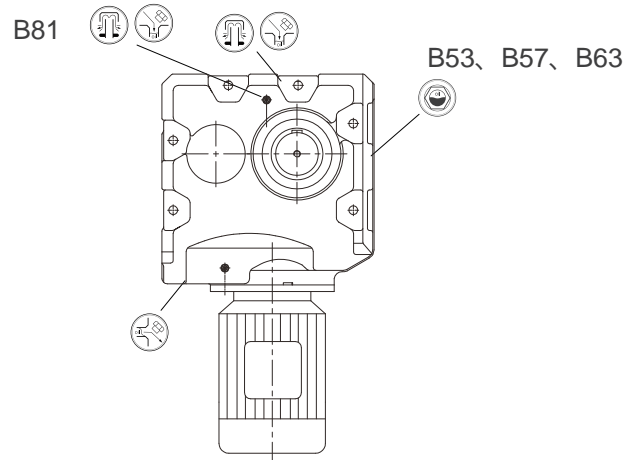


K/KH167 ~ 187

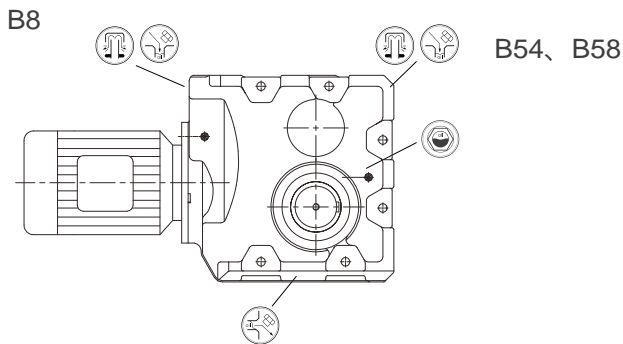
B3、B51、B61、B55



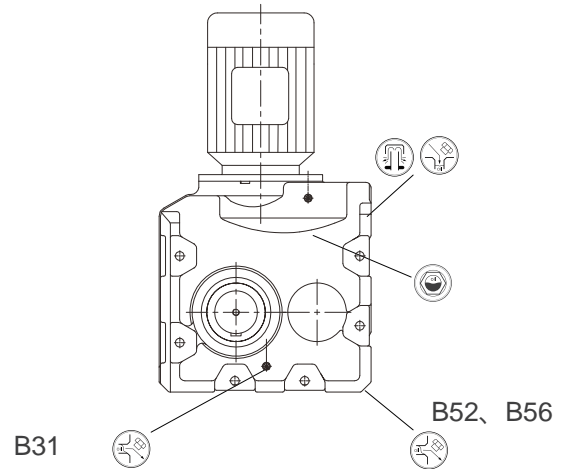
B53、B57、B63、B81



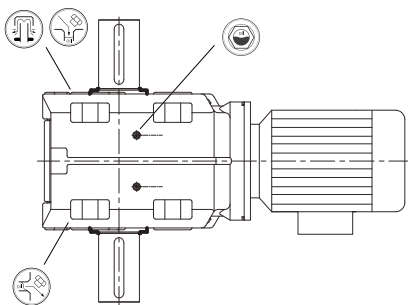
B8、B54、B58



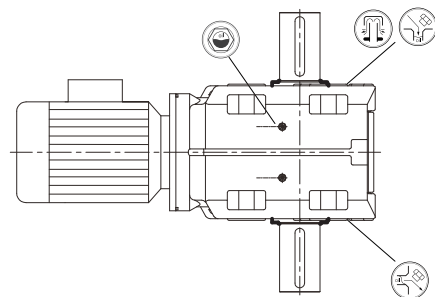
B31、B52、B56



V1、V5、V31、V51

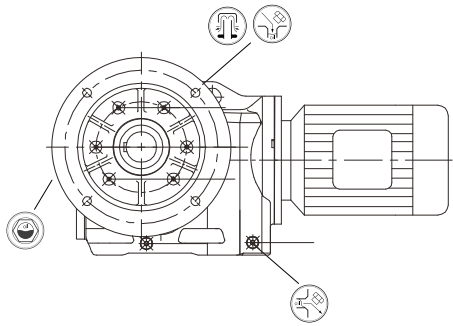


V3、V6、V11、V61

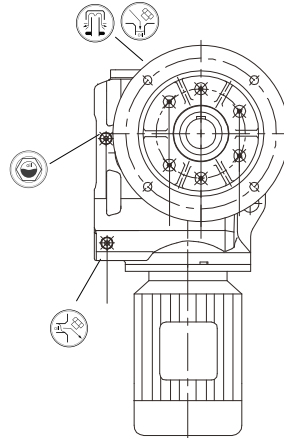


KF/KL/KHL/KA/KZ/KHZ37 ~ 157 , KNF/KNZ37 ~ 107 , KYL67 ~ 127

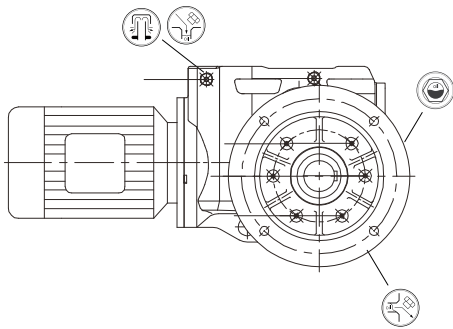
B51、B55、H1、H11



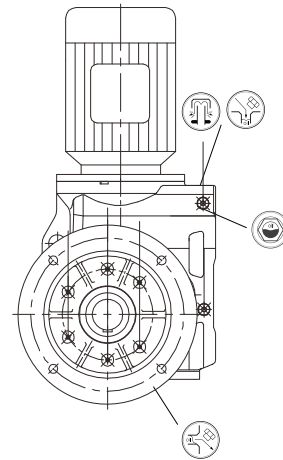
B53、B57、H3、H31



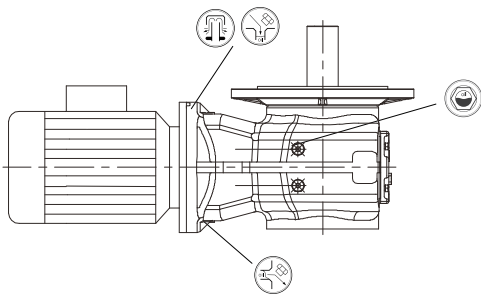
B54、B58、H2、H21



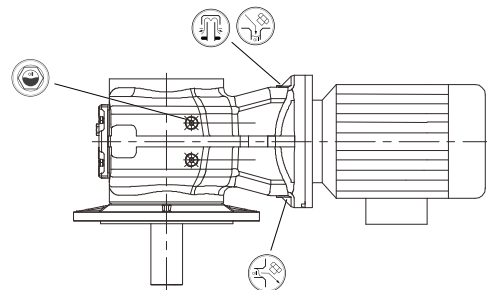
B52、B56、H4、H41



V3、V31、H5、H51



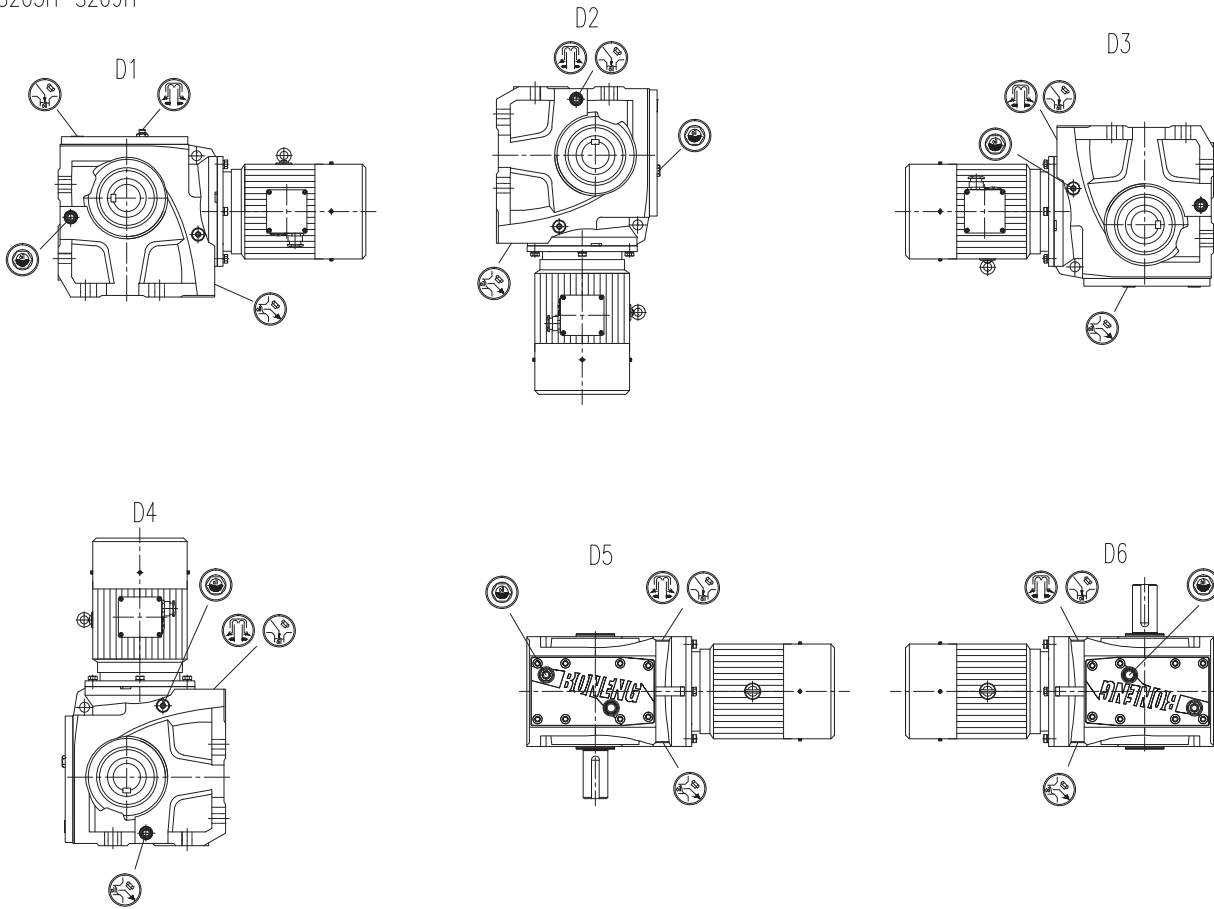
V1、V11、H6、H61



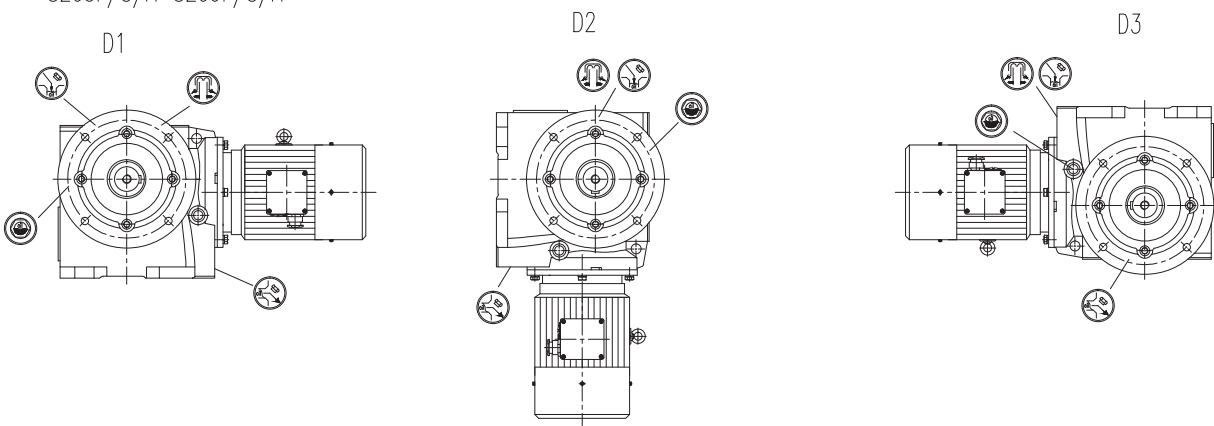
S helical - worm gearmotor mounting position

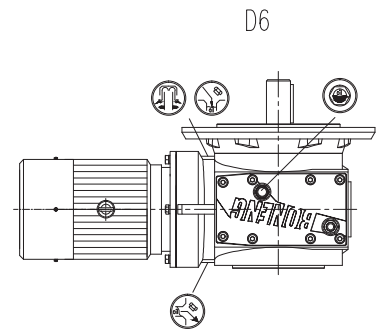
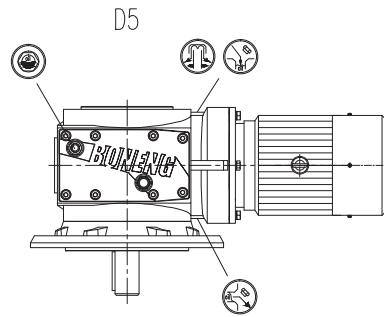
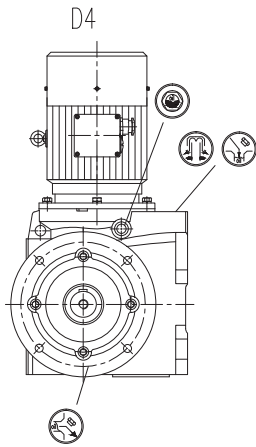
S斜齿 - 蜗轮齿轮马达的安装方位

S203H-S209H

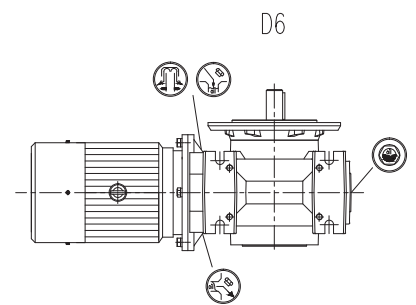
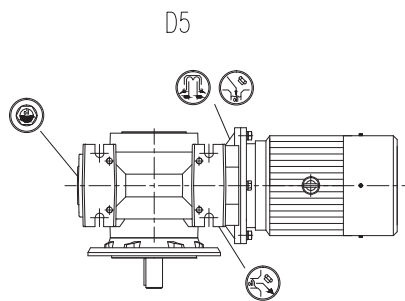
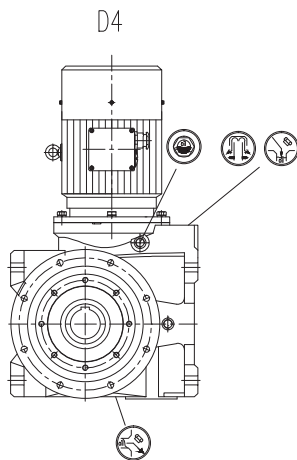
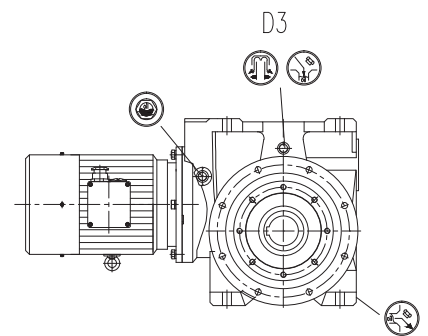
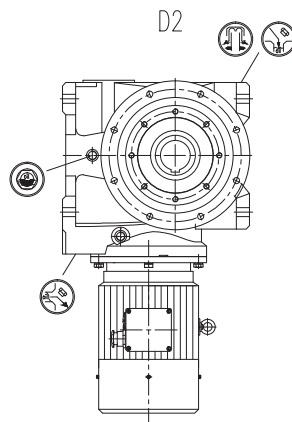
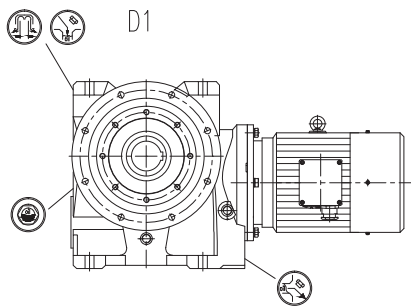


S203F/S/A-S209F/S/A





S210F/S/A-S212F/S/A



5 Lubrication/ Cooling/ Heating

5 润滑/冷却/加热

5.1 Lubrication selection

5.1 润滑油的选择

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

在相同粘度等级和类型的前提下，您可以自由地选择国际知名品牌的润滑油。如需改变推荐的粘度等级敬请垂询。

下表列出了博能使用润滑油的选择。

type/型号	lubrication brand(adhesiveness of ISO) 润滑油牌号 (符合ISO粘度等级)	ambient temperature 环境温度
C31~C101	VG220	-20°C~+40°C
CR37~CR167		
F37~F157		
K37~K127		
K157~K187	VG320	
KY67~ky127	GL-5 85W/90	
S203~S212	VG680	



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.

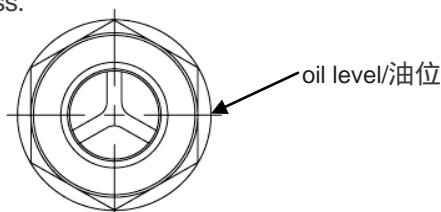
环境温度低于-10 时必须使用合成油。为确保产品的使用寿命，实际使用中推荐使用合成油。使用环境温度超过上述范围时，请咨询BONENG公司技术部门。

5.2 Quantity of lubrication oil fill

5.2 润滑油的注油量

This quantity is a recommended value. According to the difference of gearmotor 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.

本注油量为建议值。根据齿轮马达级数和速比的不同，相应加油量也不同。请注意油镜作为加油量多少的指示，油位必须在油镜的中间位置。



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

下表列出了对于安装方位相应的润滑油注油量建议值。

5.2.1 C series oil quantity

5.2.1 C系列注油量

Oil quantity table/油量表 (L)											
mounting position 安装方位 type/型号	B3	B5	B51	B8	B6、B7	B65	B75	V1	V3	V5	V6
C.31	0.52	0.25	0.36	0.45	0.36	0.22	0.36	0.38	0.36	0.6	0.36
C.41	0.7	0.355	0.45	0.6	0.45	0.38	0.45	0.51	0.45	0.8	0.45
C.61	0.8	0.4	0.51	0.7	0.5	0.42	0.6	0.6	0.5	0.9	0.5
C.71	1.6	0.8	0.7	1.6	1	0.7	1	1.2	0.9	2	1
C.81	2.5	1.3	0.9	2.7	1.6	1.2	1.6	2.2	1.5	3.1	1.8
C.91	3.45	1.8	1.25	3.7	2.2	1.8	2.2	3	2.1	4.3	2.5
C.101	6.2	3.5	2.9	7.7	4.1	3	4.1	4.5	3.6	8.5	4.1

5.2.2 CR series oil quantity

5.2.2 CR 系列注油量

Oil quantity table/油量表 (L)										
mounting position 安装方位 type/型号	B3*	V6*	B8	V5	B6	B7	mounting position 安装方位 type/型号	B5*/B6 B7/B8	V3*	V1
	CRW37	0.3/1	0.9	1	1.1	0.8		1	CRL37	0.4/1
CRW47	0.7/1.5	1.6	1.5	1.7	1.5	1.5	CRL47	0.7/1.5	1.6	1.7
CRW67	1.1/2.3	2.3/3.5	2.8	3.2	1.8	2	CRL67 CRM67	1.2/2.5	2.7/3.6	3.1
CRW77	1.2/3	3.8/4.3	3.6	4.3	2.5	3.4	CRL77 CRM77	1.2/2.6	3.8/4.1	4.1
CRW87	2.3/6	6.7/8.4	7.2	7.7	6.3	6.5	CRL87 CRM87	2.4/6	6.8/7.9	7.7
CRW97	4.6/9.8	11.7/14	11.7	13.4	11.3	11.7	CRL97 CRM97	5.1/10.2	11.9/14	14
CRW107	6/13.7	16.3	16.9	19.2	13.2	15.9	CRL107 CRM107	6.3/14.9	15.9	19.2
CRW137	10/25	28	29.5	31.5	25	25	CRL137 CRM137	9.5/25	27	32.5
CRW147	15.4/40	46.5	48	52	39.5	41	CRL147 CRM147	16.4/42	47	52
CRW167	27/70	82	78	88	66	69	CRL167 CRM167	26/70	82	88

Note : * for the combination type or big gearmotor, choose the bigger value in the table.

注：*对于组合型，大型号减速机选择表中的大数据。

5.2.3 F series oil quantity

5.2.3 F 系列注油量

Oil quantity table/油量表 (L)						
mounting position 安装方位 type/型号	B5、B6、H1	V3、V6、H6	B51、B61、 H2	V1、V5、H5	B52、B3、 B8、H4	B53、B31、 B81、H1
F.37	1	1.2	0.7	1.3	1	1.1
F.47	1.6	1.9	1.1	1.9	1.5	1.7
F.67	2.7	3.8	1.9	3.8	2.9	3.2
F.77	5.1	7.3	4.3	8.1	6	6.3
F.87	10.3	13.2	7.8	14.1	11	11.2
F.97	19	22.5	12.6	25.5	18.9	20.5
F.107	25.5	32	19.5	38.5	27.5	28
F.127	41.5	56	34	63	46.5	49
F.157	72	105	64	106	87	79

5.2.4 K series oil quantity

5.2.4 K 系列注油量

Oil quantity table/油量表 (L)						
mounting position 安装方位 type/型号	B3、B61、B51、 B55、H1、H11	B63、B81、B53、 B57、H3、H31	B8、B54、B58、 H2、H21	B31、B62、B52、 B56、H4、H41	V5、V51、V1、 V11、H6、H61	V6、V61、V3、 V31、H5、H51
K.37	0.5	1.1	1.1	1.5	1	1
K.47	0.8	1.3	1.7	2.2	1.6	1.6
K.67	1.1	2.4	2.8	3.6	2.7	2.7
K.77	2.2	4.1	4.6	6	4.5	4.5
K.87	3.7	8.2	9	11.9	8.4	8.4
K.97	7	14.7	17.3	21.5	15.7	16.5
K.107	10	22	26	35	25	25
K.127	21	41.5	46	55	41	41
K.157	31	66	69	92	62	62
K.167	35	100	100	125	85	85
K.187	60	170	170	205	130	130

5.2.5 KY series oil quantity

5.2.5 KY 系列注油量

Oil quantity table/油量表 (L)						
mounting position 安装方位 type/型号	B3、B61、B51 B55、H1、H11	B63、B81、B53 B57、H3、H31	B8、B54、B58 H2、H21	B31、B62、B52 B56、H4、H41	V5、V51、V1、V11 H6、H61	V6、V61、V3 B56、H5、H51
KY67	1.3	2.3	2.5	4	2.8	2.8
KY77	3.2	5.2	5.4	8.5	6.6	6.6
KY87	4	6.9	7.2	11.5	8.9	8.9
KY97	7.4	14	14.6	22	17.9	17.9
KY107	15	23.9	24.3	40	30.4	30.4
KY127	23.5	37.2	36.2	63.5	46.6	46.6

5.2.6 S series oil quantity

5.2.6 S 系列注油量

Oil quantity table/油量表 (L)						
Size Mounting Position	D01	D02	D03	D04	D05	D06
S203	0.3	0.5	0.6	0.7	0.5	0.5
S204	0.5	1.1	1.1	1.4	1.2	1.2
S205	0.6	1.4	1.2	1.9	1.7	1.7
S206	1.2	2.6	3.7	3.8	3.2	3.2
S207	2.3	5.0	7.0	7.8	5.9	5.9
S208	4.6	9.7	12.5	14.4	10.9	10.9
S209	8.9	18.0	22.6	28.3	21.6	21.6
S210	12.5	45.6	37.8	45.6	25.4	25.4
S212	22.0	80.4	63.6	80.4	42.8	42.8

Note: When ambient temperature is -10°C ~ $+40^{\circ}\text{C}$, for S series Products, lubricant brand is VG680 (Isoviscosity class), accessory code is U84.

注：在环境温度 -10°C ~ $+40^{\circ}\text{C}$ 时，S系列润滑油牌号为VG680 (ISO粘度等级)，附件代号U84。

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 gearmotor, the working ambient temperature is $-20 \sim +40$, when the temperature is under -10 , it needs to be preheated or running without load. When the gearmotor temperature is over -10 , gearmotor can be operated with load.

5.5 Backstop

Gearmotor 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.

5.3 润滑油的更换

要用和原来的润滑油同一牌号、同一厂家的润滑油。更换润滑油品种时，要用润滑油将齿轮马达箱体里面的沉积物、金属颗粒和残留的润滑油都冲洗干净。

5.4 加热

对标准齿轮马达：使用环境温度 $-20 \sim +40$ ，当环境温度低于 -10 时需预热或空载启动，当齿轮马达温度超过 -10 时允许加载运行。

5.5 逆止机构

带逆止器的齿轮马达：在安装或启动前，一定要检查传动装置的旋转方向，为防止错误的旋转方向，必要时请向技术部门咨询。逆止器为免维护。

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 gearmotor.

6.2 Check the device

Check oil level.

For the gearmotor 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.

6 使用

6.1 润滑油添加

本公司产品一般都未带润滑油出厂，在设备运行前请先按使用说明书加润滑油。

在标记有该符号的位置上将通气帽拧出，给齿轮马达加入润滑油。

6.2 设备检查

检查油面高度。

配备了止回装置的齿轮马达，检查电机接线是否正确。

检查轴封是否有效。

检查旋转的零部件是否与其它零件接触。

6.3 启动

检查自由状态下转动方向是否正确（同时监听轴转动时是否有异常研磨噪声）。

运行检查时要保证轴上没有输出元件，同时开启相关的监测和保护设备。

无论什么时候，只要怀疑出现了不正常的运行现象（例如温升、噪声、振动等异常），应立即关掉电机，并查明原因。

必要时与BONENG公司联系。

7 Checks and maintenance

7.1 Check and maintenance regularly

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

7 检查与维护

7.1 定期检查与维护

用户要定期对齿轮马达进行维护和保养，要定期检查润滑油的使用状态，定期清理通气帽、风扇、冷却盘管和齿轮马达表面的灰尘和异物，保持齿轮马达清洁，保证齿轮马达的正常运行。

7.2 Periods of checks and maintenance

Check oil temperature 检查油温	Daily 每日
Check abnormal noise of gearmotor 检查齿轮马达的不正常的噪声	Daily 每日
Check oil level 检查油面高度	Monthly 每月
Check gearmotor for leaks 检查齿轮马达的漏油	Monthly 每月
Check oil for water content 检验油中的水分	After working 400 hours, at least once a year 在400工作小时后,至少每年一次
First oil change after starting 在起动之后的首次换油	After working 400 hours 在400工作小时后
Subsequent oil changes 其后的换油	After every 5000 hours 每5000工作小时,至少每年一次
Clean the breather 清理通气帽	Every 3 months 每3个月
Clean gearmotor housing 清理齿轮马达箱体	Do with oil changing 和换油同时进行
Check tightness of fastening bolts 检查紧固螺栓的紧固程度	The first time after changing oil, then change oil every two times 第一次换油后,其后每隔一次换油
Carry out complete inspection of gearmotor 对于齿轮马达的全面检查	About every 2 years, do with oil changing 大约每2年和换油同时进行

7.2 检查与维护的周期

7.3 Notes for checks and maintenance:

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

7.3 检查与维护的注意事项

切断电源，防止触电，等待齿轮马达冷却。
油位的检查：油位必须在油镜的中间位置。
油的检查：移去油塞，取油样，检查油的粘度指数；如果油明显浑浊，建议尽快更换。
油的更换：

不同的润滑剂禁止相互混合使用。

冷却后油的粘度会增大，放油困难，换油时齿轮箱应保持温热。

在油塞下面放一个接油盘，拆下油塞/通气帽，将油全部排除后装上油塞。

注入同牌号的新油，油量应与安装方位一致(见铭牌);若牌号不同则向我司售后服务咨询。

在油镜处检查油位，装上通气帽。

8 Fault treatment

8 故障处理

Fault/故障	Reason/原因	Measure/措施
Noise change of gearmotor 齿轮马达的噪声变化	Fastening is loose 紧固件松动了	Tighten bolts/nuts to prescribed torque Replace damaged bolts/nuts 将螺栓/螺母拧紧到规定的扭矩。 更换损坏了的螺栓/螺母。
	Damage to gearmotor 齿轮马达的齿轮发生了损坏	Contact customer service Check all teeth and replace any damaged parts 和售后服务部联系。 检查所有的齿轮，更换损坏了的零件。
	Excessive bearing play 轴承间隙过大	Contact customer service Adjust bearing play 和售后服务部联系。 调整轴承的间隙。
	Bearing defective 轴承损坏	Contact customer service Replace defective bearings 和售后服务部联系。 更换损坏的轴承。
Operating temperature too high 工作温度过高	Oil level in gearmotor housing too high or too low 箱体里面的油面过高或过低	Check oil level and,if necessary, adjust 检查油面的高度，如果有必要的话，调整。
	Oil too old 油过于陈旧	Contact customer service Check date of last oil change if necessary, change 和售后服务部联系。 检查上一次换油的时间，如果有必要的话就更换。
	Oil badly contaminated 油受到严重污染	Contact customer service Change oil 和售后服务部联系。 → 换油
Increased vibration amplitudes at the bearing points 轴承处的振幅升高	Bearing defective 轴承损坏	Contact customer service Check and , if necessary, replace bearings 和售后服务部联系。 查阅操作人员在振动测量中所获得的数据。 检查并按需更换轴承。
	Gear defective 齿轮损坏	Contact customer service Check gears and, if necessary replace 和售后服务部联系。 检查并按需更换齿轮。
Oil leakage from gearmotor 齿轮马达漏油	Inadequate sealing of housing covers or joints 箱体盖或者连接处的密封不良	检查密封和连接处，如果必要的话， 更换新的。将连接处密封好。 Check and, if necessary,replace seals, seal joints
	Radial shaft sealing rings defective 径向轴封环失效	和售后服务部联系。 换新的径向密封。 Contact customer service Replace radial shaft sealing rings
Water in the oil 油中有水	Oil foams in sump 油中有杂物	用试管检查油的状态是否有水分存在。实验室分析油。 Check state of oil by the test - tube method for water contamination.Have oil analysed by laboratory
	Gearmotor expose to cold air from machine - room ventilator 齿轮马达受到机器间的通风过来的 凉空气而产生凝霜	用合适的保温材料将齿轮箱保护起来。 关闭空气的出口或者在结构上改变其方向。 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.

注：对于客户自己无法排除的故障请和我公司售后服务部联系。

9 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.

9 售后服务

各种传动设备，客户发现有质量问题时，不要先拆卸零件，应说明以下情况然后与本公司售后服务部联系，说明现象后确认问题所在，再采用较理想的方法处理。

型号规格/Type: _____

出厂日期/Production date: _____

编号/Number: _____

已使用时间/Time being used: _____

使用场合或主机名称/Site or main machine name: _____

主机生产单位/Manufacturer of main machine: _____

质量问题描述/Quality problem description: _____

用户单位/User company: _____

地址/Address: _____

电话/Telephone: _____ 传真/Fax: _____

邮编/Postcode: _____ 联系人/Contact: _____

博能售后服务电话/After-sales service telephone of Boneng: _____

传真/Fax: _____

NOTE: _____

BONENG

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