

安装、使用、润滑说明

一般说明

减速机的安装、操作、维护保养和修理人员均需阅读和理解本说明并遵守其中的规定。若因违反本说明的规定而造成的任何损伤和停机，本公司概不负责。

注意事项

- 一定不能用高压清理设备清洁减速机。
- 对减速机所进行检修、保养、维护、安装都必须在减速机不工作的情况下进行。
- 在减速机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的不可修复的损坏。
- 如果在减速机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），应该立即停机检查。
- 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。
- 一定要遵守减速机上所附加的说明，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。
- 在组装或者解体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。
- 安装升降机时，台架面上的孔，在满足丝杆能方便通过的前提下，应尽可能小。
- 根据减速机的操作条件，减速机的表面、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。
- 减速机应该放置在不振动的干燥木制基座上并遮盖好。当储存减速机和任何单独的零部件的时候一定要做好防锈措施，以免生锈，储存时不得将减速机叠放在一起。
- 除订货合同中另外有所规定，否则减速机不得储存在或工作在强酸、强碱、低温、高温和重度的空气污染、潮湿，具有化学物品的场所。
- 在搬运减速机时，一定要特别小心，应防止撞击轴端，因为这样将有可能造成减速机的损坏，在吊运减速机时，不得将吊环螺钉挂在轴端处的螺纹上。
- 除订货合同中另外有所规定，减速机和无级变速器工作环境温度不超过40摄氏度，温升低于40摄氏度。
- MB无级变速器出厂时，调速限位螺钉已经调整在极限位置，不得任意调整，以免损坏零件。
- MB无级变速器必须在开机情况下方可调速，否则会损坏零件。

Installation、usage、lubrication

General

It must be read and understood by operators, maintenance and repair persons. And they must comply with all regulations in this manual. Any damages and stop of machine caused by wrong operation will be buyer's responsibility.

Notes

- Gear units can not be cleaned by high-pressure cleaning machine.
- Repair, maintenance, installation must be made with gear unit powered off.
- No welding can be made on gear units, and it cannot be a welding ground point. Welding will cause irreparability of precision gears and shafts.
- During running, gear units must be stopped immediately for check once any problem (such as over heated and high noise) occurs.
- Any rotating parts will be equipped with appropriate shields in order to keep it from accidental touch. Such as couplings, hydraulic couplings, gears, driving belt wheels.
- Please note the instructions attached on gear units, such as label, arrow indicating direction. And they will be kept clean without dust and oil.
- The bolts damaged in installation or dismantlement should be replaced with new one of the same tension and type.
- When installing screw jacks, the screw holes in mounting plate should be as small as possible up to bolts' diameter.
- When gear units running, its temperature may get up to a high point, please take care, there is a danger of scald.
- When changing lubrication, please be careful not to be scalded by hot oil.
- Gear units should be put on dry wooden non-vibration base and be covered. When storing gear units and their components, we should take rust-proof measures, and we cannot pile up gear units.
- Unless there are special requirements in contracts, gear units cannot be stored or work in places with acid, alkali, low temperature, high temperature, heavy air pollution, damp, chemical products.
- When removing gear units, please be careful to avoid knocking shaft end and damaging; when swinging them, bolts of swinging rings cannot put in screw holes in the shaft ends.
- Unless there are special requirements in contracts, ambient temperature of gear units and variable speed drives is below 40℃, and temperature rise should lower 40℃.
- Before delivery of MB series, speed-limiting screw has been adjusted to an extreme point to protect spare parts. And speed adjustment must be done after the drives start up, or the drives will damage.

- 减速机、无级变速器应在许用转矩范围内使用，超扭矩使用应在输出轴上装安全装置，以免减速机损坏。
- 各种减速机、无级变速器适用于连续运转，并允许正反两向运转。（配逆止器时除外）
- 若出现安装方位变动，一般情况下调换油镜、油塞、通气帽即可。
- 备件一定要从布鲁克纳减速机有限公司购买。

安装与拆卸

关于安装的综合信息：在户外安装时应该避免阳光的直射，一定要避免热力集中影响减速机的正常性能。

整机安装

- 1) 准备刚性好的基础或牢固的台架来安装传动设备，同时也需充分考虑即使加上最大载荷也不至于改变装配好后各部件的位置。
- 2) 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。
- 3) 法兰式安装，凸肩（或凹肩）应配合良好，以免错位。法兰式安装并配空心轴联接时，特别应保证联接处的形位公差。
- 4) 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。
- 5) 在减速机上安装驱动零件时（如联轴器、齿轮、链轮等），如果需要预加热，则必须保护好轴上的油封，要用隔热屏减少热辐射。
- 6) 输出轴加装联轴器、皮带轮、齿轮、链轮等时，请勿重击，应用输出轴外端螺孔，压入连接件。皮带轮、链轮、搅拌式还需考虑径向力。

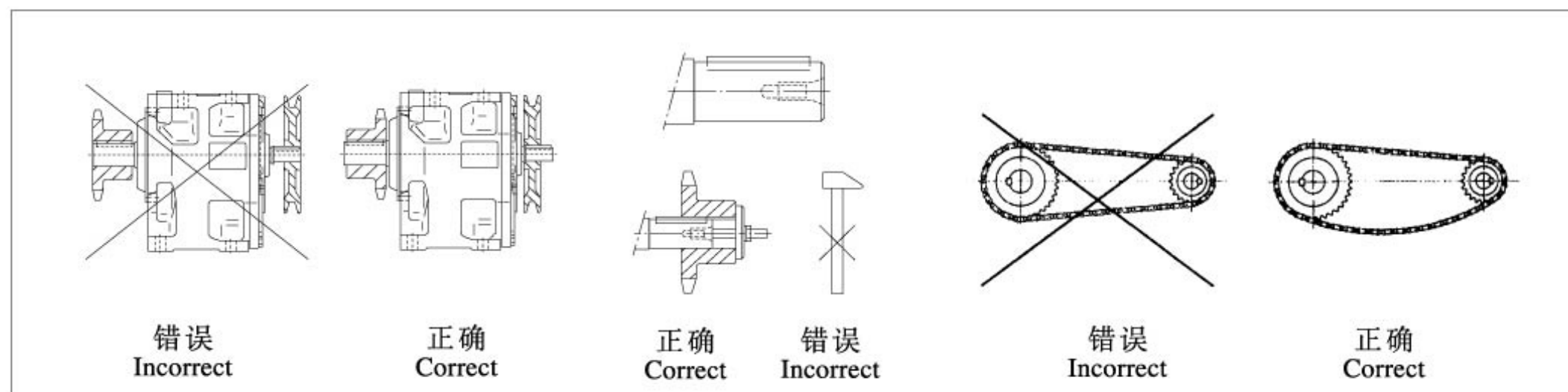
- Gear units and MB should run under permissible torque, safety devices should be equipped to avoid damage if load is larger permissible torque.
- Gear units and MB can run continuously and are permitted to rotate in both directions.
- If mounting position changes, the positions of breather screw, oil level, oil drain plug will be change with each other as usual.
- Spare parts must be purchased from BLKN.

Installation and dismantlement

Installing gear units should avoid direct sunshine and heat concentration to guarantee smooth running.

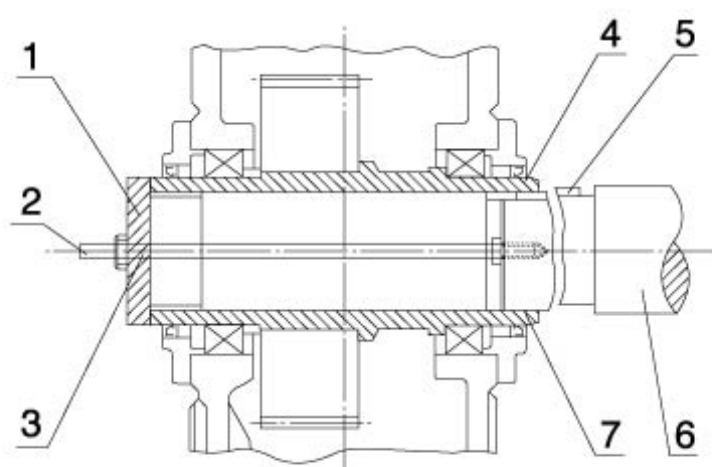
Installation of whole units

- 1) Please choose foundation with good rigidity or stable plat form to install transmission devices. In the meantime, also should take full consideration that the positions of all parts will not change even if maximum torque is loaded on units.
- 2) Choosing foot-mount, the height of centre line should be calibrated; Choosing coupling-connect, coaxiality should be calibrated; Choosing flexible coupling, run-out should keep within permissible values; Choosing rigid coupling, contour and position tolerance should be guaranteed; Choosing long coupling, rigidity of shaft should be enough.
- 3) Flange-mount, protruding or concave steps should inosculate with housings; using hollow shaft, contour and position tolerance at connection parts should be guaranteed.
- 4) Torque-arm-mount, hollow shafts should be fit with working shafts; run-out of working shafts and vibration of units should be within range of vibration values, torque arm should be fixed and locked.
- 5) Mounting driving parts such as couplings, gears, gear chains, if pre-heat is necessary, seal should be protected by using heat-proof shelter to diminish heat radiation.
- 6) Installing couplings, belt wheels, gears, chain gears on output shafts, please use screw hole in shaft end to press them in the correct position (see following pictures). And radial force should be considered in case of Belt wheel, chain gears and agitation mode.



7) 空心轴与实心轴连接时, 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以外, 还可以使用其它类型的装置例(如液压提升装置)。

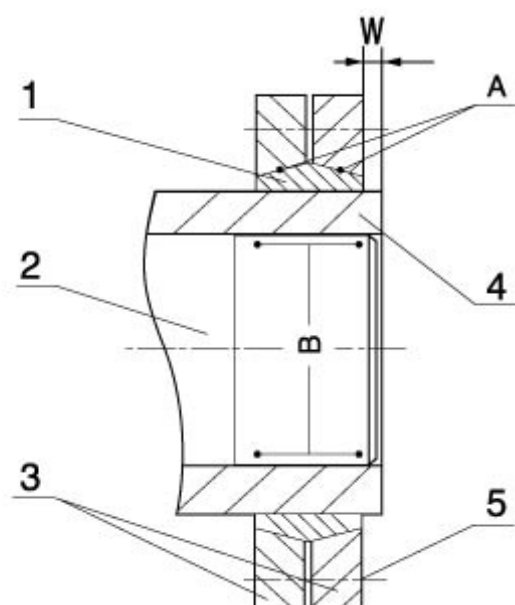
7) When connecting hollow shaft and solid shaft, please clean the surface and put anti-corrosive oil on it. When connecting, besides nuts and threads illustrated in the drawing below, other installing tools such as oil hydraulic devices can be used.



- 1 端板 Pressure plate
- 2 螺母 Nut
- 3 螺杆 Thread
- 4 空心轴 Hollow shaft
- 5 平键 Key
- 6 机器轴 Shaft
- 7 螺母 Nut

8) 当空心轴配置收缩盘时, 为了安全起见在收缩盘上应加防护罩; 空心轴的孔和工作轴在收缩盘的区域里面一定不能有润滑脂。在安装机器的轴之前不要拧紧紧固螺栓。

8) When hollow shaft equipped with shrink disk, protect shield should be installed on shrink disk for safety. Connecting area (equipped shrink disk) of hollow shaft and solid shaft must not be put lubrication cream. Before installing solid shaft, not tighten binding bolts.



- 1 内环 Inner ring
- 2 机器轴 Solid shaft
- 3 外环 Outer ring
- 4 空心轴 Hollow shaft
- 5 紧固螺栓 Binding bolt
- A 有润滑脂的部位 Lubrication area
- B 绝对不能有润滑脂的部位 Non lubrication area
- W 安装高度 Installation height

9) 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:

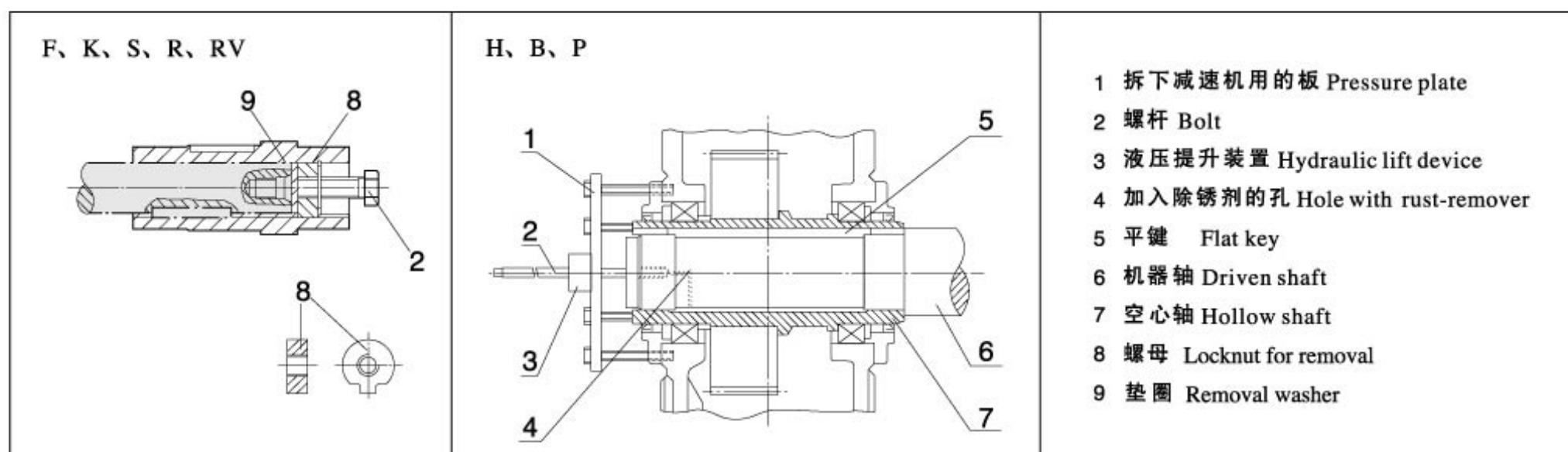
9) Generally fixing bolts adopt GBT8.8. In case of high temperature and vibration, please take anti-loose measures. The tightening torques of binding bolts as follows

螺栓大小 (mm) Diameter of bolt	预紧力矩 (N·m) Pre-binding-torque	螺栓大小 (mm) Length of bolt	预紧力矩 (N·m) Pre-binding torque
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

拆卸

1) 空心轴的拆卸

根据现场实际可使用的设备，可以用端板上的螺杆（参见下图）、中心螺杆或者液压提升装置将减速机从机器轴上脱下来。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。



注：端板和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本公司技术图纸）。

Dismantlement

1) Dismantle hollow shaft

According to tools available on the spot, Bolts on pressure plate, center bolt, oil hydraulic device are available to dismantle gear units from driven solid shaft. There are two screw holes in the end surface of hollow shaft for tightening bolts fixing pressure plate.

2) 当空心轴配置收缩盘时，在首次受力之前一定不能拆下来。拆卸时严禁按照相邻的顺序松开螺栓。

2) When hollow shaft equipped with shrink disk, it is prohibited to loosen bolts one by one in a round way.

润滑与冷却

润滑

1) 润滑油的选择：

系 列 Series of reducer	环境温度 Ambient temperature				ISO粘度与NLGI相应 Adhesiveness of ISO and NLGI unitive	Esso	Mobil	SHELL	GB牌号 L-CK
	-50	0℃	+50	+100					
R. F. K. T. H. B. P	-25		+40		VG220		Mobil Glygoyle 30	Shell Tivela OIWB	N220
	0				VG220	SPARTAN EP 220	Mobilgear 630	Shell Omala OI220	N220
	-15		+25		VG150 VG100	SPARTAN EP 150	Mobilgear 629	Shell Omala OI 100	N150
	-30	+10			VG68-46 VG32	ESSOATF D-21611	Mobil D.T.E. 15M	Shell Tellus OI T 32	N68
	-20				VG22 VG15	UNIVIS J 13	Mobil D.T.E. 11M	Shell Tellus OI T 15	N22
RV. S	-45	0		+60	VG680		Mobil Glygoyle HE 680		N680
	0		+40		VG680	SPARTAN EP 680	Mobilgear 636	Shell Omala OI 680	N680
	-15		+25		VG220	SPARTAN EP 220	Mobilgear 630	Shell Omala OI 220	N220
	-20	+10			VG150 VG100	SPARTAN EP 150	Mobil D.T.E. 18M	Shell Omala OI 100	N150
	-25	+10			VG220		Mobil Glygoyle 30		N220
JW	-45-20				VG22 VG15	UNIVIS J 13	Mobil D.T.E. 11M	Shell Tellus OI T 15	N22, N15
	升降机的润滑油选择：JW010-JW200，选000#钙基润滑脂；JW300-JW1000，选VG150齿轮润滑油。 Lubrication oil: JW010-JW200, 000# calcium grease; JW300-JW1000, VG150 gear lubrication.								

2) 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，要用润滑油将减速机箱体里面的沉积物、金属颗粒和残留的润滑油都冲洗干净。

对于升降机在其正常工作前，都必须对丝杆表面涂抹润滑油脂，将丝杆升到最大行程，然后在丝杆表面涂抹润滑油脂。

3) 润滑方式：

- 油池润滑：一般情况下减速机都采用油池飞溅润滑；
- 浸油润滑：所有的齿轮和轴承都浸没在润滑油里面；
- 强制润滑：是靠辅助设备将润滑油强制压入齿轮箱内对轴承和齿轮进行润滑的。
- 稀油站集中润滑：客户可以根据实际情况自配润滑系统。

Lubrication and cooling

Lubrication

1) Choosing lubrication oil, as following table:

2) Change of lubrication oil

Changing lubrication oil, it must be the same type and produced by the same factory. If type is different, must completely remove deposits, metal grains, residues of the old oil in housing with new lubrication oil.

Before screw jacks running, must lubricate screw threads with lubrication cream. Let threads get up to highest point and lubricate threads.

3) Lubrication methods

- Splash lubrication: generally gear units adopt or splash lubrication.
- Oil-bath lubrication: all gears and bearings must immerse in oil.
- Forced lubrication: attached devices press oil into housing to lubricate gears and bearings.
- Oil tank lubrication: Customers can equip lubrication system accordingly.