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为确保泵车高效、安全可靠以及长的工作寿命等，定期、正确的维修保养十分必要，且至关重要。由于泵车的工作环境很恶劣，泵车操作及维护人员，务必阅读本使用说明书的有关章节，了解清楚各液压件的使用性能、使用期限和检查期限，了解各有关标识符的意义；以确保正确使用和规范维护保养。

警告：如未做定期的检修可能导致泵车功能失效。务必请专业人员按照要求来实施检修。

Regular and thorough maintenance is essential to ensure efficiency, reliability and long service life of the machine. The machine works on sites with varying conditions, please bear in mind that machine must be periodically checked by experts, as described in the relative manual. Warning: Failure to respect the above checking schedule may lead to malfunction of the machine, and the maintenance must be performed by a trained technician.

5.1 日常检查 Routine checks

5.1.1 日常基本项目检查 Daily check items

5.1.1.1 标准的液压油应该是透明的，颜色是淡黄色，不时乳化或者浑浊的。

Level and condition of hydraulic oil, oil should be transparent, the color should be light yellow, not emulsified or turbid.

5.1.1.2 润滑油箱及各润滑点加满润滑脂，水箱加满清水。

Fill the lubrication sump to ensure that the lubrication points have sufficient grease. Fill water tank with clean water.

5.1.1.3 检查混凝土活塞应密封良好，无砂浆渗入水箱。

Sealing condition of concrete piston by observing if there is excess grout in the water tank.

5.1.1.4 检查切割环，眼镜板间隙正常（最大间隙 2mm）。

The clearance between cutting ring and anti-wearing plate. (max. 2mm).

5.1.1.5 检查润滑系统工作情况，应看到递进式分油器指示杆来回动作，S 管摆臂端轴承位置、搅拌轴轴承位置有润滑油溢出。

Lubrication system working status, the step-type oil distribution indication lever should move to-and-fro, and there should be lubricant leaking from the bearing of "S" valve end and of mixing shaft.

5.1.1.6 检查各电器元件功能是否正常。

Check the operation of electronic components is normal.

5.1.1.7 检查分配阀摆动，搅拌装置正反转是否正常动作。

Inspect movement of distribution valve, mixing and reverse mixing are normal.

5.1.1.8 检查冷却器外部，若有污物立即清洗，否则易引起油温过热。

Inspect exterior of coolers. Should there be dirt, clean the dirt away to avoid oil overheating.

5.1.1.9 检查真空表指示，应在绿色区域内（真空度严禁超过 0.04）。一般吸油真空度应小于 0.01MPa。回油压力真空表示值应小于 0.35 MPa。

Check the indicator of vacuum meter should be within green area (don't exceed 0.04). Generally, vacuum degree for suction oil should be below 0.01MPa. The vacuum degree for returning oil should be below 0.35MPa.

5.1.1.10 以敲击方式检查混凝土管磨损程度，检查各管路接头是否密封良好。

Check the wear on the concrete pipes by knocking, and that the sealing of the pipes is in good condition.

5.1.1.11 检查液压系统是否有渗漏油现象，油箱盖板密封是否松动、进水进气。

Check for leaks in hydraulic system, if the sealing of oil tank cover is loose, or if there is water or air in the oil

tank.

5.1.1.12 检查液压油油位，油质应是淡黄色透明，无乳化或浑浊现象，否则应更换。

Level and condition of hydraulic oil, oil should be transparent, the color should be light yellow, not emulsified or turbid.

5.1.1.13 检查液压油是否混入过多水分。每隔 3~10 天应将油箱底部带有漏斗状的底部球阀拧开排水。并注意不要让液压油流出。

Check the hydraulic oil whether the oil interfuses the excessive water or not. Every 3~10 days, operator should open ball valve in the bottom and pay attention to the hydraulic the oil that it runs off.

5.1.2 工作 50 小时后的保养（1500~2500m³）

Maintenance after 50-hours working (or after pumping 1500~2000m³)

5.1.2.1 进行前述保养。

Do the maintenance work as specified above.

5.1.2.2 检查所有螺纹联接，保证联接牢固。

Check all bolts for tightness.

5.1.2.3 检查水箱内活塞接杆连接情况，保证联接牢固可靠。

Check piston rod connections in water tank to ensure good connections.

5.1.2.4 检查真空表指示，滤芯过滤情况。

Check the reading of vacuum gauge and filter element.

5.1.3 工作 100 小时后的保养（3500~5000m³）

Maintenance after 100-hours working (or after pumping 3500~5000m³)

5.1.3.1 进行前述保养。

Do the maintenance work as specified above.

5.1.3.2 检查眼镜板、环磨损情况，必要时更换切割环。

Check wear on cutting ring and anti-wearing plate, replace them if necessary.

5.1.3.3 检查混凝土活塞磨损情况，必要时更换。

Check wear on concrete piston for wear and change it if necessary.

5.1.3.4 检查液压油是否有变质、乳化现象，否则应彻底换油，并将油箱全面清洗干净。

Inspect hydraulic oil, if there is deterioration and emulsification, replace the oil completely and clean oil tank thoroughly.

5.1.4 工作 500 小时后的保养（15000~25000m³）

Maintenance after 500-hours working (or after pumping 15000~25000m³)

5.1.4.1 进行前述保养。

Do the maintenance work as specified above.

5.1.4.2 检查 S 管及 S 管轴承位置磨损情况。

Check wear on "S" valve and its bearing.

5.1.4.3 检查搅拌装置、搅拌叶片、搅拌轴承磨损情况。

Check wear on mixing unit, mixing blade and mixing shaft.

5.1.4.4 检查液压油。必要时换新液压油，新加入的液压油必须使用本公司推荐牌号的液压油。一般泵送 10000 m³ 混凝土应彻底更换一次油。

Inspect hydraulic oil. Replace the oil if necessary, brand of oil should comply with the recommendation of our company. It is recommended that hydraulic oil should be completely replaced after pumping 10000m³ concrete

5.1.4.5 检查蓄能器气压是否足够，大蓄能器充气压力 8~9MPa。

Check if there is sufficient pressure in the accumulator. The charge pressure for the accumulator should be 8~9MPa.

5.1.4.6 检查结构件的连接及焊缝。

Check the connection and weld.

5.1.4.7 分动箱油位检查，是否需补注或换油。

Check lubrication grease level of transfer case, refill or replace if necessary.

5.1.5 工作 750 小时后的保养

Maintenance after 750 hours working

5.1.5.1 进行前述保养。

Do the maintenance work as specified above.

5.1.5.2 检查混凝土缸的磨损情况，镀铬层磨损严重应予更换。

Inspect wear on concrete cylinder, if the chrome coat is seriously damaged, then change the cylinder.

5.1.5.3 全面调试泵机，使各性能参数符合要求。

Check the machine thoroughly to ensure that all functions and parameters are normal.

5.2 关于汽车底盘的维护保养 Chassis maintenance

汽车底盘的具体维护与保养的详细说明请参见底盘使用手册。在泵车每次行驶启动时，应至少做好以下项目的检查：

Please refer to chassis operation manual for details. Before start up, please check following items:

5.2.1 发动机里机油的油位及油况检查。

Level and condition of the engine oil.

5.2.2 发动机的油压检查。

Inspection of engine oil pressure.

5.2.3 发动机里冷却水位，冷却液液位及水温检查。

Level of cooling water level and coolant; water temperature.

5.2.4 轮胎的磨损及压力检查。

Pressure and state of types.

5.2.5 电气系统检查。（例如照明，指示灯，及停机灯等）

Electrical system (e.g. lighting, indicator, parking light)

5.2.6 后视镜的视野检查。

Vision in the rear view mirror.

5.2.7 刹车系统的气压检查。

Pressure of braking system.

5.2.8 所有转向灯的工作检查。

Inspection of steering lights.

5.2.9 油/气泄露检查（如有泄露，拧紧接头）。

Check oil/air leakage.

5.2.10 安全装置检查（如限位开关，安全插销等）。

Inspection of safety device (e.g. limiting switch, pin).

5.2.11 在泵车移动前，检查所有运动部件（例如固定支腿，臂架等）都已固定在规定的位置上。Inspection of all moving parts (e.g. outriggers, boom arm) to ensure that they are securely fixed.

5.3 关于泵送单元 Pumping unit

5.3.1 日常检查 Routine inspections

由于频繁的泵送作业，泵送单元的运动部件磨损比较快，而正确的维护保养，将提高工效，并延长易损件的使用寿命。认真做好日常检查，尤其以下项目：

Frequent pumping will cause fast wear of moving parts of pumping unit. Regular and thorough maintenance and service will help to maintain high efficiency and longer service life. Please do routine inspections of the following items:

5.3.1.1 如发现润滑水箱里有过多的混凝土浆，应查看是否需更换混凝土活塞；

If there is excessive grout in the water tank, the concrete piston will be replaced.

5.3.1.2 检查眼镜板和切割环，如果过度磨损，则要换掉。

Check the state of wear of the cutting ring and anti-wearing plate, should there be serious wear replace them.

5.3.1.3 检查混凝土缸内表面是否氧化及严重磨损。

Check whether there is oxide on the surface of the concrete cylinder.

5.3.1.4 检查泵送换向及分配阀摆动是否正确、到位。

Check the correctness of pumping direction changing and distribution movement.

5.3.2 眼睛板与切割环间隙调整

Adjustment of clearance cutting ring and anti-wearing plate.

(1) 筛网 screen mesh (2) 搅拌装置 mixing device (3) 摆臂 swing arm (4) 止转螺钉 retainer screw (5) 异形螺栓 bolt (6) 切割环 cutting ring (7) 橡胶弹簧 rubber spring (8) 眼镜板 anti-wearing plate (9) 出料口 discharge port

泵机泵送 5000m³ 左右混凝土后应注意检查眼镜板与切割环间的间隙，若超过 2mm，且磨损均匀，则应考虑调整间隙。调整步骤如下：

After pumping 5000m³ concrete, check clearance between anti-wearing plate and cutting ring. If the clearance is more than 2mm and the groove is uniform, adjust the clearance as following procedures:

5.3.2.1 将料斗、S 管阀清洗干净；

Clean hopper and “S” valve.

5.3.2.2 拧下止转螺钉 4；

Unscrew retainer screw 4.

5.3.2.3 拧紧异形螺栓 5，将 S 管拉向料斗后墙板，使切割环与眼镜板之间间隙缩小；

Tighten bolt 5, pull “S” valve towards back wall of hopper to reduce clearance between cutting-ring and anti-wearing plate.

5.3.2.4 拧上止转螺钉 4。

Tighten retainer screw 4.

5.3.3 切割环与眼镜板的更换 Change cutting ring and anti-wearing plate.

5.3.3.1 切割环的更换

Change cutting ring

5.3.3.1.1 关闭发动机，释放蓄能器内压力，取出料斗筛网。

Shut down engine, release pressure in accumulator and take out hopper screen mesh.

5.3.3.1.2 将异形螺栓 5 松开 20mm 请不要松开太多，否则 S 管往后退时，轴承配合位会从轴承套中退出，损坏密封件，封不住砂浆，影响 S 管的使用寿命。

Loosen bolt 5 for 20mm. Note: remember not to loosen too much, or else, when the “S” valve moves back, the bearing may come out of bearing bush, resulting in damage to sealing and shortening the span life of “S” valve.

5.3.3.1.3 拆下出口法兰，将 S 管往出口方向撬，使切割环和眼镜板之间间隙达 20mm 左右，取出切割环。

Remove flange on outlet, pry “S” valve toward outlet until the clearance between cutting ring and anti-wearing plate is about 20mm. Take the cutting ring out.

5.3.3.1.4 检查所装橡胶弹簧是否损坏，若损坏，请更换。

Inspect if rubber spring is damaged, change it if necessary.

5.3.3.1.5 装上新切割环。

Fix the new cutting rings.

5.3.3.2 眼镜板的更换 Change anti-wearing plate

5.3.3.2.1 重复更换切割环工序。

Repeat the procedure of replacing cutting ring.

5.3.3.2.2 拧下眼镜板的全部安装螺栓，稍微震动后即可将眼镜板取出。

Remove all fitting bolts of anti-wearing plate, shake the plate slightly, it will be easily taken out.

5.3.3.2.3 装上新眼镜板。

Fix the new anti-wearing plate.

5.3.4 混凝土活塞的更换 Replacing the concrete pistons

1) 取下水箱上水箱盖。

Remove the lid of the water tank.

2) 在低压泵送状态下分别提起压板，取下定位套。

Raise the cover plate and take off the muff in the state of low-pressure pumping.

3) 关闭泵送油缸尾部 U 型管路中的球阀。

Turnoff the shut-off valve in the U pipeline at the tail of pumping cylinder.

4) 点动主油缸待混凝土活塞全部推出砵缸后，应先停机，再操作主缸点动开关，使泵送和分配压力表降至为零。待停机状态下完全卸压后方可拆装混凝土活塞！

Switch the engine off after the piston that works by inching the main cylinder has been pushed out of the concrete cylinder

entirely, and make sure the pressure of both pumping circuit and distribution circuit drop to zero, afterwards, manipulate the switch of the main cylinder. Dismantle and install the concrete piston must on the halt and unpressurized condition.

5) 手将挡销按下并退出套环。

Take out the ring by pressing down the block pin.

6) 取下两个半圆。

Remove the two semicircular objects.

7) 取下混凝土活塞。

Take out the concrete piston.

8) 装混凝土活塞时其步骤与上面步骤相反。

The process to install the concrete piston is just the contrary.

注意 Attention:

a)、分别安装好混凝土活塞、半圆、套环、挡销。其中挡销用手压应明显感到有弹力，并且正常伸出圆弧约 4mm。

Install the concrete piston, semicircular object, ring, and block pin well respectively. Make sure the block pin has elasticity when pressing it and reach out of the cirque about 4mm normally.

b)、开启泵送油缸尾部 U 型管路中的球阀，此时先不安装定位套，当自动泵送十次以上，混凝土活塞不会退出混凝土缸时，先停机，再安装好定位套、水箱盖板。

Do not fix the muff just after turning on the valve in the U pipeline at the tail of pumping cylinder. Switch the engine off after pumping more than ten times automatically when the piston cannot secede from the concrete cylinder, and than fix the muff and water tank lid well.

● 注意事项 Attention:

(1) 停机并放空料斗及混凝土缸内的混凝土料。

Switch off the engine ,empty the hopper and concrete cylinder.

(2) 安装新活塞时，应在新活塞两唇之间应抹满黄油。

When assemble the pistons, apply a thick coat of grease between the two lips of the new pistons.

(3) 将混凝土活塞顶入混凝土缸时，一定要速度缓慢，且只能采用点动方式。

When concrete piston is squeezed into concrete cylinder, the speed must be very slow and only by inching.

5.3.5 蓄能器充气与更换 Charging and change of accumulator

蓄能器的主要作用是用来补充 S 管分配阀摆动时所需能量，使 S 管分配阀的摆动得以在瞬间完成。其主要故障形式有蓄能器皮囊气压不够或皮囊破损，造成 S 管分配阀摆动不动或摆动无力。

其故障的判定方法如下：

操作判定：当蓄能器换向压力达 16 MPa 时，摆动油缸摆动瞬间，换向压力正常应只有 3~8 MPa 的压力降，若换向压降太大，如从 16 MPa 降至 5 MPa，甚至更小，则说明蓄能器皮囊无气或气压不足。

拆检判定：拆下蓄能器充气单向阀上的防护螺母，用小内六角扳手或铁丝顶充气单向阀阀芯，应顶不动。若顶得动，说明蓄能器皮囊内气压不够或破损。

The main function of accumulator is to provide energy for “S” valve to swing quickly. Commonly seen failures such as insufficient pressure or damage of the bladder, causing no or slow movement of “S” valve.

There are two ways to judge if there is a fault:

At the moment the “S” valve change direction, differential pressure should be limited in 3-8Mpa.

If a large pressure drop occurs (e.g. from 16Mpa down to 5Mpa or even lower), it indicates that there is no nitrogen or insufficient air in accumulator.

Remove the protection nut from the charging check valve, push valve spool with a small hexagon ring spanner or similar, if the spool moves, it indicates low or no pressure in the accumulator.

5.3.5.1 蓄能器的充氮方法 Charging nitrogen

5.3.5.1.1 拧下蓄能器充气阀保护螺母，把充气工具带压力表的一端接氮气瓶，另一端接蓄能器。从氮气瓶输入的氮气必须通过减压阀。

Unscrew protection nut of the charging valve, connect one end with the pressure gauge of charging tool with nitrogen container, the other end to the accumulator. Always use a regulator to refill the accumulator

5.3.5.1.2 徐徐打开氮气瓶气阀，当压力表指示值达到规定值(8-9MPa)时，即关闭氮气瓶阀。保持 20 分钟左右，看压力是否下跌。

Slowly open the valve of nitrogen container. When the reading on pressure gauge is up to the specified value (8~9Mpa), shut off the valve and keep such pressure for about 20 minutes to see if pressure drop.

1-蓄能器 accumulator 2-充气工具（带压力表、管接头） charging tool(pressure gauge, coupling) 3- 氮气瓶 nitrogen container

5.3.5.1.3 拆开充气工具接蓄能器端之接头，卸下充气工具。

Disconnect one end of charging tool connected to accumulator.

5.3.5.1.4 拧紧蓄能器安全阀保护帽。

Tighten safety valve protection cap.

注意：蓄能器充入的只能是氮气，充气压力必须按规定要求。

Note: Only nitrogen may be charged into accumulator, and the charging pressure should be up to the specified value.

5.3.5.2 蓄能器皮囊更换方法 Change accumulator bladder

1- 充气阀 Charging valve 2- 壳体 Casing 3- 皮囊 Bladder 4- 提升阀 lifting valve 5-放气塞 Release cock
6- 阀体总成 Valve assembly 7- 锁紧螺母 locking nut 8- 垫片 Gasket 9- O 形圈 O-ring 10- 半圆卡箍 Semi-circular snap ring 11- 压紧螺母 Check nut

5.3.5.2.1 拆下蓄能器，拧下充气阀 1 的保护螺母。松开充气阀 1，徐徐释放皮囊内气压。然后卸下充气阀和压紧螺母 11，卸下放气塞 5。

Remove accumulator, unscrew protection nut of charging valve 1. Loosen charging valve 1, slowly release pressure in the bladder. Remove charging valve, check nut 11 and release cock 5.

5.3.5.2.2 卸下锁紧螺母 7，垫片 8，O 形圈 9 等，然后把阀体总成 6 推进壳体内，使阀体与半圆卡箍 10 脱离。然后分别取出半圆卡箍 10，阀体总成 6 等。

Remove locking nut 7, gasket 8 and O-ring 9. Push valve assembly 6 into casing 2 to disconnect valve body from semi-circular snap ring 10. Take out snap ring 10, valve assembly 6, etc.

5.3.5.2.3 用钢丝钳钳住皮囊 3，从壳体大端出口拉出皮囊。

Take bladder 3 from casing 2 with a steel wire clip

5.3.5.2.4 装配时先将蓄能器内清洗干净，在皮囊外壳抹上液压油，然后装入皮囊，半圆卡箍及阀体总成；依次装好其它各件即可。

Before assembling, clean accumulator interior first, Applying hydraulic oil on exterior surface of the bladder, then put the bladder in, assemble semi-circular snap ring, valve assembly, then other parts in sequence.

5.4 关于结构件的维护 Structure checks

由于泵车工况比较差，泵送作业中整机的交变受力以及较为剧烈的震动，可能会导致其结构件的连接松动或焊缝开裂等，所以对于泵车结构的检查尤为重要。主要检查项目如：

——连接件和支撑件间的稳固性，如汽车底盘、泵送单元、水箱、减速齿轮、搅拌机构以及混凝土输送管。

——连接螺栓和密封件的可靠性（尤其是受剪和受扭的元件）。

——零部件的状态（元件可能破裂或者折断）。

——臂架及支座等各处焊缝有无开裂。

——销钉和衬套的润滑状态，是否有锈蚀和卡死、磨损（可能断裂）。

——由于零部件相互运动，过度磨损产生的游动间隙。

因为结构件的松动或开裂，如果不能及时发现并修复，将可能导致整机损坏甚至人员伤亡的严重事故。因此用户务必高度重视结构件的检查。

Because the work condition of the truck-mounted pump is very worse, the pump is subjected to the dint and more violent vibrations in the whole machine , may cause the conjunction of its structure piece may become less crowded and craze etc. So it is important to the pump of checking of the truck-mounted pump structure.

The main items include the following:

- Soundness of the connecting parts and support parts, such as chassis, pumping unit, water tank, reducing gear, mixer unit and concrete pipes.
- Soundness of bolts and tightness of sealing, especially the parts that receive shear stress or torque.
- State of materials, for possible cracks and breakage.
- Welds of boom and outrigger, check if any weld cracks
- Lubrication of pins and bushings, check for wear, clogged (or broken).
- Play clearance due to excessive wear between parts in reciprocating movement.

Loosened or cracked structure may lead to accidents causing severe whole machine damage, or even personnel injury & death.。

Please pay great attention to inspection of structure condition safety.

5.4.1 连接件的紧固 Connections tightening

定期检查连接螺栓、紧定螺钉、螺母、销轴等是否松动。若松了，用扭力扳手根据下表中提供的扭矩拧紧。

尤其回转支承的螺栓承受巨大的交变载荷，因此每工作数小时后，原预紧力矩就会有所损失。必须定期采用扭力扳手来检查螺栓的预紧力矩。必须将臂架搁放在支架上来检查预紧扭矩，这样才能消除回转支承上的轴向力。对于新泵车在 100 个工作小时后，必须进行检查，以后每 500 小时进行一次。

在拧紧时，螺栓件不能有预拉应力，所以臂架须折叠关闭起来，并保持在垂直位置。在逐一拧紧回转台上的螺栓时，务必将并紧螺母锁死。

Inspect tightness of bolts, pins and nuts, forelocks at regular intervals。 If there is any looseness, tighten using a torque wrench to the listed torque settings.

Slewing bearing bolts are subject to strong loads, therefore after a few hours of work the setting torque may decrease。 The periodical checks must be performed by using a torque wrench to the listed torque settings.The wrench torque setting must be checked by resting the arm on its trestle so as to exert an axial load on the turret bearing。 To new machine, the check must be performed after 100 hours of work, then make such bolt checks every500 hours.

In tightening, initial stress acted on bolts should be relieved, therefore boom arm has to be folded, closed and kept at vertical position and the nuts should be locked.

下表即为各型号连接螺纹的所需拧紧扭矩:

Table of tightening torques required

螺纹规格 Thread specification 拧紧扭矩
Tightening torque

8.8 级

Grade 8.8

Grade 10.9

M8 25 N.m 35 N.m

M10 51 N.m 71 N.m

M12 90 N.m 110 N.m

M14 144 N.m 180 N.m

M16 210 N.m 260 N.m

M18 290 N.m 360 N.m

M20 410 N.m 520 N.m

M22×1.5 550 N.m 700 N.m

M24 640 N.m 900 N.m

M27 950 N.m 1350 N.m

需要强调的是，因结构修复拆掉的高强螺栓以及因疲劳等损坏的连接螺栓，不能重复使用，再装配时应采用新的同等级连接螺栓。

It should be stressed that high-resistance bolts removed in structure repair and other bolts damaged due to stress fatigue can not be reused. New bolts with the same grade as the original must be used in reassembling。

5.4.2 结构件的裂缝修复 Repairing of structure cracks

臂架、支腿及底架支座等结构件，由于作业时的变负荷承载，在经历一段时间后，将可能会因局部应力的集中、氧化锈蚀以及局部结构件的疲劳，发生裂缝现象。用户在泵车每工作 300 小时后，必须对臂架等结构件做焊缝探伤检查。泵车结构件开裂均是可修复的。用户应及时发现，尽早做好处理。臂架和支腿等承力件均采用高强度钢，不能随意补焊或者打孔，改变或降低它的强度。如有裂纹发生，请及时联系我公司服务站人员，进行修复。

Structure such as boom, outriggers and base frame are subject to alternate stress during operation. After a period of time, cracks may appear due to localized stress concentration, rust, corrosion, oxidization and fatigue of structure. Inspection of welds on the structures should be carried out every 300-hours working。

Cracks on structure can be repaired. It is most important is to find them in time and repair as early as possible. Booms and outriggers are made of high-duty steel, and must not be welded or drilled at will, this will lead to a reduction in their strength. If cracks are found on the structures, the distributor should be contacted to arrange for specialized repair。

5.5 关于液压系统的维护 Maintenance of the hydraulic system

泵车液压系统比较复杂，且液压元件型号较多，必须请专业技术人员进行液压系统的检修。如果发现故障，应该及时找出原因，并在系统执行任何动作之前修复。

The hydraulic system of the machine is complicated, and includes different models of components. Therefore, maintenance of hydraulic system must be performed by specialists. In case of any problems, the causes must be found promptly and eliminated before any operation of the machine is carried out.

5.5.1 液压油的使用 The use of the hydraulic oil

清洁是液压系统维护的最重要工作。经常清洗才能保证系统没有灰尘、脏物及其它颗粒。每个细小颗粒会引起阀体、主泵的不正常工作及堵塞管道，在向油箱加注新油之前，应将油从桶内取出，并让液压油沉淀一会，且不能从油桶底部抽油，最好让油通过 25 μ m 的过滤器过滤后，再注入油箱。油箱盖必须在打开之前清洁，其它容器也一样。请使用说明书中推荐的优质抗磨液压油（或更高品质液压油）；但注意不同品牌液压油不能混合使用。如发现油液变色、浑浊或乳化，应及时更换。

For hydraulic system, cleaning is the most important maintenance procedure. Only regular cleaning can prevent dust, dirt, foreign matters entering into the system. Each tiny particle may cause malfunction of valves and pump, and lead to pipe blockage. Before refilling the hydraulic oil tank, the refilled oil should firstly be removed from barrel and be precipitated for a moment. When refilling, please remember not to take oil from bottom of the oil barrel. It is recommended to filter oil by using a 25 μ m filter. before refilling. Oil tank cover must be cleaned before opening, and the same with the other containers. Please use the recommended high quality anti-wear hydraulic oil (or higher-quality oil). Take care that mixture of different brands is avoided. If the hydraulic oil appear muddy, cloudy, dirty, or not its usual clear yellow, it should be replaced immediately.

5.5.2 滤油器的维护 Checking the filter

因为液压系统中的杂质等，滤油器在长时间工作后，滤芯等元件需要定期清洗、更换。

如过滤器带堵塞指示灯，若红色警告灯亮，则过滤器堵塞。

如回油过滤器上的压力指示表，指针进入红色区域，则过滤器堵塞。

在更换过滤器之前，应进行如下操作：关闭面板按钮；停止液压泵送；关闭发动机；释放液压系统压力；并取掉点火钥匙。更换旧滤芯，换上新滤芯之前，检查每样东西如过滤圈、滤芯、堵塞指示灯是否完好，更换损坏的元件。

必须使用原厂的滤芯才能确保质量。

The filter element must be regularly cleaned and replaced due to impurities in hydraulic oil.

If the filter is fitted with a warning indicator, the indicator will be on if it becomes clog.

The filter is clogged if the indication of pressure gauge on return line filter enters into red zone.

Before changing filter: Shut off all buttons and switches on control panel; Stop hydraulic pump;

Shut off engine; Release pressure of hydraulic system; Remove ignition key.

Before changing filter element, do check that other part of the filter is in good condition, such as clog indicator.

Only the recommended filter can ensure proper operation and service life.

5.6 关于润滑的维护 Maintenance of lubrication

润滑是为了使泵车的料斗、搅拌等处的滑动支撑处有较好的润滑，为了使回转减速机、PTO 齿轮箱、臂架关节等运动副运转灵活，从而使摩擦减小、延长寿命。除采用液动双柱塞润滑泵或电动集中润滑泵)进行自动润滑各点外，其余非自动润滑点采用手工黄油嘴润滑。

In the pumping unit, mixing unit and the distribution boom there are many moving parts that need to be lubricated regularly to ensure efficient and long working life. The lubrication of pumping unit is automatic, controlled by a hydraulic two-piston pump or an electrical motor. The other lubrication points are filled manually.

5.6.1 润滑油脂的使用 Use lubricant

因为润滑质量的好坏，直接影响泵车各运动部件的工效及其寿命。对不同润滑点，润滑油/脂的使用及更换，均有所不同。参照下面润滑表格所示，对相应的润滑部位，应定期检查润滑油和油脂的油位及油质。

The quality of lubricant directly affects efficiency and service life of moving parts. With lubricate point on different parts, the appropriate lubricant/grease should be used. According to the underneath lubrication form, to the homologous lubrication part, operator should periodically check lubricant and the oil and oilinesses of the grease.

序号 No. 部件

Parts 润滑油/脂 Oil/pressure 润滑间隔/小时

Lubrication interval /hr. 备注

Remarks

50 200 1000

1 转台回转减速机内 Slewing turret gear reducer MOBILUBE HD 80W-90 补注 Refill 更换 Replace 第一个 100 小时更换全部机油 Complete replace after first 100hrs

2 回转减速齿轮轴端油嘴 Boom slewing gear 2#锂基润滑脂 2#Li grease 润滑 Lubrication 润滑脂等级 NLGI2

Grease NLGI2

3 回转大齿圈轴承

Slewing bearing 2#锂基润滑脂 2#Li grease 润滑 Lubrication 润滑脂等级 NLGI2

Grease NLGI2

4 各臂架关节和支腿关节 Articulations for boom sections and outriggers 2#锂基润滑脂 2# Li grease 润 滑 Lubrication 润滑脂等级

Grease NLGI2 NLGI 2

5 取力齿轮箱 PTO gear box PTO

(1)美孚 SHC220 EP220 Mobilgear SHC220 (2)美孚格高 30

Mobilgear 30

(3)埃索 Spartan EP220

Spartan EP220 同种

补注 Refill with the same brand 更换 Replace 第一个 100 小时更换全部机油; 不同牌号油不能混合使用 Complete replace after first 100hrs. No use mixed brands.

6 泵送系统润滑

Pumping system

非极压型半流体锂基脂:

夏季用 0 或 1 号

冬季用 00 或 0 号 use No.0 or No.1 semi-fluid lithium lubricating grease in summer, No.00 or No.0 semi-fluid lithium lubricating grease in winter 补注

Refill 润滑脂等级

Grease NLGI2 NLGI 2

7 清洗水泵 Cleaning pump 30# 机油

30# oil

40# 机油

40# oil 更换 Replace

5.6.2 润滑油脂的添加 Refill of lubricant / grease

因润滑油脂的损耗，所以每次开机工作时，都必须检查各润滑点是否润滑充分。如不足，则需及时添加；如需换油，应放尽系统中老的润滑油脂。全部采用新的润滑油脂可保持最佳的润滑。

润滑的频率取决于工作条件，正常情况下是按上表格中时间，应进行一次注油。若工作环境潮湿、灰尘多或空气中含有较多粉尘颗粒或温差变化在，以及连续回转，则需增加润滑次数。当机器停止很长一段时间不工作，也须进行更深层次润滑，即对所有的部件都作一次充分的润滑。

要确保润滑油脂的清洁。在加注润滑油脂之前，要清洗干净润滑枪的喷嘴，避免混入杂质损坏接头及衬套。

Before startup, please check that every lubrication point is thoroughly lubricated. Refill if necessary. If necessary to replace lubricant, please empty the old lubricant completely for optimum lubrication effects.

Lubrication frequency depends on working environment. Normal lubrication should be performed as the table above. If the working environment has high humidity, dusty and high temperature changes, or the slewing mechanism move continuously, higher lubrication frequency will be needed. After long down time, a thorough lubrication to all parts will be necessary.

It is important to keep the lubricant clean. Before refilling, please clean greasing gun nozzle to avoid damage to the pins and bushes.

5.6.2.1 对于采用非自动润滑的混凝土泵送活塞的润滑，可以按照如下的步骤：

The piston of pump unit can be lubricated as follows:

5.6.2.1.1 将其中一个活塞推到油缸冲程末端，即退到注油位置(靠泵送水箱侧)；

Bring one of the pistons to the end of stroke(near the pumping water tank).

5.6.2.1.2 用手动加油器给混凝土活塞加注润滑油脂；

Use the greasing gun to lubricate the piston.

5.6.2.1.3 然后反向的操作，对另一个活塞加注润滑油脂。推荐每 50 小时进行一次。

Perform the same manoeuvre for the other piston. It is recommended to carry out this lubrication every 50 hours.

5.6.2.2 对于臂架的润滑注油过程：首先将整机固定好，且臂架全部收拢后垂直立起，再充分回转臂架，同时将润滑油脂注入到回转台及臂架各关节上的润滑点；臂架应来回伸缩，多次加注润滑油脂。

Lubrication for boom: Position and stabilize the machine. Fold and close the boom arms. Rotate the boom for several revolutions, and grease slewing parts and the articulations of the a boom. Extend and telescope the boom and refill grease several times.

5.6.3 回转减速机的润滑油脂添加 Lubrication of slewing gear reducer

5.6.3.1 通过拧掉减速机通气罩，定期检查加注润滑油，防止少油、缺油。见 6.6.1 表，其添加润滑油为 MOBILUBE HD 80W-90。加油前，先拧开减速机的放油口螺堵和油位口螺堵，放掉用过的旧油；再拧上放油口螺堵，加注新油，直到减速机油位口有油溢出为止；拧紧油位口螺堵，然后拧紧通气罩。

Check the lubrication of slewing gear reducer through its breath port. See table 6.6.1, the lubricant is MOBILUBE HD 80W-90. Before adding, loosen the plugs of discharge port and oil level port. Let out all the used lubricant, then fasten discharge port plug. Refill new lubricant until it overflows from oil level port. Screw down the plug of oil level port and the cover of breath port.

5.6.3.2 定期检查加注减速机刹车机构润滑油。其添加润滑油为 MOBILUBE HD 80W-90。如需加油时，先拧开其加油口螺堵和油位口螺堵，放掉旧油后，再拧上放油口螺堵，从通气口加注新油，直到减速机油位口有油溢出为止；拧紧油位口螺堵，然后拧紧通气罩。

Check the lubricant of gear reducer's brake mechanism regularly. The lubricant is MOBILUBE HD 80W-90. Before adding, loosen the plugs of discharge port and oil level port. Let out all the used lubricant, then fasten discharge port plug., Refill new lubricant until it overflows from oil level port. Screw down the plug of oil level port and the cover of breath port.

7.6.3.3 定期检查，如发现回转机构齿轮面有污物，应立即清除，以防齿轮损坏。给回转减速机构中的所有齿轮表面及回转轴承，定期涂抹、加注 2# 锂基润滑脂。

Check the surface of reducer's gear. Clean out if there are some dirty things, which will prevent damaging these gears. If necessary, lubricate 2# Li grease on the surface.

5.6.4 分动箱的润滑油添加 Lubrication of PTO

在分动箱靠后传动轴侧，有观测油位口。定期拧开该油位口螺堵，检查油位。见 7.6.1 表，其添加润滑油为美孚 Mobilgear SHC220 等。如需加注润滑油时，拧开油位口螺堵，注油至油溢出为止。如需更换润滑油，先拧开油位口下面的放油口螺堵，放尽旧油后，拧紧该螺堵；从加油口加油至溢出为止。注意，务必采用梅花扳手旋拧螺堵，以免螺堵头滑扣。

On the side of rear axle, there is a oil level port on the PTO. Check the oil level through this port regularly. See table 7.6.1, the lubricant is such as Mobilgear SHC220, etc., If necessary to add, loosen the plug of oil level port, then refill until the lubricant overflows. If necessary to change the lubricant, loosen discharge port plug below the oil level port, let out all the used lubricant, then fasten the plug. Refill new lubricant from the oil level port. Be careful with club wrench to turn the plug, or the plug head may be damaged.

5.7 关于电气系统的维护 Maintenance of electrical system

对于电气系统的日常使用与维护，请遵照说明书中的电气系统及操纵章节，进行正确的操作与维护。其中，我们需要经常性地做好以下项目的检查：

For operation and daily maintenance of electrical system, refer to relevant chapter. Please pay special attention to check the following items:

5.7.1 检查所有电气系统元件的动作是否正确可靠。

All electrical components function normally.

5.7.2 保证电线完全绝缘，特别是成捆或者受压的电线，以免造成元件的损坏。

Make sure that the cables are well insulated, particularly cable ties and pressure cables, in order to avoid short circuits which could damage other components.

5.7.3 检查电线的连接处是否牢固，有无氧化。

Make sure that the terminals are securely connected, without oxidization.

5.7.4 检查电气系统接地是否良好。电气元件的更换原则上必须采用与原件相同的配件。如需要采用任何替换配件，则必须是同等级、同标准的检验合格品。

Make sure that the electrical system is securely connected to the earth. Principally, any components must be changed by those which are the same as the originals. When replaced, any replacement must have the same characteristics and quality.

5.8 混凝土输送管的维护 Maintenance of concrete pipe

为了减少泵送混凝土时的危险和故障，必须采用正确管径和厚度的输送管、正确的管卡，以及安全锁。并定期检查管卡是否锁紧，输送管是否过度磨损。

Correct diameter and thickness of pipes with normal condition of wear, correct type of joints and safety lock are important for avoiding risks and problems during pumping. The security of locks, the state of wear of pipes should be inspected periodically.

5.8.1 为使磨损均匀，让输送管寿命更长，可以定期旋转输送管：每浇注约 3000 方，直管顺时针转 120°，弯管旋转 180°。如下图所示：

To ensure a uniform wear of the concrete pipe, all the pipes must be turned clockwise by 120° and curved sections by 180° after pumping about 3000m³, as shown side.

as shown follows:

5.8.2 输送管必须是在臂架关闭时无应力的情况下安装。当臂架张开时，安装输送管会产生应力。两输送管联接法兰面之间的间隙必须为 4mm。如果因间隙过小，管内压力会使输送管受拉伸，这会造成整个结构摇晃从而导致支承件损坏增加泵送时臂架应力。

The concrete pipes must be fitted untensioned and with the distributor boom closed. In the event of the concrete pipe being fitted with the boom open, excessive tension could form. The clearance between every two flange surfaces must be 4mm. In case of play less than 4mm, the interior stress exerts the pipes, which affect stabilization of the structure, leading to damage to support parts and the increase of stress on booms in pumping.

5.8.3 每次在作业前都应检查输送管的磨损情况。当管子的厚度低于规定的值时，就要更换。可以用锤子敲打的经验方法

来检查：即根据听到的声音变化来估计管厚；当然，更科学的方法是用测厚仪来测量。

Check daily the wear of the concrete pipes before pumping. And replace the worn pipes if their thickNess is less than the value as required. To examine the thickness, listen to the sound by hammering it, or more scientifically, use thickness measuring equipment.

5.8.4 最小壁厚与泵送压力成线性比例关系。如下图示：

Minimum pipe wall thickness is linearly proportional to pumping pressure as shown below:

X—横向坐标 X 为最小壁厚 minimum wall thickness

Y—纵向坐标 Y 为泵送压力 pumping pressure

A—内径 100mm 输 送管的特性曲线 curve of 100mm-ID pipe

B—表示内径 125mm 输送管的特性曲线 curve of 125mm-ID pipe

C—内径 150mm 输送管的特性曲线 curve of 150mm-ID pipe

根据上表，不同泵送施工压力下，应相应选择大于最小壁厚的输送管。

According to diagram above, the wall thickNess of the pipe must be larger than the relative pumping pressure requirement.

警告 Warning:

--请不要使用与原厂输送管的壁厚及直径不同的管子。

Never use the pipe with wall thickNess and diameter different from the original one.

--当高压泵送混凝土时，要选用相应的输送管。

Select proper pipe in high pumping pressure.

--离工作人员距离小于 3 米的输送直管和弯管，当壁厚磨损到规定值必须及时更换。拆、换输送管路之前，应先释放管道内压力。

Any pipe sections within 3m of the operator must be replaced immediately if they are heavily worn.

5.9 关于清洗系统的维护 Maintenance of cleaning system

泵车配置的高压清洗水泵，如在汽车发动机为怠速时，水泵转速低，此时水泵压力小；随发动机转速提高，水泵压力将升高。如需要进行高压清洗，务必将发动机油门开关调至最大设定值。

必须使用清洁水。水中杂质在水管内尤其与水箱连接处容易堵塞；且影响水泵的使用寿命。必须定期清洗过滤器，水箱等，以清除污垢。

在气温很低的天气里，每天工作结束后，要放尽水路系统中的水，以防水的冻结造成水泵或者其他部件爆裂。

The machine is equipped with a high-pressure cleaning pump. Periodically clean the filter and water tank to remove dirt. When truck engine is idle, the pump speed and water pressure is low; with the increase of engine speed, the water pressure will also be increased, therefore, the enginen should at the set Max. speed in cleaning.

Clean water must be used . The impurities in water easily lead to blockage in the water hose or the connector in water tank, reducing the service life of water tank. In order to clean dirt, the filter and water tank etc.must be periodically cleaned.

In cold weather, the water in system should be drained completely to prevent freezing and breakage.

5.10 相关环保事项 Concerning environment protection

在泵车的使用与维护过程中，务必严格遵守使用当地的各项环保法规，控制好泵车噪音、排放、废弃物等对环境的污染。对于泵车使用后需废弃的已污染或氧化的油液，不允许现场排放；经清洗输送管路和料斗的污水等，也不允许现场排放，应用回收罐回收，经净化处理后排放；或排放到环保部门允许的地方。

Various local environment protection rules should be complied while use and maintenance the machine.Control the pollution caused by the machine' s noise、exhaust、castoff, etc. The hydraulic oil is not permitted to discharge on job site, which is polluted or oxygenated by the machine's usage. The sewage is also not permitted to discharge on job site, while cleaningthe hopper and delivery pipes. It must be purified by recycle jar before discharging. Or it should be discharged to the special place appointed by the environment protection department.