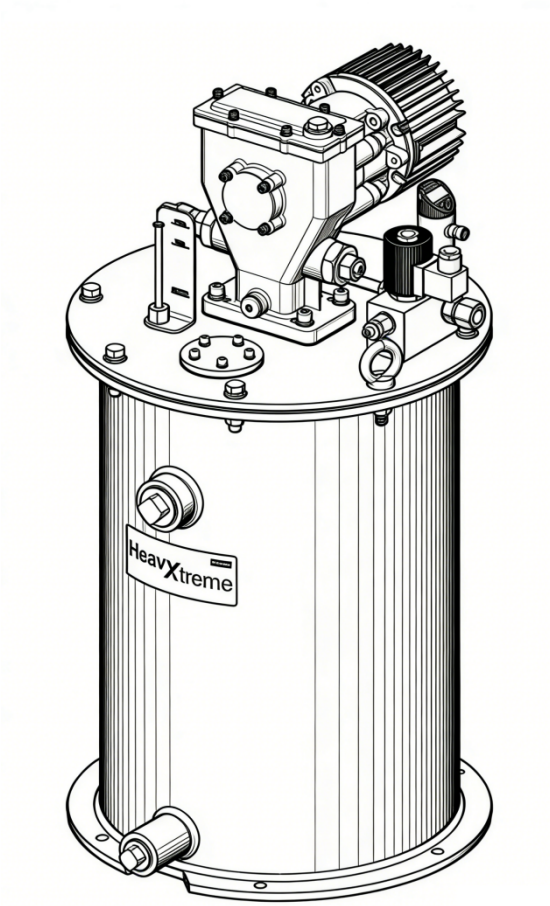
HeavyXtreme™悍驰系列
电动润滑泵操作手册



上海毅那机械科技有限公司

目录

安全

本装置仅可由熟悉本使用说明的人员进行安装、维护与维修作业。

设备闲置不用时，务必切断所有动力源（电力、气源或液压源）。

本设备会产生高压。操作设备时须极度谨慎，若零部件松动或破裂发生介质泄漏，高压流体可穿透皮肤进入人体。一旦发现有流体渗入皮肤，必须立即就医，切勿将伤情当作普通割伤处理，并需如实告知接诊医生侵入体内的流体类型。

凡未按本说明书规定进行违规使用，将自动丧失保修及追责索赔权利。

- 严禁违规使用、超压运行、私自改装零部件，禁止使用不相容的化学介质、流体，以及磨损或损坏的零部件。
- 不得超过设备额定最大工作压力，也不得超过系统中最低额定值部件的工作压力。
- 务必阅读并遵循制造商关于流体相容性、防护服装及防护用具使用的相关建议。
- 若未遵守上述要求，可能造成人身伤害和、或设备损坏。
- 必须严格遵守国家法律法规及各项安全防事故管理规定。

安全警示用语释义

须知

本项内容着重提供实用提示与建议，同时说明相关注意事项，用以防止财产损失，并保障设备高效、无故障平稳运行。

注意

表示若忽视防护措施，将可能引发出现轻微人身伤害的危险状况。

警告

表示若忽视防护措施，将可能引发造成严重人身伤害的危险情形。

危险

表示若忽视防护措施，会导致造成死亡或重伤的危险状况。

警告

未阅读并完全理解安全警示及操作说明前，严禁操作本设备。

未遵守安全警示和操作说明，可能导致严重人身伤害。

注意

未佩戴个人防护装备，严禁操作设备。

必须佩戴护目镜。根据工况佩戴防尘口罩、防滑安全鞋、安全帽、听力防护用品等防护装备，可有效降低人身伤害风险。

未按要求执行，可能造成轻微人身伤害。

警告

严禁超过设备标定的最大工作压力，亦不得超过系统中额定等级最低部件的工作压力。

本设备会产生极高油脂压力，操作时务必格外谨慎。

若未遵守本要求，可能造成轻微人身伤害。

警告

严禁使用本设备输送、转运或存放危险物质及混合物。

通用须知

- 在工程机械、道路车辆、通用机械、机床等工业设备上进行安装作业时，必须遵守当地安全防事故规程及相关设备操作与维护说明书。
- 安全防护装置
  - ✧ 严禁因安装润滑系统而擅自改动任何安全防护装置，不得永久拆除设备及设施原有防护装置（如防护栏、防护罩、安全锁等）。
  - ✧ 仅可在安装润滑系统时，按作业要求并获得相关许可后，临时拆除安全防护装置；润滑系统安装完毕后，须立即恢复原有安全防护装置。
- 润滑系统须远离热源，不得在允许工作温度范围以外（高温或低温环境）放置和使用。
- 必须使用原厂配件或授权合规配件。
- 系统可能处于带压状态，进行维护、调节及相关作业前，必须先释放系统压力。
- 务必使用洁净润滑脂。
- 本系统为自动运行，但强烈建议用户每两周定期检查一次，确保润滑脂能够正常输送至各润滑点。

合规润滑剂

- 润滑脂稠度等级为 NLGI 2 及以下。
- 若需选用不符合上述要求的润滑剂，或无法确定所选润滑剂中的特殊添加剂是否会对润滑部件产生影响，请咨询厂家。

运输与储存

- HeavyXtreme 菁英系列润滑泵站按相关国际标准进行销售与包装，符合危险品公路、铁路、航空及海运的国际设计运输要求。
- 包装完好的润滑泵站在搬运、运输过程中须轻拿轻放，避免造成不必要的损坏。
- 润滑泵站可存放于-40 ℃ ～ +70 ℃的干燥环境中。

免责声明

对于因下列情形造成的损坏，我方不承担任何直接、间接及连带责任与相关义务：

- 因润滑脂缺失造成的损坏。
- 因选用不合规润滑脂造成的损坏。
- 因安装、使用非授权配件造成的损坏。

- 因擅自改装润滑系统部件造成的损坏。
- 因未按规范工况使用设备造成的损坏。
- 因安装错误或管路连接不当造成的损坏。
- 因电气接线错误造成的损坏。
- 因程序设置错误造成的损坏。
- 因故障排查及处理操作失误造成的损坏。

概述

HeavyXtreme 系列电动泵站包含：电机驱动泵组、油桶、可视液位计、溢流阀、24VDC 电磁通断阀、压力开关（若受润滑系统规模限制，压力开关也可安装在管路末端）。

该泵站配备 24V 直流电机与两级行星齿轮传动机构。润滑脂输出量与泵的每分钟转速成正比。本泵主要适用于单线式、递进式等集中润滑系统。

泵站由电机旋转驱动，电机旋转运动通过偏心曲柄机构转换为往复运动；往复动作带动泵管上下运动，将润滑脂从油桶内压出，经分配器输送至各润滑点。

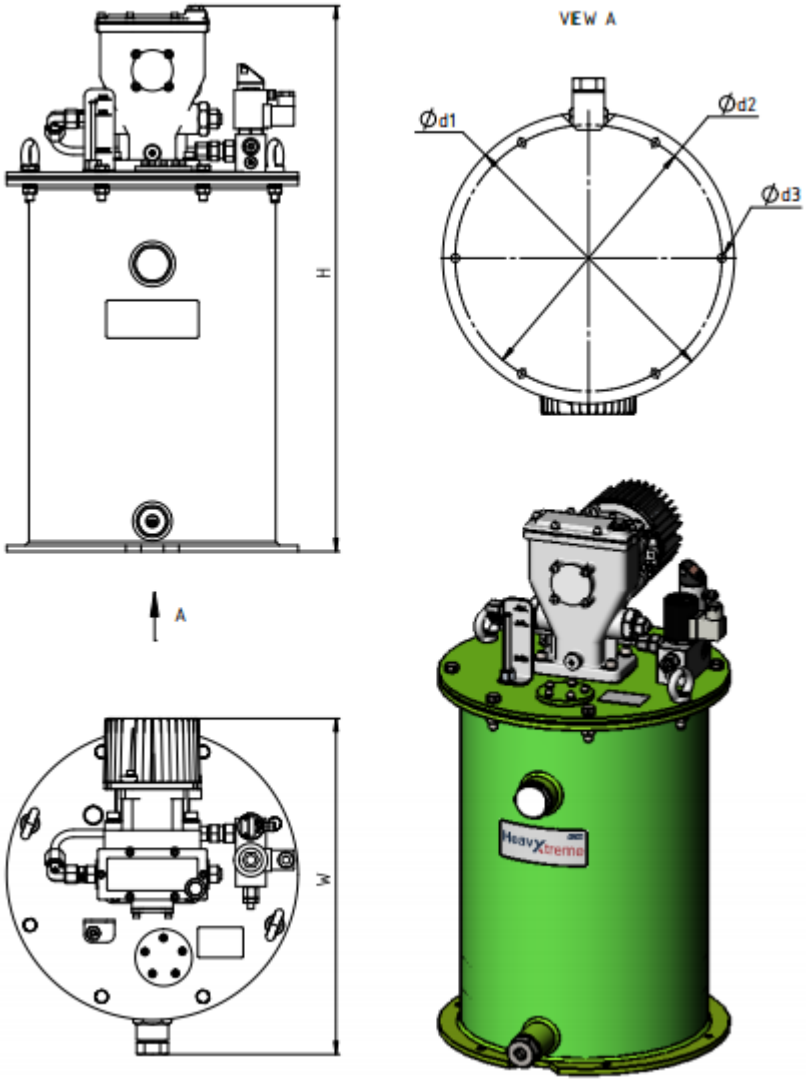
当所有润滑点均完成供油后，系统压力升高并触发压力开关。压力开关动作后，控制系统复位，使电磁阀断电，释放管路压力。随后泵停止运转、管路泄压，压力开关复位；控制系统开始计时，等待进入下一个润滑周期。

技术参数

工作电压	DC 24 V, 1 ~ 7.5 A
供电接口	DT04-2P
工作压力	最高 350 bar
出口螺纹	1 个出口，G1/4
泵出油量	88 cm^3/min
补油口	Rc 1
溢流口	Rc 1-1/4
润滑剂	NLGI 0, 1, 2
工作温度	-40 °C ~ +65 °C
油箱容积	28, 40, 55 kg
安装方式	竖直安装

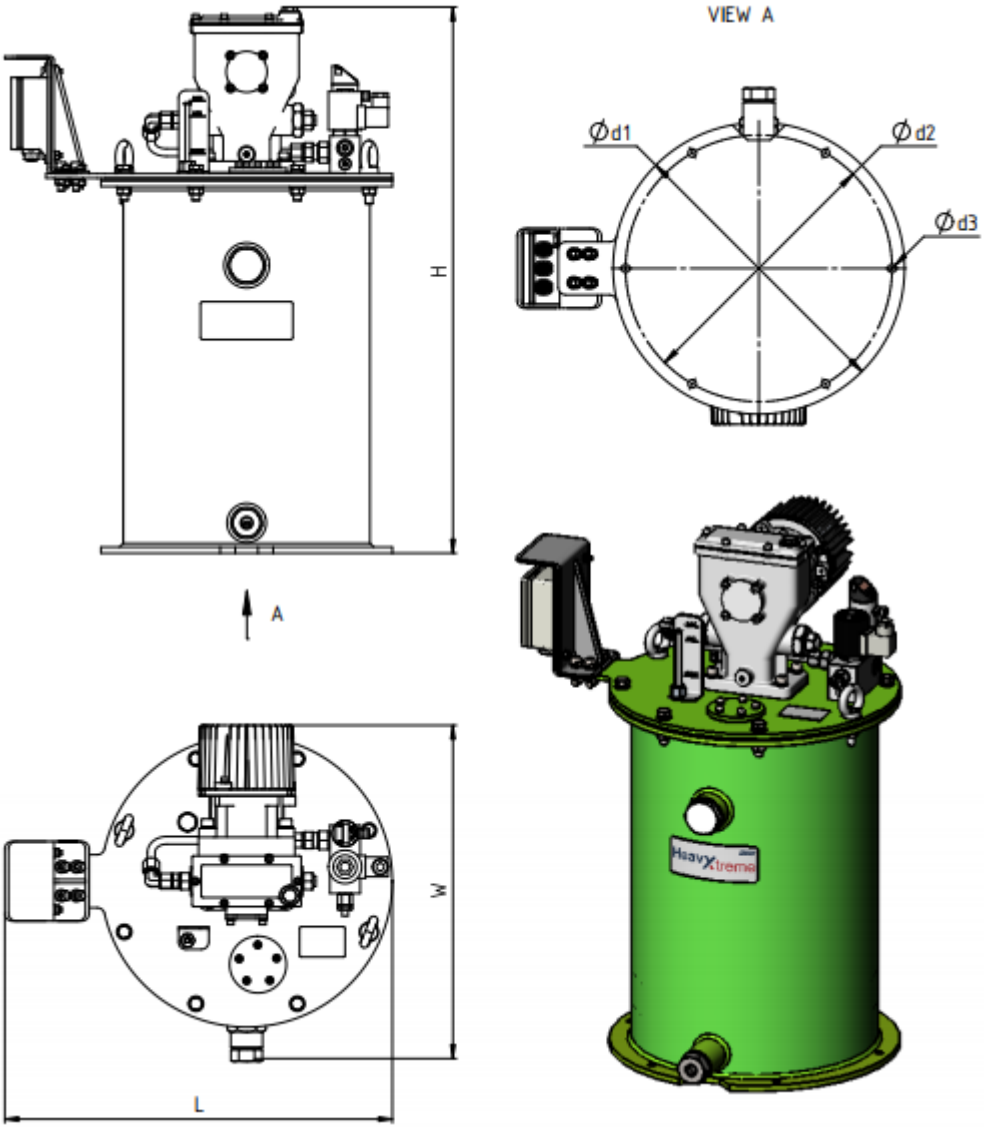
外形尺寸

■ *无控制器*



型号	油箱容积 (kg)	H (mm)	W (mm)	Ød1 (mm)	Ød2 (mm)	Ød3 (mm)
HXP28...D24...	28	720	445	385	352	6 x Ø11
HXP40...D24...	40	920	445	385	352	6 x Ø11
HXP55...D24...	55	920	470	425	394	4 x Ø15

■ ***集成控制器***

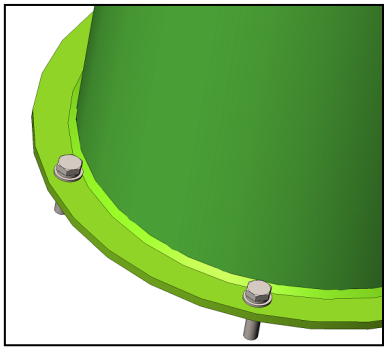


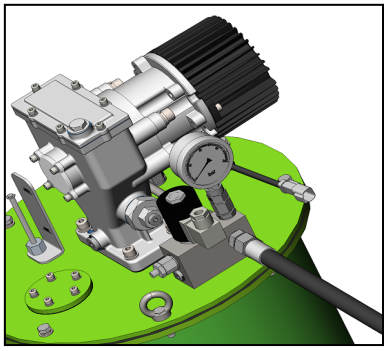
型号	油箱容积 (kg)	H (mm)	W (mm)	L (mm)	Ød1 (mm)	Ød2 (mm)	Ød3 (mm)
HXP28...CH...D24...	28	720	445	512	385	352	6 x Ø11
HXP28...CM...D24...		720	445	512	385	352	6 x Ø11
HXP40...CH...D24...	40	920	445	512	385	352	6 x Ø11
HXP40...CM...D24...		920	445	512	385	352	6 x Ø11
HXP55...CH...D24...	55	920	470	552	425	394	4 x Ø15
HXP55...CM...D24...		920	470	552	425	394	4 x Ø15

安装

将泵站安装在便于接入电源的位置。

1. 标出油桶底部各安装孔的中心位置。
2. 按照对应泵站规格，钻安装孔。
3. 采用螺栓将油桶固定于设备上，便于后期拆装与调整。
4. 在泵站出油口安装适配接头（出油口螺纹为 G1/4）。
5. 将额定工作压力 240 bar 的高压软管连接至出油口接头。

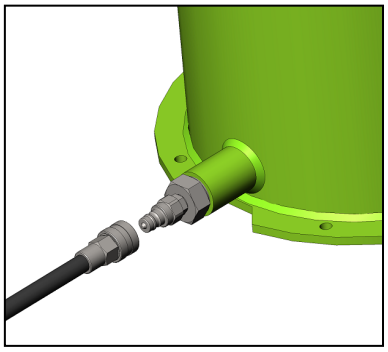




油桶加注

油桶批量加注方法。

1. 将快速接头（零件号：32-1001-006，ISO 7241-A G3/8，母头）和下部补油口的快速加注公头相连。
2. 向油桶加注润滑脂，直至液位计显示已满（液面顶端达到 MAX 最高液位线），或润滑脂从上部高位溢流口溢出为止。
3. 拆下液压快速母接头。

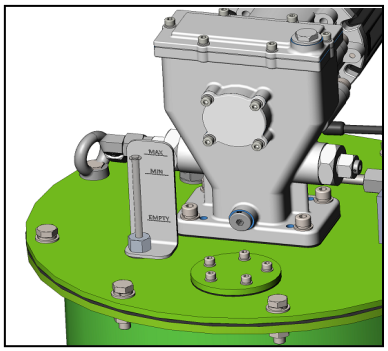


警告

在切断泵站所有液压动力及电源前，严禁开展任何维护和检修作业。若未遵守本要求，可能导致人员死亡或严重人身伤害。

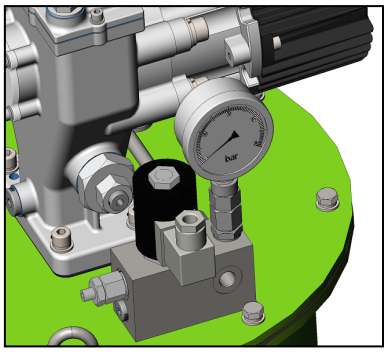
警告

加注过程中严禁过量加注油桶。若违规操作，可能造成油桶、泵体外壳损坏，甚至引发人员死亡或严重人身伤害



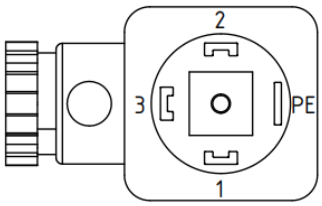
电气连接

■ ***连接电磁通断阀***

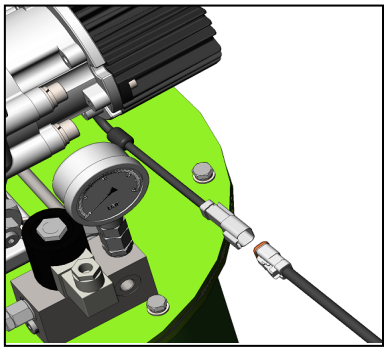


1. 使用 2x0.75mm² 电缆线连接电磁阀的矩形插头（DIN 43650A）。
2. 连接针脚参考下表。

针脚	电线颜色	连接
1	棕	24 V+
2	蓝	0V

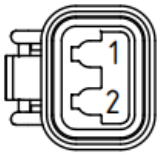


■ ***连接电机***



1. 使用带有 DT06-2S 公插头的 2x0.75mm² 电缆线连接电机上电源线的母插头（DT04-2P）。
2. 连接针脚参考下表。

针脚	电线颜色	连接
1	棕	24 V+
3	蓝	0V



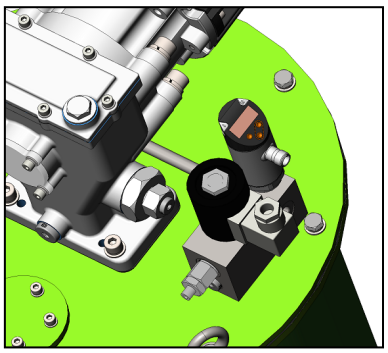
危险

未完成上锁挂牌程序前，严禁接通动力源。违者可能导致死亡或严重人身伤害。

■ ***连接压力开关****

1. 使用 5x0.75mm² 电缆线连接压力开关的圆形插头（IEC61076-2-101, M12）。
2. 连接针脚参考下表。

针脚	电线颜色	连接
1	棕	24 V+
3	蓝	0V
4	黑	压力开关信号 PNP



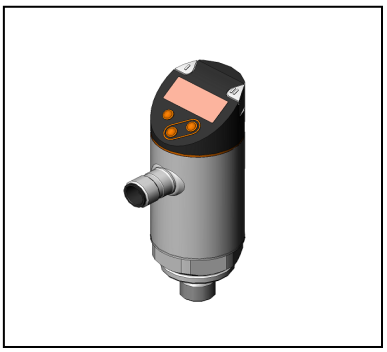
* 压力开关既可安装在泵站上，也可布置在管路末端。

开机调试

根据控制方式及润滑系统类型不同，泵站及整套系统共有四种启动与调试方式。

■ ***单线系统，由用户 PLC 控制***

1. 根据管路背压设定压力开关参数。
2. 手动启动泵站，观察润滑脂是否输送至所有润滑点。
3. 若油脂未到达，重复第 1、2 步操作直至调试合格。
4. 在用户 PLC 中设定系统运行间隔时间。
5. 至少观察一个完整润滑周期，确认无任何故障后，方可正式启用泵站及整套润滑系统。



■ ***单线系统，由智控 SC-100 控制***

1. 根据管路背压设置压力开关参数。
2. 手动启动泵站，检查润滑脂是否输送至所有润滑点。
3. 若油脂未到达，重复第 1、2 步操作直至调试正常。
4. 在 SC-100 控制器中设置系统运行间隔时间。（具体设置方法参见《SC-100 控制器操作手册》）
5. 至少观察一个完整润滑周期，确认运行无异常后，方可正式启用泵站及整套润滑系统。

■ ***递进系统，由用户 PLC 控制***

1. 根据管路布设规模及实际工况，在用户 PLC 中设置系统的工作时间与间隔时间。
2. 手动启动泵站，观察润滑脂是否输送至所有润滑点。
3. 若油脂未到达，重复第 1、2 步操作，直至调试成功。
4. 至少观察一个润滑周期，确认运行无任何异常后，方可正式启用泵站及整套润滑系统。

■ ***递进系统，由智控 SC-100 控制***

1. 根据系统大小与实际工况，在 SC-100 控制器中设置工作时间和间隔时间。（具体设置方法参见《SC-100 控制器使用手册》）
2. 启动泵站，检查润滑脂是否送达所有润滑点。
3. 若油脂未到达，重复第 1、2 步操作直至调试合格。
4. 至少观察一个完整润滑周期，确认无任何故障后，方可正式启用泵站及整套润滑系统。

须知

严禁泵在缺润滑脂的空转状态下运行。泵无脂空转时转速会急剧升高，产生摩擦高温，易造成密封件损坏。需时刻监测润滑脂液位，必要时及时补脂。若未遵守本规定，将导致设备损坏。

须知

设备启动流程完成前，严禁更改泵站参数设置。所有泵出厂均已设定为全速运行。若违反本要求，可能造成泵

危险

严禁超过额定最大出口压力。本泵未配置高压截止阀。如若违规操作，可能造成人员死亡或严重人身伤害。

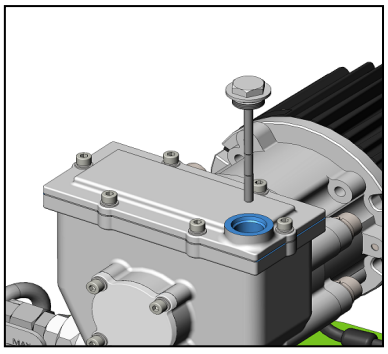
操作与维护

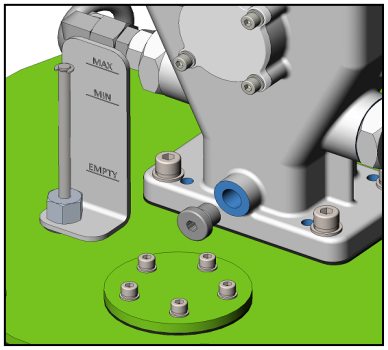
■ ***操作步骤***

1. 接通电源。
2. 电磁阀得电关闭，润滑脂被压送至分配器及各润滑点。
3. 若是单线式系统：系统压力达到设定值、压力开关动作后，泵站停止运行；若是递进式系统：运行时长结束后，泵站停止运行。
4. 切断电源。
5. 电磁阀失电打开，对单线式系统进行泄压。
6. 进入间隔计时阶段。
7. 间隔计时完成后，自动开启下一个润滑周期。

■ ***确保曲轴箱内润滑油油量充足***

1. 旋出油位标尺，用洁净干布擦拭标尺表面的油迹。
2. 将油位标尺旋入曲轴箱。
3. 再次旋出油位标尺，检查油迹是否处于上下刻度线之间。
4. 油位正常时，将油位标尺重新旋紧装回。
5. 若油位低于下刻度线，从加注口向曲轴箱补充润滑油。
6. 若油位高于上刻度线，则旋下底部放油螺塞，放出多余润滑油。





■ *曲轴箱润滑油保养周期*

1. 设备每运行 750 小时或每月，检查一次油位。
2. 设备每运行 2000 小时或每年，更换一次润滑油。
3. 环境温度在-40℃～65℃范围内使用的所有泵，均采用 SAE 10W30 发动机油（型号：97-2001-002）。
4. 油位应处于油尺标示点位置（曲轴中部位置）。
5. 曲轴箱容量：0.44 升。

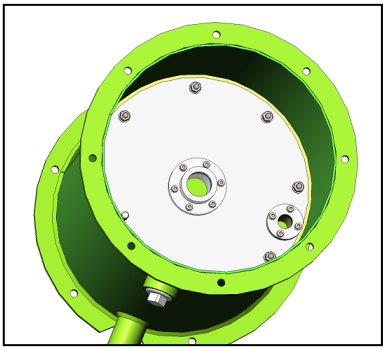
危险

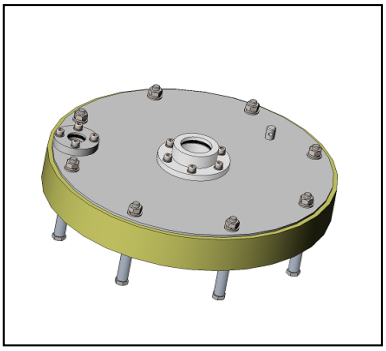
请按照国家法律法规要求，收集并妥善处理变速箱废油。若未按规定执行，将造成严重环境污染，并可能引发人身伤害。

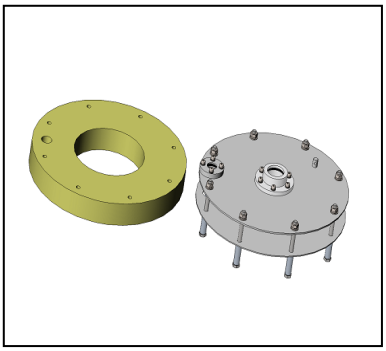
■ *压油盘*

若压油盘发泡材料出现损坏，或无法有效贴合油桶内壁刮脂时，需进行检修维护。

1. 切断泵站供电电源。
2. 拆卸固定顶盖与油桶总成的螺栓、吊环螺栓及锁紧垫圈。
3. 将泵头及桶盖总成从油桶中整体取出。
4. 从压油盘总成上拆下缆绳组件。
5. 将压油盘总成从油桶总成中取出。
6. 擦拭清理压油盘总成上多余的润滑脂。
7. 松开并拆下压油盘总成顶部的螺母。
8. 取下配重压油盘上下盖与发泡材料。
9. 更换全新发泡材料。
10. 报废旧发泡材料前，先取出留存发泡材料内部的隔套，并妥善保管。
11. 按上述相反步骤进行回装，安装时确保长螺栓与短螺栓交错排布。



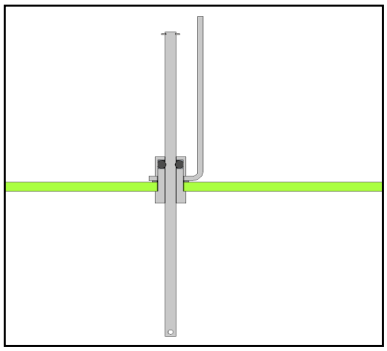




须知

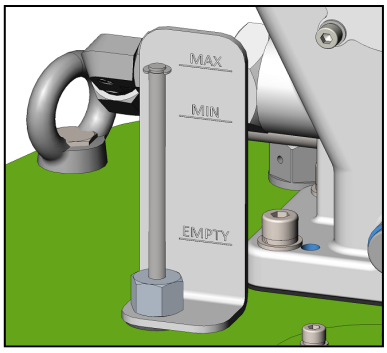
拆卸泵头及桶盖总成时，严禁弯折泵管。

■ *机械式液位指示器*



若指示杆过早脱落，或压油盘顶部明显有水迹，则说明指示器密封圈可能已损坏。

1. 拆卸固定顶盖与油桶总成的螺栓、吊环螺栓及锁紧垫圈。
2. 检查油桶密封垫片是否破损，如有损坏则更换新垫片。
3. 将整台泵及压油盘总成从储油筒内取出。
4. 拆下指示杆总成上的挡圈。
5. 用扳手固定指示螺塞，同时拆卸指示螺母。
6. 取出旧 O 型圈并更换新件。
7. 按上述相反步骤重新装配。



■ *补充油脂*

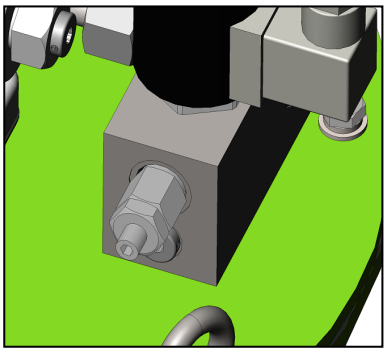
指示盘上标有“MAX（最高）”、“MIN（最低）”、“EMPTY（空桶）”三个刻度标识。

1. 指示杆指向 MAX：油桶已充满油脂。
2. 指示杆指向 MIN：油桶液位偏低，需补充润滑脂。
3. 指示杆指向 EMPTY：油桶已空，须立即加注润滑脂。

警告

当油桶处于空桶状态时，必须立即补充润滑脂；否则将无法向各润滑点输送润滑脂，进而造成泵站及被润滑机械设备损坏。

■ *安全阀*



安全阀不可自行拆解维修，出现故障需直接更换。当管路堵塞或电磁阀动作失效时，安全阀将在约 250 bar 压力下开启，对供油管路进行泄压。

安全阀调节步骤：

1. 用 17 号开口扳手松开锁紧螺母。
2. 采用 4 号内六角扳手旋转调节螺钉（顺时针：压力升高；逆时针：压力降低），同时在泵站运行状态下观察压力表。
3. 调整至所需压力值后，锁紧固定螺母。

故障排查

故障	可能原因	排除方法
泵不工作	1. 泵没有供电 2. 电机过热 3. 电机因卡住抱死保护跳闸 4. 齿轮组或传动轴损坏	1. 给泵站接通电源 2. 断电静置 10 分钟后重新启动 3. 卸掉管路中的高压或排查修复泵体卡死故障原因 4. 检修齿轮箱
泵长时间持续运转	1. 泵管故障 2. 安全阀损坏或污染堵塞 3. 电磁阀损坏或污染堵塞 4. 系统元件泄漏 5. 注油器旁通泄压 / 内泄串油	1. 检查并更换损坏零部件 2. 检修安全阀或清除杂质污物 3. 检修电磁阀或清除杂质污物 4. 处理各处泄漏故障 5. 检修注油器
泵转速忽快忽慢、运转工况异常	1. 润滑脂液位过低或油桶已空 2. 压油盘卡滞且与润滑脂脱离 3. 泵活塞或单向阀磨损	1. 给油桶加注润滑脂 2. 检查压油盘与油桶有无损坏 3. 检查并更换损坏零部件
泵运转正常，但出油量不足	1. 电机转速调节设置过低 2. 泵的进油或出油单向阀故障	1. 检查电机与齿轮箱，维修损坏部件 2. 更换故障元器件
安全阀渗漏润滑脂	1. 系统压力设定过高 2. 安全阀损坏或杂质卡滞	1. 调整压力开关设定值 2. 更换安全阀

声明：

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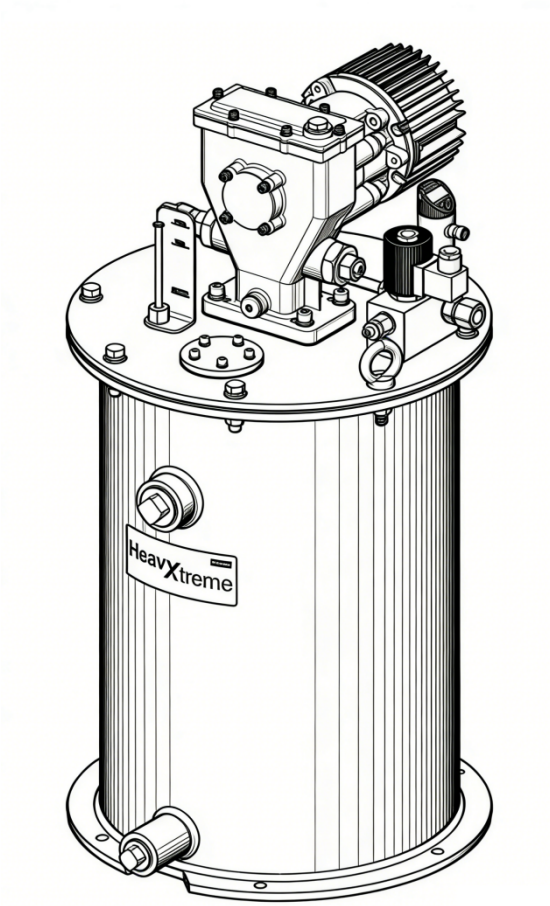
HeavyXtreme™ Electric Lubrication Pump User Manual



Shanghai INA Machinery Science & Technology Co., Ltd

Content

Safety

The assembly must be installed, maintained and repaired exclusively by persons familiar with the instructions.
Always disconnect power supply (electricity, air or hydraulic) from the equipment when it is not being used.
This equipment generates high pressure. Extreme caution should be used when operating this equipment as material leaks from loose or ruptured components can inject fluid through the skin and into the body. If any fluid appears to penetrate the skin, seek attention from a doctor immediately. Do not treat injury as a simple cut. Tell attending doctor exactly what type of fluid was injected.
Any other use not in accordance with instructions will result in loss of claim for warranty or liability.

- Do not misuse, over-pressurize, modify parts, use incompatible chemicals, fluids, or use worn and/or damaged parts.
- Do not exceed the stated maximum working pressure of the equipment or of the lowest rated component in your system.
- Always read and follow the manufacturer's recommendations regarding fluid compatibility, and the use of protective clothing and equipment.
- Failure to comply may result in personal injury and/or damage to equipment.
- Strictly follow National laws, regulations, and regulations on accident prevention.

Explanation of signal words for safety

NOTE

Emphasizes useful hints and recommendations as well as information to prevent property damage and ensure efficient trouble-free operation.

CAUTION

Indicates a dangerous situation that can lead to light injury if precautionary measures are ignored.

WARNING

Indicates a dangerous situation that can lead to serious injury if precautionary measures are ignored.

DANGER

Indicates a dangerous situation that can lead to death or serious injury if precautionary measures are ignored.

WARNING

Do not operate equipment without reading and fully understanding safety warnings and instructions.

Failure to follow warnings and instructions may result in serious injury.

CAUTION

Do not operate equipment without wearing personal protective gear. Wear eye protection. Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
Failure to comply may result in light personal injury.

WARNING

Do not exceed the stated maximum working pressure

of the equipment or of the lowest rated component in your system. Use extreme caution when operating equipment as equipment generates very high grease pressure.
Failure to comply may result in light personal injury.

WARNING

Do not use this equipment to supply, transport, or store hazardous substances and mixture.

General reminder

- When carrying out installation on industrial equipment such as construction machinery, road vehicles, general machinery, machine tools, etc., the local accident prevention regulations and the relevant operating and maintenance instructions must be observed.
- Safety equipment
  - ✧ Under no circumstances shall any safety equipment be changed due to the installation of lubrication system, and the original safety equipment (such as fence, protective cover, safety lock, etc.) on equipment and facilities shall not be permanently removed.
  - ✧ Safety equipment may only be temporarily removed when lubrication systems are installed, as required and with relevant permission. After the lubrication system is installed, the original safety equipment should be restored immediately.
- Lubrication systems must be kept away from heat sources and must not be placed outside the allowable operating temperature range (e.g. high or low temperature).
- Original parts or licensed parts must be used.
- The system may be under pressure. The pressure must be relieved before starting maintenance, adjustment or related operations.
- Make sure to use clean grease.
- Although the system works automatically, we strongly recommend that users need periodic checks every two weeks to ensure that lubricants are properly distributed to lubrication points.

Approved lubricant

- Lubrication grease viscosity is NLGI 2 or below
- If you need to choose lubricants that do not meet the above conditions or are uncertain about the influence of special additives in the selected lubricants on lubrication parts, please consult factory.

Transportation & storage

- HeavyXtreme series lubrication pump stations are sold and packaged in accordance with relevant international standards, which meet the international design requirements of road transportation,

railway transportation, air transportation and sea transportation of dangerous goods.

- Packed lubrication pump station in the process of transportation and handling, need to be handled with care, to prevent unnecessary damage.
- The lubrication pump station can be stored in a dry space between -40 °C ~ + 70 °C.

Exemption from liability

Do not assume any direct or indirect, joint and several liabilities and obligations for the damage caused by the following circumstances:

- Damage caused by lack of lubrication grease.
- Damage caused by the use of inappropriate lubrication grease.
- Damage caused by installation and use of unauthorized parts.
- Damage caused by unauthorized modifications to lubrication system parts.
- Damage caused by use not in accordance with normal use.
- Damage caused by incorrect installation or piping connections.
- Damage caused by incorrect electrical connections.
- Damage caused by program setup error.
- Damage caused by misoperation of troubleshooting.

Overview

HeavyXtreme series electric pump station includes motor-driven pump unit, drum, visual level ruler, pressure relief valve, solenoid operated (24 VDC) on/off valve, pressure switch (It is also mounted in the end of pipeline in terms of lubrication system scale).

The pump unit uses a 24 VDC motor and two stage planetary gear drive unit. Grease output is proportional to pump revolutions per minute. Pump is primarily designed for centralized lubrication systems such as single-line, progressive systems, and etc.

Pump unit is driven by rotary motion of electric motor. Rotary motion is converted to reciprocating motion through eccentric crank mechanism. Reciprocating action causes pump cylinder to move up and down, then the grease is being forced out from the drum to lube points (through dividers).

When all lube points have received lubricant, pressure rises in the system and activates the pressure

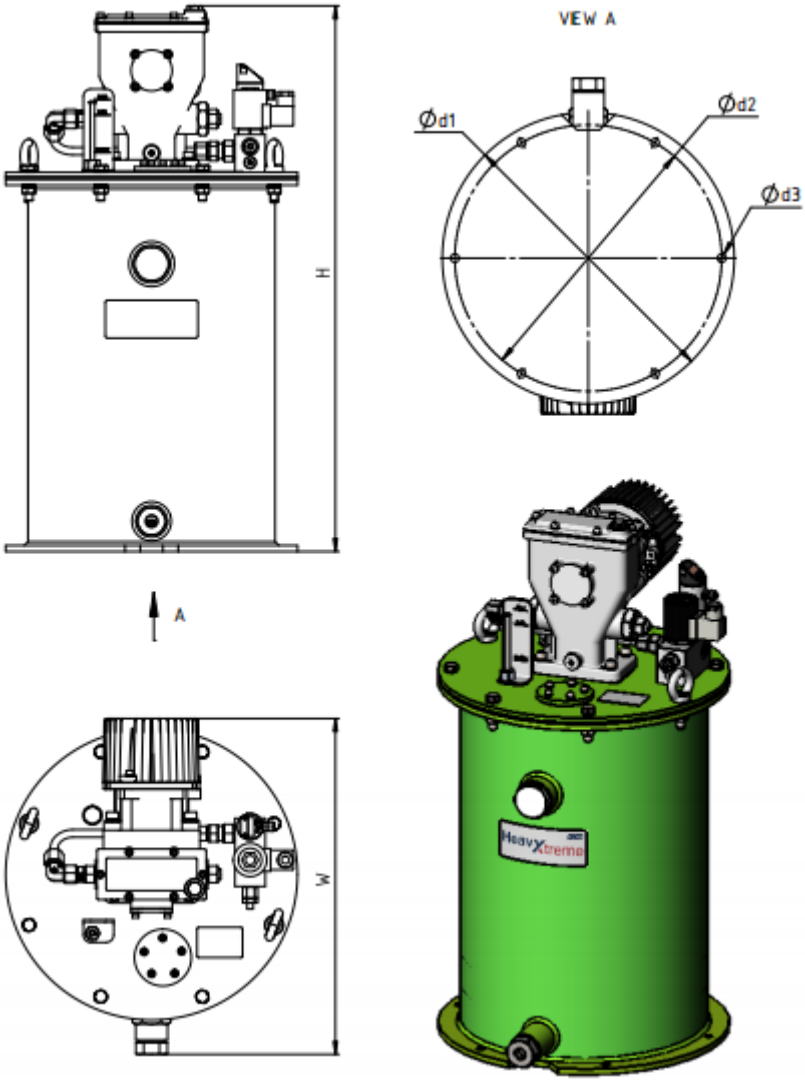
switch. When pressure switch activates, control system is reset to de-energize solenoid valve to relief pressure of pipeline. Pump stops, pressure vents and pressure switch deactivates. Control system begins timing toward next lube cycle.

Technical data

Power Supply	DC 24 V, 1 ~ 7.5 A
Power Socket	DT04-2P
Operating Pressure	Max. 350 bar
Outlet Thread	1 outlet, G1/4
Displacement	88 cm^3/min
Filling Port	Rc 1
Relief Port	Rc 1-1/4
Lubricant	NLGI 0, 1, 2
Working Temperature	-40 °C ~ +65 °C
Tank Capacity	28, 40, 55 kg
Mounting	Vertical

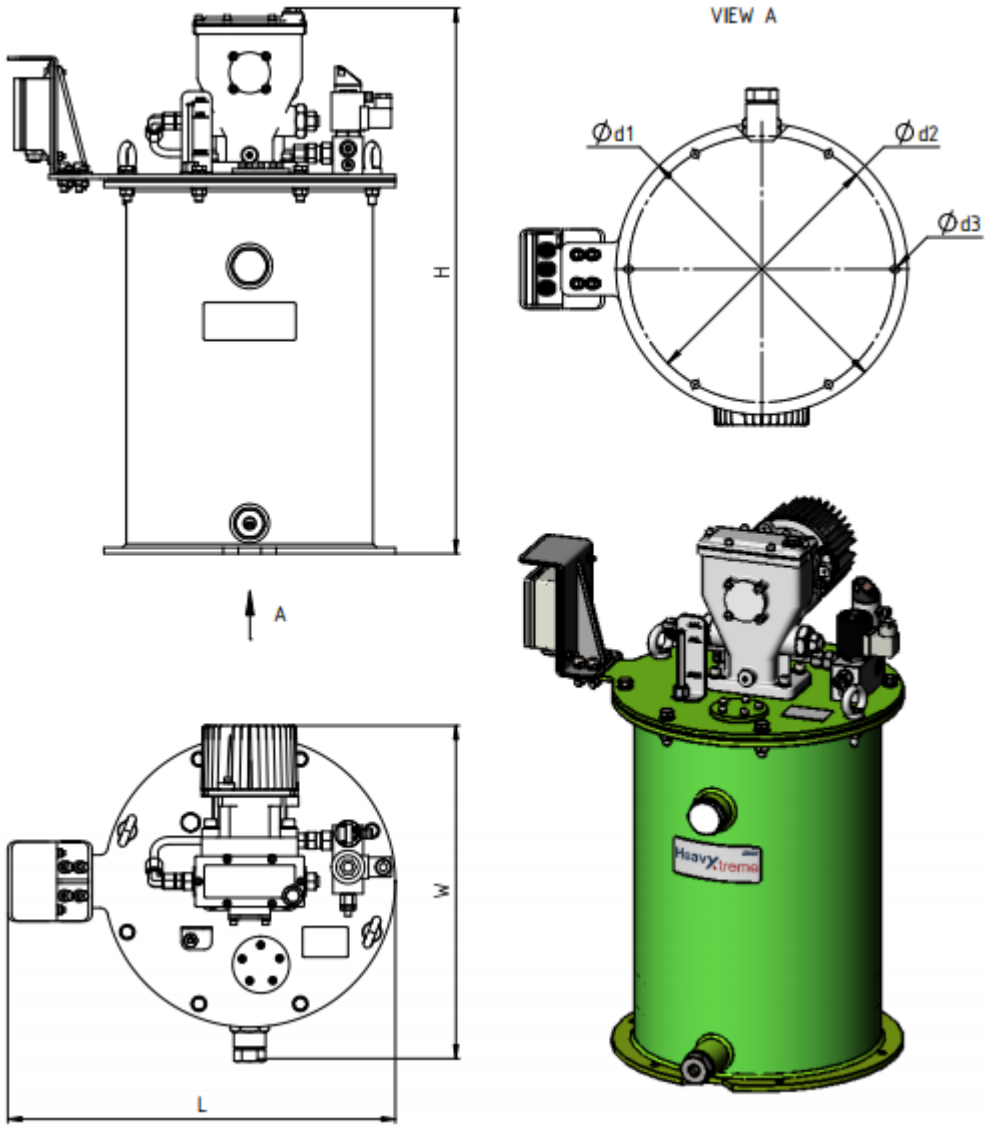
Dimension

- ***No controller***



Model	Tank Capacity (kg)	H (mm)	W (mm)	Ød1 (mm)	Ød2 (mm)	Ød3 (mm)
HXP28...D24...	28	720	445	385	352	6 x Ø11
HXP40...D24...	40	920	445	385	352	6 x Ø11
HXP55...D24...	55	920	470	425	394	4 x Ø15

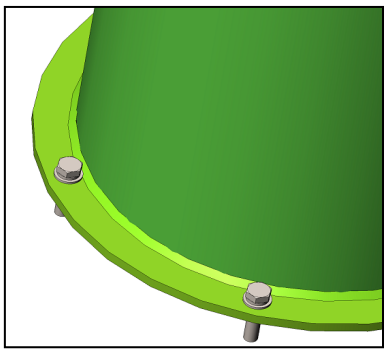
■ ***Controller integrated***



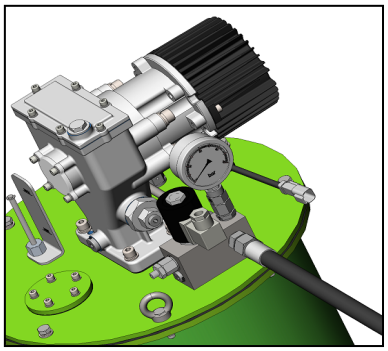
Model	Tank Capacity (kg)	H (mm)	W (mm)	L (mm)	Ød1 (mm)	Ød2 (mm)	Ød3 (mm)
HXP28...CH...D24...	28	720	445	512	385	352	6 x Ø11
HXP28...CM...D24...		720	445	512	385	352	6 x Ø11
HXP40...CH...D24...	40	920	445	512	385	352	6 x Ø11
HXP40...CM...D24...		920	445	512	385	352	6 x Ø11
HXP55...CH...D24...	*55*	920	470	552	425	394	4 x Ø15
HXP55...CM...D24...		920	470	*552*	425	394	4 x Ø15

Installation

Locate the pump station to the place that electric power connection is accessible.

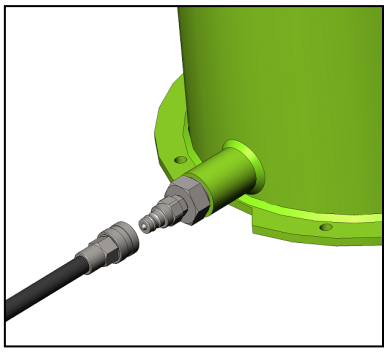


1. Mark center locations of the holes at bottom of reservoir.
2. Drill mounting holes refer to the different pump stations.
3. Use bolts for added flexibility in securing reservoir to equipment.
4. Connect suitable fitting to the pump outlet. (The outlet thread is G1/4)
5. Connect the hose capable of 240 bar working pressure to the outlet fitting.

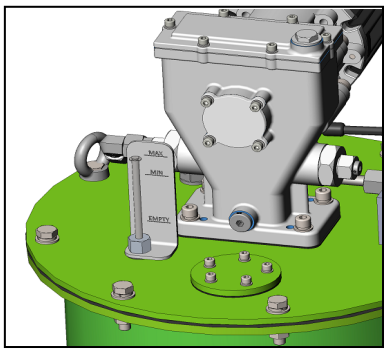


Filling reservoir

To bulk fill reservoir.



1. Attach quick coupling (P/N: 32-1001-006, ISO 7241-A G3/8, female) to button refilling males coupling on lower refill port.
2. Fill reservoir until grease level gauge indicates it is full (the top end reaches “MAX” line) or until grease appears at top high level port.
3. Remove hydraulic female quick coupling.



WARNING

Do not perform maintenance or service prior to disconnecting all hydraulic and electric power to pump assembly.
Failure to comply may cause death and/or serious personal injury.

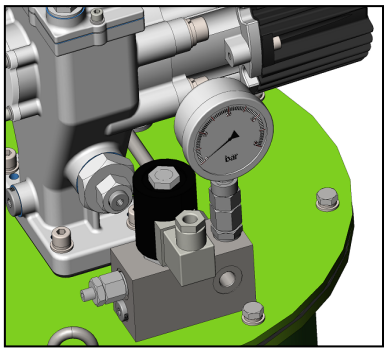
WARNING

Do not overfill reservoir during filling process.
Failure to comply may cause damage to reservoir and/or pump housing, death and / or serious personal injury.

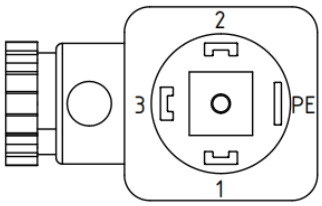
Electric connection

■ ***To connect solenoid on/off valve***

1. Use 2x0.75mm^2 cable to connect to rectangular socket (DIN 43650A) of solenoid valve.
2. Pin connection refers to blow.

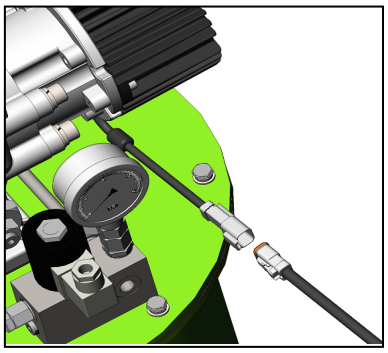


Pin	Wire color	Connection
1	Brown	24 V+
2	Blue	0V

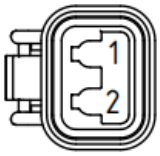


■ ***To connect motor***

1. Use 2x0.75mm^2 cable with DT06-2S to connect to power cable plug (DT04-2P) of motor.
2. Pin connection refers to blow .



Pin	Wire color	Connection
1	Brown	24 V+
3	Blue	0V

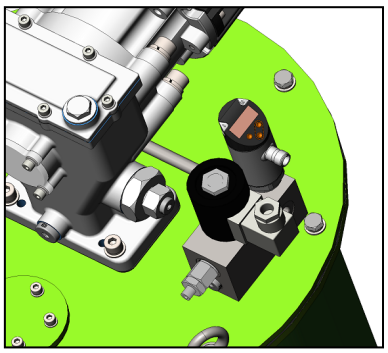


DANGER

Do not connect electrical power prior to lockout/tag out procedure being completed. Failure to comply will result in death or serious personal injury.

■ ***To connect pressure switch****

1. Use 5x0.75mm^2 cable to connect to round connector (IEC61076-2-101, M12) of pressure switch.
2. Pin connection refers to blow.



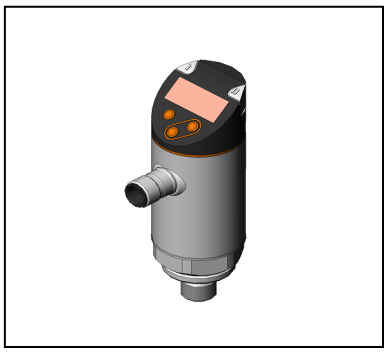
Pin	Wire color	Connection
1	Brown	24 V+
3	Blue	0V
4	Black	Pressure Switch PNP

* Pressure switch is available to be installed in either pump station or the end of pipeline.

Startup & commissioning

According to the control method and lube system type, there are four kinds of way to startup and commissioning the pump station and whole system.

■ ***Single-line system & controlled by customer PLC***



1. Setup parameters of pressure switch in terms of back pressure in pipeline.
2. Manual startup pump station and watch whether grease arrive at all lube points.
3. If failure, then repeat step 1 & 2 until succeed.
4. Setup interval time of system operation in customer PLC.
5. Watched one lubrication cycle at least without any problem, then officially startup the pump station and whole system.

■ ***Single-line system & controlled by SC-100 controller***

1. Setup parameters of pressure switch in terms of back pressure in pipeline.
2. Manual startup pump station and watch whether grease arrive at all lube points.
3. If failure, then repeat step 1 & 2 until succeed.
4. Setup interval time of system operation in SC-100 controller. (how to setup, refer to “SC-100 controller user manual”)
5. Watched one lubrication cycle at least without any problem, then officially startup the pump station and whole system.

■ ***Progressive system & controlled by customer PLC***

1. Setup working time and interval time of system operation in customer PLC in terms of pipeline scale and actual operation condition.
2. Manual startup pump station and watch whether grease arrive at all lube points.
3. If failure, then repeat step 1 & 2 until succeed.
4. Watched one lubrication cycle at least without any problem, then officially startup the pump station and whole system.

■ ***Progressive system & controlled by SC-100 controller***

1. Setup working & interval time in SC-100 controller in terms of pipeline scale and actual operation condition. (how to setup, refer to “SC-100 controller user manual”)
2. Manual startup pump station and watch whether grease arrive at all lube points.
3. If failure, then repeat step 1 & 2 until succeed.
4. Watched one lubrication cycle at least without any problem, then officially startup the pump station and whole system.

NOTE

Never allow pump to run dry of lubricant. Dry pump quickly speeds up, creating friction heat that can damage seals. Monitor supply lubricant level and refill when necessary.
Failure to comply may result in damage to equipment.

NOTE

Do not change pump settings until after start up procedure. All pumps are set to run at full speed.
Failure to comply may result in damage to pump.

DANGER

Do not exceed maximum rated outlet pressure. Pumps are not equipped with high pressure shut off valve.
Failure to comply will result in death or serious personal injury.

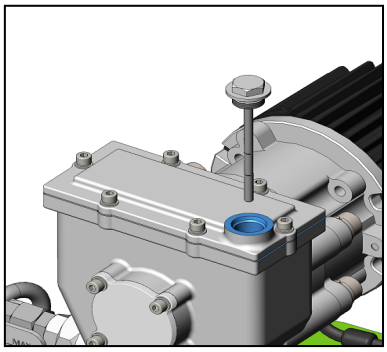
Operation & maintenance

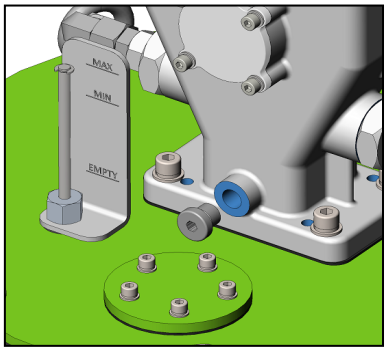
■ ***Operational procedure***

1. Turn on power supply.
2. Solenoid valve switches on (closed). Grease is forced to flow out to dividers and lube points.
3. If single-line system, pump is stopped until pressure switch activates when reaches pressure of setting. If progressive system, pump is stopped until working time is finished.
4. Turn off power supply.
5. Solenoid valve switches off (open) and to vent down system pressure (in single-line system).
6. Interval time counting.
7. Start next cycle after interval timing completed.

■ ***Make sure enough lubrication oil in the crankcase***

1. Screw out the oil level gauge. Use clean dry cloth to wipe off the oil marks on the surface of dipstick.
2. Screw in the oil level gauge to crankcase.
3. Then screw it out again and watch whether the oil mark is between two lines of dipstick.
4. If yes, then screw the oil level gauge back again.
5. If below the lower line, then refilling the crankcase oil through the port.
6. If higher than the upper line, then screw out the bottom plug to let the excess oil flow out of the hole.





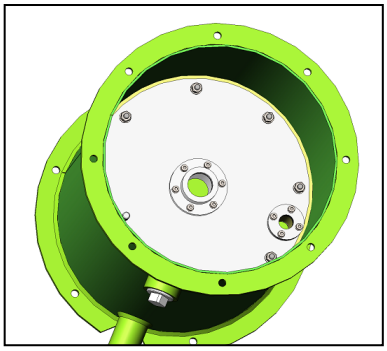
■ ***Crankcase oil service interval***

1. Check oil level after every 750 hours of machine operation, or monthly.
2. Change oil after every 2000 hours of machine operation, or every year.
3. Use SAE 10W30 (model: 97-2001-002) engine oil in all pump used in ambient temperature of – 40 to 65 °C.

DANGER

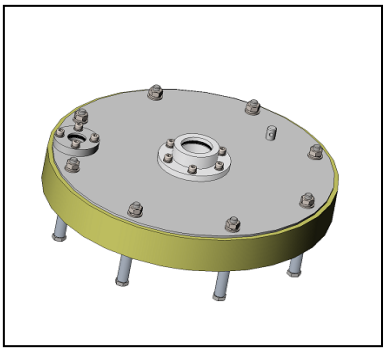
Collect and treat the gearbox oil in accordance with National law & regulations.
Failure to comply may cause serious environmental and personal injury.

4. Oil level should be at indicating dot on dipstick (middle of crankshaft).
5. Crankcase capacity: 0.44 L.

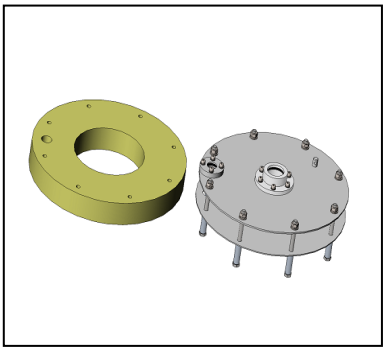


■ *Follower*

If follower foam appears to be damaged or does not wipe sides of reservoir effectively, service may be necessary.



1. Disconnect electric supply from pump.
2. Remove bolts, eyebolts and lock washers which attach cover to reservoir assembly.
3. Lift pump and drum cover out of reservoir.
4. Remove cable assembly from follower assembly.
5. Remove follower assembly from reservoir assembly.
6. Wipe off excess grease from follower assembly.
7. Loosen and remove nuts on top of follower assembly.
8. Remove weighted follower plate and follower foam.
9. Replace with new foam.
10. Remove and save spacers from inside of foam before discarding foam.
11. Reverse above procedure to re-assemble making sure long bolts are staggered with small ones.

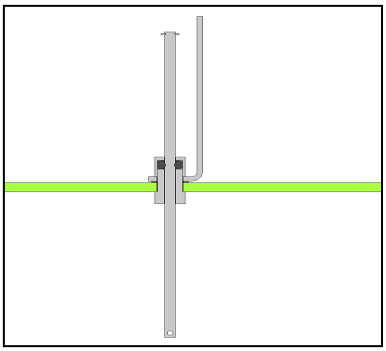


NOTE

Do not bend housing tube during removal of pump and drum cover.

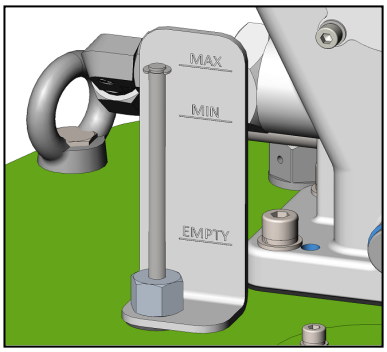
■ *Mechanical low level indicator*

Indicator seal may be damaged if indicator pin appears to drop prematurely or water is noticeable on top of follower.



1. Remove bolts, eyebolts and lock washers which attach cover to reservoir assembly.
2. Inspect reservoir gasket seal for damage. If damage is apparent, replace gasket.
3. Remove entire pump and follower from reservoir.

4. Remove retaining ring from indicator rod assembly.
5. Hold indicator plug with wrench while removing indicator nut.
6. Remove and replace o-ring.
7. Reassemble in reverse of above procedure.



■ *Grease Refilling*

There are three marks “MAX”, “MIN”, “EMPTY” in the indicator plate.

1. When the pin is pointing to “MAX”: the drum is full of grease.
2. When the pin is pointing to “MIN”: the grease level in the drum is low and grease refilling is needed.
3. When the pin is pointing to “EMPTY”: the drum is empty and grease refilling is needed immediately.

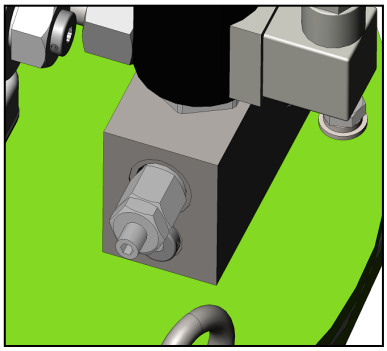
WARNING

When drum is in “EMPTY” status, grease refilling need to be operated immediately, otherwise there will be no grease pumping out to lubrication points, and both pump station and lubricated machinery will be damaged.

■ *Safety valve*

Safety valve is not serviceable. Replace if malfunction is apparent. If pipeline is stuck or solenoid valve fails to operate, safety valve will open at approximately 250 bar to relieve supply line pressure. Safety valve adjustment steps:

1. Use SW17 wrench to loosen lock nut.
2. Use 4# Allen key hexagon to rotate the adjusting screw (clockwise: pressure increase, counter-clockwise: pressure decrease) and watch the pressure gauge when pump station is working.
3. Tighten the lock nut when the pressure value is needed.



Troubleshooting

Condition	Possible cause	Corrective action
Pump does not operate	**1.** No electric power to pump **2.** Motor overheated **3.** Motor tripped out on locked rotor protection **4.** Broken gear-set or shaft	**1.** Turn power on pump **2.** Turn power off for 10 minutes and restart **3.** Remove high pressure or repair cause of locked pump **4.** Repair gearbox
Pump runs excessively	**1.** Pump tube malfunction **2.** Safety valve damage or contamination **3.** Solenoid valve damage or contamination **4.** System component leaking **5.** Injector bypassing	**1.** Check and repair the broken parts **2.** Repair or remove contamination **3.** Repair solenoid valve or remove contamination **4.** Repair leaks **5.** Repair injectors
Pump speeds up or runs erratically	**1.** Low level of grease or reservoir is empty **2.** Follower plate is stuck and separated from grease **3.** Pump piston or checks are worn	**1.** Refill reservoir **2.** Check follower plate and reservoir for damage **3.** Check and repair the broken parts
Pump runs, but output is low	**1.** Motor speed control set too low **2.** Faulty inlet or discharge check valve in pump	**1.** Check motor and gearbox and repair broken parts **2.** Replace faulty components
Lubricant leaking from safety valve	**1.** Pressure of system set too high **2.** Safety valve damaged or contaminated	**1.** Adjust pressure switch setting **2.** Replace safety valve

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