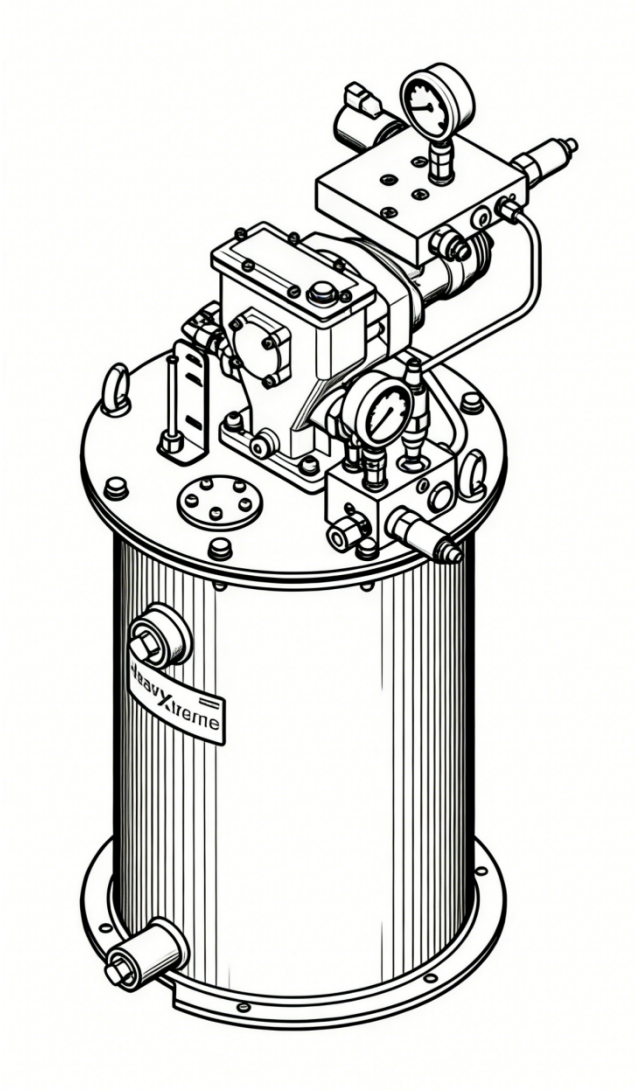
HeavyXtreme™悍驰系列
液压润滑泵操作手册



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 系列液压泵站包含液压驱动泵单元、油桶、可视液位计、液压阀组及润滑阀组。

液压阀组由电磁通断阀、压力控制阀（PCV）和流量控制阀（FCV）组成，用于调节液压油供给。润滑阀组包含安全阀、压力换向阀（PDV）及单向阀。

油脂输出量与泵每分钟转速成正比。该泵主要适用于单线式、递进式等集中润滑系统。

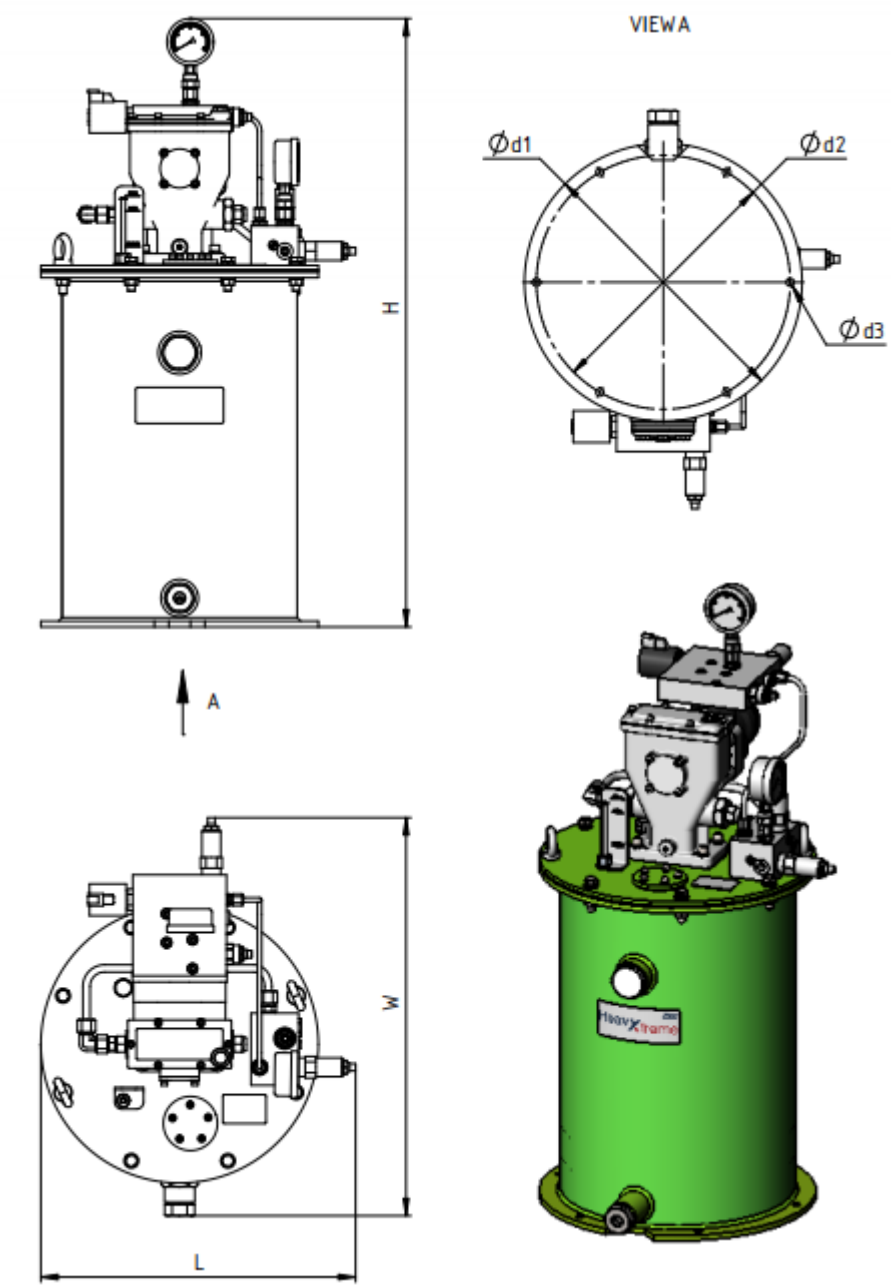
泵单元由液压马达旋转驱动，旋转运动通过偏心曲柄机构转化为往复运动。往复动作带动泵管上下运动，将油桶内的润滑脂加压挤出；此时压力换向阀在液压油压力作用下关闭，润滑脂输送至各润滑点。

当所有润滑点完成润滑后，系统压力升高，触发远程压力开关。随后用户控制系统复位，电磁通断阀断电，压力换向阀因失去液压供油压力而复位至关闭状态，管路压力经由压力换向阀释放。泵停止运转、系统泄压，压力开关复位断开。用户控制系统开始计时，等待进入下一个润滑周期。

技术参数

泵站参数		液压供油要求	
工作压力	最高 350 bar	**液压油供油压力**	≥ 35 bar
出口螺纹	1 个出口，G1/4	**默认 PCV 设定值**	50 bar
泵出油量	444 cm^3/min	**液压油供油流量**	≤ 20 L/min
补油口	Rc 1	**默认 FCV 设定值**	15 L/min
溢流口	Rc 1-1/4	**默认 PDV 设定值**	15 bar
润滑剂	NLGI 0, 1, 2	**液压油进口**	G1/4
工作温度	-40 °C ~ +65 °C	**液压油出口**	G1/4
油箱容积	28, 40, 55 kg	**电磁阀供电**	DC 24V
安装方式	竖直安装	**电磁阀电气连接**	DT04-2P

外形尺寸

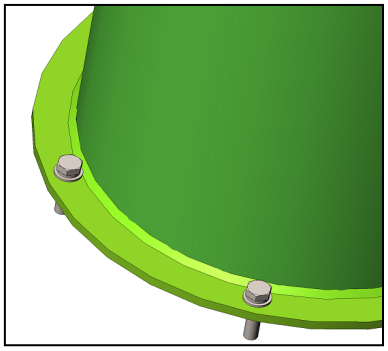


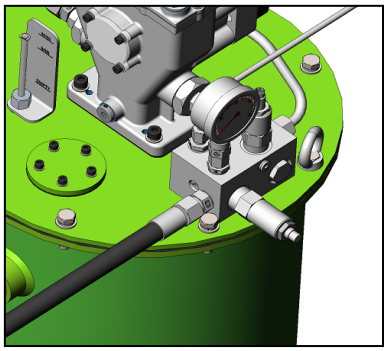
型号	油箱容积（kg）	H (mm)	W (mm)	L (mm)	Ød1 (mm)	Ød2 (mm)	Ød3 (mm)
HXP28L...HD	28	845	552	437	385	352	6 x Ø11
HXP40L...HD	40	1045	552	437	385	352	6 x Ø11
HXP55L...HD	*55*	1045	572	457	425	394	4 x Ø15

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。

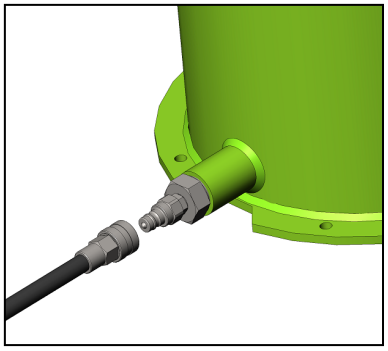




油桶加注

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。

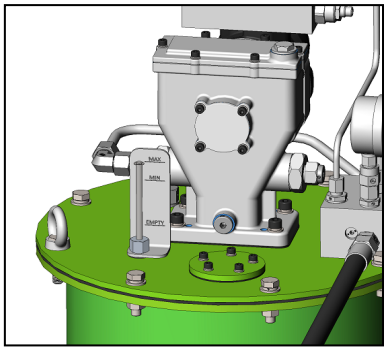


警告

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。

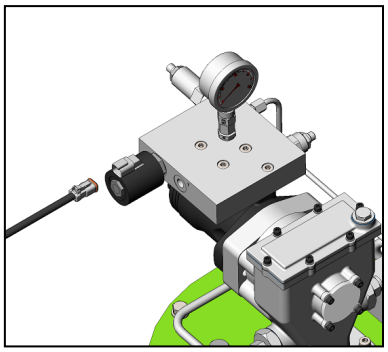
警告

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



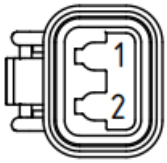
动力源连接

■ ***连接电磁通断阀***

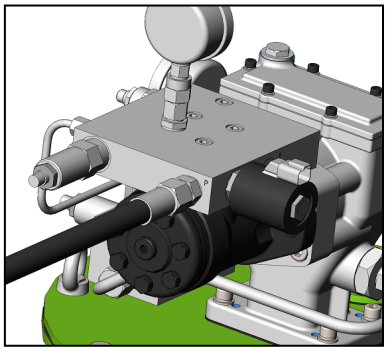


1. 使用带有 DT06-2S 公插头的 2x0.75mm^2 电缆线连接电机上电源线的母插头（DT04-2P）电缆线连接电磁通断阀上的母插头（DT04-2P）。
2. 连接针脚参考下表。

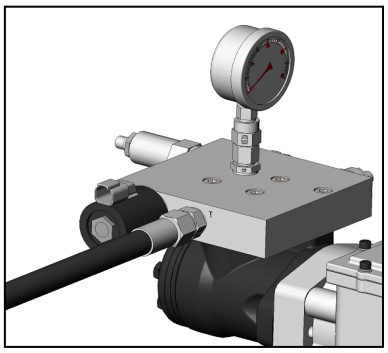
针脚	电线颜色	连接
1	棕	24 V+
3	蓝	0V



■ ***连接液压马达和液压阀组***



1. 使用扣压胶管将液压泵站的供油口、回油口，分别连接至液压阀组的 P 口和 T 口。
2. P 口和 T 口的螺纹都是 G1/4。



危险

液压供油压力严禁超过 103 bar。须采用高压规格元器件以降低安全风险。若未遵守本要求，将导致人员死亡或重伤。

开机调试

根据润滑系统类型的不同，泵站及整套系统有两种启动与调试方式。本液压泵站不含内置控制器，仅可由用户 PLC 直接控制。即需由用户 PLC 对安装在液压阀组内的电磁通断阀进行通电与断电控制。

■ ***单线系统***

1. 根据管路背压，在 PLC 中设置压力开关*参数。
2. 手动启动泵站，观察润滑脂是否送达所有润滑点。
3. 若油脂未到达，重复第 1、2 步调试直至运行正常。
4. 在 PLC 中设定系统运行间隔时间。
5. 至少观察一个润滑周期，确认无异常后，正式投入启用泵站及整套润滑系统。

* 如需订购压力开关，请联系供应商。

须知

严禁泵无润滑脂空转。泵空转时转速会急剧升高，产生摩擦高温，易造成密封件损坏。需实时监测润滑脂液位，必要时及时补充。未按规范操作将导致设备损坏。

■ ***递进系统***

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。

须知

在启动流程完成前，严禁更改泵参数设置。所有泵出厂均已设定为全速运行。违规操作可能造成泵体损坏。

危险

严禁超过额定最大出口压力。本泵未配置高压切断阀。若违规操作，将造成人员死亡或严重人身伤害。

操作与维护

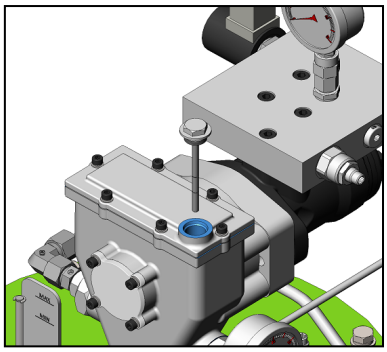
■ ***操作步骤***

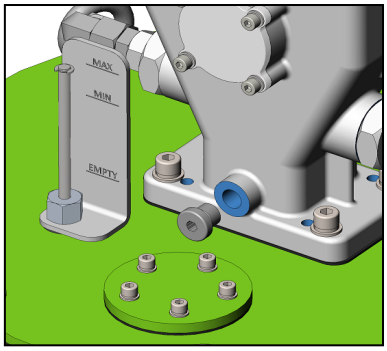
1. 接通电磁通断阀电源。
2. 电磁阀得电开启，液压油流经液压马达，推动润滑脂输送至分配器及各润滑点。

3. 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；递进式系统：运行时长结束后，泵站停止运行。
4. 断开电磁通断阀电源。
5. 电磁阀失电关闭，单线式系统随即进行系统泄压。
6. 进入间隔计时。
7. 计时结束后，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）。

曲轴箱容量：0.44 升。

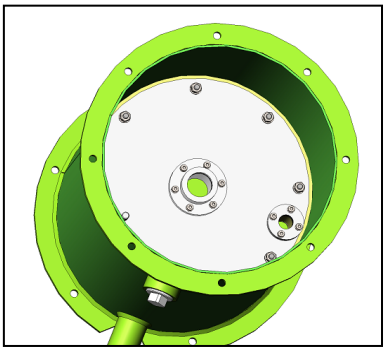
危险

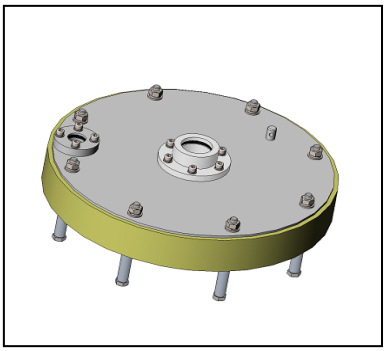
请按照国家法律法规要求，收集并妥善处理变速箱废油。若未按规定执行，将造成严重环境污染，并可能引发人身伤害。

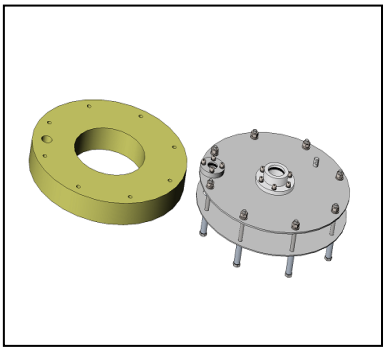
■ *压油盘*

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。







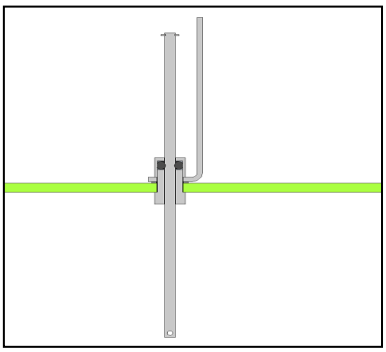
须知

拆卸泵头及桶盖总成时，严禁弯折泵管。

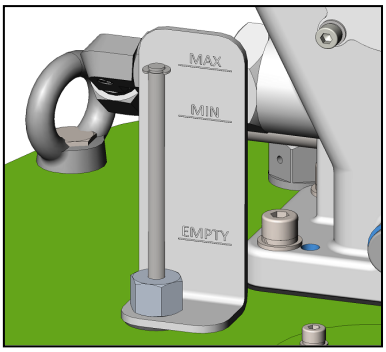
■ *机械式液位指示器*

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***

警告

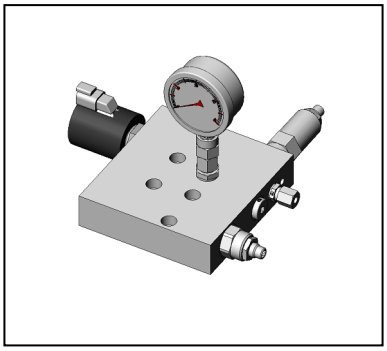
当油桶处于空桶状态时，必须立即补充润滑脂；否则将无法向各润滑点输送润滑脂，进而造成泵站及被润滑机械设备损坏。

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。

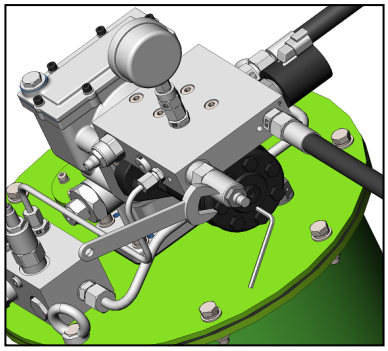
■ ***液压阀组***

液压阀组用于管控液压油供油，确保泵站合规、安全运行。该阀组内置四大核心元件：电磁通断阀、压力控制阀、流量控制阀及压力表。



✧ **电磁通断阀** 用于控制液压油供油的通断。工作电压：直流 24V，供电插座型号：DT04-2P。

✧ **压力控制阀** 用于将液压供油压力限定在所需数值。HXP 系列泵站出厂默认设定压力为 50 bar。该阀可按照以下步骤进行调节：



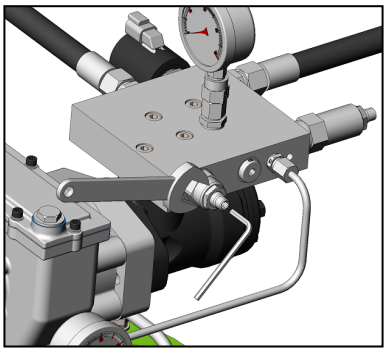
1. 使用 19 号扳手松开锁紧螺母。
2. 用 4 号内六角扳手旋转调节螺钉（顺时针升压，逆时针降压），同时观察压力表，直至调至所需压力值。

3. 压力调至设定值后，拧紧锁紧螺母。

须知

非必要请勿改动出厂 50 bar 的默认压力设定，严禁超过 103 bar 的泵工作压力。在满足润滑需求的前提下，尽量采用最低液压供油压力，可减少泵体磨损。

✧ **流量控制阀** 用于将液压供油流量限定在所需数值。HXP 系列泵站出厂默认流量设定值为 15 L/min。该阀可按以下步骤调节：

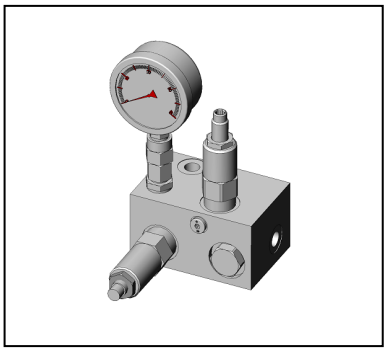


1. 用 19 号扳手松开锁紧螺母。
2. 用 4 号内六角扳手旋转调节螺钉（顺时针调大流量，逆时针调小流量），同时观察泵体运转速度，使其处于合理范围。
3. 流量调节至合适值后，拧紧锁紧螺母。

须知

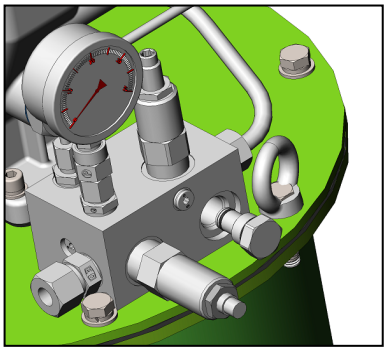
非必要请勿更改 15 L/min 的出厂默认流量设定，严禁将液压油流量调得过高或过低。在满足润滑工况的前提下，采用合适的液压供油流量，可有效减少泵体磨损。

■ ***润滑阀组***



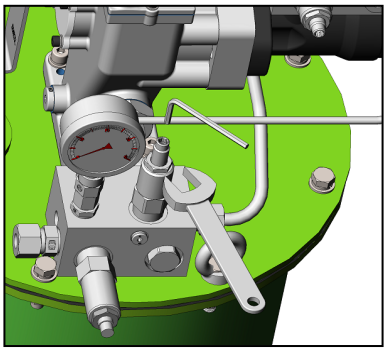
润滑阀组用于管控润滑脂的流量与压力，保障泵站满足工况要求并安全运行。该阀组包含四大核心元件：单向阀、安全阀、压力换向阀及压力表。

单向阀 是提升泵站工作可靠性的核心部件之一。若单向阀失效，需及时清洁或更换，否则会缩短泵的使用寿命。拆装所用扳手规格：SW 23。



✧ **安全阀** 不可拆解维修，一旦出现明显故障需直接更换。当管路堵塞或压力换向阀动作失灵时，安全阀约在 250 bar 压力下开启，释放供油管路压力，起到过载保护作用。安全阀调节步骤：

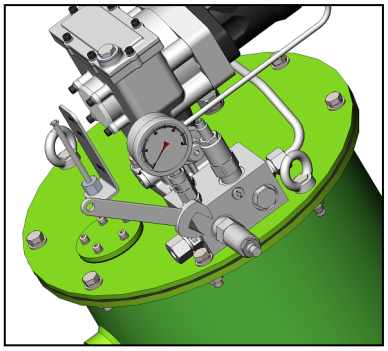
1. 用 29 号扳手松开锁紧螺母。
2. 在泵站运行状态下，用 4 号内六角扳手转动调节螺钉（顺时针调高压力，逆时针调低压力），同时观察压力表读数。
3. 调节至设定压力值后，拧紧锁紧螺母。



警告

非必要严禁调节安全阀压力设定值。违反此操作规范，将导致泵站设备损坏。

✧ **压力换向阀** 用于控制润滑脂的流向。泵站运行时阀门开启，停机时自动关闭。若泵站工作时管路无法建立压力，说明压力换向阀已失效，需使用 26 号扳手进行更换。HXP 系列泵站该阀出厂默认动作压力为 15 bar，非必要请勿随意调节。



警告

非必要请勿更改加压换向阀的出厂默认压力设定。违规调节将造成泵站运行故障。

故障排查

故障	可能原因	排除方法
泵不工作	■ 液压油进口压力过低 1. 液压供油截止阀未打开 2. 电磁通断阀无供电 3. 电磁阀故障损坏 4. 压力控制阀故障 5. 液压供油油量不足	1. 接通并开启向泵站供给的液压油源 2. 打开截止阀 3. 排查并修复电路故障 4. 更换电磁阀 5. 更换压力控制阀 6. 检查液压供油的压力与流量是否符合标准
	■ 液压油进口压力正常但设备异常 1. 液压油出油管路堵塞 2. 流量控制阀处于全关闭状态 3. 背压过大导致泵卡死 4. 泵损坏	1. 检查液压油出油管路并清除堵塞物 2. 调节流量控制阀 3. 检查压力换向阀 4. 拆解泵体，检修损坏或卡滞部件，或直接更换整泵
泵长时间持续运转	1. 泵管故障 2. 出口单向阀损坏或污染堵塞 3. 安全阀损坏或污染堵塞 4. 系统元件泄漏 5. 压力换向阀供油压力不足，无法可靠闭合 6. 注油器内部旁通泄压 / 内泄串油	1. 拆解泵体进行维修，或直接更换整泵 2. 检修单向阀或清理内部污物杂质 3. 检修安全阀或清理内部污物杂质 4. 处理各部件泄漏故障 5. 节流接头堵塞，进行检修清理 6. 检修各注油器

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.** 液压油供油不足 **2.** 进油压力过低 **3.** 泵体内进、出油单向阀故障	**1.** 检查液压供油状况并调节流量 **2.** 更换压力控制阀 **3.** 更换所有故障零部件
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：

出版物编号：INALUBE-HeavyXtreme-03

版本号：1.0

日期：2026.01

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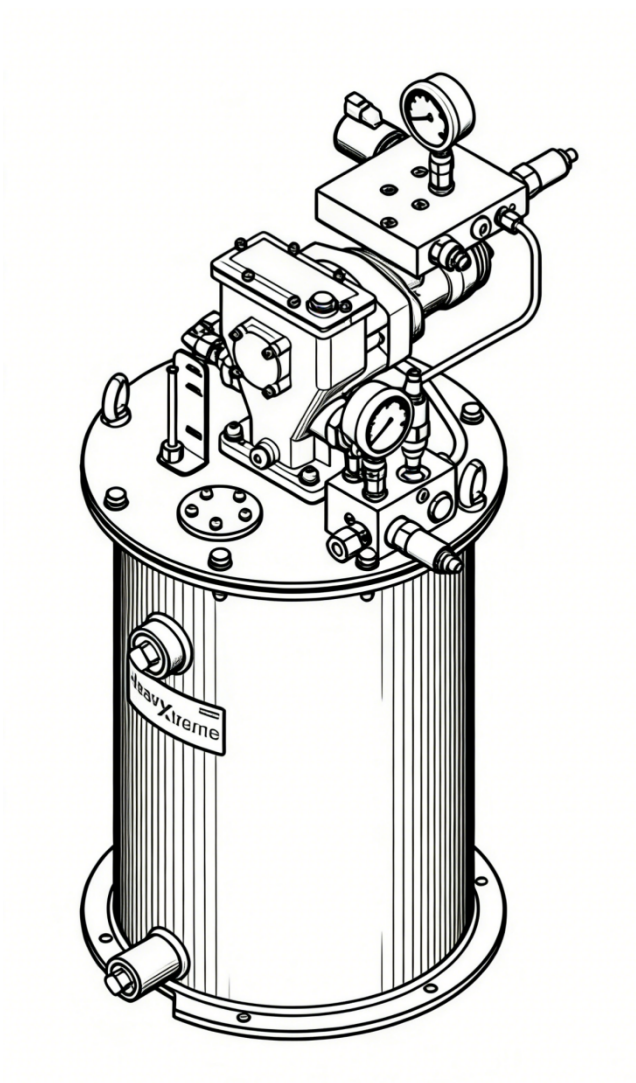
HeavyXtreme™ Hydraulic Lubrication Pump User Manual



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 hydraulic pump station includes hydraulic-driven pump unit, drum, visual level ruler, hydraulic valve assembly and lubrication valve assembly.

The hydraulic valve assembly includes solenoid on/off valve, pressure control valve (PCV) and flow control valves (FCV) to adjust the hydraulic oil supply.

The lubrication valve assembly includes safety valve, pressurized directional valve(PDV) and check valve.

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 hydraulic motor. Rotary motion is converted to reciprocating motion through eccentric crank mechanism. Reciprocating action causes pump cylinder to move up and

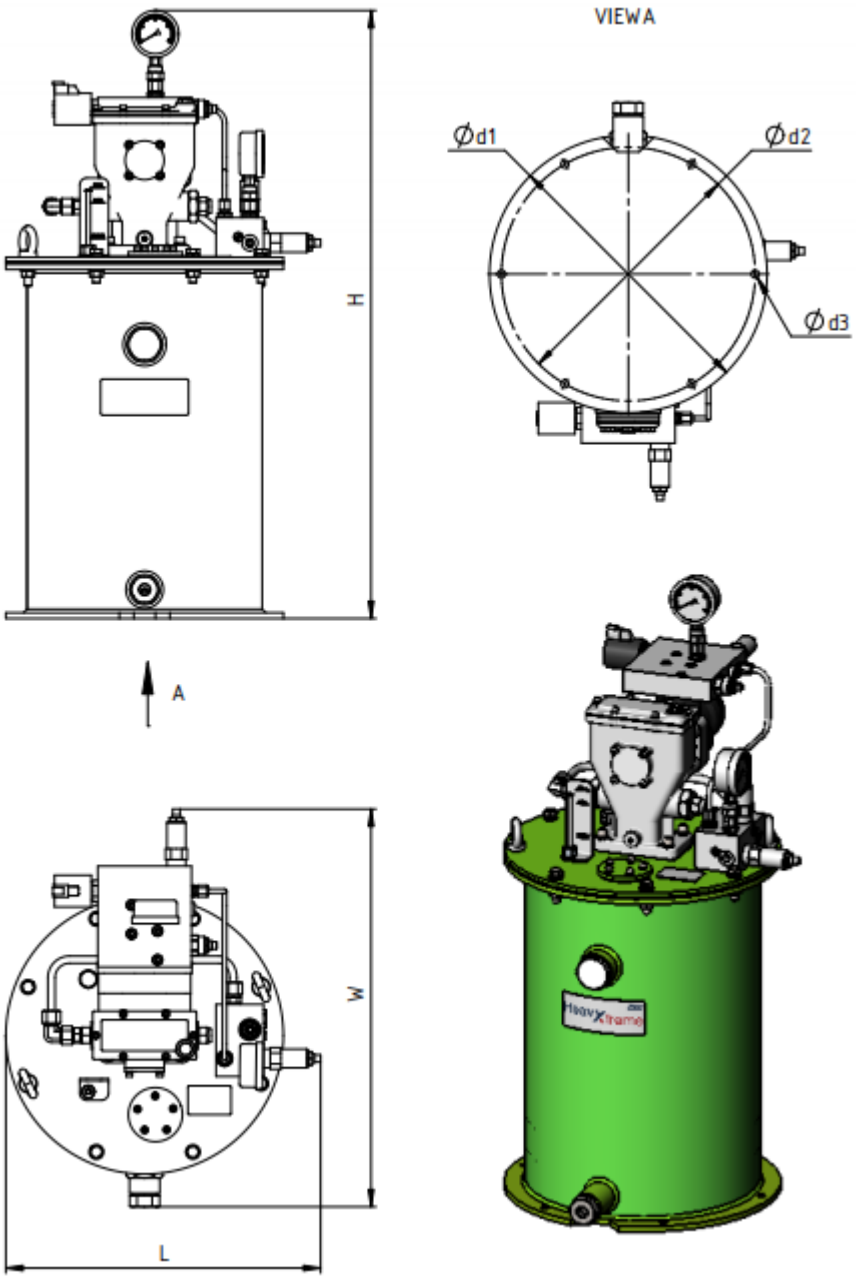
down, then the grease is being forced out from the drum to lube points through PDV which has been closed by hydraulic oil supply.

When all lube points have received lubricant, pressure rises in the system and activates the remote pressure switch. Then customer control system is reset to de-energize solenoid on/off valve to relief pressure of pipeline through PDV again which is in off status without hydraulic oil supply. Pump stops, pressure vents and pressure switch deactivates. The customer control system begins timing toward next lube cycle.

Technical data

Pump Station Parameter		Hydraulic Supply Requirement	
Operating Pressure	Max. 350 bar	**Hydraulic Oil Pressure**	≥ 35 bar
Outlet Thread	1 outlet, G1/4	**Default PCV value setting**	50 bar
Displacement	444 cm^3/min	**Hydraulic Oil Flow**	≤ 20 L/min
Filling Port	Rc 1	**Default FCV value setting**	15 L/min
Relief Port	Rc 1-1/4	**Default PDV value setting**	15 bar
Lubricant	NLGI 0, 1, 2	**Hydraulic Oil Inlet**	G1/4
Working Temperature	-40 °C ~ +65 °C	**Hydraulic Oil Outlet**	G1/4
Tank Capacity	28, 40, 55kg	**Power supply**	DC 24V
Mounting	Vertical	**Solenoid valve connection**	DT04-2P

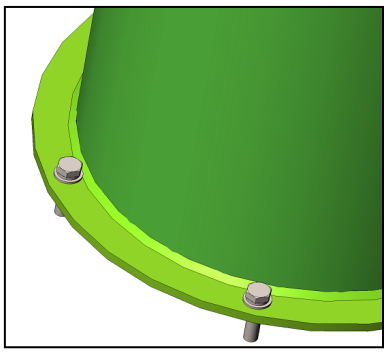
Dimension



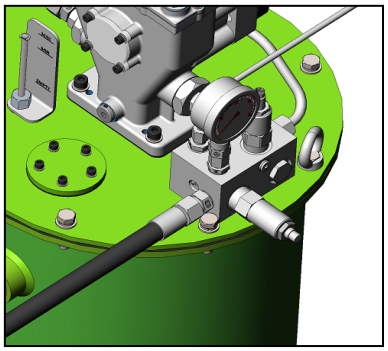
Model	Tank Capacity (kg)	H (mm)	W (mm)	L (mm)	Ød1 (mm)	Ød2 (mm)	Ød3 (mm)
HXP28L...HD	28	845	552	437	385	352	6 x Ø11
HXP40L...HD	40	1045	552	437	385	352	6 x Ø11
HXP55L...HD	*55*	1045	572	457	425	394	4 x Ø15

Installation

Locate the pump station to the place that hydraulic oil supply connection is accessible.

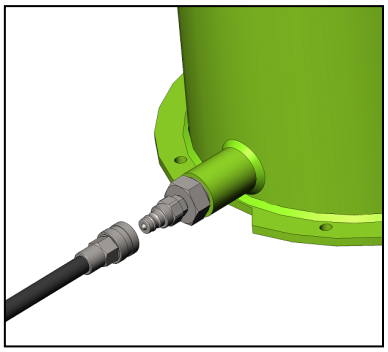


1. Mark center locations of the holes at bottom of reservoir.
2. Drill mounting holes refer to the different pump stations.
3. Use bolts for added flexibility in securing reservoir to equipment.
4. Connect suitable fitting to the pump outlet. (The outlet threat is G1/4)
5. Connect the hose capable of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



Filling reservoir

To bulk fill reservoir.



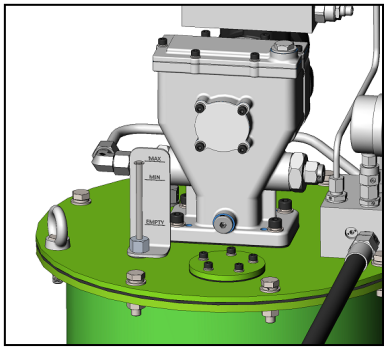
1. Attach quick coupling (P/N: 32-1001-006, ISO 7241-A G3/8, female) to button refilling males coupling on lower refill port.
2. Fill reservoir until grease level gauge indicates it is full (the top end reaches “MAX” line) or until grease appears at top high level port.
3. Remove hydraulic female quick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

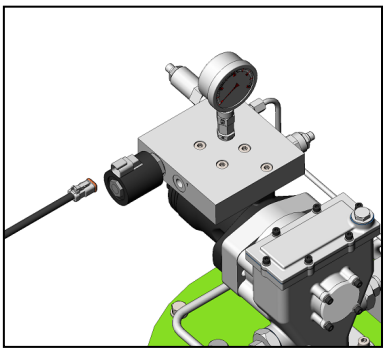
WARNING

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.



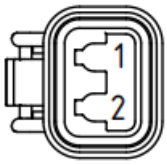
Power connection

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

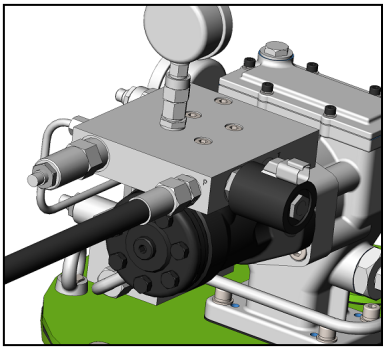


1. Use 2x0.75mm^2 cable with DT06-2S to connect power cable plug (DT04-2P) of solenoid on/off valve.
2. Pin connection refers to blow.

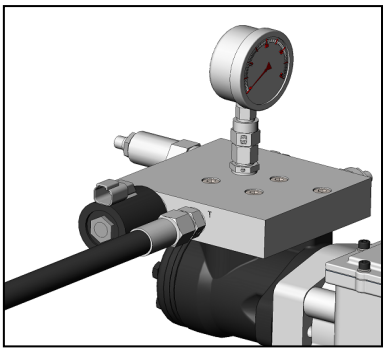
Pin	Wire color	Connection
1	Brown	24 V+
3	Blue	0V



■ ***To hydraulic motor and valve assembly***



1. Use hoses to connect hydraulic oil station supply and return ports with “P” and “T” ports of valve assembly respectively.
2. “P” and “T” ports thread are both G1/4.



DANGER

Do not exceed 103 bar hydraulic supply pressure. Use high pressure components to reduce risk. Failure to comply will result in death or serious personal injury.

Startup & commissioning

According to the lube system type, there are two kinds of way to startup and commissioning the pump station and whole system. The hydraulic pump station doesn't have controller and it can only be operated by customer PLC directly. It means customer PLC needs to power on/off the solenoid on/off valve which is installed in the hydraulic valve assembly.

■ ***Single-line system***

1. Setup parameters of pressure switch* in terms of back pressure in pipeline in PLC.
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 PLC.
5. Watched one lubrication cycle at least without any problem, then officially startup the pump station and whole system.

* If need to order pressure switch, please contact your supplier.

■ ***Progressive system***

1. Setup working and interval time of system operation in 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.

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

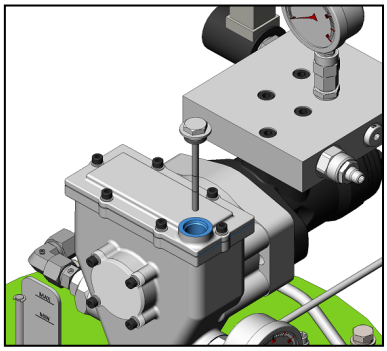
Do not exceed maximum rated outlet pressure. Pumps are not equipped with high pressure shut off valve. Failure to comply will result in death or serious personal injury.

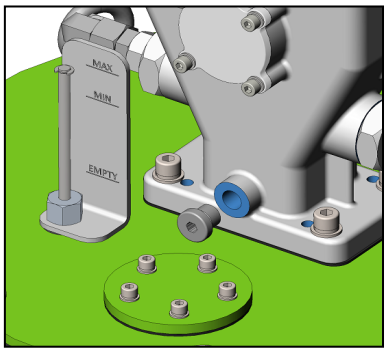
Operation & maintenance

■ ***Operational procedure***

1. Turn on power supply of solenoid on/off valve.
2. Solenoid valve switches on (open), then hydraulic oil flow through the hydraulic motor. 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 of solenoid on/off valve.
5. Solenoid valve switches off (closed) 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

DANGER

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

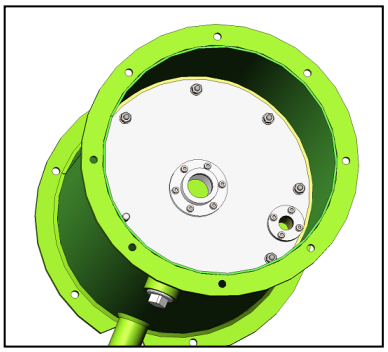
pump used in ambient temperature of – 40 to 65 °C.

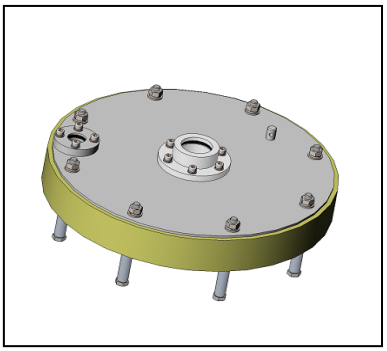
4. Oil level should be at indicating dot on dipstick (middle of crankshaft).
5. Crankcase capacity: 0.44 L.

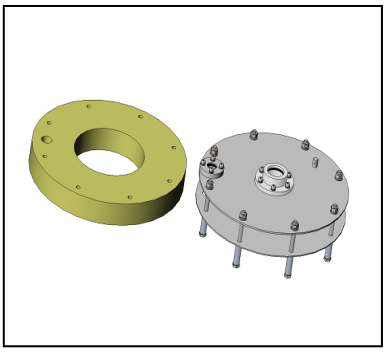
■ *Follower*

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.



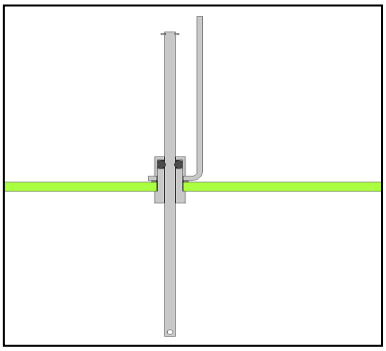




NOTE

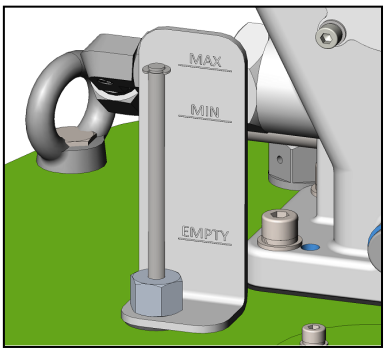
Do not bend housing tube during removal of pump and drum cover.

■ *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.

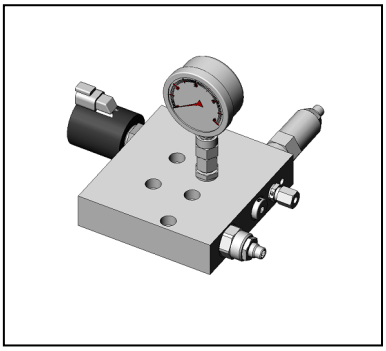
1. When the pin is pointing to “MAX”: the drum is full of grease.
2. When the pin is pointing to “MIN”: the grease level in the drum is low and grease refilling is needed.
3. When the pin is pointing to “EMPTY”: the drum is empty and grease refilling is needed immediately.

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.

■ *Hydraulic valve assembly*

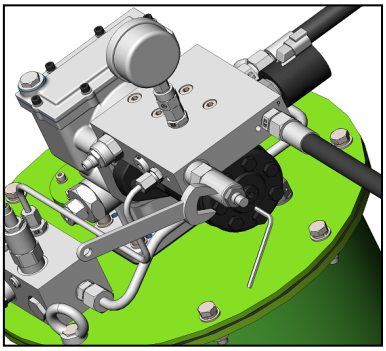
Hydraulic valve assembly is designed to manage the hydraulic oil supply in order to ensure the pump station is running in qualified and safe condition. There are four key components installed which are solenoid on/off valve, pressure control valve, flow control valve and pressure gauge.



✧ **Solenoid on/off valve** is to power on/off hydraulic oil supply. The voltage is 24VDC and the power socket is DT04-2P.

✧ **Pressure control valve** is to limit the pressure of hydraulic oil supply with needed value. For HXP pump station, the default setting pressure value is 50 bar. This valve also can be adjustable according to below steps:

1. Use SW 19 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 until reaching the needed value.
3. Tighten the lock nut when the pressure value is needed.

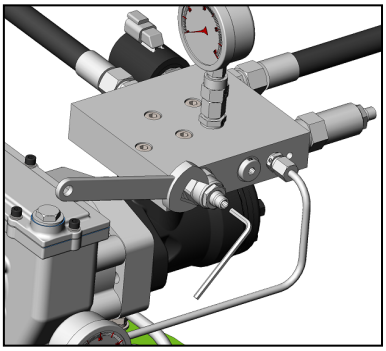


NOTE

Do not adjust the default pressure setting of 50 bar if not necessary, especially do not exceed pump operating pressure of 103 bar. Always use the lowest hydraulic supply pressure will reduce the pump wear when getting desired lubrication condition.

✧ **Flow control valve** is to limit the oil flow of hydraulic oil supply with needed value. For HXP pump station, the default setting flow value is 15 L/min. This valve also can be adjustable according to below steps:

1. Use SW 19 wrench to loosen lock nut.
2. Use 4# Allen key hexagon to rotate the adjusting screw (clockwise: flow increase, counter-clockwise: flow decrease) and watch the pump tube running speed is in reasonable range.
3. Tighten the lock nut when the flow value is needed.

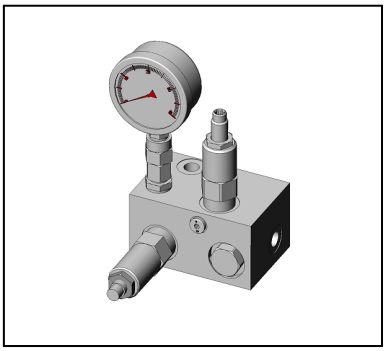


NOTE

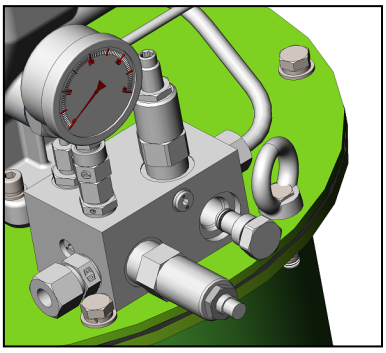
Do not adjust the default flow setting of 15 L/min if not necessary, especially do not setup too high or too low oil flow. Always use the right hydraulic supply flow will reduce the pump wear when getting desired lubrication condition.

■ ***Lubrication valve assembly***

Lubrication valve assembly is designed to manage the grease flow and pressure in order to ensure the pump station is running in necessary and safe condition. There are four key components installed in this valve assembly which are check valve, safety valve, pressurized directional valve and pressure gauge.

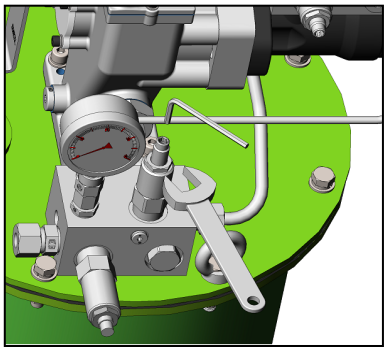


✧ **Check valve** is one of the key components of improving pump reliability. Clean or replace it if it's not serviceable, otherwise the pump life will be shorten. The wrench size is SW 23.



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

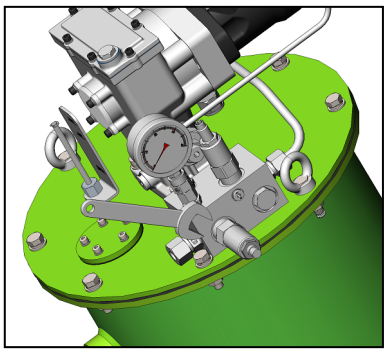
1. Use SW 29 wrench to loosen lock nut.
2. Use 4# Allen key hexagon to rotate the adjusting screw (clockwise: pressure increase, counter-clockwise: pressure decrease) and watch the pressure gauge when pump station is working.
3. Tighten the lock nut when the pressure value is needed.



WARNING

Do not adjust the safety valve pressure value if not necessary. Failure to comply will result in pump station damage.

✧ **Pressurized directional valve** is designed to manage the grease flow direction. It will open when pump is working and close when pump stops. If the pipeline is not pressurized when pump is working, It means the pressurized directional valve is not serviceable. Replace it with SW 26 wrench. For HXP pump station, the default setting activated pressure value is 15 bar. Do not adjust the value if not necessary.



WARNING

Do not adjust the default setting pressure of pressurized directional valve if not necessary. Failure to comply will result in pump station malfunction.

Troubleshooting

Condition	Possible cause	Corrective action
Pump does not operate	■ Low hydraulic oil inlet pressure **1.** Closed hydraulic supply shut off valve **2.** No electric power to solenoid on/off valve **3.** Faulty solenoid **4.** Faulty pressure control valve **5.** Insufficient hydraulic oil supply	**1.** Turn on or connect hydraulic supply to pump **2.** Open shut-off valve **3.** Correct electrical fault **4.** Replace solenoid **5.** Replace pressure control valve **6.** Check hydraulic supply for proper pressure / flow
	■ Enough hydraulic oil inlet pressure **1.** Closed hydraulic oil outlet pipeline **2.** Flow control valve is fully closed **3.** Pump is stalled due to back pressure **4.** Pump is damaged	**1.** Check hydraulic oil outlet pipeline and clear obstructions **2.** Adjust flow control valve **3.** Check pressurized directional valve in system **4.** Dismantle pump and repair defective or seized component or replace pump
Pump runs excessively	**1.** Pump tube malfunction **2.** Outlet check valve damage or contamination **3.** Safety valve damage or contamination **4.** System component leaking **5.** Pressurized directional valve not receiving proper pressure to stay closed **6.** Injector bypassing	**1.** Dismantle pump and repair it or replace pump **2.** Repair check valve or remove contamination **3.** Repair safety valve or remove contamination **4.** Repair leaks **5.** Orifice fitting plugged, repair it **6.** 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 check valves are worn	**1.** Refill reservoir **2.** Check follower plate and reservoir for damage **3.** Replace pump piston and check valves
Pump runs, but output is low	**1.** Insufficient hydraulic fluid supply **2.** Inlet pressure too low **3.** Faulty inlet or discharge check valve in pump	**1.** Check hydraulic supply and adjust flow. **2.** Replace pressure control valve **3.** 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

Statement:

Publication No.: INALUBE-HeavyXtreme-03

Version: 1.0

Date: 2026.01

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