BIJUR DELIMON
INTERNATIONAL

操作使用手册

FS 电动润滑泵

使用说明书代号：SFSE3

版本号：2

始终如一，以零缺陷的产品和服务及时地满足和超越客户的期望。

目录

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安全指示

以下的一些标志是对安全使用产品的一种提示	
	操作前请仔细阅读产品使用说明书。 不当的操作可能导致产品的损坏和人员受伤。
	对产品检修和维护前，请切断电源。
ATTENTION	接线时确保产品的外壳正确接地，否则可能会造成产品的严重损坏。
	电线接地提示

声明

所有部件都是按照劳动安全和事故预防的规则生产。使用过程中仍有可能引起危险,造成使用者或者第三人及财产受到损失,因此产品的使用应该严格按照操作使用手册进行,通常能引起安全故障的问题应该立即排除。

责任免除

南京贝奇尔不承担由以下原因引起的损坏:
缺少润滑剂
使用固体润滑剂或不合适的润滑剂
未按照正常使用用途
安装或连接错误
对于故障排除的误操作

授权安装技师

只有有资质的工程师可以安装、操作、维护和修理本产品.有资质的工程师指经过培训,有设备用户指定或委任的人员,此类人员接受培训,具有经验,熟悉相关的标准,规则,事故预防,故障排除及操作运行状况.

电流危险

只有受培训的专业人员才能进行设备电气连接并参照当地的相关法则.不正确的连接可能会引起材料和人员受损

认可的润滑剂.

在使用FS润滑泵时候请根据要求选用合适的润滑剂.

承压系统危险

系统可能带压力,所以在开始检修,调整或进行相关操作前必须卸压.

环境保护

油和油脂是危害土地和水源的物质,所以在储存,处理,
运输,要有特殊的安全规则.

运输储存

对于公路运输,空运,海运没有限制
保存在-40度和70度间干燥的地方
包装好的货物必须小心搬运!

概述

FS系列电动润滑泵是利用直流电机驱动的油脂泵,电机采用直流24V；电机可防尘，防雨；油罐直径比传统油罐更大，内径达220mm；Fs泵有两种类型压油盘式和油刮式，压油盘式是油罐内置旋转叶片和锥形弹簧，压油盘沿中间导向杆上下运动，油刮式是油罐内置脉冲信号搅拌机构，在油脂的冲击力下实现低液位以上或低液位以下不同的信号状态；FS泵采用等壁厚凸形设计，使残油尽量减小；该润滑泵可内置有程控器，低液位报警开关，并可将液位报警信号对外输出。

该系列润滑泵有4升、6升、8升、10升四种机型，油罐材料为透明塑料。其输出压力高，最高可达30MPa；有1～3个出油口，每个出油口配有超压安全保护装置，并且每个出口可以和分配元件组成独立的润滑系统。

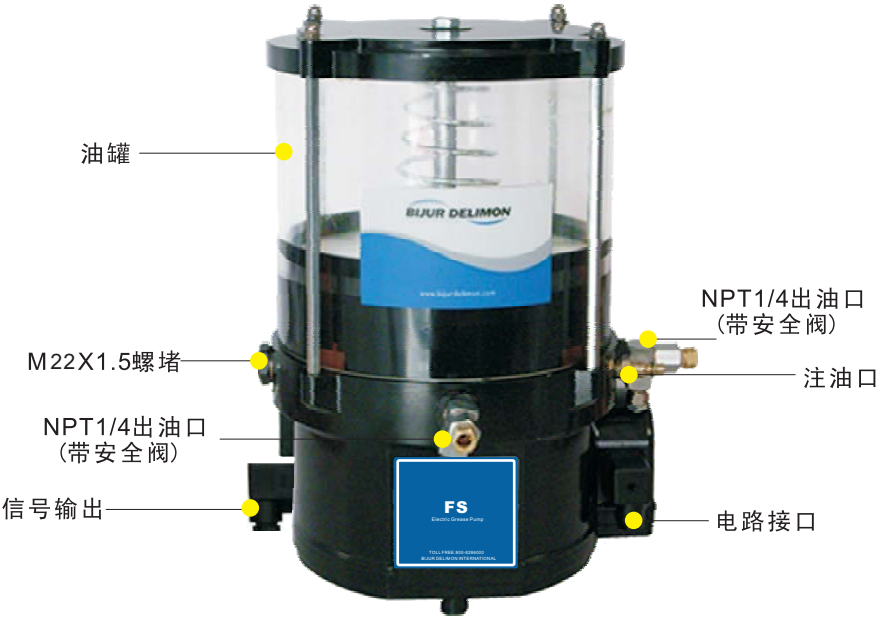
FS系列电动油脂润滑泵可与递进式分配器组成递进式润滑系统（PRG），也可以和控制件组成单线阻尼润滑系统（SLR）。通过程控器可将润滑脂定时定量地输送至各润滑点。

应用领域

FS泵可用于风电、工程机械、行走机械、机床等机械设备的集中润滑系统中。

FS泵基本部件说明

+压油盘式



+油刮式

注意:

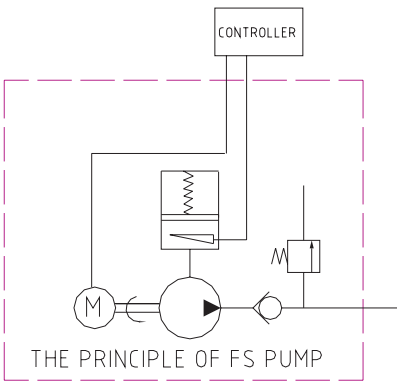
FS 系列有多种类型，每种类型都有不同的油罐容积，电压，程控器设置等。请在订货的时候按照正确的流程方法订货。

技术参数

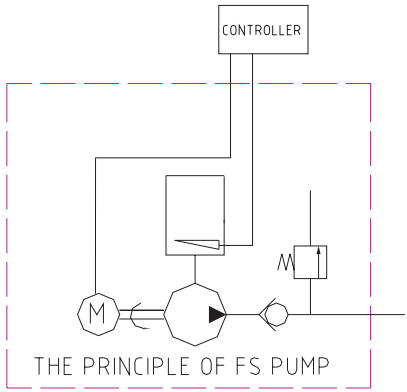
最高压力：	30Mpa
电机电压：	24VDC
电机功率：	50W
出油口螺纹：	NPT1/4
额定单柱塞流量：	3.5ml/min
使用工作温度：	-35℃～80℃
使用油脂范围：	NLGI000～2#（如在低温下使用，请选用低温润滑脂）
油罐有效容积：	4L，6 L，8 L或10L
加油口：	Rc1/4快插接头
IP 等级:	IP-65

注意:
1. 在特定的温度内选择适合该泵的润滑脂,如有特殊问题请联系泵的生产厂家.
2. 电器参数
   连接数:3+PE
   电线规格:AWG20-14
   电线直径：6-9.5mm
   IP等级：IP67

原理示意



压油盘式



油刮式

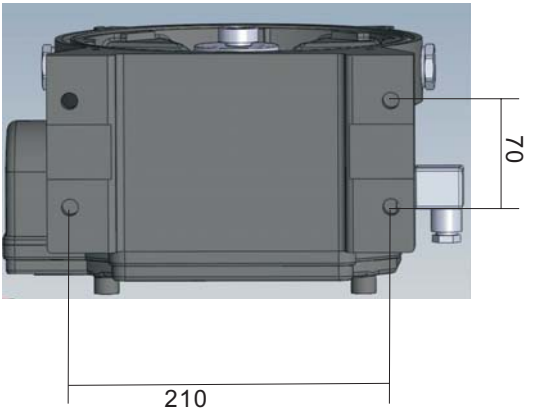
FS泵工作原理图

直流减速电机带动偏心轮旋转，偏心轮带动柱塞做往复运动，进而完成吸油和排油过程。柱塞付出油口与安全阀并联，系统最高工作压力由安全阀调定（出厂时均已调为30MPa）。

在PRG系统中，每个出油口由各自的分配器组成的独立的润滑系统，在程控器控制下，可将润滑脂定时定量地输送至各个润滑点。

安装

安装孔位置示意



FS型泵装置的固定:利用4只M10螺钉固定在主机设备上面。

注意:泵装置应该尽可能的装置在不易受外界侵扰或损坏的适当位置,设备上的安装孔应该按上图所示钻取.

安装平面应平整，安装连接应可靠。同时为确保便于润滑系统的检测，充脂和维护修理等，必须保证有一个足够的操作空间。

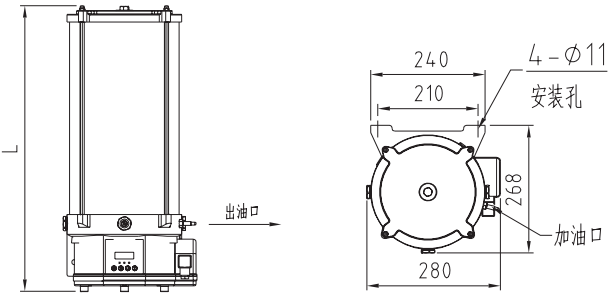
安装前工作

1、在安装之前确定该泵没有任何电源供给。

2、在安装的时候要保证油罐上面的液位线清晰，干净。当脂位低于"min"时候，如不及时加脂会让空气混入系统中，从而使整个系统失常。

3、在安装前确定泵各部件完好

安装产品外形尺寸



+ 压油盘式油罐容积和高度

油罐容积	4L	6L	8L	10L
L (mm)	386	489	542	601

+ 油刮式油罐容积和高度

油罐容积	4L	6L	8L	10L
L(mm)	386	386	489	542

开启泵之前的检查

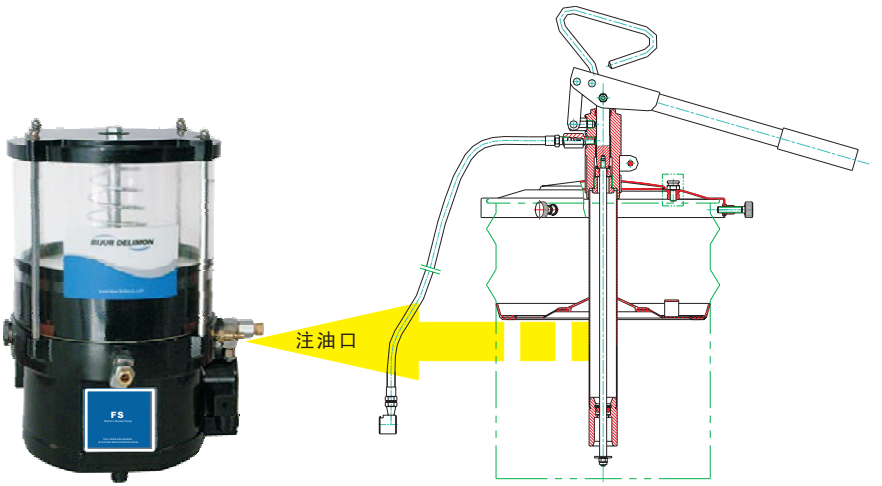
1. 通过充脂口给泵充脂，务必使用指定黏度范围内的清洁润滑油脂；（可以选用我公司配套充脂设备）

2. 将电源线及报警信号线按要求接好；（注意电源电压应与电机额定电压相符，并注意电源的正负极）

3. 检查润滑泵与系统接头部分连接处是否有渗漏，确认电源与泵之间，按接线要求正确接线；

4. 检查各接头及连接处是否有渗漏，确保各连接处连接可靠。

润滑剂填充



对泵体充脂利用电动充脂泵或气动泵进行充脂.
充脂有任何问题欢迎来电咨询.

填充液位确认

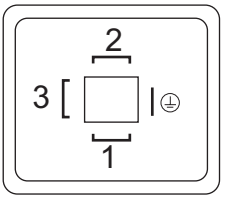
目测检视:透明罐体可以进行人工观测,为了安全这种检查需要经常定时进行.

注意:当脂位低于最低液位标记的时候,如果不及时加脂会使空气混入系统管路,从而造成整个系统的失常。

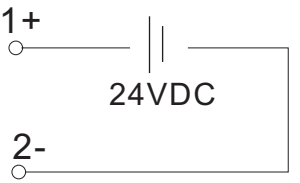
自动检测:FS泵可配置脂位低液位检测开关,当液位低于最低标记时,信号可外输出并控制自动停止工作以保护系统。

电气接线示意图

+ 液位信号不外输出接线

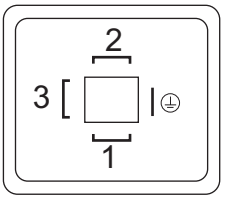


电源插头

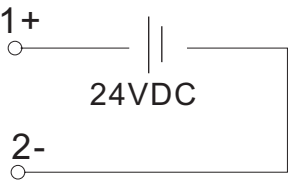


1-棕色 2-蓝色

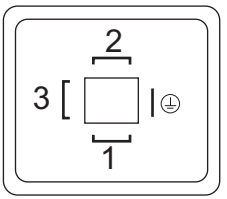
+ 液位信号外输出接线



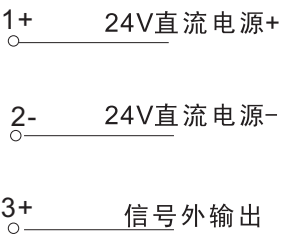
电源插头



1-棕色 2-蓝色



信号插头



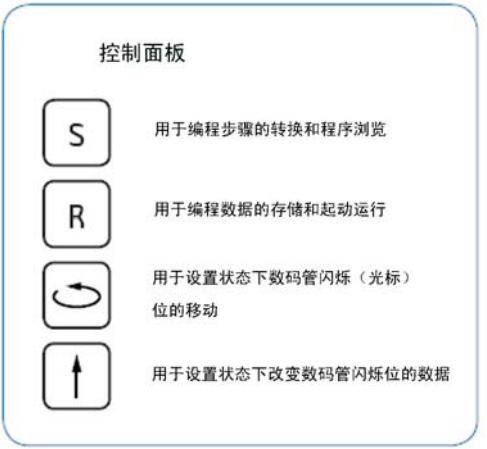
1-棕色 2-蓝色 3-黑色

程控器操作说明

面板显示说明：

显示窗口有四位数码管，用于显示系统工作状态和编程。其余三个LED分别为电源指示(绿色)、泵运行指示（红色）、低油位报警指示（黄色）。

按键功能说明：



操作说明：

+ 通电：
  接通电源后控制器继续断电前数据工作并显示，若需重新设置请按下步进行。

+ 参数设置：
  1)同时按下“S”键和“R”键进入设置模式，此模式下一位光标闪烁；
  2)按照流程图中各设置项左1位的功能提示 “↷”键和“⬆”键 修改参数。
  3)一项设置完成后，按下“S”键即可进入下一项设置。（参数修改方法相同）

+ 运行与停止：
  当全部数据设置完成后按下“R”键即可存贮已设置的参数并起动运行。控制器处于任何工作状态下，按“R”键即可按照存贮的参数重新起动运行，例如当系统管路预注油时.当需将已起动运行的泵电机停止时，可同时按下“S”键和“R”键。

+ 程序浏览：

控制器处于任何状态下按动“S”键即可浏览已存贮的各项参数，不影响当时状态。停止按键片刻即自动返回。

+ 报警：

当控制器处于任何形式的报警状态时，内部故障继电器动作,输出停止。

控制模式说明

用户应根据所配置的润滑系统首选对应的控制模式,只有对润滑系统工作过程非常熟悉或在专业人员指导下，方可另选控制模式。

+ 时间模式（d=1）：

该模式主要用于SLR系统和PRG系统

润滑系统按照控制器预先设置的供油时间和间歇时间进行周期循环。

+ 压力模式（d=2）：

该模式主要用于PDI系统

润滑系统的供油过程是由安装在润滑泵或系统上的压力开关控制的。润滑泵从起动运行到系统压力上升至额定值并使压力开关动作这一过程的时间必须在控制器设定的报警时间内完成，这样，当压力开关闭合时，控制器在当时数据闪烁4下，即延时4秒（保证管路末端建立压力）后使泵运行停止即完成供油过程，进入间歇时间计时。否认，当系统发生供油故障（泄漏、堵塞、泵损坏等）使系统建立压力的时间延长且到达控制器设定的报警时间时，既发出供油故障报警信号，数码显示“EEPP”（此状态下修改参数应先按下“R”键解除报警后再进入设置状态）。报警时间的设置应根据系统实际情况（管路长短、供油量大小等）而定，一般大于压力开关正常动作时间的4-8秒。

+ 计数模式（d=3）：

该模式主要用于PRG系统

润滑系统的供油过程是由安装在分油器上的供油循环开关控制的。润滑泵按控制器设置的循环次数起动运行后，若系统工作正常，则分油器上各出油口依次供油，当完成一个供油循环后其上循环开关发讯一次，控制器计数一次，当供油循环的次数达到控制器的设定值后，控制器输出停止，进入间歇时间计时。润滑系统一但出现故障（堵塞、泄漏、泵损坏等），使得循环开关任意一次的动作时间延长到控制器内部设定的报警时间（5分钟，不可调）时，控制器既发出供油故障报警信号，数码管显示在当前值闪烁。

+ 脉冲模式（d=4）：

该模式主要用于PULES系统

该模式是控制润滑泵以脉动（非连续）方式工作的。如：气动柱塞类和电磁柱塞类润滑泵，通过控制气源电磁阀或驱动电磁铁电源的通、断即脉冲的开、关时间来实现泵内柱塞的往复运动而完成供油过程。

维护

润滑泵使用与维护

+ 连接油管前应仔细冲洗（或吹净）所有注油管道，使管道净化，防止脏物堵塞油管或进入润滑点损坏设备。
+ 必须使用清洁无污染的润滑脂。
+ 加脂必须从加油口用加油工具注入，以防混入空气。
+ 所有螺纹密封处，不允许使用生胶带，麻丝等填充物。
+ 使用过程中应定期检查系统有无渗漏。
+ 为延长润滑泵使用寿命，应避免润滑泵长时间连续供脂：最长工作时间不应超过5分钟，间歇时间不应小于2分钟。

注意:

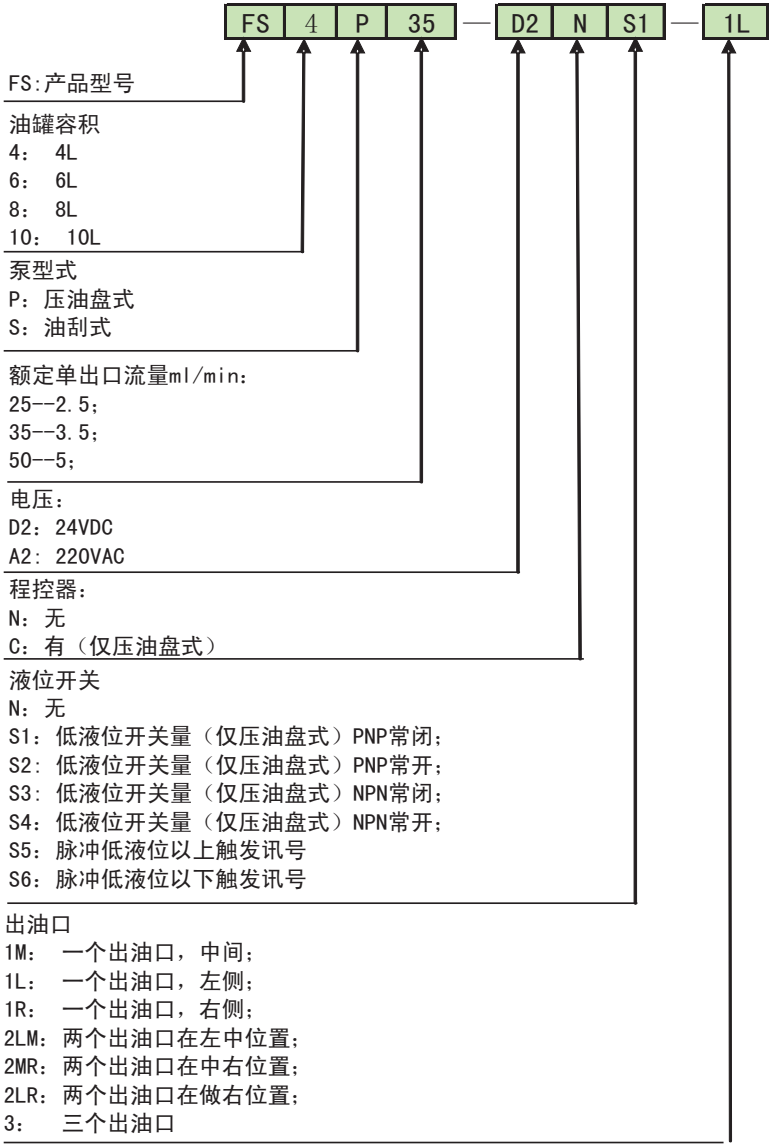
所有不按照要求操作人为损坏的产品，南京贝奇尔公司一概不付任何责任。如在操作过程中有任何的疑问欢迎来电咨询。

常见故障

现象	原因	排除方法
出油口不出油	电机不转	检查电源或电机
	油罐底部有空气	加脂时不要混入空气
压力建立不起来	管道接头漏油脂	检查排除漏脂故障
	泵体组件损坏	与本公司联系
	安全阀芯未关闭	更换安全阀
电机停止泵不卸荷	电磁阀芯卡死,有异物	清洗阀芯

订货代号

FS电动油脂润滑泵订货代号：



备件清单

+ 压油盘式和油刮式

序号	零件代号	零件名称	数量
1	53799-5	柱塞副总成	1
2	22178-6	骨架密封圈	1
3	25589-55	铜垫片	6
4	25589-7	铜垫片	3
5	22100-166	O型密封圈	1
6	49653-8	接近开关	1
7	22474-7	安全阀	1
8	22450-1	电机(24VDC)	1
9	30136-2	充脂接头	1
10	50122-1	插头座组件	1
11	47246-1	法兰密封垫	1

BIJUR DELIMON INTERNATIONAL

OPERATOR MANUAL

FS Electric Lubrication Pump

Our goal is to exceed our internal and external customer expectations and to continuously improve quality products and services that are error-free, on time, every time.

Contents

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Safety instructions

The safety warnings contained in these operating instructions which are specially marked with general danger symbols as shown below have to be observed and followed strictly.
 Prior to start up, we recommend to read the manual carefully as improper operation may result in personal injuries and damage to the product.
 Warning about dangerous electric voltage. It's obligatory to make sure power supply is shut down before inspecting or maintaining work, as such work is only to be carried out during shut-down.
 Make sure housing or shell of the product is adequately and securely grounded when wiring, otherwise, it may cause serious damage to the product.
 Safety sign for grounding.

Declaration

All the parts are manufactured according to existing national regulations on labour safety and accident preventation. Danger may take place during operation, which may result in injuries to the operator or a third party person, or property loss. Therefore, operation of this product must be performed according to theinstructions in the operation manual.

Exemption of responsibilities

NANJING BIJUR shall not be responsible for any damage resulting from following reasons.

- Short of lubricant
- Use of solid lubricants or not suited lubricants
- Any use beyond the applications described in the manual
- Installation or connection mistake
- Incorrect operation for troubleshooting

Authorized technicians for installation

The erecting, operating, maintaining, inspecting and repairing personnel must have the appropriate qualification for such work.Authorized and qualified technicians refer to those, who have acquired necessary knowledge and technique by adequate training and

thoroughly studying the operating instructions,designated or appointed personnel by the user. Furthermore, they should be familiar with related norms, regulations, accident preventation, troubleshooting and working status of the product.

Danger of electric shock

Only trained professional personnels are allowed to make electrical connections according to local rules and regulations.
Incorrect connection may cause damage to materials and personal injuries.

Danger on pressure-bearing system

Before executing inspection, repair, adjustment or relevant operations, it's required to release pressure first because some pressure may remain on the system.

Environmental protection

Lubricants are hazardous substances to the soil and water source.Therefore, storage, handling and transportation of them are subject to special requirements set by environmental legislation.

Transportation and storage

- No limitation for road , air and sea transportation.
- Stored in a dry place between -40℃ to 70℃.
- Packed goods must be handled very carefully.

operations, it's required to release pressure first because some pressure may remain on the system.

General

FS electric grease lubricating pump is driven by DC motor with 24VDC. Motor can be dust-proof and rain-proof. The diameter of grease tank reaches 220mm which is larger than traditional ones.Rotating blades and cone springs are installed in grease tanks which pressing oil pans to vertical moves along middle guide bars. Base utilizes the wall thickness convex type design to minimize the residual oil; there are program-controllers, low level alarm device and safety valve in grease pumps and level alarm signals can be outputted.

FS electric grease lubricating pump has four types including 4L, 6L, 8L, 10L and material of grease tanks is transparent plastic. The output press is up to 30Mpa. There are 1 to 3 oil outlets where overpressure safety protections are installed and independent lubrication system is composed.

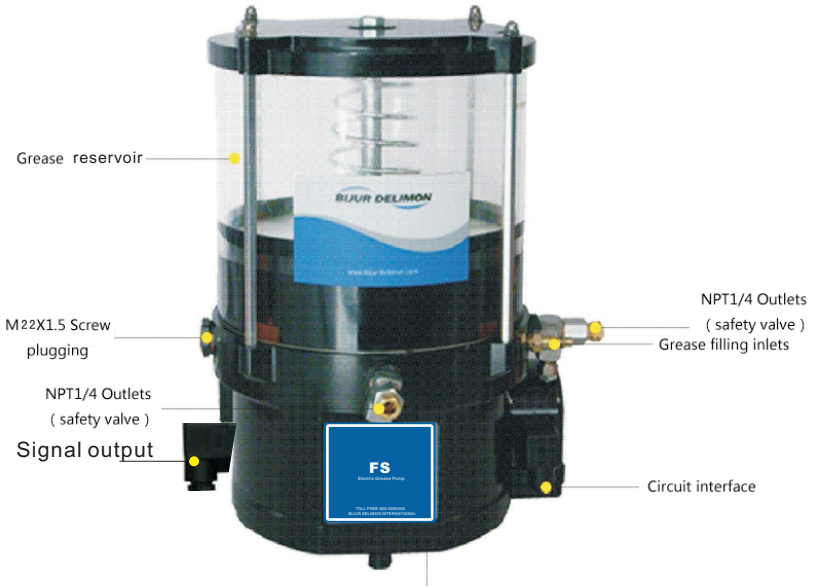
PRG is composed of FS electric grease lubricating pump and Increment Type Distributor. Also SLR is made up of FS electric grease lubricating pump and control parts. The lubricating grease can transport to different lubrication points timely and quantitatively through program-controller.

Application

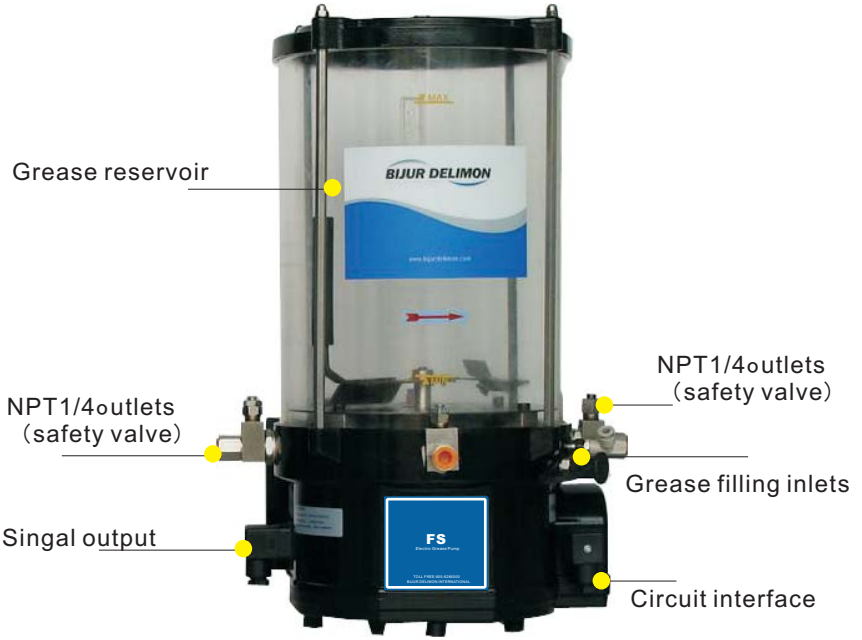
FS pump is intended for centralized lubrication systems on windpower machines, engineering machineries, walking mechanismsand machine tools, etc.

Description of basic pumping elements

+ follower



+ stir plate


Grease reservoir
NPT1/4outlets
(safety valve)
NPT1/4outlets
(safety valve)
Grease filling inlets
Singal output
Circuit interface
BIJUR DELIMON
FS

Technical specification

Rated pressure:	30Mpa
Motor voltage:	24VDC
Motor power:	70W
Outlet screw:	NPT 1/4
Rated single-piston delivery rate:	3.5ml/min
Operating temperature:	-35 c~ 80 c
Acceptable lubricants:	NLG1000~2# (if operated at low temperature, select low temperature lubricant)
Available reservoir capacities:	4L, 6L, 8L or 10L
Discharge element output port:	Rc1/4 quick connector
Ip grade:	IP -65

Notes:

1.Select suited lubricants for the lubricating pump within specified temperatures. Contact pump manufacturer if need special assistance.

2. Electrical specification

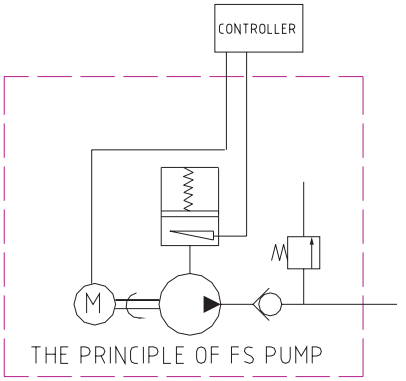
Number of connections: 3 + PE

Specification of power cable : AWG20-14

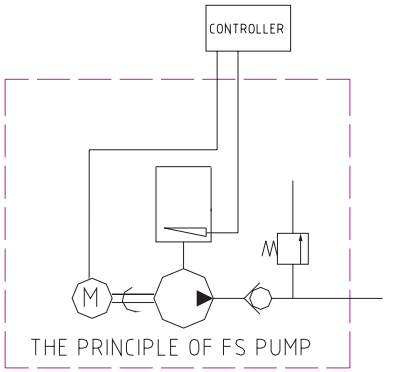
Diameter of power cable: 6-9.5 mm

IP grade: IP67

Schematic diagram of operating principles



follower



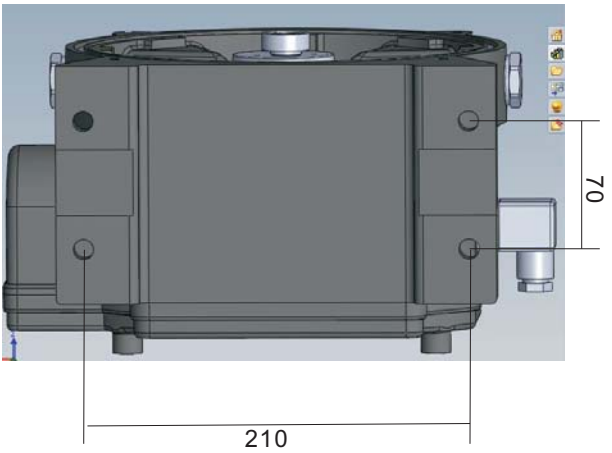
Stir plate

Operating principles of FS pump

The DC reducing motor imparts a rotary movement to the eccentric wheel therefore forces the piston to perform suction and compression stroke. Piston outlets and safety valves parallel each other and maximum working pressure is controlled by safety valves (30Mpa after production).
In SLR system, grease lubrication in every outlet can be distributed to different lubricating points according to a certain proportion by controller (CU); In PRG system, grease lubrication can be transported to different points timely and quantitatively under the supervisor of program controller with independent lubricating system which are composed of outlets consisting of distributors.

Installation

Position of Mounting Holes

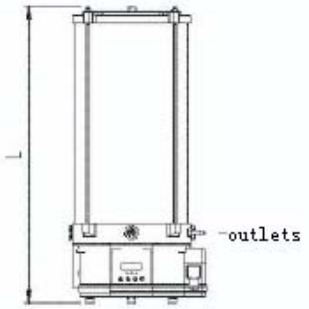


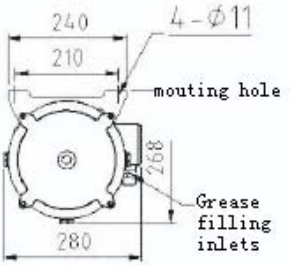
Fixing of FS Pump: It's fixed on the master equipment with four M10

Notes:

The pumping unit should be installed and mounted at appropriate location which is free from outside disturbance or damage. See the drawing on the right and make the mounting holes on the pumping unit. Mounting surface should be even and mounting connection should be reliable.Furthermore, make sure the operational space is wide enough so that inspection of lubricating system,

Dimensional Drawing





+ follower

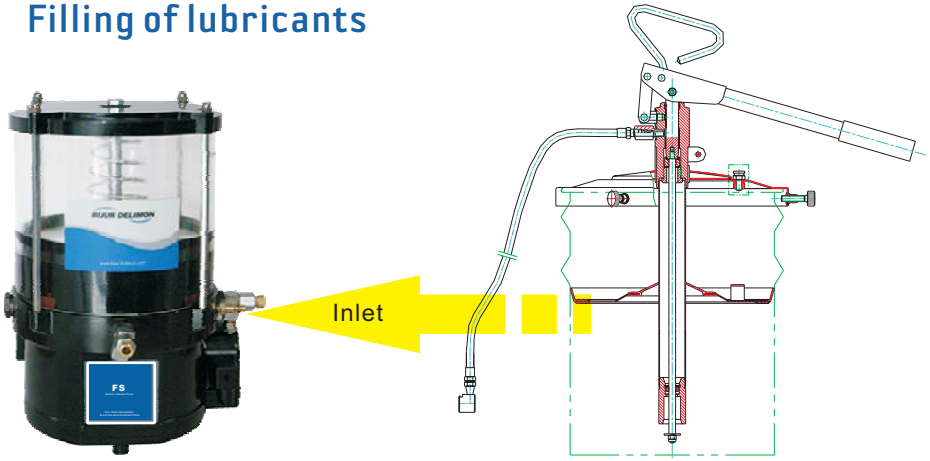
Grease tank capacity	4L	6L	8L	10L
L (mm)	386	489	542	601

+Stir plate

Grease tank capacity	4L	6L	8L	10L
L(mm)	386	386	489	542

Inspection before starting up pump
Fill the pump via grease fill fitting, make sure to use clean lubricant grease within specific viscosity. (Suited filling equipment is available as optional product)
Connect power cables and alarm signal wires according to specified requirements. Please be noted that power voltage must comply to the rated voltage of electric motor. pay attention to the positive and negative poles of power supply.
Check if there is any leakage on the joints between lubricating pump and system.
Power supply must be connected to pump properly and securely as required.
Check if there is any leakage on all the connectors and their joints. Make sure all connections are reliable and securely.

Filling of lubricants



Fill the lubricating pump body with grease by using electric motor driven grease filling pump or air driven pump.

Any question on filling grease, please contact us.

Level confirmation

Visual observation inspection:

Available for transparent tank, periodical inspection is required for safety purpose.

Note:

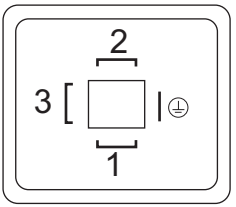
When the level line is lower than "min"(minimum), the grease should be fed to the tank without delay, otherwise, air will get into the system which shall result in system failure.

Automatic inspection:

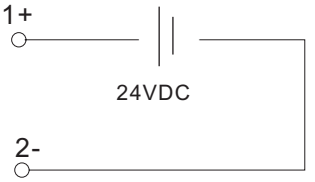
FS lubricator can be equipped with automatic oil level switch for inspection, if oil level is lower than minimum, the lubricator shall stopworking automatically to protect the system.

Schematic diagram for electrical connection

+ Without level signal output

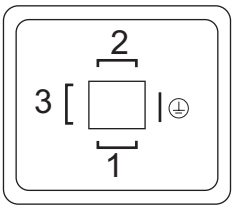


Power input connector

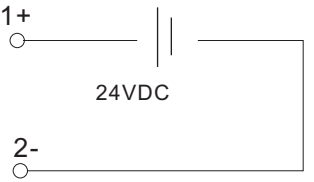


1-brown 2-bule

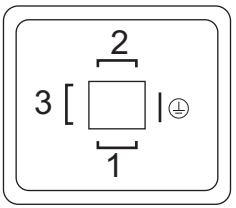
+ With level signal output



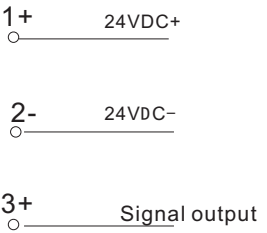
Power input connector



1-brown 2-bule



Signal output connector



1-brown 2-bule 3-black

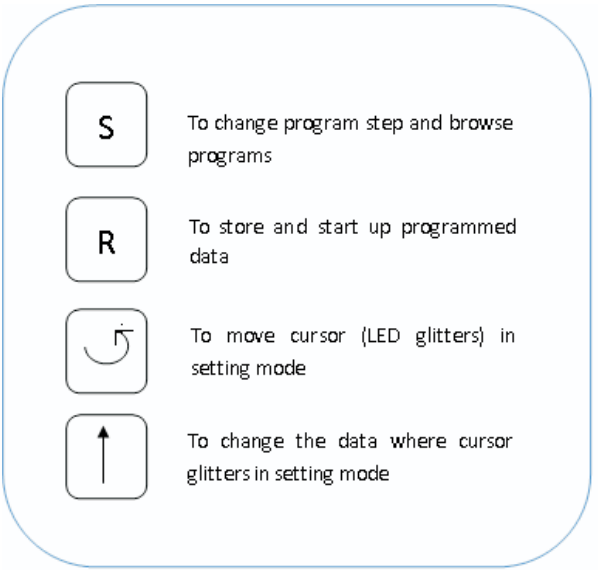
Operation of program-controller

Panel

There's a four digits LED display in display window to show status of system running and programming. Meanings of the other three LED indicators are given bellow:

- Green LED for power supply
- Red LED for pump operation
- Yellow LED for low oil level alarm

Function of pushbuttons:



Operation instructions

+Electricity

After electricity turn-on, Data works and displays before controller power-off continuously. If reset, do as follows:

+Parameter setting

1)Press "S" key and "R" key at the same time to go into Setting mode. In this mode, one cursor glitters.

2)Press button and button to change parameters according to function prompt of left unit of setting items in flow chart.

3)Press “S” button to enter the next setting when completion.

(Methods of parameter change are the same as above.)

+ Run and Pause

Press “R” button to save parameters and run pump when all the data has been set. Whenever controller is under any working condition, press “R” button to reset according to saved parameters. For instance, when pre-filling grease, press “S” and ”R” button at the same time to stop the running pump.

+ Program Browse

Press “S” button to browse saved parameters without affecting current status whenever controller is under any condition. Pressthe button again for a while to stop and back automatically.

+ Alarm

Internal fault relay runs and output stops when controller is under any type of alarm status.

Control modes

User should select corresponding control mode according to configuration of lubricating system.No other control modes can be selected only if the operator is very familiar with the working processes of total lubrication system orthe operation is performed under instructions of professional technicians.

+ Time mode (d=1)

This mode is mainly used for SLR system and PRG system.Lubrication system runs in cycles according to grease supply time and intervals preset by the controller.

+ Pressure Mode (d=2)

This mode is mainly used for PDI system.The grease supply process of lubrication system is controlled by the pressure switch mounted on the lubricating pump or lubricating system. The process from lubricating pump starting up to system pressure reaching rated value must be finished within alarm time set by the controller, such that when pressure switch is closed, controller glitters for four times delay at current data and then forces the pump to stop, the grease supply process is finished and system moves into interval counting. Otherwise, when system has problem for grease supply due to leakage, plugging or damage to the pump, the time required by system to build up pressure could be too long and reach alarm time preset by controller, system shall output alarm signal for grease supply failure, and LED displays as "EEPP". Changing the parameters under this status is only possible by pressing "R" key first to release current alarm and going to setting mode again. Alarm time should be set according to actual conditions (such as the length of piping, delivery rate of grease) , and it's normal set from 4 to 8 seconds longer than the time required by normal action of pressure switch.

+ Counting Mode (d=3)

This mode is mainly used for PDI system.

The grease supply process of lubrication system is controlled by the cycle switch

mounted on the grease distributor. After starting up, if the system is under good condition, the outlets of distributors supply grease. When a grease supply cycle is completed, the cycle switch sends signals and controller counts. When the number of grease supply cycles satisfies the setting value of controllers, controller output stops and starts up interval time timing. when system has fault for grease supply due to leakage, plugging or damage to the pump, the action time required by cycle switch could be too long to reach alarm time preset by controller(5 min, unchanged), system shall output alarm signal for grease supply failure and LED shall glitter at current value.

+Pulse Mode (d=4)

This mode is mainly used for PULES system.

This mode controls the grease lubricating pump operate as pulse mode (discontinuous) such as Pneumatic and Electromagnetic piston grease lubricating pumps, which control Pneumatic Electromagnetic valve or drive on off of Electromagnetic power(open and close time of pulse) to realize piston movements in pumps and complete grease supply process.

Maintenance

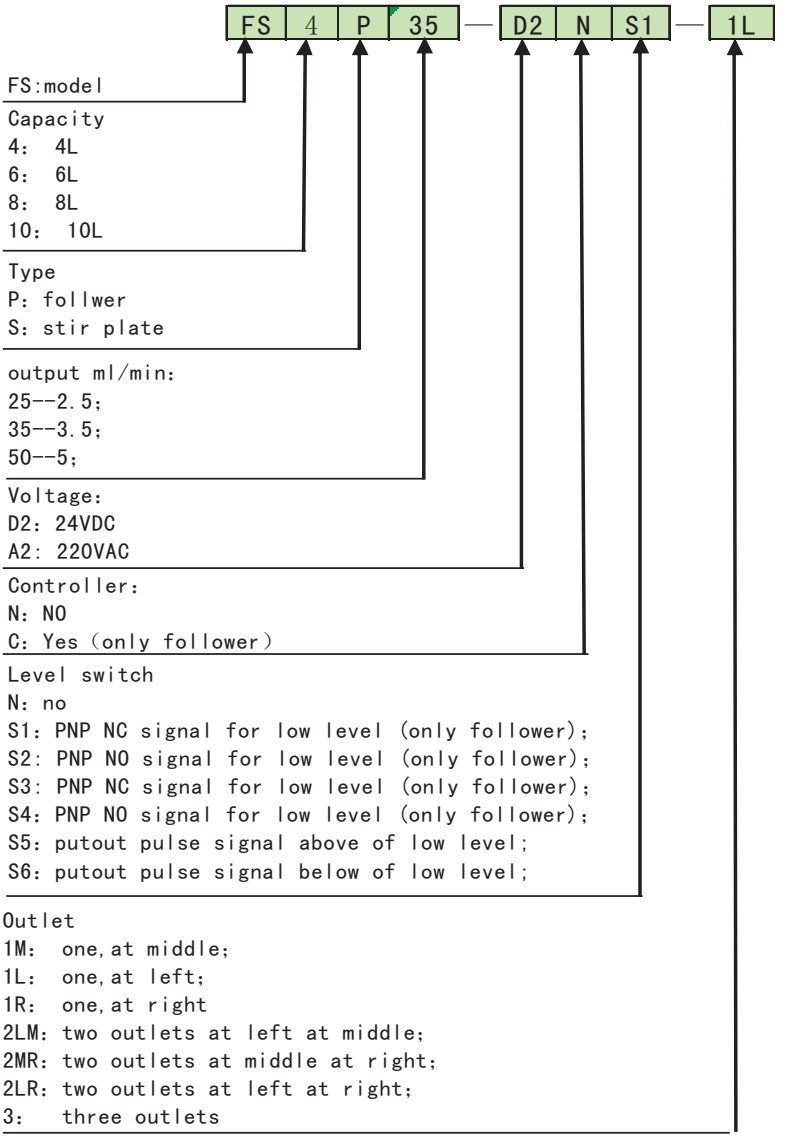
+The pipeline should be clean when connect.
+Should use clean grease.
+In order to prevent air enter, special filling tool should be used when fill grease.
+The adhesive tape and floss can be used in screw connection.
+Should check the system periodical.
+In order to lubricator has a long work time, the lubricator continuous work time should be short than 5 minutes and the rest time should long than 2 minutes.

Note:
NANJING BIJUR shall not be responsible for any damaged products resulting in improper operations. Any question during system operation, please contact us.

Troubleshooting

Symptom	Possible cause	Remedy
No grease delivery at outlets	Motor does not rotate	Check power supply or motor
	Air exists on the bottom of the reservoir	Care should be take to prevent air going to reservoir during filling operation
Pressure fail to build	Leakage at piping connection	Check and remove leakage problems
	Pumping elements are damaged	Contact us
	Electromagnetic valve core does not close	Check coils or windings
Electrical motor stop pump fail to upload	Electromagnetic valve core deadlocks	Clean valve core

Ordering code



List of spare parts

+follower and Stir plate

Item	Part P.N.	Description	QTY.
1	53799-5	Piston	3
2	22178-6	Sealing	1
3	25589-55	Washer	6
4	25589-7	Washer	3
5	22100-166	O ring	1
6	49653-8	Switch	1
7	22474	Safe valve	1
8	22450-1	Motor (24VDC)	1
9	30136-2	Filling adapter	1
10	50122-1	Connector plug assy.	1
11	47246-1	Flange washer	1

Notes:

To avoid possible mistake or misunderstanding, please give us the correct product information as described in the above in the ordering sheet when ordering.

NOTES