

# SLS PUMP INSTRUCTIONS

The SLS Lubrication system pump is designed to generate fluid flow in a positive displacement lubrication system, delivering lubricant against back pressure at a consistent and reliable rate. The pump receives fluid from a supply and delivers fluid to one or many delivery points.

The pump rocker arm is driven by a cam in a lubricator drive box, which houses the pump. Rate of lubricant delivery is controlled by the speed of the camshaft and the stroke length of the pump piston. The pump is internally lubricated by the fluid being delivered and externally lubricated by lubricant in the drive box.

## Specifications

**Part numbers:** Vacuum Supply: SLS-P-V-1, SLS-P-V-2, SLS-P-V-3, SLS-P-76V-1, SLS-P-76V-2, SLS-P-76V-3, SLS-P-V-2B  
Pressurized Supply: SLS-P-P-1, SLS-P-P-2, SLS-P-P-3, SLS-P-76P-1, SLS-P-76P-2, SLS-P-76P-3

**Pressure ratings:** -1 models: 10000 psi (68.9 MPa, 689 bar)  
-2 models: 8000 psi (55.1 MPa, 551 bar)  
-3 models: 3500 psi (24.1 MPa, 241 bar)

**Maximum speed:** 60 Strokes / minute

**Environmental:** -15°F – 158°F (-26°C - 70°C)

**Connections:** Vacuum supply: 1/8" NPT outlet  
Pressurized supply: 1/4" NPT inlet  
1/8" NPT outlet

**Wetted Materials:** Carbon Steel, Stainless Steel, Fluoropolymer Elastomers, Aluminum (Vacuum supply models), Borosilicate Glass (Vacuum supply models)

**Product Classification:**   c IIC T5 Gb

### For technical support, contact:

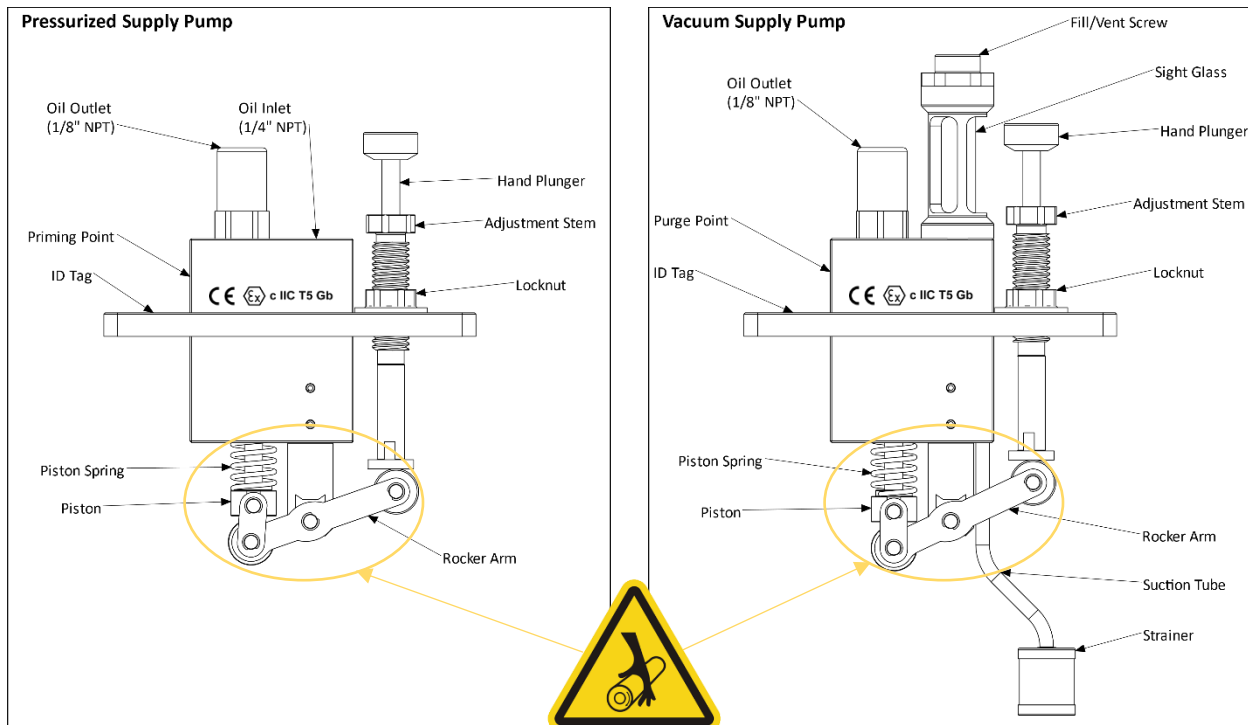
Sloan Lubrication Systems  
168 Armstrong Drive  
Freeport, PA 16229  
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**Use this product only for its intended purpose. Improper use or failure to follow these instructions may compromise protection provided by this equipment.**



# SLS PUMP INSTRUCTIONS




## Identification



## Warnings

	<p><b>Skin injection hazard</b></p> <p>Occurs when fluid under pressure is lost through a small pin hole on the fluid transfer device or surrounding tubing. The force causes the fluid to penetrate rapidly beneath the skin entering the tendons and deep tissue of the hand or body. The injection may be a small painless pin hole or there may only be a stinging sensation, however fluid injected directly into the blood vessels can spread rapidly through the circulatory system. <b>Seek medical attention IMMEDIATELY.</b></p> <p>Risk mitigation measures:</p> <ul style="list-style-type: none"><li>• Do not attempt to identify the source of a leak with your hands</li><li>• Always point the dispensing device away from the body or anyone nearby.</li><li>• Do not attempt to stop or deflect a leak with any part of the body, even while using gloves, tools, or rags.</li><li>• Ensure all fluid connections are secure before operating the equipment</li><li>• Do not use components that appear to be incorrect, damaged, worn, or rusted.</li><li>• Follow the <b>Pressure Relief Instructions</b> prior to servicing or cleaning equipment.</li></ul>
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# SLS PUMP INSTRUCTIONS

	<p><b>Fire and Explosion Hazard</b></p> <p>An explosive atmosphere is a mixture of a dangerous substance or substances (gas, mist, dust or vapor) with the air, which has the potential to catch fire or explode. When not properly controlled, these substances can cause harm as a result of a fire, explosion, or similar incident.</p> <p>Risk mitigation measures:</p> <ul style="list-style-type: none"><li>• Avoid potential ignition sources of the dangerous substances such as cigarettes, open containers of solvents, solvent soaked rags, electrical heaters.</li><li>• Avoid or minimize release of dangerous substances</li><li>• Control releases of dangerous substances at source</li><li>• Avoid adverse conditions (such as exceeding pressure/temperature limits) that could lead to danger</li><li>• Ground all equipment in the work area. <b>If static electricity is identified, immediately turn off equipment and verify grounding by using a digital volt meter.</b></li><li>• Ensure surfaces of all equipment are kept clean of excess fluid or dirt</li></ul>
	<p><b>Protective Equipment</b></p> <p>The hazards addressed by protective equipment are physical, chemical, and airborne particulate matter. Wearing the appropriate personal protective equipment (PPE) in the work area will help prevent eye injury, hearing loss, and inhalation of airborne particulate matter. Personal Protective Equipment includes but not limited to:</p> <ul style="list-style-type: none"><li>• Protective eyewear and hearing protection while servicing, inspecting, or cleaning equipment.</li><li>• Respirators, gloves, and protective clothing when working directly with fluids and solvents.</li></ul>
	<p><b>Moving Parts Hazard</b></p> <p>Reciprocating, rotating, and transverse moving parts can pinch, cut, trap fingers and other body parts.</p> <ul style="list-style-type: none"><li>• Stay clear of moving parts. Refer to Identification photos for potential pinch points.</li><li>• Do not operate equipment with covers, protective guards, shrouds removed.</li><li>• Always disconnect all power sources and to follow the <b>Pressure Relief</b> protocol before servicing, inspecting, and cleaning moving parts.</li></ul>

# SLS PUMP INSTRUCTIONS

## Pressure Relief

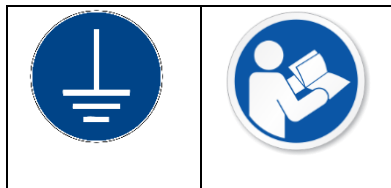


Pumps may remain pressurized after operation. Before performing maintenance or removing pumps from their drive boxes, pressure must be relieved from the system to prevent injury due to skin injection, unexpected contact with fluids, or moving parts.

Follow these steps to relieve pressure from a pump.

1. Ensure that pump is stopped & cam shaft is not moving.
2. Turn off oil supply source or ensure there is no supply pressure.
3. If system is equipped with a downstream bleed valve, open it and check system pressure gauge to ensure that pressure has bled off.
4. If there is no downstream bleed valve, slowly open the tube fitting on the pump outlet.
5. Disconnect pump supply and outlet fittings. With no fittings connected, the pump will not contain any additional internal pressure.

## Installation



**CAUTION:** Prior to installation, setup, or use, these instructions should be thoroughly reviewed and understood by both maintenance technicians and operators.

### Overview

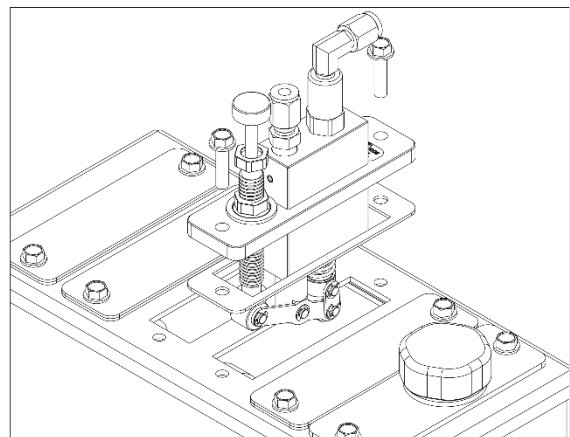
The pump is designed to be mounted only in a compatible lubricator drive box. Do not attempt to force the pump to fit in an application for which it was not designed. Do not attempt to generate more pressure with a pump than its rating.



**NOTE:** Always ensure that a pressure relief device is installed downstream of the pump to prevent accumulation of excess pressure.



**NOTE:** The pump must be installed in a location that is readily accessible to personnel during normal operation.



# SLS PUMP INSTRUCTIONS

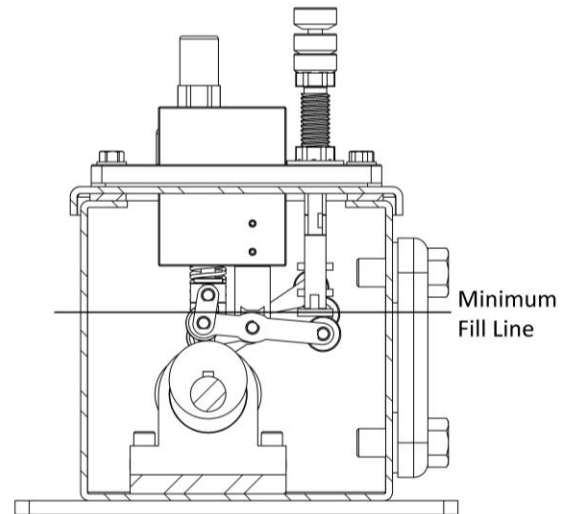
## *Instructions*

Before installing the pump, make sure that the lubricator box is in good condition, free of debris, and that the lubricator box oil level is at least 1/2" above the top of the cams. If there is visible rust in the box or significant debris, the box may need to be repaired or replaced.

Check pump for proper mechanical operation by actuating the hand plunger several times and verify that the pump is moving oil.

If the pump does not move fluid, priming is necessary. See "Priming" section below for priming instructions.

Use the new mounting bolts and gasket supplied with the SLS pump. First, insert the pump in the open pump slot and hold it down by hand to insure there are no clearance issues with any components inside the box. Pushing down the plunger stem may be helpful. Position the gasket and pump so that the bolt holes are aligned and tighten the bolts to 48 in-lb.



**CAUTION:** Not applying the specified torque may increase the risk of static sparking. Proper torque on the bolts creates a ground between the pump and the lubricator box

Ensure that the adjustment stem is facing the front of the lubricator box (as shown in the installation diagram) so that the pump roller engages the cam properly. Failure to do so may result in damage to the pump. Make necessary fluid connections to lubricant supply and discharge.

## **Priming**



Upon installation of a pump, most will prime themselves and immediately begin delivering fluid. However occasionally if there is a lack of lubricant available at the pump inlet or the check valves are not wet with fluid, the pump may need some assistance with priming to ensure that all the air is out of the internal passageways.

*Method 1:* Open the priming port bleed screw (see illustration on page 2) by using a 3/32" Allen wrench to turn the set screw counterclockwise two rotations. Do not fully remove the set screw. Then, operate the hand plunger several times until clear, air-free oil is flowing from the priming port. Tighten the set screw and again check for proper oil flow.

*Method 2:* Connect a hand or air operated purge gun to the oil supply port (see illustration on page 2) or an upstream purge port (if system is equipped) and pump oil through the SLS pump until clear, air-free oil flows from the outlet port.

# SLS PUMP INSTRUCTIONS

## Flow Rate Adjustment

While in service, regular inspection of the lubrication rate is recommended. As conditions, such as lubricant viscosity, environmental temperature, and pump age change the flow rate of the fluid being pumped may change as well. Continuous monitoring of flow rate with a metering device and monitor is highly recommended.

### *Pressurized pump models*

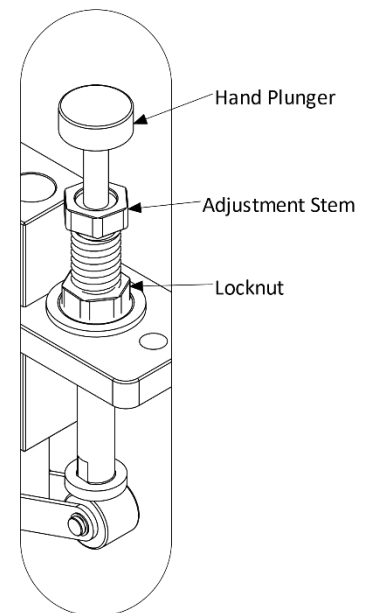
Typical lubrication systems contain a divider block or other metering device. Use that metering device to measure the flow rate of the pump at regular intervals. If the flow rate is lower or higher than desired, adjust the stroke length of the pump using the adjustment stem. See the adjustment instructions below.

### *Vacuum pump models*

Pump-to-point lubrication systems employ one pump for each lubrication point. Each pump is supplied from the lubricator drive box by sucking the lubricant through the suction tube and employs a sight glass in which drops of lubricant can be counted. The desired rate should be checked regularly. If the flow rate needs to be adjusted, follow the adjustment instructions below.

### *Adjustment instructions*

The pump flow rate is changed by adjusting the stroke length of the pump piston. The adjustment stem prevents the rocker arm from fully returning to the cam, resulting in a shortened stroke. To adjust the pump, loosen the lock nut as shown to the right. Then using a 5/8" wrench, screw the adjustment stem into or out of the pump flange. To increase flow, turn the adjustment stem counterclockwise. To decrease flow, turn the adjustment stem clockwise. Once the desired lubrication rate is achieved, re-tighten the lock nut to set that rate in place. It is recommended that flow rate adjustments are made while the pump is running in order to get instant feedback on the change.



# SLS PUMP INSTRUCTIONS

## Operation



Once the pump is installed, purged, and the flow rate is adjusted, there is little to do during normal operation. Regular flow rate checks should be performed to ensure that lubricant delivery rate is being maintained. See Adjustment Instructions on page 5.

During operation, the pump is expected to reliably deliver fluid at the following rates

Piston diameter	Cam shaft speed (RPM)	Minimum Flow rate (Pints / Day)	Maximum Flow rate (Pints / Day)
3/16"	10	1.0	5.5
	30	3.0	16.5
	60	6.0	33
1/4"	10	1.8	9.8
	30	5.4	29.4
	60	10.8	58.8
3/8"	10	4.1	22
	30	12.3	66
	60	24.6	132

\*1 Pint / day is approximately 10 drops / minute depending on fluid viscosity, temperature, etc.

## Maintenance



Annual inspection (or 8,000 operating hours)

- Remove pump from service. Lock and tag out driving equipment as appropriate to prevent injury.
- Depressurize system per pressure relief procedure on page 4
- Disconnect fluid connections.
- Remove the pump from the lubricator drive box.
- Clean pump & Inspect wear surfaces, rocker arm pins, cam follower, piston, and piston spring for wear or breakage.
- Reinstall per installation instructions on page 4.

# SLS PUMP INSTRUCTIONS

## Troubleshooting



**NOTE:** There are no user serviceable components inside the pump. Do not attempt to disassemble pump to repair or recondition it. Disassembly or modification so may result in unexpected failure of the pump.

Symptom	Possible Cause	Action
Pump is not delivering fluid	Pump is improperly installed.	Check pump installation, reinstall pump.
	Pump is shut off.	Adjust pump stroke with adjustment stem
	Pump has no fluid supply.	Ensure suitable supply of fluid to pump.
	Check valves are fouled or damaged.	Purge pump / flush with clean fluid. Ensure pump is supplied with clean oil during operation. If no resolution, replace pump.
	Pump has lost prime.	Re-prime pump / ensure supply of air-free fluid to prevent.
Pump flow rate is low	Pump is improperly installed.	Check pump installation, reinstall pump.
	Pump is adjusted to a short stroke.	Adjust pump stroke to desired flow rate with adjustment stem. If pump is fully stroking, choose next piston size or check for inlet flow restrictions.
	Pump has insufficient fluid supply.	Ensure suitable supply of fluid to pump.
Pump flow rate is high	Pump is adjusted to a long stroke.	Adjust pump stroke to desired flow rate with adjustment stem.
Sight glass fills with fluid*	Sight glass overfilled during maintenance.	Loosen vent screw and let fluid level drop.
	Check valves are fouled or damaged.	Purge pump / flush with clean fluid. Ensure pump is supplied with clean oil during operation. If no resolution, replace pump.
Sight glass drains of fluid*	Reservoir has run out of fluid.	Re-fill sight glass through vent screw, Ensure consistent supply of fluid.

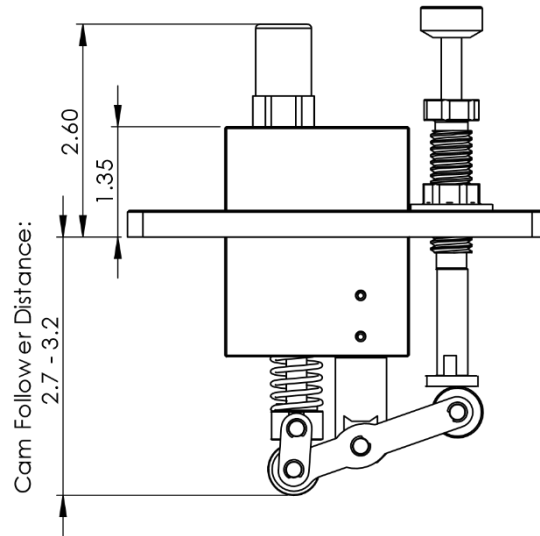
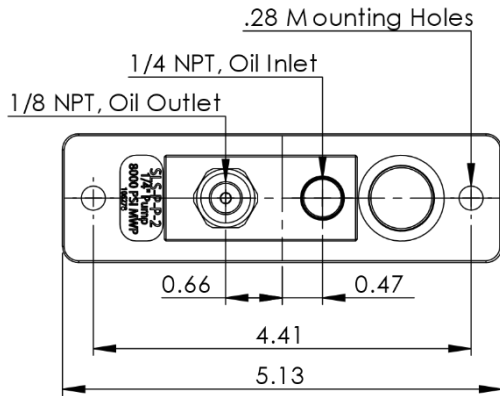
\*Vacuum supply models



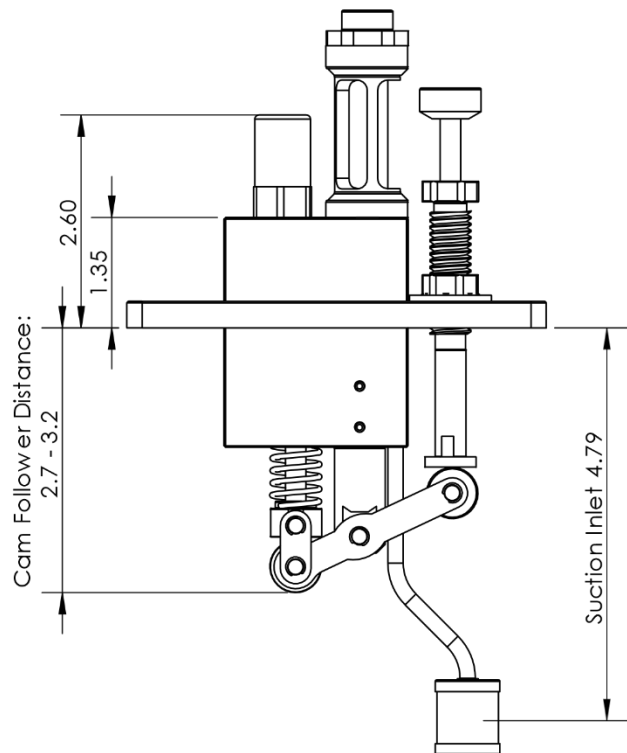
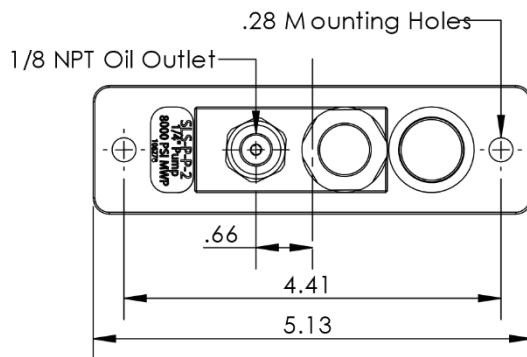
# SLS PUMP INSTRUCTIONS

## Dimensions

### Pressurized "P"



### Vacuum "V"



## Cleaning & long term care

When possible, take care to keep the pump out of weather, direct UV exposure, and excessive dust & dirt. Ensure that fluid being pumped is clean.

# SLS PUMP INSTRUCTIONS

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## Revision History

Rev. #	Date	Description of Revision	Approval(s)
0	02/21/17	Initial Release	Ryan LeFevre, Mike Bechtold, C.J. Sloan

# SLS PUMP INSTRUCTIONS

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# EU DECLARATION OF CONFORMITY

QAF-25  
REV 0

Object of the Declaration:

<b>Products:</b>	<i>SLS Pumps</i>
<b>Models:</b>	<i>SLS-P-V-1, SLS-P-V-2, SLS-P-V-3, SLS-P-76V-1, SLS-P-76V-2, SLS-P-76V-3, SLS-P-V-2B, SLS-P-P-1, SLS-P-P-2, SLS-P-P-3, SLS-P-76P-1, SLS-P-76P-2, SLS-P-76P-3</i>
<b>Manufacturer:</b>	<i>Sloan Lubrication Systems</i>
<b>Address:</b>	<i>168 Armstrong Dr., Freeport, PA 16229</i>

*This declaration of conformity is issued under the sole responsibility of the manufacturer.*

The object of the declaration described above is in conformity with the relevant Union harmonization legislation:

<b>2014/34/EU</b>	ATEX Directive
<b>2006/42/EC</b>	Machinery Directive

Conformity is declared through compliance to the relevant harmonized standards:

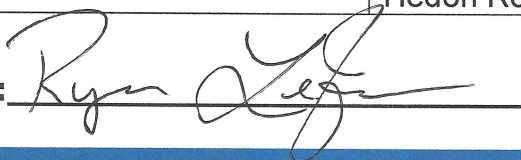
<b>ISO 80079-36:2016</b>	Explosive atmospheres-Part 36: Non-electrical equipment for explosive atmospheres-Basic method and requirements
<b>ISO 80079-37:2016</b>	Explosive atmospheres-Part 37: Non-electrical equipment for explosive atmospheres-Non electrical types of protection constructional safety "c", control of ignition source "b", liquid immersion "k" Basic method and requirements
<b>EN 1127-1:2014</b>	Explosive atmospheres-Explosion prevention and protection
<b>ISO/IEC 17050-1:2004</b>	Suppliers declaration of conformity

Product conformance is declared through the relevant standard:

<b>ISO 9001:2008</b>	Quality Management System
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Signed for and on behalf of:

<i>Sloan Lubrication Systems</i>	
<b>Place of issue</b>	Freeport, PA
<b>Date of issue</b>	12/5/16
<b>Place of Technical File Storage</b>	Element Material Technology, Unit E South Orbital Trading Park Hedon Road, Hull, HU9 1NJ, United Kingdom

**SIGNED:** 

**TITLE:** Quality Manager

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# SLOAN

THE LAST NAME IN LUBRICATION SYSTEMS