

MICROLMS, Installation, Pressure Sensors

About

This document describes the installation procedure for the pressure sensors for the main lift cylinder.

Further Information

Please visit <http://www.sil3.com.au/microlms/> for more information regarding this product.

Sensor Colours

Each hydraulic sensor has a specific colour that corresponds with a location in the machines hydraulic system. Different machines will have combinations of different sensors. The table below details the sensor colours:

Colour	Location
Green	Main lifting cylinder, head end.
Yellow	Main lifting cylinder, rod end
Blue	Secondary main lifting cylinder, head end.
Orange	Secondary main lifting cylinder, rod end.
Red	Tilt compensation cylinder, head end.
White	Tilt compensation cylinder, rod end.

Sensor Calibration


Each hydraulic sensor is calibrated at the factory. If you have purchased a new microLMS kit, then the sensors calibration constants are pre-programmed into the ECU.


If you need to change a pressure sensor, you will need to change the calibration constants within the ECU by using the microLMS display module.


Refer to the microLMS maintenance manual P/N: ULMS-LDOC070.


Cautions and Warnings


All cautions and warnings must be observed.


	CAUTION
	<p>The outer body of the pressure sensor is a thin wall stainless steel tube. It will break if subjected to excessive force</p> <p>The latest revision of pressure sensor uses a 24MM fitting. The correct spanner should be used. It is recommended that an open ended spanner is not used.</p> <p>Pressure sensors are very delicate and highly precise instruments. They must be treated with care during handling and installation.</p>


	CAUTION
	<p>If a pressure sensor is dropped or subjected to high G-shock forces, it must not be installed and must be replaced.</p>

	WARNING
	<p>The boom of the machine must be supported during the installation of a pressure sensor. After the sensor is installed, the system must be load tested by a qualified person.</p>

	WARNING
	<p>Failure of any load holding device could result in uncontrolled boom movements. Never work under an unsupported boom.</p>

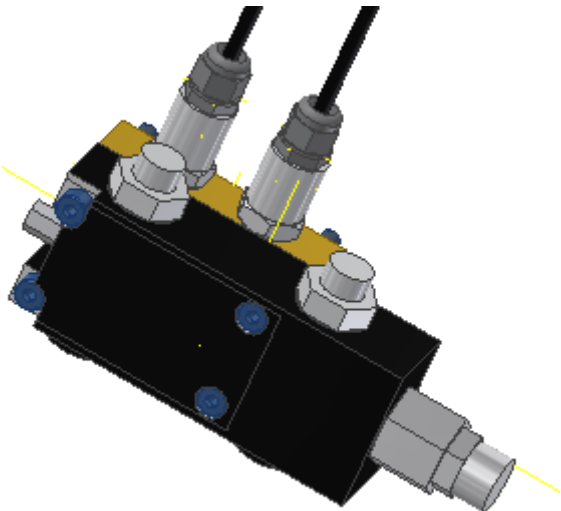
	WARNING
	<p>The minimum bend radius of a pressure sensor cable is 25mm. Any cables bent at near right-angles will damage the sensor and will void the warranty.</p> <p>The wire connecting the pressure sensor to the electronics module is delicate. Do not excessively twist or bend this wire during installation.</p>

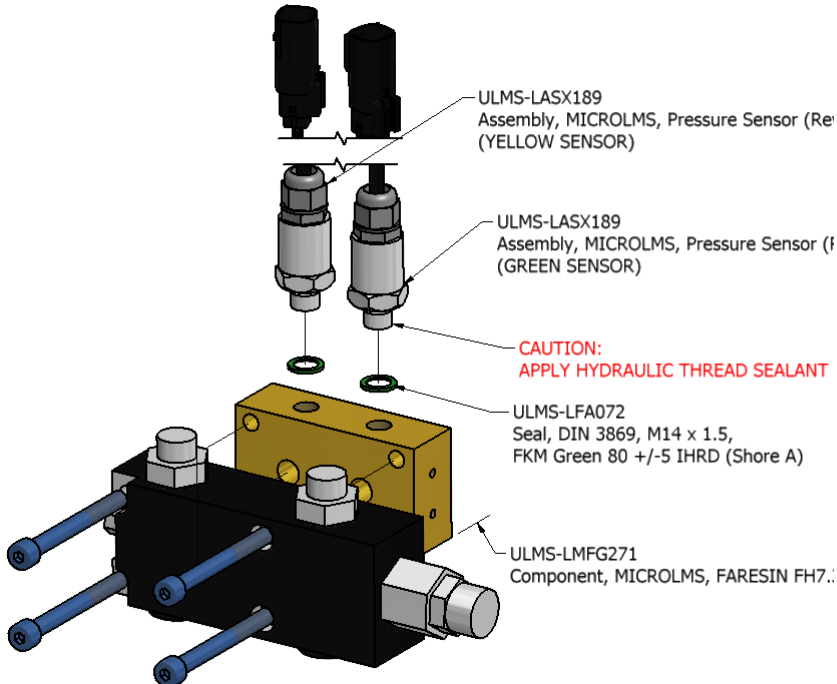
	WARNING
	<p>Always ensure that the O-ring in the end of the pressure sensor is in place and in good condition prior to installation</p> <p>The pressure sensor is sealed by use of a DIN O-ring, a gas specification thread and the additional use of hydraulic thread sealant.</p>

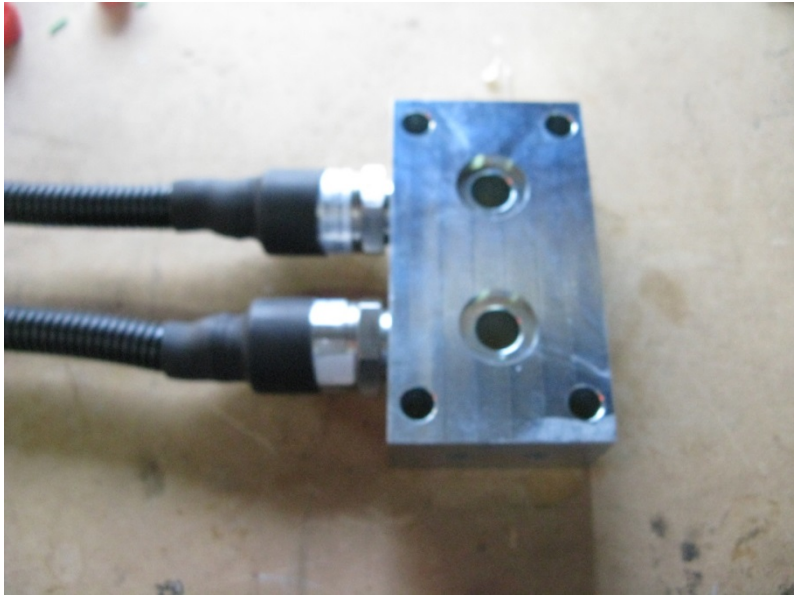
	WARNING
	<p>Always use hydraulic thread sealant when installing a pressure sensor.</p> <p>Never use Teflon based sealants; they are not rated to the pressures inside the hydraulic systems.</p>

Lift Cylinder Sensors

Preparation


Step	Details
1	Identify the correct orientation of the manifold as it would be installed in the machine. The grooved O-ring surfaces mount against the lift cylinder surface.
2	<p>Identify the correct direction for the pressure sensors to be installed. The sensors will typically be mounted vertically (facing the sky). See the image below:</p> 

<p>3</p>	<p>Install the pressure sensors into the sensor manifold. (Refer to document LASX197-00.)</p> 
<p>4</p>	<p>The Green Sensor is to be located in the head end of the lift cylinder valve.</p>
<p>5</p>	<p>The Yellow Sensor is to be located in the rod end of the lift cylinder valve.</p>
<p>6</p>	<p>Check for the correct installation of the DIN O-Rings on the pressure sensor bodies.</p>

	 A photograph showing a rectangular metal hydraulic manifold with two pressure sensors attached. The manifold has two circular ports on its front face. Two black hoses with metal fittings are connected to the sensors. The manifold is mounted on a light-colored surface.
7	<p>ALWAYS use HYDRAULIC THREAD SEALANT on the pressure sensor threads. NEVER use Teflon based products.</p> <p>Tighten each sensor.</p>

Installation

The following procedure is used to install the sensors:

Step	Details
1	Setup the machine so it can be worked on safely. Install a boom prop, install wheel chocks and ensure that all personal and environmental safety measures have been accounted for.
2	ENSURE THE BOOM IS SUPPORTED BY ANOTHER MACHINE OR OTHER SUITABLE OBJECT
3	<p>Remove the lock valve from the machine by loosening the 4x M8 Socket Head fasteners.</p> 
4	Discard the 4x M8 Socket Head fasteners as new ones are supplied with the pressure sensor manifold kit (P/N ULMS-LASX197)
5	Ensure the O-rings are replaced with new O-rings supplied with the kit.
6	<p>Install the manifold between the lock valve and the cylinder. Use the new supplied fasteners and check the orientation of the manifold. CAUTION: CHECK THE LENGTH OF THE FASTENERS</p> <p>Pressure Test the system for leaks.</p>