



TECHNICAL BULLETIN

1-800-237-0022

Stock No. L39 – HYDRAULIC PRESSURE SENSOR

Stock No. L41 – VSL HYDRAULIC PRESSURE SENSOR

CONCEPT:

The Vulcan Hydraulic Pressure Sensor is designed to provide an accurate measure of payload, by measuring the hydraulic pressure in the lift cylinders. The sensor converts pressure into a corresponding weight and can be used in conjunction with Vulcan load cells to provide complete weight information where hydraulics, shear pins, or load cells are used together.

DESCRIPTION:

The Vulcan L39 and L41 Hydraulic Pressure Sensors measure hydraulic pressure up to 3000 psi. The sensor converts hydraulic pressure into a corresponding weight for display on the Vulcan Meter. The pressure sensors are fabricated from high-strength stainless steel and contain a 9/16 –18 female (SAE: -6) pressure port. A 9/16 – 18 SAE straight thread (SAE: -6), o-ring fitting is required for the port. Each Hydraulic Pressure Sensor is equipped with the same reliable, military type, electrical connector used on all Vulcan products.

SPECIFICATIONS:

- **CAPACITY:** Designed for use in environments where pressure does not exceed 3000 psi.
- **MATERIAL:** Heat treated stainless steel sensor enclosed in a rugged corrosion resistant housing.
- **PORT SIZE:** 9/16-18 SAE straight thread, o-ring fitting (SAE: -6)
- **ACCURACY:** System accuracy typically within 1% of GVW depending on application and environmental factors.
- **OUTPUT:** 2.0 mv/V @ 3000 psi.



TECHNICAL BULLETIN

1-800-237-0022

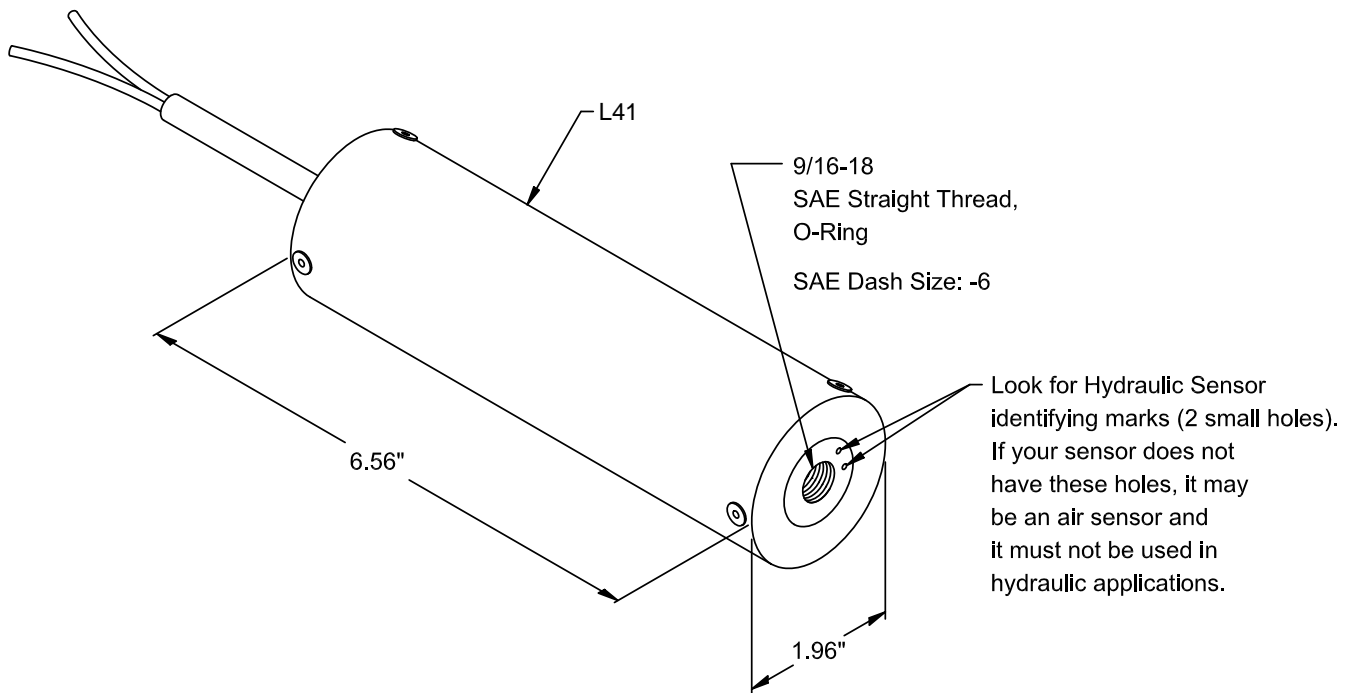
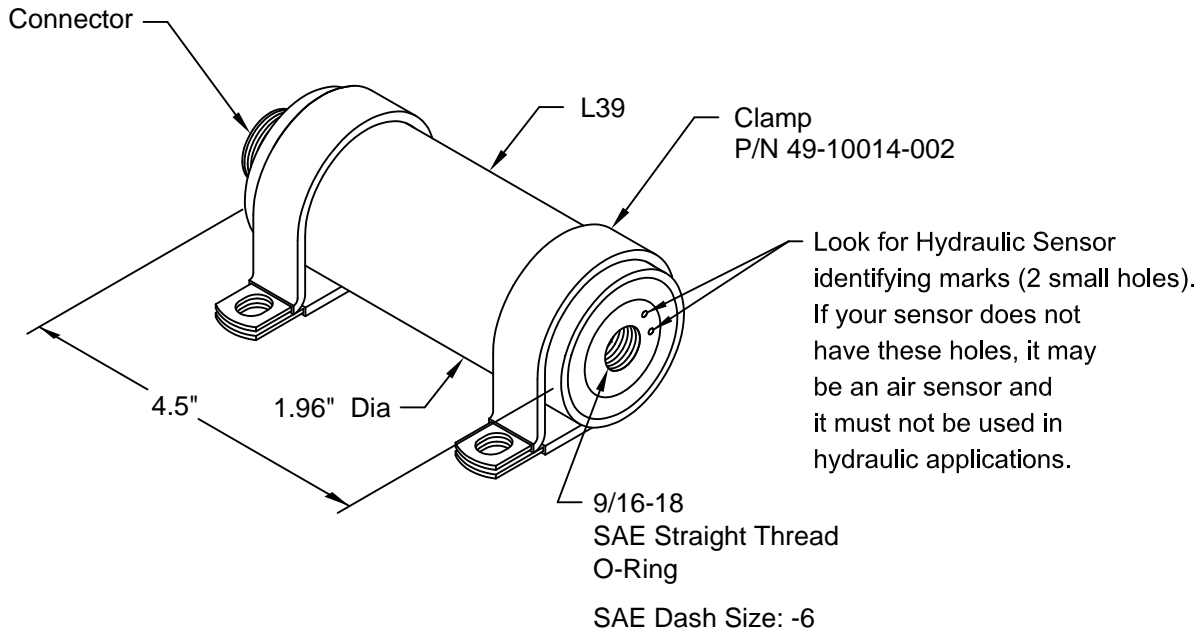


Figure 144-A



TECHNICAL BULLETIN

1-800-237-0022

INSTALLATION OF HYDRAULIC SENSOR:

USING A FLEXIBLE HOSE CONNECTION:

1. Find a suitable location to "T" into the hydraulic line between the hydraulic lift cylinder and the Spool Valve.

Note: Hydraulic Pressure Sensor must have live cylinder pressure (actual pressure inside the cylinder) at all times.

2. If using a flexible hose connection, mount the Hydraulic Sensor to the inside of the truck frame rail or to another structural member. Mounting surface must be in a protected area so the Hydraulic Sensor is not damaged by road debris.
3. Secure the Hydraulic Sensor to mounting location using the two clamps provided. Make sure each end of the sensor tube is securely fastened.
4. Connect the flexible hydraulic line to the Hydraulic Sensor and to the hydraulic lift cylinder line using appropriate fittings for the application and space constraints.
5. Ensure that all fittings, hoses, and clamps are securely fastened.
6. Pressurize the hydraulic lift cylinder and check for leaks.

INSTALLATION NOTE FOR DUAL ACTING LIFT CYLINDERS:

When taking weight readings, make sure that all pressure can be relieved on the opposing pressurized portion of the hydraulic cylinder. Weights will not be accurate if this is not done.

For example, when installing the sensor in a roll-off application, the Hydraulic Sensor is installed on the lifting (up) side of the lift cylinders. To get accurate weights, the pressure on the down side of the lift cylinders must be relieved. To relieve the pressure, disengage the PTO pump and depress the lever acting to raise the hoist.

Note: Some cylinders may have a built in check valve or built in counter balance valving in the cylinder. A weighing system using pressure as an input will not weigh properly in these types of systems unless the pressure sensor is connected such that it can monitor live cylinder pressure (actual pressure inside the cylinder) at all times. If this is the case, please consult factory for potential alternate solutions.



TECHNICAL BULLETIN

1-800-237-0022

INSTALLATION OF ELECTRONICS:

For electronic installation procedures and system operational procedures, see the "Owner's Manual" for the V320 or V600 electronics systems.

How to Find Hydraulic Sensor Calibration Numbers for Dump Trucks and Roll-offs for V320/V600 Meters:

For Dump Trucks - Cylinder is vertical in the weighing position.
(One cylinder lifting the box)

L39 / L41 VSL HYDRAULIC SENSOR: $126.73 \times (D \times D) = \text{NEW CAL\#}$

- D = Hydraulic cylinder bore diameter in inches
- X = multiplication sign

Example: Find a dump truck cal # for a bore diameter of 6"

$$\text{L39 / L41 New Cal \#} = 126.73 \times (6 \times 6) = 4562$$

Note: To get an accurate weight from the scales, the payload box must be lifted and held steady off the frame rails in the same location every weighment. This "weigh point" should be marked on the truck structure so the driver can easily lift the box to the same location for every weighment.



TECHNICAL BULLETIN

1-800-237-0022

For Roll-off Trucks - Cylinders are not vertical in the weighing position.
(Two cylinders lifting the box)

$$L39 / L41 \text{ CAL\#} = 253.5 \times (D \times D) \times \text{SIN } A$$

- D = Hydraulic cylinder bore diameter in inches
- A = Angle of cylinder from horizontal, always less than 90 degrees
- SIN = trigonometric function on your calculator
- The quantity "SIN A" is always a number between zero and one

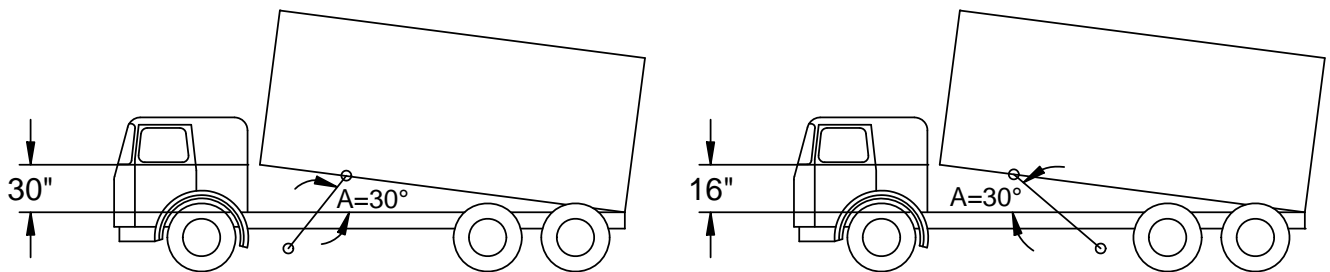


Figure 144-B

Example: Figure 144-B, find a roll-off cal # for a bore diameter of 5" and a weigh point that creates an angle of 30 degrees between the chassis frame and the hydraulic cylinder lifting the sub frame. (Calculator must have a sin function).

$$L39 / L41 \text{ New Cal \#} = 253.5 \times (5 \times 5) \times \sin 30^\circ = 3168$$



TECHNICAL BULLETIN

1-800-237-0022

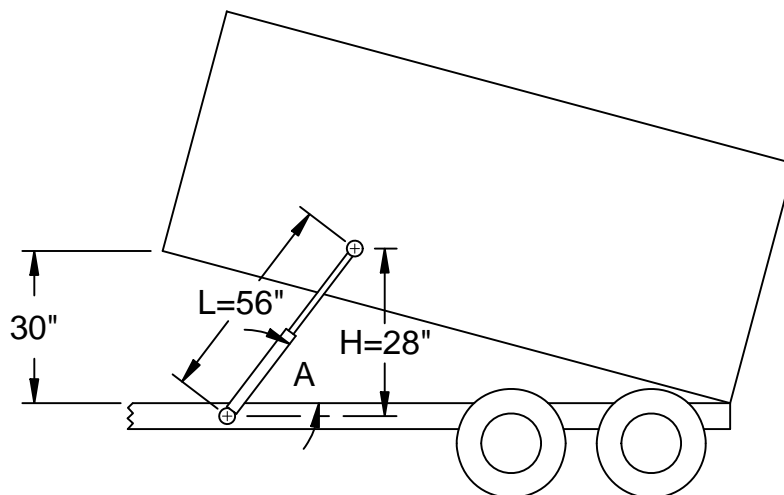


Figure 144-C

If for the previous example, you only knew the dimensions of the weigh point as $L = 56''$ and $H = 28''$ (Figure 144-C), then:

$$\mathbf{L39 / L 41 \text{ New Cal \#} = 253.5 \times (5 \times 5) \times (28 / 56) = 3168}$$

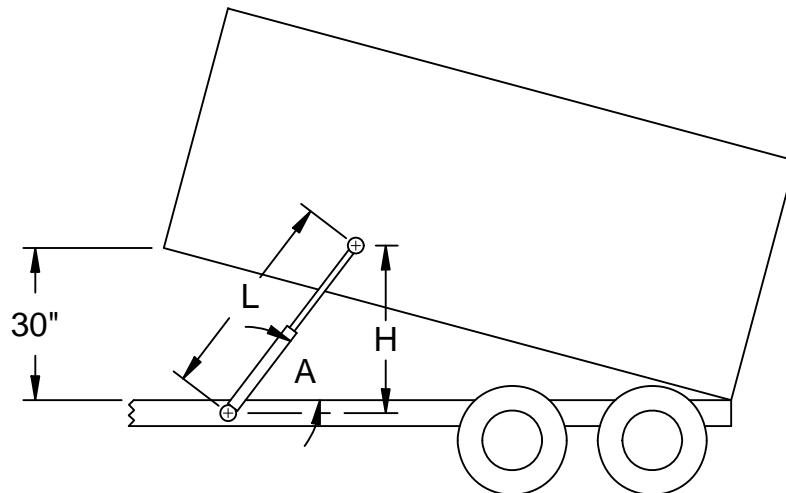
Note: To get an accurate weight from the scales, the payload box must be lifted and held steady off the frame rails in the same location every weighing. Please see the Roll-Off Driver Card for specific weighing procedure.



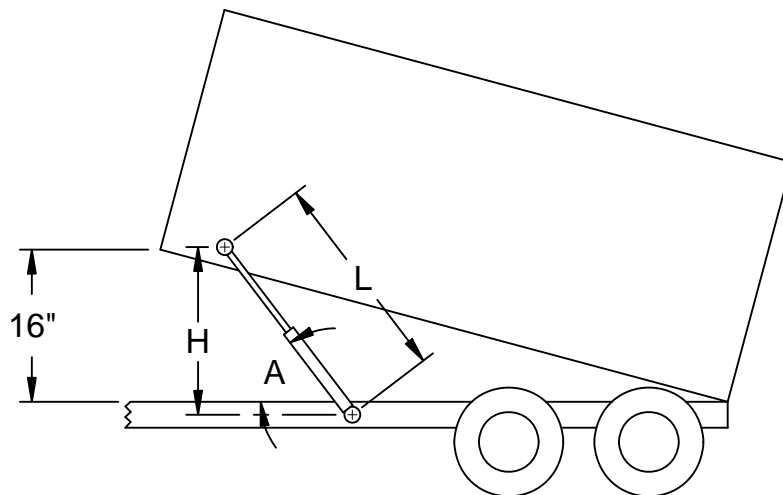
TECHNICAL BULLETIN

1-800-237-0022

How to directly measure the value "SIN A" in the field with a tape measure:



Rear Facing Hydraulic Cylinder Application – 30" Weigh Point



Forward Facing Hydraulic Cylinder Application – 16" Weigh Point

Figure 144-D

$$H / L = \text{SIN } A$$

(H divided by L = SIN A)