When Quality Counts

Lynx Delta Pressure Sensor
LS-DP-100

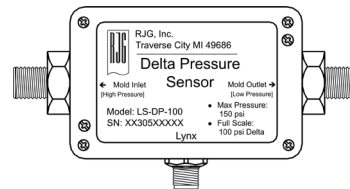Installation and Applications

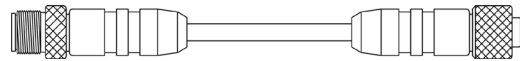RJG, Inc.
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Feb. 13, 2009

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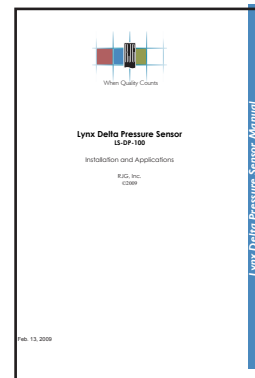# What is Included in the Lynx Delta Pressure Sensor Kit?

LS-DP-100 Delta Pressure Sensor

CE-LX5-6M Lynx Cable

LS-DP-100 Delta Pressure Sensor Manual

Lynx Delta Pressure Sensor
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Introduction

The Lynx LS-DP-100 is a machine or mold mount differential pressure sensor designed to be used with the *eDART™* System. It measures the difference in coolant pressure between the two NPT fittings. This provides information about the stability of the cooling that the mold provides to the parts (see Application Notes). **No fluid flows through the device.**
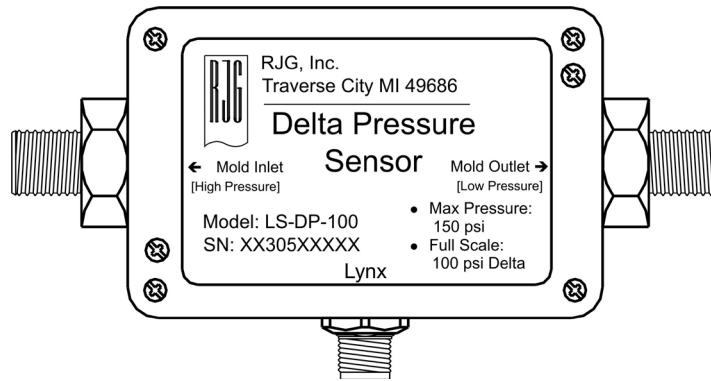
Figure 1: Lynx Delta Pressure Sensor LS-DP-100

Specifications

➢ Maximum pressure at either port: 150 psi (10.3 bar).
➢ Maximum measurable difference: 100 psi (6.88 bar).
➢ Maximum Case Temperature: 140 °F (60 °C).
➢ Maximum Coolant Temperature: 180 °F (82 °C).
➢ Accuracy: 2%
➢ Zero: 0.1 %
➢ Pressure Input Connection: 1/4-18 NPT
➢ Lynx Connector: Microstyle DC connector

Hardware Installation

Warning

Make sure Coolant System is free from pressure Before attempting installation
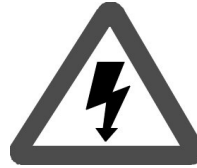
CAUTION

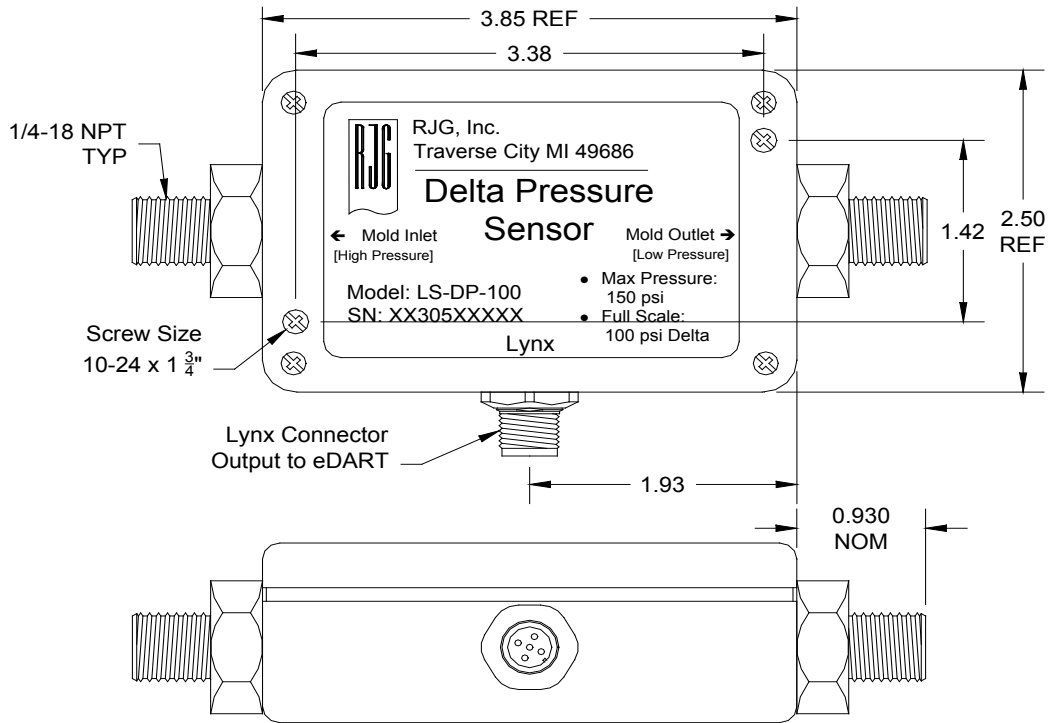*Always power down equipment before working on*

Figure 2: Mounting hole dimensions

IMPORTANT NOTES

Exceeding 150PSI (10.3 bar) may result in damage to the device!

This device is for H20 based coolants! This is not designed to measure hydraulic pressure!

Installation Checklist

☐ **Mount Delta-P Transducer**

Choose location on the machine or mold to mount the LS-DP-100 (see Figure 2 for mounting hole dimensions). Avoid mold or machine surface temperature above 140 °F (60 °C). Do not mount on the ejection plate or any other surface subject to high impact or vibration. Also avoid material feed lines or any other source of static electricity

☐ **Install T-fittings**

On the both inlet and outlet sides of the mold cooling water insert a T-fitting of sufficient size to allow the same flow through the original line (see Figure 3).

☐ **Connect T-fittings to Delta-P device**

Connect the line from the inlet T to the "+" (or "Hi") side of the delta pressure sensor and connect the "-" (or "Low") side to the line from the outlet T. This connection will normally show positive values because the pressure at the inlet is higher than the outlet. These lines must be able to handle the pressure but can be smaller since they carry no water flow, only pressure.

☐ **Connect Delta-P device to eDART**

Using Lynx cabling, connect the sensor to either of the Lynx ports on the *eDART™* or to a junction box which goes to the *eDART™*.
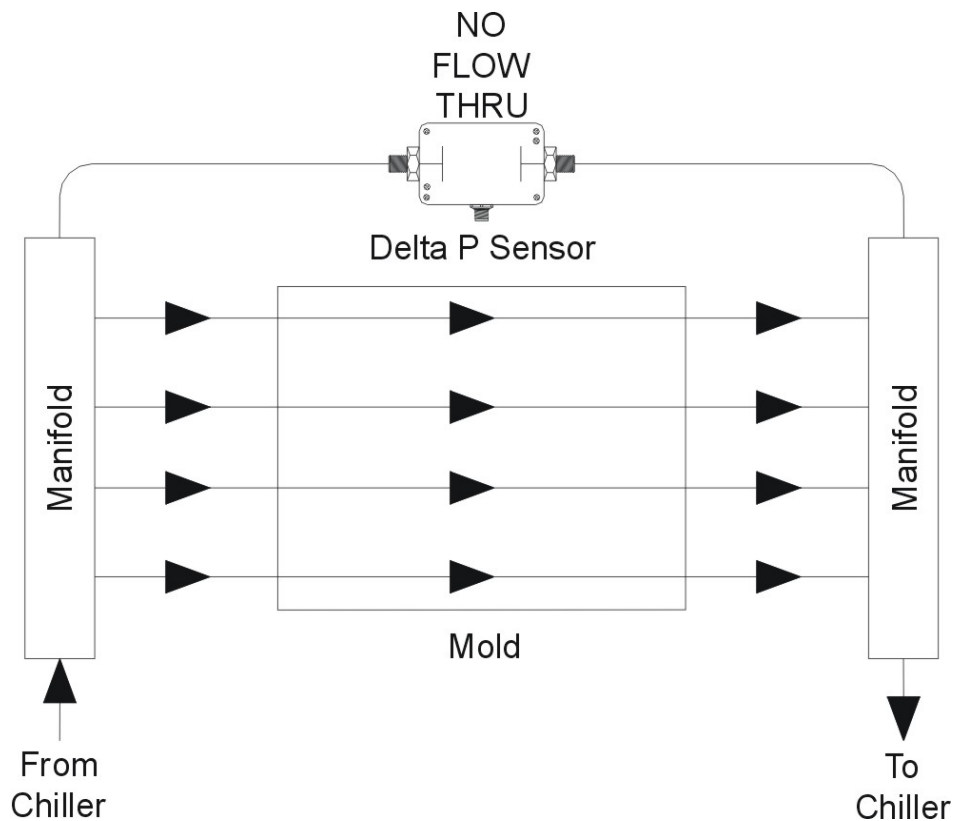

Figure 3: Installation flow diagram

SOFTWARE SETUP

⚠️ **IMPORTANT NOTE**
The Lynx Delta Pressure sensor requires eDART™ software version October 2003 or later.

After you start a job on the *eDART™* the delta pressure sensor will automatically identify itself in the Sensor Locations tool. Under the "Sensor Location" column choose "Location" from the drop down. You may enter anything under the "IDENT" column. For example if a mold has cooling plumbed separately on the A and B sides you could have two delta pressure sensors identified as "Across Mold" and "A" and then "Across Mold" and "B". (Sensor Location and IDENT columns).

After you accept the setup for the delta pressure sensor the software will begin computing a summary value for it on every shot. The name will be "Average Value", "Coolant Delta Pr.". This will be available for Alarm Settings as well as the Cycle Values, Summary Graph and Statistics tools.

Figure 3: Installation flow diagram

Application Notes

Once the software is up and taking Delta-P data you will observe that the value of "Delta Pressure", "Across Mold" as probably a straight line on the cycle graph. It is unlikely that there will be much interest in it because we expect the pressure variation across the mold to have long term changes and not cyclical ones. Perhaps the pinching and un-pinching of a cooling line as the mold opens and closes would show up as a cyclic variation.

The real interest is in the average value for each cycle. You can use this to search for long term problems that affect cooling. Sudden changes in "Average Value", "Coolant Delta Pr." usually indicate a change in the plant-wide coolant delivery due to various machines starting and stopping their cooling flow. Scale buildup in mold cooling channels will show up as a steady increase in the value in over a long time. A flow regulator will block the changes caused by other equipment in the plant and show just the changes due to flow channel blockage. And if the coolant is not flowing at all the "Average Value", "Coolant Delta Pr." will be zero if the coolant is shut off at the inlet and will be system coolant pressure if there is a total block somewhere in the mold.

In all these cases the changes represent a change in the cooling rate applied to the parts in the mold. Given that most thermolators are capable of holding a fairly constant coolant temperature the flow becomes a major variable in cooling. The "Average Value", "Coolant Delta Pr." is a simple and inexpensive way of detecting changes in that flow. Changes in cavity pressure can indicate changes in cooling but these are sometimes hard to find.

We recommend that you set a warning around "Average Value", "Coolant Delta Pr." value. First get the mold running with the proper mold surface temperature in steady state with the process centered to make your best parts. Then in the Alarm Settings tool add a warning above and below after at least 20 good shots (or whatever you have the suggested values setting set to).

It is best to use this for an indicator (light tree) output rather than sorting parts because it may be difficult to sort parts unless you have correlated changes in "Average Value", "Coolant Delta Pr." with actual part characteristics. So usually you will turn the indicator switch on and the sort switch off for each delta pressure row on the Alarm Settings tool. Then when the light tree shows yellow you can check the process before the mold temperature changes enough to make bad parts. You could also set a "reject" alarm (red light) for really bad delta pressure; i.e. if the coolant channels are blocked or the coolant is turned off entirely.

The Delta Pressure value can also be used as a "Reject" alarm to indicate that the water is turned off or the sensor has not been plugged in correctly. If you disconnect the low end and watch the "Average Value", "Coolant Delta Pr." over several shots the pressure will be the same as if the sensor is plumbed in on one side and not the other or the flow through the mold is entirely blocked. Add a "Reject Above" alarm and set it to about 5 psi below this value. Then set a "Reject Below" level at about 3 psi. If the "Average Value", "Coolant Delta Pr." goes outside these limits then something in the cooling system is not functioning and the parts will probably go bad.