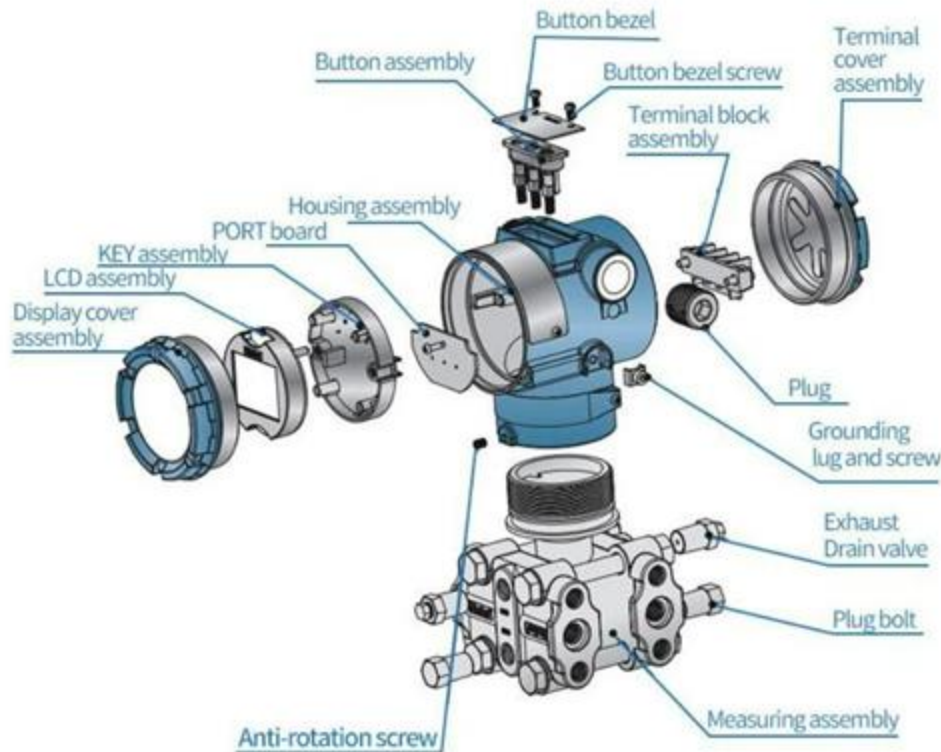


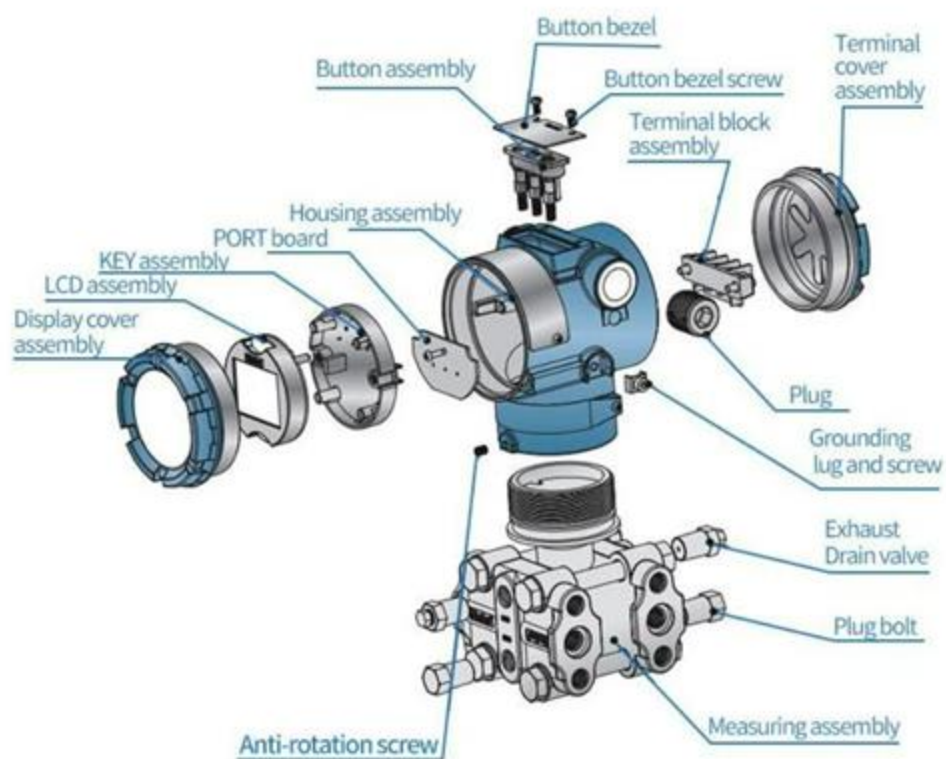
What are the major problems in a pressure transmitter and how to troubleshoot it?



Introduction to pressure transmitter

The major purpose of a pressure transmitter is to convert the measured pressure to an electrical signal. These transmitters are utilized in several industries such as chemical, oil and gas, paint, etc. A pressure transmitter must be able to produce precise readings; otherwise, it might lead to a number of malfunctions and expensive maintenance costs. These transmitters are designed to give a wide range of measurements in a variety of environments. In order to carry out the transmission process a transmitter requires a

transmission medium, a power supply, and also a receiver (signal convertor or processing units)



How to troubleshoot the problems in a pressure transmitter?

There could be several faults in a pressure transmitter like pressure drop. Signal transmission over long distances will be sometimes difficult. Mechanical vibrations, nonlinearity, and low response time.

Some common real-world problems that can occur with pressure transmitters and how to correct them:

Zero drift:

If the pressure transmitter's output changes over time even when the input pressure remains constant, it could be due to temperature changes, aging, or contamination. To correct this problem, you may need to perform a field calibration to determine the correct zero point, or you may need to clean the transmitter to remove any contamination.

Span drift:

If the pressure transmitter's output changes over its full range of measurement, it could be due to the same factors as zero drift, as well as mechanical damage or wear. To correct this problem, you may need to perform a field calibration to determine the correct span, or you may need to replace the transmitter if it has been mechanically damaged.

Non-linearity:

If the pressure transmitter's output is not proportional to the input pressure, it could be due to poor calibration, mechanical damage, or contamination. To correct this problem, you may

need to perform a field calibration to determine the correct linearity, or you may need to clean or repair the transmitter if it has been damaged or contaminated.

Noise:

If the pressure transmitter's output is unstable or fluctuates, it could be due to electrical interference, mechanical vibration, or a faulty sensor. To correct this problem, you may need to isolate the transmitter from any sources of electrical interference, or you may need to replace the sensor if it is faulty.

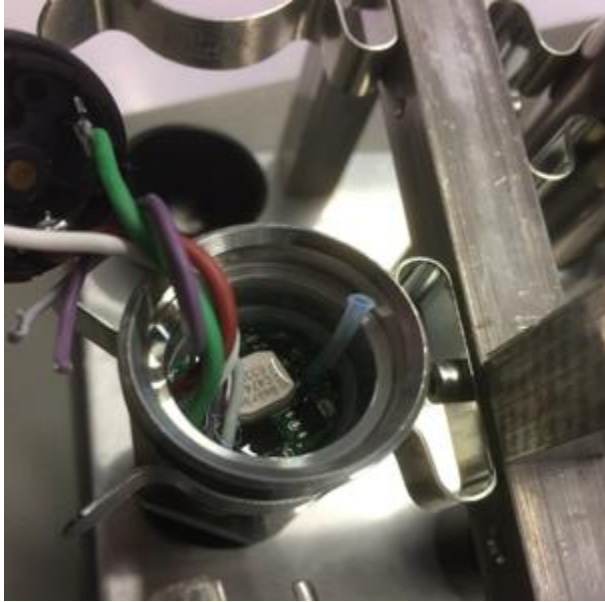
Hysteresis:

If the pressure transmitter's output changes differently depending on whether the input pressure is increasing or decreasing, it could be due to mechanical wear or damage. To correct this problem, you may need to replace the transmitter if it has been mechanically damaged.

Some common real-world problems that can occur with pressure transmitters due to environmental conditions

Vibrations:

Vibration can cause several variations in the measurement and if this vibration is more than a limit then it can lead to the failure of the transmitter.



Temperature:

If the temperature is beyond the specified amount, then there will be a lot of faults in the reading.

Vapor content:

If there is vapor content in the pressure transmitter then it will show a high reading and thus accurate measurement won't be received. Electronics can't work at all if they get wet. Pressure transmitters that could be exposed to water or other moisture must be completely sealed

Overpressure:

Overpressure will also make the transmitter read high. The pressure sensors will sense this over pressure and show abnormal readings.



Below image shows the damaged diaphragm due to over pressure

Faults in sensing lines:

If there are problems in the impulse lines, that will affect the readings. If the impulse line is cracked or punctured and there is a leak in the tube fittings, the reading will be much lower than the actual value.

Irregular power supply:

If the supply to the transmitter is lost then the readings will be really low or drop to zero.

Basic steps involved in troubleshooting problems with a pressure transmitter:

1. Check the installation:

Make sure the pressure transmitter is properly installed and that all connections are secure. Check for any signs of damage or corrosion.

2. Check the process conditions:

Make sure the process conditions (such as temperature, pressure, and humidity) are within the limits specified by the manufacturer.

3. Check the calibration:

Verify that the pressure transmitter has been calibrated correctly and that the calibration is up to date. You may need to perform a field calibration to determine if the transmitter is accurate.

4. Check the output:

Compare the pressure transmitter's output to a known reference, such as a calibrated gauge or another pressure transmitter. This can help you determine if the problem is with the transmitter or the process.

5. Check the electrical connections:

Make sure all electrical connections are secure and free of corrosion.

6. Check the wiring:

Make sure the wiring is correct and that there are no shorts or breaks.

7. Check for contamination:

Clean the pressure transmitter and check for any contamination that may be affecting its accuracy.

8. Check for mechanical damage:

Inspect the pressure transmitter for any signs of mechanical damage or wear.

Troubleshooting specific problems in a pressure transmitter

In case there is any fault in the pressure transmitter make sure that the transmitter is installed properly. The pressure transmitter should not be utilized beyond its rated pressure and temperature range. Make sure all the electrical connections in a

transmitter are correct and that the power supply is within normal limits. All these things should be checked in case there are any faults in the transmitter.

Certain communication devices can cause the transmitter to malfunction so make sure that there are no communication devices near the transmitter.

Problems in the pressure-sensing lines

The length of the pressure-sensing lines will affect the response time of the pressure transmitter.

In case a pressure transmitter is used in the fluid measurement process. The transmitter may be calibrated by considering that the reference leg is filled with a water column and its height will be known. During any faulty conditions in the process, there will be an increase in temperature and it can cause the fluid in the reference leg to turn into steam. This will cause an accuracy problem and the solution for this will be to utilize the isolation bellows in the sensing lines. For instance, if there is no water in the condensation pot in the steam line and the temperature is more than 300 degrees Fahrenheit, the transmitter will malfunction.



High output in transmitters

This could be because the impulse lines are blocked or leaking, so check for blocks and leaks. It will also be because of electronic failure, check the sensor connection. Also, check if the transmitter is grounded properly. Check if the supply power is proper and make sure that there is no electronic failure.

Low output or no output

Make sure the loop is wired correctly and check to see if the ground wire is properly connected. Check the polarity is proper and make sure the loop impedance is proper. Check for leaks and blocks in the piping. Check if there is any entrapped gas in the pipelines. Make sure there are no sediments in the transmitter flanges.

Variable outputs

Make sure that there are no open circuits and make sure that the sensor connection is proper. Make sure there is no electronic failure.

Utilizing the transmitter for proper applications

Make sure that the pressure transmitter which is utilized for the industrial process is the right one. Sometimes the industrial pressure transmitter is utilized in agricultural combines and due to this, the transmitter won't operate properly. For example, use a tank level transmitter that is incompatible with the material that is contained within the tank.

Vibrations and shock

Most pressure transmitters are tested before it is on the market. Make sure that you are utilizing the pressure transmitter in a vibration-less environment.

Electrical Interference

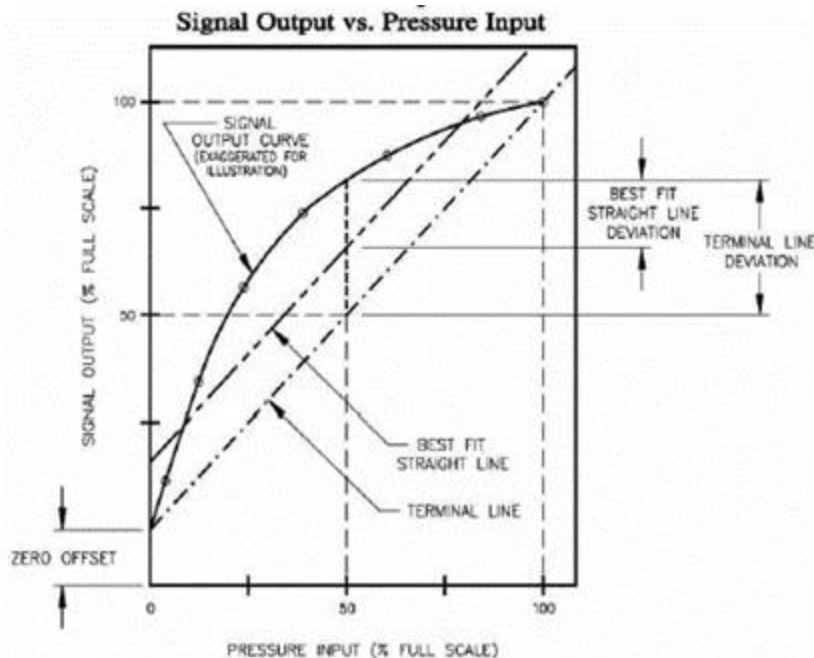
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Damages due to chemicals

In case of the certain industrial processes, the pressure transmitter will be subjected to certain chemicals. Because of the potential for this to cause harm to the transmitter, it is important to ensure that the pressure transmitter that is utilised for the application is capable of withstanding the chemicals to which it is exposed.

Fault related with measuring error

The measurement error of the pressure transmitter is the difference between what the pressure sensor shows and what the actual value of the variable being measured is.



Following things can cause pressure transmitter measurements to be wrong.

- Error in the measurement of the pressure transmitter caused by an incorrect Zero Reference.
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What are the factors that must be considered while installing a pressure transmitter?

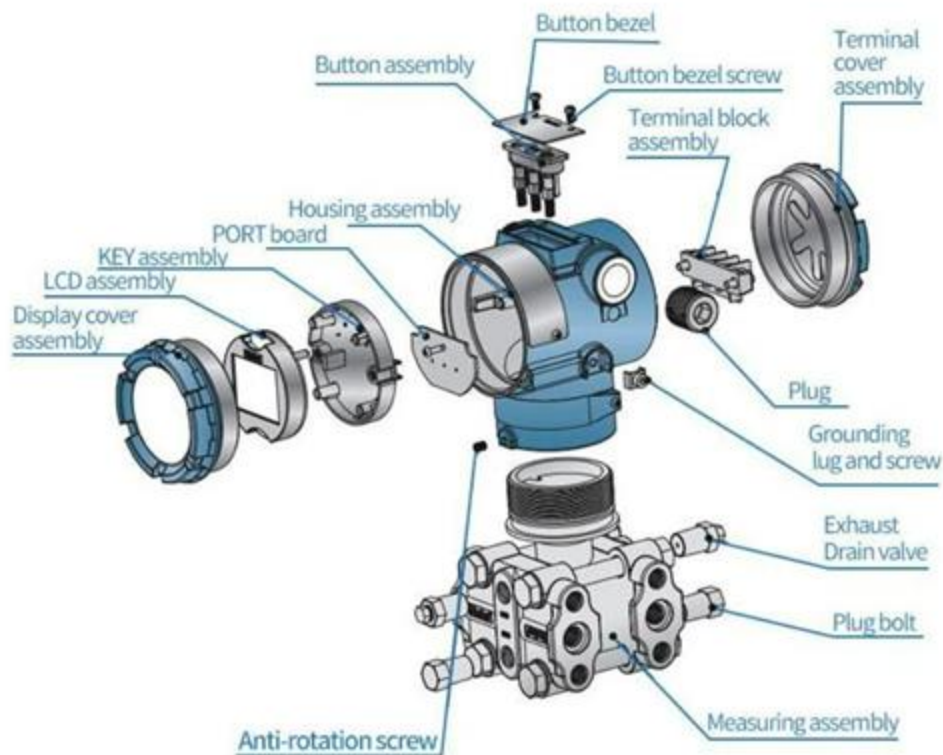
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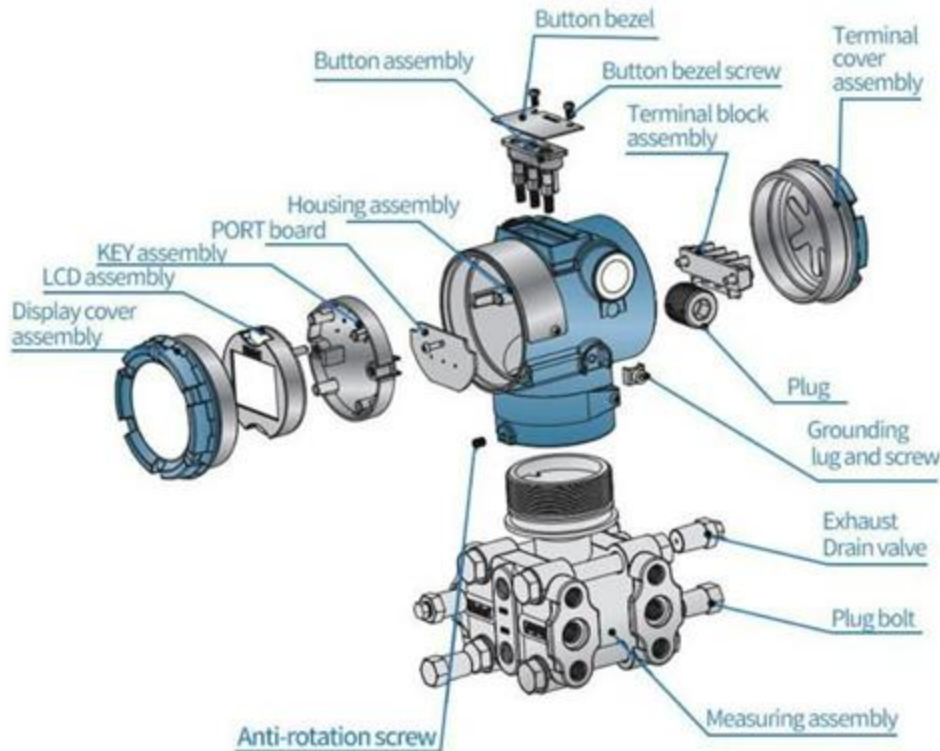
by [sundareswaran](#) December 29, 2022 [0](#)1672

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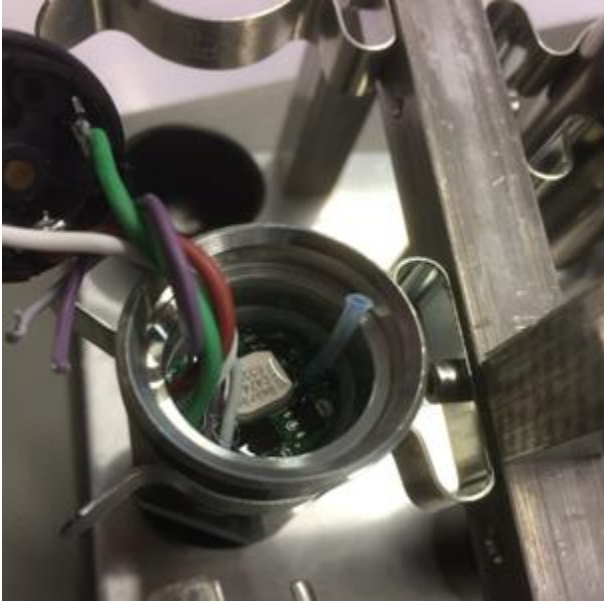
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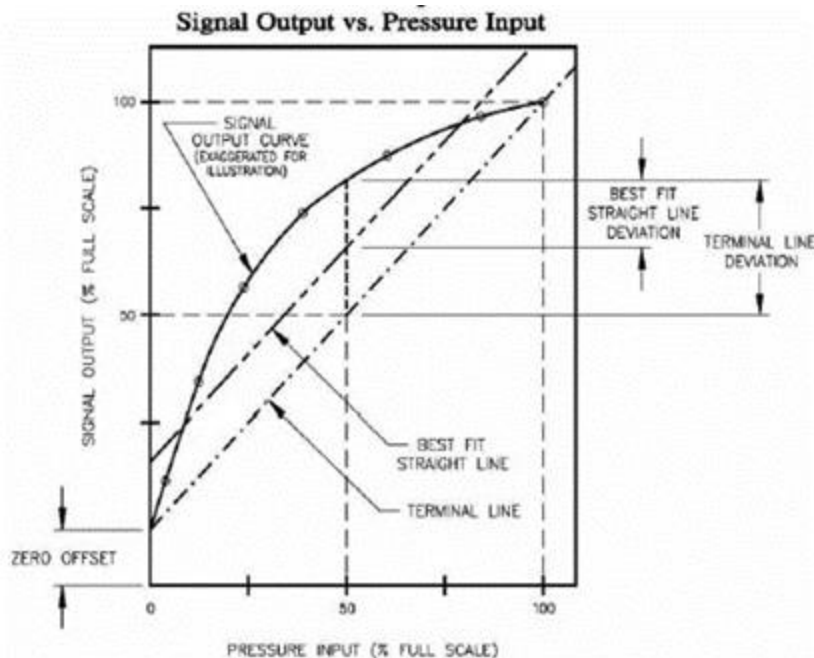
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