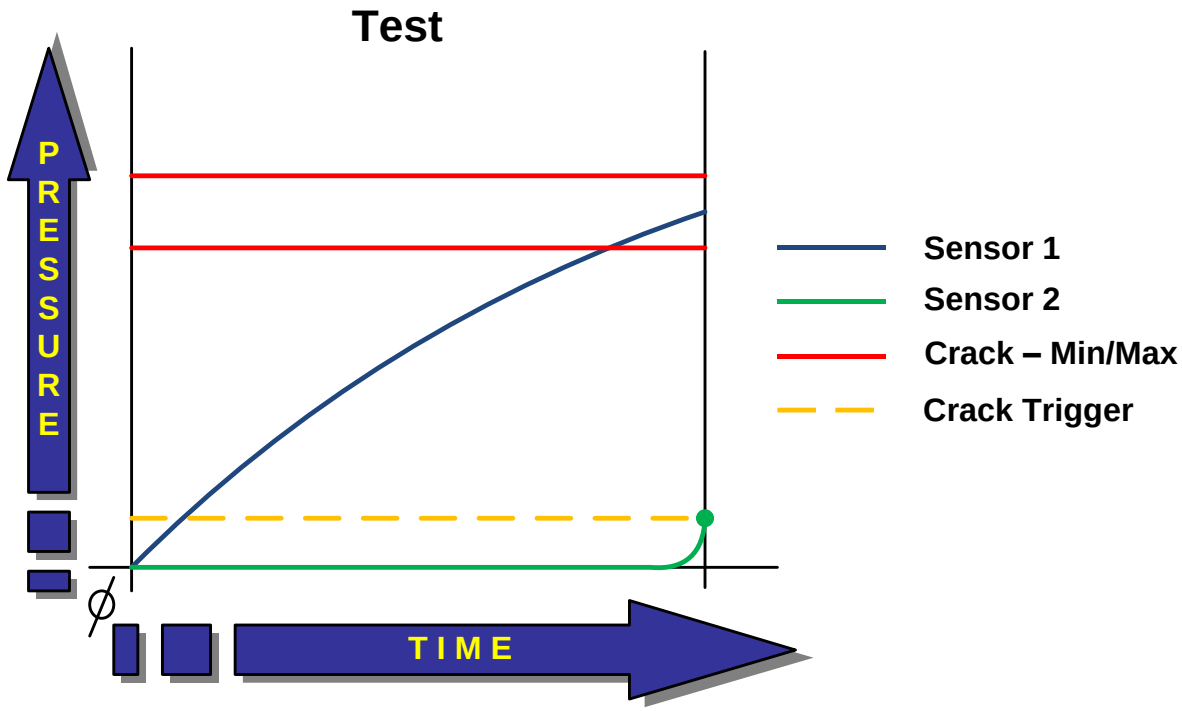
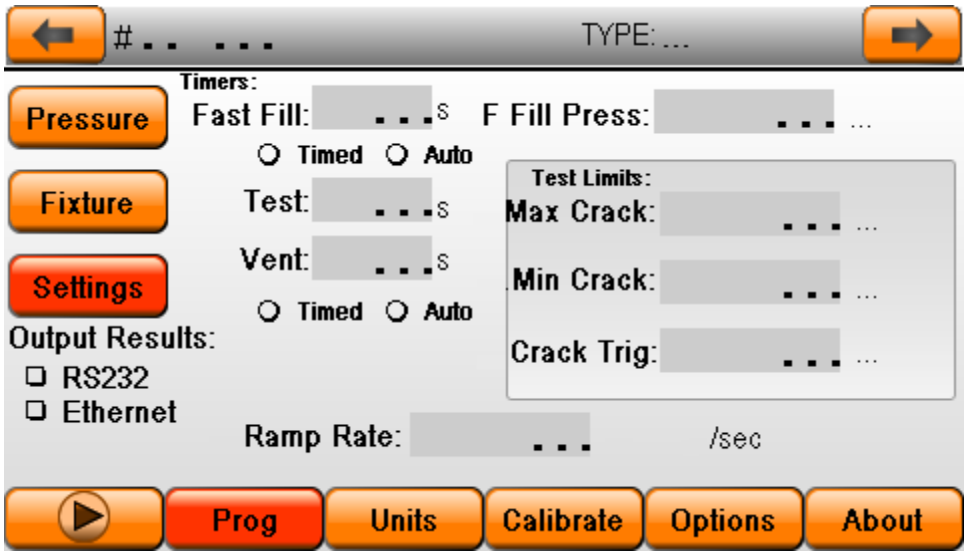
Crack Test – Testing Theory

A crack test is used to find the opening pressure of a check valve or similar item. It is especially useful in testing devices that have a small amount of weep (small leak) before the full opening.



The test is performed across two ports, with the inlet of the device on port one (sensor 1) and the outlet of the device is connected to port two (sensor 2). The pass/fail limit is set as a min/max pressure value of the pressure required to open the device. The 'trigger' is the amount of pressure increase on the output side that constitutes an opening of the device. Sensor two can be either a pressure transducer or a mass flow transducer depending on the needs of the application.

Test Setup



The test setup (shown above)

Fast Fill: The amount of time (in seconds) to allow the part to be filled to a pressure before starting the ramping of the crack test.

(Example) If the part to be crack tested had a large internal volume, instead of letting the ramp fill the device possibly taking a long amount of time, the part can be filled to a pressure below the crack point, then the crack test will ramp the part to conclusion of the test.

F Fill Press: The amount of pressure (in user selected engineering units) to fill the part to before the start of the crack test.

Test: The amount of time (in seconds) for the crack test to take place. When the crack trigger occurs the test will end regardless of the amount of time remaining. Also if the timer reaches the end before the trigger, the test will end, resulting in a 'no crack' failure.

Vent: This is the amount of time (in seconds) for venting the test part after the test has completed. This timer can be either timed- run to the end of the time, or auto- vent to a safe pressure, when the safe pressure is reached the step will end regardless of time remaining.

Max Crack: The amount of pressure (in user selected engineering units) that is the maximum tolerance for a crack to occur.

Min Crack: The amount of pressure (in user selected engineering units) that is the minimum tolerance for a crack to occur.

Crack Trig (Trigger): The amount of pressure (in user selected engineering units) increase on the downstream side (sensor 2) that constitutes an opening of the device.

Ramp Rate: The amount of pressure per second ramp on the upstream side of the device (sensor 1). The pressure units will be the same as the Max/Min (user selected)

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