

# TECHNICAL SERVICE BULLETIN: KAVLICO FLUID PRESSURE SENSORS

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Original Bulletin: May 6, 2020

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PLEASE READ THIS BULLETIN IN ITS ENTIRETY BEFORE CONTACTING DYNON AVIONICS

## Description

Since 2012, Dynon has supplied Kavlico fluid pressure sensors for use with its engine monitoring products. These sensors are primarily used to monitor oil, fuel, and coolant pressure. Dynon has received rare sensor failure reports that involve fluid leakage. Reports include both drips and sprays of fuel and oil. Dynon has not received any reports of fuel exhaustion, oil exhaustion, or fires associated with the reported failures. Based on review of the sales and fleet data, the likelihood of this condition occurring is remote.

Although the likelihood of a sensor failing in the manner described above is remote, Dynon has been investigating the issue due to the nature of the failure. However, after extensive analysis with assistance from the manufacturer, Dynon has not yet determined the root cause for these failures. Dynon continues to investigate this issue. Furthermore, Dynon requests customers who have experienced this issue to contact Dynon Technical Support to provide information that may assist us in identifying the underlying cause.

Per recommendation from the sensor manufacturer, Dynon is changing its sensor offerings to models with improved specifications going forward. The new sensors feature a different internal design, yielding substantially higher burst pressure ratings.

## Additional Technical Details

Reports of sensors that have failed in the manner described above are limited to applications where 50+ PSI sensors are implemented, as is typically the case in fuel injection and oil pumping systems. There have been no reports of 5, 15, or 30 PSI sensor failures. Even so, Dynon is offering updated sensors for all applications of 15 PSI and higher.

The updated pressure sensors have a number of design elements that result in higher burst pressure ratings than the outgoing sensors. The previous sensors are already quite robust, with burst pressure ratings that are 3x their maximum rated pressure. The updated sensors improve upon this significantly. The new 150 PSI has a burst pressure rating of 2000 PSI, which is over 13x greater than its maximum rated pressure. For low pressure applications, the new 15 PSI and 50PSI sensors have burst pressure ratings of 1000 PSI, or 66x and 50x their maximum rated pressures, respectively.

Additionally, after analyzing the sensors, Dynon determined that the updated 150 PSI sensors have sufficient accuracy and precision across their range to be used in almost all but the lowest pressure applications. Therefore, most SkyView customers with fuel injected systems can use 150 PSI sensors for measuring both fuel pressure and oil pressure. Sensors that are rated for higher pressure measurement ratings have correspondingly higher burst pressure ratings; therefore, improved margins over their

equivalent lower-pressure models. In effect, there is two-fold improvement here—first, by moving to a more robust sensor, and second, by using one higher in the pressure range.

## Applicability and Affected Equipment

The following sensors are affected by this bulletin:



Figure 1: Legacy Kavlico Sensor

Legacy Sensor	Legacy Sensor Part Marking
101716-000: Fuel Injected Fuel/Coolant/Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 50 PSI	P4055-50G or P4055-5025-3
101692-000: Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 75 PSI	P4055-75G or P4055-5025-4
101693-000: Oil/Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 150 PSI	P4055-150G or P4055-5025-6

## Unaffected Equipment

The following sensors are not known to have experienced the issue described in this bulletin:

Legacy Sensor	Legacy Sensor Part Marking
101715-000: Gravity Feed Fuel/Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 5 PSI	P4055-5G or P4055-5025 (no suffix)
101690-000: Carbureted Fuel/Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 15 PSI *	P4055-15G or P4055-5025-1
101691-000: Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 30 PSI	P4055-30G or P4055-5025-2

\* Note: Even though 15 PSI sensors are not affected by this bulletin, Advanced Flight Systems is making an updated 15 PSI sensor available for sub-15 PSI pressure applications.

## Recommendations

- **Dynon Recommendation:** Aircraft owners/operators should consider taking advantage of this product improvement. Dynon does not specify a timeframe in which such replacement should be performed..
- **Immediate Action:** Ensure pressure sensors are installed in accordance with guidance in the installation documentation. Do not mount sensors directly to the engine or other sources of high vibration. Utilize inline fittings that incorporate a flow restrictor to prevent rapid discharge of fluids in the event of a failure of any component, including the sensor.
- **Preventive Action:** Monitor engine compartment for possible fluid leaks originating at the pressure sensors. If installing new fluid pressure sensors, use the updated sensors. Other preventive actions that could be considered include isolating possible leak sources from sources of ignition. Such sources include, but are not limited to, fluid junctions, fittings, hoses, and fluid pressure sensors.
- **Corrective Action:** If any signs of fluid leaks (including trace amounts of residual fluid) are detected:
  - Please fill out the [Kavlico Sensor Leak Report Form](#).
  - **Notify Dynon Technical Support** of the failure. Include detailed pictures of the failed sensor and/or the installation if they are available.
  - If able, please **retrieve and submit diagnostic data to Dynon** as soon as practicable after the event. Do not perform this action in flight.
  - Replace the fluid pressure sensor with a new sensor immediately. Always refer to installation guidance when installing new sensors.
    - Note: EMS-D10, EMS-D120, and FlightDEK-D180 users only: For compatibility reasons, you can only use the exact sensors specified in the EMS/FLIGHTDEK section below. The 50 PSI sensor is the only sensor that can be used for fuel pressure on injected engines (and not the 150 PSI as well, like SkyView). The 15 PSI sensor is the only sensor that can be used for carbureted fuel pressure. The 150 PSI sensor is the only sensor that can be used for oil pressure.

## Updated Sensor Applications for SkyView Systems - Experimental / LSA

EMS-D10, EMS-D120, and FlightDEK-D180 users, please see the next section. This section only applies to SkyView installations.



Figure 2. Updated Kavlico Sensor

Legacy Sensor	Legacy Sensor Part Marking	Updated Sensor	Updated Sensor Part Marking	Recommended Pressure Range
101690-000: Carbureted Fuel/Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 15 PSI	P4055-15G or P4055-5025-1	103755-000: Fuel/Fluid Pressure Sender - Kavlico v2, 1/8-27 NPT, 15 PSI	P255-15G-E4A	0.6-15 PSI
101691-000: Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 30 PSI	P4055-30G or P4055-5025-2	103757-000: Oil/Fuel/Coolant/Fluid Pressure Sender - Kavlico v2, 1/8-27 NPT, 150 PSI*	P255-150G-E4A	6-150 PSI
101716-000: Fuel Injected Fuel/Coolant/Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 50 PSI	P4055-50G or P4055-5025-3	103757-000: Oil/Fuel/Coolant/Fluid Pressure Sender - Kavlico v2, 1/8-27 NPT, 150 PSI*	P255-150G-E4A	6-150 PSI
101692-000: Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 75 PSI	P4055-75G or P4055-5025-4	103757-000: Oil/Fuel/Coolant/Fluid Pressure Sender - Kavlico v2, 1/8-27 NPT, 150 PSI	P255-150G-E4A	6-150 PSI
101693-000: Oil/Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 150 PSI	P4055-150G or P4055-5025-6	103757-000: Oil/Fuel/Coolant/Fluid Pressure Sender - Kavlico v2, 1/8-27 NPT, 150 PSI	P255-150G-E4A	6-150 PSI

\* Most applications. See "Note on choosing sensors" below

**Also available:**

Updated Sensor	Part Marking	Recommended Pressure Range
103713-000: Fuel/Coolant/Fluid Pressure Sender - Kavlico v2, 1/8-27 NPT, 50 PSI	P255-50G-E4A	2-50 PSI

Note on choosing sensors:

- Use the new 15 PSI Kavlico sensor (P/N 103755-000) for most carbureted fuel systems with 0.6–15 PSI requirements.
- Use the new 150 PSI Kavlico sensor (P/N 103757-000) for most injected fuel systems and oil systems with 6–150 PSI requirements.
- If neither of the above are suitable for the airplane's fuel system, use the new 50 PSI Kavlico sensor (P/N 103713-000) for fuel systems with 2–50 PSI requirements.
- If both the 50 PSI and 150 PSI sensors meet the airplane's fuel system requirements, then use the higher pressure 150 PSI sensor.

## SkyView Engine Sensor Definitions Update

Download the updated version of the Engine Sensor Definitions for SkyView that support the new sensors from the [software updates downloads page](#) for your system. Load that file to your SkyView displays. After loading the updated sensor definitions, choose the newly installed sensor(s) in SkyView system setup under “SETUP MENU > EMS SETUP > SENSOR INPUT MAPPING...” to complete re-configuration of your system.

## Updated Sensor Applications for EMS-D10, EMS-D120, and FlightDEK-D180 Systems

Legacy Sensor	Legacy Sensor Part Marking	Updated Sensor	Updated Sensor Part Marking	Recommended Pressure Range
101690-000: Carbureted Fuel/Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 15 PSI	P4055-15G or P4055-5025-1	103755-000: Fuel/Fluid Pressure Sender - Kavlico v2, 1/8-27 NPT, 15 PSI	P255-15G-EA4	.6-15 PSI
101716-000: Fuel Injected Fuel/Coolant/Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 50 PSI	P4055-50G or P4055-5025-3	103713-000: Fuel/Coolant/Fluid Pressure Sender - Kavlico v2, 1/8-27 NPT, 50 PSI	P255-50G-EA4	101716-000: Fuel Injected Fuel/Coolant/Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 50 PSI
101693-000: Oil/Fluid Pressure Sender - Kavlico, 1/8-27 NPT, 150 PSI	P4055-150G or P4055-5025-6	103757-000: Oil/Fuel/Coolant/Fluid Pressure Sender - Kavlico v2, 1/8-27 NPT, 150 PSI	P255-150G-EA4	6-150 PSI

# Replacement Sensors

Replacement Kavlico sensors are available for purchase from Dynon. Dynon is not responsible for costs related to the removal and installation of the sensors.

## Time in Effect

This Technical Service Bulletin is in effect indefinitely or until superseded by a future bulletin.

## Additional Questions?

Contact Dynon Avionics Technical Support.