



CONVEYOR COMPONENTS COMPANY

Division of Material Control, Inc.

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MODEL DLC: DIAPHRAGM LEVEL CONTROL



WARNING:

DEATH or SERIOUS INJURY may occur.

Before installing or adjusting, shut down and physically lock-out the conveyor system. To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.

The DLC is a non-intrusive point level control for use in bins, hoppers, chutes or other points of material storage of transfer. It is particularly suited for use in chutes or in places of heavy flow to detect plugged conditions where more invasive instruments could be damaged or create flow restrictions.

SPECIFICATIONS:

Housing:	Cast Aluminum
Enclosure :	Meets Type 4X
Diaphragm material:	Neoprene rubber (DLC-2R) 302 stainless steel (DLC-2S)
Ambient Temperature:	0 to 40 °C [32 to 104 °F]
Mounting:	Ø6" [152 mm] access hole (cut out), Ø7" [178 mm] bolt circle: 6 holes at Ø 17/64" [7 mm] (¼" studs or bolts)
Conduit Connection:	¾" NPT, quantity one
Pressure Equalization:	¼" NPT port with sintered bronze vent preinstalled
Switch Type:	SPDT × 2
Contact Rating:	15 A, 125/250/480 VAC 1/8 HP, 125 VAC 1/4 HP, 250 VAC 1/2 A, 125 VDC 1/4 A, 250 VDC
Terminal Wire:	12 GA stranded TTHN, prewired
Actuation Force:	1.6 lb. [7 N] max
Material Density:	25 pcf [720 kg/m ³] or greater recommended.

OPERATION:

The DLC detects material when the force of material weight presses against the sensing face. As material builds up, it pushes on the diaphragm of the DLC which triggers the activation of the enclosed switches. When the material clears from the diaphragm the switches are released and deactivate.

MOUNTING:

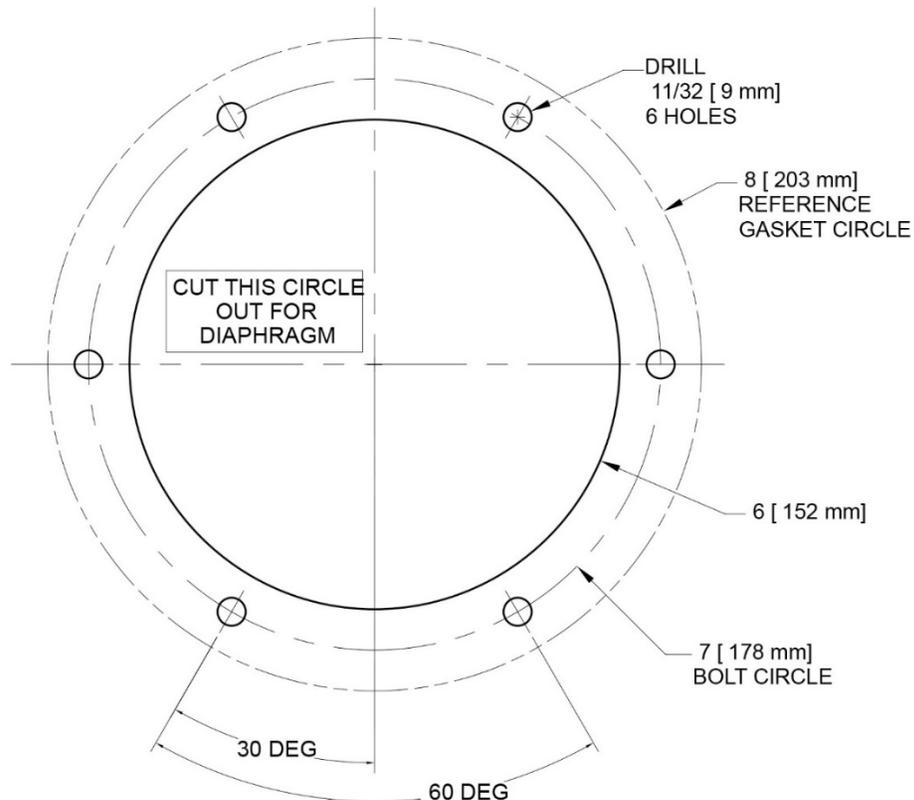
The unit should be mounted to the wall of a bin or chute where the material is present but will not buildup or remain static. The unit mounts on a seven (7) inch [178 mm] bolt circle centered on a six (6) inch [152 mm] access hole. The DLC can be mounted interchangeably with our CR series controls.

The DLC unit should be oriented so that the conduit entry and the equalization port are facing a downward direction.

If mounting on an existing bolt pattern from a previous installation, be sure to enlarge the access hole to six (6) inches in diameter to prevent material buildup between the container wall and the DLC that could cause false signals.

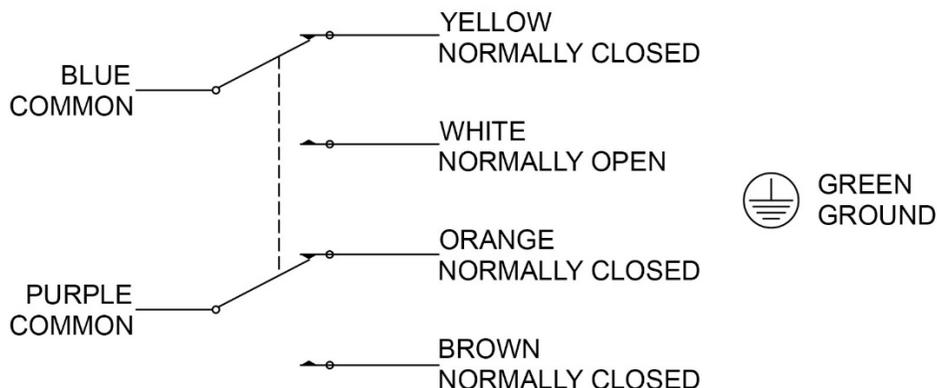
When mounting to a non-vertical surface, be certain the slope is steep enough to prevent localized buildup on the sensing face. Material failing to clear sufficiently could be a source of false signals.

For the detection of lower density materials the DLC unit may need to be placed a distance below the intended detection level to allow enough pressure to build to activate the control and prevent over-filling.



WIRING:

The DLC unit comes with prewired terminals routed through a 3/4 NPT conduit connection. The normally open and normally closed contacts are labeled for a normally unloaded state (such as high-level or plugged-chute detection). Field wiring must meet or exceed the requirements of the National Electrical Code and any other agency or authority having jurisdiction over the installation.



SENSITIVITY ADJUSTMENT:

Every application/installation is different and may require the unit to be adjusted from factory settings.

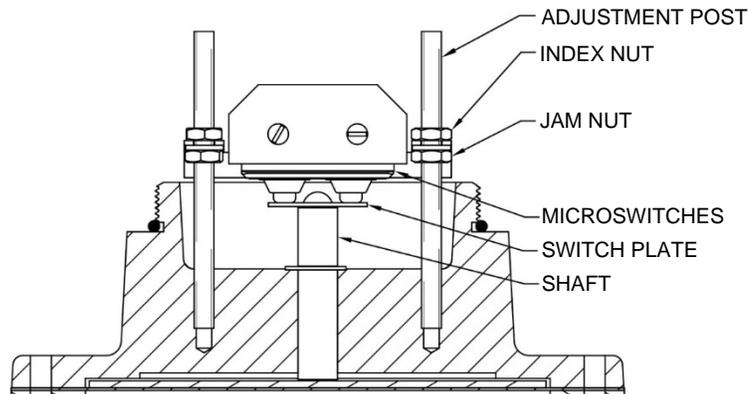
Tools needed:

7/16" (11 mm) Crescent Wrench

Ohmmeter/Multimeter (optional)



Before adjusting sensitivity remove the cover. Place two fingers behind the switch-plate on either side of the shaft and pull the switch-plate toward the switches to relieve pressure from the diaphragm. This allows the internal components to adjust to the new installation. Release the switch plate.



The switches should activate together, producing an audible click when triggered, and deactivate readily when released. Use the table below to adjust the sensitivity of the DLC to the installation.

Symptom:	Adjustment:
Shaft appears loose.	Increase the sensitivity of both switches evenly.
One or more switches do not click when the switchplate is pulled or released.	Decrease the sensitivity of affected switches.
One or more Switches have a slow or delayed click when released.	Decrease the sensitivity of affected switches.
Switches activate at different points (Asynchronous)	Increase the sensitivity of the switch that actuates last. (An ohmmeter can help to determine the order the switches activate)
Each switch has a corresponding index nut nearest that switch's common terminal (blue or purple conductor). The sensitivity of each switch can be adjusted independently by adjusting that switches index nut.	
To increase switch sensitivity lightly loosen the corresponding jam nut and rotate the index nut clockwise to lower the switch toward the diaphragm. Reseat the jam nut before testing the adjustment.	
To decrease switch sensitivity adjust the corresponding index nut counterclockwise to lift the switch away from the diaphragm. Reseat the jam nut before testing the adjustment.	
In most applications, the DLC will perform best when tuned to the highest sensitivity at which the switches actuate simultaneously and deactivate readily upon release. In some situations, the sensitivity may need to be lowered to prevent false trips.	

PRESSURE EQUALIZATION:

The DLC is built with a 1/4" NPT pressure equalization port.

In most cases the equalization port should be used with the factory installed equalization vent to equalize the pressure in the diaphragm chamber to atmospheric pressure.

When the DLC is installed where the sensing face may experiences non-atmospheric pressure, such as on a closed container into which material is pumped or blown, the equalization port may be used to equalize the pressure between the DLC unit and the container.

