



CONVEYOR COMPONENTS COMPANY

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MODEL DB INSTRUCTIONS

WARNING:

Failure to strictly follow all instructions may result in DEATH or SERIOUS INJURY.

Before servicing, shut down and physically lock-out the conveyor system.

Disconnect power before servicing.



INSTALLATION NOTES:

When installing a Damaged Belt Detection system on your conveyor, the following should be considered:

- After wiring, replace cover and torque cover screws to 12 ft-lbs. min in order to maintain environmental integrity of enclosure, openings are to be closed with UL Listed devices that possess same environmental ratings.
- The force required to extract the ball end of the pull cable from a detector unit increases proportionally with the distance from the detector. Therefore, the cable extending beyond the midpoint of the installed cable span, and the anchoring point of the cable on the opposite side, is considered inactive for damage detection purposes. Thus, a second unit is mounted opposite the first to effectively cover this inactive section. (See Figure 1).
- A damaged portion of a belt may in certain instances be confined to the top surfaces of the belt. This renders it undetectable by a system between belt surfaces. However, this damaged section will fall below the surface on the belt's return run. In order to detect this type of damage to a belt, a second detection system can be installed below the return belt's surface. This will provide even more reliable protection for your belt systems.
- Detection units must be mounted high enough for the cables to cover the entire active area under the belt. In other words, the cables must follow the contour of the belt closely enough to detect damaged sections of the belt both at the center and near the edge. The cables should not exceed a maximum of 2" below the belt (See Figure 1).

HOW IT OPERATES:

The Damaged Belt Detector operates using a spring-loaded ball and socket connected to two plunger type micro switches. As an object hanging below the belt sweeps away the cable, it pulls the ball connector from its socket (only 4 lbs. of force required; 8 and 16 lb models available; See figure 2). When this happens, a spring-loaded shaft is released causing the plungers of the two micro switches to ride down cam surfaces machined on the shaft. This de-actuates the switches causing them to sound an alarm, turn on a warning light, or shut down the system. To reactivate the detectors, all that is required is to snap the ball connector and cable back into its socket and slide boot back over the retainer housing.



FIGURE 1: Close-up of boot, ball and socket connector system.

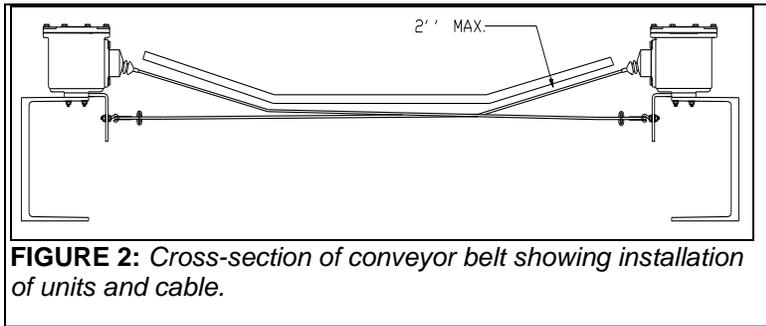


FIGURE 2: Cross-section of conveyor belt showing installation of units and cable.

SPECIFICATIONS:

Standard Construction: Suitable for inside & outside applications as covered by Type 4 dust and rain tight and Type 4X corrosion resistance construction.

Model DB-100: C-UL-US Listed; Two (2) SP/DT microswitches (See Figure 3)

Model DB-500: C-UL-US Listed; Two (2) DP/DT microswitches (See Figure 4)

Dust-Ignition Proof Construction: For inside and outside applications requiring Types 4 and 4X, along with Type 9: Class II, Groups E, F and G; Class III Hazardous Locations.

Model DBD-100: C-UL-US Listed; Two (2) SP/DT microswitches (See Figure 3)

Model DBD-500: C-UL-US Listed; Two (2) DP/DT microswitches (See Figure 4)

Explosion Proof Construction: For inside applications requiring Types 7 and 9: Class I, Groups C and D; Class II, Groups E, F and G; Class III Hazardous Locations.

Model DBX-100: C-UL-US Listed; Two (2) SP/DT microswitches (See Figure 3)

Model DBX-500: C-UL-US Listed; Two (2) DP/DT microswitches (See Figure 4)

Housing: Aluminum (Standard).

Conduit Opening: Two (2) 1" NPT conduit openings: must be sealed to meet enclosure types.

External Hardware: Stainless steel.

Contacts: Microswitches may be wired for single throw operation, either normally open or normally closed as required.

SP/DT: 20 Amp at 125, 250 or 480 VAC; ½ A, 125 VDC; ¼ A, 250 VDC; 1 HP, 125 VAC; 2 HP, 250 VAC.

DP/DT: 15 Amp at 125 or 250 VAC; ¾ HP, 125 VAC; 1 1/2 HP, 250 VAC.

Figure 3: SP/DT Terminals

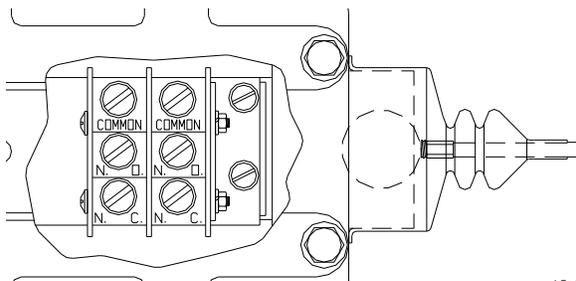


Figure 4: DP/DT Terminals

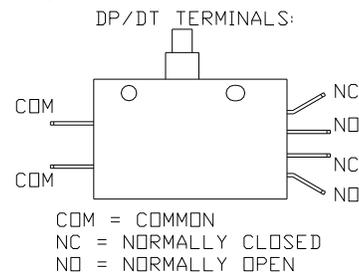


Figure 5: Mounting Dimensions

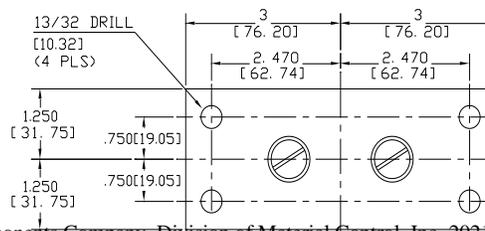
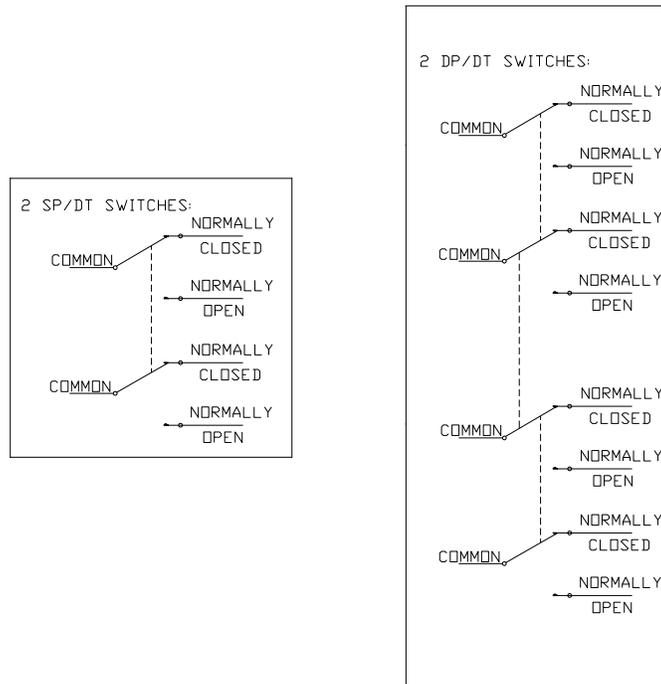


Figure 6: Electrical Contacts



Wiring for DP/DT Models DB-500, DBD-500 and DBX-500:

1. BEFORE beginning, lock out all power to the conveyor system to prevent accidental start-up.
2. Remove cover by removing hex-head cap-screws and lockwashers.
3. While holding spring retainer assembly, remove 2 switch bracket screws (see Figure 7).
4. Hold spring retainer in place. Remove switch bracket assembly.
5. Replace 1 screw to hold spring retainer in place (see Figures 8 & 9). Spring retainer may be temporarily removed to access 2 ground screws below.
6. Remove flag connectors and crimp onto wires (see figure 10).
7. Replace wired flag connectors to appropriate terminals on switches.
8. Replace switch assembly onto spring retainer bracket with 2 machine screws and washers (see Figure 7).
9. Replace cover and hex-head cap-screws and lockwashers, and torque screws to 12 ft-lbs.

Figure 7: Use hand to hold spring retainer while removing screws. Do not remove shaft spring and washers. For DPDT switches, use hand crimp tool 0640014100 or crimp head 0640054100 for AT-200 pneumatic hand tool to attach insulated, flag quick-disconnects to wires.

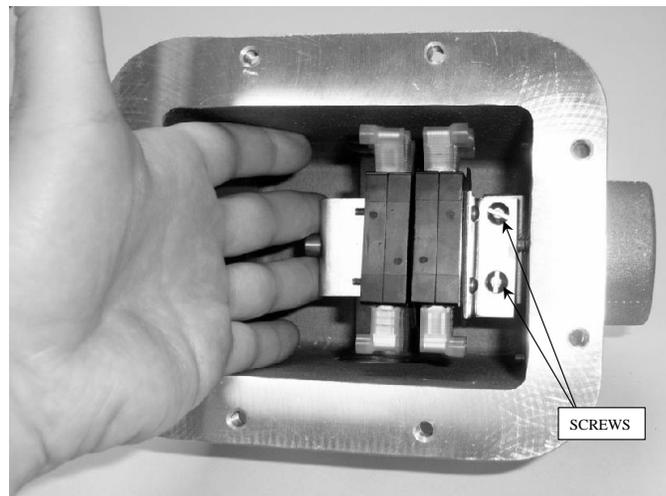


Figure 8: While holding spring retainer, replace screw to hold retainer in place. The spring retainer may be removed for access to the ground screws.

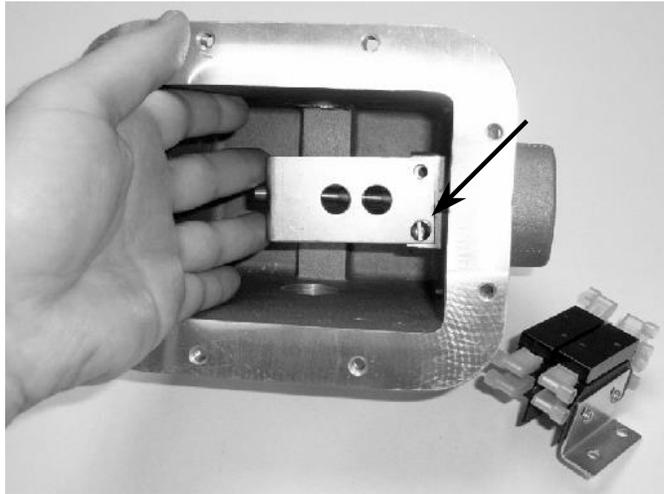


Figure 9: Note the location of shaft spring, washers (do not remove) and 2 ground screws (spring retainer removed for clarity).

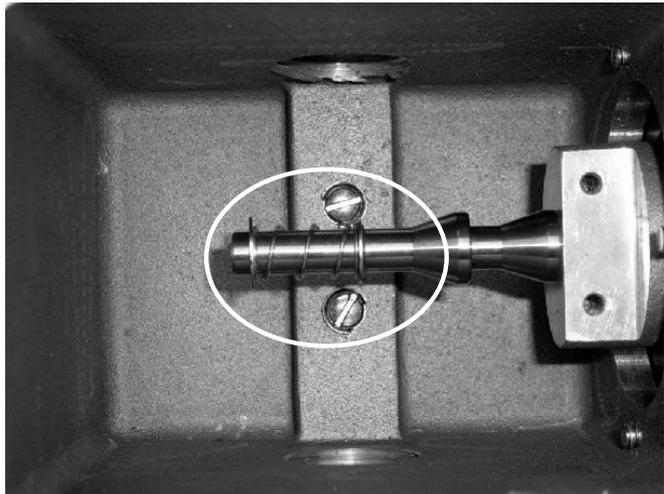


Figure 10: Switch assembly, spring retainer, spring with washers and machine screws with washers.

