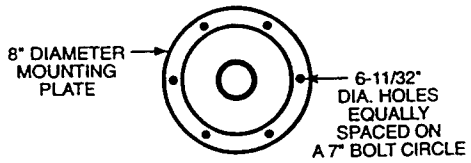
Super-Safe Plus Roto-Bin-Dicator®

Installation and Operation Instructions



Mounting Location: There must be free flow of material both to and from the paddle and shaft. Keep the paddle and shaft out of the direct flow of material. Protective baffles or offset mounting may be required.

A. On a 7" bolt circle, drill and tap or drill 6 equally spaced holes in bin wall for 1/4" bolts or cap screws. Bolt heads should be tack welded to bin inner wall.

B. Cut 5" diameter hole to pass paddle.

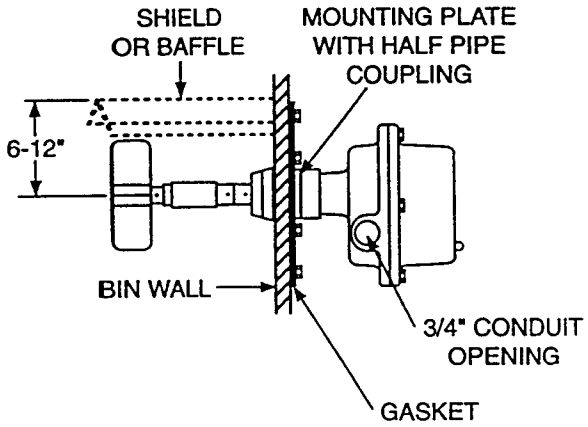
C. If required, fabricate and weld or bolt protective baffle to inner wall.

Mounting on Side of Bin:

A. Conduit opening must be down or to the left.

B. Assemble gasket between mounting plate and bin wall.

C. Use a pair of rubber and steel washers beneath the attaching hardware.



Mounting on Top of Bin:

A. Cut shaft extension pipe to required length and drill a 1/8" hole through the pipe 7/16" from each end.

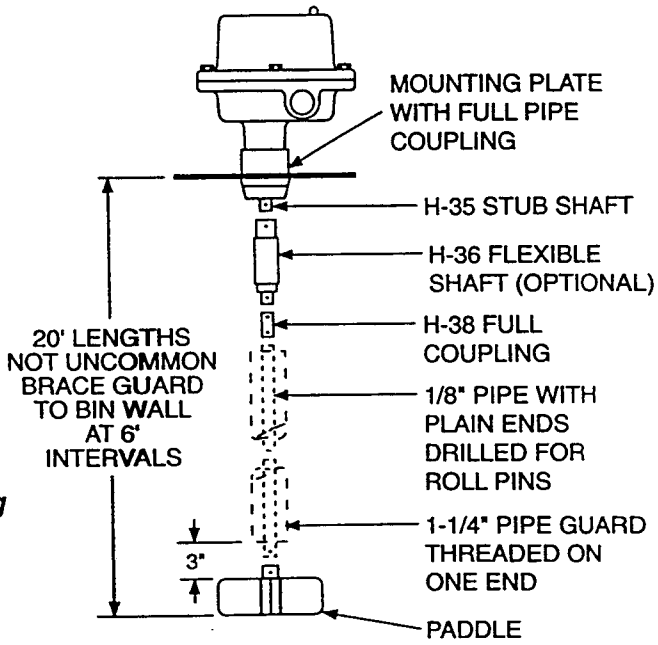
B. Assemble shaft extension to H-38 coupling and pin securely. Insert optional H-36 Flex coupling if used.

C. Cut pipe guard 5" shorter than overall extended shaft and paddle length. Thread one end 1-1/4" NPT.

D. Assemble guard over extension and screw securely into mounting plate.

E. Assemble paddle to shaft extension and pin securely.

Note: Shaft extension must be free to turn inside of shaft guard. Drive all roll pins (1/8" X 3/4") in flush to lock securely. Also, If separate couplings are used in place of conventional mounting plates with integral couplings, use full couplings for top mounting making sure that half the coupling protrudes inside the bin. For side of bin mounting use only half couplings.



OPERATION & WIRING INSTRUCTIONS

Theory of Operation: The 1 RPM synchronous motor either turns the paddle in the absence of bulk material, or actuates relay contacts when the paddle is stopped by the bulk material. An optical transmitter/receiver, in combination with a pulse wheel, monitors the rotation of the shaft to ensure the clutch assembly and motor is fully operational. An optical motor position sensor detects presence or absence of material on the paddle.

Notice: When replacing the cover take care not to damage the LEDs.

Time Delay for Relay Output: The time delay can be customized in 4 different ways. This involves setting DIP switch SW3, and adjusting the time delay potentiometer. See figure 1 for location. The time delay pot is adjustable for 3-30 seconds.

- For delay after material falls below the paddle and the paddle starts turning, set DIP switch SW3 with switch 1 on & 2 off, and adjust the time delay pot clockwise.
- For delay after the material covers the paddle and the paddle stops turning, set DIP switch SW3 with switch 1 off and 2 on, and adjust the time delay pot clockwise.
- For zero time delay (no delay), set DIP switch SW3 with switch 1 and 2 off. Adjust the time delay pot completely counterclockwise.
- For delay when the paddle starts and stops, set DIP switch SW3 with switch 1 & 2 on . Adjust the time delay pot as necessary.

Fail-Safe Selection: This feature allows the operator to select the desired alarm state should input power, electronics, or motor ever fail. Refer to figure 2 for relay alarm/non-alarm states.

To select High Level Fail-Safe, move the fail-safe selector switch SW2 to HL position.

To select Low Level Fail-Safe, move the fail-safe selector switch SW2 to LL position.

Relay Outputs: There are two separate SP/DT relays on the Super Safe Plus. The main "level alarm" relay has contacts rated 10 amps. The contacts are connected to the output terminal block positions 6, 7, & 8.
The second relay has contacts rated 0.6 amps. These contacts are connected to the output terminal block positions 3, 4, & 5. This secondary relay can be used two ways:

1. As an additional level alarm relay, mimicking the level alarm. This will then allow a DP/DT "level alarm" output, giving two separate isolated contacts for level indication if needed. This is the factory default position setting.
2. As a separate "Failure Indication" relay. When jumper JU2 is cut, the relay will change state only when a "Failure" status is sensed. "Failure" condition consists of:
   - No input power
   - Motor or clutch failure
   - Circuit board failure

   To enable the second relay as a "Failure" indication relay, cut jumper JU2. (see figure 1.)

WARNING: Turn off power before cutting jumper.

Note: The Main "level alarm" relay changes state with changes in material level. It will also change state to the alarm position when a Failure is sensed. See figure 2 for contact positions at various states.

External Lights: The external red and green LED's are used to indicate alarm and failure modes. Following is the explanation of each condition:

Red LED	Green LED	Indication
Off	Off	No power to unit
Off	Illuminated	Normal non alarm condition
Illuminated	Illuminated	Material level alarm (see note 1.)
Illuminated	Blinking	Cavitation of Paddle (see note 2.)
Off	Blinking	Cavitation of Paddle (see note 3.)
Blinking	Off	Failure (see note 4.)
Blinking	Blinking	Test Mode (see note 5.)

Note 1. - If unit is set in "High level fail-safe" (HLFS) this condition means material is present on paddle. If unit is set in "Low level fail-safe" (LLFS) this condition means no material is at paddle.
Note 2. - This condition means that paddle rotation is not completely stalled with material on the paddle, but has detected the material presence. Output relays do indicate material presence. This may be normal in light or fluffy materials.
Note 3. - This condition is the same as Note 2., however unit is in "Low level fail-safe".
Note 4. - The unit has failed to sense paddle rotation, and motor has not moved to the material presence position.
Note 5. - This is the indication given when the external "fob" test is made. See following section on "Function Test Feature".

Function Test Feature: With material below the paddle, place the FOB so that the holes are aligned over the two external LED's on the cover.

- The red and green LED will blink on and off in tandem, and the "Level Alarm" relay will indicate material presence. If Jumper JU 2 is cut, the "Failure Indication" relay will indicate failure condition.

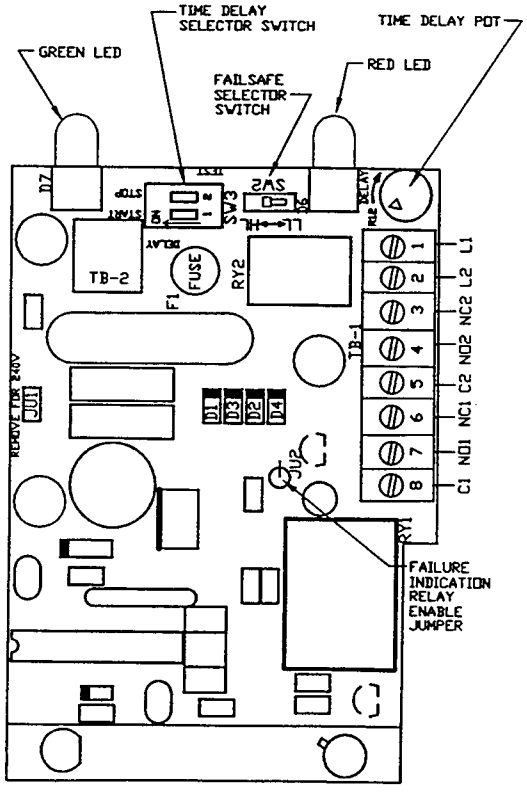


Figure 1

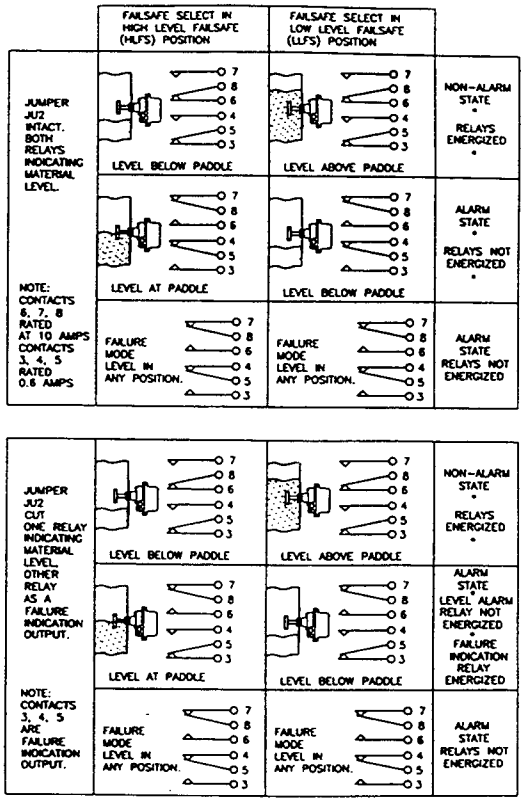


Figure 2

SPECIFICATIONS

A. *Housing & Cover*
Standard: Dust-tight and weatherproof (NEMA 4x,5) polyester-coated aluminum castings.
Explosionproof: UL & C-UL Listed (NEMA 7/9), polyester coated aluminum castings. **PENDING**

B. Drive Shaft Assembly
Precision machined shaft with two shielded ball bearings.

C. Teflon/Viton Shaft Seal
Rated 1/2 micro at 30 psi at 400 F (204 C), though the unit is only rated to 200 F (93 C) without external cooling.

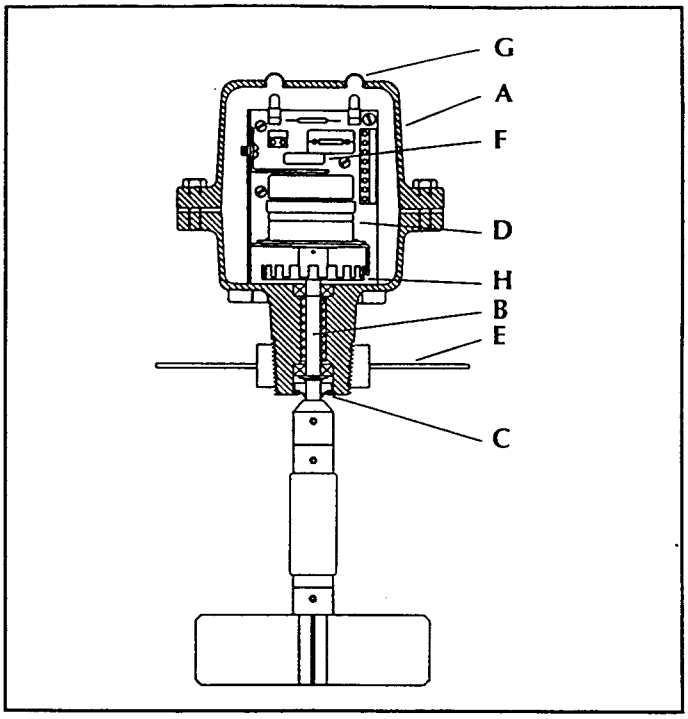
D. Motor
4 watts, 1 RPM, Input + 10%, 50/60 Hz on AC versions, Continuous stalled condition will not affect this synchronous motor. Heat generated by the motor's continuous running eliminates moisture, preventing internal corrosion and unit failure. Conduit connection: Drilled and tapped for 3/4" NPT pipe conduit.

E. Mounting Plate
8" outside diameter with 1-1/4" NPT coupling; standard polyester coated mild steel; optional 302 stainless steel.

F. Fail-Safe Circuitry
Switch position allows customer selection of fail-safe mode. Electrical connections readily accessible for ease of installation.

G. External Lights
Green (power and diagnostics) and red (alarm and dignostics) lights

H. Pulse Wheel
A multi-toothed pulse wheel, combined with an opto-reflective circuit, provides continuous monitoring of shaft rotation.



Relay
"Level Alarm" relay contacts: SPDT, 1 Form C, 10 Amps at 125 VAC, 6 Amps at 277 VAC, 5 Amps at 30 VDC,
1/8 HP at 125/277 VAC
"Failure Indication" relay contacts: SPDT, 1 Form C, 0.6 Amps at 125 VAC, 2 amps at 30 VDC

Power Consumption
7 watts; 1/8 amp internally fused

Wiring Diagram
Recommended Hookup wire 14 AWG or as required by local standards

All Roto-Bin-Dicator Super-Safe Plus controls are **pending** Underwriter's Laboratories, Inc. listings. The weatherproof models are for non-hazardous atmospheres. The explosion-proof models are for use in hazardous atmospheres, Class I, Groups C and D; and Class II, Groups E, F, and G.

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