# Bin Level Control

## Original Roto-Bin-Dicator®

### VERSATILE ENOUGH TO BECOME YOUR GLOBAL STANDARD

The Roto-Bin-Dicator is the most universal of all level sensing technologies and is the most popular level switch used in dry bulk materials. The RotoBin-Dicator is a rotating paddle type, bulk material level sensor offered with a wide variety of paddle options for unequaled application versatility. It is easy to install and requires no special tools or calibration.

### FEATURES AND BENEFITS:

- A simple, mechanical mechanism means no calibration is required for quick installation
- Long-lasting, sealed motor keeps maintenance and replacement costs low
- Extensive Paddle Options to adapt to a variety of applications
- Frame designed to enable connection flexibility
  - Imperial or Metric conduit entry options
  - Process Fitting can be made to fit any connection

### Original Roto-Bin-Dicator® Specifications

| | |
|---|---|
| Power Requirements | 24/120/240 VAC; 50/60 Hz, 24 VDC |
| Power Consumption | 5 watts |
| Motor | 1 RPM |
| Fail-Safe Circuitry | Low level fail safe |
| Switch Rating | General Purpose: SPDT 20A @ 125/250/480 VAC.<br>Pilot Duty: 345 VA, 115 VAC; 690 VA, 230 VAC |
| Process Temperature | -20º to 302º F (-29º to 150º C) Standard<br>Up to 500º F (Up to 260º C) with Extension 3 and Lag |

| | |
|---|---|
| Drive Shaft Assembly | Precision machined shaft with two shielded ball bearings |
| Shaft Seal | Teflon®/Viton® Lipseal rated 1/2 micron @ 30 psi (2.1 kg/cm2) @ 400º F (204º C) |
| Housing and Cover | Type 4X/IP66 polyester coated aluminum casting |
| Mounting Plate | 8" outside diameter with 11/4" NPT pipe threaded coupling; standard polyester coated mildsteel; optional 304 stainless steel; H-19 Half Coupling; H-192 Full Coupling |
| Conduit Entry | 3/4" NPT or M20 x 1.5 |
| Rigid Shaft and Paddle | Metal parts of all designs are 316 stainless steel |
| Flex Shaft | Available in neoprene, 155º F (68º C) or silicone, 400º F (204º C) coatings |
| Shipping Weight | Aluminum housing 10 lbs (4.5 kg)<br>Stainless steel housing 16 lbs (7.3 kg) |

# Roto-Bin-Dicator® Ordering Configuration - Part One

Complete Configuration

Power Pack Options

____ - ____ ____ ____ ____ ____ ____ ____ ____ - ____ - ____

**Process Fitting**
X1 = Aluminum Frame Neck, NPT 1-1/4"
X2 = 304 Stainless Steel Frame Neck, NPT 1-1/4" (Note 12)
C2 = 316 Stainless Steel NPT 1-1/4
D2 = 316 Stainless Steel NPT 1-1/2"
E2 = 316 Stainless Steel BSP Tapered R 1-1/4"
F2 = 316 Stainless Steel BSP Tapered R 1-1/2"
J2 = 316 Stainless Steel BSP Straight G 1-1/4" (Note 11
K2 = 316 Stainless Steel BSP Straight G 1-1/2" (Note 11)
M2 = 316 Stainless Steel Tri-Clamp 1-1/2" (Note 13)
N2 = 316 Stainless Steel Tri-Clamp 2" (Note 13)

**Housing Finish**
A = Powder Coated Aluminum
B = 304 stainless steel (Notes 2, 3, 12)
C = Epoxy Painted Aluminum
D = Electroless Nickel Plated Aluminum (Note 2)

**Model** (Note 1)

**Ordinary Location**

Standard Roto-Bin-Dicator
R-H = 120 VAC, 1SPDT
RA-H = 120 VAC, 2SPDT
RB-H = 240 VAC, 1SPDT
RC-H = 240 VAC, 2SPDT
RD-H = 24 VDC, 1SPDT
RE-H = 24 VDC, 2SPDT
RF-H = 24 VAC, 1SPDT
RG-H = 24 VAC, 2SPDT
R-HM = 120 VAC, 1SPDT, Metric
RA-HM = 120 VAC, 2SPDT, Metric
RB-HM = 240 VAC, 1SPDT, Metric
RC-HM = 240 VAC, 2SPDT, Metric
RD-HM = 24 VDC, 1SPDT, Metric
RE-HM = 24 VDC, 2SPDT, Metric
RF-HM = 24 VAC, 1SPDT, Metric
RG-HM = 24 VAC, 2SPDT, Metric

Note 1. For PowerPack ordering: for powder coated aluminum and 1-1/4 in. NPT order by model number only.

**Hazardous Location**

Standard Roto-Bin-Dicator
RX-H = 120 VAC, 1SPDT
RXA-H = 120 VAC, 2SPDT
RXB-H = 240 VAC, 1SPDT
RXC-H = 240 VAC, 2SPDT
RXD-H = 24 VDC, 1SPDT
RXE-H = 24 VDC, 2SPDT
RXF-H = 24 VAC, 1SPDT
RXG-H = 24 VAC, 2SPDT
RX-HM = 120 VAC, 1SPDT, Metric with ATEX and IEC approvals
RXA-H M= 120 VAC, 2SPDT, Metric with ATEX and IEC approvals
RXB-HM = 240 VAC, 1SPDT, Metric with ATEX and IEC approvals
RXC-HM = 240 VAC, 2SPDT, Metric with ATEX and IEC approvals
RXD-HM = 24 VDC, 1SPDT, Metric with ATEX and IEC approvals
RXE-HM = 24 VDC, 2SPDT, Metric with ATEX and IEC approvals
RXF-HM = 24 VAC, 1SPDT, Metric with ATEX and IEC approvals
RXG-HM = 24 VAC, 2SPDT, Metric with ATEX and IEC approvals

Note 14: For Hazardous Location models that require extended ambient temperature -40° to 113°F (-40° to 45°C), add suffix 'T' to model number.
Example: RX-HT

# Roto-Bin-Dicator® Ordering Configuration - Part Two

Complete Configuration

Power Pack Options

_____ - ____ ____ ____ ____ ____ ____ ____ - ____ - ____

**Lag Length** (Note 10)
Custom Lengths - 1 in. increments

**Extension Length** (Note 6, 9)
Extension 1
Extension 2 (Note 5)
Extension 3: Standard Lengths - 6 in. increments
Extension 3: Custom Lengths

**Lag** (Note 8)
A = None
B = 316 Stainless Steel - 6 in. Length
C = 316 Stainless Steel - 12 in. Length
D = 316 Stainless Steel - 18 in. Length
E = 316 Stainless Steel - 24 in. Length
F = 316 Stainless Steel Custom Length

**Extension**
0 = None
1 = 316 Stainless Steel Shaft (Note 4)
2 = 316 Stainless Steel Shaft with Guard (Note 4 and 6)
3 = 316 Stainless Steel Shaft with Guard & Lip Seal, (Notes 6, 7)

**Shaft Coupling**
A = None
B = Neoprene 3" Flexible Shaft; 170 º F (77 º C)Max Temp (H-36)
C = Molded Silicone 3" Flexible Shaft; 400º F (204º C) Max Temp (H-365)

**Paddles**
A = Standard 4-vane paddle - 1-1/2" x 5" (H-370) (Note 5)
B = Large 4-vane paddle - 2" x 7" (H-371) (Note 5)
C = Collapsible 2-vane SS paddle (H-380)
D = Single vane paddle, curved (H-379)
E = Single vane paddle with 30º cut - 1" x 2-7/8" (H-372A)
F = Multi-Flex, stainless steel - 1-1/2" x 17" (H-374) (Note 5)
G = Multi-Flex, solid neoprene - 1-1/2" x 24" (H-373) (Note 5)
H = None

**Mounting Plate** (Note 4)
0 = None
1 = 304 Stainless Steel 8" Mounting plate - Top Mounting, Full Coupling (H-192SS)
2 = 304 Stainless Steel 8" Mounting plate - Side Mounting, Half Coupling (H-19SS)
3 = Powder Coated Steel 8" Mounting Plate - Top Mounting, Full Coupling (H-192)
4 = Powder Coated Steel 8" Mounting Plate - Side Mounting, Half Coupling (H-19)

Notes:
2. Hazardous location approval not available with stainless steel Housing Finish or electroless nickel plated aluminum Housing Finish.
3. Function Test FOB not available with stainless steel Housing Finish
4. For Mounting Plates Process Fitting must be X1, X2, or C2. Extensions 1 and 2 must use Mounting Plate 1 or 3 (Top Mounted)
5. Mounting plate is required.
6. Shaft guard length will be 2 in. (5 cm) shorter than extension length unless otherwise noted
7. Process Fitting cannot be X1 or X2 and maximum length is 36 in. (91 cm) and if used with Extension, the maximum total length is 48 in. (122 cm)
8. Lag not available with process fitting X1 or X2, and if used with Extension, the maximum total length is 48 in. (122 cm)
9. Maximum extension length is 180 in. (4.6 m), minimum length is 3 in. (7.6 cm); leave blank if not used.
10. Maximum lag length is 24 inches, minimum length 1 in. (2.5 cm); leave blank if not used
11. EPDM Flat gasket is included for Process Fittings with straight threads.
12. X2 Process Fitting and Stainless Steel Housing Finish can only be ordered together.
13. M2 and N2 Process Fitting only available with C, D, E, F and G Paddles.

**Notes:**

# Roto-Bin-Dicator® PRO

## ACTIVELY PROTECTING VALUABLE INVENTORY

The Roto-Bin-Dicator® PRO is a paddlewheel type level device that outperforms others in its class. This simple device monitors the level of dry bulk material and indicates when there has been a change. The fail-safe PRO model is unique in that it comes standard with functional diagnostics that detect a unit fault even when the paddle is buried in material; unlike other paddlewheel devices.

The PRO provides added reliability by employing redundant methods of detection. These methods monitor shaft rotation as well as motor behavior, making it more reliable with regards to not missing a reading or creating a false positive.

**FEATURES AND BENEFITS:**

- Diagnostics – While the paddle is in or out of material self-checks are performed to detect unit faults which are differentiated and alerted through LED flash codes
- High/Low Level Failsafe – user selectable
- Motor Pause – optional setting, motor function will pause after a prolonged period of time where no change in material state is detected, saving power and extending the life of the unit
- Time Delay – delay the activation and deactivation of the alarm relay
- Sensitivity Adjustments - motor torque can be adjusted +/- 30% to match materials of varying bulk densities
- Test FOB – check the functionality of the unit without removing the cover and while the paddle is in or out of material
- Universal Input Power provides flexibility to match power availability
- Fault Option - optional setting, critical faults trigger an alarm, eliminates need to jumper relays to obtain genuine fail-safe operation
- Unique Frame Design to enable connection flexibility
    - Imperial or Metric conduit thread options
    - Process Fitting can be made to fit any connection
    - Extension and lag configurations available for added shaft length or high temperature applications

DETECT & DIFFERENTIATE FAULTS

Functional Diagnostics

| | |
|---|---|
| Supply Voltage Fault | The power supply voltage is too low. |
| Motor Not Connected | The motor has become disconnected from the power supply |
| Electronics Temperature Range | The electronic boards have gone outside the accepted temperature range. |
| Motor Failure | Low level fail safe |
| Gear Train Failure | Internal rotation mechanics are bound. |
| Electronics Fault | Communication error between the LED (top) and power supply (bottom) electronic boards. |

# Roto-Bin-Dicator® Pro Ordering Configuration - Part One

Complete Configuration

Power Pack Options

PRO-A - ____ ____ ____ ____ ____ ____ ____ ____ - ____ - ____

**Shaft Coupling**
A = None
B = Neoprene 3" Flexible Shaft; 170 º F (77 º C)Max Temp (H-36)

**Paddles**
A = Standard 4-vane paddle - 1-1/2" x 5" (H-370) (Note 5)
B = Large 4-vane paddle - 2" x 7" (H-371) (Note 5)
C = Collapsible 2-vane SS paddle (H-380)
D = Single vane paddle, curved (H-379)
E = Single vane paddle with 30º cut - 1" x 2-7/8" (H-372A)
F = Multi-Flex, stainless steel - 1-1/2" x 17" (H-374) (Note 5)
G = Multi-Flex, solid neoprene - 1-1/2" x 24" (H-373) (Note 5)

**Mounting Plate** (Note 4)
0 = None
1 = 304 Stainless Steel 8" Mounting plate - Top Mounting, Full Coupling (H-192SS)
2 = 304 Stainless Steel 8" Mounting plate - Side Mounting, Half Coupling (H-19SS)
3 = Powder Coated Steel 8" Mounting Plate - Top Mounting, Full Coupling (H-192)
4 = Powder Coated Steel 8" Mounting Plate - Side Mounting, Half Coupling (H-19)

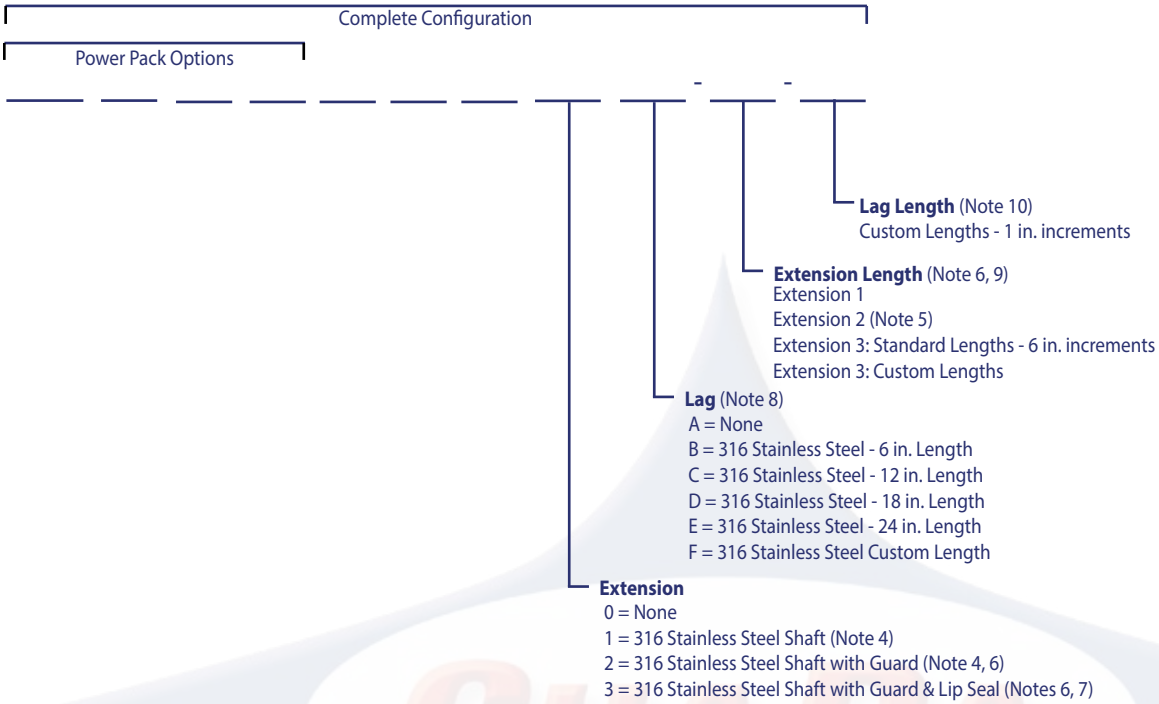
**Process Fitting**
X1 = Aluminum Frame Neck, NPT 1-1/4"
X2 = 304 Stainless Steel Frame Neck, NPT 1-1/4" (Note 12)
C2 = 316 Stainless Steel NPT 1-1/4
D2 = 316 Stainless Steel NPT 1-1/2"
E2 = 316 Stainless Steel BSP Tapered R 1-1/4"
F2 = 316 Stainless Steel BSP Tapered R 1-1/2"
J2 = 316 Stainless Steel BSP Straight G 1-1/4" (Note 11)
K2 = 316 Stainless Steel BSP Straight G 1-1/2" (Note 11)
M2 = 316 Stainless Steel Tri-Clamp 1-1/2" (Note 13)

**Housing**
A = Powder Coated Aluminum
B = 304 stainless steel (Notes 2, 3, 12)
C = Epoxy Painted Aluminum
D = Electroless Nickel Plated Aluminum (Note 2)

**Base Unit**
G = 3/4" NPT Conduit Entry with Ordinary Location Approval
GM = M20 x 1.5" Conduit Entry with Ordinary Location Approval
X = 3/4" NPT Conduit Entry with Hazardous Location Approval (Note 2)
XM = M20 x 1.5" Conduit Entry with Hazardous Location Approval (Note 2)
XT = 3/4" NPT Conduit Entry with Hazardous Location Approval - Extended Temperature Range (Note 2, 14)
XMT = M20 x 1.5" Conduit Entry with Hazardous Location Approval - Extended Temperature Range (Note 2, 14)

**Model** (Note 1)
Roto-Bin-Dicator PRO

# Roto-Bin-Dicator® Pro Ordering Configuration - Part Two




Notes:

1. For PowerPack ordering, stop the part number after the Process Fitting selection.
2. Hazardous location approval not available with stainless steel Housing Finish or electroless nickel plated aluminum Housing Finish
3. Function Test FOB not available with stainless steel Housing Finish
4. For Mounting Plates Process Fitting must be X1, X2, or C2. Extensions 1 and 2 must use Mounting Plate 1 or 3 (Top Mounted)
5. Mounting plate is required.
6. Shaft guard length will be 2 in. (5 cm) shorter than extension length unless otherwise noted
7. Process Fitting cannot be X1 or X2 and maximum length is 36 in. (91 cm) and if used with Extension, the maximum total length is 48 in. (122 cm)
8. Lag not available with process fitting X1 or X2, and if used with Extension, the maximum total length is 48 in. (122 cm)
9. Maximum extension length is 180 in. (4.6 m), minimum length is 3 in. (7.6 cm); leave blank if not used.
10. Maximum lag length is 24 inches, minimum length 1 in. (2.5 cm); leave blank if not used
11. EPDM Flat gasket is included for Process Fittings with straight threads.
12. X2 Process Fitting and Stainless Steel Housing Finish can only be ordered together.
13. M2 and N2 Process Fitting only available with C, D, E, F and G Paddles.
14. Extended ambient temperature range is -40° to 140 °F (-40° to 60° C).

# Roto-Bin-Dicator® Pro Specifications

## Functional

| | |
|---|---|
| Operating Power | Universal, 120-240 VAC, 50/60 Hz or 24-48 VDC |
| Power Consumption | 3 watts (1.8 watts in Pause Mode) |
| Ambient Temperature | Ordinary Location: -40° to 158° F (-40° to 70° C)<br>Hazardous Location: -4° to 140° F (-20° to 60° C)<br>Hazardous Location,<br>Extended: -40° to 140° F (-40° to 60° C) |
| Process Temperature | -20° to 302° F (-29° to 150° C) Standard<br>Up to 500° F (Up to 260° C) with Extension 3 and Lag |
| Outputs | Main Relay: 8A DPDT @ 240 VAC or 30 VDC (resistive)<br>Auxiliary Relay: 0.46A SPDT @ 150 VAC or 30 VDC |

## Performance

| | |
|---|---|
| Time Delay | Field Selectable; up to 25 seconds. |
| Fail Safe | Field Selectable; high/low level |
| Sensitivity | Minimum 3.4 lbs/ft$^3$ (54 kg/m3); Field Adjustable; Paddle Dependent |
| Diagnostics | LED Indicators with blink codes; see IOM for code interpretation |

## Physical

| | |
|---|---|
| Enclosure Material | Aluminum, Epoxy Coated Aluminum, Stainless Steel or Electroless Nickel Plated Aluminum |
| Dual Conduit Entry | 3/4" NPT or M20 x 1.5 |
| Mounting Plate Material | Mild Steel or 304 Stainless Steel |
| Rigid Shaft and Paddle | Metal parts of all designs are 316 stainless steel |
| Flex Shaft | Available in neoprene, 155° F (68° C) or silicone, 400° F (204° C) coatings |
| Shipping Weight | Aluminum housing 10 lbs (4.5 kg)<br>Stainless steel housing 16 lbs (7.3 kg) |



ChaDa Sales, Inc. | 815 East 12th Street, Lawrence, KS 66044

# Mini Roto-Bin-Dicator®

The Roto-Bin-Dicator® is the most universal of all level sensing technologies and is the most popular level switch used in dry bulk materials. The Roto-Bin-Dicator® is a rotating paddle type, bulk material level sensor offered with a wide variety of paddle options for unequaled application versatility. It is easy to install and requires no special tools or calibration. The impact resistant injection molded Mini Roto has been designed for use in small bins and hoppers where mounting space is at a premium. This compact and rugged level sensor includes adjustable sensitivity allowing it to be used in materials with densities between 5 lbs/ft3 and 65 lbs/ft3.

## How to Order Mini Roto-Bin-Dicator®

MR - ___ - Y - 1

- **Mini Roto**
- **Voltage**
  - 1 = 120 VAC
  - 2 = 240 VAC
  - 3 = 24 VDC
  - 4 = 24 VAC
- **LED**
  - Yes
- **Enclosure**
  - 1 = Nema 4X, Minlon®

### Features and Benefits

Simple Mechanical Mechanism
- No calibration required

Wide Variety of Paddle Options
- Unequaled application versatility

Mount in Any Orientation
- High, intermediate, or low level indication
- Bulk densities from 5 lb/ft3 to 65 lb/ft3

### Accessories

| | |
|---|---|
| LMR110006 | 2 Vane (3"x12") PVC Paddle |
| LMR110007 | PVC Extension & Guard Assembly |
| LMR110008 | 304 SS Extension & Guard Assembly |
| LMR120003 | Insertable paddle, Nylon® |
| LMR120006 | 4 Vane Paddle, Nylon® |
| LMR120024 | 4 Vane Paddle, Ryton® |
| LMR120025 | 4 Vane Paddle, Food Grade |
| LMR120026 | Insertable Paddle, Ryton® |
| LMR120027 | Insertable Paddle, Food Grade |
| LMR130025 | Mounting Plate, Nylon® |
| LMR130026 | Mounting Plate Gasket |

# Roto-Bin-Dicator® Replacement Parts

## Mouting Plates

Includes H-20 Mounting Gasket

| Part Number | Model | Description |
|---|---|---|
| LAR110130 | H-19 | Mild Steel (Side of Bin) |
| LAR110140 | H-19SS | 304 Stainless Steel (Side of Bin) |
| LAR110180 | H-192 | Mild Steel (Top of Bin) |
| LAR110190 | H-192SS | 304 Stainless Steel (Top of Bin) |

## Shaft Couplings

| Part Number | Model | Description |
|---|---|---|
| LAR110270 | H-36 | Neoprene 3 in. Flexible Shaft; 170º F (77º C) Max Temp |
| LAR120640 | H-38 | Stainless Steel, 3 in. |
| LAR110275 | H-36S | Molded Silicone 3 in. Flexible Shaft; 400º F (204º C) Max Temp |

## Paddles

All are stainless steel except model H-373.

| Part Number | Model | Description |
|---|---|---|
| LAR110310 | H-370 | 4-Vane; 1 1/2"x 5" Diameter with Pins |
| LAR110360 | H-371 | 4-Vane; 2" x 7" Diameter with Pins |
| LAR110430 | H-373 | Multiflex; Solid Neoprene 1 1/2" x 24" with Pins |
| LAR110450 | H-374 | Multiflex; Stainless Steel 1 1/2" x 17" with Pins |
| LAR111037 | H-379 | 1-Vane; Insertable with Pins |
| LAR111040 | H-372A | 1-Vane; 1" x 2 7/8" with 45º Cut |
| LAR111200 | H-380 | 2-Vane Collapsible, Stainless Steel |

NOTE. Consult the manufacturing facility on applications where the housing ambient temperature is above 200º F (93º C).

## Shaft Extensions

| Part Number | Description |
|---|---|
| LUB040500 | 316 Stainless Steel, 1/8 in. pipe |

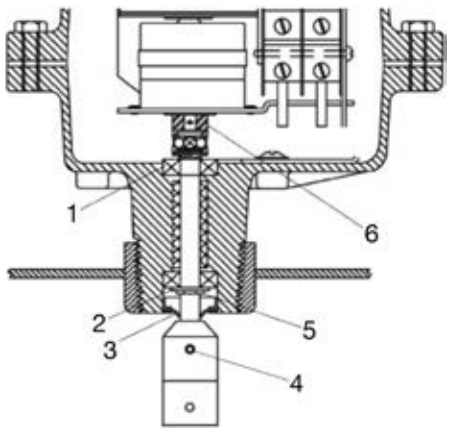
## Shaft Guards

| Part Number | Description |
|---|---|
| LUB040510 | 316 Stainless Steel, 1-1/4" NPT |

## Lower Housing Assembly

**NOT FOR EXPLOSION PROOF UNITS**: Bindicator® does not recommend the customer replacing the H-21 Clutch Assembly. Instead, replace the lower housing assembly, which includes all of the parts listed below.

| Detail Number | Part Number | Description | QTY Required |
|---|---|---|---|
| 1 | LAR130330 | H-12 Bearing | 2 |
| 2 | LAR131250 | Spring Washer | 2 |
| 3 | LAR131230 | H-32 Teflon® Lip Seal | 1 |
| 4 | LUA031190 | 5954 Roll Pin | 1 |
| 5 | LUC033190 | Retaining O-Ring | 1 |
| 6 | LAR111012 | H-21 Clutch Assembly | 1 |



# Roto-Bin-Dicator® Replacement Parts Continued

## Heavy Duty Roto-Bin-Dicator Parts

| Part Number | Model | Description |
|---|---|---|
| LAR110070 | A-H-9A-K-HD | Heavy Duty Roto-Bin-Dicator® Motor Replacement Kit: 120 VAC, 4 W, 1 rpm, 50/60Hz; Includes bracket and washer (see Note 1) |
| LAR110100 | A-H-9D-K-HD | Heavy Duty Roto-Bin-Dicator® Motor Replacement Kit: 240 VAC, 4 W, 1 rpm, 50/60 Hz; Includes bracket and washer (see Note 2) |
| LAR110940 | A-RX-1 | Lower Frame Assembly (General Purpose): Aluminum, Gasket, Clutch/Drive Shaft, Bearings, Seal, and Stub Shaft |
| LAR110945 | | Lower Frame Assembly (General Purpose): Stainless Steel, Gasket, Clutch/Drive Shaft, Bearings, Seal, and Stub Shaft |
| LAR111002 | RX 1/RX 2 | Housing Assembly (Explosionproof): Aluminum, Clutch/Drive Shaft, Bearings, Shaft Seal, and Stub Shaft; Cover Included |
| LAR111024 | | Standard Motor Replacement Kit: 24 VAC, 4W, 1 rpm, 50/60 Hz |
| LAR111025 | H-10C | Micro Switch, SP/DT with Barrier |
| LAR111026 | H-10E | Double Micro Switch, SP/DT with Barrier, Nut, and Screw |
| LAR120050 | H-3 | Switch Bracket |
| LAR120070 | | Housing Cover (General Purpose): Stainless Steel |
| LAR120470 | H-23 | Barrier, Terminal Block |
| LAR121960 | RX-2 | Housing Cover (General Purpose): Aluminum |
| LAR130300 | H-11 | Terminal Block |
| LAR111193 | | 24 VDC to 24 VAC Inverter Board |
| LAR150170 | | Refurbished Stainless Steel RSSP1G |

NOTE 1. Replaces the Standard 120 VAC Motor Replacement Kit (Part Number LAR110030, Model A-H-9A-K).
NOTE 2. Replaces the Standard 240 VAC Motor Replacement Kit (Part Number LAR110060, Model A-H-9D-K).

## Common Roto-Bin-Dicator Parts

| Part Number | Model | Description |
|---|---|---|
| LAR120480 | H-24 | Motor Support Bracket; Not used with Fail-Safe or Fail-Safe-Plus Roto-Bin-Dicator® Models |
| LAR121930 | H-35 | Stub Shaft with Pins |
| LAR122142 | | 316 Stainless Steel Tag |
| LAR131230 | | Lip Seal, RBD |
| LAR131394 | | Aluminum Tag |
| LAR131413 | | Lip Seal, 90psi |
| LUA031190 | 5954 | Pin for Paddle (1/8" x ¾") |
| LUBK43300 | | Fiber Gaskets, Pack of 5 |
| LUBK43303 | | Food Grade Gaskets, Pack of 5 |
| LUBK43304 | | Fiber Gasket, Metric, Pack of 5 |
| LUBK43307 | | Food Grade Gasket, Metric, Pack of 5 |
| LUBK43314 | | G-Thread Fitting Gasket, Pack of 5 |

**Notes:**

# VRF® II Series Capacitance Probe

## SURPASSING SENSITIVITY FOR THE TOUGHEST APPLICATIONS

Shown with X1 Process Fitting
Imperial Conduit Entry

The VRF® II Series uses radio frequency to detect the presence or absence of material in a vessel. It compensates for the load of the probe and vessel environment to automatically determine the optimal operating frequency for the greatest sensitivity and stability.

## FEATURES AND BENEFITS

- Universal Input Power provides flexibility in location of the unit
- The VRF II can automatically calibrate itself when the probe senses large decrease in the impedance with EZ-CAL II
- Adjustable Time Delay allows the user to determine time between sensing material and the alarm state. Advanced units can permit delays when it detects the presence and absence of material or a combination.
- Sensitivity Settings can be selected to fit specific applications and material requirements.
- Probes have been designed with Pro-Guard® that has the ability to ignore the effects of coatings that can adhere to the probe
- Move electronics up to 100 ft (30 m) away with the Remote Option
- Standard and Advanced offering enables the user to choose the option that best suits the application.
- Frame designed to enable connection flexibility
  - Imperial or Metric conduit entry option
  - Process Fitting can be made to fit any connection

### Standard vs. Advanced Units

| Standard | Advanced |
|---|---|
| 4 Sensitivity Settings (min 1.5 pF) | 7 Sensitivity Settings (min 0.5 pF) |
| Time Delay up to 6 seconds | Time Delay up to 150 seconds |
| Manual, Push Button for Test and Calibration | Test and Calibration with FOB |
| Universal Power | Universal Power |
| | Indicator Lights |
| | Auxiliary Relay |

# VRF® II Standard Unit Ordering Configuration

VRFII -

**Probe Type**
0 = Standard Ryton®
2 = Food Grade Polysulfone (Note 3)
4 = Stub Polysulfone (Note 3)
5 = Heavy Duty Ryton®
9 = Heavy Duty Food Grade Polysulfone (Note 3)

**Process Fitting**
(Other custom fittings available, consult factory)
X1 = Aluminum Frame Neck, NPT 11/4" (Note 2, 4)
A2 = 316 Stainless Steel, NPT 1-1/4" and 3/4"
C2 = 316 Stainless Steel, NPT 11/4"
D2 = 316 Stainless Steel, NPT 11/2"
F2 = 316 Stainless Steel, BSP Tapered R 11/2"

**S**

**Base Unit**
G = 3/4" NPT Conduit Entry with Ordinary Location Approval
GM = M20 x 1.5" Conduit Entry with Ordinary Location Approval
X = 3/4" NPT Conduit Entry with Hazardous Location Approval (Note 4)
XM = M20 x 1.5" Conduit Entry with Hazardous Location Approval (Note 4)
XT = 3/4" NPT Conduit Entry with Hazardous Location Approval - Extended Temperature Range (Note 4, 5)
XMT = M20 x 1.5" Conduit Entry with Hazardous Location Approval - Extended Temperature Range (Note 4, 5)

**Electronics**
A = Advanced
R = Remote Probe Only (Remote electronics need to be ordered separately)

**VRFII** (Note 1)

Notes:
1. Units have powder coated aluminum Housing Finish.
2. X1 Process Fitting includes a 3/4" NPT 316 stainless steel bin connector.
3. EPDM food grade gasket is standard.
4. Process Fitting X1 cannot be used with Hazardous Location Approval.
5. Extended ambient temperature range is -40° to 158° F (-40° to 70° C).

# VRF® II Standard Cable Unit Ordering Configuration

VRFII -

**Cable Extension Length** (Note 4)
Standard Lengths - 6" increments
Custom Lengths - 1" increments

**Cable Type**
B = Cable - Stainless Steel
C = Cable - Nylon® Coated
D = Cable - Teflon® Coated
E = Cable - Stainless Steel w/detachable weight

**Probe Type**
0 = Standard Ryton®
2 = Food Grade Polysulfone (Note 3)
4 = Stub Polysulfone (Note 3)
5 = Heavy Duty Ryton®

**Process Fitting**
(Other custom fittings available, consult factory)
X1 = Aluminum Frame Neck, NPT 11/4" (Note 2, 5)
A2 = 316 Stainless Steel, NPT 1-1/4" and 3/4"
C2 = 316 Stainless Steel, NPT 11/4"
D2 = 316 Stainless Steel, NPT 11/2"
F2 = 316 Stainless Steel, BSP Tapered R 11/2"

**S**

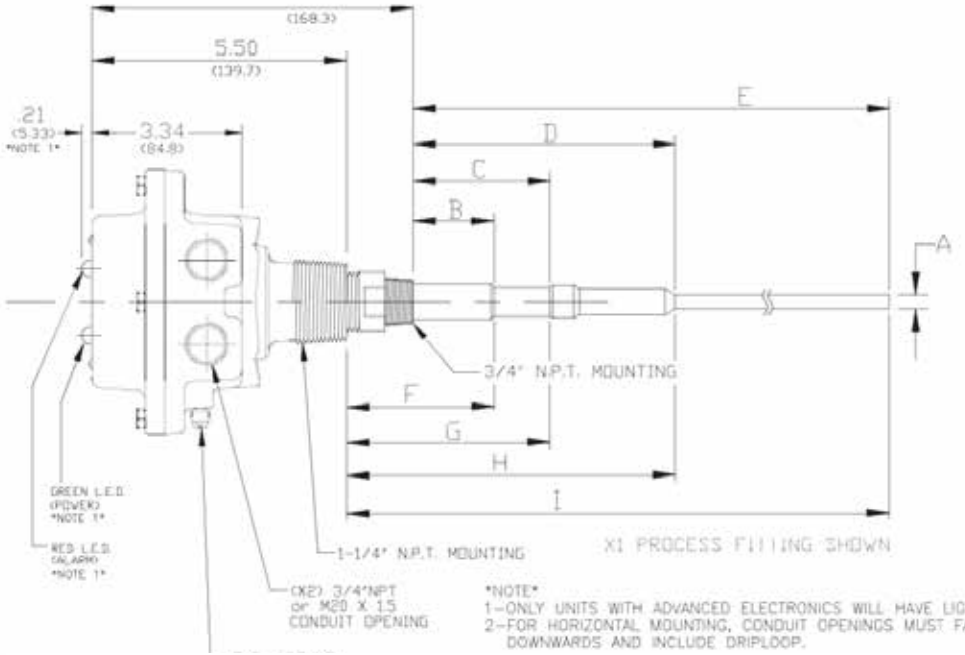
**Base Unit**
G = 3/4" NPT Conduit Entry with Ordinary Location Approval
GM = M20 x 1.5" Conduit Entry with Ordinary Location Approval
X = 3/4" NPT Conduit Entry with Hazardous Location Approval (Note 5)
XM = M20 x 1.5" Conduit Entry with Hazardous Location Approval (Note 5)
XT = 3/4" NPT Conduit Entry with Hazardous Location Approval - Extended Temperature Range (Note 5, 6)
XMT = M20 x 1.5" Conduit Entry with Hazardous Location Approval - Extended Temperature Range (Note 5, 6)

**Electronics**
A = Advanced
R = Remote Probe Only (Remote electronics need to be ordered separately)
S = Standard

**VRFII** (Note 1)

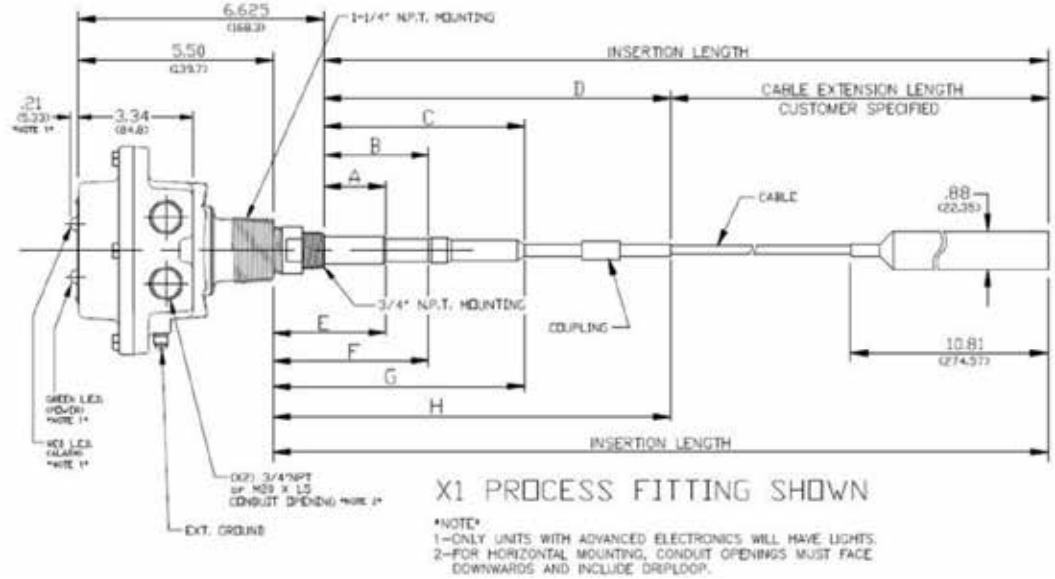
Notes:
1. Units have powder coated aluminum Housing Finish.
2. X1 Process Fitting includes a 3/4" NPT 316 stainless steel bin connector.
3. EPDM food grade gasket is standard.
4. Maximum length is 540" (13.7 m), minimum length is 12" (30.5 cm). Length cannot be zero.
5. Process Fitting X1 cannot be used with Hazardous Location Approval.

## VRF® II Standard Unit Dimensions




| | | | |
|---|---|---|---|
| I | 15.25 (387.5) | 19.25 (489) | 15.25 (387.35) |
| H | 7.00 (178) | 11.75 (298.5) | 3.63 (92.2) |
| G | 4.50 (145) | 10.00 (254) | 3.25 (82.55) |
| F | 3.38 (86) | 8.5 (216) | 2.75 (69.85) |
| E | 14.25 (362) | 18.25 (463.5) | 14.25 (362) |
| D | 6.00 (152.5) | 10.75 (273) | 2.63 (66.8) |
| C | 3.50 (89) | 9.00 (228.5) | 2.25 (57.2) |
| B | 2.38 (60.5) | 7.50 (190.5) | 1.75 (44.5) |
| A | .31 DIA. (8) | .38 DIA. (9.5) | .31 DIA. (8) |
| APPROX DIM'S | STD. & FOODGRADE | H.D. | STUB |
| PROBE TYPE | 0 & 2 | 5 & 9 | 4 |

## VRF® II Standard Cable Unit Dimensions




| | | | |
|---|---|---|---|
| H | 11.50 (292.1) | 16.25 (412.8) | 8.15 (206.2) |
| G | 7.00 (178) | 11.75 (298.5) | 3.63 (92.2) |
| F | 4.50 (145) | 10.00 (254) | 3.25 (82.6) |
| E | 3.38 (86) | 8.50 (216) | 2.75 (69.9) |
| D | 10.50 (266.7) | 15.25 (387.4) | 7.15 (180.8) |
| C | 6.00 (152.5) | 10.75 (273) | 2.63 (66.8) |
| B | 3.50 (89) | 9.00 (228.5) | 2.25 (57.2) |
| A | 2.38 (60.5) | 7.50 (190.5) | 1.75 (44.5) |
| APPROX DIM'S | STD. & FOODGRADE | H.D. | STUB |
| PROBE TYPE | 0 & 2 | 5 | 4 |

# Bin-Dicator® diaphragm-type level controls

## MODEL 'A'

- 10 ¼" diameter
- Explosion proof model avail.
- 7 diaphragm material options

## AUTO-BIN-DICATOR®

- 8" diameter
- Cast aluminum housing
- Neoprene or SS diaphragm material
- Medium duty

## BANTAM BIN-DICATOR®

- 5 ¾" diameter
- 2 diaphragm material options
- Light duty

## Description

The original electromechanical point level switch, Bin-Dicator® diaphragm-type level controls were the first to enjoy general usage in the industry. Bin-Dicator® controls eliminate bin overflow, empty bins, clogged conveyors, choked elevators and resulting damage and waste.

## How it Works

The Bin-Dicator® control is a pressure actuated switch for use with free flowing bulk materials at atmospheric pressures. Actuation of the switch is the result of pressure exerted by the bulk material against the diaphragm assembly. De-actuation or switch release is a result of the bulk material clearing away from the diaphragm Bin-Dicator®

## Features and Benefits

Simple and Rugged Construction

- Can be mounted outside the bin for lower installation costs.

Simple Operating Mechanism

- Makes entire unit readily accessible for inspection, resulting in lower maintenance costs.

Many Variations Available

- For use in a wide range of dry materials and conditions of temperature, corrosion and moisture.

SPDT Switch

- No need to power electronics.

## How to Order Model 'A'

LAA - ____ - ____ - ____ - ____

**Mounting Configuration**
V = Vertical (Standard)
U = Underslope

**Exposed Parts Material**
C = Zinc-plated Carbon Steel (Standard)
S = 304 SS

**Diaphragm Material**
CX = Canvas
NL = Light Neoprene
NM = Medium Neoprene
NH = Heavy Neoprene
SH = Heavy Silicone Rubber
FT = Heavy Teflon® Coated Fiberglass
FX = Fiberglass

**Switch Type (See Note)**
10 = One Switch, rated for 185°F (85°C)
11 = One Switch, rated for 250°F (121°C)
12 = One Switch, rated for 800°F (427°C)
20 = Two Switches, rated for 185°F (85°C)
21 = Two Switches, rated for 250°F (121°C)
30 = Explosion Proof SP/DT Switch
31 = Explosion Proof DP/DT Switch
40 = Mercury Switch

**Model 'A' Bindicator**

Note: High-temperature switches not available with neoprene diaphrams.

## How to Order Auto-Bin-Dicator®

| Diaphragm Material | One Switch | Two Switches |
|---|---|---|
| Neoprene (Light) | B-1-N, LAB101800 | B-2-N, LAB101936 |
| Teflon® Neoprene | B-1-LT, LAB101808 | B-2-LT, LAB101944 |

Note: Specify if all metal parts exposed within the bin need to be stainless steel.

## How to Order Bantam Bin-Dicator®

| Diaphragm Material | One Switch | Two Switches |
|---|---|---|
| Neoprene (Light) | B-1-N, LAB101800 | B-2-N, LAB101936 |
| Teflon® Neoprene | B-1-LT, LAB101808 | B-2-LT, LAB101944 |

Note: Specify if all metal parts exposed within the bin need to be stainless steel.

# Continuous Level Measurement Options

## Cap-Level®

Cap-Level® II & Cap-Level® IIA are designed for level monitoring and control. The 4-20mA output provides a selectable dampening function to stabilize readings where severe agitation is present. Simple zero and span adjustment make calibration easy.

## F78MP Series Radar

The F78MP Series air radar sensor provides non-contact, continuous level measurement for bulk materials in bins, tanks and silos. Accurate and reliable in difficult environments, the F78MP Series is an ideal level meter for powder and bulk solid inventory management. The F78MP Series air radar withstands corrosive environments and takes consistent measurements in steam, dust and other turbulent conditions.

## SONO-1000 Ultrasonic Sensor

The SONO-1000 is a single tank ultrasonic sensor. This unit is a compact ultrasonic transmitter designed to measure the level of free flowing solids such as powders and granules. The SONO-1000 microprocessor is a smart level transmitter that offers a 4-20 mA output, and programmable relay. This is a level measurement technology that is a non-contact ultrasonic principle which is based on sonar or sound echo principles. The SONO-1000 is especially suited for applications where physical contact with the material being measured is undesirable.

## SonoTracker™ Ultrasonic Level System

The SonoTrackerTM Ultrasonic Level System can monitor up to 16 vessels with transducers of various frequencies, and vessels of different heights and shapes and accurately measure the level of many different materials. It allows you to read levels from 1 foot to beyond 100 feet in solids, and additionally the same unit can be used for open channel flow and differential level measurements.

# Continuous Level Measurement Options

## TDR-2000 Guided Wave Radar

The TDR-2000 provides continuous, non-mechanical level measurement, utilizing guided wave radar technology. The TDR-2000 is particularly suited for measuring the level of solids, granules, and powders, as well as a wide range of liquids. For many applications, the TDR-2000 is an economical and superior alternative to capacitance, ultrasonic, and plumb bob technologies.

## Yo-Yo™ Series Level Indicator

The Bindicator® Yo-YoTM is a weight and cable bin level sensor specifically designed for continuous level measurement of dry bulk solids inventory. The Yo-YoTM automates the use of a drop line for increased safety and accuracy. Available as an option, our Yo-YoTM Readout is an LCD display that can monitor up to 99 sensors and is used to program each cable and weight Yo-YoTM, which includes assigning identification and measuring ranges.

# Communication Devices

**ORB™ Remote Inventory Management**

The ORB™ Remote Inventory System transforms inventory and process data into management information that can increase productivity and reduce supply chain costs. By providing a reliable means of gathering and transmitting real-time inventory and process information via your LAN or the Internet, high volumes of data can be securely monitored, retrieved and organized by various users within the plant or remotely.

**InvisiLink™ Wireless Radio**

InvisiLink™ is a wireless radio solution for devices that communicate via RS-485 or RS-422. A radio is connected to both the measuring device, like a Yo-Yo or controller, and the receiving device, like an ORB. Then the InvisiLink radio sends data back and forth between the devices. This system eliminates the need for cables and conduit connecting a measuring device to a device collecting data. It is also possible to have a single device receive multiple data streams from 'send' devices.

**PRD1000 Multipurpose Display**

The PRD1000 is a multi-purpose, easy to use digital process meter ideal for level, flow rate, temperature, or pressure transmitter applications. It accepts current and voltage signals (e.g. 4-20 mA, 0-10 V). Its has a dual-line 6-digit display, advanced signal input conditioning, function keys, and Modbus RTU serial communications. The basic model includes an isolated 24 VDC transmitter power supply that can be used to power the input transmitter or other devices.