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**Roto-Bin-Dicator®**  
**Single & Double Switch Models**  
**Installation & Operation Manual**





# Roto-Bin-Dicator® Single & Double Switch Models Installation & Operation Manual

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## SAFETY SYMBOLS



### **WARNING:**

IDENTIFIES CONDITIONS OR PROCEDURES, WHICH IF NOT FOLLOWED, COULD RESULT IN SERIOUS INJURY. RISK OF ELECTRICAL SHOCK.



### **CAUTION:**

IDENTIFIES CONDITIONS OR PROCEDURES, WHICH IF NOT FOLLOWED, COULD RESULT IN SERIOUS DAMAGE OR FAILURE OF THE EQUIPMENT.

# Roto-Bin-Dicator®

## Single & Double Switch Models

### I. HANDLING AND STORAGE

#### SAVE THESE INSTRUCTIONS

#### INSPECTION AND HANDLING

Do not dispose of the carton or packing materials.

Each package should be inspected upon receipt for damage that may have occurred due to mishandling during shipping. If the unit is received damaged, notify the carrier or the factory for instructions. Failure to do so may void your warranty. If you have any problems or questions, consult the manufacturer Customer Support at 800-778-9242.

#### DISPOSAL AND RECYCLING

This product can be recycled by specialized companies and must not be disposed of in a municipal collection site. If you do not have the means to dispose of properly, please contact the manufacturer for return and disposal instructions or options.

#### STORAGE

If the Roto-Bin-Dicator® is not scheduled for immediate installation following delivery, the following steps should be observed:

1. Following inspection, repackage the unit into its original packaging.
2. Select a clean dry site, free of vibration, shock and impact hazards.
3. If storage will be extended longer than 30 days, the unit must be stored at temperatures between 32° and 158° F (0° and 70° C) in non-condensing atmosphere with humidity less than 85%.



**CAUTION: DO NOT STORE A NON-POWERED UNIT OUTDOORS FOR A PROLONGED PERIOD.**

## II. GENERAL SAFETY



**WARNING: ONLY CERTAIN MODELS CAN BE USED IN HAZARDOUS LOCATIONS; SEE NAMEPLATE. THESE MODELS SHALL ONLY BE USED IN APPLICATIONS COVERED BY THE STATED RATINGS OR NON-HAZARDOUS LOCATIONS.**

### AUTHORIZED PERSONNEL

All instructions described in the document must be performed by authorized and qualified service personnel only. Before installing the unit, please read these instructions and familiarize yourself with the requirements and functions of the device. The required personal protective equipment must always be worn when servicing this device.

### USE

The device is solely intended for use as described in this manual. Reliable operation is ensured only if the instrument is used according to the specifications described in this document. For safety and warranty reasons, use of accessory equipment not recommended by the manufacturer or modification of this device is explicitly forbidden. All servicing of this equipment must be performed by qualified service personnel only. This device should be mounted in locations where it will not be subject to tampering by unauthorized personnel.

### MISUSE

Improper use or installation of this device may cause the following:

- Personal injury or harm
- Application specific hazards such as vessel overfill
- Damage to the device or system

If any questions or problems arise during installation of this equipment, please contact the manufacturer Customer Support at 800-778-9242.

### III. PRODUCT DESCRIPTION

Operation centers around the low torque, slow speed synchronous motor. The motor either turns the paddle in the absence of the bulk material, or turns itself to actuate the micro switch when paddle rotation is stopped by the bulk material. Constant power to the stalled motor keeps the switch actuated until the paddle is again free to turn.

#### TECHNICAL SPECIFICATIONS

##### FUNCTIONAL

Operating Power	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. Pilot Duty: 345 VA, 115 VAC; 690 VA, 230 VAC
Operating Temp	-40° F to 113° F (-40° C to 45° C)

##### PHYSICAL

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/cm <sup>2</sup> ) @ 400° F (204° C)
Housing and Cover	Type 4X/IP66 polyester coated aluminum casting
Mounting Plate	8" outside diameter with 1 1/4" NPT pipe threaded coupling; standard polyester coated mild steel; optional 304 stainless steel
Conduit Entry	3/4" NPT or M20 x 1.5
Rigid Shaft and Paddle	Metal parts of all designs are 304 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) Stainless Steel housing 16 lbs (7.3 kg)
Pollution Degree	2
Installation Category	II
Altitude	6,562 ft (2000 m)

#### APPROVALS & RATINGS

UL (US and Canada):

- Ordinary Location Type 4X; IP66
- Hazardous Location, Type 4X
- Explosion Proof
- Dust Ignition Proof

ATEX/IEC/IECex: (Pending)

- Dust and Gas Categories; IP66

CE

- Electromagnetic Compatibility Directive
- Low Voltage Directive

## IV. MECHANICAL INSTALLATION



**WARNING: REMOVE POWER FROM THE UNIT BEFORE INSTALLING, REMOVING, OR MAKING ADJUSTMENTS.**



**WARNING: IN ORDER TO MAINTAIN SAFE OPERATION IN HAZARDOUS LOCATIONS, THE INTEGRITY OF THE ALUMINUM CASTING AND THE EPDM SEALS MUST BE MAINTAINED. THE USER/INSTALLER MUST AVOID INSTALLATIONS WHERE AGGRESSIVE SUBSTANCES MAY BE PRESENT AND COULD AFFECT THE PERFORMANCE OF THESE MATERIALS. CARE MUST BE EXERCISED WHEN REMOVING AND REPLACING THE COVER, SO NO MARRING, SCRATCHING OR DAMAGE OCCURS TO THE FLANGES.**



**WARNING: FOR UNITS INSTALLED IN HAZAROUS LOCATIONS, TO REDUCE THE RISK OF IGNITION OF HAZARDOUS ATMOSPHERES, CONDUIT RUNS MUST HAVE A SEALING FITTING CONNECTING WITHIN 18 IN. OF THE ENCLOSURE.**



**WARNING: FOR PRODUCTS MARKED AS TYPE 4X, USE TYPE 4X HUB FITTING; FOR IP66 USE IP66 HUB FITTING.**



**CAUTION: WHEN MOUNTING UNITS, NEVER ADJUST THE ORIENTATION BY TURNING THE HOUSING. USE 2-1/4 IN. WRENCH FOR PROCESS FITTING UNITS, OTHERWISE A STRAP WRENCH SHOULD BE USED TO TIGHTEN INTO PLACE.**

### GUIDELINES

The following precautions should be observed when installing and operating a Roto-Bin-Dicator PRO device:

- The installation and wiring of this product must comply with all national, federal, state, municipal and local codes that apply.
- Handle carefully to prevent damage.
- Do not allow moisture to enter the electronics enclosure. Conduit should slope downward from the housing. Install drip loops (or drain fitting) and seal conduit with silicone rubber product.
- For horizontally mounted units, the conduit openings must face downward.

The unit must be located at the position where level indication is desired. The unit may be mounted through the top or side wall of the vessel. To ensure reliable operation, observe the following guidelines when choosing the mounting location.

- DO NOT mount the Roto-Bin-Dicator PRO in an area where the paddle or shaft can contact the vessel.
- DO NOT mount the Roto-Bin-Dicator PRO where the paddle or shaft are directly in the flow of material. The material should be able to flow on to and away from the paddle. If necessary, use a baffle to protect the paddle and shaft from falling material (ie. avalanche, mass flow and in-coming flow stream). The baffle should be placed 6 to 12 inches above the paddle, distance depend on paddle size.



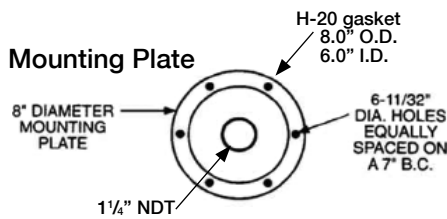
### INSTALLATION FOR USE WITH MOUNTING PLATES

1. On a 7 in. bolt circle, drill and tap or drill 6 equally spaced holes in the bin wall for 1/4 in. bolts or cap screws. If not tapped, bolt heads should be tack welded to the bin inner wall.
2. Cut a 5 in. diameter hole to pass the paddle through. Contact factory for non-standard wall thickness greater than 1/4 in.

#### MOUNTING - SIDE OF BIN

1. Conduit opening must face down.
2. Assemble gasket between the mounting plate and the bin wall.
3. Flat washer, customer supplied, is recommended between mounting plate and fastening hardware.

#### Mounting Plate & Gasket Diagram



#### MOUNTING - TOP OF BIN

1. Assemble gasket between the mounting plate and the bin.
2. Flat washer, customer supplied, is recommended between mounting plate and fastening hardware.

NOTE: All extended units should have shaft guard and/or flex coupling.

NOTE: Extended units with shaft lengths greater than 12 inches require a shaft guard.

NOTE: It is recommended that the shaft guard be braced to bin wall at 6 foot intervals.

### INSTALLATION FOR USE WITHOUT MOUNTING PLATES

Preferred mount is through half couplings; a full coupling will allow material to collect around the shaft, which may cause additional drag on the rotating shaft.

## V. ELECTRICAL INSTALLATION



**WARNING: REMOVE POWER FROM THE UNIT BEFORE INSTALLING, REMOVING, OR MAKING ADJUSTMENTS.**



**WARNING: FOR UNITS INSTALLED IN HAZAROUS LOCATIONS, TO REDUCE THE RISK OF IGNITION OF HAZARDOUS ATMOSPHERES, CONDUIT RUNS MUST HAVE A SEALING FITTING CONNECTING WITHIN 18 IN. OF THE ENCLOSURE.**



**WARNING: FOR PRODUCTS MARKED AS TYPE 4X, USE TYPE 4X HUB FITTING; FOR IP66 USE IP66 HUB FITTING.**



**CAUTION: IF THE UNIT WAS SUPPLIED WITH A GASKET, AVOID FOLDING, CUTTING OR TEARING THE GASKET. DAMAGING THE GASKET CAN ALLOW MOISTURE TO ENTER THE ENCLOSURE AND DAMAGER THE UNIT**



**CAUTION: TO REDUCE THE RISK OF IGNITION IN HAZARDOUS ATMOSPHERES, DISCONNECT THE EQUIPMENT FROM SUPPLY CURCIUT BEFORE OPENING. KEEP ASSEMBLY TIGHTLY CLOSE WHEN IN OPERATION.**

### GENERAL SAFETY

When using electrical equipment, you should always follow basic safety precautions, including the following:

- Units installed in hazardous locations must observe all government regulations regarding equipment in hazardous locations.
- The installation and wiring of this product must comply with all national, federal, state, municipal, and local codes that apply.
- Properly ground the enclosure to an adequate earth ground.
- Do not modify any factory wiring. Connections should only be made to the terminals described in this section.
- All connections must use conductors with an insulation rating of 300V minimum, rated for 221° F (105° C), a minimum flammability rating of VW-1, and be of appropriate gauge for the voltage and current required (see specifications).
- Do not allow moisture to enter the electronics enclosure. Conduit should slope downward from the housing. Install drip loops and seal conduit with silicone rubber product.

### DISCONNECT REQUIREMENTS FOR PERMANENTLY INSTALLED EQUIPMENT

A dedicated disconnecting device (circuit breaker) must be provided for the proper installation of the unit. If independent circuits are used for power input and outputs, individual disconnects are required. Disconnects must meet the following requirements:

- Located in close proximity to the device
- Easily accessible to the operator

- Appropriately marked as the disconnect for the device and associated circuit
- Sized appropriately to the requirements of the protected circuit (See specifications)

**PROTECTIVE EARTH GROUND**

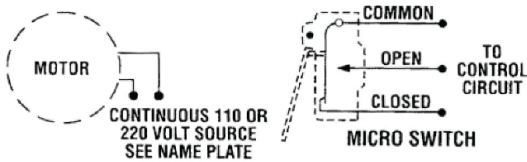
To eliminate shock hazards in the unlikely event of an internal insulation breakdown, the unit is provided with a “protective earth” (⊕) lead which must be connected to earth ground. In addition, the input power ground lead must be connected to the “protective earth” (⊕) terminal provided. Wire sizes must be selected such that it can safely carry the sum total of all circuits’ maximum amperage.

**WIRING**

1. Connect the power source for the motor to the terminal block. Continuous power is essential. The motor may be stalled indefinitely without damage.
2. Make wiring connections to the control micro switch using a separate circuit from that of the motor.
3. Apply power to the motor circuit, checking the freeness of operation and actuation of the micro switch.
4. Fasten the housing cover securely to prevent damage from dust or moisture.

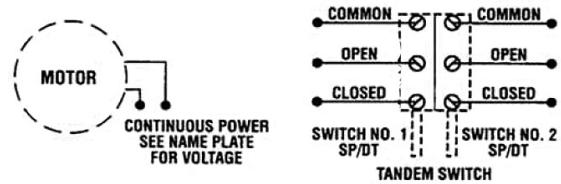
**WIRING FOR SINGLE SWITCH**  
24/120/240 VAC UNITS

**SCHEMATIC CIRCUIT DIAGRAM**



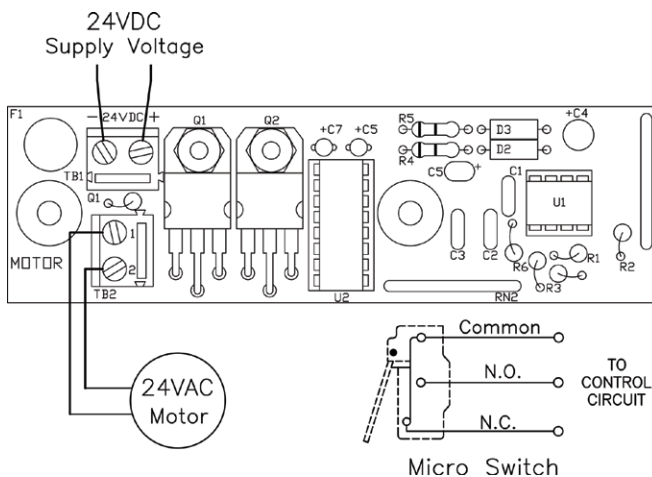
**WIRING FOR DOUBLE SWITCH**

**SCHEMATIC CIRCUIT DIAGRAM**



**WARNING: DO NOT POWER MOTOR THROUGH A MICROSWITCH.**

**WIRING FOR 24 VDC UNITS**



## VI. MAINTENANCE



**WARNING:** IN ORDER TO MAINTAIN SAFE OPERATION IN HAZARDOUS LOCATIONS, THE INTEGRITY OF THE ALUMINUM CASTING AND THE EPDM SEALS MUST BE MAINTAINED. THE USER/INSTALLER MUST AVOID INSTALLATIONS WHERE AGGRESSIVE SUBSTANCES MAY BE PRESENT AND COULD AFFECT THE PERFORMANCE OF THESE MATERIALS. CARE MUST BE EXERCISED WHEN REMOVING AND REPLACING THE COVER, SO NO MARRING, SCRATCHING OR DAMAGE OCCURS TO THE FLANGES.



**CAUTION:** IF THE UNIT WAS SUPPLIED WITH A GASKET, AVOID FOLDING, CUTTING OR TEARING THE GASKET. DAMAGING THE GASKET CAN ALLOW MOISTURE TO ENTER THE ENCLOSURE AND DAMAGER THE UNIT

### PREVENTATIVE MAINTENANCE

No scheduled preventative maintenance is required for the Roto-Bin-Dicator® units when properly applied and installed correctly. There is no cleaning required for the unit before or during installation.

If the cover is removed after the unit has been in service, it is recommended to replace the gasket to prevent the ingress of water or dust. At a minimum, the gasket (or o-ring, used in hazardous locations) should be inspected for folds, cracks and tears.

### RECOMMENDED SPARE PARTS

#### MOUNTING 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; 170° F (77° C) Max Temp
LAR120640	H-38	Stainless Steel, 3 in.
LAR110275	H-36S	Molded Silicone 3 in. Flexible Shaft; 400° F (204° 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 45° Cut
LAR111200	H-380	2-Vane Collapsible, Stainless Steel

**NOTE.** Consult the manufacturing facility on applications where the housing ambient temperature is above 200° F (93° 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

## HEAVY DUTY ROTO-BIN-DICATOR PARTS

PART #	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).

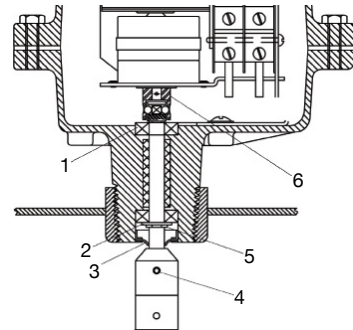
## COMMON ROTO-BIN-DICATOR® PARTS

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 3/4")
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

### 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



**Notes:**

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MEASUREMENT

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