

## HEAVY DUTY QUALITY

SINCE



Division of Material Control, Inc.

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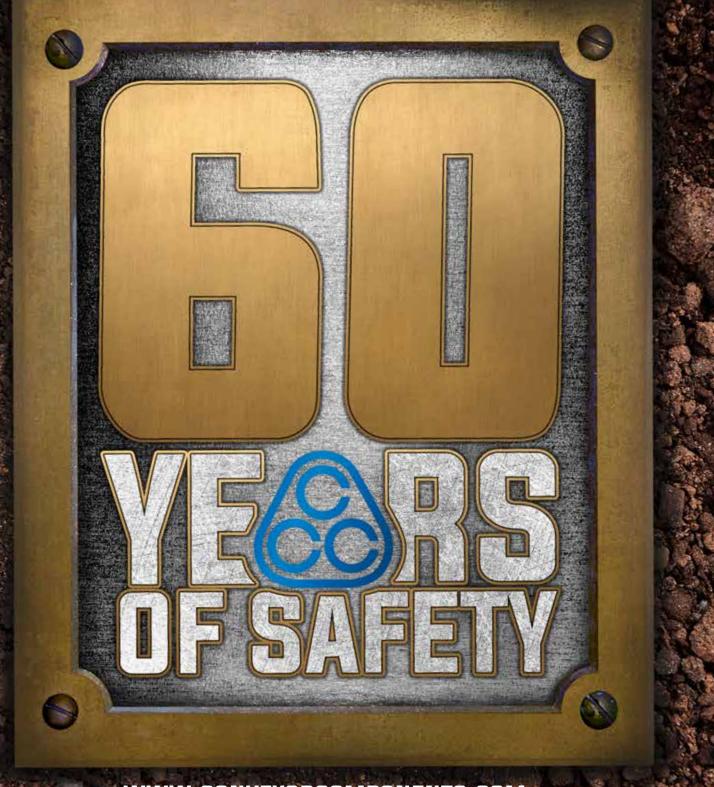
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COMPLETE PRODUCT CATALOG



WWW.CONVEYORCOMPONENTS.COM

CONVEYOR COMPONENTS COMPANY, ESTABLISHED IN 1965, IS WORLD RENOWNED FOR QUALITY ENGINEERED PRODUCTS AND UNRIVALED DURABILITY. BULK MATERIAL HANDLING **CUSTOMERS AND PROCESSING INDUSTRIES HAVE COME TO** DEPEND ON CONVEYOR COMPONENTS COMPANY AS A PREMIER MANUFACTURER OF CONVEYOR CONTROLS, MOTION SWITCHES, LEVEL CONTROL SWITCHES, AND BIN AERATORS.





# **Conveyor Components Company**

As a manufacturer of quality engineered products for the bulk handling industry throughout the world, Conveyor Components Company prides itself as a leading supplier in both international and domestic markets by maintaining and expanding market share and pursuing new product opportunities. The scope of the Conveyor Components Company Quality Management System covers conveyor safety controls, motion controls, level controls, bin aerators, as certified by NQA Global for ISO 9001:2015.

### TO MAINTAIN THIS LEADING ROLE WE:

- · Provide a quality product to the market that meet customers expressed
- · Maintain good communication with customers
- · Maintain the shortest possible lead time while pricing products competitively.
- · Continually improve designs, service, and products.
- · Comply with applicable standards, legislation, and regulations.
- · Focus on occupational, health & safety standards.
- · Invest in our future for continued growth.
- · Provision of needed resources and infrastructure.

Conveyor Components Company strives to maintain the highest standard of integrity. By strictly following and enforcing a high code of ethics we make our company a better place to work and our community a better place to live.

Conveyor Components Company ensures that we meet the needs of our internal and external customers by training our employees to understand and support the requirements of our Management System. By focusing on continual improvement of our Management System, we will ensure meeting the future needs of Conveyor Components Company customers.

### **WARRANTY POLICY**

Equipment is guaranteed against defects in material and workmanship for eighteen (18) months after shipment or twelve (12) months after operational start-up, whichever is sooner.

### © Conveyor Components CONVEYOR SAFETY SYSTEM PG. 4 CONTROLS MODEL RS

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**MODEL CMS** 

## Conveyor Components® TONVEYOR SAFETY SYSTEM®

### BUNDLE TO SAVE!

EVERYTHING YOU NEED FOR OPERATOR AND EQUIPMENT SAFETY INDIVIDUALLY OR IN ONE ALL NEW DISCOUNTED BUNDLE!



EMPLOYEE SAFETY IS EXTREMELY IMPORTANT. WITH OUR LEGENDARY MODEL RS PULL CORD SAFETY STOP SWITCH, ENDANGERED OPERATORS CAN SIMPLY PULL THE CORD THAT RUNS ALONG THE SIDE OF THE CONVEYOR SYSTEM TO SHUT THE SYSTEM DOWN AND PREVENT FURTHER DAMAGE, SERIOUS INJURY OR EVEN DEATH. AVAILABLE IN GENERAL PURPOSE OR EXPLOSION PROOF.



OUR PREMIUM BELT ALIGNMENT SWITCH THAT HAS QUICKLY BECOME THE "INDUSTRY STANDARD." INSTALLED IN PAIRS AT THE HEAD AND TAIL PULLEYS, THE MODEL TA CAN WORK AS AN ALARM, SHUTOFF SWITCH OR BOTH. REPLACING OR REPAIRING A CONVEYOR BELT THAT HAS BEEN MISALIGNED AND ENTANGLED CAN BE EXTREMELY COSTLY, NOT ONLY TO THE BELT BUT TO THE ENTIRE CONVEYOR, NOT TO MENTION DOWNTIME. AVAILABLE IN GENERAL PURPOSE OR EXPLOSION PROOF.



A TORN OR DAMAGED CONVEYOR BELT CAN BE EXTREMELY COSTLY TO A CONVEYING OPERATION. OUR MODEL DB WILL DETECT A TEAR ON THE BELT BEFORE IT BECOMES A DEVASTATING PROBLEM. EARLY DETECTION CAN SAVE HUNDREDS OF THOUSANDS OF DOLLARS IN REPAIRS OR REPLACEMENT OF A CONVEYOR BELT AND DOWNTIME. AVAILABLE IN GENERAL PURPOSE OR EXPLOSION PROOF.



CONSISTENT SPEED AND MOTION MONITORING IS VERY NECESSARY TO ANY CONVEYING SYSTEM. AND NOW, IT JUST GOT EXTREMELY SIMPLE WITH THE MAG-NEAT-OTM. SIMPLY MAGNETICALLY ATTACH IT TO THE TAIL PULLEY AND EASILY MONITOR YOUR SYSTEM'S SPEED. DESIGNED FOR ACCURACY AND EASE OF INSTALLATION, IT'S A MUST HAVE FOR DEPENDABLE CONSISTENT SPEED DETECTION.



ALSO AVAILABLE IS THE CLASSIC AND ALWAYS RELIABLE MODEL CMS COMPACT MOTION SWITCH. AVAILABLE IN GENERAL PURPOSE OR EXPLOSION PROOF, THIS MOTION SWITCH IS PERMANANTLY ATTACHED DIRECTLY TO THE TAIL PULLEY TO DELIVER CONSISTENT, LONG LASTING MONITORING TO YOUR SYSTEM.





EACH YEAR, AN ESTIMATED 9,000 WORKERS ARE INJURED AND 40 WORKERS DIE IN CONVEYOR BELT ACCIDENTS

UNPLANNED DOWNTIME CAN COST A COMPANY AS MUCH AS \$260,000 AN HOUR! REPAIRS CAN COST HUNDREDS OF THOUSANDS OF DOLLARS

CONVEYOR COMPONENTS COMPANY® INTRODUCES AN EASY WAY TO PROTECT YOUR WORKERS AS WELL AS PROTECT YOUR INVESTMENT INTO YOUR EQUIPMENT.

THE CONVEYOR SAFETY SYSTEM™ IS AN EASY, COST EFFICIENT WAY TO GET PEACE OF MIND AND PROTECTION FOR CONVEYOR EQUIPMENT. BY BUNDLING OUR MODEL RS SAFETY STOP SWITCH WITH OUR MODEL TA BELT ALIGNMENT SWITCH, MODEL DB DAMAGED BELT DETECTOR WE HAVE YOUR WORKERS AND EQUIPMENT COVERED. COUPLE THAT WITH ADDING ONE OF OUR MOTION SWITCHES (MAGNEAT-O™ OR MODEL CMS), YOU CAN FEEL CONFIDENT KNOWING THAT YOUR SYSTEM AND WORKERS ARE PROTECTED... FOR A FRACTION OF THE COST OF DOWNTIME, REPAIRS AND REPLACEMENT EQUIPMENT.



### A MUST FOR EMPLOYEE PROTECTION.

The Model RS is actuated by a cable pulled by endangered personnel. The output contacts of the Model RS can control up to two separate circuits, one for machinery shutdown and one for alarm.

Safety minded operators of conveyors, production lines, elevator equipment, assembly lines, material handling systems, cranes, etc. consider it a must for employee protection. Most states have safety statutes that require these controls on conveyors and related equipment. American National Standard Institute recommends their use (ANSI Standard No. ASME B20.1).

### **DETERMINATION OF NUMBER OF UNITS REQUIRED**

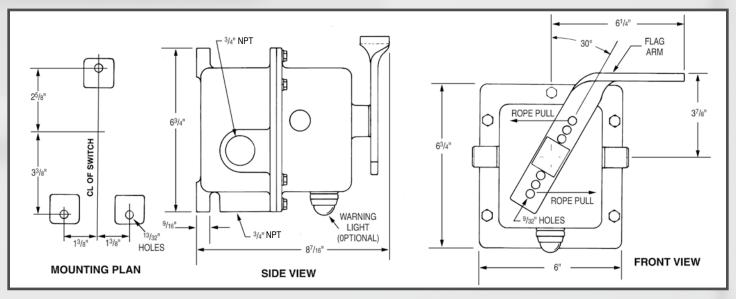
The Model RS control is designed so that a maximum of 100 feet (30m) of cable can be used on each side of the unit. A single control can therefore cover a maximum of 200 feet of conveyor belt or other machinery. If necessary, cable can be extended in only one direction from either side of the unit. The environmental considerations will determine whether or not the unit is to be explosion proof or require available epoxy coating. The possibility of a light to aid in identification of actuated units should be considered.

Our galvanized aircraft cable with vinyl coating should be used with the control to assure proper actuation with no stretching. The cable should be supported by eyebolts every 8-10 feet (3m). These supports ensure that the weight of the cable alone will not actuate the control. For ease of installation, we offer a kit (RS-K) that includes all components and correct quantities for the proper installation of one unit.

### **EXCLUSIVE FEATURES**

- 1. Once actuated, it cannot be accidentally reset causing dangerous equipment to restart. In order to reset the control, the actuation arm must be manually pushed in and turned. Reset is quick, and makes this a true "safety" control.
- 2. Installed with cables extending in both directions from the actuating handle. There is one electrical connection inside. This eliminates the double electrical connections required in two ended units employing a separate microswitch for cable in each direction.
- 3. The unit is mounted on the conveyor by drilling (3) 13/32" diameter holes.
- 4. The actuation force is easily adjusted in the field by a change in the position of the cable in holes provided in the actuation arm. One of our units will handle as much cable length as a double ended competitive unit and there is no longer a need to specify actuating force or right or left handed units.
- 5. The standard construction of the unit is a corrosion resistant aluminum housing complete with stainless steel hardware and red powder coated actuation handle. The actuation shaft is constructed of stainless steel. Epoxy coating is also available if required.
- 6. The Model RS controls are UL Listed and CSA Certified. The general purpose models are listed for non-hazardous atmospheres. Explosion proof models are listed for use in hazardous atmospheres as defined by the National Electric Code handbook and the National Electrical Manufacturers Association standards for NEMA type 7 and 9 hazardous locations. Specifically, they are listed for Class I, Div 1, Groups C and D; and Class II, Div. 1, Groups E, F and G.
- 7. The unit is available with a warning light that may be wired to indicate actuation. This permits easy identification of actuated units in areas where visual identification is difficult.

### MODEL RS DIMENSIONAL INFORMATION



### **AVAILABLE MODELS**

MODEL	DESCRIPTION	
RS-2	2 Single Pole Double Throw (SP/DT) Microswitches *	13
RS-5	2 Double Pole Double Throw (DP/DT) Microswitches *	13
RS-2L	2 Single Pole Double Throw (SP/DT) Microswitches and Red Incandescent signal lamp *	14
RS-5L	2 Double Pole Double Throw (DP/DT) Microswitches and Red Incandescent signal lamp *	14
RS-2X	2 Single Pole Double Throw (SP/DT) Microswitches **	13
RS-5X	2 Double Pole Double Throw (DP/DT) Microswitches **	13
RS-2XL	2 Single Pole Double Throw (SP/DT) Microswitches and Red Incandescent signal lamp **	14
RS-5XL	2 DP/DT Microswitches and Red Incandescent signal lamp **	14
RS-2D	2 Single Pole Double Throw (SP/DT) Microswitches ***	13
RS-5D	2 Double Pole Double Throw (DP/DT) Microswitches ***	13

<sup>\*</sup>General Purpose, NEMA TYPE 1, 3, 3R, 4, 4X

### **TECHNICAL SPECIFICATIONS**

Standard Construction - Rubber gaskets seal unit for outside applications. Listed by UL for NEMA 4/4X dust-tight and rain tight construction, applies to general purpose units.

Housing - Cast aluminum. Epoxy coating available.

Conduit Opening - 3/4" NPT standard. All RS units have three conduit openings.

Actuating Arm - Red powder-coated steel handle with stainless steel shaft.

Internal Cam and Wear Plate - Hardened steel.

External Hardware - Stainless steel.

Switches - SP/DT microswitches. Rated 20A @ 120 VAC, 240VAC, and 480 VAC; 1/2 amp at 125 VDC and 1/4 amp at 250 VDC. Switches may be wired for single throw operation, either normally open or normally closed as required. DP/DT (15A) microswitches also available.

### **ACCESSORIES**

BRACKET for mounting the Model RS stop switch to the conveyor stringer at an idler. Item # RS-30



DOUBLE-ENDED CABLE SUPPORT EYE BOLT Drilling is not required to Installs under idler

Item # RS-23-KIT

### CABLE END FITTING Secures protective cable to

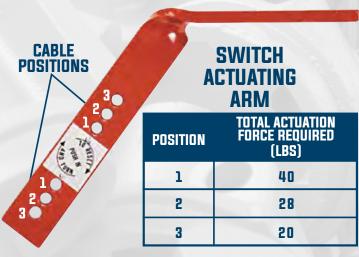
switch hand and supports. Item # RS-28K-BK

SAFETY CABLE 3/32" x 7x7 preformed, galvanized aircraft cable.
Red vinyl protective coating. Item # RS-25-105 (105ft)

RS-25-500 (500ft) RS-25-1000 (1000ft) RS-25-5000 (5000ft)

### **CABLE SUPPORT EYE BOLT**

1/2" x 6" plated 2-1/2" long N.C. thread. 1" eye, two nuts and one lock washer. Item # RS-27-KIT (pack of 10 & 4 RS-28) RS-27K-BK (nack of 100)



As shown in the chart above, the actuation force can be varied by attaching the cable at any one of the three positions.

<sup>\*\*</sup>Explosion Proof, NEMA TYPE 7: Class I (Div. 1 & 2), Groups C & D: 9: Class II (Div. 1 & 2), Groups E, F & G \*\*\*Dual Rated, NEMA TYPE 3, 4, 4X; Type 9: Class II (Div. 1 & 2), Groups E, F & G



### **RUGGED** CONSTRUCTION WITHSTANDS THE HARDEST USAGE

The PC Stop Control can be used for emergency shutdown of conveyor systems, elevator equipment, bulk handling systems, cranes, production and assembly lines, or any other equipment which may require immediate shutdown.

A cable is connected from a fixed point to the cable end connection clevis. Pulling on the cable will actuate the switch, trip the flag arm down into the walkway and lock the switch in the actuated position. The unit is reset by returning the flag arm to the normal up position.

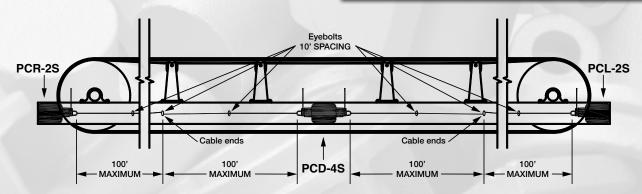
### **DETERMINATION OF NUMBER OF UNITS REQUIRED**

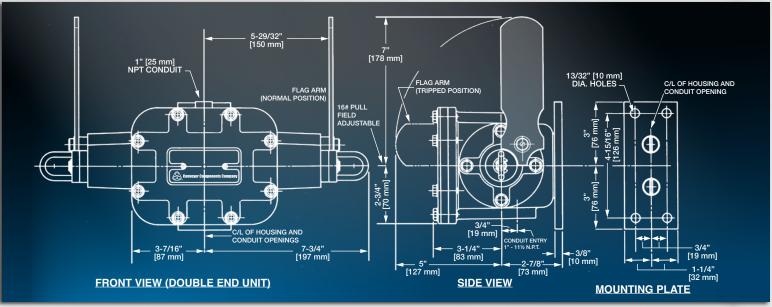
The Model PC control is designed so that a maximum of 100 feet (30m) of cable can be used. The electrical characteristics of the application will determine the type of microswitches to be specified in the unit. The environmental considerations will determine whether or not the unit is to be explosion proof or require available epoxy coating. The possibility of a light to aid in identification of actuated units should be considered.

Our galvanized aircraft cable with vinyl coating should be used with the control to assure proper actuation with no stretching. The cable should be supported by eyebolts every 8-10 feet (3m). These supports ensure that the weight of the cable alone will not actuate the control. For ease of installation, we offer a kit (PCD-K and PCLR-K) that includes all components and correct quantities for the proper installation of one unit.

### **EXCLUSIVE FEATURES**

- 1. The housing is cast aluminum, with optional epoxy coating available (for additional corrosion resistance).
- 2. Single ended units are actuated via a cable pull from one direction, while double-ended units can be actuated from either or both directions. The model PC units come standard with a 16 lb. pull force, however units can be manufactured with a 25 lb pull force. Add "-25" to the end of the model number.
- 3. The unit is mounted on the conveyor by drilling (4) 13/32" diameter holes.
- 4. General purpose (weatherproof) units and explosion proof units have (2) 1" NPT conduit openings.
- 5. The units with "S" type microswitches (SP/DT) have dry, unpowered microswitch(es) rated for 20A @ 120 VAC, 240 VAC, and 480 VAC.
- 6. The units with "T" type microswitches (Two-Circuit Double-Break) have dry, unpowered microswitch(es) rated for 15A @ 120 VAC, 240 VAC, 480 VAC and 600 VAC.
- 7. Highly visible red polyester powder coated flag arm for quick identification of actuation.
- 8. Optional red warning light available for dark or remote locations.





### **AVAILABLE MODELS**

MODEL	DESCRIPTION	SHPG. WT. LBS.
PCL-2S	Left Ended unit with 2 Single Pole Double Throw (SP/DT) Microswitches*	12
PCR-2S	Right Ended unit with 2 Single Pole Double Throw (SP/DT) Microswitches*	12
PCD-4S	Dual Ended unit with 2 Single Pole Double Throw (SP/DT) Microswitches per end*	16
PCR-2T	Right Ended unit with 2 Two Circuit Double Break (TC/DB) Microswitches*	12
PCL-2T	Left Ended unit with 2 Two Circuit Double Break (TC/DB) Microswitches*	12
PCD-4T	Dual Ended unit with 2 Two Circuit Double Break (TC/DB) Microswitches per end*	16
PCL-2SX	Left Ended unit with 2 Single Pole Double Throw (SP/DT) Microswitches**	12
PCR-2SX	Right Ended unit with 2 Single Pole Double Throw (SP/DT) Microswitches**	12
PCD-4SX	Dual Ended unit with 2 Single Pole Double Throw (SP/DT) Microswitches per end**	16
PCR-2TX	Right Ended unit with 2 Two Circuit Double Break (TC/DB) Microswitches**	12
PCL-2TX	Left Ended unit with 2 Two Circuit Double Break (TC/DB) Microswitches**	12
PCD-4TX	Dual Ended unit with 2 Two Circuit Double Break (TC/DB) Microswitches per end**	16
PCD-4SD	Dual Ended unit with 2 Single Pole Double Throw (SP/DT) Microswitches per end***	16
PCR-2TD	Right Ended unit with 2 Two Circuit Double Break (TC/DB) Microswitches***	12
PCL-2TD	Left Ended unit with 2 Two Circuit Double Break (TC/DB) Microswitches***	12
PCD-4TD	Dual Ended unit with 2 Two Circuit Double Break (TC/DB) Microswitches per end***	16

\*GENERAL PURPOSE NEMA TYPE 3, 3S, 4, 4X

\*\* EXPLOSION PROOF NEMA TYPE 7: Class I (Div. 1 & 2), Groups C, D; Type 9: Class II (Div. 1 & 2), Groups E, F, G \*\*\*DUAL RATED NEMA TYPE 4, Type 9: Class II (Div. 1 & 2), Groups E, F & G Compliant

### **ACCESSORIES**

### **CABLE SUPPORT EYE BOLT**

1/2" x 6" plated 2-1/2" long N.C. thread. 1" eye, two nuts and one lock washe Item # RS-27-KIT (pack of 10 & 4 RS-28) RS-27K-RK (pack of 100)

### **DOUBLE-ENDED CABLE**

SUPPORT EYE BOLT Drilling is not required to install this cable support Installs under idler

Item # RS-23-KIT

### SAFETY CABLE

3/32" x 7x7 preformed, galvanized aircraft cable. Red vinyl protective coating. 3/16" O.D.

Item # RS-25-105 (105ft) RS-25-500 (500ft) RS-25-1000 (1000ft) RS-25-5000 (5000ft)



### PCD-K

Double-ended (PCD units) accessory mounting kit includes: 2 pieces (105 feet each) pull cable (RS-25). 20 eyebolts (RS-27), 8 cable clamps (RS-28). mounting bracket (PC-30).



CABLE END FITTING

Item # RS-28K-BK

CONDUIT PLUG

1" metal, socket

PC MOUNTING BRACKET

**RS-29** 

head conduit plug.

Secures protective cable to

### PCLR-K

Single-ended (PCL & PCR units) accessory mounting kit includes: 1 piece (105 feet) pull cable (RS-25), 10 eyebolts (RS-27), 4 cable clamps (RS-28). mounting bracket (PC-30).







### **BUILT IN** BROKEN CABLE DETECTION

Designed to act as an emergency stop pull cord control on conveyors and other moving machinery that incorporates built-in broken cable detection. The Model RSB has extension springs, attached to opposite ends of the pull cable, which maintain the cable under constant tension. The RSB is mounted so that it is centered between the end springs. In this way, temperature changes, which cause cable length changes, are canceled out. The operating handle is held in the center vertical position with the internal switch in a normally closed condition.

If the cable is pulled or the cable breaks, the handle rotates to release the switch lever. In this way, the alarm signal is generated for either condition. The operating handle must be manually reset back to the center position after the cause has been corrected.

### DETERMINATION OF NUMBER OF UNITS REQUIRED

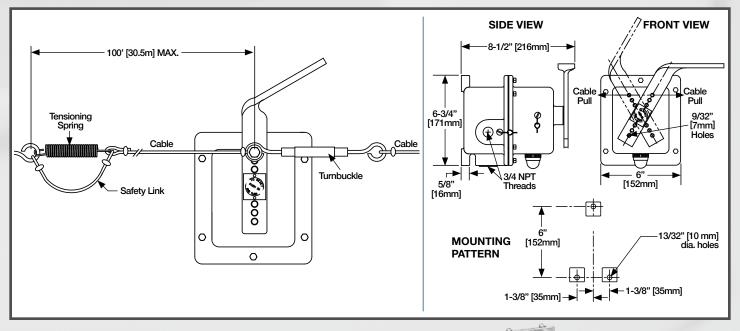
The Model RSB control is designed so that a maximum of 100 feet (30m) of cable can be used on each side of the unit. A single control can therefore cover a maximum of 200 feet of conveyor belt or other machinery. The electrical characteristics of the application will determine the type of microswitches to be specified in the unit. The environmental considerations will determine whether or not the unit is to be explosion proof or require available epoxy coating. The possibility of a light to aid in identification of actuated units should be considered.

Our galvanized aircraft cable with vinyl coating should be used with the control to assure proper actuation with no stretching. The cable should be supported by eyebolts every 8-10 feet (3m). These supports ensure that the weight of the cable alone will not actuate the control. For ease of installation, we offer a kit (RS-K) that includes all components and correct quantities for the proper installation of one unit.

### **EXCLUSIVE FEATURES**

- 1. The housing is cast aluminum, with optional epoxy coatings available.
- 2. The unit can be actuated via a cable pull from either direction, in other words, the unit is "double-ended". Pull cable is required on EACH side of RSB unit (+/- 5 feet).
- 3. The unit is mounted on the conveyor by drilling (3) 13/32" diameter holes.
- 4. All units have (3) 3/4" NPT conduit openings.
- 5. The standard units have dry, unpowered SP/DT microswitch(es) rated for 20A @ 120 VAC, 240 VAC, and 480 VAC; 1/2 amp at 125 VDC and 1/4 amp at 250 VDC.
- 6. Special spring tensioning kits included with each RSB unit provide stability due to temperature fluctuations, and ease of cable adjustment.
- 7. The general purpose units are rated NEMA type 4/4X weatherproof and corrosion-resistant. Explosion proof units are rated NEMA type 7/9 for dust ignition proof and vapor explosion proof. Specifically, they are listed for Class I, Div. 1, Groups C and D; and Class II, Div. 1, Groups E, F and G. The dual-rated "D" units are rated NEMA type 4X weatherproof and NEMA type 9 dust ignition proof. Specifically, they are listed for Class II, Groups E, F and G.
- 8. The general purpose controls meet or exceed IP65.
- 9. UL Listed and CSA Certified.

### MODEL RSB DIMENSIONAL INFORMATION



### **AVAILABLE MODELS**

DESCRIPTION		
2 Single Pole Double Throw (SP/DT) Microswitches *	13	
2 Double Pole Double Throw (DP/DT) Microswitches *	13	
2 Single Pole Double Throw (SP/DT) Microswitches and Red Incandescent signal lamp *	14	
2 Single Pole Double Throw (SP/DT) Microswitches **	13	
2 Double Pole Double Throw (DP/DT) Microswitches **	13	
2 Single Pole Double Throw (SP/DT) Microswitches and Red Incandescent signal lamp **	14	
2 DP/DT Microswitches and Red Incandescent signal lamp **	14	
2 Single Pole Double Throw (SP/DT) Microswitches ***	13	
2 Double Pole Double Throw (DP/DT) Microswitches ***	13	
	2 Single Pole Double Throw (SP/DT) Microswitches * 2 Double Pole Double Throw (DP/DT) Microswitches * 2 Single Pole Double Throw (SP/DT) Microswitches and Red Incandescent signal lamp * 2 Double Pole Double Throw (DP/DT) Microswitches and Red Incandescent signal lamp * 2 Single Pole Double Throw (SP/DT) Microswitches ** 2 Double Pole Double Throw (DP/DT) Microswitches ** 2 Double Pole Double Throw (SP/DT) Microswitches and Red Incandescent signal lamp ** 2 DP/DT Microswitches and Red Incandescent signal lamp ** 2 Single Pole Double Throw (SP/DT) Microswitches ***	

\*GENERAL PURPOSE NEMA TYPE 1, 3, 3R, 4, 4X

\*\*EXPLOSION PROOF NEMA TYPE e 7: Class I (Div. 1 & 2), Groups C & D; Type 9: Class II (Div. 1& 2), Groups E, F & G"

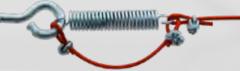
\*\*\*DUAL RATED NEMA TYPE 3, 4, 4X; Type 9: Class II (Div. 1 & 2), Groups E, F & G

### **CABLE SUPPORT EYE BOLT** 1/2" x 6" plated 2-1/2" long N.C. thread. 1" eye, two nuts and one lock washer Item # RS-27-KIT (pack of 10 & 4 RS-28 RS-27K-BK

### DOUBLE-ENDED CABLE SUPPORT EYE BOLT

Drilling is not required to install this cable support. Installs under idler Item # RS-23-KIT





Spring Tensioning Kit with cable safety link. (included with every RSB unit)

Item # RS-K



### RS PULL CORD ACCESSORY MOUNTING KIT

Includes everything you need to properly install the CCC MODEL RS Pull Cord Safety Stop Switch. (2) 105' Pull Cable (RS-25) (20) Eyebolts (RS-27) (8) Cable Clamps (RS-28) (1) Mounting Bracket (RS-30)

**CONDUIT PLUG** 3/4" metal, socket head conduit plug. Item # RS-29 or # RS-29X



### SAFETY CABLE

3/32" x 7x7 preformed, galvanized aircraft cable. Red vinyl protective coating 3/16" O.D. Item # RS-25-105 (105ft)

RS-25-500 (500ft) RS-25-1000 (1000ft) RS-25-5000 (5000ft) **CABLE END FITTING** Secures protective cable to switch hand and supports. Item # RS-28K-BK





### BELT ALIGNMENT MADE SIMPLE

The model TA Conveyor Belt Alignment Control protects conveyor belts from damage due to belt misalignment or runoff. These controls are used in pairs with the control placed on each side of the conveyor belt. Each unit can be equipped with two microswitches to produce signals indicating belt misalignment at two deviation points. The first signal point could indicate a small belt deviation by sounding an alarm. The second signal point could guard against extreme belt runoff by shutting down the conveyor.

Each control consists of an aluminum housing with a red powder-coated roller. The roller is adjustable up to 90° in both directions and is positioned approximately 1" from the conveyor belt. The control actuation points are adjustable from 0° to 45° by a simple change of the actuating cam(s). The model TA can be furnished with general purpose or explosion proof construction. Epoxy coated cast aluminum housing available upon request.

### **AVAILABLE MODELS**

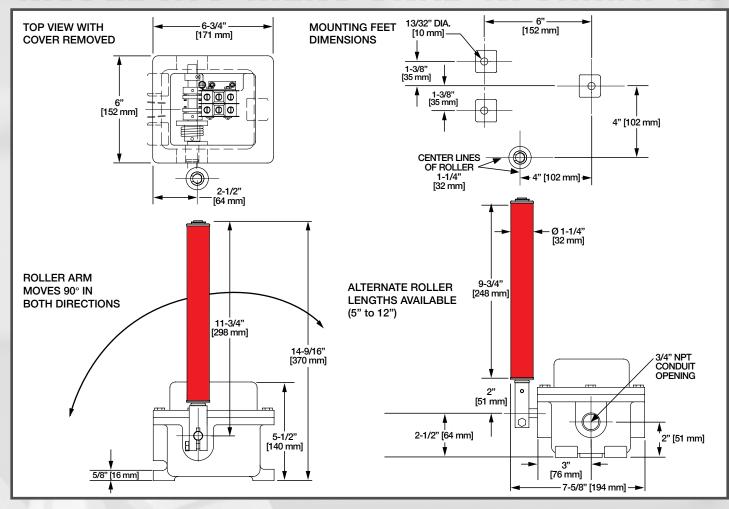
	MODEL DESCRIPTION		SHPG. WT. LBS.
	TA-2	2 Single Pole Double Throw (SP/DT) Microswitches*	11
ŀ	TA-5 2 Double Pole Double Throw (DP/DT) Microswitches*		
ľ	TA-2X	2 Single Pole Double Throw (SP/DT) Microswitches**	11
	TA-5X	2 Double Pole Double Throw (DP/DT) Microswitches**	11
	TA-2D	2 Single Pole Double Throw (SP/DT) Microswitches***	11
	TA-5D	2 Double Pole Double Throw (DP/DT) Microswitches***	11

\*GENERAL PURPOSE NEMA TYPE 3S. 4. 4X. & 5

"\*\*EXPLOSION PROOF NEMA TYPE 7: Class I (Div. 1 & 2), Groups C & D; Type 9: Class II (Div. 1 & 2), Groups E. F & G"

\*\*\*DUAL RATED NEMA TYPE Type 3S, 4, 4X, 5; Type 9: Class II (Div. 1 & 2), Groups E, F & G

### **MODEL TA DIMENSIONAL INFORMATION**



### NUMBER OF UNITS RECOMMENDED

No less than four alignment controls should be installed on each conveyor, one on each side of the belt near the head and tail pulleys. For longer conveyors, we recommend an additional pair every 250 to 500 feet.

### **TA MOUNTING BRACKET Fits** all TA Models. TA-30

### Special Roller with Ball Bearing Ends available: Roller ball bearings denoted by

yellow end-cap.

Note: Standard roller has white polymer plain bearings.

Add "-RBB" to end of model number



### **EXCLUSIVE FEATURES**

- SP/DT microswitches: Individually adjustable. Rated 20 amp at 125, 250, or 480 VAC, 1/2 Amp 125 VDC; 1/4 Amp 250 VDC.
- 2. DP/DT microswitches: Individually adjustable. Rated 15 amp at 125, 250 VAC.
- Switches may be wired for single throw operation, either normally open or normally closed as required.
- STANDARD CONSTRUCTION: Rubber gaskets seal units against dust and rain for NEMA 4, 4X outdoor applications. Applies to weatherproof units only. NEMA 7/9 units also available (without gasket).
- 5. HOUSING: Aluminum. Epoxy coating available
- 6. CONDUIT OPENING: One 3/4" NPT conduit opening.
- ACTUATING ARM: Red powder-coated steel roller with stainless steel shaft.
- 8. EXTERNAL HARDWARE: Stainless steel.
- 9. Enclosure Ratings: TA-2, TA-4, TA-5: C-UL-US Types 3S, 4, 4X & 5.
- 10. TA-2X, TA-4X, TA-5X: C-UL-US for Class I, Groups C & D; Class II, Groups E, F & G: Class III Hazardous Locations.

- 11. TA-2D, TA-4D, TA-5D: C-UL-US Types 3S, 4, 4X & 5; Class II, Groups E, F & G; Class III Hazardous Locations.
- 12. CERTIFICATION: cULus Listed.
- 13. Special 5" (shorter) height roller available, add "-R5" to end of model number. Other alternate roller lengths available (5" minimum to 12" maximum, standard style roller only, not ball bearing style).
- 14. Special 304 stainless steel roller (with red polyester powder coating) available, add "SS" to end of model number and \$ to the price. Currently not available in
- 15. Special roller with ball bearing ends available, add "-RBB" to end of model number. The "-RBB" roller is 9-3/4" inches in length, same length as the standard roller. Shorter "-RBB" lengths possible, such as 5" (-RBB-R5), 6" (-RBB-R6), 7" (-RBB-R7), 8" (-RBB-R8) or 9" (-RBB-R9).



### **PROTECTS** VALUABLE CONVEYOR **BELTS FROM SEVERE DAMAGE**

Model BA heavy duty conveyor belt alignment control protects valuable conveyor belts from severe damage due to belt misalignment or run-off. The Model BA makes sure that the belts are tracking properly. Prevents costly down time and unnecessary maintenance expense. Designed especially for bulk handling conveyor applications, it maintains a safeguard over equipment and keeps conveyor belts running.

Sometimes called a "side slip switch" or a "belt misalignment switch," the Model BA operates on a very simple principal. Two controls are positioned close to the belt, one on each side, so that undesirable side to side motion of the belt will contact a switch roller. The roller "gives" just enough to actuate the switch. The signal generated by the actuated switch can be used to take appropriate action to re-align the conveyor belt, thus eliminating conveyor damage and serious down time.

### **CONSTRUCTION AND OPERATION**

The Model BA belt alignment control has two basic welded steel components. The base housing and the roller housing. The roller housing contains the sensing roller and is attached to the base housing with a stainless steel pivot. The stainless steel pivot assures that movement will not be inhibited by corrosion. The roller and roller housing together are designed to pivot slightly when the roller is touched by the conveyor belt. The roller housing assembly actuates an enclosed switch mounted at the bottom of the base housing, it moves approximately 1/4" to actuate the switch. A stainless steel spring is mounted with a bolt at the bottom of the roller assembly to hold it away from the control except during actuation.

Microswitches are housed in either the standard weather-tight, or optional explosion proof enclosures.

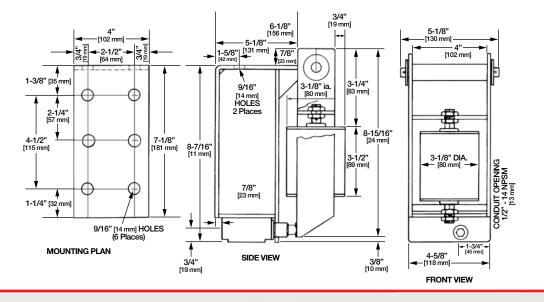
The roller has stainless steel ball bearings and nylon labyrinth seals to prevent corrosion and entry of water or dirt.

### OPTIONAL BREAKAWAY MOUNT

This optional feature allows the Model BA to give a signal, and then to get out of the way if the belt does run-off, preventing serious damage to switches and belts. The breakaway mount is spring loaded and automatically returns the Model BA to its original position when the conveyor belt is realigned. It is designed so that the Model BA roller assumes a horizontal position when the breakaway mounting is actuated.



### MODEL BA DIMENSIONAL INFORMATION



### **MODELS**

MODEL	DESCRIPTION	ELECTRICAL RATING (BELOW)	SHPG. WT. LBS.
BA-1	1 Single Pole Double Throw (SP/DT) Microswitch*	1	18
BA-1X	1 Single Pole Double Throw (SP/DT) Microswitch**	3	18
BA-2	1 Double Pole Double Throw (DP/DT) Microswitch*	2	21
BA-2X	1 Double Pole Double Throw (DP/DT) Microswitch**	2	21

\*GENERAL PURPOSE NEMA TYPE 1,3,4 & 13 \*\*EXPLOSION PROOF NEMA TYPE 7: Class I, Groups C, D; Type 9: Class II, Groups E, F, G

### **MODEL BA - ACCESSORIES**

MODEL	DESCRIPTION	SHPG. WT. LBS
BA-5*	Optional "Break Away" Mounting	10

<sup>\*</sup>BA Belt Alignment Control purchased separately

### **SWITCH ELECTRICAL RATINGS**

- 1. 20 Amp @ 125, 250, or 480 VAC: 10 Amp @ 125 VAC "L"; 1 HP @ 125 VAC; 2HP @ 250 VAC; 1/2 Amp @ 125 VDC; 1/4 Amp @ 250 VDC.
- 2. 10 Amp @ 125 or 250 VAC; 0.3 Amp @ 125 VDC; 0.15 Amp @ 250 VDC
- 3. 10 Amp @ 125, 250 or 480 VAC; 1/2 Amp @ 125 VDC; 1/4 Amp @ 250 VDC.

### **NUMBER OF UNITS RECOMMENDED**

No less than four alignment controls should be installed on each conveyor, one on each side of the belt near the head and tail pulleys. For longer conveyors, we recommend an additional pair every 250 to 500 feet.



Shown are two BA units protecting a valuable conveyor belt from damage due to belt misalignment or run-off at an aggregate facility



CONVEYORCOMPONENTS.COM



### **ENSURES** THAT YOUR BELT IS TRACKING PROPERLY

Protect your valuable conveyor belt from severe damage caused by belt misalignment, prevent costly downtime and increase production with Conveyor Components Company's Model VA belt alignment control. Designed for use on bucket elevators, the Model VA ensures that your belt is tracking properly.

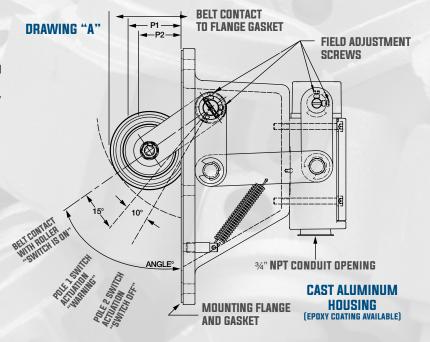
Installed in pairs on each side of the conveyor belt near the head pulley and/or the tail pulley, these heavy-duty controls consist of a conveyor roller with sealed bearings, four bar linkage and a double pole/double throw microswitch. The roller detects any belt run-off and will trigger the first pole of the microswitch to sound a warning alarm, illuminate an indicator light, or stop the conveyor completely when the vertical belt strays beyond 15° from horizontal. The second pole is triggered when the belt strays 25° from horizontal and can be wired to stop the conveyor motor. To eliminate false signals the controls should be mounted about one inch away from the belt.



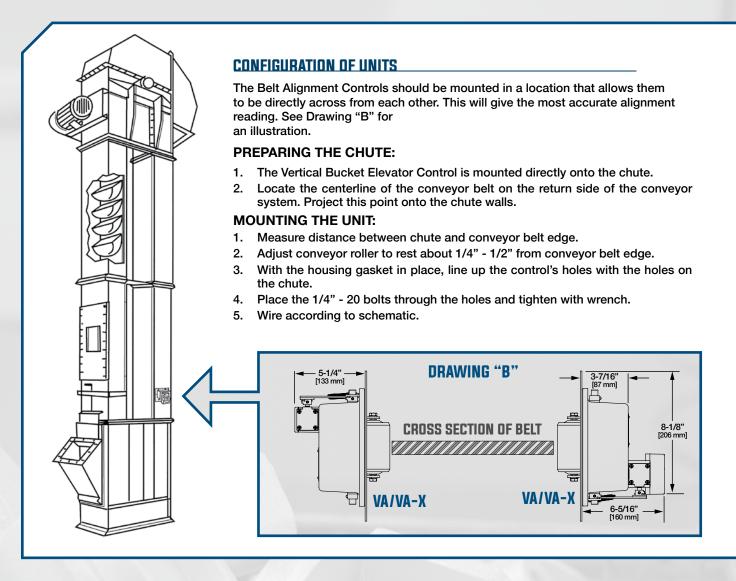
### **HOW IT OPERATES**

The control has double pole/double throw circuitry. The four bar linkage connects the roller's pivot shaft to the switch actuator. The roller is held into position by roll pins and set screws.

When the roller is displaced 15°, the first pole of the switch is triggered. This pole can be wired to sound a warning alarm, light an indicator light, or stop the conveyor. The second pole is triggered after the roller is displaced an additional 10°. This pole could also be wired to stop the conveyor motor. Drawing "A" shows a range of roller orientations and the allowable travel for each stage.



### **MODEL VA TECHNICAL INFORMATION**



### MODELS

MODEL	DESCRIPTION	SHPG. WT. LBS.
VA	1 sequential double break Microswitch *	10
VA-X	1 sequential double break Microswitch **	10

\*GENERAL PURPOSE NEMA TYPE 3,4,4X, 6P & 13

\*\*EXPLOSION PROOF NEMA TYPE 1, 3, 4, 6, 13; Type 7: Class I (Div. 1 & 2), Groups B, C & D; Type 9: Class II (Div. 1 & 2), Groups E, F & G



### **SPECIFICATIONS**

### **EXPLOSION PROOF MICROSWITCH**

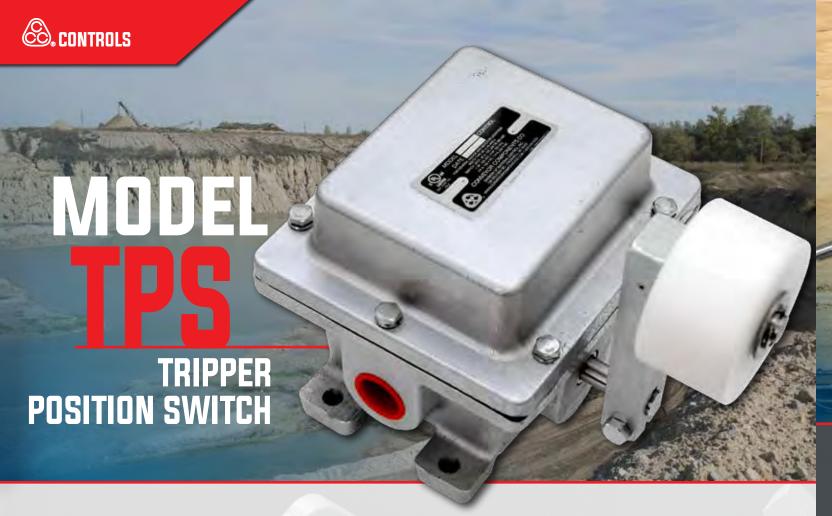
- Meets NEMA Standards: 1, 3, 4, 6, 7, 9 and 13
- . Class I, Div. 1, Groups B, C and D
- · Class II, Div. 1, Groups E, F and G
- UL Listed and CSA Certified

### **GENERAL PURPOSE MICROSWITCH**

- Meets NEMA standards: 1, 3, 4, 4X, 6P and 13
- UL Listed and CSA Certified

### **ELECTRICAL OUTPUT**

- Double Pole/Double Throw
- 10 Amp 120, 240, 480 VAC
- 0.8 Amp 120 VDC
- 0.4 Amp 240 VDC
- Conduit Connection: 3/4" NPT



### **HEAVY DUTY** LIMIT SWITCH

The Model TA-TPS is a tripper position switch, which is a heavy duty limit switch commonly used to aid in positioning of the "tripper" on a conveyor with multiple discharge points or discharge chutes. The output contacts of the Model TA-TPS can control up to two separate circuits, one for machinery shutdown and one for an alarm. The Model TA-TPS is relatively inexpensive protection that provides benefit by saving time, money, and labor associated with bulk material transfer.

### **AVAILABLE MODELS**

MODEL	DESCRIPTION	SHPG. WT. LBS.
TA-2-TPS	2 Single Pole Double Throw (SP/DT) Microswitches*	9
TA-5-TPS	2 Double Pole Double Throw (DP/DT) Microswitches*	9
TA-2X-TPS	2 Single Pole Double Throw (SP/DT) Microswitches**	9
TA-5X-TPS	2 Double Pole Double Throw (DP/DT) Microswitches**	9
TA-2D-TPS	2 Single Pole Double Throw (SP/DT) Microswitches***	9
TA-5D-TPS	2 Double Pole Double Throw (DP/DT) Microswitches***	9

- \*GENERAL PURPOSE NEMA TYPE 3S, 4, 4X, & 5
- "\*\*EXPLOSION PROOF NEMA TYPE 7: Class I (Div. 1 & 2), Groups C & D; Type 9: Class II
- (Div. 1 & 2), Groups E, F & G"
- \*\*\*DUAL RATED NEMA TYPE 3S, 4, 4X, 5; Type 9: Class II (Div. 1 & 2), Groups E, F & G

### **EXCLUSIVE FEATURES**

- 1. The housing is cast aluminum, with optional epoxy coating available. The roller is a heavy duty white acetal material of 3" diameter.
- 2. The unit is mounted on the conveyor by drilling (3) 13/32" diameter holes.
- General purpose (weatherproof) units and explosion proof units have (1) 3/4" NPT conduit opening.
- 4. SP/DT microswitches: Individually adjustable. Rated 20 amp at 125, 250, or 480 VAC, 1/2 Amp 125 VDC; 1/4 Amp 250 VDC.
- 5. DP/DT microswitches: Individually adjustable. Rated 15 amp at 125, 250 VAC.
- 6. The roller arm can move up to 90 degrees in either direction. Roller is spring loaded to automatically reset
- 7. The general purpose units are designed NEMA Type 4/4X weatherproof and corrosion-resistant and NEMA Type 5 dust-tight. Explosion proof units are designed NEMA Type 7/9 for dust ignition proof and vapor explosion proof. The dual-rated "D" units are designed NEMA Type 4X weatherproof and NEMA Type 9 dust ignition proof.
- 8. The general purpose controls are IP65 compliant.
- 9. Certification: cULus Listed.



### FLOW SWITCH

The Model FS Flow Switch is designed to produce a signal if the flow of material at any critical point is interrupted. This signal can then be used to correct the difficulty and/or warn the operator.

Several switches can be used, each one placed at critical points along the conveying system. A continuous flow of material past the switch holds the paddle-shaft-counterweight assembly out of the actuated position. If flow stops, the paddle is allowed to pivot and actuate the switch.

Fully adjustable, the paddle and counterweight assemblies can be positioned at various points along the shaft and rotated to any angular position. The shaft itself will adjust laterally. Inside, the actuating cams can be rotated so that switch actuation will occur at pre-determined points.

This versatile switch can be mounted on all types of conveyors and feeders: in discharge openings of bins, bunkers, or hoppers; in angled and vertical chutes; or in discharge chutes of any configuration. It is available with aluminum housing, and in standard or explosion proof models. The paddle and shaft are both stainless steel.

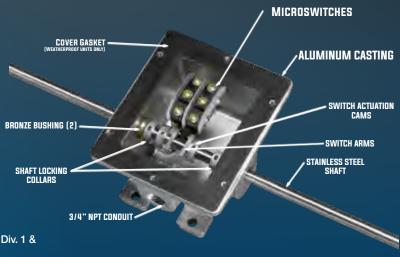
The Model FS is versatile enough to be used in a variety of applications; it can provide proof that material is actually flowing from a chute onto a conveyor belt, or it can be used to actuate a misting system to reduce dust only when material is present.

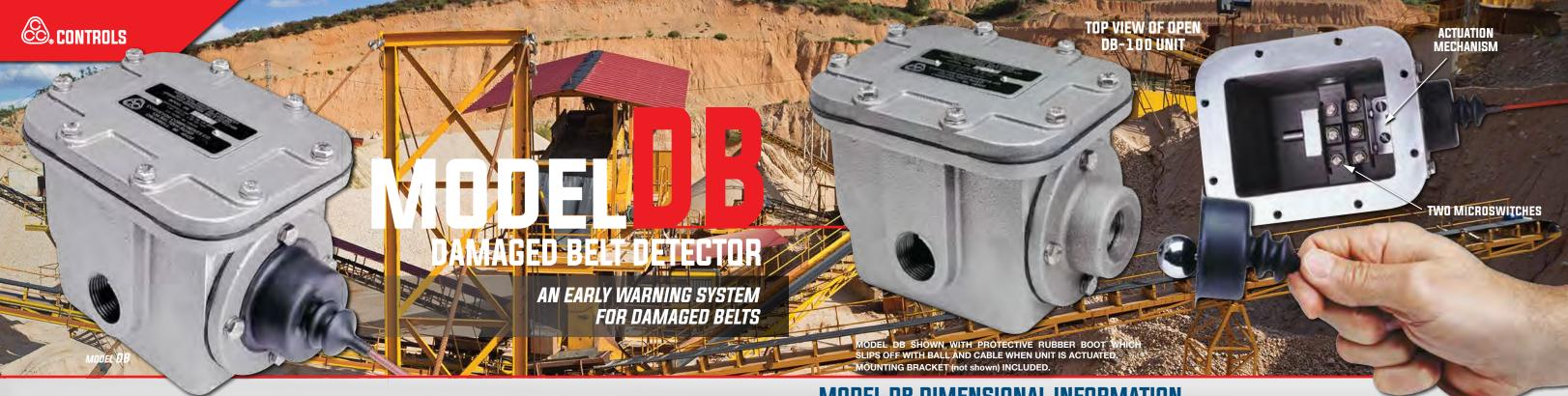
### MODELS

MODEL	DESCRIPTION	SHPG. WT. LBS
FS-2	General Purpose*, 2 SP/DT microswitches	18
FS-2X	Explosion proof** with 2 SP/DT Microswitches	18
FS-2D	2 Single Pole Double Throw (SP/DT) Micros- witches***	18
FS-5	General Purpose*, 2 DP/DT Microswitches	18
FS-5X	Explosion Proof** with 2 DP/DT Microswitches	18
FS-5D	2 Double Pole Double Throw (DP/DT) Microswitches***	18

\*GENERAL PURPOSE NEMA Type 4 & 4X

- \*\*EXPLOSION PROOF NEMA 7/9: Class I, Div. 1 & 2, Groups C & D; Class II, Div. 1 & 2. Groups E. F & G
- \*\*\*DUAL RATED NEMA TYPE Type 3S, 4, 4X, 5; Type 9: Class II (Div. 1 & 2), Groups





### **EXTRA** MEASURE OF PROTECTION

Economical and easy to install, they warn supervisory personnel of impending belt failures due to rips, punctures, splice failures, or sharp objects protruding through the belt fabric.

Damaged Belt Detectors mount in pairs positioned on either side of the belt. The units are connected by two spans of vinyl coated aircraft cable. One end of the cable mounts permanently to a support bracket and the other connects to a spring-loaded ball located in the unit. The cables loop underneath the belt from each side crossing at the midpoint. A belt problem is detected when an object or a piece of damaged belt hangs below the belt's surface and sweeps away one or both cables. As the cable is detached, it pulls a spring-loaded ball out of a socket, causing two microswitches to sound an alarm or to shut down the conveyor. One end of each cable is permanently affixed to the bracket preventing the loss of the cable.

The Damaged Belt Detector operates using a spring-loaded ball and socket connected to two plunger type microswitches. 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). When this happens, a spring-loaded shaft is released causing the plungers of the two microswitches to ride down cam surfaces machined on the shaft. This deactuates the switches causing them to sound an alarm, turn on a warning light, or shut down the system. To reactivate the detectors, all that's required is to snap the ball connector and cable back into its socket.

### **EASY TO MAINTAIN**

Damaged Belt Detectors are virtually maintenance free thanks to their simple, yet tough construction. The units can be wired normally open or normally closed. Everything you need to install your system is included, and accessory or replacement items are always available.

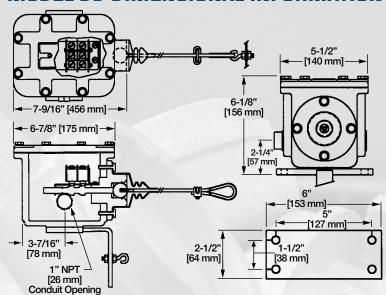
### **COST EFFECTIVE**

When you consider the cost of the average replacement belt, or the cost of repairing the mechanical damage from a torn belt, a damaged belt detection system is very inexpensive by comparison. Other than internally wired belts (tears are electronically indicated).



### **CROSS-SECTION OF CONVEYOR BELT** SHOWING INSTALLATION OF UNITS AND CABLE Max. 2" [51 mm] below conveyor belt

### MODEL DB DIMENSIONAL INFORMATION



### MODELS

WODELO		
MODEL	DESCRIPTION	SHPG. WT. LBS
DB-100	2 Single Pole Double Throw (SP/DT) Microswitch, 4 lbs of pull force*	11
DB-500	2 Double Pole Double Throw (DP/DT) Microswitch, 4 lbs of pull force*	11
DBX-100	2 Single Pole Double Throw (SP/DT) Microswitch, 4 lbs of pull force**	11
DBX-500	2 Double Pole Double Throw (DP/DT) Microswitch, 4 lbs of pull force**	11
DBD-100	2 Single Pole Double Throw (SP/DT) Microswitch, 4 lbs of pull force***	11
DBD-500	2 Double Pole Double Throw (DP/DT) Microswitch, 4 lbs of pull force***	11

\*GENERAL PURPOSE NEMA TYPE 4 & 4X

\*\*EXPLOSION PROOF NEMA TYPE 7: Class I (Div. 1 & 2), Groups C & D; Type 9: Class II (Div. 1 & 2), Groups E, F & G" \*DUAL RATED NEMA TYPE 4, 4X; Type 9: Class II (Div. 1 & 2), Groups E, F & G

DB-100 unit shown with cable mounting bracket (included).

### **ACCESSORIES**

MODEL	DESCRIPTION	SHPG. WT. LBS
DB-28	Cable End Fitting	1 oz.
DB-29	Conduit Plug, 1" NPT	6 oz.
20340008	DB Ball & 10 foot cable assembly with protective rubber boot	0.75

Housing: Aluminum (Standard). Epoxy coating available.

Conduit Opening: Two 1" NPT. Standard units and explosion proof models have two conduit

### External Hardware: Stainless Steel

**Switches:** SP/DT microswitch. Rated 20 amp at 125, 250 or 480V AC, 1/2 Amp 125 VDC; 1/4 Amp 250 VDC. Controls may be wired for single throw operation, either normally open or normally closed as required. DP/DT microswitches also available.

Standard unit "-100" is 4 lb.pull force. For optional 8 lb. or 16 lb. pull force change "-100" to either "-108" or "-116".



### **RUGGED** LEVEL CONTROLS

Designed for dry bulk material level indication and control applications. These cULus listed control units are enclosed in a rugged cast aluminum housing with LED indicator lights to alert the operator of either the presence or absence of material. Equipped with a surface mount PC board the unit now allows for a maximum of 5,000 feet of cable between the control unit and probe permitting the placement of the control unit in an easily accessible area.

Most models are equipped with intrinsically safe electronics, permitting the probe to be used in environments requiring explosion proof equipment. The control units are available in three different models for use in different environments. The Model CT-105 control unit is NEMA Type 4, 4X for use in general purpose outdoor applications and is dust proof and weather tight. The Model CT-106 control unit is NEMA Type 4, 4X and NEMA Type 9 dust ignition proof construction for use in hazardous locations. The Model CT-107 control unit is NEMA Type 7 explosion proof and NEMA Type 9 dust ignition proof construction for use in hazardous locations.



### **FEATURES:**

- Durable cast Aluminum NEMA Type housing with optional epoxy coating for corrosive environments.
- Explosion proof control units for use in hazardous locations: Model CT-106 and Model CT-107.
- Bright, energy efficient LED indicator lights.
- Up to 5,000 feet of cable length allows for control unit installation in easily accessible areas.
- Surface mount PC board resistant to shock and vibration.

### **ADVANTAGES**

- Optional stainless steel probes to safeguard against corrosion.
- Hanger fittings and mounting brackets available to permit easy suspension of probes from fixed supports.
- Our tilt probes are intrinsically safe and cULus listed when used in conjunction with the CT Control Units: Models CT-105, CT-106 and CT-107.
- · Heavy duty steel probes for abrasion resistance.
- Fail-Safe logic design defaults to safe condition when there is a loss of power.
- Adjustable time delay to prevent false signals.
- Low 12V DC probe for safety.
- · Easy installation and low maintenance.
- · Compact probes for use where space is limited.
- Probes are purchased separately. When not connected to our control unit they are not cULus listed.

### CONSTRUCTION DETAILS

The Model CT Control Unit is enclosed in a rugged cast aluminum housing with LED indicator lights labeled "Normal" and "Alarm" to indicate detection status. Within the housing a surface mount PC board has a

Consisting of a Control Unit and a Tilt Probe, the Model CT senses the presence or absence of material.

When suspended from a fixed support, the Probe indicates presence of material when it is tilted 15° for the mercury version or 25° for the non-mercury version. The circuit within the Probe is normally closed when vertical.

logic selector switch and adjustable time delay to prevent false signals. There are three terminal contacts for connection to the Probe; three for the input power; and two sets of output contacts, each with one normally open, one normally closed, and one common. Signal

lights, relay, and transformer are all

accessible with the housing open.

The Model CT Control Unit has a user configurable output relay (using normally closed contacts, normally open contacts or both) which is actuated by either the presence or absence of material. The relay provides a change in contacts as the Probe moves from vertical to tilt and vice versa.

The time delay is adjustable from 0.1 to 35 seconds. This adjustment will delay output relay action. The relay switches to the de-energized position upon reaching

the end of the delay period, as well as upon failure of power to the Control Unit.

When used in conjunction with the Control Units: Models CT-105, CT-106 and CT-107, the Probes are

cULus Listed and intrinsically safe. Two Probe sizes are available.

The CT-200G is a compact 6 inch Probe for use on small bins and hoppers where space is limited. The CT-201G is our standard 9 inch, heavy duty Probe for applications where an abrasion resistant Probe is necessary. Both Probes are available in stainless steel for corrosive environments and optional fittings are available to permit easy suspension from fixed supports. Paddle options are available for use on moving materials as a flow indicator. Probes are air tight, dust tight, waterproof and come

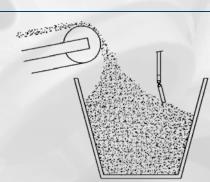
standard with 25 feet of three conductor 16-3 SO cable. Factory installed cable can be ordered up to 5,000 feet per unit.

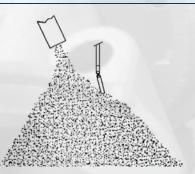
MODEL CT-200G

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### TYPICAL APPLICATIONS

- High level control on hoppers and silos
- Level detection under conveyor stackers
- Indicate back-up at conveyor transfer points
- · High level detection in crusher outlets
- Detect high level in trippers
- Indicate plugged conditions in chutes
- Detect flow of material on conveyors
- High level indicator for loading rail cars or trucks





DETECT LEVELS OF DRY BULK MATERIALS IN A VARIETY OF LOCATIONS

### MODEL CT - CONTROL UNIT

MODEL	DESCRIPTION	SHPG. WT. LBS
CT-105	1 Double Pole Double Throw (DP/DT) relay for 120 VAC*	8
CT-105B	1 Double Pole Double Throw (DP/DT) relay for 240 VAC*	8
CT-105C	1 Double Pole Double Throw (DP/DT) relay for 24 VAC/VDC*	8
CT-106	1 Double Pole Double Throw (DP/DT) relay for 120 VAC***	8
CT-106B	1 Double Pole Double Throw (DP/DT) relay for 240 VAC***	8
CT-107	1 Double Pole Double Throw (DP/DT) relay for 120 VAC**	8
CT-107B	1 Double Pole Double Throw (DP/DT) relay for 240 VAC**	8

\*GENERAL PURPOSE NEMA TYPE 3, 4, 4X

\*\*EXPLOSION PROOF NEMA TYPE 7: Class I (Div. 1 & 2), Groups C & D; Type 9: Class II (Div.1 & 2), Groups F F & G

Groups E, F & G

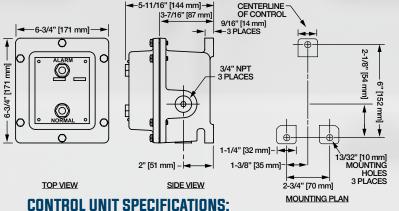
\*\*\*DUAL RATED NEMA TYPE 3, 4, 4X; Type 9: Class II (Div. 1 & 2), Groups E, F & G



### MODEL PT - APPEGGODIEG

MODEL DESCRIPTION		SHPG. WT.
		LBS
CT-300G	16-3 SO Probe Cable	0.09 lb./ft
CT-400	Probe Mounting Bracket	0.75
CT-500	S-Hook	0.5
CT-500S	Stainless Steel S-Hook	0.5
CT-600S	Stainless Steel 4" Diameter Float Ball	0.5
CT-700	Paddle Attachment Adapter	0.15
CR-61	4 Vane Stainless Steel Paddle	0.4
CR-64	Rubber Flexible Paddle	0.4
CR-65	Stainless Steel Flexible Paddle	0.5

### **CONTROL DIMENSIONS**



### CT-105/CT-105B: NEMA Type 4, 4X

CT-105/CT-105B: NEMA Type 4, 4X

NEMA Type 9 Class II, Groups E, F and G

CT-107/CT-107B: NEMA Type 7 Class I, Groups C and D

NEMA Type 9 Class II, Groups E, F and G

- Input Supply Voltage: Standard 120 VAC @ 50/60 Hz; or available 240 VAC @ 50/60 Hz (add suffix B to Model number)
- Power Consumption: 10 Watts
- Probe Voltage Output: 12 VDC
- Output Relay: DP/DT; 5 Amps, 120 VAC Resistive; 5 Amps, 240 VAC Resistive.
- Time Delay VR1: 0.1 to 35 Seconds. This adjustment will delay output relay action.
- Indicator Light: Normal (green): Illuminated when relay is energized.
- Indicator Light: Alarm (red): Illuminated when relay is de-energized.
- · Power failure is indicated if neither light is illuminated.
- Logic Selector S1: This switch determines when the output relay actuates and de-actuates.

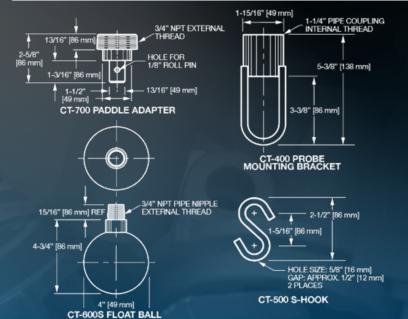
Position 1: Relay energizes when the Probe is in the vertical position. Relay de-energizes when Probe is in the tilted position.

Null: Middle position with no contact

Position 2: Relay energizes when Probe is in the tilted position. Relay de-energizes when Probe is in vertical position.

Probe Models CT-200G and CT-201G are cULus Listed and intrinsically safe when connected with CT-300G Cable to Conveyor Components Company's Control Units: Models CT-105, CT-106 and CT-107, and when used as intended and installed according to the manufacturer's instructions. Any other use or installation is not cULus Listed or intrinsically safe.

### **ACCESSORIES**



### **AVAILABLE PROBE MODELS**

### MODEL CT - PROBES COMPACT 6"

MODEL	DESCRIPTION	SHPG. WT. LBS
CT-200G	Compact 6" probe with 25 feet of cable	5
CT-200GC	Compact 6" tilt probe with 25' feet of 16-3 SO cable included. 3/4"NPT coupling welded to probe.	5.5
CT-200GN	Compact 6" tilt probe with 25' feet of 16-3 SO cable included. Non-mercury (mercury free).	5.5
CT-200GNC	Compact 6" tilt probe with 25' feet of 16-3 SO cable included. Non-mercury (mercury free), 3/4" NPT coupling welded to probe.	5.5
CT-200GNC-3/4	Compact 6" tilt probe with 25' feet of 16-3 SO cable included. Non-mercury (mercury free), 3/4" NPT coupling welded to probe.	5.5
CT-200GP	Compact 6" tilt probe with 25' feet of 16-3 SO cable included. With welded-on paddle.	5.5

### MODEL CT - PROBES STANDARD 9"

MODEL	DESCRIPTION	SHPG. WT. LBS
CT-201G	Standard 9" tilt probe with 25' feet of 16-3 SO cable included.	8.5
CT-201GC	Standard 9" tilt probe with 25' feet of 16-3 SO cable included. 1-1/4" NPT coupling welded to probe.	8.5
CT-201GC-3/4	Standard 9" tilt probe with 25' feet of 16-3 SO cable included. 3/4" NPT coupling welded to probe.	8.5
CT-201GN	Standard 9" tilt probe with 25' feet of 16-3 SO cable included. Non-mercury (mercury free)	8.5
CT-201GNC	Standard 9" tilt probe with 25' feet of 16-3 SO cable included. Non-mercury (mercury free), 1-1/4" NPT coupling welded to probe.	8.5
CT-201GNC-3/4	Standard 9" tilt probe with 25' feet of 16-3 SO cable included. Non-mercury (mercury free), 3/4" NPT coupling welded to probe.	8.5
CT-201GP	Standard 9" tilt probe with 25' feet of 16-3 SO cable included. With welded-on paddle.	8.5

\*For Non-Mercury Probe add option "N" to Model number.

\*For % NPT or 1¼ NPT threaded coupling add option "C" to Model number.

\*For Stainless Steel Probe add option "S" to Model number.

\*For welded Paddle add option "P" to Model number.

\*For High Temperature use CT-200GHC.

Tilt Probes are cULus Listed and Intrinsically Safe for Class I, Groups A, B, C and D; Class II, Groups E, F and G Hazardous Locations when connected to Conveyor Components Company's Control Units: Models CT-105, CT-106 or CT-107 with CT-300G Cable and when used as intended and installed according to manufacturer's instructions.

### **PROBE DIMENSIONS**

### PROBE SPECIFICATIONS:

CT-201G: Standard heavy-duty probe;

9" [23 cm] long

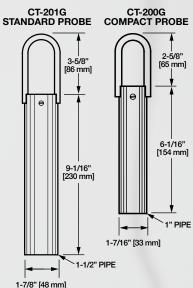
CT-200G: Compact probe; 6" [15 cm] long.

- Probe signal voltage: 12 VDC
- Probe ratings: 1.5 A @ 120VAC, 1.5mA at 5 VDC
- Probe actuation angle: 15° from vertical

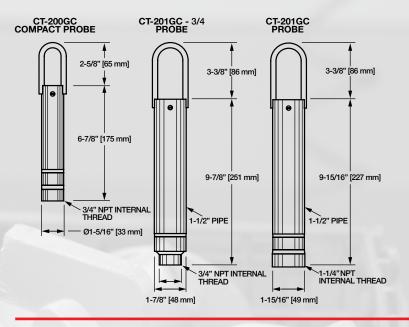
CT-201GN: Non-Mercury heavy-duty probe; 9" [23 cm] long

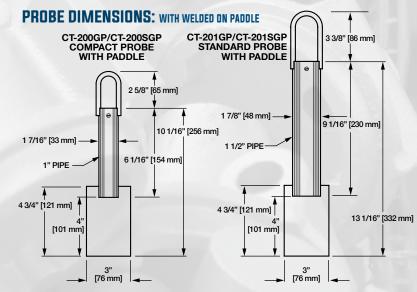
CT-200GN: Non-Mercury compact probe; 6" [15 cm] long

- Probe signal voltage: 12 VDC when used with CCC controller
- Probe ratings: 0.25 A max., 60 V max
- Probe actuation angle: 25° from vertical
- Each steel Probe contains one SP/ST, normally closed contact. Stainless steel, paddles, epoxy coating and threaded coupling options are available



### **COUPLING OPTIONS**

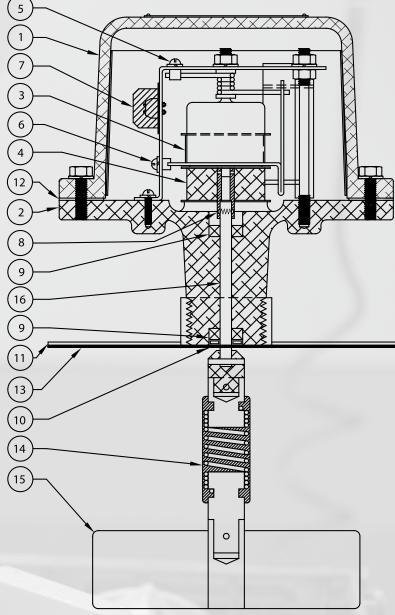






### CONSTRUCTION FEATURES COMMON TO ALL CR MODELS

- 1. COVER Cast aluminum used for both NEMA Type 4, 4X general purpose models and NEMA Type 7: Class I, Groups C and D; NEMA Type 9: Class II, Groups E, F and G explosion proof models. Optional epoxy coating is available.
- 2. BASE Cast aluminum standard with 1 1/4" NPT thread on neck for installation in ½ coupling or standard mounting plate. Conduit connection is 3/4" NPT thread.
- 3. MOTOR Power: 5 Watts, Frequency: 50/60 Hertz. Speed: 1 RPM, Voltage: 120V or 240V. Other Voltages available.
- MICROSWITCHES SP/DT, rated at 20 amps. Unit can be furnished with 1, 2 or 3 switches. All microswitches can be wired for single throw operation, either normally open or normally closed as required.
- 5. SENSITIVITY ADJUSTMENT Spring tension is adjustable to product density.
- 6. TIME DELAY ADJUSTMENT Variable to prevent false signals.
- 7. TERMINAL BLOCK For CR motor voltage.
- **8. CLUTCH** Slips to prevent damage to motor gears.
- 9. BEARINGS Sealed, permanently lubricated precision ball
- 10. SHAFT SEAL Dust and moisture-tight. Rated ½ micron dust
- 11. MOUNTING PLATE 8" diameter with 1 1/4" welded pipe coupling. Powder coated steel is standard. Stainless steel is optional. Flexible to conform to curved bins.
- 12. COVER GASKET 1/16" thick neoprene.
- 13. MOUNTING GASKET 1/16" thick fiber.
- 14. SHAFT Optional flexible or solid with all metal parts made of stainless steel.
- 15. PADDLE All metal parts made of stainless steel. Various types interchangeable in field.
- 16. DRIVE SHAFT Precision machined stainless steel. Impervious to moisture and corrosion build-up.



### MODELS

MODEL	HOUSING CONSTRUCTION	SHPG. WT. LBS
CR-2A	2 Single Pole Double Throw (SP/DT) Microswitches for 120 VAC*	9
CR-3A	3 Single Pole Double Throw (SP/DT)Microswitches for 120 VAC*	9
CR-2B	2 Single Pole Double Throw (SP/DT) Microswitches for 240 VAC*	9
CR-3B	3 Single Pole Double Throw (SP/DT) Microswitches for 240 VAC*	9
CR-2C	2 Single Pole Double Throw (SP/DT) Microswitches for 24 VAC/VDC *	9
CRX-2A	2 Single Pole Double Throw (SP/DT) Microswitches for 120 VAC**	9
CRX-3A	3 Single Pole Double Throw (SP/DT) Microswitches for 120 VAC**	9
CRX-2B	2 Single Pole Double Throw (SP/DT) Microswitches for 240 VAC**	9
CRX-3B	3 Single Pole Double Throw (SP/DT) Microswitches for 240 VAC**	9
CRD-2A	2 Single Pole Double Throw (SP/DT) Microswitches for 120 VAC***	9
CRD-3A	3 Single Pole Double Throw (SP/DT) Microswitches for 120 VAC***	9

\*GENERAL PURPOSE NEMA TYPE 4 & 4X
\*\* EXPLOSION PROOF NEMA TYPE 7: Class I (Div. 1 & 2), Groups C & D; Type 9: Class II (Div. 1 & 2), Groups E, F & G

### **MOUNTING PLATE**

MODEL	DESCRIPTION	SHPG. WT. LBS
CR-81	Side Mount	1.50
CR-82	Side Mount, Stainless Steel	1.50
CR-83	Top Mount	1.75
CR-84	Top Mount, Stainless Steel	1.75
CR-85	1-1/4" Half Coupling	.25

SIMPLE. CONSTRUCTION WITH FEWER PARTS.

SENSITIVITY AND TIME DELAY.

SHAFT AND PADDLE

**TECHNICAL INFORMATION** 

### SHAFT

MODEL	DESCRIPTION	SHPG. WT. LBS
CR-70	Solid Stainless Steel Shaft	.25
CR-71	Flexible Shaft	.25
CR-72	Stainless Steel Coupling	.06
CR-91	1/8" Stainless Steel Solid Extension	.04 / inch
CR-100	1-1/4" Pipe Guard	.19 / inch
CR-101	1-1/4" Stainless Steel Pipe Guard	.19 / inch

(89mm) STANDARD WITHOUT SHAFT [165mm] WITH CR-70/CR-71 SHAFT BLE WITH PIPE GUARD AND EXTENSION

SHAFT EXTENSION GUARD CR-100/CR-101

1-3/4" [64 mm] \_\_

4 VANE PADDLE

### PADDLE

MODEL	DESCRIPTION	SHPG. WT. LBS
CR-61	4 Vane Stainless Steel Paddle	.40
CR-62	1 Vane Curved S.S. Paddle	.50
CR-63	1 Vane Stainless Steel Paddle	.25
CR-64	Rubber Flexible Paddle	.45
CR-65	Stainless Steel Flexible Paddle	.50

### MOTOR

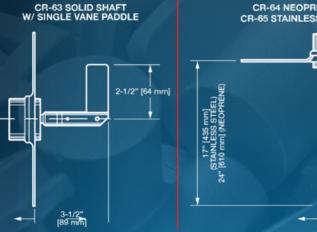
MODEL	DESCRIPTION	SHPG. WT. LBS
CR-6	120 VAC Replacement Motor	.40
CR-6A	240 VAC Replacement Motor	.50

### MOUNTING PLATE



### OPTIONAL PADDLES

7-1/2" [191 mm]



TOP MOUNTING PLATE

SIDE MOUNTING PLATE CR-81/CR-82



FLEXIBLE SHAFT CR-71

OR SOLID SHAFT\* CR-70

# - -

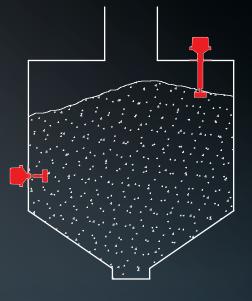
**CR-62 CURVED VANE PADDLE** 

### FOLLOW THESE 5 STEPS TO DETERMINE THE PROPER ROTO-LEVEL CONTROL™ FOR YOUR APPLICATION:

### 1. SELECT PROPER MODEL

Selection of the proper Model CR Roto-Level Control™ should begin with the electrical requirements. Use the chart below to select the model number that will give the motor voltage, number of microswitches, and type of

5		MODEL NUMBER —		
Enclosure	Number of 20 AMP SP/DT Microswitches	120 VAC Motor	240 VAC MOTOR	24 VAC (non-UL) MOTOR
NEMA Type 4, 4X - UL and cUL Certified	Two	CRX-2A	CRX-2B	CRX-2C
	Three	CR-3A	CR-3B	CR-3C
Explosion Proof NEMA Type 7 & 9 UL and cUL Certified	Two	CRX-2A	CRX-2B	CRX-2C
	Three	CRX-3A	CRX-3B	CRX-3C



### 2. DETERMINE MOUNTING PLATE

It must be decided whether the unit is to be mounted on the top or the side of the bin and which mounting plate is to be used.

- The paddle and shaft must be at a point on the bin where the material will flow freely both to and away from them.
- The paddle and shaft must be away from the direct flow of incoming material.
- HIGH LEVEL CONTROL: Top mounting is recommended. It simplifies installation, accessibility and wiring. Top mounting is suggested for:
  - Light materials where large paddles must be used. Large lump materials where long flexible paddles must be used.
  - Avoiding stagnation areas which can occur with moist materials.

PART NUMBER: CR-83 Standard mounting plate for most top mount applications.

PART NUMBER: CR-84 Stainless steel mounting plate for most top mount applications.

LOW LEVEL CONTROL: Side mounting is customary but top mounting may be easier in smaller or medium sized bins.

PART NUMBER: CR-81: Standard side mounting plate for most applications.

PART NUMBER: CR-82: Stainless Steel mounting plate. Use where corrosion is a problem.

PART NUMBER: CR-85: Half coupling welded directly to the bin wall. Used with the CR-62 or CR-63 paddles, it allows unit to be mounted directly in the coupling without a mounting plate. Paddles are inserted into the bin through the coupling.

It is sometimes necessary to install protective baffles over the paddles at the low level to protect paddle and shaft from surges in the product.

### 3. CHOOSE CORRECT PADDLE

- PART NUMBER CR-61: Stainless Steel 4 vane 6" O.D. paddle. For use on materials up to 75 lbs./cu. ft. Used at high and low level, top and side mounted.
- PART NUMBER CR-62: 1 vane curved paddle. For use with materials 30 lbs./cu. ft. Inserted through half coupling Part Number CR-85.
- PART NUMBER CR-63: 1 vane paddle. Extends 3 ½" in to bin. For materials over 75 lbs./cu. ft. and temperature ranges up to 350°F. Side mounted.
- PART NUMBER CR-64: Flexible neoprene paddle. 1 1/2" wide, 24" long. For large lump materials up to 50 lbs./cu. ft. Located so product pins paddle to bin wall.
- PART NUMBER CR-65: Stainless steel; flexible; top mounted. For materials up to 50 lbs. long. For materials up to 50 lbs./cu ft. and/or sticky materials.

### 4. PICK SHAFT COMPONENTS

- PART NUMBER CR-71: Flexible shaft; top and side mounting. Adds 3" to overall shaft and paddle assembly. Withstands bin temperature to 160°F and shock loads from product surge.\*
- PART NUMBER CR-91: 1/8" stainless steel pipe extension for top mounting.
- PART NUMBER CR-100: 1 1/4" protective guard for top mounting.
- PART NUMBER CR-72: Shaft extension coupling.
- PART NUMBER CR-101: Stainless steel guard.
  - \*Flexible shaft is not necessary on many side mounted applications. Bin temperature limit is Raised to 350°F.

### 5. CHECK THE FOLLOWING

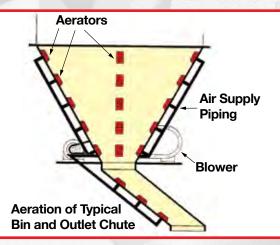
- Specify stainless steel option on mounting plates and shaft extensions where corrosion is a problem. The shaft and paddle assembly come standard in stainless steel.
- Units should be side mounted at both high and low levels where high temperatures are encountered. Temperature in housing is UL and cUL rated for up to 104°F.
- Bin pressure should not exceed 30 P.S.I. Check with factory when this is a problem.
- Mount unit on bin where there is a minimum vibration. Use rubber washers or a soft rubber mounting gasket when vibration is severe.



### END FLOW PROBLEMS FOREVER!

Model AD Aerators provide positive flow of dry, finely ground materials from any bin using the proven principle of aeration. Low pressure air is introduced into the product, restoring its natural ability to flow. In this way congestion, bridging and ratholing are overcome without resorting to brute force. Almost all flow problems inherent to dry, fine materials are caused by compaction. When low pressure air is introduced to a finely ground material it will flow like water, uniformly and quickly.

Model AD Aerators are non-clogging and provide equal distribution and consumption of air. They feature simple and quick installation. Simply drill a 7/16" hole in bin wall insert, special tank nipple through hole and secure with lock nut.



### MATERIALS RESPONDING TO AERATION

Aeration gives the best results on materials with a 60 mesh size or smaller and with a 3% or less moisture content. Specific materials that respond well to aeration are as follows: Lime, Portland Cement, Carbon Black, Diatomaceous Earth, Flour, Soda Ash, Gypsum, Fly Ash, Pigments, Soap Powders, Bentonite, Bran, Clay, Cereals, Fullers Earth, Detergents and many others. For questionable materials please contact our sales department.

### **ADVANTAGES OF AERATION**

- Positive, uniform and easily controlled flow
- Eliminates Bridging and Rat-holing
- Quiet operation
- Low power requirements
- First in / first out flow
- Adapts to any bin configuration
- Low-Cost, Easy to Install, Maintenance Free

### EXCLUSIVE

Heavy-Duty construction features stiffeners to prevent crushing of air compartment. These stiffeners eliminate the possibility of the Aerator being crushed by weight of material or by personnel stepping on it when cleaning the bin. The stiffeners do not obstruct the diffusion of air.

### **CUTAWAY VIEW**



### MODELS

MODEL	DESCRIPTION	SHPG. WT. LBS
AD-C	Zinc plated steel body with galvanized steel mesh and cotton diffuser. Brass nipple and lock nut. Nickel plated steel spacer washers and rubber gasket.	0.7
AD-F	Zinc plated steel body with galvanized steel mesh and fiberglass diffuser. Brass nipple and lock nut. Nickel plated steel spacer washers and rubber gasket. Typically used when temperatures exceed 200°F.	0.7
AD-SSC	Type 316 Stainless Steel body and mesh. Cotton diffuser. Nickel plated spacer washers, nipple and locknut. Rubber Gasket.	0.7
AD-SSF	Type 316 Stainless Steel body and mesh. Fiberglass diffuser. Nickel plated spacer washers, nipple and locknut. Rubber Gasket. Typically used when temperatures exceed 200°F.	0.7
AD-K	Optional mounting kit includes two positive sealing gaskets, adapter and clamp. Use with any of the aerators when mounting from outside the bin.	0.7

### **AERATOR SELECTION GUIDE:**

For best results, locate lower aerators as close to the discharge outlet as possible. If material is held in the bin for long periods and/or compacted in transport, we recommend aerators be installed on 12" centers.

Aerators on 12" Centers

Aerators on 1	15" C	enter
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Length of Sloping Bin Wall	Number of Aerators Per Row	Length of Sloping Bin Wall	Number of Aerators Per Row
1'8" - 2'7"	2	1'11" - 3'1"	2
2'8" - 3'7"	3	3'2" - 4'4"	3
3'8" - 4'7"	4	4'5" - 5'7"	4
4'8" - 5'7"	5	5'8" - 6'10"	5
5'8" - 6'7"	6	6'11" - 8'1"	6
6'8" - 7'7"	7	8'2" - 9'4"	7
7'8" - 8'7"	8	9'5" - 10'7"	8
8'8" - 9'7"	9	10'8" - 11'10"	9
9'8" - 10'7"	10	11'11" - 13'1"	10

Generally four rows of aerators on 12" or 15" centers are recommended. On conical bins these rows are spaced equally. On pyramidal bins, rows are spaced equally on sloping sides or in valleys if material tends to hang up in these valleys.

### **AIR SUPPLY**

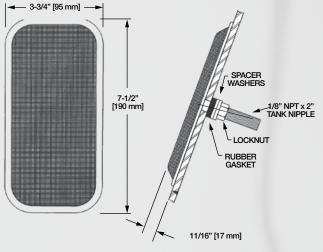
Air supply must be clean and dry. We recommend positive displacement, low pressure blowers. Plant air can be used but the pressure must be reduced to 3 to 5 P.S.I. and a filter or moisture trap used on the low pressure side. The volume of air needed is a limiting factor on the use of plant air.

Manifold Piping Size Guide

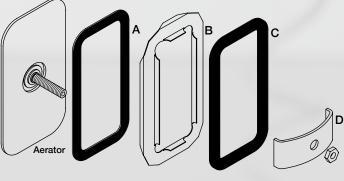
Air Consumption Guide Per Aerator

Piping Size	Number of Aerators in a Row	Air Pressure PSI	Cubic Feet Per Minute
			4.2
3/4"	1-5	2	5.7
1"	6-9	*3	6.5
		4	7.1
4 4/4"	40.40	5	7.6
1-1/4"	10-12	*Recommended fo	r most applications

### **MODEL AD AERATOR SPECIFICATIONS**



MODEL AD-K MOUNTING KIT (SOLD SEPARATELY)



A. 1/16" gasket, B. Adaptor adhesive both sides.

C. 3/16" gasket, adhesive one

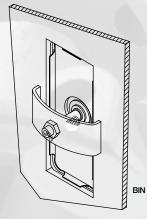
D. Spring Stee clamp.

The Model AD-K aerator mounting kit completely eliminates the need to enter the bin to install or service aerators. By cutting a 2-5/8" x 6-3/8" hole in the bin wall the mounting kit can be completely installed and serviced from outside the bin.

After the initial hole has been cut, the aerator is mounted on the adapter assembly and inserted into the bin in less than two minutes. No holes to drill, no welding or tapping. The aerator is positively sealed and securely held in place in the bin. Removal is just as simple and quick.

Aerator kits are also adaptable for use on round bins. Installation is made with standard gaskets, and the 3/16" adhesive gasket ("C" above), on bins with a diameter of three feet or greater.





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### **EASY** QUICK INSTALLATION

Designed for easy installation, the Mag-Neat-O<sup>™</sup> is a magnetically coupled motion sensor that when paired with Conveyor Components Company controller MSD or RMS-G. It can be programmed as an over speed, under speed or zero speed device. The Mag-Neat-O<sup>™</sup> is a speed switch that uses a uniquely designed magnetic coupler to attach the unit to a roller shaft on your conveyor. This coupler is connected to a target that rotates in unison with the roller shaft of a conveyor. A target is then read by a proximity sensor that communicates pulse into the optional MSD controller which has a relay to control up to two circuits.

### **ADVANTAGE**

The Mag-Neat-O<sup>™</sup> features a simple robust Magnetic Coupler for easy, rapid field installation. The coupler of the Mag-Neat-O<sup>™</sup> is magnetically attached to the shaft of a conveyor roller or other rotating piece of equipment that you want to monitor for motion.

### MAG-NEAT-O MODELS AVAILABLE

MODEL	DESCRIPTION	SHIP WT.
MCM-2S	Sensor magnetically coupled motion control with 12mm 2-wire (RMS-12S) inductive sensor and MCC-1 magnetic coupling connector.	2 lbs.
MCM-3S	Sensor magnetically coupled motion control with 12mm 3-wire (MSD-12S3) inductive sensor and MCC-1 magnetic coupling connector. Does not include optional MSD-800 controller.	2 lbs.

### **CONTROLLERS**

MODEL	DESCRIPTION	SHIP WT.
MSD-800	Panel mount style, indicates two under-speed or two over-speed points, or one of each. 100-240 VAC power input. Digital RPM tachometer display.	1.5 lbs.
RMS-1G	Non-contact motion control, includes: 120 VAC electronics *	1.5 lbs.

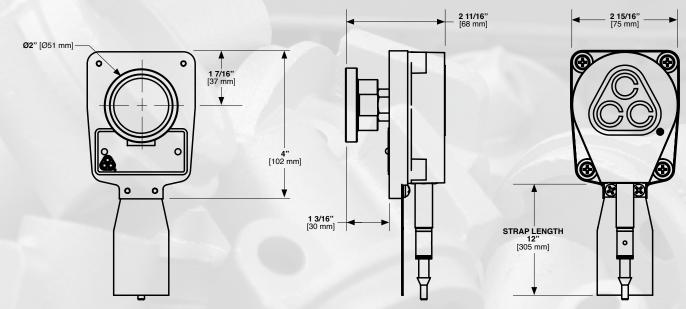
### **TECHNICAL SPECIFICATIONS**

- The sensor can be used in outdoor environments and is connected to the controller(s) with Belden 8442 or 9760 or similar.
- The maximum separation distance between controller and sensor is 200 feet.
- No drilling or tapping of the tail pulley shaft is necessary. The unit connects magnetically to the pulley shaft.





### MAG-NEAT-O DIMENSIONAL INFORMATION





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### TRACTION ACTION

The Model BSD is a traction action™ motion control that indicates when a conveyor belt has slowed or quits moving altogether. It can be used as an overspeed, underspeed, or zero speed control. For maximized control the Model BSD should be wired into our optional RMS controllers or MSD controllers which can be set to shutdown machinery or activate an alarm. These controllers allow the BSD to indicate either Over-Speed, Under-Speed or Zero-Speed.

The Model BSD can shut down rotating equipment before damage is encountered. It provides protection for interlocked conveyor belts, especially if one of the belts fails due to overloading or quits due to tearing. Also prevents material backup or plugged chute.

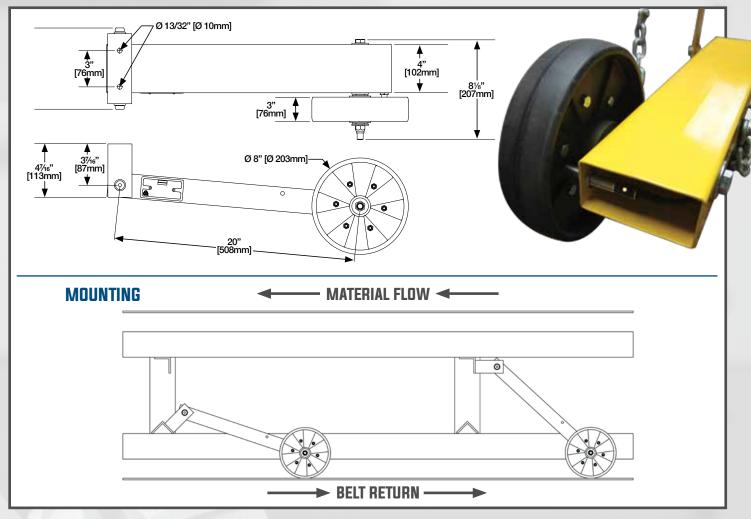
No drilling or tapping of tail pulley shaft required. Unit is shielded between top and bottom of conveyor belt, and can be placed anywhere on the conveyor belt.

SIMPLE DESIGN AND INSTALLATION.
NO DRILLING OR TAPPING OF TAIL PULLEY
SHAFT REQUIRED, UNIT IS SHIELDED
BETWEEN TOP AND BOTTOM OF CONVEYOR
BELT, AND THE UNIT CAN BE PLACED
ANYWHERE ON THE CONVEYOR BELT.

### TECHNICAL SPECIFICATIONS

- The BSD-2S (2 wire sensor) works with the RMS-G series controller, while the BSD-3S (3 wire sensor) works with the MSD-800 series controller.
- The RMS-G controller is available in a NEMA Type 4
  polycarbonate housing, while the MSD-800 controller
  is a panel-mount plastic housing with display.
- Both controllers are available in either a 120 VAC, 240 VAC, or 24V AC/DC power input. Specify input voltage upon ordering.
- The sensor can be used in outdoor environments and is connected to the controller(s) with Belden 8442 or 8760 or similar.
- Each inductive sensor is supplied with 6 feet of electrical cable. Field splice for longer lengths.
- The maximum separation distance between controller and sensor is 200 feet.
- Each controller has a dry, unpowered relay rated for 5A @ 120 VAC, 240 VAC.
- 6 targets are built into the wheel assembly. The wheel is replaceable if necessary.
- The operating temperature range is -4°F to 158°F (-20°C to 70°C).

### MODEL BSD DIMENSIONAL INFORMATION



### MODELS

MODEL	DESCRIPTION	SHIP WT.
BSD-2S	Wheel (traction action <sup>™</sup> ) motion control, includes 12mm 2-wire (RMS-12S) inductive sensor and wheel target. Does not include optional RMS-G controller.	18 lbs.
BSD-3S	Wheel (traction action <sup>™</sup> ) motion control, includes (MSD-12S3) 12mm 3-wire inductive sensor and wheel target. Does not include optional MSD-800 controller.	18 lbs.
BSD-0S	Wheel (traction action™) motion control, sensor not included. Does not include optional controller.	18 lbs.

### **ACCESSORIES / SPARE PARTS**

MODEL	DESCRIPTION	SHIP WT.
RMS-12S	12mm (2 wire) inductive proximity sensor (for use with RMS-G series controller.	1 lb.
MSD-12S3	12mm (3 wire) inductive proximity sensor (for use with MSD-800 or MSD-800-24 controller.	1 lb.
21310007	Nylon wheel assembly with 6 targets.	2 lbs.
21310016	Safety chain & hardware kit, 2 pieces at 4 feet each.	5 lbs.
21310015	Safety cable, 1 piece at 2 feet each (2 required).	1 lb.
MSD-14	Two conductor electrical cable (Belden 8442 or 8760).	.02 lbs/ft



### COMPATIBLE CONTROLLERS FOR BSD

### MSD-800 CONTROLLERS

MODEL	DESCRIPTION	SHIP WT.	
MSD-800	Panel mount style, indicates two under-speed or two over-speed points, or one of each. 100-240 VAC power input. Digital RPM tachometer display.	1.5 lbs.	
MSD- 800-24	Panel mount style, indicates two under-speed points, two over-speed points or one of each. 24 VDC power input. Digital RPM tachometer display.	1.5 lbs.	

### RMS MOTION CONTROLLERS

MODEL	DESCRIPTION	SHIP WT.
RMS-1G	Non-contact motion control, includes: 120 VAC electronics *	1.5 lbs.
RMS-2G	Non-contact motion control, includes: 240 VAC electronics *	1.5 lbs.
RMS-3G	Non-contact motion control, includes: 24 VAC/ VDC electronics *	1.5 lbs.

ENERAL PURPOSE NEMA TYPE 4 & 4X



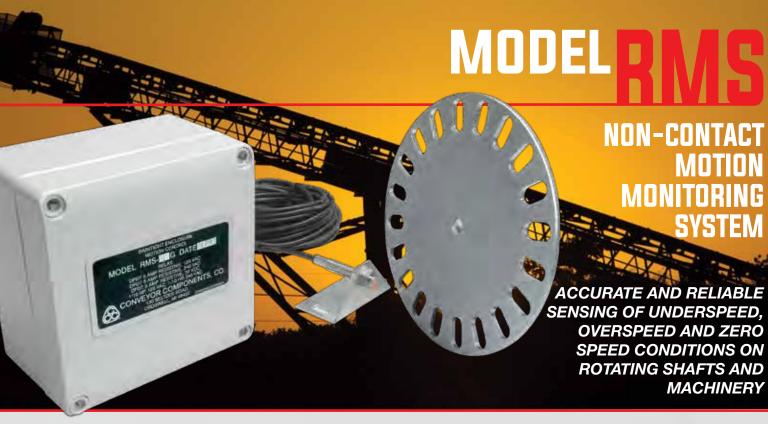
MSD-800 control unit



RMS control unit

### A PORTION OF ALL SALES GOES DIRECTLY TO





### **PROTECTS** VALUABLE ROTATING **EQUIPMENT**

The Model RMS non-contact motion control will provide accurate and reliable speed sensing of rotating shafts and machinery. Choose a NEMA 4 polycarbonate enclosed controller, then choose a sensor, and a matching mounting bracket and target disk. Each sensor comes with 6 feet of cable, will need to field splice for longer lengths. It will produce an output signal at a predetermined speed which may be either underspeed or overspeed. Solid state electronics and analog technology make this one of the most advanced and versatile motion detectors available. The Model RMS protects all valuable rotating equipment including belt conveyors, bucket elevators, rotary feeders, or screw conveyors.

The Model RMS uses a remote mounted inductive sensor to monitor speed. Motion is sensed by means of induced measurable pulses produced by a ferrous metal target rotating past the sensor. Sensors and Targets are paired for optimal pulse ranges and are available for purchase separately. If a distinctive metal target is available, sensors can be used without RMS Target. The produced pulses are converted to a digital electronic signal. Solid state circuitry within the DIN rail mount box then analyzes the digital signal and activates or deactivates the output relay at the pre-set speed point.



RMS-8M, RMS-12M, RMS-18M and RMS-30M Mounting Brackets Sold Separately

### **CONTROLLER SPECIFICATIONS**

### **MECHANICAL SPECIFICATIONS:**

ENCLOSURE: MEETS: Polycarbonate NEMA 1 **WEIGHT:** .75 lbs. 3" x 21/4" x 41/4"

### **ELECTRICAL SPECIFICATIONS:**

RMS-1G; 105-135 volts A.C., 50-60Hz. RMS-2G; 210-250 volts A.C., 50/60 Hz.

RMS-3G: 24V AC/DC

**OUTPUT:** DP/DT relay 5 Amp. Resistive at 120 volts A.C. DP/DT relay 5 Amp. Resistive at 240 volts A.C.

DP/DT relay 5 Amp. Resistive at 30 volts D.C. 1/10 horse power at 120 volts A.C.

1/10 horse power at 240 volts A.C.

**AMBIENT TEMP:** -10°F to 104°F (-23°C to 40°C) Controller only REPEATABILITY: +2% maximum at constant voltage

and temperature

POWER CONSUMPTION: SPEED RANGES:

3 watts maximum

Input ranges at which relay will energize: LOW: 2 to 120 PPM (use RMS-8S or RMS-12S)

MED: 20 to 1200 PPM (use RMS-12S or RMS-30S) HIGH: 200 to 12,000 PPM (use RMS-12S, 18S or 30S) Speed at with relay will de-energize for

Underspeed, or energize for Overspeed. Recommended to be 15-20% lower or higher than running speed. This will eliminate

nuisance shutdowns.

START UP DELAY: Adjustable up to 45 seconds

### SENSOR SPECIFICATIONS:

SIGNAL POINT:

MODEL NUMBER	RMS-88/8T	RIVIS-128/12T	RIVIS-185/18T	RWS-30S/30T
Sensor Type	2 wire DC	2 wire DC	2 wire DC	2 wire DC
Body Diameter	8mm (0.31")	12mm (0.47")	18mm (0.71")	30mm (1.18")
Body Length	50mm (1.97")	71mm (2.79")	80mm (3.15")	81mm (3.19")
Thread Size	M8	M12	M18	M30
Cable Length	2m (6.5")	2m (6.5")	2m (6.5")	2m (6.5")
Sensing Range	1.5mm (0.06")	2.0mm (0.08")	5.0mm (0.20")	10mm (0.30")
Maximum Pulse Rate	2 kHZ	1.5 kHZ	1.0 kHZ	0.6 kHZ
Maximum Voltage	30 VDC	30 VDC	30 VDC	30 VDC
PPM Range	2 - 120 PPM	20 - 1200 PPM	20-1200 PPM	200 - 12,000 PPM
Maximum Current	100 MA	100 MA	100 MA	100 MA



### **CONSTANTLY** DISPLAYS ACTUAL ROTARY SPEED

The Model MSD is comprised of two different components, a The Model MSD-1 speed sensor, which is installed directly to the indicate two under-speed points, two over-speed points, or one of each. The control unit acts as a digital tachometer that constantly is free from dust, dirt and vibration. This allows the operator to G classifications. monitor equipment from one central location.

control unit and a speed sensor. The MSD-800 control unit is a shaft of the rotating equipment being monitored, is enclosed in programmable controller that has two set points permitting it to a rugged cast aluminum housing designed to withstand harsh environments. The enclosure is weatherproof, dust-tight and meets NEMA Type 3S, 4, 4X classifications. For hazardous environments, displays the actual rotary speed of the equipment being monitored. explosion proof sensors are available that meet NEMA Type 7, The control unit is installed remotely in a control panel where it Class I Groups C and D and NEMA Type 9, Class II, Groups F and



### PROGRAMMABLE CONTROL UNIT WITH TWO SET POINTS AND DIGITAL TACHOMETER

- · Indicates two under-speed points or two over-speed points, or one of each
- Field adjustable to desired speed set points
- · Simple set up menu and adjustment
- · Panel Mount for easy access in a location free from dust, dirt and vibration
- LCD Display shows shaft RPM
- · 100-240 VAC Power input, 24 VDC available

The Model MSD-800 series motion sensing controls offer affordable and reliable protection of indoor and outdoor rotating equipment such as screw conveyors, belt conveyor pulleys, rotary feeders and bucket elevators from costly damage by continuously monitoring rotary speed. The Model MSD alerts the operator of a change in speed by sending a signal to the control unit which can be set to sound an alarm and/or shutdown the equipment completely. By monitoring speed you can greatly reduce system and equipment downtime.

### OPERATION

The Model MSD-1 sensor detects motion by means of a precision analyzed and the relays are activated or deactivated at preset are transmitted to the MSD-800 control unit where the signal is accomplished through the buttons on the face of the control unit.

metal disc with slots on its periphery generating electronic pulses signal speeds. The MSD-800 control unit is designed to permit two as the disc rotates past an infra-red light source. These pulses signal set points. Field adjustment of the signal set points is easily

### **TECHNICAL SPECIFICATIONS**

TECHNICAL INFORMATION



### MSD-1 (OR MSD-1X) SENSOR

Power Input: 12 VDC from the control unit

Output: 12 VDC NPN square wave to control unit

Max. Operating Temperature: T6: 185°F (85°C) "X" units only

Maximum Speed Limit: 1000 RPM

Shaft Load: 125 lbs. radial, 100 lbs. end thrust Rotation: Clockwise or Counter-clockwise

Drive Torque: 1 inch-pound

Shaft: 5/8" dia. x 1-1/4" long stainless steel

Enclosure: 319 cast aluminum:

NEMA Type 3S, 4, 4X compliant (MSD-1) Optional: Type 7 Class I Groups C and D,

and Type 9 Class II Groups F and G compliant (MSD-1X)

Bearings: Permanently lubricated and sealed for life ball bearings

Operating Range: 0-1000 RPM Signal Accuracy: +/- 1 RPM



MSD-800 control unit

### **MODEL MSD MOTION SPEED CONTROL - SENSOR**

MODEL	DESCRIPTION	SHPG. WT. LBS.
MSD-1	Speed Sensor (Pulse Generator)*	7
MSD-1X	Speed Sensor (Pulse Generator)**	7
RMS-12S3	Speed Sensor	1

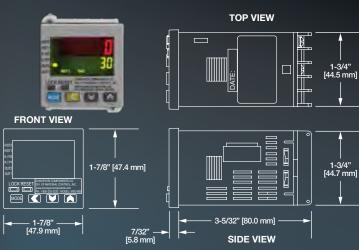
\*GENERAL PURPOSE meets NEMA TYPE 3S, 4, 4X

\*\*EXPLOSION PROOF meets NEMA TYPE 7: Class I (Div. 1 & 2) Groups C & D; and Type 9 Class II: (Div 1 & 2) Groups F & G compliant

### MODEL MSD - ACCESSORIES

MODEL	DESCRIPTION	SHPG. WT. LBS.
303	Stub Shaft, 5/8" diameter	0.5
304	Flexible Coupling, 5/8" x 5/8"	0.5
305	Coupling Guard	0.5
310	Sensor Mounting Bracket	1.0
MSD-14	Two conductor shielded cable to connect control unit and sensor (Belden 8760)	0.02

### CONTROL UNIT DIMENSIONS



### MSD-800 CONTROL UNIT:

Power Input: 100 - 240 VAC, 50/60 Hz

**Optional: 24 VDC (MSD-800-24)** 

Power Consumption: Less than 10 VA (AC input), less than 5 W (DC input)

Output Power to Sensor: 12 VDC

Signal Input From Sensor: 12 VDC square-wave, NPN or PNP

(field programmable)

Output 1: SPST Relay: rated 5 amps resistive at a maximum of 250 VAC; Transistor: NPN open collector. When 100mA/30 VDC, residual voltage = 1.5 VDC max.

Output 2: SPDT rated 5 amps resistive at 125/250 VAC; Reading Accuracy: .1 to 1 RPM

Alarm Set Accuracy: .001 to 1 RPM

Mounting: 1/16 DIN panel mount (45 mm x 45 mm cutout)

Certifications: UL. CE

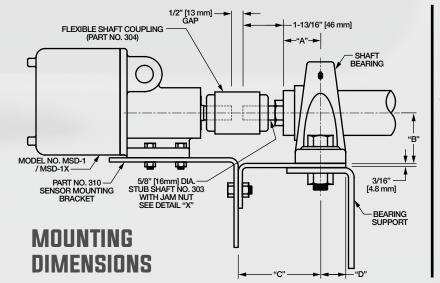
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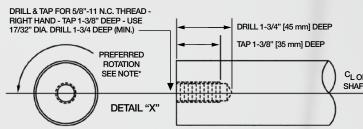
MODEL	DESCRIPTION	DIGITAL TACH	SHPG. WT. LBS.
MSD-800	CONTROL UNIT: Indicates two under-speed or two over-speed points, or one of each. 110-240 V AC power input.	YES	2.0
MSD-800-24	CONTROL UNIT: Indicates two under-speed or two over-speed points, or one of each. 24 V DC power input.	YES	2.0



# COMPACT MOTION CONTROL ONE SIGNAL SET POINT

### **MODEL CMS TECHNICAL INFORMATION**





\*NOTE: When threaded stub shaft (Part 303 or equal) is to be used. It is recommended that the location of the stub be in the end of the shaft that rotates counterclockwise. This allows the threads to continue being under a constant fastening torque while the shaft turns. If the rotation is clockwise or the shaft is for reversing type service, make sure the jam nut is locked tight against the shaft.

### RUGGED, HEAVY DUTY DETECTION

The Model CMS Motion Sensing Control is a compact unit designed to include all mechanical and electronic components in one housing. It will produce an output signal at a predetermined speed which may be either underspeed or overspeed. Rugged, heavy duty construction combined with solid state electronics and photo-electric technology, make this one of the most advanced detectors available.

The Model CMS protects all valuable rotating equipment including belt conveyors, bucket elevators, rotary feeders, or screw conveyors. It operates in either a clockwise or counterclockwise direction and mounts in any position.

The control can be mounted in any position, but the mounting surface should be flat and smooth. Normally, only 1/4" mounting bolts and lock washers are required. If vibration is extreme two of the mounting holes should be doweled and bolts used in the others.

The shaft of the device should be mounted in line with or parallel to the driving shaft. Model CMS can be driven by a flexible coupling, V-belt drive, chain drive, or gear drive.



### **TECHNICAL SPECIFICATIONS**

The Model CMS senses motion by means of a precision metal disc mounted on the input shaft. This disc generates measurable light pulses as a series of slots on its periphery rotate past an infra-red light source. A photo-electric sensor monitors the series of light pulses and converts them to a digital electronic signal. Solid state circuitry then analyzes the digital signal and activates or deactivates the output relay at the pre-set signal speed. The Model CMS has an adjustable built-in time delay eliminating the need for a separate start-up time delay.

The Model CMS will sense underspeed or overspeed conditions. Three signal speed ranges are available with each unit. the low signal speed range is from 0.1 to 10 RPM. The medium signal speed range is 1 to 100 RPM, and the high speed range is 10 to 1000 RPM.

Field adjustment of the signal set point is easily accomplished by means of an adjustment screw. The signal speed ranges are selected by a three position toggle switch on the printed circuit board. For UNDERSPEED sensing, the signal point is set below the normal operating speed of the unit. The output relay will then de-energize if the speed drops below the signal set point. For OVERSPEED sensing the signal set point is set above the normal operating speed. The output relay will energize if the speed exceeds the signal set point. The output relay can be wired either normally open or normally closed.

Zero speed sensing can be accomplished by locking the signal set point adjustment screw at it's lowest setting of 0.1 RPM. The output relay will then de-energize when the shaft speed of the unit approaches zero.

### MODEL CMS MOTION SPEED CONTROL

N	<b>NODEL</b>	DESCRIPTION	SHPG. WT. LBS.
CI	MS-1G	1 Double Pole Double Throw (DP/DT) Relay rated for 120 VAC*	7
CI	MS-1X	2 Double Pole Double Throw (DP/DT) Relay rated for 120 VAC**	7
CI	MS-2G	1 Double Pole Double Throw (DP/DT) Relay rated for 240 VAC*	7
CI	MS-2X	2 Double Pole Double Throw (DP/DT) Relay rated for 240 VAC**	7
CI	MS-3G	1 Double Pole Double Throw (DP/DT) Relay rated for 24 VAC/VDC*	7
CI	MS-3X	2 Double Pole Double Throw (DP/DT) Relay rated for 24 VAC/VDC**	7

\* GENERAL PURPOSE NEMA TYPE 3S, 4, 4X

\*\* EXPLOSION PROOF NEMA TYPE e 7: Class I (Div. 1 & 2), Groups C & D; Type 9: Class II (Div. 1 & 2), Groups F & G



### ACCESSORIES FOR THE MODEL CMS & MSD



303 STUB SHAFT %" dia., threaded one end, keyed other end. With jam nut and %6" key.



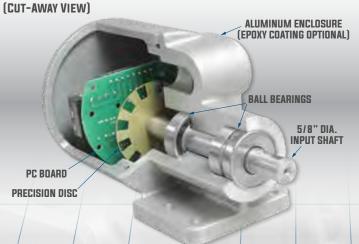
305 COUPLING GUARD
Protection cover for coupling connection.

310 MOUNTING BRACKI

304 FLEXIBLE COUPLINGS Avail able for connection of the CMS

310 MOUNTING BRACKET For mounting CMS sensor to

### MODEL CMS (CUT-AWAY VIEW)



The output of the Model CMS is a DP/DT relay connected to the terminal block at the rear of the unit. There are two sets of output contacts. Each set includes normally open, normally closed, and common. As a result, the unit can be used to control two separate circuits such as a motor starter and a signal light. Input power is connected from the source to contacts L<sub>1</sub>, and L<sub>2</sub>. A ground connection is also furnished.

### CMS-

CMS ACCESSORY MOUNTING KIT INCLUDES:









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