

# MODEL CR

## ROTO-LEVEL CONTROL™

### TOTAL RELIABILITY, DURABLE CONSTRUCTION AND ECONOMICAL PROTECTION

You get them all with the ROTO-LEVEL CONTROL™ from Conveyor Components Company. Evolved from over 35 years of experience with level controls, it's the finest electro-mechanical indicator available.

The Model CR is designed for use in the aggregate, mining, chemical, plastics and other bulk-handling industries. It functions as a perpetual sentinel, monitoring storage bins and eliminating such nagging problems as material overflow, empty bins, abnormally high or low levels, plugged chutes, jammed conveyors and damaged equipment.

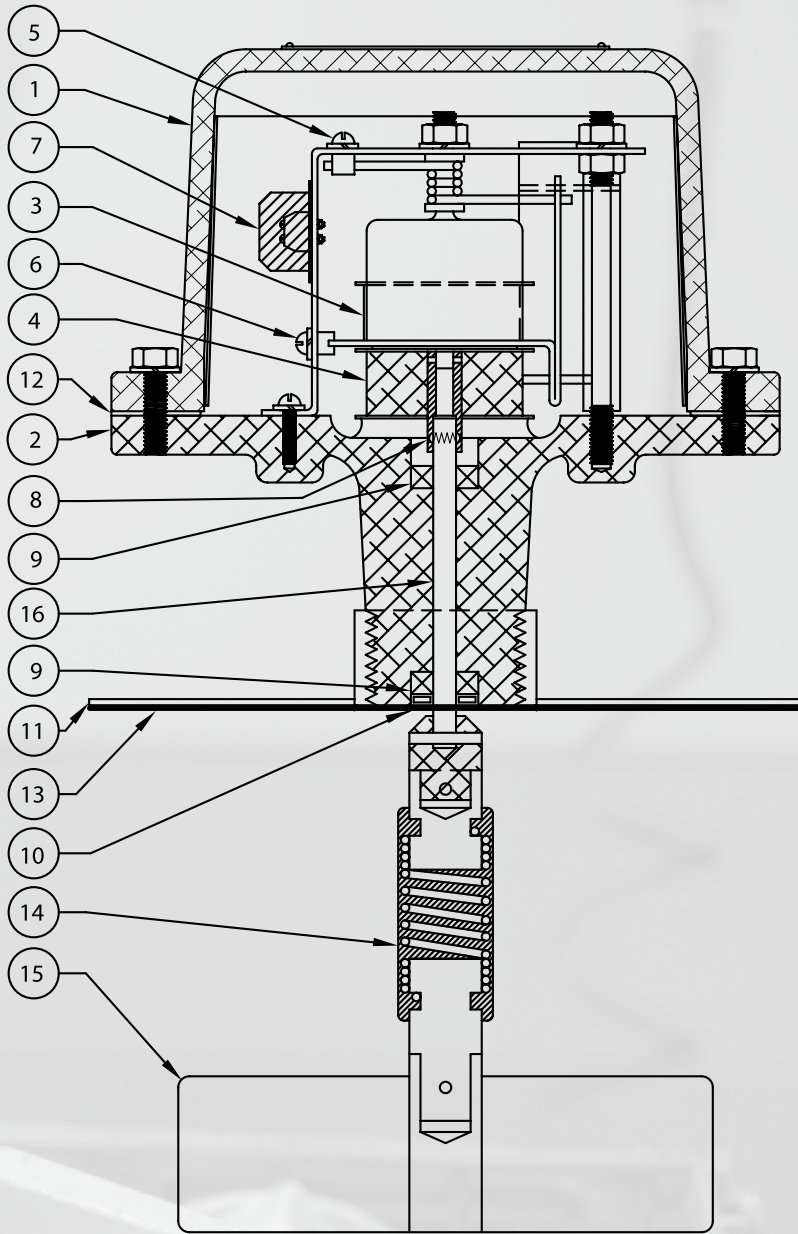
#### OPERATION

Operation of the Model CR is surprisingly simple. A paddle sensor is connected to a low torque, 5 watt synchronous motor. This sensor rotates continuously inside the bin at a slow 1 RPM. When the paddle meets the resistance of accumulated material it transfers its torque to actuate one or more microswitches.

Now actuated, these switches can be used to control the start-stop operations of conveyors, elevators, or feeders, and provide audible or visual warning signals. Actuation continues as long as the paddle motion is restricted. There's no harm to the monitoring unit or its motor while in this stalled condition. As soon as bin material moves away, the paddle turns freely once more and the switches are de-actuated. Model CR units mount at the top or side levels of the bin, or in both positions simultaneously to automatically control material level.

### CONSTRUCTION FEATURES COMMON TO ALL CR MODELS

- 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.
- BASE** — Cast aluminum standard with 1 1/4" NPT thread on neck for installation in 1/2 coupling or standard mounting plate. Conduit connection is 3/4" NPT thread.
- 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.
- SENSITIVITY ADJUSTMENT** — Spring tension is adjustable to product density.
- TIME DELAY ADJUSTMENT** — Variable to prevent false signals.
- TERMINAL BLOCK** — For CR motor voltage.
- CLUTCH** — Slips to prevent damage to motor gears.
- BEARINGS** — Sealed, permanently lubricated precision ball bearings.
- SHAFT SEAL** — Dust and moisture-tight. Rated 1/2 micron dust at 30 P.S.I.
- 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.
- COVER GASKET** — 1/16" thick neoprene.
- MOUNTING GASKET** — 1/16" thick fiber.
- SHAFT** — Optional flexible or solid with all metal parts made of stainless steel.
- PADDLE** — All metal parts made of stainless steel. Various types interchangeable in field.
- 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

\*\*\*DUAL RATED NEMA TYPE 4, 4X & 9



MODEL CR - ACCESSORIES

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, **RUGGED** CONSTRUCTION  
WITH FEWER PARTS.

**FIELD ADJUSTABLE SENSITIVITY**  
AND TIME DELAY.

**STAINLESS STEEL**  
SHAFT AND PADDLE

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

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

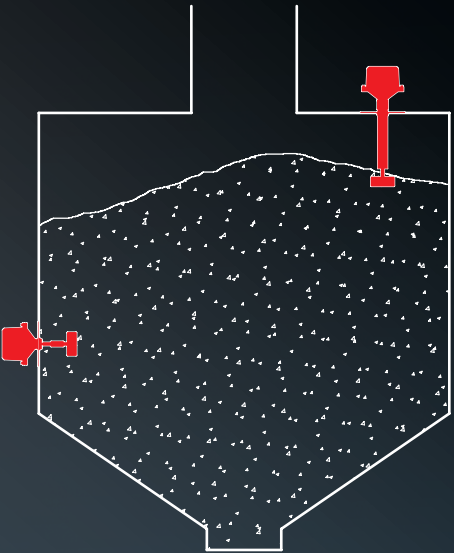
MODEL	DESCRIPTION	SHPG. WT. LBS
CR-6	120 VAC Replacement Motor	.40
CR-6A	240 VAC Replacement Motor	.50

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 housing construction required.

Enclosure	Number of 20 AMP SP/DT Microswitches	MODEL NUMBER		
		120 VAC Motor	240 VAC MOTOR	24 VAC (non-UL) MOTOR
NEMA Type 4, 4X UL and cUL Certified	One	CR-1A	CR-1B	CR-1C
	Two	CR-2A	CR-2B	CR-2C
	Three	CR-3A	CR-3B	CR-3C
Explosion Proof NEMA Type 7 & 9 UL and cUL Certified	One	CRX-1A	CRX-1B	CRX-1C
	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 1/2" 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

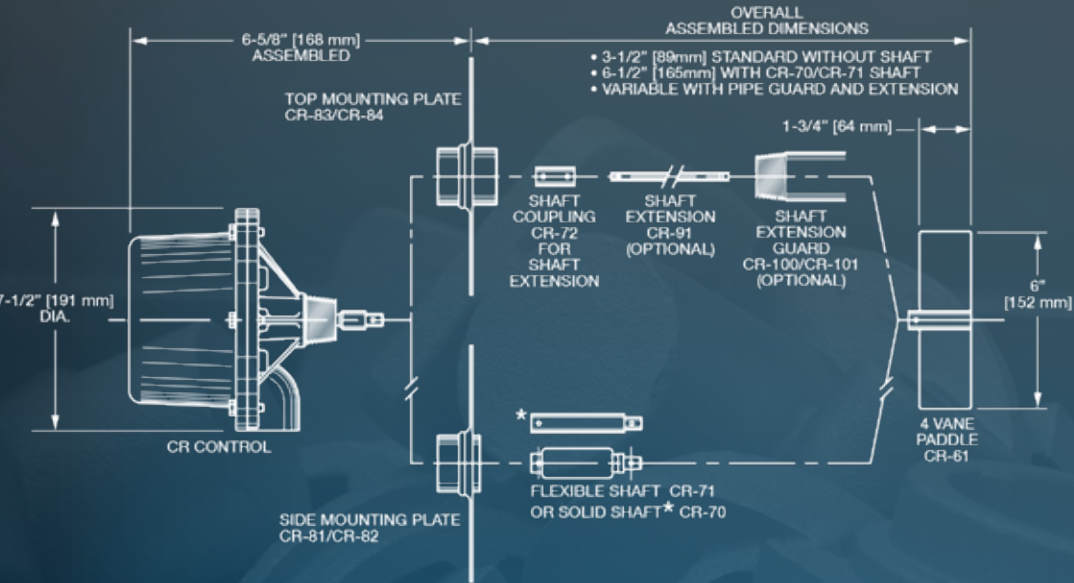
- PART NUMBER CR-71:** Flexible shaft; top and side mounting. Adds 3" to overall shaft and paddle assembly. Withstands bin temperature to 160°F and shock loads from product surge.\*
- PART NUMBER CR-91:** 1/8" stainless steel pipe extension for top mounting.
- PART NUMBER CR-100:** 1 1/4" protective 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.

TECHNICAL INFORMATION



MOUNTING PLATE



OPTIONAL PADDLES

