



Hubbell Industrial Controls, Inc.

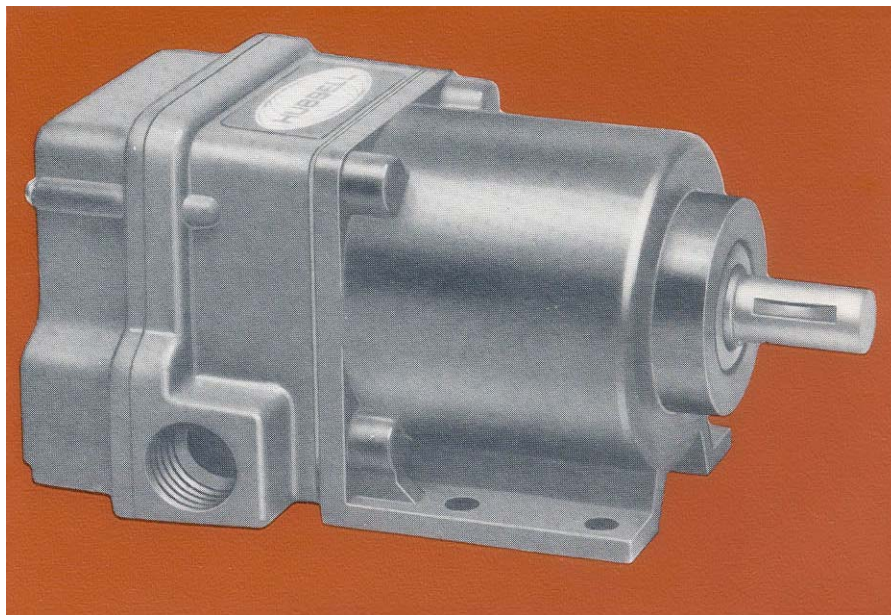
SPEED RESPONSIVE SWITCH

EUCLID TYPE C/MEDIUM - HIGH SPEED/CENTRIFUGAL

General Information

Type C Speed Responsive switches assure maximum protection of material handling systems and rotating equipment. They provide overspeed and underspeed protection with precise speed sensing and highly repetitive accuracy. These switches have excellent repetitive accuracy and are basically unaffected by temperature variations.

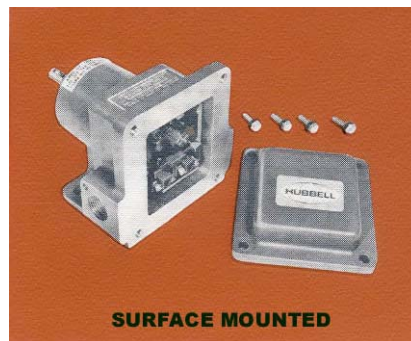
- NEMA Type enclosures for indoor, outdoor & hazardous environments.
- Contacts easily adjustable while running.
- High-speed operation to 4700 RPM.
- Low-speed operation from 10 RPM.
- Snap-Action or Slow-Action contacts, or pneumatic valve.
- Oversize bearings providing low-friction.
- Surface or flange mounting.
- 5/8" dia. input shaft & rugged construction.
- $\pm 5\%$ repeatability.



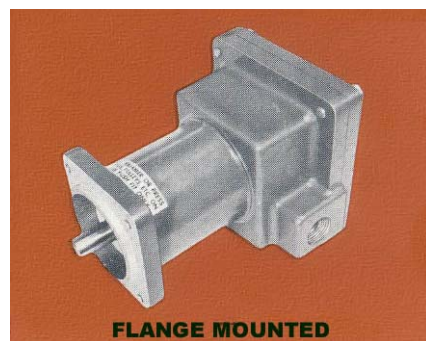
NEMA TYPE 3/13 ENCLOSURE

Application

Type C switch provide overspeed & under-speed protection and precise speed sensing with highly repetitive accuracy to indicate slipping or broken conveyor belts, preventing material pileups ... prevent overspeed of motors, generators, fans & pumps ... control starting of diesel engines ... prevent damage to rotating industrial machinery when speeds increase or decrease from safe values ... for plugging applications to assure quick & safe stops ... sequential control of functions at specific speeds.



SURFACE MOUNTED



FLANGE MOUNTED

NEMA TYPE 7, 9 OR 10 ENCLOSURE

Description

Housing & Enclosures - Standard Type C centrifugal switch housings are molded of tough fiberglass reinforced polyester resin, for the flyweight compartment and a cast aluminum housing for the contact compartment. The standard molded housings are resistant to most acid, alkali and salt compounds.

When flange mounting is specified, the flange and the flyweight section of the housing are precisely machined from a single aluminum casting.

Adaptation can be provided to meet special mounting requirements.

NEMA Type 3/13 enclosures are supplied for indoor/outdoor industrial applications.

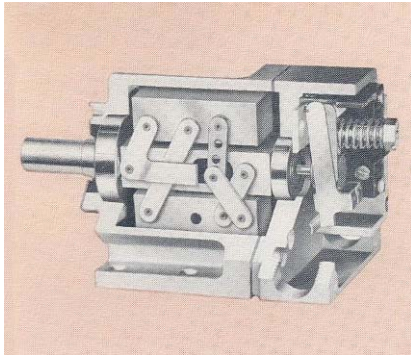
NEMA Type 4 enclosure (water-tight) for indoor/outdoor applications with a double shaft seal & grease fitting for lubrication and purging as standard equipment ensuring longer bearing life.

NEMA Type 7, 9 and 10 explosion proof enclosures are available also. These enclosures have accurately machined cast aluminum housings, either surface mounted or flange mounted. The NEMA Type 7 and 9 housings are designed in accordance with specifications for switches in Class 1 Group C or D and Class 2 Groups E, F and G hazardous locations. NEMA Type 10 enclosures have been certified by the Bureau of Mines as meeting the requirements of Schedule 2G for explosion-proof construction. File No. X/P-943 has been assigned to those EUCLID

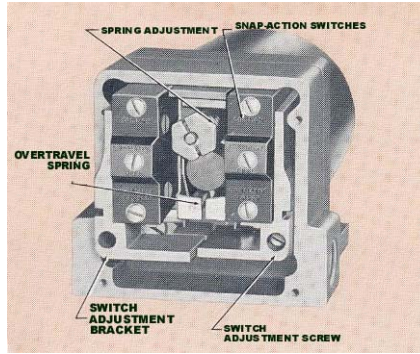
switches. Use this reference when specifying Euclid.

Flyweight System - The flyweight and linkage system (mounted in a separate compartment from the contacts) is completely suspended on the 3/4" square part of the stainless steel shaft by 8 bearings. The bearing suspension of the flyweight and linkage system provides a very low-friction means of transmitting the centrifugal force through a small concentric shaft to the switch contact compartment. The shaft is supported by 2 oversize ball bearings. No lubrication of the ball-bearing suspension system is required and, because the main shaft bearings are permanently lubricated, no access should be needed into the flyweight compartment into the flyweight compartment for servicing.

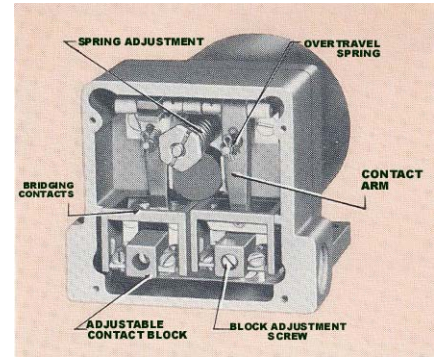
CUT-AWAY VIEW



SNAP-ACTION CONTACTS



SLOW-ACTION CONTACTS



Brass inserts molded into the flyweight housing retain the 2 shaft bearings.

Speed Adjustment - Speed points at which contacts operate are easily adjustable in the field within the standard operating ranges. Switches are factory-set at minimum ascending speeds as listed in the Price List 2210. Other contact settings may be specified as an option. EACH SET OF SNAP-ACTION INDEPENDENTLY ADJUSTABLE FROM THE REAR WHILE THE SWITCH IS ROTATING. Also the speed setting of both sets of contacts can be changed at the same time by varying the tension on the adjustment spring with the adjustment nut. Turning the spring adjustment nut or the contact adjustment screws in a clockwise direction will cause the contacts to operate at a higher speed, but making these adjustments in a counter-clockwise direction will cause the contacts to operate at a lower speed.

Contact - The contact compartment provides several basic contact-making means as required for various applications. Slow-action butt-type bridging contacts for rapid speed-change conditions or snap-action contacts for slow speed changes can be supplied.

One set or two sets of normally open and/or normally closed single-throw contacts ... each set independently adjustable ... are available in the slow-action type. One set or two sets of normally open and normally closed single-pole, double-throw, snap-action switches are also available with each set independently adjustable.

These two separate sets of contacts can be adjusted for operation at different speeds so that two separate operations can be controlled from one speed sensitive switch. Therefore, it is possible to perform two different functions at two different speeds.

A directional sensing form of the switch employs slow-action butt-type bridging contacts in normally open position only.

Type C Centrifugal Switches are available for operating in various speed ranges of adjustment between 10 and 4700 RPM on increasing speed. The specific range of adjustment that is selected determines the flyweight assembly and the adjustment spring that is used.

The contact adjustment ranges of centrifugal switches with 2 contacts (shown in the table of the price list) are for both contacts operating simultaneously. The 2 contacts can be adjusted independently, however, that operation changes the adjustment range from that shown.

The ranges of adjustment listed are for switches mounted horizontally. Vertically mounted switches with the shaft extension down have different ranges of adjustment. A special wide range adjustment can be supplied on special order.

The recommended maximum running speed of a switch with heavy flyweights is 1800 RPM, with medium flyweights is 4000 RPM and with light flyweights is 5000 RPM.

OPTIONAL FEATURES

Manual Reset - When specified, EUCLID Type C Centrifugal Switches can be furnished with one or two manual reset buttons (one for each set of A-C precision contacts). A metal guard prevents accidental damage to the buttons by impact. The Code Letter "M" designates one set of manually reset A-C snap-action contacts.

Flexible Couplings - A Flexible Coupling should be used to connect the Centrifugal Switch shaft to customer's shaft in order to compensate for minor misalignment of the shafts. Couplings can be supplied with a 1/2", 5/8" or 3/4" bore for customer's shaft and a 5/8" bore for our shaft. Standard keyways can be furnished. Specify by catalog number on Price List 2210.

Magnetic Vibration Dampeners - counteracts destructive action of the "dither". Specify by catalog number on Price List 2210.

Air Valve Actuating - Type AV, air valve instead of electrical contacts for pneumatic systems. Refer to factory with application data.

Speed Increaser - 3 to 1 ratio can be mounted at the factory which permits the input shaft speed of the speed increaser to be 1/3 the normal input shaft speed. Specify by suffix number "S" for Single Speed Increaser and "SS" for Double Speed Increaser. Refer to Price List 2210.

TYPE OF CONTACT	AMPERES MAXIMUM CONTACT INTERRUPTING RATINGS				
	AC 35% PF			DC INDUCTIVE	
	120v	240v	480v	125v	250v
*SLOW ACTION Non Directional (Butt-Type)	3	15	.75	.75	.35
*SLOW ACTION Directional (Butt-Type)					
*SNAP ACTION AC Type	3	1.5	.75	.25	.12
*SNAP ACTION DC Type60	.25

* Rating based on a min. of 1/32" contact gap.

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