

Loadbreak Switch

300 Amp

Central Moloney, Inc.
Components Operation

An ISO 9002 Certified Company

Product Data Sheet

File No. FDS1032

Availability Immediate

Introduction

Central Moloney Components is pleased to introduce a completely redesigned, state of the art, 300 amp, two position, oil immersed, loadbreak switch. CMI Components, a leader in molded transformer and switchgear products since 1970, now offers to the industry an upgraded replacement for the CMI 200 amp switch.

The new switch provides increased electrical ratings for application up to 300 amps on 38KV class systems. It is available in a single nut mounting version which eliminates the necessity of welding (brackets or studs) for ease of installation.

The unique "true position" spring mechanism, innovative shielded spring contact design, numerous mounting geometries, corrosion resistant brass and stainless steel hardware, and rigorous design and production testing are a few of the features which bring this switch to the forefront of switch design evolution.

Application

The CMI 300 amp loadbreak switch is designed for use with transformer oil insulation. It is a two position on/off switch available in 1, 2, and 3 contact deck assemblies for use on single phase, delta, and three phase circuit configurations.

Applications include primary switching in padmount or submersible transformers and oil insulated switchgear. Designs are available for both horizontally mounted and vertically mounted applications. For vertical applications an extension deck is included to provide adequate oil coverage from the top contact to the air space.

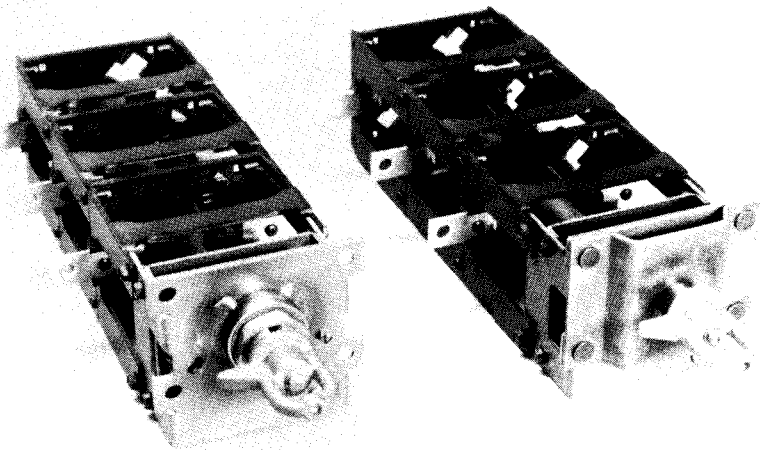


Fig 1

Single Nut And Weld Type Loadbreak Switches

Design

The switch employs a rugged, over-toggle stored energy spring mechanism which provides uniform contact speed independent of handle operating speed. The spring mechanism incorporates a special feature which does not permit the input handle to reach equilibrium before the switch operates. See page 2 for additional information on this important feature.

Both stationary and rotor contacts employ silver tungsten contact surfaces for the ultimate in conductivity and arc resistance. The two piece rotor contacts provide a parallel current carrying path which increases the contact pressure during fault current conditions.

Contact pressure is maintained with a single coil spring, precisely factory set to specified compression, located at the middle of the rotor contact. The spring is located inside the rotor, thus insuring complete isolation from the contact arc zone and uniform balance of pressure at both contacts. See page 3 for details.

The hook stick operable handle is made of bronze. The operating shaft, mounting glands, and nameplate are

constructed of 300 grade stainless steel for superior corrosion protection. The rotor and deck housings are made of engineering grade thermoplastic for strength and precise contact alignment.

Loadbreak Switch Features

- "True position" stored energy spring mechanism for 100% accurate switch position indication.
- Silver tungsten contacts for reliable, maintenance free, high current performance.
- Mono-spring contact pressure for balanced contact force and protection from arc erosion.
- Bronze, brass, and stainless steel external hardware for superior corrosion protection.

Loadbreak Switch

The CMI "True Position" Spring Mechanism

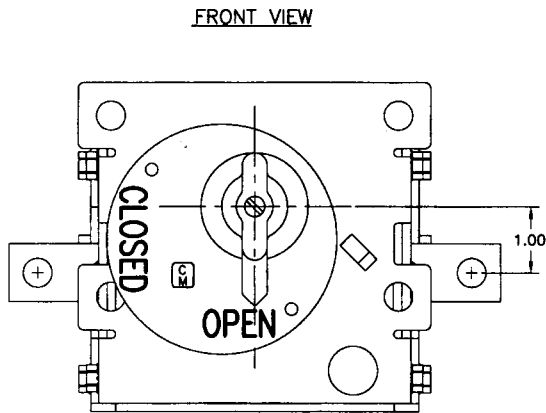


Fig 2 "True Position" Switch Indication

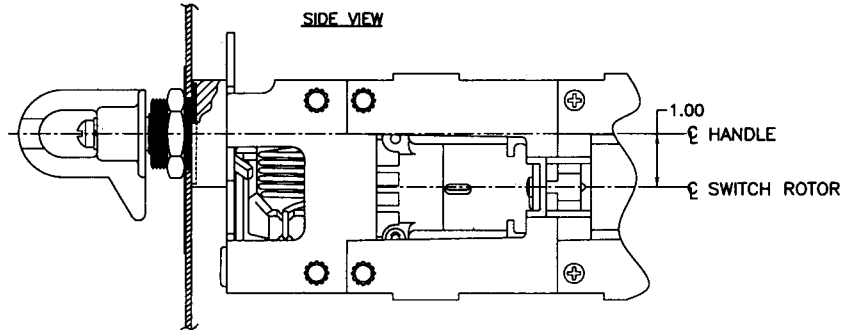


Fig 3 Offset Spring Mechanism

A unique 1" offset between input and output shaft of the spring toggle mechanism insures accurate switch position indication. This offset allows tank height reduction on many horizontal applications.

The spring mechanism employed on all 300 amp switches incorporates an offset over toggle geometry. This design

absolutely prevents a condition at the spring toggle point where the handle can be left in a static condition between positions. Switches without this feature can be left with the spring mechanism charged and the handle pointing to the next position before the switch has operated. False indication of switch position can be dangerous.

The CMI "True Position" spring mechanism has only two stable positions, open and closed, which always represent the true position of the contacts.

For safety and reliability specify the Central Moloney "True Position" 300 amp loadbreak switch.

Electrical Rating Summary

Continuous Maximum Rated Voltage - KV	38	Dielectric - 60 Hz withstand Production - KV	50
Continuous Current - Amps	300	Dielectric - 60 Hz withstand Design Test - KV	70
Impulse - KV	150	Momentary (Amps)	
Corona Extinction - KV	26	rms Symmetrical - 10 Cycle	12,000
DC Withstand - 15 Min - KV	103	rms Asymmetrical - 10 Cycle	19,200
Switching Current - Amps	300	Make and Latch (Amps)	
Magnetizing Interruption Current - Amps	7	rms Symmetrical - 10 Cycle	12,000
Capacitive/Cable Charging Current - Amps	40	rms Asymmetrical - 10 Cycle	19,200

Testing

The CMI 300 amp loadbreak switch has been tested to meet all electrical and mechanical requirements of ANSI/IEEE Standards C37.71-1984 (submersible switchgear) and C37.72-1987 (pad mounted switchgear) with a maximum voltage rating of 38KV (phase to phase) and a maximum continuous current rating of 300 amperes.

Production tests are conducted to CMI requirements and consist of operation test, contact resistance measurements, and contact speed measurements.

Loadbreak Switch

The CMI Switch Contact System

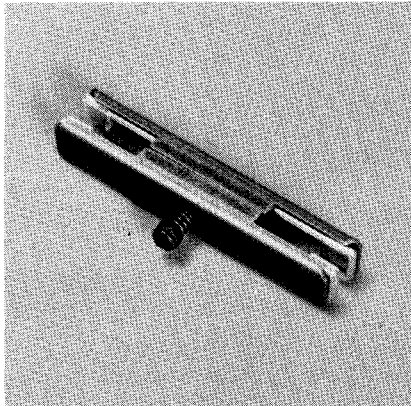


Fig. 4 Contact Assembly

Silver tungsten contacts held in precise alignment with uniform contact pressure insure long life and reliable performance. The split conductor rotor contact geometry increases contact force at fault current levels for superior momentary and fault close performance.

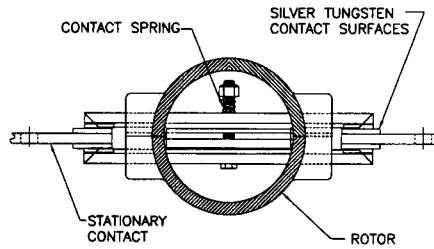


Fig. 5 Mono-Spring Contact Design

A unique feature of the CMI design is the mono spring rotor contact. A single spring located at the rotational center of the blade, inside the rotor housing, insures balanced contact force at each contact. Very importantly, the contact spring is completely protected from damage due to arcing in the vicinity of the contacts. The spring assembly located on the pivot axis reduces the kinetic inertia for higher contact speed.

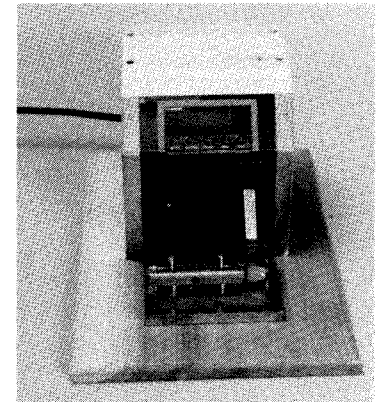


Fig. 6 Digital Contact Pressure Calibrator

Each contact assembly is precisely set to specified contact force on a digital calibrator.

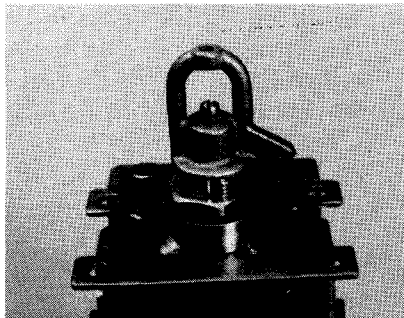


Fig. 7 Single Nut Mount

Single Nut Mounted

Ideal for all pad mount applications, the CMI single nut mounting requires no welded attachments. It mounts in a standard tap changer nibbed hole and is held solid with a 300 series stainless steel gland and heavy duty brass nut. The internal gland face is knurled for maximum torsional rigidity when tightened against the tank wall. The operating shaft is sealed with dual Viton 'O' rings.

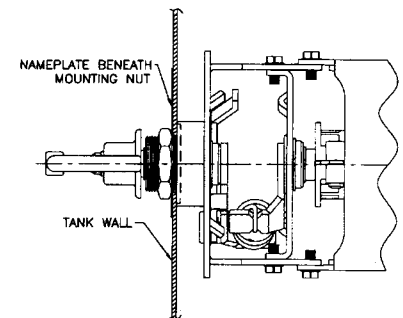


FIG. 8 Single Nut Mounting Top View

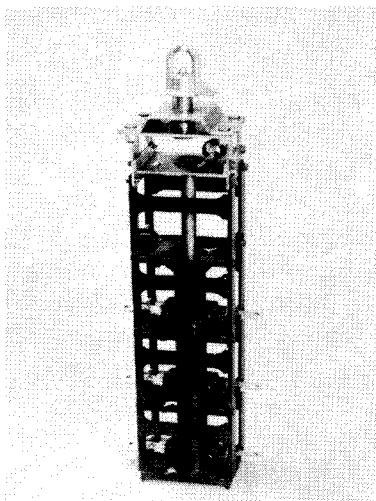


Fig. 9 3-Deck Vertical Mount

Welded Mounting

For applications requiring welded gland mounting, the new CMI switch is much improved for ease of installation. The new double bearing stored energy mechanism with pre-installed, lubricated, 'O' rings installs easily into the weld bracket gland. The switch is fastened to the bracket with four washer faced nuts requiring no flat or lock washers.

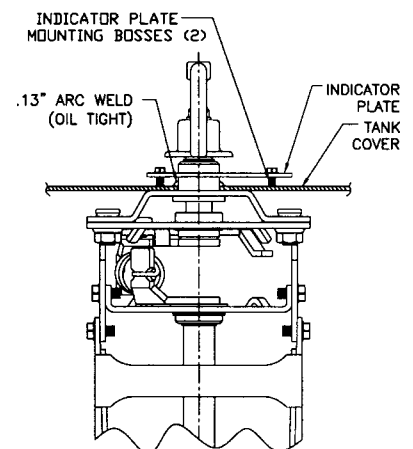


FIG. 10 Weld Type Mounting

