

300 A externally operated tap-changer switch installation instructions



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Safety for life



Eaton meets or exceeds all applicable industry standards relating to product safety in its Cooper Power™ series products. We actively promote safe practices in the use and maintenance of our products through our service literature, instructional training programs, and the continuous efforts of all Eaton employees involved in product design, manufacture, marketing, and service.

We strongly urge that you always follow all locally approved safety procedures and safety instructions when working around high voltage lines and equipment, and support our “Safety For Life” mission.

Safety information

The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians who are familiar with this equipment should install, operate, and service it.

A competent technician has these qualifications:

- Is thoroughly familiar with these instructions.
- Is trained in industry-accepted high and low-voltage safe operating practices and procedures.
- Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.
- Is trained in the care and use of protective equipment such as arc flash clothing, safety glasses, face shield, hard hat, rubber gloves, clampstick, hotstick, etc.

Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

Hazard Statement Definitions

This manual may contain four types of hazard statements:

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in equipment damage only.

Safety instructions

Following are general caution and warning statements that apply to this equipment. Additional statements, related to specific tasks and procedures, are located throughout the manual.

DANGER

Hazardous voltage. Contact with hazardous voltage will cause death or severe personal injury. Follow all locally approved safety procedures when working around high- and low-voltage lines and equipment.

G103.3

WARNING

Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this manual. Improper operation, handling or maintenance can result in death, severe personal injury, and equipment damage.

G101.0

WARNING

This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply can result in death, severe personal injury and equipment damage.

G102.1

WARNING

Power distribution and transmission equipment must be properly selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install or maintain power distribution and transmission equipment can result in death, severe personal injury, and equipment damage.

G122.3

Product Information

Introduction

Eaton's Cooper Power™ series 300 A externally operated single-, two- and three-phase tap-changer switches are designed for use in distribution transformers filled with transformer oil, Envirottemp™ FR3™ fluid, or an approved equivalent. They are designed for use in pole- or pad-mounted transformers. The switches are used to regulate induced voltage of the primary and to maintain constant secondary voltages.

Read this manual first

Read and understand the contents of this manual and follow all locally approved procedures and safety practices before installing or operating this equipment.

Additional information

These instructions cannot cover all details or variations in the equipment, procedures, or process described nor provide directions for meeting every possible contingency during installation, operation, or maintenance. For additional information, contact your Eaton representative.

Acceptance and initial inspection

Each tap-changer switch is in good condition when accepted by the carrier for shipment. Upon receipt, inspect the shipping container for signs of damage. Unpack the tap-changer switch and inspect it thoroughly for damage incurred during shipment. If damage is discovered, file a claim with the carrier immediately.

Handling and storage

Be careful during handling and storage of the tap changer switch to minimize the possibility of damage. If the switch is to be stored for any length of time prior to installation, provide a clean, dry storage area.

Standards

ISO 9001 Certified Quality Management System

Table 1. Electrical Ratings Tap Changers

	Impulse Withstand (kV)*	60 Hz 1 Min. Withstand (kV)	Current Rating Continuous**
1Ø	150 kV BIL	50 kV	300 A
3Ø	150 kV BIL	50 kV	300 A

* The surge tests are actual withstands of switch and include tests between phase and phase-to-ground.

**Current carrying capacity of one contact assembly.

Installation instructions

Torque requirements

To Seal - 80-120 in-lbs.

Lead Connection: Recommended torque for securing lead to switch terminal (assuming 1/2-20 hardware) is 40-60 in-lbs.

Clearances

Mechanical: External handle clear of obstructions and pinch points.

Table 2. Dielectric Clearance Dimensions

kV BIL	Minimum mounting clearance under-oil to Gnd/ between phases/and depth below top level
95	1.1"
125	1.5"
150	2.0"

Mechanical strength

Strip Point of Threads: External mounting threads - 325 in-lbs (NOT TO BE EXCEEDED).

Cantilever Strength of Assembly: In excess of 100 ft-lbs.

Lead Training: Designed to support leads per rating of switch (300 A High current). Standard dielectric dimensions for lead separation should be followed.

⚠ CAUTION

If the tap-changer switch is included with core/coil assembly, the following cautions should be followed prior to bakeout cycle. Care should be taken if the switch is handled at elevated temperature. **DO NOT** use the switch rod supports for handling of the switch.

⚠ WARNING

Enclosed "Warning" decal (P/N 1139090A01) must be displayed at or near operating handle of switch as a warning to service personnel. Failure to do so will constitute a waiver of all warranty and indemnity obligations which may be attributable to Eaton.

⚠ WARNING

The misapplication of the switch constitutes a potential hazard to life and property. Accordingly, the user must exercise due care in utilizing these instructions to assure that the switch is properly applied.

The decal included with the kit is to be located on the tank wall near the switch operating handle as a warning to service personnel (see Figure 1).

Failure to do so will constitute a waiver of all warranty and indemnity obligations which may be attributable to Eaton.

Lever or Hotstick Handle Switches


⚠ WARNING
DE-ENERGIZE TRANSFORMER BEFORE CHANGING VOLTAGE.
BEFORE OPERATING HANDLE, BACK OUT LOCKSCREW TO CLEAR INDEX PLATE. AFTER CHANGING SWITCH POSITION, TURN IN LOCKSCREW SECURELY BEFORE ENERGIZING AGAIN.
 COOPER Power Systems
1139090A01

Figure 1. Single-phase 300 A tap-changer.

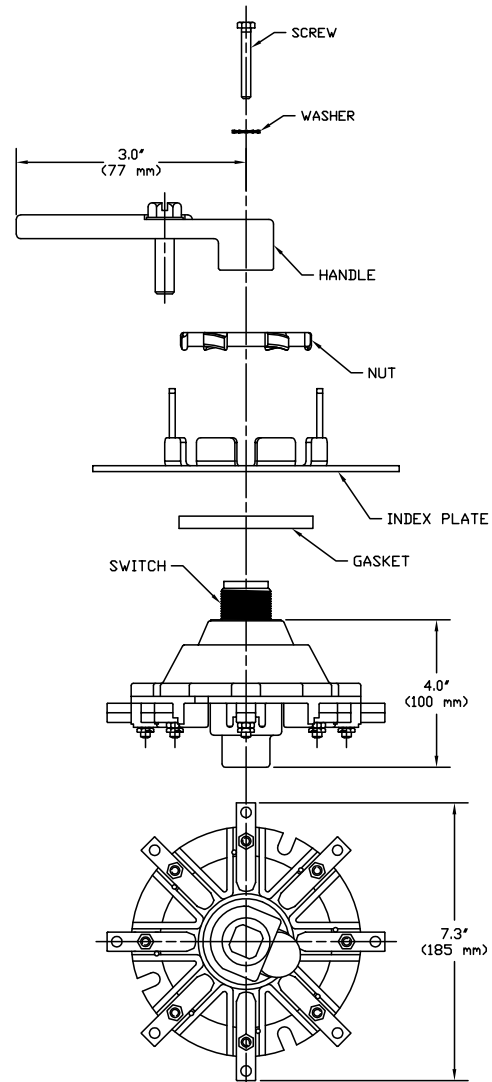


Figure 2. Single-phase 300 A tap-changer.

Position indication and operation

Position indicators on the High Current (300 A) tap-changer are engraved in the metal index plate. To operate this switch, de-energize the transformer, then back out lock screw in the indicator handle. After changing tap position, tighten lock screw securely in the index hole.

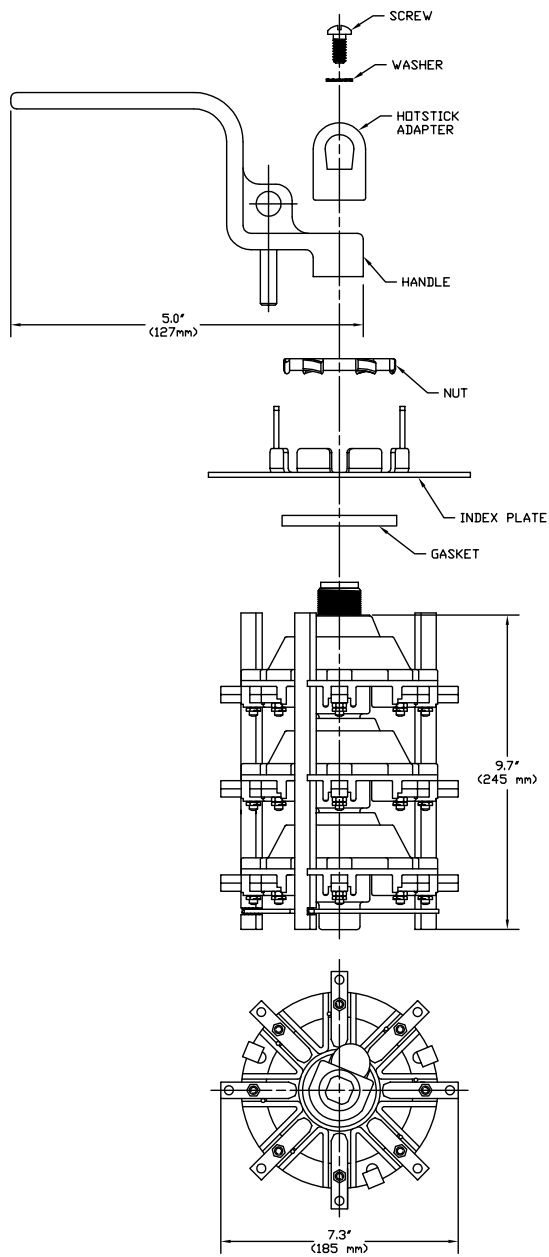


Figure 3. Three-phase 300 A tap-changer.

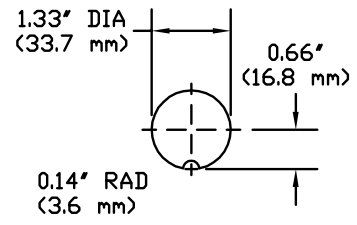


Figure 4. Mounting hole.



Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

**Eaton's Cooper Power Systems
Division**
2300 Badger Drive
Waukesha, WI 53188
United States
Eaton.com/cooperpowerseries

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Printed in USA
Publication No. MN800003EN / Rev 0
Supersedes S800601 Rev 2

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For Eaton's Cooper Power series tap-changer switch product information call 1-877-277-4636 or visit: www.eaton.com/cooperpowerseries.