

OEM Equipment

Electrical Apparatus

150 A Single Phase Series Multiple (Dual Voltage) Switches

800-71

GENERAL

The Cooper Power Systems RTE® 150 A externally operated Single Phase series multiple (dual voltage) switch is used to change connection of de-energized transformer windings between series and parallel to provide different common transformer voltage ratios. They also make it possible to stock one transformer with voltage conversion capability. Using stacked multi-layer switches and auxiliary back switches, voltages such as 2400 V x 7620 V or 7200 V x 19920 V can be provided. Tri-voltage switches are also available.

Externally operable switches eliminate many of the hazards associated with manual internal tap changing of distribution transformers because line crews need not be exposed to high-voltage conductors and hot transformer fluids. They also eliminate the need to dismount pole-type transformers for voltage adjustment and prevent exposure of the transformer tank interiors to contamination. The switches are designed for use in distribution transformers filled with transformer oil, R-Temp® Fluid or an approved equivalent.

Series multiple (dual voltage) switches are available with cap/wrench, lever, "T", or hotstick-operable handles. The lever handle has an indexing screw to ensure complete, positive switch contact. The cap/wrench handle has an innovative "one-way-in/one-way-out" operating feature that ensures positive operation. The threaded cap protects the shaft seal. The spring-loaded pad lockable handle is hotstick-operable. It allows greater leverage and provides positive indication of switch position.



Figure 1.
150 A Externally Operated Series Multiple (Dual Voltage) Switch, with Cap Wrench.

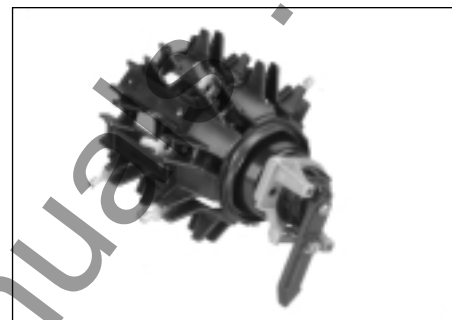


Figure 2.
150 A Externally Operated Series Multiple (Dual Voltage) Switch, with Lever Handle.

TABLE 1
Voltage Ratings and Characteristics

Description	kV
Standard Voltage Class	35 Max.
AC 60 Hz 1 Minute Withstand	50
BIL and Full Wave Crest (in both series and parallel positions)	150

Voltage ratings and characteristics are in accordance with ANSI Standard C57.12.

TABLE 2
Current Ratings and Characteristics

Description	Amperes
Continuous	150 A rms series position 300 A rms parallel position

The switch shaft is made of a high strength glass-reinforced nylon, and is sealed against leakage by two high temperature resistant Viton® O-rings. The switch body and rotor are made

of glass-reinforced polyester. The spring tempered, high conductivity copper pinch-type rotor contacts, provide dependable self-cleaning action.

Series multiple (dual voltage) switches are available with either bolt tab or crimp terminals. Switches with crimp terminals have additional inboard tapped holes for making separate ring tongue connections without changing switch contacts. All terminals have hex recesses to hold 7/16 inch hex bolt heads of standard 1/4 inch hardware for fast, easy connections.

INSTALLATION

No special tools are required. The switch body is installed through a keyed 1.33 inch (34 mm) hole in the tank wall and sealed by an inside gasket. An outer sealing nut is tightened to a torque of 80 to 120 in-lbs. Refer to Installation Instruction Sheet S800-72-1 (5000050386) for details.

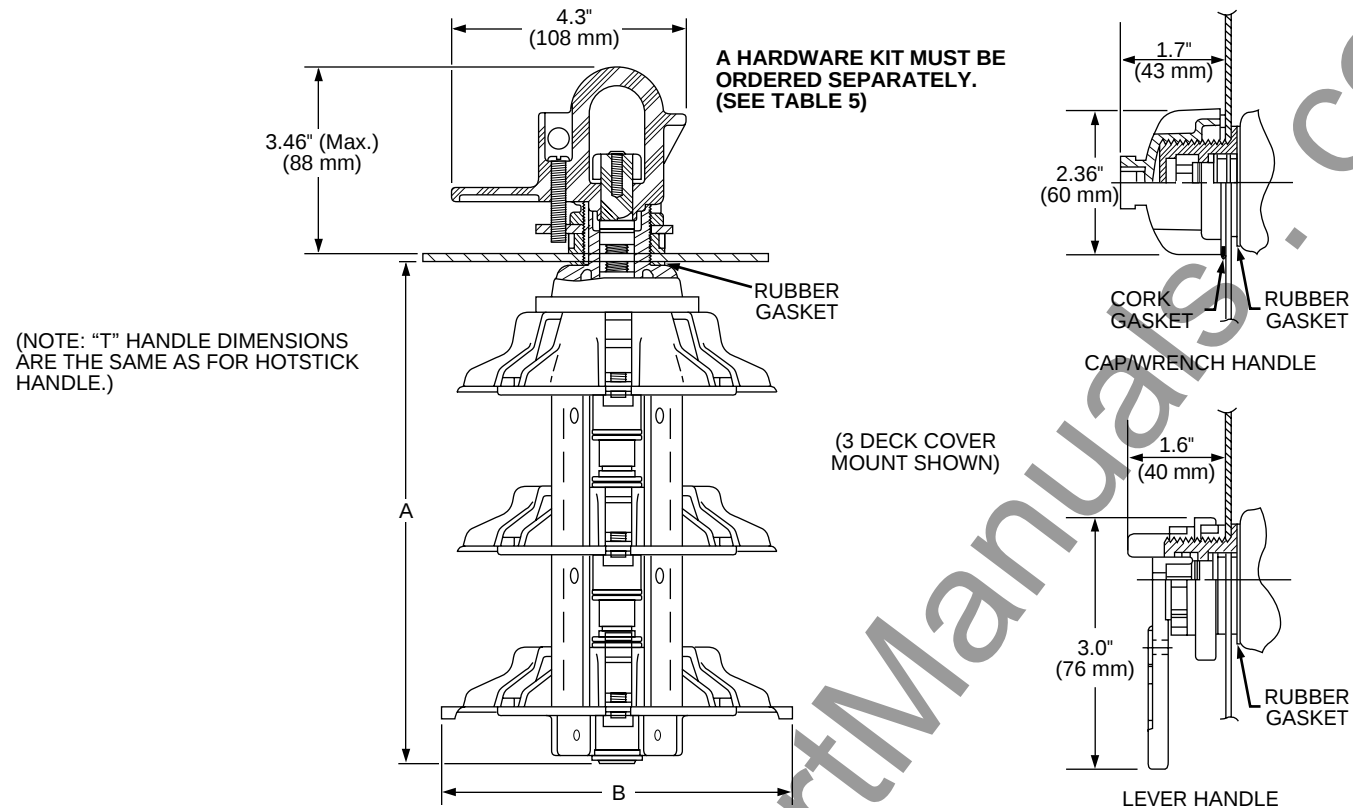


Figure 3. Series Multiple Switch. (Padlockable Hotstick Handle Options Shown On Switch.)

Note: Dimensions given are for reference only.

TABLE 3 Multiple Switch Configurations

Switch Type	Dimensions-in./ (mm)				
	A	B (w/Terminals)			
		Bolt Tab	Bolt Tab w/Stud	#14-16 #10-12 #8	#6
1-Phase Standard (1 Deck)	3.31 (84)	5.03 (128)	5.03 (128)	6.63 (168)	6.88 (175)
1-Phase With Back Decks (2 Decks)	5.713 (145)	5.03 (128)	5.03 (128)	6.63 (168)	6.88 (175)
1-Phase Cover Mount (3 Decks) ①	9.20 (232)	5.03 (128)	5.03 (128)	6.63 (168)	6.88 (175)

① The upper two decks have no contacts – for spacing only.

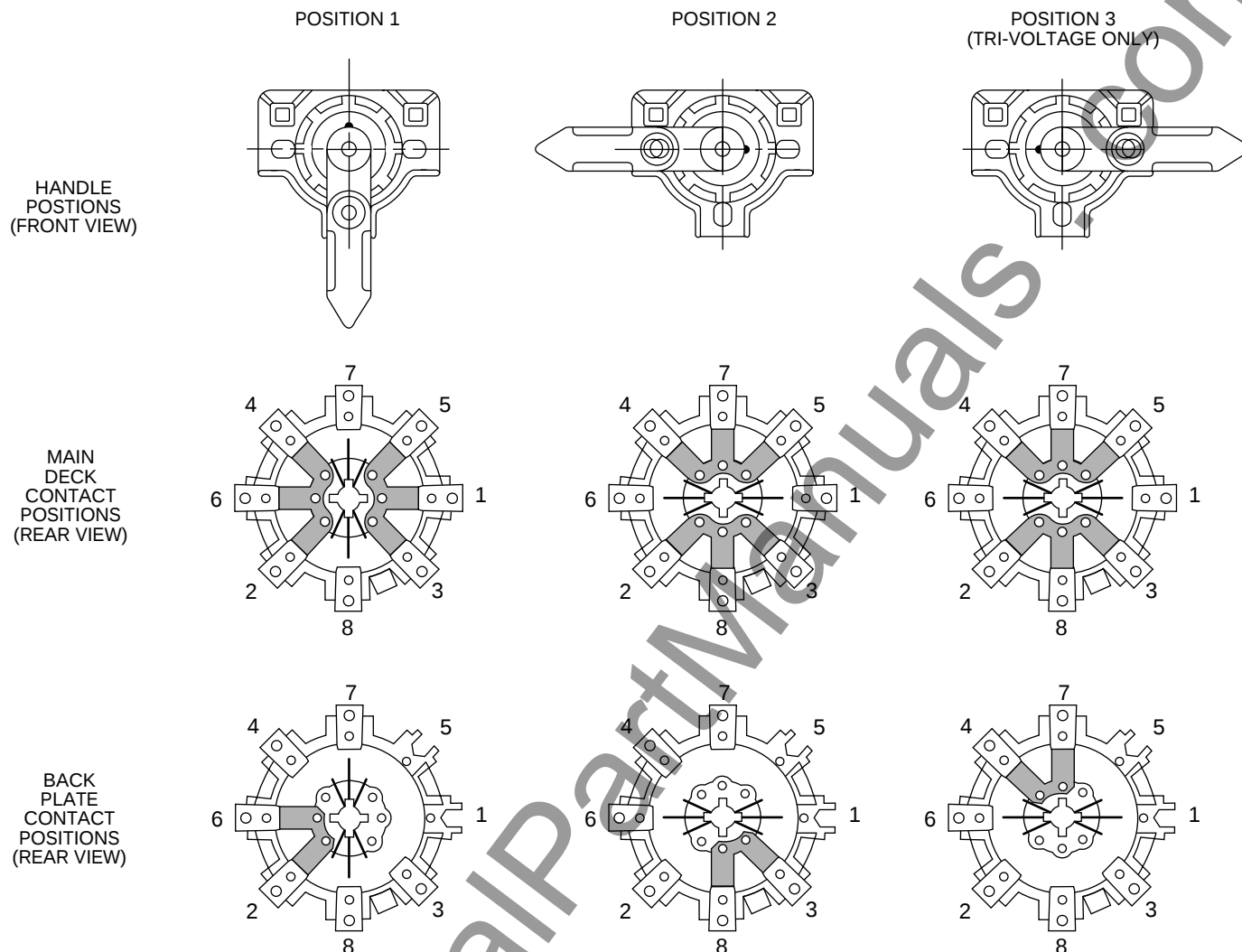


Figure 4.
Switch Contact Positions. (Typical switch shown. For specifics refer to Table 5.)

ORDERING INFORMATION

To order an RTE 150 A externally operated series multiple switch, specify one switch and one hardware kit from the charts on pages 4-5.

TABLE 4
Abbreviations and Definitions

"DV"	Dual Voltage, 6 or 8 Terminals, 2-3 Finger Contacts.
"TV"	Tri-Voltage, 6 or 8 Terminals, 2-3 Finger Contacts.
"BP"	Backplate (Backswitch), 4 Terminals, 2 Finger Contacts.
"DBP"	Double Backplate, 8 Terminals, 2-2 Finger Contacts.
"2BP"	Two Backplates, 4 Terminals each, 2 Finger Contacts each.
"1BP"	One Backplate, at end of switch, 4 Terminals, 2 Finger Contacts.
"TD"	Terminal Deck, 2 Terminals (B.T.), w/o Rotor Assembly or Finger Contacts
"CM/DV"	Cover Mounted Switch.
"SP"	Special Switch with non-standard quantities and placements of terminals and contacts.

TABLE 5
Cap Wrench or Lever Handle Operated Series Multiple Switches^⑤

Catalog Number		Switch Type ^⑥	Description		Contacts	No. of Terminals on Front Phase Deck	“N” Drawing No.
Switch Number	Hardware Kit ^{①②} TV	DV DM/DV	Phase One	Back Deck ^⑥ BP, DBP 1BP, SP	Bolt Tab Bolt Tab w/Stud ^③ #14-16 #10-12 #8, #6		
2237434C01M 2237434C02M 2237434C03M 2237434C04M 2237434C05M 2237434C16M	Cap Wrench 2237947A02 or Lever Handle 2237947A08 ^④	DV DV DV DV DV DV	1Ø 1Ø 1Ø 1Ø 1Ø 1Ø	— — — — — —	Bolt Tab #14 - 16 #10 - 12 #8 #6 Bolt Tab w/Stud ^③	6 6 6 6 6 6	720
2237434C51M 2237434C52M 2237434C53M 2237434C54M 2237434C55M 2237434C66M	Cap Wrench 2237947A02 or Lever Handle 2237947A08 ^④	DV DV DV DV DV DV	1Ø 1Ø 1Ø 1Ø 1Ø 1Ø	— — — — — —	Bolt Tab #14 - 16 #10 - 12 #8 #6 Bolt Tab w/Stud ^③	8 8 8 8 8 8	720
2237435C01M 2237435C02M 2237435C03M 2237435C04M 2237435C05M 2237435C06M	Cap Wrench 2237947A02 or Lever Handle 2237947A08 ^④	DV DV DV DV DV DV	1Ø 1Ø 1Ø 1Ø 1Ø 1Ø	BP BP BP BP BP BP	Bolt Tab #14 - 16 #10 - 12 #8 #6 Bolt Tab w/Stud ^③	6 6 6 6 6 6	721
2237435C51M 2237435C52M 2237435C53M 2237435C54M 2237435C55M 2237435C66M	Cap Wrench 2237947A02 or Lever Handle 2237947A08 ^④	DV DV DV DV DV DV	1Ø 1Ø 1Ø 1Ø 1Ø 1Ø	BP BP BP BP BP BP	Bolt Tab #14 - 16 #10 - 12 #8 #6 Bolt Tab w/Stud ^③	6 6 8 8 8 8	721
2237492C01M 2237492C02M 2237492C03M 2237492C04M 2237492C05M	Cap Wrench 2237947A02 or Lever Handle 2237947A08 ^④	DV DV DV DV DV	1Ø 1Ø 1Ø 1Ø 1Ø	DBP DBP DBP DBP DBP	Bolt Tab #14 - 16 #10 - 12 #8 #6	6 6 6 6 6	867
2237984C01M 2237984C02M 2237984C03M 2237984C04M 2237984C05M	Cap Wrench 2237947A02 or Lever Handle 2237947A08 ^④	DV DV DV DV DV	1Ø 1Ø 1Ø 1Ø 1Ø	SP SP SP SP SP	#14 - 16 #10 - 12 #8 #6 Bolt Tab	8 8 8 8 8	915
2238066C06M 2238066C07M 2238066C08M 2238066C09M 2238066C10M	Cap Wrench 2237947A02 or Lever Handle 2237947A08 ^④	DV DV DV DV DV	1Ø 1Ø 1Ø 1Ø 1Ø	SP SP SP SP SP	Bolt Tab #14 - 16 #10 - 12 #8 #6	8 8 8 8 8	1159
2237576C01M 2237576C02M 2237576C03M 2237576C04M 2237576C05M 2237576C06M	Cap Wrench 2237947A02 Lever Handle 2237947A08 ^④ or Brass Cap Wrench 2237947A41	CM/DV CM/DV CM/DV CM/DV CM/DV CM/DV	1Ø 1Ø 1Ø 1Ø 1Ø 1Ø	SP SP SP SP SP SP	Bolt Tab #14 - 16 #10 - 12 #8 #6 Bolt Tap w/Stud ^③	6 6 6 6 6 6	723
2237576C51M 2237576C52M 2237576C53M 2237576C54M 2237576C55M 2237576C56M	Cap Wrench 2237947A02 Lever Handle 2237947A08 ^④ or Brass Cap Wrench 2237947A41	CM/DV CM/DV CM/DV CM/DV CM/DV CM/DV	1Ø 1Ø 1Ø 1Ø 1Ø 1Ø	SP SP SP SP SP SP	Bolt Tab #14 - 16 #10 - 12 #8 #6 Bolt Tap w/Stud ^③	8 8 8 8 8 8	723
2237438C01M 2237438C02M 2237438C03M 2237438C04M 2237438C05M	Lever Handle 2237947A09 ^④	TV TV TV TV TV	1Ø 1Ø 1Ø 1Ø 1Ø	BP BP BP BP BP	Bolt Tab #14 - 16 #10 - 12 #8 #6	6 6 6 6 6	724
2237438C51M 2237438C52M 2237438C53M 2237438C54M 2237438C55M	Lever Handle 2237947A09 ^④	TV TV TV TV TV	1Ø 1Ø 1Ø 1Ø 1Ø	BP BP BP BP BP	Bolt Tab #14 - 16 #10 - 12 #8 #6	8 8 8 8 8	724
2238011C01M 2238011C02M 2238011C03M 2238011C04M 2238011C05M	Lever Handle 2237947A09 ^④	TV TV TV TV TV	1Ø 1Ø 1Ø 1Ø 1Ø	SP SP SP SP SP	Bolt Tab #14 - 16 #10 - 12 #8 #6	8 8 8 8 8	925

① Hardware Kits are not included with the switch, Hardware Kits must be ordered separately. ② Actuating devices are included in the Hardware Kits.

③ Bolt Tab w/Stud (1/4-20 threaded stud). ④ Add “P” to end of the part number to make lever handle padlockable.

⑤ For configuration not found, consult with your factory representative. ⑥ For abbreviations and definitions see Table 4.

TABLE 6
Padlockable Hotstick Handle or "T" Handle Operated Series Multiple Switches^④

Catalog Number		Switch Type ^⑤	Description		Contacts	No. of Terminals on Front Phase Deck	"N" Drawing No.
Switch Number	Hardware Kit ^{①②}	DV CDM/DV TV	Phase One	Back Deck ^⑤ BP, DBP 2BP, 1BP SP, TD	Bolt Tab Bolt Tab w/Stud ^③ #14-16 #10-12 #8, #6		
2237262C01M 2237262C02M 2237262C03M 2237262C04M 2237262C05M 2237262C16M	Hotstick Handle 2237947A07 or "T" Handle 2237947A74	DV DV DV DV DV DV	1Ø 1Ø 1Ø 1Ø 1Ø 1Ø	— — — — — —	Bolt Tab #14 - 16 #10 - 12 #8 #6 Bolt Tab w/Stud ^③	6 6 6 6 6 6	595
2237262C51M 2237262C52M 2237262C53M 2237262C54M 2237262C55M 2237262C66M	Hotstick Handle 2237947A07 or "T" Handle 2237947A74	DV DV DV DV DV DV	1Ø 1Ø 1Ø 1Ø 1Ø 1Ø	— — — — — —	Bolt Tab #14 - 16 #10 - 12 #8 #6 Bolt Tab w/Stud ^③	8 8 8 8 8 8	595
2237264C01M 2237264C02M 2237264C03M 2237264C04M 2237264C05M 2237264C16M	Hotstick Handle 2237947A07 or "T" Handle 2237947A74	DV DV DV DV DV DV	1Ø 1Ø 1Ø 1Ø 1Ø 1Ø	BP BP BP BP BP BP	Bolt Tab #14 - 16 #10 - 12 #8 #6 Bolt Tab w/Stud ^③	6 6 6 6 6 6	597
2237264C51M 2237264C52M 2237264C53M 2237264C54M 2237264C55M 2237264C66M	Hotstick Handle 2237947A07 or "T" Handle 2237947A74	DV DV DV DV DV DV	1Ø 1Ø 1Ø 1Ø 1Ø 1Ø	BP BP BP BP BP BP	Bolt Tab #14 - 16 #10 - 12 #8 #6 Bolt Tab w/Stud ^③	8 8 8 8 8 8	597
2237485C01M	Hotstick Handle 2237947A07 "T" Handle 2237947A74	DV	1Ø	BP	Bolt Tab	8	819
2238066C01M 2238066C02M 2238066C03M 2238066C04M 2238066C05M	Hotstick Handle 2237947A07	DV DV DV DV DV	1Ø 1Ø 1Ø 1Ø 1Ø	SP SP SP SP SP	Bolt Tab #14 - 16 #10 - 12 #8 #6	8 8 8 8 8	1159
2237486C10M	Hotstick Handle 2237947A04 "T" Handle 2237947A70	DV	1Ø	SP	Bolt Tab	6	787
2237465C01M 2237465C02M 2237465C03M 2237465C04M 2237465C05M	Hotstick Handle 2237947A04 or "T" Handle 2237947A70	CM/DV CM/DV CM/DV CM/DV CM/DV	1Ø 1Ø 1Ø 1Ø 1Ø	— — — — —	Bolt Tab #14 - 16 #10 - 12 #8 #6	6 6 6 6 6	735
2237268C01M 2237268C02M 2237268C03M 2237268C04M 2237268C05M	Hotstick Handle 2237947A06 or "T" Handle 2237947A73	TV TV TV TV TV	1Ø 1Ø 1Ø 1Ø 1Ø	BP BP BP BP BP	Bolt Tab #14 - 16 #10 - 12 #8 #6	6 6 6 6 6	603
2237268C51M 2237268C52M 2237268C53M 2237268C54M 2237268C55M	Hotstick Handle 2237947A06 or "T" Handle 2237947A73	TV TV TV TV TV	1Ø 1Ø 1Ø 1Ø 1Ø	BP BP BP BP BP	Bolt Tab #14 - 16 #10 - 12 #8 #6	8 8 8 8 8	603
2237661C01M	Hotstick Handle 2237947A06 or "T" Handle 2237947A73	TV	1Ø	SP	Bolt Tab	8	816
2237674C01M	"T" Handle 2237947A73	TV	1Ø	SP	Bolt Tab	8	820

① Hardware Kits are not included with the switch, Hardware Kits must be ordered separately. ② Actuating devices are included in the Hardware Kits.

③ Bolt Tab w/Stud (1/4-20 threaded stud). ④ For configuration not found, consult with your factory representative. ⑤ For abbreviations and definitions see Table 4.

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