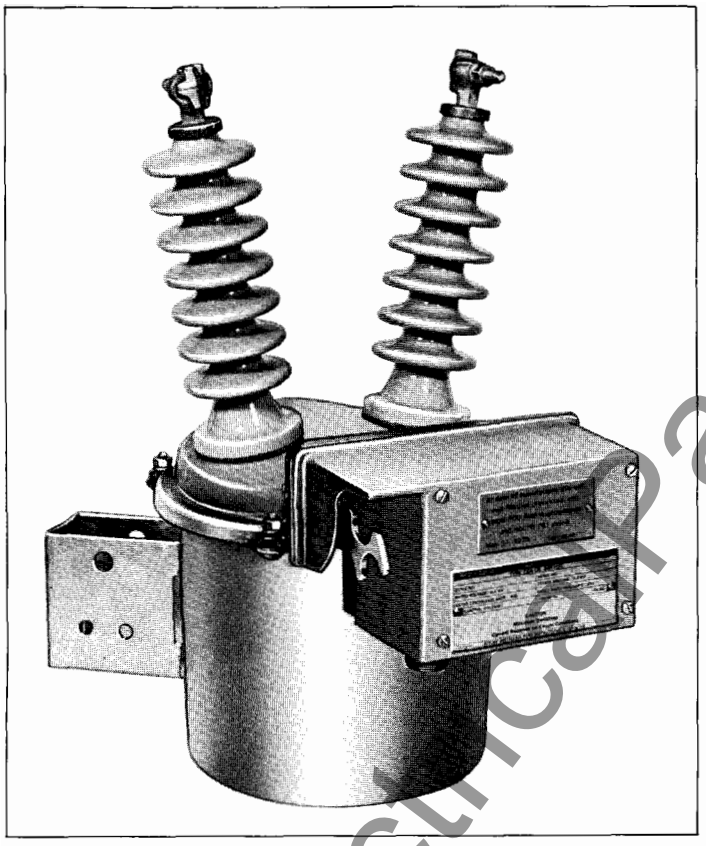
Westinghouse Electric Corporation
T&D Components Division
Bloomington, Indiana 47401

March, 1985
New Information
Mailed to: E, D, C/39-000A, 39-000B

Type CSR, 15 KV and 20 KV, 125 KV BIL
200 Amps at 15 KV
60 Amps at 20 KV

Type CSR Single Phase Oil Switch



Description

The CSR is a single pole oil switch supplied with either a manually-operated or electrically-operated mechanism. The principal applications are switching capacitor banks, outdoor lighting circuits, and sectionalizing rural and suburban distribution circuits.

The 15 KV switch may be applied on system voltages (line-to-line) up to 14.4 KV, grounded or ungrounded, and above 14.4 KV through 14.4/24.9 KV, solidly grounded only. The 20 KV switch is an extension of the 15 KV switch. The 20 KV switch may be applied above 24.94 KV through 20/34.5 KV, solidly grounded only. The CSR switch meets or exceeds all design test requirements as outlined in ANSI Standard C37.66.

Operation

Closing	20 Amps Max for 5 Cycles
Opening	20 Amps Max for 5 Cycles
Nominal Control Voltages and Ranges	120 VAC (107-127) 240 VAC (214-254)

Ratings

Nominal Voltage	14.4 KV	20 KV
Max. Design Voltage	15.5 KV	22 KV
Ten Second Withstand, 60 Cycles Wet	45 KV	45 KV
One Minute Withstand, 60 Cycles, Dry	50 KV	50 KV
Impulse Withstand	125 KV	125 KV
Bushing creepage	17 inches	17 inches

Current

Max. Continuous Current	200 Amps.	60 Amps.
Nominal 60 Hz. Capacitor Switching	150 Amps.	45 Amps.
Momentary	9 KA RMS ASYM	9 KA RMS ASYM
Short Time:		
1 Second	4.5 KA RMS SYM	4.5 KA RMS SYM
½ Second	6 KA RMS SYM	6 KA RMS SYM
Making Current, 60 Hz.	9 KA RMS ASYM	9 KA RMS ASYM
High Freq. Capacitor Inrush (6000 HZ)	12 KA Peak	12 KA Peak

Capacitor Switching

The following table shows the maximum KVAR on single bank switching, based on 200 Amps maximum at 14.4 KV and 60 Amps maximum at 20 KV, and the recommended practice of allowing for 135 percent overcurrent.

Nominal System Voltage (line to line)①	Max Three Phase KVAR	
	15 KV	20 KV
2,400 V.	600	600
4,160 V.	1050	1050
4,800 V.	1200	1200
7,200 V.	1800	1800
12,470 V.	3300	3300
13,200 V.	3450	3450
13,800 V.	3600	3600
14,400 V.	3600	3600
24,940 V. solidly grounded	6400	6400
34,500 V. solidly grounded	N/A	2700

① System voltages 2400-14,400 V. may be grounded **or** ungrounded. System voltages above 14,400 must be solidly grounded **only.**

Type CSR Single Phase Oil Switch

Design Features

Line Terminals
Hot tin-dipped bronze eyebolt terminals provide clamp type connections for copper or aluminum conductors up through size 2/0.

High Voltage Bushings
ASA #70 gray 125 KV BIL extra creep wet process porcelain bushings are standard on the CSR. The bushings are oil-filled to provide superior RIV performance.

Top Cover
A die cast aluminum top cover provides a rugged mounting for the high voltage bushings and operating mechanism. The top cover may be rotated to any position for convenient connection to the line terminals.

Oil Tank
The heavy gauge deep-drawn steel tank is hot dip galvanized for outdoor service.

Operating Handle
All switches are equipped with a manual operating handle which may be hookstick operated.

Electrical Connection
The internal control circuit of standard electrically operated switches is wired to a 5 pin male connector mounted on the underside of the low voltage compartment. Optional electrically operated switches may be selected with an extra "a" or "b" auxiliary contact, or a 6 pin male connector. Female connectors, 5 or 6 pin, may be selected as separate items.

Two and three pole electrically operated CSR switches consist of single phase CSR switches (lug mounting type) mounted on a galvanized steel channel for direct pole or substation mounting. The single phase switches are wired in parallel through a channel-mounted junction box for simultaneous operation by purchaser's control device.

Operating Mechanism
In electrically operated switches, the operating mechanism is driven by a two-coil linear solenoid located in the electrically isolated low voltage compartment.

From the open position, movement of a solenoid armature compresses the operating spring to a mid-position. No contact movement occurs until a spring is fully compressed and the linkage moves past the center position. At this point, the forces from both the solenoid and the spring drive the moving contact to the closed position.

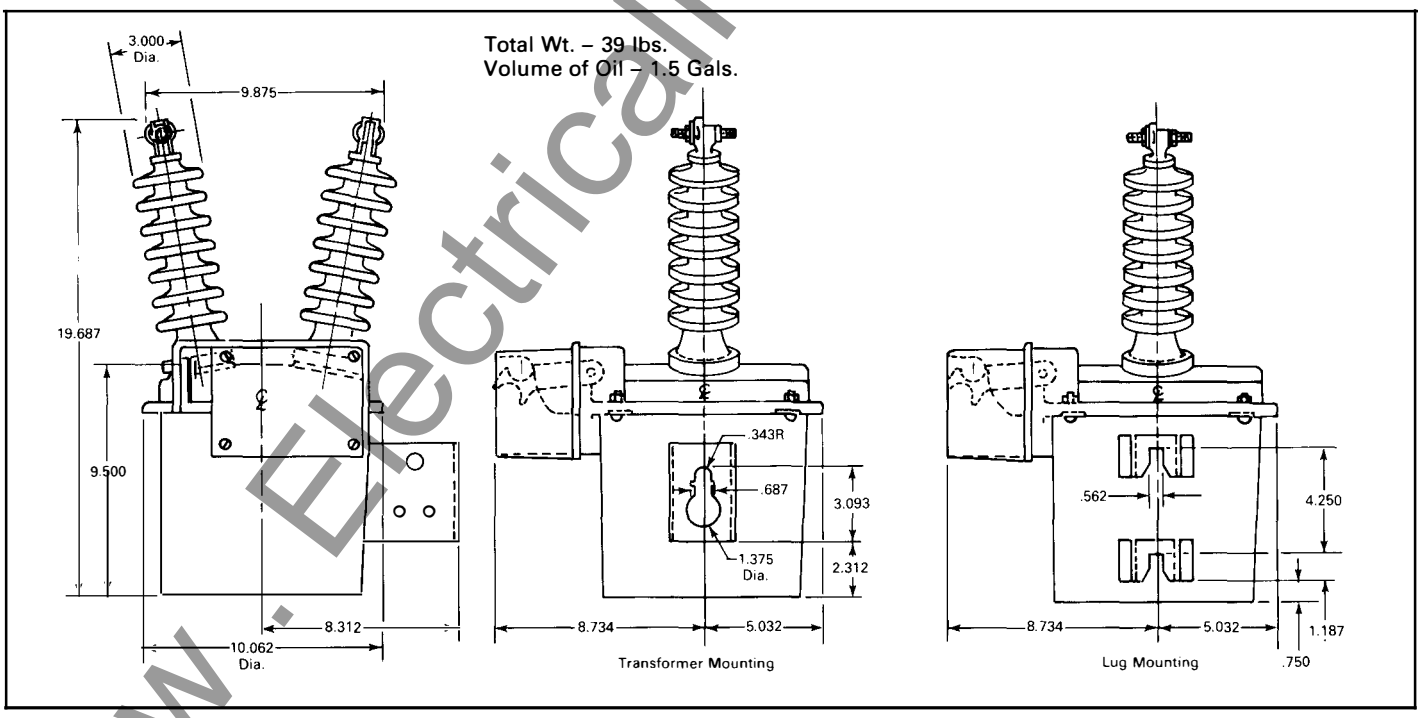
The snap action mechanism operates in a similar manner during the opening operation and provides positive spring action for both closing and opening operations.

Manually operated switches utilize the same spring mechanism to ensure that contact operating speed is independent of the operator.

Contacts
The CSR switch features double break contacts. The rotary moving contact engages two pairs of stationary contacts mounted on the contact support structure. Stationary contacts are free floating, self-aligning with individual contact pressure springs to assure consistently high contact pressure. Both moving and stationary contacts are tipped with copper tungsten which provides long life and resistance to arcing.

Additional information
P.L. 39-320
I.L. 39-321

Dimensions (In Inches)



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Printed in U.S.A.

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