INSTALLATION • OPERATION • MAINTENANCE

INSTRUCTIONS

SWITCHBOARD WATTHOUR METERS (510C-----SERIES) IN FT-21, FT-31, FT-32 & FT-42 FLEXITEST CASES

TYPES CB-F, CB-2F, CB-3F, CB-7F, CB-8F, CB-32F, CB-38F

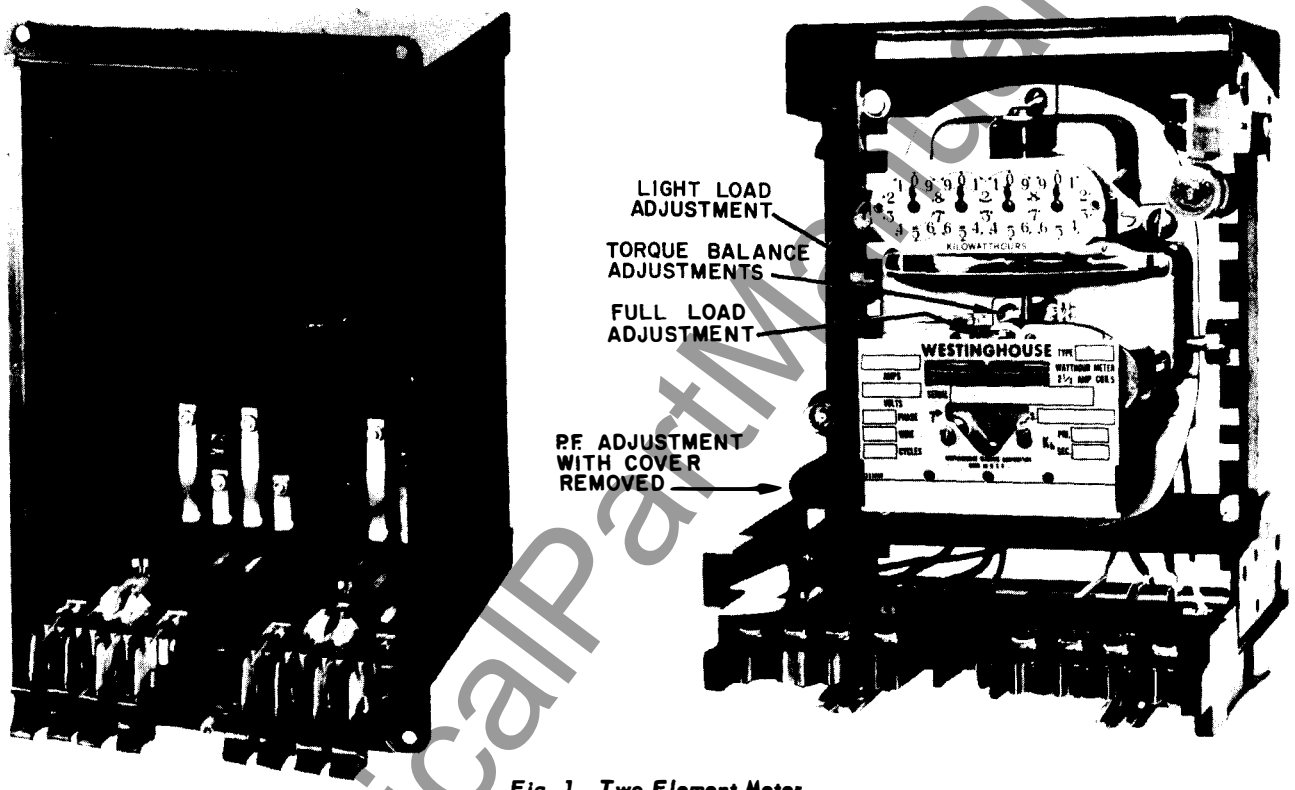

Fig. 1. Two Element Meter

APPLICATION CHART

TYPE	NUMBER OF STATORS	CIRCUIT APPLICATION
CBF	1	1-phase, 2 or 3-wire
CB-2F	2	1, 2, or 3-phase 3-wire
CB-3F	3	3-phase, 4-wire wye
CB-7F	2	3-phase, 4-wire delta
CB-8F	2-split coil	3-phase, 4-wire wye
CB-32F	4	Totalizing two 2 or 3 phase, 3-wire circuits
CB-38F	4-split coil	Totalizing two 3-phase, 4-wire wye circuits

SUPERSEDES I.L. 42-201.1B

EFFECTIVE APRIL 1962

GENERAL

The meter elements are mounted on a removable chassis. All connections are made through the test switches and the meter is held into the case by two latches. Automatic shorting switches are provided on all current circuits to prevent opening current transformers when testing or removing the chassis. For testing, leads can be clipped to the test lugs above the chassis jaws and on the switch blades.

Two test plugs are available to facilitate calibration of these meters. The 10-circuit plug is inserted into the chassis jaws and is provided with binding post terminals for connections to the test circuit. The current circuit test plug is inserted into the current switch assembly, between the chassis and the case. This breaks the circuit and ammeter leads may be attached to measure the current.

The hardware supplied with the meter permits mounting either projection or semi-flush on panels up to 3/16" thick. For projection mounting on panels thicker than 3/16" special hardware is furnished on request.

Provisions have been made on all FT-21 and FT-31 cases for convenient field installation of either 2 or 3 wire contact devices. Three knockouts located on the back of the case (close to the top) when removed, allow a molded insulation block, with two or three terminals and male plugs, to be fastened to the case. A bracket, with the proper number of female sockets, can be attached to the rear of the meter-frame & latch assembly in the proper position to allow the male and female parts to mate when the meter is inserted in the case. The parts are available in kit form for this application.

CALIBRATION

All meters are calibrated on single-phase. The basic watthour constant (K_h) for these meters is 1/3 per nominal 600 watt rating. The single-phase test speed is 30 rpm except for the CB-8F and the CB-38F for which it is 40 rpm. These test speeds are given on a 120 volt basis.

The following is a guide to the watthour element calibration. For detailed instructions, see I.L. 42-100.

Adjustments — CB-F Single-Phase Meters

Full Load — Turning the permanent magnet adjuster screw clockwise decreases the speed of the meter; turning counter-clockwise increases the speed.

Light Load — The light load adjusting screw is located at the right side of the frame. Adjustment in the fast direction is indicated by the arrow and letter "F".

Power Factor — For adjustment, change the resistance of the power factor coil at the bottom of the electromagnet. Increasing the resistance (lengthening the loop) increases the speed on lagging power factors.

Adjustments — Polyphase Meters

Full Load — Turning the permanent magnet adjuster screw clockwise decreases the speed of the meter; turning counter-clockwise increases the speed.

Light Load — The light load adjusting screws are located at the side of the frame. Adjustment in the fast direction is indicated by the arrow and letter "F".

Balance — The balance adjusting screws are located at the front of the frame near the disc shaft. Adjustment in the fast direction is indicated by the arrow and letter "F".

Balance plates should first be moved to a maximum torque (fast) position and calibration then made by changing the higher torque element.

Power Factor — For adjustment, change the resistance of the power factor coil at the side of the electromagnet. Increasing the resistance (lengthening the loop) increases the speed on lagging power factors.

GENERAL DATA

For 5-Amp, 120-Volt, 60-Cycle Meters With 2-Wire Current Coils		Single Stator	Multistator (With Potential Indicating Lamps		
			2-Stator	3-Stator	4-Stator
Starting watts		1.5	3.0	4.5	6.0
RPM at meter rating		30	30	30	30
Watthour constant (Kh)		1/3	2/3	1	4/3
Voltage-Coil Circuit	Volt-Amperes	10.0	8.3	8.3	8.3
	Watts Loss, per element	1.5	1.7	1.7	1.7
	Power Factor	0.15	0.21	0.21	0.21
Current-Coil Circuit	Volt-Amperes	0.32	0.29	0.29	0.29
	Watts Loss, per element	0.18	0.16	0.16	0.16
	Power Factor	0.59	0.55	0.55	0.55

REPLACEMENT PARTS AND REPAIRS

Where facilities are limited or where only a small number of meters are used, it is recommended that the meter be returned to the factory for repairs. When returning a meter for repairs, obtain a Returned Material Tag from the District Office so as to avoid delay in identifying the shipment.

When ordering renewal parts, give the entire nameplate reading. Always give the name of the part wanted. Check Renewal Parts Data 42-104.1 for aid in identifying parts.

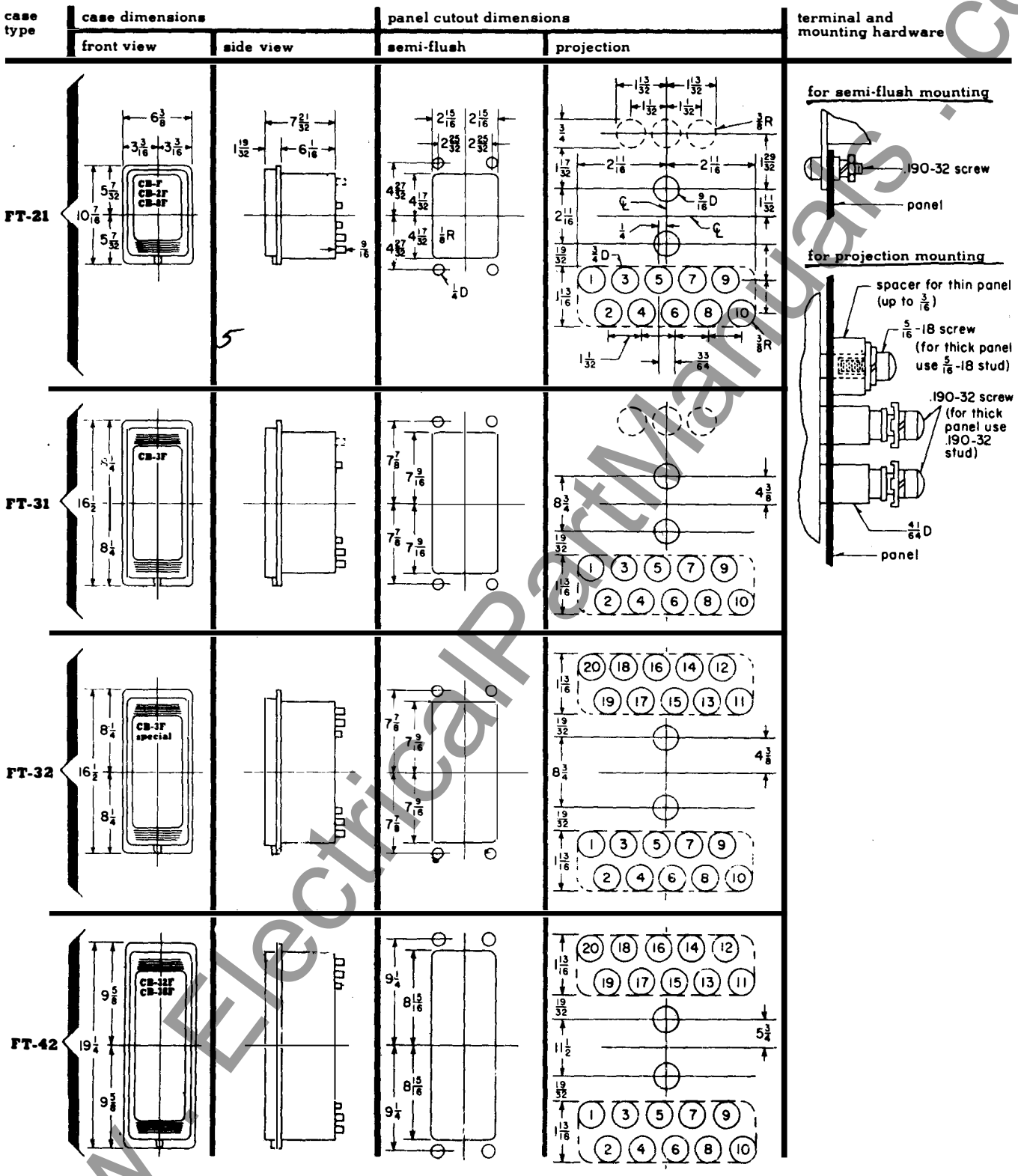

Fig. 2. FT-21, FT-31, FT-32, FT-42 Mountings

WIRING DIAGRAMS

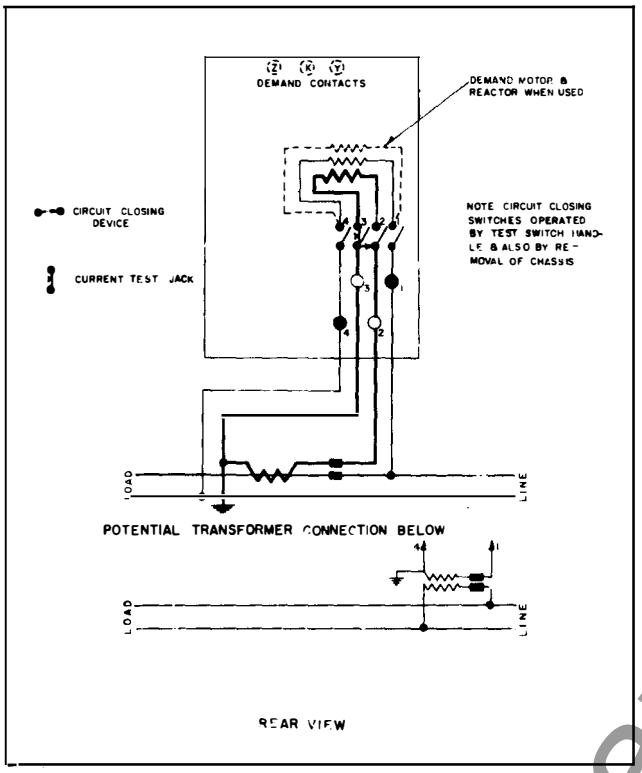

Fig. 3. Type CB-F, 1-Phase, 2-Wire

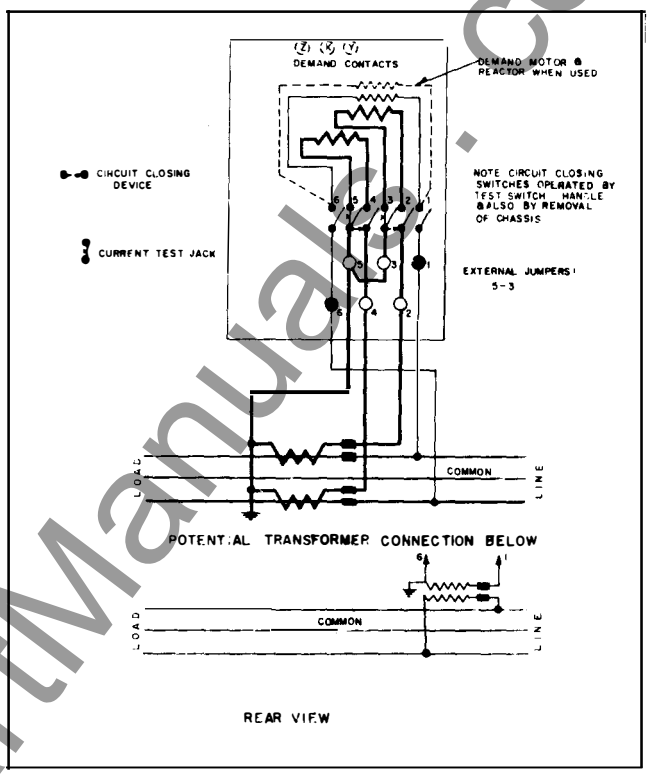

Fig. 4. Type CB-F, 1-Phase, 3-Wire

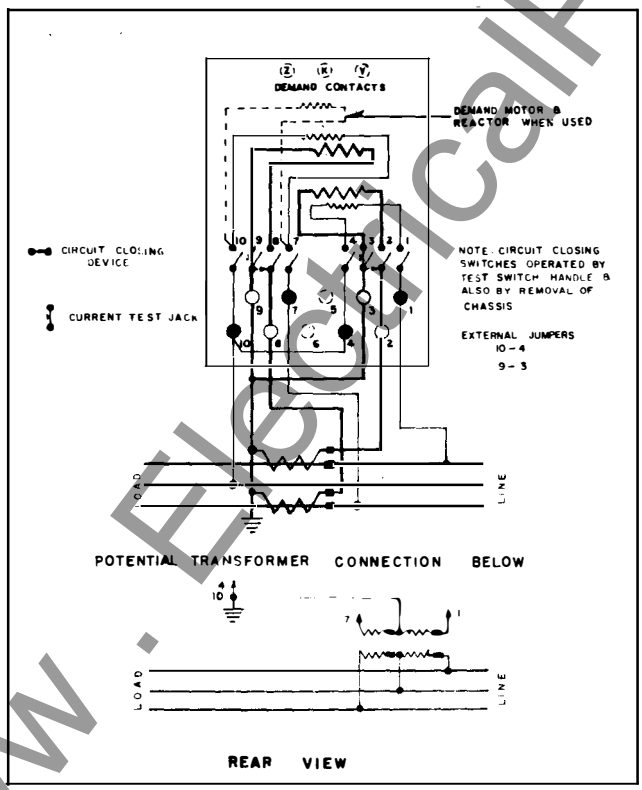

Fig. 5. Type CB-2F, 3-Phase, 3-Wire

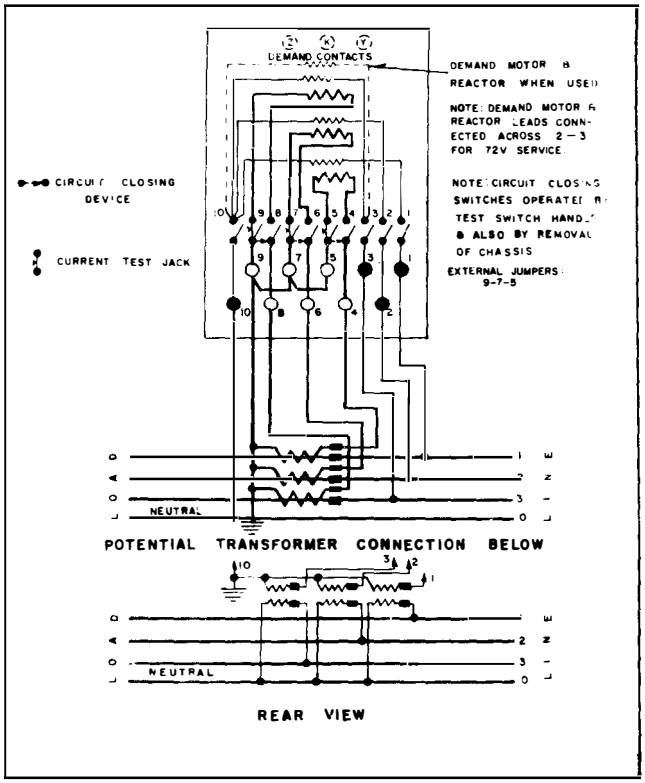

Fig. 6. Type CB-3F, 3-Phase, 4-Wire Wye.

WIRING DIAGRAMS

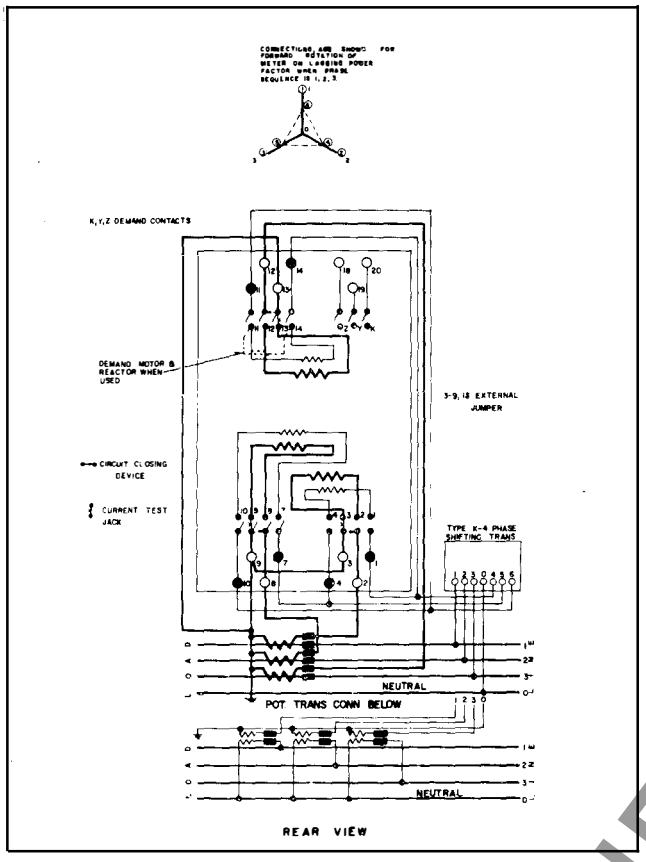

Fig. 7. Type CB-3F, 3-Phase, 4-Wire Wye (20 switch case for reactive metering with contacts)

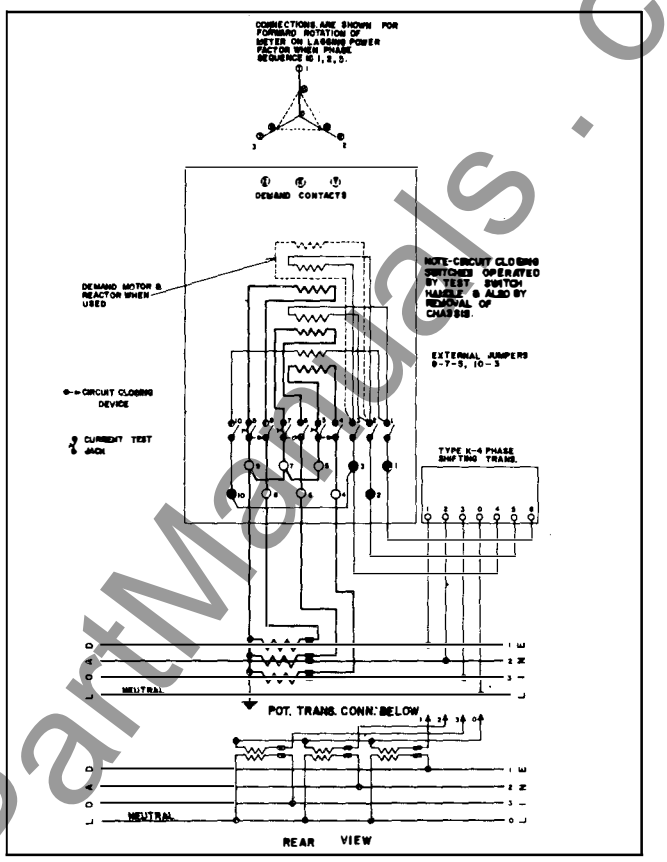

Fig. 8 CB-3F, 3 Phase, 4-Wire Wye (10 switch case with reactive metering)

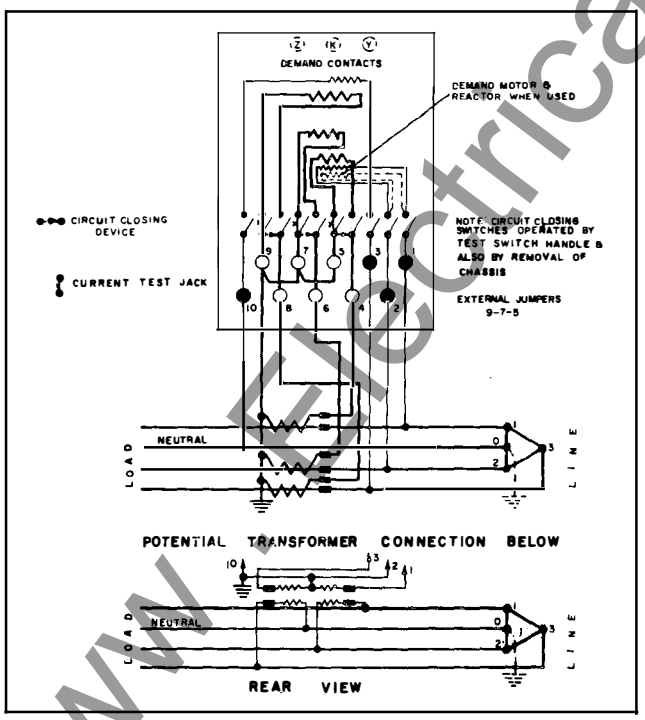

Fig. 9. Type CB-7F, 3-Phase, 4-Wire Delta

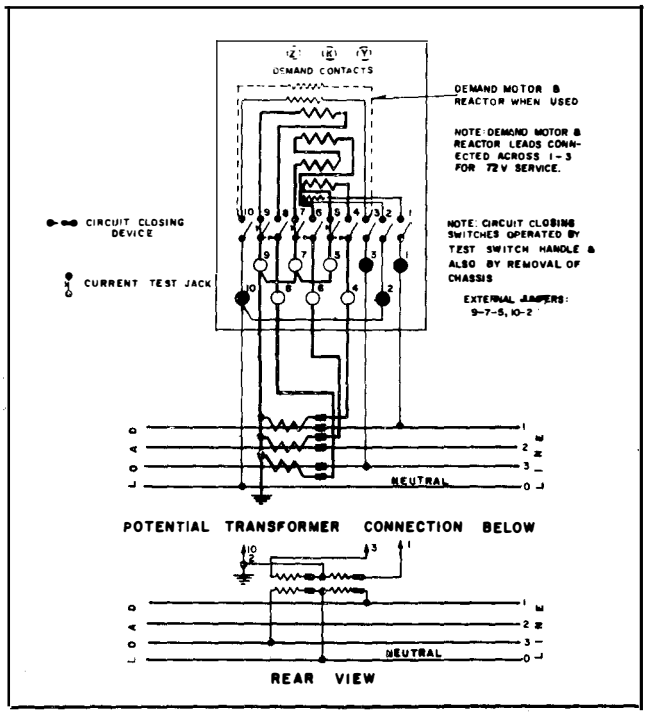

Fig. 10. Type CB-8F, 3-Phase, 4-Wire Wye

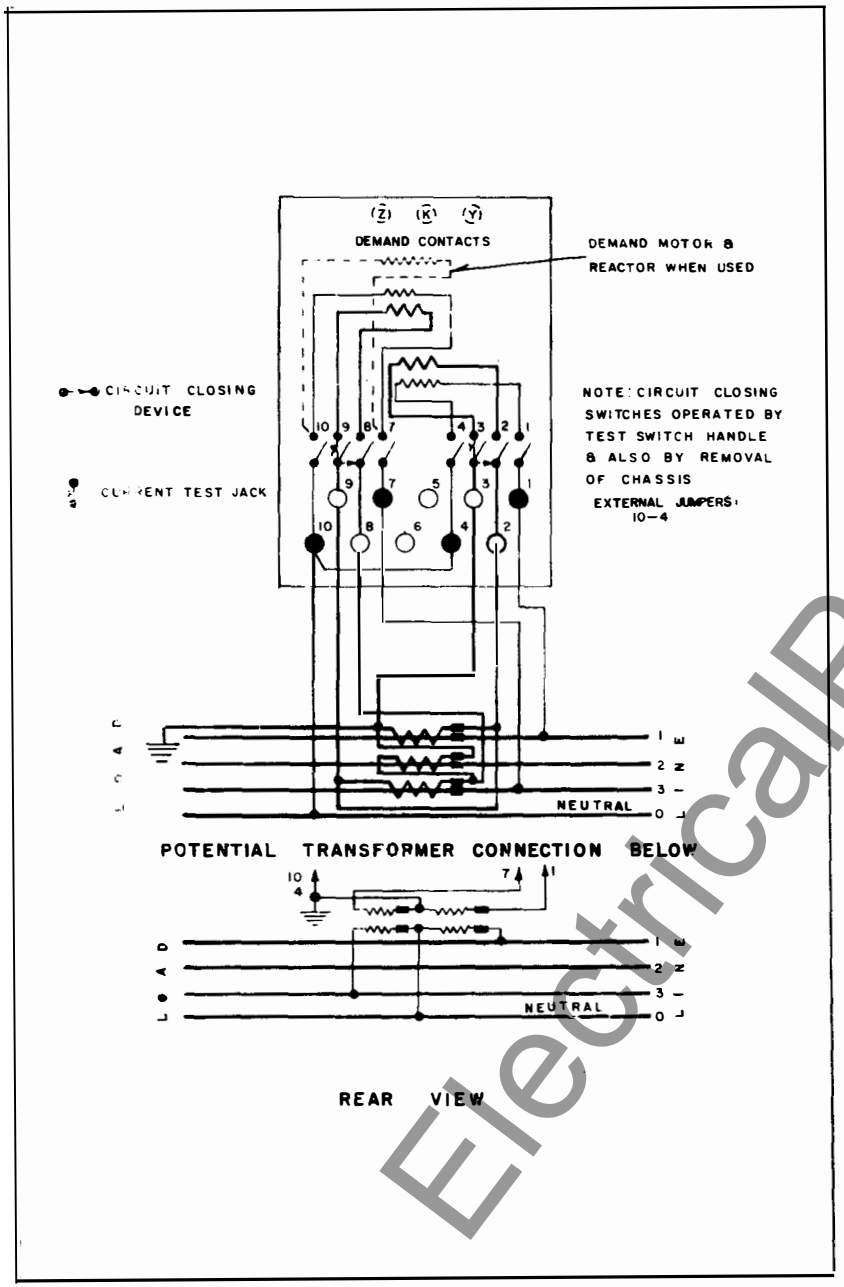

Fig. 11 Type CB-2F. 3-Phase, 4-Wire WYE, with Current Transformers.

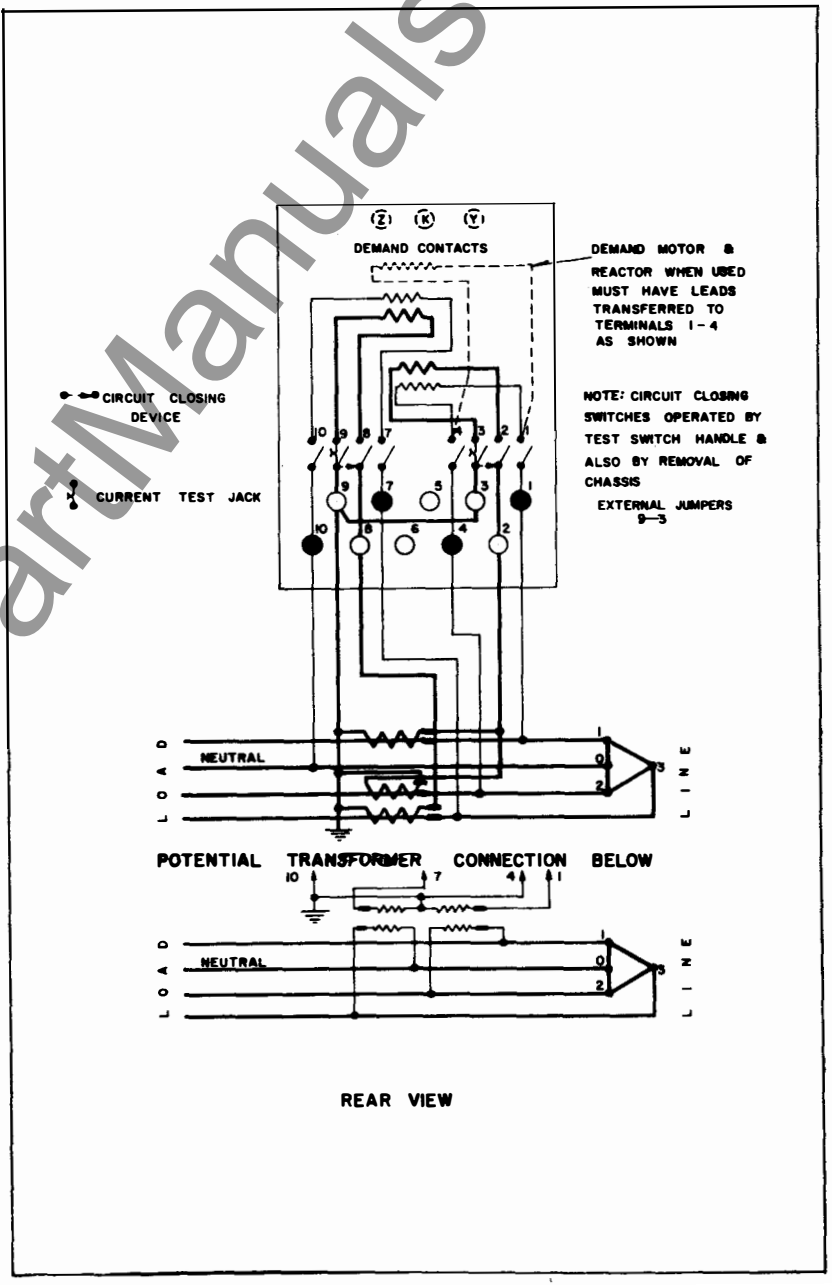

Fig. 12. Type CB-2F. 3-Phase, 4-Wire Delta, with current transformers

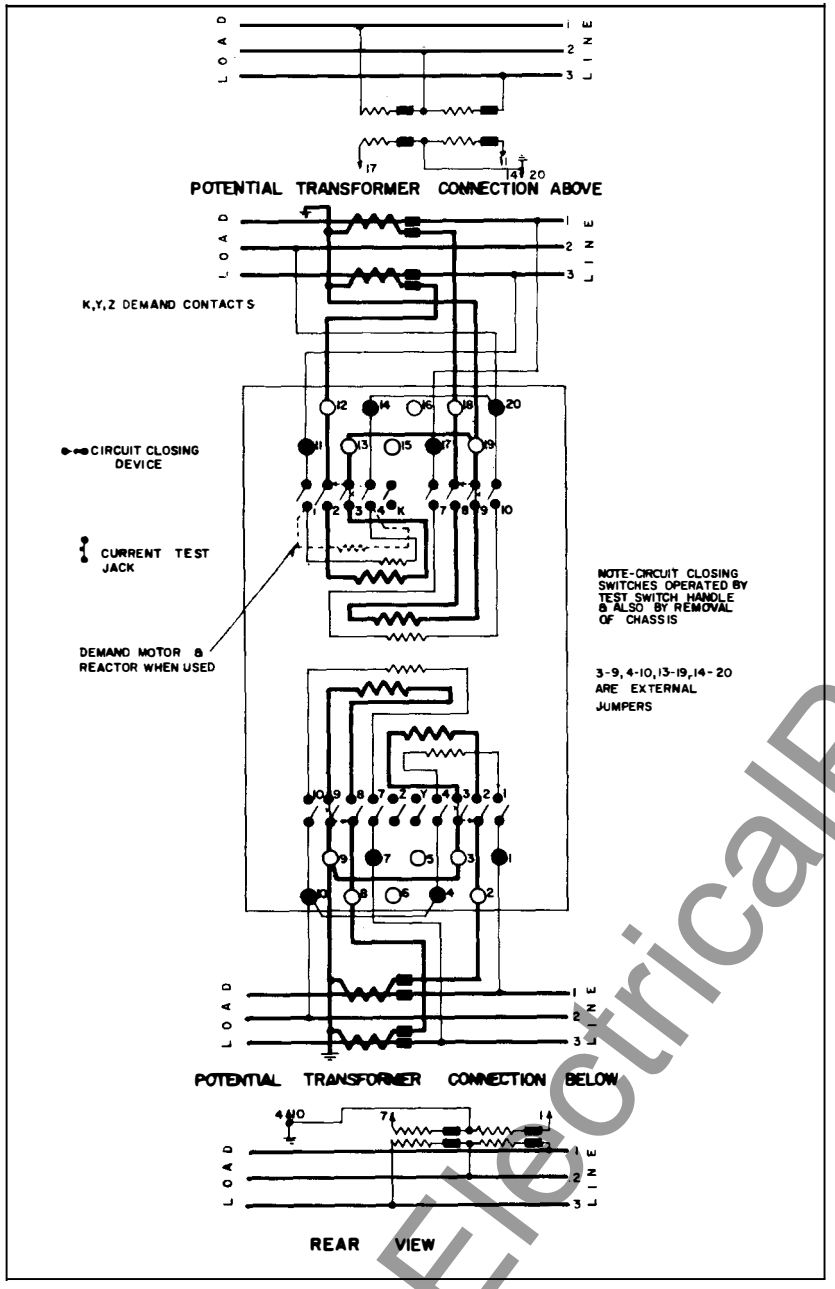

Fig. 13. Type CB-32F, Totalizing Two 3-Phase, 3-Wire Circuits.

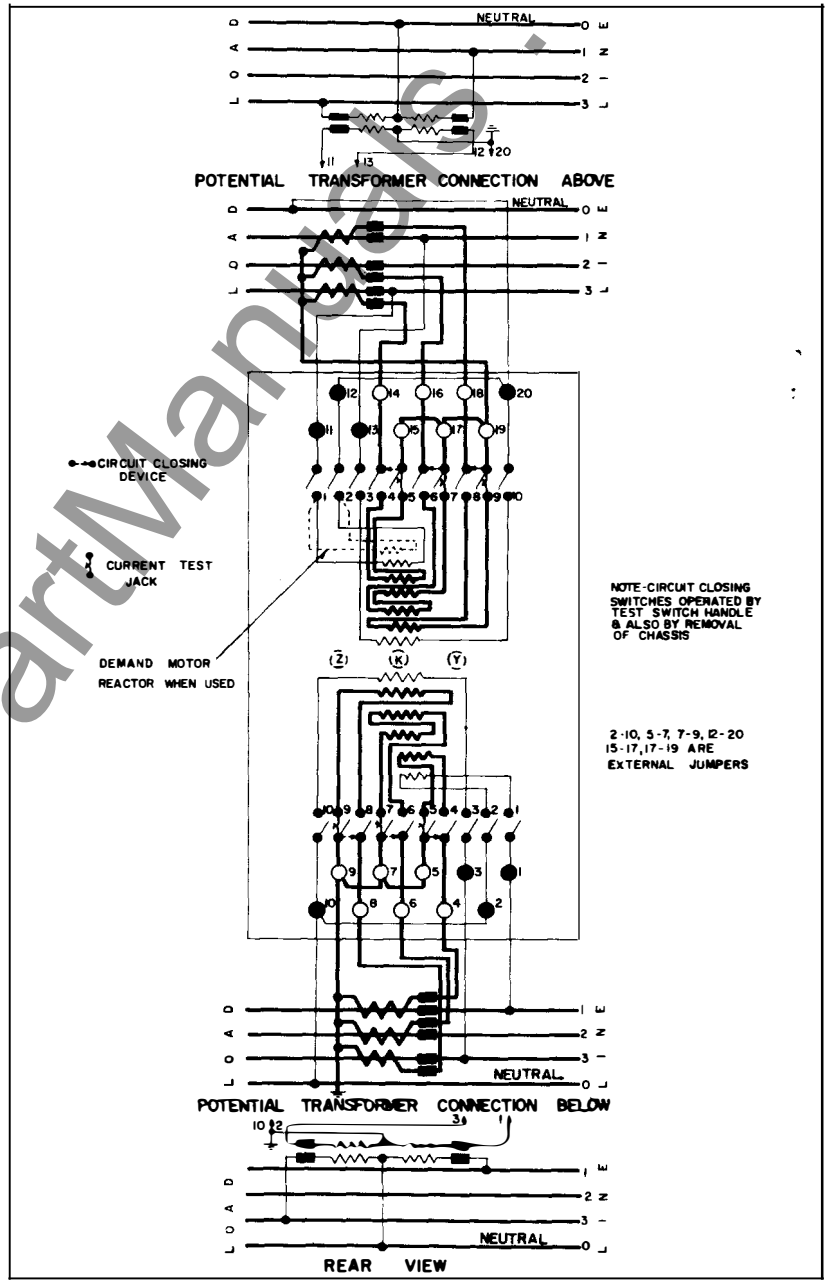

Fig. 14. Type CB-38F, Totalizing Two 3-Phase, 4 Wire WYE Circuits.

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