

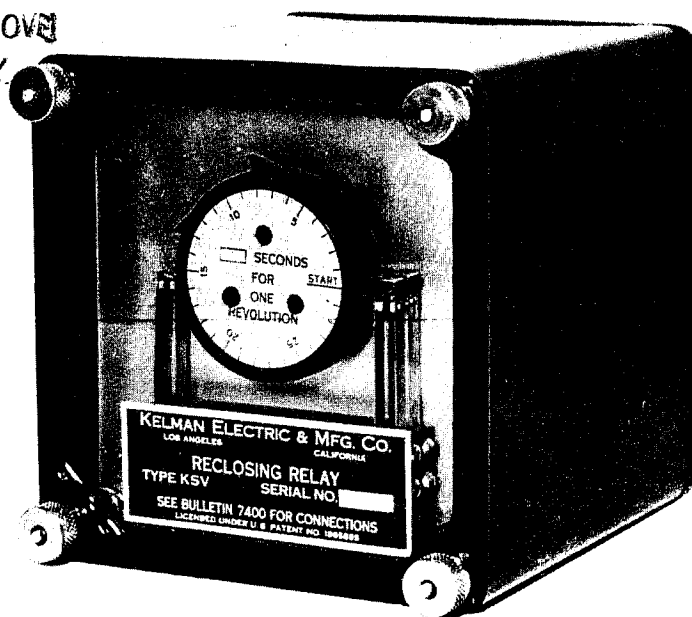
KELMAN RECLOSING RELAY

TYPE KSV & DC KSV

LICENSED UNDER U.S. PATENT NO. 1965895

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GENERAL:

The draw-out type, oil circuit breaker, reclosing relay described in this bulletin was designed primarily to replace the Kelman Type KSS Reclosing Relay, and also to make available a single reclosing relay which would operate satisfactorily on all standard AC, DC or AC-DC control voltages.

CONSTRUCTION:

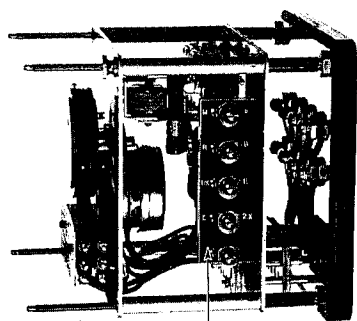
All parts of the relay are mounted on a sturdy, aluminized aluminum frame which can be withdrawn from the bakelite base once the moulded bakelite cover has been removed. The "reclosure," "hold," and "unlatch" contacts, cams, and "timing" motor are mounted on the front plate of the frame; and the latching relay, motor terminal block, "latching" capacitor, cam set-screw wrench, jumper panel or control panel, and draw-out multi-circuit plug are mounted on the back plate. The draw-out multi-circuit receptacle is mounted on the bakelite base, along with the long studs which support the frame and case, and the mounting and current carrying bushings.

The relay can be either surface or flush mounted, or in-

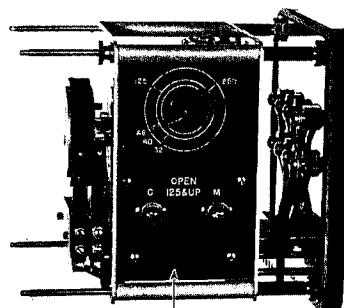
stalled in a metal housing by the use of spacers. All this is clearly shown on the drilling plans.

Relays are available with $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$ or 1 RPM, AC or DC timing motors, which are interchangeable, and give corresponding cam speeds of 480, 240, 120 and 60 seconds* for one revolution respectively. Three reclosure cams make it possible to set the relay for one, two or three automatic reclosures; the first reclosure can be instantaneous if desired. Timing motors have an accuracy of $\pm 5\%$ at all rated control voltages: i.e., 110 or 220 volts AC; or 32, 40, 48, 125 or 250 volts DC.

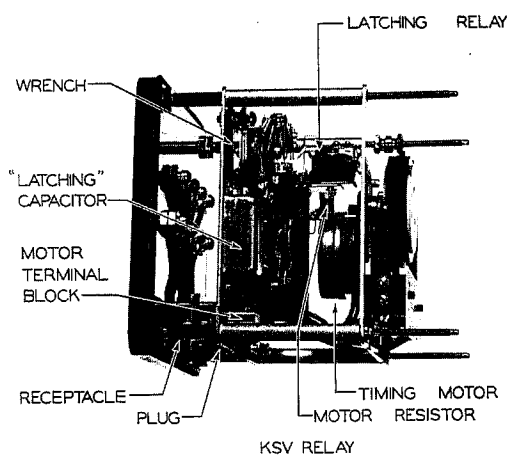
* 50 cycle installations will be correspondingly slower.



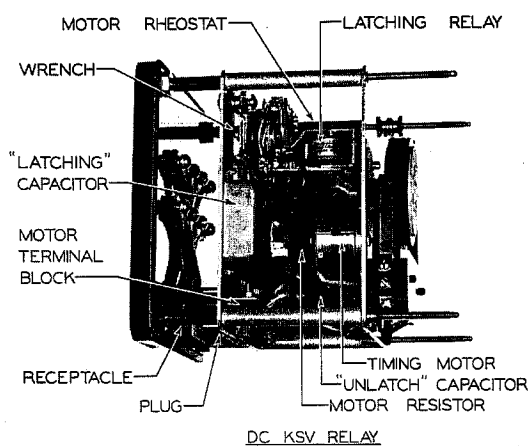
JUMPER PANEL



CONTROL PANEL

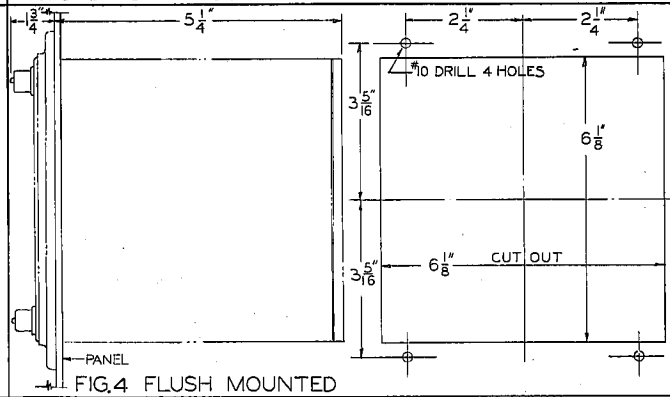
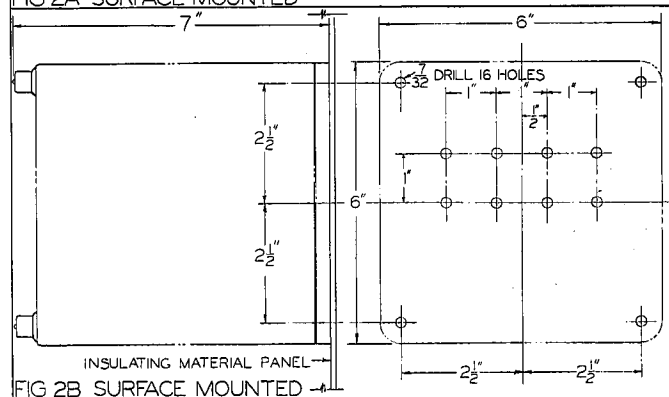
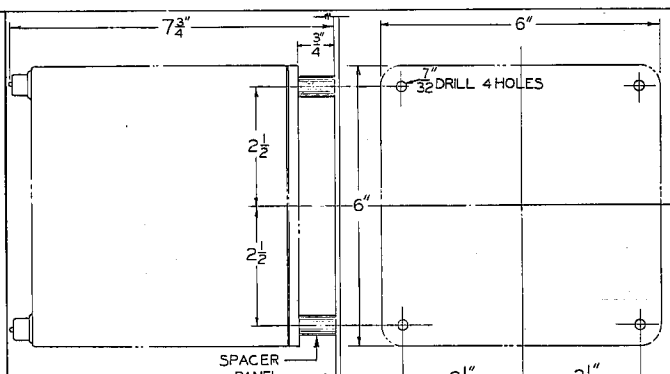
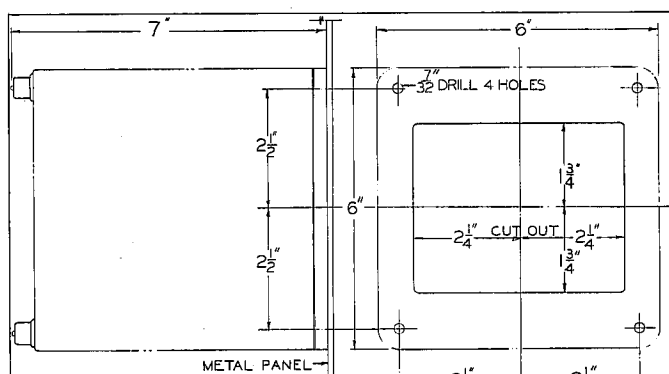


KSV RELAY



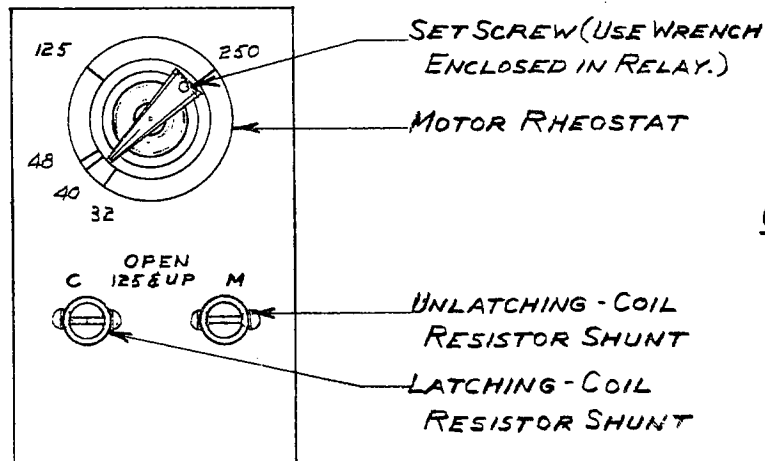
DC KSV RELAY

FIG.1 ASSEMBLED VIEWS



DRILLING PLANS

INSTRUCTIONS
FOR
CHANGING THE VOLTAGE SETTINGS ON
KELMAN RECLOSING RELAY, TYPE DC KSV



CONTROL PANEL

- 1 - Loosen the motor rheostat knob set screw and set it at the new motor-circuit voltage (Rear relay terminals 7 & 8).
- 2 - If the new motor-circuit voltage is 125 Volts DC or above, the Unlatching-Coil Resistor Shunt, "M", should be unscrewed, thereby inserting the fixed resistor in the circuit. Should the new voltage be 48 Volts DC or less, the shunting thumb nut should be screwed closed, thereby shunting around the fixed resistor.
- 3 - If the new control-circuit voltage (Rear relay terminals 1 & 2) is 125 Volts DC or 110 Volts or above, the Latching-Coil Resistor Shunt, "C", should be unscrewed, there by inserting the fixed resistor in the circuit. If the new voltage be 48 Volts DC or less, the shunting thumb nut should be screwed closed, thereby shunting around the fixed resistor.

OPERATION:

After the oil circuit breaker relays, a circuit is completed thru a momentary contact switch which operates on the RETRIEVE stroke of the breaker operating mechanism. The latching relay picks up and latches mechanically when its coil is energized. This energizes the motor and the cam revolves.

The "reclosure" contacts make at the first cam projection and energize the closing circuit of the breaker giving the first automatic reclosure. If the KSV Relay is set for instantaneous reclosure, the closing circuit of the breaker will be energized when the latching relay picks up. At each cam projection the "reclosure" contacts make and energize the breaker closing circuit. The cam continues to rotate until the "hold" contacts break and the motor stops. The motor stops instantly due to a braking arrangement.

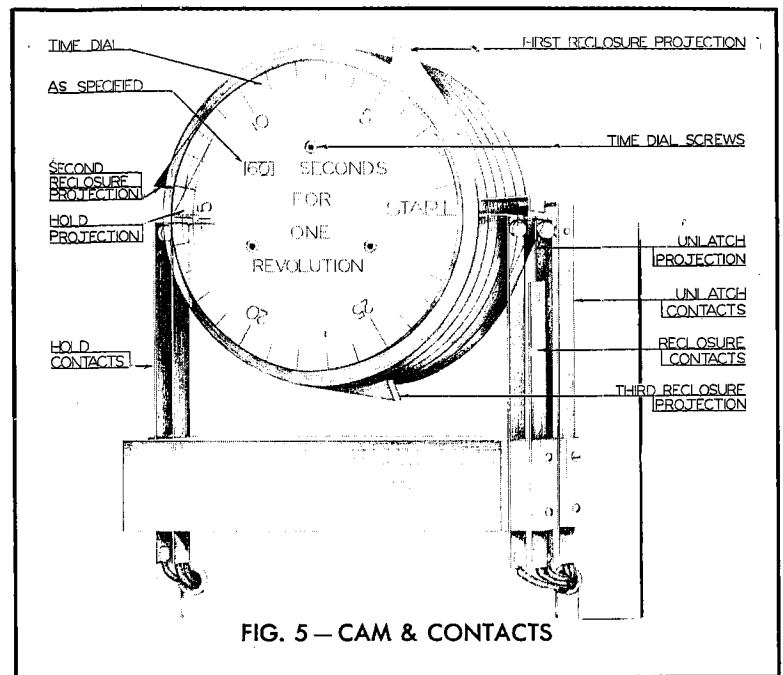
The Kelman Type KSV Relay is designed with a lock out feature which automatically stops the relay mechanism after it has gone thru its complete reclosing cycle, and also closes the bell alarm circuit should the breaker fail to remain closed. The relay will not function again until the breaker has been closed manually or by remote control. No manual resetting of the relay is necessary.

ADJUSTMENT:

Changing the timing is the only occasion when any adjustment should be necessary, provided the relay is not moved to another location where the control voltages are different. Control voltage changes can easily be handled by making the correct Jumper or Rheostat changes.

To change the timing loosen the three time dial screws with the set screw wrench, which is provided with every relay, and slide the cam projections to get the new desired reclosure intervals. On each time dial is stamped the number of seconds it takes for one revolution of the cam, i.e. 480, 240, 120 or 60 seconds. All dials have thirty divisions which means the distance between divisions will be correspondingly 16, 8, 4 and 2 second intervals, respectively.

When first setting the reclosure intervals determine the projection locations on the time dial for the stamped cam speed. The cam is in the starting position when the "start" line is horizontal or midway between the two reclosure contact cam followers. In this position the "hold" contact cam follower has just dropped off the "hold" cam projection. Every timing motor comes with a oneway friction feature which makes it possible to turn the cam in its usual clockwise direction, to the "start" position. Loosen the three small



time dial screws and turn the first plate of the cam so that the flat face of the projection will coincide with the dial setting as figured for the first reclosure. Move the second and third plates in a similar manner so that they will give the setting as determined for the second and third reclosures.

Should only two reclosures be required, place two of the projections together or if only one reclosure is required, place all three projections in line.

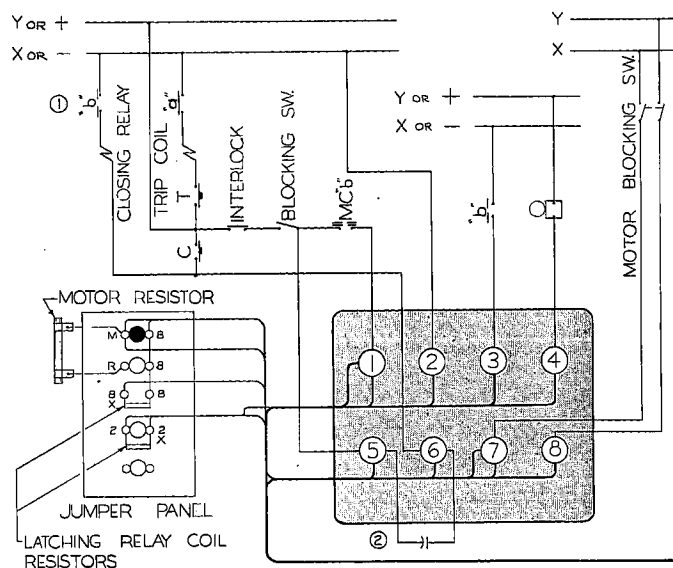
When the timing is set on the cam tighten the three small flat head screws securely, and turn the cam to the "start" position, start the relay and allow it to run through its complete cycle until it resets and stops. Check carefully to see that the cam has returned to the exact "start" position.

In case an instantaneous reclosure is necessary set the flat face of the projection on the first plate of the cam to coincide with the "start" line. This will allow the reclosure contact to be closed in the reset position.

ORDERING:

The following information should be supplied by the customer when ordering a KSV Relay:

- Motor or cam speed.
- Control voltage or voltages — AC, DC, or AC-DC.
(Every KSV relay is equipped with a 110 volt AC timing motor and a fixed resistor for 220 volt AC in case that is the only AC voltage available. Every DC KSV relay is equipped with a 32 volt DC timing motor and a calibrated rheostat for 40, 48, 125 or 250 volt DC operation. Actually, the latching relay will operate down as low as 18 volts DC.)
- Mounting: Surface, Spacer or Flush.
- Connection diagram —
Specify Bulletin 7400B, Fig. —

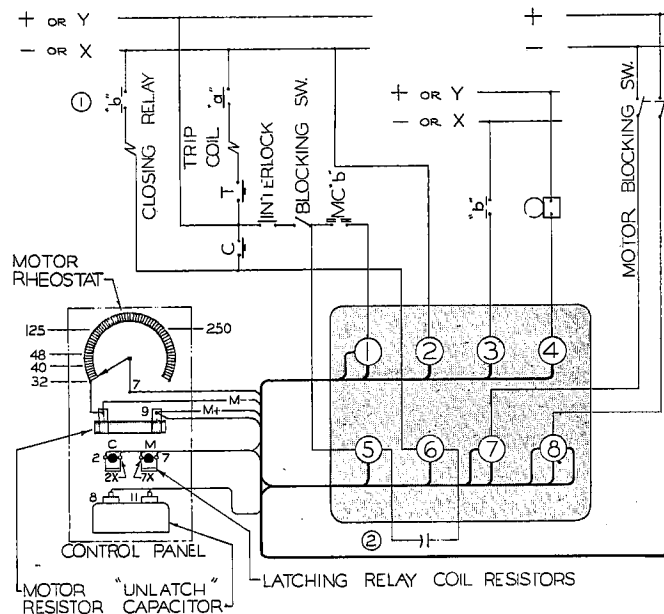
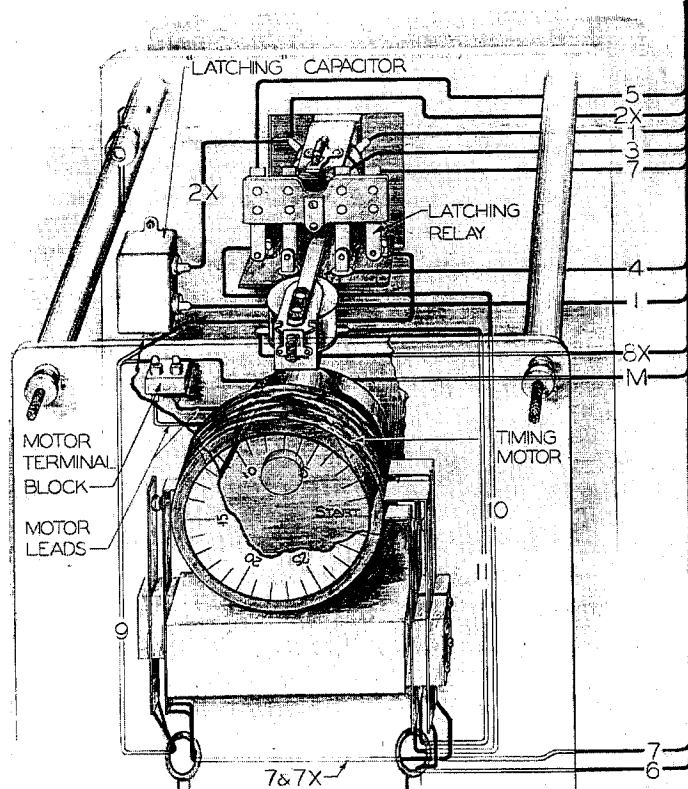


● JUMPER IN CLOSED POSITION

AC OR DC CONTROL & 110VOLT AC MOTOR CIRCUIT

OPEN JUMPER M-8 AND CLOSE JUMPER R-8 FOR 220V. AC MOTOR VOLTAGE
OPEN JUMPER 2-2X FOR 110 & 220V AC OR 125V & 250V DC CONTROL VOLTAGE

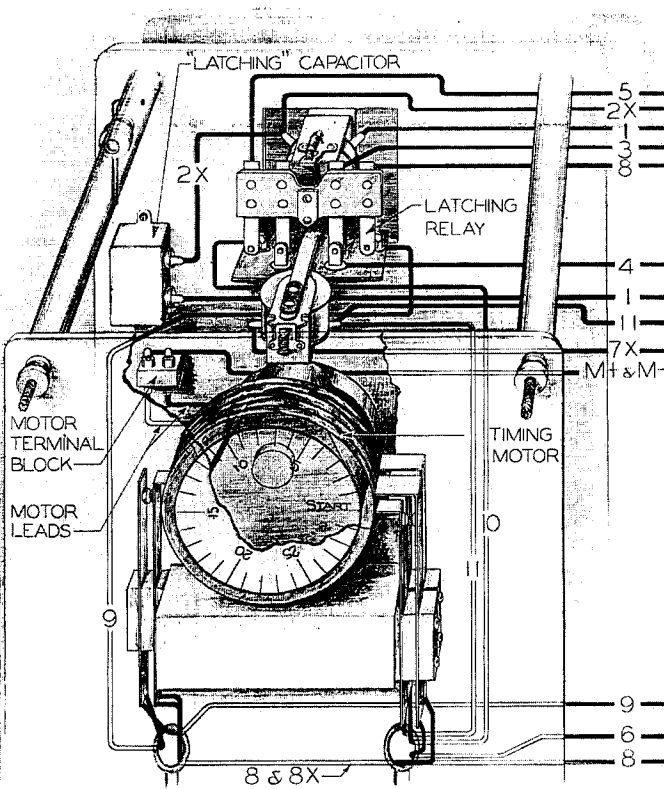
FIG. 6
KSV RELAY



DC OR AC CONTROL & DC MOTOR CIRCUIT

OPEN JUMPER C FOR 110 & 220V AC OR 125 & 250V DC CONTROL VOLTAGE
OPEN JUMPER M FOR 125V. DC & UP, AND SET RHEOSTAT FOR 32, 40, 48, 125 OR 250V. DC MOTOR VOLTAGE

FIG. 7
DC KSV RELAY



- ① USE ONLY WHEN HESITATING OR LOCK-IN TYPE CLOSING RELAY IS USED.
- ② MAY NEED CAPACITOR WHEN CONTROL VOLTAGE IS 125 OR 250V. DC.

CONNECTION DIAGRAMS