Instructions for Type WL-2 Switch
Electric Trip—Hand Reset
600 Volts AC or DC 20 Amperes Continuous

I.L. 34-253-1

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CONSTRUCTION

Figure 21 shows a general layout and the interchangeable parts that comprise the standard design of WL2 switches. Along with the pictorial view is the identification nomenclature of parts and assemblies.

The WL2 switch consists of an operating handle, face plate, control housing, and contact frame. It is built up in any number of stages from 1 to 10 and clamped together by 2 tie bolts to the control housing. A common steel operating shaft ties the contact rotors together. A metal cap is on the rear to hold the position stop pin, to retain shaft, and to give switch identification.

Two contact frames are available: (1) One with 6 contacts, 3 sets on top at 11, 12, and 1 o'clock locations, and 3 sets on bottom at 5, 6, and 7 o'clock locations, and (2) the other with 12 contacts each set at the 12 positions of a clock. The contacts for standard applications are between terminals front and rear. Both frames are made of glass polyester insulating material.

A stage of contacts consists of a frame (either 6 or 12 contact) and a rotor inside. Switches are usually described as so many stages long. A standard stage can have 6 contacts or 12 depending on the frame size used. (See Figures 3 and 4.)

The rotors are standard in design to hold the roller contacts. Each rotor is made of glass polyester insulating material; it rotates independently between the stage spacer plates. The roller contacts are made of bronze material and silver plated. The contact springs are made of stainless steel.

The head of the terminal screw is the contact face and is silver plated bronze material. The polycarbonate windows that hold the terminals in place also serve to lock the terminal nut.

The control housing is aluminum die cast and shaped to house the latching and tripping details.

Three molded phenolic compositon handles are available in the shapes of oval*, pistol grip, and round. The nameplate is a molded white cycolac ABS material upon which are hot press stamped markings as required. The dial plate is aluminum die cast and seats the mounting screws and holds the nameplate. The nameplate snaps onto the dial plate and covers the mounting screws.

Two magnet-coil assemblies are available; one for 24/48 volts D.C. and one for 120 volts through 480 volts A.C. or D.C.

OPERATION

The Type WL-2 is a two position device having manual operation to the "reset" position and electric trip (spring operated) to the "trip" position. The escutcheon is

* - Oval shape is standard.

marked "trip" and "reset". This device can be supplied as either (1) handle reset and electrical trip, or (2) handle reset and both handle trip and electric trip. The rotor is held in the reset (normal) position by means of a permanent magnet. Tripping is accomplished by energizing the release coil, which induces a magnetic field in opposition to the holding magnet (electromagnetic induction) thus cancelling the lines of force of the magnet which release the rotor to turn to the "trip" position under spring stored energy.

The permanent magnet has a minimum holding force of at least double the tripping spring pressure; therefore, the reserve force of the magnet is sufficient to hold the rotor in reset position under conditions of shock and vibration normally found in commercial application. *The magnet must hold a 13 pound test weight.

The trip coil is factory wired to a coil cutoff contact. In all cases, this coil cutoff contact is closed when the rotor is in the reset position. In the tripping sequence, the coil cutoff contact is opened as the rotor moves from the "reset" to the "trip" position.

Warning: To prevent coil damage the handle should not be manually held in the reset position when the trip circuit remains energized. When the trip circuit is energized and the switch is hand operated to the reset position, the operator will feel vibration through the switch handle and a buzzing sound will be audible.

Important Note: A Type WL-2 Switch of the non-handle trip design, although equipped with a handle, cannot be tripped by handle operation. To trip, a voltage corresponding to the coil rating shown on the switch nameplate must be applied to the trip coil.

Trip Circuit Wiring

On each switch, certain contacts are used for trip coil circuitry; thus, on control voltages of 24 volts through 250 volts, one contact is used for trip coil cutoff. For 440 volt control, two contacts are wired in series for trip coil cutoff.

On the first stage of each switch, a second contact is used to connect the positive lead from the trip coil. The terminals of this contact are connnected by means of an external connector which bears a positive (+) sign. (Disregard for Ac Control Voltage.) In the case of the six contact stage, the factory will connect the coil leads to terminals A-5 and A-7, with A-7 being the positive (+) side. Customer connections being made at terminals B-5 and B-7. B-7 being the positive side. (See Wiring Diagram). In the case of the twelve contact stage, the factory will connect the coil leads to terminals A-6 and A-8, with A-8 being the positive (+) side. Customer connections being made at terminals B-6 and B-8, B-8 being the positive side. By this means, factory wiring need not be disturbed to accomplish field connections.

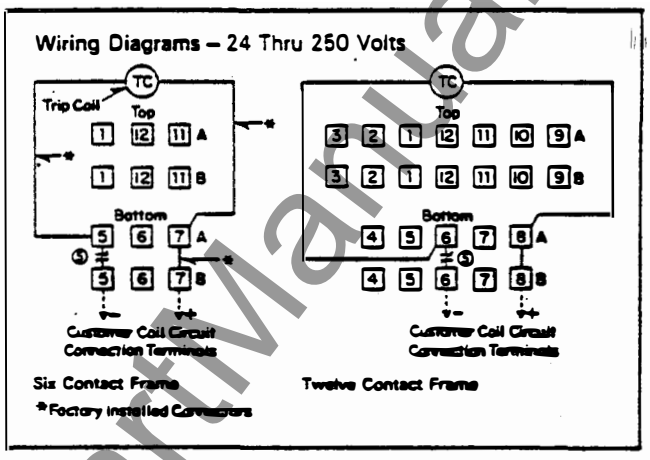

Figure 1

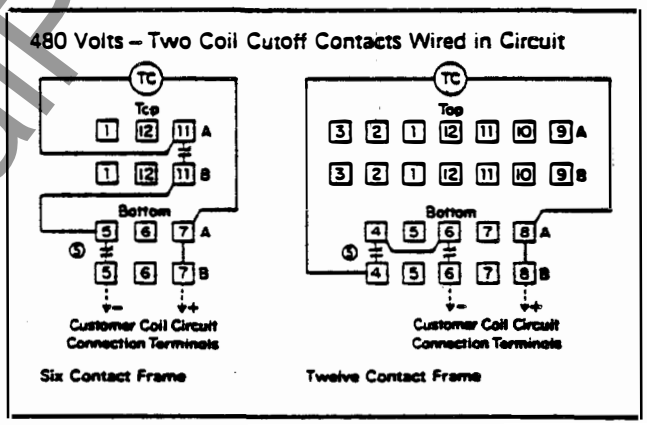

Figure 2

The Type WL-2 Switch is not available with all contacts normally closed or all normally open. Due to the nature of design, there is a combination of both normally open and normally closed contacts on each unit. These may be varied to best suit the intended application. (Refer to contact tabulation section of Descriptive Bulletin 34-253.)

Important Note: The magnet-coil assembly used on type WL-2 switches is designed for intermittant duty only; this coil assembly has no continuous duty rating. The design incorporates a contact used to cutoff all current flow when the switch is tripped. No device should be applied to