

KS-14741 PROGRAM TIMERS

PIECE-PART DATA AND REPLACEMENT PROCEDURES

1. GENERAL

1.01 This section covers the information necessary for ordering parts to be used in the maintenance of the KS-14741 program timers. It also covers the approved procedures for replacing these parts.

1.02 This section is reissued to:

- Include the KS-14741 L9 and L10 timers
- Revise Table A
- Add a new 1.07
- Add a new 1.11
- Revise Fig. 2
- Add a new Fig. 5.

1.03 Timers identified as KS-14741 without a list number are the same as those identified as KS-14741 L1.

1.04 The KS-14741 L1 and L2 timers are identical to the L5 and L4 timers, respectively, except for the hour dial. Each L1 and L2 timer has a **DAY-NIGHT** dial whereas each L5 and L4 timer has a 24-hour dial. These timers operate on 115-volt 60-Hz power.

1.05 The KS-14741 L6 and L7 timers are identical to the L1 and L5, respectively, except for the power requirements. The L6 timer has a **DAY-NIGHT** dial whereas the L7 timer has a 24-hour dial. Both of these timers operate on 21-volt 60-Hz power.

1.06 Each KS-14741 L3 and L8 timer is equipped with a **DAY-NIGHT** dial and is identical except for different power requirements as shown in Table A.

1.07 ♦The KS-14741 L9 timer is identical to the L1 except the day cutout switch is wired differently. The KS-14741 L10 timer is identical to the L1 except the cam switch closure is different.♦

1.08 Table A lists the differences in features and power requirements.

1.09 The KS-14741 L100 dial kit consists of a 24-hour dial, a setscrew wrench, and an instruction sheet. It is to be used to convert existing L1 and L2 timers to L5 and L4 timers, respectively, if the conversion is so desired.

1.10 The KS-14741 L150 and L151 terminal insulator kits each consist of one terminal block cover, two threaded spacers, two knurled thumb screws, and an instruction sheet. The L150 kit has a 5-place terminal block cover and is intended for use on L1, L2, L4, L5, L6, L7, ♦L9, and L10♦ timers. The L151 kit has a 6-place terminal block cover and is intended for use on L3 and L8 timers. These kits, when installed on timers presently in the field, offer protection to operating personnel making internal adjustments to these units against hazardous currents present at the terminal block.

1.11 ♦Part 2 of this section covers part numbers and the corresponding parts which it is practicable to replace in the field in the maintenance of these timers. No attempt should be made to replace parts not designated. Part 2 also contains explanatory figures showing the different parts.♦

1.12 Part 3 of this section covers the approved procedures for the replacement of the parts covered in Part 2.

TABLE A

| KS-14741 PROGRAM TIMER | TYPE OF HOUR DIAL | ADJUST- ABLE CAMS | TYPE OF SWITCHES | OPERATE VOLTAGE 60 Hz |
|------------------------------|-------------------------|-------------------------|------------------------|-----------------------------|
| L1 | Day-Night | Yes | Open | 115 |
| L2 | Day-Night | Yes | Open | 115 |
| L3 | Day-Night | No | Closed | 21 |
| L4 | 24-Hour | Yes | Open | 115 |
| L5 | 24-Hour | Yes | Open | 115 |
| L6 | Day-Night | Yes | Open | 21 |
| L7 | 24-Hour | Yes | Open | 21 |
| L8 | Day-Night | No | Closed | 115 |
| L9 | Day-Night | Yes | Open | 115 |
| L10 | Day-Night | Yes | Open | 115 |

2. PIECE-PART DATA

2.01 The figures included in this part show the various piece parts in their proper relation to other parts of the timer. Piece-part numbers are given together with the names of parts as listed by the Western Electric Company Purchased Products Merchandise Department. Where these names differ from those in general use in the field, the latter names in some cases are shown in parentheses.

2.02 Information enclosed in parentheses () is not ordering information. It may be reference to notes, parts referred to in other portions of the section and not considered replaceable, or where the name in general use in the field differs from the name assigned by the manufacturer.

2.03 When ordering parts that have a P number, give both the number and the name of the piece part; eg, P-210810 screw. When ordering parts that have a number which is not a P number, give the number and name of the part and state the part is for the KS-14741 (L1, L2, L3, L4, L5, L6, L7, L8, L9, or L10 program timer); eg, EZ-31A trip arm switch for the KS-14741 L1 program timer. If the part has no number, give the name and state the part is for the KS-14741 L1 program timer; eg, day wheel operating tab for the KS-14741 program timer. Do not refer to the BSP number or to any information shown in parentheses following the part number.

3. REPLACEMENT PROCEDURES

3.01 *List of Tools and Materials*

| CODE OR SPEC NO. | DESCRIPTION |
|---------------------|--|
| TOOLS | |
| 33 | 11/32-inch hex. single-end socket wrench |
| R-2559 | Power test lamp |
| R-2959 | Allen socket screw wrench |
| — | 3-inch C screwdriver |
| AT-7860 | B long-nose pliers |

MATERIALS

KS-14741 L100 Dial kit

3.02 Before making any replacement of parts on the timer, take the associated circuit out of service in accordance with approved procedures.

3.03 No replacement procedures are specified for screws or other parts where the procedure consists of a simple operation.

3.04 After making any replacement of parts on the timer, the part or parts replaced shall meet the readjust requirements involved as specified

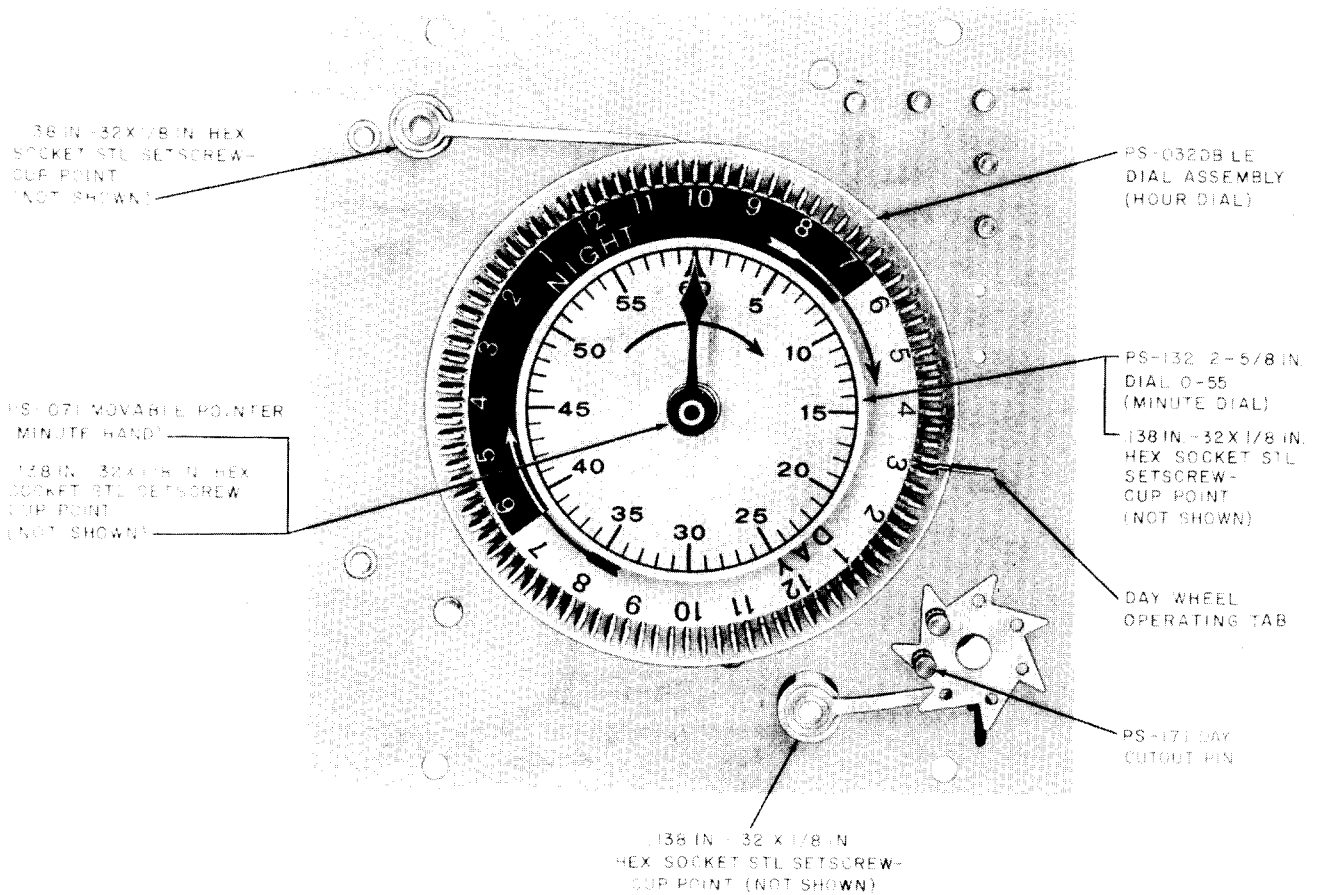


Fig. 1—KS-14741 L1, L2, L3, L6, L8, L9, and L10 Program Timers—Front View

in Section 030-157-701. Other parts whose adjustments may have been directly disturbed by the replacing operations shall be checked to meet the readjust requirements and an overall operation check shall be made of the timer before restoring the circuit to service.

3.05 Removing Timer From Mounting (See Note.)

Caution: Before removing the timer from its mounting, remove the timer fuse from the power distribution cabinet to disconnect the voltage supply.

Note: It is not necessary to remove the timer from its mounting in order to replace the minute hand, day wheel operating tab, or the day cutout pins.

If the timer is provided with a rear cover on the mounting panel, remove the cover using the 3-inch C screwdriver. If the timer is in a cabinet of a wall- or column-mounted control panel, unlock the cabinet by depressing the button on the right and swinging the front portion of the cabinet outward. Check that the power is removed from the timer using the 2559 power test lamp. Apply the test lamp leads to the terminals of the terminal block to which the timer motor leads are connected. (See Fig. 7.) After removing the knurled thumb screws which secure the terminal block cover, tag and disconnect the timer leads and remove the timer from its mounting using the screwdriver and the 33 socket wrench.

3.06 Minute Hand, Minute Dial, and Hour Dial: (All Lists) To replace these parts, proceed as follows.

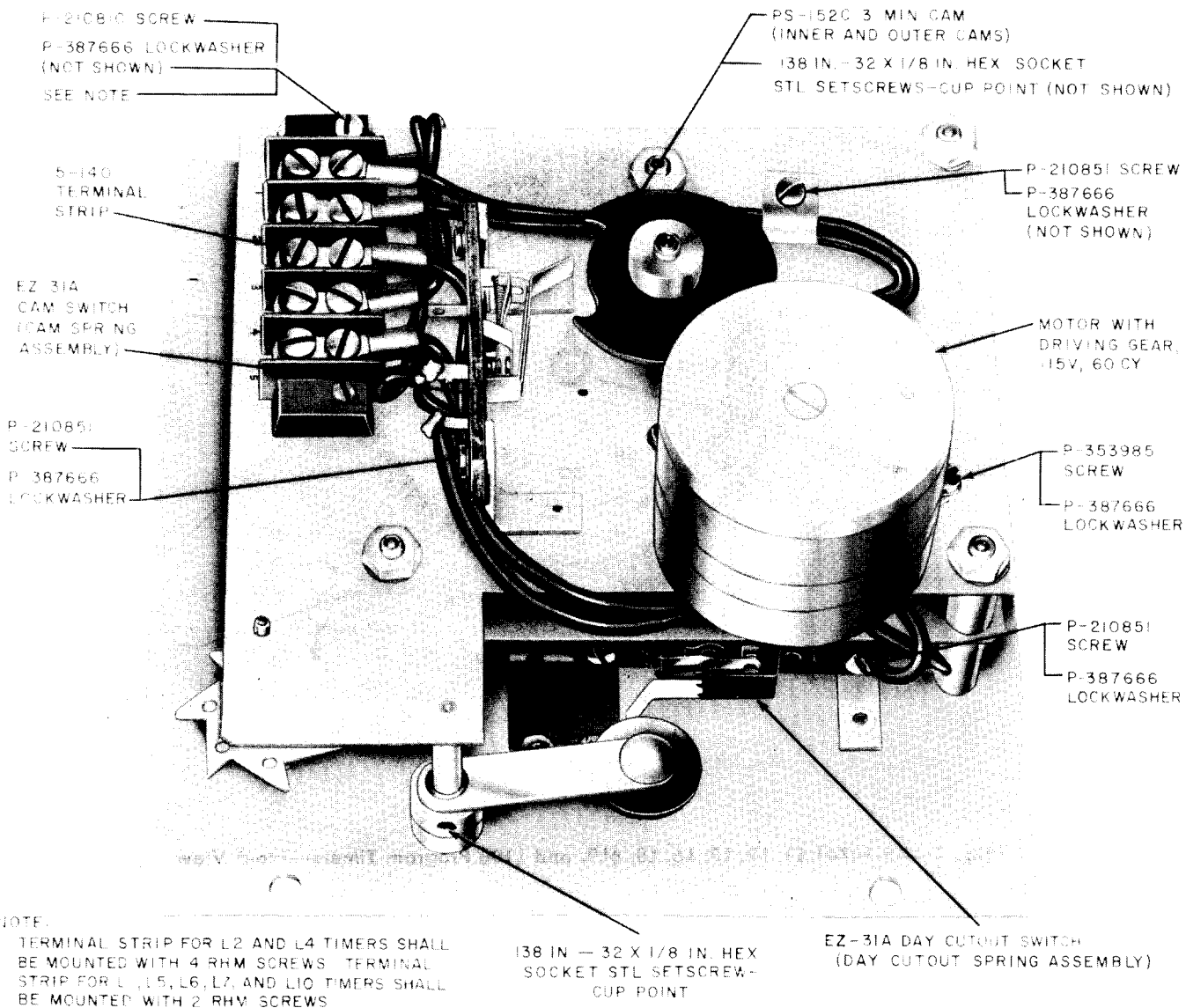


Fig. 2—KS-14741 L1, L2, L4, L5, L6, L7, and L10 Program Timers—Rear View

(1) **Minute Hand:** Loosen the minute hand setscrew with the R-2959 wrench and remove the hand from the shaft. Mount the new hand on the shaft and position it in accordance with the freedom of movement and synchronization of minute hand with hour dial requirements in Section 030-157-701. Securely tighten the setscrew.

(2) **Minute Dial:** Remove the minute hand, as covered in (1). Loosen the minute dial setscrew in the hub on the rear of the dial with the R-2959 wrench. Remove the minute dial from the shaft. Mount the new minute dial on

the shaft and position the dial so the 60 mark is centered vertically. Securely tighten the setscrew. Remount the minute hand, as covered in (1).

(3) **Hour Dial:** Remove the minute hand and minute dial, as covered in (1) and (2). Slide the hour dial outward to disengage the dial gear from the pinion and remove the hour dial from the shaft. Mount the new hour dial on the shaft and engage the dial gear with the pinion. Remount the minute dial and the minute hand, as covered in (1) and (2).

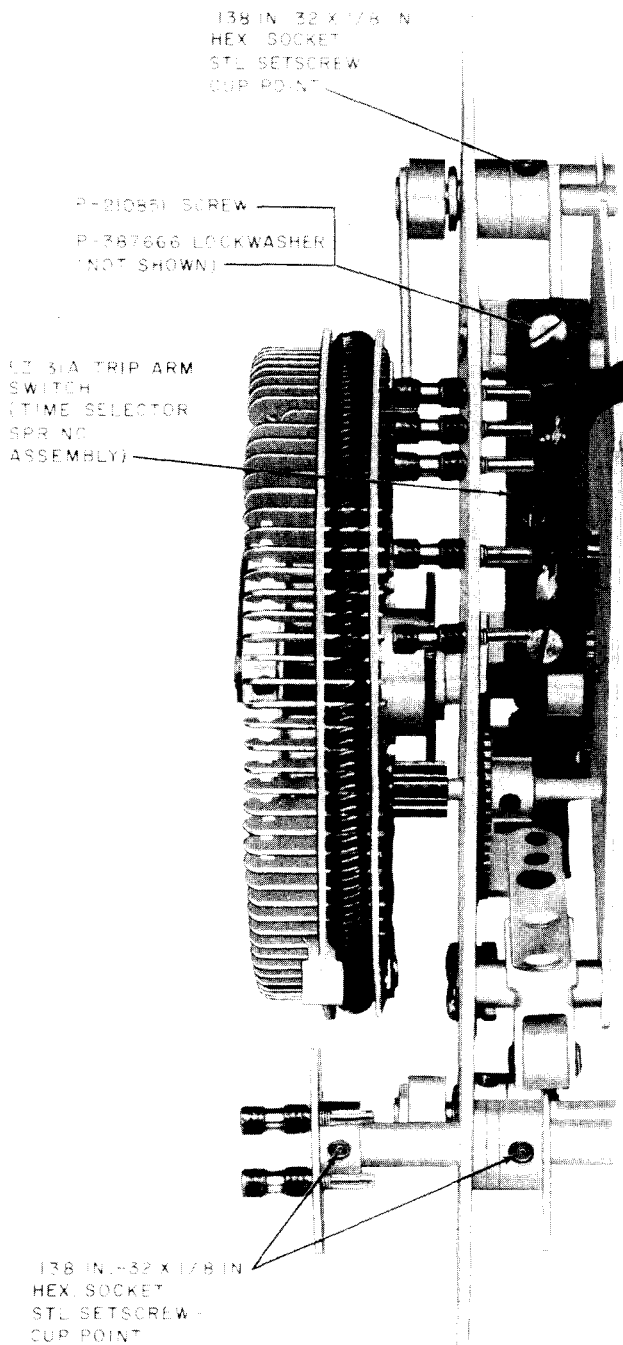


Fig. 3—KS-14741 L1, L2, L4, L5, L6, L7, L9, and L10 Program Timers—Partial Side View

3.07 Motor: (All Lists Except Where Noted)

To replace the motor, remove the terminal block cover; then remove terminal screws 1 and 2 to which the motor leads are connected using the 3-inch C screwdriver. Loosen the motor lead clip

mounting screw and remove leads from under the clip. On the **L1, L2, L4, L5, L6, L7, L9, and L10 only**, rotate the cams so the low portion of both cams is adjacent to the motor. Remove the motor mounting screws and lockwashers using the 3-inch C screwdriver and remove the motor. Place the new motor on the timer and partially tighten the mounting screws, making sure the lockwashers are under the heads of the screws. Position the motor so the gear mating with the motor pinion has slight backlash and securely tighten the mounting screws. Place the tips of the leads on the proper terminals and tighten the terminal screws. Replace the terminal block cover. Position the leads under the clip and tighten the clip mounting screw.

3.08 Terminal Strip: (All Lists) To replace the terminal block, remove the knurled thumb screws which secure the terminal block cover and then remove cover. Remove the terminal screws to which the leads are connected using the 3-inch C screwdriver. Tag and remove the leads. Remove the terminal block mounting screws and/or the threaded spacers (Fig. 9) and remove the terminal block. Mount the new terminal block and tighten the mounting screws and/or the threaded spacers, making sure the lockwashers are under the heads of the screws or threaded spacers. Remove the inner terminal screws from the new terminal block. Place the tips of the leads on the proper terminals of the new block and securely tighten the terminal screws. Replace the terminal block cover, securing it with the knurled thumb screws. Make sure the numbers on the terminal block cover correspond to the terminals numbers which are stamped on the plate on which the terminal block is mounted.

3.09 Cam Switch: (L1, L2, L4, L5, L6, L7, L9, and L10 Only) To replace the cam switch assembly, unsolder the leads. Remove the switch mounting screws and lockwashers using the 3-inch C screwdriver and remove the switch. Mount the new switch and securely tighten the mounting screws, making sure the lockwashers are under the heads of the screws. Solder the leads to the proper terminals on the new switch.

3.10 Day Cutout Switch: (All Lists) To replace the day cutout switch, remove the mounting screws and lockwashers (and on the L3 and L8 timers two bushings under the switch) using the 3-inch C screwdriver and remove the switch. Unsolder the leads and transfer them to the proper terminals on the new switch. Mount the new switch

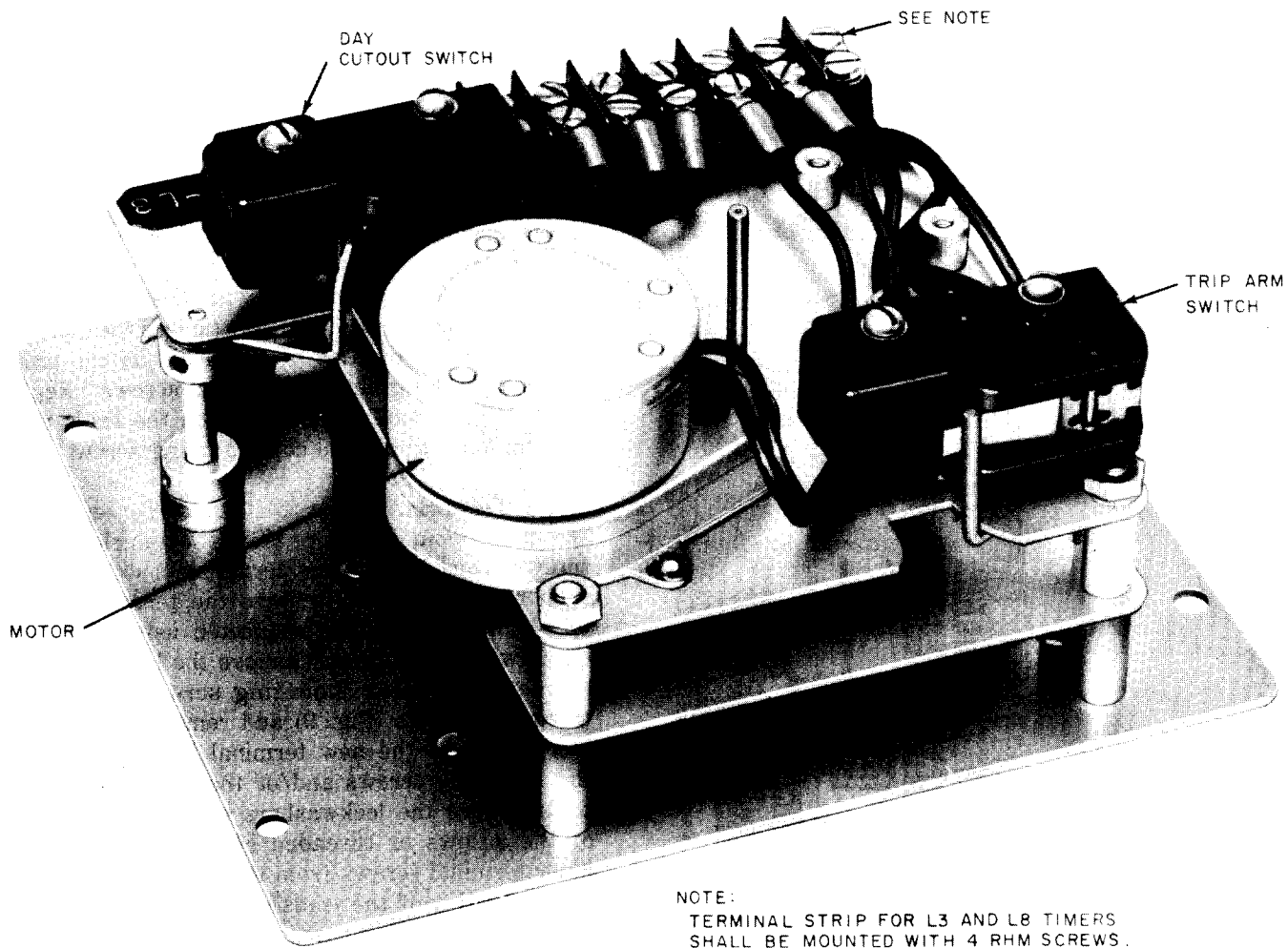


Fig. 4—KS-14741 L3 and L8 Program Timers—Rear View

and securely tighten the mounting screws, making sure the lockwashers are under the heads of the screws and in the case of the L3 and L8 timers that the bushings are between the bottom of the switch and the plate on which it is mounted. Use of the B long-nose pliers will facilitate inserting the mounting screws with the lockwashers in the mounting holes of the switch.

3.11 Inner and Outer Cams: (L1, L2, L4, L5, L6, L7, L9, and L10 only) Replace the inner and outer cams as a unit as follows. Loosen the inner cam setscrew with the R-2959 wrench and remove both cams. Mount the new cam assembly on the shaft and position the cams in accordance with Section 030-157-701.

3.12 Trip Arm Switch: (All Lists) To replace the trip arm switch, remove the switch

mounting screws and lockwashers (and on the L3 and L8 timers two bushings under the switch) using the 3-inch C screwdriver. Unsolder the leads and transfer them to the proper terminals on the new switch. Mount the new switch and securely tighten the mounting screws, making sure the lockwashers are under the heads of the screws and in the case of the L3 and L8 timers that the bushings are between the bottom of the switch and the plate on which it is mounted.

3.13 Replacement of the DAY-NIGHT Hour Dial on the L1 and L2 Timers With a 24-Hour Dial: Existing KS-14741 L1 and L2 timers may be converted to L5 and L4 timers, respectively, by replacing the present DAY-NIGHT hour dial with a 24-hour dial. (See Fig. 8.) This new dial is part of the KS-14741 L100 dial kit

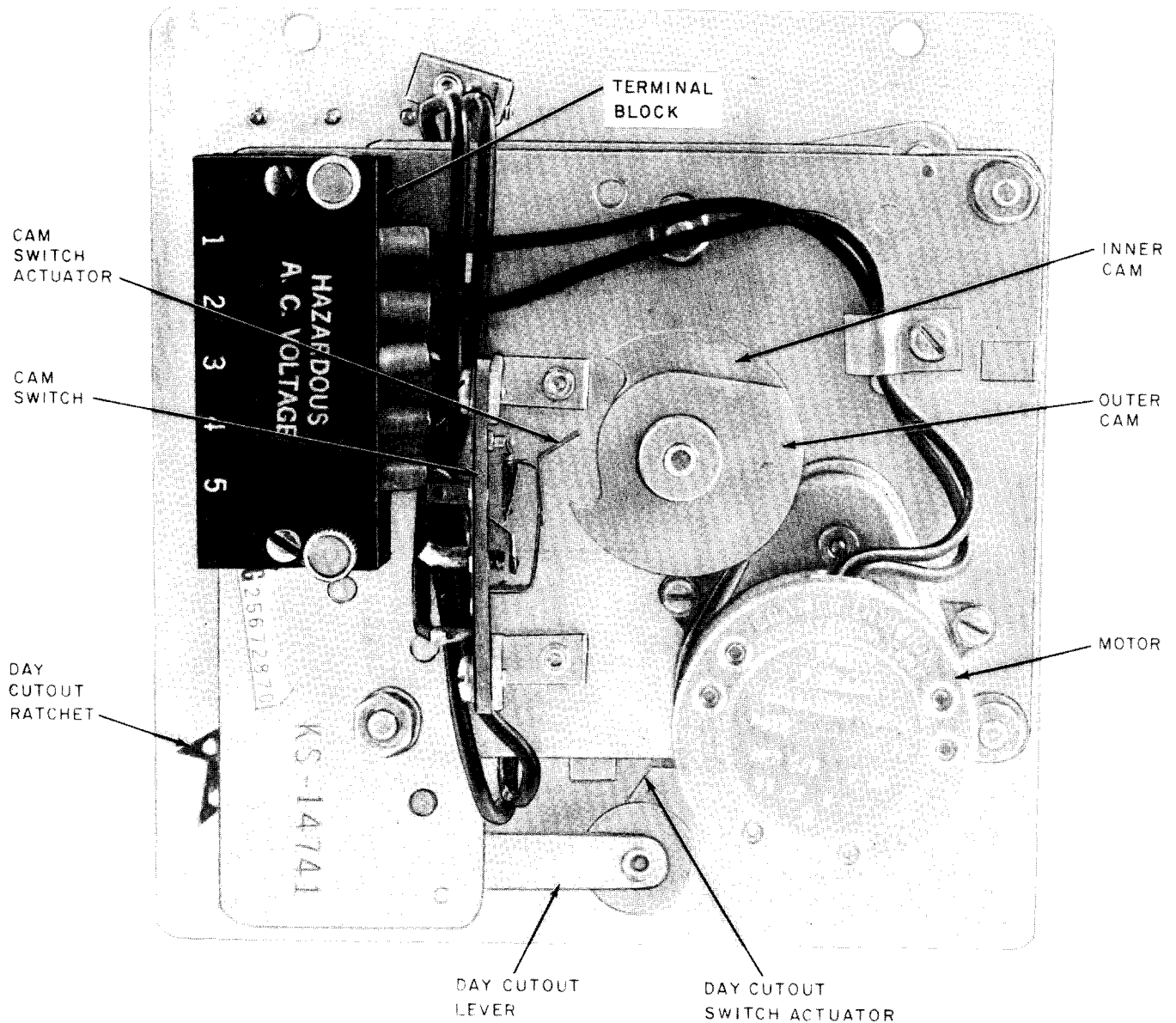


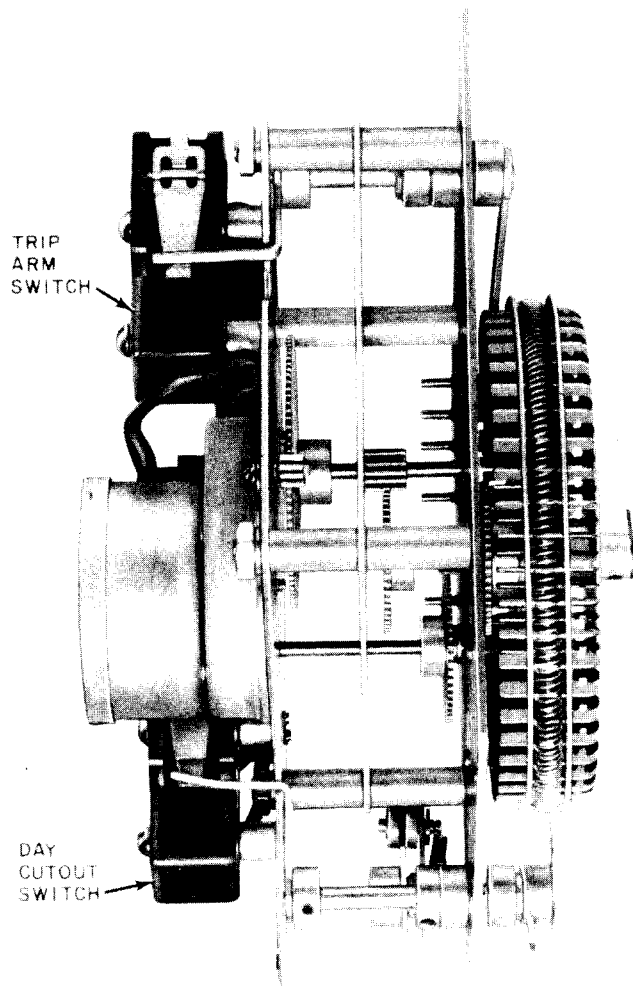
Fig. 5—KS-14741 L9 Program Timer—Rear View

which includes complete instructions on how to make the conversion.

3.14 Installation of Terminal Insulator Kit:

Terminal insulator kits KS-14741 L150 and L151 are to be installed on 5- and 6-place terminal

blocks, respectively. (See Fig. 9.) Each kit includes complete installation instructions. During installation, caution should be observed that the terminal numbers on the terminal block cover correspond to the terminal numbers which are stamped on the plate on which the terminal block is mounted.



**Fig. 6—KS-14741 L3 and L8 Program Timers—Partial
Side View**

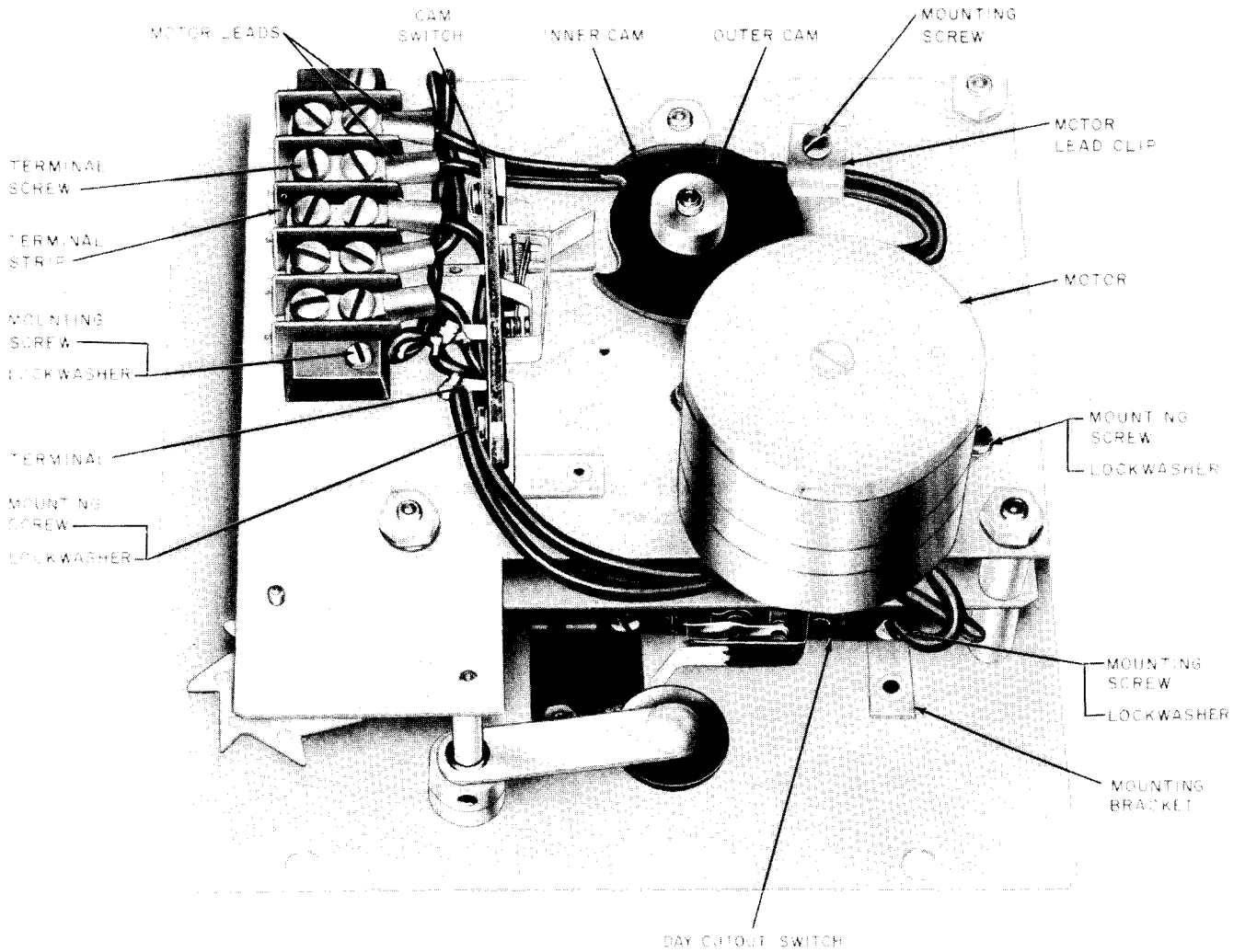


Fig. 7—KS-14741 L1, L2, L4, L5, L6, L7, and L10 Program Timers—Rear View

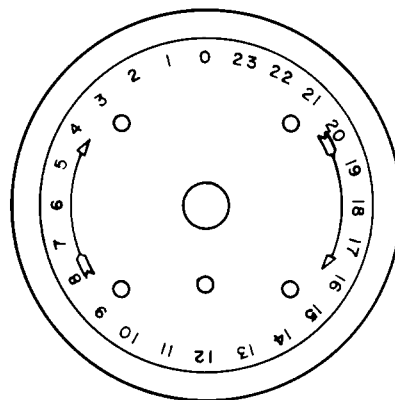


Fig. 8—0-23 Hour Dial (Part of KS-14741 L100 Timer Dial Kit)

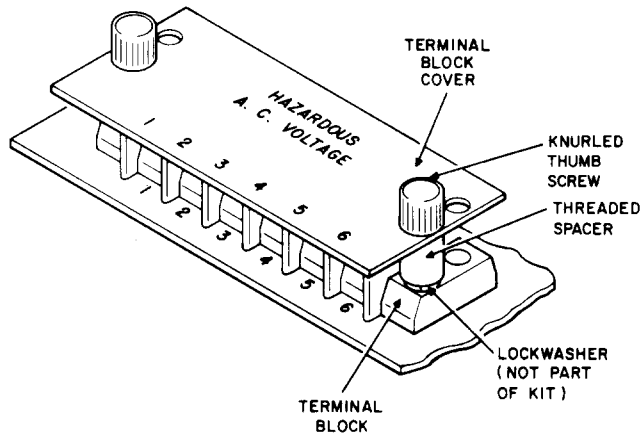


Fig. 9—KS-14741 L150 and L151 Terminal Insulator Kits (L151 Shown)