



**UNITED
TECHNOLOGIES
CARRIER**

Commercial Division
Carrier Corporation

BULLETIN: CA-SB-19-C-64-22

DATE: 9/28/64

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SERVICE BULLETIN

SUBJECT:

ANTI - RECYCLE TIMER CIRCUIT

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PURPOSE

To forward information concerning the anti-recycle timer circuit, the 19C8 machine oil pump time-delay relay, and a change in the 2CR relay.

MACHINES AFFECTED

All standard 19C machines.

INFORMATION

Anti-Recycle Timer Circuit

The function of the anti-recycle timer circuit is to prevent the machine from starting more than once every 20 minutes. Figures 1 and 2 show the actual wiring for the 19C3-C7 and 19C8 machine circuits, respectively, which can be used for troubleshooting. The anti-recycle timer circuit operates as follows when the Start button is depressed:

1. The R1 control relay in the starting circuit (not shown) is energized, closing the N.O. (normally open) R1 contacts.
2. The 2CR relay is energized, closing the N.O. 2CR contacts.
3. Closing the 2CR contacts energizes the timer clutch and the R5 relay.
4. The energized R5 relay closes the N.O. R5 contacts and opens the N.C. (normally closed) R5 contacts.
5. Opening the N.C. R5 contacts causes the circuit to the 1CR relay to open if the machine is shut down before the 20-min timer clutch has timed out.
6. Twenty minutes after the Start button is depressed, the timer will de-energize and open the T contacts.
7. The R5 relay will de-energize, and the R5 contacts will return to their normal positions.
8. The machine may now be restarted by depressing the Start button.

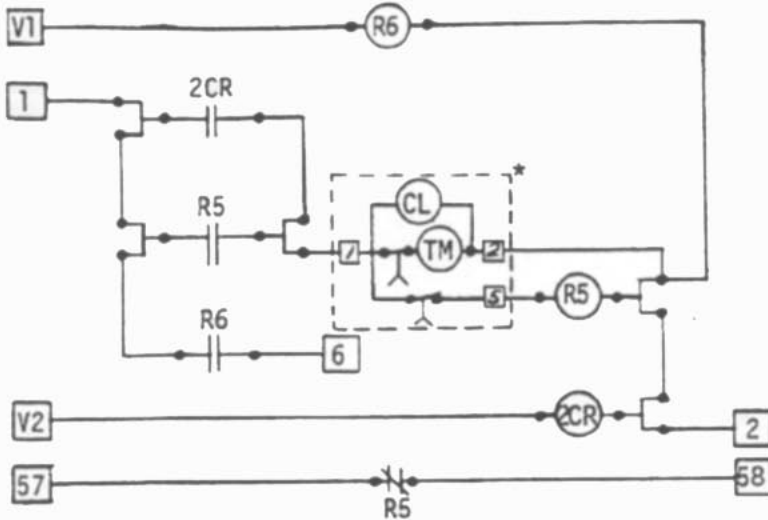
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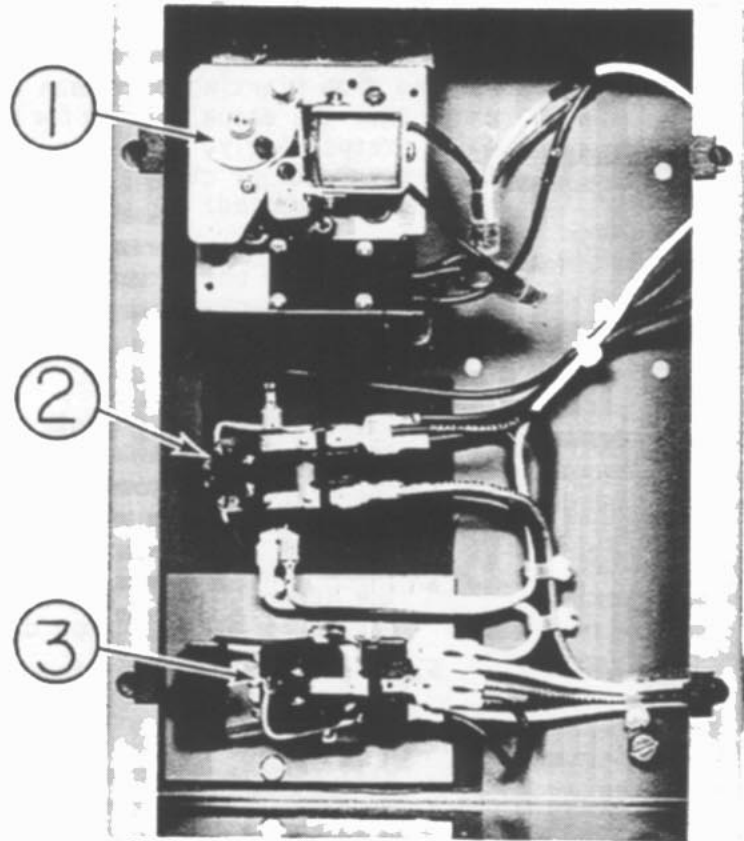
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*Timer is shown by broken-line box. Terminals 1, 2, and 5 (inside the box) are on the timer.

Anti-Recycle Circuit, 19C3-C7 Machines

- 1. Timer
- 2. R5 Relay
- 3. 2CR Relay



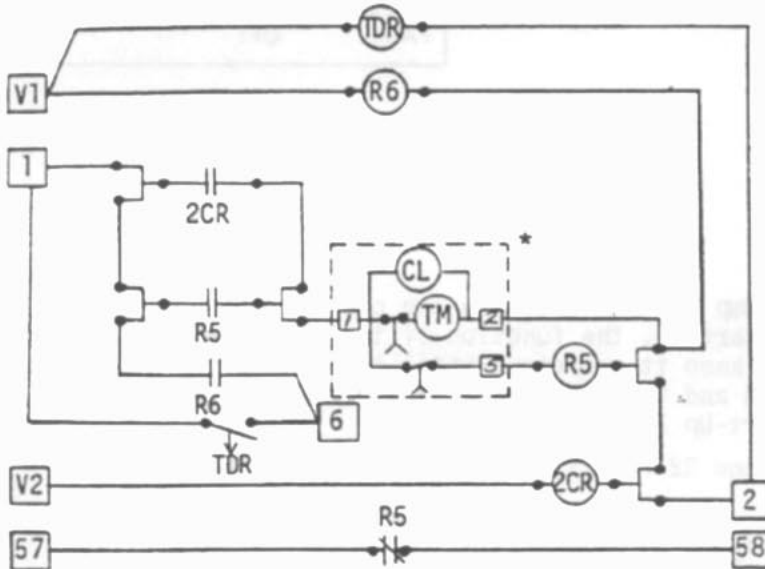
Timer Relay Box, 19C3-C7 Machines

Figure 1



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*Timer is shown by broken-line box. Terminals 1, 2, and 5 (inside the box) are on the timer.

Anti-Recycle Circuit, 19C8 Machines

- 1. Timer
- 2. R5 Relay
- 3. 2CR Relay
- 4. Time-Delay Relay

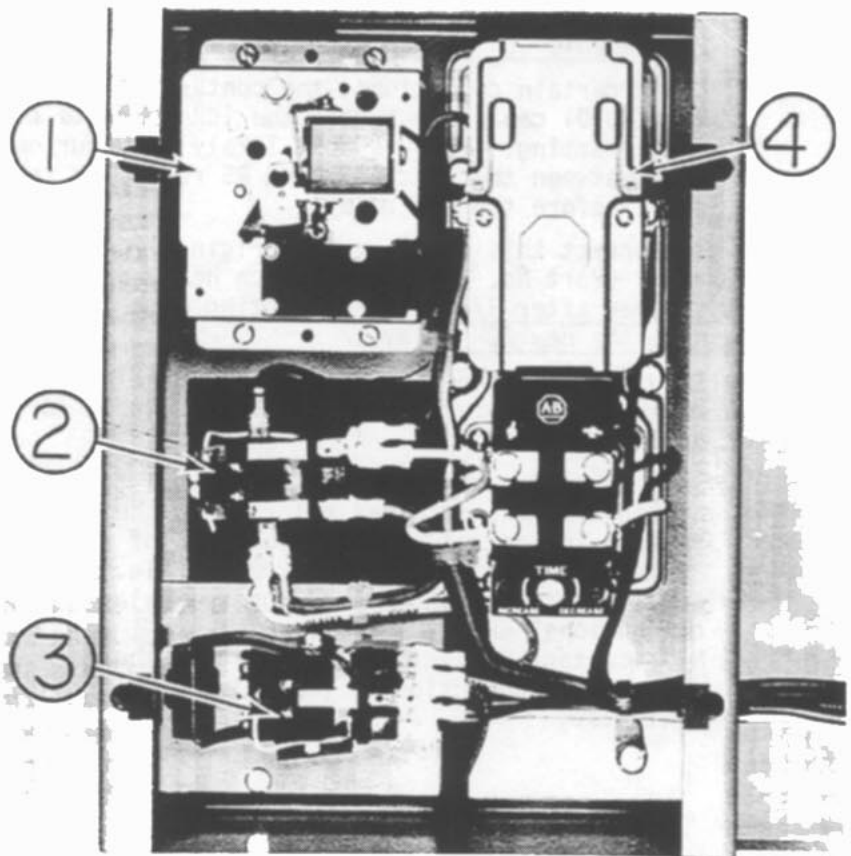


Figure 2



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3.2 Oil Pump Relay

All 19C machines have an R6 oil pump relay mounted in the control section of the console. During machine start-up, the function of this relay is to energize the oil pump starter and keep it energized until the compressor motor windings are delta connected and the R2 relay is energized. (See wiring diagram in 19C Initial Start-Up Instructions.)

On 19C3-C7 machines, both the R6 and R2 relays are de-energized on shut-down, stopping the oil pump.

On 19C8 machines, the R6 relay has a time-delay feature which is actually a time-delay relay (TDR) wired in parallel with the R6 relay (see Fig. 2). When the Stop button is pressed, the time-delay relay remains energized for three minutes, keeping the oil pump running for that time during compressor coastdown.

3.3 2CR Recycle Control Relay

Under certain conditions, the contacts of the original 2CR relay (Part No. HN61ZJ010) can close before the ICR contacts close, preventing the machine from starting. This is most likely to occur on machines where the response time between the 2CR, ICR, and R5 relays is such that the R5 relay energizes before the ICR relay.

To correct this problem, the original 2CR relay has been replaced with a relay (Part No. HN67ZJ115) which has a built-in time delay. All consoles shipped after 9/30/63 and starting with Console Serial No. 70254 and higher have the new 2CR relay.

It is recommended that the HN61ZJ010 relay be replaced with an HN67ZJ115 relay when start-up problems, attributable to the original 2CR relay, are experienced.

Schematically, the wiring is identical for both relays. The wires disconnected from the original relay go to their equivalent terminals on the new relay. The actual physical location of the terminals on the two relays is different. The original 2CR relay (Fig. 3) and the new 2CR relay (Fig. 4) are shown for comparison purposes. Relay connections ① and ④ (the coil connections) are wired to Terminals V₂ and 2. Relay connection ③ (the N.O. contact connection) is wired to the R5 N.O. contact and to Terminal 1. Relay connection ② (the common connection) is wired to the R5 common contacts.



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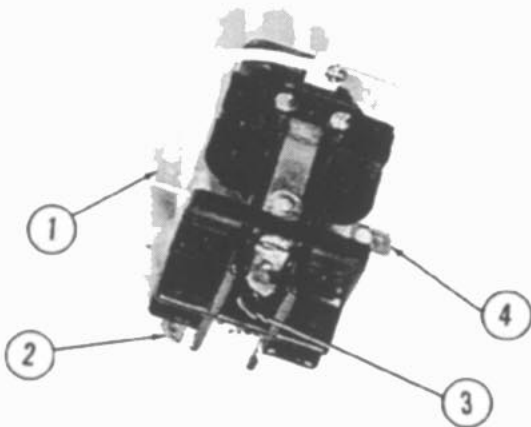
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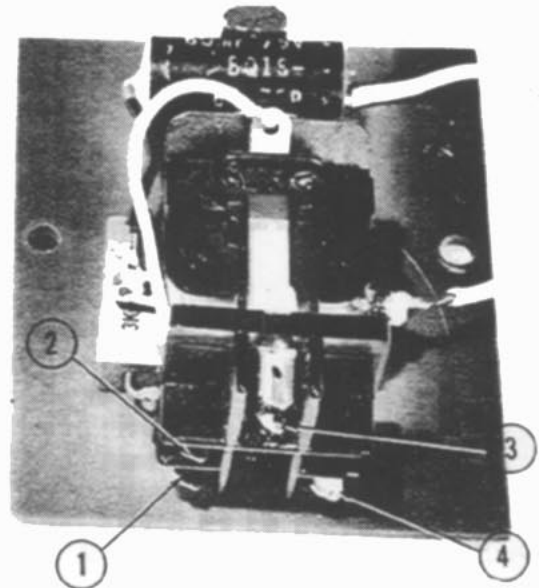
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ORIGINAL 2CR RELAY
PART # HN61ZJ-010

FIGURE 3



NEW 2CR RELAY
PART # HN67ZJ-115

FIGURE 4