

Wiring Diagrams

60 Hz

INDEX

UNIT 38HD	VOLTS-PH-(60-HZ)	FIG.	WIRING LABEL NO.
018-060	208/230-1	1	38HD500024
036-060	208/230-3, 460-3	2	38HD500022
38QR			
018-060	208/230-1	3	38QR500105
036-060	208/230-3	4	38QR500081
036-060	460-3	5	38QR500104

Time Delay Timing Sequence (38QR) Fig. 6
Time Guard®II Control Circuit Timing Sequence Fig. 7
Defrost Board Timing Sequence (38QR) Fig. 8

NOTES

- Compressor and fan motor are thermally protected. Three-phase motor protected against primary single phasing conditions.
- Wire in accordance with National Electrical Code (NEC) and local codes. Must replace any original wire with 90°C wire or its equivalent.
- The CLO locks out the compressor to prevent short cycling on compressor overloads and safety devices. Before replacing CLO check these devices.
- If indoor section has a transformer with a grounded secondary, connect the grounded side to C (located on low voltage board for 38HD - on defrost board for 38QR).
- Use minimum 60°C wiring for field power wiring.

LEGEND

BRK — Break With Amp Turns
W/AT — Compressor Contactor
C — Capacitor
CAP. — Crankcase Heater
CH — Compressor Lockout
CLO — Compressor Motor
COMP — Current Transformer
CT — Defrost Board
DFB — Defrost Thermostat
DFT — Equipment
EQUIP — Ground
GND — High Pressure Switch
HPS — Lockout Relay
LOR — Low Pressure Switch
LPS

OFM — Outdoor Fan Motor
OFR — Outdoor Fan Relay
PL — Plug
RVS — Reversing Valve Solenoid
SC — Start Capacitor
SR — Start Relay
TB — Terminal Block
TDR — Time Delay Relay
TG — Time Guard®II Control Circuit
Terminal (PCB, Field)
Terminal (PCB, Factory)
Terminal (Marked)

Terminal (Unmarked)
Terminal Block
Splice
Factory Wiring
Field Control Wiring
Field Power Wiring
Option or Accessory Wire
PCB Run

**FILE
COPY**

SEQUENCE OF OPERATION

38HD

ON A CALL FOR COOLING:

1. Control voltage from transformer energizes thermostat (24 v).
2. At thermostat, 24 v is switched to G and Y.
3. 24 v from thermostat G energizes fan relay at indoor fan coil, and indoor fan motor runs.
4. 24 v from thermostat Y energizes the logic in the LOR and the contactor coil at the outdoor unit. Compressor and outdoor fan motor run.
5. If the HPS, internal protector of the compressor, or LPS open, the 24 v to the contactor coil is interrupted, the compressor and outdoor fan motor stop, and the LOR keeps the circuit open until reset by stopping and re-starting the 24-v power at the thermostat.

38QR

ON A CALL FOR COOLING:

1. Control voltage from transformer energizes thermostat (24 v).
2. At thermostat, 24 v is switched to G, O and Y.
3. 24 v from thermostat G energizes fan relay at indoor fan coil and indoor fan motor runs.
4. 24 v from thermostat O energizes RVS at outdoor unit through O on outdoor unit defrost board.
5. 24 v from thermostat Y energizes the logic in the LOR and the contactor coil at the outdoor unit. Compressor and outdoor fan motor run.
6. If the HPS, internal protector of the compressor, or LPS open, the 24 v to the contactor is interrupted, the compressor and outdoor fan motor stop, and the LOR keeps the circuit open until reset by stopping and restarting the 24-v power at the thermostat.

ON A CALL FOR HEATING:

1. Control voltage from transformer to thermostat (24 v).
2. At thermostat, 24 v is switched to G, Y and R.
3. 24 v from thermostat G energizes fan relay at indoor fan coil and indoor fan motor runs.
4. 24 v from thermostat Y energizes the logic in the LOR and the contactor coil at the outdoor unit. Compressor and outdoor fan motor run.
5. 24 v from thermostat R energizes the logic in the DFB and starts the defrost timer.
6. Once every 90 minutes of run time, the DFB logic checks the DFT. If the DFT is open, the unit continues heating operation. If the DFT is closed, the DFB logic switches the unit into defrost mode.

IN THE DEFROST MODE:

1. DFB switches 24 v to O and energizes RVS.
2. DFB switches 24 v to K1 relay, energized relay stops outdoor fan motor operation.
3. DFB switches 24 v to W2 which energizes electric heat relay in indoor fan coil and starts the auxiliary electric heaters if present. The signal from W2 is also sent to the TDR (normally open, delay on break) which bypasses the LPS during defrost and 135 seconds following defrost termination.
4. DFB logic checks the 10-minute internal timer and DFT. If DFT opens in less than 10 minutes, DFB switches back to normal heating mode. If DFT remains closed, DFB keeps unit in defrost mode for 10 minutes and then switches back to normal heating mode.
5. During heating or defrost, if the HPS, internal protector of the compressor, or LPS (after the bypass has timed out) open, the 24 v to the contactor coil is interrupted, the compressor and outdoor fan motor stop and the LOR keeps the circuit open until reset by stopping and re-starting the 24-v power at the thermostat.

2/17
1982

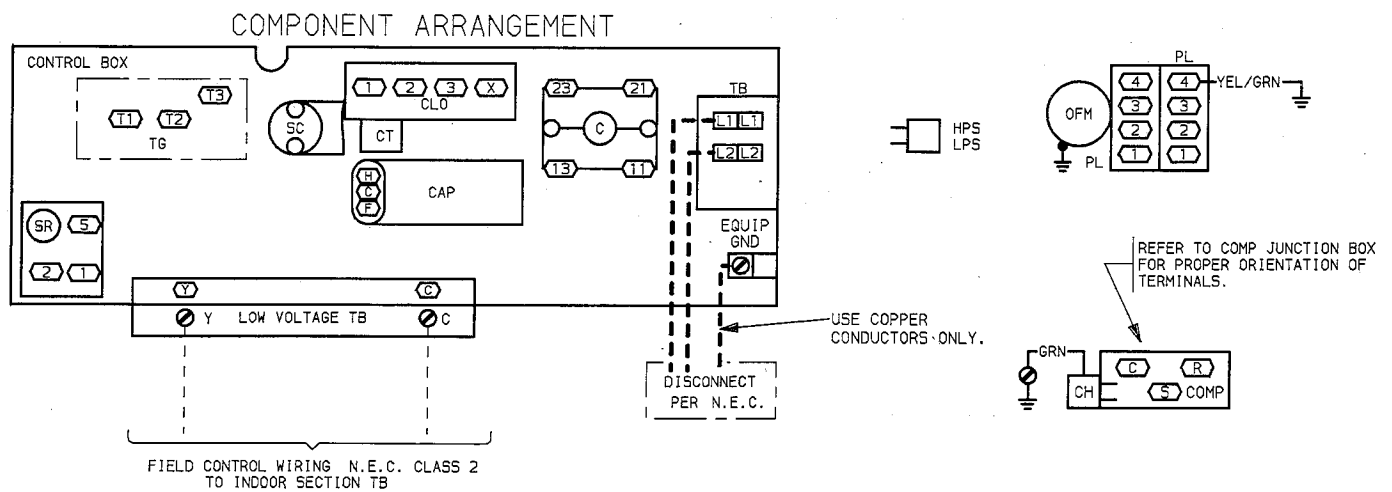
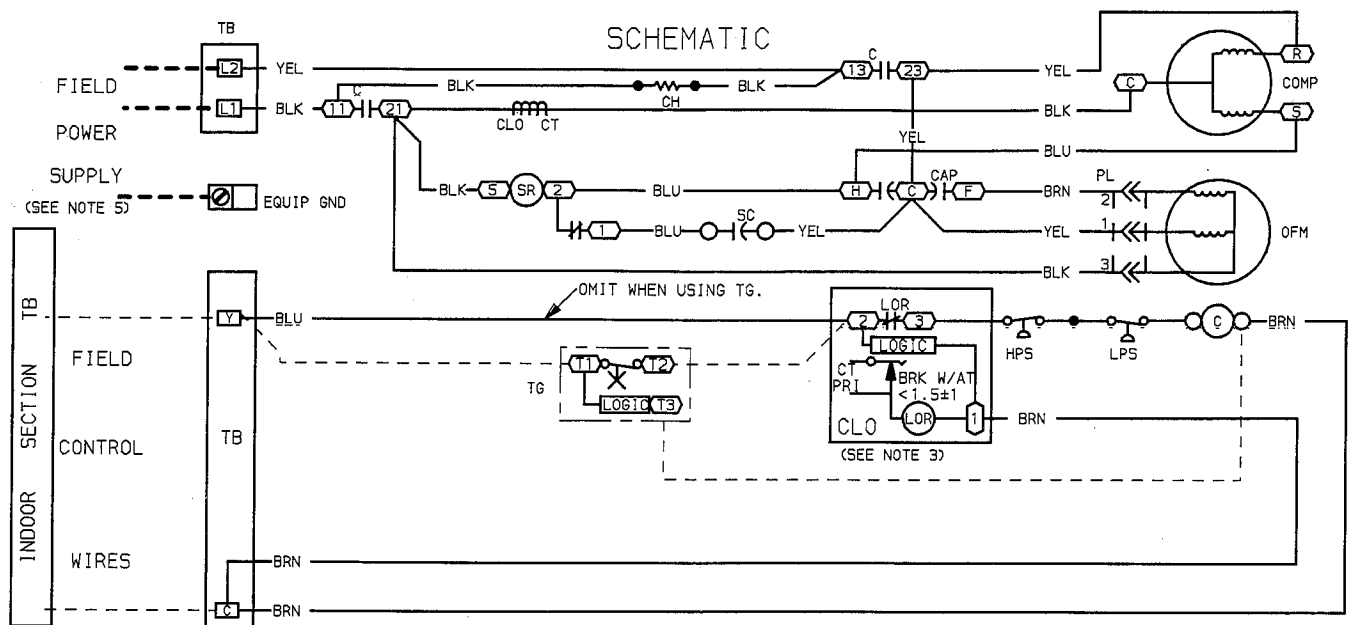


Fig. 1 – Wiring Diagram; Model 38HD018-060; 208/230-1

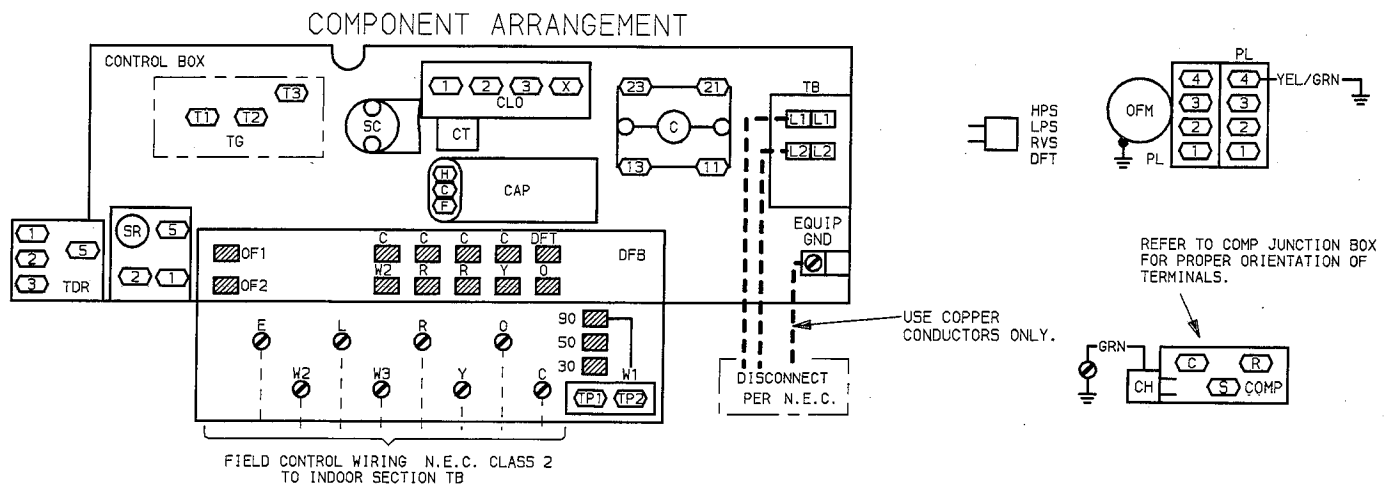
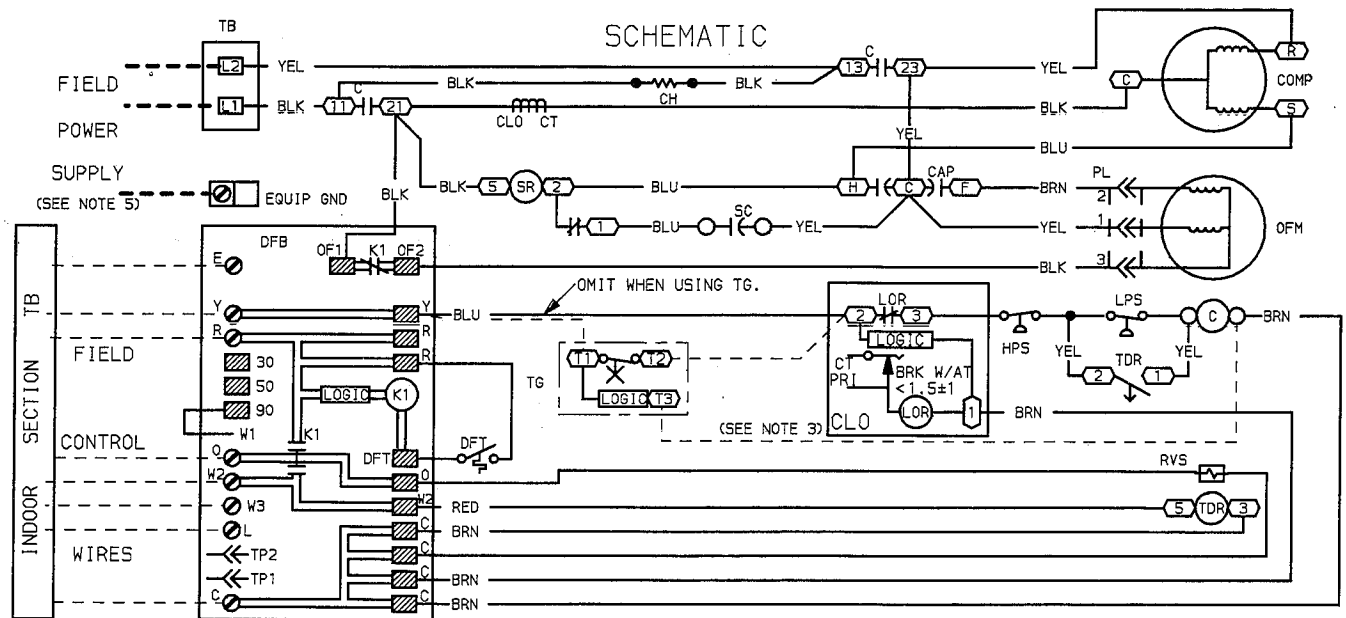


Fig. 3 — Wiring Diagram; Model 38QR018-060; 208/230-1

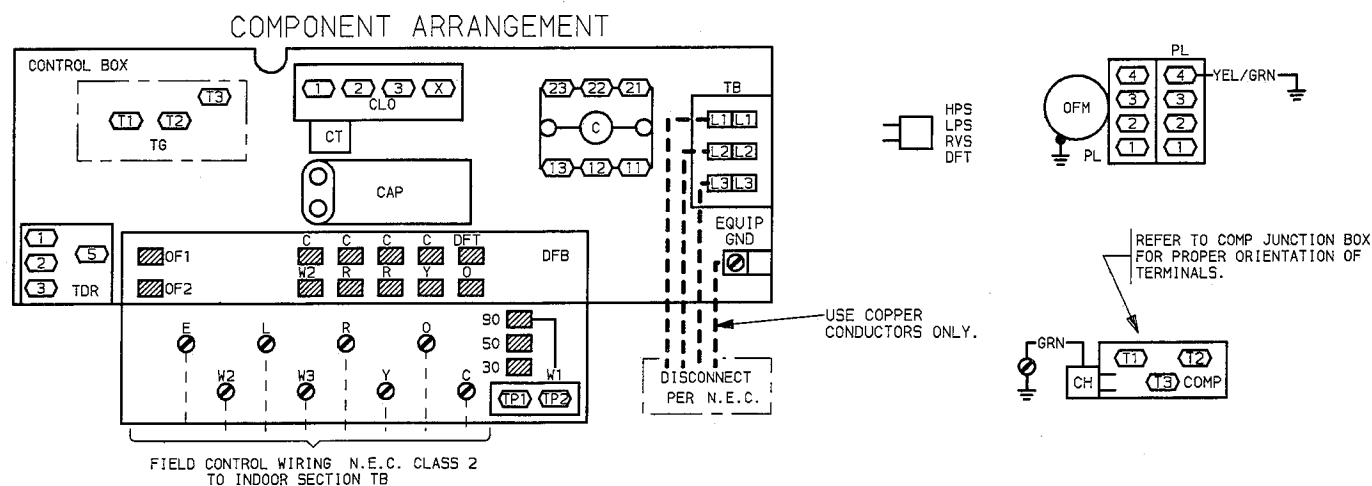
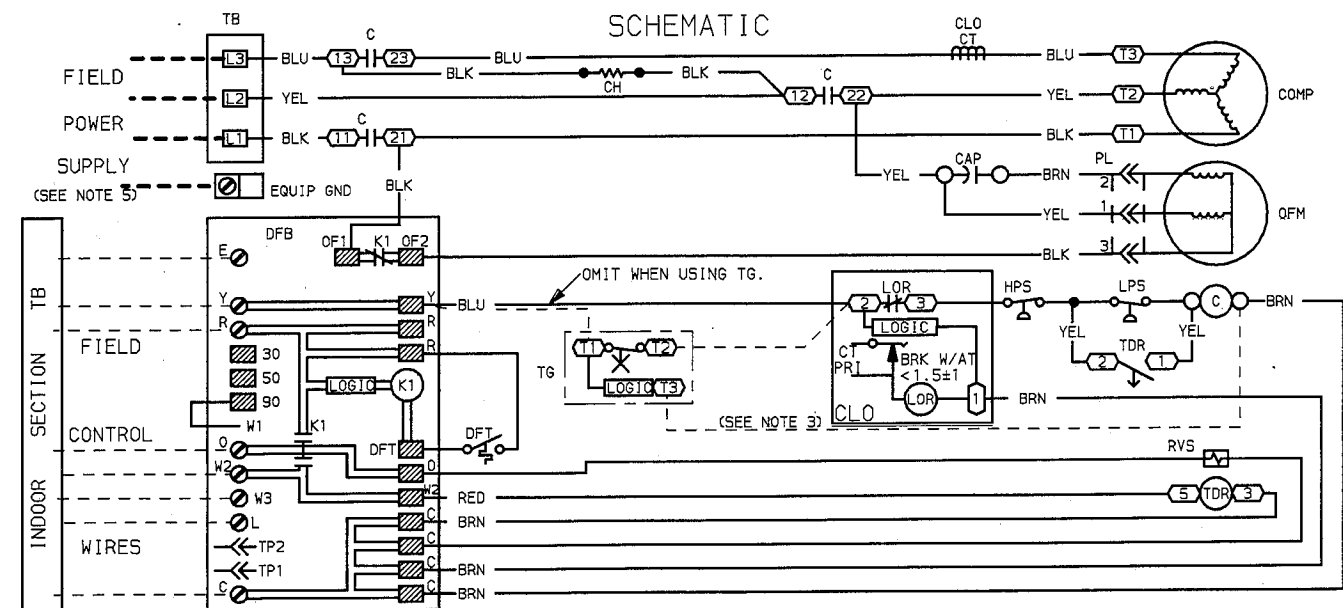


Fig. 4 — Wiring Diagram; Model 38QR036-060; 208/230-3

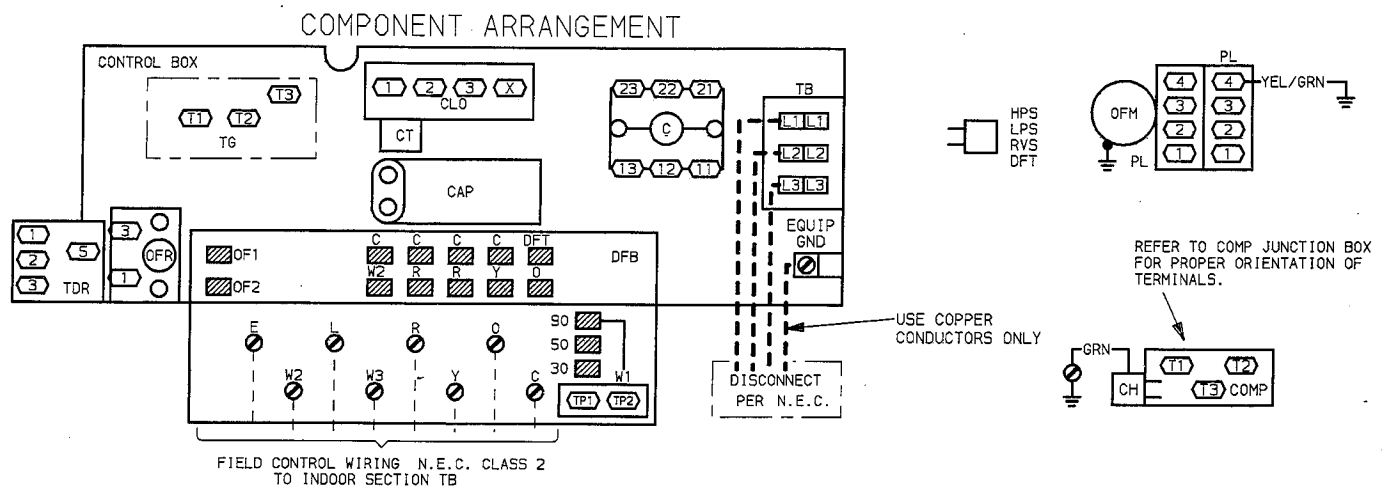
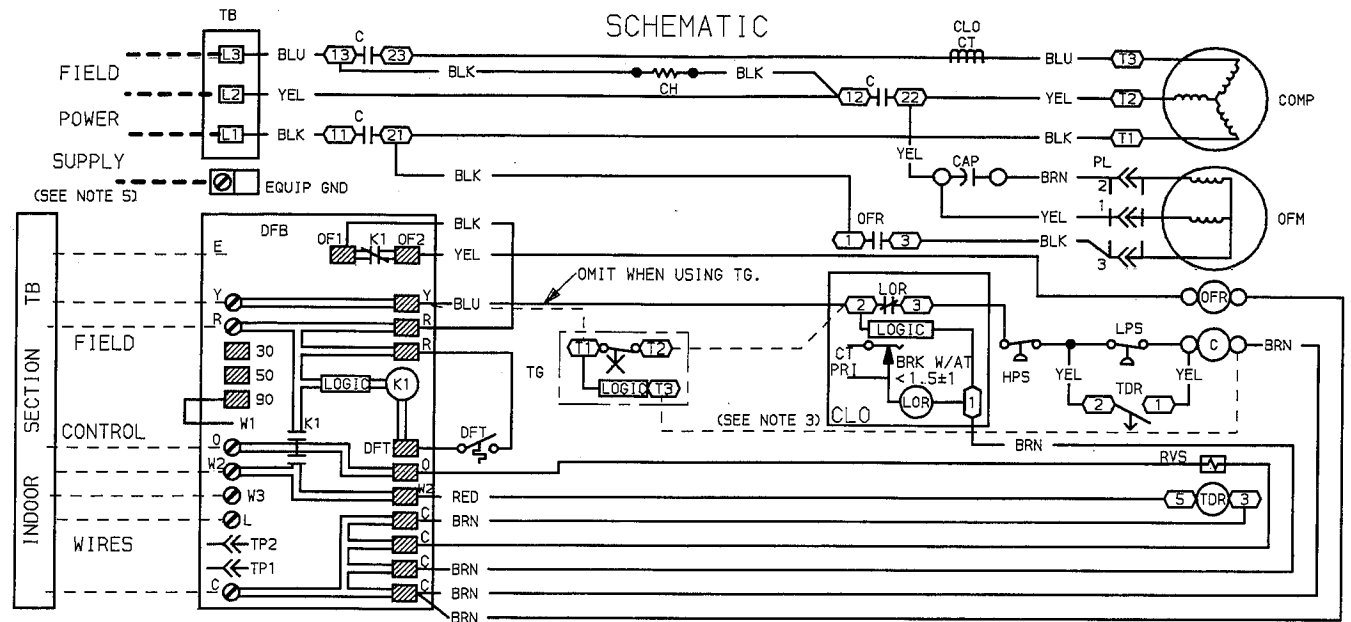


Fig. 5 — Wiring Diagram; Model 38QR036-060; 460-3

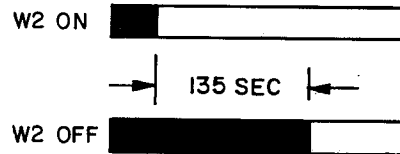


Fig.6 – Time Delay Timing Sequence (38QR)



Fig. 7 – Time Guard®II Control Circuit Timing Sequence

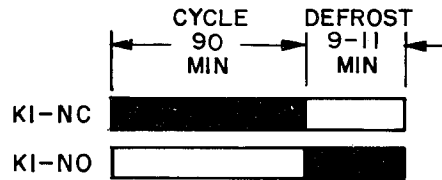


Fig. 8 – Defrost Board Timing Sequence (38QR)

NOTE: Black denotes closed contacts.