

**METROPOLITAN**



**TRANSIT**

# **TROUBLE SHOOTING PROCEDURES R. T. CARS SERIES 2201-2350**

**CHICAGO TRANSIT AUTHORITY  
TRAINING AND ACCIDENT PREVENTION DEPARTMENT  
REV. 2/71**

BLUE PANEL LIGHT COMES "ON" AND AUDIBLE ALARM SOUNDS

TROUBLE: Blown circuit breaker, dynamic brake failure or traction motor control failure

REPORT TROUBLE TO LINE SUPERVISOR AS "BLUE"

PROCEDURE FOR SHOOTING TROUBLE:

- STOP TRAIN
- AFTER TRAIN IS STOPPED, PLACE CONTROLLER HANDLE IN B4 (EMERGENCY) POSITION, THEN OPERATE RESET/CUT-OUT SWITCH

NOTE: Reset/Cut-out switch will not operate unless train has been brought to a complete stop and controller handle placed in B4 position.

A. IF AUDIBLE ALARM STOPS, RESET BRAKES BY MOVING CONTROLLER HANDLE TO B3 POSITION, PAUSING MOMENTARILY, THEN MOVING TO COAST POSITION. THEN, CHECK BLUE SIGNAL LIGHTS ON OUTSIDE OF TRAIN.

1. If no blue light is "on," circuit breaker has reset. Continue in service.
2. If one or more cars (but not all cars) has a blue light "on," that car has been cut out. Report total number of cars cut out to Line Supervisor who will instruct you as to whether to proceed in service or out-of-service.
3. If all cars of train have blue light "on," it may be necessary to couple to follower. Call Line Supervisor immediately for instructions.

B. IF AUDIBLE ALARM CONTINUES TO SOUND, CHECK THAT CONTROLLER HANDLE IS IN B4 POSITION, THEN RESET AGAIN. IF AUDIBLE ALARM CONTINUES TO SOUND, CALL LINE SUPERVISOR FOR INSTRUCTIONS.



# TRAIN WILL MOVE

As soon as trouble is indicated, notify the Line Supervisor. Then, locate column which gives the panel indication you now have. Follow actions suggested in that column until trouble is corrected or by-passed. If you have more than one panel indication, treat each one separately.

YELLOW PANEL LIGHT REMAINS "ON" regardless of position of controller handle

TROUBLE: Parking brakes on one or more cars have not released

REPORT TROUBLE TO LINE SUPERVISOR AS "YELLOW, PARKING"

PROCEDURE FOR SHOOTING TROUBLE:

LOCATE DEFECTIVE CAR OR CARS\*

- If only one car of train has outside parking brake light "on," MANUALLY CUT OUT ALL FOUR ACTUATORS ON THAT CAR

NOTE: The outside parking brake light remains "on" when actuators are cut out. The yellow panel light will go "off"

- If all cars of train have outside parking brake lights "on"
  1. RESET P5 SWITCH IN HEAD CAB
  2. RESET BRAKES
  3. If yellow panel light still does not go out, CHANGE TO ANOTHER OPERATING CAB (See "Procedure to Change Cabs")

\* TO LOCATE DEFECTIVE CAR OR CARS: Reset brakes. Keep controller handle in "Coast" position. Defective car will have outside parking brake light "on."

WHITE PANEL LIGHT COMES "ON"

TROUBLE: Converter not charging; air comfort system malfunction; interior lights malfunction; P1 circuit breaker blown.

REPORT TROUBLE TO LINE SUPERVISOR AS "WHITE"

PROCEDURE FOR SHOOTING TROUBLE:

- If at terminal, REPORT DEFECT TO TERMINAL SUPERVISOR OR YARD FOREMAN IMMEDIATELY
- If on line of road, REPORT DEFECT TO LINE SUPERVISOR IMMEDIATELY, then LOCATE DEFECTIVE CAR (Defective car has outside white light "on")

Check defective car to make certain no unsafe or uncomfortable condition exists (examples: Heater smoking or overheating, air conditioning overcooling, light smoking, etc.)

If unsafe or uncomfortable condition exists, cut out appropriate device by moving P switch in Circuit Breaker Panel Box to "off" position

Interior Lights - P35

Air Comfort System - P32



## EQUIPMENT DEFECTS NOT INDICATED BY TROUBLE LIGHTS AND ALARMS

In the event any of the following defects occur, check and reset the appropriate Circuit Breaker Switch in the Circuit Breaker Panel Box of the car with the defect.

DEFECTIVE EQUIPMENT	SWITCH
Door Controls	P31
Horn	P42
Public Address System	P31
Sander	P41
Signal Lights (all exterior lights and all interior lights except Blue and White)	P30
Signs	P43
Track Brakes	
Will not operate	P14
Stuck down	Pull fuses in Circuit Breaker Panel Box
Windshield Wiper	P9

In the event the defective equipment fails to operate correctly after the Circuit Breaker Switch is reset or if the defect seems to call for immediate cut-out of equipment, the equipment can be cut-out by operating the appropriate Circuit Breaker Switch to the "off" position.



# TRAIN WILL NOT MOVE

As soon as trouble is indicated, notify the Line Supervisor. Then, locate column which gives the panel indication you now have. Follow actions suggested in that column until trouble is corrected or by-passed. If you have more than one panel indication, treat each one separately.

YELLOW PANEL LIGHT REMAINS "ON"	GREEN PANEL LIGHT IS "OFF"	NORMAL PANEL INDICATIONS	YELLOW SIGNAL LIGHT "OFF" WHEN PARKING BRAKES ARE APPLIED; GREEN SIGNAL LIGHTS "OFF" WHEN DOORS ARE CLOSED AND WHITE SIGNAL LIGHT "ON"
TROUBLE: Defective emergency relay circuit	TROUBLE: Defective door or door circuit	TROUBLE: Defect in power control circuit	
REPORT TROUBLE TO LINE SUPERVISOR AS "YELLOW, EMERGENCY"	REPORT TROUBLE TO LINE SUPERVISOR AS "GREEN"	REPORT TROUBLE TO LINE SUPERVISOR AS "NORMAL PANEL"	TROUBLE: Blown P6 switch in operating cab (two controllers in train open at same time)
<p>PROCEDURE FOR SHOOTING TROUBLE:</p> <p>If the reason for the train being in emergency has been determined and IF THE CAUSE OF THE TROUBLE HAS BEEN CORRECTED, RESET THE BRAKES AND PROCEED.</p> <p>If the cause of the trouble is not known, CHECK P5 SWITCH IN HEAD CAB AND RESET, IF BLOWN. NOTE: Reset P switch with controller in "Coast" position.</p> <p>If this does not correct the trouble, then walk the length of the train and CHECK ALL SIDE TRIPS, WHEELS ON TRACK, CONDUCTOR'S EMERGENCY SWITCHES AND MANUAL CONTACT RETRACTION LEVERS ON TOP OF ELECTRIC COUPLER (at coupled positions, lever must be away from cab). If any defects are found, correct them if possible.</p> <p>When visual inspection is completed, REPORT YOUR FINDINGS AND ANY CORRECTIVE ACTIONS TO THE LINE SUPERVISOR who will decide if additional corrective actions are necessary.</p> <p>If instructed to use the Emergency By-Pass</p> <ul style="list-style-type: none"> <li>• RESET P5 SWITCH IN HEAD CAB</li> <li>• DEPRESS AND HOLD EMERGENCY RELAY BY-PASS BUTTON (Releasing button may cause brakes to reapply)</li> <li>• PROCEED WITH CAUTION (When the emergency relay by-pass button is depressed, overrunning a track trip or opening a Conductor's emergency switch will not stop the train. To obtain emergency braking, move the controller handle to the 4th point of braking)</li> </ul>	<p>PROCEDURE FOR SHOOTING TROUBLE:</p> <ol style="list-style-type: none"> <li>1. Have Conductor OPERATE DOOR SWITCHES SEVERAL TIMES. If this does not correct trouble</li> <li>2. CHECK FOR OPEN DOOR <ul style="list-style-type: none"> <li>If door is open <ul style="list-style-type: none"> <li>• RESET PASSENGER'S EMERGENCY. If this does not close door . . .</li> <li>• MOVE DOOR CUT-OUT SWITCH TO "CUT-OUT" POSITION (If door remains open, push it closed)</li> <li>• PROCEED</li> </ul> </li> <li>If no door is open, report findings to Line Supervisor and request permission to by-pass power control relay circuit.</li> <li>If permission is given <ul style="list-style-type: none"> <li>• MOVE FLAG SWITCH (Power Control Relay By-pass Switch) TO BY-PASS POSITION</li> <li>• OPERATE ON BUZZER SIGNALS NOTE: Green door signal light will remain "off" whenever flag switch is in by-pass position</li> </ul> </li> <li>If a door arm is broken <ul style="list-style-type: none"> <li>• MOVE DOOR CUT-OUT SWITCH TO "CUT-OUT" POSITION</li> <li>• CLOSE DOOR AND SECURE IT BY ENGAGING DOOR LOCKS</li> <li>• PROCEED</li> </ul> </li> </ul> </li> </ol>	<p>PROCEDURE FOR SHOOTING TROUBLE:</p> <ul style="list-style-type: none"> <li>• MAKE CERTAIN CONTROL SWITCH IS "ON"</li> <li>• RESET P3 AND P11 SWITCHES IN HEAD CAB NOTE: Reset P switches with controller in "Coast" position</li> </ul> <p>If this does not correct trouble, contact Line Supervisor and request permission to by-pass power control circuit. If permission is given</p> <ul style="list-style-type: none"> <li>• MOVE FLAG SWITCH (Power Control Relay By-pass Switch) TO BY-PASS POSITION</li> <li>• OPERATE ON BUZZER SIGNALS NOTE: Green door signal light will remain "off" whenever flag switch is in by-pass position</li> </ul>	<p>PROCEDURE FOR SHOOTING TROUBLE:</p> <ul style="list-style-type: none"> <li>• RESET P6 SWITCH IN HEAD CAB NOTE: Reset P switch with controller in "Coast" position</li> </ul> <p>If P6 blows again, check for a second open controller somewhere in train. If found, close it, then reset P6 switch in head cab and proceed</p>

**If train still will not move, see PROCEDURE TO CHANGE CABS**



# PROCEDURE TO CHANGE CABS

If, after all Trouble Shooting steps are completed, the train still cannot be moved from the head cab, take the following steps after obtaining permission from the Line Supervisor:

## ONE UNIT TRAIN

1. Lock up controller in head cab
2. Move back to rear cab (left side of train)
3. Operate train

If train will not operate, see folder PROCEDURE TO COUPLE, "Coupling to a Train with Equipment Trouble."

## ALL TRAINS EXCEPT ONE UNIT TRAINS

1. Lock up controller in head cab.
2. Move back to next cab on right side of train.
3. Open controller and test for response.
  - If train responds, operate from this cab.
  - If train does not respond.
    - a. Move Emergency Circuit Interrupter Switch to "Interrupt" position.
    - b. Reset P5 switch, then test for response.
      - If train now responds, manually cut out all actuators and Remote Control Cut-out Switches on all cars being pushed before moving train.
      - If train still does not respond.
        - (1) Retract contacts in electric coupler by moving manual retraction lever toward cab.
        - (2) Move Power Control Relay By-pass Switch (Flag Switch) to by-pass position.
        - (3) Test for response.
          - If train now responds, manually cut out all actuators and Remote Control Cut-out Switches on all cars being pushed before moving train.
          - If train still does not respond, restore Emergency Circuit Interrupter, electric coupler contacts and Power Control Relay By-pass Switch to normal position, lock up controller, move back to next unit and repeat step 3 above, "Open controller and test for response . . ."

If you reach the last cab on the right side of the train and the train still will not respond, trouble is probably in the last unit.

1. Retract contacts in electric coupler of rear unit by moving manual retraction lever toward cab.
2. Move Emergency Circuit Interrupter Switch in rear cab of next-to-last unit to the "Interrupt" position.
3. Manually cut out all actuators and Remote Control Cut-out Switches on both cars of rear unit.
4. Return to head cab, reset P5 switch and attempt to operate.

If train will not operate from any cab, see folder PROCEDURE FOR COUPLING AND UNCOUPLING ALL-ELECTRIC CAR, "Coupling to a Train with Equipment Trouble."