

CAB CONTROL SIGNALLING

METROPOLITAN

TRANSIT



Chicago Transit Authority
Training & Accident Prevention Dept.
67-6-T Rev. 9/69

WHAT IS A CAB CONTROL SIGNAL SYSTEM?

The cab control signal system is a signal system which (1) brings the signal into the cab of each train rather than having it at trackside, (2) continuously detects the status of trains and track ahead and continuously relays up-to-date information to the Motorman through his cab signal unit, and (3) automatically enforces speed restrictions by braking the train to a stop if speed restrictions are disregarded by the Motorman.

Cab control signalling operates by use of audio-frequency signals transmitted from equipment at trackside and picked up by equipment on the train. These signals are translated into audible and visual signals seen and heard by the Motorman in his cab.

TRAIN OPERATION WITH CAB CONTROL SIGNALLING

ASPECT PANEL

Each motor cab is equipped with an aspect panel containing the following items which are operative when the controller in that cab is made operative:

1. SPEEDOMETER - has a range of speeds from 0 to 70 M.P.H. The outer edge of the speedometer lights up to indicate the maximum speed allowed at any given time.
2. SIGNAL ASPECTS (RED, YELLOW AND GREEN) - indicate the following:

<u>SIGNAL ASPECT</u>	<u>SIGNAL INDICATION</u>	<u>SPEED INDICATION</u> (illuminated on speedometer)
Green	Proceed	0-65 (Note: Top speed of cars is 58 MPH)
Yellow	Proceed with caution	0-35 or 0-15
Red	Stop (after stop, aspect will change to Flashing Red)	0
Flashing Red (and flashing 0-15 segment light in speedometer)	Proceed with caution prepared to stop within vision	0-15 (flashing)

NOTE: Flashing red is given where low speeds are required, such as in yards or when closing in on trains ahead. Motormen must exercise extreme caution under this aspect.

Motormen must operate within the range of speeds indicated by the signal aspect and speedometer.

3. CAB SIGNAL CUTOUT LIGHT - Light "out" indicates that train is protected by cab control signalling; light "on" indicates that operation is on sight.
4. PARKING BRAKE SIGNAL LIGHT (Yellow) AND DOOR SIGNAL LIGHT (Green)

NOTE: These lights not operative on aspect panels in Series 2201-2350 cars.

Yellow light "on" indicates that one or more parking brakes on the train is applied; yellow light "off" indicates that all parking brakes on the train are released.

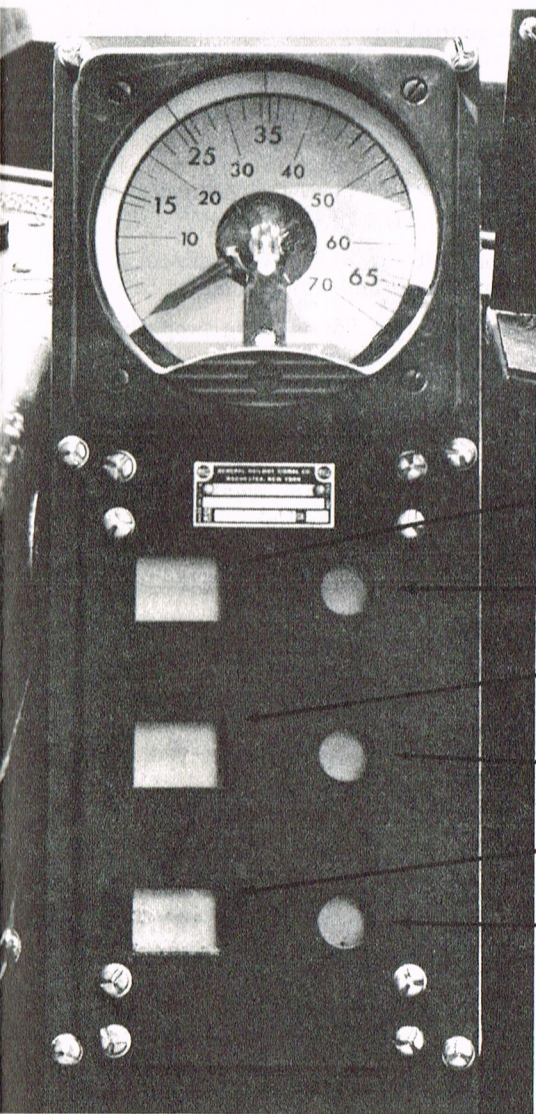
Green light "on" indicates that all passenger doors are closed; green light "off" indicates that one or more passenger doors is open.

5. "BEEP" TYPE AUDIBLE ALARM - sounds to alert the Motorman whenever a train is exceeding the maximum speed allowed by the current signal aspect. This may be the result of (1) allowing train speed to increase beyond the allowed limit, or (2) a change of signal aspect to a more restrictive aspect.

Whenever the alarm sounds, the Motorman must move the controller handle to either the second or third point of brake WITHIN $2\frac{1}{2}$ SECONDS or the train will be automatically braked to a complete stop. The alarm continues to sound until the Motorman brakes the train or, if the Motorman fails to brake the train, it sounds until automatic braking stops the train.

NOTE: Some aspect panels have a pulsating alarm while other panels have a steady alarm.

GRS TYPE SIGNAL ASPECT PANEL



CAB SIGNAL
CUTOUT LIGHT
(WHITE)

GREEN SIGNAL
ASPECT

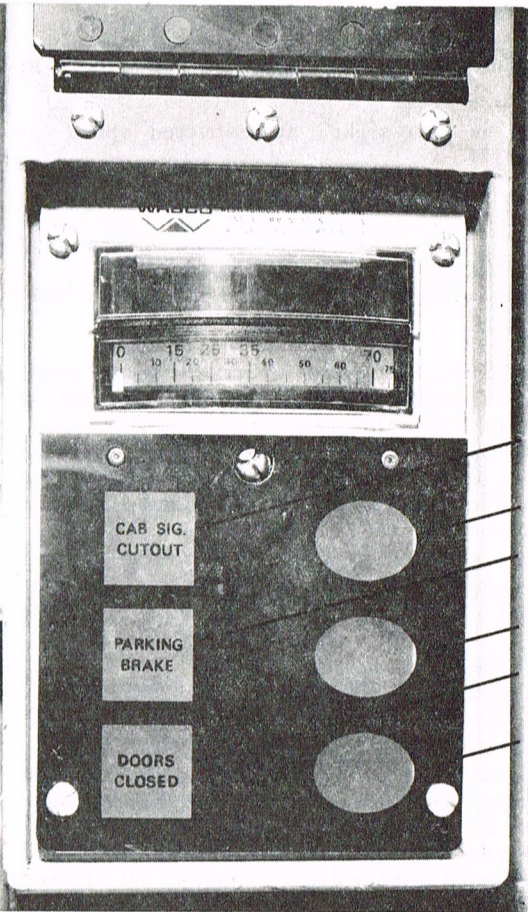
PARKING
BRAKE SIGNAL
LIGHT (YELLOW)

YELLOW
SIGNAL
ASPECT

DOOR SIGNAL
LIGHT
(GREEN)

RED SIGNAL
ASPECT

WABCO TYPE SIGNAL ASPECT PANEL



CAB SIGNAL
CUTOUT LIGHT
(WHITE)

GREEN SIGNAL
ASPECT

PARKING
BRAKE SIGNAL
LIGHT (YELLOW)

YELLOW
SIGNAL
ASPECT

DOOR SIGNAL
LIGHT
(GREEN)

RED SIGNAL
ASPECT

OPERATING PROCEDURES

- NOTE: 1. The operation of cab control signals does not relieve the Motorman of responsibility for determining safe operating speeds under various operating conditions.
2. Where there are wayside signals or operational signs in cab signal territory, operation will be governed by the wayside signal aspect or sign indication as well as by the cab signal aspect.

IN YARDS

1. Aspect panel shows only flashing red aspect in yard.
2. Operation is "on sight" at restricted speed (as per rule 227).

ON LINE OF ROAD

- WHERE CAB SIGNALLING IS OPERATIVE -
(Cab signal cutout light "off", signal aspect lights operating).

Motorman must frequently observe aspect panel and operate within range of speeds indicated on aspect panel.

- If signal changes to a more favorable aspect, for example, from flashing red to yellow, Motorman may increase speed if, in his judgment, conditions warrant an increase.
- If signal changes to a more restrictive aspect, for example, from green to yellow, and train is operating faster than new maximum allowable speed
 - a. Alarm begins to sound.
 - b. MOTORMAN MUST BEGIN BRAKING WITHIN $2\frac{1}{2}$ SECONDS, USING EITHER B2 OR B3 RATE AS TRACK CONDITIONS INDICATE.
 - c. Motorman must continue braking until speed of train is reduced to at least the maximum speed indicated on the panel.
 - d. Motorman must operate at or below indicated speed until aspect again changes. (If allowed speed is exceeded, alarm will sound and train must be braked.)
 - e. If Motorman fails to brake train within $2\frac{1}{2}$ seconds after alarm sounds, train will automatically brake to a stop. After stop, Motorman must reset brakes before train can proceed. A report of the incident must be made.

- WHERE CAB SIGNALLING IS NOT OPERATIVE -
(Cab signal cutout light "on", no signal aspects).
Operation is on sight or governed by wayside signals.

DEFECTIVE EQUIPMENT

In the event cab control equipment becomes defective, the Line Supervisor must be notified. Instructions as to corrective action will be given by the Line Supervisor. In cases where train will not move or will move only at reduced speed, operation of the Emergency Circuit By-pass Button will remedy the situation. (NOTE: OPERATION ON BY-PASS MUST BE AUTHORIZED BY THE LINE SUPERVISOR.)

Following are some of the defective equipment conditions which could occur and which must be reported.

1. Cab Signal Cutout Light not working properly.
2. Speedometer not working.
3. Speedometer lights not working.
4. Permanent red signal indication.
5. Flashing red signal or yellow signal comes "on" for no apparent reason.
6. Follower must couple or train must be operated from any cab other than head cab.
7. Any other condition about which Motorman is doubtful.