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C.W. 241

COMPONENT WRITE-UP OF BRAKE VALVE CONTROLLER P/N 772337

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C.W. 241
6 PAGES

Purpose

The Brake Valve is a 'desktop' arranged, self-contained unit having all the controls required for operation of the locomotive's train brakes. The control levers are arranged for minimum arm and hand movement while providing support of the arm during normal operation.

Operation

- A. The Brake Valve functions to indicate to the Computer the handle positions. No direct action is taken other than initiation of an emergency brake application. One selector switch is mounted on the controller to set-up the locomotive's brake system. The positions are TRAIL, TEST, FRT, and PASS.
- B. Refer to Figure C.W. 241. The 'knob' type handle, located to the right, is the INDEPENDENT BRAKE lever. The independent brake lever has a detented 'release' position. Movement of the handle away from the operator will command the computer, via a fiber optic link, to apply the independent brake fully variable from 'min' to 'max' application. The independent brake may be released in a like manner by pulling the handle toward the operator.
- C. The 'BAIL-OFF' feature is activated by lifting up on the lower ring of the 'knob' on the independent brake lever.
- D. The 'T' type handle, located to the left, is the AUTOMATIC BRAKE lever. The automatic brake's fiber optic output signal commands the computer to the desired control of the brake pipe trainline. The automatic brake lever has all the detented positions as found on the standard 26C type brake valve. When pushed to the extreme detented emergency position, a Vent Valve, mounted separately to the console, is mechanically forced open to pilot the PVEM pneumatic vent valve located on the pneumatic control unit to exhaust brake pipe and initiate an emergency brake application.

- E. The Set-Up Selector Switch, located to the front, right, indicates to the computer the mode of operation of the braking system. With the switch set to the TRAIL position, no action is taken by the computer as a result of handle movements and ER will reduce to zero psi at a service rate. Emergency brake application can still be initiated in the Trail Mode.
- F. When placed to the TEST mode, the Independent brake is available and will apply if the handle is so positioned. Equalizing reservoir pressure will respond to the position of the Automatic Brake lever setting. This position is used to cut-out brake pipe maintaining during brake pipe leakage tests. The TEST position cannot be selected under motion.
- G. When placed into FRT or PASS position the system responds to all commands from the automatic and independent brake handles (normal lead operation).
- H. PASS position is used when the locomotive is in the lead position of a passenger train. Graduated release of brakes is provided in this position. FRT position will be used when the locomotive is hauling freight trains. Brake release is direct and only in release position.
- I. Redundant sensors are incorporated to provide failure protections. Some of these protections are as follows:
 - Loss of Independent brake signal results in independent brake release to protect against stuck brakes. Maximum application position will override. Redundant full release allows for a limp-in maximum and zero brake due to this loss of independent analog signal.
 - Loss of automatic brake signal results in reduction of ER to zero psi at a service rate. An emergency brake application does not occur.
 - Redundant brake pipe cut-off and power knock-out when the automatic brake lever is in the emergency position.
 - Redundancy in the automatic brake release command position assures train brakes are not inadvertently released.
- J. Figure C.W. 241-1 shows the wiring arrangement of the Brake Valve Controller.

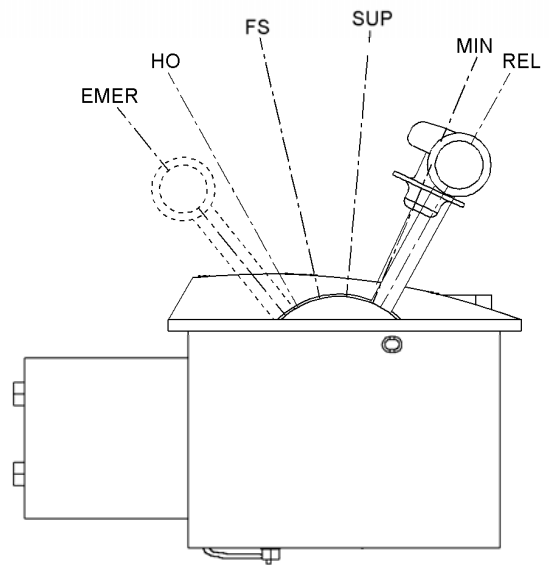
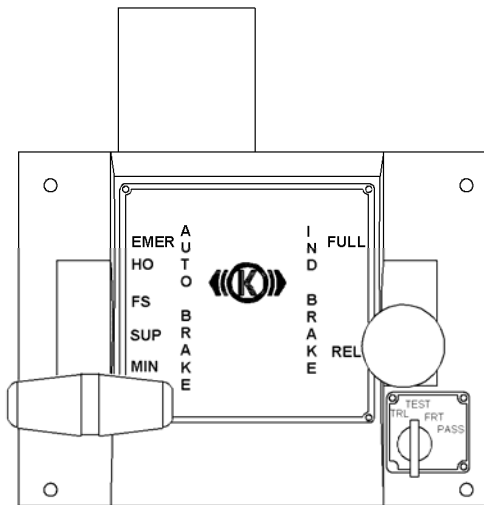
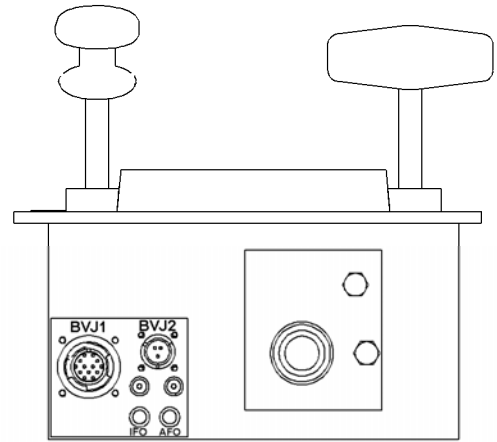
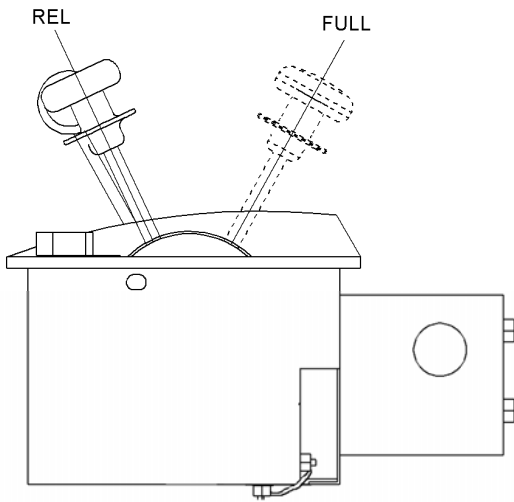


FIGURE CW 241 BRAKE VALVE CONTROLLER (P/N 772337)

NOMENCLATURE FOR FIGURE CW 241-1

AE1	AUTOMATIC EMERGENCY SWITCH NO.1, N.C.
AE2	AUTOMATIC EMERGENCY SWITCH NO.2, N.O.
AP	AUTOMATIC VARIABLE HANDLE POTENTIOMETER
AR	AUTOMATIC RELEASE SWITCH, N.O.
BO	BAIL OFF SWITCH, N.O.
BVJ1	BRAKE VALVE EXTERNAL CONNECTORS
BVJ2	BRAKE VALVE EXTERNAL CONNECTORS
ERD	EQUALIZING RESERVOIR DECREASE SWITCH, N.O.
ERI	EQUALIZING RESERVOIR INCREASE SWITCH, N.O.
FOJ1	AUTOMATIC FIBER OPTIC EXTERNAL CONNECTOR
FOJ2	INDEPENDENT FIBER OPTIC EXTERNAL CONNECTOR
IM	INDEPENDENT MAXIMUM APPLIED SWITCH, N.O.
IP	INDEPENDENT VARIABLE HANDLE POTENTIOMETER
IR	INDEPENDENT RELEASE SWITCH, N.O.
J1-J10	PCB INTERNAL CONNECTORS
PCB	PRINTED CIRCUIT BOARD
•	CONTACT CLOSED
◦	CONTACT OPEN

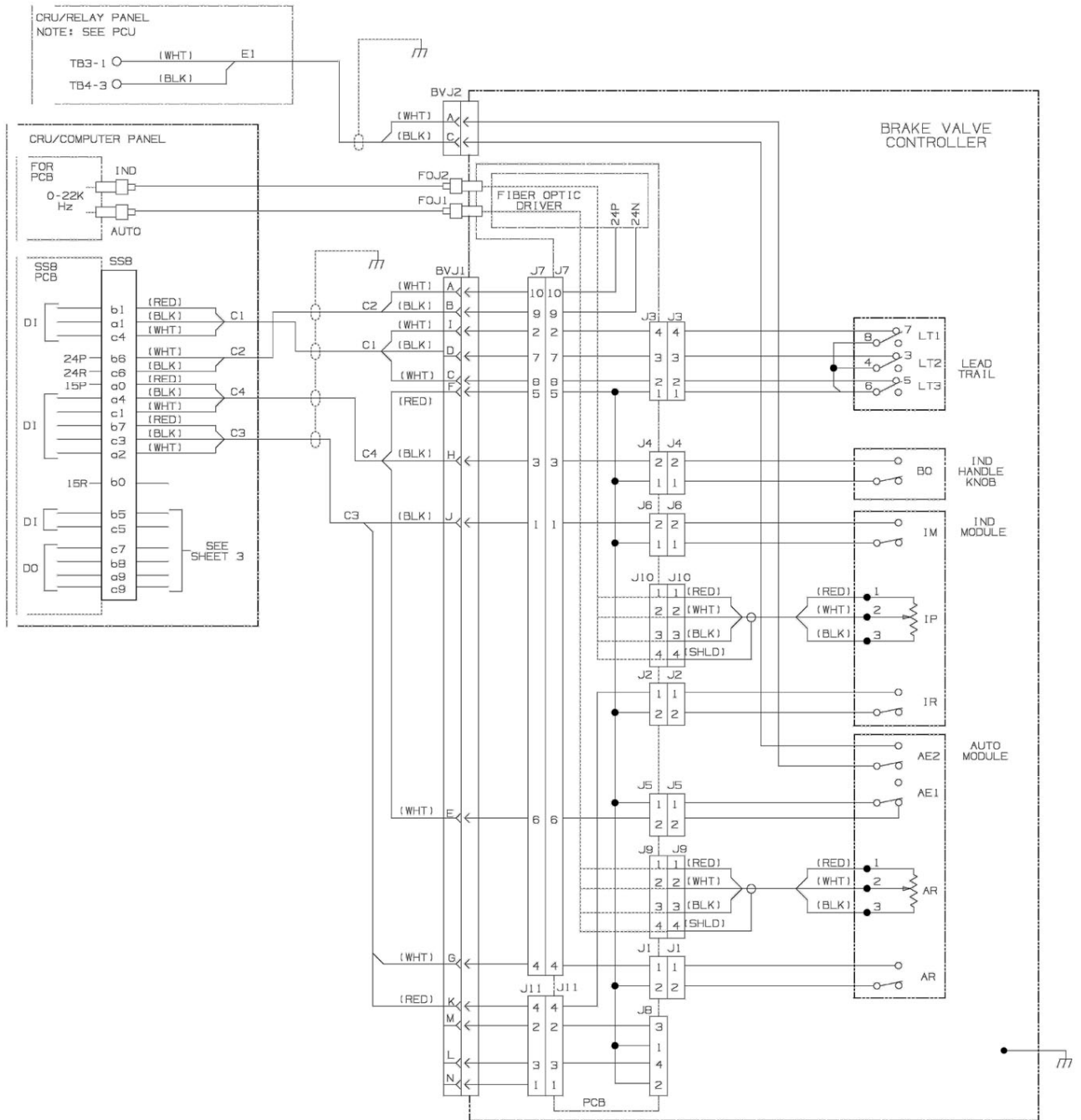


FIGURE CW 241-1 BRAKE VALVE SCHEMATIC

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REVISION PAGE:

C.W. 241

ISSUE NO. 1
DATE: APRIL 28, 1994

Original Issue

ISSUE NO. 2
DATE: SEPTEMBER 20, 1996

Added PN 774482.

Added NOTE: The only difference between
Brake Valve Controllers is

Reworded Par. J. due to 2 Brake Valve Controllers.

Updated Schematic to current version.

ISSUE NO. 3
DATE: FEBRUARY 11, 1997

Removed Controller PN 774482 from
entire document.

ISSUE NO. 4
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Updated Figure CW 241-1, made revision page last page