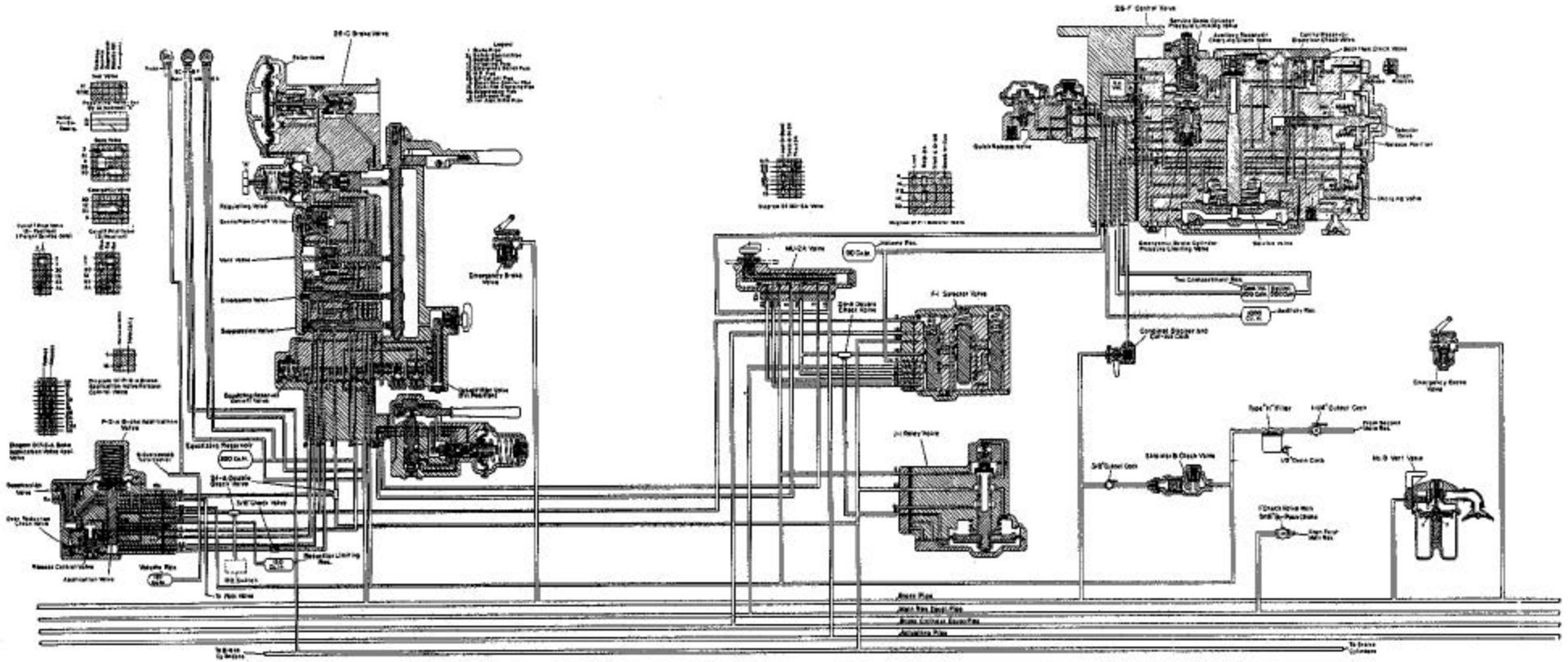


PLATE I

Piping Diagrammatic Of 26-L Brake Equipment Arranged For Complete Multiple-Unit Service And With P-2-A Brake Application Valve To Provide For Safety Control And Overspeed Control.

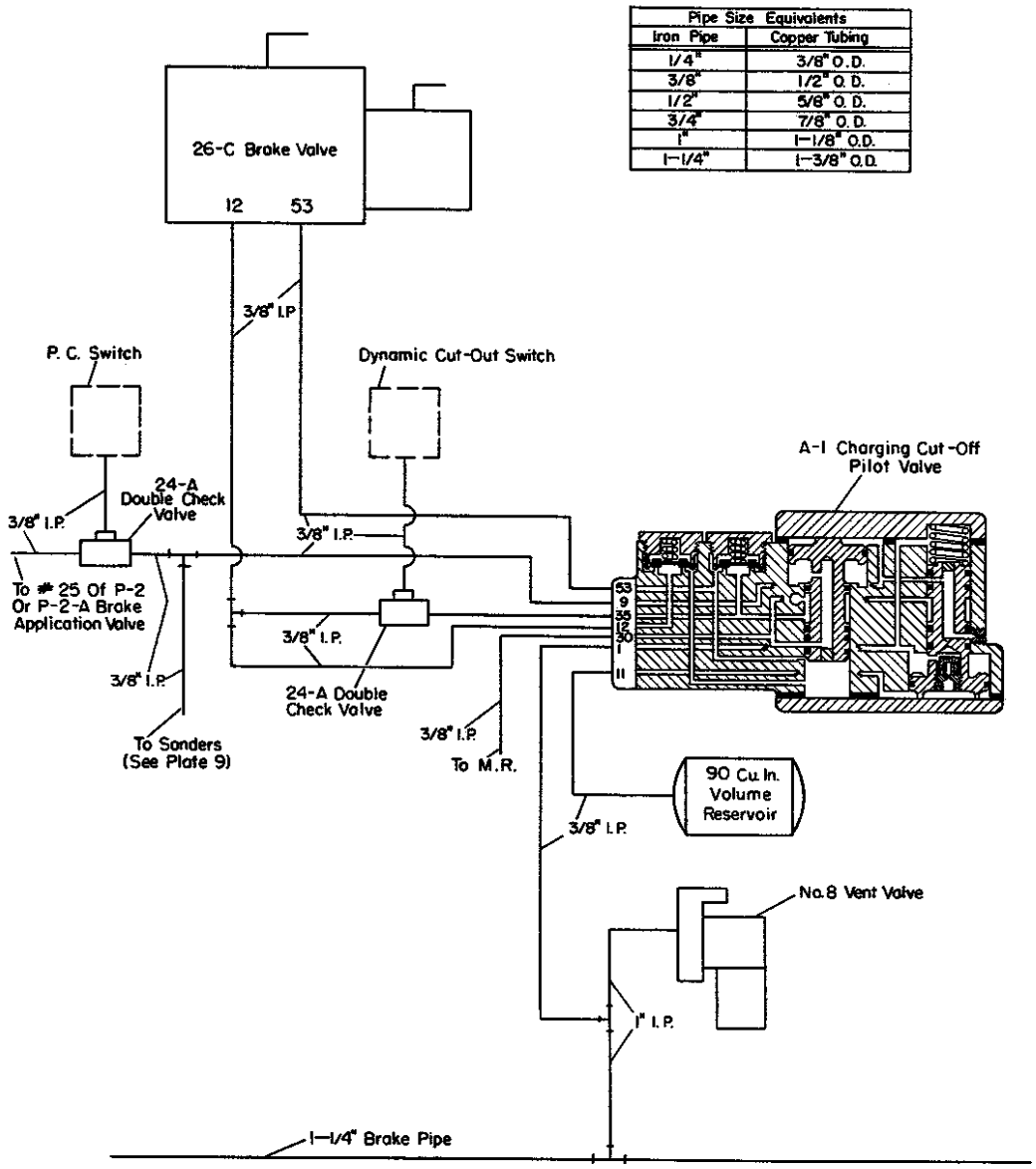


PLATE 2
Break-In-Two Protection Arrangement Employing
A-1 Charging Cut-Off Pilot Valve

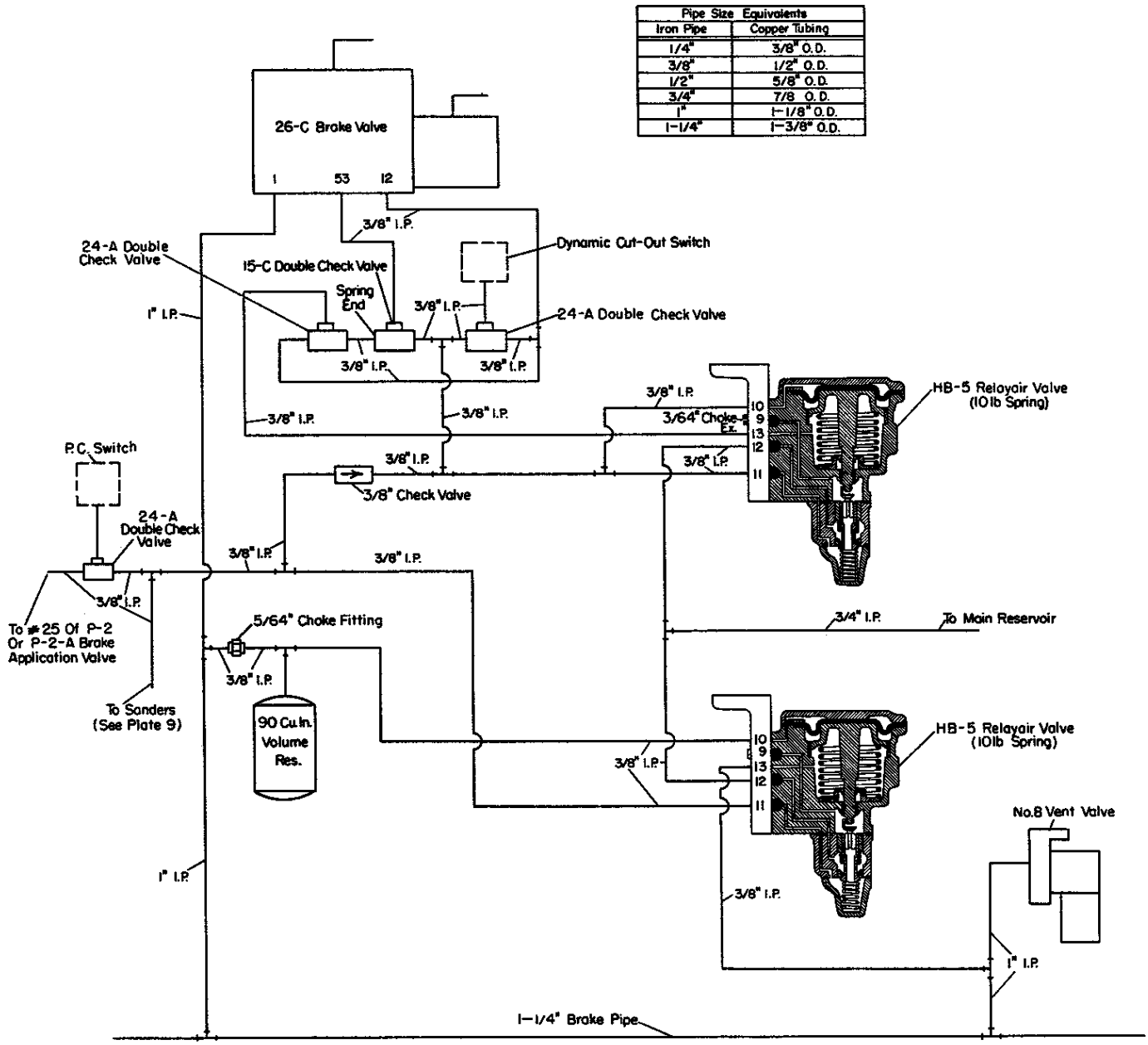


PLATE 3

Break-In-Two Protection Arrangement Employing Two HB-5 Relayair Units.

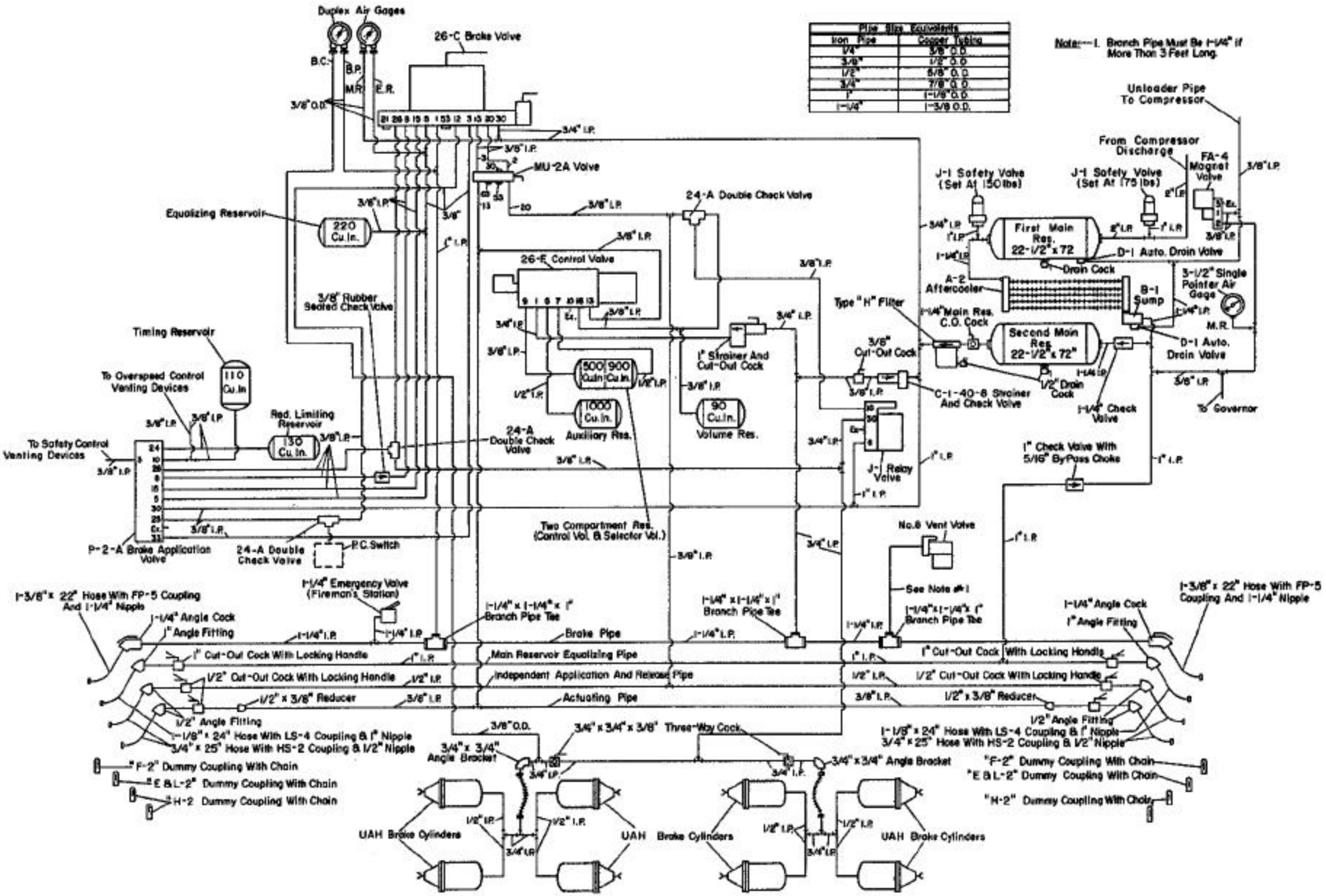


PLATE 4

Piping Diagram Of 26-L Brake Equipment Arranged For Safety Control And Overspeed Control With P-2-A Brake Application Valve Two Pipe Multiple-Unit Control

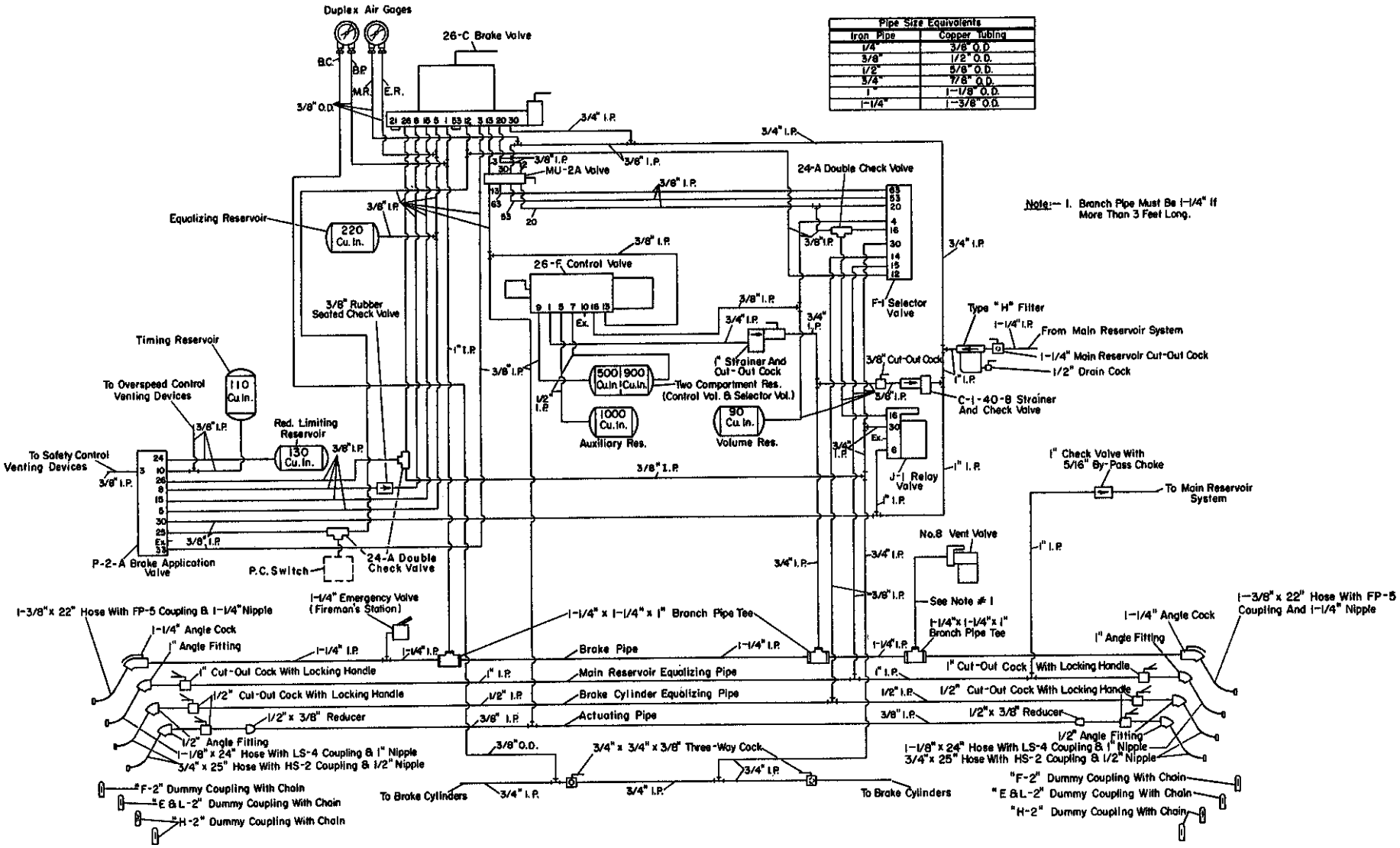


PLATE 5

Piping Diagram Of 26-L Brake Equipment Arranged For Safety Control And Overspeed Control With P-2-A Brake Application Valve Universal Multiple-Unit Control

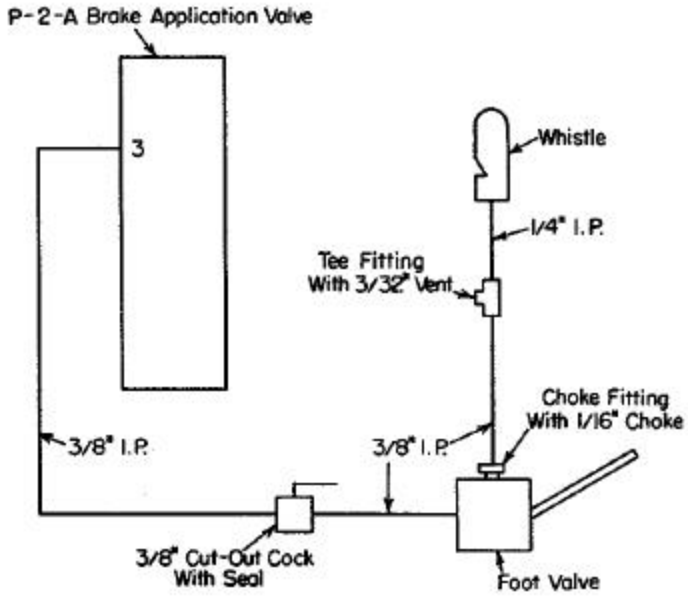


PLATE 6

Piping Arrangement Of Equipment For Providing Safety Control Brake Applications.

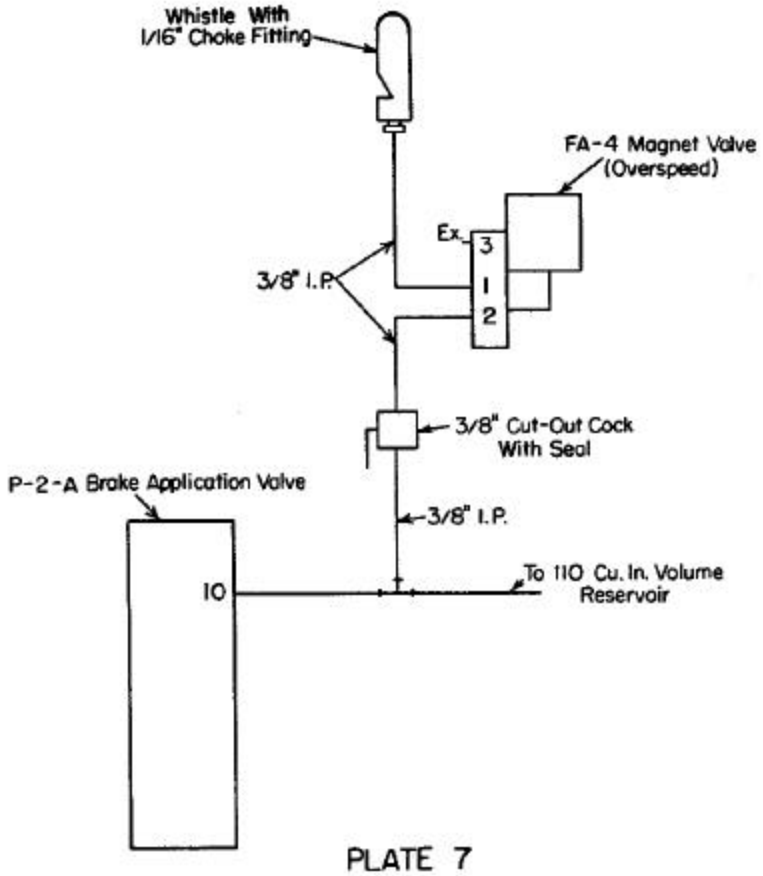


PLATE 7

Piping Arrangement Of Equipment For Providing Overspeed Control Brake Applications.

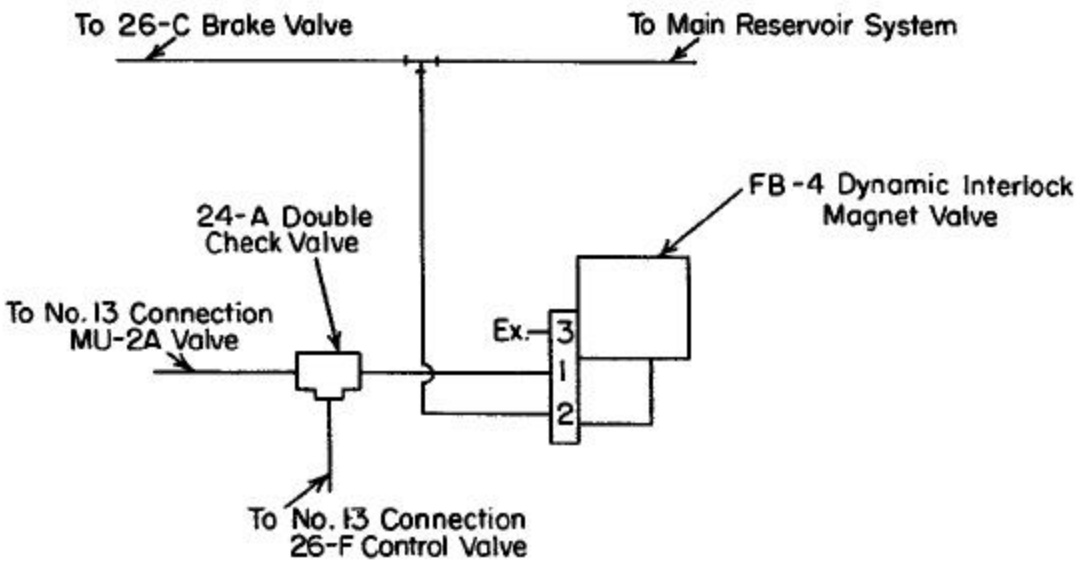
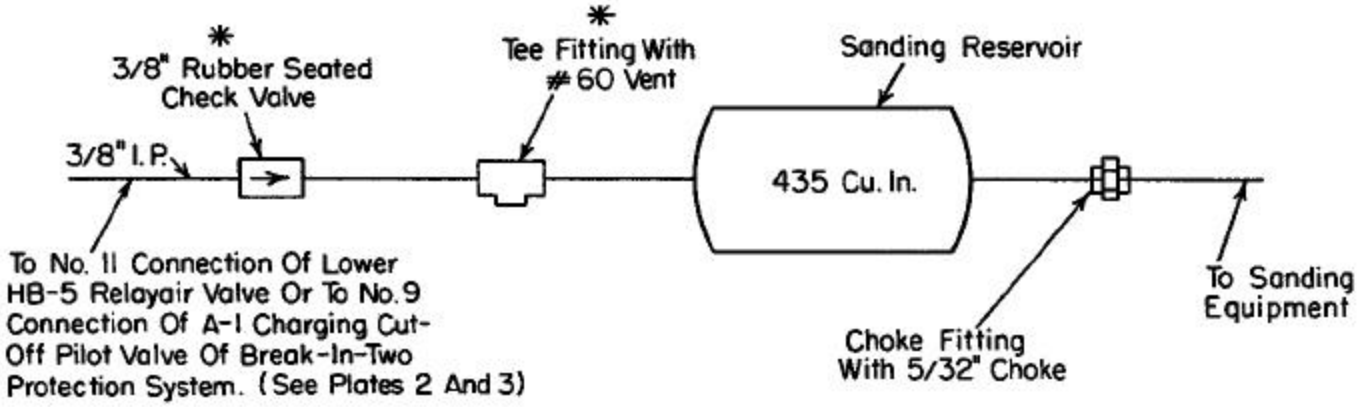


PLATE 8

Piping Arrangement Of Equipment For Providing Dynamic Brake Interlock Feature



NOTE:—When Break-In-Two Protection Feature Employs An A-1 Charging Cut-Off Pilot Valve, Items Marked With An Asterisk (*) Are To Be Omitted And Volume Of Sanding Reservoir Is To Be 90 Cu. In.

PLATE 9

Piping Arrangement Of Equipment For Providing Emergency Sanding

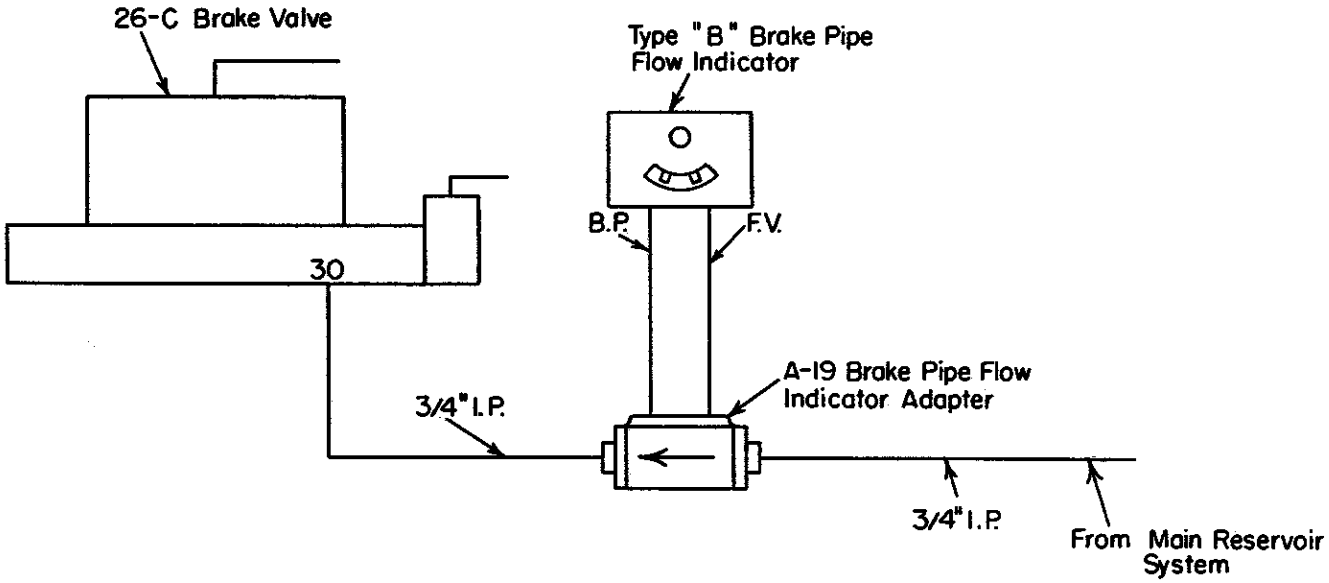


PLATE 10
Piping Arrangement Of Equipment For Addition
Of Type “B” Brake Pipe Flow Indicator

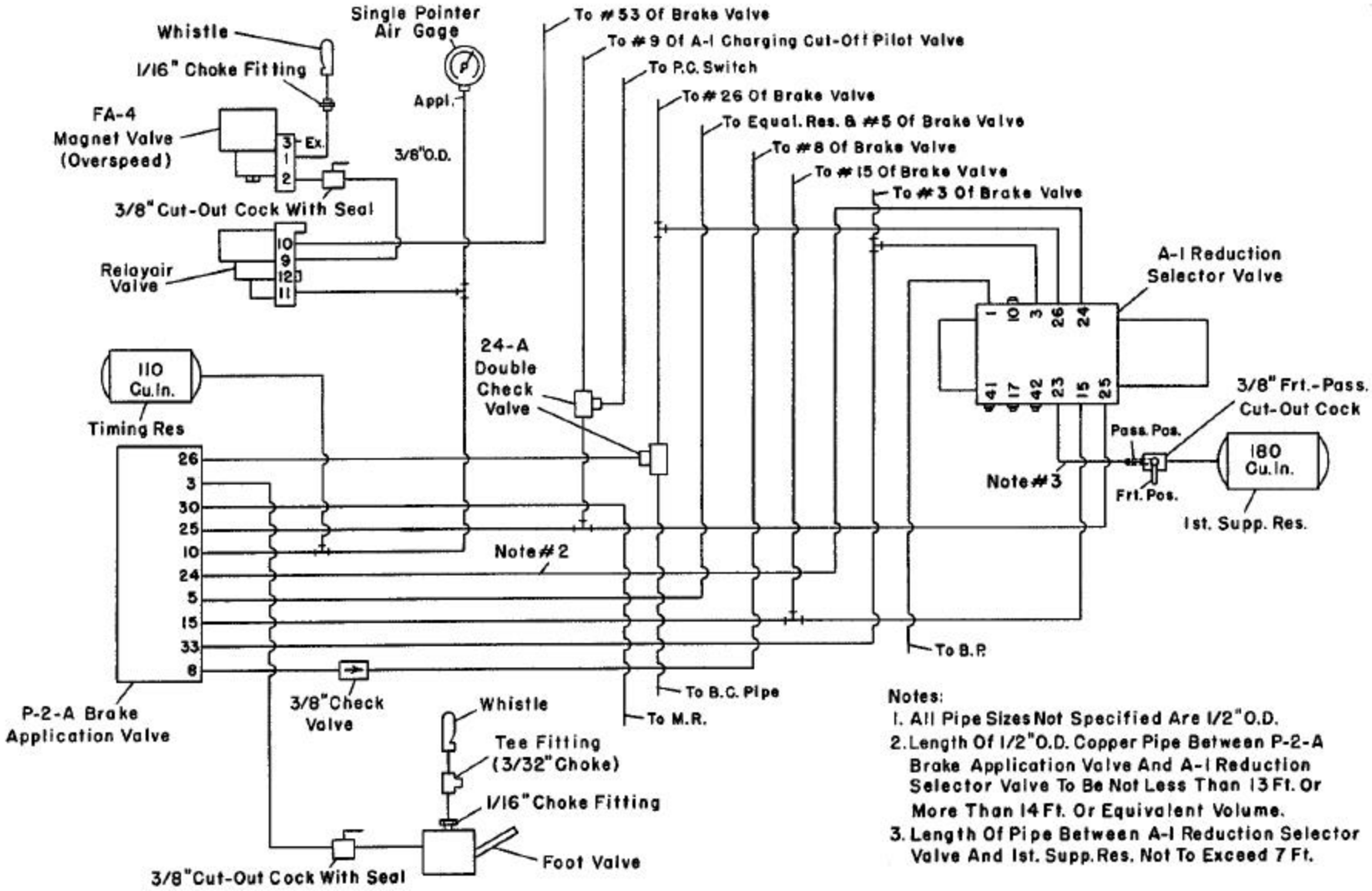
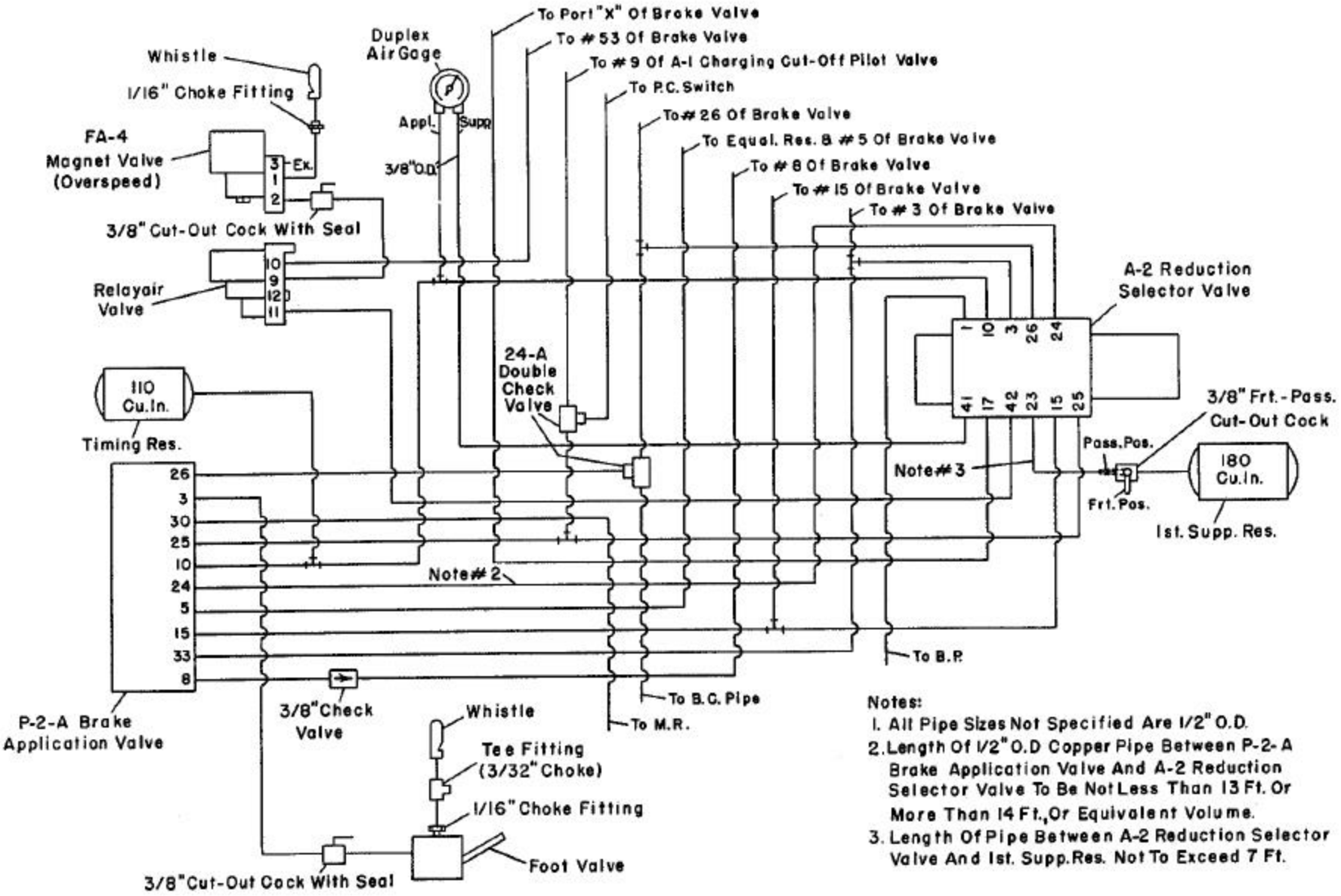


PLATE 11

Piping Arrangement Of A-1 Reduction Selector Valve In 26-L Brake Equipment
To Provide Automatic Split Reduction During Penalty Brake Application.

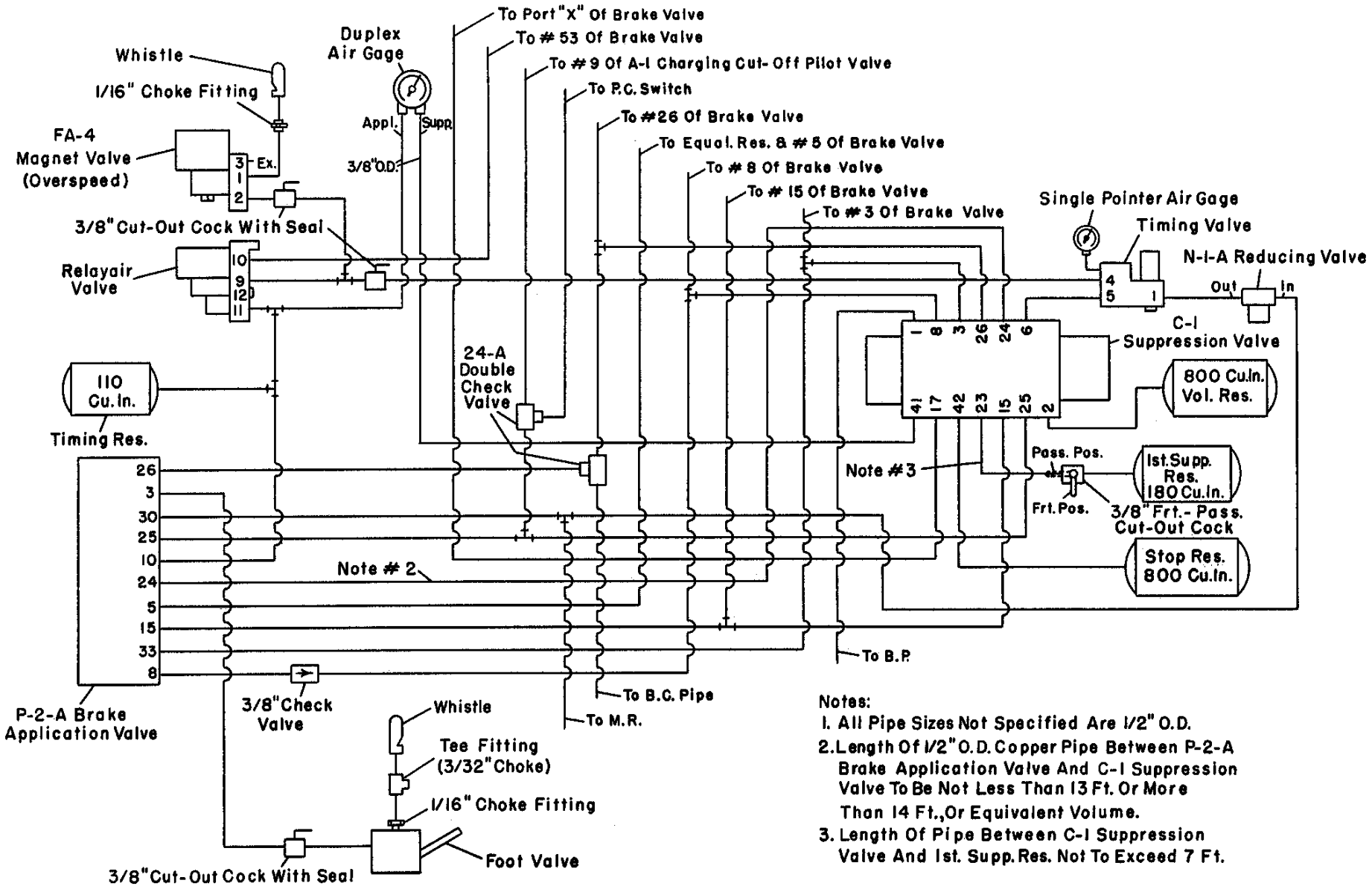


Notes:

1. All Pipe Sizes Not Specified Are 1/2" O.D.
2. Length Of 1/2" O.D Copper Pipe Between P-2-A Brake Application Valve And A-2 Reduction Selector Valve To Be Not Less Than 13 Ft. Or More Than 14 Ft., Or Equivalent Volume.
3. Length Of Pipe Between A-2 Reduction Selector Valve And 1st. Supp. Res. Not To Exceed 7 Ft.

PLATE 12

Piping Arrangement Of A-2 Reduction Selector Valve In 26-L Brake Equipment To Provide Automatic Split Reduction During Penalty Brake Application With Temporary Suppression Of Overspeed Applications.



Notes:

1. All Pipe Sizes Not Specified Are 1/2" O.D.
2. Length Of 1/2" O.D. Copper Pipe Between P-2-A Brake Application Valve And C-1 Suppression Valve To Be Not Less Than 13 Ft. Or More Than 14 Ft., Or Equivalent Volume.
3. Length Of Pipe Between C-1 Suppression Valve And 1st. Supp. Res. Not To Exceed 7 Ft.

PLATE 13

Piping Arrangement Of C-1 Suppression Valve In 26-L Brake Equipment To Provide Automatic Split Reduction During Penalty Brake Application With Temporary And Permanent Suppression Of Train Control Applications.

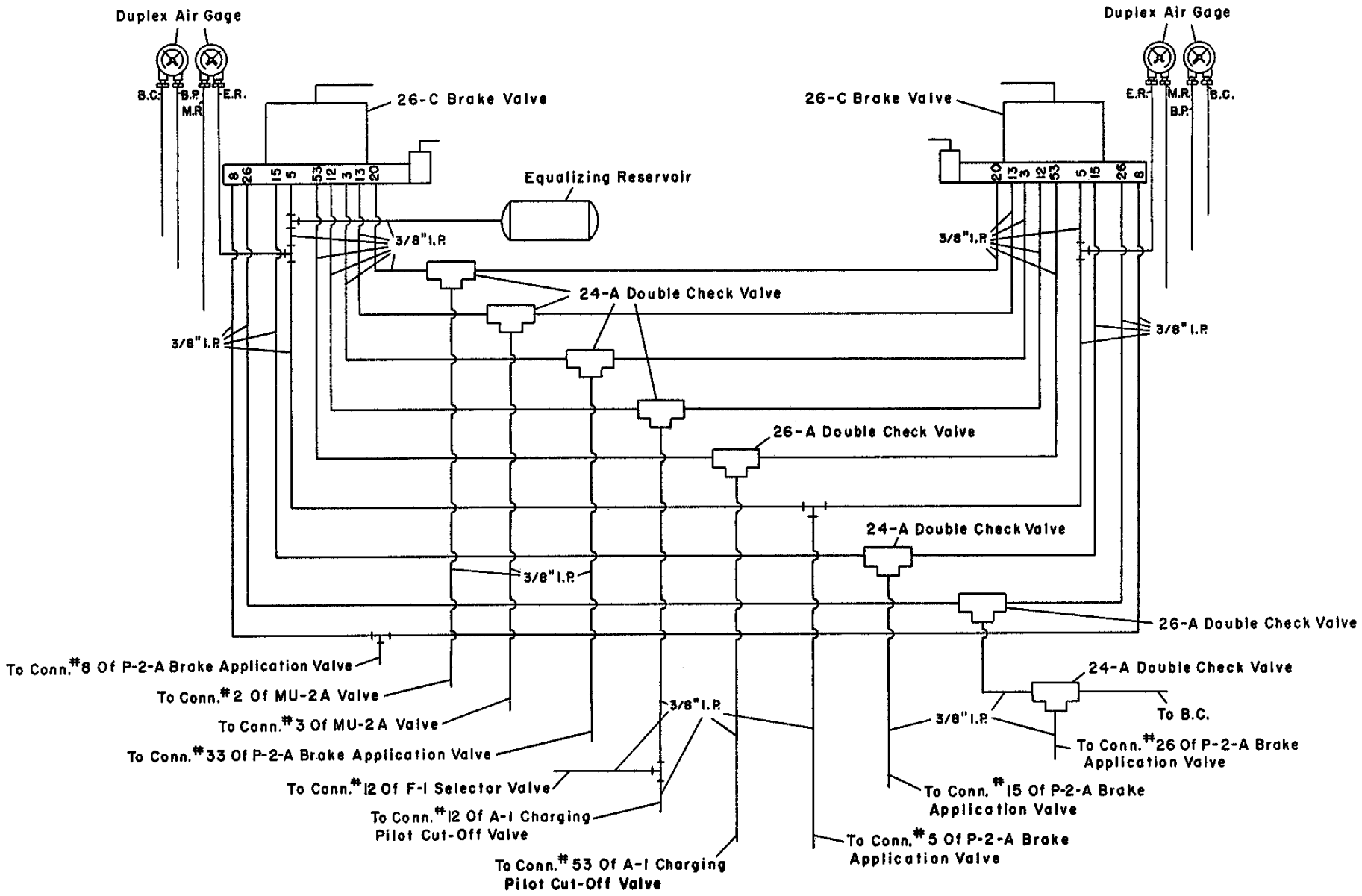


PLATE 14

Piping Arrangement Of 26-L Brake Equipment For Dual Controls In The Same Locomotive Cab

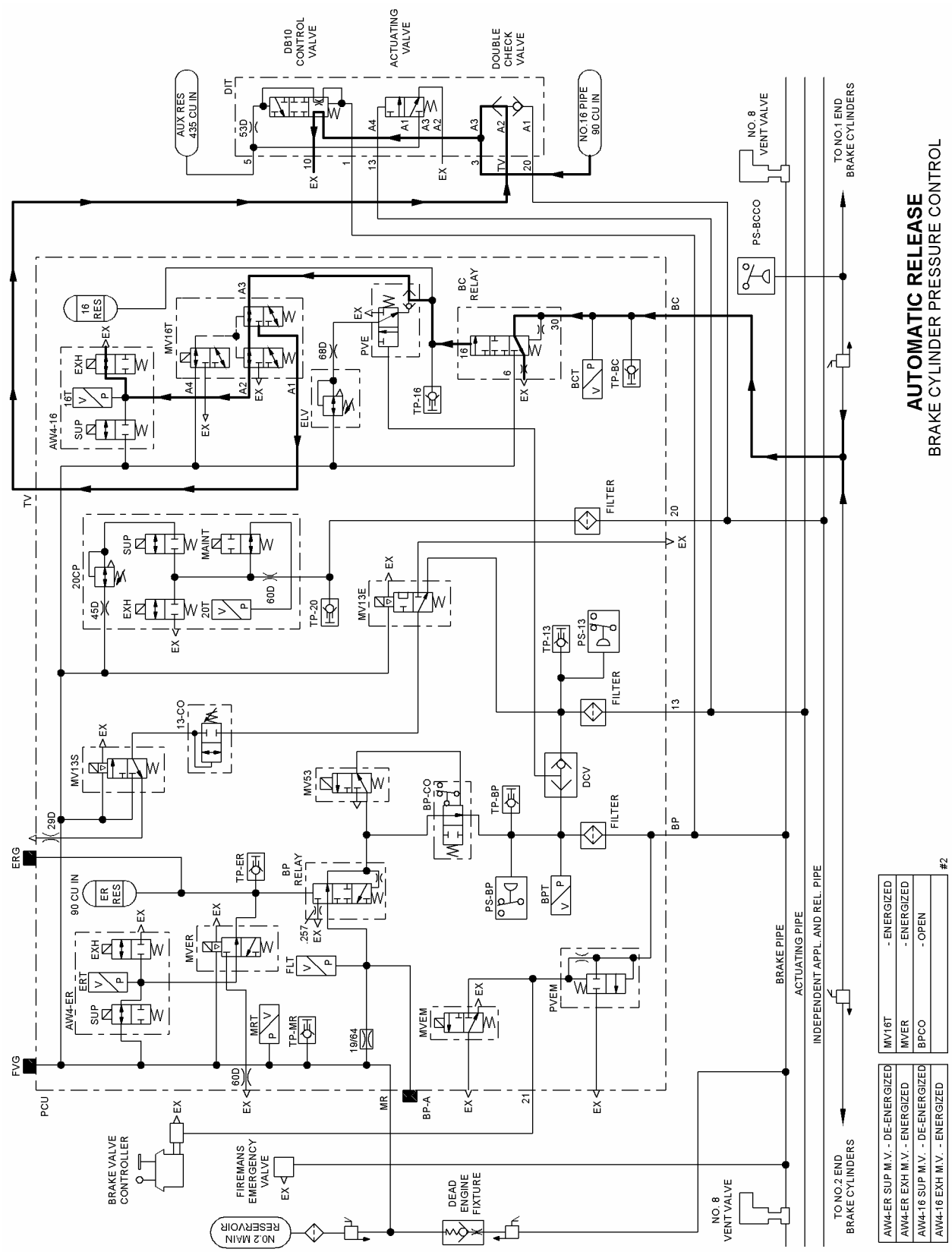
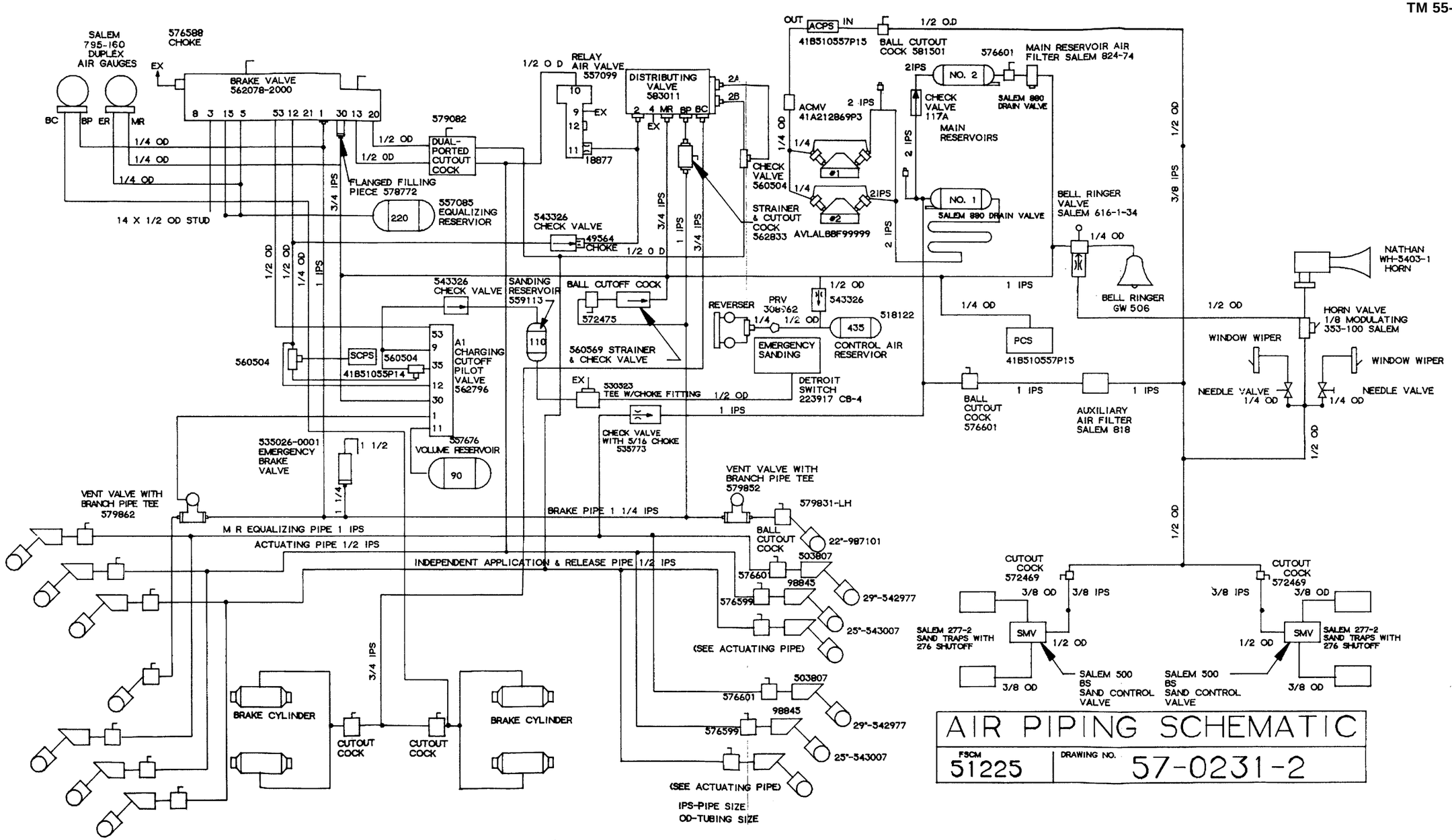


FIGURE 1-21 AUTOMATIC RELEASE BRAKE CYLINDER PRESSURE CONTROL



AIR PIPING SCHEMATIC

FSCM	DRAWING NO.
51225	57-0231-2

FO-1 Air Piping Schematic

FP1/(FP-2 Blank)

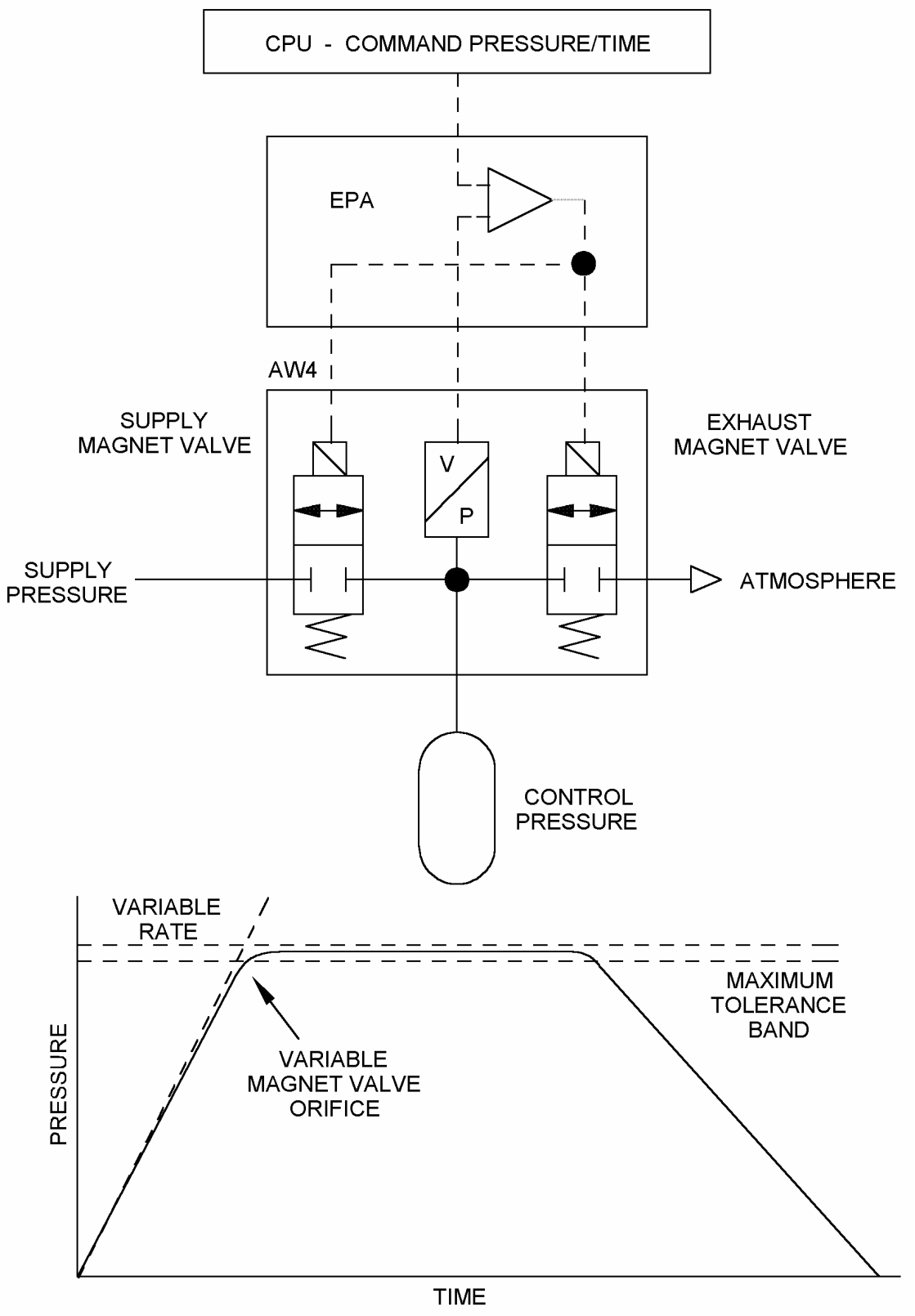


FIGURE 1-22 ANALOG CONVERTER CONTROL

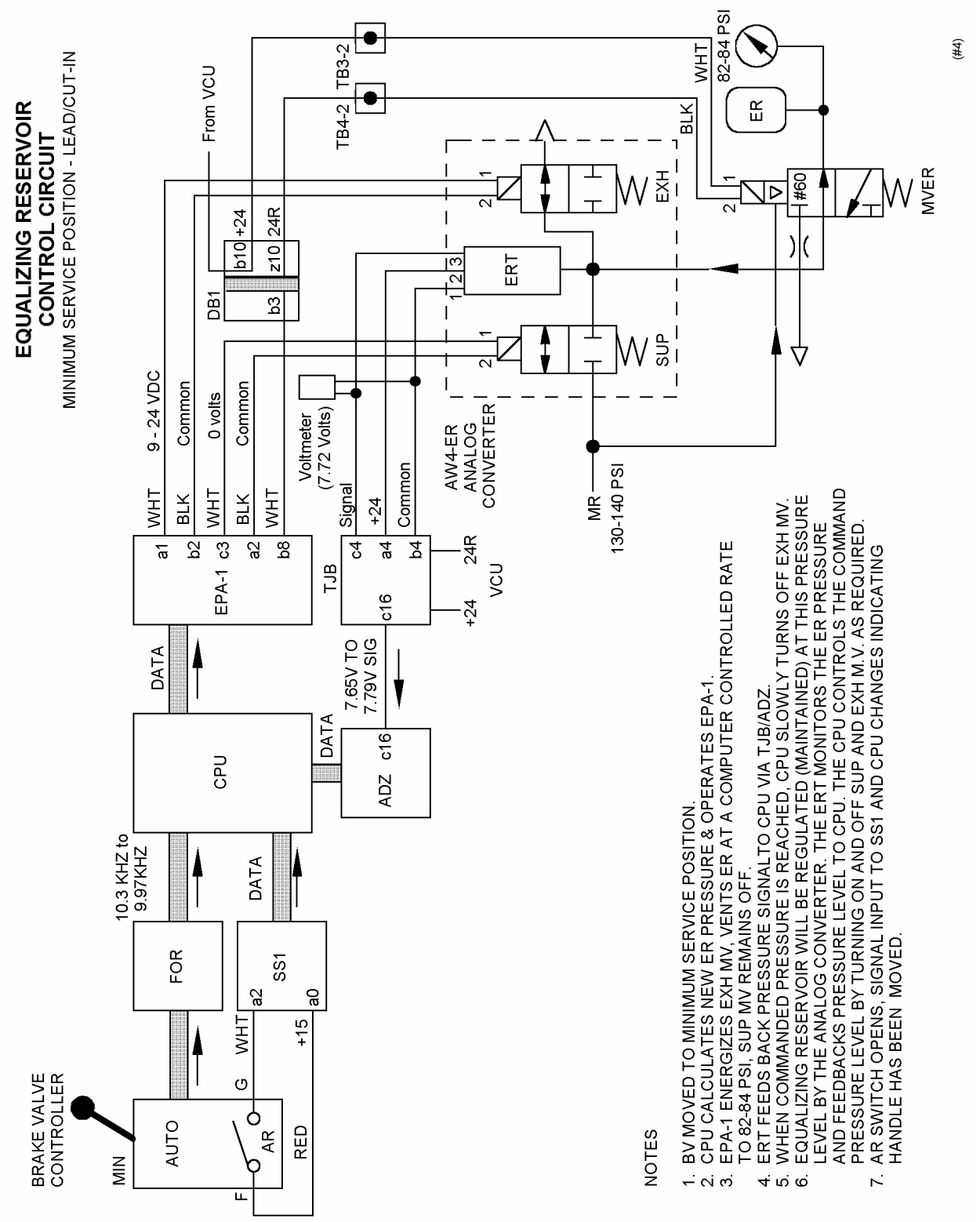


FIGURE 1-23 ER CONTROL CIRCUIT MINIMUM SERVICE POSITION- LEAD/CUT-IN

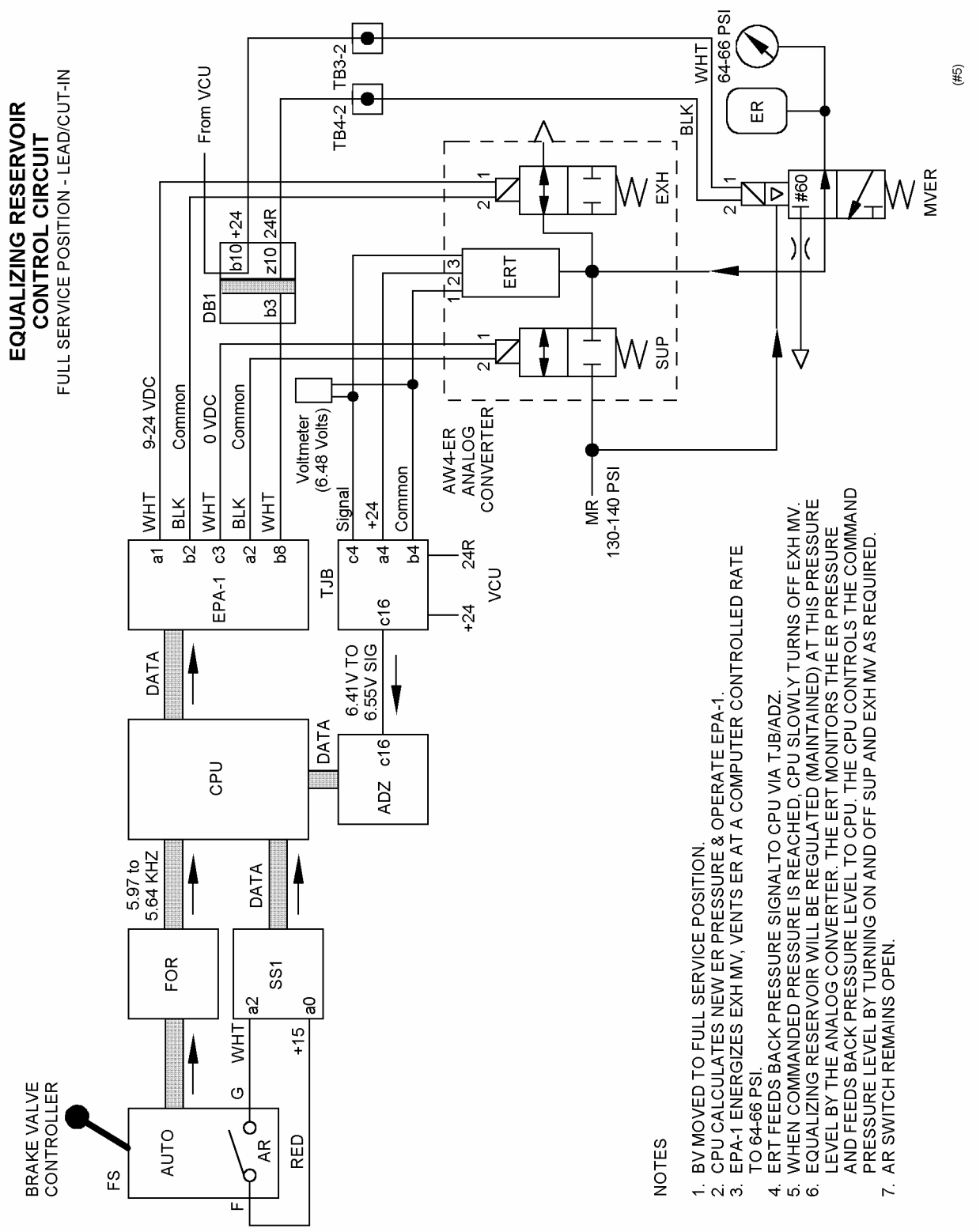


FIGURE 1-24 ER CONTROL CIRCUIT FULL SERVICE POSITION - LEAD/CUT-IN

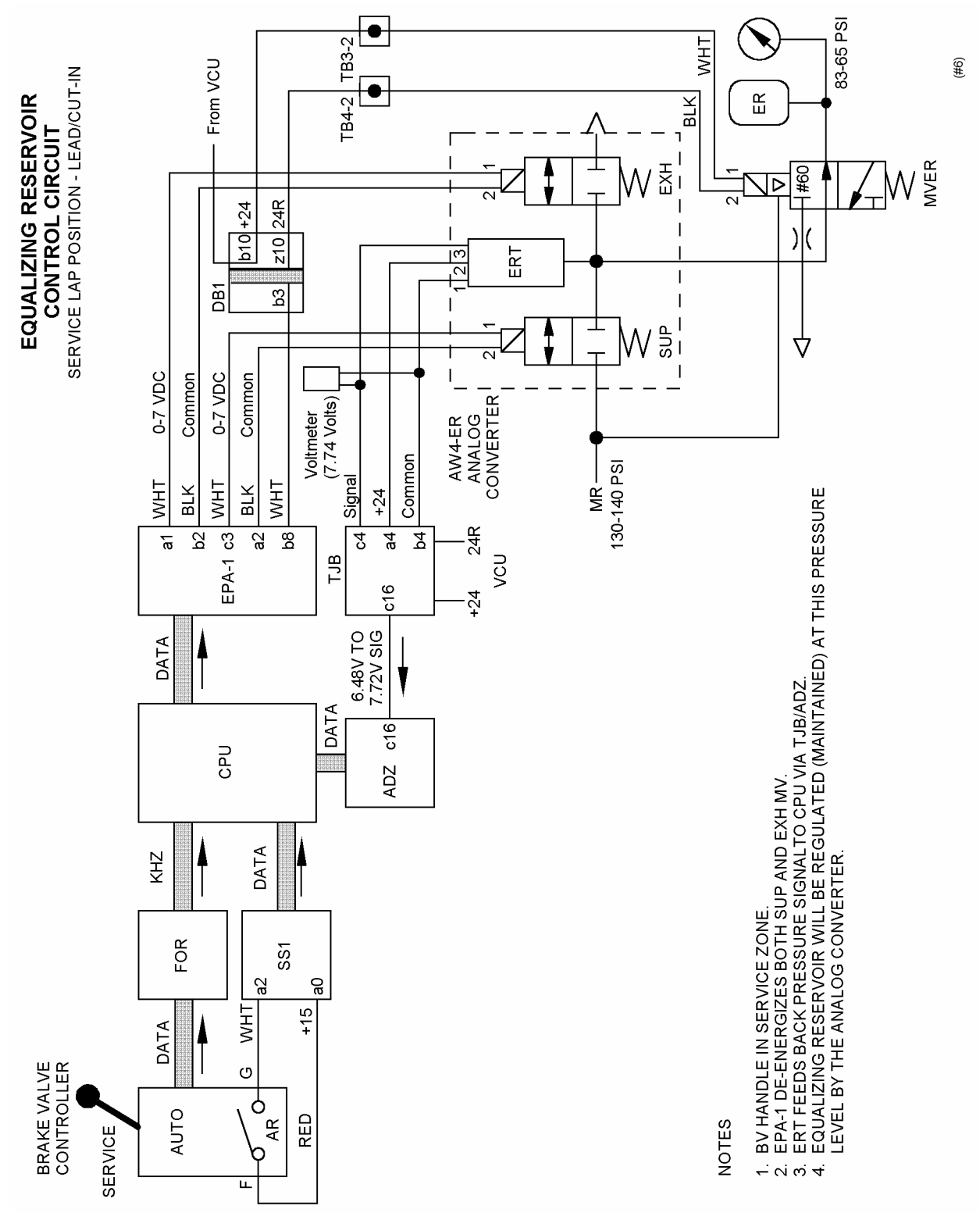


FIGURE 1-25 ER CONTROL CIRCUIT SERVICE LAP POSITION - LEAD/CUT-IN

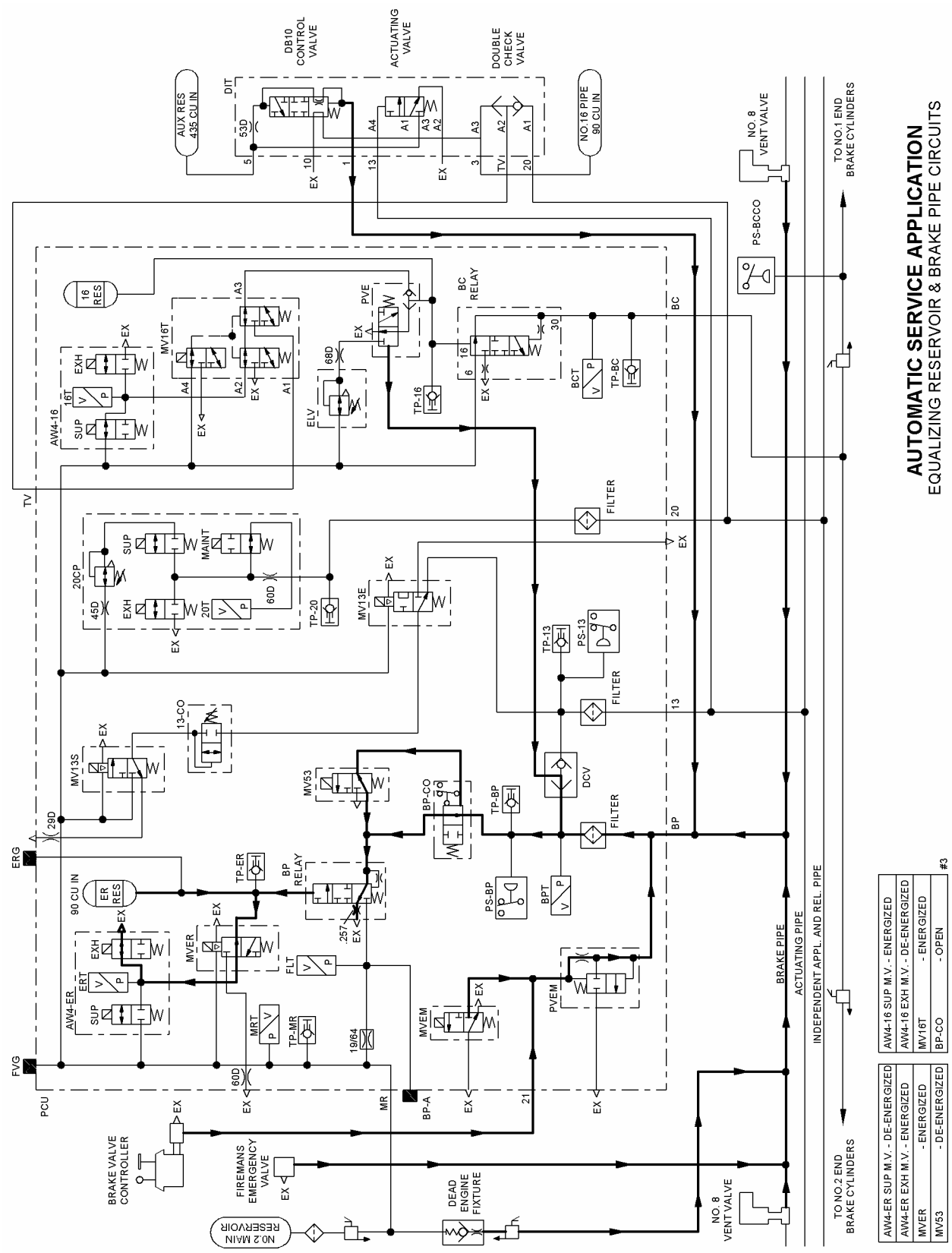


FIGURE 1-26 AUTOMATIC SERVICE APPLICATION EQUALIZING RESERVOIR AND BRAKE PIPE CIRCUITS

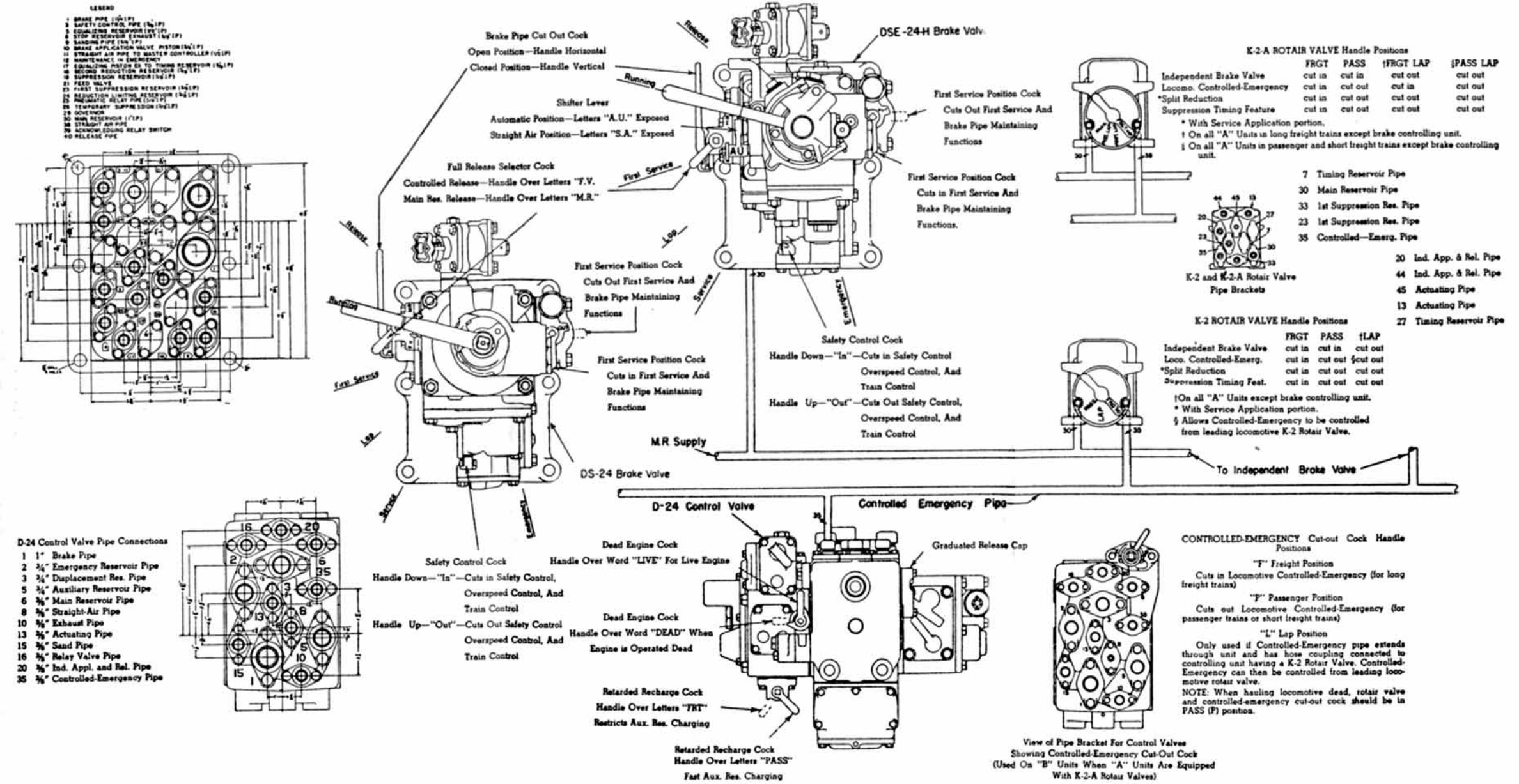
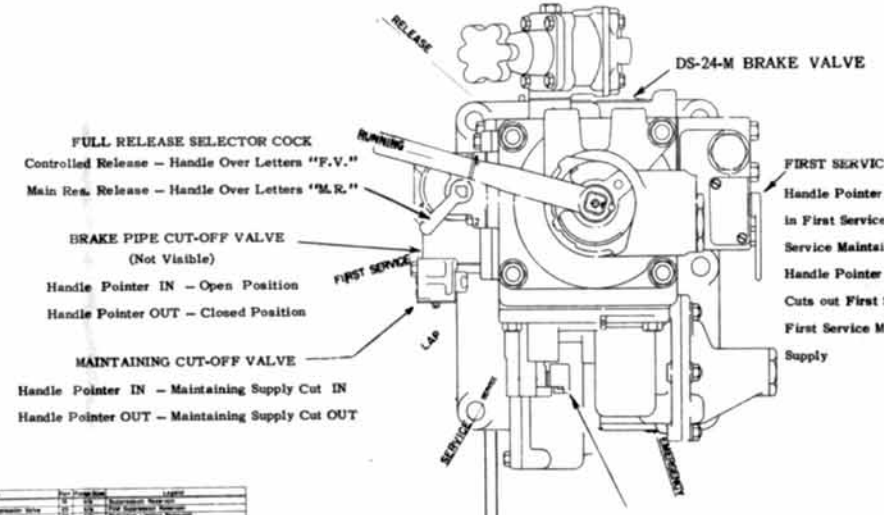


Plate 1 Cock Handle Positions for Operation of 24-RL Equipment in Various Types of Service

LOCATION OF COCKS AND VALVES

Cocks And Valves	New Brake Valve	Converted Brake Valve
Brake Pipe Cut-Off	Filling Piece Portion	Filling Piece Portion
Safety Control	Application Portion	Application Portion
Maintaining Cut-Off	Application Portion	Filling Piece Portion
First Service	Filling Piece Portion	Filling Piece Portion
Selector Cock	Rotary Valve and Seat	Rotary Valve and Seat



DS-24-M BRAKE VALVE

FULL RELEASE SELECTOR COCK
Controlled Release — Handle Over Letters "F.V."
Main Res. Release — Handle Over Letters "M.R."

BRAKE PIPE CUT-OFF VALVE
(Not Visible)
Handle Pointer IN — Open Position
Handle Pointer OUT — Closed Position

MAINTAINING CUT-OFF VALVE
Handle Pointer IN — Maintaining Supply Cut IN
Handle Pointer OUT — Maintaining Supply Cut OUT

FIRST SERVICE VALVE
Handle Pointer IN — Cuts in First Service and First Service Maintaining Supply
Handle Pointer OUT — Cuts out First Service and First Service Maintaining Supply

SAFETY CONTROL COCK
Handle IN — Cuts in Safety Control, Overspeed Control, and Train Control
Handle OUT — Cuts out Safety Control, Overspeed Control, and Train Control

M.R Supply

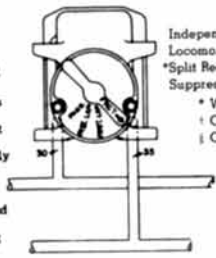
To Independent Brake Valve

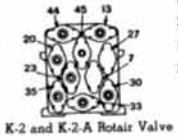
Controlled Emergency Pipe

K-2-A ROTAIR VALVE Handle Positions

	FRGT	PASS	†FRGT LAP	‡PASS LAP
Independent Brake Valve	cut in	cut in	cut out	cut out
Locomo. Controlled-Emergency	cut in	cut out	cut in	cut out
*Split Reduction	cut in	cut out	cut out	cut out
Suppression Timing Feature	cut in	cut out	cut out	cut out

* With Service Application portion.
† On all "A" Units in long freight trains except brake controlling unit.
‡ On all "A" Units in passenger and short freight trains except brake controlling unit.





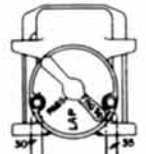
K-2 and K-2-A Rotair Valve Pipe Brackets

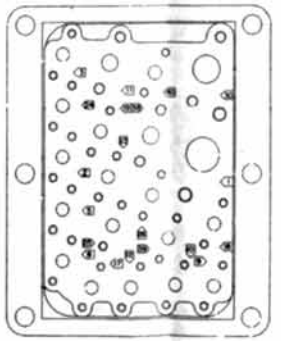
7 Timing Reservoir Pipe
30 Main Reservoir Pipe
33 1st Suppression Res. Pipe
23 1st Suppression Res. Pipe
35 Controlled—Emerg. Pipe
20 Ind. App. & Rel. Pipe
44 Ind. App. & Rel. Pipe
45 Actuating Pipe
13 Actuating Pipe
27 Timing Reservoir Pipe

K-2 ROTAIR VALVE Handle Positions

	FRGT	PASS	†LAP
Independent Brake Valve	cut in	cut in	cut out
Loco. Controlled-Emerg.	cut in	cut out	§cut out
*Split Reduction	cut in	cut out	cut out
Suppression Timing Feat.	cut in	cut out	cut out

†On all "A" Units except brake controlling unit.
* With Service Application portion.
§ Allows Controlled-Emergency to be controlled from leading locomotive K-2 Rotair Valve.





PIPE BRACKET
D-24-M Type Brake Valve

D-24 Control Valve

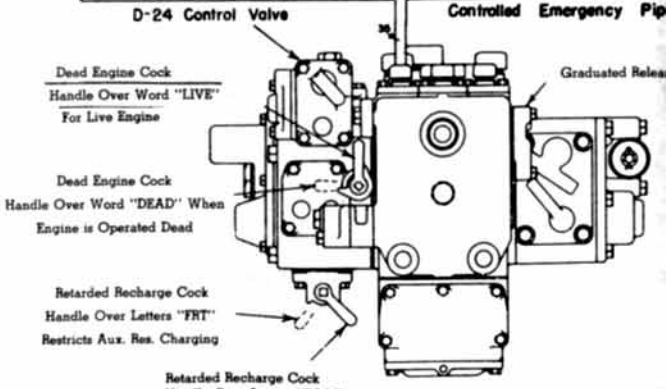
Dead Engine Cock
Handle Over Word "LIVE"
For Live Engine

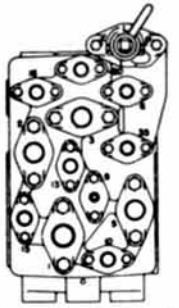
Dead Engine Cock
Handle Over Word "DEAD" When Engine is Operated Dead

Retarded Recharge Cock
Handle Over Letters "FRT"
Restricts Aux. Res. Charging

Retarded Recharge Cock
Handle Over Letters "PASS"
Fast Aux. Res. Charging

Graduated Release Cap





View of Pipe Bracket For Control Valves Showing Controlled-Emergency Cut-Out Cock (Used On "B" Units When "A" Units Are Equipped With K-2-A Rotair Valves)

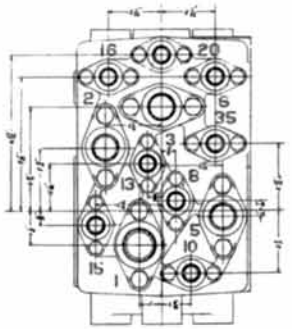
CONTROLLED-EMERGENCY Cut-out Cock Handle Positions

"F" Freight Position
Cuts in Locomotive Controlled-Emergency (for long freight trains)

"P" Passenger Position
Cuts out Locomotive Controlled-Emergency (for passenger trains or short freight trains)

"L" Lap Position
Only used if Controlled-Emergency pipe extends through unit and has hose coupling connected to controlling unit having a K-2 Rotair Valve. Controlled-Emergency can then be controlled from leading locomotive rotair valve.

NOTE: When hauling locomotive dead, rotair valve and controlled-emergency cut-out cock should be in PASS (P) position.



D-24 Control Valve Pipe Connections
1 1" Brake Pipe
2 ¾" Emergency Reservoir Pipe
3 ¾" Displacement Res. Pipe
5 ¾" Auxiliary Reservoir Pipe
6 ¾" Main Reservoir Pipe
8 ⅜" Straight-Air Pipe
10 ¾" Exhaust Pipe
13 ⅜" Actuating Pipe
15 ⅜" Sand Pipe
16 ⅜" Relay Valve Pipe
20 ⅜" Ind. Appl. and Rel. Pipe
35 ⅜" Controlled-Emergency Pipe

Plate 2 Handle Positions, 24-RL Equipment With Pressure Maintaining Brake Valve

LEAD "A" UNIT					"B" UNIT			TRAILING "A" UNIT				
K-2 ROTAIR			K-2-A ROTAIR					K-2 ROTAIR			K-2-A ROTAIR	
No. 35 Pipe Thru	No. 35 Pipe Thru Selector Cock on C.V.		No. 35 Pipe Not Thru	No. 35 Pipe Thru	No. 35 Pipe Thru No Selector Cock on Control Valve	No. 35 Pipe Thru Selector Cock on C.V.	No. 35 Pipe Not Thru Selector Cock on C.V.	No. 35 Pipe Thru	No. 35 Pipe Thru Selector Cock on C.V.		No. 35 Pipe Not Thru	No. 35 Pipe Thru
Rotair Pos.	Rotair Pos.	Cock Pos.	Rotair Pos.	Rotair Pos.		Cock Position	Cock Position	Rotair Pos.	Rotair Pos.	Cock Pos.	Rotair Pos.	Rotair Pos.
Frt.					Controlled From Lead Unit			Lap	Lap	Lap	Frt. Lap 2	Frt. Lap
Pass.					Controlled From Lead Unit			Lap	Lap	Lap	Pass. Lap 2	Pass. Lap
Frt.						Lap		Lap	Lap	Lap	Frt. Lap 2	Frt. Lap
Pass.						Lap		Lap	Lap	Lap	Pass. Lap 2	Pass. Lap
Frt.							Frt.	Lap 3	Lap	Frt.	Frt. Lap	Frt. Lap 1
Pass.							Pass.	Lap 3	Lap	Pass.	Pass. Lap	Pass. Lap
	Frt.	Lap			Controlled From Lead Unit			Lap	Lap	Lap	Frt. Lap 2	Frt. Lap
	Pass.	Lap			Controlled From Lead Unit			Lap	Lap	Lap	Pass. Lap 2	Pass. Lap
	Frt.	Lap				Lap		Lap	Lap	Lap	Frt. Lap 2	Frt. Lap
	Pass.	Lap				Lap		Lap	Lap	Lap	Pass. Lap 2	Pass. Lap
	Frt.	Lap 1					Frt.	Lap 3	Lap	Frt.	Frt. Lap	Frt. Lap 1
	Pass.	Lap 1					Pass.	Lap 3	Lap	Pass.	Pass. Lap	Pass. Lap
			Frt.		Control Dependent on			Lap 3 4	Lap	Frt. 8	Frt. Lap 8	Frt. Lap 6
			Pass.		Trailing "A" Unit			Lap 3	Lap	Pass. 5	Pass. Lap	Pass. Lap
			Frt.			Frt.		Lap 3 7	Lap	Frt.	Frt. Lap	Frt. Lap
			Pass.			Pass.		Lap 3	Lap	Pass.	Pass. Lap	Pass. Lap
			Frt.				Frt.	Lap 3 7	Lap	Frt.	Frt. Lap	Frt. Lap
			Pass.				Pass.	Lap 3	Lap	Pass.	Pass. Lap	Pass. Lap
				Frt.	Controlled From Lead Unit			Lap	Lap	Lap	Frt. Lap 2	Frt. Lap
				Pass.	Controlled From Lead Unit			Lap	Lap	Lap	Pass. Lap 2	Pass. Lap
				Frt.		Lap		Lap	Lap	Lap	Frt. Lap 2	Frt. Lap
				Pass.		Lap		Lap	Lap	Lap	Pass. Lap 2	Pass. Lap
				Frt. 1			Frt.	Lap 3	Lap	Frt. 1	Frt. Lap	Frt. Lap 1
				Pass.			Pass.	Lap 3	Lap	Pass.	Pass. Lap	Pass. Lap

1 Close No. 35 Cut-out Cock at end of unit.

2 Close No. 35 cut-out cock at rear of preceding unit.

3 Open No. 35 cut-out cock at end of unit.

4 Controlled Emergency available only on Lead Unit.

5 Cock may be placed in Lap if No. 35 pipe cut-out cocks are open to At.

6 By connecting No. 35 pipes between units, Controlled Emergency is available on "A" Unit. Feature can be annulled from Lead Unit.

7 Controlled Emergency not available on Trailing "A" Unit.

8 Controlled Emergency available only on Lead and Trailing "A" Units.

Plate 3 ROTAIR® Valve Position Combinations

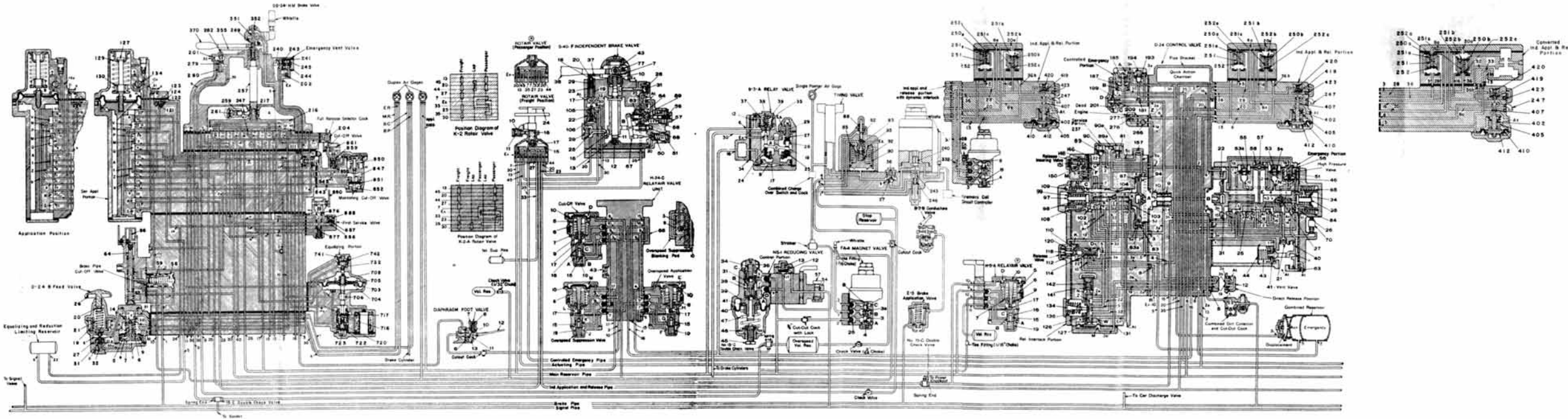


Plate 4 Diagrammatic—24-RL Locomotive Brake Equipment with DS-24-HM Brake Valve and Four-Face RELAYAIR® Valve Unit

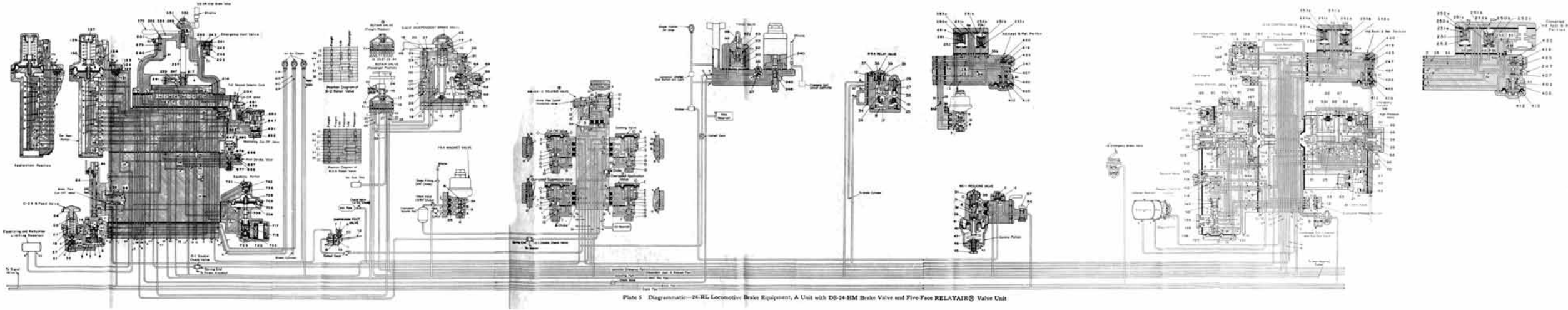


Plate 5 Diagrammatic—24-RL Locomotive Brake Equipment, A Unit with DS-24-HM Brake Valve and Five-Face RELAYAIR® Valve Unit

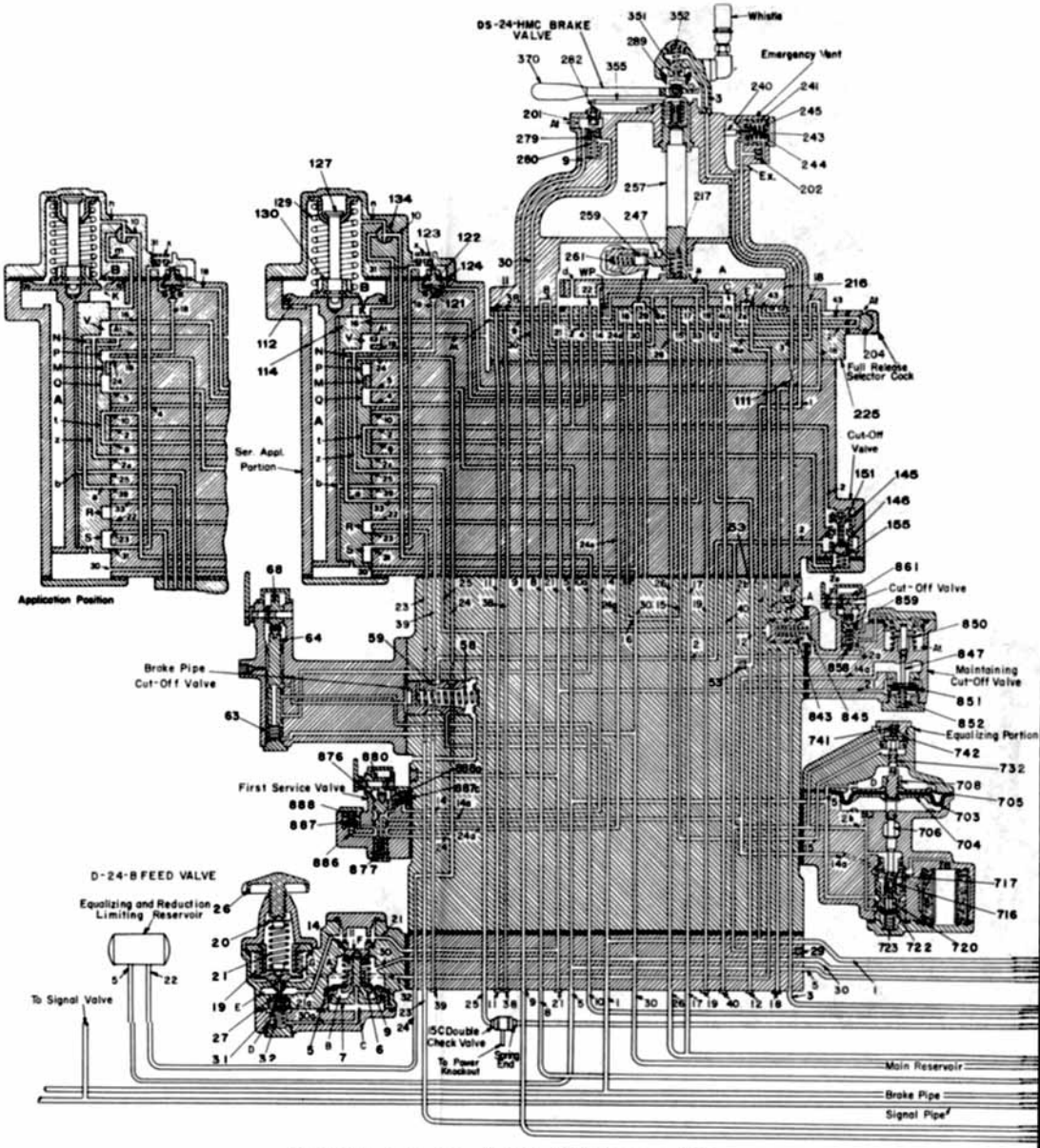


Plate 5A Overlay—DS-24-HMC Brake Valve

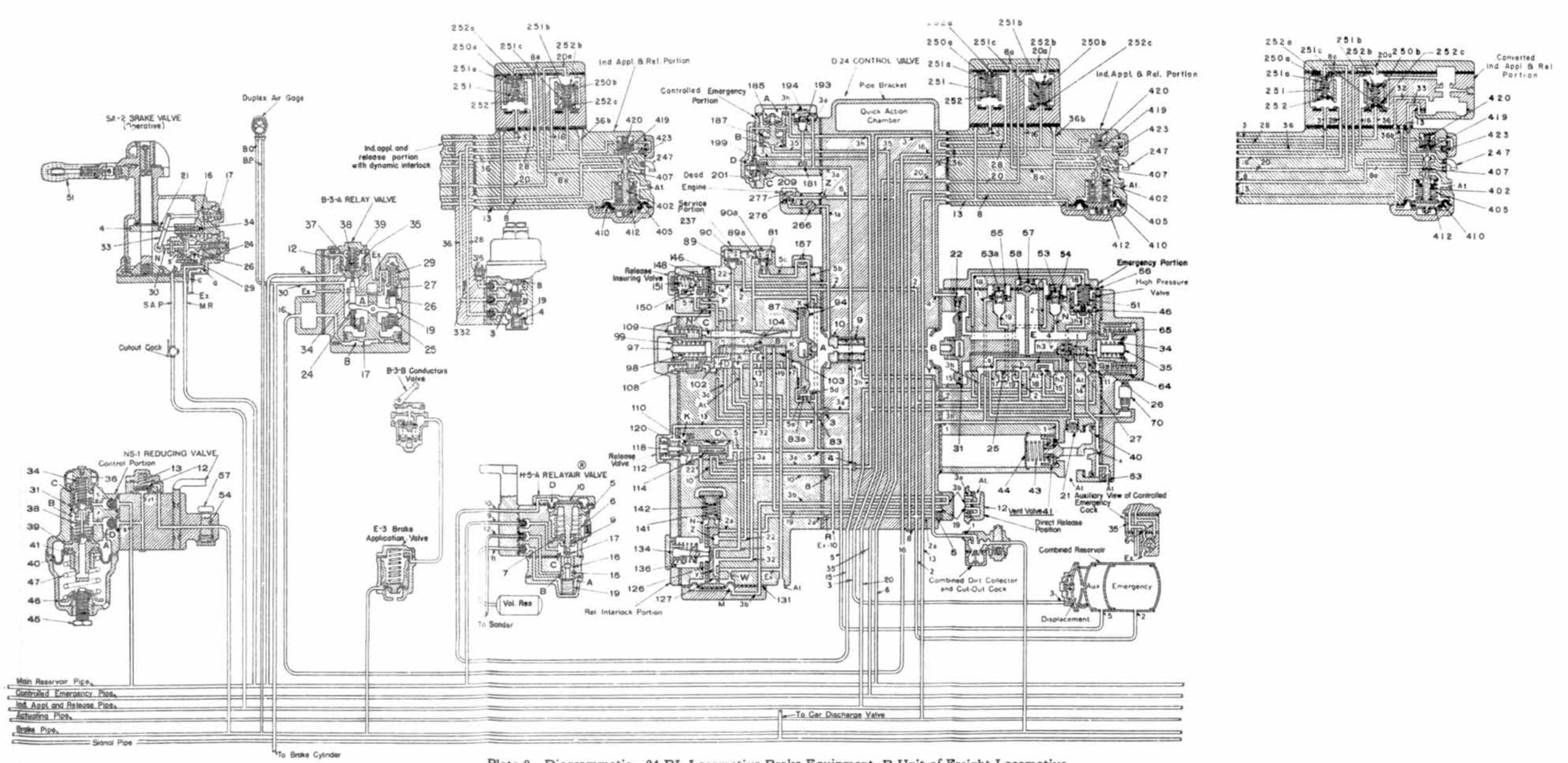


Plate 8 Diagrammatic—24-RL Locomotive Brake Equipment, B Unit of Freight Locomotive.

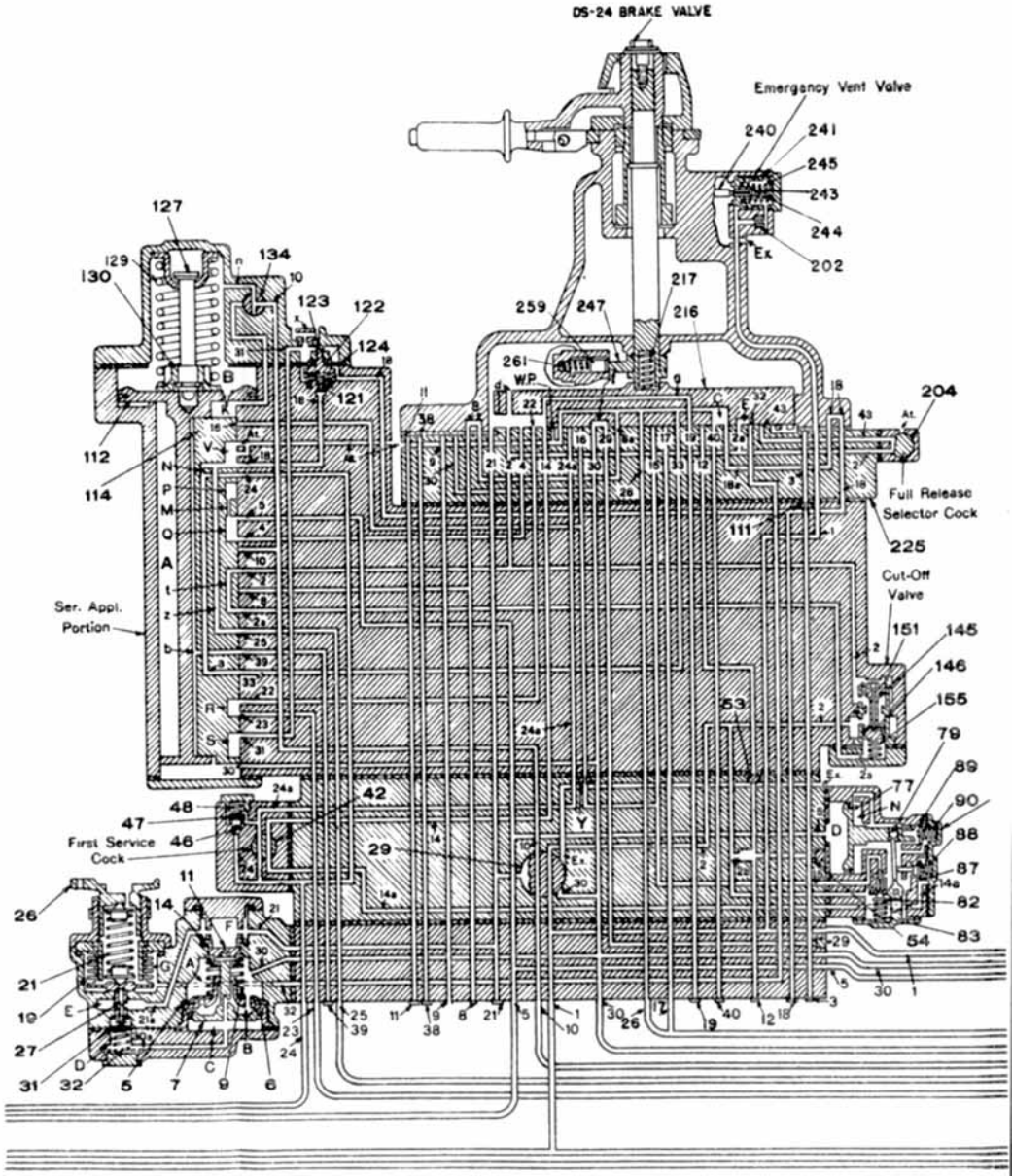


Plate 9 Diagrammatic—Supplemental View of DS-24 Brake Valve for Freight Service

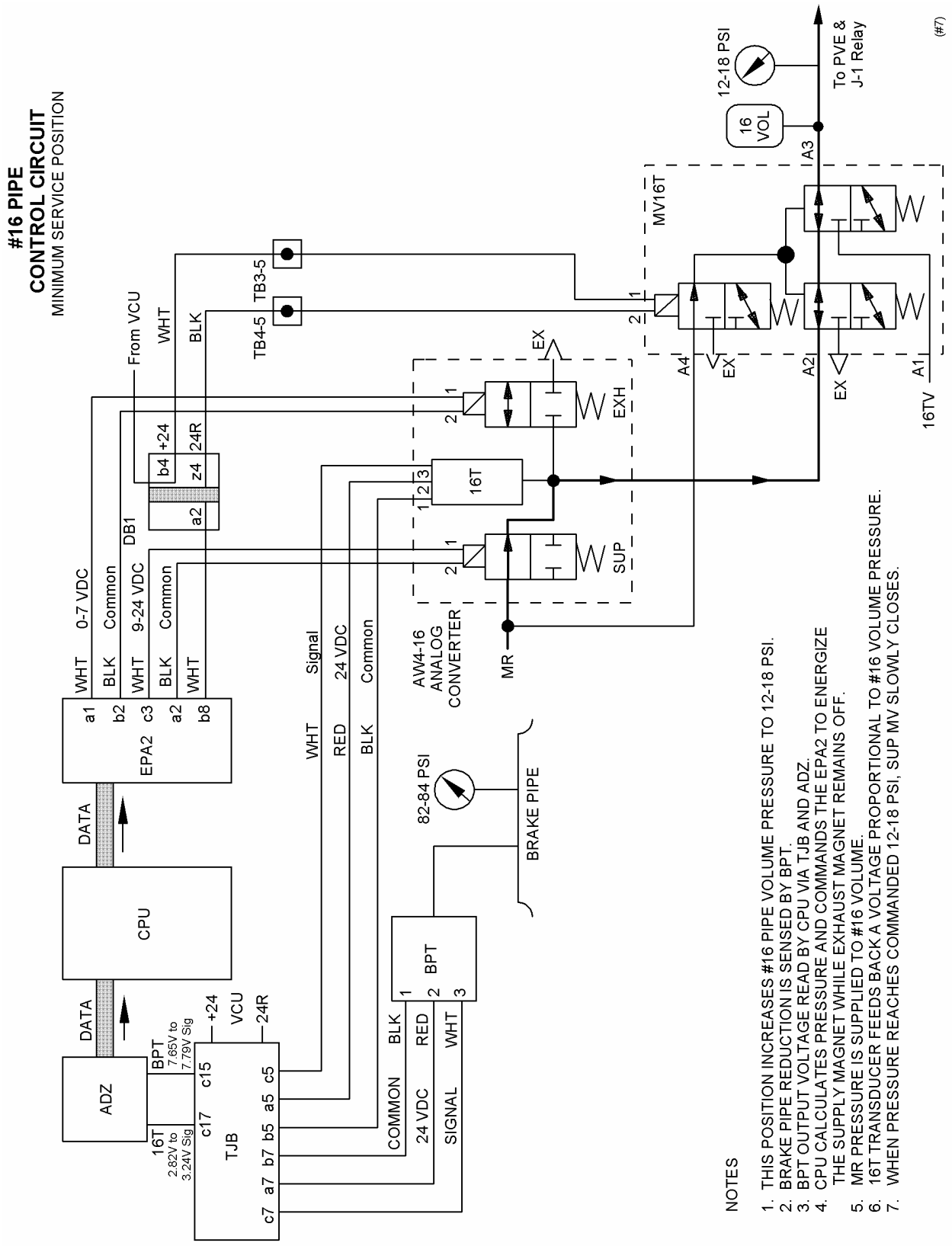


FIGURE 1-27 #16 PIPE CONTROL CIRCUIT MINIMUM SERVICE POSITION

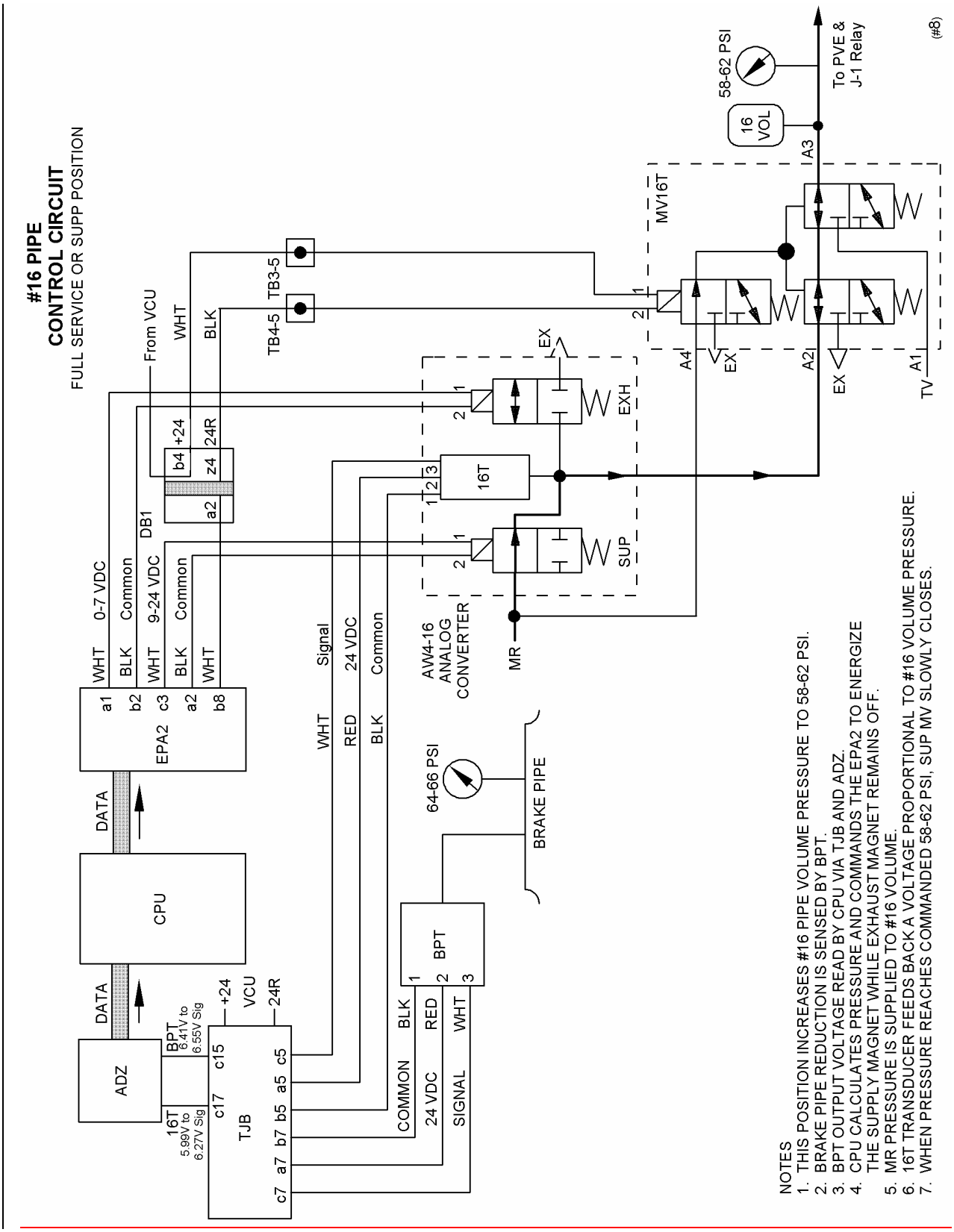


FIGURE 1-28 #16 PIPE CONTROL CIRCUIT FULL SERVICE OR SUPPRESSION POSITION

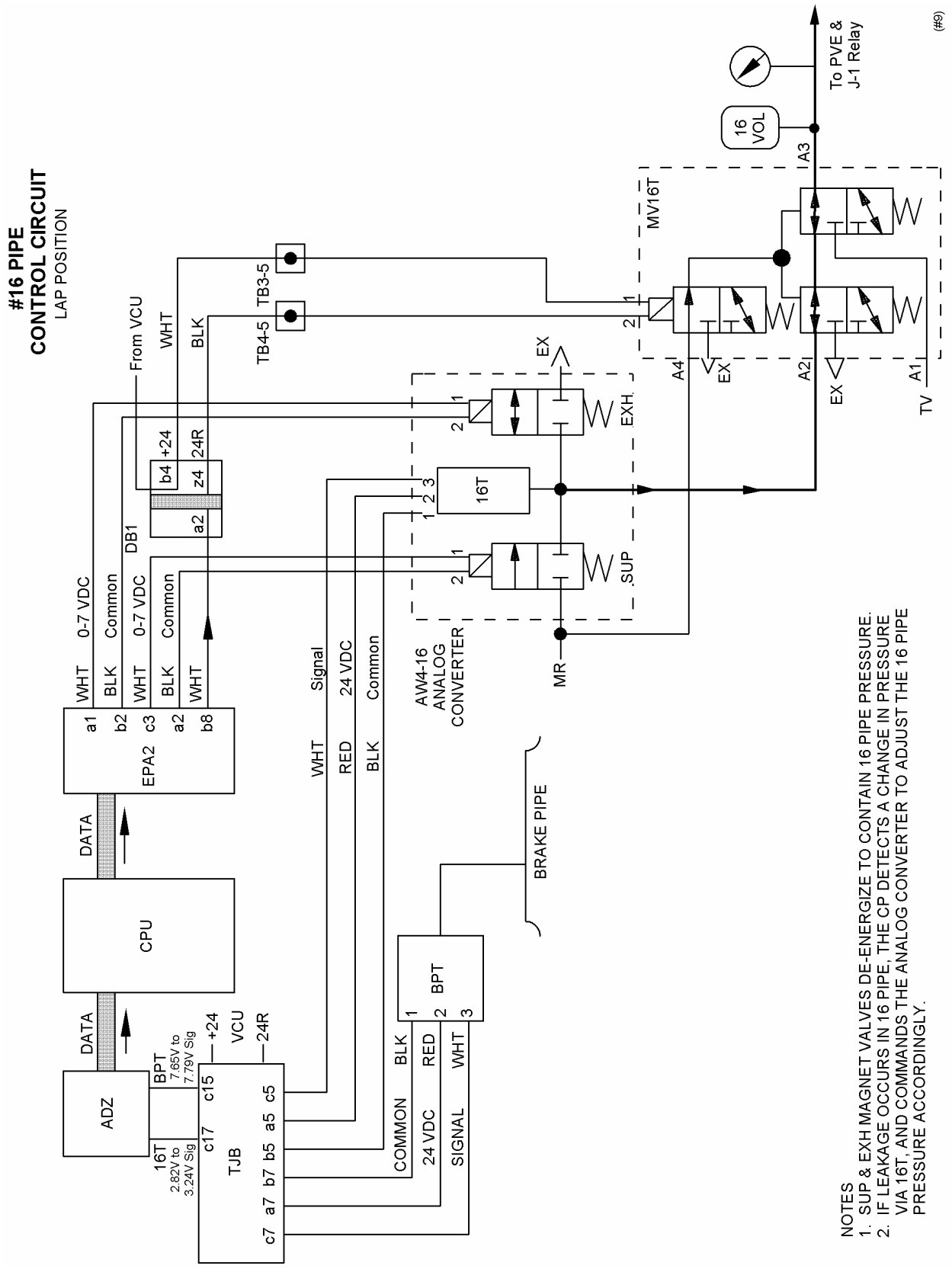


FIGURE 1-29 #16 PIPE CONTROL CIRCUIT LAP POSITION

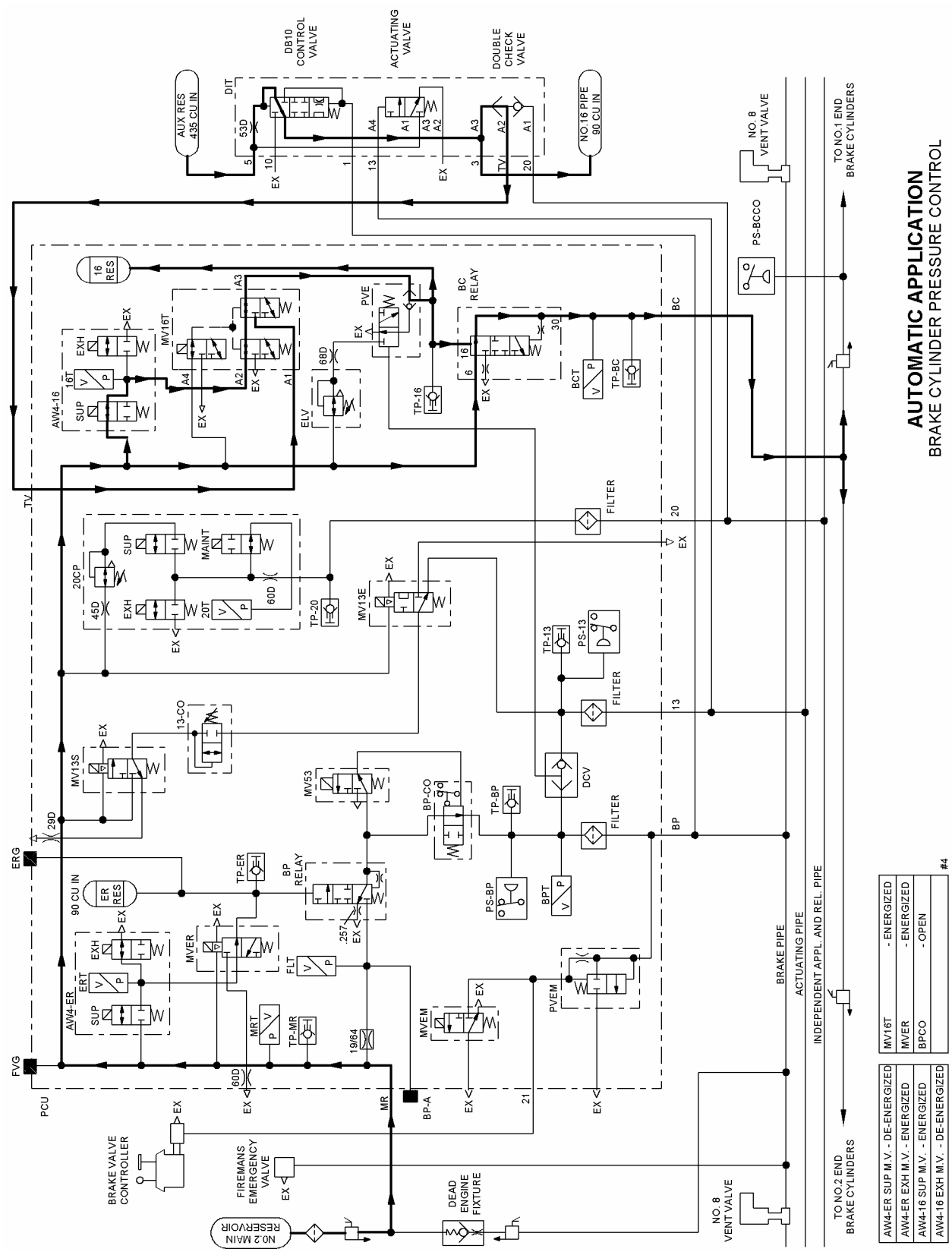


FIGURE 1-30 AUTOMATIC APPLICATION BRAKE CYLINDER CONTROL

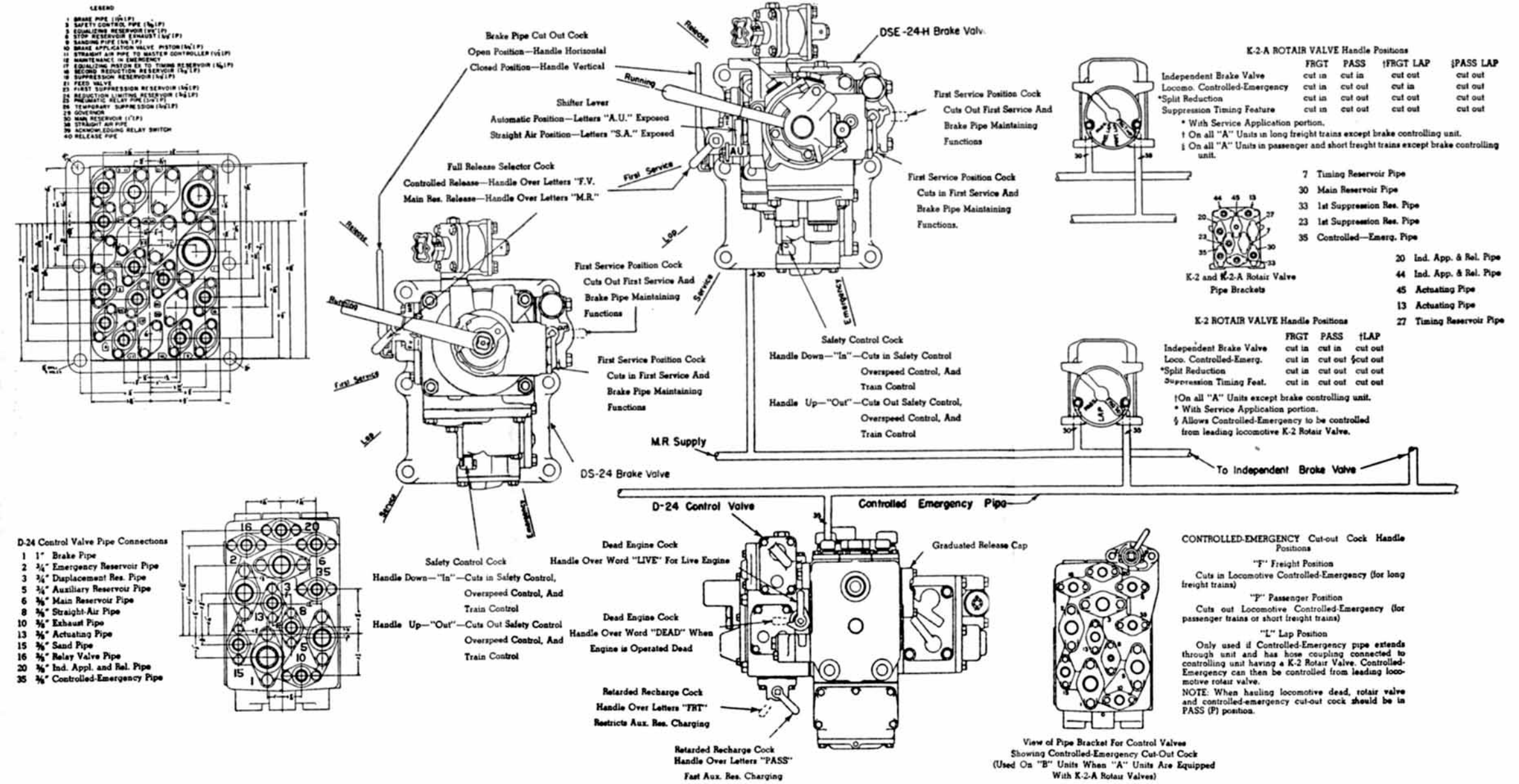
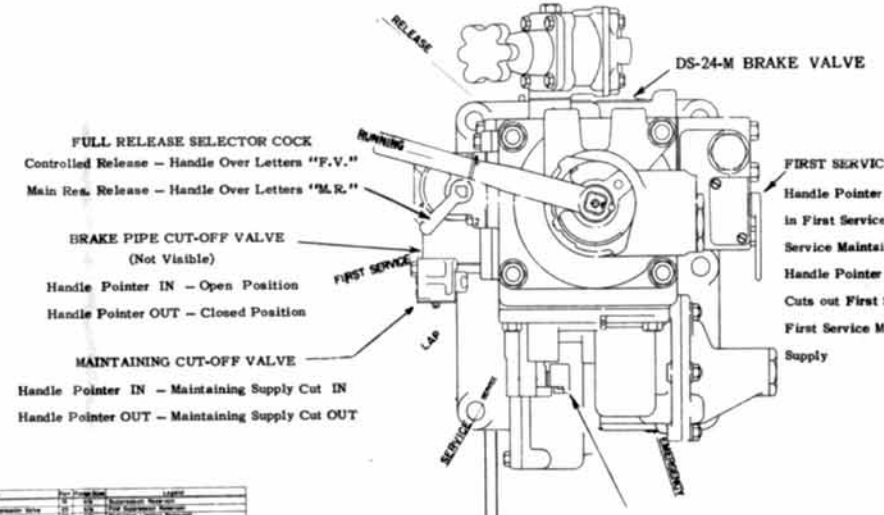


Plate 1 Cock Handle Positions for Operation of 24-RL Equipment in Various Types of Service

LOCATION OF COCKS AND VALVES

Cocks And Valves	New Brake Valve	Converted Brake Valve
Brake Pipe Cut-Off	Filling Piece Portion	Filling Piece Portion
Safety Control	Application Portion	Application Portion
Maintaining Cut-Off	Application Portion	Filling Piece Portion
First Service	Filling Piece Portion	Filling Piece Portion
Selector Cock	Rotary Valve and Seat	Rotary Valve and Seat



DS-24-M BRAKE VALVE

FULL RELEASE SELECTOR COCK
Controlled Release — Handle Over Letters "F.V."
Main Res. Release — Handle Over Letters "M.R."

BRAKE PIPE CUT-OFF VALVE
(Not Visible)
Handle Pointer IN — Open Position
Handle Pointer OUT — Closed Position

MAINTAINING CUT-OFF VALVE
Handle Pointer IN — Maintaining Supply Cut IN
Handle Pointer OUT — Maintaining Supply Cut OUT

FIRST SERVICE VALVE
Handle Pointer IN — Cuts in First Service and First Service Maintaining Supply
Handle Pointer OUT — Cuts out First Service and First Service Maintaining Supply

SAFETY CONTROL COCK
Handle IN — Cuts in Safety Control, Overspeed Control, and Train Control
Handle OUT — Cuts out Safety Control, Overspeed Control, and Train Control

M.R Supply

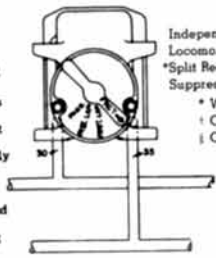
To Independent Brake Valve

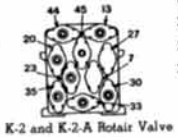
Controlled Emergency Pipe

K-2-A ROTAIR VALVE Handle Positions

	FRGT	PASS	†FRGT LAP	‡PASS LAP
Independent Brake Valve	cut in	cut in	cut out	cut out
Locomo. Controlled-Emergency	cut in	cut out	cut in	cut out
*Split Reduction	cut in	cut out	cut out	cut out
Suppression Timing Feature	cut in	cut out	cut out	cut out

* With Service Application portion.
† On all "A" Units in long freight trains except brake controlling unit.
‡ On all "A" Units in passenger and short freight trains except brake controlling unit.





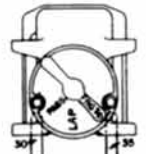
K-2 and K-2-A Rotair Valve Pipe Brackets

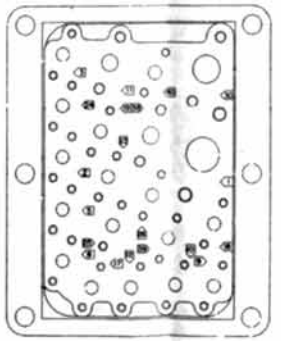
7 Timing Reservoir Pipe
30 Main Reservoir Pipe
33 1st Suppression Res. Pipe
23 1st Suppression Res. Pipe
35 Controlled—Emerg. Pipe
20 Ind. App. & Rel. Pipe
44 Ind. App. & Rel. Pipe
45 Actuating Pipe
13 Actuating Pipe
27 Timing Reservoir Pipe

K-2 ROTAIR VALVE Handle Positions

	FRGT	PASS	†LAP
Independent Brake Valve	cut in	cut in	cut out
Loco. Controlled-Emerg.	cut in	cut out	§cut out
*Split Reduction	cut in	cut out	cut out
Suppression Timing Feat.	cut in	cut out	cut out

†On all "A" Units except brake controlling unit.
* With Service Application portion.
§ Allows Controlled-Emergency to be controlled from leading locomotive K-2 Rotair Valve.





PIPE BRACKET
D-24-M Type Brake Valve

D-24 Control Valve

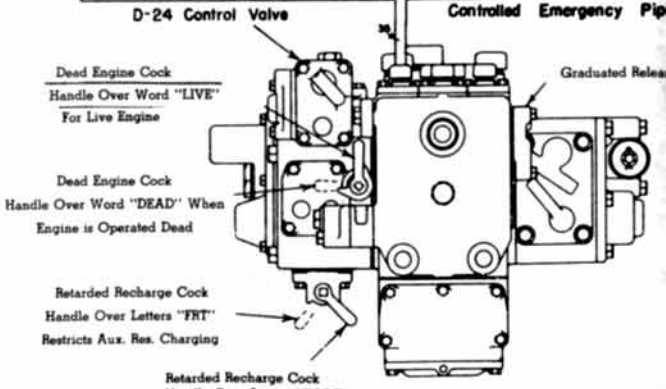
Dead Engine Cock
Handle Over Word "LIVE"
For Live Engine

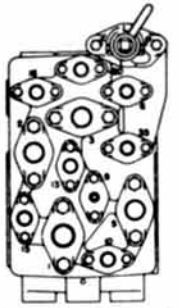
Dead Engine Cock
Handle Over Word "DEAD" When Engine is Operated Dead

Retarded Recharge Cock
Handle Over Letters "FRT"
Restricts Aux. Res. Charging

Retarded Recharge Cock
Handle Over Letters "PASS"
Fast Aux. Res. Charging

Graduated Release Cap





View of Pipe Bracket For Control Valves Showing Controlled-Emergency Cut-Out Cock (Used On "B" Units When "A" Units Are Equipped With K-2-A Rotair Valves)

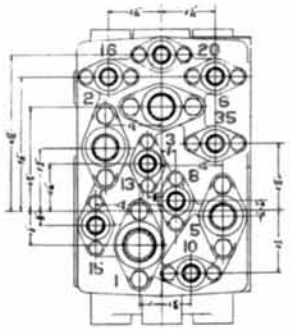
CONTROLLED-EMERGENCY Cut-out Cock Handle Positions

"F" Freight Position
Cuts in Locomotive Controlled-Emergency (for long freight trains)

"P" Passenger Position
Cuts out Locomotive Controlled-Emergency (for passenger trains or short freight trains)

"L" Lap Position
Only used if Controlled-Emergency pipe extends through unit and has hose coupling connected to controlling unit having a K-2 Rotair Valve. Controlled-Emergency can then be controlled from leading locomotive rotair valve.

NOTE: When hauling locomotive dead, rotair valve and controlled-emergency cut-out cock should be in PASS (P) position.



D-24 Control Valve Pipe Connections
1 1" Brake Pipe
2 ¾" Emergency Reservoir Pipe
3 ¾" Displacement Res. Pipe
5 ¾" Auxiliary Reservoir Pipe
6 ¾" Main Reservoir Pipe
8 ⅜" Straight-Air Pipe
10 ¾" Exhaust Pipe
13 ⅜" Actuating Pipe
15 ⅜" Sand Pipe
16 ⅜" Relay Valve Pipe
20 ⅜" Ind. Appl. and Rel. Pipe
35 ⅜" Controlled-Emergency Pipe

Plate 2 Handle Positions, 24-RL Equipment With Pressure Maintaining Brake Valve

LEAD "A" UNIT					"B" UNIT			TRAILING "A" UNIT				
K-2 ROTAIR			K-2-A ROTAIR					K-2 ROTAIR			K-2-A ROTAIR	
No. 35 Pipe Thru	No. 35 Pipe Thru Selector Cock on C.V.		No. 35 Pipe Not Thru	No. 35 Pipe Thru	No. 35 Pipe Thru No Selector Cock on Control Valve	No. 35 Pipe Thru Selector Cock on C.V.	No. 35 Pipe Not Thru Selector Cock on C.V.	No. 35 Pipe Thru	No. 35 Pipe Thru Selector Cock on C.V.		No. 35 Pipe Not Thru	No. 35 Pipe Thru
Rotair Pos.	Rotair Pos.	Cock Pos.	Rotair Pos.	Rotair Pos.		Cock Position	Cock Position	Rotair Pos.	Rotair Pos.	Cock Pos.	Rotair Pos.	Rotair Pos.
Frt.					Controlled From Lead Unit			Lap	Lap	Lap	Frt. Lap 2	Frt. Lap
Pass.					Controlled From Lead Unit			Lap	Lap	Lap	Pass. Lap 2	Pass. Lap
Frt.						Lap		Lap	Lap	Lap	Frt. Lap 2	Frt. Lap
Pass.						Lap		Lap	Lap	Lap	Pass. Lap 2	Pass. Lap
Frt.							Frt.	Lap 3	Lap	Frt.	Frt. Lap	Frt. Lap 1
Pass.							Pass.	Lap 3	Lap	Pass.	Pass. Lap	Pass. Lap
	Frt.	Lap			Controlled From Lead Unit			Lap	Lap	Lap	Frt. Lap 2	Frt. Lap
	Pass.	Lap			Controlled From Lead Unit			Lap	Lap	Lap	Pass. Lap 2	Pass. Lap
	Frt.	Lap				Lap		Lap	Lap	Lap	Frt. Lap 2	Frt. Lap
	Pass.	Lap				Lap		Lap	Lap	Lap	Pass. Lap 2	Pass. Lap
	Frt.	Lap 1					Frt.	Lap 3	Lap	Frt.	Frt. Lap	Frt. Lap 1
	Pass.	Lap 1					Pass.	Lap 3	Lap	Pass.	Pass. Lap	Pass. Lap
			Frt.		Control Dependent on			Lap 3 4	Lap	Frt. 8	Frt. Lap 8	Frt. Lap 6
			Pass.		Trailing "A" Unit			Lap 3	Lap	Pass. 5	Pass. Lap	Pass. Lap
			Frt.			Frt.		Lap 3 7	Lap	Frt.	Frt. Lap	Frt. Lap
			Pass.			Pass.		Lap 3	Lap	Pass.	Pass. Lap	Pass. Lap
			Frt.				Frt.	Lap 3 7	Lap	Frt.	Frt. Lap	Frt. Lap
			Pass.				Pass.	Lap 3	Lap	Pass.	Pass. Lap	Pass. Lap
				Frt.	Controlled From Lead Unit			Lap	Lap	Lap	Frt. Lap 2	Frt. Lap
				Pass.	Controlled From Lead Unit			Lap	Lap	Lap	Pass. Lap 2	Pass. Lap
				Frt.		Lap		Lap	Lap	Lap	Frt. Lap 2	Frt. Lap
				Pass.		Lap		Lap	Lap	Lap	Pass. Lap 2	Pass. Lap
				Frt. 1			Frt.	Lap 3	Lap	Frt. 1	Frt. Lap	Frt. Lap 1
				Pass.			Pass.	Lap 3	Lap	Pass.	Pass. Lap	Pass. Lap

1 Close No. 35 Cut-out Cock at end of unit.

2 Close No. 35 cut-out cock at rear of preceding unit.

3 Open No. 35 cut-out cock at end of unit.

4 Controlled Emergency available only on Lead Unit.

5 Cock may be placed in Lap if No. 35 pipe cut-out cocks are open to At.

6 By connecting No. 35 pipes between units, Controlled Emergency is available on "A" Unit. Feature can be annulled from Lead Unit.

7 Controlled Emergency not available on Trailing "A" Unit.

8 Controlled Emergency available only on Lead and Trailing "A" Units.

Plate 3 ROTAIR® Valve Position Combinations

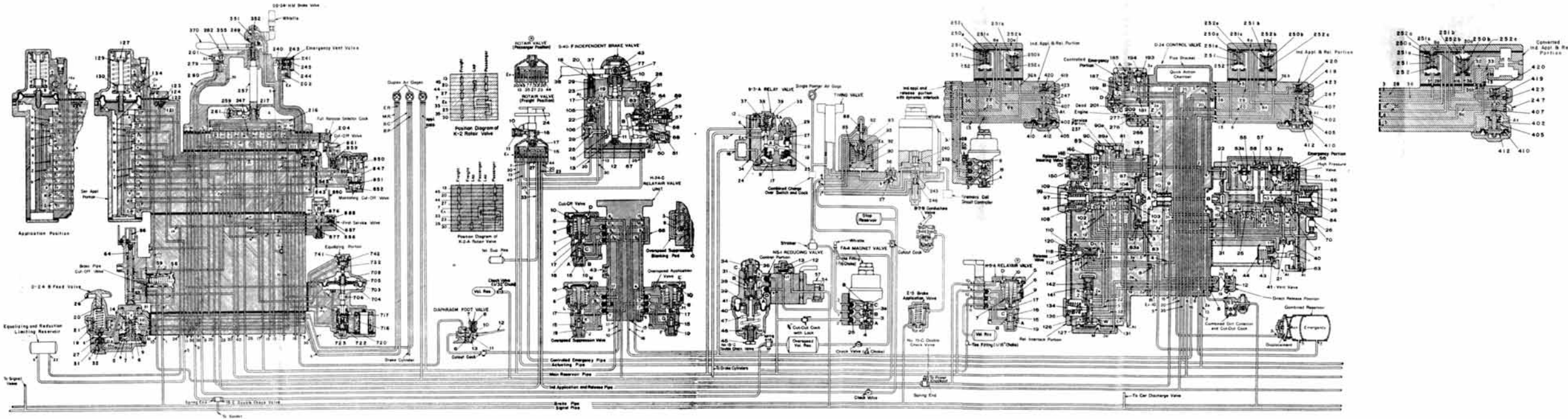


Plate 4 Diagrammatic—24-RL Locomotive Brake Equipment with DS-24-HM Brake Valve and Four-Face RELAYAIR® Valve Unit

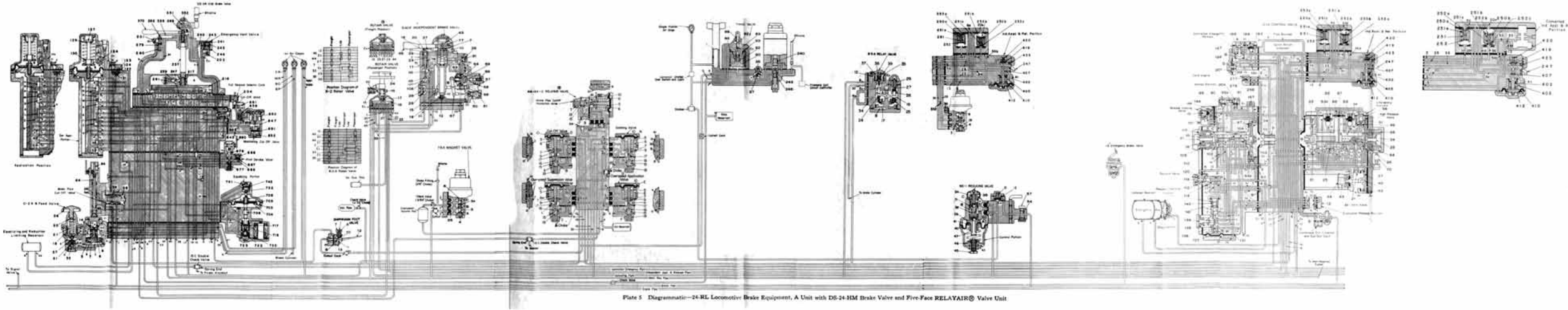


Plate 5 Diagrammatic—24-RL Locomotive Brake Equipment, A Unit with DS-24-HM Brake Valve and Five-Face RELAYAIR® Valve Unit

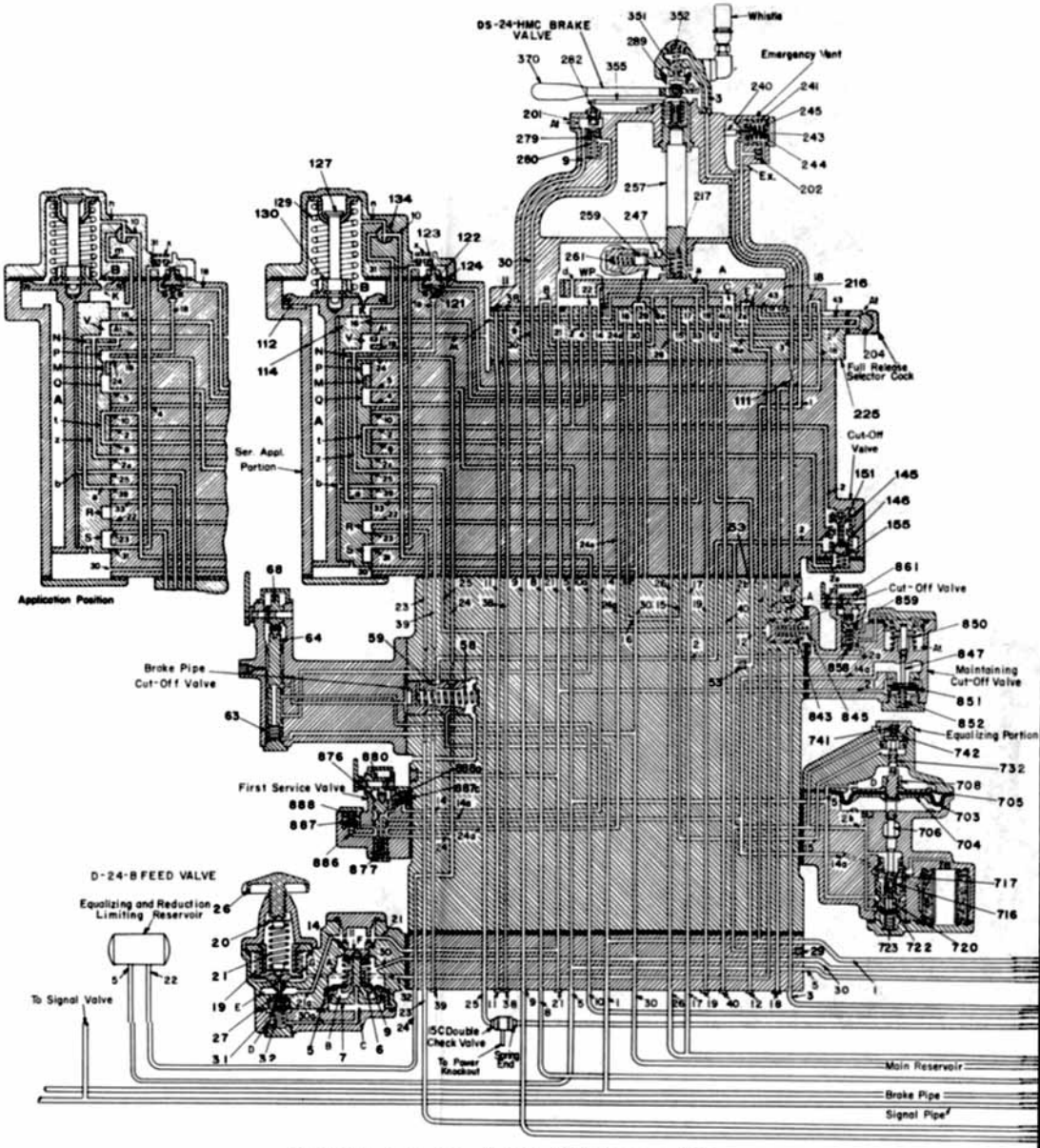


Plate 5A Overlay—DS-24-HMC Brake Valve

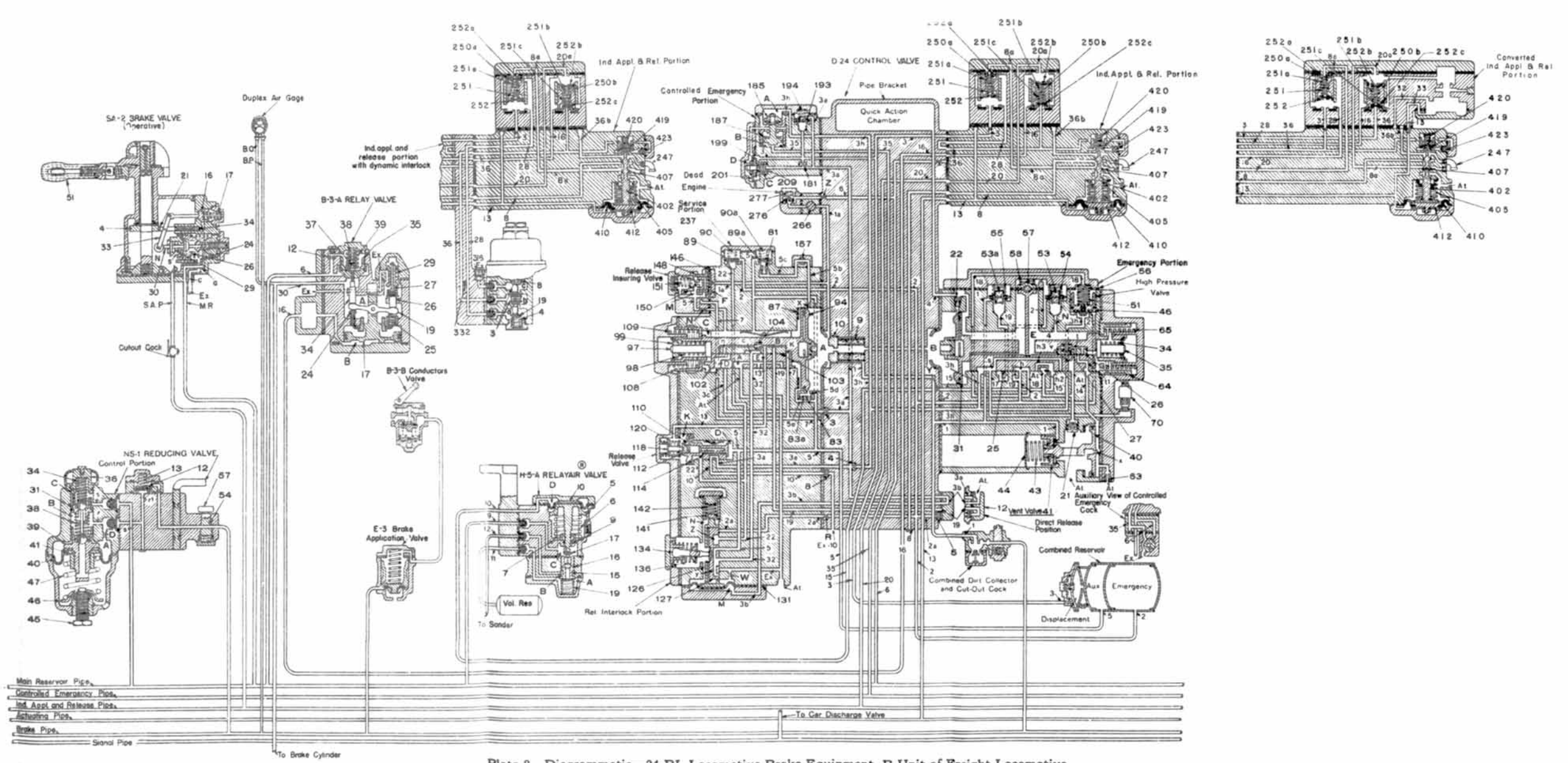


Plate 8 Diagrammatic—24-RL Locomotive Brake Equipment, B Unit of Freight Locomotive.

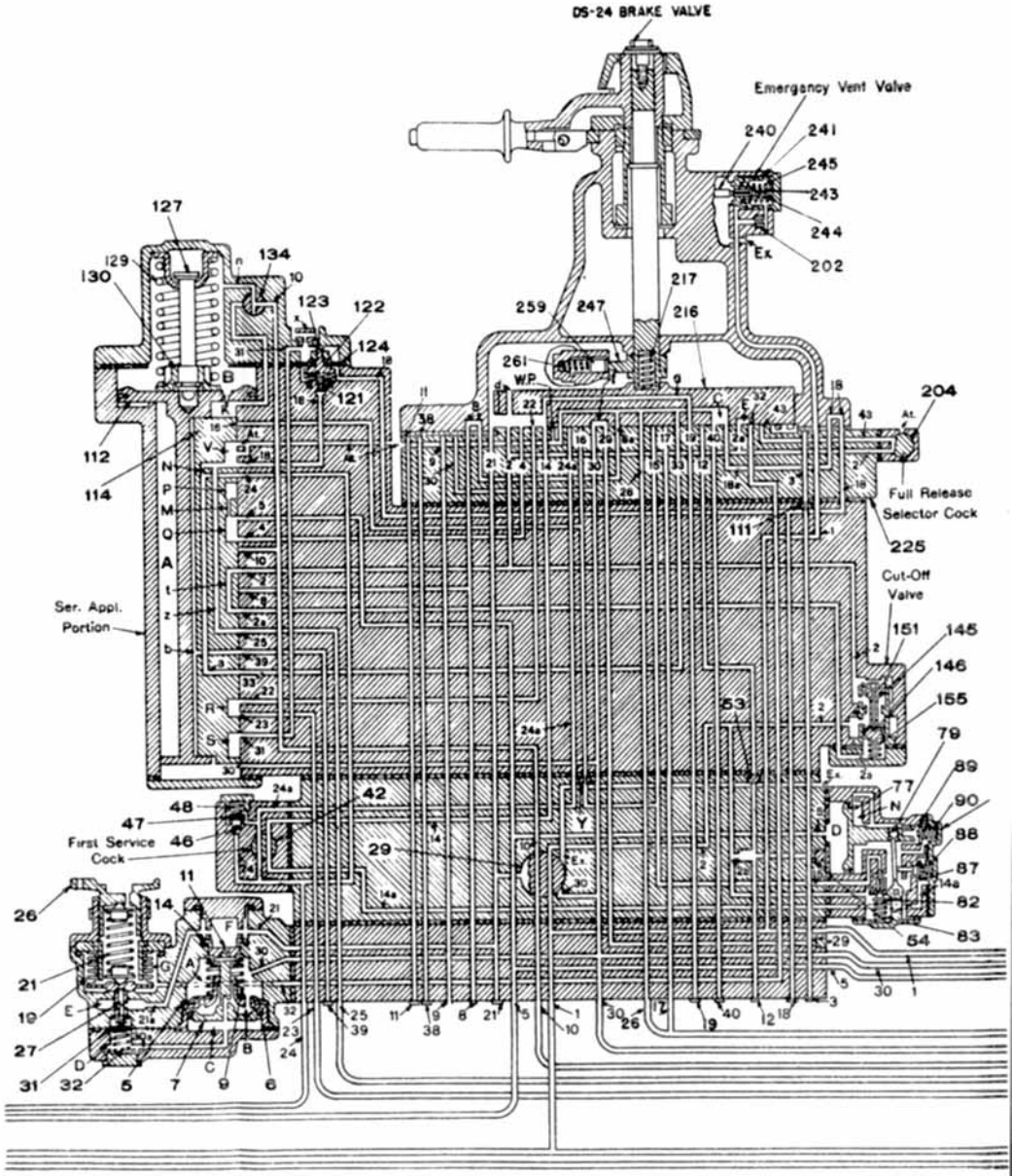


Plate 9 Diagrammatic—Supplemental View of DS-24 Brake Valve for Freight Service

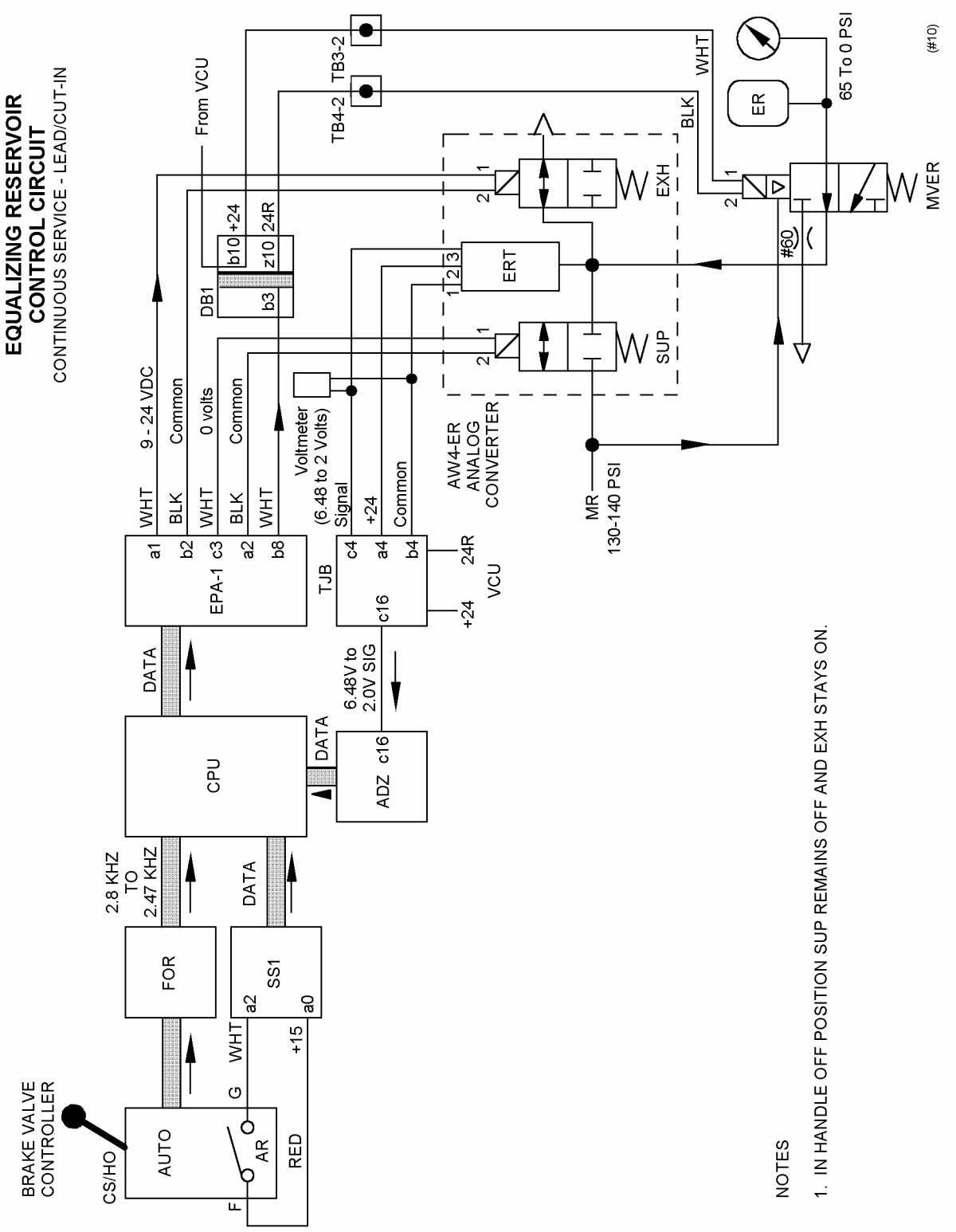


FIGURE 1-31 ER CONTROL CIRCUIT CONTINUOUS SERVICEHANDLE OUT POSITION - LEAD/CUT-IN

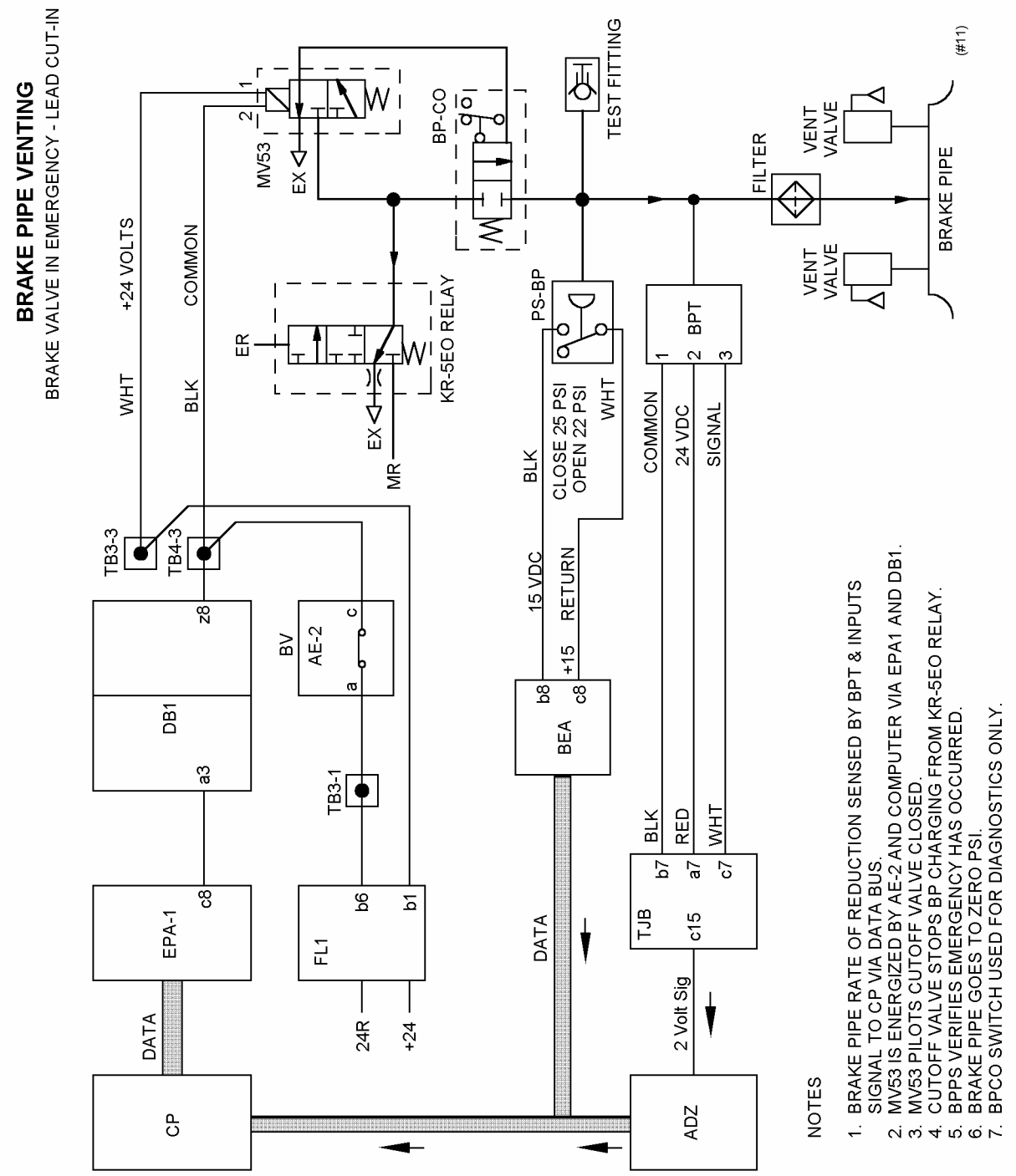


FIGURE 1-32 BP VENTING - LEAD CUT-IN BRAKE VALVE IN EMERGENCY

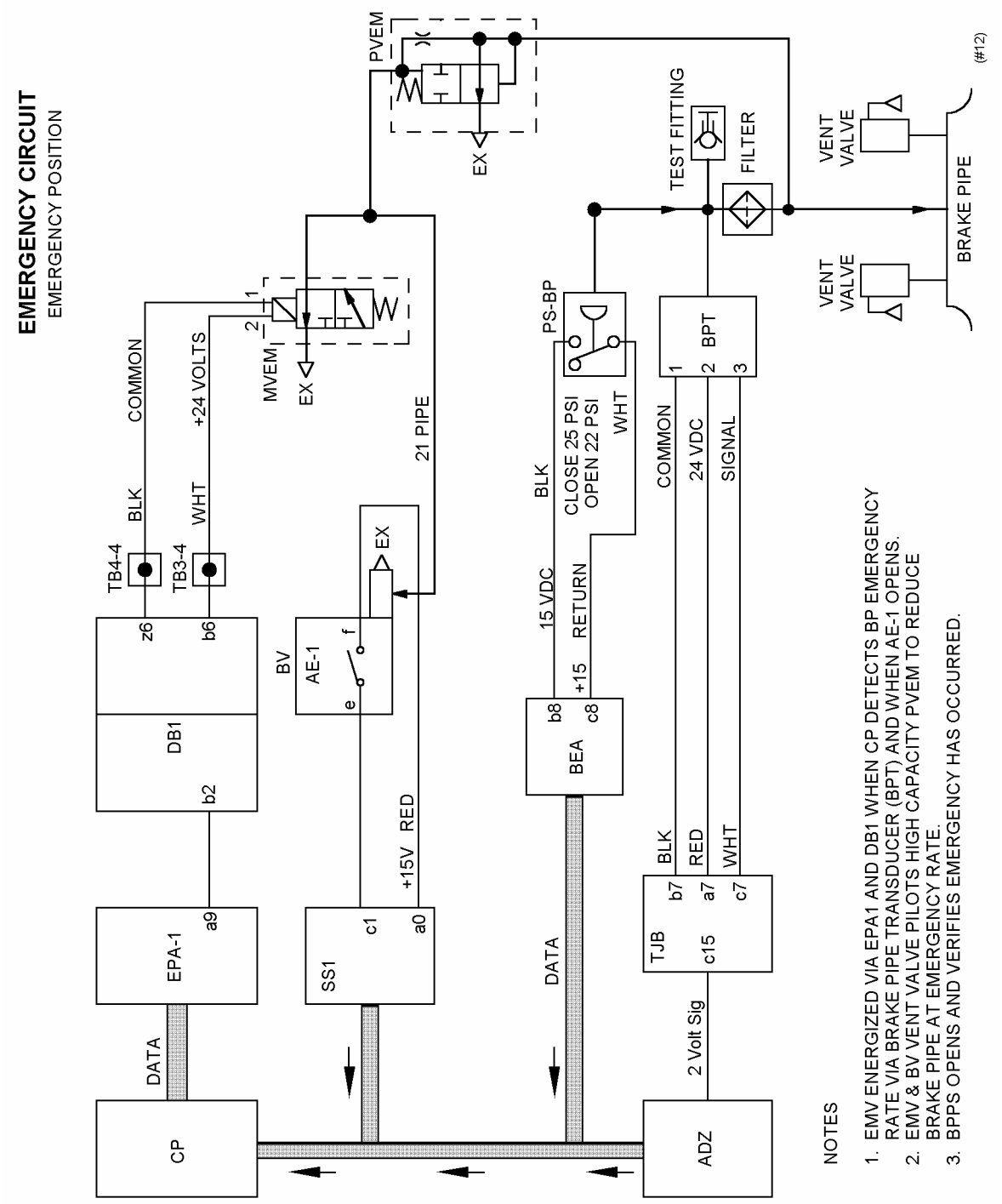


FIGURE 1-33 EMERGENCY CIRCUIT - EMERGENCY POSITION

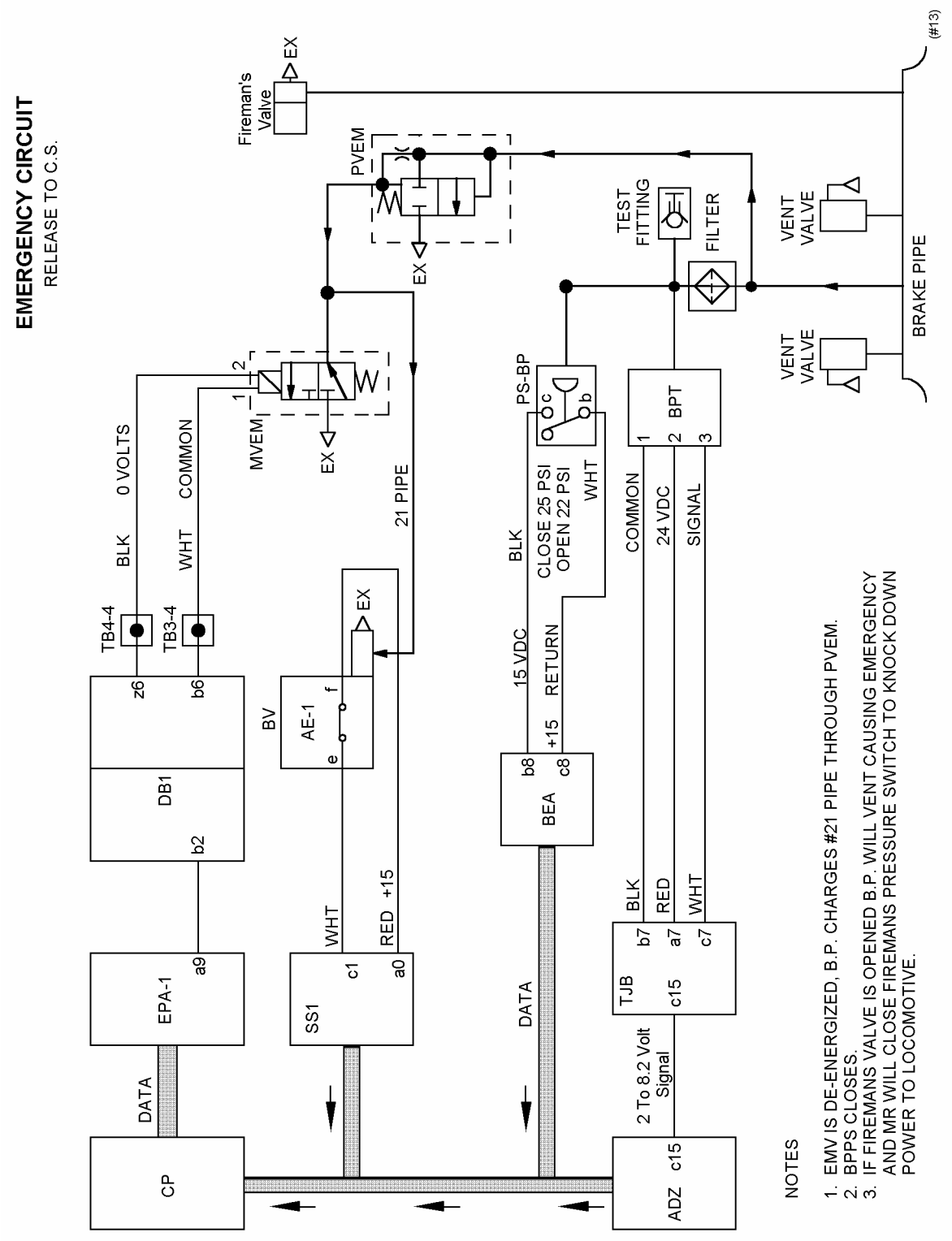


FIGURE 1-34 EMERGENCY CIRCUIT - RELEASE TO C.S.

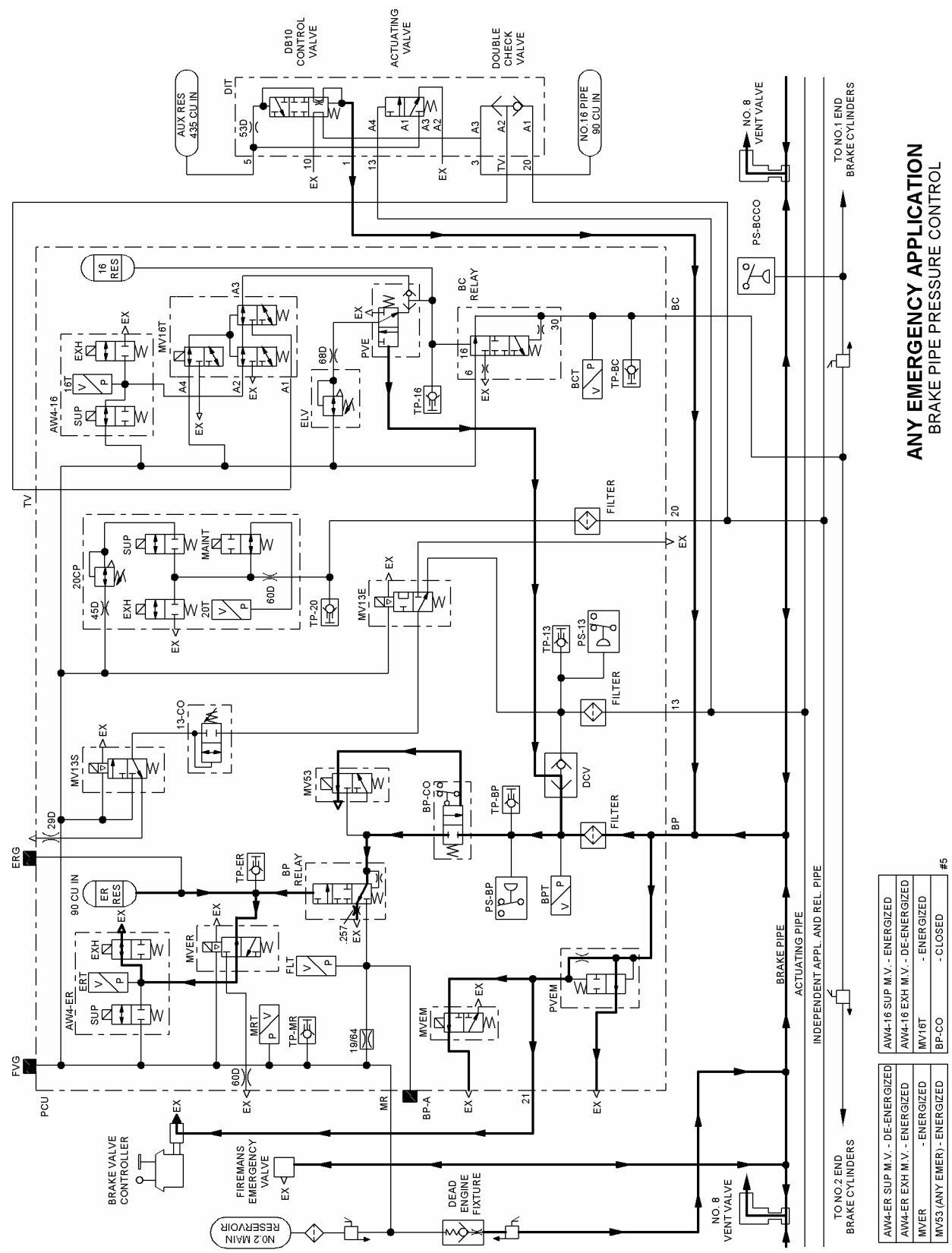


FIGURE 1-35 ANY EMERGENCY APPLICATION BRAKE PIPE PRESSURE CONTROL

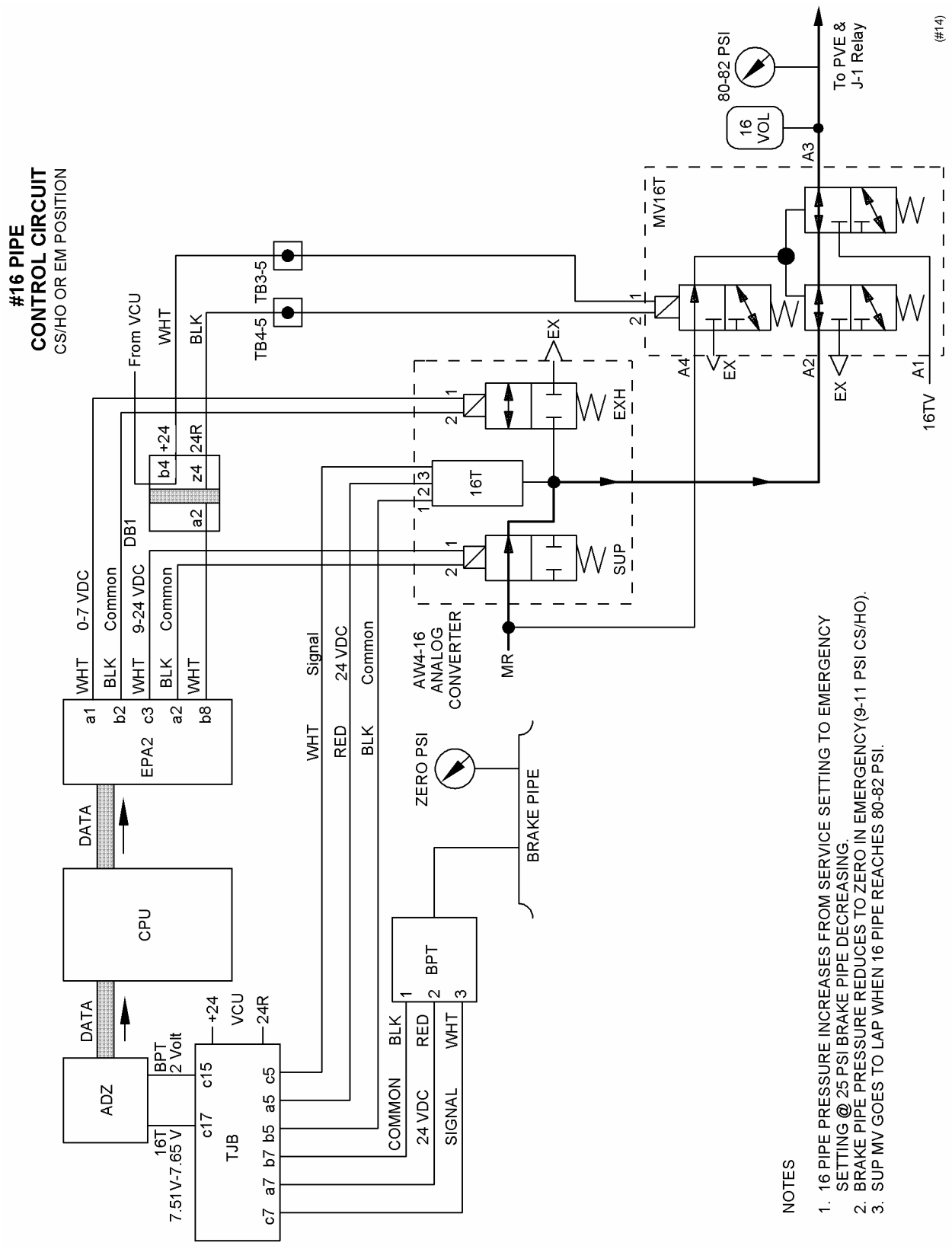


FIGURE 1-36 #16 PIPE CONTROL CIRCUIT CS/HO OR EMERGENCY POSITION

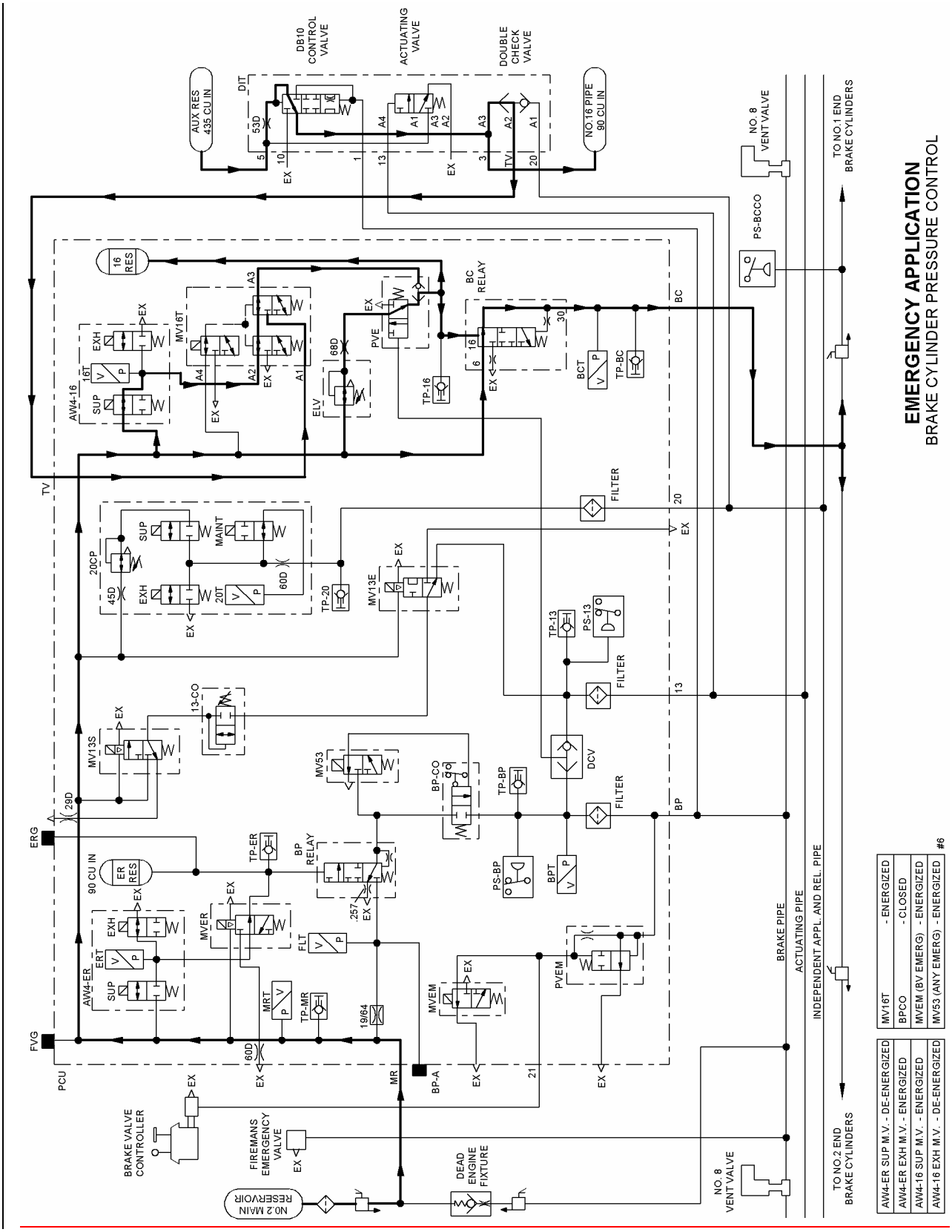


FIGURE 1-37 EMERGENCY APPLICATION BRAKE CYLINDER PRESSURE CONTROL

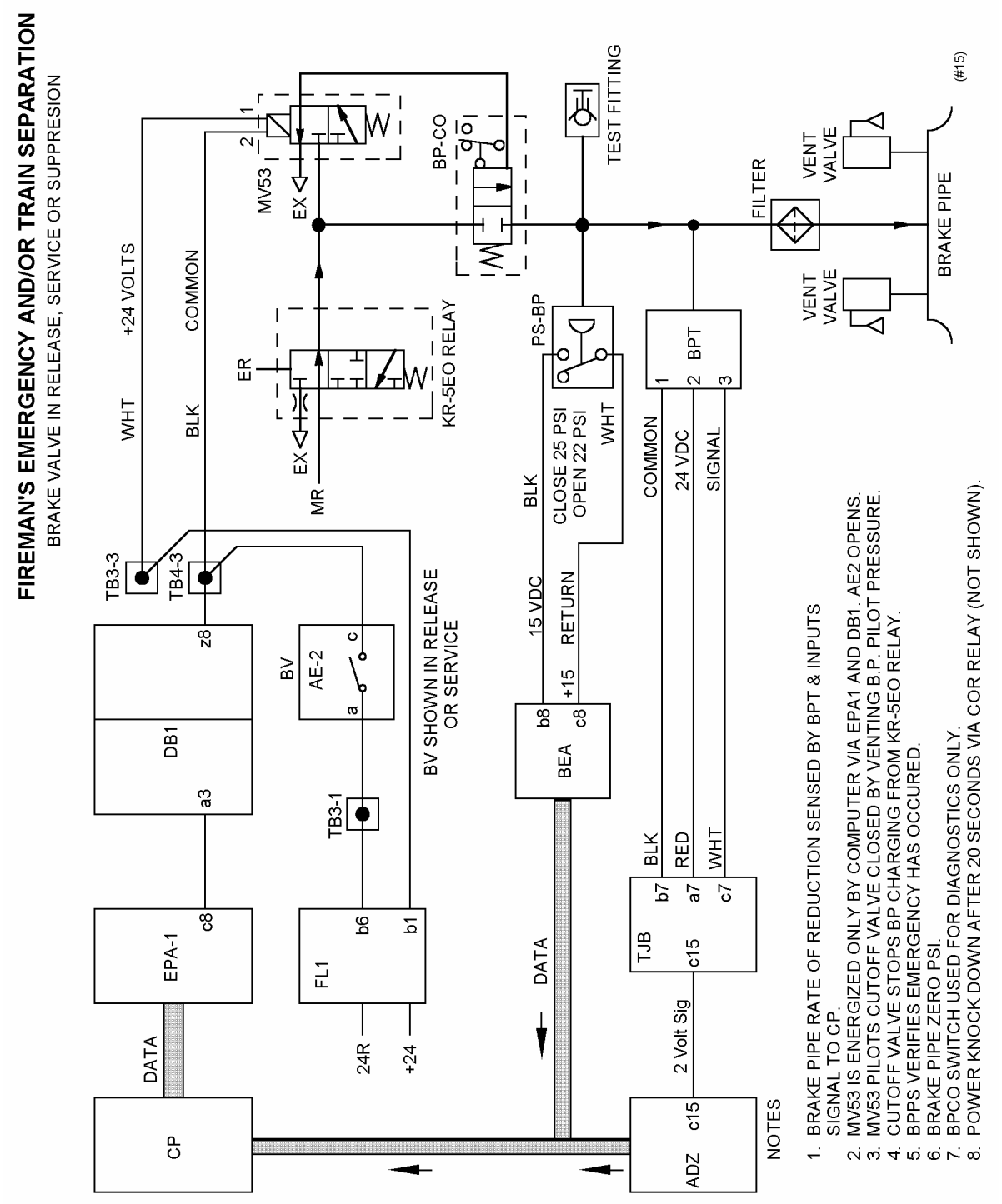


FIGURE 1-38 FIREMAN'S EMERGENCY AND/OR TRAIN SEPARARTION – BRAKE VALVE IN RELEASE, SERVICE, OR SUPPRESSION

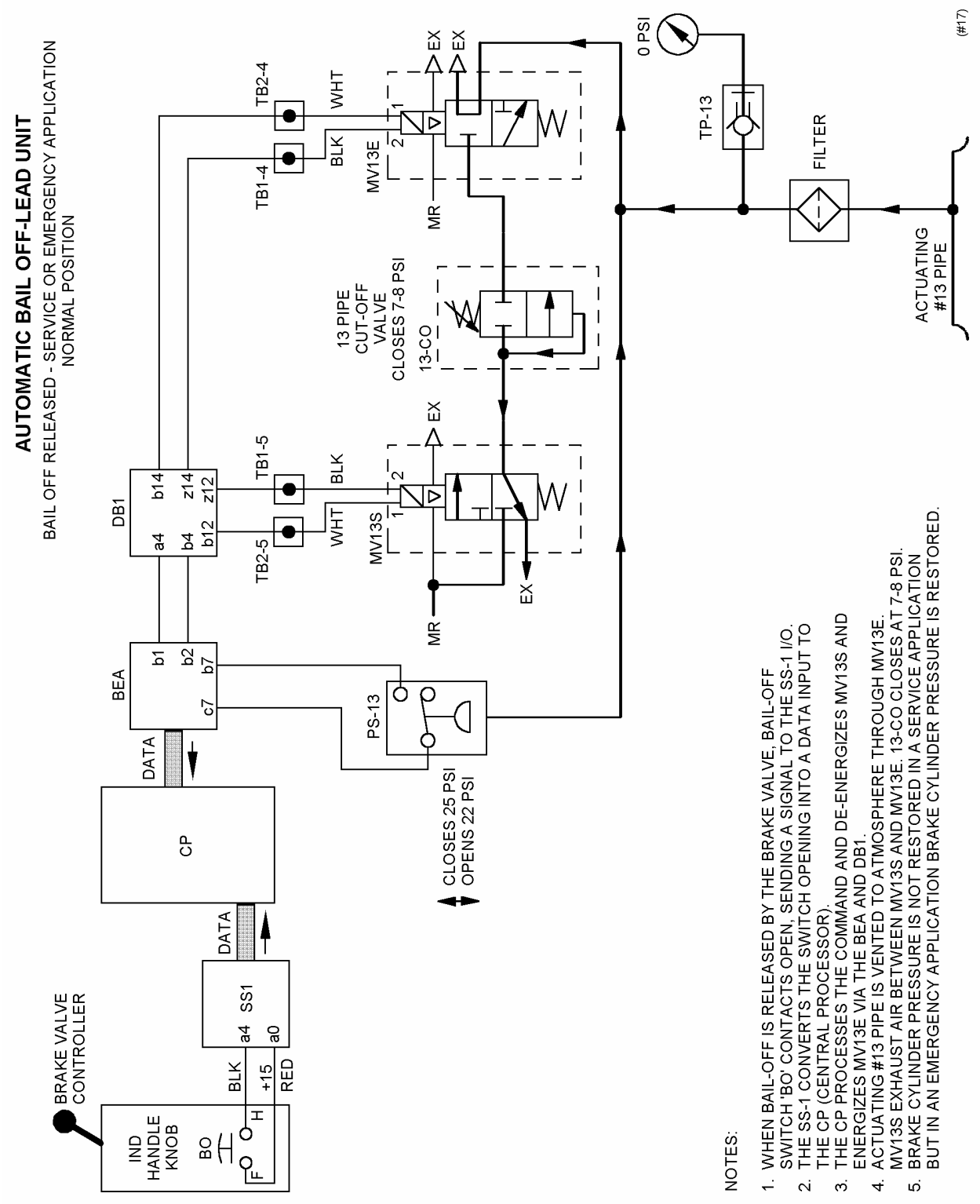


FIGURE 1-40 AUTOMATIC BAIL OFF - LEAD UNIT - BAIL OFF RELEASED-SERVICE OR EMERGENCY APPLICATION - NORMAL POSITION

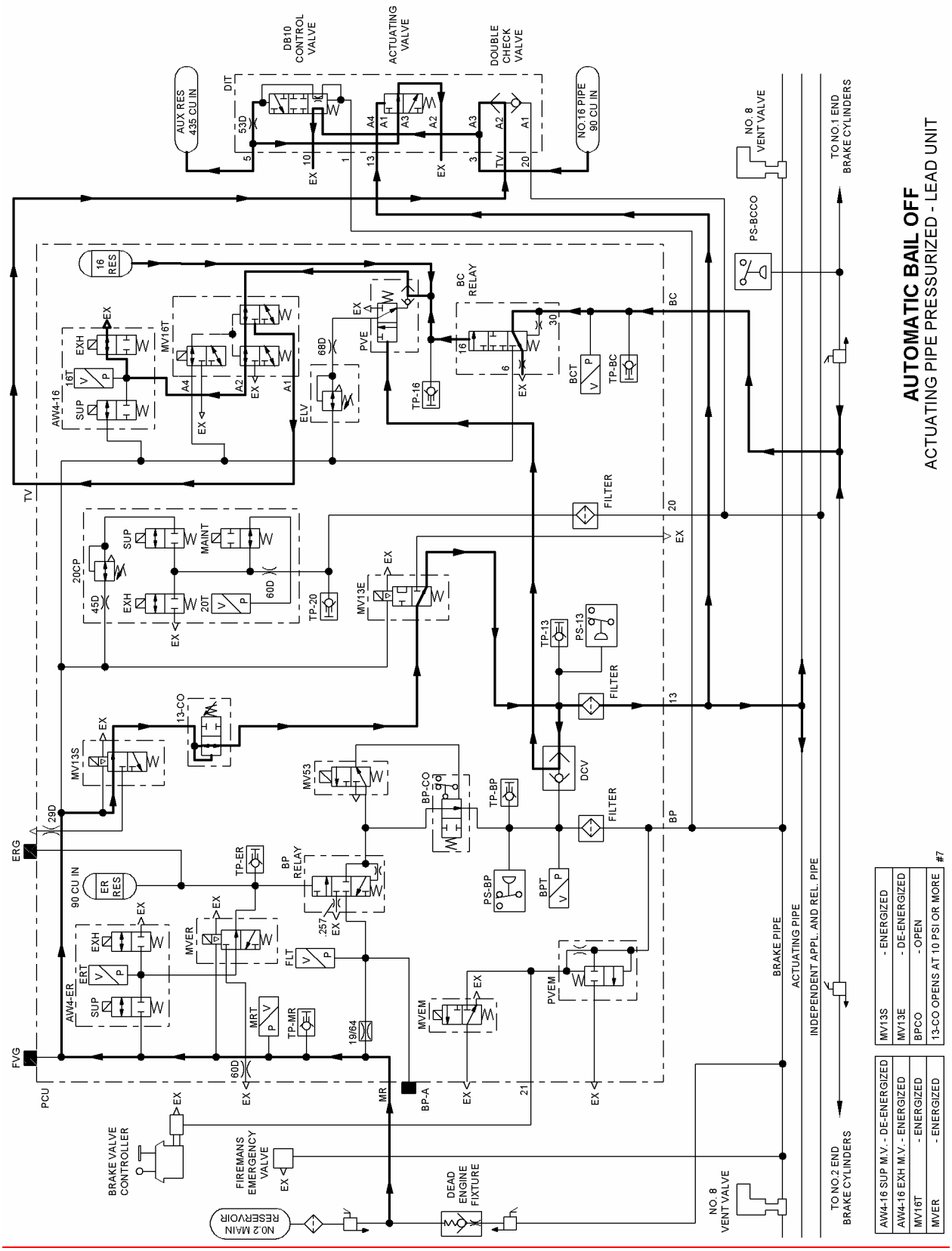


FIGURE 1-41 AUTOMATIC BAIL OFF ACTUATING PIPE PRESSURIZED - LEAD UNIT

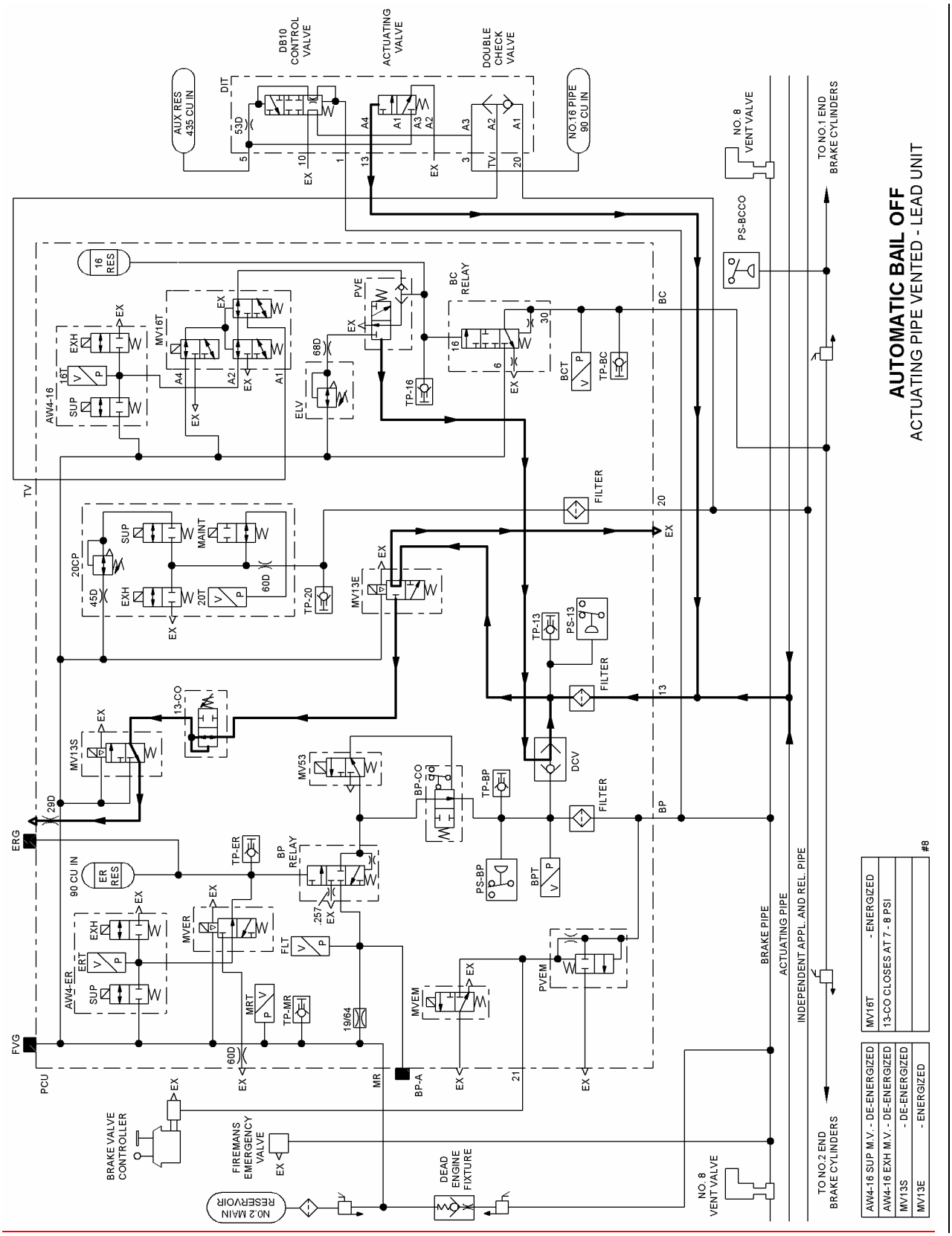


FIGURE 1-42 AUTOMATIC BAIL OFF ACTUATING PIPE VENTED - LEAD UNIT

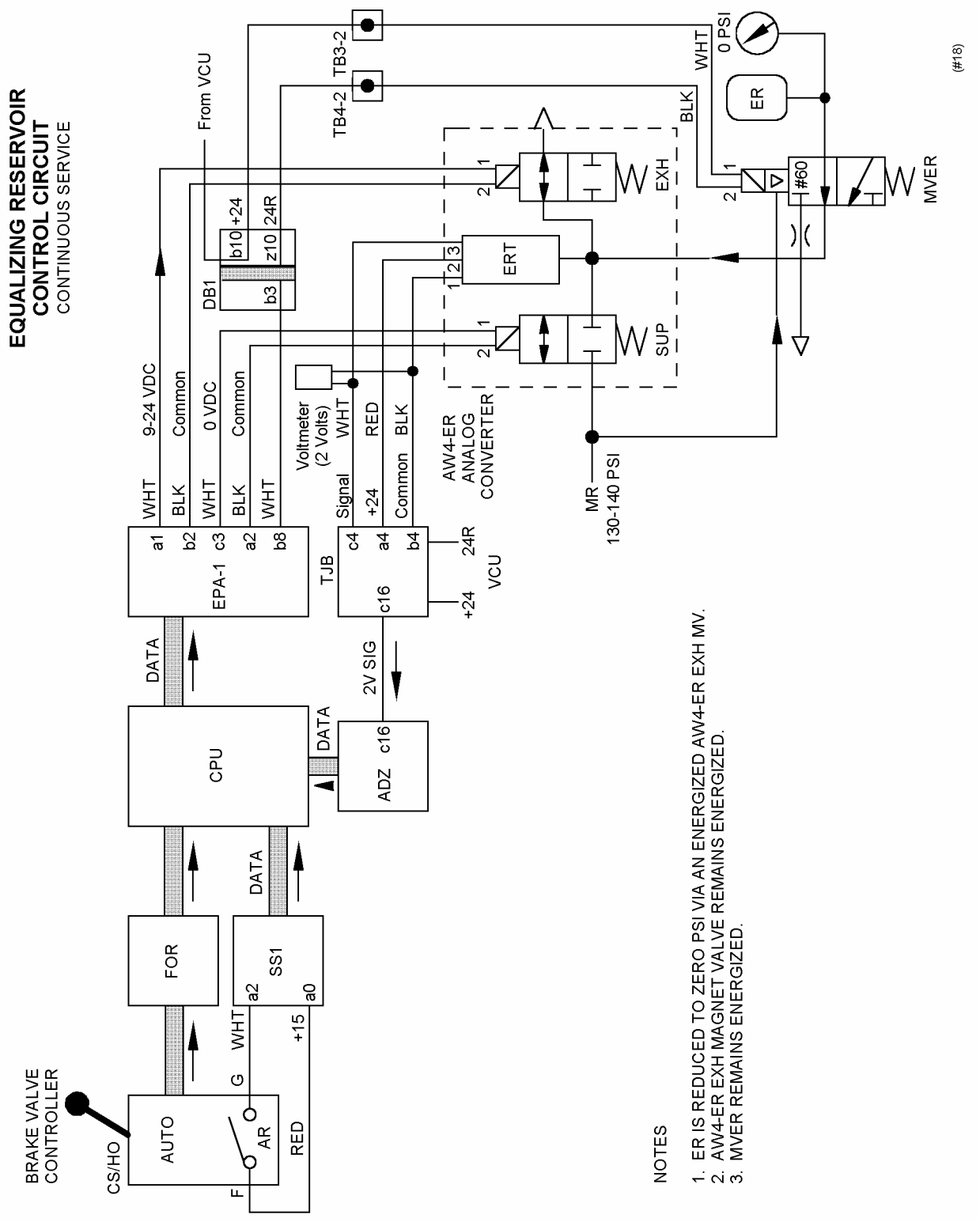


FIGURE 1-44 ER RESERVOIR CONTROL CIRCUIT - CONTINUOUS SERVICE/HANDLE OUT

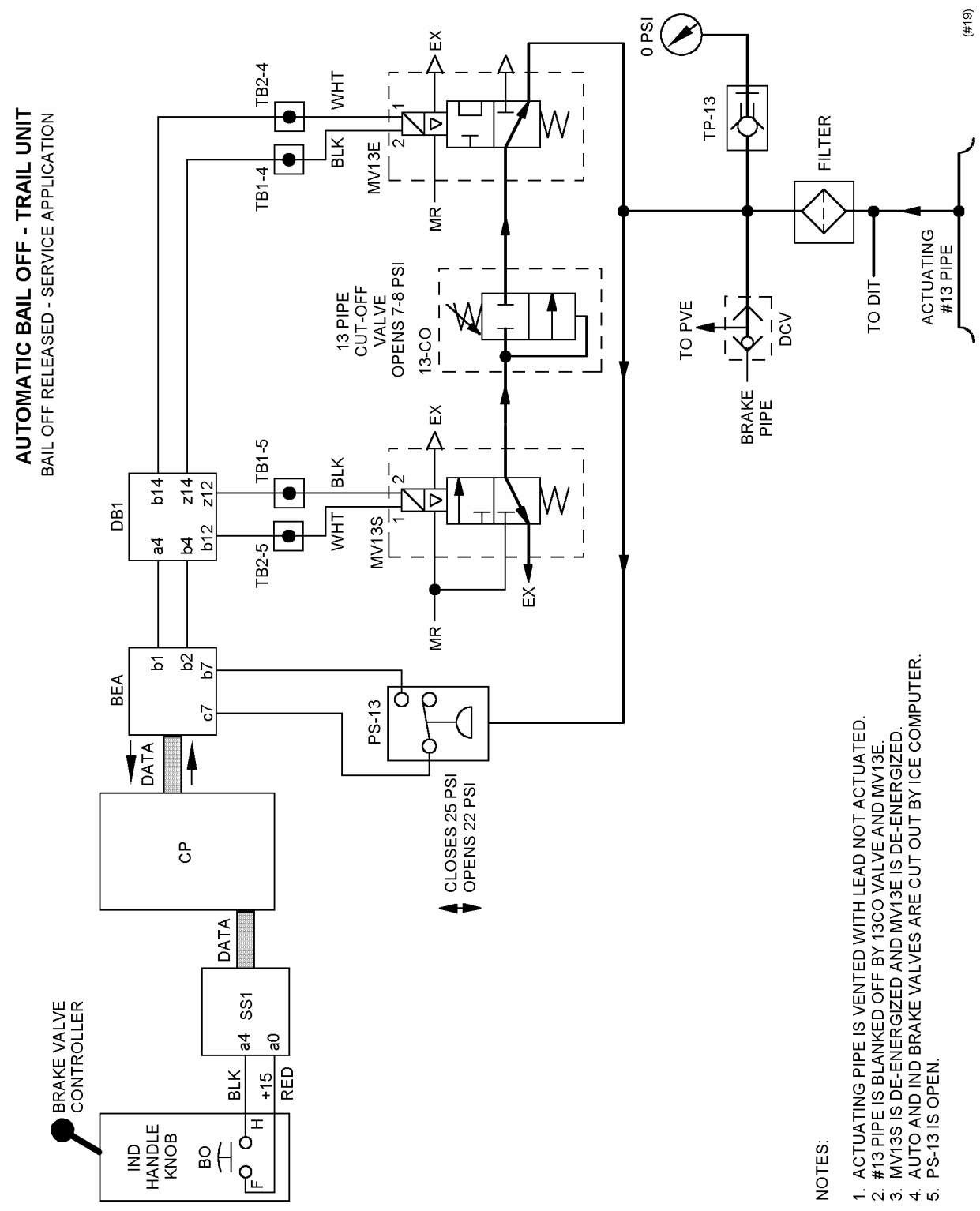


FIGURE 1-45 AUTOMATIC BAIL OFF - TRAIL UNIT - BAIL OFF RELEASED - SERVICE APPLICATION

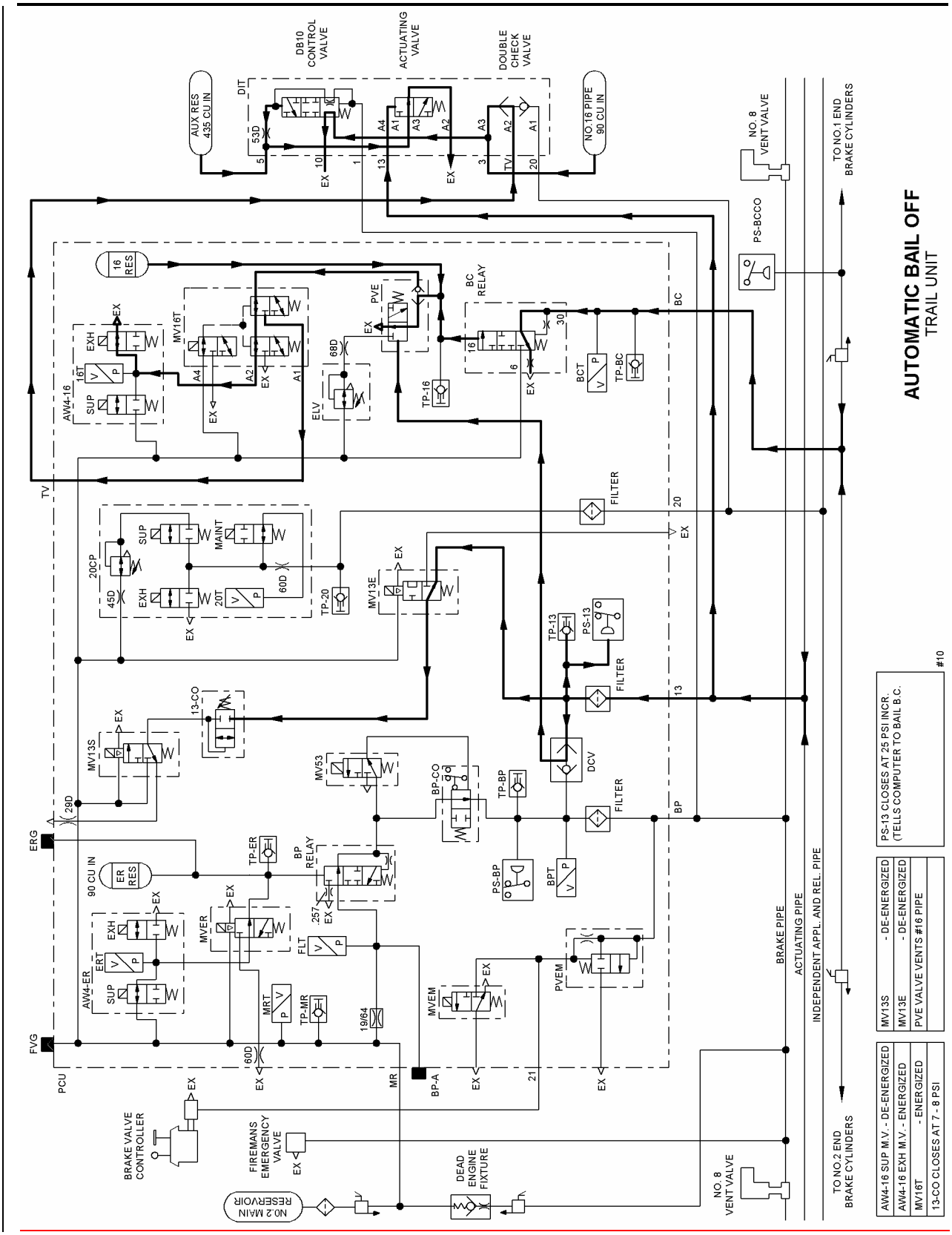


FIGURE 1-46 AUTOMATIC BAIL OFF - TRAIL UNIT

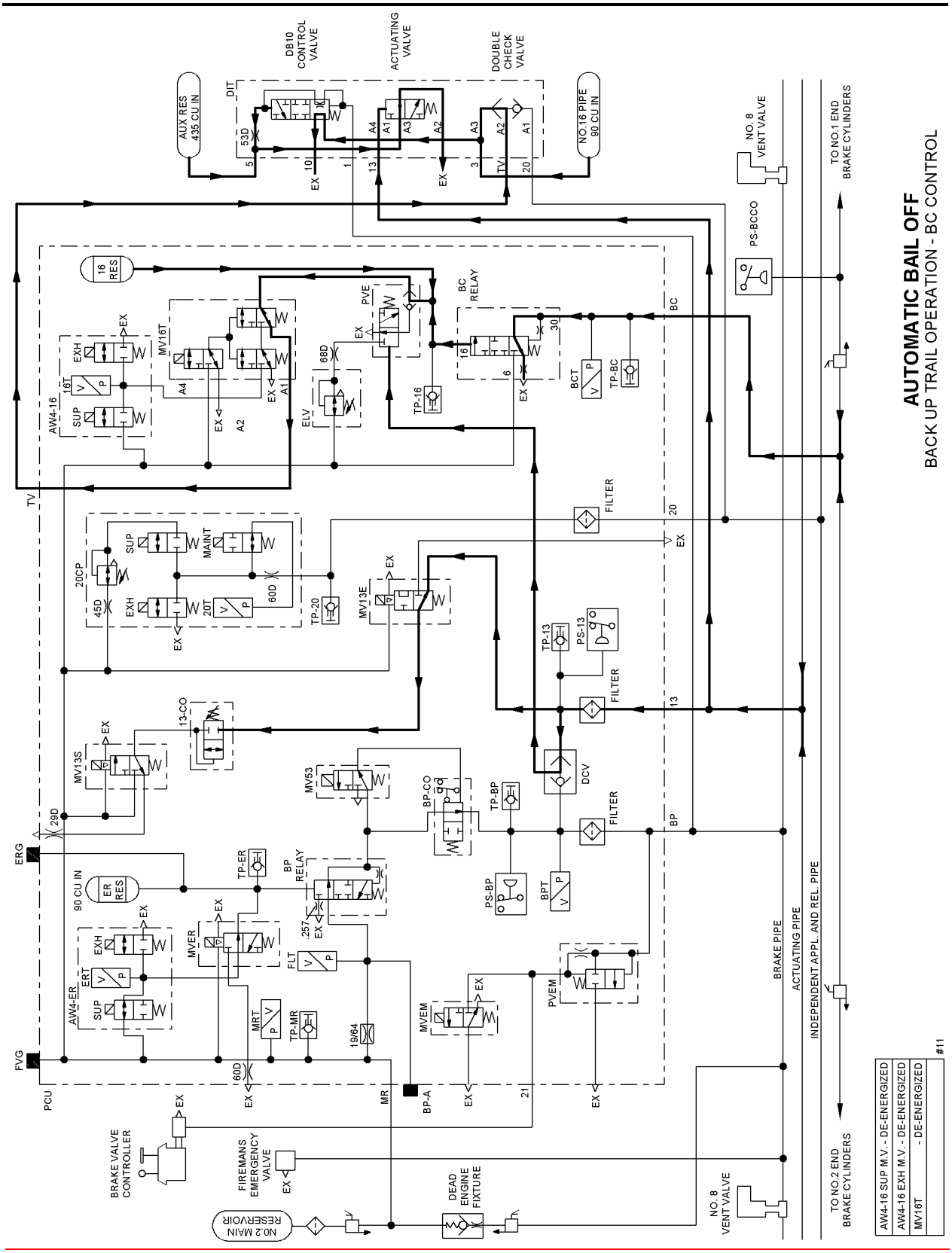


FIGURE 1-47 AUTOMATIC BAIL OFF - BACK UP TRAIL OPERATION - BC CONTROL

New York Air Brake
CCB Brake System

EMD CONTRACT
CCB BRAKE EQUIPMENT
MAINTENANCE MANUAL

IP-148-C

For the

SD 70MAC LOCOMOTIVE

DECEMBER 2001

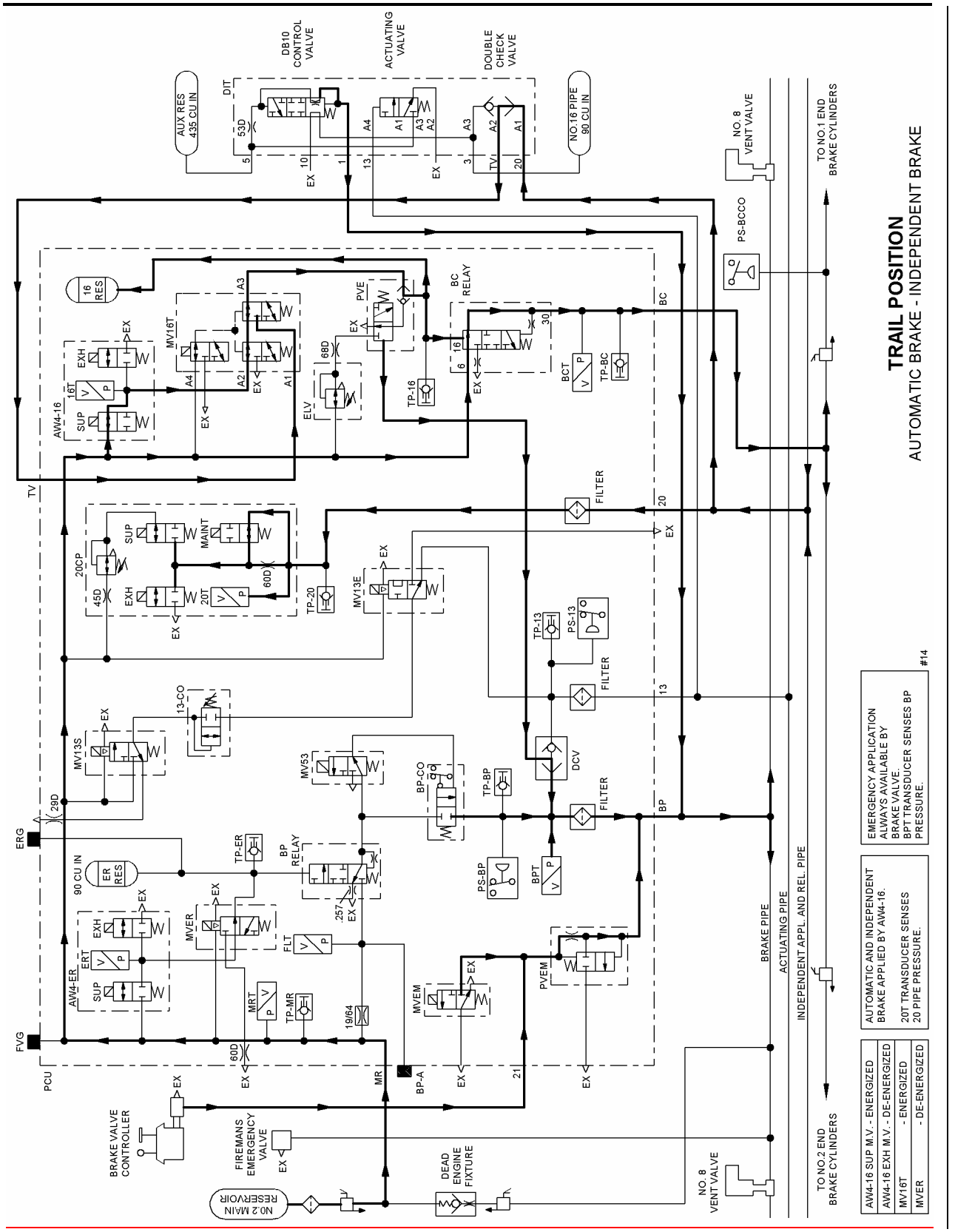


FIGURE 1-56 TRAIL POSITION AUTOMATIC BRAKE - INDEPENDENT BRAKE

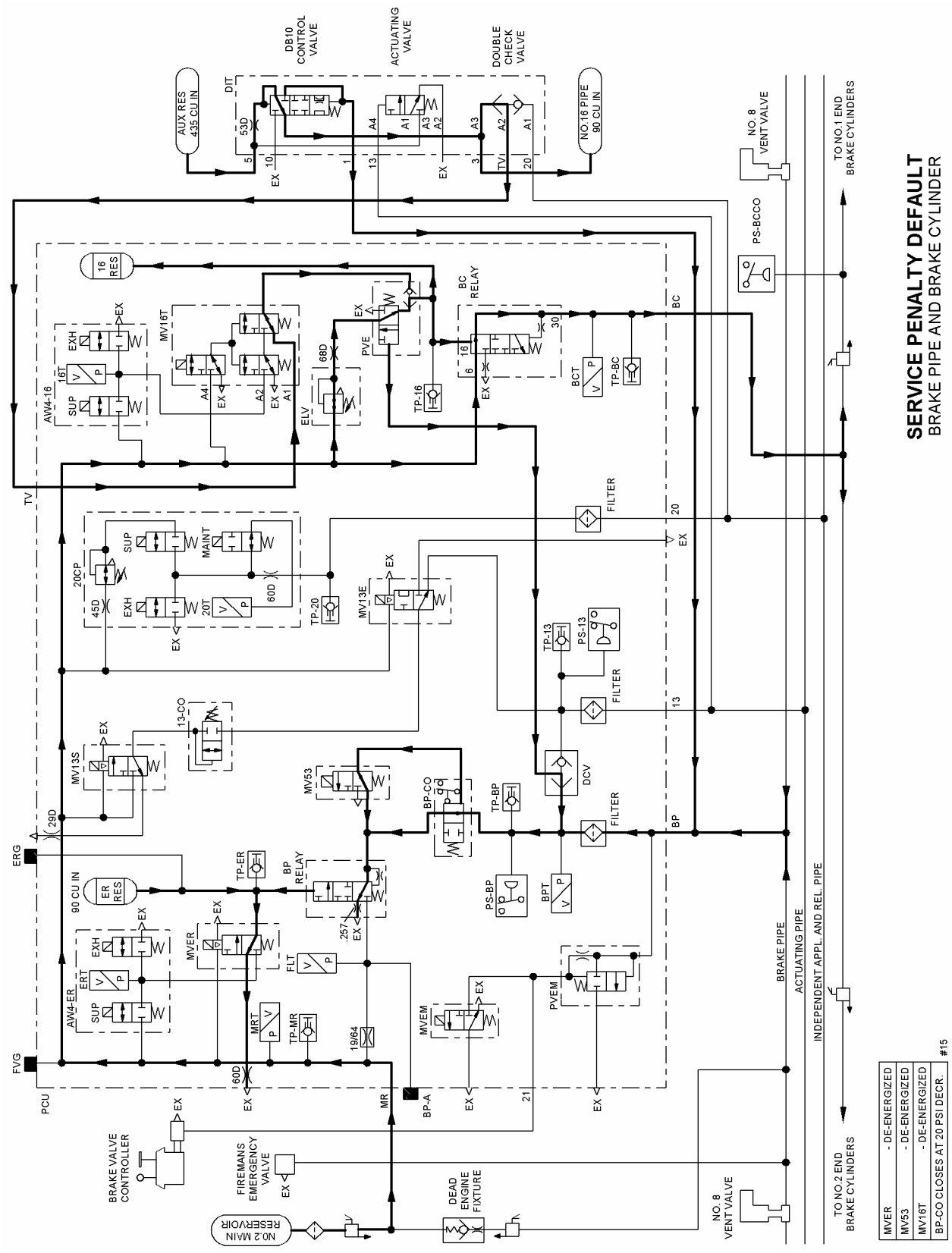


FIGURE 1-57 SERVICE PENALTY DEFAULT - BRAKE PIPE AND BRAKE CYLINDER

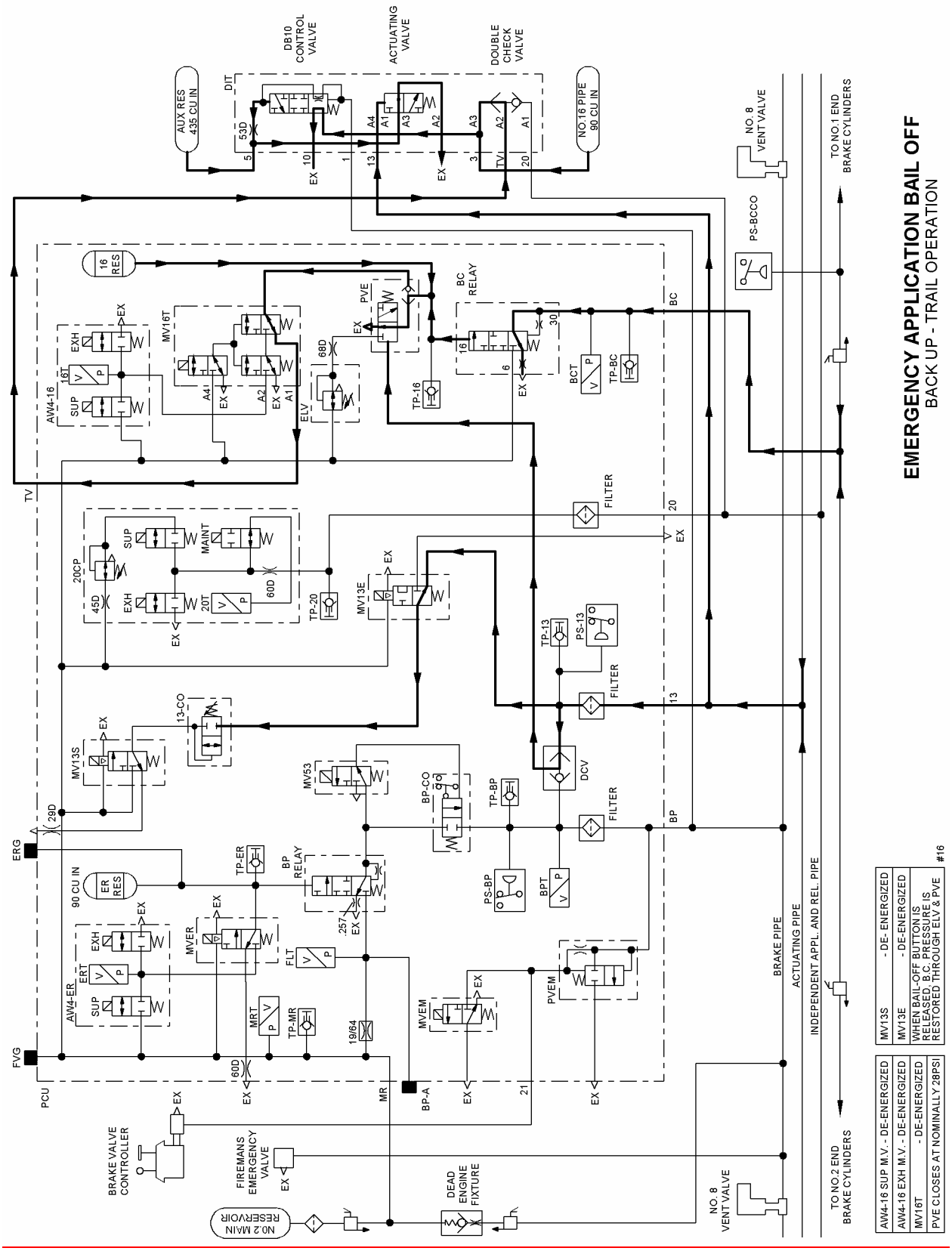


FIGURE 1-58 EMERGENCY APPLICATION BAIL OFF - BACK UP - TRAIL OPERATION

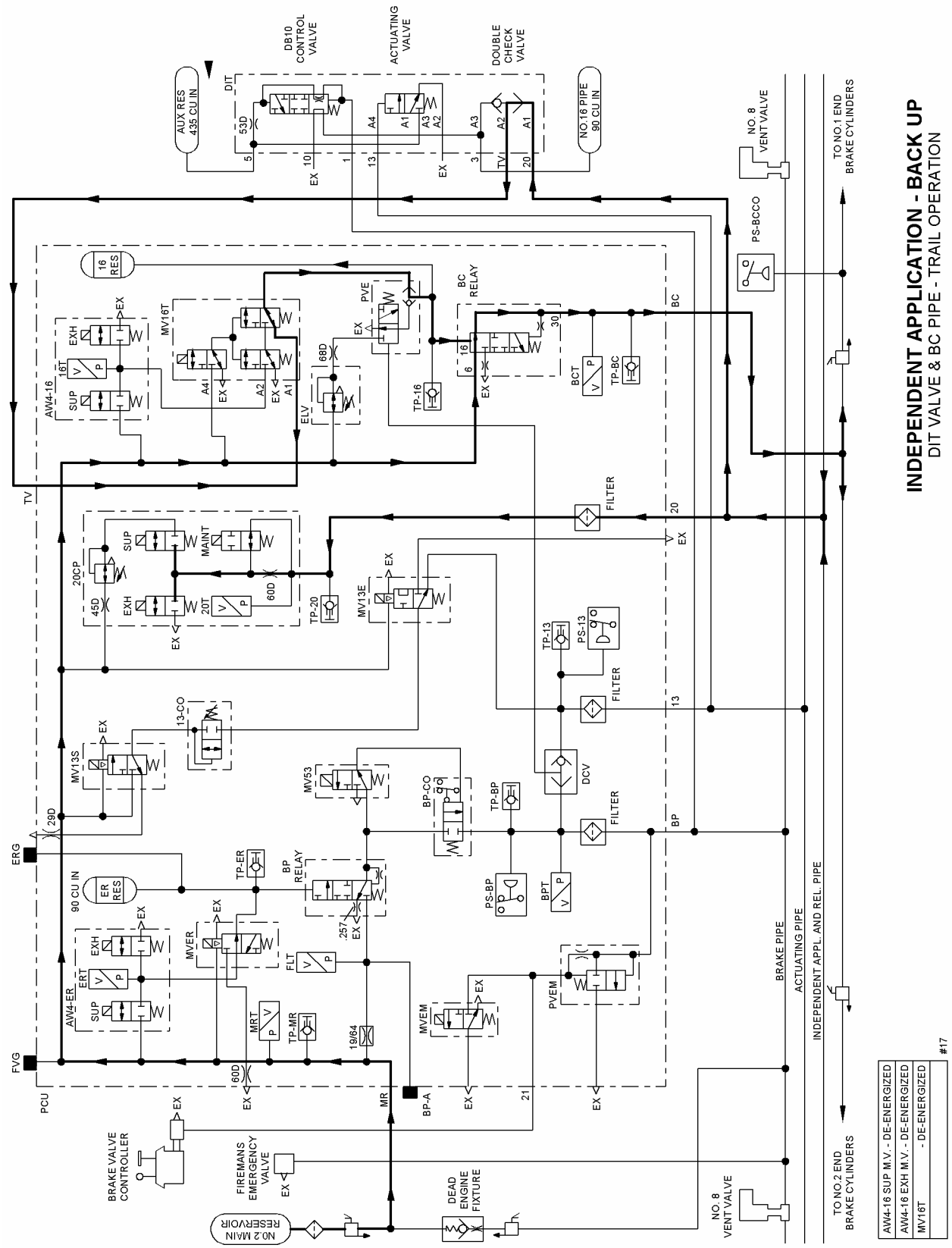


FIGURE 1-59 INDEPENDENT APPLICATION - BACK UP - TRAIL OPERATION – DIT VALVE AND BC PIPE

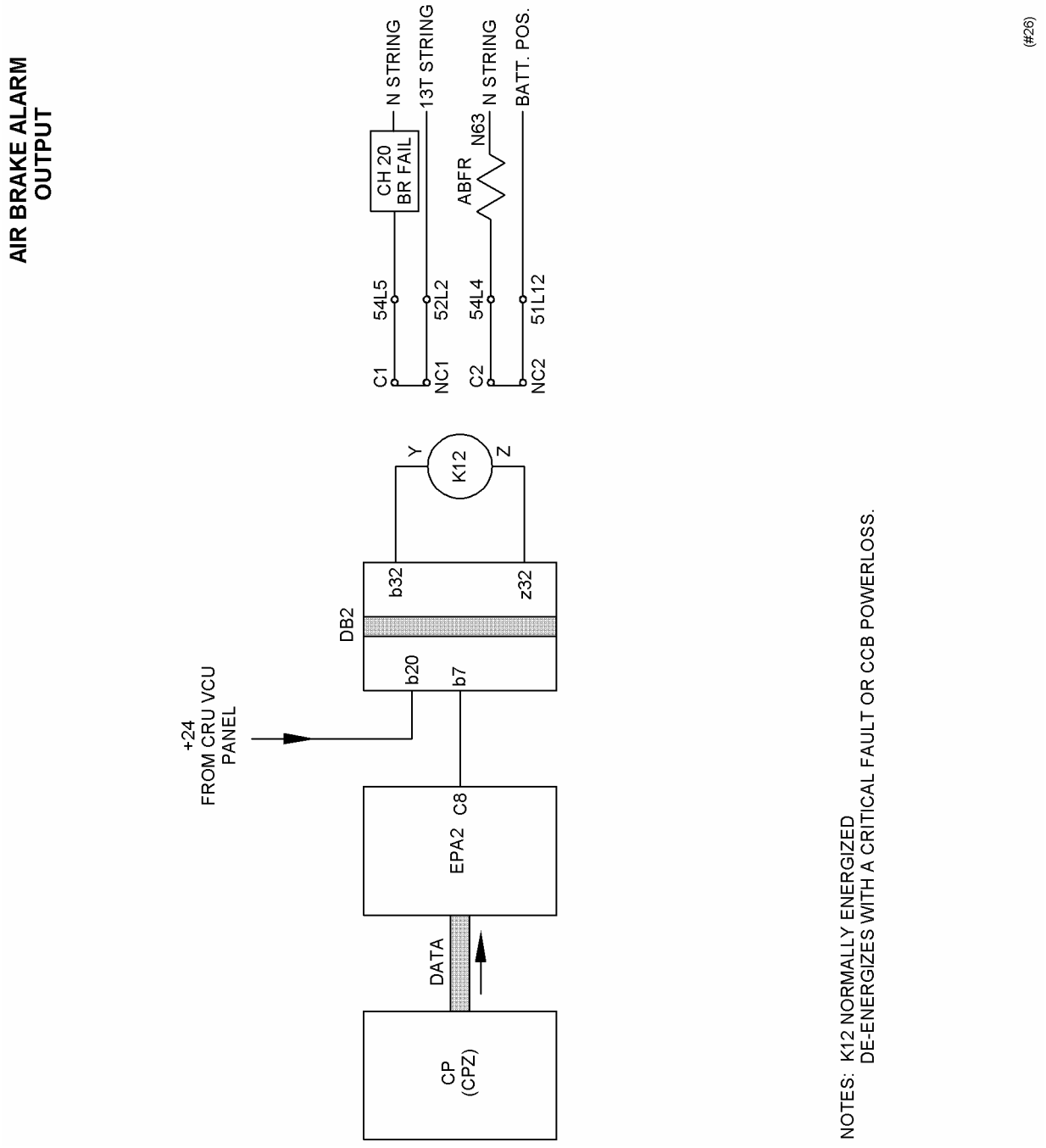


FIGURE 1-60 AIR BRAKE ALARM OUTPUT

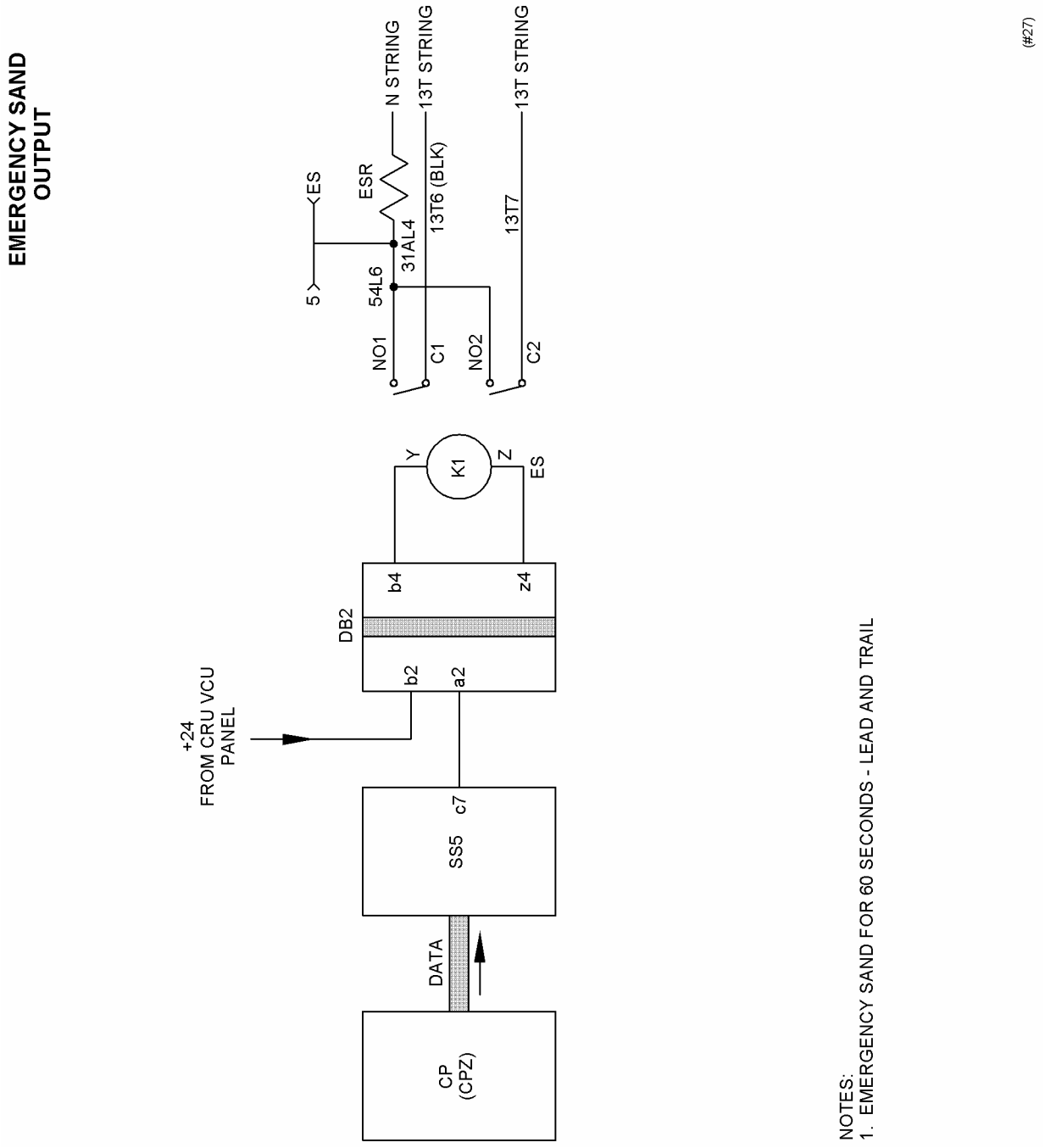


FIGURE 1-61 EMERGENCY SAND OUTPUT

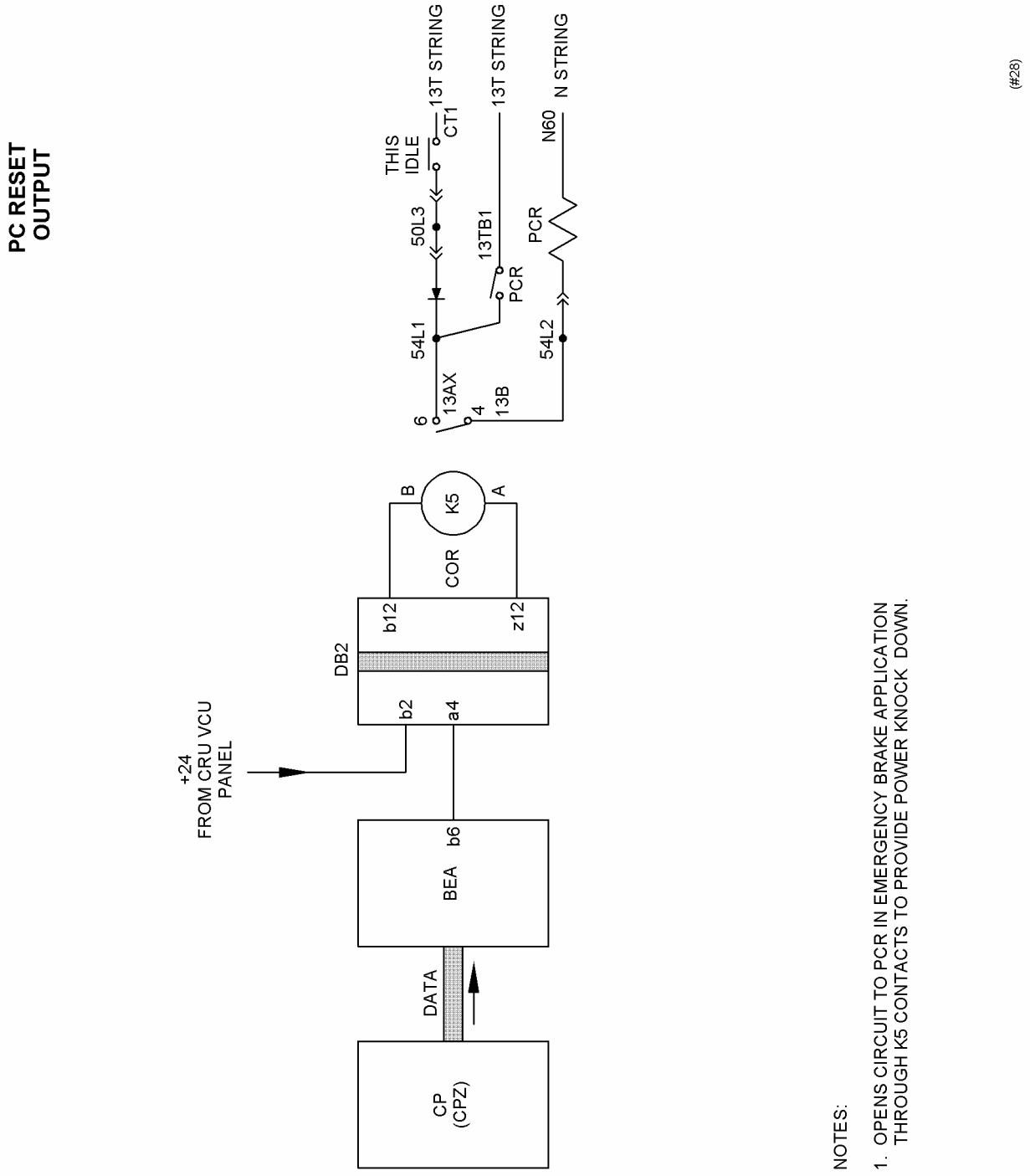


FIGURE 1-62 PC RESET OUTPUT

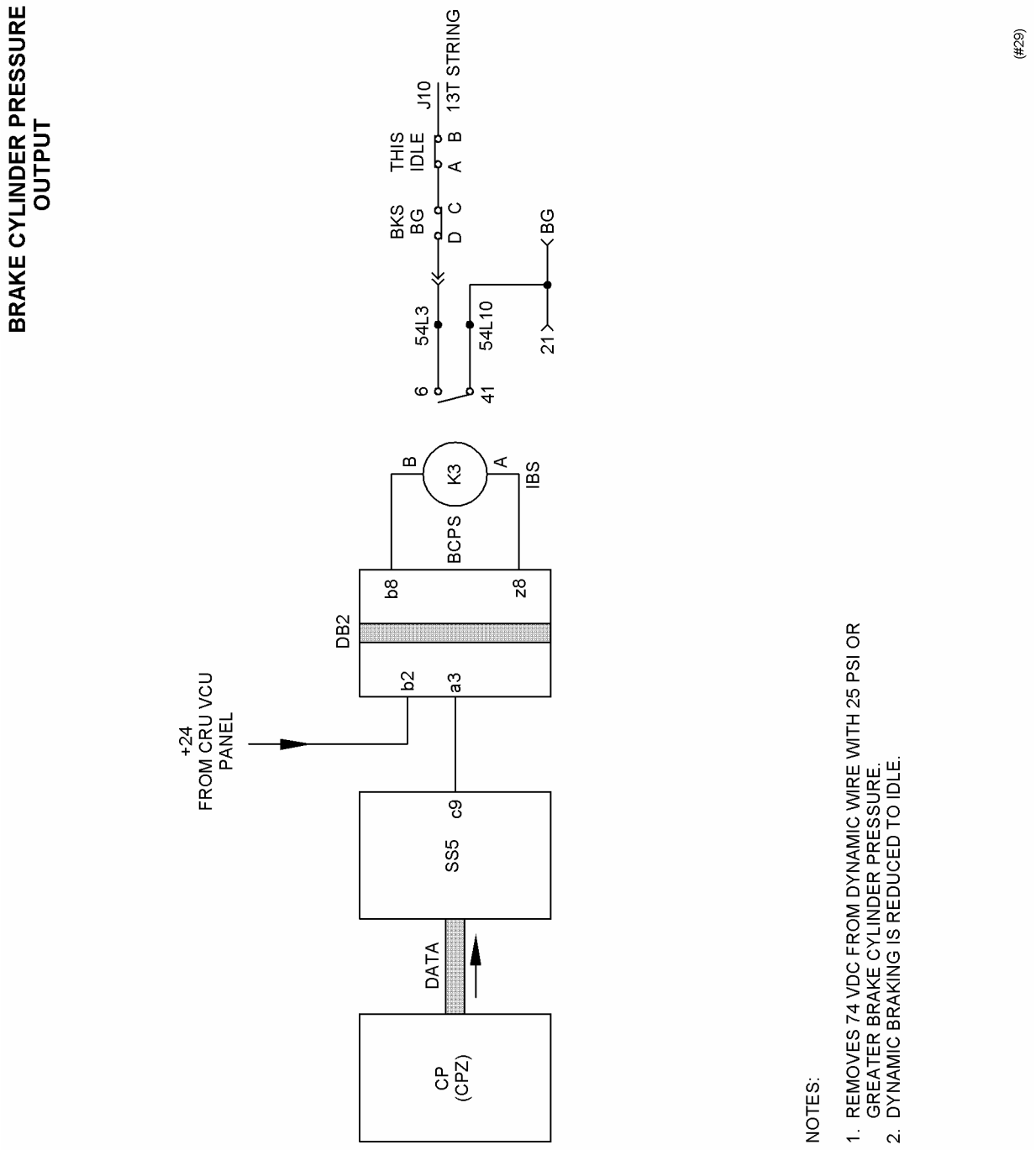


FIGURE 1-63 BRAKE CYLINDER PRESSURE OUTPUT

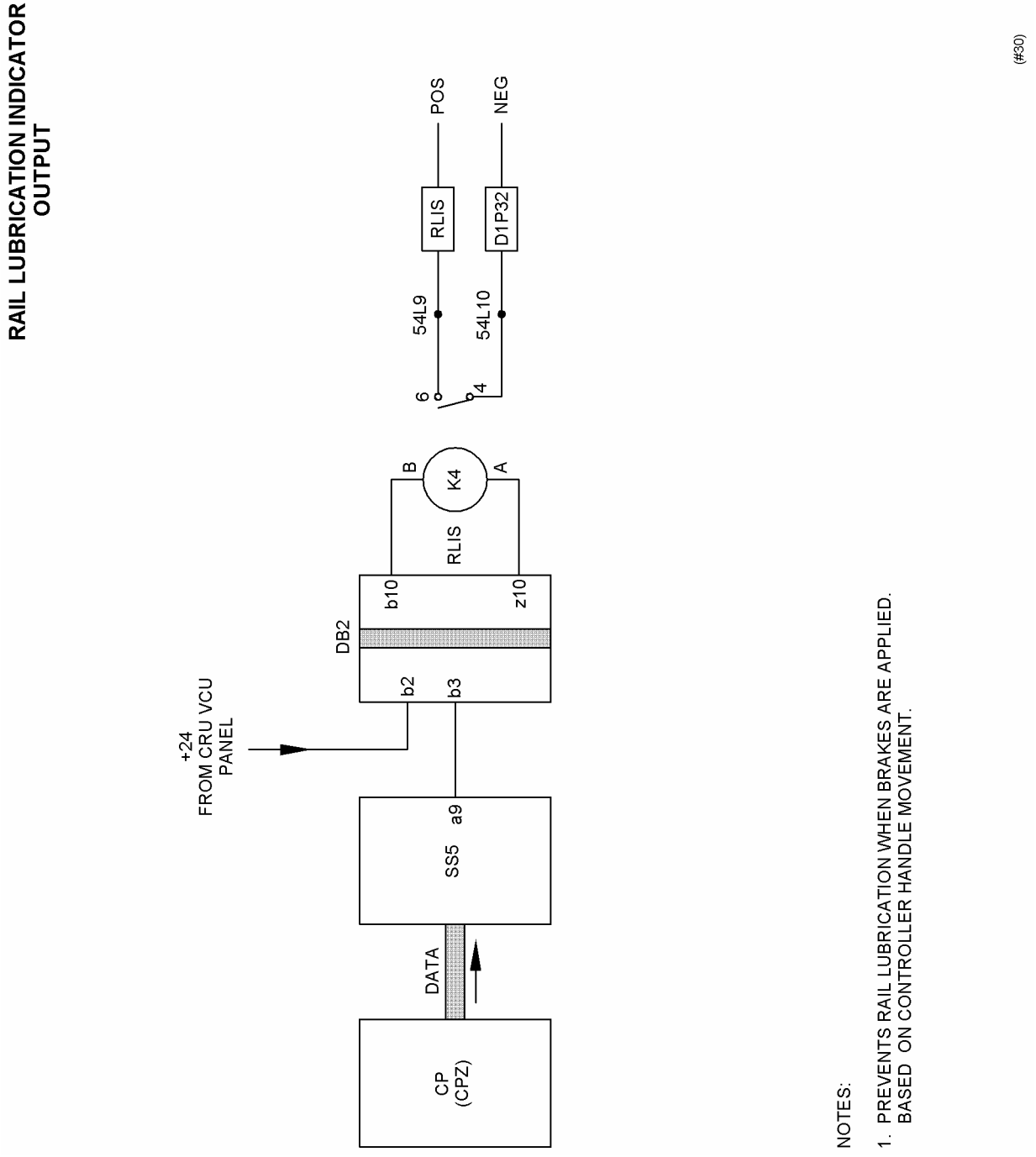


FIGURE 1-64 RAIL LUBRICATION INDICATOR OUTPUT

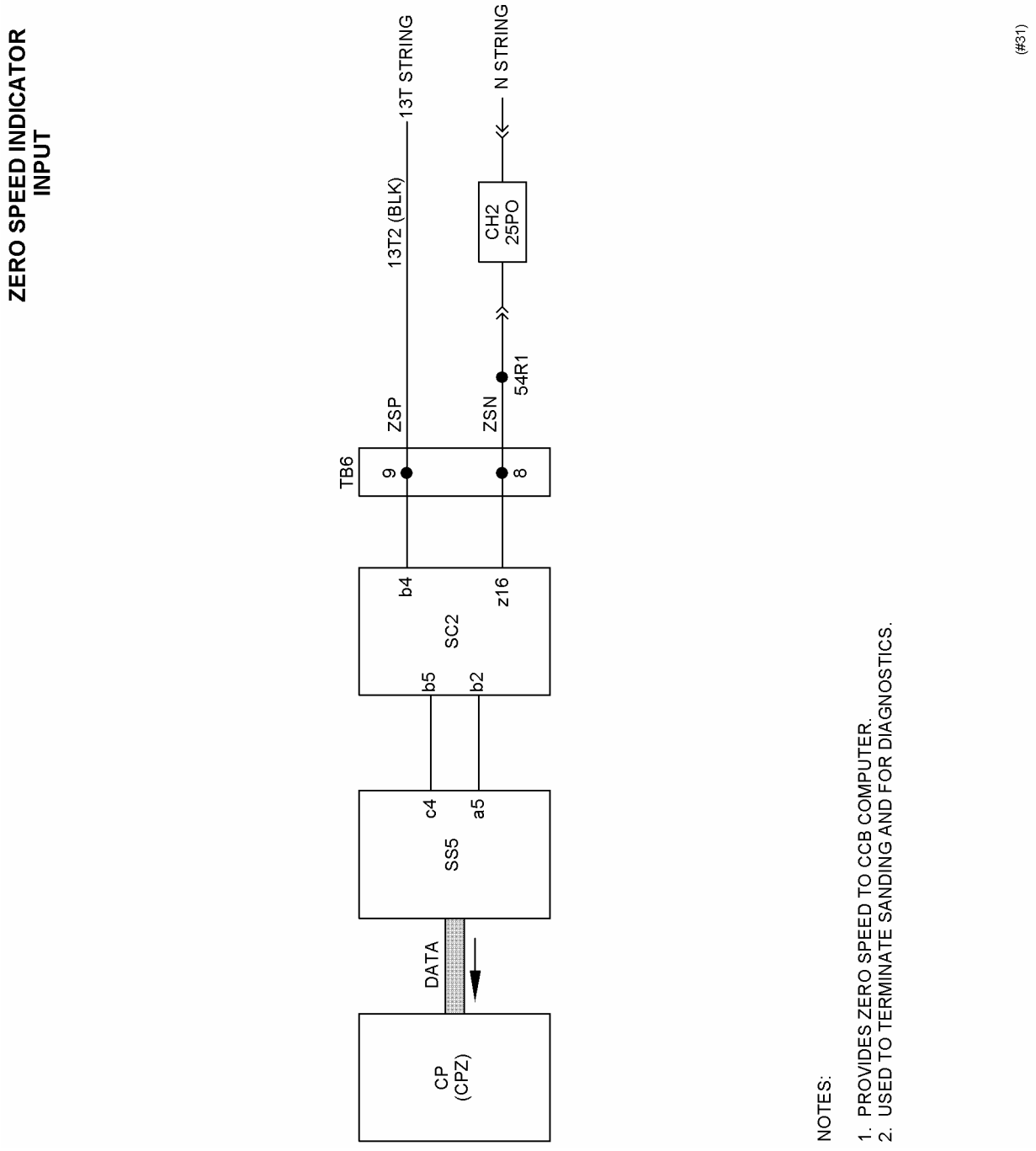


FIGURE 1-65 ZERO SPEED INDICATOR INPUT

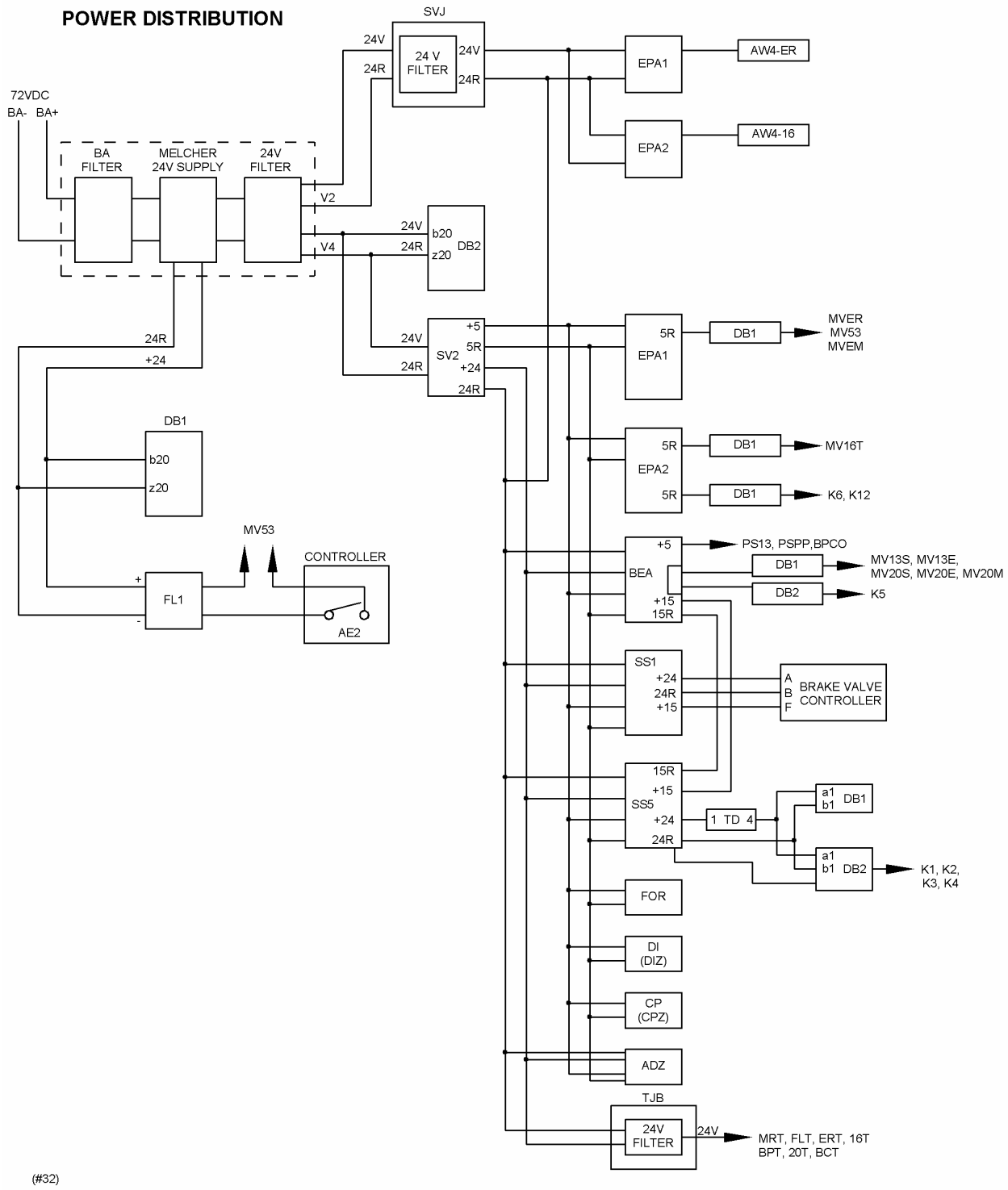


FIGURE 1-66 POWER DISTRIBUTION