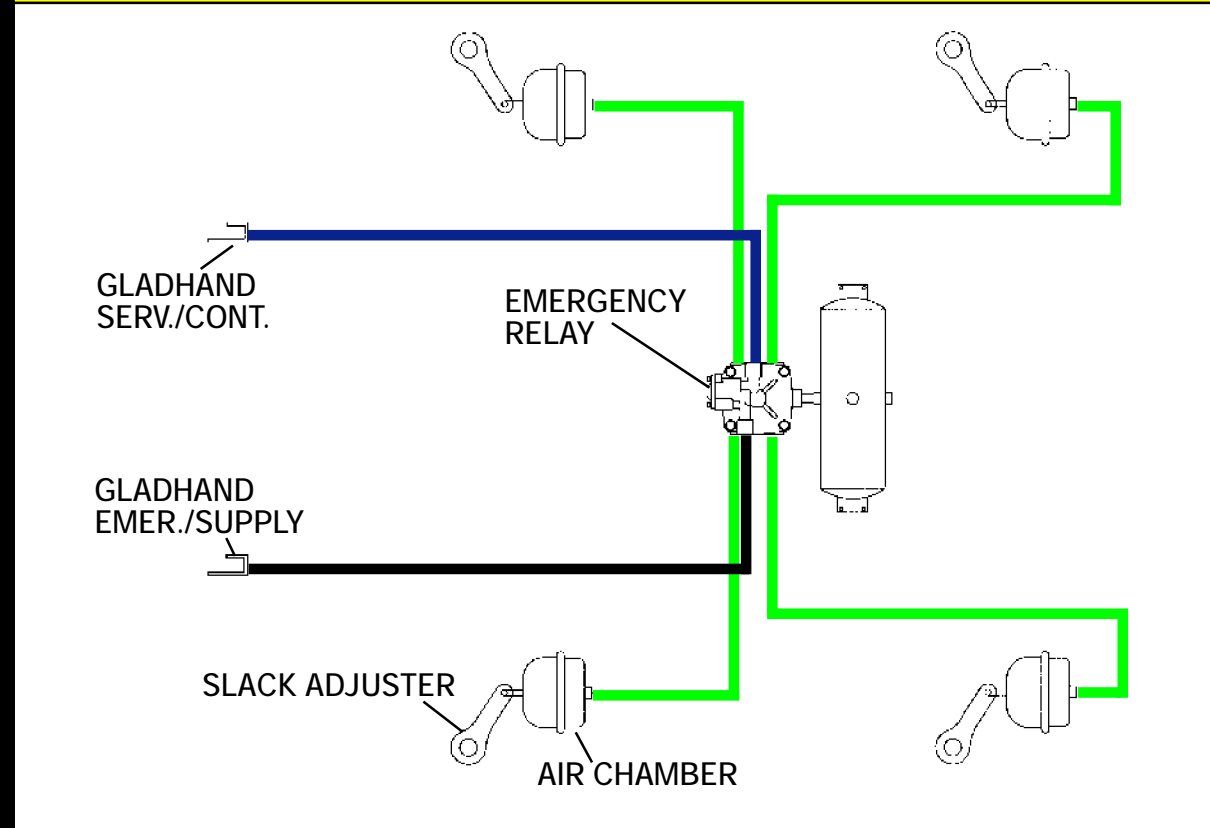
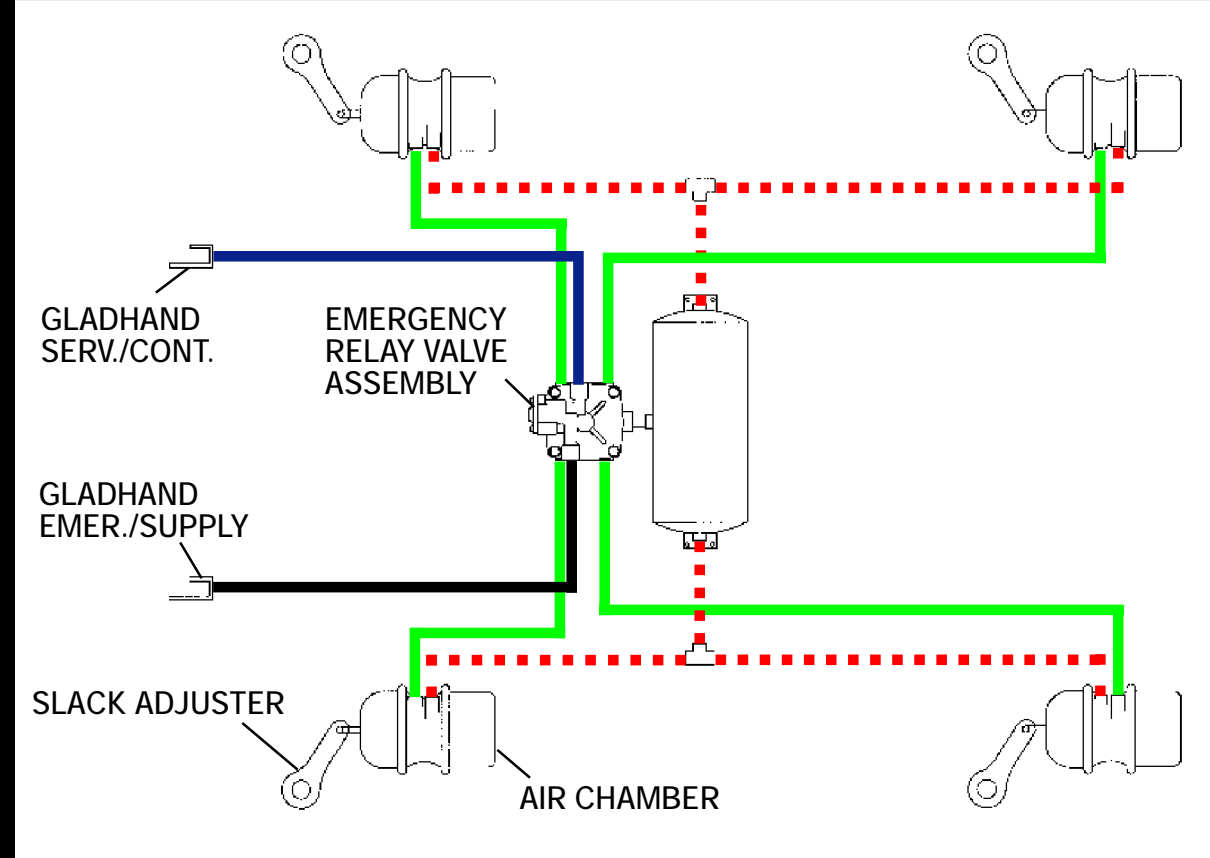


Trailer Systems Troubleshooting Guide

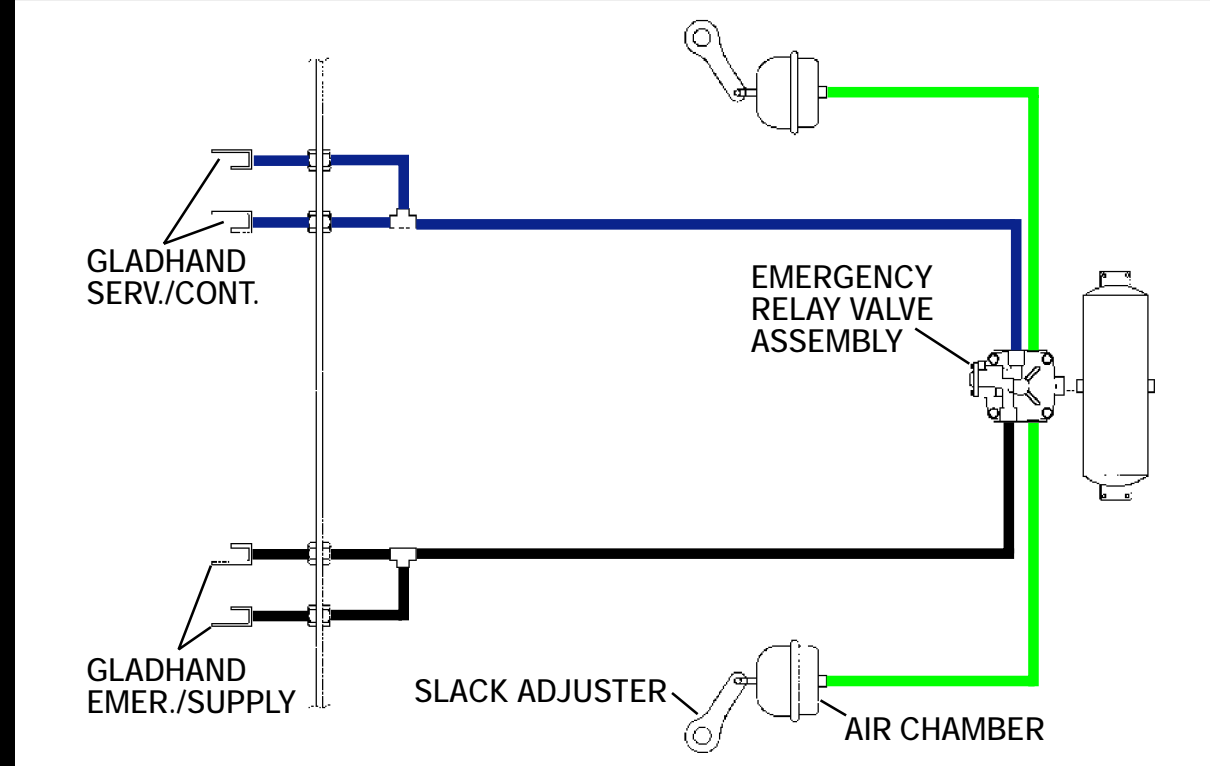
SYSTEM "A"
PRE-121 RELAY/EMERGENCY VALVE SYSTEM



SYSTEM "B"
PRE-121 RELAY/EMERGENCY VALVE SYSTEM WITH SPRING BRAKES



SYSTEM "C"
SINGLE AXLE DOLLY SYSTEM WITH CHARGING TYPE RELAY/EMERGENCY VALVE



HOW TO USE THIS CHART

The purpose of the chart is to help you solve a specific problem in the pneumatic portion of a trailer air brake system with the assumption the foundation brake components and tractor pneumatics are in good repair. Identify which system is malfunctioning. (Refer to how to check your system). Identify your system from the schematics shown. Identify the problem and select the solution recommended for that system.

CAUTION: WHEELS MUST BE BLOCKED.
CAUTION: SPRING BRAKE INSPECTION AND DISASSEMBLY MUST BE IN ACCORD WITH THE MANUFACTURERS PROCEDURE.

HOW TO CHECK YOUR SYSTEM

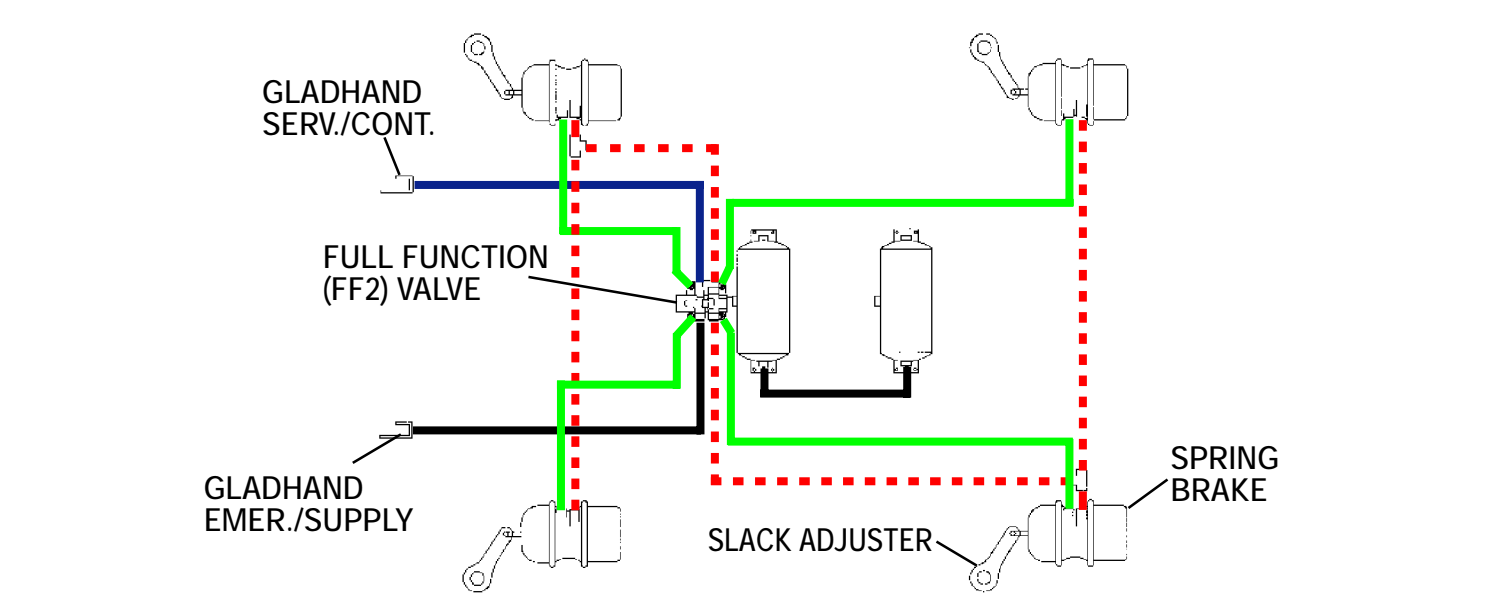
The most important factor in trailer troubleshooting is to determine if the malfunction is in the vehicle's "parking brake system" or the "service brake system". If the problem is "Neither air system is working", the fault may be mechanical. All "Pre-121" or new "121" trailers have a "parking/emergency system" and a normally used "service brake system". The parking system works from the emergency (supply) line. The service system works from the service (control) line. You can determine if the parking emergency brakes operate by charging and then disconnecting the tractor emergency (supply) line. The service brakes will operate with apply and release air in the service (control) line by the tractor hand control or foot control valve.

HOW TO IDENTIFY YOUR SYSTEM

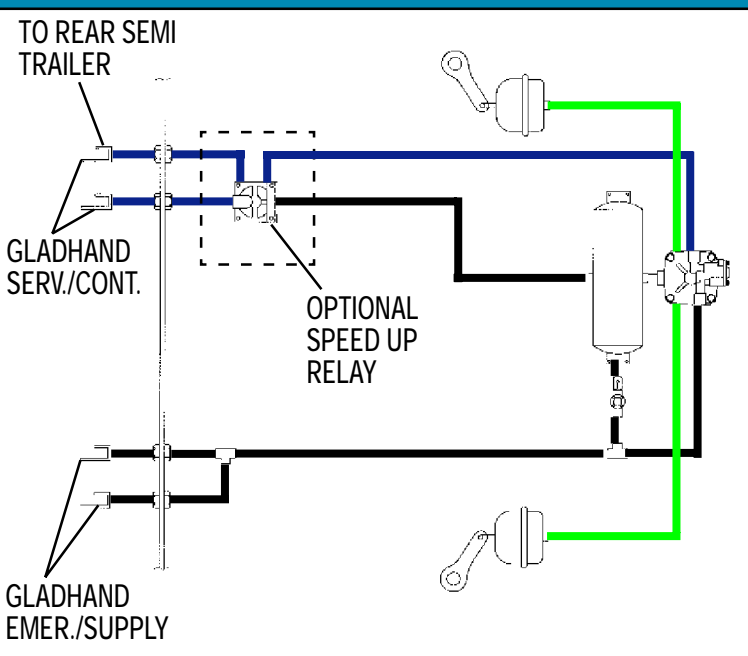
All types of trailer air brake systems can be identified for troubleshooting purposes by starting from the brake chamber or spring brake assembly. This procedure will work for older "Pre-121" equipped trailers regardless of how many tanks and valves, or types of valves that you see. If your trailer is equipped with chambers only - you are dealing with system "A" for a trailer and systems "C" and "D" for a converter dolly. A "four-wheel" trailer may have chambers on the steerable axle - identify axle as a dolly system "C" or "D". If the vehicle is equipped with spring brakes you must determine which hose is the "parking/emergency" and which is the "service". Follow the service hose from the service portion of the spring brake assembly, the hose will be connected to the service relay valve and it is responsible for the application and release of the service brake only. Follow the parking/emergency hose from the spring brake assembly and you will end up at the spring brake control valve. After you have identified your system, go directly to the Problem and Solution Sections on the reverse side to remedy your situation.

— EMER./SUPPLY — SER./CONT. — SER./DEL. - - - - PARK/EMER. DEL.

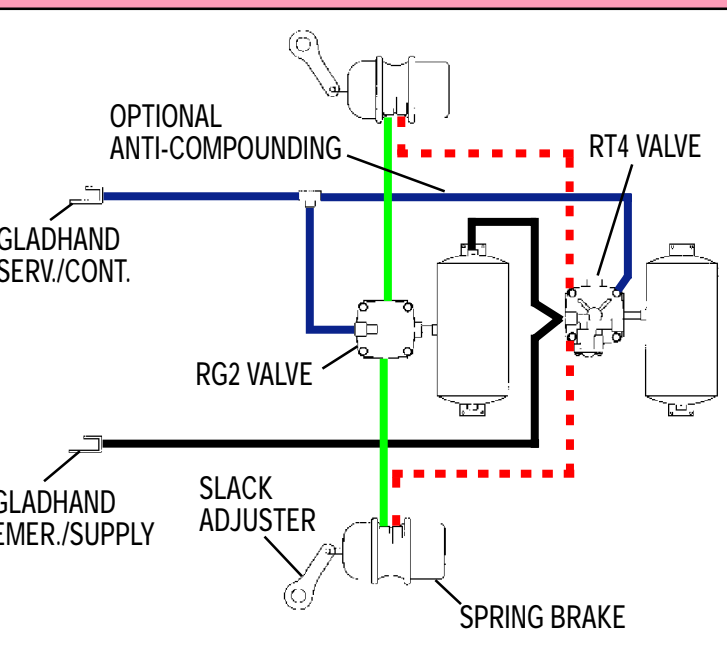
SYSTEM "J"
TWO TANK - ONE VALVE TANDEM AXLE SYSTEM



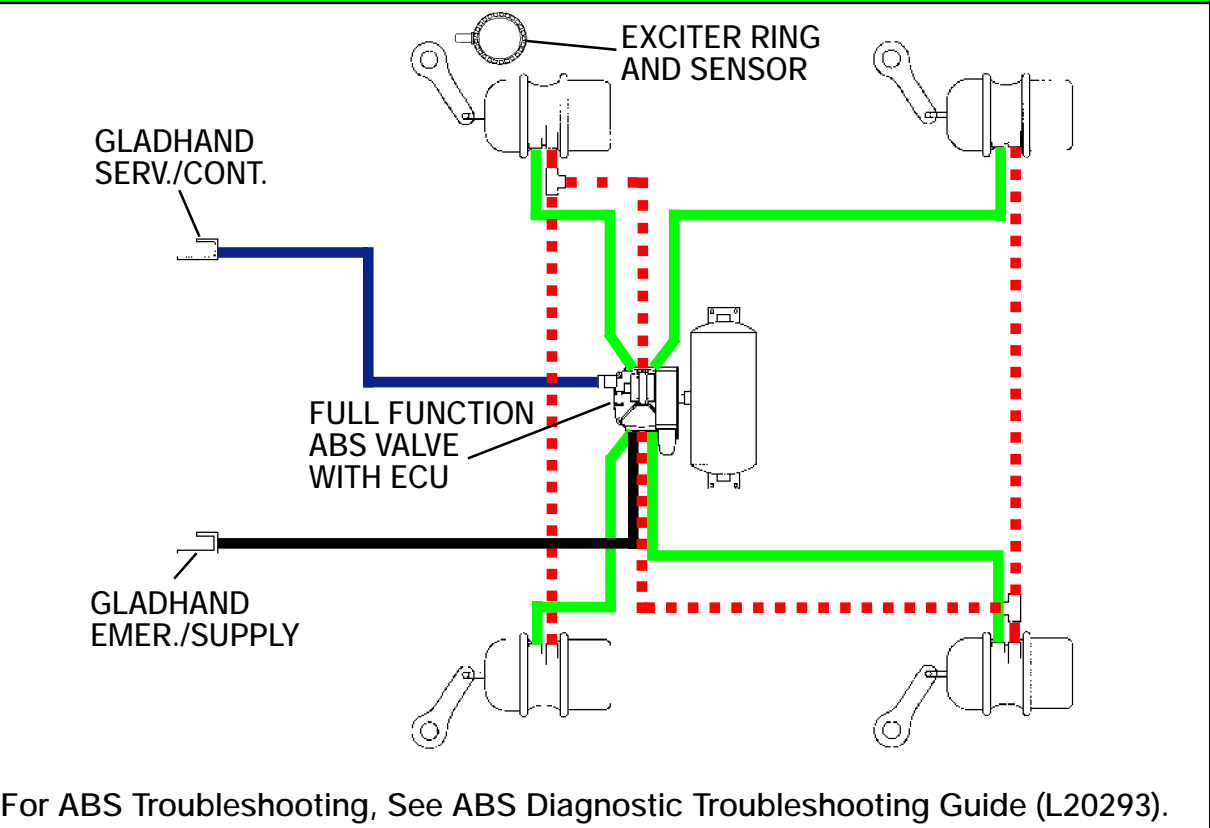
SYSTEM "D"
TYPICAL 121 DOLLY SYSTEM WITH NON-CHARGING TYPE RELAY/EMERGENCY VALVE



SYSTEM "E"
TWO TANK - TWO VALVE SINGLE AXLE SYSTEM WITH MIDLAND RT4/RG2 VALVE OR SEALCO MULTI-FUNCTION & RELAY

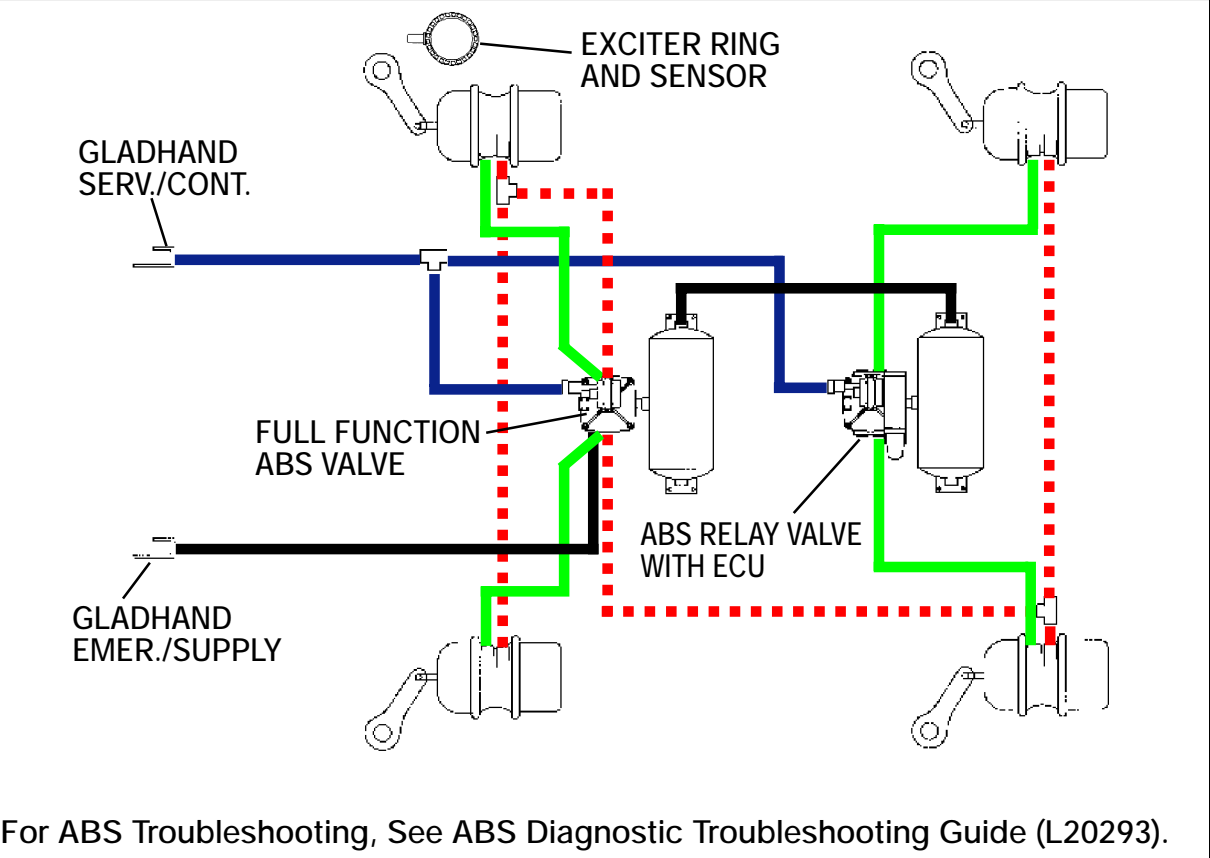


SYSTEM "F"
MOD-I FULL FUNCTION ABS 2S/1M



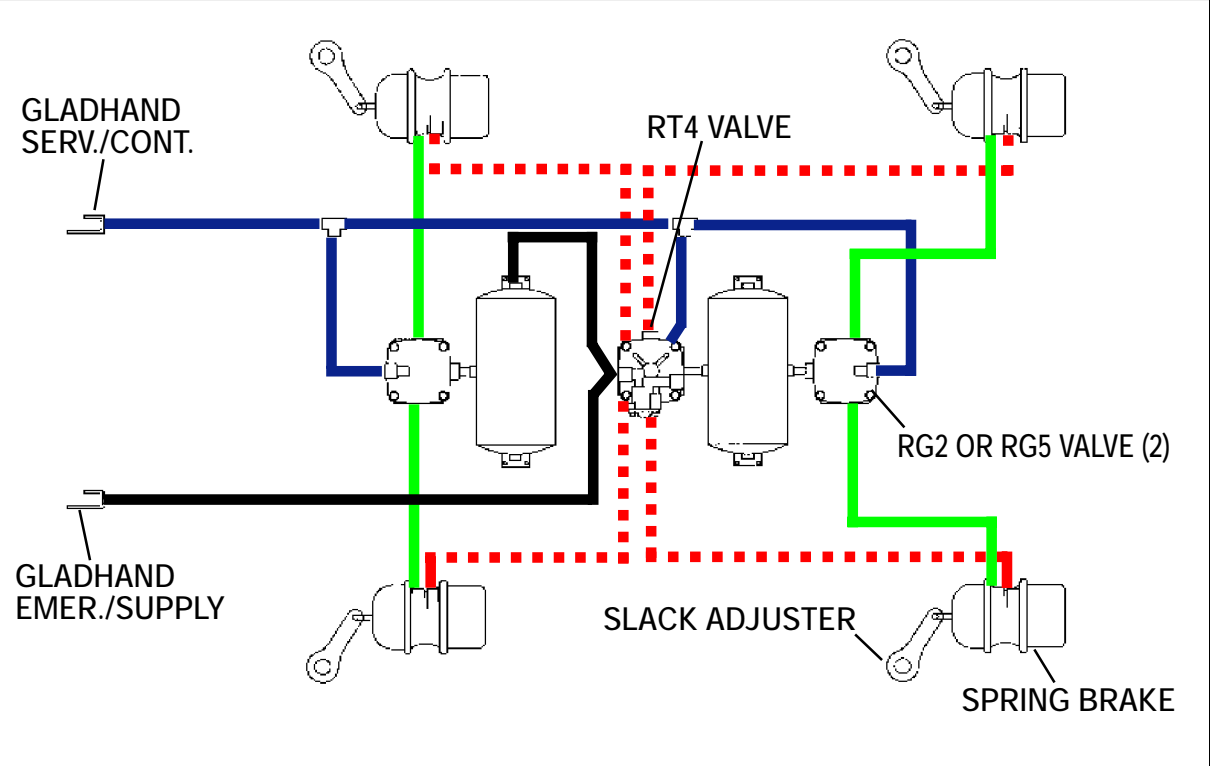
For ABS Troubleshooting, See ABS Diagnostic Troubleshooting Guide (L20293).

SYSTEM "G"
MOD-II ABS 4S/2M



For ABS Troubleshooting, See ABS Diagnostic Troubleshooting Guide (L20293).

SYSTEM "H"
TWO TANK - THREE VALVE TANDEM SYSTEM MIDLAND RT4/RG2 (RG5) VALVES OR SEALCO MULTI-FUNCTION WITH SERVICE RELAY VALVE



PROBLEM

SYSTEM LETTER AND SOLUTION NUMBER

SOLUTION

	A	B	C	D	E	F	G	H	J	
AIR LEAK AT										
• Service Brake Chamber	1-2-34	-	1-2-34	1-2-34	-	-	-	-	-	1. Check service chamber at clamp housing, push rod for damage.
• Spring Brake with Service Brakes Released & Park Brake Applied	-	11-36-37	-	-	-	-	-	-	-	2. Check service chamber diaphragm for rupture.
• Spring Brake with Service Brakes Released & Park Brake Released	-	6-11-36 or 37	-	-	6-11-36 or 37	6-11-36 or 37	6-11-36 or 37	6-11-36 or 37	6-11-36 or 37	3. Check slack adjuster and chamber/spring brake push rod alignment for interference.
• Spring Brake with Service Brakes Applied & Spring Brake Released	-	6-25-36	-	-	6-25-36	6-25-36	6-25-36	6-25-36	6-25-36	4. Assure slack adjuster and chamber/spring brake push rod angle 90° applied with proper adjustment.
• Emergency Relay Valve with Service Brake Applied or Released	42	33-36-37 or 42	42	51	-	-	-	-	-	5. Check all lines, valves, reservoirs, actuators for leakage.
• Emergency Relay Valve with Emergency Brake Applied	42	42	42	51	-	-	-	-	-	6. Check spring brake for damage or loose clamp.
• Service Relay Valve with Service Brake Released & Spring Brake Applied	-	-	-	-	38	54	54	38	53	7. Assure jumper hoses are not crossed.
• Service Relay Valve with Service Brake Released & Spring Brake Released	-	-	-	-	33-38	33-54	33-54	33-38	33-53	8. Assure functional return spring in service chamber or spring brake.
• Service Relay Valve with Service Brake Applied & Spring Brake Released	-	-	-	-	38	54	54	38	53	9. Assure air chamber size and slack adjuster arm length to original spec.
• Spring Brake Control Valve with Spring Brake Applied or Released	-	-	-	-	40	54	54	40	53	10. Assure spring brake control port has exhausted.
• Trailer Service Gladhand on Disconnect (with Trailer Supply Pressurized)	42	42	42	51	24-40	54	54	24-40	53	11. Check for ruptured spring brake diaphragm (furthest from slack adjuster).
• Trailer Emergency Gladhand on Disconnect	42	42	42	51 or 52	-	-	-	-	-	12. Supply/emergency line must be at atmosphere.
• Trailer System Leakage Exceeds 2 p.s.i., per min. with Service Brakes Applied	30	30	30	30	30	30	30	30	30	13. Assure emergency line exceeds 100 psi pressure; check and maintain governor at max cut-in.
• SERV Valve with Service Brake Released & Park Brake Applied	-	-	-	-	-	-	-	-	-	14. Assure air delivery to service gladhand.
• SERV Valve with Service Brake Released & Park Brake Released	-	-	-	-	-	-	-	-	-	15. Assure air delivery to service relay valve control port.
• SERV Valve with Service Brake Applied & Park Brake Released	-	-	-	-	-	-	-	-	-	16. Assure air delivery to air chamber or spring brake.
SYSTEM OR COMPONENT FAILURE										
• Trailer Brakes Slow and Sluggish	3-4-22-44-45-46-47	3-4-22-44-45-46-47	3-4-22-44-45-46-47	3-4-22-44-45-46-47	3-4-22-44-45-46-47	3-4-22-44-45-46-47	3-4-22-44-45-46-47	3-4-22-44-45-46-47	3-4-22-44-45-46-47	17. Assure air delivery to emergency gladhand exceeds 100 psi.
• Trailer Brakes Drag	3-4-13-22-23-42	3-4-22-23-27	3-4-22-23-42	3-4-22-23-51	3-4-13-22-23-27-37	3-4-13-22-23-27-37	3-4-13-22-23-27-37	3-4-13-22-23-27-37	3-4-13-22-23-27-37	18. Assure air delivery to emergency relay valve emergency port.
• Trailer Brakes Won't Apply (Service)	3-4-14-16-18-19	3-4-14-16-18-19	3-4-14-16-18-19	3-4-14-14-18-19	3-4-14-15-16-19	3-4-14-15-16-19	3-4-14-15-16-19	3-4-14-15-16-19	3-4-14-15-16-19	19. Assure air delivery to all reservoirs at system working pressure.
• Trailer Emergency Application Too Slow	22-28	22-28	22-28	22-28	22-28	22-28	22-28	22-28	22-28	20. Assure air delivery to spring brake control valve control port.
• Park/Emergency Brakes Won't Release	7-17-18-19-22-42	7-11-17-18-19-22-42	7-17-18-19-22-42	7-17-18-19-22-51	7-11-17-19-22-40	7-11-13-17-19-22-54	7-11-13-17-19-22-54	7-11-17-19-22-40	7-11-13-17-19-22-53	21. Assure air delivery to control port on spring brake (port furthest from slack adjuster).
• Park/Emergency Brakes Won't Hold	3-4-19	3-4-36 or 37	19-32	19-32	3-4-36 or 37	3-4-36 or 37	3-4-36 or 37	3-4-36 or 37	3-4-36 or 37	22. Assure open lines – no kinks, bends, closed shut-off cocks, restrictions, excessive elbows.
• Park/Emergency Brakes Won't Apply	4-12-19-42	4-12-19-36 or 37-42	4-12-19-42	4-12-19-51	4-10-12-36 or 37-40	4-10-12-36 or 37-54	4-10-12-36 or 37-54	4-10-12-36 or 37-40	4-10-12-36 or 37-53	23. Check for trapped service air pressure at trailer service/delivery hoses. If air pressure is noted, check for full release of all application valves (tractor/truck/trailer).
• Air Reservoir Leaks or Loose Mounting	35	35	35	35	35	35	35	35	35	24. Trailer brakes which have a spring brake control valve can be compounded by the tractor air brake system. The compounding occurs when service air pressure is trapped in the trailer service line by the tractor protection valve when the supply line is released to atmosphere. Compounding is prevented by connecting the trailer service line to the appropriate port of the trailer spring brake control valve through a tee. Early spring brake control valves are equipped with a shuttle valve between the supply and service connections at the cover. The RT-4 has a one-way check valve which prevents supply pressure from entering the service lines; but will allow service pressure to vent at trailer supply coupling. Systems A, B, C, D will not compound the trailer brake system if connected as shown on this chart.
BRAKE BALANCE										
• Semi-Trailer "RUNS-UP" on Tractor	4-22-45-46-47-49	4-22-45-46-47-49	4-22-46-47-49	4-22-46-47-49	4-22-45-46-47-49	4-22-45-46-47-49	4-22-45-46-47-49	4-22-45-46-47-49	4-22-45-46-47-49	25. Check for ruptured service brake diaphragm in spring brake (clamp nearest slack adjuster) after attention to damage or loose clamps.
• Uneven Brakes	3-4-22-31-49	3-4-22-31-49	3-4-22-31-49	3-4-22-31-49	3-4-22-31-49	3-4-22-31-49	3-4-22-31-49	3-4-22-31-49	3-4-22-31-49	26. Proceed same as for service relay valve.
• Trailer Brake Lining Wear Excessive	45-50	27-44-50	44-50	44	27-44-50	27-44-50	27-44-50	27-44-50	27-44-50	27. Assure spring brake is fully released with supply air at system pressure above 100 psi on emergency side of spring brake.
• Trailer Brake Lining Wear Insufficient When Compared to Tractor	4-16-45-46-47-49	4-16-45-46-47-49	4-17-45-46-47-49	4-16-45-46-47-49	4-16-45-46-47-49	4-16-45-46-47-49	4-16-45-46-47-49	4-16-45-46-47-49	4-16-45-46-47-49	28. Excessive volume imposed in supply/emergency lines – ie: air pintle air chamber.
• Trailer Brakes Slow to Apply	4-19-22-46-47	4-19-22-46-47	4-19-22-46-47	4-19-22-46-47	4-19-22-46-47	4-19-22-46-47	4-19-22-46-47	4-19-22-46-47	4-19-22-46-47	29. On a pre-121 exempt trailer utilizing an emergency relay valve, the spring brake emergency port should be plumbed directly to the tank.
• Trailer Brakes Slow to Release	8-22-42-47-48	8-22-42-47-48	8-22-42-47-48	8-22-47-48-51	8-22-38-47-48	8-22-38-47-48	8-22-38-47-48	8-22-38-47-48	8-22-38-47-48	30. Observe and determine which specific device, fitting or hose is leaking and replace.
• Damaged Foundation Components Due to Brake Compounding	-	29	-	24	24	54	54	24	53	31. Assure a leak free system by applying service brake and inspecting.

NOTE: FOR FURTHER TECHNICAL ASSISTANCE CONTACT YOUR HALDEX MIDLAND SERVICES DISTRIBUTOR, DISTRICT MANAGER, A TASK TEAM MEMBER OR CALL (800) 643-2374 AND ASK FOR APPLICATION SPECIALIST.



HALDEX MIDLAND CORPORATION
10707 N.W. Airworld Drive
Kansas City, Missouri 64153-1215
Phone: (816) 891-2470 • Fax: (816) 880-9766

HALDEX MIDLAND CORPORATION
Customer Service Department
10930 North Pomona Avenue
Kansas City, Missouri 64153-1297
Phone: (800) 643-2374 • Fax: (800) 533-1941

HALDEX MIDLAND LIMITED
CANADIAN DISTRIBUTION CENTRE
35 Baffin Place
Waterloo, Ontario Canada N2V 1Z7
(519) 884-9026 • (800) 267-9247
Fax: (519) 884-7256