

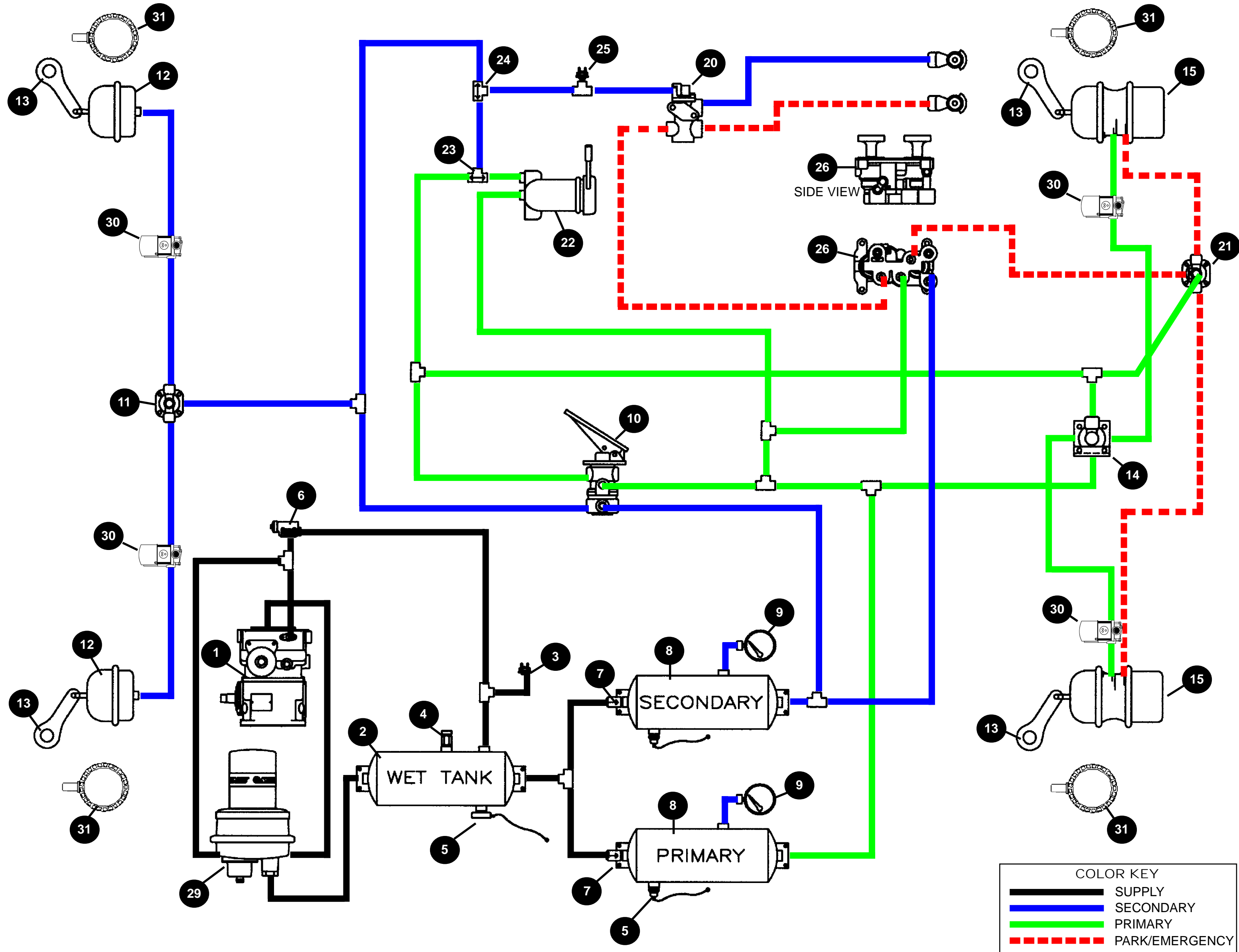
# Haldex

# Tractor Troubleshooting Guide

BRAKE SYSTEMS DIVISION  
 World Headquarters  
 10930 North Pomona Avenue  
 Kansas City, Missouri 64153-1297  
 Phone: (816) 891-2470 • Fax: (816) 891-9447

BRAKE SYSTEMS DIVISION  
 North American Sales & Svc. Org.  
 10707 N.W. Airworld Drive  
 Kansas City, Missouri 64153-1215  
 Phone: (816) 891-2470 • Fax: (816) 880-9766

BRAKE SYSTEMS DIVISION  
 Haldex Limited  
 525 Southgate Drive, Unit 1  
 Guelph, Ontario CANADA N1G 3W6  
 Phone: (519) 826-7723 • Fax: (519) 826-9497



| COLOR KEY |                |
|-----------|----------------|
|           | SUPPLY         |
|           | SECONDARY      |
|           | PRIMARY        |
|           | PARK/EMERGENCY |

# COMPLAINT/REMEDY

## 1 COMPRESSOR

- PUMPS BEYOND "CUT-OUT"
  - ◆ Check gauge.
  - ◆ Check governor.
  - ◆ Be certain it pressurizes unloader port when above "cut-out."
  - ◆ Check unloader/plungers. Lube, kit or change head.
- WON'T PUMP AIR
  - ◆ Check gauge.
  - ◆ Check compressor drive.
  - ◆ Check inlet valves and plungers. If stuck, leak will be evident at intake when unloaded. Install unloader kit, head kit or head assembly.
- SLOW PRESSURE BUILD-UP
  - ◆ Check gauge.
  - ◆ Check compressor drive.
  - ◆ Check intake for restriction.
  - ◆ Check discharge line for restriction.
  - ◆ Check unloader function. Lube or kit.
  - ◆ Check inlet and exhaust valves. Leak will be evident at intake when unloaded. Kit or exchange head.
- PUMPS EXCESSIVE OIL
  - ◆ Check oil return for restriction, kink or loop.
  - ◆ Check for gasket sealant obstructing drain.
  - ◆ Check for undersize return line (1/2" minimum).
  - ◆ Check for fitting restricting drain.
  - ◆ Check for intake vacuum (20" water maximum).
  - ◆ Check for excessive engine crankcase pressure (poor engine ventilation).
  - ◆ Check compressor ring wear. Exchange for service unit.

## 2 WET TANK

- EXCESS OIL ACCUMULATION
  - ◆ See PUMPS EXCESSIVE OIL (above).
- EXCESS WATER ACCUMULATION
  - ◆ Drain daily. Install automatic drain on wet tank.
- DAMAGED WET TANK
  - ◆ Replace.

## 3 LOW PRESSURE INDICATOR SWITCH

- BUZZER OR LIGHT INOPERABLE
  - ◆ Check ground and wiring on switch and buzzer/light.
  - ◆ Replace switch or buzzer light.
- WON'T OPERATE AT PRESSURES BELOW 60 P.S.I.
  - ◆ Check dash gauge for accuracy.
  - ◆ Replace switch or buzzer light.

## 4 SAFETY VALVE

- "POPS" OFF EXCESSIVELY
  - ◆ Check system pressure.
  - ◆ Valve operating properly in venting at 140/150 P.S.I.
  - ◆ Check unloader/governor.
- "POPS" OFF AT LESS THAN 140 P.S.I.
  - ◆ Replace.
- LEAKS
  - ◆ Replace.
- WON'T FUNCTION
  - ◆ Periodic Test: remove and test above 150 P.S.I. with shop air.
  - ◆ Replace if non-functional.

## 5 DRAIN VALVES - MANUAL

- LEAKS
  - ◆ Replace.

## 5 DRAIN VALVES - AUTOMATIC

- WON'T DRAIN
  - ◆ Repair or replace.
- WON'T DRAIN IN COLD WEATHER
  - ◆ Replace with heated unit.
- LEAKS - MALFUNCTIONS
  - ◆ Repair or replace.
  - ◆ Periodic Test: with system pressure stabilized (compressor unloaded) no leak evident at discharge port - make several foot brake applications to reduce wet tank pressure. Moisture should drain from discharge port.

## 6 GOVERNOR

- FLUTTERS
  - ◆ Check gauge.
  - ◆ Check unloader line size (5/16" x 5' maximum).
  - ◆ Check air actuated accessory. Is the air volume requirement greater than governor capacity?
  - ◆ Check for plugged governor reservoir line.
  - ◆ Repair, adjust or replace governor.
- WON'T PASS AIR TO UNLOADER TO "CUT-OUT" COMPRESSOR
  - ◆ Check governor reservoir line.
  - ◆ Repair or replace.

# COMPLAINT/REMEDY

## 7 SINGLE CHECK VALVE

- ALLOW BLEED BACK TO SUPPLY RESERVOIR
  - ◆ Periodic Test: bleed supply reservoir and observe gauges. Check valves should maintain rear and front reservoir pressure.
  - ◆ Replace if test results are negative.

## 8 PRIMARY & SECONDARY RESERVOIR

- EXCESS OIL/WATER
  - ◆ Drain as required.
  - ◆ Check automatic drain valve on wet tank for proper operation (See #5).

## 9 AIR GAUGE

- INCORRECT READING
  - ◆ Calibrate or replace.

## 10 DUAL SYSTEM FOOT BRAKE VALVE

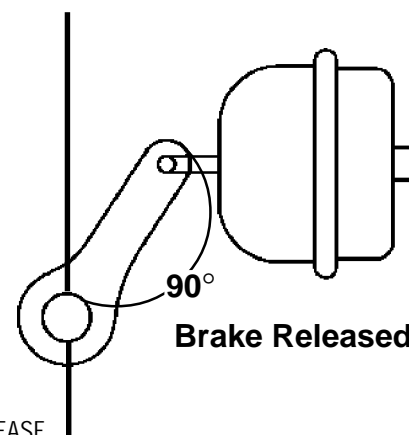
- LEAKS AT EXHAUST WITH ALL BRAKES RELEASED
  - ◆ Check anti-compound double check valve #21.
  - ◆ Check #20 and #27a & 27b for back flow into service control line.
  - ◆ Check trailer air system for back flow into tractor's service control line.
- CAUTION: CHOCK WHEELS - Repair and replace items as necessary.
- LEAKS AT EXHAUST WITH HAND VALVE APPLIED
  - ◆ Check double check valve #23 or #24. Repair or replace.
- LEAKS AT EXHAUST WITH FOOT BRAKE APPLIED
  - ◆ Foot valve defective. Repair or replace.
- LEAKS AT EXHAUST WITH ALL PARK BRAKES SET IN PARK POSITION AND FOOT BRAKE RELEASED
  - ◆ Foot valve defective. Repair or replace.

## 11 QUICK RELEASE VALVE

- LEAKS AT EXHAUST PORT WITH ALL BRAKES RELEASED
  - ◆ Check and replace #27b if back flow occurs into service delivery line.
- LEAKS WHEN SERVICE BRAKES ARE APPLIED
  - ◆ Repair or replace.

## 12 SERVICE BRAKE CHAMBER

- LEAKS
  - ◆ Replace diaphragm.
  - ◆ Cage park brake.
  - ◆ Reset clamps.
  - ◆ Adjust brakes.
- WITH SERVICE BRAKES APPLIED STROKE IS AT OR BEYOND MAXIMUM LIMIT OF:
  - ◆ Type 9 1 3/8"
  - ◆ Type 12 1 3/8"
  - ◆ Type 16 1 3/4"
  - ◆ Type 20 1 3/4"
  - ◆ Type 24 1 3/4"
  - ◆ Type 30 2"
- SLUGGISH APPLICATION OR RELEASE
  - ◆ Check basic brake.
  - ◆ Check for air line restriction/leak.
  - ◆ Align linkage.
  - ◆ Check chamber return spring.
  - ◆ Adjust brakes. Angle should approach 90° on application.
  - ◆ Check for improper chamber or obstruction.



## 13 BRAKE ADJUSTER

- SLEEVE WILL NOT DEPRESS
  - ◆ Clean and lubricate or replace with unit dimensionally same.
- ADJUSTING SHAFT WILL NOT TURN
  - ◆ Replace with unit dimensionally same.
- CRACKED HOUSING
  - ◆ Check spring brake anti-compound system.
  - ◆ Check air chamber size. Replace if larger than original size.
  - ◆ Check direction of travel for proper position of hex nut (Shown Under #12).
  - ◆ Hex nut must face away from chamber for uni-directional brake adjuster.
- WORN CLEVIS PIN BUSHING
  - ◆ Replace bushing.

## 14 RELAY VALVE

- LEAKS AT EXHAUST PORT WITH ALL BRAKES RELEASED
  - ◆ Check seal in spring brake for back-flow of spring "hold-off" pressure through service port to open exhaust on valve. Replace #15 Spring Parking Brake.
  - ◆ Check and replace #27b if back flow occurs into service delivery line.
  - ◆ Check reservoir port for evidence of contamination, check supply lines for rusty fittings or carbon deposits. Repair or replace.
- LEAKS AT EXHAUST PORT WITH SERVICE BRAKES APPLIED
  - ◆ Exhaust valve not seating properly. Repair or replace.

# COMPLAINT/REMEDY

## 15 SPRING PARKING BRAKE (SERVICE ONLY SERVICE CHAMBER SIDE OF SPRING BRAKE)

- PARK BRAKE DRAGS OR WON'T RELEASE
  - ◆ Check For: Improper adjustment, restriction or broken line. Diaphragm failure. System pressure too low. Improper manual release. Broken return spring (spring side). Quick release of relay malfunction. Broken power spring.
  - ◆ Replace entire unit or piggy-back emergency section.
- SLUGGISH PARK APPLICATION
  - ◆ Check For: Diaphragm failure. Improper manual release. Broken power spring.
- LEAKS WHEN PRESSURIZED FOR PARK BRAKE RELEASE
  - ◆ Check For: Ruptured spring side diaphragm. Push rod seal leakage (may be evident at #14 relay valve).
- SERVICE CHAMBER MALFUNCTION
  - ◆ See #12 service brake chamber.

## 16 DOUBLE CHECK VALVE UNITES FRONT BRAKE AND REAR BRAKE RESERVOIRS TO FEED PARK CONTROL (INSET B OPTION WITH TWO VALVE DASH PANEL)

- REAR TANK BLEED-DOWN ALSO BLEEDS FRONT TANK OR VICE VERSA
  - ◆ Periodic Test: Pressure should remain in one tank after the other is drained. Replace if not functioning properly.

## 20 TWO-LINE TRACTOR PROTECTION VALVE (NON-AUTOMATIC TYPE)

- WILL NOT RESPOND TO TRAILER CHARGE VALVE
  - ◆ Defective valve. Repair or replace.
- SUPPLY LINE TO TRAILER WITH SLOW BLEED-DOWN DOES NOT SHUT OFF TRACTOR AIR AND VENT BETWEEN 45 P.S.I. AND 20 P.S.I.
  - ◆ Check trailer charge valve #26, as it should "pop" to let T.P. valve vent trailer supply. Repair or replace.
- LEAKS AT EXHAUST PORT OR TRACTOR SERVICE (BACK THROUGH HAND OR FOOT VALVE) OR TRAILER SUPPLY
  - ◆ Defective valve. Repair or replace.

## 21 QUICK RELEASE AND DOUBLE CHECK VALVE COMBINATION

- FOOT VALVE EXHAUST LEAK PARK BRAKES RELEASED YELLOW DASH CONTROL VALVE EXHAUST LEAK IN PARK POSITION AND SERVICE BRAKES APPLIED
  - ◆ Check anti-compound double check valve portion for feedback to foot or dash control valve. Repair or replace.

## 22 HAND CONTROL VALVE-TRAILER SERVICE BRAKES

- LEAKS AT EXHAUST PORT WHEN RELEASED AND FOOT VALVE IS APPLIED
  - ◆ Check #23. Replace if necessary.
- LEAKS AT EXHAUST PORT WHEN RELEASED AND TRAILER PARKING BRAKES ALSO RELEASED
  - ◆ Check #20 for internal backflow into service control line, or trailer air system for backflow into tractor service control line.
- LEAKS AT EXHAUST PORT WHEN RELEASED OR APPLIED AND ALL PARKING BRAKES IN PARKED POSITION
  - ◆ Hand control valve is defective. Repair or replace.

## 23 DOUBLE CHECK VALVE SEPARATES TRAILER HAND VALVE PRESSURE FROM REAR FOOT BRAKE PRESSURE FOR DELIVERY TO TRAILER

- FOOT VALVE EXHAUST PORT LEAKS WHEN HAND VALVE IS APPLIED
  - ◆ Replace.
- HAND VALVE EXHAUST PORT LEAKS WHEN FOOT VALVE IS APPLIED
  - ◆ Replace.

## 24 DOUBLE CHECK VALVE SEPARATES FRONT AXLE FOOT BRAKE PRESSURE FROM REAR AXLE FOOT BRAKE PRESSURE AND/OR TRAILER HAND VALVE PRESSURE FOR DELIVERY TO TRAILER

- LEAKS THROUGH FOOT VALVE EXHAUST WITH HAND VALVE APPLIED
  - ◆ Replace #23 or #24.
  - ◆ Periodic Test: Alternately loosen each inlet line and apply pressure to other. If leak is detected - replace.

# COMPLAINT/REMEDY

## 25 STOP LIGHT SWITCH

- LEAKS
  - ◆ Replace.
- FAILS TO SIGNAL A GOOD BULB THROUGH SOUND WIRING AT 3-6 P.S.I.
  - ◆ Replace.

## 26 MANIFOLD DASH VALVE WITH BUILT-IN TWO-WAY CHECK (RED OCTAGON) TRAILER CHARGE (YELLOW DIAMOND) TRACTOR PARK

- PARK BRAKE WON'T RELEASE
  - ◆ Check for full system pressure delivery through valve.
- PARK BRAKE WON'T APPLY
  - ◆ Repair or replace, if it will not release pressure.
- LEAKS AT EXHAUST PORT IN PARK POSITION SERVICE BRAKES APPLIED
  - ◆ Check #21 anti-compound double check valve.
- LEAKS AT EXHAUST PORT IN PARK POSITION SERVICE BRAKES RELEASED
  - ◆ Repair or replace.
- WON'T APPLY TRAILER IMMEDIATELY WHEN "PULLED"
  - ◆ Replace, if it won't exhaust. Repair or replace #20 if #26 is functioning properly.
- REAR TANK BLEED-DOWN ALSO BLEEDS FRONT TANK OR VICE VERSA
  - ◆ Periodic Test: Pressure should remain in one tank after the other is drained. Replace, if inoperative.

## 28 BARRIER WHEEL OIL SEALS (NOT SHOWN IN SCHEMATIC)

- OIL LEAK
  - ◆ Check for proper glazing of the sealing lip.
  - ◆ Check serrations on O.D. and I.D. to see that sealing surfaces are dry. If wet, this could denote the leakage path.
  - ◆ Check area between positioning pads. If wet, suspect seal leak.
  - ◆ Check seal for possible damage incurred during installation.
  - ◆ Check hub bore and spindle surfaces for imperfections or irregularities.
  - ◆ Check to be sure that proper seal has been installed for the particular axle application.

## 29 AIR DRYER

- AIR LEAKING CONSTANTLY FROM PURGE VALVE
  - ◆ Purge valve seal damaged. Replace.
  - ◆ Purge valve frozen.
  - ◆ Inspect heater (see heater problems).
- HEATER INOPERATIVE
  - ◆ Blown Fuse. Check fuse and replace with 8-10 amp fuse.
  - ◆ Broken wires or poor connections. Repair or replace wiring to heater.
- SLOW WET TANK BUILD-UP
  - ◆ Filter and/or desiccant plugged. Service air dryer.

## 30 ABS INLINE VALVES

- FOR COMPLETE TROUBLESHOOTING INFORMATION, REFER TO LITERATURE PIECES MODAL POWER TK-2 INSTALLATION & SERVICE MANUAL (L30022) AND/OR ABS DIAGNOSTIC TROUBLESHOOTING GUIDE (L20293)

## 31 ABS SENSORS & EXCITER RINGS

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