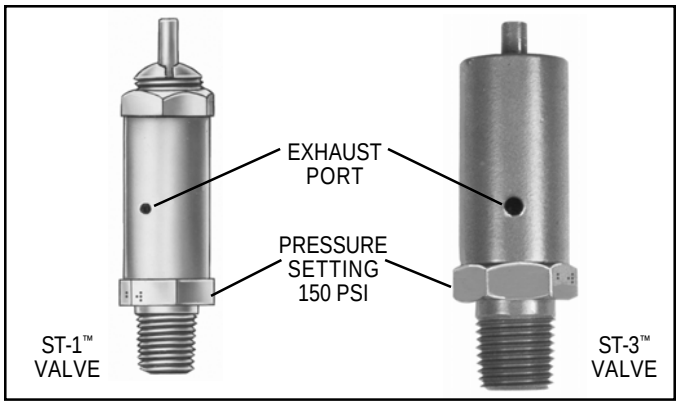
Bendix® ST-1™ & ST-3™ Safety Valve



DESCRIPTION

The safety valve protects the air brake system against excessive air pressure build-up. The valve consists of a spring loaded ball valve subjected to reservoir pressure which will permit air to exhaust reservoir pressure to atmosphere if reservoir pressure rises above the valves pressure setting, which is determined by the force of the spring.

OPERATION

To illustrate the operation of the safety valve, we shall assume that the governor cutout pressure is set at 125 psi. A safety valve with a setting of 150 psi could then be used. Should system pressure rise to approximately 150 psi air pressure would force the ball valve off its seat, and allow reservoir pressure to vent to atmosphere through the exhaust port in the spring cage.

When reservoir pressure decreases sufficiently, the spring force will seat the ball check valve, sealing off reservoir pressure. This would occur at approximately 135 psi for the 150 psi valve. It is important to note that the desired pressure setting of the safety valve is determined by the governor cutout pressure. The opening and closing pressures of the safety valve should always be in excess of governor cutout pressure setting. The pressure setting is stamped on the lower wrench flat of the valve.

Normally, the safety valve remains inoperative and only functions if for any reason reservoir pressure rises above the setting of the valve. Constant “popping off” or exhausting of the safety valve can be caused by a faulty safety valve, faulty governor, faulty compressor unloading mechanism, or a combination of any of the preceding.

PREVENTIVE MAINTENANCE

Important: Review the Bendix Warranty Policy before performing any intrusive maintenance procedures. A warranty may be voided if intrusive maintenance is performed during the warranty period.

No two vehicles operate under identical conditions, as a result, maintenance intervals may vary. Experience is a valuable guide in determining the best maintenance interval for air brake system components. At a minimum, the safety valve should be inspected every 6 months or 1500 operating hours, whichever comes first, for proper operation. Should the safety valve not meet the elements of the operational tests noted in this document, further investigation and service of the valve may be required.

OPERATING AND LEAKAGE CHECKS

OPERATING TEST: With air pressure in the system, pull the exposed end of the valve stem removing the spring load from the ball check valve. Air should exhaust from the valve’s exhaust port. Release the stem, the air flow should stop. Failure of valve to pass operating test would indicate the valve should be disassembled, cleaned and rebuilt. (See “Disassembly and Assembly” section). If adjustment is necessary, see “Adjustment” section.

LEAKAGE CHECK: Coat the exhaust port with soap solution. A leakage of a 1” bubble in 5 seconds is permitted. Excessive leakage indicates dirt in valve, faulty ball valve or seat. Valve should be disassembled, cleaned and rebuilt. (See “Disassembly and Assembly” section).

REMOVING AND INSTALLING

REMOVING

1. Block wheels or otherwise secure vehicle and drain reservoirs.
2. Using wrench flat closest to reservoir, unscrew valve from reservoir.

INSTALLING

Safety valve should be installed in same reservoir that compressor discharge line is connected to. Install in a convenient location in a top port of the reservoir. If safety valve is installed horizontally, exhaust port should point down, stem of the valve should face rear of vehicle.

DISASSEMBLY: ST-1™ ADJUSTABLE VALVE

1. Clamp lower wrench flat in vise (flat nearest pipe thread).
2. Using upper wrench flat, unscrew lock nut. Unscrew and remove spring cage from body of valve.
3. Remove ball valve, spring and release pin from spring cage.

DISASSEMBLY: ST-3™ NON-ADJUSTABLE VALVE

1. Clamp spring cage in soft jawed vise.
2. Using wrench flat, unscrew body from spring cage.
3. Remove ball valve, spring and release pin from spring cage.

CLEANING AND INSPECTION

Clean all parts in mineral spirits. Inspect all parts. All parts not considered serviceable should be replaced with genuine Bendix replacement parts.

ASSEMBLY: ST-1™ ADJUSTABLE VALVE

1. Place the ball valve in body.
2. Install spring and release pin in spring cage with adjusting screw.
3. Position the release pin overball valve. Screw body with ball into the spring cage. Tighten securely.
4. Adjust for proper setting (see “Adjustment” section).

ASSEMBLY: ST-3™ NON-ADJUSTABLE VALVE

1. Install spring, release pin in spring cage.
2. Position ball valve in body and screw spring cage onto body.
3. Hold spring cage in soft jawed vise and tighten body securely.

TO RAISE PRESSURE SETTING

1. Loosen lock nut.
2. Turn adjusting nut clockwise to obtain correct pressure setting.
3. Tighten lock nut.

TO LOWER PRESSURE SETTING

1. Loosen lock nut.
2. Turn adjusting nut counter clockwise to obtain correct pressure setting.
3. Tighten lock nut.

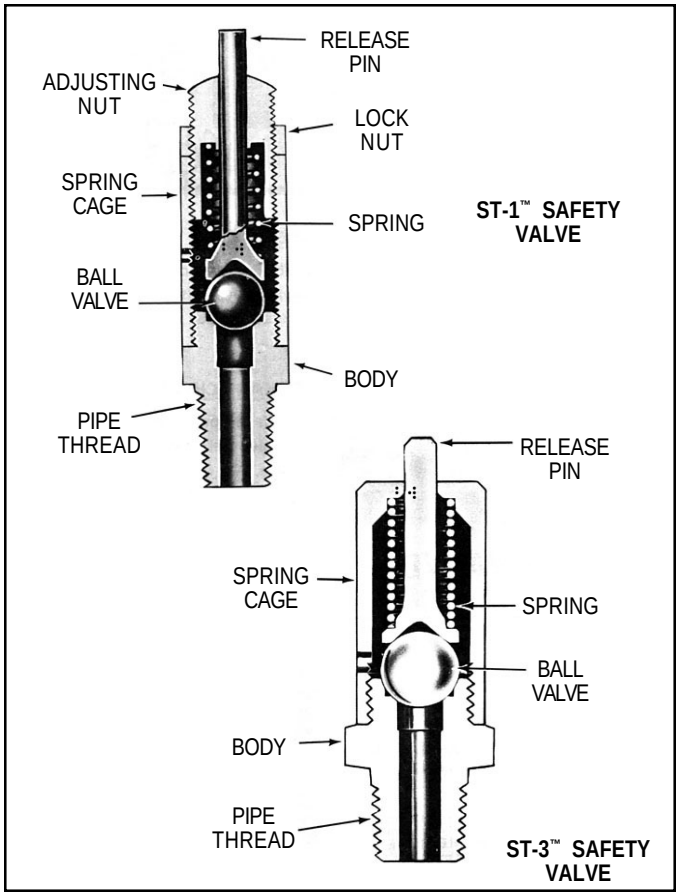
TESTING OF REBUILT SAFETY VALVES:

Perform operating and leakage checks.

ADJUSTMENT OF SAFETY VALVE

NOTE: The ST-3™ safety valve is not adjustable.

The pressure setting of the safety valve is stamped on the cover wrench flat (closest to the pipe thread). The vehicle manual may also provide the proper pressure setting. If setting is not known, determine governor cutout pressure setting and adjust safety valve so that the safety valve closes at a pressure setting somewhat above governor cutout pressure setting (See “Operation” section).



To adjust, the safety valve must be connected to an air system with air pressure in excess of desired setting. It is important that an accurate gauge be used to check pressure settings while making adjustments.

<u>WARNING! PLEASE READ AND FOLLOW THESE INSTRUCTIONS TO AVOID PERSONAL INJURY OR DEATH:</u>

When working on or around a vehicle, the following general precautions should be observed <u>at all times</u>.

1. **Park the vehicle on a level surface, apply the parking brakes, and always block the wheels. Always wear safety glasses.**
2. **Stop the engine and remove ignition key when working under or around the vehicle. When working in the engine compartment, the engine should be shut off and the ignition key should be removed. Where circumstances require that the engine be in operation, <u>EXTREME CAUTION</u> should be used to prevent personal injury resulting from contact with moving, rotating, leaking, heated or electrically charged components.**
3. **Do not attempt to install, remove, disassemble or assemble a component until you have read and thoroughly understand the recommended procedures. Use only the proper tools and observe all precautions pertaining to use of those tools.**

4. **If the work is being performed on the vehicle's air brake system, or any auxiliary pressurized air systems, make certain to drain the air pressure from all reservoirs before beginning ANY work on the vehicle. If the vehicle is equipped with an AD-IS® air dryer system or a dryer reservoir module, be sure to drain the purge reservoir.**
5. **Following the vehicle manufacturer's recommended procedures, deactivate the electrical system in a manner that safely removes all electrical power from the vehicle.**
6. **Never exceed manufacturer's recommended pressures.**
7. **Never connect or disconnect a hose or line containing pressure; it may whip. Never remove a component or plug unless you are certain all system pressure has been depleted.**
8. **Use only genuine Bendix® replacement parts, components and kits. Replacement hardware, tubing, hose, fittings, etc. must be of equivalent size, type and strength as original equipment and be designed specifically for such applications and systems.**
9. **Components with stripped threads or damaged parts should be replaced rather than repaired. Do not attempt repairs requiring machining or welding unless specifically stated and approved by the vehicle and component manufacturer.**
10. **Prior to returning the vehicle to service, make certain all components and systems are restored to their proper operating condition.**