



# 70 psi Supply Line Retention Using Sealco Pressure Protection Valves

This guide is to aid in selecting the proper Sealco pressure protection valve (PPV) for a semi-trailer air brake system. Specific reference is made to U.S. and Canadian rules and codes regarding this subject and must be taken into consideration when choosing the appropriate pressure protection valve. These rules and codes are both enforceable and safety related.

Note: The 70 psi minimum level of protection discussed in this document comes from the U.S. and Canadian 121 Air Brake Systems standards in paragraphs S5.8.2. It refers to the industry standard that accepts that 70 psi is the minimum amount of air pressure required, to keep the power spring in the springbrake chamber fully caged, so that parking brakes stay fully released.

## The U.S. FMVSS and Canadian CMVSS Standard 121; Air Brake Systems S5.8.2

S5.8.2 *Supply line pressure retention.* Any single leakage type failure in the service brake system (except for a failure of the supply line, a valve directly connected to the supply line or a component of a brake chamber housing) shall not result in the pressure in the supply line falling below 70 psi, measured at the forward trailer supply coupling. A trailer shall meet the above supply line pressure retention requirement with its brake system connected to the trailer test rig shown in Figure 1, with the reservoirs of the trailer and test rig initially pressurized to 100 psi and the regulator of the trailer test rig set at 100 psi; except that a trailer equipped with an air-applied, mechanically-held parking brake system and not designed to tow a vehicle equipped with air brakes, at the manufacturer's option, may meet the requirements of S5.8.4 rather than those of S5.8.2 and S5.8.3.

- Reprinted from the e-Code of Federal Regulations Title 49 Part 571 Subpart B 571.121

## The Canadian National Safety Code Standard 11; Air Brakes and Coupling Devices

**PART A** of National Safety Code Standard 11 contains the recommended standards for a commercial vehicle maintenance program and represents the *minimum* criteria which would be evaluated in an audit of the carrier's operation.

**Section 3A – Air Brakes 8. Brake Valves & Controls** d) Any air system accessory device, (e.g.: suspension, tire inflation system, landing gear) that draws air from the air brake system must function as intended with a properly functioning pressure protection valve.

**Section 10 Coupling Devices 3. Pintle Hook, Pin Hitch or Coupler Hitch** d) No air chamber cushion or component shall be used that is damaged or leaking from an air chamber, air line or fitting, or that does not have a properly-functioning pressure protection valve installed.

**PART B** of NSC Standard 11 contains the mandatory **Periodic Motor Vehicle Inspection (PMVI)** standards for commercial vehicles, the standards to which a vehicle will be inspected by an authorized technician at an authorized facility at a scheduled frequency, as evidenced by a decal of compliance.

### **Section 3A – Air Brakes 8. Brake Valves & Controls**

d) air system or accessory device, (e.g.: suspension, tire inflation system, pintle hook damper, tail gate, landing gear, tarp system, etc.) | d) any system or accessory device that draws air from the air brake system is not equipped with a functioning pressure protection valve

**Note:**

The pressure protection valve must be installed so that it prevents a failure in such a system or accessory from depleting all of the pressure from the brake system.

- Reprinted from the Canadian Council of Motor Transport Administrators (CCMTA) NSC Standard 11 “Maintenance and Periodic Inspection Standards”



# Pressure Protection Valves from Sealco

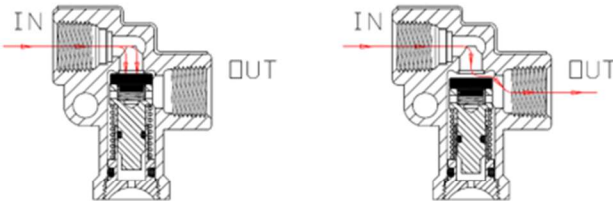
The 140xxx series of pressure protection valves (PPV) are non-adjustable in-line pressure valves. They are used in the trailer air brake system to protect the air supplied through the emergency/supply line or air tank, from the source for air such as the air suspension or other air devices. Refer to the table below for closing pressures and the diagrams for air flow directions IN and OUT of the PPV.



Part Number	Inlet Port (NPT)	Outlet Port (NPT)	Nominal Closing	Repair Kit	Notes
140200	3/8"	3/8"	50 PSI	140201	
140270	3/8"	3/8"	60 PSI	140271	
140280	3/8"	3/8"	70 PSI	140281	
140290	3/8"	3/8"	80 PSI	140291	
140300	1/4"	1/4"	50 PSI	140201	
140370	1/4"	1/4"	60 PSI	140271	
140380	1/4"	1/4"	70 PSI	140281	
140390	1/4"	1/4"	80 PSI	140291	
140680	3/8"	1/4"	70 PSI	140281	Replaces 140580

Always install with vent port downward.

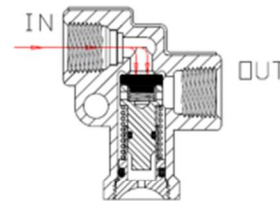
Figure 1  
140280



Valve remains closed (no flow) until inlet port pressure builds up to approximately 80 p.s.i. The check valve begins to move off the casting seat and allow air flow to begin thru the outlet and to the downstream accessories.

**Valve in initial and normal operating position**

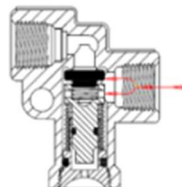
Figure 2  
140280



If pressure is lost at the outlet port, spring will move check valve upwards, closing off the flow of air to maintain approximately 70 P.S.I. at the inlet port. This is to protect the supply of air to the brake system.

**Valve in downstream pressure failure position**

Figure 3  
140280



If pressure drops at the inlet port, spring will move check valve upwards, closing off the flow of air to maintain approximately full pressure at the outlet port. This to protect the downstream air accessories.

**Valve in downstream air protection position**



## The Emergency Brake PPV from Sealco

The 110257 Emergency Brake pressure protection valve (EBPPV) is non-adjustable and has a closing pressure of 70 psi. It has a unique backflow feature and is commonly used with the 110376 emergency control valve or 110338 relay emergency valve on axles equipped with service chambers to comply with the "121" rule S5.8.2. It also complies with the Canadian NCS 11 codes when pintle hook damper chambers are connected directly to trailer emergency/supply line. Refer to the table below and for air flow directions IN and OUT of the EBPPV.



Part Number	Inlet Port (NPT)	Outlet Port (NPT)	Nominal Closing	Notes
110257	3/8"	3/8"	70 PSI	Does not interchange with other pressure protection valves due to the special back flow feature.

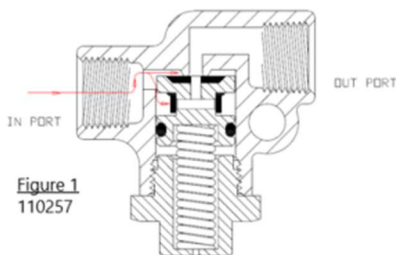


Figure 1  
110257

Supply air is first introduced into the valve thru the "IN" port building to 75 P.S.I.

Valve Shown In Pressure Build-Up Position

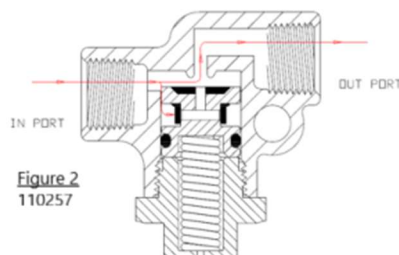


Figure 2  
110257

When supply air reaches 75 P.S.I valve opens allowing air to flow thru "OUT" port.

Valve Shown In Open Position

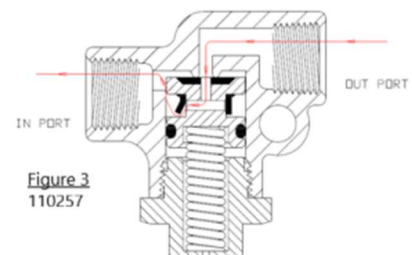
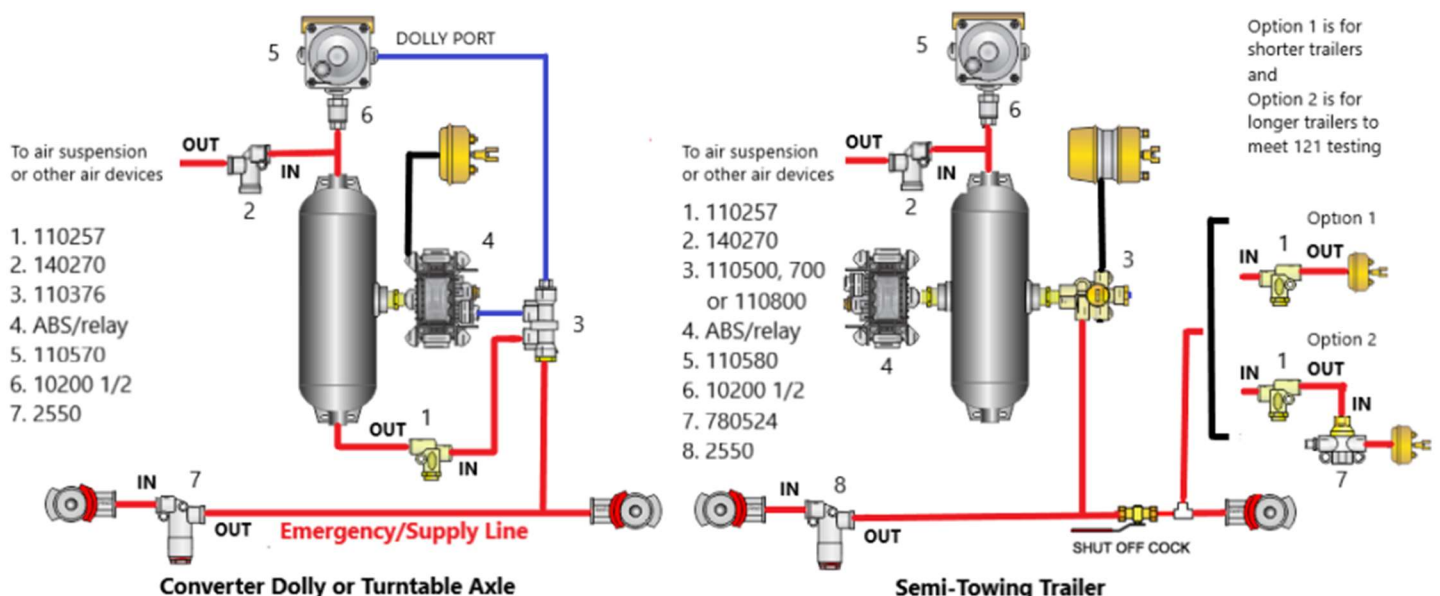


Figure 3  
110257

When supply air drops the valve begins to close. When the valve seat is fully closed at 70 P.S.I. the valve continues to exhaust

Valve Shown In Pressure Release Position

NOTE: The 140 series PPV and the 110257 EBPPV are **not** interchangeable. Always install them with the vent port facing downward.





# Sealco Commercial Vehicle Products

## Sealco Spring Brake Control Valves And Pressure Protection



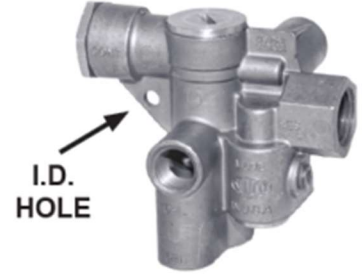
**110170, 110171  
110191, 110310  
110315**



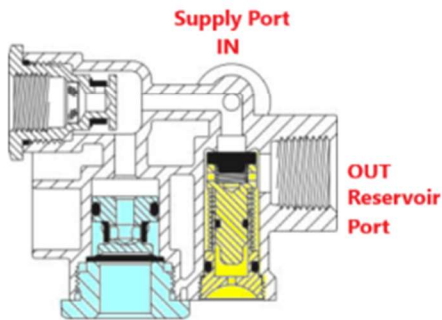
**110500  
110505  
110510**



**110700**

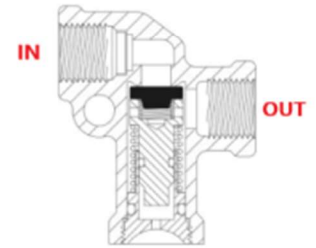


**110800**



**Cut-away view of 110500**

All genuine Sealco spring brake control valves (SBCV) have internal pressure protection valves in them. They have a non-adjustable closing pressure of 70 psi to comply with "121" rule S5.8.2. The yellow highlighted area shown in the cut-away view of the 110500 on the left shows the PPV portion of our SBCV's. The cut-away view of our 140 series of PPV's on the right shows the similar cross-section for comparison.



**Cut-away view of 140 series PPV**

NOTE: The 140 series PPV and the 110257 EBPPV are **not** interchangeable. Always install them with the vent port facing downward.

