
Announcement

Dixon has redesigned the 2182 series of Bayco relief valves. (shown below)

The new 2182 series of blower relief valves, (not to be confused with the A2182 series which are designed for trailer service) have a temperature compensated pressure relief setting. The 2182 valve will relieve at the ordered set pressure at a temperature of 204°C / 400°F. At room temperature (73°F / 22°C) the 2182 valve will relieve approximately 4 psi higher than the ordered set pressure.

A new label is being used to show the relief pressure at 73°F / 22°C (for testing purposes), plus the relief pressure at the blower operating temperature (204°C / 400°F).

Depending on the blower type, amount of vibration & operating temperature a difference of observable set pressure may occur. Room temperature testing will show different results.

Example: 2182M-18 is set for 18 psi pressure relief while at an operating temperature of 204°C / 400°F.

This same valve will test at 22psi while at room temperature and a stable work bench. Both set points are listed on the new label.

For proper use and testing, please read the installation instructions included with the product (also available on our website)

Please contact Dixon for more information.

Blower Service

2182 Series

The 2182 series of air relief valves are designed for use in elevated temperature applications associated with blower service.

(not intended for use on Dry Bulk trailers)

- Standard pressure setting for truck mounted blowers is 18 PSI, however, for other applications, valves are available with temperature compensated pressure settings of between 3 PSI and 24 PSI. Customer should request set pressure at time of order.
- anodized aluminum body reduces thread galling
- High relieving capacity varies between 800 SCFM and 1700 SCFM depending upon the chosen set pressure. For specific relief rates please contact Dixon.
- white food grade silicone poppet and diaphragm
- installed cup seal deters unauthorized tampering
- **preset pressure settings are set based upon operating temperatures of 204°C/400°F**
- **Note: At 73°F / 22°C the 2182 series valves will relieve at 4 PSI higher than the ordered pressure setting.**



| Part # | Connection |
|-----------------|---------------|
| 2182F-xx | 2" female NPT |
| 2182M-xx | 2" male NPT |

xx refers to choice of pressure setting, request the required pressure setting when ordering.

Trailer Service



2180, A2180, 3180 and A3180 Series

- aluminum cowl with Bayloy body eliminates thread galling
- bronze poppet valve
- silicone diaphragm
- cup seal installed to deter unauthorized tampering
- optional safety lanyard is available



| Valve Series | Valve Connection | Available Factory Set Pressure Range (PSI) ¹ | Set Pressure Tolerance | Diaphragm Material | Relieving Capacity (SCFM) ² |
|--------------|-------------------------|---|------------------------|---------------------------|--|
| 2180-xx | 2" female NPT | 2 to 25 | +3/-0 PSI | white food grade silicone | 500 to 950 |
| A2180-xx | 2" female NPT | 2 to 27 | +1/-0 PSI | white food grade silicone | 500 to 950 |
| 2180B-xx | 2" cam & groove adapter | 2 to 25 | +3/-0 PSI | white food grade silicone | 500 to 950 |
| A2180B-xx | 2" cam & groove adapter | 2 to 27 | +1/-0 PSI | white food grade silicone | 500 to 950 |
| 2180V-xx | 2" grooved | 2 to 25 | +3/-0 PSI | white food grade silicone | 500 to 950 |
| A2180V-xx | 2" grooved | 2 to 27 | +1/-0 PSI | white food grade silicone | 500 to 950 |
| 3180-xx | 3" female NPT | 4 to 30 | +3/-0 PSI | red silicone | 750 to 1500 |
| A3180-xx | 3" female NPT | 6 to 32 | +1/-0 PSI | red silicone | 750 to 1500 |

¹ request the required pressure setting when ordering

² relieving capacity (SCFM) varies with set pressure, for specific rates please contact Dixon
xx refers to choice of pressure setting, request the required pressure setting when ordering.

A2180ADJ and A3180ADJ Adjustable Series

- adjustable: factory preset pressure can be adjusted by the customer by +3/-3 PSI
- aluminum cowl and adjustment bolt cover with Bayloy body eliminates thread galling
- bronze poppet valve
- silicone diaphragm
- cup seal installed to deter unauthorized tampering



| Valve Series | Valve Connection | Available Factory Set Pressure Range (PSI) ¹ | Set Pressure Tolerance | Diaphragm Material | Relieving Capacity (SCFM) ² |
|--------------|------------------|---|------------------------|---------------------------|--|
| A2180 xxADJ | 2" female NPT | 9 to 30 | +1/-0 PSI | white food grade silicone | 500 to 950 |
| A3180-xxADJ | 3" female NPT | 9 to 30 | +1/-0 PSI | red silicone | 750 to 1500 |

¹ request the required pressure setting when ordering, factory preset pressure can be adjusted by the customer by +3/-3 PSI

² relieving capacity (SCFM) varies with set pressure, for specific rates please contact Dixon
xx refers to choice of pressure setting, request the required pressure setting when ordering.

A2182 Series

- Anodized aluminum body reduces weight and thread galling. The A2182 is physically larger than the 2180 and A2180 however all weigh approximately 4 lbs.
- High relieving capacity varies between 800 SCFM and 1700 SCFM depending upon the chosen set pressure. For specific relief rates please contact Dixon.
- White food grade silicone poppet and diaphragm, reduces the tendency of products that "cake" such as cement, lime and flour from sticking to the poppet.
- installed cup seal deters unauthorized tampering



| Valve Series | Valve Connection | Available Factory Set Pressure Range (PSI) ¹ | Set Pressure Tolerance | Diaphragm Material | Relieving Capacity (SCFM) ² |
|--------------|-------------------------|---|------------------------|---------------------------|--|
| A2182F xx | 2" female NPT | 6 to 27 | +1/-0 PSI | white food grade silicone | 800 to 1700 |
| A2182M-xx | 2" male NPT | 6 to 27 | +1/-0 PSI | white food grade silicone | 800 to 1700 |
| A2182B-xx | 2" cam & groove adapter | 6 to 27 | +1/-0 PSI | white food grade silicone | 800 to 1700 |
| A2182V-xx | 2" grooved | 6 to 27 | +1/-0 PSI | white food grade silicone | 800 to 1700 |

¹ request the required pressure setting when ordering

² relieving capacity (SCFM) varies with set pressure, for specific rates please contact Dixon
xx refers to choice of pressure setting, request the required pressure setting when ordering.

Air Pressure Relief Valves

Theory of Operation

All Bayco air relief valves are spring-loaded system-pressure actuated devices consisting of a valve disc held in a closed position against a valve seat by means of a spring. The pressure in the system to be protected acts on the valve disc and tends to open the valve; however, the spring load is set to ensure that at normal operating pressures, the pressure in the system is insufficient to open the valve. However, when the system pressure builds to a level where the pressure load on the valve disc is equal or near to the load exerted by the spring, the valve will begin to open. If the pressure in the system were to be held at this level, the load due to system pressure and the spring load would remain in equilibrium and the valve would be neither opened nor closed. In such circumstances the valve will tend to flutter on the valve seat and may release a small amount of air but will not be relieving significant pressure from the system. This point is known as the Warning Pressure, Cracking Pressure or Hissing Pressure.

If the pressure in the system continues to rise, the load acting on the face of the valve will also rise and will begin to exceed the load exerted by the spring. When the load due to system pressure exceeds the spring load, the valve will open and will remain open as long as the system pressure remains sufficient. This point is known as the Opening Pressure or Set Pressure (also referred to as Rated or Popping Pressure). The difference between the Crack Pressure and Opening Pressure varies between valves and is related to the system flow rate. However, the two should not be confused as there is a significant difference in pressure between the two points.

If the system pressure continues to rise, the valve will continue to open and will relieve more and more air until the valve is fully open. At this point the valve will be relieving close to its maximum airflow rate; further increase in system pressure will show only relatively minor increases in flow rate. If the system pressure decreases, the relieving airflow rate will reduce and the valve will start to close. However, the valve will not fully re-seat until some pressure below the Opening Pressure. This pressure is known as the Reseating Pressure and the difference between the two pressures is known as "Blowdown".

In practice the valve should be matched to the system to be protected such that the maximum airflow rate of the valve is never utilized, i.e. the valve should be capable of relieving a sufficient volume flow rate of air at the opening pressure to ensure that the system pressure drops significantly. If the valve is open and the system pressure continues to rise above the opening pressure then the valve is relieving less air than is being put into the system. This is a potentially dangerous situation that may lead to over pressurization. The relieving airflow rate of an air relief valve at the maximum allowable system pressure, and ideally at the Opening Pressure, should be well in excess of the system input flow rate at that same pressure.

Periodic Inspection, Cleaning and Maintenance

Important Note: Dixon Bayco air relief valves are designed and built to provide accurate and consistent operation; however periodic inspection, cleaning, and maintenance of these valves is required to ensure continued trouble free service.

Dixon Bayco air relief valves consist of a spring-loaded poppet valve that seals against a rigid annular valve seat. When the system pressure reaches the valve opening pressure, the poppet lifts and system air passes under the poppet and out to atmosphere. When a sufficient volume of air has been relieved, the system pressure will drop and the poppet will re-seat.

When these valves are used in applications that subject them to particulate laden air, there is potential for contamination of the valve, larger particles such as grains, plastic pellets etc. can get trapped between the valve seating surfaces. Applications involving fine particles such as cement, fly ash, lime, flour etc. can result in a cementing of hardened product on the valve seat or poppet surface. These situations can prevent the valve from fully re-seating, prevent it from opening and can lead to early opening or leakage from the valve.

To prevent this from occurring we advise that Air/Vacuum relief valves be regularly inspected, cleaned and maintained. At a minimum the valve seat and poppet sealing surface should be inspected and cleaned, and the small air vent hole in the top casting checked for blockage. The inspection, cleaning, and maintenance should be carried out with the valve removed from the system, and in a clean environment.

All relief valves are available with threaded connections. In addition 2180, A2180 and A2182 series air relief valves are available with cam and groove adapter or grooved pipe connections. These types of connections make removal and installation of the valves much easier to allow for inspections, cleaning and maintenance.

**SAFETY
ALERT**

Before servicing or removing any component from the pneumatic system, the blower must be turned off and all residual air released from the system.