



**NOTE:** When using gauges without header tanks, keep gauge shut-off valve closed when not in use to isolate gauge from pulsation. Use liquid filled gauges when connecting directly to line.

**Alternate Pressure Gauge Detail**

~18psi  
relief only

~0.5psi  
constant release

**Assembly Detail**

**NOTE:** Use "piston" type check valves with caution near the compressor. These valves are subject to failure due to pulsation.

**Alternate Check Valve Detail**

**NOTE:** Direct connection of poly pipe to the assembly makes disconnection and maintenance difficult, especially in cold weather when the pipe becomes stiff. Use a short length of 1/2" rubber airline with a "Quick" coupler before the poly pipe as shown to alleviate the problem.

- 1 Hex Nipple 1/4" mpt x mpt  
Or use 90deg Male Elbow 1/4" mpt x 1/4" mpt. Compressors may have different fitting requirements.
- 2 Branch Tee 1/4" fpt x fpt x mpt
- 3 Pressure Relief Valve 1/4" mpt  
Use Valves with brass or stainless steel mechanisms, aluminum is subject to corrosion.
- 4a Check Valve (Rubber Diaphragm Mechanism) 1/4" fpt x fpt  
Koenders Check valves shown. Piston valves are subject to failure this close to the compressor.
- 4b Check Valve (Piston/Spring Mechanism) 1/4" mpt x mpt  
Stainless steel or brass "piston" Check Valves are well suited to installations at the diffuser. However installed near the compressor they are subject to damage and failure from pulsation. Use these types of Check Valves with caution in this location.
- 5 Male Tee 1/4" mpt x mpt x mpt
- 6a Ball Valve (Assembly Shut-off Valve) 1/4" fpt x fpt  
Allows setting of the Pressure Relief Valve and the Bleeder Valve
- 6b Ball Valve (Bleeder Valve) 1/4" fpt x fpt  
A Bleeder Valve is required to allow the low torque compressor motors to start under load
- 6c Ball Valve (Gauge Shut-off Valve) fpt x fpt  
Gauges are subject to damage from compressor pulsation. When mounting directly to assembly a shut-off valve must be used when the gauge is not being read. Using Header Tanks is a better solution.
- 7 Connector - Tube to Female Pipe 1/4" tube x 1/4" fpt
- 8 Rubber Air Line 1/4"
- 9 90deg Elbow - Hose Barb to Male Pipe 1/4" barb x 1/4" mpt
- 10 Gauge Header Tank  
Small ~ 1cfm compressors require approx. 150in<sup>3</sup> or about a 12" by 4" dia. tank to eliminate pulsation effects at the gauge. Pulsation and vibration will eventually fail most gauges within months or even weeks. Liquid gauges are also subject to the same damage. Header tanks will eliminate the problem in most cases.
- 11 Pressure Gauge 4" Face 0-30psi 1/4" mpt
- 12 Connector - Tube to Male Pipe 1/4" tube x 1/4" mpt
- 13 Coupler Male Plug (M Style) 1/4" mpt
- 14 Coupler Female Body (M Style) 1/4" fpt
- 15 Coupler - Hose Barb to Male Pipe 1/2" barb x 1/4" mpt
- 16 Rubber Air Line 1/2"
- 17 Reducing Coupling 1/4" fpt x 1/2" fpt
- 18 Coupler - Poly Insert to Male Pipe 1/2" Poly Insert x 1/2" Male Pipe
- 19 Polyethylene Pipe 1/2"  
Note that 1/2" Polyethylene pipe is not dimensionally the same as 1/2" tubing or hose. Poly "insert" couplers are required to connect to Poly Pipe.
- 20 Reducing Adapter - 1/4" mpt x 1/2" fpt
- 21 Pressure Gauge 2 1/2" Face 0-30-psi Liquid Filled 1/4" mpt  
Although mounting directly with liquid gauges is more convenient, pulsation and vibration from the compressor will eventually fail most gauges. A shut-off valve that isolates the gauge when not in use eliminates pulsation damage, but not vibration. The use of a remotely mounted header tank eliminates both.
- 36 Single Diaphragm Compressor capable of 0.5 - 1.0 cfm
- 38 Commercial Air Filter or suitable home made device.

**Connection Details**

**Standard PFRA Assembly for Small Single Diaphragm Aeration Compressors**

Drawn: J.H.Squires, Jan 12, 2000 PFRA DRAWING No. 265019 rev 1.00

Agriculture and Agri-Food Canada  
Prairie Farm Rehabilitation Administration

Agriculture et Agroalimentaire Canada  
Administration du rétablissement agricole des Prairies

