Installation Instructions

INI-211 Revision -

Sample Cylinders

Stainless Steel Cylinders
Pressure and Temperature Ratings

1800 psig (124 bar)
-58 °F to 450 °F (-50 °C to 232 °C)

- DOT-3E 1800:
75, 150, 300, and 500cc with 1/4" NPT threads
- DOT-3A 1800:
1000 and 2250cc with 1/4" NPT threads
- DOT-3A 1800:
3785cc (1 gallon) with 1/2" NPT threads

Aluminum Cylinders
Pressure and Temperature Rating

1800 psig (124 bar)
0 °F to 120 °F (-18 °C to 49 °C)

- DOT-E 7737 1800:
150, 300, and 500cc with 1/4" NPT threads

Cylinder Design, Production and Testing

The design, manufacture and testing of steel sample cylinders is regulated by the US government in 49 CFR, Paragraphs 178.36 *Specification 3A; seamless steel cylinders* and 178.42 *Specification 3E; seamless steel cylinders.* Aluminum sample cylinders are governed by the same paragraphs, supplemented by Exemption DOT-E 7737. Specification 3A deals with cylinders not over 1,000 pounds (455 kg) water capacity and Specification 3E is for cylinders having an outside diameter no greater than 2 inches (51 mm), with a length less than 2 feet (61 cm). Service pressure is limited to 1,800 psi (124 bar) for Parker Sample Cylinders.

The above regulations control all aspects of the design and production of sample cylinders. Material physical properties and chemical characteristics are controlled. Each cylinder must be hydrostatically tested between 3,000 and 4,500 psi (207 and 310 bar). In addition, one cylinder out of each lot of 500 or less must be subjected to a burst test and result in a safety factor on burst pressure of 3.3 minimum.

All cylinder tests must be inspected and verified by an independent inspection agency, and all test reports must be maintained for fifteen years. Each cylinder must also be marked and packaged in accordance with 49 CFR.

Parker Hannifin Corporation
Instrumentation Valve Division
Jacksonville, Alabama

DOT Cylinder Retesting Requirements
(Per 49 CFR, Paragraph 173.34)

DOT Rating	Minimum Retest Pressure	Retest Period (Years)
3E 1800	Retest not required	N/A
3A 1800	3000 psig (207 bar)	5
E 7737 1800	Retest not required	N/A

DOT Approved Materials for use in Aluminum Sample Cylinders

Air, Compressed
Ammonia, anhydrous
Argon
Boron trichloride
Butadiene, inhibited
Butane
Carbon Dioxide, liquefied
Compressed gas, n.o.s. (Bromotrifluorethylene)
Compressed gas, n.os. (Deuterium)
Compressed gas, n.o.s. (Difluoroethylene)
Compressed gas, n.o.s. (Krypton)
Compressed gas, n.o.s. (Ozone)
Cyclopropane
Dimethylamine, anhydrous
Dimethyl ether
Ethane
Ethylene
Ethylene oxide
Flammable liquid, n.o.s. (Dimethylpropane)
Refrigerant gas (Freon)
Helium
Hydrocarbon gas, non-liquefied (Coal gas)
Hydrogen
Hydrogen sulphide
Isobutane
Isobutylene
Liquefied petroleum gas (Butene)
Liquefied petroleum gas (Cyclobutane)
Liquefied petroleum gas (Propylene)
Methane
Methylamine, anhydrous
Methyl butene
Monoethylamine
Neon
Nitrogen
Nitrous oxide
Oxygen*
Pentane
Propane
Sulphur dioxide
Sulphur hexafluoride
Trimethylamine, anhydrous
Vinyl chloride
Vinyl fluoride, inhibited
Xenon

***Note:** Oxygen is only acceptable if the cylinder has straight threads

Aluminum Sample Cylinders

This cylinder is produced from a high strength aluminum alloy designated by the Aluminum Association as 6061 and heat treated to T6 temper. It should be noted that this cylinder is manufactured under Department of Transportation Exemption Number DOT-E 7737-1800 and is the aluminum equivalent of DOT-3E 1800 cylinder. The cylinder has been inspected by and testing has been witnessed by an independent inspection agency.

It is important that the user respect the fact that this is an aluminum cylinder. If this cylinder is exposed to fire, it should not be refilled and the cylinder should be properly disposed.

In some cases, the user may evacuate or clean the cylinder by heating in an oven; and in this case the cylinder should not be exposed to temperature above 350 °F.

This cylinder is approved for any hazardous material for which the DOT specification 3AL cylinder is prescribed or authorized in 49 CFR Part 173, classed as flammable gas, non-flammable gas, flammable liquid, or Poison A. The gases listed above are generally those that are approved.

Oxygen Service

For aluminum sample cylinders to be charged with oxygen, the following applies: Straight threads only. (Since this cylinder has tapered threads it cannot be used for oxygen service.)

Nitrous Oxide & Oxygen Service

Each cylinder requires special cleaning in compliance with Federal Specification RR-C-901b dated August 1, 1967, paragraph 3.8.2 This aluminum sample cylinder has not been processed by this special cleaning and therefore should not be used for oxygen service.

Valve Insertion Procedure for Sample Cylinders

1. It is recommended that new valves be used. If a valve has been used in a steel cylinder, the threads may be distorted and possibly would not produce a proper seal.
2. Valve and cylinder threads should be clean. Examine the valve and cylinder for damaged threads, and reject or repair those containing defects such as burrs, dings, nicks, gouges, etc.
3. Apply 1-1/2 wraps of PTFE tape on the valve threads, leaving the first lead thread exposed. Apply a PTFE paste to the first lead thread and over the tape, evenly but sparingly. For stainless steel valves, PTFE paste is suggested for proper sealing.
4. Assemble the lubricated valve to the cylinder by inserting and hand tightening to engage a minimum of 2 to 3 threads. If the valve fails to start easily, recheck the valve to make sure it is to gauge. Also, check the valve and cylinder for damaged threads.
5. Place the valved cylinder in a holding device providing protective material around the cylinder to prevent gouging of the side walls with the vice holding jaws. Using a torque wrench with an adapter to fit the wrench flats on the valve, tighten the valve to **8 to 10 foot pounds maximum**. This torque should yield another 2 to 3 threads engagement, giving a total engagement of 5 to 6 threads. If a problem develops, please contact the Instrumentation Valve Division or Parker Distributor for assistance.

Caution

Aluminum cylinders require care in the assembly of valves with tapered threads. The aluminum cylinder is of the same relative hardness as a brass valve and does not reshape or rethread the valve during insertion as does a steel cylinder. Therefore, an interface problem could be created by damaged threads or excessive valve torque preventing a gas-tight connection.

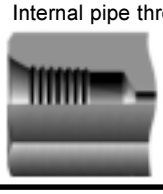
VALVE CONNECTOR MAKE-UP INSTRUCTIONS

MALE AND FEMALE PIPE PORTS

Wrench flats are provided on the Valve Body. It is recommended a smooth- jawed wrench or vise be used to grip the Valve Body.

1. On the male threaded part of the connection, apply a high quality pipe joint compound or PTFE tape made for this purpose. When PTFE tape is used, it is recommended two full turns of tape be applied. PTFE tape should not be overhanging or covering the first thread
2. Engage the Valve and the other component part together, until hand-tight.
3. With a proper wrench, holding both the Valve and the component part, continue to tighten to achieve a leak-tight joint.

F -ANSI/ASME B1.20.1
Internal pipe threads



M -ANSI/ASME B1.20.1
External pipe threads

WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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ALL PARKER VALVES MUST PASS A RIGID OPERATIONAL AND LEAKAGE TEST BEFORE LEAVING THE FACTORY. IT IS RECOMMENDED AFTER ANY REASSEMBLY, THE VALVE SHOULD BE TESTED BY THE USER FOR OPERATION AND LEAKAGE. IF THESE INSTRUCTIONS ARE NOT FULLY COMPLIED WITH, THE REPAIRED PRODUCT MAY FAIL AND CAUSE DAMAGE TO PROPERTY OR INJURY TO PERSONS. PARKER HANNIFIN CANNOT ASSUME RESPONSIBILITY FOR PERFORMANCE OF A CUSTOMER SERVICED VALVE.

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