



INSTALLATION INSTRUCTIONS AND MAINTENANCE

M-4-06
REV 0
DEL 20/12/04

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USE OF THIS DOCUMENT

This instruction sheet is intended to provide information and guidance for those integrating the PRD on to tanks or in to systems. It give known limitations and requirements of the PRD. It does not replace proper and competent engineering of the system. Considerations required for safe operation of the PRD are written using "shall" or "must". Statements or recommendations written using "should" or similar language are considered non – binding. These are recommendations created without knowledge of how the device is used in a particular application. It remains the responsibility of the system integrator to assure the PRD and related components are used safely and effectively.

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CONTACT INFORMATION

OMB SALERI SpA
Via Rose di Sotto 38/C
25126 Brescia (BS) Italy

Tel. +39 030 31 95 801
Fax. +39 030 37 32 872
Website www.omb-saleri.it
e-mail info@omb-saleri.it

PART NOMENCLATURE

Family name: 695R
Model names: YORK ; BULL

SPECIFICATIONS

PRD type: Thermally activated PRD
Gas: Compressed Natural Gas per Recommended Practice for Compressed Natural Gas Vehicle Fuel, SAE J1616
Maximum Service Pressure: 3600psi / 250 bar
Maximum pressure (overfill condition): 4500 psi / 31MPa / 310bar
Operating temperature (normal non fire): -40°C / +85°C (-40°F / +180°F).
Activation temperature: 110°C+/-10°C (230°F+/-18°F).

VARIATIONS

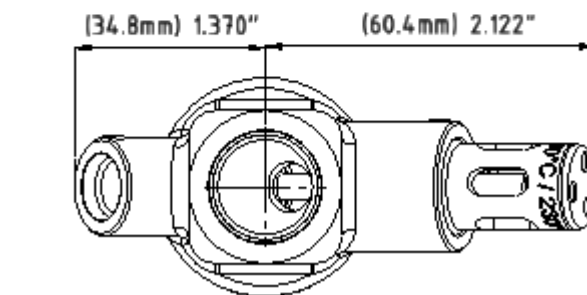
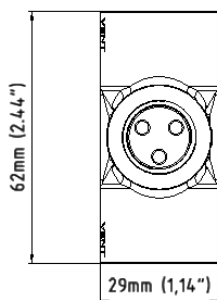
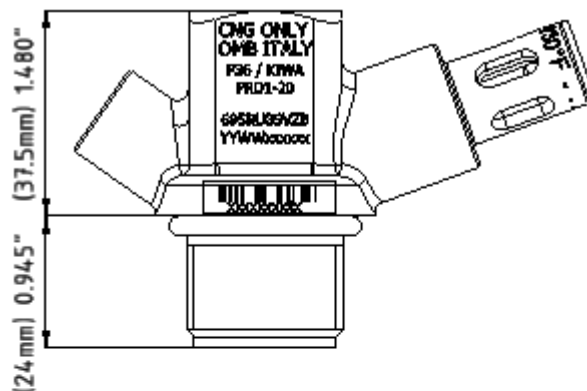
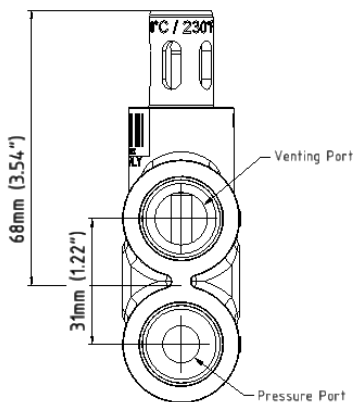
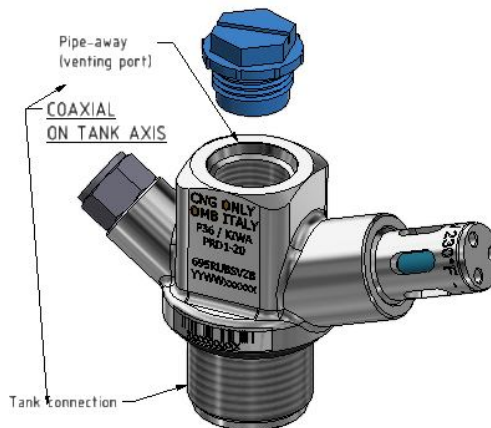
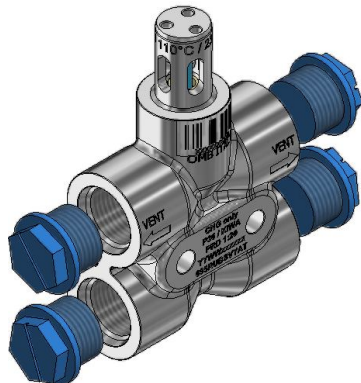
Note that this document covers many variations of the PRD York, Bull. The options listed below are those approved at the time of writing this revision of the document. Further options may be considered at a later time, and OMB will consider custom configurations if requested.

Valve Model	Live Port / Tank connection	Venting Port
BULL Model	1" 1/8 -12 UNF 2A	9/16" – 18 UNF
BULL Model	1" 1/8 -12 UNF 2A	5/8" -18 UNF
BULL Model	1" 1/8 -12 UNF 2A	3/4" – 16 UNF
YORK Model	9/16" – 18 UNF	9/16" – 18 UNF
YORK Model	5/8" -18 UNF	5/8" -18 UNF
YORK Model	3/4" – 16 UNF	3/4" – 16 UNF

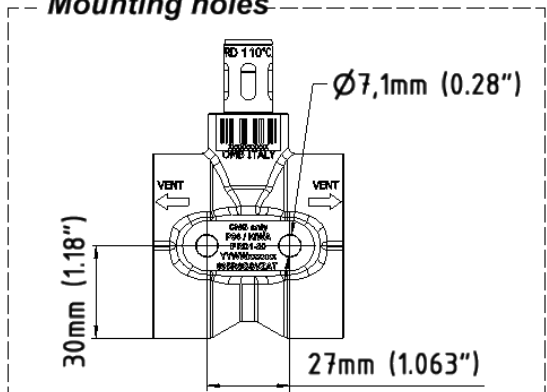
FAMILY 695R DIMENSIONS AND CONNECTIONS

TPRD YORK2

TPRD BULL2



Mounting holes





TANK/PRD SELECTION

⚠ DANGER

Proper matching of PRDs to tanks is critical for safe function. This is the responsibility of the tank manufacturer or the system integrator. After-market integrators should consult with the appropriate tank manufacturer for approved PRD and tank combinations. Failure to do so may result in death or serious injury and property damage

⚠ DANGER

In case of any visible dent, deformations or signs of impacts on the item, (see below visual helps to define unacceptable visual defects) reject the TPRD. Failure to do so may result in death or serious injury and property damage,.

⚠ DANGER

In case of missing blue fluid, or large gas bubble in the glass bulb reject the TPRD. Failure to do so may result in death or serious injury and property damage, (see below visual helps to define unacceptable visual defects)



MOUNTING LOCATION

⚠ DANGER

It is critically important that the PRD be mounted near the tank, and exposed to the same fire conditions as the tank. The PRD must see the same conditions as the tank. As well, both the tank and PRD must be shielded from normal non-fire heat sources such as exhaust or engine components, as these can damage the tank or PRD, or activate the PRD. Failure to do so may result in death or serious injury and property damage.

⚠ DANGER

The PRD must be protected from road debris or any other possible impact source, and overhead hazards such as tree branches. as these can damage the tank or PRD, or activate the PRD. Failure to do so may result in death or serious injury and property damage.

If mounting directly to tank or tank frame, expansion of the tank with pressure cycles must be taken into account.

The PRD have a brass body, Or nickel phosphorous plating, and corrosion must be considered in mounting locations. Galvanic corrosion between the brass body and other materials to which the PRD is attached must be considered. The PRD has been tested to the requirements of ANSI PRD1 standard, but not to the strictest OEM corrosion requirements.

The PRD must be mounted securely, considering vehicle or system dynamics. This should include vibration, frame movement, thermal effects and other considerations. Since OMB does not control the mounting, vehicle or system, this is the responsibility of the system integrator. As a guideline, OMB recommends fixing the TPRD every 24" or 600mm, and within 6" or 150mm of the end furthest from the body. This reflects the baseline conditions for component certification testing.

The PRD uses nickel phosphorous plated Brass or Brass, which are generally resistant to typical automotive fluids, but care must be taken in environments with other corrosive chemicals. In particular, chemicals used in industrial applications or carried in vehicles must be considered.

If mounted in a trunk or other cargo area, the PRD should not be in a location where it will be obstructed or damaged by cargo. It should not be in a location where it may be used to hang or attach cargo or other items.

TANK CONNECTION TO THE PRD

⚠ DANGER

The PRD should be connected to the tank contents through a connection that cannot be closed or isolated from the tank. Any valve or excess flow device between the tank and PRD could be left closed and this would make the PRD ineffective. Failure to do so may result in death or serious injury and property damage.

These fuel lines need to be able to withstand fire exposure until the PRD has vented the tanks. This is usually accomplished with stainless steel tubes, but other methods may work. There are specific requirements in various standards. For example, NGV3.1 requires that flexible fuel lines be protected from accidental rupture by excess flow devices or valves, yet this would not be acceptable for a PRD.

Since tanks change length when filled, there may be one end of a tank that moves during normal operation. Any connections from the tank to the PRD must therefore take this into account so that the PRD and lines are not damaged by tank expansion.

To prevent accidental disconnections, the tubing and connections should be marked as being pressurized even when the tank valve is closed.



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The size and geometry of the connections to the tank must be selected so that they do not restrict flow from the tank to the PRD. In no case should the connection between the tank and PRD be more restrictive than has been tested and approved.

Water, oil or debris, as is sometimes found in compressed natural gas must not be allowed to accumulate in the PRD. Water can freeze and damage tubes, fittings, or the PRD. Ice in tubes can block flow into the PRD when it is activated. Debris can block the PRD during activation. In particular, the connection to the PRD should not branch off the bottom of the fill or outflow tubes, or should not be from the bottom of a vertical tank. Having the inlet to the PRD pointing above horizontal should be avoided. As OMB is not responsible for the connections to the PRD, how this is done remains the responsibility of the system integrator.

Torque to be applied for **PRD BULL Model** assembling on cylinders

Application	Size of valve parallel stem	Torque Force Nm	
		Min.	Max.
Steel cylinder without welding	1" 1/8 - 12 UNF	100	130
Aluminium-alloy cylinders	1" 1/8 - 12 UNF	95	130

VENT CONNECTION

Ice formation in PRD vent lines is one of the leading causes of PRD failures in the industry, affecting most of designs to some extent.



Water, insects, and debris must not be allowed to accumulate in the outlet of the PRD or in vent lines. Ice in vent lines can prevent activation or can damage PRDs, causing unintended activation or inability to activate in a fire. Failure to do so may result in death or serious injury and property damage.

The axis of the Venting port of the PRD must not be above Horizontal. The vent tube should incorporate a bend or other features so that the PRD is not the lowest point in the vent line. Note that this applies to the PRD itself, and not necessarily the outlet of the tube, in order to protect the PRD from becoming a water trap.

The outlet of the PRD vent tube should be in a direction to limit damage or danger when the PRD Vents.

Since tanks change length when filled, there may be one end of a tank that moves during normal operation. Any connections from tank-mounted PRD to a frame-mounted vent line must therefore take this into account so that the PRD and lines are not damaged by tank expansion.

Vent line closures should be incorporated at the end of the vent tube. Any device used should keep water from rain or vehicle washing out of the vent tube. Vent systems must allow for escape of any gas that leaks or permeates through the PRD (or other sources) without losing effectiveness.

Vent line must be sufficient to vent the rated flow without restricting flow through the PRD. In no case should the vent line be more restrictive than tested and approved.

COMBINED OR MANIFOLDED VENT OUTLETS

If multiple PRDs or other devices are vented into a common manifold, the manifold must be able to withstand the combined flow and pressure of all connected devices without restricting flow.

The effect of backpressure on other devices, such as pressure relief valves or regulator vents should be considered.

SERVICE



There are no serviceable parts in the PRD. Fittings attached to the inlet and outlet can be reused or replaced at the discretion of the system integrator if the threads and sealing surfaces are undamaged.



The tank must be vented before removing or servicing the PRD. Failure to do so may result in death or serious injury and property damage. Closing the tank valve does not isolate the PRD.

INSPECTION

The PRD should be inspected when the tank is inspected or serviced. Service should be done according to the vehicle or tank manufacturers procedures. The following are provided as suggested content for system inspection procedures or as a starting point when such procedures do not exist.

1. Check the PRD for any external damage, including corrosion or mechanical damage to the body. Check in particular around fittings and bolts, and adjacent to mounting surfaces
2. Assure mounting bolts on the body are tight.
3. Inspect the vent line to assure that there is no evidence of water accumulation or dirt.
4. Assure that there is a functioning method of relieving normal pressure build-up while keeping water out of the vent lines. If vent line closures or caps are missing or compromised, the PRD and vent line must be inspected for any signs of water infiltration. Evidence of water in the PRD indicates a probable need to replace the PRD.
5. Verify that the supply lined are not kinked or damaged.
6. Leak check per system manufacturers procedure, or as below.

LEAK TESTING

Leak testing is the only test of the PRD that is possible. Leaks will either be found at the seal of the inlet fitting, or through the Venting port. Leak testing at the inlet fitting can be done with a soap solution or commercial leak testing fluid, or with methane detector.



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To leak test at the outlet of the PRD, first isolate the vent line of the PRD from other devices. Use of a methane detector is preferred. If using a liquid leak detector, make sure that fluid does not get into the PRD as this could contaminate the PRD.

REUSE AND REPLACEMENT

⚠ DANGER

If the PRD has been activated or exposed to fire, it cannot be reset or reused. It must be removed from service and either destroyed or returned to the manufacturer.

⚠ DANGER

A PRD removed from service and otherwise fully functional can only be returned to the vehicle it was removed from. It cannot be used in any other vehicle or application.

⚠ DANGER

A PRD that is removed must only be replaced by an identical part unless approved otherwise by the tank manufacturer.

NOTE

OMB Saleri SpA declines any responsibility over the incorrect use or application of the installation instruction and maintenance of its products or by any other reason beyond OMB Saleri S.p.A's control.