



# Manway Nozzle Gaskets

for the Rail Industry



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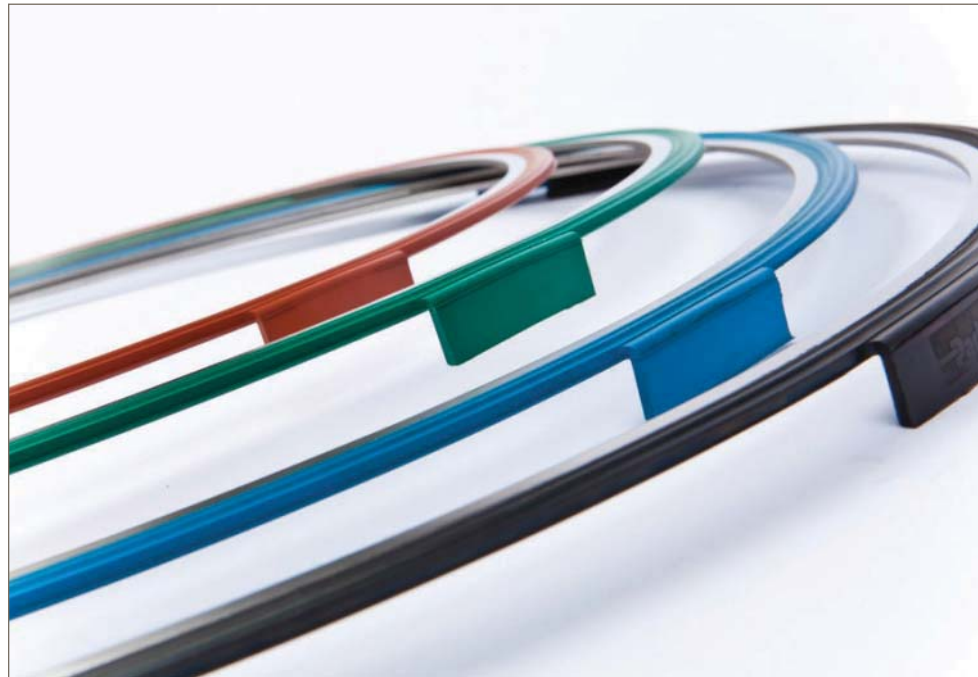
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## Torque retention design offers ease of assembly and extended life

Parker's Sure Torque manway nozzle gasket design will improve system performance, simplify assembly and lower your total system cost. The design features an over-molded stainless steel compression limiter that incorporates single or multiple materials on the gasket assembly to meet a variety of chemical resistance requirements.

Manway NARs (Non-Accidental Release) that have plagued the rail industry for more than a decade are eliminated with the Parker design and proper installation practices. The stainless steel compression limiter will allow the bolt retention to remain constant over its seal life, provide a robust controlled compression seal and allow for repeated usage without seal deterioration.



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Product Feature	Product Benefits
<b>Alignment Tabs</b>	<ul style="list-style-type: none"> <li>• Speedy assembly</li> <li>• Allows perfect alignment</li> <li>• Provides gasket identification/traceability</li> <li>• Visual confirmation of gasket placement</li> </ul>
<b>Compression Limiter</b>	<ul style="list-style-type: none"> <li>• Maintains bolt torque retention</li> <li>• Eliminates gasket creep</li> <li>• Extends seal life</li> <li>• Allows multiple gasket usage</li> <li>• Eliminates gasket ability to fall into tanker</li> </ul>
<b>PTFE Over-Molded Film</b>	<ul style="list-style-type: none"> <li>• Added chemical resistance</li> </ul>

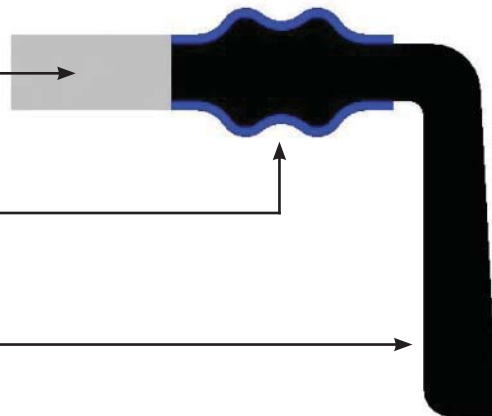
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## Over-Molded Rubber to Metal Design

Stainless steel inner compression limiter maintains bolt torque and prevents the seal from being over compressed.

Outer seal beads are designed for hard joint mating components that will be in full contact when assembled. (Rubber beads with PTFE film coating shown in illustration)

Rubber outer alignment tabs (4) make assembly easy and centered every time.



## Nozzle Design / Validation

Testing has proven that the Parker design maintained bolt torque within 1% (Chart 1) of installation as compared to today's typical seal designs that can lose bolt torque up to 20% of installation in a 24 hour period. This design feature is the first to allow a tanker manufacturer or maintenance facility the option to simplify design and speed securement

without the worry of spills due to gasket relaxation or creep. The Parker design will work with today's many nozzle and lid configurations, making it easy to convert current fleets.

Gasket Type	Bolt Torque Lost after 24 hours	Failure Mode	Number of Manway Closures
PTFE w/Barium Sulfate Filler	-3.7%	leak 125psi	1
PTFE w/Inorganic Fillers	-6.2%	leak 135 psi	1
Virgin ePTFE	-4.8%	leak 125psi	1
Formed EPDM Gasket	-21.5%	cut gasket	2
Parker EPDM	-0.6%	none	>30

**Chart 1** Performance data utilized a flat manway nozzle configuration. Failure mode was the type of gasket failure that occurred and how many manway closures it took to fail. **Note:** Parker EPDM testing ongoing.

## Material Traceability

Each manway nozzle gasket has product identification printed on an alignment tab to allow for full lot traceability. The printed identification includes codes for the material type, manufacturing shift and date.

Parker's internal rubber mixing capability ensures full traceability back to the raw ingredients used in production.



# Material Selection

Parker can offer a wide range of elastomers to accommodate the various critical sealing challenges faced in rail transportation. Selecting a suitable material is critical to ensure long-term sealability.

For aggressive chemicals, the addition of a PTEF over-molded film provides an extra layer of security, excellent chemical resistance, a wide service temperature and non-stick properties.

Material Type	EPDM	FKM (66% F)	FKM (66% F)	FKM (70% f)
Recommended Material	EB263-60	VW450-65	VB486-65	VG490-70
Color	Black	Blue	Dark Green	Red
Temperature Range	-60 to 300°F	-30 to 400°F	-25 to 400°F	-20 to 400°F

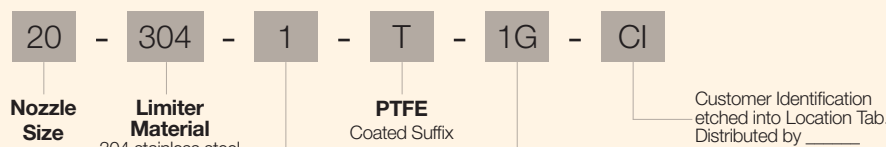
Acetone	1	4	4	4
Ammonia (Anhydrous)	1	4	4	4
Caustic Soda	1	4	3	2
Chlorine (Dry)	4	1	1	1
Chlorine (Wet)	3	2	1	1
Ethanol	1	2	1	1
Methanol	1	4	2	1
Methyl Ethyl Ketone (MEK)	1	4	4	4
Nitric Acid (Turning)	4	3	2	1
Petroleum Oil, Crude	4	1	1	1
Phosphoric Acid (Concentrated)	1	1	1	1
Potassium Chloride	1	1	1	1
Sodium Carbonate (Soda Ash)	1	1	1	1
Sulfur (Molten)	1	1	1	1
Sulfuric Acid (Fuming)	3	2	1	1
Toluene	4	2	1	1
Potassium Hydroxide	1	4	4	4
Sodium Hypochloride	1	1	1	1

Chemical Resistance Scale	Excellent	Good	Fair	Not Recommended
	1	2	3	4

**Material Properties:** The temperature ranges and resistance to media are to be used as a general reference. Always test under actual service conditions to verify chemical resistance and performance. Additional elastomers can be offered to provide an application specific seal.

Contact the Integrated Sealing Division or your local distributor to verify material compatibility.

## How to Order



**Material Suffix**

- 1 EPDM (black color)
- 2 FKM (blue color)
- 3 FKM-B (green color)
- 4 FKM-F (red color)

**Brass Grommet**

- 1G one tab
- 2G two tabs

**Note:** every manway gasket will have Parker etched into one tab.

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# Manway Nozzle Gasket Installation

Parker's Sure Torque manway nozzle gasket design makes it easy to install in the field. The recommended installation and securement procedure is as follows:

## Installation

Prior to installation, check to see that the mating surfaces are clean and free of defects and corrosion (reference M-1003, AAR specification, appendix D) that could affect a tight joint. Install the gasket appropriate to the commodity to be transported (see charts, page 3) so that the four installation tabs (see figure 1) are in position on the outside diameter of the manway nozzle. Close the lid slowly and position the bolts and nuts finger tight.



Figure 1: Alignment tabs (4) located on outside of manway nozzle.

## Securement

The Parker Manway nozzle gasket design incorporates a stainless steel compression limiter that acts a positive dead stop when tightening the nuts onto the Manway assembly. The sure torque design protects the integrity of the seal and allows the bolts to be torqued to an appropriate yield depending on the bolt type used in accordance with ASTM and the manufacturer's recommendations. **NORMALLY 60% OF BOLT YIELD IS RECOMMENDED.**

Note: CLEANING & lubricating bolt threads will reduce torque loss due to friction. Utilizing thoroughly hardened steel washers (e.g. ASTM F-436) should be used for even load distribution during gasket installation. **DO NOT PUT LUBRICANT ON THE GASKET.**

Tighten the nuts with properly calibrated torque or impact wrenches in a sequential order (figure 2) as recommended by the AAR, taking a minimum of three passes to achieve the required torque.

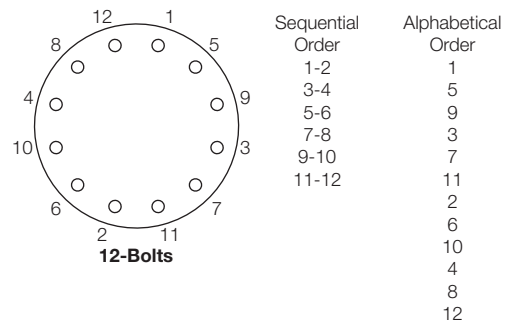
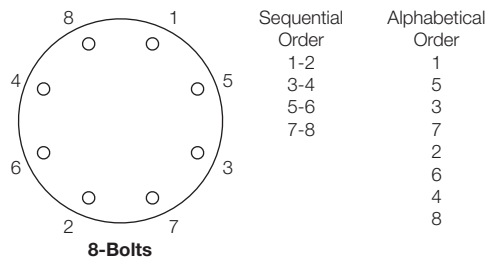


Figure 2: Bolt securement sequence reference Appendix D of Specifications M-1002 of the AAR.

<b>First Pass</b>	10 to 20 ft-lbs
<b>Second Pass</b>	50% of target torque*
<b>Third Pass</b>	100% of target torque*

\*Based on bolt manufactures specifications.

The stainless steel compression limiter will maintain the required torque until the manway needs to be opened.

