

	Form Title:	ENGINEERING BULLETIN	Document #: EB-01-18 <small>(Form: DEF-003A-1)</small>
	Document Title:	Regulatory Instructions: Replacement of Pressure Relief Valves on MC306 Tanks	Revision: 1
			Date: Jan. 20, 2018
			Page: 1 of 2

Description of Bulletin: This bulletin provides important instructions for the proper selection of replacement pressure relief valves (PRVs) on MC306 cargo tanks. A PRV is also sometimes referred to as pressure relief device (PRD), manhole, dome lid, or pressure actuated fill (PAF).

Background Details: A very common industry question is, “Can a PAF406-98 manhole pressure relief valve be installed on a MC306 cargo tank?” To avoid confusion and potential regulation misinterpretation, our answer is, “No, a PAF406-98 should not be installed on a MC306 cargo tank unless the tank has a MAWP of 3.3 psi and a test pressure of 5.0 psi.”

For many years the industry interpreted §180.405 to allow a 406 PRV to be used as replacement on a MC306 cargo tank provided the replacement PRV satisfied the original minimum emergency venting capacity. 49CFR§180.405(h)(3) specifically states:

As provided in paragraph (c)(2) of this section, the owner of a cargo tank may elect to modify reclosing pressure relief devices to more recent cargo tank specifications. However, replacement devices constructed to the requirements of §178.345-10 of this subchapter must provide the minimum venting capacity required by the original specification to which the cargo tank was designed and constructed.

It was also believed that as long as the PRV met the original set pressure requirements of MC306 §178.341-4(d)(2) “set to open at not less than 3 psig” and the venting capacity was tested at the original requirement of 5 psig, it was permissible to use a 406 PRV.

In July of 2016 a new ruling was released. New section 49CFR§180.407(j) reads as follows:

- (j)(1) Each self-closing pressure relief valve must open and reseal to a leak-tight condition at the pressures prescribed for the applicable cargo tank specification or at the following pressures:
 - (i) For MC 306 cargo tanks:
 - (A) With MC 306 reclosing pressure relief valves, it must open at not less than 3 psi and not more than 4.4 psi and must reseal to a leak-tight condition at no less than 2.7 psi.
 - (B) With reclosing pressure relief valves modified as provided in §180.405(c) to conform with DOT 406 specifications, according to the pressures set forth for a DOT 406 cargo tank in §178.346-3 of this subchapter.

Therefore, a MC306 PRV installed on a MC306 cargo tank is required to open between 3 psi and 4.4 psi and should re-seal before the pressure drops below 2.7 psi. The set pressure and flow rate pressure are not a function of cargo tank MAWP. Unfortunately, this is not the case for a 406 PRV installed on a MC306 tank. For a 406 PRV installed on a MC306 tank, the set pressure and flow rate pressure are controlled by §178.346-3 and are a function of the cargo tank MAWP. *This means a PAF406-98 PRV can only be installed on a MC306 cargo tank that has a tank MAWP of 3.3 psi and a tank test pressure of 5.0 psi.*

Bulletin Instructions: Per §180.407 a pressure relief valve (PRV) must be visually inspected and bench tested. If it satisfies the testing requirements, it can remain in service; if not, it must be repaired or replaced. The following tables provide the required information to ensure the repaired or replacement PRVs meets the requirements of DOT regulations.

- Continued on Page 2 -

	Form Title:	ENGINEERING BULLETIN	Document #: EB-01-18 <small>(Form: DEF-003A-1)</small>
	Document Title:	Regulatory Instructions: Replacement of Pressure Relief Valves on MC306 Tanks	Revision: 1
			Date: Jan. 20, 2018
			Page: 2 of 2

The PRV models shown in Table 1 are acceptable for use on MC306 cargo tanks if the PRVs were installed on or before August 31, 1998. These models can be repaired indefinitely to meet the set pressure and reseal requirements of §180.407(j)(1)(i)(A) but cannot be used as a replacement PRV if installed after August 31, 1998. Betts defines “repair” as replacing any number of components of the manhole/PRV without replacing the entire assembly at one time.

Table 1			
Acceptable PRVs if Installed on MC306 Cargo Tanks <u>On or Before</u> August 31, 1998			
Model	Example Part #'s Start with but Not Inclusive	Set Pressure	Rated Venting Capacity
PAF 1000	FVA8110, FVA8412, FVA8416, FVA8516, FVA8420, FVA8520	3.0 psi to 4.4 psi	180,000 scfh @ 5 psig
PAF 9000	FVA9110, FVA9412, FVA9416, FVA9516, FVA9420, FVA9520	3.0 psi to 4.4 psi	250,000 scfh @ 5 psig
PAF 9000R	Replacement cover for PAF 9000	3.0 psi to 4.4 psi	250,000 scfh @ 5 psig
PAF 450	FVA9710, FVA9712, FVA9716, FVA9816, FVA9720, FVA9820	3.0 psi to 4.4 psi	375,000 scfh @ 5 psig

Important: To avoid confusion and potential regulatory misinterpretation, Betts Industries Inc. highly recommends any PRV installed on a MC306 cargo tank should be a PRV specifically designated for MC306 units and NOT a replacement DOT406 PRV.

If the manhole or PRV needs to be replaced on a MC306 cargo tank, it must be a model that meets the less-than-a-liter surge requirements of §178.345(10)(b)(3)(ii) and should be a model specifically designated for MC306 as shown in Table 2.

Table 2					
Acceptable PRVs if Installed on MC306 Cargo Tanks <u>After</u> August 31, 1998					
Model	Example Part #'s Start with but Not Inclusive	Description	Set Pressure	Rated Venting Capacity	Satisfies Regulatory Requirements
PAF 306-98	FVAR410 FVAR412 FVAR416 FVAR516 FVAR420 FVAR520	Recommended for use on older style MC306 tanks that have a low overturn rail height. This PRV has a height of 3.06” from collar gasket. Height profile matches older PRV models PAF9000 and PAF1000.	3.0 psi to 4.4 psi	250,000 scfh @ 5 psig	§178.345-5 §178.345(10)(b)(3)(ii) §180.407(j)(1)(ii)
PAF 306-HS	FVAH710 FVAH712 FVAH716 FVAH816 FVAH720 FVAH820	Slightly higher venting capacity than PAF306-98. Recommended for use on MC306 tanks that have adequate overturn rail height. This PRV has a height of 3.56” from collar gasket. Height profile matches PRV models PAF450 and PAF406-98.	3.0 psi to 4.4 psi	294,985 scfh @ 5 psig	

If there are any questions, contact Betts Sales or Design Engineering Department.