

Kelso External Pressure
Relief Valve for Crude Oil
Service



Kelso **Klincher**[®]
Manway Securement
System



Made in USA

New Regulations on Tank Cars for Packaging Group 1 & 2 Service

September 17-19, 2013

FRA Hazmat Seminar – Billings, Montana



Tank Car Standards for Crude Oil and Ethanol (Packaging Group 1 & 2 Commodities)

- Why improve the packaging for these commodities?
- Increasing number of rail accidents especially with crude oil tank cars leading to demand for better tank car designs.
- Increasing pressure by regulators to minimize damage to a tank car in an accident.
- Much greater knowledge of tank car performance in an accident scenario allow targeted tank car design improvements.
- Releases from derailments totaled \$63 million between 2004 and 2008 resulting in one fatality and 11 injuries

Tank Car Standards for Crude Oil and Ethanol (Packaging Group 1 & 2 Commodities)



Tank Car Standards for Crude Oil and Ethanol (Packaging Group 1 & 2 Commodities)

- AAR took lead on addressing this in 2008 – AAR task Group T87.5. Determine benefit of making changes to existing and new tank cars
- March 9, 2011 AAR petitioned PHMSA to adopt improved packaging standards (P-1577)
- P-1577 focused on new tank car construction only

Tank Car Standards for Crude Oil and Ethanol (Packaging Group 1 & 2 Commodities)

What is included:

- Reclosing pressure relief valve
- Top fitting protection
- Minimum of 1/2" thick half height head shields
- Head and shells normalized TC-128 or A516-70
- Minimum shell thickness – TC-128
 - Non-jacketed 1/2"
 - Jacketed 7/16"
- Minimum shell thickness on Class 111 cars with high alloy (DOT 111****W6 & W7)
 - Non-jacketed 1/2"
 - Jacketed 7/16"
- Minimum shell thickness – A516-70
 - Non-Jacketed 9/16"
 - Jacketed 1/2"

Tank Car Standards for Crude Oil and Ethanol (Packaging Group 1 & 2 Commodities)

- On August 31, 2011, AAR issued CPC 1232 making recommendations mandatory for all tank cars ordered after October 10, 2011.
- On March 1, 2012 AAR recommended PHMSA adopt P-1577 with one modification, cars be equipped with 27,000 scfm, 75 psi STD pressure relief valve
- Most car builders included 27,000 scfm, 75 psi pressure relief valve in new car builds where applicable and approved by customers.

Tank Car Standards for Crude Oil and Ethanol (Packaging Group 1 & 2 Commodities)

- NTSB issued report on 2-14-2012 about the Cherry Valley accident near Rockford, IL where one person was killed.
- Recommended actions **included** retrofit of the existing fleet to P-1577 standards plus other recommendations beyond P-1577.
 - Require that all newly manufactured and **existing** general service tank cars authorized for transportation of denatured fuel ethanol and crude oil in Packing Groups I and II have enhanced tank head and shell puncture-resistance systems and top fittings protection that exceeds existing design requirements for DOT-111 tank cars. (R-12-5)
 - Require that all newly manufactured and **existing** tank cars authorized for transportation of hazardous materials have center sill or draft sill attachment designs that conform to the revised Association of American Railroads' design requirements adopted as a result of Safety Recommendation

Tank Car Standards for Crude Oil and Ethanol (Packaging Group 1 & 2 Commodities)

OPTIONS	ESTIMATED COST TO RETROFIT	OUT OF SERVICE
New Pressure Relief Device	\$2,000	2 Weeks
Half Height Head Shields	\$17,500	5 Weeks
Top Fittings Protection	\$24,000	7 Weeks
Thermal Jacket	\$23,500	12 Weeks
<u>TOTAL</u>	<u>\$67,000</u>	

RSI, Feb 6, 2013 RFA meeting

Tank Car Standards for Crude Oil and Ethanol (Packaging Group 1 & 2 Commodities)

- PHMSA web site has issued Advanced Notice of Proposed Rulemaking (ANPRM) on September 4, 2013 and is out for a 60-day comment period
- NTSB recommendations are included in PHMSA ANPRM
 - NTSB reports to the US Congress, PHMSA reports to the Executive Branch of the US Government. Both are independent.
- Any proposed rule must be reviewed and approved by the Office of Management and Budget before final issuance
- We are probably 12-24 months from a final rule. This timing will miss the bulk of the crude oil tank car build.

Emerging Issues For Tank Cars In Crude Oil Service

- Presence of Hydrogen Sulfide in Crude Oil Shipments
 - Information emerging that Hydrogen Sulfide is present in light crude oil as well as heavy crude oil
 - Would require procedure changes to eliminate personnel exposure
- Corrosion on Tank Cars
 - Corrosion is becoming a concern on all crude oil cars
 - Remedies include changing to stainless steel valves and adding linings to the tank car interior.
- Mileage – Unit train tank cars in crude oil service seeing upwards of 90-100,000 miles per year.

Kelso Products Designed for Crude Oil and Ethanol Tank Cars

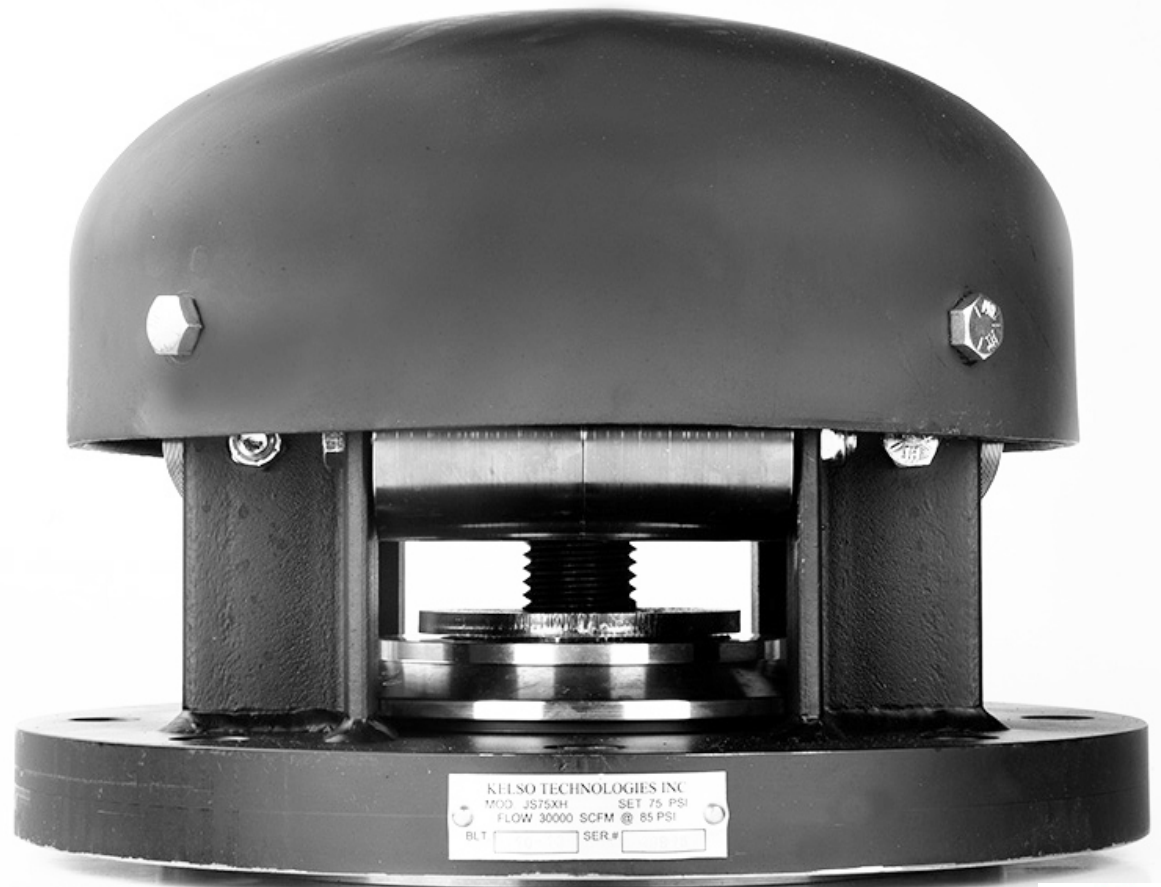


Pressure Relief Valve

- CPC 1232 Amendment has recommended all cars carrying crude oil and ethanol be fitted with safety valve with a capacity minimum of 27,000 scfm @ 85 psi discharge pressure.
- Recently there have been some questions raised about the AFFTEK formula results that suggested this safety valve capacity.
- At this point, there has been no decision on changing the safety valve rating so car builders are continuing to install the high-capacity safety valves with and without flues as this is the better way to go.
- The AAR Task Group T87.6 has been brought back to review the needs for the high-capacity safety valve in coiled and insulated tank cars. Should the insulation value of the jacket insulation be included in AFFTEK calculations or not.
- The issue is that the jacket insulation melts at approximately 450°F and the car behaves as if it is a slick car – no insulation.
- At this time, there is no change to the regulation.

Kelso JS75XH Stats

1. 30,060 SCFM @ 85 Psi
2. 28,660 SCFM @ 85 Psi with Flue
3. Height: 8.5 inches
4. Weight: 71 lbs
5. Available in
 1. Carbon Steel with Stainless Trim
 2. Stainless Steel
6. Complete Overhaul in 75 Minutes
 1. No NDT required



Kelso JS75XH

- Standard on Trinity and ARI tank cars for crude oil and ethanol service. Option on UTLX and Greenbrier tank cars.
- Approximately 6,000 units in service at this point with many more to come.
- Key Features:
 - Totally external – no components exposed to the commodity
 - Multiple Springs for Reliability
 - Low Profile
 - Low cost of ownership

Kelso Klincher[®] Manway 2.0



Kelso Klincher® Manway 2.0

- Revised Safety System (49 CFR 179.201-6)
- No Eyebolts to Manage – no cost to maintain eye-bolts
- Uniform Gasket Stress
- Fast Open/Close – 5 Minutes Vs. 25-35 Minutes
- Simple Securement Procedure – one operator input, not 24-32.
- Can't Miss the T-bolt
- Visual Indication of Closure
- Did I mention Speed?
- Meets All Regulatory Requirements
- NO NARs in field testing.

Kelso Klincher[®] Manway 2.0

- Return on Investment
 - New Tank Cars
 - 100- car unit train payback is 1.3 years
 - For every \$10,000 loose eye-bolt fine, payback improves by 1 month.
 - Retrofitting Tank Cars
 - 100-car unit train payback is 2.9 years
 - For every \$10,000 loose eye-bolt fine, payback improves by 2 months.

Kelso Klincher® Manway 2.0

- **SAFER** than hinged and bolted manways
 - **FASTER** than hinged and bolted manways
 - **BETTER** than hinged and bolted manways
 - **MAKES MONEY** for user
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- **WHAT MORE COULD YOU WANT!!**

Thank You!

Questions & Answers

Neil Gambow