DURASITE™ 150/300/500/800/1000 Portable Sample Vessel User's Guide

Version 05-29-2020

YZ SYSTEMS
MILTON ROY

Durasite 150/300/500/800/1000 Table of Contents

1. Introduction

Congratulations on your purchase of the DuraSite Portable Sample Vessel. You've made a wise measurement investment for your company. Safe installation, operation, and maintenance of your DuraSite vessel becomes the liability of the purchaser at the time of receipt. It is therefore important that you become very familiar with this manual prior to first use of the product.

Before you begin installation, ensure that all necessary components and tools are present. PTFE tape, stainless steel tubing, and tubing fittings may be required.

2. About This Manual

This User's Guide provides a step-by-step description of the information you need to operate the DuraSite Portable Sample Vessel.

3. Contacting YZ Systems

This manual provides solutions to typical questions about the Durasite system. If the answer can not be found within this manual, contact YZ Systems at:

T: 1.281.362.6500
T: 1.800.653.9435 (800.NJEX.HELP)
F: 1.281.362.6513
Em: TechSupport@yzhq.com

When calling, have this manual close at hand. Also be prepared to provide the following:

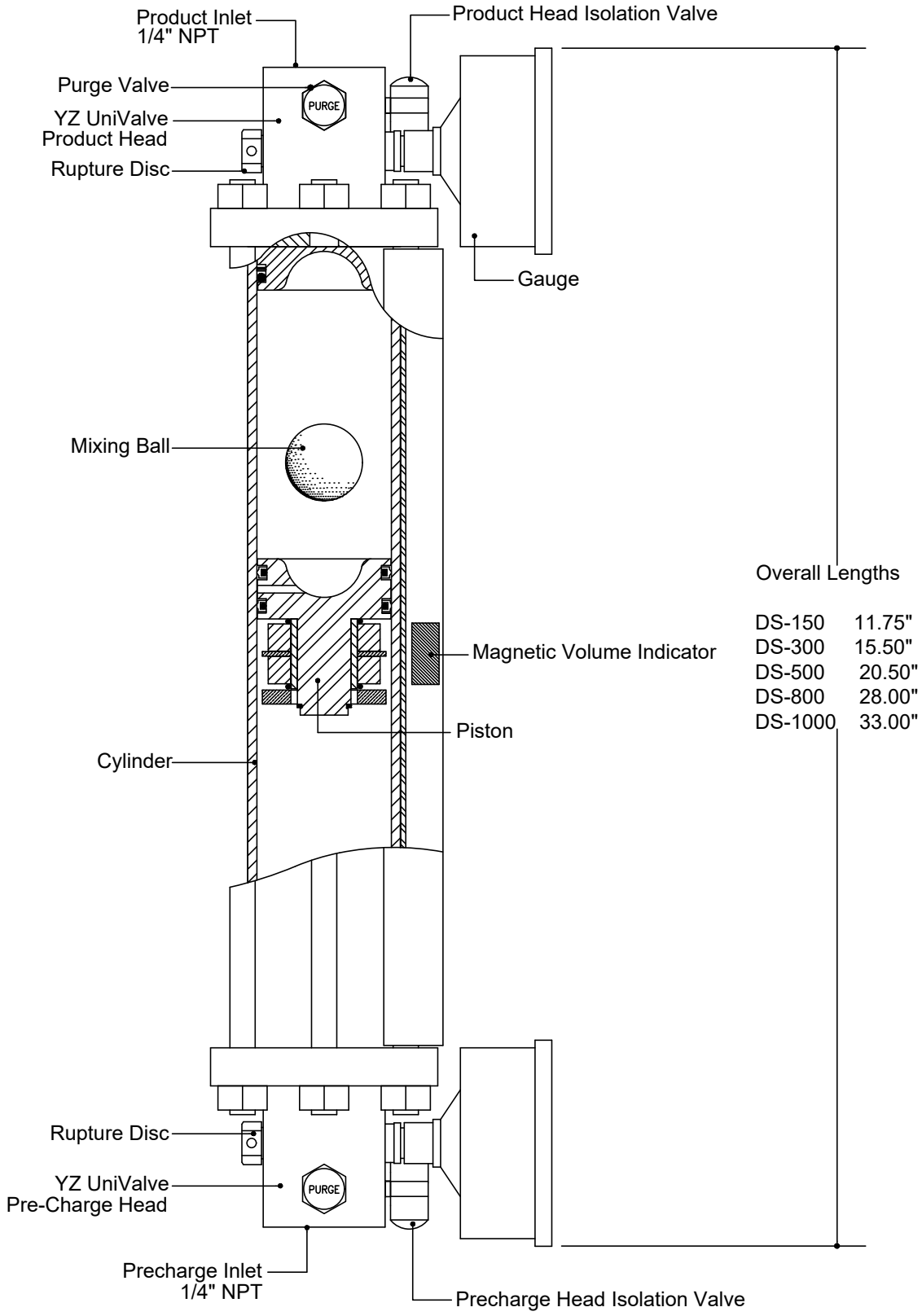
- The model and serial number of the DuraSite Portable Sample Vessel. The model number may be found on the level indicator (ex: Durasite - DS500cc). The serial number is etched onto the side of the Durasite cylinder (ex: 170616).

- This manual and its version number, listed on the front cover.

- A description of the difficultly and the activity at the time of occurrence.

4. Vessel Components

The primary components of the DuraSite Portable Sample Vessel are illustrated here.



5. Specifications

Working Pressure	: 1800 psi*
Tested Pressure	: 3000 psi*
Visual Level Indication	: Magnetic
Primary Materials	: 316 Stainless Steel and Aluminum
Carrying Case	: Optional
Sizes	: *150cc, *300cc, *500cc, *800cc, *1000cc sizes

* Manufactured under DOT exemption #DOT-SP 8757 (See Appendix B)

6. Application

Accurate sampling of natural gas and liquid hydrocarbons equates to revenue, and in many cases a large amount of revenue. One of the major links in the sampling process is the sample container or sample cylinder.

In recent years, the Constant Pressure Cylinder has become the storage cylinder of choice, principally due to it's unique design. This type cylinder allows the sampled product to be stored at a constant pressure throughout the sample period and in final lab analysis.

The DuraSite Portable Sample Vessel permits the user to remove a liquid or gas hydrocarbon sample from a pipeline or a sampling device. This is accomplished without changing the pressure of the product or exposing it to a contaminant fluid. If properly used and maintained the DuraSite will provide many years of safe, accurate and clean sampling.

The DuraSite is a very safe device to use. As with any equipment dealing with flammable products, it is mandatory that a good, thorough operator training procedure be established prior to use.

7. Theory of Operation

The DuraSite Portable Sample Vessel consists of a metal cylinder precisely machined and polished on the inside surface with removable end heads for easy access to the inside of the cylinder. The heads are drilled and tapped to incorporate isolation valves, gauges, and pressure rupture disc assemblies.

Contained inside of the cylinder is a moving piston fitted with seals to ensure a leak-free seal between the sample and pre-charge side of the cylinder. The piston is able to move freely within the cylinder while maintaining the segregation between the two ends of the cylinder. This piston also incorporates a set of magnets to interface with the magnetic sensor to determine the level of the sample fluid within the vessel. A visual level indication can be observed on the DuraSite vessel by the position of the magnetic level marker on the vessel.

In operation an inert gas pressure is applied to the pre-charge end of the sample cylinder. This inert gas pressure should exceed the anticipated equilibrium vapor pressure of the product. This will ensure the sample is maintained in a single phase.

Product should be introduced to the cylinder from the product end. The cylinder should never be filled over 80% full by volume, to allow a safe cushion for any expansion of the product due to changes in the temperature.

8. DuraSite Installation & Use

Typical use of the vessel would be as follows:

Step 1: In The Lab
Connect a regulated inert gas supply to the pre-charge valve. The product valve should be open. By carefully controlling the pre-charge valve and the regulator, the vessel can be slowly charged with pre-charge gas (NOTE: This should be done slowly to prevent slamming the piston down to the opposite end). The pressure on the pre-charge pressure gauge should be brought to a reading of 10-50 psi above the expected pressure of the product in the field. Close the pre-charge valve and disconnect the gas supply. Check the pre-charge valve, relief device, and the pre-charge pressure gauge for leaks. Any leaks should be stopped before continuing. The vessel should be placed in a DOT approved padded carrying case and made ready for field use.
YZ Systems offers carrying cases which exceed all DOT requirements. Consult with your YZ sales representative about obtaining a model KK1, KK-2, or KK-3 carrying case.

Step 2: In The Field
Connect the pre-charged sample vessel to the product supply (NOTE: The pre-charge pressure gauge reading should be greater than the product supply pressure reading. If not, repeat Step 1 above).

Step 3:
Once the vessel is connected to the product supply, it is necessary to vent a small amount of product prior to filling the vessel. This assures fresh product and removes any air or gas when dealing with liquids. This can be done by loosening the product purge valve a very small amount until the product is purged. After thorough purging, the product purge valve should be tightened.

Step 4:
The product pressure gauge reading should be 10-50 psi below the pre-charge pressure gauge reading. By carefully opening the pre-charge valve, the pressure becomes equalized. The pre-charge valve should be carefully controlled so as to not vent the pre-charge gas too fast. The pre-charge port should then be connected to a pipeline connection or relief valve *(page 9)*, which will allow movement of the piston while maintaining pre-charge on the vessel.

Step 5:
When the vessel becomes a maximum of 80% full (see volume indicator), all valves should be closed. The product connection is slowly broken in order to vent any trapped product. After vessel removal, all connections should be checked for leaks and the pre-charge and product valve ports capped to prevent leakage.

WARNING: A portable sample vessel should never be filled to more than 80%. This allows a 20% pre-charge cushion to absorb thermal expansion of the product.

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8. DuraSite Installation & Use

Step 6: Preparing Charged Durasite for Transport
Extreme care should be taken when preparing your Durasite vessel for shipment. Both valves must be capped to prevent leakage. **The vessel must be placed in a DOT approved**, snug-fitting, well-padded and durable case (such as YZ Systems KK models). All applicable DOT regulations must be followed (refer to U.S. Government CFR Title 49 for details) when shipping charged Durasite cylinders. **A copy of DOT-SP 8757 (see Appendix B) must accompany the charged Durasite cylinder during shipment**. Operator must be aware that the cylinder and case may potentially be exposed to extreme temperature differentials, and thermal expansion of the product, during transport. Allowances must be made to accommodate this thermal expansion when determining the % fill. In most cases 80% maximum fill of product is acceptable. However, a lower % fill value may be necessary for certain products that are expected to be exposed to large temperature variations during transit.

WARNING: The Durasite sampling vessel is equipped with burst discs to protect against overpressure situations. If over pressured, potentially hazardous / flammable product will be released. Section 173.301(f)(6) of U.S. Gov CFR 49 prohibits any pressure relief devices (ex: burst discs) on vessels transporting Division 2.3 materials in Hazard Zone A.

Step 7: In The Lab
Prior to analysis, the product should be mixed. This is accomplished simply and efficiently by inverting the vessel end-over-end, causing the mixing ball to fall through the product. Approximately 10-12 trips of the mixing ball through the product assures a homogenous solution.

Step 8:
The regulated pre-charge gas should be reconnected to the pre-charge side of the vessel. The pre-charge gas supply should remain open during analysis.

Step 9:
Purging a small amount of product from the vessel removes unmixed product from the tee, relief device, gauge, etc. The unit can now be connected to a chromatograph and the product analyzed.

Step 10:
After analyzing, the remainder of the product should be dumped and the vessel properly cleaned. Normal cleaning can be accomplished by rinsing the product end with a petroleum solvent and flushing with acetone. If a more thorough cleaning is required, the vessel should be disassembled.

9. Cylinder Maintenance

Time, Temperature, Pressures, Sample Quality, and the number of Sample Cycles will all have an affect on the need and frequency for maintenance.

Preventative Maintenance
In general, a preventative maintenance program is for the purpose of trying to anticipate possible maintenance that will be required and to choose when to perform that maintenance prior to the actual need for the maintenance, thus eliminating most emergency responses for the maintenance, or possible ending up without a sample.

Reactive Maintenance
This is when maintenance is only performed as a reaction to the cylinder not being capable of containing a sample properly due to some type of component fatigue. A strong preventative maintenance program will prevent or reduce the need for reactive maintenance and avoid not having a vessel available for product sampling.

DOT-SP 8757 (see Appendix B) *requires that each cylinder must be visibly reinspected at least once a year for deterioration of seals, scratches, dents, and gouges. Components that are deteriorated or damaged must be replaced by factory specified parts as shown in Diagrams 1-3 (Appendix A). If any deep scratches, gouges, dents, or dings are found on interior or exterior of cylinder,* ***CYLINDER MUST BE LABELED AS DEFECTIVE AND DISCARDED****. Components may be replaced by the factory or user, observing Tie Rod Nut tightening torque values (Diagram 3 - Step N). Replacement of Durasite cylinder can only be done at the factory as a DOT mandated factory pressure test is required. Per DOT requirements, once every 5 years the Durasite unit must be returned to the factory for requalification. Additionally at least once a year, the end caps, tie rods, and cylinder must be thoroughly cleaned with appropriate solvent recommended by the manufacturer (Varsol™). Replace rupture disc every year under normal conditions. A more frequent change out of the rupture disc may be necessary due to corrosion, fatigue, temperature, or adverse conditions. These factors must be evaluated by the user through actual service experience.* ***However, if the disc is not changed periodically when exposed to these conditions, premature failure (due to elapsed time or pressure) of the rupture disc may occur, thereby discharging the process media.***

WARNING: Per DOT regulations, a Durasite unit that has been subjected to fire shall not be placed in service until it has been returned to the factory for either reconditioning and retest, or replacement with a new unit.

Please follow instructions in Diagram #3, Page 10 (Appendix A) when conducting maintenance on your Durasite sample vessel. It is advisable to always have a spare seal repair kit available to you in the event of the need for sudden / reactive maintenance.

Recommended spare parts:

Part Number	Description	Qty.
D3-0051	Std. DuraSite Seal Repair Kit	1
A3-0600	3000 psi Rupture Disc	2

9. Cylinder Maintenance

Rupture Disc Design:

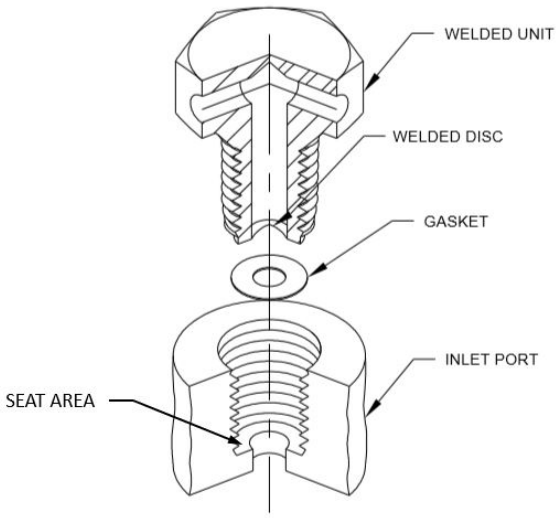
A rupture disc is a thin wafer of metal placed in a specially designed port for the purpose of protecting the device and anyone near it from danger due to over pressure of the device. If the device is over pressured this device **SHOULD** burst.
This overpressure may be a result of many factors, a couple of the most common causes are overfilling of the vessel, or a rise in temperature of a vessel that is full of liquids with no gas expansion area. Rupture discs used on our DOT sample vessels are rated at a pressure, but have a typical tolerance of +0/-10%. For the model DS Durasite unit, this equates to a rupture range of 2700-3000 psig @ 72^0F. All fluctuations of pressure and/or temperature begin the weakening process of the rupture disc. that leads to required maintenance.

Safety Precautions Before Installation

1. The special standard flat seat rupture disc is a precision instrument and must be handled with extreme care. Rupture discs should be installed only by qualified personnel familiar with rupture discs and proper piping practices.
2. Examine the rupture disc. A rupture disc with visible nicks or dents in the dome is considered damaged and should not be used / installed in the Durasite unit.

Replacement Procedure

1. Assure that the vessel has no pressure left in it.
2. Remove and discard the old rupture disc assembly and sealing gasket.
3. Clean all foreign material from the threaded area of the rupture disc assembly and mating port in the Durasite unit.
4. Inspect the rupture disc seat area in the Durasite head port for any nicks, or deformities. Replace head if any damage is found in seat area.
5. Install the new TFE washer / gasket in the disc pocket, onto seat area.
6. Install the new welded rupture discand nut in the pocket on top of the TFE washer and tighten finger tight.
7. Final tightening of the retaining nut should be done with a **Torque Wrench ONLY. Torque to Precisely 10 Ft. Lbs.**



Appendix A: Diagram 1 - Durasite Portable Sample Veseel

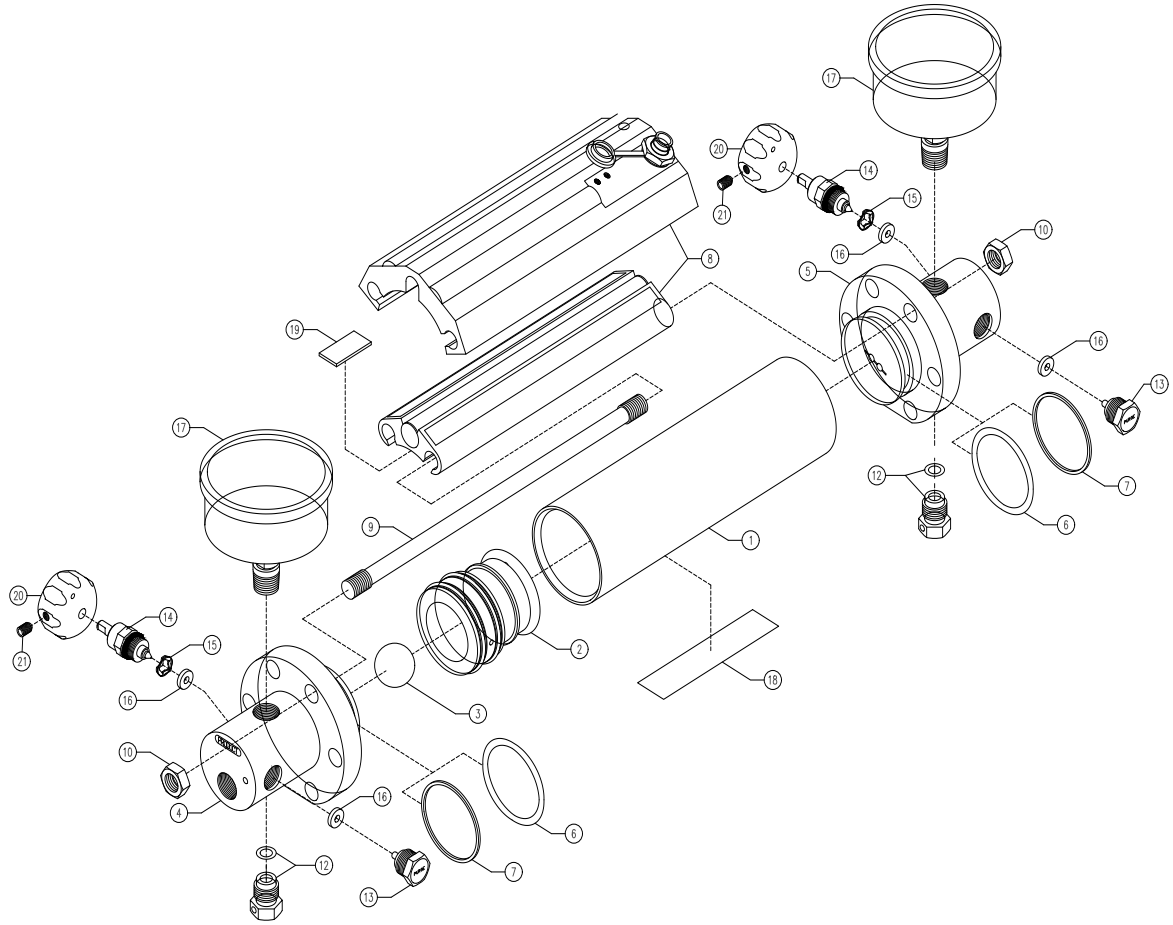
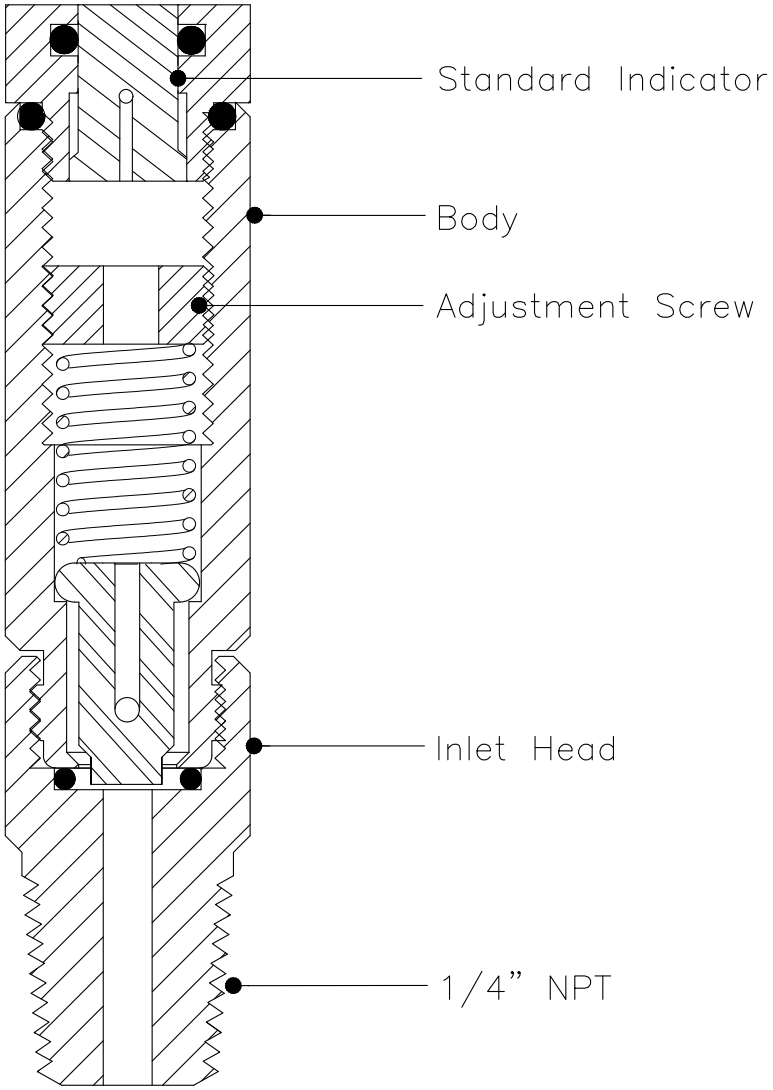


TABLE 1		
COMPLETE ASSEMBLY DESCRIPTION	COMPLETE ASSEMBLY PART NO.	LEVEL INDICATOR PART NO.
2", 150 cc DURASITE	DS-150	C6-1206+
2", 300 cc DURASITE	DS-300	C6-1306+
2", 500 cc DURASITE	DS-500	C6-1406+
2", 800 cc DURASITE	DS-800	C6-1506+
2", 1000 cc DURASITE	DS-1000	C6-1606+
2", 150 cc SMARTSITE	SS-150	F2-0050
2", 300 cc SMARTSITE	SS-300	F2-0051
2", 500 cc SMARTSITE	SS-500	F2-0052
2", 800 cc SMARTSITE	SS-800	F2-0053
2", 1000 cc SMARTSITE	SS-1000	F2-0054

TABLE 2	
ALTERNATE O-RING MATERIALS O-RING, PART NO. A5-1222 (ITEM 6) MAY BE REPLACED BY THE FOLLOWING O-RINGS BY USING NEW PART NO. A5-X222 WHERE:	
'X'	MATERIAL
2	NITRILE
3	PERFLUOROELASTOMER
5	ETHYLENE PROPYLENE
8	LOW TEMP NITRILE

BILL OF MATERIALS				
REF.	QTY.	PART NO.	DESCRIPTION	DRAWING NO.
1	1	C6-1200	CYLINDER 2" DS-150	5M-0006
		C6-1300	CYLINDER 2" DS-300	
		C6-1400	CYLINDER 2" DS-500	
		C6-1500	CYLINDER 2" DS-800	
		C6-1600	CYLINDER 2" DS-1000	
2	1	C6-1017+	DS 2" PISTON ASSY COMPLETE	5A-0033
3	1	C6-1005	DS 2" MIXING BALL	N/A
4	1	C6-1040	DS 2" PRODUCT HEAD	5M-0193
5	1	C6-1041	DS 2" PRECHARGE HEAD	5M-0194
6	2	A5-1222	O-RING -222 VITON (SEE TABLE 2)	N/A
7	2	A5-4222B	BACK-UP RING -222 TEFLON	N/A
8	1	(TABLE 1)	LEVEL INDICATOR ASSEMBLY - DURASITE	5A-0034
		(TABLE 1)	LEVEL INDICATOR ASSEMBLY - SMARTSITE	5A-0023
9	6	C6-1201	TIE ROD DS-150	5M-0188
		C6-1301	TIE ROD DS-300	
		C6-1401	TIE ROD DS-500	
		C6-1501	TIE ROD DS-800	
		C6-1601	TIE ROD DS-1000	
10	12	C0-0048	3/8"-16 NUT 316 SS	N/A
12	2	A3-0600	RUPTURE DISK ASSEMBLY - 3000 PSI	A3-0600
13	2	A3-0080	YZ PURGE VALVE BODY	5M-0007
14	2	A3-0095	YZ O-RING BONNET ASSEMBLY	5A-0103
15	2	A3-0062	VALVE SEAT RETAINER WASHER	5M-0004
16	4	A3-0063	VALVE SEAT	5M-0005
17	2	A8-0036	0-3000 2.5" SS 1/4" CBM	N/A
18	1	D5-0066	CAUTION LABEL - 1800 PSI	5S-0046
19	1	C6-1015	DS LEVEL INDICATOR SPACER	N/A
20	2	A3-0251	VALVE KNOB - BLACK	5M-0137
21	2	C0-0099	#10-32 x 1/4" SET SCREW	N/A
22	1	D5-0008	DS-150 LABEL SET	5S-0044
		D5-0009	DS-300 LABEL SET	
		D5-0010	DS-500 LABEL SET	
		D5-0011	DS-800 LABEL SET	
		D5-0012	DS-1000 LABEL SET	

Appendix A: Diagram 2 - YZ Systems Adjustable Relief Valve



RV-

Relief Valves, Adjustable Pressure Model Number Options

0..... 0-15 psig
1..... 0-100 psig
8..... 100-800 psig
18..... 800-1800 psig
23..... 1800-2300 psig

Discharge Connection

-S Standard visual indicator
-4 1/4" FNPT
-8 1/8" FNPT

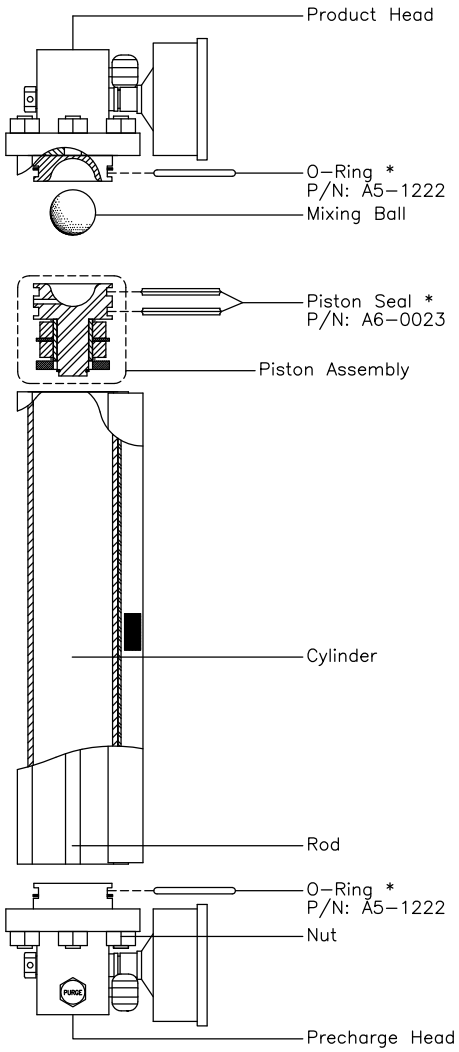
Relieving Pressure

Factory set per customer specification

Example: Model RV18-8-1450 = relief valve, 800-1800 psig range, 1/8" FNPT discharge connection with relieving pressure set at 1450 psig per customer specification

Appendix A: Diagram 3 - Repair Kit Instructions

DURASITE EXPLODED VIEW



REPAIR KIT INSTRUCTIONS

CAUTION: Be sure both the product and precharge ends of the Durasite have been evacuated by opening the valve at each end before starting any disassembly or maintenance procedure.

A. Loosen the nuts holding the precharge and product heads onto the cylinder. Remove the rods.

B. Remove both heads from the cylinder.

C. Using a wooden stick or other soft non–metallic instrument, push the piston assembly out of the cylinder.

D. Clean and carefully examine vessel parts. Any vertical scratch inside the cylinder or in the seal area of the piston may cause leaks, even with new seals. Any parts found to have damage should be replaced prior to re–assembly.

E. If possible, soak the new piston seals in hot water for a few seconds before assembly. This will make the seals more pliable and easier to install.

F. Apply a light coat of nonsoluble assembly grease to the o–rings inside the seals (Krytox GPL206 is recommended).

1. Remove both seals from the piston.
2. Clean and inspect the piston.
3. Install the two new seals onto the piston.

G. Clean the cylinder with Varsol. Carefully examine inside and outside surfaces for damage. If any deep scratches, gouges, dents, or dings are found, the CYLINDER MUST BE LABELED AS DEFECTIVE AND DISCARDED. Unit must then be sent back to factory for installation of new cylinder and hydrotest.

H. Install the piston into the cylinder making sure the dished out end faces the product end of the cylinder. The product end of the cylinder starts with "0" on the volume scale.

I. Remove the o–rings on the heads.

J. Clean(with Varsol) and inspect the heads.

K. Apply a light coat of nonsoluble assembly grease to the o–rings(Krytox GPL206 is recommended). Install the new o–rings.

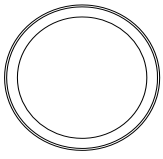
L. Place the mixing ball in the product end of the cylinder.

M. Install the heads on the ends of the cylinder making sure the precharge head goes on the precharge end of the cylinder.

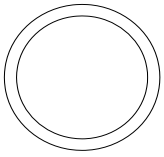
N. Install the tension rods and hex nuts through the holes in the heads and tighten the nuts to 18 ft./lbs. in 6lb. increments. Tighten at 18 ft./lbs. twice, tighten nuts in an opposing pattern.

O. Pressure test both the Pre–Charge & Liquid End independently to 1000 psi to verify that there are no leaks.

* KIT COMPONENTS
(Part# D3–0051)



Piston Seal
P/N: A6–0023
QTY: 2



O–Ring
P/N: A5–1222
QTY: 2

APPENDIX B: DOT SPECIAL PERMIT SP-8757

March 20, 2019

U.S. Department
of Transportation

Pipeline and Hazardous
Materials Safety Administration

East Building, PHH-30
1200 New Jersey Avenue S.E.
Washington, D.C. 20590

DOT-SP 8757
(TWENTY-SECOND REVISION)

EXPIRATION DATE: 2022-02-28

(FOR RENEWAL, SEE 49 CFR 107.109)

1. GRANTEE: Milton Roy, LLC
Ivyland, PA

2. PURPOSE AND LIMITATIONS:

a. This special permit authorizes the manufacture, mark, sale, and use of non-DOT specification stainless steel cylinders conforming to all regulations applicable to a DOT Specification 3A cylinder, except as specified herein, for the transportation in commerce of the materials authorized by this special permit. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein. The most recent revision supersedes all previous revisions.

b. The safety analyses performed in development of this special permit only considered the hazards and risks associated with transportation in commerce.

c. In accordance with 49 CFR 107.107(a), party status may not be granted to a manufacturing permit. These packagings may be used in accordance with 49 CFR 173.22a.

3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.

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4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.201(c), 173.202(c), 173.203(c), 173.302a(a)(1), and 173.304a(a)(1) in that a non-DOT specification cylinder is not authorized except as specified herein; and § 180.205 in that a retest is not required.

5. BASIS: This special permit is based on the application of Milton Roy, LLC dated January 11, 2018 submitted in accordance with § 107.105 and the public proceeding thereon and additional information dated March 9, 2018 and March 11, 2019.

6. HAZARDOUS MATERIALS (49 CFR 172.101):

Hazardous Materials Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identification Number**	**Packing Group**
1,2-Dichloro-1,1,2,2-Tetrafluoroethane *or* Refrigerant gas R114	2.2	UN1958	N/A
Air, compressed	2.2	UN1002	N/A
Ammonia solutions, *relative density less than 0.888 and 0.957 at 15 degrees C in water, with more 35 percent but not more than 50 percent ammonia*	2.2	UN2073	N/A
Butane	2.1	UN1011	N/A
Carbon dioxide	2.2	UN1013	N/A
Compressed gas, flammable, n.o.s. (Crude oil under pressure)	2.1	UN1954	N/A
Compressed gas, toxic, flammable, n.o.s. *Inhalation Hazard Zone A, B, C, or D**	2.3	UN1953	N/A

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Hazardous Materials Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identification Number**	**Packing Group**
Compressed gas, toxic, n.o.s. *Inhalation Hazard Zone D*	2.3	UN1955	N/A
Dichlorodifluoromethane *or* Refrigerant gas R 12	2.2	UN1028	N/A
Ethane	2.1	UN1035	N/A
Gasoline	3	UN1203	II
Hexanes	3	UN1208	II
Helium, compressed	2.2	UN1046	N/A
Heptanes	3	UN1206	II
Hydrocarbon gas mixture, liquefied, n.o.s.	2.1	UN1965	N/A
Hydrocarbon gas mixture, compressed, n.o.s.	2.1	UN1964	N/A
Hydrocarbons, liquid, n.o.s.	3	UN3295	As appropriate
Isobutane	2.1	UN1969	N/A
Isopropanol *or* Isopropyl alcohol	3	UN1219	II
Kerosene	3	UN1223	III
Liquefied gas, toxic, flammable, n.o.s.*	2.3	UN3160	N/A
Liquefied gas, flammable, n.o.s.	2.1	UN3161	N/A
Liquefied gas, n.o.s.	2.2	UN3163	N/A

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Hazardous Materials Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identification Number**	**Packing Group**
Methane, compressed *or* Natural gas, compressed (*with high methane content*)	2.1	UN1971	N/A
Nitrogen, compressed	2.2	UN1066	N/A
Oil gas, compressed	2.3	UN1071	N/A
Pentanes	3	UN1265	I, II
Petroleum crude oil	3	UN1267	As appropriate
Petroleum gases, liquefied *or* Liquefied petroleum gas	2.1	UN1075	N/A
Petroleum distillates, n.o.s. *or* Petroleum products, n.o.s.	3	UN1268	I
Propane	2.1	UN1978	N/A

*Applicable parts of § 173.40 must be complied with when transporting this material.

7. SAFETY CONTROL MEASURES:

a. PACKAGING: Prescribed packaging is a stainless steel non-DOT specification cylinder, constructed from seamless Nitronic tubing for DS9 high pressure cylinders and seamless stainless steel or welded tubing for DS low pressure cylinders, with flanged flat head end closures at each end restrained by six tie rods, and containing a piston which forms two pressure chambers. The cylinders must conform with YZ System's drawing 5A-0032, Rev. 12 (for DS models) or drawing 5A-0086, Rev. 8 (for DS9 models),

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calculations on file with the Office of Hazardous Materials Safety Approvals and Permits Division (OHMSAPD) and the DOT-3A Specification (§§ 178.35 and 178.36), except as follows:

§ 178.35(b) *Inspections and analyses.*

Chemical analyses and tests as specified must be made within the United States unless otherwise approved in writing by the Associate Administrator, in accordance with § 107.807. Certification of changes to the original cylinder designs (Model DS or DS9) must be performed by an independent inspection agency (IIA) approved in writing by the Associate Administrator, in accordance with § 107.803(a). The IIA certification must include a statement that the cylinder design meets all the requirements of this special permit. Once the IIA certifies a cylinder design change, inspections and verifications required during production may be carried out by a manufacturer's inspector.

§ 178.35(e) *Safety devices.*

Each head must be equipped with a safety relief device. Safety devices and other connections, must be as required or authorized by the appropriate specification, and comply with § 180.205(a) and § 173.301.

§ 178.35(f) *Markings.*

Applies except cylinders must be marked "DOT-SP 8757 1800" or "DOT-SP 8757 3600" for Model DS and DS9, respectively.

§ 178.35(g) *Inspectors report.*

(Added) The inspector's report form may be revised to accommodate the tests required by this special permit.

(Added) A copy of the inspector's report on the first lot of cylinders produced must be submitted to the OHMSAPD prior to the first shipment.

APPENDIX B: DOT SPECIAL PERMIT SP-8757

§ 178.36(a) Type, size and service pressure.

(1) Model DS piston style receptacle has flat heads on each end restrained with tie rods which are secured by nuts at both ends. The maximum volume may not exceed 1,000 cc. The maximum service pressure must be 1,800 psig. The dimensions are as follows:

Maximum outside diameter: 2.010 inches
Maximum length: 29 inches long
Minimum side wall thickness: 0.110 inch

(2) Model DS9 piston style receptacle has flat heads on each end restrained with tie rods which are secured by nuts at both ends. The maximum volume may not exceed 1000 cc. The maximum service pressure is 3,600 psig. The dimensions are as follows:

Maximum outside diameter: 2.010 inches
Maximum length: 29 inches long
Minimum side wall thickness: 0.110 inch

§ 178.36(b) *Steel.*

(1) For "DOT-SP 8757 1800":

All cylinder components must be type 304 or 316 stainless steel.

(2) For "DOT-SP 8757 3600":

All cylinder components must be type 316 stainless steel or Nitronic 50 (UNS20910).

§ 178.36(g) *Heat treatment.*

The completed cylinders need not be heat treated.

§ 178.36(i) *Hydrostatic test.*

(1), (2), and (3) * * *

(4) Cylinders must be tested as follows:

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(i) Each compartment of each piston style receptacle must be subjected to a pneumatic test of at least 500 psig without leakage. If the cylinder fails this test, it must be rejected.

(ii) Each cylinder (tube with end caps but without pistons, and with tie bolts) must be hydrostatically tested to at least 3,000 psig in the case of cylinders with a marked service pressure of 1,800 psi, or 6,000 psig in the case of cylinders with a marked service pressure of 3,600 psi and show no defect.

(iii) In addition, one cylinder (tube with end caps with tie bolts, if applicable, but without pistons) from each lot must be pressurized to failure. Rate of pressurization may not exceed 200 psi per second.

(A) A "lot" is defined as the quantity of pressure vessels fabricated from the same heat of steel, manufactured by the same process and heat treated in the same equipment under same conditions of time, temperature and atmosphere and may not exceed a quantity of 500. The burst test must be performed on each lot of cylinders produced or every six months whichever occurs first.

(B) The pressure at which the cylinder fails to hold test pressure must be recorded. This pressure may not be less than 5,000 psi and 10,000 psi respectively for the 1800 psi and 3600 psi service pressure cylinders.

(C) The size of the cylinder tested will be based on the size that had the greatest production during the previous 6 months or 500 cylinders.

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(D) If cylinder failure is determined to be due to gasket performance, the cylinder may be requalified, if it is rebuilt per manufacturer's specifications and retested. Failure of a rebuilt cylinder due to gasket performance shall be cause of rejection of the gasketing; however, the cylinder may be requalified at a later date once the manufacturer has determined the gasket attribute causing the initial failure, and has taken appropriate quality control actions to correct the problem as evidenced by successful documentation of same and satisfactory testing of the cylinder as outlined above.

(E) If any cylinder fails this test by other than gasket performance, the entire lot must be rejected.

§ 178.36(j) *Flattening test.*

The tube body of one cylinder from each lot of 500 or less that has passed the test prescribed in § 178.36(i)(4)(ii) of this special permit must be flattened to at least 6 times wall thickness without cracking.

§ 178.36(m) Leakage test.

Not applicable; however, the requirements of §§ 178.36(i) and 178.36(j) above apply.

b. TESTING: Each cylinder must be visually reinspected at least once a year for deterioration of seals, scratches, dents and gouges. Components that are deteriorated or damaged must be replaced by factory specified parts as shown on YZ drawings 5A-0032, Rev.12 and 5A-0086, Rev. 8 or drawings referenced thereon. Components may be replaced by the factory or user, observing Tie Rod Nut tightening torque values shown on the above drawings. Annual reinspection/repair must be in accordance with instructions on file with the OHMSAPD.

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c. OPERATIONAL CONTROLS:

(1) At least once a year, the end caps, tie rods, and cylinder must be thoroughly cleaned with an appropriate solvent recommended by the manufacturer.

(2) The cylinder may be used only for materials that are being transported for purposes of analytical testing.

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this special permit for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this special permit.

b. A person who is not a holder of this special permit, but receives a package covered by this special permit, may reoffer it for transportation provided no modification or change is made to the package and it is offered for transportation in conformance with this special permit and the HMR.

c. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.

d. Each packaging manufactured under the authority of this special permit must be either (1) marked with the name of the manufacturer and location (city and state) of the facility at which it is manufactured or (2) marked with a registration symbol designated by OHMSAPD for a specific manufacturing facility.

e. A current copy of this special permit must be maintained at each facility where the package is manufactured under this special permit. It must be made available to a DOT representative upon request.

f. No modifications may be made to the cylinder, which would affect its performance and its compliance with the requirements of this special permit until such

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modifications have been reviewed, tested, and certified by an Independent Inspection Agency (IIA) as meeting the requirements of this special permit.

g. If the Associate Administrator or the IIA deems it necessary, the IIA may perform periodic inspections of the manufacturer's facility.

h. The IIA's design certification must include test results and documents related to the cylinder design approval. A copy of the design certification must be maintained at each facility where the cylinder is manufactured and by the IIA for a period of 15 years from the date of completion of the design certification.

i. For cases where an internal coating, not shown on the drawings on file with OHMSAPD, is required prior to filling, the coating must be compatible with the material to be filled. The coating must not affect the cylinder properties.

j. Transportation of Division 2.1 materials (flammable gases) and Division 2.3 materials (gases which are toxic by inhalation) are not authorized aboard cargo vessel or aircraft unless specifically authorized in the Hazardous Materials Table (§ 172.101).

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, and cargo-only aircraft (see restrictions in paragraph 8.j. above).

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each cargo vessel, aircraft, or motor vehicle used to transport packages covered by this special permit. The shipper must furnish a current copy of this special permit to the air carrier before or at the time the shipment is tendered.

11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this special permit and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

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- All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, Parts 171-180.

- Persons operating under the terms of this special permit must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.

- Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this special permit, including display of its number, when this special permit has expired or is otherwise no longer in effect.

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)- "The Hazardous Materials Safety and Security Reauthorization Act of 2005" (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005), amended the Federal hazardous materials transportation law by changing the term "exemption" to "special permit" and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this special permit are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 Immediate notice of certain hazardous materials incidents, and 171.16 Detailed hazardous materials incident reports. In addition, the grantee(s) of this special permit must notify the Associate

APPENDIX B: DOT SPECIAL PERMIT SP-8757

Administrator for Hazardous Materials Safety, in writing, of any incident involving a package, shipment or operation conducted under terms of this special permit.

Issued in Washington, D.C.:

for William Schoonover
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, East Building PHH-30, 1200 New Jersey Avenue, Southeast, Washington, D.C. 20590.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

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