



Department of Environmental Protection

2600 Blair Stone Road • Tallahassee, Florida 32399-2400

DEP Form: 62-762.901(9)

Form Title: Storage Tank Equipment

Registration Form

Effective Date: July 2019

Incorporated in Rule 62-762.851, F.A.C.

Storage Tank System Equipment Registration Form

Fill out completely

General Information

Company Name: ACS Manufacturing LLC Contact Name: Danny Wells
Company Address: 1901 Commerce Blvd. City, State: Denison, TX Zip: 75020
E-mail: Danny.Wells@ACSManufacturing.com Contact Number: 903-462-2001 Ext:10024 *
Product Name: Model EFVT.MH 28123 Special-Purpose Aboveground Storage Tank
Model Number(s): 13556-10 Product Type: Aboveground Storage Tank
Rule(s) citation that registration is being requested within Chapter 62-761 (UST), and/or 62-762 (AST), F.A.C.: _____

Write a brief description of equipment registration request including product limitations:

ACS Manufacturing is renewing the registration with a new tank installation.

Information Checklist (Choose Yes, No, or N/A - Not Applicable):

	Yes	No	N/A
1. Third-party Certification by a Nationally Recognized Testing Laboratory? (Required)	☒	☐	☐
2. Documentation of third-party evaluation that the equipment meets DEP Rules?	☒	☐	☐
3. Documents included about the qualifications of the Nationally Recognized Testing Laboratory?	☒	☐	☐
4. Technical information and drawings included?	☒	☐	☐
5. Installation instructions included?	☒	☒	☐
6. Annual Operability Testing Requirements (Rules 62-761.500, 62-762.501, & 62-762.502 F.A.C.)?	☒	☐	☐
7. Integrity Testing Requirements (Rules 62-761.700, 62-762.701, & 62-762.702, F.A.C.)?	☒	☐	☐
8. Compatible with fuel blends containing >10% ethanol or >20% biodiesel?	☐	☐	☒
9. Has the product been approved or registered in other countries or states? (If so provide list)	☐	☒	☐
10. Any requirements for company-certified installers or trainers?	☐	☒	☐
11. Was this product(s) previously approved or registered by the Department? If yes, EQ- <u>824</u>	☒	☐	☐
12. Any changes or modifications to the equipment since the last submittal to DEP?	☐	☒	☐

Document Information: Provide supporting documents indicated as "Yes" above including this form via email to Tanknotify@floridadep.gov, or documents can be sent to FDEP, Division of Waste Management, 2600 Blair Stone Road, MS 4560, Tallahassee, FL 32399.

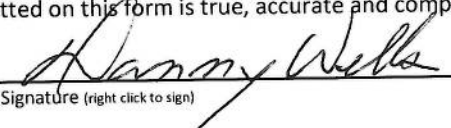
Write a brief description of equipment installation and performance in the U.S.:

The tanks are intended for stationary installation in accordance with The Standard for Flammable and Combustible Liquids Code of The National Fire Protection Association, NFPA 30, The Standard for The Installation and Use of Stationary Combustion Engine and Gas Turbines, NFPA 37, and The Standard for Emergency and Standby Power Systems, NFPA 110.

Equipment Registration Certification:

To the best of my knowledge and belief, all information submitted on this form is true, accurate and complete.

Danny Wells / Quality Assurance Manager
Printed Name and Title


Signature (right click to sign)

11/25/2025
Date

For Department Use Only:

Date Application Received: 11/25/2025 Application complete: Yes: ☒ No: ☐

EQ- 824 Date of complete or incomplete letter sent: 12/02/2025 Date Equipment Requires Renewal: 12/02/2030

Storage tank system equipment requires renewal every 5 years in accordance with subsection 62-762.851(2), F.A.C.

NOTES:

1. ENCLOSURE ASSEMBLY:

a.) FOR A CUMMINS 2500kW DQKAN GEN–SET (480VAC).

b.) FULLY ASSEMBLED DROP OVER TYPE ACOUSTICAL ENCLOSURE TO BE MOUNTED TO THE SUB BASE TANK AND THEN ANCHORED TO THE FOUNDATION.

c.) PANEL JOINTS ARE SKIP WELDED AND CAULKED.

d.) WIND LOAD RATED: 100 MPH.
2. ENCLOSURE CONSTRUCTION:

a.) SKIN – 14 GA. GALVANNEAL STEEL (WALLS).

12 GA. GALVANNEAL STEEL (ROOF).

b.) FRAMING – A36 STRUCTURAL CHANNEL & A500–B TUBING

c.) INNER LINER – 22 GA. GALVANIZED PERFORATED STEEL.

d.) INSULATION – MINERAL WOOL.

e.) DOORS – TWO (2) DOUBLE ACCESS SERVICE DOOR

WITH STAINLESS HINGES, CHROME PLATED REFRIGERATOR LATCHES

WITH INSIDE RELEASE & KEY LOCKING HANDLES.

f.) INLET FIXED WEATHER LOUVERS –(GALVANNEALED CONSTRUCTION).

g.) INLET MOTORIZED DAMPERS –(GALVANIZED CONSTRUCTION –CD356)

i.) DISCHARGE BAFFLE PANELS –(GALVANNEALED CONSTRUCTION).

j.) DISCHARGE GRAVITY BACKDRAFT DAMPERS –(ALUMINUM CONSTRUCTION –CBD2)
3. DESIGN CONSTRUCTION:

a.) AIR FLOW RATES;

RADIATOR – 93,550 CFM

COMBUSTION – 6,829 CFM

b.) PRESSURE DROPS;

INLET & DISCHARGE LOUVERS/BAFFLES 0.5” W.G. OR LESS (TOTAL).

c.) PERFORMANCE;

DESIGNED TO REDUCE THE GEN–SET EQUIPMENTS NOISE LEVEL TO 90 dBA WHEN MEASURED AT A DISTANCE OF 85 FEET FROM THE ENCLOSURE IN A FREE FIELD ENVIRONMENT & 5.5 FT. ABOVE GRADE.

(PROVIDING THE EQUIPMENT NOISE DOES NOT EXCEED 130 dB @ 3 FEET.)
4. PAINT:

a.) ALL EXTERIOR GALVANNEAL SURFACES TO BE SOLVENT CLEANED PER SSPC–SP1 AND PAINTED AS FOLLOWS;

* FINISH – ONE COAT OF AMERSHIELD VOC (3–5 MILS DFT).

b.) ALL CARBON STEEL SURFACES TO BE POWER TOOL CLEANED PER SSPC–SP3 AND PAINTED AS FOLLOWS;

* PRIMER – ONE COAT AMERCOAT 370 (3–5 MILS DFT).

* FINISH – ONE COAT OF AMERSHIELD VOC (3–5 MILS DFT).

* INTERIOR WALL AND ROOF SURFACES WILL NOT BE PAINTED

c.) COLOR; ENCLOSURE: T.B.D.

TANK: BLACK

5. ELECTRICAL: SEE 13556–10E SHEETS.
6. QUANTITY REQUIRED:

ONE (1) GEN–SET ENCLOSURE ASSEMBLIES AS SHOWN.

ONE (1) U.L. LISTED SUB BASE FUEL TANKS.

TWO (2) PLATFORM ASSEMBLIES AS SHOWN.
7. ESTIMATED SHIPPING WEIGHTS ARE AS FOLLOWS:

a.) ENCLOSURE w/MISC. & ELECTRICAL: – 24,000 LBS

b.) GENSET ASSEMBLY: – 52,000 LBS (WET)

c.) SUB BASE TANK: – 24,000 LBS (DRY)

TOTAL –100,000 LBS

d.) PLATFORM (EACH): – 2,500 LBS
8. SHIPPING SIZES:

a.) ENCLOSURE PACKAGE ASSEMBLY: 394”L x 144”W x 156”H

b.) GENSET ASSEMBLY: 280”L x 109”W x 126”H

c.) SUB BASE TANK: 432”L x 138”W x 66”H

d.) PLATFORM (EACH): 136”L x 44”W x 96”H

9. ACS CONTACT INFORMATION

SALES: WESLEY RITCHIE

TELEPHONE: 903.462.2034

E–MAIL: wesley.ritchie@acsmanufacturing.com

PROJECT MANAGER: STEVE WATKINS

TELEPHONE: 903.462.2031

E–MAIL: steve.watkins@acsmanufacturing.com

- ☐ APPROVED AS IS – Manufacturing may proceed.
- ☐ APPROVED WITH NOTED CHANGES – Resubmit drawing; manufacturing may proceed.
- ☐ NOT APPROVED – Correct drawing as noted and resubmit for approval before manufacturing begins.

BY: _____ DATE: _____

COMPANY: _____

RETURNED APPROVAL DRAWINGS WITH SIGNATURE
REQUIRED BEFORE ACS WILL BEGIN
MANUFACTURING PROCESS

QUOTE NO.: 202306047

PO NO.: S1S1099247

ACS MFG LOC.: SC

JOB NAME: FREEZPAK JACKSONVILLE – 2500KW

*CUSTOMER TO VERIFY ALL NOTES AND DIMENSIONS

PROPRIETARY NOTICE

THIS DRAWING CONTAINS DESIGNS AND OTHER INFORMATION WHICH ARE THE PROPERTY OF ACS MANUFACTURING, INC. EXCEPT FOR THE RIGHTS GRANTED EXPRESSLY BY CONTRACT, THIS DRAWING MAY NOT BE DISCLOSED OR DUPLICATED IN WHOLE OR IN PART OR USED FOR MANUFACTURE OF DESIGNS DISCLOSED HEREIN WITHOUT THE PRIOR WRITTEN PERMISSION OF ACS MANUFACTURING, INC.

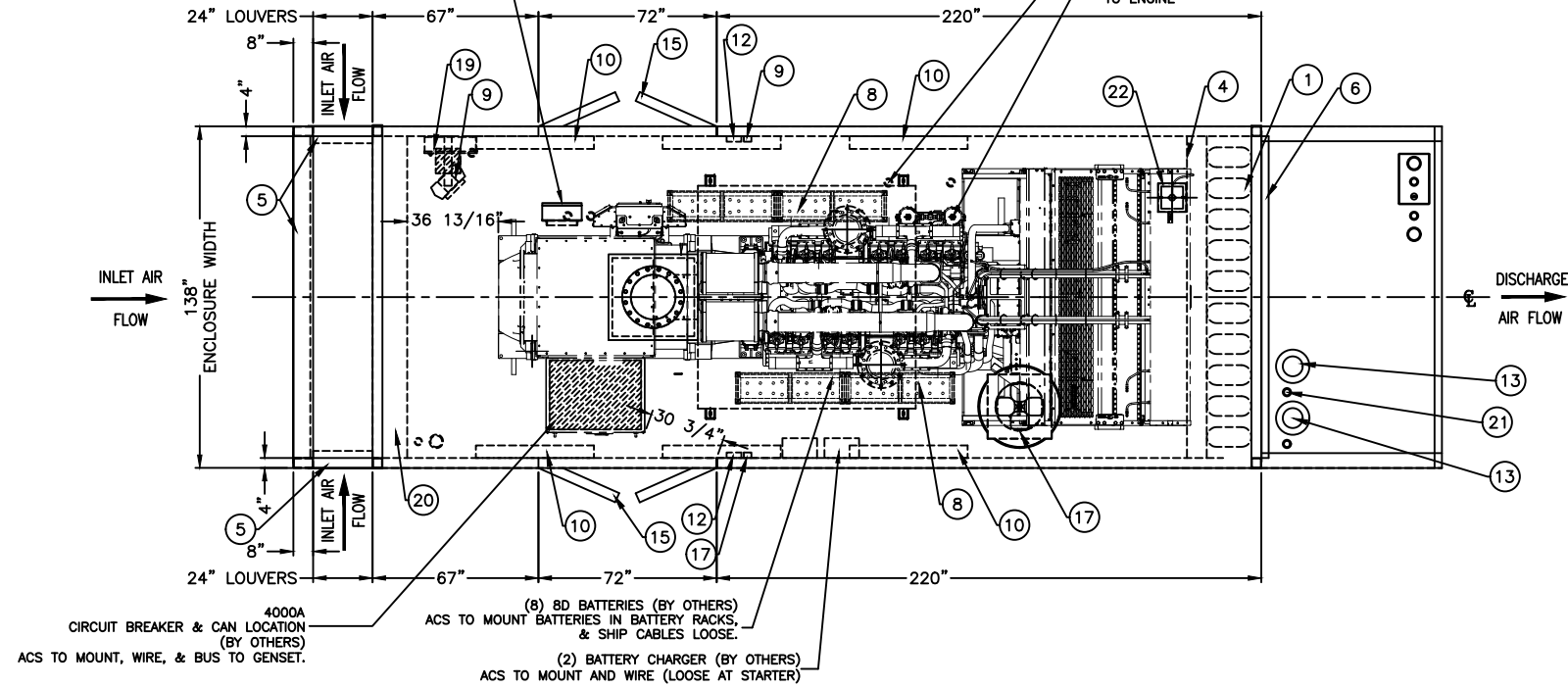
E	—	SEE OTHER SHEETS	CE	SW	08/01/24	DECIMAL ± 0.125"	CUMMINS SOUTHERN PLAINS ACOUSTICAL ENCLOSURE PACKAGE TEXT SHEET	CHECKED BY:	
D	—	SEE OTHER SHEETS	CE	SW	05/31/24	FRACTIONAL ± 1/8"		CHECKED BY:	
C	—	SEE OTHER SHEETS	CE	SW	05/16/24	ANGULAR ± 3°		APPROVED BY: SW	
B	—	SEE OTHER SHEETS	CE	SW	04/30/24	SCALE 1:1		SHEET	REV.
A	—	UPDATE PLATFORM WEIGHTS	CE	SW	03/29/24	DATE		1 of 6	E
REV	ECO NUMBER	DESCRIPTION	BY	APPD	DATE	DATE	DRAWING NUMBER		
						11/29/23	13556-10		



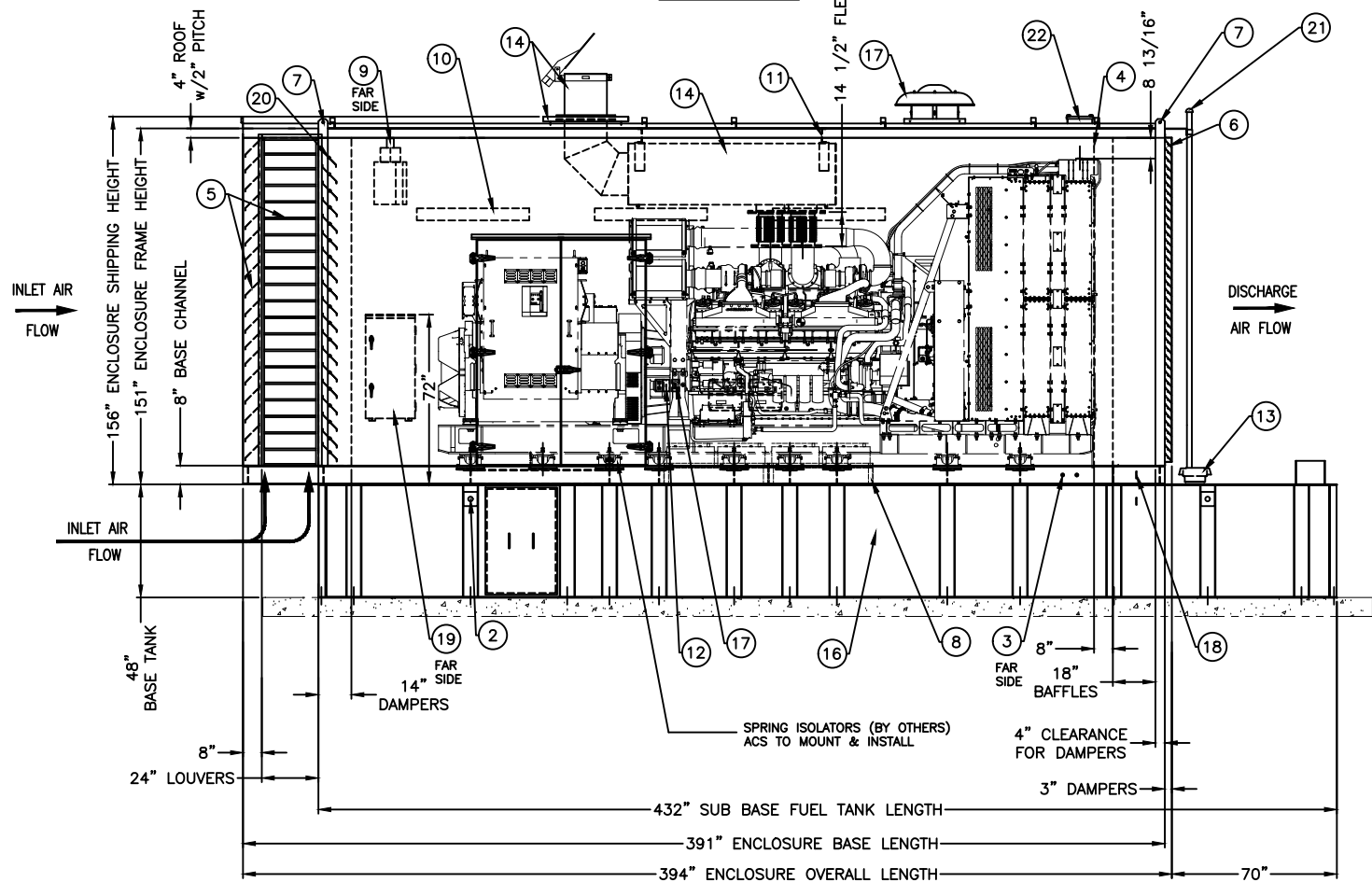
260A LIFE SAFETY CIRCUIT BREAKER (BY OTHERS)
ACS TO MOUNT TO TANK MOUNTED STAND & WIRE TO GENSET

FUEL SUPPLY & RETURN LINES (BY OTHERS)
ACS TO CONNECT TO TANK FITTINGS

FLEETGUARD FILTER ASSEMBLY (BY OTHERS)
ACS TO MOUNT & PLUMB (FLEX HOSES)
TO ENGINE



PLAN VIEW



ELEVATION VIEW

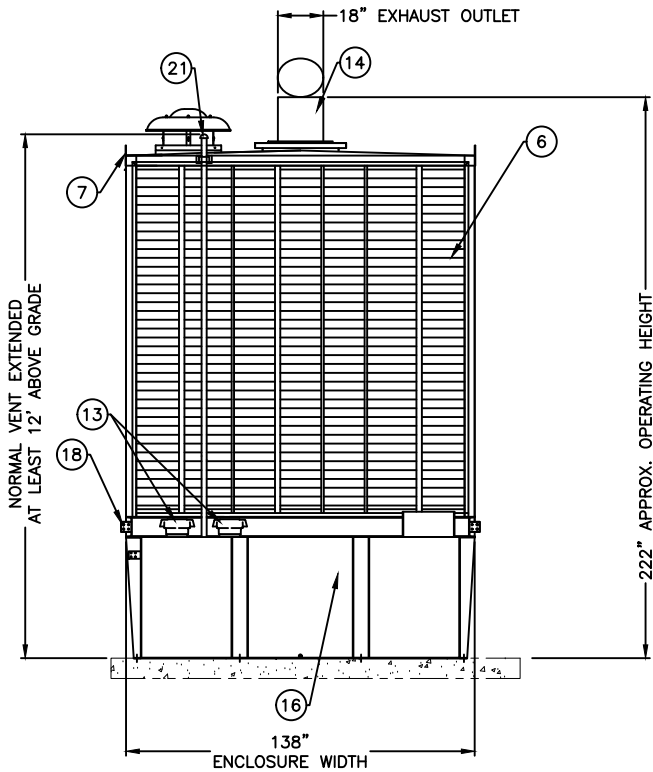
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COMPANY: _____

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BILL OF MATERIAL			DESCRIPTION
ITEM	QTY		
1	10		BAFFLE PANELS WITH MINERAL WOOL
2	4		TANK LIFTING LUG (DESIGNED TO LIFT TANK ONLY)
3	2		1" COUPLING, OIL & WATER DRAIN, EXTENDED TO ENCLOSURE WALL (BALL VALVE ON THE INSIDE, PLUGGED ON THE OUTSIDE)
4	1		RADIATOR FLASHING & TRIM FLASHING
5	3		FIXED INLET WEATHER LOUVER (RECESSED)
6	1		DISCHARGE GRAVITY BACKDRAFT DAMPER (CBD2)
7	4		ENCLOSURE LIFTING LUG (DESIGNED FOR ENCLOSURE REMOVAL ONLY)
8	4		BATTERY RACK (EACH TO HOLD (2) 8D BATTERIES)
9	1		5KW SPACE HEATER w/ T-STAT
10	6		LED LIGHT, 4'
11	2		INTERNAL MUFFLER SUPPORT CHANNEL
12	2		3-WAY LIGHT SWITCH/DUPLEX RECEPTACLE
13	2		EMERGENCY VENT, FUEL TANK
14	1		COMPLETE EXHAUST SYSTEM INCLUDING: CRITICAL GRADE MUFFLER, FLEXES, TAIL PIPE, STAINLESS STEEL EXHAUST WEATHER CAP, RAIN CAP, NRG KITS & REMOVABLE BLANKETS (FOR FLEXES, FLANGES, & INTERNAL ELBOW ON MUFFLER)
15	2		72" X 96" DOUBLE DOOR (SINGLE SEAL) w/ KEY LOCKING, & BOND STRAP (FROM ENCLOSURE DOOR TO DOOR FRAME)
16	1		U.L. 142 SUB BASE FUEL TANK
17	1		2400 CFM VENT FAN w/ LOUVERS & T-STAT
18	2		NEMA 4 HOLE S/S GROUNDING PAD (OPPOSING CORNERS OF ENCLOSURE)
19	1		120/208VAC PANELBOARD, 3PH (TYPE NQ)
20	1		MOTORIZED INTAKE DAMPERS (CD356)
21	1		NORMAL VENT, FUEL TANK - EXTENDED OUTSIDE OF ENCLOSURE TO ROOF LINE (AT LEAST 12' ABOVE GRADE) SHIPPED LOOSE & INSTALLED BY OTHERS
22	1		RADIATOR CAP ACCESS HATCH



END VIEW

QUOTE NO.: 202306047
PO NO.: S1S1099247
ACS MFG LOC.: SC
JOB NAME: FREEZPAK JACKSONVILLE - 2500KW

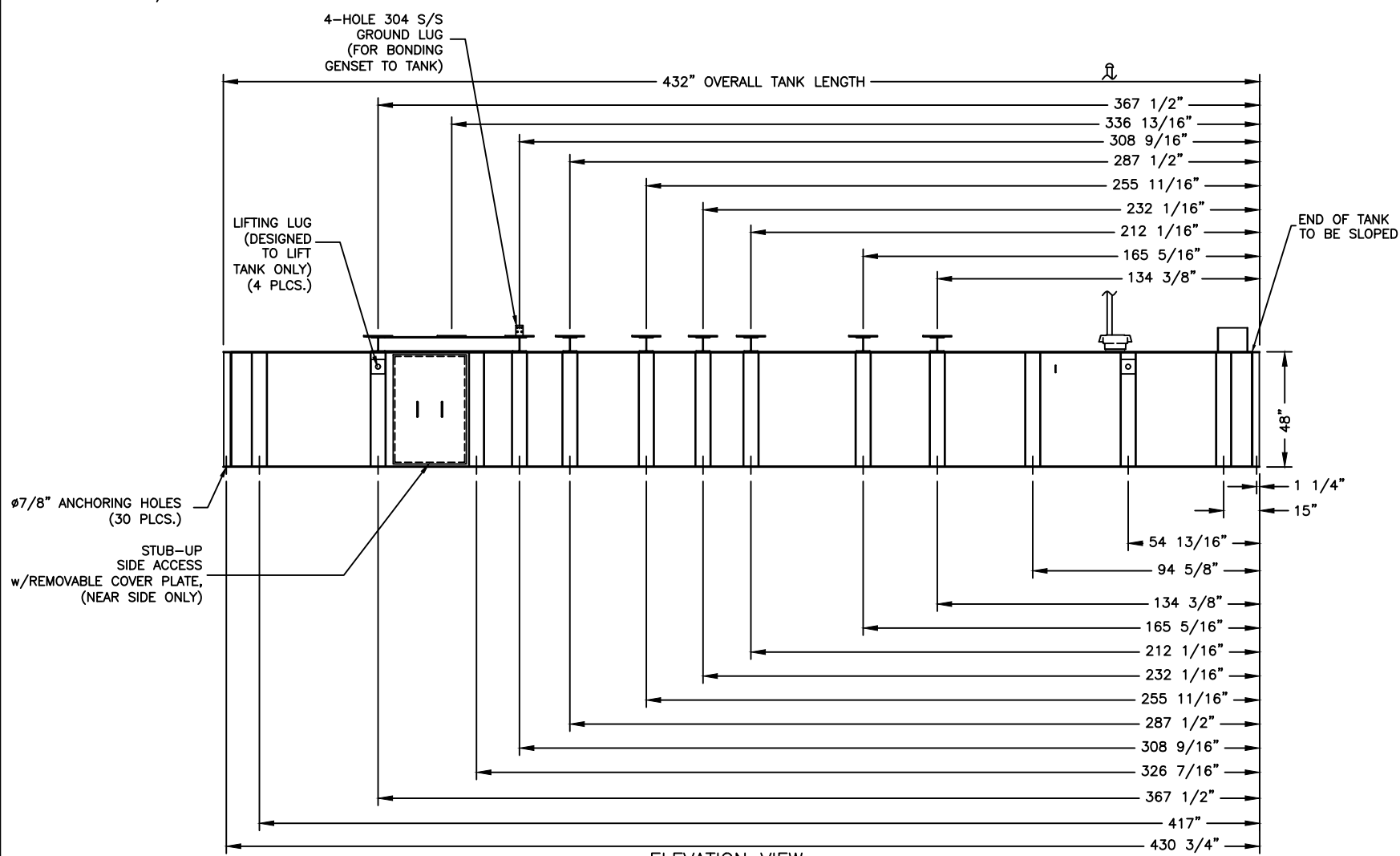
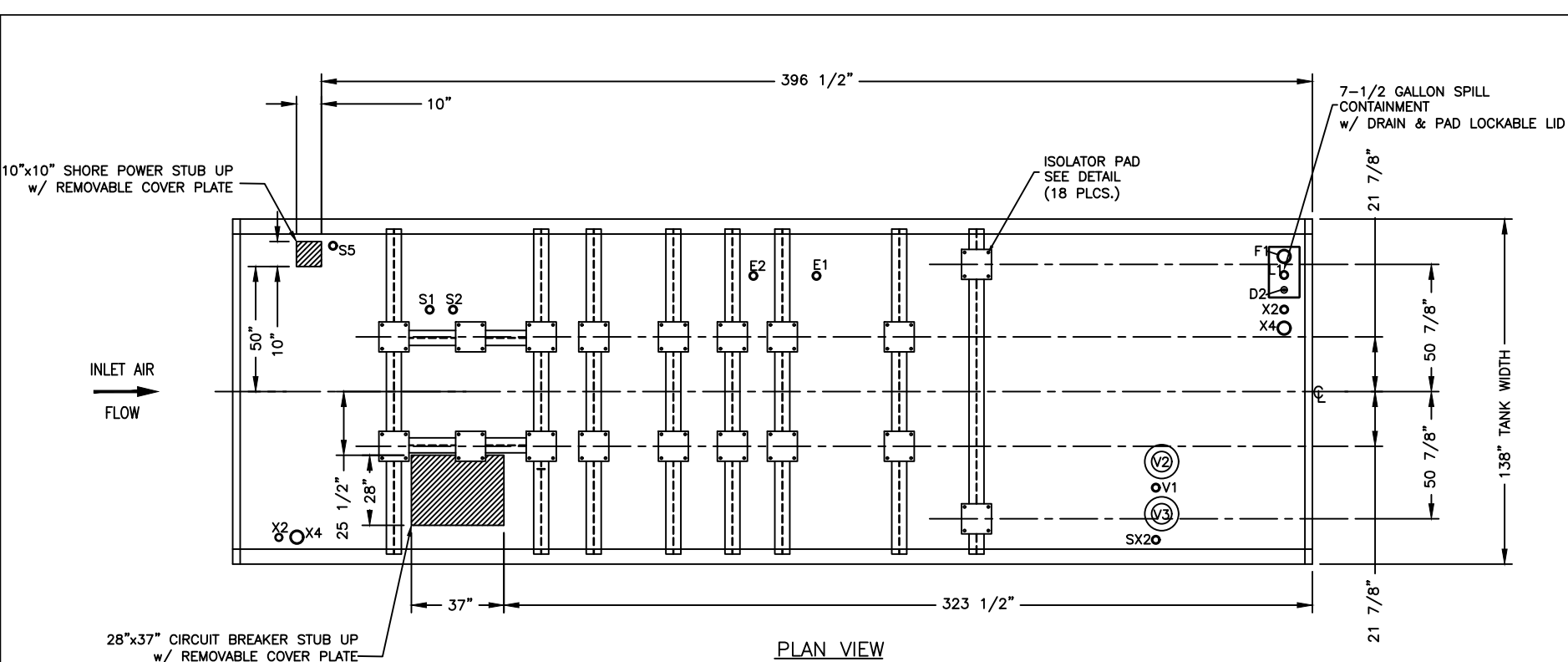


E	-	SEE OTHER SHEETS	CE	SW	08/01/24
D	-	SEE OTHER SHEETS	CE	SW	05/31/24
C	-	ADD 260A LIFE SAFETY BREAKER (BY OTHERS)	CE	SW	05/16/24
B	-	SEE OTHER SHEETS	CE	SW	04/30/24
A	-	UPDATE LOC OF DIS BAFFLES/UPDATE SET BACK, & BAF QTY	CE	SW	03/29/24
REV	ECO NUMBER	DESCRIPTION	BY	APPD	DATE
					11/29/23

TOLERANCES (EXCEPT AS NOTED)		CUMMINS SOUTHERN PLAINS	DRAWN BY: C	
DECIMAL	± 0.125"		CHECKED BY:	
FRACTIONAL	± 1/8"		CHECKED BY:	
ANGULAR	± 3°		APPROVED BY: S	
SCALE	1 TO 1	TITLE	ACOUSTICAL ENCLOSURE ASSEMBLY DETAILS	
DATE	11/29/23	DRAWING NUMBER	SHEET 2 of 6	REV. E
		13556-10		

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ELEVATION VIEW
U.L. 142 SUB BASE FUEL TANK
9,135 CAPACITY / 8,480 GALLON USABLE

REF.	FITTING SIZE	DESCRIPTION
D1	1" NPT	TANK DRAIN – SECONDARY
D2	3/4" NPT	SPILL CONTAINMENT DRAIN w/ T-HANDLE
E1	2" NPT	ENGINE FUEL SUPPLY – 1–1/2" NPT DIP TUBE
E2	2" NPT	ENGINE FUEL RETURN – 1–1/2" NPT DIP TUBE
F1	4" NPT	FUEL FILL w/ 2" CAMLOCK w/ OPV @ 95%
L1	2" NPT	LEVEL GAUGE – DIRECT SITE READING
S1	2" NPT	LOW LEVEL SWITCH – N.C. – 35% (WIRE TO GCP)
S2	2" NPT	HIGH LEVEL SWITCH – N.O. – 90% (WIRE TO GCP)
S5	2" NPT	LEAK DETECTOR – N.O. – (WIRE TO GCP)
SX2	2" NPT	SPARE FITTING – SECONDARY (1)
V1	2" NPT	NORMAL VENT, PRIMARY – 2" – EXTENDED OUTSIDE OF ENCLOSURE TO ROOF LINE (AT LEAST 12' ABOVE GRADE) SHIPPED LOOSE & INSTALLED BY OTHERS
V2	8" NPT	EMERGENCY VENT, PRIMARY
V3	8" NPT	EMERGENCY VENT, SECONDARY
X2	2" NPT	SPARE FITTING – PRIMARY (2)
X4	4" NPT	SPARE FITTING – PRIMARY (2)

- * EXTEND TANK ALARMS TO REACH GENSET CONTROL PANEL VIA FLEX CONDUIT
- * ACS TO PROVIDE SIGNAGE/LABELING: "DIESEL FUEL, FLAMMABLE, NO SMOKING", & NFPA LABEL.
- * EXTERIOR TANK LABEL – TANK CAPACITY

☐ APPROVED AS IS – Manufacturing may proceed.

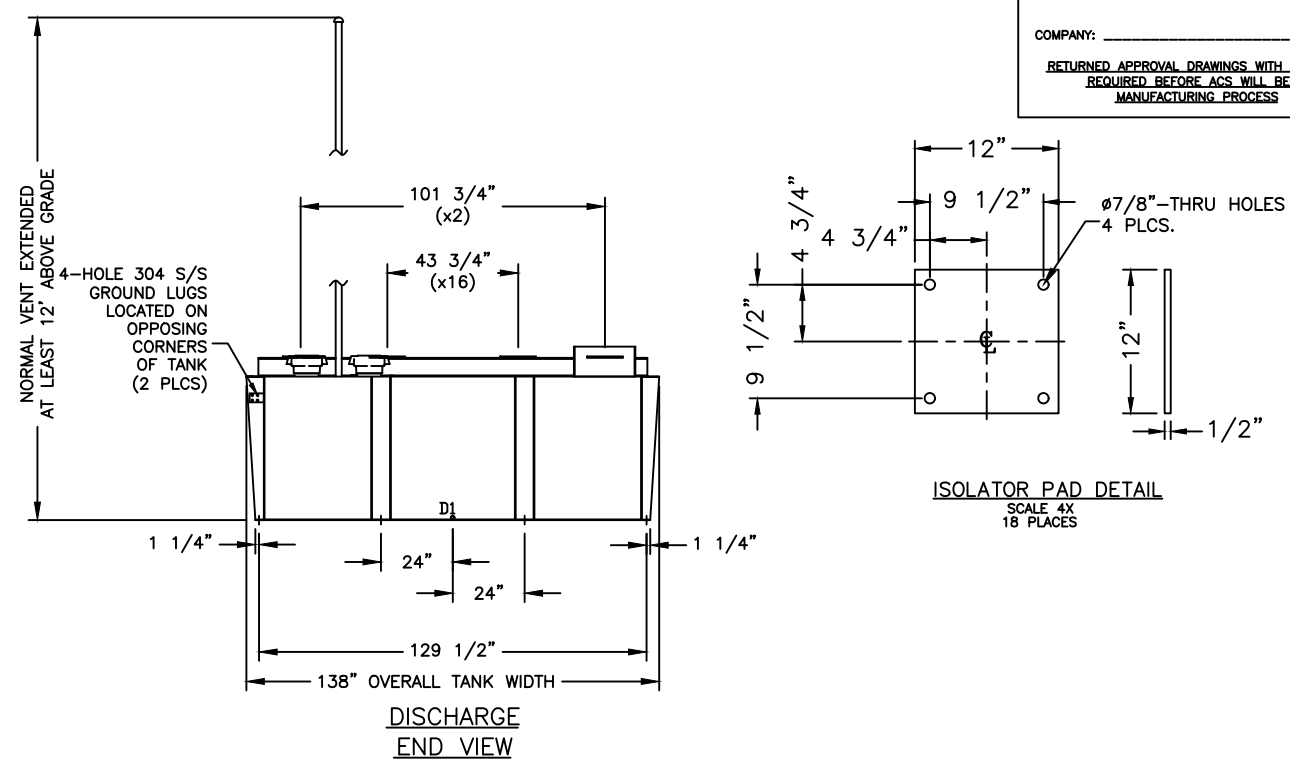
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QUOTE NO.:202306047
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E	-	SEE OTHER SHEETS	CE	SW	08/01/24	TOLERANCES (EXCEPT AS NOTED) DECIMAL $\pm 0.125"$	CUMMINS SOUTHERN PLAINS	DRAWN BY: CE
D	-	UPDATE GALLONS CAP PER DESIGN	CE	SW	05/31/24	FRACTIONAL $\pm 1/8"$		CHECKED BY:
C	-	SEE OTHER SHEETS	CE	SW	05/16/24	ANGULAR $\pm 3^\circ$		CHECKED BY:
B	-	SEE OTHER SHEETS	CE	SW	04/30/24	SCALE 1 TO 1		APPROVED BY: SW
A	-	UPDATE LOC OF E1 & E2 PORTS	CE	SW	03/29/24	DATE 11/29/23		SHEET 3 OF 6
REV	ECO NUMBER	DESCRIPTION	BY	APPD	DATE		DRAWING NUMBER 13556-10	REV. E



Certificate of Compliance

Secondary Containment Aboveground Tank for Flammable Liquids UL 142 Listed File # MH28123

ACS Manufacturing, Inc. certifies the tank listed below has been designed, manufactured and factory leak tested in accordance with the UL Standard for Safety for Steel Aboveground Tanks for Flammable Liquids, UL 142 and complies with UL file number MH28123.

ACS Manufacturing Job Number: 13556-10

Tank Serial Number: SC1744

UL Tag Number: G38432892

Factory leak pressure test on Primary and Secondary containment tanks are performed at 3 PSI.

Factory leak pressure test completed on: 05-22-2024

Factory leak pressure test confirmed by: ACS Quality Assurance

This tank is intended for stationary installation and use in accordance with the Flammable and Combustible Liquids Code, NFPA 30; the Standard for Automotive and Marine Service Station Code NFPA 30A and the Standard for Installation and Of Oil Burning Equipment, NFPA 31, of the National Fire Protection Association.

ACS-FORM-QA45-251009



File MH28123

Vol 1

Authorization Page 1

Issued: 2002-05-03

Revised: 2025-10-28

FOLLOW-UP SERVICE PROCEDURE
(TYPE L)

SPECIAL-PURPOSE TANKS
(EFVT, EFVT7)

Manufacturer:	SEE ADDENDUM FOR MANUFACTURER LOCATIONS
Applicant: (292699-001)	623300 (Party Site) ACS Manufacturing Inc 1601 Commerce Blvd Denison TX 75020 US
Listee/Classified Company: (292699-001)	623300 (Party Site) SAME AS APPLICANT

Use of the Mark

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, or any authorized licensee of UL LLC, including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party. The UL Contracting Party for Follow-Up Services is listed in the addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

It is the responsibility of the Applicant, Manufacturer(s), and Listee/Classified Company to make sure that only the products meeting the aforementioned requirements bear the authorized Marks of UL LLC, or any authorized licensee of UL LLC.

Additional Responsibilities

Additional responsibilities, duties and requirements for the Applicant and Manufacturers are defined under Additional Resources at the following website: <https://www.ul.com/fus>. Manufacturers without Internet access may obtain the current version of these documents from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of these documents or the Follow-Up Service Terms referenced below, please contact UL's Customer Service at <https://www.ul.com/aboutul/locations/>, select a location and enter your request, or call the number listed for that location.

Acceptance of Follow-Up Services

The Applicant and the specified Manufacturer(s) and any Listee/Classified Company in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable service agreement is a Global Services Agreement ("GSA"), the Applicant, the specified Manufacturer(s), and any Listee/Classified Company will be bound to a Service Agreement for Follow-Up Services upon the earliest by any Subscriber of a) use of the prescribed UL Mark, b) acceptance of the factory inspection, or c) payment of the Follow-Up Service fees. The Service Agreement incorporates such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking the following link: <https://www.ul.com/resources/contracts/follow-up-service-terms>. In all other events, Follow-Up Services will be governed by and incorporate the terms of your applicable service agreement and this Follow-Up Service Procedure.

Use and Ownership of the Follow-Up Service Procedure

This Follow-Up Service Procedure, and any subsequent revisions, is the property of UL and is not transferable. This Follow-Up Service Procedure contains confidential information for use only by the Applicant, the specified Manufacturer(s), and representatives of UL and is not to be used for any other purpose. It is provided to the Subscribers with the understanding

that it is not to be copied, either wholly or in part unless specifically allowed, and that it will be returned to UL, upon request.

Definition of Terms

Capitalized terms used but not defined herein have the meanings set forth in the GSA and the applicable Service Terms or any other applicable UL service agreement.

No Third Party Liability

UL shall not incur any obligation or liability for any loss, expense or damages, including incidental, consequential or punitive damages arising out of or in connection with the use or reliance upon this Follow-Up Service Procedure to anyone other than the above Manufacturer(s) as provided in the agreement between UL LLC or an authorized licensee of UL LLC, including UL Contracting Party, and the Manufacturer(s).

Certification Body

UL LLC has signed below solely in its capacity as the certification body to indicate that this Follow-Up Service Procedure fulfills the requirements for certification documentation issued by the certification body. The certification body's accreditation status for the applicable certification scheme and identification of the accreditation body can be found at <https://www.ul.com/resources/accreditation>.

Deborah Jennings-Conner
VP Regulatory Services
UL LLC



FreezPak Jacksonville 2500

Enclosure & UL 142 Sub-Base Tank

Cummins Southern Plains

Submitted By:

ACS Manufacturing, Inc.

1601 Commerce Blvd.

Denison, TX 75020

Jaime Morgan

(903) 462-2008

November 30, 2023



Tank

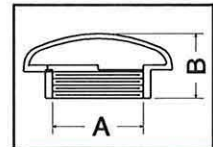


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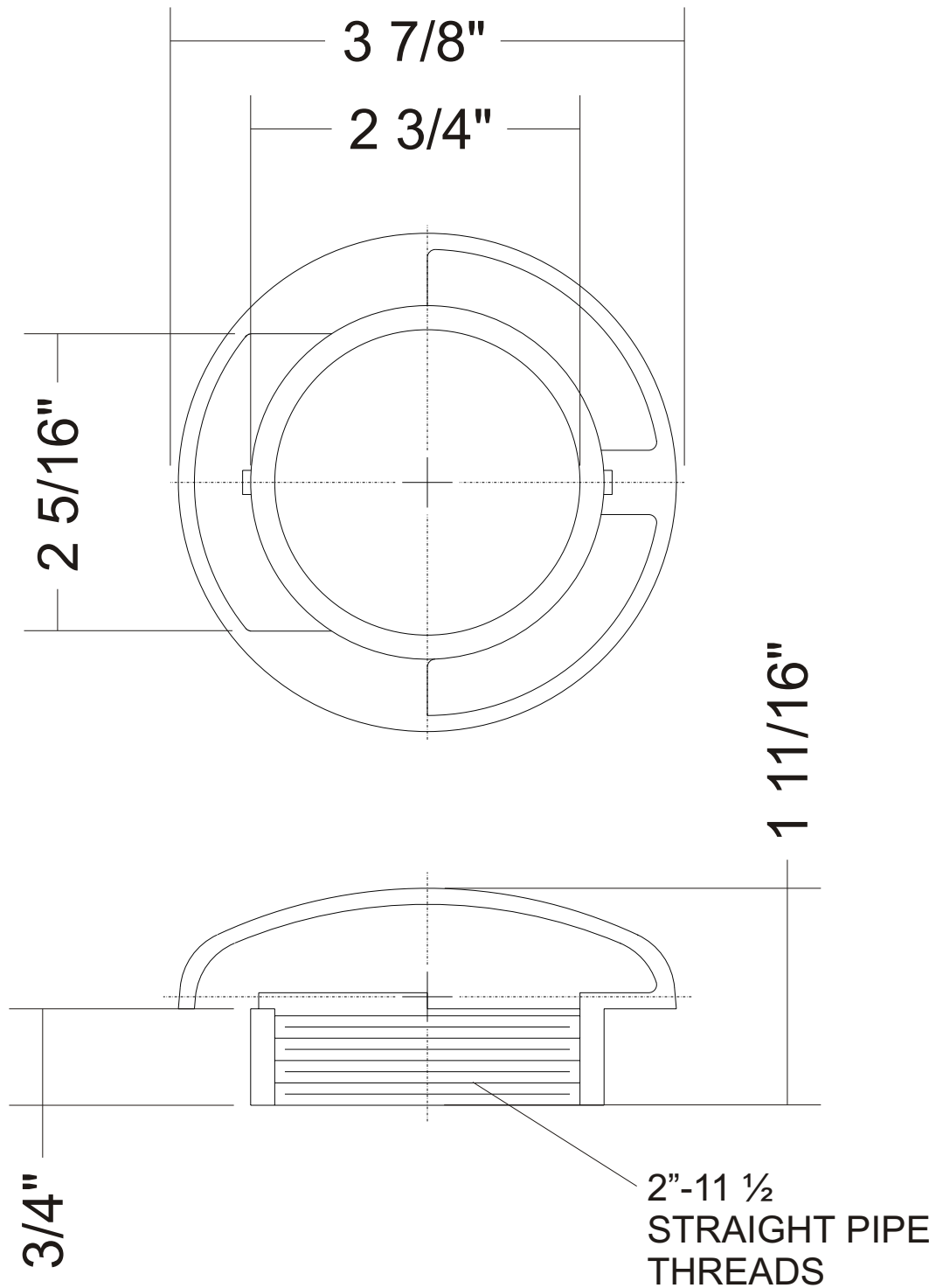
Part No.	Size	lbs	SCFH@		
			2.5psi	A	B
0401-01-0750	3/4"	0.3	4,894	3/4"	1"
0401-01-1000	1"	0.5	8,711	1"	1 1/8"
0401-01-1250	1 1/4"	0.6	13,616	1 1/4"	1 1/2"
0401-01-1500	1 1/2"	0.7	19,532	1 1/2"	1 9/16"
0401-01-2000	2"	1.1	34,846	2"	1 11/16"
0401-01-4000	4"	2.5	54,873	4"	3"

Features

Mushroom style free flow vent is made of cast iron with a 40 mesh brass screen. Domed vent top prevents tank contamination from entering vent lines. NPT thread is standard. Zinc plating available.



- NOTES:
1. TOTAL OPEN AREA
3.1 SQ. IN.
 2. MATERIAL - XX IN PART
NUMBER IS -01- BLACK
IRON, -10- IS GALVANIZED.



CLAY & BAILEY MFG CO.

2" MUSHROOM VENT

DWG: 0401-XX-2000



Model 244 Emergency Vents | 8-inch Male

SPECIFICATION SHEET

UL Listed Emergency vent (pressure relief only) used on aboveground storage tanks, as a code requirement, to help prevent the tank from becoming over-pressurized and possibly rupturing if ever exposed to fire. Vent must be used in conjunction with a "normal vent." Correct application of this vent requires proper vent size and selection for the tank system in order to meet the specific venting capacity.

Code Compliance

API 2000; International Fire Code; National Fire Code of Canada; NFPA 1, 30, 30A, 31, 37, 110; PEI RP200; PEI RP800; Underwriters Laboratories Inc. UL-142, UL-2085, UL- 2244; Underwriters Laboratories of Canada CAN/ULC S601-07, CAN/ULC S602-07, CAN/ULC S652-08.

Additional References

NFPA 30, UL 142, Morrison Venting Guide.

	I.D. Number	A	B	C	D	E	F	G	Diameter	Height	Weight
	244O--0600 AV	8	504,818		8	I	A	AL	11	4.6	33
EVR	244O--0600 AVEVR	8	504,818		8	I	B	AL	11	4.6	33
	244O--0700 AV	8	504,818		16	I	A	AL	11	5.8	62
EVR	244O--0700 AVEVR	8	504,818		16	I	B	AL	11	5.8	62
	244OI-0600 AV	8	504,818		8	I	A	I	11	4.6	39
	244OF-0100 AV	8	504,818	F	8	I	A	AL	11	3.3	33
EVR	244OF-0100AVEVR	8	504,818	F	8	I	B	AL	11	3.3	33
	244OF-0200 AV	8	504,818	F	16	I	A	AL	11	4.5	67
EVR	244OF-0200AVEVR	8	504,818	F	16	I	B	AL	11	4.5	67
EVR	244OM-0600 AV	8	504,818	M	8	I	A	AL	11	5.8	34
EVR	244OM-0600AVEVR	8	504,818	M	8	I	B	AL	11	5.8	34
	244OM-0700 AV	8	504,818	M	16	I	A	AL	11	6.9	63
EVR	244OM-0700AVEVR	8	504,818	M	16	I	B	AL	11	6.9	63
	244OMB0700 AV	8	504,818	M	16	I	A	AL	11	6.9	63
	244OMBSP0600 AV	8	504,818	M	8	I	B	AL	11	5.8	34
	244OMI0600 AV	8	504,818	M	8	I	A	I	11	5.8	42
	244OMI0700 AV	8	504,818	M	16	I	A	I	11	6.9	71

Flange = 14" OD ; eight (8) .88" Diameter holes on 11.75" diameter B.C.

SPECIFICATION OPTIONS:

A—Size: 8"
 B—Venting Capacity/CFH (in 1000's)
 C—Mounting Connection: Female N.P.T. (BLANK); Male N.P.T.(M); Flanged (F);
 D—Pressure Settings: 8, 16 oz/in². Pressure Required to Open Vent.
 E—Cover: Cast Iron Powder Coated (I)
 F—Seat Material: O-Ring Viton A (A) or Viton B (B)
 G—Body Material: Aluminum (AL) or Iron (I)
 Diameter—Dimension Across Vent
 Height—Dimension From Base to Top When Closed
 Weight—Shipping Weight
 Bolt—Zinc plated steel



WARNING: DO NOT FILL OR UNLOAD FUEL FROM A STORAGE TANK UNLESS IT IS CERTAIN THAT THE TANK VENTS WILL OPERATE PROPERLY. Morrison tank vents are designed only for use on shop fabricated atmospheric tanks which have been built and tested in accordance with UL 142, NFPA 30 & 30A, and API 650 and in accordance with all applicable local, state, and federal laws. In normal operation, dust and debris can accumulate in vent openings and block air passages. Certain atmospheric conditions such as a sudden drop in temperature, below freezing temperatures, and freezing rain can cause moisture to enter the vent and freeze which can restrict internal movement of vent mechanisms and block air passages. All storage tank vent air passages must be completely free of restriction and all vent mechanisms must have free movement in order to insure proper operation. Any restriction of airflow can cause excessive pressure or vacuum to build up in the storage tank, which can result in structural damage to the tank, fuel spillage, property damage, fire, injury, and death. Monthly inspection, and immediate inspection during freezing conditions, by someone familiar with the proper operation of storage tank vents, is required to insure venting devices are functioning properly before filling or unloading a tank.

570 E. 7th Street, P.O. Box 238 | Dubuque, IA 52004-0238
 t. 563.583.5701 | 800.553.4840 | f. 563.583.5028

www.morbros.com



MORRISON BROS. CO.

759 Brass Ball Valve • Spec Sheet

759T04

1/4" – 1-1/2"

FEATURES & BENEFITS

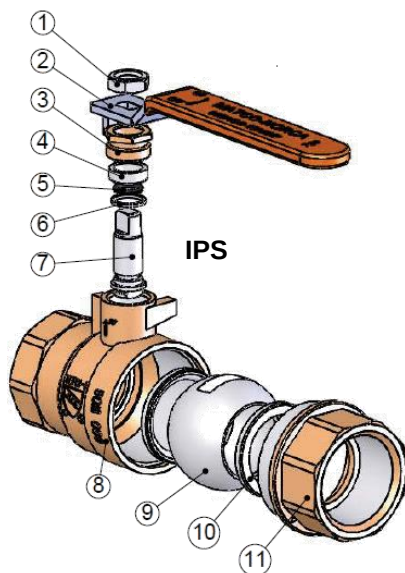
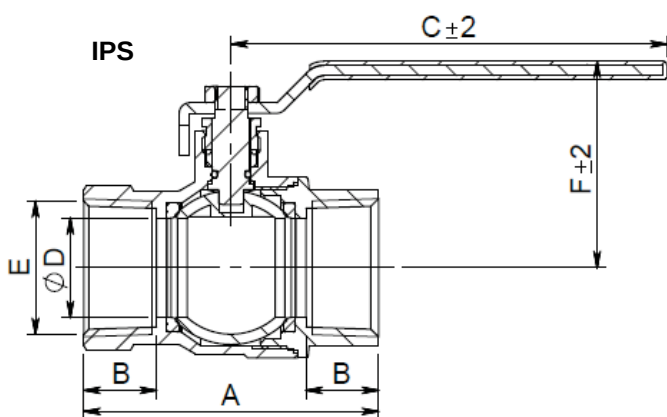
- Full Port
- Forged Brass
- Two Piece Body
- Blow-Out Proof Stem
- Chrome Plated Solid Brass Ball
- Thread Ends Comply Per ANSI B2.1
- Conforms to MSS-SP-110
- 1/4" - 4" Rated: 600 PSI Non-Shock CWP - 150 PSI SWP
- CSA Gas Approved to 2" (IPS Only)

APPLICATIONS

- Commercial & Light Industrial/ Steam, Water, Oil, Gas, Air

IPS DIMENSIONS

Size	A	B	C	D	E	F
1/4"	1.73	0.45	3.07	Ø0.39	18NPT	1.44
3/8"	1.73	0.45	3.07	Ø0.39	18NPT	1.44
1/2"	2.05	0.55	3.07	Ø0.51	14NPT	1.54
3/4"	2.30	0.57	4.14	Ø0.71	14NPT	1.78
1"	2.80	0.69	4.14	Ø0.95	11.5NPT	1.96
1-1/4"	3.15	0.69	4.93	Ø1.20	11.5NPT	2.49
1-1/2"	3.51	0.71	4.93	Ø1.46	11.5NPT	2.67



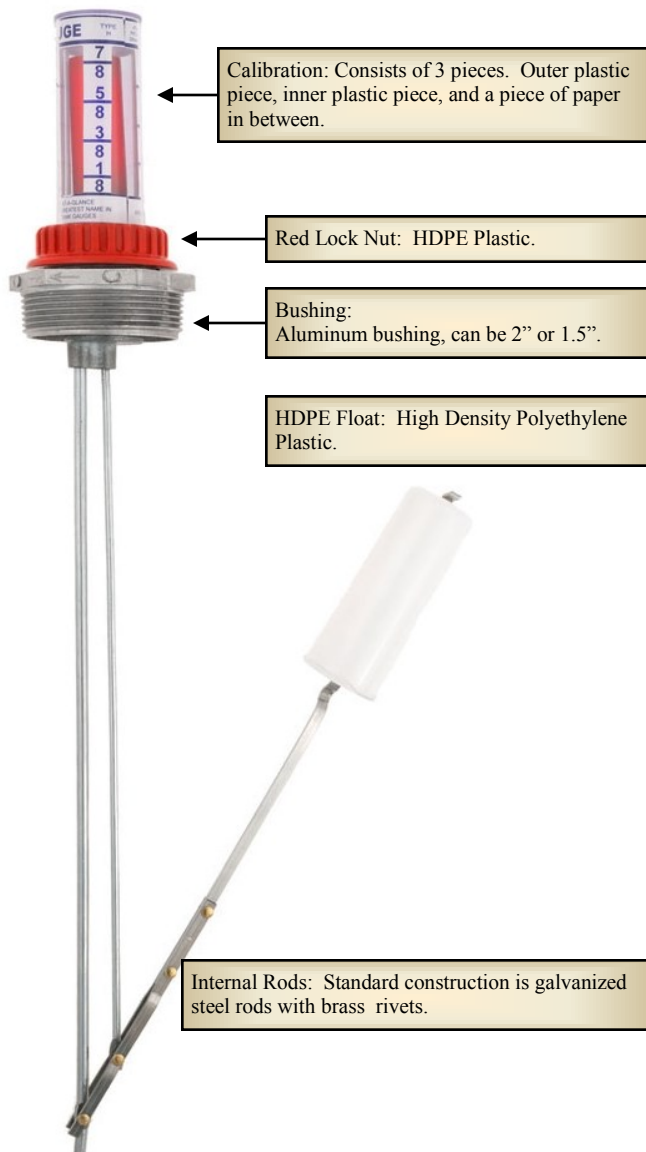
MATERIAL SPECIFICATION

No.	Part	Material
1	Hex Nut	Steel
2	Handle	Steel
3	Packing Nut	Brass
4	Packing Gland	PTFE
5	O-Ring	EPDM
6	Washer	PTFE
7	Stem	Brass C36000
8	Bonnet	Brass C37700
9	Ball	Brass
10	Seat	PTFE
11	Body	Brass C37700



KRUEGER SENTRY GAUGE®

The Therma Gauge—Type H



Part Number—
H-(size opening)-(tank depth)+(ext)-(list options)
Sample—H-2-48+12

What it is:

Top mounted liquid level gauge that can measure from 6 inches to 144 inches in depth. Bushing size can be 2" or 1.5". Gauges are custom made in house to fit your tank. Can also accommodate for double walls and pipe risers. The Type H Gauge has a 2 piece bushing construction that allows you to aim your swing arm away from walls, corners, and other obstructions.

Additional Options - Not included:

Audible Alarm Accessory: This add on feature can turn your mechanical gauge into an audible Hi or Lo level alarm.

LED At-A-Glance Accessory: Another add on feature. This can give your mechanical gauge remote reading capability.

Gauge Guard: A cover that protects the exposed plastic components on top of the gauge.

Replacement Parts -

H-Kit - Replaces all of the gauge components from the red lock nut and up. Includes: Red HDPE Plastic Nut, Duro Nitrile Gasket, Plastic Cellulose acetate inner and outer calibration.

HG-Kit-ALN - Replaces all of the gauge components from the red lock nut and up with upgraded parts. Includes: Aluminum Lock Nut, Duro Nitrile Gasket, Plastic Cellulose acetate outer calibration, Glass inner calibration.

Instructions for Operation:

This gauge is a simple volume reading tool. The top of the red indicator is an indication of your approximate fuel level in your tank. Once installed, you simply view the calibration to monitor your tank level. Indicator is calibrated in eighths of a tank on one side, and quarters of a tank on the other.

Krueger Sentry Gauge
1873 Siesta Lane
Green Bay, WI 54313

www.ksentry.com



Contact us for more info:
Ph: 920-434-8860
Fax: 920-434-8897

Email: info@ksentry.com



Model 9095X 2" Overfill Prevention Valve

9095X-2200AV

SPECIFICATION SHEET

Application

The 9095X is a top-fill overfill prevention valve designed to prevent overfilling storage tanks by providing a positive shut-off during a pressurized fill.

Features

- Fill adaptor and shut-off mechanism are factory-assembled for ease of field installation
- Straight female threaded adaptor facilitates valve installation to a precise set point
- Minimum shut-off height is 1" from the tank top
- Full flow to shut-off point, cushioned closure eliminates shock
- Drop tube adaptor accepts 2" drop fill tubes (Morrison 419)
- Integral pressure relief
- 305C--2000 cap included with 1100 and 2200 models

Options

- Mechanical Test Mechanism
 - Verify the operation of the valve by activating the test mechanism at any time during the filling process

Materials of Construction

- Direct fill adaptor...passivated aluminum
- Remote fill adaptor...powder coated ductile iron & stainless steel
- Shaft, linkage and hardware...stainless steel
- Lower pipe nipple...e-coated steel
- Body... passivated aluminum
- Drop tube adaptor... passivated aluminum

Operational Criteria

- Minimum 5 PSI flow requirements
- Maximum operating pressure is 100 PSI
- Maximum viscosity of 300 centistokes
- A tight fill connection is required for the valve to operate
- The estimated flow rate is 230 GPM at 10 PSI pressure drop (See flow curve on next page)

Code Compliance

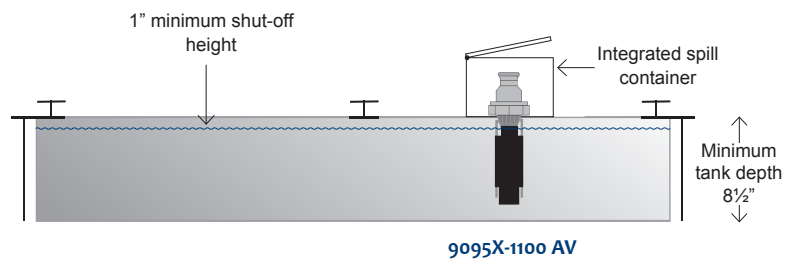
NFPA 30, 30A, UFC, IFC, PEI/RP 200, PEI/RP 600, ULC listed, and Florida DEP EQ-858



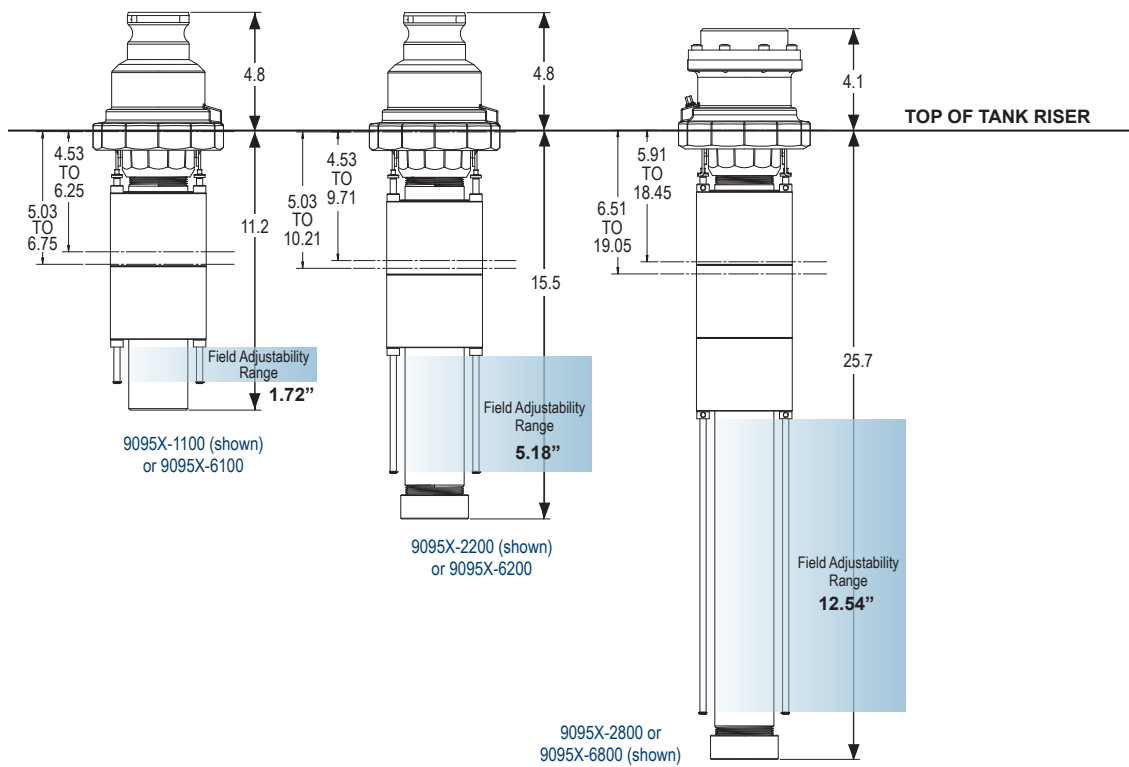
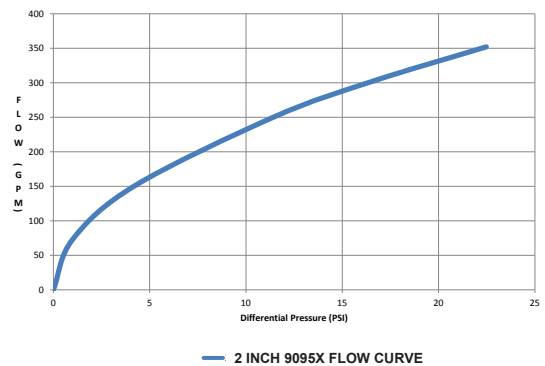
MORRISON BROS. CO.

Item numbers, diagrams, and flow curve on next page.

Item Number	Inlet Size	Tank Connection Size	Drop Tube	Fill Connection	Cap Included	Test Mechanism Available	Application	Weight (lbs)
9095X-1100 AV	2"	4"	No	Direct fill	Y	Y	Generator base tanks with integrated spill container	6.50
9095X-6100 AV	2"	4"	No	Remote fill	N	Y	Generator base tanks with integrated spill container	8.00
9095X-2200 AV	2"	4"	Yes	Direct fill	Y	Y	Low profile tanks; integrated spill container	15.00
9095X-6200 AV	2"	4"	Yes	Remote fill	N	Y	Low profile tanks; integrated spill container	10.50
9095X-2800 AV	2"	4"	Yes	Direct fill	N	Y	General purpose and aviation	14.80
9095X-6800 AV	2"	4"	Yes	Remote fill	N	Y	General purpose and aviation	15.00
9095ATM1000 AK							Test mechanism for 9095X series	



2 INCH 9095X FLOW CURVE (CV=74)





FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

BOB MARTINEZ CENTER
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32399-2400

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

HERSCHEL T. VINYARD JR.
SECRETARY

May 15 2014

Mr. Ken Whisenhunt
ACS Manufacturing, Inc.
1601 Commerce Blvd.
Denison, TX 75020

Subject: Approval of the ACS Manufacturing, Inc.
Model EFVT.MH 28123 Special-purpose Aboveground Storage Tank
File No. EQ-824

Dear Mr. Whisenhunt:

The Office of District and Business Support has concluded its review of the Equipment Approval request dated February 17, 2014, that was submitted for ACS Manufacturing, Inc.'s Model EFVT.MH 28123 Special-purpose Aboveground Storage Tank, pursuant to Rules 62-762.501(2)(b), and 62-762.851(2), Florida Administrative Code (F.A.C.). The Model EFVT.MH 28123 Special-purpose Aboveground Storage Tank is constructed to the performance standards of UL 142 and provides a secondary containment system for the aboveground storage tank system. The technical requirements in the Florida aboveground storage tank system rule are met by the proposed aboveground storage tank system.

Based on the information provided by ACS Manufacturing, Inc., the Model EFVT.MH 28123 Special-purpose Aboveground Storage Tank provides environmental protection substantially equivalent to that provided by compliance with the requirements established in Rule 62-762.501(2)(b), F.A.C. The Model EFVT.MH 28123 Special-purpose Aboveground Storage Tank may be used as an aboveground secondary containment storage tank system.

Pursuant to Rule 62-762.851(2), F.A.C., the request for the use of the ACS Manufacturing, Inc.'s Model EFVT.MH 28123 Special-purpose Aboveground Storage Tank is approved in the State of Florida as an aboveground storage tank system. The installation and integrity testing procedures for the aboveground storage tank system shall be made in accordance with the manufacturer's recommendations.

Please be advised that the above referenced DEP rules are subject to change. If the above rule standards are modified in the future, this order may be modified or rescinded for future upgrades and installations. Additionally, if the product(s) show a consistent pattern of failure(s), and therefore does not provide substantially equivalent environmental protection, the Department may rescind this order.

The Department's Order shall become final unless a timely petition for an administrative hearing is filed under sections 120.569 and 120.57, F.S., within 21 days of receipt of this Order. Persons who have filed such a petition may seek to mediate the dispute and choosing mediation will not adversely affect the right to a hearing if mediation does not result in a settlement. The procedures for petitioning a hearing and pursuing mediation are set forth below.

Persons affected by this Order have the following options:

- A. If you choose to accept the Department's decision regarding the Order, you do not have to do anything. This Order is final and effective as of the date on the top of the first page of this Order.
- B. If you choose to challenge the decision, you may do the following:
 - 1. File a request for an extension of time to file a petition for hearing with the Department's Agency Clerk in the Office of General Counsel within **21** days of receipt of this Order. This request should be made if you wish to meet with the Department in an attempt to resolve any disputes without first filing a petition for hearing or negotiate an agreement to mediate; or
 - 2. File a petition for administrative hearing with the Department's Agency Clerk in the Office of General Counsel within **21** days of receipt of this Order.

In addition to requesting an administrative hearing, any petitioner may elect to pursue mediation under Section 120.573, F.S., and must negotiate an agreement to mediate within **10** days after the deadline for filing a petition.

How to Request an Extension of Time to File a Petition for Hearing

For good cause shown, pursuant to Rule 62-110.106(4), F.A.C., the Department may grant a request for an extension of time to file a petition for hearing. Such a request must be filed (received) by the Agency Clerk in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000, within **21** days of receipt of this Order. Petitioner, if different from the applicant, shall mail a copy of the request to the applicant at the time of filing. Failure to file a petition within this time period shall waive the right of anyone who may request an administrative hearing under Sections 120.569 and 120.57, F.S.

How to File a Petition for Administrative Hearing

A person whose substantial interests are affected by this Order may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received) by the Agency Clerk in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, MS 35, Tallahassee, Florida, 32399-3000, within **21** days of receipt of this Order. Petitioner, if different from the applicant shall mail a copy of the petition to the applicant at the time of filing. Failure to file a petition within this time period shall waive the right of anyone who may request an administrative hearing under Sections 120.569 and 120.57, F.S.

Pursuant to Subsection 120.569(2), F.S., and Rule 28-106.201, F.A.C., a petition for administrative hearing shall contain the following information.

- a) The name, address, and telephone number of each petitioner; the name, address, and telephone number of the petitioner's representative, if any, the site owner's name and address, if different from the petitioner, the DEP facility number, and the name and address of the facility;
- b) A statement of when and how the petitioner received notice of the Department's action or proposed action;
- c) An explanation of how each petitioner's substantial interests are or will be affected by the Department's action or proposed action;
- d) A statement of the disputed issues of material fact, or a statement that there are no disputed facts;

- e) A concise statement of the ultimate facts alleged, including a statement of the specific facts the petitioner contends warrant reversal or modification of the Department's action or proposed action;
- f) A statement of the specific rules or statutes the petitioner contends requires reversal or modification of the Department's action or proposed action; and
- g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the Department to take with respect to the Department's action or proposed action.

How to Pursue Mediation

In addition to requesting an administrative hearing, any petitioner may elect to pursue mediation. The election may be accomplished by filing with the Department a mediation agreement with all parties to the proceeding (i.e., the applicant, the Department, and any person who has filed a timely and sufficient petition for hearing). The agreement must contain all the information required by Rule 28-106.404, F.A.C. The agreement, signed by all parties, must be received by the Agency Clerk in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000 within **10** days after the deadline for filing a petition, as set forth above. Choosing mediation will not adversely affect the right to a hearing if mediation does not result in a settlement.

Pursuant to Rule 28-106.404, F.A.C., an agreement to mediate must include the following.

- (i) The name, address, and telephone number of the persons who may attend the mediation, (also the DEP facility number, the name and address of the facility if applicable);
- (ii) The name, address, and telephone number of the mediator agreed to by the parties;
- (iii) How the costs and fees associated with the mediation will be allocated (the Department will not pay any of the costs of mediation);
- (iv) The agreement of the parties regarding the confidentiality of discussions and documents introduced during mediation to the extent authorized by law;
- (v) The date, time, and place of the first mediation session;
- (vi) The name of the party's representative who shall have authority to settle or recommend settlement; and
- (vii) The signature of the parties.

As provided in Section 120.573, F.S., the timely agreement of all parties to mediate will toll the time limitations imposed by Sections 120.569 and 120.57, F.S., for holding an administrative hearing and issuing a final order. Unless otherwise agreed by the parties, the mediation must be concluded within sixty days of the execution of the agreement. If mediation results in settlement of the administrative dispute, the Department must enter a final order incorporating the agreement of the parties. Persons seeking to protect their substantial interests that would be affected by such a modified final decision must file their petitions within **21** days of receipt of this notice, or they shall be deemed to have waived their right to a proceeding under Sections 120.569 and 120.57, F.S. If mediation terminates without settlement of the dispute, the Department shall notify all parties in writing that the administrative hearing processes under Sections 120.569 and 120.57, F.S., are resumed.

This Order is final and effective as of the date on the top of the first page of this Order. Timely filing a petition for administrative hearing postpones the date this Order takes effect until the Department issues either a final order pursuant to an administrative hearing or mediation settlement.

Mr. Whisenhunt, EQ-824
May 15, 2014
Page 4

Judicial Review

Any party to this Order has the right to seek judicial review of it under Section 120.68, F.S., by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the Agency Clerk of the Department in the Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within thirty days after this order is filed with the clerk of the Department (see below).

Questions

Any questions regarding the Department's review of your equipment approval should be directed to John Svec at (850)245-8845. Questions regarding legal issues should be referred to Rebecca Robinette, Office of General Counsel, at (850)245-2242. Contact with any of the above does not constitute a petition for administrative hearing, a request for a time extension to file a petition for hearing or an agreement to mediate.

Sincerely,



John A. Coates, PE, Assistant Division Director
Division of Waste Management

JAC/js

FILING AND ACKNOWLEDGMENT FILED,
on this date, pursuant to §120.52 Florida Statutes,
with the designated Department Clerk, receipt of
which is hereby acknowledged.

Penningto_JA

Digitally signed by Penningto_JA
DN: o=Florida Dept. of Environmental Protection,
email=jed@fla.dep.state.us, cn=Penningto_JA
Date: 2014.05.16 14:11:54 -0400

Clerk (or Deputy Clerk)

Date



Telefonica - Miami
Enclosure & UL 2085 Sub-Base Tank

Mustang Cat

Submitted By:
ACS Manufacturing, Inc.
1601 Commerce Blvd.
Denison, TX 75020
Philip Macha
(903) 462-2008

January 23, 2014

Telefonica - Miami

Customer: Mustang Cat

Date: January 23, 2014

Drawings:

ACS Drawing # 12129-10

ACS Drawing # 12129-10E

Enclosure & Tank Drawings

Electrical Drawings

Enclosure Accessories & Electrical Components:

Ruskin Spec Sheet - Intake Damper

Ruskin Spec Sheet - Discharge Damper

Cooper Lighting

Cooper Lighting

Leviton

Leviton

Dayton Vent Fan

Square D

Control Damper (Spring Open/Power Close)

Discharge Damper - Gravity

T8 Fluorescent Light Fixtures

24 VDC Lights, 100Watt Compact Fluorescent

Receptacles, 20A, 120VAC

3-Way Light Switches

12" Dayton Vent Fan

100Amp NQ Panelboard

Fuel Tank Components and Accessories:

Clay & Bailey Vent Spec Sheet

Clay & Bailey E-Vent Spec Sheet

At-A-Glance Direct Reading Level Gauge

Overfill Prevention Valve

Caldyn Spring Isolators

NOCO Battery Box

KENCO Oil Reservoir

Foot Valve

2" Normal Vent

8" Emergency Vents

2" Fuel Tank Level Gauge

OPV 95% Guillotine

Caldyn RJE-4240T Spring Isolators

8D Battery Box

5 Gallon Oil Reservoir

1-1/2" Foot Valve

Exhaust System:

Exhaust Muffler

Pancake Muffler



Drawings



Enclosure

CD50 LOW LEAKAGE CONTROL DAMPER

High Performance Extruded Aluminum Airfoil
Class 1A Leakage Rated

APPLICATION

The CD50 is a low leak, extruded aluminum damper designed with airfoil blades for higher velocity and pressure HVAC systems. It meets the leakage requirements of the International Energy Conservation Code by leaking less than 3 cfm/sq. ft. at 1" of static pressure and is AMCA licensed as a Class 1A damper.

STANDARD CONSTRUCTION

FRAME

5" x 1" x 6063T5 extruded aluminum hat channel with .125" minimum wall thickness (127 x 25 x 3.2). Low profile, 5" x 1/2" (127 x 13) top and bottom frames on dampers 12" (305) high and less. Mounting flanges on both sides of frame.

BLADES

6" (152) wide, 6063T5 heavy gage extruded aluminum, airfoil shape.

SEALS

Ruskiprene blade edge seals and flexible metal compressible jamb seals.

BEARINGS

Molded synthetic.

LINKAGE

Concealed in frame.

AXLES

1/2" (13) plated steel hex.

MAXIMUM SIZE

Single section – 60"w x 72"h (1524 x 1829).
Multiple section assembly – Unlimited size.

MINIMUM SIZE

Single blade – 6"w x 5"h (152 x 127).
Two blades, parallel or opposed action: 6"w x 9"h (152 x 229).

TEMPERATURE LIMITS

-72°F (-58°C) and +275°F (+135°C).

FEATURES

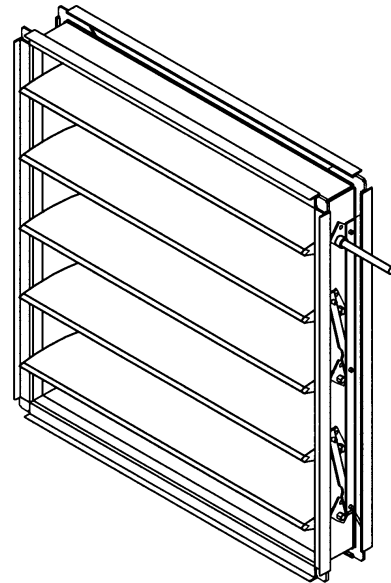
- Airfoil blade design for low pressure drop and less noise generation.
- Positive lock axles, noncorrosive bearings and shake proof linkage for low maintenance operation.
- Blade edge seals mechanically lock into the blade for superior sealing.

OPTIONS

- Factory-installed, pneumatic and electric actuators.
- Enamel and epoxy finishes.
- SP100 Switch Package to remotely indicate damper blade position.
- 16 gage galvanized steel hat channel frame.
- Front, rear or double flange frame with or without bolt holes.
- Face and bypass configurations.

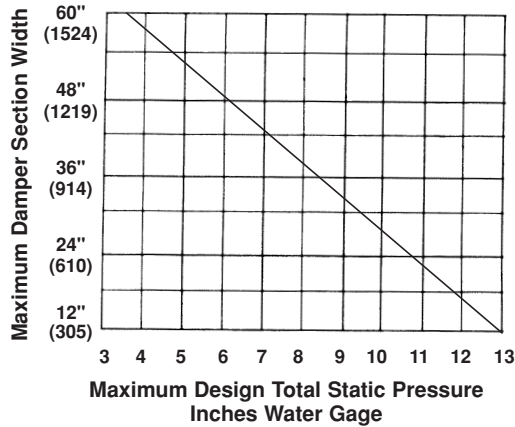
NOTE: Dimensions shown in parenthesis () indicate millimeters.

*Units furnished approximately 1/4" (6) smaller than given opening dimensions.



CD50 AMCA LICENSED PERFORMANCE DATA

CD50 PRESSURE LIMITATIONS



The CD50 may be used in systems with total pressures exceeding 3.5" w.g. by reducing damper section width as indicated. Example: Maximum design total pressure of 8.5" w.g. would require CD50 damper with maximum section width of 36" (914).

Pressure limitations shown above allow maximum blade deflection of 1/180 of span on 60" (1524) damper widths. Deflections in other damper widths (less than 48" [1219]) at higher pressures shown will result in blade deflection substantially less than 1/180 of span.



Ruskin Company certifies that the CD50 shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA International Certified Ratings Seal applies to Air Performance and Air Leakage.

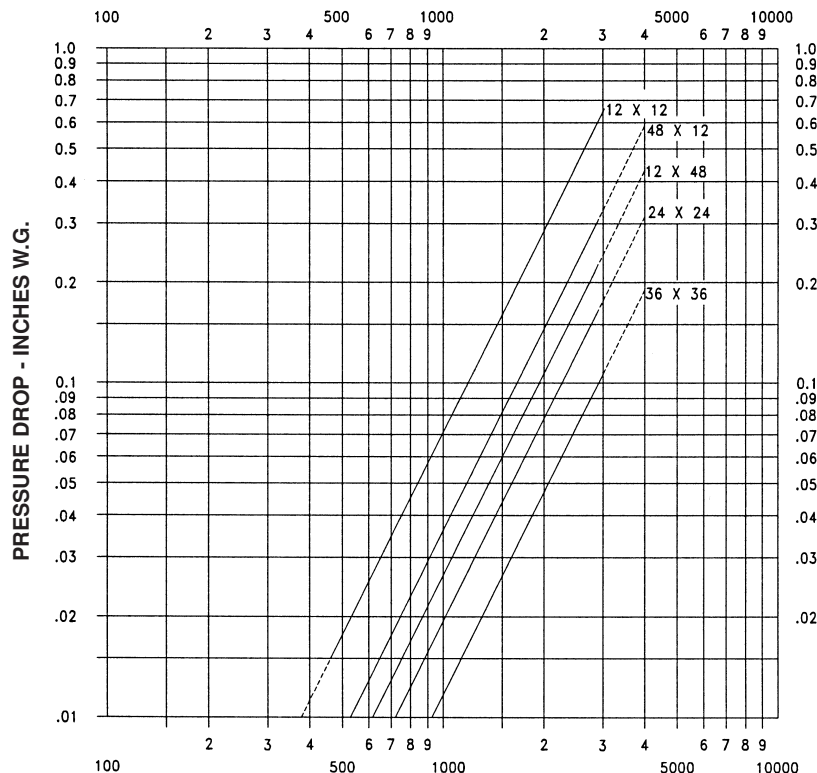
Pressure/ Class	Leakage, ft ³ /min/ft ² (L/s/m ²)			
	Required Rating		Extended Ranges (Opt.)	
	1" (0.25 kPa)	4" (1.0 kPa)	8" (2.0 kPa)	12" (3.0 kPa)
1A	3 (15.2)	8 (40.6)	11 (55.9)	14 (71.1)
1	4 (20.3)	8 (40.6)	11 (55.9)	14 (71.1)
2	10 (50.8)	20 (102)	28 (142)	35 (178)
3	40 (203)	80 (406)	112 (569)	140 (711)

Leakage testing conducted in accordance with AMCA Standard 500-D-98. Torque applied holding damper closed, 5 in. lbs./sq. ft. on opposed blade dampers and 7 in. lbs./sq. ft. on parallel blade

DAMPER WIDTH (INCHES)	1 IN. W.G.	4 IN. W.G.	8 IN. W.G.
12" (305)	1A	1A	1A
24" (610)	1A	1A	1A
36" (914)	1A	1A	1A
48" (1219)	1A	1A	1A
60" (1524)	1A	1A	1A

dampers. Air leakage is based on operation between 50°F to 104°F. All data corrected to represent standard air density 0.075 lbs/ft³.

VELOCITY VS. PRESSURE DROP



FACE VELOCITY - FEET/MINUTE
AMCA FIG. 5.3

CD50 sizes 12 x 12, 24 x 24, 48 x 12, 12 x 48, 36 x 36 (305 x 305, 610 x 610, 1219 x 305, 305 x 1219, 914 x 914)

All data corrected to represent standard air at a density of 0.075 lbs/ft³.

SOUND RATINGS

CD50 SOUND RATINGS

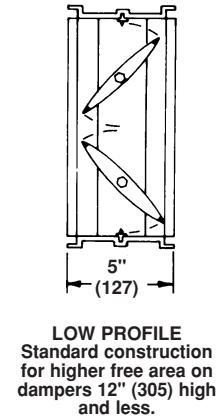
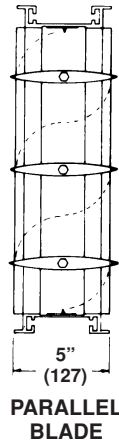
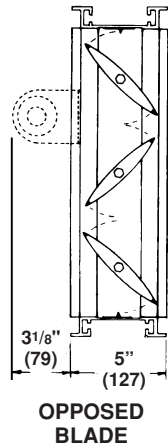
Damper Size	Damper Full Open		Damper 75% Open		Damper 50% Open		Damper 25% Open	
	CFM	NC	CFM	NC	CFM	NC	CFM	NC
12 x 12 (305 x 305)	2000	17	1500	11	1000	11	500	*
	3000	28	2250	22	1500	19	750	*
	4000	35	3000	29	2000	24	1000	*
18 x 18 (457 x 457)	2250	17	1688	10	1125	21	563	*
	4500	33	3375	26	2250	32	1125	*
	6750	43	5063	37	3375	40	1688	15
24 x 24 (610 x 610)	4000	11	3000	10	2000	26	1000	*
	8000	32	6000	30	4000	38	2000	21
	12000	43	9000	42	6000	46	3000	31

NC = Noise criteria in Decibels is based on 10db room effect and 10db of room attenuation.

* = Less than 10 NC

See ASHRAE Handbook (1977 Fundamentals, Chapter 7) for explanation of NC Ratings.

DIMENSIONAL INFORMATION



CD50 SUGGESTED SPECIFICATION

Furnish and install, at locations shown on plans, or in accordance with schedules, Low leakage dampers shall meet the following minimum construction standards: Frames shall be 5" x 1" x .125" (minimum thickness) (127 x 25 x 3.2) 6063T5 extruded aluminum hat channel with hat mounting flanges on both sides of the frame. Each corner shall be reinforced with two die formed internal braces and machine staked for maximum rigidity. Blades shall be airfoil type extruded aluminum (maximum 6" [152] depth) with integral structural reinforcing tube running full length of each blade.

Blade edge seals shall be extruded double edge design with inflatable pocket which enables air pressure from either direction to

assist in blade to blade seal off. Blades seals shall be mechanically locked in extruded blade slots, yet shall be easily replaceable in field. Adhesive or clip-on type blade seals are not acceptable. Bearings shall be non-corrosive molded synthetic. Axles shall be hexagonal (round not acceptable) to provide positive locking connection to blades and linkage. Linkage shall be concealed in frame. Submittal must include leakage, maximum air flow and maximum pressure ratings based on AMCA Publication 500. Damper shall be tested and licensed in accordance with AMCA 511 for Air Performance and Air Leakage. Damper widths from 12" to 60" (305 to 1524) wide shall not leak any greater than 8 cfm sq. ft. @ 4" w.g. and a maximum of 3 CFM sq. ft. @ 1" w.g. Dampers shall be in all respects equivalent to Ruskin Model CD50.



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Kansas City, MO 64030
(816) 761-7476
FAX (816) 765-8955
www.ruskin.com

~~BD2/A1~~ AND **BD2/A2** BACKDRAFT DAMPERS

STANDARD CONSTRUCTION

FRAME

6063T5 extruded aluminum, .090" (2.3) wall thickness, mitered corners.

BLADES

~~BD2/A1 – .025 (.6) formed aluminum, extruded vinyl edge seals.~~

BD2/A2 – 6063T5 extruded aluminum, .050" (1.2) wall thickness, extruded vinyl edge seals.

BEARINGS

Synthetic.

LINKAGE

Concealed in frame.

FINISH

Mill.

TEMPERATURE LIMITS

-40°F to +200°F (-40°C to +93°C).

MAXIMUM SPOT VELOCITY

~~BD2/A1 – 1500 fpm.~~

BD2/A2 – 2500 fpm.

MINIMUM SIZE

6"w x 6"h (152 x 152).

MAXIMUM SIZE

Single section – 40"w x 48"h (1016 x 1219).

Note:

When used in fan discharge applications, damper should be located at a minimum distance equal to half the fan diameter away from the fan discharge.

Dimensions in parentheses () indicate millimeters.

FEATURES

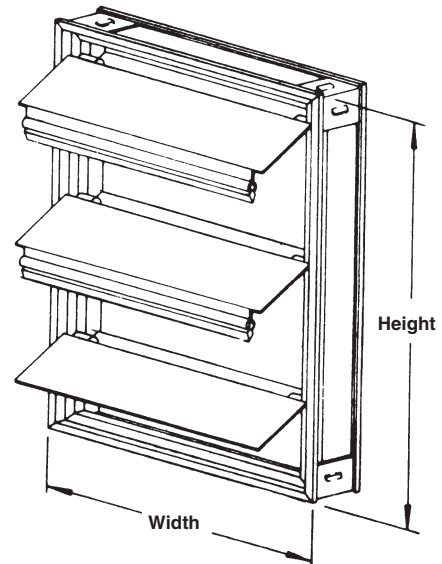
The BD2 dampers offer backdraft protection in light to medium duty applications that demand less than 12 cfm per square foot of leakage at 1/2" w.g. Non-metallic blade-to-blade seal provides quiet operation during the highest spot velocities.

The damper's good looking appearance is maintained by sturdy, corrosion resistant aluminum construction. Contemporary styling features blades that overlap the frame for optimum resistance to weather.

VARIATIONS

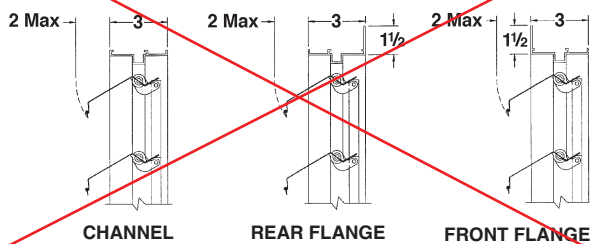
The following variations to the BD2s are available at additional cost:

- Rear mounted screen
- Special finishes
- Electric actuators

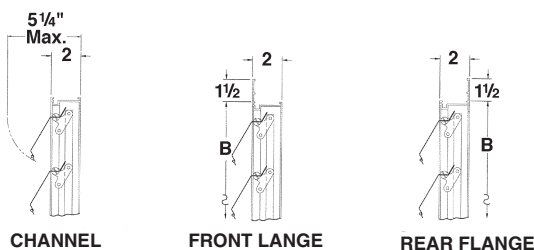


HORIZONTAL MOUNT
(Upward air flow only)

~~BD2/A1 FRAME CONSTRUCTION~~



BD2/A2 FRAME CONSTRUCTION



*Unit is furnished approximately 1/4" (6) smaller than given opening dimensions.

SUGGESTED SPECIFICATION

Furnish and install at locations on plans or in accordance with schedules backdraft dampers that meet the following minimum construction standards: Frame shall be .090" (2.3) 6063T5 extruded aluminum wall thickness with mitered corners. Blades shall be (specify) .025" (.6) formed aluminum with extruded vinyl edge seals or .050" (1.3) 6063T5 extruded aluminum with extruded vinyl

edge seals. Blade edge seals shall be mechanically locked into blade edge; adhesive type seals are unacceptable. Bearings shall be corrosion resistant synthetic and linkage shall be concealed in frame for low pressure drop and noise. Damper shall be, in all respects, equivalent to Ruskin model (specify) BD2/A1 or BD2/A2.

PERFORMANCE DATA

AMCA Standard 500 provides a reasonable basis for testing and rating dampers. Testing to AMCA 500 is performed under a certain set of laboratory conditions. This does not guarantee that other conditions will not occur in the actual environment where dampers must operate.

Designs should provide a reasonable safety factor for damper performance by selecting at some point below damper leakage or pressure drop system requirements.

BD2A1

DAMPER WIDTH	MAXIMUM BACK PRESSURE (EXTERNAL WIND VELOCITY)	MAXIMUM SYSTEM VELOCITY	LEAKAGE*	
			% OF MAX. FLOW	CFM/ SQ. FT.
40" (1016)	55 mph/1.5" w.g.	1000 fpm	1.5	15.0
36" (914)	70 mph/2.5" w.g.	1000 fpm	1.5	15.0
24" (610)	85 mph/3.5" w.g.	1000 fpm	2.0	20.0
12" (305)	95 mph/4.5" w.g.	1000 fpm	4.0	40.0

OPERATIONAL PRESSURES INCHES W.G.		
DAMPER MODEL	BLADES START TO OPEN	BLADES FULLY OPEN
BD2A1	.03	.10
BD2A2	.10	.15

BD2A2

DAMPER WIDTH	MAXIMUM BACK PRESSURE (EXTERNAL WIND VELOCITY)	MAXIMUM SYSTEM VELOCITY	LEAKAGE*	
			% OF MAX. FLOW	CFM/ SQ. FT.
40" (1016)	75 mph/3" w.g.	1500 fpm	1.0	15.0
36" (914)	90 mph/4" w.g.	1500 fpm	1.0	15.0
24" (610)	100 mph/5" w.g.	1500 fpm	1.17	17.5
12" (305)	100 mph/6" w.g.	1500 fpm	2.67	40.0

*Leakage information based on pressure differential of 1" w.g.

INSTALLATION INSTRUCTIONS

1. When used in fan discharge applications, damper should be located at least one-half the fan diameter away from the fan.
2. For proper operation, damper must be installed square and free from racking.
3. Bracing of multiple section assemblies: The BD2/A1, BD2/A2 is intended to be self supporting only in the largest single section

size. Multiple section damper assemblies may require bracing to support the weight of the assembly and to hold against system pressure. Ruskin recommends appropriate bracing to support the weight of the assembly and to hold against system pressure. Ruskin recommends appropriate bracing to support the damper horizontally at least once for every 8 feet of damper width. Vertical assemblies and higher system pressures may require more bracing.

RUSKIN®

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DESCRIPTION

The APHDVT Series is a contemporary looking industrial Vaportite fixture that features rugged and durable construction. The APHDVT incorporates a metal gear tray inside a reinforced fiberglass housing with a high impact diffuser. This Vaportite series is suitable for interior and exterior applications and can be surface or chain mounted.

The APHDVT Series has been designed for commercial institutional and industrial environments where weathering, high temperature, humidity and dust or corrosive fumes are present.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction

Fiberglass housing with embossments (4' unit), provides mounting flexibility on uneven surfaces. Hub with 1/2" conduit entry provided at each end of housing (standard) for continuous feed. Cam latches create positive seal between housing, and diffuser.

Electrical*

Unit has metal gear tray secured by internal fasteners equipped with T8 NEMA premium ballast. Rotor lock lampholders. Electrical components and fixture are UL/CUL listed for Wet Locations.** IP65 approved.

Shielding

New contemporary styled clear lens w/ impact resistant additives and linear prisms.

Mounting

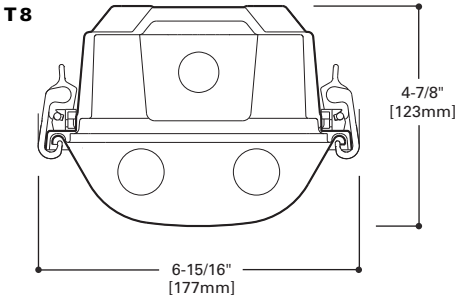
Surface mount fixture using two (2) galvanized brackets (included per 4' section).



APHDVT
232

4' INDUSTRIAL
2 LAMP

Vaportite Industrial



Catalog Number	Product Description	Wattage	UPC
APHDVT-232	48", 2 LAMP, HEAVY DUTY VAPORTITE	32W	080083623563

SHIPPING INFORMATION

Catalog Number	WGT.	Pallet Qty.
APHDVT-232	11.77	35

LAMPS CONTAIN MERCURY. DISPOSE ACCORDING TO LOCAL, STATE OR FEDERAL LAWS

LINEAR DISCONNECT

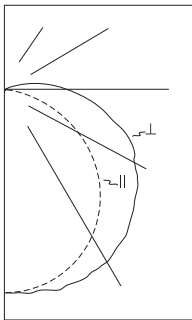
Safe and convenient means of disconnecting power.

*Reference the lamp/ballast data in the Technical Section for specific lamp/ballast requirements.

**Not Suitable for Wet Locations if EL4 Option is added. Consult Pre Sales Technical Support.



PHOTOMETRICS

**APHDVT-232**

(1) Electronic Ballasts

(2) T32WT8 lamps
2850 lumens

Spacing criterion:

(H) 1.3 x mounting
height, (L) 1.5 x
mounting height

Efficiency 77.4%

Test Report:

APHDVT-232.IES

Candela

Angle	Along H	45°	Across L
0	1103	1103	1103
5	1097	1108	1107
10	1083	1107	1106
15	1059	1091	1127
20	1025	1089	1113
25	983	1058	1098
30	932	1035	1088
35	870	991	1052
40	801	952	1024
45	725	892	971
50	640	831	920
55	548	753	878
60	451	683	814
65	352	611	771
70	251	550	698
75	155	471	592
80	77	367	513
85	28	290	427
90	6	217	342

Coefficients of Utilization

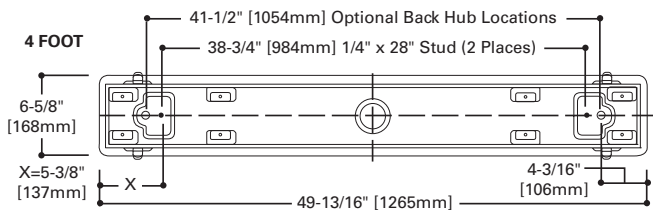
rc rw RCR	Effective floor cavity reflectance												20%											
	80%				70%				50%				30%				10%				0%			
	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0	0	0	0
0	91	91	91	91	89	89	89	89	84	84	84	79	79	79	75	75	75	73	73	73	73	73	73	73
1	82	78	74	70	79	75	72	69	71	68	66	67	65	63	64	62	60	58	58	58	58	58	58	58
2	74	67	61	56	71	65	60	55	61	57	53	58	54	51	55	52	49	47	47	47	47	47	47	47
3	67	58	52	46	65	57	51	46	54	49	44	51	47	43	49	45	42	40	40	40	40	40	40	40
4	61	51	44	39	59	50	43	38	48	42	37	45	40	36	43	39	35	33	33	33	33	33	33	33
5	56	45	38	32	54	44	37	32	42	36	31	40	34	30	38	33	30	28	28	28	28	28	28	28
6	51	40	33	28	49	39	32	27	37	31	27	36	30	26	34	29	26	24	24	24	24	24	24	24
7	47	36	29	24	45	35	28	23	33	27	23	32	27	23	30	26	22	20	20	20	20	20	20	20
8	43	32	25	20	42	31	25	20	30	24	20	29	23	19	27	23	19	17	17	17	17	17	17	17
9	40	29	22	17	38	28	22	17	27	21	17	26	20	17	25	20	16	15	15	15	15	15	15	15
10	37	26	20	15	36	26	19	15	24	19	15	23	18	15	22	18	14	13	13	13	13	13	13	13

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	899	15.8	20.4
0-40	1512	26.5	34.3
0-60	2847	49.9	64.5
0-90	4169	73.1	94.5
0-180	4413	77.4	100.0

Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	5519	7213	7212
55	5083	6756	7098
65	4347	6377	7074
75	3001	6097	6510
85	1349	5151	6092

MOUNTING DATA

For complete product data, reference the Fluorescent Specification binder. Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

VXBR100DG

Die cast aluminum construction. Wall bracket plus junction box with sturdy mounting lugs. Medium base socket, 1/2" or 3/4" NPS hub size and a variety of globes. ~~incandescent lamp~~ A21 for 100 series, PS25 for 200 Series. Lamp not supplied. CFL: 13 & 22 watt lamp supplied.

Color: Natural

Weight: 4.1 lbs



100 Watt 24VDC Light Fixture

Compact Fluorescent

Lamp Info

Type: A19
Watts: 150W
Shape/Size: N/A
Base: N/A
ANSI: N/A
Hours: 0
Lamp Lumens: 0
Efficacy: N/A

Ballast Info

Type: 0
120V: N/A
208V: 0
240V: N/A
277V: N/A
Input Watts: 0W
Efficiency: N/A

Technical Specifications

UL Listing:

Suitable for wet locations. Suitable for use in dwellings. Suitable for use with 90°C supply wiring. Complies with UL Standard 1598. For non-hazardous locations where the lamp, socket and wiring require protection from rain, corrosive fumes, non-combustible dusts, moisture, non-explosive vapors and gases.

Wattage:

See catalog number chart for maximum wattage with clear glass, colored glass and Permaglobes.

Globes:

Supplied with clear heat resistant glass globes unless otherwise stated. Colored and white glass globes available. Unbreakable RAB Permaglobes available in clear and in color.

Optional Reflectors:

Highly reflective white baked polyester epoxy powder finish over a heavy gauge aluminum base. Reflectors thread onto fixtures. See RV series.

Socket:

Premium porcelain with 150°C 8" leads attached. Fastened with 2 brass screws.

Die Cast Guard:

Supplied with one piece die cast guard with set screw .

Maximum Watts:

150 watts .

Colored Globe Maximum Watts:

100 watts .

Patents:

RAB sensor and fixture designs are protected under U.S. and International Intellectual Property laws.

Country of Origin:

Designed by RAB in New Jersey and assembled in Taiwan.

Trade Agreements Act Compliant:

This product is a product of Taiwan and a "designated country" end product that complies with the Trade Agreements Act.

GSA Schedule:

Suitable in accordance with FAR Subpart 25.4.





Color: Brown



NEMA: 5-20R



7899-1

Description

20 Amp, 125 Volt Receptacle, 20 Amp Feed-Through, Monochromatic, SmartLock Pro GFCI, back and side wired, nylon wallplate and screws included - Ivory

Product Features

Grounding: GFCI Ground Fault

Feature: SmartLock, Buttons Match Face Color

Amperage: 20 Amp

Voltage: 125 Volt

NEMA: 5-20R

Pole: 2

Wire: 3

Trip Level: 5mA plus or minus 1mA

Termination: Back & Side 20A Feed-Thru

Face Material: Thermoplastic Nylon

Body Material: Polycarbonate

Strap Material: Steel

Color: Brown

Standards and Certifications: UL/CSA

Warranty: 2-Year Limited

Notes: w/ Wallplate

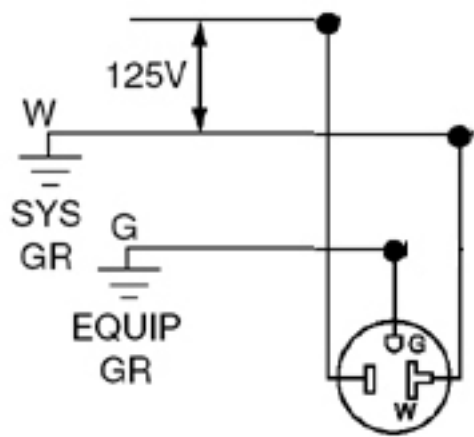
Features and Benefits

- Automatically test the GFCI every time the RESET button is pushed in. The GFCI will not reset if the GFCI circuit is not functioning properly.
- By blocking reset of the GFCI if protection has been compromised, SmartLockPRO reduces the possibility of end-users incorrectly assuming that a reset GFCI outlet is providing ground fault protection when it actually is not.
- A line-load reversal diagnostic feature is provided which prevents the GFCI from being reset and stops power from being fed to the GFCI receptacle face or through to downstream devices. A green LED indicator on the GFCI's face also illuminates to alert the installer to the line-load wiring reversal.
- The trip latch mechanism in SmartLockPro GFCIs is a one piece "T" design for efficient operation.
- There are 4 sets of contacts for load terminals and face. SmartLockPRO GFCIs use a patented bifurcated bridge contact for efficient operation.
- Trip threshold meets or exceeds UL requirements for tripping time.
- Improved immunity to high-frequency noise reduces nuisance tripping.
- Advanced electronics design provides superior resistance to electrical surges and over-voltages.
- Expanded wiring options with nine back-wire holes. Two for each line and load connection plus one for ground with an internal clamp.
- Silver alloy contacts.
- Compatible with all Decora devices and wallplates; available in select Decora colors.

AC Horsepower Ratings	
At Rated Voltage	1 HP
Environmental Specifications	
Flammability	Rated V-2 per UL94
Operating Temperature	-35C to 65C
Mechanical Specifications	
Terminal ID	Brass-Hot, Green-Ground, Silver-Neutral
Terminal Accom.	14-12 AWG
Product ID	Ratings are permanently marked on device

Electrical Specifications	
Dielectric Voltage	Withstands 1500V per UL498
Current Limiting	10kA
Temperature Rise	Max 30C after 50 cycles OL at 150 percent rated current
Material Specifications	
Face Material	Thermoplastic Nylon
Body Material	Polycarbonate
Line Contacts	Brass Triple-Wipe
Terminal Screws	Plated Steel
Grounding Screw	Plated Steel
Yoke	Zinc-Plated Steel
Clamp Nuts	Zinc-Plated Steel
Notes	w/ Wallplate
Standards and Certifications	
NEMA	WD-6
ANSI	C-73
UL498	File E13399
CSA C22.2 No. 42	File LR-57811
NOM	057

Wiring Diagram



5-20R

SPECIFICATION SUBMITTAL

JOB NAME: 	CATALOG NUMBERS: 	
JOB NUMBER: 		

Leviton Manufacturing Co., Inc.

201 North Service Road, Melville, NY 11747

Telephone: 1-800-323-8920 · FAX: 1-800-832-9538 · Tech Line (8:30AM-7:30PM E.S.T. Monday-Friday): 1-800-824-3005

Leviton Manufacturing of Canada, Ltd.

165 Hymus Boulevard, Pointe Claire, Quebec H9R 1E9 · Telephone: 1-800-469-7890 ·

FAX: 1-800-824-3005 · www.leviton.com/canada

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Lago Tana 43, Mexico DF, Mexico CP 11290 · Tel.: (+52)55-5082-1040 · FAX: (+52)5386-1797 ·

www.leviton.com.mx

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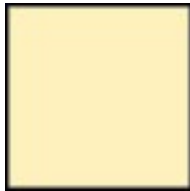
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www.leviton.com/international/contacts/





Color: Ivory



1223-2I

Description

20 Amp, 120/277 Volt, Toggle 3-Way AC Quiet Switch, Extra Heavy Duty Spec Grade, Self Grounding, Back & Side Wired - IVORY

Product Features

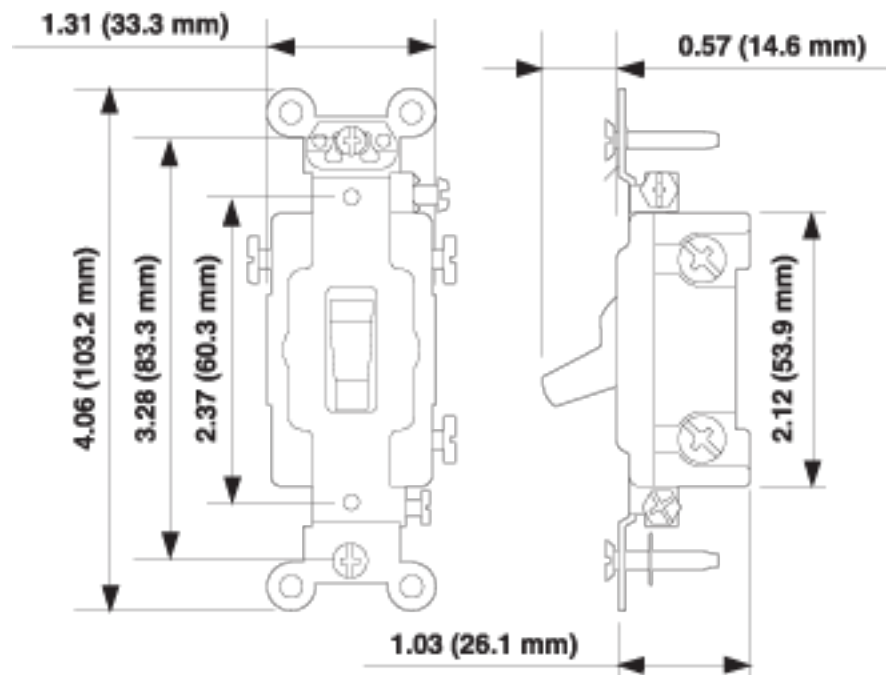
Color: Ivory

AC Horsepower Ratings	
HP Rating	1HP-120V 2HP-240V
Max. Amperage	16 Amp
Environmental Specifications	
Flammability	Rated V-2 per UL94
Operating Temperature	-40°C to 65°C
Mechanical Specifications	
Terminal ID	Brass-Hot Black-Hot White-Neutral Green-Gnd
Terminal Accom.	14-#10 AWG back wired; #14-#12 AWG side wired
Product ID	Ratings are permanently marked on device
Torque Range	12-14 inch pounds

Electrical Specifications	
Amperage	20 Amp
Voltage	120/277 Volt
Grounding	Self Grounding
Dielectric Voltage	Withstands 1500V for 1 minute
Overload UL20 Test	100 cycles of OL at 4.8 times rated current
Temperature Rise	Maximum 30 degress C rise
Endurance	50,000 cycles minimum

Material Specifications	
Strap Material	.048" Thick Galvanized Steel
Base Material	Thermoplastic
Toggle	Polycarbonate
Cover Material	Thermoplastic
Contact Material	Silver Alloy
Terminal Screws	Brass 8-32
Grounding Screw	Brass 8-32
Ground Clips	Brass
Color	Ivory

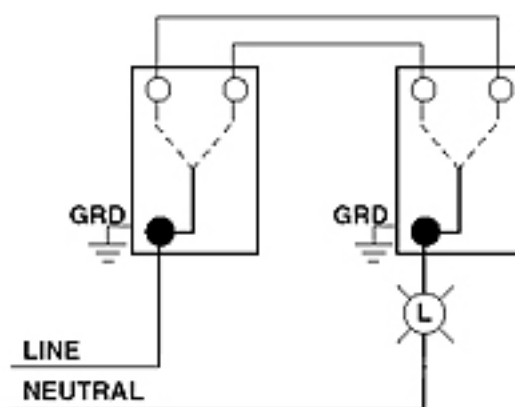
Standards and Certifications	
NEMA	WD-1 & WD-6
ANSI	C-73
UL Fed Spec WS896E	File #E7458
UL Standard	UL 20
CSA C22.2 No. 111	File #152105
NOM	057
RoHS	Compliant
Warranty	10 Year Limited



3-WAY

Wiring Diagram

3-Way to 3-Way



SPECIFICATION SUBMITTAL

JOB NAME:	CATALOG NUMBERS:	
JOB NUMBER:		

Leviton Manufacturing Co., Inc.

201 North Service Road, Melville, NY 11747

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www.leviton.com/international/contacts/



Shutter-Mount Exhaust Fans

- Mount: vertical only
- Motors: totally enclosed, 115V, 60 Hz, thermally protected
- Max. inlet/ambient temp.: 104°F
- 7" through 24" dia. propellers are aluminum; 30" and 36" propellers are galvanized steel
- OSHA-compliant gray polyester powder-coated wire guards

Fans come fully assembled with shutters and pre-punched mounting holes; simply frame an opening and mount. UL and C-UL Listed.

INSULATED FAN COVERS

Fit snugly over fan guard using high strength magnets to provide wind, draft, and weather insulation. Interior installation; covers store compactly when not in use.



No. 1HLA3



No. 6HKV6

Propeller Dia. (in.)	CFM @ 0.000" SP	CFM @ 0.125" SP	Motor RPM	Motor HP	Full Load Amps	Bearing Type	Sones @ 0.000" SP @ 5 ft.	Speed Control	H (in.)	W (in.)	Max. Depth (in.)	Sq. Opening Req. (in.)	No. of Blades	EXHAUST FANS Item No.	INSULATED FAN COVERS Item No.
Speed Controllable															
7	140	—	1550	1/25	1.5	Sleeve	4.8	1DGV1	11 1/2	11 1/2	10 1/2	8 1/2	5	1HKL9 ✓	6HKV6
10	585	285	1550	1/25	1.5	Sleeve	6.6	1DGV1	13 1/2	13 1/2	10 1/2	10 1/2	5	1HLA1 ✓	6HKV7
12	800	470	1550	1/25	1.5	Sleeve	7.6	1DGV1	15 1/2	15 1/2	12 1/2	13	3	1HLA2 ✓	6HKV8
16	1095	720	1550	1/20	1.0	Sleeve	8	1DGV1	19 1/2	19 1/2	14 1/2	17	3	1HLA3 ✓	6HKV9
18	1860	850	1075	1/15	1.3	Sleeve	8.4	1DGV1	21 1/2	21 1/2	14 1/2	19	3	1HLA4 ✓	6HKW0
20	2830	2255	1100	1/4	5	Sleeve	11.3	1DGV2	23 1/2	23 1/2	17 1/2	21	3	1HLA9 ✓	6HKW1
24	3240	2485	1075	1/4	4	Ball	11.7	1DGV2	27 1/2	27 1/2	19 1/2	25	3	1HLB3 ✓	6HKW2
Single-Speed															
18	2590	2190	1725	1/4	4.5	Ball	14.3	—	21 1/2	21 1/2	18 1/4	19	3	1HLA5 ✓	6HKW0
20	2955	2450	1725	1/4	4.5	Ball	14.4	—	23 1/2	23 1/2	17 3/4	21	3	1HLA8 ✓	6HKW1
20	3635	3115	1725	1/3	4.8	Ball	16.9	—	23 1/2	23 1/2	17 1/2	21	3	1HLA7 ✓	6HKW1
24	3270	2515	1075	1/4	4.1	Sleeve	10.7	—	27 1/2	27 1/2	18 1/2	25	3	1HLB2 ✓	6HKW2
24	3970	3240	1075	1/3	5.3	Sleeve	12.1	—	27 1/2	27 1/2	17 3/4	25	3	1HLB4 ✓	6HKW2
20	2985	2445	1725	1/4	4.3	Ball	14.3	—	23 1/2	23 1/2	17 1/2	21	3	1HLA6 ±✓	6HKW1
30	6075	4195	825	1/3	4.5	Ball	13.5	—	33 1/2	33 1/2	18 1/2	31	3	1HLB5 ✓	6HKW3
36	8225	6480	825	1/2	6.4	Ball	14.7	—	39 1/2	39 1/2	18 1/2	37	3	1HLB6 ✓	6HKW4
Two-Speed															
24	3985/3760	3255/2995	1075	1/3	5.3	Sleeve	11.8/11.3	1DGZ9	27 1/2	27 1/2	18 1/2	25	3	1HLB1 ✓	6HKW2

‡ Limited availability.

2-Speed Fan Switch

For use with No. 1HLB1 and other 2-speed fans. Mounts on standard 4" x 2" single gang box. DPDT (center off).

Voltage	Max. Amps	Item No.	\$ Each
120	15	1DGZ9	19.42



Dayton®

Corrosion-Resistant Shutter-Mount Exhaust Fans

- Mount: vertical only
- Motors: totally enclosed, 115V, 60 Hz, thermally protected
- Max. inlet/ambient temp.: 104°F
- Fiberglass-reinforced polypropylene propellers
- OSHA-compliant epoxy-coated wire guards

Constructed with fiberglass shutter and frame and stainless steel hardware, for superior resistance to corrosive gases and vapors. UL and C-UL Listed.

Note: Not designed for laboratory hood exhaust or explosive atmospheres.



No. 1BLJ3

Dayton®

Propeller Dia. (in.)	CFM @ 0.000" SP	CFM @ 0.125" SP	Motor RPM	Motor HP	Full Load Amps	Bearing Type	Sones @ 0.000" SP @ 5 ft.	H (in.)	W (in.)	Max. Depth (in.)	Sq. Opening Req. (in.)	No. of Blades	Item No.
10	524	379	1550	1/25	1.9	Sealed Ball	12.3	13	13	14 1/2	10 1/2	4	1BLH6 ✓
12	1100	799	1625	1/6	1.9	Sealed Ball	13.4	15	15	15	13	4	1BLH8 ✓
16	2005	1678	1625	1/6	2.1	Sealed Ball	15.7	19	19	15	17	4	1BLJ1 ✓
18	2790	1961	1075	1/4	4.1	Sealed Ball	12.5	21	21	18 3/4	19	8	1BLJ3 ✓
20	3642	2838	1075	1/3	4.9	Sealed Ball	13.7	23	23	17 1/2	21	8	1BLJ5 ✓
24	4876	4197	1075	1/2	6.7	Sealed Ball	17.4	27	27	18	25	8	1BLJ7 ✓

Guard- and Ring-Mount Exhaust Fans

- Mount: vertical or horizontal
- Motors: totally enclosed, 115V, 60 Hz, thermally protected
- Max. inlet/ambient temp.: 104°F

Designed for low-pressure exhausting and cooling applications. Automatic shutter is recommended; see Index under "Shutters, Fan". UL and C-UL Listed.

Propeller Dia. (in.)	CFM @ 0.000" SP	CFM @ 0.125" SP	Motor RPM	Motor HP	Operating Amps	Bearing Type	Max. Depth (in.)	Outside Dia. (in.)	Mounting Holes O.C. (in.)	No. of Blades	Item No.
Guard-Mount Fans with OSHA-Compliant Gray Polyester-Coated Guards											
7	230	—	1550	1/25	1.5	Sleeve	4 1/2	9 3/4	7 3/4	5	1HKL2 ✓
10	595	405	1550	1/25	1.5	Sleeve	5 1/2	11 1/4	8 3/4	5	1HKL3 ✓
12	820	535	1550	1/25	1.5	Sleeve	5 1/2	13 1/2	10 3/4	3	1HKL4 ✓
16	1060	585	1550	1/20	1.0	Sleeve	6 1/2	17 1/2	12 1/2	3	1HKL5 ✓
18	2515	1780	1725	1/4	4.4	Ball	12 1/2	20 1/4	15 3/4	3	1HKL6 ✓
20	2600	1685	1725	1/4	4.0	Ball	11 1/2	22 3/4	16 3/4	3	1HKL7 ✓
24	3840	2690	1075	1/3	3.6	Sleeve	10 1/2	26 1/2	19 3/4	3	1HKL8 ✓
Ring-Mount Fans with Galvanized Steel Frame*											
6	119	—	1550	1/65	0.72	Ball	5	7	11 1/2	5	12U117 ✓
9	305	—	1550	1/45	0.74	Ball	5	9 1/2	11 1/4	5	12U118 ✓
12	665	—	1550	1/30	1.40	Ball	6 1/2	12 3/4	13 1/2	5	12U119 ✓
12	889	—	1550	1/20	1.50	Ball	7 3/4	16 3/4	14 1/2	3	12U120 ✓

* OSHA complying guards are required when a fan is installed within 8 ft. of floor, working level, or within reach of personnel. Review OSHA codes and UL standards. See index under Guards, Fan.



No. 1HKL4



No. 12U117

Dayton®

NQ Circuit Breaker Panelboards

Catalog
1640CT0801

100Amp 120/208VAC 3 Phase Type NQ



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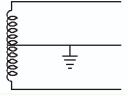
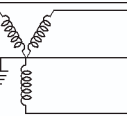
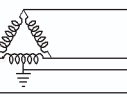
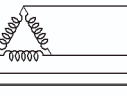
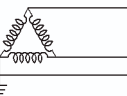
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NQ Circuit Breaker Panelboards

Standards and Ratings

Standards and Ratings

NQ circuit breaker panelboards meet US and Canadian standards, and are marked cULus. NQ circuit breaker panelboards accept QO® and QOB branch circuit breakers.

Voltage	System	System Diagram
120/240 Vac	1 ϕ 3W	
208Y/120 Vac	3 ϕ 4W	
240/120 Vac	3 ϕ 4W Delta	
240 Vac	3 ϕ 3W Delta	
240 Vac	3 ϕ 3W Grd. B ϕ Delta	

Standards

NQ circuit breaker panelboards are designed, manufactured, and tested to comply with the following standards:

- UL 67—Standard for Panelboards
- UL 50—Enclosures for Electrical Equipment
- CSA C22.2, No. 29-M1989—Panelboards and Enclosed Panelboards
- CSA C22.2, No. 94-M91—Special Purpose Enclosures
- NEMA PB 1—Panelboards
- NFPA 70—National Electrical Code® (NEC®)
- Federal Specification W-P-115C Type I Class 1—Circuit Breaker Panelboards
- 2003 IBC, NFPA 5000, ASCE/SE17 Seismic Qualification

Ratings

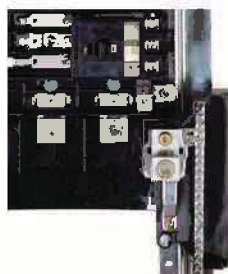
- Main Lugs 100–600 A
- Main Circuit Breaker 100–600 A

NQ Circuit Breaker Panelboards Interiors

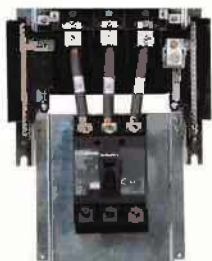
Interiors



Main Circuit Breaker Interiors



100 A QOB Interior



225 A QBL Interior

- Will accept plug-on or bolt-on branch circuit breakers.
- Merchandised main circuit breaker interiors are suitable for use as service entrance (US only).
- Service entrance barriers are required and available in Canada (factory-assembled only).
- Top- or bottom-feed.
- 65k AIR maximum branch circuit breakers (fully-rated).
- 200k AIR maximum when supplied by I-Limiter circuit breaker (series rated).
- Available with silver-plated copper or tin-plated aluminum bus (aluminum is standard). Tin-plated copper bus is available as an option. Branch connector fingers are all tin-plated copper; silver-plated branch connector fingers are optional.
- 100 A main circuit breaker interiors use a standard main lug interior and an appropriate QOB or QOB-VH main circuit breaker in a branch space; vertical main breaker main breaker interiors are also available.
- 110-225 A main circuit breaker interior consists of:
 - Standard main lug interior.
 - Main circuit breaker adaptor kit (NQMB2Q, NQMB2HJ or NQMB2KI).
 - Appropriate QBL, QDL, QGL, QJL, HDL, HGL, HJL, HLL, JDL, JGL, JJL, JLL, or KIL circuit breaker.
- 250 A main circuit breaker interiors are factory-assembled only.
- 400 A main circuit breaker interiors consist of:
 - Standard main lug interior
 - Main circuit breaker adaptor kit (Catalog No. NQMB4LA)
 - Appropriate LAL or LHL circuit breaker
- 600 A main circuit breaker interiors (factory-assembled only) consist of:
 - Appropriate LCL or LIL circuit breaker

NQ Circuit Breaker Panelboards

Branch Circuit Breakers (Bolt-on)

Branch Circuit Breakers (Bolt-on)

Table 8: Branch Circuit Breakers (Plug-on or Bolt-on) ¹

10 k AIR	22 k AIR	65 k AIR	10 k AIR (240 Vac)	42 k AIR
QO,	QO-VH, QOB-VH	QH, QHB	QO-H, QOB-H	QOH
1-Pole 10–70 A	1-Pole 15–30 A	1-Pole 15–30 A	2-Pole 15–100 A	2-Pole 35–125 A
2-Pole 10–125 A	2-Pole 15–150 A	2-Pole 15–30 A		
3-Pole 10–100 A	3-Pole 15–150 A	3-Pole 15–30 A		

¹ Series ratings are also available. Canada: See the Series Rating Guide (data bulletin #S1600PD0302EP) USA: See Switchboard/Panelboard Short-Circuit Current Ratings (data bulletin #2700DB9901), or the Digest



QOB Branch Circuit Breakers



QO Branch Circuit Breakers

Table 9: Branch Circuit Breaker Interrupting Data

Circuit Breaker Catalog Prefix	Max. Vac Rating	Number of Poles	Ampere Rating	Interrupting Rating— RMS Symmetrical Amperes		
				Vac		
				120	120/240	240
QO, QOB	120/240	1	10-70	—	10k	—
	120/240	2	10-125	—	10k	—
	240	3	10-100	—	—	10k
QO-H, QOB-H	240	2	15–125	—	—	10k
QO-VH	120/240	1	15–30	—	22k	—
	120/240	2	15–125	—	22k	—
	240	3	15–100	—	—	22k
QOB-VH	120/240	1	15–30	—	22k	—
	120/240	2	15–150	—	22k	—
	240	3	15–150	—	—	22k
QOH-QOHB	120/240	2	35–125	—	42k	—
QH QHB	120/240	1	15–30	—	65k	—
	120/240	2	15–30	—	65k	—
	240	3	15–30	—	—	65k

Table 10: Additional Branch Circuit Breaker Information

Circuit Breaker Type	Circuit Breaker Catalog Class
QO, QOB	730
QO-AFCI	760
QO-GFI, QOB-GFI	910

NQ Circuit Breaker Panelboards

Neutrals



100–225 A
Neutral Assembly

Neutrals

- All lugs suitable for copper or aluminum wire. 100–600 A interiors have split neutral located on same end as mains.
- Bondable for use as service entrance (in Canada, available as factory-assembled only).
- Branch terminals suitable for #12-#4 aluminum and #14-#4 copper.
- Provisions for larger branch terminal lugs with use of auxiliary neutral lugs.
- Suitable lug provided on neutrals for termination of grounding conductor.
- All unused neutral terminals may be used to terminate equipment grounding conductors when panelboard is used as service entrance.
- 100% rated neutrals. One neutral termination provided per circuit in panelboard.
- 200% rated neutrals are available as factory-assembled options or as kits.

Table 13: Field Installable Copper 100% Neutral Kits

Amperes	Catalog Number
100	NQN1CU
225	NQN2CU
400/600 ¹	NQN6CU

¹ Not for use with 600 sub-feed lugs, feed-through lugs, or sub-feed circuit breaker

Table 14: Field Installable 200% Neutral Kits

Amperes	Catalog Number
100	NQNL1
225	NQNL2 ¹
400	NQNL4 ²

¹ Use NQNL2ACCY when installing on a 225A panel with SFL, SFB, or TFL.

² Not to be used with SFL, FTL, or SFB. These combinations are factory-assembled only.

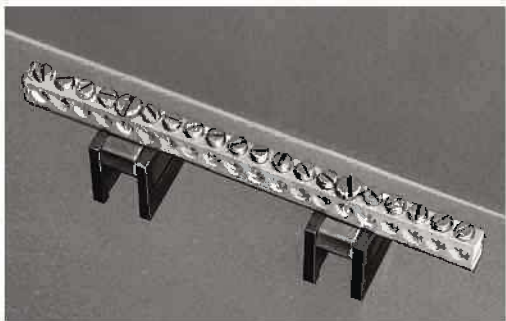
NQ Circuit Breaker Panelboards
Ground Bar Kits

Ground Bar Kits

- Field-installable in all panelboards.
- Suitable for copper or aluminum wire.
- Provisions for mounting up to four ground bar kits per panel.



Equipment Ground Bar



Ground Bar with Insulator Kit

Ground Bar Insulator Kit (Catalog No. PKGTAB)

The insulator kit is field installable and may be used with equipment ground bar kits. NQ panelboard enclosures have equipment ground bar mounting provisions in all four corners.

Technical Information

All PK equipment grounding kits are supplied with mounting screws, necessary installation instructions, and an "Equipment Grounding Terminal" self-adhesive label.

Table 15: Ground Bar Kit Technical Information

Catalog Number	Total Qty	Terminals		Approximate Overall Length in (mm)	Distance Between Mounting Holes in (mm)
		Qty Each Size (For Wire Range see Table 16:)			
		I	II		
PK23GTAL	24	23	1	9.125 (232)	3.125 (79)
PK27GTA	27	27	—	9.125 (232)	3.125 (79)
PK27GTACU	27	27	—	9.125 (232)	3.125 (79)

Table 16: Ground Bar Kit Wire Ranges

Size	Cu	Al
I	(1) #14 to #4 or (2) #14 or #12	(1) #12 to #4 or (2) #12 or #10
II	(1) #1 to 4/0	(1) #1 to 4/0

Enclosures



Interior Mounts to Box Studs



MH Box



Front (Type 1) Enclosure for 400–600 A Interiors



Mono-Flat Front (Type 1 Enclosure) for 100–250 A Interiors

Table 21: Enclosure Types

Type	Environment	Protects Against
Type 1	Indoor	Contact with the enclosed equipment, falling dirt
Type 2	Indoor	Type 1, plus • Dripping and light splashing of non-corrosive liquids
Type 3R	Outdoor	Type 2, plus • Rain, snow, and sleet
Type 4	Indoor/outdoor	Type 3R, plus • Circulating dust, lint, fibers and flyings • Settling airborne dust, lint, fibers and flyings • Windblown dust • Hosedown and splashing water
Type 4X	Indoor/outdoor	Type 4, plus • Corrosive agents
Type 5	Indoor	Type 2, plus • Settling airborne dust, lint, fibers, and flyings
Type 12	Indoor	Type 2, plus • Circulating dust, lint, fibers, and flyings • Settling airborne dust, lint, fibers, and flyings • Oil and coolant seepage

Indoor Enclosures (Types 1 and 2)

Boxes (MH):

- Galvanized steel with removable endwalls. One is provided with knockouts and the other is blank.
- Standard box sizes:
 - 20 in. (508 mm) wide x 5.75 in. (146 mm) deep, 600 A main lug interior max. or 400 A main circuit breaker max
 - 20 in. (508 mm) wide x 8.75 in. (223 mm) deep, 600 A main circuit breaker interior, factory-assembled only
- Box and interior mounting instructions are found in the information manual shipped with the interior.
- Interiors mount directly to studs in the MH box. Interior mounting brackets are not required.
- Type 2 enclosure includes a driphood.
 - Surface-mounted trim only.

NOTE: Also available with knockouts / blank endwalls both ends.

Trims:

- Finished with gray baked enamel electrodeposited over cleaned phosphatized steel (ANSI 49).
- Flush or surface mounted (Type 2 surface only).
- Door has flush lock. Uses NSR-251 key.
- Directory card located on the inside of the door.
- Mono-Flat® trims on 100–225 A interiors mount to the interior trim with trim screws. Both trim screws and door hinges are concealed. Trims are not removable with the door closed and locked.
- Trims for 400–600 A interiors are vented and mount to the enclosure with trim screws. Door hinges are concealed.
- Optional hinged trims are available. These meet door-in-door specs.

Indoor Enclosures



Flush Lock (standard) (Catalog No. PK4FL)



Key NSR-251 (Catalog No. LP9618)



Sliding Vault Lock (optional) (Catalog No. PK5FL)



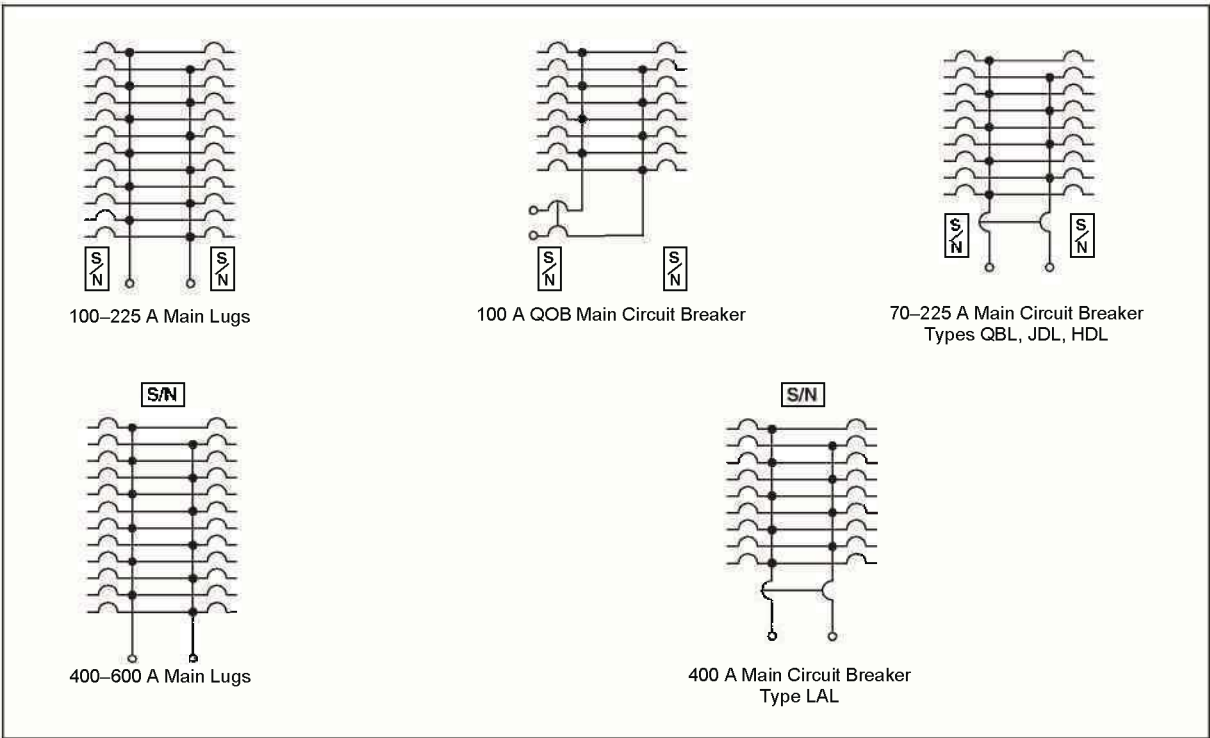
Concealed Hinge Used on 100–600 A Fronts

Indoor Enclosure Accessories

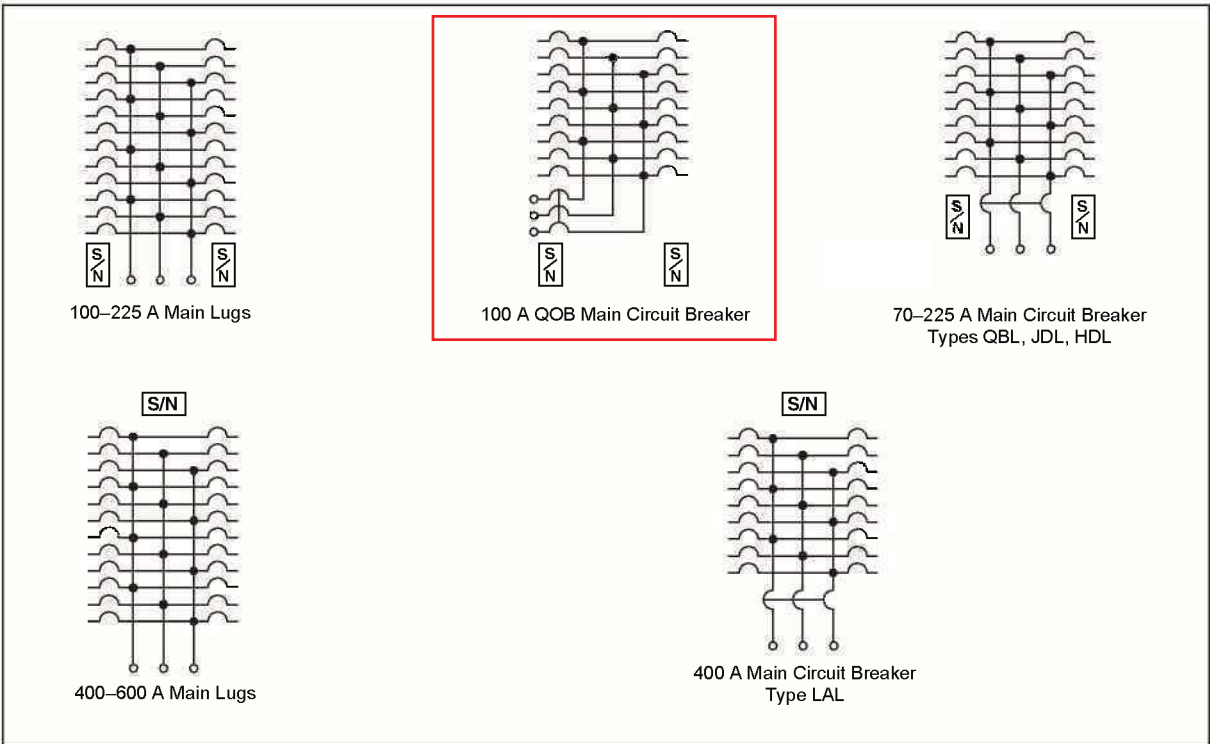
NQ Circuit Breaker Panelboards

Typical Wiring Diagrams

Typical Wiring Diagrams

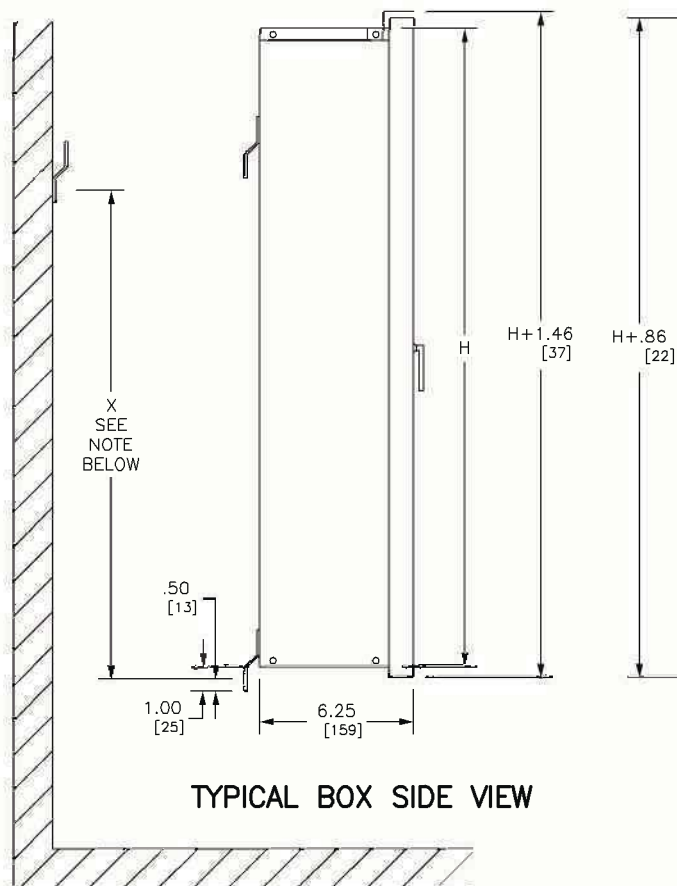


1-Phase, 3-Wire

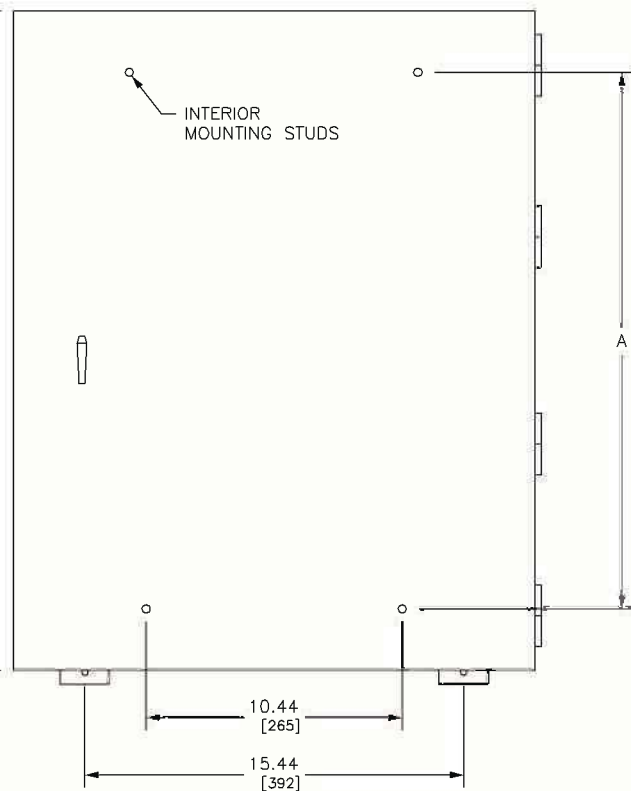


3-Phase, 4-Wire

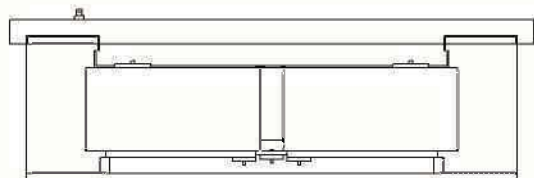
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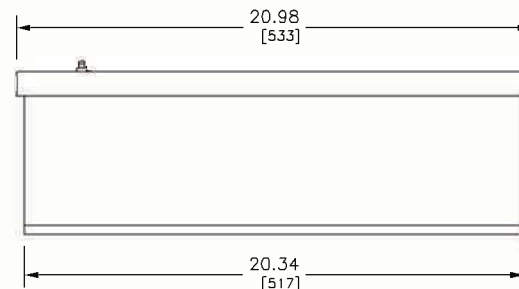
TYPICAL BOX SIDE VIEW



TYPICAL FRONT VIEW



TYPICAL MOUNTING OF QO,QOB BREAKERS



TYPICAL ENDWALL

DUAL DIMENSIONS: INCHES
MILLIMETERS

BOX HEIGHT		MOUNTING INTERIOR HEIGHT	
H		A	
IN	MM	IN	MM
26.00	660	21.00	533
32.00	813	27.00	686
38.00	965	33.00	838
44.00	1118	39.00	991
50.00	1270	45.00	1143
56.00	1422	51.00	1295
62.00	1575	57.00	1448
68.00	1727	63.00	1600
74.00	1880	69.00	1753
80.00	2032	75.00	1905
86.00	2184	81.00	2057

NOTE: FOR "X" DIMENSION, SUBTRACT 6.60/[168] FROM THE BOX HEIGHT.

REFER TO DP CATALOG CLASS 1640 FOR ADDITIONAL INFORMATION

NQ PANELBOARDS MEET THE APPLICABLE REQUIREMENTS OF UL AND CSA.

BOX: GRAY BAKED ENAMEL FINISH ELECTRODEPOSITED OVER CLEANED PHOSPHATIZED STEEL. INCLUDES HINGED COVER. MOUNTS TO WALL WITH MOUNTING BRACKETS.

LOCK: CHROME-PLATED HANDLE LOCK. NSR 251 KEY.
NOT PROVISIONS FOR PADLOCK.

JOB NAME:	----	EQUIPMENT DESIGNATION:	----
JOB LOCATION:	----	EQUIPMENT TYPE:	NQ NEMA 3R/5/12 ENCLOSURES
DRAWN BY:	----	DRAWING TYPE:	----
ENGR:	----	 SQUARE D Schneider Electric	
DATE:	AUGUST 2007		
DRAWING STATUS:	----	DWG#	PBA711
		PG	01 OF 01 REV -

Figure 6: UL Recognized Circuit Breaker/Circuit Breaker Series-Connected Rating



Figure 6 at left and Table 11 below show the arrangement and ratings of 240 Vac (maximum) systems with line side circuit breakers in series with load side circuit breakers for NQOD panelboards.

NOTE: Suffixes HID, SWD, and SWN may also be applied to the applicable branch circuit breakers shown above, with one exception: suffix SWN may not be applied in combination with LC main circuit breakers.

Table 11: NQ 240 Vac Series Short-Circuit Current Ratings—Panelboards

Maximum System Voltage AC ^[1]	Maximum Short Circuit Current Rating (RMS Symmetrical)	Integral or Remote Main Circuit Breakers and Remote Main Fuses	Branch Circuit Breaker Designations and Allowable Ampere Ranges ^{[2][3][4]}			
			Type	1-pole	2-pole	3-pole
120/240 1Ø	22k	MG	QO (B)	15–30 A	—	—
	42k	HD, JD	QO (B) PL	15–30 A	15–60 A	15–30 A
	65k	HG, JG	QO (B) PL	15–30 A	15–60 A	15–30 A
	100k	HJ, JJ	QO (B) PL	15–30 A	15–60 A	15–30 A
	125k	HL, JL	QO (B) PL	15–30 A	15–60 A	15–30 A
120/240 1Ø 208Y/120	100k	DJ 400 A	QO (B)	15–70 A	15–125 A	—
			QO (B) GFI	15–30 A	40–60 A	—
			QO (B) VH	—	150 A	15–150 A
			QO (B) AFI	15–20 A	—	—
			QO (B)	15–70 A	15–125 A	15–30 A
	100k	QJ	QO (B) AS	15–30 A	15–30 A	15–30 A
			QO (B) GFI	15–30 A	15–60 A	—
			QO (B) PL	15–30 A	15–60 A	15–30 A
			QO (B) VH	—	150 A	35–150 A
			QO (B) AFI	15–20 A	—	—
208Y/120	18k	LA/LH (L) 34200MC LA/LH (L) 34225MC LA/LH (L) 34250MC LA/LH (L) 34400MC	QO (B)	15–30 A	15–30 A	15–30 A
240	22k	QO (B) VH	QO (B)	15–70 A	15–125 A	15–100 A
			QO (B) AS	15–30 A	15–30 A	15–30 A
			QO (B) GFI	15–30 A	15–60 A	—
			QO (B) PL	15–30 A	15–30 A	—
			QO (B) AFI	15–20 A	—	—
	22k	Q2-H ^[5]	QO (B)	15–70 A	15–100 A	15–30 A
			QO (B) GFI	15–30 A	15–30 A	—
			QO (B) AFI	15–20 A	—	—
			QO (B)	15–70 A	15–125 A	15–30 A
			QO (B) AS	15–30 A	15–30 A	15–30 A
	25k	QD	QO (B) GFI	15–30 A	15–60 A	—
			QO (B) PL	15–30 A	15–60 A	15–30 A
			QO (B) VH	—	150 A	35–150 A
			QO (B) AFI	15–20 A	—	—
			QO (B)	15–70 A	15–125 A	15–100 A
		ED, FD ^[5]	QO (B) GFI	15–30 A	15–60 A	—
			QO (B) AFI	15–20 A	—	—
			QO (B)	15–70 A	15–125 A	15–100 A
		KD ^[5]	QO (B) AS	15–30 A	15–30 A	15–30 A
			QO (B) GFI	15–30 A	15–60 A	—
			QO (B) AFI	15–20 A	—	—
	25k	HD, JD	QO (B)	15–70 A	15–125 A	15–100 A
			QO (B) VH	—	—	35–150 A
			QO (B) GFI	15–30 A	15–60 A	—
			QO (B) AFI	15–20 A	—	—
			QO (B) H	—	15–100 A	—
			QOB2150VH	—	150 A	—

Continued on next page

- ¹ For shown circuit breakers rated less than this maximum voltage, the indicated short circuit current rating also applies, but at the voltage rating of the circuit breaker.
- ² Suffixes HID, SWD, and SWN may also be applied to the applicable branch circuit breakers shown above, with one exception: suffix SWN may not be applied in combination with LC main circuit breakers.
- ³ Where QO® (B) circuit breakers are shown above, QO (B) H, QO (B) VH, and QH (B) circuit breakers may also be used.
- ⁴ Where QO(B) GFI circuit breakers are shown above, QO (B) EPD circuit breakers may also be used.
- ⁵ Obsolescent. Contact your local Schneider Electric representative for the replacement circuit breaker. One-pole FJ circuit breakers are still available.

Switchboard/Panelboard Short-Circuit Current Ratings

Introduction

This document addresses Underwriters Laboratories (UL) short-circuit current rating (SCCR) requirements for switchboards and panelboards, along with three methods of system protection. It also provides circuit breaker interrupting ratings, series ratings tables, a fuse cross-reference table, and typical application examples.

UL requires that all UL Listed switchboards and panelboards be marked with a maximum SCCR. Testing switchboards and panelboards at the maximum SCCR evaluates the structure, bus, and overcurrent protective device (OCPD) as an entire system. The National Electrical Code® (NEC®) equipment requirements for SCCR are defined in Sections 110.9 and 110.10. The criteria for determining SCCR are found in UL Standard 891 for switchboards and UL Standard 67 for panelboards.

Three systems of short-circuit current protection are available:

- Fully-rated system
- Fully-rated, selectively-coordinated system
- Series-connected system

NOTE: The information contained in the tables of this data bulletin is correct at the time of printing; ratings may change without notice due to equipment design modifications. Refer to the series-connected ratings marked on the end-use equipment.

Fully-Rated System

In a fully-rated system, the interrupting rating of all OCPDs must be greater than or equal to the available fault current at the line side terminals of each device.

Fully-Rated, Selectively-Coordinated System

This is a fully-rated system with an additional design characteristic: within the range of selectivity, the OCPD closest to the fault opens the circuit, while the upstream OCPD remains closed. This limits unnecessary interruption of service to unaffected portions of the system. A system coordination study must be performed to ensure selectivity.

Series-Connected System

A series-rated system consists of a combination of OCPDs connected in series. The line side (main) device must have an interrupting rating equal to or greater than the available fault current at the line side terminals of the device. The load side (branch) circuit breaker has a lower interrupting rating that has been tested in combination with the line side device.

To comply with Sections 110.22 and 240.86 of the NEC, all applicable series combinations must be marked on the end-use equipment. The UL Recognized Component Directory (Yellow Book) must not be used as an application guide for series-connected ratings in end-use equipment.

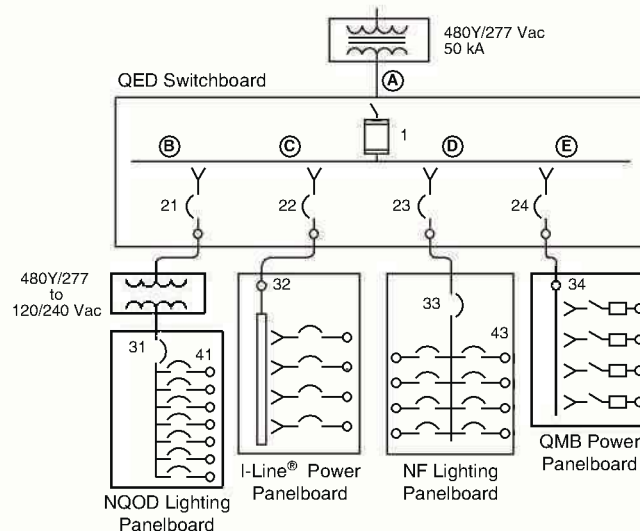
Section 240.86(B) further defines the use of series ratings with respect to motor contribution. This section requires that a calculation of the motor contribution be made if the motor(s) are connected to the load side of the higher rated device and to the line side of the lower rated device. If the sum of the motor full load current(s) is found to be higher than one percent of the interrupting rating of the lower rated device, then the series rating for that device cannot be used.

Examples

The examples are based on a 480Y/277 V system with 50 kA available at the service entrance.

NOTE: Series-rated systems must comply with NEC Article 240.86(B).

Figure 1: Series Rating Example



Legend:

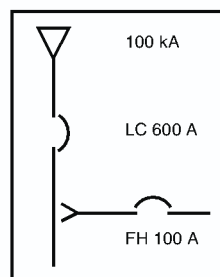
- (A) A main may be series-rated with all the distribution circuit breakers (21, 22, 23, 24). Calculating the available fault current at the line terminals of the downstream circuit breakers may permit lower AIR rated circuit breakers. Series rating at this level typically is not as economical as series rating between the switchboard distribution circuit breakers (22, 23) and panelboards (32, 33).
- (B) A distribution circuit breaker (21) is not series-rated through a transformer to a lighting panelboard (31) because the voltage changes.
- (C) A 225 A KC circuit breaker (22) will series rate with FD and FG circuit breakers in an I-Line panelboard (32). Refer to Table 10 on page 14.
- (D) The 225 A KC feeder circuit breaker (23) in the switchboard must be fully rated. A 225 A main circuit breaker (33) in the panelboard must be fully rated for the available fault current, either calculated at the panelboard or the switchboard available fault rating if calculations are not done. The integral panelboard main circuit breaker must series rate with the branch EDB circuit breakers (43). Refer to Table 12 on page 17.
- (E) Fusible disconnects with Class R, J, T, or L (34) do not require series rating with a 225 A KC circuit breaker (24).

If a consultant specifies, based on a short-circuit study, that all switchboards are to be rated 50 kA, power panelboards 42 kA, and lighting panelboards 22 kA, the following procedure is permissible:

- Series rate the switchboard main fusible disconnect (1) with the switchboard feeder circuit breakers (21, 22, 23, 24) at 50 kA.
- Series rate the NQOD panelboard main circuit breaker (31) with the panelboard branch circuit breaker (41) at 22 kA.
- Series rate the NF panelboard main circuit breaker (33) with the lighting panelboard branch circuit breakers (43) at 22 kA.

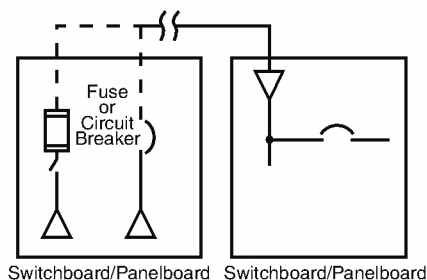
Example 1

A series-connected rating can be used *within* a single switchboard or panelboard enclosure.



Example 2

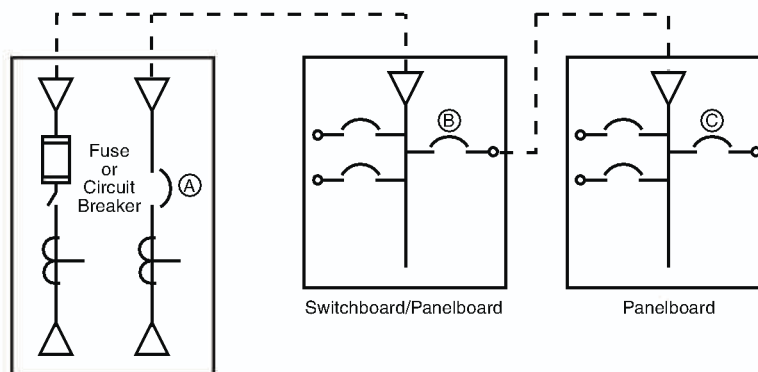
A series-connected rating can be accomplished outside a single enclosure using two switchboards, two panelboards, or a switchboard feeding a panelboard.



Example 3

A series-connected rating can be accomplished using a switchboard OCPD (A) and a panelboard main disconnect (B) (two-tier), or using a panelboard main OCPD (B) and a panelboard branch OCPD (C) (two-tier). In order for all OCPDs (A, B, C) to be in a series combination (three-tier), the series combination would have to be marked on the panelboard housing OCPD (C).

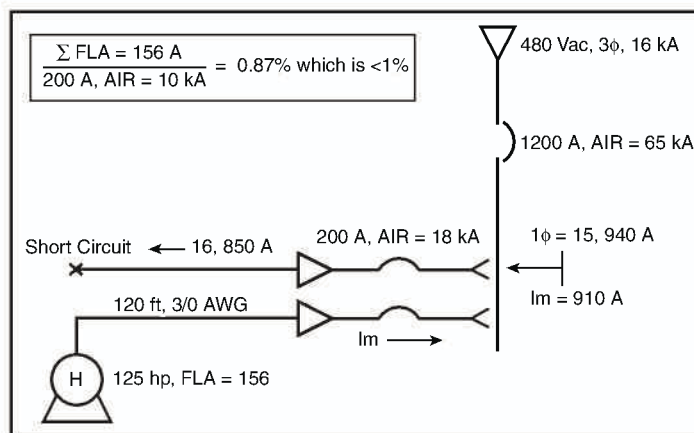
NOTE: Schneider Electric has three-tier ratings for multi-metering equipment. Multi-metering three-tier series ratings are not addressed in this bulletin. Applicable ratings appear on the appropriate equipment.



Example 4

Motor contribution in accordance with NEC 240.86 (B) must be considered before series ratings can be used.

NOTE: Use only the UL Listed SCCRs marked on the equipment. Standard interrupting circuit breakers cannot be substituted where high interrupting circuit breakers are indicated. Do not use the “up-over-down” method. It can lead to unsafe applications. Fuses chosen by the “up-over-down” method typically result in larger ampere ratings than the UL Listed fuse/circuit breaker series-connected short-circuit ratings shown in the tables. This simple method gives inaccurate results, partly because it ignores the dynamic impedance of molded case circuit breakers.



Interrupting and Series Ratings

Table 1 below and Table 2 on page 5 show the ratings of the OCPDs commonly furnished in Square D® brand switchboards and I-Line® panelboards. Devices are UL Listed for the interrupting ratings shown. Information given is correct at time of printing; ratings may change without notice due to modification in equipment design.

Table 1: Molded Case Circuit Breaker Interrupting Ratings (x 1000 RMS Symmetrical Amperes)

Circuit Breaker Type	Poles	Ampere Rating	240 Vac	277 Vac	480 Vac	600 Vac
FY	1	15–30	14	14	—	—
FA 240 V	1, 2, 3	15–100	10	—	—	—
FA 480 V	1	15–100	18	18	—	—
	2, 3	15–100	25	18	18	—
FA 600 V	2, 3	15–100	25	18	18	14
FH	1	15–30	65	65	—	—
	1	35–100	25	25	—	—
	2, 3	15–100	65	25	25	18
FC	2, 3	15–100	100	65	65	—
FI	2, 3	20–100	200	200	200	100
FD	1	15–70	18	18	18 ^[1]	—
	2, 3	15–100	25	18	18 ^[1]	—
FG	1	15–70	35	35	35 ^[1]	—
	2, 3	15–100	65	35	35 ^[1]	—
FJ	1	15–70	65	65	65 ^[1]	—
	2, 3	15–100	100	65	65 ^[1]	—
HD	2, 3	15–150	25	18	18	14
HG	2, 3	15–150	65	35	35	18
HJ	2, 3	15–150	100	65	65	25
HL	2, 3	15–150	125	100	100	50
QB	2, 3	70–225	10	—	—	—
QD	2, 3	70–225	25	—	—	—
QG	2, 3	70–225	65	—	—	—
QJ	2, 3	70–225	100 ^[2]	—	—	—
KA	2, 3	70–250	42	25	25	22
KH	2, 3	70–250	65	35	35	25
KC	2, 3	110–250	100	65	65	—
KI	2, 3	110–250	200	200	200	100
JD	2, 3	150–250	25	18	18	14
JG	2, 3	150–250	65	35	35	18
JJ	2, 3	150–250	100	65	65	25
JL	2, 3	150–250	125	100	100	50
LA	2, 3	125–400	42	30	30	22
LH	2, 3	125–400	65	35	35	25
LC	2, 3	300–600	100	65	65	35
LX	2, 3	100–600	100	65	65	35
LE	2, 3	100–600	100	65	65	35
LXI	2, 3	100–600	200	200	200	100
LI	2, 3	300–600	200	200	200	100
MA	2, 3	300–1200	42	30	30	22
MH	2, 3	300–1200	65	65	65	25
MX	2, 3	450–800	65	65	65	25
ME	2, 3	450–800	65	65	65	25

Continued on next page

¹ FD, FG, and FJ circuit breakers are rated 480Y/277 Vac maximum.

² QJ 3-pole circuit breaker is rated 100 kA, 208Y/120 Vac maximum.



Tank



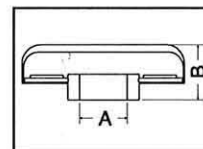
300

Part No.	Size	lbs	SCFH@		
			2.5psi	A	B
0300-01-0750	3/4"	1.1	4,894	3/4"	1 1/2"
0300-01-1000	1"	1.1	8,711	1"	1 1/2"
0300-01-1250	1 1/4"	1.5	13,616	1 1/4"	2"
0300-01-1500	1 1/2"	1.9	19,532	1 1/2"	2 1/8"
0300-01-2000	2"	2.8	34,846	2"	2 1/2"
0300-01-2500	2 1/2"	3.6	53,047	2 1/2"	2 3/4"
0300-01-3000	3"	5.4	78,350	3"	3"

Features

"T" style free flow vent is made of cast iron with 40 mesh brass or stainless steel screens. Openings directed downward prevent water and contaminants from entering the vent line.

Available in zinc plating or aluminum. NPT thread is standard. Available in Slip on style with set screw.

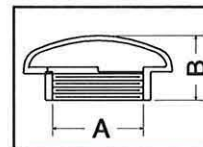


401

Part No.	Size	lbs	SCFH@		
			2.5psi	A	B
0401-01-0750	3/4"	0.3	4,894	3/4"	1"
0401-01-1000	1"	0.5	8,711	1"	1 1/8"
0401-01-1250	1 1/4"	0.6	13,616	1 1/4"	1 1/2"
0401-01-1500	1 1/2"	0.7	19,532	1 1/2"	1 9/16"
0401-01-2000	2"	1.1	34,846	2"	1 11/16"
0401-01-4000	4"	2.5	54,873	4"	3"

Features

Mushroom style free flow vent is made of cast iron with a 40 mesh brass screen. Domed vent top prevents tank contamination from entering vent lines. NPT thread is standard. Zinc plating available.

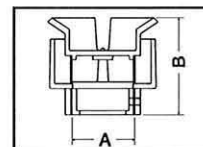


395

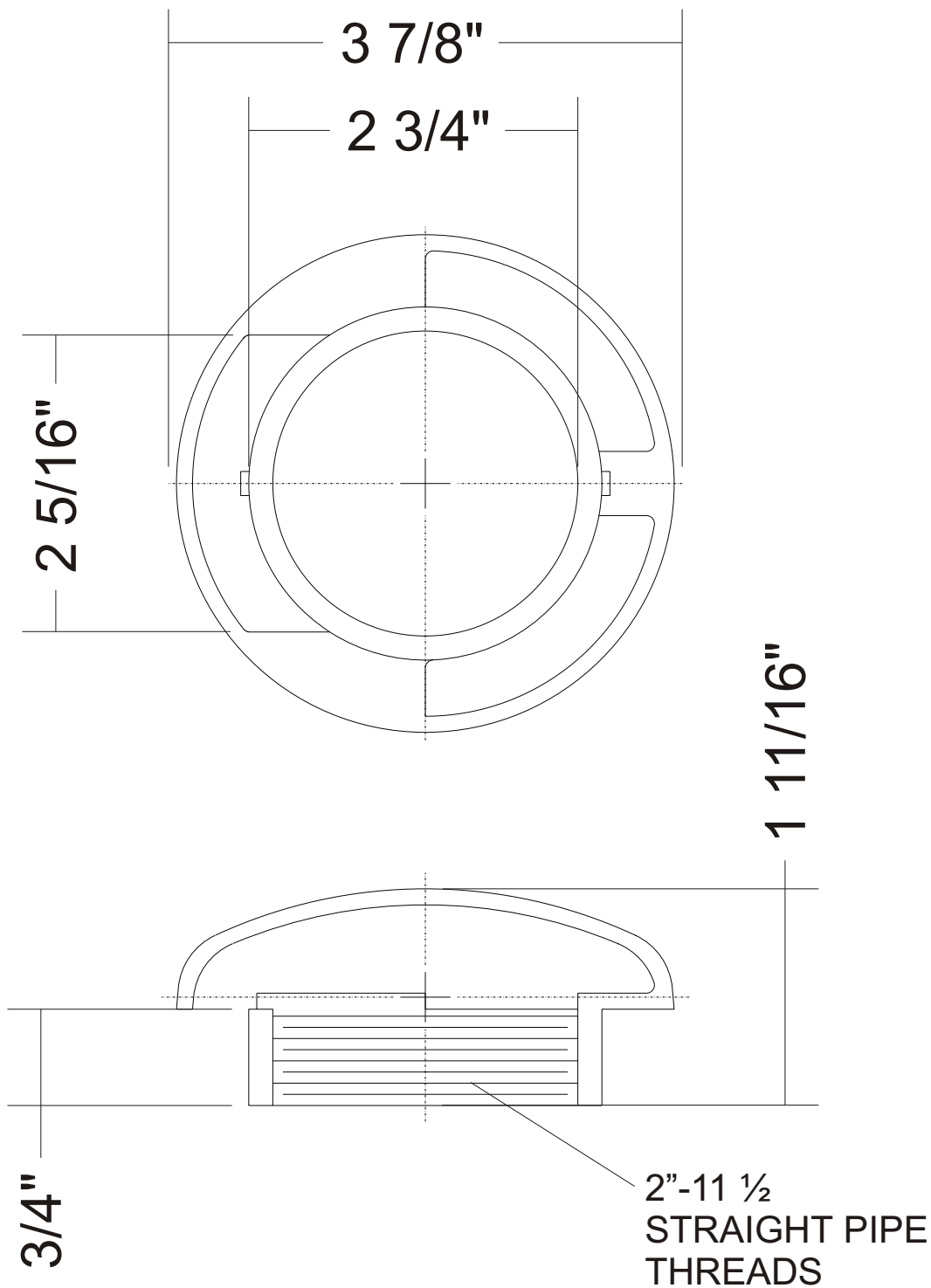
Part No.	Size	lbs	SCFH@		
			2.5psi	A	B
0395-03-2000	2"	1.3	46,610	2"	3 1/2"

Features

Free flow vent made of cast aluminum with a 40 mesh brass screen. Slip fits on a 2" pipe, or 1 1/2" pipe with the included adaptor. Body has openings in the bottom to assist vapors in dispersing upward.



- NOTES:
- 1. TOTAL OPEN AREA
3.1 SQ. IN.
 - 2. MATERIAL - XX IN PART
NUMBER IS -01- BLACK
IRON, -10- IS GALVANIZED.



CLAY & BAILEY MFG CO.

2" MUSHROOM VENT

DWG: 0401-XX-2000

Model 244 Emergency Vents | 8-inch

SPECIFICATION SHEET

UL Listed Emergency vent (pressure relief only) used on aboveground storage tanks, as a code requirement, to help prevent the tank from becoming over-pressurized and possibly rupturing if ever exposed to fire. Vent must be used in conjunction with a "normal vent." Correct application of this vent requires proper vent size and selection for the tank system in order to meet the specific venting capacity.

Code Compliance

API 2000; International Fire Code; National Fire Code of Canada; NFPA 1, 30, 30A, 31, 37, 110; PEI RP200; PEI RP800; Underwriters Laboratories Inc. UL-142, UL-2085, UL- 2244; Underwriters Laboratories of Canada CAN/ULC S601-07, CAN/ULC S602-07, CAN/ULC S652-08.

Additional References

NFPA 30, UL 142, Morrison Venting Guide.



WARNING: DO NOT FILL OR UNLOAD FUEL FROM A STORAGE TANK UNLESS IT IS CERTAIN THAT THE TANK VENTS WILL OPERATE PROPERLY. Morrison tank vents are designed only for use on shop fabricated atmospheric tanks which have been built and tested in accordance with UL 142, NFPA 30 & 30A, and API 650 and in accordance with all applicable local, state, and federal laws. In normal operation, dust and debris can accumulate in vent openings and block air passages. Certain atmospheric conditions such as a sudden drop in temperature, below freezing temperatures, and freezing rain can cause moisture to enter the vent and freeze which can restrict internal movement of vent mechanisms and block air passages. All storage tank vent air passages must be completely free of restriction and all vent mechanisms must have free movement in order to insure proper operation. Any restriction of airflow can cause excessive pressure or vacuum to build up in the storage tank, which can result in structural damage to the tank, fuel spillage, property damage, fire, injury, and death. Monthly inspection, and immediate inspection during freezing conditions, by someone familiar with the proper operation of storage tank vents, is required to insure venting devices are functioning properly before filling or unloading a tank.

	I.D. Number	A	B	C	D	E	F	G	Diameter	Height	Weight
→	244O--0600 AV	8	504,818		8	I	A	AL	11	4.6	33
EVR	244O--0600 AVEVR	8	504,818		8	I	B	AL	11	4.6	33
EVR	244O--0700 AV	8	504,818		16	I	A	AL	11	5.8	62
	244O--0700 AVEVR	8	504,818		16	I	B	AL	11	5.8	62
	244OI-0600 AV	8	504,818		8	I	A	I	11	4.6	39
	244OF-0100 AV	8	504,818	F	8	I	A	AL	11	3.3	33
EVR	244OF-0100 AVEVR	8	504,818	F	8	I	B	AL	11	3.3	33
EVR	244OF-0200 AV	8	504,818	F	16	I	A	AL	11	4.5	67
EVR	244OF-0200 AVEVR	8	504,818	F	16	I	B	AL	11	4.5	67
	244OM-0600 AV	8	504,818	M	8	I	A	AL	11	5.8	34
EVR	244OM-0600 AVEVR	8	504,818	M	8	I	B	AL	11	5.8	34
EVR	244OM-0700 AV	8	504,818	M	16	I	A	AL	11	6.9	63
	244OM-0700 AVEVR	8	504,818	M	16	I	B	AL	11	6.9	63
	244OMB0700 AV	8	504,818	M	16	I	A	AL	11	6.9	63
	244OMBSP0600 AV	8	504,818	M	8	I	B	AL	11	5.8	34
	244OMI0600 AV	8	504,818	M	8	I	A	I	11	5.8	42
	244OMI0700 AV	8	504,818	M	16	I	A	I	11	6.9	71

Flange = 14" OD ; eight (8) .88" Diameter holes on 11.75" diameter B.C.

SPECIFICATION OPTIONS:

A—Size: 8"
 B—Venting Capacity/CFH (in 1000's)
 C—Mounting Connection: Female N.P.T. (BLANK); Male N.P.T.(M); Flanged (F);
 D—Pressure Settings: 8, 16 oz/in². Pressure Required to Open Vent.
 E—Cover: Cast Iron Powder Coated (I)
 F—Seat Material: O-Ring Viton A (A) or Viton B (B)
 G—Body Material: Aluminum (AL) or Iron (I)
 Diameter—Dimension Across Vent
 Height—Dimension From Base to Top When Closed
 Weight—Shipping Weight
 Bolt—Zinc plated steel

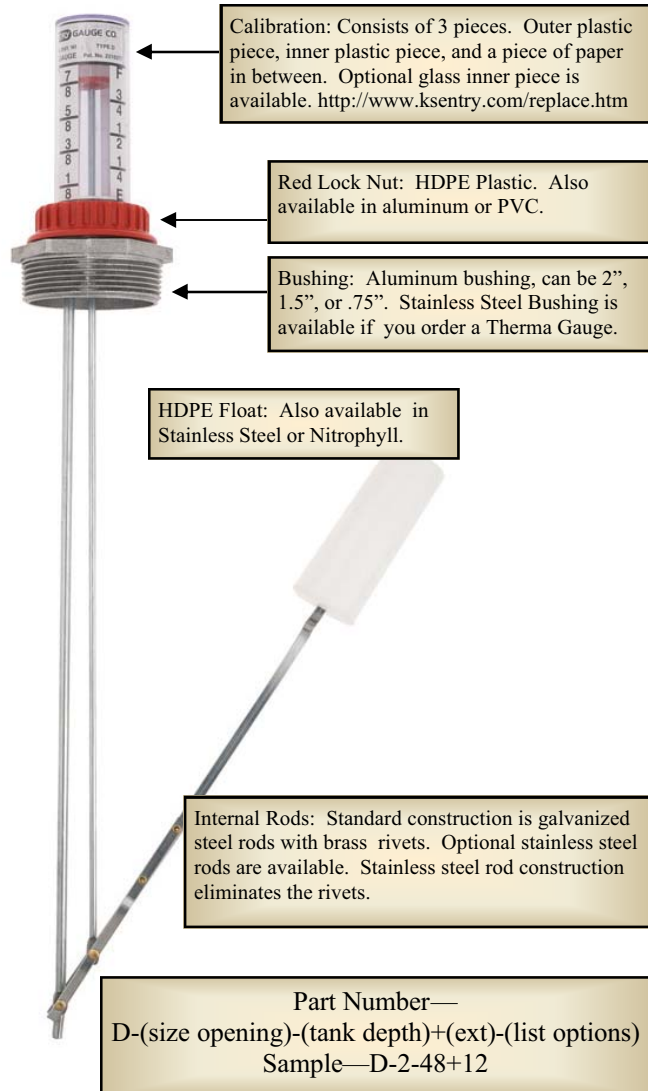
570 E. 7th Street, P.O. Box 238 | Dubuque, IA 52004-0238
 t. 563.583.5701 | 800.553.4840 | f. 563.583.5028

www.morbros.com



The At A Glance Direct Reading Gauge—Type D

Price Book Page 2



What it is:

Top mounted liquid level gauge that can measure from 6 inches to 144 inches in depth. Bushing size can be 2", 1.5", or .75". Gauges are custom made in house to fit your tank. Can also accommodate for double walls and pipe risers (*info on price book page 12*).

Additional Options:

Audible Alarm Accessory: This add on feature can turn your mechanical gauge into an audible Hi or Lo level alarm. (*price book page 8*) <http://www.ksentry.com/alarm.htm>

LED At-A-Glance Accessory: Another add on feature. This can give your mechanical gauge remote reading capability. (*price book page 1*) <http://www.ksentry.com/led.htm>

Gauge Guard: A cover that protects the exposed plastic components on top of the gauge.

Material Choices and Limitations:

Standard choices are listed on picture to the left.

Opening size: .75" opening reduces choices on size and material options.

Stainless Steel Floats: Maximum tank depth is reduced to 120 inches.

Material Packages / Gauge Packages:

All SS Model—This model is only available in the type H Therma Gauge. It comes standard with Glass Calibration, Aluminum Locking Nut, Stainless Steel Bushing, Stainless Steel Rods, and Stainless Steel Floats. (*price book page 4*)

All Plastic Model—Type PD—This model comes standard with Glass Calibration, PVC Gauge Guard, PVC Bushing, PEEK Plastic Rods, HDPE Plastic Float. (*price book page 4*)

Krueger Sentry Gauge
1873 Siesta Lane
Green Bay, WI 54313

www.ksentry.com



Contact us for more info or a local distributor:

Ph: 920-434-8860

Fax: 920-434-8897

Email: info@ksentry.com



The At A Glance Direct Reading Gauge—Type D

Price Book Page 2

Model	Calibration	Indicator	Lock Nut	Bushing	Internal Rods	Rivets	Floats	Gasket
Standard - (6"-144")	Cellulose Acetate-Plastic	HDPE	HDPE	Aluminum	Galvanized Steel	Brass	HDPE	Nitrile
-SSR (6"-144")	Cellulose Acetate-Plastic	HDPE	HDPE	Aluminum	Stainless Steel	None	HDPE	Nitrile
-SSR-SSF (12"-120")	Cellulose Acetate-Plastic	HDPE	HDPE	Aluminum	Stainless Steel	None	Stainless Steel	Nitrile
TYPE PD all plastic (18"-110")	Glass Internal Plastic External	HDPE	PVC Guard	PVC	PEEK Plastic Or Kynar Plastic	PVC	HDPE	Viton
Options available for all of above	GLC -Glass internal, plastic external		ALN- Aluminum Lock Nut			N/A	NTE— Nitrophyl	VTN—Viton

- Sample Part Number—D-2-44+12-SSR-SSF

Other Options Available on the Type D Gauge

Price Book Page 2

Level Gauge Accessory	Description	Web Link
At-A-Glance Alarm	Audible Hi or Lo Level Alarm Accessory. Retrofits right to gauge. 110 decibel alarm. 9volt lithium battery.	http://www.ksentry.com/alarm.htm
At-A-Glance LED	Add a remote display to this gauge. Up to 100 feet of wired remote capability. Hi and Lo adjustable alarms. 9volt lithium battery.	http://www.ksentry.com/led.htm
Gauge Guard Aluminum or PVC	Durable sleeve that covers the plastic components on top of the gauge. Extend the life of the exposed parts of the gauge, and protect it from physical damage.	http://www.ksentry.com/replace.htm

Krueger Sentry Gauge
1873 Siesta Lane
Green Bay, WI 54313

<http://www.ksentry.com>



Contact us for more info or a local distributor:

Ph: 920-434-8860

Fax: 920-434-8897

Email: info@ksentry.com



LISTED 53ZL
Flammable And Combustible
Liquid Tank Accessory

4" pipe x 2" Camlock Fill Adapter

1½" Drop Tube

The Guillotine Fill Limiter must be fitted with a Camlock type fitting for correct operation

Float

When a vapor recovery system is required, a two point fill system must be used

The Guillotine Fill Limiter is designed for specific tanks and set to restrict the fuel delivery rate, at 90% of tank capacity

Connecting Rods

4" x 1½" DropTube Adapter

Restrictor Valve Assembly

This unit is not designed to be used in waste oil

GUILLLOTINE[®] INC.

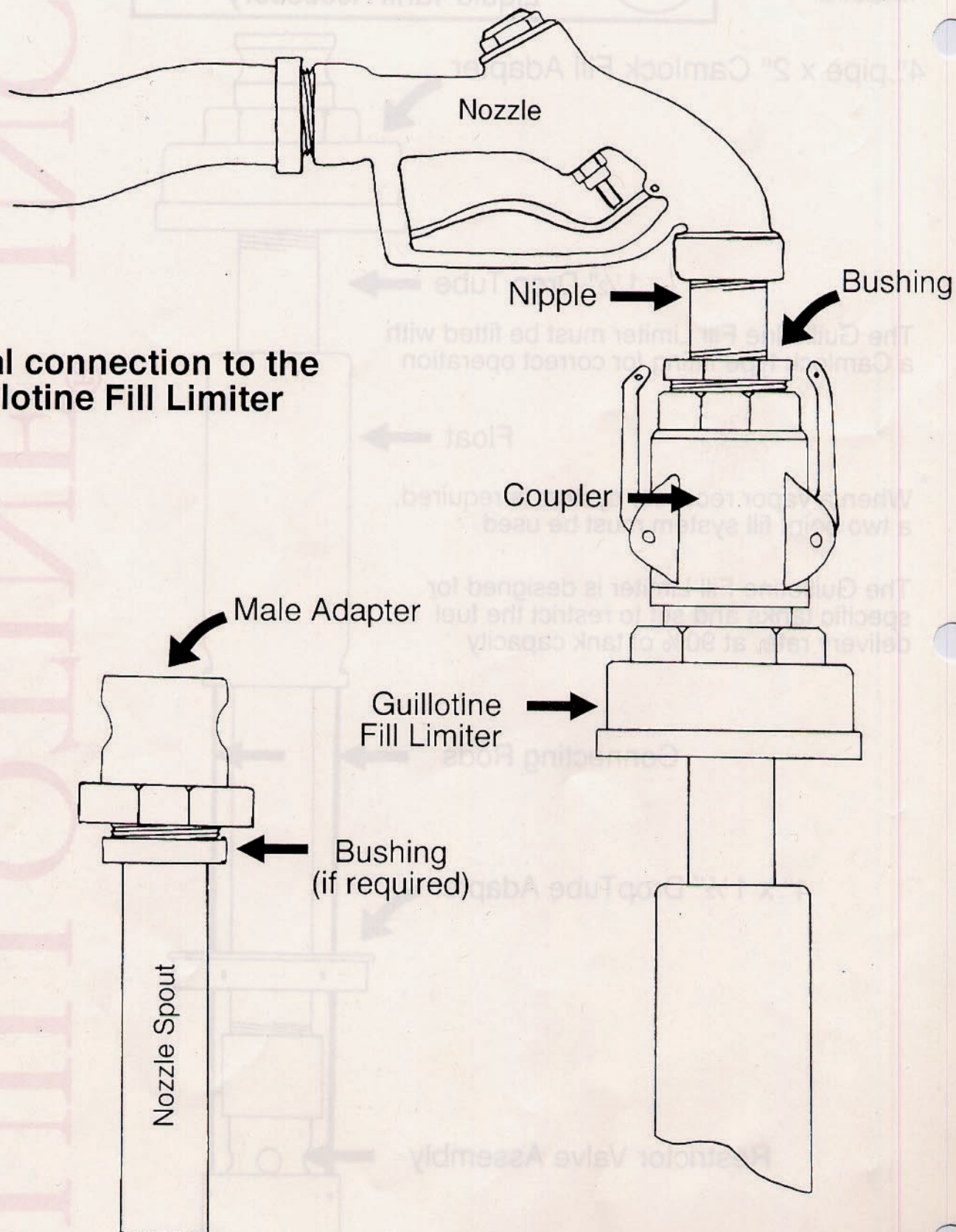
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(800) 824-1394 • (209) 586-7419 • FAX (209) 586-6471

U.S. PAT. 5,235,999

CANADIAN PAT. 2,083,585

**Typical connection to the
Guillotine Fill Limiter**



EARTHQUAKE RESTRAINT RATING					SIDE HIGH RATING applies for machine with strong moment resisting attachments.
Type	Up	End	Side		
			Low	High	SIDE LOW RATING applies for machine with weak moment resisting attachments.
RJB	1600	1600	1280	1600	
RJC	3366	3333	1312	2840	
RJE	4810	6000	4000	4400	
Restraint ratings determined by independent laboratory test.					

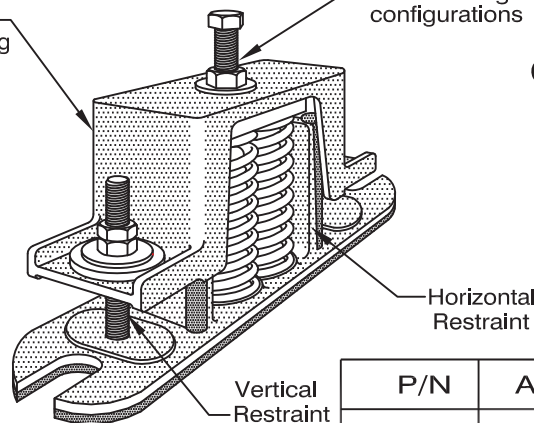
EARTHQUAKE RESTRAINTS

Equipment motion is limited in all horizontal and vertical directions.

PROTECTION FOR -

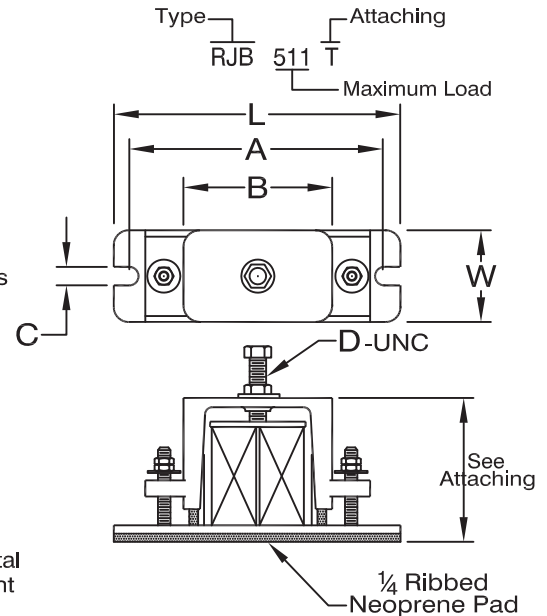
- Earthquakes
- Windloads
- Marine installations (see *)
- Mobile installations (see *)
- Equipment weight change due to drainage
- Unstable installations due to high equipment center of gravity

Ductile Iron housing



DATE : _____

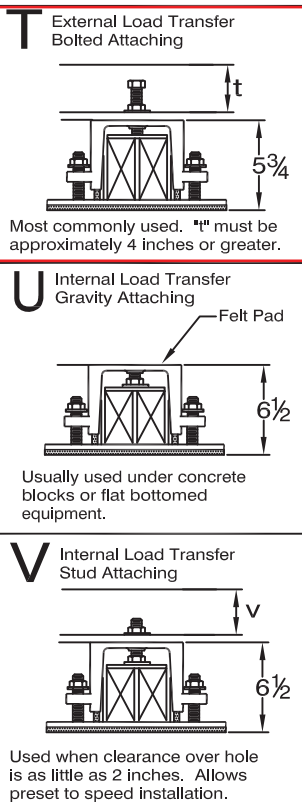
TYPICAL CALLOUT



FREE HEIGHT-SEE BELOW

Typical Operating $5\frac{1}{2}$ to 6
 Height min. 5, max. $6\frac{1}{2}$.

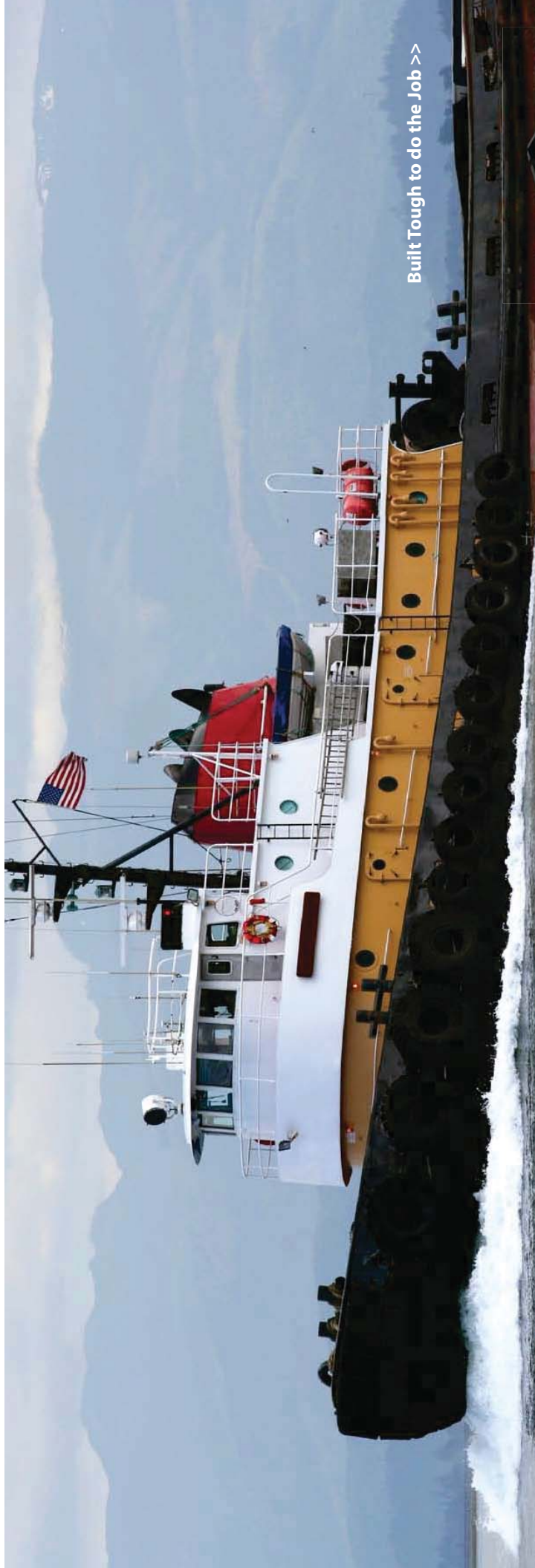
ATTACHING



* Not for use in marine or mobile applications.
 Contact factory for assistance.

P/N	A	B	C	D	L	W
RJB	8	$3\frac{3}{4}$	$\frac{9}{16}$	$\frac{1}{2}$	9	$2\frac{3}{8}$
RJC	12	7	$\frac{5}{8}$	$\frac{5}{8}$	13	$2\frac{3}{8}$
RJE	12	7	$1\frac{1}{16}$	$\frac{5}{8}$	13	$4\frac{5}{8}$

1 SPRING				2 SPRINGS			4 SPRINGS		
TYPE	MAXIMUM LOAD (Lbs.)	Max. Defl. (Inches)	Spring Rate (Lbs/in)	TYPE	MAXIMUM LOAD (Lbs.)	Max. Defl. (Inches)	TYPE	MAXIMUM LOAD (Lbs.)	Spring Rate (Lbs/in)
RJB	21	1.13	18	RJC	42	1.13	RJE	84	72
RJB	55	1.13	49	RJC	110	1.13	RJE	220	196
RJB	79	1.13	70	RJC	158	1.13	RJE	316	280
RJB	106	1.13	94	RJC	212	1.13	RJE	424	376
RJB	120	2.30	52	RJC	240	2.30	RJE	480	208
RJB	155	2.20	70	RJC	310	2.20	RJE	620	282
RJB	187	1.13	165	RJC	374	1.13	RJE	748	662
RJB	244	1.13	216	RJC	488	1.13	RJE	976	864
RJB	318	1.13	281	RJC	636	1.13	RJE	1272	1124
RJB	395	1.80	220	RJC	790	1.80	RJE	1580	880
RJB	511	1.50	341	RJC	1022	1.50	RJE	2044	1364
RJB	715	1.30	550	RJC	1430	1.30	RJE	2860	2200
* RJB	1060	1.00	1060	* RJC	2120	1.00	* RJE	4240	4240
* RJB	1520	.78	1950	* RJC	3040	.78	* RJE	6080	7800
* RJB	1960	.78	2515	* RJC	3920	.78	* RJE	7840	10060



Built Tough to do the Job >>

COMMERCIAL BATTERY BOXES

Commercial Battery Boxes are rotationally molded from the highest quality, low density polyethylene plastic.

These rugged battery boxes maintain their tough impact properties in climates down to -40 °F (-40 °C).

Meets USCG Code of Federal Regulation 183.420 and ABYC E-10.7 specification.



HM408>>

4D Commercial Battery Box



HM426>>

Dual 6V Commercial Battery Box



HM462>>

Dual L16 Commercial Battery Box



HM484>>

8D Commercial Battery Box



HM485>>

Dual 8D Commercial Battery Box

Part No.	Group	Color	Inside Dim. (LxWxH)	Outside Dim. (LxWxH)	Weight (lbs)
HM408	4D	■ Black	20.50" x 9.08" x 10.50"	24.50" x 12.50" x 13.00"	7.7
HM426	Dual 6V	■ Black	14.75" x 10.75" x 12.00"	18.25" x 14.25" x 14.00"	7.0
HM462	Dual L16	■ Black	14.44" x 12.06" x 17.31"	18.130" x 15.75" x 19.50"	9.5
HM484	8D	■ Black	21.00" x 11.50" x 10.50"	24.50" x 15.00" x 13.00"	9.2
HM485	Dual 8D	■ Black	23.05" x 21.05" x 10.56"	26.01" x 24.02" x 12.50"	16.4

Easy to install...



Fastens from the top/down for quick installation.

Superior Quality Boxes for Commercial Battery Applications

- Four-corner fastening system and captive lid
- Large cable entry holes
- Large electrolyte reservoir
- Full flow ventilation
- Brass insulated star knobs
- Acid, gasoline, oil, salt & chemical resistant
- Impact resistant to -40 °F (-40 °C)
- UV Resistant



ABYC
Setting Standards for Safer Boating

OIL SUPPLY SYSTEMS AND FIRE SAFE® OIL SUPPLY SYSTEMS



5 GALLON



15 GALLON



30 GALLON



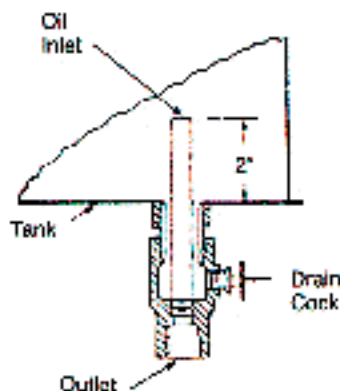
55 GALLON

MODEL NUMBER						ADD TO MODEL NUMBER		
Tank Size	Tank Only	Tank with	Tank with	36" Stand	56" Stand	For Fire	For	For
			36" Stand	56" Stand	Only	Safe Valves	Condensate	Galvanized
							Drain	Tanks/Stand
5 Gallon	5G	5G-36	NA*	36S - 5	NA*	NA*	NA*	NA*
15 Gallon	15G	15G-36	15G - 36	36S - 15	56/S - 15	-FS	-CD	-GALV
30 Gallon	30G	30G-36	30G - 36	36S - 30	56/S - 30	-FS	-CD	-GALV
55 Gallon	55G	55G-36	55G - 36	36S - 55	56/S - 55	-FS	-CD	-GALV

GALVANIZED TANKS AND STANDS ARE ALSO AVAILABLE

Condensate Drain

A unique outlet fitting which forms a sediment trap is optional on all 15, 30, and 55 gallon oil supply tanks. It is fitted with a drain cock for removing sediment without the loss of oil.



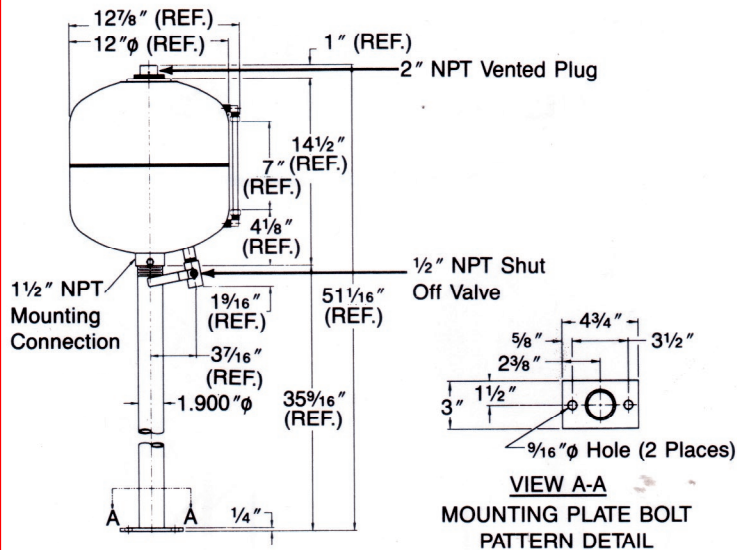
Fire Safe Valve

A Fire Safe Oil Supply Tank has a thermally actuated outlet valve which closes in the event of fire near the oil tank. This prevents oil escaping into the fire. The valve closes off both the tank outlet and gauge tube. The valve body is electroplated steel. Its plunger assembly and spring are stainless steel. The melting point of the fuseable link is 160-190 ° F (other temperatures on special order). Fire Safe oil tanks are available with or without condensate drain. They are supplied with a 1/2" brass outlet valve.

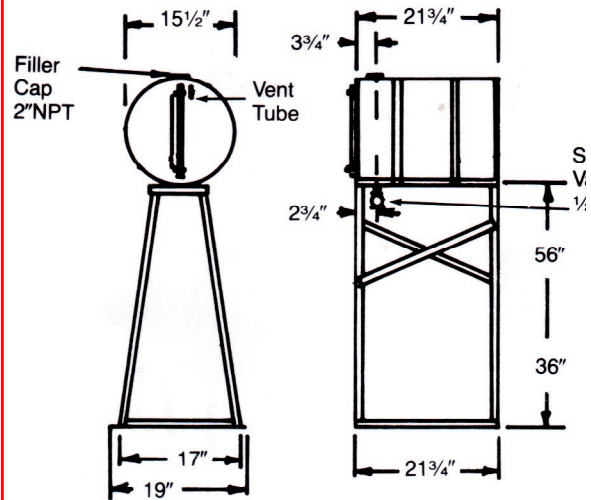


FIRE SAFE VALVE

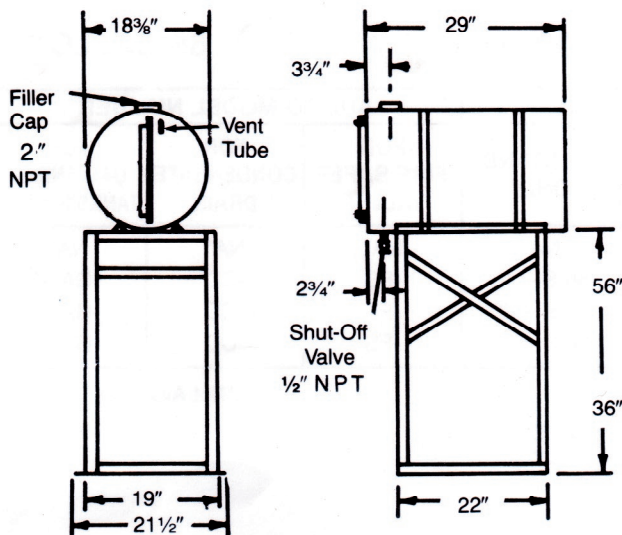
OUTLINE DIMENSIONS



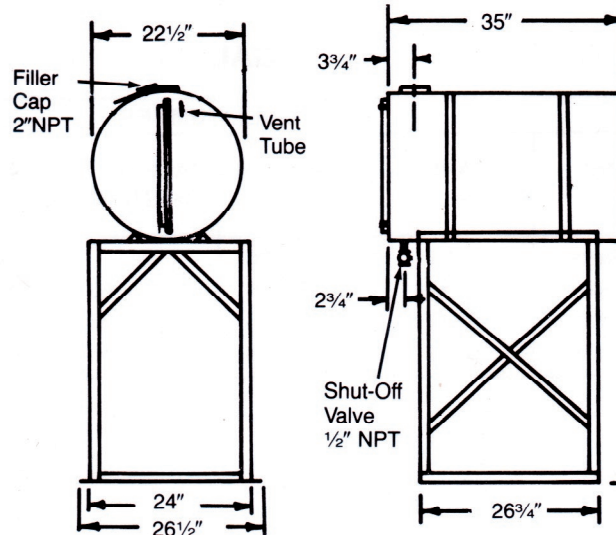
5 GALLON TANK AND STAND



15 GALLON TANK AND STAND



30 GALLON TANK AND STAND



55 GALLON TANK AND STAND

GAUGE GLASS REPAIR KITS

Tank Size	Standard Tank	Fire Safe Tank
5 Gallon	PTA-3872K	Not Available
15 Gallon	PT A847K	PT A2105K
30 Gallon	PT A848K	PT A2106K
55 Gallon	PT A849K	PT A2107K

Represented by:

Tulsa
PO Box 470426
Tulsa, OK 74147
phone 918.663.4406
fax 918.663.4480
<http://www.kenco-eng.com>
email: info@kenco-eng.com

Baton Rouge
11616 Industriplex, Suite 14
Baton Rouge, LA 70809
phone 504.755.1912
fax 504.755.1913
<http://www.kenco-eng.com>

Fig. 334 Single Poppet Foot Valve

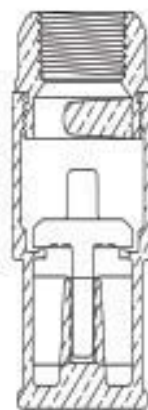
Specification Sheet

The 334 is installed at the inlet of a suction line normally at the bottom of the storage tank and is intended to hold the prime. Contains a poppet and functions like a check valve to hold prime on a suction pump. Metal-to-metal seat and screened inlet. All Morrison foot valves have lapped brass poppets and lapped brass seals to maximize prime holding capabilities.

Poppet and seats are metal and may allow some seepage over long periods of time.



Fig. 334

Fig. 334
Drawing

SPECIFICATION OPTIONS:

I.D. NUMBER	A	B	C	D	Width	Height	Weight
334---0100 AV	.75"	BR	BR	BR	1 19/32"	3 1/32"	1
334---0200 AV	1"	BR	BR	BR	2 1/16"	3 33/64"	1.25
334---0300 AV	1.5"	BR	BR	BR	2 5/8"	4 3/16"	2.25
334---0400 AV	2"	BR	BR	BR	2 5/16"	5 1/16"	4.75
334BP-0100 AV	1.5"	BR	BR	BR	2 3/4"	3 7/8"	2.5

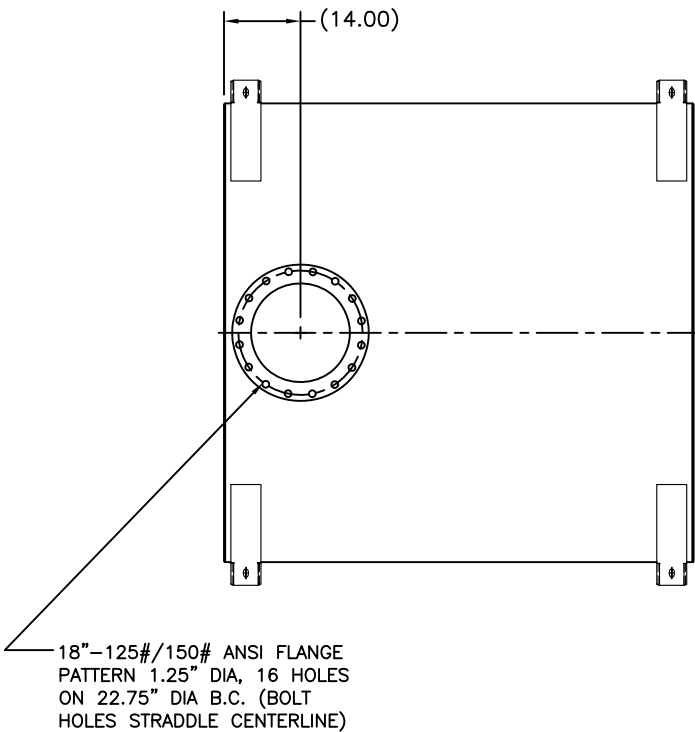
CHART KEY:

A—Size
B—Body: Brass (BR)
C—Seat: Brass (BR)
D—Poppets: Brass (BR)
Width—Width of Valve
Height—Height of Valve
Weight—Shipping Weight

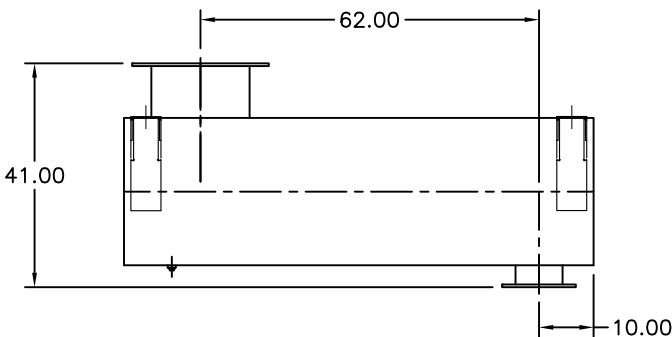
Screen is 20 Mesh Stainless Steel



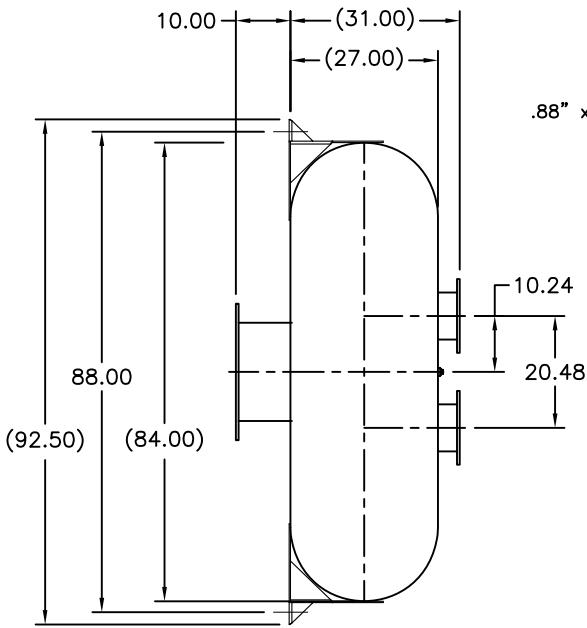
Exhaust System



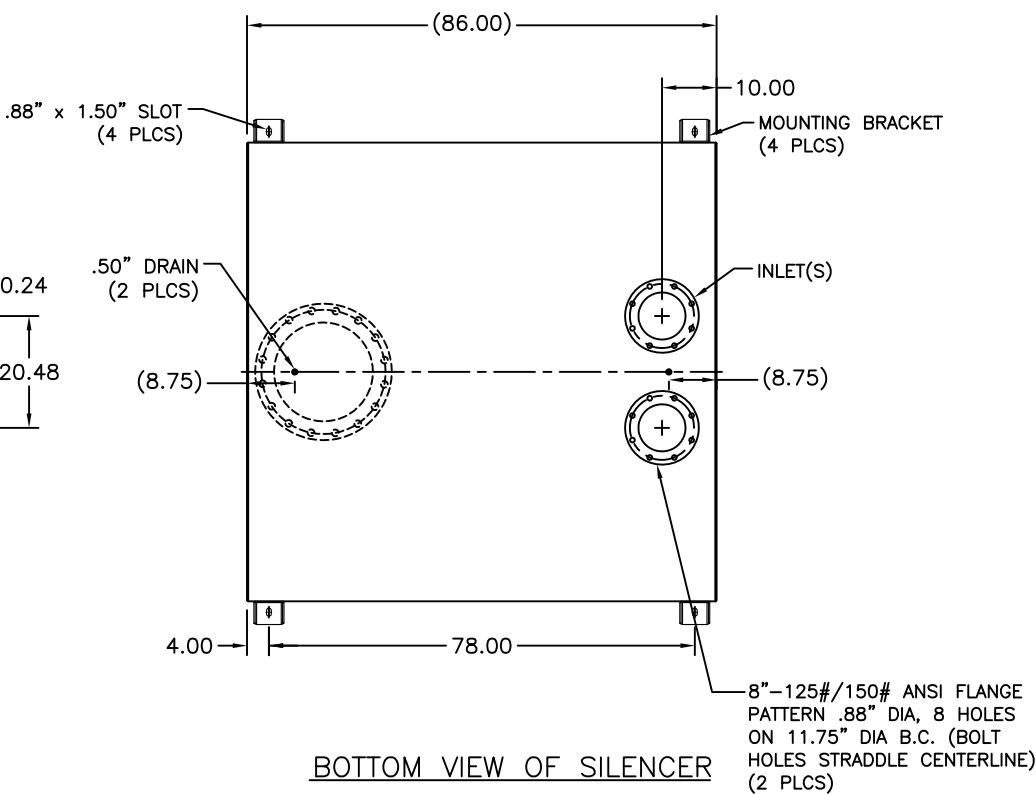
TOP VIEW OF SILENCER



SIDE VIEW OF SILENCER

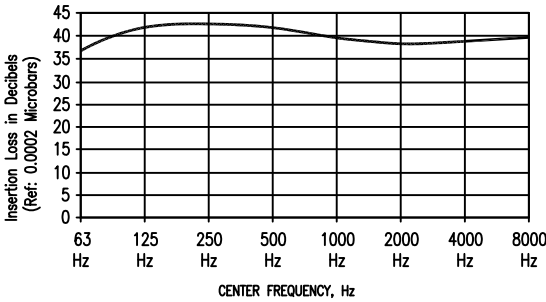


OUTLET END VIEW



BOTTOM VIEW OF SILENCER

Nominal Attenuation Curve for 516-C2-5114 TO 516-C2-5122
OCTAVE BAND (Consult Factory for Specific Applications)



FINISH: HIGH HEAT BLACK
APPROX. WT.: 1,700 LBS
ALL DIMENSIONS ARE IN INCHES
NOTE: 1) ALL DIMENSIONS ARE IN INCHES.
2) FOR MOST APPLICATIONS, IT IS RECOMMENDED THAT THIS SILENCER BE MOUNTED WITH AT LEAST A 3" CLEARANCE BETWEEN CEILING AND WALLS, EXCESSIVE TEMPERATURES, OR NEARBY FLAMMABLE MATERIALS MAY WARRANT ADDITIONAL CLEARANCE.
3) THIS SILENCER HAS 2" THK. INTERNAL INSULATION (NEW "SUPER COOL" MODEL)

TOLERANCES (EXCEPT AS NOTED)	REVISIONS				GT EXHAUST		
	NO.	DESCRIPTION	DATE	BY			
DECIMAL: ±.12"	A	ADDED SIDE OUTLET HIDDEN VIEW PER CUSTOMER	05/02/13	MAR	516-C2-5118-3-TOP-56320: 18" SLR CRIT		
FRACTIONAL: ±1/8"					DRAWN BY:	SCALE:	MATERIAL:
ANGULAR: ±2°					MAR/	NONE	HRS
					APP'D BY:	DATE:	DWG. NO.
						11/09/12	
					CUSTOMER:		56320
					CAT 3516 C		