VAPOR INTRUSION MITIGATION PLAN DESIGN
For:
325 Yonkers Avenue
Yonkers, NY 10701

Prepared for:

Mr. Irving D Cohen
President and CEO
Enviro-Sciences Inc.
781 Route 15 South/2nd Floor
Lake Hopatcong, NJ 07849

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Clean Vapor, LLC
NRPP ID: 104705

August 25, 2022

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KEY TERMS:
ESI: Enviro-Sciences (of Delaware), Inc.
Clean Vapor: Clean Vapor, LLC
SSDS: Sub-Slab Depressurization System
VOC: Volatile Organic Compound
': Feet
": Inches
"w.c.: Inches of Water Column
PVC: Polyvinyl Chloride

1 Introduction

1.1 Disclaimer

The information in this report including text, Clean Vapor example photographs, and diagrams shall be considered the intellectual property of Clean Vapor, LLC and is intended to facilitate the vapor intrusion mitigation of 325 Yonkers Avenue, Yonkers, NY 10701. Any reproduction of the content of this report in part or total for any other purpose is prohibited without the written consent of Clean Vapor, LLC.

1.2 Background

Environmental sampling at the site (not conducted by Clean Vapor) found that volatile organic compound (VOC) contaminants are present in the sub-slab soil of the site and levels exceed permissible concentration limits. ESI retained Clean Vapor, LLC (Clean Vapor) to conduct a building investigation, diagnostic testing, and prepare a Vapor Intrusion Mitigation System (VIMS) plan design.

A Sub-Slab Depressurization System (SSDS) has been designed to create a negative pressure field under the existing dry cleaner and stairwell slab areas. The SSDS is designed to ensure compliance with the New York State Department of Health's requirement for a negative pressure field of 0.004 inches of water column ("w.c.) / (~1 Pascals) at the outer extent of the negative pressure field during cumulative adverse conditions such as low outdoor temperatures, high winds, low barometer, and normal anticipated manufacturing exhaust equipment *(Sections 3 and 4, Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006).*

The design consists of specifications and drawings that provide details for installation. If installed, operated, and maintained per specifications, the SSDS will maintain required negative sub-slab pressures under reasonably anticipated conditions.

2 Building Investigation and Diagnostics

2.1 Building Areas of Concern

Clean Vapor completed the site investigation on Wednesday, August 17, 2022. The building is a two-story, concrete slab-on-grade structure. The first floor has a dry-cleaning facility, and the second floor is a vacant area which is accessed by a stairwell adjacent to the dry-cleaning facility. The total mitigation area is approximately 3,100 square feet. In the dry-cleaning facility, the slab is exposed. In the stairwell, the slab is covered in ceramic tiles. The slab thickness averages 6" and the substrate is sandy soil. The walls on the first and second floors are made of concrete - painted on the exterior and covered with drywall in the interior. The dry-cleaning facility and stairwell have a dropped ceiling with foam ceiling tiles and the vacant area on the second floor has an exposed ceiling. The roof is supported by steel beams on the second floor which are spaced 1' apart. The roof itself is made of plywood and is covered with a heat-applied rubber material on the exterior. There is also a parapet wall on 3/4 of the perimeter of the roof which is also covered in rubber material.

2.2 Diagnostic Testing

Diagnostic Testing involves vacuum field extension testing beneath the slab, recording indoor-outdoor pressure differentials, and gaining an awareness of mechanical equipment in the building that may induce vapor intrusion.

Floor plans of the building were hand sketched and test point locations for vacuum testing were determined based on the length of the building. A central 3-9/16" diameter suction point was cored through the slab and approximately 1 cubic foot of soil was removed. A series of ¼" test holes were drilled at approximately ten-foot intervals on transect lines extending away from the central suction point in 4 different directions.

Instrumentation used to collect data for vacuum field extension testing was as follows; micromanometer with 0.0001"w.c. resolution for all sub-slab vacuum measurements, digital manometer with .001"w.c resolution for applied vacuum, and vane anemometer for air flow.

Clean Vapor began by recording sub-slab differential pressure measurements from each test hole to establish a baseline prior to the application of vacuum. Next, a speed-controlled Shop Vacuum was used to generate multiple levels of applied vacuum at the central suction point. At each applied vacuum level, airflow yields from the suction point were recorded using a vane anemometer and sub-slab vacuum measurements were taken at each diagnostic test hole.

Upon completion of the vacuum field extension testing, the excavated soil was returned to the diagnostic suction point hole and the concrete surface restored. The test holes were sealed using gun-grade Tremco Vulkem 116 urethane-based Sealant.

2.3 Diagnostics Findings

The baseline pressures (no vacuum applied) indicated that the sub-slab pressure is positive relative to the indoor air, suggesting that there is potential for vapor intrusion. Pressure differentials that induce vapor intrusion are also expected to be greater during the heating season (winter) as compared to the cooling season (summer). The exhaust fans and drying machines in the space also affect the indoor air pressure and may induce vapor intrusion.

After coring the central suction point, we found that the sub-slab soil is sandy. Sandy soils have average permeability but variable porosity depending on compaction. Upon applying vacuum, we determined that there was a significant level of permeability and vacuum field extension at this site. It is expected that when future suction points are installed, a mitigation fan with 5"w.c. vacuum capacity will extend a sub-slab radius of influence of up to approximately 40'.

3 System Design and Installation

3.1 Suction Holes

Clean Vapor's SSDS design includes a total of 3 suction points. To limit potential disruption to building use, the suction points will be located near existing walls or corners. Once the suction point has been developed and sealed, vacuum will be applied to the suction point using an AMG Force mitigation fan.

3.2 Soil Management

ESI will be responsible for coordination of disposal soil and concrete cuttings.

3.3 Sealing Cracks and Joints

Observed slab cracks that have a 1/16" or greater opening will be sealed. Cracks will be sealed with a gun-grade urethane caulk sealant. Other observed slab openings, such as those that may occur around pipe penetrations through the slab or at expansion joints, will also be sealed with gun-grade urethane caulk.

3.4 Sealing Sump Pump

A retrofit, water-trap Dranjer will be installed to properly seal the sump pump. The Dranjer is designed to fit drains from 2"-8" in diameter and is installed under the existing strainer plate. After installation of the Dranjer, the new sump pump lid should be sealed using silicone caulking. Silicone is waterproof and easy to remove if the inside of the sump pump needs to be accessed in the future.

3.5 System Piping

Mitigation system components will be installed to facilitate servicing, maintenance and repair or replacement of other equipment components in or outside the building. Where mounting heights are not detailed, or dimensions not given, system materials and equipment are to be installed to provide the maximum headroom or side clearance as is possible. The owner's representative will be contacted in cases where a conflict is encountered.

The systems, materials and equipment will be installed level, plumb, parallel, or perpendicular to other building systems and components unless otherwise specified. Horizontal pipe runs between the fans and the first suction point will be installed with one-inch slope back to a suction point for each ten feet of horizontal pipe run. Horizontal runs after the first suction point may be run level. However, the piping should not be installed to create a possible water trap in the piping. Piping and fittings installed, unless otherwise noted or specified, should be PVC.

PVC pipes will be supported every six feet of horizontal run and every ten feet of vertical run. Suction point riser pipes will be secured to the wall or column adjacent to the suction point. Conduit channel with pipe clamps and split ring hangers will be used to support vertical pipe. Horizontal pipe can be supported using clamps, threaded rod, and swivel loop hangers. Pipes cannot be supported by other building piping or ducts.

3.6 Gate Valves

In the future there is a possibility that airflow in the sub-slab may change, and the system may need to be balanced to equalize the vacuum distribution throughout the system. Inline gate valves will be installed on suction point riser pipes at approximately the ten-foot elevation. Valves will enable the select suction points to be dampened to facilitate even distribution of sub-slab vacuum. Once adjusted, collar clamps may be used to lock the stem of the gate valve at a fixed position.

3.7 Blower Selection and Suction Point Locations

Blowers and suction points have been selected and specified based on the volume of air yield, static pressure readings, and measured vacuum field extension recorded during the diagnostic testing. The design objective of the Mitigation System is to create a minimum vacuum field of -0.004 "w.c. to the outer extent of the negative pressure field during cumulative adverse conditions. Pressure field projections are adjusted to accommodate anticipated field installation conditions. For example, when removing one cubic foot of soil under the slab, the static pressure can drop 20% and the volume of air increases subject to the limitations of the soil and blower. The radius of the negative pressure field beneath the slab may also increase. Since variability in soils and permeability exist beneath the slab, the projected radius is not based on a pure mathematical extrapolation but a total approach that includes the conditions. An examination of the soil matrix, sub-slab permeability mapping data, and Clean Vapor's professional experience factors are considered when developing these projections.

3.8 Blower Installation and Start Up

There will be one (1) AMG Force mitigation blower installed. The blower is specified based on diagnostic vacuum distribution and airflow measurements taken during diagnostics. When soil is removed from the suction point, solution channels that were not detected during the diagnostic phase are sometimes discovered. This can result in greater than expected airflow and decreased static vacuum. The blower has been sized in anticipation of these changes.

The blower frame will be supported by rubber Dura Bloks. The blower exhaust will be a minimum of two feet above the roofline and a minimum of 15 feet from windows, doors, air intakes, passive relief vents or other openings in the building that cannot be easily repaired.

A separate roofing contractor will need to be hired to seal pipe penetrations at the roof leading to the blower.

3.9 Blower Wiring

A separate electrician will need to be hired to provide power to the roof-mounted blower. A dedicated breaker should be used. This will prevent the blowers from being shut off when a circuit is powered down for an unrelated function. Based on the blower amperage requirements, the facilities engineer, or licensed electrician will determine the load for each circuit. The location of the panel chosen for wiring will be determined in conjunction with the building representative and ESI. The panel location and breaker number will be referenced in the final report and each breaker labeled. Electric panel locations, wire runs, and

breaker numbers will be noted on the As-Built Electrical Drawing and included in the final commissioning report.

3.10 Vacuum Indicators

A Magnehelic will be installed to indicate the static vacuum generated by the blower system. To the extent practicable, the range of the Magnehelic will be selected so that the indicator needle during operation is close to or just to the right of center on the dial face. The Magnehelics will be enclosed in a protective enclosure. The low pressure Magnehelic port will be connected with 1/4-inch outer-diameter, rigid polyethylene tubing to a common conveyance pipe in the system. The polyethylene tubing will arc to a higher elevation than where it exits the riser pipe before it is connected with the Magnehelics to reduce potential for condensation from running into the Magnehelics or creating a water trap in the tube. Exposed sections of tubing that run down from overhead will be enclosed in rigid conduit. The exact location of the Magnehelics panel is at the discretion of Clean Vapor, ESI, and the owner's representative and will be noted in the final system As-Built drawings.

3.11 Audible and Visual Alarm

A RadonAway Checkpoint IIA Audible and Visual alarm will be installed for regulatory compliance. The alarm system will be installed in the basement near the Magnehelic gage unless there is a determination to change the location of the alarm system during installation.

3.12 Fire Stopping

Small penetration openings such as those surrounding conduits will be sealed using intumescent fire-rated caulk. Hilti is the recommended manufacturer of fire stopping products.

3.13 Sampling Ports

Test ports for manually measuring vacuum and airflow will be installed in each of the riser pipes. Ports will be drilled, tapped, and plugged using a 3/8-16 x ¾ stainless steel socket cap screw with a neoprene washer. Soil gas samples may also be collected from these ports. Riser pipe port should be installed at approximately 60 inches above the floor. Permanent sub-slab test ports will be installed at various locations throughout the individual system vacuum fields for the purpose of measuring sub-slab vacuum. The vacuum measured at these permanent ports will have a somewhat linear relationship to the vacuum applied at the suction holes and measured at the pressure transducer port(s). The location of these ports will be shown on the As-Built drawings.

3.14 System Labeling

A label will be installed on the riser pipes, sensor enclosure and at the disconnect switch next to the fan that says, "Active Soil Depressurization System, Do Not Alter." The electrical circuit at the panel that is used to control the fan will be labeled as "Active Soil Depressurization System" with the corresponding blower number. At a minimum, every 20' of exposed horizontal contaminant vent pipe length will have an ANSI compliant label that reads "SSD System" and indicates direction of flow attached to the pipe. A

weatherproof engraved label will be affixed to the blower frame on the roof with a corresponding label on the Magnehelics panel. The labels will be readable from three feet away.

4 General Installation Notes

The mitigation system components will be installed to facilitate servicing, maintenance and repair or replacement of other equipment components in or outside the building. Where mounting heights are not detailed, or dimensions not given, system materials and equipment are to be installed to provide the maximum headroom or side clearance as is possible. ESI will be contacted in cases where a conflict exists. All systems, materials and equipment will be installed level, plumb, parallel, or perpendicular to other building systems and components unless otherwise specified.

Penetrations through walls and the roof will be sealed. There will not be placement of piping or conduit that would inhibit intended use of building areas under current foreseeable conditions. Foreign materials should not be left to be drawn into the vapor system piping or fan which could interfere with, or impair, the vapor system performance. System components should have UL or equivalent ratings as applicable.

5 System Materials

5.1 Vapor Vent Piping:

- 3", 4" Schedule 40 PVC Pipe and fittings ASTM D-2665
    i. Hollow Core PVC is not permissible
- PVC cement clear primer will comply with ASTM F-656
- PVC cement adhesive will comply with ASTM D-2564

5.2 Piping Supports and Hardware:

- 3", 4" Hanging Pipe Supports
    i. 3", 4" Unistrut Clamps
    ii. Adjustable swivel ring or standard bolt type clevis hangers
    iii. Adjustable band hangers
    iv. 3" Split Ring Hangers
    v. 3" and 4" Conduit Clamps
    vi. Sammy 3/8 in. x 2-1/2 in Vertical Rod Anchor Super Screw 3/8 in
- 3/8" threaded rod
- 1/2" threaded rod
- Assorted zinc plated bolts, nuts & washers
- 1 3/16" C- Profile Galvanized Uni-strut
- 1 5/8" C- Profile Galvanized Uni-strut
- Ceiling Plates / Wall Plates
- Beam Clamps

5.3 System Control Valves:

- 3" inline PVC Gate valves (Valterra Bladex)

5.4 Vapor Blowers:

- AMG Force

5.5 Vapor Blower Couplers:

- Fernco or equivalent 3"x3",4"x4",4"x3" Stainless Steel Banded Rubber Couplers

5.6 Blower Support Frames:

- 1 5/8-inch C- Profile Galvanized Uni-strut
- Dura Block™ Uni-strut Supports

5.7 Visual Pressure Indicator and Protective Enclosure:

- Dwyer Magnehelic (1) (Pressure Range to Be Determined)
- Integra Enclosures
    i. Magnehelics /Sensor Enclosure 8-inch X 8-inch H8084H Backing Plate PVCBP-88 (1)

5.8 Checkpoint Alarm

- RadonAway Checkpoint IIA Audible and Visual alarm

5.9 Sealing Materials:

- Gun-Grade Urethane Caulk (Vulkem 116)
- Flowable Urethane Caulk (Vulkem 45SSL)
- JN-6 Industrial Model Dranjer
- 3/8 Clear Polycarbonate
- Gun-Grade Silicone Sealant

5.10 Fire Stopping:

- Hilti Gun Grade Silicone Fire Sealant CFS-S-SIL GG
- *Note: Hilti is the suggested manufacturer of fastening and fire prevention products*

6 Administrative and Final Report

6.1 Permits

The owner or representative will need to provide building access for the municipal building inspectors or any other jurisdictional authority to inspect the relevant components of the SSDS.

6.2 Warranties

The mitigation contractor will warranty system components and workmanship for a period of one year from the date of system commissioning. Sub-slab vacuum extension values are based on the conditions at the date of the diagnostic measurements. The owner will not incur cost for warranty work performed during this period. Fluctuating water tables, sink holes, future building changes, and other unforeseen sub-slab anomalous conditions that may affect indoor air pressures or sub-slab soil gas channeling after commissioning values have been achieved may be considered outside of the warranty. Repairing system damage caused by others is not included in the warranty. Clean Vapor's performance, materials and workmanship warranty does not apply to systems installed by others.

6.3 Final Project Report

The pressure field extension beneath the slab created by the SSDS will be measured with a digital micro-manometer capable of reading down to 0.0001"w.c. The gate valves in the riser pipes will be adjusted to facilitate maximum vacuum distribution. Static vacuum measurements for each system will be recorded. The vacuum measurements will be measured in inches of water column. The exhaust airflow from the blower system will be measured, calculated, and reported in cubic feet per meter (CFM).

The final report summarizing remedial activities will include a summary of remedial activities, As-Built drawings, blower and system performance tables, photo documentation, equipment warranties and material submittals. The As-Built drawings will be a modification of the original design print and include the specific locations of mechanical equipment, conveyance piping and permanent sub-slab test ports. The electrical panel location and breaker number will also be noted for the blower. The location of the low-pressure gauges will also be shown on the drawing. The title block will include the final system installation date.

Photo documentation will include at least one picture of the blower(s) installed, the pressure gauge panel, system labels, suction points, relevant sealing, fire stopping, post-mitigation vacuum testing and pictures thought to be important by the owner. Warranties and Submittals will include blower warranties, performance and wiring information and Material "cut sheets." The Operations and Maintenance Section will include a table of items to be checked quarterly and annually. A copy of the final report will be maintained by Clean Vapor, ESI, and building representatives.

7 Submittals

The mitigation contractor will provide copies of submittals.

I. Pre-Work Submittals
   a. Copy of applicable licenses
   b. Equipment manufacturer cut sheets

II. Post Work Submittals
   a. As-Built drawings to include the applicable mechanical component locations
   b. Final project report
   c. OM&M instructions and recommendations

Appendix A – Pressure Differential Data Tables

Test Suction Point #1 (SP-1)

Lithology: 6" Concrete slab atop of sandy soil

Power Setting		High	Medium	Low	Custom
Vacuum Applied (“w.c.)		18.91	9.50	4.5	2.25
Airflow (cfm):		106.09	67.66	40.00	20.25

Transect	Test Hole	Distance In Feet From SP-1	Baseline (Vacuum Off)	High	Medium	Low	Custom
1	V-1	1	+0.0004	-17.3000	-9.2300	-4.4700	-2.1300
	V-2	5	+0.0006	-9.4700	-4.1800	-1.8800	-0.9270
	T-1	10	+0.0012	-3.7000	-1.6800	-0.8590	-0.4170
	T-2	20	+0.0010	-0.4510	-0.2600	-0.0780	-0.0300
	T-3	30	+0.0007	-0.1060	-0.1210	-0.0212	-0.0080
2	T-4	10	+0.0020	-3.3900	-1.9000	-0.9560	-0.5870
3	T-5	10	+0.0014	-5.1300	-3.0100	-1.5800	-0.9810
	T-6	20	+0.0016	-2.3100	-1.4300	-0.7930	-0.5240
4	T-7	10	+0.0029	-5.1600	-2.9300	-1.4100	-0.9010

Pressure Differential Table

Outside Temp / Conditions	Clear Sky, 76 °F, S Wind at 6 MPH, 29.95" HG Bar Pressure, 50% Humidity
10 Second Interval	**Differential Pressure Reading ("w.c.) Reference = Outside Input = Inside (Main Entrance)**
1	-0.02
2	-0.0202
3	-0.0214
4	-0.0212
5	-0.0208
6	-0.0221
7	-0.0217
8	-0.0188
9	-0.0203
10	-0.0216
Average	-0.02081

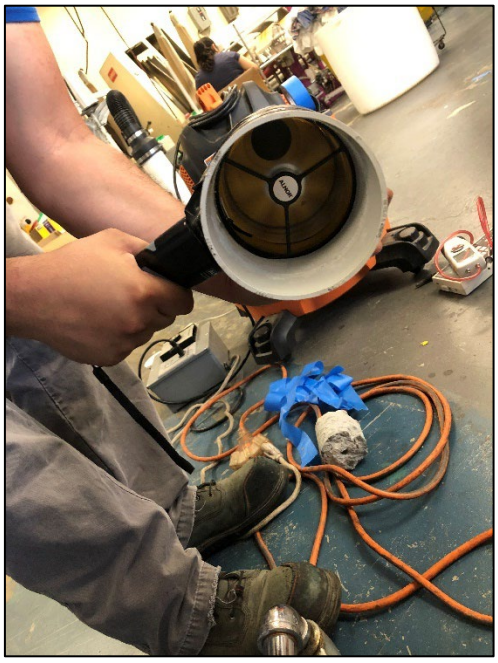
Appendix B – Photographs

Coring Test Suction Hole with Dust Collection

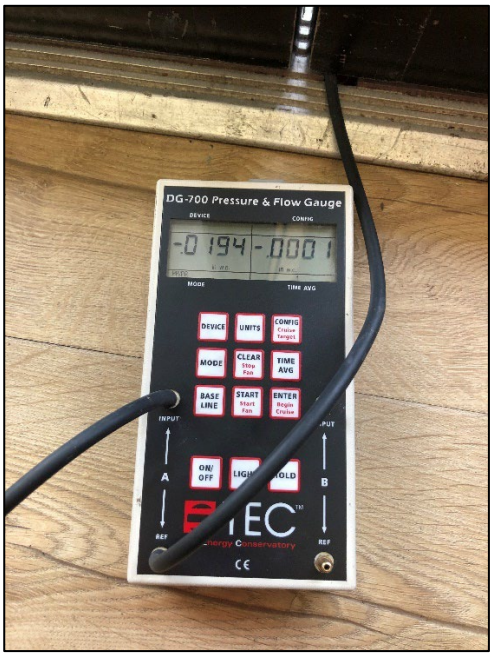
Drilling Quarter-Inch Test Hole with Dust Collection

Diagnostic Setup

Measuring Applied Vacuum



Measuring Soil Airflow Yields



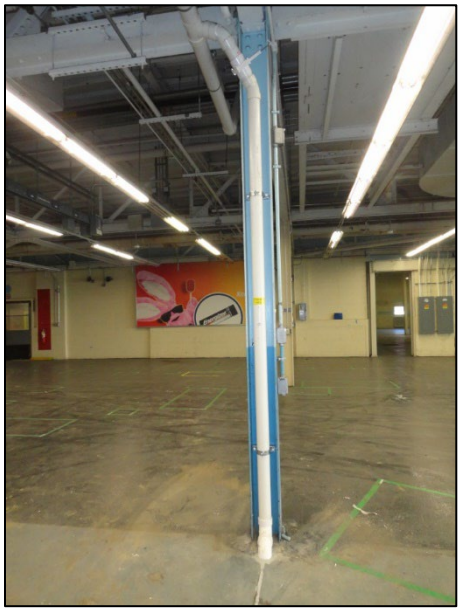
Measuring Indoor Outdoor Pressure Differentials

Sandy Soil Below the Slab

Exhausting Soil Vapors

Installation Examples

Suction Point Sealing



Vertical and Horizontal Pipe Runs

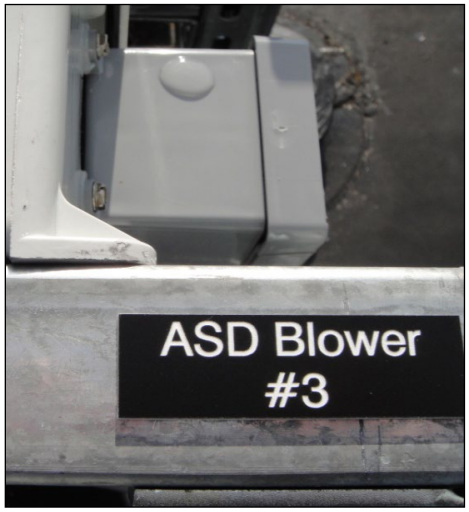
Vertical and Horizontal Pipe Runs

Inline Gate Valve

Typical Floor Crack or Expansion Joint Sealing

Riser Pipe with System Label, Suction Point # and Sampling Port

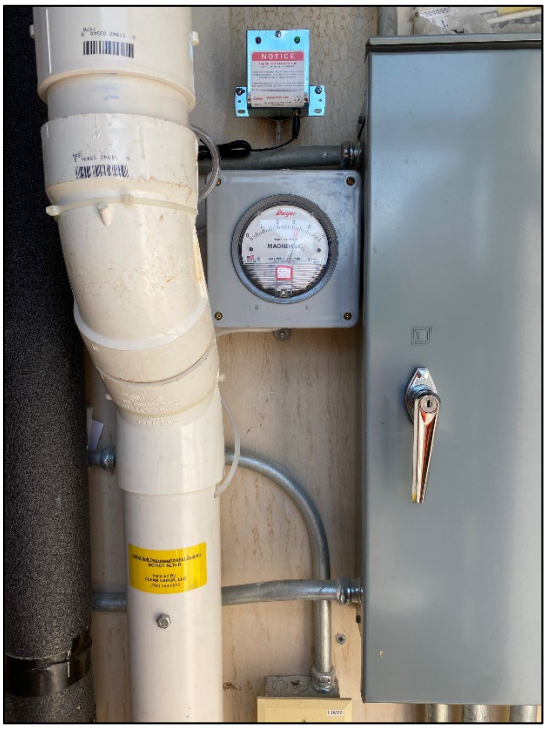
System Label



Outdoor Engraved Blower Label

Permanent Floor Test Port

Roof-Mounted AMG Force Blower with Custom Support Frame



Magnehelic Gauge Enclosure, Riser Test Port with ASD Affixed Label and Checkpoint IIA System Alarm

Electrical Room Breaker Panel with Labels

Appendix C – Drawings

ACTIVE SOIL DEPRESSURIZATION SYSTEM
325 YONKERS AVE
YONKERS, NY 10701

AUGUST 25, 2022

DRAWING LIST

C	Cover
V-1	Diagnostic Test Holes
V-2	Suction Points First Floor
V-3	Suction Points Second Floor
D-1	Mechanical Details

CLEAN VAPOR LLC

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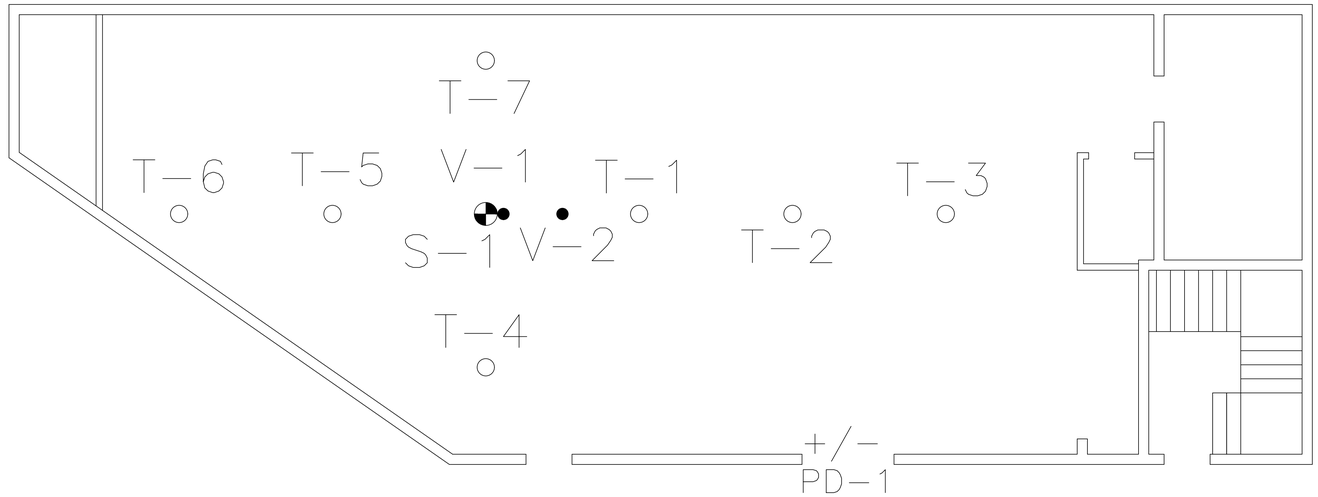

N

TRUE PLAN

0 4' 12'

2' 8' 16'

GRAPHIC SCALE

LEGEND

T–X	TEST HOLE
V–X	VELOCITY TEST HOLE
S–X	SUCTION POINT
+/– PD–1	INDOOR / OUTDOOR PRESSURE DIFFERENTIAL

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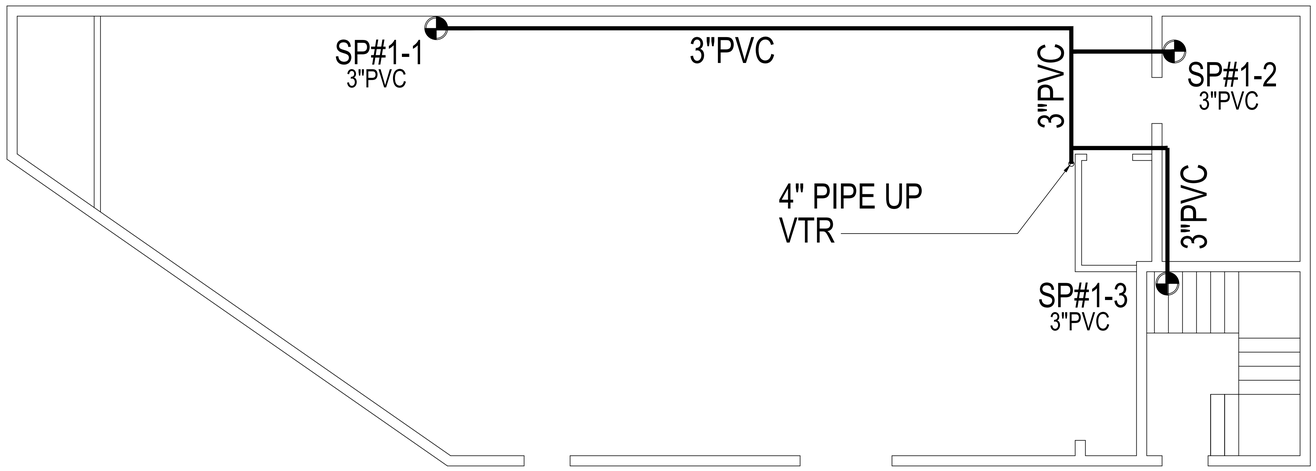
ACTIVE SOIL DEPRESSURIZATION SYSTEM
325 YONKERS AVE
YONKERS, NY 10701

REVISION	DATE

DATE	8–25–22
DRAWN BY	DAB
APPROVED	TEH
SCALE	1/4"=1'
CHECKED BY	TEH

SHEET TITLE
DIAGNOSTIC TEST HOLES

SHEET NO.
V-1



TRUE N PLAN

LEGEND

SP#1-1 3"PVC — SUCTION POINT

0 4' 12'

2' 8' 16'

GRAPHIC SCALE

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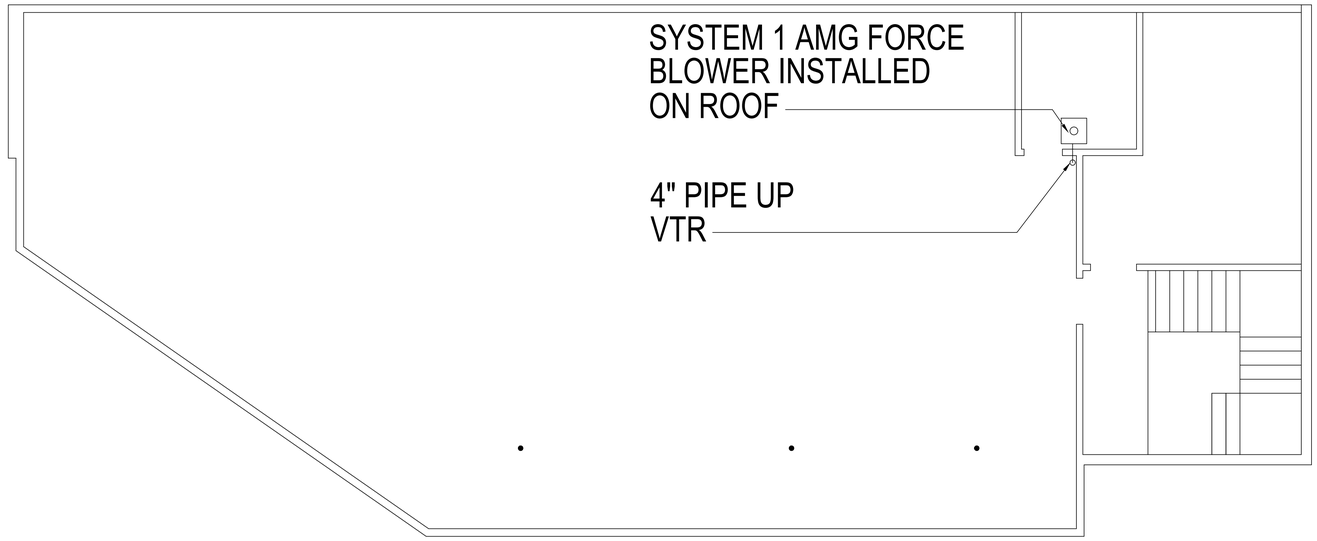
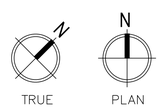
REVISION	DATE

DATE	8-25-22
DRAWN BY	DAB
APPROVED	TEH
SCALE	1/4"=1'
CHECKED BY	TEH

SHEET TITLE
SUCTION POINTS FIRST FLOOR

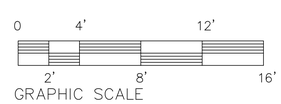
SHEET NO.
V-2





LEGEND

⊡ AMG FORCE BLOWER



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CLEAN VAPOR

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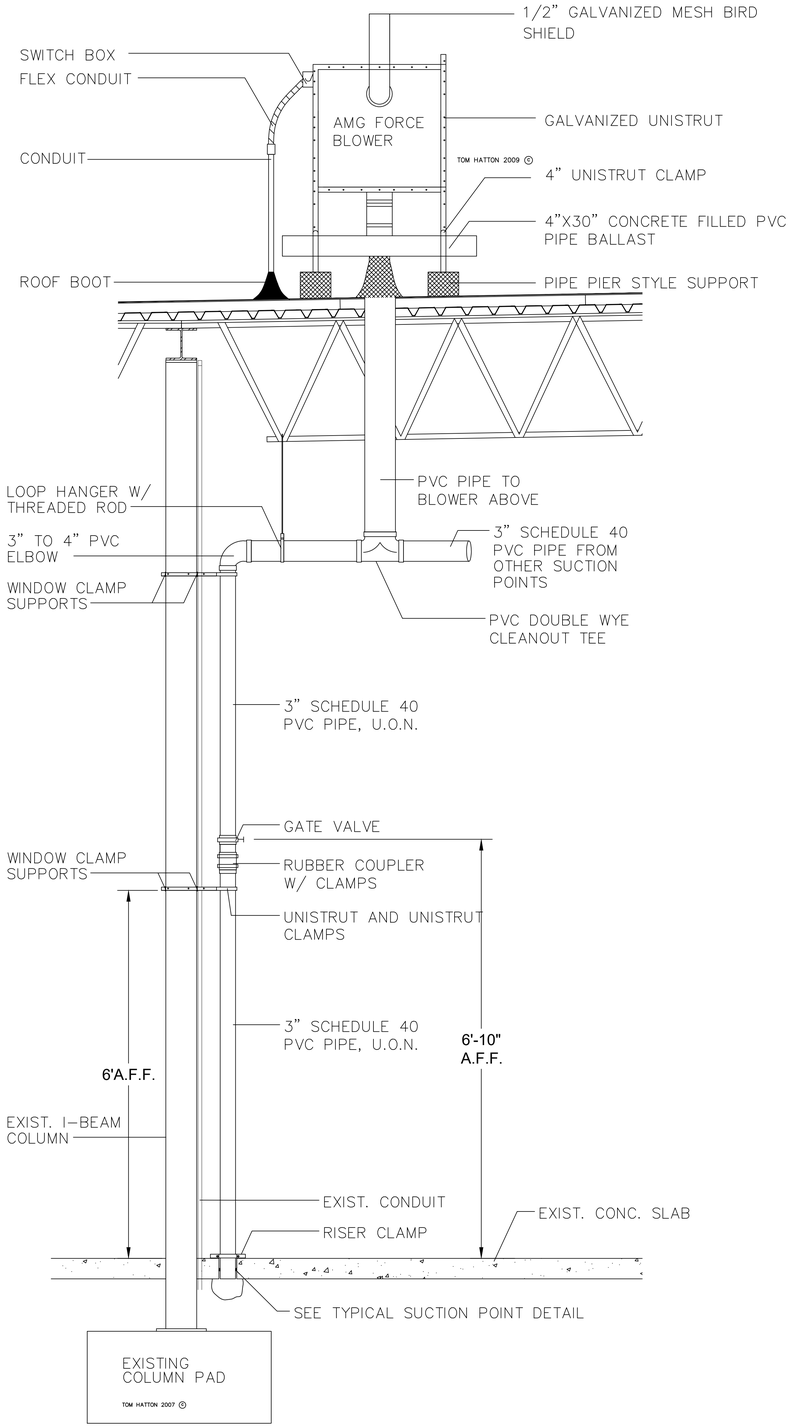
325 YONKERS AVE
YONKERS, NY 10701

REVISION	DATE

DATE	8-25-22
DRAWN BY	DAB
APPROVED	TEH
SCALE	1/4"=1'
CHECKED BY	TEH

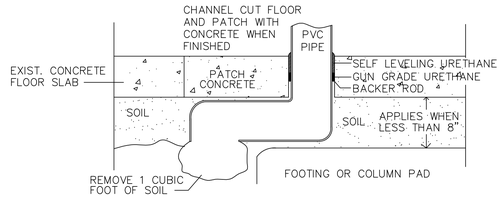
SHEET TITLE
SUCTION POINTS SECOND FLR

SHEET NO.
V-3

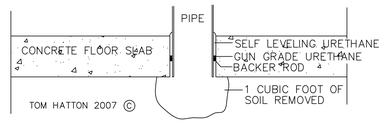


TYPICAL USED COLUMN DETAIL

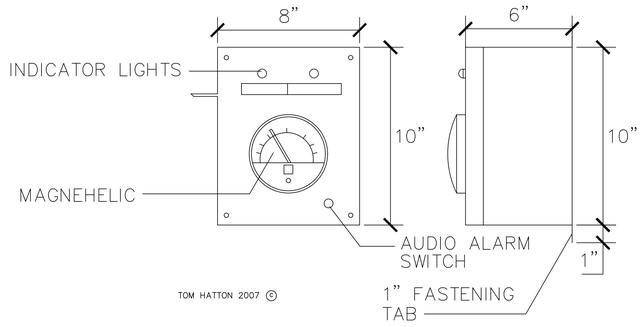
TYPICAL SUCTION POINT DETAIL AT FOOTER



TYPICAL SUCTION POINT DETAIL



MAGNEHELIC AND LIGHT ALARM PANEL DETAIL



CLEAN VAPOR LLC
P.O. BOX 688, BLAIRSTOWN, NJ 07825
Ph. 908 362-5616 Fax. 9708 362-5433
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CLEAN VAPOR

ACTIVE SOIL DEPRESSURIZATION SYSTEM
325 YONKERS AVE
YONKERS, NY 10701

REVISION	DATE

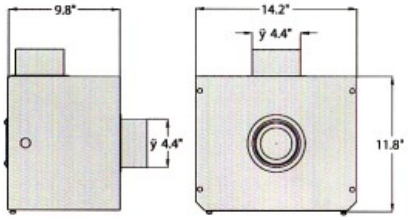
DATE	8-25-22
DRAWN BY	DAB
APPROVED	TEH
SCALE	NTS
CHECKED BY	TEH

SHEET TITLE
MECHANICAL DETAILS

SHEET NO.
D-1

Appendix D – Cut Sheets

AMG Force



AMG Force, Radon Extract Fan Performance Figures

				CFM at STATIC PRESSURE in. w.g.										
Model	**Volts**	**Watts**	**Max. Amps**	**0"**	**0.5"**	**1.0"**	**1.5"**	**2.0"**	**2.5"**	**3.0"**	**3.5"**	**4.0"**	**4.5"**	**5"**
AMG Force	120V 60Hz	302	2.48	240	223	207	191	174	155	133	110	83	55	28
Weight: 8 lbs. 3 oz. Fan Speed: 3000 rpm														

Performance shown is for installation type D - Ducted inlet, Ducted outlet.
Speed (rpm) shown is nominal. Performance is based on actual speed of test.
Performance ratings do not include the effects of appurtenances in the air stream.
The performance figures shown have been corrected to standard air density.

*We have brackets, too!

To Order Call 1 (800) 806-7866 or 1 (877) 264-3267

Festa Manufacturing Enterprises, LLC.
Festa International Radon Supply Technologies, Co.
Festa Radon Technologies Co.

1 (800) 806-7866 1 (877) 264-3267
47A Progress Avenue, Cranberry Twp., PA 16066

DURA-BLOK™ Rooftop Supports

DURA-BLOK is made from 100% recycled rubber and qualifies for LEED credits. Reflective strips on both sides allow for easy product visibility.

Channels are through bolted on all sizes for added strength and a 1" (25.4mm) gap between blocks allows water to flow freely around longer assemblies.

Product composition is not sharp or abrasive, helping to extend the roof life and no penetration through the roof is required.

The DURA-BLOK dampens vibration, needs no supplemental rubber pad, and will not float or blow away.

DURA-BLOK can be used to support piping, HVAC/Ducts, roof walkways, conduit and cable tray.

Base Only

DBP


DBM

Base Only

Dimensions - 4" (101mm) High x 6" (152mm) Wide x Base Length

Material - 100% recycled rubber, UV resistant

Ultimate Load Capacity - (uniform load) *

DBP = 500 lbs. (2.22kN)

DBM = 200 lbs. (0.89kN)

DURA-BLOK channel support is designed as an economical support for piping systems, cable tray, HVAC equipment and many other applications. The DURA-BLOK is UV resistant and is suitable for any type of roofing material or other flat surfaces. Material effectively accepts screw fasteners for securing accessories.

Part No.	Weight Each
DBP	4.48 (2.03kg)
DBM	2.35 (1.07kg)

Part No.	Height	Width	Length
DBP	4" (101mm)	6" (152mm)	9.6" (244mm)
DBM	4" (101mm)	6" (152mm)	4.8" (122mm)

*** For Roof Loading, Consult Roofing Manufacturer or Engineer. As with most commercial roofs, the weakest point may be the insulation board beneath the rubber membrane.**

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

EMT

DESIGNATORS		APPROX WT PER 100'		OUTSIDE DIAMETER		NOMINAL WALL THICKNESS		RED AND GALVANIZED BUNDLE QUANTITY		ALL OTHER COLORS BUNDLE QUANTITY	
TRADE SIZE	METRIC	LB	KG	IN	MM	IN	MM	IN	MM	FT	M*
1/2	16	30	13.6	0.706	17.9	0.042	1.07	7000	2135	3500	1067.5
3/4	21	46	20.9	0.922	23.4	0.049	1.25	5000	1525	2500	762.5
1	27	67	30.4	1.163	29.5	0.057	1.45	3000	915	1500	457.5
1-1/4	35	101	45.8	1.510	38.4	0.065	1.65	2000	610	2000	610.0
1-1/2	41	116	52.6	1.740	44.2	0.065	1.65	1500	457.5	1500	457.5
2	53	148	67.1	2.197	55.8	0.065	1.65	1200	366.0	1200	366.0
2-1/2	53	216	98.0	2.875	73.0	0.072	1.83	610	186.1	610	186.1
3	78	263	119.3	3.500	88.9	0.072	1.83	510	155.6	510	155.6
3-1/2	91	349	158.3	4.000	101.6	0.083	2.11	370	112.9	370	112.9
4	103	393	178.2	4.500	114.3	0.083	2.11	300	91.5	300	91.5

*Other Color sizes (2-4) are available thru special order.

Firestop Gun Grade Silicone Sealant CFS-S SIL GG

Product description

- A silicone based firestop sealant that provides maximum movement in fire-rated joints, and seals through-penetration applications

Product features

- Halogen and solvent free
- Asbestos free
- Simple to use and apply
- Good adhesion without use of a primer
- Smoke, fume, water and UV resistant
- Excellent movement capability, meets 500 cycle requirements (ASTM E 1966 and UL 2079)
- Meets Class I W-rating requirements
- Meets LEED™ requirements for indoor environmental quality credit 4.1 Low Emitting Materials, Sealants and Adhesives and 4.2 Paints and Coatings

Areas of application

- Sealing construction/expansion joints
- Top-of-wall joints
- Metal pipes
- Cable bundles
- HVAC penetrations

For use with

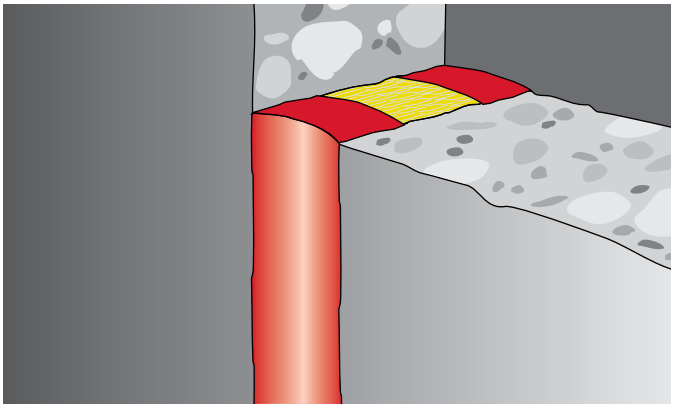
- Various base materials such as masonry, concrete, metal, etc.
- Wall and floor assemblies rated up to 4 hours

Examples

- Where a gypsum wall assembly meets the underside of a metal or concrete deck
- Sealing expansion joints to impede the passage of fire, smoke and toxic fumes
- Sealing around penetrations through fire-rated assemblies

Installation instructions

- Refer to what is included in the package, the MSDS, and the applicable listing.



Technical Data*	CFS-S SIL GG
Chemical basis	Neutral elastic silicone
Density	Approx. 1.4 g/cm³
Color	Available in red, white, and gray
Application temperature	40°F to 104°F (5°C to 40°C)
Skin-forming time	Approx. 15 min.
Curing time	Approx. 2 mm / 3 days
Volume shrinkage	Approx. 0 – 5%
Movement capability (UL 2079)	Approx. 33%
Temperature resistance	–40°F to 300°F (–40°C to 149°C)
Surface burning characteristics (ASTM E84-12)	Flame spread: 0 Smoke development: 25
Sound transmission classification (ASTM E 90-09)	59 (Relates to specific construction)
Tested in accordance with	UL 2079 ASTM E 814 ASTM E 1966 ASTM C 920 UL 1479 ASTM E 84 ASTM G21

*At 73°F (23°C) and 50% relative humidity

CLASSIFIED C UL US
FILL, VOID OR CAVITY MATERIAL
FOR USE IN THROUGH-PENETRATION
FIRESTOP SYSTEMS AND
JOINT SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
5BP5

FM APPROVED

FBC SYSTEM COMPATIBLE
Visit fbcsystemcompatible.com.
FBC™ is a trademark of
the Lubrizol Corporation.

W rated SYSTEMS AVAILABLE

Hilti. Outperform. Outlast.

Firestop Collar (CP 643N)

Product description

- A ready-to-use firestop collar, made of a galvanized steel housing and intumescent inserts for firestopping combustible pipes

Product features

- Ready-to-use collar
- No construction required
- Fast installation time
- Adjustable mounting tabs
- Low profile for tight installations

Areas of application

- Firestopping combustible pipes up to 6" diameter in penetrations through fire walls and floors
- Suitable for the following pipe materials:
- PVC, CPVC, ABS, PVDF, PP and FRPP

For use with

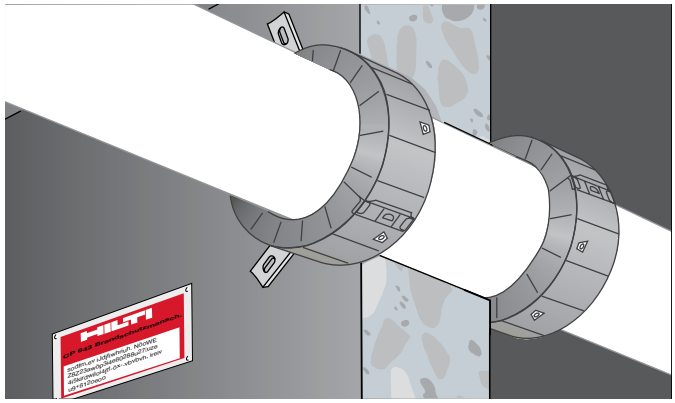
- Concrete, masonry, wood floor and gypsum wall assemblies
- Wall and floor assemblies rated up to 4 hours

Types of installation

- Wall: two collars, one on each side
- Floor: one collar on underside (bottom)

Example

- Waste water pipes
- Fresh water pipes



Technical Data	CP 643N		
Description	Pipe outside dia (in.)	Collar outside dia. (in.)	Collar Height (in.)	No. of hooks and fasteners
CP 643-50/1.5"N	1.4–2.0	2.8	0.9	2
CP 643-63/2"N	2.0–2.5	3.4	1.3	2
CP 643-90/3"N	2.6–3.6	4.9	1.7	3
CP 643-110/4"N	3.6–4.5	6.0	1.9	3
CP 643-160/6"N	6.6	9.8	1.9	4
Temperature resistance		-40°F to 140°F (–40°C to 60°C)		
Intumescent activation		Approx. 392°F (200°C)		
Expansion ratio (unrestricted)		Up to 1:10		

Tested in accordance with
• UL 1479 • ASTM E 814 • ASTM G21

CLASSIFIED c UL us
FIRESTOP DEVICE
FOR USE IN THROUGH-PENETRATION FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY 5N76

FM APPROVED

FBC SYSTEM COMPATIBLE
Visit fbcsystemcompatible.com.
FBC™ is a trademark of the Lubrizol Corporation.

Installation instructions for CP 643N

Notice

- Before handling, read Material Safety Data Sheet and product label for safe usage and health information.
- Instructions below are general guidelines — always refer to the applicable drawing in the UL Fire Resistance Directory or Hilti Firestop Systems Guide for complete installation information

Opening

1. Clean the plastic pipes. Expansion of the intumescent material during a fire acts to close the plastic pipe. Very dirty pipes (ie: with remains of mortar) may lead to a delay in this closing action. Soiled plastic pipes should, therefore, be cleaned in the area where the CP 643N Firestop Collar is to be installed.

Application of firestop system

2. Seal the opening if required. Gaps may be closed with FS-ONE. The approved methods vary and are given in the specific UL system.
3. Close the CP 643N Firestop Collar. Place the CP 643N Firestop Collar around the plastic pipe and lock the closure by applying firm pressure until it latches.
4. Attach fastening hooks. The fastening hooks can be attached to various points on the metal housing. This allows the fastening points to be made to suit the space available in each case. The hooks must be positioned as symmetrically as possible. The required number of fastening hooks is indicated on the packaging.
5. Fastening the CP 643N Firestop Collar. Only when fastened properly can CP 643N offer protection against fire.

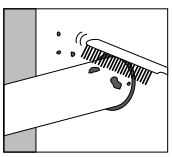
a. Mark the fastening points.
b. Drill holes with a Hilti rotary hammer drill (i.e. TE 4-A18) or, depending on base material, fasten using Hilti powder-actuated tool.
c. To secure the CP 643N Firestop Collar, use Hilti anchors/fasteners.
d. For maintenance reasons, a penetration can be permanently marked with an identification plate and fastened in a visible position next to the seal.

Not for use

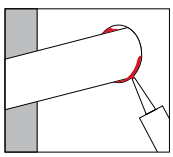
- With metal pipes
- In highly corrosive surroundings
- With unapproved anchors/fasteners

Storage

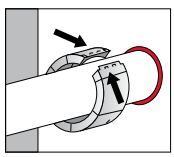
- Store only in the original packaging in a location protected from moisture



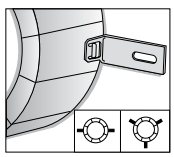
1. Clean plastic pipe.



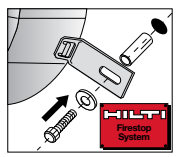
2. Close remaining gap to provide smoke and gas resistant seal.



3. Close collar.



4. Attach fastening hooks.



5. Fasten collar and identification plate (if required).

Hilti Firestop
Saving lives through innovation and education

Hilti. Outperform. Outlast.

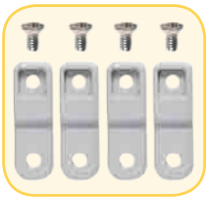
8X8X4 PREMIUM LINE

PREMIUM POLYCARBONATE ENCLOSURE

Features and Benefits

- 16 Standard configurations including hinged or non-hinged lids in 2-screw, 4-screw, or stainless steel metal latched lids.
- Standard color – light gray with a gloss finish.
- Best material – bases, opaque covers and clear covers are all made of high-impact, UV resistant polycarbonate.
- Easy ordering – one part number includes base, lid, mounting feet or flanges and all lid fastening hardware (mounting panels sold separately).
- Flexible interior mounting – features the unique and patented Integra adjustable depth "T-Rail" back panel mounting system (back panel and adjustable brackets sold separately).
- Features multiple bosses for easy installation of devices and DIN rails.
- UL-50 / c-UL Listed (files # E229365, # E207562)

Our Premium line of enclosures are the most durable, aesthetically pleasing, non-metallic Nema UL rated enclosures available. From the extremely versatile mounting options inside the enclosure to having the most off the shelf accessories, the Integra "Made In the USA" Premium line of enclosures provide great value to any application.



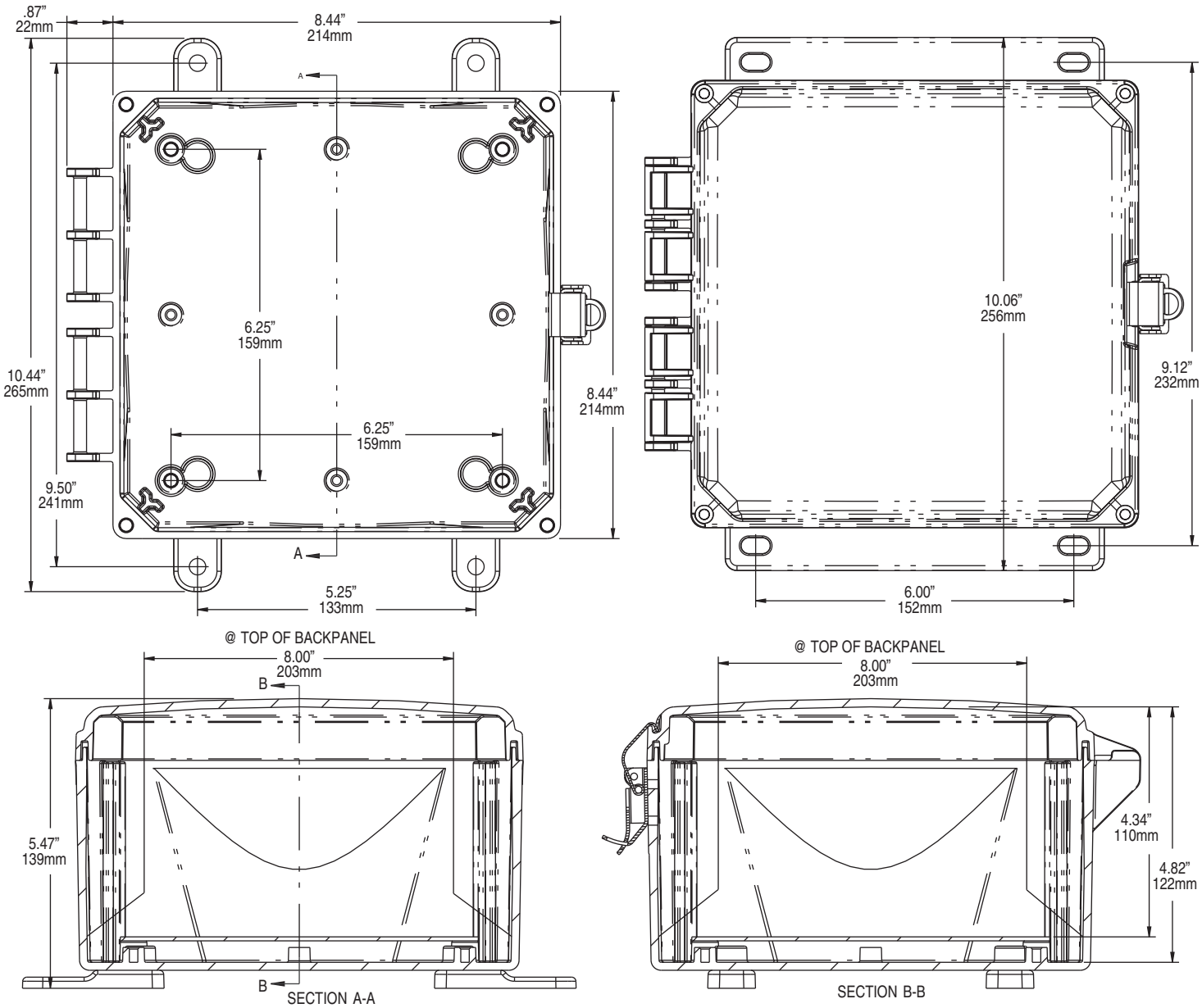
Comes with feet or flanges.

Atex pending, contact factory for details

Mechanical and Thermal	Test Spec.	Unit	Premium Line
Instrumented Dart Impact @ 73° F		in/lb.	565
Falling Ball/Impact @ 73° F	UL-746	in/lb.	900
Deflection Temperature @ 264 psi	ASTM D648	Deg. F	270
Modulus of Elasticity	ASTM D790	x 10^5 lb/in^2	3.4
Temperature Range		Deg. F	-40 to 265
Flammable / UV Ratings	**Test Spec.**	**Unit**	**Premium Line**
Flame Rating - UL	UL 94	-	V2
Outdoor UV Exposure	UL	-	F1

8084 P/N	4X IP66	6P IP68	Hinged Cover	Screw Cover	Opaque Cover	Clear Cover	Mounting Feet	Mounting Flange	Stainless Steel Locking Latch	T-Rail System
H8084S	✓	✓		✓	✓		✓			✓
H8084SC	✓	✓		✓		✓	✓			✓
H8084SF	✓	✓		✓	✓			✓		✓
H8084SCF	✓	✓		✓		✓		✓		✓
H8084H	✓		✓	✓	✓		✓			✓
H8084HC	✓		✓	✓		✓	✓			✓
H8084HF	✓		✓	✓	✓			✓		✓
H8084HCF	✓		✓	✓		✓		✓		✓
H8084HLL	✓		✓		✓		✓		✓	✓
H8084HCLL	✓		✓			✓	✓		✓	✓
H8084HFLL	✓		✓		✓			✓	✓	✓
H8084HCFLL	✓		✓			✓		✓	✓	✓
H8084H-6P	✓	✓	✓	✓	✓		✓			✓
H8084HC-6P	✓	✓	✓	✓		✓	✓			✓
H8084HF-6P	✓	✓	✓	✓	✓			✓		✓
H8084HCF-6P	✓	✓	✓	✓		✓		✓		✓

TORQUE SPECIFICATIONS - Mounting Brackets - 1/4"-20 x 0.25 SS, countersunk phillips drive screws (torque limit = 20 in. lbs.) | **Covers / Doors** - Torque for corner screws is 5 pounds inches.



Register online to download this drawing off the Integra website at www.integraenclosures.com | Your company's logo or other information on the lid. Consult factory for details.

Accessories for 8x8x4 (For complete accessories, see page 39-42)

Back Panels
ABP88 - Aluminum panel
SBP88 - Steel panel
PVCBP88 - PVC panel

Swing Out Panels
ABP-88SP/SOPK - Complete panel kit
ABP-88SP - Aluminum swing out panels only
SOPK - Hardware only

Back Panel Adjustment Kit
BPAKG - Grey
BPAKB - Black

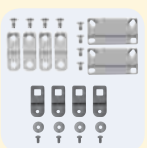
Air Vents
VENT 1 - Aluminum louvered
VENT 2 - Outdoor labyrinth

Lock
CAT 60
CAT 90

Mounting Screws
SP-10 - 10 Pieces self-tapping screws for bosses

Din Rail
DIN 8 - 2 rails, 4 screws

Pole Mounting Kit
PMKG-28 - 2" pole
PMKG-38 - 3" pole
PMKG-48 - 4" pole
PMKG-128 - 12" pole



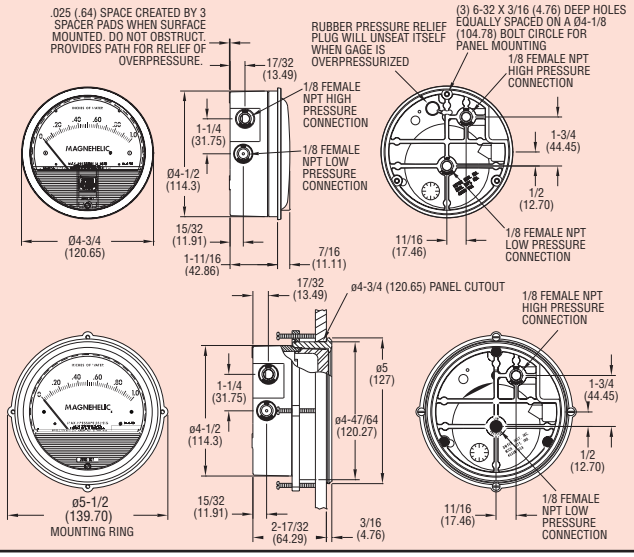
Mounting Feet & Flange Kits
MFKG - Premium line feet
MFKSS - Stainless steel feet
MFLK6 - 8" Flange kit

Series 2000

Magnehelic® Differential Pressure Gages

Indicate Positive, Negative or Differential, Accurate within 2%

RoHS



Select the Dwyer® Magnehelic® gage for high accuracy – guaranteed within 2% of full-scale – and for the wide choice of 81 models available to suit your needs precisely. Using Dwyer's simple, frictionless Magnehelic® gage movement, it quickly indicates low air or non-corrosive gas pressures – either positive, negative (vacuum) or differential. The design resists shock, vibration and over-pressures. No manometer fluid to evaporate, freeze or cause toxic or leveling problems. It's inexpensive, too.

The Magnehelic® gage is the industry standard to measure fan and blower pressures, filter resistance, air velocity, furnace draft, pressure drop across orifice plates, liquid levels with bubbler systems and pressures in fluid amplifier or fluidic systems. It also checks gas-air ratio controls and automatic valves, and monitors blood and respiratory pressures in medical care equipment.

Mounting

A single case size is used for most models of Magnehelic® gages. They can be flush or surface mounted with standard hardware supplied. Although calibrated for vertical position, many ranges above 1″ may be used at any angle by simply re-zeroing. However, for maximum accuracy, they must be calibrated in the same position in which they are used. These characteristics make Magnehelic® gages ideal for both stationary and portable applications. A 4-9/16″ hole is required for flush panel mounting. Complete mounting and connection fittings, plus instructions, are furnished with each instrument. See page 7 for more information on mounting accessories.

Flush, Surface or Pipe Mounted

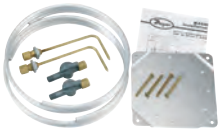
Enclosure Mounted

SPECIFICATIONS

Service: Air and non-combustible, compatible gases (natural gas option available).
Note: May be used with hydrogen. Order a Buna-N diaphragm. Pressures must be less than 35 psi.
Wetted Materials: Consult factory.
Housing: Die cast aluminum case and bezel, with acrylic cover. Exterior finish is coated gray to withstand 168 hour salt spray corrosion test.
Accuracy: ±2% of FS (±3% on - 0, -100 Pa, -125 Pa, 10MM and ±4% on - 00, -60 Pa, -6MM ranges), throughout range at 70°F (21.1°C).
Pressure Limits: -20 in Hg to 15 psig† (-0.677 to 1.034 bar); MP option: 35 psig (2.41 bar); HP option: 80 psig (5.52 bar).
Overpressure: Relief plug opens at approximately 25 psig (1.72 bar), standard gages only. See Overpressure Protection Note on next page.
Temperature Limits: 20 to 140°F* (-6.67 to 60°C). -20°F (-28°C) with low temperature option.
Size: 4″ (101.6 mm) diameter dial face.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Process Connections: 1/8″ female NPT duplicate high and low pressure taps - one pair side and one pair back.
Weight: 1 lb 2 oz (510 g), MP & HP 2 lb 2 oz (963 g).
Standard Accessories: Two 1/8″ NPT plugs for duplicate pressure taps, two 1/8″ pipe thread to rubber tubing adapter, and three flush mounting adapters with screws. (Mounting and snap ring retainer substituted for three adapters in MP & HP gage accessories.)
Agency Approval: RoHS. **Note:** -SP models not RoHS approved.
†For applications with high cycle rate within gage total pressure rating, next higher rating is recommended. See Medium and High pressure options at lower left.

ACCESSORIES

Model A-432 Portable Kit
Combine carrying case with any Magnehelic® gage of standard range, except high pressure connection. Includes 9 ft (2.7 m) of 3/16″ ID rubber tubing, standhang bracket and terminal tube with holder.



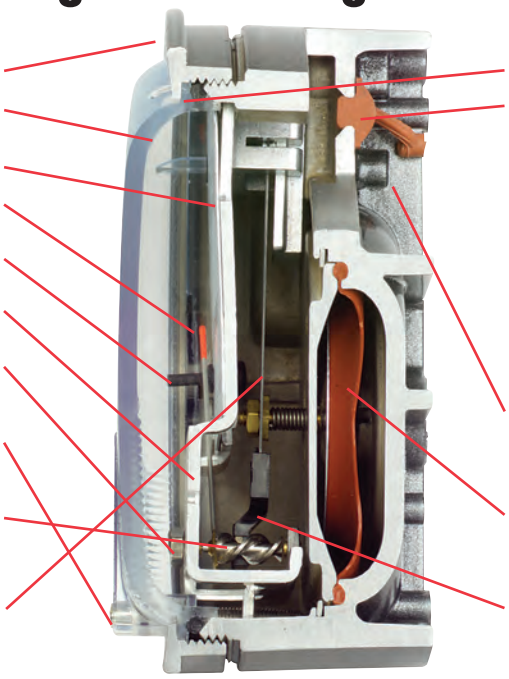
Model A-605 Air Filter Gage Accessory Kit
Adapts any standard Magnehelic® gage for use as an air filter gage. Includes aluminum surface mounting bracket with screws, two 5 ft (1.5 m) lengths of 1/4″ aluminum tubing two static pressure tips and two molded plastic vent valves, integral compression fittings on both tips and valves.

A-605B Air Filter Gage Accessory Kit, Air filter kit with two plastic open/close valves, two 4″ steel static tips, plastic tubing and mounting flange

A-605C Air Filter Gage Accessory Kit, Air filter kit with two plastic open/close valves, two plastic static tips, plastic tubing and mounting flange

Series 2000

Magnehelic® Gage Models & Ranges



Bezel provides flange for flush mounting in panel.

Clear plastic face is highly resistant to breakage. Provides undistorted viewing of pointer and scale.

Precision litho-printed scale is accurate and easy to read.

Red tipped pointer of heat treated aluminum tubing is easy to see. It is rigidly mounted on the helix shaft.

Pointer stops of molded rubber prevent pointer over-travel without damage.

"Wishbone" assembly provides mounting for helix, helix bearings and pointer shaft.

Jeweled bearings are shock-resistant mounted; provide virtually friction-free motion for helix. Motion damped with high viscosity silicone fluid.

Zero adjustment screw is conveniently located in the plastic cover, and is accessible without removing cover. O-ring seal provides pressure tightness.

Helix is precision made from an alloy of high magnetic permeability. Mounted in jeweled bearings, it turns freely, following the magnetic field to move the pointer across the scale.

Calibrated range spring is flat spring steel. Small amplitude of motion assures consistency and long life. It reacts to pressure on diaphragm. Live length adjustable for calibration.

O-ring seal for cover assures pressure integrity of case.

OVERPRESSURE PROTECTION
Blowout plug is comprised of a rubber plug on the rear which functions as a relief valve by unseating and venting the gage interior when over pressure reaches approximately 25 psig (1.7 bar). To provide a free path for pressure relief, there are four spacer pads which maintain 0.023˝ clearance when gage is surface mounted. Do not obstruct the gap created by these pads. The blowout plug is not used on models above 180˝ of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm. The blowout plug should not be used as a system overpressure control. High supply pressures may still cause the gage to fail due to over pressurization, resulting in property damage or serious injury. Good engineering practices should be utilized to prevent your system from exceeding the ratings or any component.

Die cast aluminum case is precision made and iridite-dipped to withstand 168 hour salt spray corrosion test. Exterior finished in baked dark gray hammerloid. One case size is used for all standard pressure options, and for both surface and flush mounting.

Silicone rubber diaphragm with integrally molded O-ring is supported by front and rear plates. It is locked and sealed in position with a sealing plate and retaining ring. Diaphragm motion is restricted to prevent damage due to overpressures.

Samarium Cobalt magnet mounted at one end of range spring rotates helix without mechanical linkages.

Model	Range Inches of Water
2000-00N†••	.05-0-.2
2000-00†••	0-.25
2000-0†•	0-.50
2001	0-1.0
2002	0-2.0
2003	0-3.0
2004	0-4.0
2005	0-5.0
2006	0-6.0
2008	0-8.0
2010	0-10
2012	0-12
2015	0-15
2020	0-20
2025	0-25
2030	0-30
2040	0-40
2050	0-50
2060	0-60
2080	0-80
2100	0-100
2120	0-120
2150	0-150
2160	0-160
2180*	0-180
2250*	0-250
Zero Center Ranges	
2300-00†••	0.125-0-0.125
2300-0†•	.25-0-.25
2301	.5-0-.5
2302	1-0-1
2304	2-0-2
2310	5-0-5
2320	10-0-10
2330	15-0-15

Model	Range PSI
2201	0-1
2202	0-2
2203	0-3
2204	0-4
2205	0-5
2210*	0-10
2215*	0-15
2220*	0-20
2230**	0-30

Model	Range, CM of Water
2000-15CM	0-15
2000-20CM	0-20
2000-25CM	0-25
2000-50CM	0-50
2000-80CM	0-80
2000-100CM	0-100
2000-150CM	0-150
2000-200CM	0-200
2000-250CM	0-250
2000-300CM	0-300
Zero Center Ranges	
2300-4CM	2-0-2
2300-10CM	5-0-5
2300-30CM	15-0-15

†These ranges calibrated for vertical scale position.
• Accuracy +/-3%
• • Accuracy +/-4%
*MP option standard
**HP option standard

Model	Range MM of Water
2000-6MM†••	0-6
2000-10MM†•	0-10
2000-15MM	0-15
2000-25MM	0-25
2000-30MM	0-30
2000-50MM	0-50
2000-80MM	0-80
2000-100MM	0-100
2000-125MM	0-125
2000-150MM	0-150
2000-200MM	0-200
2000-250MM	0-250
2000-300MM	0-300
Zero Center Ranges	
2300-6MM†••	3-0-3
2300-10MM†•	5-0-5
2300-20MM†•	10-0-10

Model	Range, Pa
2000-60NPA†••	10-0-50
2000-60PA†••	0-60
2000-100PA†•	0-100
2000-125PA†•	0-125
2000-250PA	0-250
2000-300PA	0-300
2000-500PA	0-500
2000-750PA	0-750
2000-1000PA	0-1000
Zero Center Ranges	
Model	**Range, Pa**
2300-60PA†••	30-0-30
2300-100PA†•	50-0-50
2300-120PA	60-0-60
2300-200PA	100-0-100
2300-250PA	125-0-125
2300-300PA	150-0-150
2300-500PA	250-0-250
2300-1000PA	500-0-500

Model	Range, kPa
2000-0.5KPA	0-0.5
2000-1KPA	0-1
2000-1.5KPA	0-1.5
2000-2KPA	0-2
2000-2.5KPA	0-2.5
2000-3KPA	0-3
2000-4KPA	0-4
2000-5KPA	0-5
2000-8KPA	0-8
2000-10KPA	0-10
2000-15KPA	0-15
2000-20KPA	0-20
2000-25KPA	0-25
2000-30KPA	0-30
Zero Center Ranges	
2300-1KPA	.5-0-.5
2300-2KPA	1-0-1
2300-2.5KPA	1.25-0-1.25
2300-3KPA	1.5-0-1.5

Dual Scale Air Velocity Units
For use with pitot tube

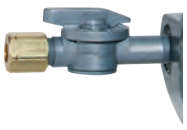
Model	Range in W.C./ Velocity F.P.M.
2000-00AV†••	0-.25/300-2000
2000-0AV†•	0-.50/500-2800
2001AV	0-1.0/500-4000
2002AV	0-2.0/1000-5600
2005AV	0-5.0/2000-8800
2010AV	0-10/2000-12500

Dual Scale English/Metric Models

Model	Range, in w.c.	Range, Pa or kPa
2000-00D†••	0-.25	0-62 Pa
2000-0D†•	0-0.5	0-125 Pa
2001D	0-1.0	0-250 Pa
2002D	0-2.0	0-500 Pa
2003D	0-3.0	0-750 Pa
2004D	0-4.0	0-1.0 kPa
2005D	0-5.0	0-1.25 kPa
2006D	0-6.0	0-1.5 kPa
2008D	0-8.0	0-2.0 kPa
2010D	0-10	0-2.5 kPa
2015D	0-15	0-3.7 kPa
2020D	0-20	0-5 kPa
2025D	0-25	0-6.2 kPa
2050D	0-50	0-12.4 kPa
2060D	0-60	0-15 kPa

VELOCITY AND VOLUMETRIC FLOW UNITS
Scales are available on the Magnehelic® that read in velocity units (FPM, m/s) or volumetric flow units (SCFM, m^3/s, m^3/h). Stocked velocity units with dual range scales in inches w.c. and feet per minute are shown above. For other ranges contact the factory.
When ordering volumetric flow scales please specify the maximum flow rate and its corresponding pressure. Example: 0.5 in w.c. = 16,000 CFM.

ACCESSORIES
A-321, Safety Relief Valve
A-448, 3-piece magnet kit for mounting Magnehelic® gage directly to magnetic surface
A-135, Rubber gasket for panel mounting
A-401, Plastic Carry Case



A-310A 3-Way Vent Valves
In applications where pressure is continuous and the Magnehelic® gage is connected by metal or plastic tubing which cannot be easily removed, we suggest using Dwyer A-310A vent valves to connect gage. Pressure can then be removed to check or re-zero the gage.

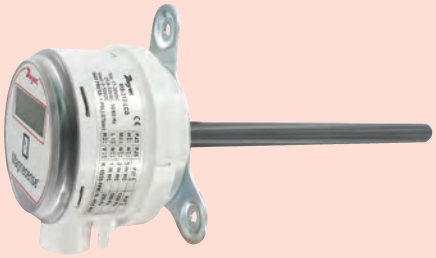
Series MS

Magnesense® Differential Pressure Transmitter

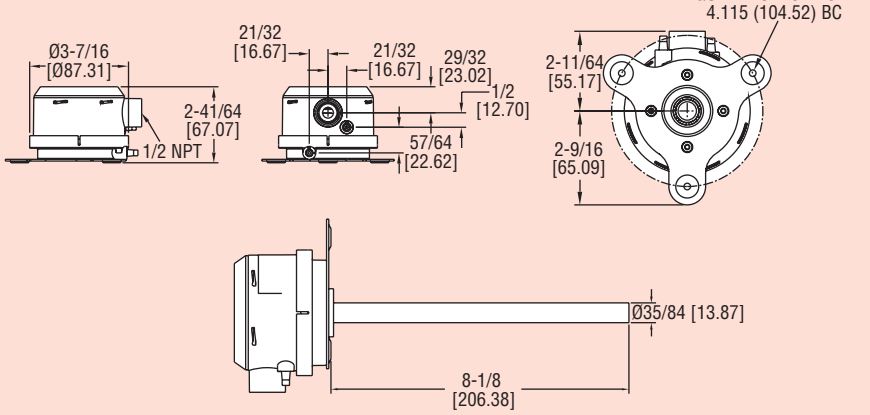
Monitors Pressure & Air Velocity

CE

Standard MS with optional LCD



MS with optional LCD and static probe



The Series MS Magnesense® Differential Pressure Transmitter is an extremely versatile transmitter for monitoring pressure and air velocity. This compact package is loaded with features such as:

- Field selectable English or Metric ranges
- Field upgradeable LCD display
- Adjustable damping of output signal (with optional display)
- Ability to select a square root output for use with pitot tubes and other similar flow sensors

Along with these features, the patented magnetic sensing technology provides exceptional long term performance and enables the Magnesense® Differential Pressure Transmitter to be the single solution for your pressure and flow applications.

Model	Output	Selectable Ranges
MS-121*	4-20 mA	0.1″, 0.25″, 0.5″ w.c. (25, 50, 100 Pa)
MS-321*	0-10 V	0.1″, 0.25″, 0.5″ w.c. (25, 50, 100 Pa)
MS-721*	0-5 V	0.1″, 0.25″, 0.5″ w.c. (25, 50, 100 Pa)
MS-111*	4-20 mA	1″, 2″, 5″ w.c. (250, 500, 1250 Pa)
MS-311*	0-10 V	1″, 2″, 5″ w.c. (250, 500, 1250 Pa)
MS-711*	0-5 V	1″, 2″, 5″ w.c. (250, 500, 1250 Pa)
MS-131	4-20 mA	10″ w.c. (2 kPa)
MS-141	4-20 mA	15″ w.c. (3 kPa)
MS-151	4-20 mA	25″ w.c. (5 kPa)
MS-331	0-10 V	10″ w.c. (2 kPa)
MS-341	0-10 V	15″ w.c. (3 kPa)
MS-351	0-10 V	25″ w.c. (5 kPa)
MS-021	4-20 mA	±0.1″, 0.25″,0.5″ w.c. (±25, 50, 100 Pa)
MS-221	0-10 V	±0.1″, 0.25″,0.5″ w.c. (±25, 50, 100 Pa)
MS-621	0-5 V	±0.1″, 0.25″,0.5″ w.c. (±25, 50, 100 Pa)

OPTIONS

Note: Add -LCD to end of model for units with display.
*Models available with duct mount static pressure probe. Change last digit from 1 to 2. Ex. MS-122

Add suffix -NIST to end of model numbers for NIST traceable calibration certificate. Example: MS-021-NIST.

Add suffix -FC to end of model numbers for factory calibration certificate. Example: MS-021-FC.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases.
Wetted Materials: Consult factory.
Accuracy: ±1% for 0.25″ (50 Pa), 0.5″ (100 Pa), 2″ (500 Pa), 5″ (1250 Pa), 10″ (2 kPa), 15″ (3 kPa), 25″ (5 kPa) ±2% for 0.1″ (25 Pa), 1″ (250 Pa) and all bi-directional ranges.
Stability: ±1% / year FSO.
Temperature Limits: 0 to 150°F (-18 to 66°C).
Pressure Limits: 1 psi maximum, operation; 10 psi, burst.
Power Requirements: 10 to 35 VDC (2-wire); 17 to 36 VDC or isolated 21.6 to 33 VAC (3-wire).
Output Signals: 4 to 20 mA (2-wire); 0 to 5 V, 0 to 10 V (3-wire).
Response Time: Adjustable 0.5 to 15 sec. time constant. Provides a 95% response time of 1.5 to 45 seconds.
Zero & Span Adjustments: Digital push button.
Loop Resistance: Current output: 0-1250 Ω max; Voltage output: min. load resistance 1 kΩ.
Current Consumption: 40 mA max.
Display (optional): 4 digit LCD.
Electrical Connections:
4-20 mA, 2-Wire: European style terminal block for 16 to 26 AWG.
0-10 V, 3-Wire: European style terminal block for 16 to 22 AWG.
Electrical Entry: 1/2″ NPS thread.
Accessory (A-151): Cable gland for 5 to 10 mm diameter cable.
Process Connections: 3/16″ ID tubing (5 mm ID). Maximum OD 9 mm.
Enclosure Rating: NEMA 4X (IP66).
Mounting Orientation: Diaphragm in vertical position.
Weight: 8.0 oz (230 g).
Agency Approvals: CE.

ACCESSORIES

A-435, Field Upgradeable LCD
A-480, Plastic Static Pressure Tip
A-481, Installer kit. Includes 2 plastic static pressure tips and 7 ft (2.1 m) of PVC tubing
A-489, 4″ Straight Static Pressure Tip with Flange
A-302F-A, 303 SS Static Pressure Tip with mounting flange. For 3/16″ ID rubber or plastic tubing. 4″ insertion depth. Includes mounting screws
SCD-PS, 100 to 240 VAC/VDC to 24 VDC Power Supply

See page 567 for process tubing options.

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Jul. 2014

New Product RELEASE

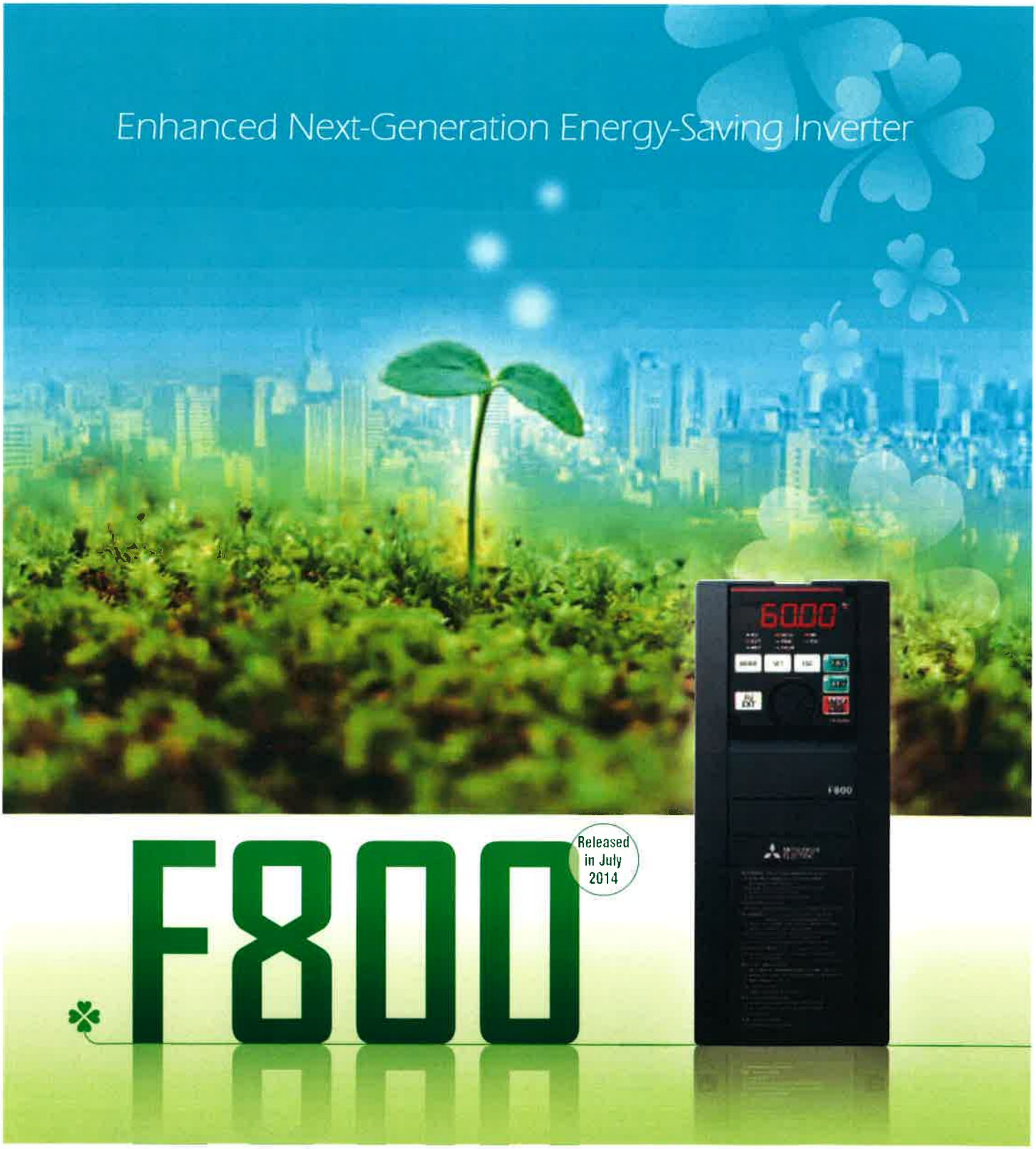
No.14-6

INVERTER

Model

FR-F800

800 series



Vapor Guardian 5500®

Dynamic Controls and Remote Management

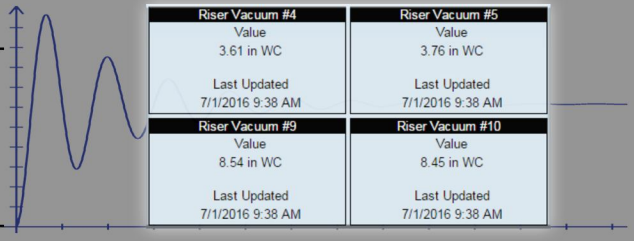
Backed by 30 Years of Mitigation Experience

Key Features

+ Save up to 90% on power consumption
+ Remotely manage 10 dynamically controlled blower systems
+ Remotely control sub-slab pressures to tolerance of 0.001 ″w.c.
+ Remotely monitor up to 44 additional performance metrics
+ Login and view system performance in real-time
+ Automated Email and text alerts
+ Automated quarterly and annual performance reports

Specification

Outputs to Control Blowers	10	Height	15.8"
Inputs for Sensors	44	Length	15.8"
Sensor Input Current	4-20 mA	Width	5.2"
Powered by	120VAC or 24VDC		



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PVC SCHEDULE 40 FITTINGS

40-2-0604

Performance Engineered & Tested

SPEARS® Schedule 40 PVC fitting designs combine years of proven experience with computer generated stress analysis to yield the optimum physical structure and performance for each fitting. Material reinforcement is uniformly placed in stress concentration areas for substantially improved pressure handling capability. Resulting products are subjected to numerous verification tests to assure the very best PVC fittings available.

Full 1/4" Through 12" Availability

Spears® comprehensive line of PVC fittings offers a variety of injection molded configurations in Schedule 40 sizes 1/4" through 12" conforming to ASTM D 2466.

Exceptional Chemical & Corrosion Resistance

Unlike metal, PVC fittings never rust, scale, or pit, and will provide many years of maintenance-free service and extended system life.

High Temperature Ratings

PVC thermoplastic can handle fluids at service temperatures up to 140°F (60°C), allowing a wide range of process applications, including corrosive fluids.

Lower Installation Costs

Substantially lower material costs than steel alloys or lined steel, combined with lighter weight and ease of installation, can reduce installation costs by as much as 60% over conventional metal systems.

Higher Flow Capacity

Smooth interior walls result in lower pressure loss and higher volume than conventional metal fittings.

Additional Fabricated Configurations through 36"

Extra large, hard-to-find, and custom configurations are fabricated from NSF Certified pipe. Fittings are engineered and tested to provide full pressure handling capabilities according to Spears® specifications.

PVC Valves

SPEARS® PVC Valve products are available for total system compatibility and uniformity; see SPEARS® THERMOPLASTIC VALVES PRODUCT GUIDE & ENGINEERING SPECIFICATIONS (V-4).

Advanced Design Specialty Fittings

Spears® wide range of innovative, improved products include numerous metal-to-plastic transition fittings and unions with Spears® patented special reinforced (SR) plastic threads.

Sample Engineering Specifications

All PVC Schedule 40 fittings shall be produced by Spears® Manufacturing Company from PVC Type I cell classification 12454, conforming to ASTM D 1784. All injection molded PVCSchedule 40 fittings shall be Certified for potable water service by NSF International and manufactured in strict compliance to ASTM D 2466. All fabricated fittings shall be produced in accordance with Spears® General Specifications for Fabricated Fittings.

MADE IN THE U.S.A. WITH PRIDE

LPCB

Quality Systems Certificate No. 293
Corporate Facilities, Sylmar, CA
Assessed to ISO 9001

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PVC Thermoplastic Pipe Temperature Pressure De-Rating

To determine the maximum internal pressure rating at an elevated temperature, simply multiply the pipe pressure rating at 73°F by the percentage specified for the desired temperature.

System Operating Temperature °F (°C)	73 (23)	80 (27)	90 (32)	100 (38)	110 (43)	120 (49)	130 (54)	140 (60)
PVC	100%	90%	75%	62%	50%	40%	30%	22%

NOTE: Valves, Unions and Specialty Products have different elevated temperature ratings than pipe.

PVC Basic Physical Properties

Properties	ASTM Test Method	PVC
Mechanical Properties, 73°F		
Specific Gravity, g/cm³	D 792	1.41
Tensile Strength, psi	D 638	7,200
Modulus of Elasticity, psi	D 638	440,000
Compressive Strength, psi	D 695	9,000
Flexural Strength, psi	D 790	13,200
Izod Impact, notched, ft-lb/in	D 256	.65
Thermal Properties		
Heat Deflection Temperature, °F at 66 psi	D 648	165
Thermal Conductivity, BTU/hr/sq ft/°F/in	C 177	1.2
Coefficient of Linear Expansion, in/in/°F	D 696	3.1 X 10^5
Flammability		
Limiting Oxygen Index, %	D 2863	43
UL 94 rating	94V-0	
Other Properties		
Water Absorption, % 24 hr.	D 570	.05
Industry Standard Color	White / Dark Gray	
ASTM Cell Classification	D 1784	12454
NSF Potable Water Approved	Yes	

PVC Chemical Resistance

PVC is generally inert to most mineral acids, bases, salts and paraffinic hydrocarbon solutions. For more information on PVC chemical resistance refer to the Chemical Resistance of Rigid Vinyls Based on Immersion Test, published by the GEON® Company.

NOT FOR USE WITH COMPRESSED AIR OR GAS

Spears® Manufacturing Company DOES NOT RECOMMEND the use of thermoplastic piping products for systems to transport or store compressed air or gases, or the testing of thermoplastic piping systems with compressed air or gases in above and below ground locations. The use of our product in compressed air or gas systems automatically voids any warranty for such products, and its use against our recommendation is entirely the responsibility and liability of the installer.

WARNING: DO NOT USE COMPRESSED AIR OR GAS TO TEST ANY PVC OR CPVC THERMOPLASTIC PIPING PRODUCT OR SYSTEM, AND DO NOT USE DEVICES PROPELLED BY COMPRESSED AIR OR GAS TO CLEAR SYSTEMS. THESE PRACTICES MAY RESULT IN EXPLOSIVE FRAGMENTATION OF SYSTEM PIPING COMPONENTS CAUSING SERIOUS OR FATAL BODILY INJURY.

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Series 668 Differential Pressure Transmitter

Ranges from 0 to 100" w.c., Overpressure Protection to 10 psig, ±1% Accuracy

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Write Product Review

Our low cost **Series 668 Differential Pressure Transmitter** is capable of measuring low pressures with a ±1% accuracy - ideally suited for proper building pressurization and air flow control. Transmitters can withstand up to 10 psig overpressure with no damage to the unit. Variable capacitance sensor design provides excellent sensitivity and long-term stability. Compact, lightweight design makes installation simple and easy. Units also feature reverse-polarity protection.

Product Applications

- Variable air volume systems
- HVAC
- Building management

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Specifications

Service:	Air and non-conductive gases.
Accuracy:	±1% FS (RSS), (includes non-linearity, hysteresis, and non-repeatability).
Temperature Limits:	Operating: 0 to 150˚F (-18 to 65˚C), Storage: -40 to 185˚F (-40 to 85˚C).
Pressure Limits:	10 psig (0.69 bar).
Compensated Temperature Range:	0 to 150˚F (-18 to 65˚C).
Thermal Effects:	0.033% FS/˚F (0.18% FS/˚C).
Supply Voltage:	12 to 30 VDC.
Output:	4 to 20 mA, 2-wire.
Zero and Span Adjustment:	±1 mA, non-interactive.
Response Time:	<60 msec.
Loop Resistance:	0 to 800 Ω.
Electrical Connection:	Terminal strip.
Pressure Connection:	3/16" OD fitting for 1/4" ID tubing.
Housing:	Fire retardant glass filled polyester.
Weight:	3 oz (85 g).
Agency Approval:	CE.

VALTERRA®

VALVES AND ACCESSORIES

15230 San Fernando Mission Blvd., Suite 107
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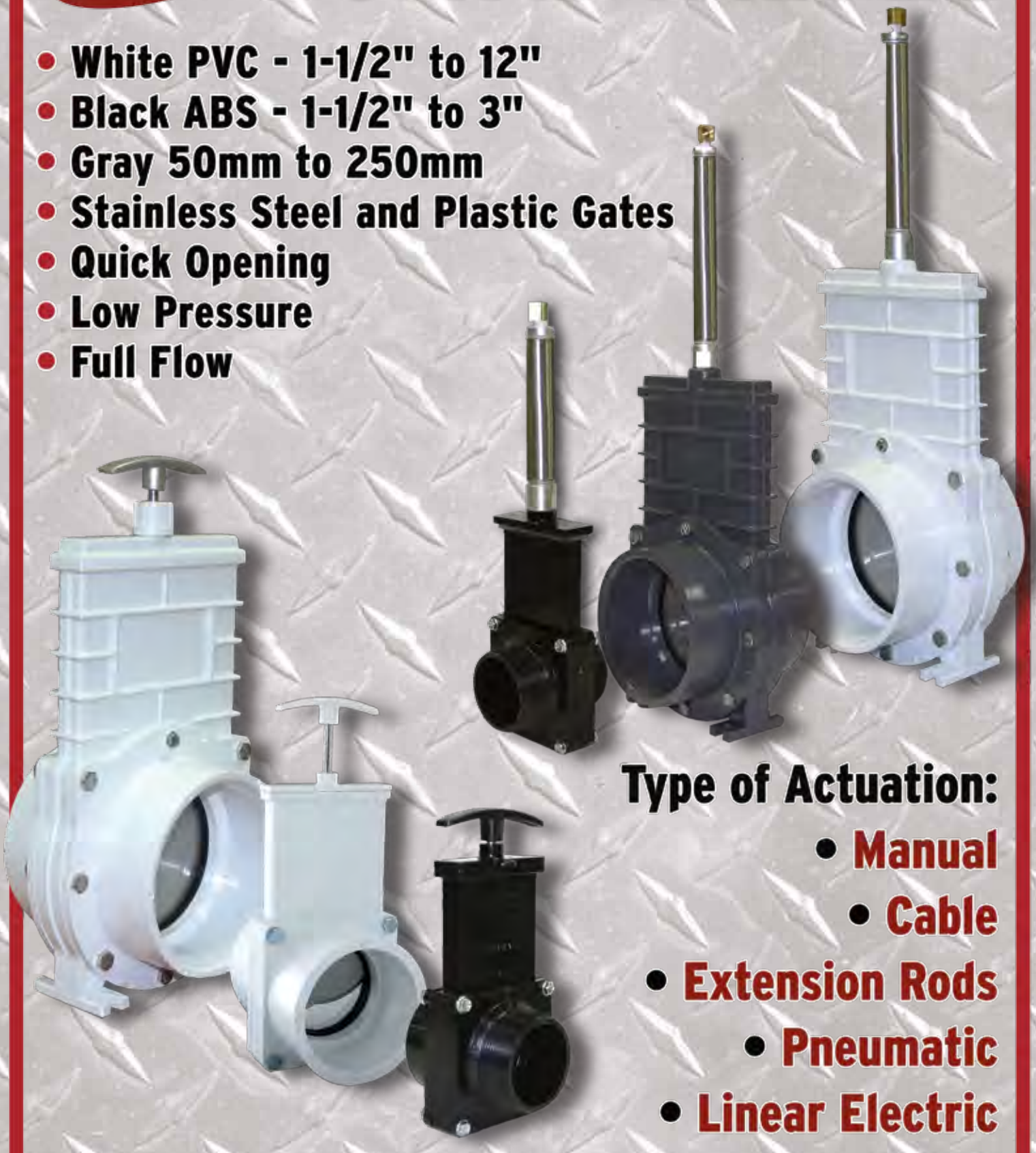
(818) 898-1671 • Fax (818) 361-5389
valterra@valterra.com
www.valterra.com

VALTERRA® GATE VALVES

- White PVC - 1-1/2" to 12"
- Black ABS - 1-1/2" to 3"
- Gray 50mm to 250mm
- Stainless Steel and Plastic Gates
- Quick Opening
- Low Pressure
- Full Flow



Type of Actuation:

- Manual
- Cable
- Extension Rods
- Pneumatic
- Linear Electric

See spec sheets located at the back of the catalog

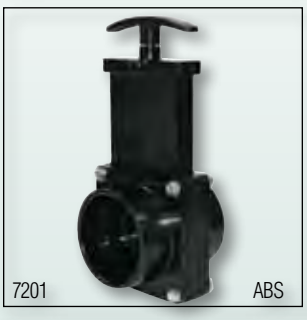

2101X PVC


7107 ABS

1.5" Gate Valves with Plastic Paddles

Part No. PVC/White	Part No. ABS/Black	Description	Handle	Carton Qty. PVC/White	Carton Qty. ABS/Black
2101X		1-1/2" Slip x Slip Unibody (One Piece Valve)	Plastic	30	
2102X		1-1/2" Slip x Spig Unibody (One Piece Valve)	Plastic	30	
6101	7101	1-1/2" Slip x Slip	Plastic	30	36
6101M	7101M	1-1/2" Slip x Slip	Metal	30	36
6102	7102	1-1/2" Slip x Spig	Plastic	30	36
6103	7103	1-1/2" Spig x Spig	Plastic	30	36
	7103M	1-1/2" Spig x Spig	Metal		36
6104	7104	1-1/2" MPT x MPT	Plastic	20	20
6105	7105	1-1/2" MPT x Slip	Plastic	24	26
6105M	7105M	1-1/2" Slip x MPT	Metal	24	26
6106	7106	1-1/2" MPT x Spig	Plastic	24	28
6106M	7106M	1-1/2" Spig x MPT	Metal	24	28
6107	7107	1-1/2" FPT x FPT	Plastic	30	30
	7107M	1-1/2" FPT x FPT	Metal		30
6108	7108	1-1/2" FPT x MPT	Plastic	24	26
6109	7109	1-1/2" FPT x Slip	Plastic	30	30
	7109M	1-1/2" FPT x Slip	Metal		30
6110	7110	1-1/2" FPT x Spig	Plastic	30	36
	7110M	1-1/2" FPT x Spig	Metal		36


6201 PVC


7201 ABS

2" Gate Valves with Plastic Paddles

Part No. PVC/White	Part No. ABS/Black	Description	Handle	Carton Qty. PVC/White	Carton Qty. ABS/Black
2201X		2" Slip x Slip Unibody (One Piece Valve)	Plastic	20	
6201	7201	2" Slip x Slip	Plastic	20	20
6201M	7201M	2" Slip x Slip	Metal	20	20
6202	7202	2" Slip x Spig	Plastic	16	20
	7202M	2" Slip x Spig	Metal		20
6203	7203	2" Spig x Spig	Plastic	16	22
	7203M	2" Spig x Spig	Metal		22
	7204	2" MPT x MPT	Plastic		20
6205	7205	2" MPT x Slip	Plastic	20	20
6205M	7205M	2" MPT x Slip	Metal	20	20
	7206	2" MPT x Spig	Plastic		22
	7206M	2" MPT x Spig	Metal		22
6207	7207	2" FPT x FPT	Plastic	20	20
	7207M	2" FPT x FPT	Metal		20
	7208	2" FPT x MPT	Plastic		20
	7208M	2" FPT x MPT	Metal		20
6209	7209	2" FPT x Slip	Plastic	20	22
	7209M	2" FPT x Slip	Metal		22
	7210	2" FPT x Spig	Plastic		22
	7210M	2" FPT x Spig	Metal		20
	7217	2" Rot Flanges, FPT x FPT	Plastic		20

2" Gate Valves with Stainless Steel Paddles

Part No. PVC/White	Part No. ABS/Black	Description	Handle	Carton Qty. PVC/White	Carton Qty. ABS/Black
4201	5201	2" Slip x Slip	Metal	20	20
4202	5202	2" Slip x Spig	Metal	16	20
4203		2" Spig x Spig	Metal	16	
4203S		2" Spig X Spig	Metal	16	
4204		2" MPT x MPT	Metal	20	
4205	5205	2" MPT x Slip	Metal	20	20
4206		2" MPT x Spig	Metal	20	
4207	5207	2" FPT x FPT	Metal	20	20
4208	5208	2" FPT x MPT	Metal	20	20
4209		2" FPT x Slip	Metal	20	
4210	5210	2" FPT x Spig	Metal	20	22

3" Gate Valves with Plastic Paddles

Part No. PVC/White	Part No. ABS/Black	Description	Handle	Carton Qty. PVC/White	Carton Qty. ABS/Black
6301	7301	3" Slip x Slip	Plastic	12	18
6301M	7301M	3" Slip x Slip	Metal	12	18
	7302	3" Slip x Spig	Plastic		18
	7302M	3" Slip	Metal		18
	7303	3" Spig x Spig	Plastic		18
	7303M	3" Spig x Spig	Metal		18
	7304	3" MPT x MPT	Plastic		18
	7304M	3" MPT x MPT	Metal		18
	7305	3" MPT x Slip	Plastic		18
	7305M	3" MPT x Slip	Metal		18
	7306	3" MPT x Spig	Plastic		18
	7306M	3" MPT x Spig	Metal		18
	7307	3" FPT x FPT	Plastic		18
	7307M	3" FPT x FPT	Metal		18
	7308	3" FPT x MPT	Plastic		18
	7309	3" FPT x Slip	Plastic		18
	7309M	3" FPT x Slip	Metal		18
	7310	3" FPT x Spig	Plastic		18
	7341	3" Spig x Bay with Cap	Plastic		18
	7342	3" MPT x Bay with Cap	Plastic		18
	7343	3" FPT x Bay with Cap	Plastic		18

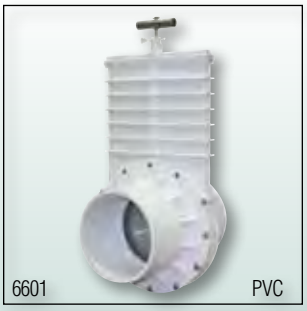
Manual Gate Valves

3" Gate Valves with Stainless Steel Paddles

Part No. PVC/White	Part No. ABS/Black	Description	Handle	Carton Qty. PVC/White	Carton Qty. ABS/Black
4301	5301	3" Slip x Slip	Metal	12	18
4302	5302	3" Slip x Spig	Metal	12	18
4303	5303	3" Spig x Spig	Metal	14	18
4304	5304	3" MPT x MPT	Metal	16	18
4305	5305	3" MPT x Slip	Metal	16	18
4306	5306	3" MPT x Spig	Metal	15	18
4307	5307	3" FPT x FPT	Metal	16	18
4308	5308	3" FPT x MPT	Metal	16	18
4309	5309	3" FPT x Slip	Metal	12	18
4310		3" FPT x Spig	Metal	15	

4" Gate Valves with Stainless Steel Paddles

Part No. PVC/White	Part No. PVC/Gray	Description	Handle	Carton Qty. PVC/White	Carton Qty. PVC/Gray
6401	6401G	4" Slip x Slip	Metal	6	6



6" -8" Gate Valves with Stainless Steel Paddles

Part No. PVC/White	Description	Handle	Carton Qty. PVC/White
6601	6" Slip x Slip	Metal	1
6801	8" Slip x Slip	Metal	1

10" -12" Gate Valves with Stainless Steel Paddles

Part No. PVC/White	Description	Handle	Carton Qty. PVC/White
6910	10" Slip x Slip	Metal	1
6912	12" Slip x Slip	Metal	1

Gate Valves for Direct Tank Mounting

Part No. ABS/Black	Description	Carton Qty. ABS/Black
7120	1-1/4" Simple Tank Drain Valve, with one seal (No Fittings)	18
7121	1-1/2" Simple Tank Drain Valve, with one seal (No Fittings)	18
7311	3" Slip x Tank Flange	18
7312	3" Spig x Tank Flange	18
7314	3" MPT x Tank Flange	18

"Bag in a Box" Valve (NSF Listed Materials)

Part No. ABS/Black	Part No. PC/Stainless	Description	Carton Qty. ABS/Black	Carton Qty. PC/Stainless
7218		2" FPT x Polypropylene MPT	25	
	Custom	Star Cutter Price Calculation is Base Cost + Length Cost = List Price		1

Union and Barbed Valves with Plastic Paddles

Part No. PVC/White	Part No. ABS/Black	Description	Handle	Carton Qty. PVC/White	Carton Qty. ABS/Black
6114		1-1/2" Slip x Union Slip	Plastic	24	
6125		1-1/2" FPT x Union Slip	Plastic	30	
6124M		1-1/2" MPT x Union Slip	Metal	20	
6130		1-1/2" Slip x Hose Barb	Plastic	54	
6136		1-1/2" MPT x Hose Barb	Plastic	24	
	7134	1-1/2" Stepdown Pool Hose x MPT	Plastic		22
6101BB		1-1/2" Hose Barb x Hose Barb	Plastic	26	

Metric Gate Valves

Metric Gate Valves with Plastic Paddles

Part No. PVC/Gray	Description	Carton Qty. PVC/Gray
3101	50mm Slip x Slip Unibody (One Piece Valve)	30
3201	63mm Slip x Slip Unibody (One Piece Valve)	20
8101	50/63mm Slip-Spig x 50/63mm Slip-Spig	26
8201	63mm Slip x Slip	16
8251	75/90mm Slip-Spig x 75/90mm Slip-Spig	12
8301	90mm Slip x Slip	12

Metric Gate Valves with Stainless Steel Paddles

Part No. PVC/Gray	Description	Carton Qty. PVC/Gray
8401	110mm Slip x Slip	6
8601	160mm Slip x Slip	1
8801	200mm Slip x Slip	1
8910	250mm Slip x Slip	1

Metric Gate Valves with Plastic Paddles & Pneumatic Cylinder

Part No. PVC/Gray	Description	Carton Qty. PVC/Gray
8201P	63mm Slip x Slip, Metal Air Cylinder	24
8201PP	63mm Slip x Slip, Plastic Air Cylinder	12
8301P	90mm Slip x Slip, Metal Air Cylinder	9
8301PP	90mm Slip x Slip, Plastic Air Cylinder	15

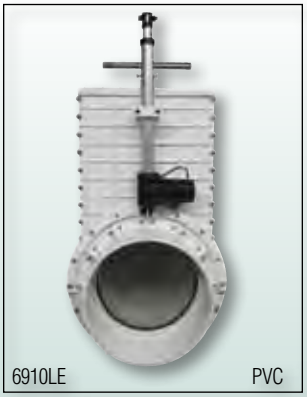
Metric Gate Valves with Stainless Steel Paddles & Pneumatic Cylinder

Part No. PVC/Gray	Description	Carton Qty. PVC/Gray
8201PPS	63mm Slip x Slip, Plastic Air Cylinder	12
8201PS	63mm Slip x Slip, Metal Air Cylinder	24
8301PPS	90mm Slip x Slip, Plastic Air Cylinder	15
8301PS	90mm Valve, Slip x Slip, Metal Air Cylinder	9
8401P	110mm Slip x Slip, Metal Air Cylinder	6
8601P	160mm Slip x Slip, Metal Air Cylinder	1
8801P	200mm Slip x Slip, Metal Air Cylinder	1


E1003VP ABS

Electric Gate Valves with Plastic Paddles

Part No. ABS/Black	Description	Carton Qty. ABS/Black
E1003VP	EZ Valve, Electric Waste Valve System, 3_, No Fittings	4
E40-8	EZ-Valve, Electric Waste Valve, 3" Hub x 3" Spigot	4
E40A-8	EZ-Valve, Electric Waste Valve, 3" Spigot x 3" Spigot	4
E40B-8	EZ-Valve, Electric Waste Valve, 3" Hub x 3" Hub	4
E7301	EZ-Valve, Electric Waste Valve, 3" Slip x 3" Slip, No Wiring Harness	4


6910LE PVC

Electric Linear Gate Valves with Stainless Steel Paddles

Part No. PVC/White	Part No. PVC/Gray	Description	Carton Qty. PVC/White	Carton Qty. PVC/Gray
6601LE		6" Slip x Slip	1	
6801LE		8" Slip x Slip	1	
6910LE		10" Slip x Slip	1	
6912LE		12" Slip x Slip	1	
	8601LE	160mm Slip x Slip		1
	8801LE	200mm Slip x Slip		1
	8910LE	250mm Slip x Slip		1


9201 ABS


6201P PVC

2" Gate Valves with Plastic Paddles & Pneumatic Cylinder

Part No. ABS/Black	Part No. PVC/White	Description	Carton Qty. ABS/Black	Carton Qty. PVC/White
9201		2" Slip x Slip, Metal Air Cylinder	28	
9202		2" Slip x Spig, Metal Air Cylinder	28	
9203		2" Spig x Spig, Metal Air Cylinder	28	
9204		2" MPT x MPT, Metal Air Cylinder	20	
9205		2" MPT x Slip, Metal Air Cylinder	30	
9206		2" MPT x Spig, Metal Air Cylinder	24	
9207		2" FPT x FPT, Metal Air Cylinder	20	
9208		2" FPT x MPT, Metal Air Cylinder	20	
9209		2" FPT x Slip, Metal Air Cylinder	24	
9210		2" FPT x Spig, Metal Air Cylinder	24	
	6201P	2" Slip x Slip, Metal Air Cylinder		28
	6201PP	2" Slip x Slip, Plastic Air Cylinder		12
9201P		2" Slip x Slip, Plastic Air Cylinder	12	


9201S ABS

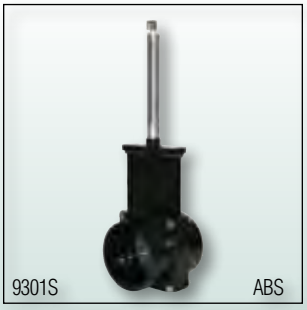
2" Gate Valves with Stainless Steel Paddles & Pneumatic Cylinder

Part No. PVC/White	Part No. ABS/Black	Description	Carton Qty. PVC/White	Carton Qty. ABS/Black
4201P		2" Slip x Slip, Metal Air Cylinder	24	
	9201PS	2" Slip x Slip, Plastic Air Cylinder		12
	9201S	2" Slip x Slip, Metal Air Cylinder		28
	9202S	2" Slip x Spig, Metal Air Cylinder		28
	9207S	2" FPT x FPT, Metal Air Cylinder		20
	9208S	2" FPT x MPT, Metal Air Cylinder		20

Actuated Gate Valves

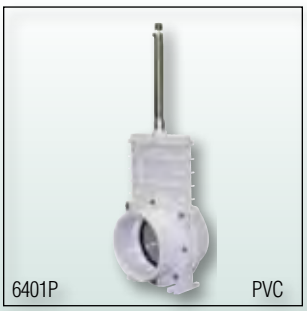
3" Gate Valves with Plastic Paddles & Pneumatic Cylinder

Part No. ABS/Black	Part No. PVC/White	Description	Carton Qty. ABS/Black	Carton Qty. PVC/White
9301		3" Slip x Slip, Metal Air Cylinder	12	
9302		3" Slip x Spig, Metal Air Cylinder	12	
9303		3" Spig x Spig, Metal Air Cylinder	12	
9304		3" MPT x MPT, Metal Air Cylinder	12	
9305		3" Slip x MPT, Metal Air Cylinder	12	
9306		3" Spig x MPT, Metal Air Cylinder	12	
9307		3" FPT x FPT, Metal Air Cylinder	12	
9308		3" FPT x MPT, Metal Air Cylinder	12	
9309		3" FPT x Slip, Metal Air Cylinder	12	
9310		3" FPT x Spig, Metal Air Cylinder	12	
9311		3" Slip x Tank Flange, Metal Air Cylinder	12	
9312		3" Spig x Tank Flange, Metal Air Cylinder	12	
	6301P	3" Slip x Slip, Metal Air Cylinder		12
	6301PP	3" Slip x Slip, Plastic Air Cylinder		15
9301P		3" Slip x Slip, Plastic Air Cylinder	15	



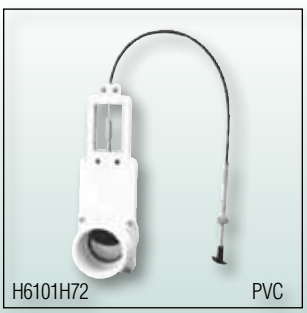
3" Gate Valves with Stainless Steel Paddles & Pneumatic Cylinder

Part No. PVC/White	Part No. ABS/Black	Description	Carton Qty. PVC/White	Carton Qty. ABS/Black
4301P	9301PS	3" Slip x Slip, Metal Air Cylinder	12	15
	9301S	3" Slip x Slip, Metal Air Cylinder		12
	9307S	3" FPT x FPT, Metal Air Cylinder		12
	9308S	3" FPT x MPT, Metal Air Cylinder		12



4" - 12" Gate Valves with Stainless Steel Paddles Pneumatic Cylinder

Part No. PVC/White	Description	Carton Qty. PVC/White
6401P	4" Slip x Slip, Metal Air Cylinder	6
6601P	6" Slip x Slip, Metal Air Cylinder	1
6801P	8" Slip x Slip, Metal Air Cylinder	1
6910P	10" Slip x Slip, Metal Air Cylinder	1
6912P	12" Slip x Slip, Metal Air Cylinder	1



Cable Valves, Remote Actuating

Part No. PVC/White	Description	Carton Qty. PVC/White
H6101H72	1-1/2" Slip x Slip w/ 72" Cable (Custom Lengths Available)	12
6201H72	2" Slip x Slip with 72" Cable (Custom Lengths Available)	10
H6301H72	3" Slip x Slip w/ 72" Cable (Custom Lengths Available)	8


700-12 PVC

Compact Ball Valves

Part No. PVC/White	Description	Carton Qty. PVC/White
700-12	1/2" Slip x Slip	24
700-14	3/4" Slip x Slip	24
700-10	1" Slip x Slip	18
700-11	1-1/4" Slip x Slip	10
700-15	1-1/2" Slip x Slip	12
700-20	2" Slip x Slip	6
700-12F	1/2" FPT x FPT	24
700-14F	3/4" FPT x FPT	24
700-10F	1" FPT x FPT	18
700-11F	1-1/4" FPT x FPT	10
700-15F	1-1/2" FPT x FPT	12
700-20F	2" FPT x FPT	6


700-25 PVC

Compact Ball Valves, Single Handle

Part No. PVC/White	Description	Carton Qty. PVC/White
700-25	2-1/2" Slip x Slip	2
700-30	3" Slip x Slip	1
700-40	4" Slip x Slip	2
700-25F	2-1/2" FPT x FPT	2
700-30F	3" FPT x FPT	1
700-40F	4" FPT x FPT	2

Check Valves


400-15 PVC

Sump Pump Check Valves

Part No. PVC/Gray	Description	Carton Qty. PVC/Gray
400-15	1-1/2" Sump Pump Check	14
400-20	2" Sump Pump Check	12


200-15W PVC

Swing (No Spring) Check Valves

Part No. PVC/White	Part No. PVC/Clear	Description	Carton Qty. PVC/White	Carton Qty. PVC/Clear
200-15W	200-C15W	1-1/2" Slip x Slip Swing Check	6	6
200-20W	200-C20W	2" Slip x Slip Swing Check	4	4
	200-CU50	50mm Union Slip x Slip Swing Check		12
	200-CU63	63mm Union Slip x Slip Swing Check		12

Swing/Spring COMBO Check Valves

- Combines the benefits of a spring and a swing check valve; full-flow design--installs in any position
- Quiet - does not chatter
- 15% more flow than comparable spring check valves; eliminates the restriction of a spring center poppet
- Schedule 40 white or clear PVC
- PSI rating: 150 @ 73°F
- 1/2 Lb PSI crack pressure
- 316 Stainless Steel spring
- Flow/Pressure Drop (see page 21)


200-05F PVC


200-07 PVC

Swing/Spring Combo Check Valves

Part No. PVC/White	Part No. PVC/Clear	Description	Tension	Carton Qty. PVC/White	Carton Qty. PVC/Clear
200-05	200-C05	1/2" Slip x Slip Check	1/2 lb.	10	10
200-05F	200-C05F	1/2" FPT x FPT Check	1/2 lb.	10	10
200-07	200-C07	3/4" Slip x Slip Check	1/2 lb.	12	12
200-07F	200-C07F	3/4" FPT x FPT Check	1/2 lb.	12	12
200-10	200-C10	1" Slip x Slip Check	1/2 lb.	12	12
200-15	200-C15	1-1/2" Slip x Slip Check	1/2 lb.	8	8
200-20	200-C20	2" Slip x Slip Check	1/2 lb.	9	9
200-30	200-C30	3" Slip x Slip Check	1/2 lb.	5	5
UNIONS					
200-U10	200-CU10	1" Union x Union Check	1/2 lb.	8	8
200-U15	200-CU15	1-1/2" Union x Union Check	1/2 lb.	12	12
200-U20	200-CU20	2" Union x Union Check	1/2 lb.	12	12
	200-CUS50	50mm Union x Union Check	1/2 lb.		12
	200-CUS63	63mm Union x Union Check	1/2 lb.		12
2 LBS TENSION					
2002-20	2002-C20	2" Slip x Slip Check	2 lbs.	9	9
2002-U20	2002-CU20	2" Union x Union Check	2 lbs.	12	12


200-15AC PVC

Air Check Valves

Part No. PVC/White	Part No. PVC/Clear	Description	Carton Qty. PVC/White	Carton Qty. PVC/Clear
200-15AC	200-C15AC	1-1/2" Slip /2" Spig Compact Air CV	8	8
	400-S	1-1/2" Slip x Slip Air Check (Clear) - Repairable		8


310-20 PVC

Corrosion Resistant Check Valves

Part No. PVC/White	Description	Carton Qty. PVC/White
310-20	2" Window Check	6
310-00	1-1/2" Adapter for 310-20 Check, Set of 2	6

***Can be used in pool and spa applications for chlorinated flow water**


2161 PVC

Three-Way Valves

Part No. PVC/Black	Part No. ABS/White	Description	Carton Qty. PVC/Black	Carton Qty. ABS/White
2161	2162	1-1/2" I.D. x 2" O.D. Three Way Valve	20	20
2261		2" I.D. x 2-1/2" O.D. Three Way Valve	20	

Gate Valve Accessories & Fittings

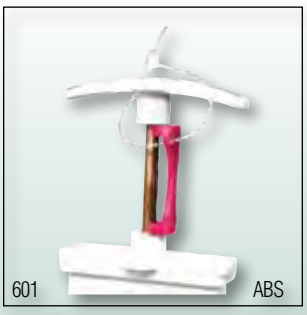

6100PB PVC


9300PB ABS

Valve Body Kits, Manual & Pneumatic

Part No. PVC/White	Part No. ABS/Black	Description	Handle	Carton Qty. PVC/White	Carton Qty. ABS/Black
6100PB	7100PB	1-1/2" Valve Body Kit, Seals, Hardware, Bagged	Plastic	1	1
	7100PBM	1-1/2" Valve Body Kit, Seals, Hardware, Bagged			1
6200PB	7200PB	2" Valve Body Kit, Seals, Hardware, Bagged	Plastic	1	1
	7200PBM	2" Valve Body Kit, Seals, Hardware, Bagged			1
4300PB	5300PB	3" Valve Body Kit, Seals, Hardware, Bagged	Plastic	1	1
	5300PBM	3" Valve Body Kit, Seals, Hardware, Bagged			1
	7300PB	3" Valve Body Kit, Seals, Hardware, Bagged			1
	7300PBM	3" Valve Body Kit, Seals, Hardware, Bagged			1
6400PB		4" Valve Body Kit, Seals, Hardware, Bagged	Plastic	1	
6600PB		6" and 8" Valve Body Kit, Seals, Hardware, Bagged	Plastic	1	
6900PB		10" and 12" Valve Body Kit, Seals, Hardware, Bagged	Plastic	1	

Part No. PVC/Gray	Part No. ABS/Black	Description	Handle	Carton Qty. PVC/Gray	Carton Qty. ABS/Black
8300PB		90mm Pneumatic Valve Body Kit, Seals, Hardware Bagged	Plastic	1	
	9300PB	3" Pneumatic Valve Body Kit, Metal Cylinder, Bagged			1
	9300SPB	3" Pneumatic Valve Body, Metal Cylinder, Bagged			1

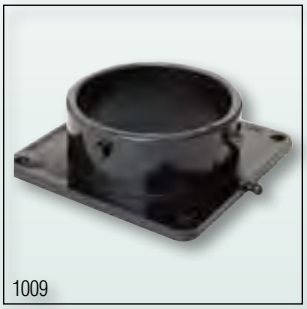

601 ABS

Safety Locks

Part No. ABS/Red	Part No. PE/Black	Description	Carton Qty. ABS/Red	Carton Qty. PE/Black
601		Safety Lock for 1-1/2" Valves	N/A	
602		Safety Lock for 2" Valve	N/A	
	603	Safety Lock for 3" Valve		1
	604	Safety Lock for 4" Valve		1

Gate Valve Accessories & Fittings


1005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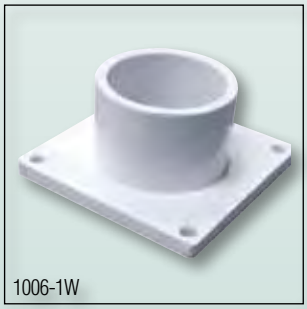

1006-1W

Flanged Valve Fittings

Part No. ABS/Black	Part No. PVC/White	Part No. PVC/Gray	Description	Carton Qty.
1005			3" Slip	1
1006			3" Spig	1
1007			3" FPT	1
1008			3" MPT	1
1009			3" Bayonet Lugs	1
7182			1-1/2" Hose Barb with Flange	60
7184			1-1/2" Step Down with Flange	50
1005-1			1-1/2" Slip	1
	1005-10W		10" Slip	1
		1005-110MM	110mm Slip	1
	1005-12W		12" Slip	1
		1005-160MM	160mm Slip	1
	1005-1W		1-1/2" Slip	1
1005-2			2" Slip	1
	1005-2W		2" Slip	1
	1005-4CW		4" Slip	1
	1005-6		6" Slip	1
	1005-8		8" Slip	1
		1005-90MM	90mm Slip (Gray)	1
	1005W		3" Slip	1
1006-1			1-1/2" Spig	1
	1006-1W		1-1/2" Spig	1
1006-2			2" Spig	1
	1006-2W		2" Spig	1
1008-1			1-1/2" MPT	1
	1008-2W		2" MPT	1
	7182W		1-1/2" Hose Barb with Flange	60


1003-6WN

Handles

Part No.	Description	Carton Qty.
2203-6W	Unibody Handle - Fits 1-1/2" - 2" Unibody Valve	1
1003-6N	Plastic Handle - Fits 1-1/2" - 3" Bolted Valve	1
1003-6WN	Plastic Handle - Fits 1-1/2" - 3" Bolted Valve	1
1003-6MN	Metal Handle - Fits 1-1/2" - 4" Bolted Valve	1
1008C-6	Metal Handle - Fits 6" and 8" Bolted Valve	1


1001-7N

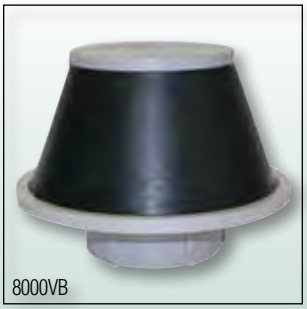
Seals

Part No. Sarlink/Black	Description	Carton Qty. Sarlink/Black
1001-7N	1-1/2" Gate Seal, Bulk	1
1001-9PB	1-1/2" Gate Seals and Hardware, Bagged	1
1002-7N	2" Gate Seal, Bulk	1
1002-9PB	2" Gate Seals and Hardware, Bagged	1
1003-7N	3" Gate Seal, Bulk	1
1003-9PB	3" Gate Seals and Hardware, Bagged	1
1004-7N	4" Gate Seal, Bulk	1
1008C-7N	6" and 8" Gate Seals, Bulk	1
1009-7	10" and 12" Gate Seals, Bulk	1


TX12T

Gate Valve Extension Rod Kits

Part No. Aluminum	Part No. SS	Description	Carton Qty. Aluminum	Carton Qty. SS
TX12T		12" Extension Rod for 1-1/2" to 3" Valves, Aluminum	1	
TX24T		24" Extension Rod for 1-1/2" to 3" Valves, Aluminum	1	
TX36T		36" Extension Rod for 1-1/2" to 3" Valves, Aluminum	1	
	X12-36	36" Extension Rod for 10" & 12" Valves, Stainless Steel		1
	X12-72	72" Extension Rod for 10" & 12" Valves, Stainless Steel		1
	X4-24	24" Extension Rod for 4" Valves, Stainless Steel		1
	X4-6	6" Extension Rod for 4" Valves, Stainless Steel		1
	X8-12	12" Extension Rod for 6" & 8" Valves, Stainless Steel		1
	X8-72	72" Extension Rod for 6" & 8" Valves, Stainless Steel		1


8000VB

Septic Valve Access Box

Part No. PP/Gray & Blk	Description	Carton Qty. PP/Gray & Blk
8000VB	Septic Valve Extension Rod Access Box	6


7150


7152

Bulkhead Parts

Part No. Rubber/Blk	Description	Carton Qty. Rubber/Blk
7150	1-1/2" Thick Rubber Gasket	500
7151	1-1/2" Thin Rubber Gasket	100
7152	1-1/2" Die Cast Metal Locknut	500
7252	2" Die Cast Metal Locknut	350
7180	1-1/2" Male Thread x 1-1/2" Hose Barb w/ Flange	200
7180G	1-1/2" Male Thread x 1-1/2" Hose Barb w/ Flange	200


H03-0001


H03-0004

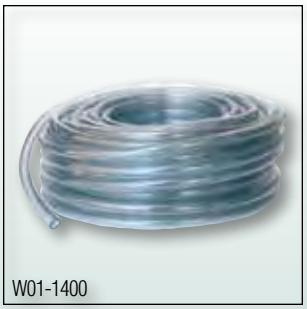

H03-0010


H03-0058


H03-0058

Hose Clamps

Part No.	Description	Band Width	Carton Qty.
H03-0001	Hose Clamp # 8, Stainless Steel, 7/16" x 1", Bagged	1/2"	10
H03-0001BU	Hose Clamp # 8, Stainless Steel, 7/16" x 1", Bulk	1/2"	100
H03-0002	Hose Clamp # 10, Stainless Steel, 1/2" x 1-1/16", Bagged	1/2"	10
H03-0002BU	Hose Clamp # 10, Stainless Steel, 1/2" x 1-1/16", Bulk	1/2"	50
H03-0003	Hose Clamp # 12, Stainless Steel, 1/2" x 1-1/4", Bagged	1/2"	10
H03-0003BU	Hose Clamp # 12, Stainless Steel, 1/2" x 1-1/4", Bulk	1/2"	100
H03-0004	Hose Clamp # 20, Stainless Steel, 3/4" x 1-3/4", Bagged	1/2"	10
H03-0004BU	Hose Clamp # 20, Stainless Steel, 3/4" x 1-3/4", Bulk	1/2"	50
H03-0005	Hose Clamp # 16, Stainless Steel, 1-1/1 6" x 1-1/2", Bagged	1/2"	10
H03-0005BU	Hose Clamp # 16, Stainless Steel, 1-1/1 6" x 1-1/2", Bulk	1/2"	100
H03-0006	Hose Clamp # 24, Stainless Steel, 1" x 2", Bagged	1/2"	10
H03-0006BU	Hose Clamp # 24, Stainless Steel, 1" x 2", Bulk	1/2"	50
H03-0007	Hose Clamp # 36, Stainless Steel, 1" x 2-3/4", Bagged	1/2"	10
H03-0007BU	Hose Clamp # 36, Stainless Steel, 1" x 2-3/4", Bulk	1/2"	50
H03-0008	Hose Clamp # 48, Stainless Steel, 2-1/2" x 3-1/2", Bagged	1/2"	10
H03-0008BU	Hose Clamp # 48, Stainless Steel, 2-1/2" x 3-1/2", Bulk	1/2"	50
H03-0009	Hose Clamp # 56, Stainless Steel, 3" x 4", Bagged	1/2"	10
H03-0009BU	Hose Clamp # 56, Stainless Steel, 3" x 4", Bulk	1/2"	50
H03-0010	Hose Clamp # 28, Stainless Steel, 1-1/4" x 2-1/4", Bagged	1/2"	10
H03-0010BU	Hose Clamp # 28, Stainless Steel, 1-1/4" x 2-1/4", Bulk	1/2"	50
H03-0011	Hose Clamp # 32, Stainless Steel, 1-1/2" x 2-1/2", Bagged	1/2"	10
H03-0011BU	Hose Clamp # 32, Stainless Steel, 1-1/2" x 2-1/2", Bulk	1/2"	50
H03-0012	Hose Clamp # 40, Stainless Steel, 2" x 2", Bagged	1/2"	10
H03-0012BU	Hose Clamp # 40, Stainless Steel, 2" x 2", Bulk	1/2"	50
H03-0013	Hose Clamp # 60, Stainless Steel, 3-1/4" x 4-1/4", Bagged	1/2"	10
H03-0013BU	Hose Clamp # 60, Stainless Steel, 3-1/4" x 4-1/4", Bulk	1/2"	25
H03-0014	Hose Clamp # 52, Stainless Steel, 2-3/4" x 3-3/4", Bagged	1/2"	10
H03-0014BU	Hose Clamp # 52, Stainless Steel, 2-3/4" x 3-3/4", Bulk	1/2"	50
H03-0015	Hose Clamp # 4, Stainless Steel, 1/4" x 5/8", Bagged	5/16"	10
H03-0015BU	Hose Clamp # 4, Stainless Steel, 1/4" x 5/8", Bulk	5/16"	100
H03-0016	Hose Clamp # 6, Stainless Steel, 3/8" x 7/8", Bagged	5/16"	10
H03-0016BU	Hose Clamp # 6, Stainless Steel, 3/8" x 7/8", Bulk	5/16"	100
H03-0017	Hose Clamp # 64, Stainless Steel, 2-1/2" x 4-1/2", Bagged	1/2"	10
H03-0017BU	Hose Clamp # 64, Stainless Steel, 2-1/2" x 4-1/2", Bulk	1/2"	25
H03-0018	Hose Clamp # 44, Stainless Steel, 2-1/4" x 3-1/4", Bagged	1/2"	10
H03-0018BU	Hose Clamp # 44, Stainless Steel, 2-1/4" x 3-1/4", Bulk	1/2"	50
H03-0019	Hose Clamp # 72, Stainless Steel, 3" x 5", Bagged	1/2"	10
H03-0019BU	Hose Clamp # 72, Stainless Steel, 3" x 5", Bulk	1/2"	25
H03-0020	Hose Clamp # 6, Stainless Steel, 3/8" x 7/8", Bagged	1/2"	10
H03-0020BU	Hose Clamp # 6, Stainless Steel, 3/8" x 7/8", Bulk	1/2"	100
H03-0058	Hose Clamp # 48, Galvanized Steel, 2-1/2" x 3-1/2", Boxed	1/2"	50
H03-0058VP	Hose Clamp # 48, Galvanized Steel, 2-1/2" x 3-1/2", 2 per Card	1/2"	46


W01-1400

Clear Vinyl Tubing

Part No. PVC/Clear	Description	Carton Qty. PVC/Clear
W01-1400	3/8" I.D. x 1/2" O.D. x 100' Boxed	2
W01-1400BU	3/8" I.D. x 1/2" O.D. x 100' Bulk	4
W01-1600	1/2" I.D. x 5/8" O.D. x 100' Boxed	6
W01-1800	1/2" I.D. x 5/8" O.D. x 50' Reinforced	6
W01-2105NSF-5	1/2" I.D. x 5/8" O.D. x 500' Reinforced High Pressure Hose	1


140-20CS PVC

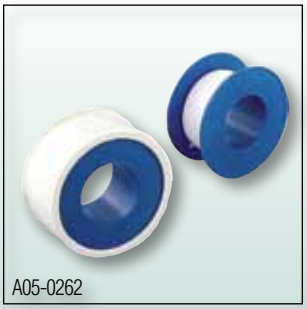
Unions

Part No. PVC/White	Description	Carton Qty. PVC/White
140-15CS	1-1/2" Union, Standard	48
140-20CS	2" Union, Standard	24
2098-1W	1-1/2" Half Pump Union	25
2098-2W	2" Half Pump Union	25


1019-2 ABS

Drain Spouts

Part No. ABS/Black	Part No. ABS/White	Description	Carton Qty. ABS/Black	Carton Qty. ABS/White
1019-1A		45° Drain Spout, 1-1/2" Male Slip x 1-1/2" Female Slip	200	
1019-2	1019-2W	45° Drain Spout, 2" Male Slip x 2" Female Slip	100	100


A05-0262

PTFE Tape

Part No.	Description	Carton Qty.
A05-0262	PTFE Tape, 1/2" x 24"	500
A05-0260	PTFE Tape, 1/2" x 260"	100
A05-0265	PTFE Tape, 1/2" x 520"	100

Plastic Barbed Fittings


RF850

Male Adapter

Part No. PP/Black	Description	Carton Qty. PP/Black
RF850	1/4" MPT x 3/8" Barb, Straight	25
RF847	1/4" MPT x 1/2" Barb, Straight	25
RF834	3/8" MPT x 3/8" Barb, Straight	25
RF840	3/8" MPT x 1/2" Barb, Straight	25
RF883	1/2" MPT x 3/8" Barb, Straight	25
RF841	1/2" MPT x 1/2" Barb, Straight	25


RF851

90° Ell Male Adapter

Part No. PP/Black	Description	Carton Qty. PP/Black
RF851	1/4" MPT x 3/8" Barb, Elbow	25
RF848	1/4" MPT x 1/2" Barb, Elbow	25
RF842	3/8" MPT x 1/2" Barb, Elbow	25
RF882	1/2" MPT x 3/8" Barb, Elbow	25
RF846	1/2" MPT x 1/2" Barb, Elbow	25
RF881	1/2" MPT x 5/8" Barb, Elbow	25
RF871	1/8" MPT x 3/8" Barb, Elbow	25


RF854

90° Ell

Part No. PP/Black	Description	Carton Qty. PP/Black
RF854	3/8" Barb x 3/8" Barb, Elbow	25
RF844	1/2" Barb x 1/2" Barb, Elbow	25


RF855

Coupler

Part No. PP/Black	Description	Carton Qty. PP/Black
RF855	3/8" Barb x 3/8" Barb, Straight	25
RF845	1/2" Barb x 1/2" Barb, Straight	25


RF884

Reducer Coupler

Part No. PP/Black	Description	Carton Qty. PP/Black
RF884	3/8" Barb x 1/4" Barb, Straight	25
RF885	1/2" Barb x 3/8" Barb, Straight	25


RF853

Tee Male Adapter

Part No. PP/Black	Description	Carton Qty. PP/Black
RF853	1/4" MPT x 3/8" Barb x 3/8" Barb	25
RF833	3/8" MPT x 3/8" Barb x 3/8" Barb	25
RF849	1/2" MPT x 1/2" Barb x 1/2" Barb	25


RF852

Tee

Part No. PP/Black	Description	Carton Qty. PP/Black
RF852	3/8" Barb x 3/8" Barb x 3/8" Barb	25
RF843	1/2" Barb x 1/2" Barb x 1/2" Barb	25

Fresh Water Hose

W01-5300BU

High Pressure Drinking Water Hose

Part No. Vinyl/White	Description	Carton Qty. Vinyl/White
W01-5120BU	1/2" x 10' Water Hose	10
W01-5300BU	1/2" x 25' Water Hose	10
W01-5600BU	1/2" x 50' Water Hose	6
W01-6300BU	5/8" x 25' Water Hose	8
W01-6600BU	5/8" x 50' Water Hose	4


A01-0144C

Hi Flow Ball Valve

Part No. ABS/Black	Description	Carton Qty. ABS/Black
1020-1D	Ball Valve Cap Only	300
A01-0144C	Hi Flow Ball Valve with Cap	100


A01-0130VP

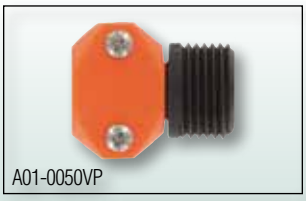
Double Hose Shutoff

Part No.	Description	Carton Qty.
A01-0130VP	Double Hose Shutoff, Plastic, Carded	50
A01-0131VP	Double Hose Shutoff, Metal, Carded	20


A01-0144VP

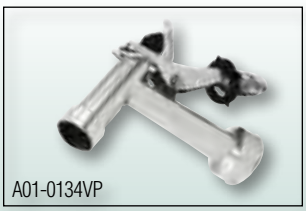
Single Hose Shutoff

Part No.	Description	Carton Qty.
A01-0144VP	Single Hose Shutoff, High Flow, Carded	30


A01-0050VP

Hose Fixers

Part No.	Description	Carton Qty.
A01-0050VP	Hose Fixer, HSE x MGH, Carded	20
A01-0055VP	Hose Fixer, HSE x FGH, Carded	20
A01-0060VP	Hose Fixer, HSE x HSE, Carded	50


A01-0134VP

Pistol Nozzles

Part No.	Description	Carton Qty.
A01-0134VP	Pistol Nozzle, Metal, Carded	30
A01-0136VP	Pistol Nozzle, Plastic, Carded	36


W1516 & W1526

Hose Washers

Part No.	Description	Carton Qty.
W1516	Hose Washers, Black, 250 Per Bag	10
W1516VP	Hose Washers, Blue, 10 Per Card	100
W1526	Hose Washers With Screen, Red, Bag of 100	8
W1526VP	Hose Washers With Screen, Red, 3 Per Card	40


R8009

ABS Water Tanks

Part No. ABS/Black	Description	Carton Qty. ABS/Black
R8009	8" x 16" x 9" ABS Water Tank	1
R8012	8" x 16" x 12" ABS Water Tank	1
R8018	8" x 16" x 18" ABS Water Tank	1
R8024	8" x 16" x 24" ABS Water Tank	1
R8030	8" x 16" x 30" ABS Water Tank	1
R8036	8" x 16" x 36" ABS Water Tank	1
R8042	8" x 16" x 42" ABS Water Tank	1
R8048	8" x 16" x 48" ABS Water Tank	1
R8054	8" x 16" x 54" ABS Water Tank	1
R8060	8" x 16" x 60" ABS Water Tank	1
R8066	8" x 16" x 66" ABS Water Tank	1
R8072	8" x 16" x 72" ABS Water Tank	1


RK907

ABS Tank Fill Kits, Fittings & Cement

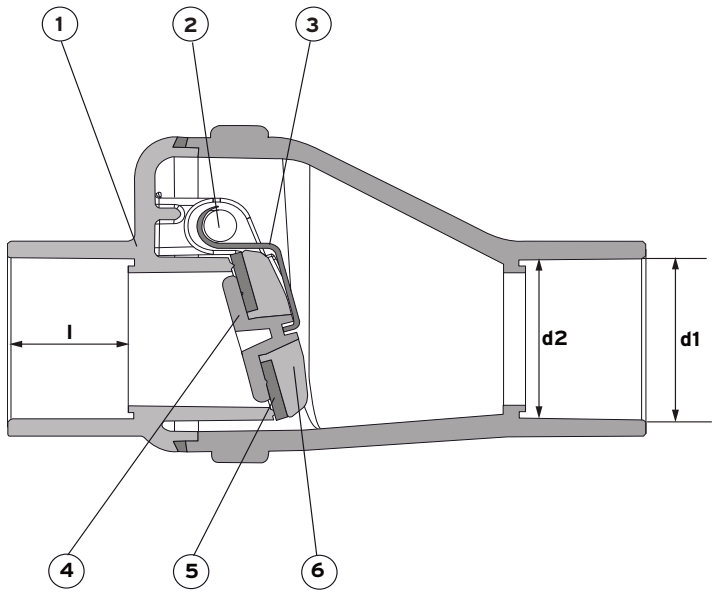
Part No. PP/Black	Description	Carton Qty. PP/Black
RF835	3/8" MPT x 3/8" Barb, 90° Elbow	25
RF836	Fill Cap 1-1/2" FPT	200
RF865	Pipe Plug 3/8" MPT	25
RF907	Barbed Fill-Elbow 1-1/4"	100
RF908	Barbed Fill-Straight 1-1/4"	180
RF909	Fill Thread Adaptor 1-1/2" MPT	150
RF922	Drain Nut, 3/8" FPT	200
RK907	ABS Tank Fill Kit - 90° Barbed Elbow, with Cement	70
RK908	ABS Tank Fill Kit - Straight Barbed Elbow, with Cement	70
RK909	ABS Tank Fill Kit - Thread with Cap, with Cement	70

Well Pressure Tank Products

Well Pressure Tank Products

Part No. PVC/Gray	Description	Carton Qty. PVC/Gray
100-50	1/2" x 1/2" Pressure Relief, PVC	20
100-75	3/4" x 1/2" Pressure Relief, PVC	24
105-10	Tank Tee, PVC	20
600-75	3/4" Float Valve	8
600-100	1" Float Valve	10
600-125	1-1/4" Float NPT Valve	6
610-6	6" x 1/4" Float Ball	8
610-8	8" x 1/4" Float Ball	8
610-8F	8" x 5/16" Float Ball	8
615-12	12" x 1/4" Stainless Steel Float Rod	8
615-14F	14" x 5/16" Stainless Steel Float Rod	8

SPECIFICATIONS - SWING/SPRING COMBO CHECK VALVES



SPECIFICATION OF MATERIAL

ITEM	PARTS	MATERIAL
1	BODY	PVC, WHITE OR CLEAR
2	SHAFT	NORYL GFN3
3	SPRING	316 STAINLESS STEEL
4	SEAL RETAINER	PVC WHITE
5	SEAL	BUNA, 40 SHORE
6	GATE	PVC WHITE

ANSI SOCKET SWING/SPRING CHECK VALVES

SIZE	l (min)	d1	d2
1/2"	0.688	0.848	0.836
3/4"	0.719	1.058	1.046
1"	0.895	1.325	1.310
1-1/2"	1.094	1.912	1.894
2"	1.156	2.387	2.369
3"	1.875	3.516	3.492

FLOW VS. PRESSURE DROP

1-1/2" COMBO CHECK VALVES

FLOW RATE (GPM)	0	10	20	30	40	50	60	70	80	90	100
PSI DROP (ΔP)	0.00	0.40	0.52	0.63	0.76	0.90	1.08	1.26	1.46	1.70	1.88

Air Temp = 75 Deg. F Water Temp = 82 Deg. F TDS = 390 ppm

2" COMBO CHECK VALVES

FLOW RATE (GPM	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
PSI DROP (ΔP)	0.00	0.25	0.33	0.38	0.45	0.51	0.56	0.59	0.61	0.65	0.67	0.70	0.72	0.78	0.85	0.94

Air Temp = 78 Deg. F Water Temp = 82 Deg. F TDS = 390 ppm

3" COMBO CHECK VALVES

FLOW RATE (GPM	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
PSI DROP (ΔP)	0.00	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.09	0.10	0.11	0.13	0.14	0.15	0.17	0.17

Air Temp = 78 Deg. F Water Temp = 84 Deg. F TDS = 390 ppm

Gate Valve Technical Data

MATERIAL & GENERAL SPECIFICATIONS

	1½" (50mm)	2" (63mm or 75/90mm)	3" (90mm)	4" (110mm)	6"/8" (160/200mm)	10" / 12"
Color	White or Black (Gray)	White or Black (Gray)	White or Black (Gray)	White (Gray)	White (Gray)	White
Hubs	PVC or ABS (PVC)	PVC or ABS (PVC)	PVC or ABS (PVC)	PVC (PVC)	PVC	PVC
Body	PVC or ABS (PVC)	PVC or ABS (PVC)	PVC or ABS (PVC)	PVC (PVC)	ABS	ABS
Shaft	304SS	304SS	304SS	304SS	304SS	304SS
Paddle	Polypro	Polypro or 304SS	Polypro or 304SS	304SS	304SS	304SS
Handle	Plastic or Die Cast Al	Plastic or Die Cast Al	Plastic or Die Cast Al	Die Cast Al	304SS	304SS
Seals	Sarlink	Sarlink	Sarlink	Sarlink	Sarlink	Sarlink
Max PSI Open/Closed	45/100	40/80	30/30	20/40	10/20	10/15
Mid-Flow Max Closing Pressure	6 psi	1 psi (PP) 15 psi (SS)	.5 psi (PP) 9 psi (SS)	8 psi	2.5 psi	2.5 psi
Air Cylinder	Reinforced Nylon	Metal or Reinforced Nylon	Metal or Reinforced Nylon	Metal	Metal	Metal

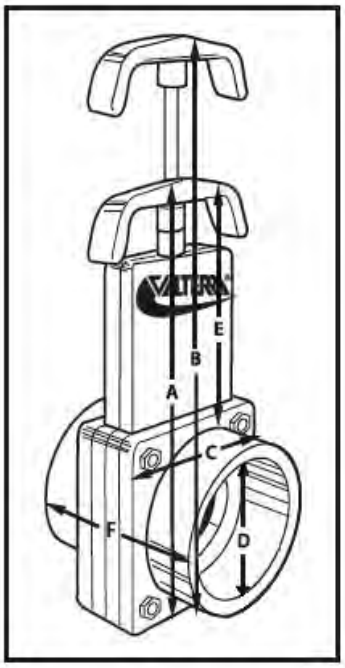
Notes:

Vacuum Applications: 1½" to 4" tested to 26 Hq in. when requested by customer

Metric Valves are Gray PVC

MANUAL VALVE DIMENSIONS (Inches)(mm)

Size	A	B	C	D	E	F
1.5 ABS	6.5	8.625	2.896	1.912	3.9375	2.875
1.5 PVC	6.5	8.625	2.896	1.913	3.9375	3.375
50mm	168	222	72.6	50.3	98	98
2 ABS	7.5	10.25	3.364	2.388	4.5	3.125
2 PVC	7.5	10.25	3.37	2.387	4.5	3.5
63mm	191	260	85.4	63.3	111	105
75/90mm	238	324	111	75.3	130	133
3 ABS	9.25	13	4.35	3.518	5.1875	4.5
3 PVC	9.25	13	4.37	3.516	5.1875	4.5
90mm	238	324	111	90.3	130	133
4 PVC	13.25	18	6.665	4.518	7.4375	5.1875
110mm	330	454	169	110.4	181	130
6 PVC	22.75	31.125	11.1	6.647	13.25	11.125
160mm	572	800	279.4	160.7	343	279
8 PVC	22.75	31.125	11.1	8.655	12.1875	13.75
200mm	572	797	279.4	200.7	327	276
10 PVC	35	48.5	18.475	10.78	16.99	13.75
12 PVC	35	48.5	18.475	12.78	18	15.375

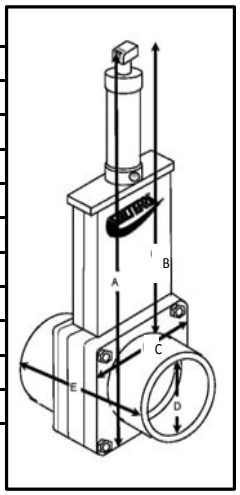


"B" Dimension is height of valve in fully open position

Gate Valve Technical Data

PNEUMATIC VALVE - ALUMINUM/STAINLESS STEEL AIR CYLINDER DIMENSIONS (Inches)(mm)

Size	A	B	C	D	E	Air Tubing Size	Recomm. Operating Pressure	Cylinder Air Volume
2	12.5	8.5	3.364	2.388	3	1/4"	55-70 psi	1.209 in³
63mm	318	216	85.4	63.3	105	1/4"	55-70 psi	1.209 in³
3	15.5	11.25	4.35	3.518	4.5	1/4"	55-70 psi	1.662 in³
90mm	394	286	111	90.3	133	1/4"	55-70 psi	1.662 in³
4	19.5	13.25	6.665	4.518	5	1/4"	55-70 psi	1.742 in³
110mm	489	337	169	110.4	130	1/4"	55-70 psi	1.742 in³
6	33	24	11.1	6.647	11.125	1/4"	90-120 psi	19.36 in³
160mm	838	610	279.4	160.7	279	1/4"	90-120 psi	19.36 in³
8	33	22.75	11.1	8.655	13.75	1/4"	90-120 psi	19.36 in³
200mm	838	590	279.4	200.7	276	1/4"	90-120 psi	19.36 in³
10	50	34	18.475	10.78	13.1	1/4"	100-130 psi	51.08 in³
12	50	33	18.475	12.78	15.375	1/4"	100-130 psi	51.08 in³

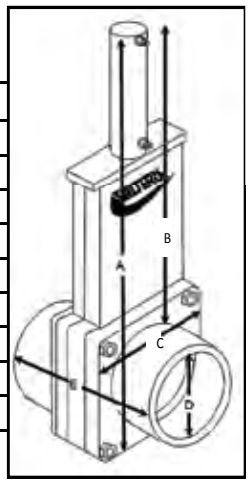


Note: Aluminum/SS Air Cylinders assembled with Air Restrictor - removal of restrictor voids warranty

Cylinder working temperature: 40°F - 140°F

PNEUMATIC VALVE - REINFORCED NYLON PLASTIC AIR CYLINDER DIMENSIONS (Inches)(mm)

Size	A	B	C	D	E	Air Tubing Size	Recomm. Operating Pressure	Cylinder Air Volume
1.5	10	7.375	2.896	1.912	2.875	I.D. 4 mm x O.D. 6 mm	60-75 psi	1.196 in³
50mm	254	187	72.6	50.3	98	I.D. 4 mm x O.D. 6 mm	60-75 psi	1.196 in³
2	11	8	3.364	2.388	3	I.D. 4 mm x O.D. 6 mm	60-75 psi	1.196 in³
63mm	279	203	85.4	63.3	105	I.D. 4 mm x O.D. 6 mm	60-75 psi	1.196 in³
3	13	8.5	4.35	3.518	4.5	I.D. 4 mm x O.D. 6 mm	60-75 psi	1.196 in³
90mm	330	216	111	90.3	133	I.D. 4 mm x O.D. 6 mm	60-75 psi	1.196 in³



Note: Cylinder working temperature: 40°F - 140°F

CEMENT

VALVE FITTING	PIPE	SIZE	CEMENT
ABS	PVC	1.5-6"	Use IPS #794 or equivalent
ABS	ABS	1.5-3"	Use IPS #771 or equivalent
PVC	ABS	1.5-6"	Use IPS #794 or equivalent
PVC	PVC	1.5-12"	Use IPS #717 or equivalent

STATIC HEAD PRESSURE

Feet Head	PSI
1	0.43
3	1.03
6	2.6
9	3.9
12	5.2
15	6.51
20	8.66
30	12.99
40	17.32
50	21.65

► **Feet Head to PSI, multiply by 0.434**

► **PSI to Feet Head, multiply by 2.3**

VALVE MAX WORKING TEMPERATURE

Material	Suggested Maximum Working Temperature	
ABS	205° F	96° C
PVC	167° F	75° C
PC	280° F	137° C

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M01141

Vulkem® 45SSL

Semi-Self-Leveling, Single-Component, Polyurethane Sealant

Commercial Sealants & Waterproofing

Product Description

Vulkem® 45SSL is a semi-self-leveling, single-component, moisture-curing, low-modulus, polyurethane sealant.

Basic Uses

Vulkem 45SSL is formulated for use in expansion joints in sidewalks, swimming pool decks, plazas, floors and any other horizontal surfaces with slopes up to 6% (e.g. 1' rise for every 16' run).

Features and Benefits

- Vulkem 45SSL is a traffic rated, pourable, semi-self-leveling sealant with exceptional primerless adhesion and movement capability.
- Vulkem 45SSL is suitable for continuous immersion in non-chlorinated water.
- The Vulkem 45SSL technology provides the sealant with greater UV resistance and will not out gas.
- Vulkem 45SSL provides exceptional wear and tear resistance required in high traffic areas.
- Formulated with an innovative polymer technology, similar to TREMproof® 250GC and Dymonic® 100, Vulkem 45SSL is highly versatile and has a unique capability to adhere to damp or green concrete.

Availability

Vulkem 45SSL is immediately available from your local Tremco Sales Representative, distributor, or warehouse.

Coverage Rates

308' of joint per gallon for a 1/4" x 1/4" (6 mm x 6 mm) joint. For specific coverage rates that include joint size, and usage efficiencies, visit our website usage calculator at www.tremcosealants.com

Packaging

1-qt (890-mL) cartridges
2-gal (7.6-L) pails
5-gal (18.9-L) pails
55-gal (208-L) drums

Colors

Black, Buff, Gray, Limestone, White.

Shelf Life

1 year when stored at 40 to 100 °F (5 to 38 °C)

Storage

Store Vulkem 45SSL in original, undamaged packaging in a clean, dry, protected location with temperatures between 40 to 110 ˚F (5 to 43 ˚C).

Applicable Standards

Vulkem 45SSL meets or exceeds the requirements of the following specifications:

- ASTM C920, Type S, Grade P, Class 35, Use T, M, A, O and I (Class 2)
- CAN/CGSB 19.13-M87, MC-1-25-B-N
- ASTM E 1966/UL 2079

Fire Rated Systems

FF-D-1062, and FW-D-1058

Limitations

- Use with adequate ventilation.
- Always utilize the accompanying MSDS for information on Personal Protective Equipment (PPE) and Health Hazards.
- Vulkem 45SSL is not recommended for use in chlorinated, potable, heavy or waste water.
- Although Vulkem 45SSL is paintable, this does not imply adhesion to and compatibility with all paints. Please refer to Tremco Technical Bulletin No. S-09-05 for more information.

Substrate Preparation

Surfaces must be sound and clean. All release agents, existing waterproofing, dust, loose mortar, paints, other finishes or field applied coating must be removed. This can be accomplished with a thorough wire brushing, grinding, sandblasting, or solvent washing, depending on the contamination.

Tremco recommends that surface temperatures be 40 ˚F (5 ˚C) or above at the time the sealant is applied. If sealant must be applied in temperatures below 40 ˚F, please refer to the Tremco Technical Bulletin for Applying Sealants in Cold Conditions (No. S-08-44 rev 1) that can be found on our website at www.tremcosealants.com

Priming

Vulkem 45SSL typically adheres to common construction substrates without primers. However, Tremco always recommends that a mock-up or field adhesion test be performed on the actual materials being used on the job to verify the need for a primer, proper cleaning and prep requirements. A description of the field adhesion test can be found in appendix X1 of ASTM C1193, Standard Guide for Use of Joint Sealants.

Where deemed necessary, use Vulkem® Primer #191 Low-VOC QD on porous substrates and TREMprime® Non-Porous Primer for metals or plastics.

Application

Vulkem 45SSL is easy to apply with conventional caulking equipment. Ensure that the backer rod is properly friction-fitted and any primers have been applied.

Fill the joint completely with a proper width-to-depth ratio, and then tool to ensure intimate contact of sealant with joint substrates.

Dry tooling is always preferred, although compatible wetting agents can be used in limited amounts to slick the spatula if needed after an initial pass.

For a cleaner finish, mask the sides of the joint with tape prior to filling.

Joint Design

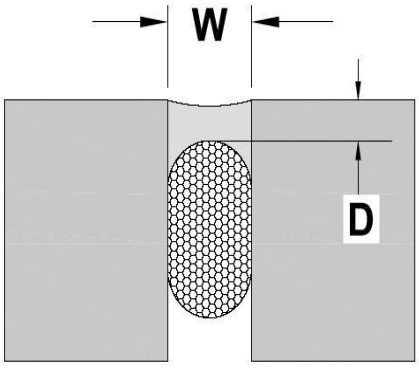
Vulkem 45SSL may be used in horizontal joints designed in accordance with accepted architectural/engineering practices. Joint width should be 4 times anticipated movement but not less than 1/4" (6 mm).

Joint Backing

Polyethylene backer rod is recommended as joint backing to control sealant depth and ensure intimate contact of sealant with joint substrate when tooling. Where depth of joint will prevent the use of backer rod, an adhesive backed polyethylene tape (bond breaker tape) should be used to prevent three-sided adhesion. All backing should be dry at the time of sealant application.

Sealant Dimensions

W = Sealant width, D = Sealant depth,



Expansion Joints- The minimum width and depth of any sealant application should be 1/4" x 1/4" (6 mm x 6 mm). The depth (D) of sealant may be equal to width (W) of joints that are less than 1/2" wide.

For joints ranging from 1/2" to 1" (13 mm to 25 mm) wide, the sealant depth should be approximately one-half of the joint width. The maximum depth (D) of any sealant application should be 1/2" (13 mm). For joints that are wider than 1" (25 mm) contact Tremco Technical Services or your local Tremco Sales Representative.

Cure Time

At 75 °F (23.9 °C), 50% RH a skin forms within 5 hr. Curing continues at a rate of approximately 1/16" (1.6 mm) per day. The cure time will increase as the temperature and/or humidity decrease. A good rule of thumb is one additional day of cure for every 10 °F decrease in temperature. Cure time can be increased by adding water when using pails of Vulkem 45SSL. Please refer to the Technical Bulletin on Vulkem 45SSL Activator that can be found on our website at: www.tremcosealants.com

Clean Up

Excess sealant and smears adjacent to the joint interface can be carefully removed with xylene or mineral spirits before the sealant cures. Any utensils used for tooling can also be cleaned with xylene or mineral spirits.

Warranty

Tremco warrants its Products to be free of defects in materials, but makes no warranty as to appearance or color. Since methods of application and on-site conditions are beyond our control and can affect performance, Tremco makes no other warranty, expressed or implied including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE with respect to Tremco Products. Tremco's sole obligation shall be, at its option, to replace or refund the purchase price of the quantity of Tremco Products proven to be defective, and Tremco shall not be liable for any loss or damage.

Please refer to our website at www.tremcosealants.com for the most up-to-date Product Data Sheets.

TYPICAL PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUES
Type		Single component polyurethane sealant
Color		4 Standard Colors
Solids		98%
Specific Gravity		1.32
Application		Semi self leveling sealant, applied with typical caulking equipment
Rheological Properties	ASTM C639	Type I Single component, flowable
Hardness, durometer scale “A”	ASTM C661	40 +/-5
Weight Loss	ASTM C1246	Pass
Skin Time	ASTM C679	2 hr
Tack Free Time	73.4°F (23°C) 50% RH	5 hr
Stain and Color Change	ASTM C510	Pass
Adhesion to Concrete	ASTM C794	31 pli (before water)
Adhesion to Concrete After Immersion	ASTM C794	28 pli
Adhesion to Green Concrete	ASTM C794	>15 pli
Adhesion to Damp Concrete	ASTM C794	>15 pli
Effects of Accelerated Aging	ASTM C793	Pass
Movement Capability	ASTM C719	+/-35%
Movement Capability	ASTM C719* Modified	+100/-50%
Tensile Strength	ASTM D412	250 to 300 psi
% Elongation	ASTM D412	600 to 750%
Tear Strength	ASTM D412	35 psi
Service Temperature		-40 to (-40 to 37°C)
Application Temperature		40 to 100°F (4 to 37 °C)

Tremco Commercial Sealants & Waterproofing

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www.tremcosealants.com

Vulkem® 116

Multi-Purpose, Single-Component, Polyurethane Sealant

Product Description

Vulkem® 116 is a multi-purpose, single-component, moisture-curing, gun-grade polyurethane sealant.

Basic Uses

Vulkem 116 is an excellent general-purpose sealant designed for use on poured and precast concrete, masonry work, window and door perimeters, and similar types of construction joints. Vulkem 116 is approved for exterior use only.

Features and Benefits

- Vulkem 116 has a 30-year history of delivering superior primerless adhesion to porous substrates, which makes it the choice for sealing expansion joints in commercial construction applications.
- Vulkem 116 is suitable for certain water immersion applications.
- Vulkem 116 is rated for +/-25% movement capability.
- The cure of the sealant can be accelerated with the addition of the Vulkem Catalyst 45/116.
- Vulkem 116 is durable, flexible, and offers excellent performance in dynamic joints.

Availability

Immediately available from your local Tremco Field Representative, Tremco Distributor or Tremco Warehouse.

Coverage Rates

308 linear feet of joint per gallon for a 1/4" x 1/4" (6 mm x 6 mm) joint. For specific coverage rates that include joint size, and usage efficiencies, visit our website usage calculator at www.tremcosealants.com.

Packaging

10.1-oz. (300-mL) cartridges, 20-oz. (600-mL) sausages, 2- and 5-gal (7.6- and 18.9-L) pails, and 55-gal (208-L) drums. All colors are not available in every package size. Contact Tremco Customer Service for more information.

Colors

Almond, Aluminum, Black, Bronze, Buff, Gray, Dark Bronze, Ivory, Limestone, Redwood Tan, Beige, Stone, Anodized Aluminum, Aluminum Stone, White, Natural Clay.

Storage

Store Vulkem 116 in original, undamaged packaging in a clean, dry, protected location with temperatures between 40 to 110 ˚F (5 to 43 ˚C).

Applicable Standards

Vulkem 116 meets or exceeds the requirements of the following specifications:

- ASTM C920 Type S, Grade NS, Class 25, Use T, NT, M, A, I class II, and O
- U.S. Federal Specification TT-S-00230C, Class A, Type II
- CAN/CGSB-19.13-M87
- USDA regulation for indirect food contact
- Canadian Food Inspection Agency
- City of Los Angeles (COLA) approval standards

Limitations

- Do not apply Vulkem 116 over damp, green or contaminated surfaces.
- Vulkem 116 is approved for exterior use only. Do not use this product inside an occupied building even if there are no occupants present during use.
- Always utilize the sealant's MSDS found on our website at www.tremcosealants.com for information on proper ventilation, Personal Protective Equipment (PPE) and other health concerns.
- Do not use in chlorinated, potable, heavy or waste water.
- Although this product is paintable, this does not imply adhesion to and compatibility with all paints. Please refer to Tremco Technical Bulletin No. S-09-05 for more information.

Substrate Preparation

Surfaces must be sound and clean. All release agents, existing waterproofing, dust, loose mortar, paints, other finishes or field applied coating must be removed. This can be accomplished with a thorough wire brushing, grinding, sandblasting, or solvent washing, depending on the contamination.

Tremco recommends that surface temperatures be 40 ˚F (5 ˚C) or above at the time the sealant is applied. If sealant must be applied in temperatures below 40 ˚F, please refer to the Tremco Technical Bulletin for Applying Sealants in Cold Conditions (No. S-08-44 rev 1) that can be found on our website at www.tremcosealants.com

Priming

Vulkem 116 typically adheres to common construction substrates without primers; however, Tremco always recommends that mock-up or field adhesion test be performed on the actual materials being used on the job to verify the need for a primer, proper cleaning and prep requirements. The field adhesion test can be found in appendix X1 of ASTM C 1193, Standard Guide for Use of Joint Sealants.

Where deemed necessary, use Vulkem Primer® #191 Low VOC QD for porous substrates and TREMprime® Non-Porous Primer for metals and plastics.

Application

Vulkem 116 is easy to apply with conventional caulking equipment. Ensure that the backer rod is friction-fitted properly and any primers have been applied.

Fill the joint completely with a proper width-to-depth ratio, and then tool to ensure intimate contact of sealant with joint walls.

Dry tooling is always preferred, although xylene can be used in limited amounts to slick the spatula if needed.

For a cleaner finish, mask the sides of the joint with tape prior to filling.

Joint Design

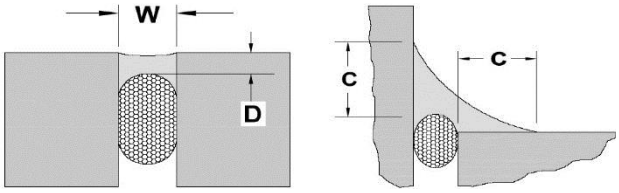
Vulkem 116 may be used in any vertical or horizontal joint designed in accordance with accepted architectural/engineering practices. Joint width should be 4 times anticipated movement, but not less than 1/4" (6 mm).

Joint Backing

Closed cell or reticulated polyethylene backer rod is recommended as joint backing to control sealant depth and to ensure intimate contact of sealant with joint walls when tooling. Where depth of joint will prevent the use of backer rod, an adhesive backed polyethylene tape (bond breaker tape) should be used to prevent three-sided adhesion. All backing should be dry at time of sealant application.

Sealant Dimensions

W = Sealant width, D = Sealant depth, C = Contact area.



EXPANSION JOINTS - The minimum width and depth of any sealant application should be 1/4" x 1/4" (6 mm x 6 mm). The depth (D) of sealant may be equal to the width (W) of joints that are less than 1/2" (13 mm) wide. For joints ranging from 1/2" to 1" (13 mm to 25 mm) wide, the sealant depth should be approximately one-half of the joint width. The maximum depth (D) of any sealant application should be 1/2" (13 mm). For joints that are wider than 1" (25 mm) contact Tremco's Technical Service Department, or your local Tremco Sales Representative.

WINDOW PERIMETER – For fillet beads, or angle beads around windows and doors, the sealant should exhibit a minimum surface contact area [C] of 1/4" (6 mm) onto each substrate, with provisions for release at the heel of the angle using backer rod or bond breaker tape.

Cure Time

Vulkem 116 generally cures at a rate of 1/16" (2 mm) per day at 75 °F (24 °C) and 50% RH. It will skin in 5 hr and be tack free in 30 hr. The cure time will increase as temperatures and/or humidity decrease. A good rule of thumb is one additional day for every 10 °F decrease in temperature.

Clean Up

Excess sealant and smears adjacent to the joint interface can be carefully removed with xylene or mineral spirits before the sealant cures. Any utensils used for tooling can also be cleaned with xylene or mineral spirits.

Warranty

Tremco warrants its Products to be free of defects in materials, but makes no warranty as to appearance or color. Since methods of application and on-site conditions are beyond our control and can affect performance, Tremco makes no other warranty, expressed or implied including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE with respect to Tremco Products. Tremco's sole obligation shall be, at its option, to replace or refund the purchase price of the quantity of Tremco Products proven to be defective, and Tremco shall not be liable for any loss or damage.

Please refer to our website at www.tremcosealants.com for the most up-to-date Product Data Sheets.

TYPICAL PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUES
Type		Single component polyurethane sealant
Color		Almond, Aluminum, Black, Bronze, Buff, Gray, Dark Bronze, Ivory, Limestone, Redwood Tan, Beige, Stone, Anodized Aluminum, Aluminum Stone, White, Natural Clay.
Solids		94%
Specific Gravity		1.1344
Application		gun-grade sealant, applied with typical caulking equipment
Extrusion Rate	ASTM C1183	40 to 50 mL/min
Hardness Properties	ASTM C661	40
Weight Loss	ASTM C1246	Pass
Skin Time	ASTM C679	6 hr
Tack Free Time	73.4°F (23°C) 50% RH	30 hr
Stain and Color Change	ASTM C510	No visible color change/No stain
Adhesion to Concrete	ASTM C794	20 to 25 pli (89 to 111 N)
Adhesion to Aluminum	ASTM C794	18 to 22 pli (80 to 99 N)
Adhesion to Brick	ASTM C794	19 to 23 pli (85 to 102 N)
Effects of Accelerated Aging	ASTM C793	Pass
Movement Capability	ASTM C719	±25%
Tensile Strength	ASTM D412	200 to 250 psi
% Elongation	ASTM D412	200 to 300%
Modulus at 100%	ASTM D412	150 to 200 psi

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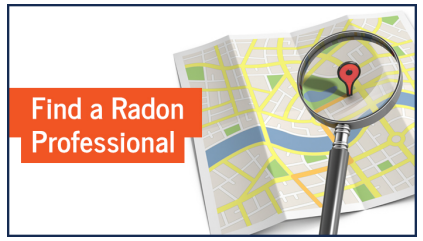



Radon Fan Operating
Cost Calculator

INSTALLATION & OPERATING INSTRUCTIONS
Instruction P/N IN015 Rev E
FOR *CHECKPOINT IIa*™ P/N 28001-2 & 28001-3
RADON SYSTEM ALARM

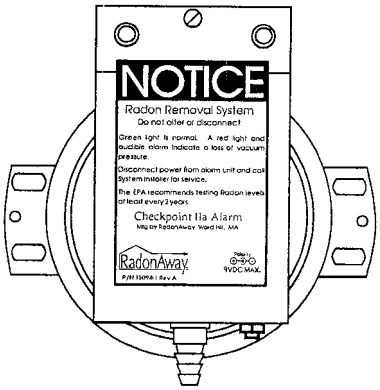
INSTALLATION INSTRUCTIONS
(WALL MOUNTING)

Select a suitable wall location near a vertical section of the suction pipe. The unit should be mounted about four or five feet above the floor and as close to the suction pipe as possible. Keep in mind that with the plug-in transformer provided, the unit must also be within six feet of a 120V receptacle. **NOTE: The Checkpoint IIa is calibrated for vertical mounting, horizontal mounting will affect switchpoint calibration.**

Drill two ¼" holes 4" apart horizontally where the unit is to be mounted.

Install the two ¼" wall anchors provided.

Hang the CHECKPOINT IIa from the two mouting holes located on the mounting bracket. Tighten the mounting screws so the unit fits snugly and securely against the wall.



Drill a 5/16" hole into the side of the vent pipe about 6" higher than the top of the unit.

Insert the vinyl tubing provided about 1" inside the suction pipe.

Cut a suitable length of vinyl tubing and attach it to the pressure switch connector on the CHECKPOINT IIa.

CALIBRATION AND OPERATION.

The CHECKPOINT IIa units are calibrated and sealed at the factory to alarm when the vacuum pressure falls below the factory setting and should not normally require field calibration. Factory Settings are:
28001-2 -.25" WC Vacuum
28001-3 -.10" WC Vacuum

To Verify Operation:

With the exhaust fan off or the pressure tubing disconnected and the CHECKPOINT IIa plugged in, both the red indicator light and the audible alarm should be on.

Turn the fan system on or connect the pressure tubing to the fan piping. The red light and the audible alarm should go off. The green light should come on.

Now turn the fan off. The red light and audible alarm should come on in about two or three seconds and the green light should go out.

WARRANTY INFORMATION

Subject to applicable consumer protection legislation, RadonAway warrants that the CHECKPOINT IIa will be free from defective material and workmanship for a period of (1) year from the date of purchase. Warranty is contingent on installation in accordance with the instructions provided. This warranty does not apply where repairs or alterations have been made or attempted by others; or the unit has been abused or misused. Warranty does not include damage in shipment unless the damage is due to the negligence of RadonAway. All other warranties, expressed or written, are not valid. To make a claim under these limited warranties, you must return the defective item to RadonAway with a copy of the purchase receipt. RadonAway is not responsible for installation or removal cost associated with this warranty. In no case is RadonAway liable beyond the repair or replacement of the defective product FOB RadonAway.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO WARRANTY OF MERCHANTIBILITY. ALL OTHER WARRANTIES, EXPRESSED OR WRITTEN, ARE NOT VALID.

For service under these warranties, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. **No returns can be accepted without an RMA.** If factory return is required, the customer assumes all shipping costs to and from factory.

Manufactured by:
RadonAway
Ward Hill, MA
(978)-521-3703