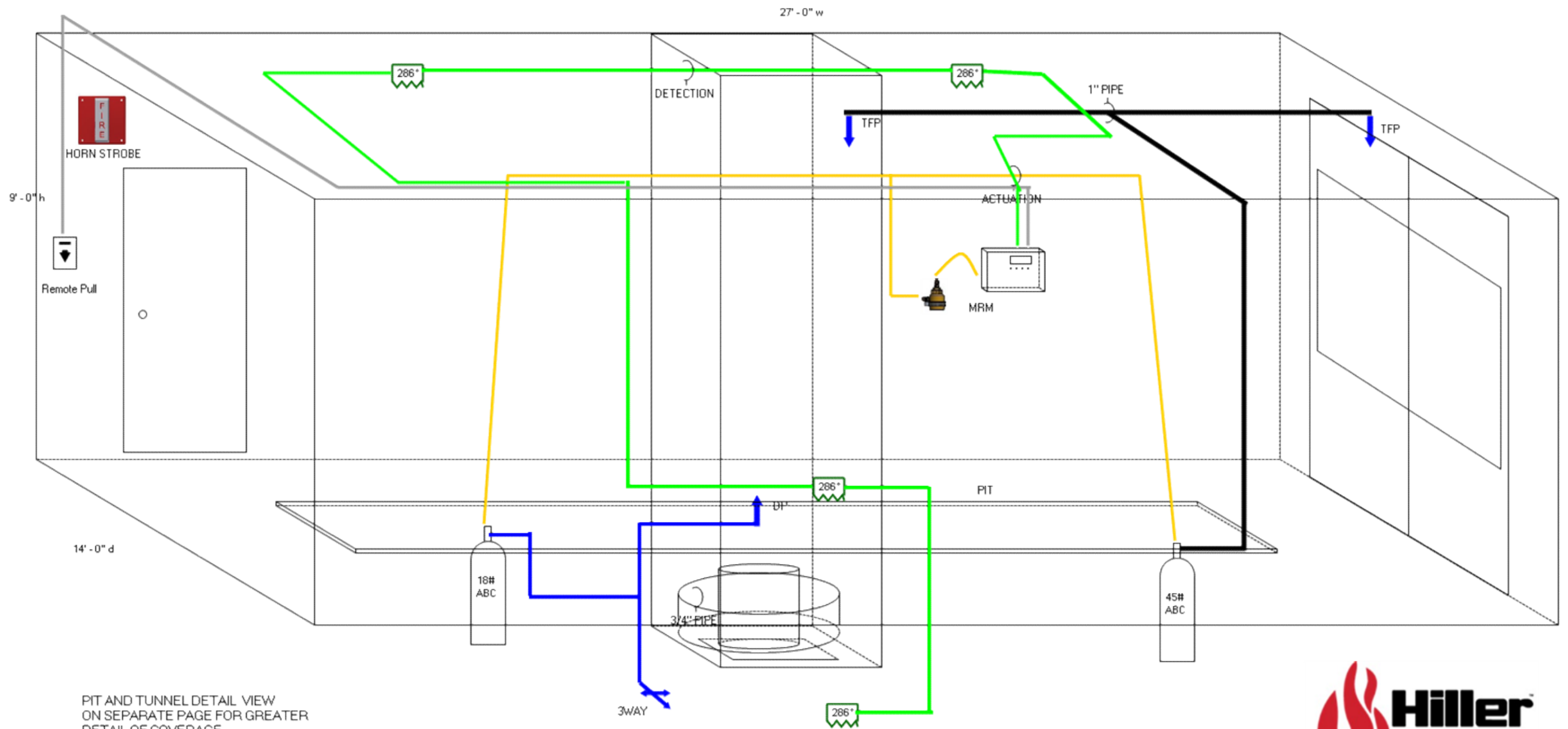


Amerex Pre-Engineered Fire Suppression System



PIT AND TUNNEL DETAIL VIEW
ON SEPARATE PAGE FOR GREATER
DETAIL OF COVERAGE.



Protecting life and property since 1919

SCALE

1 foot



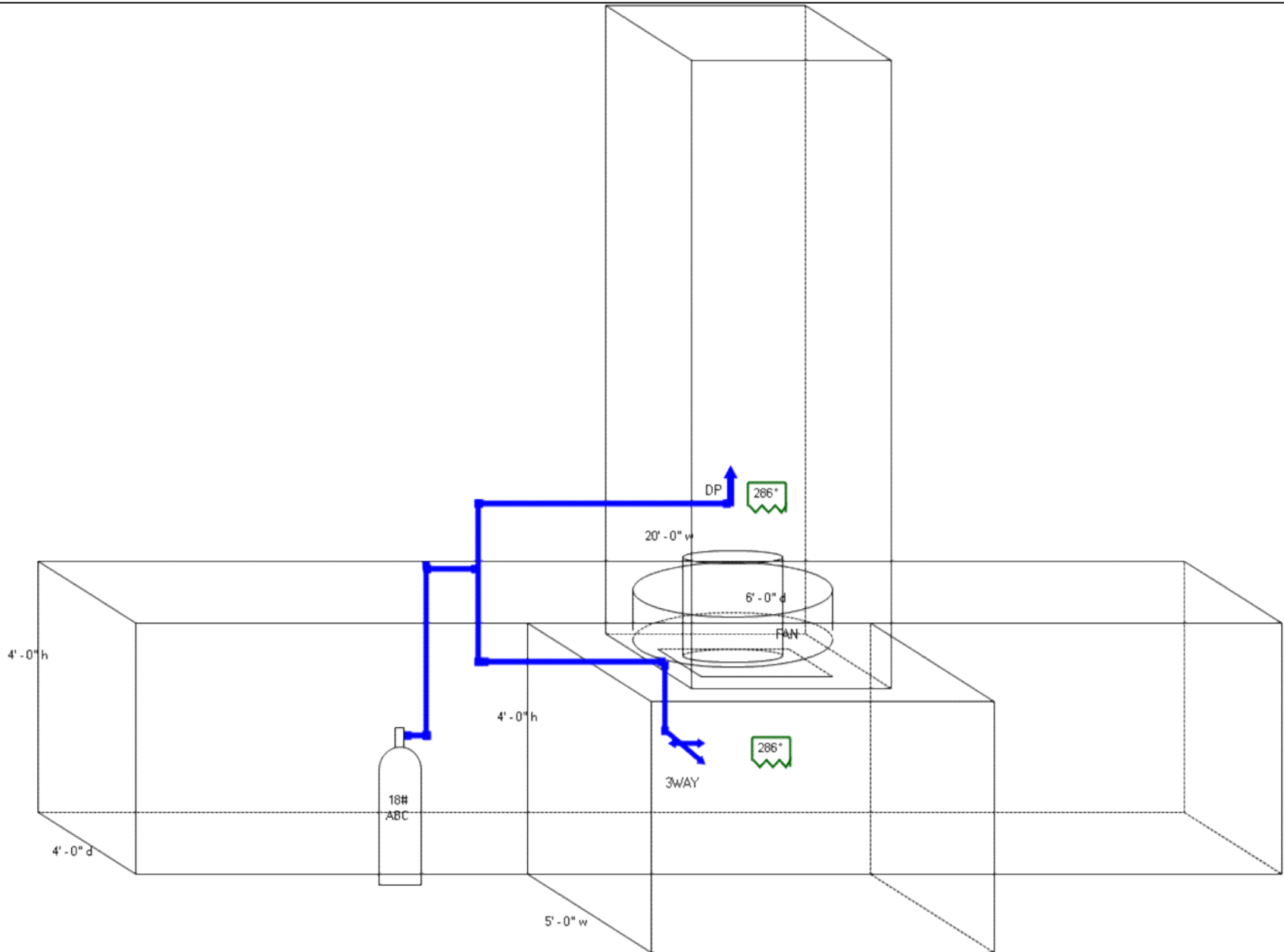
Designed & Installed by:
HILLER
1242 EXECUTIVE BLVD
CHESEPEAKE, VA 23320
(757) 549-9123

For:
HILLER
3424 CHANDLER CREEK RD
VIRGINA BEACH, VA 23452

Designer:
Job: ATL MARINE
Date: 9/23/2020

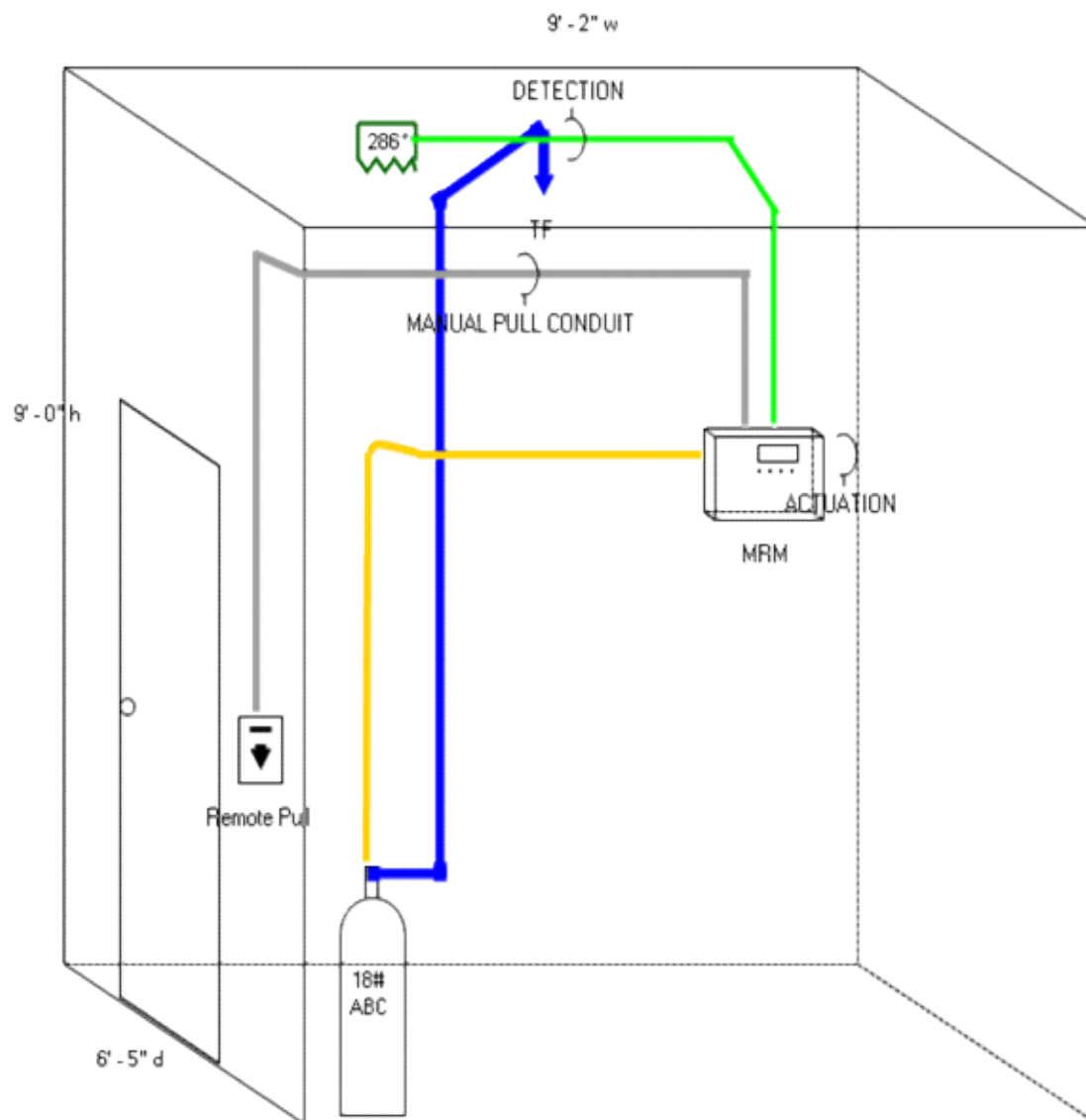
Stamp

Amerex Pre-Engineered Fire Suppression System



SCALE

1 foot



SCALE

1 foot



Designed & Installed by:
 THE HILLER COMPANIES
 1242 EXECUTIVE BLVD
 CHESAPEAKE, VA 23320
 (757) 549-9123

For:
 HILLER
 3424 CHANDLER CREEK RD
 VIRGINA BEACH, VA 23452

Designer:

Job: PAGE 2

Date: 9/23/2020

Fire Suppression System Design Specifications

Notes

- The Industrial Dry Chemical Fire Suppression System has been installed in accordance with NFPA 17, NFPA 33, and the local I.M.C. Codes.
- The Industrial Dry Chemical Fire Suppression System has been evaluated by Underwriters Laboratories (UL) in accordance with the specific test protocol found in the UL1254 Standard (Pre-Engineered Dry Chemical System Units).
- All Electric work to be performed by the customer's Licensed Electrician.
- Exhaust Fan - VPSB required to shut down prior to discharge.
- Fire Suppression System to be tied into by the customer's Licensed Fire Alarm Company.
- Fittings are Schedule 40, 150# BMI.
- This Fire Suppression System has been designed so the customer can add additional coverage, if needed, in the future.
- Provided Gas Valves are to be installed by the customer's Licensed Plumber.
- Pipe is Schedule 40, 1" (black, chrome or stainless steel) pipe.
- Pipe is Schedule 40, 3/4" (black, chrome or stainless steel) pipe.
- Piping Requirements: Piping diagrams include limitations on pipe length and fittings. System piping must be balanced. Balanced piping is that in which the difference between the shortest actual pipe length from the 1" tee to the nozzle and the longest actual pipe length from the 1" tee to the nozzle does not exceed 10% of the actual pipe length from tee to nozzle. The number and type of fittings for both tee to nozzle sections must be equal.
- Remote pull station shall be 48" above finished floor and in the path of egress.
- System shall have manual and automatic methods of actuation.
- Upon activation of system all electrical & fuel must shut down.

System Materials

Item Number	Description	Quantity
16226	JOB LINK QUICK RESPONSE (286 F /	4
17809	Total Flood Perimeter (TFP)	2
16208	AGENT CYLINDER ASY – IS45ABC	1
16206	AGENT CYLINDER ASY – IS18ABC	1
16190	Duct and Plenum (DP)	1
16174	Three-Way (3WAY)	1
21481	Manual Pull Station - English (Recess or	1
18001	MRM - Mechanical Release Module	1



Designed & Installed by:
HILLER
 1242 EXECUTIVE BLVD
 CHESEPEAKE, VA 23320
 (757) 549-9123

For:
HILLER
 3424 CHANDLER CREEK RD
 VIRGINA BEACH, VA 23452

Amerex Fire Suppression System Specifications

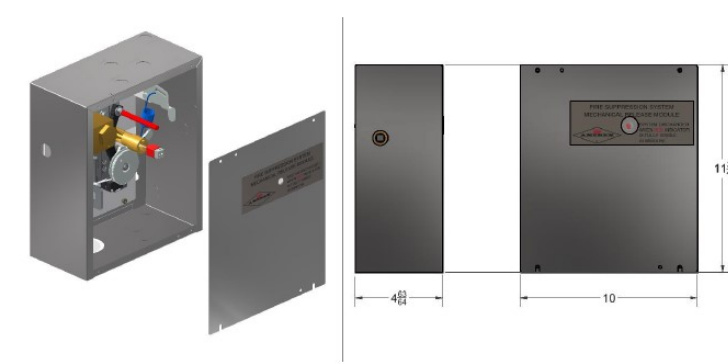
AGENT CYLINDER BRACKET



P/N: 14929

The agent cylinder bracket is constructed from 1/8 inch (3.2mm) steel & powder coated black. This bracket assembly will accommodate either the IS18 or the taller IS35/45 agent cylinders, and contains two stainless steel Bracket Straps (P/N 14927) for securing the cylinder to the bracket back. Only one strap is needed for the IS18 cylinder.

MECHANICAL RELEASE MODULE



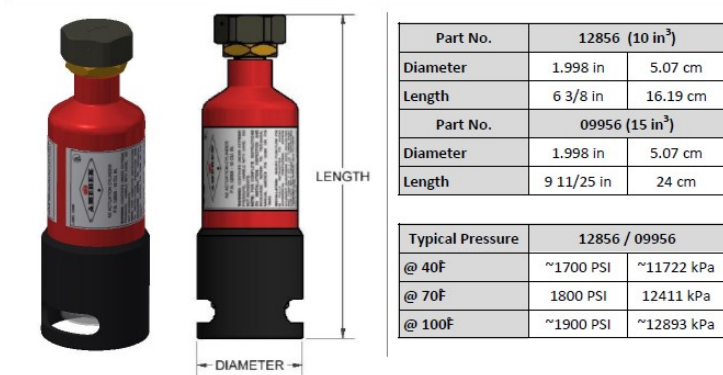
P/N: 18001

The new MRM combines the same features and functionality as the original MRM along with increased detection capabilities and far simpler means of setting the detection cable tension. The slide plate and collapsible column are now Teflon coated. The MRM is available in the above configurations, now preinstalled in its own enclosure.

Setting the detection cable tension does not require the use of any tools (once the cable is locked down into the large, knurled ratchet wheel). A large lever to the right of the ratchet wheel is used to increase the cable tension. Alignment of the bottom edge of the lever with markings on a label indicates when the proper tension has been achieved. Lowering cable tension to change out detection links is now also much simpler.

There is also a MRM available without the enclosure, P/N 11977. This has the same purpose and functionality as the MRM (P/N 18001). It is often used in conjunction with the Single

NITROGEN ACTUATION CYLINDERS



Part No.	12856 (10 in ³)	
Diameter	1.998 in	5.07 cm
Length	6 3/8 in	16.19 cm
Part No.	09956 (15 in ³)	
Diameter	1.998 in	5.07 cm
Length	9 11/25 in	24 cm

Typical Pressure	12856 / 09956	
@ 40F	~1700 PSI	~11722 kPa
@ 70F	1800 PSI	12411 kPa
@ 100F	~1900 PSI	~12893 kPa

P/N: 12856 / 09956

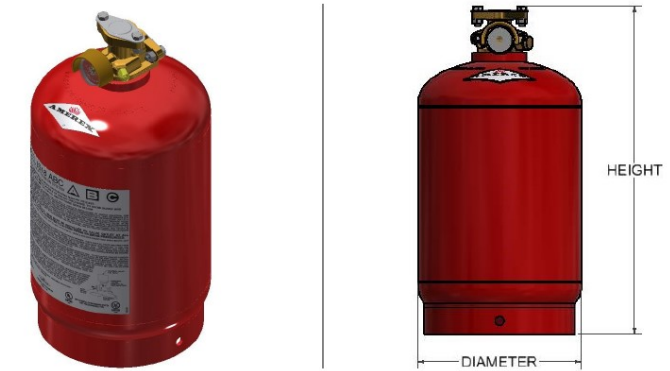
The N2 Actuation Cylinder supplies nitrogen gas pressure to the Agent Cylinder Discharge Valve through the actuation network for the purpose of opening the Agent Cylinder. Each Actuation Cylinder is charged to 1800 psig (12410 KPa) at 70°F (21°C)

The 10 in³ N₂ Actuation Cylinder (P/N 12856) contains enough nitrogen to actuate up to ten total of Models 275 / 375 / 475 Agent Cylinders Assemblies in any combination. A total of six Model 600 Agent Cylinders Assemblies OR a total of six Agent Cylinders when the mix contains at least one Model 600 Agent Cylinder Assemblies.

The 15 in³ N₂ Actuation Cylinder (P/N 09956) contains enough nitrogen to actuate up to ten total of Models 275 / 375 / 475 & 600 Agent Cylinders Assemblies in any combination.

A Replacement Rupture Disc (P/N 09958) is available for both cylinders for use by certified

AGENT CYLINDER - IS18ABC



P/N: 16206

IS18 Agent Cylinders utilize our highest MAP ABC powder formula, 350 psi (2413 KPa) fill pressure, a corrosion resistant Zinc Primed Cylinder, and a rugged brass machined valve. The agent cylinders can be used in temperature ranging from -40F to 120F (-40C to 49C). They are shipped with 2 safety plates installed in order to prevent accidental activation, both plates must be removed prior to installation.

IS18ABC	U.S.	METRIC
Height	17 13/16 in	45.2 cm
Diameter	9 in	22.9 cm
Weight Full	39 lbs.	17.69 kg
Agent Weight	18 lbs	8.16 Kgs

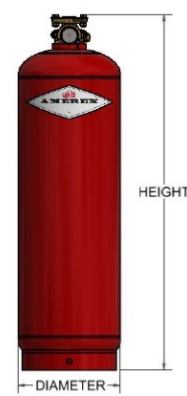


Designed & Installed by:
HILLER
 1242 EXECUTIVE BLVD
 CHESEPEAKE, VA 23320
 (757) 549-9123

For:
HILLER
 3424 CHANDLER CREEK RD
 VIRGINA BEACH, VA 23452

Amerex Fire Suppression System Specifications

AGENT CYLINDER - IS35ABC/IS45ABC



IS35ABC/IS45ABC	U.S.	METRIC
Height	31 in	78.7 cm
Diameter	9 in	22.9 cm
IS35ABC - P/N 16207	U.S.	METRIC
Weight Full	lbs.	kg
Agent Weight	69 lbs	26.76 kg
IS45ABC - P/N 16208	U.S.	METRIC
Weight Full	lbs.	kg
Capacity	79 lbs	35.83 kg

P/N: 16207 / 16208

IS35/IS45 Agent Cylinders utilize our highest MAP ABC powder formula, 350 psi (2413 KPa) fill pressure, a corrosion resistant Zinc Primed Cylinder, and a rugged brass machined valve. The agent cylinders can be used in temperature ranging from -40F to 120F (-40C to 49C). They are shipped with 2 safety plates installed in order to prevent accidental activation, both plates must be removed prior to installation.

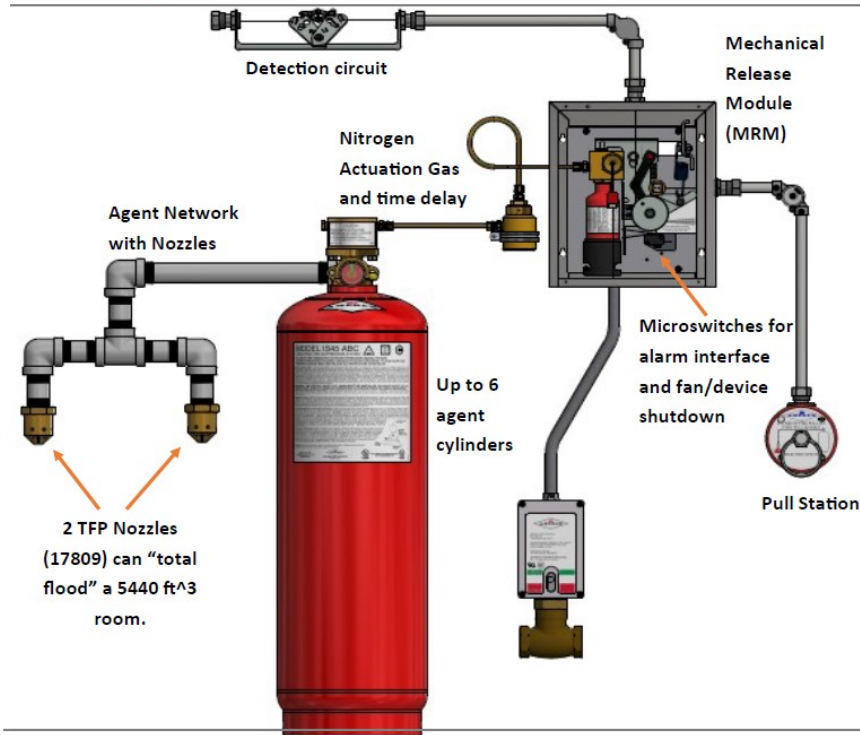
JOB LINKS



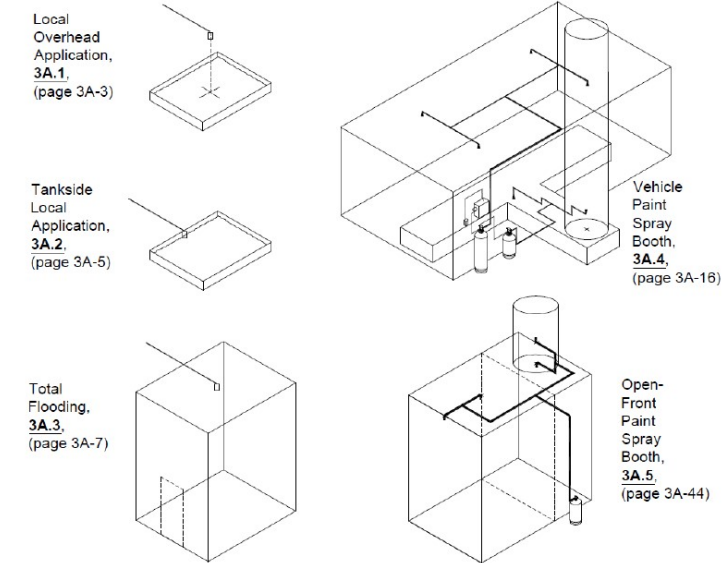
Part No.	Response	Link Rating		Max. Ambient	
		F	C	F	C
16225	Quick	200 F	93 C	150 F	66 C
16226	Quick	286 F	141 C	225 F	107 C
16227	Quick	360 F	182 C	300 F	149 C
16445	Quick	450 F	232 C	375 F	191 C
16446	Quick	500 F	260 C	425 F	218 C

Multiple temperature ratings of the Job Links are available. They are constructed of two metal struts held in tension by a small, glass bulb that ruptures at the appropriate temperature rating. The detector bracket (P/N 12508) will support either the Globe Type "K" fusible links or the Job links, and the same detector limitations apply for both types of detector.

MRM/PRM MECHANICAL SYSTEM OVERVIEW



IS HAZARDS CATEGORIES



It is necessary for the system designer to consider the physical characteristics and layout of the hazard area to ensure proper protection. The system must meet the criteria for a particular hazard and the requirements of NFPA 17 for the system to be effective. Underwriters Laboratories, under the UL 1254 test protocol, has evaluated the Amerex Industrial Dry Chemical System in each of five separate hazard categories. Each category has its own specific installation requirements. It is imperative that the system designer properly identify the fire hazard in order to effectively remain within the UL listing parameters.



Designed & Installed by:
HILLER
1242 EXECUTIVE BLVD
CHESEPEAKE, VA 23320
(757) 549-9123

For:
HILLER
3424 CHANDLER CREEK RD
VIRGINA BEACH, VA 23452

Amerex Fire Suppression System Specifications

3A.4.1.2 Module Perimeter Work Area Coverage, VPSB

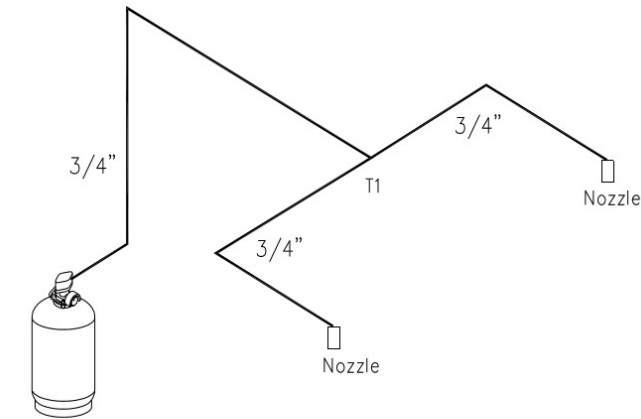
Module Volume: 2,720 ft.³ per nozzle, one or two TFP nozzles per IS45ABC
Maximum Module Area: 217.6 ft.² per nozzle for booths up to 20 ft. in height; *
Maximum Module Height: 20 ft.
Maximum Module Side Length: 16 ft.
Maximum Nozzle Offset From Center of Wall: +/- 10% of adjacent wall length

***Note:** Reference Coverage Table 3A-2

Table 3A-2: Module Perimeter Vehicle Paint Spray Booth

Booth Height, Feet	Work Area Coverage					
	Module Side 2, feet					
	13.60	14.00	14.50	15.00	15.50	16.00
12.5	16.00	15.54	15.00	14.50	14.03	13.60
13	15.38	14.94	14.42	13.94	13.49	13.07
14	14.28	13.87	13.39	12.95	12.53	12.14
15	13.33	12.95	12.50	12.08	11.69	11.33
16	12.50	12.14	11.72	11.33	10.96	10.62
17	11.76	11.42	11.03	10.66	10.32	10.00
18	11.11	10.79	10.42	10.07	9.74	9.44
19	10.52	10.22	9.87	9.54	9.23	8.94
20	10.00	9.71	9.37	9.06	8.77	8.50

[Dimensions inside of table are Side 1]



Vehicle Paint Spray Booths, DUCT and STANDARD Plenum Coverages, IS18ABC, Two Nozzles						
Cylinder Size	Nozzle Quantity	Nozzle Type	Piping Section	Pipe Size, in.	Maximum Length, ft.	Maximum # of Elbows
IS18ABC	2	Any of the following combinations: - one 3-Way and one D/P; - two D/P's; - two TF's; - one TF and one D/P	Cylinder to T1	3/4"	36	4
			T1 to Nozzle	3/4"	16	3

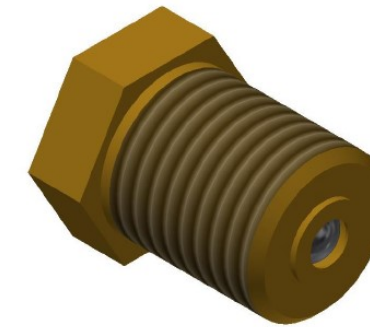
The maximum elevation of the D/P, TF and 3-way nozzles above cylinder is 23'4".

The Amerex Vehicle Paint Spray Booth System requires that the booth exhaust fan(s) be shut down prior to the discharge of the ABC dry chemical. This is accomplished with the use of the Mechanical Time Delay (P/N 15765) with mechanically-released systems, or by the use of the Amerex Electric Control Panel (P/N 15780) with the use of the timed discharge circuit. It is the responsibility of the installer to properly identify the configuration of the booth and to follow the requirements of this manual in order to achieve proper fire suppression. Sometimes, additional turns, baffles, or obstructions in the booth's plenum and duct may dictate the use of additional nozzles in order to ensure good distribution of dry chemical.

Nozzles:	P/N:	Application:
TF	16172	Standard Work Area; Backdraft / Pantleg / Underfloor Plenum
3-Way	16174	Pit w/ Tunnel (center-mount); Dowlraft Plenum with or without Vertical Transition (center-mount)
D/P	16190	Exhaust Duct; Pit Plenum (end-position)
TFP	17809	Module Perimeter Work Area Coverage, ONLY

Cylinders: The Model IS18ABC, IS35ABC, and IS45ABC can be used for Vehicle Paint Spray Booth applications. The IS18 and IS 35 models are used for Duct and Plenum coverage, using either the DP, TF, or 3-Way nozzles. The IS45 model must use two or four TF nozzles (P/N 16172) under Standard Work Area Coverage. The IS45 model uses one or two TFP nozzles (P/N 17809) under Module Perimeter Work Area Coverage.

VENT PLUG



P/N: 10173

The vent plug is required in the system actuation network to allow a means of relieving pressure in the actuation piping after a system discharge, and to prevent a slow build-up of pressure in the actuation line.



Designed & Installed by:
 HILLER
 1242 EXECUTIVE BLVD
 CHESEPEAKE, VA 23320
 (757) 549-9123

For:
 HILLER
 3424 CHANDLER CREEK RD
 VIRGINIA BEACH, VA 23452

Amerex Fire Suppression System Specifications

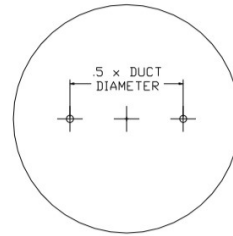
3A.4.3 Duct Coverage, VPSB

The D/P Nozzle will protect either round or rectangular ducts up to 28 feet in length. Any change in duct direction or additional length requires an additional D/P nozzle. The duct nozzle must be centered at the duct entrance, pointed in the direction of air flow. The tip of the duct nozzle must be within 6" of the duct entrance.

Round Ducts

Maximum Diameter, Single Nozzle = 46 Inches
 Maximum Diameter, Two Nozzles = 52 Inches
 (nozzle spacing: .5 x duct diameter, located on the same plane)

Spacing for two nozzles, protecting a duct diameter larger than 46", up to 52" maximum



Rectangular Ducts

The following table shows sample maximum rectangular dimensions, based on the following two requirements:
 Maximum Perimeter = 144.5 Inches
 Maximum Diagonal = 46 Inches

Rectangular Ducts	
Side 1, Inches	Side 2, Inches, Maximum
12	44.4
14	43.8
16	43.1
18	42.3
20	41.4
22	40.4
24	39.2
26	37.9
28	36.5
30	34.8
32	33.0
32.5	32.5
34	31.0
36	28.6
38	25.9
40	22.7
42	18.7
44	13.4

Piping Requirements:

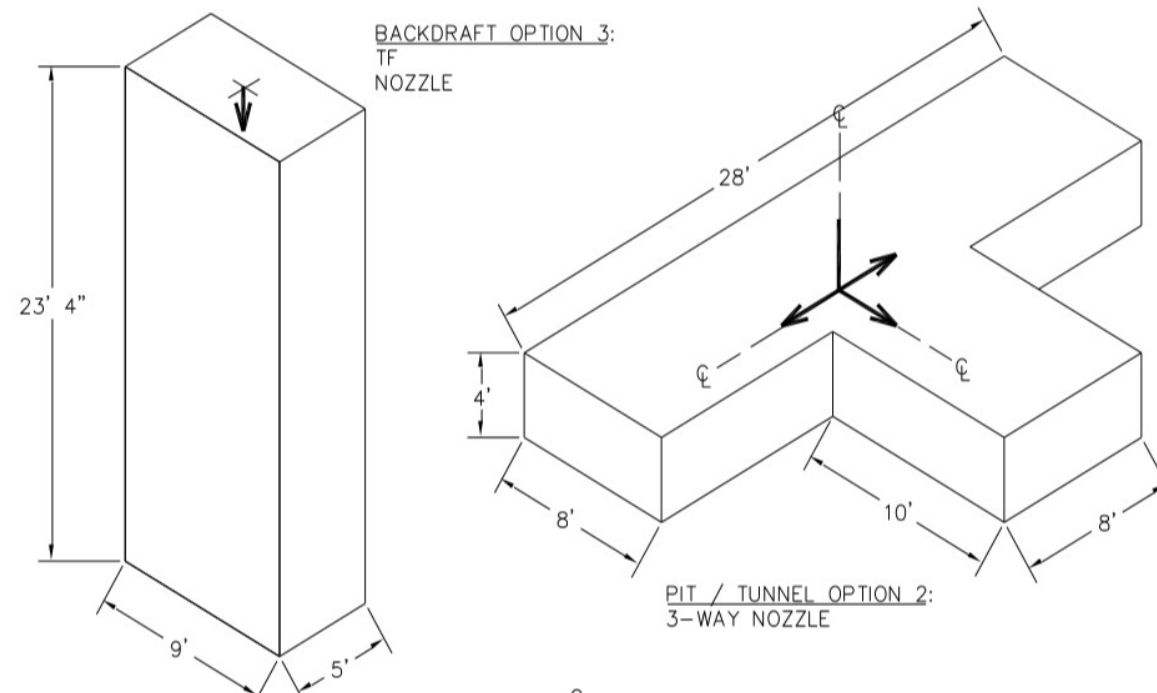
Piping diagrams include limitations on pipe length and fittings. System piping must be balanced. Balanced piping is that in which the difference between the shortest actual pipe length from the 1" tee to nozzle and the longest actual pipe length from the 1" tee to nozzle does not exceed 10% of the longest actual pipe length from tee to nozzle. The number and type of fittings for both tee to nozzle sections must be equal.

All piping must be Schedule 40, hot-dipped galvanized steel pipe, and all fittings must be 150lb. class. Examples of acceptable fitting materials include hot-dipped galvanized malleable iron, ductile iron, or steel. Couplings and unions may be used where necessary, and reducing bushings or reducing tees can be used for changes in pipe diameter.

Note: Black steel pipe and fittings can be used in relatively noncorrosive atmospheres.

Nozzle Placement and Orientation:

The TFP Nozzle has been developed to provide application of extinguishing agent from the upper perimeter of the module being protected. The nozzle is to be installed through the top of the module, at the closest point to the intersection of the module wall and module top. The nozzle location, laterally, is to be at the midpoint (+/- 10%) of the adjacent module edge. The tip of the nozzle must be within 6" of its entry point. The nozzle is to be installed vertically, with the orifices pointing downward, and the engraved arrow pointing into the protected module. The arrow must be aligned perpendicular to the adjacent wall, when viewed directly from below. Proper nozzle placement is shown as follows:

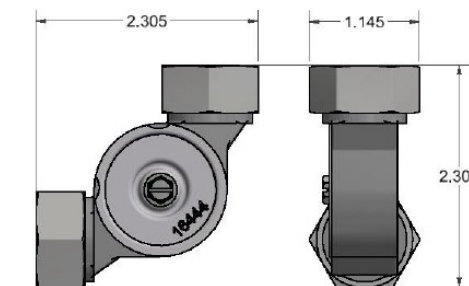


CORNER PULLEY - BROOKS CP5



P/N: 16444

This compression corner pulley, Brooks Model CP5, allows complete assembly of conduit and corner pulleys prior to installing the cable. Like the AMEREX Corner Pulley (P/N 12309) it is used to change direction of the cable by 90°



Designed & Installed by:
 HILLER
 1242 EXECUTIVE BLVD
 CHESEPEAKE, VA 23320
 (757) 549-9123

For:
 HILLER
 3424 CHANDLER CREEK RD
 VIRGINA BEACH, VA 23452

Amerex Fire Suppression System Specifications

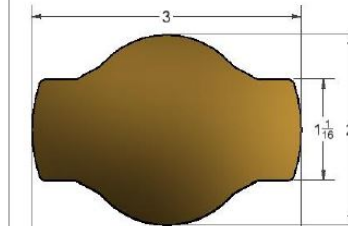
FUSIBLE / JOB LINK DETECTOR BRACKET



P/N: 12508

Each Detector Bracket in the AMEREX KP System is comprised of three parts the Detector Bracket, Detector Linkage and two EMT fittings. The fusible link is ordered separately. The bracket serves as support for the linkage and is attached to a rigid surface. The linkage supports the fusible link and a continuous cable run under tension. At a predetermined temperature the fusible link will separate, relieving tension on the cable and actuating the

KP600 PNEUMATIC ACTUATOR



P/N: 10147

The Pneumatic Actuator is required for every pneumatically actuated, KP600 Agent Cylinder Assembly. The actuator is bolted directly to the top of the agent cylinder discharge valve. When actuation occurs at the MRM or PRM, the pneumatic pressure from the nitrogen cylinder enters the actuator through 1/4" NPT threaded ports on either side. The actuation pressure forces the piston inside to extend and depress the valve stem of the discharge valve. Resetting is easier than the previous discontinued



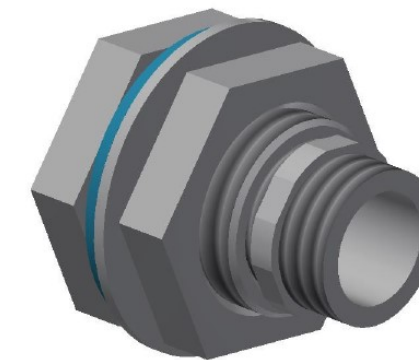
COPPER ACTUATION TUBING



P/N: 22278—50'

1/4" O.D. x 0.049 wall thickness copper tubing. Use this tubing to connect the MRM or PRM to the actuation port of the agent cylinder. Fittings used with tubing are to be brass or steel compression style fittings.

QUICK SEAL CORNER PULLY ADAPTER



P/N 22279 - EMT THREAD - HOLE SIZE 1-1/8" DIA.

This listed mechanical bulkhead fitting provides a close connection to a CP5 corner pulley. The close coupling of the two assist in alignment of the conduit run to a detection bracket.

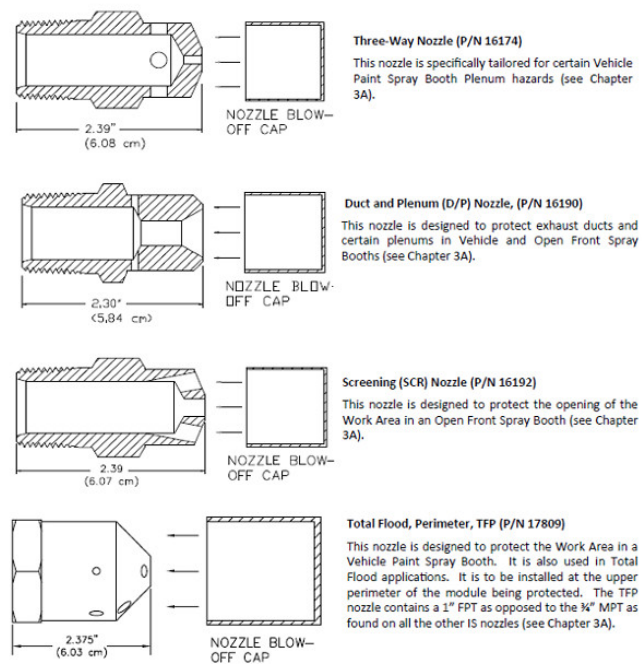


Designed & Installed by:
HILLER
1242 EXECUTIVE BLVD
CHESEPEAKE, VA 23320
(757) 549-9123

For:
HILLER
3424 CHANDLER CREEK RD
VIRGINA BEACH, VA 23452

Amerex Fire Suppression System Specifications

IS DISCHARGE NOZZLES



IS DISCHARGE NOZZLES

APPLICATION TYPE	PART NO.
Local Application, Overhead (LAOH) Nozzle	16216
Tankside (TS) Local Application Nozzle	16170
Total Flood (TF) Nozzle	16172
Three-Way Nozzle	16174
Duct and Plenum (D/P) Nozzle	16190
Screening (SCR) Nozzle	16192
Total Flood, Perimeter (TFP)	17809

Covers 2720 ft³ per nozzle in TF applications



P/N 17809 - TFP

1" Female Threads & 17810 blowoff cap



P/N 16170 - TS



P/N 16172 - TF



P/N 16190 - DP



P/N 16216 - LAOH



P/N 16192 - SCR



P/N 16174 - 3 Way

These 6 nozzles use 3/4" Male threads & P/N 14988 blowoff caps

The AMEREX IS system uses 7 different nozzles, each type of nozzle is specifically machined so it can be identified by touch and are also stamped with the part number. All AMEREX IS nozzles come with a protective cap installed on the nozzle assembly.

MANUAL PULL STATION



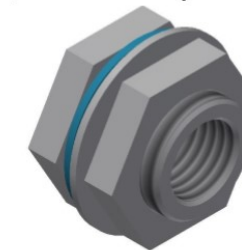
P/N: 21481

This Manual Pull Station may either be surface or recess mounted. The oversized cover is large enough to cover the sheetrock access hole for the standard 4" octagonal box and remain attractive and functional. Manual Pull Stations should be located in the path of egress and mounted at a height conforming to the local code requirements.

The surface and recess mounted pull stations are also available in French

PIPE SEAL ADAPTERS

"Quick Seal" Adapters



P/N: 14204 / 16234 / 18252

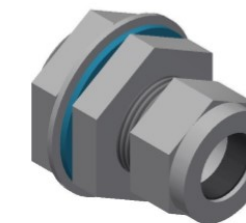
This adapter is used to create a liquid tight seal around discharge piping where the piping penetrates an enclosure or duct. It is threaded internally to accept either 1/2" conduit fittings or 3/4" pipe.

P/N 14204 is sized for 1/2" conduit fittings.

P/N 16234 is sized for Schedule 40, 3/4" pipe.

P/N 18252 is sized for 1" pipe.

"Compression Seal" Adapters



P/N: 12512 / 16235

This adapter is a "Listed Mechanical Bulkhead" fitting that produces a liquid-tight seal around discharge piping where the piping penetrates an enclosure or duct. Unlike the Quick-Seal Adapter, the Compression Seal Adapter is not threaded to accept pipe and does not require pipe to be cut or threaded.

P/N 12512 is sized for 1/2" conduit.

P/N 16235 is sized for Schedule 40, 3/4" pipe.



Designed & Installed by:
HILLER
1242 EXECUTIVE BLVD
CHESEPEAKE, VA 23320
(757) 549-9123

For:
HILLER
3424 CHANDLER CREEK RD
VIRGINA BEACH, VA 23452