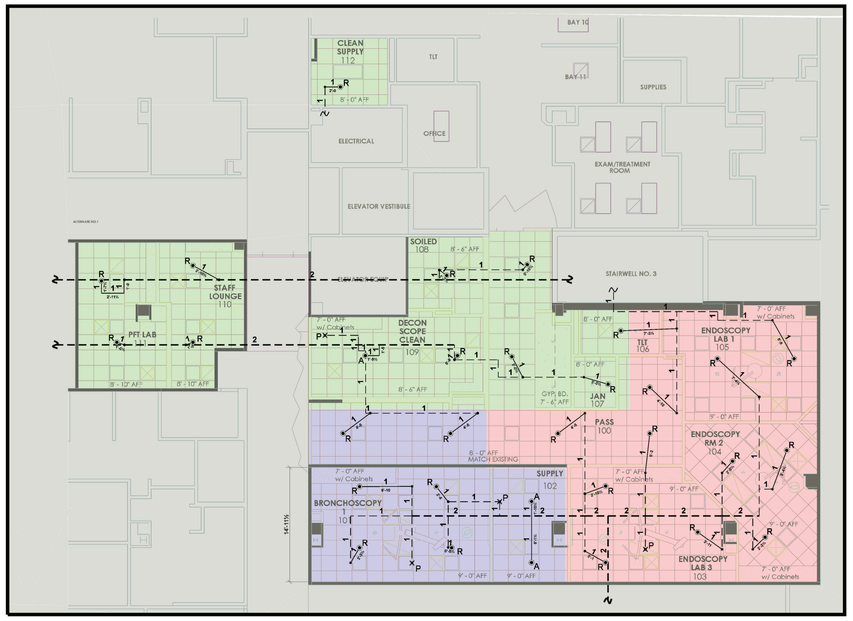
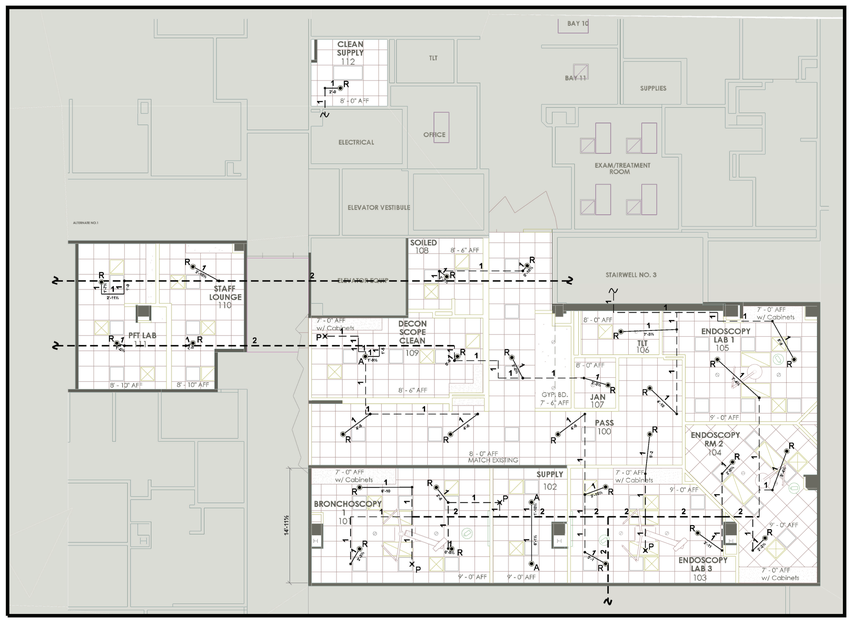
RSN: 1669597
Permit # 2022-2237321-CT
Sheet 1 of 39



PHASE 1
PHASE 2
PHASE 3

PHASING PLAN

PLAN NORTH 1/8" = 1'-0"



REMODEL LEGEND

- EXISTING SPRINKLER PIPE
- NEW SPRINKLER PIPE
- EXISTING 1" OUTLET
- R REPLACE AND RELOCATE EXISTING (27)
- A ADD NEW QR PENDENT SPRINKLER (3)
- P PLUG EXISTING 1" OUTLET (2)
- NEW PENDENT LOCATION

FIRE PROTECTION REMODEL PLAN

PLAN NORTH 1/8" = 1'-0"

STRUCTURE: 15'-0" AFF
PIPE: 10'-6" AFF

BUILDING CLASSIFICATIONS AND CODES

OCCUPANCY GROUP: HEALTHCARE

USE: I-2

CONSTRUCTION TYPE: 2-A

STORIES: 4

APPLICABLE CODES:

2015 IBC
2015 IFC
2015 IMC
2013 NFPA 13

PIPE SPECIFICATIONS

PER NFPA 13 2013 EDITION AND MANUFACTURERS' DATA SHEETS

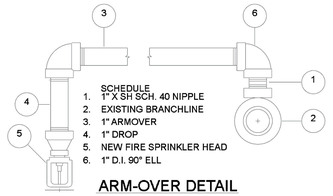
NOMINAL PIPE SIZE (IN.)	¾"	1"	1 ¼"	1 ½"	2"	2 ½"	3"	4"	5"	
INSIDE DIAMETER	I.D.	I.D.	I.D.	I.D.	I.D.	I.D.	I.D.	I.D.	I.D.	
EDDYTHREAD	.0856	1.083	1.418	1.654	2.123					
EDDYFLOW			1.530	1.728	2.203	2.705	3.334	4.310		
SCH 40		1.049	1.380	1.610	2.067	2.469	3.068	4.026	5.047	
SCH 10		1.097	1.442	1.682	2.157	2.635	3.260	4.260	5.295	

HANGER SPACING LEGEND

PER NFPA 13 TABLE 9.2.2.1 2013 EDITION

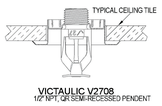
NOMINAL PIPE SIZE (IN.)	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	
STEEL PIPE SCH 40, SCH 10, DF, EF	12-0	12-0	15-0	15-0	15-0	15-0	15-0	15-0	

WHERE STATIC OR OPERATING PRESSURES EXCEED 100 PSI HANGERS SHALL BE PER NFPA 13 9.2.3.5.2.1 2013 EDITION



SCHEDULE
1. 1" X SH SCH. 40 NIPPLE
2. EXISTING BRANCHLINE
3. 1" ARMOVER
4. 1" DROP
5. NEW FIRE SPRINKLER HEAD
6. 1" D.I. 90° ELL

ARM-OVER DETAIL



VICTAULIC V2708
1/2" NPT, QR SEMI-RECESSED PENDENT



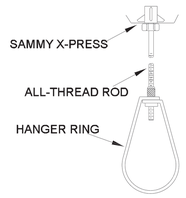
SITE PLAN

NORTH N.T.S.

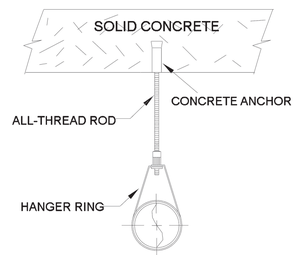
City of Aurora Building Division
Counter Permit intake by: MLA
Date: Oct 24, 2022
RSN: 1669597
Permit: 2022-2237321-CT
2015 INTERNATIONAL CODES & 2020 NEC Scope of permit to be field verified

COA Adopted Codes for this project:
ICC-2015 - NEC-2020
NFPA 13-2013 - NFPA 72-2013
COA Amendments 22 & 66

Provide a full size set of legible approved construction documents
PRINTED IN COLOR
for review by the Field Inspector.



SAMMY X-PRESS DETAIL
STEEL PIPING UP TO 4" DIA.



CONCRETE HANGER DETAIL
DRILLED CONC. ANCHOR: HDIP OR SIMILAR
STEEL AND/OR CPVC PIPING UP TO 8" DIA.

GENERAL NOTES

01. SEE THE FIRE PROTECTION EQUIPMENT DATA FOR ALL APPLICABLE MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT.

02. THIS SET OF FIRE PROTECTION PLANS HAVE BEEN DESIGNED BY ARAPAHOE FIRE PROTECTION IN THEIR ENTIRETY, AND HAVE BEEN SEALED BY A PROFESSIONAL ENGINEER AS REQUIRED BY THE STATE OF COLORADO.

03. THESE FIRE PROTECTION PLANS HAVE BEEN DESIGNED PER NFPA 13, 2013, PROJECT SPECIFICATIONS, AND APPLICABLE STATE CODES AND REGULATIONS.

04. ALL NEW MATERIALS AND DEVICES INSTALLED UNDER THIS CONTRACT SHALL BE UL LISTED AND/OR FACTORY MUTUAL APPROVED.

05. ALL NEW MATERIALS, DEVICES, AND HANGERS SHALL BE INSTALLED IN ACCORDANCE WITH THEIR LISTINGS AND MINIMUM APPLICABLE NFPA 13, 2013 ENGINEERING STANDARDS.

06. SCOPE OF WORK IS TO MODIFY THE EXISTING HYDRAULICALLY CALCULATED FIRE SPRINKLER SYSTEM TO ACCOMMODATE THE NEW TENANT FINISH AREA. THE MODIFICATIONS SHOWN ON THESE PLANS WILL NOT ADVERSELY AFFECT THE HYDRAULICS OF THE REMOTE AREA OF THE EXISTING SPRINKLER SYSTEM CURRENTLY INSTALLED.

07. VALVES CONTROLLING WATER SUPPLY TO 20 OR MORE SPRINKLERS SHALL BE ELECTRICALLY SUPERVISED AND SHALL BE MONITORED BY AN APPROVED MONITORING AGENCY. ANY AND ALL ELECTRICAL AND/OR ALARM WIRING, CONNECTIONS AND TERMINATIONS, OR HORN AND STROBE(S) SHALL BE BY OTHERS. FIRE ALARM SYSTEMS (BY OTHERS) SHALL BE INTERCONNECTED WITH FIRE SPRINKLER SYSTEMS FLOW SWITCH AND HORN AND STROBE(S).

08. IT IS THE RESPONSIBILITY OF THE OWNER OR OTHERS TO PROVIDE, INSTALL AND MAINTAIN AN APPROVED MONITORING SYSTEM OF ALL FIRE PROTECTION SYSTEM COMPONENTS ELECTRICAL OR OTHERWISE INSTALLED UNDER THIS CONTRACT.

09. IT SHALL BE THE SOLE RESPONSIBILITY OF THE OWNER TO PROVIDE ADEQUATE HEAT THROUGHOUT THE FACILITY WHERE WET PIPE SPRINKLER SYSTEMS ARE PRESENT, TO PREVENT FREEZING OF SPRINKLER SYSTEM COMPONENTS (MIN 40° F).

10. THE OWNER SHALL MAINTAIN A CLEAR SPACE OF 18" BETWEEN THE TOP OF STORAGE AND STANDARD SPRAY SPRINKLERS.

11. ALL NEW SPRINKLER PIPING PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL BE SEALED WITH AN APPROVED MATERIAL EQUAL TO THE RATING OF SUCH ASSEMBLY PENETRATED.

12. ALL NEW SPRINKLER PIPING UNDER THIS CONTRACT SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH ALL APPLICABLE NFPA ENGINEERING STANDARDS AND STATE AND LOCAL CODES.

13. UPON SUCCESSFUL INSTALLATION AND COMPLETION:
-24 HOUR EMERGENCY PHONE NUMBER SHALL BE POSTED.
-OPERATIONS AND MAINTENANCE MANUALS SHALL BE PROVIDED.
-CONTRACTORS MATERIALS AND TEST CERTIFICATES SHALL BE PROVIDED.
-ALL SYSTEM CONTROL VALVES SHALL BE ACCESSIBLE, LEFT OPEN, AND IN SERVICE.
-ALL SYSTEM DEVICES SHALL BE IDENTIFIED PER MINIMUM NFPA 13 REQUIREMENTS.

14. ADEQUATE DRAINAGE OF FIRE PROTECTION PIPING SHALL BE PROVIDED PER MINIMUM NFPA 13 REQUIREMENTS.

15. SEISMIC BRACING IS NOT PART OF THIS CONTRACT.

16. CHLORINATION OF FIRE PROTECTION PIPING IS NOT PART OF THIS CONTRACT.

17. PAINTING OF FIRE PROTECTION PIPING IS NOT PART OF THIS CONTRACT.

18. FIRE EXTINGUISHERS AND CABINETS ARE NOT PART OF THIS CONTRACT.

19. FIRE PROTECTION IDENTIFICATION IS NOT PART OF THIS CONTRACT.

20. NEW SPRINKLERS AND SPRINKLERS RELOCATED FOR CODE COMPLIANCE SHALL BE LOCATED CENTER OF 2' X 2' CEILING TILE, OR QUARTER POINT OF 2'X 4' CEILING TILE.

21. PROTECTION OF ELECTRICAL DEVICES, SUCH AS CIRCUIT BREAKER PANELS FROM WATER DISCHARGE, SHALL BE BY OTHERS.

22. ALL KNOX EQUIPMENT IS NOT PART OF THIS CONTRACT AND SHALL BE PROVIDED AND INSTALLED BY OTHERS.

23. ALL REQUIRED SIGNAGE NOT PER MINIMUM NFPA 13 REQUIREMENTS SHALL BE PROVIDED AND INSTALLED BY OTHERS.

24. PROVISIONS FOR FLUSHING FIRE SPRINKLER PIPING INSTALLED UNDER THIS CONTRACT WILL BE MADE BY ARAPAHOE FIRE PROTECTION, LLC. ARAPAHOE FIRE PROTECTION WILL PERFORM ALL TESTING AND PROVIDE ALL TESTING EQUIPMENT REQUIRED BY THE LIFE SAFETY INSPECTOR.

25. PIPE AND FITTING NOTES:
-ALL NEW PIPING SHALL BE IN ACCORDANCE WITH NFPA STANDARDS.
-ALL NEW PIPING 2" AND SMALLER SHALL BE SCHEDULE 40 BLACK STEEL PIPING PER ASTM A135/A53 WITH COMPATIBLE CLASS 300 DUCTILE IRON FITTINGS, UNLESS NOTED OTHERWISE.
-ALL PIPING 2½" AND LARGER SHALL BE SCHEDULE 10 BLACK STEEL PIPING PER ASTM A135 WITH ROLL GROOVED JOINTS, COMPATIBLE WITH FITTINGS USED.
-ALL NEW SCREWED FITTINGS SHALL MEET ANSI B.16.4 REQUIREMENTS.
-ALL NEW FLANGED FITTINGS SHALL MEET ANSI B.16.1 REQUIREMENTS.
-ALL NEW GROOVED FITTINGS SHALL MEET ASTM A536 REQUIREMENTS.
-ALL METHODS OF JOINING PIPE SHALL BE IN ACCORDANCE WITH NFPA 13 SECTIONS 2-5.

26. ALL AREAS IN THE SCOPE OF WORK ARE LIGHT HAZARD AREAS EXCEPT FOR THE FOLLOWING ORDINARY HAZARD I AREAS: SUPPLY (102) AND CLEAN SUPPLY (112). FOR SPRINKLER AREA COVERAGE FOR LIGHT HAZARD AREAS. FOR ORDINARY HAZARD I USE 130 SQ FT MAX SPRINKLER AREA COVERAGE.

28. ALL CEILING HEIGHTS ARE 9'-0" UNLESS OTHERWISE NOTED.

PROJECT CONTACTS

OWNER	AUTHORITY HAVING JURISDICTION #1 City of Aurora
GENERAL CONTRACTOR Vertix Builders 3762 Puritan Way #1 Frederick, CO 80516	AUTHORITY HAVING JURISDICTION #2
ARCHITECT	

REVISIONS

DATE	DESCRIPTION	BY

SPRINKLER SCHEDULE & LEGEND

SYM	SPRINKLER MAKE, MODEL, TRIM, NPT	ORIFICE	K	TEMP	FINISH	QUANTITY
●	VICTAULIC V2708 QR PENDENT, 1/2"	1/2"	5.6	200°F	CHRO	30

HEAD CABT & WRENCH(ES) PROVIDED — TOTAL COUNT THIS SHEET - 30
TOTAL COUNT THIS JOB - 30

COLORADO LICENSED FIRE SPRINKLER SYSTEM DESIGNER — JARRAD MISNER — 44429 — 10/14/2022 — PROFESSIONAL ENGINEER

Arapahoe FIRE PROTECTION LLC
11901 East 14th Ave.
Aurora, Colorado 80010
Voice: (303) 366-4905
Email: office@arapahoefire.com
Fax: (303) 366-4966
Colorado State Registration #22-S-00034

TMCA South Endoscopy

1501 S Potomac St
Aurora, CO 80012

FIRE SPRINKLER REMODEL PLAN

CONTRACT NO.	2342
DESIGNED BY	JARRAD MISNER
SUBMIT REVIEW BY	JS
FAB. REVIEW BY	
SCALE	1/8" = 1'-0"
DATE	10/14/22
REVISED PLOTTED 10/14/22	FP1 OF 1

MATERIAL SUBMITTAL

Arapahoe FIRE PROTECTION INC
11901 East 14th Avenue
Aurora, Colorado 80010
Phone: (303) 366-4905
Fax:(303) 366-4966

TMCA South Endoscopy
1501 S Potomac St
Aurora, CO 80012

JOB 2342

JARRAD MISNER

Victaulic® FireLock™ Series FL-QR
Standard Coverage, Quick Response
Upright, Pendent and Recessed Pendent Sprinklers
K2.8 (4.0), K4.2 (6.1), K5.6 (8.1), K8.0 (11.5)






1.0 PRODUCT DESCRIPTION

QUICK RESPONSE UPRIGHT SPRINKLERS				
SIN	**V2815**	**V4215**	**V2704**	**V3402**
ORIENTATION	UPRIGHT	UPRIGHT	UPRIGHT	UPRIGHT
K-FACTOR[1]	2.8 Imp./4.0 S.I.	4.2 Imp./6.1 S.I.	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	½" NPT/15mm BSPT	½" NPT/15mm BSPT	½" NPT/15mm BSPT/IGS	¾" NPT/20mm BSPT/IGS
MAX. WORKING PRESSURE	175 psi/1200 kPa	175 psi/1200 kPa	175 psi/1200 kPa cULus 250 psi /1725 kPa	175 psi/1200 kPa
GLOBE RE-DESIGNATION	GL2815	GL4215	–	–
GLOBE EQUIVALENT	–	–	GL5615	GL8118

QUICK RESPONSE PENDENT SPRINKLERS				
SIN	**V2801**	**V4201**	**V2708**	**V3406**
ORIENTATION	PENDENT	PENDENT	PENDENT	PENDENT
K-FACTOR[1]	2.8 Imp./4.0 S.I.	4.2 Imp./6.1 S.I.	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	½" NPT/15mm BSPT	½" NPT/15mm BSPT	½" NPT/15mm BSPT/IGS	¾" NPT/20mm BSPT/IGS
MAX. WORKING PRESSURE	175 psi /1200 kPa	175 psi /1200 kPa	175 psi /1200 kPa cULus 250 psi/1725 kPa	175 psi/1200 kPa
GLOBE RE-DESIGNATION	GL2801	GL4201	–	–
GLOBE EQUIVALENT	–	–	GL5601	GL8101

QUICK RESPONSE RECESSED PENDENT SPRINKLERS				
SIN	**V2801**	**V4201**	**V2708**	**V3406**
ORIENTATION	PENDENT	PENDENT	PENDENT	PENDENT
K-FACTOR[1]	2.8 Imp./4.0 S.I.	4.2 Imp./6.1 S.I.	5.6 Imp./8.1 S.I.	8.0 Imp./11.5 S.I.
CONNECTION	½" NPT/15mm BSPT	½" NPT/15mm BSPT	½" NPT/15mm BSPT/IGS	¾" NPT/20mm BSPT/IGS
MAX. WORKING PRESSURE	175 psi/1200 kPa	175 psi/1200 kPa	175 psi/1200 kPa cULus 250 psi/1725 kPa	175 psi/1200 kPa
ESCUTCHEON	Recessed	Recessed	Recessed	Recessed
GLOBE RE-DESIGNATION	GL2801	GL4201	–	–
GLOBE EQUIVALENT	–	–	GL5601	GL8101

AVAILABLE GUARDS/SHIELDS				
SPRINKLER	**V28**	**V42**	**V27**	**V34**
Upright			■	■
Pendent			■	■

AVAILABLE WRENCHES							
SPRINKLER	**V56-2 Recessed**	**V56 Open End**	**V27-2 Recessed**	**V27 Open End**	**V34-2 Recessed**	**V34 Open End**	**3/16 Hex-Bit**
V2815 and V4215		■					
V2707 and V2704				■			■
V3402						■	■
V2801, and V4201	■	■					
V2706 and V2708			■	■			■
V3406					■	■	■

Factory Hydrostatic Test: 100% @ 500 psi/3447 kPa/34 bar

Min. Operating Pressure: UL/FM: 7 psi/48 kPa/.5 bar
VdS: 5 psi/35 kPa/.35 bar (Upright only)

Temperature Rating: See tables in section 2.0

[1] For K-Factor when pressure is measured in bar, multiply S.I. units by 10.0.

ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

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2.0 CERTIFICATION/LISTINGS

UPRIGHT APPROVALS/LISTINGS				
SIN	**V2815**	**V4215**	**V2704**	**V3402**
Nominal K Factor Imperial	2.8	4.2	5.6	8.0
Nominal K Factor S.I.[2]	4.0	6.1	8.1	11.5
Orientation	UPRIGHT	UPRIGHT	UPRIGHT	UPRIGHT
	Approved Temperature Ratings F°/C°			
cULus	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
FM	–	–	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
LPCB	–	–	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
CE	–	–	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
VdS	–	–	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
CCC K-ZSTZ	–	–	155°F/68°C 175°F/79°C 286°F/141°C	155°F/68°C 286°F/141°C

[2] For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.

PENDENT APPROVALS/LISTINGS				
SIN	**V2801**	**V4201**	**V2708**	**V3406**
Nominal K Factor Imperial	2.8	4.2	5.6	8.0
Nominal K Factor S.I.[2]	4.0	6.1	8.1	11.5
Orientation	PENDENT	PENDENT	PENDENT	PENDENT
Escutcheon	Flush/Extended	Flush/Extended	Flush/Extended	Flush/Extended
	Approved Temperature Ratings F°/C°			
cULus	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
FM	–	–	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
CCC K-ZSTX	–	–	155°F/68°C 200°F/93°C 286°F/141°C	155°F/68°C 286°F/141°C

[2] For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.

NOTES

- Listings and approval as of printing.
- Where cULus Listed, Polyester and VC-250 Coatings Listed as Corrosion Resistant (V3402 with VC-250 Only)
- Where FM Approved, VC-250 Coating Approved as Corrosion Resistant
- New York City Acceptance - All UL Listed and/or FM Approved sprinklers acceptable to NYC per section 28-113 of the Administrative Code and the OTCR Rule.

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2.0 CERTIFICATION/LISTINGS (CONTINUED)

RECESSED PENDENT APPROVALS/LISTINGS				
SIN	**V2801**	**V4201**	**V2708**	**V3406**
Nominal K Factor Imperial	2.8	4.2	5.6	8.0
Nominal K Factor S.I.[2]	4.0	6.1	8.1	11.5
Orientation	PENDENT	PENDENT	PENDENT	PENDENT
Escutcheon	Recessed	Recessed	Recessed	Recessed
Approved Temperature Ratings F°/C°				
cULus	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C 286°F/141°C
FM WITH ½" ADJUSTMENT ESCUTCHEON ONLY	–	–	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C	135°F/57°C 155°F/68°C 175°F/79°C 200°F/93°C
CCC K-ZSTX	–	–	155°F/68°C 200°F/93°C 286°F/141°C	155°F/68°C 286°F/141°C

[2] For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.

NOTES

- Listings and approval as of printing.
- Where cULus Listed, Polyester and VC-250 Coatings Listed as Corrosion Resistant (V3402 with VC-250 Only)
- Where FM Approved, VC-250 Coating Approved as Corrosion Resistant
- New York City Acceptance - All UL Listed and/or FM Approved sprinklers acceptable to NYC per section 28-113 of the Administrative Code and the OTCR Rule.

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3.0 SPECIFICATIONS – MATERIAL

Deflector: Bronze

Bulb Nominal Diameter: 3.0mm

Load Screw: Bronze

Pip Cap: Bronze

Spring Seal: PTFE coated Beryllium nickel alloy

Frame: Brass

Lodgement Spring: Stainless steel

Installation Wrench: Ductile iron

Sprinkler Frame Finishes:

- Plain brass
- Chrome plated
- White polyester painted[3, 4]
- Flat black polyester painted[3, 4]
- Custom polyester painted[3, 4]
- VC-250[5]

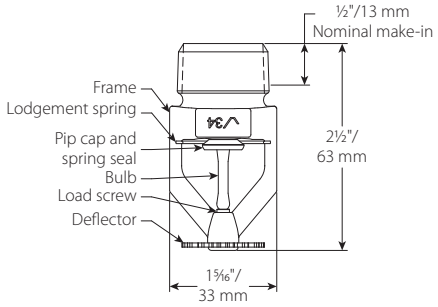
[3] Not available on the Intermediate Level Style Pendent.

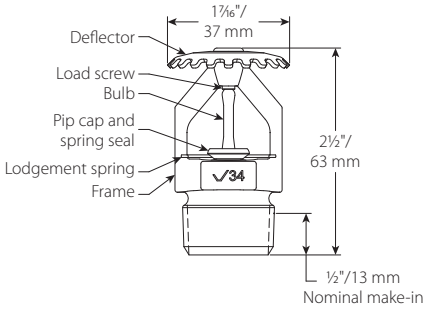
[4] UL Listed for corrosion resistance.

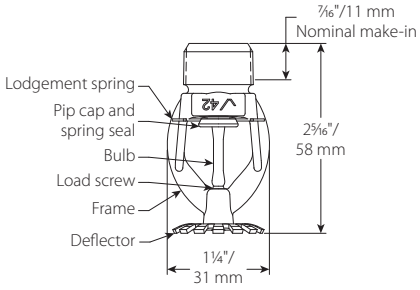
[5] UL Listed and FM Approved for corrosion resistance.

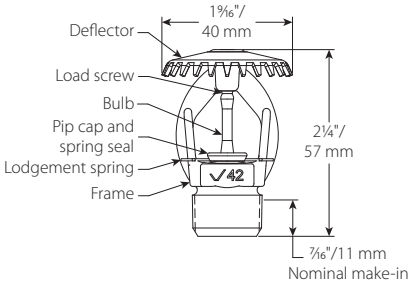
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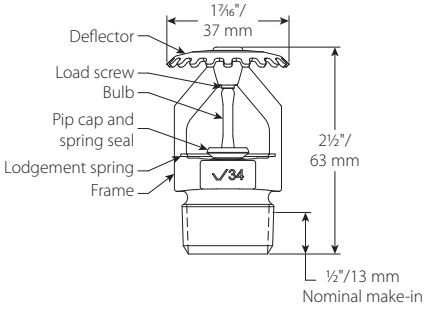
- For cabinets and other accessories refer to separate sheet.

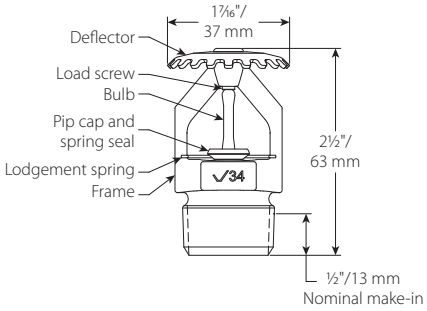








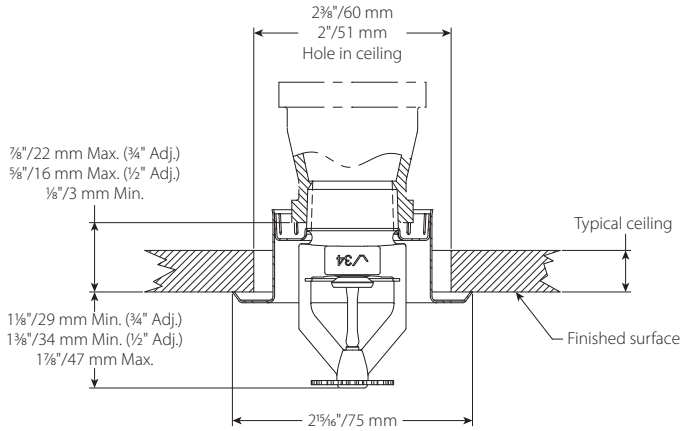


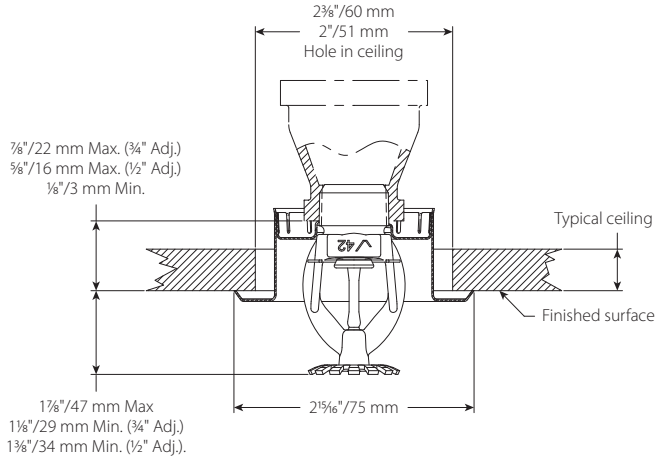


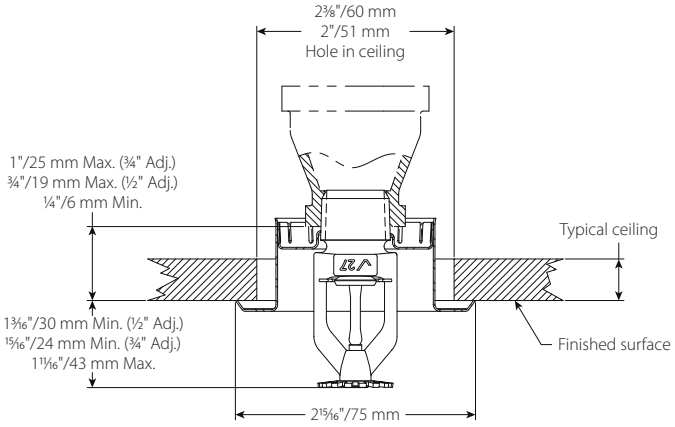
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4.0 DIMENSIONS







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5.0 PERFORMANCE

Sprinkler is to be installed and designed as per NFPA, FM Datasheets, or any local standards.

6.0 NOTIFICATIONS

⚠ WARNING



- **Read and understand all instructions before attempting to install any Victaulic products.**
- **Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.**
- **Wear safety glasses, hardhat, and foot protection.**

Failure to follow these instructions could result in death or serious personal injury and property damage.

- **These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.**
- **The installer shall understand the use of this product and why it was specified for the particular application.**
- **The installer shall understand common industry safety standards and potential consequences of improper product installation.**
- **It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.**
- **The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service.**

Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

Ratings: All glass bulbs are rated for temperatures from -67°F/-55°C to those shown in the table below.

I-40: Victaulic FireLock™ Automatic Sprinklers Installation and Maintenance Instructions

I-V9: Style V9 Victaulic FireLock™ IGS™ Installation-Ready™ Sprinkler Coupling Installation Instructions

User Responsibility for Product Selection and Suitability
Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

Intellectual Property Rights
No statement contained herein concerning a possible or suggested use of any material, product, service, or design is intended, or should be constructed, to grant any license under any patent or other intellectual property right of Victaulic or any of its subsidiaries or affiliates covering such use or design, or as a recommendation for the use of such material, product, service, or design in the infringement of any patent or other intellectual property right. The terms "Patented" or "Patent Pending" refer to design or utility patents or patent applications for articles and/or methods of use in the United States and/or other countries.

Note
This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Installation
Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

Warranty
Refer to the Warranty section of the current Price List or contact Victaulic for details.

Trademarks
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EDDYTHREAD SPRINKLER PIPE SUBMITTAL DATA SHEET

APPROVALS AND SPECIFICATIONS

- ASTM A135, Grade A
- ASTM A795, Type E, Grade A
- Pressure rated to 300 psi
- Underwriters Laboratories—United States of America
- Underwriters Laboratories—Canada
- Factory Mutual
- NFPA-13
- NFPA-13R
- NFPA-14
- CIVIL DEFENSE APPROVAL—United Arab Emirates
- Made in the United States of America
- UL, ULC & FM listed for roll-groove, plain-end and welded joints for wet, dry, preaction and deluge sprinkler systems.
- LEED v4 Certified

FINISHES AND COATINGS

- Eddythread Sprinkler Pipe receives an OD mill coating of water-based paint which has corrosion protection expected with a painted carbon steel product, i.e. it would be expected to resist corrosion for an extended and indefinite period in a clean and dry environment and, as environmental conditions deteriorate, the corrosion protection would also diminish.
- Eddythread Sprinkler Pipe (black) receives an ID mill coating of Eddy Guard II MIC preventative coating. EG2 has been tested at independent laboratories to resist bacterial growth and maintain minimal bacterial count after multiple flushes (25) of the pipe.
- Eddythread Sprinkler Pipe when Hot Dip Galvanized by ASTM A123 and supplied by Bull Moose Tube is UL listed and FM approved.

PRODUCT IDENTIFICATION

- Every length of Bull Moose fire sprinkler pipe features large, easy-to-read, continuous stenciling, clearly identifying the manufacturer, type of pipe, size, and length.

Nominal Pipe Size (inches)	1	1-1/4"	1-1/2"	2"
O.D. (in)	1.295	1.650	1.900	2.375
I.D. (in)	1.083	1.418	1.654	2.123
Empty Weight (lb/ft)	1.461	2.070	2.547	3.308
Water Filled Weight (lb/ft)	1.860	2.754	3.468	4.842
C.R.R.*	1.00	1.00	1.00	1.00
Pieces per Lift	70	51	44	30

*Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY

SUBMITTAL INFORMATION

Project

Contractor

Engineer

Specification Reference

Date

System Type

Locations

Comments

◯ Eddythread - Black ◯ Eddythread - Hot Dip Galvanized

EDDY FLOW SPRINKLER PIPE SUBMITTAL DATA SHEET

APPROVALS AND SPECIFICATIONS

- ASTM A135, Grade A
- ASTM A795, Type E, Grade A
- Pressure rated to 300 psi
- Underwriters Laboratories—United States of America
- Underwriters Laboratories—Canada
- Factory Mutual
- NFPA-13
- NFPA-13R
- NFPA-14
- CIVIL DEFENSE APPROVAL—United Arab Emirates
- Made in the United States of America
- UL, ULC & FM listed for roll-groove, plain-end and welded joints for wet, dry, preaction and deluge sprinkler systems.
- LEED v4 Certified

FINISHES AND COATINGS

- Eddy Flow Sprinkler Pipe receives an OD mill coating of water-based paint which has corrosion protection expected with a painted carbon steel product, i.e. it would be expected to resist corrosion for an extended and indefinite period in a clean and dry environment and, as environmental conditions deteriorate, the corrosion protection would also diminish.
- Eddy Flow Sprinkler Pipe (black) receives an ID mill coating of Eddy Guard II MIC preventative coating. EG2 has been tested at independent laboratories to resist bacterial growth and maintain minimal bacterial count after multiple flushes (25) of the pipe.
- Eddy Flow Sprinkler Pipe when Hot Dip Galvanized by ASTM A123 and supplied by Bull Moose Tube is UL listed and FM approved.

PRODUCT IDENTIFICATION

- Every length of Bull Moose fire sprinkler pipe features large, easy-to-read, continuous stenciling, clearly identifying the manufacturer, type of pipe, size, and length.

Nominal Pipe Size (inches)	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
O.D. (in)	1.660	1.900	2.375	2.875	3.500	4.500
I.D. (in)	1.530	1.728	2.203	2.705	3.334	4.310
Empty Weight (lb/ft)	1.222	1.844	2.330	2.809	3.361	4.968
Water Filled Weight (lb/ft)	2.019	2.860	3.982	5.299	7.144	11.290
C.R.R.*	1.98	3.44	2.78	1.66	1.00	1.00
Pieces per Lift	61	61	37	30	19	19

*Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY

SUBMITTAL INFORMATION

Project

Contractor

Engineer

Specification Reference

Date

System Type

Locations

Comments

◯ Eddy Flow - Black ◯ Eddy Flow - Hot Dip Galvanized

1819 Clarkson Road, Chesterfield, MO 63017
US: 800.325.4467 | Canada: 800.882.4666 | sales@BullMooseIndustries.com

D.I. THREADED FITTINGS

S.P FITTINGS
A Division of Star Pipe Products

LISTED LISTED APPROVED

For fire protection services request submittal GRS 1.3

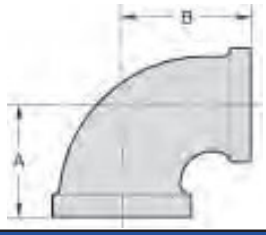


DUCTILE IRON THREADED FITTINGS ARE UL, ULC LISTED AND FACTORY MUTUAL APPROVED FOR 500 PSI SERVICE. DUCTILE IRON PER ASTM A 536 GRADE 65-45-12. DIMENSIONS CONFORM TO ANSI B16.3 CLASS 150. THREADS ARE NPT PER ANSI/ASME B1.20.1

NOTICE: DUCTILE IRON FITTINGS HAVE HIGHER TENSILE STRENGTH THEN THAT OF STEEL PIPE. THEREFORE, OVER TIGHTENING CAN CAUSE DAMAGE TO PIPE THREADS WHICH MAY CAUSE LEAKAGE. DUCTILE IRON FITTINGS SHOULD BE TIGHTENED THREE TURNS BEYOND HAND TIGHT, BUT NO MORE THAN FOUR TURNS.

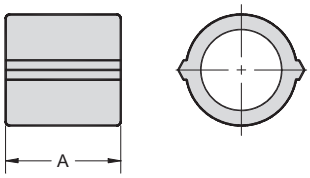
DUCTILE IRON 90 DEG. ELBOW

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS A	DIMENSIONS B	WEIGHT EACH PIECE
1	DB90033	500	1.50	1.50	0.62
1 1/4	DB90044	500	1.75	1.75	0.90
1 1/2	DB90055	500	1.94	1.94	1.20
2	DB90066	500	2.25	2.25	1.85



DUCTILE IRON RED.90 DEG. ELBOW

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS A	DIMENSIONS B	WEIGHT EACH PIECE
1X1/2	DB90031	500	1.26	1.36	0.44
1X3/4	DB90032	500	1.37	1.45	0.52
1 1/4X1/2	DB90041	500	1.34	1.53	0.64
1 1/4X3/4	DB90042	500	1.45	1.62	0.72
1 1/4X1	DB90043	500	1.58	1.67	0.75
1 1/2X1	DB90053	500	1.65	1.80	0.92
1 1/2X1 1/4	DB90054	500	1.82	1.88	1.08
2X1/2	DB90061	500	1.49	1.88	1.08
2X3/4	DB90062	500	1.60	1.97	1.24
2X1	DB90063	500	1.73	2.02	1.40
2X1 1/4	DB90064	500	1.90	2.10	1.52
2X1 1/2	DB90065	500	2.02	2.16	1.65



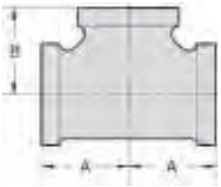
DUCTILE IRON COUPLING

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSION A	WEIGHT EACH PIECE
1	DCL033	500	1.67	0.40
1 1/4	DCL044	500	1.93	0.57
1 1/2	DCL055	500	2.15	0.75
2	DCL066	500	2.53	1.15



DUCTILE IRON 45 DEG. ELBOW

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS A	DIMENSIONS B	WEIGHT EACH PIECE
1	DB45033	500	1.12	1.12	0.46
1 1/4	DB45044	500	1.29	1.29	0.73
1 1/2	DB45055	500	1.43	1.43	0.92
2	DB45066	500	1.68	1.68	1.50



DUCTILE IRON STRAIGHT TEE

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS A	DIMENSIONS B	WEIGHT EACH PIECE
1	DT333	500	1.50	1.50	0.85
1 1/4	DT444	500	1.75	1.75	1.22
1 1/2	DT555	500	1.94	1.94	1.55
2	DT666	500	2.25	2.25	2.45



DUCTILE IRON RED. COUPLING

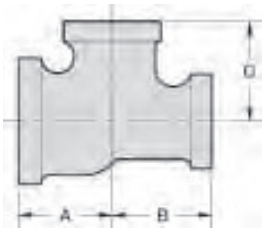
NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSION A	WEIGHT EACH PIECE
1X1/2	DRC031	500	1.69	0.39
1X3/4	DRC032	500	1.69	0.53

D.I. THREADED FITTINGS

S.P FITTINGS
A Division of Star Pipe Products

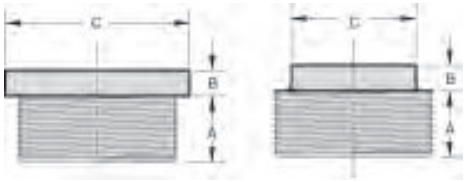
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For fire protection services request submittal GRS 1.3



DUCTILE IRON REDUCING TEE

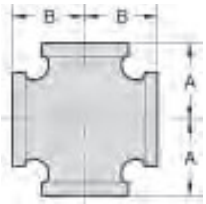
NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSIONS A	B	C	WEIGHT EACH PIECE
1X1X1/2	DT331	500	1.26	1.26	1.36	0.64
1X1X3/4	DT332	500	1.37	1.37	1.45	0.73
1X1/2X1	DT313	500	1.50	1.36	1.50	0.71
1X3/4X1	DT323	500	1.50	1.45	1.50	0.76
1X1X1 1/4	DT334	500	1.67	1.67	1.58	0.98
1X1X1 1/2	DT335	500	1.80	1.80	1.65	1.16
1 1/4X1X1/2	DT431	500	1.34	1.26	1.53	0.82
1 1/4X1X3/4	DT432	500	1.45	1.37	1.62	0.90
1 1/4X1X1	DT433	500	1.58	1.50	1.67	1.00
1 1/4X1X1 1/4	DT434	500	1.75	1.67	1.75	1.08
1 1/4X1X1 1/2	DT435	500	1.88	1.80	1.82	1.42
1 1/4X1 1/4X1/2	DT441	500	1.34	1.34	1.53	0.86
1 1/4X1 1/4X3/4	DT442	500	1.45	1.45	1.62	0.92
1 1/4X1 1/4X1	DT443	500	1.58	1.58	1.67	0.95
1 1/4X1 1/4X1 1/2	DT445	500	1.88	1.88	1.82	1.45
1 1/4X1 1/4X2	DT446	500	2.10	2.10	1.90	1.75
1 1/2X1X1/2	DT531	500	1.41	1.34	1.66	0.95
1 1/2X1X3/4	DT532	500	1.52	1.37	1.75	1.14
1 1/2X1X1	DT533	500	1.65	1.50	1.80	1.17
1 1/2X1X1 1/4	DT534	500	1.82	1.67	1.88	1.34
1 1/2X1X1 1/2	DT535	500	1.94	1.80	1.94	1.45
1 1/2X1 1/4X1/2	DT541	500	1.41	1.34	1.66	1.05
1 1/2X1 1/4X3/4	DT542	500	1.52	1.45	1.75	1.15
1 1/2X1 1/4X1	DT543	500	1.65	1.58	1.80	1.25
1 1/2X1 1/4X2	DT546	500	2.16	2.10	2.02	1.90
1 1/2X1 1/2X1/2	DT551	500	1.41	1.41	1.16	1.15
1 1/2X1 1/2X3/4	DT552	500	1.52	1.52	1.75	1.24
1 1/2X1 1/2X1	DT553	500	1.65	1.65	1.80	1.30
1 1/2X1 1/2X1 1/4	DT554	500	1.82	1.82	1.88	1.48
1 1/2X1 1/2X2	DT556	500	2.16	2.16	2.02	1.98
2X1X2	DT636	500	2.25	2.02	2.25	2.15
2X1 1/4X2	DT646	500	2.25	2.10	2.25	2.30
2X1 1/2X1/2	DT651	500	1.49	1.41	1.88	1.50
2X1 1/2X3/4	DT652	500	1.60	1.52	1.97	1.62
2X1 1/2X1	DT653	500	1.73	1.65	2.02	1.64
2X1 1/2X1 1/4	DT654	500	1.90	1.82	2.10	1.80
2X1 1/2X1 1/2	DT655	500	2.02	1.94	2.16	2.00
2X1 1/2X2	DT656	500	2.25	2.16	2.25	2.35
2X2X1/2	DT661	500	1.49	1.49	1.88	1.60
2X2X3/4	DT662	500	1.60	1.60	1.97	1.68
2X2X1	DT663	500	1.73	1.73	2.02	1.85
2X2X1 1/4	DT664	500	1.90	1.90	2.10	2.04
2X2X1 1/2	DT665	500	2.02	2.02	2.16	2.18
2X2X2 1/2	DT667	500	2.60	2.60	2.39	3.61
2 1/2X2X3/4	DT762	500	1.74	1.60	2.32	2.28



OUTSIDE HEAD INSIDE HEAD

DUCTILE IRON BUSHINGS

NOMINAL SIZE (INCH)	ITEM CODE #	DIMENSIONS A	B	C	STYLE	WT. EACH
1x1/2	DBUSH31	0.75	0.25	1.42	OUT	0.22
1x3/4	DBUSH32	0.75	0.25	1.42	OUT	0.17
1 1/4x1	DBUSH43	0.80	0.28	1.76	OUT	0.28
1 1/2x1	DBUSH53	0.83	0.31	2.00	OUT	0.44
1 1/2x1 1/4	DBUSH54	0.83	0.31	2.00	OUT	0.30
2x1	DBUSH63	0.88	0.41	1.95	IN	0.66
2x1 1/4	DBUSH64	0.88	0.34	2.48	OUT	0.72
2x1 1/2	DBUSH65	0.88	0.34	2.48	OUT	0.61



DUCTILE IRON CROSS

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I	DIMENSIONS A	B	WEIGHT EACH PIECE
1	DX033	500	1.50	1.50	0.98
1 1/4	DX044	500	1.75	1.75	1.50
1 1/2	DX055	500	1.94	1.94	1.90
2	DX066	500	2.25	2.25	2.95
1 1/4X1	DX043	500	1.58	1.67	1.27
1 1/2X1	DX053	500	1.65	1.80	1.48
2X1	DX063	500	1.73	2.02	2.10



DUCTILE IRON CAP

NOMINAL SIZE (INCH)	ITEM CODE #	MAX. WORKING P.S.I.	DIMENSION A	WEIGHT EACH PIECE
1	DCP003	500	1.16	0.32
1 1/4	DCP004	500	1.28	0.43
1 1/2	DCP005	500	1.33	0.60
2	DCP006	500	1.45	0.91

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Permit # 2022-2237321-CT
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Mechanical-T® Bolted Branch Outlets

SEE VICTAULIC PUBLICATION 10.01 FOR DETAILS

STYLES 920 AND 920N



STYLES 920 AND 920N



STYLE 920 CROSS

PATENTED

Victaulic Mechanical-T® Outlet provides a direct branch connection at any location a hole can be cut in pipe. The hole is cut oversize to receive a "holefinder" locating collar which secures the outlet in position permanently. A pressure responsive gasket seals on the pipe O.D.

Cross-type connections can be achieved by utilizing two upper housings of the same style and size, with the same or differing branch size connections. NOTE: Style 920 and Style 920N housings cannot be mated to each other to achieve a cross connection.

Style 920 and Style 920N Mechanical-T outlets are available with grooved or female threaded outlet. Specify choice on order. Units are supplied painted with plated bolts. Galvanized housings are available, supplied with plated bolts.

All sizes of Style 920 and 920N are rated at 500 psi/3450 kPa working pressure on Schedule 10 and 40 carbon steel pipe. They may also be used on high density polyethylene or polybutylene (HDPE) pipe. Pressure ratings on HDPE are dependent on the pipe rating. Contact Victaulic for ratings on other pipe. **Style 920 and 920N are not recommended for use on PVC plastic pipe.**

Standard piping practices dictate that the Mechanical-T Styles 920 and 920N must be installed so that the main and branch connections are a true 90° angle when permanently attached to the pipeline surface.

Additionally, the Vic-Tap II® hole cutting tool, which allows for hole cutting capabilities on pressurized systems, utilizes the Style 920 Mechanical-T in conjunction with the Series 726 Vic-Ball Valve to create the Style 931 Vic-Tap II Mechanical-T unit. See page 8 for further information.

MATERIAL SPECIFICATIONS

Housing/Coating: Ductile iron conforming to ASTM A-536, grade 65-45-12, with orange enamel coating. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

- **Optional:** Hot dipped galvanized

Gasket: (Specify choice*)

- **Grade "E" EPDM**
  EPDM (Green color code). Temperature range –30°F to +230°F/–34°C to +110°C. Recommended for cold and hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL Classified in accordance with ANSI/NSF 61 for cold +86°F/+30°C and hot +180°F/+82°C. NOT RECOMMENDED FOR PETROLEUM SERVICES.

- **Grade "T" nitrile**
  Nitrile (Orange color code). Temperature range –20°F to +180°F/–29°C to +82°C. Recommended for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range. Not recommended for hot water services over +150°F/+66°C or for hot dry air over +140°F/+60°C.

*Services listed are General Service Recommendations only. It should be noted that there are services for which these gaskets are not recommended. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service recommendations and for a listing of services which are not recommended.

Bolts/Nuts: Heat-treated plated carbon steel, trackhead meeting the physical and chemical requirements of ASTM A-449 and physical requirements of ASTM A-183.

JOB/OWNER

System No. _____

Location _____

CONTRACTOR

Submitted By _____

Date _____

ENGINEER

Spec Sect _____ Para _____

Approved _____

Date _____

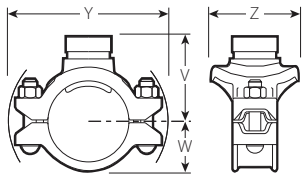
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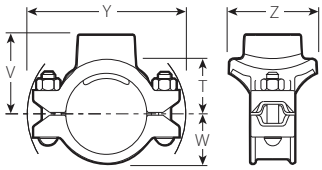
Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

DIMENSIONS



GROOVED OUTLET



FEMALE THREADED OUTLET

- Provides a direct branch connection at any location where a hole can be cut in the pipe
- A pressure responsive gasket provides the seal
- Request Publication 11.03 for Mechanical-T cross assemblies
- Pressure rated up to 500 psi/3450 kPa on steel pipe; also available for use with HDPE pipe
- Sizes from 2 × ½"/50 × 15 mm through 8 × 4"/200 × 100 mm

IMPORTANT NOTES:

Style 920 and Style 920N housings cannot be mated to one another to achieve cross connections.

Size		Style No.	Max. Work Pressure@	Dimensions							Approx. Weight Each	
Run × Branch Nominal Size Inches mm		920 or 920N	psi kPa	Hole Diameter +0.13 -0.00	T** Inches mm	V ‡ # Thd. Inches mm	V ‡ Grv. Inches mm	W Inches mm	Y Inches mm	Z Inches mm	Female Thd. Lbs. kg	Grv. Lbs. kg
2 50	× ½ (a) ¤ 15	920N	500 3450	1.50 38.1	2.00 51	2.53 64	—	1.61 41	5.35 136	2.75 70	3.1 1.5	—
	¾ (a) ¤ 20	920N	500 3450	1.50 38.1	1.97 50	2.53 64	—	1.61 41	5.35 136	2.75 70	3.1 1.5	—
	1 (a) ¤ 25	920N	500 3450	1.50 38.1	1.85 47	2.53 64	—	1.61 41	5.35 136	2.75 70	3.0 1.4	—
	1 ¼ (a) †¤ 32	920N	500 3450	1.75 44.5	2.05 52	2.75 70	3.00 76	1.61 41	5.35 136	3.00 76	3.5 1.7	3.2 1.5
	1 ½ (a) †¤ 40	920N	500 3450	1.75 44.5	2.03 52	2.75 70	3.12 79	1.61 41	5.35 136	3.25 83	3.6 1.7	3.2 1.5
2 ½ 65	× ½ (a) §¤ 15	920N	500 3450	1.50 38.1	2.21 56	2.74 70	—	1.82 46	5.64 143	2.75 70	3.0 1.4	—
	¾ (a) §¤ 20	920N	500 3450	1.50 38.1	2.18 55	2.74 70	—	1.82 46	5.64 143	2.75 70	3.0 1.4	—
	1 (a) §¤ 25	920N	500 3450	1.50 38.1	2.06 52	2.74 70	—	1.82 46	5.64 143	2.75 70	2.9 1.4	—
	1 ¼ † (a) ¤ 32	920N	500 3450	1.75 44.5	2.30 58	3.00 76	3.25 83	1.82 46	6.29 160	3.00 76	3.5 1.7	3.2 1.5
	1 ½ † (a) ¤ 40	920N	500 3450	2.00 50.8	2.28 58	3.00 76	3.25 83	1.82 46	6.26 159	3.25 83	3.6 1.7	3.3 1.6
76.1	× ½ (a) 15	920N	300 2065	1.50 38.1	2.22 56	2.75 70	—	2.25 57	6.46 164	3.18 81	3.9 1.8	—
	¾ (a) 20	920N	300 2065	1.50 38.1	2.19 56	2.75 70	—	2.25 57	6.46 164	3.18 81	3.9 1.8	—
	1 (a) 25	920N	300 2065	1.50 38.1	2.07 53	2.75 70	—	2.25 57	6.46 164	3.18 81	3.8 1.7	—
	1 ¼ (a) ¤ 32	920N	500 3450	1.75 44.5	2.30 58	3.00 76	3.31 84	1.92 49	6.29 160	3.00 76	3.5 1.6	3.2 1.5
	1 ½ (a) ¤ 40	920N	500 3450	2.00 50.8	2.28 58	3.00 76	3.31 84	1.92 49	6.29 160	3.25 83	3.5 1.6	3.3 1.5
3 80	× ½ (a) ¤ 15	920N	500 3450	1.50 38.1	2.52 64	3.05 78	—	2.28 58	6.15 156	2.75 70	3.4 1.6	—
	¾ (a) ¤ 20	920N	500 3450	1.50 38.1	2.49 63	3.05 78	—	2.28 58	6.15 156	2.75 70	3.4 1.6	—
	1 (a) 25	920N	500 3450	1.50 38.1	2.38 61	3.06 78	—	2.28 58	6.15 156	2.75 70	3.3 1.6	—
	1 ¼ (a) †¤ 32 (b)	920N	500 3450	1.75 44.5	2.55 65	3.25 83	3.56 90	2.28 58	6.15 156	3.00 76	3.8 1.8	3.7 1.8
	1 ½ (a) †¤ 40 (b)	920N	500 3450	2.00 50.8	2.78 71	3.50 89	3.56 90	2.28 58	6.15 156	3.25 83	4.1 1.9	3.8 1.8
	2 (a) ¤ 50	920N	500 3450	2.50 63.5	2.75 70	3.50 89	3.56 90	2.28 58	6.75 172	3.88 99	4.9 2.3	4.6 2.1
3 ½ 90	× 2 50	920N	500 3450	2.50 63.5	3.00 76	—	3.75 95	2.44 62	6.72 171	3.88 99	—	3.8 1.8

TABLE CONTINUED ON PG. 3

** Center of run to engaged pipe end, female threaded outlet only (dimensions approximate).

† Available with grooved or female threaded outlet. Specify choice on order.

‡ Center of run to end of fitting.

Female threaded outlets are available to NPT and BSPT specifications.

@ See page 7 for Fire Protection approvals and pressure ratings.

(a) British Standard female pipe threaded outlet is available as listed. Specify "BSPT" clearly on order.

(b) For 76.1 mm threaded outlet, specify 2½" BSPT clearly on order.

§ Vds approved for fire protection services

¤ LPCB approved for fire protection services

Ø Approved for use in China by Tianjin Approvals Company.

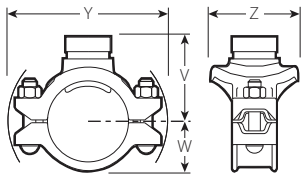
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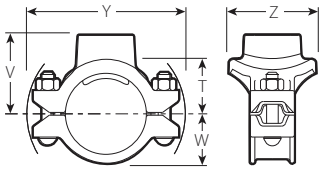
Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

DIMENSIONS



GROOVED OUTLET



FEMALE THREADED OUTLET

- Provides a direct branch connection at any location where a hole can be cut in the pipe
- A pressure responsive gasket provides the seal
- Request Publication 11.03 for Mechanical-T cross assemblies
- Pressure rated up to 500 psi/3450 kPa on steel pipe; also available for use with HDPE pipe
- Sizes from 2 × ½"/50 × 15 mm through 8 × 4"/200 × 100 mm

Size		Style No.	Max. Work Pressure@	Dimensions							Approx. Weight Each	
Run × Branch Nominal Size Inches mm		920 or 920N	psi kPa	Hole Diameter +0.13 -0.00	T** Inches mm	V ‡ # Thd. Inches mm	V ‡ Grv. Inches mm	W Inches mm	Y Inches mm	Z Inches mm	Female Thd. Lbs. kg	Grv. Lbs. kg
TABLE CONTINUED FROM PAGE 2												
4 100 ×	½ (a) ¤ 15	920N	500 3450	1.50 38.1	3.03 77	3.56 90	—	2.69 68	7.01 178	2.75 70	3.7 1.8	—
	¾ (a) ¤ 20	920N	500 3450	1.50 38.1	3.00 76	3.56 90	—	2.69 68	7.01 178	2.75 70	3.7 1.8	—
	1 (a) ¤ 25	920N	500 3450	1.50 38.1	2.88 73	3.56 90	—	2.69 68	7.01 178	2.75 70	3.6 1.8	—
	1 ¼ (a) †¤ 32 (b)	920N	500 3450	1.75 44.5	3.08 78	3.78 96	4.00 102	2.69 68	7.01 178	3.00 76	4.0 1.9	3.6 1.8
	1 ½ (a) †¤ 40 (b)	920N	500 3450	2.00 50.8	3.28 83	4.00 102	4.00 102	2.69 68	7.01 178	3.25 83	4.2 2.0	3.9 1.9
	2 (a) †¤ 50	920N	500 3450	2.50 63.5	3.25 83	4.00 102	4.00 102	2.69 68	7.01 178	3.88 99	5.0 2.3	4.6 2.1
	2½ (a) † 65	920	500 3450	2.75 69.9	2.88 73	4.00 102	4.00 102	2.69 68	7.34 186	4.63 118	5.8 2.6	5.0 2.3
	76.1 mm	920	500 3450	2.75 69.9	2.88 73	—	4.00 102	2.69 68	7.34 186	4.63 118	—	6.4 2.9
	3 (a) † 80	920	500 3450	3.50 88.9	3.31 84	4.50 114	4.12 105	2.69 68	7.73 196	5.12 130	8.4 3.8	6.4 2.9
108.0 ×	1 ¼ (a)¤ 32	920N	500 3450	1.75 44.5	3.08 78	3.78 96	—	2.63 67	7.64 194	3.05 78	5.0 2.3	—
	1 ½ (a)¤ 40	920N	500 3450	2.00 50.8	3.28 83	4.00 102	—	2.63 67	7.64 194	3.25 83	5.0 2.3	—
	2 (a) 50	920N	500 3450	2.50 63.5	3.25 83	4.00 102	—	2.63 67	7.64 194	4.00 102	4.0 1.9	—
	76.1 mm	920	500 3450	2.75 69.9	2.88 73	4.00 102	4.00 102	2.63 67	7.64 194	4.29 109	8.0 3.6	7.8 3.5
	3 (a) 80	920	500 3450	3.50 88.9	3.31 84	4.50 114	4.50 114	2.63 67	7.63 194	4.88 124	6.8 3.1	6.5 3.0
5 125 ×	1 ½ (a) † 40	920	500 3450	2.00 50.8	4.03 102	4.75 121	4.75 121	3.16 80	9.70 246	3.69 94	7.4 3.4	7.6 3.4
	2 (a) † 50	920	500 3450	2.50 63.5	4.00 102	4.75 121	4.75 121	3.16 80	9.70 246	4.38 111	8.2 3.7	8.0 3.6
	2½ (a) † 65	920	500 3450	2.75 69.9	3.63 92	4.75 121	4.75 121	3.16 80	9.70 246	4.63 118	8.3 3.8	7.9 3.6
	76.1 mm ¤	920	500 3450	2.75 69.9	3.75 95	—	4.75 121	3.16 80	9.70 246	4.63 118	—	8.0 3.6
	3 (a) † 80	920	500 3450	3.50 88.9	3.81 97	5.00 127	4.63 118	3.16 80	9.70 246	5.31 135	8.4 3.8	8.8 4.0
133.0 ×	2 50	920N	500 3450	2.50 63.5	3.75 95	4.50 114	—	3.17 81	8.00 203	3.88 99	8.0 3.6	—
	3 80	920	500 3450	3.50 88.9	3.81 97	5.00 127	—	3.00 76	9.46 240	5.31 135	8.0 3.6	—
TABLE CONTINUED ON PG. 4												

IMPORTANT NOTES:

Style 920 and Style 920N housings cannot be mated to one another to achieve cross connections.

** Center of run to engaged pipe end, female threaded outlet only (dimensions approximate).

† Available with grooved or female threaded outlet. Specify choice on order.

‡ Center of run to end of fitting.

Female threaded outlets are available to NPT and BSPT specifications.

@ See page 7 for Fire Protection approvals and pressure ratings.

(a) British Standard female pipe threaded outlet is available as listed. Specify "BSPT" clearly on order.

(b) For 76.1 mm threaded outlet, specify 2½" BSPT clearly on order.

§ Vds approved for fire protection services

¤ LPCB approved for fire protection services

Ø Approved for use in China by Tianjin Approvals Company.

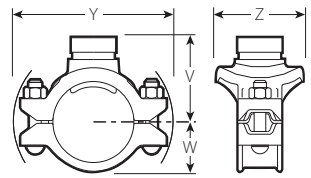
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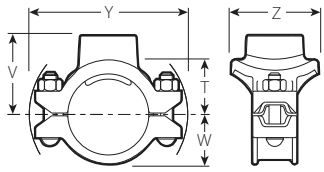
Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

DIMENSIONS



GROOVED OUTLET



FEMALE THREADED OUTLET

- Provides a direct branch connection at any location where a hole can be cut in the pipe
- A pressure responsive gasket provides the seal
- Request Publication 11.03 for Mechanical-T cross assemblies
- Pressure rated up to 500 psi/3450 kPa on steel pipe; also available for use with HDPE pipe
- Sizes from 2 × ½"/50 × 15 mm through 8 × 4"/200 × 100 mm

IMPORTANT NOTES:

Style 920 and Style 920N housings cannot be mated to one another to achieve cross connections.

Size		Style No.	Max. Work Pressure@	Dimensions							Approx. Weight Each	
Run × Branch Nominal Size Inches mm		920 or 920N	psi kPa	Hole Diameter +0.13 -0.00	T** Inches mm	V ‡ # Thd. Inches mm	V ‡ Grv. Inches mm	W Inches mm	Y Inches mm	Z Inches mm	Female Thd. Lbs. kg	Grv. Lbs. kg
TABLE CONTINUED FROM PAGE 3												
139.7 ×	1½ † 40	920N	500 3450	2.00 50.8	3.78 96	4.50 114	—	3.30 84	8.23 209	3.25 83	7.0 3.2	—
	2 † 50	920N	500 3450	2.50 63.5	3.75 95	4.50 114	—	3.30 84	8.23 209	3.88 99	9.0 4.1	—
6 150 ×	1¼ (a) 32 (b)	920N	500 3450	1.75 44.5	4.43 112	5.13 130	5.13 130	3.79 96	9.15 232	3.25 83	5.1 2.3	4.8 2.2
	1½ (a) †¤ 40 (b)	920N	500 3450	2.00 50.8	4.40 112	5.13 130	5.13 130	3.79 96	9.15 232	3.25 83	5.4 2.4	5.1 2.3
	2 (a) †¤ 50	920N	500 3450	2.50 63.5	4.38 111	5.13 130	5.13 130	3.79 96	9.15 232	3.88 99	6.0 2.7	5.6 2.5
	2½ 65	920	500 3450	2.75 69.9	4.01 110	5.13 130	5.12 130	3.69 94	10.51 267	4.63 118	8.3 3.8	7.6 3.4
	76.1 mm ¤	920	500 3450	2.75 69.9	4.15 105	—	5.21 132	3.69 94	10.51 267	4.63 118	—	8.4 3.8
	3 (a) † 80	920	500 3450	3.50 88.9	4.31 110	5.50 140	5.13 130	3.69 94	10.51 267	5.31 135	9.9 4.5	8.4 3.8
	4 (a) †¤ 100	920	500 3450	4.50 114.3	3.81 97	5.75 146	5.38 137	3.69 94	10.51 267	6.25 159	10.1 4.6	10.1 4.6
159.0 ×	1½ (a) 40	920N	500 3450	2.00 50.8	4.41 112	5.13 130	—	3.63 92	9.40 239	3.25 83	7.8 3.5	—
	2 (a) 50	920N	500 3450	2.50 63.5	4.38 111	5.13 130	—	3.63 92	9.40 239	3.88 99	8.0 3.6	—
	76.1 mm	920	500 3450	2.75 69.9	4.38 111	5.50 140	5.13 130	3.63 92	9.40 239	4.63 118	9.5 4.3	9.5 4.3
	3 80	920	500 3450	3.50 88.9	4.31 110	5.50 140	5.13 130	3.63 92	9.40 239	5.31 135	8.1 3.7	14.0 6.4
	108.0 mm	920	500 3450	4.50 114.3	4.45 113	—	5.38 137	3.63 92	9.40 239	6.12 155	—	10.0 4.5
	4 100	920	500 3450	4.50 114.3	3.81 96.80	5.75 146	—	3.63 92	9.40 239	6.25 159	18.0 8.2	—
TABLE CONTINUED ON PG. 5												

** Center of run to engaged pipe end, female threaded outlet only (dimensions approximate).

† Available with grooved or female threaded outlet. Specify choice on order.

‡ Center of run to end of fitting.

Female threaded outlets are available to NPT and BSPT specifications.

@ See page 7 for Fire Protection approvals and pressure ratings.

(a) British Standard female pipe threaded outlet is available as listed. Specify "BSPT" clearly on order.

(b) For 76.1 mm threaded outlet, specify 2½" BSPT clearly on order.

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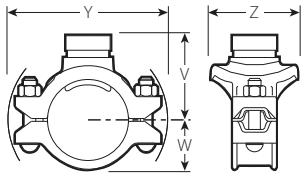
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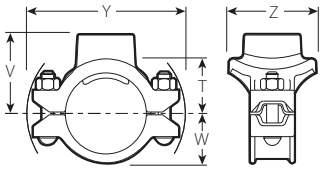
Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

DIMENSIONS



GROOVED OUTLET



FEMALE THREADED OUTLET

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Size			Style No.	Max. Work Pressure@	Dimensions							Approx. Weight Each	
Run × Branch Nominal Size Inches mm			920 or 920N	psi kPa	Hole Diameter +0.13 -0.00	T** Inches mm	V ‡ # Thd. Inches mm	V ‡ Grv. Inches mm	W Inches mm	Y Inches mm	Z Inches mm	Female Thd. Lbs. kg	Grv. Lbs. kg
TABLE CONTINUED FROM PAGE 4													
165.1	×	1 25	920N	500 3450	1.50 38.1	3.88 99	4.56 116	—	3.79 96	9.34 237	2.75 70	8.0 3.6	—
		1 ¼¤ 32	920N	500 3450	1.75 44.5	4.43 113	5.13 130	—	3.79 96	9.34 237	3.25 83	8.4 3.8	—
		1 ½ (a) †¤ 40	920N	500 3450	2.00 50.8	4.41 112	5.13 130	5.13 130	3.79 96	9.34 237	3.25 83	8.4 3.8	5.4 2.4
		2 (a) † 50	920N	500 3450	2.50 63.5	4.38 111	5.13 130	5.13 130	3.79 96	9.34 237	3.88 99	8.5 3.9	6.0 2.7
		76.1 mm	920	500 3450	2.75 69.9	4.01 110	5.13 130	5.21 132	3.63 92	10.51 267	4.63 118	8.6 3.9	7.6 3.4
		3 (a) † ø 80	920	500 3450	3.50 88.9	4.31 110	5.50 140	5.13 130	3.63 92	10.51 267	5.31 135	10.2 4.6	8.4 3.8
		4 (a) †¤ 100	920	500 3450	4.50 114.3	3.81 97	5.75 146	5.38 137	3.63 92	10.51 267	6.25 159	10.5 4.8	8.4 3.8
8 200	×	2 (a) † 50	920	500 3450	2.75 69.9	5.44 138	6.19 157	6.25 159	4.81 122	12.42 316	4.50 114	11.6 5.3	11.6 5.3
		2½ (a) † 65	920	500 3450	2.75 69.9	5.07 129	6.19 157	6.19 157	4.81 122	12.42 316	4.50 114	11.6 5.3	11.6 5.3
		76.1 mm ¤	920	500 3450	2.75 69.9	5.25 133	—	6.25 159	4.81 122	12.42 316	4.56 116	—	11.6 5.3
		3 (a) †¤ 80	920	500 3450	3.50 88.9	5.31 135	6.50 165	6.50 165	4.81 122	12.42 316	5.31 135	12.6 5.7	11.6 5.3
		4 (a) †¤ 100	920	500 3450	4.50 114.3	4.81 122	6.75 171	6.38 162	4.81 122	12.42 316	6.25 159	15.3 6.9	12.5 5.7

** Center of run to engaged pipe end, female threaded outlet only (dimensions approximate).
† Available with grooved or female threaded outlet. Specify choice on order.
‡ Center of run to end of fitting.
# Female threaded outlets are available to NPT and BSPT specifications.
@ See page 7 for Fire Protection approvals and pressure ratings.`
(a) British Standard female pipe threaded outlet is available as listed. Specify "BSPT" clearly on order.
(b) For 76.1 mm threaded outlet, specify 2½" BSPT clearly on order.
§ Vds approved for fire protection services
¤ LPCB approved for fire protection services
Ø Approved for use in China by Tianjin Approvals Company.

IMPORTANT NOTES:

Style 920 and Style 920N housings cannot be mated to each other to achieve cross connections.

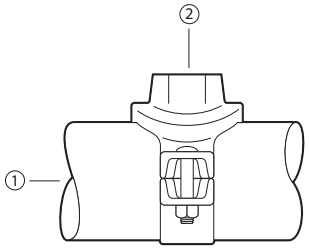
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Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

FLOW DATA



Exaggerated for clarity

Flow test data has shown that the total head loss between point (1) and (2) for the Style 920, 920N and 929 Mechanical-T® fittings can best be expressed in terms of the pressure difference across the inlet and branch. The pressure difference can be obtained from the relationship below.

C_V and Kv Values

Values for flow of water at +60°F/+16°C are shown in the table below.

Formulas for C_V /K_V Values:

$$\Delta P = \frac{Q^2}{C_v^2}$$

$$Q = C_v \times \sqrt{\Delta P}$$

Where:
Q = Flow (GPM)
ΔP = Pressure Drop (psi)
C_v = Flow Coefficient

$$\Delta P = \frac{Q^2}{K_v^2}$$

$$Q = K_v \times \sqrt{\Delta P}$$

Where:
Q = Flow (m^3/hr)
ΔP = Pressure Drop (Bar)
K_v = Flow Coefficient

OUTLET SIZE		Equivalent Length of Outlet Size Schedule 40 Carbon Steel Pipe (per UL 213, Sec. 16) (C = 120)ŧ FT		C_V/K_V Values	
NOMINAL DIAMETER In/mm	ACTUAL O.D. In/mm	GROOVED	THREADED	GROOVED	THREADED
½ 15	0.840 21.3	-	2	-	11 9.4
¾ 20	1.050 26.7	-	4	-	16 13.7
1 25	1.315 33.7	3**	8	-	21 1.8
1 ¼ 32	1.660 42.7	5 ½	6	50 42.9	48 41.1
1 ½ 40	1.900 48.3	11	11	53 45.4	53 45.4
2 50	2.375 60.3	9	10 ½	112 96	104 89.1
2 ½ 65	2.875 73.0	20	12 ½	119 102	150 128.5
76.1 mm	3.000 76.1	16*	-	161 138.1	-
3 80	3.500 88.9	14	15 ½	249 213.4	237 203.1
4 100	4.500 114.3	20	22	421 360.8	401 343.6

ŧ Hazen-Williams coefficient of friction is 120.
* Pipe with a wall thickness of 0.165in./4.2mm.
** 1" FireLock™ Innovative Groove System (IGS) outlet

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Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

FIRE PROTECTION APPROVALS AND PRESSURE RATINGS

The information provided below is based on the latest listing and approval data at the time of publication. Listings/Approvals are subject to change and/or additions by the approvals agencies. Contact Victaulic for performance on other pipe and the latest listings and approvals.

Run Size		Outlet Size	Pipe	Approval Agency Rated Working Pressures – psi/kPa					
								Vds	
Nominal Size Inches/mm	Actual Outside Diameter Inches/mm	Inches/mm	Schedule	UL	ULC	FM	LPCB	(Style 920)	(Style 920N)
21/2 - 6 65 - 150	2.875 - 6.625 73.0 - 168.3	All	10, 40	400 2755	400 2755	400 2755	290 1999	232 1599	362 2496
21/2 - 4 65 - 100	2.875 - 4.500 73.0 - 114.3	All	DF	300 2065	300 2065	300 2065	290 1999	232 1599	362 2496
21/2 - 4 65 - 100	2.875 - 4.500 73.0 - 114.3	All	SF	300 2065	300 2065	300 2065	290 1999	232 1599	362 2496
6 150	6.625 168.3	3, 4	10	300 2065	300 2065	250 1724	290 1999	232 1599	362 2496
6 150	6.625 168.3	3,4	30, 40	300 2065	300 2065	300 2065	290 1999	232 1599	362 2496
8 200	8.625 219.1	21/2	10, 40	400 2755	—	—	—	145 1000	—
8 200	8.625 219.1	3,4	10	300 2065	—	250 1724	—	145 1000	—
8 200	8.625 219.1	3,4	30, 40	300 2065	—	300 2065	—	145 1000	—

NOTES:
10 refers to Listed/Approved Schedule 10 steel sprinkler pipe.
40 refers to Listed/Approved Schedule 40 steel sprinkler pipe.
DF refers to Listed/Approved Dyna-Flow steel sprinkler pipe manufactured by American Tube Company.
SF refers to Listed/Approved Super-Flo steel sprinkler pipe manufactured by Allied Tube and Conduit Corporation.

VIC-TAP II HOLE CUTTING TOOL FOR 4 - 8"/100 - 200 MM CARBON STEEL PIPE



The Vic-Tap II hole cutting tool is designed for use with the Style 931 Vic-Tap II Mechanical-T unit, which is a combination of the Style 920 Mechanical-T and Series 726 Vic-Ball Valve. The Vic-Tap II is capable of tapping into carbon steel pipe systems under pressures up to 500 psi/3450 kPa.

The Style 931 Vic-Tap II Mechanical-T unit is a full port ball valve which can be mounted on 4"/100 mm, 5"/125 mm, 6"/150 mm and 8"/200 mm diameter pipe. The Style 931 comes with a 2 ½"/65 mm grooved outlet.

The drill motor is an electric motor with ground fault circuit interrupter (GFCI) in accordance with safety codes.

For more information, refer to publication 24.01.

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Mechanical-T® Bolted Branch Outlets

STYLES 920 AND 920N

INSTALLATION

Reference should always be made to the I-100 Victaulic Field Installation Handbook for the product you are installing. Handbooks are included with each shipment of Victaulic products for complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

WARRANTY

Refer to the Warranty section of the current Price List or contact Victaulic for details.

NOTE

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

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Fig. 200 - "Trimline" Adjustable Band Hanger

Size Range — 1/2" thru 8" pipe

Material — Carbon Steel, Mil. Galvanized to G90 specifications

Function — For fire sprinkler and other general piping purposes. Knurled swivel nut design permits hanger adjustment after installation.

Features —

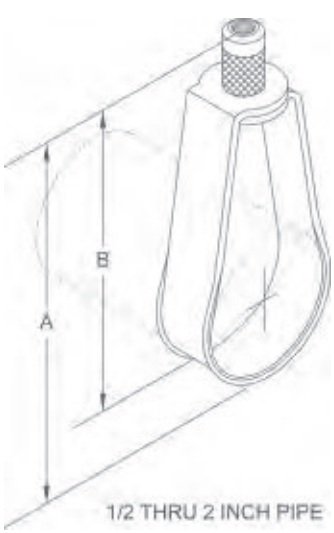
- (1/2" thru 2") Flared edges ease installation for all pipe types and protect CPVC plastic pipe from abrasion. Captured design keeps adjusting nut from separating with hanger. Hanger is easily installed around pipe.
- (2 1/2" thru 8" Spring tension on nut holds it securely in hanger before installation. Adjusting nut is easily removed.

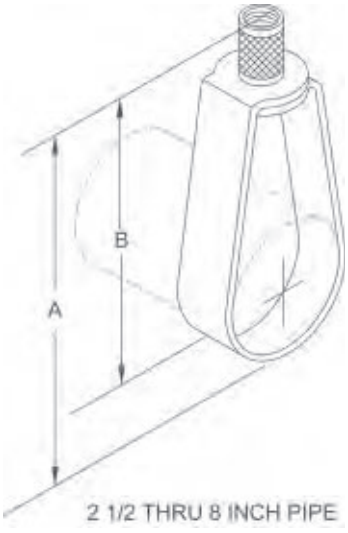
Approvals — Underwriters' Laboratories listed (1/2" thru 8") in the USA **(UL)** and Canada **(cUL)** for steel and CPVC plastic pipe and Factory Mutual Engineering Approved (3/4" thru 8"). Conforms to Federal Specifications WW-H-171E, Type 10 and Manufacturers Standardization Society SP-69, Type 10.

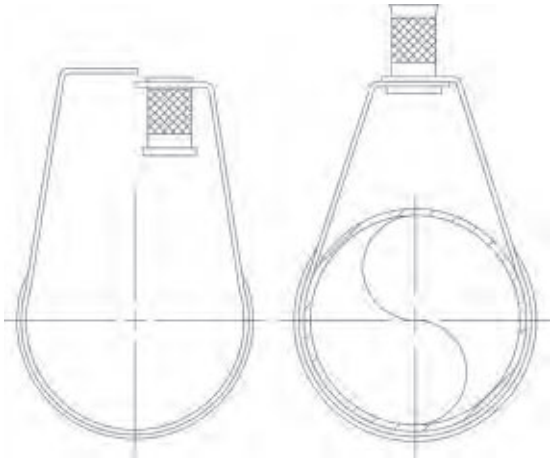
Maximum Temperature — 650°F

Finish — Mil. Galvanized. For Stainless Steel materials, order TOLCO™ Fig. 200WON.

Order By — Figure number and pipe size







Dimensions • Weights

Pipe Size	Rod Size Inch	Rod Size Metric	A	B	Max. Rec. Load Lbs.	Approx. Length
1/2	3/8	8mm or 10mm	3 1/8	2 5/8	400	11
3/4	3/8	8mm or 10mm	3 1/8	2 1/2	400	11
1	3/8	8mm or 10mm	3 3/8	2 5/8	400	12
1 1/4	3/8	8mm or 10mm	3 3/4	2 7/8	400	13
1 1/2	3/8	8mm or 10mm	3 7/8	2 7/8	400	14
2	3/8	8mm or 10mm	4 1/2	3	400	15
2 1/2	3/8	10mm	5 5/8	4 1/8	600	27
3	3/8	10mm	5 7/8	4	600	29
3 1/2	3/8	10mm	7 3/8	5 1/4	600	34
4	3/8	10mm	7 3/8	5	1000	35
5	1/2	12mm	9 1/8	6 1/4	1250	66
6	1/2	12mm	10 1/8	6 3/4	1250	73
8	1/2	12mm	13 1/8	8 3/4	1250	136

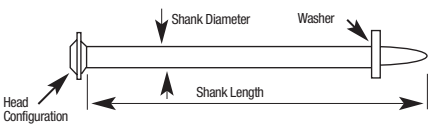
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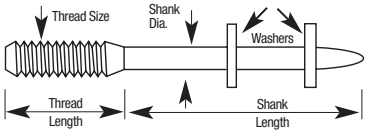
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General Application Fastener

3.2.1.1 Product Description

General application powder actuated fasteners include a wide variety of nails and threaded studs for fastening to steel and concrete.





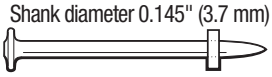
Pin Nomenclature[1]: X-DNI 37 P8 MX
- Head Configuration
- Shank Length (mm)
- Washer Type[2] and Diameter (mm)
- Indicates Collated Pin

Stud Nomenclature[1]: W6 20 22 D12
- Thread Size (mm)
- Thread Length (mm)
- Shank Length (mm)
- Washer Type[2] and Diameter (mm)

1. When the fastener nomenclature is preceded by an "E" (e.g. X-EDNI 16 P8) it indicates a knurled shank for improved holding in steel. (Note: ESD 16P8 fastener does not utilize shank knurling.)
2. **P** = Plastic washer; **S** = Steel washer; **D** = Double washer (one plastic, one steel); **L** = Double washer (both steel); **DP** = Double washer (both plastic).
3. "MX" at the end of the product nomenclature, indicates collated fasteners in strips of 10.

X-DNI PINS

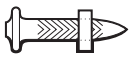
Shank diameter 0.145" (3.7 mm) for concrete and steel. Packaged in boxes of 100.



Description	Length		Description	Length	
DNI 19 P8	3/4"	(19 mm)	DNI 47 P8	1 7/8"	(47 mm)
DNI 22 P8	7/8"	(22 mm)	DNI 52 P8	2"	(52 mm)
DNI 27 P8	1"	(27 mm)	DNI 57 P8	2 1/4"	(57 mm)
DNI 32 P8	1 1/4"	(32 mm)	DNI 62 P8	2 1/2"	(62 mm)
DNI 37 P8	1 1/2"	(37 mm)	DNI 72P8	2 7/8"	(72 mm)
DNI 42 P8	1 5/8"	(42 mm)			

X-EDNI PINS

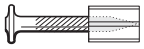
Shank diameter 0.145" (3.7 mm) for steel. Packaged in boxes of 100.



Description	Length	
EDNI 16 P8	5/8"	(16 mm)
EDNI 19 P8	3/4"	(19 mm)
EDNI 22 P8	7/8"	(22 mm)

X-DW Pins

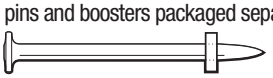
Shank diameter 0.118" (3.0 mm) for concrete. Packaged in boxes of 1000.



Description	Length	
X-DW20THP	3/4"	(20 mm)
X-DW27THP	1"	(27 mm)
X-DW39THP	1 5/8"	(39 mm)
X-DW20MX	3/4"	(20 mm)
X-DW27MX	1"	(27 mm)

X-ZF PINS

Shank diameter 0.138" (3.5 mm) for concrete and steel. Combos include 1000 pins and boosters packaged separately.



Description	Length	Diameter	Description	Length	Diameter
ZF 14 THP	1/2"	0.145"	ZF 42 P8	1 5/8"	0.138"
ZF 20 THP	3/4"	0.145"	ZF 47 P8	1 7/8"	0.138"
ZF 27 P8	1"	0.138"	ZF 52 P8	2"	0.138"
ZF 32 P8	1 1/4"	0.138"	ZF 62 P8	2 1/2"	0.138"
ZF 37 P8	1 1/2"	0.138"			

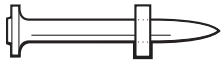
X-CF PINS (Packaged 2000/box with cartridge)



Description	Length	Shank Dia.
CF62P8 Combo	2 1/2"	0.138"
CF72P8S23 Combo	2 7/8"	0.145"

DS HEAVY-DUTY PINS

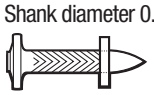
Shank diameter 0.177" (4.5 mm) for concrete and steel. Packaged in boxes of 100.



Description	Length		Description	Length	
DS 27 P10	1"	(27 mm)	DS 57 P10	2 1/4"	(57 mm)
DS 32 P10	1 1/4"	(32 mm)	DS 62 P10	2 1/2"	(62 mm)
DS 37 P10	1 1/2"	(37 mm)	DS 72 P10	2 7/8"	(72 mm)
DS 42 P10	1 5/8"	(42 mm)	DS 82 P10	3 1/4"	(82 mm)
DS 47 P10	1 7/8"	(47 mm)	DS 97 P10	3 3/4"	(97 mm)
DS 52 P10	2"	(52 mm)	DS 117 P10	4 5/8"	(117 mm)

EDS HEAVY-DUTY PINS

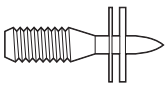
Shank diameter 0.177" (4.5 mm) for steel. Packaged in boxes of 100.



Description	Length	
EDS 19 P10	3/4"	(19 mm)
EDS 22 P10	7/8"	(22 mm)

1/4" - 20 STUDS W6-11, 20, 38

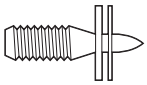
Shank diameter 0.145" (3.7 mm) for concrete. Packaged in boxes of 100.



Description	Thread	Shank
W6-11-17 D12	3/8"	5/8"
W6-11-22 D12	3/8"	7/8"
W6-11-27 D12	3/8"	1"
W6-20-17 D12	3/4"	5/8"
W6-20-22 D12	3/4"	7/8"
W6-20-27 D12	3/4"	1"
W6-20-42 D12	3/4"	1 5/8"
W6-38-27 D12	1 1/2"	1"

1/4" - 20 STUDS EW6-11, 20, 28, 38

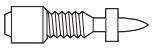
Shank diameter 0.145" (3.7 mm) for steel. Packaged in boxes of 100.



Description	Thread	Shank
EW6-11-12 D12	3/8"	1/2"
EW6-20-12 D12	3/4"	1/2"
EW6-28-12 D12	1"	1/2"
EW6-38-12 P12	1 1/2"	1/2"

1/4" - 20 STUDS EW6-11, 20, 28, 38

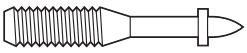
Shank diameter 0.145" (3.7 mm) for steel. Packaged in boxes of 100.



Description	Thread	Shank
EW6-11-12 P8	3/8"	1/2"
EW6-20-12 P8	3/4"	1/2"
EW6-28-12 P8	1 1/8"	1/2"
EW6-38-12 P8	1 1/2"	1/2"

3/8" - 16 STUDS

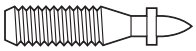
Shank diameter 0.205" (5.2 mm) for concrete. Packaged in boxes of 100.



Description	Thread	Shank
W10-30-27 P10	1 1/4"	1"
W10-30-32 P10	1 1/4"	1 1/4"
W10-30-32 P10K	1 1/4"	1 1/4"
W10-30-42 P10	1 1/4"	1 5/8"

3/8" - 16 STUDS

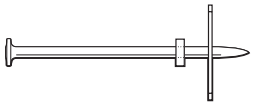
Shank diameter 0.205" (5.2 mm) for steel. Packaged in boxes of 100.



Description	Thread	Shank
EW10-30-15 P10	1 1/4"	5/8"

X-ZF Pins with pre-mounted 23 mm and 36 mm Diameter Steel Washers

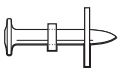
Combos include 1000 pins and boosters packaged separately.



Description	Length		Shank Dia.
ZF 27 P8S23	1"	(27 mm)	0.138"
ZF 32 P8S23	1 1/4"	(32 mm)	0.138"
ZF 37 P8S23	1 1/2"	(37 mm)	0.138"
ZF 37 P8S36	1 1/2"	(37 mm)	0.138"
ZF 42 P8S23	1 5/8"	(42 mm)	0.138"
ZF 47 P8S23	1 7/8"	(47 mm)	0.138"
ZF 52 P8S36	2"	(52 mm)	0.138"
ZF 62 P8S36	2 1/2"	(62 mm)	0.138"
ZF 72 P8S36	2 7/8"	(72 mm)	0.145"

X-DNI Pins with 15 mm and 36 mm Diameter Steel Washers

Pre-mounted steel washer with DNI 32 P8 and DNI 72 P8



Description	Length		Shank Dia.
DNI 32 P8S15	1 1/4"	(32 mm)	0.145"
DNI 32 P8S36	1 1/4"	(32 mm)	0.145"
DNI 72 P8S36	2 7/8"	(72 mm)	0.145"

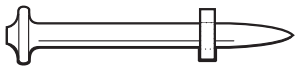
RSN: 1669597
Permit # 2022-2976-21-CT
Sheet 23 of 39

3.2.1.1 Product Description

General application powder actuated fasteners include a wide variety of nails and threaded studs for fastening to steel and concrete.

X-AL-H

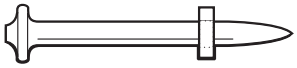
The Hilti X-AL-H Powder Actuated Fastener is designed for fastening into high strength concrete (4500-7200 psi) and steel (A36-A572 Grade 65) which is beyond the limits for standard fasteners. This zinc plated fastener is available in lengths from 5/8" (16 mm) to 27/8" (72 mm).



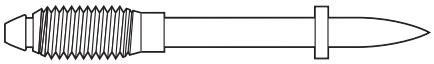
Description	Shank Length		Shank Dia.	
	in.	(mm)	in.	(mm)
X-AL-H16 P8	5/8	(16)	0.145	(3.7)
X-AL-H19 P8	3/4	(19)	0.158	(4.0)
X-AL-H22 P8	7/8	(22)	0.158	(4.0)
X-AL-H27 P8	1	(27)	0.177	(4.5)
X-AL-H32 P8	1 1/4	(32)	0.177	(4.5)
X-AL-H37 P8	1 1/2	(37)	0.177	(4.5)
X-AL-H42 P8	1 5/8	(42)	0.177	(4.5)
X-AL-H47 P8	1 7/8	(47)	0.177	(4.5)
X-AL-H52 P8	2	(52)	0.177	(4.5)
X-AL-H57 P8	2 1/4	(57)	0.177	(4.5)
X-AL-H62 P8	2 1/2	(62)	0.177	(4.5)
X-AL-H67 P8	2 5/8	(67)	0.177	(4.5)
X-AL-H72 P8	2 7/8	(72)	0.177	(4.5)

X-CR

The Hilti X-CR Corrosion Resistant Fastener is a powder actuated stainless steel fastener. Made from a proprietary material, the X-CR provides a level of corrosion resistance equivalent to AISI 316 stainless steel and is available in lengths from 9/16" (14 mm) to 21/8" (54 mm).



Description	Shank Length		Shank Dia.	
	in.	(mm)	in.	(mm)
X-CR14 P8	9/16	(14)	0.145	(3.7)
X-CR16 P8	5/8	(16)	0.145	(3.7)
X-CR18 P8	11/16	(18)	0.145	(3.7)
X-CR21 P8	13/16	(21)	0.145	(3.7)
X-CR24 P8	15/16	(24)	0.145	(3.7)
X-CR29 P8	1 1/8	(29)	0.145	(3.7)
X-CR34 P8	1 5/16	(34)	0.145	(3.7)
X-CR39 P8	1 9/16	(39)	0.145	(3.7)
X-CR44 P8	1 3/4	(44)	0.158	(4.0)
X-CR54 P8	2 1/8	(54)	0.158	(4.0)



Description	Thread Length		Shank Length		Shank Dia.	
	in.	(mm)	in.	(mm)	in.	(mm)
X-CRW6-11-12 FP8	7/16	(11)	1/2	(12)	0.145	(3.7)
X-CRW6-11-27 FP8	7/16	(11)	11/16	(27)	0.145	(3.7)
X-CRW6-22-12 FP8	7/8	(22)	1/2	(12)	0.145	(3.7)
X-CRW6-22-27 FP8	7/8	(22)	11/16	(27)	0.145	(3.7)
X-CRM8-9-12FP10	11/32	(9)	1/2	(12)	0.158	(4.0)
X-CRM8-9-12P8	11/32	(9)	1/2	(12)	0.158	(4.0)
X-CRM8-15-12FP10	5/8	(15)	1/2	(12)	0.158	(4.0)
X-CRM8-15-12P8	5/8	(15)	1/2	(12)	0.158	(4.0)

SAMMYS®

Anchors for Steel

RSN: 1669597
Permit # 2022-2237321-CT

DESCRIPTION/SUGGESTED SPECIFICATIONS

Self drilling & self tapping into steel up to 1/2" thick—

The Steel Sammy is made using Teks® self-drilling fasteners, perfect for Hanging Sprinklers, Pipes, Electrical Fixture or HVAC Equipment to steel purlin, structural beams, and open web joist. The Steel Sammy is available in vertical mount, horizontal mount, and Swivel mount to accommodate all fastening situations.

Installs into Steel Structures Easily and Quickly!

Available in Vertical and Horizontal



VERTICAL MOUNT

MADE WITH TEKS

SIDEWINDERS®
FOR STEEL
HORIZONTAL MOUNT

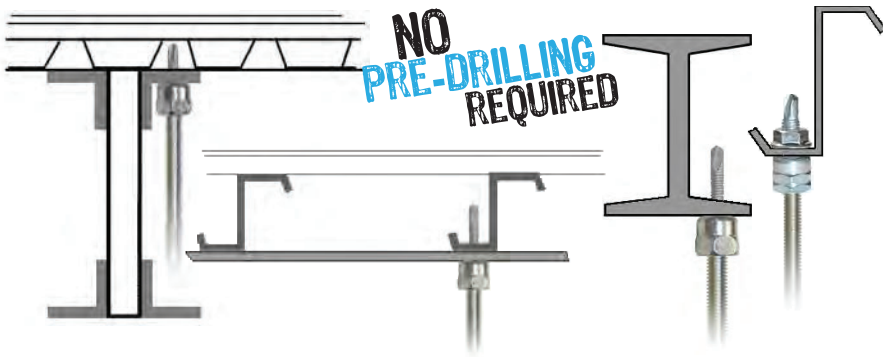


MADE WITH TEKS

ADVANTAGES

- Made with Teks® self-drilling fasteners – no pre-drilling required.
- Install into steel range from 22 gauge – 1/2" thickness
- Saves time from traditional methods.
- Reduces installation cost.
- Quick to install using the Sammy Nut Driver with a no load speed 2000-2500 rpm, minimum 6 amps drill/driver.

Sammy's Vertical Mount Product Features



Sammy's Sidewinder® Product Features



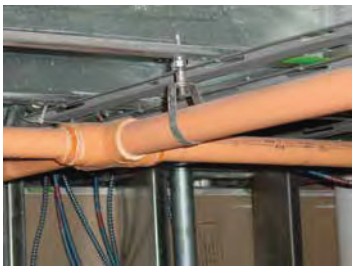
NO PRE-DRILLING REQUIRED

ITW Construction Products
Call our toll free number **800-387-9692** or visit **www.itwconstruction.ca** for general information.

SAMMYS®

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APPLICATIONS



Sprinkler Systems

Pipes/Plumbing

Electrical Lighting and Fixtures

HVAC Equipment and Fixtures



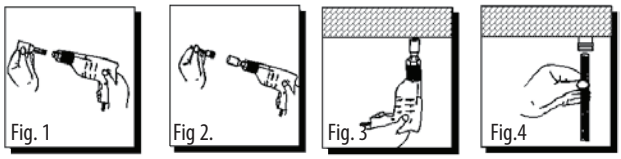




APPROVALS

See Selection Chart for items with approvals.

INSTALLATION INSTRUCTIONS VERTICAL MOUNT

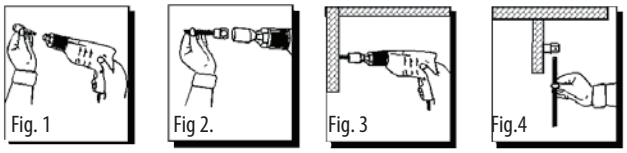


1. Insert the appropriate nut driver into a 3/8" or 1/2" portable drill.
2. Insert the SAMMYS into the #14 (black) nut driver (p/n 8113910). Drill should be in a vertical position.
3. Push the face of the nut driver tight to the member. When the nut driver spins freely on the SAMMYS, stop drill and remove.
4. The SAMMYS is now ready to receive 1/4", 3/8", 1/2" or metric all thread rod, bolt stock. (The 1/2" requires the #14SW red nut driver)

Important Vertical Installation Notes

Warranty requires the use of appropriate nut drivers for installation.
Model #14 Nut Driver **Item No:** 100 **Color:** Black
Use With Sammys for 1/4" and 3/8" Rod PN 8113910
Eye protection should be worn at all times when installing this product.

INSTALLATION INSTRUCTIONS HORIZONTAL MOUNT



1. Insert the appropriate nut driver into a 3/8" or 1/2" portable drill.
2. Insert the SAMMYS into the #14W (red) nut driver (p/n 8114910). With drill unit in a horizontal position and at a right angle to the structural member, begin installation.
3. When the nut driver spins free on the SAMMYS, stop drill and remove.
4. The unit is now ready to receive 1/4", 3/8", or metric all thread rod, bolt stock.

Important Horizontal Installation Notes

Warranty requires the use of appropriate nut drivers for installation. Sidewinders must be installed using **Model** #14SW (Red) nut driver only. **Item No:** 101 **PN:** 8114910
Eye protection should be worn at all times when installing this product.

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SAMMYS for Steel
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SELECTION CHART


■ Part # 8113910


■ Part # 8114910

SAMMYS Vertical Mount



ROD SIZE	PART NUMBER	MODEL	DESCRIPTION	ULTIMATE PULLOUT (LBS)	TEST LOAD (LBS) UL LISTED	TEST LOAD (LBS) FM APPROVED	MIN THICKNESS	MAX THICKNESS	BOX QTY	CASE QTY	NUT DRIVER
3/8"	8040957	DST 10	1/4-14 x 1" TEKS 3	446 (20 ga.) 970 (16 ga.)			.036"-20 ga	3/16"	25	125	Part # 8113910
3/8"	8041957	DST 15	1/4-14 x 1-1/2" TEKS 3	446 (20 ga.) 970 (16 ga.)			.036"-20 ga	3/16"	25	125	

SAMMYS Horizontal Mount

3/8"	8055957	SWDR 1 *	1/4-20 x 1" TEKS 3	1900 (20 ga.)	1500	1475	.036"-20 ga	3/16"	25	125	Part # 8114910
3/8"	8056957	SWDR 516 *	5/16-18 x 1-1/4" TEKS 3	2480 (20 ga.)	1500	1475	.036"-20 ga	1/8"	25	125	

*Includes retaining nut

SPECIAL NUT DRIVER SYSTEM: The nut drivers were designed with a unique spin-off feature which provides a fast and safe installation each time. When the face of the driver comes into contact with the material you are installing into, continue drilling until nut driver spins free. Installation is then complete. Warranty requires the use of the appropriate nut driver for installations.

PERFORMANCE TABLES

Sheet Steel Gauges

GAUGE NO.	26	24	22	20	18	16	14	12	3/16"	1/4"
Nominal Decimal Equivalent	.018	.024	.030	.036	.048	.060	.075	.105	.188	.250

Ultimate Pullout Values
(Avg. Lbs. Ultimate) – SAMMYS

FASTENER			STEEL GAUGE (Lbs.)						
MODEL	DIA.	PT	20	18	16	14	12	3/16"	1/4"
DST 516	5/16"	#3	457	568	1209	1712	2422	-----	-----

Aluminum Curtain Wall Extrusion
Ultimate Pullout Values

(AVERAGE LBS. ULTIMATE)						
FASTENER			THICKNESS			
MODEL	DIA.	PT.	.114	.092	.365	.132
DST 10	1/4	#3	1265	-----	2750	-----

Ultimate Pullout Values
(Avg. Lbs. Ultimate) – SIDEWINDERS

FASTENER			STEEL GAUGE (LBS.)						
MODEL	DIA.	PT	20	18	16	14	12	3/16"	1/4"
SWDR 1"	1/4"	#3	1900	-----	-----	1900	-----	-----	-----
SWDR 516	5/16"	#3	2480	-----	-----	2480	-----	-----	-----

SAMMYS for Steel –Seismic Restraint





DESCRIPTION (SIDEWINDER)

SWDR 516 FOR 3/8" ROD

Structural attachment for installation of branch/end of line restraint using 3/8" threaded rod. Used primarily in purlin, bar joist, or other steel structural members. These fastening systems provide a secure and economical attachment to the structure.

The SWDR 516 model provides upper structural attachment in a range of steel thicknesses, from 20 ga. through 1/8". A retaining nut is included with each fastener.

SPECIFICATIONS

Restrained Pipe Size:	Up to Schedule 40 pipe 2" or less
Max Length of Restraint Material:	See Maximum Horizontal Load Tables below.
Maximum Angle:	45° from horizontal
Material:	Carbon Steel
Screw Description:	(SWDR 1-1/2): 12-24 X 1-1/2" Teks® 5 (SWDR 516): 5/16"-18 X 1-1/4" Teks® 3
Finish (both):	Electro-Zinc (cap) Silver Climaseal® (screw)
Testing:	BX Report # R-1362
Listing:	UL 203 as a pipe hanger UL 203A pending

c UL us LISTED

SELECTION CHART

SAMMYS Sidewinders for Steel – Seismic Restraint

ROD SIZE	PART NUMBER	MODEL	MIN THICKNESS	MAX THICKNESS	APPLICATION	BOX QTY	CASE QTY	INSTALLATION TOOL
3/8"	8056957	SWDR 516	16 ga.	1/8"	Steel Purlin or Bar Joist	25	125	SWDR 516 must be installed with #14 SW Red Nut Driver (Part No. 8114910). No pre-drilling required.

PERFORMANCE TABLES

Maximum Horizontal Loads for Restraint with l/r=100, 200, 300, and 400

RESTRAINT SHAPE AND SIZE	NOMINAL DIAMETER	AREA (in.^{2})	LEAST RADIUS OF GYRATION, r (in.)	MAXIUMU ROD LENGTH FOR l/r (ft)			
				l/r = 100	l/r = 200	l/r = 300	l/r = 400*
Rods (all thread)	3/8 in.	0.07	0.075	0.6	1.3	1.9	2.5
	1/2 in.	0.129	0.101	0.8	1.7	2.5	3.4
Rods (threaded at ends only)	3/8 in.	0.11	0.094	0.8	1.6	2.4	3.1
	1/2 in.	0.196	0.125	1.0	2.1	3.1	4.2

Reference: NFPA 13, (2007) * Reference: NFPA 13, (2010)

ITW Construction Products
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SAMMYS®

Sammy X-Press®

RSN: 1669597
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DESCRIPTION/SUGGESTED SPECIFICATIONS

Sammy X-Press Revolutionizes The Pipe Handing Trades—

The Sammy X-Press® System is designed to provide direct attachment of threaded rod in metal deck (22-16 gauge) and thin gauge purlin (18-16 gauge), while providing reduced installation costs in terms of time and materials. The X-Press Anchors eliminate the need for costly "armovers" in pipe hanging installations. Current methods offered for thin gauge purlin require use of a time-consuming retaining nut on the threaded portion of the fastener to prevent pullout and are not designed for use in metal deck. In many instances, access to the backside of the installed fastener is prohibited by panel liner or roofing insulation. Sammy X-Press® anchors deliver the performance installers require without the use of a retaining nut!


Sammy X-Press

The patent-pending X-Press Anchors consist of a threaded fastener and expandable sleeve. The X-Press System features an easy-to-install anchor with expanding anchoring strips that collapse to prevent pullout after installation. The Sammy X-Press® It Installation Tool assures a perfect installation every time offering the added convenience of one-tool efficiency – just drill and drive in seconds! SECONDS!

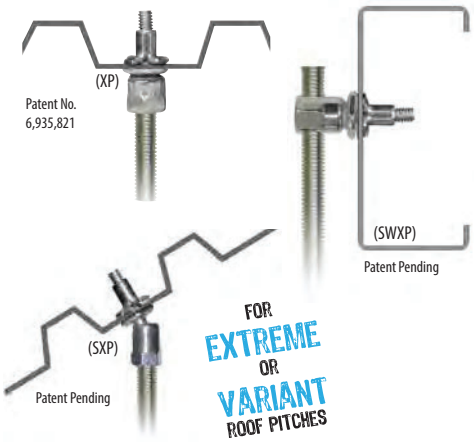
Installs into Metal Deck, Purlin, or Tubular Steel



ADVANTAGES

- Installs in seconds, saving time & installation costs.
- Use in applications where access to the back of the installed fastener is prohibited. ie. metal roof deck, tubular steel, or vapor barrier fabric.
- Less jobsite material needed.
- No retaining nut required.
- Provides design flexibility.

Sammy's X-Press, Swivel and Sidewinder



The **Sammy X-Press** expands to provide direct vertical attachment in:

- Metal Deck (22-16 gauge)
- Z-Purlin (18-16 gauge)

The **Sammy X-Press Swivel** allows you to hang plumb in extreme roof pitches:

- 89° in Z-Purlin
- 45° in metal deck for 12/12 pitch

The **Sammy X-Press Sidewinder** expands to provide horizontal attachment in:

- 16 ga - 3/16" steel - purlin, tubular steel.

RSN: 1669597
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APPLICATIONS



Sprinkler Systems

Pipes/Plumbing

Electrical Lighting and Fixtures

HVAC Equipment and Fixtures





APPROVALS

The X-Press System has earned the 9R21 and 25ES UL Listing.

INSTALLATION INSTRUCTIONS



1. Pre-Drill.



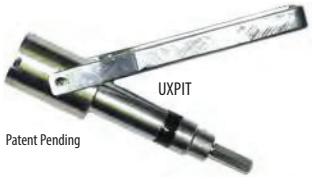
2. Insert Anchor.



3. Install.

INSTALLATION TOOL

SAMMY X-PRESS IT® INSTALLATION TOOL

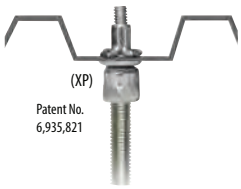


PART NUMBER	MODEL	DESCRIPTION	EACH QTY
8194910	UXPIT*	Universal X-Press It Tool	1
8152910	XPDB	25/64" Drill Bit	1

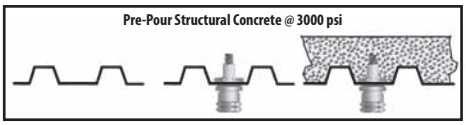
*Tool Includes: Sleeve, Bit Receiver, Hex Wrench, and 25/64" Drill Bit.

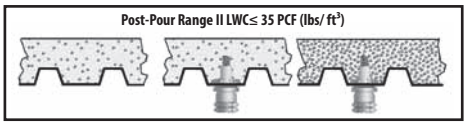
SELECTION CHART

SAMMYS X-Press Vertical Mount



ROD SIZE	PART NUMBER	MODEL	DESCRIPTION	ULTIMATE PULLOUT (LBS)	TEST LOAD (LBS)	UL MIN THICK	TEST LOAD (LBS)	FM MIN THICK	MAX THICK	BOX QTY	CASE QTY	APPLICATION
1/4"	8181922	XP 200	X-Press 200	1146 (22 ga)	185 (Luminaire) 250 (Luminaire)	.027" .056"			.125"	25	125	Metal Deck
3/8"	8150922	XP 20	X-Press 20	1146 (22 ga)	850 (2½" Pipe) 185 (Luminaire) 250 (Luminaire) 283 (Conduit & Cable)	.027" .027" .056" .029"	940 (2" Pipe) 1475 (4" Pipe)	.029" .104"	.125"	25	125	Metal Deck
3/8"	8153922	XP 35	X-Press 35	1783 (16 ga)	1500 (4" Pipe) 85 (Luminaire) 250 (Luminaire) 416 (Conduit & Cable)	.060" .029" .056" .059"	940 (2" Pipe) 1475 (4" Pipe)	.029" .104"	.125"	25	125	Purlin
3/8"	8150922	XP 20	X-Press 20	1146 (22 ga)	850 (2½ Pipe)		Pre-Pour Structural Concrete@ 3000 psi Post-Pour Range II LWC≤ 35 PCF (lbs/ ft^3)			25	125	Metal Deck (Pre-Pour) Metal Deck (Post-Pour)



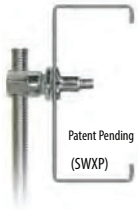


SAMMYS X-Press Swivel Head®



ROD SIZE	PART NUMBER	MODEL	DESCRIPTION	ULTIMATE PULLOUT (LBS)	TEST LOAD (LBS)	UL MIN THICK	TEST LOAD (LBS)	FM MIN THICK	MAX THICK	BOX QTY	CASE QTY	APPLICATION
3/8"	8295922	SXP 35	Swivel X-Press 35	1675 (16 ga Vertical) 1558 (89° Off Vertical)	1250 (3-1/2" Pipe) 250 vertical (Luminaire) 80 @ 90° (Luminaire) 500 vertical (Conduit & Cable) 333 @ 89° (Conduit & Cable)	.059"	635 (2" Pipe)	.029"	.125"	25	125	Purlin

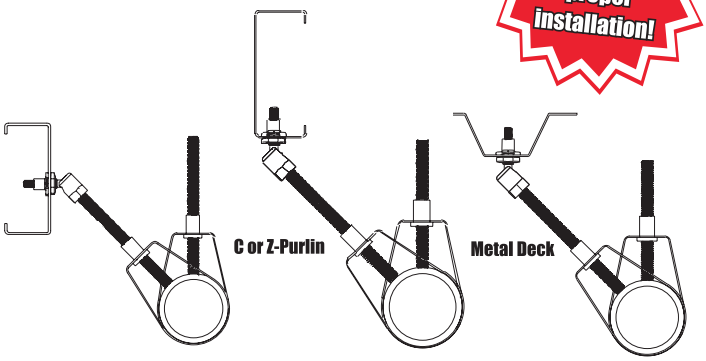
SAMMYS X-Press Horizontal Mount



ROD SIZE	PART NUMBER	MODEL	DESCRIPTION	ULTIMATE PULLOUT (LBS)	TEST LOAD (LBS)	TEST LOAD (LBS)	MIN THICK	MAX THICK	BOX QTY	CASE QTY	APPLICATION
3/8"	8293957	SWXP 35	Sidewinder X-Press 35	1798 (16 ga)	1250 (3½" Pipe) 80 (Luminaire) 416 (Conduit & Cable)		.060"	.125"	25	125	Purlin

SAMMYS X-Press for Seismic Restraint

Swivels to 45° to ensure proper installation!



DESCRIPTION

FEATURES

- Structural attachment and restraint component combined; ready for selected rod.
- Access to the back of fastener not required.
- Does not require use of a retaining nut.
- Quick and easy installation.

BENEFITS

- Reduced installation cost.
- Design flexibility.
- Less on site material (GO GREEN).
- Less material coordination.
- Aesthetically pleasing.

TESTED TO ZONE 4 REQUIREMENTS
RICHTER 8.4 SCALE
TESTED TO SEISMIC DESIGN CATEGORIES C.D.E. & F

FOR 3/8" AND 1/2" RODS

SXP 35 FOR 3/8" ROD

Structural attachment for installation of branch/end of line restraint using 3/8" all thread (.299" OD) or end thread rod (.374" OD).

SXP 35 for 3/8" Rod: Designed for use in steel purlin ranging from 16 ga. through 1/8" in low slope or pitched roof designs (12/12).

The Swivels may be used to attach short length of rod to eliminate lateral sway bracing per NFPA 13, 9.3.5.3.8, (2007).

SPECIFICATIONS

FOR 3/8" ROD

Restrained Pipe Size: Up to Schedule 40 pipe 2" or less

Max Length of Restraint Material: See Maximum Horizontal Load Tables below.

Maximum Angle: 45° from horizontal

Material: Carbon Steel

Screw Description: 1/4"-20 x 1-1/8" with expandable sleeve

Finish: Electro-Zinc

Testing: Tested to GR-63-CORE Standard for performance in structural steel in seismic restraint applications as outlined for use in NFPA 13 (2007), 9.3 at an independent test lab. The calculated force used for the testing was equal to that found in a Zone 4 and an 8.4 Richter scale seismic event.

Listing for 3/8" Rod: UL 203 listed as pipe hanger File EX 5098
- SXP 35 (16 ga.) 0-90° from horizontal - 3-1/2" Schedule 40 pipe
UL 203A File EX 15565

SELECTION CHART

SAMMYS X-Press Swivels – Seismic Restraint

ROD SIZE	PART NUMBER	MODEL	MIN THICKNESS	MAX THICKNESS	APPLICATION	BOX QTY	CASE QTY	INSTALLATION TOOL
3/8"	8295922	SXP 35	16 ga	1/8"	Purlin	25	125	The SWXP 35 must be installed with UXPIT Tool (Part No. 8194910); pre-drilling required.

PERFORMANCE TABLES

Maximum Rod Length for l/r=100, 200, 300, and 400

RESTRAINT SHAPE AND SIZE	NOMINAL DIAMETER	AREA (in.²)	LEAST RADIUS OF GYRATION, r (in.)	MAXIMUM ROD LENGTH FOR l/r (ft)			
				l/r = 100	l/r = 200	l/r = 300	l/r = 400*
Rods (all thread)	3/8 in.	0.07	0.075	0.6	1.3	1.9	2.5
	1/2 in.	0.129	0.101	0.8	1.7	2.5	3.4
Rods (threaded at ends only)	3/8 in.	0.11	0.094	0.8	1.6	2.4	3.1
	1/2 in.	0.196	0.125	1.0	2.1	3.1	4.2

Reference: NFPA 13, (2007) * Reference: NFPA 13, (2010)

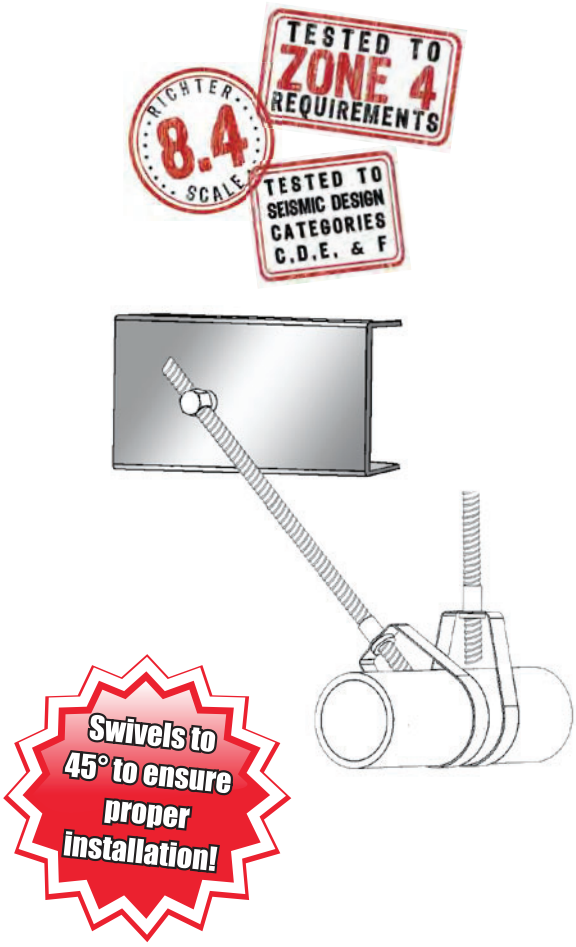
RSN: 1669597
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DESCRIPTION (SIDEWINDER)

SWXP 35 FOR 3/8" ROD

Structural attachment for installation of branch/end of line restraint using 3/8" threaded rod. Used primarily in purlin, bar joist, or other steel structural members. These fastening systems provide a secure and economical attachment to the structure.

The SWXP 35 model provides upper structural attachment in a range of steel thicknesses, from 16 ga. through 1/8". An expandable sleeve is included with each fastener, eliminating need for retaining nut.



SPECIFICATIONS

Restrained Pipe Size:	Up to Schedule 40 pipe 2" or less
Max Length of Restraint Material:	See Maximum Horizontal Load Tables below.
Maximum Angle:	45° from horizontal
Material:	Carbon Steel
Screw Description:	1/4"-20 X 1-1/8" with expandable sleeve
Finish:	Electro-Zinc (cap & screw)
Testing:	BX Report # R-1362
Listing:	UL 203 as a pipe hanger UL 203A pending

SELECTION CHART

SAMMYS Sidewinders for Steel – Seismic Restraint

ROD SIZE	PART NUMBER	MODEL	MIN THICKNESS	MAX THICKNESS	APPLICATION	BOX QTY	CASE QTY	INSTALLATION TOOL
3/8"	8293957	SWXP 35	16 ga.	1/8"	Steel Purlin or Bar Joist	25	125	The SWXP 35 must be installed with UXPIT Tool (Part No. 8194910); pre-drilling required.

PERFORMANCE TABLES

Maximum Horizontal Loads for Restraint with l/r=100, 200, 300, and 400

RESTRAINT SHAPE AND SIZE	NOMINAL DIAMETER	AREA (in.^{2})	LEAST RADIUS OF GYRATION, r (in.)	MAXIMUM ROD LENGTH FOR l/r (ft)			
				l/r = 100	l/r = 200	l/r = 300	l/r = 400*
Rods (all thread)	3/8 in.	0.07	0.075	0.6	1.3	1.9	2.5
	1/2 in.	0.129	0.101	0.8	1.7	2.5	3.4
Rods (threaded at ends only)	3/8 in.	0.11	0.094	0.8	1.6	2.4	3.1
	1/2 in.	0.196	0.125	1.0	2.1	3.1	4.2

Reference: NFPA 13, (2007) * Reference: NFPA 13, (2010)

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HDI / HDI-L Drop-In Anchor

4.3.4.1 PRODUCT DESCRIPTION

The Hilti HDI/HDI-L Drop-In anchor is an internally threaded, flush mounted expansion anchor for use in concrete.



Product Features

HDI

- Anchor, setting tool & Hilti drill bit form a matched tolerance system to provide reliable fastenings
- Below surface setting for easy patchwork
- Allows for shallow embedment without sacrificing performance

HDI-L

- Lip provides flush installation, consistent anchor depth, and easy rod alignment
- Lip allows accurate flush surface setting, independent of hole depth & ideal for repetitive fastenings with threaded rods of equal length
- Intelligent expansion section adapts to the base material & reduces number of hammer blows up to 50%
- Easy to read brand & size identification (red laser print)

Guide Specifications

Expansion Anchors: Expansion anchors shall be flush or shell type which meet the description in Federal Specification FF-S-325, Group VIII, Type 1, for expansion shield anchors. Anchors to be zinc plated in accordance with ASTM B633, Sc. 1, Type III. Anchors shall be Hilti HDI/HDI-L anchors as supplied by Hilti, Inc., P.O. Box 21148, Tulsa, OK 74121.

Installation: Shell or flush type anchors to be installed in holes drilled with Hilti carbide tipped drill bits. Anchors shall be installed per manufacturer's recommendations.

Approvals/Listings

- City of Los Angeles (COLA): Research Report No. 23709 (HDI Only)
- Factory Mutual (FM): Serial No. 22765 "Sprinkler Hangar Components—Expansion Shields." (HDI and HDI-L)
- Conforms to the description in Federal Specification FF-S-325, Group VIII, Type 1 for expansion shield anchors. (HDI and HDI-L)
- Underwriters Laboratory (UL), "Pipe Hangers" (3/8"–3/4" diameter) (HDI and HDI-L)
- International Conference of Building Officials (ICBO ES): Evaluation Report No. 2895 (HDI Only)
- Southern Building Code Congress (SBCCI): Report No. 9930 (HDI Only)

4.3.5.2 MATERIAL SPECIFICATIONS

	MECHANICAL PROPERTIES	
	f_y ksi (MPa)	min. f_u ksi (MPa)
HDI/HDI-L Carbon Steel material meets the requirements of AISI 1010M for the 1/4", 3/8" & 1/2"	44 (303)	53 (365)
HDI Carbon Steel material meets the requirements of AISI 12L14 for the 5/8" and 3/4" sizes	60 (415)	78 (540)
HDI Stainless Steel material meets the requirements of AISI 303	60 (414)	100 (689)

Carbon Steel HDI/HDI-L plated with a dull zinc finish for corrosion protection in accordance with ASTM B633, Sc. 1, Type III

4.3.5.3 TECHNICAL DATA

HDI/HDI-L Specification Table

Details \ Anchor Size		HDI/HDI-L	HDI/HDI-L	HDI/HDI-L	HDI	HDI
	in.	1/4	3/8	1/2	5/8	3/4
	(mm)	(6.4)	(9.5)	(12.7)	(15.9)	(19.1)
d_{bit}: bit diameter[1]	in.	3/8	1/2	5/8	27/32	1
h_{nom}: std. depth of embed.	in.	1	1 9/16	2	2 9/16	3 3/16
ℓ: anchor length h_1: hole depth	(mm)	(25)	(40)	(51)	(65)	(81)
ℓ_{th}: useable thread length	in.	7/16	5/8	11/16	7/8	1 3/8
	(mm)	(11)	(15)	(17)	(22)	(34)
Threads per in.		20	16	13	11	10
h: min. base material thickness	in.	3	3 1/8	4	5 1/8	6 3/8
	(mm)	(76)	(79)	(102)	(130)	(162)
T_{inst}: max. tightening torque	ft lb	4	11	22	37	80
	(Nm)	(5.4)	(14.9)	(29.8)	(50.2)	(108.5)

1. For Hilti matched tolerance carbide tipped drill bits, see section 10.4.1.

Combined Shear and Tension Loading

$$\left(\frac{N_d}{N_{rec}}\right)^{5/3} + \left(\frac{V_d}{V_{rec}}\right)^{5/3} \leq 10$$

(Ref. Section 4.1.3)

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Carbon Steel HDI Ultimate Loads in Concrete

Anchor size in. (mm)	2000 psi (13.8 MPa)				4000 psi (27.6 MPa)				6000 psi (41.4 MPa)			
	Tension	lb(kN)	Shear	lb (kN)	Tension	lb(kN)	Shear	lb (kN)	Tension	lb (kN)	Shear	lb (kN)
	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L
1/4 (6.4)	1995 (8.9)	1995 (8.9)	1800 (8.0)	1800 (8.0)	2270 (10.1)	2270 (10.1)	2500 (11.1)	2500 (11.1)	3150 (14.0)	3150 (14.0)	2800 (12.5)	2800 (12.5)
3/8 (9.5)	3555 (15.8)	3555 (15.8)	3850 (17.1)	3850 (17.1)	4460 (19.8)	4460 (19.8)	5000 (22.2)	5000 (22.2)	5430 (24.2)	5430 (24.2)	6000 (26.7)	6000 (26.7)
1/2 (12.7)	4470 (19.9)	4470 (19.9)	6000 (26.7)	6000 (26.7)	7140 (31.8)	7140 (31.8)	8500 (37.8)	7750 (34.4)	9375 (41.7)	9375 (41.7)	10000 (44.5)	10000 (44.5)
5/8 (15.9)	7500 (33.4)	-	10000 (44.5)	-	11685 (52.0)	-	13000 (57.8)	-	14865 (66.1)	-	15000 (66.7)	-
3/4 (19.1)	10000 (44.5)	-	15500 (69.0)	-	16260 (72.3)	-	20000 (89.0)	-	22250 (99.0)	-	22000 (97.9)	-

Carbon Steel HDI Allowable Loads in Concrete

Anchor size in. (mm)	2000 psi (13.8 MPa)				4000 psi (27.6 MPa)				6000 psi (41.4 MPa)			
	Tension	lb(kN)	Shear	lb (kN)	Tension	lb(kN)	Shear	lb (kN)	Tension	lb (kN)	Shear	lb (kN)
	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L	HDI	HDI-L
1/4 (6.4)	500 (2.2)	500 (2.2)	450 (8.0)	450 (8.0)	570 (2.5)	570 (2.5)	625 (2.8)	625 (2.8)	790 (3.5)	790 (3.5)	700 (3.1)	700 (3.1)
3/8 (9.5)	890 (4.0)	890 (4.0)	965 (4.3)	965 (4.3)	1115 (5.0)	1115 (5.0)	1250 (5.6)	1250 (5.6)	1360 (6.0)	1360 (6.0)	1500 (6.7)	1500 (6.7)
1/2 (12.7)	1120 (5.0)	1120 (5.0)	1500 (6.7)	1500 (6.7)	1785 (7.9)	1785 (7.9)	2125 (9.5)	1940 (8.6)	2345 (10.4)	2345 (10.4)	2500 (11.1)	2500 (11.1)
5/8 (15.9)	1875 (8.3)	-	2500 (11.1)	-	2920 (13.0)	-	3250 (14.5)	-	3715 (16.5)	-	3750 (16.7)	-
3/4 (19.1)	2500 (11.1)	-	3875 (17.2)	-	4065 (18.1)	-	5000 (22.2)	-	5565 (24.8)	-	5500 (24.5)	-

Note: The ultimate shear and allowable shear values are based on the use of SAE Grade 5 bolts, (f_y = 85 ksi, F_{ult} = 120 ksi) with the exception of the 1/4" HDI/HDI-L in f'c = 6000 psi concrete which is based upon the use of a SAE Grade 8 bolt (f_y = 120 ksi, F_{ult} = 150 ksi).

Carbon Steel HDI Allowable Load in Lightweight Concrete[3, 4]

Anchor size in. (mm)	Anchor installed in 3000 psi (20.7 MPa) Lt. Wt. Concrete [1]		Anchor Installed Through Steel Decking into 3000 psi (20.7 MPa) Lt. Wt. Concrete[2]	
	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
HDI – 1/4 (6.4)	465 (2.1)	340 (1.5)	530 (2.4)	335 (1.5)
HDI – 3/8 (9.5)	755 (3.4)	940 (4.2)	880 (3.9)	1010 (4.5)
HDI – 1/2 (12.7)	1135 (5.0)	1700 (7.6)	1105 (4.9)	1755 (7.8)
HDI – 5/8 (15.9)	1465 (6.5)	2835 (12.6)	—	—
HDI – 3/4 (19.1)	2075 (9.2)	3680 (16.4)	—	—

1. The tabulated shear and tensile values are for anchors installed in structural lightweight concrete having the designated ultimate compressive strength at the time of installlation. The concrete must comply with ASTM C 330-77.
2. The tabulated shear and tensile values are for anchors installed through 20 gauge intermediate decking into structural lightweight concrete having the designated ultimate strength at the time of installation. The concrete must comply with ASTM C 330-77. Anchors were located in the valley of the fluted deck.
3. The allowable values are based on the use of SAE Grade 2 bolts installed in the anchors.
4. Based on using a safety factor of 4

Stainless Steel HDI Ultimate Loads in Concrete

Anchor size in. (mm)	4000 psi (27.6 MPa)		6000 psi (41.4 MPa)	
	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
SS HDI – 1/4 (6.4)	1930 (8.6)	2400 (10.7)	2950 (13.1)	2400 (10.7)
SS HDI – 3/8 (9.5)	4170 (18.5)	4920 (21.9)	5850 (26.0)	4920 (21.9)
SS HDI – 1/2 (12.7)	7350 (32.7)	11040 (49.1)	9630 (42.8)	11040 (49.1)
SS HDI – 5/8 (15.9)	10540 (46.9)	18040 (80.2)	15100 (67.2)	18040 (80.2)
SS HDI – 3/4 (19.1)	15340 (68.2)	22320 (99.3)	20130 (89.5)	22320 (99.3)

Stainless Steel HDI Allowable Loads in Concrete

Anchor size in. (mm)	4000 psi (27.6 MPa)		6000 psi (41.4 MPa)	
	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
HDI – 1/4 (6.4)	480 (2.1)	600 (2.7)	740 (3.3)	600 (2.7)
HDI – 3/8 (9.5)	1040 (4.6)	1230 (5.5)	1460 (6.5)	1230 (5.5)
HDI – 1/2 (12.7)	1840 (8.2)	2760 (12.4)	2410 (10.7)	2760 (12.3)
HDI – 5/8 (15.9)	2630 (11.7)	4510 (20.1)	3770 (16.8)	4510 (20.1)
HDI – 3/4 (19.1)	3830 (17.0)	5580 (24.8)	5030 (22.4)	5580 (24.8)

Note: The ultimate and allowable shear values are based on the use of Type 18-8 bolts.

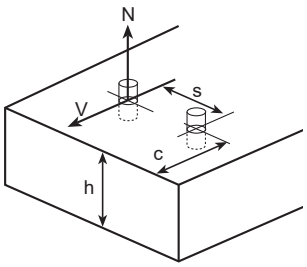
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Anchor Spacing and Edge Distance Guidelines *(See Anchoring Technology Section 4.1.3)*

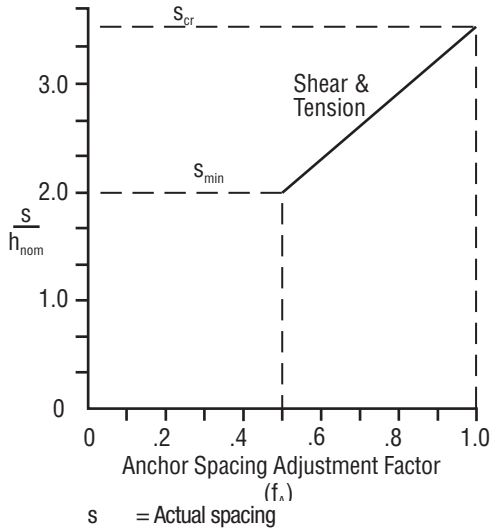
Influence of Anchor Spacing and Edge Distance f_A, f_R

Anchor Size	in.	1/4	3/8	1/2	5/8	3/4
	(mm)	(6.4)	(9.5)	(12.7)	(15.8)	(19.1)
h_{nom}	in.	1	1 9/16	2	2 9/16	3 3/16
	(mm)	(25)	(40)	(51)	(65)	(81)

h_{nom} = standard embedment depth

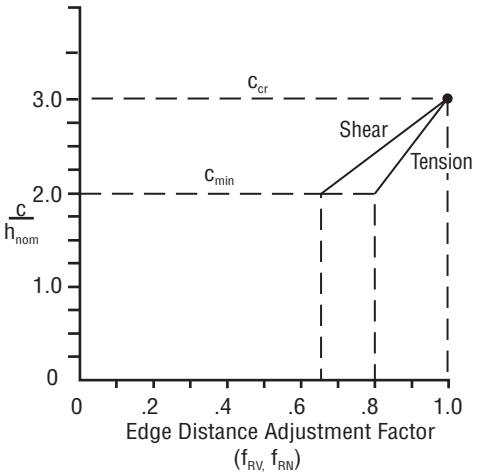


Anchor Spacing Adjustment Factors



s = Actual spacing
s_{min} = 2.0 h_{nom}
s_{cr} = 3.5 h_{nom}

Edge Distance Adjustment Factors



c = Actual edge distance
c_{min} = 2.0 h_{nom}
c_{cr} = 3.0 h_{nom}

Load Adjustment Factors (Anchor Spacing) f_A							Load Adjustment Factors (Edge Distance) f_R										
Tension/Shear Loads							Tension, f_{RN}						Shear, f_{RV}				
Spacing s in. (mm)		Anchor Diameter					Edge Distance c in. (mm)		Anchor Diameter					Anchor Diameter			
		1/4	3/8	1/2	5/8	3/4			1/4	3/8	1/2	5/8	3/4	1/4	3/8	1/2	5/8	3/4
2	(51)	.50					2	(51)	.80					.65				
2 1/2	(64)	.67					2 1/2	(64)	.90					.83				
3	(76)	.83	.50				3	(76)	1.0	.80				1.0	.65			
3 1/2	(89)	1.0	.58				3 1/2	(89)		.85					.73			
4	(102)		.69	.50			4	(102)		.91	.80				.85	.65		
4 1/2	(114)		.79	.58			4 1/2	(114)		.98	.85				.96	.74		
5	(127)		.90	.67	.50		5	(127)		1.0	.90	.80			1.0	.83	.65	
5 1/2	(140)		1.0	.75	.55		5 1/2	(140)			.95	.83				.91	.70	
6	(152)			.83	.61	.50	6	(152)			1.0	.87				1.0	.77	
7	(178)			1.0	.74	.57	6 1/2	(165)				.91	.80				.84	.65
8	(203)				.87	.67	7	(178)				.95	.84				.91	.72
9	(229)				1.0	.77	8	(203)				1.0	.90				1.0	.83
10	(254)					.88	9	(229)					.96					.94
11	(279)					.98	10	(254)					1.0					1.0
12	(305)					1.0												

s_{min} = 2.0 h_{nom}, s_{cr} = 3.5 h_{nom}

$f_A = 0.33 \frac{s}{h_{nom}} - 0.17$

for $s_{cr} > s > s_{min}$

c_{min} = 2.0 h_{nom}, c_{cr} = 3.0 h_{nom}

$f_{RN} = 0.2 \frac{c}{h_{nom}} + 0.4$

for $c_{cr} > c > c_{min}$

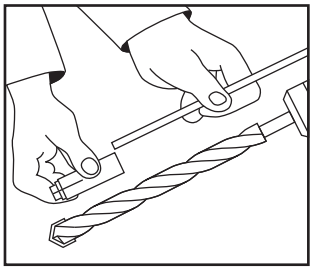
c_{min} = 2.0 h_{nom}, c_{cr} = 3.0 h_{nom}

$f_{RV} = 0.35 \frac{c}{h_{nom}} - 0.05$

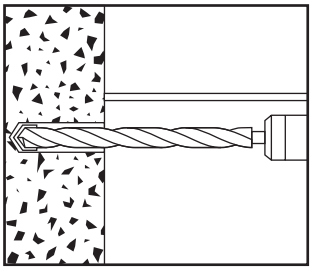
for $c_{cr} > c > c_{min}$

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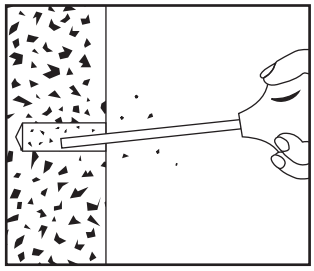
4.3.5.4 INSTALLATION INSTRUCTIONS



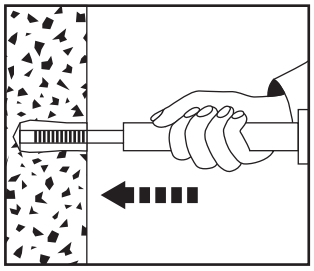
1. Adjust depth gauge so that anchor will be flush with the concrete surface when installed.



2. Hammer drill hole.



3. Clean hole.



4. Install anchor using proper setting tool. Setting tool to be driven into anchor until setting tool shoulder meets top of anchor.

4.3.5.5 ORDERING INFORMATION

HDI Products

Anchor Thread Size	Carbon Steel				Stainless Steel		Quantity per Box
	Description	Item No.	Description	Item No.	Description	Item No.	
1/4"	HDI 1/4	00045752	HDI-L 1/4	247818	HDI (SS 303) 1/4	00045787	100
3/8"	HDI 3/8	00045753	HDI-L 3/8	247817	HDI (SS 303) 3/8	00045788	50
1/2"	HDI 1/2	00045754	HDI-L 1/2	247816	HDI (SS 303) 1/2	00045789	50
5/8"	HDI 5/8	00045755	-	-	HDI (SS 303) 5/8	00045790	25
3/4"	HDI 3/4	00045756	-	-	HDI (SS 303) 3/4	00045791	25

Setting Tools for HDI / HDI-L Anchors

Anchor Thread Size	Hand Setting Tools		Automatic Setting Tools [1]	
	Description	Item No.	Description	Item No.
1/4"	HST 1/4 Setting Tool	00032978	—	—
3/8"	HST 3/8 Setting Tool	00032979	HSD-MM 3/8" (TE-C-24SD10 3/8" Setting tool)	00243751
1/2"	HST 1/2 Setting Tool	00032980	HSD-MM 1/2" (TE-C-24SD12 1/2" Setting tool)	00243752
5/8"	HST 5/8 Setting Tool	00032981	—	—
3/4"	HST 3/4 Setting Tool	00032982	—	—

1. Use automatic setting tools with TE-5, TE-5A, TE-15, TE-18, and TE-25 rotary hammer drills.

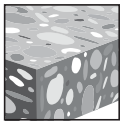
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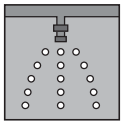
3.3.14 HDI-P DROP-IN ANCHORS

PRODUCT DESCRIPTION

HDI-P Drop-in Anchors

Anchor System	Features and Benefits
HDI-P Drop-in Anchor 	• Optimized anchor length to allow reliable fastenings in hollow core panels, precast plank and post tensioned slabs • Shallow drilling enables fast installation • Lip provides flush installation, consistent anchor depth and easy rod alignment • HSD-G 3/8 setting tool with hand guard leaves mark on flange when anchor is set properly to enable inspection and verification of proper expansion


Uncracked concrete


Fire sprinkler list-ings

MATERIAL SPECIFICATIONS

The HDI-P is manufactured from mild carbon steel, which is zinc plated for corrosion protection in accordance with ASTM B633, SC 1, Type III.

Approvals/Listings	
FM (Factory Mutual)	Pipe hanger components for automatic sprinkler systems for ¾=8-in. model

FM APPROVED

DESIGN DATA IN CONCRETE USING ALLOWABLE STRESS DESIGN

Technical data

Table 1 — Hilti HDI-P loads in normal-weight concrete and hollow core concrete panels

Nominal anchor diameter	Length in. (mm)	Nom. bit dia. in.	Ultimate loads, lb (kN)								Allowable loads, lb (kN)[3]							
			f'_c = 4,000 psi concrete				Hollow core[1,2]				f'_c = 4,000 psi concrete				Hollow core[1,2]			
			Tension		Shear		Tension		Shear		Tension		Shear		Tension		Shear	
1/4	5/8	(15.9)	3/8	1,430	(6.4)	1,870	(8.3)	1,550	(6.9)	2,275	(10.1)	285	(1.3)	375	(1.7)	310	(1.4)	455	(2.0)
3/8	3/4	(19.1)	1/2	1,900	(8.5)	3,000	(13.3)	2,100	(9.3)	4,000	(17.8)	380	(1.7)	600	(2.7)	420	(1.9)	800	(3.6)
1/2	1	(25.4)	5/8	3,000	(13.3)	6,075	(27.0)	3,110	(13.8)	5,495	(24.5)	600	(2.7)	1215	(5.4)	620	(2.8)	1,100	(4.9)

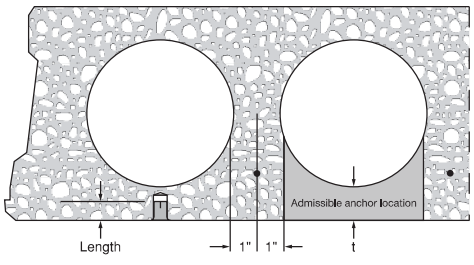
1 The Admissible Anchor Location must be established to prevent damage to the prestressed cable during the drilling process. Verify the location and height of the cable with the hollow core plank supplier to confirm Admissible Anchor Location.
2 Minimum compressive strength of hollow core panels is 7,000 psi at the time of installation. The minimum thickness "t" is 1-3/8 inches.
3 Allowable loads calculated with a 5:1 factor-of-safety.

3.3.14

INSTALLATION INSTRUCTIONS

Installation Instructions For Use (IFU) are included with each product package. They can also be viewed or downloaded online at www.hilti.com (Canada). Because of the possibility of changes, always verify that downloaded IFU are current when used. Proper installation is critical to achieve full performance. Training is available on request. Contact Hilti Technical Services for applications and conditions not addressed in the IFU.

Figure 1 — Installation of Hilti HDI-P in hollow core concrete



ORDERING INFORMATION

HDI-P anchor

Description	Bit diameter	Qty / box
HDI-P 1/4	3/8	100
HDI-P 3/8	1/2	100
HDI-P 1/2	5/8	50

Setting tools for HDI-P anchors

Description
HST-P 1/4 Hand Setting Tool
HST-P 3/8 Hand Setting Tool
HSD-G 3/8 Hand Setting Tool with hand guard
HST-P 1/2 Hand Setting Tool

INSTALLATION INSTRUCTIONS

Manufacturer's Printed Installation Instructions (MPII) are included with each product package. They can also be viewed or downloaded at www.hilti.com. Because of the possibility of changes, always verify that downloaded MPII are current when used. Proper installation is critical to achieve full performance. Training is available on request. Contact Hilti Technical Services for applications and conditions not addressed in the MPII.

ORDERING INFORMATION[1]

HDI+, HDI-L+ and HDI

Carbon steel

Description	Description	Anchor thread size	Qty / box
HDI+ 1/4	**HDI-L+ 1/4**	1/4	100
HDI+ 3/8	**HDI-L+ 3/8**	3/8	50
HDI+ 1/2	**HDI-L+ 1/2**	1/2	50
HDI 5/8	**–**	5/8	25
HDI 3/4	**–**	3/4	25

HDI-SS anchors

Stainless steel

Description	Anchor thread size	Qty / box
HDI 1/4 SS303	1/4	100
HDI 3/8 SS303	3/8	50
HDI 1/2 SS303	1/2	50
HDI 5/8 SS303	5/8	25
HDI 3/4 SS303	3/4	25

Setting tools for HDI and HDI-SS anchors

Description	Anchor thread size
HST 5/8 Setting Tool	5/8
HST 3/4 Setting Tool	3/4



Setting Tools for HDI+ and HDI-L+

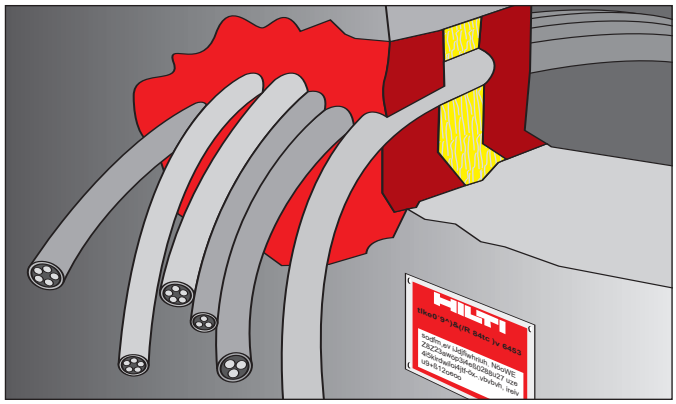
Anchor thread size	Description
1/4	HST 1/4 Setting tool
	HSD-MM 1/4 (TE-C-24D6 1/4 Setting tool)
	HDI+ Setting Tool includes a TE-CX 3/8x1 carbide bit
3/8	HST 3/8 Setting tool
	HSD-MM 3/8 (TE-C-24SD10 3/8 Setting tool)
	HDI+ Setting Tool includes a TE-CX 1/2x1-9/16 carbide bit
1/2	HST 1/2 Setting tool
	HSD-MM 1/2 (TE-C-24SD12 1/2 Setting tool)
	HDI+ Setting Tool includes a TE-CX 5/8x2 carbide bit



1 All dimensions in inches

FS-ONE

High Performance Intumescent Firestop Sealant



Product description

- Intumescent (expands when exposed to fire) firestop sealant that helps protect combustible and non-combustible penetrations for up to 4 hours fire rating

Product features

- Smoke, gas and water resistant after material has cured
- Contains no halogen, solvents or asbestos
- High fire rating properties
- Water based, easy to clean
- Protects most typical firestop penetration applications
- Can be painted
- Single component systems available
- 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

- Steel, copper and EMT pipes
- Insulated steel and copper pipes
- Cable bundles
- Closed or vented plastic pipes
- HVAC penetrations

For use with

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

Examples

- Sealing around plastic pipe penetrations in fire rated construction
- Sealing around combustible and non-combustible penetrations in fire rated construction

FS-ONE Technical Data

Chemical basis	Water-based intumescent acrylic dispersion
Color	Red
Application temperature	40°F to 104°F (5°C to 40°C)
Skin forming time	Approx. 20-30 min.
Curing time	Approx. 2 mm / 3 days
Movement capability	Approx. 5%
Expansion rate (unrestricted):	Up to 3-5 times original volume
Temperature resistance (cured)	–40°F to 212°F (–40°C to 100°C)
Surface burning characteristics (ASTM E 84-96)	Flame Spread: 0 Smoke Development: 5
Sound transmission classification (ASTM E 90-99)	56 (Relates to specific construction)
Approvals	
California State Fire Marshal	Listing No. 4485-1200:108
City of New York	MEA 326-96-M Vol. IV
Tested in accordance with	• UL 1479 • ASTM E 814 • ASTM E 84

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

FILL, VOID OR CAVITY MATERIAL
FOR USE IN THROUGH-PENETRATION
FIRESTOP SYSTEMS
SEE UL FIRE RESISTANCE DIRECTORY
66Y7

FM APPROVED

Installation instructions for FS-ONE

Notice

- Before handling, read Material Safety DataSheet 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 opening. Surfaces to which FS-ONE will be applied should be cleaned of loose debris, dirt, oil, moisture, frost and wax. Structures supporting penetrating items must be installed in compliance with local building and electrical standards.

Application of firestop sealant

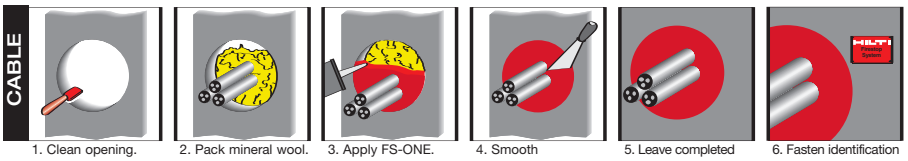
2. Install the prescribed backfilling material type and depth to obtain the desired rating (if required). Leave sufficient depth for applying FS-ONE.
3. Application of firestop sealant: Apply FS-ONE to the required depth in order to obtain the desired fire rating. Make sure FS-ONE contacts all surfaces to provide maximum adhesion. For application of FS-ONE use a standard caulking gun, foil pack gun, bulk loader and bulk gun. With FS-ONE buckets, Graco type sealant pumps may be used. (Contact pump manufacturer for proper selection).
4. Smoothing of firestop sealant: To complete the seal, tool immediately to give a smooth appearance. Excess sealant, prior to curing, can be cleaned away from adjacent surfaces and tools with water.
5. Leave completed seal undisturbed for 48 hours.
6. For maintenance reasons, a penetration seal could be permanently marked with an identification plate. In such a case, mark the identification plate and fasten it in a visible position next to the seal.

Not for use

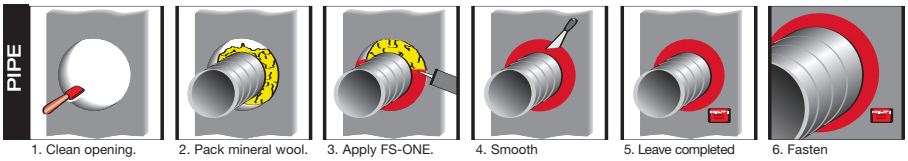
- High movement expansion joints
- Underwater
- On materials where oil, plasticizers or solvents may bleed i.e. impregnated wood, oil based seals, green or partially vulcanized rubber
- In any penetration other than those specifically described in this manual or the test reports

Storage

- Store only in the original packaging in a location protected from moisture at temperatures between 40°F (5°C) and 86°F (30°C)
- Observe expiration date on the packaging



1. Clean opening. 2. Pack mineral wool. (If required) 3. Apply FS-ONE. 4. Smooth FS-ONE. 5. Leave completed seal undisturbed for 48 hours. 6. Fasten identification plate (if required).



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Hilti. Outperform. Outlast.