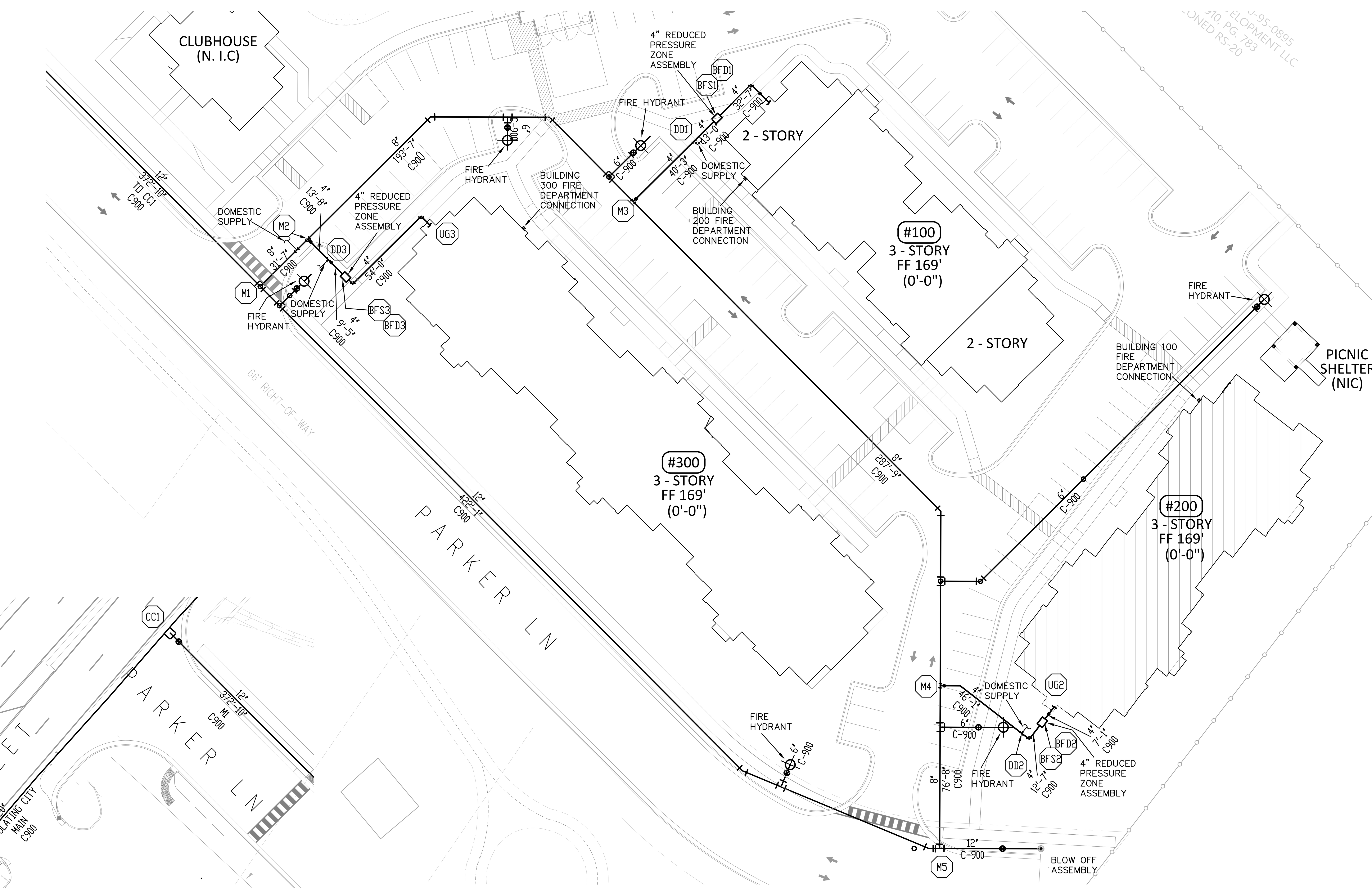
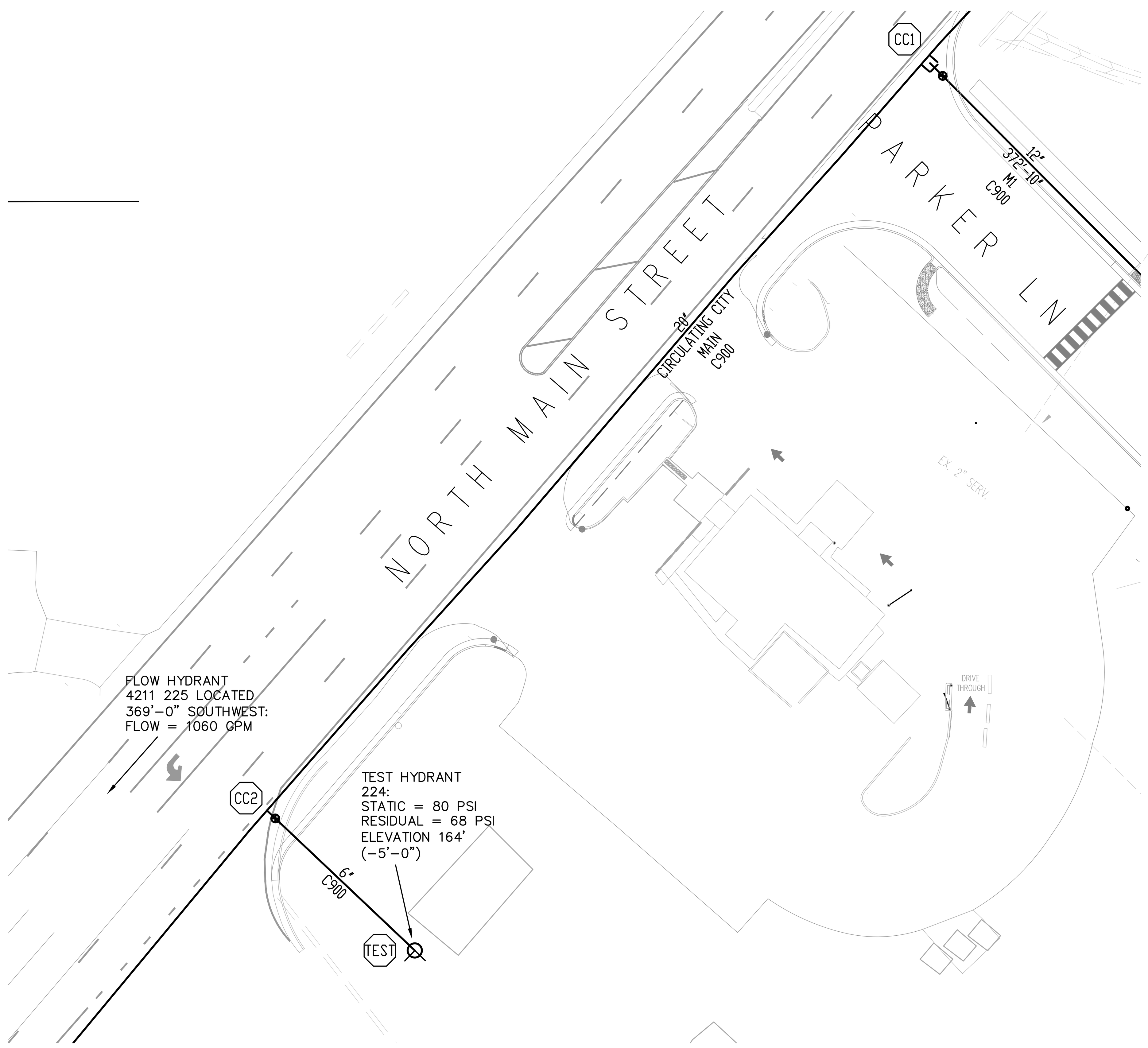
Reviewed for Fire Code Compliance
Harnett County
Leslie Jackson
04/18/2024 9:20:50 AM



FIRE SPRINKLER SITE PLAN

SCALE 1" = 30'-0"



FLOW TEST HYDRANT LOCATION

SCALE 1" = 30'-0"

- ALL UNDERGROUND PIPING IS BY OTHERS.
- PLANS ARE PROVIDED FOR HYDRAULIC REFERENCE NODE PURPOSES AND FDC LOCATIONS ONLY
- UNDERGROUND CONTRACTOR IS TO PROVIDE WAFS WITH TEST CERTIFICATES INDICATING COMPLETION OF HYDROSTATIC TEST AND FLUSH PER NFPA 24 PRIOR TO WAFS CONNECTING TO THE UNDERGROUND.
- UNDERGROUND CONTRACTOR SHALL COORDINATE SIZE AND LOCATION OF LEAD-INS WITH WAFS.
- UNDERGROUND CONTRACTOR SHALL NOTIFY WAFS OF MAKE AND MODEL OF BACKFLOW PREVENTER USED WHEN IN THEIR SCOPE.
- ALL TAMPER SWITCHES REQUIRED ON UNDERGROUND NOT IN WAFS SCOPE SHALL BE BY OTHERS.
- FOR HYDRAULIC CALCULATION PURPOSES ELEVATION OF 169' IS CONSIDERED 0'-0".

UNDERGROUND CONTRACTOR NOTES
WAYNE Automatic Fire Sprinklers, Inc.
SCALE: NONE
00500N

30' 15' 0 30' 60'
SCALE 1" = 30'

BUILDING 200

N.I.C.E.T. NICET CERTIFIED
Christopher A. Williams
NICET Level 3
Certification Number 115724
North Carolina Licence # 29745

IMPORTANT OWNER INFORMATION

THIS DRAWING IS BASED ON THE OWNER'S ACCEPTANCE OF THE CURRENTLY ADOPTED EDITION (EITHER STATE OR LOCAL) OF NFPA 25 AS THE APPLICABLE STANDARD FOR THE INSPECTION, TESTING AND MAINTENANCE OF WATER BASED FIRE PROTECTION SYSTEMS. PER SECTION 4.1, THE RESPONSIBILITY FOR PROPERLY MAINTAINING A WATER BASED FIRE PROTECTION SYSTEM SHALL BE THAT OF THE OWNER. IF THE BUILDING OWNER HAS NOT RECEIVED A COPY OF THIS PAMPHLET AND/OR IS NOT FAMILIAR WITH THE OPERATION AND MAINTENANCE OF THIS SYSTEM, PLEASE CONTACT THE NEAREST OFFICE OF WAYNE AUTOMATIC FIRE SPRINKLERS, INC.

CPVC COMPATIBILITY NOTICE

CPVC FIRE SPRINKLER PIPING SYSTEMS HAVE BEEN USED SUCCESSFULLY FOR MORE THAN 20 YEARS IN NEW CONSTRUCTION, RE-PIPE AND REPAIR. CPVC PRODUCTS ARE IDEALLY SUITED FOR THESE APPLICATIONS DUE TO THEIR OUTSTANDING CORROSION RESISTANCE. OCCASIONALLY, HOWEVER, CPVC CAN BE DAMAGED BY CONTACT WITH CHEMICALS FOUND IN SOME CONSTRUCTION MATERIALS (IE: SOME WIRES, FLUX, PETROLEUM BASED PRODUCTS, ETC.) AND ANCILLARY PRODUCTS SUCH AS THREAD SEALANTS, LEAK DETECTORS, FIRESTOPS, MOLD INHIBITORS AND CLEANERS, ETC. ANY PRODUCT THAT COMES IN CONTACT WITH CPVC SPRINKLER PIPE MUST BE EVALUATED. FOR A LIST OF COMPATIBLE PRODUCTS, PLEASE REVIEW HTTP://PARTS.SPEARSMFG.COM/CPL.ASPX

GRAPHICS ELEMENTS NOTE

FIRE SPRINKLER CONSTRUCTION DRAWINGS AND SHOP DRAWINGS MAY INCLUDE BACKGROUND DRAWINGS OR GRAPHICS BORROWED FROM THE ARCHITECTURAL, CIVIL, STRUCTURAL, OR MEP DRAWINGS. THESE REFERENCE BACKGROUND ELEMENTS ARE FOR GENERAL INFORMATION OR CONTEXT ONLY AND THE FIRE SPRINKLER ENGINEER DOES NOT ACCEPT ANY RESPONSIBILITY FOR THESE ELEMENTS. THE FIRE SPRINKLER ENGINEER IS ONLY RESPONSIBLE FOR THOSE PORTIONS OF THE FIRE SPRINKLER DRAWINGS DEPICTING FIRE SPRINKLER SCOPES OF WORK. REFER TO APPROVED ARCHITECTURAL, STRUCTURAL, MEP OR CIVIL DRAWINGS FOR AUTHORITATIVE EXPRESSIONS OF BACKGROUND INFORMATION THAT MAY BE UTILIZED IN FIRE SPRINKLER DRAWINGS OR DETAILS

WATER SUPPLY INFORMATION

	ACTUAL	DROUGHT OR EXTRAPOLATED (AS REQ'D BY AHJ)	FIRE PUMP	-
			SIZE: GPM @ PSI	-
STATIC PRESSURE	80	-	HYDRANT ELEV.	164 (-5'-0")
RESIDUAL PRESSURE	68	-	DATE OF TEST	3-20-2024
FLOW IN GPM	1060	-	TIME OF TEST	8:30 AM
PITOT READING	40		NUMBER OF PORTS FLOWED	1
TEST PROVIDED BY	Lillington Fire Department			
HYDRANT LOCATION OR NUMBER	Test Hydrant: 4311 224 - Flow Hydrant: 4311 225			

DESIGN CRITERIA

SYSTEM / DESIGN AREA #	-			
HAZARD CLASS	-			
# OF SPRINKLERS IN DESIGN AREA	-			
MINIMUM DENSITY	-			
DESIGN AREA S.F.	-			
PSI REQ'D @ BASR	-			
GPM REQ'D @ BASR	-			
PSI REQ'D @ TEST	-			
GPM REQ'D @ TEST	-			
ELEVATION @ HIGHEST SPRINKLER	-			
HOSE INSIDE/OUTSIDE	-			
DOMESTIC DEMAND	-			

SPRINKLERS SPACING

SYMBOL	MAXIMUM	MINIMUM	COMMENTS

SPRINKLERS

QUANTITY

SYMB.	1ST	2ND	3RD	4TH	SIN	SIZE	K	TEMP	MODEL

TOTAL PER FLOOR
TOTAL THIS SHEET

DATE	SUBMITTALS	BY
3-16-2021	QA Review	DH
4-5-2024	Permit	DH

NO.	DATE	REVISIONS	BY
1	XX/XX/XX	--	-

WAYNE Automatic Fire Sprinklers, Inc.

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3226 CHERRY PALM DRIVE
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CONCORD, NC
4370 MOTORSPORT DRIVE
CONCORD, NC 28027-8977
PHONE: (704) 782-3032
FAX: (704) 795-6838

STATE LICENSES:
NC SPRINKLER: 29745
NC ALARM: 29222 SP LV
SC SPRINKLER: 1116
SC ALARM: 3385

Title Block V5.02

PROJECT:
JUNIPER VILLAGE
PARKER LANE
LILLINGTON, NORTH CAROLINA

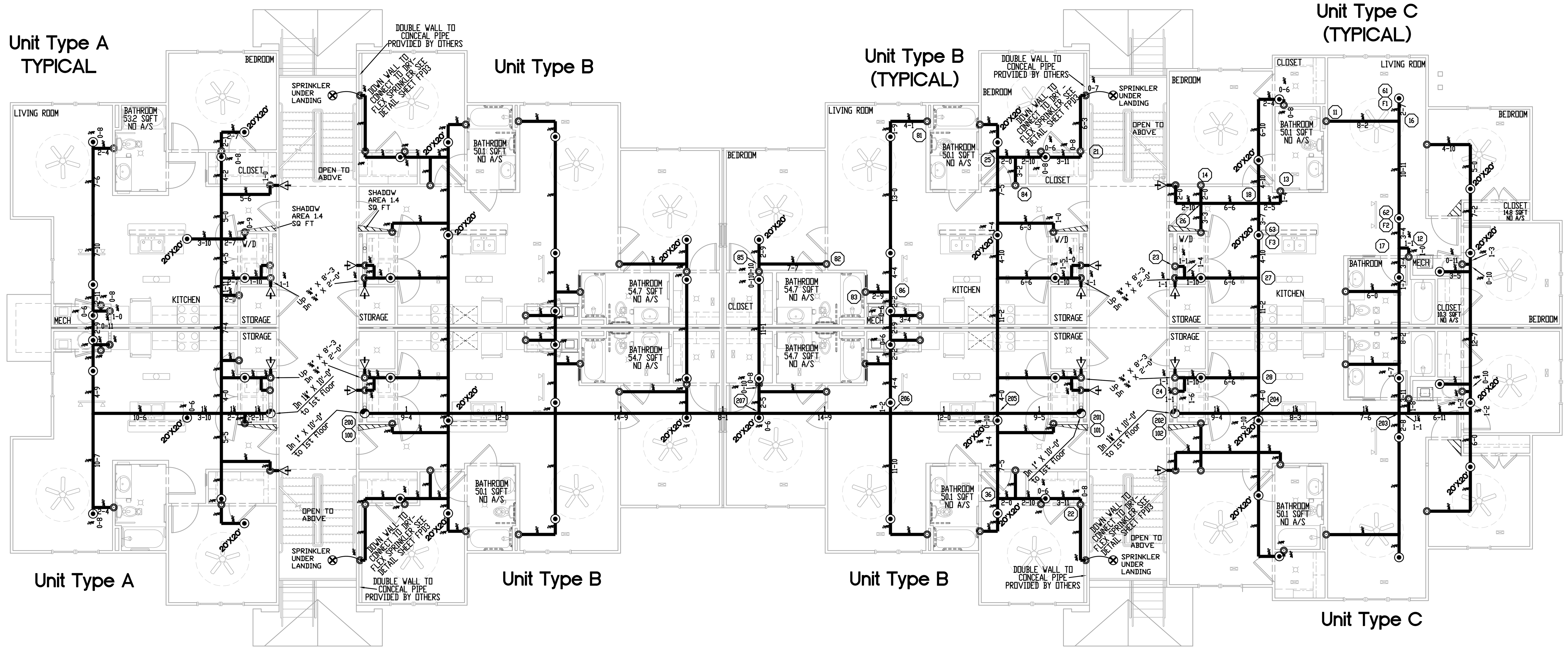
CONTRACT WITH:
Wynnefield Properties
5614 Riverdale Road
Jamestown, NC 27282

SHEET TITLE:	FIRE SPRINKLER SITE PLAN
DRAWN BY:	Donald Hawkins
TOTAL A/S:	938
DATE:	3-5-2021
AHJ:	Harnett County
CONTRACT #	102001

CENTER OF TILE JOB? YES ☐ NO ☑ CENTER ON FIXTURES JOB? YES ☐ NO ☑

SHEET #
FPS 1.1

CONSTRUCTION TYPE: V-B
OCCUPANCY: R-2

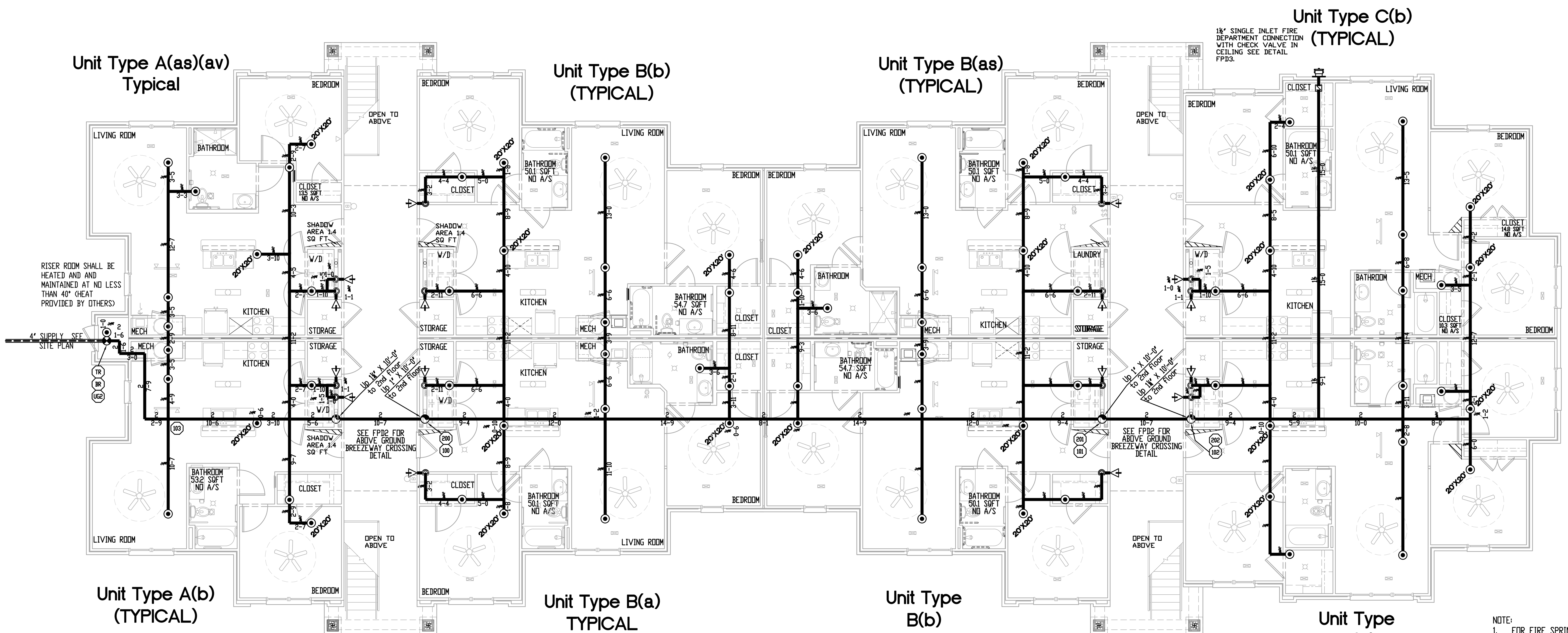


BUILDING 200 - 2nd FLOOR FIRE SPRINKLER LAYOUT

9,167 Sq Ft

SCALE 1/8" = 1'-0"

DESIGN AREA 2.3
2nd FLOOR UNIT C, COMMON AREA COMPARTMENT DESIGN PER NFPA 13R, SECTION 7.1.1
F1 16'w X 16't SPACING 16 GPM @ 13.3 PSI
F2 16'w X 16't SPACING 16 GPM @ 13.3
F3 20' X 20' SPACING 20 GPM @ 16.7
DENSITY .05
DOMESTIC DEMAND - 103 GPM R00947N



BUILDING 200 - 1ST FLOOR FIRE SPRINKLER LAYOUT

9,507 Sq Ft

SCALE 1/8" = 1'-0"

4' 2' 1' 0 8' 16'
SCALE 1/8" = 1'

NOTE:
1. FOR FIRE SPRINKLER RISER DETAIL SEE SHEET FPD3.
2. PIPE LENGTHS FOR TYPICAL UNITS AND UNITS WITHOUT HYDRAULIC CALCULATION POINTS HAVE BEEN OMITTED FOR CLARITY.
3. A 1 HOUR FIRE WALL IS PROVIDED BY OTHERS BETWEEN DWELLING UNITS.
4. CEILINGS IN UNITS ARE 8'-0" AFF UNLESS NOTED OTHERWISE.
5. THE RISER ROOM SHALL BE HEATED AND MAINTAINED AT NO LESS THAN 40°. (HEAT IS TO BE PROVIDED BY OTHERS)
6. HORIZONTAL SIDEWALL SPRINKLERS ON THE TOP FLOOR ARE SUPPLIED BY AN ¾" X 8'-3" SECTION OF CPVC PIPE.

N.I.C.E.T. NICET CERTIFIED
Christopher A. Williams
NICET Level 3
Certification Number 115724
North Carolina Licence # 29745

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WATER SUPPLY INFORMATION

	ACTUAL	DROUGHT OR EXTRAPOLATED (AS REQ'D BY AHJ)		
			FIRE PUMP	-
			SIZE: GPM @ PSI	-
STATIC PRESSURE	80	-	HYDRANT ELEV.	163 (-3'-0")
RESIDUAL PRESSURE	68	-	DATE OF TEST	3-20-2024
FLOW IN GPM	1060	-	TIME OF TEST	8:30 AM
PITOT READING	40		NUMBER OF PORTS FLOWED	1
TEST PROVIDED BY	Lillington Fire Department			
HYDRANT LOCATION OR NUMBER	Parker Lane and North Main Street - Hydrant #224			

DESIGN CRITERIA

SYSTEM / DESIGN AREA #	2.3			
HAZARD CLASS	NFPA 13R			
# OF SPRINKLERS IN DESIGN AREA	3			
MINIMUM DENSITY	.05			
DESIGN AREA S.F.	3 SPRINKLERS			
PSI REQ'D @ BASR	39.3			
GPM REQ'D @ BASR	49.9			
PSI REQ'D @ TEST	51.1			
GPM REQ'D @ TEST	152.9			
ELEVATION @ HIGHEST SPRINKLER	17'-9"			
HOSE INSIDE/OUTSIDE	-			
DOMESTIC DEMAND	103			

SPRINKLERS SPACING

SYMBOL	MAXIMUM	MINIMUM	COMMENTS
◉	18' x 18' UNO	8' BETWEEN SPRINKLERS	9'-0" MAX. SPACING OFF WALLS U.N.O DEFLECTOR TO BE INSTALLED 1" - 4" BELOW CEILING
⊗	225 SQ FT	6' BETWEEN SPRINKLERS	7'-6" MAX. SPACING OFF WALLS U.N.O DEFLECTOR TO BE INSTALLED 1" - 12" BELOW CEILING
◁	16' x 16' UNO	8' BETWEEN SPRINKLERS	8'-0" MAX. SPACING OFF WALLS U.N.O DEFLECTOR TO BE INSTALLED 4" - 6" BELOW CEILING
◁+	196 SQ FT	6' BETWEEN SPRINKLERS	7'-0" MAX. SPACING OFF WALLS U.N.O DEFLECTOR TO BE INSTALLED 4" - 6" BELOW CEILING

SPRINKLERS

SYMB.	QUANTITY 1ST	2ND	3RD	4TH	SIN	SIZE	K	TEMP	MODEL
◉	74	70	4	-	R3516	1/2"	4.9	175°	RELIABLE MODEL F1 Res 49 WHITE RESIDENTIAL PENDENT WITH WHITE SEMI-RECESSED ESCUTCHEON
⊗	-	4	-	-	V3506	1"	5.6	200°	VICTAULIC MODEL V3506 WHITE QUICK RESPONSE PENDENT SPRINKLER WITH WHITE SEMI-RECESSED ESCUTCHEON
◁	-	-	74	-	R3531	1/2"	4.4	175°	RELIABLE MODEL F1 Res 44 RESIDENTIAL HORIZ. SIDEWALL WITH WHITE SEMI-RECESSED ESCUTCHEON.
◁+	16	16	16	-	R5714	1"	5.6	200°	RELIABLE MODEL F3QR WHITE QUICK RESPONSE DRY HORIZONTAL SIDEWALL SPRINKLER WITH WHITE SLEEVE AND SKIRT ESCUTCHEON. 12" LONG
	90	90	94	-	TOTAL PER FLOOR				
	274				TOTAL THIS BUILDING				

DATE	SUBMITTALS	BY
3-16-2021	QA Review	DH
2-1-2023	Permit	DH

NO.	DATE	REVISIONS	BY
1	XX/XX/XX	--	-

WAYNE Automatic Fire Sprinklers, Inc.

Title Block V.5.0.2

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FAX: (704) 795-6838

STATE LICENSES:
NC SPRINKLER: 29745
NC ALARM: 29222 SP LV
SC SPRINKLER: 1116
SC ALARM: 3385

PROJECT:
JUNIPER VILLAGE
PARKER LANE
LILLINGTON, NORTH CAROLINA

CONTRACT WITH:
Wynnefield Properties
5614 Riverdale Road
Jamestown, NC 27282

SHEET TITLE:	Building 200 1st & 2nd Floor Fire Sprinkler Plan
DRAWN BY:	Donald Hawkins
TOTAL A/S:	938
DATE:	3-5-2021
AHJ:	Town of Lillington
CONTRACT #	102001

CENTER OF TILE JOB? ☐ YES ☑ NO CENTER ON FIXTURES JOB? ☐ YES ☑ NO

SHEET # FP2.1

CONSTRUCTION TYPE: V-B

OCCUPANCY: R-2

UNIT A			
ITEM	NUMBER OF ITEMS	FIXTURE LOAD PER ITEM	TOTAL
BATH GROUPS W/ FLUSH TANK	1	6	6
BATHTUB OR SHOWER STALL	–	2	0
KITCHEN SINKS	1	2	2
LAVATORY	–	1	0
WATER CLOSET W/ FLUSH TANK	–	3	0
DISHWASHERS	1	1	1
WASHING MACHINES	1	2	2
TOTAL FIXTURE LOAD PER UNIT			11

UNIT B, B2 and C			
ITEM	NUMBER OF ITEMS	FIXTURE LOAD PER ITEM	TOTAL
BATH GROUPS W/ FLUSH TANK	2	6	12
BATHTUB OR SHOWER STALL	–	2	0
KITCHEN SINKS	1	2	2
LAVATORY	–	1	0
WATER CLOSET W/ FLUSH TANK	–	3	0
DISHWASHERS	1	1	1
WASHING MACHINES	1	2	2
TOTAL FIXTURE LOAD PER UNIT			17

	UNIT A	UNIT B & C
TOTAL FIXTURE LOAD PER UNIT	11	17
TOTAL UNITS PER BUILDING	6	18
TOTAL LOAD UNITS PER UNIT	66	306
TOTAL UNIT DEMAND PER BUILDING	372	
TOTAL DOMESTIC DEMAND PER BLDG IN GPM INTERPOLATION USED	103	

TABLES A.9.6 (a)/(b) DOMESTIC DEMAND

WAYNE Automatic Fire Sprinklers, Inc.

SCALE: NONE

00333N

DESIGN AREA 2.4
3rd FLOOR UNIT B COMMON AREA COMPARTMENT DESIGN PER NFPA 13R, SECTION 7.1.1

- H1 16'w X 16't SPACING 16 GPM @ 13.3 PSI
- H2 16'w X 16't SPACING 16 GPM @ 13.3
- H3 16'w X 16't SPACING 16 GPM @ 13.3
- H4 16'w X 16't SPACING 16 GPM @ 13.3

DENSITY .05

DOMESTIC DEMAND - 103 GPM R00947N

DESIGN AREA 2.2
3rd FLOOR OUTSIDE DWELLING UNIT DESIGN PER NFPA 13R, SECTION 7.2

- B1 122 FT² .10 DENSITY @ 7 PSI
- B2 122 FT² .10 DENSITY @ 7 PSI
- B3 122 FT² .10 DENSITY @ 7 PSI
- B4 122 FT² .10 DENSITY @ 7 PSI

DENSITY .10

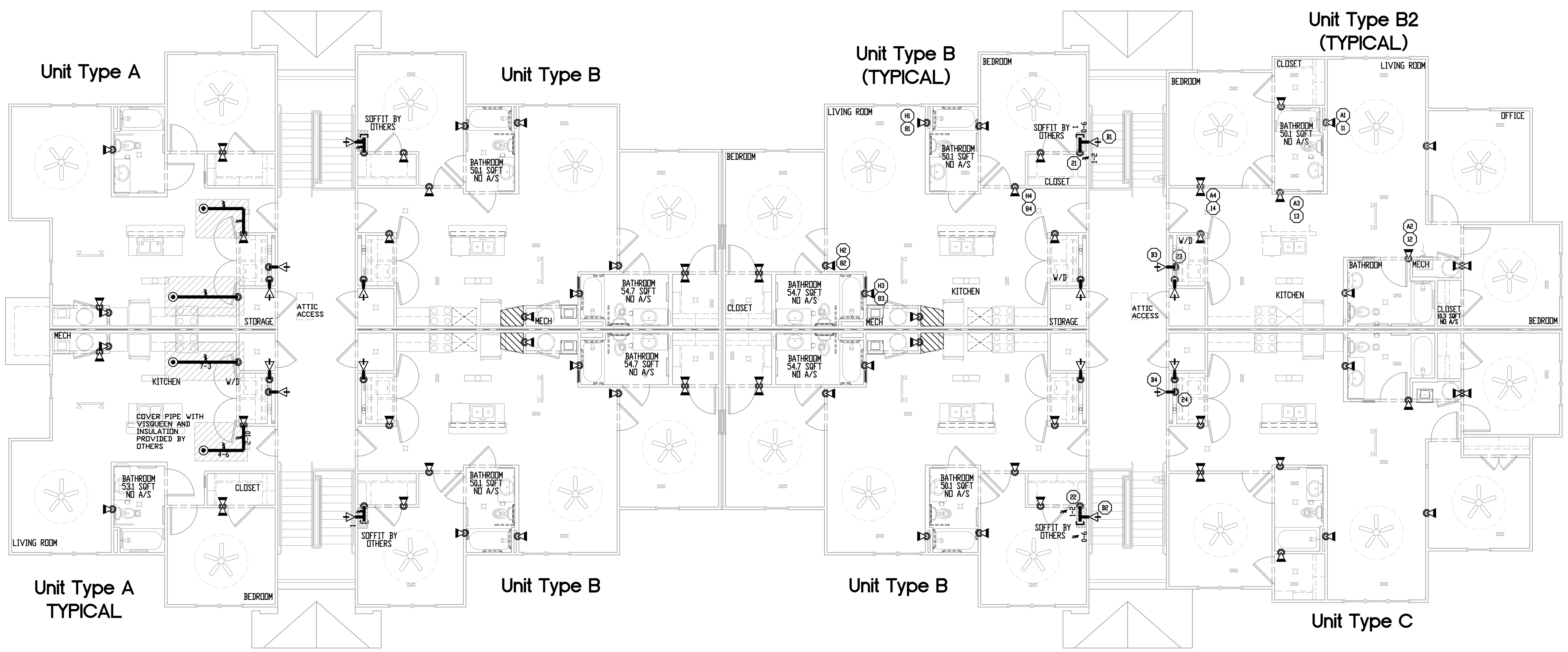
DOMESTIC DEMAND - 103 GPM R00948N

DESIGN AREA 2.1
3rd FLOOR UNIT B2 COMMON AREA COMPARTMENT DESIGN PER NFPA 13R, SECTION 7.1.1

- A1 16'w X 16't SPACING 16 GPM @ 13.3 PSI
- A2 16'w X 16't SPACING 16 GPM @ 13.3
- A3 16'w X 16't SPACING 16 GPM @ 13.3
- A4 16'w X 16't SPACING 16 GPM @ 13.3

DENSITY .05

DOMESTIC DEMAND - 103 GPM R00947N



BUILDING 200 - 3rd FLOOR FIRE SPRINKLER LAYOUT

8,737 Sq Ft

SCALE 1/8" = 1'-0"

SCALE 1/8" = 1'

NOTE:
1. FOR FIRE SPRINKLER RISER DETAIL SEE SHEET FPD3.
2. PIPE LENGTHS FOR TYPICAL UNITS AND UNITS WITHOUT HYDRAULIC CALCULATION POINTS HAVE BEEN OMITTED FOR CLARITY.
3. A 1 HOUR FIRE WALL IS PROVIDED BY OTHERS BETWEEN DWELLING UNITS.
4. CEILINGS IN UNITS ARE 8'-0" AFF UNLESS NOTED OTHERWISE.
5. THE RISER ROOM SHALL BE HEATED AND MAINTAINED AT NO LESS THAN 40°. (HEAT IS TO BE PROVIDED BY OTHERS)
6. HORIZONTAL SIDEWALL SPRINKLERS ON THE TOP FLOOR ARE SUPPLIED BY AN ¾" X 8'-3" SECTION OF CPVC PIPE.

N.I.C.E.T. NICET CERTIFIED

Christopher A. Williams
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WATER SUPPLY INFORMATION

	ACTUAL	DROUGHT OR EXTRAPOLATED (AS REQ'D BY AHJ)		
STATIC PRESSURE	80	-	FIRE PUMP	-
RESIDUAL PRESSURE	68	-	SIZE: GPM @ PSI	-
FLOW IN GPM	1060	-	HYDRANT ELEV.	163 (-3'-0")
			DATE OF TEST	3-20-2024
			TIME OF TEST	8:30 AM
PITOT READING	40		NUMBER OF PORTS FLOWED	1
TEST PROVIDED BY	Lillington Fire Department			
HYDRANT LOCATION OR NUMBER	Parker Lane and North Main Street - Hydrant #224			

DESIGN CRITERIA

SYSTEM / DESIGN AREA #	2.1	2.2	2.4	
HAZARD CLASS	NFPA 13R	NFPA 13R	NFPA 13R	
# OF SPRINKLERS IN DESIGN AREA	4	4	4	
MINIMUM DENSITY	.05	.05	.05	
DESIGN AREA S.F.	4 SPRINKLERS	4 SPRINKLERS	4 SPRINKLERS	
PSI REQ'D @ BASR	57.2	34.7	54.2	
GPM REQ'D @ BASR	65.7	62.3	71.8	
PSI REQ'D @ TEST	68.6	46.2	65.5	
GPM REQ'D @ TEST	168.7	165.3	174.8	
ELEVATION @ HIGHEST SPRINKLER	27'-6"	27'-6"	27'-6"	
HOSE INSIDE/OUTSIDE	-	-	-	
DOMESTIC DEMAND	103	103	103	

SPRINKLERS SPACING

SYMBOL	MAXIMUM	MINIMUM	COMMENTS
⦿	18' x 18' UNO	8' BETWEEN SPRINKLERS	9'-0" MAX. SPACING OFF WALLS U.N.O DEFLECTOR TO BE INSTALLED 1" - 4" BELOW CEILING
⊗	225 SQ FT	6' BETWEEN SPRINKLERS	7'-6" MAX. SPACING OFF WALLS U.N.O DEFLECTOR TO BE INSTALLED 1" - 12" BELOW CEILING
◁	16' x 16' UNO	8' BETWEEN SPRINKLERS	8'-0" MAX. SPACING OFF WALLS U.N.O DEFLECTOR TO BE INSTALLED 4" - 6" BELOW CEILING
◁+	196 SQ FT	6' BETWEEN SPRINKLERS	7'-0" MAX. SPACING OFF WALLS U.N.O DEFLECTOR TO BE INSTALLED 4" - 6" BELOW CEILING

SPRINKLERS

SYMB.	QUANTITY 1ST	2ND	3RD	4TH	SIN	SIZE	K	TEMP	MODEL
⦿	74	70	4	-	R3516	1/2"	4.9	175°	RELIABLE MODEL F1 Res 49 WHITE RESIDENTIAL PENDENT WITH WHITE SEMI-RECESSED ESCUTCHEON
⊗	-	4	-	-	V3506	1"	5.6	200°	VICTAULIC MODEL V3506 WHITE QUICK RESPONSE FLEXIBLE DRY PENDENT SPRINKLER WITH WHITE ESCUTCHEON
◁	-	-	74	-	R3531	1/2"	4.4	175°	RELIABLE MODEL F1 Res 44 RESIDENTIAL HORIZ. SIDEWALL WITH WHITE SEMI-RECESSED ESCUTCHEON.
◁+	16	16	18	-	R5714	1"	5.6	200°	RELIABLE MODEL F3QR WHITE QUICK RESPONSE DRY HORIZONTAL SIDEWALL SPRINKLER WITH WHITE SLEEVE AND SKIRT ESCUTCHEON. 12" LONG
	90	90	96	-	TOTAL PER FLOOR				
	276				TOTAL THIS BUILDING				

DATE	SUBMITTALS	BY
3-16-2021	QA Review	DH
2-1-2023	Permit	DH

NO.	DATE	REVISIONS	BY
1	XX/XX/XX	--	-

WAYNE Automatic Fire Sprinklers, Inc.

Title Block V.5.0.2

MAIN OFFICE - ORLANDO, FLORIDA
222 CAPITOL COURT OCOEE, FLORIDA 34761
PHONE: (407) 656-3030 FAX: (407) 656-8026

JACKSONVILLE, FL	TAMPA, FL	DEERFIELD BEACH, FL
11326 DISTRIBUTION AVE. WEST, JACKSONVILLE, FL 32256-2745, PHONE: (904) 268-3030, FAX: (904) 268-0724	3226 CHERRY PALM DRIVE, TAMPA, FL 33619-8337, PHONE: (813) 630-0303, FAX: (813) 630-0312	1500 S. POWERLINE RD SUITE A, DEERFIELD BEACH, FL 33442, PHONE: (954) 917-3030, FAX: (954) 917-9424
FT. MYERS, FL 4683 LAREDO AVE., FT. MYERS, FL 33905-4924, PHONE: (239) 433-3030, FAX: (239) 433-3263	☑ **CONCORD, NC** 4370 MOTORSPORT DRIVE, CONCORD, NC 28027-8977, PHONE: (704) 782-3032, FAX: (704) 795-6838	STATE LICENSES: NC SPRINKLER: 29745, NC ALARM: 29222 SP LV, SC SPRINKLER: 1116, SC ALARM: 3385

PROJECT:
JUNIPER VILLAGE
PARKER LANE
LILLINGTON, NORTH CAROLINA

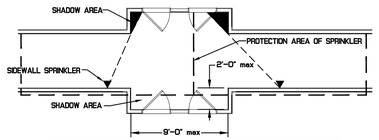
CONTRACT WITH:
Wynnefield Properties
5614 Riverdale Road
Jamestown, NC 27282

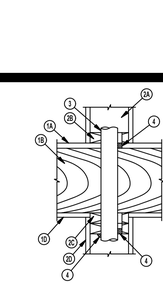
SHEET TITLE:	Building 200 3rd Floor Fire Sprinkler Plan
DRAWN BY:	Donald Hawkins
TOTAL A/S:	938
DATE:	3-5-2021
AHJ:	Town of Lillington
CONTRACT #	102001

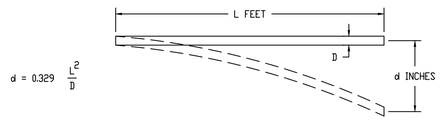
CENTER OF TILE JOB? ☐ YES ☑ NO CENTER ON FIXTURES JOB? ☐ YES ☑ NO

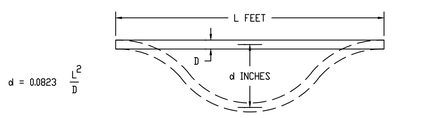
SHEET # **FP2.2**

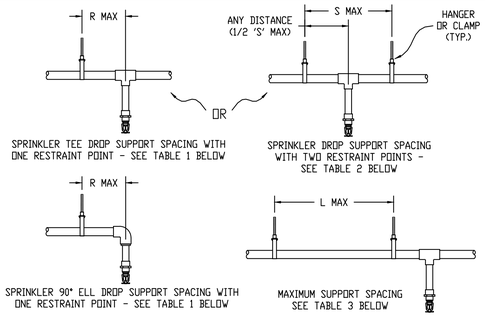
CONSTRUCTION TYPE: V-B
OCCUPANCY: R-2

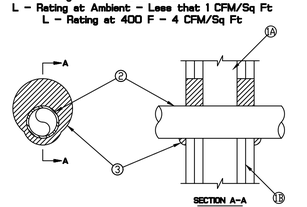












- ✱ DESIGN AND INSTALLATION TO BE IN ACCORDANCE WITH 2013 EDITION OF NFPA 13R AND 2013 EDITION OF NFPA 13 WHERE DESIGNATED BY NFPA 13R.
- ✱ DESIGN AND INSTALLATION TO BE IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND STATE CODES.
- ✱ ALL PIPE AND FITTINGS USED ON THIS PROJECT TO BE IN ACCORDANCE WITH APPLICABLE CODES AND WAFS STANDARDS. SEE PIPE AND FITTINGS GENERAL NOTES (WAFS DETAIL #00593N).
- ✱ ALL HANGERS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH NFPA 13 AND THEIR LISTING.
- ✱ ALL SEISMIC BRACING, IF REQUIRED, SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH NFPA 13 AND THEIR LISTING.
- ✱ ALL PENETRATIONS THROUGH RATED BUILDING ASSEMBLIES SHALL BE SEALED WITH FIRE CAULK IN ACCORDANCE WITH DETAILS PROVIDED. WAFS POLICY IS TO USE HILTI FS ONE OR STI LCI.
- ✱ UNDERGROUND MAINS AND LEAD-INS SHALL BE FLUSHED AND SIGNED TEST CERTIFICATES PROVIDED BEFORE A CONNECTION IS MADE TO THE SPRINKLER SYSTEM.
- ✱ ALL PIPING SHALL BE INSPECTED AND APPROVED BY PROPER AUTHORITIES PRIOR TO COVERING WITH DRYWALL. COPIES OF SIGNED TEST CERTIFICATES ARE TO BE FORWARDED TO THE PROPER RECIPIENTS.
- ✱ ALL SYSTEMS SHALL BE TESTED AT 200 PSI FOR 2 HOURS.
- ✱ ALL SOFFITS REQUIRED TO CONCEAL SPRINKLER PIPING ARE BY OTHERS.
- ✱ ALL WIRING OF DEVICES (FLOW SWITCHES, TAMPER SWITCHES, COMPRESSORS, ETC) IS BY OTHERS.
- ✱ CONNECTION OF SPRINKLER DEVICES TO THE BUILDING ALARM OR MONITORING SYSTEM IS BY OTHERS.
- ✱ ALL PAINTING OF PIPE AS REQUIRED IS BY OTHERS.
- ✱ ALL INSULATION REQUIRED FOR FREEZE PROTECTION OF SPRINKLER PIPING IS BY OTHERS.
- ✱ HEATING OF ROOMS TO MAINTAIN TEMPERATURES OF 40 DEGREES OR GREATER IS BY OTHERS.
- ✱ FIRE DEPARTMENT CONNECTIONS SHALL BE LOCATED NOT LESS THAN 18" AND NOT MORE THAN 48" ABOVE THE LEVEL OF THE ADJACENT GRADE.
- ✱ SPRINKLERS SHALL NOT BE INSTALLED PRIOR TO THE FITTINGS BEING CEMENTED IN PLACE.
- ✱ ALL SPRINKLERS IN DWELLING UNITS SHALL BE UL LISTED OR FM APPROVED RESIDENTIAL SPRINKLERS.
- ✱ ALL SPRINKLERS OUTSIDE OF DWELLING UNITS SHALL BE QUICK RESPONSE. RESIDENTIAL SPRINKLERS SHALL BE ALLOWED AS PER NFPA 13R SECTION 6.4.7.
- ✱ SPARE SPRINKLERS OF EACH TYPE, TEMPERATURE RATING AND ORIFICE SIZE AND APPROPRIATE WRENCH OR WRENCHES SHALL BE LEFT ON THE PREMISES. ON A SINGLE PROPERTY UNDER THE SAME OWNERSHIP, SPRINKLERS WILL BE PROVIDED IN A SINGLE LOCATION.
- ✱ REFER TO SPACING NOTES ON PLANS FOR MAXIMUM CALCULATED SPACING ALLOWANCES.
- ✱ SPRINKLERS SHALL BE PROVIDED IN ALL OPEN ENDED CORRIDORS THAT ARE NOT SEPARATED FROM THE EXIT STAIRS PER IBC/NCBC/FBC 903.3.1.2.2.
- ✱ SPRINKLERS SHALL BE INSTALLED IN ALL AREAS EXCEPT AS FOLLOWS:
  - o BATHROOMS WHERE THE AREA DOES NOT EXCEED 55 SQ FT (INCLUDING TUBS AND SHOWERS).
  - o CLOTHES CLOSETS, LINEN CLOSETS AND PANTRIES WITHIN THE DWELLING UNITS THAT DO NOT EXCEED 24 SQUARE FEET, THE LEAST DIMENSION DOES NOT EXCEED 3 FEET, AND THE WALLS AND CEILINGS ARE SURFACED WITH NONCOMBUSTIBLE OR LIMITED-COMBUSTIBLE MATERIALS AS DEFINED BY NFPA 220, STANDARD ON TYPES OF BUILDING CONSTRUCTION.
  - o ANY PORCHES, BALCONIES (EXCEPT THOSE OF TYPE V CONSTRUCTION), CORRIDORS, AND STAIRS THAT ARE OPEN AND ATTACHED.
  - o ATTICS, PENTHOUSE EQUIPMENT ROOMS, ELEVATOR MACHINE ROOMS, CONCEALED SPACES DEDICATED EXCLUSIVELY TO AND CONTAINING ONLY DWELLING UNIT VENTILATION EQUIPMENT, CRAWL SPACES, FLOOR/CEILING SPACES, NONCOMBUSTIBLE ELEVATOR SHAFTS WHERE THE ELEVATOR CARS COMPLY WITH ANSI A17.1, AND OTHER CONCEALED SPACES THAT ARE NOT USED OR INTENDED FOR LIVING PURPOSES OR STORAGE AND DO NOT CONTAIN FUEL-FIRED EQUIPMENT.
  - o CLOSETS ON EXTERIOR BALCONIES AND EXTERIOR BREEZEWAYS/CORRIDORS, REGARDLESS OF SIZE OR CONTENTS, AS LONG AS THERE ARE NO DOORS OR UNPROTECTED PENETRATIONS FROM THE CLOSET DIRECTLY INTO THE DWELLING UNIT.
  - o CEILING POCKETS THAT MEET THE FOLLOWING REQUIREMENTS:
    1. THE TOTAL VOLUME OF THE UNPROTECTED CEILING POCKET DOES NOTE EXCEED 100 CU. FT.
    2. THE DEPTH OF THE UNPROTECTED CEILING POCKET DOES NOT EXCEED 12 IN.
    3. THE ENTIRE FLOOR OF THE UNPROTECTED CEILING POCKET IS PROTECTED BY THE SPRINKLERS AT THE LOWER CEILING ELEVATIONS.
    4. THE INTERIOR FINISH OF THE UNPROTECTED CEILING POCKET IS NONCOMBUSTIBLE OR LIMITED-COMBUSTIBLE CONSTRUCTION.
- ✱ WAFS TO PROVIDE ALL REQUIRED SIGNAGE PER NFPA 13R INCLUDING BUT NOT LIMITED TO VALVES, AND HYDRAULIC PLACARDS.

NFPA 13R 2013 GENERAL NOTES

WAYNE Automatic Fire Sprinklers, Inc.

SCALE: NONE

01002N

ALL MATERIAL APPLICABLE TO THIS PROJECT WILL BE INDICATED WITH A (☑)

- ☑ ALL PLASTIC PIPE ¾" THROUGH 2½" SHALL BE UL LISTED OR FM APPROVED CPVC MANUFACTURED IN ACCORDANCE WITH ASTM F-442.
- ☑ ALL PLASTIC FITTINGS SHALL BE UL LISTED OR FM APPROVED CPVC MANUFACTURED IN ACCORDANCE WITH ASTM F438, ASTM F439 OR ASTM F1970.
- ☑ ALL CPVC PIPE AND FITTINGS SHALL BE ASSEMBLED USING 'ONE STEP' 500 CEMENT.
- ☑ CPVC PIPE SHALL BE ALLOWED TO BE USED IN ORDINARY HAZARD ROOMS OF 400 SQUARE FEET OR LESS OF OTHERWISE LIGHT HAZARD OCCUPANCIES (NFPA 13 SECTION 6.3.6.2 OR NFPA 13R SECTION 5.2.2.3).
- ☐ ALL 1" TO 2" THREADED BLACK STEEL PIPE SHALL BE UL LISTED/FM APPROVED AND MANUFACTURED IN ACCORDANCE WITH ASTM A-135 OR A-795. ACCEPTABLE PIPE BRANDS ARE WHEATLAND 'MEGATHREAD', ALLIED 'DYNATHREAD', BULL MOOSE TUBE 'EDDYTHREAD' AND WELDED TUBE-BERKELEY 'STEADY-THREAD'. ALL PIPE SHALL BE CPVC COMPATIBLE.
- ☑ ALL 1" TO 2" THREADED GALVANIZED PIPE WILL BE SCHEDULE 40 HOT DIPPED GALVANIZED MANUFACTURED IN ACCORDANCE WITH ASTM A-795 OR ASTM A-53.
- ☐ ALL 1" TO 2" THREADED BLACK STEEL PIPE SHALL BE SCHEDULE 40 UL LISTED/FM APPROVED AND MANUFACTURED IN ACCORDANCE WITH ASTM A-795. ACCEPTABLE PIPE MANUFACTURERS ARE WHEATLAND, ALLIED, BULL MOOSE TUBE AND WELDED TUBE-BERKELEY. ALL PIPE SHALL BE CPVC COMPATIBLE.
- ☑ ALL 1¼" TO 4" GROOVED BLACK STEEL PIPE SHALL BE UL LISTED/FM APPROVED AND MANUFACTURED IN ACCORDANCE WITH ASTM A795. ACCEPTABLE BRANDS ARE BULL MOOSE 'EDDYFLOW', WHEATLAND 'MEGA-FLOW', ALLIED 'DYNA-FLOW' AND WELDED TUBE-BERKELEY 'STEADY-FLOW'. ALL PIPE SHALL BE CPVC COMPATIBLE.
- ☐ ALL 1¼" TO 4" GROOVED BLACK STEEL PIPE SHALL BE SCHEDULE 10, UL LISTED/FM APPROVED AND MANUFACTURED IN ACCORDANCE WITH ASTM A-795. ACCEPTABLE MANUFACTURERS ARE BULL MOOSE, WHEATLAND, ALLIED AND WELDED TUBE-BERKELEY. ALL PIPE SHALL BE CPVC COMPATIBLE.
- ☐ ALL GROOVED STEEL PIPE 6" AND LARGER SHALL BE UL LISTED/FM APPROVED SCHEDULE 10 AND MANUFACTURED IN ACCORDANCE WITH ASTM A-135.
- ☐ ALL GROOVED STEEL PIPE 1¼" AND LARGER SHALL BE SCHEDULE 10 HOT DIPPED GALVANIZED AND MANUFACTURED IN ACCORDANCE WITH ASTM A-795.
- ☑ ALL STEEL PIPE SHALL HAVE A CORROSION RESISTANCE RATIO (CRR) OF NOT LESS THAN 1.0 PER WAFS STANDARDS.
- ☐ ALL BLACK THREADED FITTINGS SHALL BE DUCTILE IRON CLASS 150 OR CLASS 300 ANSI B16.3, CAST IRON CLASS 125 OR CLASS 250 ANSI B16.4 OR MALLEABLE IRON CLASS 150 OR CLASS 300 ANSI B16.3.
- ☑ ALL GALVANIZED THREADED FITTINGS SHALL BE MALLEABLE IRON CLASS 150 OR CLASS 300 ANSI B16.3 WITH GALVANIZED COATING IN ACCORDANCE WITH ASTM A-153.
- ☐ ALL WELDED OUTLETS SHALL BE UL LISTED OR FM APPROVED AND MANUFACTURED IN ACCORDANCE WITH ANSI B16.11.
- ☑ GROOVED FITTINGS SHALL BE UL LISTED OR FM APPROVED AND MANUFACTURED IN ACCORDANCE WITH ASTM A-536 FOR DUCTILE IRON OR ASTM A-47 FOR MALLEABLE IRON.
- ☐ ALL GALVANIZED GROOVED FITTINGS SHALL BE UL LISTED OR FM APPROVED AND MANUFACTURED IN ACCORDANCE WITH ASTM A-536 FOR DUCTILE IRON OR ASTM A-47 FOR MALLEABLE IRON. GALVANIZED COATING SHALL BE IN ACCORDANCE WITH ASTM A-153.
- ☑ ALL GROOVED STEEL PIPE SHALL BE ROLL GROOVED PER PIPE MANUFACTURER REQUIREMENTS.

PIPE AND FITTINGS GENERAL NOTES

WAYNE Automatic Fire Sprinklers, Inc.

SCALE: NONE

00859N

IN REGARDS TO OBSTRUCTIONS AND SHADOWED FLOOR AREAS, PLEASE NOTE THE FOLLOWING EXCERPTS FROM NFPA 13R 2013 EDITION:

6.4.6.3.3.1 SHADOW AREAS SHALL BE PERMITTED IN THE PROTECTION AREA OF A SPRINKLER AS LONG AS THE CUMULATIVE DRY AREAS DO NOT EXCEED 15 FT^2 (1.4 M^2) PER SPRINKLER.

6.4.6.3.3.2 SHADOW AREAS IN CORRIDORS UP TO 2 FT (0.61 M) IN DEPTH AND UP TO 9 FT (2.7 M) IN LENGTH BEHIND SIDEWALL SPRINKLERS SHALL BE PERMITTED AS SHOWN IN FIGURE 6.4.6.3.3.2.

FIGURE 6.4.6.3.3.2 Shadow Areas Behind Sidewalls in Corridors

6.4.6.3.3.3 SMALL AREAS CREATED BY ARCHITECTURAL FEATURES SUCH AS PLANTER BOX WINDOWS, BAY WINDOWS, AND SIMILAR FEATURES SHALL BE EVALUATED AS FOLLOWS:

(1) WHERE NO ADDITIONAL FLOOR AREA IS CREATED BY AN ARCHITECTURAL FEATURE, NO ADDITIONAL SPRINKLER PROTECTION IS REQUIRED.

(2) WHERE ADDITIONAL FLOOR AREA IS CREATED BY AN ARCHITECTURAL FEATURE, NO ADDITIONAL SPRINKLER PROTECTION IS REQUIRED, PROVIDED ALL OF THE FOLLOWING CONDITIONS ARE MET:

(A) THE FLOOR AREA SHALL NOT EXCEED 18 FT^2 (1.7 M^2).

(B) THE FLOOR AREA SHALL NOT BE GREATER THAN 2 FT (0.65 M) IN DEPTH AT THE DEEPEST POINT OF THE ARCHITECTURAL FEATURE TO THE PLANE OF THE PRIMARY WALL WHERE MEASURED ALONG THE FINISHED FLOOR.

(C) THE FLOOR SHALL NOT BE GREATER THAN 9 FT (2.7 M) IN LENGTH WHERE MEASURED ALONG THE PLANE OF THE PRIMARY WALL.

(D) MEASUREMENT FROM THE DEEPEST POINT OF THE ARCHITECTURAL FEATURE TO THE SPRINKLER SHALL NOT EXCEED THE MAXIMUM LISTED SPACING OF THE SPRINKLER.

(3) THE HYDRAULIC DESIGN SHALL NOT BE REQUIRED TO CONSIDER THE AREA CREATED BY THE ARCHITECTURAL FEATURE.

SHADOWED FLOOR AREA NOTES (BASED ON NFPA 13R 2013 EDITION)

WAYNE Automatic Fire Sprinklers, Inc.

SCALE: NONE

01006N

System No. F-C-2270

F Rating – 1 Hr

T Rating – 1 Hr

1. FLOOR-CEILING ASSEMBLY – THE FIRE-RATED SOLID OR TRUSSED LUMBER JOIST FLOOR-CEILING ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN INDIVIDUAL L500 SERIES FLOOR-CEILING DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY. THE GENERAL CONSTRUCTION DETAILS OF THE FLOOR-CEILING ASSEMBLY ARE SUMMARIZED BELOW:
   - A. FLOORING SYSTEM – LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OF LUMBER, PLYWOOD OR FLOOR TOPPING MIXTURE* AS SPECIFIED IN THE INDIVIDUAL FLOOR-CEILING DESIGN. MAX DIAM OF FLOOR OPENING IS 3 IN.
   - B. WOOD JOISTS – NOM 2 BY 10 IN. LUMBER JOISTS SPACED 16 IN. OC WITH NOM 1 BY 3 IN. LUMBER BRIDGING AND WITH ENDS FIRESTOPPED. AS AN ALTERNATE TO LUMBER JOISTS, NOM 10 IN. DEEP (OR DEEPER) LUMBER, STEEL OR COMBINATION LUMBER AND STEEL JOISTS, TRUSSES OR STRUCTURAL WOOD MEMBERS* WITH BRIDGING AS REQUIRED WITH ENDS FIRESTOPPED.
   - C. FURRING CHANNELS – (NOT SHOWN) - RESILIENT GALV STEEL FURRING INSTALLED PERPENDICULAR TO WOOD JOISTS (ITEM 1B) BETWEEN WALLBOARD (ITEM 1D) AND WOOD JOISTS AS REQUIRED IN THE INDIVIDUAL FLOOR-CEILING DESIGN.
   - D. GYPSUM BOARD* – NOM 4 FT WIDE BY 5/8 IN. THICK AS SPECIFIED IN THE INDIVIDUAL FLOOR-CEILING DESIGN.
2. CHASE WALL – THE THROUGH PENETRANT (ITEM 3) SHALL BE ROUTED THROUGH A 1 HR FIRE-RATED SINGLE, DOUBLE OR STAGGERED WOOD STUD/GYPSUM WALLBOARD CHASE WALL CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   - A. STUDS – NOM 2 BY 4 IN. LUMBER STUDS.
   - B. SOLE PLATE – NOM 2 BY 4 IN. LUMBER PLATES. MAX DIAM OF OPENING IS 3 IN.
   - C. TOP PLATE – THE DOUBLE TOP PLATE SHALL CONSIST OF TWO NOM 2 BY 4 IN. LUMBER PLATES. MAX DIAM OF OPENING IS 3 IN.
   - D. GYPSUM BOARD* – THICKNESS, TYPE, NUMBER OF LAYERS AND FASTENERS SHALL BE AS SPECIFIED IN INDIVIDUAL WALL AND PARTITION DESIGN.
3. THROUGH PENETRANTS - ONE NONMETALLIC PIPE TO BE INSTALLED EITHER ECCENTRICALLY OR CONCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN THE THROUGH PENETRANT AND THE PERIPHERY OF THE OPENING SHALL BE A MIN 0 IN. (POINT CONTACT) TO A MAX OF 5/8 IN. PIPE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE FLOOR-CEILING ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF NONMETALLIC PIPES MAY BE USED.
   - A. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - NOM 2 IN. DIAM (OR SMALLER) FLOWGUARD GOLD®SDR11 CPVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS.
   - B. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - NOM 2 IN. DIAM (OR SMALLER) BLAZEMASTER®SDR13.5 CPVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS.
4. FILL, VOID OR CAVITY MATERIAL* - SEALANT - MIN 3/4 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR SOLE PLATE AND FLUSH WITH BOTTOM SURFACE OF LOWER TOP PLATE. AT POINT CONTACT LOCATION, A MIN 1/2 IN. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED FLUSH WITH BOTTOM SURFACE OF LOWER TOP PLATE.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC - FS-ONE SEALANT
*BEARING THE UL CLASSIFICATION MARK

HILTI
Hilti Firestop Systems

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of Underwriters Laboratories, Inc.
June 20, 2000

CLASSIFIED UL

FIRE CAULK – HILTI SYSTEM No. F-C-2270 UP TO 2" CPVC & WOOD FLOOR TRUSS – 1-HOUR

WAYNE Automatic Fire Sprinklers, Inc.

SCALE: NONE

00205N

CURE TIMES WITH ONE STEP SOLVENT CEMENT 200 PSI (MAXIMUM) TEST PRESSURE **(SEE NOTE 1)**			
PIPE SIZE INCHES	AMBIENT TEMPERATURE DURING CURE PERIOD		
	60°F TO 120°F	40°F TO 59°F	0°F TO 39°F
¾"	45 MIN.	1.5 HR.	24 HR.
1"	45 MIN.	1.5 HR.	24 HR.
1¼"	1.5 HR.	16 HR.	120 HR.
1½"	1.5 HR.	16 HR.	120 HR.
2"	6 HR.	36 HR.	SEE NOTE 2
2½"	8 HR.	72 HR.	SEE NOTE 2
3"	8 HR.	72 HR.	SEE NOTE 2

CURE TIMES WITH ONE STEP SOLVENT CEMENT 225 PSI (MAXIMUM) TEST PRESSURE **(SEE NOTE 1)**			
PIPE SIZE INCHES	AMBIENT TEMPERATURE DURING CURE PERIOD		
	60°F TO 120°F	40°F TO 59°F	0°F TO 39°F
¾"	1 HR.	4 HR.	48 HR.
1"	1.5 HR.	4 HR.	48 HR.
1¼"	3 HR.	32 HR.	10 DAYS
1½"	3 HR.	32 HR.	10 DAYS
2"	8 HR.	48 HR.	SEE NOTE 2
2½"	24 HR.	96 HR.	SEE NOTE 2
3"	24 HR.	96 HR.	SEE NOTE 2

NOTE 1: THESE CURE TIMES ARE FOR NEW CONSTRUCTION. IF GLUING INTO EXISTING PIPING, SUCH AS IN THE CASE OF CUT-INS, CURE TIME SHOULD BE A MINIMUM OF 24 HOURS.

NOTE 2: FOR THESE SIZES, THE SOLVENT CEMENT CAN BE APPLIED AT TEMPERATURES BELOW 32°F, HOWEVER, THE SPRINKLER SYSTEM TEMPERATURE MUST BE RAISED TO A TEMPERATURE OF 32°F OR ABOVE AND ALLOWED TO CURE PER THE ABOVE RECOMMENDATIONS PRIOR TO PRESSURE TESTING.

TYPICAL CPVC CURE TIMES

WAYNE Automatic Fire Sprinklers, Inc.

00415N

PERMISSIBLE BENDING DEFLECTIONS SDR 13.5 (73°F) (ONE END RESTRAINED)								
PIPE SIZE INCHES	LENGTH OF RUN (L) IN FEET							
	2'	5'	7'	10'	12'	15'	17'	20'
¾"	1.3"	7.8"	15.4"	31.3"	45.1"	70.5"	90.6"	125.4"
1"	1.0"	6.3"	12.3"	25.0"	36.0"	56.3"	72.3"	100.1"
1¼"	0.8"	5.0"	9.7"	19.8"	28.5"	44.6"	57.3"	79.3"
1½"	0.7"	4.3"	8.5"	17.3"	24.9"	39.0"	50.1"	69.3"
2"	0.6"	3.5"	6.8"	13.9"	20.0"	31.2"	40.0"	55.4"
2½"	0.5"	2.9"	5.6"	11.4"	16.5"	25.8"	33.1"	45.8"
3"	0.4"	2.4"	4.6"	9.4"	13.5"	21.2"	27.2"	37.6"

$$d = 0.329\ \frac{L^2}{D}$$

PERMISSIBLE BENDING DEFLECTIONS SDR 13.5 (73°F) (BOTH ENDS RESTRAINED)								
PIPE SIZE INCHES	LENGTH OF RUN (L) IN FEET							
	2'	5'	7'	10'	12'	15'	17'	20'
¾"	0.3"	2.0"	3.8"	7.8"	11.3"	17.6"	22.6"	31.3"
1"	0.3"	1.6"	3.1"	6.3"	9.0"	14.1"	18.1"	25.0"
1¼"	0.2"	1.2"	2.4"	5.0"	7.1"	11.2"	14.3"	19.8"
1½"	0.2"	1.1"	2.1"	4.3"	6.2"	9.7"	12.5"	17.3"
2"	0.1"	0.9"	1.7"	3.5"	5.0"	7.8"	10.0"	13.9"
2½"	0.1"	0.7"	1.4"	2.9"	4.1"	6.4"	8.3"	11.4"
3"	0.1"	0.6"	1.2"	2.4"	3.4"	5.3"	6.8"	9.4"

$$d = 0.0823\ \frac{L^2}{D}$$

CPVC BENDING DEFLECTIONS

WAYNE Automatic Fire Sprinklers, Inc.

00416N

SPRINKLER TEE DROP SUPPORT SPACING WITH ONE RESTRAINT POINT - SEE TABLE 1 BELOW

OR

SPRINKLER DROP SUPPORT SPACING WITH TWO RESTRAINT POINTS - SEE TABLE 2 BELOW

SPRINKLER 90° ELL DROP SUPPORT SPACING WITH ONE RESTRAINT POINT - SEE TABLE 1 BELOW

MAXIMUM SUPPORT SPACING SEE TABLE 3 BELOW

TABLE 1 - SPRINKLER SUPPORT SPACING DISTANCE WITH ONE RESTRAINT POINT		
NOM. PIPE SIZE	'R' @ LESS THAN 100 PSI	'R' @ GREATER THAN 100 PSI
¾ INCH	0'-9"	0'-6"
1 INCH	1'-0"	0'-9"
1¼ INCH	1'-4"	1'-0"
1½ INCH	2'-0"	1'-0"
>1½ INCH	2'-0"	1'-0"

TABLE 2 - SPRINKLER SUPPORT SPACING DISTANCE WITH TWO RESTRAINT POINTS		
NOM. PIPE SIZE	'S' @ LESS THAN 100 PSI	'S' @ GREATER THAN 100 PSI
¾ INCH	4'-0"	3'-0"
1 INCH	5'-0"	4'-0"
1¼ INCH	6'-0"	5'-0"
1½ INCH	7'-0"	7'-0"
>1½ INCH	7'-0"	7'-0"

TABLE 3 - MAXIMUM SUPPORT SPACING							
NOM. PIPE SIZE	¾ INCH	1 INCH	1¼ INCH	1½ INCH	2 INCH	2½ INCH	3 INCH
SUPPORT SPACING 'L'	5'-6"	6'-0"	6'-6"	7'-0"	8'-0"	9'-0"	10'-0"

TYPICAL CPVC HANGER/BRACE SPACING

WAYNE Automatic Fire Sprinklers, Inc.

SCALE: NONE

00356N

System No. W-L-2377

F Ratings – 1 and 2 Hr (See Items 1 and 3)

T Ratings – 1 and 2 Hr (See Items 1 and 3)

L – Rating at Ambient – Less that 1 CFM/Sq Ft

L – Rating at 400 F – 4 CFM/Sq Ft

1. WALL ASSEMBLY - THE 1 AND 2 HR FIRE RATED GYPSUM BOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   - A. STUDS - WALL FRAMING SHALL CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE BY 1-3/8 IN. DEEP CHANNELS SPACED MAX 24 IN. OC.
   - B. GYPSUM BOARD* - THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 3 IN.

   THE HOURLY F AND T RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.
2. THROUGH PENETRANT - ONE NONMETALLIC PIPE, CONDUIT OR TUBING INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE AND PERIPHERY OF OPENING SHALL BE MIN OF 0 IN. (POINT CONTACT) TO A MAX 1-1/4 IN. PIPE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF NONMETALLIC PIPES MAY BE USED:
   - A. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - NOM 2 IN. DIAM (OR SMALLER) FLOWGUARD GOLD® SDR11 CPVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS.
   - B. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE - NOM 2 IN. DIAM (OR SMALLER) BLAZEMASTER® SDR13.5 CPVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS.
3. FILL, VOID OR CAVITY MATERIAL* - SEALANT - MIN 5/8 IN. AND 1-1/4 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL FOR 1 AND 2 HR RATED ASSEMBLIES, RESPECTIVELY. AT POINT CONTACT LOCATION, A MIN 1/2 IN. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED TO THE WALL/PENETRANT INTERFACE ON BOTH SURFACES OF THE WALL.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC - FS-ONE SEALANT
*BEARING THE UL CLASSIFICATION MARK

HILTI
Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy
of Underwriters Laboratories, Inc.
June 20, 2000

CLASSIFIED UL

FIRE CAULK – HILTI SYSTEM No. W-L-2377 UP TO 2" CPVC & DRYWALL – 1 TO 2-HOUR

WAYNE Automatic Fire Sprinklers, Inc.

SCALE: NONE

00203N

N.I.C.E.T. NICET CERTIFIED

Christopher A. Williams
NICET Level 3
Certification Number 115724

North Carolina Licence # 29745

IMPORTANT OWNER INFORMATION

THIS DRAWING IS BASED ON THE OWNER'S ACCEPTANCE OF THE CURRENTLY ADOPTED EDITION (EITHER STATE OR LOCAL) OF NFPA 25 AS THE APPLICABLE STANDARD FOR THE INSPECTION, TESTING AND MAINTENANCE OF WATER BASED FIRE PROTECTION SYSTEMS. PER SECTION 4.1, THE RESPONSIBILITY FOR PROPERLY MAINTAINING A WATER BASED FIRE PROTECTION SYSTEM SHALL BE THAT OF THE OWNER. IF THE BUILDING OWNER HAS NOT RECEIVED A COPY OF THIS PAMPHLET AND/OR IS NOT FAMILIAR WITH THE OPERATION AND MAINTENANCE OF THIS SYSTEM, PLEASE CONTACT THE NEAREST OFFICE OF WAYNE AUTOMATIC FIRE SPRINKLERS, INC.

CPVC COMPATIBILITY NOTICE

CPVC FIRE SPRINKLER PIPING SYSTEMS HAVE BEEN USED SUCCESSFULLY FOR MORE THAN 20 YEARS IN NEW CONSTRUCTION, RE-PIPE AND REPAIR. CPVC PRODUCTS ARE IDEALLY SUITED FOR THESE APPLICATIONS DUE TO THEIR OUTSTANDING CORROSION RESISTANCE. OCCASIONALLY, HOWEVER, CPVC CAN BE DAMAGED BY CONTACT WITH CHEMICALS FOUND IN SOME CONSTRUCTION MATERIALS (IE: SOME WIRES, FLUX, PETROLEUM BASED PRODUCTS, ETC.) AND ANCILLARY PRODUCTS SUCH AS THREAD SEALANTS, LEAK DETECTORS, FIRESTOPS, MOLD INHIBITORS AND CLEANERS, ETC. ANY PRODUCT THAT COMES IN CONTACT WITH CPVC SPRINKLER PIPE MUST BE EVALUATED. FOR A LIST OF COMPATIBLE PRODUCTS, PLEASE REVIEW HTTP://PARTS.SPEARSMFG.COM/CPL.ASPX

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GRAPHICS ELEMENTS NOTE

FIRE SPRINKLER CONSTRUCTION DRAWINGS AND SHOP DRAWINGS MAY INCLUDE BACKGROUND DRAWINGS OR GRAPHICS BORROWED FROM THE ARCHITECTURAL, CIVIL, STRUCTURAL, OR MEP DRAWINGS. THESE REFERENCE BACKGROUND ELEMENTS ARE FOR GENERAL INFORMATION OR CONTEXT ONLY AND THE FIRE SPRINKLER ENGINEER DOES NOT ACCEPT ANY RESPONSIBILITY FOR THESE ELEMENTS. THE FIRE SPRINKLER ENGINEER IS ONLY RESPONSIBLE FOR THOSE PORTIONS OF THE FIRE SPRINKLER DRAWINGS DEPICTING FIRE SPRINKLER SCOPES OF WORK. REFER TO APPROVED ARCHITECTURAL, STRUCTURAL, MEP OR CIVIL DRAWINGS FOR AUTHORITATIVE EXPRESSIONS OF BACKGROUND INFORMATION THAT MAY BE UTILIZED IN FIRE SPRINKLER DRAWINGS OR DETAILS

WATER SUPPLY INFORMATION

	ACTUAL	DROUGHT OR EXTRAPOLATED (AS REQ'D BY AHJ)	FIRE PUMP	-
			SIZE: GPM @ PSI	-
STATIC PRESSURE	80	-	HYDRANT ELEV.	163 (-3'-0")
RESIDUAL PRESSURE	68	-	DATE OF TEST	3-20-2024
FLOW IN GPM	1060	-	TIME OF TEST	8:30 AM
PITOT READING	40		NUMBER OF PORTS FLOWED	1
TEST PROVIDED BY	Lillington Fire Department			
HYDRANT LOCATION OR NUMBER	Parker Lane and North Main Street - Hydrant #224			

DESIGN CRITERIA

DESIGN AREA #				
HAZARD CLASS				
# OF SPRINKLERS IN DESIGN AREA				
MINIMUM DENSITY				
DESIGN AREA S.F.				
PSI REQ'D @ BASR				
GPM REQ'D @ BASR				
PSI REQ'D @ TEST				
GPM REQ'D @ TEST				
ELEVATION @ HIGHEST SPRINKLER				
HOSE INSIDE/OUTSIDE				
DOMESTIC DEMAND				

SPRINKLERS SPACING

SYMBOL	MAXIMUM	MINIMUM	COMMENTS

SPRINKLERS

SYMB.	QUANTITY 1ST	2ND	3RD	4TH	SIN	SIZE	K	TEMP	MODEL
					TOTAL PER FLOOR				
					TOTAL THIS BUILDING				

DATE	SUBMITTALS	BY
2-24-2021	QA Review	DH
3-4-2021	Permit	DH

NO.	DATE	REVISIONS	BY
1	XX/XX/XX	--	-

WAYNE Automatic Fire Sprinklers, Inc.

Title Block V.5.0.2

☐ **MAIN OFFICE – ORLANDO, FLORIDA**
222 CAPITOL COURT OCOEE, FLORIDA 34761
PHONE: (407) 656-3030 FAX: (407) 656-8026

☐ **JACKSONVILLE, FL** 11326 DISTRIBUTION AVE. WEST JACKSONVILLE, FL 32256-2745 PHONE: (904) 268-3030 FAX: (904) 268-0724	☐ **TAMPA, FL** 3226 CHERRY PALM DRIVE TAMPA, FL 33619-8337 PHONE: (813) 630-0303 FAX: (813) 630-0312	☐ **DEERFIELD BEACH, FL** 1500 S. POWERLINE RD SUITE A DEERFIELD BEACH, FL 33442 PHONE: (954) 917-3030 FAX: (954) 917-9424
☐ **FT. MYERS, FL** 4683 LAREDO AVE. FT. MYERS, FL 33905-4924 PHONE: (239) 433-3030 FAX: (239) 433-3263	☑ **CONCORD, NC** 4370 MOTORSPORT DRIVE CONCORD, NC 28027-8977 PHONE: (704) 782-3032 FAX: (704) 795-6838	STATE LICENSES: NC SPRINKLER: 29745 NC ALARM: 29222 SP LV SC SPRINKLER: 1116 SC ALARM: 3385

PROJECT:
JUNIPER VILLAGE
PARKER LANE
LILLINGTON, NORTH CAROLINA

CONTRACT WITH:
Wynnefield Properties
5614 Riverdale Road
Jamestown, NC 27282

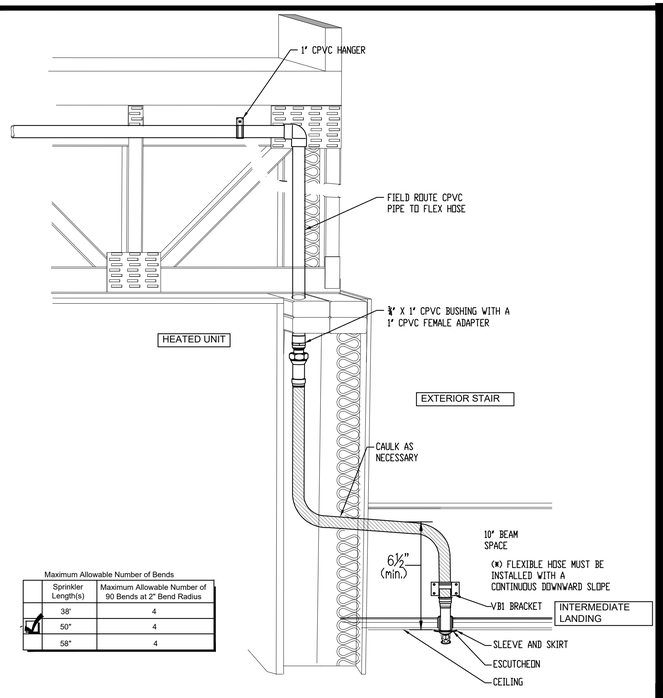
SHEET TITLE:	Notes and Details 1
DRAWN BY:	Donald Hawkins
TOTAL A/S:	938
DATE:	3-5-2021
AHJ:	Town of Lillington
CONTRACT #	102001

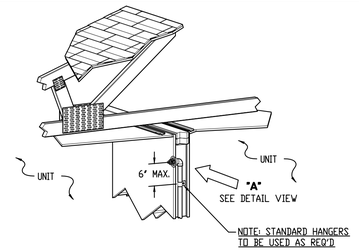
CENTER OF TILE JOB? ☐ YES ☑ NO
CENTER ON FIXTURES JOB? ☐ YES ☑ NO

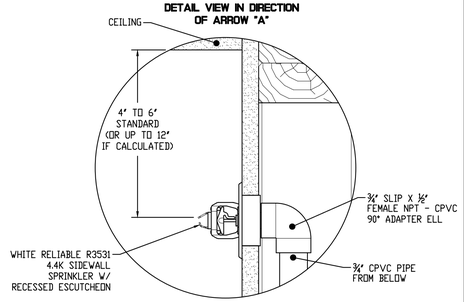
SHEET # **FPD1**

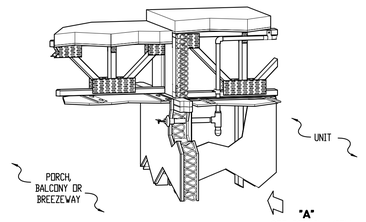
CONSTRUCTION TYPE: V-B

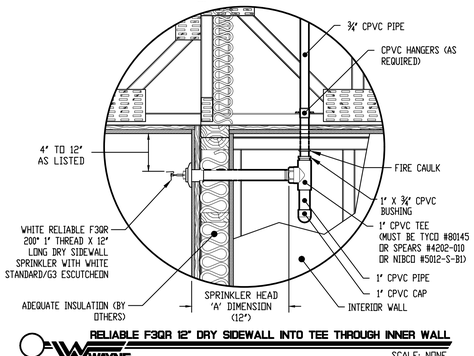
OCCUPANCY: R-2

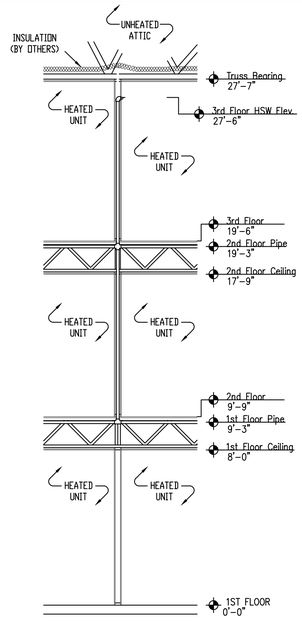


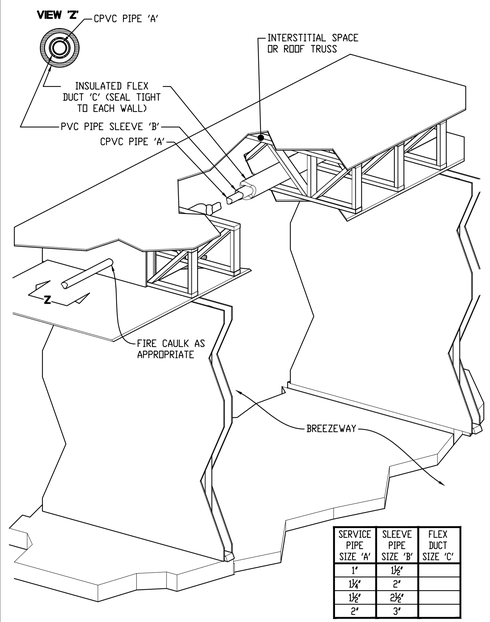


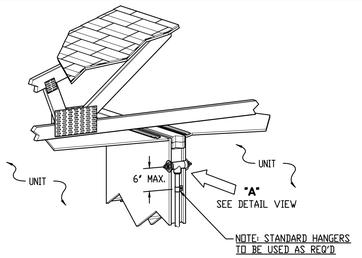


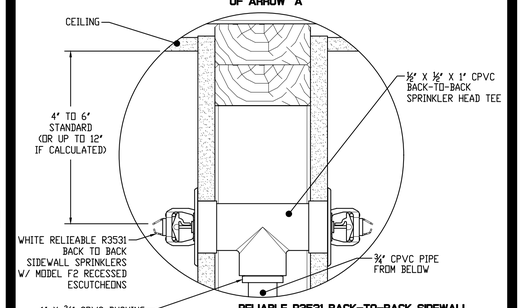


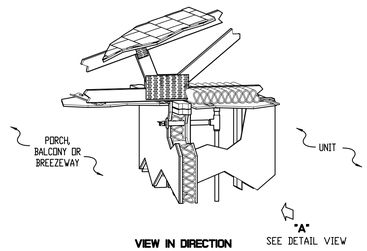


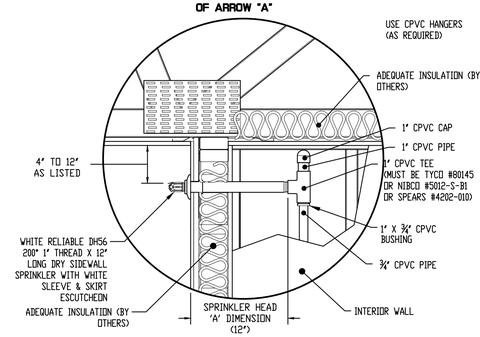












Maximum Allowable Number of Bends

	Sprinkler Length(s)	Maximum Allowable Number of 90 Bends at 2" Bend Radius
	38'	4
☑	50"	4
	58"	4

VICTAULIC V3506 200° FLEXIBLE HOSE ASSEMBLY

Wayne Automatic Fire Sprinklers, Inc.

MINUTES MATTER

SCALE: NONE

00354N

RELIABLE R3531 SIDEWALL (TOP FLOOR) W/ FLOOR FEED

Wayne Automatic Fire Sprinklers, Inc.

SCALE: NONE

00732N

RELIABLE F3QR 12" DRY SIDEWALL INTO TEE THROUGH INNER WALL

Wayne Automatic Fire Sprinklers, Inc.

SCALE: NONE

00830N

TYPICAL RESIDENTIAL CROSS SECTION – 3 FLOOR

Wayne Automatic Fire Sprinklers, Inc.

SCALE: NONE

00682N

SERVICE PIPE SIZE 'A'	SLEEVE PIPE SIZE 'B'	FLEX DUCT SIZE 'C'
1"	1½"	
1¼"	2"	
1½"	2½"	
2"	3"	

BREEZEWAY CROSS-OVER

Wayne Automatic Fire Sprinklers, Inc.

SCALE: NONE

00703N

RELIABLE R3531 BACK-TO-BACK SIDEWALL SPRINKLERS (TOP FLOOR) W/ FLOOR FEED

Wayne Automatic Fire Sprinklers, Inc.

SCALE: NONE

00734N

RELIABLE 12" DRY SIDEWALL INTO TEE THROUGH INNER WALL – TOP FLOOR

Wayne Automatic Fire Sprinklers, Inc.

SCALE: NONE

00797N

N.I.C.E.T.
NICET CERTIFIED

Christopher A. Williams
NICET Level 3
Certification Number 115724

North Carolina Licence # 29745

IMPORTANT OWNER INFORMATION

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WATER SUPPLY INFORMATION

	ACTUAL	DROUGHT OR EXTRAPOLATED (AS REQ'D BY AHJ)		
			FIRE PUMP	-
			SIZE: GPM @ PSI	-
STATIC PRESSURE	80	-	HYDRANT ELEV.	163 (-3'-0")
RESIDUAL PRESSURE	68	-	DATE OF TEST	3-20-2024
FLOW IN GPM	1060	-	TIME OF TEST	8:30 AM
PITOT READING	40		NUMBER OF PORTS FLOWED	1
TEST PROVIDED BY	Lillington Fire Department			
HYDRANT LOCATION OR NUMBER	Parker Lane and North Main Street - Hydrant #224			

DESIGN CRITERIA

DESIGN AREA #				
HAZARD CLASS				
# OF SPRINKLERS IN DESIGN AREA				
MINIMUM DENSITY				
DESIGN AREA S.F.				
PSI REQ'D @ BASR				
GPM REQ'D @ BASR				
PSI REQ'D @ TEST				
GPM REQ'D @ TEST				
ELEVATION @ HIGHEST SPRINKLER				
HOSE INSIDE/OUTSIDE				
DOMESTIC DEMAND				

SPRINKLERS SPACING

SYMBOL	MAXIMUM	MINIMUM	COMMENTS

SPRINKLERS

SYMB.	QUANTITY 1ST	2ND	3RD	4TH	SIN	SIZE	K	TEMP	MODEL

TOTAL PER FLOOR

TOTAL THIS BUILDING

DATE	SUBMITTALS	BY
2-24-2021	QA Review	DH
3-4-2021	Permit	DH

NO.	DATE	REVISIONS	BY
1	XX/XX/XX	--	-

WAYNE
Automatic Fire Sprinklers, Inc.

Title Block V.5.0.2

☐ MAIN OFFICE – ORLANDO, FLORIDA
222 CAPITOL COURT OCOEE, FLORIDA 34761
PHONE: (407) 656-3030 FAX: (407) 656-8026

☐ JACKSONVILLE, FL 11326 DISTRIBUTION AVE. WEST JACKSONVILLE, FL 32256-2745 PHONE: (904) 268-3030 FAX: (904) 268-0724	☐ TAMPA, FL 3226 CHERRY PALM DRIVE TAMPA, FL 33619-8337 PHONE: (813) 630-0303 FAX: (813) 630-0312	☐ DEERFIELD BEACH, FL 1500 S. POWERLINE RD SUITE A DEERFIELD BEACH, FL 33442 PHONE: (954) 917-3030 FAX: (954) 917-9424
☐ FT. MYERS, FL 4683 LAREDO AVE. FT. MYERS, FL 33905-4924 PHONE: (239) 433-3030 FAX: (239) 433-3263	☑ CONCORD, NC 4370 MOTORSPORT DRIVE CONCORD, NC 28027-8977 PHONE: (704) 782-3032 FAX: (704) 795-6838	STATE LICENSES: NC SPRINKLER: 29745 NC ALARM: 29222 SP LV SC SPRINKLER: 1116 SC ALARM: 3385

PROJECT:

JUNIPER VILLAGE
PARKER LANE
LILLINGTON, NORTH CAROLINA

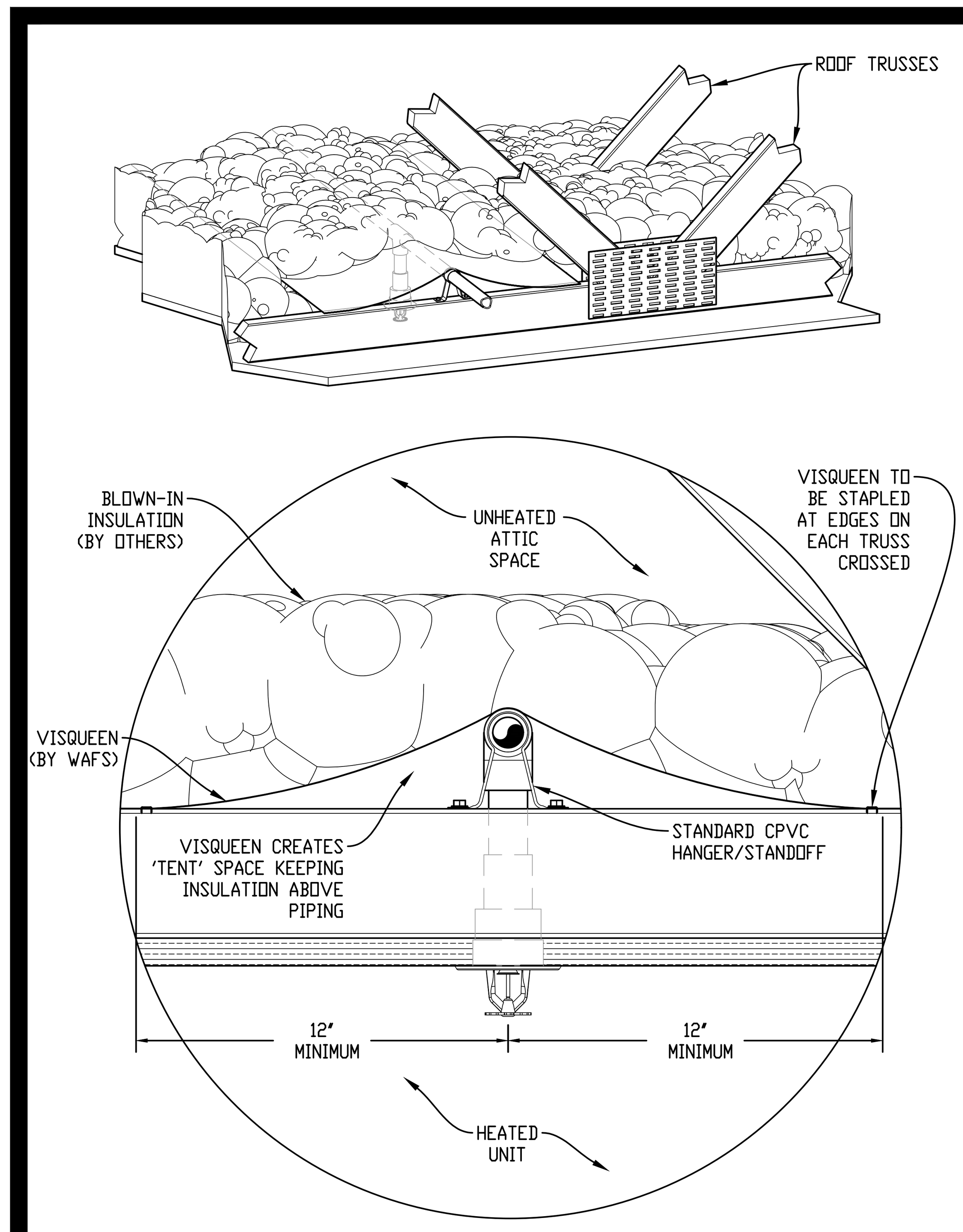
CONTRACT WITH:
Wynnefield Properties
5614 Riverdale Road
Jamestown, NC 27282

SHEET TITLE:	Notes and Details 2
DRAWN BY:	Donald Hawkins
TOTAL A/S:	938
DATE:	3-5-2021
AHJ:	Town of Lillington
CONTRACT #	102001

CENTER OF TILE JOB? ☐ YES ☑ NO
CENTER ON FIXTURES JOB? ☐ YES ☑ NO

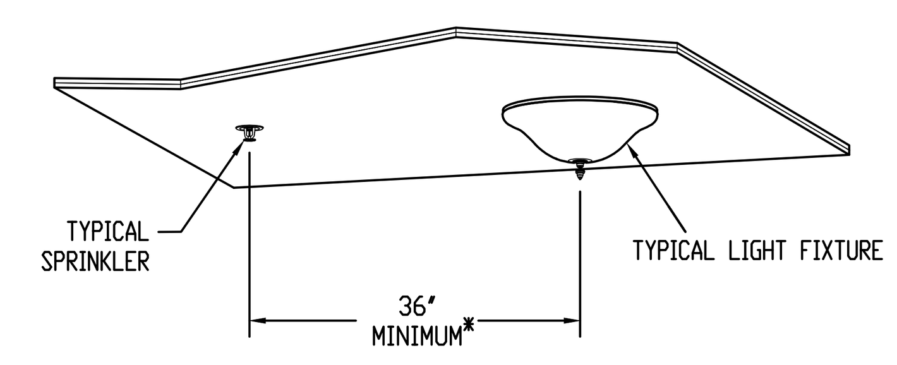
SHEET # FPD2

CONSTRUCTION TYPE: V-B
OCCUPANCY: R-2



ATTIC PIPING WITH VISQUEEN AND BLOWN-IN INSULATION

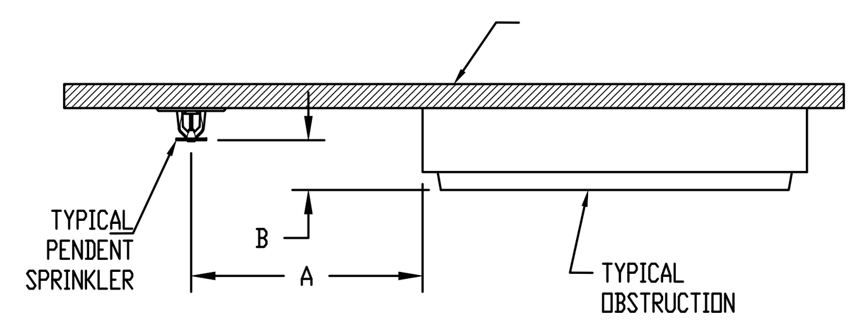
WAYNE Automatic Fire Sprinklers, Inc. — SCALE: NONE — 00861N



*IN ROOMS/COMPARTMENTS 400 CU. FT. OR LESS, SPRINKLERS MAY BE PLACED REGARDLESS OF LOCATION OF OBSTRUCTIONS.

NFPA 13R & 13D SPRINKLER CLEARANCE W/ LIGHT FIXTURE

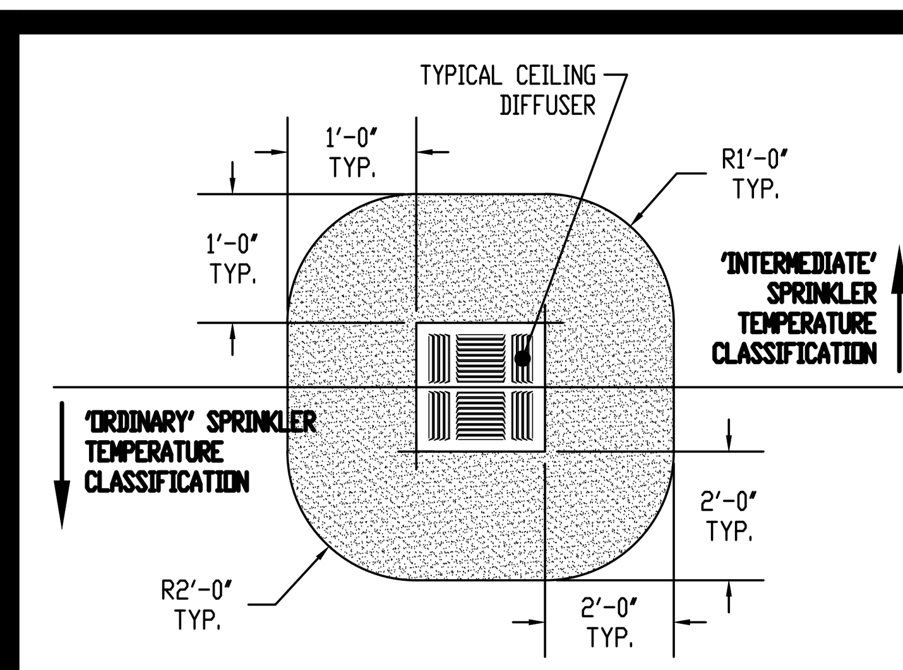
WAYNE Automatic Fire Sprinklers, Inc. — SCALE: NONE — 00504N



DISTANCE FROM SPRINKLER TO SIDE OF OBSTRUCTION (A)	MAXIMUM ALLOWABLE DISTANCE OF DEFLECTOR ABOVE BOTTOM OF OBSTRUCTION (IN.) (B)
LESS THAN 1 FT. 6 IN.	0
1 FT. 6 IN TO LESS THAN 3 FT.	1
3 FT. TO LESS THAN 4 FT.	3
4 FT. TO LESS THAN 4 FT. 6 IN.	5
4 FT. 6 IN. TO LESS THAN 6 FT.	7
6 FT. TO LESS THAN 6 FT. 6 IN.	9
6 FT. 6 IN. TO LESS THAN 7 FT.	11
7 FT. AND GREATER	14

NFPA 13R & 13D RESIDENTIAL PENDENT SPRINKLER CLEARANCE W/ OBSTRUCTION

WAYNE Automatic Fire Sprinklers, Inc. — SCALE: NONE — 00527N



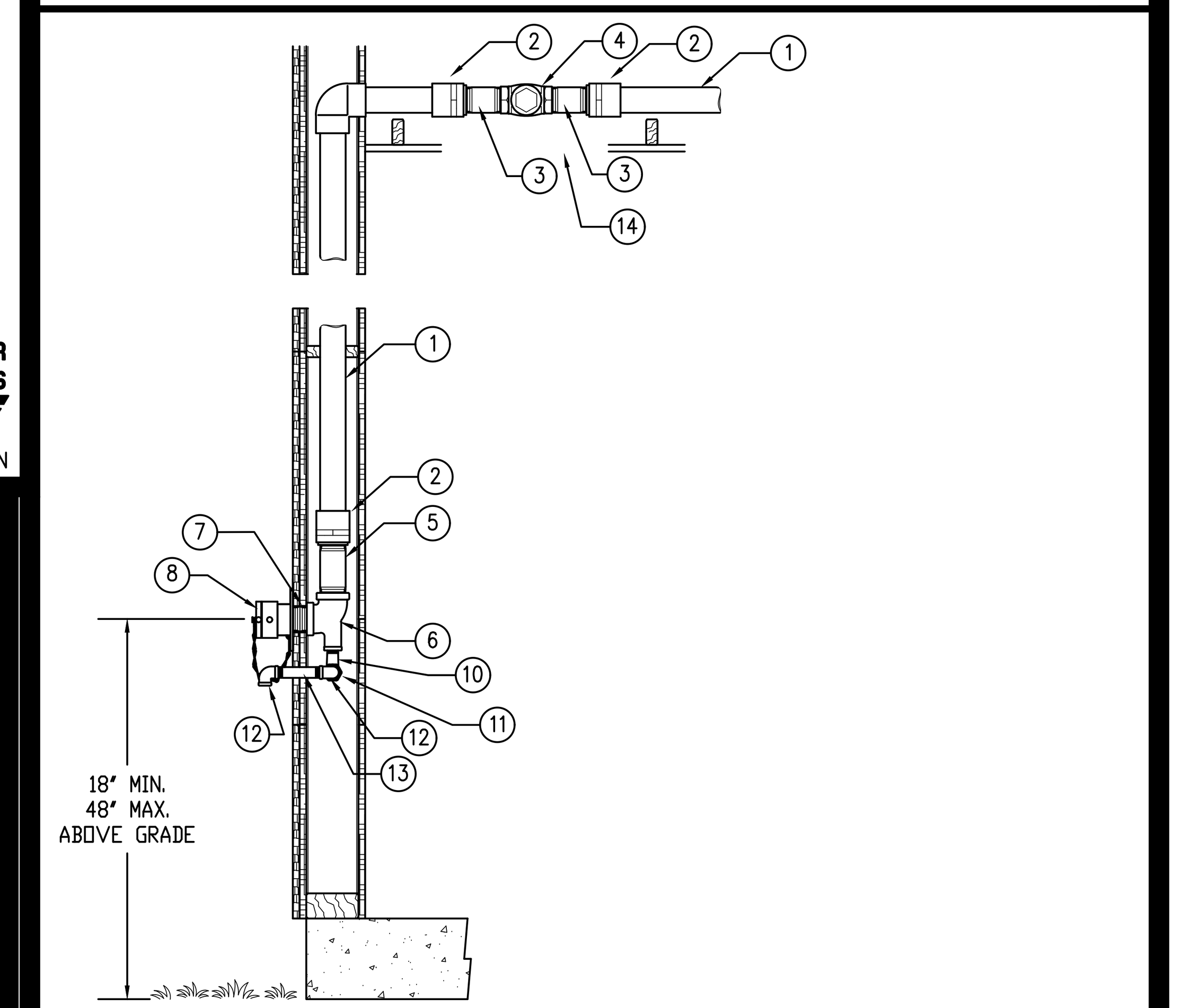
NOTE: SPRINKLERS MUST BE LOCATED OUTSIDE OF SHADED AREA

TYPICAL RESIDENTIAL CEILING MOUNTED HOT AIR DIFFUSER SPRINKLER MINIMUM CLEARANCES

WAYNE Automatic Fire Sprinklers, Inc. — SCALE: NONE — 00702N

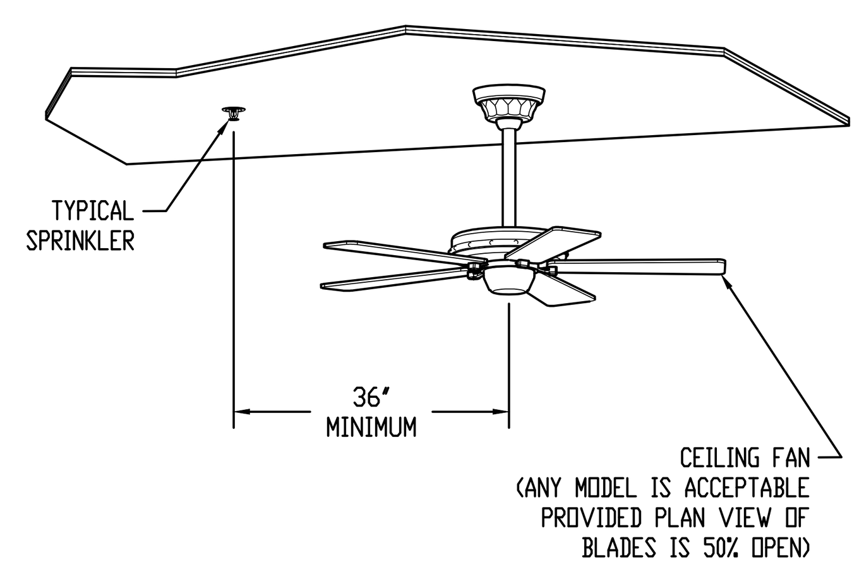
COMPONENT LIST

1. 1½" CPVC PIPE
2. 1½" CPVC FEMALE X SLIP ADPT.
3. 1½" X 3" GALV. THRD. NIPPLE
4. 1½" FPPI SWING CHECK VALVE
5. 1½" X 4" GALV. THRD. NIPPLE
6. 1½" X ½" X 1½" GALV. TEE
7. 1½" X 2" GALV. THRD. NIPPLE
8. 1½" SINGLE INLET FDC W/ PLATE, PLUG & CHAIN.
9. NOT USED
10. ½" GALV. 90° STREET ELL
11. ½" BALL DRIP - UNITED #235
12. ½" GALV. 90° ELL
13. ½" X 3" GALV. THRD. NIPPLE
14. 12" X 12" FIRE RATED ACCESS PANEL



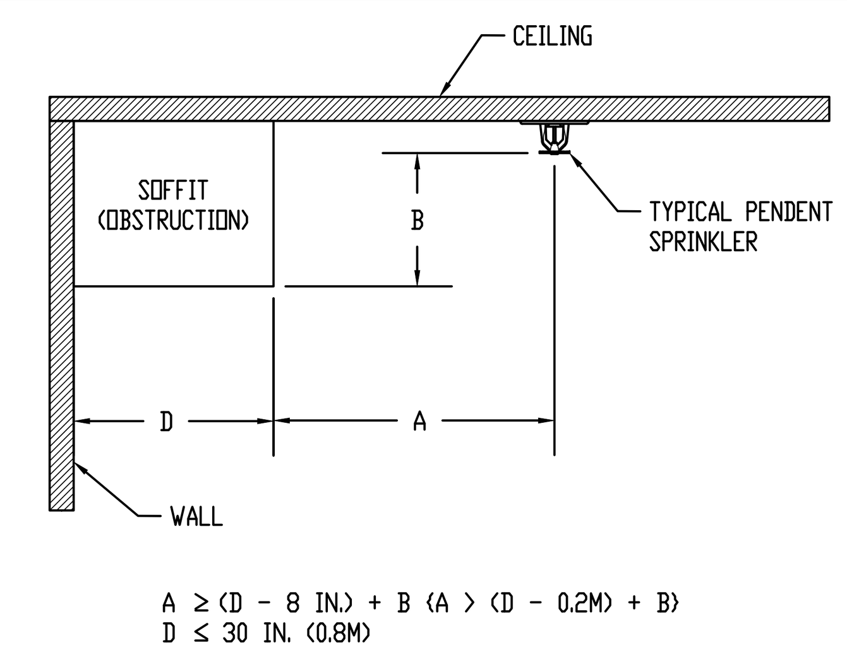
TYPICAL 1½" RESIDENTIAL WALL MOUNT FDC

WAYNE Automatic Fire Sprinklers, Inc. — SCALE: NONE — 00317L



NFPA 13R & 13D SPRINKLER CLEARANCE W/ CEILING FAN

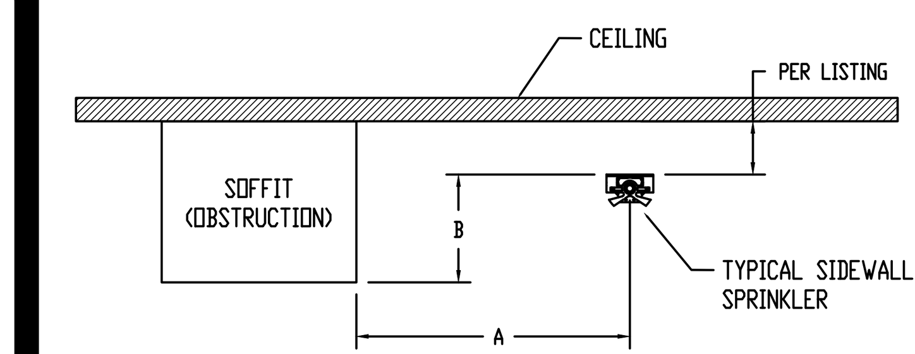
WAYNE Automatic Fire Sprinklers, Inc. — SCALE: NONE — 00505N



A ≥ (D - 8 IN.) + B (A > (D - 0.2M) + B)
D ≤ 30 IN. (0.8M)

NFPA 13R & 13D RESIDENTIAL PENDENT SPRINKLER CLEARANCE W/ SOFFIT

WAYNE Automatic Fire Sprinklers, Inc. — SCALE: NONE — 00531N



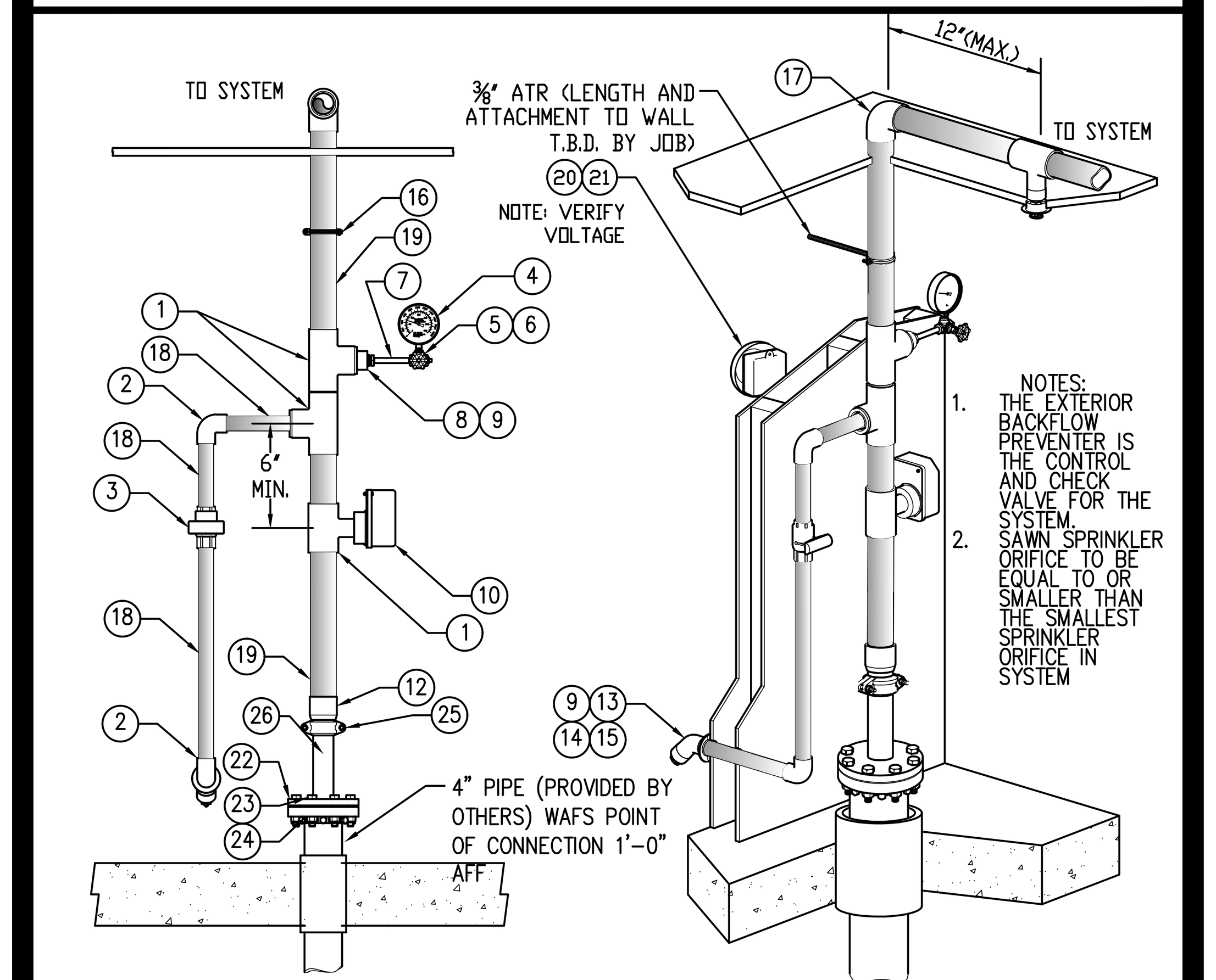
DISTANCE FROM SPRINKLER TO SIDE OF OBSTRUCTION ALONG WALL (DIMENSION A)	MAXIMUM ALLOWABLE DISTANCE FROM DEFLECTOR TO BOTTOM OF OBSTRUCTION (IN.) (DIMENSION B)
LESS THAN 1 FT. 6 IN.	0
1 FT. 6 IN. TO LESS THAN 3 FT.	1
3 FT. TO LESS THAN 4 FT.	3
4 FT. TO LESS THAN 4 FT. 6 IN.	5
4 FT. 6 IN. TO LESS THAN 6 FT.	7
6 FT. TO LESS THAN 6 FT. 6 IN.	9
6 FT. 6 IN. TO LESS THAN 7 FT.	11
7 FT. TO LESS THAN 7 FT. 6 IN.	14

RESIDENTIAL SIDEWALL SOFFIT CLEARANCE SIDE

WAYNE Automatic Fire Sprinklers, Inc. — SCALE: NONE — 02000N

COMPONENT LIST

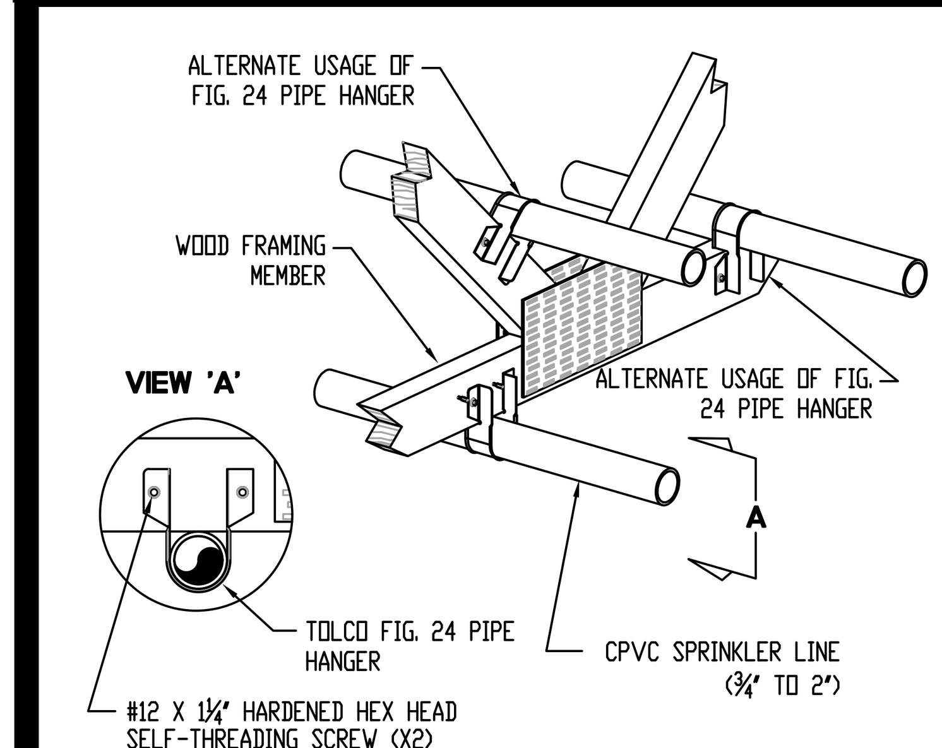
1. 2"x 2"x 1" CPVC REDUCING TEE
2. 1" CPVC 90° ELL
3. 1" CPVC BALL VALVE
4. ¼" PRESSURE GAUGE
5. ¼" 3-WAY VALVE
6. ¼" GALV. PLUG
7. ¼" X 3" GALV. NIPPLE
8. ½" X ¼" GALV. BUSHING
9. 1" X ½" SPIGOT ADAPTER
10. CPVC GLUE-IN FLOW SWITCH
12. 2" CPVC GROOVED ADAPTER
13. 1" CPVC 45° ELL
14. SAWN SPRINKLER
15. 1" SPLIT WALL PLATE
16. 2" SPLIT RING HANGER
17. 2" CPVC 90° ELL
18. 1" CPVC PIPE
19. 2" CPVC PIPE
20. 6" ALARM BELL 120V
21. WEATHERPROOF ALARM BELL BOX
22. 4" x 9" SLIP-ON WELD FLANGE
23. 4" NUT, BOLT & GASKET KIT
24. 4" DIP UNI-FLANGE
23. 2" GROOVED COUPLING
24. 2" x 12" FLANGE TO GROOVED NIPPLE



NOTES:
1. THE EXTERIOR BACKFLOW PREVENTER IS THE CONTROL AND CHECK VALVE FOR THE SYSTEM.
2. SAWN SPRINKLER ORIFICE TO BE EQUAL TO OR SMALLER THAN THE SMALLEST SPRINKLER ORIFICE IN SYSTEM

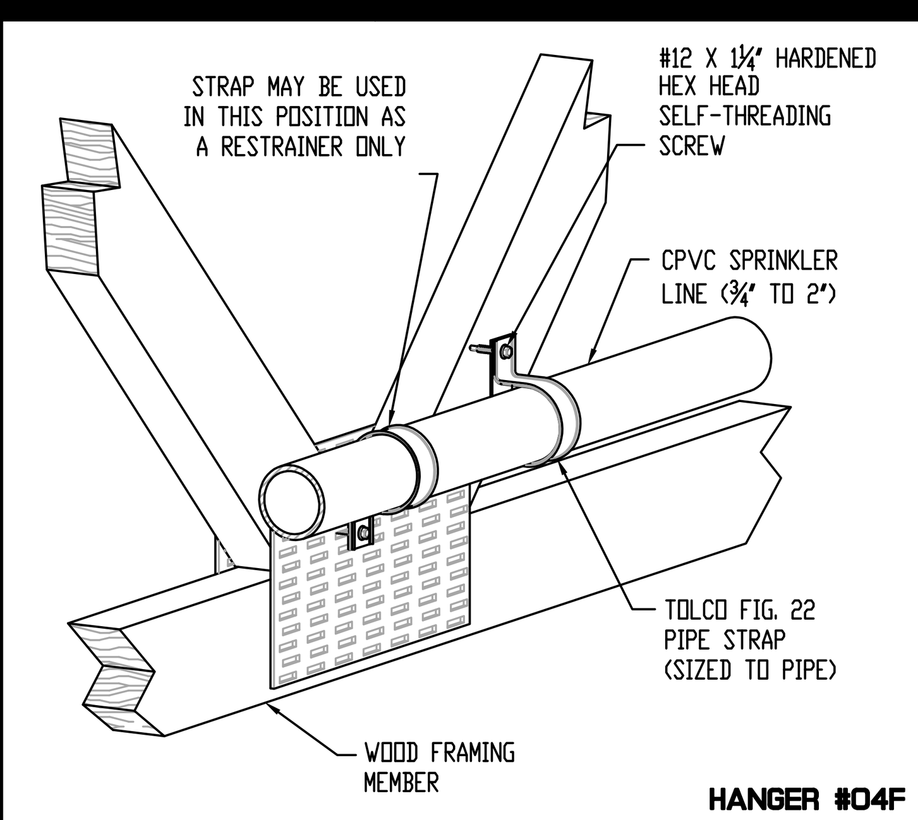
TYPICAL 2" CPVC EXPOSED RISER WITH GAUGE, FLOW SWITCH AND TEST LINE

WAYNE Automatic Fire Sprinklers, Inc. — MINUTES MATTER — SCALE: 3/4"=1' — R00311AL



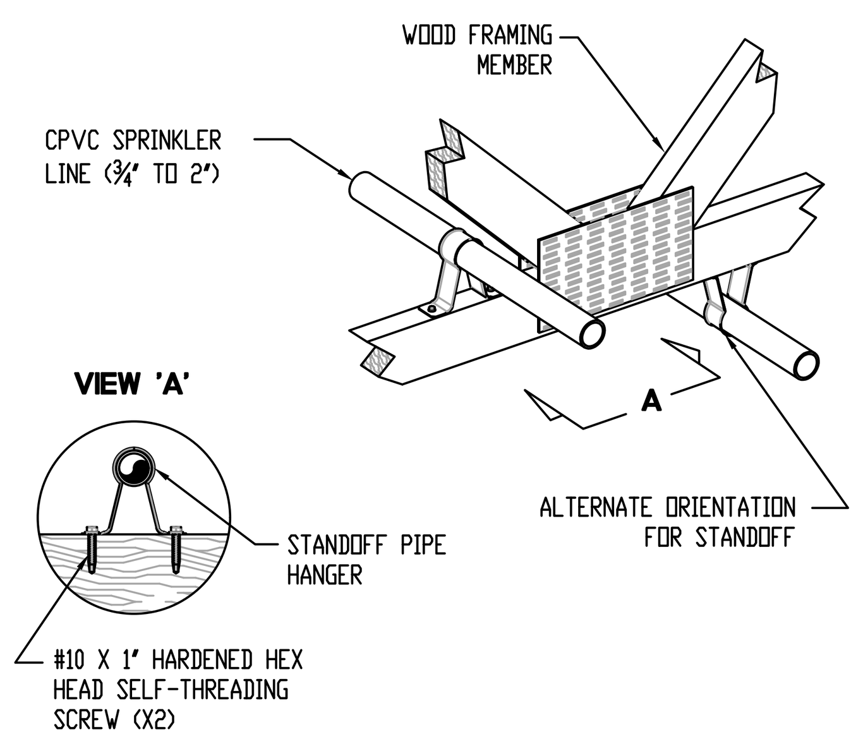
HANGER #04J
FIG. 24 HANGER FOR ¾" TO 2" CPVC PIPE

WAYNE Automatic Fire Sprinklers, Inc. — SCALE: NONE — 00282N



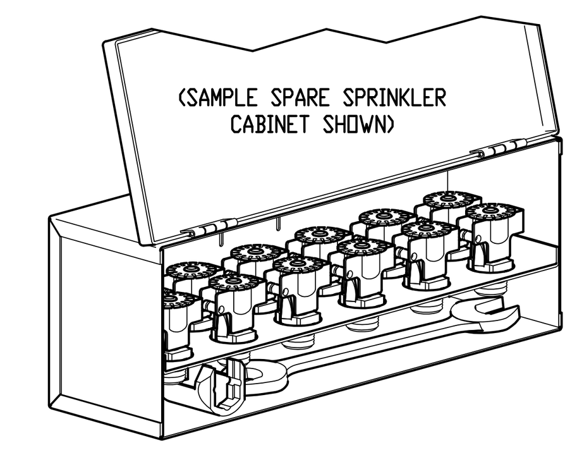
HANGER #04F
FOR ¾" TO 2" CPVC PIPE

WAYNE Automatic Fire Sprinklers, Inc. — SCALE: NONE — 00251N



HANGER #04K
STANDOFF ¾" TO 2" CPVC PIPE

WAYNE Automatic Fire Sprinklers, Inc. — SCALE: NONE — 00283N



NFPA 13R 6.4.1 - AT LEAST THREE SPARE SPRINKLERS OF EACH TYPE, TEMPERATURE RATING, AND ORIFICE SIZE USED IN THE SYSTEM SHALL BE INSTALLED ON PREMISES.

- ☐ (2) 12-HEAD SPARE HEAD BOXES WITH WRENCHES WILL BE LEFT AT CLUBHOUSE / LEASING CENTER.
- ☑ (1) SPARE HEAD BOX WITH WRENCHES WILL BE LEFT PER BUILDING.
- ☑ DRY SPRINKLER HEADS WILL NOT BE PROVIDED PER NFPA 13-6.2.9.4

NFPA 13R SPARE SPRINKLER HEAD CABINET

WAYNE Automatic Fire Sprinklers, Inc. — SCALE: NONE — 00477N

N.I.C.E.T. NICET CERTIFIED
Christopher A. Williams
NICET Level 3
Certification Number 115724
North Carolina Licence # 29745

IMPORTANT OWNER INFORMATION

THIS DRAWING IS BASED ON THE OWNER'S ACCEPTANCE OF THE CURRENTLY ADOPTED EDITION (EITHER STATE OR LOCAL) OF NFPA 25 AS THE APPLICABLE STANDARD FOR THE INSPECTION, TESTING AND MAINTENANCE OF WATER BASED FIRE PROTECTION SYSTEMS. PER SECTION 4.1, THE RESPONSIBILITY FOR PROPERLY MAINTAINING A WATER BASED FIRE PROTECTION SYSTEM SHALL BE THAT OF THE OWNER. IF THE BUILDING OWNER HAS NOT RECEIVED A COPY OF THIS PAMPHLET AND/OR IS NOT FAMILIAR WITH THE OPERATION AND MAINTENANCE OF THIS SYSTEM, PLEASE CONTACT THE NEAREST OFFICE OF WAYNE AUTOMATIC FIRE SPRINKLERS, INC.

CPVC COMPATIBILITY NOTICE

CPVC FIRE SPRINKLER PIPING SYSTEMS HAVE BEEN USED SUCCESSFULLY FOR MORE THAN 20 YEARS IN NEW CONSTRUCTION, RE-PIPE AND REPAIR. CPVC PRODUCTS ARE IDEALLY SUITED FOR THESE APPLICATIONS DUE TO THEIR OUTSTANDING CORROSION RESISTANCE. OCCASIONALLY, HOWEVER, CPVC CAN BE DAMAGED BY CONTACT WITH CHEMICALS FOUND IN SOME CONSTRUCTION MATERIALS (IE: SOME WIRES, FLUX, PETROLEUM BASED PRODUCTS, ETC.) AND ANCILLARY PRODUCTS SUCH AS THREAD SEALANTS, LEAK DETECTORS, FIRESTOPS, MOLD INHIBITORS AND CLEANERS, ETC. ANY PRODUCT THAT COMES IN CONTACT WITH CPVC SPRINKLER PIPE MUST BE EVALUATED. FOR A LIST OF COMPATIBLE PRODUCTS, PLEASE REVIEW HTTP://PARTS.SPEARSMFG.COM/CPL.ASPX

GRAPHICS ELEMENTS NOTE

FIRE SPRINKLER CONSTRUCTION DRAWINGS AND SHOP DRAWINGS MAY INCLUDE BACKGROUND DRAWINGS OR GRAPHICS BORROWED FROM THE ARCHITECTURAL, CIVIL, STRUCTURAL, OR MEP DRAWINGS. THESE REFERENCE BACKGROUND ELEMENTS ARE FOR GENERAL INFORMATION OR CONTEXT ONLY AND THE FIRE SPRINKLER ENGINEER DOES NOT ACCEPT ANY RESPONSIBILITY FOR THESE ELEMENTS. THE FIRE SPRINKLER ENGINEER IS ONLY RESPONSIBLE FOR THOSE PORTIONS OF THE FIRE SPRINKLER DRAWINGS DEPICTING FIRE SPRINKLER SCOPES OF WORK. REFER TO APPROVED ARCHITECTURAL, STRUCTURAL, MEP OR CIVIL DRAWINGS FOR AUTHORITATIVE EXPRESSIONS OF BACKGROUND INFORMATION THAT MAY BE UTILIZED IN FIRE SPRINKLER DRAWINGS OR DETAILS

WATER SUPPLY INFORMATION

	ACTUAL	DROUGHT OR EXTRAPOLATED (AS REQ'D BY AHJ)		
			FIRE PUMP	-
			SIZE: GPM @ PSI	-
STATIC PRESSURE	80	-	HYDRANT ELEV.	163 (-3'-0")
RESIDUAL PRESSURE	68	-	DATE OF TEST	3-20-2024
FLOW IN GPM	1060	-	TIME OF TEST	8:30 AM
PITOT READING	40		NUMBER OF PORTS FLOWED	1
TEST PROVIDED BY	Lillington Fire Department			
HYDRANT LOCATION OR NUMBER	Parker Lane and North Main Street - Hydrant #224			

DESIGN CRITERIA

DESIGN AREA #				
HAZARD CLASS				
# OF SPRINKLERS IN DESIGN AREA				
MINIMUM DENSITY				
DESIGN AREA S.F.				
PSI REQ'D @ BASR				
GPM REQ'D @ BASR				
PSI REQ'D @ TEST				
GPM REQ'D @ TEST				
ELEVATION @ HIGHEST SPRINKLER				
HOSE INSIDE/OUTSIDE				
DOMESTIC DEMAND				

SPRINKLERS SPACING

SYMBOL	MAXIMUM	MINIMUM	COMMENTS

SPRINKLERS

SYMB.	1ST (QUANTITY)	2ND	3RD	4TH	SIN	SIZE	K	TEMP	MODEL
					TOTAL PER FLOOR				
					TOTAL THIS BUILDING				

DATE	SUBMITTALS	BY
2-24-2021	QA Review	DH
3-4-2021	Permit	DH

NO.	DATE	REVISIONS	BY
1	XX/XX/XX	--	-

WAYNE Automatic Fire Sprinklers, Inc.

Title Block V.5.0.2

MAIN OFFICE - ORLANDO, FLORIDA
222 CAPITOL COURT OCOEE, FLORIDA 34761
PHONE: (407) 656-3030 FAX: (407) 656-8026

JACKSONVILLE, FL
11326 DISTRIBUTION AVE. WEST
JACKSONVILLE, FL 32256-2745
PHONE: (904) 268-3030
FAX: (904) 268-0724

TAMPA, FL
3226 CHERRY PALM DRIVE
TAMPA, FL 33619-8337
PHONE: (813) 630-0303
FAX: (813) 630-0312

DEERFIELD BEACH, FL
1500 S. POWERLINE RD SUITE A
DEERFIELD BEACH, FL 33442
PHONE: (954) 917-3030
FAX: (954) 917-9424

FT. MYERS, FL
4683 LAREDO AVE.
FT. MYERS, FL 33905-4924
PHONE: (239) 433-3030
FAX: (239) 433-3263

☑ CONCORD, NC
4370 MOTORSPORT DRIVE
CONCORD, NC 28027-8977
PHONE: (704) 782-3032
FAX: (704) 795-6838

STATE LICENSES:
NC SPRINKLER: 29745
NC ALARM: 29222 SP LV
SC SPRINKLER: 1116
SC ALARM: 3385

PROJECT:
JUNIPER VILLAGE
PARKER LANE
LILLINGTON, NORTH CAROLINA

CONTRACT WITH:
Wynnefield Properties
5614 Riverdale Road
Jamestown, NC 27282

SHEET TITLE:	Notes and Details 2
DRAWN BY:	Donald Hawkins
TOTAL A/S:	938
DATE:	3-5-2021
AHJ:	Town of Lillington
CONTRACT #	102001

CENTER OF TILE JOB? ☐ YES ☑ NO CENTER ON FIXTURES JOB? ☐ YES ☑ NO

SHEET # FPD3

CONSTRUCTION TYPE: V-B

OCCUPANCY: R-2

Harnett COUNTY NORTH CAROLINA

Emergency Services Department
www.harnett.org

Reviewed for Fire Code Compliance
Harnett COUNTY
Leslie Jackson
04/18/2024 9:14:50 AM

Application for Plan Review

Application # _____-_____

Date Received: _____ **Received By:** _____

Name of Project: Jumiper Villiage Building 200

Physical Address of Project: 1208 North Main Street

Lillington, NC 27546

Plans Submitted By: Wayne Automatic Fire Sprinkler

Project Phone: (704)- 782 - 3032

Contact Person/Address: Donald Hawkins

222 Capitol Court

Ocoee, Florida 34761

Contact Email: dhawkins@waynefire.com

Contact Phone: (407)- 877 - 5514 (407)- 547 - 9103

Contractor's Name/Info: Wayne Automatic Fire Sprinklers

4370 Motorsport Drive

Concord, NC 29027-8977

Contractor's Phone: (704)- 782 - 8977

- Plans that are submitted will be reviewed as quickly as possible with an average time of review between 7-10 working days.
- Status checks may be conducted on plan reviews by visiting the website http://hteweb.harnett.org/Click2GovBP/Index.jsp or by calling the Harnett County Central Permitting Office (910-893-7525, Option #2), or the Harnett County Fire Marshal's Office (910-893-7580).
- Approved plans must be picked up from the Central Permitting Office and all fees paid before any required inspections can be conducted.

JUNIPER VILLAGE
BUILDING 200

1208 North Main Steet
Lillington, North Carolina

Hydraulic Calculations

Wayne Automatic Fire Sprinklers Job Number: 1020001

Wayne Automatic Fire Sprinklers, Inc.
4370 Motorsport Drive, Concord NC 28027 - 8977

Hydrant Flow Test Report

LOCATION: JUNIPER VILLAGE APTS PARKER LANE & NORTH MAIN ST. DATE: 3-20-24

TEST MADE BY: PJAMES TIME: 8:30 AM

REPRESENTATIVE OF: LILLINGTON FIRE DEPT.

WITNESS: JAMEY

STATE PURPOSE OF TEST:

CONSUMPTION RATE DURING TEST:

IF PUMPS AFFECT TEST, INDICATE PUMPS OPERATING:

TEST #225

FLOW HYDRANTS: #224 A1 A2 FLOW A3 A4

Size Nozzle: 2.5"

Pilot Reading: 40 psi

Discharge Coefficient: .9 Total GPM

GPM: 1060

STATIC P 80 psi RESIDUAL B 68 psi

PROJECTED RESULTS: At 20 psi Residual _____gpm, or At _psi Residual_____gpm

REMARKS:

LOCATION MAP: Show line sizes and distance to next cross connected line. Show valves and Hydrant branch size. Indicate North. Show flowing hydrants – Label A1, A2, A3, A4. Show location of Static and Residual – Label B.

Indicate B. Hydrant:_____ Sprinkler:_____Other (Identify): _____

WAYNE

Automatic Fire Sprinklers, Inc.

Hydraulic Calculations

Wayne Automatic
Fire Sprinklers, Inc.
4370 Motorsport Drive
Concord, NC 28027
704-782-3032

Job Name	:	Juniper Village - Building 200 - 3rd Floor - Unit B2 - Common - DA 2.1
Sheet Number	:	FP2.2
Location	:	Building 200
Design Area	:	Design Area 2.1
Contract	:	102001
Data File	:	Building 200- 3rd Floor - Unit B2 - Common DA 2.1.WXF

HYDRAULIC CALCULATIONS
for

Project name: Juniper Villiage
Location: Building 200
Drawing no: FP2.2
Date: 4-5-2024

Design

Remote area number: Design Area 2.1
Remote area location: Building 200 - 3rd Floor - Unit B2 -Common Area
Occupancy classification: NFPA 13R
Density: .05 - Gpm/SqFt
Area of application: 4 Sprinklers - SqFt
Coverage per sprinkler: 256 - SqFt
Type of sprinklers calculated: Reliable Mod. F1 Res 44 Residential HSW
No. of sprinklers calculated: 4
In-rack demand: - GPM
Hose streams: - GPM
Total water required (including hose streams): 168.7 - GPM @ 68.6 - Psi
Type of system: Wet Residential NFPA 13R
Volume of dry or preaction system: - Gal

Water supply information

Date: 1-18-2023
Location: Parker Lane and North Main Street Hydrant #224
Source: Lillington Fire Department

Name of contractor: Wayne Automatic Fire Sprinklers
Address: 4370 Motorsport Drive / Concord, NC
Phone number: 407-877-5514
Name of designer: Donald Hawkins
Authority having jurisdiction: Town of Lillington
Notes: (Include peaking information for gridded systems here.)
(1) Finished floor elevation is 169. For clarity the finished floor elevation on the hydraulic calculations is shown as 0'-0".
(2) A domestic demand of 103 was added at node point DD1 as required by NFPA 13R Section 9.6.

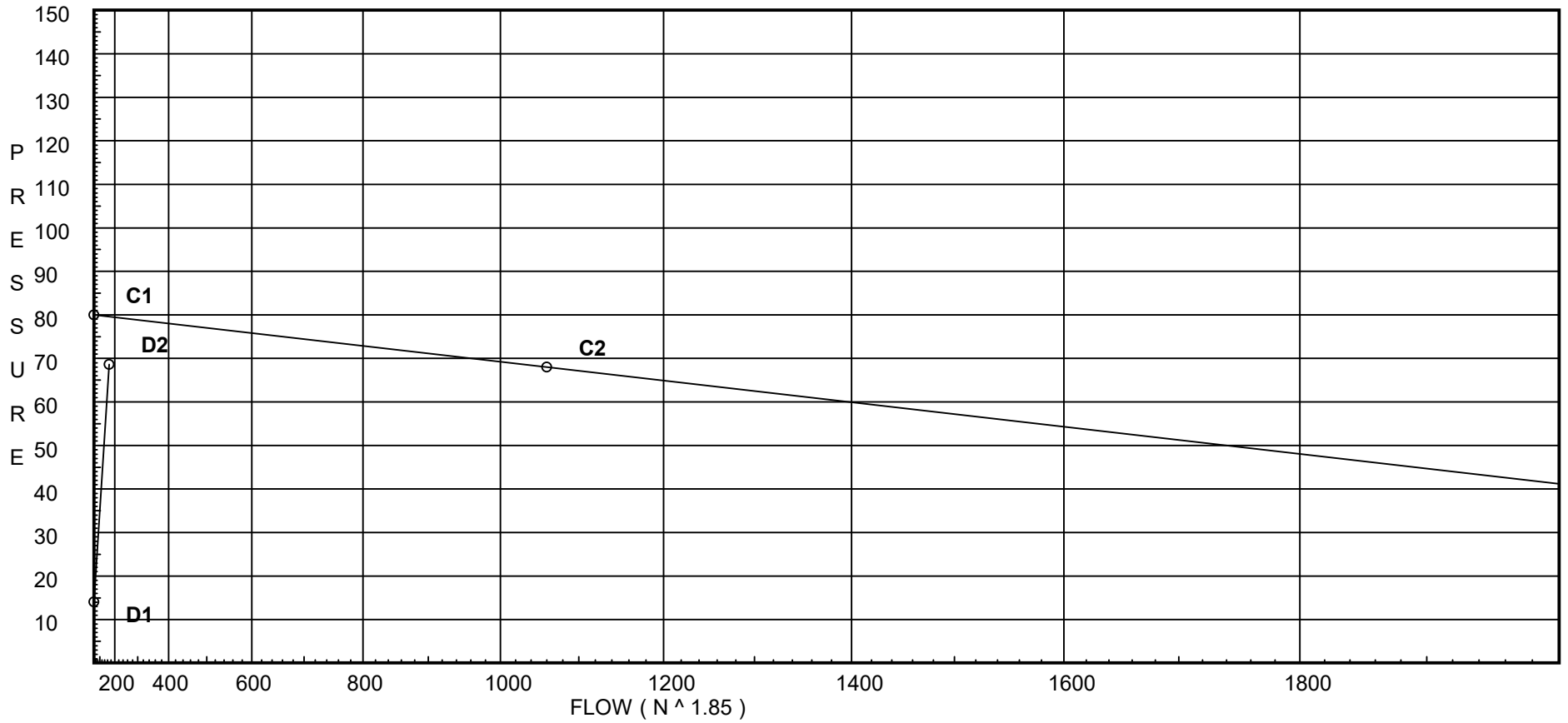
Water Supply Curve C

Wayne Automatic
Juniper Village - Building 200 - 3rd Floor - Unit B2 - Common - DA 2.1

Date 4-5-2024

City Water Supply:
- C1 - Static Pressure : 80
- C2 - Residual Pressure: 68
- C2 - Residual Flow : 1060

Demand:
- D1 - Elevation : 14.076
- D2 - System Flow : 168.751
- D2 - System Pressure : 68.641
- Hose (Demand) : _____
- D3 - System Demand : 168.751
- Safety Margin : 10.958



Fittings Used Summary

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	1	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
T	NFPA 13 Tee Branch	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
U *	CPVC 90' Elbow Tyco	0	4	5	6	7	9	12	13	0	0	0	0	0	0	0	0	0	0	0	0
V *	CPVC Tee Branch Tyco	0	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
Z	Generic Flow Switch	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
Zai	Ames 4000SS	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Pressure / Flow Summary - STANDARD

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
A1	27.5	4.4	13.3	na	16.05	0.05	256	13.3
A2	27.5	4.4	15.19	na	17.15	0.05	256	13.3
A3	27.5	4.4	13.9	na	16.41	0.05	256	13.3
A4	27.5	4.4	13.47	na	16.15	0.05	256	13.3
11	19.25		18.58	na				
16	19.25		20.14	na				
62	19.25		21.66	na				
12	19.25		20.69	na				
17	19.25		22.12	na				
13	19.25		19.26	na				
14	19.25		18.77	na				
26	19.25		19.48	na				
18	19.25		20.82	na				
63	19.25		22.66	na				
27	19.25		25.16	na				
28	19.25		30.92	na				
203	19.25		33.66	na				
204	19.25		34.53	na				
202	19.25		37.52	na				
102	9.25		44.97	na				
101	9.25		45.32	na				
100	9.25		48.33	na				
103	9.25		49.35	na				
TR	1.0		54.97	na				
BR	-3.0		57.2	na				
UG2	-3.0		57.21	na				
BFS2	2.0		55.07	na				
BFD2	2.0		65.03	na				
DD2	-3.0		67.22	na	103.0			
M1	-3.0		67.68	na				
M2	-3.0		67.68	na				
M3	-3.0		67.67	na				
M4	-3.0		67.66	na				
M5	-3.0		67.67	na				
CC1	-10.0		70.73	na				
CC2	-10.0		70.73	na				
TEST	-5.0		68.64	na				

The maximum velocity is 17.75 and it occurs in the pipe between nodes 17 and 203

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
A1	16.05	0.874	U	4.0	8.250	13.300		K Factor = 4.40
to		150.0		0.0	4.000	3.573		
11	16.05	0.1393		0.0	12.250	1.707		Vel = 8.58
	0.0							
	16.05					18.580		K Factor = 3.72
A2	17.15	0.874	U	4.0	8.250	15.189		K Factor = 4.40
to		150.0		0.0	4.000	3.573		
12	17.15	0.1576		0.0	12.250	1.930		Vel = 9.17
	0.0							
	17.15					20.692		K Factor = 3.77
A3	16.41	0.874	U	4.0	8.250	13.904		K Factor = 4.40
to		150.0		0.0	4.000	3.573		
13	16.41	0.1452		0.0	12.250	1.779		Vel = 8.78
	0.0							
	16.41					19.256		K Factor = 3.74
A4	16.15	0.874	U	4.0	8.250	13.472		K Factor = 4.40
to		150.0		0.0	4.000	3.573		
14	16.15	0.1410		0.0	12.250	1.727		Vel = 8.64
	0.0							
	16.15					18.772		K Factor = 3.73
11	16.05	0.874	V	3.0	8.170	18.580		
to		150.0		0.0	3.000	0.0		
16	16.05	0.1394		0.0	11.170	1.557		Vel = 8.58
16	0.0	0.874		0.0	10.920	20.137		
to		150.0		0.0	0.0	0.0		
62	16.05	0.1394		0.0	10.920	1.522		Vel = 8.58
62	0.0	0.874		0.0	3.330	21.659		
to		150.0		0.0	0.0	0.0		
17	16.05	0.1393		0.0	3.330	0.464		Vel = 8.58
	0.0							
	16.05					22.123		K Factor = 3.41
12	17.15	0.874	U	4.0	2.080	20.692		
to		150.0	V	3.0	7.000	0.0		
17	17.15	0.1576		0.0	9.080	1.431		Vel = 9.17
17	16.04	0.874	V	3.0	18.580	22.123		
to		150.0		0.0	3.000	0.0		
203	33.19	0.5348		0.0	21.580	11.541		Vel = 17.75
	0.0							
	33.19					33.664		K Factor = 5.72
13	16.41	0.874	U	4.0	3.750	19.256		
to		150.0	V	3.0	7.000	0.0		
18	16.41	0.1452		0.0	10.750	1.561		Vel = 8.78
	0.0							
	16.41					20.817		K Factor = 3.60
14	16.15	0.874	V	3.0	2.000	18.772		
to		150.0		0.0	3.000	0.0		
26	16.15	0.1412		0.0	5.000	0.706		Vel = 8.64

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
26	0.0	0.874	V	3.0	6.500	19.478		
to		150.0		0.0	3.000	0.0		
18	16.15	0.1409		0.0	9.500	1.339		Vel = 8.64
18	16.41	0.874		0.0	3.580	20.817		
to		150.0		0.0	0.0	0.0		
63	32.56	0.5159		0.0	3.580	1.847		Vel = 17.41
63	0.0	0.874		0.0	4.830	22.664		
to		150.0		0.0	0.0	0.0		
27	32.56	0.5159		0.0	4.830	2.492		Vel = 17.41
27	0.0	0.874		0.0	11.170	25.156		
to		150.0		0.0	0.0	0.0		
28	32.56	0.5159		0.0	11.170	5.763		Vel = 17.41
28	0.0	0.874	V	3.0	4.000	30.919		
to		150.0		0.0	3.000	0.0		
204	32.56	0.5160		0.0	7.000	3.612		Vel = 17.41
	0.0							
	32.56					34.531		K Factor = 5.54
203	33.19	1.394		0.0	15.750	33.664		
to		150.0		0.0	0.0	0.0		
204	33.19	0.0550		0.0	15.750	0.867		Vel = 6.98
204	32.56	1.394	U	6.0	9.330	34.531		
to		150.0		0.0	6.000	0.0		
202	65.75	0.1949		0.0	15.330	2.988		Vel = 13.82
	0.0							
	65.75					37.519		K Factor = 10.73
202	65.75	1.394	V	6.0	10.000	37.519		
to		150.0		0.0	6.000	4.331		
102	65.75	0.1950		0.0	16.000	3.120		Vel = 13.82
	0.0							
	65.75					44.970		K Factor = 9.80
102	65.75	2.003		0.0	10.580	44.970		
to		150.0		0.0	0.0	0.0		
101	65.75	0.0334		0.0	10.580	0.353		Vel = 6.69
101	0.0	2.003	V	10.0	80.250	45.323		
to		150.0		0.0	10.000	0.0		
100	65.75	0.0334		0.0	90.250	3.011		Vel = 6.69
100	0.0	2.003		0.0	30.420	48.334		
to		150.0		0.0	0.0	0.0		
103	65.75	0.0334		0.0	30.420	1.015		Vel = 6.69
103	0.0	2.003	5U	45.0	16.500	49.349		
to		150.0		0.0	45.000	3.573		
TR	65.75	0.0334		0.0	61.500	2.052		Vel = 6.69
	0.0							
	65.75					54.974		K Factor = 8.87
TR	65.75	2.003	Z	6.482	8.250	54.974		
to		150.0		0.0	6.482	1.732		
BR	65.75	0.0334		0.0	14.732	0.492		Vel = 6.69
BR	0.0	4.28	L	10.75	4.000	57.198		
to		140.0		0.0	10.750	0.0		
UG2	65.75	0.0009		0.0	14.750	0.014		Vel = 1.47

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
	0.0							
	65.75					57.212		K Factor = 8.69
UG2	65.75	4.24	G	3.889	7.080	57.212		
to		150.0	L	11.667	15.556	-2.166		
BFS2	65.75	0.0009		0.0	22.636	0.020		Vel = 1.49
BFS2	0.0	4.026	Zai	0.0	10.000	55.066		
to		120.0		0.0	0.0	9.950		* * Fixed Loss = 9.95
BFD2	65.75	0.0017		0.0	10.000	0.017		Vel = 1.66
BFD2	0.0	4.24	L	11.667	12.580	65.033		
to		150.0		0.0	11.667	2.166		
DD2	65.75	0.0008		0.0	24.247	0.020		Vel = 1.49
DD2	103.00	4.24	G	3.889	46.080	67.219		Qa = 103.00
to		150.0	T	38.891	42.780	0.0		
M4	168.75	0.0050		0.0	88.860	0.440		Vel = 3.83
	0.0							
	168.75					67.659		K Factor = 20.52
M1	-61.54	7.98		0.0	31.580	67.678		
to		150.0		0.0	0.0	0.0		
M2	-61.54	0.0		0.0	31.580	-0.001		Vel = 0.39
M2	0.0	7.98	2F	27.183	193.580	67.677		
to		150.0		0.0	27.182	0.0		
M3	-61.54	0.0		0.0	220.762	-0.007		Vel = 0.39
M3	0.0	7.98	F	13.591	287.750	67.670		
to		150.0		0.0	13.592	0.0		
M4	-61.54	0.0		0.0	301.342	-0.011		Vel = 0.39
M4	168.75	7.98	T	52.855	76.670	67.659		
to		150.0		0.0	52.855	0.0		
M5	107.21	0.0001		0.0	129.525	0.013		Vel = 0.69
M5	0.0	11.68	F	17.661	422.000	67.672		
to		150.0		0.0	17.661	0.0		
M1	107.21	0.0		0.0	439.661	0.006		Vel = 0.32
M1	61.54	11.68	T	81.513	372.830	67.678		
to		150.0	G	8.151	89.664	3.032		
CC1	168.75	0.0		0.0	462.494	0.017		Vel = 0.51
CC1	0.0	19.76		0.0	321.000	70.727		
to		150.0		0.0	0.0	0.0		
CC2	168.75	0.0		0.0	321.000	0.001		Vel = 0.18
CC2	0.0	6.08	G	4.038	65.000	70.728		
to		140.0	L	12.115	16.153	-2.166		
TEST	168.75	0.0010		0.0	81.153	0.079		Vel = 1.86
	0.0							
	168.75					68.641		K Factor = 20.37

WAYNE

Automatic Fire Sprinklers, Inc.

Hydraulic Calculations

Wayne Automatic
Fire Sprinklers, Inc.
4370 Motorsport Drive
Concord, NC 28027
704-782-3032

Job Name	:	Juniper Village- Building 200 - 3rd Floor - Corridor - DA 2.2
Sheet Number	:	FP 2.2
Location	:	Building 200
Design Area	:	Design Area 2.2
Contract	:	102001
Data File	:	Building 200- 3rd Floor - Corridor - DA 2.2.WXF

HYDRAULIC CALCULATIONS
for

Project name: Juniper Village
Location: Building 200
Drawing no: FP 2.2
Date: 4-5-2024

Design

Remote area number: Design Area 2.2
Remote area location: Building 200 - 3rd Floor - Corridor
Occupancy classification: NFPA 13R
Density: .10 - Gpm/SqFt
Area of application: 4 Sprinklers - SqFt
Coverage per sprinkler: 122 - SqFt
Type of sprinklers calculated: Reliable Mod. F3QR Quick Response HSW
No. of sprinklers calculated: 4
In-rack demand: - GPM
Hose streams: - GPM
Total water required (including hose streams): 165.3 - GPM @ 46.2 - Psi
Type of system: Wet Residential NFPA 13R
Volume of dry or preaction system: - Gal

Water supply information

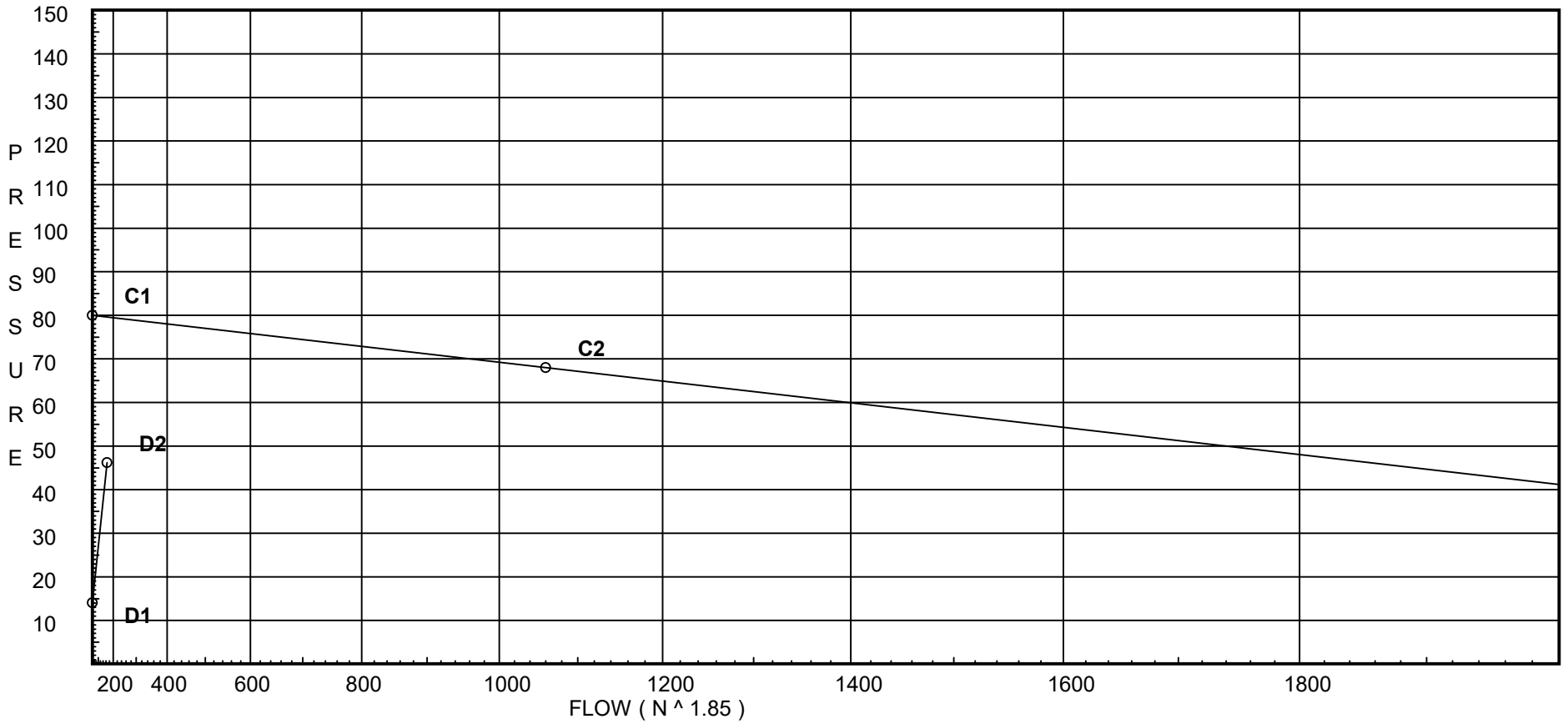
Date: 1-18-2023
Location: Parker Lane and North Main Street - Hydrant #224
Source: Lillington Fire Department

Name of contractor: Wayne Automatic Fire Sprinklers
Address: 4370 Motorsport Drive / Concord, NC
Phone number: 704-782-3032
Name of designer: Donald Hawkins
Authority having jurisdiction: Town of Lillington
Notes: (Include peaking information for gridded systems here.)
(1) Finished floor elevation is 136'. For clarity the finished floor elevation on the hydraulic calculations is shown as 0'-0".
(2) A domestic demand of 103 was added at node point DD2 as required by NFPA 13R Section 9.6.

Water Supply Curve C

City Water Supply:
- C1 - Static Pressure : 80
- C2 - Residual Pressure: 68
- C2 - Residual Flow : 1060

Demand:
- D1 - Elevation : 14.076
- D2 - System Flow : 165.294
- D2 - System Pressure : 46.194
- Hose (Demand) : _____
- D3 - System Demand : 165.294
- Safety Margin : 33.420



Fittings Used Summary

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	1	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
T	NFPA 13 Tee Branch	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
U *	CPVC 90' Elbow Tyco	0	4	5	6	7	9	12	13	0	0	0	0	0	0	0	0	0	0	0	0
V *	CPVC Tee Branch Tyco	0	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
Z	Generic Flow Switch	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
Zai	Ames 4000SS	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Pressure / Flow Summary - STANDARD

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
B1	27.5	5.6	7.4	na	15.23	0.1	122	7.0
B2	27.5	5.6	8.72	na	16.54	0.1	122	7.0
B3	27.5	5.6	7.0	na	14.82	0.1	122	7.0
B4	27.5	5.6	7.87	na	15.71	0.1	122	7.0
21	19.25		13.18	na				
25	19.25		15.19	na				
22	19.25		14.86	na				
36	19.25		17.36	na				
23	19.25		12.05	na				
27	19.25		14.54	na				
24	19.25		13.08	na				
28	19.25		15.88	na				
204	19.25		19.09	na				
201	19.25		19.76	na				
205	19.25		19.21	na				
206	19.25		19.59	na				
207	19.25		20.07	na				
200	19.25		21.64	na				
202	19.25		19.81	na				
102	9.25		24.3	na				
101	9.25		24.39	na				
100	9.25		26.14	na				
103	9.25		27.06	na				
TR	1.0		32.48	na				
BR	-3.0		34.66	na				
UG2	-3.0		34.67	na				
BFS2	2.0		32.53	na				
BFD2	2.0		42.61	na				
DD2	-3.0		44.79	na	103.0			
M1	-3.0		45.24	na				
M2	-3.0		45.23	na				
M3	-3.0		45.23	na				
M4	-3.0		45.22	na				
M5	-3.0		45.23	na				
CC1	-10.0		48.28	na				
CC2	-10.0		48.28	na				
TEST	-5.0		46.19	na				

The maximum velocity is 16.32 and it occurs in the pipe between nodes 28 and 204

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
B1	15.23	0.874	V	3.0	10.420	7.398		K Factor = 5.60
to		150.0	U	4.0	7.000	3.573		
21	15.23	0.1266		0.0	17.420	2.205		Vel = 8.14
	0.0							
	15.23					13.176		K Factor = 4.20
B2	16.54	0.874	V	3.0	10.420	8.722		K Factor = 5.60
to		150.0	U	4.0	7.000	3.573		
22	16.54	0.1474		0.0	17.420	2.567		Vel = 8.85
	0.0							
	16.54					14.862		K Factor = 4.29
B3	14.82	0.874	U	4.0	8.250	7.000		K Factor = 5.60
to		150.0		0.0	4.000	3.573		
23	14.82	0.1202		0.0	12.250	1.473		Vel = 7.93
	0.0							
	14.82					12.046		K Factor = 4.27
B4	15.71	0.874	U	4.0	8.250	7.868		K Factor = 5.60
to		150.0		0.0	4.000	3.573		
24	15.71	0.1340		0.0	12.250	1.641		Vel = 8.40
	0.0							
	15.71					13.082		K Factor = 4.34
21	15.23	0.874	2V	6.0	9.920	13.176		
to		150.0		0.0	6.000	0.0		
25	15.23	0.1266		0.0	15.920	2.015		Vel = 8.14
25	0.0	0.874	V	3.0	28.750	15.191		
to		150.0		0.0	3.000	0.0		
205	15.23	0.1266		0.0	31.750	4.019		Vel = 8.14
	0.0							
	15.23					19.210		K Factor = 3.47
22	16.54	0.874	U	4.0	9.920	14.862		
to		150.0	V	3.0	7.000	0.0		
36	16.54	0.1474		0.0	16.920	2.494		Vel = 8.85
36	0.0	0.874	V	3.0	9.580	17.356		
to		150.0		0.0	3.000	0.0		
205	16.54	0.1474		0.0	12.580	1.854		Vel = 8.85
	0.0							
	16.54					19.210		K Factor = 3.77
23	14.82	0.874	U	4.0	10.750	12.046		
to		150.0	2V	6.0	10.000	0.0		
27	14.82	0.1202		0.0	20.750	2.495		Vel = 7.93
27	0.0	0.874		0.0	11.170	14.541		
to		150.0		0.0	0.0	0.0		
28	14.82	0.1202		0.0	11.170	1.343		Vel = 7.93
	0.0							
	14.82					15.884		K Factor = 3.72
24	15.71	0.874	U	4.0	10.920	13.082		
to		150.0	2V	6.0	10.000	0.0		
28	15.71	0.1339		0.0	20.920	2.802		Vel = 8.40

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
28	14.81	0.874	V	3.0	4.000	15.884		
to		150.0		0.0	3.000	0.0		
204	30.52	0.4580		0.0	7.000	3.206		Vel = 16.32
	0.0							
	30.52					19.090		K Factor = 6.99
204	30.52	1.394	U	6.0	9.330	19.090		
to		150.0		0.0	6.000	0.0		
202	30.52	0.0471		0.0	15.330	0.722		Vel = 6.42
	0.0							
	30.52					19.812		K Factor = 6.86
201	-18.45	1.101		0.0	9.420	19.762		
to		150.0		0.0	0.0	0.0		
205	-18.45	-0.0586		0.0	9.420	-0.552		Vel = 6.22
205	31.77	1.101		0.0	12.000	19.210		
to		150.0		0.0	0.0	0.0		
206	13.32	0.0320		0.0	12.000	0.384		Vel = 4.49
206	0.0	1.101		0.0	14.750	19.594		
to		150.0		0.0	0.0	0.0		
207	13.32	0.0321		0.0	14.750	0.473		Vel = 4.49
207	0.0	1.101	U	5.0	44.160	20.067		
to		150.0		0.0	5.000	0.0		
200	13.32	0.0321		0.0	49.160	1.576		Vel = 4.49
	0.0							
	13.32					21.643		K Factor = 2.86
200	13.32	1.394	V	6.0	10.000	21.643		
to		150.0		0.0	6.000	4.331		
100	13.32	0.0101		0.0	16.000	0.162		Vel = 2.80
	0.0							
	13.32					26.136		K Factor = 2.61
201	18.45	1.394	V	6.0	10.000	19.762		
to		150.0		0.0	6.000	4.331		
101	18.45	0.0186		0.0	16.000	0.297		Vel = 3.88
	0.0							
	18.45					24.390		K Factor = 3.74
202	30.52	2.003	V	10.0	10.000	19.812		
to		150.0		0.0	10.000	4.331		
102	30.52	0.0081		0.0	20.000	0.162		Vel = 3.11
	0.0							
	30.52					24.305		K Factor = 6.19
102	30.52	2.003		0.0	10.580	24.305		
to		150.0		0.0	0.0	0.0		
101	30.52	0.0080		0.0	10.580	0.085		Vel = 3.11
101	18.46	2.003	V	10.0	80.250	24.390		
to		150.0		0.0	10.000	0.0		
100	48.98	0.0193		0.0	90.250	1.746		Vel = 4.99
100	13.31	2.003		0.0	30.420	26.136		
to		150.0		0.0	0.0	0.0		
103	62.29	0.0302		0.0	30.420	0.919		Vel = 6.34

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
103	0.0	2.003	5U	45.0	16.500	27.055		
to		150.0		0.0	45.000	3.573		
TR	62.29	0.0302		0.0	61.500	1.857		Vel = 6.34
	0.0							
	62.29					32.485		K Factor = 10.93
TR	62.29	2.003	Z	6.482	8.250	32.485		
to		150.0		0.0	6.482	1.732		
BR	62.29	0.0302		0.0	14.732	0.445		Vel = 6.34
BR	0.0	4.28	L	10.75	4.000	34.662		
to		140.0		0.0	10.750	0.0		
UG2	62.29	0.0009		0.0	14.750	0.013		Vel = 1.39
	0.0							
	62.29					34.675		K Factor = 10.58
UG2	62.29	4.24	G	3.889	7.080	34.675		
to		150.0	L	11.667	15.556	-2.166		
BFS2	62.29	0.0008		0.0	22.636	0.018		Vel = 1.42
BFS2	0.0	4.026	Zai	0.0	10.000	32.527		
to		120.0		0.0	0.0	10.067		* * Fixed Loss = 10.067
BFD2	62.29	0.0015		0.0	10.000	0.015		Vel = 1.57
BFD2	0.0	4.24	L	11.667	12.580	42.609		
to		150.0		0.0	11.667	2.166		
DD2	62.29	0.0007		0.0	24.247	0.018		Vel = 1.42
DD2	103.00	4.24	G	3.889	46.080	44.793		Qa = 103.00
to		150.0	T	38.891	42.780	0.0		
M4	165.29	0.0048		0.0	88.860	0.423		Vel = 3.76
	0.0							
	165.29					45.216		K Factor = 24.58
M1	-60.28	7.98		0.0	31.580	45.235		
to		150.0		0.0	0.0	0.0		
M2	-60.28	0.0		0.0	31.580	-0.001		Vel = 0.39
M2	0.0	7.98	2F	27.183	193.580	45.234		
to		150.0		0.0	27.182	0.0		
M3	-60.28	0.0		0.0	220.762	-0.007		Vel = 0.39
M3	0.0	7.98	F	13.591	287.750	45.227		
to		150.0		0.0	13.592	0.0		
M4	-60.28	0.0		0.0	301.342	-0.011		Vel = 0.39
M4	165.29	7.98	T	52.855	76.670	45.216		
to		150.0		0.0	52.855	0.0		
M5	105.01	0.0001		0.0	129.525	0.013		Vel = 0.67
M5	0.0	11.68	F	17.661	422.000	45.229		
to		150.0		0.0	17.661	0.0		
M1	105.01	0.0		0.0	439.661	0.006		Vel = 0.31
M1	60.28	11.68	T	81.513	372.830	45.235		
to		150.0	G	8.151	89.664	3.032		
CC1	165.29	0.0		0.0	462.494	0.016		Vel = 0.49
CC1	0.0	19.76		0.0	321.000	48.283		
to		150.0		0.0	0.0	0.0		
CC2	165.29	0.0		0.0	321.000	0.001		Vel = 0.17

Final Calculations - Hazen-Williams

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*******	Notes	******
CC2	0.0	6.08	G	4.038	65.000	48.284				
to		140.0	L	12.115	16.153	-2.166				
TEST	165.29	0.0009		0.0	81.153	0.076		Vel = 1.83		
	0.0									
	165.29					46.194		K Factor = 24.32		

WAYNE

Automatic Fire Sprinklers, Inc.

Hydraulic Calculations

Wayne Automatic
Fire Sprinklers, Inc.
4370 Motorsport Drive
Concord, NC 28027
704-782-3032

Job Name	:	Juniper Village - Building 200 - 2nd Floor - Unit C - Common - DA 2.3
Sheet Number	:	FP2.1
Location	:	Building 200
Design Area	:	Design Area 2.3
Contract	:	102001
Data File	:	Building 200- 2nd Floor - Unit C- Common DA 2.3.WXF

HYDRAULIC CALCULATIONS
for

Project name: Juniper Villiage
Location: Building 200
Drawing no: FP2.1
Date: 4-5-2024

Design

Remote area number: Design Area 2.3
Remote area location: Building 200 - 2nd Floor - Unit C Common Area
Occupancy classification: NFPA 13R
Density: .05 - Gpm/SqFt
Area of application: 4 Sprinklers - SqFt
Coverage per sprinkler: 256, 400 - SqFt
Type of sprinklers calculated: Reliable Mod. F1 Res 49 Residential Pendents
No. of sprinklers calculated: 3
In-rack demand: - GPM
Hose streams: - GPM
Total water required (including hose streams): 152.9 - GPM @ 51.1 - Psi
Type of system: Wet Residential NFPA 13R
Volume of dry or preaction system: - Gal

Water supply information

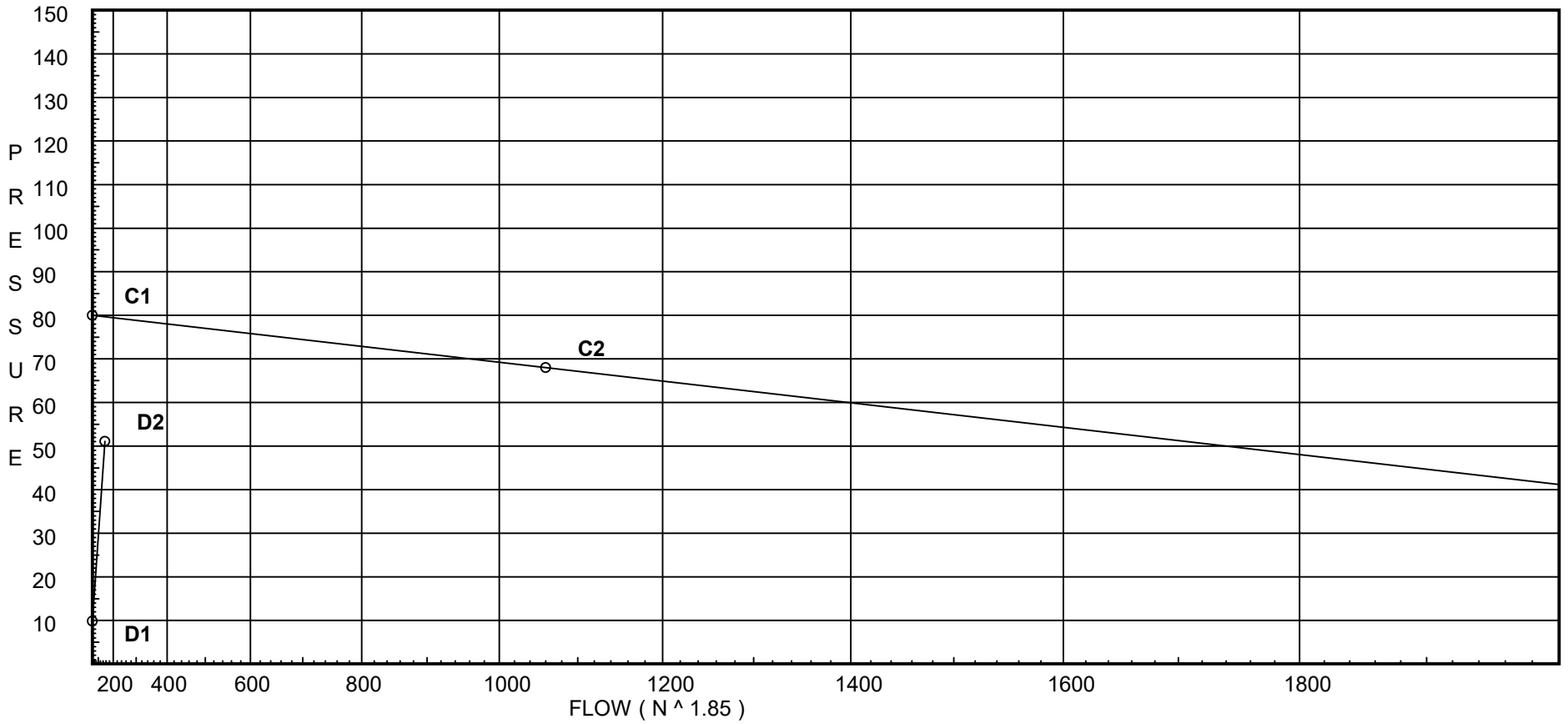
Date: 1-18-2023
Location: Parker Lane and North Main Street Hydrant #224
Source: Lillington Fire Department

Name of contractor: Wayne Automatic Fire Sprinklers
Address: 4370 Motorsport Drive / Concord, NC
Phone number: 704-782-3032
Name of designer: Donald Hawkins
Authority having jurisdiction: Town of Lillington
Notes: (Include peaking information for gridded systems here.)
(1) Finished floor elevation is 169. For clarity the finished floor elevation on the hydraulic calculations is shown as 0'-0".
(2) A domestic demand of 103 was added at node point DD2 as required by NFPA 13R Section 9.6.

Water Supply Curve C

City Water Supply:
- C1 - Static Pressure : 80
- C2 - Residual Pressure: 68
- C2 - Residual Flow : 1060

Demand:
- D1 - Elevation : 9.853
- D2 - System Flow : 152.949
- D2 - System Pressure : 51.085
- Hose (Demand) : _____
- D3 - System Demand : 152.949
- Safety Margin : 28.581



Fittings Used Summary

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	1	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
T	NFPA 13 Tee Branch	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
U *	CPVC 90' Elbow Tyco	0	4	5	6	7	9	12	13	0	0	0	0	0	0	0	0	0	0	0	0
V *	CPVC Tee Branch Tyco	0	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
Z	Generic Flow Switch	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
Zai	Ames 4000SS	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Pressure / Flow Summary - STANDARD

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
F1	17.75	4.9	8.56	na	14.34	0.05	256	7.0
F2	17.75	4.9	10.12	na	15.59	0.05	256	7.0
F3	17.75	4.9	16.7	na	20.02	0.05	400	16.7
61	19.25		8.54	na				
16	19.25		8.83	na				
62	19.25		10.06	na				
17	19.25		11.58	na				
63	19.25		17.0	na				
27	19.25		18.01	na				
28	19.25		20.35	na				
203	19.25		21.11	na				
204	19.25		21.82	na				
202	19.25		23.62	na				
102	9.25		29.83	na				
101	9.25		30.04	na				
100	9.25		31.85	na				
103	9.25		32.46	na				
TR	1.0		37.27	na				
BR	-3.0		39.3	na				
UG2	-3.0		39.3	na				
BFS2	2.0		37.15	na				
BFD2	2.0		47.58	na				
DD2	-3.0		49.76	na	103.0			
M1	-3.0		50.14	na				
M2	-3.0		50.14	na				
M3	-3.0		50.13	na				
M4	-3.0		50.12	na				
M5	-3.0		50.13	na				
CC1	-10.0		53.18	na				
CC2	-10.0		53.19	na				
TEST	-5.0		51.09	na				

The maximum velocity is 16 and it occurs in the pipe between nodes 62 and 17

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
F1	14.34	0.874	U	4.0	1.500	8.562		K Factor = 4.90
to		150.0		0.0	4.000	-0.650		
61	14.34	0.1133		0.0	5.500	0.623		Vel = 7.67
	0.0							
	14.34					8.535		K Factor = 4.91
F2	15.59	0.874	V	3.0	1.500	10.118		K Factor = 4.90
to		150.0		0.0	3.000	-0.650		
62	15.59	0.1322		0.0	4.500	0.595		Vel = 8.34
	0.0							
	15.59					10.063		K Factor = 4.91
F3	20.02	0.874	V	3.0	1.500	16.700		K Factor = 4.90
to		150.0		0.0	3.000	-0.650		
63	20.02	0.2100		0.0	4.500	0.945		Vel = 10.71
	0.0							
	20.02					16.995		K Factor = 4.86
61	14.34	0.874		0.0	2.580	8.535		
to		150.0		0.0	0.0	0.0		
16	14.34	0.1132		0.0	2.580	0.292		Vel = 7.67
16	0.0	0.874		0.0	10.920	8.827		
to		150.0		0.0	0.0	0.0		
62	14.34	0.1132		0.0	10.920	1.236		Vel = 7.67
62	15.58	0.874		0.0	3.440	10.063		
to		150.0		0.0	0.0	0.0		
17	29.92	0.4416		0.0	3.440	1.519		Vel = 16.00
17	0.0	0.874	V	3.0	18.580	11.582		
to		150.0		0.0	3.000	0.0		
203	29.92	0.4414		0.0	21.580	9.526		Vel = 16.00
	0.0							
	29.92					21.108		K Factor = 6.51
63	20.02	0.874		0.0	4.830	16.995		
to		150.0		0.0	0.0	0.0		
27	20.02	0.2099		0.0	4.830	1.014		Vel = 10.71
27	0.0	0.874		0.0	11.170	18.009		
to		150.0		0.0	0.0	0.0		
28	20.02	0.2099		0.0	11.170	2.345		Vel = 10.71
28	0.0	0.874	V	3.0	4.000	20.354		
to		150.0		0.0	3.000	0.0		
204	20.02	0.2100		0.0	7.000	1.470		Vel = 10.71
	0.0							
	20.02					21.824		K Factor = 4.29
203	29.92	1.394		0.0	15.750	21.108		
to		150.0		0.0	0.0	0.0		
204	29.92	0.0455		0.0	15.750	0.716		Vel = 6.29
204	20.03	1.394	U	6.0	9.330	21.824		
to		150.0		0.0	6.000	0.0		
202	49.95	0.1172		0.0	15.330	1.797		Vel = 10.50
	0.0							
	49.95					23.621		K Factor = 10.28

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
202	49.95	1.394	V	6.0	10.000	23.621		
to		150.0		0.0	6.000	4.331		
102	49.95	0.1172		0.0	16.000	1.876		Vel = 10.50
	0.0							
	49.95					29.828		K Factor = 9.15
102	49.95	2.003		0.0	10.580	29.828		
to		150.0		0.0	0.0	0.0		
101	49.95	0.0200		0.0	10.580	0.212		Vel = 5.09
101	0.0	2.003	V	10.0	80.250	30.040		
to		150.0		0.0	10.000	0.0		
100	49.95	0.0201		0.0	90.250	1.811		Vel = 5.09
100	0.0	2.003		0.0	30.420	31.851		
to		150.0		0.0	0.0	0.0		
103	49.95	0.0201		0.0	30.420	0.610		Vel = 5.09
103	0.0	2.003	5U	45.0	16.500	32.461		
to		150.0		0.0	45.000	3.573		
TR	49.95	0.0201		0.0	61.500	1.234		Vel = 5.09
	0.0							
	49.95					37.268		K Factor = 8.18
TR	49.95	2.003	Z	6.482	8.250	37.268		
to		150.0		0.0	6.482	1.732		
BR	49.95	0.0202		0.0	14.732	0.297		Vel = 5.09
BR	0.0	4.28	L	10.75	4.000	39.297		
to		140.0		0.0	10.750	0.0		
UG2	49.95	0.0005		0.0	14.750	0.008		Vel = 1.11
	0.0							
	49.95					39.305		K Factor = 7.97
UG2	49.95	4.24	G	3.889	7.080	39.305		
to		150.0	L	11.667	15.556	-2.166		
BFS2	49.95	0.0005		0.0	22.636	0.012		Vel = 1.13
BFS2	0.0	4.026	Zai	0.0	10.000	37.151		
to		120.0		0.0	0.0	10.417		* * Fixed Loss = 10.417
BFD2	49.95	0.0010		0.0	10.000	0.010		Vel = 1.26
BFD2	0.0	4.24	L	11.667	12.580	47.578		
to		150.0		0.0	11.667	2.166		
DD2	49.95	0.0005		0.0	24.247	0.012		Vel = 1.13
DD2	103.00	4.24	G	3.889	46.080	49.756		Qa = 103.00
to		150.0	T	38.891	42.780	0.0		
M4	152.95	0.0041		0.0	88.860	0.367		Vel = 3.48
	0.0							
	152.95					50.123		K Factor = 21.60
M1	-55.78	7.98		0.0	31.580	50.139		
to		150.0		0.0	0.0	0.0		
M2	-55.78	0.0		0.0	31.580	-0.001		Vel = 0.36
M2	0.0	7.98	2F	27.183	193.580	50.138		
to		150.0		0.0	27.182	0.0		
M3	-55.78	0.0		0.0	220.762	-0.006		Vel = 0.36

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
M3	0.0	7.98	F	13.591	287.750	50.132		
to		150.0		0.0	13.592	0.0		
M4	-55.78	0.0		0.0	301.342	-0.009		Vel = 0.36
M4	152.95	7.98	T	52.855	76.670	50.123		
to		150.0		0.0	52.855	0.0		
M5	97.17	0.0001		0.0	129.525	0.010		Vel = 0.62
M5	0.0	11.68	F	17.661	422.000	50.133		
to		150.0		0.0	17.661	0.0		
M1	97.17	0.0		0.0	439.661	0.006		Vel = 0.29
M1	55.78	11.68	T	81.513	372.830	50.139		
to		150.0	G	8.151	89.664	3.032		
CC1	152.95	0.0		0.0	462.494	0.013		Vel = 0.46
CC1	0.0	19.76		0.0	321.000	53.184		
to		150.0		0.0	0.0	0.0		
CC2	152.95	0.0		0.0	321.000	0.001		Vel = 0.16
CC2	0.0	6.08	G	4.038	65.000	53.185		
to		140.0	L	12.115	16.153	-2.166		
TEST	152.95	0.0008		0.0	81.153	0.066		Vel = 1.69
	0.0							
	152.95					51.085		K Factor = 21.40

WAYNE

Automatic Fire Sprinklers, Inc.

Hydraulic Calculations

Wayne Automatic
Fire Sprinklers, Inc.
4370 Motorsport Drive
Concord, NC 28027
704-782-3032

Job Name	:	Juniper Village- Building 200 - 3rd Floor - Unit B - Common - DA 2.4
Sheet Number	:	FP 2.2
Location	:	Building 200
Design Area	:	Design Area 2.4
Contract	:	102001
Data File	:	Building 200- 3rd Floor - Unit B - Common - DA 2.4.WXF

HYDRAULIC CALCULATIONS
for

Project name: Juniper Village
Location: Building 200
Drawing no: FP 2.2
Date: 4-5-2024

Design

Remote area number: Design Area 2.4
Remote area location: Building 200 - 3rd Floor - Unit B - Commons
Occupancy classification: NFPA 13R
Density: .10 - Gpm/SqFt
Area of application: 4 Sprinklers - SqFt
Coverage per sprinkler: 122, 87 - SqFt
Type of sprinklers calculated: Reliable Mod. F3QR Quick Response HSW
No. of sprinklers calculated: 4
In-rack demand: - GPM
Hose streams: - GPM
Total water required (including hose streams): 174.8 - GPM @ 65.5 - Psi
Type of system: Wet Residential NFPA 13R
Volume of dry or preaction system: - Gal

Water supply information

Date: 1-18-2023
Location: Parker Lane and North Main Street - Hydrant #224
Source: Lillington Fire Department

Name of contractor: Wayne Automatic Fire Sprinklers
Address: 4370 Motorsport Drive / Concord, NC
Phone number: 407-877-5514
Name of designer: Donald Hawkins
Authority having jurisdiction: Town of Lillington
Notes: (Include peaking information for gridded systems here.)
(1) Finished floor elevation is 136'. For clarity the finished floor elevation on the hydraulic calculations is shown as 0'-0".
(2) A domestic demand of 103 was added at node point DD2 as required by NFPA 13R Section 9.6.

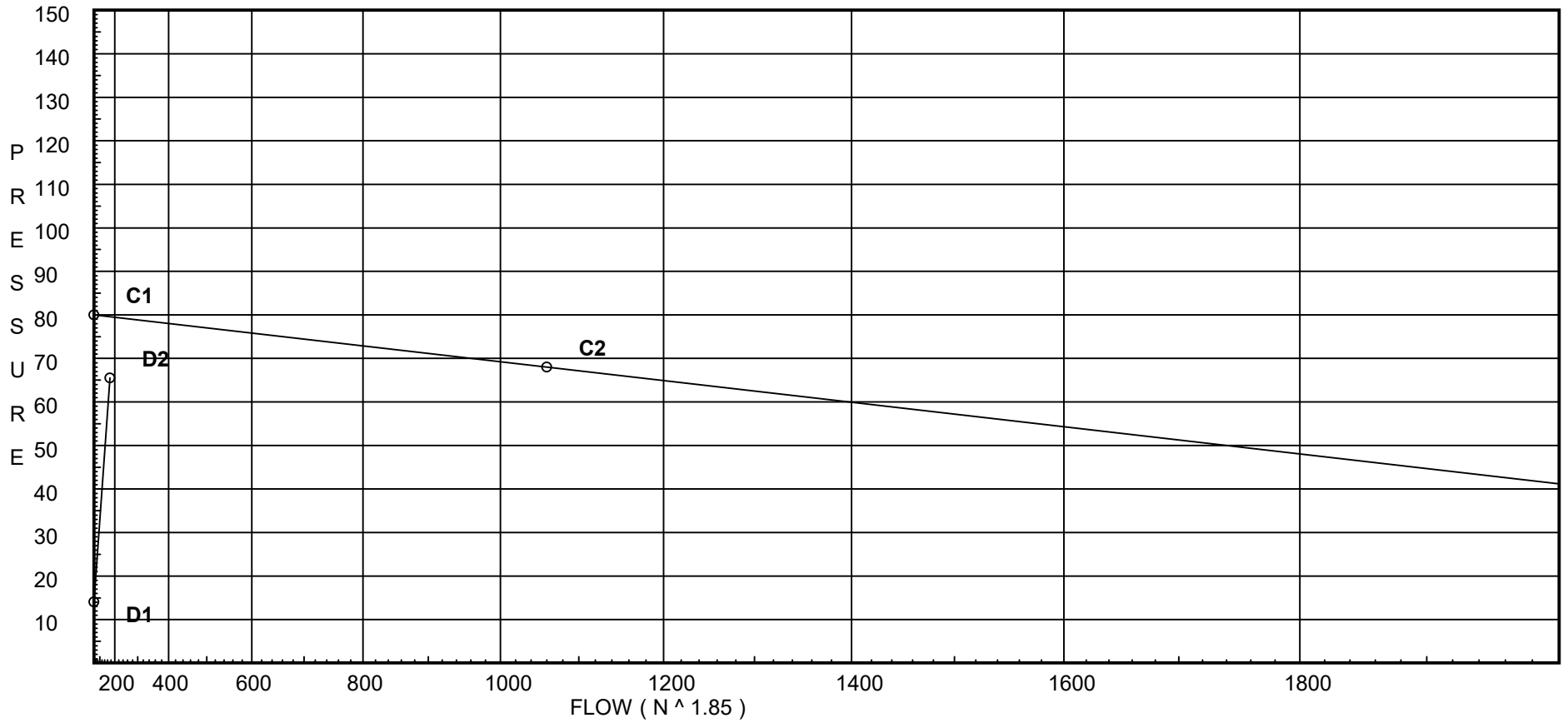
Water Supply Curve C

Wayne Automatic
Juniper Village- Building 200 - 3rd Floor - Unit B - Common - DA 2.4

Date 4-5-2024

City Water Supply:
- C1 - Static Pressure : 80
- C2 - Residual Pressure: 68
- C2 - Residual Flow : 1060

Demand:
- D1 - Elevation : 14.076
- D2 - System Flow : 174.794
- D2 - System Pressure : 65.524
- Hose (Demand) : _____
- D3 - System Demand : 174.794
- Safety Margin : 14.048



Fittings Used Summary

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	1	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
T	NFPA 13 Tee Branch	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
U *	CPVC 90' Elbow Tyco	0	4	5	6	7	9	12	13	0	0	0	0	0	0	0	0	0	0	0	0
V *	CPVC Tee Branch Tyco	0	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
Z	Generic Flow Switch	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
Zai	Ames 4000SS	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Pressure / Flow Summary - STANDARD

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
H1	27.5	4.4	13.3	na	16.05	0.05	256	13.3
H2	27.5	4.4	19.49	na	19.43	0.05	256	13.3
H3	27.5	4.4	15.73	na	17.45	0.05	256	13.3
H4	27.5	4.4	18.4	na	18.87	0.05	256	13.3
82	19.25		25.5	na				
85	19.25		27.6	na				
81	19.25		18.58	na				
83	19.25		21.29	na				
86	19.25		22.23	na				
84	19.25		24.28	na				
25	19.25		26.38	na				
201	19.25		34.93	na				
205	19.25		32.35	na				
206	19.25		31.24	na				
207	19.25		31.52	na				
200	19.25		38.31	na				
101	9.25		43.37	na				
100	9.25		44.71	na				
103	9.25		45.91	na				
TR	1.0		51.9	na				
BR	-3.0		54.21	na				
UG2	-3.0		54.22	na				
BFS2	2.0		52.08	na				
BFD2	2.0		61.88	na				
DD2	-3.0		64.07	na	103.0			
M1	-3.0		64.56	na				
M2	-3.0		64.55	na				
M3	-3.0		64.55	na				
M4	-3.0		64.53	na				
M5	-3.0		64.55	na				
CC1	-10.0		67.6	na				
CC2	-10.0		67.61	na				
TEST	-5.0		65.52	na				

The maximum velocity is 17.91 and it occurs in the pipe between nodes 86 and 206

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
H1	16.05	0.874	U	4.0	8.250	13.300		K Factor = 4.40
to		150.0		0.0	4.000	3.573		
81	16.05	0.1393		0.0	12.250	1.707		Vel = 8.58
	0.0							
	16.05					18.580		K Factor = 3.72
H2	19.43	0.874	U	4.0	8.250	19.492		K Factor = 4.40
to		150.0		0.0	4.000	3.573		
82	19.43	0.1985		0.0	12.250	2.432		Vel = 10.39
	0.0							
	19.43					25.497		K Factor = 3.85
H3	17.45	0.874	U	4.0	8.250	15.725		K Factor = 4.40
to		150.0		0.0	4.000	3.573		
83	17.45	0.1628		0.0	12.250	1.994		Vel = 9.33
	0.0							
	17.45					21.292		K Factor = 3.78
H4	18.87	0.874	U	4.0	8.250	18.398		K Factor = 4.40
to		150.0		0.0	4.000	3.573		
84	18.87	0.1882		0.0	12.250	2.305		Vel = 10.09
	0.0							
	18.87					24.276		K Factor = 3.83
82	19.43	0.874	V	3.0	7.580	25.497		
to		150.0		0.0	3.000	0.0		
85	19.43	0.1985		0.0	10.580	2.100		Vel = 10.39
85	0.0	0.874	V	3.0	16.750	27.597		
to		150.0		0.0	3.000	0.0		
207	19.43	0.1985		0.0	19.750	3.920		Vel = 10.39
	0.0							
	19.43					31.517		K Factor = 3.46
81	16.05	0.874	V	3.0	23.170	18.580		
to		150.0		0.0	3.000	0.0		
86	16.05	0.1394		0.0	26.170	3.648		Vel = 8.58
	0.0							
	16.05					22.228		K Factor = 3.40
83	17.45	0.874	V	3.0	2.750	21.292		
to		150.0		0.0	3.000	0.0		
86	17.45	0.1628		0.0	5.750	0.936		Vel = 9.33
86	16.04	0.874	V	3.0	13.580	22.228		
to		150.0		0.0	3.000	0.0		
206	33.49	0.5437		0.0	16.580	9.015		Vel = 17.91
	0.0							
	33.49					31.243		K Factor = 5.99
84	18.87	0.874	2V	6.0	5.170	24.276		
to		150.0		0.0	6.000	0.0		
25	18.87	0.1882		0.0	11.170	2.102		Vel = 10.09
25	0.0	0.874	V	3.0	28.750	26.378		
to		150.0		0.0	3.000	0.0		
205	18.87	0.1882		0.0	31.750	5.974		Vel = 10.09

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
	0.0							
	18.87					32.352		K Factor = 3.32
201	-42.46	1.101		0.0	9.420	34.932		
to		150.0		0.0	0.0	0.0		
205	-42.46	-0.2739		0.0	9.420	-2.580		Vel = 14.31
205	18.87	1.101		0.0	12.000	32.352		
to		150.0		0.0	0.0	0.0		
206	-23.59	-0.0924		0.0	12.000	-1.109		Vel = 7.95
206	33.49	1.101		0.0	14.750	31.243		
to		150.0		0.0	0.0	0.0		
207	9.9	0.0186		0.0	14.750	0.274		Vel = 3.34
207	19.43	1.101	U	5.0	44.170	31.517		
to		150.0		0.0	5.000	0.0		
200	29.33	0.1382		0.0	49.170	6.793		Vel = 9.88
	0.0							
	29.33					38.310		K Factor = 4.74
200	29.33	1.101	V	5.0	10.000	38.310		
to		150.0		0.0	5.000	4.331		
100	29.33	0.1382		0.0	15.000	2.073		Vel = 9.88
	0.0							
	29.33					44.714		K Factor = 4.39
201	42.46	1.101	V	5.0	10.000	34.932		
to		150.0		0.0	5.000	4.331		
101	42.46	0.2740		0.0	15.000	4.110		Vel = 14.31
	0.0							
	42.46					43.373		K Factor = 6.45
101	42.46	2.003	V	10.0	80.250	43.373		
to		150.0		0.0	10.000	0.0		
100	42.46	0.0149		0.0	90.250	1.341		Vel = 4.32
100	29.33	2.003		0.0	30.420	44.714		
to		150.0		0.0	0.0	0.0		
103	71.79	0.0393		0.0	30.420	1.194		Vel = 7.31
103	0.0	2.003	5U	45.0	16.500	45.908		
to		150.0		0.0	45.000	3.573		
TR	71.79	0.0393		0.0	61.500	2.415		Vel = 7.31
	0.0							
	71.79					51.896		K Factor = 9.97
TR	71.79	2.003	Z	6.482	8.250	51.896		
to		150.0		0.0	6.482	1.732		
BR	71.79	0.0392		0.0	14.732	0.578		Vel = 7.31
BR	0.0	4.28	L	10.75	4.000	54.206		
to		140.0		0.0	10.750	0.0		
UG2	71.79	0.0012		0.0	14.750	0.017		Vel = 1.60
	0.0							
	71.79					54.223		K Factor = 9.75
UG2	71.79	4.24	G	3.889	7.080	54.223		
to		150.0	L	11.667	15.556	-2.166		
BFS2	71.79	0.0010		0.0	22.636	0.023		Vel = 1.63

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
BFS2	0.0	4.026	Zai	0.0	10.000	52.080		
to		120.0		0.0	0.0	9.775		* * Fixed Loss = 9.775
BFD2	71.79	0.0020		0.0	10.000	0.020		Vel = 1.81
BFD2	0.0	4.24	L	11.667	12.580	61.875		
to		150.0		0.0	11.667	2.166		
DD2	71.79	0.0010		0.0	24.247	0.024		Vel = 1.63
DD2	103.00	4.24	G	3.889	46.080	64.065		Qa = 103.00
to		150.0	T	38.891	42.780	0.0		
M4	174.79	0.0053		0.0	88.860	0.469		Vel = 3.97
	0.0							
	174.79					64.534		K Factor = 21.76
M1	-63.75	7.98		0.0	31.580	64.555		
to		150.0		0.0	0.0	0.0		
M2	-63.75	0.0		0.0	31.580	-0.001		Vel = 0.41
M2	0.0	7.98	2F	27.183	193.580	64.554		
to		150.0		0.0	27.182	0.0		
M3	-63.75	0.0		0.0	220.762	-0.008		Vel = 0.41
M3	0.0	7.98	F	13.591	287.750	64.546		
to		150.0		0.0	13.592	0.0		
M4	-63.75	0.0		0.0	301.342	-0.012		Vel = 0.41
M4	174.80	7.98	T	52.855	76.670	64.534		
to		150.0		0.0	52.855	0.0		
M5	111.05	0.0001		0.0	129.525	0.014		Vel = 0.71
M5	0.0	11.68	F	17.661	422.000	64.548		
to		150.0		0.0	17.661	0.0		
M1	111.05	0.0		0.0	439.661	0.007		Vel = 0.33
M1	63.74	11.68	T	81.513	372.830	64.555		
to		150.0	G	8.151	89.664	3.032		
CC1	174.79	0.0		0.0	462.494	0.018		Vel = 0.52
CC1	0.0	19.76		0.0	321.000	67.605		
to		150.0		0.0	0.0	0.0		
CC2	174.79	0.0		0.0	321.000	0.001		Vel = 0.18
CC2	0.0	6.08	G	4.038	65.000	67.606		
to		140.0	L	12.115	16.153	-2.166		
TEST	174.79	0.0010		0.0	81.153	0.084		Vel = 1.93
	0.0							
	174.79					65.524		K Factor = 21.59

JUNIPER VILLAGE

1208 North Main Street
Lillington, North Carolina

Manufactures Product Data

Wayne Automatic Fire Sprinklers Job Number: 102001

Wayne Automatic Fire Sprinklers, Inc.
4370 Motorsport Drive - Concord, North Carolina 28027

Important Information with Regards to Your CPVC Fire Sprinkler System

CONGRATULATIONS! This building contains a state-of-the-art FlameGuard® life safety system. Your CPVC fire sprinkler system will enhance the safety and security of your building when properly cared for. CPVC Fire Sprinkler Products resist attack from a wide range of chemicals that are corrosive to metallic piping. As with any piping material, there are certain chemicals that can be detrimental to CPVC. Occasionally, some of these chemicals may be found in some construction products, site preparations and building maintenance. There are certain things that you need to be mindful of in caring for or working around your CPVC fire sprinkler system.

Keep your system clear from contact with the following products and chemicals unless product labels state materials are compatible with CPVC:

NOTICE	
Ordinary Considerations	**Property Maintenance Services**
Cleaning Products/Detergents Oils/Lubricants/Greases Rubbery Materials	Fungicides Mold Remediation Chemicals/Termiticides/Insecticides
For Hired Contractors & Do-It-Yourselfers	
Corrosion Inhibitors Glycol-based antifreezes Solder Flux Thread Sealants Flexible Cable/Wiring (especially communications cabling) Caulks/Mastics Adhesive Vinyl/Electrical Tape Non-Water Based Paint Paint Thinners Wood Finishes/Varnishes	

You should also avoid the following:

- Sitting, standing, hanging, leaning, or resting anything on the pipe, fittings, and sprinkler heads
- Grounding electrical wiring to the pipe or fittings
- Ambient temperatures below 40°F/4°C where your fire sprinkler system is located. (Unless an approved compatible antifreeze or insulation method is installed.)
- Hot work around the pipe, i.e. blow torches, soldering, etc.

Be certain this document is reviewed and understood by anyone working on or around your CPVC life safety system. If you have any questions or need assistance on chemical compatibility with your CPVC fire sprinkler system, contact the manufacturer listed on the pipe.

Proper care will help your CPVC fire sprinkler system provide protection for years to come.

SPEARS FlameGuard® CPVC FIRE SPRINKLER PRODUCTS

FOR ADDITIONAL INFORMATION CONTACT SPEARS® MANUFACTURING COMPANY AT 1-800-862-1499

Notice

This building contains a CPVC fire sprinkler system. This CPVC fire sprinkler system is a Life Safety Assembly and must be treated carefully. Please read the following before any activity which could contact this system:

CPVC piping components may be damaged by certain substances and construction practices.

- DO NOT stack, support, hang equipment, or hang flexible wire/cable, especially communications cable, or other material on the fire sprinkler system.
- ONLY system compatible materials including, but not limited to solvent cements, caulks, sealants, cutting oils and thread pastes as noted by the CPVC fire sprinkler piping system manufacturer's installation instructions should be used in contact with this system.
- DO NOT expose CPVC products to incompatible substances, such as cutting oils, non-water based paints, packing oils, traditional pipe thread paste and dope, fungicides, termiticides, insecticides, detergents, building caulks, adhesive tape, solder flux, flexible wire/cable (with special consideration for communications cabling), and non-approved spray foam insulation materials.

- DO NOT expose CPVC products to edible oils, solvents, or glycol-based anti-freeze fluids.
- DO NOT expose CPVC products to open flame, solder, and soldering flux.
- DO NOT handle CPVC products with gloves contaminated with oils (hydrocarbons) or other incompatible materials.

Failure to follow this notice may cause cracks or fractures to develop in CPVC products resulting in property damage due to leaks or flooding. The presence of any visible cracks may require partial or full system replacement. For additional information contact the general contractor or the fire sprinkler system installer.

SPEARS FlameGuard® CPVC FIRE SPRINKLER PRODUCTS

FOR ADDITIONAL INFORMATION CONTACT
SPEARS® MANUFACTURING COMPANY AT 1-800-862-1499

Rev. 3.0 Jan 2008

Bulletin 157 Rev. I

Reliable®

Model F3QR Quick Response Dry Sprinklers

Features

1. The Model F3QR sprinkler utilizes Belleville Spring Closure Technology. Reliable is the first in the industry to produce a Quick Response Dry Concealed sprinkler utilizing this technology.
2. Styles available
   - Pendent
   - Recessed FP Pendent
   - Recessed F1 Pendent
   - Concealed
   - Horizontal Sidewall
   - Recessed FP Horizontal Sidewall
   - Recessed F1 Horizontal Sidewall
3. 1½" (38mm) escutcheon adjustment on pendent sprinkler.
4. ½" (13mm) escutcheon adjustment on recessed sprinkler with push-on/ thread-off FP Model Escutcheon ring.
5. 3/8" (9.5mm) cover plate adjustment on concealed sprinkler with push-on/ thread-off CCP Cover Plate.
6. 3/4" (19mm) escutcheon adjustment on recessed sprinkler with F1 Escutcheon.
7. Attractive appearance. Employs 3mm frangible glass bulb and galvanized nipple.
8. Lengths available to accommodate installation dimensions from 2" - to - 48" (51mm - to - 1219mm), in ¼" (6mm) increments. See specific styles for correct "A" dimension range.
9. Available in a variety of plated and painted finishes.
10. Polyester Coated Corrosion Resistant Sprinklers.

US Patent Numbers 5,775,431 and 5,967,240.
Other US Patents pending.

Approvals

1. Listed by Underwriters Laboratories Inc. and UL Certified for Canada (cULus)

Style	Response	Sprinkler System Type	Hazard
Pendent Recessed Pendent Recessed F1 Pendent CCP Concealed (R5714)	Quick	Wet Pipe Dry Pipe All Preaction	Light Ordinary
Horizontal Sidewall Recessed Horizontal Sidewall (R5734)	Quick	Wet Pipe Dry Pipe All Preaction	Light

2. Certified by FM Approvals

Style	Response	Sprinkler System Type	Hazard
Pendent Recessed F1 Pendent (R5714)	Quick	Wet Pipe Dry Pipe All Preaction	Light Ordinary, Groups 1&2
Horizontal Sidewall Recessed F1 Horizontal Sidewall (R5734)	Quick	Wet Pipe Dry Pipe All Preaction	Light

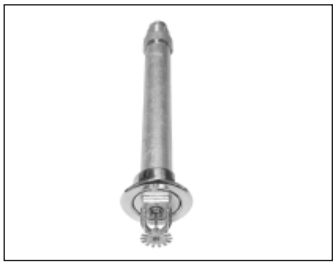
3. NYC MEA 258-93-E

Pendent
(See Fig. 1)

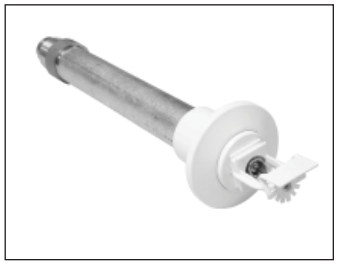
Pendent / HB
(See Fig. 2)

Recessed FP Pendent
(See Fig. 3)

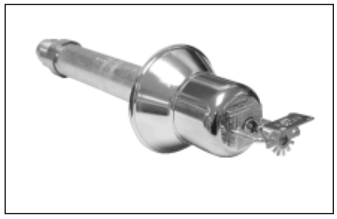
Concealed
(See Fig. 4)



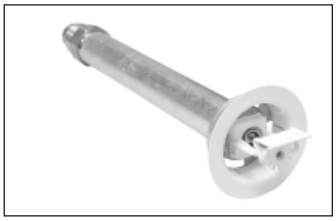
Recessed F1 Pendent
(See Fig. 5)



Horizontal Sidewall
(See Fig. 6)



Horizontal Sidewall / HB
(See Fig. 7)



Recessed FP
Horizontal Sidewall
(See Fig. 8)

Recessed F1
Horizontal Sidewall
(See Fig. 9)

Model F3QR Dry Pendent Sprinkler

"A" Dim.	2" to 48" (51mm to 1219mm) in ¼" (6mm) increments

Finishes[1]

Sprinkler	Escutcheon
Bronze	Brass [3]
Chrome Plated	Chrome Plated
White Polyester [2]	White

[1] Other finishes and colors are available on special order. Consult factory for details.

[2] cULus Listed as a Corrosion Resistant sprinkler in standard Black or White.

[3] Not available for HB escutcheons.

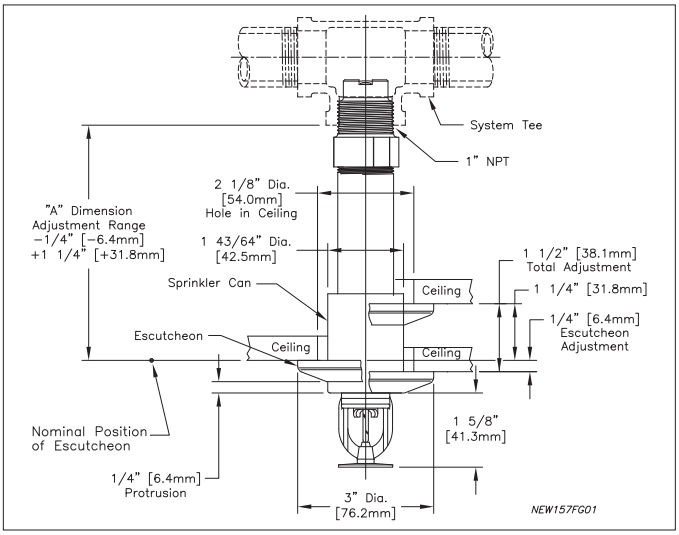


Fig. 1

Note: The sprinkler can protrudes ¼" when escutcheon is in nominal position. Escutcheon adjustment provides -¼" (-6mm) to +1¼" (+32mm) "A" dimension adjustment range.

Sprinkler Guard: Model C-2
Sprinkler Installation Wrench: Model G3 Sprinkler Wrench
Sprinkler Identification Number (SIN): R5714

Model F3QR Dry Pendent w/HB Escutcheon

"A" Dim.	3½" to 48" (89mm to 1219mm) in ¼" (6mm) increments

Standard Temperature Ratings

Classification	Sprinkler Temperature Rating	Max. Ambient Temp.	Bulb Color
Ordinary	135°F (57°C)	100°F (38°C)	Orange
Ordinary	155°F (68°C)	100°F (38°C)	Red
Intermediate [1]	175°F (79°C)	150°F (66°C)	Yellow
Intermediate	200°F (93°C)	150°F (66°C)	Green
High [1]	286°F (141°C)	225°F (107°C)	Blue

Sprinkler can and escutcheon fabricated of brass for better weather resistance in exterior applications.

[1] Listed and Certified only by cULus.

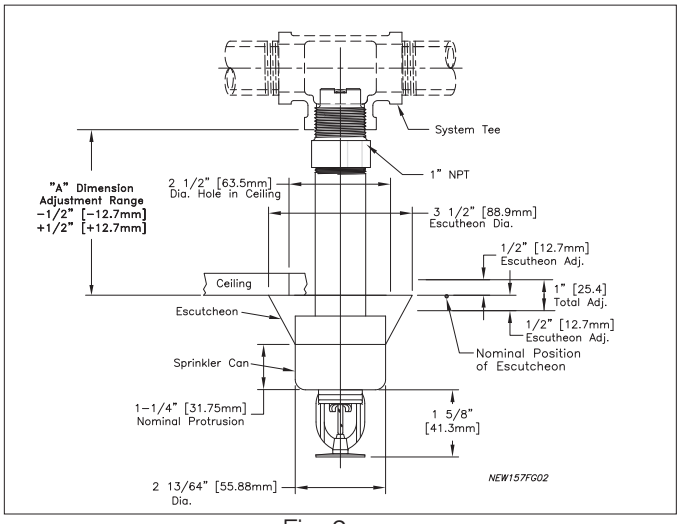


Fig. 2

Note: The sprinkler can protrudes 1¼" when escutcheon is in nominal position. Escutcheon adjustment provides -½" (-12.7mm) to +½" (+12.7mm) "A" dimension adjustment range.

Model F3QR Dry Recessed FP Pendent Sprinkler

"A" Dim.	3½" to 48" (89mm to 1219mm) in ¼" (6mm) increments

Finishes[1]

Sprinkler	Escutcheon
Bronze	Brass
Chrome Plated	Chrome Plated
White Polyester [2]	White

[1] Other finishes and colors are available on special order. Consult factory for details. Cup remainds unfinished. Only the escutcheon will contain desired finish.

[2] cULus Listed as a Corrosion Resistant sprinkler in standard Black or White.

Standard Temperature Ratings

Classification	Sprinkler Temperature Rating	Max. Ambient Temp.	Bulb Color
Ordinary	135°F (57°C)	100°F (38°C)	Orange
Ordinary	155°F (68°C)	100°F (38°C)	Red
Intermediate [1]	175°F (79°C)	150°F (66°C)	Yellow
Intermediate	200°F (93°C)	150°F (66°C)	Green
High [1]	286°F (141°C)	225°F (107°C)	Blue

Sprinkler cup and FP Escutcheon fabricated of steel and recommended for interior applications.

[1] Listed and Certified only by cULus.

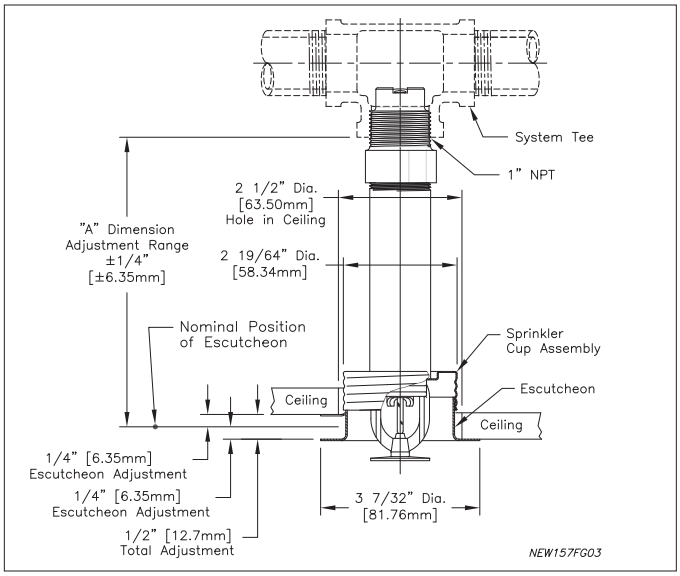


Fig. 3

Note: Do not install the Model F3QR Dry Recessed FP Pendent Sprinkler in ceilings which have positive pressure in space above.

Sprinkler Installation Wrench: Model G3 R/C Sprinkler Wrench
Sprinkler Identification Number (SIN): R5714

Model F3QR Dry Pendent Concealed Sprinkler

"A" Dim.	3½" to 48" (89mm to 1219mm) in ¼" (6mm) increments

CCP Cover Plate [1] Finishes [2]

Standard Finishes	Special Application Finishes
Chrome Plated White	Bright Brass Plated Black Plated Black Paint Off White Satin Chrome

[1] Utilizes the 1/2" cover plate with 3/8" total adjustment.
[2] Other finishes and colors are available on special order. Consult factory for details.

Standard Temperature Ratings

Classification	Sprinkler Temperature Rating	Cover Plate Temp. Rating	Max. Ambient Temp.
Ordinary	135°F (57°C)	135°F (57°C)	100°F (38°C)
Ordinary	155°F (68°C)	135°F (57°C)	100°F (38°C)
Intermediate [1]	175°F (79°C)	165°F (74°C)	150°F (66°C)
Intermediate	200°F (93°C)	165°F (74°C)	150°F (66°C)
High [1]	286°F (141°C)	165°F (74°C)	150°F (66°C)

Sprinkler cup fabricated of steel and CCP Cover Plate fabricated of brass and recommended for interior applications.

[1] Listed and Certified only by cULus.

Sprinkler Installation Wrench:
Model G3 R/C Sprinkler Wrench
Sprinkler Identification Number (SIN): R5714

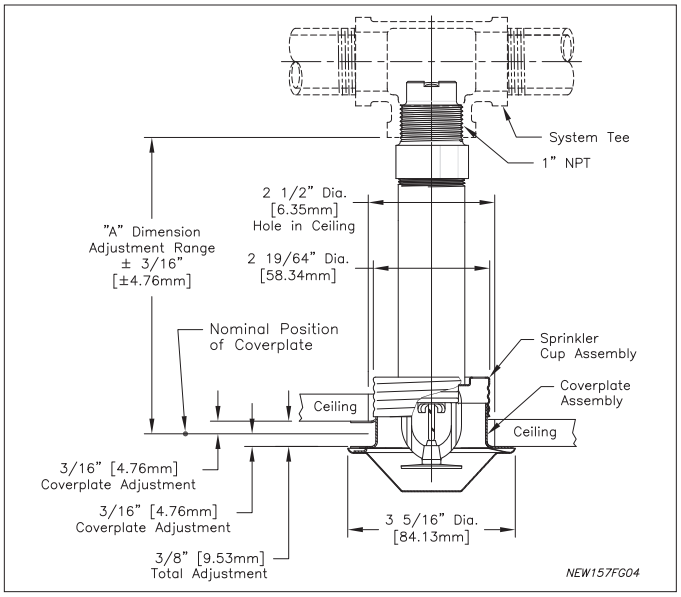


Fig. 4

Note: Do not install the Model F3QR Dry Concealed Pendent Sprinkler in ceilings which have positive pressure in the space above.

Model F3QR Dry Recessed F1 Pendent Sprinkler

"A" Dim.	3½" to 48" (89mm to 1219mm) in ¼" (6mm) increments

Finishes [1]

Sprinkler	Escutcheon	Collar
Chrome Plated White Polyester [2]	Chrome Plated White	Chrome Plated White

[1] Other finishes and colors are available on special order. Consult factory for details.
[2] cULus Listed as a Corrosion Resistant sprinkler in standard Black or White.

Standard Temperature Ratings

Classification	Sprinkler Temperature Rating	Max. Ambient Temp.	Bulb Color
Ordinary	135°F (57°C)	100°F (38°C)	Orange
Ordinary	155°F (68°C)	100°F (38°C)	Red
Intermediate [1]	175°F (79°C)	150°F (66°C)	Yellow
Intermediate	200°F (93°C)	150°F (66°C)	Green
High [1]	286°F (141°C)	225°F (107°C)	Blue

[1] Listed and Certified only by cULus.

Sprinkler Installation Wrench:
Model G3 R/C Sprinkler Wrench
Sprinkler Identification Number (SIN): R5714

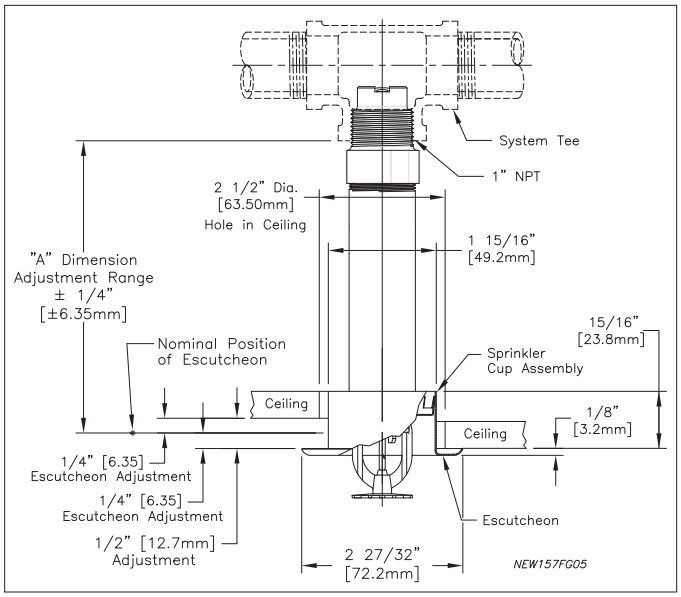


Fig. 5

Model F3QR Dry Horizontal Sidewall Sprinkler

"A" Dim.	2" to 48" (51mm to 1219mm) in ¼" (6mm) increments

Finishes [1]

Sprinkler	Escutcheon
Bronze	Brass [3]
Chrome Plated	Chrome Plated
White Polyester [2]	White

[1] Other finishes and colors are available on special order. Consult factory for details.

[2] cULus Listed as a Corrosion Resistant sprinkler in standard Black or White.

[3] Not available for HB escutcheons.

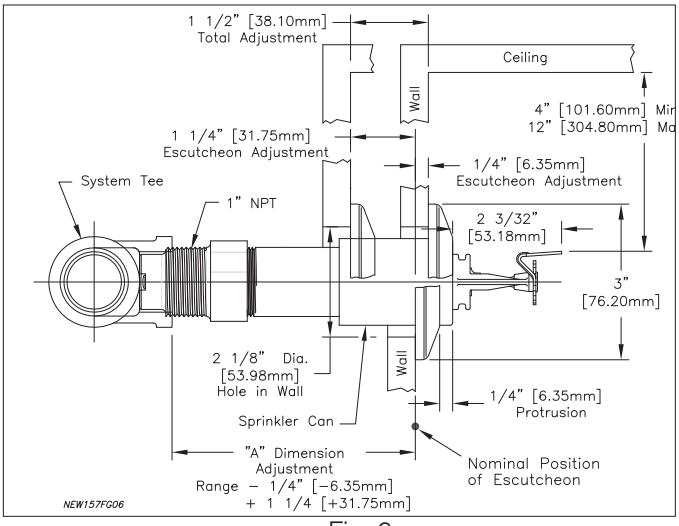


Fig. 6

Note: The sprinkler can protrudes ¼" when escutcheon is in nominal position. Escutcheon adjustment provides -¼" (-6mm) to +1¼" (+32mm) "A" dimension adjustment range.

[1] Listed and Certified only by cULus.

Sprinkler Installation Wrench: Model G3 Sprinkler Wrench

prinkler Identification Number (SIN): R5734

Model F3QR Dry HSW w/HB Escutcheon

"A" Dim.	2" to 48" (51mm to 1219mm) in ¼" (6mm) increments

Standard Temperature Ratings

Classification	Sprinkler Temperature Rating	Max. Ambient Temp.	Bulb Color
Ordinary	135°F (57°C)	100°F (38°C)	Orange
Ordinary	155°F (68°C)	100°F (38°C)	Red
Intermediate [1]	175°F (79°C)	150°F (66°C)	Yellow
Intermediate	200°F (93°C)	150°F (66°C)	Green
High	286°F (141°C)	225°F (107°C)	Blue

Sprinkler can and escutcheon fabricated of brass for better weather resistance in exterior applications.

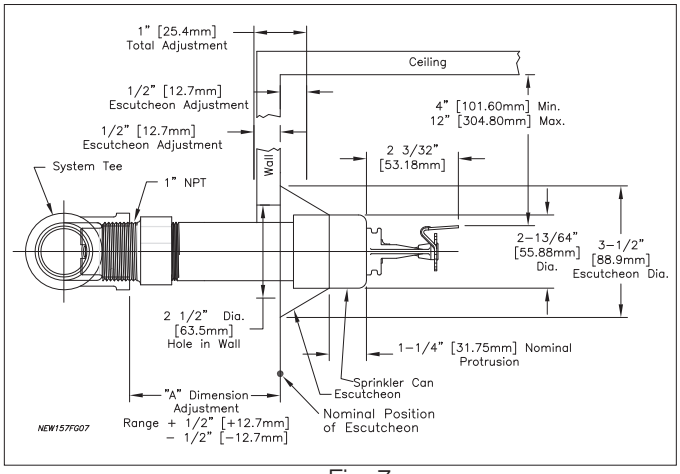


Fig. 7

Note: The sprinkler can protrudes 1¼" when escutcheon is in nominal position. Escutcheon adjustment provides -½" (-12.7mm) to +½" (+12.7mm) "A" dimension adjustment range.

Model F3QR Dry Recessed FP Horizontal Sidewall Sprinkler

"A" Dim.	3½" to 48" (89mm to 1219mm) in ¼" (6mm) increments

Finishes [1]

Sprinkler	Escutcheon
Bronze	Brass
Chrome Plated	Chrome Plated
White Polyester [2]	White

[1] Other finishes and colors are available on special order. Consult factory for details. Cup remaindes unfinished. "See page 2"

[2] cULus Listed as a Corrosion Resistant sprinkler in standard Black or White.

Standard Temperature Ratings

Classification	Sprinkler Temperature Rating	Max. Ambient Temp.	Bulb Color
Ordinary	135°F (57°C)	100°F (38°C)	Orange
Ordinary	155°F (68°C)	100°F (38°C)	Red
Intermediate [1]	175°F (79°C)	150°F (66°C)	Yellow
Intermediate	200°F (93°C)	150°F (66°C)	Green
High [1]	286°F (141°C)	225°F (107°C)	Blue

[1] Listed and Certified only by cULus.

Sprinkler Installation Wrench:
Model G3 R/C Sprinkler Wrench
Sprinkler Identification Number (SIN): R5734

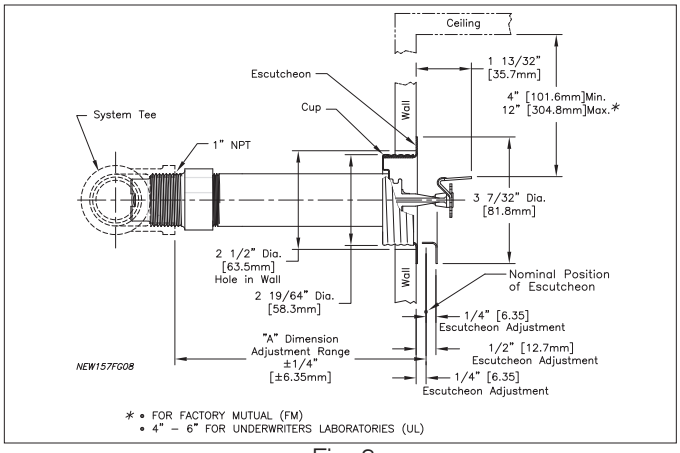


Fig. 8

Notes: Do not install the Model F3QR Dry Recessed FP Horizontal Sidewall Sprinkler in walls which have positive pressure in their side space.

- Listed by cULus for Quick Response. Approved by FM for Standard Response.
- Recessed Horizontal sidewall sprinklers are listed with cULus for installation of min. 4" (100mm) - to - max. 6" (150mm) below ceiling and approved by FM for installation of min. 4" (100mm) - to - max. 12" (300mm) below ceiling.

Model F3QR Dry Recessed F1 Horizontal Sidewall Sprinkler

"A" Dim.	3½" to 48" (89mm to 1219mm) in ¼" (6mm) increments

Finishes [1]

Sprinkler	Escutcheon	Collar
Chrome Plated White Polyester [2]	Chrome Plated White	Chrome Plated White

[1] Other finishes and colors are available on special order. Consult factory for details.

[2] cULus Listed as a Corrosion Resistant sprinkler in standard Black or White.

Standard Temperature Ratings

Classification	Sprinkler Temperature Rating	Max. Ambient Temp.	Bulb Color
Ordinary	135°F (57°C)	100°F (38°C)	Orange
Ordinary	155°F (68°C)	100°F (38°C)	Red
Intermediate [1]	175°F (79°C)	150°F (66°C)	Yellow
Intermediate	200°F (93°C)	150°F (66°C)	Green
High [1]	286°F (141°C)	225°F (107°C)	Blue

[1] Listed and Certified only by cULus.

Sprinkler Installation Wrench:
Model G3 R/C Sprinkler Wrench
Sprinkler Identification Number (SIN): R5734

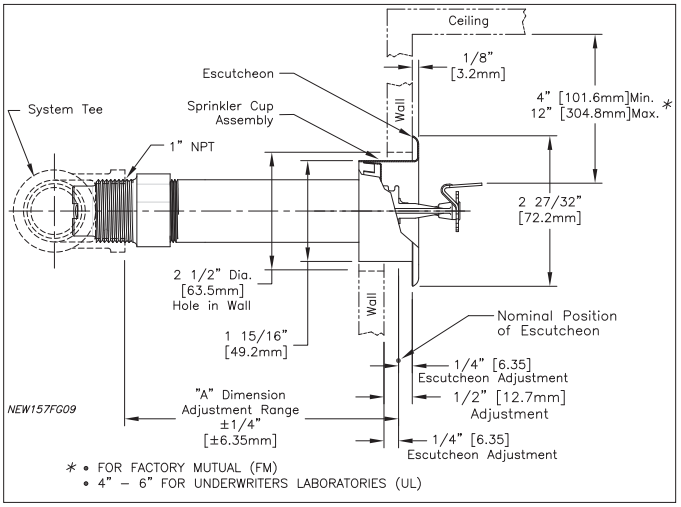


Fig. 9

- Listed by cULus for Quick Response. Approved by FM for Standard Response.
- Recessed Horizontal sidewall sprinklers are listed with cULus for installation of min. 4" (100mm) - to - max. 6" (150mm) below ceiling and approved by FM for installation of min. 4" (100mm) - to - max. 12" (300mm) below ceiling.

Technical Data:

Orifice Size: ½" (15mm)
Thread Size: 1" NPT per ANSI B2.1
Working Pressure: 175 psi (12 bar)
Nominal K Factor - US / (Metric): 5.6 / (80)

Product Description

Reliable Model F3QR Dry Sprinklers are quick response sprinklers utilizing a durable 3mm frangible glass bulb. This quick response enables these sprinklers to apply water to a fire much sooner than standard response sprinklers of the similar temperature rating.

Model F3QR Dry Sprinklers are intended for use in dry and preaction systems and in areas subjected to freezing temperatures, such as freezers and unheated portions inside and outside buildings.

Environments wherein dry sprinklers are employed can be corrosive. For this reason, Model F3 Sprinklers have a special wax fillet placed in the gap between the cup that supports the bulb and the wrenching boss. This wax will not interfere with the operation of the sprinkler, and it prevents contaminents from entering the internal portion of the drop nipple. The wax must not be removed.

Operation

The glass bulb consists of an accurately controlled amount of special fluid hermetically sealed inside a precisely manufactured glass capsule. This glass bulb is specially constructed to provide fast thermal response. When the temperature increases sufficiently, due to a fire, the bulb shatters allowing operating parts to clear the waterway. This enables the inlet seal to release air or water and subsequently, cause water flow over the deflector in a uniform spray pattern, controlling or extinguishing the fire.

Ordering Information

Specify:

1. Sprinkler Type (select one):
   (a) Model F3QR Dry Pendent
   (b) Model F3QR Dry Pendent/HB
   (c) Model F3QR Dry Recessed FP Pendent
   (d) Model F3QR Dry Recessed F1 Pendent
   (e) Model F3QR Dry Concealed Pendent
   (f) Model F3QR Dry Horizontal Sidewall
   (g) Model F3QR Dry Horizontal Sidewall/HB
   (h) Model F3QR Dry Recessed FP Horizontal Sidewall
   (i) Model F3QR Dry Recessed F1 Horizontal Sidewall
2. Sprinkler Temperature Rating.
3. Sprinkler Finish.
4. Escutcheon type (F1 or FP).
5. Cover Plate/Escutcheon Finish.
6. Length:
   "A" Dimension (face of tee to face of ceiling or wall) in ¼" (6mm) increments.
7. Model F3QR Dry Pendent (a) is available without sprinkler can and escutcheon.

Note:

1. The "A" dimension is based on a nominally gauged pipe thread "make-up" of 0.600" (15mm) per ANSI B2.1 [7½ threads approximately].
2. All platings and paintings are decorative and intended for interior use.

General Installation Instructions

Model F3QR dry sprinklers must be installed only in standard (ANSI B 16.3 class 150 and ANSI B 16.4 class 125) pipe tees in the horizontal position, even at branch line ends. They should not be installed into elbows or pipe couplings located on drop nipples to the sprinklers. For these and other fittings including CPVC*, the dry sprinkler should be installed into a fitting to allow protrusion into the fitting in accordance with the diagrams. The "A" dimension of the dry sprinkler, which extends into the freezers or a freezing zone from wet pipe systems, should be selected to provide, as a minimum, the specified lengths in inches shown in Fig. 10.

Caution:

Do not install Model F3QR Dry sprinklers into CPVC adapter fittings or tees that have an internal obstruction. This will damage the sprinkler and /or the fitting. Refer to Fig. 11.

During installation, the following steps must be followed:

1. Cut the specified size hole (see illustrations) for the sprinkler in the ceiling or wall directly in line with the tee.
2. Apply pipe joint compound to the 1" (25mm) pipe threads and install sprinkler using the Model G3 or G3 R/C Sprinkler Wrench as specified.
3. Install the Model FP push-on / thread-off escutcheon or CCP cover plate if required.

Note: Installation of the Model F3QR Sprinklers is not recommended in copper pipe systems, as this may reduce the life expectancy of the sprinklers.

Model F3QR Concealed and Recessed Installation Instructions

- The Model G3 R/C wrench (Fig. 12) is designed to locate on the wrenching pads of the recessed sprinkler while centering in the cup. A standard ½" drive ratchet may be used to drive this wrench. Fig. 13 and Fig. 14 show sequentially the insertion of the wrench. First the wrench, with its jaws above the sprinkler deflector, is moved laterally until centered with the cup. Then raise the wrench inside of the cup until its jaws engage the sprinkler's square wrenching pads (Fig. 14). To remove the wrench, follow this procedure in reverse order. Care should be taken to avoid striking the deflector, with the wrench.
- Model G3 Wrench (Fig. 15) is used for installation of Pendent and Horizontal Sidewall sprinklers.
- Glass bulb sprinklers have orange bulb protectors to minimize bulb damage during shipping, handling and installation. REMOVE THIS PROTECTION AT THE TIME THE SPRINKLER SYSTEM IS PLACED IN SERVICE FOR FIRE PROTECTION. Removal of the protectors before this time may leave the bulb vulnerable to damage. RASCO wrenches are designed to install sprinklers when covers are in place. REMOVE PROTECTORS BY UNDOING THE CLASP BY HAND. DO NOT USE TOOLS TO REMOVE THE PROTECTORS.

Maintenance

The Model F3QR Quick Response Dry Sprinklers should be inspected quarterly and the sprinkler system maintained in accordance with NFPA 25. Do not remove the factory applied thermally sensitive wax fillet between the bulb supporting cup and the wrenching boss. Do not replace this wax with a substitute substance. An Alternate substance may interfere with proper operation of the sprinkler. Do not clean sprinklers with soap and water, ammonia or any other cleaning fluids. Remove dust by using a soft brush or gently vacuuming. Remove any sprinkler which has been painted (other than factory applied) or damaged in any way. A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers. Prior to installation, sprinklers should be maintained in the original cartons and packaging until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Caution:

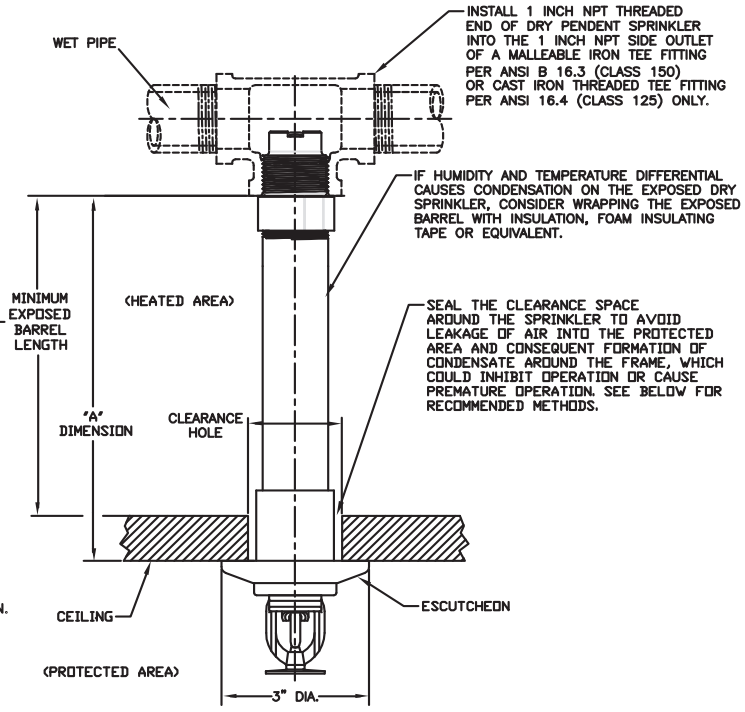
Use specified by RASCO wrenches only, which are designed to engage sprinkler's wrenching pad. (Fig. 15, page 9)

RECOMMENDED EXPOSED MINIMUM BARREL LENGTH BASED ON AMBIENT TEMPERATURE IN THE PROTECTED AREA
(STANDARD DRY PENDENT SPRINKLER SHOWN)

AMBIENT TEMPERATURE OF PROTECTED AREA* AT THE DISCHARGE END OF THE SPRINKLER	EXPOSED BARREL AMBIENT TEMPERATURE		
	40°F/4°C	50°F/10°C	60°F/16°C
	EXPOSED MINIMUM BARREL LENGTH** (FACE OF TEE TO TOP OF CEILING)		
	IN. (MM)	IN. (MM)	IN. (MM)
40°F (4°C)	0	0	0
30°F (−1°C)	0	0	0
20°F (−7°C)	4 (101)	0	0
10°F (−12°C)	8 (203)	1 (25.1)	0
0°F (−18°C)	12 (305)	3 (75)	0
−10°F (−23°C)	14 (356)	4 (101)	1 (25.1)
−20°F (−29°C)	14 (356)	6 (152)	3 (75)
−30°F (−34°C)	16 (406)	8 (203)	4 (101)
−40°F (−40°C)	18 (457)	8 (203)	4 (101)
−50°F (−46°C)	20 (508)	10 (254)	6 (152)
−60°F (−51°C)	20 (508)	10 (254)	6 (152)

* THE PROTECTED AREA REFERS TO THE AREA BELOW THE CEILING. THE AMBIENT TEMPERATURE IS THE TEMPERATURE AT THE DISCHARGE END OF THE SPRINKLER.
FOR PROTECTED AREA TEMPERATURES THAT OCCUR BETWEEN THE VALUES LISTED, USE THE NEXT COOLER TEMPERATURE.

**THE MIN. REQUIRED BARREL LENGTH IS NOT THE SAME AS THE 'A' DIMENSION.
NOTE: EXPOSED MINIMUM BARREL LENGTHS ARE INCLUSIVE UP TO 30MPH WIND VELOCITIES IN THE PROTECTED AREA.



RECOMMENDED EXPOSED MINIMUM BARREL LENGTHS ALSO APPLY TO HORIZONTAL SIDEWALL DRY SPRINKLERS

RECOMMENDED DRY SPRINKLER SEAL ARRANGEMENTS
(STANDARD DRY PENDENT SPRINKLER SHOWN)

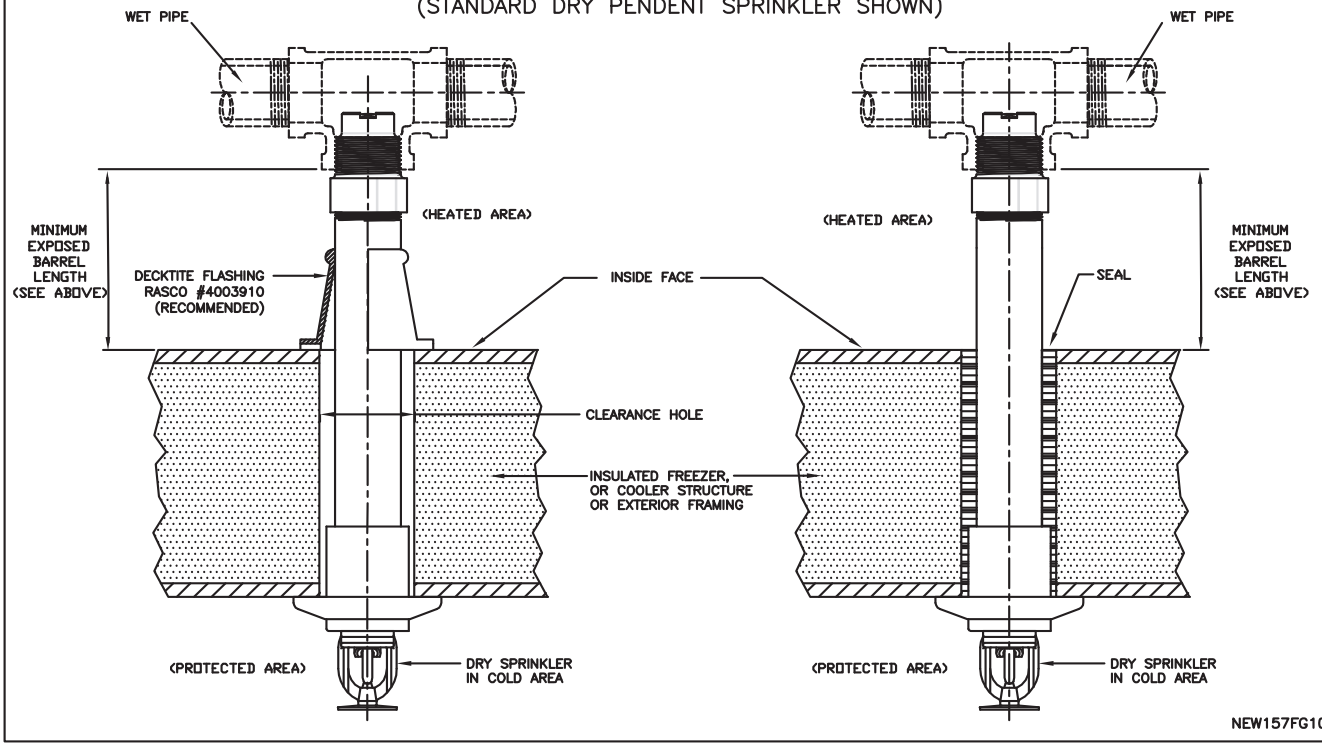
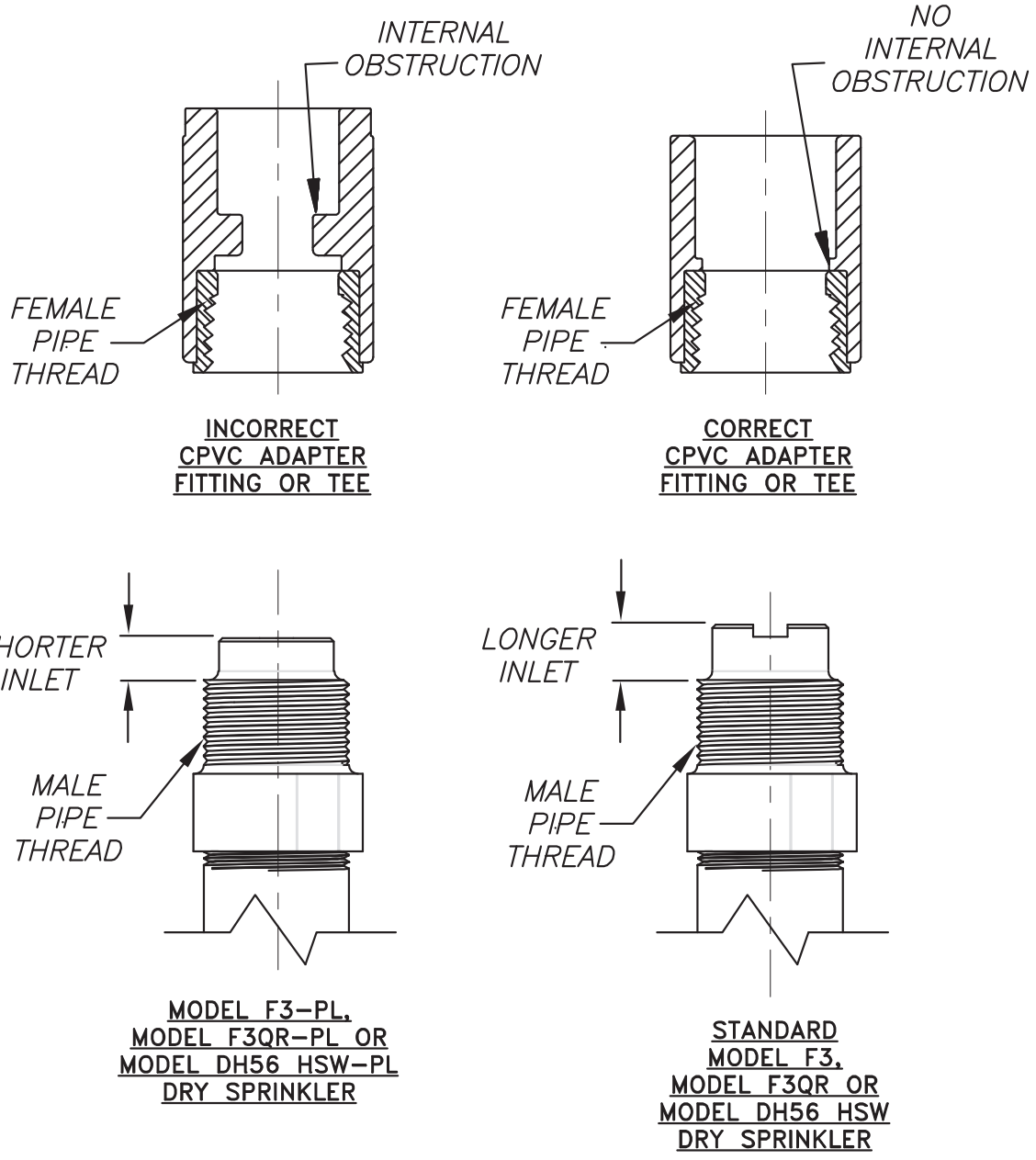


Fig. 10

CAUTION

DO NOT INSTALL MODEL F3, MODEL F3QR OR MODEL DH56 HSW DRY SPRINKLERS INTO CPVC ADAPTER FITTINGS OR TEES THAT HAVE AN INTERNAL OBSTRUCTION. THIS WILL DAMAGE THE SPRINKLER AND/OR THE FITTING.

CPVC ADAPTER FITTINGS AND TEES WITH INTERNAL OBSTRUCTIONS ARE ALSO COMMONLY FOUND DURING THE RETROFITTING PROCESS OF RELIABLE'S OLDER MODEL G3 DRY SPRINKLERS.



BE SURE TO ORDER THE CORRECT SPRINKLERS FOR YOUR APPLICATION

016fg08A

Fig. 11

Fig. 12 - G3 R/C Wrench

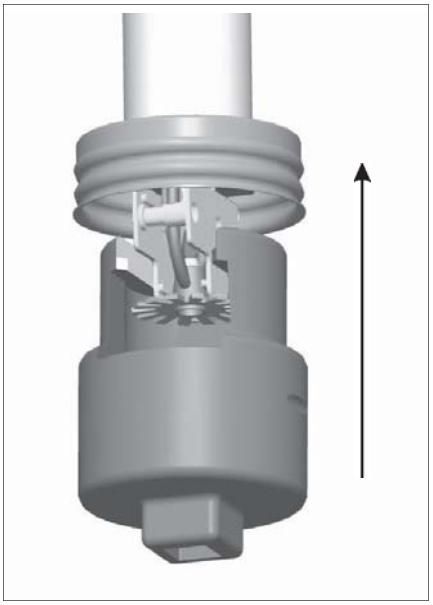


Fig. 13 - G3 R/C Wrench

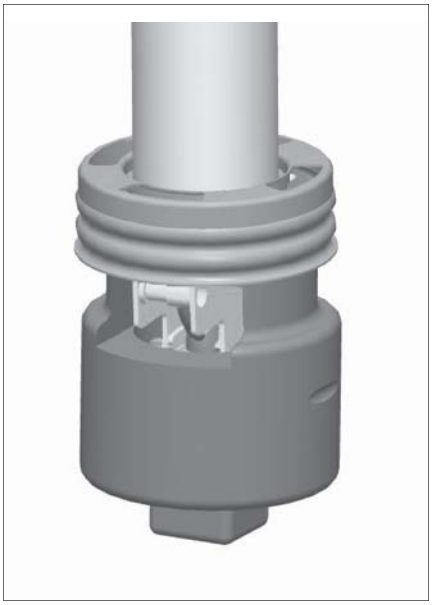


Fig. 14 - G3 R/C Wrench

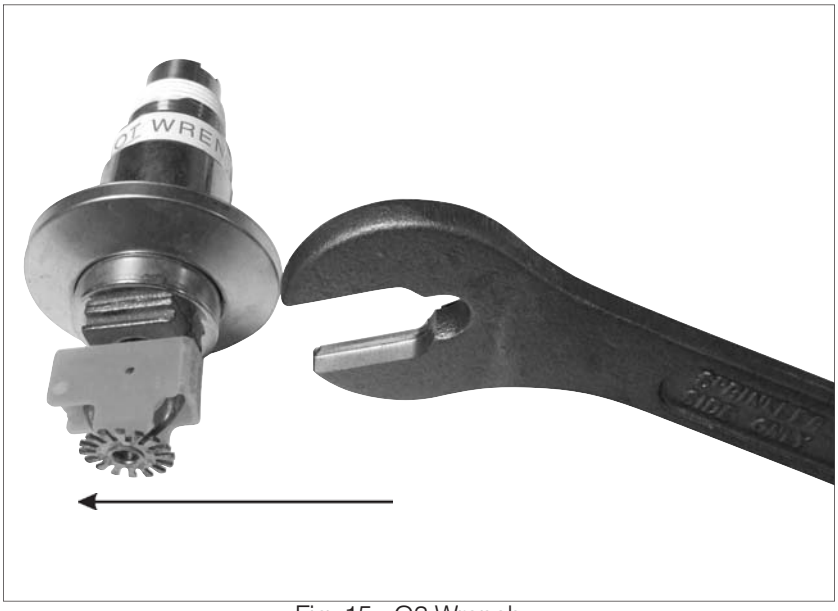


Fig. 15 - G3 Wrench

Reliable...For Complete Protection

Reliable offers a wide selection of sprinkler components. Following are some of the many precision-made Reliable products that guard life and property from fire around the clock.

- Automatic sprinklers
- Flush automatic sprinklers
- Recessed automatic sprinklers
- Concealed automatic sprinklers
- Adjustable automatic sprinklers
- Dry automatic sprinklers
- Intermediate level sprinklers
- Open sprinklers
- Spray nozzles
- Alarm valves
- Retarding chambers
- Dry pipe valves
- Accelerators for dry pipe valves
- Mechanical sprinkler alarms
- Electrical sprinkler alarm switches
- Water flow detectors
- Deluge valves
- Detector check valves
- Check valves
- Electrical system
- Sprinkler emergency cabinets
- Sprinkler wrenches
- Sprinkler escutcheons and guards
- Inspectors test connections
- Sight drains
- Ball drips and drum drips
- Control valve seals
- Air maintenance devices
- Air compressors
- Pressure gauges
- Identification signs
- Fire department connection

The equipment presented in this bulletin is to be installed in accordance with the latest published Standards of the National Fire Protection Association, Factory Mutual Research Corporation, or other similar organizations and also with the provisions of governmental codes or ordinances whenever applicable.

Products manufactured and distributed by Reliable have been protecting life and property for over 90 years, and are installed and serviced by the most highly qualified and reputable sprinkler contractors located throughout the United States, Canada and foreign countries.

Manufactured by
Reliable®

The Reliable Automatic Sprinkler Co., Inc.
(800) 431-1588 Sales Offices
(800) 848-6051 Sales Fax
(914) 829-2042 Corporate Offices
www.reliablesprinkler.com Internet Address

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Bulletin 135 Rev. J

Reliable®

Model F1 Residential Sprinklers for Design Density of .05 gpm/ft²

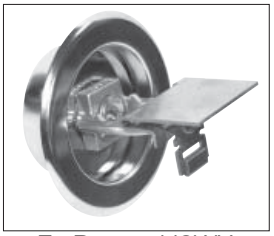
Model F1 Res Sprinklers engineered for the lowest flows to meet the minimum design density of .05 gpm/ft²

Types:

1. F1 Res 30 Pendent
2. F1 Res 30 Recessed Pendent/F2
3. F1 Res 30 Recessed Pendent/FP
4. F1 Res 49 Pendent
5. F1 Res 49 Recessed Pendent/F1
6. F1 Res 49 Recessed Pendent/FP
7. F1 Res 58 Pendent
8. F1 Res 58 Recessed Pendent/F1
9. F1 Res 58 Recessed Pendent/FP
10. F1 Res 76 Pendent
11. F1 Res 76 Recessed Pendent/F1
12. F1 Res 76 Recessed Pendent/FP
13. F1 Res 30 CCP Pendent
14. F1 Res 49 CCP Pendent
15. F1 Res 58 CCP Pendent
16. F1 Res 76 CCP Pendent
17. F1 Res 44 HSW
18. F1 Res 44 Recessed HSW/F2
19. F1 Res 58 HSW
20. F1 Res 58 HSWX
21. KRes58 HSWX
22. F1 Res 58 HSW Recessed HSW/F2
23. F1 Res 44 SWC

F1 Res 30, 49, 58 & 76 Recessed Pendent / F1

F1 Res 30, 49, 58 & 76 Recessed Pendent / FP



F1 Res 58 HSWX

F1 Res 30, 49, 58 & 76 CCP Pendent

F1 Res 44 & 58 Recessed HSW/F2

F1 Res 44 SWC

Listings & Approvals

1. Listed by Underwriters Laboratories Inc. and UL Certified for Canada (cULus)
2. NYC MEA 258-93-E

Slope Ceiling Approvals: Refer to Bulletin 035

Sprinklers for .10 Density: Refer to Bulletin 176

UL Listing Category

Residential Automatic Sprinkler

UL Guide Number

VKKW

Patents

US Patent No. 6,516,893 applies to the Model F1 Res 49 & 58 Pendent Sprinklers

US Patent No. 7,353,882 applies to Model F1 Res 44 & 58 HSW Sprinklers

US Patent No. 7,784,555 applies to Model F1 Res 44 SWC Sprinklers

Product Description

Model F1 Res Pendent sprinklers (Figs. 1, 2, 3, & 4) are fast response sprinklers combining excellent durability, high sensitivity glass-bulb and low profile decorative design. The F1 Res Horizontal Sidewall sprinklers (Figs. 5, 6 & 7) are equally attractive when above ceiling piping cannot be used.

The 3mm glass-bulb pendent sprinklers permit the efficient use of residential water supplies for sprinkler coverage in residential fire protection design.

The low flow F1 Res sprinklers are specially engineered for fast thermal response to meet the sensitive fire protection application needs of the latest residential market standards (UL 1626 Standard). Upon fire conditions, rising heat causes a sprinkler's heat-sensitive element, glass bulb or link to actuate, releasing the waterway for water flow onto the deflector, evenly distributing the discharged water to control a fire.

Technical Data:

- Thermal Sensor: Soldered Element (Link) or Nominal 3mm glass-bulb
- Sprinkler Frame : Brass Casting
- Sprinklers' Pressure Rating : 175 psi
  Factory Hydrostatically Tested to 500 psi
- Thread Size: ½" NPT (R½)
- K-Factor: 3.0 (Actual) - F1 Res 30 Pendent Sprinkler
  4.9 (Actual) - F1 Res 49 Pendent Sprinkler
  5.8 (Actual) - F1 Res 58 Pendent & HSW Sprinkler
  7.6 (Actual) - F1 Res 76 Pendent Sprinkler
  4.4 (Actual) - F1 Res 44 HSW Sprinkler
- Density: Minimum 0.05 gpm/ft²

The Reliable Automatic Sprinkler Co., Inc., 103 Fairview Park Drive, Elmsford, New York 10523

Application

Model F1 Res Sprinklers are used for Residential Fire Protection according to UL 1626 Standard*. Be sure that orifice size, temperature rating, deflector style and sprinkler type are in accordance with the latest published standards of The National Fire Protection Association or the approving authority having jurisdiction.

Installation

Models F1 Res sprinklers are to be installed as shown. Model F1, F2 and FP Escutcheons, illustrated herewith, are the only recessed escutcheons to be used with Model F1 Res sprinklers. Use of any other recessed escutcheon will void all approvals and warranties. For installing Model F1 Res Pendent sprinklers use only the Model D sprinkler Wrench; for installing Models F1 Res Recessed Pendent, CCP & SWC sprinklers use only the Model GFR2 sprinkler wrench; for installing Model F1 Res Recessed HSW sprinklers use only the Model GFR2 Sprinkler Wrench. Use of wrenches other than those specified may damage these sprinklers. Install F1 Res 44 with a ceiling to deflector distance of 4" - 12". Flow arrow on deflector must point away from near wall and "Top" marking must face ceiling.

Escutcheon*, F1 or F2, Data:

Type	Adjustment Inch (mm)	"A" Inch (mm)	Face of fitting to ceiling Inch (mm)
F1	3/4 (19.0)	Min.=3/4" (19.1) Max.=1 1/2" (38.1)	3/16 - 15/16 (4.7 - 24.0)
F2	1/2 (12.7)	Min.=15/16" (23.8) Max.=1 1/2" (38.1)	3/16 - 11/16 (4.7 - 17.4)

*** Note:** Escutcheons F1 or F2 may be used with Model F1 Res 49, 58 & 76 Recessed Pendent Sprinkler

- **Model F1 Res 30, 49, 58 & 76 Pendent**

- **Model F1 Res 30 Recessed Pendent / F2**
- **Model F1 Res 49, 58 & 76 Recessed Pendent / F1**

F1 escutcheon, 3/4" (19mm) adjustment

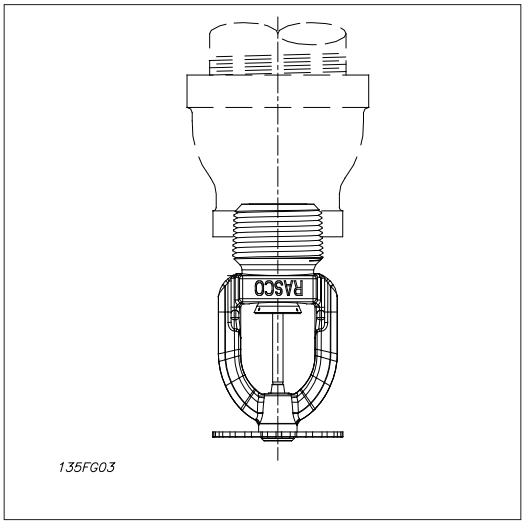


Fig. 1

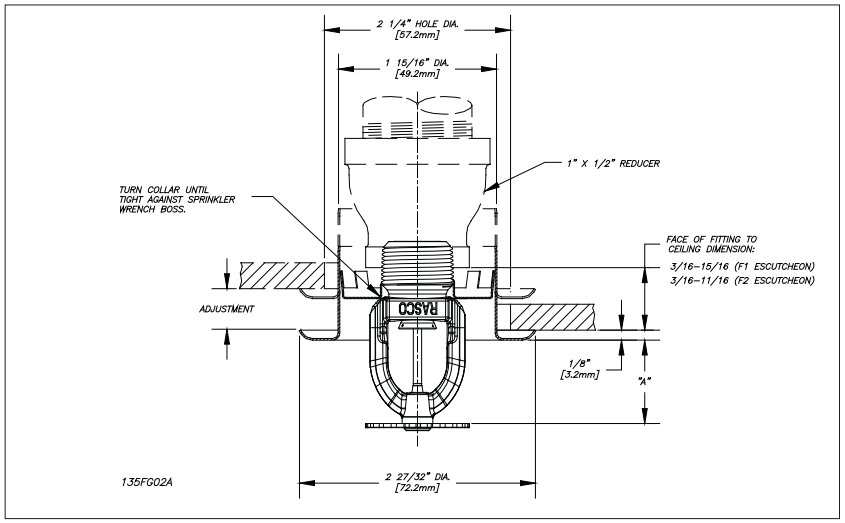


Fig. 2

Technical Data: F1Res 30 Pendent and Recessed Pendent (SIN R3511)

Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	Sprinkler Temp. Rating °F	Sprinkler Temp. Rating °C	Max. Ambient Temp. °F	Max. Ambient Temp. °C	Actual K Factor	Sprinkler Length Inch (mm)
1/2" NPT (R1/2)	21/64" (8.2)	175 (12)	155 175	68 79	100	38	3.0	2.25 (57)

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C) Flow GPM (L/min)	Ordinary Temp. Rating (155°F/68°C) Pressure PSI (bar)	Intermediate Temp. Rating (175°F/79°C) Flow GPM (L/min)	Intermediate Temp. Rating (175°F/79°C) Pressure PSI (bar)	Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
12 x 12 (3,6 x 3,6)	12 (3,6)	8 (30,3)	7.0 (0,48)	8 (30,3)	7.0 (0,48)	1 to 4 (25 to 100); 1/2 recessed using F2 escutcheon	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	10 (37,8)	11 (0,76)	10 (37,8)	11 (0,76)		

For Ceiling types refer to NFPA 13, 13R or 13D

Technical Data: F1Res 49 Pendent and Recessed Pendent (SIN R3516)

Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	Sprinkler Temp. Rating		Max. Ambient Temp.		Actual K Factor	Sprinkler Length Inch (mm)
			°F	°C	°F	°C		
½" NPT (R½)	7/16" (11)	175 (12)	155 175	68 79	100 150	38 66	4.9	2.25 (57)

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C)		Intermediate Temp. Rating (175°F/79°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)	Flow GPM (L/min)	Pressure PSI (bar)		
12 x 12 (3,6 x 3,6)	12 (3,6)	13 (49)	7.0 (0,48)	13 (49)	7.0 (0,48)	1 to 4 (25 to 100); ½ (13) recessed using F2 escutcheon, ¾ (19) recessed using F1 escutcheon	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	13 (49)	7.0 (0,48)	13 (49)	7.0 (0,48)		
16 x 16 (4,9 x 4,9)	16 (4,9)	13 (49)	7.0 (0,48)	13 (49)	7.0 (0,48)		
18 x 18 (5,5 x 5,5)	18 (5,5)	17 (64,3)	12 (0,83)	17 (64,3)	12 (0,83)		
20 x 20 (6,1 x 6,1)	20 (6,1)	20 (75,7)	16.7 (1,14)	20 (75,7)	16,7 (1,14)		

For Ceiling types refer to NFPA 13, 13R or 13D

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C)		Intermediate Temp. Rating (175°F/79°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)	Flow GPM (L/min)	Pressure PSI (bar)		
12 x 12 (3,6 x 3,6)	12 (3,6)	15 (57)	9.4 (0,65)	15 (57)	9.4 (0,65)	4 to 8 (100 to 203); ½ (13) recessed using F2 escutcheon, ¾ (19) recessed using F1 escutcheon	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	16 (60,5)	10.6 (0,73)	16 (60,5)	10.6 (0,73)		
16 x 16 (4,9 x 4,9)	16 (4,9)	17 (64,3)	12.0 (0,83)	17 (64,3)	12.0 (0,83)		
18 x 18 (5,5 x 5,5)	18 (5,5)	19 (72)	15.0 (1,0)	19 (72)	15.0 (1,0)		
20 x 20 (6,1 x 6,1)	20 (6,1)	22 (83,2)	20.2 (1,4)	22 (83,2)	20.2 (1,4)		

***Note:** The F1 Res 49 pendent and recessed pendent residential sprinklers can be installed per NFPA 13, NFPA 13R and NFPA 13D in beamed ceilings meeting the following criteria:

1. Maximum beam depth = 7" (178mm)
2. Beam spacing at or greater than 7.5 ft. (2.3m) on center.

Technical Data: F1Res 58 Pendent and Recessed Pendent (SIN R3513)

Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	Sprinkler Temp. Rating		Max. Ambient Temp.		Actual K Factor	Sprinkler Length Inch (mm)
			°F	°C	°F	°C		
½" NPT (R½)	½" (13)	175 (12)	155 175	68 79	100 150	38 66	5.8	2.25 (57)

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C)		Intermediate Temp. Rating (175°F/79°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)	Flow GPM (L/min)	Pressure PSI (bar)		
12 x 12 (3,6 x 3,6)	12 (3,6)	16 (61)	7.6 (0,53)	16 (61)	7.6 (0,53)	1 to 4 (25 to 100); ½ (13) recessed using F2 escutcheon, ¾ (19) recessed using F1 escutcheon	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	16 (61)	7.6 (0,53)	16 (61)	7.6 (0,53)		
16 x 16 (4,9 x 4,9)	16 (4,9)	16 (61)	7.6 (0,53)	16 (61)	7.6 (0,53)		
18 x 18 (5,5 x 5,5)	18 (5,5)	19 (72)	10.8 (0,75)	19 (72)	10.8 (0,75)		
20 x 20 (6,1 x 6,1)	20 (6,1)	22 (83,3)	14.4 (1,0)	22 (83,3)	14.4 (1,0)		

For Ceiling types refer to NFPA 13, 13R or 13D

Technical Data: F1 Res 76 Pendent and Recessed Pendent (SIN R7618)

Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	Sprinkler Temp. Rating		Max. Ambient Temp.		K Factor	Sprinkler Length Inch (mm)
			°F	°C	°F	°C		
3/4" NPT (R½)	17/32" (13.5)	175 (12)	155 175	68 79	100 150	38 66	7.6	2.25 (57)

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C)		Intermediate Temp. Rating (175°F/79°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)	Flow GPM (L/min)	Pressure PSI (bar)		
12 x 12 (3,6 x 3,6)	12 (3,6)	21 (79,5)	7.6 (0,53)	21 (79,5)	7.6 (0,53)	1 to 4 (25 to 100); ½ (13) recessed using F2 escutcheon, ¾ (19) recessed using F1 escutcheon	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	21 (79,5)	7.6 (0,53)	21 (79,5)	7.6 (0,53)		
16 x 16 (4,9 x 4,9)	16 (4,9)	21 (79,5)	7.6 (0,53)	21 (79,5)	7.6 (0,53)		
18 x 18 (5,5 x 5,5)	18 (5,5)	21 (79,5)	7.6 (0,53)	21 (79,5)	7.6 (0,53)		
20 x 20 (6,1 x 6,1)	20 (6,1)	23 (87,1)	9.2 (0,63)	23 (87,1)	9.2 (0,63)		

For Ceiling types refer to NFPA 13, 13R or 13D

- **Model F1 Res 30, 49, 58 & 76 CCP Pendent**

- **Model F1 Res 30, 49, 58 & 76 Recessed Pendent / FP**

FP push-on/thread-off escutcheon

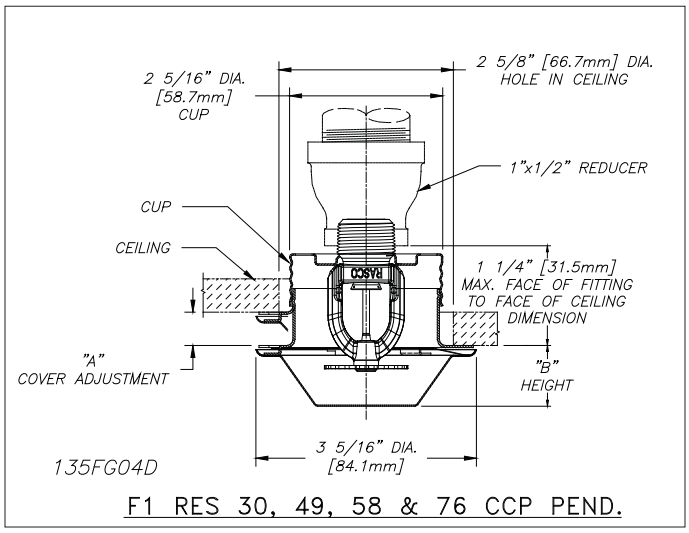


Fig. 3

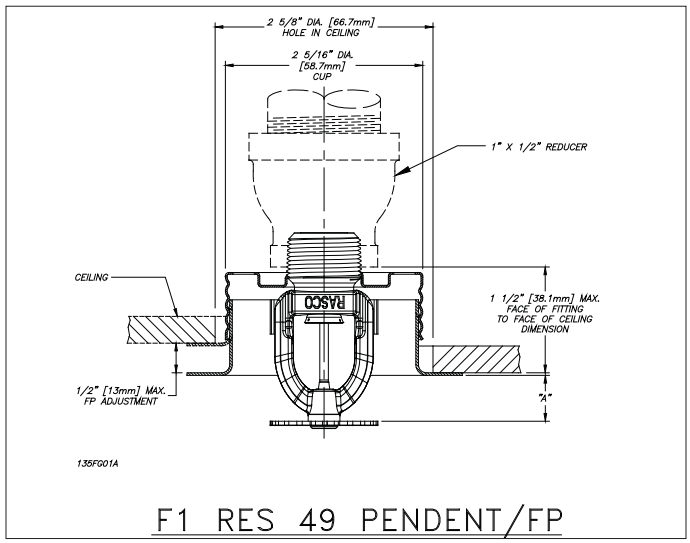


Fig. 4

Note: The F1 Res 76 will use a 1" x ¾" reducer.

Technical Data: F1Res 30 CCP Pendent and Recessed Pendent/FP (SIN R3511)

Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	CCP Assembly Temp. Rating		Max. Ambient Temp.		K Factor	Sprinkler Length Inch (mm)
			°F	°C	°F	°C		
½" NPT (R½)	21/64" (8.2)	175 (12)	135	57	100	38	3.0	2.25 (57)

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)		
12 x 12 (3,6 x 3,6)	12 (3,6)	8 (30,3)	7.0 (0,48)	1 to 4 (25 to 100); ½ (13mm) recessed using FP escutcheon	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	11 (37,8)	13.4 (0,92)		

For Ceiling types refer to NFPA 13, 13R or 13D

Technical Data: F1Res 49 CCP Pendent and Recessed Pendent/FP (SIN 3516)

Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	CCP Assembly Temp. Rating		Max. Ambient Temp.		K Factor	Sprinkler Length Inch (mm)
			°F	°C	°F	°C		
½" NPT (R½)	7/16" (11)	175 (12)	135	57	100	38	4.9	2.25 (57)

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)		
12 x 12 (3,6 x 3,6)	12 (3,6)	13 (49)	7.0 (0,48)	1 to 4 (25 to 100); ½ (13) recessed using FP escutcheon	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	13 (49)	7.0 (0,48)		
16 x 16 (4,9 x 4,9)	16 (4,9)	14 (53)	8.2 (0,56)		
18 x 18 (5,5 x 5,5)	18 (5,5)	18 (68,1)	13.5 (0,93)		
20 x 20 (6,1 x 6,1)	20 (6,1)	20 (75,7)	16.7 (1,14)		

For Ceiling types refer to NFPA 13, 13R or 13D

CCP Options Data:

"A" Cover Adjustment Inch (mm)	"B" CCP Height Inch (mm)
1/2 (12.7)	15/16 (24)
5/16 (7.9)	3/4 (19)

FP Data "A":

FP Position	"A" Inch (mm)
Max. Recessed	7/16 (11)
Min. Recessed	15/16 (24)

Note: Sprinklers shown in Fig. 3 and Fig. 4 are not suitable for installation in ceilings which have positive pressure in the space above.

Technical Data: F1Res 58 CCP Pendent and Recessed Pendent/FP (SIN R3513)

Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	CCP Assembly Temp. Rating		Max. Ambient Temp.		K Factor	Sprinkler Length Inch (mm)
			°F	°C	°F	°C		
½" NPT (R½)	1/2" (13)	175 (12)	135	57	100	38	5.8	2.25 (57)

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)		
12 x 12 (3,6 x 3,6)	12 (3,6)	16 (61)	7.6 (0,53)	1 to 4 (25 to 100); ½ (13) recessed using FP escutcheon	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	16 (61)	7.6 (0,53)		
16 x 16 (4,9 x 4,9)	16 (4,9)	16 (61)	7.6 (0,53)		
18 x 18 (5,5 x 5,5)	18 (5,5)	19 (72)	10.8 (0,75)		
20 x 20 (6,1 x 6,1)	20 (6,1)	22 (83,3)	14.4 (1,0)		

For Ceiling types refer to NFPA 13, 13R or 13D

Technical Data: F1Res 76 CCP Pendent and Recessed Pendent/FP (SIN R7618)

Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	CCP Assembly Temp. Rating		Max. Ambient Temp.		K Factor	Sprinkler Length Inch (mm)
			°F	°C	°F	°C		
3/4" NPT (R3/4)	17/32" (13.5)	175 (12)	135	57	100 150	38 66	7.6	2.25 (57)

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)		
12 x 12 (3,6 x 3,6)	12 (3,6)	21 (79,5)	7.6 (0,53)	1 to 4 (25 to 100); ½ (13) recessed using FP escutcheon	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	21 (79,5)	7.6 (0,53)		
16 x 16 (4,9 x 4,9)	16 (4,9)	21 (79,5)	7.6 (0,53)		
18 x 18 (5,5 x 5,5)	18 (5,5)	22 (83,3)	8.4 (0,58)		
20 x 20 (6,1 x 6,1)	20 (6,1)	25 (94,6)	10.8 (0,74)		

For Ceiling types refer to NFPA 13, 13R or 13D

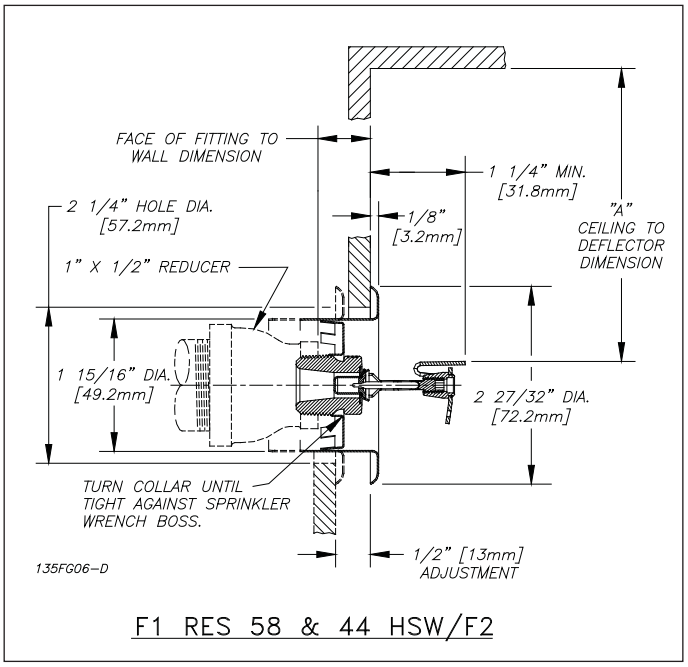
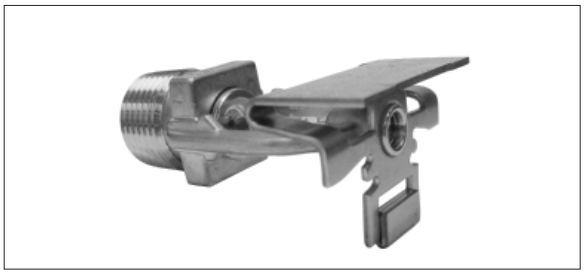
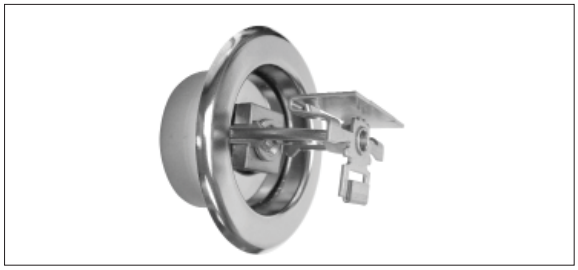


Fig. 5

- **Model F1 Res 44 & 58 HSW**



- **Model F1 Res 44 & 58 Recessed HSW/F2**



F2 escutcheon,
1/2" (13mm) adjustment

Technical Data: F1Res 44 HSW & HSW/F2 (SIN R3531)

Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	Sprinkler Temp. Rating		Max. Ambient Temp.		K Factor	Sprinkler Length Inch (mm)
			°F	°C	°F	°C		
½" NPT (R½)	3/8" (10)	175 (12)	155 175	68 79	100 150	38 66	4.4	2.45 (62)

Escutcheon, F2, Data:

Type	Adjustment Inch (mm)	Face of Fitting to wall Inch (mm)
F2	1/2 (13)	3/16 - 11/16 (4.7 - 17.4)

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C)		Intermediate Temp. Rating (175°F/79°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)	Flow GPM (L/min)	Pressure PSI (bar)		
12 x 12 (3,6 x 3,6)	12 (3,6)	12 (45,4)	7.5 (0,52)	12 (45,4)	7.5 (0,52)	4 to 6 (100 to 152); ½ (13) recessed using F2 escutcheon	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	14 (53,0)	10.2 (0,71)	14 (53,0)	10.2 (0,71)		
16 x 16 (4,9 x 4,9)	16 (4,9)	16 (60,6)	13.3 (0,92)	16 (60,6)	13.3 (0,92)		
16 x 18 (4,9 x 5,5)	16 (4,9)	18 (68,1)	16.8 (0,53)	18 (68,1)	16.8 (0,53)		
18 x 18 (5,5 x 5,5)	18 (5,5)	19 (72,0)	18.7 (1,29)	19 (72,0)	18.7 (1,29)		
16 x 20 (4,9 x 6,1)	16 (4,9)	23 (87,1)	27.4 (1,89)	23 (87,1)	27.4 (1,89)		
12 x 12 (3,6 x 3,6)	12 (3,6)	14 (53,0)	10.2 (0,71)	14 (53,0)	10.2 (0,71)	6 to 12 (152 to 305); ½ (13) recessed using F2 escutcheon	
14 x 14 (4,3 x 4,3)	14 (4,3)	16 (60,6)	13.3 (0,92)	16 (60,6)	13.3 (0,92)		
16 x 16 (4,9 x 4,9)	16 (4,9)	17 (64,4)	15.0 (1,04)	17 (64,4)	15.0 (1,04)		
16 x 18 (4,9 x 5,5)	16 (4,9)	20 (75,7)	20.7 (1,43)	20 (75,7)	20.7 (1,43)		
16 x 20 (4,9 x 6,1)	16 (4,9)	23 (87,1)	27.4 (1,89)	23 (87,1)	27.4 (1,89)		

For Ceiling types refer to NFPA 13, 13R or 13D

Technical Data: F1Res 58 HSW & HSW/F2 (SIN R3533)

Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	Sprinkler Temp. Rating		Max. Ambient Temp.		K Factor	Sprinkler Length Inch (mm)
			°F	°C	°F	°C		
½" NPT (R½)	1/2" (13)	175 (12)	155 175	68 79	100 150	38 66	5.8	2.45 (62)

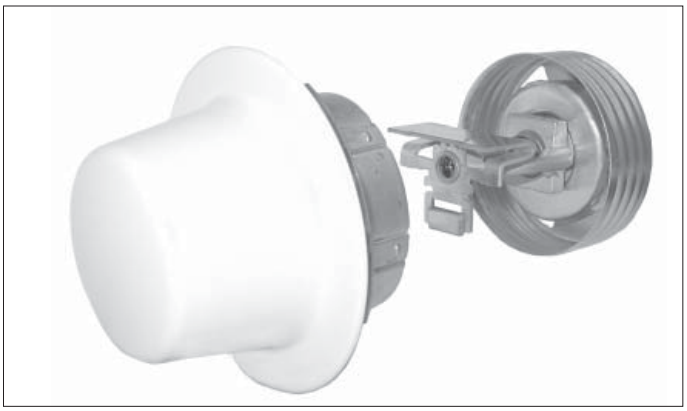
Escutcheon, F2, Data:

Type	Adjustment Inch (mm)	Face of Fitting to wall Inch (mm)
F2	1/2 (13)	3/16 - 11/16 (4.7 - 17.4)

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C)		Intermediate Temp. Rating (175°F/79°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)	Flow GPM (L/min)	Pressure PSI (bar)		
12 x 12 (3,6 x 3,6)	12 (3,6)	16 (60,6)	7.6 (0,53)	16 (60,6)	7.6 (0,53)	4 to 6 (100 to 152); ½ (13) recessed using F2 escutcheon	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	18 (68,2)	9.7 (0,69)	18 (68,2)	9.7 (0,69)		
16 x 16 (4,9 x 4,9)	16 (4,9)	21 (79,5)	13.2 (0,91)	21 (79,5)	13.2 (0,91)		
16 x 18 (4,9 x 5,5)	16 (4,9)	25 (94,7)	18.6 (1,28)	25 (94,7)	18.6 (1,28)		
16 x 20 (4,9 x 6,1)	16 (4,9)	29 (109,8)	25.0 (1,73)	29 (109,8)	25.0 (1,73)		
12 x 12 (3,6 x 3,6)	12 (3,6)	22 (83,3)	14.4 (1,0)	22 (83,3)	14.4 (1,0)	6 to 12 (152 to 305); ½ (13) recessed using F2 escutcheon	
14 x 14 (4,3 x 4,3)	14 (4,3)	22 (83,3)	14.4 (1,0)	22 (83,3)	14.4 (1,0)		
16 x 16 (4,9 x 4,9)	16 (4,9)	26 (98,4)	20.1 (1,39)	26 (98,4)	20.1 (1,39)		
16 x 18 (4,9 x 5,5)	16 (4,9)	31 (117,4)	28.6 (1,97)	31 (117,4)	28.6 (1,97)		

For Ceiling types refer to NFPA 13, 13R or 13D

- **Model F1 Res 44 SWC**



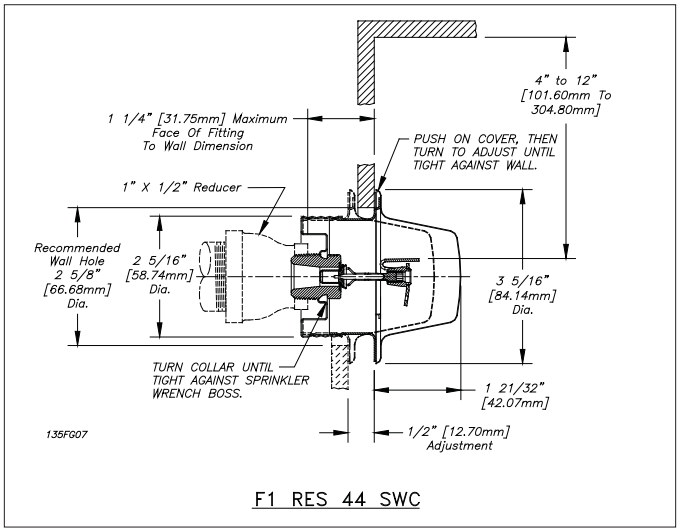


Fig. 6

Technical Data: F1Res 44 SWC (SIN R3531)

Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	Cover Temp. Rating		Max. Ambient Temp.		K Factor	Sprinkler Length Inch (mm)
			°F	°C	°F	°C		
½" NPT (R½)	⅜" (10)	175 (12)	135	57	100	38	4.4	2.45 (62)

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)		
12 x 12 (3,6 x 3,6)	12 (3,6)	13 (49,2)	8.7 (0,60)	4 to 6 (100 to 152); ½ (13) recessed using F2 escutcheon	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	14 (53,0)	10.2 (0,71)		
16 x 16 (4,9 x 4,9)	16 (4,9)	17 (64,3)	15.0 (1,1)		
16 x 18 (4,9 x 5,5)	16 (4,9)	19 (71,8)	18.7 (1,13)		
16 x 20 (4,9 x 6,1)	16 (4,9)	23 (87,1)	27.4 (1,89)		
12 x 12 (3,6 x 3,6)	12 (3,6)	14 (52,9)	10.2 (0,71)	6 to 12 (152 to 305); ½ (13) recessed using F2 escutcheon	
14 x 14 (4,3 x 4,3)	14 (4,3)	15 (56,7)	11.7 (0,81)		
16 x 16 (4,9 x 4,9)	16 (4,9)	18 (68,1)	16.8 (1,16)		
16 x 18 (4,9 x 5,5)	16 (4,9)	20 (75,6)	20.7 (1,43)		

For Ceiling types refer to NFPA 13, 13R or 13D

Technical Data: F1Res 58 HSWX (SIN RA3533)

	Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	Sprinkler Temp. Rating		Max. Ambient Temp.		K Factor	Sprinkler Length Inch (mm)	Sprinkler Identification Number (SIN)
				°F	°C	°F	°C			
Bulb	½" NPT (R½)	½" (13)	175 (12)	155 175	68 79	100 150	38 66	5.8	2.45 (62)	RA3533

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (155°F/68°C)		Intermediate Temp. Rating (175°F/79°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)	Flow GPM (L/min)	Pressure PSI (bar)		
18 x 20 (5,5 x 6,1)	18 (5,5)	30 (114)	26.8 (1,85)	30 (114)	26.8 (1,85)	4 to 6 (100 to 152); ½ (13) recessed using F2 escutcheon	8 (2,4)
20 x 20 (6,1 x 6,1)	20 (6,1)	30 (114)	26.8 (1,85)	30 (114)	26.8 (1,85)		
16 x 22 (4,9 x 7,3)	16 (4,9)	33 (125)	32.4 (2,23)	33 (125)	32.4 (2,23)		
16 x 24 (4,9 x 7,3)	16 (4,9)	38 (144)	42.9 (2,96)	38 (144)	42.9 (2,96)		
14 x 26 (4,3 x 7,9)	14 (4,3)	42 (160)	52.4 (3,75)	42 (160)	52.4 (3,75)		
18 x 20 (5,5 x 6,1)	18 (5,5)	35 (133)	36.4 (2,5)	35 (133)	36.4 (2,5)	6 to 12 (152 to 305); ½ (13) recessed using F2 escutcheon	
16 x 22 (4,9 x 6,7)	16 (4,9)	38 (144)	42.9 (2,96)	38 (144)	42.9 (2,96)		
16 x 24 (4,9 x 7,3)	16 (4,9)	42 (160)	52.4 (3,6)	42 (160)	52.4 (3,6)		
14 x 26 (4,3 x 7,9)	14 (4,3)	46 (174)	62.9 (4,34)	46 (174)	62.9 (4,34)		

For Ceiling types refer to NFPA 13, 13R or 13D

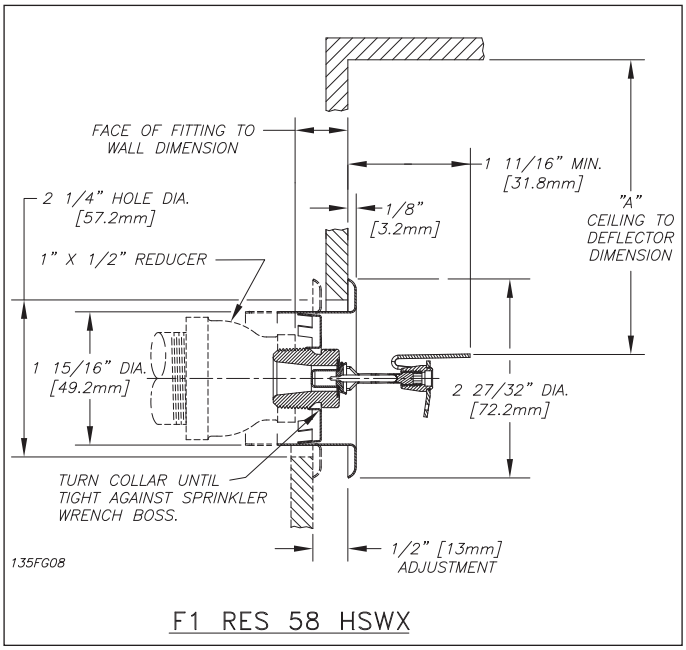
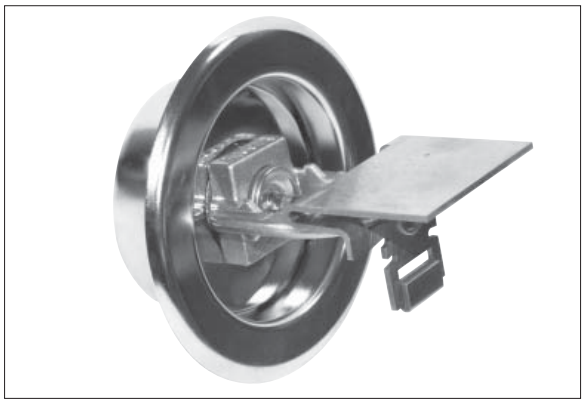
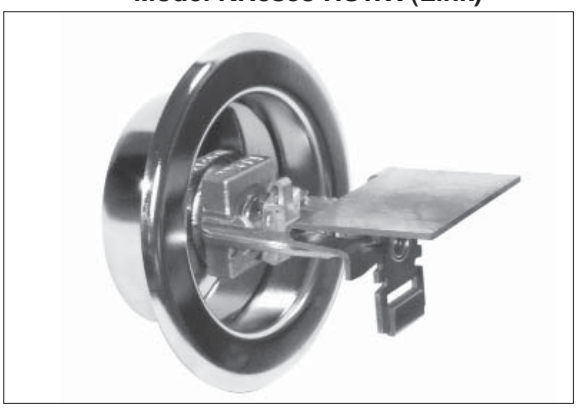


Fig. 7

- **Model F1 Res 58 HSWX (Bulb)**



- **Model KRes58 HSWX (Link)**



Technical Data: KRes58 HSWX (RA3593)

	Thread Size	Nominal Orifice Inch (mm)	Max. Pressure psi (bar)	Max. Ambient Temp.		K Factor	Sprinkler Length Inch (mm)	Sprinkler Identification Number (SIN)
				°F	°C			
Link	½" NPT (R½)	½" (13)	175 (12)	100	38	5.8	2.45 (62)	RA3593

Max. Coverage area Ft x Ft (m x m)	Max. Spacing Ft (m)	Ordinary Temp. Rating (165°F/74°C)		Top of Deflector to Ceiling Inch (mm)	Minimum Spacing Ft (m)
		Flow GPM (L/min)	Pressure PSI (bar)		
18 x 20 (5,5 x 6,1)	18 (5,5)	29 (109)	25 (1,72)	4 to 6 (100 to 152); ½ (13) recessed using F2 escutcheon	8 (2,4)
20 x 20 (6,1 x 6,1)	20 (6,1)	30 (114)	26.8 (1,85)		
16 x 22 (4,9 x 7,3)	16 (4,9)	33 (125)	32.4 (2,23)		
16 x 24 (4,9 x 7,3)	16 (4,9)	38 (144)	42.9 (2,96)		
14 x 26 (4,3 x 7,9)	14 (4,3)	42 (160)	52.4 (3,75)		
18 x 20 (5,5 x 6,1)	18 (5,5)	35 (133)	36.4 (2,5)	6 to 12 (152 to 305); ½ (13) Recessed using F2 escutcheon	
16 x 22 (4,9 x 6,7)	16 (4,9)	38 (144)	42.9 (2,96)		
16 x 24 (4,9 x 7,3)	16 (4,9)	42 (160)	52.4 (3,6)		
14 x 26 (4,3 x 7,9)	14 (4,3)	46 (174)	62.9 (4,34)		

For Ceiling types refer to NFPA 13, 13R or 13D

Maintenance

Model F1 Res 30, 49, F1 Res 58, F1 Res 76 and F1 Res 44 Sprinklers should be inspected quarterly, and the sprinkler system maintained in accordance with NFPA 25, 13, 13D, and 13R. Do not clean sprinkler with soap and water, Ammonia or any other cleaning fluids. Remove dust by using a soft brush or gentle vacuuming. Remove any sprinkler which has been painted (other than factory applied) or damaged in any way. A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers. Prior to installation, sprinklers should remain in the original cartons and packaging until used. This will minimize the potential for damage to sprinklers that could cause improper operation or non-operation.

Model F1 Res 30, 49 & 58 Pendent Sprinkler Specifications

Sprinklers shall be [cULus Listed] [New York City MEA Approved (258-93-E)] low flow residential pendent sprinklers engineered to provide a minimum design density of 0.05 gpm/ft^2 over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Where pendent residential sprinklers are installed under sloped ceilings having a pitch from [4/12] to [8/12], the sprinklers shall be listed for such use. Deflector-to-ceiling distance listing shall be 1" to 8" maximum. Sprinkler frame and deflector shall be of bronze frame construction having a ½" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer with top-loaded extruded or cold head cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of [155°F (68°C)] [175°F (79°C)]. Sprinklers shall have a nominal K-factor of 3.0, 4.9 and 5.8. Standard finish: [Bronze] [Chrome-plated] [White Polyester] [Special finish– specify]. Residential pendent sprinklers shall be Reliable Model F1 Res 30, 49 & 58, SIN R3511, R3516 & R3513 (Bulletin 135).

Model F1 Res 49 & 58 Recessed Pendent/F1, Model F1 Res 30, 49 & 58 Recessed Pendent/F2, Model F1 Res 30, 49 & 58 Recessed Pendent/FP

Sprinklers shall be [cULus Listed] [New York City MEA Approved (258-93-E)] low flow residential recessed pendent sprinklers engineered to provide a minimum design density of 0.05 gpm/ft^2 over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard.

Where pendent residential sprinklers are installed under sloped ceilings having a pitch from [4/12] to [8/12], the sprinklers shall be listed for such use. Deflector-to-ceiling distance listing shall be 1" to 8" maximum. Sprinkler frame and deflector shall be of bronze frame construction having a ½" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer with top-loaded extruded or cold head cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of [155°F (68°C)] [175°F (79°C)]. Sprinklers shall have a nominal K-factor of 3.0, 4.9 & 5.8. Standard finish: [Bronze] [Chrome-plated] [White Polyester] [Special finish– specify]. Recessed escutcheon assembly shall be a steel, two-piece escutcheon [with ½" adjustment (Model F2)] [with ¾" adjustment (Model F1)] [of push-on and thread off design with ½" adjustment (Model FP)]. Standard finish shall be [brass][bright chrome] [white painted]. Residential recessed pendent sprinklers shall be Reliable [Model F1 Res 30, 49 & 58 Recessed Pendent/F1] [Model F1 Res 30, 49 & 58 Recessed Pendent/F2] [Model F1 Res 30, 49 & 58 Recessed Pendent/FP] SIN R3511, R3516 & R3513 (Bulletin 135).

Model F1 Res 30, 49 & 58 CCP Pendent (Concealed)

Sprinklers shall be [cULus Listed] [New York City MEA Approved (258-93-E)] low flow residential concealed sprinklers engineered to provide a minimum design density of 0.05 gpm/ft² over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Where pendent residential sprinklers are installed under sloped ceilings having a pitch from [4/12] to [8/12], the sprinklers shall be listed for such use. Sprinkler frame and deflector shall be of bronze frame construction having a ½" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer with top-loaded extruded or cold head cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of 155°F (68°C). Cover plate assembly shall consist of a brass cover plate and copper alloy retainer flange. Method of attaching the cover plate to the sprinkler cup shall be a push-on and thread-off design allowing a ½" cover plate adjustment. Cover plate temperature rating shall be 135°F (57°C). A plastic protective cap shall be provided and factory installed inside the sprinkler cup to protect the sprinkler from damage, which could occur during construction before the cover plate is installed. Standard cover plate finish: [White] [Custom Color– specify].]. Concealed pendent sprinklers shall be Reliable Model F1 Res 30, 49 & 58 CCP, SIN R3511, R3516 & R3513 (Bulletin 135).

Model F1 Res 44, F1 Res 58 Horizontal Sidewall, F1 Res 58 HSWX & KRes58 HSWX Residential Sprinkler Specifications

Sprinklers shall be [cULus Listed] low flow residential horizontal sidewall sprinklers engineered to provide a minimum design density of 0.05 gpm/ft² over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Where horizontal sidewall residential sprinklers are installed under sloped ceilings having a pitch from [4/12] to [8/12], the sprinklers shall be listed for such use. Sprinkler frame and deflector shall be of bronze frame construction having a ½" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer with top-loaded extruded or cold head cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of [155°F (68°C)] [175°F (79°C)]. The solder element (Link) version, the water seal consist of a cap with a bellville spring washer and a temperature rating of 165°F (74°C). The recessed assembly forthe HSWX (Bulb & Link) should be a steel two pieces escutcheon with 1/2" adjustment (Model F2) standard finish should be Bright Chrome and white painted. The F1 Res 58 HSW is also available with low lead frame. F1 Res 58 HSW and HSWX sprinklers shall have a nominal K Factor of 5.8 and F1 Res 44 a nominal K factor of 4.4. Standard finish: [Bronze] [Chrome-plated] [White Polyester] [Special finish– specify]. Residential horizontal sidewall sprinklers shall be Reliable Model F1 Res 44, F1 Res 58, F1 Res 58 HSWX & Model KRes58 HSWX, SIN R3531, RA3533 & RA3593 (Bulletin 135).

Model F1 Res 44 Recessed Horizontal Sidewall Sprinkler

Use description for the Model F1 Res 44 horizontal sidewall sprinkler with the following modifications: Replace "horizontal sidewall sprinkler" with "recessed horizontal sprinkler." Add: Recessed escutcheon assembly shall be a steel, two-piece escutcheon with ½" adjustment (Model F2). Standard finish shall be [brass][bright chrome] [white painted] [Special finish– specify]. Residential recessed horizontal sidewall sprinklers shall be Reliable Model F1 Res 44/F2, SIN R3531 (Bulletin 135).

Model F1 Res 76 Pendent

Sprinklers shall be [cULus Listed] low flow residential pendent sprinklers engineered to provide a minimum design density of 0.05 gpm/ft^2 over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Sprinkler frame and deflector shall be of bronze frame construction having a ¾" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer with machined or cold head cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of [155°F (68°C)] [175°F (79°C)]. Sprinklers shall have a nominal K-factor of 7.6. Standard finish: [Bronze] [Chrome-plated] [White Polyester] [Special finish– specify]. Residential pendent sprinklers shall be Reliable Model F1 Res 76, SIN R7618 (Bulletin 135).

Model F1 Res 76 Recessed Pendent/F1, Model F1 Res 76 Recessed Pendent/F2, Model F1 Res 76 Recessed Pendent/FP

Sprinklers shall be [cULus Listed] low flow residential recessed pendent sprinklers engineered to provide a minimum design density of 0.05 gpm/ft^2 over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Sprinkler frame and deflector shall be of bronze frame construction having a ¾" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer with machined or cold head cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of [155°F (68°C)] [175°F (79°C)]. Sprinklers shall have a nominal K-factor of 7.6. Standard finish: [Bronze] [Chrome-plated] [White Polyester] [Special finish– specify]. Recessed escutcheon assembly shall be a steel, two-piece escutcheon [with ½" adjustment (Model F2)] [with ¾" adjustment (Model F1)] [of push-on and thread off design with ½" adjustment (Model FP)]. Standard finish shall be [brass][bright chrome] [white painted]. Residential recessed pendent sprinklers shall be Reliable [Model F1 Res 76 Recessed Pendent/F1] [Model F1 Res 76 Recessed Pendent/F2] [Model F1 Res 76 Recessed Pendent/FP] SIN R7618 (Bulletin 135).

Model F1 Res 76 CCP Pendent (Concealed)

Sprinklers shall be [cULus Listed] low flow residential concealed sprinklers engineered to provide a minimum design density of 0.05 gpm/ft^2 over the listed coverage area. Listed flows as specified by the manufacturer's technical data sheets are to be used. Residential sprinklers shall be installed in conformance with the manufacturer's installation guidelines and the applicable installation standard. Sprinkler frame and deflector shall be of bronze frame construction having a ¾" NPT thread. Water seal assembly shall consist of a Teflon-coated Belleville spring washer with machined or cold head cup with 3 mm glass bulb containing no plastic parts, and having a temperature rating of 155°F (68°C). Cover plate assembly shall consist of a brass cover plate and copper alloy retainer flange. Method of attaching the cover plate to the sprinkler cup shall be a push-on and thread-off design allowing a ½" cover plate adjustment. Cover plate temperature rating shall be 135°F (57°C). A plastic protective cap shall be provided and factory installed inside the sprinkler cup to protect the sprinkler from damage, which could occur during construction before the cover plate is installed. Standard cover plate finish: [White] [Custom Color– specify].]. Concealed pendent sprinklers shall be Reliable Model F1 Res 76 CCP, SIN R7618 (Bulletin 135).

Finishes [1]

Standard Finishes		
Sprinkler	**F1, F2, FP Escutcheons**	**Cover Plates**
Bronze Chrome Plated White and Black Polyester Coated	Brass Bright Chrome Plated White Painted	White Painted Chrome
Special Application Finishes		
Sprinkler	**F1, F2, Escutcheons**	**Cover Plates**
Bright Brass Black Plated Black Paint Off White Satin Chrome	Bright Brass Black Plated Black Paint Off White Satin Chrome	Bright Brass Black Plated Black Paint Off White Satin Chrome

[1] Other finishes and colors are available on special order. Consult factory for details.

Note: Paint or any other coating applied over the factory finish will void all approvals and warranties.

Ordering Information

Specify:

1. Sprinkler Model
2. Sprinkler Type
3. Temperature Rating
4. Sprinkler Finish
5. Escutcheon Finish
6. Cover Plate Finish

The equipment presented in this bulletin is to be installed in accordance with the latest published Standards of the National Fire Protection Association, Factory Mutual Research Corporation, or other similar organizations and also with the provisions of governmental codes or ordinances whenever applicable.

Products manufactured and distributed by Reliable have been protecting life and property for over 90 years, and are installed and serviced by the most highly qualified and reputable sprinkler contractors located throughout the United States, Canada and foreign countries.

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VicFlex™ Style VS1 Dry Sprinkler
Models V3505, V3506, V3509, V3510, V3517, V3518

10.91

1.0 PRODUCT DESCRIPTION

Style: Pendent, Concealed Pendent, Horizontal Sidewall

K Factor: 5.6 Imp./8.1 S.I.

Nominal Orifice Size: ½"/13 mm

Maximum Working Pressure: 175 psi/1200 kPa

Factory Hydrostatic Test: 100% @ 500 psi/3450 kPa

Minimum Operating Pressure: 7 psi/48 kPa

Connections: To branch line (inlet) via 1"/25 mm NPT or 1" BSPT

Minimum Bend Radius:

- 2"/51 mm

Hazard Classifications: Light and Ordinary Hazard

Maximum Number of Bends:

4

2.0 CERTIFICATION/LISTINGS

	Model					
APPROVALS/LISTINGS	**V3505**	**V3506**	**V3509**	**V3510**	**V3517**	**V3518**
Orifice Size (inches)	½"	½"	½"	½"	½"	½"
Orifice Size (mm)	13	13	13	13	13	13
Nominal K Factor Imperial	5.6	5.6	5.6	5.6	5.6	5.6
Nominal K Factor S.I.[6]	8.1	8.1	8.1	8.1	8.1	8.1
Response	Standard	Quick	Standard	Quick	Standard	Quick
Deflector Type	Pendent	Pendent	Hor. SW	Hor. SW	Conc Pen	Conc Pen
Approved Temperature Ratings F°/C°						
	135/57	135/57	135/57	135/57	135/57	135/57
	155/68	155/68	155/68	155/68	155/68	155/68
	175/79	175/79	175/79	175/79	175/79	175/79
	200/93	200/93	200/93	200/93	200/93	200/93
	286/141	286/141	286/141	286/141	–	–

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

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

3.0 MATERIAL SPECIFICATIONS

Deflector: Brass

Bulb: Glass with glycerin solution

Bulb Nominal Diameter:

☐ **Quick Response:** 3.0 mm

☐ **Standard Response:** 5.0 mm

Split spacer: Stainless Steel

Load screw: Brass

Pip Cap: Stainless Steel

Spring Seal Assembly: PTFE-coated Beryllium Nickel and Stainless Steel

Frame: Die cast brass 65-30

Flexible Hose: 300-Series Stainless Steel

Collar/Weld Fitting: 300-Series Stainless Steel

Gasket Seal: Victaulic EPDM

Isolation Ring: Nylon

Hose Fittings: Carbon Steel, Zinc-Plated

Inlet Fitting: Brass

Outer tube: 300-Series Stainless Steel

Concealed cup: Carbon Steel, Zinc-plated

Brackets: Carbon Steel, Zinc-plated

3.1 ACCESSORIES SPECIFICATIONS

Sprinkler Finishes:

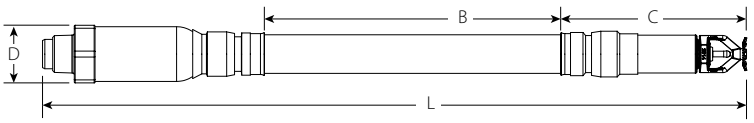
☐ **Standard: VC-250**

☐ **White painted RAL 9010**

4.0 DIMENSIONS

Product Details and Optional Components

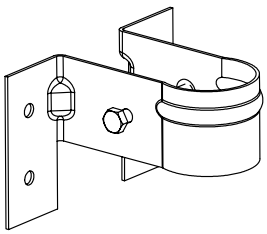
Style VS1 Dry Sprinkler

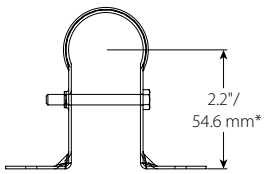


Sprinkler Length inches mm	Overall Length (pendent) L inches mm	Live Length B inches mm	Outlet End Length C inches mm	Maximum OD D inches mm
38 965	39.2 995	25.1 638	6.5 165	2.2 56
50 1270	51.2 1300	37.1 943	65 165	2.2 56
58 1475	59.2 1505	45.1 1145	65 165	2.2 56

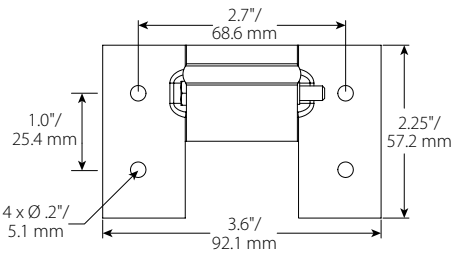
1 Add ½" to Overall Length and Outlet End Length for increased length of sidewall deflector

Style VB1 Bracket



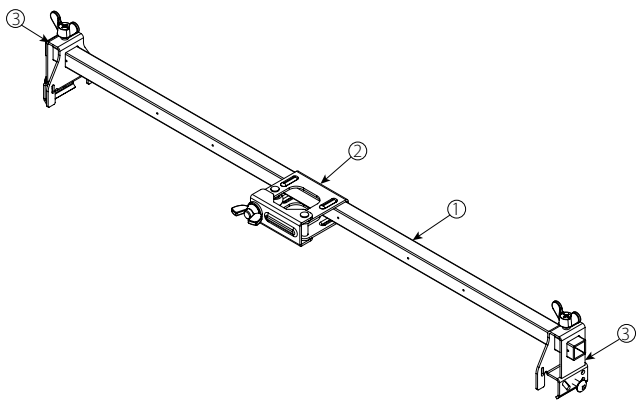


*Note: Theoretical center point of sprinkler in bracket.



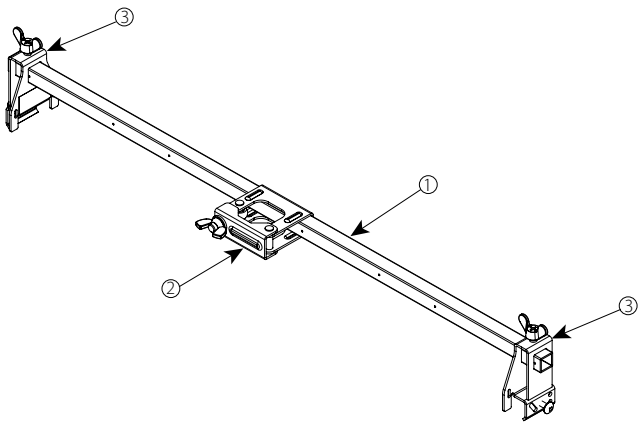
Style VB2 Bracket
Recessed Pendent, Suspended Ceilings

Item	Description
1	24"/610 mm or 48"/1220 mm Square Bar
2	Patented 1-Bee Center Bracket
3	End Bracket



Style VB3 Bracket
Concealed Pendent, Suspended Ceilings

Item	Description
1	24"/610 mm or 48"/1220 mm Square Bar
2	Patented 1-Bee Center Bracket
3	End Bracket



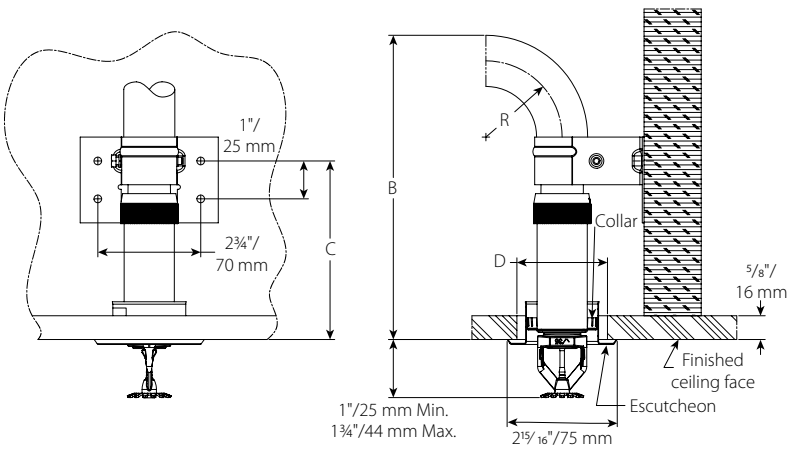
4.1 DIMENSIONS

Sprinkler Finishes: Dimensions and Mounting Conditions:

NOTE:

Drawings are shown with ⅝" finished ceiling thickness. Adjustments to "B" and "C" dimensions will be required if finished ceiling thickness deviate from drawing.

Recessed Pendent:

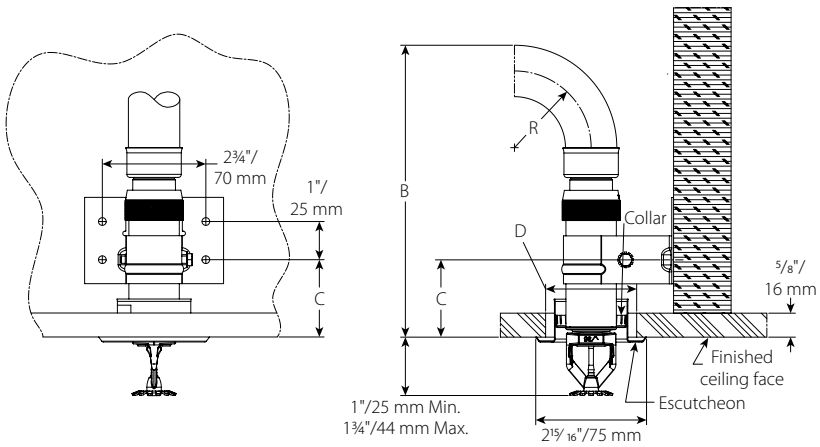


Take-out Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	7 ⅝/193	8 ⅝/218	9 ⅝/244	10 ⅝/269	11 ⅝/295	12 ⅝/320
C	4 ¾/119					
Ceiling Hole Diameter "D"	2 - 2 ⅜"/50 - 60mm					

NOTE:
Dimensions are shown with ¾" escutcheon at middle of height adjustment range.

4.2 DIMENSIONS

Recessed Pendent Alternative Bracket Location:



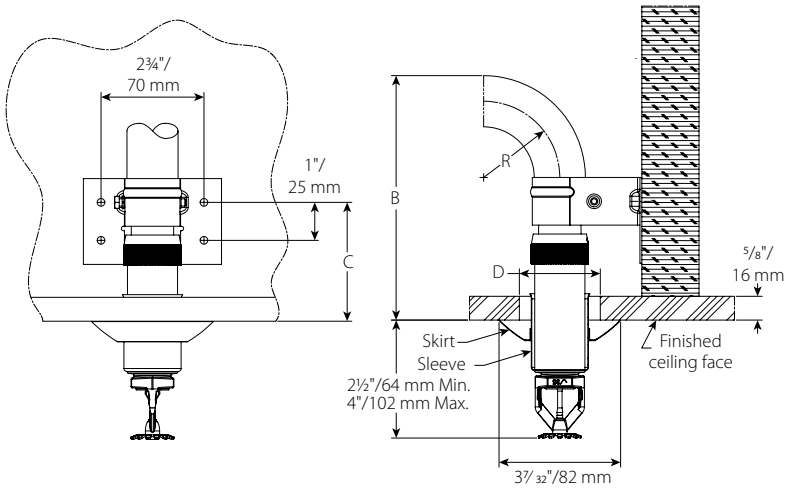
Take-out Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	7 5/8/193	8 5/8/218	9 5/8/244	10 5/8/269	11 5/8/295	12 5/8/320
C	2/50					
Ceiling Hole Diameter "D"	2 - 2 3/8/50 - 60					

NOTE:

Dimensions are shown with ¾" escutcheon at middle of height adjustment range.

4.3 DIMENSIONS

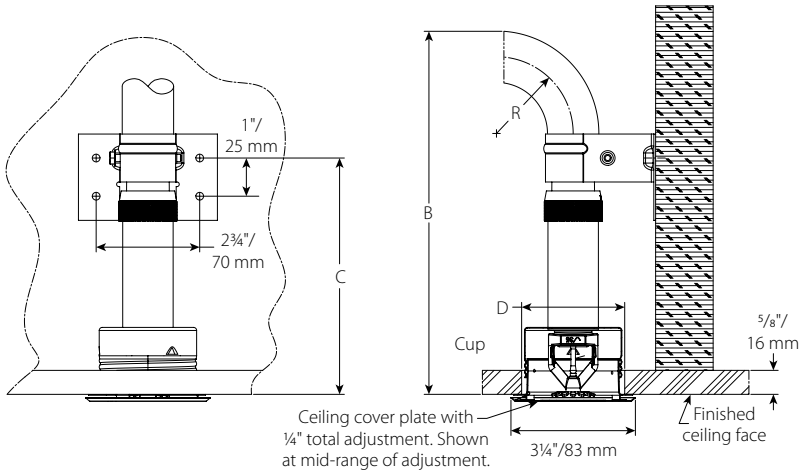
Sleeve and Skirt Pendent:



Hose Clearance Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	6 ½/163	7 ½/188	8 ½/213	9 ½/239	10 ½/264	11 ½/290
C	3 ⅛/79					
Ceiling Hole Diameter "D"	1 ¾/44 - 2 ⅛/54					

4.4 DIMENSIONS

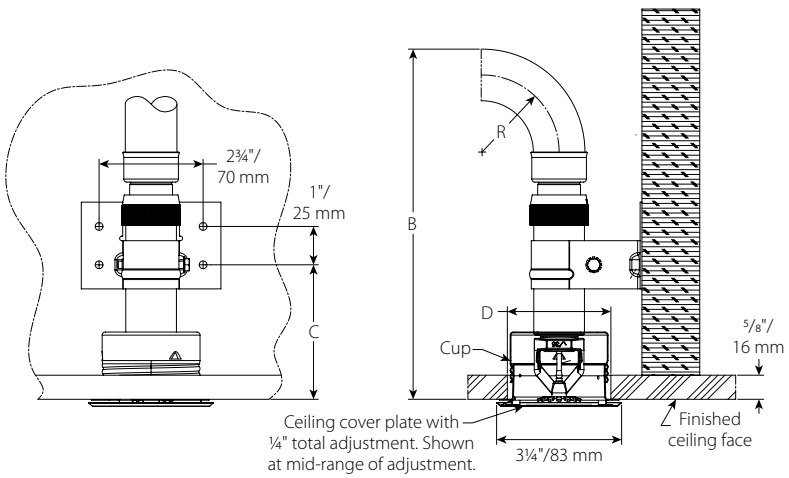
Concealed Pendent:



Hose Clearance Chart						
Dimension	inches/mm					
Minimum Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	9 ½/241	10 ½/267	11 ½/292	12 ½/318	13 ½/343	14 ½/368
C	6 ¼ /157					
Ceiling Hole Diameter "D"	2 ⅝/67 - 2 ¾ /70					

4.5 DIMENSIONS

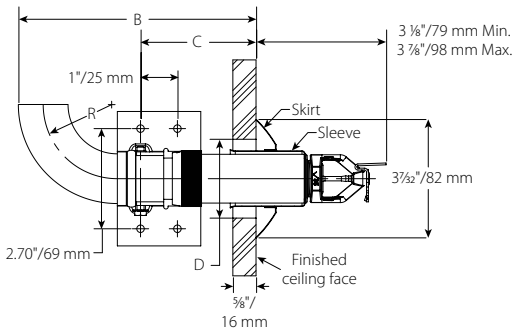
Concealed Pendent Alternative Bracket Location:



Hose Clearance Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	9⅛/231	10⅛/257	11⅛/282	12⅛/307	13⅛/333	14⅛/358
C	3½/89					
Ceiling Hole Diameter "D"	2⅝/67 - 2¾/70					

4.6 DIMENSIONS

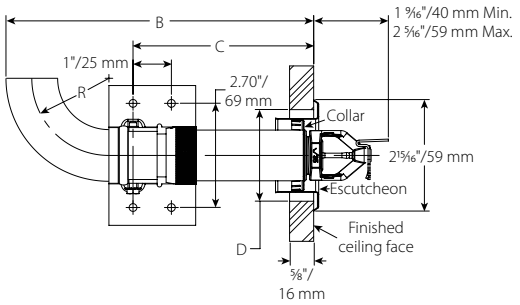
Sleeve and Skirt Sidewall:



Hose Clearance Chart						
Dimension	inches/mm					
Minimum Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	6½/163	7½/188	8½/213	9½/239	10½/264	11½/290
C	3⅛/79					
Ceiling Hole Diameter "D"	1¾/44 - 2⅛/54					

4.7 DIMENSIONS

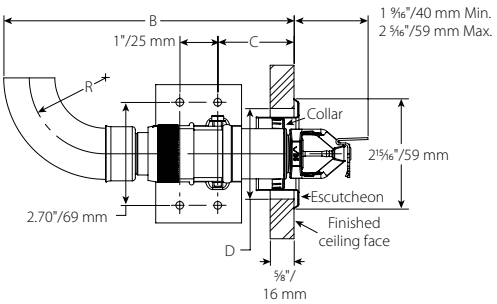
Recessed Sidewall:



Hose Clearance Chart						
Dimension	inches/mm					
Minimum Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	8/203	9/229	10/254	11/279	12/305	13/330
C	4 3⁄4/119					
Ceiling Hole Diameter "D"	2/51 - 2 3⁄8/600					

4.8 DIMENSIONS

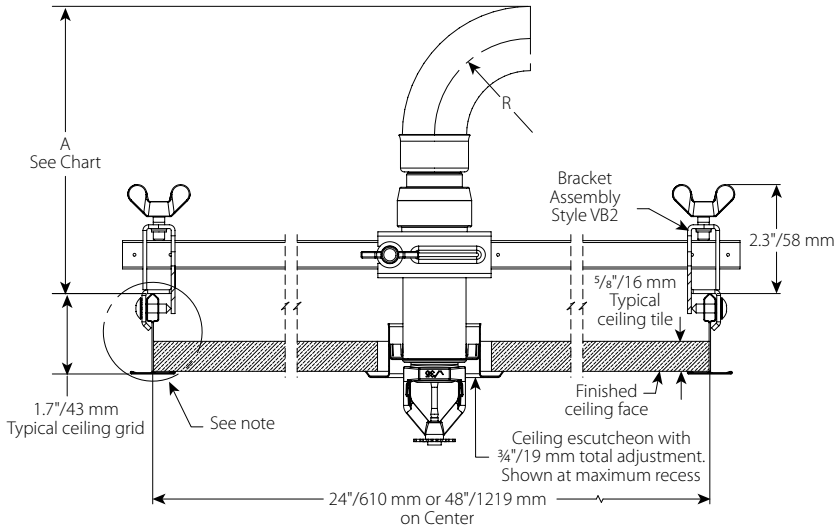
Recessed Sidewall Alternative Bracket Location:



Hose Clearance Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
B	8/203	9/229	10/254	11/279	12/305	13/330
C	2/51					
Ceiling Hole Diameter "D"	2/51 - 2 3⁄8/600					

4.9 DIMENSIONS

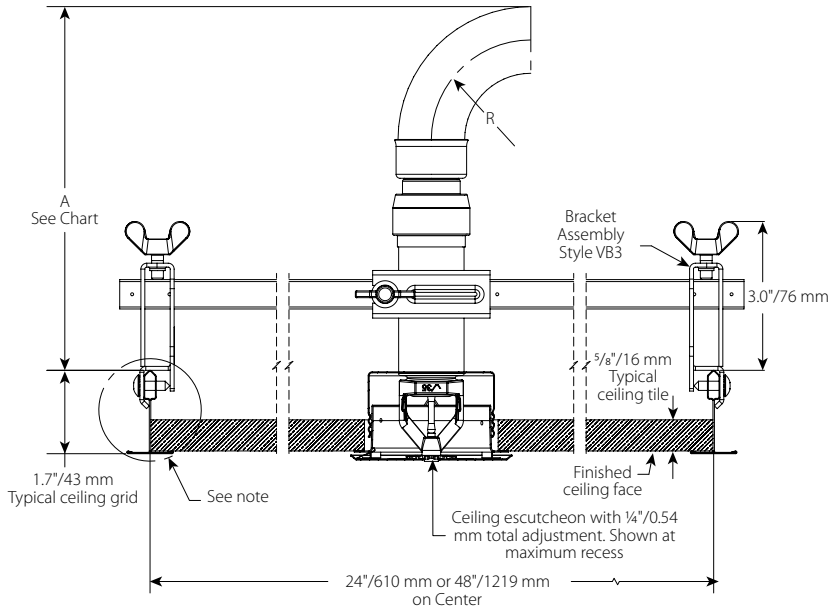
VB2 Recessed Pendent:



Hose Clearance Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
A	6½/163	7½/188	8½/213	9½/239	10½/264	11½/290

4.10 DIMENSIONS

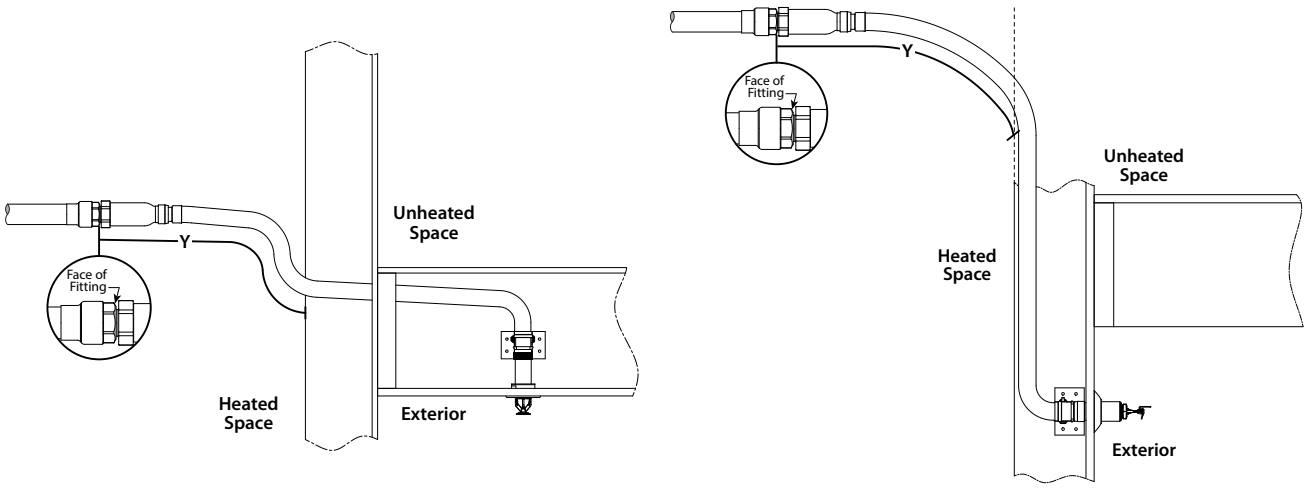
VB3 Concealed Pendent:



Hose Clearance Chart						
Dimension	inches/mm					
Bend Radius "R"	2/50	3/75	4/100	5/125	6/150	7/175
A	7⅝/193	8⅝/218	9⅝/244	10⅝/269	11⅝/295	12⅝/320

5.0 PERFORMANCE

Freeze Protection



Ambient Temperature Exposed to Discharge End of Sprinkler °F °C	Exposed Minimum Barrel Length "Y" inches mm		
	40°F/4°C	50°F/10°C	60°F/16°C
40 4	0 0	0 0	0 0
30 -1	0 0	0 0	0 0
20 -7	4 100	0 0	0 0
10 -12	8 200	1 25	0 0
0 -18	12 300	3 75	0 0
-10 -23	14 350	4 100	1 25
-20 -29	14 350	6 150	3 75
-30 -34	16 400	8 200	4 100
-40 -40	18 450	8 200	4 100
-50 -46	20 500	10 250	6 150
-60 -51	20 500	10 250	6 150

NOTE

- Exposed minimum barrel lengths are inclusive up to 30-mph/48-kph wind velocities.

Maximum Allowable Number of Bends

Sprinkler Length inches mm	Maximum Allowable Number of 90 Bends at 2"/51mm Bend Radius
38 965	4
50 1270	4
58 1475	4

6.0 NOTIFICATIONS

⚠ WARNING

- **It is the responsibility of the system designer to verify suitability of 300-Series stainless steel flexible hose for use with the intended fluid media.**
- **The effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on 300-Series stainless steel flexible hose must be evaluated by the material specifier to confirm system life will be acceptable for the intended service.**

Failure to follow these instructions could cause product failure, resulting in serious personal injury and/or property damage.

Important Installation Notes:

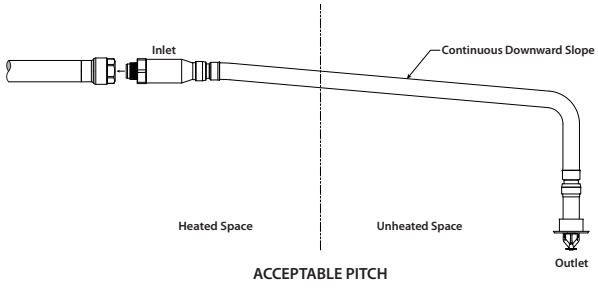
1. Should be installed only in accordance with NFPA 13 Standard for the the Installation of Sprinkler Systems.
2. Install and tighten hexagonal boss at inlet of sprinkler fitting only.
3. DO NOT install the Victaulic® VicFlex™ Style VS1 Dry Sprinkler's inlet into any fitting that interferes with thread penetration. Use a sample fitting to confirm proper engagement.
   To ensure unobstructed flow during operation, the Victaulic® VicFlex™ Style VS1 Dry Sprinkler must be installed into a fitting that will prevent water and debris from accumulating at the dry sprinkler's inlet.
4. Do not remove deflector or inlet end of sprinkler.

FOR DRY SYSTEMS ONLY:
The Style VS1 Dry Sprinkler's inlet MUST be installed only into the outlet of a cast or malleable iron tee that meets the dimensional requirements of ANSI B16.3 and ANSI B16.4, Class 125 and Class 150. Use a sample fitting to confirm proper engagement.

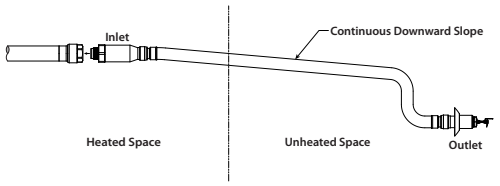
Style VS1 Dry Sprinklers in dry systems must be installed with a continuous downward slope along its entire length from the branch line fitting to the sprinkler. No localized low points shall be present along the length of the Style VS1 Dry Sprinkler.

Style VS1 Dry Sprinklers are not permitted to be installed into the top of the branch line piping. Style VS1 Dry Sprinklers must be installed into the side or from the bottom of the branch line piping.

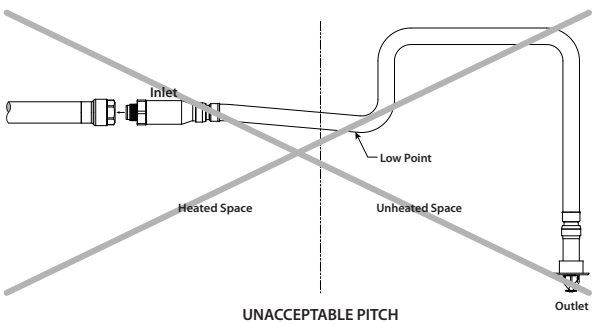
FOR WET SYSTEMS ONLY:
Style VS1 Dry Sprinklers in wet systems, installed where a portion extends into an unconditioned space, must be installed with a continuous downward slope along the entire exposed length from the inside wall to the sprinkler. No localized low points shall be present along the exposed length of the sprinkler.



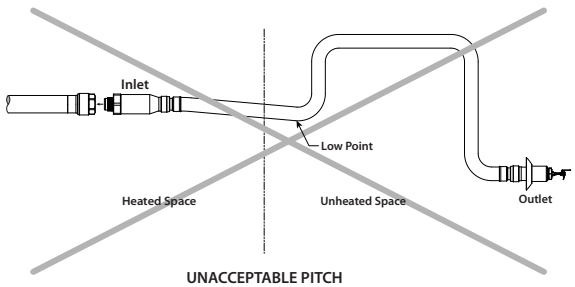
ACCEPTABLE PITCH



ACCEPTABLE PITCH

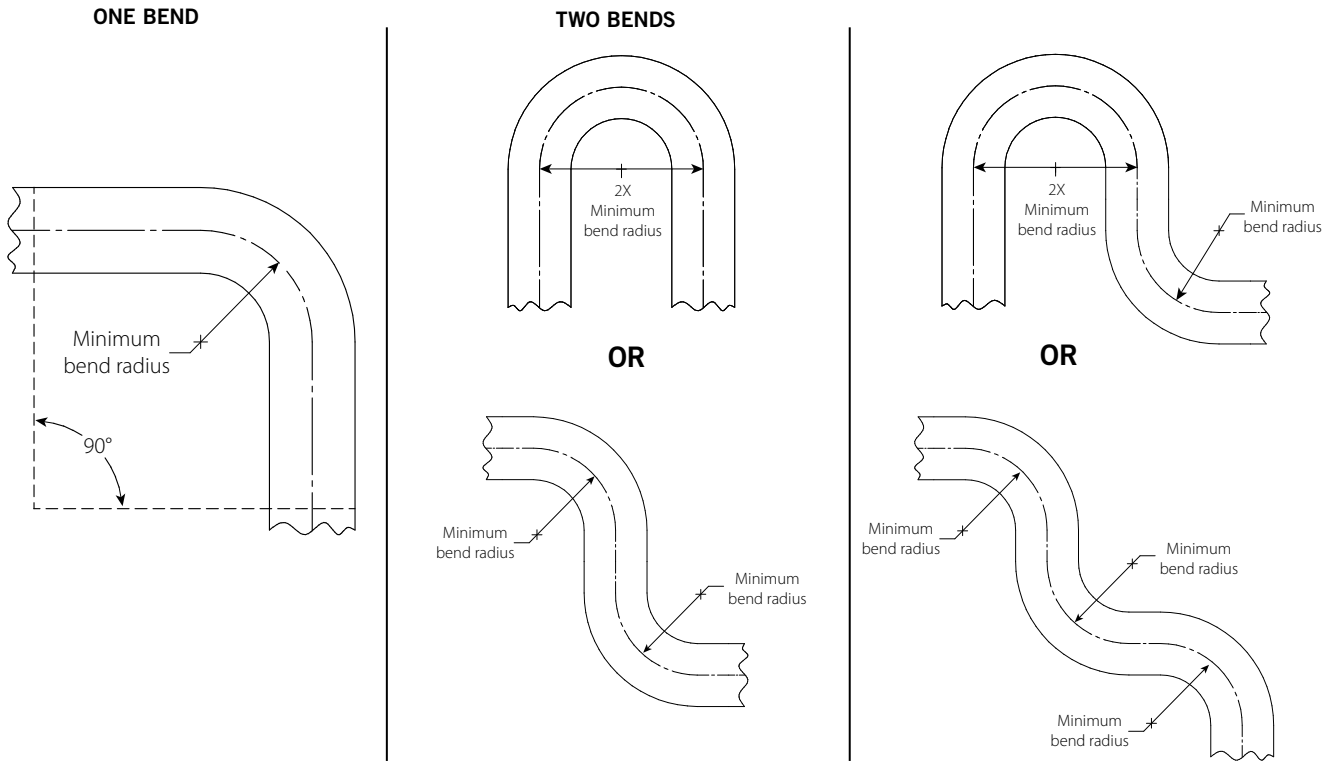


UNACCEPTABLE PITCH



UNACCEPTABLE PITCH

7.0 REFERENCE MATERIALS



NOTE

- For out-of-plane (three-dimensional) bends, care must be taken to avoid imparting torsional stress on the sprinkler.

The information contained in this section is based on current information and Product design at the time of publication and is subject to change without notification. Our ongoing commitment to product improvement may result in some variation. No representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications or results to be obtained therefrom. For verification of technical data or additional information not contained herein, please contact Spears® Technical Services Department [West Coast: (818) 364-1611—East Coast: (678) 985-1263].

General Information

RECOMMENDATIONS FOR INSTALLERS AND USERS:

Plastic piping systems should be **ENGINEERED, INSTALLED** and **OPERATED** in accordance with **ESTABLISHED DESIGN AND ENGINEERING STANDARDS AND PROCEDURES** for plastic piping systems. Suitability for the intended service application should be determined by the installer and/or user prior to installation of a plastic piping system. All Installation and maintenance personnel should be trained in the proper handling and installation requirements and precautions of plastic piping systems. **PRIOR TO ASSEMBLY, all piping system components should be inspected for damage or irregularities. Mating components should be checked to assure that tolerances and engagements are compatible. Do not use any components that appear irregular or do not fit properly. Contact the appropriate manufacturer of the component product in question to determine usability. Consult all applicable codes and regulations for compliance prior to installation.**

Installation must be made in accordance with Spears® Manufacturing Company
FlameGuard® CPVC Fire Sprinkler Piping Products Installation Instructions - FG-3

NOTE — Individual or group instruction in correct solvent welding procedures is available by contacting your local distributor or your servicing Spears® Regional Distribution Center.

SOLVENT CEMENT CONNECTIONS — Spears® Manufacturing Company recommends the use of Spears® FS-5 One Step solvent cement for joining Spears® products. Use of solvent cementing products not approved for CPVC fire sprinkler systems, or failure to follow installation instructions will automatically void the warranty.

THREADED CONNECTION — Spears® Manufacturing Company recommends the use of Spears® **BLUE 75™** Thread Sealant. This product has been tested by Spears® and the sealant manufacturer for compatibility with the Spears® CPVC fire sprinkler products. Consult the sprinkler head manufacturer before using this product. **WARNING: OTHER PIPE JOINT COMPOUNDS OR PASTES MAY CONTAIN SUBSTANCES THAT COULD CAUSE STRESS CRACKING IN THE CPVC OR OTHER FITTING COMPONENTS.** Care must be taken to avoid over torquing - generally 1 to 2 turns beyond finger tight is all that is required to make up a threaded connection. Factory testing has indicated 10-25 ft. lbs. of torque is adequate to obtain a leak free seal.

GASKET SEALED THREAD CONNECTIONS — This type of connection can only be made with Spears® TorqueSafe™, SofTorque™ or QuickTorque™ style Gasket Sealed Female Sprinkler Adapters. DO NOT USE ANY TYPE OF THREAD SEALANT WHEN INSTALLING THIS TYPE OF ADAPTER. Tape or paste may impair proper sealing and function. Testing has shown that hand tight until snug for the TorqueSafe™ adapter and finger tight plus 1-turn is all that is needed to seal this special connection. Sprinkler heads in these specialty fittings can then be additionally tightened clockwise to bring sprinkler frames into desired alignment without stressing the fitting. See specific adapter instructions in package for details.

GripLoc™ CONNECTIONS — This type of connection can only be made with Spears® GripLoc™ Couplings or Repair Couplings. DO NOT USE ANY TYPE OF SOLVENT CEMENT OR SEALANT WHEN INSTALLING THIS TYPE OF CONNECTION. Uses an internal stainless steel gripper ring with an internal elastomer gasket seal. Connection allows immediate system use. See specific instructions in package for details.

Installation Training Available - Contact Spears® Technical Services for Details

FlameGuard® Products must be installed in accordance with Spears® FlameGuard® CPVC Fire Sprinkler Piping Products Installation Instructions, National Fire Protection Association Standards 13, 13R, 13D, and in accordance with local codes. Code requirements and field conditions may differ. It is the responsibility of the installing contractor to insure that the product is suitable to meet these requirements.

Dimension Reference

G = (LAYING LENGTH) Intersection of center lines to bottom of socket/thread; 90° elbows, tees, crosses; ± 1/32 inch.
H = Intersection of center lines to face of fitting; 90° elbows tees, crosses; ± 1/32 inch.
J = Intersection of center lines to bottom of socket/thread; 45° elbows; ± 1/32 inch
L = Overall length of fittings; ± 1/16 inch.
M = Outside diameter of socket/thread hub; ± 1/16 inch.
N = Socket bottom to socket bottom; couplings; ± 1/16 inch.
Q = Width of flats; ±1/16 inch.
W = Height of cap; ± 1/16 inch.

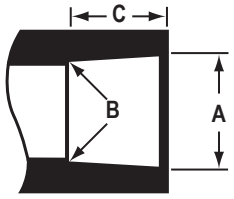
CPVC FIRE SPRINKLER PIPE SDR 13.5 (ASTM F 442)

Part Number	Nominal Size		Average O.D.		Average I.D.		Approx. Weight Lbs./Ft.
	Inches	(mm)	Inches	(mm)	Inches	(mm)	
CP-007	3/4	(19.1)	1.050	(26.7)	.874	(22.5)	0.168
CP-010	1	(25.4)	1.315	(33.4)	1.101	(28.2)	0.262
CP-012	1-1/4	(31.8)	1.660	(42.2)	1.394	(35.6)	0.418
CP-015	1-1/2	(38.1)	1.900	(48.3)	1.598	(40.7)	0.548
CP-020	2	(50.8)	2.375	(60.3)	2.003	(50.9)	0.859
CP-025	2-1/2	(63.5)	2.875	(73.0)	2.423	(61.5)	1.257
CP-030	3	(76.2)	3.500	(88.9)	2.950	(75.0)	1.867

"Lead Free" low lead certification – unless other wise specified, all Spears® FlameGuard® fittings specified here-in are certified by NSF International to ANSI/NSF® Standard 61, Annex G and is in compliance with California's Health & Safety Code Section 116825 (commonly known as AB1953) and Vermont Act 193. Weighted average lead content <=0.25%. Spears® PVC and CPVC Pipe, Fittings and Valves have always been lead-free and Certified by NSF International for use in potable water systems. Spears® offers a wide range of lead-free specialty fittings and transition adapters for plumbing applications. However, certain brass threaded adapter fittings for applications that are not intended to convey water for human consumption through drinking or cooking are still produced and available.

SOCKET DIMENSIONS

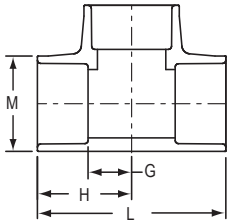
SCH 40 - ASTM F438
SCH 80 - ASTM F439



Size	Socket Entrance A	Socket Bottom B	Tolerance	SCH 40 Minimum Socket Length C	SCH 80 Minimum Socket Length C
3/4	1.058	1.046	± .004	.719	1.000
1	1.325	1.130	± .005	.875	1.125
1-1/4	1.670	1.655	± .005	.938	1.250
1-1/2	1.912	1.894	± .006	1.094	1.375
2	2.387	2.369	± .005	1.156	1.500
2-1/2	2.889	2.868	± .007	1.750	1.750
3	3.516	3.492	± .008	1.875	1.875

TEE

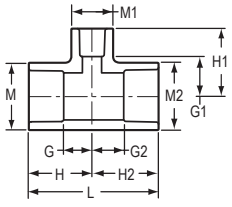
Socket x Socket x Socket



Part Number	Size	G	H	L	M	Approx. Wt. (Lbs.)
4201-007	3/4	9/16	1-1/2	2-31/32	1-5/16	.11
4201-010	1	7/8	1-13/16	3-5/8	1-5/8	.20
4201-012	1-1/4	15/32	2-3/32	4-7/32	2	.29
4201-015	1-1/2	1-5/32	2-9/16	5-3/32	2-11/32	.54
4201-020	2	1-13/32	2-15/16	5-7/8	2-7/8	.86
4201-025	2-1/2	1-23/32	3-1/2	7	3-15/32	1.62
4201-030	3	2-1/16	3-31/32	7-15/16	4-5/32	2.53

REDUCING TEE

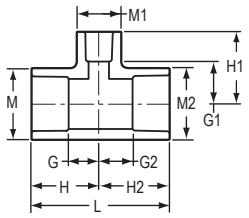
Socket x Socket x Socket



Part Number	Size	G	G1	G2	H	H1	H2	L	M	M1	M2	Approx. Wt. (Lbs.)
4201-102	3/4x3/4x1	3/4	3/4	3/4	1-11/16	1-25/32	1-11/16	3-13/32	1-5/16	1-21/32	1-5/16	.13
4201-125	1x3/4x3/4	23/32	7/8	23/32	1-25/32	1-13/16	1-21/32	3-7/16	1-19/32	1-11/32	1-5/16	.16
4201-126	1x3/4x1	23/32	23/32	3/4	1-27/32	1-27/32	1-3/4	3-19/32	1-5/8	1-5/8	1-5/16	.17
4201-131	1x1x3/4	11/16	13/16	11/16	1-13/16	1-13/16	1-13/16	3-5/8	1-5/8	1-5/16	1-5/8	.17
4201-157	1-1/4x1x3/4	11/16	1-1/32	11/16	1-15/16	2-1/32	1-13/16	3-25/32	2-3/32	1-13/32	1-23/32	.32

REDUCING TEE (continued)

Socket x Socket x Socket



Part Number	Size	G	G1	G2	H	H1	H2	L	M	M1	M2	Approx. Wt. (Lbs.)
4201-158	1-1/4x1x1	27/32	29/32	25/32	2-1/16	2-1/32	1-29/32	3-15/16	1-31/32	1-5/8	1-5/8	.24
4201-159	1-1/4x1x1-1/4	31/32	31/32	31/32	2-7/32	2-7/32	2-3/32	4-11/32	2-1/8	2-1/8	1-23/32	.36
4201-167	1-1/4x1-1/4x3/4	21/32	1	21/32	1-29/32	2	1-29/32	3-13/16	2	1-5/16	2	.22
4201-168	1-1/4x1-1/4x1	13/16	1	13/16	2-1/16	2-1/8	2-1/16	4-1/8	1-31/32	1-21/32	1-31/32	.24
4201-169	1-1/4x1-1/4x1-1/2	1-1/8	15/16	1-1/8	2-3/8	2-11/32	2-3/8	4-3/4	2-3/32	2-11/32	2-3/32	.51
4201-201	1-1/2x1-1/4x3/4	11/16	1	1/4	2-1/16	2	1-15/16	4	2-5/16	1-3/8	2-1/16	.41
4201-202	1-1/2x1-1/4x1	27/32	1-1/32	1	2-7/32	2-5/32	2-1/4	4-15/32	2-5/16	1-11/16	2-1/16	.42
4201-210	1-1/2x1-1/2x3/4	11/16	1-1/32	11/16	2-1/16	2-1/32	2-1/16	4-5/32	2-11/32	1-13/32	2-11/32	.39
4201-211	1-1/2x1-1/2x1	13/16	1-3/32	13/16	2-3/16	2-1/4	2-3/16	4-3/8	2-11/32	1-3/4	2-11/32	.41
4201-212	1-1/2x1-1/2x1-1/4	1-1/32	1-3/32	1-1/32	2-13/32	2-11/32	2-13/32	4-13/16	2-11/32	2-1/8	2-11/32	.49
4201-213	1-1/2x1-1/2x2	1-9/32	1-5/32	1-9/32	2-21/32	2-21/32	2-21/32	5-11/32	2-11/32	2-29/32	2-11/32	.64
4201-248	2x2x3/4	11/16	1-13/32	11/16	2-7/32	2-7/16	2-7/32	4-7/16	2-27/32	1-3/8	2-27/32	.52
4201-249	2x2x1	27/32	1-13/32	27/32	2-11/32	2-9/16	2-11/32	4-23/32	2-7/8	1-3/4	2-7/8	.58
4201-250	2x2x1-1/4	1-1/32	1-11/32	1-1/32	2-17/32	2-19/32	2-17/32	5-3/32	2-7/8	2-3/32	2-7/8	.65
4201-251	2x2x1-1/2	1-5/32	1-7/16	1-5/32	2-11/16	2-13/32	2-11/16	5-3/8	2-7/8	2-13/32	2-7/8	.79
4201-289	2-1/2x2-1/2x1	27/32	1-23/32	27/32	2-5/8	2-27/32	2-5/8	5-1/4	3-17/32	1-23/32	3-17/32	1.01
4201-290	2-1/2x2-1/2x1-1/4	1-3/32	1-23/32	1-1/32	2-13/16	2-31/32	2-13/16	5-21/32	3-9/16	2-3/32	3-9/16	1.13
4201-291	2-1/2x2-1/2x1-1/2	1-3/16	1/2	1-3/16	2-15/16	1-7/8	2-15/16	5-7/8	3-15/32	2-11/32	3-15/32	1.26
4201-292	2-1/2x2-1/2x2	1-13/32	1-5/8	1-13/32	3-3/16	3-1/8	3-3/16	6-3/8	3-1/2	2-7/8	3-1/2	1.37
4201-335	3x3x1	7/8	1-15/16	7/8	2-3/4	3-1/16	2-3/4	5-15/32	4-3/16	1-23/32	4-3/16	1.26
4201-336*	3x3x1-1/4	1-3/8	1-3/4	1-3/8	3-5/16	3-1/2	3-5/16	6-5/8	4-1/8	2-7/8	4-1/8	1.94
4201-337	3x3x1-1/2	1-5/32	2-1/16	1-5/32	3-1/32	3-7/16	3-1/32	6-3/32	4-3/16	2-3/8	4-3/16	1.46
4201-338	3x3x2	1-7/16	1-13/16	1-7/16	3-5/16	3-5/16	3-5/16	6-19/32	4-3/16	2-7/8	4-3/16	1.69
4201-339	3x3x2-1/2	1-3/4	1-31/32	1-3/4	3-5/8	3-23/32	3-5/8	7-1/4	4-3/16	3-17/32	4-3/16	2.11

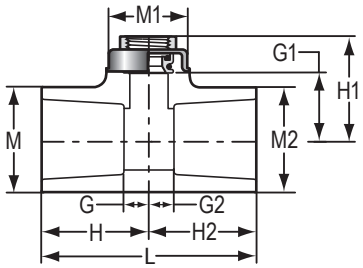
*** Branch Outlet Sized with Bushing**

TorqueSafe™ SPRINKLER HEAD TEE

Gasket Sealed Brass Thread Insert Style

Socket x Socket x Gasket Fipt

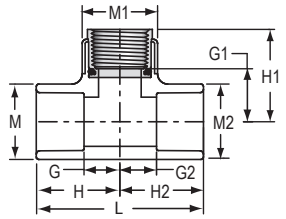
With Elastomer Seal - Use NO Thread Sealant



Part Number	Size	G	G1	G2	H	H1	H2	L	M	M1	M2	Approx. Wt. (Lbs.)
4202-101 G	3/4x3/4x1/2	7/16	1-3/16	7/16	1-7/16	1-7/16	1-17/32	2-29/32	1-3/8	1-3/8	1-3/8	.22
4202-124 G	1x3/4x1/2	7/16	1-11/32	9/16	1-9/16	1-11/16	1-9/16	3-1/8	1-11/16	1-3/8	1-3/8	.26
4202-130 G	1x1x1/2	7/16	1-11/32	7/16	1-9/16	1-11/16	1-9/16	3-1/8	1-23/32	1-3/8	1-23/32	.28
4202-131 G	1x1x3/4	17/32	15/16	17/32	1-11/16	1-5/8	1-11/16	3-11/32	1-23/32	1-9/16	1-23/32	.31
4202-166 G	1-1/4x1-1/4x1/2	7/16	1-5/8	7/16	1-11/16	1-15/16	1-11/16	3-3/8	2-1/16	1-3/8	2-1/16	.34
4202-209 G	1-1/2x1-1/2x1/2	1/2	1-13/16	1/2	1-7/8	2-3/32	1-7/8	3-3/4	2-11/32	1-3/8	2-11/32	.41
4202-247 G	2x2x1/2	1/2	2-1/16	1/2	2	2-11/32	2	4-1/32	2-27/32	1-3/8	2-27/32	.54

Not intended to convey or dispense water for human consumption through drinking or cooking

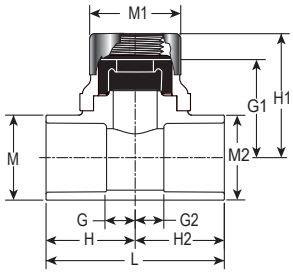
SPRINKLER HEAD TEE
Brass Thread Insert Style
Socket x Socket x Fipt



Part Number	Size	G	G1	G2	H	H1	H2	L	M	M1	M2	Approx. Wt. (Lbs.)
4202-010	1x1x1	21/31	1-1/8	21/31	1-25/32	1-29/32	1-25/32	3-19/32	1-23/32	1-23/32	1-23/32	.37

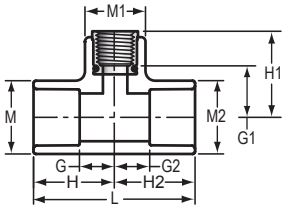
Not intended to convey or dispense water for human consumption through drinking or cooking

SofTorque™ SR REDUCING TEE
Gasket Sealed Special Reinforced Plastic Thread Style
Socket x Socket x SR Fipt
With Elastomer Seal - Use NO Thread Sealant



Part Number	Size	G	G1	G2	H	H1	H2	L	M	M1	M2	Approx. Wt. (Lbs.)
4202-101GSR	3/4x3/4x1/2	7/16	1-1/2	7/16	1-3/8	1-7/8	1-3/8	2-3/4	1-5/16	1-3/8	1-5/16	.16
4202-130GSR	1x1x1/2	7/16	1-5/8	7/16	1-1/2	2	1-1/2	3	1-5/8	1-3/8	1-5/8	.20

SPRINKLER REDUCING HEAD TEE
Brass Thread Insert Style
Socket x Socket x Fipt

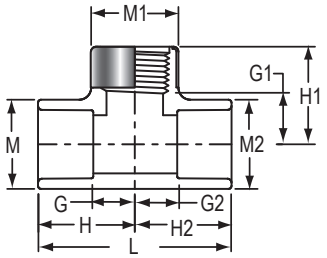


Part Number	Size	G	G1	G2	H	H1	H2	L	M	M1	M2	Approx. Wt. (Lbs.)
4202-101	3/4x3/4x1/2	7/16	1-1/16	7/16	1-15/32	1-5/8	1-15/32	2-29/32	1-13/32	1-3/16	1-13/32	.20
4202-124	1x3/4x1/2	7/16	1-11/32	9/16	1-9/16	1-11/16	1-9/16	3-1/8	1-11/16	1-3/8	1-3/8	.26
4202-130	1x1x1/2	7/16	1-7/32	7/16	1-9/16	1-25/32	1-9/16	3-1/8	1-3/4	1-3/16	1-3/4	.26
4202-156	1-1/4x1x1/2	7/16	1-7/16	9/16	1-11/16	2-1/32	1-11/16	3-3/8	2-3/32	1-3/16	1-23/32	.30
4202-166	1-1/4x1-1/4x1/2	7/16	1-15/32	7/16	1-11/16	2-1/32	1-11/16	3-3/8	2-3/32	1-3/16	2-3/32	.31
4202-199	1-1/2x1-1/4x1/2	1/2	1-5/8	9/16	1-7/8	2-3/16	1-13/16	3-11/16	2-11/32	1-3/16	2-1/16	.37
4202-209	1-1/2x1-1/2x1/2	1/2	1-5/8	1/2	1-7/8	2-3/16	1-7/8	3-3/4	2-11/32	1-3/16	2-11/32	.38
4202-237	2x1-1/2x1/2	1/2	1-27/32	17/32	2	2-7/16	1-29/32	3-15/16	2-7/8	1-3/16	2-11/32	.47
4202-247	2x2x1/2	1/2	1-7/8	1/2	2	2-7/16	2	4-1/32	2-27/32	1-3/16	2-27/32	.50

Not intended to convey or dispense water for human consumption through drinking or cooking

SPRINKLER HEAD TEE
Special Reinforced
Plastic Thread Style

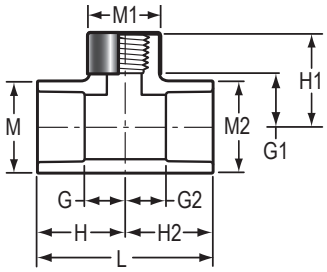
Socket x Socket x SR Fipt



Part Number	Size	G	G1	G2	H	H1	H2	L	M	M1	M2	Approx. Wt. (Lbs.)
4202-010SR	1x1x1	21/32	3/4	21/32	1-25/32	1-5/8	1-25/32	3-19/32	1-23/32	1-11/16	1-23/32	.26

SPRINKLER REDUCING HEAD TEE
Special Reinforced
Plastic Thread Style

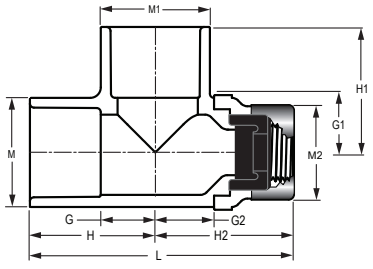
Socket x Socket x SR Fipt



Part Number	Size	G	G1	G2	H	H1	H2	L	M	M1	M2	Approx. Wt. (Lbs.)
4202-101SR	3/4x3/4x1/2	19/32	25/32	19/32	1-19/32	1-7/16	1-19/32	3-7/32	1-13/32	1-3/16	1-13/32	.15
4202-124SR	1x3/4x1/2	7/16	29/32	9/16	1-19/32	1-5/8	1-9/16	3-5/32	1-23/32	1-3/16	1-17/32	.19
4202-130SR	1x1x1/2	7/16	29/32	7/16	1-9/16	1-5/8	1-9/16	3-1/8	1-23/32	1-3/16	1-23/32	.20
4202-156SR	1-1/4x1x1/2	15/32	1-5/32	19/32	1-23/32	1-7/8	1-23/32	3-13/32	2-3/32	1-3/16	1-23/32	.26
4202-166SR	1-1/4x1-1/4x1/2	7/16	1-1/8	7/16	1-11/16	1-27/32	1-11/16	3-3/8	2-3/32	1-3/16	2-3/32	.26
4202-168SR	1-1/4x1-1/4x1	27/32	1-1/32	27/32	2-3/32	1-29/32	2-3/32	4-7/32	2-3/32	1-11/16	2-3/32	.34
4202-199SR	1-1/2x1-1/4x1/2	9/16	1-9/32	17/32	1-15/16	2	1-25/32	3-23/32	2-11/32	1-3/16	2-3/32	.33
4202-209SR	1-1/2x1-1/2x1/2	1/2	1-1/4	1/2	1-7/8	1-31/32	1-7/8	3-3/4	2-11/32	1-3/16	2-11/32	.35
4202-211SR	1-1/2x1-1/2x1	27/32	1-7/32	27/32	2-7/32	2-1/8	2-7/32	4-15/32	2-11/32	1-23/32	2-11/32	.44
4202-237SR	2x1-1/2x1/2	23/32	1-9/16	3/8	2-7/32	2-9/32	1-3/4	3-31/32	2-7/8	1-3/16	2-11/32	.45
4202-247SR	2x2x1/2	1/2	31/32	1/2	2	1-11/16	19/32	4	2-7/8	1-3/16	2-7/8	.48
4202-287SR	2-1/2x2-1/2x1/2	17/32	1-3/4	17/32	2-9/32	2-1/2	2-9/32	4-19/32	3-1/2	1-7/32	3-1/2	.78

SOFTORQUE™
SR SPRINKLER HEAD TEE
Gasket Sealed Special
Reinforced Plastic Thread Style

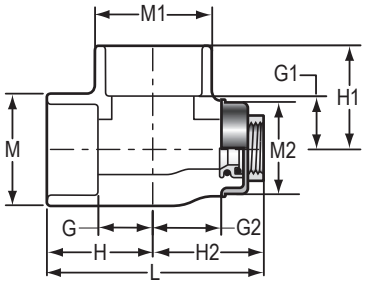
Socket x SR Fipt x Socket
Stainless Steel Collar With Elastomer Seal - Use NO Thread Sealant



Part Number	Size	G	G1	G2	H	H1	H2	L	M	M1	M2	Approx. Wt. (Lbs.)
4203-122GSR	1x1/2x1	13/16	13/16	1-1/2	1-27/32	1-27/32	1-31/32	3-13/16	1-5/8	1-5/8	1-3/8	.22

TorqueSafe™
SPRINKLER HEAD TEE
Gasket Sealed
Brass Thread Insert Style

Socket x Gasket Fipt x Socket
With Elastomer Seal - Use NO Thread Sealant

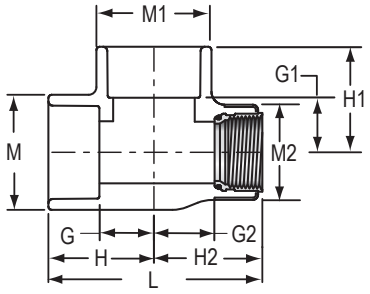


Part Number	Size	G	G1	G2	H	H1	H2	L	M	M1	M2	Approx. Wt. (Lbs.)
4203-122 G	1x1/2x1	19/32	13/16	1-13/32	1-19/32	1-27/32	1-3/4	3-11/32	1-5/8	1-5/8	1-3/8	.25

Not intended to convey or dispense water for human consumption through drinking or cooking

SPRINKLER HEAD TEE
Brass Thread Insert Style

Socket x Fipt x Socket

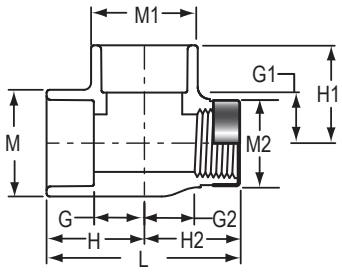


Part Number	Size	G	G1	G2	H	H1	H2	L	M	M1	M2	Approx. Wt. (Lbs.)
4203-122	1x1/2x1	23/32	3/4	1-1/4	1-5/8	1-5/8	1-15/16	3-1/2	1-23/32	1-23/32	1-3/16	.25

Not intended to convey or dispense water for human consumption through drinking or cooking

SPRINKLER HEAD TEE
Special Reinforced
Plastic Thread Style

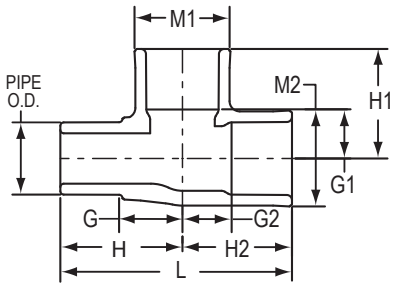
Socket x SR Fipt x Socket



Part Number	Size	G	G1	G2	H	H1	H2	L	M	M1	M2	Approx. Wt. (Lbs.)
4203-122SR	1x1/2x1	27/32	23/32	1-3/32	1-23/32	1-5/8	1-25/32	3-13/32	1-3/4	1-3/4	1-3/16	.21

STREET TEE

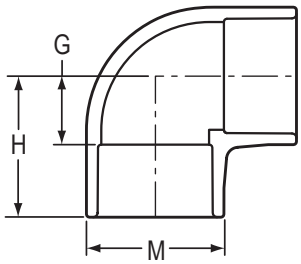
Spigot x Socket x Socket



Part Number	Size	G	G1	G2	H	H1	H2	L	M1	M2	Approx. Wt. (Lbs.)
4244-007	3/4	13/16	27/32	27/32	1-13/16	1-7/8	1-7/8	3-5/8	1-13/32	1-13/32	.16
4244-010	1	1-5/32	1-1/32	1-1/32	2-1/8	1-29/32	1-29/32	4-3/16	1-3/4	1-3/4	.27
4244-012	1-1/4	1-1/4	1	1	2-7/16	2-9/32	2-9/32	4-27/32	2-3/32	2-3/32	.42
4244-015	1-1/2	1-13/16	1-1/8	1-1/8	2-7/8	2-9/16	2-9/16	5-11/32	2-11/32	2-11/32	.56
4244-020	2	1-23/32	1-7/16	1-13/32	3-1/4	2-15/16	2-15/16	6-5/32	2-7/8	2-7/8	.84

90° ELBOW

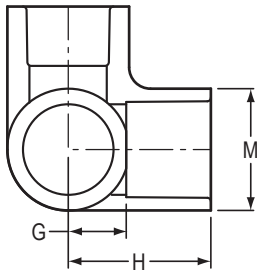
Socket x Socket



Part Number	Size	G	H	M	Approx. Wt. (Lbs.)
4206-007	3/4	9/16	1-1/2	1-5/16	.07
4206-010	1	3/4	1-5/8	1-5/8	.11
4206-012	1-1/4	15/16	2-3/16	2	.22
4206-015	1-1/2	1-5/32	2-17/32	2-3/8	.41
4206-020	2	1-13/32	2-29/32	2-7/8	.62
4206-025	2-1/2	1-15/32	3-3/8	3-1/2	1.15
4206-030	3	1-5/32	3-3/32	4-3/16	1.83

SIDE OUTLET ELBOW

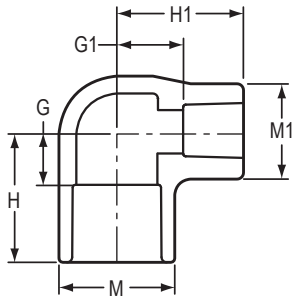
Socket x Socket x Socket



Part Number	Size	G	H	M	Approx. Wt. (Lbs.)
4213-007	3/4	27/32	1-19/32	1-5/16	.09
4213-010	1	13/16	1-7/8	1-5/8	.18

REDUCING 90° ELBOW

Socket x Socket



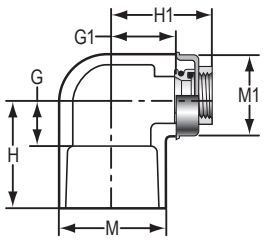
Part Number	Size	G	G1	H	H1	M	M1	Approx. Wt. (Lbs.)
4206-131	1x3/4	21/32	13/16	1-25/32	1-13/16	1-19/32	1-5/16	.11

TorqueSafe™ 90° SPRINKLER HEAD ELBOW

Gasket Sealed Brass Thread Insert Style

Socket x Gasket Fipt

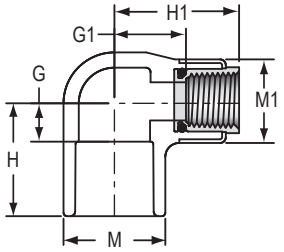
With Elastomer Seal - Use NO Thread Sealant



Part Number	Size	G	G1	H	H1	M	M1	Approx. Wt. (Lbs.)
4207-101 G	3/4x1/2	9/16	1-7/32	1-13/32	1-17/32	1-13/32	1-3/8	.19
4207-130 G	1x1/2	7/16	1-3/16	1-9/16	1-11/16	1-23/32	1-3/8	.23
4207-166 G	1-1/4x1/2	15/32	1-19/32	1-15/16	1-11/16	2-3/32	1-3/8	.25

Not intended to convey or dispense water for human consumption through drinking or cooking

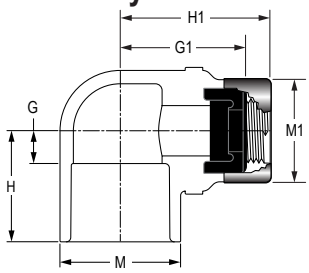
SPRINKLER HEAD 90° ELBOW
Brass Thread Insert Style
Socket x Fipt



Part Number	Size	G	G1	H	H1	M	M1	Approx. Wt. (Lbs.)
4207-101	3/4x1/2	1/2	1-3/32	1-1/2	1-5/8	1-13/32	1-3/16	.17
4207-130	1x1/2	7/16	1-7/32	1-19/32	1-25/32	1-23/32	1-3/16	.21
4207-131	1x3/4	17/32	1-11/32	1-21/32	1-31/32	1-23/32	1-3/8	.25
4207-166	1-1/4x1/2	15/32	1-17/32	1-11/16	1-15/16	2-3/32	1-17/32	.33

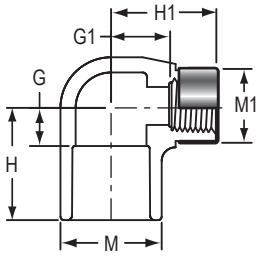
Not intended to convey or dispense water for human consumption through drinking or cooking

SofTorque™ SR 90° ELBOW SPRINKLER HEAD ADAPTER
Gasket Sealed Special Reinforced Plastic Thread Style
Socket x SR Fipt
With Elastomer Seal - Use NO Thread Sealant



Part Number	Size	G	G1	H	H1	M	M1	Approx. Wt. (Lbs.)
4207-101GSR	3/4x1/2	7/16	1-17/32	1-3/8	1-27/32	1-11/32	1-3/8	.17
4207-130GSR	1x1/2	7/16	1-11/16	1-1/2	2	1-21/32	1-3/8	.19
4207-166GSR	1-1/4x1/2	7/16	1-7/8	1-11/16	2-7/32	2	1-3/8	.22

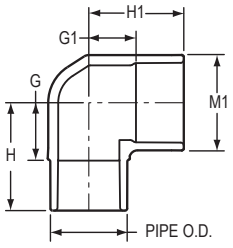
SPRINKLER HEAD 90° ELBOW
Special Reinforced Plastic Thread Style
Socket x SR Fipt



Part Number	Size	G	G1	H	H1	M	M1	Approx. Wt. (Lbs.)
4207-101SR	3/4x1/2	11/32	13/16	1-15/32	1-1/2	1-13/32	1-3/16	.14
4207-130SR	1x1/2	7/16	7/8	1-9/16	1-5/8	1-23/32	1-3/8	.20
4207-131SR	1x3/4	1/2	7/8	1-5/8	1-9/16	1-23/32	1-3/8	.16
4207-166SR	1-1/4x1/2	13/32	1-1/32	1-21/32	1-23/32	2-3/32	1-7/32	.19

90° STREET ELBOW

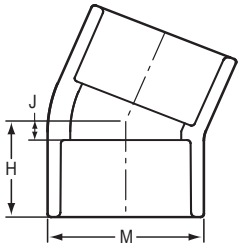
Spigot x Socket



Part Number	Size	G	G1	H	H1	M1	Approx. Wt. (Lbs.)
4209-007	3/4	29/32	19/32	1-15/16	1-11/16	1-13/32	.12
4209-010	1	1-9/32	23/32	2-13/32	1-27/32	1-3/4	.21
4209-012	1-1/4	1-9/16	27/32	2-13/16	2-3/32	2-3/32	.32
4209-015	1-1/2	1-15/32	1-3/16	2-27/32	2-9/16	2-11/32	.42
4209-020	2	1-23/32	1-3/8	3-7/32	2-15/16	2-27/32	.65

22-1/2° ELBOW

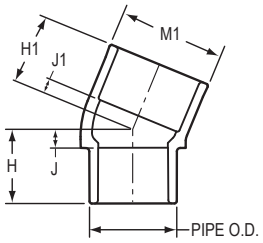
Socket x Socket



Part Number	Size	H	J	M	Approx. Wt. (Lbs.)
4216-007	3/4	1-3/16	7/32	1-13/32	.09
4216-010	1	1-3/8	9/32	1-25/32	.14
4216-012	1-1/4	1-1/2	5/16	2-3/32	.20
4216-015	1-1/2	1-7/16	13/32	1-3/8	.19
4216-020	2	1-7/8	3/8	2-27/32	.43
4216-030	3	2-3/8	1/2	4-5/32	1.00

22-1/2° STREET ELBOW

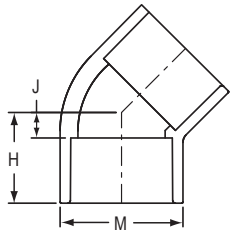
Spigot x Socket



Part Number	Size	H	H1	J	J1	M1	Approx. Wt. (Lbs.)
4242-007	3/4	1-1/4	1-1/2	1/4	1/2	1-3/8	.08
4242-010	1	1-7/16	1-11/32	5/16	7/32	1-23/32	.14
4242-012	1-1/4	1-9/16	1-25/32	17/32	11/16	2-1/16	.21
4242-015	1-1/2	1-13/32	1-23/32	1/2	11/32	2-11/32	.28
4242-020	2	1-29/32	2-1/8	7/32	5/8	2-7/8	.42
4242-025	2-1/2	2-1/8	2-1/4	13/32	1/2	3-1/2	.68
4242-030	3	2-13/32	2-13/32	9/16	17/32	4-5/32	.99

45° ELBOW

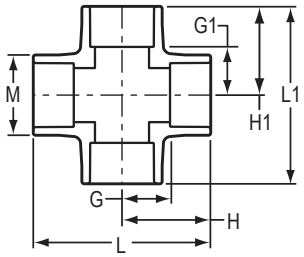
Socket x Socket



Part Number	Size	H	J	M	Approx. Wt. (Lbs.)
4217-007	3/4	1-5/16	5/16	1-5/16	.07
4217-010	1	1-13/32	3/8	1-5/8	.11
4217-012	1-1/4	1-5/8	3/8	2-5/32	.21
4217-015	1-1/2	1-27/32	15/32	2-11/32	.32
4217-020	2	2-1/8	21/32	2-7/8	.48
4217-025	2-1/2	2-17/32	3/4	3-1/2	.88
4217-030	3	2-29/32	29/32	4-5/32	1.17

CROSS

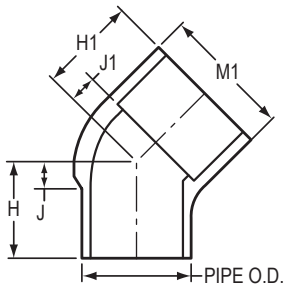
Socket x Socket x Socket x Socket



Part Number	Size	G	G1	H	H1	L	L1	M	Approx. Wt. (Lbs.)
4220-007	3/4	5/8	5/8	1-21/32	1-21/32	3-5/16	3-5/16	1-13/32	.22
4220-010	1	3/4	3/4	1-5/8	1-5/8	3-1/4	3-1/4	1-23/32	.20
4220-012	1-1/4	1-1/8	1-1/8	2-3/8	2-3/8	4-3/4	4-3/4	2-3/32	.63
4220-015	1-1/2	1-7/32	1-7/32	2-5/8	2-5/8	5-7/32	5-7/32	2-3/8	.80
4220-020	2	1-1/2	1-1/2	3	3	6	6	3	1.43
4220-025	2-1/2	1-11/16	1-11/16	3-7/16	3-7/16	6-7/8	6-7/8	3-17/32	2.16
4220-030	3	2-3/32	2-3/32	3-31/32	3-31/32	7-15/16	7-15/16	4-7/16	3.37

45° STREET ELBOW

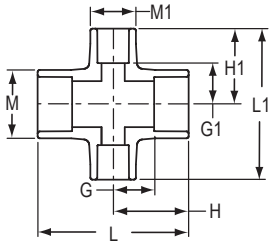
Spigot x Socket



Part Number	Size	H	H1	J	J1	M1	Approx. Wt. (Lbs.)
4227-010	1	1-1/2	1-5/16	1/2	1/4	1-5/8	.10
4227-012	1-1/4	1-25/32	1-9/16	9/16	11/32	1-31/32	.15
4227-015	1-1/2	2-1/32	2-1/8	19/32	25/32	2-11/32	.29
4227-020	2	2-5/16	1-15/16	25/32	13/32	2-7/8	.44

REDUCING CROSS

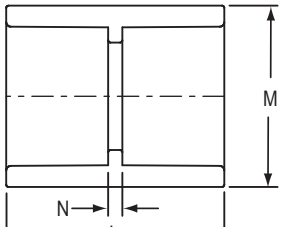
Socket x Socket x Socket x Socket



Part Number	Size	G	G1	H	H1	L	L1	M	M1	Approx. Wt. (Lbs.)
4220-131	1x3/4	23/32	5/8	1-5/8	1-5/8	3-1/4	3-1/4	1-7/8	1-1/2	.31
4220-167	1-1/4x3/4	1-1/16	23/32	2-1/16	1-31/32	4-3/32	3-31/32	2-1/16	1-13/32	.35
4220-210	1-1/2x3/4	11/16	1-5/32	2-3/32	2-3/16	4-3/16	4-11/32	2-3/8	1-13/32	.42
4220-248	2x3/4	11/16	1-7/16	2-7/32	2-7/16	4-13/32	4-7/8	2-29/32	1-13/32	.56
4220-289	2-1/2x1	29/32	1-3/4	2-11/16	2-7/8	5-11/32	5-3/4	3-1/2	1-3/4	.98

COUPLING

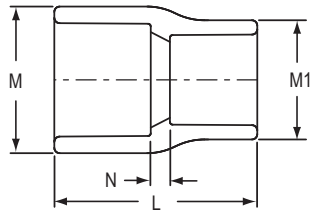
Socket x Socket



Part Number	Size	L	M	N	Approx. Wt. (Lbs.)
4229-007	3/4	2-1/8	1-5/16	3/16	.05
4229-010	1	2-3/16	1-5/8	3/32	.08
4229-012	1-1/4	2-19/32	2	3/32	.13
4229-015	1-1/2	2-7/8	2-11/32	3/32	.22
4229-020	2	3-1/8	2-7/8	1/8	.33
4229-025	2-1/2	3-11/16	3-15/32	3/16	.48
4229-030	3	4	4-3/16	1/4	.89

REDUCER COUPLING

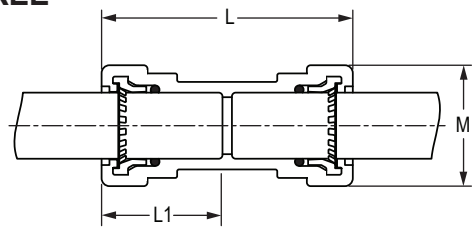
Socket x Socket



Part Number	Size	L	M	M1	N	Approx. Wt. (Lbs.)
4229-131	1x3/4	2-3/8	1-23/32	1-13/32	7/32	.10
4229-167	1-1/4x3/4	2-19/32	2-3/32	1-5/8	11/32	.17
4229-168	1-1/4x1	2-11/16	2-3/32	1-23/32	5/16	.18
4229-210	1-1/2x3/4	2-13/16	2-11/32	1-13/32	15/32	.19
4229-211	1-1/2x1	2-7/8	2-11/32	1-15/16	3/8	.24
4229-212	1-1/2x1-1/4	2-13/16	2-13/32	2-1/8	5/32	.23
4229-248	2x3/4	3-3/16	2-7/8	1-7/16	23/32	.32
4229-249	2x1	3-1/8	2-7/8	1-23/32	1/2	.31
4229-250	2x1-1/4	3-3/16	2-7/8	2-1/8	17/32	.33
4229-251	2x1-1/2	3-3/16	2-27/32	2-11/32	9/32	.31
4229-291	2-1/2x1-1/2	3-23/32	3-15/32	2-11/32	21/32	.51
4229-292	2-1/2x2	3-21/32	3-1/2	2-7/8	13/32	.52
4229-337	3x1-1/2	3-1/2	4-3/16	2-3/8	7/32	.71
4229-339	3x2-1/2	3-27/32	4-3/16	3-1/2	3/16	.80

GripLoc™ COUPLING - LEAD FREE

w/EPDM O-Ring Seals



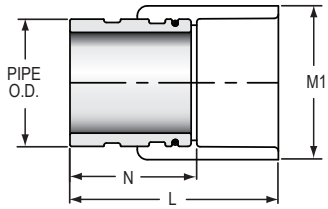
175 psi Maximum
Internal Pressure @ 150°F

WARNING: DO NOT INSERT FINGERS.

Part Number	Size	L	M1	N	Approx. Wt. (Lbs.)
GL4229-007	3/4	4	1-15/16	1-29/32	.25
GL4229-010	1	4-5/32	2	2-1/4	.34

GROOVED COUPLING ADAPTER

Groove x Socket



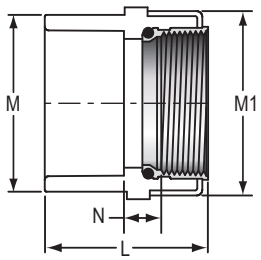
Part Number	Size	L	M1	N	Approx. Wt. (Lbs.)
4233-012	1-1/4	3-5/8	2-3/32	2-11/32	.72
4233-015	1-1/2	3-3/4	2-11/32	2-11/32	.83
4233-020	2	3-27/32	2-27/32	2-11/32	1.27
4233-025	2-1/2	4-3/16	3-15/32	2-7/16	2.02
4233-030	3	4-5/16	4-1/8	2-7/16	2.76

Not intended to convey or dispense water for human consumption through drinking or cooking

FEMALE ADAPTER

Brass Thread Insert Style

Socket x Fipt



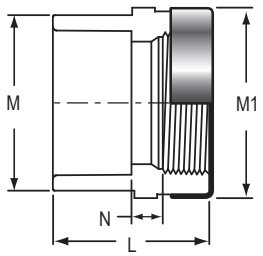
Part Number	Size	L	M	M1	N	Approx. Wt. (Lbs.)
4235-007	3/4	2	1-13/32	1-3/8	5/16	.23
4235-010	1	2-3/16	1-3/4	1-11/16	11/32	.25
4235-012	1-1/4	2-3/8	2-3/32	2-1/16	3/8	.36
4235-015	1-1/2	2-17/32	2-3/8	2-7/16	3/8	.47
4235-020	2	2-25/32	2-27/32	3-3/16	7/16	1.05

Not intended to convey or dispense water for human consumption through drinking or cooking

FEMALE ADAPTER

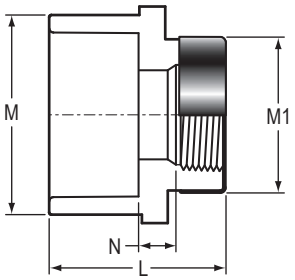
Special Reinforced Plastic Thread Style

Socket x SR Fipt



Part Number	Size	L	M	M1	N	Approx. Wt. (Lbs.)
4235-007SR	3/4	1-7/8	1-13/32	1-3/8	3/32	.08
4235-010SR	1	2-5/32	1-23/32	1-7/8	3/32	.22
4235-012SR	1-1/4	2-5/16	2-1/8	2-1/16	3/16	.20

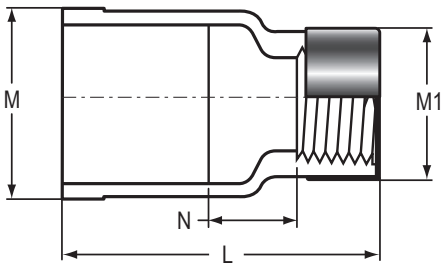
FEMALE SPRINKLER HEAD ADAPTER
Special Reinforced Plastic Thread Style
Socket x SR Fipt



Part Number	Size	L	M	M1	N	Approx. Wt. (Lbs.)
4235-101SR	3/4x1/2	1-29/32	1-13/32	1-3/16	1/8	.08
4235-130SR	1x1/2	1-31/32	1-23/32	1-3/8	3/32	.16
4235-131SR	1x3/4	2-3/32	1-3/4	1-3/8	1/4	.13

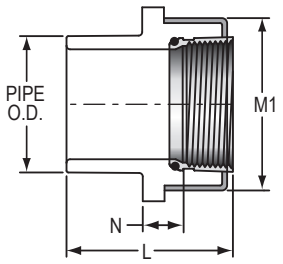
FEMALE SPRINKLER HEAD ADAPTER
Special Reinforced Plastic Thread Style with Socket Wrench Flats
Socket x SR Fipt

M = Flat-to-Flat Dimension



Part Number	Size	L	M	M1	N	Approx. Wt. (Lbs.)
W4235-101SR	3/4x1/2	2-9/32	1-13/32	1-3/16	17/32	.09
W4235-130SR	1x1/2	2-9/32	1-3/4	1-3/16	13/32	.12

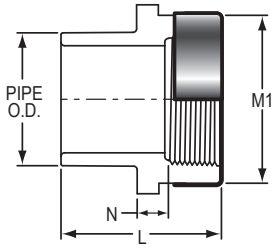
SPIGOT FEMALE ADAPTER
Brass Thread Insert Style
Spigot x Fipt



Part Number	Size	L	M1	N	Approx. Wt. (Lbs.)
4278-007	3/4	2-5/32	1-3/8	17/32	.15
4278-010	1	2-9/32	1-11/16	7/16	.22

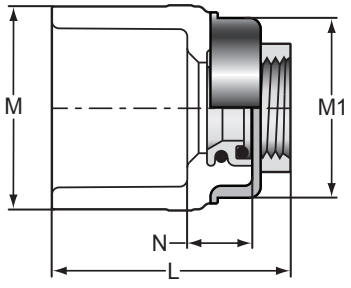
Not intended to convey or dispense water for human consumption through drinking or cooking

SPIGOT FEMALE ADAPTER
Special Reinforced Plastic Thread Style
Spigot x SR Fipt



Part Number	Size	L	M1	N	Approx. Wt. (Lbs.)
4278-007SR	3/4	1-15/16	1-3/8	11/32	.08
4278-010SR	1	2-1/4	1-23/32	13/32	.13

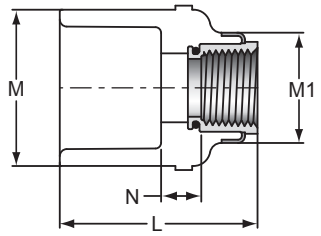
TorqueSafe™ FEMALE SPRINKLER HEAD ADAPTER
Gasket Sealed Brass Thread Insert Style
Socket x Gasket Fipt
With Elastomer Seal - Use NO Thread Sealant



Part Number	Size	L	M	M1	N	Approx. Wt. (Lbs.)
4235-101 G	3/4x1/2	1-7/8	1-13/32	1-3/8	9/16	.15
4235-130GS	1x1/2	2-1/32	1-11/16	1-3/8	17/32	.17
4235-131 G	1x3/4	2	1-11/16	1-9/16	9/16	.18

Not intended to convey or dispense water for human consumption through drinking or cooking

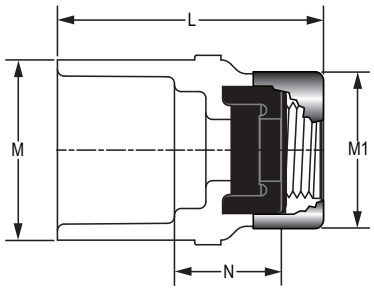
FEMALE SPRINKLER HEAD ADAPTER
Brass Thread Insert Style
Socket x Fipt



Part Number	Size	L	M	M1	N	Approx. Wt. (Lbs.)
4235-101	3/4x1/2	1-7/8	1-13/32	1-17/32	15/32	.19
4235-130	1x1/2	2-11/32	1-11/16	1-3/16	5/8	.16
4235-131	1x3/4	2-5/16	1-11/16	1-3/8	17/32	.18

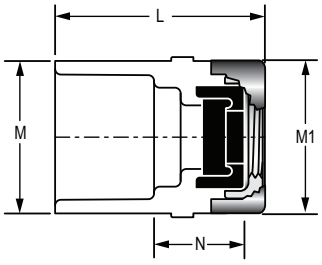
Not intended to convey or dispense water for human consumption through drinking or cooking

SofTorque™ SR FEMALE SPRINKLER HEAD ADAPTER
Gasket Sealed Special Reinforced Plastic Thread Style
Socket x SR Fipt
With Elastomer Seal - Use NO Thread Sealant



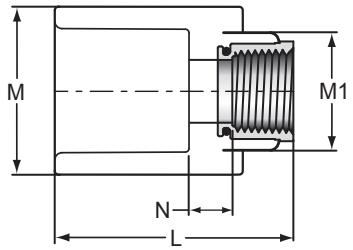
Part Number	Size	L	M	M1	N	Approx. Wt. (Lbs.)
4235-101GSR	3/4x1/2	2-5/16	1-5/16	1-3/8	31/32	.11
4235-130GSR	1x1/2	2-13/32	1-19/32	1-3/8	31/32	.13
4235-131GSR	1x3/4	2-13/32	1-5/8	1-23/32	1	.16

QuickTorque™ SR FEMALE SPRINKLER HEAD ADAPTER
Gasket Sealed Special Reinforced Plastic Thread Style
Socket x SR Metal Fipt
With Elastomer Seal - Use NO Thread Sealant



Part Number	Size	L	M	M1	N	Approx. Wt. (Lbs.)
4235-101GMR	3/4x1/2	1-15/16	1-5/16	1-9/16	13/16	.17
4235-130GMR	1x1/2	2-3/16	1-19/32	1-9/16	15/16	.19

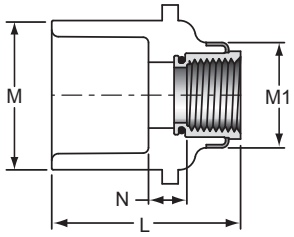
FEMALE SPRINKLER HEAD ADAPTER
Brass Thread Insert Style with Long Body
Socket x Fipt



Part Number	Size	L	M	M1	N	Approx. Wt. (Lbs.)
L4235-130	1x1/2	2-3/16	1-23/32	1-7/32	1/2	.19

Not intended to convey or dispense water for human consumption through drinking or cooking

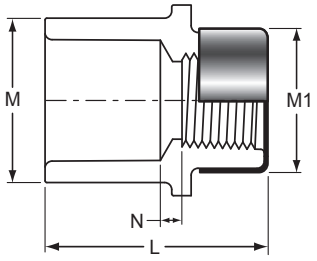
FEMALE SPRINKLER HEAD ADAPTER
Brass Thread Insert Style with Positioning Ring
Socket x Fipt



Part Number	Size	L	M	M1	N	Approx. Wt. (Lbs.)
R4235-101	3/4x1/2	2-1/32	1-7/16	1-3/16	15/32	.15

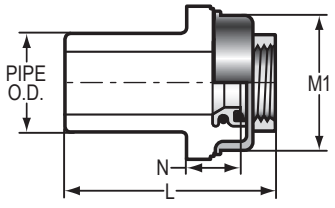
Not intended to convey or dispense water for human consumption through drinking or cooking

FEMALE SPRINKLER HEAD ADAPTER
Special Reinforced Plastic Thread Style with Positioning Ring
Socket x SR Fipt



Part Number	Size	L	M	M1	N	Approx. Wt. (Lbs.)
R4235-101SR	3/4x1/2	1-15/16	1-7/16	1-7/32	7/32	.09

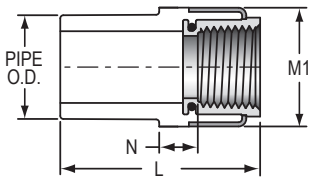
TorqueSafe™ FEMALE SPIGOT SPRINKLER HEAD ADAPTER
Gasket Sealed Brass Thread Insert Style
Spigot x Gasket Fipt
With Elastomer Seal - Use NO Thread Sealant



Part Number	Size	L	M	N	Approx. Wt. (Lbs.)
4238-101 G	3/4x1/2	1-15/16	1-3/8	21/32	.14
4238-130 G	1x1/2	2-1/16	1-3/8	19/32	.15

Not intended to convey or dispense water for human consumption through drinking or cooking

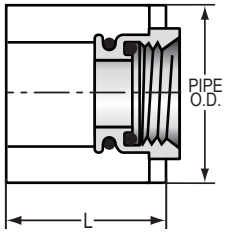
SPIGOT FEMALE SPRINKLER HEAD ADAPTER
Brass Thread Insert Style
Spigot x Fipt



Part Number	Size	L	M1	N	Approx. Wt. (Lbs.)
4238-101	3/4x1/2	1-15/16	1-17/32	17/32	.18
4238-130	1x1/2	2-1/4	1-3/16	11/32	.19

Not intended to convey or dispense water for human consumption through drinking or cooking

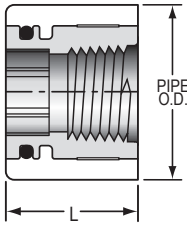
TorqueSafe™ BUSHING - GASKET SEALED
Brass Thread Insert Style
Spigot x Gasket FIPT
With Elastomer Seal - Use NO Thread Sealant



Part Number	Size	L	Approx. Wt. (Lbs.)
4238-130BR G	1x1/2	1-7/32	.10

Not intended to convey or dispense water for human consumption through drinking or cooking

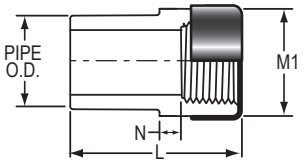
BUSHING with BRASS THREAD INSERT
Spigot x Fipt



Part Number	Size	L	Approx. Wt. (Lbs.)
4238-130BR	1x1/2	1	.13

Not intended to convey or dispense water for human consumption through drinking or cooking

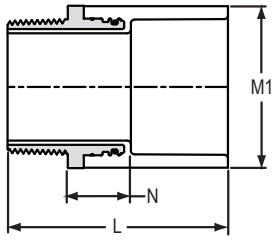
SPIGOT FEMALE SPRINKLER HEAD ADAPTER
Special Reinforced Plastic Thread Style
Spigot x SR Fipt



Part Number	Size	L	M1	N	Approx. Wt. (Lbs.)
4238-101SR	3/4x1/2	1-29/32	1-7/32	1/8	.07
4238-130SR	1x1/2	2-1/32	1-7/32	7/32	.09

MALE ADAPTER

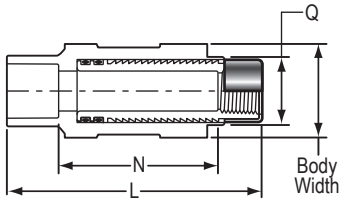
With CPVC Lined Thread Brass Insert
Mipt x Socket



Part Number	Size	L	M1	N	Approx. Wt. (Lbs.)
4236-007	3/4	2-17/32	1-13/32	13/16	.26
4236-010	1	2-15/16	1-23/32	29/32	.43
4236-012	1-1/4	3-1/8	2-3/32	31/32	.66
4236-015	1-1/2	3-9/32	2-11/32	31/32	.80
4236-020	2	3-7/16	2-27/32	31/32	1.00

ADJUSTABLE SPRINKLER HEAD ADAPTER
Special Reinforced Plastic Thread Style

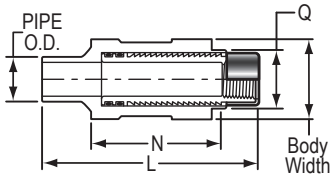
Socket x SR Fipt



Part Number	Size	L		N		Q	Body Width	Approx. Wt. (Lbs.)
		Min	Max	Min	Max			
42001SR	3/4x1/2	6-9/32	8	4-7/16	6-1/4	1-7/16	2-3/16	.66
42011SR	1x1/2	6-13/32	8	4-1/2	6-1/8	1-7/16	2-1/8	.68

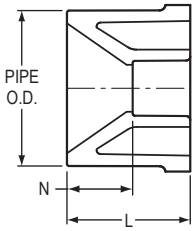
ADJUSTABLE SPRINKLER HEAD ADAPTER
Special Reinforced Plastic Thread Style

Spigot x SR Fipt



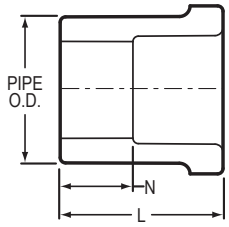
Part Number	Size	L		N		Q	Body Width	Approx. Wt. (Lbs.)
		Min	Max	Min	Max			
42004SR	3/4x1/2	5-1/32	6-5/16	3-3/16	4-15/32	1-5/16	2-1/8	.36
42014SR	1x1/2	6-7/16	8-1/8	4-7/16	6-1/4	1-7/16	2-3/16	.67

REDUCER BUSHING
Flush Style
Spigot x Socket



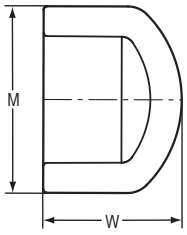
Part Number	Size	L	N	Approx. Wt. (Lbs.)
4237-131	1x3/4	1-1/4	1/4	.04
4237-167	1-1/4x3/4	1-7/16	7/16	.10
4237-168	1-1/4x1	1-13/32	9/32	.06
4237-210	1-1/2x3/4	1-5/8	5/8	.19
4237-211	1-1/2x1	1-17/32	13/32	.13
4237-212	1-1/2x1-1/4	1-9/16	5/16	.07
4237-248	2x3/4	1-29/32	29/32	.28
4237-249	2x1	1-23/32	9/16	.23
4237-250	2x1-1/4	1-11/16	7/16	.21
4237-251	2x1-1/2	1-11/16	5/16	.15
4237-290	2-1/2x1-1/4	2-5/32	7/8	.41
4237-291	2-1/2x1-1/2	2-5/32	3/4	.39
4237-292	2-1/2x2	2-9/32	3/4	.28
4237-338	3x2	2-7/32	11/16	.63
4237-339	3x2-1/2	2-5/16	1/4	.42

TRANSITION BUSHING
IPS Spigot x CTS Socket



Part Number	Size	L	N	Approx. Wt. (Lbs.)
4240-101	3/4x1/2	1-1/8	5/8	.03
4240-130	1x1/2	1-1/4	23/32	.05

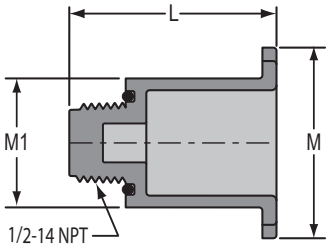
CAP
Socket



Part Number	Size	M	W	Approx. Wt. (Lbs.)
4247-007	3/4	1-5/16	1-5/16	.04
4247-010	1	1-5/8	1-9/16	.06
4247-012	1-1/4	2-3/32	1-27/32	.13
4247-015	1-1/2	2-11/32	2	.17
4247-020	2	2-27/32	2-9/32	.39
4247-025	2-1/2	3-17/32	2-5/8	.50
4247-030	3	4-3/8	3	.92

TEST PLUG - O-ring Sealed

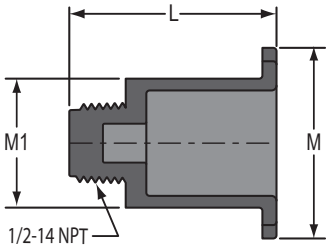
Mipt - For Pressure Testing Only,
Not For use with Z4235 Series Adapters



Part Number	Size	L	M	M1	Approx. Wt. (Lbs.)
FTP-005	1/2	1-27/32	1-15/16	1-7/32	.03

TEST PLUG for TorqueSafe™ Gasket Sealed Head Adapters

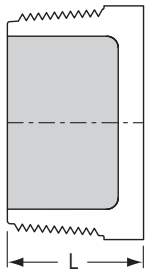
Mipt - For Pressure Testing Only.
Use ONLY with Gasket Sealed Head Adapters



Part Number	Size	L	M	M1	Approx. Wt. (Lbs.)
FTP-005GS	1/2	1-25/32	2-1/32	1-1/4	.05

TEST PLUG

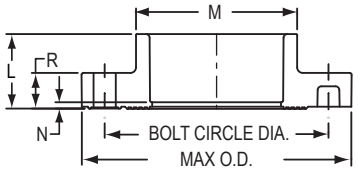
(PVC White) Not UL Listed; For Pressure Testing Only,
Mipt



Part Number	Size	L	Approx. Wt. (Lbs.)
4250-005	1/2	27/32	.02

FLANGE - ONE PIECE

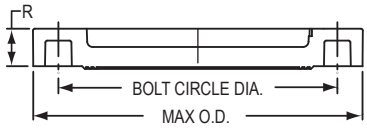
4 Bolt Holes, 175 psi
Socket



Part Number	Size	L	M	N	R	No. of Bolt Holes	Bolt Circle Dia.	Bolt Size	Min. Bolt Length	Max. O.D.	Approx. Wt. (Lbs.)
4251-007	3/4	1-5/32	1-1/2	1/8	17/32	4	2-3/4	1/2	2	3-29/32	.31
4251-010	1	1-5/16	1-13/16	1/8	11/16	4	3-1/8	1/2	2-1/4	4-9/32	.35
4251-012	1-1/4	1-13/32	2-7/32	5/32	11/16	4	3-1/2	1/2	2-1/4	4-5/8	.44
4251-015	1-1/2	1-19/32	2-1/2	3/16	23/32	4	3-27/32	1/2	2-1/2	5-1/16	.61
4251-020	2	1-27/32	3	5/16	27/32	4	4-3/4	5/8	3	5-31/32	.95
4251-025	2-1/2	2-7/32	3-1/2	7/16	1-1/32	4	5-1/2	5/8	3-1/4	7	1.50

BLIND FLANGE

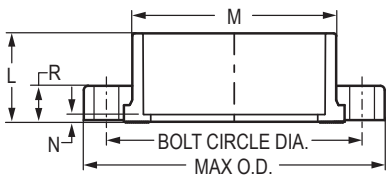
4 Bolt Holes, 175 psi



Part Number	Size	R	Bolt Circle Dia.	No. of Bolt Holes	Bolt Size	Min. Bolt Length	Max. O.D.	Approx. Wt. (Lbs.)
4253-007	3/4	17/32	2-3/4	4	1/2	2	3-27/32	.30
4253-010	1	23/32	3-1/8	4	1/2	2-1/4	4-1/4	.35
4253-012	1-1/4	21/32	3-1/2	4	1/2	2-1/4	4-5/8	.40
4253-015	1-1/2	23/32	3-27/32	4	1/2	2-1/2	5-1/16	.52
4253-020	2	27/32	4-3/4	4	5/8	3	5-31/32	.86
4253-025	2-1/2	1-1/32	5-1/2	4	5/8	3-1/4	6-15/16	1.70
4253-030	3	1-5/16	6	4	5/8	3-1/4	7-5/8	1.72

FLANGE - TWO PIECE

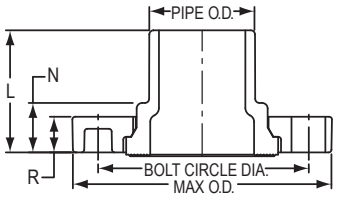
Van Stone Style, 4 Bolt Holes, 175 psi
Socket



Part Number	Size	L	M	N	R	Bolt Circle Dia.	No. of Bolt Holes	Bolt Size	Min. Bolt Length	Max. O.D.	Approx. Wt. (Lbs.)
4254-030	3	2-1/8	4-1/4	9/32	1-1/32	6	4	5/8	3-1/4	7-15/32	1.75

FLANGE - TWO PIECE

Van Stone Style, 4 Bolt Holes, 175 psi
Spigot

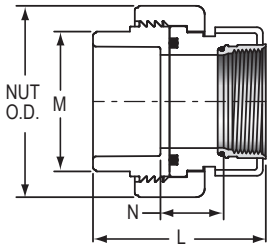


Part Number	Size	L	N	R	Bolt Circle Dia.	No. of Bolt Holes	Bolt Size	Min. Bolt Length	Max. O.D.	Approx. Wt. (Lbs.)
4256-007	3/4	1-15/16	13/16	17/32	2-3/4	4	1/2	2	3-27/32	.30
4256-010	1	2-7/32	1-1/32	11/16	3-1/8	4	1/2	2-1/4	4-1/4	.41
4256-012	1-1/4	2-3/8	1	11/16	3-1/2	4	1/2	2-1/4	4-5/8	.50
4256-015	1-1/2	2-7/16	1-3/32	23/32	3-7/8	4	1/2	2-1/2	4-31/32	.65
4256-020	2	2-3/4	1-5/32	25/32	4-3/4	4	5/8	3	5-15/16	1.00
4256-025	2-1/2	3-1/16	1-9/32	1-1/32	5-1/2	4	5/8	3-1/4	6-15/16	1.62
4256-030	3	3-3/8	1-13/32	1-1/32	6	4	5/8	3-1/4	7-9/16	1.76

TRANSITION UNION

Brass Thread Insert Style

Socket x Fipt



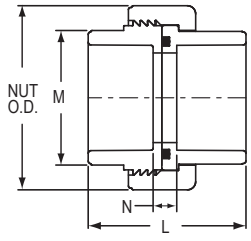
175 psi

Part Number	Size	L	M	N	Nut O.D.	Approx. Wt. (Lbs.)
4259-010BR	1	2-13/16	1-7/8	1-1/32	2-7/8	.52
4259-012BR	1-1/4	3	2-3/16	1-1/8	3-9/32	.98
4259-015BR	1-1/2	3-3/4	2-1/2	1-9/16	3-17/32	.93
4259-020BR	2	3-5/8	2-7/8	1-1/4	4-5/16	1.64

Not intended to convey or dispense water for human consumption through drinking or cooking

UNION

Socket x Socket



175 psi

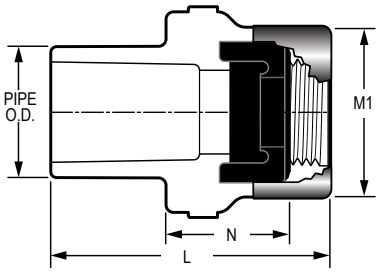
Part Number	Size	L	M	N	Nut O.D.	Approx. Wt. (Lbs.)
4257-007	3/4	2-3/8	1-17/32	3/8	2-1/2	.38
4257-010	1	2-9/16	1-27/32	3/8	2-7/8	.41
4257-012	1-1/4	2-27/32	2-7/32	11/32	3-5/16	.52
4257-015	1-1/2	3-1/8	2-1/2	3/8	3-17/32	.63
4257-020	2	3-5/8	3-1/32	9/16	4-3/16	1.09

SofTorque™ SR FEMALE SPIGOT SPRINKLER HEAD ADAPTER

Gasket Sealed Special Reinforced Plastic Thread Style

Spigot x SR Fipt

With Elastomer Seal - Use NO Thread Sealant

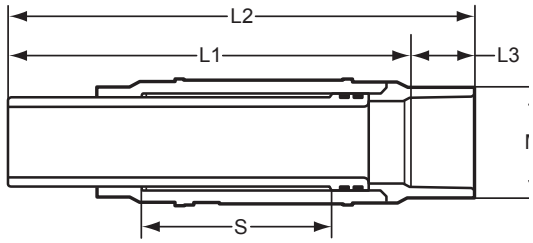


Part Number	Size	L	M1	N	Approx. Wt. (Lbs.)
4278-101GSR	3/4x1/2	2-1/4	1-3/8	1	.11

SHORT REPAIR COUPLING

Spigot x Socket

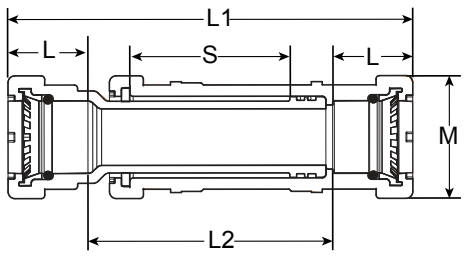
175 psi



Part Number	Size	L1	L2	L3	M	S	Approx. Wt. (Lbs.)
SH118-07CO	3/4	4-13/16	5-17/32	3/4	1-3/4	2-3/16	.31
SH118-10CO	1	4-3/4	5-5/8	31/32	2-1/16	2-5/32	.40

GripLoc™ REPAIR COUPLING – LEAD FREE

w/EPDM O-Ring Seals



175 psi Maximum
Pressure @ 150°F

WARNING: DO NOT INSERT FINGERS.

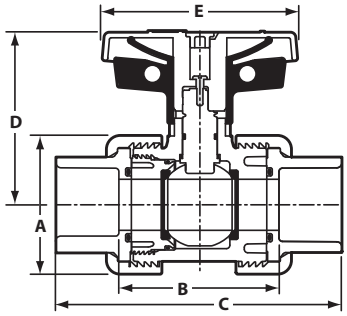
Part Number	Size	L	L1	L2	M	S	Approx. Wt. (Lbs.)
SG118-10CO	1	1-17/32	7-17/32	4-1/4	2-1/4	2-27/32	.73

FlameGuard® CPVC Drain & Swing Check Valves for NFPA 13D Applications Only

Application: FlameGuard® CPVC Orange Swing Check Valves and PVC/CPVC True Union Drain Valves are for use in configuring CPVC Fire Sprinkler System connection to water supply (riser/drain assembly) in NFPA 13D installations only. These valves are not UL Listed and NOT for use in any other locations within the fire sprinkler system.

TRUE UNION INDUSTRIAL DRAIN VALVES
CPVC Gray Valve with CPVC Orange End Connector

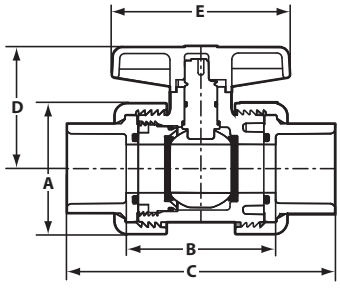
Socket x Socket



Part Number	Size	A	B	C	D	E
1822-007CFG	3/4	2-1/4	2-3/4	4-3/4	2-7/8	3-3/8
1822-010CFG	1	2-1/2	2-7/8	5-1/8	3-1/8	3-7/16
1822-012CFG	1-1/4	3-1/16	3-1/4	5-3/4	3-5/8	3-7/8
1822-015CFG	1-1/2	3-1/2	3-1/2	6-1/4	4	4-3/16
1822-020CFG	2	4-1/4	4-3/4	7-3/4	4-1/2	5-1/8
Not UL Listed						

TRUE UNION DRAIN VALVES
PVC Valve with CPVC End Connector

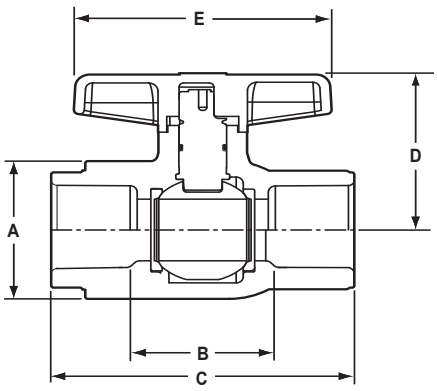
Socket x Socket



Part Number	Size	A	B	C	D	E
3622-007FG	3/4	2-1/4	2-3/4	4-3/4	2	3
3622-010FG	1	2-1/2	2-7/8	5-1/8	2-5/16	3-7/16
Not UL Listed						

COMPACT 2000 DRAIN VALVE

Socket x Socket

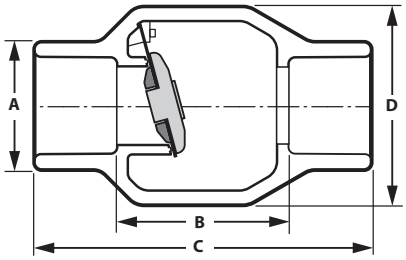


Part Number	Size	A	B	C	D	E
6622-007CO	3/4	1-13/16	1-1/2	3-9/16	2	3
6622-010CO	1	2-1/16	1-3/4	4	2-5/16	3-7/16

Not UL Listed

CPVC SWING CHECK VALVES

Socket x Socket

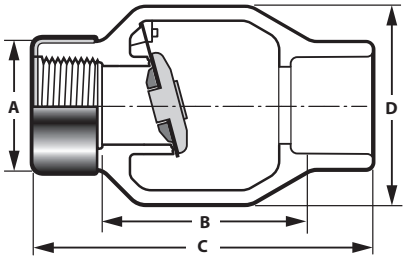


Part Number	Size	A	B	C	D	Approx. Wt. (Lbs)
S1520-10CO	1	1-11/16	2-5/16	4-9/16	2-5/8	.33
S1520-12CO	1-1/4	2-1/16	2-15/16	5-1/2	3-3/8	.42
S1520-15CO	1-1/2	2-7/16	3	5-5/8	3-3/8	.89

Not UL Listed

CPVC SPECIAL REINFORCED THREAD INLET SWING CHECK VALVES

SR Fipt x Socket



Part Number	Size	A	B	C	D	Approx. Wt. (Lbs)
S1520-10FSRSCO	1	1-11/16	2-15/16	4-9/16	2-5/8	.33
S1520-12FSRSCO	1-1/4	2-1/16	3-5/8	5-1/2	3-3/8	.42
S1520-15FSRSCO	1-1/2	2-7/16	3-11/16	5-5/8	3-3/8	.89

Not UL Listed

PRODUCT LIMITED LIFETIME WARRANTY

Except as otherwise specified for certain products, mandated by law or herein provided, Spears® Manufacturing Company ("Company") warrants Standard Catalog Products ("Products") which have been directly manufactured by them to be free from defects in material and workmanship for as long as the original intended end user of the Products ("End User") retains ownership and possession of the Products and complies with this Warranty ("Warranty Period"). Each other person or entity acquiring or employing the Products, including buyers, contractors and installers ("Buyer") and End Users ("Buyer/End User") agrees that this Warranty shall be effective only during the Warranty Period so long as the Products are used solely for the normal purposes for which they are intended and in conformance with industry established standards, engineering, installation, operating, and maintenance specifications, recommendations and instructions including explicit instructions by the Company; the Products are properly installed, operated and used, and have not been modified; and all the other terms of this Warranty are complied with. Any violation thereof shall void this Warranty and relieve Company from all obligations arising from this Warranty and the Products.

Upon receipt or discovery of any Products that appear questionable or defective each Buyer/End User shall promptly inspect and return any such Product to the Company at 15853 Olden Street, Sylmar, California 91342, accompanied by a letter stating the nature of any problems. If the Products are determined by Company to be defective in materials or workmanship directly provided by Company, Company, at its sole option, may either repair or replace the defective Products, or reimburse applicable Buyer/End User for the cost of such Products. The applicable Buyer/End User shall bear all applicable shipping costs. THIS SHALL BE BUYERS/END USERS' SOLE REMEDY. EACH BUYER/END USER AGREES THAT COMPANY WILL NOT BE RESPONSIBLE FOR ANY OTHER OBLIGATIONS RELATING TO THE PRODUCTS, INCLUDING ANY OTHER MATERIALS OR LABOR COSTS, LOSS OF USE OR ANY OTHER ITEM OR FOR ANY DELAYS IN COMPLYING WITH THIS WARRANTY BEYOND COMPANY'S REASONABLE CONTROL.

COMPANY SHALL NOT BE LIABLE FOR, DOES NOT ASSUME, AND EXPRESSLY DISCLAIMS, ANY LIABILITY, RESPONSIBILITY AND DAMAGES: DUE TO ANY BUYER/END USER'S FAILURE TO COMPLY WITH THIS WARRANTY, INCLUDING IMPROPER INSTALLATION, USE OR OPERATION; USE WITH PRODUCTS FROM OTHER MANUFACTURERS THAT DO NOT MEET ASTM OR OTHER APPLICABLE PRODUCT STANDARDS; IMPROPER CONTROL OF SYSTEM HYDRAULICS, IMPROPER WINTERIZATION PROCEDURES, IMPROPER VOLTAGE SUPPLY, CONTACT WITH INCOMPATIBLE MATERIALS OR CHEMICALS, EXCAVATION/DIGGING, EXCESSIVE WEIGHT, AND VANDALISM; DUE TO REASONABLE WEAR AND TEAR AND DUE TO ANY ACTS OF NATURE, INCLUDING LIGHTNING, EARTHQUAKES, GROUND MOVEMENT, FROST HEAVE, OR FLOODS.

COMPANY EXTENDS ONLY THIS WARRANTY AND EXPLICITLY DISCLAIMS ALL OTHER WARRANTIES, WHETHER IMPLIED OR OTHERWISE EXPRESSED, WHETHER ORAL, STATUTORY OR OTHERWISE, INCLUDING ANY IMPLIED WARRANTIES OR AFFIRMATIONS FOR SUITABILITY, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO AFFIRMATION BY COMPANY OR ANY OF ITS REPRESENTATIVES, BY WORDS, CONDUCT OR OTHERWISE, SHALL CONSTITUTE A WARRANTY. THIS WARRANTY MAY NOT BE TRANSFERRED, EXTENDED, ALTERED OR OTHERWISE MODIFIED IN ANY MANNER, EXCEPT BY WRITTEN AGREEMENT SIGNED BY COMPANY.

BY ITS ACCEPTANCE OF THE PRODUCTS, EACH BUYER/END USER EXPRESSLY WAIVES ALL OTHER LIABILITY OR OBLIGATION OF ANY KIND OR CHARACTER OF COMPANY, INCLUDING LIABILITY PREDICATED UPON CONTRACT, TORT, STRICT LIABILITY OR OTHER LEGAL OR EQUITABLE GROUNDS, AND ALL, IF ANY, DAMAGES AND LOSSES AS A RESULT THEREOF, INCLUDING ALL, IF ANY, COMPENSATORY, GENERAL, SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGES. WITH RESPECT TO SUCH WAIVERS, EACH BUYER/END USER EXPLICITLY WAIVES CALIFORNIA CIVIL CODE §1542 WHICH STATES "A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS FAVOR AT THE TIME OF EXECUTING THIS RELEASE, WHICH IF KNOWN BY HIM MUST HAVE MATERIALLY ADVERSELY AFFECTED HIS SETTLEMENT WITH DEBTOR" AND ALL OTHER SIMILAR STATUTORY, COMMON AND CASE LAW RIGHTS, DEFENSES AND LIMITATIONS.

Having previously independently inspected the Products, or a sample, as fully as desired, or having the opportunity to and having not done so, upon acceptance of delivery of the Products, and except as otherwise herein explicitly provided, each Buyer/End User by acceptance or use of the Products accepts them in their "AS IS" and "WITH ALL FAULTS" condition without any other warranty, expressed, implied or otherwise, and accepts and assumes the entire risk and cost of all servicing, remediation and consequences thereof. This Warranty shall be governed by California law and any unenforceable provisions severed without affecting the remaining provisions. As used herein, "including" includes "without limitation."

Spears® Quality Policy

It is the policy and objective of Spears® Manufacturing Company to produce a superior quality product suitable for its intended use, with regard to functionality, structural integrity and conformance to established industry standards and practices. It is the commitment of this Company to do so in a manner which provides consistency of product quality, optimum availability, and superior customer service, while maintaining efficiency of operations and profitability necessary to perpetuate product improvement and customer satisfaction. Furthermore, it is recognized that the attainment of these objectives is the responsibility of all Company operations and personnel according to their respective functions.

The information contained in this publication is based on current information and product design at the time of publication and is subject to change without notification. Our ongoing commitment to product improvement may result in some variations. No representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular application or results to be obtained therefrom. For information not contained herein, please contact Spears® Technical Services Department [West Coast: (818) 364-1611 — East Coast: (678) 985-1263]. Reproduction of this publication in whole or in part is prohibited without the authorized consent of Spears® Manufacturing Company, Sylmar, California.

Three-way Bronze Valve

1/4” IPS UL/ULC Listed* 300 psi

Description

The 1/4" IPS three-way female threaded valve is used to facilitate the installation of sprinkler system pressure gauges. The valve provides for one inlet and two outlets. This design allows for replacement of the system gauge without shutting down the water supply to the sprinkler system. This design also allows Authoritys’ Having Jurisdication to test system pressure with an additional gauge through the second outlet. (The second outlet is normally plugged during installation with a 1/4" IPS pipe plug.)

Specifications

Materials:
- Body - Bronze
- Seat - Brass
- Handwheel - Iron

Sizes:
- 1/4” IPS

Working Pressure:
- 400 WOG

Installation

Installation of the three-way valve can be accomplished with normal field installation tools. Make sure the valve is installed according to the flow indication arrow that has been cast into the valve body. The most common installation allows for a 1/4" IPS nipple between the valve and the water supply being measured. This assures there will be adequate spacing for the sprinkler system gauge from the riser. Use either PTFE Pipe Thread Sealing Tape or a suitable pipe thread sealant such as **PipeFit® Thread Sealant Paste with PTFE** when installing the valve. **DO NOT OVERTIGHTEN THREADS. OVERTIGHTENING MAY CAUSE VALVE FAILURE.**

*UL/ULC Listed 2R97

Fire Protection Products, Inc.
6241 Yarrow Dr., Suite A, Carlsbad, CA 92011-1541
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

FlameGuard™ CPVC Drain & Check Valves For NFPA 13D Applications Only

Application: FlameGuard™ CPVC Orange Drain Valves and Check Valves are for use in configuring CPVC Fire Sprinkler System connection to water supply (riser/drain assembly) in NFPA 13D installations only. These valves are NOT for use in any other locations within the fire sprinkler system.

Drain Valve

Check Valve

Special Reinforced (SR) Threaded Inlet Check Valve

CPVC Drain Valves

Part Number	Size	Disc Code	Price Each
Socket x Socket			
6622-007CO	3/4	004	22.68
6622-010CO	1	004	28.36

CPVC Check Valves

Part Number	Size	Disc Code	Price Each
Socket x Socket			
S1520-10CO	1	004	22.56
S1520-12CO	1-1/4	004	25.22
S1520-15CO	1-1/2	004	28.36

CPVC Special Reinforced Thread Inlet Check Valves

Part Number	Size	Disc Code	Price Each
SR Fipt x Socket			
S1520-10FSRSCO	1	004	24.44
S1520-12FSRSCO	1-1/4	004	28.22
S1520-15FSRSCO	1-1/2	004	33.47

General Installation Information: Socket end connections should be installed using Spears® FS-5 One-Step Cement for use with Spears® CPVC Fire Sprinkler Products. Threaded connections should be made using Spears® **BLUE 75™** Thread Sealant tested for compatibility with CPVC materials. Swing check valves are designed for horizontal installations, but may be installed in up-flow only vertical position. Check valves MUST be installed with the valve's FLOW arrow pointing in the direction of the flow. Do not install valve upside down.

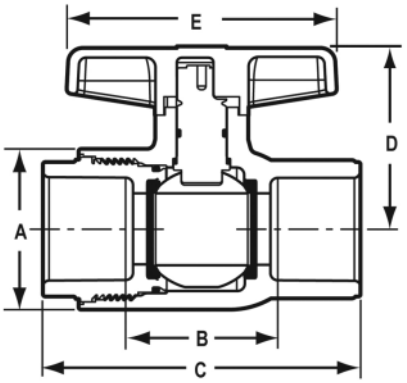
NOT FOR USE WITH COMPRESSED AIR OR GAS

FlameGuard™ CPVC Drain & Check Valves For NFPA 13D Applications Only

Specifications

Drain Valve:

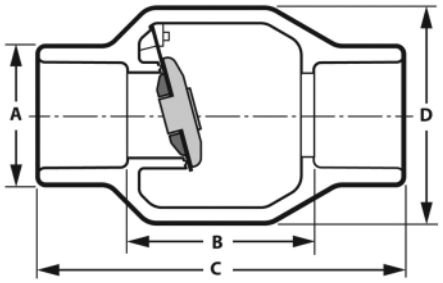
Nominal Size Range	3/4", 1"
Type	1/4-Turn Ball Valve, Maintenance-free Sealed Unit
Material	CPVC, Orange
Seats	PTFE/HDPE
Seals	EPDM
Handle	Polypropylene, Red
End Connections	Socket x Socket

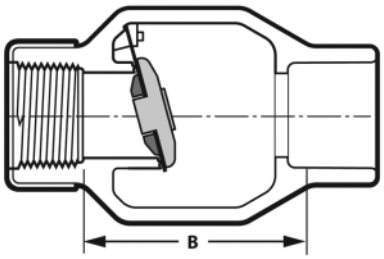


Socket x Socket Part Number	Nominal Size	Dimension Reference (inches, ± 1/16)				
		A	B	C	D	E
6622-007CO	3/4	1-13/16	1-1/2	3-9/16	2	2
6622-010CO	1	2-1/16	1-3/4	4	2-5/16	2-5/16

Check Valve:

Nominal Size Range	1", 1-1/4", 1-1/2"
Type	Swing Check, Maintenance-free Sealed Unit
Material	CPVC, Orange
Seat	EPDM
End Connections	Socket x Socket Socket x Special Reinforced (SR) Female Plastic Thread



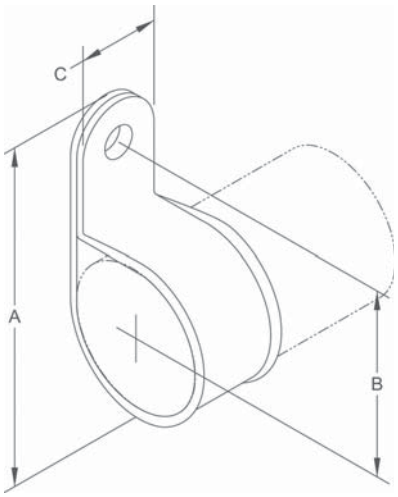


Socket x Socket Part Number	SR Thread x Socket Part Number	Nominal Size	Dimension Reference (inches, ± 1/16)					C_V (GPM)
			A	B		C	D	
				Socket	SR Thread			
S1520-10CO	S1520-10FSRSCO	1	1-11/16	2-5/16	2-15/16	4-9/16	2-5/8	33
S1520-12CO	S1520-12FSRSCO	1-1/4	2-1/16	2-15/16	3-5/8	5-1/2	3-3/8	42
S1520-15CO	S1520-15FSRSCO	1-1/2	2-7/16	3	3-11/16	5-5/8	3-3/8	89

NOT FOR USE WITH COMPRESSED AIR OR GAS

Fig. 22 - Hanger for CPVC Plastic Pipe Single Fastener Strap Type

c UL US LISTED



Size Range — 3/4" thru 2" CPVC pipe

Material — Pre-Galvanized Steel

Function — Intended to perform as a hanger to support CPVC piping used in automatic fire sprinkler systems. The product acts as a hanger when tab is upward and the fastener screw is in the horizontal position. Figure 22 can be installed on the top of a beam, but in this situation acts as a guide to the piping which is supported by the beam itself. It is not intended to support CPVC pipe from under a flat horizontal surface, such as a ceiling. For this type of installation, use the TOLCO® Fig. 23, Double Fastener Strap for CPVC Piping. Fig. 22, when inverted, with the hanger tab downward, can function as a restrainer to prevent the upward movement of the sprinkler head during activation.

Approvals — Underwriters' Laboratories Listed in the USA **(UL)** and Canada **(cUL)** to support fire sprinkler piping. May be installed in wood using fasteners supplied with product, or into minimum 20 gauge steel using (1) 1/4" x 1" tek type screw. Meets and exceeds the requirements of NFPA 13, 13R and 13D.

Features — Fig. 22 incorporates features which protect the pipe and ease installation. The flared edge design protects CPVC pipe from any rough surface. It is easily attached to the building structure using the special UL Listed hex head self threading screw* furnished with the product. It is recommended that rechargeable electric drills fitted with a hex socket attachment to be used as installation tools. No impact tools (such as a hammer) are allowed. Damage has been known to result from installations using impact type tools. No pre-drilling of a pilot hole in wood is required.

Finish — Pre-Galvanized

Order By — Figure number and CPVC pipe size.

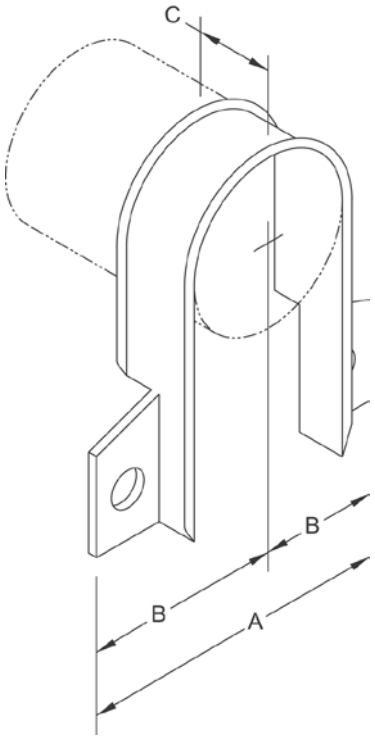
*** Hardened hex head self threading screw is furnished with the product and is the minimum fastener size acceptable.**

Dimensions • Weights

CPVC Pipe Size	A	B	C	Max. Hanger Spacing (Ft.)	Fastener Hex Head Size	Approx. Wt./100
3/4	2 7/16	1 5/16	1 3/16	5½	5/16	9
1	2 11/16	1 7/16	1 3/16	6	5/16	9
1¼	3 1/16	1 5/8	1 3/16	6½	5/16	11
1½	3 5/16	1¾	1 3/16	7	5/16	12
2	3¾	2 1/8	1 3/16	8	5/16	15

Fig. 24 - Hanger for CPVC Plastic Pipe
Double Fastener Strap Type - Side Mount

c UL US LISTED



Size Range — 3/4" thru 2" CPVC pipe

Material — Pre-Galvanized Steel

Function — Intended to perform as a hanger/restrainer to support CPVC piping used in automatic fire sprinkler systems. Can be installed on the top or on the bottom of a beam. The Fig. 24 can also function as a restrainer to prevent the upward movement of the sprinkler head during activation.

Approvals — Underwriters' Laboratories Listed in the USA **(UL)** and Canada **(cUL)** to support fire sprinkler piping. May be installed in wood using fasteners supplied with product, or into minimum 20 gauge steel using (2) 1/4" x 1" tek type screw. Meets and exceeds the requirements of NFPA 13, 13R and 13D.

Features — Fig. 24 incorporates features which protect the pipe and ease installation. The flared edge design protects the CPVC pipe from any rough surface. Easily attaches to the building structure using the two UL Listed hex head self threading screws* furnished with the product. It is recommended that rechargeable electric drills fitted with a hex socket attachment be used as installation tools. No impact tools (such as a hammer) are allowed. Damage has been known to result from installations using impact type tools. No pre-drilling of a pilot hole in wood is required.

Finish — Pre-Galvanized

Order By — Figure number and pipe size

*** Hardened hex head self threading screw is furnished with the product and is the minimum fastener size acceptable.**

Dimensions • Weights

CPVC Pipe Size	A	B	C	Max. Hanger Spacing (Ft.)	Fastener Hex Head Size	Approx. Wt./100
3/4	2 5/16	1 5/32	1 3/16	5½	5/16	9
1	2 5/8	1 5/16	1 3/16	6	5/16	9
1¼	3	1½	1 3/16	6½	5/16	11
1½	3¼	1 5/8	1 3/16	7	5/16	12
2	3 1/16	1 27/32	1 3/16	8	5/16	15

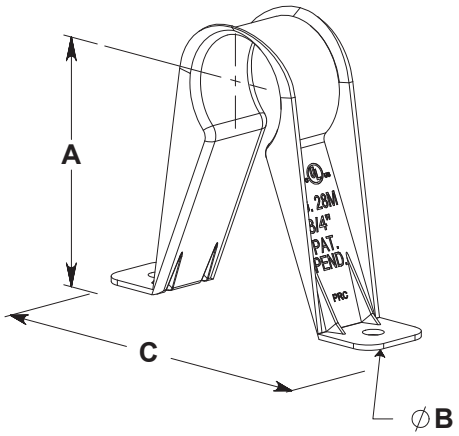
Fig. 28M - Offset Hanger and Restrainer for CPVC Plastic Pipe and IPS Pipe

c UL us LISTED

Size Range — 3/4" thru 1-1/4"

Material — Carbon Steel, Pre-Galvanized

Function — Designed to be used as a hanger and restrainer for CPVC piping or steel piping where the "stand-off" design will ease installation by eliminating the need for wood blocking.



Features —

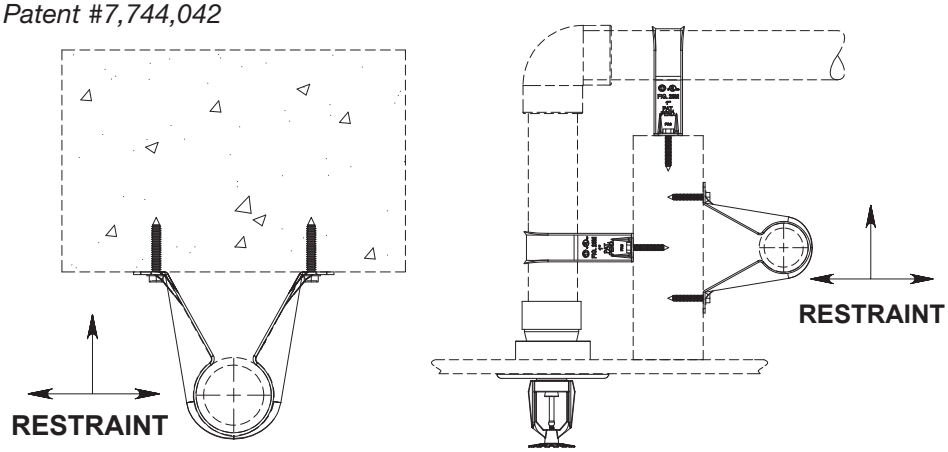
- Flared edge design protects CPVC pipe from any rough or abrasive surfaces
- Unique snap-on design holds pipe firmly in place and allows retrofit type of installation
- The "Stand-Off" design eliminates the need for wood block extension
- Can be installed on horizontal or vertical piping regardless of mounting surface orientation
- Attaches easily to wood structure with two hex head self-threading screws furnished with product
- Installs easily using rechargeable electrical driver with 5/16" extension socket eliminating impact tool damage to pipe
- Attaches easily to steel, minimum 18 gauge with (2) 1/4" x 1" tek type self drilling tapping screws
- cULus Listed as a hanger and a restrainer for fire sprinkler piping

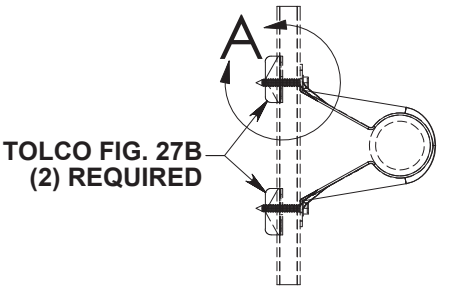
Installation Note — When installed in wood structural member and threads from the #10 x 1" screws are exposed, use FIG. 27B speed nut to secure

Approvals — Underwriters' Laboratory Listed in the USA (UL) and Canada (cUL) to support automatic fire sprinkler systems. May be installed into wood using fasteners screws. Meets and exceeds the requirements of NFPA 13, 13R and 13D. Fig. 28M satisfies the UL vertical restraint requirements where needed.

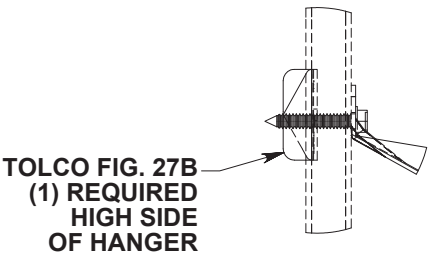
Order By — Figure number and pipe size

Patent #7,744,042





HANGER AND RESTRAINT APPLICATION



DETAIL A HANGER APPLICATION

Dimensions • Weights

Pipe Size	A	B	C	Max. Spacing required per NFPA 13 for CPVC plastic pipe	Approx Wt./100
3/4	2	3/16	3-5/16	5'-6"	9
1	2-1/8	3/16	3-1/2	6'-0"	12
1-1/4	2-5/16	3/16	3-1/2	6'-6"	13

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www.tolco.com

Steel Hinged Wall Plates w/springs

Description

Fire Protection Products' plated steel hinged wall plate has been designed to offer aesthetically pleasing concealment of pipe penetrations through walls. Utilizing a two piece construction allows for easy installation and closure around pipe diameters from 1/2" IPS to 10" IPS. Centering springs are used for "automatic" alignment and a secure installation on the pipe. A simple clasp allows for the wall plate to stay in place. Available in chrome finish.

Caution: May not provide proper sealing to provide fire wall or smoke penetration ratings. An approved fire stop material should be used for this purpose.

Installation

Installation of the wall plate occurs after installation of piping materials and appropriate fire stop materials (if required) has occured. Simply open the wall plate, install around piping and close, making sure to secure the two halves with the clasp. The wall plate will "automatically" center itself on the pipe. No tools are required for proper installation.

Specs:

Type:
Steel hinged w/ springs

Sizes:
1/2" thru 10" IPS

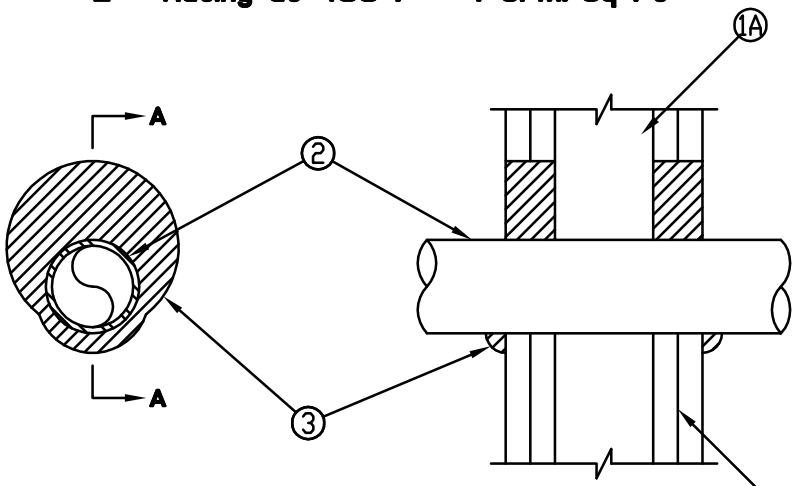
Material :
.046" colded rolled steel

Standard finish:
Chrome

For questions:
1 800 344-1822 or fax
1 800 344-3775
http://www.fppi.com

System No. W-L-2377

F Ratings – 1 and 2 Hr (See Items 1 and 3)
T Ratings – 1 and 2 Hr (See Items 1 and 3)
L – Rating at Ambient – Less that 1 CFM/Sq Ft
L – Rating at 400 F – 4 CFM/Sq Ft



SECTION A-A

1. WALL ASSEMBLY – THE 1 AND 2 HR FIRE RATED GYPSUM BOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   A. STUDS – WALL FRAMING SHALL CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE BY 1-3/8 IN. DEEP CHANNELS SPACED MAX 24 IN. OC.
   B. GYPSUM BOARD* – THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 3 IN.

   THE HOURLY F AND T RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.
2. THROUGH PENETRANT – ONE NONMETALLIC PIPE, CONDUIT OR TUBING INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE AND PERIPHERY OF OPENING SHALL BE MIN OF 0 IN. (POINT CONTACT) TO A MAX 1-1/4 IN. PIPE TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF NONMETALLIC PIPES MAY BE USED:
   A. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE – NOM 2 IN. DIAM (OR SMALLER) FLOWGUARD GOLD® SDR11 CPVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS.
   B. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE – NOM 2 IN. DIAM (OR SMALLER) BLAZEMASTER® SDR13.5 CPVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS.
3. FILL, VOID OR CAVITY MATERIAL* – SEALANT – MIN 5/8 IN. AND 1-1/4 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL FOR 1 AND 2 HR RATED ASSEMBLIES, RESPECTIVELY. AT POINT CONTACT LOCATION, A MIN 1/2 IN. DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED TO THE WALL/PENETRANT INTERFACE ON BOTH SURFACES OF THE WALL.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC – FS-ONE SEALANT
*BEARING THE UL CLASSIFICATION MARK

HILTI

Hilti Firestop Systems

CLASSIFIED UL

FIRE CAULK – HILTI SYSTEM No. W-L-2377
UP TO 2" CPVC & DRYWALL – 1 TO 2-HOUR

WAYNE
Automatic Fire Sprinklers, Inc.

SCALE: NONE

Back Box (patent pend) for Fire Alarm Bell, ABS

Description

FPPI's Back Box for Fire Alarm Bells is made from high impact ABS thermoplastic. ABS is known for its strength and rigidity and has superior electrical insulation properties as compared to PVC, Styrene or other plastics. ABS can also be used in a wide range of temperatures from -13 °F (-25° C) and 140 °F (60°). ABS is resistant to the elements that would normally cause corrosion in a similar back box made from cast aluminum with a painted finish. The back box design includes two tabs for easy surface mounting with two 1/2" NPT threaded inlets/outlets for through wiring. Each back box is supplied with four screws for mounting a compatible bell and an extra 1/2" NPT plug for plugging an unused NPT inlet or outlet.

Specifications

Materials:
Acrylonitrile butadiene styrene (ABS)

Sizes:
4" Back box with two 1/2" NPT threaded outlets/inlets. Includes for bell mounting screws and one 1/2" NPT plug.

Color:
Dark Gray

Installation

Install in accordance with usual and customary installation techniques for electrical apparatus. The ABS back box can be attached to most flat even surfaces in either horizontal or vertical positioning. Mounting to an uneven surface may cause the back box to become deformed, compromise weather resistance and prevent proper installation of the alarm bell. In order to maintain its' weather resistant properties install the supplied 1/2" NPT plug when not "through" wiring the bell to another appliance. Prolonged exposure to direct sunlight may cause the surface of the backbox to appear slightly discolored. This appearance does not change the performance characteristics of the product. Do not mount any electrical appliance in areas that are expected to be exposed to direct streams of water or directly exposed to inclimate weather. The back box weather resistant properties are dependent on all installed components (NPT plugs, conduit connections, alarm bells, etc.) being installed in a weather resistant fashion and having weather resistant properties of their own. When installed correctly, the final assembly of all components should provide a reasonable amount of resistance to moisture.

Maintenance

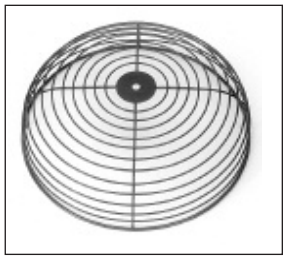
No regular maintenance is required. As with all fire sprinkler system components, regularly inspect the back box for damage to insure expected performance.

Related Products

6" Alarm Bell
10" Alarm Bell
Alarm Bell Cage (Guard)
Alarm Bell Signs

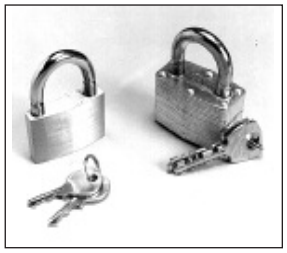
Fire Protection Products, Inc. 6241 Yarrow Dr., Suite A, Carlsbad, CA 92011-1541
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

Fire Sprinkler Accessories



Alarm Bells and Bell Accessories

Part No.	Description	Box Qty.
02-450	Alarm Bell, 10" 120VAC	10
02-452	Alarm Bell, 6" 120VAC	20
02-455	Alarm Bell Back Box	48
02-457	Bell Guard	20



Break Shackle Locks

FPPI offers break shackle locks to prevent tampering with controlled valves. Locks are keyed alike to allow easy access to secured valves by authorized personnel.

Part No.	Description	Box Qty.
02-410	Break Shackle Lock #764-40	250
02-411	Master Break Lock #500KABRK197	72

Sign Chain

Zinc plated for corrosion resistance. Suitable for use in exposed areas.

Part No.	Description	Box Qty.
02-200	#16 Sign Chain, 100' Box	20
02-201	#16 Sign Chain, 250' Reel	1

Spare Sprinkler Head Cabinets

All Spare Sprinkler Head Cabinets are equipped with “knockouts” to accommodate 1/2" or 3/4" sprinkler heads. ESFR head box will accommodate 3/4" or 1" IPS sprinklers. Finish: Red Enamel

Part No.	Description	Box Qty.
02-400	Spare Head Box, 12 Head	20
02-401	Spare Head Box, 6 Head	25
02-402	Spare Head Box, 3 Head	20
02-403	ESFR Spare Head Box, 6 Head	20

Identification Signs

Description

Manufactured from .020" white coated aluminum. All sign types are screen printed with a fade resistant red ink. Each sign is shipped with a clear protective plastic coating which can be removed at time of installation. Each sign type meets or exceeds NFPA13 requirements. All signs (except 7" round) are drilled in four corners to allow for easy installation. All signs (except 7" round) may be installed with sign chain or with any fastener that is suitable for the material that the sign is being attached. The 7" round bell signs are center drilled to allow for installation directly to the bell gong assembly. Type “A” 9" x 7" Control valve signs are drilled with the same four hole pattern as Type "B" 6" x 2" signs to allow for attachment of Type “B” to Type "A".

Installation

Installation of aluminum signs is accomplished by several methods. The most common installation procedure is to use #16 Single Jack chain to hang the sign on the area being identified. Since all of the above mentioned signs are predrilled at all four corners, the last link of the chain can be opened and hooked through the top holes on the signs and hung on the appropriate valve or piping. The signs may also be fastened to a flat surface with fasteners appropriate to the base material. (The 9" x 7" Fire Alarm Bell sign must be drilled if it is to be attached directly to the bell gong.)

Specifications

Material:

.020" aluminum with removable plastic protective coating

Sizes:

6" x 2"
4" x 6"
5" x 7"
9" x 7"
12" x 10"
8.5" x 11"

See current catalog for a full listing of all available signs.

Fire Protection Products, Inc
6241 Yarrow Dr., Suite A, Carlsbad, CA 92011-1541
For questions: 1 800 344-1822 • 1 800 344-3775 fax • www.fppi.com

High-performance intumescent firestop sealant FS-ONE MAX

Applications

- For effectively sealing most common through penetrations in a variety of base materials
- For use on concrete, masonry and drywall
- Mixed and multiple penetrations
- Metal pipe penetrations: copper, steel and EMT
- Insulated metal pipe penetrations: steel and copper
- Plastic pipe penetrations: closed or vented

Advantages

- US-produced: “Buy American” compliant
- One product for a variety of common through penetrations
- Cost-effective, easy-to-use solution
- Water-based and paintable
- Industry-leading VOC results
- Ethylene glycol-free

Chemical resistant

Mold and mildew resistant

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

Technical data	
Chemical basis	Water-based acrylic dispersion
Approx. Density	84.3 lb/ft³
Color	Red
Application temperature range	41 - 104 °F
Approx. cure time[1)]	4 mm/3 days
Temperature resistance range	-4 to 212 °F
Mold and mildew performance	Class 0 (ASTM G21-96)
Mold and mildew resistance	Yes
Surface burning characteristics UL 723 (ASTM E84)	Flame spread: 0 Smoke development: 10
Tested in accordance with	UL 1479, ASTM E814, ASTM E84, CAN/ ULC-S115, ASTM G21, ASTM E90
California State fire marshal approval	CSFM Listing 4485-1200:0108 for FS-ONE MAX Intumescent Firestop Sealant
Expansion ratio (unrestricted, up to)	1:5

[1)] at 75°F/24°C, 50% relative humidity

Order Designation	Package Content	Item number
FS-ONE MAX 20oz foil (3 case + disp)	1x Foil pack dispenser manual CS 270-P1, 75x Firestop sealant FS-ONE MAX 20 oz foil	**3530252**
FS-ONE MAX 10oz tube (1 case)	12x Firestop sealant FS-ONE MAX 10 oz cartridge	**3530249**
FS-ONE MAX 5 gallon (18 pails)	18x Firestop sealant FS-ONE MAX 5 gallon pail	**3530263**
FS-ONE MAX 20oz foil (1 case)	25x Firestop sealant FS-ONE MAX 20 oz foil	**3530250**
FS-ONE MAX 20oz foil (3 cases)	75x Firestop sealant FS-ONE MAX 20 oz foil	**3530251**
FS-ONE MAX 20oz Foil-Pallet	600x FSONE-MAX 20 oz foil, 290x Bulk Shipping Condition	**3534713**
FS-ONE MAX 10 oz cartridge		**2101531**
FS-ONE MAX 5 gallon pail		**2101533**

12/16 DBS

VSR-SG

VANE TYPE WATERFLOW ALARM SWITCH WITH RETARD AND GLUE-IN UNION

FOR CPVC PIPE

Specifications subject to change without notice.

Stock Number: 1144460

Optional: Cover Tamper Switch Kit, stock no. 0090148

Replaceable Components: Retard/Switch Assembly, stock no. 1029030

UL, CUL and CSFM Listed

Service Pressure: Up to 175 PSI (12,07 BAR)

Flow Sensitivity Range for Signal: 4-10 GPM (15-38 LPM) - UL

Maximum Surge: 18 FPS (5.5 m/s)

Contact Ratings: Two sets of SPDT (Form C)
10.0 Amps at 125/250VAC
2.0 Amps at 30VDC Resistive
10 mAmps min. at 24VDC

Conduit Entrances: Two openings provided for 1/2" conduit. Individual switch compartments suitable for dissimilar voltages.

Environmental Specifications:

- NEMA 4/IP54 Rated Enclosure suitable for indoor or outdoor use with factory installed gasket and die-cast housing when used with appropriate conduit fitting.
- Temperature Range: 40°F - 120°F, (4.5°C - 49°C) - UL

Service Use:

Automatic Sprinkler	NFPA-13
One or two family dwelling	NFPA-13D
Residential occupancy up to four stories	NFPA-13R
National Fire Alarm Code	NFPA-72

⚠ WARNING

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.

CAUTION

Waterflow switches that are monitoring wet pipe sprinkler systems shall not be used as the sole initiating device to discharge AFFF, deluge, or chemical suppression systems. Waterflow switches used for this application may result in unintended discharges caused by surges, trapped air, or short retard times.

General Information

The Model VSR-SG is a vane type waterflow switch for use on wet sprinkler systems using CPVC plastic fittings (manufactured by Tyco, Nibco, Victaulic, Ipex, and Spears Manufacturing Company) that use 1", 1 ¼", 1 ½", or 2" pipe sizes. It is equipped with a union to accommodate installation in confined spaces.

The VSR-SG contains two single pole, double throw, snap action switches and an adjustable, instantly recycling pneumatic retard. The switches are actuated when a flow of 10 GPM (38 LPM) or more occurs downstream of the device. The flow condition must exist for a period of time necessary to overcome the selected retard period.

Enclosure

The VSR-SG switches and retard device are enclosed in a general purpose, die-cast housing. The cover is held in place with two tamper resistant screws which require a special key for removal. A field installable cover tamper switch is available as an option which may be used to indicate unauthorized removal of the cover. See bulletin number 5401103 for installation instructions of this switch.

VSR-SG

VANE TYPE WATERFLOW ALARM SWITCH WITH RETARD AND GLUE-IN UNION

FOR CPVC PIPE

Installation (see Fig. 1, 2, and 3)

These devices may be mounted on horizontal or vertical pipe. On horizontal pipe they shall be installed on the top side of the pipe where they will be accessible. The device should not be installed within 6" (15 cm) of a fitting which changes the direction of the waterflow or within 24" (60 cm) of a valve or drain. The unit has a 1" male fitting for gluing into a CPVC plastic tee.

NOTE: Do not leave cover off for an extended period of time.

Loosen the union nut and separate the 1" male fitting from the VSR-SG. Glue the 1" male fitting into the TEE following the TEE manufacturer's instructions for preparation and gluing of CPVC piping systems. (Note: The 1" male fitting must bottom out on the stop of the TEE for proper operation of the VSR-SG. See Fig. 1.) Wait 2 to 4 hours to allow the glue to dry before attaching the VSR-SG to the 1" male fitting. Select the proper paddle for the pipe size and type of TEE used. See Fig. 3 for instructions on how to change paddle. Verify that the o-ring is properly positioned in its groove. Hand tighten the nut on the union after orienting the device in the appropriate direction to detect waterflow as shown in Fig. 2.

The vane must not rub the inside of the TEE or bind in any way. The stem should move freely when operated by hand.

⚠ CAUTION

Do not trim the paddle. Failure to follow these instructions may prevent the device from operating and will void the warranty.

⚠ CAUTION

Do not over-tighten the union nut, hand tighten only.

Fig. 1

Glue the 1" male fitting into the TEE following the TEE manufacturer's instructions for preparation and gluing of CPVC piping systems. Wait 2 to 4 hours to allow the glue to dry before attaching the VSR-SG to the 1" male fitting.

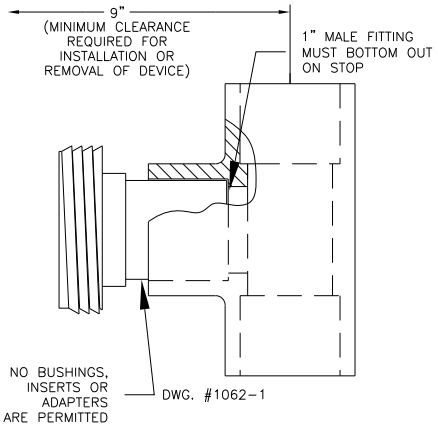
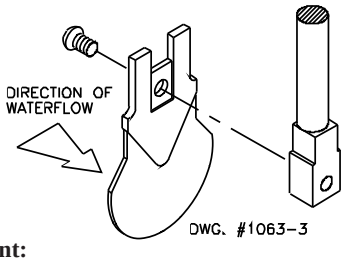


Fig. 3



Important:

11 paddles are furnished with each unit to accommodate the various sizes and manufacturers of TEES. *The paddles have raised lettering that show the pipe size and the TEE manufacturer they are to be used with. The proper paddle must be used.* The paddle must be properly attached (see Fig. 3) and the screw that holds the paddle must be securely tightened.

Fig. 2 **Retard Adjustment**

The delay can be adjusted by rotating the retard adjustment knob from 0 to the max setting (60-90 seconds). The time delay should be set at the minimum required to prevent false alarms.

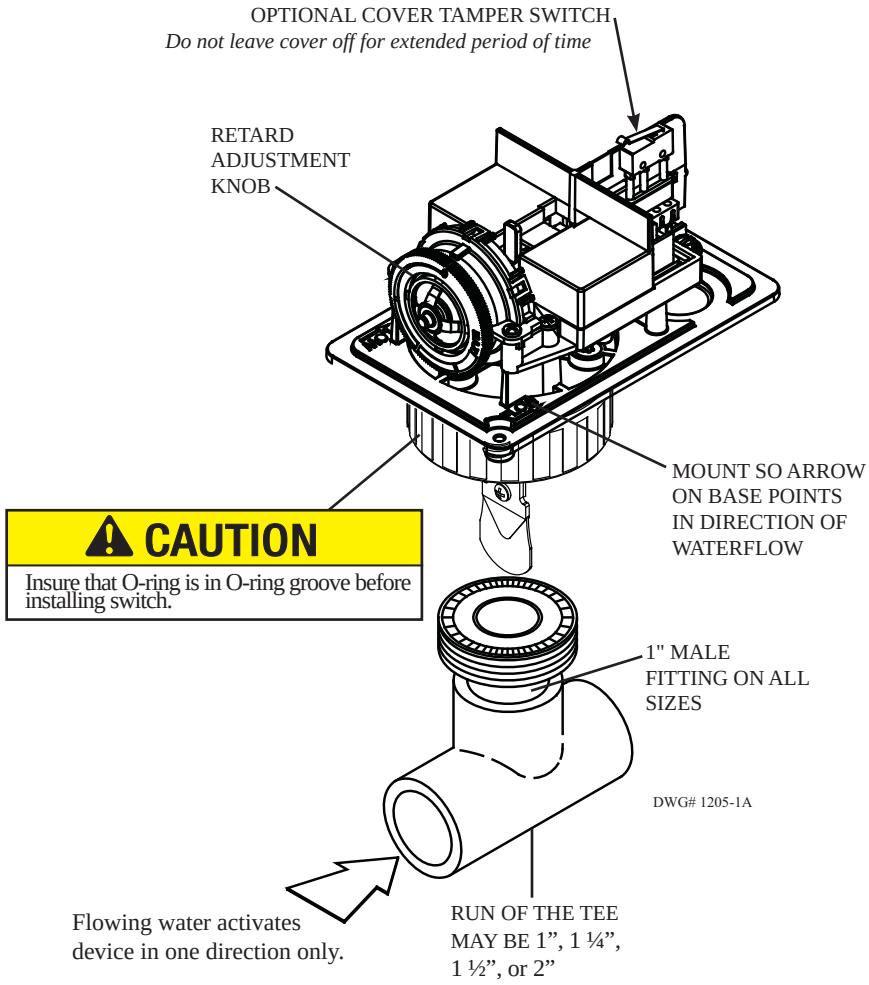
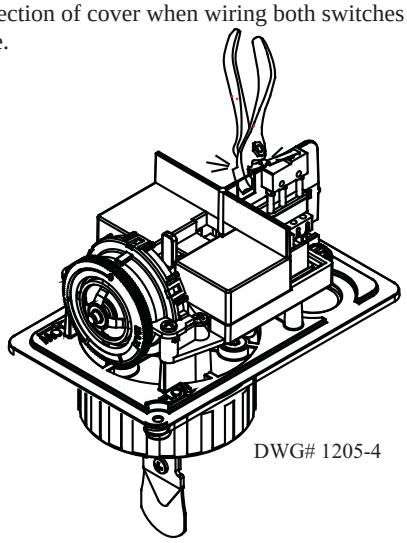


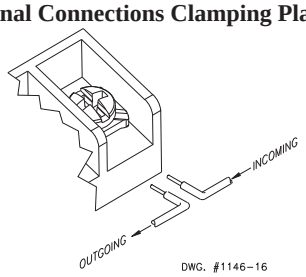
Fig. 4

Break out thin section of cover when wiring both switches from one conduit entrance.



DWG# 1205-4

Fig. 5 Switch Terminal Connections Clamping Plate Terminal



DWG. #1146-16

⚠ WARNING

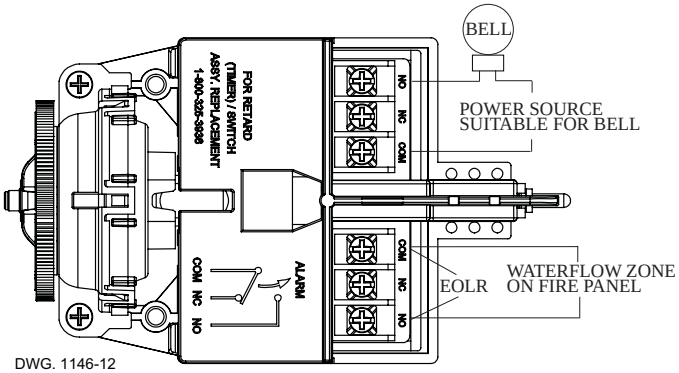
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire become dislodged from under the terminal. Failure to sever the wire may render the device inoperable risking severe property damage and loss of life.

Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

Fig. 6 Typical Electrical Connections

Notes:

1. The Model VSR-SG has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other contact is used to operate a local audible or visual annunciator.
2. For supervised circuits, see "Switch Terminal Connections" drawing and warning note (Fig. 5).



DWG. 1146-12

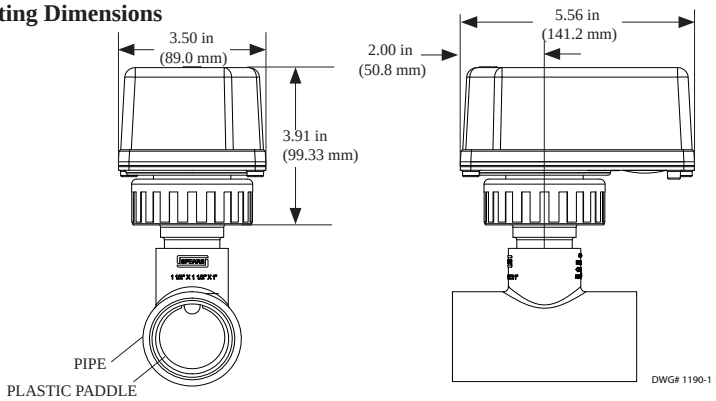
Testing

The frequency of inspection and testing for the Model VSR-SG and its associated protective monitoring system shall be in accordance with applicable NFPA Codes and Standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

If provided, the inspector's test valve shall always be used for test purposes. If there are no provisions for testing the operation of the flow detection device on the system, application of the VSR-SG is not recommended or advisable.
A minimum flow of 10 GPM (38 LPM) is required to activate this device.

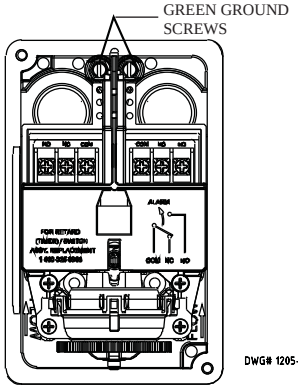
NOTICE Advise the person responsible for testing of the fire protection system that this system must be tested in accordance with the testing instructions.

Fig. 7 Mounting Dimensions



DWG# 1190-1

Fig. 8



DWG# 1205-15

Maintenance

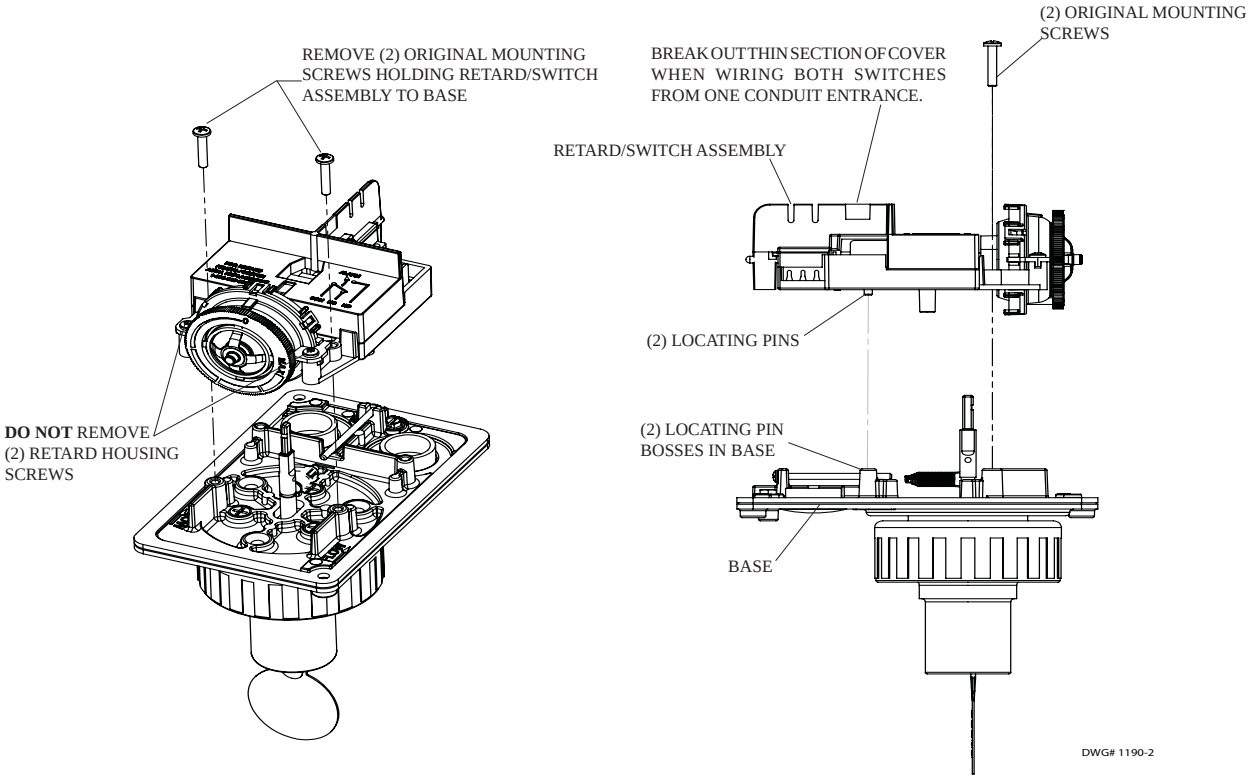
Inspect detectors monthly. If leaks are found, replace the detector. The VSR-SG waterflow switch should provide years of trouble-free service. The retard and switch assembly are easily field replaceable. In the unlikely event that either component does not perform properly, please order replacement retard switch assembly stock #1029030 (see Fig. 6). There is no maintenance required, only periodic testing and inspection.

Retard/Switch Assembly Replacement (See Fig. 9)

NOTICE The Retard/Switch Assembly is field-replaceable without draining the system or removing the waterflow switch from the pipe

1. Make sure the fire alarm zone or circuit connected to the waterflow switch is bypassed or otherwise taken out of service.
2. Disconnect the power source for local bell (if applicable).
3. Identify and remove all wires from the waterflow switch.
4. Remove the (2) mounting screws holding retard/switch assembly to the base. **Do not** remove the (2) retard housing screws.
5. Remove the retard assembly by lifting it straight up over the tripstem.
6. Install the new retard assembly. Make sure the locating pins on the retard/switch assembly fit into the locating pin bosses on the base.
7. Re-install the (2) original mounting screws.
8. Reconnect all wires. Perform a flow test and place the system back in service.

Fig. 9



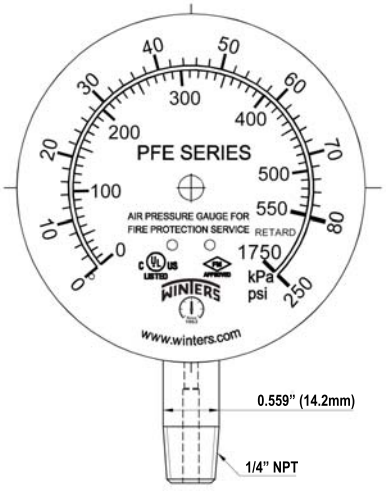
Removal of Waterflow Switch

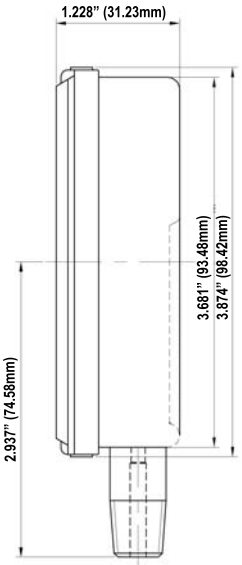
- To prevent accidental water damage, all control valves should be shut tight and the system completely drained before waterflow detectors are removed or replaced.
- Turn off electrical power to the detector, then disconnect wiring.
- Loosen nuts and seperate unit from the glued-in fittings
- Gently lift the unit far enough to get your fingers under it. With your fingers, roll the vane so it will fit through the hole while continuing to lift the waterflow detector.
- Lift detector clear of pipe.

Description & Features:

- Specially designed for fire sprinkler systems
- Suitable for air and water media
- Corrosion resistant case
- Dual scale (psi/kpa) and single scale (psi) pressure ratings
- Approved by Factory Mutual (FM) and listed by Underwriter Laboratory (UL-393), USA and Canada
- Internal pointer travel over-stop
- CRN registered
- 5 year warranty

Specifications	
Dial	3.5" (90mm), white aluminum with black and red markings
Case	Black plastic
Lens	Polycarbonate, threaded
Socket	Brass
Connection	¼" NPT standard, bottom
Bourdon Tube	Phosphor bronze
Movement	Brass
Pointer	Aluminum, black
Welding	Silver Alloy
Working Pressure	Maximum 75% of full scale value
Ambient/Process Temperature	-40°F to 150°F (-40°C to 65°C)
Accuracy	3-2-3% ASME Grade B
Enclosure Rating	IP52





Order Codes (products in bold are normally in stock)

Model	Air	Water	Air/Water
0/80/retard - 250 psi	**PFE3932R1**	-	-
0 - 300 psi	-	**PFE3933R1**	**PFE3935R1**
0/80/retard - 250 psi/kPa	**PFE3932**	-	-
0 - 300 psi/kPa	-	**PFE3933**	**PFE3935**