OWNER FURNISHED SPRINKLERS AND ACCESSORIES

SYM	SIZE	K FACTOR	FINISH	MFR	MAKE	S.I.N.	TEMP	STYLE	QTY	SPARE QTY	ESCH STYLE	ESCH FINISH	ESCH QTY
◉	3/4"	11.2	BRASS	TYCO	ELO-231	TY5131	155	UPRIGHT	45	6	---	---	---

SUBSTITUTIONS WILL NOT BE PERMITTED. REFERENCE SPECIFICATIONS APPENDIX B FOR ADDITIONAL INFORMATION.

WHERE SPRINKLERS ARE INSTALLED BELOW OBSTRUCTIONS (REFRIGERATION PIPING, RTUs, CABLE TRAYS, ETC.) THESE SPRINKLERS SHALL BE REPLACED WITH SPRINKLERS MATCHING THE NEW SPRINKLERS BEING INSTALLED AT THE ROOF DECK LEVEL.

THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE TO OWNER FURNISHED SPRINKLERS DURING INSTALLATION. TO REPLACE DAMAGED SPRINKLERS CONTACT HAINES, JONES, CADBURY 1-800-459-7099.

THE OWNER WILL FURNISH ADDITIONAL SPRINKLERS FOR THE SPARES CABINET. INSTALL SPARE SPRINKLER QUANTITY INDICATED ON CONTRACT DOCUMENTS PRIOR TO FIRE PROTECTION CONSULTANT SITE OBSERVATION.

CONTRACTOR PROVIDED SPRINKLER SCHEDULE

SYM	SIZE	MFR	MAKE	S.I.N.	FINISH	STYLE	TEMP	K FACTOR	QTY
◉	MATCH EXISTING	TYCO	MATCH EXISTING	MATCH EXISTING	MATCH EXISTING	PENDENT	MATCH EXISTING	MATCH EXISTING	4
●	1/2"	TYCO	TY-FRB	TY3231	WHITE	RECESSED STYLE 10	155	5.6	2
●	1"	TYCO	DS-2	TY5255	CHROME	FLUSH DRY PENDENT	286	11.2	12
⊗	VARIES	VARIES	VARIES	VARIES	VARIES	DEMO PENDENT	VARIES	VARIES	2
◌	VARIES	VARIES	VARIES	VARIES	VARIES	EXISTING PENDENT	VARIES	VARIES	22

WHERE SPRINKLERS ARE CALLED OUT TO "MATCH EXISTING", THE CONTRACTOR SHALL PROVIDE SPRINKLERS MANUFACTURED BY TYCO, WHICH ARE EQUIVALENT TO THE EXISTING TO REMAIN SPRINKLERS. SUBSTITUTIONS WILL NOT BE PERMITTED. DEMO SPRINKLER QTYS ARE APPROXIMATE. DEMO QTYS DO NOT INCLUDE COUNTS FOR SPRINKLERS SHOWN AS BEING REPLACED.

EXISTING SPRINKLERS QUANTITIES MAY NOT BE REPRESENTATIVE OF TOTAL EXISTING SPRINKLER COUNTS OR MAY REPRESENT EXISTING SPRINKLERS NOT SHOWN ON CONTRACT DOCUMENTS.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
(XXX)	HYDRAULIC REFERENCE NODE POINT
[–	CAP
]–	PLUG
○	RISER NIPPLE/DROP NIPPLE
⊗ / ▲	SPRINKLER RISER / DRY RISER
	HOSE VALVE
	INSPECTOR'S TEST/AUXILIARY DRAIN
	FIRE DEPARTMENT CONNECTION
	NEW CONNECTION
———	NEW SPRINKLER PIPE
– – –	EXISTING SPRINKLER PIPE
–·–·–·–	DEMOLISHED SPRINKLER PIPE

PROVIDE ADDITIONAL SPRINKLERS AS REQUIRED PER NFPA 13 IN EXISTING SPRINKLER CABINET FOR ANY NEW SPRINKLERS INSTALLED.

GENERAL UNDERGROUND NOTES

1. ALL UNDERGROUND IS SHOWN FOR HYDRAULIC REFERENCE ONLY.
2. SEE CIVIL DRAWINGS FOR EXACT LOCATIONS IF AVAILABLE.
3. NO NEW WORK UNLESS OTHERWISE NOTED.

AIR RELEASE VENT

ONE AIR VENT MUST BE INSTALLED ON ALL WET TYPE FIRE PROTECTION SYSTEMS INCLUDING SYSTEMS NOT AFFECTED BY THE REMODEL SCOPE OF WORK. EACH AIR VENT IS TO BE INSTALLED AT THE HIGHEST POINT OF THE SYSTEM AND PREFERABLY ON THE MAINS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING THE HIGHEST POINT OF EACH SYSTEM AND INSTALLING THE AIR VENT IN AN ACCESSIBLE LOCATION. IF THE AIR VENT IS TO BE INSTALLED ABOVE AN EXISTING CEILING THE CONTRACTOR MUST PROVIDE SIGNAGE, ONLY IF AIR VENT CANNOT BE LOCATED IN AN ACCESSIBLE LOCATION, PER NFPA 13. REF 8-FP3

PLACARD INFORMATION

THE FOLLOWING INFORMATION MUST BE SHOWN ON THE PLACARDS FOR EACH UL PERFORMANCE BASE DESIGNS. REFERENCE CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION. PLACARDS THAT ARE INSTALLED WITH INFORMATION WRITTEN WITH PERMANENT MARKER WILL NOT BE ACCEPTED.

SYSTEM #: X AREA: X
SPRINKLERS CALCULATED: X
MIN DISCHARGE PRESSURE: X
COMBINED HOSE ALLOWANCE: X
SYSTEM FLOW DEMAND AT (SRC/PO): X
SYSTEM PRESSURE DEMAND AT (SRC/PO): X
SYSTEM SAFETY FACTOR: X
INSTALLING CONTRACTOR: X
UL TEST SERIES NUMBER: X
UL PERFORMANCE BASE DESIGN
PROJECT: 4789705078, NC27954

WATER SUPPLY INFORMATION

STATIC: 130 PSI
RESIDUAL: 92 PSI AT 2556 GPM

INFORMATION DERIVED FROM A FLOW TEST PERFORMED BY HENDERSON ENGINEERS DURING A SITE VISIT ON 05/22/2024. ADDITIONAL SAFETY FACTORS ARE NOT INCLUDED.

SEISMIC REQUIREMENTS

THE SPRINKLER CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS PER NFPA 13 "PROTECTION OF PIPING AGAINST DAMAGE WHERE SUBJECT TO EARTHQUAKES". THE SPRINKLER CONTRACTOR MUST ALSO TAKE INTO ACCOUNT THE LIMITATIONS OF THE STRUCTURAL ELEMENTS PRIOR TO SIZING, FASTENING AND/OR LOCATING SEISMIC ASSEMBLIES, RESTRAINTS, ETC. ON THEIR PLANS. STRUCTURAL REQUIREMENTS AND LIMITATIONS MAY BE MORE STRINGENT THAN NFPA. REF 3-FP3 AND 5-FP3.

CONTACT INFORMATION

DOCUMENTS INCLUDE JURISDICTIONAL REQUIREMENTS PROVIDED BY THE FOLLOWING CONTACTS:

FIRE SPRINKLER REVIEWING AUTHORITY:
LESLIE JACKSON, CHIEF DEPUTY FIRE MARSHAL
(910) 893-7580

APPLICABLE CODES

NFPA STANDARDS	EDITION
NFPA 13	2022

UL LLC TECHNICAL REPORT: 4789705078, NC27954

REFER TO SHEET C1 FOR APPLICABLE CODES

GENERAL PIPING AND DEMOLITION NOTES

1. UNLESS NOTED OTHERWISE, DISCONNECT AND REMOVE ALL EXISTING FIRE PROTECTION COMPONENTS NOT INTENDED TO BE REUSED.
2. REMOVE ALL DEMOLITION MATERIALS AND DEBRIS TO AN APPROVED DUMPING SITE AND CLEAN ALL FIRE PROTECTION WORK PRIOR TO PROJECT COMPLETION.
3. PERFORM ALL WORK ACCORDING TO THE PROJECT PHASING SCHEDULE INFORMATION FOR THIS PROJECT. PROVIDE ALL NECESSARY FIRE PROTECTION WORK, TEMPORARY AND/OR OTHERWISE, AND USE WHATEVER MEANS NECESSARY, TO CONFORM TO THE REQUIRED CONSTRUCTION PHASING OF THE PROJECT.
4. CONTRACTOR IS RESPONSIBLE FOR REPAIRING OR REPLACING ITEMS DAMAGED DURING DEMOLITION AND CONSTRUCTION.
5. CONTRACTOR SHALL PATCH ALL HOLES TO MATCH ADJACENT SURFACES LEFT UNUSED AFTER EXISTING SPRINKLER PIPING OR EQUIPMENT IS REMOVED AND VACATED FROM THESE HOLES.
6. SPRINKLER SYSTEMS NOT ASSOCIATED WITH THE DEMOLITION SHALL BE LEFT IN SERVICE.
7. ALL WORK SHALL BE PERFORMED SO AS TO NOT INTERRUPT SERVICE. THE CONTRACTOR SHALL PROPERLY NOTIFY THE LANDLORD, THE LESSOR AND ADJACENT TENANTS A MINIMUM OF 48 HOURS IN ADVANCE BEFORE PROCEEDING WITH THIS WORK. ALL WORK SHALL BE SCHEDULED IN ADVANCE.
8. ALL SYSTEMS TO BE LEFT IN SERVICE PRIOR TO THE END OF EACH WORKDAY.
9. ONLY THE PORTIONS OF THE BUILDING AFFECTED BY THE SCOPE OF THE PROJECT HAVE BEEN SHOWN. INFORMATION SHOWN AS EXISTING TO REMAIN IS NOT BEING MODIFIED AS A PART OF THIS PROJECT.
10. SPRINKLER CONTRACTOR TO SUBMIT AND RECEIVE APPROVAL OF FULL SHOP DRAWINGS TO THE ENGINEER OF RECORD PRIOR TO FABRICATION AND INSTALLATION.
11. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND MAINTAINING FIRE DEPARTMENT ACCESS ROADS THROUGHOUT THE PROJECT.

SYSTEM IMPAIRMENT REQUIREMENTS

1. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION, VERIFICATION AND PROVISION OF A FIRE WATCH SUBJECT TO THE REQUIREMENTS OF THE LOCAL JURISDICTION. ALL FIRE WATCH COSTS INCURRED AS A RESULT OF THIS PROJECT SHALL BE INCLUDED IN THE PROJECT BID AS A SEPARATE LINE ITEM. COORDINATION AND VERIFICATION AS TO WHEN A FIRE WATCH MAY BE NEEDED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL REQUEST THE STORE MANAGER TO NOTIFY ALARM CENTRAL OF THE SYSTEM(S) BEING SHUT OFF FOR WORK AND THE DURATION OF THE SHUT OFF.
3. THE CONTRACTOR SHALL CALL DIRECT TO THE FIRE DEPARTMENT AND ADVISE THAT THE FIRE ALARM SYSTEM IS IN TEST.
4. AT THE END OF EACH NIGHTS WORK, THE CONTRACTOR SHALL CALL DIRECT TO THE FIRE DEPARTMENT AND STORE MANAGER TO ADVISE WORK IS COMPLETE.
5. A FIRE WATCH IN ACCORDANCE WITH THE ADOPTED FIRE PROTECTION CODE BY THE AUTHORITY HAVING JURISDICTION SHALL BE REQUIRED WHEN ANY FIRE PROTECTION SYSTEM IS IMPAIRED OR OTHERWISE DOWN FOR ALTERATION. ADDITIONAL SPECIFIC REQUIREMENTS MAY BE NECESSARY DEPENDING UPON THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR IS RESPONSIBLE FOR ASSUMING THE ROLE OF IMPAIRMENT COORDINATOR TO DEVELOP AND MAINTAIN THE FIRE WATCH PLAN. THE PLAN SHALL ENSURE THAT A TRAINED INDIVIDUAL(S), WHOSE SOLE RESPONSIBILITY IS TO PERFORM CONSTANT PATROL AND WATCH FOR THE OCCURRENCE OF FIRE IS ON SITE WHILE ANY SYSTEM IS IMPAIRED. THE FIRE WATCH INDIVIDUAL SHALL HAVE AN APPROVED MEANS OF COMMUNICATION TO REPORT A FIRE TO THE FIRE DEPARTMENT AND/OR THE DESIGNATED CENTRAL STATION, AND DOCUMENT EVIDENCE OF THEIR PATROLS IN WRITING.
6. ONLY (1) ONE SYSTEM IS PERMITTED TO BE SHUT DOWN AT ONE TIME.
7. ANY FIRE DEPARTMENT FEES FOR FAILURE TO FOLLOW PROCEDURES WILL BE AT THE CONTRACTORS EXPENSE.
8. ALL SYSTEMS TO BE LEFT IN SERVICE PRIOR TO THE END OF EACH WORKDAY.
9. THE CONTRACTOR SHALL COORDINATE WITH THE STORE MANAGER ON THE AREA TO BE WORKED ON AT LEAST 24 HOURS IN ADVANCE.
10. REQUIRED MEANS OF EGRESS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION, DEMOLITION, REMODELING OR ALTERATIONS AND ADDITIONS TO THE WALMART. ALL EXITS SHALL NOT BE BLOCKED, REDUCED OR OTHERWISE MADE INOPERABLE WHICH ALSO INCLUDES THE EXIT ACCESS, THE EXIT AND EXIT DISCHARGE TO THE PUBLIC WAY. TEMPORARY MEANS OF EGRESS ARE ALLOWED.

GENERAL NOTES

1. THE DESIGN SHOWN ON THESE CONTRACT DOCUMENTS HAS BEEN PREPARED *FOR APPROVAL BY THE AUTHORITY HAVING JURISDICTION AND* TO PROVIDE GUIDANCE FOR BIDDING. THE CONTRACTOR SHALL SUBMIT COMPLETE FIRE SPRINKLER SHOP DRAWINGS AS REQUIRED BY SPECIFICATION SECTION 01330. CONTRACTOR SHALL BASE SHOP DRAWING DESIGN ON THE FIRE PROTECTION DRAWINGS AND SPECIFICATIONS. SPRINKLER SHOP DRAWINGS SHALL INCLUDE ALL NECESSARY ELEVATIONS, HANGER LOCATIONS, PIPE LENGTHS, DIMENSIONS, FABRICATION METHODS/NOTES, MATERIAL DATA, AND ANY OTHER INFORMATION NECESSARY TO CLARIFY THE INTENT OF INSTALLATION. CONTRACTOR SHALL PROVIDE PIPE SIZES, SPRINKLER SPACING, AND ALL SYSTEM CONFIGURATIONS AS SHOWN. ANY ALTERNATES IN DESIGN OF THE SYSTEM OR IN MATERIALS OR EQUIPMENT USED MUST BE APPROVED IN WRITING VIA THE REQUEST FOR INFORMATION PROCESS BY THE FIRE PROTECTION ENGINEER OF RECORD PRIOR TO ANY BIDDING, FABRICATION, OR INSTALLATION.
2. CONTRACTOR SHALL COORDINATE LOCATIONS OF FIRE PROTECTION COMPONENTS INCLUDING PIPING, ALARMS, DRAINS, TEST POINTS, ETC., WITH ALL ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS. OBSTRUCTIONS TO SPRINKLER DISCHARGE MUST BE CONSIDERED DURING SHOP DRAWING PRODUCTION AND INSTALLATION. EXTRA SPRINKLERS MAY BE REQUIRED AT NO ADDITIONAL COST TO THE OWNER. REFER TO SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
3. SUBMIT A REQUEST FOR INFORMATION (RFI), FOR QUESTIONS RELATED TO THE FIRE PROTECTION DOCUMENTS.
4. ROUTE ALL SPRINKLER MAINS ABOVE THE BOTTOM CHORD OF THE BAR JOISTS.
5. NEUTRALIZATION/DEMISING WALLS ARE SHOWN ON THE ARCHITECTURAL DRAWINGS. REFER TO THE MECHANICAL DRAWINGS FOR NEUTRALIZATION WALL PENETRATIONS.
6. SPRINKLER SYSTEMS ARE MONITORED BY AN OFF-SITE CENTRAL STATION INCLUDING TAMPER SWITCHES ON ALL CONTROL VALVES AND FLOW SWITCHES.
7. IF APPLICABLE, THE CONTRACTOR SHALL ASSUME THAT ANY CURTAIN BOARDS OR DRAFT CURTAINS WILL BE INSTALLED PRIOR TO THE SPRINKLER PIPING. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER PENETRATIONS OF THE CURTAIN BOARDS OR DRAFT CURTAINS AND SEALING WITH APPROVED FIRE CAULKING.
8. PENETRATIONS OF RATED WALLS OR ASSEMBLIES SHALL BE "FIRE CAULKED" WITH APPROVED CAULKING PER METHODS REQUIRED BY THE AUTHORITY HAVING JURSDICTION, AND PROJECT SPECIFICATIONS.
9. THE FIRE PROTECTION ENGINEER OF RECORD WILL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S FAILURE TO CARRY OUT THE CONSTRUCTION WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NOR SHALL THEY BE REQUIRED TO SUPERVISE THE CONDUCT OF THE WORK, THE CONSTRUCTION PROCEDURES AS SET FORTH BY THE GENERAL CONTRACTOR, SUB-CONTRACTORS, THEIR RESPECTIVE EMPLOYEES, OR ANY OTHER PERSON AT THE JOBSITE OTHER THAN THE ENGINEERING FIRM'S OWN EMPLOYEES.
10. SPRINKLER PROTECTION IS REQUIRED ABOVE THE ELECTRICAL ROOMS. NO MAIN PIPING SHALL PENETRATE OR PASS ABOVE THE ELECTRICAL ROOMS.
11. THE CONTRACTOR MUST REVIEW ALL CONSTRUCTION DOCUMENTS PRIOR TO BID. SHOULD MODIFICATION TO THESE PLANS BECOME NECESSARY TO PROPERLY COORDINATE THE SYSTEM WITH, OTHER TRADES, IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN APPROVAL OF THESE CHANGES BY THE AHJ, AND THE FIRE PROTECTION ENGINEER OF RECORD. IN ADDITION TO OBTAINING THE NECESSARY APPROVALS, THE CONTRACTOR MUST MAKE NOTE OF ALL FIELD OR COORDINATION CHANGES ON THE INSTALLATION DRAWINGS. ONCE COMPLETE, THE CONTRACTOR SHALL SUPPLY ONE COPY OF AS-BUILT DRAWINGS TO THE FIRE PROTECTION ENGINEER OF RECORD FOR THEIR USE.
12. THE CONTRACTOR SHALL DIVERT ALL DRAIN AND INSPECTORS TEST CONNECTION DISCHARGE AWAY FROM FINISHED SURFACES AND PIPE TO APPROVED DRAIN LOCATIONS. THE CONTRACTOR WILL BE BACKCHARGED FOR ANY REPAIR, REPLACEMENT, OR CLEANING OF RUST STAINS ON PAVEMENT/CONCRETE DUE TO WATER DISCHARGE FROM SPRINKLER SYSTEM DRAIN DOWNS.
13. ALL HANGER CONNECTIONS SHALL BE MADE TO THE TOP CHORD OF STRUCTURAL JOIST UNLESS NOTED OTHERWISE. USE OF SELF TAPPING AND POWDER DRIVEN THREADED ROD ANCHORS INTO ROOF DECK OR STRUCTURE IS PROHIBITED UNLESS OTHERWISE NOTED.

SHEET INDEX

Reviewed for Fire Code Compliance
Harnett County
Leslie Jackson
11/26/2025 7:56:59 AM

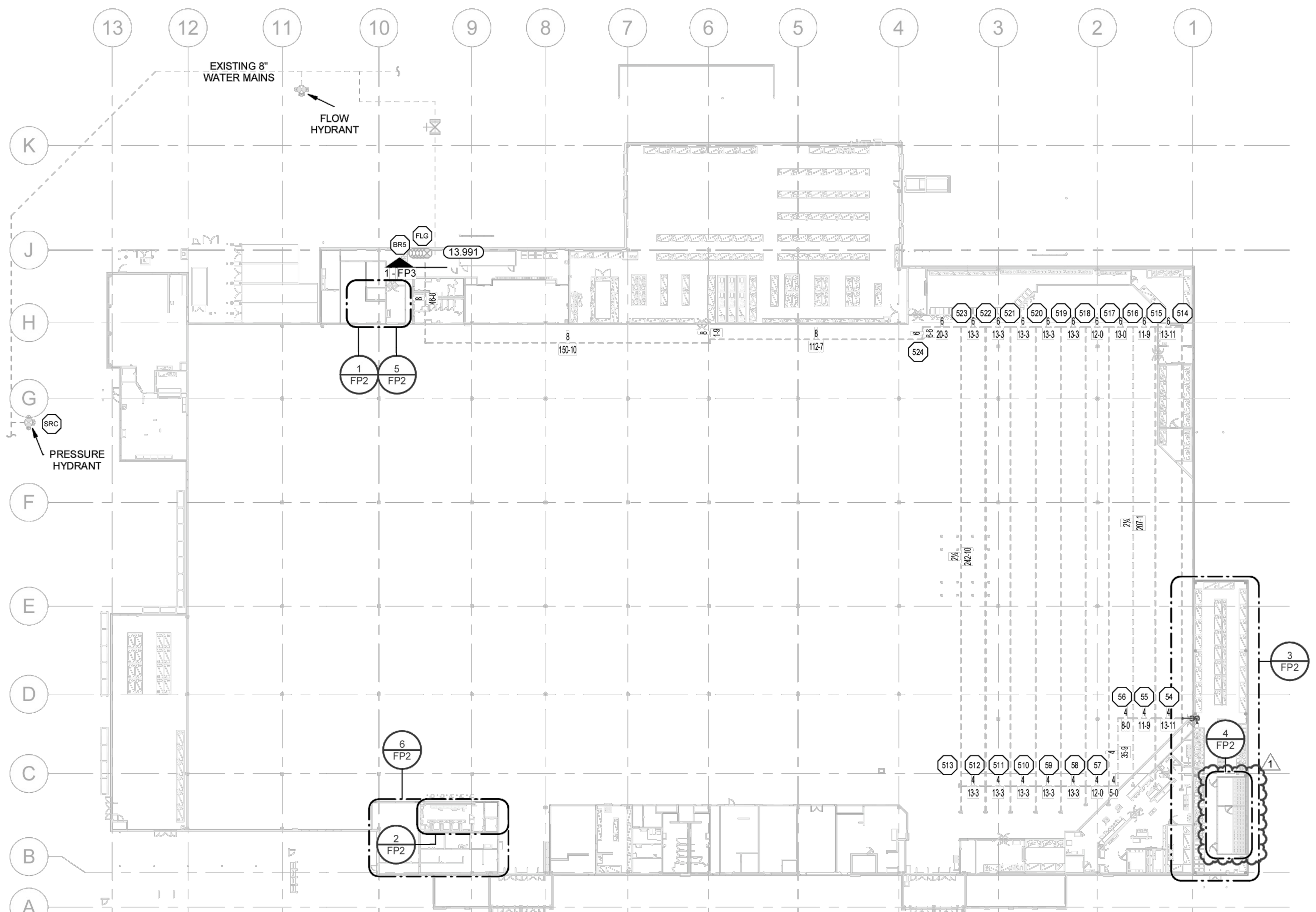
PIPE TABLE (WET)

PRODUCT	NOMINAL PIPE SIZE	INSIDE DIAMETER
DYNA-FLOW	2"	2.203
DYNA-FLOW	2 1/2"	2.703
DYNA-FLOW	3"	3.314
DYNA-FLOW	4"	4.310
DYNA-THREAD	1"	1.080
DYNA-THREAD	1 1/4"	1.408
DYNA-THREAD	1 1/2"	1.639
DYNA-THREAD	2"	2.104
SCHEDULE 10	1 1/4"	1.442
SCHEDULE 10	1 1/2"	1.682
SCHEDULE 10	2"	2.157
SCHEDULE 10	2 1/2"	2.635
SCHEDULE 10	3"	3.260
SCHEDULE 10	4"	4.260
SCHEDULE 10	6"	6.357
SCHEDULE 10	8"	8.249
SCHEDULE 10	10"	10.370
SCHEDULE 40	1"	1.049
SCHEDULE 40	1 1/4"	1.380
SCHEDULE 40	1 1/2"	1.610
SCHEDULE 40	2"	2.067

PIPE TABLE (UNDERGROUND)

PRODUCT	NOMINAL PIPE SIZE	INSIDE DIAMETER
DI	6"	6.16
DI	8"	8.27
DI	10"	10.28
DI	12"	12.34
DI	16"	16.41
DI	18"	18.49
DI	20"	20.57
DI	24"	24.73
PVC	6"	6.09
PVC	8"	7.98
PVC	10"	9.79
PVC	12"	11.65
PVC	16"	15.53
PVC	18"	17.20
PVC	20"	19.06
PVC	24"	22.76

PIPE SIZES SHOWN ARE FOR HYDRAULIC CALCULATIONS PURPOSES ONLY.
REFER TO SPECIFICATIONS FOR ALLOWABLE SUBSTITUTIONS.



1 FIRE SPRINKLER SITE PLAN
1" = 40'-0"

UNDERGROUND PIPING SHOWN FOR HYDRAULIC CALCULATION PURPOSES ONLY

EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. CONTRACTOR SHALL CAREFULLY COORDINATE NEW WORK AND DEMOLITION WITH ALL OTHER DISCIPLINES AND EXISTING CONDITIONS.

EACH SUBCONTRACTOR IS RESPONSIBLE FOR HAVING A THOROUGH KNOWLEDGE OF ALL DRAWINGS AND SPECIFICATIONS IN THEIR RELATED FIELD. THE FAILURE TO ACQUAINT THEMSELF WITH THIS KNOWLEDGE DOES NOT RELIEVE THE RESPONSIBILITY OF PERFORMING THE WORK PROPERLY. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED BECAUSE OF CONDITIONS THAT OCCUR DUE TO FAILURE TO FAMILIARIZE WORKERS WITH THIS KNOWLEDGE.

Randy A. Roberson
NICET Level III #78260

JASPER FIRE PROTECTION, INC.
POST OFFICE BOX 1548
JASPER, ALABAMA 35502

ISSUE BLOCK

1	ADD#2	09/10/25

Date: 10/26/25
Scale: AS NOTED
Drawn By: JRP

Walmart
CAMERON, NC
2800 NC HWY 24-87
STORE NO. 06958.1000

FIRE SPRINKLER PLAN

SHEET: FP1

PROTECTION CRITERIA LEGEND

OCCUPANCY CLASSIFICATION	DENSITY/AREA (GPM/SQ FT / SQ FT) DISCHARGE PRESSURE (# OPERATING SPRINKLERS - DESIGN AREA)	HOSE ALLOWANCE (GPM)	MAXIMUM SPRINKLER SPACING (SQ FT)	DESIGN BASIS
PICKUP STOCKROOM - GM/GR (OPTION 1)	30 PSI (2 AS-2S/1L) 15 PSI (12 AS-4S/3L)	250	100	CLASS I-IV & CARTONED GROUP A ON SHELF TO 10'-0", EXPOSED GROUP A PLASTIC TO 6'-0", 25'-0" CEILING HEIGHT, RACK TO RACK 6'-0" MINIMUM AISLES, GONDOLA TO GONDOLA 5'-0" MINIMUM AISLES; UL LLC TECHNICAL REPORT PROJECT 4789705078, NC27954 - TABLE 3 SUMMARY OF TESTS, TEST SRR W/GONDOLAS 12022002 & 12032002
PICKUP COOLER/FREEZER (EXTRA HAZARD GROUP II)	0.40/2000	500	100	CLASS I-IV TO 12'-0"; NFPA 13: TABLE 4.3.1.7.1.1, TABLE 19.2.3.1.1, SECTION 19.2.3.2.7, SECTION 28.2.4.2.5 (OWNER ELECTED DENSITY)
MOTHER'S ROOM/HEALTH SERVICES (ORDINARY HAZARD GROUP II)	0.20/1500	250	130	CLASS I-IV TO 5'-0"; NFPA 13: TABLE 4.3.1.7.1.1 & TABLE 19.2.3.1.1
VISION CENTER/TRAINING	EXISTING	EXISTING	130	EXISTING PROTECTION CRITERIA

RC = RETAIL CEILING/RNC = RETAIL NO CEILING
SL = STORAGE LOW/SH = STORAGE HIGH
REFERENCE SPRINKLER PLANS AND SPRINKLER SYMBOL LEGEND FOR SPRINKLERS NECESSARY TO MEET THE DESIGN REQUIREMENTS

SRR = SINGLE ROW RACK
DRR = DOUBLE ROW RACK
MRR = MULTIPLE ROW RACK

KEYNOTES

13.901 COORDINATE SPRINKLER PROTECTION PER REMOVAL, RELOCATION AND/OR ADDITION OF WALLS AND/OR CEILINGS. WHERE NECESSARY, REMOVE EXISTING SPRINKLER(S) AND ASSOCIATED PIPING. CAP OUTLETS NOT INTENDED FOR REUSE. WHERE NEW SPRINKLER(S) ARE REQUIRED WITHIN THE SAME COMPARTMENT AS EXISTING TO REMAIN SPRINKLERS, NEW SPRINKLER(S) SHALL MATCH EXISTING SPRINKLER TYPE, K-FACTOR, TEMPERATURE RATING AND FINISH. WHERE APPLICABLE, ALIGN NEW SPRINKLERS WITH EXISTING TO REMAIN SPRINKLERS, AND COORDINATE WITH NEW AND EXISTING EQUIPMENT AND WALLS TO MEET NFPA 13 SPACING REQUIREMENTS. NOT MORE THAN ONE SPRINKLER SHALL BE SUPPLIED BY A 1" PIPE OR CONNECTION.

13.910 REMOVE EXISTING PENDENT SPRINKLER AND ASSOCIATED PIPING. CAP REMAINING OUTLETS NOT INTENDED FOR REUSE.

13.920 EXISTING SPRINKLERS AND BRANCHLINES TO REMAIN.

13.944 PROVIDE LOW POINT AUXILIARY DRAIN IN ACCESSIBLE LOCATION.

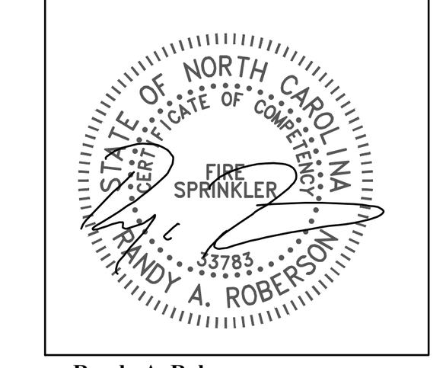
13.950 PROVIDE NEW MAIN(S). LOCATE MAIN ABOVE BOTTOM CHORD OF THE JOIST(S). FIELD VERIFY AND COORDINATE EXACT ROUTE THROUGH NEW AND EXISTING CONSTRUCTION/EQUIPMENT. MAINS 4" AND LARGER SHALL BE INSTALLED PER SPRINKLER PIPE SUPPORT DETAIL.

13.951 PROVIDE NEW BRANCHLINE(S). FIELD VERIFY AND COORDINATE EXACT ROUTE THROUGH NEW AND EXISTING CONSTRUCTION/EQUIPMENT.

13.970 PROVIDE PENDENT SPRINKLERS. REFERENCE SPRINKLER SYMBOL LEGEND FOR SPECIFIC SPRINKLER TO BE INSTALLED. NOT MORE THAN ONE SPRINKLER SHALL BE SUPPLIED BY A 1" PIPE OR CONNECTION. EXISTING UPRIGHT SPRINKLER PROTECTION, WHERE PROVIDED AT THE CEILING/ROOF DECK LEVEL, TO REMAIN UNLESS NOTED OTHERWISE.

13.974 PROVIDE DRY PENDENT SPRINKLERS. REFERENCE SPRINKLER SYMBOL LEGEND FOR SPECIFIC SPRINKLER TO BE INSTALLED. COORDINATE WITH LOCATION OF LIGHTS AND EVAPORATOR UNITS. NOT MORE THAN ONE SPRINKLER SHALL BE SUPPLIED BY A 1" PIPE OR CONNECTION. ADDITIONAL SPRINKLERS MAY BE REQUIRED AT NO ADDITIONAL COST TO OWNER. REFERENCE FREEZER COOLER DRY PENDENT DETAIL & FREEZER SECTION DETAIL.

13.988 INSTALL NEW ¾" UPRIGHT SPRINKLERS WITH TYCO TY5131 11.2K UPRIGHT SPRINKLERS. PROVIDE THE NECESSARY FITTING(S). REFERENCE OWNER FURNISHED SPRINKLER AND ACCESSORIES LEGEND FOR SPECIFIC SPRINKLER TO BE INSTALLED. WHERE SPRINKLERS ARE NEAR HEAT PRODUCING EQUIPMENT PROVIDE INTERMEDIATE AND HIGH-TEMPERATURE SPRINKLERS IN ACCORDANCE WITH NFPA 13.



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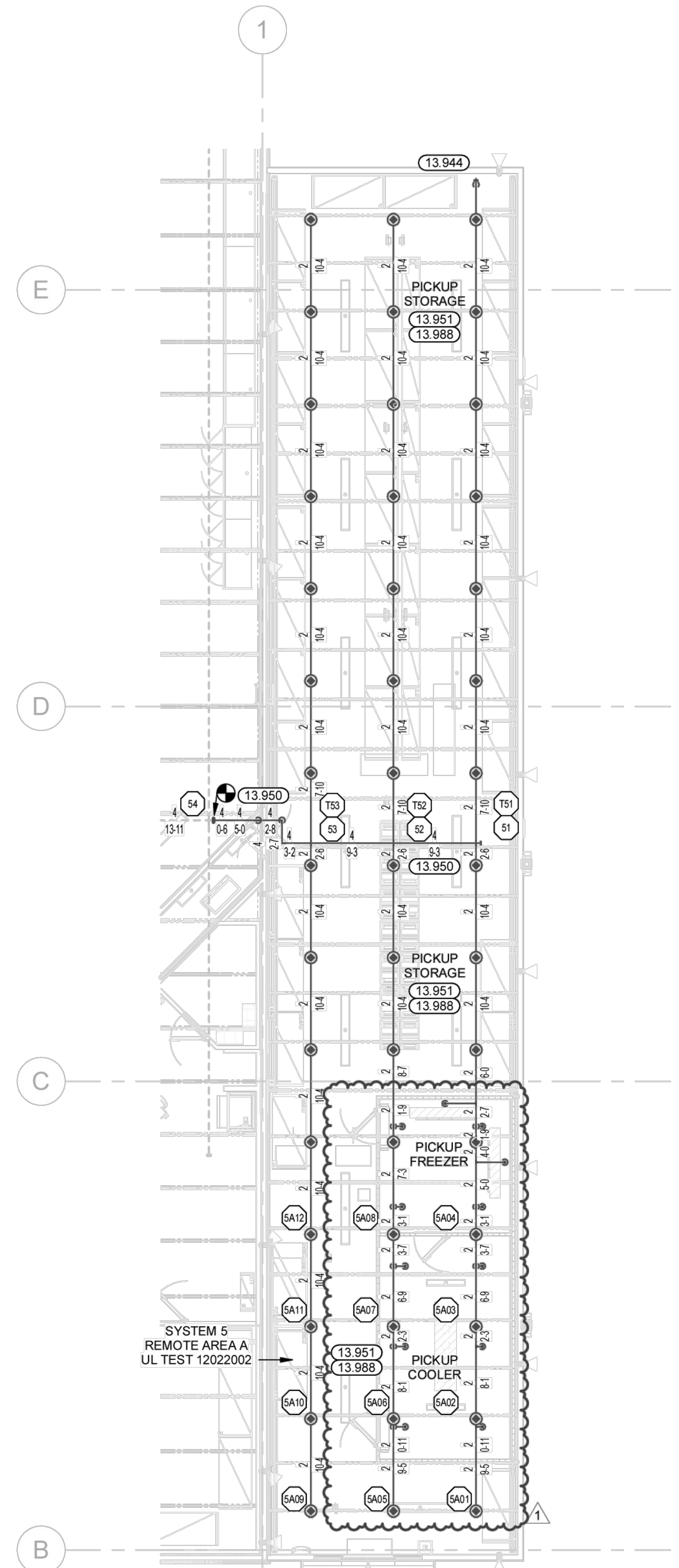
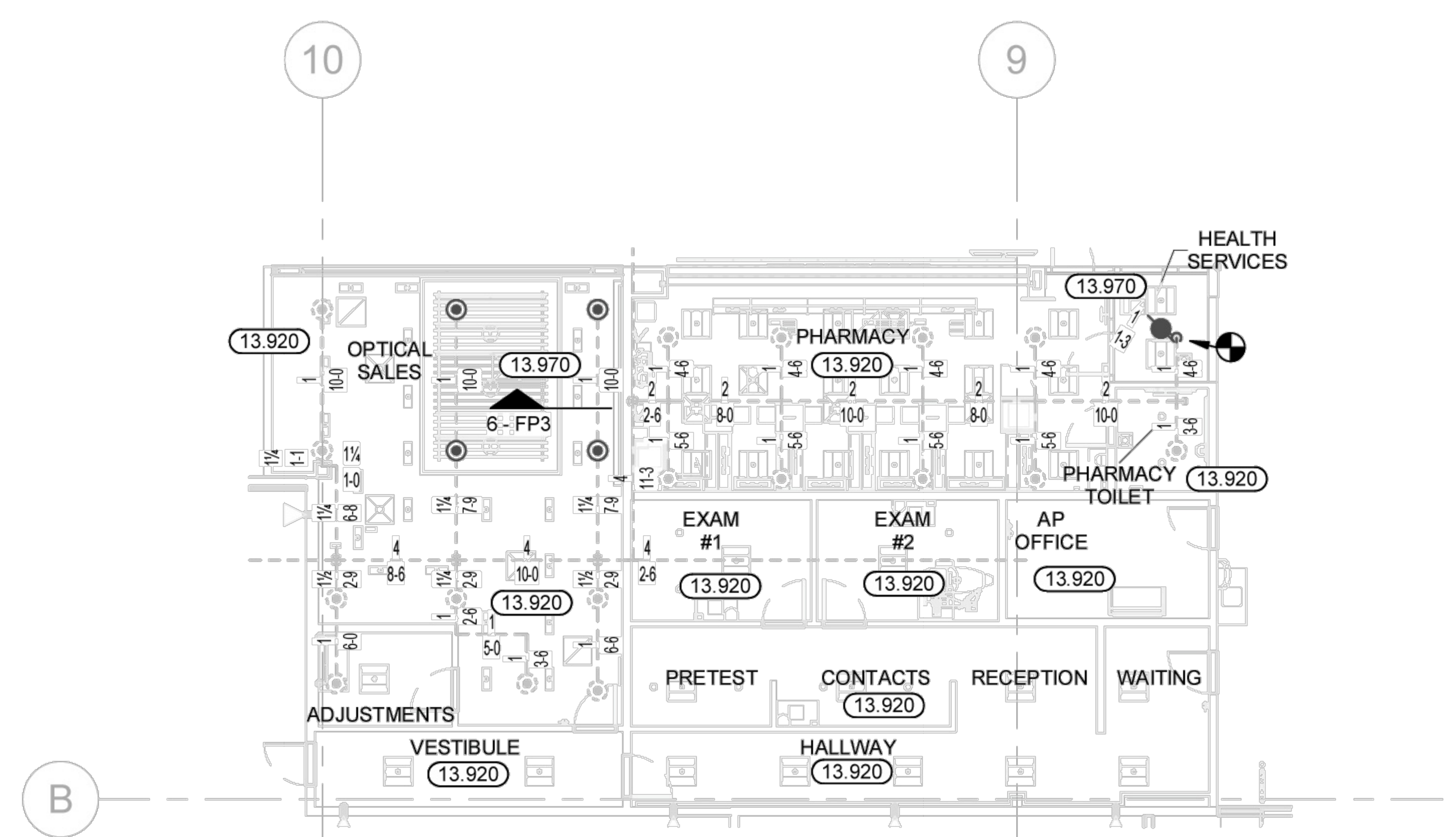
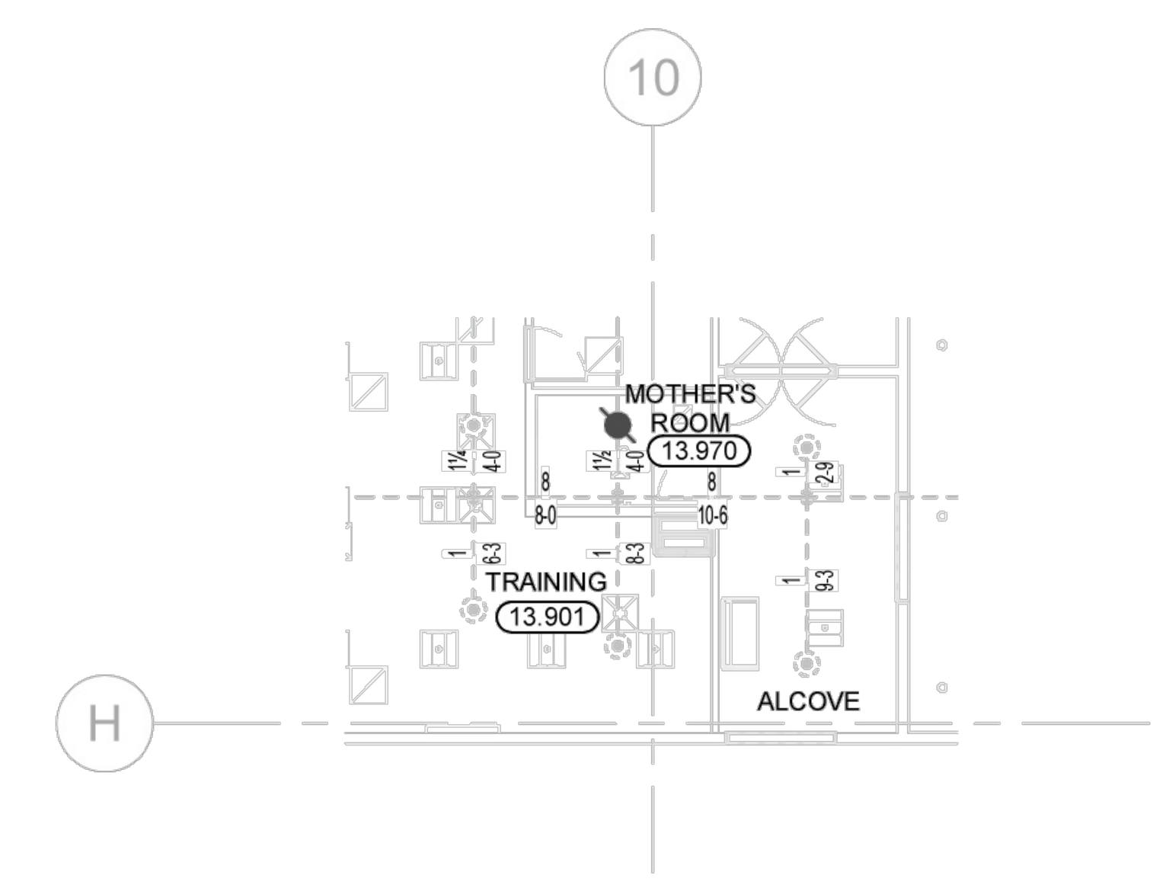


3 PICKUP STORAGE FIRE SPRINKLER PLAN
3/32" = 1'-0"

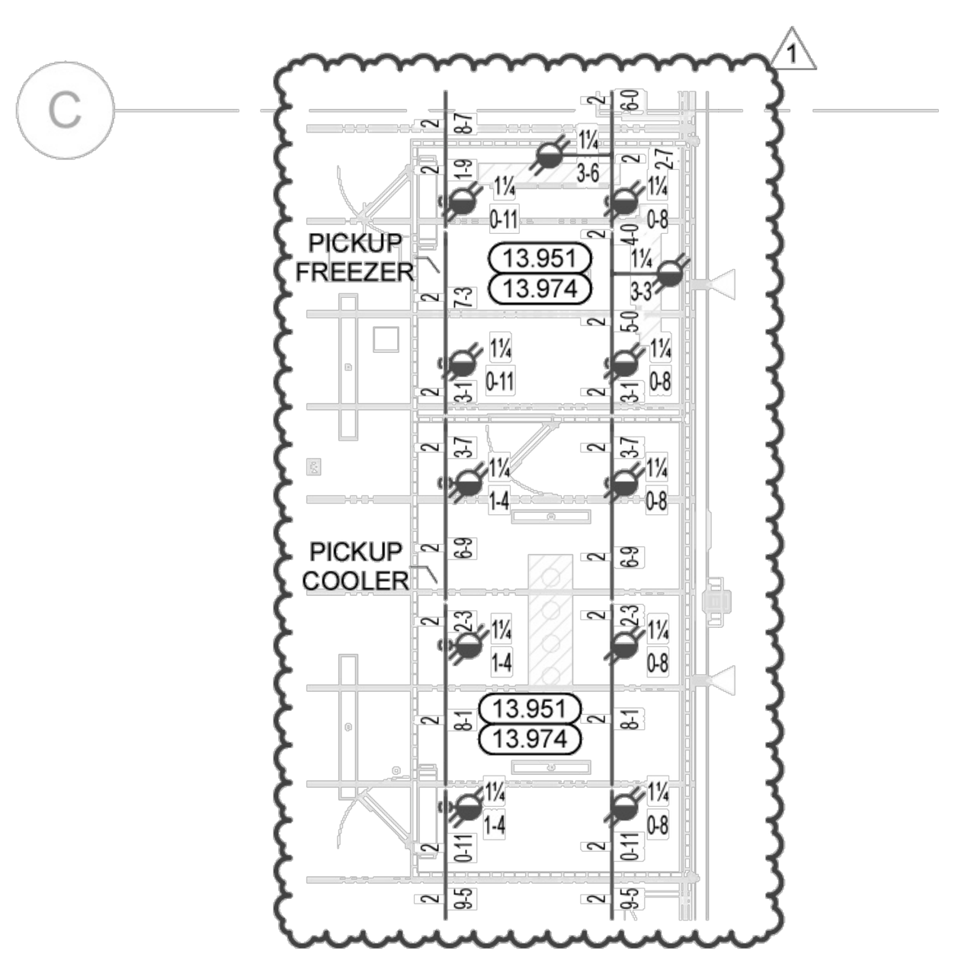


6 VISION CENTER/PHARMACY FIRE SPRINKLER PLAN
3/32" = 1'-0"

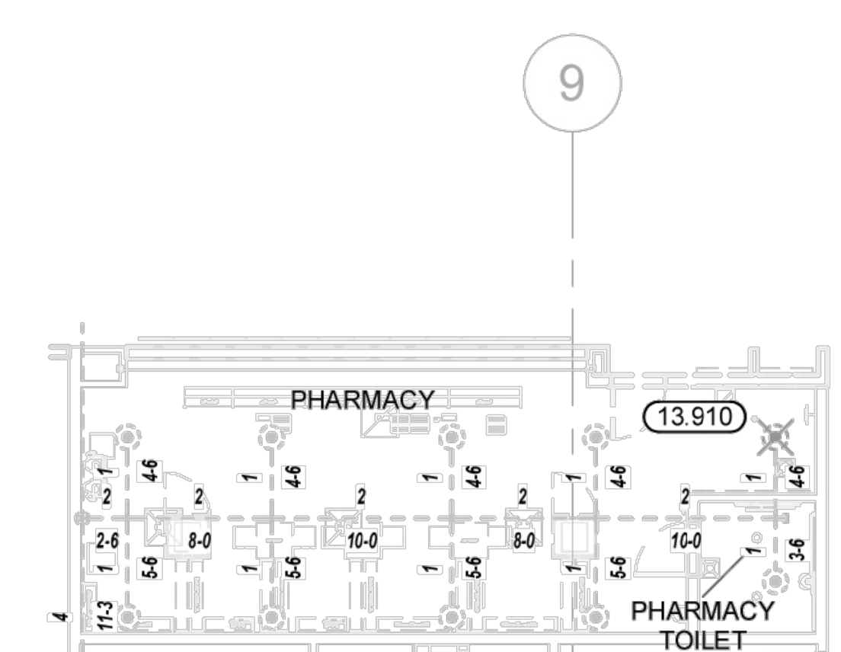


5 BACK OF HOUSE FIRE SPRINKLER PLAN
3/32" = 1'-0"

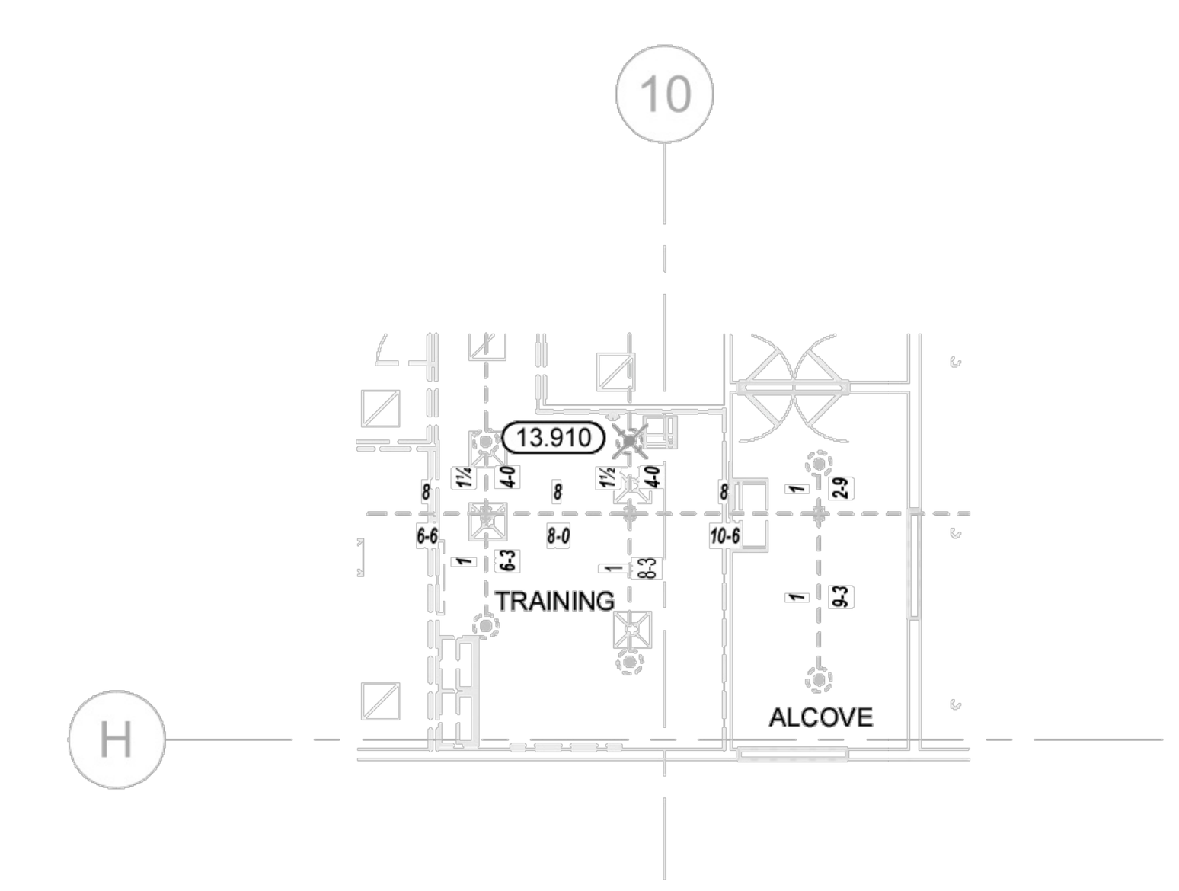
HYDRAULIC DESIGN	
SYSTEM # 5 REMOTE AREA # A	PICKUP STORAGE
SPRINKLERS CALCULATED	12 SPRINKLERS
SPRINKLER PRESSURE	15 PSI
COMBINED HOSE ALLOWANCE	250 GPM
SYSTEM FLOW DEMAND AT SRC	784 GPM
SYSTEM PRESSURE DEMAND AT SRC	62.5 PSI
SYSTEM SAFETY FACTOR	63.2 PSI
COMBINED HOSE ALLOWANCE INCLUDED IN FLOW DEMAND	



4 PICKUP COOLER/FREEZER FIRE SPRINKLER PLAN
3/32" = 1'-0"



2 PHARMACY FIRE SPRINKLER DEMOLITION PLAN
3/32" = 1'-0"



1 BACK OF HOUSE FIRE SPRINKLER DEMOLITION PLAN
3/32" = 1'-0"

EXISTING CONDITIONS WERE TAKEN FROM ORIGINAL DRAWINGS AND MAY NOT REFLECT EXACT "AS-BUILT" CONDITIONS. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. CONTRACTOR SHALL CAREFULLY COORDINATE NEW WORK AND DEMOLITION WITH ALL OTHER DISCIPLINES AND EXISTING CONDITIONS.

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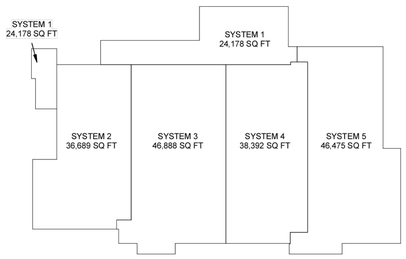
ISSUE BLOCK		
1	ADD#2	09/10/25

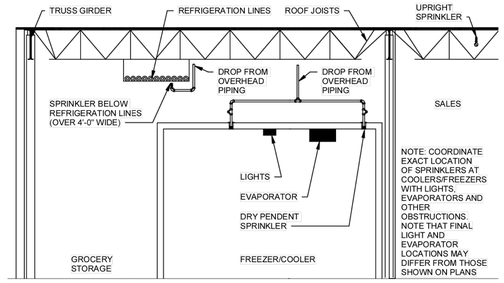
Date: 10/26/25
Scale: AS NOTED
Drawn By: JRP

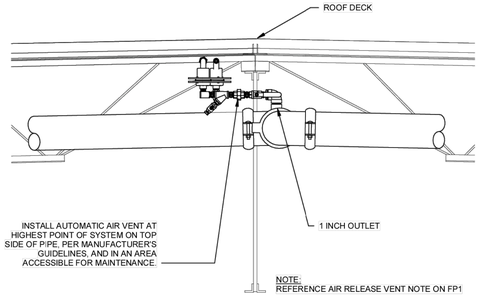
Walmart
CAMERON, NC
2800 NC HWY 24-87
STORE NO: 06958.1000

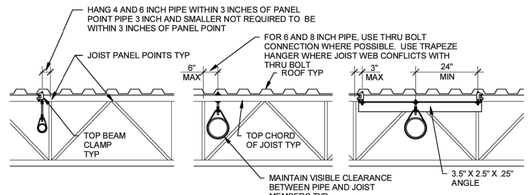
ENLARGED FIRE SPRINKLER PLAN

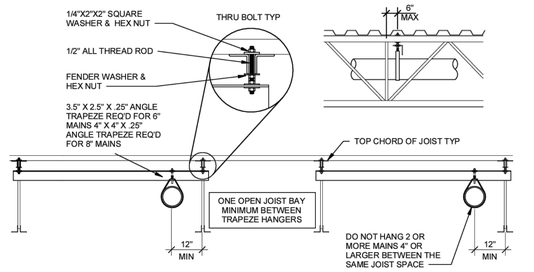
SHEET: FP2

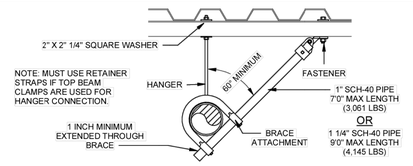


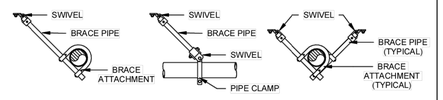


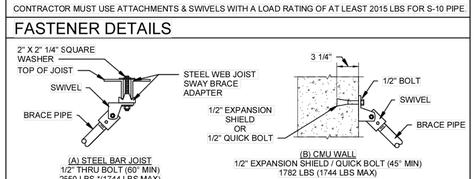


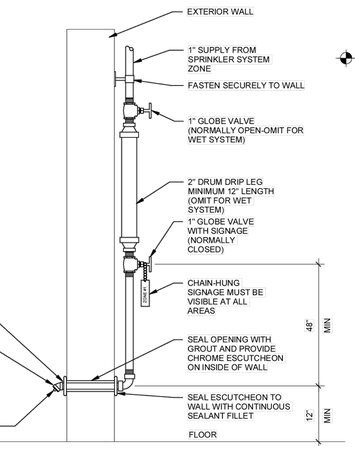


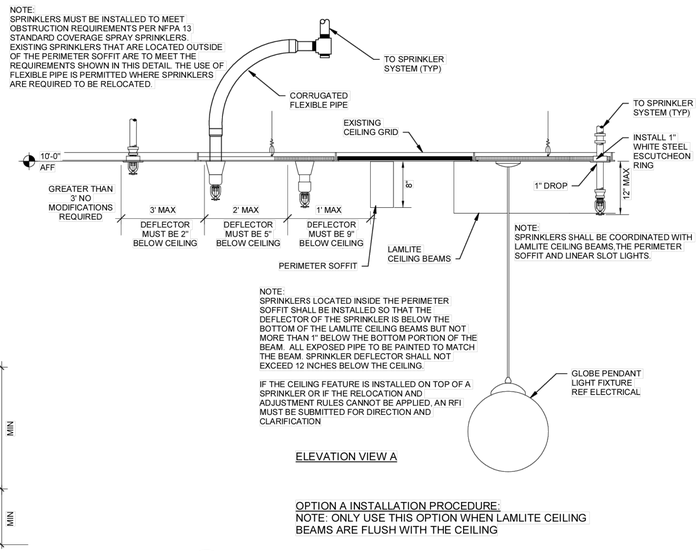


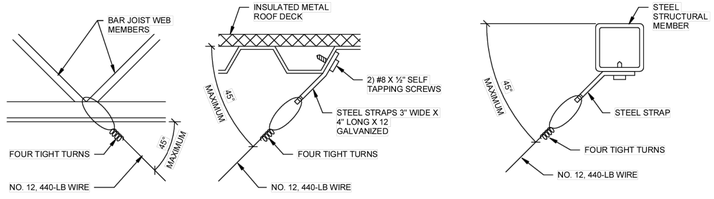


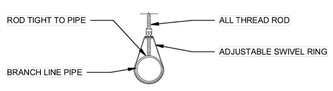


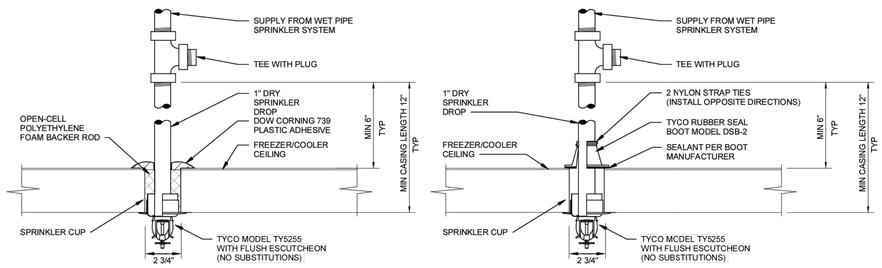


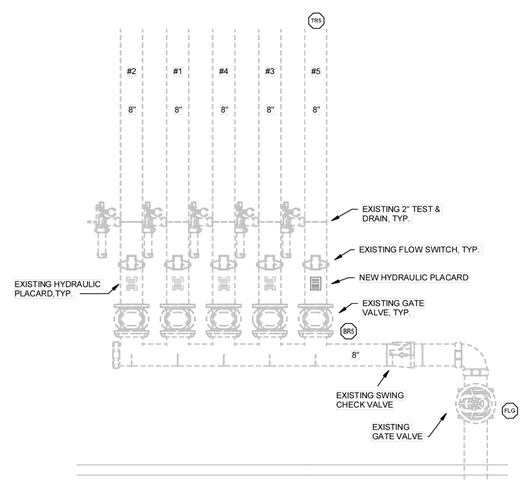












10 ZONE MAP
NTS

NOTE: COORDINATE EXACT LOCATION OF SPRINKLERS AT COOLERS/FREEZERS WITH LIGHTS, EVAPORATORS AND OTHER OBSTRUCTIONS. NOTE THAT FINAL LIGHT AND EVAPORATOR LOCATIONS MAY DIFFER FROM THOSE SHOWN ON PLANS

9 FREEZER SECTION
NTS

INSTALL AUTOMATIC AIR VENT AT HIGHEST POINT OF SYSTEM ON TOP SIDE OF PIPE, PER MANUFACTURER'S GUIDELINES, AND IN AN AREA ACCESSIBLE FOR MAINTENANCE.

NOTE:
REFERENCE AIR RELEASE VENT NOTE ON FP1

8 AIR RELEASE VENT
NTS

HANG 4 AND 6 INCH PIPE WITHIN 3 INCHES OF PANEL POINT PIPE 3 INCH AND SMALLER NOT REQUIRED TO BE WITHIN 3 INCHES OF PANEL POINT

FOR 6 AND 8 INCH PIPE, USE THRU BOLT CONNECTION WHERE POSSIBLE. USE TRAPEZE HANGER WHERE JOIST WEB CONFLICTS WITH THRU BOLT

MAXIMUM HANGER SPACING FOR PIPING PERPENDICULAR TO JOISTS		
BEAM CLAMP NOT TRAPEZED	THRU-BOLT NOT TRAPEZED	BEAM CLAMP TRAPEZED
4" PIPE EVERY 12'-0" EVERY OTHER JOIST 6" PIPE EVERY 6'-0" EVERY JOIST 8" PIPE NOT ALLOWED	4" PIPE EVERY 12'-0" EVERY OTHER JOIST 6" PIPE EVERY 12'-0" EVERY OTHER JOIST 8" PIPE EVERY 6'-0" EVERY JOIST	4" PIPE NOT NECESSARY 6" PIPE NOT NECESSARY 8" PIPE EVERY 6'-0" EVERY JOIST

PIPE RUNNING PERPENDICULAR TO JOISTS

MAXIMUM HANGER SPACING FOR PIPES PARALLEL TO JOISTS		
4" PIPE EVERY 12'-0" NOT TRAPEZED BEAM CLAMP	6" PIPE EVERY 12'-0" TRAPEZED THRU BOLT	8" PIPE EVERY 12'-0" TRAPEZED THRU BOLT

PIPE RUNNING PARALLEL TO JOIST

CONTRACTOR MAY SUBSTITUTE ANGLE IRON TRAPEZE MEMBER WITH PIPE MEMBER. SIZE PIPE MEMBER IN ACCORDANCE WITH NFPA-13 AND MAINTAIN 12 INCH MAXIMUM DEFLECTOR DISTANCE

UTILIZE THESE HANGING METHODS FOR ALL SPRINKLER PIPING. SPACE TRAPEZE HANGERS IN ACCORDANCE WITH SCHEDULE. LOCATE HANGERS WITHIN 3 INCHES OF JOIST PANEL POINTS U.N.O.

NOTE: DO NOT SUPPORT SPRINKLER PIPING FROM BOTTOM CHORD OF BAR JOISTS

4 SPRINKLER PIPE SUPPORT
NTS

7 DRUM DRIP/AUXILIARY DRAIN/INSPECTOR'S TEST
NTS

NOTE:
SPRINKLERS MUST BE INSTALLED TO MEET OBSTRUCTION REQUIREMENTS PER NFPA 13 STANDARD COVERAGE SPRAY SPRINKLERS. EXISTING SPRINKLERS THAT ARE LOCATED OUTSIDE OF THE PERIMETER SOFFIT ARE TO MEET THE REQUIREMENTS SHOWN IN THIS DETAIL. THE USE OF FLEXIBLE PIPE IS PERMITTED WHERE SPRINKLERS ARE REQUIRED TO BE RELOCATED.

NOTE:
SPRINKLERS SHALL BE COORDINATED WITH LAMLITE CEILING BEAMS,THE PERIMETER SOFFIT AND LINEAR SLOT LIGHTS.

NOTE:
SPRINKLERS LOCATED INSIDE THE PERIMETER SOFFIT SHALL BE INSTALLED SO THAT THE DEFLECTOR OF THE SPRINKLER IS BELOW THE BOTTOM OF THE LAMLITE CEILING BEAMS BUT NOT MORE THAN 1" BELOW THE BOTTOM PORTION OF THE BEAM. ALL EXPOSED PIPE TO BE PAINTED TO MATCH THE BEAM. SPRINKLER DEFLECTOR SHALL NOT EXCEED 12 INCHES BELOW THE CEILING.

IF THE CEILING FEATURE IS INSTALLED ON TOP OF A SPRINKLER OR IF THE RELOCATION AND ADJUSTMENT RULES CANNOT BE APPLIED, AN RFI MUST BE SUBMITTED FOR DIRECTION AND CLARIFICATION

ELEVATION VIEW A

OPTION A INSTALLATION PROCEDURE:
NOTE: ONLY USE THIS OPTION WHEN LAMLITE CEILING BEAMS ARE FLUSH WITH THE CEILING

6 VISION CENTER SOFFIT/LAMLITE
NTS

TYPICAL BRACE ARRANGEMENT

CONTRACTOR MUST USE ATTACHMENTS & SWIVELS WITH A LOAD RATING OF AT LEAST 2015 LBS FOR S-10 PIPE.

TYPICAL BRACE FITTINGS

LATERAL BRACE
LONGITUDINAL BRACE
FOUR WAY BRACE

CONTRACTOR MUST USE ATTACHMENTS & SWIVELS WITH A LOAD RATING OF AT LEAST 2015 LBS FOR S-10 PIPE.

FASTENER DETAILS

(A) STEEL BAR JOIST
1/2" THRU BOLT (60° MIN)
2550 LBS *(1744 LBS MAX)

(B) CMU WALL
1/2" EXPANSION SHIELD / QUICK BOLT (45° MIN)
1782 LBS (1744 LBS MAX)

FASTENER (B) ONLY ALLOWED ON FOUR WAY BRACE WHERE LOAD IS DISTRIBUTED ACROSS TWO CMU ATTACHMENTS

SEISMIC CALCULATIONS BASED ON S-10 MAINS. CONTRACTOR SHALL BE RESPONSIBLE TO REVISE CALCULATIONS AND ADD BRACES AS REQUIRED SHOULD LIGHT WALL PIPING BE USED.

CONTRACTOR MUST USE ATTACHMENTS & SWIVELS WITH A LOAD RATING OF AT LEAST 2015 LBS FOR S-10 PIPE.
WEAKEST LOADS REDUCED PER NFPA-13 FOR 60 DEG. MIN. ANGLE: (2015 LBS / 1.155) = 1744 LBS MAX LOAD

5 SEISMIC BRACING
NTS

ACCEPTABLE CONNECTIONS OF RESTRAINT WIRE TO STEEL FRAMING

ACCEPTABLE HANGER CONFIGURATION TO RESIST UPWARD MOVEMENT

RESTRAIN BRANCH LINES TO SATISFY THE REQUIREMENTS OF NFPA #13 9.3.6
USE NO. 12, 440-LB WIRE INSTALLED AT LEAST 45° FROM THE VERTICAL PLANE AND ANCHORED ON BOTH SIDES OF PIPE. (SEE DETAIL ABOVE FOR ACCEPTABLE CONNECTIONS TO STEEL FRAMING)
WIRE USED FOR RESTRAINT SHALL BE LOCATED WITHIN 2 FT. OF A HANGER. THE HANGER CLOSEST TO A WIRE RESTRAINT SHALL BE OF A TYPE THAT RESISTS UPWARD MOVEMENT OF BRANCH LINE. (SEE DETAIL ABOVE FOR ACCEPTABLE HANGER CONFIGURATION TO RESIST UPWARD MOVEMENT OF PIPE)
THE END SPRINKLER ON A LINE SHALL BE RESTRAINED AGAINST EXCESSIVE VERTICAL AND LATERAL MOVEMENT.
BRANCH LINES SHALL BE RESTRAINED AT INTERVALS NOT EXCEEDING 30 FT.

3 SEISMIC RESTRAINT
NTS

OPTION "A" INSTALLATION PROCEDURE

1. CORE DRILL 2 1/2" DIAMETER HOLE IN THE FREEZER/COOLER INSULATED CEILING PANEL. LOCATE HOLE AND REQUIRED SPRINKLER PROTECTION IN ACCORDANCE WITH NFPA 13 OBSTRUCTION CRITERIA (SSP TYPE SPRINKLERS). MAINTAIN 6" CLEARANCE FROM COOLER SEAMS.
2. INSTALL DRY PENDENT SPRINKLER PER MANUFACTURER'S INSTALLATION REQUIREMENTS.
3. COMPLETELY FILL ANNULAR CEILING OPENING BETWEEN THE ESCUTCHEON AND TOP OF CEILING PANEL WITH OPEN-CELL POLYETHYLENE FOAM BACKER ROD. EXPANDED FOAM IS NOT PERMITTED.
4. INJECT DOW CORNING 739 PLASTIC ADHESIVE SEALANT INTO AND AROUND THE TOP OF THE FREEZER/COOLER CEILING CORE OPENING IN ACCORDANCE WITH SEALANT MANUFACTURER'S INSTRUCTIONS.

OPTION "B" INSTALLATION PROCEDURE

1. CORE DRILL 2 1/2" DIAMETER HOLE IN THE FREEZER/COOLER INSULATED CEILING PANEL. LOCATE HOLE AND REQUIRED SPRINKLER PROTECTION IN ACCORDANCE WITH NFPA 13 OBSTRUCTION CRITERIA (SSP TYPE SPRINKLERS). MAINTAIN 6" CLEARANCE FROM COOLER SEAMS
2. INSTALL TYCO DRY PENDENT SPRINKLER PER MANUFACTURER'S INSTALLATION REQUIREMENTS. INSERT BOOT PRIOR TO MAKE-UP WITH PIPING.
3. COMPLETELY SEAL INTERFACE BETWEEN BOOT FLANGE AND TOP OF FREEZER/COOLER PANEL WITH ADHESIVE PROVIDED WITH BOOT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
4. APPLY STRAP TIES ON BOOT AROUND DRY SPRINKLER BARREL PER MANUFACTURER'S INSTRUCTIONS.

OPTION A
OPTION B

NOTE: CONTRACTOR TO SEAL DRY PENDENT SPRINKLERS AT FREEZER/COOLER USING ONE OF THE OPTIONS ABOVE. NO OTHER SEALANTS ARE PERMITTED

2 FREEZER COOLER K11.2 DRY PENDENT
NTS

ALL FIRE PROTECTION TO REMAIN. NO NEW WORK UNLESS NOTED OTHERWISE. FIRE RISER DETAIL FOR REFERENCE ONLY.

1 EXISTING FIRE RISER ROOM
1/2" = 1'-0"

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RANDY A. ROBERSON
33783

Randy A. Roberson
NICET Level III #78260

JASPER FIRE PROTECTION, INC.
POST OFFICE BOX 1548
JASPER, ALABAMA 35502
PHONE: 770-546-4951 FAX: 866-591-7621

ISSUE BLOCK

Date: 10/26/25
Scale: AS NOTED
Drawn By: JRP

Walmart
CAMERON, NC
2800 NC HWY 24-87
STORE NO: 06958.1000

FIRE PROTECTION DETAILS

SHEET:
FP3

Harnett COUNTY NORTH CAROLINA

Emergency Services Department
www.harnett.org

Fire Marshal Division
P.O. Box 370
Lillington, NC 27546
910-893-7580

Application for Plan Review

Permit Type: Automatic Fire Extinguishing System - Fixed Fire Suppression Systems/Sprinkler

Date Received: _____ Received By: _____

Name of Project: Walmart 6958 Cameron, NC

Physical Address of Project: 2800 NC-24 #87 Cameron, NC 28326

Plans Submitted By: Lydia Young

Project Phone: (205)-512-4895

Contact Person/Address: 128 Hollis Crump Drive
Jasper, AL 35501

Contact Phone: (205)-512-4895 (_____)-_____-_____

Contractor's Name/Info: Jasper Fire Protection, Inc
128 Hollis Crump Drive, Jasper, AL 35501

Contractor's Phone: (205)-512-4895

Contact Email: jasperfire@yahoo.com

- **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 : Opt. 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.**

JASPER FIRE PROTECTION, INC.
P.O. BOX 1548
JASPER, AL 35502
PH: (205) 388-3110 FAX: (866) 591-7621

Job Name	:	Walmart
Building	:	06958 Cameron, NC
Location	:	Pickup Storage
System	:	
Contract	:	
Data File	:	06958 CANC - System 5 - RA A - UL12022002 - 12@15.WXF

Water Supply Curve

Walmart

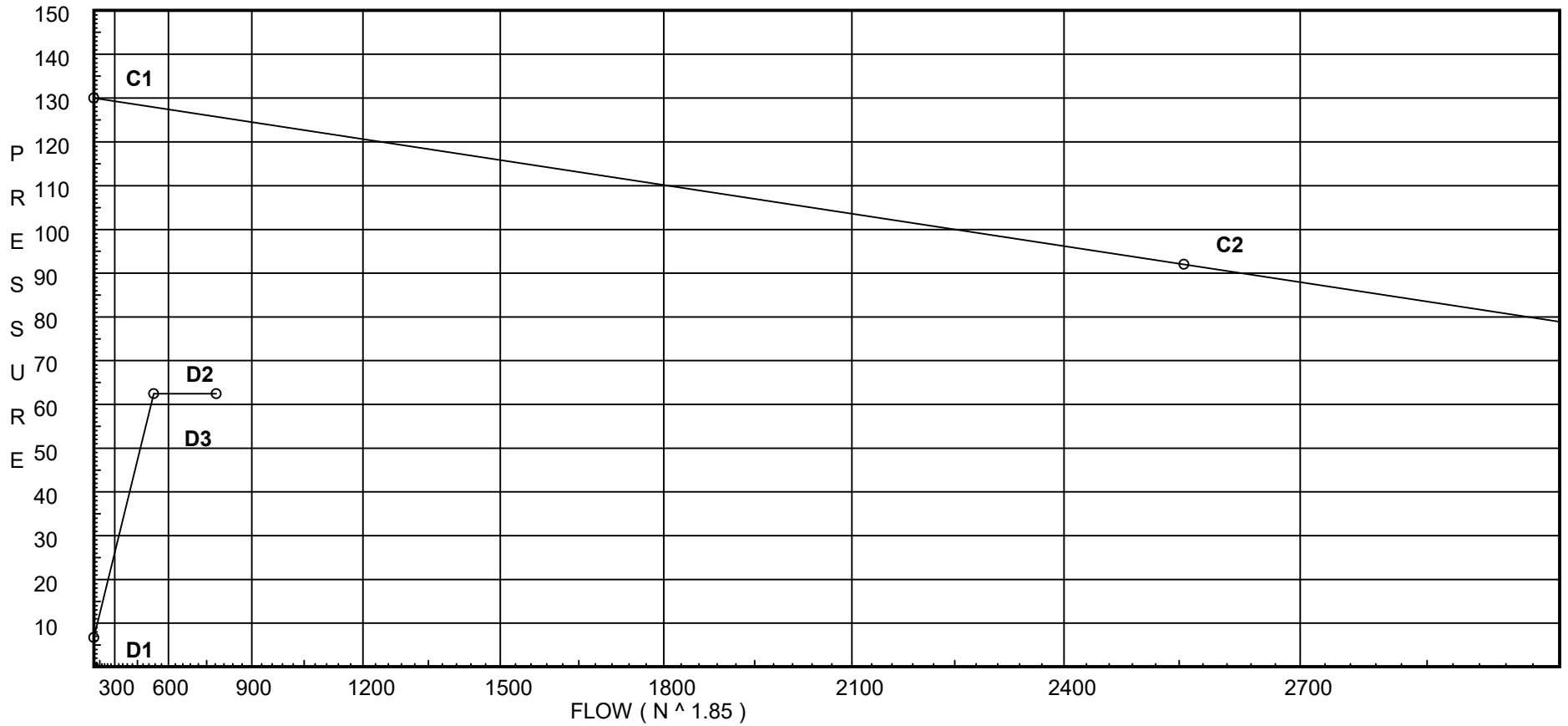
Date

City Water Supply:

C1 - Static Pressure	: 130
C2 - Residual Pressure	: 92
C2 - Residual Flow	: 2556

Demand:

D1 - Elevation	: 6.709
D2 - System Flow	: 533.903
D2 - System Pressure	: 62.449
Hose (Demand)	: 250
D3 - System Demand	: 783.903
Safety Margin	: 63.284



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
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
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
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
Zcj	Colt C500 Horz OSY	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.

SUPPLY ANALYSIS

Node at Source	Static Pressure	Residual Pressure	Flow	Available Pressure	Total Demand	Required Pressure
SRC	130.0	92	2556.0	125.732	783.9	62.449

NODE ANALYSIS

Node Tag	Elevation	Node Type	Pressure at Node	Discharge at Node	Notes	
5A05	15.49	11.2	15.0	43.38	0.1	20
5A06	15.49	11.2	15.17	43.62	0.1	20
5A07	15.49	11.2	15.78	44.49	0.1	20
5A08	15.49	11.2	17.09	46.3	0.1	20
T52	15.49		29.51			
52	14.3		33.01			
53	14.51		33.19			
54	14.76		38.18			
55	15.07		38.68			
56	15.33		38.96			
57	15.62		40.51			
58	15.89		40.59			
59	16.19		40.61			
510	16.48		40.59			
511	16.78		40.52			
512	17.08		40.42			
513	17.37		40.3			
523	17.37		42.09			
524	17.83		42.28			
TR5	6.53		48.2			
BR5	3.58		50.63	100.0		
FLG	1.52		51.81			
SRC	0.0		62.45	150.0		
5A01	15.27	11.2	15.01	43.39	0.1	20
5A02	15.27	11.2	15.18	43.64	0.1	20
5A03	15.27	11.2	15.79	44.5	0.1	20
5A04	15.27	11.2	17.1	46.31	0.1	20
T51	15.27		29.53			
51	14.09		33.03			
5A09	15.71	11.2	15.08	43.5	0.1	20
5A10	15.71	11.2	15.25	43.74	0.1	20
5A11	15.71	11.2	15.87	44.61	0.1	20
5A12	15.71	11.2	17.18	46.42	0.1	20
T53	15.71		29.67			
514	14.76		42.81			
515	15.07		42.68			
516	15.33		42.57			
517	15.62		42.47			
518	15.89		42.38			
519	16.19		42.3			
520	16.48		42.23			
521	16.78		42.17			

NODE ANALYSIS (cont.)

Node Tag	*Elevation*	*Node Type*	*Pressure at Node*	*Discharge at Node*	*Notes*
522	17.08		42.12		

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
5A05	15.49	11.20	43.38	2			10.340	120	15.000	
to									0.0	
5A06	15.49		43.38	2.157			10.340	0.0162	0.168	Vel = 3.81
5A06	15.49	11.20	43.62	2			10.330	120	15.168	
to									0.0	
5A07	15.49		87.0	2.157			10.330	0.0591	0.610	Vel = 7.64
5A07	15.49	11.20	44.49	2			10.330	120	15.778	
to									0.0	
5A08	15.49		131.49	2.157			10.330	0.1267	1.309	Vel = 11.54
5A08	15.49	11.20	46.29	2	T	12.307	43.820	120	17.087	
to							12.307		0.0	
T52	15.49		177.78	2.157			56.127	0.2214	12.424	Vel = 15.61
T52	15.49		0.0	2	T	12.307	1.190	120	29.511	
to							12.307		0.515	
52	14.3		177.78	2.157			13.497	0.2214	2.988	Vel = 15.61
52	14.3		177.85	4			9.250	120	33.014	
to									-0.091	
53	14.51		355.63	4.26			9.250	0.0290	0.268	Vel = 8.01
53	14.51		178.27	4	5E	65.835	17.050	120	33.191	
to							65.835		-0.108	
54	14.76		533.9	4.26			82.885	0.0616	5.102	Vel = 12.02
54	14.76		-80.43	4			13.920	120	38.185	
to									-0.134	
55	15.07		453.47	4.26			13.920	0.0455	0.633	Vel = 10.21
55	15.07		-74.31	4			11.750	120	38.684	
to									-0.113	
56	15.33		379.16	4.26			11.750	0.0327	0.384	Vel = 8.53
56	15.33		-70.47	4	2E	26.334	48.740	120	38.955	
to							26.334		-0.126	
57	15.62		308.69	4.26			75.074	0.0224	1.678	Vel = 6.95
57	15.62		-46.99	4			12.000	120	40.507	
to									-0.117	
58	15.89		261.7	4.26			12.000	0.0164	0.197	Vel = 5.89
58	15.89		-44.78	4			13.250	120	40.587	
to									-0.130	
59	16.19		216.92	4.26			13.250	0.0116	0.154	Vel = 4.88
59	16.19		-43.28	4			13.250	120	40.611	
to									-0.126	
510	16.48		173.64	4.26			13.250	0.0078	0.103	Vel = 3.91
510	16.48		-42.64	4			13.260	120	40.588	
to									-0.130	
511	16.78		131.0	4.26			13.260	0.0045	0.060	Vel = 2.95
511	16.78		-42.75	4			13.250	120	40.518	
to									-0.130	
512	17.08		88.25	4.26			13.250	0.0023	0.030	Vel = 1.99
512	17.08		-43.51	4			13.250	120	40.418	
to									-0.126	
513	17.37		44.74	4.26			13.250	0.0006	0.008	Vel = 1.01
513	17.37		0.0	2.5	2T	32.948	242.830	120	40.300	
to							32.948		0.0	
523	17.37		44.74	2.635			275.778	0.0065	1.794	Vel = 2.63

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
523	17.37		489.16	6	E	17.603	26.190	120	42.094	
to							17.603		-0.199	
524	17.83		533.9	6.357			43.793	0.0088	0.384	Vel = 5.40
524	17.83		0.0	8	5E	105.706	311.833	120	42.279	
to							105.706		4.894	
TR5	6.53		533.9	8.249			417.539	0.0025	1.029	Vel = 3.21
TR5	6.53		0.0	8	T	41.108	13.583	120	48.202	
to					G	4.698	45.806		2.278	* * Fixed Loss = 1
BR5	3.58		533.9	8.249	Fsp	0.0	59.389	0.0025	0.146	Vel = 3.21
BR5	3.58	H100	100.00	8	S	52.853	7.270	120	50.626	
to					E	21.141	78.692		0.892	
FLG	1.52		633.9	8.249	G	4.698	85.962	0.0034	0.291	Vel = 3.81
FLG	1.52		0.0	8	5E	142.34	473.980	140	51.809	
to					2T	110.709	253.049		8.813	* * Fixed Loss = 8.154
SRC	0		633.9	8.27	Zcj	0.0	727.029	0.0025	1.827	Vel = 3.79
			150.00							Qa = 150.00
SRC			783.90						62.449	K Factor = 99.20
5A01	15.27	11.20	43.39	2			10.340	120	15.011	
to									0.0	
5A02	15.27		43.39	2.157			10.340	0.0163	0.169	Vel = 3.81
5A02	15.27	11.20	43.64	2			10.330	120	15.180	
to									0.0	
5A03	15.27		87.03	2.157			10.330	0.0591	0.610	Vel = 7.64
5A03	15.27	11.20	44.50	2			10.330	120	15.790	
to									0.0	
5A04	15.27		131.53	2.157			10.330	0.1267	1.309	Vel = 11.55
5A04	15.27	11.20	46.32	2	T	12.307	43.820	120	17.099	
to							12.307		0.0	
T51	15.27		177.85	2.157			56.127	0.2215	12.433	Vel = 15.62
T51	15.27		0.0	2	T	12.307	1.180	120	29.532	
to							12.307		0.511	
51	14.09		177.85	2.157			13.487	0.2215	2.987	Vel = 15.62
51	14.09		0.0	4			9.250	120	33.030	
to									-0.091	
52	14.3		177.85	4.26			9.250	0.0081	0.075	Vel = 4.00
			0.0							
52			177.85						33.014	K Factor = 30.95
5A09	15.71	11.20	43.50	2			10.330	120	15.084	
to									0.0	
5A10	15.71		43.5	2.157			10.330	0.0164	0.169	Vel = 3.82
5A10	15.71	11.20	43.74	2			10.330	120	15.253	
to									0.0	
5A11	15.71		87.24	2.157			10.330	0.0592	0.612	Vel = 7.66
5A11	15.71	11.20	44.61	2			10.330	120	15.865	
to									0.0	
5A12	15.71		131.85	2.157			10.330	0.1274	1.316	Vel = 11.58
5A12	15.71	11.20	46.42	2	T	12.307	43.810	120	17.181	
to							12.307		0.0	
T53	15.71		178.27	2.157			56.117	0.2225	12.485	Vel = 15.65

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
T53	15.71		0.0	2	T	12.307	1.200	120	29.666	
to							12.307		0.520	
53	14.51		178.27	2.157			13.507	0.2225	3.005	Vel = 15.65
			0.0							
53			178.27						33.191	K Factor = 30.94
54	14.76		80.43	2.5	2T	32.948	207.090	120	38.185	
to							32.948		0.0	
514	14.76		80.43	2.635			240.038	0.0193	4.621	Vel = 4.73
514	14.76		0.0	6			13.920	120	42.806	
to									-0.134	
515	15.07		80.43	6.357			13.920	0.0003	0.004	Vel = 0.81
515	15.07		74.31	6			11.750	120	42.676	
to									-0.113	
516	15.33		154.74	6.357			11.750	0.0009	0.010	Vel = 1.56
516	15.33		70.47	6			13.000	120	42.573	
to									-0.126	
517	15.62		225.21	6.357			13.000	0.0018	0.024	Vel = 2.28
517	15.62		46.99	6			12.000	120	42.471	
to									-0.117	
518	15.89		272.2	6.357			12.000	0.0025	0.030	Vel = 2.75
518	15.89		44.78	6			13.250	120	42.384	
to									-0.130	
519	16.19		316.98	6.357			13.250	0.0033	0.044	Vel = 3.20
519	16.19		43.28	6			13.250	120	42.298	
to									-0.126	
520	16.48		360.26	6.357			13.250	0.0043	0.057	Vel = 3.64
520	16.48		42.64	6			13.260	120	42.229	
to									-0.130	
521	16.78		402.9	6.357			13.260	0.0052	0.069	Vel = 4.07
521	16.78		42.76	6			13.250	120	42.168	
to									-0.130	
522	17.08		445.66	6.357			13.250	0.0063	0.083	Vel = 4.50
522	17.08		43.50	6			13.250	120	42.121	
to									-0.126	
523	17.37		489.16	6.357			13.250	0.0075	0.099	Vel = 4.94
			0.0							
523			489.16						42.094	K Factor = 75.39
55	15.07		74.31	2.5	2T	32.948	207.090	120	38.684	
to							32.948		0.0	
515	15.07		74.31	2.635			240.038	0.0166	3.992	Vel = 4.37
			0.0							
515			74.31						42.676	K Factor = 11.38
56	15.33		70.47	2.5	2T	32.948	207.090	120	38.955	
to							32.948		0.0	
516	15.33		70.47	2.635			240.038	0.0151	3.618	Vel = 4.15
			0.0							
516			70.47						42.573	K Factor = 10.80
57	15.62		46.99	2.5	2T	32.948	242.830	120	40.507	
to							32.948		0.0	
517	15.62		46.99	2.635			275.778	0.0071	1.964	Vel = 2.76

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	******* Notes ******
			0.0							
517			46.99						42.471	K Factor = 7.21
58	15.89		44.78	2.5	2T	32.948	242.830	120	40.587	
to							32.948		0.0	
518	15.89		44.78	2.635			275.778	0.0065	1.797	Vel = 2.63
			0.0							
518			44.78						42.384	K Factor = 6.88
59	16.19		43.28	2.5	2T	32.948	242.830	120	40.611	
to							32.948		0.0	
519	16.19		43.28	2.635			275.778	0.0061	1.687	Vel = 2.55
			0.0							
519			43.28						42.298	K Factor = 6.65
510	16.48		42.64	2.5	2T	32.948	242.830	120	40.588	
to							32.948		0.0	
520	16.48		42.64	2.635			275.778	0.0060	1.641	Vel = 2.51
			0.0							
520			42.64						42.229	K Factor = 6.56
511	16.78		42.76	2.5	2T	32.948	242.830	120	40.518	
to							32.948		0.0	
521	16.78		42.76	2.635			275.778	0.0060	1.650	Vel = 2.52
			0.0							
521			42.76						42.168	K Factor = 6.58
512	17.08		43.51	2.5	2T	32.948	242.830	120	40.418	
to							32.948		0.0	
522	17.08		43.51	2.635			275.778	0.0062	1.703	Vel = 2.56
			0.0							
522			43.51						42.121	K Factor = 6.70

PAV-W/WS

ECS Ejector Automatic Air Vent

Engineered Corrosion Solutions

Features

ECS Ejector Automatic Air Vent (U.S. Patents No. 8,636,023)

- Patented redundant float design - eliminates piping to a drain
- Quick Connect - Easy installation and maintenance
- Pressure Gauge - Visual monitoring from the floor
- Isolation Ball Valve Included
- Available in Supervised (PAV-WS)

FM APPROVED

UL LISTED

General Description

The ECS Ejector Automatic Air Vent (PAV-W/WS) is a device that provides automatic venting of trapped air in wet pipe fire sprinkler systems. As a fire sprinkler system is filled with water, trapped air migrates to the high point of the system near the vent installation location which allows for trapped air to be vented. Trapped air contains oxygen which is the primary cause of corrosion in fire sprinkler systems. Corrosion in wet pipe fire sprinkler systems is directly proportional to the amount of oxygen trapped within the system piping, so a reduction in trapped air will in turn reduce the internal corrosion activity of the fire sprinkler system. Venting the trapped air in a wet pipe sprinkler system can improve water delivery time and reduce false water flow alarms.

The float mechanism on the ECS Ejector Automatic Air Vent will automatically close when water reaches the vent and the redundant design eliminates the need to plumb the PAV-W/WS to drain. If the primary float valve allows any significant amount of water to leak past it, the second float valve will close preventing water from discharging and provide a system pressure reading on the pressure gauge. This condition will be an indication that the primary automatic gas vent valve has failed and requires service or replacement. The pressure gauge is designed to be visible from the floor below the ECS Ejector Automatic Air Vent from a distance of approximately 30 feet.

There are two available models of the ECS Ejector Automatic Air Vent: PAV-W and PAV-WS. The units both operate as described previously; however, the PAV-WS includes a single contact rated 24VAC/DC @ 2A for electronic monitoring. When connected to a building alarm system, connect the contact of the PAV-WS using the appropriate end-of-line supervision device, as required by the building alarm manufacture.

Specifications

Dimensions	8" (W) x 7" (H) x 6" (D)
Weight	7 Lbs*
Service Pressure	Up to 175 PSIG (12 Bar)
System Connection	½" NPT Male
Temperature Range	40˚F - 270˚F (5˚C - 132˚C)
Clear Height	5"

*Support Hanger Not Required

Installation

The ECS Ejector Automatic Air Vent must be installed as shown on the engineering design documents. If a location is not provided, install the vent at an accessible high point on the fire sprinkler system remote from the system riser where gas can be vented and at a location that the pressure gauge provided for visual monitoring can be viewed from directly below. The PAV-W/WS is also equipped with brass components that allows the device to be installed in areas subject to external corrosion. For detailed installation and operation please refer to the PAV-W/WS installation sheet.

Maintenance

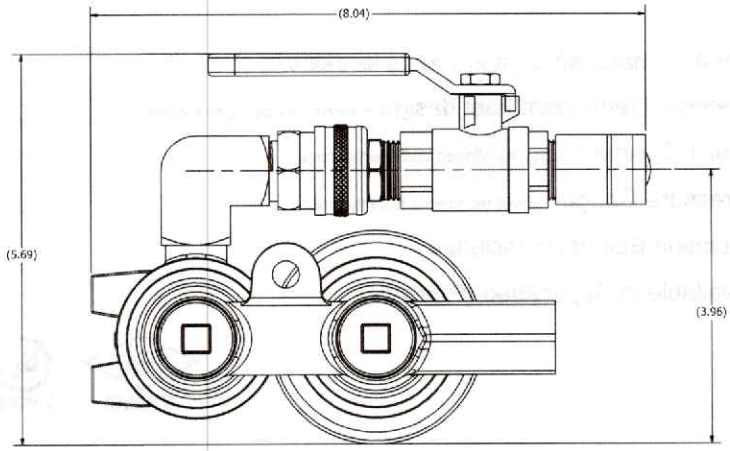
ECS Ejector Automatic Air Vent (PAV-W/WS) require limited maintenance. ECS recommends inspecting annually, check the pressure gauge on the bottom of the vent assembly.

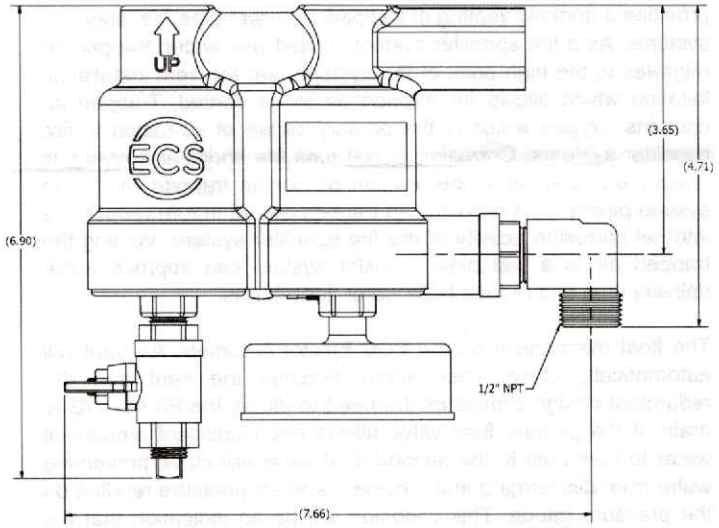
Engineered Corrosion Solutions • 11336 Lackland Road St. Louis, MO 63146 • Phone: 314.432.1377 • www.ecscorrosion.com

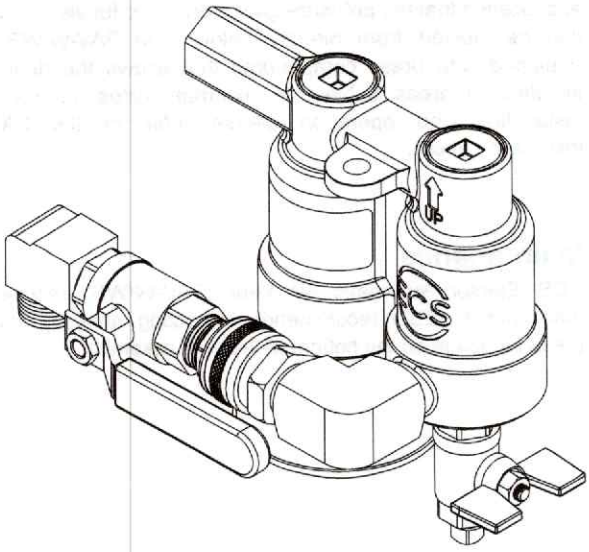
PAV-W/WS

ECS Ejector Automatic Air Vent

Engineered Corrosion Solutions







COLLECTANDRAIN®

Model 5100/5200

QUALITY COMPONENTS FOR FIRE SPRINKLER SYSTEMS

Dry and Pre-Action System Auxiliary Drains with Anti-Trip Plate

The AGF COLLECTANDRAIN Model 5100 and 5200 are fully assembled auxiliary drains (drum drips, low-point drains) designed to collect moisture that condenses in dry and pre-action fire sprinkler systems, while minimizing the system's air pressure loss when draining.

The Model 5100 and 5200 both feature a patented Anti-Trip Plate (ATP). The ATP prevents the opening of the supply valve or drain valve unless the opposite valve is in the closed position, as per NFPA standard. This prevents improper maintenance and deters vandalism. The Model 5100 includes a water detector that sounds an audible alarm and flashes a visual alert when water has been detected. This helps notify personnel that draining is required and helps to prevent freeze-ups in colder months. The water detector can be wired to a BMS or a fire control panel for remote notification. COLLECTANDRAIN Auxiliary Drains are made with galvanized or black steel piping components, and offer locking kits for added security.

Features

- Galvanized or Black Steel Piping Components
- Fully Assembled
- Easy Installation
- Highly Visible NFPA Signage
- Prevents Improper Maintenance
- Deters Vandalism
- BMS or Fire Control Panel Integration
- Optional 110V Plug-In
- Locking Kits Available

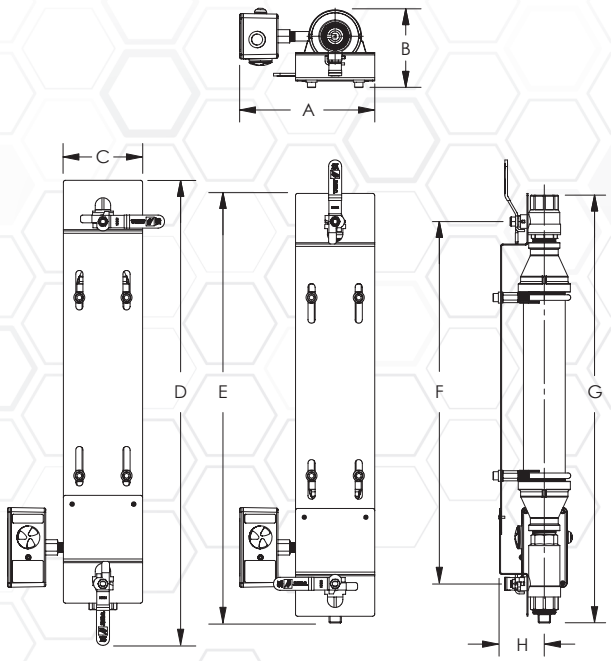
M5100 M5200

Models

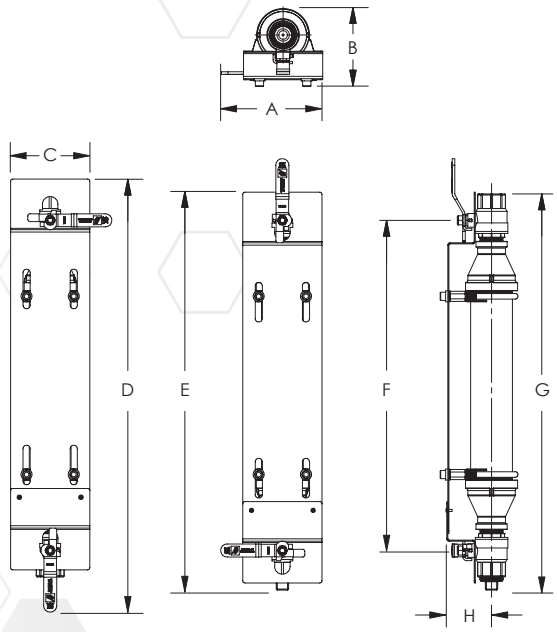
Part Numbers		
Piping	**with Water Detector**	**without Water Detector**
Galvanized	5100A	5200A
Black Steel	5100B	5200B

Dimensions

M5100



M5200



Model	A	B	C	D	E	F	G	H
5100	7⅝" (195 mm)	4⅜" (112 mm)	4½" (114 mm)	26⅜" (671 mm)	24⅜" (620 mm)	20⅝" (523 mm)	24¼" (617 mm)	2⅞" (74 mm)
5200	6½" (165 mm)	4⅜" (112 mm)	4½" (114 mm)	24⅝" (625 mm)	22⅝" (574 mm)	18⅞" (480 mm)	22½" (572 mm)	2⅞" (74 mm)

Sizes have been rounded to the highest millimeter

USA Patent and Other Patents Pending

For use on dry and pre-action fire sprinkler systems.

Valve Size

1"

Connections

Inlet..... NPT
Outlet..... NPT

Installation Orientation

Vertical

Electrical Requirements

5100..... 9V, 12-24V DC, or 110V AC
5200.....None

Materials

Body ..... Galvanized or Black Steel
Anti-Trip Plate..... Steel
Valves ..... Brass
Handles ..... Steel
Drain Plug..... Steel

Rating

300 PSI

Compliance

NFPA 13
NYC-BSA No. 720-87-SM

Approvals

UL/ULC (EX27218)
FM

AGF Manufacturing Inc.
100 Quaker Lane, Malvern, PA 19355
Phone: 610-240-4900
Fax: 610-240-4906
www.agfmfg.com

Job Name: _____
Architect: _____
Engineer: _____
Contractor: _____

BULL MOOSE TUBE

SCHEDULE 10 & 40 SPRINKLER PIPE SUBMITTAL DATA SHEET

APPROVALS AND SPECIFICATIONS

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

FINISHES AND COATINGS

- Schedule 10 & 40 Sprinkler Pipe receives an OD mill coating of water-based paint which has corrosion protection expected with a painted carbon steel product, i.e. it would be expected to resist corrosion for an extended and indefinite period in a clean and dry environment and, as environmental conditions deteriorate, the corrosion protection would also diminish.
- Schedule 10 & 40 Sprinkler Pipe (black) receives an ID mill coating of Eddy Guard II MIC preventative coating. EG2 has been tested at independent laboratories to resist bacterial growth and maintain minimal bacterial count after multiple flushes (25) of the pipe.
- Schedule 10 & 40 Sprinkler Pipe when Hot Dip Galvanized by ASTM A123 and supplied by Bull Moose Tube is UL listed and FM approved.

PRODUCT IDENTIFICATION

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

	Nominal Pipe Size (inches)	1	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	6"**	8"**
Schedule 10	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500	6.625	8.625
	I.D. (in)	1.097	1.442	1.682	2.157	2.635	3.260	4.260	6.357	8.249
	Empty Weight (lb/ft)	1.410	1.810	2.090	2.640	3.530	4.340	5.620	9.290	16.940
	Water Filled Weight (lb/ft)	1.800	2.518	3.053	4.223	5.893	7.957	11.796	23.038	40.086
	C.R.R.*	15.27	9.91	7.76	6.27	4.92	3.54	2.50	1.158	1.805
	Pieces per Lift	91	61	61	37	30	19	19	10	7
Schedule 40	O.D. (in)	1.315	1.660	1.900	2.375	2.875	3.500	4.500		
	I.D. (in)	1.049	1.380	1.610	2.067	2.469	3.068	4.026		
	Empty Weight (lb/ft)	1.680	2.270	2.720	3.660	5.800	7.580	10.800		
	Water Filled Weight (lb/ft)	2.055	2.918	3.602	5.114	7.875	10.783	16.316		
	C.R.R.*	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
	Pieces per Lift	70	51	44	30	30	19	19		

*Calculated using Standard UL CRR formula, UL Fire Protection Directory, Category VIZY **Not Eddy Guard II treated/Not produced by BMT

SUBMITTAL INFORMATION

Project

Contractor

Engineer

Specification Reference

Date

System Type

Locations

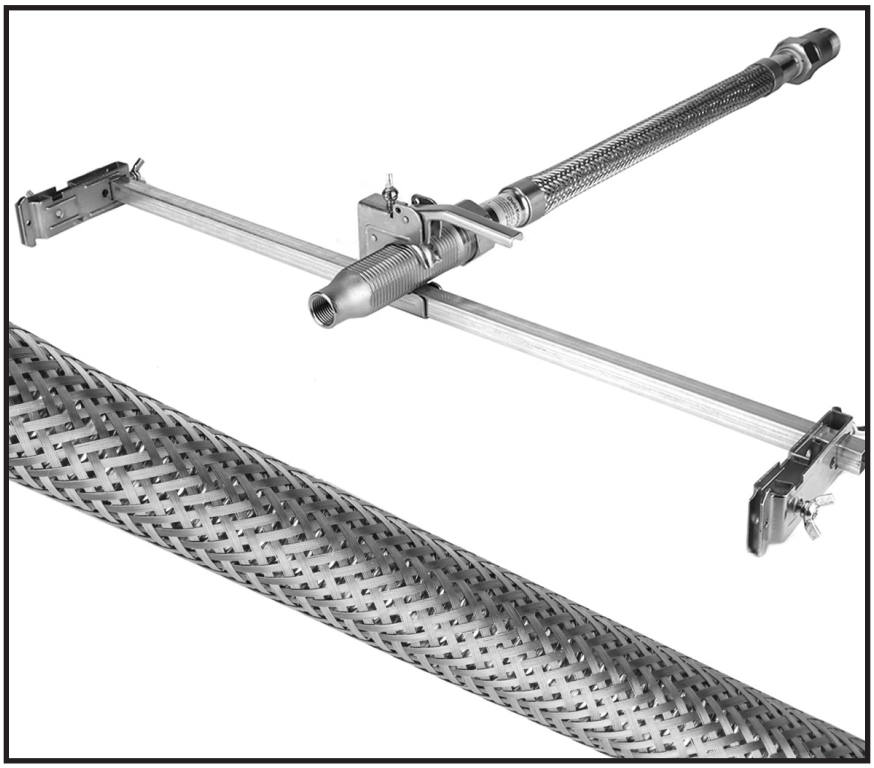
Comments

◯ Schedule 10 - Black ◯ Schedule 10 - Hot Dip Galvanized ◯ Schedule 40 - Black ◯ Schedule 40 - Hot Dip Galvanized

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

FLEXIBLE SPRINKLER DROP HOSE
3-BEND BRAIDED CONNECTIONS

ARGCO
ARGCO.com 800-854-1015



- **Save Time & Money**
- **No cutting, no welding, no threading**
- **Perfect for retrofit applications**
- **Easy to move for layout changes**
- **Most flexible hose in its class.**
  UL: 3 bends 4” minimum radius

Full assembly includes Stainless Steel Braided Hose, Reducing Discharge Nipple, 1" Inlet Nipple, Hinged Lever Center Bracket, two End Brackets & 24" Square Bar

TECHNICAL DATA

- Rated Pressure: 203 PSI (14 Bars)
- Maximum Ambient Temperature: 225°F (107°C)
- Designed for use in wet and dry systems
- Flexibility Type: Unlimited
- Hose Diameter: O.D. 1-1/16” / Flow 13/16”

c UL us LISTED

FM APPROVED

Friction Loss Data and Specifications

Model	Length	NPT	ITEM #	Equivalent Length of 1 ft Sch 40 Pipe					
				c UL us LISTED			FM APPROVED		
				UL	Max. # of Bends	Min. Bending Radius	FM	Max. # of Bends	Min. Bending Radius
AR-BR FLEX-07-050	28” (0.6 m)	1/2”	6530165A	25 ft	2	4”	26.7 ft	1	10”
AR-BR FLEX-10-050	40” (0.9 m)	1/2”	6530166A	33 ft	3	4”	42.6 ft	2	10”
AR-BR FLEX-12-050	48” (1.2 m)	1/2”	6530167A	39 ft	3	4”	53.2 ft	3	10"
AR-BR FLEX-15-050	60” (1.5 m)	1/2”	6530168A	50 ft	3	4”	67.8 ft	3	10”
AR-BR FLEX-18-050	72” (1.8 m)	1/2”	6530169A	58 ft	3	4”	82.4 ft	4	10”
AR-BR FLEX-07-075	28” (0.6 m)	3/4”	6530175A	21 ft	2	4”	22.1 ft	1	10”
AR-BR FLEX-10-075	40” (0.9 m)	3/4”	6530176A	36 ft	3	4”	40.6 ft	2	10”
AR-BR FLEX-12-075	48” (1.2 m)	3/4”	6530177A	43 ft	3	4”	53.0 ft	3	10”
AR-BR FLEX-15-075	60” (1.5 m)	3/4”	6530178A	52 ft	3	4”	64.2 ft	3	10”
AR-BR FLEX-18-075	72” (1.8 m)	3/4”	6530179A	63 ft	3	4”	75.5 ft	4	10”

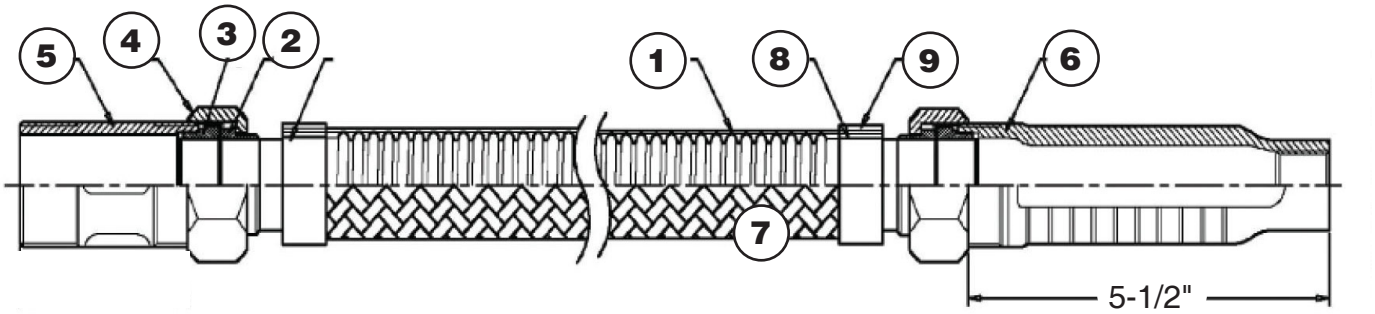
Anchoring components are intended for use with drop ceilings conforming to ASTM C635 and other major standards when installed in accordance with the standard practice for installation of metal ceiling suspension systems for acoustical tile and lay-in panel, ASTMC C635 or other equivalent standards.

System No.		Location		Spec Section		Paragraph	
Submitted By		Date		Approved		Date	

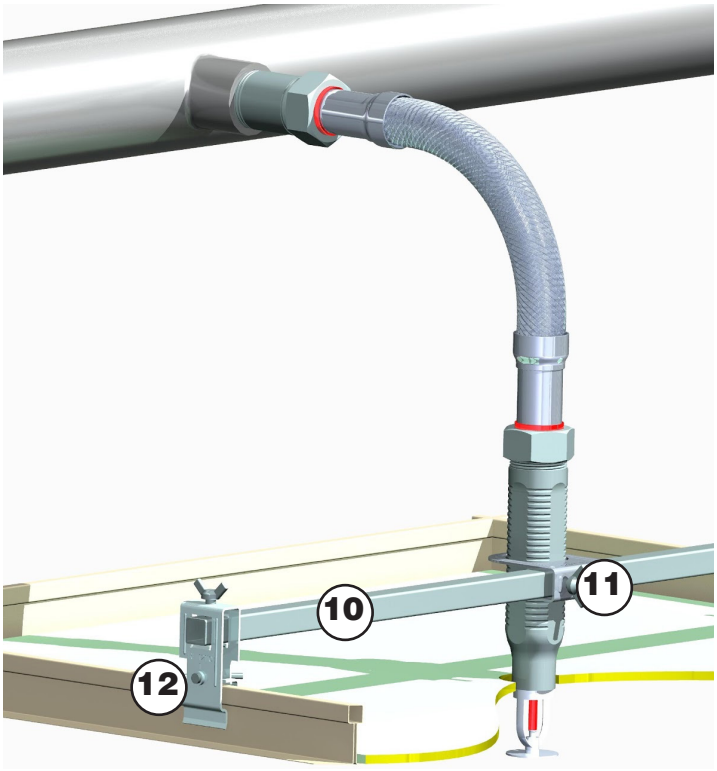
ARGCO
ARGCO.com 800-854-1015

FLEXIBLE SPRINKLER DROP HOSE
BRAIDED CONNECTIONS

COMPONENTS:



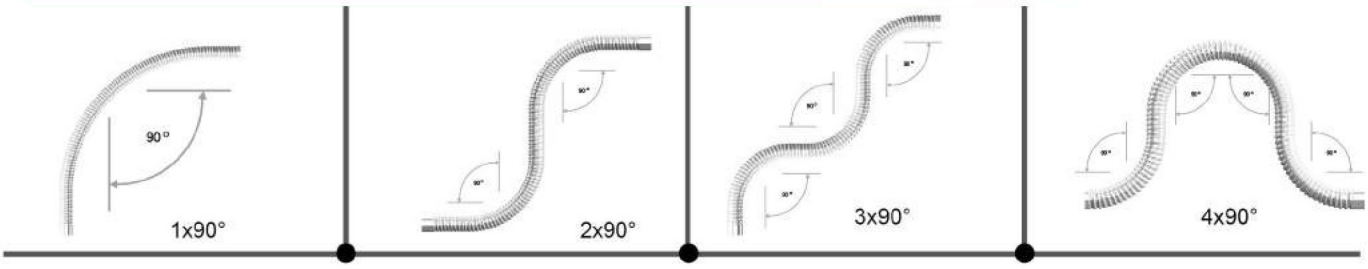
1.	FLEXIBLE TUBE	304 STAINLESS STEEL
2.	ISOLATION RING	NYLON 66
3.	SEALING GASKET	EPDM
4.	NUT	ZINC PLATED STEEL
5.	NIPPLE 1"	ZINC PLATED STEEL
6.	REDUCING NIPPLE	ZINC PLATED STEEL
7.	BRAID	304 STAINLESS STEEL
8.	COLLAR RING (INNER)	304 STAINLESS STEEL
9.	COLLAR RING (OUTER)	304 STAINLESS STEEL
10.	SQUARE BAR	ZINC PLATED STEEL
11.	CENTER BRACKET	ZINC PLATED STEEL
12.	4" END BRACKET(S)	ZINC PLATED STEEL



CHARACTERISTICS:

•Minimum bend radius Braided 3” (230 mm)
•Flexibility Type: Limited

HOSE BENDING PARAMETERS

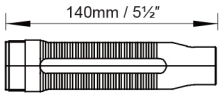


FLEXIBLE SPRINKLER DROP HOSE
BRAIDED CONNECTIONS

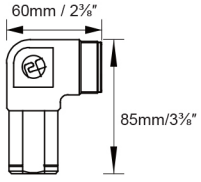
INSTALLATION CLEARANCE

This data sheet indicates the minimum distance for Flex Hose installation between the building room and ceiling tiles. Unless otherwise specified, all figures include 25 mm / 1" operation space.

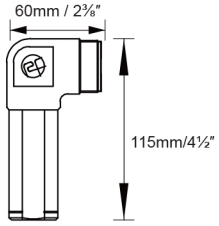
Grid type	Side bracket	Straight reducer%		Cast elbow short$		Cast elbow long*		Elbow reducer+	
		concealed sprinkler	pendent sprinkler	concealed sprinkler	pendent sprinkler	concealed sprinkler	pendent sprinkler	concealed sprinkler	pendent sprinkler
T-bar grid 	RF-12210/30 Long S. bracket	1.1	2.1	/	/	1.4	/	1.7	/
	RF-12110/30 Short S. bracket	/	2.2	1.2	/	/	2.4	/	2.6
	RF-12510 B-shape S. bracket	/	2.3	1.3	/	/	2.5	/	2.7
C-beam 	RF-12610/30 C-clamp	/	4.2	/	4.3	/	4.5	/	4.7
	RF-12510 B-shape S. bracket	/	4.1	3.1	/	3.2	4.4	/	4.6
	RF-12210/30 Long S. bracket	3.3	4.8	/	/	/	3.4	/	4.7
	RF-12110/30 Short S. bracket	/	4.9	3.5	/	3.6	4.10	/	4.11
Hat furring channel 	RF-12310 Hat furring channel bracket	5.1	6	/	/	5.2	/	5.3	/



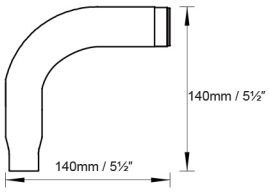
Mark %: Straight reducer includes RF-13102/202, 13103/203, 13109/209, 13110/210



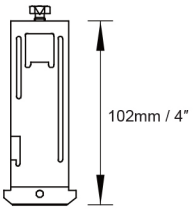
Mark $: Cast elbow short includes RF-13137/237, 13138/238;



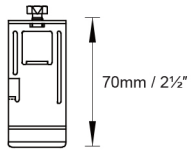
Mark *: Cast elbow long includes RF-13147/247, 13148/248;



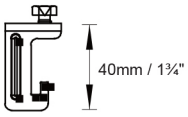
Mark +: Elbow reducer includes RF-13104/204, 13105/205



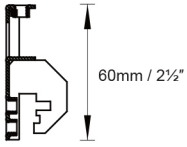
RF-12210/30
Long side bracket



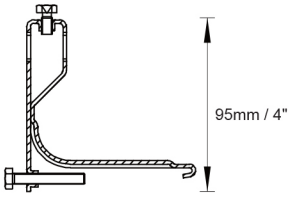
RF-12110/30
Short side bracket



RF-12610/30 C-clamp



RF- 12510
B-shape side bracket



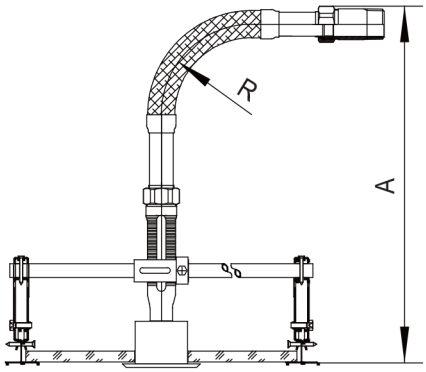
RF-12310
Hat furring channel bracket

FLEXIBLE SPRINKLER DROP HOSE
BRAIDED CONNECTIONS

INSTALLATION CLEARANCE

This data sheet indicates the minimum distance for Flex Hose installation between the building room and ceiling tiles. Unless otherwise specified, all figures include 25 mm / 1" operation space.

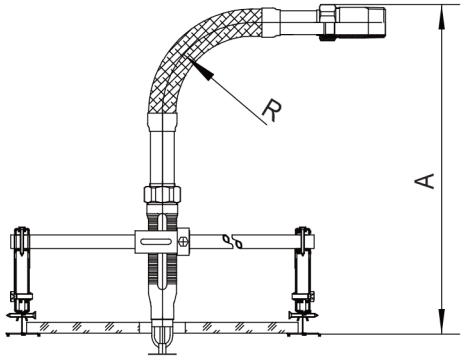
Concealed sprinklers on T-bar grid



Straight Reducer with Long End Bracket

Installation Clearance			
		UL	FM
R	Minimum bend radius	3.9"	5.8"
A	Minimum	15.4"	22.0"

Pendent sprinklers on T-bar grid



Straight Reducer with Long End Bracket

Installation Clearance			
		UL	FM
R	Minimum bend radius	3.9"	9.8"
A	Minimum	14.0"	20.0"

FLEXIBLE SPRINKLER DROP HOSE INSTALLATION INSTRUCTIONS

Determine the approximate place where the sprinklers will be located. The sprinkler should be located as close as possible to the center of the distance between ceiling grid's T-bars.

CONNECT INLET NIPPLE

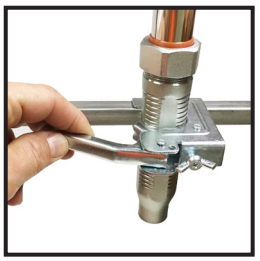
Use a pipe wrench to screw the INLET NIPPLE into the branch outlet. Apply pipe joint compound or Teflon tape to the tapered threads to seal and tighten the branch line nipple into the branch line outlet, with 35ft-lbs/50N•m.
DO NOT OVERTIGHTEN.


ATTACH BRACKET SET

Attach SIDE BRACKETS and SQUARE BAR to the main rail of the T-Bar grid, with the CENTER BRACKET in the middle. Tighten horizontal bolts on the side brackets with 3ft-lbs/4N•m.
A second hole is pre-drilled for optional installation applications.

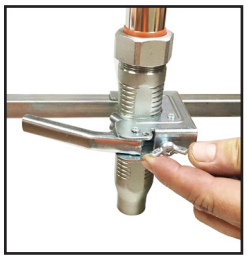
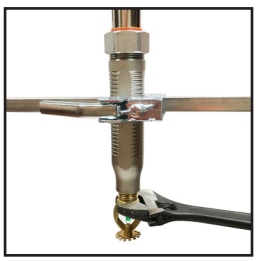

BENDING AND LOCATING

With CENTER BRACKET in the middle of the SQUARE BAR, bend the FLEXIBLE HOSE body as desired (According to hose bending parameters) and locate the DISCHARGE NIPPLE into the CENTER BRACKET and hinge arm and and tighten wing nut with 3ft-lbs/4N•m torque, after the proper location of sprinkler head has been determined.

CONNECT DISCHARGE NIPPLE

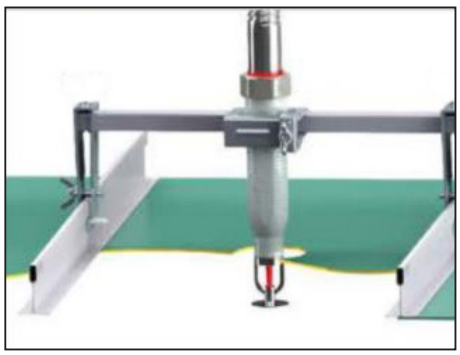
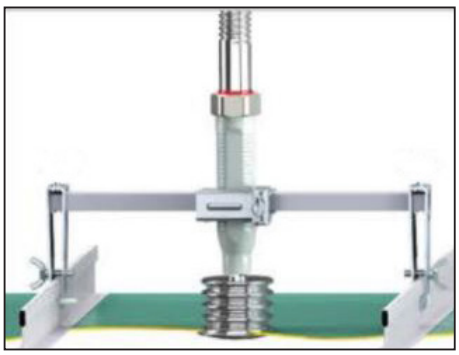
Apply Teflon tape to the male threads of the sprinkler.
Tighten slip nuts of CENTER BRACKET and install sprinkler head to discharge nipple by following the sprinkler manufacturer's installation instructions.

TEST

After installation is complete, test the system for leaks in accordance with NFPA guidelines.

Simply add 2x sheet metal screws to build a tamper resistant installation.

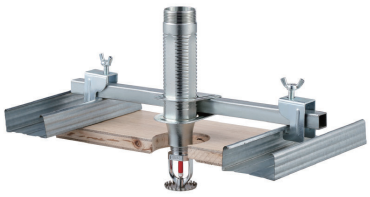
AR-200 FLEXIBLE SPRINKLER DROP HOSE ACCESSORIES

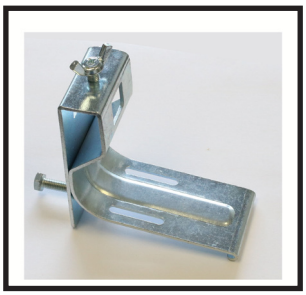
90° Reducing Nipple
6530190: 1" x 1/2"
6530192: 1" x 3/4"

Straight Reducing Nipple
6530181: 1" x 1/2" standard
6530180: 1" x 3/4" standard
6530191: 1" x 1/2" x 9" length

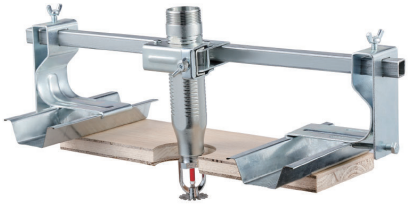
Flex Hose End Brackets
6530185: Standard 4" End Brackets (sold each)
6530183: Short 2-1/4" End Brackets (sold each)

6530194 :
Metal Stud End Bracket
(C-Clamp)





6530195:
Furring Channel End Bracket
(Hat Channel Bracket)



Flex Hose Center Brackets
6530184: Center bracket with hinged lever handle

Flex Hose Square Bar
6530182: 25" Square bar to fit standard ceiling tile grids

FLEXIBLE SPRINKLER DROP HOSE
BRAIDED CONNECTIONS

ARGCO Flexible Sprinkler Drops are designed to reduce labor and installation costs by installing without cutting and threading pipe associated with installing a drop, arm-over and elbows. ARGCO offers braided and unbraided hoses in 28, 40, 48, 60 and 72” lengths with simple brackets for suspended ceilings.

National Fire Protection Association (NFPA):

- NFPA 13: Standard for the Installation of Sprinkler Systems
- NFPA 13R: Standard for the Installation of Sprinkler Systems in residential Occupancies up to and including four stories in height.
- NFPA 13D: Standard for the Installation of Sprinkler Systems in One and Two-Family Dwellings and Manufactured Homes
- NFPA 13 Section 9.2.1.3.3.3: No hangers are required for flexible connections as long as the length does not exceed 6 feet.

American Society for Testing Methods (ASTM):

- ASTM C635: Standard specifications for the manufacture, performance, and testing of metal suspension systems for acoustical tile and lay-in panel ceilings
- ASTM C636: Standard practice for installation of metal ceiling suspension systems for acoustical tile and lay-in panels.

Factory Mutual (FM):

- Approved standard for flexible sprinkler hose with threaded end fittings

Underwriter’s Laboratories (FM):

- Standard for flexible sprinkler hose with fittings for fire protection service

International Building Code (IBC):

- Flexible Sprinkler Connections are an alternative solution to install without seismic escutcheons.

System No.		Location		Spec Section		Paragraph	
Submitted By		Date		Approved		Date	

SPRINKLER CABINETS FOR REPLACEMENT AUTOMATIC SPRINKLERS

SIX SPRINKLER CABINET
FOR 1/2” OR 3/4” SPRINKLERS
P/N 312390

TWELVE SPRINKLER CABINET
FOR 1/2” OR 3/4” SPRINKLERS
P/N 312392

When storing concealed sprinklers, Twelve Sprinkler Cabinet holds six units and Six Sprinkler Cabinet holds three units.

4077 AIRPARK DRIVE, STANDISH, MICHIGAN 48658
989-846-4583 FAX 989-846-9231
1-800-248-0278 www.globesprinkler.com

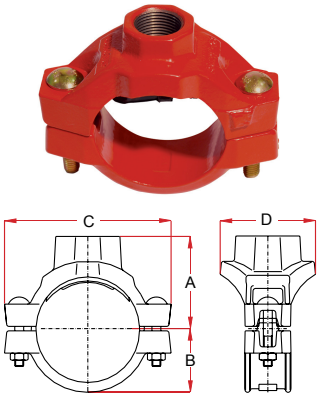
BRANCH OUTLETS / Style 08T / 08G

QUIK-T™ BRANCH OUTLETS
Maximum working pressure: 20 bar
For fire protection equipment and approved pressure ratings please contact Modgal.

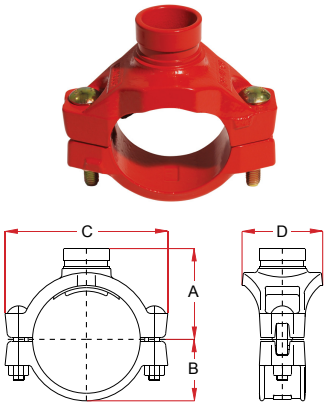
QUIK-T™ ANBOHRSCHELLEN
Maximaler Betriebsdruck: 20 bar
Die Brandschutzzulassungen und die Zulassungsnenndrücke erhalten Sie bei Modgal.

QUIK-T™ MECHANICAL TEES
Maximale werkdruk: 20 bar
Contacteer Modgal voor toegelaten drukklassen voor brandbeveiligingstoepassingen.

STYLE 08T
Threaded / Gewinde / Draad



STYLE 08G
Grooved / Genutet / Gegroeft



Nominal Size (Inches / DN)		Pipe Outside Diameter	Outlet		Quik-T™ Dimensions					Hole Diameter	Bolts			Weight Kg.	Approvals
Run	Outlet		Size	Type	A		B	C	D	Tolerance +2.0mm	Qty.	Size	Length		
					Thrd.	Grv.									
2" / 50	½" / 15	60.3	21.3	T	58.0	-	41.5	135.0	76.0	38.1	2	M10	57.0	1.36	FM / UL / LPCB / VDS
	¾" / 20	60.3	26.9	T	58.0	-	41.5	135.0	76.0	38.1	2	M10	57.0	1.37	FM / UL / LPCB / VDS
	1" / 25	60.3	33.7	T	65.5	-	41.5	135.0	76.0	38.1	2	M10	57.0	1.45	FM / UL / LPCB / VDS
	1¼" / 32	60.3	42.4	T or G	69.5	76.5	41.5	135.0	82.0	44.5	2	M10	57.0	1.49	FM / UL / LPCB / VDS
	1½" / 40	60.3	48.3	T or G	69.5	76.5	41.5	135.0	82.0	44.5	2	M10	57.0	1.48	FM / UL / LPCB / VDS
2½" / 65	½" / 15	76.1	21.3	T	67.0	-	48.0	150.0	92.0	38.1	2	M12	76.0	1.82	FM / UL / LPCB / VDS
	¾" / 20	76.1	26.9	T	69.0	-	48.0	150.0	92.0	38.1	2	M12	76.0	1.78	FM / UL / LPCB / VDS
	1" / 25	76.1	33.7	T	72.0	-	48.0	150.0	92.0	38.1	2	M12	76.0	1.75	FM / UL / LPCB / VDS
	1¼" / 32	76.1	42.4	T or G	76.0	82.0	48.0	150.0	92.0	50.8	2	M12	76.0	1.72	FM / UL / LPCB / VDS
	1½" / 40	76.1	48.3	T or G	76.0	82.0	48.0	150.0	92.0	50.8	2	M12	76.0	1.81	FM / UL / LPCB / VDS
3" / 80	½" / 15	88.9	21.3	T	71.0	-	56.5	160.0	80.0	38.1	2	M12	76.0	1.90	FM / UL / LPCB / VDS
	¾" / 20	88.9	26.9	T	76.0	-	56.5	160.0	80.0	38.1	2	M12	76.0	2.01	FM / UL / LPCB / VDS
	1" / 25	88.9	33.7	T	77.5	-	56.5	160.0	80.0	38.1	2	M12	76.0	1.93	FM / UL / LPCB / VDS
	1¼" / 32	88.9	42.4	T or G	87.5	95.0	56.5	160.0	95.0	50.8	2	M12	76.0	1.93	FM / UL / LPCB / VDS
	1½" / 40	88.9	48.3	T or G	87.5	95.0	56.5	160.0	94.0	50.8	2	M12	76.0	1.97	FM / UL / LPCB / VDS
	2" / 50	88.9	60.3	T or G	90.0	95.0	56.5	160.0	105.0	63.5	2	M12	76.0	2.20	FM / UL / LPCB / VDS
4" OD	1½" / 40	108.0	48.3	T	101.0	-	65.0	181.0	96.0	50.8	2	M12	76.0	2.36	VDS
4" / 100	½" / 15	114.3	21.3	T	87.0	-	69.0	187.0	96.0	38.1	2	M12	76.0	2.25	FM / LPCB / VDS
	¾" / 20	114.3	26.9	T	89.0	-	69.0	187.0	96.0	38.1	2	M12	76.0	2.26	FM / LPCB / VDS
	1" / 25	114.3	33.7	T	92.0	-	69.0	187.0	96.0	38.1	2	M12	76.0	2.23	FM / LPCB / VDS
	1¼" / 32	114.3	42.4	T or G	104.0	104.0	69.0	187.0	96.0	50.8	2	M12	76.0	2.12	FM / UL / LPCB / VDS
	1½" / 40	114.3	48.3	T or G	104.0	104.0	69.0	187.0	96.0	50.8	2	M12	76.0	2.07	FM / UL / LPCB / VDS
	2" / 50	114.3	60.3	T or G	104.0	104.0	69.0	187.0	107.0	63.5	2	M12	76.0	2.15	FM / UL / LPCB / VDS
	2½" / 65	114.3	76.1	T or G	104.0	104.0	69.0	187.0	106.0	69.8	2	M12	76.0	2.53	FM / UL / VDS
	3" / 80	114.3	88.9	T or G	112.0	104.0	69.0	187.0	130.0	88.9	2	M12	76.0	3.50	FM / UL / VDS
5" / 125	1¼" / 32	139.7	42.4	T or G	118.5	119.0	81.5	216.0	100.0	50.8	2	M16	89.0	3.20	FM / VDS
	1½" / 40	139.7	48.3	T or G	118.5	119.0	81.5	216.0	100.0	50.8	2	M16	89.0	3.23	FM / VDS
	2" / 50	139.7	60.3	T or G	120.5	119.0	81.5	216.0	106.0	63.5	2	M16	89.0	3.37	FM / VDS
	2½" / 65	139.7	76.1	G	-	119.0	81.5	216.0	107.0	69.8	2	M16	89.0	3.50	FM / VDS
6" OD	1½" / 40	159.0	48.3	T	124.0	-	93.0	245.0	96.0	50.8	2	M16	120.0	3.17	VDS
6" OD	1¼" / 32	165.1	42.4	T or G	126.5	128.5	93.0	245.0	96.0	50.8	2	M16	120.0	3.69	FM / LPCB
	1½" / 40	165.1	48.3	T or G	126.5	128.5	93.0	245.0	96.0	50.8	2	M16	120.0	3.69	FM / LPCB
	2" / 50	165.1	60.3	T or G	126.5	132.0	93.0	245.0	107.0	63.5	2	M16	120.0	3.86	FM / LPCB
	2½" / 65	165.1	76.1	T or G	135.0	129.0	93.0	245.0	107.0	69.8	2	M16	120.0	4.23	FM / LPCB
	3" / 80	165.1	88.9	T or G	135.0	135.5	93.0	245.0	140.0	88.9	2	M16	120.0	4.80	FM / UL
	4" / 100	165.1	114.3	T or G	143.0	137.0	96.0	245.0	156.0	114.3	2	M16	120.0	6.80	FM / UL
6" / 150	1¼" / 32	168.3	42.4	T or G	133.0	133.0	95.0	245.0	96.0	50.8	2	M16	120.0	3.62	FM / UL / LPCB / VDS
	1½" / 40	168.3	48.3	T or G	133.0	130.5	95.0	245.0	96.0	50.8	2	M16	120.0	3.63	FM / UL / LPCB / VDS
	2" / 50	168.3	60.3	T or G	130.0	131.5	95.0	245.0	107.0	63.5	2	M16	120.0	3.92	FM / UL / LPCB / VDS
	2½" / 65	168.3	76.1	T or G	140.5	132.5	95.0	245.0	107.0	69.8	2	M16	120.0	4.05	FM / UL / LPCB / VDS
	3" / 80	168.3	88.9	T or G	137.5	138.5	95.0	247.0	140.0	88.9	2	M16	120.0	4.85	FM / UL / VDS
	4" / 100	168.3	114.3	T or G	144.0	139.5	97.0	247.0	163.0	114.3	2	M16	120.0	4.34	FM / UL / LPCB / VDS
8" / 200	2" / 50	219.1	60.3	T	160.0	-	123.0	320.0	117.0	63.5	2	M20	120.0	4.85	LPCB
	2½" / 65	219.1	76.1	T or G	157.5	155.0	123.0	320.0	120.0	69.8	2	M20	120.0	4.75	-
	3" / 80	219.1	88.9	T or G	161.0	161.0	123.0	320.0	138.0	88.9	2	M20	120.0	5.52	VDS
	4" / 100	219.1	114.3	T or G	171.0	161.0	123.0	320.0	164.0	114.3	2	M20	120.0	5.59	VDS

aalberts integrated piping systems

THREADED FITTINGS

c UL us LISTED

FM APPROVED

For pressure rating, listing, and approval information, refer to data sheet or visit SHURJOINT website www.shurjoint.com for details or contact your SHURJOINT representatives.

Shurjoint offers a complete range of ductile iron Class 300 threaded fittings in sizes from ½" to 2½". Shurjoint ductile iron threaded fittings are 100% air tested underwater to ensure leak-free performance. The Shurjoint ductile iron fitting series is UL listed and FM approved, making them the right choice for fire protection and other general application services.

Ductile Iron Class 300 threaded fittings are designed to the same dimensions as that of Class 150 malleable iron fittings. Though due to the superior strength characteristics, ductile iron fittings carry a much higher pressure rating. Laboratory tests confirm Shurjoint ductile iron fittings have passed hydrostatic test pressures exceeding 6,000 psi / 414 Bar, which is equal to four times the 1,500 psi /103 Bar as specified by ANSI B16.3 for 1¼" – 2" sizes.

Pressure-Temperature Rating (ANSI B16.3 & B16.14)

Nom. Rating	Working Pressure (W.O.G.) @150°F / @65°C	Working Pressure Saturated Steam
Class 300	½" – 1": 2000 psi / 140 Bar 1¼" – 2": 1500 psi / 105 Bar 2½": 1000 psi / 70 Bar	300 psi (20 Bar)

*Proof test pressure: 1.5 times the working pressure, non-shock cold water.

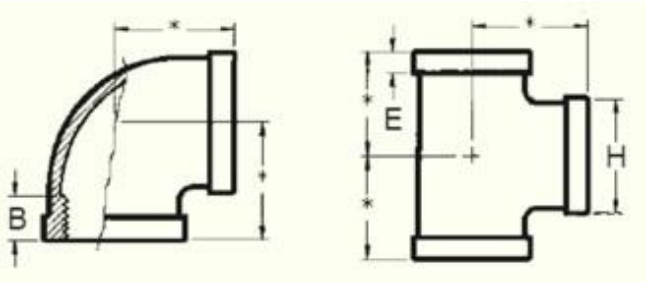
material specification

- Body:
  Ductile Iron to ASTM A536, Gr. 65-45-12, min. tensile strength 65,000 psi (448 MPa).
- Dimensions:
  ANSI B16.3 Class 150 except bushings and plugs (B16.14), unions (B16.39) and companion flanges (B16.42). Please note wall thickness dimensions are subordinate to Shurjoint UL and FM pressure rating listings and approvals.
- Threads:
  ANSI B1.20.1 NPT or ISO 7 (BSPT).
- Finish:
  Black or electro-zinc plated.

SHURJOINT®

General Dimensions

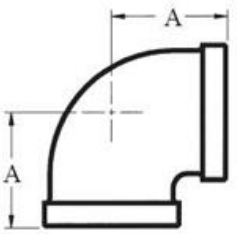
These dimensions apply to all standard fittings, both straight and reducing. For center-to-face dimensions (*), see fitting tables.



Pipe Size	H Band O.D.	E Band Width	B Thread Length (min)
in	in	in	in
mm	mm	mm	mm
½	1.02	0.25	0.43
15	26	6	11
¾	1.46	0.27	0.5
20	37	7	13
1	1.77	0.3	0.58
25	45	8	15
1¼	2.15	0.34	0.67
32	55	9	17
1½	2.43	0.37	0.7
40	62	9	18
2	2.96	0.42	0.75
50	75	11	19
2½	3.59	0.48	0.92
65	91	12	23

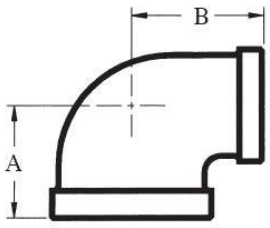
Installers who have not used DI threaded fittings before should be instructed that the fittings are stronger than the pipe in most cases. In general DI threaded fittings require about a one-half turn less than cast iron fittings. Refer to the installation instructions for further detail.

MODEL 811 90° ELBOW



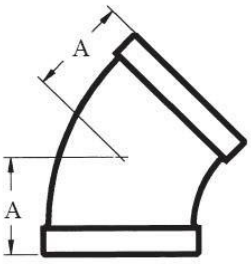
Model 811 90° Elbow				
Size	Pipe O.D.	A	Weight	Box Qty
in	in	in	lbs	Pcs
mm	mm	mm	kg	
½	0.840	1.12	0.25	240
15	21.3	28	0.1	
¾	1.050	1.31	0.35	120
20	26.7	33	0.2	
1	1.315	1.50	0.57	70
25	33.4	38	0.3	
1¼	1.660	1.75	0.97	40
32	42.2	44	0.4	
1½	1.900	1.94	1.17	30
40	48.3	49	0.5	
2	2.375	2.25	1.83	20
50	60.3	57	0.8	
2½	2.875	2.70	3.34	10
65	73.0	69	1.5	

MODEL 812 90° REDUCING ELBOW



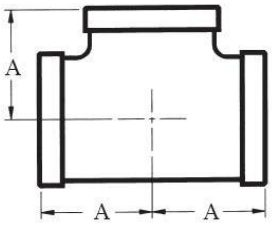
Model 812 90°Reducing Elbow					
Size	Pipe O.D.	A	B	Weight	Box Qty
in	in	in	in	lbs	Pcs
mm	mm	mm	mm	kg	
¾ x ½	1.050 x 0.840	1.20	1.22	0.35	160
20 x 15	26.7 x 21.3	30	31	0.2	
1 x ½	1.315 x 0.840	1.26	1.36	0.46	110
25 x 15	33.4 x 21.3	32	35	0.2	
1 x ¾	1.315 x 1.050	1.18	1.45	0.57	90
25 x 20	33.4 x 26.7	30	37	0.3	
1¼ x ½	1.660 x 0.840	1.34	1.53	0.64	75
32 x 15	42.2 x 21.3	34	39	0.3	
1¼ x ¾	1.660 x 1.050	1.45	1.62	0.68	60
32 x 20	42.2 x 26.7	37	41	0.3	
1¼ x 1	1.660 x 1.315	1.58	1.67	0.81	55
32 x 25	42.2 x 33.4	40	42	0.4	
1½ x ½	1.900 x 0.840	1.41	1.66	0.84	45
40 x 15	48.3 x 21.3	36	42	0.4	
1½ x ¾	1.900 x 1.050	1.52	1.75	0.90	45
40 x 20	48.3 x 26.7	39	44	0.4	
1½ x 1	1.900 x 1.315	1.65	1.80	0.95	40
40 x 25	48.3 x 33.4	42	46	0.4	
1½ x 1¼	1.900 x 1.660	1.82	1.88	1.10	35
40 x 32	48.3 x 42.2	46	48	0.5	
2 x ¾	2.375 x 1.050	1.60	1.97	1.19	30
50 x 20	60.3 x 26.7	41	50	0.5	
2 x 1	2.375 x 1.315	1.73	2.02	1.47	25
50 x 25	60.3 x 33.4	44	51	0.7	
2 x 1½	2.375 x 1.900	2.02	2.16	1.61	20
50 x 40	60.3 x 48.3	51	55	0.7	
2½ x 2	2.875 x 2.375	2.39	2.60	2.93	15
65 x 50	73.0 x 60.3	61	66	1.3	

MODEL 813 45° ELBOW



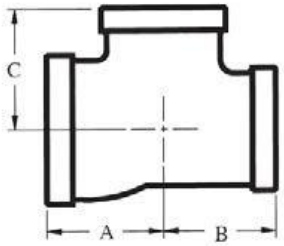
Model 813 45° Elbow				
Size	Pipe O.D.	A	Weight	Box Qty
in	in	in	lbs	Pcs
mm	mm	mm	kg	
½	0.840	0.88	0.22	250
15	21.3	22	0.1	
¾	1.050	0.98	0.33	150
20	26.7	25	0.1	
1	1.315	1.12	0.55	90
25	33.4	28	0.2	
1¼	1.660	1.29	0.84	50
32	42.2	33	0.4	
1½	1.900	1.43	0.92	35
40	48.3	36	0.4	
2	2.375	1.68	1.63	18
50	60.3	43	0.7	
2½	2.875	1.95	2.42	12
65	73.0	50	1.1	

MODEL 814 TEE



Model 814 Tee				
Size	Pipe O.D.	A	Weight	Box Qty
in	in	in	lbs	Pcs
mm	mm	mm	kg	
½	0.840	1.12	0.31	150
15	21.3	28	0.1	
¾	1.050	1.31	0.48	90
20	26.7	33	0.2	
1	1.315	1.50	0.81	60
25	33.4	38	0.4	
1¼	1.660	1.75	1.28	35
32	42.2	44	0.6	
1½	1.900	1.94	1.72	24
40	48.3	49	0.8	
2	2.375	2.25	2.57	12
50	60.3	57	1.2	
2½	2.875	2.70	4.44	8
65	73.0	69	2.0	

MODEL 815 REDUCING TEE



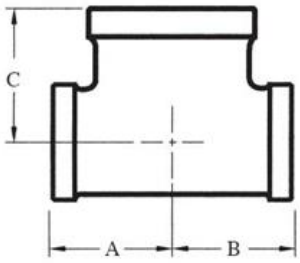
Model 815 Reducing Tee							
Size			A	B	C	Weight	Box Qty
in			in	in	in	lbs	Pcs
mm			mm	mm	mm	kg	
¾	¾	½	1.20	1.20	1.22	0.46	95
20	20	15	30	30	31	0.2	
	½	1	1.50	1.36	1.50	0.71	55
	15	25	38	35	38	0.3	
		½	1.26	1.20	1.36	0.59	80
		15	32	30	35	0.3	
	¾	¾	1.37	1.31	1.45	0.66	65
1	20	20	35	33	37	0.3	
25		1	1.50	1.45	1.50	0.77	55
		25	38	37	38	0.3	
		½	1.26	1.26	1.36	0.64	65
	1	15	32	32	35	0.3	
	25	¾	1.37	1.37	1.45	0.75	60
		20	35	35	37	0.3	
		½	1.34	1.26	1.53	0.79	50
		15	34	32	39	0.4	
		¾	1.45	1.37	1.62	0.88	50
	1	20	37	35	41	0.4	
	25	1	1.58	1.50	1.67	1.01	45
		25	40	38	42	0.2	
1¼		1¼	1.75	1.67	1.75	1.25	40
32		32	44	42	44	0.6	
		½	1.34	1.34	1.53	0.84	45
		15	34	34	39	0.4	
	1¼	¾	1.45	1.45	1.62	0.99	45
	32	20	37	37	41	0.4	
		1	1.58	1.58	1.67	1.12	40
		25	40	40	42	0.5	
		½	1.44	1.31	1.69	0.92	40
1½	1	15	37	33	43	0.4	
40	25	¾	1.50	1.37	1.75	1.01	40
		20	38	35	44	0.5	

Model 815 Reducing Tee

Size			A	B	C	Weight	Box Qty
in			in	in	in	lbs	Pcs
mm			mm	mm	mm	kg	
		1	1.65	1.50	1.80	1.19	30
		25	42	38	46	0.5	
	1	1¼	1.82	1.67	1.88	1.54	30
	25	32	46	42	48	0.7	
		1½	1.94	1.80	1.94	1.54	30
		40	49	46	49	0.7	
		½	1.41	1.34	1.66	1.08	40
		15	36	34	42	0.5	
	1¼	¾	1.52	1.45	1.75	1.14	40
1½	32	20	39	37	44	0.5	
40		1	1.65	1.58	1.80	1.39	30
		25	42	40	46	0.6	
		½	1.41	1.41	1.66	1.10	35
		15	36	36	42	0.5	
		¾	1.52	1.52	1.75	1.17	35
	1½	20	39	39	44	0.5	
	40	1	1.65	1.65	1.80	1.36	30
		25	42	42	46	0.6	
		1¼	1.82	1.82	1.88	1.56	30
		32	46	46	48	0.7	
	1	2	2.25	2.02	2.25	2.13	15
	25	50	57	51	57	1.0	
	1¼	2	2.25	2.10	2.25	2.22	15
	32	50	57	53	57	1.0	
		½	1.49	1.41	1.88	1.52	30
		15	38	36	48	0.7	
		¾	1.60	1.52	1.97	1.47	25
		20	41	39	50	0.7	
	1½	1	1.73	1.65	2.02	1.63	20
	40	25	44	42	51	0.7	
2		1½	2.02	1.94	2.16	2.09	20
50		40	51	49	55	0.9	
		2	2.25	2.16	2.25	2.33	15
		50	57	55	57	1.1	
		½	1.49	1.49	1.88	1.56	20
		15	38	38	48	0.7	
	2	¾	1.60	1.60	1.97	1.61	20
	50	20	41	41	50	0.7	
		1	1.73	1.73	2.02	1.80	20
		25	44	44	51	0.8	

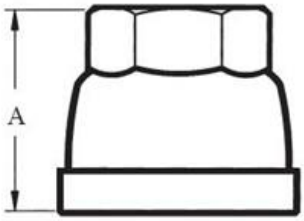
Model 815 Reducing Tee							
Size			A	B	C	Weight	Box Qty
in			in	in	in	lbs	Pcs
mm			mm	mm	mm	kg	
		1¼	1.90	1.90	2.10	2.09	20
2	2	32	48	48	53	0.9	
50	50	1½	2.02	2.02	2.16	2.24	15
		40	51	51	55	1.0	
2½	2	¾	1.74	1.60	2.32	2.35	15
65	50	20	44	41	59	1.1	

MODEL 815 BULLHEAD TEE



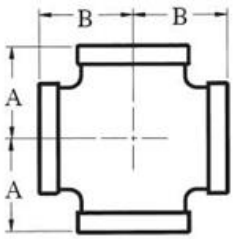
Model 815 Bullhead Tee							
Size			A	B	C	Weight	Box Qty
in			in	in	in	lbs	Pcs
mm			mm	mm	mm	kg	
¾	¾	1	1.45	1.45	1.37	0.66	65
20	20	25	37	37	35	0.3	
		1¼	1.67	1.67	1.58	0.97	45
1	1	32	42	42	40	0.4	
25	25	1½	1.81	1.81	1.65	1.15	35
		40	46	46	42	0.5	
	1	1½	1.88	1.81	1.82	1.43	30
	25	40	48	46	46	0.6	
1¼		1½	1.88	1.88	1.82	1.52	30
32	1¼	40	48	48	46	0.7	
	32	2	2.10	2.10	1.90	1.80	24
		50	53	53	48	0.8	
	1¼	2	2.16	2.10	2.02	1.94	20
1½	32	50	55	53	51	0.9	
40	1½	2	2.16	2.16	2.02	2.00	20
	40	50	55	55	51	0.9	
2	2	2½	2.60	2.60	2.39	3.61	10
50	50	65	66	66	61	1.6	

MODEL 816 REDUCING COUPLING

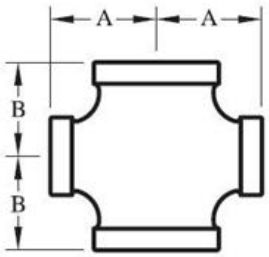


Model 816 Reducing Coupling					
Size	Pipe O.D.	A	Wrench Size	Weight	Box Qty
in	in	in	in	lbs	Pcs
mm	mm	mm	mm	kg	
¾ x ½	1.050 x 0.840	1.63	1¼	0.37	150
20 x 15	26.7 x 21.3	41	32	0.2	
1 x ½	1.315 x 0.840	1.69	1¼	0.37	140
25 x 15	33.4 x 21.3	43	32	0.2	
1 x ¾	1.315 x 1.050	1.37	1½	0.48	120
25 x 20	33.4 x 26.7	35	38	0.2	
1¼ x ¾	1.660 x 1.050	2.06	1½	0.59	80
32 x 20	42.2 x 26.7	52	38	0.3	
1¼ x 1	1.660 x 1.315	2.06	-	0.66	60
32 x 25	42.2 x 33.4	52		0.3	
1½ x 1	1.900 x 1.315	2.31	-	0.84	50
40 x 25	48.3 x 33.4	59		0.4	
1½ x 1¼	1.900 x 1.660	2.31	-	0.92	45
40 x 32	48.3 x 42.2	59		0.4	
2 x 1	2.375 x 1.315	2.81	-	1.23	35
50 x 25	60.3 x 33.4	71		0.6	
2 x 1¼	2.375 x 1.660	2.81	-	1.28	30
50 x 32	60.3 x 42.2	71		0.6	
2 x 1½	2.375 x 1.900	2.81	-	1.66	30
50 x 40	60.3 x 48.3	71		0.8	
2½ x 2	2.875 x 2.375	3.25	-	2.24	18
65 x 50	73.0 x 60.3	83		1.0	

MODEL 817 CROSS

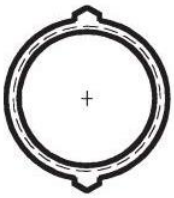


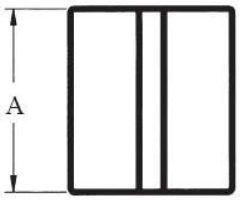
Model 817 Cross					
Size	Pipe O.D.	A	B	Weight	Box Qty
in	in	in	in	lbs	Pcs
mm	mm	mm	mm	kg	
½	0.840	1.12	1.12	0.48	90
15	21.3	28	28	0.2	
¾	1.050	1.31	1.31	0.77	60
20	26.7	33	33	0.3	
1	1.315	1.50	1.50	0.95	45
25	33.4	38	38	0.4	
1¼	1.660	1.75	1.75	1.43	25
32	42.2	44	44	0.6	
1½	1.900	1.94	1.94	1.87	20
40	48.3	49	49	0.8	
2	2.375	2.25	2.25	2.86	10
50	60.3	57	57	1.3	



Model 817 Reducing Cross				
Size	A	B	Weight	Box Qty
in	in	in	lbs	Pcs
mm	mm	mm	kg	
1¼ x 1¼ x 1 x 1	1.67	1.58	1.25	30
32 x 32 x 25 x 25	42	40	0.6	
1½ x 1½ x 1 x 1	1.80	1.65	1.47	24
40 x 40 x 25 x 25	46	42	0.7	
2 x 2 x 1 x 1	2.02	1.73	1.94	16
50 x 50 x 25 x 25	51	44	0.9	

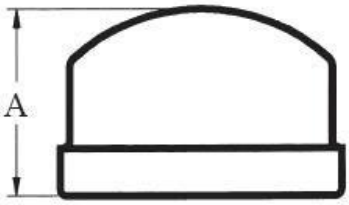
MODEL 818 STRAIGHT COUPLING





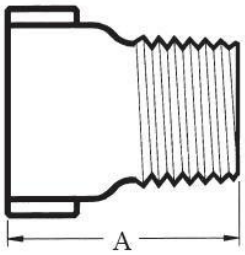
Model 818 Straight Coupling					
Size	Pipe O.D.	A	Wrench Size	Weight	Box Qty
in	in	in	in	lbs	Pcs
mm	mm	mm	mm	kg	
½	0.840	1.38	1⅛	0.18	360
15	21.3	35	29	0.1	
¾	1.050	1.61	1⅜	0.26	200
20	26.7	41	35	0.2	
1	1.315	1.77	1 11/16	0.42	110
25	33.4	45	43	0.2	
1¼	1.660	2.00	2	0.57	75
32	42.2	51	51	0.3	
1½	1.900	2.20	2¼	0.77	60
40	48.3	56	57	0.3	
2	2.375	2.60	2¾	1.17	30
50	60.3	66	70	0.5	
2½	2.875	3.00	3⅜	2.11	18
65	73.0	76	86	1.0	

MODEL 820 CAP



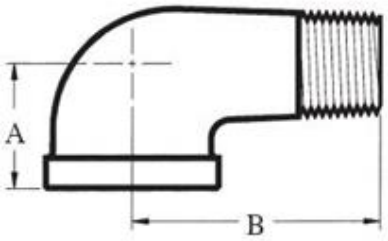
Model 820 Cap				
Size	Pipe O.D.	A	Weight	Box Qty
in	in	in	lbs	Pcs
mm	mm	mm	kg	
½	0.840	0.89	0.14	500
15	21.3	23	0.1	
¾	1.050	1.00	0.20	300
20	26.7	25	0.1	
1	1.315	1.18	0.33	180
25	33.4	30	0.1	
1¼	1.660	1.32	0.46	110
32	42.2	34	0.2	
1½	1.900	1.38	0.57	80
40	48.3	35	0.3	
2	2.375	1.48	0.88	45
50	60.3	38	0.4	
2½	2.875	1.77	1.54	25
65	73.0	45	0.7	

MODEL 825 EXTENSION PIECE



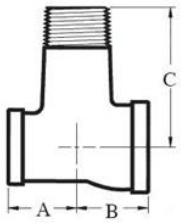
Model 825 Extension Piece				
Size	Pipe O.D.	A	Weight	Box Qty
in	in	in	lbs	Pcs
mm	mm	mm	kg	
½ x 1½L	0.840 x 1.900	1.50	0.18	300
15 x 40L	21.3 x 48.3	38	0.1	
½ x 2L	1.900 x 2.375	2.00	0.22	250
15 x 50L	21.3 x 60.3	51	0.1	
¾ x 1½L	1.050 x 1.900	1.50	0.22	250
20 x 40L	26.7 x 48.3	38	0.1	
¾ x 2L	1.050 x 2.375	2.00	0.26	200
20 x 50L	26.7 x 60.3	51	0.1	

MODEL 831 LONG STREET ELBOW 90°



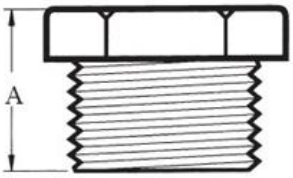
Model 831 Long Street Elbow 90°					
Size	Pipe O.D.	A	B	Weight	Box Qty
in	in	in	in	lbs	Pcs
mm	mm	mm	mm	kg	
1 x ½M	1.315 x 0.840	1.50	3.00	0.66	80
25 x 15M	33.4 x 21.3	38	76	0.3	
1 x 1M	1.315 x 1.315	1.50	3.00	0.81	60
25 x 25M	33.4 x 33.4	38	76	0.4	

MODEL 832 LONG STREET TEE



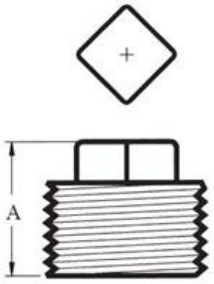
Model 832 Long Street Tee					
Size	A	B	C	Weight	Box Qty
in	in	in	in	lbs	Pcs
mm	mm	mm	mm	kg	
1 x ½ x 1M	1.50	1.40	3.00	0.91	50
25 x 15 x 25M	38	36	76	0.4	
1 x 1 x 1M	1.50	1.50	3.00	1.03	45
25 x 25 x 25M	38	38	76	0.5	

MODEL 827 HEX BUSHING



Model 827 Hex Bushing				
Size	Pipe O.D.	A	Weight	Box Qty
in	in	in	lbs	Pcs
mm	mm	mm	kg	
1 x ½	1.315 x 0.840	1.06	0.20	280
25 x 15	33.4 x 21.3	27	0.1	
1 x ¾	1.315 x 1.050	1.06	0.18	280
25 x 20	33.4 x 26.7	27	0.1	
1¼ x 1	1.660 x 1.315	1.18	0.29	150
32 x 25	42.2 x 33.4	30	0.1	
1½ x 1	1.900 x 1.315	1.26	0.53	100
40 x 25	48.3 x 21.3	32	0.2	
1½ x 1¼	1.900 x 1.660	1.26	0.37	100
40 x 32	48.3 x 42.2	32	0.2	
2 x 1	2.375 x 1.315	1.34	0.75	80
50 x 25	60.3 x 33.4	34	0.3	
2 x 1¼	2.375 x 1.660	1.34	0.75	80
50 x 32	60.3 x 42.2	34	0.3	
2 x 1½	2.375 x 1.900	1.34	0.64	80
50 x 40	60.3 x 48.3	34	0.3	

MODEL 819 PLUG



Model 819 Plug				
Size	Pipe O.D.	A	Weight	Box Qty
in	in	in	lbs	Pcs
mm	mm	mm	kg	
½	0.840	0.93	0.09	500
15	21.3	24	0.0	
¾	1.050	1.13	0.18	300
20	26.7	29	0.1	
1	1.315	1.25	0.25	200
25	33.4	32	0.1	
1¼	1.660	1.36	0.42	110
32	42.2	35	0.2	
1½	1.900	1.45	0.59	80
40	48.3	37	0.3	
2	2.375	1.50	0.95	45
50	60.3	38	0.4	

General note

- Listed and or Approved Pressures are pressure ratings for fire protection systems, tested and approved by various approval bodies. Please always refer to the latest approval data posted on the Shurjoint website.
- Field Joint Test: For one time only the system may be tested hydrostatically at 1½ times the maximum working pressure listed (AWWA C606 5.2.3).
- Warning: Piping systems must always be depressurized and drained before attempting disassembly and or removal of any components.
- The 10 Year Limited Warranty applies to manufacturing defects only and does not cover severe service/temperature applications or wear parts.
- Shurjoint reserves the right to change specifications, designs and or standard without notice and without incurring any obligations.

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Taiwan
www.aalberts.com/ips

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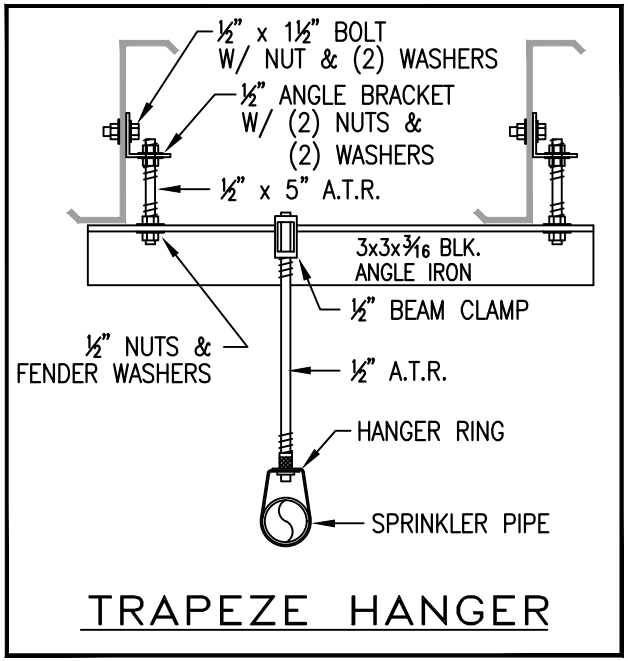


TRAPEZE HANGER

Series TY-B and TY-FRB Poly-Stainless Sprinklers

IMPORTANT

Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.

docs.jci.com/tycofire/tfp682

General Description

The TYCO Series TY-B and TY-FRB Poly-Stainless Sprinklers are corrosion resistant sprinklers designed for use in commercial occupancies where corrosive atmospheres may exist.

The series characteristics are as follows:

TY-B Series
- 5 mm diameter heat sensitive glass bulb
- Standard response (SR) rating

TY-FRB Series
- 3 mm diameter heat sensitive glass bulb
- Quick response (QR) rating

Although corrosion resistant sprinklers have passed the standard corrosion tests of the applicable approval agencies, the testing is not representative of all possible corrosive atmospheres. Consequently, it is recommended that the end user be consulted with respect to the suitability of this coating material for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, at a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

Upright and Pendent Sprinklers

The upright and pendent sprinklers are standard coverage spray sprinklers available in either 5.6 or 8.0 K-factor. The recessed version is intended for use in areas with a finished ceiling. The two-piece Style 10 (1/2 inch NPT) or Style 40 (3/4 inch NPT) recessed escutcheons provide 1/2 inch (12,7 mm) of recessed adjustment or 3/4 inch (19,1 mm) of total adjustment from the flush pendent position. The adjustment provided by the recessed escutcheon reduces the accuracy to which the fixed pipe drops to the sprinklers must be cut.

Horizontal Sidewall Sprinklers

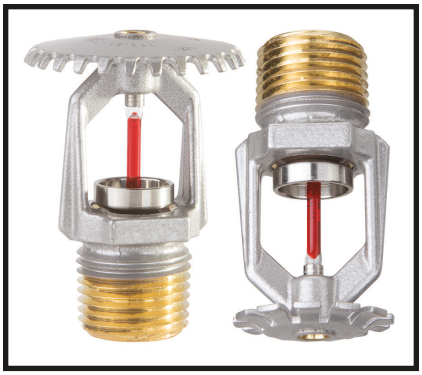
The horizontal sidewall sprinklers are designed for installation along a wall or side of a beam and just beneath a smooth ceiling. Sidewall sprinklers are commonly used instead of upright and pendent sprinklers due to aesthetics or building construction considerations, where piping across the ceiling is not desirable.

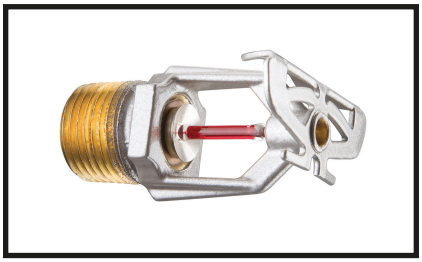
A recessed version of the horizontal sidewall sprinkler can be achieved by using the Style 10 recessed escutcheon.

NOTICE

The Series TY-B and TY-FRB Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.





Sprinkler Identification Number (SIN)

TY-B Standard Response

TY3151 . . . Upright 5.6K, 1/2 in. NPT
TY3251 . . . Pendent 5.6K, 1/2 in. NPT
TY4151 . . . Upright 8.0K, 3/4 in. NPT
TY4251 . . . Pendent 8.0K, 3/4 in. NPT
TY3351 . . . . . HSW* 5.6K, 1/2 in. NPT

TY-FRB Quick Response

TY3131 . . . Upright 5.6K, 1/2 in. NPT
TY3231 . . . Pendent 5.6K, 1/2 in. NPT
TY4131 . . . Upright 8.0K, 3/4 in. NPT
TY4231 . . . Pendent 8.0K, 3/4 in. NPT
TY3331 . . . . . HSW* 5.6K, 1/2 in. NPT

* = Horizontal Sidewall

Model K-Factor Response	Type	Temperature Rating	Bulb Liquid Color	Sprinkler Material
				Brass
TY-B 5.6 1/2 in. NPT SR	Upright TY3151 and Pendent TY3251	135°F (57°C)	Orange	1, 2, 3
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
		360°F (182°C)	Mauve	
	Recessed* Pendent TY3251 See Figure 1	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
TY-B 8.0 3/4 in. NPT SR	Upright TY4151 and Pendent TY4251	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
		360°F (182°C)	Mauve	
	Recessed** Pendent TY4251 See Figure 1	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	

NOTES:
1. UL Listed
2. C-UL Listed
3. EAC Approved

* Installed with Style 10 (1/2 NPT) Recessed Escutcheon
** Installed with Style 40 (3/4 NPT) Recessed Escutcheon

TABLE A
POLY-STAINLESS SERIES TY-B STANDARD RESPONSE
5.6 AND 8.0 K-FACTOR UPRIGHT AND PENDENT SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

Technical Data

Approvals
UL and C-UL Listed
EAC Approved

Note: *For complete approvals information, see Tables A, B, and C.*

Maximum Working Pressure
175 psi (12,1 bar)

Temperature Rating
See Tables A, B, C, and D

Physical Characteristics

Frame	Polyester coated Brass
Button	L316 Stainless Steel*
Compression Screw	L316 Stainless Steel*
Bulb	Glass
Deflector	Copper/Bronze
Sealing Assembly	Gold Plated Beryllium Nickel w/TEFLON**

*Type L316 stainless steel (UNS 31603) per ASTM A479/479M or BS EN 1008 WN1.4404.
**Beryllium Nickel (UNS NO3360) Gold Plated per MIL G-45204, Type 3, Class 2.

Operation

The glass bulb contains a fluid which expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.

Design Criteria

The TYCO Series TY-B and TY-FRB Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency - for example, the UL Listing is based on the requirements of NFPA 13. Only the Style 10 or 40 Recessed Escutcheon, as applicable, is to be used for recessed installation.

Model K-Factor Response	Type	Temperature Rating	Bulb Liquid Color	Sprinkler Material
				Brass
TY-FRB 5.6 1/2 in. NPT QR	Upright TY3131 and Pendent TY3231	135°F (57°C)	Orange	1, 2, 3
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
	Recessed Pendent* TY3231 See Figure 2	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
TY-FRB 8.0 3/4 in. NPT QR	Upright TY4131 and Pendent TY4231	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
	Recessed Pendent** TY4231 See Figure 4	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	

NOTES:
1. UL Listed
2. C-UL Listed
3. EAC Approved

* Installed with Style 10 (1/2 NPT) Recessed Escutcheon
** Installed with Style 40 (3/4 NPT) Recessed Escutcheon

TABLE B
POLY-STAINLESS SERIES TY-FRB QUICK RESPONSE
5.6 AND 8.0 K-FACTOR UPRIGHT AND PENDENT SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

Model K-Factor Response	Type	Temperature Rating	Bulb Liquid Color	Sprinkler Material
				Brass
TY-B 5.6 1/2 in. NPT SR	Horizontal Sidewall TY3351	135°F (57°C)	Orange	1, 2, 3
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
		360°F (182°C)	Mauve	
	Recessed Horizontal Sidewall* TY3351 See Figure 5	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
TY-FRB 5.6 1/2 in. NPT QR	Horizontal Sidewall TY3331	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	
	Recessed Horizontal Sidewall* TY3331 See Figure 6	135°F (57°C)	Orange	
		155°F (68°C)	Red	
		175°F (79°C)	Yellow	
		200°F (93°C)	Green	
		286°F (141°C)	Blue	

NOTES:
1. UL Listed
2. C-UL Listed
3. EAC Approved

* Installed with Style 10 (1/2 NPT) Recessed Escutcheon

TABLE C
POLY-STAINLESS SERIES TY-B STANDARD RESPONSE
AND POLY-STAINLESS SERIES TY-FRB QUICK RESPONSE
5.6 K-FACTOR HORIZONTAL SIDEWALL SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

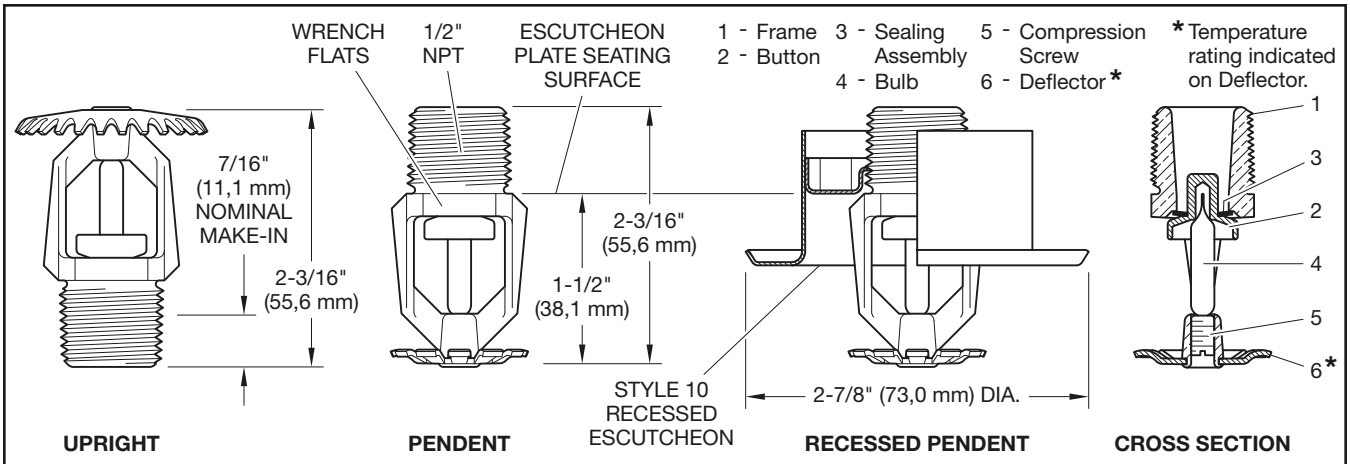


FIGURE 1
POLY-STAINLESS SERIES TY-B STANDARD RESPONSE
UPRIGHT (TY3151) AND PENDENT (TY3251) 5.6 K-FACTOR 1/2 INCH NPT SPRINKLERS

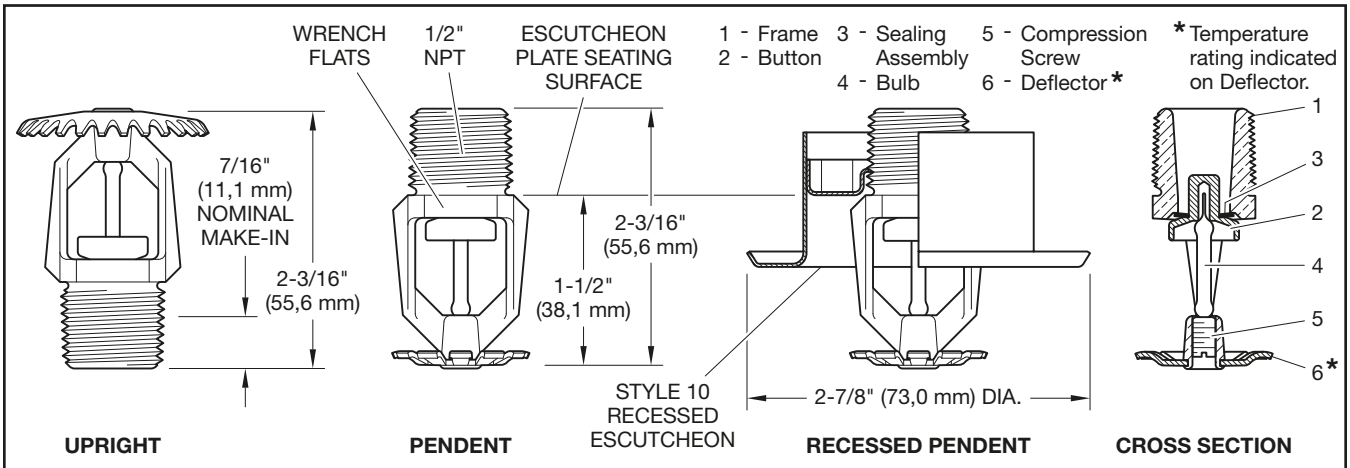


FIGURE 2
POLY-STAINLESS SERIES TY-FRB QUICK RESPONSE
UPRIGHT (TY3131) AND PENDENT (TY3231) 5.6 K-FACTOR 1/2 INCH NPT SPRINKLERS

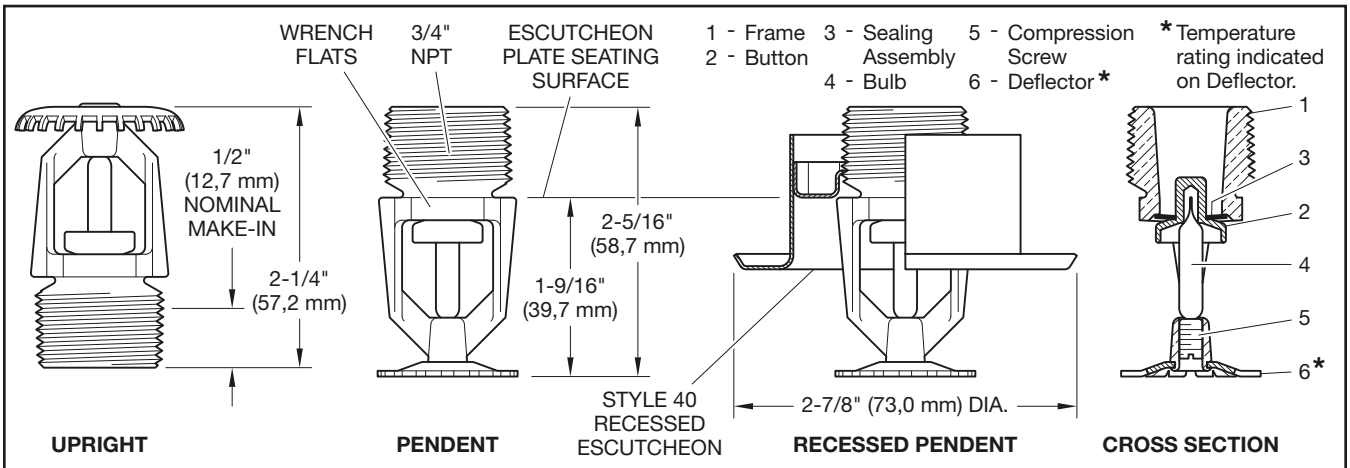


FIGURE 3
POLY-STAINLESS SERIES TY-B STANDARD RESPONSE
UPRIGHT (TY4151) AND PENDENT (TY4251) 8.0 K-FACTOR 3/4 INCH NPT SPRINKLERS

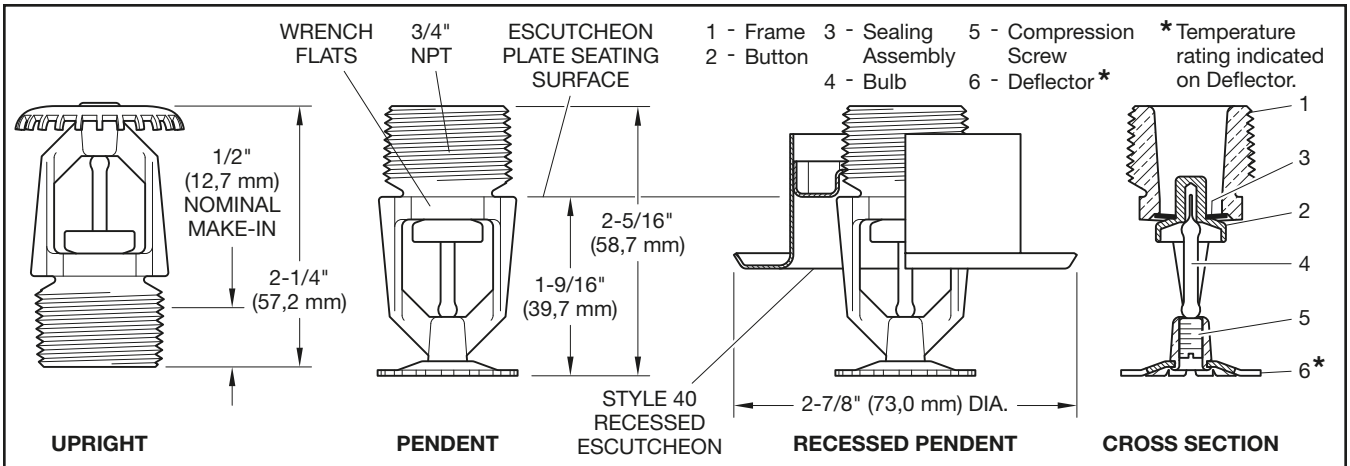


FIGURE 4
POLY-STAINLESS SERIES TY-FRB QUICK RESPONSE
UPRIGHT (TY4131) AND PENDENT (TY4231) 8.0 K-FACTOR 3/4 INCH NPT SPRINKLERS

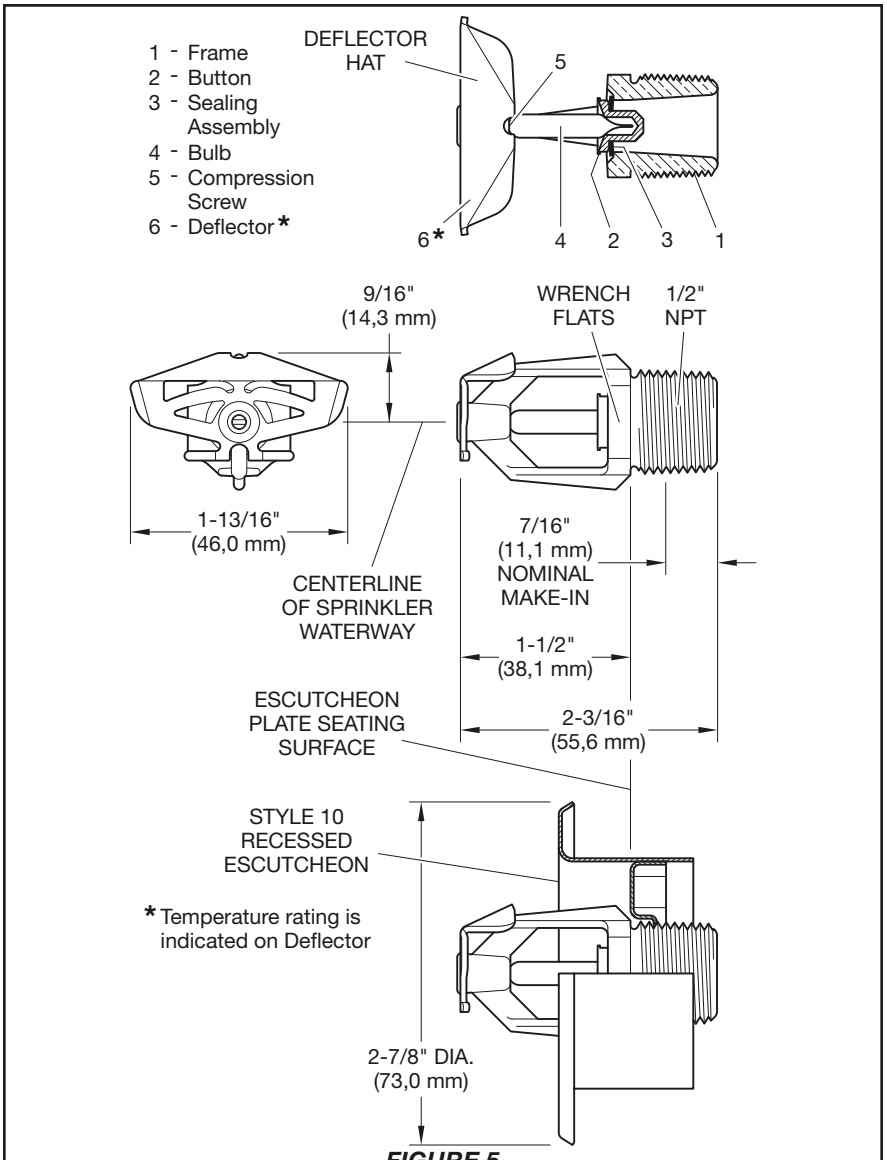


FIGURE 5
POLY-STAINLESS SERIES TY-B STANDARD RESPONSE HORIZONTAL SIDEWALL (TY3351) 5.6 K-FACTOR 1/2 INCH NPT SPRINKLERS

Installation

The TYCO Series TY-B and TY-FRB sprinklers must be installed in accordance with this section.

General Instructions

Do not install any bulb type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 135°F (57°C) and 3/32 inch (2,4 mm) for the 360°F (182°C) temperature ratings.

A 1/2 inch NPT sprinkler joint should be obtained with a minimum to maximum torque of 7 to 14 ft-lbs (9,5 to 19,0 Nm). A 3/4 inch NPT sprinkler joint should be obtained with a minimum to maximum torque of 10 to 20 ft-lbs (13,4 to 26,8 Nm). Higher levels of torque may distort the sprinkler inlet and cause leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the sprinkler by under- or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

Upright and Pendent Sprinklers
The Poly-Stainless Series TY-B and TY-FRB Upright and Pendent Sprinklers must be installed in accordance with the following instructions:

Step 1A. Upright sprinklers must be installed in the upright position, and pendent sprinklers are to be installed in the pendent position.

Step 2A. With pipe thread sealant applied to the pipe threads, hand tighten the sprinkler into the sprinkler fitting.

Step 3A. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench, refer to Figure 10. With reference to Figures 1, 2, 3, and 4, apply the W-Type 6 Sprinkler Wrench to the sprinkler wrench flats.

Recessed Pendent Sprinklers
The Poly-Stainless Series TY-B and TY-FRB Recessed Pendent Sprinklers must be installed in accordance with the following instructions:

Step 1B. After installing the Style 10 or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe sealant applied to the sprinkler threads, hand tighten the sprinkler into the sprinkler fitting.

Step 2B. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench, refer to Figure 11. With reference to Figures 1, 2, 3, and 4 apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step 3B. After the ceiling has been installed or the finish coat has been applied, slide the Style 10 or 40 Closure over the sprinkler and push the Closure over the Mounting Plate until it comes in contact with the ceiling mounting surface.

Horizontal Sidewall Sprinklers
The Poly-Stainless Series TY-B and TY-FRB Horizontal Sprinklers must be installed in accordance with the following instructions:

Step 1C. Horizontal sprinklers must be positioned in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. The word “TOP” on the deflector is to face towards the ceiling.

Step 2C. With pipe thread sealant applied to the sprinkler threads, hand tighten the sprinkler into the sprinkler fitting.

Step 3C. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench, as shown in Figure 10. Apply the W-Type 6 Sprinkler Wrench to the wrench flats shown in Figure 5 and Figure 6.

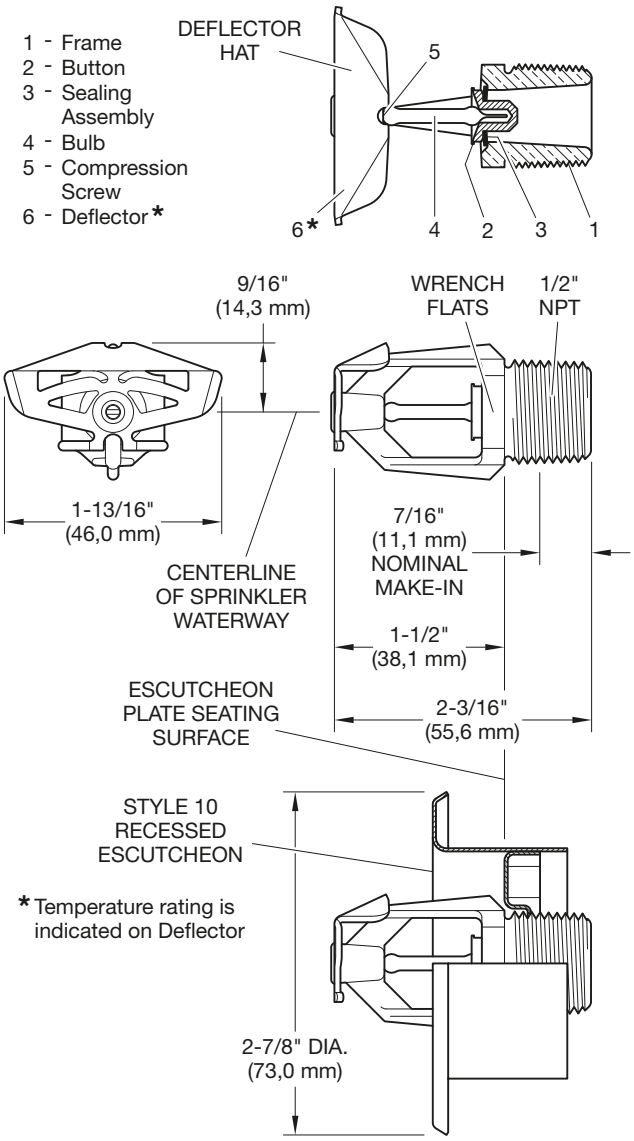


FIGURE 6
POLY-STAINLESS SERIES TY-FRB QUICK RESPONSE HORIZONTAL SIDEWALL (TY3331) 5.6 K-FACTOR 1/2 INCH NPT SPRINKLERS

Recessed Horizontal Sidewall Sprinklers
The Poly-Stainless Series TY-B and TY-FRB Recessed Horizontal Sidewall Sprinklers must be installed in accordance with the following instructions:

Step 1E. Recessed horizontal sidewall sprinklers are to be positioned in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. The word “TOP” on the deflector is to face towards the ceiling.

Step 2E. After installing the Style 10 Mounting Plate over the sprinkler threads and with pipe thread sealant applied to the sprinkler threads, hand tighten the sprinkler into the sprinkler fitting.

Step 3E. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench, refer to Figure 11. Apply the W-Type 7 Sprinkler Wrench to the wrench flats shown in Figure 5 and Figure 6.

Step 4E. After the wall has been installed or the finish coat has been applied, slide the Style 10 Closure over the sprinkler and push the Closure over the Mounting Plate until it comes in contact with the wall mounting surface.

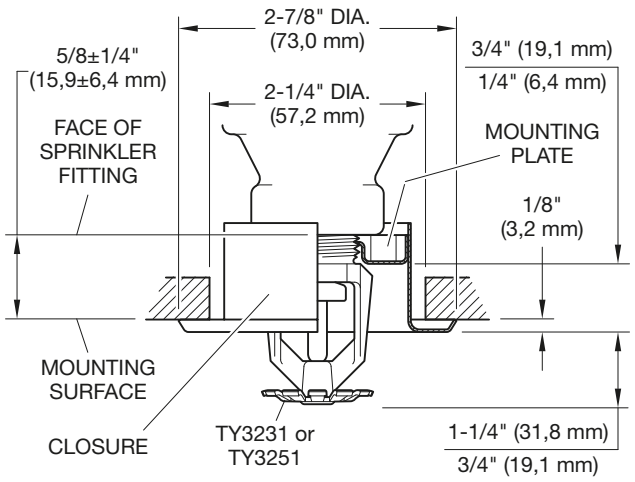


FIGURE 7
POLY-STAINLESS SERIES TY-B OR TY-FRB RECESSED PENDENT 5.6 K-FACTOR 1/2 INCH NPT SPRINKLER ASSEMBLY WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT STYLE 10 RECESSED ESCUTCHEON

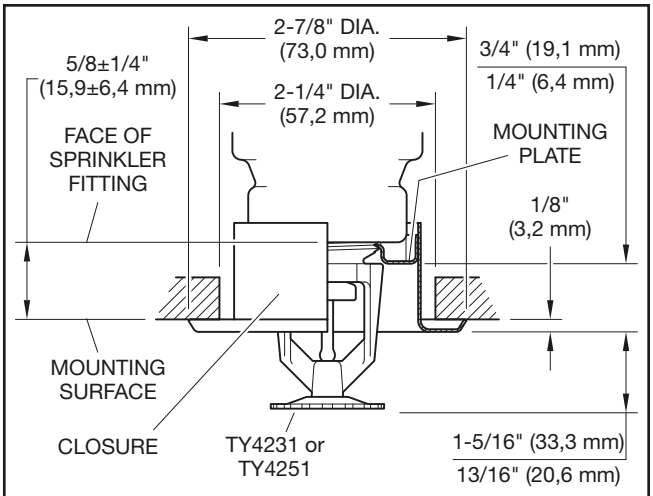


FIGURE 8
POLY-STAINLESS SERIES TY-B OR TY-FRB RECESSED PENDENT 8.0 K-FACTOR 3/4 INCH NPT SPRINKLER ASSEMBLY WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT STYLE 40 RECESSED ESCUTCHEON

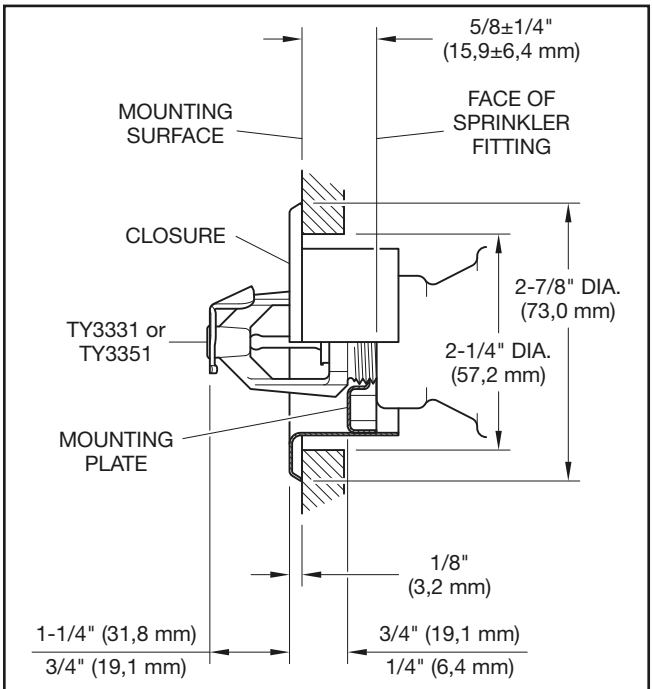


FIGURE 9
POLY-STAINLESS SERIES TY-B OR TY-FRB RECESSED HORIZONTAL SIDEWALL 5.6 K-FACTOR 1/2 INCH NPT SPRINKLER ASSEMBLY WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT STYLE 10 RECESSED ESCUTCHEON

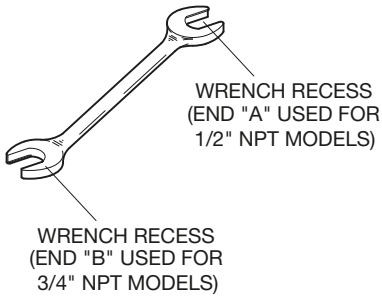
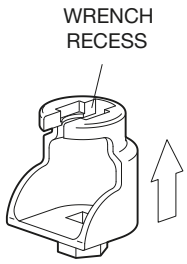


FIGURE 10
W-TYPE 6 SPRINKLER WRENCH



PUSH WRENCH
IN TO ENSURE
ENGAGEMENT
WITH SPRINKLER
WRENCHING AREA

FIGURE 11
W-TYPE 7 SPRINKLER WRENCH

Care and Maintenance

The TYCO Series TY-B and TY-FRB Sprinklers must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

The owner must assure that the sprinklers are not used for hanging of any objects; otherwise, non-operation in the event of a fire or inadvertent operation may result.

Absence of an escutcheon, which is used to cover a clearance hole, may delay the time to sprinkler operation in a fire situation.

Sprinklers that are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage to the sprinklers before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. For more information, see the Installation section.

Frequent visual inspections are recommended to be initially performed for corrosion resistant sprinklers, after the installation has been completed, to verify the integrity of the corrosion resistant material of construction.

P/N 57 — XXX — X — XXX

	Standard Response (SR)	SIN
570	TY-B 5.6K Upright SR	TY3151
590	TY-B 8.0K Upright SR	TY4151
571	TY-B 5.6K Pendent SR	TY3251
591	TY-B 8.0K Pendent SR	TY4251
578	TY-B 5.6K HSW SR	TY3351

	Quick Response (QR)	SIN
370	TY-FRB 5.6K Upright QR	TY3131
390	TY-FRB 8.0K Upright QR	TY4131
371	TY-FRB 5.6K Pendent QR	TY3231
391	TY-FRB 8.0K Pendent QR	TY4231
378	TY-FRB 5.6K HSW QR	TY3331

	Temperature Rating
135	135°F (57°C)
155	155°F (68°C)
175	175°F (79°C)
200	200°F (93°C)
286	286°F (141°C)
360	360°F (182°C)*

* TY-B - Only

	Sprinkler Finish
2	Grey Aluminium (RAL9007)

TABLE D
POLY-STAINLESS SERIES TY-B AND TY-FRB
UPRIGHT, PENDENT AND HORIZONTAL SIDEWALL SPRINKLERS
PART NUMBER SELECTION

Thereafter, annual inspections according to NFPA 25 should suffice; however, instead of inspecting from the floor level, a random sampling of close-up visual inspections should be made, so as to better determine the exact sprinkler condition and the long term integrity of the corrosion resistant material of construction, as it may be affected by the corrosive conditions present.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association such as NFPA 25, in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

Automatic sprinkler systems should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Sprinkler Assemblies
Specify: (specify SIN), (specify Standard Response or Quick Response), (specify K-factor), (specify) temperature rating, (specify Upright, Pendent or HSW), P/N (specify from Table D)

Recessed Escutcheon
Specify: Style (specify 10 or 40) Recessed Escutcheon, Grey Aluminum (RAL9007) finish, P/N (specify*)

*Refer to Technical Data Sheet TFP770.

Sprinkler Wrench
Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387

Specify: W-Type 7 Recessed Sprinkler Wrench, P/N 56-850-4-001

1467 Elmwood Avenue, Cranston, RI 02910 | Telephone +1-401-781-8220

Johnson Controls

Series ELO-231FRB – 11.2 K-factor Upright and Pendent Sprinklers Quick Response, Standard Coverage

IMPORTANT

Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.

docs.jci.com/tycofire/tfp344

General Description

TYCO Series ELO-231FRB 11.2K Quick Response, Standard Coverage, Upright and Pendent Sprinklers (see Figure 1) are automatic sprinklers of the frangible bulb type. They are quick response spray sprinklers that produce a hemispherical water distribution pattern below the deflector.

The 11.2K ELO-231FRB Upright and Pendent Sprinklers were subjected to full scale, high-piled storage fire tests to qualify their use in lieu of 5.6 or 8.0 K-factor standard spray sprinklers for the protection of high-piled storage.

Higher flow rates can be achieved at much lower pressures with the 11.2K ELO-231FRB Sprinklers, making their use highly advantageous in high density applications, such as the protection of high-piled storage.

For in-rack applications, an upright intermediate level version of the Series ELO-231FRB Sprinklers can be obtained by utilizing the Series ELO-231FRB Upright Sprinkler with the WSG-2 Guard & Shield, and a pendent intermediate level version of the Series ELO-231FRB Sprinklers can be obtained by utilizing the Series ELO-231FRB Pendent Sprinkler with the WS-2 Shield. If there is a possibility of the pendent intermediate level version being exposed to mechanical damage, a G-2 Guard can be added.

NOTICE

The Series ELO-231FRB Sprinklers described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (NFPA), in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

Installation of Series ELO-231FRB Pendent Sprinklers in recessed escutcheons will void all sprinkler warranties, as well as possibly void the sprinkler's Approvals and/or Listings.

NFPA 13 prohibits the installation of 1/2 in. NPT sprinklers with a K-factor greater than 5.6K in new installations. They are intended for use in retrofit applications only.

Sprinkler Identification Numbers (SINs)

See Table A

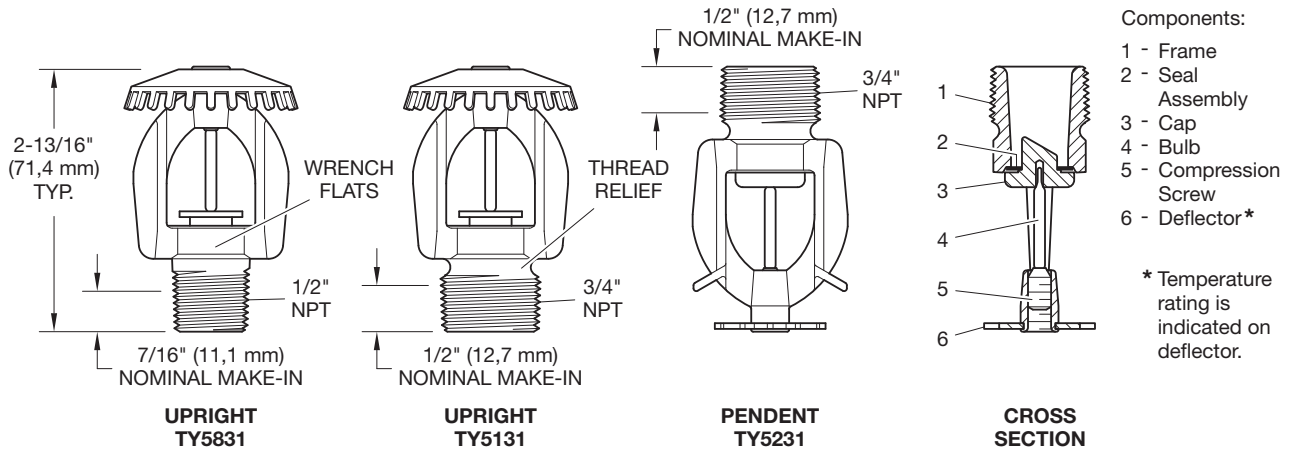


FIGURE 1
SERIES ELO-231FRB 11.2K UPRIGHT - 3/4 IN. NPT (TY5131), UPRIGHT - 1/2 IN. NPT (TY5831), AND PENDENT - 3/4 IN. NPT (TY5231) SPRINKLERS

Technical Data

Approvals
UL and C-UL Listed
FM Approved
NYC Approved
VdS Approved
LPCB Approved
EAC Approved

Note: *For complete approval information, see Table C. UL and C-UL Listings and FM Approval apply to the service conditions described in the Design Criteria section.*

Finishes
Sprinkler: See Table C

Physical Characteristics

Frame	Bronze
Cap	Bronze
Sealing Assembly	Beryllium Nickel w/TEFLON
Bulb (3mm dia.)	Glass
Compression Screw	Bronze
Deflector	Bronze

Additional Technical Data
See Table A

Item	Description
Sprinkler Identification Number (SIN)	TY5131 – Upright 3/4 in. NPT TY5231 – Pendent 3/4 in. NPT TY5831 - Upright 1/2 in. NPT TY5131 is a re-designation for Central SIN C5131. TY5231 is a re-designation for Central SIN C5231, G1870, and S2551.
K-factor, (gpm/psi) (lpm/bar)	K=11.2 GPM/psi½ (161,4 LPM/bar½)
Temperature Rating °F (°C)[1]	155°F (68°C)[1] 200°F (93°C) 286°F (141°C)
Thread Size	3/4 in. NPT or 1/2 in. NPT
Sprinkler Orientation	Upright/Pendent
Maximum Working Pressure, psi (bar)	175 psi (12,1 bar)

Notes:
1. For laboratory listings and approvals, see Table C.

TABLE A
SERIES ELO-231FRB 11.2K UPRIGHT AND PENDENT SPRINKLERS TECHNICAL DATA

Operation

The glass bulb contains a fluid that expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.

Design Criteria

UL and C-UL Listings Requirements
The 11.2K Model ELO-231FRB (TY5131, TY5231, and TY5831) Sprinklers are to be installed in accordance with NFPA 13 standard sprinkler position and area/density flow calculation requirements for light or ordinary occupancies, as well as high-piled storage occupancies (solid-piled, palletized, rack storage, bin box, and shelf storage including but not limited to Class I-IV and Group A plastics) with a minimum residual (flowing) pressure of 7 psi (0,5 bar) for wet pipe systems only. For additional information, see Table B.

FM Approval Requirements
The 11.2K Model ELO-231FRB (TY5131 and TY5231) Sprinklers are to be installed in accordance with the applicable control mode density/area guidelines provided by FM Approvals for wet systems only.

Note: *FM Approvals guidelines may differ from UL and C-UL Listings criteria.*

Storage Type	NFPA	FM Global
Sprinkler Type	Standard Coverage	Storage
Response Type	QR	QR
System Type	Wet	Wet
Temperature Rating ºF (ºC)[1]	155°F (68°C)[1] 200°F (93°C) 286°F (141°C)	155°F (68°C)[1] 200°F (93°C) 286°F (141°C)
Open Frame (i.e., no solid shelves) Single, Double, Multiple-Row, or Portable Rack Storage of Class I-IV and Group A or B Plastics	Refer to NFPA 13	Refer to FM 2-0 and 8-9
Solid Pile or Palletized Storage of Class I-IV and Group A or B Plastics	Refer to NFPA 13	Refer to FM 2-0 and 8-9
Idle Pallet Storage	Refer to NFPA 13	Refer to FM 2-0, 8-9, and 8-24
Rubber Tire Storage	Refer to NFPA 13	Refer to FM 2-0 and 8-3
Roll Paper Storage (Refer to the Standard)	Refer to NFPA 13	Refer to FM 8-21
Flammable/Ignitable Liquid Storage (Refer to the Standard)	Refer to NFPA 30	Refer to FM 7-29
Aerosol Storage (Refer to the Standard)	Refer to NFPA 30B	Refer to FM 7-31
Automotive Components in Portable Racks (Control mode only; refer to the Standard)	Refer to NFPA 13	N/A

Notes:
1. For laboratory listings and approvals, see Table C.

N/A – Not Applicable

TABLE B
SERIES ELO-231FRB 11.2K UPRIGHT AND PENDENT SPRINKLERS
COMMODITY SELECTION AND DESIGN CRITERIA OVERVIEW

Sprinkler Type	Temperature Rating	Bulb Liquid Color	Sprinkler Finish	
			Natural Brass	Chrome Plated
Upright (TY5131) & Pendent (TY5231)	155°F (68°C)	Red	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7
	200°F (93°C)	Green		
	286°F (141°C)	Blue		
Upright (TY5831)	155°F (68°C)	Red	1	N/A
	200°F (93°C)	Green		

Notes:
1. UL Listed
2. C-UL Listed
3. FM Approved
4. NYC Approved under MEA 291-04-E
5. VdS Approved, TY5131 Ref. No. G410022 and TY5231 Ref. No. G410023
6. LPCB Approved, TY5131 Ref. No. 094c/01 and TY5231 Ref. No. 094c/02
7. EAC Approved

N/A - Not Available

TABLE C
SERIES ELO-231FRB UPRIGHT AND PENDENT 11.2K SPRINKLERS, QUICK RESPONSE
LABORATORY LISTINGS AND APPROVALS
(See the Design Criteria Section)

P/N 50 — XXX — X — XXX

		SIN
500	11.2K UPRIGHT (3/4 in. NPT)	TY5131
502	11.2K PENDENT (3/4 in. NPT)	TY5231
503	11.2K UPRIGHT (1/2 in. NPT)	TY5831[b]

	SPRINKLER FINISH
1	NATURAL BRASS
9	CHROME PLATED[b]

	TEMPERATURE RATING
155	155°F (68°C)
200	200°F (93°C)
286	286°F (141°C)[b]

a. For TY5131 and TY5231 sprinklers only.
b. For retrofit applications only.

TABLE D
SERIES ELO-231FRB UPRIGHT & PENDENT 11.2K SPRINKLERS, QUICK RESPONSE PART NUMBER SELECTION

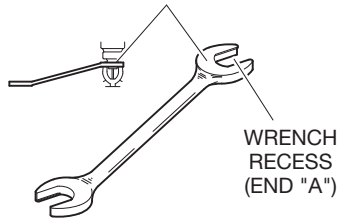


FIGURE 2
W-TYPE 3
SPRINKLER WRENCH

Installation

TYCO Series ELO-231FRB 11.2K Quick Response, Standard Coverage, Upright and Pendent Sprinklers must be installed in accordance with this section.

General Instructions

NOTICE

Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 in. (1,6 mm) for the 155°F (68°C) to 3/32 in. (2,4 mm) for the 286°F (141°C) temperature ratings.

A leak tight 1/2 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 7 ft-lb to 14 ft-lb (9,5 N·m to 19,0 N·m). A leak-tight 3/4 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 10 ft-lb to 20 ft-lb(13,4 N·m to 26,8 N·m). Higher levels of torque can distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to make up for insufficient adjustment in the escutcheon plate by under- or over-tightening the sprinkler. Readjust the position of the sprinkler fitting to suit.

The Series ELO-231FRB Upright and Pendent Sprinklers must be installed in accordance with the following instructions:

Step 1. Upright sprinklers are to be installed in the upright position; pendent sprinklers are to be installed in the pendent position.

Step 2. With pipe thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 3 Sprinkler Wrench shown in Figure 2. Apply the sprinkler wrench to the wrench flats shown in Figure 1.

Care and Maintenance

TYCO Series ELO-231FRB 11.2K Quick Response, Standard Coverage, Upright and Pendent Sprinklers must be maintained and serviced in accordance with this section.

Before closing a fire protection system control valve for maintenance work on the fire protection system that it controls, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

Sprinklers that are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage to the sprinklers before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. For additional information, refer to the Installation section.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association such as NFPA 25, in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Sprinkler
Specify: Series ELO-231FRB 11.2K Quick Response (specify Pendent or Upright) Sprinkler, (specify SIN), (specify) temperature rating, (specify) finish, P/N (specify from Table D)

Sprinkler Wrench
Specify: W-Type 3 Sprinkler Wrench, P/N 56-895-1-001

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Johnson Controls

Series DS-2 Dry-Type Sprinklers 11.2K Pendent Standard and Quick Response, Standard Coverage

General Description

TYCO Series DS-2 Dry-Type Sprinklers, 11.2K Pendent, Standard (5 mm bulb) and Quick Response (3 mm bulb), and Standard Coverage are decorative glass bulb automatic sprinklers typically used where:

- pendent sprinklers are required on dry pipe systems that are exposed to freezing temperatures (e.g., sprinkler drops from unheated portions of buildings)
- sprinklers and/or a portion of the connecting piping may be exposed to freezing temperatures (e.g., sprinkler drops from wet systems into freezers)

NOTICE

Series DS-2 Dry-Type Sprinklers described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

IMPORTANT

Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

Series DS-2 Dry-Type Sprinklers must only be installed in fittings that meet the requirements of the Design Criteria section.

Sprinkler Identification Numbers (SINs)

TY5255 – Standard Response
TY5235 – Quick Response

Technical Data

Approvals
UL and C-UL Listed
NYC Approved under MEA 173-02-E

See Table A.

Maximum Working Pressure
175 psi (12,1 bar)

Inlet Thread Connections
1 in. NPT
ISO 7-R 1

Discharge Coefficient
See Table C.

Temperature Ratings
See Table A.

Finishes
Sprinkler: See Table D.
Escutcheon: See Table D.

Physical Characteristics

Inlet	Copper
Plug	Copper
Yoke	Stainless Steel
Casing	Galvanized Carbon Steel
Insert	Bronze
Bulb Seat	Bronze
Bulb	Glass
Compression Screw	Bronze
Deflector	Bronze
Frame	Bronze
Guide Tube	Stainless Steel
Water Tube	Stainless Steel
Spring	Stainless Steel Gasketed Spring
Plate Seal	Beryllium Nickel w/TEFLON
Pin	Stainless Steel
Button Spring	Stainless Steel
Escutcheon	Carbon Steel

Operation

When TYCO Series DS-2 Dry-Type Sprinklers, 11.2K Pendent, Standard (5 mm bulb) and Quick Response (3 mm bulb), and Standard Coverage are in service, water is prevented from entering the assembly by the Plug with Gasketed Spring Plate Seal (see Figure 1) in the Inlet of the sprinkler.

The glass bulb contains a fluid that expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, and the Bulb Seat is released.

The compressed Spring is then able to expand and push the Water Tube as well as the Guide Tube outward. This action simultaneously pulls inward on the Yoke, withdrawing the Plug with Gasketed Spring Plate Seal from the Inlet, allowing the sprinkler to activate and flow water.

Temperature Rating	Bulb Color Code	**TY5255** Standard Response **TY5235** Quick Response with Flush Escutcheon (Figure 2) with Recessed Escutcheon (Figure 3) with Extended Escutcheon (Figure 4) without Escutcheon (Figure 5)		
		SPRINKLER FINISH		
		Natural Brass	**Chromed Plated**	**Signal White**
135°F (57°C)	Orange	1, 2, 3		
155°F (68°C)	Red			
175°F (79°C)	Yellow			
200°F (93°C)	Green			
286°F (141°C)	Blue			

Notes:
1. Listed by Underwriters Laboratories, Inc. (UL), maximum order length of 48 inches
2. Listed by Underwriters Laboratories for use in Canada (C-UL), maximum order length of 48 inches
3. Approved by the City of New York under MEA 173-02-E

TABLE A
SERIES DS-2 STANDARD & QUICK RESPONSE, STANDARD COVERAGE DRY-TYPE PENDENT SPRINKLERS LABORATORY LISTINGS AND APPROVALS

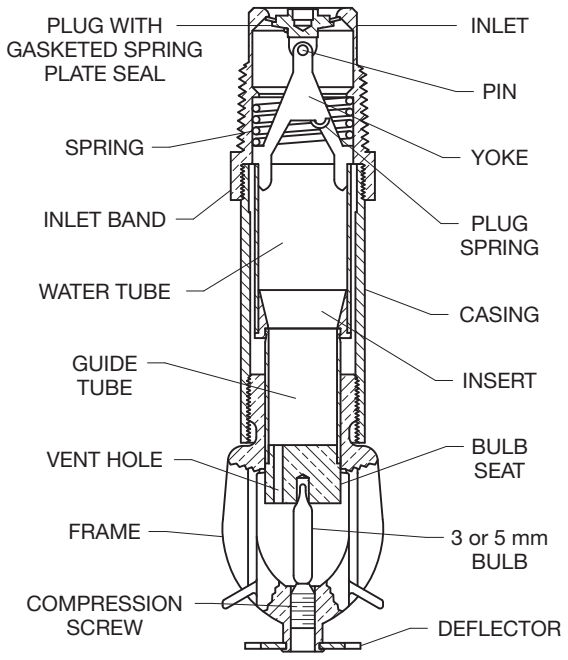

FIGURE 1
SERIES DS-2 STANDARD & QUICK RESPONSE DRY-TYPE PENDENT SPRINKLER ASSEMBLY

Design Criteria

TYCO Series DS-2 Dry-Type Sprinklers, 11.2K Pendent, Standard (5 mm bulb) and Quick Response (3 mm bulb), and Standard Coverage are intended for use in fire sprinkler systems designed in accordance with the standard coverage installation rules recognized by the applicable listing agency (e.g., UL Listing is based on NFPA 13 requirements).

Sprinkler Fittings
Install 1 in. NPT Series DS-2 Dry-Type Sprinklers in the 1 in. NPT outlet or run of the following fittings:

- malleable or ductile iron threaded tee fittings that meet the dimensional requirements of ANSI B16.3 (Class 150)
- cast iron threaded tee fittings that meet the dimensional requirements of ANSI B16.4 (Class 125)

Do not install Series DS-2 Dry-Type Sprinklers into elbow fittings. The Inlet of the sprinkler can contact the interior of the elbow.

The unused outlet of the threaded tee is plugged as shown in Figure 9.

You can also install Series DS-2 Dry-Type Sprinklers in the 1 in. NPT outlet of a GRINNELL Figure 730 Mechanical Tee. However, the use of the Figure 730 Tee for this arrangement is limited to wet pipe systems.

The configuration shown in Figure 8 is only applicable for wet pipe systems where the sprinkler fitting and water-filled pipe above the sprinkler fitting are not subject to freezing and where the length of the dry-type sprinkler has the minimum exposure length depicted in Figure 10. See the Exposure Length section.

For wet pipe system installations of 1 in. NPT Series DS-2 Dry-Type Sprinklers connected to CPVC piping, use only the following TYCO CPVC fittings:

- 1 in. x 1 in. NPT Female Adapter (P/N 80145)
- 1 in. x 1 in. x 1 in. NPT Sprinkler Head Adapter Tee (P/N 80249)

For dry pipe system installations, use only the side outlet of maximum 2 1/2 in. reducing tee when locating Series DS-2 Dry-Type Sprinklers directly below the branchline. Otherwise, use the configuration shown in Figure 9 to assure complete water drainage from above Series DS-2 Dry-Type Sprinklers and the branchline. Failure to do so may result in pipe freezing and water damage.

Ambient Temperature Exposed to Discharge End of Sprinkler	Temperatures for Heated Area[1]		
	40°F (4°C)	50°F (10°C)	60°F (16°C)
	Minimum Exposed Barrel Length[2], Inches (mm)		
40°F (4°C)	0	0	0
30°F (-1°C)	0	0	0
20°F (-7°C)	4 (100)	0	0
10°F (-12°C)	8 (200)	1 (25)	0
0°F (-18°C)	12 (305)	3 (75)	0
-10°F (-23°C)	14 (355)	4 (100)	1 (25)
-20°F (-29°C)	14 (355)	6 (150)	3 (75)
-30°F (-34°C)	16 (405)	8 (200)	4 (100)
-40°F (-40°C)	18 (455)	8 (200)	4 (100)
-50°F (-46°C)	20 (510)	10 (255)	6 (150)
-60°F (-51°C)	20 (510)	10 (255)	6 (150)

Notes:
1. For protected area temperatures that occur between values listed above, use the next cooler temperature.
2. These lengths are inclusive of wind velocities up to 30 mph (18,6 kph).

TABLE B
EXPOSED SPRINKLER BARRELS IN WET PIPE SYSTEMS
MINIMUM RECOMMENDED LENGTHS

NOTICE

Do not install Series DS-2 Dry-Type Sprinkler into any other type fitting. Failure to use the appropriate fitting may result in one of the following:

- *failure of the sprinkler to operate properly due to formation of ice over the Inlet Plug or binding of the Inlet Plug*
- *insufficient engagement of the Inlet pipe-threads with consequent leakage*

Drainage

In accordance with the minimum requirements of the NATIONAL FIRE PROTECTION ASSOCIATION for dry pipe sprinkler systems, branch, cross, and feed-main piping connected to dry sprinklers and subject to freezing temperatures must be pitched for proper drainage.

Exposure Length

When using dry sprinklers in wet pipe sprinkler systems to protect areas subject to freezing temperatures, use Table B to determine a sprinkler's appropriate exposed barrel length to prevent water from freezing in the connecting pipes due to conduction. The exposed barrel length measurement must be taken from the face of the sprinkler fitting to the surface of the structure or insulation that is exposed to the heated area. See Figure 10 for an example.

For protected area temperatures between those given above, the minimum recommended length from the face of the fitting to the outside of the protected area may be determined by interpolating between the indicated values.

Clearance Space

In accordance with Section 8.4.9.2 of the 2010 edition of NFPA 13, when connecting an area subject to freezing and an area containing a wet pipe sprinkler system, the clearance space around the sprinkler barrel of dry-type sprinklers must be sealed. Due to temperature differences between two areas, the potential for the formation of condensation in the sprinkler and subsequent ice build-up is increased. If this condensation is not controlled, ice build-up can occur that might damage the dry-type sprinkler and/or prevent proper operation in a fire situation.

Use of the Model DSB-2 Dry Sprinkler Boot, described in Technical Data Sheet TFP591 and shown in Figure 11, can provide the recommended seal.

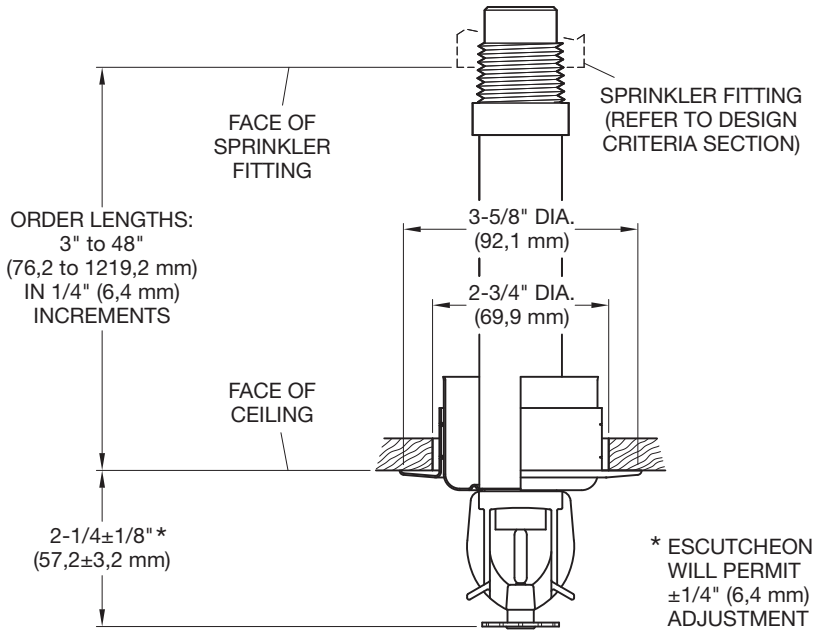

FIGURE 2
SERIES DS-2 DRY-TYPE PENDENT WITH FLUSH ESCUTCHEON
STANDARD RESPONSE (TY5255) OR QUICK RESPONSE (TY5235)

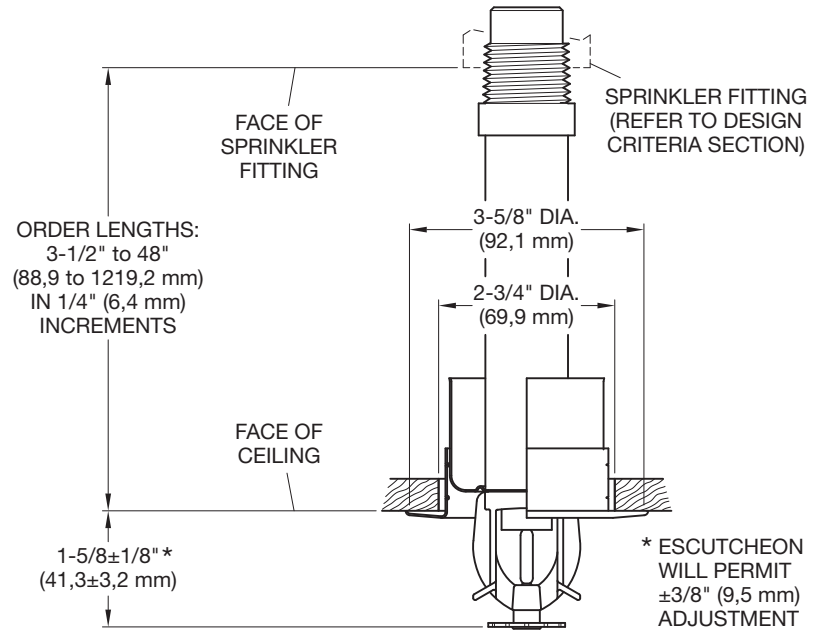

FIGURE 3
SERIES DS-2 DRY-TYPE PENDENT WITH RECESSED ESCUTCHEON
STANDARD RESPONSE (TY5255) OR QUICK RESPONSE (TY5235)

K-factor Length, Inches (mm)	K-factor, GPM/psi½ (LPM/bar½)
2-1/2 to 6-1/4 (63 mm to 159 mm)	11.2 (161,3)
6-1/2 to 10-1/2 (165 mm to 267 mm)	11.1 (159,8)
10-3/4 to 14-3/4 (273 mm to 375 mm)	11.0 (158,4)
15 to 18-3/4 (381 mm to 476 mm)	10.9 (157,0)
19 to 23 (483 mm to 584 mm)	10.8 (155,5)
23-1/4 to 26-3/4 (591 mm to 679 mm)	10.7 (154,1)
27-1/4 to 31-1/4 (692 mm to 794 mm)	10.6 (152,6)
31-1/2 to 35-1/4 (800 mm to 895 mm)	10.5 (151,2)
35-1/2 to 39-1/2 (902 mm to 1003 mm)	10.4 (149,8)
39-3/4 to 43-1/2 (1010 mm to 1105 mm)	10.3 (148,3)
43-3/4 to 48 (1111 mm to 1219 mm)	10.2 (146,9)

Notes:
K-factor Length is determined as follows:
- Flush: Order Length from Figure 2 plus 1/2 in. (12,7 mm)
- Recessed: Order Length from Figure 3 plus 1/4 in. (6,3 mm)
- Extended: Order Length from Figure 4 plus 3-1/4 in. (82,6 mm)
- Without Escutcheon: Order Length from Figure 5 minus 2-1/4 in. (57,2 mm)

TABLE C
DISCHARGE COEFFICIENTS

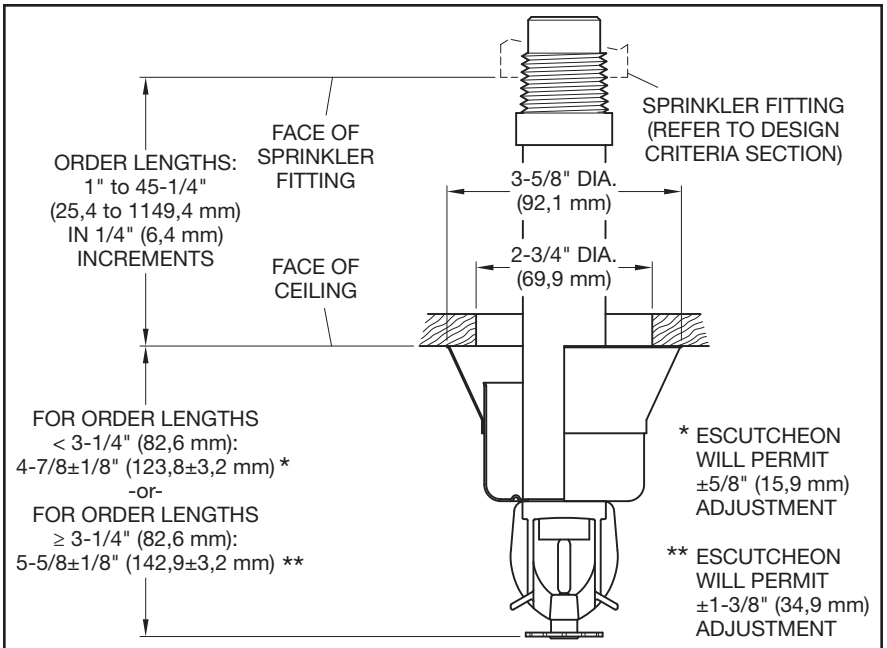

FIGURE 4
SERIES DS-2 DRY-TYPE PENDENT WITH EXTENDED ESCUTCHEON
STANDARD RESPONSE (TY5255) OR QUICK RESPONSE (TY5235)

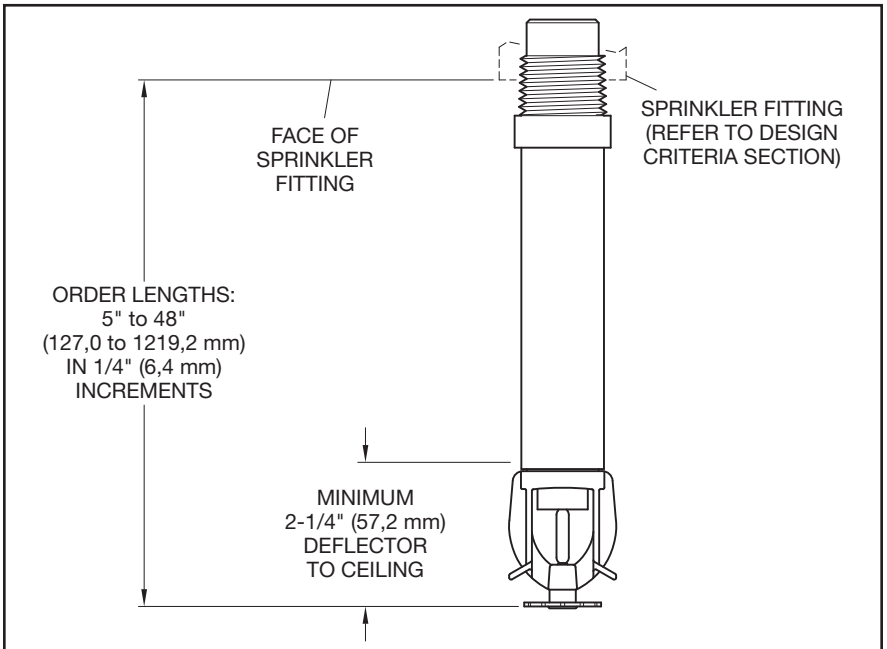

FIGURE 5
SERIES DS-2 DRY-TYPE PENDENT WITHOUT ESCUTCHEON
STANDARD RESPONSE (TY5255) OR QUICK RESPONSE (TY5235)

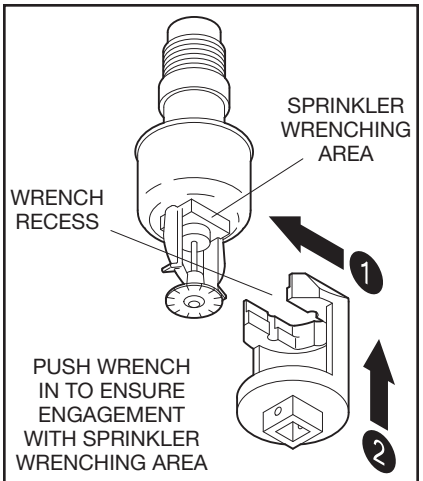

FIGURE 6
W-TYPE 17
SPRINKLER WRENCH

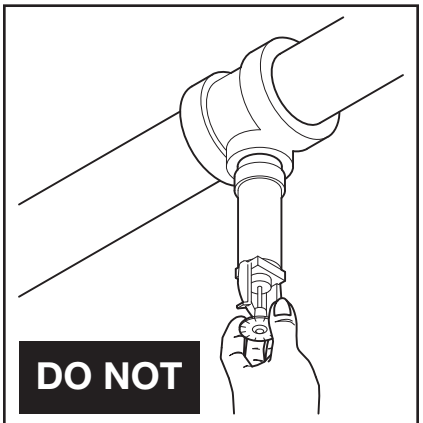

FIGURE 7
DO NOT GRASP DEFLECTOR

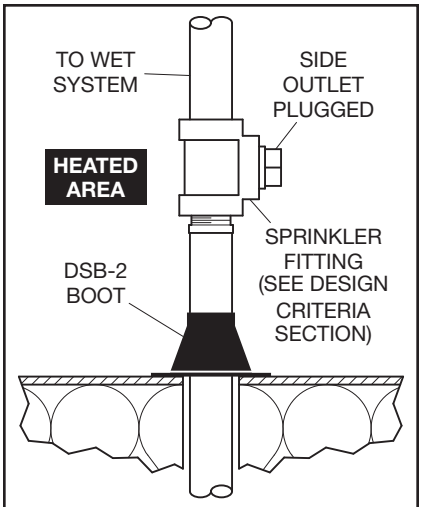

FIGURE 8
SPRINKLER FITTING
HEATED AREA

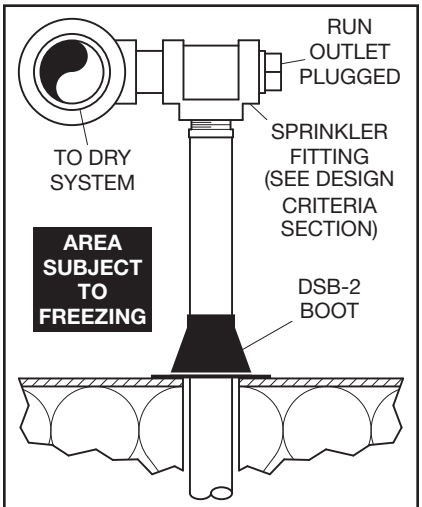

FIGURE 9
SPRINKLER FITTING
UNHEATED AREA

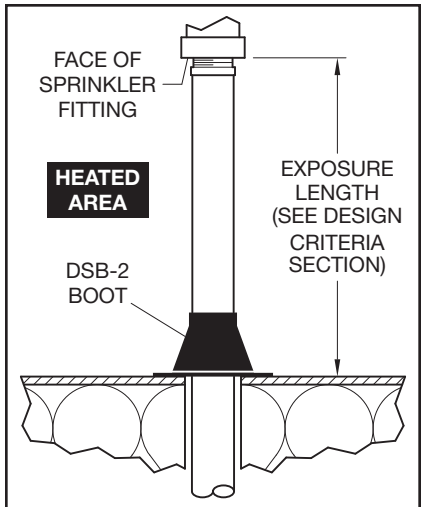

FIGURE 10
EXPOSURE LENGTH

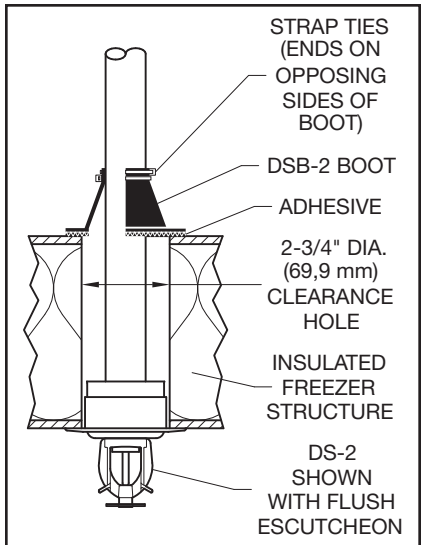

FIGURE 11
MODEL DSB-2 DRY SPRINKLER BOOT WITH SERIES DS-2 DRY-TYPE PENDENT SPRINKLER

Installation

TYCO Series DS-2 Dry-Type Sprinklers, 11.2K Pendent, Standard (5 mm bulb) and Quick Response (3 mm bulb), and Standard Coverage must be installed in accordance with this section.

General Instructions
Series DS-2 Dry-Type Sprinklers must only be installed in fittings that meet the requirements of the Design Criteria section. See the Design Criteria section for other important requirements regarding piping design and sealing of the clearance space around the sprinkler Casing. With reference to Figure 7, do not grasp the sprinkler by the Deflector. Failure to follow this instruction may impair performance of the device.

Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 in. (1,6 mm) for the 135°F (57°C) rating to 1/8 in. (3,2 mm) for the 360°F (182°C) rating.

A leak-tight 1 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 20 to 30 lb-ft (26,8 to 40,2 N·m). Higher levels of torque may distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in an Escutcheon Plate by under or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

Note: *Install pendent sprinklers only in the pendent position. The Deflector of a pendent sprinkler must be parallel to the ceiling.*

Step 1. With a non-hardening pipe-thread sealant such as TEFLON applied to the Inlet threads, hand-tighten the sprinkler into the sprinkler fitting. Do not grasp the sprinkler by the Deflector, see Figure 7.

Step 2. Wrench-tighten the sprinkler using either:

- a pipe wrench on the Inlet Band or the Casing, see Figure 1
- the W-Type 17 Sprinkler Wrench on the Wrench Flat, see Figure 2

Apply the Wrench Recess of the W-Type 17 Sprinkler Wrench to the Wrench Flat.

Note: *If sprinkler removal becomes necessary, remove the sprinkler using the same wrenching method noted above. Sprinkler removal is easier when a non-hardening sealant was used and torque guidelines were followed. After removal, inspect the sprinkler for damage.*

Step 3. After installing the ceiling and applying a ceiling finish, slide on the outer piece of the escutcheon until it comes in contact with the ceiling. Do not lift the ceiling panel out of its normal position.

When using the Deep Escutcheon, hold the outer piece in contact with the mounting surface (ceiling or wall). Then rotate the inner piece approximately 1/4 turn with respect to the outer piece, to hold the Deep Escutcheon firmly together.

Care and Maintenance

TYCO Series DS-2 Dry-Type Sprinklers, 11.2K Pendent, Standard (5 mm bulb) and Quick Response (3 mm bulb), and Standard Coverage must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection systems from the proper authorities and notify all personnel who may be affected by this action.

Absence of the outer piece of an escutcheon, which is used to cover a

clearance hole, may delay the time to sprinkler operation in a fire situation.

A Vent Hole is provided in the Bulb Seat (Figure 1) to indicate if the Dry Sprinkler is remaining dry. Evidence of leakage from the Vent Hole indicates potential leakage past the Inlet seal and the need to remove the sprinkler to determine the cause of leakage (e.g., an improper installation or an ice plug). Close the fire protection system control valve and drain the system before removing the sprinkler.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage to the sprinklers – before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb, see Installation Section.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION, such as NFPA 25, in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and part number (P/N).

Dry-Type Sprinkler
When ordering Series DS-2 Dry-Type Sprinklers, 11.2K Pendent, Standard (5 mm bulb) and Quick Response (3 mm bulb), and Standard Coverage, specify the following information:

- SIN:
  TY5255 – Standard Response
  TY5235 – Quick Response
- Order Length:
  Dry-Type Sprinklers are furnished based upon Order Length as measured from the face of the ceiling to the face of the sprinkler fitting see Figures 2 through 5. After the measurement is taken, round it to the nearest 1/4 in. increment.
- Inlet Connections:
  1 in. NPT
  (Standard)

  ISO 7-R 1
  (For information on ISO Inlet Thread Connections, contact your Johnson Controls Sales Representative.)
- Temperature Rating
- Sprinkler Finish
- Escutcheon Type and Finish, as applicable
- Part Number from Table D

Replacement Escutcheons
Order replacement escutcheons separately.

Specify: (specify type), (specify) finish, P/N (specify):

Flush and Recessed
White Color 854902
Chrome Plated 854912
Brass Plated. 854922

Deep
White Color 854802
Chrome Plated 854812
Brass Plated. 854822

Sprinkler Wrench
Specify W-Type 17 Sprinkler Wrench, P/N 56-010-4-118

Sprinkler Boot
Specify Model DSB-2 Dry Sprinkler Boot, P/N 63-000-0-002

This Part Number includes one (1) Boot, two (2) Strap Ties, and 1/3 oz of Adhesive (a quantity sufficient for installing one boot).

P/N* 61 – XXX – X – XXX

		SIN
10	Standard Response Pendent with Flush Escutcheon	TY5255 (Figure 2)
11	Standard Response Pendent with Recessed Escutcheon	TY5255 (Figure 3)
12	Standard Response Pendent with Extended Escutcheon	TY5255 (Figure 4)
13	Standard Response Pendent without Escutcheon	TY5255 (Figure 5)
30	Quick Response Pendent with Flush Escutcheon	TY5235 (Figure 2)
31	Quick Response Pendent with Recessed Escutcheon	TY5235 (Figure 3)
32	Quick Response Pendent with Extended Escutcheon	TY5235 (Figure 4)
35	Quick Response Pendent without Escutcheon	TY5235 (Figure 5)

	SPRINKLER FINISH	ESCUTCHEON FINISH[1]
0	CHROME PLATED	SIGNAL WHITE (RAL9003)
1	NATURAL BRASS	SIGNAL WHITE (RAL9003)
4	SIGNAL WHITE (RAL9003)	SIGNAL WHITE (RAL9003)
5	NATURAL BRASS	BRASS PLATED
9	CHROME PLATED	CHROME PLATED

	ORDER LENGTH[2]
055	5.50 in.
082	8.25 in.
180	18.00 in.
187	18.75 in.
372	37.25 in.
480	48.00 in.

	TEMPERATURE RATING
0	135°F (57°C)
1	155°F (68°C)
2	175°F (79°C)
3	200°F (93°C)
4	286°F (141°C)

Notes:
1. Escutcheon Finish applies to sprinklers with escutcheons.
2. Dry-Type Sprinklers are furnished based upon "Order Length" as measured per Figures 2 through 5, as applicable, and for each individual sprinkler where it is to be installed. After the measurement is taken, round it to the nearest 1/4 inch increment.

* Use Prefix "I" for ISO 7-R1 Connection (e.g., I-61-101-1-180).

TABLE D
SERIES DS-2 STANDARD AND QUICK RESPONSE, STANDARD COVERAGE, DRY-TYPE SPRINKLERS
PART NUMBER SELECTION

1400 Pennbrook Parkway, Lansdale, PA 19446 | Telephone +1-215-362-0700

TFP530
Change History Appendix

ISSUE DATE	NOTES
09-21	Added Replacement Escutcheons to Ordering Procedure.
11-19	Removed consulting Technical Services Department statement from Sprinkler Fittings subsection Notice.
08-18	Updated Tyco® branding and document format; Added Johnson Controls copyright; Added disclaimer stating specifications and information subject to change without notice; Added reference to Regulatory and Health Warning Technical Data Sheet TFP2300.
01-14	Removed note from Table D Part Number Selection limiting sprinklers having 286°F (141°C) temperature rating to non-recessed assemblies only.
06-13	Clarified Sprinkler with Extended Escutcheon order length specification to lengths greater than 3-1/4" (82.6 mm), formerly lengths equaling 3-1/4" (82.6 mm); Updated and standardized RAL color finishes.
05-11	Clarified NYC Approved; Updated minimum order and exposed barrel lengths; Improved Design Criteria section; Updated patent information.
12-07	Added Model DSB-2 Dry Sprinkler Boot; Added NFPA 13 requirements for use of DSB-2; Added illustrations providing guidance on alternative piping connections to dry type sprinklers for freeze protection or system drainage; Added Natural Brass sprinkler with Brass plate escutcheon finish option.
07-04	Clarified sprinkler is not to be installed by grasping deflector.
04-04	Added reference to Installer Warning data sheet TFP700; Added NYC Approved; Added guidance on use of compatible CPVC fittings.
01-03	Added new Tyco Fire & Building Products masthead.
02-02	New Technical Data Sheet for Series DS-2 Dry Type Standard Coverage Pendent Sprinklers.

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Johnson Controls

tyco / Fire & Building Products

Technical Services: Tel: (800) 381-9312 / Fax: (800) 791-5500

Model DSB-1
Dry Sprinkler Boot
For Use With TFP Dry Type Sprinklers

General Description

The Model DSB-1 Dry Sprinkler Boot (Ref. Figure 1) is designed for use with TFP Dry Type Sprinklers. When properly installed, it will help close the air gap created by the clearance hole through a wall or ceiling through which the dry type sprinkler has penetrated.

Predominately, the DSB-1 is intended for use with clearance holes through freezer ceiling structures. In these types of installations, due to the greater temperature difference between the inside and outside of the freezer than found with other type installations, the potential for the formation of condensation in the sprinkler and subsequent ice build-up is increased. If this condensation is not controlled, ice build-up can occur which might damage the dry type sprinkler and/or prevent proper operation in a fire situation.

The DSB-1 is intended to help stop the air exchange between the inside and outside of the freezer (or any other type of similar construction) to help prevent transfer of moist air into the freezer space. The use of the DSB-1 provides a quick and efficient means to closing the air gap created by the dry type sprinkler clearance hole. The DSB-1 provides the added feature of eliminating the occurrence of cracking of some commonly used sealants, where the cracking of these sealants subsequently allows the passage of moist air.

WARNINGS

The Model DSB-1 Dry Sprinkler Boot described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. ***Failure to do so may impair the performance of these devices.***

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

Technical Data

Approvals

The Model DSB-1 Dry Sprinkler Boot does not require laboratory approval to be installed in accordance with the applicable standards of the National Fire Protection Association. The use of the DSB-1 does not alter any of the applicable laboratory approvals for TFP Dry Type Sprinklers.

Dry Type Sprinkler Compatibility and Technical Data Sheet Reference

Series DS-1, Standard Response Standard Coverage, Pendent, Upright and HSW TFP500

Series DS-1, Quick Response Standard Coverage, Pendent, Upright and HSW TFP510

Series DS-C, Standard Coverage Concealed Pendent . . . TFP515

Series DS-ECC, Extended Coverage Concealed Pendent . . . TFP518

Series DS-1, Extended Coverage Horizontal Sidewall TFP520

Series DS-2, Standard Coverage Pendent . . . TFP530

Series DS-2, Extended Coverage Pendent . . . TFP540

Series DS-3, ECOH Horizontal Sidewall . . . TFP550

NOTE

Use of the Model DSB-1 Dry Sprinkler Boot with non-TFP Dry Type Sprinklers will void the warranty. Failure may result due to dimensional differences in the outside diameter of the barrel. The DSB-1 has not been tested with any non-TFP Dry Type Sprinklers with regard to fit or performance.

Physical Characteristics

The Boot is EPDM, the Strap Ties are nylon, and the Adhesive is ethyl cyanoacrylate based. The adhesive is formulated for instant bonding of the Boot to metal, plastic, or rubber surfaces.

Patents

U.S.A. 7,213,319

Design Criteria

There are four items to be considered: Dry Type Sprinklers, Clearance Hole,

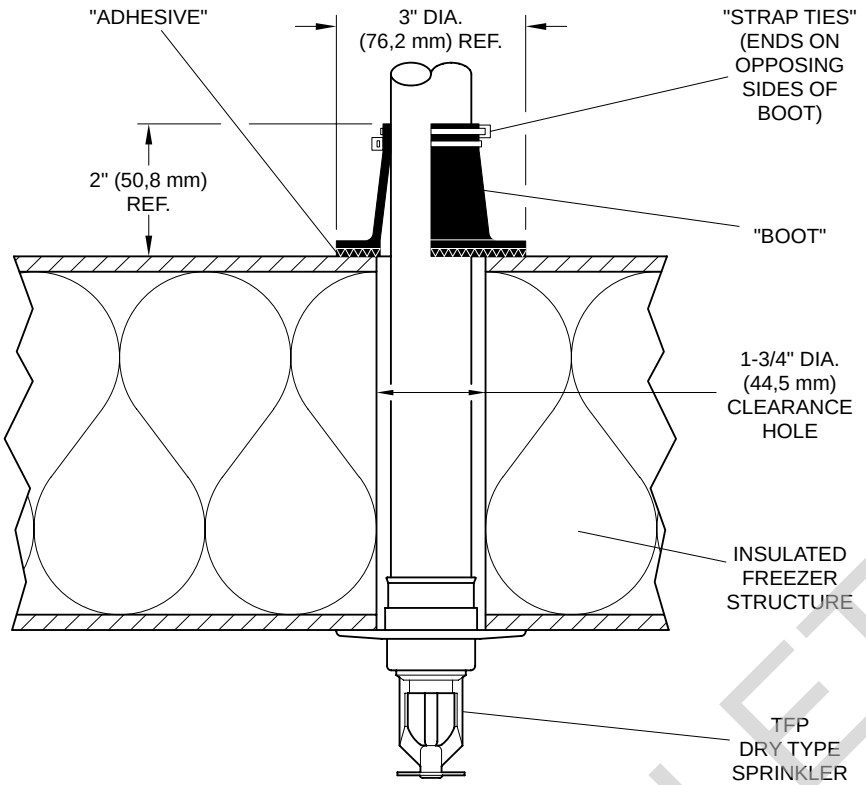

FIGURE 1
MODEL DSP-1 DRY SPRINKLER BOOT

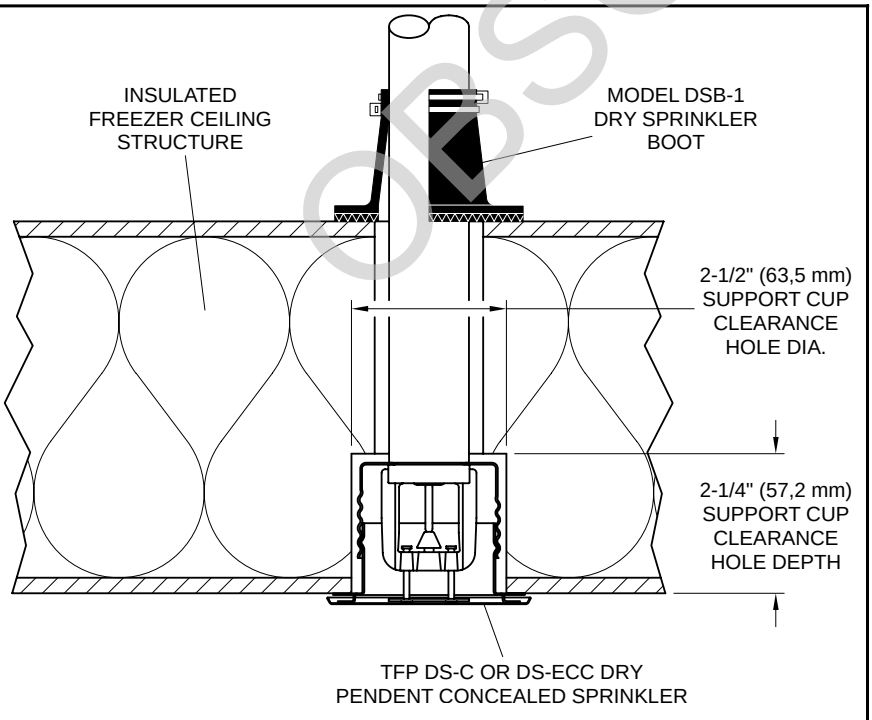

FIGURE 2
TYPICAL INSTALLATION OF MODEL DSP-1 DRY SPRINKLER BOOT WITH SERIES DS-C DRY PENDENT CONCEALED SPRINKLER

Exposure Length, and Sprinkler Fitting.

Dry Type Sprinklers. This Technical Data section provides a list of all of the compatible dry type sprinklers and their associated technical data sheets. Refer to the applicable technical data sheet for installation and maintenance information for the sprinkler being utilized.

NOTE

The TFP Dry Type Sprinklers must be installed and maintained in compliance with the applicable technical data sheet. ***Failure to do so may impair the performance of these devices.***

Clearance Hole. The Model DSB-1 Dry Sprinkler Boot may be used with a maximum 1-3/4 inch (44,5 mm) diameter clearance hole (i.e., the diameter of the hole in the ceiling or wall being penetrated by the dry type sprinkler, reference Figure 1). Based on the diameter of the Dry Type Sprinkler Barrel, the designated maximum clearance hole will compensate for non-centering of the Dry Type Sprinkler Barrel within the clearance hole. Where centering can be maintained, a clearance hole as large as 2-1/4 inches (57,2 mm) in diameter can be accommodated.

Where necessary, the clearance hole may need to be enlarged adjacent to the sprinkler end of the dry pendent sprinkler. For example as shown in Figure 2, a 2-1/2 inch (63,5 mm) diameter by 2-1/4 inch (57,2 mm) deep counterbore is necessary to facilitate installation of the DS-C or DS-ECC Dry Pendent Concealed Sprinklers.

NOTES

The clearance hole adjacent to the DSB-1 cannot be larger than 1-3/4 inch (44,5 mm) diameter for a non-concentric installation or 2-1/4 inch (57,2 mm) diameter for a concentric installation. Otherwise, the DSB-1 cannot perform as intended by closing the air gap.

Clearance holes greater than specified cannot be filled in with foam insulation, etc. In order for the the DSB-1 to be effective in closing the air gap it must seat and seal against the smooth material of the ceiling or wall.

Exposure Length. When Dry Sprinklers are to be used in wet pipe sprinkler systems protecting areas subject to freezing temperatures (e.g., sprinkler drops into freezers), consideration must be given to the appropriate length of the sprinkler that will prevent freezing of the water in the connecting pipes due to conduction. When the temperature surrounding the wet pipe

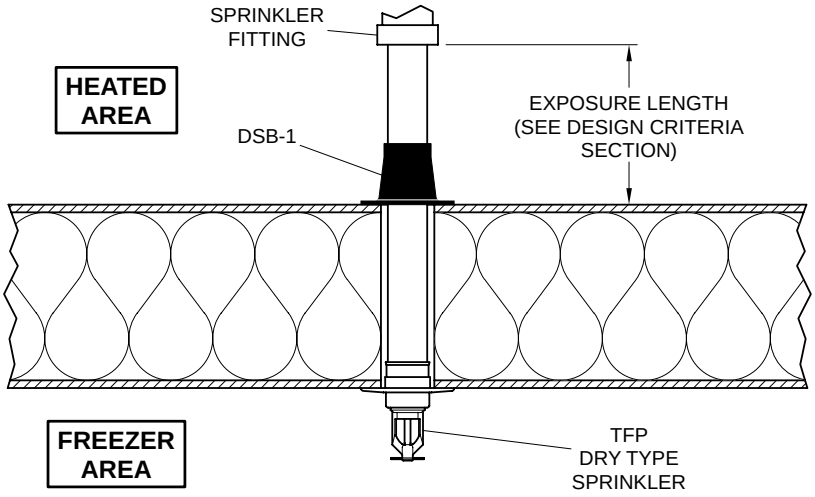

FIGURE 3, EXPOSURE LENGTH

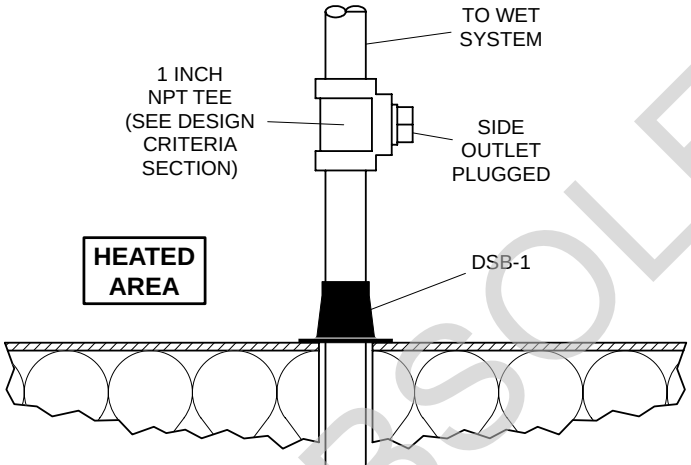

FIGURE 4, SPRINKLER FITTING IN HEATED AREA

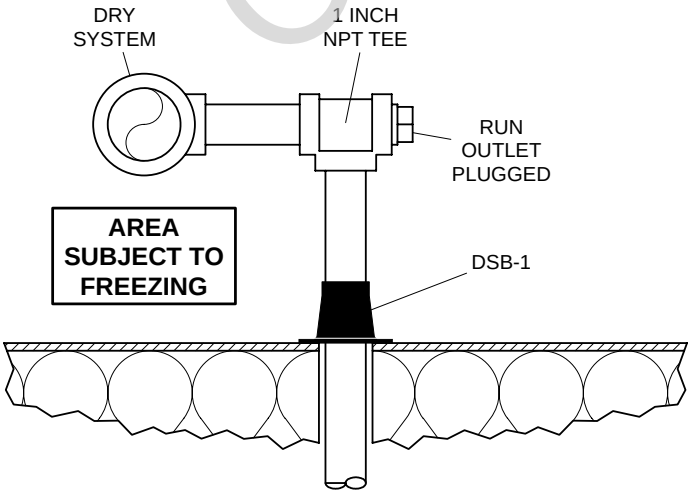

FIGURE 5, SPRINKLER FITTING IN UNHEATED AREA

sprinkler system is maintained at a minimum temperature of 40°F/4°C, the following are the minimum recommended lengths between the face of the sprinkler fitting and the outside surface of the protected area (i.e., length exposed to minimum ambient temperature of 40°F/4°C — Ref. Figure 3):

- 12 inches (300 mm) when the temperature within the protected area is -20°F/-29°C
- 18 inches (450 mm) when the temperature within the protected area is -40°F/-40°C
- 24 inches (600 mm) when the temperature within the protected area is -60°F/-51°C

For protected area temperatures between those given above, the minimum recommended length from the face of the fitting to the outside of the protected area may be determined by interpolating between the indicated values.

NOTE

The temperature within the protected area must be based on the lowest expected temperature.

For example: a freezer may be rated at -20°F/-29°C, yet the condenser is emitting -30°F/-35°C. The dry sprinkler length must be calculated based on the lower temperature of -30°F/-35°C.

Sprinkler Fitting. TFP Dry Type Sprinklers must be installed in the 1 inch NPT outlet or run of a malleable or cast iron threaded tee as described in the applicable Technical Data Sheets. With reference to Figure 4 and in conjunction with use in a wet pipe system, the sprinkler drop may be installed as shown. The information in Figure 4 may only be used where the sprinkler fitting and water filled pipe above the sprinkler fitting is not subject to freezing. In areas subject to freezing, the pipe connected to the dry type sprinkler must be configured to allow complete drainage as shown in Figure 5.

Installation

The Model DSB-1 must be installed in accordance with the following instructions:

WARNING

The Adhesive contains cyanoacrylate ester. Irritation will occur when inhaled. This adhesive bonds skin in seconds. Contact through clothing may cause burns. EYE IRRITANT.

Always refer to the Material Safety

Data Sheet for additional adhesive handling recommendations. The Material Safety Data Sheet should be obtained from the adhesive manufacturer via their web site noted on the adhesive container label before using the adhesive.

In case of skin contact, flush with water, and for eye contact seek medical attention.

Provide adequate ventilation in area of usage. When possible ventilation should be achieved by the use of local exhaust ventilation and good general ventilation. Vapors are heavier than air, therefore, downward ventilation should be used. When handling cyanoacrylate adhesives, goggles or safety glasses should always be worn. Polyethylene gloves should be used to protect the hands. WARNING: DO NOT USE RUBBER OR CLOTH GLOVES. RUBBER GLOVES WILL BOND WHEN BROUGHT IN CONTACT WITH THE ADHESIVE AND POROUS COTTON GLOVES WILL ABSORB THE ADHESIVE AND BOND THE GLOVES TO THE SKIN.

Step 1. Prepare the clearance hole per the applicable TFP Dry Sprinkler Technical Data Sheet.

Step 2. Insert the dry sprinkler through the clearance hole and slide the Boot over threaded inlet of the dry sprinkler.

When installing on Series DS-2 Dry Sprinklers, the Boot will require stretching. The use of a grooved coupling gasket lubricant will ease installation. Use only a petroleum free silicone grooved coupling gasket lubricant to avoid freezing of the Dry Sprinkler Boot to the Dry Sprinkler.

When sliding the Boot over the length of the Dry Sprinkler, sliding is easily accomplished by slightly squeezing the Boot around the cone area.

Step 3. Thread the dry sprinkler into the sprinkler fitting per the applicable TFP Dry Sprinkler Technical Data Sheet.

Refer to the sprinkler technical data sheet for tightening torque specifications. The use of higher levels of torque then specified may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Step 4. Clean the contact surfaces of the Boot and the building (ceiling or wall) structure with a damp cloth. Moist surfaces will aid in a quick adhesion.

Use only a cloth that has been dampened with water. The use of other cleaning techniques, solvents, etc. may render the adhesive incapable of sealing.

Step 5. Apply the provided Adhesive to the building structure in a zig-zag pattern. *Refer to Warning regarding the adhesive.*

Step 6. Slide the Boot so that it comes in contact with the building structure, and then press the Boot firmly against the building structure to help ensure that the Adhesive is fully applied to both surfaces.

When sliding the Boot over the length of the Dry Sprinkler, sliding is easily accomplished by slightly squeezing the Boot around the cone area.

Step 7. Wait two minutes to allow the Adhesive to sufficiently cure and then apply the two Strap Ties. The Strap Ties are to be applied to the straight section of the Boot as shown in Figure 1 and so that the ends are on opposing sides of the Boot.

The ties are to be pulled sufficiently tight to the point that there is no gap between Dry Sprinkler Boot and the Dry Sprinkler. When properly installed a paper clip or wire of similar dimension cannot be slipped between the Dry Sprinkler Boot and the Dry Sprinkler.

Care and Maintenance

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. The installing contractor or sprinkler manufacturer should be contacted relative to any questions.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFBP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFBP was informed about the possibility of such damages, and in no event shall TFBP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

Model DSB-1:
Specify: Model DSB-1 Dry Sprinkler Boot*, P/N 63-000-0-001.

* Includes one Boot, two Strap Ties, and 1/3 oz. of Adhesive (quantity of adhesive is sufficient for installing one Boot).