FIRE SPRINKLER NOTES

1. PROVIDE WET PIPE SPRINKLER SYSTEMS THROUGHOUT ALL AREAS OF THE BUILDING, INCLUDING EXTERIOR COVERED WALKWAYS, LOADING DOCKS AND STAGING AREAS IN ACCORDANCE WITH NFPA 13 (2013 EDITION) AND THE FLORIDA FIRE PREVENTION CODE (5TH EDITION). ALL PIPING, SPRINKLERS, VALVES AND COMPONENTS SHALL BE UL LISTED AND/OR FM APPROVED FOR USE IN AUTOMATIC SPRINKLER SYSTEMS. ALL SYSTEMS SHALL BE HYDRAULICALLY CALCULATED PER NFPA 13.
2. AREA HAZARD CLASSIFICATIONS ARE AS SHOWN ON THE DRAWINGS. LIGHT HAZARD AREAS INCLUDE OFFICES, CORRIDORS, RESTROOMS, ETC. ORDINARY HAZARD GROUP 1 AREAS INCLUDE MECHANICAL ROOMS, ELECTRICAL ROOMS AND JANITOR CLOSETS. ORDINARY HAZARD GROUP 2 AREAS INCLUDE COVERED LOADING DOCKS, GENERAL STORAGE AREAS (STORAGE HEIGHT TO 12'-0" MAX), AND MANUFACTURING AREAS.
3. PROVIDE WET PIPE RISERS WITH APPROPRIATE TRIM PER NFPA 13. CONNECT FLOW AND TAMPER SWITCHES (PROVIDE ON ALL SYSTEM CONTROL AND SHUTOFF VALVES, INCLUDING BACKFLOW PREVENTER WHERE REQUIRED) AND ALL OTHER FIRE ALARM DEVICES TO FIRE ALARM SYSTEM.
4. COORDINATE ROUTING OF ALL PIPING, TEST CONNECTIONS, AND AUXILIARY DRAIN LINES WITH OTHER TRADES. PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL PANELS, ETC. PER NFPA 70.
5. PROVIDE AUXILIARY DRAINS PER NFPA 13. ALL MAIN DRAINS, SECTIONAL DRAINS, INSPECTOR TEST CONNECTIONS, AND AUXILIARY DRAINS (MORE THAN 5 GAL TRAPPED VOLUME) SHALL DISCHARGE DIRECTLY TO THE EXTERIOR WITH APPROPRIATE SPLASH PROTECTION. WORKING DRAWINGS SHALL INDICATE LOCATION OF ALL TEST/DRAIN VALVES AND DISCHARGE POINTS.
6. PIPING SHALL BE ASTM A53 SCHEDULE 40 BLACK STEEL PIPE FOR WELDED, THREADED AND GROOVED FITTINGS ONLY OR ASTM A135 OR A795 SCHEDULE 10 BLACK STEEL PIPE FOR WELDED OR ROLLED GROOVE FITTINGS ONLY. ALL PIPING SERVING A SINGLE SPRINKLER SHALL BE 1" PIPE SIZE MINIMUM PER NFPA 13.
7. SPRINKLERS IN INTERIOR SPACES WITH FINISHED CEILINGS SHALL BE CHROME RECESSED PENDENT WITH MATCHING CHROME ESCUTCHEON, ORDINARY TEMPERATURE UNLESS OTHERWISE REQUIRED PER NFPA 13, AND SHALL BE CENTERED IN CEILING TILE. SPRINKLERS IN AREAS WITHOUT CEILINGS SHALL BE PENDENT OR UPRIGHT PER NFPA 13.
8. PROVIDE SPRINKLER GUARDS ON ALL SPRINKLERS INSTALLED LESS THAN 7 FT. ABOVE FINISHED FLOORS AND OTHER AREAS WHERE REQUIRED BY NFPA 13.
9. SUPPORT ALL PIPING FROM STRUCTURE AND PROVIDE HANGERS AND BRACING PER NFPA 13. PIPING SHALL BE SUPPORTED FROM TOP CHORD OF BEAMS, TRUSSES, JOISTS, ETC.
10. PROVIDE SHOP DRAWINGS, WORKING PLANS AND HYDRAULIC CALCULATIONS FOR ALL SYSTEMS PER NFPA 13.
11. SHOP DRAWINGS, WORKING PLANS, AND HYDRAULIC CALCULATIONS SHALL BE PREPARED BY OR UNDER THE DIRECT SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER OR AN INDIVIDUAL CERTIFIED AS A LEVEL III ENGINEERING TECHNICIAN BY THE NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES (NICET) IN THE AUTOMATIC SPRINKLER SYSTEM LAYOUT SUBFIELD OF FIRE PROTECTION ENGINEERING TECHNOLOGY.
12. PROVIDE MINIMUM 3'-0" CLEAR ACCESS TO ALL VALVES AND EQUIPMENT.
13. PERFORM ACCEPTANCE TESTING OF ALL SYSTEMS AND COMPONENTS IN ACCORDANCE WITH SPECIFICATIONS AND NFPA 13 UPON COMPLETION OF CONSTRUCTION.
14. CONTRACTOR SHALL CONDUCT WATER SUPPLY FLOW TEST IN ACCORDANCE WITH NFPA 291 PRIOR TO BEGINNING WORK TO VERIFY WATER SUPPLY DATA PROVIDED ON THE DRAWINGS. IF FLOW TEST INDICATES GREATER WATER SUPPLY CAPACITY THAN THAT PROVIDED ON THE DRAWINGS , CONTRACTOR SHALL DESIGN SYSTEMS BASED ON WATER SUPPLY DATA PROVIDED. IF FLOW TEST INDICATES LESSER WATER SUPPLY CAPACITY THAN THAT PROVIDED ON THE DRAWINGS, CONTRACTOR SHALL DESIGN SYSTEMS BASED ON FLOW TEST DATA.
15. PROVIDE APPROVED DOUBLE DETECTOR CHECK BACKFLOW PREVENTER ON FIRE WATER SERVICE MAIN TO THE SITE IN ACCORDANCE WITH THE FLORIDA FIRE PREVENTION CODE AND LOCAL REQUIREMENTS.
16. PROVIDE METAL CABINET WITH STOCK OF SPARE SPRINKLERS AND WRENCHES PER NFPA 13 AT EACH BUILDING RISER.
17. PROVIDE IDENTIFICATION SIGNS FOR ALL CONTROL, DRAIN AND TEST VALVES PER NFPA 13. WHERE VALVES AND DEVICES ARE LOCATED ABOVE CEILINGS, PROVIDE AND ATTACH LEGIBLE TYPED LABEL TO THE CEILING INDICATING DEVICE TYPE.
18. POINT OF SERVICE IS THE 8" TEE INTO THE EXISTING 10" WATER MAIN AT THE STREET, UPSTREAM OF THE BACKFLOW PREVENTER.
19. THERE ARE NO KNOWN INSTANCES OF MICROBIAL INDUCED CORROSION (MIC) IN THE PROJECT AREA.

FIRE PROTECTION LEGEND

- SPRINKLER RISER, WET PIPE
- SPRINKLER VALVE (GENERIC)
- CHECK VALVE
- TEST AND DRAIN VALVE
- BACKFLOW PREVENTER (DOUBLE CHECK TYPE)
- FIRE DEPARTMENT CONNECTION (YARD STANDPIPE) 3
- WATERFLOW SWITCH
- PIPE BREAK / CONTINUATION
- PIPE TURNED DOWN
- LIGHT HAZARD OCCUPANCY
- ORDINARY HAZARD GROUP 1 OCCUPANCY
- ORDINARY HAZARD GROUP 2 OCCUPANCY

WATER SUPPLY ANALYSIS

A. FLOW TEST RESULTS

DATE OF TEST	16 DEC 2015
TESTED BY	CITY OF TITUSVILLE
STATIC PRESSURE	46 PSI
RESIDUAL PRESSURE	32 PSI
MEASURED FLOW	1,890 GPM
CALCULATED FLOW	2,641 GPM @ 20 PSI
FLOW HYDRANT:	1525 ARMSTRONG DR., #3-4H-7
RESIDUAL HYDRANT:	1525 ARMSTRONG DR., #3-4H-6

B. BUILDING FIRE FLOW CALCULATION (FLORIDA FIRE PREVENTION CODE, CHAPTER 18)

BUILDING IS PROTECTED THROUGHOUT WITH AUTOMATIC SPRINKLERS PER NFPA 13

BUILDING CONSTRUCTION TYPE:	TYPE IIB (000)
BUILDING AREA:	40,500 SQ. FT.
BUILDING FIRE FLOW:	4,250 GPM (FFPC TABLE 18.4.5.1.2)
SPRINKLER REDUCTION PER FFPC 18.4.5.2.1:	4,250 * 25% = 1,062.5 GPM
MINIMUM BUILDING FIRE FLOW REQUIRED:	1,062 GPM
MINIMUM BUILDING FIRE FLOW DURATION:	4 HOURS

C. PRELIMINARY SPRINKLER HYDRAULIC CALCULATION

ESTIMATED FLOW CALCULATION:

OH2 SPRINKLER DENSITY	= 0.20 GPM/SQ. FT.	
DESIGN AREA	= 1,500 SQ. FT.	
ESTIMATED SPRINKLER FLOW	=	0.20 * 1500 * 120% = 360 GPM
HOSE STREAM ALLOWANCE	=	250 GPM
TOTAL FIRE PROTECTION FLOW	=	610 GPM

ESTIMATED PRESSURE LOSS:

STARTING SPRINKLER PRESSURE	=	11 PSI (K=8.0)
ELEVATION LOSS @ 20 FT. * 0.433 PSI / FT	=	9
BACKFLOW PREVENTER LOSS	=	8
SAFETY FACTOR	=	5
TOTAL REQUIRED PRESSURE (EXCLUDING FRICTION)	=	33 PSI

AVAILABLE PRESSURE AT DEMAND FLOW RATE:

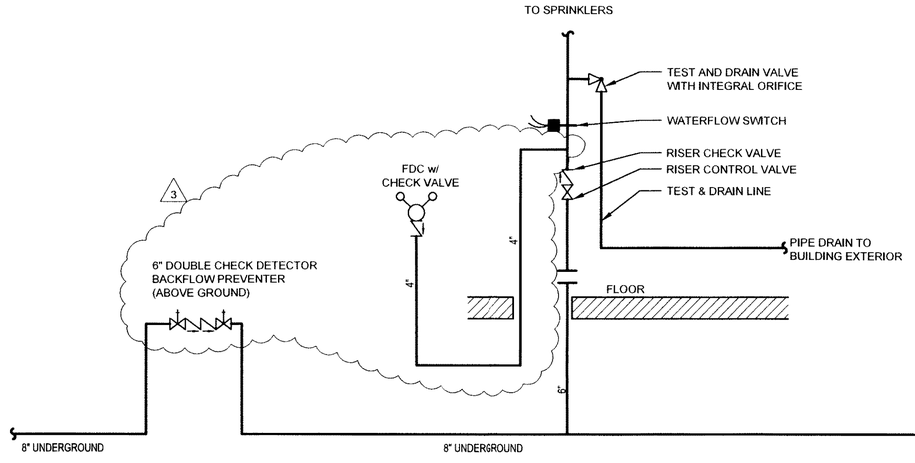
QR = REQUIRED FLOW RATE AT DEMAND PRESSURE
QT = TEST FLOW RATE
PDR = PRESSURE DROP AT DEMAND FLOW RATE
PDT = PRESSURE DROP AT TEST FLOW RATE

PDR = PDT * (QR/QT)^1.85
PDR = 14 PSI * (610 / 1890)^1.85 = 1.7 PSI

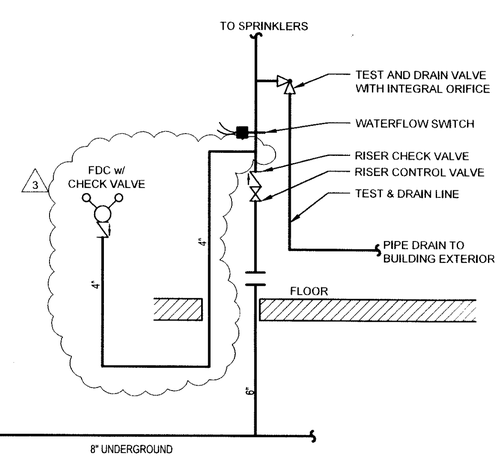
AVAILABLE PRESSURE @ 610 GPM = 46 - 1.7 = 44.3 PSI
AVAILABLE PRESSURE FOR FRICTION = 44.3 - 33 = 11.3 PSI

BASED UPON THE CURRENT FLOW TEST DATA, THERE IS APPROXIMATELY 11 PSI AVAILABLE FOR FRICTION LOSSES, INCLUDING THE UNDERGROUND SUPPLY. THE WATER SUPPLY IS ADEQUATE TO MEET SYSTEM DEMAND REQUIREMENTS WITHOUT THE USE OF A FIRE PUMP.

PRODUCTION BUILDING



ADMINISTRATION BUILDING



A2 / F100 OVERALL FIRE PROTECTION SCHEMATIC PIPING DIAGRAM

SCALE: NTS

SCOTT V. LEOPOLD LICENSE No. 74186 STATE OF FLORIDA PROFESSIONAL ENGINEER

4-19-16

EMBRAER AERO SEATING

DESIGNED BY: DATE:

SEE STRUCTURAL DRAWINGS FOR EXACT LOCATION OF WALL OPENINGS IN TILT-UP PANEL FOR PIPING PASSING FROM PRODUCTION AREA TO COMPRESSOR AND FACILITIES ROOMS. COORDINATE PIPING THRU OPENINGS WITH OTHER TRADES.

SPRINKLER MAIN SERVING INTERIOR SPACES AND EXTERIOR LOADING DOCK.

FIRE SPRINKLER RISER, SEE F001 FOR PIPING SCHEMATIC. HATCHING NOT SHOWN AT RISER FOR CLARITY.

6" FIRE SERVICE SUPPLY AND 4" FDC SUPPLY. SEE CIVIL FOR CONT.

3

EXTERIOR COVERED LOADING DOCK

SEE STRUCTURAL DRAWINGS FOR EXACT LOCATION OF WALL OPENINGS IN TILT-UP PANEL FOR PIPING PASSING FROM PRODUCTION AREA TO COVERED LOADING DOCK AND ELECTRICAL ROOM. COORDINATE PIPING THRU OPENINGS WITH OTHER TRADES.

FACILITIES 130
COMPRESSOR 129
HIDE STORAGE 119
GENERAL STORAGE 118
LEATHER CUTTING/STORAGE 116
MANUFACTURING ENGINEERING 115
SUB ASSEMBLY 114
FLEX SPACE 113
SHIPPING 127
PRODUCTION 124
ELECT 131
QUALITY LAB 128
PACKING 126
MEN 112
JAN 111
WOMEN 110
EMPLOYEE TRANSITION LOBBY 109
OFFICE 105
DOC CONTROL 106
RR 107
COPY 108
CORRIDOR 104
EMPLOYEE LOBBY 101
OFFICE 103
MEETING RM 102

A1
F101
PRODUCTION BUILDING FIRE PROTECTION PLAN
SCALE: 1/16" = 1'-0"

SCOTT V. LEOPOLD LICENSE No. 74188 STATE OF FLORIDA PROFESSIONAL ENGINEER
4-19-16

N
0 8' 16' 32'
SCALE: 1/16"=1'-0"

DATE 2/19/16
DESIGNED BY SVL

RS&H

EMBRAER AERO SEATING TECHNOLOGIES

EMBRAER

FIRE SPRINKLER NOTES

1. PROVIDE WET PIPE SPRINKLER SYSTEMS THROUGHOUT ALL AREAS OF THE BUILDING IN ACCORDANCE WITH NFPA 13 (2013 EDITION) AND THE FLORIDA FIRE PREVENTION CODE (5TH EDITION). ALL PIPING, SPRINKLERS, VALVES AND COMPONENTS SHALL BE UL LISTED AND/OR FM APPROVED FOR USE IN AUTOMATIC SPRINKLER SYSTEMS. ALL SYSTEMS SHALL BE HYDRAULICALLY CALCULATED PER NFPA 13.
2. AREA HAZARD CLASSIFICATIONS ARE AS SHOWN ON THE DRAWINGS. LIGHT HAZARD AREAS INCLUDE ASSEMBLY AREAS, OFFICES, CORRIDORS. RESTROOMS, ETC. ORDINARY HAZARD GROUP 1 AREAS INCLUDE MECHANICAL ROOMS, ELECTRICAL ROOMS, JANITOR CLOSETS AND STORAGE ROOMS (STORAGE HEIGHT TO 8'-0" MAX).
3. PROVIDE WET PIPE RISERS WITH APPROPRIATE TRIM PER NFPA 13. CONNECT FLOW AND TAMPER SWITCHES (PROVIDE ON ALL SYSTEM CONTROL AND SHUTOFF VALVES, INCLUDING BACKFLOW PREVENTER WHERE REQUIRED) AND ALL OTHER FIRE ALARM DEVICES TO FIRE ALARM SYSTEM.
4. COORDINATE ROUTING OF ALL PIPING, TEST CONNECTIONS, AND AUXLIARY DRAIN LINES WITH OTHER TRADES. PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL PANELS, ETC. PER NFPA 70.
5. PROVIDE AUXILIARY DRAINS PER NFPA 13. ALL MAIN DRAINS, SECTIONAL DRAINS, INSPECTOR TEST CONNECTIONS, AND AUXILIARY DRAINS (MORE THAN 5 GAL TRAPPED VOLUME) SHALL DISCHARGE DIRECTLY TO THE EXTERIOR WITH APPROPRIATE SPLASH PROTECTION. WORKING DRAWINGS SHALL INDICATE LOCATION OF ALL TEST/DRAIN VALVES AND DISCHARGE POINTS.
6. PIPING SHALL BE ASTM A53 SCHEDULE 40 BLACK STEEL PIPE FOR WELDED, THREADED AND GROOVED FITTINGS ONLY OR ASTM A135 OR A795 SCHEDULE 10 BLACK STEEL PIPE FOR WELDED OR ROLLED GROOVE FITTINGS ONLY. ALL PIPING SERVING A SINGLE SPRINKLER SHALL BE1" PIPE SIZE MINIMUM PER NFPA 13.
7. SPRINKLERS IN INTERIOR SPACES WITH FINISHED CEILINGS SHALL BE CHROME RECESSED PENDENT WITH MATCHING CHROME ESCUTHEON, ORDINARY TEMPERATURE UNLESS OTHERWISE REQUIRED PER FPA13, AND SHALL BE CENTERED IN CEILING TILE. SPRINKLERS IN AREAS WITHOUT CEILINGS SHALL BE PENDENT OR UPRIGHT PER NFPA 13.
8. PROVIDE SPRINKLER GUARDS ON ALL SPRINKLERS INSTALLED LESS THAN 7 FT. ABOVE FINISHED FLOORS AND OTHER AREAS WHERE REQUIRED BY NFPA 13.
9. SUPPORT ALL PIPING FROM STRUCTURE AND PROVIDE HANGERS AND BRACING PER NFPA 13. PIPING SHALL BE SUPPORTED FROM TOP CHORD OF BEAMS, TRUSSES, JOISTS, ETC.
10. PROVIDE SHOP DRAWINGS, WORKING PLANS AND HYDRAULIC CALCULATIONS FOR ALL SYSTEMS PER NFPA 13.
11. SHOP DRAWINGS, WORKING PLANS, AND HYDRAULIC CALCULATIONS SHALL BE PREPARED BY OR UNDER THE DIRECT SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER OR AN INDIVIDUAL CERTIFIED AS A LEVEL III ENGINEERING TECHNICIAN BY THE NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES (NICET) IN THE AUTOMATIC SPRINKLER SYSTEM LAYOUT SUBFIELD OF FIRE PROTECTION ENGINEERING TECHNOLOGY.
12. PROVIDE MINIMUM 3'-0" CLEAR ACCESS TO ALL VALVES AND EQUIPMENT.
13. PERFORM ACCEPTANCE TESTING OF ALL SYSTEMS AND COMPONENTS IN ACCORDANCE WITH SPECIFICATIONS AND NFPA 13 UPON COMPLETION OF CONSTRUCTION.
14. CONTRACTOR SHALL CONDUCT WATER SUPPLY FLOW TEST IN ACCORDANCE WITH NFPA 291 PRIOR TO BEGINNING WORK TO VERIFY WATER SUPPLY DATA PROVIDED ON THE DRAWINGS. IF FLOW TEST INDICATES GREATER WATER SUPPLY CAPACITY THAN THAT PROVIDED ON THE DRAWINGS, CONTRACTOR SHALL DESIGN SYSTEMS BASED ON WATER SUPPLY DATA PROVIDED. IF FLOW TEST INDICATES LESSER WATER SUPPLY CAPACITY THAN THAT PROVIDED ON THE DRAWINGS, CONTRACTOR SHALL DESIGN SYSTEMS BASED ON FLOW TEST DATA.
15. PROVIDE APPROVED DOUBLE DETECTOR CHECK BACKFLOW PREVENTER ON FIRE WATER SERVICE MAIN TO THE SITE IN ACCORDANCE WITH THE FLORIDA FIRE PREVENTION CODE AND LOCAL REQUIREMENTS.
16. PROVIDE METAL CABINET WITH STOCK OF SPARE SPRINKLERS AND WRENCHES PER NFPA 13 AT EACH BUILDING RISER.
17. PROVIDE IDENTIFICATION SIGNS FOR ALL CONTROL, DRAIN AND TEST VALVES PER NFPA 13. WHERE VALVES AND DEVICES ARE LOCATED ABOVE CEILINGS, PROVIDE AND ATTACH LEGIBLE TYPED LABEL TO THE CEILING INDICATING DEVICE TYPE.
18. POINT OF SERVICE IS THE 8" TEE INTO THE EXISTING 10" WATER MAIN IN THE STREET, UPSTREAM OF THE BACKFLOW PREVENTER.
19. THERE ARE NO KNOWN INSTANCES OF MICROBIAL INDUCED CORROSION (MIC) IN THE PROJECT AREA.

FIRE PROTECTION LEGEND

- SPRINKLER RISER, WET PIPE
- SPRINKLER VALVE (GENERIC)
- CHECK VALVE
- TEST AND DRAIN VALVE
- BACKFLOW PREVENTER (DOUBLE CHECK TYPE)
- FIRE DEPARTMENT CONNECTION (YARD STANDPIPE) 3
- WATERFLOW SWITCH
- PIPE BREAK / CONTINUATION
- LIGHT HAZARD OCCUPANCY
- ORDINARY HAZARD GROUP 1 OCCUPANCY

WATER SUPPLY ANALYSIS

A. FLOW TEST RESULTS

DATE OF TEST	16 DEC 2015
TESTED BY	CITY OF TITUSVILLE
STATIC PRESSURE	46 PSI
RESIDUAL PRESSURE	32 PSI
MEASURED FLOW	1,890 GPM
CALCULATED FLOW	2,641 GPM @ 20 PSI
FLOW HYDRANT:	1525 ARMSTRONG DR., #3-4H-7
RESIDUAL HYDRANT:	1525 ARMSTRONG DR., #3-4H-6

B. BUILDING FIRE FLOW CALCULATION (FLORIDA FIRE PREVENTION CODE, CHAPTER 18)

BUILDING IS PROTECTED THROUGHOUT WITH AUTOMATIC SPRINKLERS PER NFPA 13

BUILDING CONSTRUCTION TYPE:	TYPE IIB (000)
BUILDING AREA:	13,190 SQ. FT.
BUILDING FIRE FLOW:	2,500 GPM (FFPC TABLE 18.4.5.1.2)
SPRINKLER REDUCTION PER FFPC 18.4.5.2.1:	2,500 * 25% = 625 GPM
MINIMUM BUILDING FIRE FLOW REQUIRED:	1,000 GPM (FFPC 18.4.5.2.1)
MINIMUM BUILDING FIRE FLOW DURATION:	2 HOURS

C. PRELIMINARY SPRINKLER HYDRAULIC CALCULATION

ESTIMATED FLOW CALCULATION:

OH1 SPRINKLER DENSITY	= 0.15 GPM/SQ. FT.	
DESIGN AREA	= 1,500 SQ. FT.	
ESTIMATED SPRINKLER FLOW	=	0.15 * 1500 * 120% = 270 GPM
HOSE STREAM ALLOWANCE	=	250 GPM
TOTAL FIRE PROTECTION FLOW	=	520 GPM

ESTIMATED PRESSURE LOSS:

STARTING SPRINKLER PRESSURE	=	11 PSI (K=8.0)
ELEVATION LOSS @ 16 FT. * 0.433 PSI / FT	=	7
BACKFLOW PREVENTER LOSS	=	8
SAFETY FACTOR	=	5
TOTAL REQUIRED PRESSURE (EXCLUDING FRICTION)	=	31 PSI

AVAILABLE PRESSURE AT DEMAND FLOW RATE:

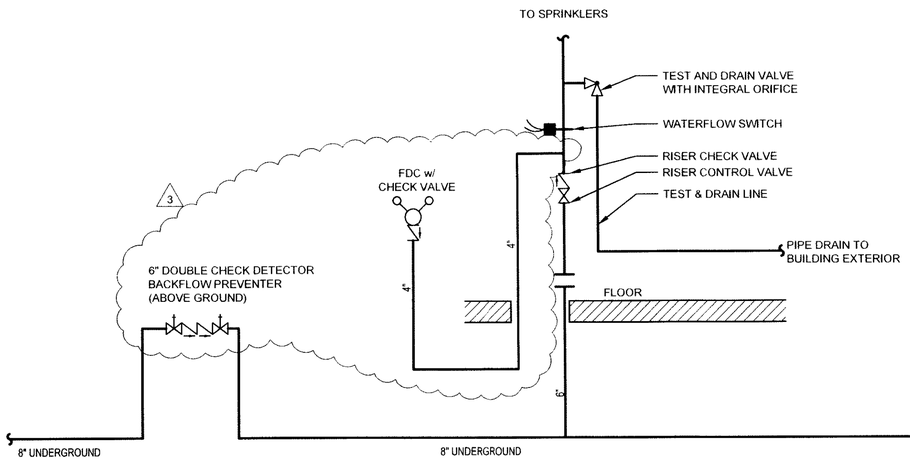
QR = REQUIRED FLOW RATE AT DEMAND PRESSURE
QT = TEST FLOW RATE
PDR = PRESSURE DROP AT DEMAND FLOW RATE
PDT = PRESSURE DROP AT TEST FLOW RATE

PDR = PDT * (QR/QT)^1.85
PDR = 14 PSI * (520 / 1890)^1.85 = 1.3 PSI

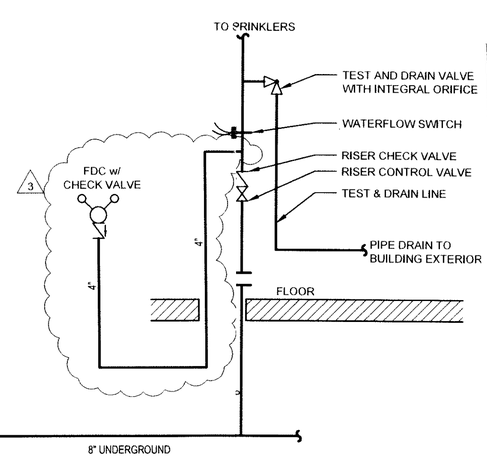
AVAILABLE PRESSURE @ 520 GPM = 46 - 1.3 = 44.7 PSI
AVAILABLE PRESSURE FOR FRICTION = 44.7 - 31 = 13.7 PSI

BASED UPON THE CURRENT FLOW TEST DATA, THERE IS APPROXIMATELY 14 PSI AVAILABLE FOR FRICTION LOSSES, INCLUDING THE UNDERGROUND SUPPLY. THE WATER SUPPLY IS ADEQUATE TO MEET SYSTEM DEMAND REQUIREMENTS WITHOUT THE USE OF A FIRE PUMP.

PRODUCTION BUILDING



ADMINISTRATION BUILDING



A2 / F100 OVERALL FIRE PROTECTION SCHEMATIC PIPING DIAGRAM

SCALE: NTS

FILE

FILED

REVIEWED FOR CODE COMPLIANCE
FLORIDA BUILDING CODE
2016000011
CITY OF TITUSVILLE, FL

SCOTT V. LEOPOLD LICENSE No. 74106 STATE OF FLORIDA PROFESSIONAL ENGINEER

4-19-16

DESIGNED BY: SVL
DRWN BY: SVL
CKD BY: SWD
DATE: 2/19/16

RS&H

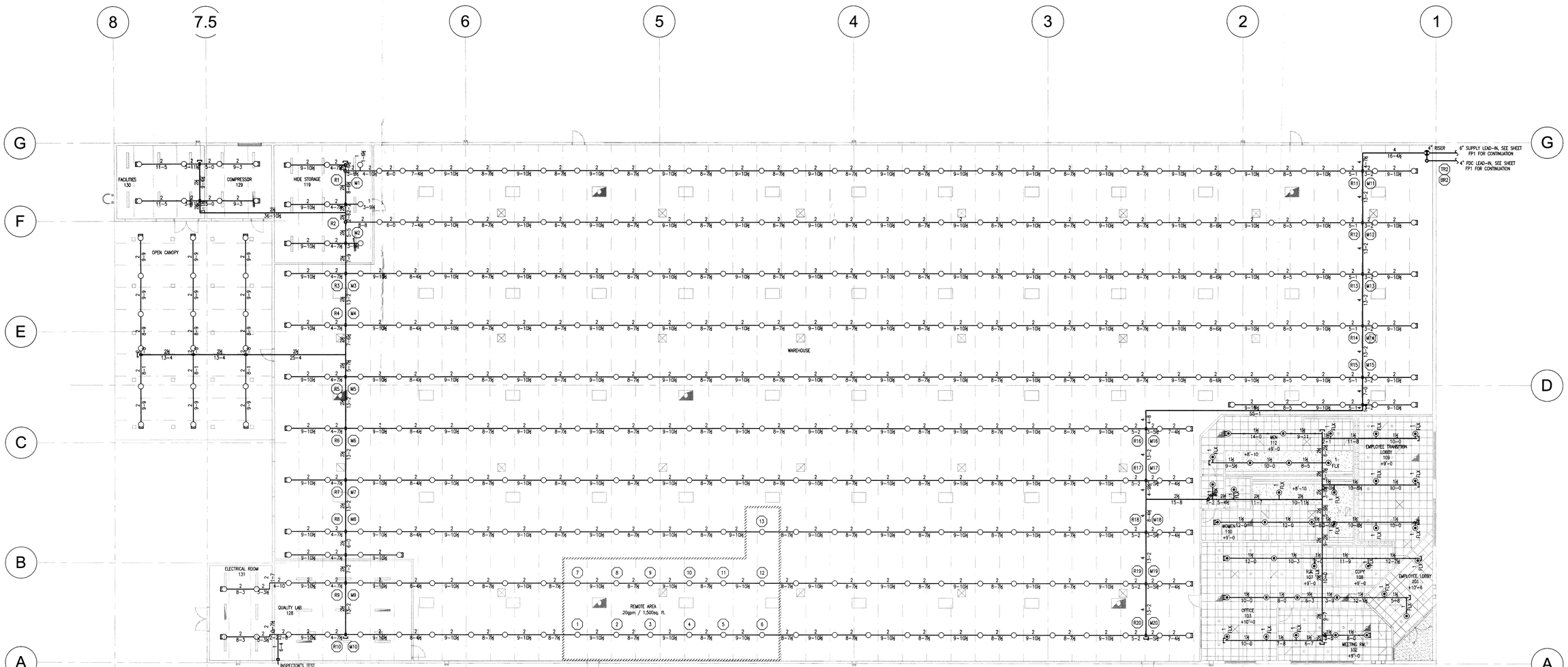
EMBRAER AERO SEATING TECHNOLOGIES TITUSVILLE, FL

EMBRAER

FIRE PROTECTION

PI
REFE
NU
FC

SHEET



Hydraulically Designed System	
Location	REMOTE AREA
No. of Sprinklers	13
Density	.20
Design Area Size	1,500 SQ FT
System Demand At Base of Riser	
GPM Discharge	346.13
Residual PSI	34.44

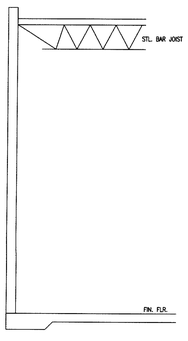
N

Fire Sprinkler Piping Layout

SCALE 3/32"=1'-0"

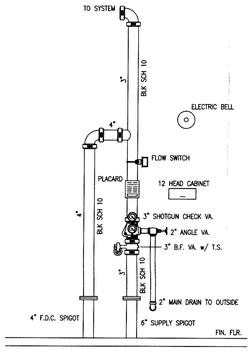
S.I.N. TY3231
.37
1/2" (5.6K)
155° QR
TYCO TY-FRB
WHITE SSP
RECESSED
STANDARD SPRAY

S.I.N. TY4131
.335
3/4" (8.0K)
155° QR
TYCO TY-FRB
BRASS SSU
NO ESC
STANDARD SPRAY



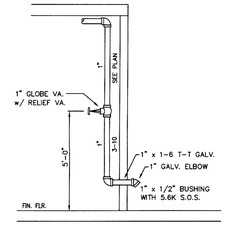
Building Section

No Scale



Riser Detail

No Scale

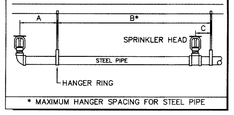


Ins. Test Detail

No Scale

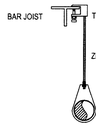
HANGER LOCATION DETAIL

PIPE SIZE	A	B*	C
1"	3'-0" MAX.	12'-0" MAX.	3" MIN.
1¼"	4'-0" MAX.	12'-0" MAX.	3" MIN.
1½"-8"	5'-0" MAX.	15'-0" MAX.	3" MIN.



* MAXIMUM HANGER SPACING FOR STEEL PIPE

TYPE #1



Hanger Detail

No Scale

FIRE PROTECTION NOTES:

1. INSTALL A WET PIPE SPRINKLER SYSTEM THROUGHOUT BUILDING IN ACCORDANCE WITH NFPA 13 2010 EDITION AND THE LOCAL AUTHORITY. THE SPRINKLER SYSTEM IS HYDRAULICALLY DESIGNED TO PROTECT AN ORDINARY HAZARD GROUP II OCCUPANCY.
2. ALL 1" THROUGH 2" DIAMETER PIPE TO BE SCH. 40 BLACK STEEL PER ASTM A-135/A-795 AND SHALL BE JOINED BY CLASS 125 ANSI B16.4 CAST IRON THREADED FITTINGS. ALL 2-1/2" AND LARGER SHALL BE SCHEDULE 10 BLACK STEEL PER ASTM A-135/A-795 AND SHALL BE JOINED BY MECHANICAL COUPLINGS.
3. ALL MATERIAL AND INSTALLATION TO BE IN ACCORDANCE WITH NFPA STANDARDS 13 & 24, 2010 EDITIONS AND THE LOCAL AUTHORITY.
4. PROVIDE HANGERS INCLUDING TRAPEZE HANGERS AS REQUIRED TO COMPLY WITH NFPA 13.
5. SPRINKLER SYSTEM FLOW AND TAMPER SWITCHES TO BE PROVIDED AND INSTALLED BY THE SPRINKLER CONTRACTOR AND CONNECTED TO THE ALARM BY THE ELECTRICAL CONTRACTOR. ALL SPRINKLER SYSTEM CONTROL VALVES AND WATERFLOW DETECTION DEVICES SHALL BE MONITORED IN ACCORDANCE WITH NFPA 72.
6. FLUSH AND HYDROSTATICALLY TEST SYSTEM IN ACCORDANCE WITH NFPA STANDARDS 13 & 24.
7. SEAL ALL OPENINGS THROUGH FLOORS, CEILINGS, AND PARTITIONS TO RE-ESTABLISH IT'S FIRE RATING. SEE THE ARCHITECTUAL DRAWINGS FOR FIRE RATINGS.
8. SPRINKLER SYSTEM INSTALLATION MUST BE PERFORMED BY A CLASS 1 OR CLASS 2 FIRE PROTECTION CONTRACTOR. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS AND PAY ALL RELATED FEES.
9. ALL HEADS IN LAY-IN CEILINGS TO BE INSTALLED IN A UNIFORM MANNER BUT NOT CENTERED IN TILES.
10. ALL MATERIAL AND DEVICES TO BE U.L. LISTED FOR FIRE PROTECTION SERVICE.
11. PROVIDE AUX. DRAINS AS NECESSARY TO COMPLY WITH NFPA 13.

FILE

REVIEWED FOR CODE COMPLIANCE
FLORIDA BUILDING CODE
2016000010
CITY OF TITUSVILLE, FL

Precision Fire Systems Inc.
782 Monroe Road
Sanford, Florida 32771
Phone: 321-363-1560
Fax: 321-363-1320

Embraer Aero Seating Technologies
Production Building
1600 Armstrong Drive
Titusville Florida

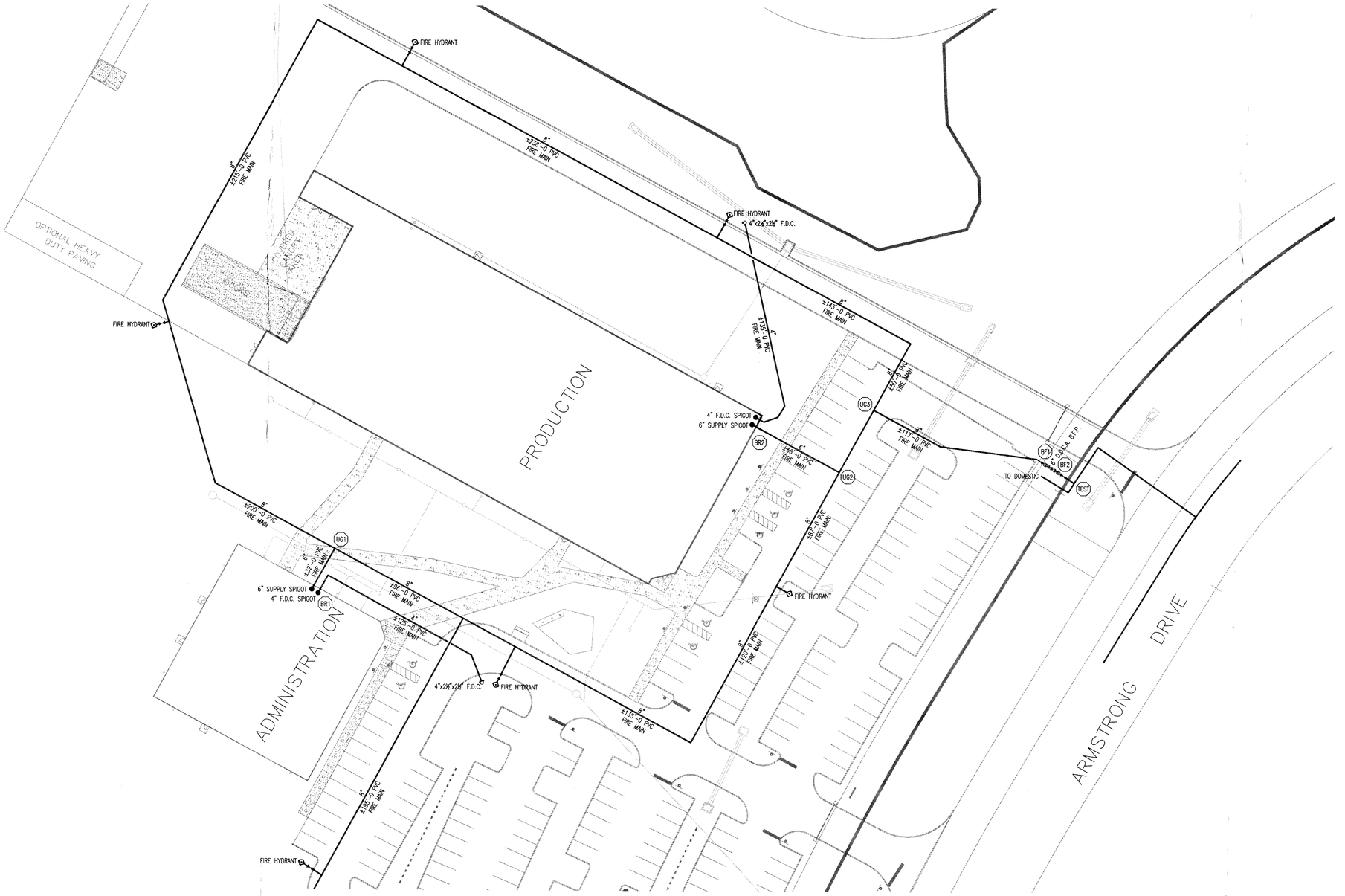
Fire Sprinkler Piping Plan

NO.	DATE	REVISION DESCRIPTION	BY
0	4-28-16	APPROVALS	C.S.S.

CONTRACT # 16016
DRAWN : C.S.S.
CHECKED : F.C.
DATE : 3-29-16
TOTAL HEADS : 372
SCALE : AS NOTED

FP-2

SHEET 2 of 2



Fire Sprinkler Site Plan

SCALE 1"=30'

FLOW TEST DATA	
STATIC:	46 PSI
RESIDUAL:	32 PSI
FLOW:	1,890 GPM
DATE:	12-16-15
TIME:	900 AM
LOCATION:	ARMSTRONG DRIVE
BY:	CITY OF TITUSVILLE

Note:
This site plan is for hydraulic reference only. Precision is under contract to begin installation 1'-0 above finished floor inside the building. All dedicated fire mains will be permitted and installed by a licensed site utility contractor.

FS16-000010
1600 Armstrong Dr.

REVIEWED FOR CODE COMPLIANCE
FLORIDA BUILDING CODE
2016000010
CITY OF TITUSVILLE, FL
FILE

Precision Fire Systems Inc.
782 Monroe Road
Sanford, Florida 32771
Phone: 321-363-1560
Fax: 321-363-1320

Embraer Aero Seating Technologies
Production Building
1600 Armstrong Drive
Titusville Florida

Fire Sprinkler Site Plan

NO.	DATE	REVISION DESCRIPTION	BY
0	4-28-16	APPROVALS	C.S.S.

CONTRACT # 16016
DRAWN : C.S.S.
CHECKED : F.C.
DATE : 3-29-16
TOTAL HEADS : 372
SCALE : AS NOTED

FP-1

CITY OF TITUSVILLE PERMIT APPLICATION
BUILDING / ALL TRADES

PERMIT # FSP-000010

RECEIVED
DATE SUBMITTED STAMP
MAY - 2 2016
BUILDING DEPARTMENT

ENTERED BY: KD/SD TAX ID # 2300577 PERMIT FEE: 331.04

Existing use of Structure: ☐ SFR ☐ Townhouse ☐ Condominium ☐ Apartment ☐ Commercial ☐ Storage ☐ Industrial ☐ Mercantile ☐ Business ☐ Assembly ☐ Educational ☐ Day Care ☐ Other_____

Permit Type: ☐ Building ☐ Electric ☐ Mechanical ☐ Plumbing ☒ Other: Fire Sprinklers

☐ Fence ☐ Gas ☐ Roofing ☐ Shed ☐ Sign ☐ Slab ☐ A/G Pool/Spa ☐ I/G Pool/Spa ☐ Driveway
☐ Deck ☐ Generator ☐ Antenna ☐ Solar ☐ Siding/Fascia/Soffits ☐ Aluminum ☐ Concrete ☐ Masonry
☐ Residential (New) ☐ Residential Alteration ☐ Residential Addition ☐ Exterior Doors/Windows
☐ Commercial (New) ☐ Commercial Alteration ☐ Commercial Addition ☐ Fire Alarm ☐ Fire Suppression
☐ Mobile Home ☐ Modular Home ☐ Storage Tank/LP Tank ☐ Demolition ☐ Tent ☐ Dock

PROJECT ADDRESS: 1600 Armstrong Drive ZIP CODE:_____
CONTACT PERSON: Chad Sheffield PHONE #: 407-399-1478
EMAIL: chad@precisionfs.com
PROPERTY OWNER: Embraer Aircraft Holding PHONE #:_____
ADDRESS: 1100 Woody Burke Rd Melbourne 32901 EMAIL:_____

DESCRIPTION OF WORK: Install new fire protection system beginning 1' AFF

FLOOD ZONE:_____ ZONING:_____ **VALUE OF CONSTRUCTION $:** 21,684.00

# of Bedrooms:_____ Florida Code Edition: 5th Electrical Code Edition:_____

Proposed building Use: _____

Construction type:_____ Occupancy Classification: _____ # of Stories:_____

ARCHITECT/ENGINEER FIRM: _____ PHONE #:

ADDRESS: _____

PHONE #: _____ EMAIL: _____

Reviewed By
MAY 02 2016
Titusville Fire Dept.

FEE SIMPLE TITLEHOLDER'S NAME (IF OTHER THAN OWNER): _____

FEE SIMPLE TITLEHOLDER'S ADDRESS: _____

BONDING COMPANY: _____

BONDING COMPANY ADDRESS: _____

Note: Subcontractor's verification forms for electrical, plumbing, mechanical, gas, roofing and any specialty must be submitted prior to permit issuance.

ALL OTHER APPLICABLE STATE OR FEDERAL PERMITS MUST BE OBTAINED PRIOR TO COMMENCEMENT

Continued on page 2.

Pg. 2 Address:_____ Permit #_____

GENERAL CONTRACTOR:_____ LICENSE #: _____

ADDRESS: _____

PHONE #:_____ EMAIL:_____

ELECTRICAL:_____ LICENSE #: _____

ADDRESS: _____

PHONE #: _____ EMAIL: _____

PLUMBING: _____ LICENSE #: _____

PHONE #: _____ EMAIL: _____

MECHANICAL:_____ LICENSE #: _____

ADDRESS: _____

PHONE #:_____ EMAIL: _____

ROOFING:_____ LICENSE #: _____

ADDRESS: _____

PHONE #: _____ EMAIL: _____

SPECIALTY: Precision Fire systems inc. LICENSE #: FPC13-000123

ADDRESS: 782 Monroe Rd Sanford, FL 32771

PHONE #: 321-363-1560 EMAIL: alexia@precisionfs.com

SPECIALTY:_____ LICENSE #: _____

ADDRESS: _____

PHONE #: _____ EMAIL: _____

Application is hereby made to obtain a permit to do the work and installations as indicated. I certify that no work or installation has commenced prior to the issuance of a permit and that all work will be performed to meet the standards of all laws regulating construction in this jurisdiction. I understand that a separate permit must be secured for ELECTRICAL WORK, PLUMBING, SIGNS, WELLS, POOLS, FURNACES, BOILERS, HEATERS, TANKS and AIR CONDITIONERS, etc.

OWNER'S AFFIDAVIT: I certify that all the foregoing information is accurate and that all the work will be done in compliance with all the applicable laws regulating construction and zoning. I understand that all permits require inspections as indicated on permit card.

"WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. A NOTICE OF COMMENCEMENT MUST BE RECORDED AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT. "

_____
OWNER/AGENT'S SIGNATURE

STATE OF FLORIDA
COUNTY OF BREVARD
The foregoing instrument was acknowledged before me this
_____ day of _____, 20____
By _____ who is
Personally known to me, or has
Produced valid ID _____

_____
Notary as to Owner or Agent W/Seal

KAREN A. JONES
MY COMMISSION #FF136907
EXPIRES July 27, 2018
(407) 398-0153 FloridaNotaryService.com

_____
CONTRACTOR'S SIGNATURE

STATE OF FLORIDA
COUNTY OF ~~BREVARD~~ Seminole
The foregoing instrument was acknowledged before me this
29th day of April, 2016
By Arthur Bateman who is
personally known to me, or has
Produced valid ID N/A

_____
Notary as to Qualifier W/Seal

CITY OF TITUSVILLE BUILDING PERMIT / DEVELOPMENT ORDER

File #: 16-002329
Permit #: FS16-000010
Job Address: 1600 ARMSTRONG DRIVE
Parcel ID: 2300577

Owner's Name and Address
EMBRAER AIRCRAFT HOLDING
1100 WOODY BURKE ROAD
MELBOURNE FL 32901

Contractor Lic. #: FPC13-000123
Issue Date: 06/01/2016
Expiration Date: 12/01/2016
Zoning: PID

Main Contractor
PRECISION FIRE SYSTEMS INC.

Phone #:

Nature of work: FIRE - INSTALL NEW FIRE PROTECTION SYSTEM BEGINNING 1' AFF.

SUB CONTRACTORS

REQUIRED INSPECTIONS

Type	Date	Pass	Fail
Fire - Sprinkler			
Mechanical Final			
Mechanical Rough			

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. IF YOU INTEND TO OBTAIN FINANCING, CONSULT YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

NOTICE: In addition to the requirements of this permit, there may be additional restrictions applicable to this property that may be found in the public records of this county, such as water management districts, state agencies or federal agencies. All other applicable state or federal permits shall be obtained before commencement of the development.

Inspections must be passed before proceeding with subsequent work. Inspections logged in before midnight will be performed on the next business day. Make sure to have your **permit** number ready. To obtain an approximate time, please call 321-567-3768 between 7:00AM and 8:30AM the morning of your scheduled inspection. **Call 321-567-3760 for Building, Electrical, Plumbing and Mechanical inspections.** **(Call 321-567-3794 for Fire Alarm and Sprinkler inspections, only.)**

Building Official: CFM, MCP

Jeff Atwater
CHIEF FINANCIAL OFFICER

Julius Halas
DIVISION DIRECTOR

Casia Sinco
BUREAU CHIEF

Keith McCarthy
SAFETY PROGRAM MANAGER

FLORIDA DEPARTMENT OF FINANCIAL SERVICES
DIVISION OF STATE FIRE MARSHAL
200 East Gaines Street - Tallahassee, Florida 32399-0342
Tel. 850-413-3644 Fax. 850-410-2467

CERTIFICATE OF COMPETENCY
OFFICIAL COPY

THIS CERTIFIES THAT: Arthur Bateman
782 Monroe Road
Sanford FL 32771

BUSINESS ORGANIZATION: Precision Fire Systems, Inc

Contractor II is limited to the execution of contracts requiring the ability to layout, fabricate, install, inspect, alter, repair, and service water sprinkler systems, water spray systems, foam-water sprinkler systems, foam-water spray systems, standpipes, combination standpipes and sprinkler risers, all piping that is an integral part of the system beginning at the point of service, sprinkler tank heaters, air lines, thermal systems used in connection with sprinklers, and tanks and pumps connected thereto, excluding pre-engineered systems.

Issue Date:	07/01/2014
Type:	07
Class:	12
County:	Seminole
License/Permit #:	FPC13-000123
Expiration Date:	06/30/2016

Chief Financial Officer

SEMINOLE COUNTY BUSINESS TAX RECEIPT

RAY VALDES, SEMINOLE COUNTY TAX COLLECTOR

PO Box 630 ▪ Sanford, FL 32772-0630 ▪ Telephone: 407-665-1000
www.seminoletax.org

VALID THROUGH 09/30/16

PRECISION FIRE SYSTEMS INC
782 MONROE RD
SANFORD, FL 32771

Account #:187793

ARTHUR BATEMAN (OFFICER)

REGULATED
License # - FPC13-000123
Qualifier- BATEMAN ARTHUR

Receipt #: 10592015101200720 **Amount Paid: $ 49.50** **Date Paid: 10/12/2015**

BUSINESS OWNER, PLEASE NOTE THE FOLLOWING:

- **DISPLAY THE ABOVE RECEIPT PROMINENTLY:** This Business Tax Receipt shall be displayed conspicuously at the place of business in such a manner that it can be open to the view of the public and subject to inspection by all duly authorized officers of the County. Upon failure to do so, the business shall be subject to the payment of another business tax for the same business or profession.

- **RENEW THIS TAX BEFORE IT EXPIRES:** Pursuant to Florida Statutes, all Business Tax Receipts shall be issued by the Tax Collector beginning July 1st of each year, and it shall expire on September 30th of the succeeding year. Those Business Tax Receipts issued as renewal accounts beginning October 1st shall be delinquent and subject to a delinquency penalty of 10% for the month of October, plus an additional 5% penalty for each month of delinquency thereafter until paid; provided that the total penalty shall not exceed 25% of the business tax for the delinquent establishment (Florida Statute [FS] 205.053 [1]).

  A 25% penalty shall be imposed on any individual engaged in any new business or profession without first obtaining a Seminole County Business Tax receipt. ([FS] 205.053 [2])

  This Business Tax Receipt is only a receipt for business taxes paid. It does not permit the taxpayer to violate any existing regulatory or zoning laws of the state, county, or municipality, nor does it exempt the taxpayer from any other required licenses, registrations, certifications, or permits. Business Tax requirements are subject to legislative change.

- **REPORT ALL CHANGES:** The holder of this Business Tax Receipt is required to report a change in the following: Ownership, Business Location, Mailing Address, or any other information that would alter the status of the current year's taxes. This includes, but is not limited to, the loss of or a change in a State License which was used to qualify for the business activity and/or occupation identified on the current County Business Tax Receipt. If you have any changes to report, contact the Business Tax Department at 407-665-7636.

PRECISION FIRE SYSTEMS INC
782 MONROE RD
SANFORD, FL 32771

OP ID: MOMA

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 04/29/2016

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Alexander Insurance Agency 541 S. Orlando Ave., Suite 206 Maitland, FL 32751 Peter Katauskas	CONTACT NAME: Mary Monica PHONE (A/C, No, Ext): 407-629-4825 FAX (A/C, No): 407-629-5407 E-MAIL ADDRESS: mmonica@alexfinancial.com PRODUCER CUSTOMER ID #: PRECI-2
INSURED Precision Fire Systems, Inc Arthur Bateman 782 Monroe Road Sanford, FL 32771	INSURER(S) AFFORDING COVERAGE — NAIC # INSURER A : Greenwich Insurance Co AXV — 22322 INSURER B : Associ Industries Ins AXIII — 23140 INSURER C : Mapfre Insurance Co AXI — 34932 INSURER D : Navigators Specialty Ins AXI — 36056 INSURER E : American Zurich Insurance Co. — 050457 INSURER F :

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR X BLKT ADDL INSURED X INCL COMP OPERS GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC			RMG640047501 PRIMARY& NON CONTRIBUTORY CONTR LIAB X-C--U INCL	12/05/2015	12/05/2016	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 100,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
C	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS X HIRED AUTOS X NON-OWNED AUTOS			4150130009477	12/31/2015	12/31/2016	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (PER ACCIDENT) Comp Ded Coll Ded	$ 1,000,000 $ $ $ $ 1,000 $ 1,000
D	UMBRELLA LIAB X OCCUR X EXCESS LIAB CLAIMS-MADE DEDUCTIBLE X RETENTION $			NY15EXC830963IC	12/05/2015	12/05/2016	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N: N If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		AWC1055605 BLKT WAIVER OF SUBROGATIO	12/05/2015	12/05/2016	X WC STATU-TORY LIMITS OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
A	ERRORS & OMISSIONS			RMG640047501	12/05/2015	12/05/2016	OCCUR/AGG	$1MIL/$2MIL
E	CONTRACTORS EQUIP			EC09144314	04/26/2016	04/26/2017	RENTED EQ	$250,000*

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER

TITUS-2

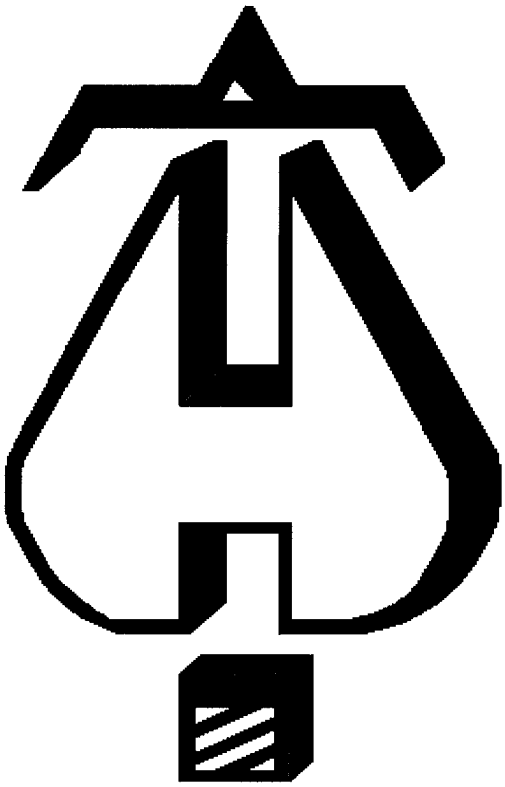
City of Titusville
Building Dept.
FAX 1-321-383-5700
555 S. Washington Ave
Titusville, FL 32796

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Peter Katauskas



FILE

. . . Fire Protection by Computer Design

Precision Fire Systems
782 Monroe Road
Sanford, FL 32771
321-363-1560

Job Name	:	EMBRAER AERO SEATING
Building	:	PRODUCTION BUILDING
Location	:	1600 ARMSTRONG DRIVE
System	:	1
Contract	:	16016
Data File	:	Embraer - Production DA - Rev01 - 4-7-16.WXF

HYDRAULIC CALCULATIONS
for

Project name: EMBRAER AERO SEATING TECHNOLOGIES
Location: 1600 ARMSTRONG DRIVE
Drawing no: PRODUCTION BUILDING
Date: 4-28-16

Design

Remote area number: 1
Remote area location: WAREHOUSE
Occupancy classification: ORDINARY GROUP II
Density: .20 - Gpm/SqFt
Area of application: 1500 - SqFt
Coverage per sprinkler: 130 - SqFt
Type of sprinklers calculated: STANDARD SPRAY
No. of sprinklers calculated: 13
In-rack demand: - GPM
Hose streams: 250 - GPM
Total water required (including hose streams): 596.13 - GPM @ 38.23 - Psi
Type of system: WET
Volume of dry or preaction system: - Gal

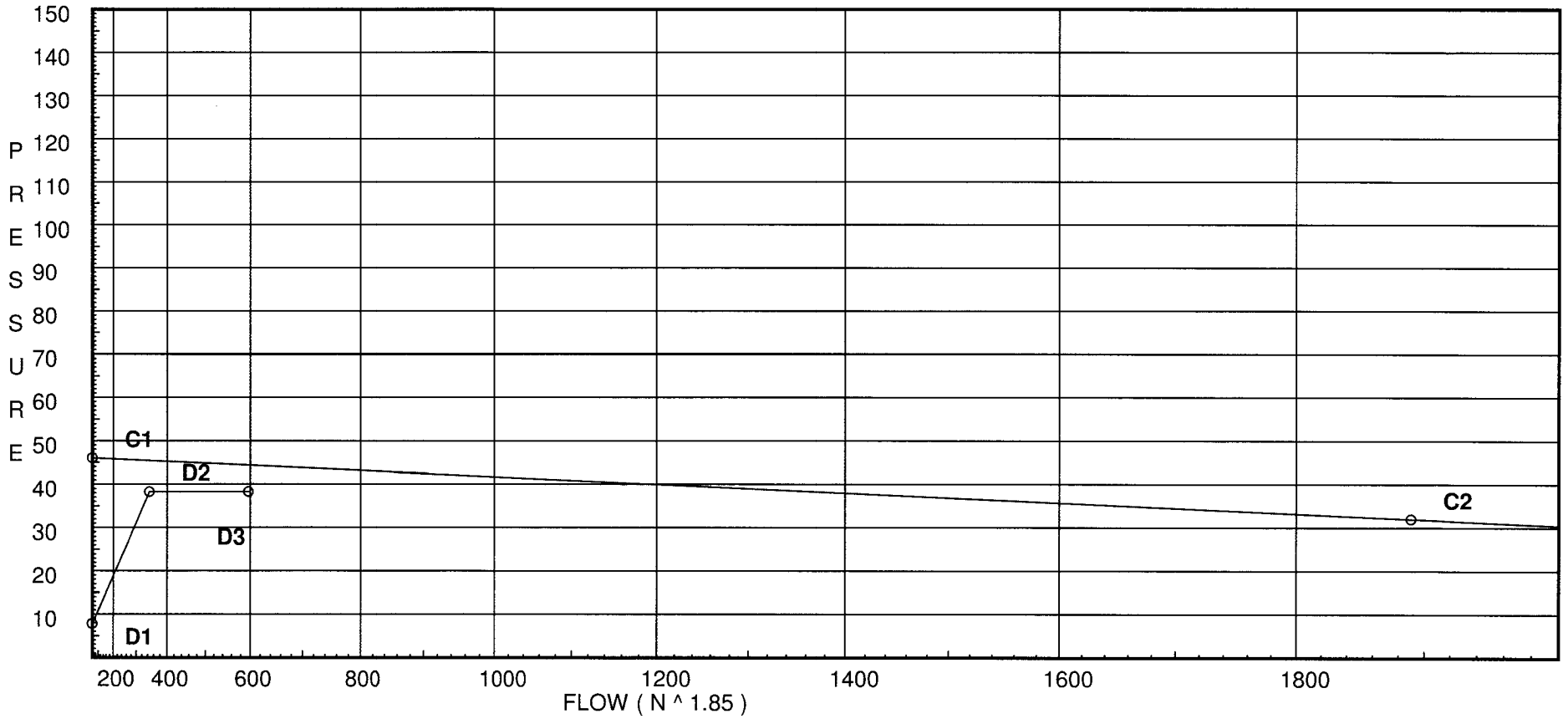
Water supply information

Date: 12-16-15
Location: ARMSTRONG DRIVE
Source: CITY OF TITUSVILLE

Name of contractor: PRECISION FIRE SYSTEMS, INC.
Address: 782 MONROE ROAD, SANFORD, FL
Phone number: 321.363.1560
Name of designer: CHAD SHEFFIELD
Authority having jurisdiction: TITUSVILLE
Notes: (Include peaking information or gridded systems here.)

City Water Supply:
C1 - Static Pressure : 46
C2 - Residual Pressure: 32
C2 - Residual Flow : 1890

Demand:
D1 - Elevation : 7.796
D2 - System Flow : 346.128
D2 - System Pressure : 38.230
Hose (Demand) : 250
D3 - System Demand : 596.128
Safety Margin : 6.114



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
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
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
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
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
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	0	0	0	0	0	0	0
X	90'Tee-BranchFirelock002	0	0	0	0	0	8.5	10.8	13	0	16	21	25	33	0	0	0	0	0	0	0
Zaf	Ames 3000SS	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

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

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

Pressure / Flow Summary - STANDARD

Precision Fire Systems
EMBRAER AERO SEATING

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
1	20.0	8	10.84	na	26.33	0.2	130	7.0
2	20.0	8	10.61	na	26.06	0.2	130	7.0
3	20.0	8	10.56	na	26.0	0.2	130	7.0
4	20.0	8	10.56	na	26.0	0.2	130	7.0
5	20.0	8	10.62	na	26.07	0.2	130	7.0
6	20.0	8	10.85	na	26.35	0.2	130	7.0
7	20.0	8	10.96	na	26.48	0.2	130	7.0
8	20.0	8	10.73	na	26.2	0.2	130	7.0
9	20.0	8	10.67	na	26.13	0.2	130	7.0
10	20.0	8	10.67	na	26.13	0.2	130	7.0
11	20.0	8	10.73	na	26.2	0.2	130	7.0
12	20.0	8	10.95	na	26.47	0.2	130	7.0
13	20.0	8	15.68	na	31.68	0.2	130	7.0
R7	20.0		16.48	na				
R6	20.0		17.05	na				
R5	20.0		17.54	na				
R4	20.0		17.85	na				
R3	20.0		18.04	na				
R2	20.0		18.15	na				
R1	20.0		18.19	na				
R8	20.0		15.62	na				
R9	20.0		14.03	na				
R10	20.0		13.81	na				
R11	20.0		19.83	na				
R12	20.0		19.53	na				
R13	20.0		19.26	na				
R14	20.0		19.02	na				
R15	20.0		18.81	na				
R16	20.0		17.67	na				
R17	20.0		17.49	na				
R18	20.0		17.24	na				
R19	20.0		16.65	na				
R20	20.0		16.62	na				
M1	20.0		18.1	na				
M2	20.0		18.08	na				
M3	20.0		17.98	na				
M4	20.0		17.79	na				
M5	20.0		17.48	na				
M6	20.0		17.01	na				
M7	20.0		16.41	na				
M8	20.0		15.61	na				
M9	20.0		14.74	na				
M11	20.0		19.91	na				
M12	20.0		19.6	na				
M13	20.0		19.32	na				
M14	20.0		19.08	na				
M15	20.0		18.87	na				
M16	20.0		17.71	na				
M17	20.0		17.56	na				
M18	20.0		17.43	na				
M19	20.0		17.35	na				
TR2	20.0		20.99	na				
BR2	0.0		34.44	na				
UG2	0.0		34.88	na				
UG3	0.0		34.98	na	250.0			
BF1	0.0		35.42	na				
BF2	0.0		38.93	na				
TEST	2.0		38.23	na				

The maximum velocity is 9.24 and it occurs in the pipe between nodes M8 and M9

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
1	-51.54	2.157		0.0	9.875	10.836		K Factor = 8.00
to		120.0		0.0	0.0	0.0		
2	-51.54	-0.0224		0.0	9.875	-0.221		Vel = 4.53
2	26.07	2.157		0.0	8.625	10.615		K Factor = 8.00
to		120.0		0.0	0.0	0.0		
3	-25.47	-0.0061		0.0	8.625	-0.053		Vel = 2.24
3	26.00	2.157		0.0	9.875	10.562		K Factor = 8.00
to		120.0		0.0	0.0	0.0		
4	0.53	0.0		0.0	9.875	0.0		Vel = 0.05
4	26.00	2.157		0.0	8.625	10.562		K Factor = 8.00
to		120.0		0.0	0.0	0.0		
5	26.53	0.0066		0.0	8.625	0.057		Vel = 2.33
5	26.07	2.157		0.0	9.875	10.619		K Factor = 8.00
to		120.0		0.0	0.0	0.0		
6	52.6	0.0233		0.0	9.875	0.230		Vel = 4.62
6	26.35	2.157	X	10.461	106.542	10.849		K Factor = 8.00
to		120.0		0.0	10.461	0.0		
R20	78.95	0.0493		0.0	117.003	5.768		Vel = 6.93
	0.0							
	78.95					16.617		K Factor = 19.37
7	-52.71	2.157		0.0	9.875	10.959		K Factor = 8.00
to		120.0		0.0	0.0	0.0		
8	-52.71	-0.0234		0.0	9.875	-0.231		Vel = 4.63
8	26.20	2.157		0.0	8.625	10.728		K Factor = 8.00
to		120.0		0.0	0.0	0.0		
9	-26.51	-0.0065		0.0	8.625	-0.056		Vel = 2.33
9	26.14	2.157		0.0	9.875	10.672		K Factor = 8.00
to		120.0		0.0	0.0	0.0		
10	-0.37	0.0		0.0	9.875	0.0		Vel = 0.03
10	26.13	2.157		0.0	8.625	10.672		K Factor = 8.00
to		120.0		0.0	0.0	0.0		
11	25.76	0.0061		0.0	8.625	0.053		Vel = 2.26
11	26.20	2.157		0.0	9.875	10.725		K Factor = 8.00
to		120.0		0.0	0.0	0.0		
12	51.96	0.0228		0.0	9.875	0.225		Vel = 4.56
12	26.47	2.157	X	10.461	106.542	10.950		K Factor = 8.00
to		120.0		0.0	10.461	0.0		
R19	78.43	0.0487		0.0	117.003	5.699		Vel = 6.89
	0.0							
	78.43					16.649		K Factor = 19.22
13	38.90	2.157	X	10.461	106.542	15.683		K Factor = 8.00
to		120.0		0.0	10.461	0.0		
R18	38.9	0.0133		0.0	117.003	1.557		Vel = 3.42
	0.0							
	38.90					17.240		K Factor = 9.37

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
1	77.87	2.157	X	10.461	51.417	10.836		
to		120.0		0.0	10.461	0.0		
R10	77.87	0.0481		0.0	61.878	2.974		Vel = 6.84
	0.0							
	77.87					13.810		K Factor = 20.95
7	79.20	2.157	X	10.461	51.417	10.959		
to		120.0		0.0	10.461	0.0		
R9	79.2	0.0496		0.0	61.878	3.069		Vel = 6.95
	0.0							
	79.20					14.028		K Factor = 21.15
13	-7.21	2.157	X	10.461	97.000	15.683		
to		120.0		0.0	10.461	0.0		
R8	-7.21	-0.0006		0.0	107.461	-0.063		Vel = 0.63
	0.0							
	-7.21					15.620		K Factor = -1.82
R7	21.71	2.157	2X	20.921	203.583	16.478		
to		120.0		0.0	20.921	0.0		
R17	21.71	0.0045		0.0	224.504	1.015		Vel = 1.91
	0.0							
	21.71					17.493		K Factor = 5.19
R6	16.63	2.157	2X	20.921	203.583	17.053		
to		120.0		0.0	20.921	0.0		
R16	16.63	0.0028		0.0	224.504	0.620		Vel = 1.46
	0.0							
	16.63					17.673		K Factor = 3.96
R5	21.70	2.157	2X	20.921	258.667	17.542		
to		120.0		0.0	20.921	0.0		
R15	21.7	0.0045		0.0	279.588	1.264		Vel = 1.91
	0.0							
	21.70					18.806		K Factor = 5.00
R4	20.83	2.157	2X	20.921	258.667	17.848		
to		120.0		0.0	20.921	0.0		
R14	20.83	0.0042		0.0	279.588	1.171		Vel = 1.83
	0.0							
	20.83					19.019		K Factor = 4.78
R3	21.26	2.157	2X	20.921	258.667	18.041		
to		120.0		0.0	20.921	0.0		
R13	21.26	0.0044		0.0	279.588	1.217		Vel = 1.87
	0.0							
	21.26					19.258		K Factor = 4.84
R2	22.75	2.157	2X	20.921	258.667	18.146		
to		120.0		0.0	20.921	0.0		
R12	22.75	0.0049		0.0	279.588	1.380		Vel = 2.00
	0.0							
	22.75					19.526		K Factor = 5.15

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
R1	24.98	2.157	2X	20.921	258.667	18.188		
to		120.0		0.0	20.921	0.0		
R11	24.98	0.0059		0.0	279.588	1.641		Vel = 2.19
	0.0							
	24.98					19.829		K Factor = 5.61
R1	-24.98	2.157	T	12.307	2.000	18.188		
to		120.0		0.0	12.307	0.0		
M1	-24.98	-0.0058		0.0	14.307	-0.083		Vel = 2.19
	0.0							
	-24.98					18.105		K Factor = -5.87
R2	-22.75	2.157	T	12.307	2.000	18.146		
to		120.0		0.0	12.307	0.0		
M2	-22.75	-0.0050		0.0	14.307	-0.071		Vel = 2.00
	0.0							
	-22.75					18.075		K Factor = -5.35
R3	-21.26	2.157	T	12.307	2.000	18.041		
to		120.0		0.0	12.307	0.0		
M3	-21.26	-0.0043		0.0	14.307	-0.062		Vel = 1.87
	0.0							
	-21.26					17.979		K Factor = -5.01
R4	-20.83	2.157	T	12.307	2.000	17.848		
to		120.0		0.0	12.307	0.0		
M4	-20.83	-0.0042		0.0	14.307	-0.060		Vel = 1.83
	0.0							
	-20.83					17.788		K Factor = -4.94
R5	-21.70	2.157	T	12.307	2.000	17.542		
to		120.0		0.0	12.307	0.0		
M5	-21.7	-0.0045		0.0	14.307	-0.065		Vel = 1.91
	0.0							
	-21.70					17.477		K Factor = -5.19
R6	-16.63	2.157	T	12.307	2.000	17.053		
to		120.0		0.0	12.307	0.0		
M6	-16.63	-0.0028		0.0	14.307	-0.040		Vel = 1.46
	0.0							
	-16.63					17.013		K Factor = -4.03
R7	-21.71	2.157	T	12.307	2.000	16.478		
to		120.0		0.0	12.307	0.0		
M7	-21.71	-0.0045		0.0	14.307	-0.065		Vel = 1.91
	0.0							
	-21.71					16.413		K Factor = -5.36
R8	-7.21	2.157	T	12.307	2.000	15.620		
to		120.0		0.0	12.307	0.0		
M8	-7.21	-0.0006		0.0	14.307	-0.009		Vel = 0.63
	0.0							
	-7.21					15.611		K Factor = -1.82

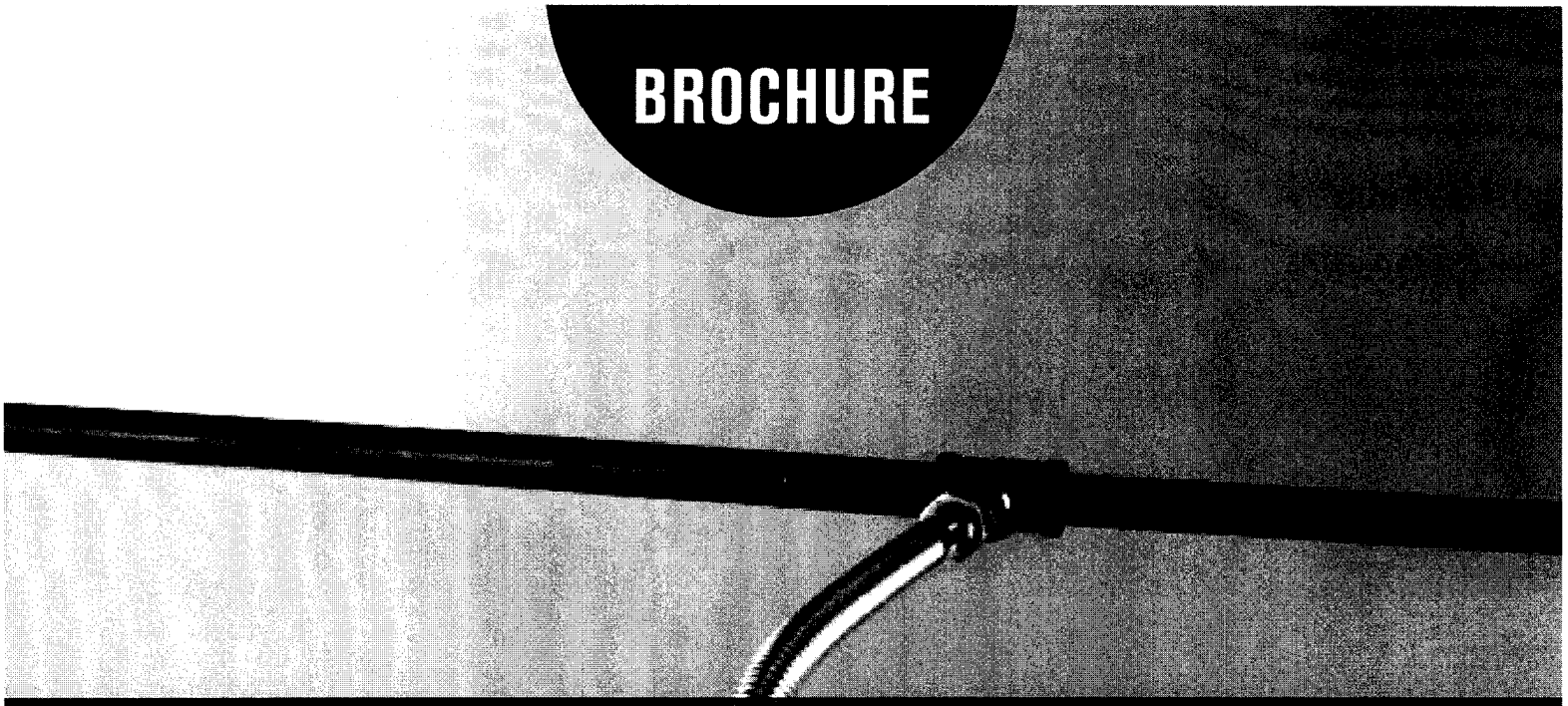
Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
R9	79.20	2.157	T	12.307	2.000	14.028		
to		120.0		0.0	12.307	0.0		
M9	79.2	0.0496		0.0	14.307	0.709		Vel = 6.95
	0.0							
	79.20					14.737		K Factor = 20.63
R10	77.87	2.157	T	12.307	2.000	13.810		
to		120.0		0.0	12.307	0.0		
M10	77.87	0.0481		0.0	14.307	0.688		Vel = 6.84
	0.0							
	77.87					14.498		K Factor = 20.45
R11	24.98	2.157	T	12.307	2.000	19.829		
to		120.0		0.0	12.307	0.0		
M11	24.98	0.0059		0.0	14.307	0.084		Vel = 2.19
	0.0							
	24.98					19.913		K Factor = 5.60
R12	22.75	2.157	T	12.307	2.000	19.526		
to		120.0		0.0	12.307	0.0		
M12	22.75	0.0049		0.0	14.307	0.070		Vel = 2.00
	0.0							
	22.75					19.596		K Factor = 5.14
R13	21.26	2.157	T	12.307	2.000	19.258		
to		120.0		0.0	12.307	0.0		
M13	21.26	0.0043		0.0	14.307	0.062		Vel = 1.87
	0.0							
	21.26					19.320		K Factor = 4.84
R14	20.83	2.157	T	12.307	2.000	19.019		
to		120.0		0.0	12.307	0.0		
M14	20.83	0.0042		0.0	14.307	0.060		Vel = 1.83
	0.0							
	20.83					19.079		K Factor = 4.77
R15	21.70	2.157	T	12.307	2.000	18.806		
to		120.0		0.0	12.307	0.0		
M15	21.7	0.0045		0.0	14.307	0.065		Vel = 1.91
	0.0							
	21.70					18.871		K Factor = 5.00
R16	16.63	2.157	T	12.307	2.000	17.673		
to		120.0		0.0	12.307	0.0		
M16	16.63	0.0027		0.0	14.307	0.039		Vel = 1.46
	0.0							
	16.63					17.712		K Factor = 3.95
R17	21.71	2.157	T	12.307	2.000	17.493		
to		120.0		0.0	12.307	0.0		
M17	21.71	0.0045		0.0	14.307	0.065		Vel = 1.91
	0.0							
	21.71					17.558		K Factor = 5.18

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
R18	38.90	2.157	T	12.307	2.000	17.240		
to		120.0		0.0	12.307	0.0		
M18	38.9	0.0134		0.0	14.307	0.191		Vel = 3.42
	0.0							
	38.90					17.431		K Factor = 9.32
R19	78.43	2.157	T	12.307	2.000	16.649		
to		120.0		0.0	12.307	0.0		
M19	78.43	0.0487		0.0	14.307	0.697		Vel = 6.89
	0.0							
	78.43					17.346		K Factor = 18.83
R20	78.95	2.157	T	12.307	2.000	16.617		
to		120.0		0.0	12.307	0.0		
M20	78.95	0.0493		0.0	14.307	0.705		Vel = 6.93
	0.0							
	78.95					17.322		K Factor = 18.97
M1	-24.98	2.635		0.0	13.167	18.105		
to		120.0		0.0	0.0	0.0		
M2	-24.98	-0.0023		0.0	13.167	-0.030		Vel = 1.47
M2	-22.76	2.635		0.0	13.167	18.075		
to		120.0		0.0	0.0	0.0		
M3	-47.74	-0.0073		0.0	13.167	-0.096		Vel = 2.81
M3	-21.25	2.635		0.0	13.167	17.979		
to		120.0		0.0	0.0	0.0		
M4	-68.99	-0.0145		0.0	13.167	-0.191		Vel = 4.06
M4	-20.83	2.635		0.0	13.167	17.788		
to		120.0		0.0	0.0	0.0		
M5	-89.82	-0.0236		0.0	13.167	-0.311		Vel = 5.28
M5	-21.70	2.635		0.0	13.167	17.477		
to		120.0		0.0	0.0	0.0		
M6	-111.52	-0.0352		0.0	13.167	-0.464		Vel = 6.56
M6	-16.63	2.635		0.0	13.167	17.013		
to		120.0		0.0	0.0	0.0		
M7	-128.15	-0.0456		0.0	13.167	-0.600		Vel = 7.54
M7	-21.70	2.635		0.0	13.167	16.413		
to		120.0		0.0	0.0	0.0		
M8	-149.85	-0.0609		0.0	13.167	-0.802		Vel = 8.82
M8	-7.22	2.635		0.0	13.167	15.611		
to		120.0		0.0	0.0	0.0		
M9	-157.07	-0.0664		0.0	13.167	-0.874		Vel = 9.24
M9	79.20	2.635		0.0	13.167	14.737		
to		120.0		0.0	0.0	0.0		
M10	-77.87	-0.0182		0.0	13.167	-0.239		Vel = 4.58
	0.0							
	-77.87					14.498		K Factor = -20.45
M11	-321.14	4.26		0.0	13.167	19.913		
to		120.0		0.0	0.0	0.0		
M12	-321.14	-0.0241		0.0	13.167	-0.317		Vel = 7.23

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
M12	22.75	4.26		0.0	13.167	19.596		
to		120.0		0.0	0.0	0.0		
M13	-298.39	-0.0210		0.0	13.167	-0.276		Vel = 6.72
M13	21.26	4.26		0.0	13.167	19.320		
to		120.0		0.0	0.0	0.0		
M14	-277.13	-0.0183		0.0	13.167	-0.241		Vel = 6.24
M14	20.82	4.26		0.0	13.167	19.079		
to		120.0		0.0	0.0	0.0		
M15	-256.31	-0.0158		0.0	13.167	-0.208		Vel = 5.77
M15	21.70	4.26	2V	17.907	68.250	18.871		
to		120.0		0.0	17.907	0.0		
M16	-234.61	-0.0135		0.0	86.157	-1.159		Vel = 5.28
M16	16.63	4.26		0.0	13.167	17.712		
to		120.0		0.0	0.0	0.0		
M17	-217.98	-0.0117		0.0	13.167	-0.154		Vel = 4.91
M17	21.71	4.26		0.0	13.167	17.558		
to		120.0		0.0	0.0	0.0		
M18	-196.27	-0.0096		0.0	13.167	-0.127		Vel = 4.42
M18	38.89	4.26		0.0	13.167	17.431		
to		120.0		0.0	0.0	0.0		
M19	-157.38	-0.0065		0.0	13.167	-0.085		Vel = 3.54
M19	78.43	4.26		0.0	13.167	17.346		
to		120.0		0.0	0.0	0.0		
M20	-78.95	-0.0018		0.0	13.167	-0.024		Vel = 1.78
	0.0							
	-78.95					17.322		K Factor = -18.97
M11	346.13	4.26	2V	17.907	21.000	19.913		
to		120.0		0.0	17.907	0.0		
TR2	346.13	0.0276		0.0	38.907	1.074		Vel = 7.79
TR2	0.0	4.26	Fsp	0.0	20.000	20.987		
to		120.0	B	15.8	44.768	11.662		* * Fixed Loss = 3
BR2	346.13	0.0276	S	28.968	64.768	1.788		Vel = 7.79
BR2	0.0	5.86	L	11.503	66.000	34.437		
to		150.0	T	38.342	49.845	0.0		
UG2	346.13	0.0039		0.0	115.845	0.448		Vel = 4.12
UG2	0.0	7.68	T	43.857	47.000	34.885		
to		150.0		0.0	43.857	0.0		
UG3	346.13	0.0010		0.0	90.857	0.094		Vel = 2.40
UG3	250.00	7.68	2F	22.555	117.000	34.979		Qa = 250
to		150.0	L	16.29	38.845	0.0		
BF1	596.13	0.0028		0.0	155.845	0.441		Vel = 4.13
BF1	0.0	6.16	3L	38.734	12.000	35.420		
to		140.0	Zaf	0.0	38.734	3.031		* * Fixed Loss = 3.031
BF2	596.13	0.0094		0.0	50.734	0.478		Vel = 6.42
BF2	0.0	7.68	G	5.012	10.000	38.929		
to		150.0	T	43.857	48.869	-0.866		
TEST	596.13	0.0028		0.0	58.869	0.167		Vel = 4.13

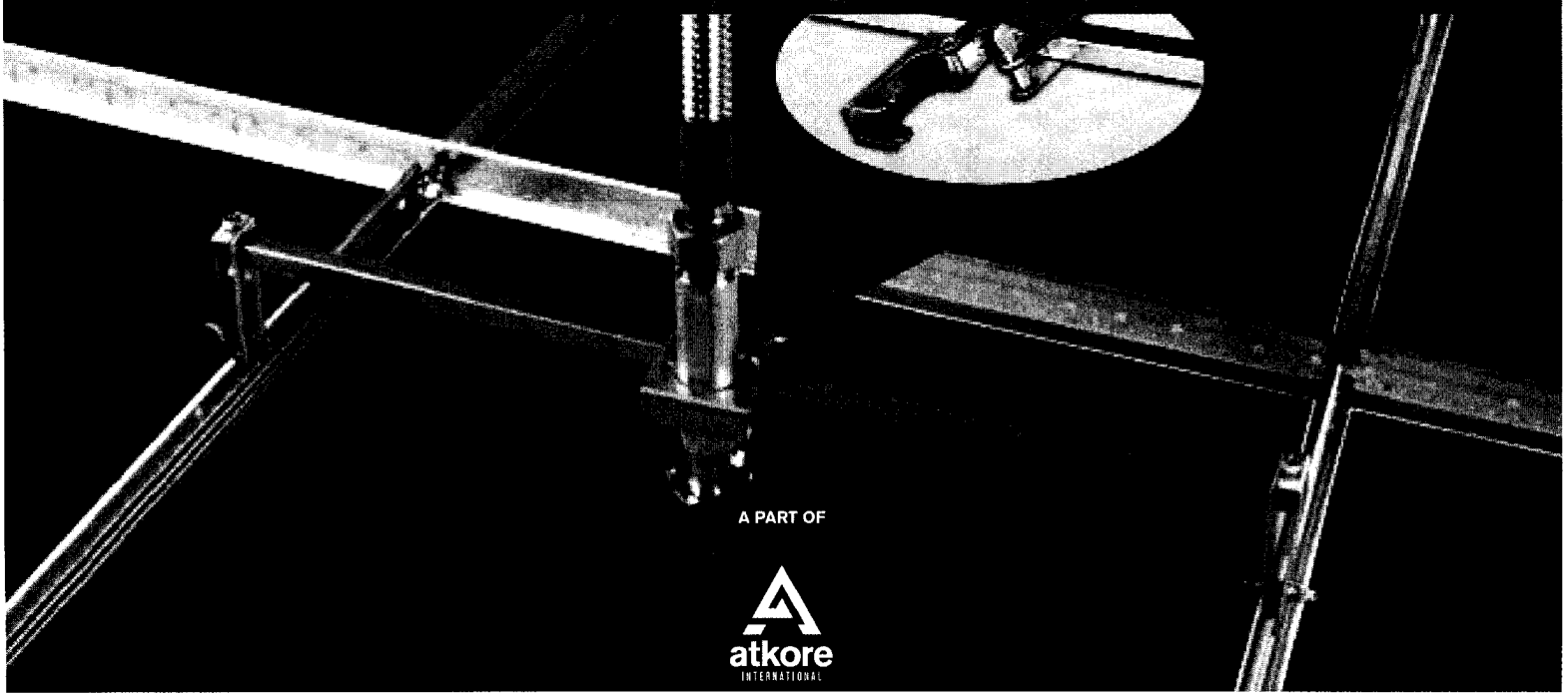
Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*******	Notes	******
	0.0								
	596.13				38.230		K Factor = 96.41		

BROCHURE



SprinkFLEX®

COMMERCIAL FIRE SPRINKLER CONNECTIONS
Product Submittal



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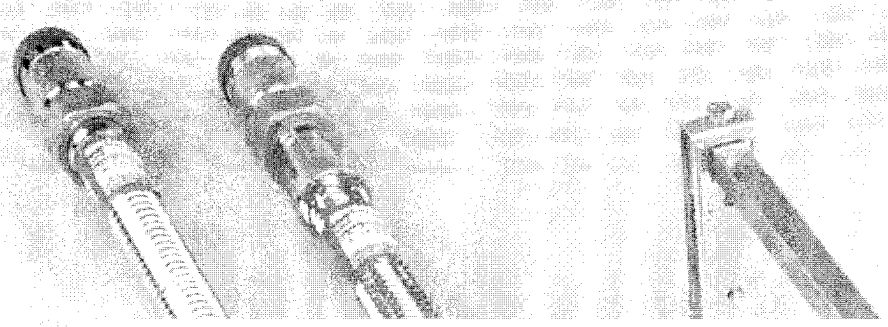


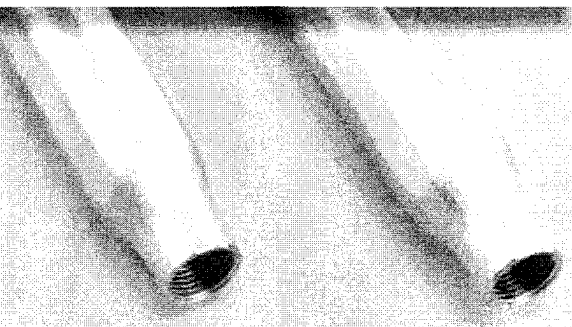
Limited Warranty

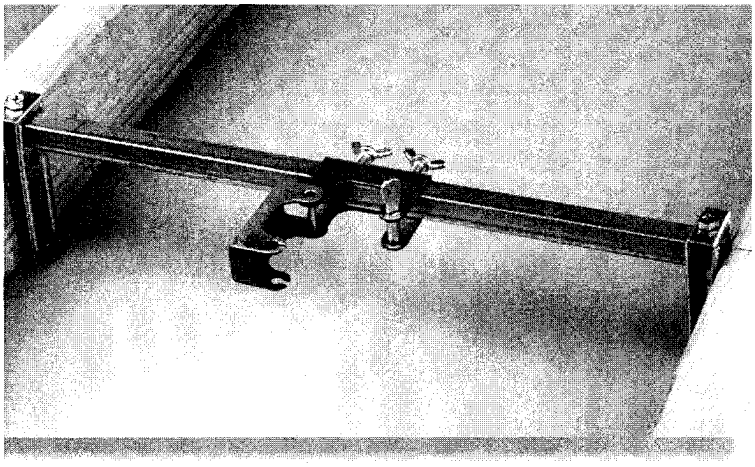
SprinkFLEX LLC warrants that its products will be free from defects in materials and workmanship under normal conditions of use and service for a period of one year from date of sale. Our obligation under this warranty is limited to repairing or replacing any product that is returned to us with transportation charges prepaid within one year after the date of original sale and that our examination shows to our satisfaction to have been defective in materials or workmanship under normal conditions of use and service. The decision as to whether to repair or to replace any product shall be made by us, and any repair shall be made at our facility. Notwithstanding the foregoing, the following are specifically excluded from the coverage of this warranty:

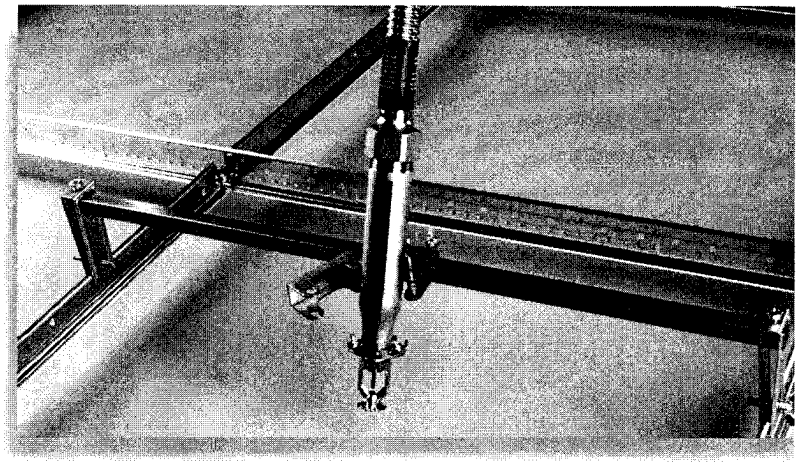
(a) the sprinkler head of any SprinkFLEX LLC product, but SprinkFLEX LLC hereby assigns to the original purchaser of any such product the right to enforce the warranty, if any, issued by the manufacturer of such sprinkler head;
(b) defects resulting from ordinary wear and tear, of any SprinkFLEX LLC. Product;
(c) products that have been altered in any manner by the buyer or by anyone other than SprinkFLEX LLC.;
(d) products that have been subjected to misuse, abusive use, or damage by accident or casualty;
(e) products that have been installed or used in a manner contrary to our specifications, instructions or recommendation;
(f) products that have been installed or used in a manner that is not in compliance with all applicable requirements of any code, law, regulation or rule of any federal, state or local governmental or industry authority; and
(g) products that have not been inspected and maintained in accordance with our specifications, instructions or recommendations, including, without limitation, our recommendations as to following the inspection and maintenance standards published by the National Fire Protection Association (NFPA); and
(h) products that have been affected by Microbiologically Influenced Corrosion (MIC).

This warranty is not assignable and shall benefit only the original purchaser of a SprinkFLEX LLC product. If any provision hereof or any portion of any provision shall be held invalid, the remainder of this Limited Warranty shall not be affected thereby, and all provisions of this Limited Warranty shall remain valid and in full force and effect to the fullest extent permitted by law.

THIS WARRANTY IS IN LIEU OF ALL IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY AND WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. NOTWITHSTANDING ANY PROVISION TO THE CONTRARY HEREIN OR ANY APPLICABLE LAW TO THE CONTRARY, IN NO EVENT SHALL SPRINKFLEX LLC. BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES UNDER ANY CIRCUMSTANCES WHATSOEVER, WHETHER ARISING FROM ANY BREACH OF THIS LIMITED WARRANTY OR OTHERWISE ARISING FROM OR IN CONNECTION WITH THE USE OR OPERATION OF, OR ANY DEFECT IN, ANY SPRINKFLEX, LLC. PRODUCT, OR OTHERWISE. The risk of damages from any breach of warranty with respect to injury to any person will be born by the purchaser of SprinkFLEX LLC.







Series SFN Unbraided Flexible Hose Assemblies c UL us LISTED

Series SFB Braided Flexible Hose Assemblies FM APPROVED c UL us LISTED

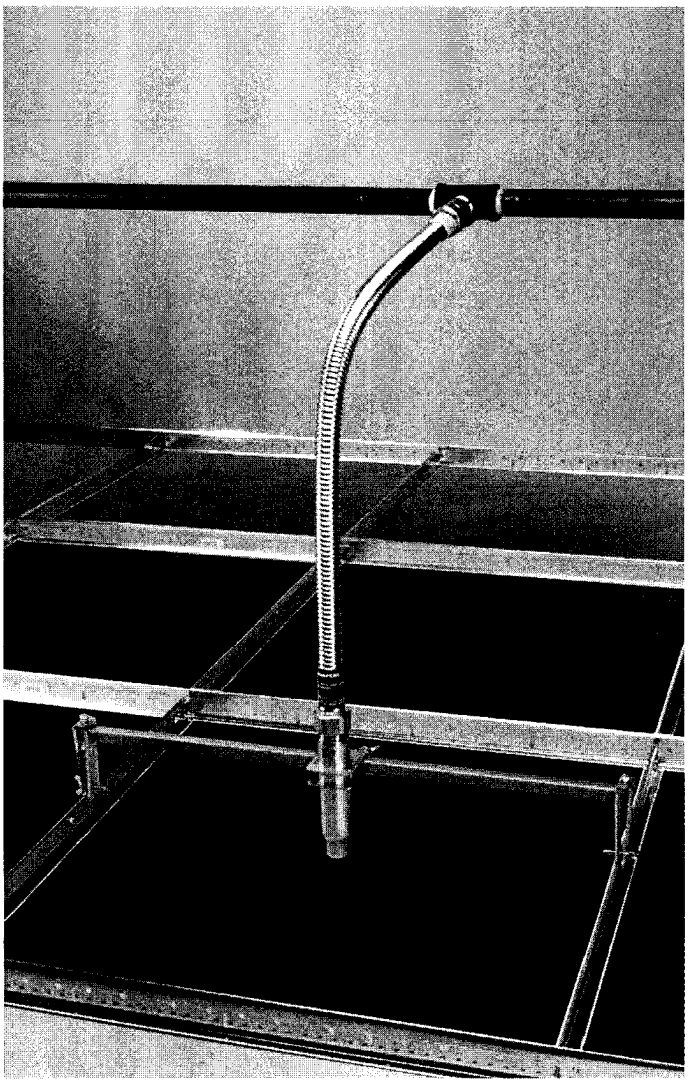
SprinkFLEX Stainless Steel Sprinkler Fittings connect the branch line to the sprinkler using a flexible stainless steel hose and reducer. The flexible stainless steel hose and fittings are intended for direct connection to the sprinkler and are particularly suited for use in suspended and hard ceiling applications. Each drop assembly comes with one stainless steel flexible hose, one branch line connection nipple, one sprinkler reducing nipple and bracket system.

SYSTEM OPTIONS

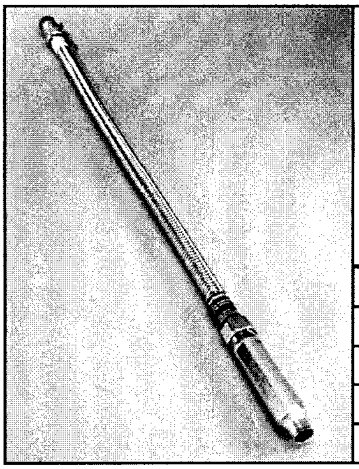
- Pre-assembled, ready to install, unbraided and braided flexible stainless steel hose lengths:
  28" (700mm), 40" (1000mm), 48" (1200mm), 59" (1500mm), 71" (1800mm)
- 1/2" and 3/4" outlet fittings for connecting sprinkler
- Pre-assembled, ready to install mounting bracket available in 24" and 48" long
- Mounting bracket allows the sprinkler to be locate anywhere within the ceiling with reference marks in the center for ease of installation without the need for measuring.
- Optional factory installed sprinkler head.

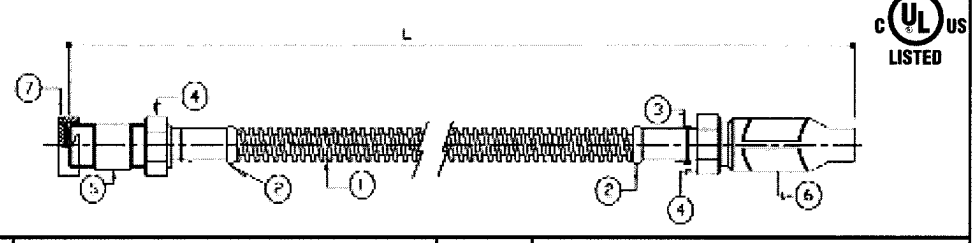
TECHNICAL DATA

- Maximum Working Pressure: 200 psi (1375 kPa)
- Maximum Ambient Temperature: 300° F (149°C)
- Connection to Branch Line: 1-inch NPT
- Minimum Bend Radius of Flexible Stainless Steel Hose:
  3 inches (76.2 mm) per UL Listing
  8 inches (203.2 mm) per FM Approval
- Maximum Number of 90° Bends Per Flexible Stainless Steel Hose:
  2 - 90 degree bends for 28" length
  3 - 90 degree bends for 40", 48", 59"and 71" lengths
  The flexible stainless steel hose should not be bent within 21/2 inches (64 mm) of the connection nut at both ends.
- Maximum K-Factor of Sprinkler to be connected to Sprinkler Reducing Nipple:
  1/2 inch outlets: 8.0
  3/4 inch outlets: 11.2
- Listings and Approvals:
  Unbraided models are UL Listed
  Braided models are FM Approved and UL Listed



FLEXIBLE HOSE - NON BRAIDED

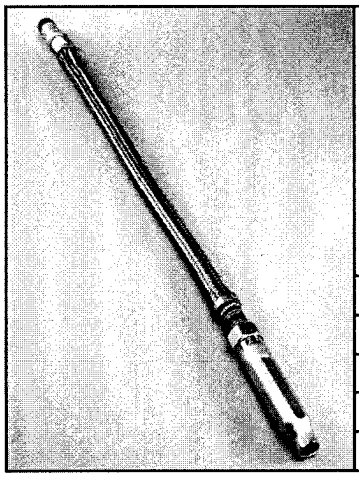


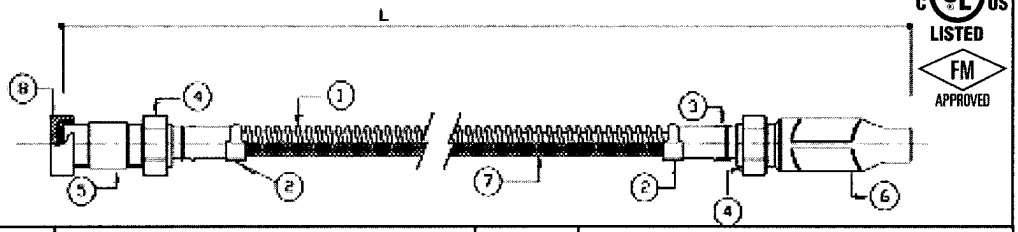


c UL us LISTED

NO.	DESCRIPTION	NO.	DESCRIPTION
1	Flexible Hose 7/8" Nominal Diameter	5	Nipple
2	Ring	6	Reducer 1/2" or 3/4"
3	Washer	7	Plastic Cap
4	Slip Nut		

FLEXIBLE HOSE - BRAIDED

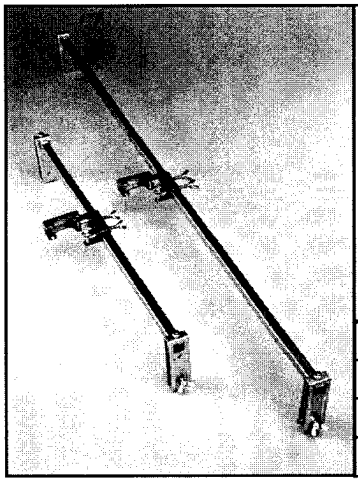


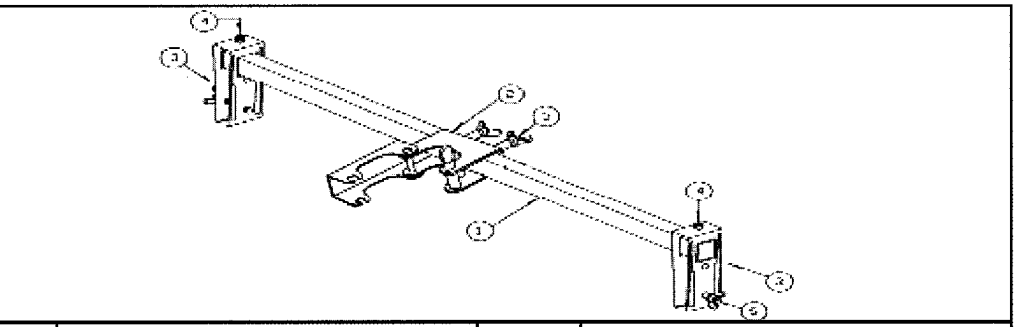


c UL us LISTED
FM APPROVED

NO.	DESCRIPTION	NO.	DESCRIPTION
1	Flexible Hose 7/8" Nominal Diameter	5	Nipple
2	Ring	6	Reducer 1/2" or 3/4"
3	Washer	7	Braid
4	Slip Nut	8	Plastic Cap

BRACKET ASSEMBLY





NO.	DESCRIPTION	NO.	DESCRIPTION
1	24" or 48" Support Bar	4	Hex Screw
2	Center Bracket Assembly	5	Wing Bolt
3	Clamp		

MATERIAL SPECIFICATIONS

Corrugated Flexible Hose: SS304	Support Bar: G90 Galvanized Steel
SEAL: EPDM	Clamp and Center Bracket Assembly: G90 Galvanized Steel
SLIP NUT AND NIPPLE: Zinc-Plated Carbon Steel	Hex Screw and Wing Bolts: Zinc-Plated Carbon Steel
Slip Nut and Nipple: Zinc-Plated Carbon Steel	Optional Tamper-Resistant Screw: Zinc-Plated Carbon Steel
BRAID AND BRAID RING: SS304	

FRICTION LOSS DATA

UNBRAIDED HOSE UL LISTED

MODEL	INLET & OUTLET SIZE NPT INCH	LENGTH INCH (mm)	NUMBER OF 90 DEGREE BENDS	UL LISTED – UNBRAIDED HOSE MAXIMUM EQUIVALENT LENGTH OF SCH 40 1 INCH DIAMETER PIPE (C=120), FT
SFN28H	1 x 1/2	28" (700mm)	2	22
SFN28T	1 x 3/4	28" (700mm)	2	28
SFN40H	1 x 1/2	40" (1000mm)	3	39
SFN40T	1 x 3/4	40" (1000mm)	3	54
SFN48H	1 x 1/2	48" (1200mm)	3	56
SFN48T	1 x 3/4	48" (1200mm)	3	63
SFN59H	1 x 1/2	59" (1500mm)	3	59
SFN59T	1 x 3/4	59" (1500mm)	3	74
SFN71H	1 x 1/2	71" (1800mm)	3	67
SFN71T	1 x 3/4	71" (1800mm)	3	74

*Series SFN models are unbraided/Series SFB models are braided
*Unbraided hoses are UL Listed
*Braided hoses are FM Approved

BRAIDED HOSE FM APPROVED AND UL LISTED

MODEL	INLET & OUTLET SIZE NPT INCH	LENGTH INCH (mm)	NUMBER OF 90 DEGREE BENDS	UL–BRAIDED HOSE MAXIMUM EQUIVALENT LENGTH OF SCH 40 1 INCH DIAMETER PIPE (C=120), FT	FM–BRAIDED HOSE MAXIMUM EQUIVALENT LENGTH OF SCH 40 1 INCH DIAMETER PIPE (C=100), FT
SFB28H	1 x 1/2	28" (700mm)	2	22	18.6
SFB28T	1 x 3/4	28" (700mm)	2	28	18.8
SFB40H	1 x 1/2	40" (1000mm)	3	39	24.6
SFB40T	1 x 3/4	40" (1000mm)	3	54	24.8
SFB48H	1 x 1/2	48" (1200mm)	3	56	28.5
SFB48T	1 x 3/4	48" (1200mm)	3	63	28.7
SFB59H	1 x 1/2	59" (1500mm)	3	59	34.4
SFB59T	1 x 3/4	59" (1500mm)	3	74	34.6
SFB71H	1 x 1/2	71" (1800mm)	3	67	40.4
SFB71T	1 x 3/4	71" (1800mm)	3	74	40.6

BRAIDED HOSE WITH ELBOW - FM APPROVED

MODEL	INLET & OUTLET SIZE NPT INCH	LENGTH INCH (mm)	NUMBER OF 90 DEGREE BENDS	FM–BRAIDED HOSE MAXIMUM EQUIVALENT LENGTH OF SCH 40 1 INCH DIAMETER PIPE (C=120), FT
SFB28H – E	1 x 1/2	28" (700mm)	2	20.6
SFB28T – E	1 x 3/4	28" (700mm)	2	20.8
SFB40H – E	1 x 1/2	40" (1000mm)	3	26.6
SFB40T – E	1 x 3/4	40" (1000mm)	3	26.8
SFB48H – E	1 x 1/2	48" (1200mm)	3	30.5
SFB48T – E	1 x 3/4	48" (1200mm)	3	30.7
SFB59H – E	1 x 1/2	59" (1500mm)	3	36.4
SFB59T – E	1 x 3/4	59" (1500mm)	3	36.6
SFB71H – E	1 x 1/2	71" (1800mm)	3	42.4
SFB71T – E	1 x 3/4	71" (1800mm)	3	42.6

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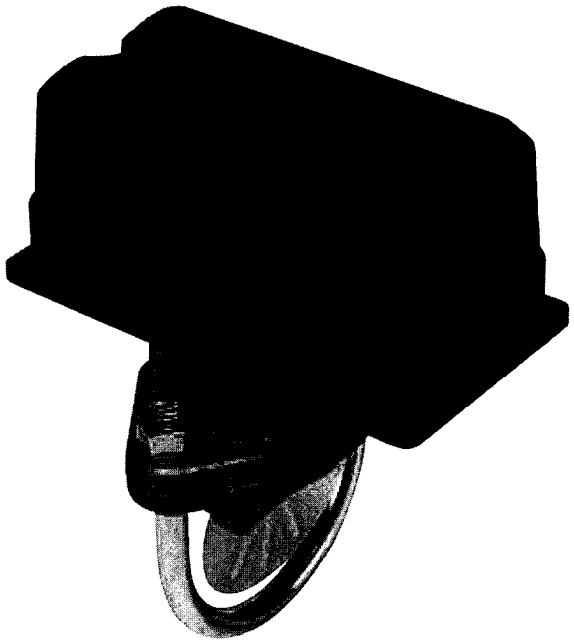
SYSTEM SENSOR®

WFD Series Waterflow Detector



The System Sensor WFD series is compatible with schedule 10 through 40 steel pipe, sizes 2″ through 8″, and can be mounted in a vertical or horizontal position.

Features

- Two-inch mounting hole provided in new WFD30-2 models
- UL-listed models are NEMA 4 rated
- Sealed retard mechanism immune to dust and other contaminants
- Visual switch activation
- Field-replaceable retard mechanism and SPDT switches
- Rugged, dual SPDT switches enclosed in a durable terminal block
- Accommodates up to 12 AWG wire
- Designed for both indoor and outdoor use
- 100 percent synchronization activates both alarm panel and local bell
- Tamper-resistant cover screws

Robust Construction. The WFD series consists of a rugged, NEMA 4-rated enclosure. Designed for both indoor and outdoor use, the WFD series operates across a wide temperature range, from 32°F to 120°F.

Reliable Performance. UL-listed models are equipped with tamper-resistant cover screws to prevent unauthorized entry. Inside, two sets of SPDT (Form C) synchronized switches are enclosed in a durable terminal block to assure reliable performance.

False Alarm Immunity. The WFD series incorporates a mechanical retard feature, which minimizes the risk of false alarm due to pressure surges or air trapped in the sprinkler system. In addition, the mechanical retard's unique sealed design is immune to dust and other contaminants.

Simplified Operation. The WFD series is designed to simplify installation. Two conduit openings permit easy attachment to the local alarm system. The retard mechanism and dual SPDT switches are field-replaceable.

Agency Listings

UL LISTED S739 | ULC CS169 | 7770-1653:114 | MEA approved 167-93-E | FM APPROVED 3006195

Waterflow Detector Specifications

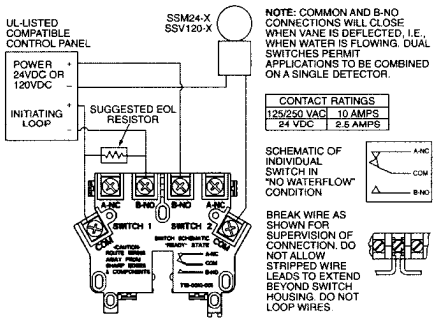
Engineering Specifications

Vane-type waterflow detectors shall be installed on system piping as designated on the drawing and/or as specified herein. Detectors shall mount on any clear pipe span of the appropriate nominal size, either a vertical upflow or horizontal run, at least 6″ from any fittings that may change water direction, flow rate, or pipe diameter or no closer than 24″ from a valve or drain. Detectors shall have a sensitivity in the range of 4 to 10 gallons per minute and a static pressure rating of 450 psi* for 2″ – 8″ pipes. The detector shall respond to waterflow in the specified direction after a preset time delay that is field adjustable. The delay mechanism shall be a sealed mechanical pneumatic unit with visual indication of actuation. The actuation mechanism shall include a polyethylene vane inserted through a hole in the pipe and connected by a mechanical linkage to the delay mechanism. Outputs shall consist of dual SPDT switches (Form C contacts). Two conduit entrances for standard fittings of commonly used electrical conduit shall be provided on the detectors. A grounding provision is provided. Unless noted, enclosures shall be NEMA 4 listed by Underwriters Laboratories Inc. All detectors shall be listed by Underwriters Laboratories Inc. for indoor or outdoor use.

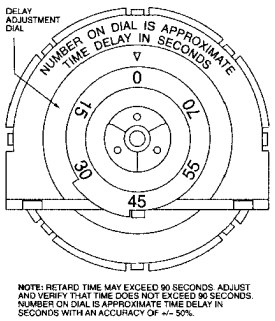
Standard Specifications

Static Pressure Rating	450 PSI*	**Operating Temperature Range**	32°F to 120°F (0°C to 49°C)
Maximum Surge	18 Feet Per Second (FPS)	**Enclosure Rating***	NEMA 4 – suitable for indoor/outdoor use
Triggering Threshold Bandwidth (Flow Rate)	4–10 GPM	**Cover Tamper Switch**	Standard with ULC models, optional for UL models, part no. 546-7000
Conduit Entrances	Two openings for ½″ conduit. One open, one knock-out type	**Service Use**	Automatic Sprinkler: NFPA-13 One or Two Family Dwelling: NFPA 13D Residential Occupancies up to 4 Stories: NFPA 13R National Fire Alarm Code: NFPA-72
Contact Ratings	Two sets of SPDT (Form C) 10.0 A, ½ HP @ 125/250 VAC 2.5 A @ 6/12/24 VDC	**U.S. Patent Numbers**	5,213,205
Compatible Pipe	Steel water pipe, schedule 10 through 40	**Warranty**	3 Years

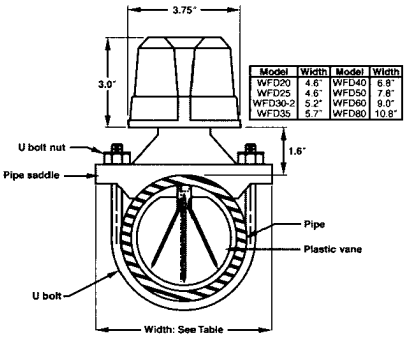
WFD Field Wiring Diagram



Delay Adjustment Dial



Overall Dimensions, Installed



Model	Width	Model	Width
WFD20	4.6"	WFD40	6.8"
WFD25	4.6"	WFD50	7.8"
WFD30-2	5.2"	WFD60	9.0"
WFD35	5.7"	WFD80	10.8"

Ordering Information

UL Model	ULC Model	Pipe Size	Hole Size	Shipping Weight
WFD20	WFD20A	2″	1¼″	4.2 lbs.
WFD25	WFD25A	2½″	1¼″	4.3 lbs.
WFD30-2	WFD30-2A	3″	2″	4.5 lbs.
WFD35	WFD35A	3½″	1¼″	4.7 lbs.
WFD40	WFD40A	4″	2″	5.2 lbs.
WFD50	WFD50A	5″	2″	6.3 lbs.
WFD60*	WFD60A	6″	2″	6.8 lbs.
WFD80*	WFD80A	8″	2″	7.5 lbs.
Accessories				
A3008-00	Retard mechanism			
A77-01-02	Terminal block			
546-7000	Tamper-proof switch kit			
WFDW	Tamper-proof wrench for cover			
WFDN4	Gasket kit			

*Maximum pressure rating 400 psi as approved by Factory Mutual.

SYSTEM SENSOR®

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A05-0180-013 • 1/09 • #1922

SSM/SSV Series Alarm Bells

System Sensor's SSM and SSV series alarm bells are low current, high decibel notification appliances for use in fire and burglary systems or other signaling applications.

Features

- Approved for indoor and outdoor use
- Low current draw
- High dB output
- Available in six-inch, eight-inch, and ten-inch sizes
- AC and DC models
- DC models polarized for use with supervision circuitry
- Mount directly to standard four-inch square electrical box indoors
- SSM and SSV series come pre-wired

Reliable Performance. The SSM and SSV series provide loud resonant tones. The SSM series operates on 24VDC and are motor driven, while the SSV series operates on 120VAC utilizing a vibrating mechanism.

Simplified Installation. For indoor use, the SSM and SSV series mount to a standard four-inch square electrical box. For outdoor applications, weatherproof back box, model number WBB, is used.

The SSM and SSV series come pre-wired, to reduce installation time. The SSM series incorporates a polarized electrical design for use with supervision circuitry.

Agency Listings

UL LISTED S4011

ULC CS549

FM APPROVED 3005255

7135-1653:0217

MEA approved 331-01-E

SSM/SSV Specifications

Architectural/Engineering Specifications

Model shall be a SSM or SSV Series alarm bell. Bells shall have underdome strikers and operating mechanisms. Gongs on said bells shall be no smaller than nominal 6″/8″/10″ (specify size) with an operating voltage of 24VDC or 120VAC (specify by part number). Bells shall be suitable for surface or semi-flush mounting. Outdoor surface mounted installations shall be weatherproof (using optional WBB weatherproof electrical box). Otherwise bells shall mount to a standard 4″ square electrical box having a maximum projection of 2½″. Bells shall be located as shown on the drawings or as determined by the Authority Having Jurisdiction. Bells shall be listed for indoor/outdoor use by Underwriters Laboratories and the California State Fire Marshal, and approved by Factory Mutual and MEA.

Physical/Operating Specifications

Operating Temperature Range	–31°F to 140°F
Operating Voltage	SSM series: 24 VDC SSV series: 120 VAC
Termination	Provided with 2 sets of leads for in/out wiring
Service Use	Fire Alarm, General Signaling, Burglar Alarm
Warranty	3 years

Electrical Specifications

Model	Gong Diameter (inches)	Nominal Voltage	Operating Voltage Limit	Maximum Current	Sound Output (dBA)
SSM24-6	6	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	82
SSM24-8	8	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	80
SSM24-10	10	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	81
SSV120-6	6	Regulated 120VAC	96 to 132VAC	53mA	85
SSV120-8	8	Regulated 120VAC	96 to 132VAC	53mA	82
SSV120-10	10	Regulated 120VAC	96 to 132VAC	53mA	82

* Sound output measured at Underwriter Laboratories, as specified in UL464

Ordering Information

UL/FM Model No.	ULC/Canadian Model No.	Description
SSM24-6	SSM24-6A	Bell, 6″, 24VDC, Polarized, 82dBA
SSM24-8	SSM24-8A	Bell, 8″, 24VDC, Polarized, 80dBA
SSM24-10	SSM24-10A	Bell, 10″, 24VDC, Polarized, 81dBA
SSV120-6	SSV120-6A	Bell, 6″, 120VAC, 85dBA
SSV120-8	SSV120-8A	Bell, 8″, 120VAC, 82dBA
SSV120-10	SSV120-10A	Bell, 10″, 120VAC, 82dBA
WBB		Weatherproof back box for SSM and SSV series, when installed outdoors

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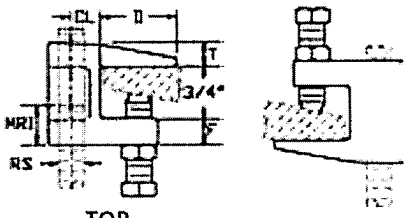
A05-0260-010 • 08/11 • #2870

Model #300

Domestic Beam Clamp
Universal/Reversible (Double Rod Hole)

May be mounted in either position.



Model #300I

**Import Beam Clamp

APPLICATION: Structural attachment (with infinite adjustment) to top or bottom of metal beams, purlins, channel or angle iron to support hanger rod.

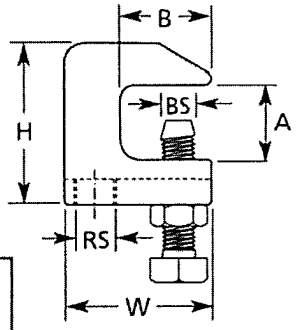
NOTE: Set screw must be tightened onto the sloped side of the I-Beam, channel or angle iron flange and torqued to 60 inch pounds. Set screw and locknut supplied are hardened steel.
Available with a HD finish by special order. For corresponding retainer strap see Models 300C and 300R

Part No.	RS	Max Pipe Size	CL	D	MRI	F	T	Max. Recom. Load (lbs)		Finish*
								Top	Bottom	
3000037EG	3/8	4	7/16	1-1/8	1/2	3/8	3/8	500	250	EG
3000037PL	3/8	4	7/16	1-1/8	1/2	3/8	3/8	500	250	PL
3000050EG	1/2	8	9/16	1-1/16	11/16	1/2	1/2	950	760	EG
3000050PL	1/2	8	9/16	1-1/16	11/16	1/2	1/2	950	760	PL
3000062EG	5/8	8	9/16	1-1/16	11/16	1/2	1/2	950	760	EG
3000062PL	5/8	8	9/16	1-1/16	11/16	1/2	1/2	950	760	PL
3000075EG	3/4	8	9/16	1-1/8	13/16	5/8	3/8	950	760	EG
3000075PL	3/4	8	9/16	1-1/8	13/16	5/8	3/8	950	760	PL
3000087EG	7/8	8	9/16	1-1/8	13/16	5/8	3/8	950	760	EG
3000087PL	7/8	8	9/16	1-1/8	13/16	5/8	3/8	950	760	PL
**300I0037EG	3/8	4	7/16	1-1/8	1/2	3/8	3/8	500	250	EG
**300I0037PL	3/8	4	7/16	1-1/8	1/2	3/8	3/8	500	250	PL

Conforms With: Federal Specification **WW-H-171** (Type 23), Manufacturers Standardization Society **ANSI/MSS-SP-58** (Type 19 & 23), install in accordance with **ANSI/MSS-SP-69.**

Model #305

Steel Top Beam Clamp



APPLICATION: For attachment to the top of flange of structural shapes or for use under roof installations with bar joist type construction where the thickness of flange does not exceed 5/8".

NOTE: Specify Carbon Steel or Stainless Steel (316).

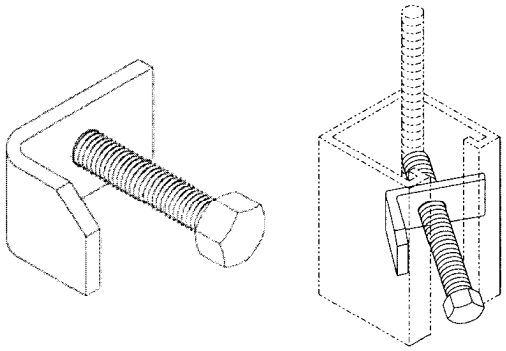
Part No.	RS	A	B	W	H	BS	Max. Recom. Load (lbs.)	Finish*
3050037PL	3/8	3/4	31/32	1-13/32	1-21/32	3/8	500	PL
3050037S6	3/8	3/4	31/32	1-13/32	1-21/32	3/8	500	S6
3050050PL	1/2	3/4	29/32	1-15/32	1-23/32	3/8	1130	PL
3050050S6	1/2	3/4	29/32	1-15/32	1-23/32	3/8	1130	S6

Conforms With: Manufacturers Standardization Society **SP-69** (Type 23).

All dimensions are in inches unless otherwise noted.
*See page 2 for finish and material descriptions. All material is Carbon Steel unless otherwise noted.

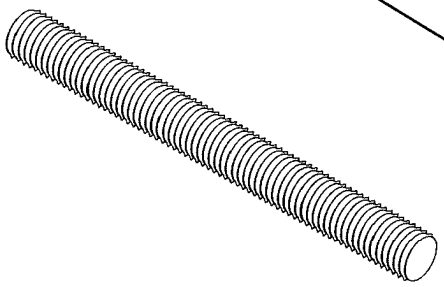
Fig. 98 - Rod Stiffener

Component of State of California OSHPD Approved Seismic Restraints System



Size Range — Secures 3/8" thru 7/8" hanger rod
Material — Carbon Steel
Function — Secures channel to hanger rod for vertical seismic bracing.
Approvals — Included in our Seismic Restraints Catalog approved by the State of California Office of Statewide Health Planning and Development (**OSHPD**). For additional load, spacing and placement information relating to OSHPD projects, please refer to the TOLCO Seismic Restraint Systems Guidelines
Finish — Electro Galvanized
Note — Available in HDG finish or Stainless Steel materials.
Order By — Figure number

Fig. 99 - All Thread Rod Cut to Length

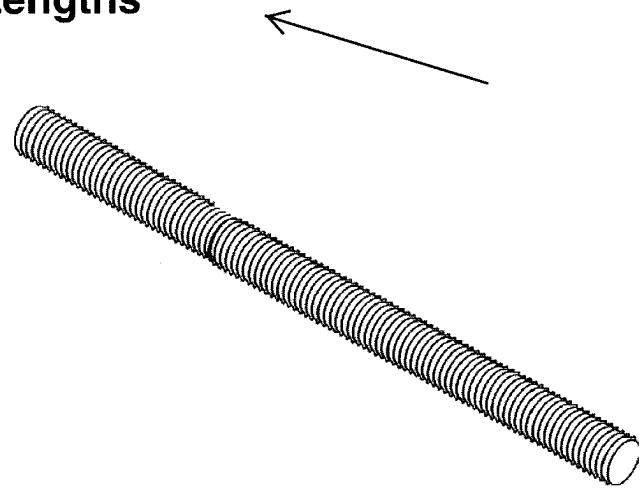


Size Range — Secures 3/8" thru 7/8" rod in 1" increments
Material — Carbon Steel
Maximum Temperature — 750°F
Finish — Plain
Note — Available in Electro-Galvanized and HDG finish or Stainless Steel materials.
Order By — Figure number, rod diameter, rod length and finish

Dimensions

Rod Size	Max. Rec. Load Lbs. For Service Temps 650°F	750°F
3/8	610	540
1/2	1130	1010
5/8	1810	1610
3/4	2710	2420
7/8	3770	3360

Fig. 100 - All Thread Rod Full Lengths



Size Range — Secures 3/8" thru 1½" rod in 10' lengths
Material — Carbon Steel
Maximum Temperature — 750°F
Finish — Plain
Note — Available in Electro-Galvanized and HDG finish or Stainless Steel materials.
Order By — Figure number, rod diameter and finish

Dimensions • Weights

Rod Size	Max Rec. Load Lbs. For Service Temps 650°F	750°F	Approx. Wt./100
1/4	240	215	12
3/8	730	540	29
1/2	1350	1010	53
5/8	2160	1610	84
3/4	3230	2420	123
7/8	4480	3360	169
1	5900	4420	222
1¼	9500	7140	360
1½	13800	10370	510

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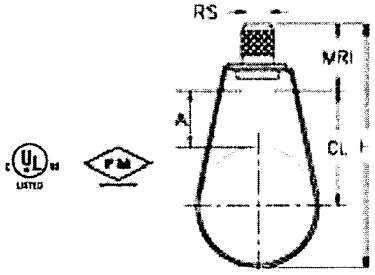
Model #100

Swivel Loop Hanger - Heavy Duty

APPLICATION: #100 pipe support for stationary piping. Lowest in-place cost available. Easy adjustment.

NOTE: Meets MSS requirements.



Part No.	Pipe Size	H	CL	RS	MRI	A	Max. Recom. Load (lbs.)	Finish*
1000050EG	1/2	2-3/4	1-1/4	3/8	1	13/16	300	EG
1000050FL	1/2	2-3/4	1-1/4	3/8	1	13/16	300	FL
1000075EG	3/4	3-1/16	1-7/16	3/8	1	15/16	300	EG
1000075FL	3/4	3-1/16	1-7/16	3/8	1	15/16	300	FL
1000100EG	1	3-5/16	1-9/16	3/8	1	15/16	300	EG
1000100FL	1	3-5/16	1-9/16	3/8	1	15/16	300	FL
1000125EG	1-1/4	3-9/16	1/5/8	3/8	1	13/16	300	EG
1000125FL	1-1/4	3-9/16	1-5/8	3/8	1	13/16	300	FL
1000150EG	1-1/2	3-13/16	1-3/4	3/8	1	13/16	300	EG
1000150FL	1-1/2	3-13/16	1-3/4	3/8	1	13/16	300	FL
1000200EG	2	4-1/4	1-15/16	3/8	1	13/16	300	EG
1000200FL	2	4-1/4	1-15/16	3/8	1	13/16	300	FL
1000250EG	2-1/2	5-5/8	2-15/16	1/2	1-1/4	1-5/16	1000	EG
1000250FL	2-1/2	5-5/8	2-15/16	1/2	1-1/4	1-5/16	1000	FL
1000300EG	3	6-9/16	3-1/2	1/2	1-1/4	1-7/16	1000	EG
1000300FL	3	6-9/16	3-1/2	1/2	1-1/4	1-7/16	1000	FL
1000350EG	3-1/2	7	3-3/4	1/2	1-1/4	1-11/16	1000	EG
1000350FL	3-1/2	7	3-3/4	1/2	1-1/4	1-11/16	1000	FL
1000400EG	4	7-3/4	4-5/16	5/8	1-5/16	1-3/4	1100	EG
1000400FL	4	7-3/4	4-5/16	5/8	1-5/16	1-3/4	1100	FL
1000500EG	5	9-1/8	4-5/16	5/8	1-5/16	1-13/16	1100	EG
1000600EG	6	10-5/8	5-7/8	3/4	1-9/16	2-1/8	1250	EG
1000800EG	8	13-1/8	7-1/16	7/8	1-5/8	2-3/8	1250	EG

Conforms With: Federal Specification **WW-H-171** (Type 10), Manufacturers Standardization Society **ANSI/MSS-SP-58** (Type 10),install in accordance with **ANSI/MSS-SP-69.**

6

All dimensions are in inches unless otherwise noted.
*See page 2 for finish and material descriptions. All material is Carbon Steel unless otherwise noted.

300 lb. WWP UL/FM Butterfly Valves

Fire Protection Valve • Grooved Mechanical Style • Nylon Coated Ductile Iron Body • Extended Neck • Elastomer Encapsulated Disc • Internal Supervisory Switches Standard on -8 Version • Compatible with IPS Pipe

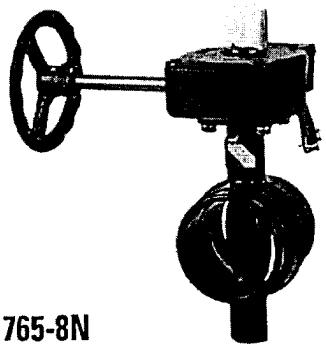
300 PSI/20.7 Bar Non-Shock Cold Water 2½" - 8"
175 PSI/12.1 Bar Non-Shock Cold Water 10"

UL/ULC LISTED • FM APPROVED • 2½" - 10" UL LISTED FOR INDOOR AND OUTDOOR SERVICE • CALIFORNIA STATE FIRE MARSHALL LISTING NO. 7770-1243:101 • APPROVED BY THE NEW YORK CITY MEA 9-97-E, VOL.2 WHEN ASSEMBLED WITH APPROPRIATE NYC INDICATOR FLAG

MATERIAL LIST

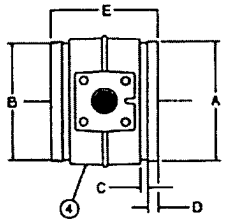
PART		SPECIFICATION
1.	Upper Stem	Stainless Steel ASTM A582 Type 416
2.	Upper Bushing	PTFE Bronze Sintered on Steel
3.	"O" Ring	EPDM
4.	Body	Ductile Iron ASTM A395 with Polyamide Coating
5.	Disc	Ductile Iron ASTM A395 with EPDM Encapsulation
6.	Lower Bushing	PTFE Bronze Sintered on Steel
7.	Lower Stem	Stainless Steel ASTM A582 Type 416
8.	Dust Plug	PVC
9.	Nameplate	Aluminum
10.	Gear Operator	Cast Iron and Steel
11.	Indicator Flag	Cast Iron
12.	Handwheel	Cast Iron

***-8N version has two factory mounted internal supervisory switches.**
-4N version is gear operated only
Uses NIBCO model #TS-4 Switch Kit.
Polyamide coating has NSF certification.



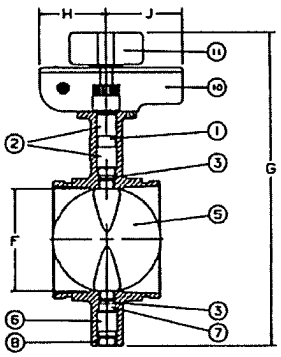
GD-1765-8N
10"
(not shown)

GD-4765-8N*
Grooved
2½" thru 8"

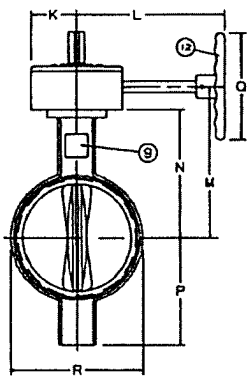


DIMENSIONS—WEIGHTS—QUANTITIES

Size		Dimensions A		B		C		D		E		F		G		H	
In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.
2½	65	2.88	73	2.72	69	0.31	8	0.63	16	3.85	98	2.42	61	11.94	303	2.91	74
3 O.D.	76.1	3.00	76	2.84	72	0.31	8	0.63	16	3.85	98	2.42	61	11.94	303	2.91	74
3	80	3.50	89	3.34	85	0.31	8	0.63	16	3.85	98	2.86	73	12.48	317	2.91	74
4	100	4.50	114	4.33	110	0.38	10	0.63	16	4.56	116	3.84	98	14.18	360	2.91	74
5	125	5.56	141	5.39	137	0.38	10	0.63	16	5.86	149	4.79	122	15.17	385	2.91	74
6	150	6.63	168	6.45	164	0.38	10	0.63	16	5.86	149	5.73	146	17.54	446	2.91	74
6½ O.D.	165.1	6.51	165	6.32	161	0.38	10	0.63	16	5.86	149	5.73	146	17.54	446	2.91	74
8	200	8.63	219	8.44	214	0.44	11	0.75	19	5.26	134	7.71	196	19.42	493	2.91	74
10	250	10.75	273	10.56	268	0.50	13	0.75	19	6.29	160	9.56	243	24.03	610	3.90	99



Size		Dimensions J		K		L		M		N		P		Q		R		Weight	
In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	In.	mm.	Lbs.	Kg.
2½	65	3.54	90	2.13	54	5.82	148	5.67	144	4.19	106	3.25	83	5.9	150	3.46	88	22	10.0
3 O.D.	76.1	3.54	90	2.13	54	5.82	148	5.67	144	4.19	106	3.25	83	5.9	150	3.46	88	22	10.4
3	80	3.54	90	2.13	54	5.82	148	5.94	151	4.44	113	3.54	90	5.9	150	3.97	101	23	10.4
4	100	3.54	90	2.13	54	7.64	194	6.31	173	5.33	135	4.35	110	5.9	150	5.03	128	28	12.7
5	125	3.54	90	2.13	54	7.64	194	7.32	186	5.83	148	4.84	123	5.9	150	6.27	159	31	14.1
6	150	3.54	90	2.13	54	7.64	194	8.62	219	7.11	181	5.93	151	5.9	150	7.25	184	41	18.6
6½ O.D.	165.1	3.54	90	2.13	54	7.64	194	8.62	219	7.11	181	5.93	151	5.9	150	7.25	184	41	18.6
8	200	3.54	90	2.13	54	7.91	201	9.80	249	8.05	204	6.87	174	9.8	250	9.25	235	53	24.1
10	250	3.98	101	3.03	77	9.49	241	11.61	295	9.86	250	9.17	233	18.0	457	11.80	300	88	40.0



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c UL us

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Model CV-1FR Grooved-End Riser Check Valves 2 to 12 Inch (DN50 to DN300)

General Description

The TYCO Model CV-1FR Grooved-End Riser Check Valve is a compact and rugged swing-type unit that allows water flow in one direction and prevents flow in the opposite direction. A resilient elastomer seal facing on the spring-loaded clapper ensures a leak-tight seal and non-sticking operation. The Model CV-1FR Riser Check Valves are designed to minimize water hammer caused by flow reversal.

The Model CV-1FR Riser Check Valve is furnished with grooved ends and can be installed using GRINNELL Grooved Couplings or GRINNELL Figure 71 Flange Adapters. The Model CV-1FR Riser Check Valves have been designed with a removable cover for ease of field maintenance. These valves can be installed horizontally (with cover in the upward position) or vertically with the flow in the upward direction. Refer to Figure 6.

To facilitate their use in wet-type automatic sprinkler system risers, the Model CV-1FR Riser Check Valves are provided with threaded outlets for pressure gauges and a drain connection. They provide a more compact and economical alternative to an alarm check valve where a water motor alarm is not required. Provisions must be made for a local alarm using an approved flow switch (not included).

The Model CV-1FR Riser Check Valve is also Listed for use in conjunction with the TYCO DV-5 Deluge Valve in Preaction Systems under air pressure without the use of prime water.

The Model CV-1FR Riser Check Valves are a redesign for the Central Figure 590FR and GRINNELL Figure 590FR.

NOTICE

The Model CV-1FR Riser Check Valve 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 this device.

Never remove any piping component nor correct or modify any piping deficiencies without first de-pressurizing and draining the system. Failure to do so may result in serious personal injury, property damage, and/or impaired device performance.

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

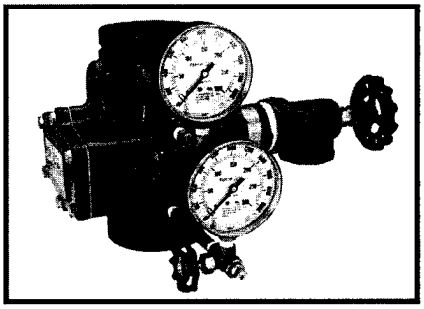
Technical Data

Approvals
UL, C-UL Listed
FM Approved

Sizes
2 to 12 Inch (DN50 to DN300)

Maximum Working Pressure
300 psi (20,7 bar)

Valve Assembly Finish
Red, non-lead paint

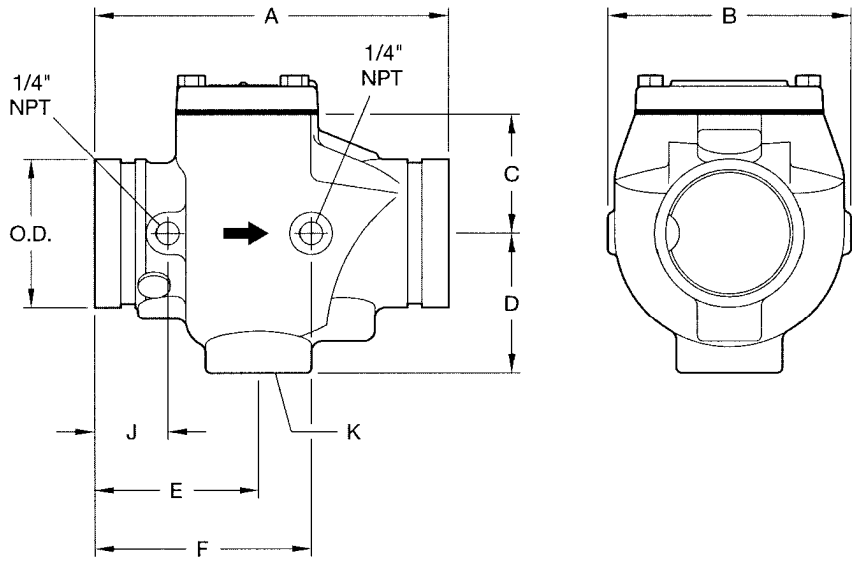


Installation

The Model CV-1FR Riser Check Valves are to be installed in accordance with this section:

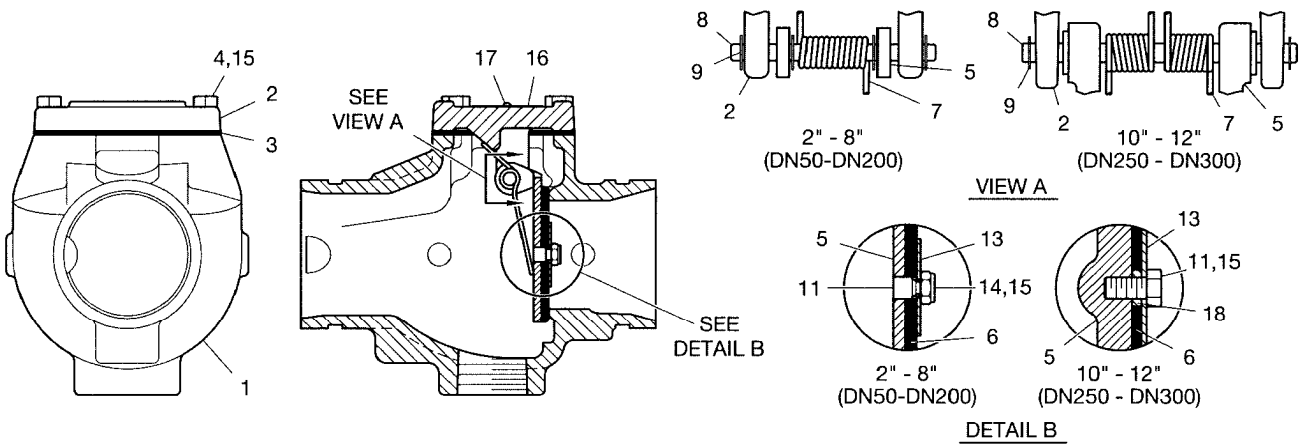
1. The arrow cast on the Body must point in the direction of the flow.
2. Valves installed vertically must be positioned with the flow in the upward direction.
3. Valves installed horizontally must be positioned with the Cover facing up. Refer to Figure 6.
4. Grooved-end pipe couplings used with the Model CV-1FR Riser Check Valve must be installed in accordance with manufacturer's instructions.

NOTE: *Valves should be installed a reasonable distance downstream from pumps, elbows, expanders, reducers, or other similar devices to extend the valve life. Standard piping practices call for a minimum of five (5) times the pipe diameter for general use.*



Nominal Pipe Size		Nominal Dimensions Inches (mm)								Cover Bolt Torque Lbs.-ft. (Nm)	Approx. Weight Lbs. (kg)
ANSI Inches DN	O.D. Inches (mm)	A	B	C	D	E	F	J	K Inches NPT		
2 DN50	2.375 (60,3)	6.75 (171,5)	4.38 (111,3)	1.96 (49,8)	2.57 (65,3)	3.25 (82,3)	4.37 (111,0)	1.56 (39,6)	1	18 (25)	9.0 (4,5)
2-1/2 DN65	2.875 (73,0)	8.00 (203,2)	5.38 (136,7)	2.63 (66,8)	3.09 (78,5)	3.87 (98,3)	5.12 (130,0)	1.73 (43,9)	1-1/4	39 (54)	10.0 (4,5)
76,1 DN65	- (76,1)	8.00 (203,2)	5.38 (136,7)	2.63 (66,8)	3.09 (78,5)	3.87 (98,3)	5.12 (130,0)	1.72 (43,7)	1-1/4	39 (54)	10.0 (4,5)
3 DN80	3.500 (88,9)	8.37 (212,6)	5.72 (145,3)	2.81 (71,4)	3.31 (84,1)	3.87 (98,3)	5.12 (130,0)	1.72 (43,7)	1-1/4	39 (54)	11.0 (5,0)
4 DN100	4.500 (114,3)	9.63 (245,6)	6.68 (169,7)	3.80 (96,5)	3.63 (92,2)	4.53 (115,4)	5.78 (146,8)	2.12 (53,8)	2	50 (69)	25.0 (11,3)
139.7 DN125	- (139,7)	10.50 (266,7)	7.40 (188,0)	4.46 (113,2)	4.13 (104,9)	4.90 (124,5)	7.00 (177,8)	2.09 (53,1)	2	39 (54)	29.0 (13,2)
5 DN125	5.563 (141,3)	10.50 (266,7)	7.40 (188,0)	4.46 (113,2)	4.13 (104,9)	4.90 (124,5)	7.00 (177,8)	2.09 (53,1)	2	39 (54)	29.0 (13,2)
165.1 DN150	- (165,1)	11.50 (292,1)	8.00 (203,2)	4.62 (117,4)	4.50 (114,3)	5.00 (127,0)	7.25 (184,2)	2.00 (50,8)	2	60 (82)	47.0 (21,3)
6 DN150	6.625 (168,3)	11.50 (292,1)	8.00 (203,2)	4.62 (117,4)	4.50 (114,3)	5.00 (127,0)	7.25 (184,2)	2.00 (50,8)	2	60 (82)	47.0 (21,3)
8 DN200	8.625 (219,1)	14.00 (355,6)	10.14 (257,6)	6.67 (169,4)	5.52 (140,2)	5.46 (138,7)	10.50 (266,7)	2.43 (61,7)	2	120 (164)	66.0 (30,0)
10 DN250	10.750 (273,1)	18.00 (457,2)	12.38 (314,5)	8.62 (218,9)	6.41 (162,8)	7.50 (190,5)	10.75 (273,1)	3.38 (85,9)	2	130 (178)	109.7 (49,4)
12 DN300	12.750 (323,9)	21.0 (533,4)	14.28 (362,7)	9.93 (252,2)	7.27 (184,7)	7.62 (193,5)	10.00 (254,0)	3.13 (79,5)	2	130 (178)	151.0 (68,0)

FIGURE 1
MODEL CV-1FR RISER CHECK VALVES
NOMINAL DIMENSIONS



Detail	Part	Material	Qty.
1	Body	Ductile Iron	1
2	Cover	Ductile Iron	1
3	Cover Gasket	Nitrile Rubber	1
4	Hex Cap Screw	Steel, Zinc Plated	AR
5	Clapper 2″ - 8″ (DN50-200)	Stainless Steel	1
	Clapper 10″ - 12″ (DN250-300)	Ductile Iron	

Detail	Part	Material	Qty.
6	Clapper Facing	EPDM Grade "E"	1
7	Spring	Stainless Steel	1
8	Hinge Shaft	Stainless Steel	1
9	Retaining Ring	Stainless Steel	AR
11	Retention Bolt	Stainless Steel	1
13	Retaining Disc	Stainless Steel	1

Detail	Part	Material	Qty.
14	Locknut	Stainless Steel	1
15	Adhesive	Thread Sealer	AR
16	Nameplate	Aluminum	1
17	Rivet	Steel	2
18	Spacer	Stainless Steel	1

FIGURE 2
MODEL CV-1FR RISER CHECK VALVES
ASSEMBLY

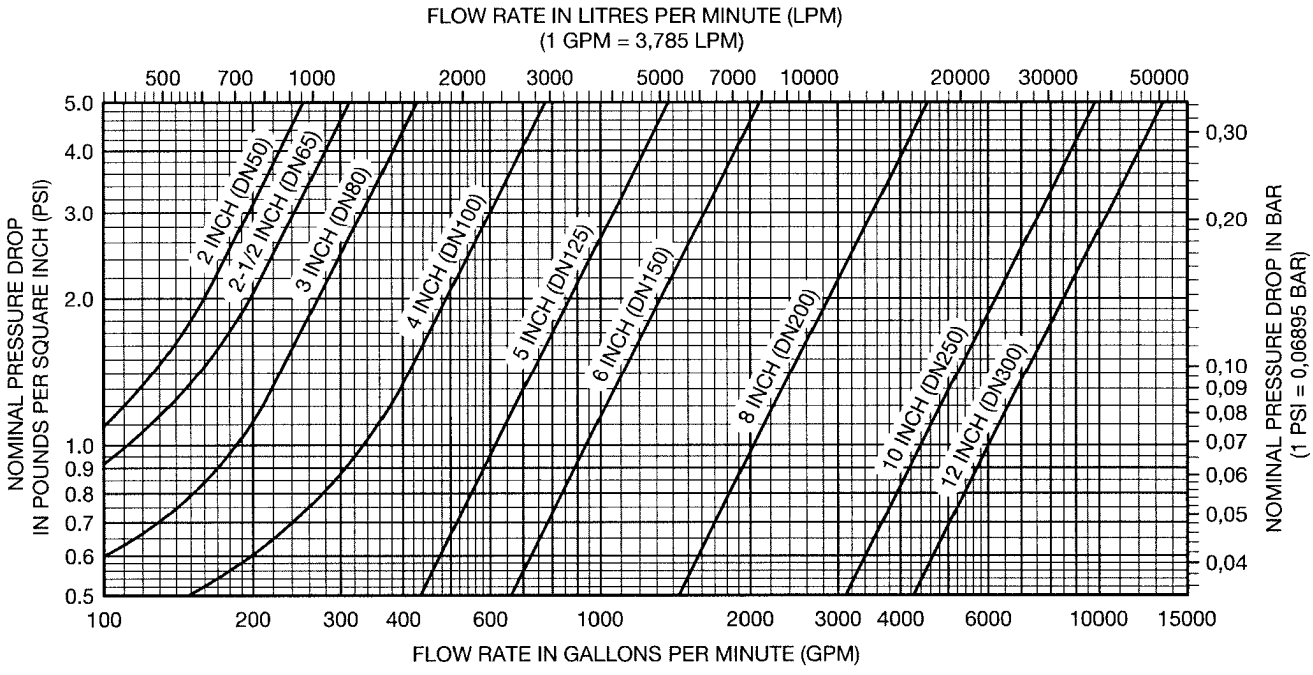
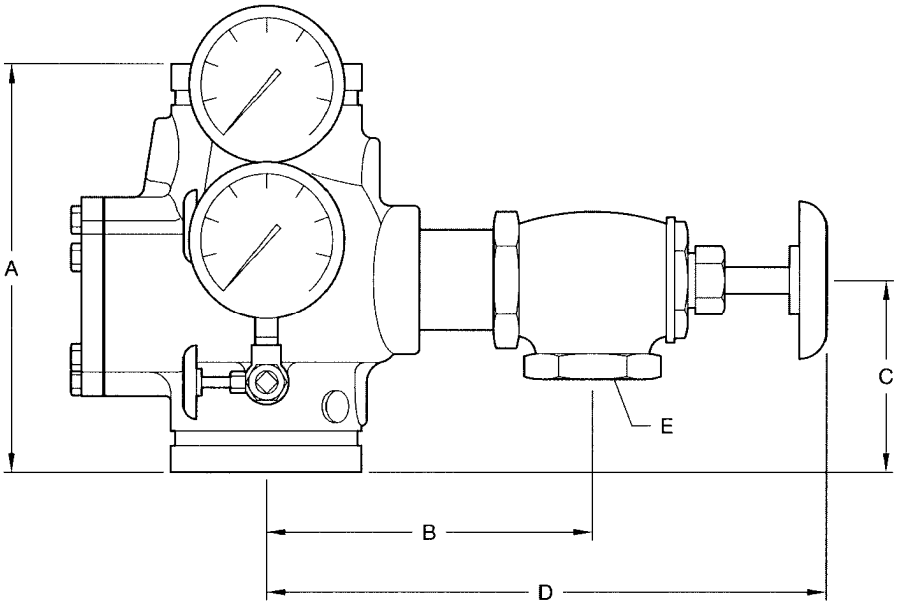


FIGURE 3
MODEL CV-1FR RISER CHECK VALVES
PRESSURE LOSS DATA



Nominal Pipe Size		Nominal Dimensions Inches (mm)				
ANSI Inches DN	O.D. Inches (mm)	A	B	C	D	E Inches NPT
2 DN50	2.375 (60,3)	6.75 (171,5)	5.87 (149,1)	3.25 (82,6)	9.52 (241,9)	1
2-1/2 DN65	2.875 (73,0)	8.00 (203,2)	6.66 (169,2)	3.87 (98,3)	10.80 (274,3)	1-1/4
76,1 DN65	– (76,1)	8.00 (203,2)	6.66 (169,2)	3.87 (98,3)	10.80 (274,3)	1-1/4
3 DN80	3.500 (88,9)	8.37 (212,6)	6.88 (174,8)	3.87 (98,3)	11.02 (279,9)	1-1/4
4 DN100	4.500 (114,3)	9.63 (244,6)	7.63 (193,7)	4.53 (115,1)	11.92 (302,7)	2
139,7 DN125	– (139,7)	10.50 (266,7)	8.13 (206,4)	4.90 (124,5)	12.42 (315,4)	2
5 DN125	5.563 (141,3)	10.50 (266,7)	8.13 (206,4)	4.90 (124,5)	12.42 (315,4)	2
165,1 DN150	– (165,1)	11.50 (292,1)	8.50 (215,8)	5.00 (127,0)	12.79 (324,8)	2
6 DN150	6.625 (168,3)	11.50 (292,1)	8.50 (215,8)	5.00 (127,0)	12.79 (324,8)	2
8 DN200	8.625 (219,1)	14.00 (355,6)	9.52 (241,7)	5.46 (138,7)	13.81 (350,7)	2
10 DN250	10.750 (273,1)	18.00 (457,2)	10.41 (264,3)	7.50 (190,5)	14.70 (373,3)	2
12 DN300	12.750 (323,9)	21.00 (533,4)	11.27 (286,1)	7.62 (193,5)	15.56 (395,2)	2

FIGURE 4
MODEL CV-1FR RISER CHECK VALVE WITH TRIM COMPONENTS
NOMINAL DIMENSIONS

P/N 59-591-1-020
2 Inch (DN50)

NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa Water Pressure Gauge	2	92-343-1-005
2	1/4" Gauge Test Valve	2	46-005-1-002
3	1/4" Plug	2	CH
4	1" Angle Valve	1	46-048-1-006
5	1/4" x 2" Nipple	1	CH
6	1/4" x 5" Nipple	1	CH
7	1" x 3" Nipple	1	CH

P/N 59-591-1-030
2-1/2 Inch (DN65) through 3 Inch (DN80)

NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa Water Pressure Gauge	2	92-343-1-005
2	1/4" Gauge Test Valve	2	46-005-1-002
3	1/4" Plug	2	CH
4	1-1/4" Angle Valve	1	46-048-1-007
5	1/4" x 2" Nipple	1	CH
6	1/4" x 5" Nipple	1	CH
7	1-1/4" x 3" Nipple	1	CH

P/N 59-591-1-080
4 Inch (DN100) through 12 Inch (DN300)

NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa Water Pressure Gauge	2	92-343-1-005
2	1/4" Gauge Test Valve	2	46-005-1-002
3	1/4" Plug	2	CH
4	2" Angle Valve	1	46-048-1-009
5	1/4" x 2" Nipple	1	CH
6	1/4" x 5" Nipple	1	CH
7	2" x 3" Nipple	1	CH

NOTES:
1. All Fittings and Nipples are galvanized (Standard Order).
2. CH: Common Hardware.

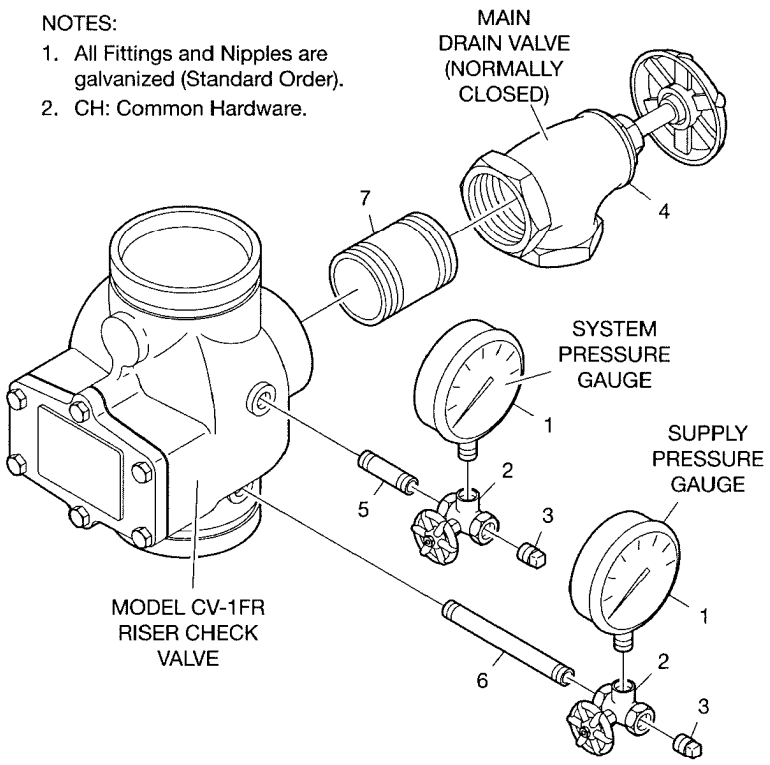
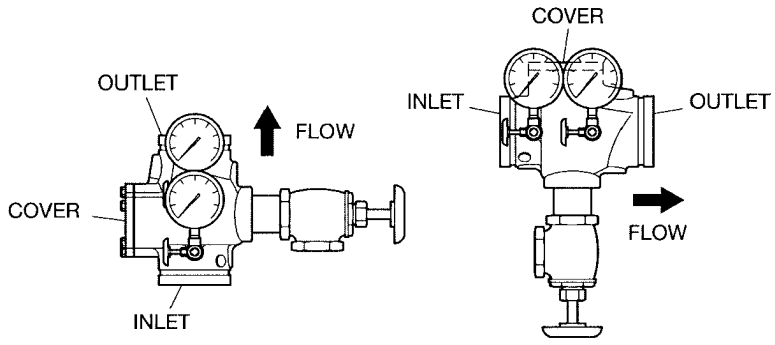


FIGURE 5
MODEL CV-1FR RISER CHECK VALVES
TRIM PARTS LIST



VERTICAL ORIENTATION **HORIZONTAL ORIENTATION**

FIGURE 6
MODEL CV-1FR RISER CHECK VALVES
INSTALLATION

Care and Maintenance

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 system from the proper authorities and notify all personnel who may be affected by this decision.

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

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 authority having jurisdiction. Contact the installing contractor or product manufacturer with any questions. Any impairments must be immediately corrected.

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).

Model CV-1FR Check Valves
Specify: Size and P/N (below).

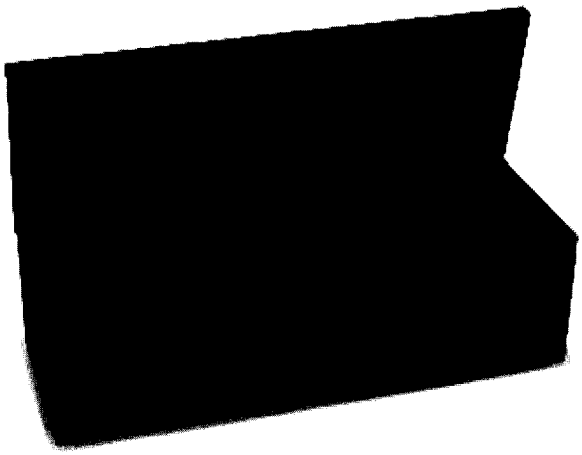
2″ (DN50)	P/N 59-590-1-020
2-1/2″ (DN65)	P/N 59-590-1-025
76,1 mm (DN65)	P/N 59-590-1-076
3″ (DN80)	P/N 59-590-1-030
4″ (DN100)	P/N 59-590-1-040
139,7 mm (DN125)	P/N 59-590-1-139
5″ (DN125)	P/N 59-590-1-050
165,1 mm (DN150)	P/N 59-590-1-165
6″ (DN150)	P/N 59-590-1-060
8″ (DN200)	P/N 59-590-1-080
10″ (DN250)	P/N 59-590-1-100
12″ (DN300)	P/N 59-590-1-120

Model CV-1FR
Riser Check Valve Trim Assembly
Specify: Size and P/N (below).

2″ (DN50)	P/N 59-591-1-020
2-1/2″ (DN65)	P/N 59-591-1-030
76,1 mm (DN65)	P/N 59-591-1-030
3″ (DN80)	P/N 59-591-1-030
4″ (DN100)	P/N 59-591-1-080
139,7 mm (DN125)	P/N 59-591-1-080
5″ (DN125)	P/N 59-591-1-080
165,1 mm (DN150)	P/N 59-591-1-080
6″ (DN150)	P/N 59-591-1-080
8″ (DN200)	P/N 59-591-1-080
10″ (DN250)	P/N 59-591-1-080
12″ (DN300)	P/N 59-591-1-080

tyco Fire Protection Products

Spare Sprinkler Head Storage Cabinet



Description

Fire Protection Products, Inc. Spare Sprinkler Head Cabinets are designed to allow for spare sprinkler head storage as required by NFPA guidelines. The Spare Sprinkler Head Cabinets are available in six configurations. Three head, six head, six head ESFR, twelve head, twenty-four head and thirty-six head. All six styles are manufactured with "knockouts" to accommodate the most common size sprinklers. The shelf is located to allow for the storage of a typical sprinkler head wrench. Each cabinet is finished with a red enamel fi nish. Each spare head cabinet comes with a hinged door which remains closed to protect the spare sprinklers from the elements and features two holes on the back panel to allow for attachment to most surfaces utilizing the appropriate fasteners. Not intended for exposed or harsh environments.

Installation

Select the correct Spare Sprinkler Head Cabinet in accordance with the Automatic Sprinkler Systems Handbook. As per the 1989 Edition the correct number of spare sprinkler is as follows:

"0-300 sprinklers, not less than 6
300-1000, not less than 12
1000 or more, not less than 24.
Stock of spare sprinklers shall include all types and ratings installed."*

Once the correct Spare Sprinkler Head Cabinet has been selected, installation is accomplished by inserting the correct fastener in each of the two holes inside the cabinet, securing the cabinet securely to the wall. The insert the correct number and type of sprinklers in accordance with the "handbook".

*Final determination is subject to approval by the AHJ.

Specifications

Material:
Painted plain steel

Finish:
Red enamel

Styles:
3 Spare sprinklers, 1/2 or 3/4

6 Spare sprinklers, 1/2 or 3/4

6 Spare, ESFR, 1/2 , 3/4 or 1"

12 Spare sprinklers 1/2 or 3/4

24 Spare sprinklers

36 Spare sprinklers

FPPI FIRE PROTECTION PRODUCTS INC.

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

PipeFit® Thread Sealing Paste

INSIST ON FPPI®

Description

Pipefit® Thread Sealing Paste with PTFE is a premium non-hardening PTFE filled pipe thread sealing paste designed specifically for the fire sprinkler industry. Pipefit is suitable for use on all threadable materials commonly used in fire sprinkler systems, including CPVC. Pipefit's unique blend of materials provides superior thread sealing qualities over other similarly priced sealants. The particulate PTFE also helps prevent leaks by accumulating in the voids of damaged or defective threads of the pipe or fittings. Additionally, the lubricating qualities of the PTFE and other materials in the sealing paste improve thread seating during pipe and fitting assembly. Pipefit® also adheres well to hot oily pipe present in "high speed' fabrication operations.

Design Criteria/Data

Recommended Use

Water	Air
Refrigerants	Natural Gas
Mild caustics	Steam
Kerosene	LP Gases
Acids	Gasoline
Diesel Fuel	Ammonia

Use for threaded connections on steel, aluminum, brass, PVC, CPVC and ABS. Operating temperature ranges -50 f to 500 f.

FBC SYSTEM COMPATIBLE

*FBC™ System Compatible indicates this product has been tested by Lubrizol Advanced Materials and is monitored on an on going basis to assure chemical compatibility with FlowGuard Gold®, BlazeMaster®, and Corzan® pipe and fittings.

Installation

Make sure that the threads are free from burs and other debris. Apply Pipefit® liberally to the male pipe threads. Make sure that the thread sealant is brushed into the "root" of the threads. Do not wipe off excess material until fitting has been "made on" to the pipe thread. The threading action of the fitting to the pipe will allow the proper amount of sealant to remain in the connection. Wipe off excess sealant. Pipefit® will not dry out under normal conditions. Never use dope and tape together. Keep covered when not in use to avoid contamination. Some settling of the product may occur. Occasional stirring may be necessary. Two year shelf life.

Disclaimer

DO NOT ALTER THE CONSISTENCY OF THIS PRODUCT. Use as is directly from the container. Keep away from your mouth and eyes. If eye contact occurs, flush with water for 5 minutes. If discomfort persists get medical attention.

Specifications

Appearance:
Dense, paste-like consistency, off white in color.

Packaging:
16 oz. brush in cap
32 oz.
32 oz. BIC
1 gl.
5 gl.
55 gl.

CAUTION: See MSDS for first aid instructions. Wash hands thoroughly after each use.

See Material Safety Data Sheet for additional safety and disposal information at www.fppi.com

3198 LIONSHEAD AVE
CARLSBAD, CA 92010
TEL + 1 760 599-1168
+ 1 800 344-1822
FAX + 1 800 344-3775

MADE IN U.S.A.

Identification Signs

INSIST ON FPPI®

Description

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

Installation

Installation of aluminum signs is accomplished by several methods. The most common installation procedure is to use #16 Single Jack chain to hang the sign on the area being identified. Since all of the above mentioned signs are predrilled at all four corners, the last link of the chain can be opened and hooked through the top holes on the signs and hung on the appropriate valve or piping. The signs may also be fastened to a flat surface with fasteners appropriate to the base material. (The 9" x 7" Fire Alarm Bell sign must be drilled with a ⅜" hole if it is to be attached directly to the bell gong.)

Specifications

Material:
.020" aluminum with removable plastic coating

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

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

3198 LIONSHEAD AVE
CARLSBAD, CA 92010
TEL + 1 760 599-1168
+ 1 800 344-1822
FAX + 1 800 344-3775

FPPI High Density Tape

INSIST ON FPPI®

Description

Designed for use in difficult sealing applications. It is ideally suited for Anti-Freeze filled sprinkler systems which are more subject to thread leakage than water filled systems. Manufactured to meet MIL Spec AA58092. Thickness is 0.09mm with density of 1.2g/cu cm.

Installation

Place end of tape on pipe thread ⅛" from end of pipe.

1. Wrap tape around pipe with 70% overlap = 3 layers all the way around the male thread. Stretch tape enough to pull into the thread without causing the thread tape to shred. Overlap back to the starting point.
2. Press tightly on tape and break it. Pipe thread is now ready for joining.
3. Joint should be tightened according to the fitting or device manufacturers' specifications.

NEVER USE PTFE PIPE THREAD SEALING TAPE AND PASTE TOGETHER.
Seal integrity will depend on the quality of the male and female thread, fluid pressure, and the nature of fluid being sealed. The 70% overlap is acceptable under normal water use with fixtures in normal repeated use condition. Higher risk applications may require greater overlap or the use of high density thread sealing tape.

Specifications

Material:
100% virgin PTFE

Size:
½" x 520"
¾" x 520"

3198 LIONSHEAD AVE
CARLSBAD, CA 92010
TEL + 1 760 599-1168
+ 1 800 344-1822
FAX + 1 800 344-3775

Precision Fire Systems, Inc.
Overhead Product Submittal

Project No: 16016

Project Name and Location:

Embraer Aero Seating Technologies
Production Building
1600 Armstrong Drive
Titusville, FL
March 30, 2016

Material Submittal Index

Section	Item	Specification Section
A.	Material Submittal	

NOTE: Specialty items, such as electrical components or other items indexed in accordance with the project requirements, including special submittals, will be as provided by Precisions suppliers.

Office: 152 Steeplechase Circle. ° Sanford, FL 32771
Tel. No. (321) 363-1560 ° Fax No. (321) 363-1320-

Precision Fire System, Inc.
Steel Pipe Submittal

All of the steel pipe to be used on this project meets or exceeds the requirements of one or more of the following standards as required by paragraph 6.3 NFPA 13-2010:

ASTM A795 **Specification for Black and Hot-Dipped Zinc Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use**

ANSI/ASTM A 53 **Specification for Black and Hot-Dipped Zinc Coated (Galvanized) Welded and Seamless Steel Pipe**

ASTM A 135 **Specification for Electric – Resistance Welded Steel Pipe**

Manufacturers may vary. As per paragraph 6.3.8.1, NFPA 13-2010, all pipe shall be marked along its length to properly identify its type, schedule and manufacturing standard.

Additional approvals or listings are not required when:

1. Steel pipe meeting the above referenced ASTM specifications is used and joined by welding or roll-grooved pipe and fittings, the minimum nominal wall thickness for pressures up to 300 psi shall be in accordance with Schedule 10 for sizes up to 6 inches and .188 inches for 8" – 10" pipe.
2. Steel pipe meeting the above referenced ASTM specifications is used and joined by threaded fittings, the minimum wall thickness shall be in accordance with Schedule 40 in sizes less than 8 inches for pressures up to 300 psi.

Exception: Pipe meeting the above referenced ASTM specifications with wall thickness and pressure limitations less than Schedule 40 for threading or Schedule 10 for welding and roll-grooving, which have been investigated for suitability in automatic sprinkler installations and listed for this service, shall be permitted when installed in accordance with their UL or FM listing limitations.

All steel pipe is to be installed in strict accordance with the guidelines of NFPA 13 and therefore requires no special submittal of specific manufacture's installation instructions as noted in NFPA 13-2010.

NOTE:
All piping 2" and less shall be Schedule 40.
All piping 2

Precision Fire Systems, Inc.
Threaded and Flanged
Fittings Submittal

All of the threaded or flanged fittings to be used on this project meet or exceed the requirements of one or more of the following standards as required by paragraph 6.4, NFPA 13-2010:

ANSI B16.4 **Cast Iron Fittings Class 125 and 250**

ANSI B16.1 **Cast Iron Pipe Flanges and Flanged Fittings**

ANSI B16.3 **Malleable Iron Fittings, Class 150 and 300**

Manufacturers may vary.

Fittings are to be installed in strict accordance with the guidelines of NFPA 13 and therefore require no special submittal of specific manufacture's installation instructions as noted in NFPA 13-2010.

FireLock® Fittings

c UL us LISTED FM LPCB VdS CTP
See Victaulic publication 10.01 for details

FireLock® products comprise a unique system specifically designed for fire protection services. FireLock full-flow elbows and tees feature CAD-developed, hydrodynamic design, affording a shorter center-to-end dimension than standard fittings. A noticeable bulge allows the water to make a smoother turn to maintain similar flow characteristics as standard full flow fittings.

FireLock fittings are designed for use exclusively with Victaulic IPS-sized couplings that have been Listed or Approved for Fire Protection Services. Use of other couplings or flange adapters may result in bolt pad interference.

Victaulic FireLock fittings pressure ratings conform to the ratings of Victaulic FireLock EZ® Style 009N/Style 009H couplings.

MATERIAL SPECIFICATIONS

Fitting: Ductile iron conforming to ASTM A-536, grade 65-45-12.

Fitting Coating:

- Orange enamel.
- Red Enamel in EMEA-I.
- **Optional:** Hot dipped galvanized.

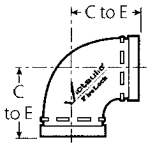
JOB/OWNER
System No. _____
Location _____

CONTRACTOR
Submitted By _____
Date _____

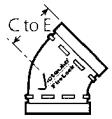
ENGINEER
Spec Sect _____ Para _____
Approved _____
Date _____

FireLock® Fittings

DIMENSIONS



NO. 001



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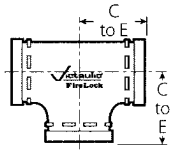


NO. 002

NO. 006

Size		No. 001 90° Elbow		No. 003 45° Elbow		No. 002 Straight Tee		No. 006 Cap	
Nominal Size Inches mm	Actual Outside Diameter Inches mm	C to E Inches mm	Approx. Weight Each Lbs. kg	C to E Inches mm	Approx. Weight Each Lbs. kg	C to E Inches mm	Approx. Weight Each Lbs. kg	Thickness "T" Inches mm	Approx. Weight Each Lbs. kg
1 ¼ 32	1.660 42.4	—	—	—	—	—	—	0.8 21	0.3 0.1
1 ½ 40	1.900 48.3	—	—	—	—	—	—	0.82 21	0.4 0.2
2 50	2.375 60.3	2.75 70	1.7 0.8	2.00 51	1.8 0.8	2.75 70	2.4 1.1	0.88 22	0.6 0.3
2 ½ 65	2.875 73.0	3.00 76	3.1 1.4	2.25 57	2.2 1.0	3.00 76	3.6 1.6	0.88 22	1.0 0.5
76.1 mm	3.000 76.1	3.00 76	3.30 1.5	2.25 57	2.4 1.1	—	—	—	—
3 80	3.500 88.9	3.38 86	4.0 1.8	2.50 64	3.1 1.4	3.38 86	5.3 2.4	0.88 22	1.2 0.5
108 mm	4.250 108.0	4.00 102	5.7 2.6	3.00 76	5.1 2.3	4.00 102	7.5 3.4	—	—
4 100	4.500 114.3	4.00 102	6.7 3.0	3.00 76	5.6 2.5	4.00 102	8.7 3.9	1.00 25	2.4 1.1
5 125	5.563 141.3	4.88 124	12.6 5.7	3.25 83	8.3 3.8	4.88 124	15.7 7.1	1.00 25	4.1 1.9
159 mm	6.250 158.8	5.50 140	12.6 5.7	3.50 89	9.2 4.2	5.50 140	17.9 8.0	—	—
6 150	6.625 168.3	5.50 140	18.3 8.3	3.50 89	11.7 5.3	5.50 140	22.7 10.3	1.00 25	5.9 2.7
8 200	8.625 219.1	6.81 173	25.5 11.6	4.25 108	20.4 9.3	6.94 176	38.7 17.6	1.13 29	12.7 5.8

FireLock® Fittings

FLOW DATA

Size		Frictional Resistance Equivalent Feet/meters of Straight Pipe †			
		Elbows		No. 002 Straight Tee	
Nominal Size Inches mm	Actual Outside Diameter Inches mm	No. 001 90° Elbow	No. 003 45° Elbow	Branch	Run
1 ¼	1.660	—	—	—	—
32	42.4	—	—	—	—
1 ½	1.900	—	—	—	—
40	48.3	—	—	—	—
2	2.375	3.5	1.8	8.5	3.5
50	60.3	1.1	0.5	2.6	1.1
2 ½	2.875	4.3	2.2	10.8	4.3
65	73.0	1.3	0.7	3.3	1.3
76.1 mm	3.000	4.5	2.3	11.0	4.5
	76.1	1.4	0.7	3.4	1.4
3	3.500	5.0	2.6	13.0	5.0
80	88.9	1.5	0.8	4.0	1.5
108 mm	4.250	6.4	3.2	15.3	6.4
	108.0	2.0	0.9	4.7	2.0
4	4.500	6.8	3.4	16.0	6.8
100	114.3	2.1	1.0	4.9	2.1
5	5.563	8.5	4.2	21.0	8.5
125	141.3	2.6	1.3	6.4	2.6
159 mm	6.250	9.4	4.9	25.0	9.6
	158.8	2.9	1.5	7.6	2.9
6	6.625	10.0	5.0	25.0	10.0
150	168.3	3.0	1.5	7.6	3.0
8	8.625	13.0	5.0	33.0	13.0
200	219.1	4.0	1.5	10.1	4.0

† The flow data listed is based upon the pressure drop of Schedule 40 pipe.

FireLock® Fittings

GENERAL NOTES

NOTE: When assembling FireLock EZ couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For FireLock EZ Style 009N/009H couplings, use FireLock No. 006 end caps containing the "EZ" marking on the inside face or No. 60 end caps containing the "QV EZ" marking on the inside face. Non-Victaulic end cap products shall not be used with Style 009/009V/009H couplings.

WARRANTY

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

NOTE

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

Series TY-FRB — 2.8, 4.2, 5.6, and 8.0 K-Factor Upright, Pendent, and Recessed Pendent Sprinklers Quick Response, Standard Coverage

General Description

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described in this data sheet are quick response, standard coverage, decorative 3 mm glass bulb-type spray sprinklers designed for use in light or ordinary hazard, commercial occupancies such as banks, hotels, and shopping malls.

The recessed version of the Series TY-FRB Pendent Sprinkler, where applicable, is intended for use in areas with a finished ceiling. This recessed pendent sprinkler uses one of the following:

- A two-piece Style 10 (1/2 inch NPT) or Style 40 (3/4 inch NPT) Recessed Escutcheon with 1/2 inch (12,7 mm) of recessed adjustment or up to 3/4 inch (19,1 mm) of total adjustment from the flush pendent position, or a
- A two-piece Style 20 (1/2 inch NPT) or Style 30 (3/4 inch NPT) Recessed Escutcheon with 1/4 inch (6,4 mm) of recessed adjustment or up to 1/2 inch (12,7 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.

Corrosion-resistant coatings, where applicable, are utilized to extend the life of copper alloy sprinklers beyond that which would otherwise be obtained when exposed to corrosive atmospheres. Although corrosion-resistant coated 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 these coatings for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, as a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

An intermediate level of the Series TY-FRB Pendent Sprinklers is detailed in Technical Data Sheet TFP356, and Sprinkler Guards are detailed in Technical Data Sheet TFP780.

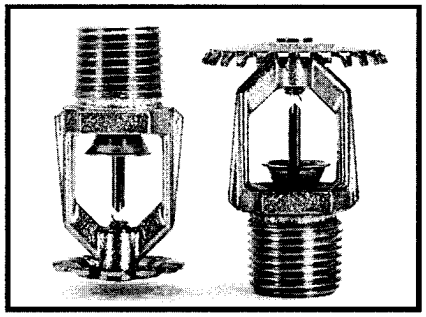
NOTICE

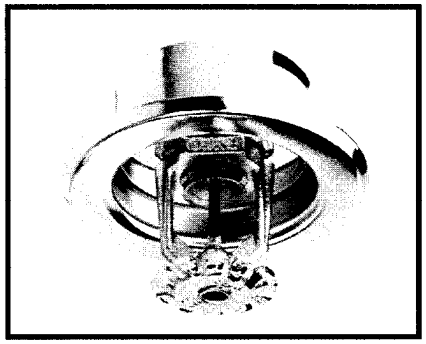
The Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities 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. The installing contractor or sprinkler manufacturer should be contacted with any questions.

IMPORTANT

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.





Sprinkler Identification Number (SIN)

~~TY1131:~~	~~Upright~~	~~2.8K, 1/2" NPT~~
~~TY1231:~~	~~Pendent~~	~~2.8K, 1/2" NPT~~
~~TY2131:~~	~~Upright~~	~~4.2K, 1/2" NPT~~
~~TY2231:~~	~~Pendent~~	~~4.2K, 1/2" NPT~~
~~TY3131:~~	~~Upright~~	~~5.6K, 1/2" NPT~~
TY3231:	Pendent	5.6K, 1/2" NPT
TY4131:	Upright	8.0K, 3/4" NPT
~~TY4231:~~	~~Pendent~~	~~8.0K, 3/4" NPT~~
~~TY4331:~~	~~Upright~~	~~8.0K, 1/2" NPT~~
~~TY4431:~~	~~Pendent~~	~~8.0K, 1/2" NPT~~

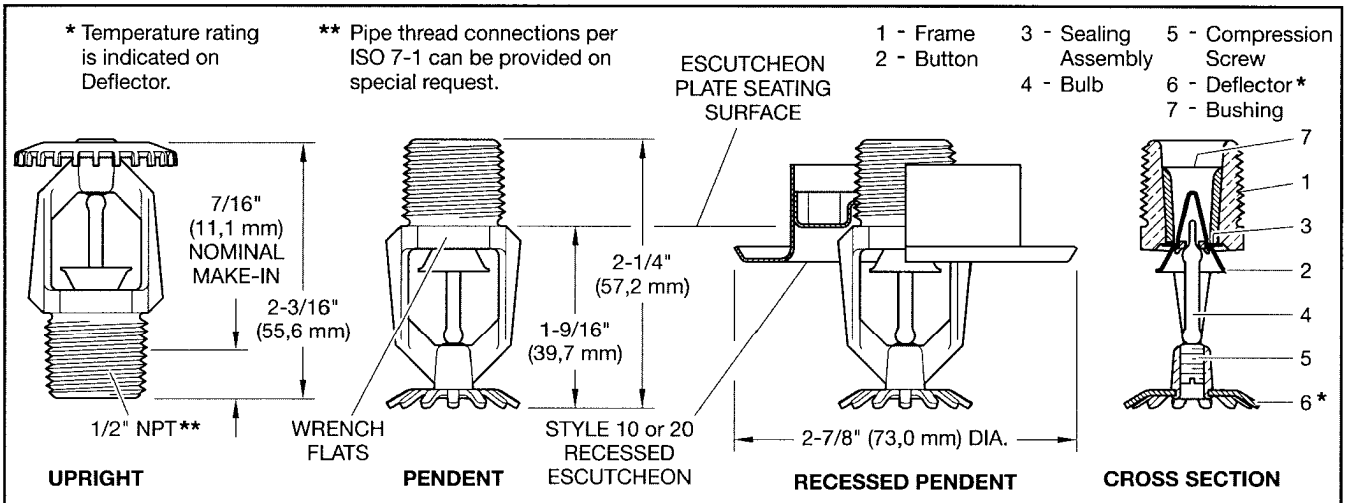


FIGURE 1
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY1131) AND PENDENT (TY1231) SPRINKLERS
2.8 K-FACTOR, 1/2 INCH NPT

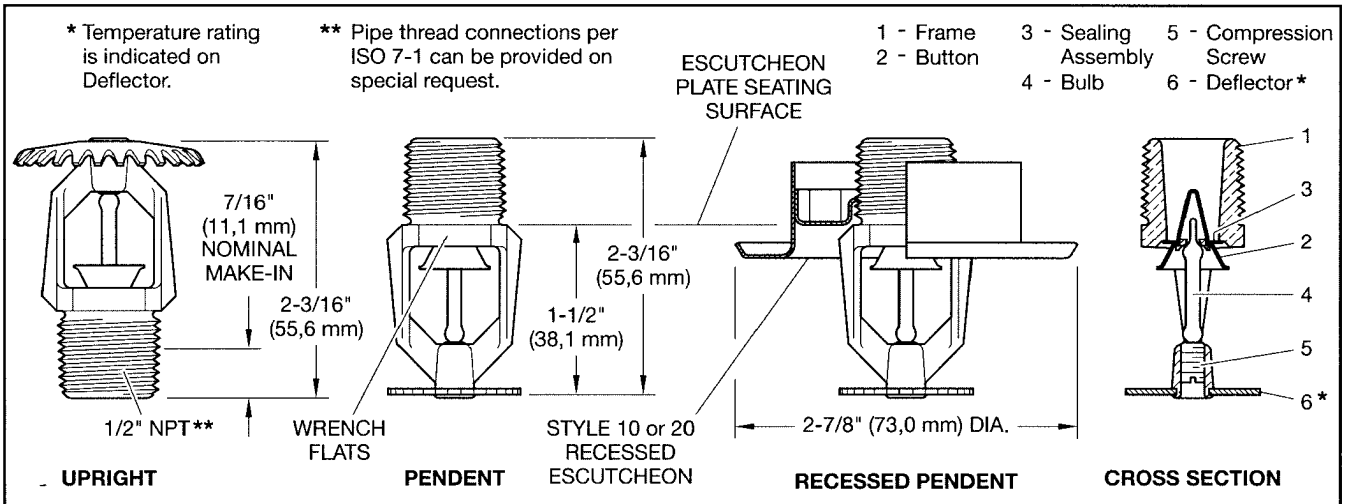


FIGURE 2
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY2131) AND PENDENT (TY2231) SPRINKLERS
4.2 K-FACTOR, 1/2 INCH NPT

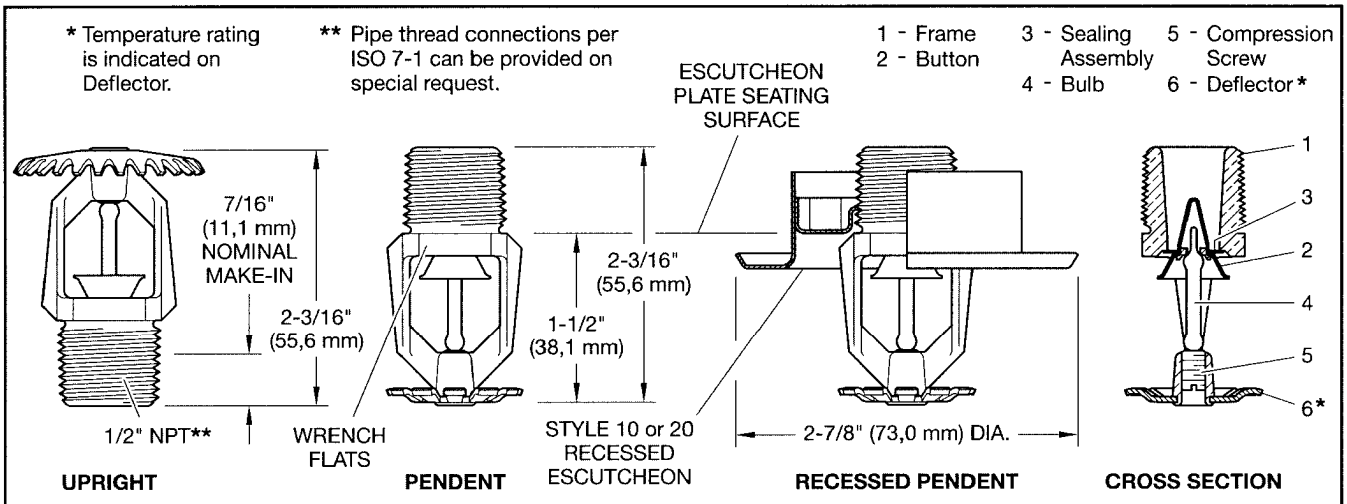


FIGURE 3
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY3131) AND PENDENT (TY3231) SPRINKLERS
5.6 K-FACTOR, 1/2 INCH NPT

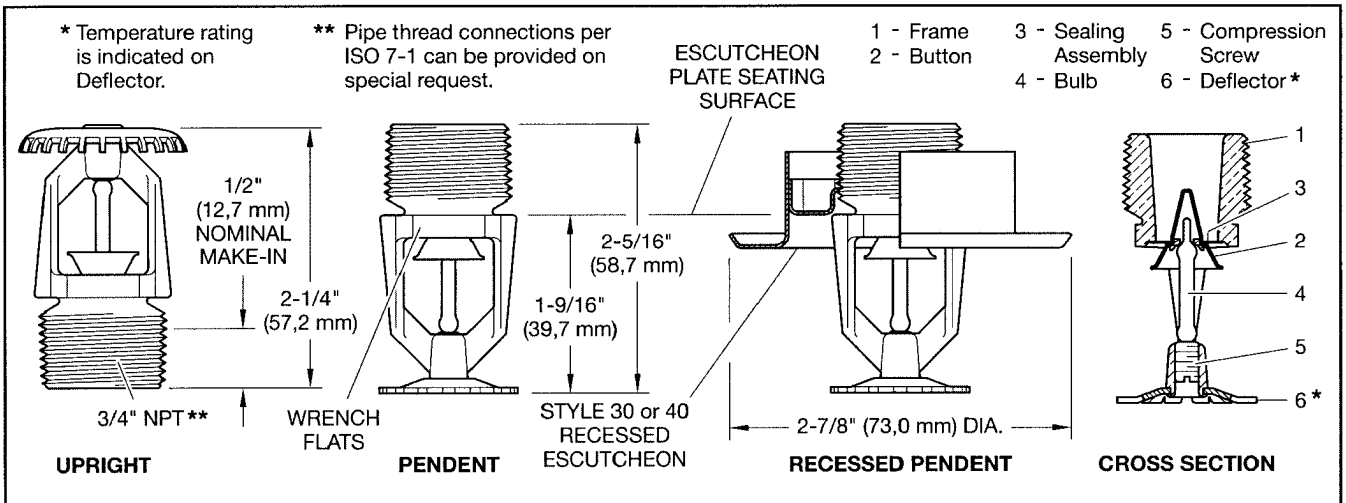


FIGURE 4
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4131) AND PENDENT (TY4231) SPRINKLERS
8.0 K-FACTOR, 3/4 INCH NPT

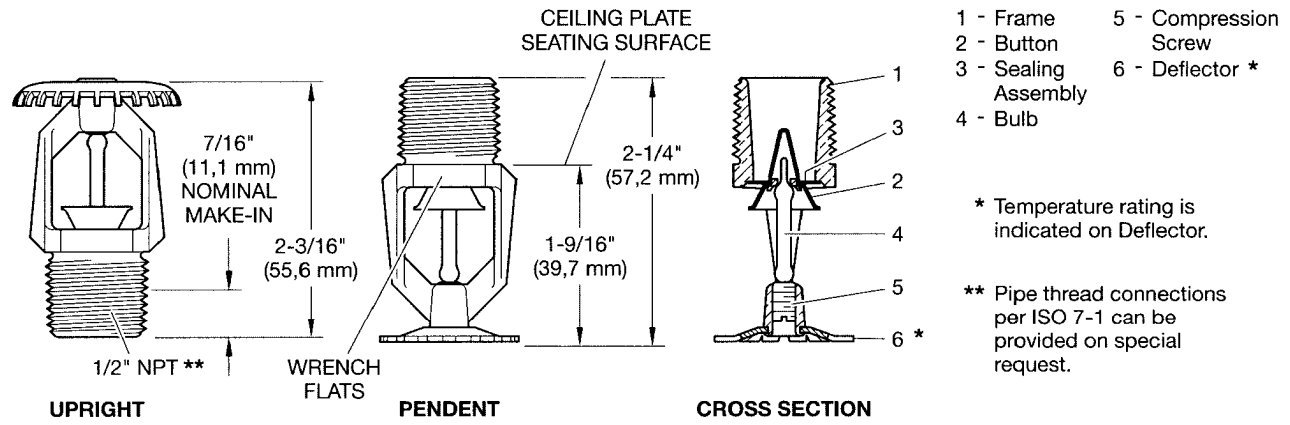


FIGURE 5
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4831) AND PENDENT (TY4931) SPRINKLERS
8.0 K-FACTOR, 1/2 INCH NPT

Technical Data

Approvals
UL and C-UL Listed
FM, LPCB, and NYC Approved
Refer to Table A and B for complete approval information including corrosion-resistant status.

Maximum Working Pressure
Refer to Table C.

Discharge Coefficient

K=2.8 GPM/psi$^{1/2}$	(40,3 LPM/bar$^{1/2}$)
K=4.2 GPM/psi$^{1/2}$	(60,5 LPM/bar$^{1/2}$)
K=5.6 GPM/psi$^{1/2}$	(80,6 LPM/bar$^{1/2}$)
K=8.0 GPM/psi$^{1/2}$	(115,2 LPM/bar$^{1/2}$)

Temperature Rating
Refer to Table A and B.

Finishes
Sprinkler: Refer to Table D. Recessed Escutcheon: White Coated, Chrome Plated, or Brass Plated.

Physical Characteristics

Frame	Bronze
Button	Brass/Copper
Sealing Assembly	Beryllium Nickel w/TEFLON
Bulb	Glass
Compression Screw	Bronze
Deflector	Copper/Bronze
Bushing (K=2.8)	Bronze

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

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (such as, UL Listing is based on the requirements of NFPA 13, and FM Approval is based on the requirements of FM's Loss Prevention Data Sheets). Only the Style 10, 20, 30, or 40 Recessed Escutcheon, as applicable, is to be used for recessed pendent installations.

Installation

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklersmust 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 286°F (141°C) temperature ratings.

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

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

Series TY-FRB Upright and Pendent Sprinklers
The Series TY-FRB Pendent and Upright Sprinklers must be installed in accordance with the following instructions.

Step 1. Install Pendent sprinklers in the pendent position. Install upright sprinklers in the upright 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 6 Sprinkler Wrench (Figure 14). With reference to Figures 1 through 5, apply the W-Type 6 Sprinkler Wrench to the sprinkler wrench flats.

Series TY-FRB Recessed Pendent Sprinklers
The Series TY-FRB Recessed Pendent Sprinklers must be installed in accordance with the following instructions.

Step A. After installing the Style 10, 20, 30, or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step B. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Figure

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 5)			
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	SIGNAL*** WHITE
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	135°F (57°C)	Orange	1, 2, 3, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY1231)* Figure 6	135°F (57°C)	Orange	1, 2, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	RECESSED PENDENT (TY1231)** Figure 7	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	135°F (57°C)	Orange	1, 2		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY2231)* Figure 8	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	RECESSED PENDENT (TY2231)** Figure 9	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			

NOTES:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the City of New York under MEA 354-01-E.
5. Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.

** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.

*** Frame and Deflector only. Listings and approvals apply to color (Special Order).

N/A: Not Available

TABLE A
LABORATORY LISTINGS AND APPROVALS FOR
2.8 AND 4.2 K-FACTOR SPRINKLERS

15). With reference to Figures 1 to 4, apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step C. After ceiling installation and finishing, slide on the Style 10, 20, 30, or 40 Closure over the Series TY-FRB Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling.

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 8) BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	SIGNAL*** WHITE	LEAD COATED
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 3, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)* Figure 10	135°F (57°C)	Orange	1, 2, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)** Figure 11	135°F (57°C)	Orange	1, 2, 3, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)* Figure 12	135°F (57°C)	Orange	1, 2, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)** Figure 13	135°F (57°C)	Orange	1, 2, 3, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	135°F (57°C)	Orange	1, 2, 4, 5, 6			1, 2, 5
		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) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007k/04) as Quick Response Sprinklers. However, LPCB does not rate the thermal sensitivity of recessed sprinklers.
5. Approved by the City of New York under MEA 354-01-E.
6. VdS Approved (For details, contact Tyco Fire Suppression & Building Products, Enschede, Netherlands, Tel. 31-53-428-4444/Fax 31-53-428-3377.)
7. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) as Quick Response Sprinklers.
8. Where Polyester Coated and Lead-Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers. Where Lead-Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as a Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.

** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.

*** Frame and Deflector only. Listings and approvals apply to color (Special Order).

N/A: Not Available

TABLE B
LABORATORY LISTINGS AND APPROVALS FOR
5.6 AND 8.0 K-FACTOR SPRINKLERS

K FACTOR	TYPE	SPRINKLER FINISH			
		NATURAL BRASS	CHROME PLATED	SIGNAL WHITE	LEAD COATED
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY1231)				
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY2231)				
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	250 PSI (17,2 BAR) OR 175 PSI (12,1 BAR) (SEE NOTE 1)			175 PSI (12,1 BAR)
	RECESSED PENDENT (TY3231)				N/A
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)
	RECESSED PENDENT (TY4231)				N/A
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)

NOTES:
1. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories Inc. (UL); the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL); and, the Approval by the City of New York.

TABLE C
MAXIMUM WORKING PRESSURE

Care and Maintenance

The TYCO Series TY-FRB 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, can delay sprinkler operation in a fire situation.

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. (Ref. 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 (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding 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.

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. (Ref. Installation Section).

Initial and frequent visual inspections of random samples are recommended for corrosion-resistant sprinklers to verify the integrity of the corrosion-resistant material of construction. Thereafter, annual inspections per NFPA 25 should suffice.

Inspections of corrosion-resistant sprinklers are recommended at close range, instead of from the floor level per NFPA. Inspection at close range can better determine the exact sprinkler condition and the long-term integrity of the corrosion-resistant material, which can be affected by the corrosive conditions present.

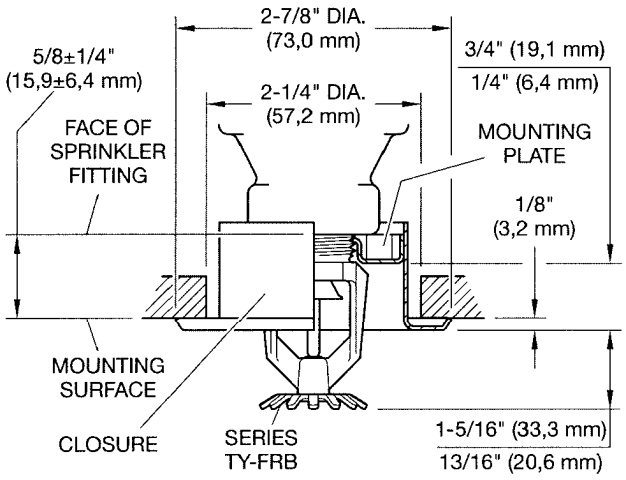


FIGURE 6
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

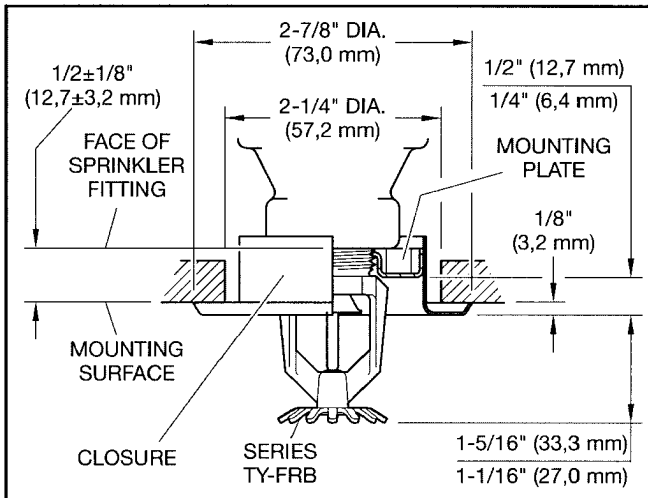


FIGURE 7
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

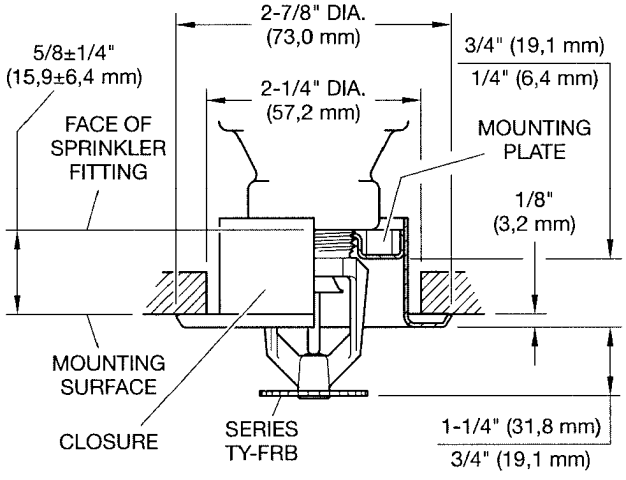


FIGURE 8
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

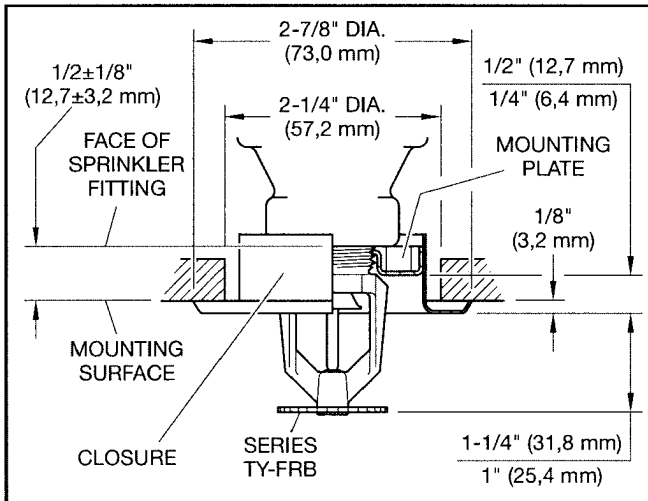


FIGURE 9
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

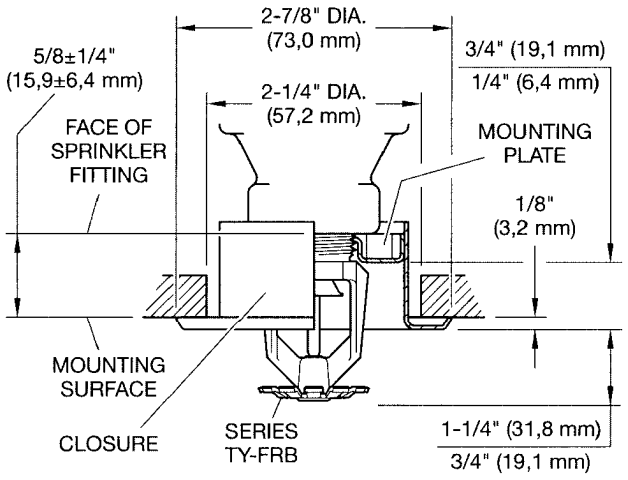


FIGURE 10
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

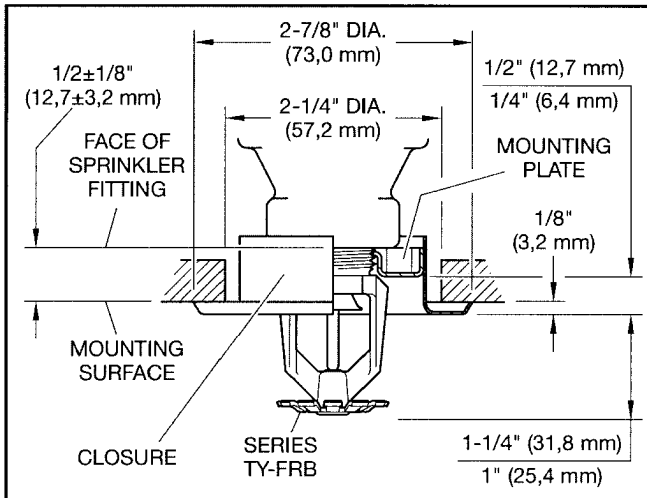


FIGURE 11
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

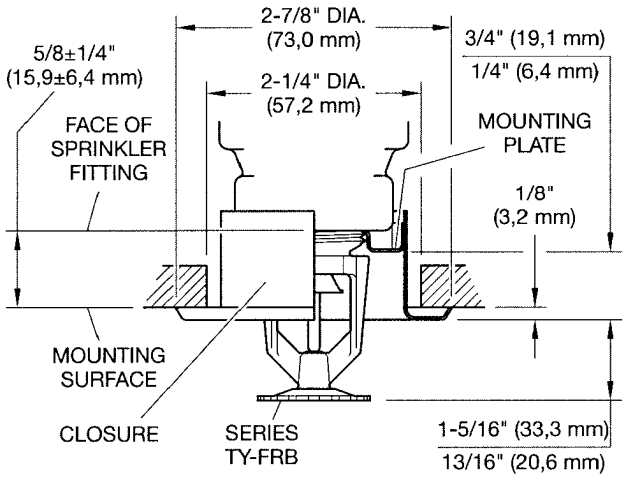


FIGURE 12
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 40 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

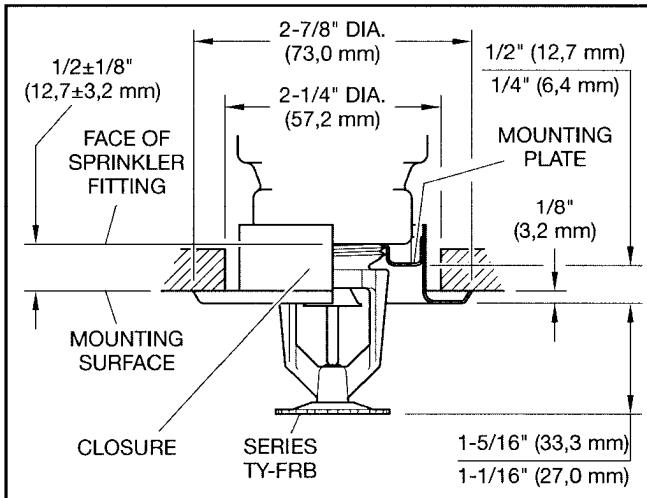


FIGURE 13
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 30 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

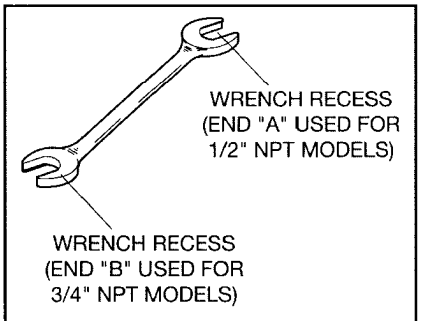


FIGURE 14
W-TYPE 6 SPRINKLER
WRENCH

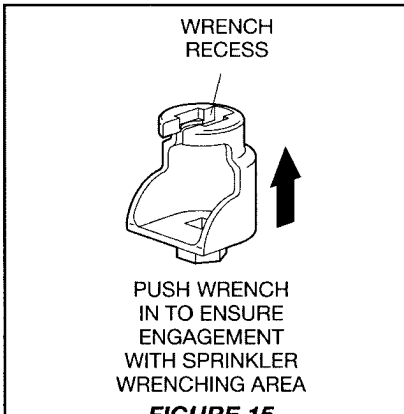


FIGURE 15
W-TYPE 7 RECESSED
SPRINKLER WRENCH

P/N 57 – XXX – X – XXX

		SIN
330	2.8K UPRIGHT (1/2"NPT)	TY1131
331	2.8K PENDENT (1/2"NPT)	TY1231
340	4.2K UPRIGHT (1/2"NPT)	TY2131
341	4.2K PENDENT (1/2"NPT)	TY2231
370	5.6K UPRIGHT (1/2"NPT)	TY3131
371	5.6K PENDENT (1/2"NPT)	TY3231
390	8.0K UPRIGHT (3/4"NPT)	TY4131
391	8.0K PENDENT (3/4"NPT)	TY4231
360	8.0K UPRIGHT (1/2"NPT)	TY4831*
361	8.0K PENDENT (1/2"NPT)	TY4931*

	SPRINKLER FINISH
1	NATURAL BRASS
3	PURE WHITE (RAL9010)*
4	SIGNAL WHITE (RAL9003)
5	JET BLACK (RAL9005)**
7	LEAD COATED
9	CHROME PLATED

	TEMPERATURE RATINGS
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)

* Eastern Hemisphere sales only.

** Available in only 2.8K, 4.2K, and 8.0K, 155°F (68°C) and 200°F (93°C); requires lead time to manufacture.

TABLE D
SERIES TY-FRB PENDENT AND UPRIGHT SPRINKLERS
PART NUMBER SELECTION

Ordering Procedure

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

Sprinkler Assemblies with NPT Thread Connections
Specify: Series TY-FRB (Specify SIN), (specify K-factor), (specify Pendent or Upright) Sprinkler (specify) temperature rating, (specify) finish or coating, P/N (specify from Table D)

Recessed Escutcheon:
Specify: Style (10, 20, 30, or 40) Recessed Escutcheon with (specify*) finish, P/N (specify*)

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

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

* Refer to Technical Data Sheet TFP770

tyco Fire Protection Products

PERMIT AUTHORIZATION

CITY OF TITUSVILLE BUILDING DEPARTMENT

PLEASE SIGN THE APPLICABLE SECTION, HAVE THIS FORM NOTARIZED AND THEN RETURNIT TO THE BUILDING DEPARTMENT.

OWNER: Embraer Aircraft Holding

JOBSITE ADDRESS: 1600 AND 1700 Armstrong Dr. TITUSVILLE, FL.

DESCRIPTION OF WORK TO BE DONE: Fire Sprinkler System

PERMIT # FS16-000010 AND FS16-000011

(By completing this section limits this authorization to the job listed.)

****

CONTRACTOR AUTHORIZATION

1. I, Arthur Bateman, hereby authorize
(Print name of qualifier)

Ben D'Amico to obtain a permit on my behalf.
(Print authorized person's name)

License # FPC13-000123.

At such time as the above named person may secure a permit based on this authorization, I will assume full responsibility for their actions insofar as the provisions of the City of Titusville Licensing laws are applicable to me as a certificate holder. I understand that I am required to notify the City of Titusville Building Department immediately, in writing, in the event that I wish to have the name of the above person removed from this authorization.

I understand that this authorization shall be valid for a period not to exceed the regular renewal date of the renewal period in which this agreement was executed. Should I desire to extend the provisions of this authorization upon its expiration date, I understand I will be required to execute a new authorization form.

(Signature of Qualifier)

EFFECTIVE DATE 6/1/16

EXPIRATION DATE 6/30/16

****

PROPERTY OWNER AUTHORIZATION

2. I, _____ hereby authorize
(Print name of owner)

_____ to sign for and
(Print authorized person's name)

obtain a building permit on my behalf.

Effective Date: _____

_____ Expiration Date: _____
(Signature of Owner)

****

STATE OF FLORIDA, COUNTY OF BREVARD

Sworn to and Subscribed before me this 1st day of June 20 16,

By Arthur Bateman who is

personally known to me or produced identification. Type of Identification: _____.

(Notary Public signature)

chad sheffield
(Print name)

CHAD S SHEFFIELD
MY COMMISSION #FF184723
EXPIRES December 21, 2018
(407) 398-0153 FloridaNotaryService.com

CITY OF TITUSVILLE
R E P R I N T
*** CUSTOMER RECEIPT ***

Batch ID: LOTT 6/01/16 01 Receipt no: 146287

Type	SvcCd	Description	Amount
BBCC		BUILDING BCAIB FEES	
	Qty	1.00	$7.78
ARTHUR BATEMAN			
BDCC		BUILDING DCA FEES	
	Qty	1.00	$7.78
BEFC		BUILDING EDUCATION FEE	
	Qty	1.00	$19.89
BPRC		BLDG PERMITS/REVIEWS FEE	
	Qty	1.00	$633.50

1600 ARMSTRONG DR FS16-000010
1700 ARMSTRONG DR FS16-000011

Tender detail
GC GOVNOW CC CO $668.95
Total tendered: $668.95
Total payment: $668.95

Trans date: 6/01/16 Time: 11:33:47

*** THANK YOU FOR YOUR PAYMENT ***

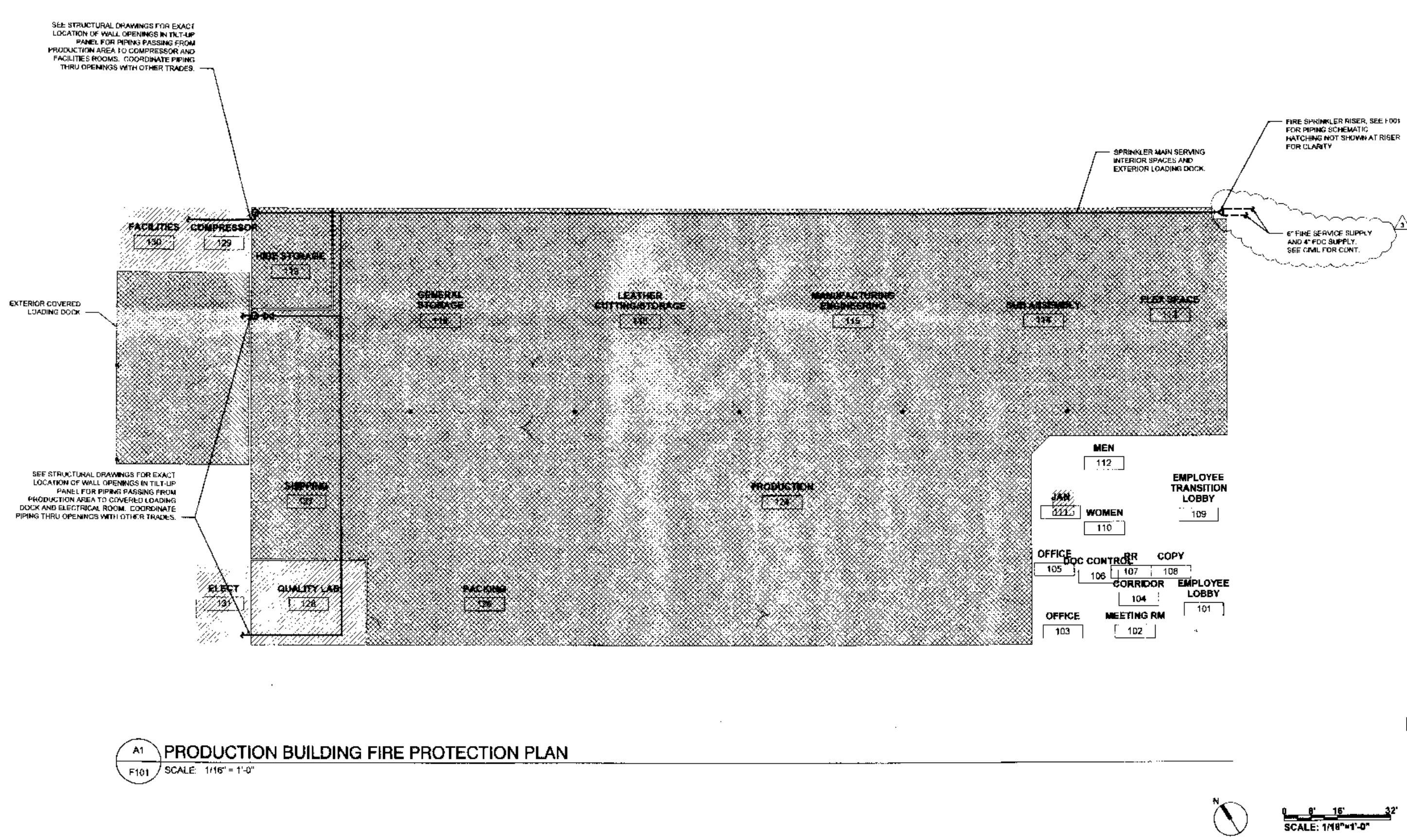
Permit #: FS16-000010
Address: 1600 ARMSTRONG DRIVE

PERMIT FEES INVOICE

All BCAIB Fees (State Requirement)	3.89
All DCA Fees (State Requirement)	3.89
Building and Technology account	6.51
Building Permit Fees	219.50
Fire Permit Fee	97.25
Total	**331.04**

PAYMENTS

Called
5.19.16



A1 / F101 PRODUCTION BUILDING FIRE PROTECTION PLAN

SCALE 1/16" = 1'-0"

SCOTT V. LEOPOLD LICENSE No. 74186 STATE OF FLORIDA PROFESSIONAL ENGINEER

4-19-16

SYMBOL	DESCRIPTION	DATE	BY
1	REVISED PER CITY OF TITUSVILLE COMMENTS	03/15/16	

DESIGNED BY: SVL	DATE: 2/13/16
DWN BY: SVL	CKD BY: SWD
SUBMITTED BY: TDG	
FILE NAME:	
SIZE: D 22"X34"	PLOT SCALE:
PLOT DATE: 2/19/16	

RS&H
115 ALMA BLVD, SUITE 101
MERRITT ISLAND, FL 32953
757.622.1800 www.rsandh.com

EMBRAER
EMBRAER AERO SEATING TECHNOLOGIES
TITUSVILLE, FL

PRODUCTION BLDG - FIRE PROTECTION PLAN

PLATE REFERENCE NUMBER
F101
SHEET of

RUSH

FIRE SPRINKLER NOTES

1. PROVIDE WET PIPE SPRINKLER SYSTEMS THROUGHOUT ALL AREAS OF THE BUILDING, INCLUDING EXTERIOR COVERED WALKWAYS, LOADING DOCKS AND STAGING AREAS IN ACCORDANCE WITH NFPA 13 (2013 EDITION) AND THE FLORIDA FIRE PREVENTION CODE (5TH EDITION). ALL PIPING, SPRINKLERS, VALVES AND COMPONENTS SHALL BE UL LISTED AND/OR FM APPROVED FOR USE IN AUTOMATIC SPRINKLER SYSTEMS. ALL SYSTEMS SHALL BE HYDRAULICALLY CALCULATED PER NFPA 13.
2. AREA HAZARD CLASSIFICATIONS ARE AS SHOWN ON THE DRAWINGS. LIGHT HAZARD AREAS INCLUDE OFFICES, CORRIDORS, RESTROOMS, ETC. ORDINARY HAZARD GROUP 1 AREAS INCLUDE MECHANICAL ROOMS, ELECTRICAL ROOMS AND JANITOR CLOSETS. ORDINARY HAZARD GROUP 2 AREAS INCLUDE COVERED LOADING DOCKS, GENERAL STORAGE AREAS (STORAGE HEIGHT TO 12'-0" MAX) AND MANUFACTURING AREAS.
3. PROVIDE WET PIPE RISERS WITH APPROPRIATE TRIM PER NFPA 13. CONNECT FLOW AND TAMPER SWITCHES (PROVIDE ON ALL SYSTEM CONTROL AND SHUTOFF VALVES, INCLUDING BACKFLOW PREVENTER WHERE REQUIRED) AND ALL OTHER FIRE ALARM DEVICES TO FIRE ALARM SYSTEM.
4. COORDINATE ROUTING OF ALL PIPING, TEST CONNECTIONS, AND AUXILIARY DRAIN LINES WITH OTHER TRADES. PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL PANELS, ETC. PER NFPA 70.
5. PROVIDE AUXILIARY DRAINS PER NFPA 13. ALL MAIN DRAINS, SECTIONAL DRAINS, INSPECTOR TEST CONNECTIONS, AND AUXILIARY DRAINS (MORE THAN 5 GAL TRAPPED VOLUME) SHALL DISCHARGE DIRECTLY TO THE EXTERIOR WITH APPROPRIATE SPLASH PROTECTION. WORKING DRAWINGS SHALL INDICATE LOCATION OF ALL TEST/DRAIN VALVES AND DISCHARGE POINTS.
6. PIPING SHALL BE ASTM A53 SCHEDULE 40 BLACK STEEL PIPE FOR WELDED, THREADED AND GROOVED FITTINGS ONLY OR ASTM A135 OR A795 SCHEDULE 10 BLACK STEEL PIPE FOR WELDED OR ROLLED GROOVE FITTINGS ONLY. ALL PIPING SERVING A SINGLE SPRINKLER SHALL BE 1" PIPE SIZE MINIMUM PER NFPA 13.
7. SPRINKLERS IN INTERIOR SPACES WITH FINISHED CEILINGS SHALL BE CHROME RECESSED PENDENT WITH MATCHING CHROME ESCUTCHEON, ORDINARY TEMPERATURE UNLESS OTHERWISE REQUIRED PER NFPA 13, AND SHALL BE CENTERED IN CEILING TILE. SPRINKLERS IN AREAS WITHOUT CEILINGS SHALL BE PENDENT OR UPRIGHT PER NFPA 13.
8. PROVIDE SPRINKLER GUARDS ON ALL SPRINKLERS INSTALLED LESS THAN 7 FT. ABOVE FINISHED FLOORS AND OTHER AREAS WHERE REQUIRED BY NFPA 13.
9. SUPPORT ALL PIPING FROM STRUCTURE AND PROVIDE HANGERS AND BRACING PER NFPA 13. PIPING SHALL BE SUPPORTED FROM TOP CHORD OF BEAMS, TRUSSES, JOISTS, ETC.
10. PROVIDE SHOP DRAWINGS, WORKING PLANS AND HYDRAULIC CALCULATIONS FOR ALL SYSTEMS PER NFPA 13.
11. SHOP DRAWINGS, WORKING PLANS, AND HYDRAULIC CALCULATIONS SHALL BE PREPARED BY OR UNDER THE DIRECT SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER OR AN INDIVIDUAL CERTIFIED AS A LEVEL III ENGINEERING TECHNICIAN BY THE NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES (NICET) IN THE AUTOMATIC SPRINKLER SYSTEM LAYOUT SUBFIELD OF FIRE PROTECTION ENGINEERING TECHNOLOGY.
12. PROVIDE MINIMUM 3'-0" CLEAR ACCESS TO ALL VALVES AND EQUIPMENT.
13. PERFORM ACCEPTANCE TESTING OF ALL SYSTEMS AND COMPONENTS IN ACCORDANCE WITH SPECIFICATIONS AND NFPA 13 UPON COMPLETION OF CONSTRUCTION.
14. CONTRACTOR SHALL CONDUCT WATER SUPPLY FLOW TEST IN ACCORDANCE WITH NFPA 291 PRIOR TO BEGINNING WORK TO VERIFY WATER SUPPLY DATA PROVIDED ON THE DRAWINGS. IF FLOW TEST INDICATES GREATER WATER SUPPLY CAPACITY THAN THAT PROVIDED ON THE DRAWINGS, CONTRACTOR SHALL DESIGN SYSTEMS BASED ON WATER SUPPLY DATA PROVIDED. IF FLOW TEST INDICATES LESSER WATER SUPPLY CAPACITY THAN THAT PROVIDED ON THE DRAWINGS, CONTRACTOR SHALL DESIGN SYSTEMS BASED ON FLOW TEST DATA.
15. PROVIDE APPROVED DOUBLE DETECTOR CHECK BACKFLOW PREVENTER ON FIRE WATER SERVICE MAIN TO THE SITE IN ACCORDANCE WITH THE FLORIDA FIRE PREVENTION CODE AND LOCAL REQUIREMENTS.
16. PROVIDE METAL CABINET WITH STOCK OF SPARE SPRINKLERS AND WRENCHES PER NFPA 13 AT EACH BUILDING RISER.
17. PROVIDE IDENTIFICATION SIGNS FOR ALL CONTROL, DRAIN AND TEST VALVES PER NFPA 13. WHERE VALVES AND DEVICES ARE LOCATED ABOVE CEILINGS, PROVIDE AND ATTACH LEGIBLE TYPED LABEL TO THE CEILING INDICATING DEVICE TYPE.
18. POINT OF SERVICE IS THE 8" TEE INTO THE EXISTING 10" WATER MAIN AT THE STREET, UPSTREAM OF THE BACKFLOW PREVENTER.
19. THERE ARE NO KNOWN INSTANCES OF MICROBIAL INDUCED CORROSION (MIC) IN THE PROJECT AREA.

FIRE PROTECTION LEGEND

- SPRINKLER RISER, WET PIPE
- SPRINKLER VALVE (GENERIC)
- CHECK VALVE
- TEST AND DRAIN VALVE
- BACKFLOW PREVENTER (DOUBLE CHECK TYPE)
- FIRE DEPARTMENT CONNECTION (YARD STANDPIPE) (3)
- WATERFLOW SWITCH
- PIPE BREAK / CONTINUATION
- PIPE TURNED DOWN
- LIGHT HAZARD OCCUPANCY
- ORDINARY HAZARD GROUP 1 OCCUPANCY
- ORDINARY HAZARD GROUP 2 OCCUPANCY

WATER SUPPLY ANALYSIS

A. FLOW TEST RESULTS

DATE OF TEST	16 DEC 2015
TESTED BY	CITY OF TITUSVILLE
STATIC PRESSURE	48 PSI
RESIDUAL PRESSURE	32 PSI
MEASURED FLOW	1 890 GPM
CALCULATED FLOW	2,641 GPM @ 20 PSI
FLOW HYDRANT	1525 ARMSTRONG DR., #3-4H-7
RESIDUAL HYDRANT	1525 ARMSTRONG DR., #3-4H-6

B. BUILDING FIRE FLOW CALCULATION (FLORIDA FIRE PREVENTION CODE, CHAPTER 18)

BUILDING IS PROTECTED THROUGHOUT WITH AUTOMATIC SPRINKLERS PER NFPA 13

BUILDING CONSTRUCTION TYPE	TYPE IIB (000)
BUILDING AREA	40,500 SQ. FT.
BUILDING FIRE FLOW	4,250 GPM (FFPC TABLE 18.4.5.1.2)
SPRINKLER REDUCTION PER FFPC 18.4.5.2.1	4,250 * 25% = 1,062.5 GPM
MINIMUM BUILDING FIRE FLOW REQUIRED:	1,062 GPM
MINIMUM BUILDING FIRE FLOW DURATION:	4 HOURS

C. PRELIMINARY SPRINKLER HYDRAULIC CALCULATION

ESTIMATED FLOW CALCULATION:

OH2 SPRINKLER DENSITY	= 0.20 GPM/SQ. FT.	
DESIGN AREA	= 1,500 SQ. FT.	
ESTIMATED SPRINKLER FLOW	=	0.20 * 1500 * 120% = 360 GPM
HOSE STREAM ALLOWANCE	=	250 GPM
TOTAL FIRE PROTECTION FLOW	=	610 GPM

ESTIMATED PRESSURE LOSS

STARTING SPRINKLER PRESSURE	=	11 PSI (K=8.0)
ELEVATION LOSS @ 20 FT. * 0.433 PSI / FT	=	9
BACKFLOW PREVENTER LOSS	=	8
SAFETY FACTOR	=	5
TOTAL REQUIRED PRESSURE (EXCLUDING FRICTION)	=	33 PSI

AVAILABLE PRESSURE AT DEMAND FLOW RATE.

QR = REQUIRED FLOW RATE AT DEMAND PRESSURE
QT = TEST FLOW RATE
PDR = PRESSURE DROP AT DEMAND FLOW RATE
PDT = PRESSURE DROP AT TEST FLOW RATE

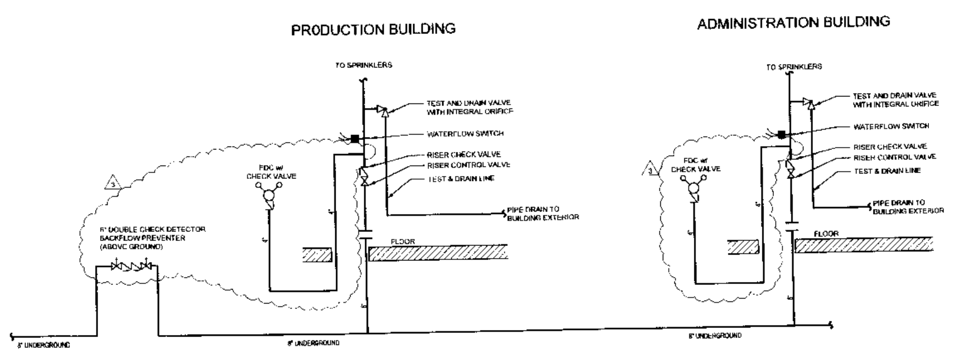
PDR = PDT * (QR/QT)^1.85
PDR = 14 PSI * (610 / 1890)^1.85 = 1.7 PSI

AVAILABLE PRESSURE @ 610 GPM = 48 - 1.7 = 44.3 PSI
AVAILABLE PRESSURE FOR FRICTION = 44.3 - 33 = 11.3 PSI

BASED UPON THE CURRENT FLOW TEST DATA, THERE IS APPROXIMATELY 11 PSI AVAILABLE FOR FRICTION LOSSES, INCLUDING THE UNDERGROUND SUPPLY. THE WATER SUPPLY IS ADEQUATE TO MEET SYSTEM DEMAND REQUIREMENTS WITHOUT THE USE OF A FIRE PUMP.

FILE

20160000



A2 / F100 OVERALL FIRE PROTECTION SCHEMATIC PIPING DIAGRAM
SCALE: NTS

SCOTT V. LEOPOLD LICENSE No. 74186 STATE OF FLORIDA PROFESSIONAL ENGINEER 4-19-16

SYMBOL	DESCRIPTION	DATE	BY
3	REVISED PER CITY OF TITUSVILLE COMMENTS	03/16/16	

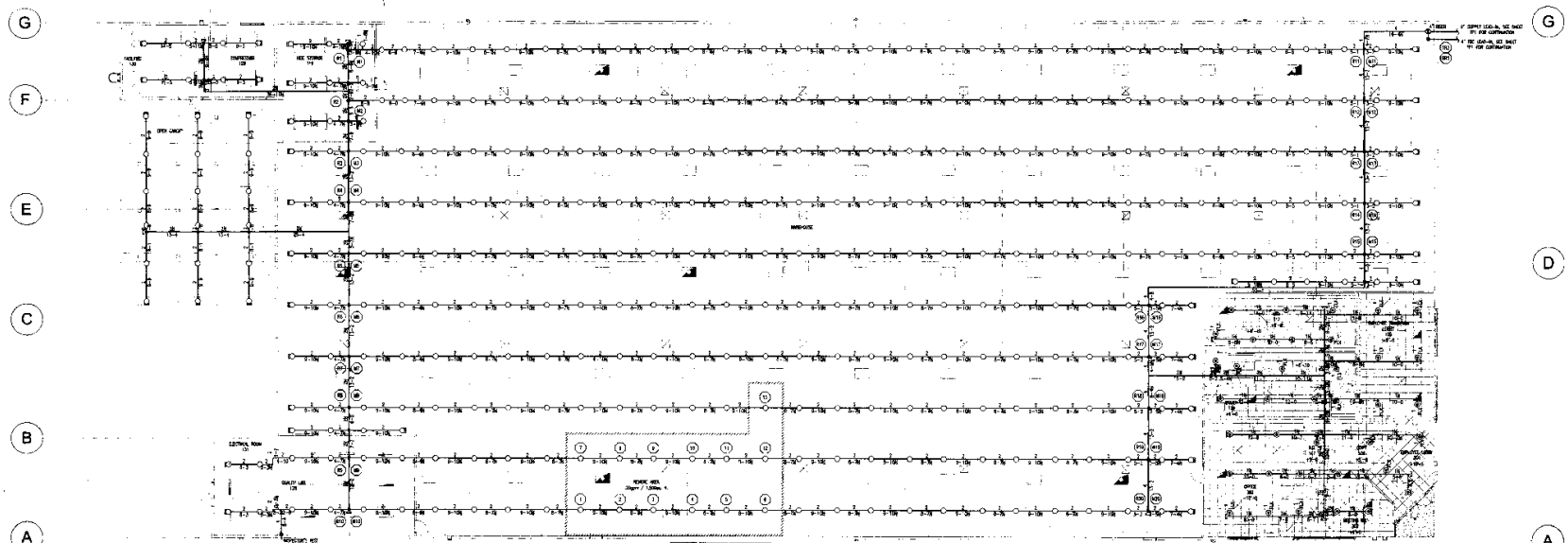
EMBRAER — EMBRAER AERO SEATING TECHNOLOGIES, TITUSVILLE, FL

FIRE PROTECTION NOTES, LEGENDS AND ABBREVIATIONS - PRODUCTION

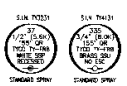
RS&H — 115 ALMA BLVD SUITE101 MERRITT ISLAND FL 32953 757-622-1959 www.rsandh.com

DESIGNED BY: SVL | DATE: 2/18/16 | DWN BY: SVL | CKD BY: SWD | SUBMITTED BY: TDG | FILE NAME: | SIZE D 22"X34" | PLOT SCALE | PLOT DATE 2/19/16

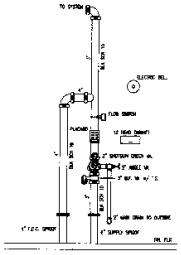
PLATE REFERENCE NUMBER F001
SHEET of



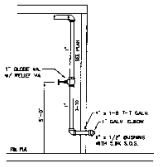
Fire Sprinkler Piping Layout



Building Section



Riser Detail



Ins. Test Detail

HANGER LOCATION DETAIL

PIPE SIZE	A	B*	C
1"	3'-0" MAX.	12'-0" MAX.	3" MIN.
1½"	4'-0" MAX.	12'-0" MAX.	3" MIN.
2"-6"	5'-0" MAX.	10'-0" MAX.	3" MIN.

* MAXIMUM HANGER SPACING FOR STEEL PIPE

Hanger Detail

FIRE PROTECTION NOTES:

1. INSTALL A WET PIPE SPRINKLER SYSTEM THROUGHOUT BUILDING IN ACCORDANCE WITH NFPA 13, 2010 EDITION AND THE LOCAL AUTHORITY. THE SPRINKLER SYSTEM IS HYDRAULICALLY DESIGNED TO PROTECT AN ORDINARY HAZARD GROUP 1 OCCUPANCY.
2. ALL 1" THROUGH 2" DIAMETER PIPE TO BE SCH. 40 BLACK STEEL PER ASTM A-135/A-795 AND SHALL BE JOINED BY CLASS 125 AND 816.4 CAST IRON THREADED FITTINGS. ALL 3-1/2" AND LARGER SHALL BE SCHEDULE 10 BLACK STEEL PER ASTM A-135/A-795 AND SHALL BE JOINED BY MECHANICAL COUPLINGS.
3. ALL MATERIAL AND INSTALLATION TO BE IN ACCORDANCE WITH NFPA STANDARDS 13 & 24, 2010 EDITIONS AND THE LOCAL AUTHORITY.
4. PROVIDE HANGERS INCLUDING TRAPEZE HANGERS AS REQUIRED TO COMPLY WITH NFPA 13.
5. SPRINKLER SYSTEM FLOW AND TAMPER SWITCHES TO BE PROVIDED AND INSTALLED BY THE SPRINKLER CONTRACTOR AND CONNECTED TO THE ALARM BY THE ELECTRICAL CONTRACTOR. ALL SPRINKLER SYSTEM CONTROL VALVES AND WATERFLOW DETECTION DEVICES SHALL BE MONITORED IN ACCORDANCE WITH NFPA 72.
6. FLUSH AND HYDROSTATICALLY TEST SYSTEM IN ACCORDANCE WITH NFPA STANDARDS 13 & 24.
7. SEAL ALL OPENINGS THROUGH FLOORS, CEILINGS, AND PARTITIONS TO RE-ESTABLISH IT'S FIRE RATING. SEE FIRE ARCHITECTURAL DRAWINGS FOR FIRE RATINGS.
8. SPRINKLER SYSTEM INSTALLATION MUST BE PERFORMED BY A CLASS I OR CLASS 2 FIRE PROTECTION CONTRACTOR. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS AND PAY ALL RELATED FEES.
9. ALL HEADS IN LAY-IN CEILINGS TO BE INSTALLED IN A UNIFORM MANNER BUT NOT CENTERED IN TILES.
10. ALL MATERIAL AND DEVICES TO BE L.L. LISTED FOR FIRE PROTECTION SERVICE.
11. PROVIDE AUX. DRAWS AS NECESSARY TO COMPLY WITH NFPA 13.

FILE 20160000010

Precision Fire Systems Inc.
782 Monroe Road
Sanford, Florida 32771
Phone: 321-363-1660
Fax: 321-363-1260

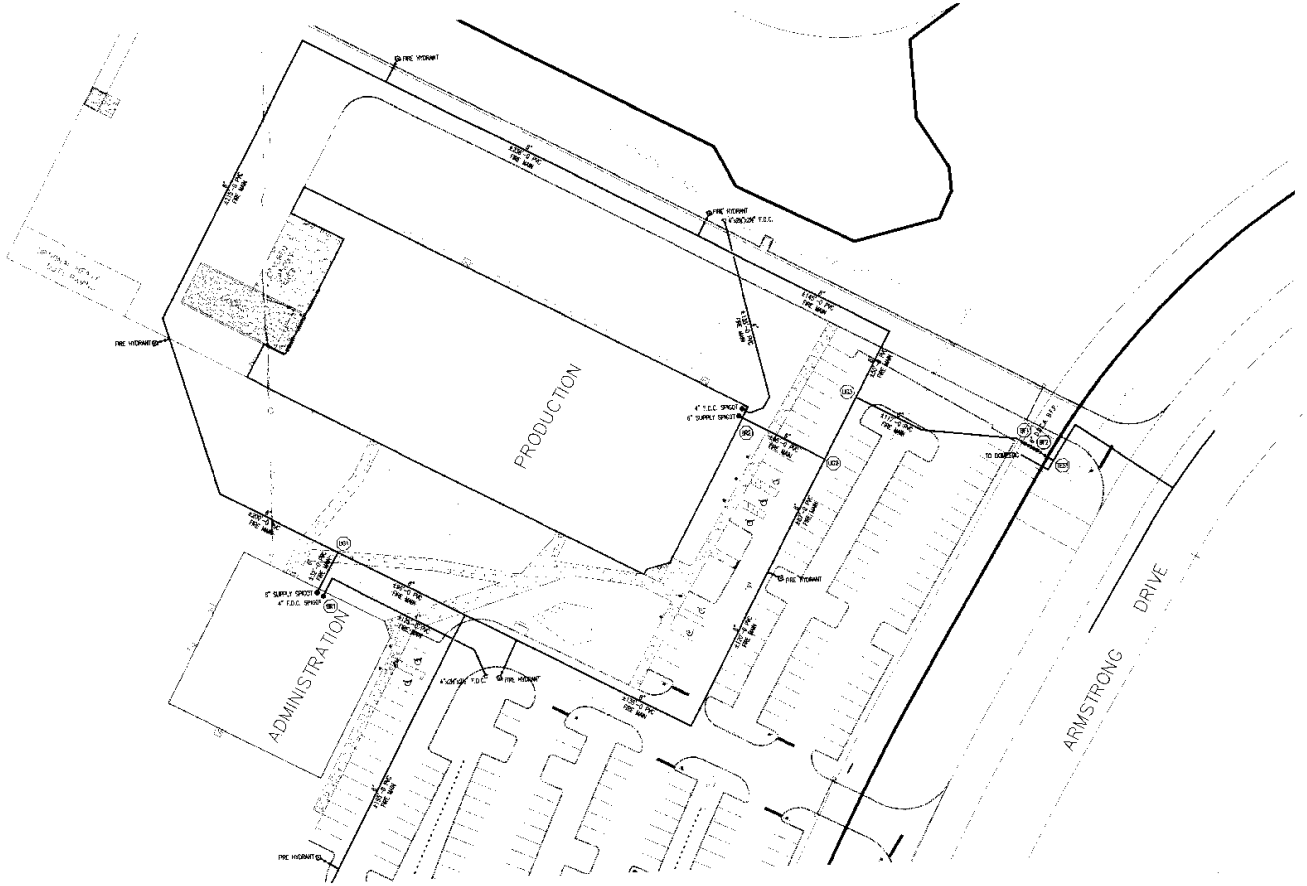
Embraer Aero Seating Technologies
Production Building
1600 Armstrong Drive
Titusville, Florida

Fire Sprinkler Piping Plan

NO	DATE	REVISION DESCRIPTION APPROVALS	BY
0	4-29-16		C.S.S.

CONTRACT # 16016
DRAWN : C.S.S.
CHECKED : F.C.
DATE : 3-29-16
TOTAL HEADS : 372
SCALE : AS NOTED

FP-2
SHEET 2 of 2



Fire Sprinkler Site Plan

FS16-000010
1600 Armstrong Dr.

FLOW TEST DATA	
STATIC	46 PSI
RESIDUAL	30 PSI
FLOW	1000 GPM
DATE	12-16-15
TIME	9:00 AM
LOCATION	ARMSTRONG DRIVE
BY	CITY OF TITUSVILLE

Note:
This site plan is for hydraulic reference only.
Precision is under contract to begin installation 1'-0 above finished floor inside the building.
All dedicated fire mains will be permitted and installed by a licensed site utility contractor.

REVIEWED FOR CODE COMPLIANCE
2018000010
FILE

Precision Fire Systems Inc
788 Monroe Road
Sanford, Florida 32771
Phone: 321-265-1580
Fax: 321-265-1300

Embraer Aero Seating Technologies
Production Building
1600 Armstrong Drive
Titusville — Florida

Fire Sprinkler Site Plan

NO.	DATE	REVISION DESCRIPTION	BY
0	3-29-16		C.S.S.

CONTRACT # 16016
DRAWN : C.S.S.
CHECKED : F.C.
DATE : 3-29-16
TOTAL HEADS : 372
SCALE : AS NOTED

FP-1
SHEET 1 of 2