



- A1  APPROVED  
 A2  APPROVED WITH COMMENTS  
 A3  NOT APPROVED  
 A4  INFORMATION REVIEWED

This approval does not relieve the vendor of his responsibility to meet purchase order conditions relating to duty, specifications, materials, design, construction and delivery requirements.

DATE	CHKD	REVD	APPD
<u>Aug/08/2013</u>	<u>J.W. LEE</u>	<u>S.H. KIM</u>	<u>G.S. KIM</u>

E	17 May 13	Issued For Approval	JS	EE	LC
D	26 Apr 13	Issued For Approval	JS	EE	LC
C	21 Nov 12	Issued For Approval	KB	EE	LC
B	30 Oct 12	Issued For Approval	KB	EE	LC
A	05 Oct 12	Issued For Approval	KB	EE	LC
REV.	DATE	DESCRIPTION	PRED	CHKD	APPD

OWNER :

**ENERJİSA ENERJİ ÜRETİM A.Ş**

PROJECT :

## Tufanbeyli Thermal Power Plant (3 x 150MW)

CONTRACTOR :



SUB-CONTRACTOR :

### Deluge Fire Protection (S.E.A.) Pte Ltd

PREPARED BY	DATE	TITLE :  <b>LOW PRESSURE CO2 INERTING SYSTEM EQUIPMENT DATA SHEETS</b>			
JS	17 May 13				
CHECKED BY	DATE				
EE	17 May 13				
APPROVED BY	DATE				
LC	17 May 13				
JOB NO. (OWNER)	TFB	DOCUMENT NUMBER			REV.
JOB NO. (SKEC)	10014D	TFB-71500-F-VP-2021			<b>E</b>

## Record of Revisions

<u>Rev</u>	<u>Date</u>	<u>Page affected</u>	<u>Description of Revision</u>
B	30 Oct 12	All	Updated New Numbering
C	21 Nov 12	All	Deleted last page and added DS 009 Evaporator
D	26 Apr 13	All	Revised as per Technical Comments – Added International Units
E	17 May 13	All	Revised Document number : - From TFB-71500-F-VP-2023 to TFB-71500-F-VP-2021 & - Revised Index

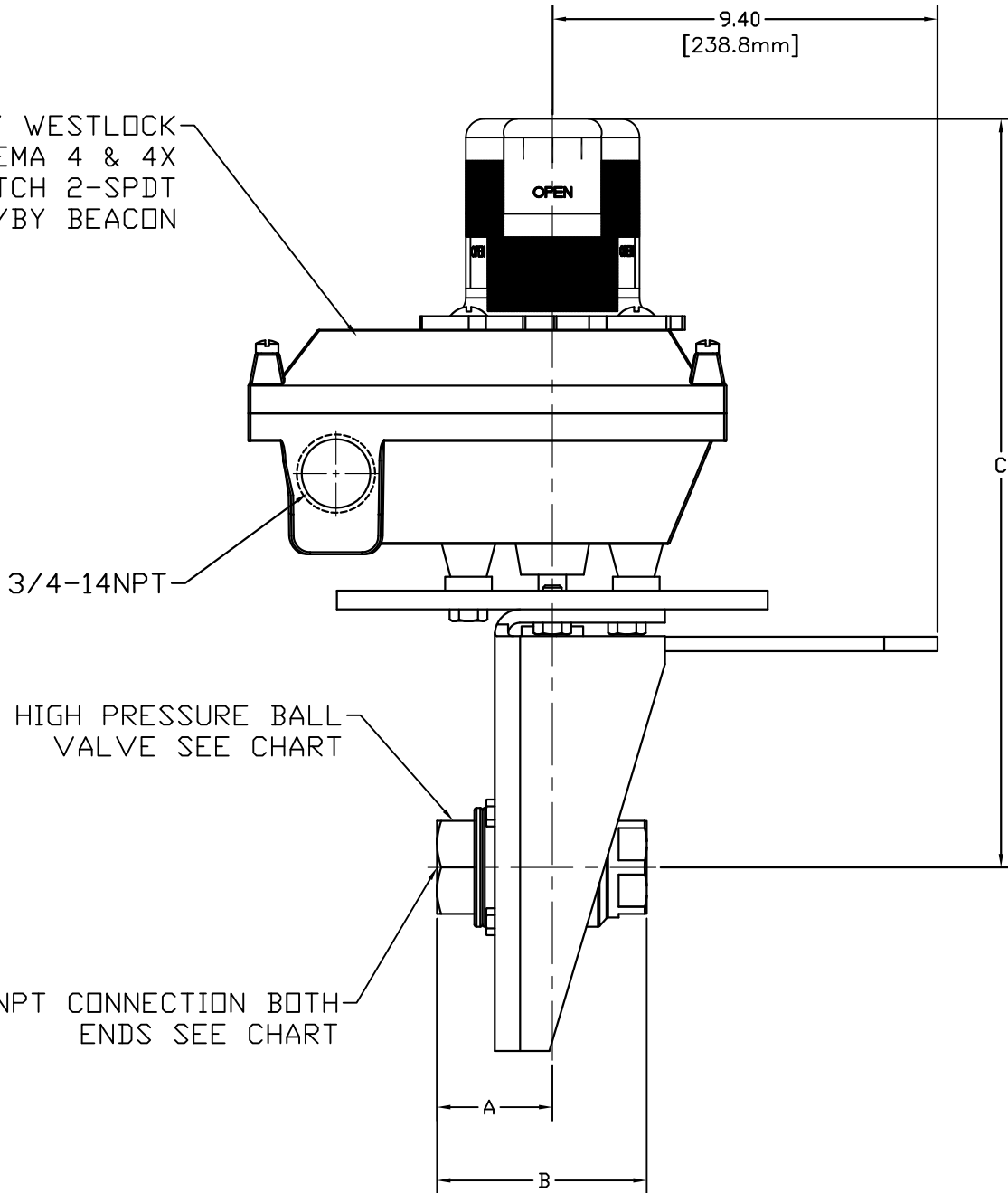
**DATA SHEET INDEX**

No.	Description	Part No.	DS. No	Quantity
1	1" Manual liquid Ball valve with limit switch	70985022	DS 001	2
2	1/2" Manual Vapor Ball valve with limit switch	70985020	DS 002	1
3	3" Butterfly Wafer Type , Tank shutoff Valve with counter flange	10610994	DS 003	1
4	1" Cardox Inerting valve , Pressure operated _ Selector valve	10610663	DS 004	13
5	1" Ball valve w/Extended -steam , with limit switch	70610883	DS 005	1
6	3-Way Solenoid valve - 24Vdc	10610707	DS 006	13
7	1/4" in-line Filter	70860004	DS 007	13
8	1/2" Relief valve, 450 PSI	10610753	DS 008	19
9	Carbon Dioxide Vaporizer - 1500 pound per hour @ 55 deg. F. capacity (60 KW) Nema 4 (400V - 3Ph ) - ( 1" inlet , 1" outlet )	70490095	DS 009	2
10	Check valve , 1 / 2" FNPT , 600 PSI max	70610584	DS 010	96
11	1" Manual Ball valve with lockout	70985077	DS 011	15
12	1 / 2" Inerting tube, SST - Bottom of Bin 1 / 2"	30370598	DS 012	48
13	1" Manual Ball valve with limit switch for manual override Inerting systems	70985071	DS 013	24
15	Discharge pressure switch, Ex-proof 1/4 FNPT 30 PSI , 15 A	70170275	DS 015	12
16	1" strainer	50860004	DS 016	12
17	1" Throttle valve FNPT Bar Stock Globe	70610610	DS 017	13
18	Pressure gauge 0-300 PSI 90-20 bar)	70240021	DS 018	20
19	Orifice nozzle 1 / 2" NPT - w/spring cap, includes a set of accessories	10371308	DS 019	48
	for top nozzle (refer Dwg. TFB-71500-F-VP-2015 sheet 1) as follows :	--	--	
19.1	4" ANSI 150 flange with 1/2" welded coupling	--	--	48
19.2	1/2" flexible hose	--	--	48
19.3	1/2" galvanized pipe L 100mm	--	--	48
19.4	1/2" galvanized pipe L 70mm	--	--	48
19.5	1/2" galvanized union ANSI 3000	--	--	48
19.6	1/2" galvanized reducer 1" X 1/2" ANSI 3000	--	--	48
19.7	1 set of bolts and gasket for 4" flange	--	--	48
20	Union orifice nozzle 1 / 2" NPT, includes a set of accessories for intermediate nozzle (refer Dwg. TFB-71500-F-VP-2015 sheet 2) as follows :	10371321	DS 020	48
		--	--	
20.1	4" ANSI 150 flange with 1/2" welded coupling	--	--	48
20.2	1/2" flexible hose	--	--	48
20.3	1/2" galvanized pipe L 100mm	--	--	48
20.4	1/2" galvanized pipe L 70mm	--	--	48
20.5	1/2" galvanized pipe L 50mm	--	--	48
20.6	1/2" galvanized elbow ANSI 3000	--	--	48
20.7	1/2" galvanized reducer 1" X 1/2" ANSI 3000	--	--	48
20.8	1 set of bolts and gasket for 4" flange	--	--	48
21	Push button station 24Vdc EX-proof w/red light	10430261	DS 021	12
22	Maintenance selector station Sw. Ex-proof	10170086	DS 022	12
23	Alarm horn/strobe Ex-proof 24Vdc	70130186	DS 023	12
24	Control panel - Chemetron Micro SLX , includes the following material:	70101329	DS 024	1
24.1	Handled Programmer - device Chemetron	70101766	--	1
24.2	Isolator - Loop Chemetron	70101362	--	12

No.	Description	Part No.	DS. No	Quantity
24.3	ASM Module (for addressable signal)	70101361	--	12
24.4	Inline releasing device	70101338	--	13
24.5	Module - monitor AI N/O	70101355	--	66
24.6	Module - remote release	70101458	--	13
24.7	Bracket AI/AO	70090173	--	68
24.8	End of line resistor Kit	70101408	--	7
24.9	Module relay	70101359	--	2
24.10	ICM Intelligent communication module	70101390	--	1
25	Battery 12Vdc 18AH with one battery box	70100321	DS 025	2
26	Supervisory Pressure switch	70170178	DS 026	1
27	Discharge station manual momentary CO2	20100140	DS 027	12
28	CO2 8 TON Tank Unit (refer to TFB-71500-F-VP-2010 sheet 1)	--	--	1

Note: Position (14) has been deleted; it is included in Pos. (6)

2004 BY WESTLOCK  
NEMA 4 & 4X  
LIMIT SWITCH 2-SPDT  
W/BY BEACON



VALVE ASSEMBLY GROUP INDEX

GRP. NO.	VALVE SIZE	CHEMETRON'S ASSEMBLY S/N	CHEMETRON'S * BALL VALVE S/N	DIMENSIONS			ASSY WT. IN LBS.
				A	B	C	
4	1	70985022	70985077	1.92 [48.8mm]	3.60 [91.4mm]	9.55 [242.6mm]	9 [4.1kg]

1. LISTINGS:

-ULC, FM...

2. TECHNICAL DATA:

- APPLICATION: ARGONITE, FM-200, LPCO2, HPCO2
- RATED WORKING PRESSURE: 1/2"-1" 4500PSI (310 BAR)
- WEIGHT: SEE CHART
- TEMPERATURE RANGE (INDOOR & OUTDOOR) N/A
- ENCLOSURE RATINGS: NEMA 4 AND 4X
- FACTORY SETTINGS: N/A
- 2-SPDT LIMIT SWITCH

3. MATERIAL:

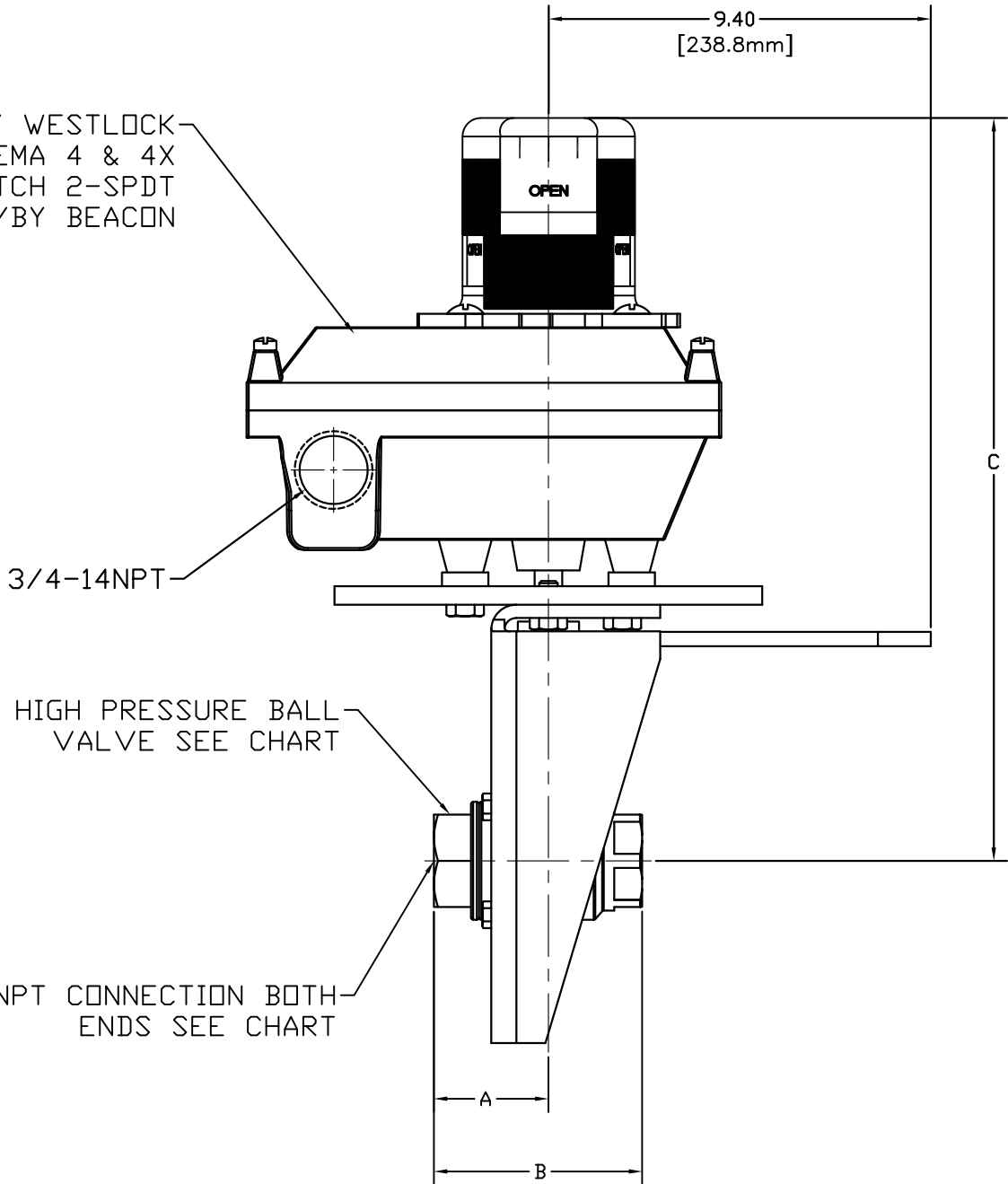
- BODY & BODY CAP: CARBON STEEL
- BALL: 316 STAINLESS STEEL
- STEM: 17-4PH STAINLESS STEEL

4. NOTES:

\* THIS IS CHEMETRON'S ENGINEERING EQUIVALENT BALL VALVE S/N FOR OPTIONAL REPAIR/REPLACEMENT.  
COMES WITH LOCK OPEN/CLOSED FEATURE

XXXXXXXXXXA

2004 BY WESTLOCK  
NEMA 4 & 4X  
LIMIT SWITCH 2-SPDT  
W/BY BEACON



**VALVE ASSEMBLY GROUP INDEX**

GRP. NO.	VALVE SIZE	CHEMETRON'S ASSEMBLY S/N	CHEMETRON'S * BALL VALVE S/N	DIMENSIONS			ASSY WT. IN LBS.
				A	B	C	
2	1/2	70985020	70985075	1.55 [39.4mm]	2.73 [69.3mm]	9.25 [235mm]	7 [3.2kg]

**1. LISTINGS:**

-ULC, FM...

**2. TECHNICAL DATA:**

- APPLICATION: ARGONITE, FM-200, LPCO2, HPCO2
- RATED WORKING PRESSURE: 1/2"-1" 4500PSI (310 BAR)
- WEIGHT: SEE CHART
- TEMPERATURE RANGE (INDOOR & OUTDOOR) N/A
- ENCLOSURE RATINGS: NEMA 4 AND 4X
- FACTORY SETTINGS: N/A
- 2-SPDT LIMIT SWITCH

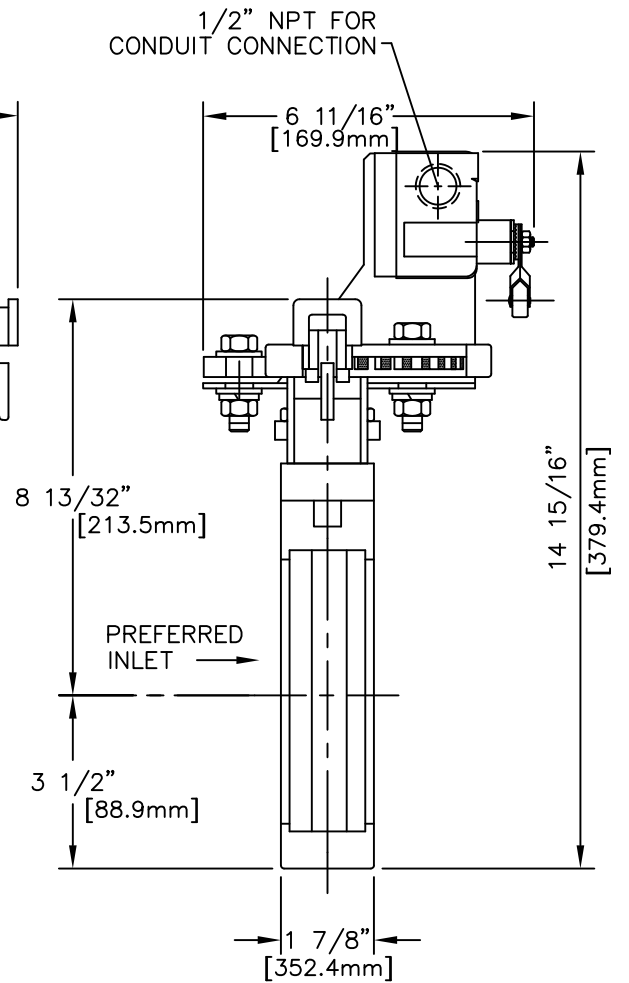
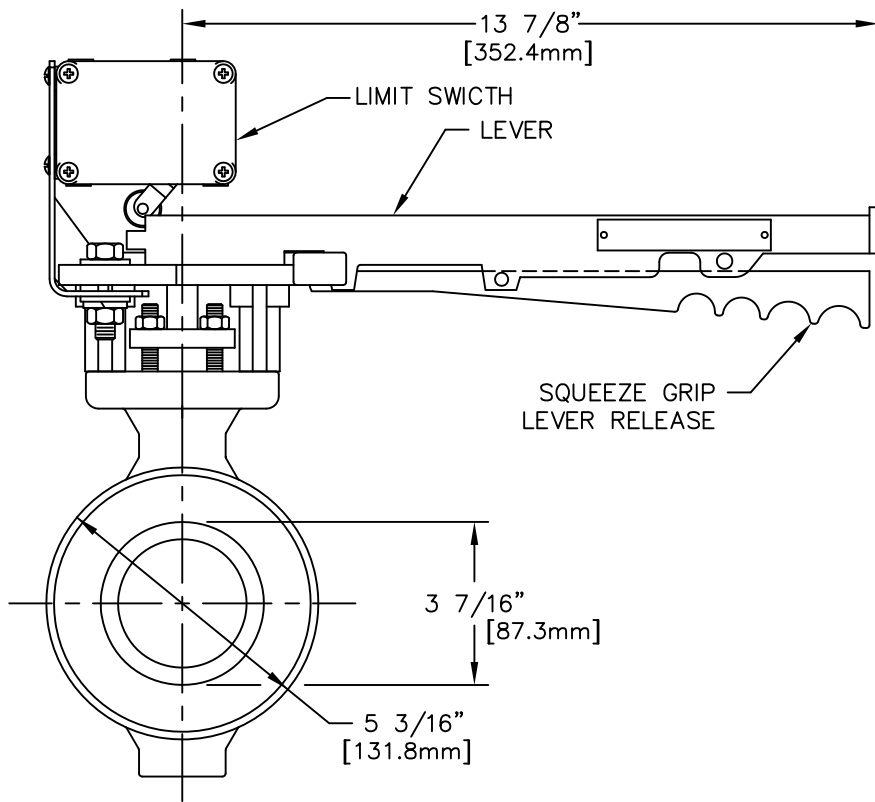
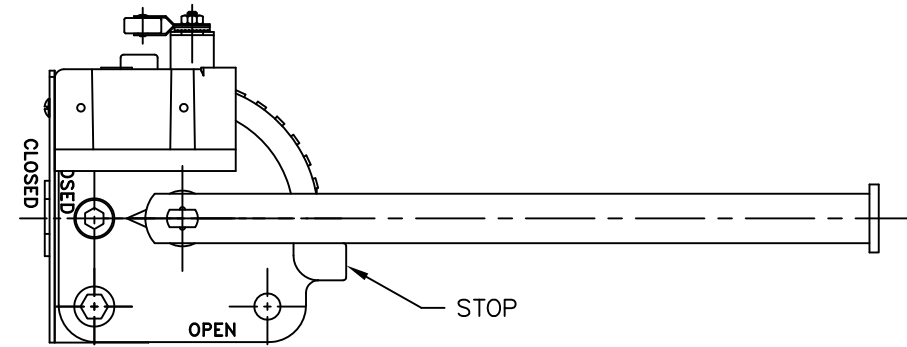
**3. MATERIAL:**

- BODY & BODY CAP: CARBON STEEL
- BALL: 316 STAINLESS STEEL
- STEM: 17-4PH STAINLESS STEEL

**4. NOTES:**

\* THIS IS CHEMETRON'S ENENGINEERING EQUIVALENT BALL VALVE S/N FOR OPTIONAL REPAIR/REPLACEMENT.  
COMES WITH LOCK OPEN/CLOSED FEATURE

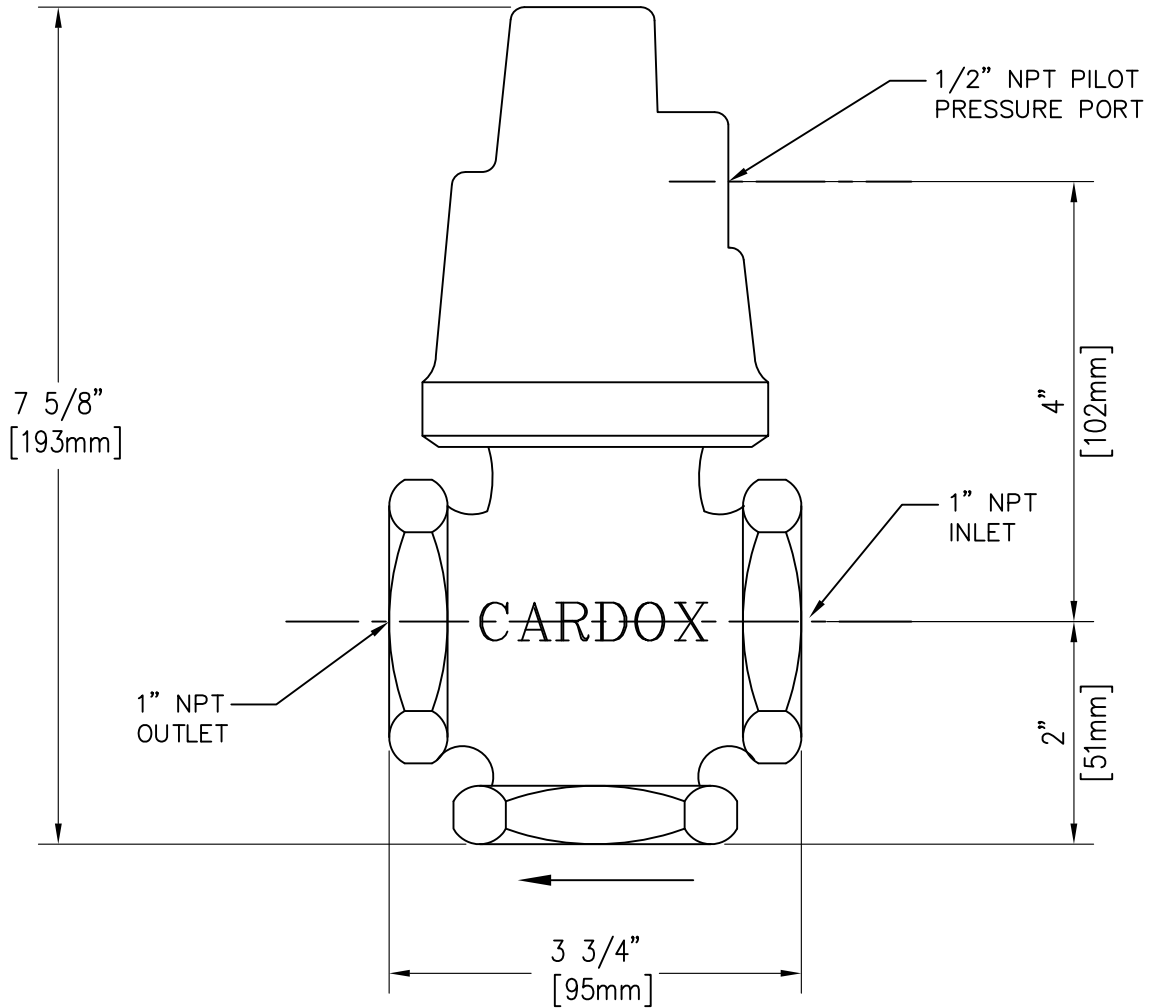
XXXXXXXXXXA



**LIMIT SWITCH DATA:**

SNAP SWITCH – UL LISTED
CONTACT RATING:
15 AMP. – 125, 250 AND 480 VAC
1/8 HP – 125 VAC
1/2 AMP. – 125 VDC
1/4 HP – 250 VAC
1/4 AMP. – 250 VDC
CONTACT ARRANGEMENT: 1 NO AND 1 NC
CONTACT POSITION NORMAL WHEN VALVE IS FULLY OPEN.
POSITION TRANSFER WHEN VALVE STARTS TO CLOSE.

XXXXXXXXXXA



MATERIALS	
BRASS	BODY, CAP, HEAD, PISTONS, DISC HOLDER & STEM
STAINLESS STEEL	STEM SPRING & BALLS
NEOPRENE	DISC
POLYURETHANE	O-RINGS

WEIGHT: 3.65 KGS, W.P. 2000 PSI

NOTE:  
UL - LISTED  
FM APPROVED

46218

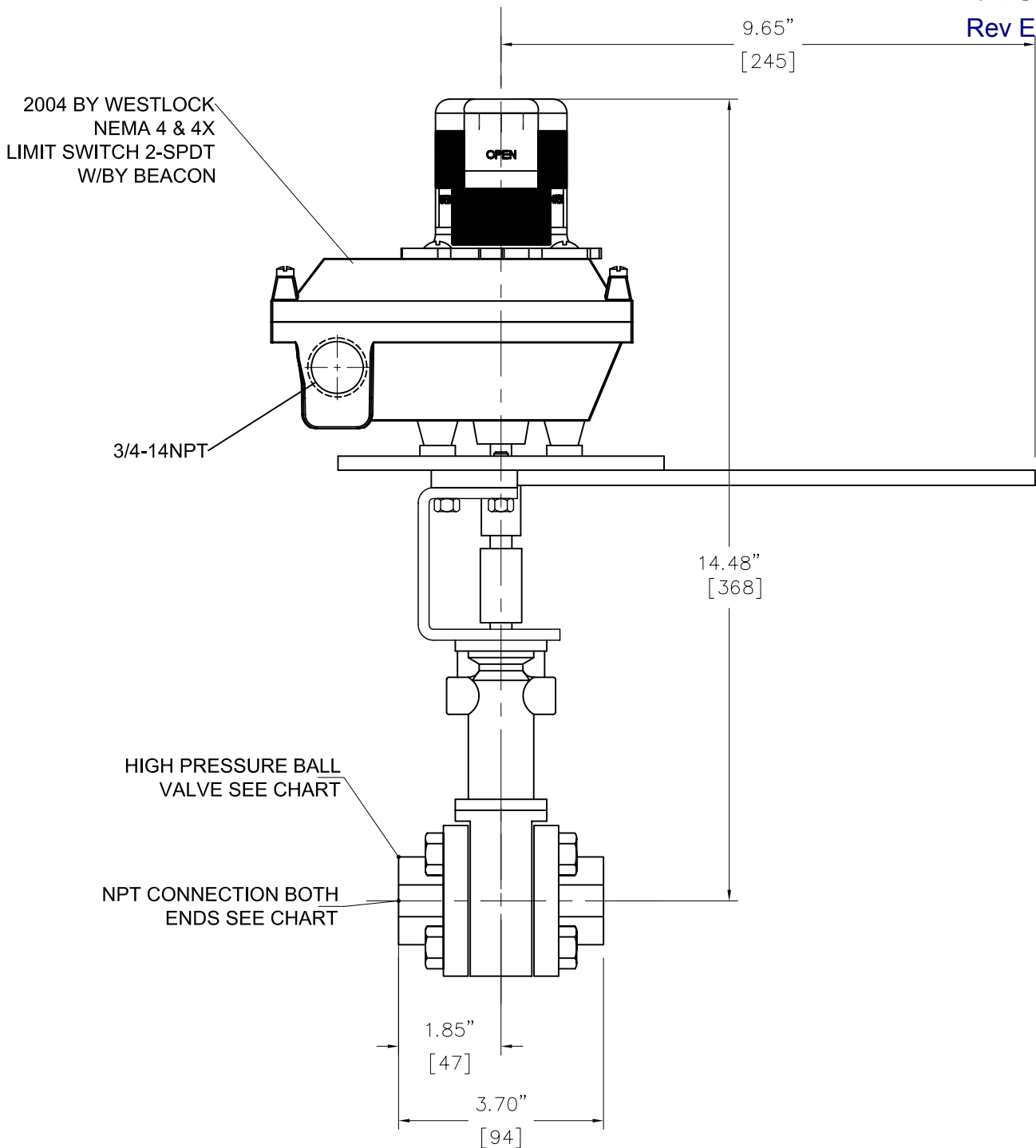
**CHEMETRON**  
Fire Systems <sup>TM</sup>

DESCRIPTION 1" CARDOX VALVE

STOCK NO. 10610663

INFORMATION PRESSURE OPERATED





1. LISTINGS:

-ULC, FM....

2. TECHNICAL DATA:

- APPLICATION: ARGONITE, FM-200, LPCO2, HPCO2
- RATED WORKING PRESSURE: 1/2"-1" 4500PSI, 1 1/4"-2" 3000PSI
- WEIGHT: SEE CHART
- TEMPERATURE RANGE (INDOOR & OUTDOOR) N/A
- ENCLOSURE RATINGS: NEMA 4, 4X, 7, AND 9
- FACTORY SETTINGS: N/A
- EX-PROOF 2-SPDT LIMIT SWITCH

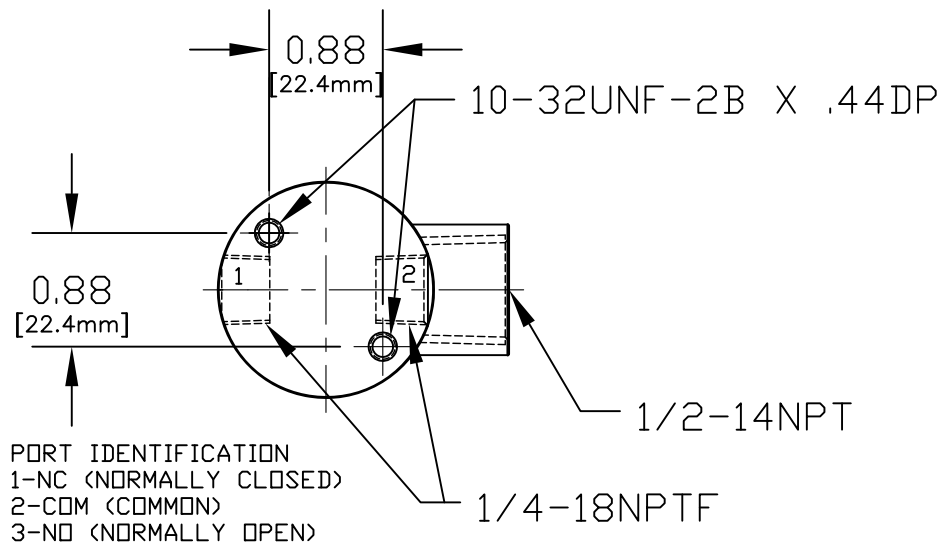
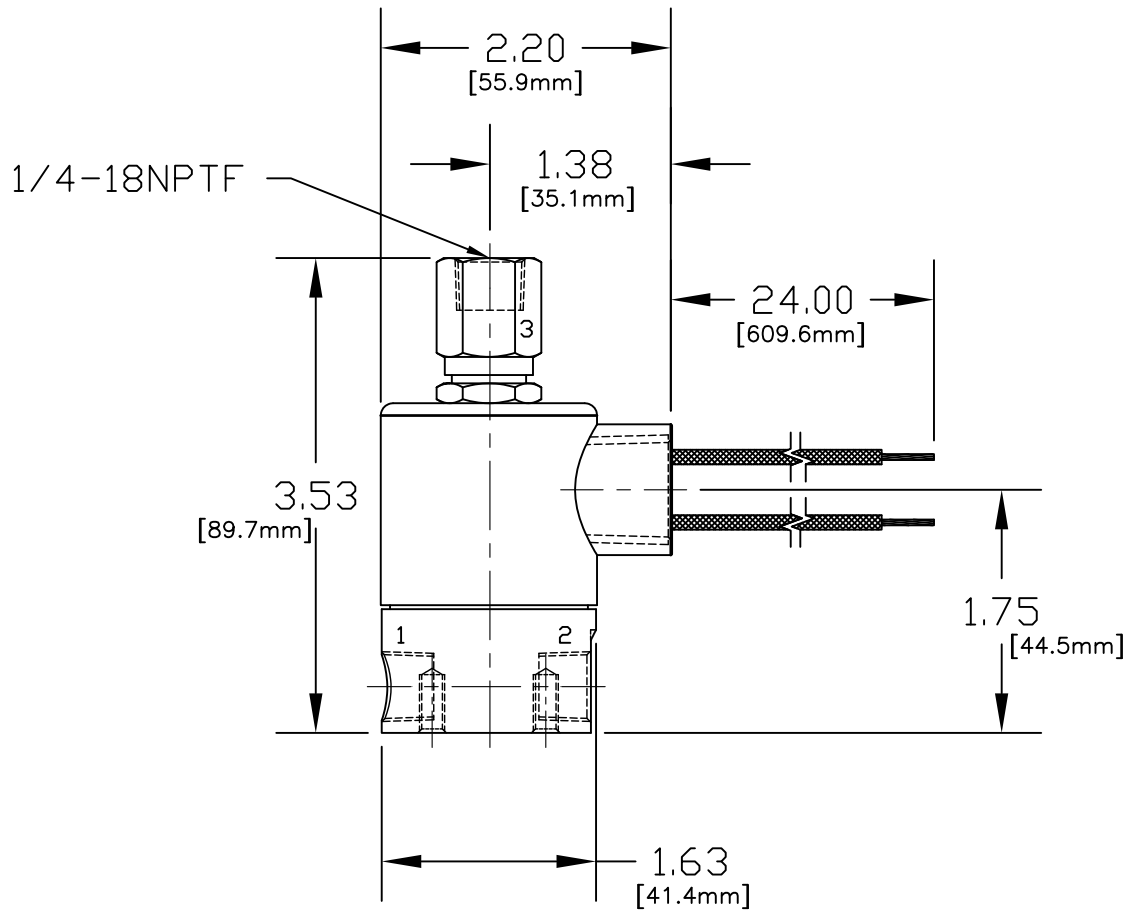
3. MATERIAL:

- BODY & BODY CAP: CARBON STEEL
- BALL: 316 STAINLESS STEEL
- STEM: 17-4PH STAINLESS STEEL

4. NOTES:

\* THIS IS CHEMETRON'S ENNGINEERING EQUIVALENT BALL VALVE S/N FOR OPTIONAL REPAIR/REPLACEMENT. COMES WITH LOCK OPEN/CLOSED FEATURE

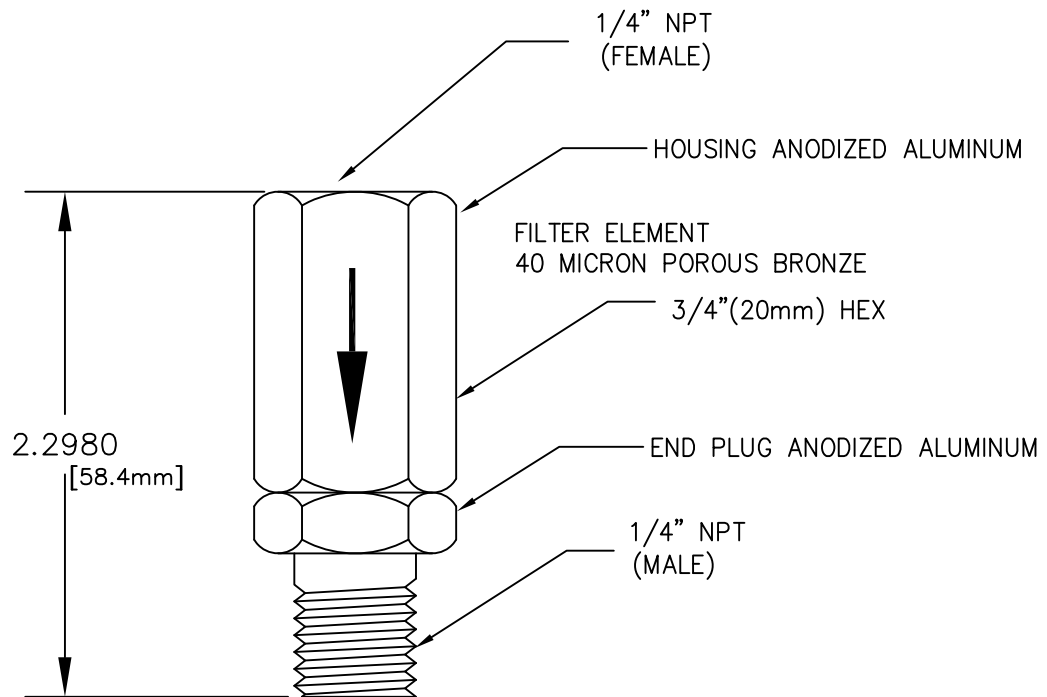
DESCRIPTION	STOCK NO.	INFORMATION
1" BALL VALVE w/LIMIT SWITCH-EXTENDED STEM	70610883	SPDT & W/P & EX-PROOF



- NOTE:  
 UL - LISTED  
 THREE-WAY MULTI-PURPOSE SOLENOID VALVE.  
 2. OPERATING PRESSURE: 300 PSI [20.7bar]  
 3. RATING: 0.396 A @ 24 VDC  
 4. WEIGHT: 1.9 LBS [0.9kg]

46621

<b>CHEMETRON</b> Fire Systems <sup>TM</sup>	DESCRIPTION	3-WAY SOLENOID VALVE	(19)
	STOCK NO.	10610707	
		TYPE "L" (105°C) MOLED COIL	



NOTE:  
UL - LISTED  
WEIGHT: 0.4LBS [0.2kg]

46621

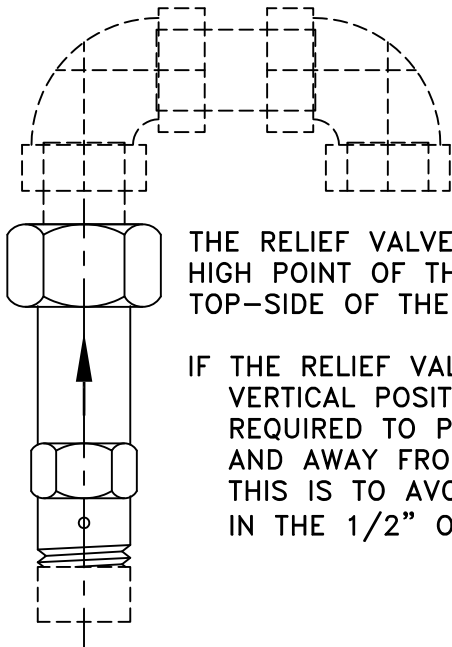
**CHEMETRON**  
Fire Systems <sup>TM</sup>

DESCRIPTION  
1/4" IN-LINE FILTER

10

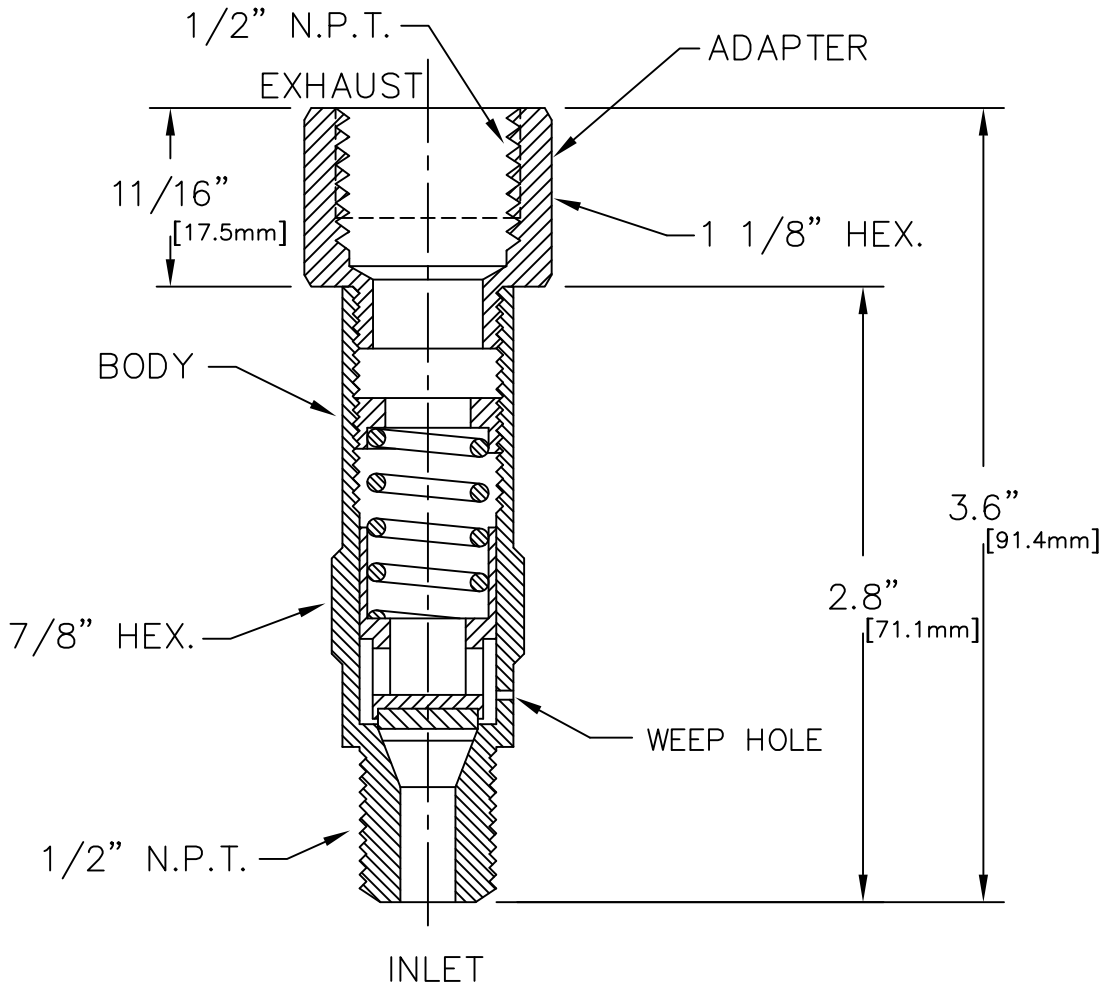
STOCK NO.  
70860004

INFORMATION  
1000 PSI WORKING PRESSURE



THE RELIEF VALVE SHOULD ALWAYS BE LOCATED AT THE HIGH POINT OF THE PIPING SECTION AND EXIT FROM THE TOP-SIDE OF THE PIPE.

IF THE RELIEF VALVE IS MOUNTED IN THE HORIZONTAL OR VERTICAL POSITION, ADDITIONAL FITTINGS ARE REQUIRED TO POSITION THE RELIEF OUTLET DOWN AND AWAY FROM PERSONNEL. THIS IS TO AVOID DIRT AND WATER BUILD-UP IN THE 1/2" OUTLET. (FITTINGS BY OTHERS)



NOTE:

FM APPROVED

1. DESCRIPTION:

POP-TYPE SAFETY RELIEF VALVE  
 BRASS BODY  
 STAINLESS STEEL SPRING,  
 PTFE (TEFLON) SEAT DISC

2. SET AT: 450 PSIG [31bar]

3. WEIGHT: 0.5 LBS [0.3kg]

23215

<b>CHEMETRON</b> Fire Systems <sup>TM</sup>	DESCRIPTION 1/2" SAFETY RELIEF VALVE, 450 PSI		3
	STOCK NO. 10610753	INFORMATION —	



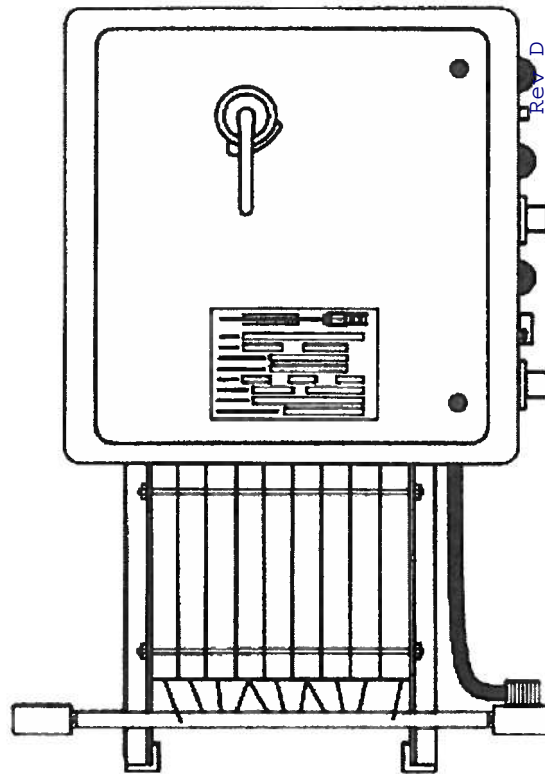
Chemetron Fire Systems  
16 W 361 S Frontage Road, Suite 125  
Burr Ridge, IL 60527 USA  
Tel.: +1 708.283.4405 Fax: +1 708.748.2847  
manny.velazquez@fs.utc.com  
www.chemetron.com

## Electric Direct to Process Vaporizers

### Standard Features

- Replaceable heating elements
  - Weather proof cabinets
- Complete separation of electrical and plumbing systems
  - Accurate temperature control
  - Silicone rubber sealed heater terminals
  - Circuit breaker with door interlock
- High temperature limit protection on each heater segment
  - Capacities to 200 KW in single cabinet
    - Pilot light indicators
  - Low outlet gas temperature cut off systems
    - Electric Solenoid valves

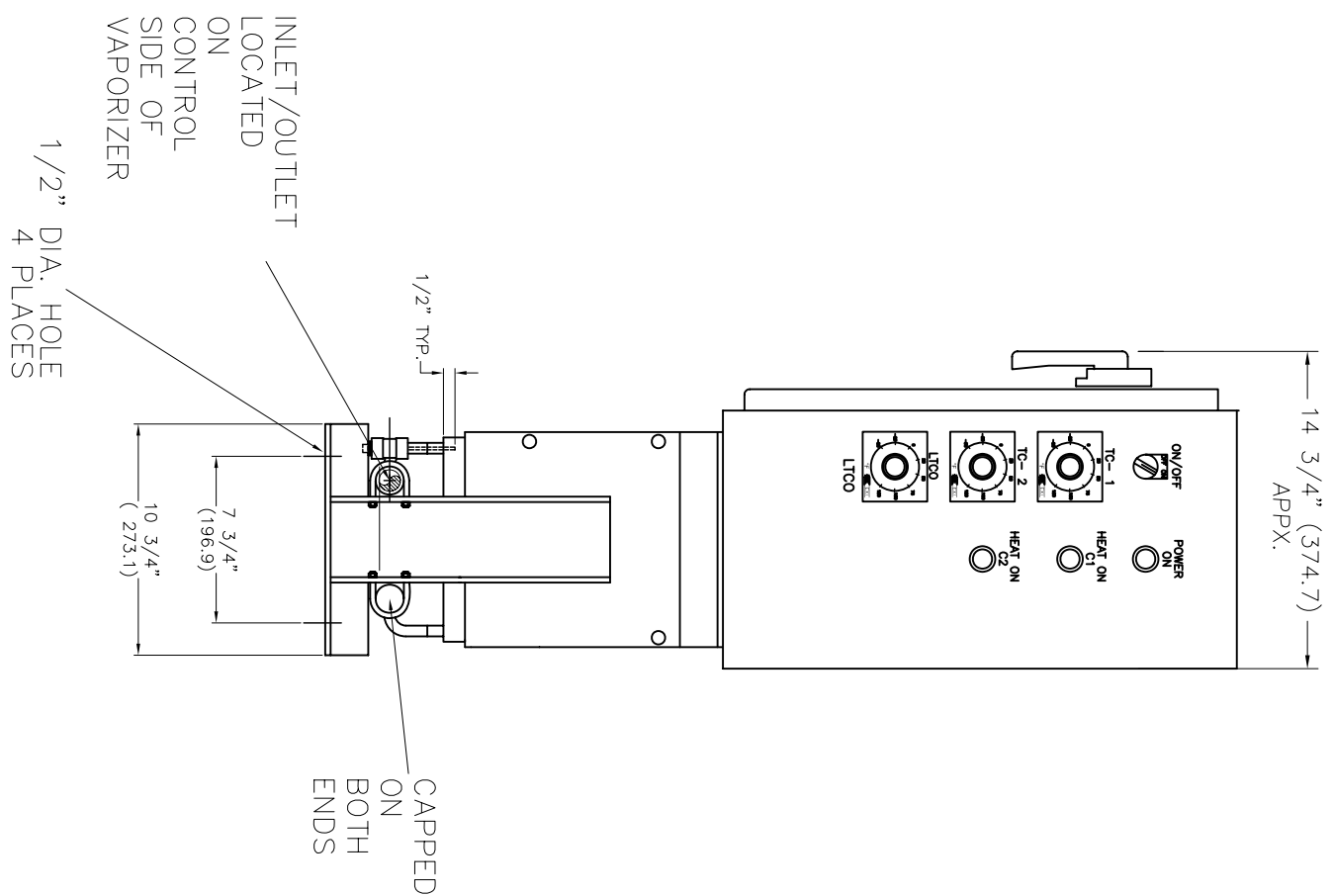
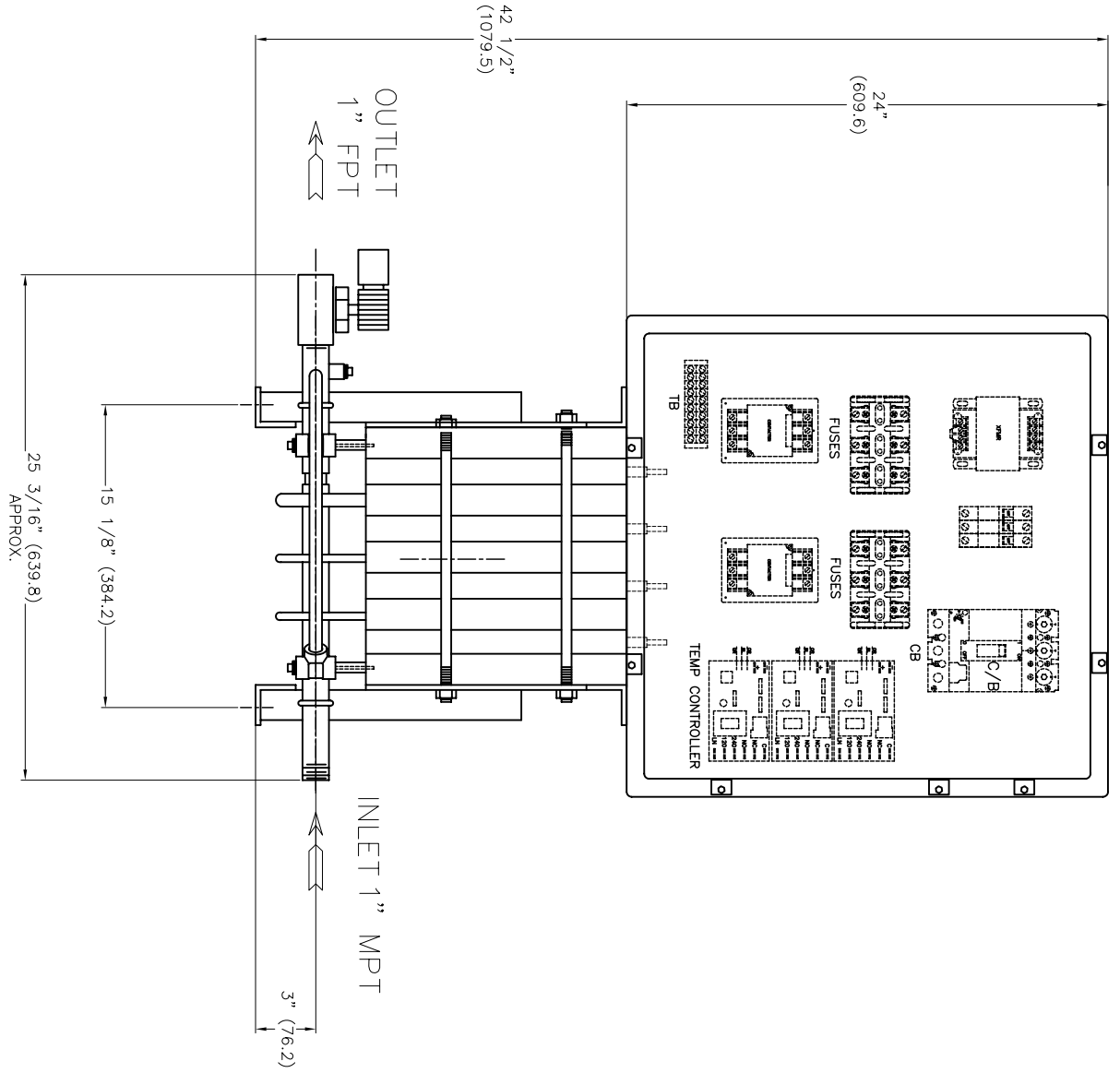
June 5, 2007



KW	In*	Out*	Volts	Amps	BC	Capacity		WT LBS	WT KGS	KGS/HR/ CO2
						Lbs/Hr/ CO <sub>2</sub>	SCFH S <sub>N</sub> /O <sub>2</sub> /AR			
15	1/2	1/2	220/440	40/20	6	375	3750	100	45.4	170.1
30	3/4	3/4	220/440	80/40	8 1/8	750	7500	150	68.1	340.2
45	3/4	3/4	220/440	120/60	10 1/4	1125	11250	180	81.7	510.3
60	1	1	220/440	160/80	13	1500	15000	210	95.3	680.4
75	1	1	220/440	200/100	15 1/4	1800	18750	240	108.9	816.5
90	1	1	440	120	17 1/2	2100	22500	275	124.8	952.6
105	1	1	440	140	19 3/4	2500	26500	310	140.7	1134.0
120	1	1	440	160	22	2900	30000	345	156.5	1315.5
135	1	1	440	180	24 1/8	3200	33750	375	170.1	1451.5
150	1	1 1/2	440	200	26 3/8	3600	37500	405	183.8	1633.0
165	1	1 1/2	440	220	28 1/2	4000	41250	440	199.6	1814.4
180	1	1 1/2	440	240	30 3/4	4300	45000	575	260.9	1950.5
195	1	1 1/2	440	260	33	4700	48750	605	274.5	2131.9

BC is footprint width dimension

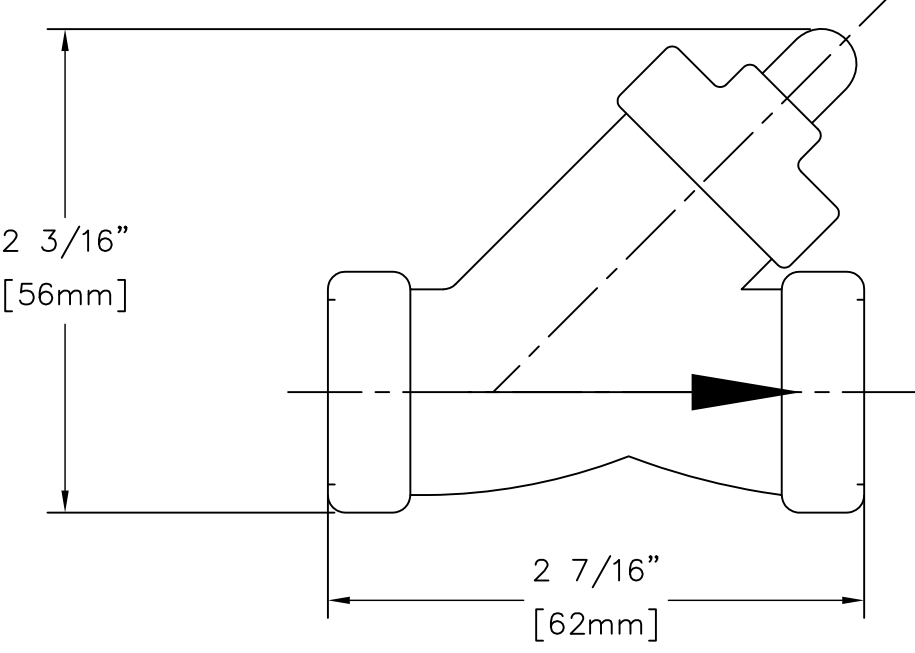
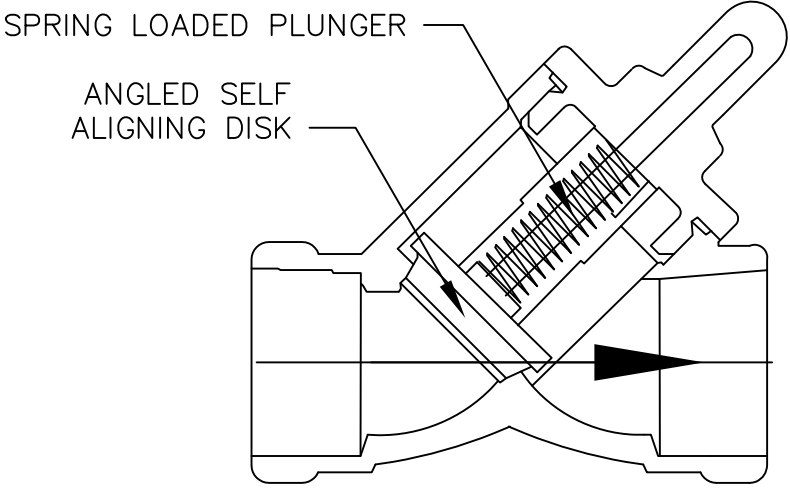




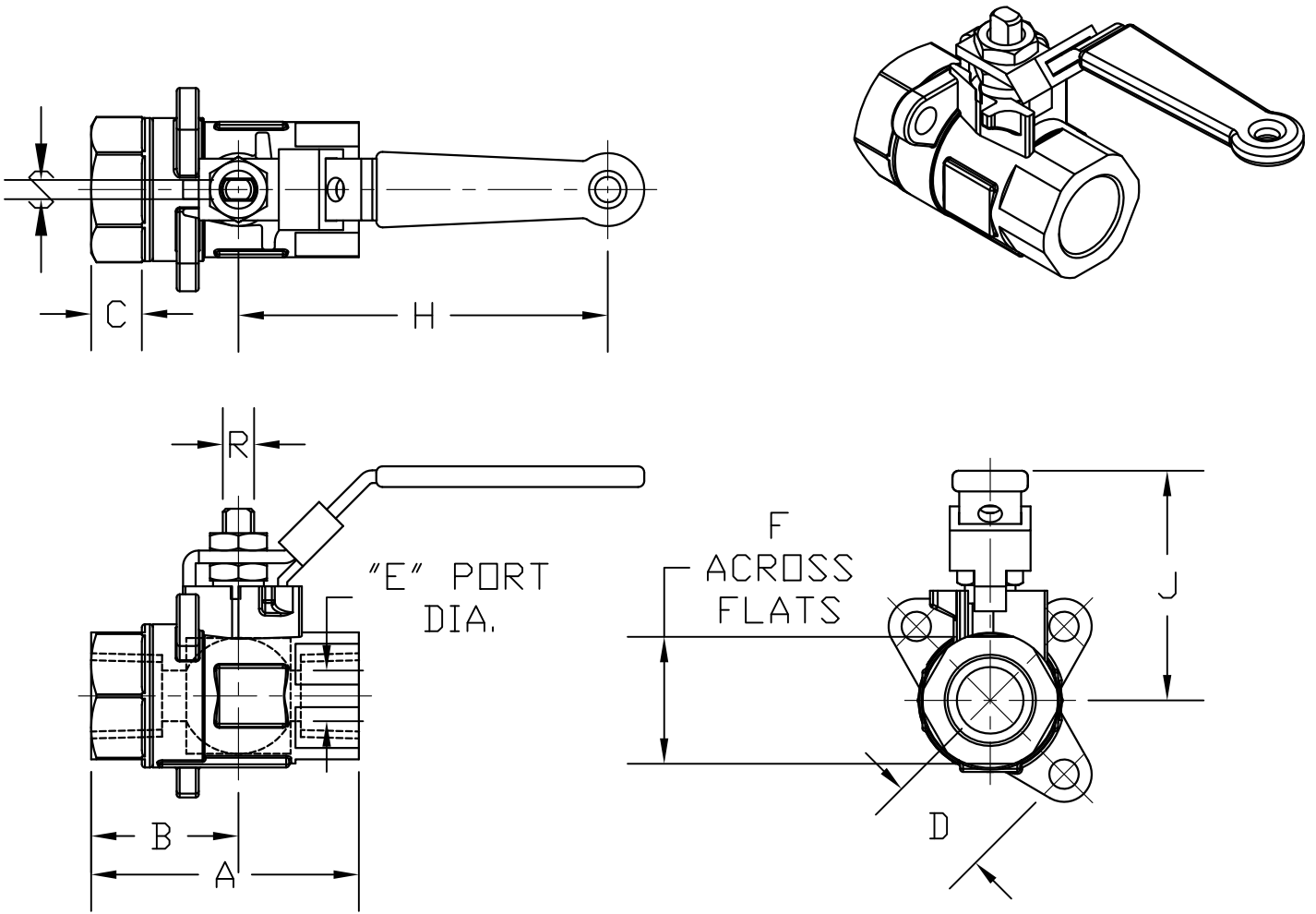
DESCRIPTION:	ELECTRIC VAPORIZER FOR CO2 SERVICE
FINISH:	GRAY POWDER COAT
ELECTRICAL RATING:	400V - 3 $\phi$ - 50HZ
CURRENT DRAW:	73.33 AMPS
HEATER POWER:	60 KW
CAPACITY @ 70F:	1,500 LBS/HR
CAPACITY @ 0F:	1,738 LBS/HR
WEIGHT:	210 LBS
STOCK NUMBER:	70490095







XXXXXXXXXXA



VALVE SIZE	APPROXIMATE DIMENSIONS - INCHES										APPROX. WT. LB	VALVE STYLE	
	A	B	C	D	E	F	H	J	R	S			
1"	3.60	1.92	0.50	1.38	0.88	1.75	5.50	3.10	0.50	0.31	2.8	REDUCED PORT	
	[mm]	[91.4]	[48.8]	[12.7]	[35.1]	[22.4]	[44.5]	[139.7]	[78.7]	[12.7]	[7.9]	[1.3kg]	

NOTE:

UL - LISTED

1. MATERIAL:

BODY: CARBON STEEL

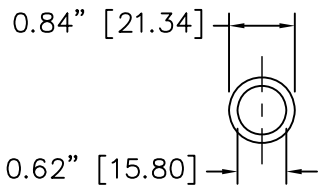
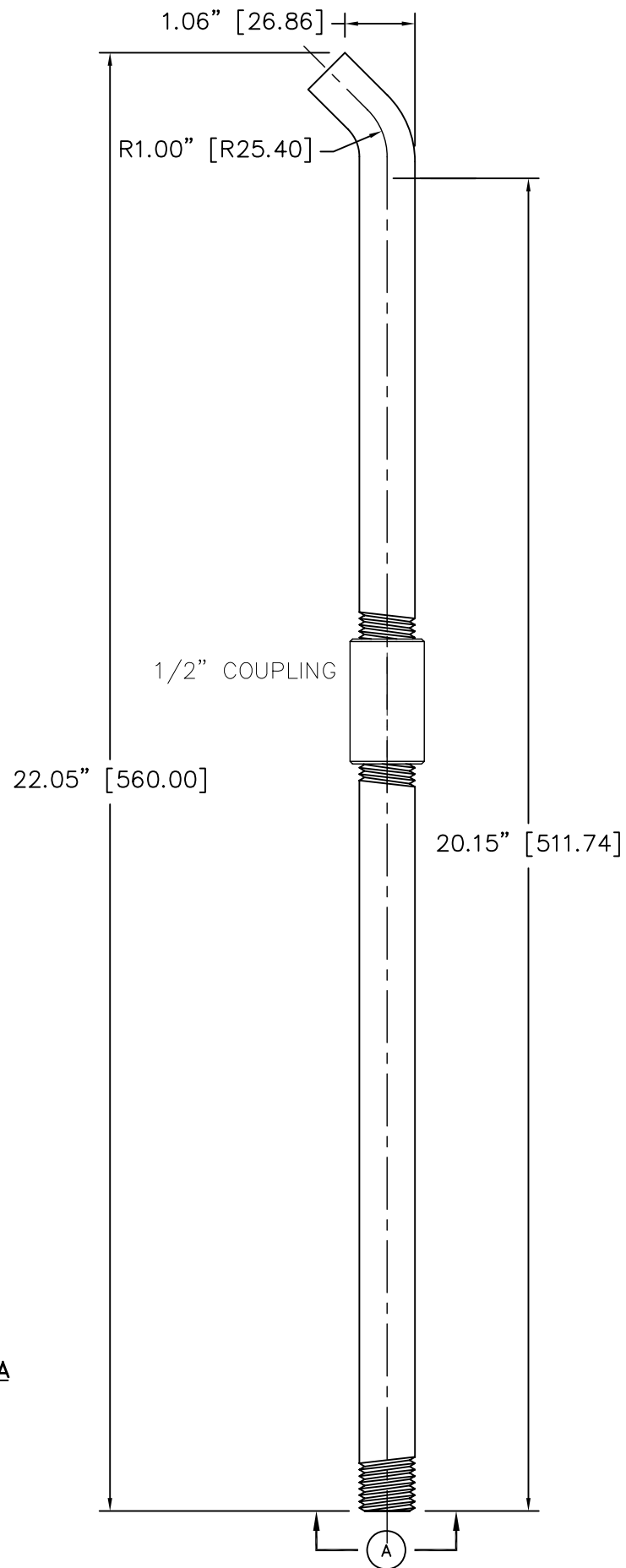
BODY CAP: CARBON STEEL

BALL: 316 STAINLESS STEEL

STEM: 17-4PH STAINLESS STEEL

2. WORKING PRESSURE: 4500 PSI [310.3bar]

XXXXXXXXXXA



SECTION A

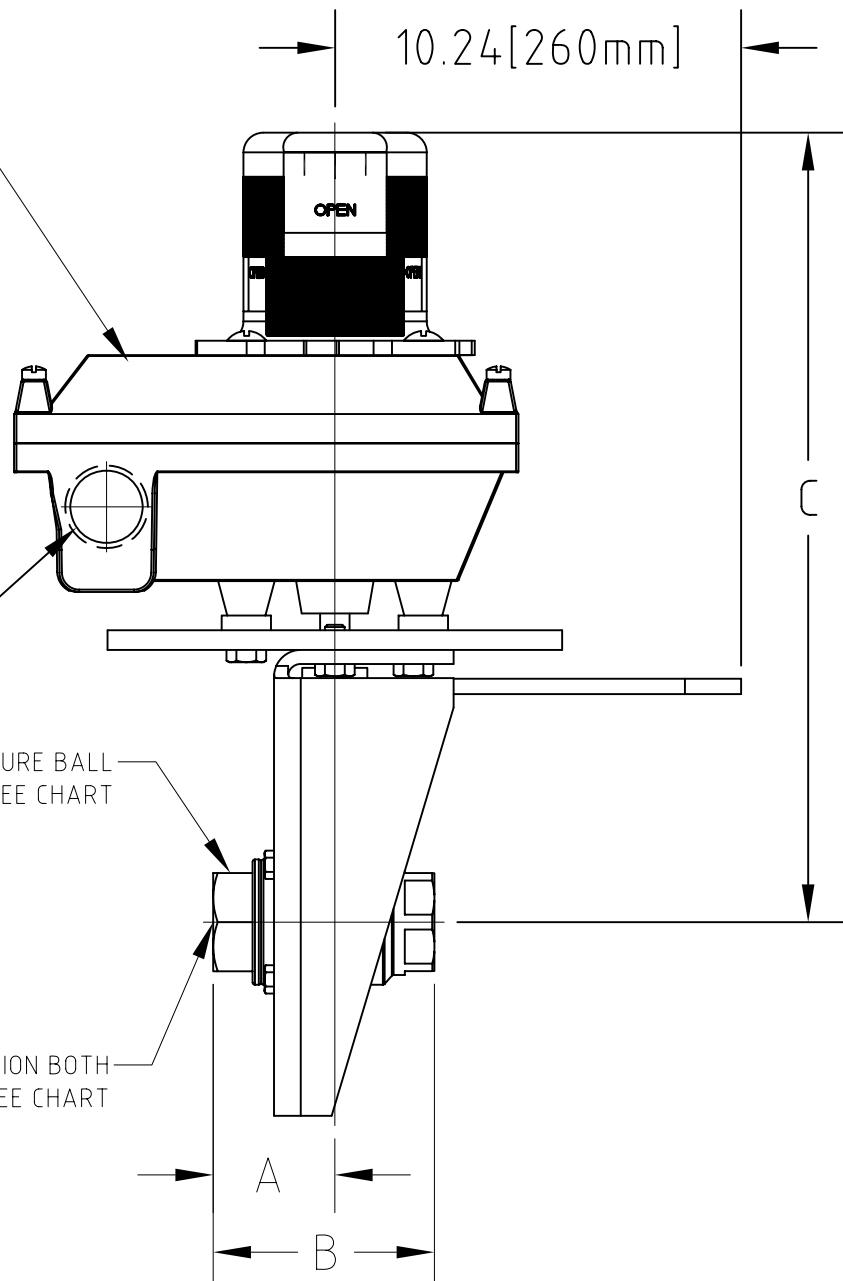
2004 BY WESTLOCK  
 NEMA 4 & 4X  
 LIMIT SWITCH 2-SPDT  
 W/BY BEACON

3/4-14NPT

HIGH PRESSURE BALL  
 VALVE SEE CHART

NPT CONNECTION BOTH  
 ENDS SEE CHART

10.24 [260mm]



VALVE ASSEMBLY GROUP INDEX

GRP. NO.	VALVE SIZE	CHEMETRON'S ASSEMBLY S/N	CHEMETRON'S * BALL VALVE S/N	DIMENSIONS			ASSY WT. IN LBS.
				A	B	C	
4	1	70985071	70985077	1.92 (48.8mm)	3.60 (91.5mm)	10.4 (265mm)	9 (4.1Kg)

1. LISTINGS:

-ULC, FM....

2. TECHNICAL DATA:

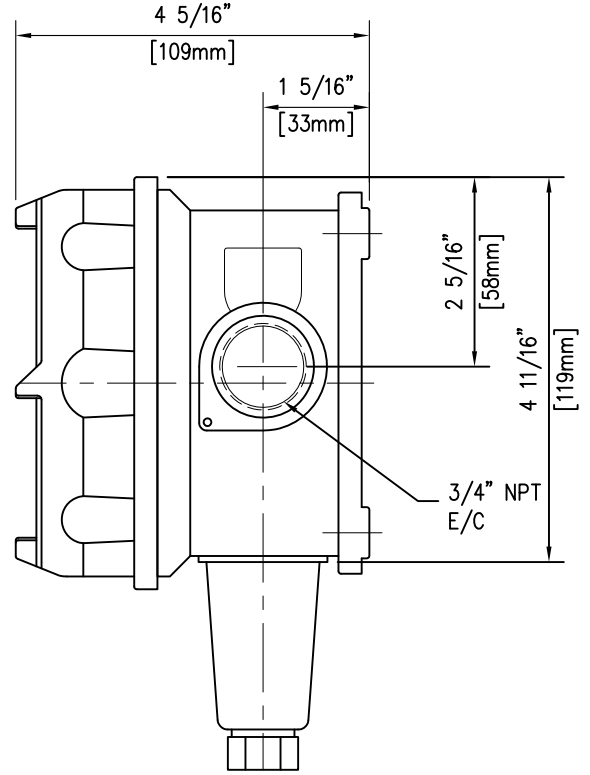
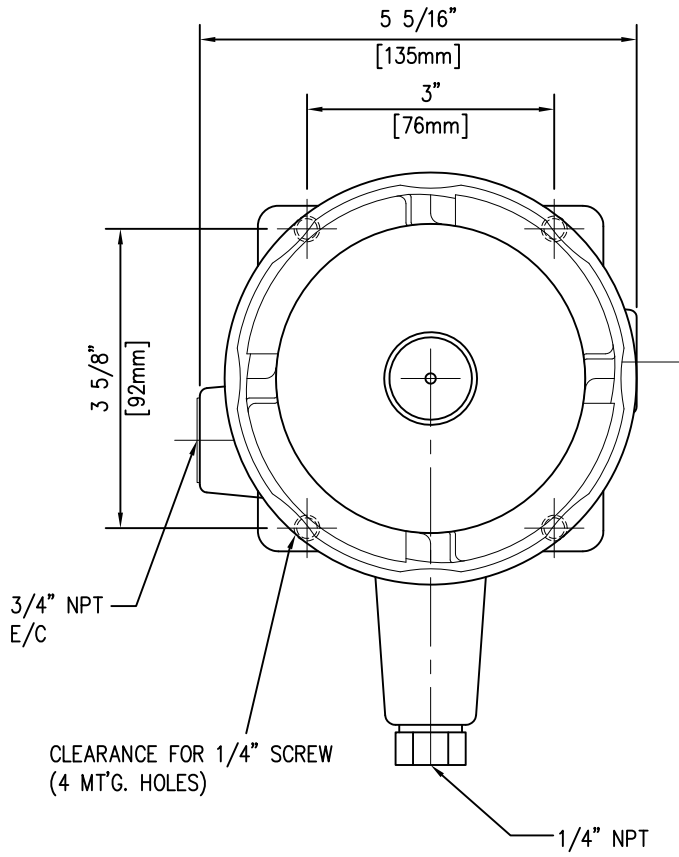
- APPLICATION: ARGONITE, FM-200, LPCO2, HPCO2
- RATED WORKING PRESSURE: 1/2"-1" 4500PSI, 1 1/4"-2" 3000PSI
- WEIGHT: SEE CHART
- TEMPERATURE RANGE (INDOOR & OUTDOOR) N/A
- ENCLOSURE RATINGS: NEMA 4, 4X, 7, AND 9
- FACTORY SETTINGS: N/A
- EX-PROOF 2-SPDT LIMIT SWITCH

3. MATERIAL:

- BODY & BODY CAP: CARBON STEEL
- BALL: 316 STAINLESS STEEL
- STEM: 17-4PH STAINLESS STEEL

4. NOTES:

\* THIS IS CHEMETRON'S ENENGINEERING EQUIVALENT BALL VALVE S/N FOR OPTIONAL REPAIR/REPLACEMENT.  
 COMES WITH LOCK OPEN/CLOSED FEATURE

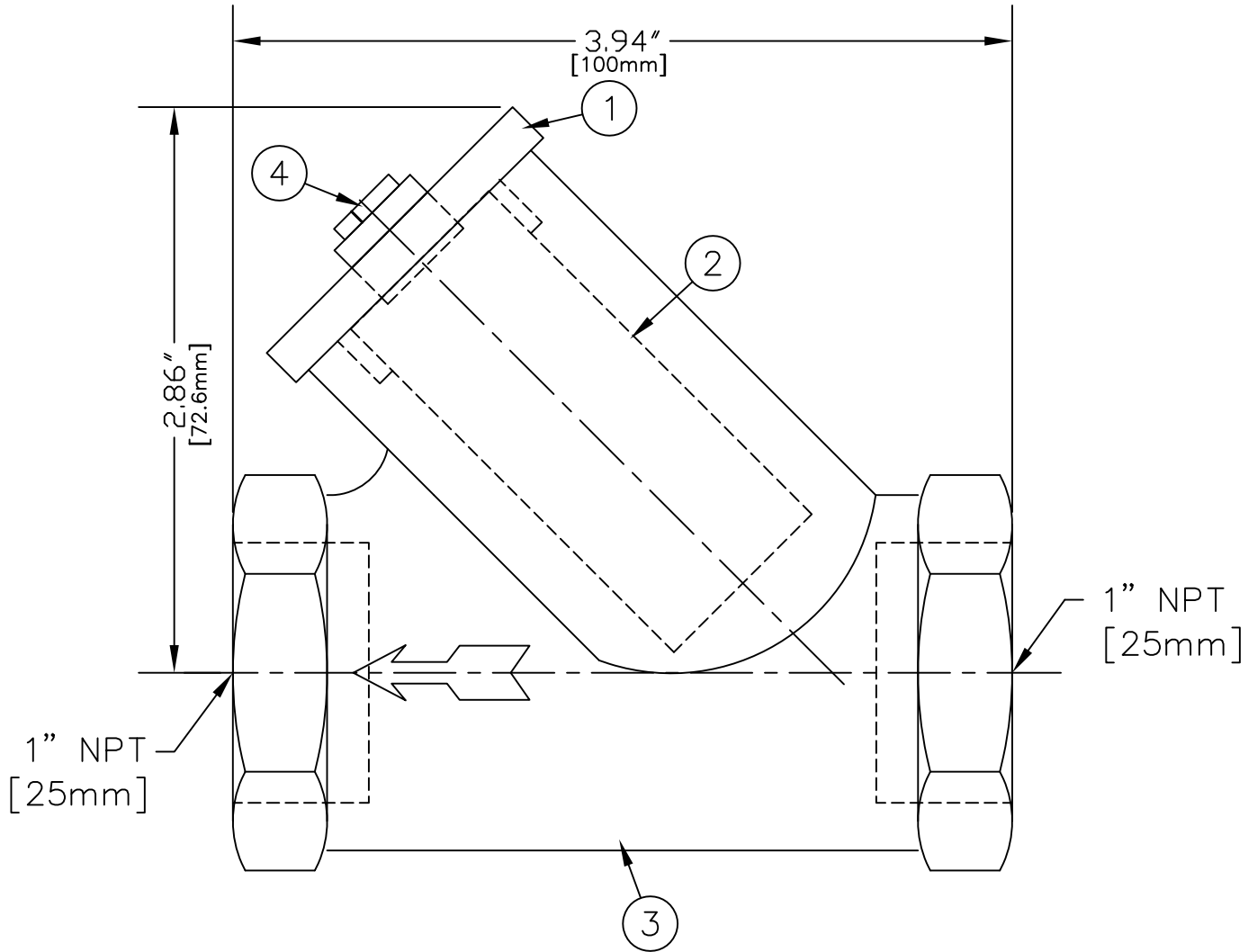


EXPLOSION PROOF PRESSURE SWITCH  
 TYPE J120 MODEL 703  
 FACTORY SET TO CLOSE @30 PSI [2.1bar]  
 ONE SPDT OUTPUT; EPOXY COATED ENCLOSURE  
 INTERNAL ADJUSTMENT WITH NO REFERENCE SCALE  
 RATING: 15A @ 125/250/480 VAC RESISTIVE

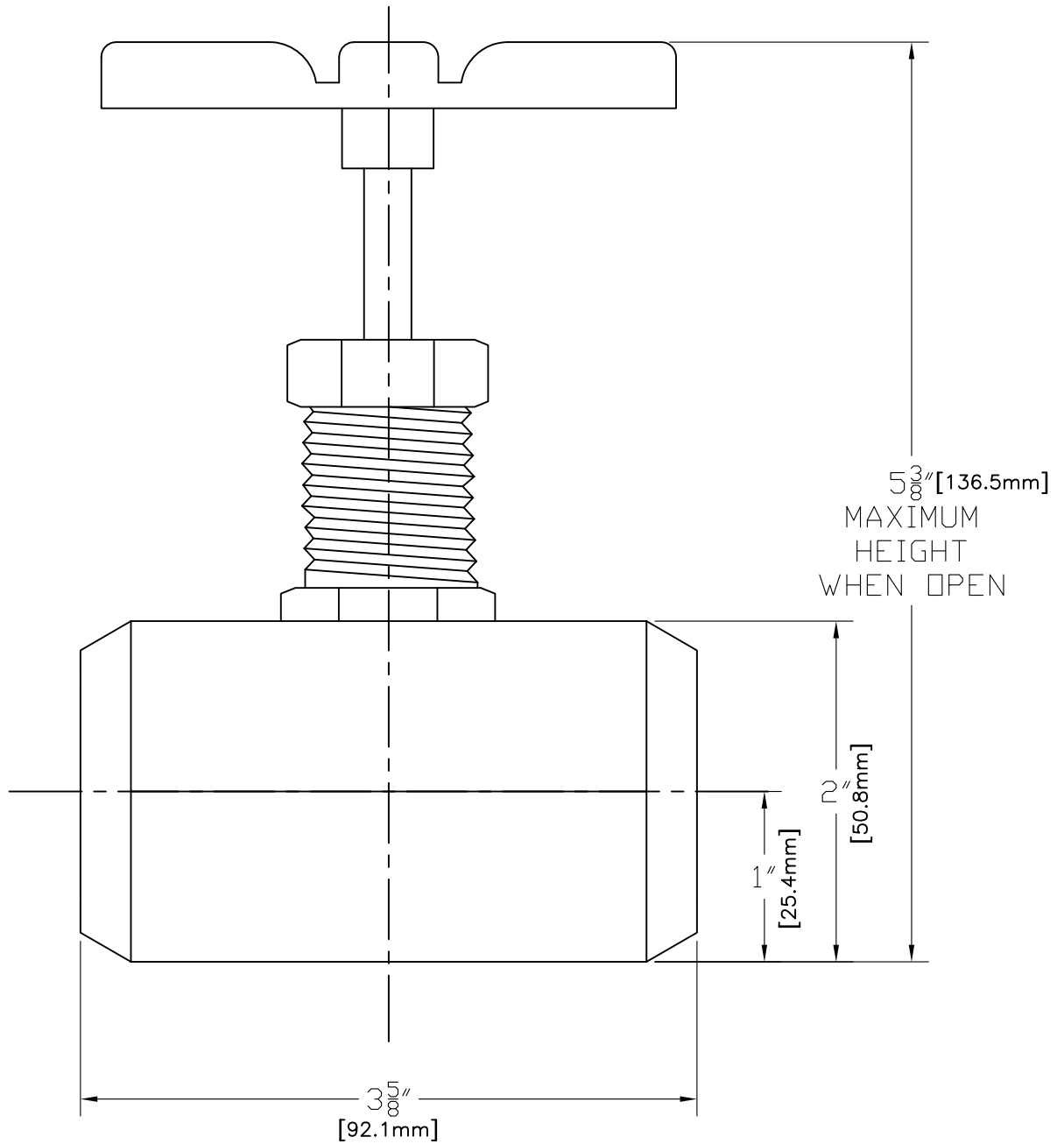
UL - LISTED  
 MEETS CLASS I, DIVISIONS 1 & 2 GROUPS B, C & D  
 CLASS II, DIVISIONS 1 & 2, GROUPS E, F & G  
 CLASS III, ENCLOSURE TYPE 4X, 7, 9; IP66  
 NOTE:  
 UL - LISTED  
 WEIGHT: APROX. 3 LBS (1.4 KGS)

xxxxxxx

<b>CHEMETRON</b> Fire Systems <small>TM</small>	DESCRIPTION	DISCHARGE PRESSURE SWITCH	(15)
	STOCK NO.	70170275	



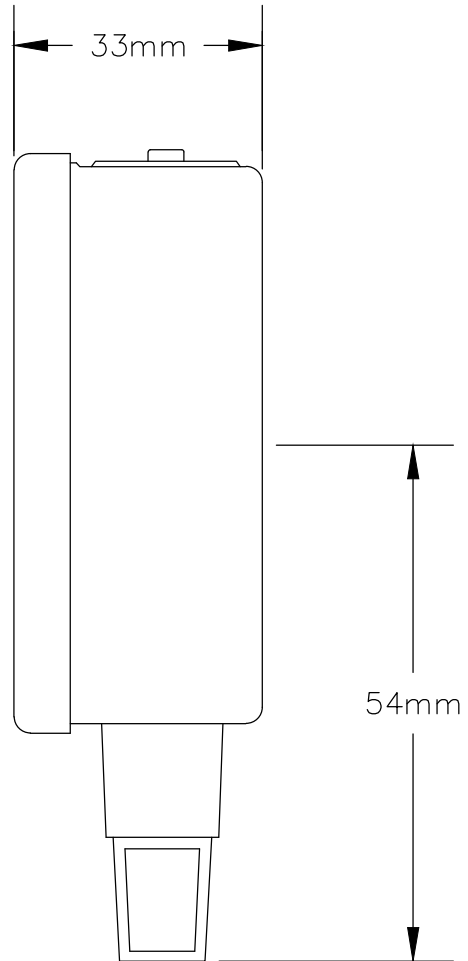
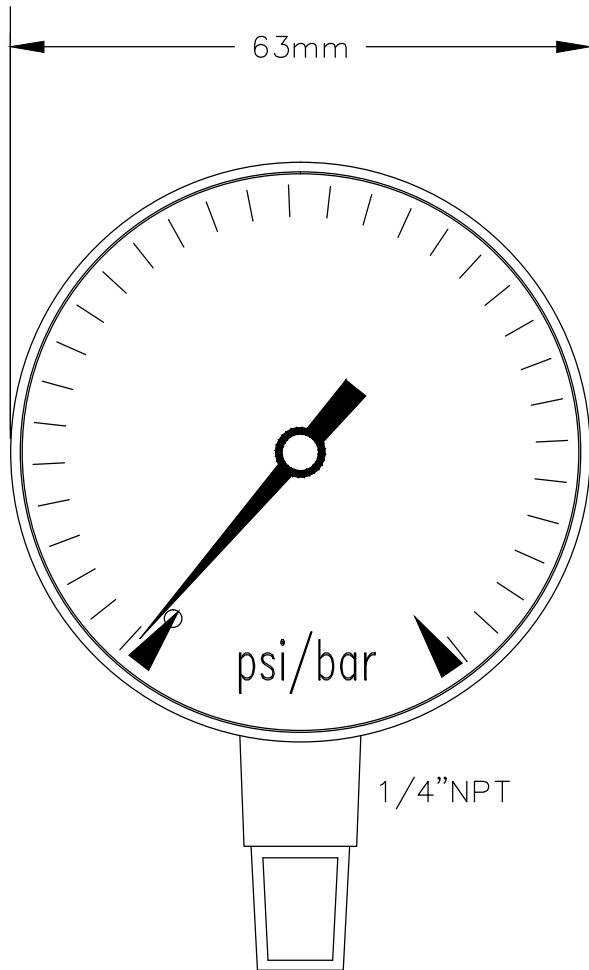
- 1 - CAP = BRASS
- 2 - SCREEN = STAINLESS STEEL
- 3 - BODY = BRONZE
- 4 - PLUG = STEEL



DESIGN SPECIFICATIONS:

1. MATERIAL: ASTM A108 STEEL
2. FINISH: ZINC PHOSPHATE
3. PRESSURE RATING:  
10,000 PSIG AT 150°F, WOG  
(689.6 BAR AT 65.6°C, WOG)
4. WEIGHT: 4.65 LBS (2.109 KGS)

PART	MATERIAL
-LOCKNUT	STEEL, ZINC PLATED
-HANDLE	MALLEABLE IRON
-STEM	GRADE 316 STAINLESS STEEL
-GLAND NUT	STEEL, MELONITE FINISH
-GLAND	STEEL, MELONITE FINISH
-PACKING	GRAFOIL
-BONNET	STEEL, MELONITE FINISH
-BODY	STEEL, MELONITE FINISH



DIAL NOMINAL SIZE: Ø63 mm  
 DIAL: ALUMINIUM, WHITE, BLACK LETTERING  
 POINTER: ALUMINIUM BLACK  
 WINDOW: POLYCARBONATE  
 RANGE: 0–300 PSI and 0–20 Bar  
 CONNECTION: 1/4" NPTM  
 PRESSURE ELEMENT MATERIAL: 316L SS  
 ACCURACY CLASS: 1.6  
 COLOR FOR 2 SCALE: RED RAL 3020  
 WEIGHT: 0.2 KG

XXXXXXXXXXA



S/N 10371308		
DRILL SIZE	DRILL DIA	ORIFICE CODE No
60	0.0400	1.0 *
53	0.0593	1.5 *
5/64	0.0781	2.0 *
41	0.0960	2.5 *
32	0.1160	3.0 *
9/64	0.1405	3.5
5/32	0.1563	4.0
15	0.1800	4.5
8	0.1990	5.0
7/32	0.2188	5.5
B	0.2380	6.0
G	0.2610	6.5
I	0.2720	6.7
K	0.2810	7.0
N	0.3020	7.5
O	0.3160	8.0
Q	0.3320	8.5
S	0.3480	9.0
U	0.3680	9.5
W	0.3860	10.0
Z	0.4130	11.0
7/16	0.4375	12.0
15/32	0.4688	13.0
31/64	0.4844	14.0
33/64	0.5156	15.0
17/32	0.5313	16.0

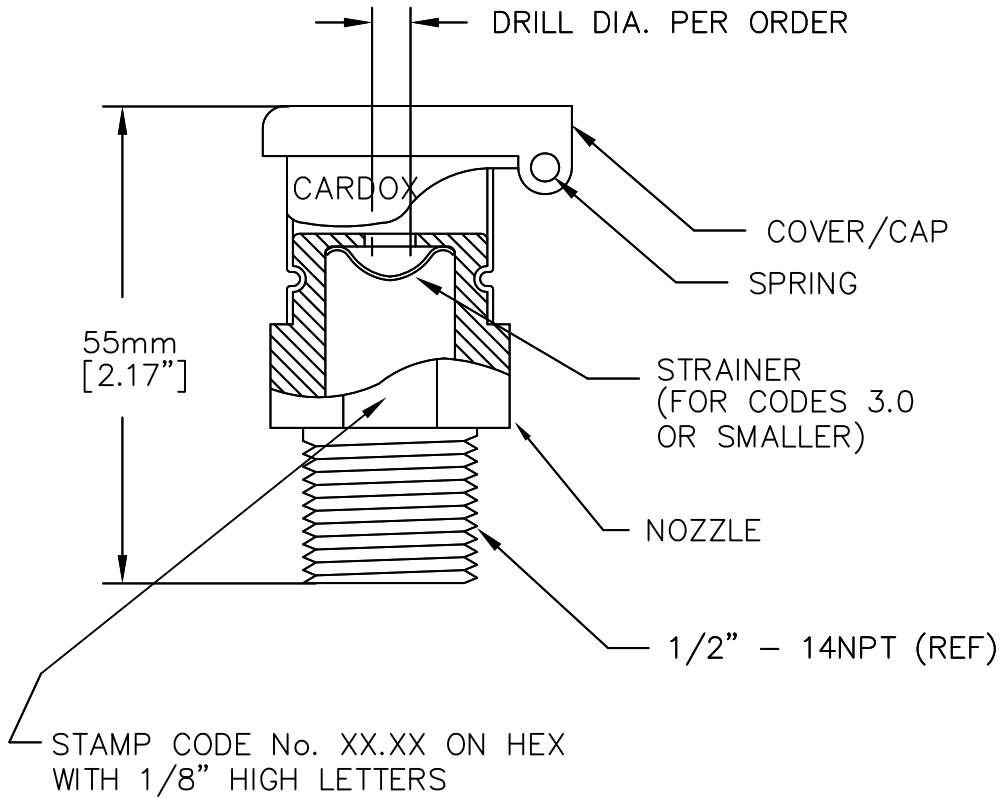
**TECHNICAL DATA**

APPLICATION: . . .  
 APPROVED FOR TOTAL FLOODING  
 CARBON DIOXIDE SYSTEMS

FITTING: . . . . . MALE NPT  
 1/2" NPT . . . . . S/N 10371308

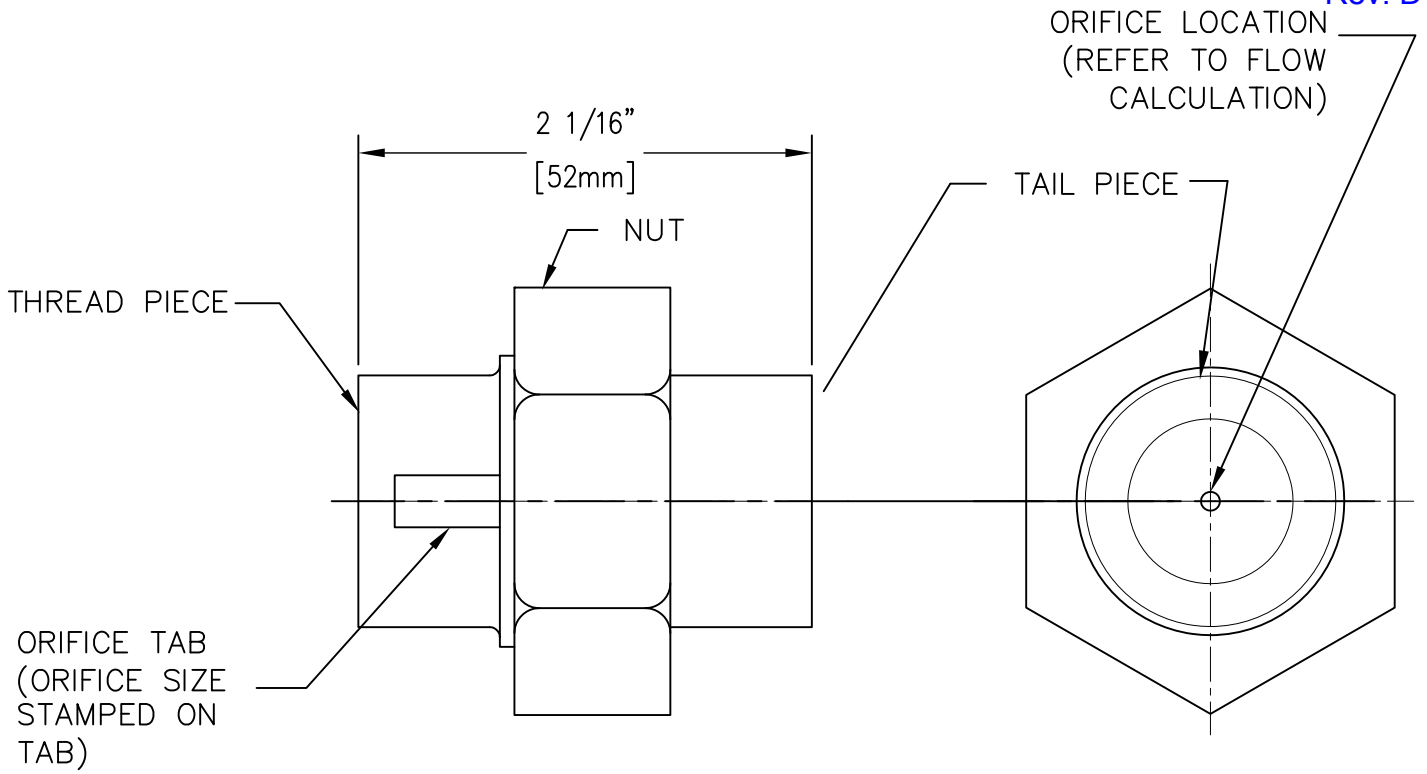
MATERIAL: ORIFICE NOZZLE—STAINLESS STEEL  
 COVER/CAP—ZINC COATED STEEL  
 SPRING—STAINLESS STEEL  
 STRAINER—BRASS (3.0 & SMALLER)

UL LISTING: . . .LISTED  
 FM APPROVAL: . . .APPROVED



STAMP CODE No. XX.XX ON HEX WITH 1/8" HIGH LETTERS

NOTE:  
 UL - LISTED  
 FM APPROVED



1/2" NPT	
S/N 1-037-1321	
DRILL SIZE	DRILL DIA
56	0.0465
41	0.0960
37	0.1040
27	0.1440
16	0.1770
4	0.2090
K	0.2810
P	0.3230
S	0.3480
U	0.3680
1/2	0.5000

**1. LISTINGS:**

-UL, FM APPROVAL: APPROVED

**2. TECHNICAL DATA:**

- APPLICATION: .....
- RATED WORKING PRESSURE....
- WEIGHT....
- TEMPERATURE RANGE (INDOOR & OUTDOOR)....
- ENCLOSURE RATINGS....
- FACTORY SETTINGS....

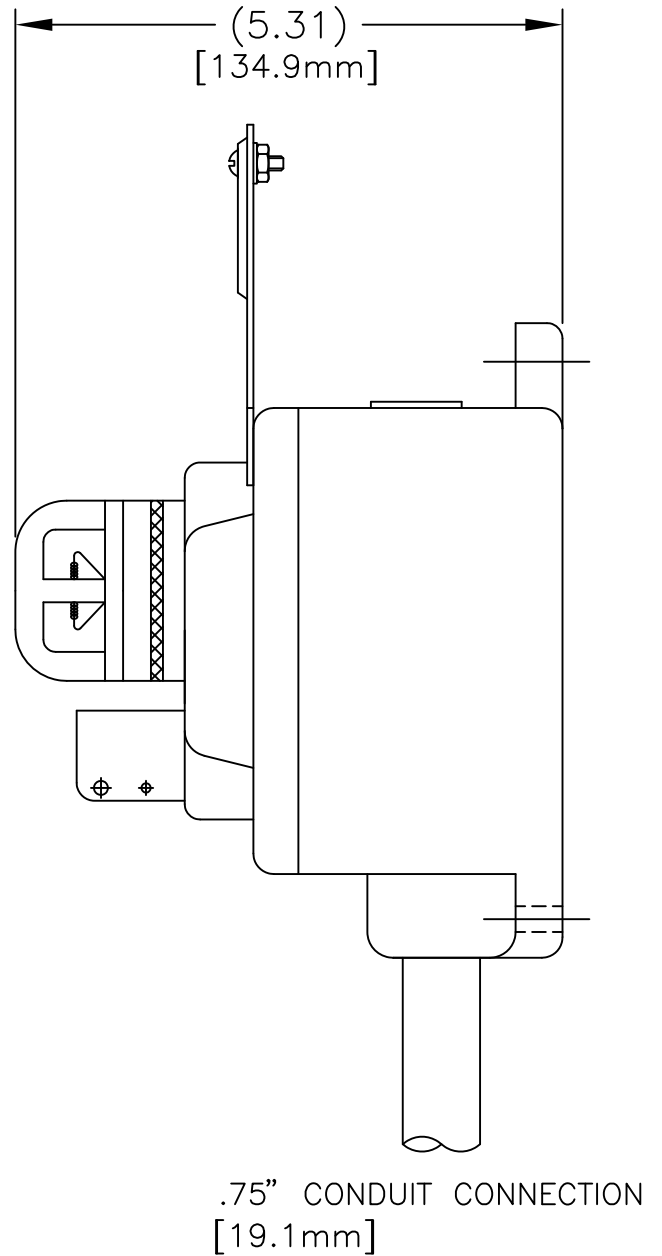
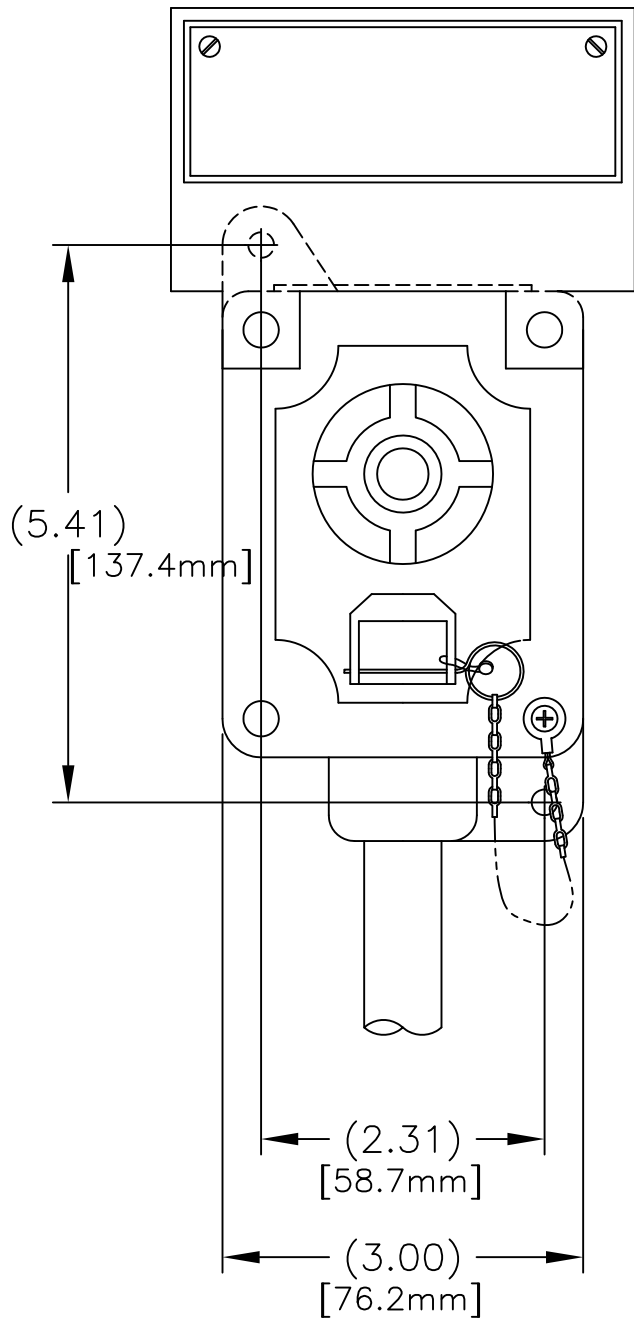
**3. MATERIAL:**

- BODY: UNION - STEELS, ORIFICE PLATE - TAINLESS STEEL
- FINISH COLOR...

**4. NOTES:**

USED IN LOW PRESSURE SUPERVISORY CONTROL ARRANGEMENT AND CARBON DIOXIDE TOTAL FLOODING SYSTEMS

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**1. LISTINGS:**

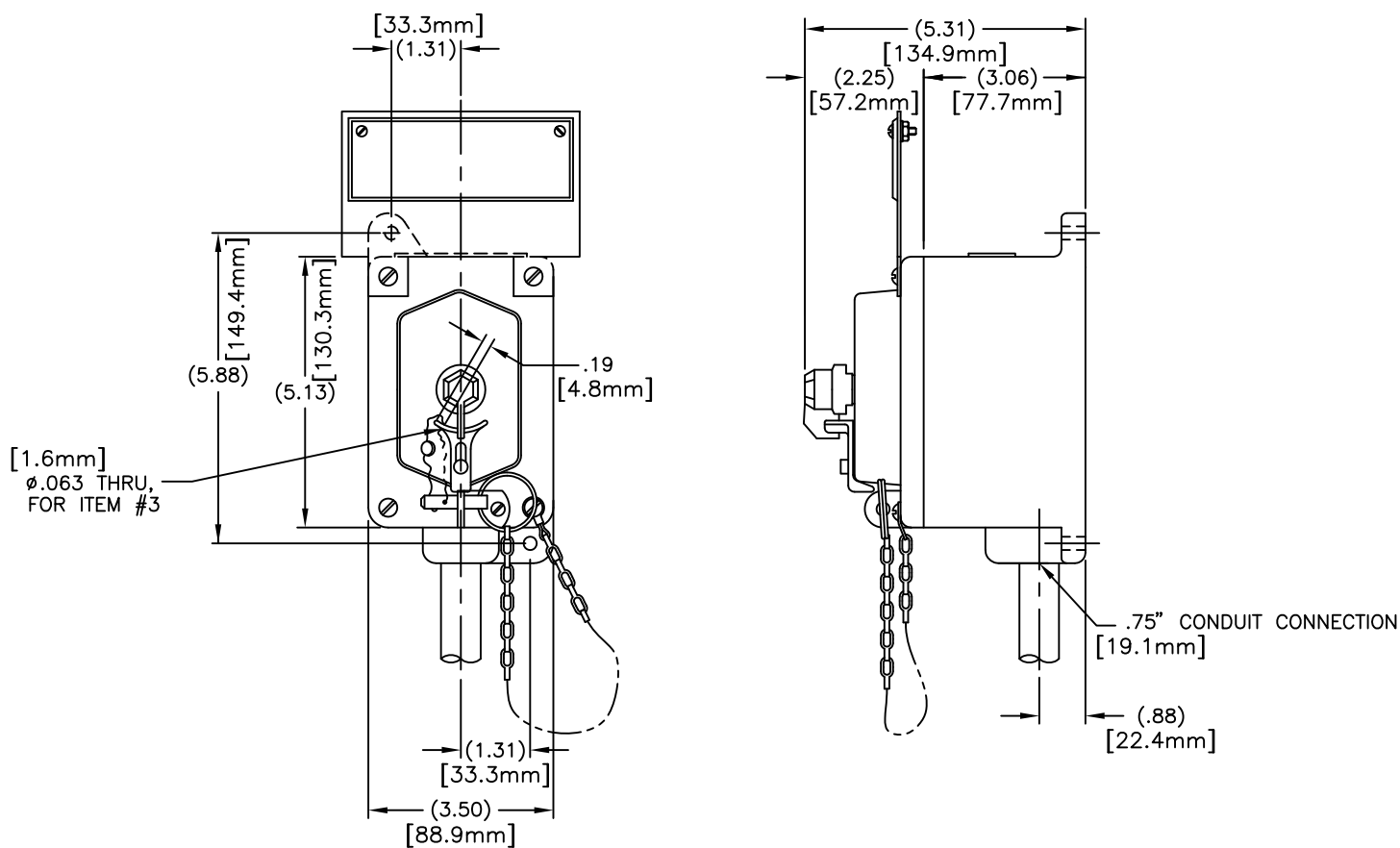
-UL, FM....

**2. MATERIAL:**

- BODY N/A
- FINISH: PAINT CARDOX RED - EXCEPT NAMEPLATES, BUTTON GUARDS, LENS AND LOCKPIN ASSEMBLY

**3. NOTES:**

NEC : CLASS I GROUPS C, D  
 CLASS II GROUPS E, F, G  
 NEMA: 3, 7CD, 9EFG, 12.  
 CONTACT RATING MAX. 600V - MIN. 30V



NOTES:

1. THIS DWG SUPERSEDES DWG OF SAME NUMBER AND SIZE, DATED 3/16/77
2. DIMENSIONS & TOLERANCES PER ANSI Y14.5 M-1982 STDS.
3. TOLERANCES FOR IMPLIED ANGLES  $\pm 0^{\circ}30'$
4. MATERIAL: N/A
5. FINISH: PAINT CARDOX RED - EXCEPT NAMEPLATES, SELECTOR SWITCH LEVER, LOCKING DEVICE AND LOCKPIN ASSEMBLY.
6. SHIP NAMEPLATE BRACKET (ITEM #4) LOOSE WITH PUSHBUTTON STATION.
7. STAMP PART NUMBER ON NAMEPLATE (ITEM #6).
8. FOR NAMEPLATE STOCK USE EITHER "D" OR "E" SIZE STOCK ON DRAWING 21492.
9. STAMP SWITCH NAMEPLATE IN ACCORDANCE WITH JOB REQUIREMENTS.

MAINTENANCE SELECTOR SWITCH

NOTE:  
UL - LISTED  
FM APPROVED

**CHEMETRON**  
Fire Systems <sup>TM</sup>

DESCRIPTION

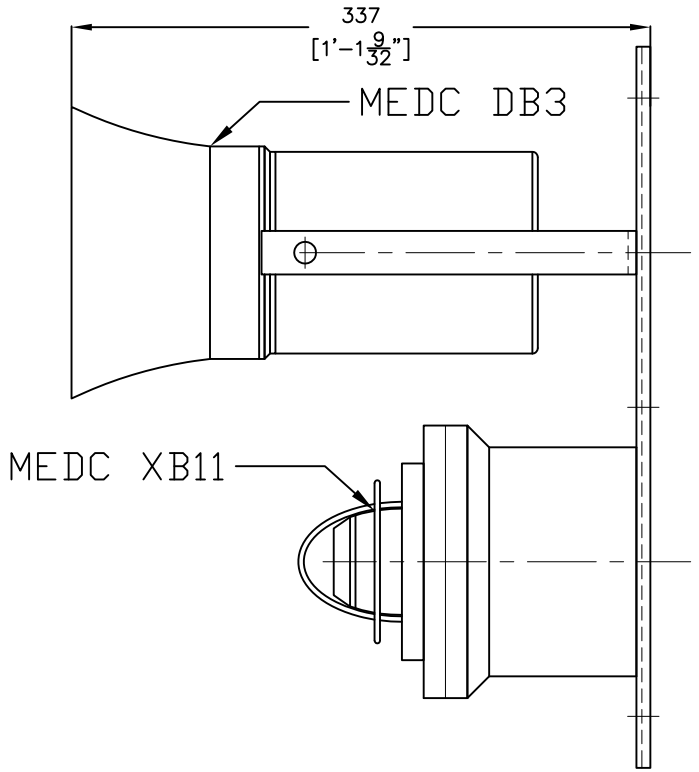
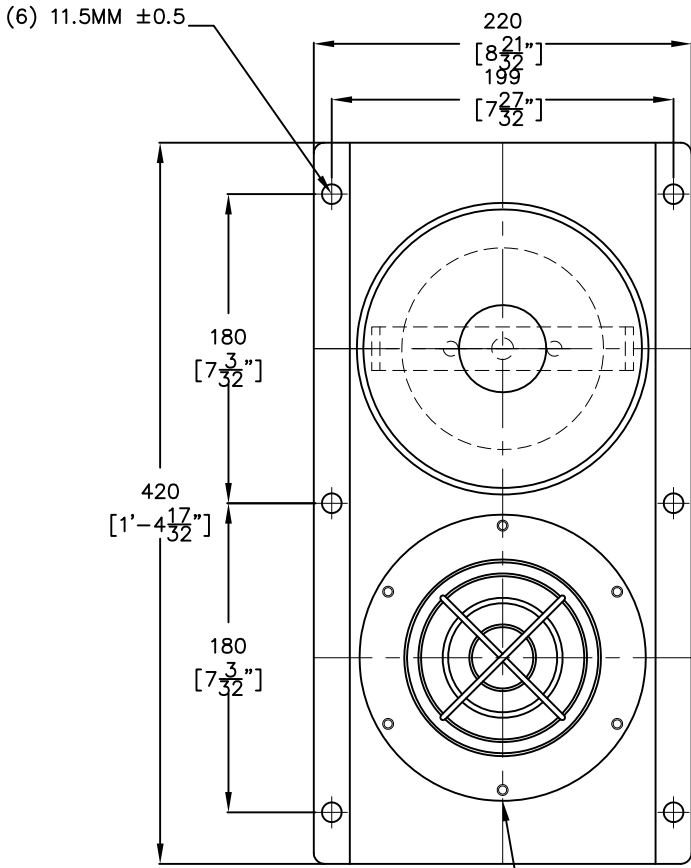
STATION, SELECTOR SW. WITH SEAL EXPL. PROOF

STOCK NO.

10170086

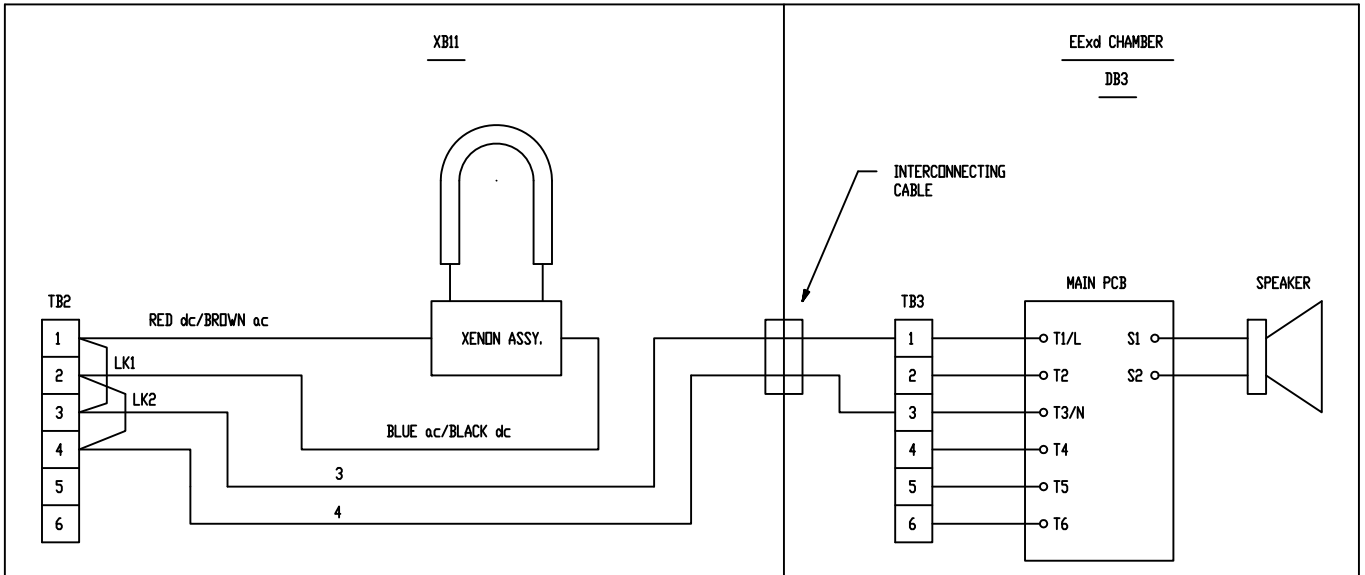
INFORMATION

23



ALARM HORN/STROBE WEATHERPROOF/EXPLOSIONPROOF

1/2" NPT  
CONDUIT ENTRY



- NOTE:
- UL - LISTED CLASS 1, DIV 1 & 2, GROUPS C & D; NEMA 4X & 6
  - 1. SOUND SETTING: 115dBA
  - 2. BEACON: XENON 5J
  - 3. LENS COLOR : RED
  - 4. RATINGS: 24VDC 0.7A
  - 5. TEMPERATURE: -67°F TO 158°F [-55°C TO 70°C]
  - 6. WEATHERPROOF/EXPLOSIONPROOF
  - 7. FINISH: RED/BLACK
  - 8. BODY: CORROSION FREE GRP

XXXXXXXXXXA

# MICRO SLX™

## Fire Alarm/Suppression System Control Unit

# CHEMETRON

  
Fire Systems™

A UTC Fire &amp; Security Company

Effective: November 2011

**C-65-600**

### FEATURES

- Distributed Intelligence to Sensor Level
- Fully-Digitized Communications Protocol
- Up to 255 Points without Device-Type Restrictions
- “Triple-R” Protection Against Inadvertent Extinguishing-System Activation
- Inherently Power Limited
- Peer-to-Peer Networking of up to 32 Control Units
- USB Communications Port
- Internet Accessible
- Simple Programming
- UL Listed
- cUL Listed
- FM Approved to ANSI/UL 864, 9th edition
- FM Approved to ULC-S527-99
- CSFM Approved
- NYC Fire Department Approved

### DESCRIPTION

The MICRO SLX Fire Alarm/Suppression System Control Unit is a compact control unit that provides one signaling line circuit, four notification-appliance circuits, two releasing circuits, and four on-board relays. Two of the four notification-appliance circuits are user-configurable to actuate one solenoid valve for control of a special-extinguishing system or a pre-action/deluge sprinkler system. A 5.4-A filtered and regulated power supply provides charging capabilities for batteries up to 70-AH.

The MICRO SLX Control Unit annunciates alarm, trouble, and supervisory events via an 80-character, backlit LCD display with integral status LEDs. Event acknowledgment, alarm silence, and system reset are accomplished with dedicated control keys. Basic user and maintenance operations such as viewing history or isolation commands to initiating points and system outputs are performed via the control keys and associated digit keys. A security password prevents unauthorized access to the system.

#### Signaling Line Circuit

The signaling line circuit communicates with up to 255 automatic initiating devices, monitor modules, and control modules via a highly-efficient, fully-digitized protocol. The SLC communications protocol imposes no limitations on the mix of automatic initiating devices and monitor/control modules on the signaling line circuit. Each initiating device has a microprocessor, memory, and decision-making algorithms to interrupt normal control-unit communications and initiate an alarm signal.



This distributed intelligence to the sensor level ensures rapid response to all types of initiating signals and is far superior to the various sequential, poll-and-respond communication schemes employed by others that rely on the control unit to make all alarm decisions. Chemetron smoke detectors manage their individual drift-compensation routines and have pre-alarm and alarm thresholds that are configurable in 0.1 percent-per-foot increments throughout the entire range of Listed sensitivities. The control unit can dynamically adjust the smoke detector alarm thresholds as the result of one or more alarm-initiating events to confirm that a fire requiring the rapid action of an associated extinguishing system has occurred. Chemetron smoke detectors can also be configured for non-latching operation that requires them to measure smoke signatures in excess of their alarm thresholds for the entire pre-discharge time period in order to discharge the extinguishing system. This prevents a transitory event that mimics a smoke signature such as the leakage of air-conditioning fluid from accidentally discharging the extinguishing system.

Intelligent heat detectors have pre-alarm and alarm thresholds that are programmable in 1F° intervals.

The signaling line circuit can be wired for Class-A, Style-6 or Class-B, Style-4 operation. Optional isolator modules can be used for a Class-A, Style-7 circuit.

### Releasing Circuits

The MICRO SLX Control Unit has two releasing circuits that can be configured to actuate releasing devices via any of the following ways:

- Single control head or
- Solenoid valve
- Two series-supervised, parallel-actuated control heads or solenoid valves

These releasing circuits can be used to actuate various Chemetron control heads for waterless-extinguishing-system storage containers, or solenoid valves for sprinkler control that fall within the Factory Mutual System Groups A, B, D, E, and G. A releasing circuit can actuate an unmatched pair of control heads or solenoid valves because it activates these releasing devices in parallel, not in series. This means that a releasing circuit can activate the control valves for a waterless suppression system and a back-up pre-action-sprinkler system simultaneously which makes efficient use of the control unit's circuitry and increases system reliability by enabling a single action to operate both extinguishing systems.

The releasing circuits are protected against inadvertent activation via the main microprocessor by the MICRO SLX's exclusive "Triple-R" (for triple redundancy) safeguard system. The "Triple-R" system requires that the main microprocessor issue two release commands, of opposite polarity and via separate signaling channels, and that these commands be combined with a signal from the control unit's watchdog timer confirming proper microprocessor operation, in order to activate a release circuit. This triply-redundant release-command requirement ensures that an electrical transient or disturbance that temporarily interferes with the operation of the main microprocessor will not inadvertently activate an extinguishing system.

### Notification-Appliance Circuits

The MICRO SLX Control Unit has four notification-appliance circuits (NACs). Each circuit can provide up to 1.5 Amps @ 24 VDC for horns, strobes, chimes, or other notification appliances. Power for the notification appliances is fully filtered and regulated. Each NAC is programmable, and supports continuous and master coded outputs for audible devices. The NACs' coded patterns are dynamically adjustable and can be programmed to sound different codes to notify the occupants of progressively-more-serious conditions.

Both circuits are supervised, power limited, and are compatible with conventional, UL-Listed, 24-VDC notification appliances. They can also be used with the following Chemetron synchronizable horns and strobes without the requirement of an external synchronization module:

Model/Stock No.	Description
HSR (70030470)	Horn, Strobe, Red
HSRC (70030471)	Horn, Strobe, Red, Ceiling Mount
STR (70030472)	Strobe, Red
STRC (70030473)	Strobe, Red, Ceiling Mount
HNR (70030474)	Horn, Red
HNRC (70030475)	Horn, Red, Ceiling Mount
HSR-A (70030476)	Horn, Strobe, Red, Agent Label
STR-A (70030477)	Strobe, Red, Agent Label
HNR-A (70030478)	Horn, Red, Agent Label

Two of the NACs are also user-configurable to activate one solenoid for special-extinguishing-system actuation or pre-action/deluge sprinkler-system actuation like the regular releasing circuits. These NACs are also protected against inadvertent activation via the main microprocessor by the MICRO SLX "Triple-R" safeguard system when they are configured for releasing applications.

### On-Board Relays and Auxiliary Power

The MICRO SLX has four Form-C relays. Three of the four relays are user-programmable for any system condition and the fourth relay is dedicated to trouble conditions. Each relay is rated for 1 Amp @ 28 VDC.

Two auxiliary-power outputs are provided, each with a 1-A output. These auxiliary-power outputs are user configurable for resettable or continuous power.

### Integration with Specialty Detection Systems

The MICRO SLX is designed to integrate seamlessly with CLASS High Sensitivity Smoke Detectors (HSSD) via one or more AI Modules. It also integrates with Chemetron's AlarmLine Cable via AlarmLine Addressable Modules and with Linear Heat-Sensing Cable (LHS) via regular monitor modules.

The AAM permits an AlarmLine cable to be connected to the signaling line circuit and report pre-alarms and alarms in an addressable manner analogous to a heat detector. HSSDs and LHS can report as point-specific alarms via AI Monitor Modules.

The AAM permits an AlarmLine cable to be connected to the signaling line circuit and report pre-alarms and alarms in an addressable manner analogous to a Chemetron heat detector. The LHS can report as a point-specific alarm via an AI Monitor Module.

## Programming

The MICRO SLX configuration tool is used to program the control unit for each individual, site-specific application. Programming is for control-by-event scenarios, and consists of entering a series of conditional control statements that logically join initiating points to control-unit-based outputs and remote control modules. Each Chemetron field device can be assigned a location message of up to 40 characters via the MICRO SLX configuration software tool. A USB Device Port is available to connect to a laptop computer for application upload.

A front-panel-activated AutoLearn routine can be executed that will create a general-alarm, one-input-activates-all outputs application to speed the system-configuration process. The more-sophisticated Auto-Setup routine allows the MICRO SLX System to be automatically configured for the typical control scenario utilized by waterless fire-suppression systems.

## OPTIONAL MODULES

### Remote LCD Annunciator

The MICRO SLX Control Unit supports up to 15 remote LCD annunciators called Remote Display/Control Modules (RDCMs). This remote annunciator uses the same 80-character, backlit LCD display found on the main control unit. The RDCM permits remote event acknowledgment, alarm silencing, and system reset, and is secured with a key lock. User- and maintenance-level functions are also possible from the remote annunciator.

### Graphic-Annunciator Driver

The Model ATM-L Annunciator Driver Module provides the MICRO SLX Control Unit with up to 32 programmable, supervised LED outputs for graphical or tabular annunciators, along with 6 system-level LED outputs and 5 system-level inputs circuits for functional switches.

The system-level LEDs correspond to the following general conditions: Module Power, Pre-Alarm, Alarm, Alarm Silence, Supervisory, and Trouble.

The input circuits for functional switches provide for the following operator intervention: System Reset, Event Acknowledgment, Alarm Silence, Fire Drill, and Lamp Test.

The MICRO SLX supports up to 16 graphic-annunciator-driver modules.

Refer to Data Sheet C-65-236.

### Intelligent Communications Module

The Intelligent Communications Module (ICM) can be used to access the MICRO SLX System via the Internet to view system-status and current events and to download the history log. The ICM can be programmed to transmit up to five e-mails upon the occurrence of any unsolicited event in the system. The e-mail message

embeds a link with the IP address of the control unit that sent the message for instant access to the remote system.

The ICM can be accessed using any standard Web-browsing program and requires no special proprietary software.

The ICM also allows the MICRO SLX Control Unit to report as a slave device via the Modbus TCP/IP Protocol to a master monitoring system for automated process control.

Refer to Data Sheet C-65-602.

### Network Interface Card

The MICRO SLX Network Interface Card (S/N 70101343) provides true peer-to-peer functionality when installed in the MICRO SLX Control Unit. Added functionality is provided when the Chemetron RDCMs (S/N 70101340) are connected to the individual control panels and, hence, into the interconnection scheme.

The network is capable of performing the following fire alarm and/or suppression system operations on a network-wide basis:

- Event initiation
- Protected-premises local and/or remote event annunciation
- Occupant notification via audible and visible signaling appliances
- Process/equipment control to activate safety procedures
- Fire extinguishing system release
- Off-premises transmissions to central station or fire department via third-party digital communicator and programmable relays.

The network provides several convenient interconnect programming schemes wherein control panels can be configured individually or within created groups of control panels.

When utilizing the grouping configuration, the interconnection shall automatically provide shared alarm and trouble responses. The programmable shared responses are: acknowledge, silence, reset, event logging and logic statements. Operator events can be activated into the interconnection via the control panels or any annunciator. A location address and programmable description shall identify the panel initiating the event.

Refer to Data Sheet C-65-605.



**SPECIFICATIONS**

<b>Primary AC Power:</b>	120 Vac, 50/60 Hz, 3.2 A 220/240 Vac, 50/60 Hz, 1.6 A
<b>Power Output:</b>	5.4 A @ 24 Vdc Filtered and Regulated, Inherently Power-Limited
<b>Battery (Sealed, Lead-Acid Only):</b>	70-AH Maximum Capacity, 12-AH Fits within enclosure
<b>1 Signaling Line Circuit:</b>	255 Devices Maximum, Style -4, -6, or -7 (with Isolator Modules)
<b>2 Notification-Appliance Circuits:</b>	Class-A, Style-Z or Class-B, Style-Y 24 Vdc, 1.5 A (maximum per circuit) Suitable for Synchronized Notification Appliances
<b>2 Releasing Circuits:</b>	Configurable for: <ul style="list-style-type: none"> <li>• One or Two Control Heads and/or Solenoid Valves</li> <li>• 24 VDC, 2.4 A (maximum per circuit)</li> </ul>
<b>2 Combination Circuits:</b>	Each Configurable as: Class-A, Style-Z or Class-B, Style-Y NAC, 24 Vdc, 1.5 A (Maximum per circuit) Suitable for Synchronized Notification Appliances OR Release Circuit with One Control Head or Solenoid Valve, 24 Vdc, 2.4 A (maximum per circuit)
<b>Relays:</b>	3 Programmable and 1 Trouble Relay <ul style="list-style-type: none"> <li>• 1.0 A @ 30 Vdc (resistive)</li> <li>• 0.5 A @ 30 Vdc (inductive)</li> <li>• 0.5 A @ 120 Vdc (inductive)</li> </ul>
<b>2 Auxiliary-Power Outputs:</b>	Programmable for Resettable or Continuous Output 1 A @ 24 Vdc (each output)
<b>2 RS-232 Serial Ports:</b>	Bi-Directional 9600 Baud, 8 Data Bits, 1 Stop Bit, No Parity
<b>1 RS-485 Communications Port:</b>	Maximum 31 Remote Addresses (RDCM and ATM-L)

**SPECIFICATIONS (Continued)**

<b>1 USB Device Port</b>	USB Serial
<b>Dimensions:</b>	Enclosure Only: 14-1/4 in. W x 19 H x 5 in. D  Enclosure with Door: 14-13/32 in. W x 19-5/32 in. H x 5 in. D
<b>Optional Modules:</b>	<ul style="list-style-type: none"> <li>• RDCM Remote Display/Control Module</li> <li>• Annunciator Driver Module</li> <li>• ICM Internet-Accessible/Modbus-Conversion Module</li> <li>• Network Interface Card</li> <li>• Fiber-Optic Converter Card</li> </ul>

**ORDERING INFORMATION**

<b>Stock Number</b>	<b>Description</b>
70101329	MICRO SLX Control Unit, Red (complete assembly)
70101331	Trim Ring (Red)

**OPTIONAL MODULES**

<b>Stock Number</b>	<b>Description</b>
70101390	Intelligent Communication Module (ICM)
70101346	Graphic Annunciator Driver Module
70101347	Relay Driver Module
70101340	Remote Display/Control Module (RDCM)
70101343	Network Interface Card (NIC)
70101345	Fiber-Optic Converter Card

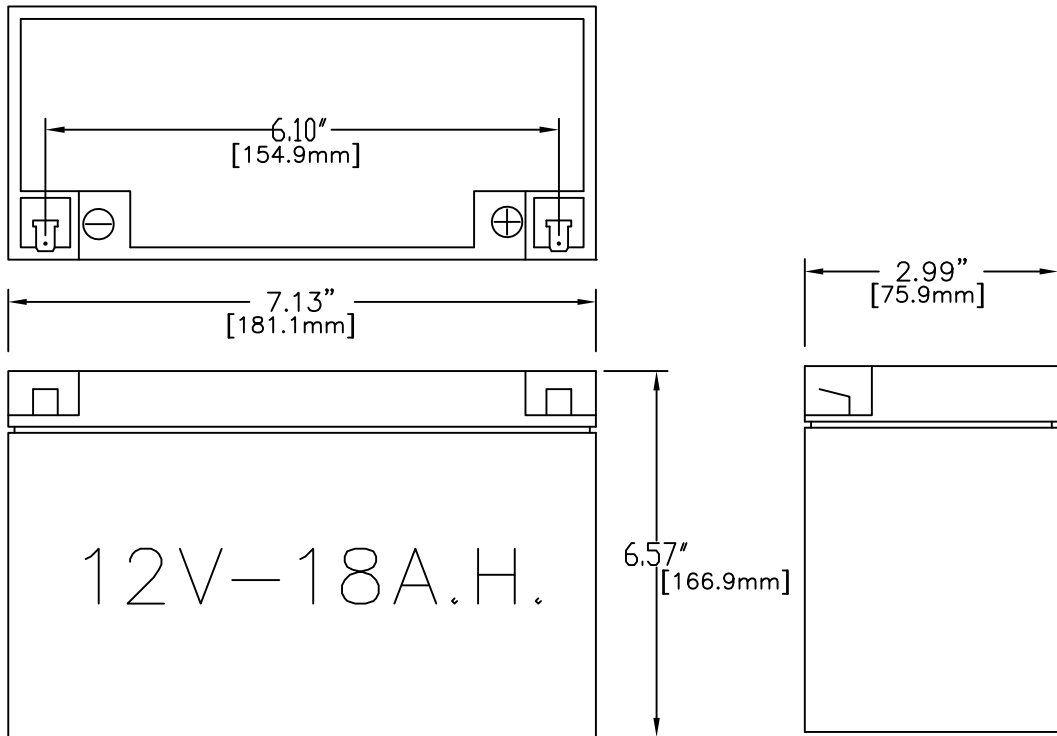
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This literature is provided for informational purposes only. Chemetron Fire Systems assumes no responsibility for the product's suitability for a particular application. The product must be properly applied to work correctly. If you need more information on this product, or if you have a particular question, contact Chemetron Fire Systems, Matteson, IL 60443. Telephone: (708) 748-1503.



A UTC Fire & Security Company

4801 Southwick Drive, 3rd Floor  
Matteson, IL 60443  
Ph: 708-748-1503  
Fax: 708-748-2847  
www.chemetron.com



DESCRIPTION

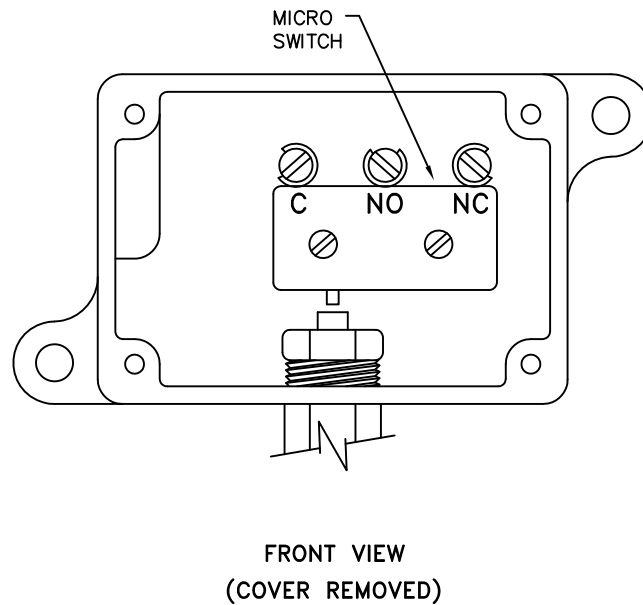
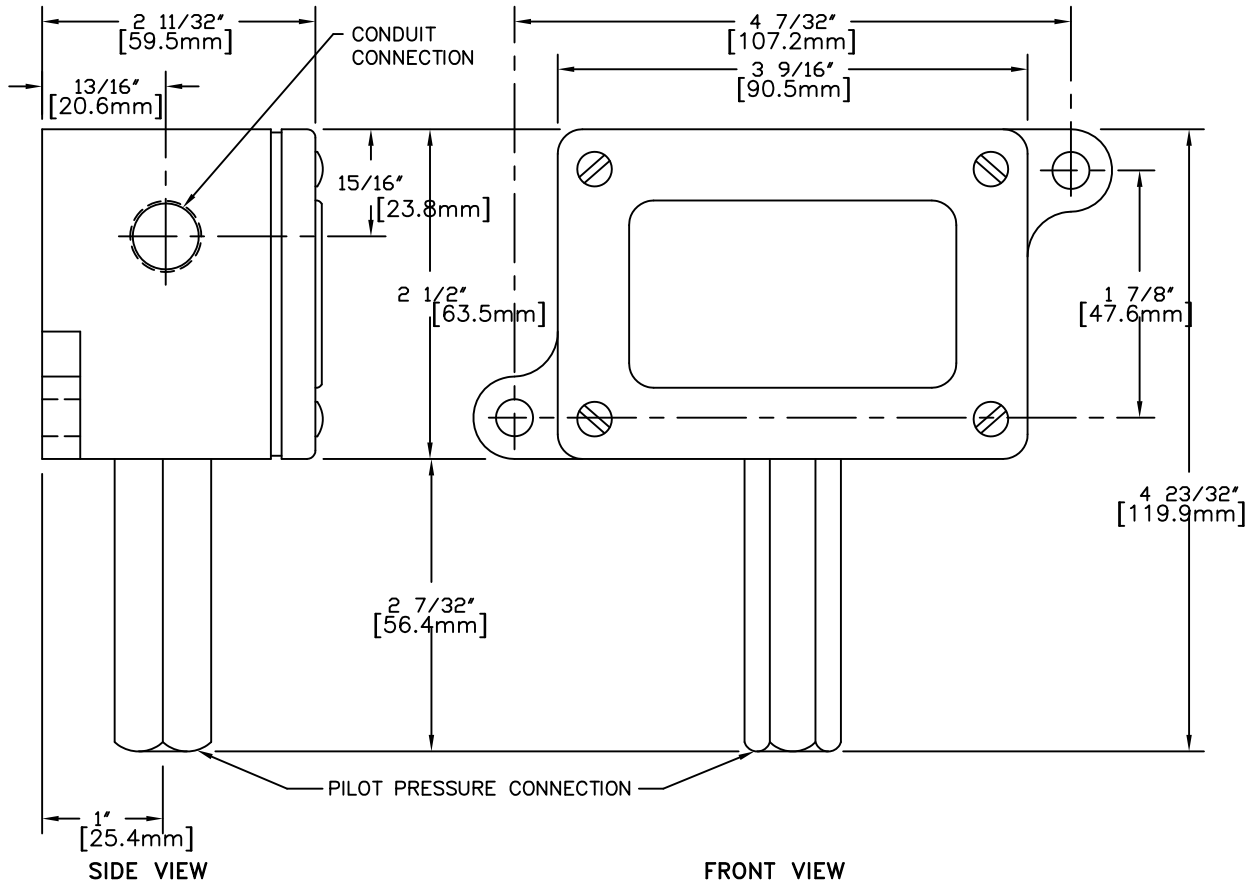
RECHARGEABLE SEALED LEAD-ACID BATTERY THAT IS MAINTENANCE-FREE, LEAK PROOF, AND USABLE IN ANY POSITION.

TECHNICAL DATA

NOMINAL VOLTAGE . . . . . 12 VOLTS  
 NOMINAL CAPACITY . . . . . 18 AMP HOUR  
 APPROX. WEIGHT . . . . . 12.8 POUNDS [5.9kg]  
 TERMINAL . . . . . QUICK DISCONNECT TABS 0.250" x 0.032"  
 (MATE WITH AMP. INC. FASTON "250" SERIES)  
 LIFE CYCLE . . . . . APROX. 3 YEARS  
 OPERATING TEMPERATURE RANGE  
 CHARGE . . . . . -4°F TO 122°F [-20°C TO 50°C]  
 DISCHARGE . . . . . -76°F TO 140°F [-60°C TO 60°C]  
 CASE . . . . . HIGH-IMPACT POLYSTYRENE

XXXXXXXXXXA

<b>CHEMETRON</b> Fire Systems <sup>TM</sup>	DESCRIPTION	12V 18 AMP HOUR BATTERY	<span style="border: 1px solid black; border-radius: 50%; padding: 5px;">26</span>
	STOCK NO.	70100321	



**1. LISTINGS:**

-UL, FM....

**2. TECHNICAL DATA:**

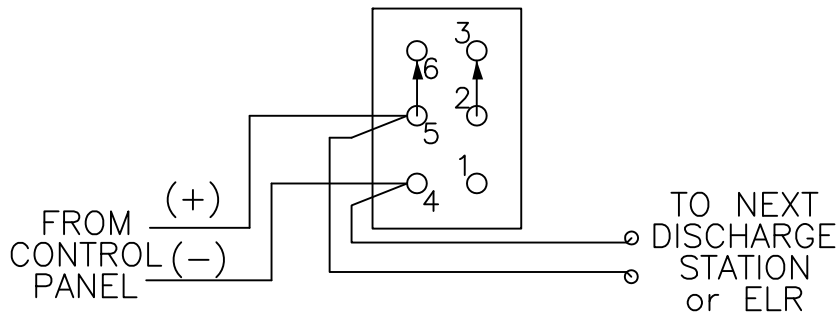
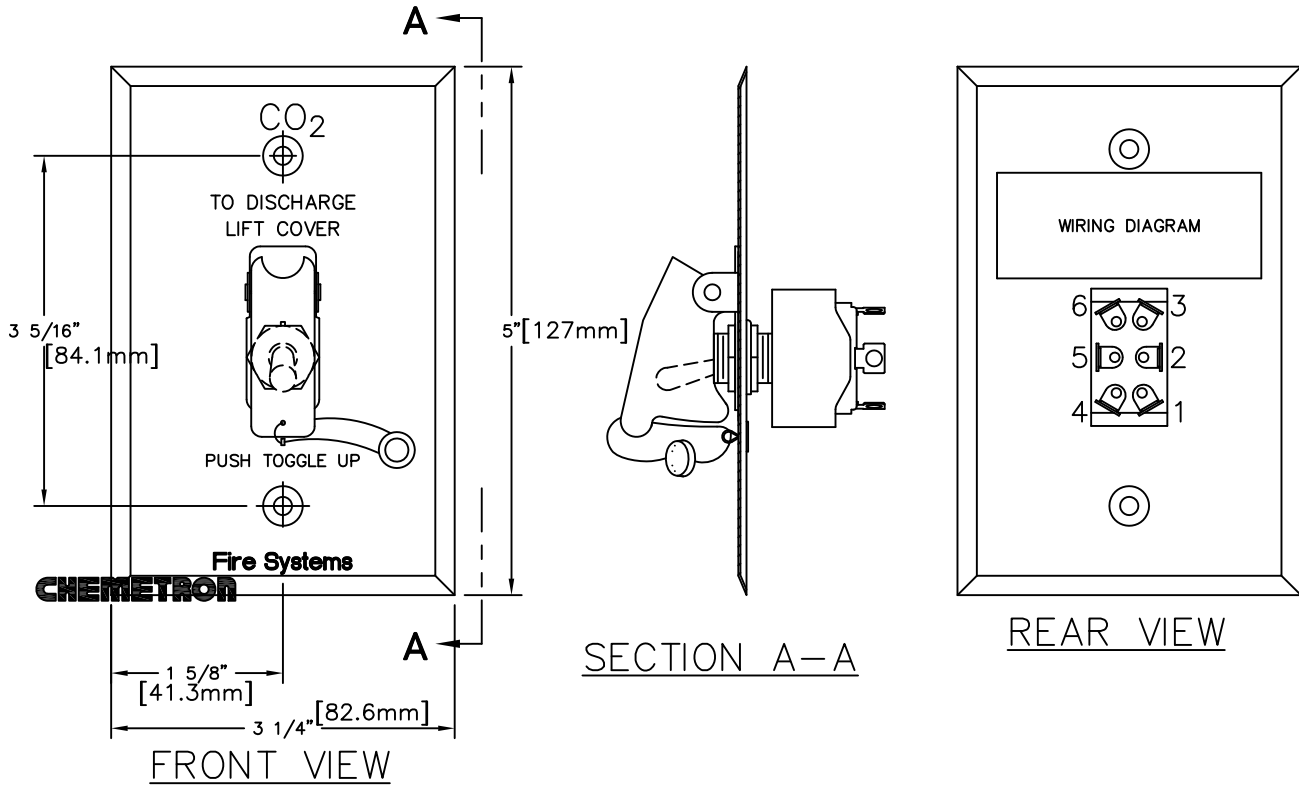
- APPLICATION: SUREVISION OF TANK PRESSURE FOR LPCO2 SYSTEMS.
- CONTACTS: NORMALLY CLOSED, OPEN @ 250 PSIG/CLOSES AT 300 PSIG
- CONTACTS RATING: 10 AMP @ 125VDC & 15 AMP @ 125VAC.
- CONNECTION: PIPE, 1/4" FNPT, - CONDUIT, 1/2"
- ENCLOSURE RATINGS....
- FACTORY SETTINGS....

**3. MATERIAL:**

- BODY....
- FINISH COLOR...

**4. NOTES:**

XXXXXXXXXXXXXXXXXXXX....



CONTACT RATINGS

5 AMPS @ 125VAC  
1 AMP @ 28VDC  
.25 AMP @ 125VDC