LAWRENCE
ENGINEERING GROUP

ADDENDUM **DATE: 1/12/24**

PROJECT: Jack G. Desmond Middle School
Cold Box Addition

JOB NO.: 21181
DSA File No.: 20-30
DSA App. No.: 02-120016

OWNER: Madera Unified School District
26490 Martin St.
Madera, CA 93638

ENGINEER: Lawrence Engineering Group
Attention: Ryan Carlson
4910 E. Clinton Way, Suite 101
Fresno, CA 93727
T. (559) 431-0101

It will be the responsibility of the General Contractor to submit the information contained in this addendum to all its subcontractors and suppliers. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

The following additions, deletions, and revisions to the Sheets and Project Manual are hereby made and do become a part of these Contract Documents.

DRAWINGS:

1. Refer to Sheet E1.01:
    a. **Replace** sheet with attached E1.01 per revision Delta 4 dated 12/29/23.

2. Refer to Sheet E2.01:
    a. **Replace** sheet with attached E2.01 per revision Delta 4 dated 12/29/23.

3. Refer to Sheet E5.01:
    a. **Add**: New attached Fire Alarm sheet E5.01 per revision Delta 4 dated 12/29/23.

4. Refer to Sheet E5.02:
    a. **Add**: New attached Fire Alarm sheet E5.02 per revision Delta 4 dated 12/29/23.

SUPPORTING DOCUMENTS:

1. Refer to Fire Alarm Booklet:
    a. **Add** Fire Alarm listed equipment booklet dated 1/9/24.

APPROVALS:

APPLICATION # 02-120016

ARC FLASH WARNING LABEL REQUIREMENTS

CONDITION 1

DANGER

ELECTRICAL ARC FLASH HAZARD

Will cause severe injury or death. Turn OFF ALL power before opening. Follow ALL requirements in NFPA 70E for safe work practices and for Personal Protective Equipment.

ARC FLASH HAZARD HAZARD WARNING LABELS SHALL BE FIELD MARKED/PLACED ON ALL NEW AND EXISTING ELECTRICAL DISTRIBUTION BOARDS, MAIN SWITCHBOARDS, TRANSFORMERS, PANELS, PANELBOARDS, DISCONNECTS, MCC'S. PER CEC/NEC 110.16A THAT IS WITHIN THE SCOPE OF THIS PROJECT. LABELS SHALL BE APPLIED TO EXISTING EQUIPMENT WHERE NEW CONNECTIONS ARE MADE. THE LABELS SHALL MEET THE REQUIREMENTS OF 110.21(B) PER ANSI Z535.4-2011 GUIDELINES BY USING EFFECTIVE COLORS, SYMBOLS OR ANY COMBINATION THEREOF.

CONDITION 2

DANGER

Arc Flash and Shock Hazard

Nominal System Voltage _____ Incident Energy (cal/cm²) _____
Arc Flash Boundary _____ Working Distance _____
Restricted Approach _____ PPE Hazard Category _____
Limited Approach _____ Arc Rating of Clothing _____

Arc-rated PPE:			Additional PPE:	
☐ Face shield	☐ Coverall		☐ Hard hat	☐ Leather footwear
☐ Long-sleeve shirt	☐ Balaclava	☐ Hard hat liner	☐ Safety goggles	☐
☐ Flash suit jacket	☐ Gloves	☐	☐ Safety glasses	☐
☐ Flash suit pants	☐ Jacket	☐	☐ Hearing protection	☐
☐ Flash suit hood	☐ Parka	☐	☐ Heavy duty leather gloves	☐
☐ Pants	☐ Rainwear	☐		

Equipment ID:

ARC FLASH HAZARD WARNING LABELS FOR AN ENTIRELY NEW ELECTRICAL SERVICE AND DISTRIBUTION SYSTEMS, THE EXCEPTION TO 110.16(B) SHALL BE UTILIZED AND ALL ELECTRICAL COMPONENTS OF THE DISTRIBUTION EQUIPMENT SHALL HAVE AN ARC FLASH WARNING LABEL WITH THE FOLLOWING INFORMATION:

a. NOMINAL SYSTEM VOLTAGE
b. ARC FLASH BOUNDARY
c. MINIMAL ARC RATING OF CLOTHING
d. AT LEAST ONE, BUT NOT BOTH OF THE FOLLOWING:
   - INCIDENT ENERGY & CORRESPONDING WORKING DISTANCE
   - THE ARC FLASH PPE CATEGORY

THE LABELS SHALL MEET THE REQUIREMENTS OF 110.21(B) PER ANSI Z535.4-2011 GUIDELINES BY USING EFFECTIVE COLORS, SYMBOLS OR ANY COMBINATION THEREOF. THE CONTRACTOR SHALL HAVE THE EQUIPMENT MANUFACTURER PROVIDE THE REQUIRED LABELING OR OBTAIN THE SERVICES OF A THIRD PARTY OR THE ELECTRICAL ENGINEER OF RECORD.

CONDITION 3

ARC FLASH HAZARD WARNING LABELS SHALL BE FIELD MARKED/PLACED ON ALL NEW SERVICE EQUIPMENT WITH THE FOLLOWING INFORMATION: NOMINAL SYSTEM VOLTAGE, AVAILABLE FAULT CURRENT AT THE SERVICE OVERCURRENT PROTECTIVE DEVICES, CLEARING TIME OF THE SERVICE OVERCURRENT PROTECTIVE DEVICES BASED ON THE AVAILABLE FAULT CURRENT AT THE SERVICE EQUIPMENT, THE DATE THE LABEL WAS APPLIED. THE LABELS SHALL MEET THE REQUIREMENTS OF 110.21(B) PER ANSI Z535.4-2011 GUIDELINES BY USING EFFECTIVE COLORS, SYMBOLS OR ANY COMBINATION THEREOF.

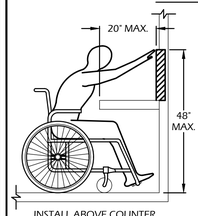
120V BRANCH CIRCUIT VOLT DROP CONDUCTOR LENGTH CHART

LOAD IN VOLT AMPERES	LENGTH OF CONDUCTOR WIRE SIZE IN (GAUGE)				
	#12	#10	#8	#6	#4
1200VA	74	121	183	284	434
1560VA	57	93	141	218	334
1800VA	49	81	122	189	289
1920VA	46	76	115	178	271
2340VA	X	62	94	146	223
2880VA	X	51	76	118	181
3000VA	X	48	73	114	174
3900VA	X	X	56	87	134
4800VA	X	X	46	71	108

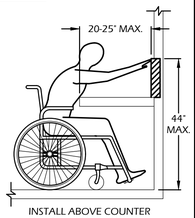
NOTES:
1. THIS CHART IS FOR COPPER CONDUCTORS ONLY.
2. THIS CHART ASSUME AN 80% POWER FACTOR AND STEEL RACEWAYS.
3. 2019 CALIFORNIA ENERGY CODE, 130.5(c) ALLOWS A MAXIMUM COMBINED VOLTAGE DROP OF 5%. THIS CHART ASSUMES A MAXIMUM LENGTH OF CONDUCTORS FOR LESS THAN 2% VOLTAGE DROP ON A BRANCH CIRCUIT AT GIVEN VA LOAD.
4. USE WIRE SIZE FROM THIS CHART UNLESS LARGER CONDUCTOR SIZES ARE NOTED ON THE DRAWINGS.
5. FOR VA VALUES NOT SHOWN USE NEXT HIGHEST VALUE FROM VALUE FROM THE CHART.

TYPICAL WALL DEVICE MOUNTING HEIGHTS

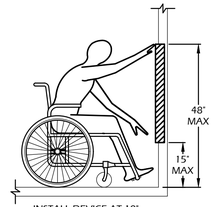
ADA GUIDELINES



INSTALL ABOVE COUNTER DEVICE AT 44" ABOVE FINISHED FLOOR.

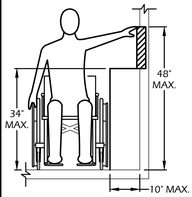


INSTALL ABOVE COUNTER DEVICE AT 40" ABOVE FINISHED FLOOR.

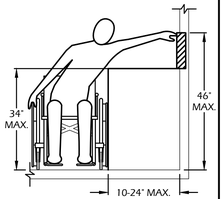


INSTALL DEVICE AT 18" ABOVE FINISHED FLOOR

FRONT ACCESS

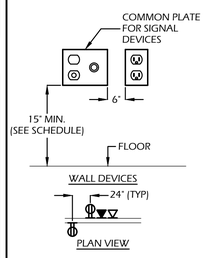


INSTALL DEVICE AT 44" ABOVE FINISHED FLOOR.



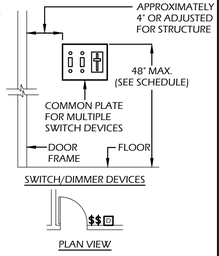
INSTALL DEVICE AT 42" ABOVE FINISHED FLOOR.

SIDE ACCESS



WALL DEVICES

PLAN VIEW



SWITCH/DIMMER DEVICES

PLAN VIEW

DEVICE TYPE	MOUNTING HEIGHT
SWITCHES	NO MORE THAN 48" A.F.F. TO TOP OF DEVICE
DIMMERS	NO MORE THAN 48" A.F.F. TO TOP OF DEVICE
RECEPTACLES	NO LESS THAN 15" A.F.F. TO BOTTOM OF DEVICE
TEL. OUTLETS (OFFICE)	NO LESS THAN 15" A.F.F. TO BOTTOM OF DEVICE
TEL. OUTLETS (CLASSROOMS)	NO MORE THAN 48" A.F.F. TO TOP OF DEVICE
DATA OUTLETS	NO LESS THAN 15" A.F.F. TO BOTTOM OF DEVICE
INTERCOM OUTLETS	NO LESS THAN 15" A.F.F. TO BOTTOM OF DEVICE
TELEVISION OUTLETS	NO LESS THAN 15" A.F.F. TO BOTTOM OF DEVICE
MICROPHONE OUTLETS	NO LESS THAN 15" A.F.F. TO BOTTOM OF DEVICE
RECEPTACLES, OUTLETS, SWITCHES, ETC. MOUNTED ABOVE COUNTERS	WITHIN THE REACH RANGE SPECIFIED IN SECTION 11B-308 OF THE CALIFORNIA BUILDING CODE.
CLOCKS	AS SHOWN ON DRAWINGS
SPEAKERS	AS SHOWN ON DRAWINGS
HAND DRYERS	REFER TO ARCHITECTURAL PLANS
HAIR DRYERS	REFER TO ARCHITECTURAL PLANS
WALL SCONCES	ABOVE 80" FOR PROJECTIONS INTO CORRIDORS OF MORE THAN 4" OR AS SHOWN ON DRAWING
EXIT LIGHTS	SEE DETAILS
EXIT MARKERS	SEE DETAILS
EMERGENCY LIGHTING WALL PACK	AS SHOWN ON DRAWINGS
KEYPADS	NO MORE THAN 48" A.F.F. TO TOP OF DEVICE
WIREMOLD	MOUNTING HEIGHT SHALL BE SUCH THAT THE LOWEST DEVICE MOUNTED ON WIREMOLD IS AT 15" A.F.F. TO BOTTOM OF DEVICE, U.O.N.

NOTES:
1. ALL VERTICAL MEASUREMENTS ARE 'ABOVE FINISHED FLOOR' - (A.F.F.).
2. SEE DRAWINGS FOR NON-TYPICAL MOUNTING HEIGHTS.
3. WHERE MOUNTING HEIGHTS ARE NOT SHOWN, REFER TO ARCHITECTURAL PLANS.
4. RECEPTACLES, LIGHT SWITCHES, TELEPHONE-DATA OUTLETS AND OTHER RECESSED ELECTRICAL DEVICES THAT ARE SHOWN BACK-TO-BACK ON WALLS SEPARATING CORRIDORS, ROOMS AND OPEN AREAS SHALL BE SEPARATED HORIZONTALLY BY AT LEAST 24 INCHES. THIS REQUIREMENT IS TO SATISFY BOTH THE CONDITIONS AT FIRE RATED CORRIDORS AND SOUND TRANSMISSION FACTOR BETWEEN ALL CORRIDORS, ROOMS AND OPEN AREAS INCLUDING EXTERIOR WALLS.

STANDARD SYMBOL LEGEND

- (#) FIXTURE DESIGNATOR - '#' INDICATES FIXTURE TYPE.
- LIGHT FIXTURE - APPROXIMATELY TO SCALE
- FIXTURE WITH 90 MINUTE EMERGENCY BATTERY BACK-UP UNIT - SEE TYPICAL WIRING DETAIL
- O_a^3 LIGHT FIXTURE - WALL OR CEILING MOUNTED. '3' INDICATES CIRCUIT, 'a' INDICATES SWITCH CONTROL.
- EXIT LIGHTS- CEILING OR WALL MOUNTED, ARROW(S) INDICATES DIRECTION.
- EXISTING POLE LIGHTING
- S1 WATTSTOPPER LMRC-101 ON/OFF, 1 SWITCH LEG LIGHTING CONTROLLER
- S2 WATTSTOPPER LMRC-102 ON/OFF, 2 SWITCH LEG LIGHTING CONTROLLER
- D1 WATTSTOPPER LMRC-211 DIMMING, 1 SWITCH LEG LIGHTING CONTROLLER
- D2 WATTSTOPPER LMRC-212 DIMMING, 2 SWITCH LEG LIGHTING CONTROLLER
- D3 WATTSTOPPER LMRC-213 DIMMING, 3 SWITCH LEG LIGHTING CONTROLLER
- WATTSTOPPER LMDC-100 DUAL TECHNOLOGY MOTION SENSOR
- WATTSTOPPER LMDX-100 DUAL TECHNOLOGY OCCUPANCY SENSOR
- SW_a WATTSTOPPER LMSW-101 SWITCH, 'a' INDICATES SWITCH LEG CONTROL. 2 LETTERS NEXT TO EACHOTHER WITHOUT A COMMA INDICATES 1 SWITCH LEG
- DI_a WATTSTOPPER LMDM-101 DIMMER, 'a' INDICATES SWITCH LEG CONTROL. 2 LETTERS NEXT TO EACHOTHER WITHOUT A COMMA INDICATES 1 SWITCH LEG
- PS WATTSTOPPER LMLS-400 PHOTOSENSOR
- RC WATTSTOPPER LMPL-201 RECEPTACLE CONTROLLER
- PANEL IDENTIFICATION
- CIRCUIT IDENTIFICATION
- SWITCH-LEG IDENTIFICATION

'PNL'-#a

LIGHTING AND RECEPTACLE ROOM CONTROLLERS SHALL BE LOCATED ABOVE THE T-BAR CEILING FOR THE ROOMS THEY ARE CONTROLLING. IF THE ROOM WITH THE CONTROLLED DEVICES HAS A HARD CEILING THEN LOCATE THE ROOM CONTROLLERS AT THE NEAREST ADJACENT ROOM WITH A T-BAR CEILING. IF NO T-BAR CEILINGS EXISTS LOCATE THE ROOM CONTROLLERS IN THE ELECTRICAL ROOM. LABEL ALL ROOM LIGHTING AND RECEPTACLE CONTROLLERS WITH THE ROOM NAME, ROOM NUMBER, AND CIRCUIT(S) THEY CONTROL.

- SKYLIT OR PRIMARY SIDE DAYLIT ZONE
- SECONDARY SIDE DAYLIT ZONE
- $ SPST TOGGLE WALL SWITCH - 20A, 120/277V, 'a' INDICATES CONTROL
- $_{OC}$ OCCUPANCY SENSOR COMBO WALL SWITCH - 20A, 120/277V RATED
- CEILING OR WALL MOUNTED JUNCTION BOX
- PULLBOX(S) - SIZE AND NUMBER AS INDICATED
- RECEPTACLE, DUPLEX - 20A, 120V & GROUND
- RECEPTACLE, DUPLEX CEILING MOUNTED
- RECEPTACLE, DUPLEX - WITH ONE-HALF SWITCHED/CONTROLLED
- RECEPTACLE, DUPLEX- WITH GFCI PROTECTION
- WP RECEPTACLE, DUPLEX - WITH GFCI PROTECTION IN WEATHERPROOF HOUSING
- 20A, 120V RECEPTACLE, DUPLEX- WITH TWO USB PORTS
- RECEPTACLE, DOUBLE DUPLEX - (2) 20A, 120V & GROUND
- RECEPTACLE, DOUBLE DUPLEX CEILING MOUNTED
- RECEPTACLE, DOUBLE DUPLEX WITH GFCI PROTECTION
- RECEPTACLE, DOUBLE DUPLEX - WITH ONE-HALF SWITCHED/CONTROLLED
- RECEPTACLE, DOUBLE DUPLEX - WITH ONE-HALF SWITCHED/CONTROLLED, FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED.
- RECEPTACLE, SPECIAL - REFER TO FLOOR PLAN FOR RECEPTACLE SIZE.
- TELEPHONE OUTLET: PROVIDE & INSTALL 2-GANG BOX WITH 1" CONDUIT. STUB-UP INTO T-BAR CEILING. FOR HARD CEILINGS, RUN THE CONDUIT TO THE CABLE TERMINATION LOCATION INDICATED PER THE RISER DIAGRAM.
- DATA OUTLET: PROVIDE & INSTALL 2-GANG BOX WITH 1" CONDUIT. STUB-UP INTO T-BAR CEILING. FOR HARD CEILINGS, RUN THE CONDUIT TO THE CABLE TERMINATION LOCATION INDICATED PER THE RISER DIAGRAM.
- RECEPTACLE, FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED.
- RECEPTACLE WITH ONE-HALF SWITCHED/CONTROLLED, FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED.
- TELEPHONE OUTLET, FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED.
- DATA OUTLET, FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED.
- INTERCOM OUTLET, FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED.
- FLUSH, FLOOR MOUNTED DUPLEX RECEPTACLE, DATA JACK, AND TELEPHONE JACK.
- DATA OUTLET, CEILING MOUNTED
- CEILING OR WALL MOUNTED WIRELESS ACCESS POINT PROVISIONS. PROVIDE AND INSTALL ONE DATA CABLE FROM EACH ACCESS POINT TO IDF. FOR HARD CEILINGS TERMINATE THE CABLES INTO A BOX WITH COVER PLATE. FOR T-BAR CEILINGS TERMINATE THE CABLES INTO A CUBE CAT-6 PORT AND CURL UP THE CABLE WITH 10-FEET OF SLACK. LEAVE ABOVE THE T-BAR CEILING. PROVIDE A LABEL BENEATH THE T-BAR CEILING TO INDICATE DATA PORTS ABOVE.

- 3/4" THICK x 96" TALL FIRE RETARDANT PLYWOOD BACKBOARD, PROVIDE QUANTITY OF PLYWOOD SHEETS TO ENCOMPASS ENTIRE LENGTH INDICATED ON PLANS.
- TERMINAL CABINET - SURFACE OR FLUSH MOUNTED WITH FLAME RETARDANT PLYWOOD BACKBOARD
- PANELBOARD - SURFACE OR FLUSH MOUNTED
- DISTRIBUTION OR SWITCHBOARD
- NEUTRAL LINK
- TRANSFORMER
- TRANSFORMER
- #A/#B/#C FUSED DISCONNECT - MOTOR RATED. FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR. DISCONNECTS TO BE FURNISHED WITH DUAL ELEMENT FUSES SIZED ACCORDING TO NAME PLATE DATA ON EQUIPMENT INSTALLED. SIZE AS : #A = AMPERE RATING OF DISCONNECT, #B = POLES, #C = FUSE SIZE REQUIRED. ALSO REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR DISCONNECT REQUIREMENTS. IF NO AMPERE RATING IS INDICATED ON PLAN SIZE DISCONNECT PER NAMEPLATE RATING AND CEC.
- #A/#B UNFUSED DISCONNECT - MOTOR RATED, FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR: #1 = AMPERE RATING OF DISCONNECT, #2 = POLES REQUIRED. ALSO REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR DISCONNECT REQUIREMENTS. IF NO AMPERE RATING IS INDICATED ON PLAN SIZE DISCONNECT PER NAMEPLATE RATING AND CEC.
- MAGNETIC MOTOR STARTER FURNISHED, INSTALLED AND CONNECTED BY ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED.
- MOTOR - FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR AND CONNECTED BY ELECTRICAL CONTRACTOR.
- M METER
- FIRE SPRINKLER HEAD. REFER TO OTHER DISCIPLINE PLANS.
- INTRUSION ALARM DOOR CONTACT PROVISION, SEE TYPICAL DETAILS.
- INTRUSION ALARM KEYPAD
- INTRUSION ALARM MOTION DETECTOR, AIM AS INDICATED ON PLANS.
- GROUND
- CIRCUIT BREAKER
- EXISTING ABOVE GROUND CONDUIT
- EXISTING UNDERGROUND CONDUIT
- WIREMOLD 5400 SERIES DUAL CHANNEL IVORY RACEWAY. PROVIDE ALL ACCESSORIES, FITTINGS, DIVIDERS, ETC FOR A COMPLETE AND FULLY FUNCTIONAL SYSTEM.
- WIREMOLD RACEWAY VERTICAL RUNS. PROVIDE ALL ELBOWS, FITTINGS, AND CONNECTORS AS NECESSARY FOR A COMPLETE RACEWAY SYSTEM.
- NEW ELECTRICAL EQUIPMENT
- EXISTING ELECTRICAL EQUIPMENT TO REMAIN
- EXISTING ELECTRICAL EQUIPMENT TO BE DEMOLISHED
- GROUND WIRE WITH GREEN INSULATION SIZE PER N.E.C., U.O.N.
- CONDUIT CONCEALED IN WALL OR CEILINGS. PROVIDE NUMBER OF WIRES NECESSARY FOR BRANCH CIRCUIT, SWITCH LEGS, ETC. PROVIDE SEPARATE NEUTRALS FOR EACH PHASE WIRE. SIZE SHALL BE DETERMINED BY OCPD CONNECTED TO THE PHASE CONDUCTORS AND VOLTAGE DROP CONSIDERATIONS. ALL CONDUITS SHALL HAVE GROUND CONDUCTOR(S). SIZE CONDUIT PER NEC.
- CONDUIT CONCEALED UNDERGROUND OR BELOW FLOOR, MINIMUM SIZE IS 3/4". PROVIDE NUMBER OF WIRES NECESSARY FOR BRANCH CIRCUIT, SWITCH LEGS, ETC. PROVIDE SEPARATE NEUTRALS FOR EACH PHASE WIRE. SIZE SHALL BE DETERMINED BY OCPD CONNECTED TO THE PHASE CONDUCTORS AND VOLTAGE DROP CONSIDERATIONS. ALL CONDUITS SHALL HAVE GROUND CONDUCTOR(S). SIZE CONDUIT PER NEC.
- CONDUIT- UP
- CONDUIT-DOWN
- # SHEET NOTE NUMBER - #, SEE NOTE DESCRIPTION ON SAME SHEET.
- # GENERAL NOTE NUMBER - #, SEE NOTE DESCRIPTION ON SAME SHEET.
- # REFERENCE TO PLAN/DETAIL/DIAGRAM
- XX X DESIGNATES SIZE AND QUANTITY OF FEEDERS SEE FEEDER SCHEDULE
- PROVIDE AND INSTALL TWO MALE F-TYPE CONNECTORS AND TV FACEPLATE. PROVIDE AND INSTALL RG-6 COAXIAL CABLE FROM EACH CONNECTOR TO THE CABLE TV HEADEND & TERMINATE WITH A MALE F-TYPE CONNECTOR.
- TELEVISION OUTLET IN FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED, SEE TELEVISION SYMBOL.
- (#) NUMBER IN PARENTHESIS INDICATES QUANTITY OF DEVICES. TYPICAL FOR ALL TYPES OF DEVICES.
- SPEAKER - WALL OR CEILING MOUNTED, REFER TO RISER DIAGRAM AND/OR NOTES ON PLANS.
- CLOCK, REFER TO RISER DIAGRAM AND/OR NOTES ON PLANS.
- COMBINATION CLOCK & SPEAKER, SEE CLOCK & SPEAKER SYMBOLS.

ELECTRICAL EQUIPMENT NOTES

1. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF ELECTRICAL EQUIPMENT, DEVICES AND WIRING. REFER TO THE TECHNICAL SPECIFICATIONS FOR FURTHER REQUIREMENTS.

ELECTRICAL SHEET LIST

THESE PLANS ARE ACCOMPANIED WITH BOOK SPECIFICATIONS THAT FORM PART OF THE CONTRACT DOCUMENTS.

ABBREVIATIONS

A. AMP	AMPERES
A.C.	ABOVE COUNTER
A.F.F.	ABOVE FINISHED FLOOR
AL	ALUMINUM CONDUCTOR OR BUS
BD	BOARD
C	CONDUIT
CAB	CABINET
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CC	CENTER TO CENTER
CKT	CIRCUIT
CO	CONDUIT ONLY (EMPTY CONDUIT) WITH PULL WIRE
CPB	COMMUNICATIONS PULL BOX
CU	COPPER CONDUCTOR OR BUS
DB	DISTRIBUTION PANEL
(E)	EXISTING
EM	EMERGENCY
EMT	ELECTRIC METALLIC TUBING
E.O.L.	END-OF-LINE
EPO	EMERGENCY POWER-OFF
EWC	ELECTRIC WATER COOLER
F	FUSE
F.A./FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
F.B.O.	FURNISHED BY OTHER/FURNISHED BY OWNER
FLA	FULL LOAD AMPS
FMC	FLEXIBLE METALLIC CONDUIT
FS	FLOW SWITCH
G	GREEN GROUND WIRE
GFCI	GROUND FAULT CIRCUIT INTERRUPT
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HC	HORIZONTAL CROSSCONNECT
HID	HIGH INTENSITY DISCHARGE
HPS	HIGH PRESSURE SODIUM
I.B.O.	INSTALLED BY OTHER
I.B.E.	INSTALLED AND CONNECTED BY ELECTRICAL CONTRACTOR
IDF	INTERMEDIATE DISTRIBUTION FRAME (DATA)
IG	ISOLATED GROUND
INT	INTRUSION ALARM
J/JB	JUNCTION BOX
KV	KILOVOLTS
KVA	KILOVOLTS-AMPERES
KW	KILOWATT
LFMC	LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT
LCP	LIGHTING CONTROL PANEL
LTG	LIGHTING
LV	LOW VOLTAGE
MTD	MOUNTED
MTG	MOUNTING
MLO	MAIN LUG ONLY
N	NEUTRAL
(N)	NEW
NL	NIGHT LIGHT
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
O.C./OC	ON CENTER
OFOI	OWNER FURNISHED OWNER INSTALLED
Ø	PHASE
P	POLE
P.A./PA	PUBLIC ADDRESS SYSTEM
PB	PULL BOX
PIV	POST INDICATOR VALVE
PNL	PANEL
PPB	POWER PULL BOX
REC/RECEPT.	RECEPTACLE
REF.	REFRIGERATOR
RELO	RELOCATABLE BUILDING/ PORTABLE BUILDING
RM	ROOM
RS	RAPID START
RU	RACK UNIT
SCE	SIGNAL CURRENT EXPANDER PANEL
S.L.	SECURITY LIGHT
SCTB	SIGNAL AND COMMUNICATION TERMINAL BACKBOARD
SPB	SIGNAL PULL BOX
SPD	SURGE SUPPRESSION DEVICE
STB	SIGNAL TERMINAL BOARD
STC	SIGNAL TERMINAL CABINET
SW	SWITCH
TPB	TELEPHONE PULL BOX
TS	TAMPER SWITCH
TEL	TELEPHONE
TERM	TERMINAL
TYP	TYPICAL
TTB	TELEPHONE TERMINAL BOARD
TTC	TELEPHONE TERMINAL CABINET
U.C.	UNDER COUNTER
UG	UNDERGROUND
U.O.N.	UNLESS OTHERWISE NOTED
V	VOLTS/VOLTAGE
V.P.	VANDAL PROOF
W	WATTS
WP	WEATHERPROOF
WM	WIREMOLD

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2032 N. Gateway Boulevard
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ca-bai@borrelliengineering.com
BAI# 21162

REGISTERED PROFESSIONAL ENGINEER — DAVID BORRELLI — No.E16390 — EXP. 6/30/25 — ELECTRICAL — STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — RYAN W. CARLSON — M34846 — Exp. 6-30-24 — MECHANICAL — STATE OF CALIFORNIA

DATE: 12-29-2023

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REVISIONS
1 12-28-23 ADDENDUM #4

LAWRENCE ENGINEERING GROUP
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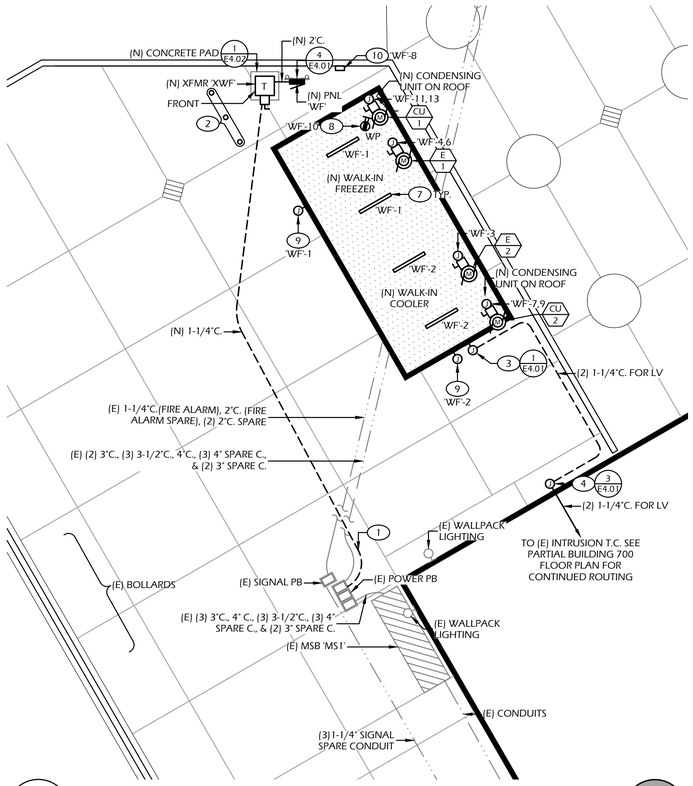
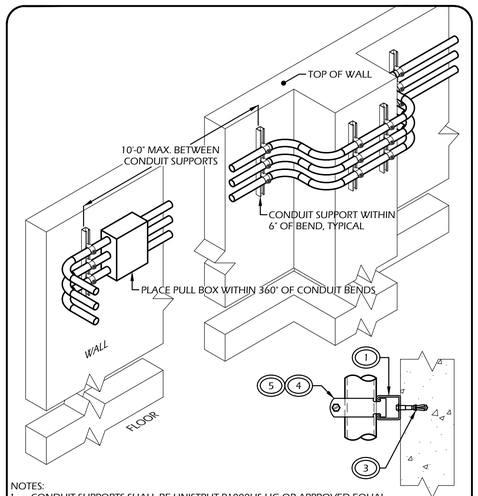
TITLE: SYMBOL LEGEND, NOTES, ABBREVIATIONS, AND REQUIREMENTS

SHEET: E1.01

PROJECT 21181

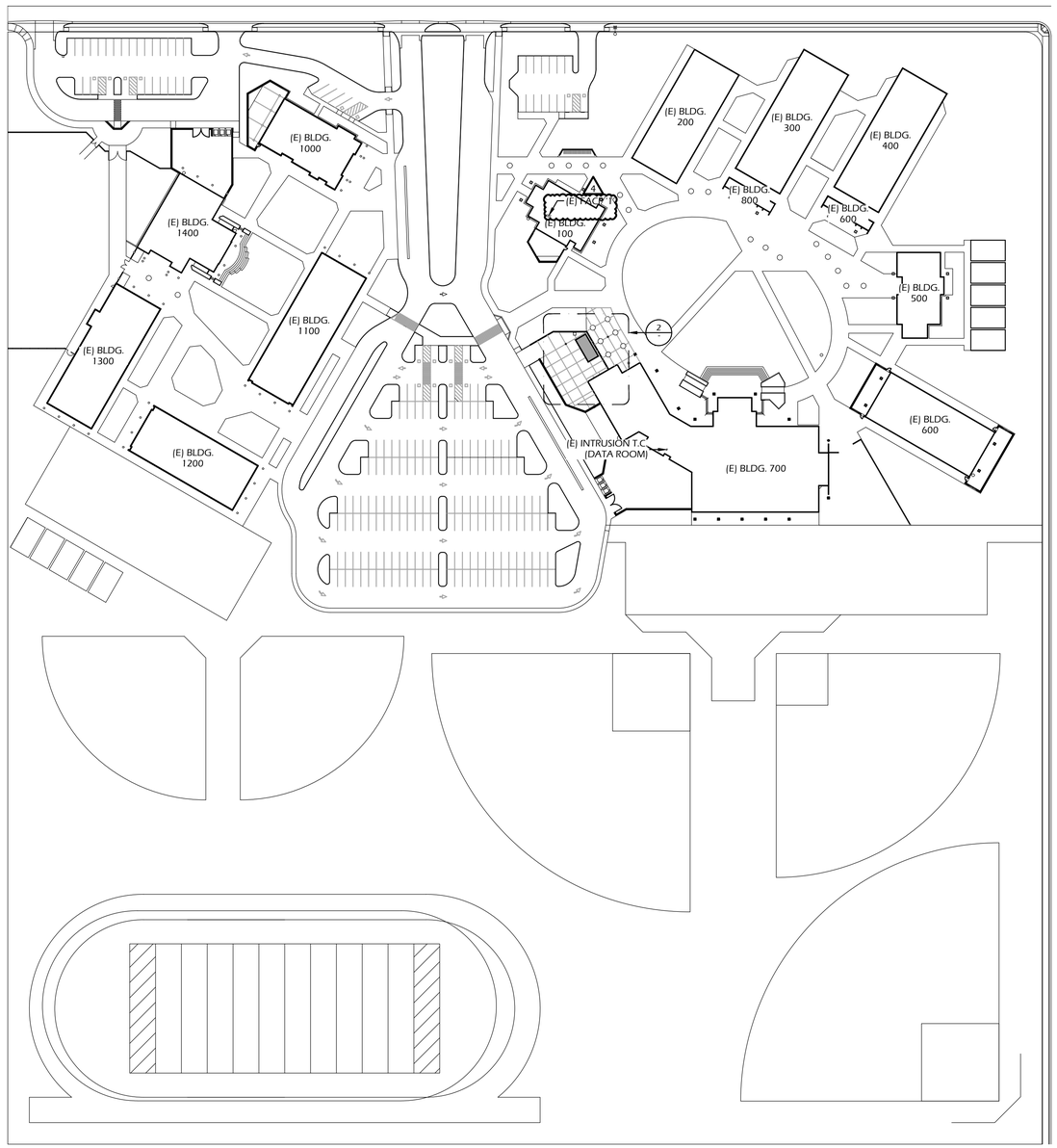


2 / - **PARTIAL ELECTRICAL SITE PLAN**
SCALE: 1/8"=1'-0"



NOTES:
1. CONDUIT SUPPORTS SHALL BE UNISTRUT P1000HS-HG OR APPROVED EQUAL.
2. CONDUIT SUPPORTS SHALL EXTEND 3" BEYOND CONDUITS.
3. MOUNT CONDUIT SUPPORTS TO WALL WITH HILTI 1/2"x3-3/4", STAINLESS STEEL KWIK-BOLT TZ2 EXPANSION ANCHORS. EACH SUPPORT SHALL BE FASTENED IN PLACE WITH A MINIMUM OF TWO BOLTS. TORQUE PER ICC-ES ESR-4266 FOR CONCRTET AND 4561 FOR CMU. BOLT SPACING SHALL NOT EXCEED 12". FOR CMU WALLS, INSTALL BOLTS AS CLOSE TO CENTER OF THE BLOCKS AS POSSIBLE.
4. MOUNT CONDUITS TO CONDUIT SUPPORTS WITH ELECTRO-GALVANIZED UNISTRUT, OR APPROVED EQUAL, PIPE CLAMPS. MODEL NUMBERS OF CLAMPS WILL VARY DEPENDING ON SIZE AND TYPE OF CONDUITS.
5. THE CONDUIT SUPPORTS AND PIPE CLAMPS SHALL BE MADE BY THE SAME MANUFACTURER.
6. MOUNT CONDUIT NEAR TOP OF WALL UNLESS OTHERWISE NOTED.
7. PROVIDE A PULL BOX ON EACH SIDE OF A COLUMN OR OTHER OBSTRUCTION REQUIRING BENDS IN THE CONDUITS.
8. COORDINATE WITH THE STRUCTURAL PLANS.

3 / - **TYPICAL CONDUIT MOUNTING AT CONCRETE OR CMU WALL OR HORIZONTAL MOUNTING**
NOT TO SCALE



1 / - **PARTIAL FIRE ALARM AND ELECTRICAL SITE PLAN**
SCALE: 1"=80'-0"

SHEET NOTES

1. FASTEN CONDUIT TO WALL. REFER TO THE CONDUIT MOUNTING TO CMU WALL DETAIL, THIS SHEET.
2. PROVIDE AND INSTALL NEW FIXED BARRIER POST.
3. PROVIDE AND INSTALL A 6x6x4-INCH J-BOX, MOUNTED UP HIGH. TERMINATE THE SPARE COMMUNICATIONS CONDUITS AT J-BOX.
4. PROVIDE AND INSTALL A 6x6x4-INCH J-BOX, MOUNTED UP HIGH ABOVE THE INTERIOR CEILING LEVEL. PROVIDE (2) 1-1/4-INCH CONDUIT, NIPPLE THROUGH WALL TO THE ATTIC FOR FUTURE COMMUNICATION CABLES.
5. NOT USED.
6. NOT USED.
7. LIGHT FIXTURE SHALL BE MASTER-BILT 48-INCH FIXTURE P/N #157752. FIXTURE SHALL HAVE OPTIONAL CEILING MOUNT AND MOUNTED ON CEILING OF FREEZER/COOLER.
8. MOUNT RECEPTACLE ON ROOF.
9. PROVIDE AND INSTALL A 1-1/4-INCH CONDUIT BACK TO PANEL INDICATED. MAKE CONNECTIONS TO THE NL708 HIGH/LOW ALARM AND LIGHTING MANAGEMENT SYSTEM. MAKE ALL LIGHTING CONNECTIONS WITH 3/4-INCH LIQUID TIGHT CONDUITS TO THE LIGHT AND SWITCHES. COORDINATE WITH WALK-IN FREEZER CONTRACTOR FOR EXACT LOCATION.
10. NEW FIRE ALARM BELL. REFER TO FIRE SPRINKLER PLAN.

GENERAL NOTES

1. ALL CONDUIT PENETRATIONS SHALL BE SEALED WITH APPROVED SEALANT TO PREVENT MOISTURE PENETRATION WITHIN THE FREEZER AND COOLER.
2. ALL PANELS SHALL BE LOCKABLE.
3. COORDINATE WITH THE REFRIGERATION CONTRACTOR. PART NUMBERS WITHIN THIS PLAN ARE PER THE BUILT OF MATERIAL FOR THE WALK-IN BOXES. COORDINATE WITH THE REFRIGERATION CONTRACTOR FOR EQUIPMENT PURCHASE.

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BAI# 21162

REGISTERED PROFESSIONAL ENGINEER — JOHN BORRELLI — No.E16390 — EXP. 6/30/23 — ELECTRICAL — CALIFORNIA

APPROVALS:
APPLICATION # 02-120016

REGISTERED PROFESSIONAL ENGINEER — RYAN W. CARLSON — M34846 — Exp. 6-30-24 — MECHANICAL — STATE OF CALIFORNIA

DATE: 12-29-2023

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REVISIONS
1 11-10-23 ADDENDUM #2
4 12-28-23 ADDENDUM #4

LAWRENCE ENGINEERING GROUP
Fresno, CA 93720
FAX (559) 431-1362
7084 N. Maple Ave., Suite 101
(559) 431-5701

TITLE: 4 PARTIAL FIRE ALARM AND ELECTRICAL SITE PLAN

SHEET: E2.01
PROJECT 21181

FIRE ALARM SYSTEM NOTES

1. APPLICABLE STANDARD NFPA 72, AS ADOPTED AND AMENDED IN CBC CHAPTER 35.
2. ALL WORK AND MATERIALS SHALL COMPLY WITH THE LATEST REGULATIONS OF THE STATE FIRE MARSHAL, CALIFORNIA CODE OF REGULATIONS, SERVING UTILITY COMPANIES, AND OTHER APPLICABLE STATE ORDINANCES. NOTHING IN THESE PLANS OR SPECIFICATIONS IS TO BE CONSTRUED AS TO PERMIT WORK NOT CONFORMING TO THESE CODES. WHERE WORK OF A HIGHER DEGREE IS INDICATED IN THE PLANS OR SPECIFICATIONS THIS REQUIREMENT SHALL GOVERN.
3. THE FIRE ALARM SYSTEM DESIGN IS A "COMPLETE PLAN SUBMITTAL". THE CONTRACTOR SHALL INSTALL THE SYSTEM AS SHOWN AND AS HEREIN SPECIFIED.
4. ALARM INDICATING DEVICES OF A FIRE ALARM SYSTEM INTENDED TO ALERT ALL OCCUPANTS SHALL BE SO LOCATED AND UNOBSTRUCTED AS TO CAUSE A LEVEL OF AUDIBILITY OF NOT LESS THAN 15 DB ABOVE AMBIENT NOISE LEVELS MEASURED FOUR FEET ABOVE THE FLOOR INSIDE BUILDING. AMBIENT NOISE LEVELS SHALL BE CONSTRUED TO MEAN THAT WHICH CAN NORMALLY BE EXPECTED TO EXIST WHEN THE FACILITY, BUILDING, ROOM OR AREA IS FUNCTIONING UNDER NORMAL OPERATIVE OR WORKING CONDITIONS.
5. UPON COMPLETION OF THE INSTALLATION OF THE FIRE PROTECTIVE SIGNALING EQUIPMENT, A SATISFACTORY TEST OF THE ENTIRE SYSTEM SHALL BE MADE IN THE PRESENCE OF THE ENFORCING FIRE AGENCY PER CHAPTER 14, NFPA 72, AND A CERTIFICATE OF COMPLETION SHALL BE PROVIDED TO THE OWNER PER CHAPTER 7, NFPA 72, AND THE CALIFORNIA FIRE CODE, SECTION 907.7.
6. INSTALLATION OF THE SYSTEMS SHALL NOT BE STARTED UNTIL DETAILED DESIGN DOCUMENTS AND SPECIFICATION, INCLUDING STATE FIRE MARSHAL LISTING NUMBERS FOR EACH COMPONENT OF THE SYSTEM, HAS BEEN APPROVED BY DSA.
7. THE FIRE ALARM SYSTEM SHALL TRANSMIT THE ALARM, SUPERVISORY, AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION IN ACCORDANCE WITH NFPA 72. THE SUPERVISING STATION SHALL BE LISTED AS EITHER UUFX (CENTRAL STATION) OR UUJS (REMOTE AND PROPRIETARY) BY UNDERWRITERS LABORATORY (UL) OR SHALL COMPLY WITH THE REQUIREMENTS OF STANDARD FM 3011.
8. ALL PENETRATIONS THROUGH RATED ASSEMBLIES REQUIRING OPENING PROTECTION SHALL BE PROVIDED WITH A PENETRATION FIRE STOP SYSTEM AS IDENTIFIED IN CBC CHAPTER 7, UL OR OTHER APPROVED LAB TESTING CRITERIA. APPROVED TYPES OF MATERIALS SHALL BE IDENTIFIED WITHIN THE PROJECT SPECIFICATIONS WITHIN THE FIRE ALARM SECTION.
9. THE CONTRACTOR SHALL ADJUST/INSTALL ALL DEVICES TO MAXIMIZE PERFORMANCE AND TO MINIMIZE FALSE ALARMS.
10. DSA, ARCHITECT/ENGINEER AND OWNER SHALL BE NOTIFIED A MINIMUM OF 48 HOURS PRIOR TO THE FINAL INSPECTION AND/OR TESTING.
11. AFTER SUCCESSFUL TESTING OF THE FIRE ALARM SYSTEM, COMPLETE THE NFPA 72 RECORD OF COMPLETION AND PROVIDE COPIES TO THE ARCHITECT, OWNER, LOCAL FIRE AUTHORITY, AND DSA (VIA THE PROJECT INSPECTOR).
12. A STAMPED SET OF APPROVED FIRE ALARM DESIGN DOCUMENTS SHALL BE ON THE JOB SITE AND USED FOR INSTALLATION.
13. ANY DISCREPANCIES BETWEEN THE DRAWINGS AND THE CODE OR RECOGNIZED STANDARDS SHALL BE BROUGHT TO THE ATTENTION OF DSA AND THE ARCHITECT/ENGINEER OF THE PROJECT.
14. PROVIDE ALL REQUIRED FIRE ALARM PANEL SYSTEM CARDS, HARDWARE, ETC. FOR A FULLY FUNCTIONAL SYSTEM. PROVIDE ALL FIRE ALARM ZONE INDICATORS AND SCHEDULES AT THE THE FIRE ALARM CONTROL PANEL AND REMOTE ANNUNCIATORS (WHEN REMOTE ANNUNCIATORS ARE USED).
15. UNDERGROUND AND EXTERIOR CONDUITS SHALL HAVE WATER TIGHT FITTINGS AND WIRE TO BE APPROVED FOR WET LOCATIONS.
16. PER CEC STANDARDS, ALL WIRING SHALL BE PULLED THROUGH EACH JUNCTION BOX AND CONNECTED DIRECTLY TO EACH FIRE DEVICE. DO NOT SPLICE THE WIRE. ALL BOXES TO BE SIZED PER CEC.
17. ALL FIRE ALARM CIRCUITS SHALL BE IN CONDUIT, SURFACE RACEWAY OR OPEN RUN ABOVE CEILINGS, UNDER FLOORS AND IN WALLS IN A NEAT AND PROTECTED MANOR AS INDICATED ON DESIGN DOCUMENTS. EXPOSED CIRCUITS ARE ONLY PERMITTED WHEN NOTED AS EXPOSED ON DESIGN DOCUMENTS.
18. FIRE ALARM PANEL, REMOTES, AND COMPONENTS SHALL BE SECURED TO MOUNTING SURFACES PER MANUFACTURERS SPECIFICATIONS. NO SINGLE DEVICE SHALL EXCEED 20 LBS. WITHOUT SPECIAL MOUNTING DETAILS.
19. THE INSTALLING CONTRACTOR SHALL PROVIDE A COMPLETED "SYSTEM RECORD OF COMPLETION" PER NFPA 72, FIGURE 17.8.2.
20. THE INSTALLING CONTRACTOR SHALL PROVIDE SYSTEM PROGRAMMING FOR SUPERVISORY MONITORING PER CBC SECTION 901.6.2.
21. SUPERVISORY MONITORING SHALL BE TESTED AND VERIFIED AS SENDING CORRECT SIGNALS IN CONJUNCTION WITH FINAL ACCEPTANCE TEST.
22. OWNER SHALL BE RESPONSIBLE FOR ESTABLISHING A FIRE SYSTEM MONITORING CONTRACT OR PROVISIONS.
23. PROVIDE A FIRE WATCH IF CLASSES ARE IN SESSION AND ALTERATION OF LIFE SAFETY SYSTEM IS HAPPENING.

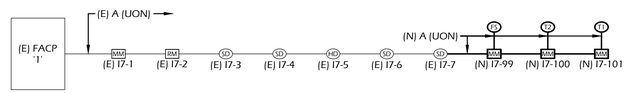
FIRE ALARM OPERATION MATRIX

INPUT	OUTPUT							
	ANNUNCIATE ALARM AT FACP	ANNUNCIATE TROUBLE AT FACP	ANNUNCIATE SUPERVISORY AT FACP	ANNUNCIATE WATER FLOW AT FACP	TRANSMIT SIGNAL TO CENTRAL STATION	ACTIVATE NOTIFICATION APPLIANCES	CLOSE FIRE / SMOKE DAMPERS	SHUT DOWN HVAC
MANUAL PULL STATION	●	●			●	●		
POWER FAILURE		●	●		●			
AREA SMOKE DETECTORS	●	●			●	●	●	●
AREA HEAT DETECTORS		●	●		●		●	●
AREA HEAT DETECTORS	●	●		●	●	●	●	●
SPRINKLER FLOW SWITCH	●	●			●	●		
SPRINKLER TAMPER SWITCH		●	●		●			

FIRE ALARM CONTROL PANEL BATTERY CALCULATIONS

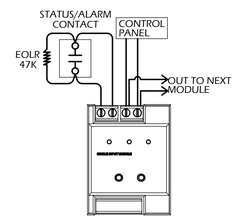
DESIGNATION: FACP '1'

QUANTITY	DEVICE	SUPV. CURRENT	SUBTOTAL SUPV. CURRENT	ALARM CURRENT	SUBTOTAL ALARM CURRENT	NOTES
1	EXISTING LOAD	1.0910	1.0910	2.4760	2.4760	
3	MONITOR MODULES	0.0004	0.0011	0.0065	0.0195	
TOTALS			1.0921		2.4955	
MINIMUM RUNTIME ON BATTERIES			24 HOURS		15 MINUTES	
BATTERY STANDBY (AMP-HOURS)			26.2110		0.6239	
TOTAL BATTERY STANDBY (AMP-HOURS)		26.8349				
SAFETY FACTOR		125%				
MINIMUM CAPACITY (AMP-HOURS)		33.5436	SYSTEM VOLTAGE: 24VDC			
BATTERY SIZE (AMP-HOURS)		35				



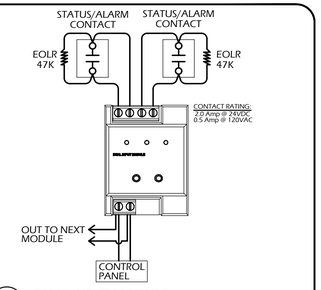
1 - PARTIAL FIRE ALARM RISER DIAGRAM

NOT TO SCALE



A - INPUT MODULE

SCALE: NONE



B - DUAL INPUT MODULE

SCALE: NONE

2 - FIRE ALARM DEVICE WIRING TYPICAL CONNECTION DETAILS

NOT TO SCALE

FIRE ALARM SYMBOL LIST

SYMBOL	DEVICE TYPE	MANUFACTURER AND MODEL NUMBER	CSFM LISTING NUMBER
	EXISTING FACP: FIRE ALARM CONTROL PANEL	GAMEWELL-FCI #E3	7165-1703:125
SD	EXISTING SMOKE DETECTOR - SPOT TYPE DETECTOR BASE	GAMEWELL-FCI #ASD-PL2F SYSTEM SENSOR #B210LP	7272-1703:121 7300-1653:109
HD	EXISTING 135°F FIXED HEAT DETECTOR DETECTOR BASE	GAMEWELL-FCI #ATD-L2F SYSTEM SENSOR #B210LP	7270-1703:115 7300-1653:109
MM	MONITOR MODULE	GAMEWELL-FCI #AMM-4F	7300-1703:102
RM	RELAY MODULE	GAMEWELL-FCI #AOM-2RF	7300-1703:102
FS	FIRE SPRINKLER FLOW SWITCH	POTTER #VSR	7770-0328:001
T1	FIRE SPRINKLER TAMPER SWITCH	POTTER #OSYSU-1	7770-0328:010
T2	FIRE SPRINKLER TAMPER SWITCH/PIV	POTTER #PCVS	7770-0328:010
CABLE LEGEND			
A	INITIATION CABLE ABOVE GROUND	WEST-PENN #D990	7161-0859:101
	INITIATION CABLE UNDERGROUND	WEST-PENN #AQ225	7161-0859:101

SYSTEM DESCRIPTION

1. THE SYSTEM SHOWN IS AN ADDITION TO AN EXISTING AUTOMATIC AND ADDRESSABLE SYSTEM.
2. CLASS B WIRING METHOD IS UTILIZED FOR ALL SIGNALING CIRCUITS.

SCOPE OF FIRE ALARM WORK

1. THE FIRE ALARM SYSTEM SCOPE CONSISTS OF NEW ADDITION OF ADDRESSABLE INITIATION DEVICES.

SHEET NOTES (#)

1. MAKE INITIATION LOOP CONNECTION AT EXISTING DEVICE LOCATION.

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http://www.borrelliengineering.com/
ca-bai@borrelliengineering.com
BAI# 21162

REGISTERED PROFESSIONAL ENGINEER JOHN BORRELLI No.E16390 exp. 6/30/23 ELECTRICAL CALIFORNIA

APPROVALS:

APPLICATION # 02-120016

REGISTERED PROFESSIONAL ENGINEER IVAN W. CARLSON M34846 Exp. 6-30-24 MECHANICAL STATE OF CALIFORNIA

DATE: 12-29-2023

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

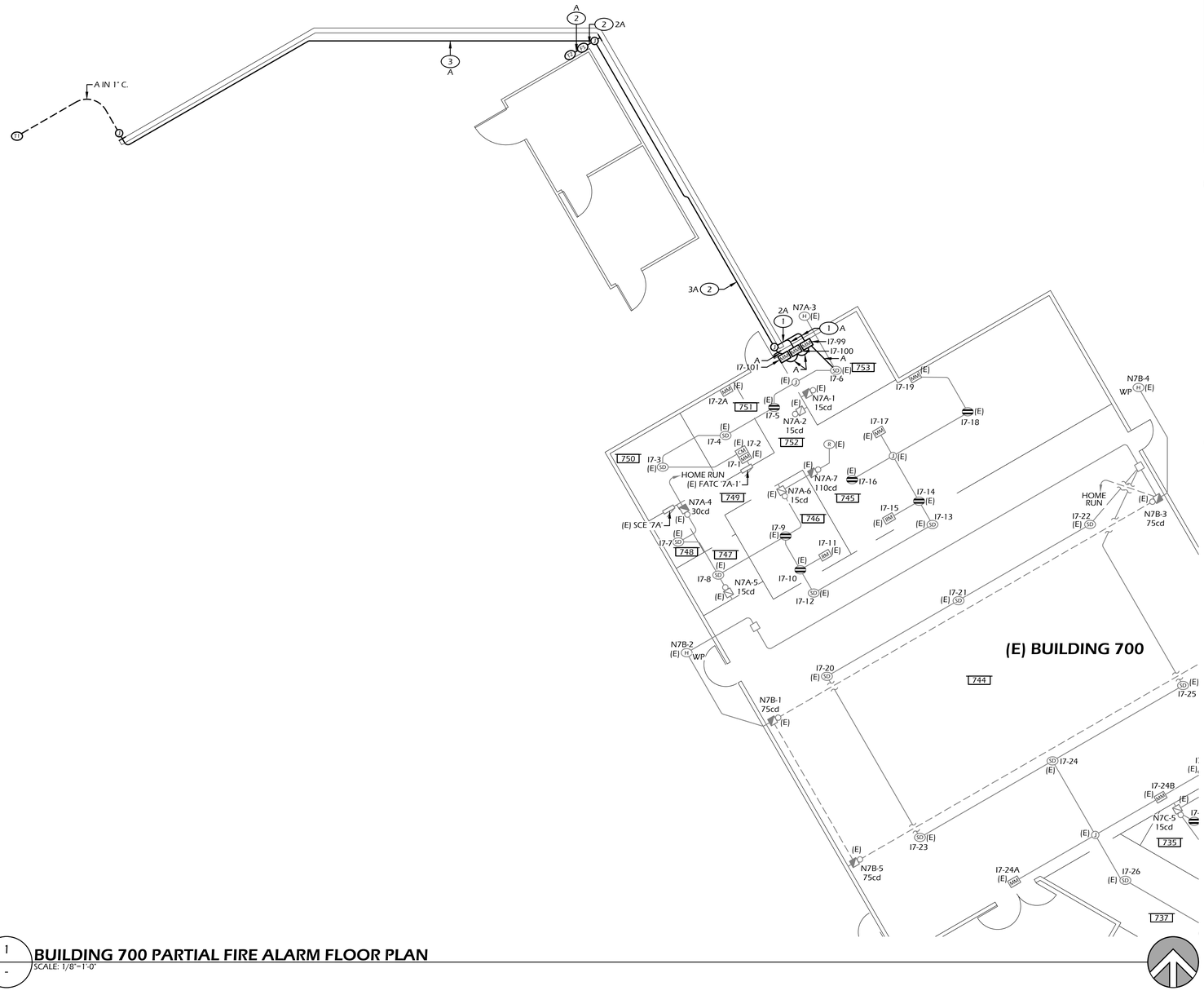
REVISIONS
4 12-28-23 ADDENDUM #4

LAWRENCE ENGINEERING GROUP
7884 N. Maple Ave., Suite 101
(559) 431-0101
Fresno, CA 93720
FAX (559) 431-1502

TITLE:
FIRE ALARM CALCULATIONS

SHEET: E5.01

PROJECT 21181



ROOM SCHEDULE

###	ROOM NAME	###	ROOM NAME
730	VESTIBULE	742	STORAGE
731	JANITOR	743	ELECTRICAL
732	VESTIBULE	744	CAFETERIA
733	MENS	745	KITCHEN
734	WOMENS	746	DISH WASH
735	VESTIBULE	747	TOILET
736	STORAGE	748	JANITOR
737	STORAGE	749	HALL
738	LAUNDRY	750	PANTRY
739	CUSTODIAL/P.E. OFFICE	751	OFFICE
740	TOILET	752	HALL
741	DATA	753	STUDENT STORE

SHEET NOTES ④

1. CABLES ARE SHOWN OUTSIDE FOR CLARITY. INSTALL CABLES FROM MONITOR MODULES TO JUNCTION BOX INSIDE BUILDING.
2. PROVIDE AND INSTALL 1-1/2-INCH RIGID CONDUIT ON WALL. USE LFMC BETWEEN CMU WALL AND BUILDINGS.
3. PROVIDE AND INSTALL 1-1/4-INCH RIGID CONDUIT ON WALL. USE LFMC BETWEEN CMU WALL AND BUILDINGS.

GENERAL NOTES ⑨

1. MINIMUM CONDUIT SIZE FOR EXTERNAL WALL MOUNTED CONDUIT SHALL BE 1-INCH CONDUIT, IF NOT NOTED.
2. ALL UNDERGROUND LOCATIONS SHALL BE PVC PER THE SPECIFICATIONS.

1 / - **BUILDING 700 PARTIAL FIRE ALARM FLOOR PLAN**
SCALE: 1/8"=1'-0"

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REVISIONS
4 12-29-23 ADDENDUM #4

LAWRENCE ENGINEERING GROUP
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Fresno, CA 93720
FAX (559) 431-1032

TITLE:
PARTIAL BUILDING 700
FIRE ALARM FLOOR PLAN,
SYMBOL LEGEND, AND NOTES

SHEET: E5.02 (4)
PROJECT 21181

Madera Unified School District
Desmond Middle School
Walk-In Freezer Fire Alarm Booklet

Borrelli And Associates, Inc.
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January 9, 2024

Velociti® Series
AMM-4F

Description

The Gamewell-FCI Velociti® Series, addressable monitor module (AMM-4F) features a single Style D, Class A initiating device circuit. It may also be configured as a Style B, Class B initiating circuit with end-of-line resistor. This module provides an address for any device or group of devices connected to this circuit. Any alarm initiating devices with normally open (N.O.) dry contacts, such as heat detectors, linear heat detection devices, 4-wire projected beam smoke detectors, 4-wire smoke detectors, water flow switches, tamper switches, manual stations, etc. may be installed in this circuit.

The Velociti® Series use a communication protocol that substantially increases the speed of communication between the sensors and certain Gamewell-FCI analog addressable fire alarm controls. These devices operate in a grouped fashion. If one of the devices in the group has a status change, the panel's microprocessor stops the group poll and concentrates on the single device. The net effect is response speed up to five times greater than earlier designs.

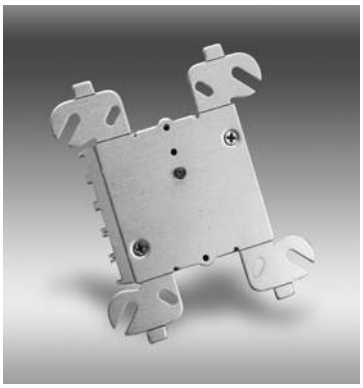
The AMM-4F module is designed for installation in the signaling line circuit of any Gamewell-FCI analog addressable control panel. The initiating circuit of the AMM-4F has a maximum line resistance of 40 ohms, allowing the module to accommodate a number of initiating devices at a distance from the module. The AMM-4F is designed to mount in a 4" square junction box 2 1/8" deep.

The initiating device circuit of the AMM-4F can support a maximum line resistance of up to 40 ohms allowing the use of linear heat detection devices.

Ordering Information

Model	Description
AMM-4F	Addressable monitor module, single circuit, Style D, Class A or Style BC/A and B

Addressable Monitor Module



AMM-4F

Features

- Compact size allows easy installation
- Class A, Style D, or Class B, Style B initiating circuit
- Visual rotary, decimel switch addressing (01-159)
- 40 ohm line resistance for each initiating device circuit
- Accommodates any N/O dry contact device
- Bicolor LEDs flash green whenever the module is addressed, and light steady red on alarm*

*Note: Only the red LED is operative in panels that do not operate in Velociti® mode.

Specifications

Supervisory current:	.000375 amps. (LED flashing)
Alarm current:	.005 amps. (LED lit)
Operating temperature:	32° to 120° F (0° to 49° C)
Relative humidity:	10 to 93% (non-condensing)
End-of-line resistor:	47K ohms
Dimensions:	4 1/2" H x 4" W x 1 1/4" D (11.4 x 10.2 x 3.2 cm)

SIGNALING UL LISTED S1949 FM APPROVED 3023594 MEA Approved 227-03-E Vol. IV 7300-1703:0102

ISO 9001 certified ENGINEERING & MANUFACTURING QUALITY SYSTEMS

GAMEWELL-FCI
12 Clintonville Road, Northford, CT 06472-1653 USA • Tel: (203) 484-7161 • Fax: (203) 484-7118

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7300-1703:0102
PARENT LISTING No.:	7300-1653:0103
CATEGORY:	7300 - FIRE ALARM CONTROL UNIT ACCESSORIES/MISC. DEVICES
LISTEE:	GAMEWELL-FCI 12 Clintonville Road, Northford, CT, 06472 Contact: Brant, Lisa (203) 484-6105 Email: lisa.brant@honeywell.com
DESIGN:	Models AMM-4, *AMM-4F, AMM-2 and *AMM-2F monitor modules and Models AOM, AOM-2, AOM-2R, *AOM-2RF, AOM-2S and *AOM-2SF control modules. Refer to listee's data sheet for detailed product description and operational considerations.
RATING:	
INSTALLATION:	In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model designation, electrical rating and UL label.
APPROVAL:	Listed as accessories for use with separately listed compatible control units. System Sensor Model SMB500 surface mount box (CSFM Listing No. 7300-1653:103) may be used as an enclosure for these modules
NOTES:	FORMERLY: 7300-0694:178

12-4-07

Date Issued: 05/05/2023

Listing Expires: 06/30/2024

Authorized By: **David Castillo** , Program Coordinator
Fire Engineering & Investigations Division

Velociti® Series
AOM-2RF

Description

The Gamewell-FCI Velociti® Series, addressable output relay control module (AOM-2RF) allows a Gamewell-FCI analog addressable fire alarm control panel to switch discrete relay contacts by code command. The relay provides two isolated sets of Form-C contacts which transfer simultaneously. Circuit connections to the relay contacts are not supervised by the module.

The Velociti® Series use a communication protocol that substantially increases the speed of communication between the SLC devices and certain Gamewell-FCI analog addressable fire alarm control panels. These devices operate in a grouped fashion. If one of the devices in the group has a status change, the panel's microprocessor stops the group poll and concentrates on the single device. The net result produces a superior response speed up to five times greater than earlier designs.

The AOM-2RF Module is designed for installation in the signaling line circuit of any Gamewell-FCI analog addressable fire alarm control panel. The module contains a panel controlled LED. The AOM-2RF is designed to mount in a 4" (10.16 cm) square junction box 2 1/8" (5.53 cm) deep.
Table 1 lists the relay contact ratings.

Current Rating	Maximum Voltage	Load Description	Application
3A	30 VDC	Resistive	Non-Coded
2A	30 VDC	Resistive	Coded
0.9A	110 VDC	Resistive	Non-Coded
0.5A	125 VAC	Resistive	Non-Coded
0.5A	30 VDC	Inductive (L/R=5ms)	Coded
1A	30 VDC	Inductive (L/R=2ms)	Coded
0.5A	125 VAC	Inductive (PF=.35)	Non-Coded
0.7A	75 VAC	Inductive	Non-Coded

Table 1: Relay Contact Ratings

Addressable Output Relay Control Module

AOM-2RF

Features

- Listed under UL® Standard 864.
- Offers two sets of Form "C" contacts.
- Provides visual rotary, decimal switch addressing (01-159).
- Includes a bicolor LED that flashes green whenever the module is addressed, and lights steady red upon activation.*
- Designed as a compact size to allow easy installation.

Note: Only the red LED is operative in panels that do not operate in Velociti® mode.

Specifications

Supervisory current: .000375 amps.
Alarm current: .0065 amps.
Operating temperature: 32° to 120° F (0° to 49° C)
Relative humidity: 10 to 93% relative humidity (non-condensing)
Dimensions: 4 1/2" H x 4" W x 1 1/4" (11.4 x 10.2 x 3.2 cm)

Ordering Information

Part Number	Description
AOM-2RF	Addressable output relay control module

SIGNALING UL LISTED S1913 FM APPROVED 3023594 MEA Approved 219-02-E Vol. VI 7300-1703:0102

ISO 9001 CERTIFIED ENGINEERING & MANUFACTURING QUALITY SYSTEMS
GAMEWELL-FCI
12 Clintonville Road, Northford, CT 06472-1653 USA • Tel: (203) 484-7161 • Fax: (203) 484-7118

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7300-1703:0102
PARENT LISTING No.:	7300-1653:0103
CATEGORY:	7300 - FIRE ALARM CONTROL UNIT ACCESSORIES/MISC. DEVICES
LISTEE:	GAMEWELL-FCI 12 Clintonville Road, Northford, CT, 06472 Contact: Brant, Lisa (203) 484-6105 Email: lisa.brant@honeywell.com
DESIGN:	Models AMM-4, *AMM-4F, AMM-2 and *AMM-2F monitor modules and Models AOM, AOM-2, AOM-2R, *AOM-2RF, AOM-2S and *AOM-2SF control modules. Refer to listee's data sheet for detailed product description and operational considerations.
RATING:	
INSTALLATION:	In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model designation, electrical rating and UL label.
APPROVAL:	Listed as accessories for use with separately listed compatible control units. System Sensor Model SMB500 surface mount box (CSFM Listing No. 7300-1653:103) may be used as an enclosure for these modules
NOTES:	FORMERLY: 7300-0694:178

12-4-07

Date Issued: 05/05/2023

Listing Expires: 06/30/2024

Authorized By: **David Castillo** , Program Coordinator
Fire Engineering & Investigations Division

VSR

Vane Type Waterflow Alarm Switch W/ Retard

Features

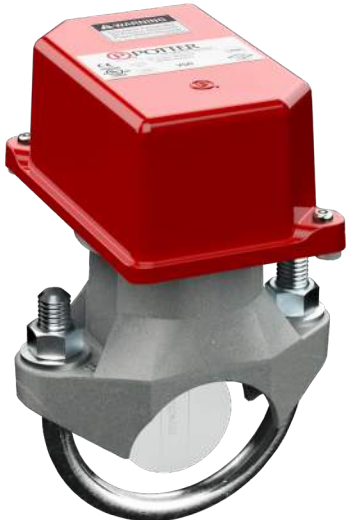
- Assembled in USA
- 0-90 second field replaceable time delay retard
- Easy to read retard time delay adjustment knob
- UL Listed models for 2"-6" steel pipe schedules 5 through 40
- UL Listed and FM approved models for 2"-8" steel pipe schedules 10 through 40
- Two SPDT (form C) contacts
- Weatherproof
- Easy to read wire terminal designations

⚠ WARNING

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

CAUTION

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



Description

The Model VSR is a vane type waterflow switch for use on wet sprinkler systems. It is UL Listed for use on a steel pipe; schedules 5 through 40, sizes 2" - 6" and is UL Listed and FM Approved for use on steel pipe; schedules 10 through 40, sizes 2" thru 8" (50 mm thru 200 mm). LPC approved sizes are 2" thru 8" (50 mm thru 200 mm). See Ordering Information chart.

The VSR may also be used as a sectional waterflow detector on large systems. The VSR contains two single pole, double throw, snap action switches and an adjustable, instantly recycling pneumatic retard. The switches are actuated when a flow of 10 GPM (38 LPM) or more occurs downstream of the device. The flow condition must exist for a period of time necessary to overcome the selected retard period.

Enclosure

The VSR switches and retard device are enclosed in a weather/UV/flame resistant high impact composite plastic. The cover is held in place with two tamper resistant screws which require a special key for removal. A field installable cover tamper switch is available as an option which may be used to indicate unauthorized removal of the cover. See bulletin number 5401103 for installation instructions of this switch.

NOTICE

This document contains important information on the installation and operation of the VSR. Please read all instructions carefully and notify the building owner or their authorized representative before any work is done on the fire sprinkler or fire alarm system. A copy of this document is required by NFPA 72 to be maintained on site.

Technical Specifications

Conduit Entrances	Two knockouts provided for 1/2" conduit. Individual switch compartments suitable for dissimilar voltages
Contact Ratings	Two sets of SPDT (Form C) 10.0 Amps at 125/250VAC 2.0 Amps at 30VDC Resistive 10 mAmps min. at 24VDC
Enclosure	Cover - Weather/UV/Flame Resistant High Impact Composite Base - Die-cast aluminum
Environmental Specifications	NEMA 4/IP54 Rated Enclosure suitable for indoor or outdoor use with factory installed gasket when used with appropriate conduit fitting. Temperature Range: 40°F - 120°F, (4.5°C - 49°C) - UL Non-corrosive sleeve factory installed in saddle.
Flow Sensitivity Range for Signal	4-10 GPM (15-38 LPM) - UL
Maximum Surge	18 FPS (5.5 m/s)
Service Pressure	450 PSI (31 BAR) - UL
Service Use	Automatic Sprinkler NFPA-13 One or two family dwelling NFPA-13D Residential occupancy up to four stories NFPA-13R National Fire Alarm Code NFPA-72

Specifications subject to change without notice.

VSR

Vane Type Waterflow Alarm Switch W/ Retard

Installation (see Fig. 1)

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

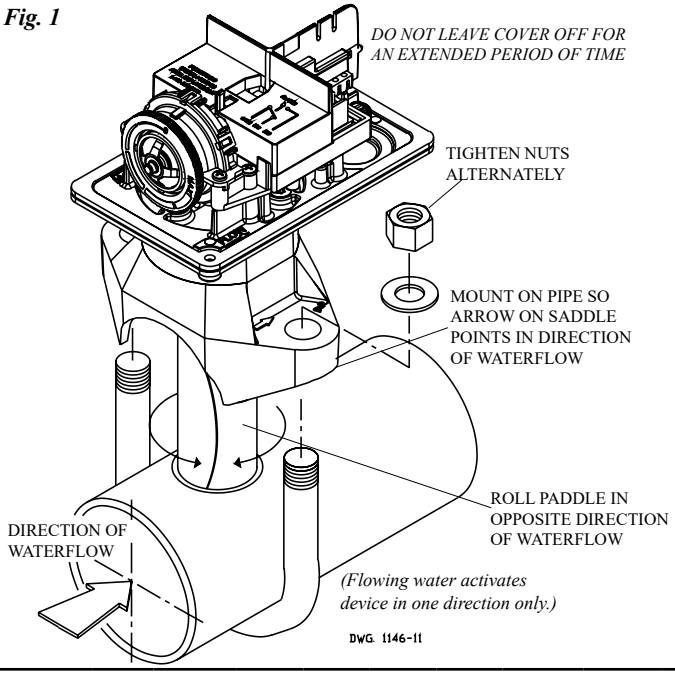
NOTE: Do not leave cover off for an extended period of time.

Drain the system and drill a hole in the pipe using a hole saw in a slow speed drill (see Fig. 1). Clean the inside pipe of all growth or other material for a distance equal to the pipe diameter on either side of the hole. Roll the vane so that it may be inserted into the hole; do not bend or crease it. Insert the vane so that the arrow on the saddle points in the direction of the waterflow. Take care not to damage the non-corrosive bushing in the saddle. The bushing should fit inside the hole in the pipe. Install the saddle strap and tighten nuts alternately to required torque (see the chart in Fig. 1). The vane must not rub the inside of the pipe or bind in any way.

⚠ CAUTION

Do not trim the paddle. Failure to follow these instructions may prevent the device from operating and will void the warranty. Do not obstruct or otherwise prevent the trip stem of the flow switch from moving when water flows as this could damage the flow switch and prevent an alarm. If an alarm is not desired, a qualified technician should disable the alarm system.

Fig. 1

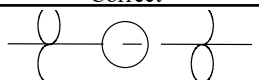
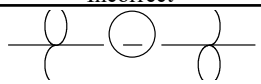


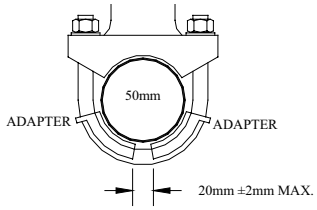
Retard Adjustment

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

CAUTION

Hole must be drilled perpendicular to the pipe and vertically centered Refer to the Compatible Pipe/Installation Requirements chart for size.

Correct	Incorrect
	

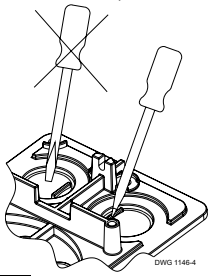


USE (2) 5180162 ADAPTERS AS SHOWN ABOVE

Compatible Pipe/ Installation Requirements

Model	Nominal Pipe Size		Nominal Pipe O.D.		Pipe Wall Thickness										Hole Size		U-Bolt Nuts Torque	
					Lightwall		Schedule 10 (UL)		Schedule 40 (UL)		BS-1387 (LPC)		DN (VDS)					
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	ft-lb	n-m
VSR-2	2	DN50	2.375	60.3	.065	1.651	0.109	2.77	0.154	3.91	0.142	3.6	0.091	2.3	1.25 + .125/-.062	33.0 ± 2.0	20	27
VSR-2 1/2	2.5	-	2.875	73.0	.084	2.134	0.120	3.05	0.203	5.16	-	-	-	-				
VSR-2 1/2	-	DN65	3.000	76.1	-	-	-	-	-	-	0.142	3.6	0.102	2.6				
VSR-3	3	DN80	3.500	88.9	.083	2.108	0.120	3.05	0.216	5.49	0.157	4.0	0.114	2.9	2.00 ± .125	50.8 ± 2.0		
VSR-3 1/2	3.5	-	4.000	101.6	-	-	0.120	3.05	0.226	5.74	-	-	-	-				
VSR-4	4	DN100	4.500	114.3	.084	2.134	0.120	3.05	0.237	6.02	0.177	4.5	0.126	3.2				
VSR-5	5	-	5.563	141.3	-	-	0.134	3.40	0.258	6.55	-	-	-	-				
VSR-6	6	DN150	6.625	168.3	.115	2.921	0.134	3.40	0.280	7.11	0.197	5.0	0.157	4.0				
VSR-8	8	DN200	8.625	219.1	-	-	0.148	3.76	0.322	8.18	0.248	6.3	0.177	4.5				

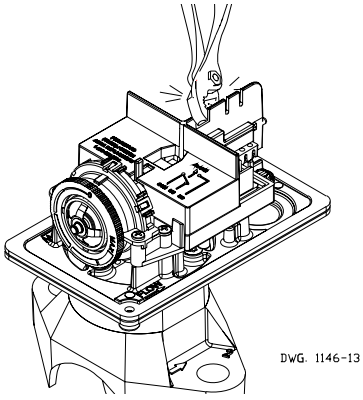
Fig. 2
To remove knockouts: Place screwdriver at inside edge of knockouts, not in the center.



NOTICE

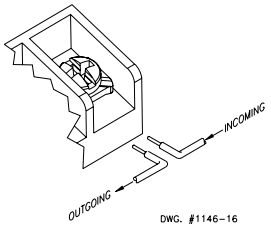
Do not drill into the base as this creates metal shavings which can create electrical hazards and damage the device. Drilling voids the warranty.

Fig. 3
Break out thin section of cover when wiring both switches from one conduit entrance.



Switch Terminal Connections Clamping Plate Terminal

Fig. 4



⚠ WARNING

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

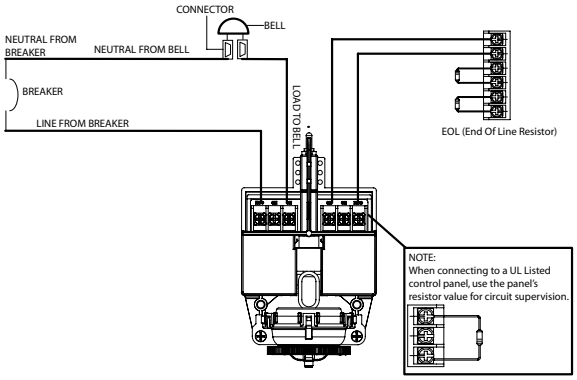
Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

Typical Electrical Connections

Fig. 5

Notes:

1. The Model VSR has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other contact is used to operate a local audible or visual annunciator.
2. For supervised circuits, see "Switch Terminal Connections" drawing and warning note (Fig. 4).

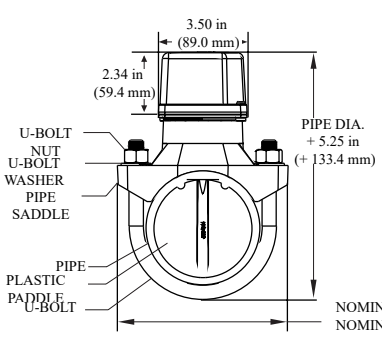


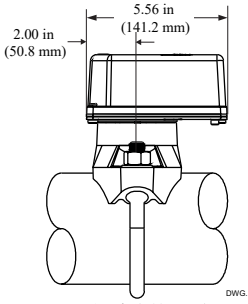
Testing

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

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

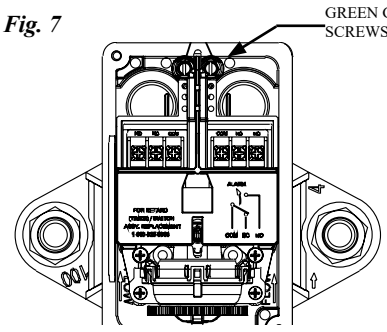
Fig. 6 Mounting Dimensions





NOMINAL PIPE DIA. +1.75 in (+44.5 MM) FOR DN 50 – DN 65 2–2.5 in
NOMINAL PIPE DIA. +2.125 in (+54.0 MM) FOR DN 80 – DN 200 3–8 in

Fig. 7



NOTICE

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

Maintenance

Inspect detectors monthly. If leaks are found, replace the detector. The VSR waterflow switch should provide years of trouble-free service. The retard and switch assembly are easily field replaceable. In the unlikely event that either component does not perform properly, please order replacement retard switch assembly stock #1029030 (see Fig. 8). There is no maintenance required, only periodic testing and inspection.

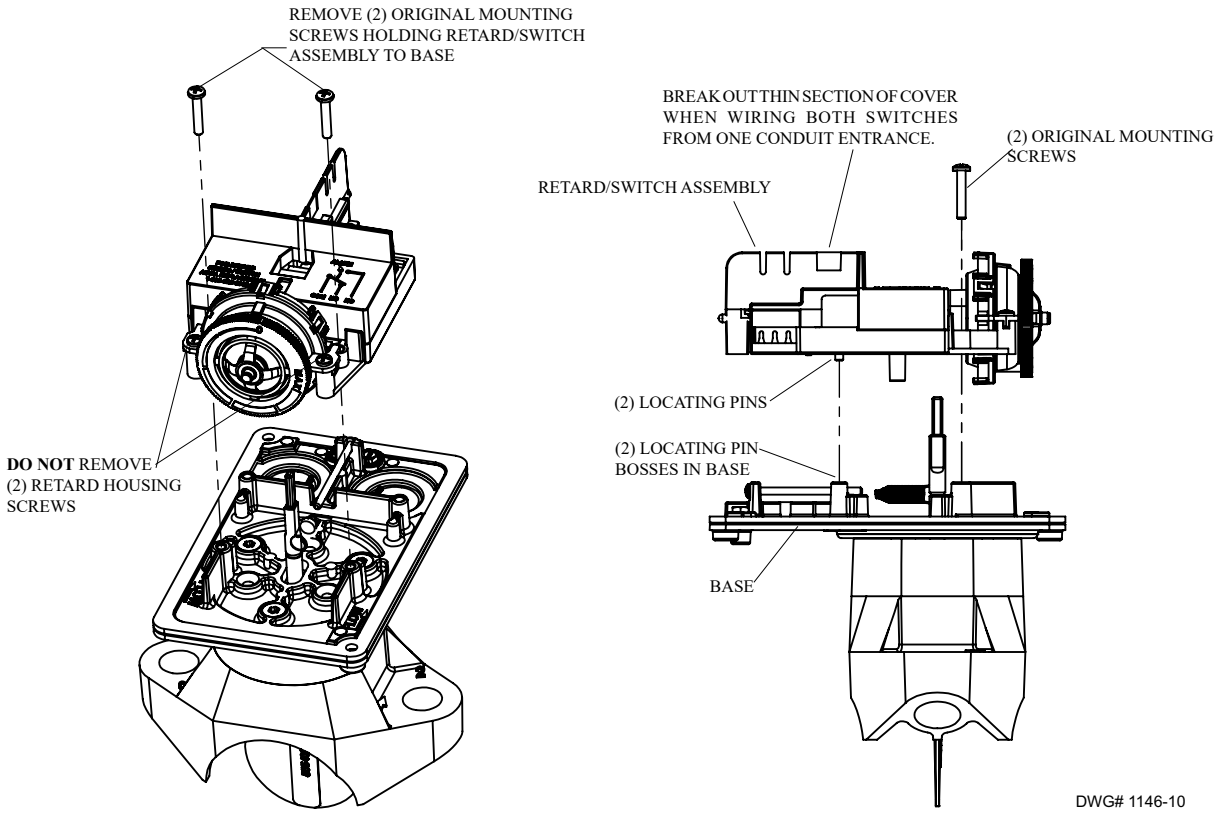
Retard/Switch Assembly Replacement (See Fig. 8)

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

NOTICE

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

Fig. 8



Removal of Waterflow Switch

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

NOTICE

Flow switches have a normal service life of 10-15 years. However, the service life may be significantly reduced by local environmental conditions.

Ordering Information

Model	Nominal Pipe Size		Part Number
VSR-2	2"	DN50	1144402
VSR-2 1/2	2 1/2"	DN65	1144425
VSR-3	3"	DN80	1144403
VSR-3 1/2	3 1/2"	-	1144435
VSR-4	4"	DN100	1144404
VSR-5	5"	-	1144405
VSR-6	6"	DN150	1144406
VSR-8	8"	DN200	1144408

Optional: Cover Tamper Switch Kit, stock no. 0090148
FSBS-FLOWSWITCH BYPASS SWITCH, stock no. 3001006

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

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7770-0328:0001
CATEGORY:	7770 - VALVES/SWITCHES
LISTEE:	Potter Electric Signal Co 1609 Park 370 Place, Hazelwood, MO, 63042 Contact: Lakomiak, Neil 3148168679 Email: neill@pottersignal.com
DESIGN:	Vane and pressure type water flow alarm switches listed below. Refer to listee's data sheet for detailed product description and operational considerations. <u>Vane Types:</u> VSR-CF VSR-D VSR-F VSR-SF VSR-FE-2 VS-SP VS-F VSR-SFG VSR-SFT VSG VSR VSR-S VSR-C VSR-ST VSR-SG <u>Pressure Type:</u> WFS-B WFSR-C WFSPD-B PS10 PS-10A PS-100A WFSR-F PS100
RATING:	
INSTALLATION:	In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model number and UL or FM label.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

APPROVAL:	Listed as waterflow alarm switches for use with fire sprinkler systems. Vane models may be used in wet pipe systems; pressure models may be used in wet or dry systems. Model VSR-CF is for use on K, L or M copper pipe (2", 2-1/2", 3", 4") and listed CPVC pipe (2", 2-1/2", 3"). Model VSR-SF for use on 1", 1-1/4", 1-1/2" and *2" steel, copper or listed plastic pipe. Model VSG is for low flow rate. Model VSR-SFG and VSR-SFT are for use on 1", 1-1/4", 1-1/2" and *2" plastic pipe. Models VS-F, VSR-F, VSR-FE and VSR-FE-2 is for use on 2", 2-1/2", 3", 3-1/2", 4", 5", 6", 8" and 10" pipe. *Model VSR is for use on steel pipe sizes from 2" through 8". Vane type switches may be used outdoors when the outdoor temperature never falls below 40oF.
NOTES:	

Rev*5-17-2007 jw

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 05/09/2023

Listing Expires: 06/30/2024

Authorized By: **David Castillo**, Program Coordinator
Fire Engineering & Investigations Division

POTTER
The Symbol of Protection

OSYSU Series

Outside Screw and Yoke Valve Supervisory Switch

Features

- NEMA 4X* (IP 65) and 6P (IP 67)

  **Enclosure is 4X. For additional corrosion protection of mounting hardware, use model OSYSU-2 CRH*
- -40º to 140º (-40ºC to 60ºC) operating temperature range
- Visual switch indicators
- Two conduit entrances
- Adjustable length trip rod
- Accomodates up to 12AWG wire
- Three position switch detects tampering and valve closure
- Knurled mounting bracket prevents slipping
- Fine adjustment feature for fast, easy installation
- RoHS compliant
- One or two SPDT contact models (-1,-2)

NOTICE

Before any work is done on the fire sprinkler or fire alarm system, the building owner or their authorized representative shall be notified. Before opening any closed valve, ensure that opening the valve will not cause any damage from water flow due to open or missing sprinklers, piping, etc.

Important: This document contains important information on the installation and operation of OS&Y valve supervisory switches. Please read all instructions carefully before beginning installation. A copy of this document is required by NFPA 72 to be maintained on site.

Description

The OSYSU is used to monitor the open position of an OS&Y (outside screw and yoke) type gate valve. This device is available in two models; the OSYSU-1, containing one set of SPDT (Form C) contacts and the OSYSU-2, containing two sets of SPDT (Form C) contacts. These switches mount conveniently to most OS&Y valves ranging in size from 2" to 12" (50mm to 300mm). They will mount on some valves as small as ½" (12,5mm).
The cover is held in place by two tamper resistant screws that require a special tool to remove. The tool is furnished with each device.

Testing

The operation of the OSYSU and its associated protective monitoring system shall be inspected, tested, and maintained in accordance with all applicable local and national codes and standards and/or the Authority Having Jurisdiction (manufacturer recommends quarterly or more frequently). A minimum test shall consist of turning the valve wheel towards the closed position. The OSYSU shall operate within the first two revolutions of the wheel. Fully close the valve and ensure that the OSYSU does not restore. Fully open the valve and ensure that the OSYSU restores to normal only when the valve is fully opened.

⚠ CAUTION

Close the valve fully to determine that the stem threads do not activate the switch. The switch being activated by the stem threads could result in a ***false valve open*** indication.

Technical Specifications

Dimensions	See Fig 8
Weight	1.6 lbs (0,73 kg)
Enclosure	Cover: Die Cast Finish: Red Powder Coat Base: Die Cast Finish: Black Powder Coat All parts have corrosion resistant finishes
Cover Tamper	Tamper Resistant Screws Optional Cover Tamper Switch Available
Contact Ratings	OSYSU-1: One Set of SPDT (Form C) OSYSU-2: Two Sets of SPDT (Form C) 10.0 Amps at 125/250 VAC 2.0 Amps at 30VDC Resistive 10 mAmps minimum at 24 VDC
Environmental Limitations	-40º F to 140ºF (-40ºC to 60ºC) NEMA 4X (IP 65) and NEMA 6P (IP 67) Enclosure (Use suitably rated conduit and connector) Indoor or Outdoor Use (See OSYSU-EX Bulletin 5400705 for Hazardous locations)
Conduit Entrances	Two Knockouts for 1/2" conduit provided (See Notice on Page 6 and Fig. 9 on Page 5)
Service Use	NFPA 13, 13D, 13R, 72

Specifications subject to change without notice

Theory of Operation

The OSYSU is a 3 position switch. The center position is the normal installation position. Normal is when the switch is installed on the OS&Y valve, the valve is fully open and the trip rod of the OSYSU is in the groove of the valve stem. Closing the valve causes the trip rod to ride up out of the groove and activates the switches. Removing the OSYSU from the valve causes the spring to pull the trip rod in the other direction and activates the switches.

Visual Switch Status Indication

There are 3 visual indicators to determine the status of the switches.

Fig 1; the actuator button of the micro switches are on the raised section of the switch actuator.

Fig 2; the trip rod is perpendicular to the base and lined up with the alignment mark on the mounting bracket.

Fig 3; the white visual indicator is visible through the window on the back of the switch actuator.

A final test is to meter the contacts marked COM and N.O. to ensure they are an open circuit when the valve is open and that they close and have continuity within 2 revolutions of turning the valve handwheel towards the closed position and the contacts remain closed as the valve is completely closed and until the valve is completely opened when the trip rod drops back into the groove in the valve stem.

Fig 1

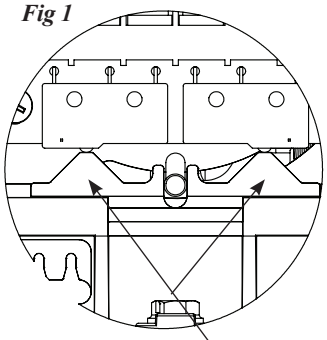


Fig 2

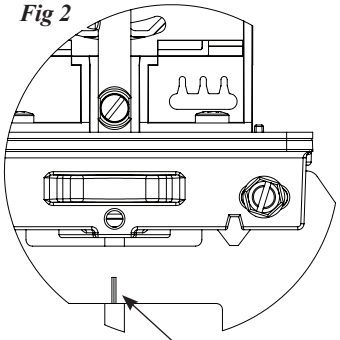


Fig 3

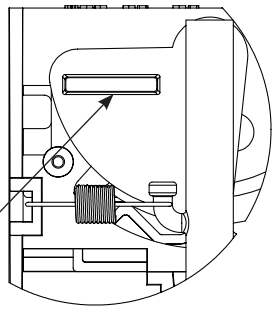


Fig 4

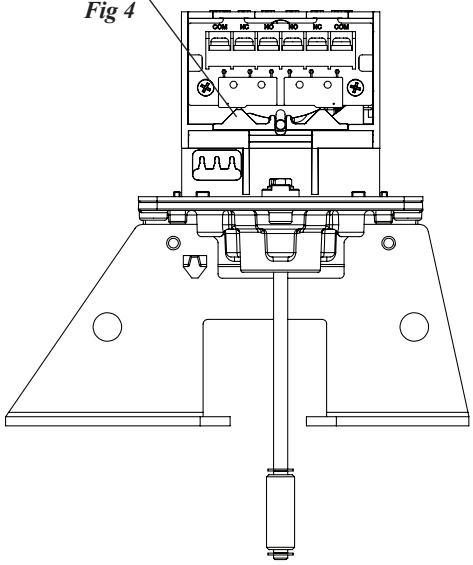


Fig 5

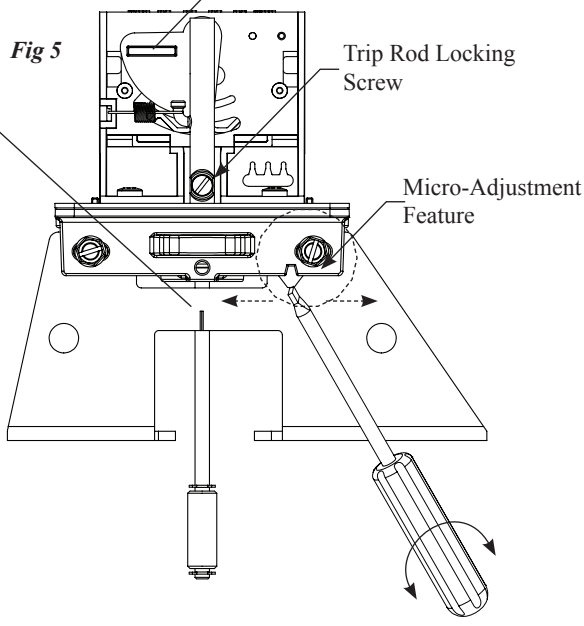
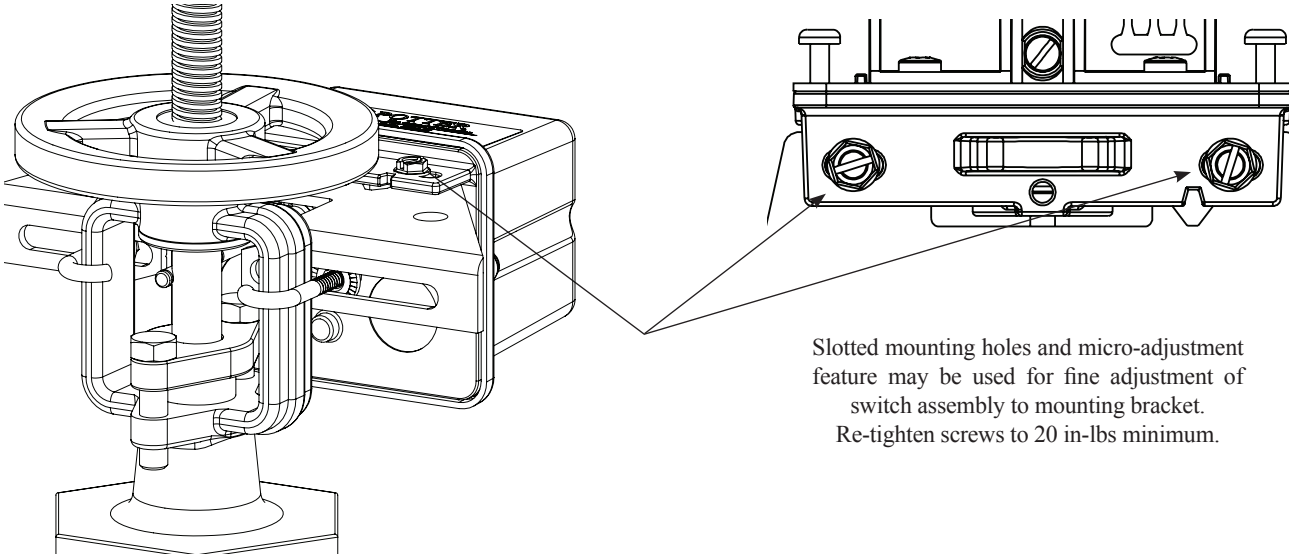


Fig 6

Small Valve Installation - 1/2” Through 2 1/2” Sizes



Slotted mounting holes and micro-adjustment feature may be used for fine adjustment of switch assembly to mounting bracket. Re-tighten screws to 20 in-lbs minimum.

Small Valve Installation

NOTE: If the valve stem is pre-grooved at 1/8” minimum depth; proceed to step 7.

1. Remove and discard "E" ring and roller from the trip rod.
2. With the valve in the FULL OPEN position, locate the OSYSU across the valve yoke as far as possible from the valve gland so that the spring loaded trip rod of the OSYSU is pulled against the non threaded portion of the valve stem. Position the OSYSU with the bracket near the handwheel as shown in Fig. 6 if possible to avoid creating a pinch point between the wheel and the OSYSU.
3. Loosen the locking screw that holds the trip rod in place and adjust the rod length (see Fig. 5). When adjusted properly, the rod should extend past the valve screw, but not so far that it contacts the clamp bar. Tighten the locking screw to 5 in-lbs minimum to hold the trip rod in place and properly seal the enclosure.

   NOTE: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one (1) inch long notched section (see Fig. 10). Reinstall trip rod and repeat Step 3 procedure.
4. Mount the OSYSU loosely with the carriage bolts and clamp bar supplied. On valves with limited clearance use J-hooks supplied instead of the carriage bolts and clamp bar to mount the OSYSU.
5. Mark the valve stem at the center of the trip rod.
6. Remove the OSYSU. Utilizing a 3/16” or 1/4” diameter straight file, file a 1/8” minimum depth groove centered on the mark on the valve stem. Deburr and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.

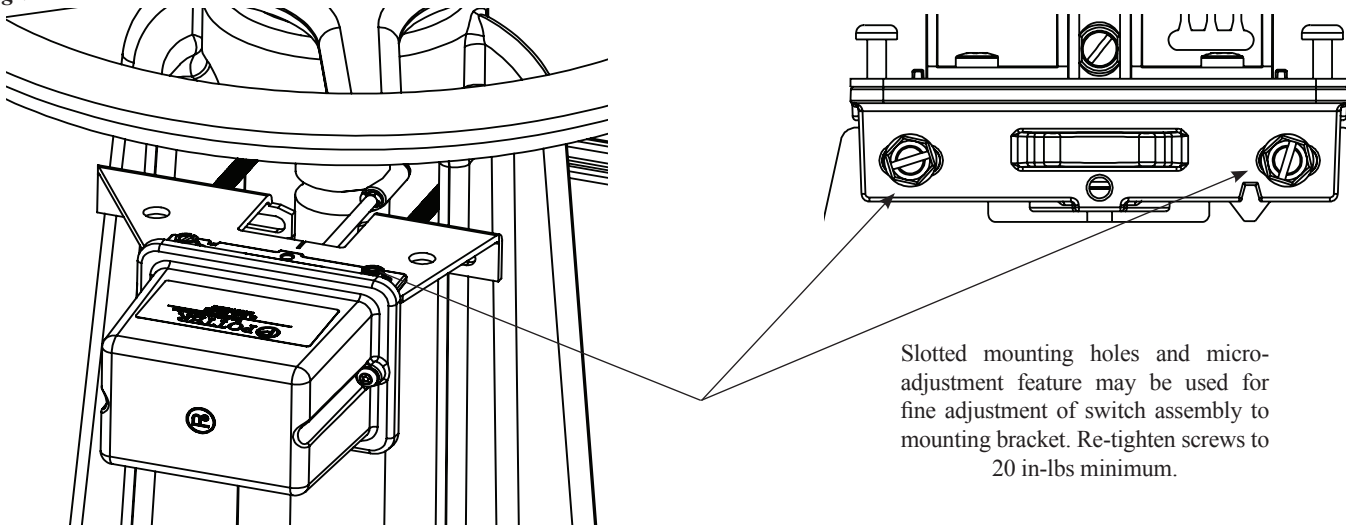
   NOTE: A groove depth of up to approximately 3/16” can make it easier to install the OSYSU so that it does not restore as it rolls over by the threads of the valve stem.
7. Mount the OSYSU on the valve yoke with the spring loaded trip rod of the OSYSU pulled against the valve stem and centered in the groove of the stem. If possible, position the OSYSU with the flat side of the bracket toward the hand wheel, as shown in Fig. 6, to help avoid creating a pinch point between the wheel and OSYSU. When in this preferred mounting position, it is usually best to use the white indicator visible through the window, as illustrated in Fig. 3, to aid in initially locating the OSYSU in the correct position on the yoke. If the unit must be installed inverted with the white indicator no longer easily visible, use the visual indicators of the actuator buttons on the micro-switches, as illustrated in Fig. 1, or the trip rod alignment mark on the bracket, as illustrated in Fig. 2 , to aid in initially locating the OSYSU.
8. Final adjustment can be made by slightly loosening the two screws on the bracket and using the fine adjustment feature (see Fig. 5). The adjustment is correct when the plungers on the switches are depressed by the actuator and there is no continuity between the COM and NO terminals on the switches.
9. Tighten the adjustment screws and all mounting hardware securely (20 in-lbs minimum). Check to insure that the rod moves out of the groove easily and that the switches activate within two turns when the valve is operated from the FULL OPEN towards the CLOSED position.
10. Reinstall the cover and tighten the cover screws to 15 in-lbs minimum to properly seal the enclosure.

⚠ CAUTION

Close the valve fully to determine that the stem threads do not activate the switch. The switch being activated by the stem threads could result in a ***false valve open*** indication.

Large Valve Installation - 3" Through 12" Sizes

Fig 7



Slotted mounting holes and micro-adjustment feature may be used for fine adjustment of switch assembly to mounting bracket. Re-tighten screws to 20 in-lbs minimum.

Large Valve Installation

NOTE: If the valve stem is pre-grooved at 1/8" minimum depth; proceed to step 6.

1. With the valve in the FULL OPEN position, locate the OSYSU across the valve yoke as far from the valve gland as possible so that the spring loaded trip rod of the OSYSU is pulled against the non threaded portion of the valve stem. Position the OSYSU with the bracket near the handwheel as shown in Fig. 7 if possible to avoid creating a pinch point between the wheel and the OSYSU.
2. Mount the OSYSU loosely with the carriage bolts and clamp bar supplied.
3. Loosen the locking screw that holds the trip rod in place and adjust the rod length (see Fig. 5). When adjusted properly, the rod should extend past the valve screw, but not so far that it contacts the clamp bar. Tighten the locking screw to 5 in-lbs minimum to hold the trip rod in place and properly seal the enclosure.

   NOTE: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one (1) inch long notched section (see Fig. 10). Reinstall trip rod and repeat Step 3 procedure.
4. Mark the valve stem at the center of the trip rod.
5. Remove the OSYSU. Utilizing a 3/8" or ½" diameter straight file, file a 1/8" minimum depth groove centered on the mark on the valve stem. Deburr and smooth the edges of the groove to prevent damage to the valve packing and to allow the trip rod to move easily in and out of the groove as the valve is operated.

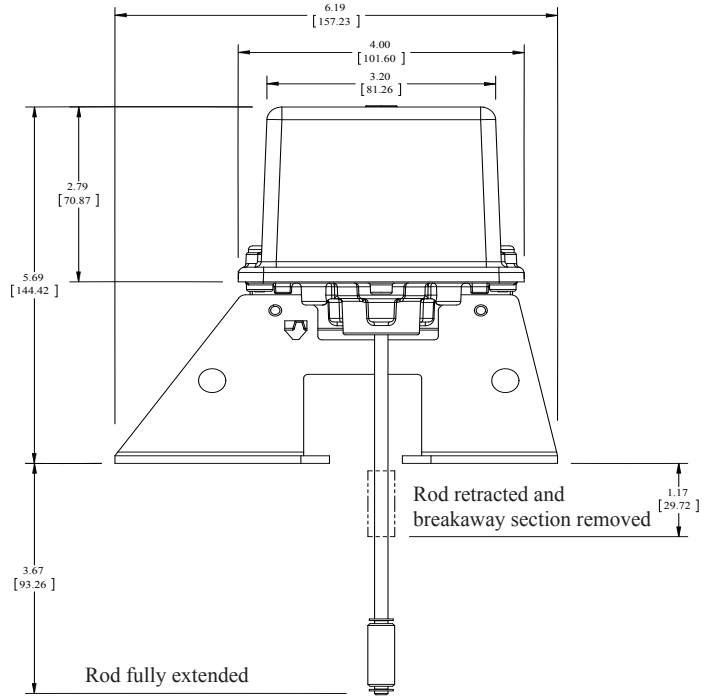
   NOTE: A groove depth of up to approximately 3/16" can make it easier to install the OSYSU so that it does not restore as it rolls over by the threads of the valve stem.
6. Mount the OSYSU on the valve yoke with the spring loaded trip rod of the OSYSU pulled against the valve stem and centered in the groove of the stem. If possible, position the OSYSU with the flat side of the bracket toward the hand wheel, as shown in Fig. 7, to help avoid creating a pinch point between the wheel and OSYSU. When in this preferred mounting position, it is usually best to use the white indicator visible through the window, as illustrated in Fig. 3, to aid in initially locating the OSYSU in the correct position on the yoke. If the unit must be installed inverted with the white indicator no longer easily visible, use the visual indicators of the actuator buttons on the micro-switches, as illustrated in Fig. 1, or the trip rod alignment mark on the bracket, as illustrated in Fig. 2 , to aid in initially locating the OSYSU.
7. Final adjustment can be made by slightly loosening the two screws on the bracket and using the fine adjustment feature (see Fig. 5). The adjustment is correct when the plungers on the switches are depressed by the actuator and there is no continuity between the COM and NO terminals on the switches.
8. Tighten the adjustment screws and mounting hardware securely (minimum 20 in-lbs). Check to insure that the rod moves out of the groove easily and that the switches activate within two turns when the valve is operated from the FULL OPEN towards the CLOSED position.
9. Reinstall the cover and tighten the cover screws to 15 in-lbs minimum to properly seal the enclosure.

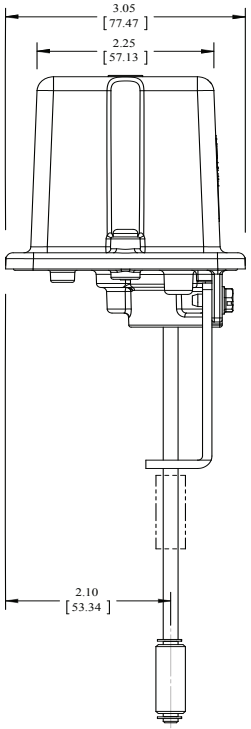
⚠ CAUTION

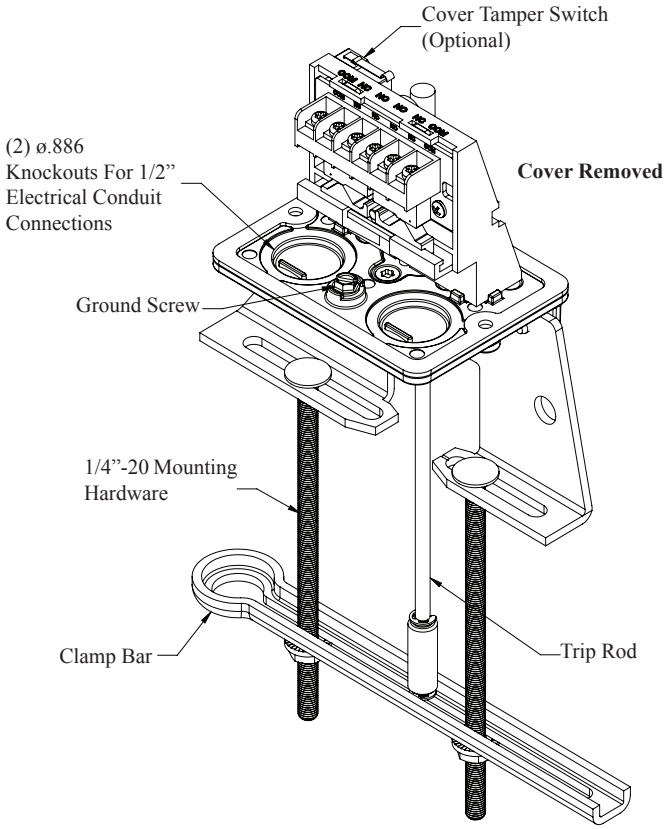
Close the valve fully to determine that the stem threads do not activate the switch. The switch being activated by the stem threads could result in a ***false valve open*** indication.

Dimensions

Fig 8



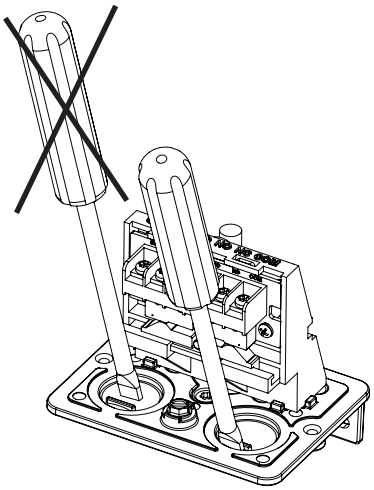




Knockout Removal

Fig 9

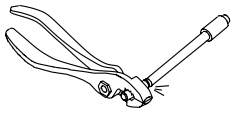
To remove knockouts: Place screwdriver at inside edge of knockouts, not in the center.



NOTE: Do not drill into the base as this creates metal shavings which can create electrical hazards and damage the device. Drilling voids the warranty.

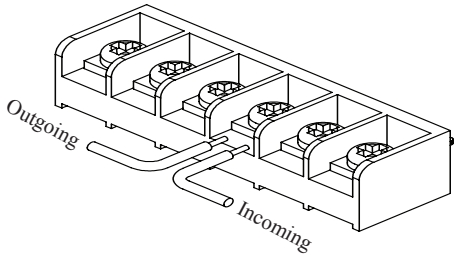
Breaking Excessive Rod Length

Fig 10



Switch Terminal Connections Clamping Plate Terminal

Fig 11



⚠ WARNING

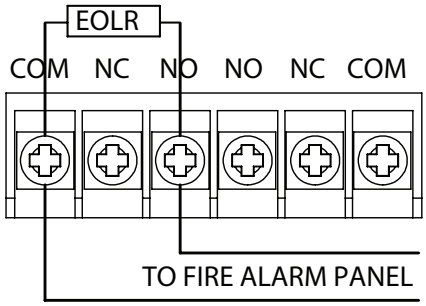
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire become dislodged from under the terminal. Failure to sever the wire may render the device inoperable risking severe property damage and loss of life. Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

NOTICE

All conduit and connectors selected for the installation of this product shall be suitable for the environment for which it is to be used and shall be installed to the manufacturer's installation instructions. For NEMA 4, 4X, 6, 6P installations, the cover screws are recommended to be tightened to 15 in-lbs minimum and the trip rod locking screw tightened to 5 in-lbs minimum to properly seal the enclosure.

Typical Electrical Connections

Fig 12



Ordering Information

Model	Description	Stock No.
OSYSU-1	Outside Screw & Yoke Supervisory Switch (Single switch)	1010102
OSYSU-2	Outside Screw & Yoke Supervisory Switch (Double switch)	1010202
OSYSU-2 CRH	Outside Screw & Yoke Supervisory Switch (Double Switch). Corrosion resistant hardware of 316 stainless steel	1010210
	Cover Screw	5490424
	Hex Key for Cover Screws and Installation Adjustments	5250062
	Optional Cover Tamper Switch Kit	0090200

Engineering Specifications: OS&Y Valves

UL, CUL Listed / FM Approved and CE Marked valve supervisory switches shall be furnished and installed on all OS&Y type valves that can be used to shut off the flow of water to any portion of the fire sprinkler system, where indicated on the drawings and plans and as required by applicable local and national codes and standards. The supervisory switch shall be NEMA 4X and 6P rated and capable of being mounted in any position indoors or out and be completely submerged without allowing water to enter the enclosure.. The enclosure shall be held captive by tamper resistant screws. The device shall contain two ½" conduit entrances and one or two Single Pole Double Throw (SPDT) switches. There shall be a visual indicator to display the status of the switches. To aid in installation, it shall be possible to make fine adjustments to the position of the switch on the valve without loosening the mounting bracket from the valve. The device shall contain an adjustable length trip rod and roller, the trip rod shall be held captive by a set screw accessible upon removal of the cover. The switch contacts shall be rated at 10A, 125/250VAC and 2A, 30VDC. OS&Y Valve supervisory switch shall be model OSYSU-1 for the single switch model and OSYSU-2 for the two switch model manufactured by Potter Electric Signal Company LLC

NOTICE

Supervisory switches have a normal service life of 10-15 years. However, the service life may be significantly reduced by local environmental conditions.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7770-0328:0010
CATEGORY:	7770 - VALVES/SWITCHES
LISTEE:	Potter Electric Signal Co 1609 Park 370 Place, Hazelwood, MO, 63042 Contact: Lakomiak, Neil 3148168679 Email: neill@pottersignal.com
DESIGN:	Supervisory switches listed below to monitor pressure, OS&Y, gate, globe/gate, PIV, tank temperature or water level valves. Refer to listee's data sheet for detailed product description and operational considerations. HLS-B WLS-W WLS-S PS-40A PS-120A OSYSU-2 OSYS-B PMS PTS-B OSYSU-1 GVS PCVS-1 PIVS-B TTS-S TTS-W PCVS-2 WLS PTS-C PS40 PS120 RBVS *PS15 *PS25
RATING:	
INSTALLATION:	In accordance with listee's printed instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model designation and FM or UL label.
APPROVAL:	Listed as sprinkler system supervisory switches.
NOTES:	Formerly 7738-0328:010

*Revision 09-07-2016 dc

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 05/09/2023

Listing Expires: 06/30/2024

Authorized By: **David Castillo**, Program Coordinator
Fire Engineering & Investigations Division

PCVS Series

Control Valve Supervisory Switch

Features

- NEMA 4X* (IP 65) and 6P (IP 67)

  **Enclosure is 4X. For additional corrosion protection of mounting hardware, use model PCVS-2 CRH*
- -40º to 140º (-40ºC to 60ºC) operating temperature range
- Visual Switch Indicators
- Two conduit entrances
- Adjustable length trip rod
- Accomodates up to 12AWG wire
- Switch detects tampering and valve closure
- RoHS compliant
- Two SPDT contacts

NOTICE

Before any work is done on the fire sprinkler or fire alarm system, the building owner or their authorized representative shall be notified. Before opening any closed valve, ensure that opening the valve will not cause any damage from water flow due to open or missing sprinklers, piping, etc.

Important: This document contains important information on the installation and operation of PCVS valve supervisory switches. Please read all instructions carefully before beginning installation. A copy of this document is required by NFPA 72 to be maintained on site.

Description

The Model PCVS is a weather proof and tamper resistant switch for monitoring the open position of fire sprinkler control valves of the wall and yard post indicator and butterfly types. Two SPDT (Form C) contacts are provided which will operate when the valve position is altered from an open state.

The unit mounts in a 1/2" NPT tapped hole in the post indicator or butterfly valve housing. The device is engaged by the indicating assembly of the post indicator or the operating mechanism of the butterfly valve, actuating switches when the valve is fully open. The unit should be installed where it is accessible for service.

The cover is held in place by two tamper resistant screws that require a special tool to remove. The tool is furnished with each device.

Testing

The operation of the PCVS and its associated protective monitoring system shall be tested upon completion of the installation and inspected, tested and maintained in accordance with all applicable local and national codes and standards and/or the Authority Having Jurisdiction, (manufacturer recommends quarterly or more frequently). A minimum test shall consist of turning the valve operating mechanism towards the closed position. The PCVS shall operate within the first two revolutions of the operating mechanism. Fully close the valve and ensure the PCVS does not restore. Fully open the valve and ensure that the PCVS restores to normal.

Technical Specifications

Dimensions	See Fig 10
Weight	1.0 lbs (0,45 kg)
Enclosure	Cover: Die Cast Finish: Red Powder Coat Base: Die Cast Finish: Black Powder Coat All parts have corrosion resistant finishes
Cover Tamper	Tamper Resistant Screws Optional Cover Tamper Switch Available
Contact Ratings	PCVS-2: Two Sets of SPDT (Form C) 10.0 Amps at 125/250 VAC 2.0 Amps at 30VDC Resistive 10 mAmps minimum at 24 VDC
Environmental Limitations	-40º F to 140ºF (-40ºC to 60ºC) NEMA 4X (IP 65) and NEMA 6P Enclosure (IP67) (Use suitably rated conduit and connector) Indoor or Outdoor Use (See PIVSU-EX Bulletin 5400694 for Hazardous locations)
Conduit Entrances	Two Knockouts for 1/2" conduit provided (See Notice on Page 7 and Fig. 11 on Page 6)
Service Use	NFPA 13, 13D, 13R, 72

Specifications subject to change without notice

Theory Of Operation

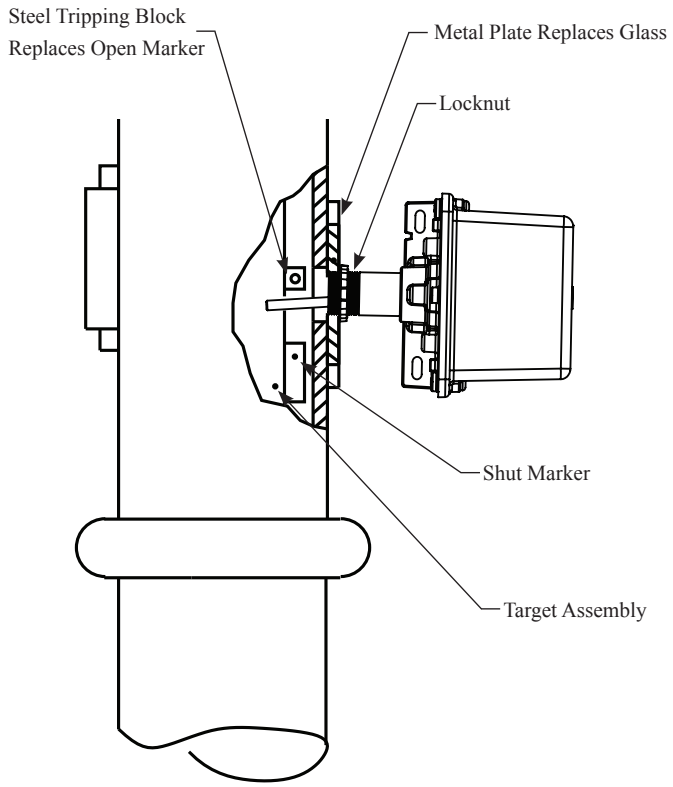
The PCVS is a spring loaded switch. It is in normal position when the trip rod is pulling against the spring force. Normal is when the switch is installed on the valve and the valve is fully open. As the valve closes, the valve actuator moves away from the trip rod of the PCVS and the spring on the PCVS pulls the trip rod over and trips the switch.

Alternate Window Installation and Moving Hood Installation

Target Moves Up as Valve is Shut

Fig 1

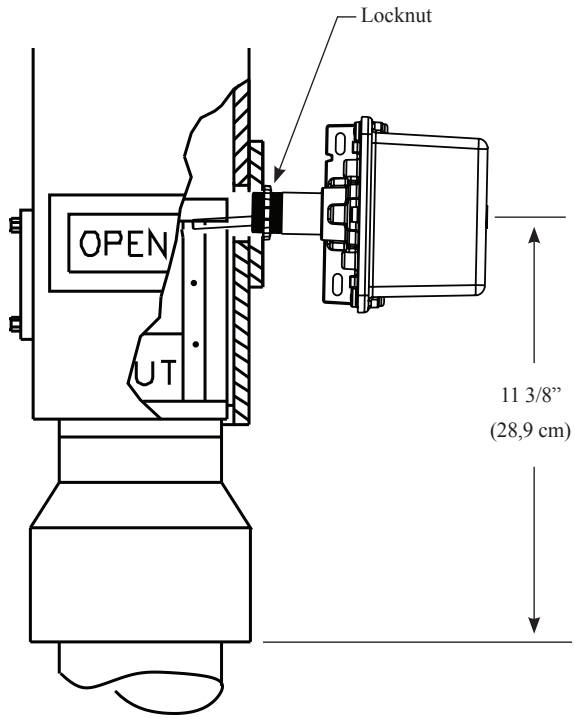
Subject to the approval of the "authority having jurisdiction" the alternate method of installation shown in Fig. 1 may be used. In this method, one of the glass windows of the housing is replaced with a 1/4" thick metal plate that is cut to fit in place of the glass and drilled and tapped to recieve 1/2" NPT pipe nipple. In some cases it may be necessary to attach an angle bracket to the target assembly to engage the PCVS trip rod.



Hood Moves Down as Valve is Shut

Fig 2

If the target is stationary and a hood arrangement is used, such as is shown in Fig. 2, the hood must be drilled with a 23/32" drill and tapped with a 1/2" NPT. The center line of this hole should be 1/8" below the portion of target assembly that strikes the PCVS trip rod. The 11 3/8" dimension shown is for a Clow Valve. Flexible conduit must be used for this type of installation. (More on pg. 3).



Typical Installations On Post Indicator Valve Housings

Fig 3

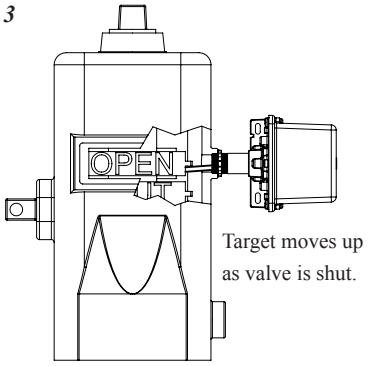
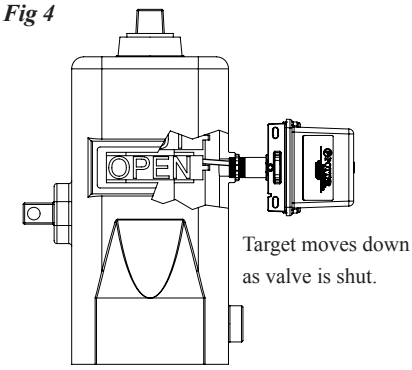


Fig 4



NOTE: Before any work is done on the fire sprinkler or fire alarm system, the building owner or their authorized representative shall be notified. Before opening any closed valve, ensure that opening the valve will not cause any damage from water flow due to open or missing sprinklers, piping, etc.

1. Position the valve to fully open ("OPEN" should appear in the window of the housing). Partially close the valve while observing the direction that the target assembly moves. Reopen the valve. If the valve housing is predrilled with a 1/2" NPT for installation of a monitoring switch, remove the 1/2" plug and fully open the valve. Make sure that "OPEN" appears in the window of the housing. GO TO STEP NO. 6.
2. If the valve is not pre-drilled for 1/2" NPT, remove the head and target assembly (consultation with valve manufacturer is recommended).
3. If the target assembly moved up as the valve was closed, measure the distance from the bottom of the head to the lower part of the target assembly that will contact the trip rod of the PCVS (see Fig. 3). This is usually a plate or bar on the target assembly, on a side adjacent to the "OPEN/SHUT" plates. Subtract 1/8" from the measurement. If the target moved down as the valve was closed, measure the distance from the bottom of the head to the upper portion of the target assembly that will contact the trip rod of the PCVS (see Fig. 4). Add 1/8" (3,2mm) to this measurement.
4. Mark the housing at the proper location. Using a 23/32" (18,2mm) drill bit, drill and then tap a 1/2" NPT in the housing on the side that coincides with the portion of the target assembly that will engage the trip rod of the PCVS.
5. Replace the head and target assembly.
6. Loosen the socket head screw that holds the nipple in the PCVS and remove the nipple.
7. Screw the locknut that is provided onto the nipple.
8. Screw the nipple into the 1/2" NPT hole in the valve housing hand tighten. Tighten the locknut against the valve housing to secure the nipple firmly in place.
9. Insert a scale or probe thru the nipple to measure the distance from the open end of the nipple to the target assembly. Subtract 1/2" (12,5mm) from this measurement.

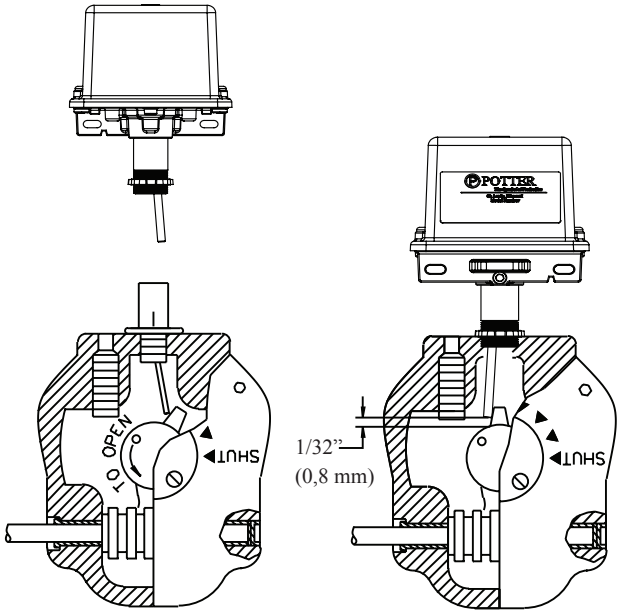
NOTE: In some cases, it may be necessary to attach an angle bracket to the target assembly to engage the PCVS trip rod.

10. Using the special tool provided, loosen the two cover screws and remove the cover from the PCVS.
11. Loosen the locking screw that holds the trip rod in place and adjust the rod length, from the end of the collar to the end of the rod, using the dimension determined in Step 9. Tighten the locking screw to 5 in-lbs minimum to hold the rod in place and properly seal the enclosure.
12. Partially close the valve to move the target assembly away (3 to 4 revolutions of the handle/hand wheel).
13. With the PCVS positioned so the spring will pull the trip rod to follow the target as the valve is closing, slide the PCVS over the nipple. Tighten the socket head screw in the collar.
14. Carefully open the valve to the fully open position. As the target moves to the open position it should engage the trip rod and actuate the switch(es). There should be a minimum overtravel of 1/2 revolution of the handle/hand wheel after the switch(es) actuate (a continuity meter connected to each set of contacts is one method that could be used to determine this).
15. Slowly close the valve. The switch must operate during the first two revolutions of the handle/hand wheel or during 1/5 of the travel distance of the valve control apparatus from its normal condition.

    NOTE: Small adjustments of the target position may be necessary (consultation with valve manufacturer is recommended).
16. Complete the required electrical wiring, connections and tests. The valve should be operated through the entire cycle of fully closed and fully open to determine the integrity of the PCVS installation and the signaling system. Check that all electrical and mechanical connections are secure.
17. Reinstall the cover and tighten the cover screws to 15 in-lbs minimum to properly seal the enclosure.
18. When the installation and testing are complete, return valve to its proper position.
19. Alternative installation for other post indicator valve housing shown in Fig. 1 and 2.

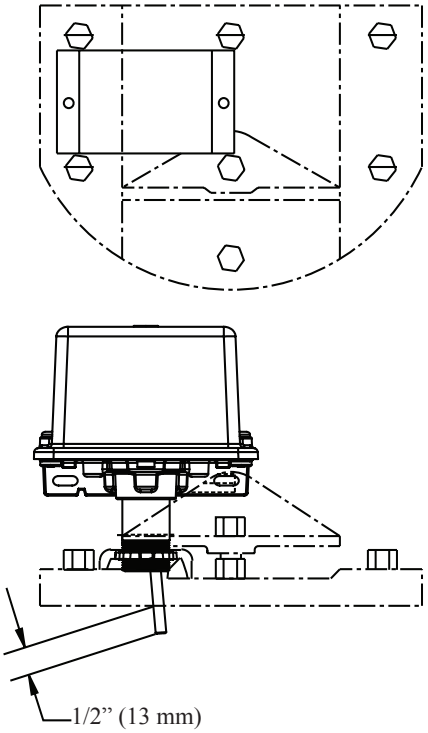
Typical Installation on a Butterfly Valve

Fig 5 Typical Indicating Butterfly Valve



Valve Partially Closed Valve Open

Fig 6 Dresser Indicating Butterfly Valve



1. Remove the 1/2" NPT plug from the gear operator case.
2. Loosen the set screw that holds the nipple in the PCVS and remove the nipple.
3. Screw the locknut that is provided onto the nipple.
4. Screw the nipple into the 1/2" NPT hole in the gear operator-hand tighten. Tighten the locknut against the case, to secure the nipple firmly in place
5. Partially close the valve to move the boss on the gear hub out of the way (3 or 4 revolutions of the hand wheel or crank).
6. Using the special tool provided, loosen the two cover screws and remove the cover from the PCVS.
7. Orient the PCVS so the spring will pull up the trip rod to follow the actuating cam inside the valve.

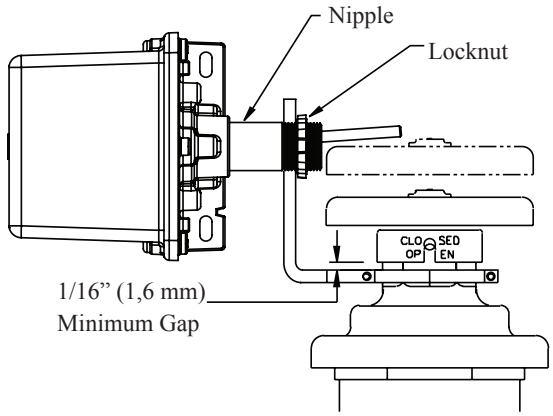
   NOTE: If trip rod length is excessive, loosen the locking screw and remove the trip rod from the trip lever. Using pliers, break off the one (1) inch long notched section (see Fig. 12). Reinstall the trip rod, tightening the screw to 5 in-lbs minimum, and repeat Step 7 procedure.
8. Remove device from nipple and shorten the trip rod 1/32" (0,80mm) (this is to prevent the trip rod from dragging on the gear hub inside the valve). Tighten the locking screw to hold the rod in place. Re-install the device on the nipple. Tighten the screw in the collar against the nipple.

   NOTE: In some cases it may be necessary to remove the gear box cover to ensure correct operation (consultation with the valve manufacturer is recommended).
9. Carefully open the valve to its full open position, as the boss on the gear hub moves to the open position it must engage the PCVS trip rod and actuate the switch(es). There should be a minimum overtravel or revolution of the crank or hand wheel after the switch(es) actuate (a continuity meter connected to each set of contacts is one method that could be used to determine this).

   NOTE: Slight adjustment of gear stops may be necessary to prevent overtravel of the trip rod (consultation with valve manufacture is recommended).
10. Carefully close the valve. The switch(es) must operate during the first two revolutions of the crank or hand wheel or during 1/5 of the travel distance of the valve control apparatus from its normal condition.
11. Complete the required electrical wiring, connections and tests. The valve should be operated through the entire cycle of fully closed and fully open to determine the integrity of the PCVS installation and signaling system.
12. Reinstall the cover and tighten the screws to 15 in-lbs minimum to properly seal the enclosure.
13. When the installation and testing are complete, return valve to its proper position.

Typical Pressure Reducer Type Valve Installation

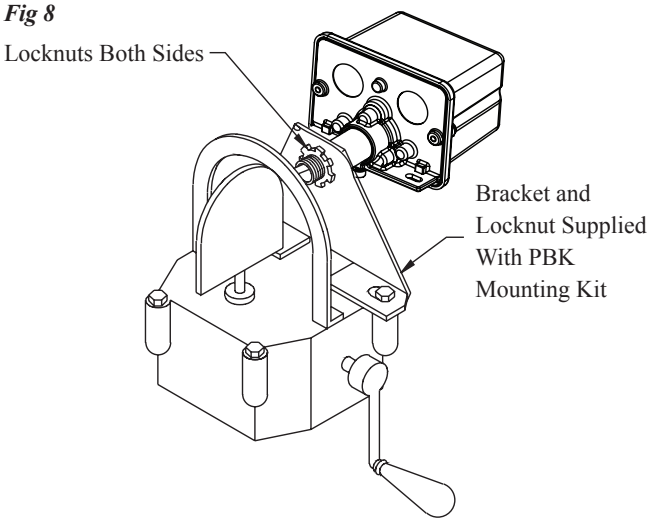
Fig 7



This figure shows the Model PCVS mounted on the valve yoke, with a bracket supplied by the valve manufacturer, to supervise a pressure reducer type valve.
NOTE: This application is subject to the approval of the authority having jurisdiction.

PBK - Butterfly Valve Kit for Valves with Internal Supervisory Switches

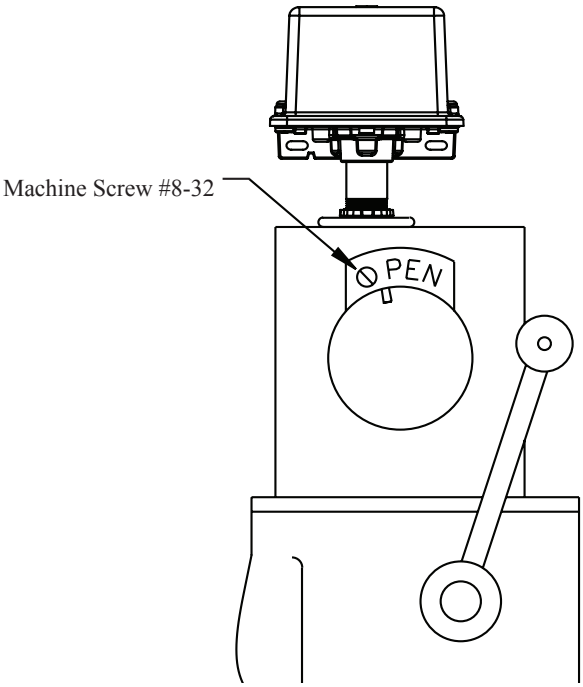
Fig 8



Pratt Butterfly Valve Kit as used to mount a PCVS on a Pratt Model IBV Valve.
Kits contain: Bracket, nuts and instructions
NOTE: Due to changes in valves, brackets may need to be modified by installer. This application is subject to the approval of the authority having jurisdiction.

PVK - Pratt PIVA Post Indicator Valve Kit

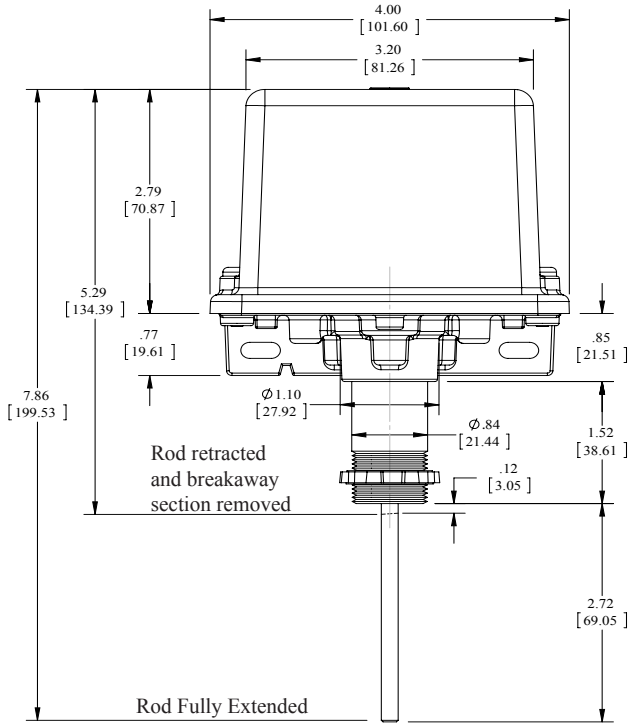
Fig 9

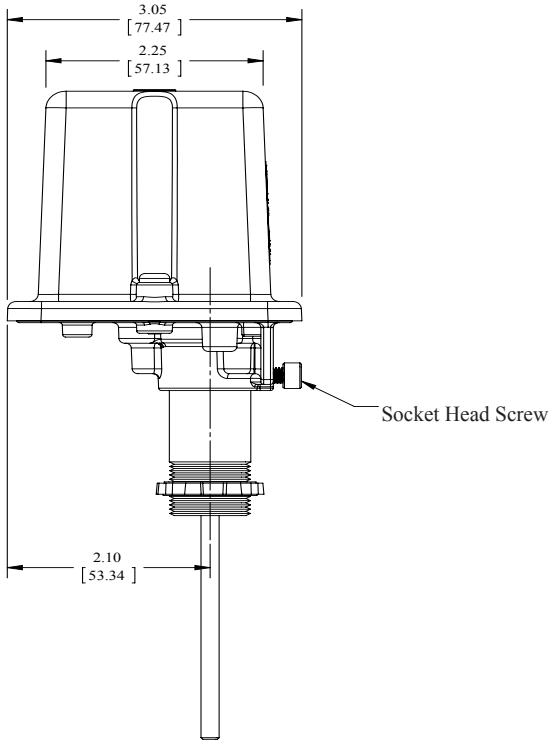


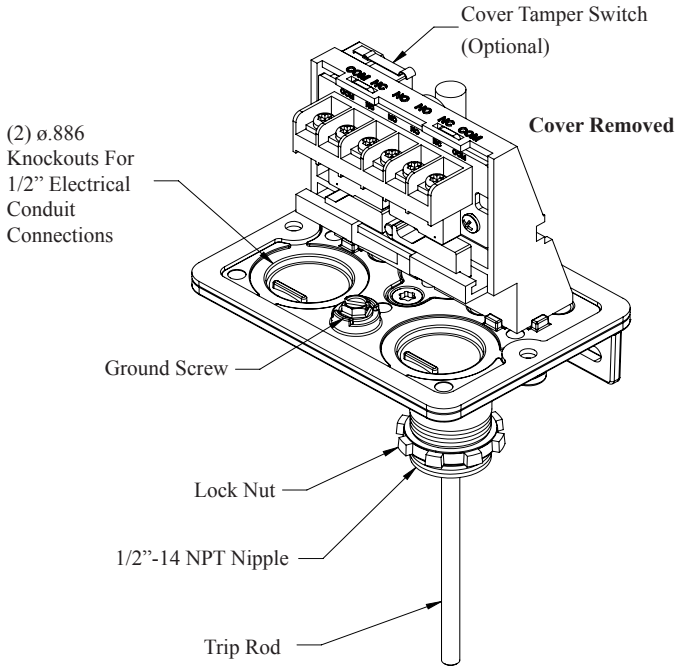
Pratt Valve Kit as used to mount a PCVS on a Pratt Model PIVA Valve.
Kit contains: Instructions, template, screw and nut.
NOTE: This application is subject to the approval of the authority having jurisdiction.

Dimensions

Fig 10



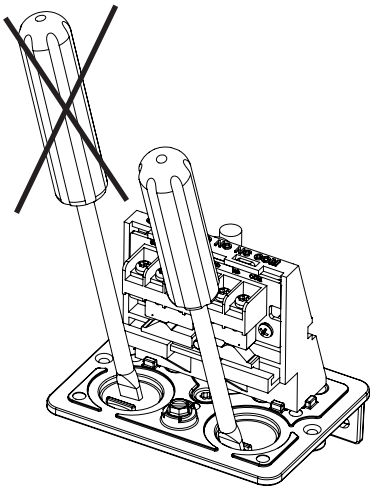




Knockout Removal

Fig 11

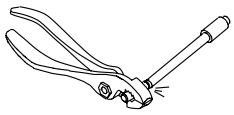
To remove knockouts: Place screwdriver at inside edge of knockouts, not in the center.



NOTE: Do not drill into the base as this creates metal shavings which can create electrical hazards and damage the device. Drilling voids the warranty.

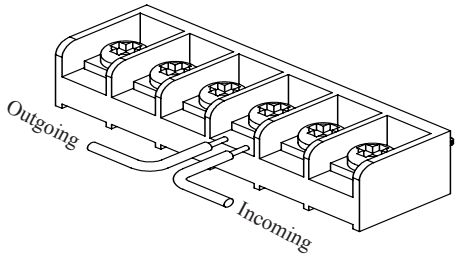
Breaking Excessive Rod Length

Fig 12



Switch Terminal Connections Clamping Plate Terminal

Fig 13



⚠ WARNING

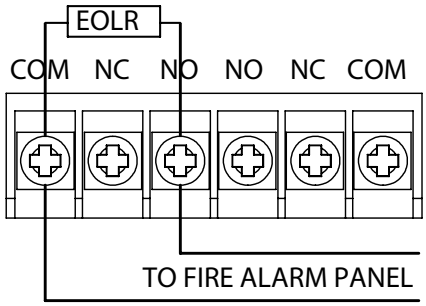
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire become dislodged from under the terminal. Failure to sever the wire may render the device inoperable risking severe property damage and loss of life. Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

NOTICE

All conduit and connectors selected for the installation of this product shall be suitable for the environment for which it is to be used and shall be installed to the manufacturer's installation instructions. For NEMA 4, 4X, 6, 6P installations, the cover screws are recommended to be tightened to 15 in-lbs minimum and the trip rod locking screw tightened to 5 in-lbs minimum to properly seal the enclosure.

Typical Electrical Connections

Fig 14



Ordering Information

Model	Description	Stock No.
PCVS-2	Potter Control Valve Switch (double switch)	1010203
PCVS-2 CRH	Potter Control Valve Switch (double switch). Corrosion resistant 316 stainless steel hardware.	1010211
--	Cover Screw	5490424
--	Hex Key for Cover Screws and Installation Adjustments	5250062
PBK-S	Pratt Butterfly Valve Kit - 3" (75mm) to 12" (30mm)	0090133
PBK-M	Pratt Butterfly Valve Kit - 14" (355 mm) and 16" (406 mm)	0090146
PBK-L	Pratt Butterfly Valve Kit - 18" (457mm) to 24" (610 mm)	0090132
PVK	Pratt Valve Kit	1000060
--	Optional Cover Tamper Switch Kit	0090200
KBK	Kennedy Butterfly Valve Kit	0090143
TBK	Tycho Butterfly Valve Kit	0090150

For pressure reducer type valve installation kits (if required) contact valve manufacturer.

Engineering Specifications: Post Indicator & Butterfly Valves

UL, CUL Listed / FM Approved and CE Marked valve supervisory switches shall be furnished and installed on all post Indicator and Butterfly valves that can be used to shut off the flow of water to any portion of the fire sprinkler system, where indicated on the drawings and plans and as required by applicable local and national codes and standards. The supervisory switch shall be NEMA 4X and 6P rated and capable of being mounted in any position indoors or out and be completely submerged without allowing water to enter the enclosure. The enclosure shall be held captive by tamper resistant screws. The device shall contain two conduit entrances and two Single Pole Double Throw (SPDT) switches. The device shall contain a removable 1/2" NPT nipple and adjustable trip rod, the trip rod shall be held captive by a set screw accessible upon removal of the cover. The switch contacts shall be rated at 10A, 125/250VAC and 2A, 30VDC. Post Indicator and Butterfly Valve supervisory switch shall be model PCVS-2 manufactured by Potter Electric Signal Company LLC

NOTICE

Supervisory switches have a normal service life of 10-15 years. However, the service life may be significantly reduced by local environmental conditions.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7770-0328:0010
CATEGORY:	7770 - VALVES/SWITCHES
LISTEE:	Potter Electric Signal Co 1609 Park 370 Place, Hazelwood, MO, 63042 Contact: Lakomiak, Neil 3148168679 Email: neill@pottersignal.com
DESIGN:	Supervisory switches listed below to monitor pressure, OS&Y, gate, globe/gate, PIV, tank temperature or water level valves. Refer to listee's data sheet for detailed product description and operational considerations. HLS-B WLS-W WLS-S PS-40A PS-120A OSYSU-2 OSYS-B PMS PTS-B OSYSU-1 GVS PCVS-1 PIVS-B TTS-S TTS-W PCVS-2 WLS PTS-C PS40 PS120 RBVS *PS15 *PS25
RATING:	
INSTALLATION:	In accordance with listee's printed instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model designation and FM or UL label.
APPROVAL:	Listed as sprinkler system supervisory switches.
NOTES:	Formerly 7738-0328:010

*Revision 09-07-2016 dc

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
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LISTING SERVICE

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 05/09/2023

Listing Expires: 06/30/2024

Authorized By: **David Castillo**, Program Coordinator
Fire Engineering & Investigations Division