Riser Pole Overhead Switches

HUBBELL® CHANCE®
POWER SYSTEMS, INC.

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Warranty - Material

Hubbell Power Systems, Inc. warrants all products sold by it to be merchantable (as such term is defined in the Uniform Commercial Code) and to be free from defects in material and workmanship. Buyer must notify the Company promptly of any claim under this warranty. The Buyer's exclusive remedy for breach of this warranty shall be the repair or replacement, F.O.B. factory, at the Company's option, of any product defective under the warranty which is returned to the Company within one year from the date of shipment. NO OTHER WARRANTY, WHETHER EXPRESS OR ARISING BY OPERATION OF LAW, COURSE OF DEALING, USAGE OF TRADE OR OTHERWISE IMPLIED, SHALL EXIST IN CONNECTION WITH THE COMPANY'S PRODUCTS OR ANY SALE OR USE THEREOF. The Company shall in no event be liable for any loss of profits or any consequential or special damages incurred by Buyer. The Company's warranty shall run only to the first Buyer of a product from the Company, from the Company's distributor, or from an original equipment manufacturer reselling the Company's product, and is non-assignable and non-transferable and shall be of no force and effect if asserted by any person other than such first Buyer. This warranty applies only to the use of the product as intended by Seller and does not cover any misapplication or misuse of said product.

Warranty - Application

Hubbell Power Systems, Inc. does not warrant the accuracy of and results from product or system performance recommendations resulting from any engineering analysis or study. This applies regardless of whether a charge is made for the recommendation, or if it is provided free of charge.

Responsibility for selection of the proper product or application rests solely with the purchaser. In the event of errors or inaccuracies determined to be caused by Hubbell Power Systems, Inc. , its liability will be limited to the re-performance of any such analysis or study.

NOTE: Because Hubbell has a policy of continuous product improvement, we reserve the right to change design and specifications without notice.

U.S. Patents 6,207,919; 6,215,082; 6,281,460; 6,409,135; 6,459,053; 6,541,717; 6,818,846; 6,946,607.

Type AR (Automation-Ready) Switch

14.4kV, 25kV or 34.5kV 900 Amperes Continuous/Interrupt

Description

The Hubbell unitized Type AR switch is a distribution-level, loadbreak, gang-operated side-break switch designed to meet not only today's needs but well into utilities' future of distribution automation. Designed for nominal system voltages of 14.4kV and 25kV three- and four-wire systems and 34.5kV grounded-wye systems. The Type AR switch is available with a variety of options, and in ratings for present and planned requirements.

To minimize field installation time, the Type AR switch is pre-assembled, adjusted and mounted on a crossarm. Installation time is even faster for a Type AR switch with the hook stick-operation option.

The Type AR switch for underground applications is a vertical configuration.

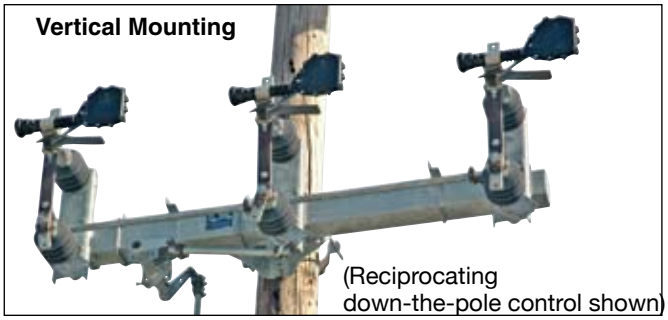
All feature clockwise opening and are operable by torsional or reciprocating controls as well a hookstick operation option (full-length down-the-pole control or crossarm-mounted hook stick-operation control).

1. Full-length down-the-pole controls Reciprocating pump-handle operation for Vertical switch. (Standard Duty or Heavy Duty conrols are available for Vertical switch.) Switch open or close positions locking provisions are provided.

2. Crossarm-mounted hook stick-operation controls provide pull-to-open / pull-to-close switch with maximum target hook stick accessibility.

Features:

All three phase switches feature a four-link overtoggle mechanism to assure locked closed blades, mechanical advantage for easier open and close operation, and "snap" feedback to the operator.



Type AR Switch Ratings

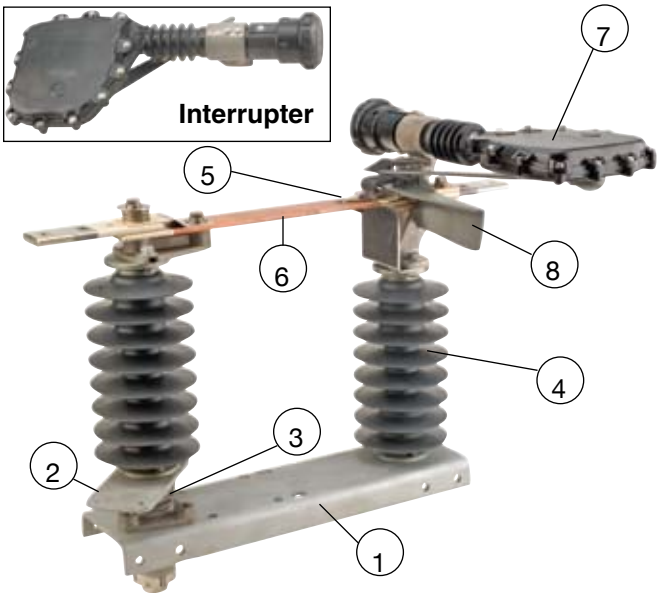
Nominal Voltage/Lightning Impulse Withstand	14.4 kV/110 kV, 25 kV/150 kV or 34.5 kV grounded-wye/150 kV
Continuous Current	900 amperes
Interrupting Current	900 amperes
Peak Withstand Current	65,000 amperes peak
Short Time Withstand Current (3 sec)	25,000 amperes, symmetrical
Fault Making: 1 time	25,000 amperes, asymmetrical
3 time	20,000 amperes, asymmetrical
Dead-ending:	8,000-lb. working load
Ice Breaking:	3/4-in. thick, opening and closing

HUBBELL POWER SYSTEMS, INC. CHANCE®

Type AR (Automation-Ready) Switch

14.4kV, 25kV or 34.5kV 900 Amperes Continuous/Interrupt

Feature —	Advantage —
• Automation-ready design	• Compatible with today's D/A environment by adding a motor operator and RTU of your choice, or upgrade in the future
• 900-amp continuous and interruption current rating	• Meets present and future operation requirements
• Four-link overtoggle mechanism	• Mechanical advantage reduces operating torque to the lowest level in the industry to date • Overtoggle feature assures blades are closed and gives "snap" feedback to the operator
• Hook stick operation capability	• Minimizes installation time, reduces possible vandalism, eliminates control adjustments
• Unitized, pre-assembled construction	• Minimizes installation time and eliminates control adjustments
• Four mounting arrangements	• Meets various utility installation requirements



Single Phase of Type AR Switch

(1) Hot-rolled steel base formed into a channel and galvanized per ASTM A153.

(2) Hot-rolled crank lever provides high strength and corrosion resistance. Galvanized per ASTM A153.

(3) Delrin® bushing coupled with a cast aluminum rotating shaft eliminates the need for lubrication during the life of the switch.

(4) Insulators available in 2.25" bolt circle, porcelain or polymer.

(5) High-conductivity copper with phosphorous-bronze back-up springs and copper-tungsten fault-closing tips provide reliable contact areas. Silver-to-silver current-transfer points.

(6) Blade formed from hard-drawn, high-conductivity copper for maximum current carrying capability.

(7) Interrupter provides current interruption without external arc or flame. High-strength polyurethane material for strength, weatherability and UV resistance. Bolted tongue-in-groove mounting ensures positive alignment.

(8) Polycarbonate ice shield helps protect contacts from ice build up.

Available Options

Hook stick Operation The Type AR switch can be operated by a hook stick operation. This option eliminates control pipe sections down the pole and their attendant adjustment during installation and maintenance.

Extra Pipe The extra pipe section includes guide, coupling, and all hardware for attachment.

Extension Links When deadending to the AR switch, extension links must be used to give needed clearance. The end clevis has a slotted hole for inserting the machine bolt without having to remove the extension bar. The extension links supplied are 14 inches long, hot-dip galvanized, and REA accepted. Catalog No. C2070112; six required per switch.

Surge Arrester Brackets Three brackets can be supplied for mounting six surge arresters (utility supplied) for overvoltage protection.

Sensor Brackets Extension Brackets can be supplied, or added to the AR Switch, to allow for the additon of line voltage/current sensors.

Crossarm Braces Crossarm braces may be specified as an option.

ESP™ polymer Insulators The distribution insulators, 2.25-inch bolt circle, are available in a U.S.-manufactured ESP polymer design. They are light weight, durable, and they offer long-term performance in every type of environment.

Terminal Connectors Catalog No. ATC1343, fortified cadmium-plated aluminum parallel-groove clamp can be supplied with switches. Six per switch.

Cable Range:
Minimum No. 2 solid copper [0.258 inch (6.55 mm)] to maximum 500 kcmil copper [0.811 inch (20.60 mm)].

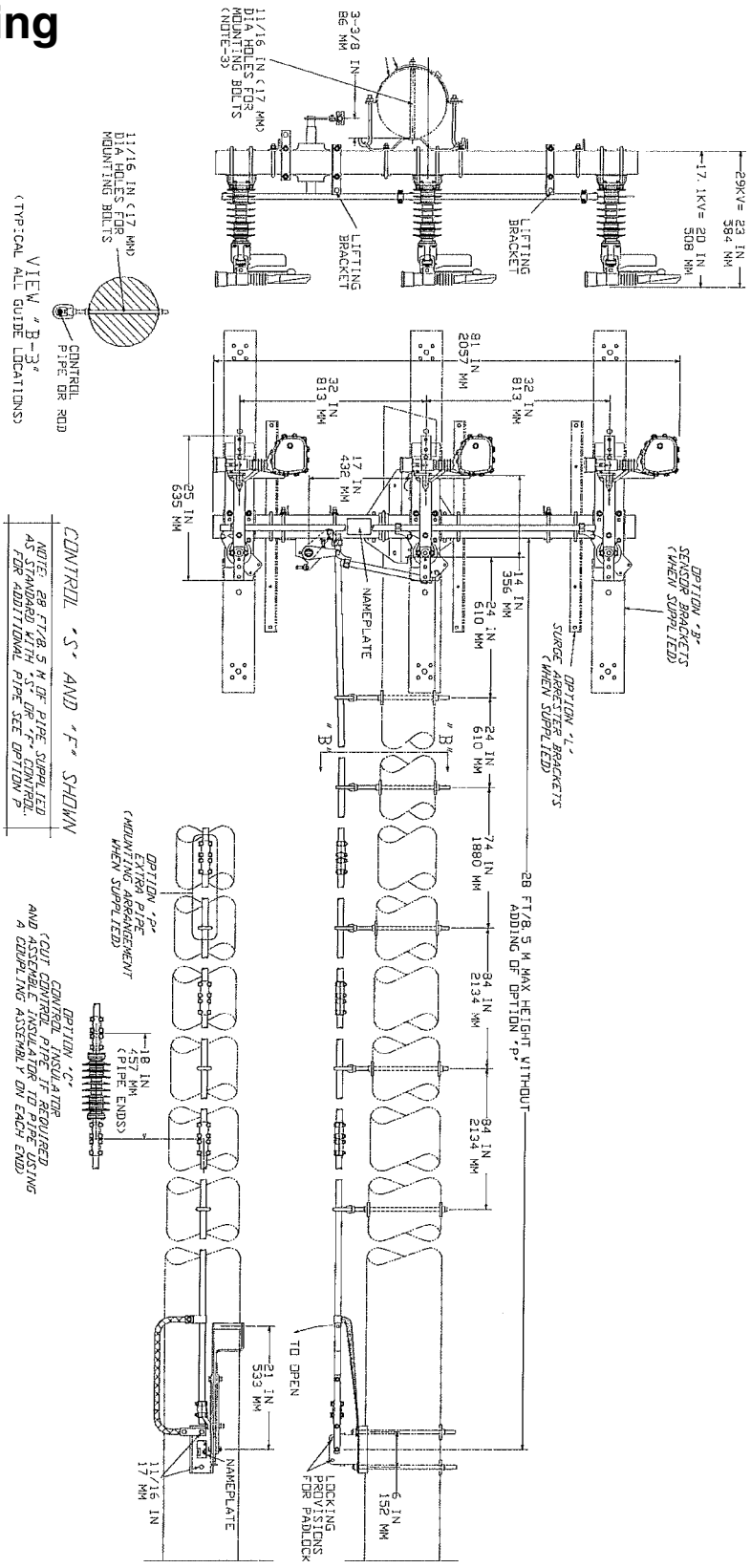
Control Insulator One 150 kV LIW (Lightining Impulse Withstand - BIL) polymer insulator in vertical control pipe.

Captive Hardware Two stainless-steel spline bolts pressed into each terminal pad, nuts and lockwashers included.

Type AR (Automation-Ready) Switch

14.4kV, 25kV or 34.5kV 900 Amperes Continuous/Interrupt

Vertical Mounting



HUBBELL POWER SYSTEMS, INC. CHANCE®

Type AR (Automation-Ready) Switch

14.4kV, 25kV or 34.5kV 900 Amperes Continuous/Interrupt

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Catalog Numbering System

A	R	1	X	X	X	X	X	X	X	X	X	X	X	X

Position 1:
Configuration

1 = Horizontal
2 = Vertical
3 = Ø-over-Ø
4 = Delta
5 = Inverted

Position 2:
Insulation, kV Impulse (maximum system kV)

1 = 110 porcelain (17.1kV)
3 = 110 polymer (17.1kV)
4 = 150 polymer (29kV)
6 = 150 polymer (38kV grounded-wye)
7 = 150 polymer Long Leak (39.6") (38kV grounded-wye)

Position 3:
Crossarm/Inter-Phase Shaft

S = Steel
F = Fiberglass
M = Steel crossarm, fiberglass interphase shaft

Position 4:
Standard Controls — Pipe sizes on drawings, pages 14A-4 thru -8 (All configurations)

S = All Steel Vertical Sections
F = One Fiberglass Vertical Section
H = Vertical Controls replaced with Hook stick Operating Mechanism

Heavy-Duty Controls — 1¼" IPS (Vertical and Ø-over-Ø only)

T = All Steel Vertical Sections
G = One Fiberglass Vertical Section

Positions 5 through 12:
See Option Tables for each Configuration

Option Tables by Configuration

Vertical Switch, S & F Controls

B = Sensor Brackets
* **C** = Control Insulator
H = Captive Hardware
L = Surge Arrester Brackets
* **P** = Extra Pipe
* **PP** = Two Extra Pipes
† **T** = Terminal Connectors (ATC 1343)

Vertical Switch, T & G Controls

B = Sensor Brackets
* **D** = Control Insulator
H = Captive Hardware
L = Surge Arrester Brackets
* **R** = Extra Pipe
* **RR** = Two Extra Pipes
† **T** = Terminal Connectors (ATC 1343)

Options C, P, R, PP and RR do not apply when Hook Stick Operated Control is supplied.

†Options H and T, Captive Hardware and Terminal Connectors, cannot be ordered together.

Replacement Parts

C8180001	Interrupter for all Mounting Configurations
E8181000P	Live Parts for all kV Ratiings and Mounting Configurations

Type M3 Hookstick Disconnect Switches

Up to 38kV 600 or 900 Amp 40kA Momentary

Application

The Chance Type M3 Disconnect Switch is a single-phase hookstick operated switch. It is for manual switching of overhead lines on electrical distribution systems up to 38kV. Design variations allow for applications as a distribution switch or a substation switch. Rated for 600 or 900 amps continuous, 40,000 amps momentary and 25,000 amps sym. 2-seconds short-time withstand, the M3 may be applied on:

- Dip/Riser poles
- Double crossarm
- Single crossarm
- Aluminum or steel structure

and wherever a disconnect switch is desirable for line sectionalizing. The addition of optional bypass studs allows for bypassing reclosers, regulators, capacitor banks or metering devices.

Operation

All Chance M3 disconnect switches include loadbreak hooks which serve both as a blade closing guide and for use with a portable loadbreak tool. To open the switch under load, use only an approved loadbreak tool and refer to the tool manufacturer for instructions.

Positive latching is provided. Silver-plating on the contact areas enhances efficient current transfer. For easy opening and ice-breaking action, the pull ring activates the latch as a pry-out lever.

Components of the M3 Switch

1. By-pass Studs (Optional)

Two copper alloy by-pass studs used for regulator, reclosers, and metering devices for by-passing operations. Provides superior corrosion protection as well as high conductivity. Chance hot line clamps are to be used in conjunction with this option (refer to section 13 of the Chance catalog for selection of proper clamp).

2. Terminal Pad (Standard)

High conductivity tin-plated copper, NEMA two-hole terminal pad.

3. Back-up Springs (Standard)

Two stainless steel springs (300 series) for high strength and superior corrosion resistance to maintain efficient current transfer at the stationary contact and end of blade.

4. Loadbreak Hooks (Standard)

Hot dipped galvanized steel to ASTM A153 for corrosion protection to be used with portable loadbreak tool. Also acts as a blade guide to increase the side loading capabilities during switch closing.

5. Copper Blade (Standard)

High conductivity copper blade and silver-plated moving contact areas. The blade utilizes four-finger contact design for superior performance on momentary currents. Blade is triangulated and edge-formed for superior stiffness and blade side-loading capability during closing.

5. Stainless steel pin (Standard)

Stainless steel pin can be positioned to stop the blade at 90° (as supplied) or 160°.

7. 160° Open Position Latch (Optional)

This is a 300 series stainless steel latch to hold the blade in the 160° open position.

8. Parallel Groove Connectors, (Optional)

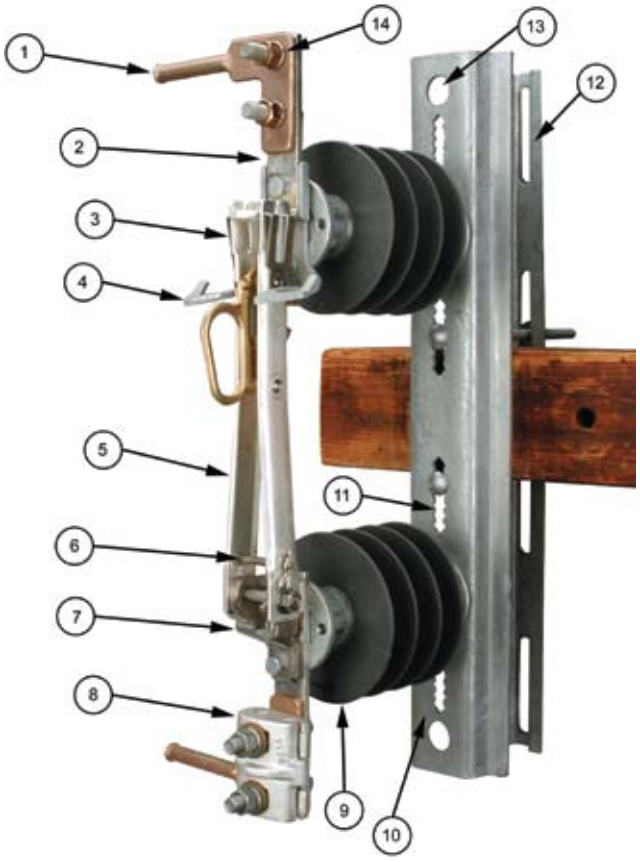
Catalog No. ATC1343, fortified cadmium-plated aluminum parallel groove clamp, furnished with galvanized steel bolts and nuts and will accept #2 through 500 kcmil aluminum or copper conductor.

9. Insulators

Available in 2.25-inch bolt circle distribution insulators of light weight ESP™ silicon alloy rubber or porcelain.

10. Switch Base

Bases are hot dip galvanized to ASTM A153 for corrosion protection and can be mounted with the supplied back-strap on a single or double crossarm; they can also be mounted on aluminum or steel equipment mounts. See drawings on following pages for dimensions.



11. Serrated Slots (Standard)

For retaining 3/8" carriage bolts, which are included, with the mounting back-strap when ordered. Smooth slots are available as an option. (Distribution switches only)

12. Back-strap (Standard)

Comes with hardware to match the distribution base ordered: U-shaped for rigidity and strength. Galvanized to ASTM A153 for corrosion protection. (Distribution switches only)

13. Dead-end Provision (Standard)

Holes for dead-ending conductors are stamped out of the galvanized steel base. Rated for 8,000 lb. working load. Hole size is 1"

14. Captive Hardware (Optional)

Two stainless steel spline bolts pressed into each terminal pad, bronze nut and stainless steel lock washer included.

HUBBELL POWER SYSTEMS, INC. CHANCE®

DISTRIBUTION CLASS (2.25" Bolt-Circle) Switch Ratings

Max. kV	Rated BIL*	Material	Switch Electrical Ratings				Insulator Mechanical Ratings				
			Leakage Distance, inches	Dry Arc Distance, inches	60 Hz Flash-over, kV*		Cantilever, pounds	Tension, pounds	Torsion, in.-lb.	Compression, pounds	Weight, lb.
					Wet	Dry					
15.5	110	ESP Rubber	17.2	7.1	30	38	1,200	5,000	3,000	5,000	2.90
		Porcelain	10.5	6.0	30	38	1,200	5,000	3,000	5,000	7.73
27	125	ESP Rubber	21.9	8.1	45	50	1,000	5,000	3,000	5,000	3.30
		Porcelain	15.5	7.0	45	50	1,000	5,000	3,000	5,000	9.00
38	150	ESP Rubber	28	10.0	60	70	800	5,000	3,000	5,000	4.50
		Porcelain	24.0	9.5	60	70	800	5,000	3,000	5,000	11.45

*ANSI Rating. Less than test results. Test reports available upon request.

Distribution Class Ratings

Nominal Voltage/BIL: 14.4kV/110kV, 25kV/125kV, 34.5/150kV
Continuous Current: 600 or 900 amp
Momentary Current: 40,000 amperes asymmetrical
Short Time Withstand Current 2-sec.: 25,000 amperes sym.
Deadending: 8,000 lb. working load

DISTRIBUTION Class Insulators

Distribution class insulators are $2^{1}/_{4}$" bolt-circle, provided with 110, 125 or 150kV BIL respectively for the 15.5, 27 and 38kV ratings. These are available in either ESP™ silicon alloy rubber or porcelain insulators.

ESP™ Insulator, available in three sizes

110kV 125kV 150kV

Structural design of ESP™ insulator:

• Rod

ESP™ insulator fiberglass rod is produced from the highest quality material. Strands are aligned for the maximum tensile strength. The rod is filled with electrical grade glass fibers.

• End Fittings

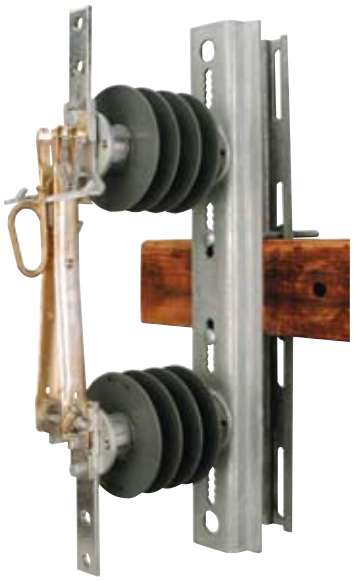
Ductile iron castings are mechanically crimped directly to the fiberglass rod. The crimp requires no intermovement of the parts to achieve high strength, nor does it introduce potting compounds or adhesives.

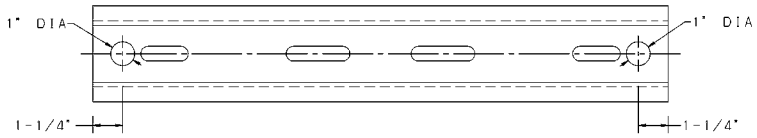
• Weathersheds

ESP™ insulators are the same proven material used in PDV arresters, Hi*Lite and Veri*Lite insulators and PDI dead-ends. ESP™ is a polymer compound made by alloying silicone and EPDM rubber. This alloy offers the desirable toughness and resistance to tracking of Ohio Brass's original EPR, with the hydrophobic characteristics derived from low molecular weight silicone oils.

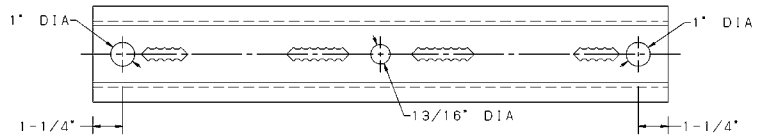
Ohio Brass uses several tests to evaluate materials. Tracking, QUV, corona cutting, salt fog, oxidative stability and variations of differential thermal analysis tests assure the quality of OB's shed material. For further information on our polymers ask your Hubbell representative for the publication "Polymer Materials for Insulator Weathersheds" EU1264-H.

DISTRIBUTION CLASS
M3 SWITCH—DIMENSIONAL DATA
110kV BIL - 600 Amp

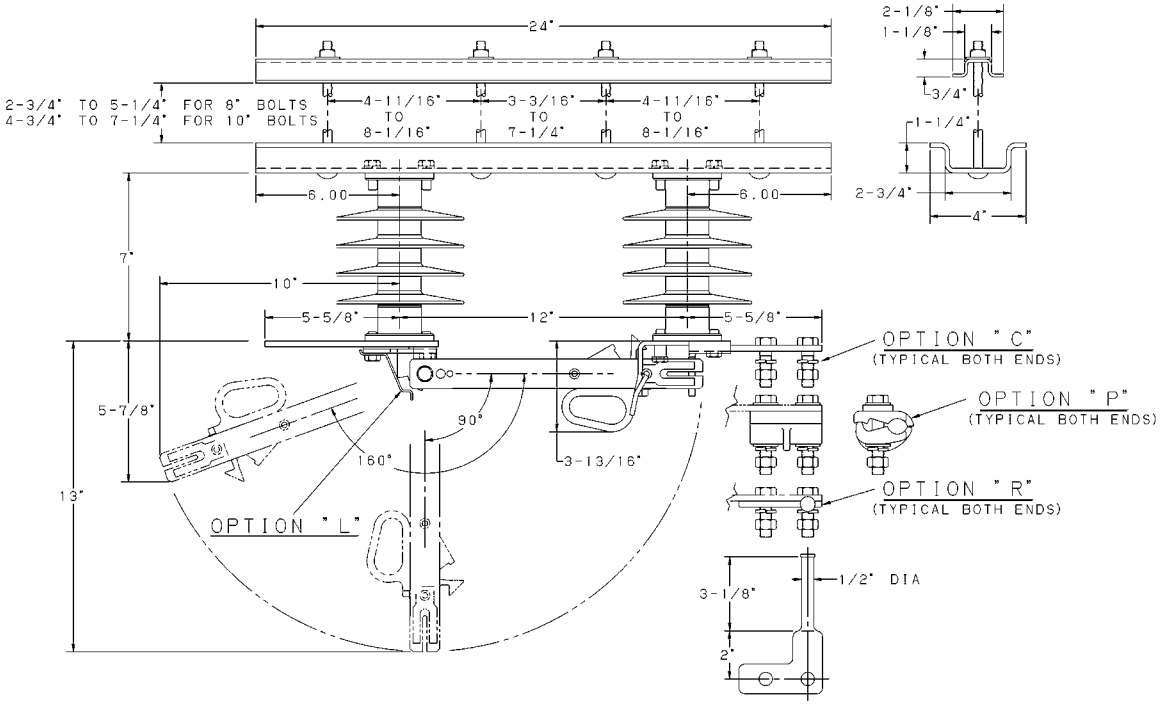




24" BASE "H" FOR 1/2" MOUNTING BOLTS



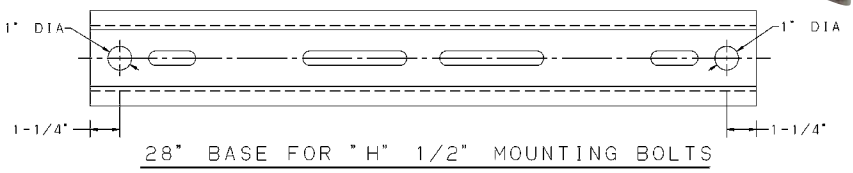
24" BASE "D" FOR 3/8" MOUNTING BOLTS

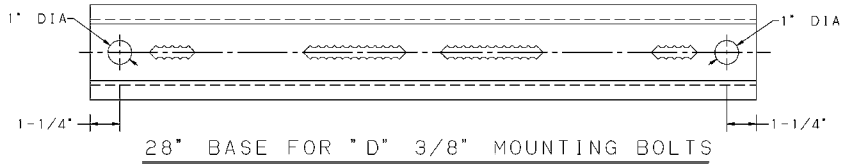


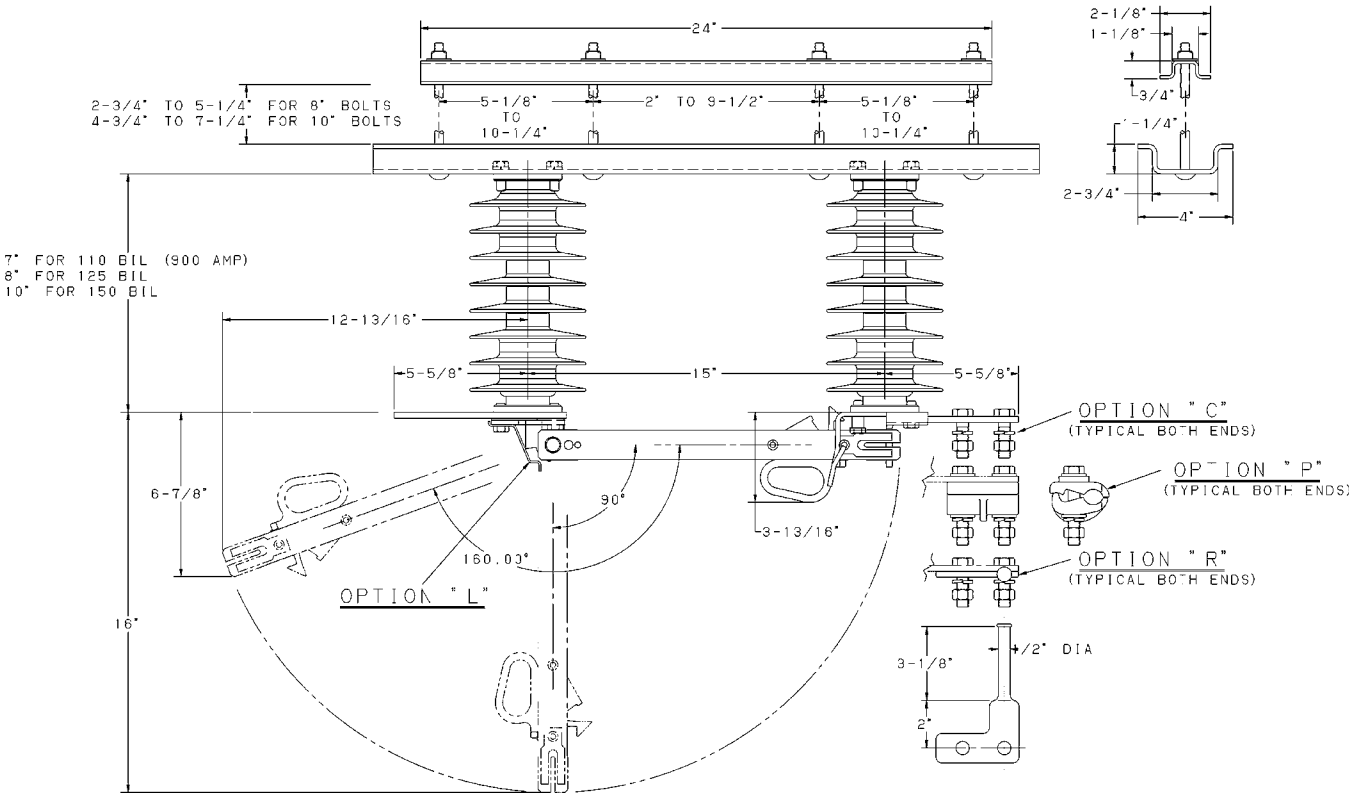
HUBBELL POWER SYSTEMS, INC.

CHANCE®

DISTRIBUTION CLASS
M3 SWITCH—DIMENSIONAL DATA
110kV BIL - 900 Amp
125kV BIL - 600 Amp
150kV BIL - 600 & 900 Amp







Type M3 Switch
DISTRIBUTION CLASS

RUS Listed

Ordering Information

M3 [1] [2] [3] [4] [5] [6] [7]

BASE

D = Distribution base, serrated slots with four 3/8" x 8"/10" carriage bolts and backstrap

H = Distribution base, smooth slots with four 1/2"x 8"/10" carriage bolts and backstrap

RATED CURRENT

6 = 600 AMP

9 = 900 AMP

INSULATION

2 = 15kV 110BIL Porcelain
3 = 25kV 125BIL Porcelain (not available in 900 amp)
4 = 35kV 150BIL Porcelain
6 = 15kV 110BIL Polymer
7 = 25kV 125BIL Polymer (not available in 900 amp)
8 = 35kV 150BIL Polymer

OPTIONS

C = Captive Hardware*
Consists of 4 each: 1/2" 13 stainless steel bolts, 1/2" flatwasher / lockwasher, 1/2" 13 bronze nut

L = Open Position Latch (P8070181P)
Stainless steel latch for holding the blade in the 160° open position

P = Parallel Groove Terminals* (ACT1343 2 per switch)
Two complete connectors and hardware. Accepts #2 - 500 kcmil (Copper or Aluminum)

R = Bypass Studs (P8070166P 2 per switch)
Two copper alloy bypass studs, which can be used for regulator or recloser bypassing

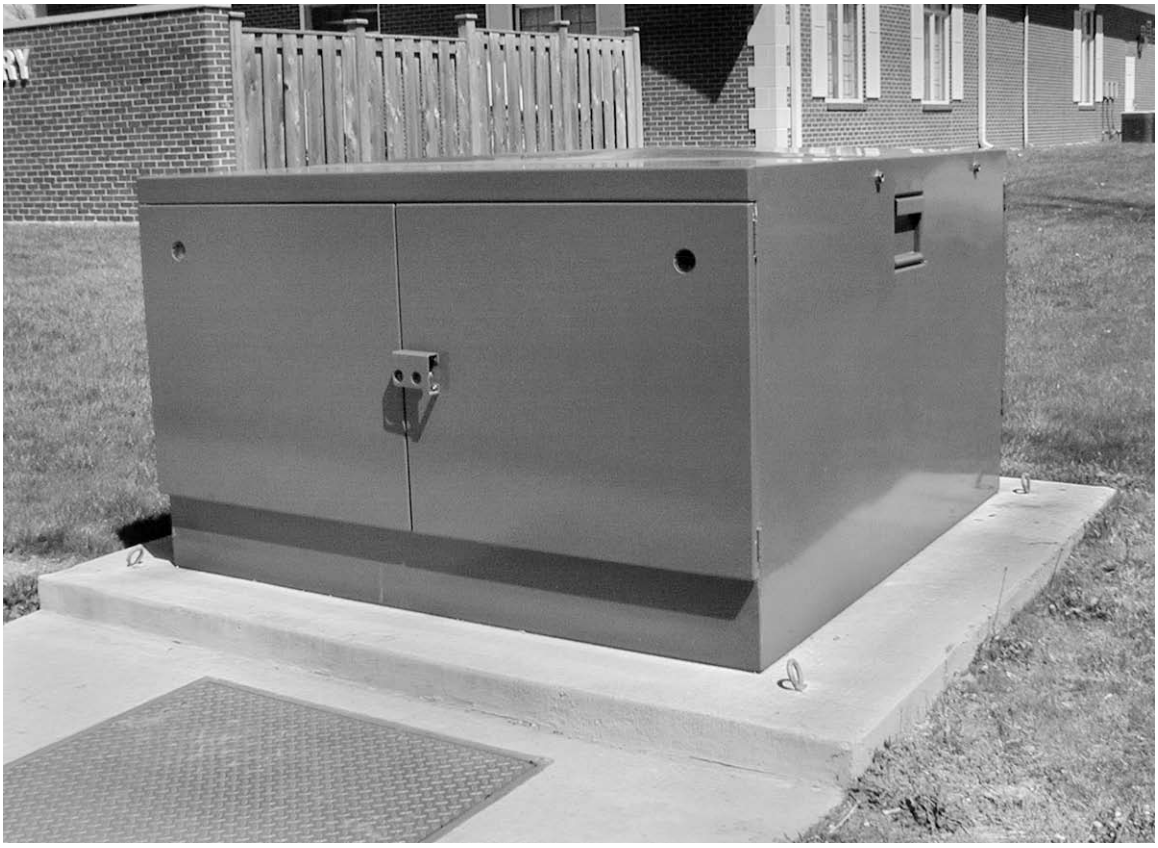
***NOTE:** Captive Hardware and Parallel Groove Terminals **CANNOT** be ordered together.

BOLT LENGTH

A = 10" Length
B = 8" Length

HUBBELL CHANCE
POWER SYSTEMS, INC.

UNDERGROUND SYSTEM PRODUCTS
Padmounted
Air-Insulated Switchgear
15 & 25 kV



15 & 25 kV
Air-Insulated Deadfront Padmounted Switchgear

AIS switches combine . . .
Deadfront protection . . .
with Air Insulation benefits

Description

The AIS padmounted switch is an air-insulated, deadfront switch used for sectionalizing underground distribution systems. It is available in 15kV and 25kV ratings and in a variety of switch/fuse configurations. There are also extensive options available.

The AIS Switch is a true deadfront design with a sealed switching compartment, utilizing air as the insulating medium along with a deadfront connector system. This combination minimizes electrical exposure to work crews and the public, reduces outages, reduces maintenance requirements and provides the most cost effective solution for 15kV and 25kV underground system sectionalizing.

Features · · · · · and · · · · · Benefits of AIS Switches

True air-insulated deadfront design	**Minimizing electrical exposure to work crews and the public**
	Reduces maintenance requirements
	Reduces outages caused by vegetation and/or animal intrusion
Large viewing windows	**Maximum visibility of 600A switch position and fuse condition**
Built-in 9" base spacing	**Increases door clearance and reduces the need for additional base spacers**
No center door support	**Increases working area in cable compartments**
Replaceable 600A bushings	**All 600A bushings are externally replaceable**

AIS Ratings

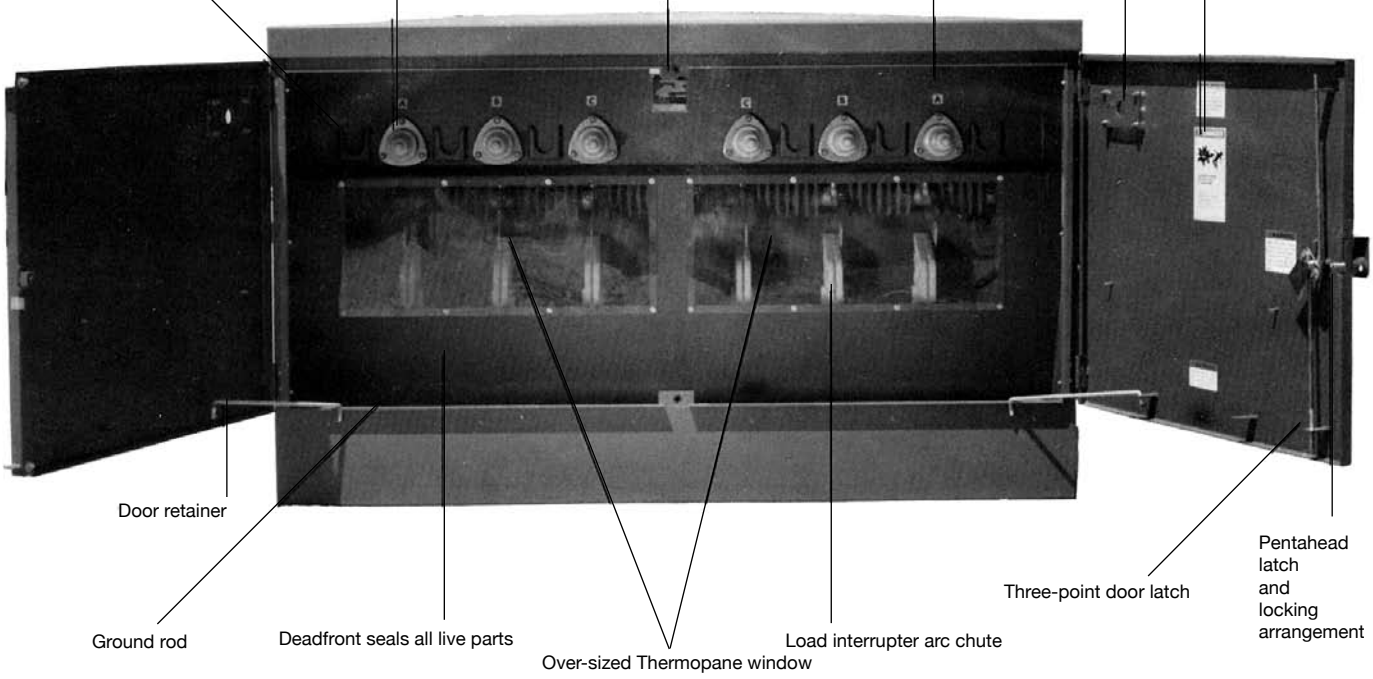
Nominal Voltage	**15kV**	**25kV**
Maximum Design Voltage	15.5kV	29kV
BIL	95kV	125kV
One-Minute Withstand (60Hz)		
Switch and Terminators	35kV	60kV
Continuous Current Rating		
Switch Side	600 Amp	600 Amp
Fuse Side (Maximum)	200 Amp	200 Amp
Load Switching	600 Amp	600 Amp
Cable Charging Current	10 Amp	15 Amp
Magnetizing Current	21 Amp	21 Amp
Momentary and Making Current*	12,000 Amps, rms, symm 19,200 Amps, rms, asymm	12,000 Amps, rms, symm 19,200 Amps, rms, asymm

*Consult factory for other requirements.

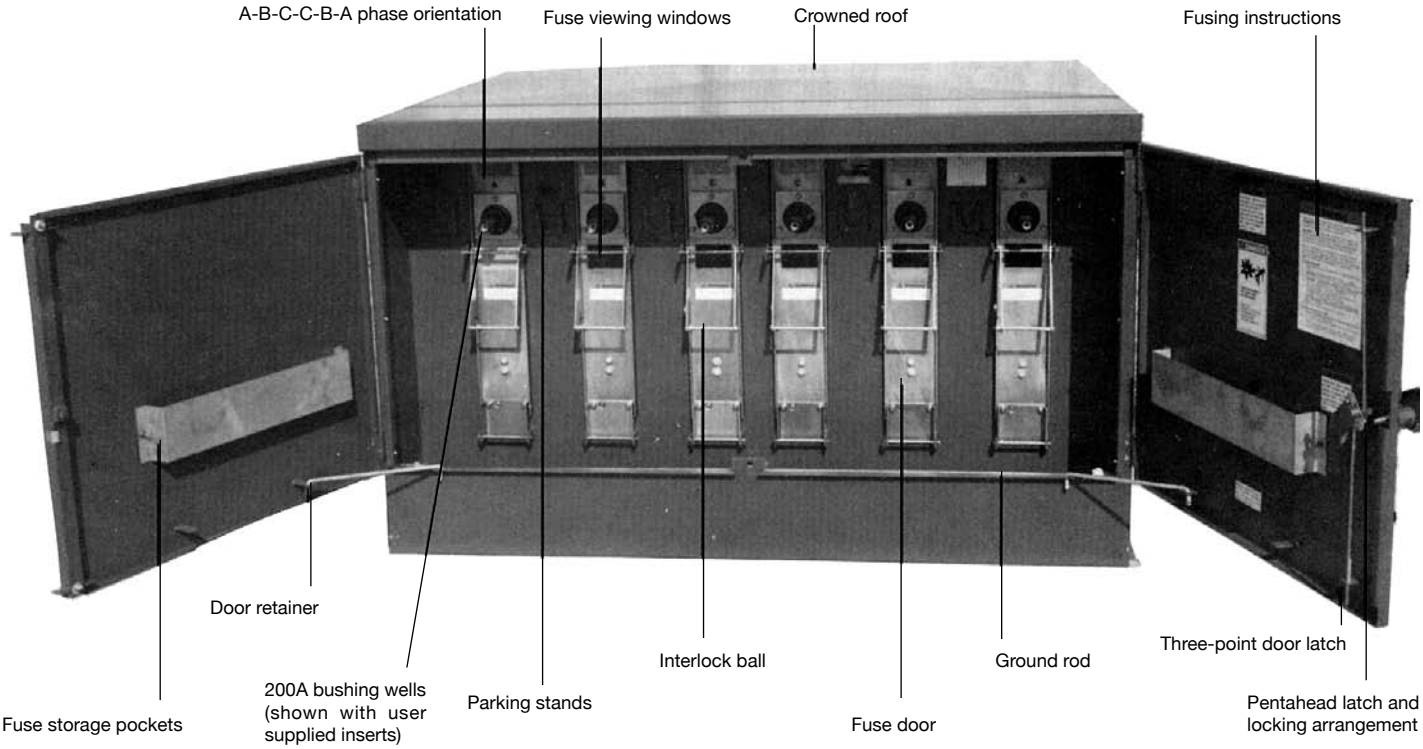
HUBBELL POWER SYSTEMS, INC. CHANCE

AIS Design Features

Switch Compartment



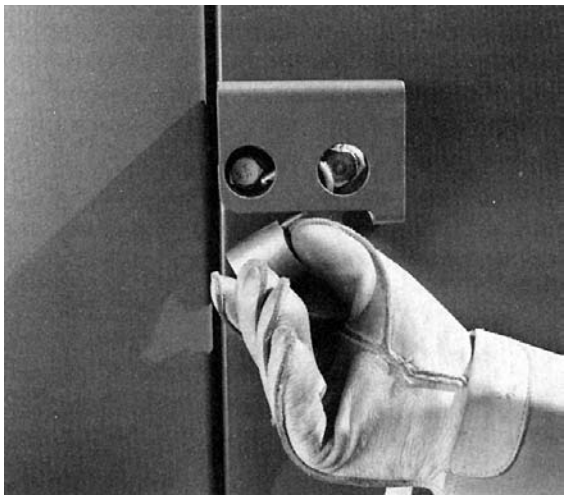
Fuse Compartment



AIS Design Features

Structural Stability

The fully welded enclosure is constructed of heavy gauge steel for superior strength and durability. For applications in highly corrosive areas, stainless steel enclosures are available.



Exterior Protection

The surface of each enclosure undergoes a multistage chemical cleaning process. A powder coat finish is then applied for superior corrosion protection, durability and ultraviolet protection. This coating system meets the latest revision of ANSI Standard C57.12.28, "Padmounted Equipment Enclosure Integrity," and the EEI Paint Guidelines.

Door Latching System

The low-profile door latch assembly has no protruding handles. The pentahead on the right operates the three-point latch. The pentahead on the left secures the door to the center door jamb. Both pentaheads must be engaged before a padlock can be installed.

The latching system exceeds requirements in the latest revision of ANSI C57.12.28 and the Western Underground Committee Guide 2.13, "Security for Padmounted Equipment Enclosures."

Externally Replaceable Bushings

The 600A bushings on the AIS switch are truly externally replaceable. This feature allows the utility to quickly replace any bushings in the field without disassembling the faceplate. Due to the individualized sub-assembly design, the AIS may be provided with 200A bushing wells in lieu of 600A bushings.

External Side Operator

An external operating mechanism is housed on the outside of the center compartment and allows linemen to perform switching functions without opening the cable compartment. Each three-phase gang switch is equipped with its own operator. The external operator can be padlocked in either the open or closed position.

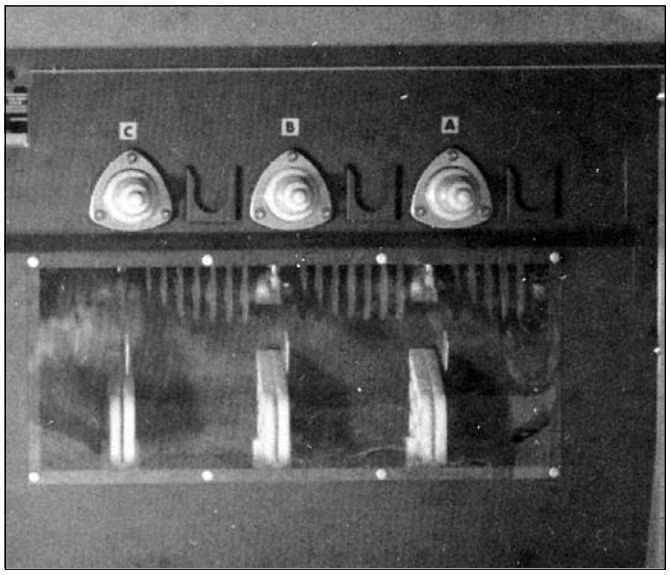
A sturdy operating handle is stored in each operator compartment. The padlocking provisions on the compartment doors accommodate the majority of available padlocks.

Padmount Interchangeability

The AIS is designed to be pad interchangeable with competitive designs. Base adapters also are available to make the AIS compatible with pads for some live front gear.

Visible Break

Oversized Thermopane windows provide excellent viewing for verification of visible break. The large windows are constructed of heavy-duty, mar-proof double pane polycarbonate. They are easily removed in the shop to provide ready access to switch components.



Confirming the visible break through the AIS windows eliminates the need to move the 600A connectors.

HUBBELL CHANCE
POWER SYSTEMS, INC.

Fusing Flexibility

Fuse versatility was a key design parameter of the AIS in order to utilize existing fuses already approved and in use by the utility and/or to improve coordination with existing fuse systems. A utility using livefront gear can use the same fuses and end fittings in the AIS.

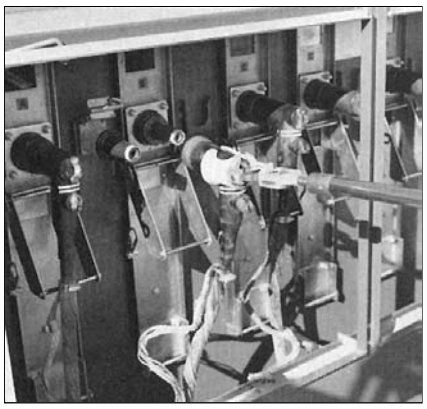
S&C SMU-20 power fuse
S&C SM-4Z power fuse
Cooper type NX current limiting fuse

For S&C fuses, indicator windows are provided for locating blown fuses.
Fuse doors are mechanically interchangeable and require only a simple operation, without de-energizing the 600 amp line side, to change in the field from one type fuse to another.

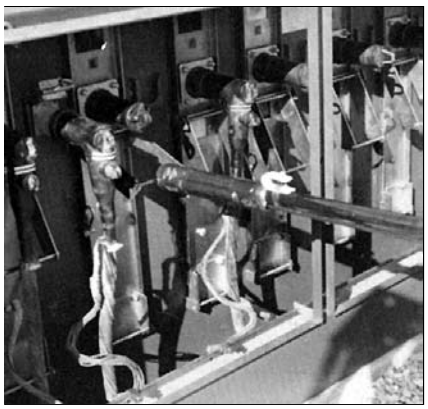
Horizontal Feed-Thru

Sufficient space is provided for feed-thru bushings for parking of elbows.

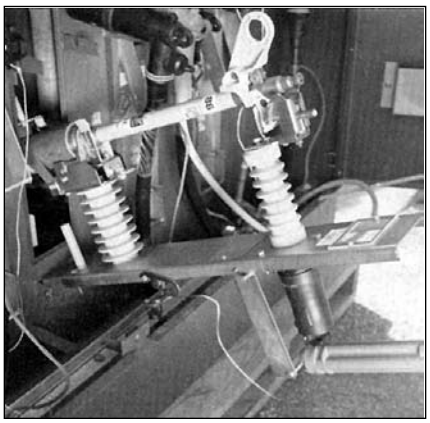
Fuse Access is Safe and Simple



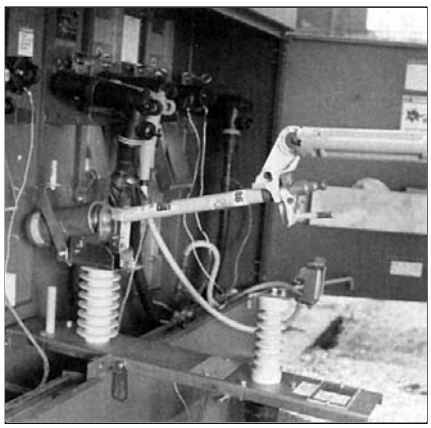
1 - Loadbreak elbow must be removed before the mechanical latch can be opened. Parking the elbow insures that the load is safely disconnected.



2 - After the elbow has been parked, the latching bail on the fuse door is released.

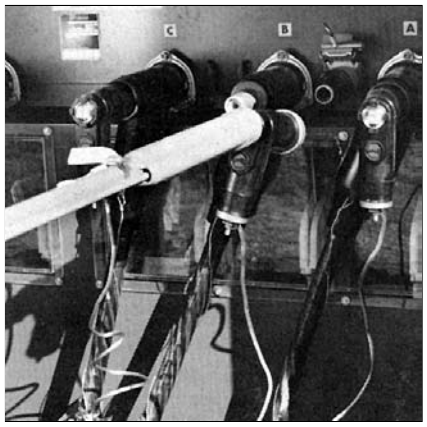


3 - As fuse door is lowered, a spring-activated barrier closes behind it to maintain the deadfront integrity of the switch's tap side.



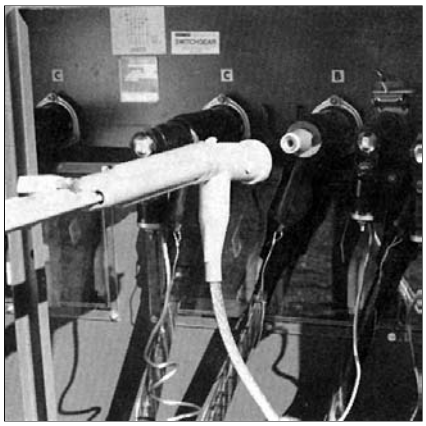
4 - When the fuse door is fully opened, the fuse tray is positioned an ample distance from the cables for easy removal of the fuses.

FEEDER ISOLATION does not require movement of the 600A connectors.



After verification of visible break, removal of the arrester exposes the load reducing tap plug on back of the 600A connector.

A Chance Multi-Range Voltage Detector may be used to test for line voltage.



The Feeder can then be grounded with a standard grounding elbow.

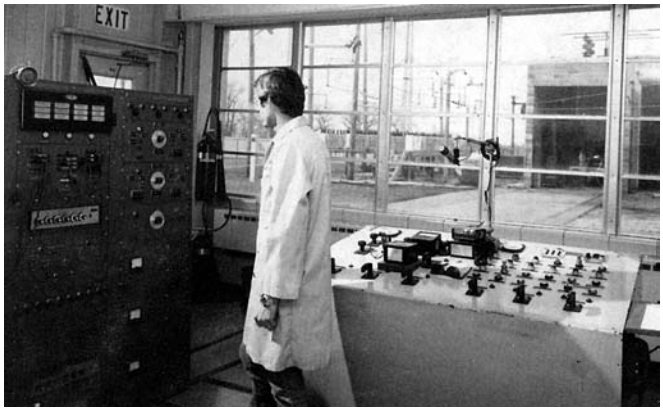
AIS Reliability

ANSI Design Tests

The AIS has been tested to rigorous specifications of the Standard for Deadfront Padmounted Switchgear, ANSI C37.72. Traditionally, switchgear was subjected to a variety of tests which imposed individual switches to the extremes of interrupting duty, momentary, make-and-latch, dielectric and mechanical tests. As a result of unanimous utility input to the Standards Committee, the design test requirements in the new standard were substantially changed. Now, a single switch must be subjected to a sequence which combines and expands all the rigors previously imposed on individual switches. The design test sequence consists of the following tests in the order indicated:

1. Interrupting Current Test
2. Momentary Current Test
3. Making Current Test
4. 60-Hertz Withstand Test
5. Thermal Runaway Test
6. Mechanical Operation Test

After completing the design test sequence, the switch must be capable of carrying rated current without thermal runaway. In addition, the design must pass a 60-Hertz, direct current and impulse test as well as one-second high current, corona and temperature rise tests. While the above tests in themselves are all very important, Chance does not stop at this point in their evaluation of new switch designs. Various other visual, mechanical, electrical and environmental tests are conducted to assure optimum performance.

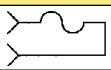
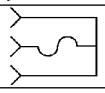
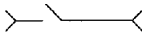
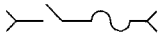
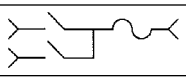
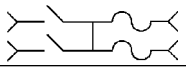
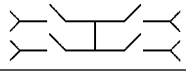
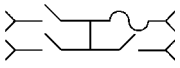
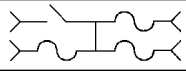
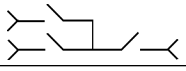


The AIS switch undergoes various tests in the Chance Research Center and its testing laboratory complex.

After assembly, all switches are tested to ANSI Standards:

1. Voltage Drop Test (IR). Each line direction of the switch configuration is tested. The IR test is a current test where the voltage drop across the area tested is measured to indicate the impedance in the circuit which is tested. This test assures reliable electrical connections.
2. High Potential Testing. Each switch is tested phase-to-phase and phase-to-ground across the insulation system with the switch in the open and closed positions.

Ordering Information: 15 and 25 kV AIS Padmounted Sectionalizing Equipment

Switch Configuration	One-Line Diagram	Voltage kV		Termination & Bus Ratings — Amps				Phases
		Nom.	BIL	Line 1	Line 2	Line 3	Line 4	
AIS-1		15/25	95/125	200	200	—	—	1
AIS-1A		15/25	95/125	200	200	200	—	1
AIS-3		15/25	95/125	600*	600*	—	—	3
AIS-5		15/25	95/125	600*	200	—	—	3
AIS-6		15/25	95/125	600*	600*	—	200	3
AIS-9		15/25	95/125	600*	600*	200	200	3
AIS-10		15/25	95/125	600*	600*	600*	600*	3
AIS-11		15/25	95/125	600*	600*	600*	200	3
AIS-12		15/25	95/125	200	600*	200	200	3
AIS-13A		15/25	95/125	600*	600*	600*	—	3

*200A universal bushing wells can be supplied instead of 600A deadbreak bushings.

HUBBELL POWER SYSTEMS, INC. CHANCE®

AIS Switch Catalog Number System

X X X X X X X X X X X

kV Rating

A 15kV
B 25kV

Switch Configuration

010.....AIS-1
01A AIS-1A
030.....AIS-3
050.....AIS-5
060.....AIS-6
090.....AIS-9
100.....AIS-10
110.....AIS-11
120.....AIS-12
13A AIS-13A

Source Connector Provisions

A .....600A deadbreak bushings
B .....200A universal bushing wells

NOTE: All fuse connector provisions are supplied with 200A universal bushing wells. 200A universal bushing well inserts are not provided.

00..... No fusing (i.e. AIS-3, AIS-10, AIS-13A)

Options

C1 .... Removable stud 600A bushings
D1 .... Automatic door latch (standard with stainless steel, option F).
E ..... 6" base adapter to allow mounting AIS switch on the pad of a different manufacturer's switch of the same configuration (contact factory for specific details and availability).
F ..... Stainless steel enclosure
G..... Kirk Key Interlocks to prevent paralleling source side switches.
H..... Kirk Key interlocks to prevent entry to fuse doors without all feed switches locked open.
I..... 200A bushing well inserts
L..... Kirk Key Interlocks combining options G and H
Q..... 6" base spacer
U..... 12" base spacer
V ..... 18" base spacer
W ..... 24" base spacer

Fusing: For **15 kV** AIS
Select the appropriate fuse from table below:

Fuse Manufacturer	Fuse Mounting	Ratings: Maximum Design kV	Ratings: Maximum Amperes, RMS	Catalog Number Additions
S&C	SM-20	17.0	200	20(1)
S&C	SM-4Z	17.0	200	4Z(2)
Cooper	NX	8.3	1.5-40	N1
Cooper	NX	8.3 15.5	50-100 1.5-40	N2
Cooper	NX	15.5	50-100	N3

Fusing: For **25 kV** AIS
Select the appropriate fuse from table below:

Fuse Manufacturer	Fuse Mounting	Ratings: Maximum Design kV	Ratings: Maximum Amperes, RMS	Catalog Number Additions (Suffix)
S&C	SM-20	27	200	20(1)
S&C	SM-4Z	27	200	4Z(2)
Cooper	NX	15.5	1.5-40	N1
Cooper	NX	15.5 23	50-100 6-40	N2
Cooper	NX	27	6-50	N3

(1) To include SML20 End Fittings, change "20" to "2H"

(2) To include SM4Z End Fittings, change "4Z" to "4H"

PAD™ Controller for Padmount Switch Automation

The PAD™ controller for AIS switchgear provides utilities with the most advanced and economical approach to automation. The easy-to-install PAD is adaptable to any AIS padmount as well as those of other manufacturers.

Two-way, three-way, and four-way switching is available.

PAD Electrical Features

- Six status indications for position indication, charger status, loss of AC, and battery condition.
- Motor runs on AC or battery for double reliability.
- Temperature compensating battery charger
- "Smart" battery disconnect to prevent damage to the battery from deep discharge
- "No-Go" function with status indication to prevent underpowered switch operation.
- User-friendly travel set control – You'll love it!!
- Local/remote switch
- Open/close switch with LED position indication
- Vented 12 V .33 A-H lead acid battery
- AC receptacle
- Surge protection to ANSI C37.90 and C62.41
- Grounding provision
- Thermostatically controlled heater

PAD™ Mechanical Features

- Provision for manual operation
- Padlockable motor
- Decoupler with lockout provision
- Powder-coated aluminum enclosure with stainless steel continuous hinge and handle hardware
- Instruction book pocket

HUBBELL POWER SYSTEMS, INC. CHANCE®

Specific PAD™ Model Features

PAD™ motor operator to automate the AIS padmount loadbreak switch featuring:

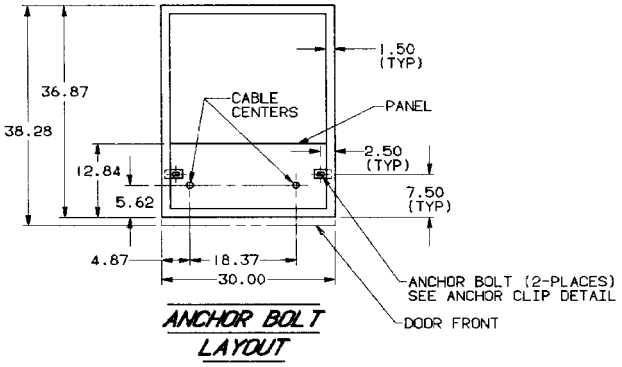
Catalog No. ABCCB33HB01
Features —

- Aluminum enclosure with green finish
- PAD mounting kit
- Version III circuit control assembly
- 12 V, vented battery
- Battery fuse and block
- Battery charger
- AC fuse and block
- MOV surge protection
- 125 V / 250 watt heater and thermostat
- Front panel with indicating lights and motor travel setting controls
- AC convenience outlet
- Provision for mounting customer RTU and radio

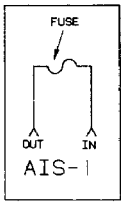
Catalog No. ABCCB33HB02
Features —

Same as above except without provision for mounting RTU and radio for use on switches with two or more motor operators. RTU and Radio are only required in one unit.

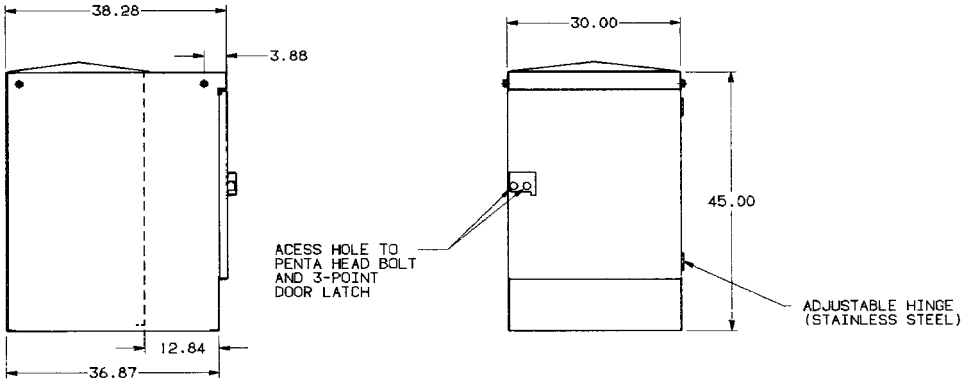
Model AIS-1
15kV — 95kV - BIL
weight 401 lb.



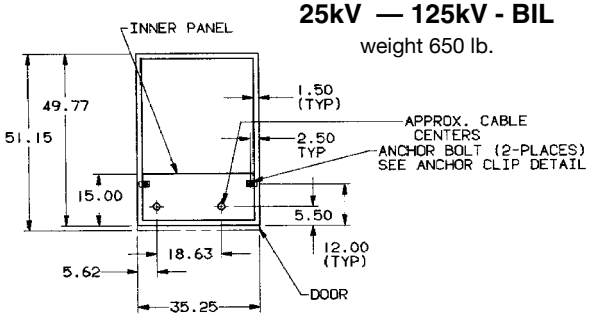
ANCHOR BOLT LAYOUT



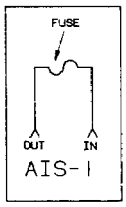
CIRCUIT DIAGRAM



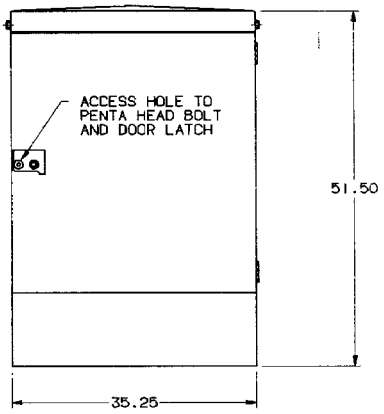
Model AIS-1
25kV — 125kV - BIL
weight 650 lb.

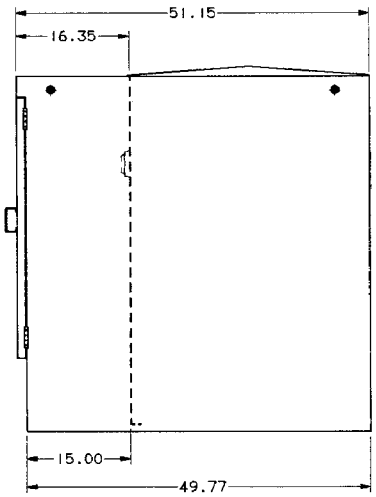


ANCHOR BOLT LAYOUT



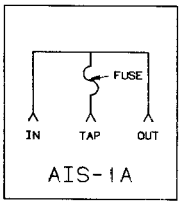
CIRCUIT DIAGRAM



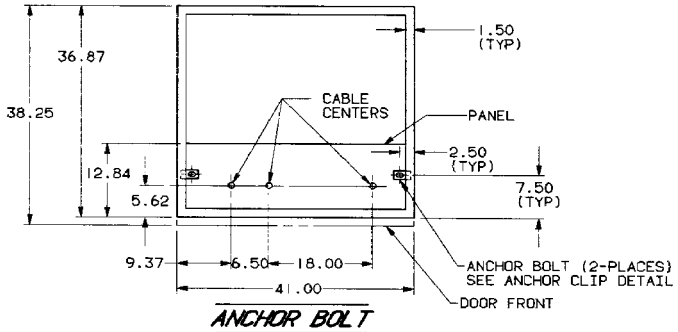


HUBBELL POWER SYSTEMS, INC. CHANCE®

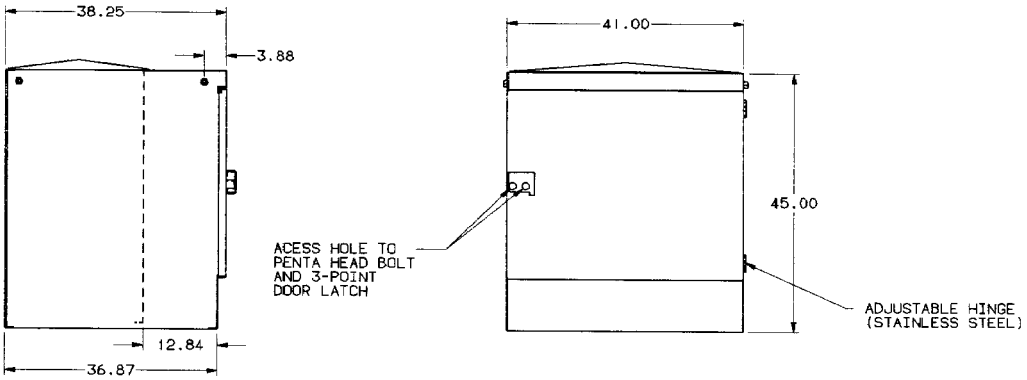
Model AIS-1A
15kV — 95kV - BIL
weight 475 lb.



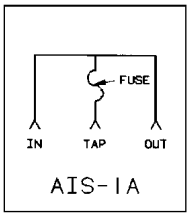
CIRCUIT DIAGRAM



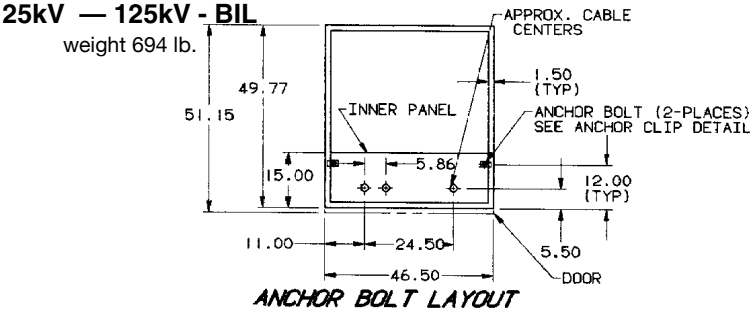
ANCHOR BOLT LAYOUT



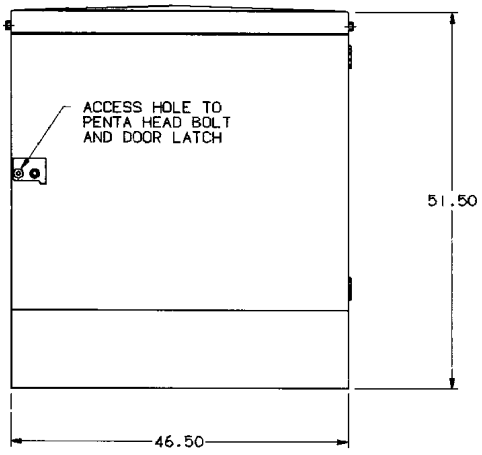
Model AIS-1A
25kV — 125kV - BIL
weight 694 lb.

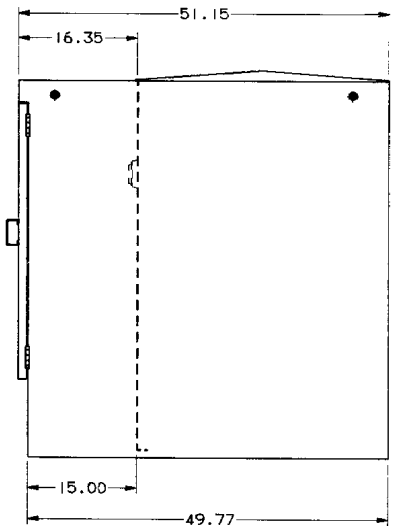


CIRCUIT DIAGRAM



ANCHOR BOLT LAYOUT

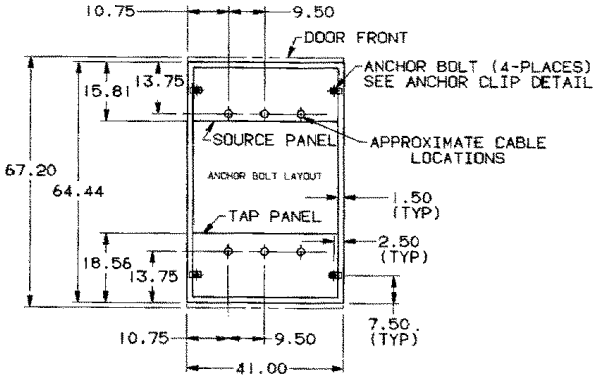


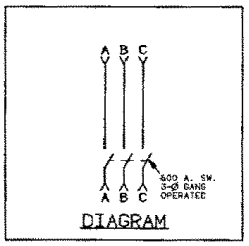


HUBBELL POWER SYSTEMS, INC. CHANCE®

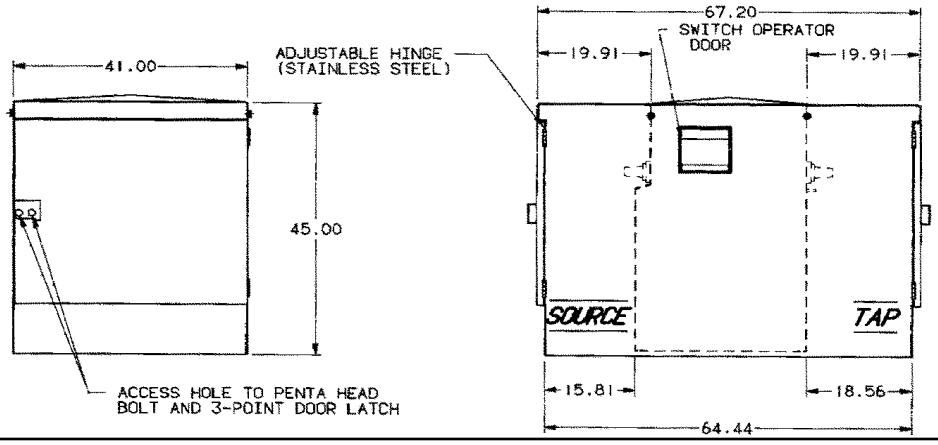
Model AIS-3
15kV — 95kV - BIL

weight 875 lb.



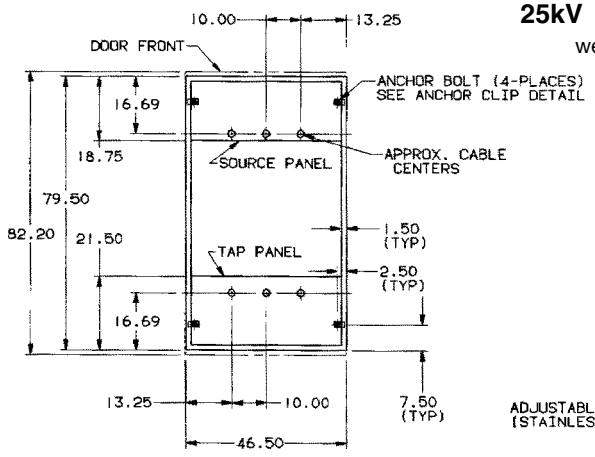


AIS-3
CIRCUIT DIAGRAM

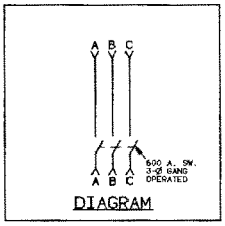


Model AIS-3
25kV — 125kV - BIL

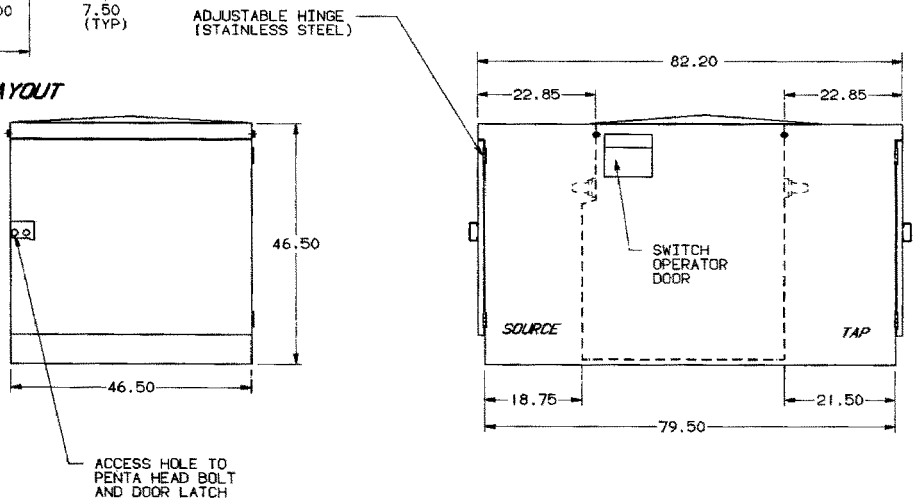
weight 1275 lb.



ANCHOR BOLT LAYOUT



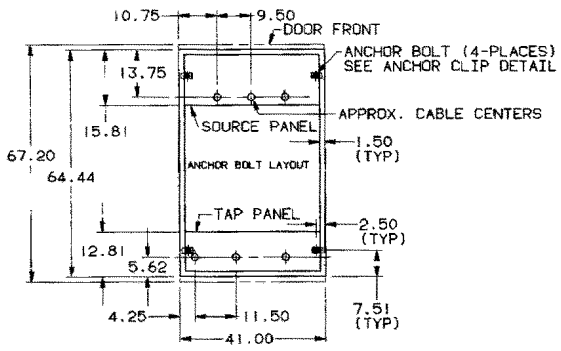
AIS-3
CIRCUIT DIAGRAM

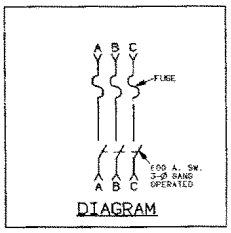


HUBBELL POWER SYSTEMS, INC. CHANCE®

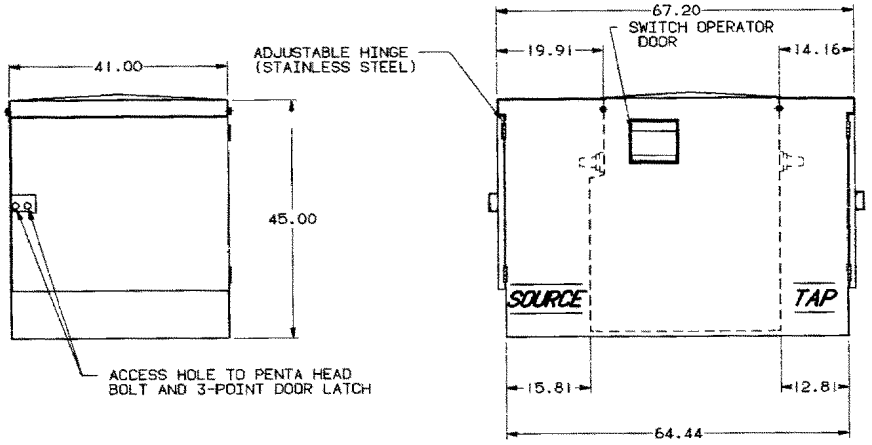
Model AIS-5
15kV — 95kV - BIL

weight 900 lb.



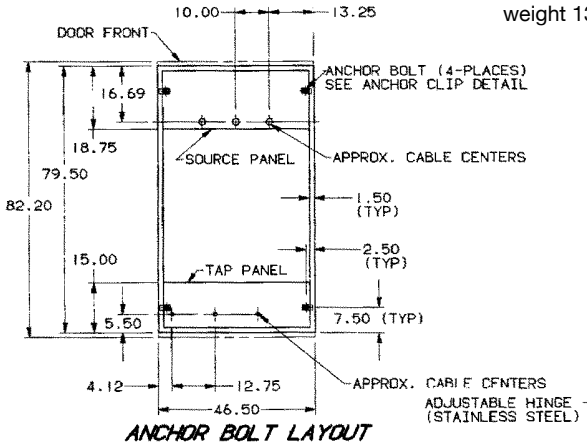


AIS-5
CIRCUIT DIAGRAM

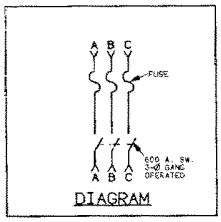


Model AIS-5
25kV — 125kV - BIL

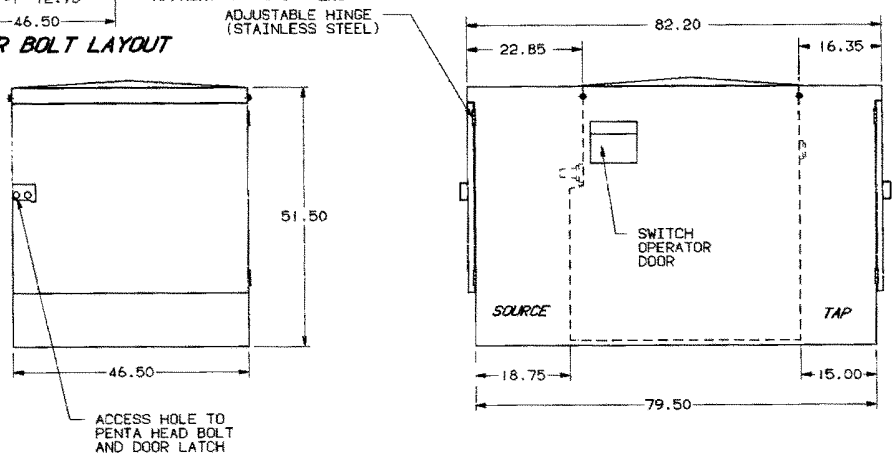
weight 1350 lb.



ANCHOR BOLT LAYOUT

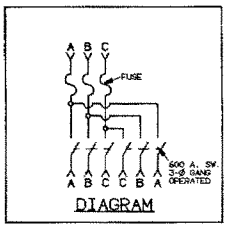


AIS-5
CIRCUIT DIAGRAM

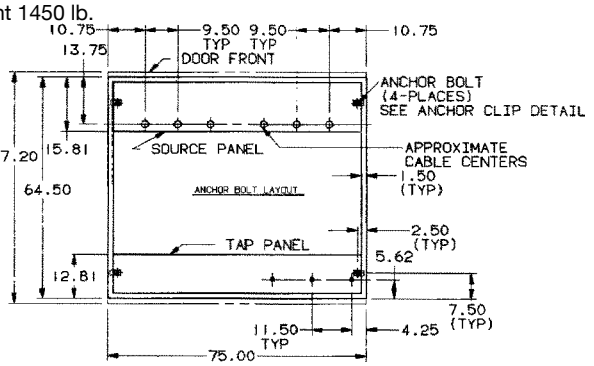


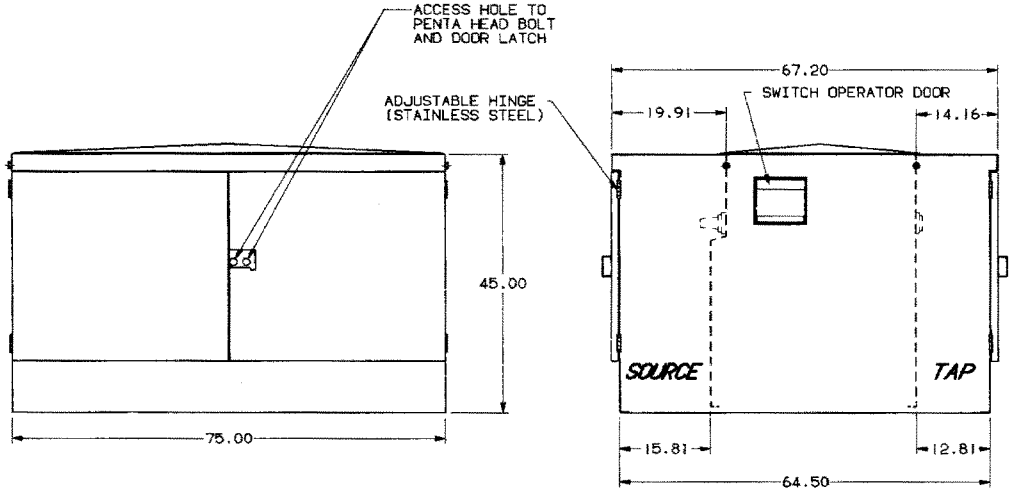
Model AIS-6
15kV — 95kV - BIL

weight 1450 lb.



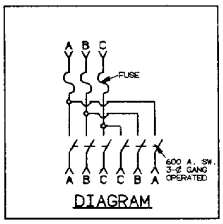
AIS-6
CIRCUIT DIAGRAM



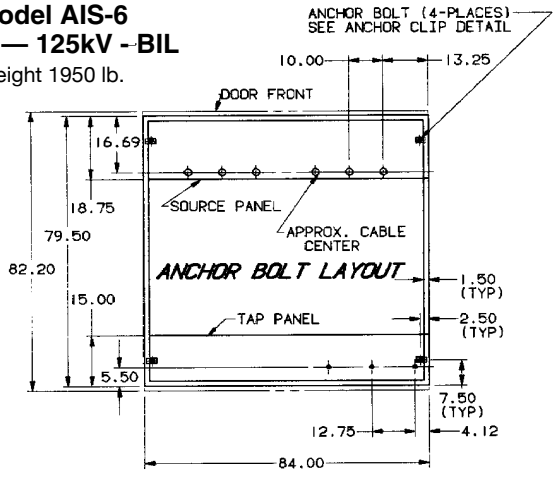


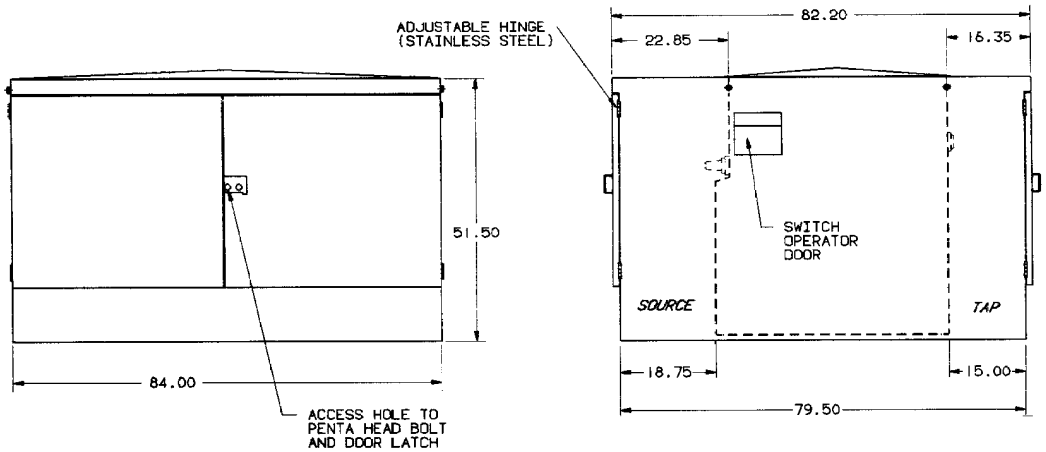
Model AIS-6
25kV — 125kV - BIL

weight 1950 lb.



AIS-6
CIRCUIT DIAGRAM

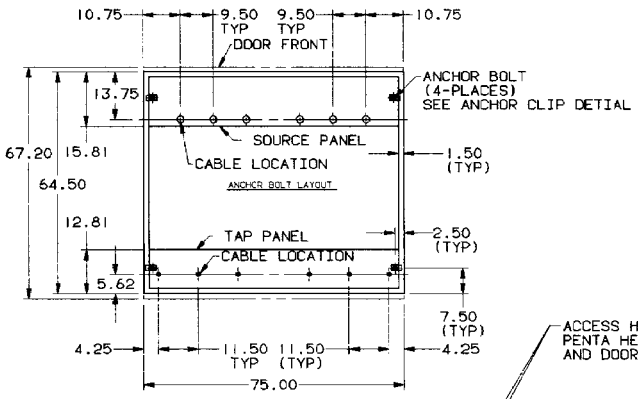


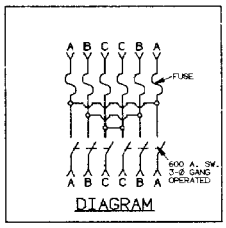


HUBBELL CHANCE
POWER SYSTEMS, INC.

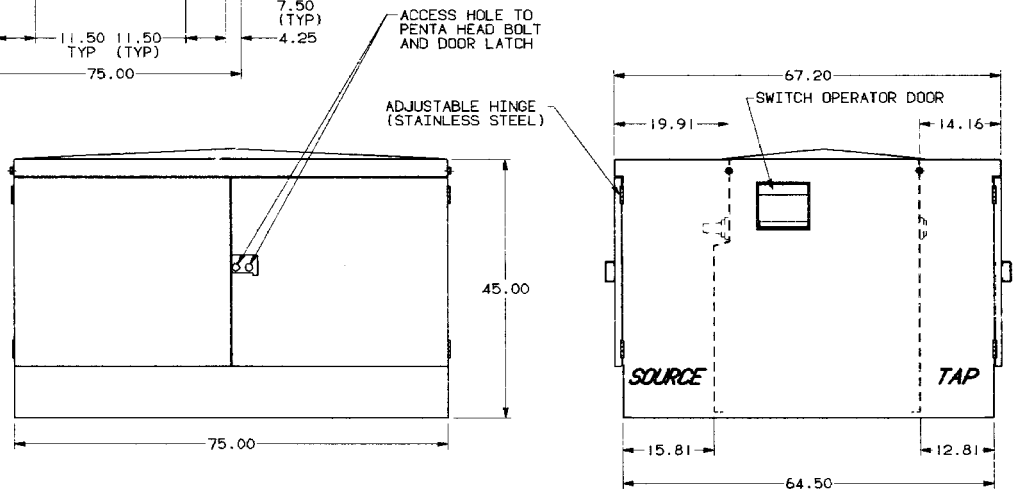
Model AIS-9
15kV — 95kV - BIL

weight 1500 lb.



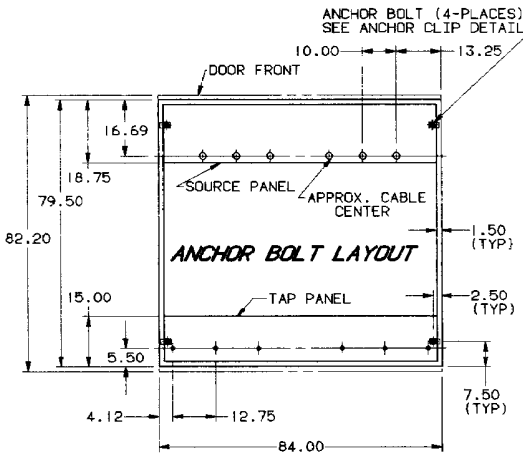


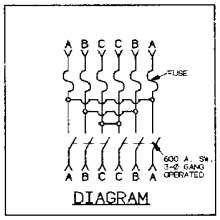
AIS-9
CIRCUIT DIAGRAM



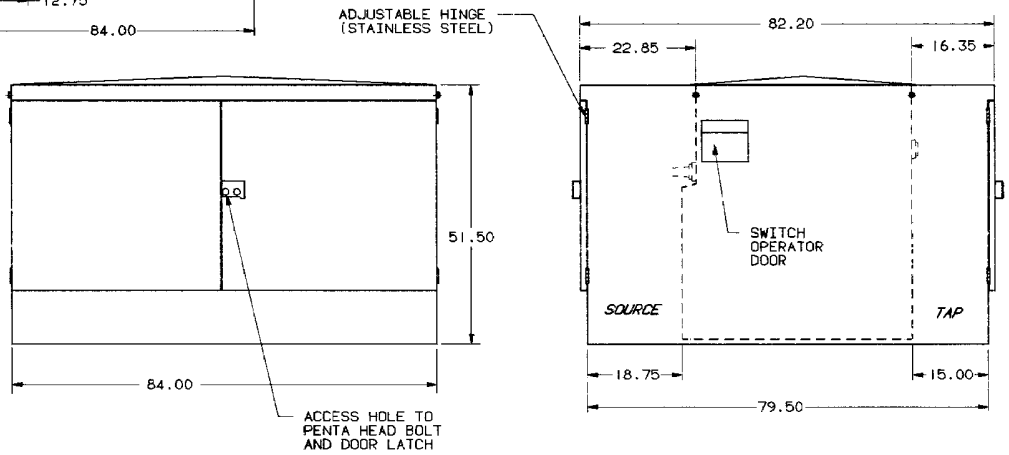
Model AIS-9
25kV — 125kV - BIL

weight 2000 lb.





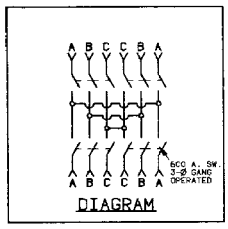
AIS-9
CIRCUIT DIAGRAM



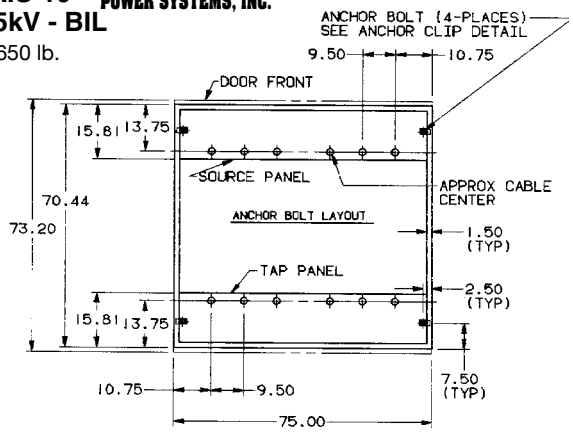
HUBBELL CHANCE POWER SYSTEMS, INC.

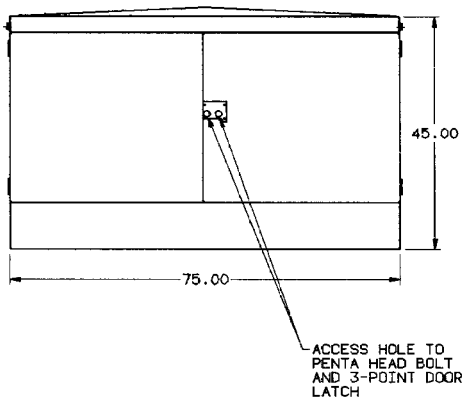
Model AIS-10
15kV — 95kV - BIL

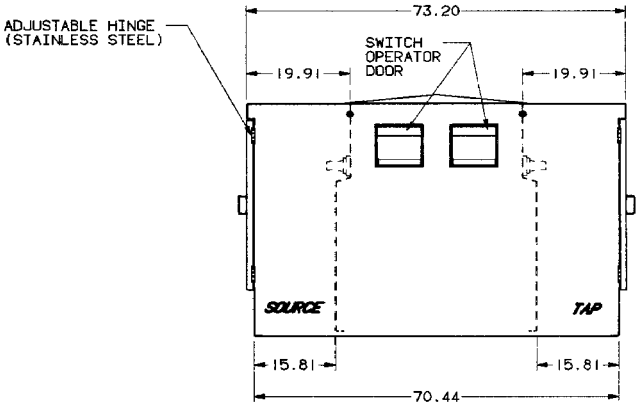
weight 1650 lb.



AIS-10
CIRCUIT DIAGRAM

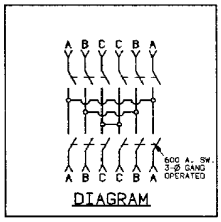




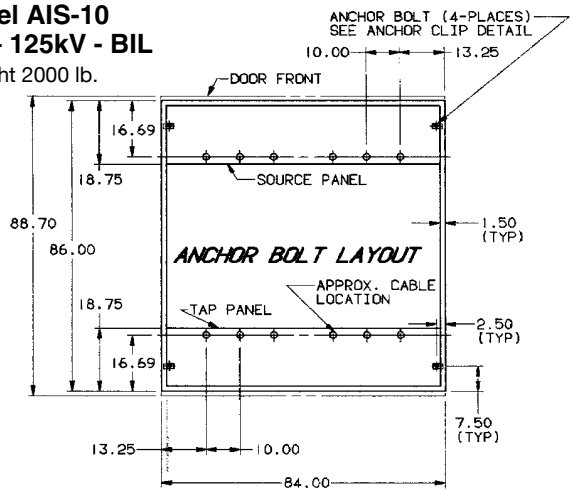


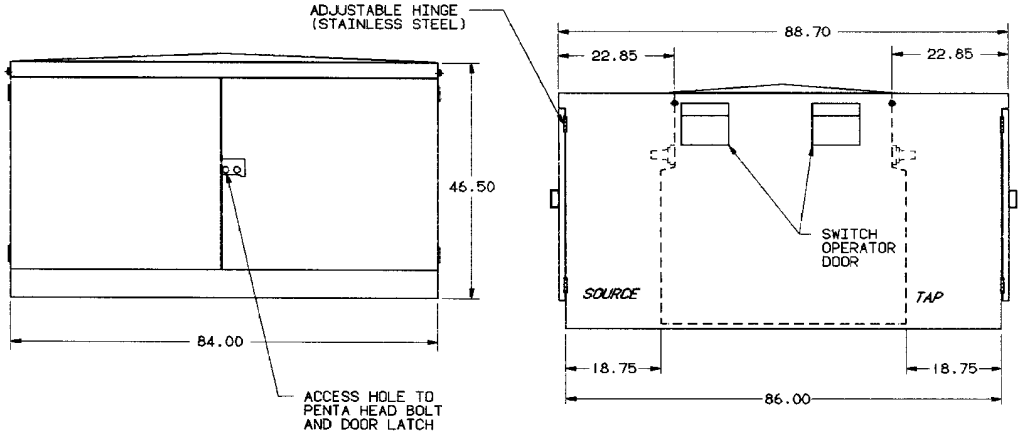
Model AIS-10
25kV — 125kV - BIL

weight 2000 lb.



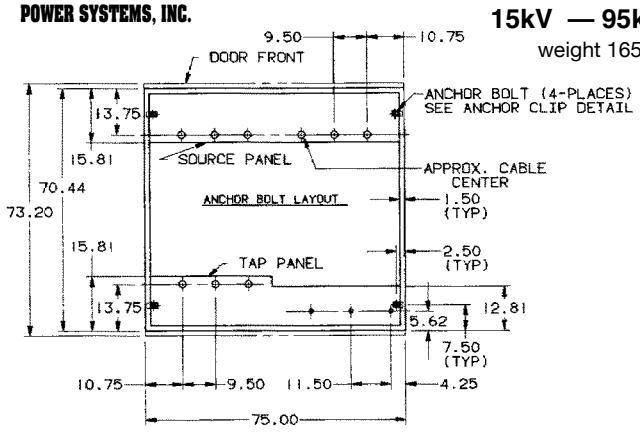
AIS-10
CIRCUIT DIAGRAM

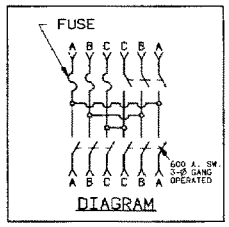




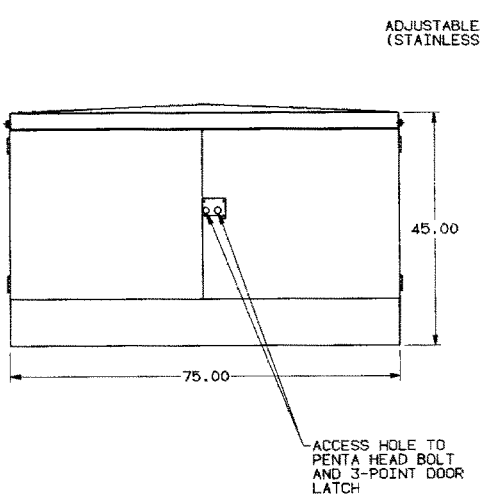
HUBBELL POWER SYSTEMS, INC. CHANCE®

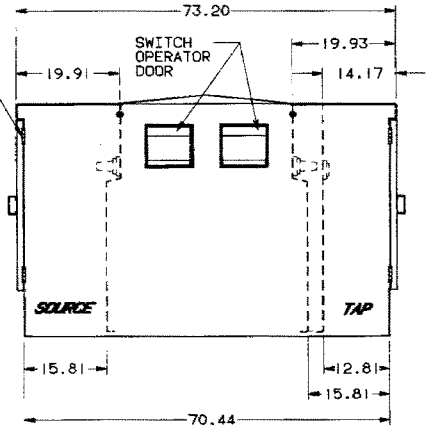
Model AIS-11
15kV — 95kV - BIL
weight 1650 lb.



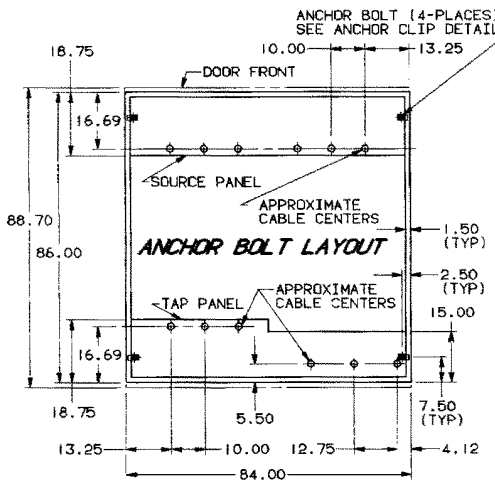


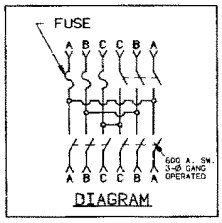
AIS-11
CIRCUIT DIAGRAM



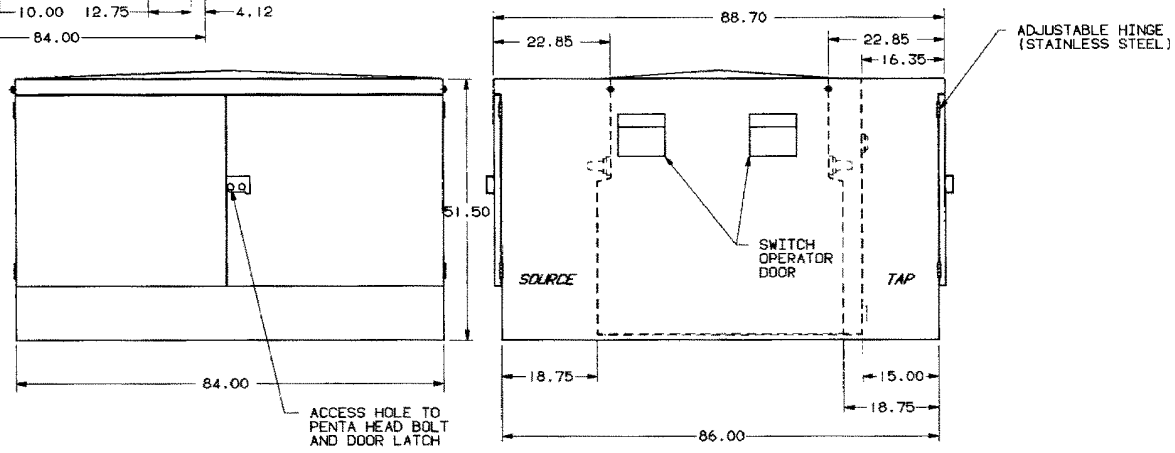


Model AIS-11
25kV — 125kV - BIL
weight 2200 lb.



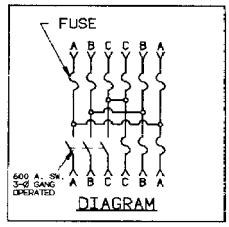


AIS-11
CIRCUIT DIAGRAM

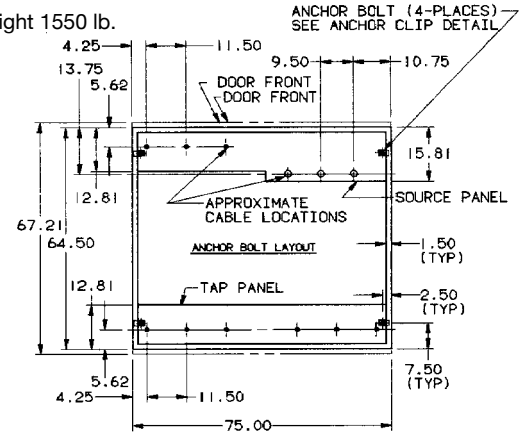


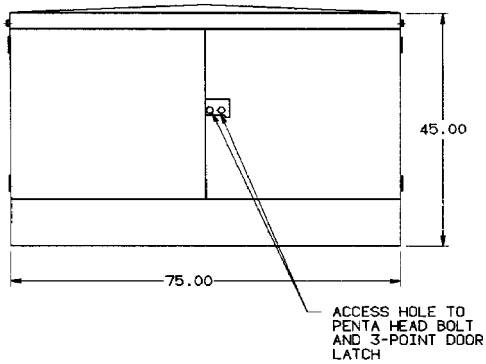
Model AIS-12
15kV — 95kV - BIL

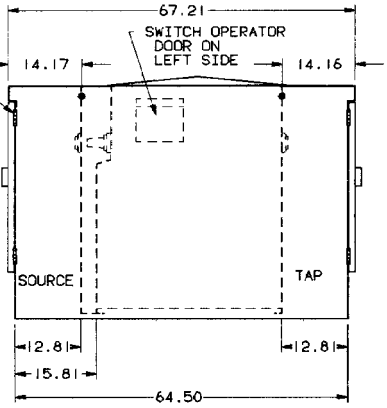
weight 1550 lb.



AIS-12
CIRCUIT DIAGRAM

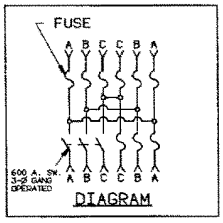




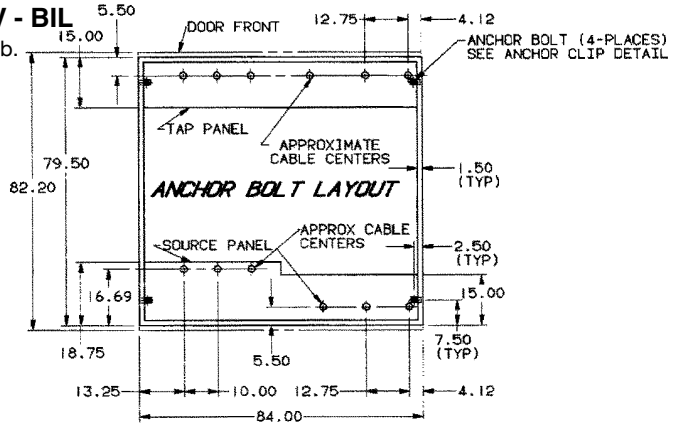


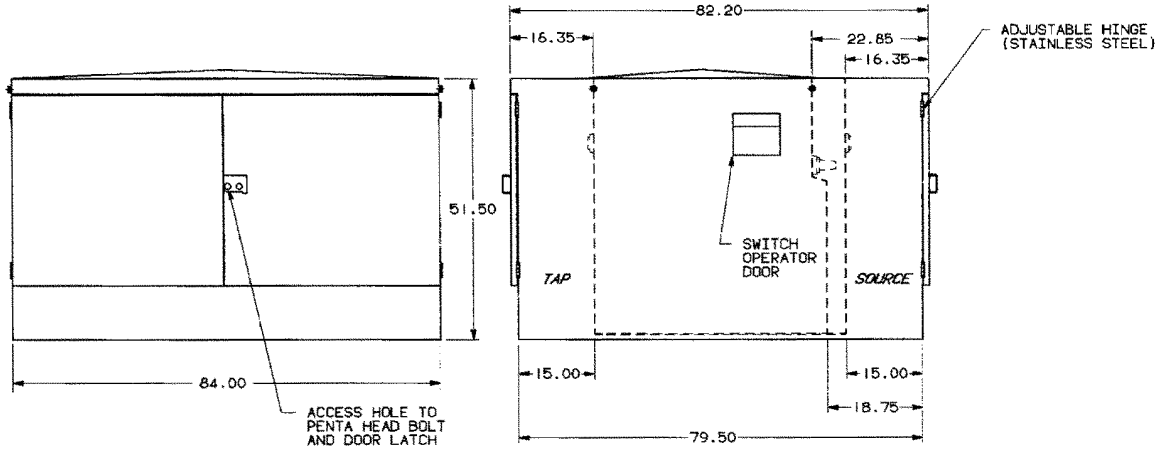
Model AIS-12
25kV — 125kV - BIL

weight 2075 lb.



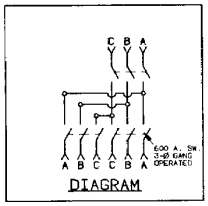
AIS-12
CIRCUIT DIAGRAM



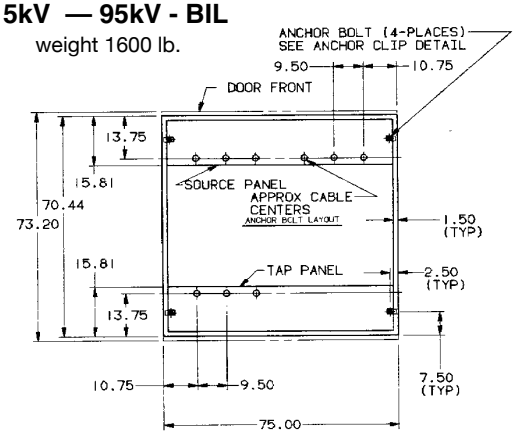


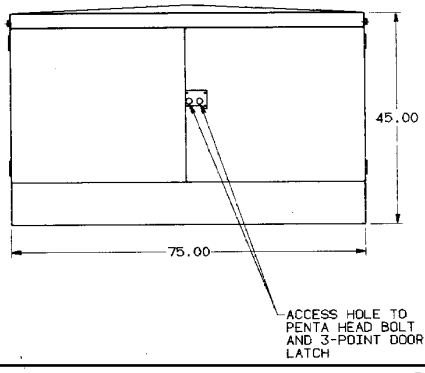
HUBBELL POWER SYSTEMS, INC. CHANCE®

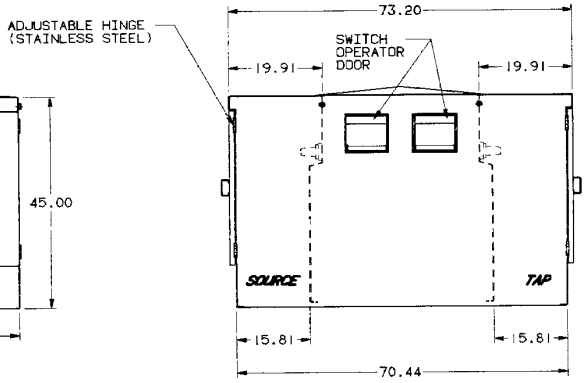
Model AIS-13A
15kV — 95kV - BIL
weight 1600 lb.



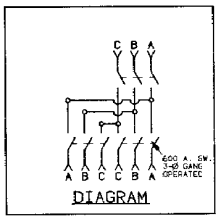
AIS-13A
CIRCUIT DIAGRAM







Model AIS-13A
25kV — 125kV - BIL
weight 1950 lb.



AIS-13A
CIRCUIT DIAGRAM