

# Type EA1S and VBV

## Morpac Vertical Break V Switches

Morpac offers two types of vertical break V style switches, The EA1S and the VBV. The VBV is a true vertical break V switch and the only true vertical break V switch available in the world. The EA1S is a slant V vertical break switch with conventional insulator arrangement on the hinge end but with a slanted insulator on the stationary, jaw contact end.

**EA1S.** The EA1S is an aluminum switch with all live parts common to the EA1. For further feature details refer to the EA1 section of this catalog. The shorter base of the EA1S allows for fitting in tight locations and may be ideal for substation voltage upgrade applications, since existing structures may not have to be changed to accommodate the longer bases required for conventional vertical break switches.

**VBV.** Morpac's vertical break VBV switch is a heavy duty, copper, substation class switch designed to the old 30 degree C rise standard. All current carrying parts are high conductivity copper or copper alloy. Contacts are silver to silver. Contact shoes are reverse loop design with stainless steel back up springs isolated from any current path. The VBV is a *true* "V" style vertical break switch. With a center of gravity within 5 % of its geometric center the VBV can be safely and securely mounted on a single beam unlike conventional vertical break switches.

Select the one best suited to your application:

### **VBV**

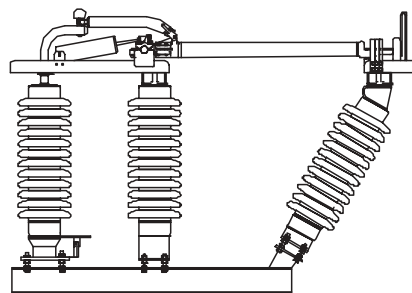
- Copper/ bronze construction
- Only true vertical break V switch available
- Silver to silver contacts
- Maintenance free bearings
- Available in ratings up to 245 kV, 2000A
- Small footprint allows switch to be mounted on single beam



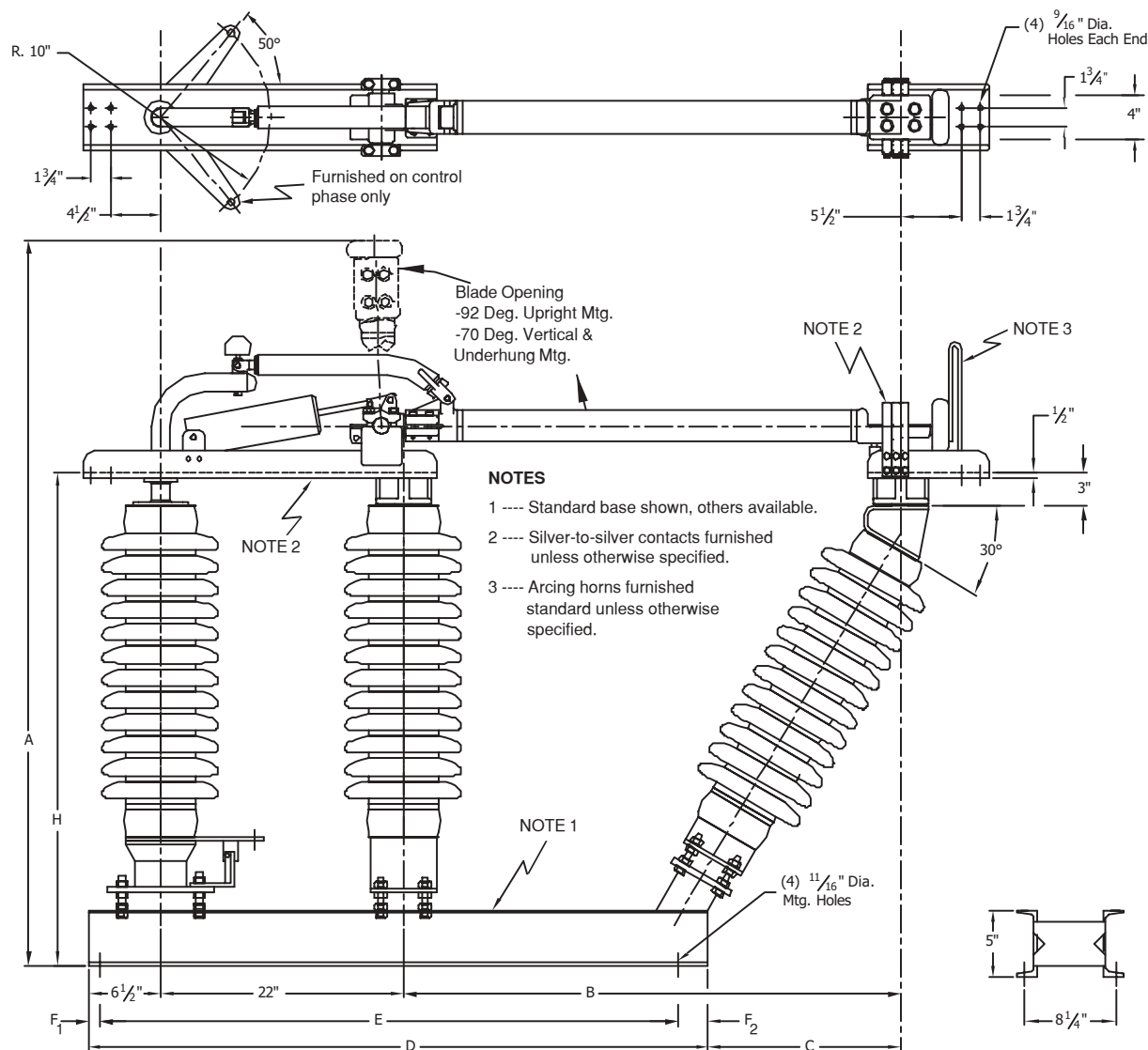
**Morpac type VBV, 72.5 kV, 1200A**

### **EA1S**

- High conductivity aluminum
- V style, with short base but live parts from traditional EA1 line
- Silver to silver contacts
- Maintenance free bearings
- Available in ratings up to 245 kV, 2000A
- Short foot print allows fitting in tight locations.



**Morpac Type EA1S**



Voltage Rating kV		CATALOG NUMBER	Insul. Tech. Ref. No.	Approximate Dimensions (Refer to Factory for Certified Prints)							
Max.	BIL			A	B	C	D	E	F <sub>1</sub>	F <sub>2</sub>	H
72.5	350	69EA1S-12HP5	278	100 1/4"	45"	17"	56 1/2"	36"	4 1/2"	16"	44 5/8"
121	550	115EA1S-12HP5	286	130 1/4"	60"	25 1/2"	63"	54"	3"	6"	59 5/8"
145	650	138EA1S-12HP5	288	151 1/4"	72"	29 1/2"	71"	66"	3"	2"	68 5/8"

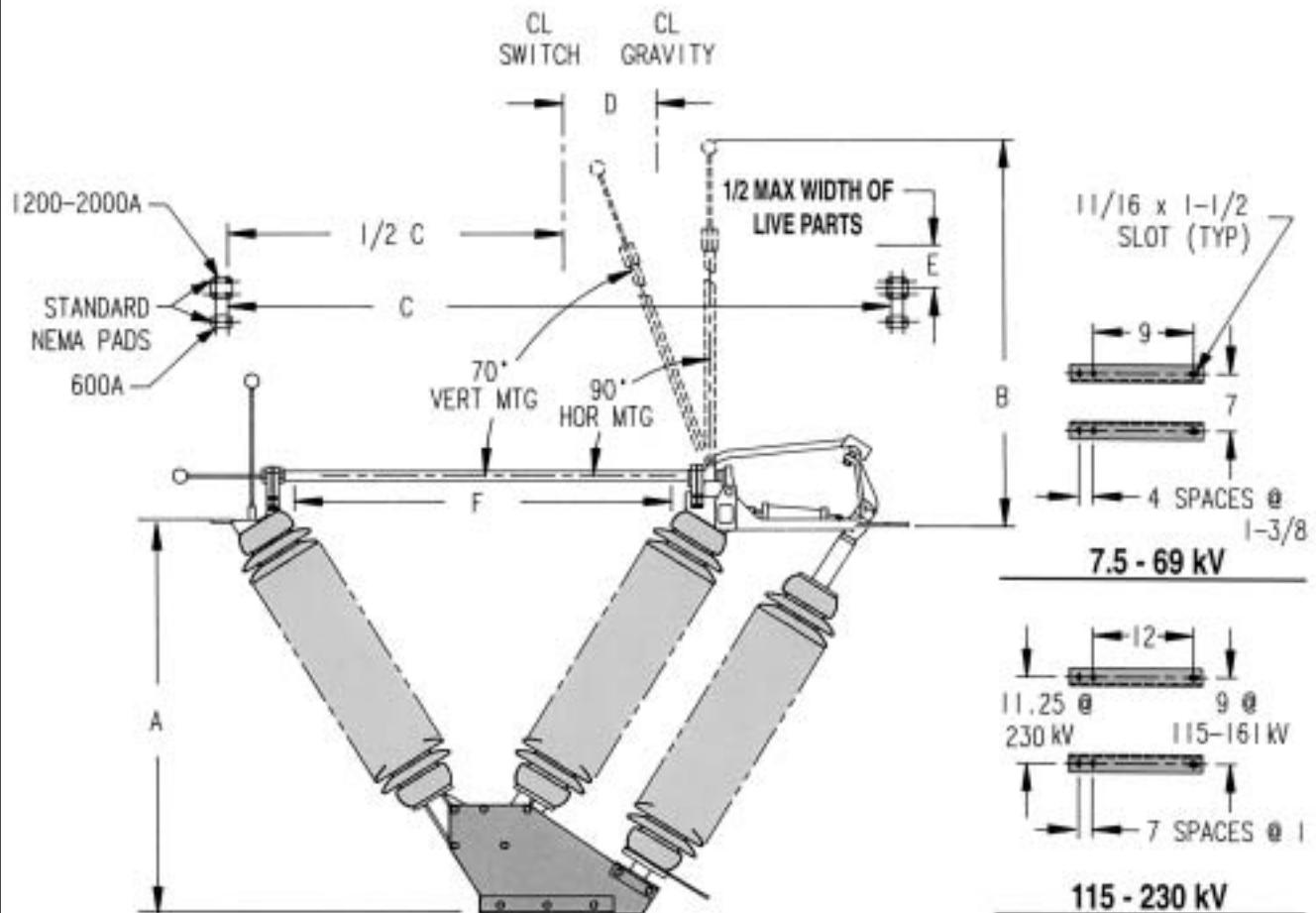
- (1) Catalog numbers shown are with station post insulators.  
 (2) When 30° temperature rise unit is required, omit the H in the catalog number (eg.: 69EA1S-12P5).  
 (3) Catalog numbers shown are for 1200 amps. For 2000 amps, change 12 to 20 in the catalog number as required (eg.: 72.5 kV-2000 A: Cat No. 69EA1S-20HP5).

Ampere Rating	Momentary Rating
1200A	61 KA
2000A	100 KA

**Type EA1S 72.5 kV - 145 kV 1200 and 2000 Ampere**

# Morpac Type VBV

## Vertical Break "V" Group Operated Switch



MOUNTING DIMENSIONS  
(ALL HOLES 11/16)

KV	INSULATOR	DIMENSIONS						WEIGHT/POLE		
		A	B	C	D	E	F	600A	1200A	2000A
7.5	TR-202	16	27½	37	1½	5½	13	127	133	389
15	TR-205	18	30	39½	1¾	5½	15¼	145	153	407
23	TR-208	21½	34	43½	2	5½	19¼	174	189	442
34.5	TR-210	25¼	38	47½	2½	5½	23¼	203	211	465
46	TR-214	28½	42	51½	3	5½	27¼	243	253	503
69	TR-216	35¼	48	59½	3½	5½	33¼	293	334	553
115	TR-286	55½	82	92¼	2	7½	54	719	736	869
138	TR-288	62¼	93	102¼	3	7½	63½	803	820	945
161	TR-291	67½	99	108½	4	7½	72	865	884	1003
230	900 BIL	82½	114	128	9¼	8	88	1390	1413	1537
230	1050 BIL	89½	126	140	10	8	100¼	1585	1590	1715

## **Morpac Industries, Inc.**

### **VBV Key Features and Advantages**

- **The VBV is a vertical break V switch.** There are V switches on the market but these are center break switches and their applications are different. (We also have center break V switches).
- Since the VBV is a vertical break switch, **its application and phase spacing are the same as any other traditional style vertical break switch.**
- **The VBV has been around for over 30 years and is built to the old 30 degree C rise standard.** Therefore it is a cooler running switch than some of the newer, optimized design (that is, cheaper) switches on the market with 43 and 53 degree C temperature rises.
- **The VBV is an all copper switch with silver to silver contacts.**
- The VBV has a short base, which means **the VBV can be mounted on a single beam.**
- **We can offer the VBV in a unitized version. Unitizing means that all three poles will be assembled on a single beam.** We provide the beam and ship the entire switch fully adjusted and assembled on the beam. See the pictures on the next two pages.
- **Unitized switches save field adjustment time.** Typically switches are shipped as individual poles with a box of parts and some pipe to put the switch together. Often the insulators have to be installed at the job site. So, the installer has to mount each phase, assemble the linkage and adjust each phase to make sure that each phase opens and closes more or less together.
- **When the switch is unitized the phases are already mounted and adjusted.** The customer has to lift the assembly, put it in place and install the rest of the operating mechanism, which may be motor, worm gear or swing handle operated depending on customer preference.
- **Installation time is conservatively cut in half when the switch is unitized.** One customer reported a savings of 12 hours. **Their typical installation time was cut by three quarters.**
- **When crews, boom trucks and cranes are lined up to install a switch, saving even an hour or two is significant.**
- **The VBV is available in voltages from 15kV to 230kV and up to 2000A.**
- **Arcing horns are standard on all VBV's.**
- **Vacuum interrupters are available for the VBV** for full voltage and load interruption. See third photo.
- **Quick break whips are available too.** Note that the switch in the first two photos has quick break whips.
- **Slant V vs. VBV. The VBV has an advantage over the slant V with its smaller footprint and single beam mounting capability at all voltages.**

## **Morpac Industries, Inc. VBV Applications**



Unitized VBV. Phase over phase on single beam. Switch is in open position. This switch is equipped with quick break whips

**Morpac Industries, Inc.  
VBV Applications**



Same Unitized VBV. Shown in closed position.



## **Morpac Industries, Inc. VBV Applications**



Two vertically mounted VBV switches with vacuum interrupters for full load, full voltage interruption. Note that both switches are mounted on the same single beam.