

Unitized "Quick Install" Switches for Transmission Applications

**Vertical Break Switches
Center Break "V" Switches**



***CP* CLEVELAND / PRICE INC.**

14000 Rt. 993, Trafford, PA 15085 (724) 864-4177

FAX (724) 864-9040

Email: sales@cleavelandprice.com

Cleaveland/Price

“Quick Install” Transmission Switches

Cleaveland/Price “Quick Install” switches are unitized, phase-over-phase transmission switches that ship from the factory fully assembled and adjusted. These unitized switches are available in vertical break and center break designs and can be used in sectionalizing, tap, and multi-way transfer applications. Vertical break switches are provided with an inclined jaw end insulator to shorten the base and reduce switch weight. Center break switches are “V” type for the smallest footprint, and to minimize steel weight. Two, three, or four unitized switches can be installed on a pole to provide 2-way, 3-way, or 4-way switching. “Quick Install” switches are designed to address issues that customers have with other transmission switch designs.

Some customers have difficulty getting switches into adjustment when mounted on tall transmission poles. This is the result of the torsional “windup” of the vertical operating pipe between phases, which causes the three pole units to operate out of sync. Cleaveland/Price has designed the “Quick Install” switches with “push-pull” interphase linkage so that the three pole units always move in unison, regardless of the length of the vertical operating pipe.

The switch ships from the factory fully adjusted with the linkage set in toggle in the closed and open positions. The switch stays in adjustment after installation, just as it was tested and operated at the factory.

“Quick Install” switches are supplied to meet customers’ site requirements. The mounting frame is designed to match mounting hole locations on new or existing steel or concrete poles. Switch phase spacing is set to match the transmission line conductor spacing. With this customization, it is not necessary to refit conductors and money is saved on pole cost by not having to install extra high poles needed by rack type switch mounting.

The switches are typically supplied with standard strength porcelain insulators. At voltages to 115 kV, vertical break switches can be supplied with polymer insulators. On center break switches, polymer insulators are available on 69 kV and 115 kV switches with a maximum short time peak rating of 65 kA. Consult the factory for higher short circuit ratings.

Vertical break “Quick Install” switches can be supplied with arc horns, Cleaveland/Price Superwhip™, or vacuum or SF₆ interrupters, depending on current interrupting requirements. Center break switches can be supplied with arc horns, quick break whips, or single bottle vacuum interrupters for loop splitting application.

“Quick Install” Transmission Switches

- Easy to install
- Low force operation
- Consistent full contact engagement on all three phases regardless of pole height and operating speed
- Cost effective



138 kV, 3000 A. “Quick Install” center break switch with porcelain insulators and quick break whips, mounted on a steel pole.



115 kV “Quick Install” vertical break switch with polymer insulators and quick break whips, mounted on a concrete pole.



115 kV “Quick Install” vertical break switch with vacuum interrupters for full load break.

Switch Installation - *It's this easy!*

1



The unitized switches ship from the Cleaveland/Price factory fully assembled and adjusted on their individual mounting frames. Several switches can ship on a flatbed.

2



The assembled switch is delivered to site on a utility trailer. First step in installation is raising the assembly off of the trailer using a crane.

3



The assembly is guided to the transmission pole.

4



The switch assembly is secured to the pole.

5



The vertical operating pipe with guide brackets attached is raised into position.

6



The vertical operating pipe is bolted to the switch operator and the pre-installed gear box.

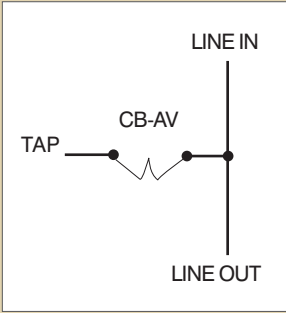
7



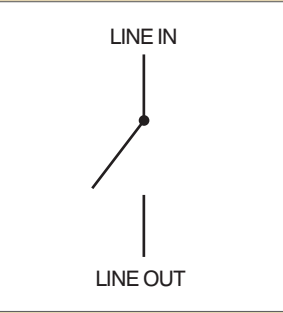
The interrupters (whips or full load interrupters) are installed and jumper cables to the switch terminal pads are attached. **No switch adjusting is required!**

Application Schematics

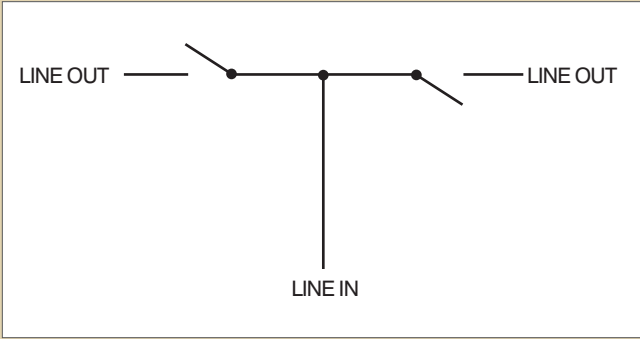
Tap



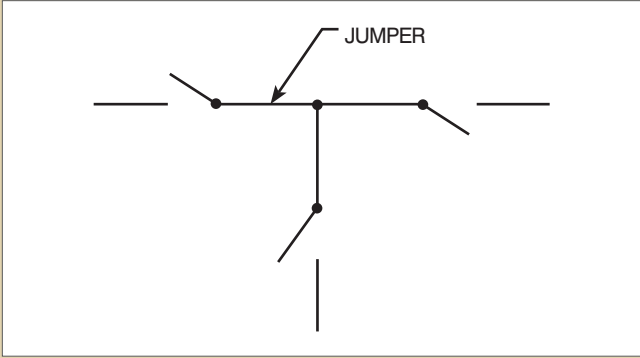
Single-way



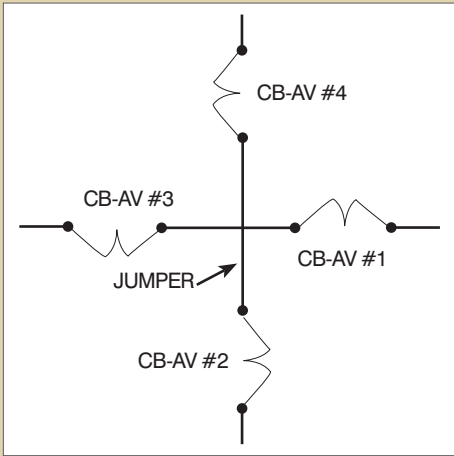
Two-way



Three-way

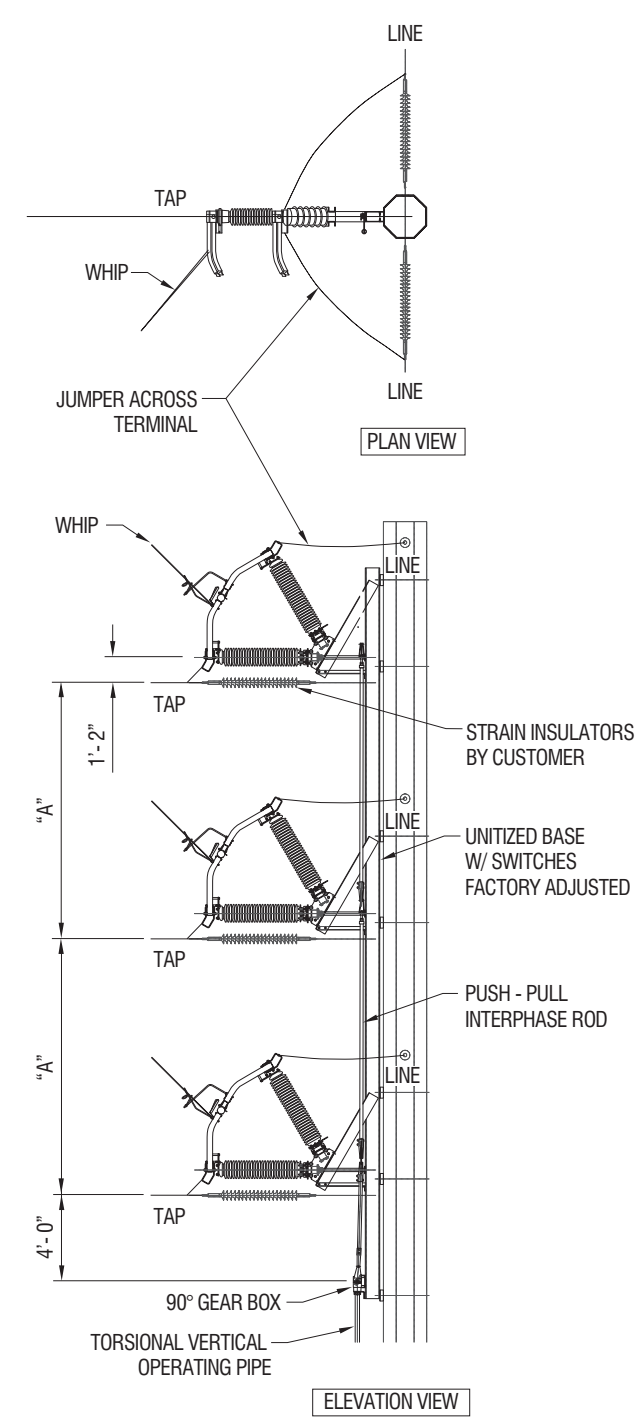


Four-way



Unitized Tap Switch

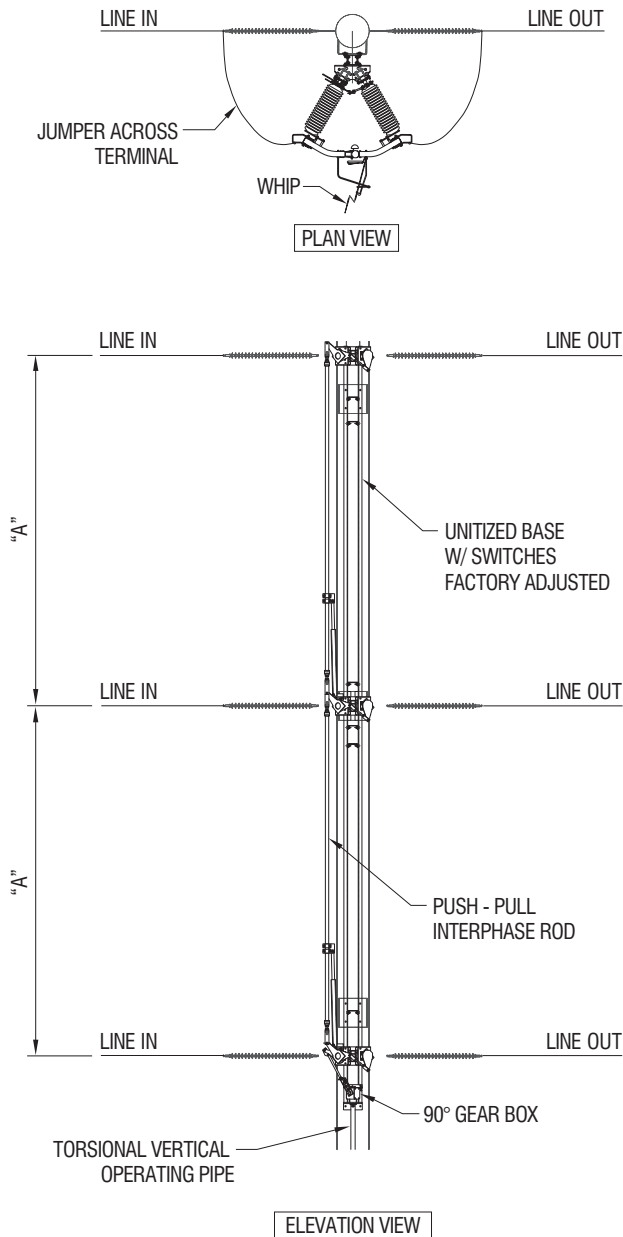
Centerbreak "V" Switch



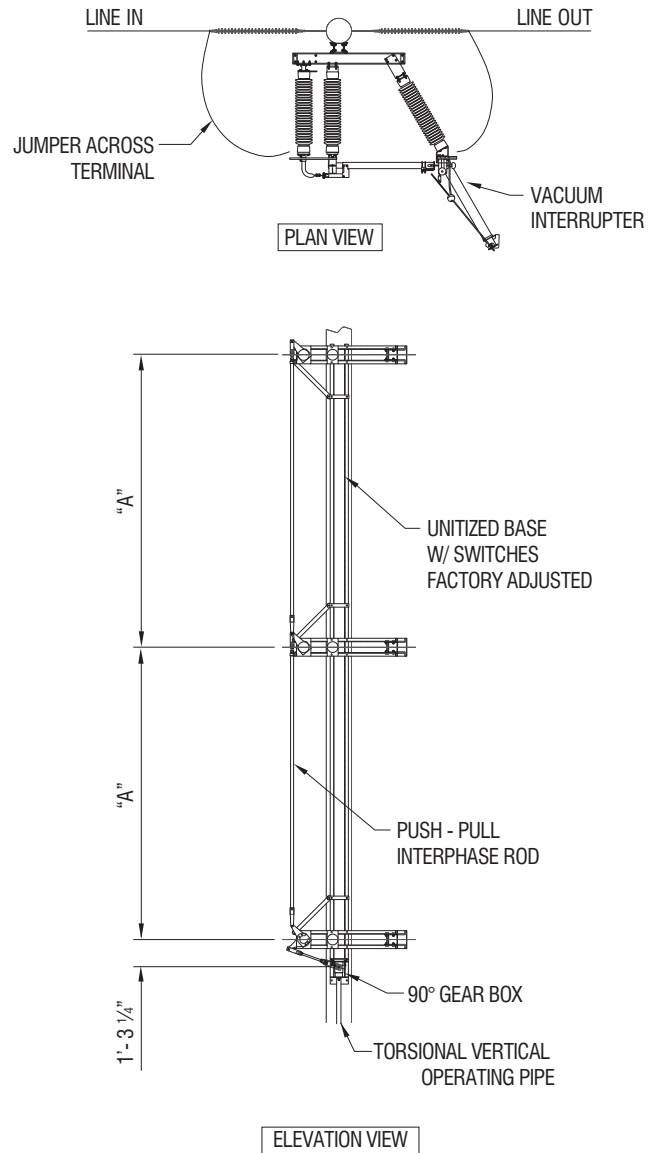
Voltage	Typical "A" Dim.	Switch Weight
69 kV	9 ft.	2800 lbs.
115 kV	12 ft.	3500 lbs.
138 kV	13 ft.	3900 lbs.
161 kV	14 ft.	4500 lbs.

Single-Way Unitized Configuration

Centerbreak "V" Switch



Vertical Break Switch



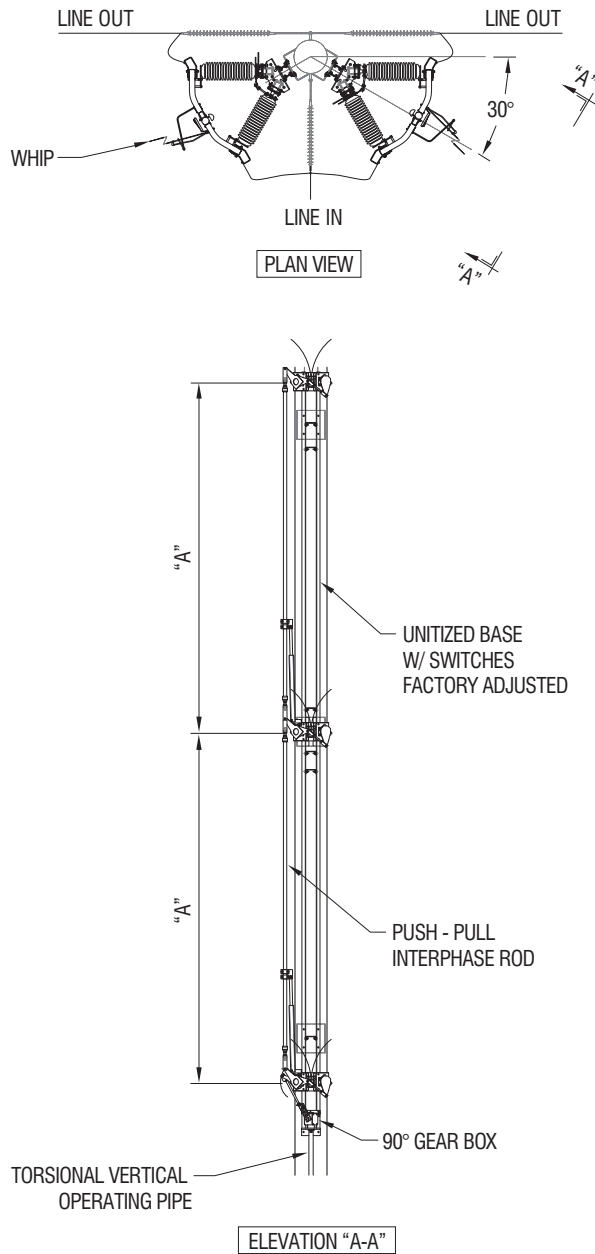
Voltage	Typical "A" Dim.	Switch Weight
69 kV	7 ft.	2100 lbs.
115 kV	10ft.	2700 lbs.
138 kV	12 ft.	3100 lbs.
161 kV	14 ft.	3800 lbs.

Note: Weights are based upon a 1200 A. continuous rating, and switch supplied with porcelain insulators and without interrupters.

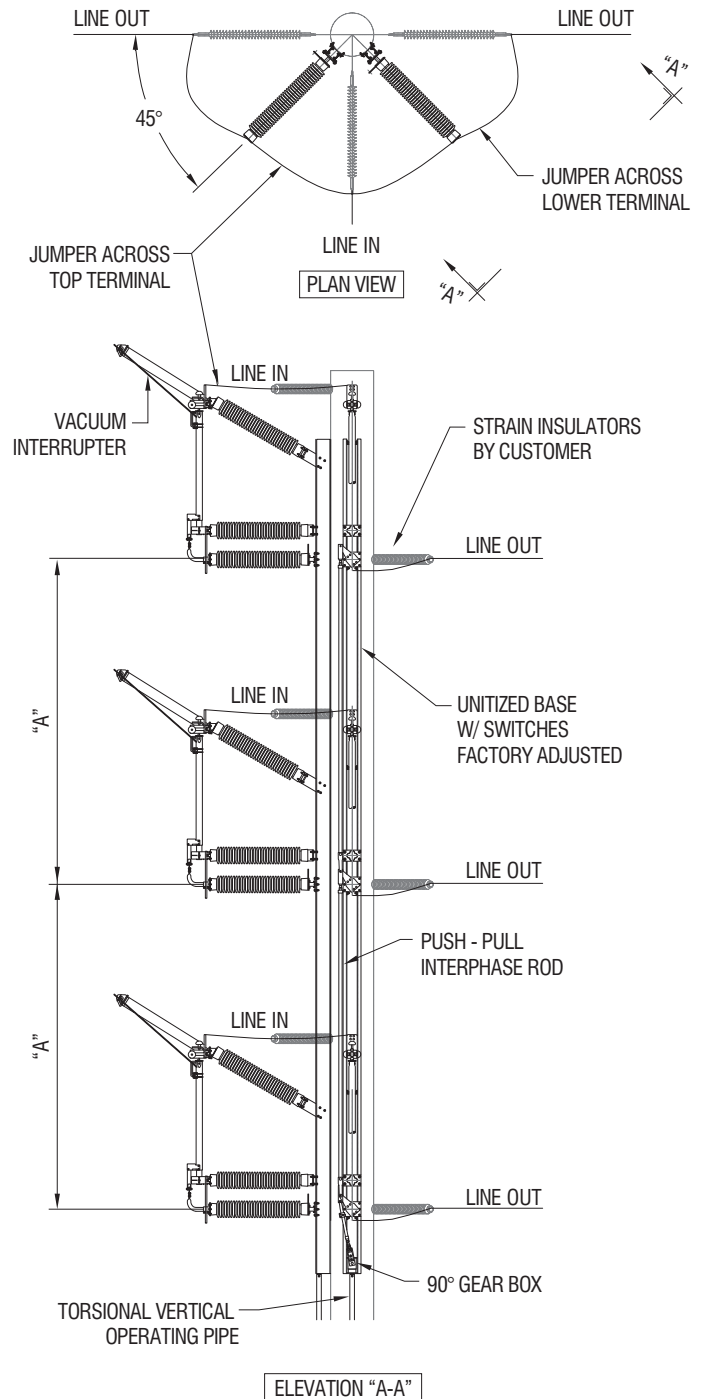
Voltage	Typical "A" Dim.	Switch Weight
69 kV	5 ft.	2700 lbs.
115 kV	7 ft.	3200 lbs.
138 kV	8 ft.	3500 lbs.
161 kV	9 ft.	3800 lbs.
230/900	11 ft.	4600 lbs.
230/1050	13 ft.	5200 lbs.

2-Way Unitized Configuration

Centerbreak "V" Switch



Vertical Break Switch



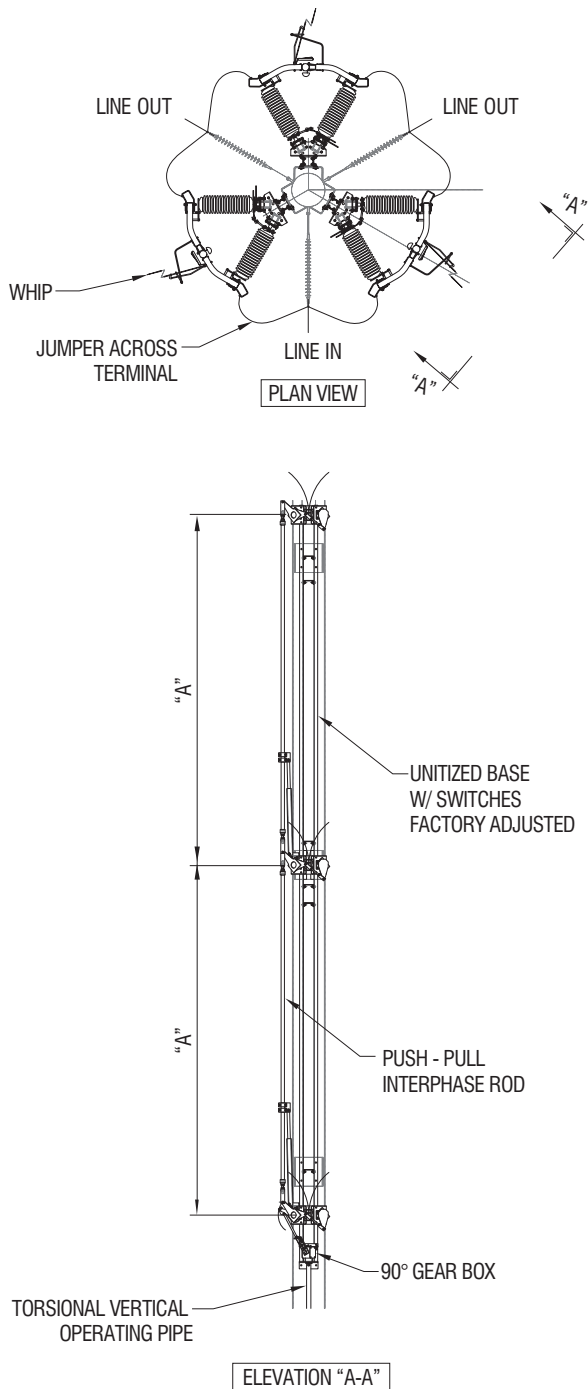
Voltage	Typical "A" Dim.	Switch Weight per Way
69 kV	7 ft.	2100 lbs.
115 kV	10 ft.	2700 lbs.
138 kV	12 ft.	3100 lbs.
161 kV	14 ft.	3800 lbs.

Voltage	Typical "A" Dim.	Switch Weight per Way
69 kV	10 ft.	3100 lbs.
115 kV	13 ft.	3700 lbs.
138 kV	15 ft.	4100 lbs.
161 kV	17 ft.	4500 lbs.

Note: Weights are based upon a 1200 A. continuous rating, and switch supplied with porcelain insulators and without interrupters.

3-Way Unitized Configuration

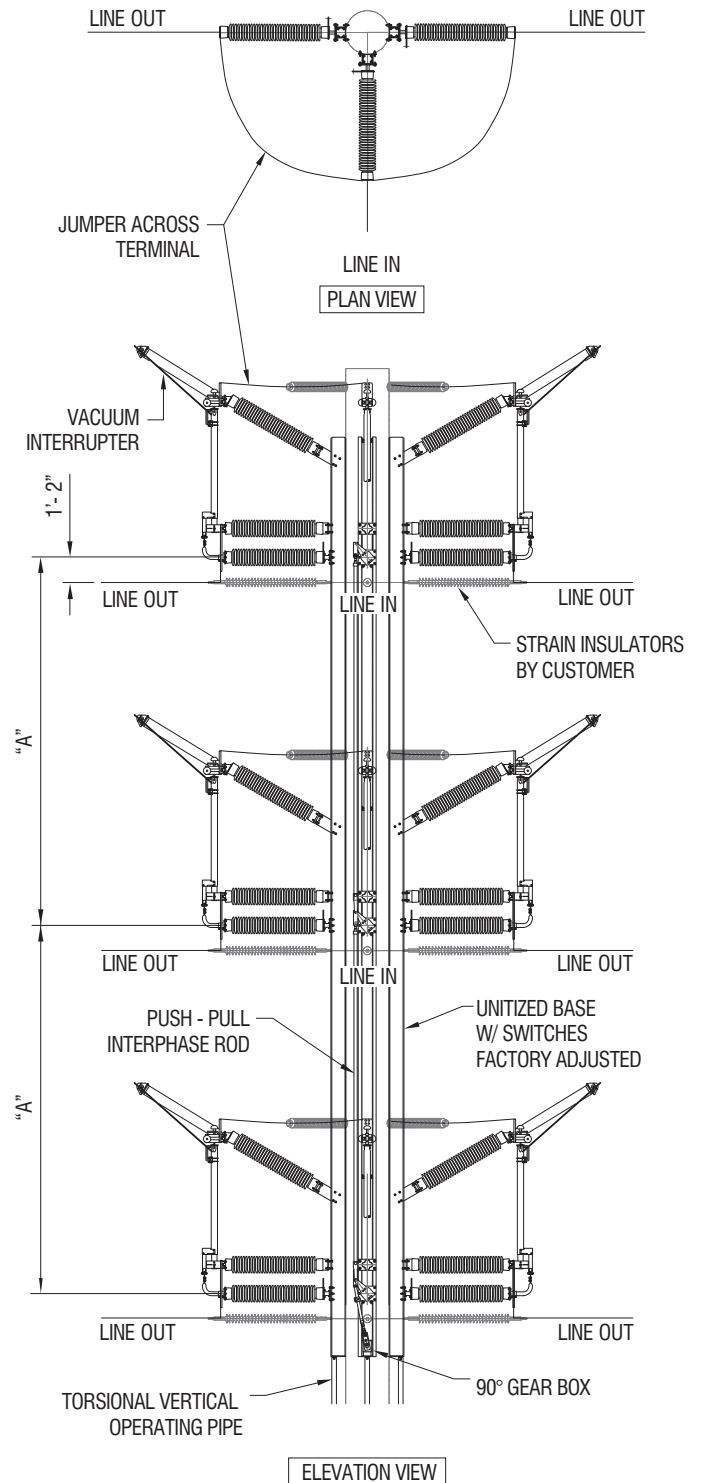
Centerbreak "V" Switch



Voltage	Typical "A" Dim.	Switch Weight per Way
69 kV	7 ft.	2100 lbs.
115 kV	10 ft.	2700 lbs.
138 kV	12 ft.	3100 lbs.
161 kV	14 ft.	3800 lbs.

Note: Weights are based upon a 1200 A. continuous rating, and switch supplied with porcelain insulators and without interrupters.

Vertical Break Switch



Voltage	Typical "A" Dim.	Switch Weight per Way
69 kV	12 ft.	3300 lbs.
115 kV	15 ft.	3800 lbs.
138 kV	17 ft.	4300 lbs.
161 kV	19 ft.	4700 lbs.

SCADA-ready Installations

A “Quick Install” switch can be manually operated with a swing handle or a wormgear type operator, depending upon the type of interrupter supplied on the switch. The switch may also be operated with a transmission class motor operator for remotely operating the switch through a customer’s SCADA system.

A SCADA-ready installation would consist of a “Quick Install” switch, Cleaveland/Price BT-T motor operator, customer’s choice of RTU, provision for customer’s choice of communication means, and any other specified equipment such as sensors or fault indicators.



BT-T motor operator

The BT-T operator is a 17,000 in-lb. torque operator that will open or close a switch in 3.4 seconds with 180° rotation of the vertical operating pipe. It comes with a padlockable safety cover that protects operating personnel from rotating parts and also prevents tampering with the mechanism. A padlockable torque-relief decoupler is also provided. The motor operator is supplied with contacts that will indicate the true switch position whether the vertical pipe is coupled or decoupled. For manual operation, a telescoping swing handle and handcrank are supplied.

At locations where low voltage AC is not available for charging the BT-T’s battery, a complete solar charging package can be offered. Consult the factory for more information.



SCADA installation with BT-T motor operator and communication by satellite.



SCADA installation with BT-T motor operator and communication by radio.

“Quick Install” Options

kV Voltage	Vertical Break Switches					Center Break Switches			
	69	115	138	161	230	69	115	138	161
Quick Break Whips	X	X	X	X		X	X	X	X
Vacuum interrupters for full load break	X	X	X	X	X				
Single bottle vacuum interrupter for loop splitting	X	X	X	X	X	X	X	X	X
SF ₆ interrupters (porcelain insulators and wormgear or motor operator only)	X	X	X	X	X				
Swing handle	X	X	X	X	X	X	X	X	X
Wormgear operator	X	X	X	X	X	X	X	X	X
BT-T motor operator	X	X	X	X	X	X	X	X	X