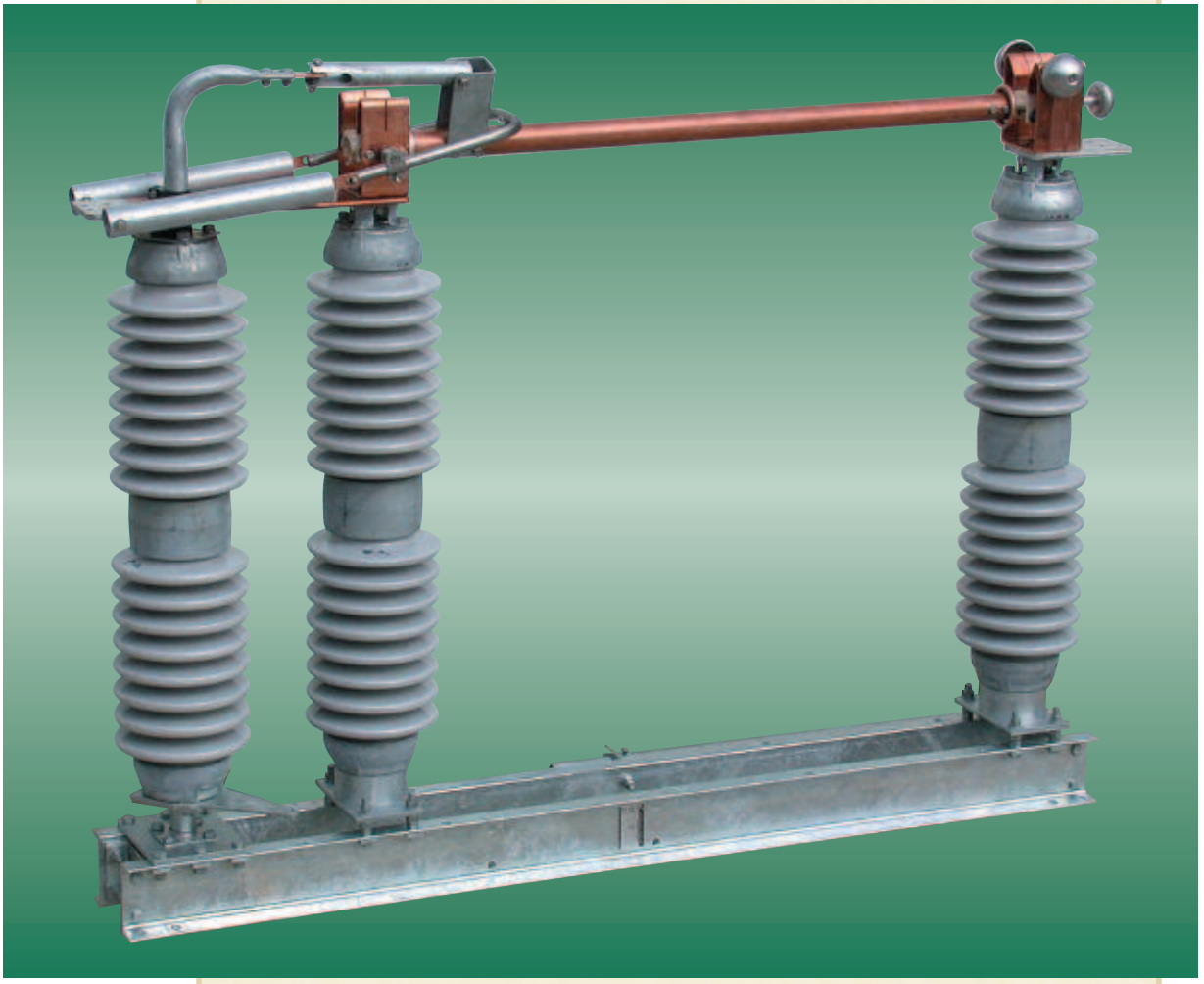
Bulletin DB-C06BH09

Type V2-C

Copper Vertical Break Switch

115 - 230 kV
600 - 3000 A.



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Designed for Simplicity

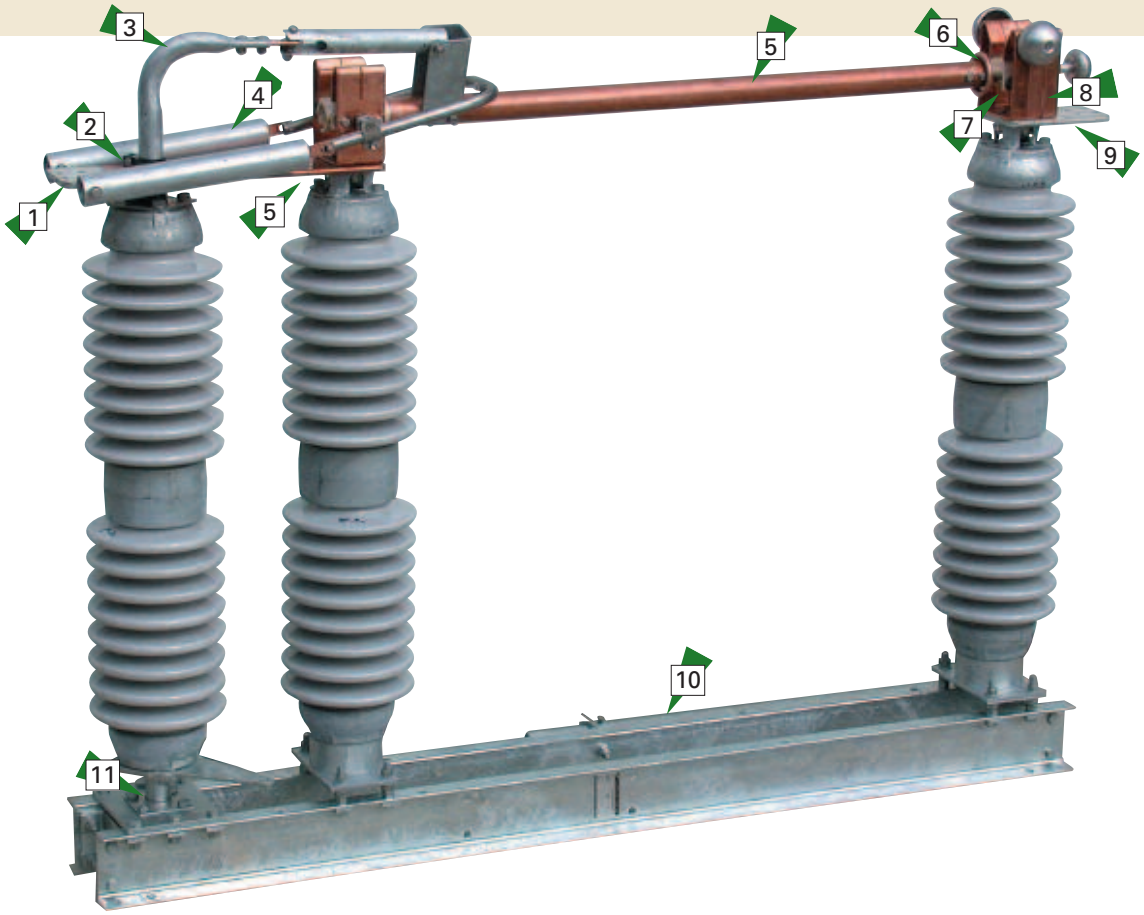
V2-C APPLICATION

The Cleaveland/Price V2-C is a three pole, group operated, copper vertical break switch for installation in substation or distribution line locations. The switch can be mounted in the horizontal-upright, vertical, or horizontal-underhung position. The V2-C is suitable for use in a variety of applications including line disconnecting and sectionalizing, circuit breaker by-pass and isolation, and transformer isolation.

Arc horns or quick break whips are supplied when small amounts of transformer magnetizing currents and line charging currents must be interrupted.

Accessories and options needed to adapt the switch to a customer's particular requirements are available. The V2-C may be manually operated by use of a swing handle or wormgear mechanism or electrically operated by use of a type TP-C2 motor operator.

The V2-C meets NEMA and IEEE Standards and the rating requirements of applicable IEC Standards.



1. Unbreakable, non-cast copper terminal pads with NEMA standard hole pattern
2. Fully insulated journal bearing
3. Unbreakable, non-cast operating crank
4. Stainless steel counterbalance springs that are insulated from the current path
5. Hard-drawn, high conductivity copper current-carrying parts
6. Silver-to-silver contacts at hinge and jaw
7. Stainless steel contact springs insulated from the current path
8. Hard-drawn, high conductivity copper contact fingers at hinge and jaw
9. Plain or tin-plated terminal pads
10. Hot-dip galvanized steel base
11. Double-sealed, maintence-free bearing assembly

Engineered for Performance

THE CLEAVELAND/PRICE APPROACH

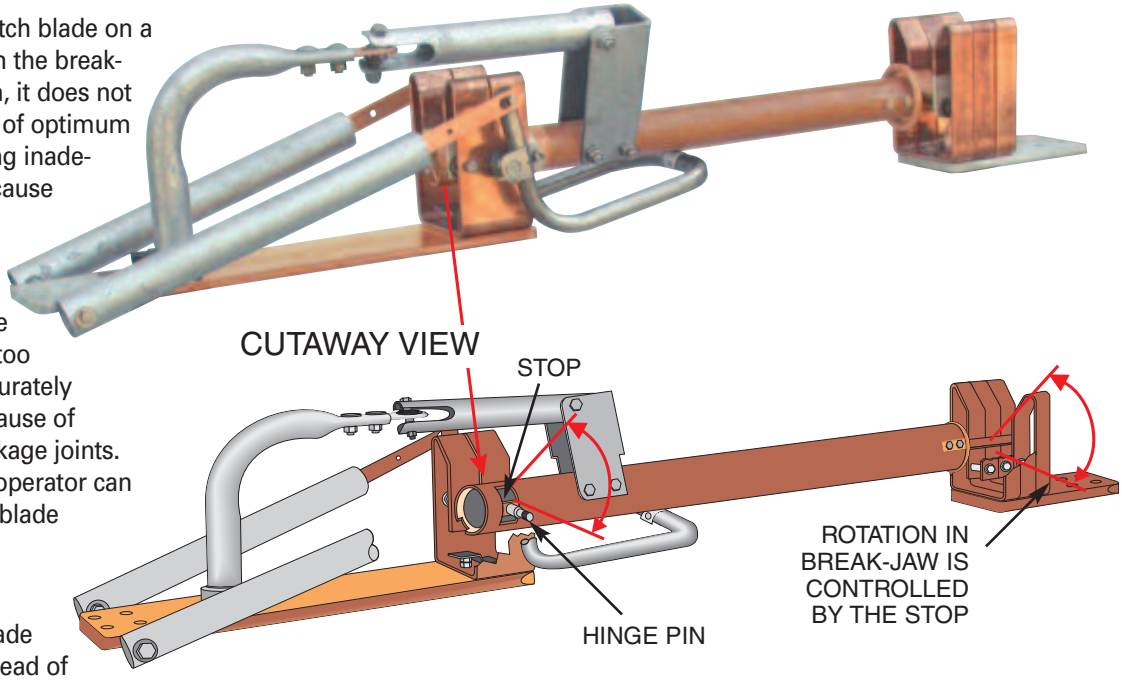
Cleaveland/Price has a very basic approach to design . . . keep it simple. It is an approach that is employed from material selection to mechanical design.

The Cleaveland/Price V2-C disconnect switch current carrying parts are manufactured from high strength, high conductivity copper. All switches are of non-cast design for superior dependability of parts. Switch performance is not troubled by flaws that could occur in the casting process.

Contacts are designed to take advantage of electromagnetic forces by using a reverse loop configuration at both the hinge and jaw of the switch. Current transfer points are kept to a minimum.

PROBLEM: When the switch blade on a conventional switch rotates in the break-jaw to the final blade position, it does not consistently stop at the point of optimum contact pressure. The resulting inadequate contact pressure may cause contact pitting and burning.

Many switches use a stop on the rotating insulator to try to set proper blade position. This type of stop is too remote from the blade to accurately control the blade motion because of the cumulative play in the linkage joints. Variation in the speed of the operator can actually affect the amount of blade turnover.



SOLUTION: On the Cleaveland/Price V2-C, the blade stop is on the blade itself instead of an intermediate linkage point (the rotating insulator). The V2-C stop location assures that blade rotation in the break-jaw will accurately and consistently stop at the point of maximum contact pressure.

The cutaway view shows how the unique Cleaveland/Price turnover stop allows the blade to rotate until the slot in the blade engages with the hinge pin. This sets the proper turnover angle.

The stop angle is factory-machined for built-in accuracy. No matter how fast or slow the blade moves, it doesn't stop moving until it has fully turned over.

CLEAVELAND/PRICE FEATURES FOR OUTSTANDING PERFORMANCE AND LONG LIFE

The V2-C is made of the finest materials for dependable, trouble-free service. Knowledge gained from maintaining switches in the field for over 60 years has played a major part in refining the V2-C. Significant design features include:

- Total non-cast copper and steel construction resulting in the superior dependability of parts
- Live parts constructed from hard-drawn, high conductivity copper producing stronger, more conductive components than parts made of cast materials
- Silver-to-silver moving contacts
- Open construction of the hinge and smooth non-cast surfaces throughout, enabling the V2-C to break ice with amazing ease
- Wiping action on both the break-jaw and hinge keeps contacts clean for years of reliable service
- Visable hinge contacts allow easy verification of contact condition without disassembly
- Reverse loop electromagnetic design at hinge and break-jaw on all ratings gives outstanding performance under fault conditions

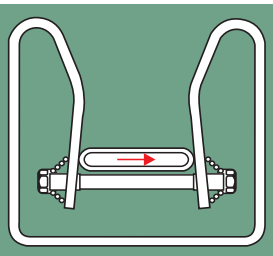
Exclusive Cleaveland/Price V2-C Features

The Cleaveland/Price V2-C is an advanced design vertical break switch with features of genuine value to the customer. It incorporates several patented improvements:

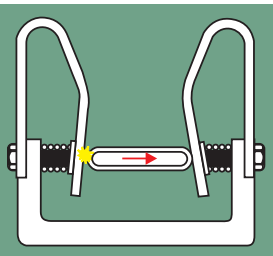
1. Positive blade turnover stop is the key to consistent and complete contact pressure to prevent contact burning.
2. Insulating journal bearing prevents current flow through the live operating linkage.
3. Floating break-jaw contacts allow blade and break-jaw fingers to move together under short circuit and seismic duty to outperform conventional contact systems.

UNIQUE BREAK-JAW DESIGN

Short circuit tests prove that the V2-C break-jaw is superior to conventional break-jaws. On the V2-C, phase-to-phase electromagnetic forces that pull the blade side-to-side do not decrease the contact pressure since the fingers of the jaw are joined together to create a floating spring system that moves with the blade. Maximum contact pressure is maintained on all contact surfaces during short circuit and seismic events.



***ADVANCED V2-C BREAK-JAW** maintains consistent contact pressure as blade and jaw fingers move to the side together as a unit under short circuit forces.*

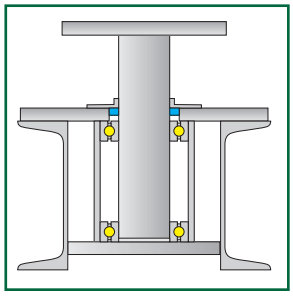


***CONVENTIONAL BREAK-JAW** loses contact pressure as the blade moves to the side because of electromagnetic forces.*

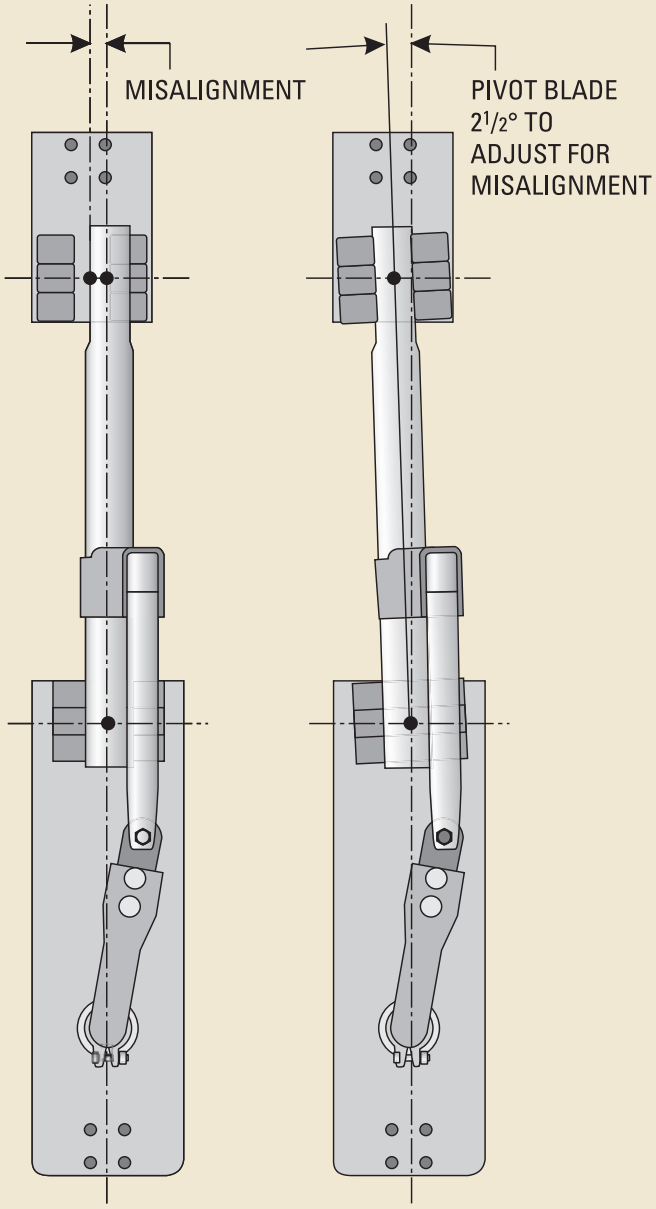
ANSI standards require that a switch pass the rated short circuit test only once. Standards also allow live parts to be changed for each test. The V2-C gives greater confidence in short circuit performance as demonstrated by 12 consecutive test shots on a 2000 amperes switch using the same set of live parts.

Superior Bearing Assembly

- High strength, non-cast, hot-dip galvanized steel shaft
- Special ozone and ultraviolet resistant seals outlast conventional seals and contain no metal parts which typically corrode
- Maintenance free, permanently lubricated construction
- Individually sealed ball bearing assemblies in sealed, grease-packed housing
- Permanently adjusted bearing



FEATURE FOR EASY ADJUSTMENT



PIVOTING HINGE

During installation, the blade may be misaligned with the break-jaw, requiring adjustment of the insulators. However, it is often easier to pivot the blade to attain alignment with the jaw contact. This is particularly true when bus and ground blades have been installed at the jaw terminal and the blades are not perfectly adjusted. By loosening the bolts that attach the hinge and jaw to the stationary insulators and closing the switch, the blade and jaw automatically seat themselves in the proper alignment. Retighten the bolts and the adjustment is complete without having to realign the ground switch or bus.

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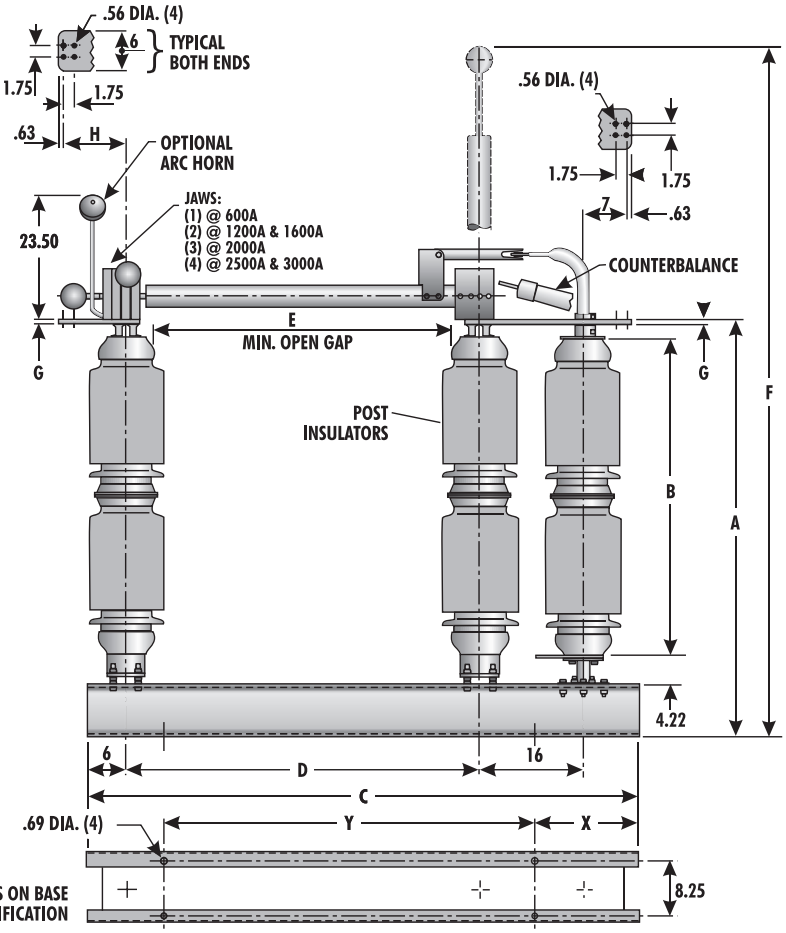
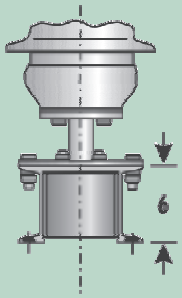
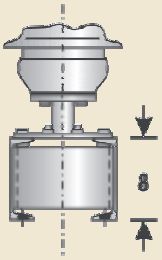


BASE CONFIGURATION

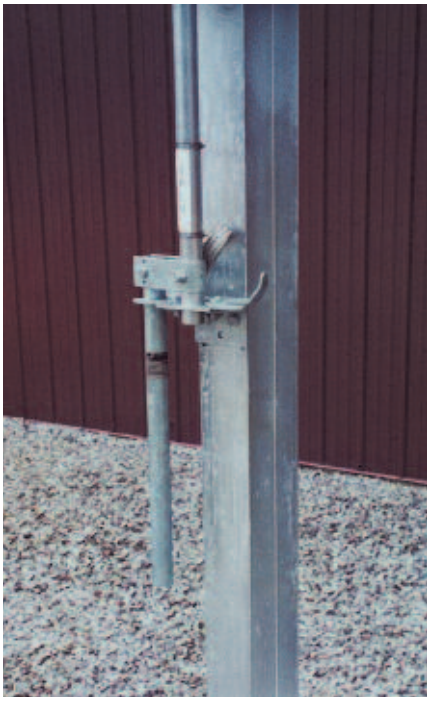




Nom. kV	Max. kV	kV BIL	Ins. TR#	Amp.	Mom. kA	Switch Style Number	A	B	C	D	E	F	G	H	Wt./ Pole
115	123	550	286	600	40	C06B036G01	57.78	45	88	60	52	126.72	.50	7	915
				1200	61	C06B036G02									928
				1600	70	C06B036G03									937
				2000	100	C06B036G04						128.22			942
				2500	100	C06B036G05*						129.72		10	967
				3000	120	C06B036G06*	58.03					129.97	.75		992
138	145	650	288	600	40	C06B036G07	66.78	54	98	70	62	145.72	.50	7	1013
				1200	61	C06B036G08									1025
				1600	70	C06B036G09									1045
				2000	100	C06B036G10						147.22			1050
				2500	100	C06B036G11*						148.72		10	1075
				3000	120	C06B036G12*	67.03					148.97	.75		1091
161	170	750	291	600	40	C06B036G13	74.78	62	106	78	70	161.72	.50	7	1112
				1200	61	C06B036G14									1125
				1600	70	C06B036G15									1140
				2000	100	C06B036G16						163.22			1145
				2500	100	C06B036G17*						164.72		10	1170
				3000	120	C06B036G18*	75.03					164.97	.75		1195
230	242	900	304	600	40	C06B037G01	94.78	80	124.5	94	84	199.41	.50	10	1667
				1200	61	C06B037G02									1683
				1600	70	C06B037G03									1688
				2000	100	C06B037G04*						200.91			1570
				2500	100	C06B037G05*	95.03					202.66	.75		1609
				3000	120	C06B037G06*									1634
230	242	1050	312	600	40	C06B037G07*	106.78	92	144.5	114	104	231.65	.50	10	1751
				1200	61	C06B037G08*									1770
				1600	70	C06B037G09*									1773
				2000	100	C06B037G10*						233.16			1776
				2500	100	C06B037G11*	107.03					234.91	.75		1815
				3000	120	C06B037G12*									1843

** Supplied with an aluminum blade.*

Operators / Accessories



Swing Handle Operator

Handcrank Operator

Motor Operator Type TP-C2

Standard Operator Features

- **Swing handle or handcrank operator**
- **Padlock provision in both the open and closed positions**
- **Ground strap for vertical operating pipe**
- **Adjustable stops**
- **Clamp-on open/closed indicators**
- **Self-lubricating, maintenance-free outboard bearing**
- **2″ IPS galvanized steel vertical operating pipe**
- **Adjustable radius outboard bearing lever**
- **Threaded interphase and drive lever adjustment**

Ordering Information

Furnish:

Switch type
Voltage
Amperage
Momentary rating
BIL level
Mounting position
Operator type
Accessories required
Base mounting details

Available Accessories

Arc horns
Auxiliary switch
Braidless ground contact
Electrical interlock
Extended operator
Ground blades
Ground blade mechanical interlock
Insulated vertical pipe
Interrupting device
Key interlock
Mounting hardware
Operator grounding platform
Outriggers
Quick break whips
Spill gaps
Terminal connectors

This brochure describes our standard product and does not show variations in design that may be available. Contact the factory for additional details.

Cleaveland/Price reserves the right to make changes or improvements to the product shown in this brochure without notice or obligation.

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