COOPER Power Systems

Electrical Apparatus

Electronically Controlled Types KFME and KFVME; Three-Phase

KFE10009-E

DESCRIPTION

Reliable, economical overcurrent protection for distribution systems is available for substation or pole mounting. The two reclosers in this group provide service-proven dependability and long operating life. Commanded by a Kyle® electronic or microprocessor-based recloser control, three-phase current interrupting Type KFME and KFVME reclosers offer superior coordination and application capability unmatched by other system protection apparatus.

Recloser operations are programmed on the recloser control panel with accurate, tripping characteristics and reclosing times. Operating programs are precise and unvaried, enabling closer coordination with other protective devices on the system. When system requirements change, program settings are easily altered with no sacrifice of accuracy or consistency.

Figure 1.
Kyle Type KFME recloser.

87899KMA-F

RATINGS AND CHARACTERISTIC FEATURES

The Type KFME provides 8000 amps symmetrical interrupting at 2.4 to 14.4 kV and the Type KFVME provides 8000 amps symmetrical interrupting at 2.4 to 24.9 kV. A ratings summary of this recloser group is found in Table 1.

TABLE 1
Summary of Ratings

Type	Nominal Voltage (kV)	Maximum Continuous Current (amps)	Maximum Interrupting Rating at Nominal Voltage (sym amps)
KFME	2.4-14.4	400	8000*
KFVME	2.4-24.9	400	8000

*12 kA available as option.

Operation

Recloser tripping and closing are initiated by signals from the recloser control. The signals from the control energize the operating circuits of the recloser. Flexibility in coordination with other protective devices is provided by dual-time current characteristics from a choice of available curves, minimum trip values, reclosing and resetting time settings, and a selection of accessories.

Vacuum Interruption

Arc interruption takes place within the three sealed vacuum interrupters. The moving contacts in the vacuum interrupters are driven by the release of opening springs. A trip solenoid, actuated by the recloser control, releases the opening spring. Closing energy, as well as energy to charge the opening spring, is supplied by a high voltage closing solenoid momentarily connected phase-to-phase through a high-voltage contactor.

ORDERING INFORMATION

A complete electronic recloser includes these items:

- Recloser and accessories
- Electronic control and accessories
- Interconnecting control cable
- Recloser mounting equipment (if required)

To order a recloser, electronic control, and control cable:

1. Use the chart and Table 2, on page 2, to construct a catalog number that describes the required recloser.
2. Use Table 3, on page 2, to specify the proper control cable by catalog number and description.
3. From Tables 10 - 17, specify the catalog numbers that describe the required recloser accessories, mounting equipment and factory assemblies.

TABLE 2
Closing Coil Voltage Code Numbers

Phase-to-Phase Closing Coil Operating Voltage ±15% 50Hz Coils (kV)	Code No.
6.0	51
11.0	52
13.2	53
14.4	54
20.0	55**
22.0 - 24.9	56**
60Hz Coils (kV)	
2.4	21
4.16 - 4.8	22
6.0	31
12.0 - 13.2	30
14.4	27
24.9	33**
Low-Voltage Coils*	
125Vdc	26
250Vdc	28

* Requires low-voltage closing accessory (KRK1027F) to operate. Order separately.

** KFVME only.

Example:

To order a basic Type KFVME for service on a 11.0 kV, 50 Hz system, the catalog number would be constructed like this:

KKFVME Basic letters for a Type KFME recloser: KKFME. Basic letters for a Type KFVME recloser: KKFVME

52 Closing coil code number selected from Table 2 for the system on which the recloser is to be used.

KKFVME 52

KKFVME52 is the catalog number for the required basic recloser.

TABLE 3
Control Cable; Form 4C and FXA Controls

Description	Catalog Number
18 gauge conductor control cable, 7 foot length	KRK1025F7
16 gauge conductor control cable, 7 foot length	KRK1103F7
Longer cable	
8 to 80 feet.....	KRK1025FXX*
81 to 125 feet.....	KRK1103FXX*

* Substitute feet for XX in catalog number.

FEATURES

Minimum Maintenance

The Types KFME and KFVME reclosers encounter no oil contamination from current interruption because the fault-current arc is interrupted within the vacuum chamber rather than in oil. Thus, recloser inspection and oil-test intervals can be extended over a considerably higher number of recloser operations.

Contact and interrupter life is several times greater than what is usual for oil interrupters. The duty cycle is four times that of comparably rated oil reclosers. Interrupters require no maintenance throughout their contact-life period.

Bushing replacement is easily accomplished without major disassembly of the recloser mechanism. The interrupter-support structure, mounted independently of the bushings, allows rapid bushing replacement, without removal or adjustment of the vacuum interrupters.

Oil is used in the Types KFME and KFVME reclosers for electrical insulation. Being a vacuum recloser, oil is not involved in arc interruption. Oil specifications and tests are found in *Reference Information R280-90-1*.

Long Operating Life

Low-energy arc interruption in a vacuum results in far less shock when fault currents are cleared. Accordingly, reduced stress on the recloser mechanism extends the operating life of mechanism parts.

Vacuum interruption, with its inherently long duty cycle, allows maximum number of operations - yet has the least effect on recloser components.

Rugged, Reliable Construction

The simple electromechanical design provides operation by movement of a solenoid plunger which loads springs, closes contacts, and releases spring-loaded mechanisms.

The complete internal mechanism is suspended from the head casting and can be removed from the tank as a single unit as in Figures 2 and 3. Mechanism removal requires merely loosening and pivoting six captive bolts on the head flange. Six head-flange clamping locations assure even and proper gasket compression. An oil-tight, weatherproof seal between head and tank is obtained by a nitrile gasket confined in a controlled compression clamping arrangement. The mechanism itself is secured to the head with four large bolts, easily removed in the event that work is required on mechanism parts.

External construction involves a rugged cast-aluminum head, stainless-steel hardware, sturdy well-anchored bushings, and a steel tank finished with a corrosion-resistant polyester base paint. Both finish and bushing glaze color is light gray, Munsell 5BG7.0/0.4.

Where additional operating and service flexibility is required, KFME and KFVME reclosers can be supplied with factory-installed accessories. Metering or relaying can be accomplished with integral bushing current transformers. Recloser contact or mechanism position can be monitored with an Auxiliary Switch accessory. This and other accessories permit Type KFME and KFVME reclosers to fit even the most complex of system applications.

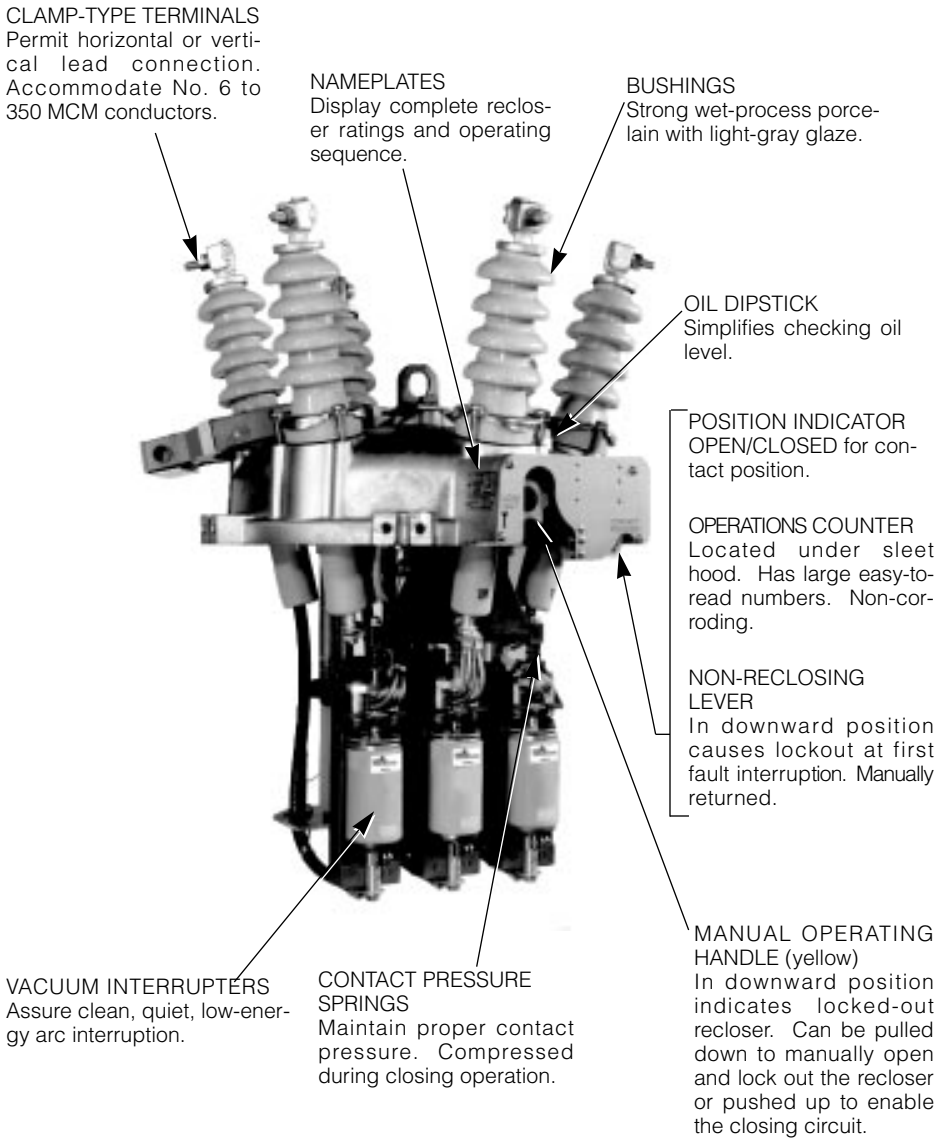
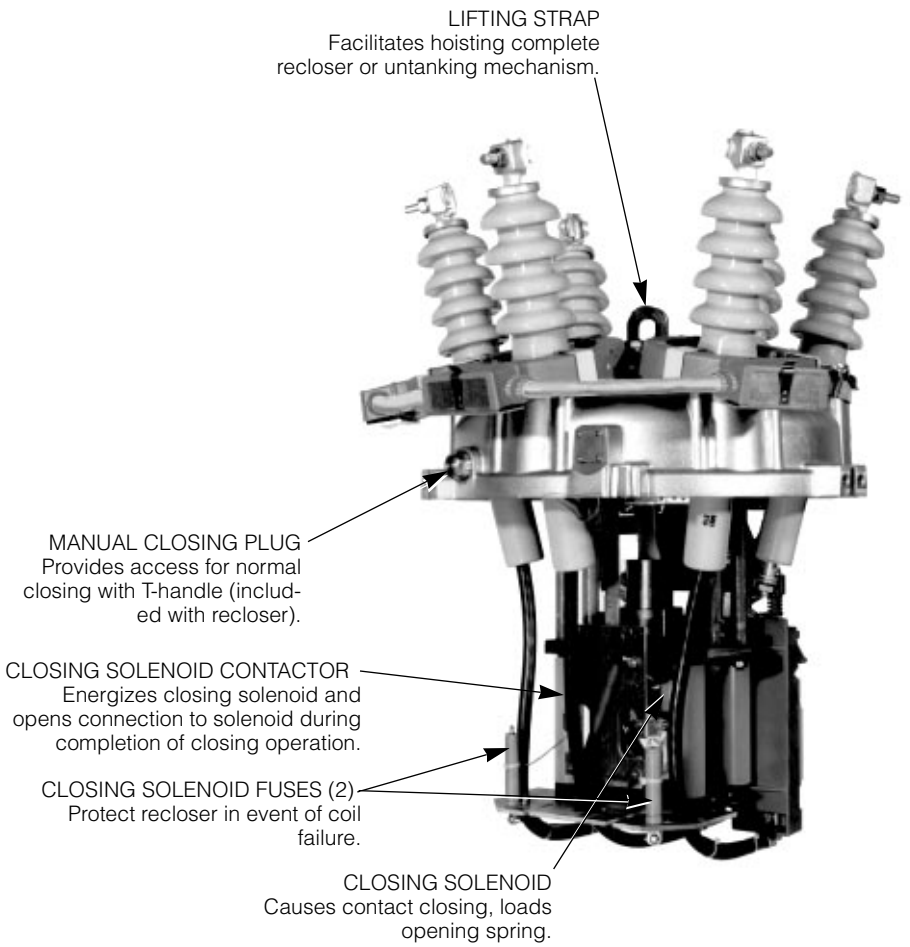


Figure 2.
Untanked Type KFME recloser (viewed from interrupter side). Shown with BCT accessory installed.

921094KM-F



921095KMA-F

Figure 3.
Untanked Type KFME recloser (viewed from contactor side). Shown with BCT accessory installed.

Reliable Operation

TRIPPING

Line current flowing through the recloser is sensed by three internally mounted bushing current transformers, one on each phase. When the phase current or the zero sequence (ground) current exceeds its programmed minimum-trip value, the electronic control initiates the programmed sequence of recloser tripping and recloser operations. If the fault is temporary, the recloser control ceases to command recloser operations after the successful reclosure, and the control resets to the start of its operating sequence after a preset time delay. If the fault is permanent, the control performs its complete programmed operating sequence and locks out leaving the recloser's main contacts open. Once locked out, the control must be manually reset to the start of its operating sequence which simultaneously closes the recloser.

Through the use of a recloser control, a variety of time-current characteristics for both phase- and ground- tripping allow the KFME and KFVME to fit specific power distribution needs.

Power to operate the tripping and reclosing solenoids in the recloser is provided by the recloser control. In the event auxiliary power is lost, backup power is supplied by the control battery which is trickle-charged by a temperature-regulated battery charger also located in the control.

CLOSING

Closing energy, as well as energy to charge the opening springs, is supplied by a high-voltage closing solenoid momentarily connected phase-to-phase (Figure 4). When the recloser contacts are closed, the solenoid plunger is latched in the down position. This latch is tripped simultaneously with the release of the recloser opening springs, and the solenoid plunger moves upward, out of the solenoid, in preparation for a closing operation.

At the programmed reclosing time, the electronic control energizes a rotary solenoid in the recloser. Movement of the rotary solenoid allows a high-voltage contactor to close momentarily, connecting the closing solenoid to the line. The plunger is pulled into the solenoid, closing the recloser contacts and charging the opening springs. Plunger movement also opens the high-voltage contactor, de-energizing the closing solenoid. Closing operation of the recloser mechanism activates a switch (b contact) in the recloser, disconnecting the rotary solenoid from the electronic control.

The closing solenoid is designed for repeated-momentary rather than continuous operation. If a malfunction of the solenoid plunger or the closing-coil contactor results in the closing solenoid energizing for an extended period, a closing-solenoid fuse within the recloser opens the high-voltage circuit, protecting the closing solenoid from thermal damage.

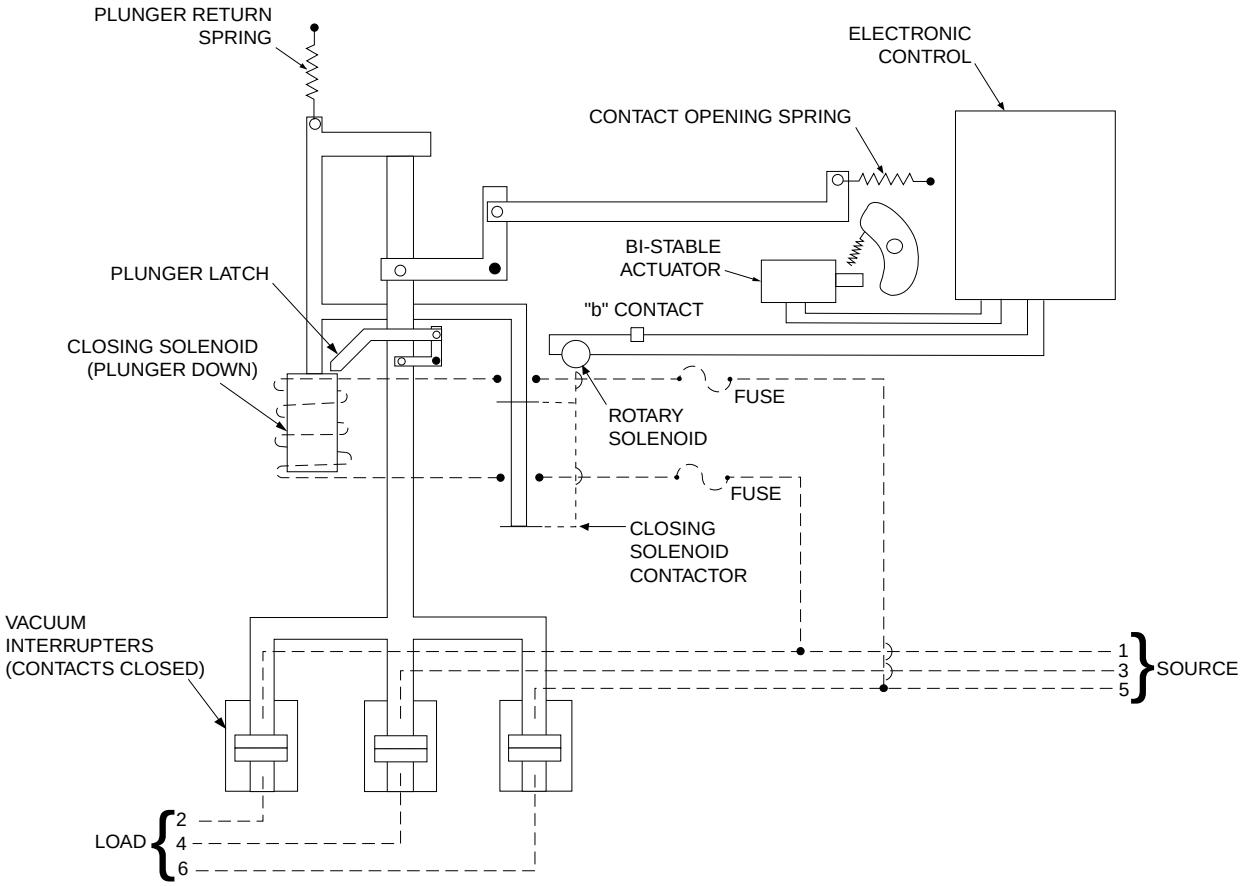


Figure 4.
Simplified diagram of recloser's major electrical and mechanical components.

Electronic Recloser Control

Kyle Type KFME and KFVME reclosers are electronically controlled by a Kyle recloser control. Kyle offers a choice of controls that can be used to operate these reclosers.

FORM 4C TYPE ME CONTROL

The Form 4C Type ME microprocessor-based recloser control incorporates computer technology to provide enhanced application versatility and ease of operation.

Figure 5. 911064KM
Kyle Form 4C Type ME Microprocessor-based recloser control.

All standard control operating parameters, including phase and ground-fault minimum trip levels, time-current curve selection, and sequences of recloser operation, are keyboard programmable. Simple keyboard sequences, and dedicated function keys, provide convenient programming and interrogation of the control's various operating parameters. A large LCD display provides control feedback during programming and interrogation, and front panel LCD indicators provide control and recloser status, at a glance.

The control is equipped with keyboard-selectable time-current curves which are interchangeable for use as either phase or ground. Each of the curves can be custom modified to provide almost unlimited coordination flexibility.

The control provides a wide range of standard features, which include: Sensitive Ground Fault, supervisory operation, remote status indication, fault indication via LCD targets and counters, event recorder, recloser duty monitor, demand metering, and load profile monitoring.

The microprocessor-based control can also be equipped with an accessory supervisory input-output board to extend the supervisory operation capabilities of the control.

Complete descriptive installation and operation information for the Form 4C microprocessor-based recloser control and accessories are found in *Service Information S280-77-1*.

FX / FXA CONTROL

The FX and FXA microprocessor-based recloser controls provide the operational intelligence for three-phase electronically controlled reclosers. Both controls are equipped with features that provide application flexibility, metering, and event recording.

Figure 6. 911053KM
Kyle FX microprocessor-based recloser control.

Figure 7.
Kyle FXA microprocessor-based recloser control.

The FX control is designed to operate without an external power source. Current transformers, located within the recloser, provide energy to operate the control and maintain charge on the control battery.

The FXA primary source of power is 120Vac or 240Vac (customer supplied).

The FX and FXA controls make use of a unique Microsoft® Windows-based application to program and interrogate the controls. The FX control connection is made via a fiber-optic interface, located on the control printed circuit board. The FXA connection is made via a front panel EIA232D port for easy customer access.

The FXA control can be ordered with supervisory I/O's for remote operation.

The control interface application makes it possible to upload operating parameters to the control as well as download present operating parameters from the control and collected data from the control data bases. Operating parameters and collected data can be saved to disk, for future reference or to provide system documentation.

For a listing of features of the FX and FXA controls, see *Bulletins 93009* and *95006* respectively. Complete installation and operation information can be found in *Service Information FX10001E* (FX) *and S280-78-1* (FXA).

VACUUM INTERRUPTION

Vacuum has proven to be an efficient medium for fault- and load-current interruption. It offers many advantages over other interrupting media:

- Deterioration of the medium is virtually non-existent.
- Its extremely rapid dielectric recovery makes the interrupter insensitive to the recovery-voltage rise rates usually encountered.
- Interrupter contact wear is minimal; consequently, contact life is considerably extended.
- Shorter contact travel significantly reduces mechanism shock which results in less part wear and longer operating life.
- Shorter contact travel results in faster opening time and fault clearing.
- The medium itself requires no service throughout the life of the interrupter.

Since the early twenties, designers of circuit interrupters have recognized the advantages of vacuum as an interrupting medium. Two major technological advances enabled vacuum interrupters to become a commercial reality. These are developments in metallurgy growing out of the semiconductor industry and developments in modern vacuum techniques.

Kyle vacuum interrupters have established a superb field record for long life and high reliability. This stems from superior design, materials, and processing, plus thorough testing to confirm that high-quality standards have been met. The interrupters used in the Types KFME and KFVME reclosers (Figure 8) employ these same materials, processing and testing.

Interrupter Design and Construction

The Kyle vacuum interrupter used in the Type KFME and KFVME reclosers provides fast, low-energy arc interruption with long contact and interrupter life, low mechanical stress and maximum operating safety. With arc interruption taking place in a vacuum, contact and interrupter life are several times greater than with interruption in oil.

Kyle vacuum interrupters are designed with a metal and ceramic housing for maximum strength and long-term vacuum integrity. The high-alumina ceramic has more than five times the strength of glass and permits a higher processing temperature to develop maximum purity of the assembly, and is impervious even to helium penetration, to sustain the vacuum level.

Enclosed within the interrupter is a stationary and a moving chrome-copper contact assembly. The moving contact travels $\frac{3}{8}$ inch (9.5mm) during closing and opening operations; its shaft passing through a flexible bellows which maintains the integrity of the vacuum chamber.

Because the smallest amount of internal contamination can significantly shorten the life of a vacuum interrupter, a clean room manufacturing facility is used for interrupter production. Special care is taken to avoid even minute contamination from any source, whether it be dust particles, machining oils, or human body salts.

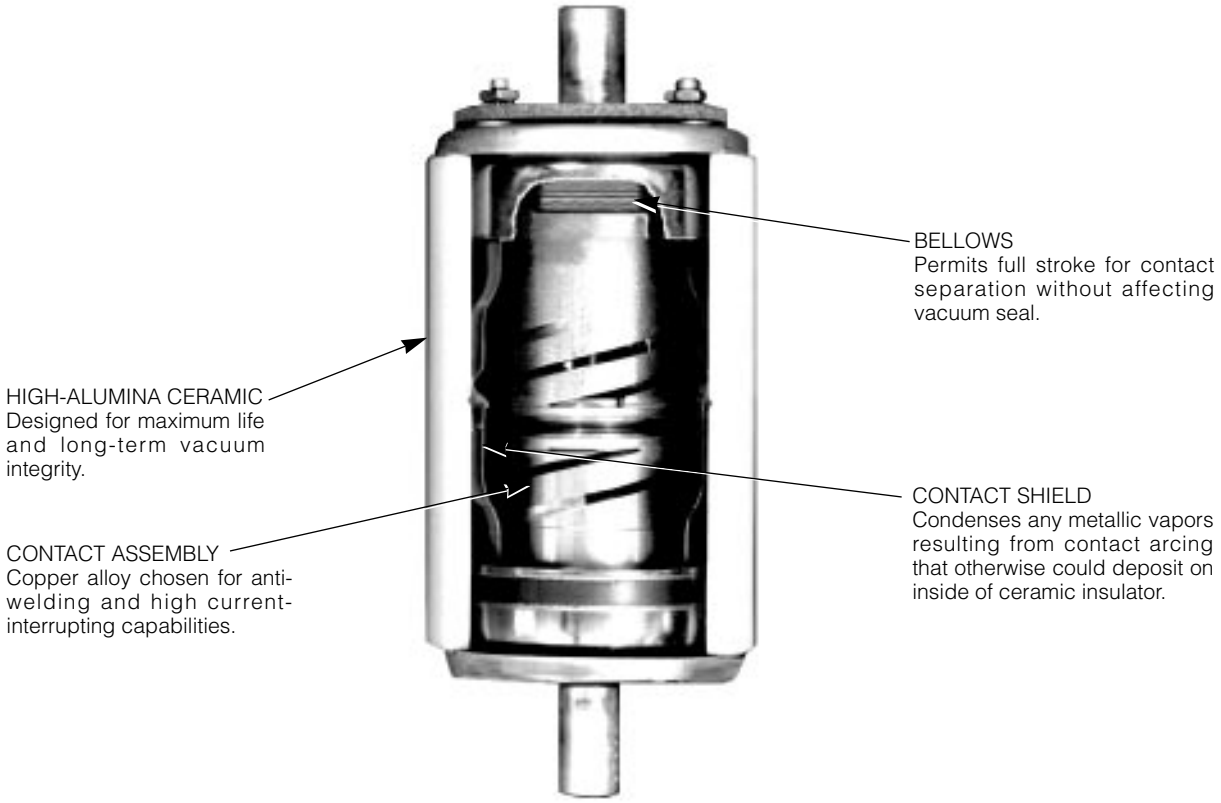


Figure 8.
Cutaway of vacuum interrupter.

RATINGS AND SPECIFICATIONS

The recloser will operate effectively only when applied within its specified ratings. Consult the following ratings tables and compare to system characteristics at point of application prior to installation.

TABLE 4
Voltage Ratings

	KFME	KFVME
Nominal Operating (kV)	2.4 - 14.4	2.4 - 24.9
Maximum Design (kV)	15.5	27.0
Impulse Withstand (BIL) 1.2 x 50 microsecond wave, crest (kV)	110	125
60 Hz withstand (rms)		
Dry, 1 min (kV)	50	60
Wet, 10 sec (kV)	45	50
RIV at 1000 kHz, at 9.41 kV (microvolts max)	100	100
Operating frequency (Hz)	50 - 60	50 - 60

TABLE 5
Current Rating

Description	KFME	KFVME
Maximum Continuous current (amps)	400**	400
Overload capability (4 hr) (amps)	500*	500*
(2 hr) (amps)	600*	600*
Interrupting Current (amps)	8000**	8000
Magnetizing interrupting current (amps)	14	14
Cable charging current	2	5
Three-second current (rms sym amps)	8000	8000
Momentary current (rms sym amps)	12800	12800
Surge current (amps)	65000	65000
Make Current (peak asym amps)	21500	21500

* After level-off at rated continuous current.

** 560 Amp continuous current and 12,000 Amps interrupting current available as an option.

TABLE 6
Duty Cycle*

Number of Operations	% of Interrupting Rating	Max Circuit X/R Ratio	
		KFME	KFVME
88	15-20	3	4
112	45-55	7	8
32	90-100	14	15
232 Total Operations			

* In accordance with ANSI standard C37.60-1981.

TABLE 7
Mechanical Specifications

Operating temperature (°C)	
Minimum	-30
Maximum	+50*
Close mechanism	Solenoid close
Open mechanism	Spring operated
Contact close time (cycles)	0.75
Contact gap [cm (in.)]	0,95 (0.375)
Contact open time (milliseconds)	8.3
Interrupting time (maximum, cycles)	1.5
Allowable contact erosion [cm (in.)]	0,32 (0.125)
Resistance, Nominal (micro-ohms);	
Bushings, terminal-to-terminal	400
Mechanical life (minimum operations)	2500

*150 percent overload rating not applicable at ambients exceeding +40°C.

Dimensions and Weights

TABLE 8
Dimensions and Weights

	KFME	KFVME
Recloser weight with oil, kg (lb.)	172 (380)	177 (390)
Recloser weight with pole-top frame, kg (lb.)	181 (400)	182 (410)
Recloser weight and substation frame, kg (lb.)	240 (530)	245 (540)
Recloser oil capacity, liters (gal.)	71,9 (19)	71,9 (19)
Standard bushing creepage, cm (in.)	29,53 (11 5/8)	67,31 (26 1/2)

Dim.	KFME	KFVME
A	20,3cm (8”)	23,2cm (9 1/8”)
B	27,3cm (10 3/4”)	31,4cm (12 3/8”)
C	54,8cm (21 9/16”)	69,8cm (27 1/2”)
D	93,7cm (36 7/8”)	109,8cm (43 1/4”)
E	29,5cm (11 5/8”)	44,5cm (17 1/2”)

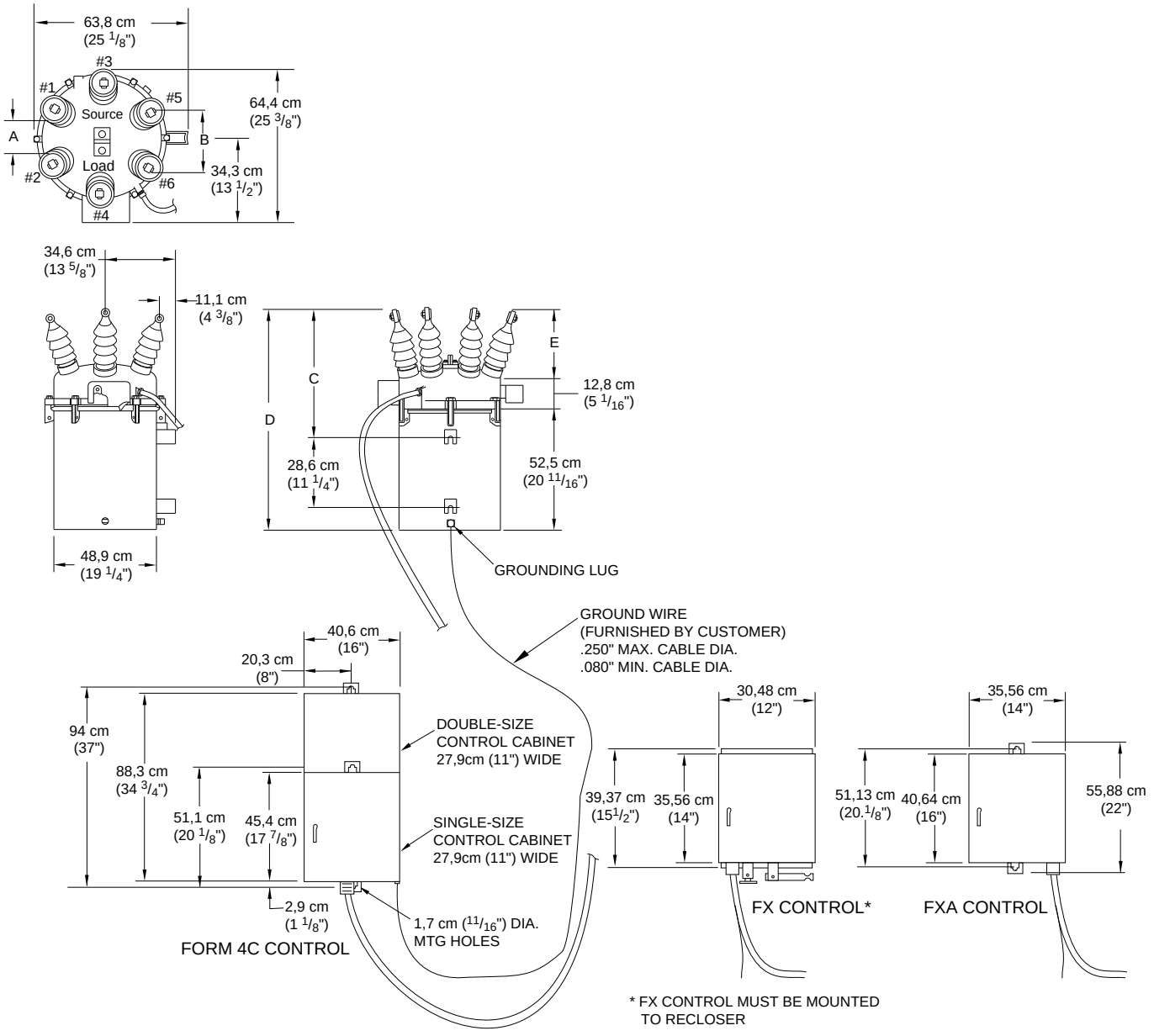
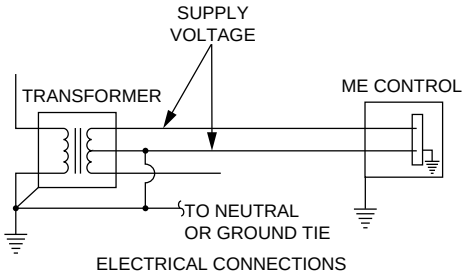


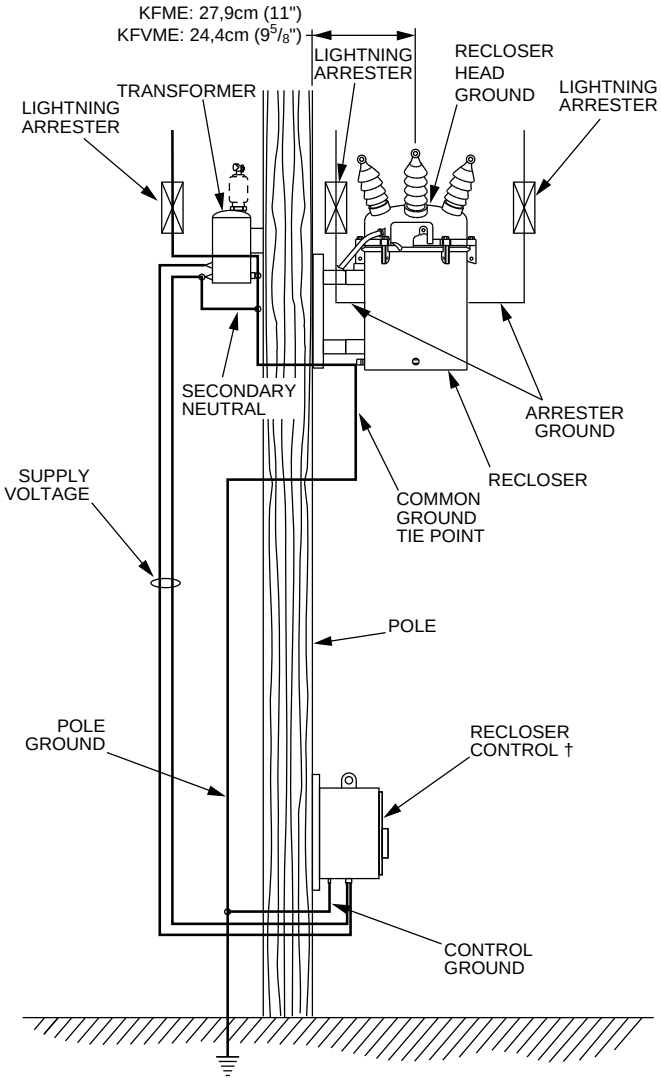
Figure 9.
KFME and KFVME dimensions.

Versatile Recloser Mounting

Any of three methods can be used to mount a Type KFME or KFVME recloser. Direct mounting by tank lugs to either a curved or flat surface (mounting lugs accommodate 19mm[$^{3}/_{4}$in] diameter hardware), mounting by use of the pole extension hanger accessory (Figures 10 and 11), or substation mounting accessory (Figure 12).

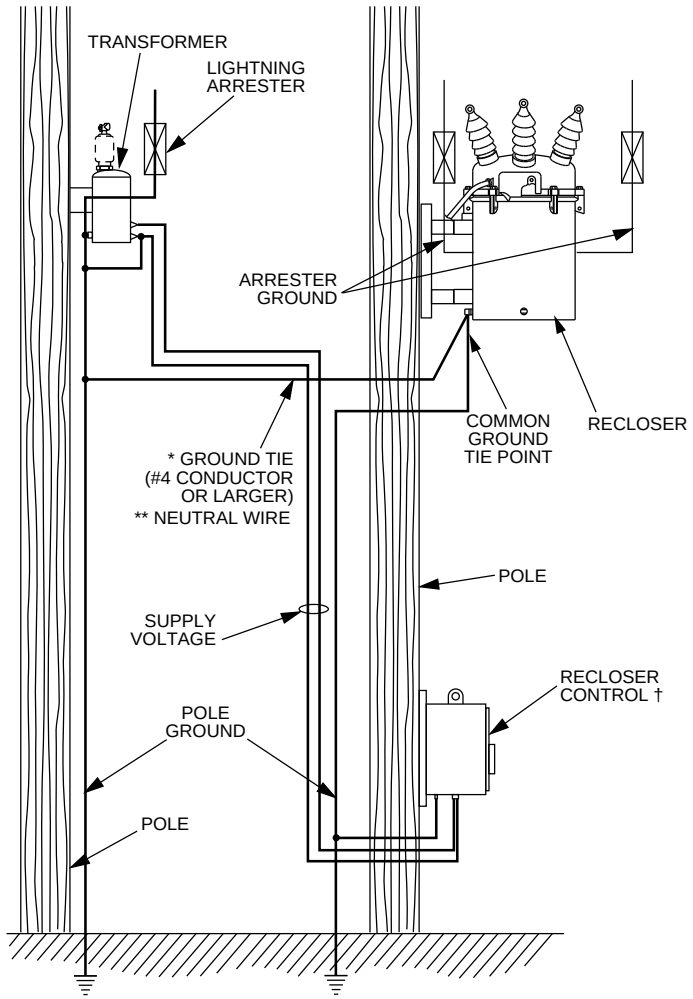
Having a symmetrical head-to-tank clamping arrangement, the recloser may be placed in the tank in various positions. Thus optimum location of manual operating handles, indicators, and bushings can be easily accomplished.





† FX CONTROL MUST BE MOUNTED TO RECLOSER

Figure 10.
Recommended grounding method for the electronic control with local supply voltage transformer.



*3 WIRE UNIGROUNDED SYSTEM

** 4 WIRE SYSTEM

† FX CONTROL MUST BE MOUNTED TO RECLOSER AND REQUIRES NO POTENTIAL TRANSFORMER.

Figure 11.
Recommended grounding method for the electronic control with remote supply voltage transformer.

Dimensions for Substation Elevating Structure

	Dimension	A	B
KFME	Without BCT's	271,3 (106 13/16") to 324,6 (127 13/16")	42,0 (16 9/16")
	With BCT's	283,4 (111 9/16") to 336,7 (132 9/16")	54,1 (21 5/16")
KFVME	Without BCT's	286,5 (112 13/16") to 339,9 (133 13/16")	57,3 (22 9/16")
	With BCT's	298,6 (117 9/16") to 352,6 (138 13/16")	71,0 (27 5/16")

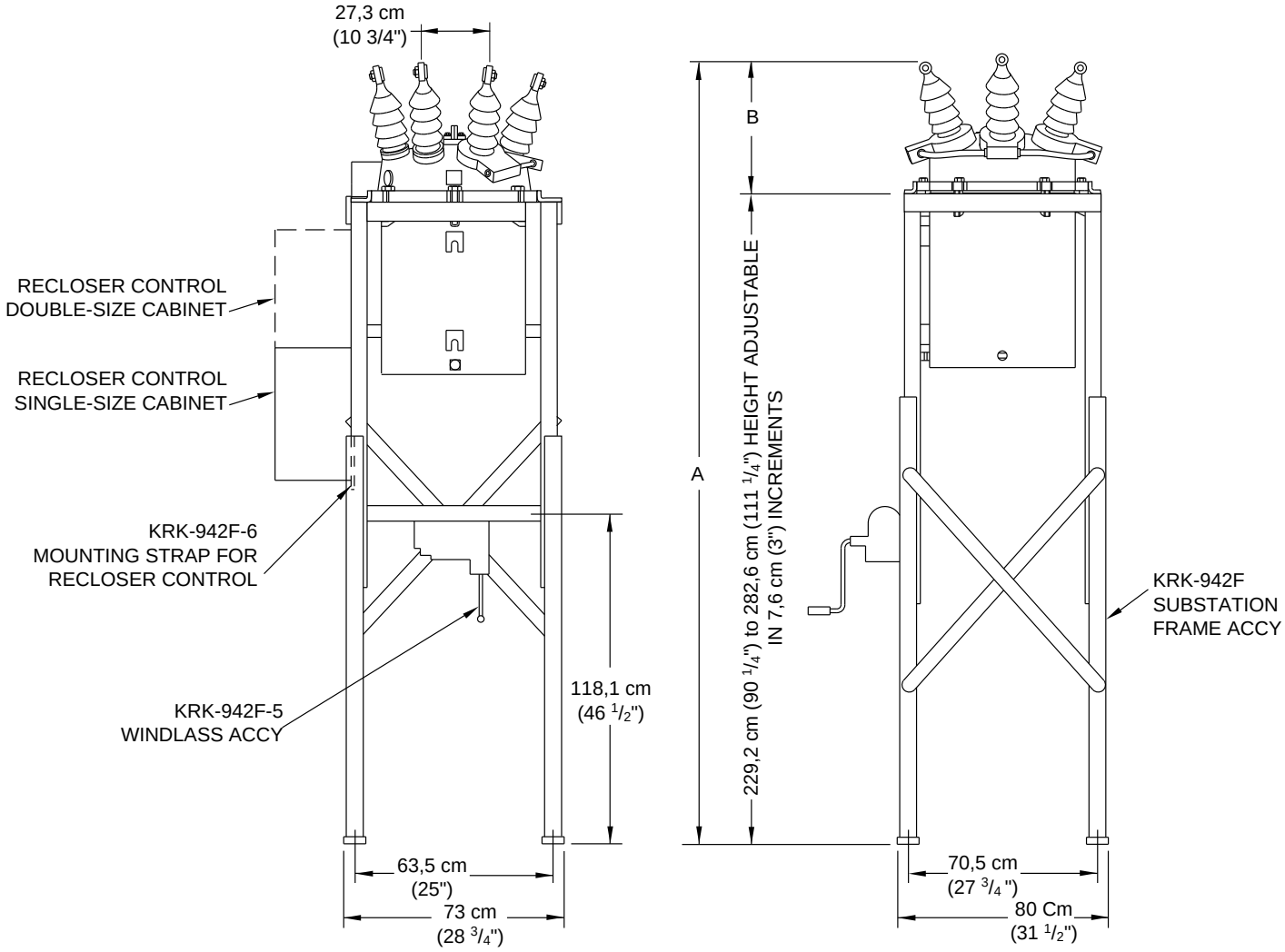


Figure 12.
Mounting and clearance dimensions for substation elevating structure.

RECLOSER ACCESSORIES

The Types KFME and KFVME can be tailored to meet a variety of application requirements by including factory-installed accessories. Ordering information for all accessories is found at the end of this bulletin.

Factory Assemblies and Kits

Reclosers can be factory-assembled in mounting frames. Accessory wiring kits are available for field installation. Contact your Cooper Power Systems representative for specific wiring kit information.

Extra-Creepage Bushings

When Type KFME reclosers are to be installed where extensive salt spray, smog, smoke, or other atmospheric contaminants reduce the effectiveness of porcelain insulation, extra-creepage bushings can be supplied. Standard Type KFME recloser bushings provide 29,5 cm (11 5/8 in.) of creepage; extra-creepage accessory bushings provide 43,2 cm (17 in.).

ORDERING INFORMATION

TABLE 9
Bushings and Terminals; Factory-Installed (set of six).

Description	Catalog Number
17-inch creepage bushings, KFME only	KRK288FC
Bushing Terminals for 1/0 to 500 MCM Cable, KFME only	KRK525FA

Figure 13.
Bushing Current Transformer accessory mounted on recloser bushings.

TABLE 10
Multi-Ratio Bushing-Current Sensing Transformers
Factory-Installed on Source-Side Bushings 1, 3, and 5.

Description	Catalog Number
Type KFME	
Three 600:5 BCT's on 11 5/8-inch Creepage bushings	KRK50F3X
Three 600:5 BCT's on 17-inch Creepage Bushings	KRK51F3X
Type KFVME	
Three 600:5 BCT's on 26 1/2-inch Creepage Bushings	KRK63F3X

Bushing-Type Multi-Ratio Current Transformers

A set of three 600:5 multi-ratio current transformers for operating relays or load meters can be factory installed externally on the source side bushings (Figure 13). The accessory includes three current transformers, conduit, fittings and factory wiring to a terminal block mounted in a weatherproof junction box. Taps on the secondary winding provide the different ratios. The available ratios and their corresponding terminal arrangement for the tapped secondary (Figure 14) is accessible when the cover plate on the transformer housing is removed.

Figure 14.
Bushing current transformer secondary winding taps are located in the transformer housing.

ORDERING INFORMATION

TABLE 11
Multi-Ratio Bushing-Current Transformers for Field Installation 600:5 for Metering.

Description	Catalog Number
Slip-on bushing current transformer kit; one BCT per kit	KA712L2
Set of 3	KA712L2-3

Figure 15. 921098KMA
Bushing Current Transformer accessory mounted on recloser bushings Factory or Field Installation.

Auxiliary Switch

Remote indication of recloser contact position can be accomplished with the Auxiliary Switch accessory KRK1020FA. The contacts of the Auxiliary switch can also be used to switch other circuits in accordance with the opening and closing of the recloser contacts. Table 12 shows the interrupting ratings of the Auxiliary Switch.

The switches are single-pole, double-throw - “a” and “b”. When the recloser contacts are open, the “a” contacts are also open and the “b” contacts are closed. The relationship between the auxiliary switch and recloser contacts is shown in Table 13.

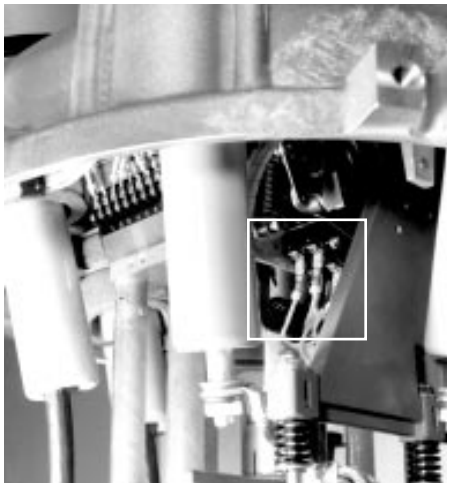


Figure 16. 921097KM
Auxiliary Switch accessory mounted on side of the recloser mechanism.

ORDERING INFORMATION

Auxiliary Switch Accessory

Description	Catalog Number
Auxiliary Switch *	KRK1020FA

* Requires cable KRK1100FA7.

TABLE 12
Interrupting Ratings of Auxiliary Switch

Volts	Current (amps)
120ac	15
240ac	15
24dc	2
48dc	3/4
125dc	1/2
250dc	1/4

TABLE 13
Auxiliary Switch Contact Positions

Recloser Contacts	Open	Closed
Auxiliary “a” contacts are	Open	Closed
Auxiliary “b” contacts are	Closed	Open

Junction Box

The junction box accessory (KRK62F) provides a convenient single location for customer wiring to the Auxiliary Switch accessory, or to a Low Voltage Closing Coil. An accessory interconnection cable (KRK1100F) is available for connection between the auxiliary switch receptacle and the junction box assembly.

Low-Voltage Closing

Type KFME and KFVME reclosers can employ low-voltage ac/dc closing with the proper closing coil (Table 14) and the Low-Voltage Closing accessory (KRK1027F). The proper coil is specified by a code number used in the recloser catalog number. The low-voltage closing accessory provides the alternate closing-solenoid contactor and the factory-installed wiring to accommodate the low-voltage closing power. Also, a separate step-down transformer is utilized to insure that enough voltage is present to charge the trip capacitors under low-voltage closing.

The Type KFME recloser, with low-voltage closing, has a maximum interrupting rating of 12kA symmetrical and a maximum continuous current of 560 amps.

ORDERING INFORMATION

TABLE 14
Low-Voltage Closing Coil Ratings

Rated Voltage (Vdc)	Current Required (amps)	Closing Coil Code No.*
125	40	26
250	25	28

* Specify as final digits in recloser catalog number.

TABLE 15
Low-Voltage Closing Accessory with Closing Coils.

Description	Catalog Number
Low voltage closing*	
115 Vac	KRK1027FA
230 Vac	KRK1027FB
125 Vdc	KRK1027FC
250 Vdc	KRK1027FD

* Low-voltage closing requires that recloser be ordered with dc closing coil, Code 26 or 28.

Figure 17.
Type KMET Tester.

KMET TESTER

The KMET tester is designed specifically for testing the Form 4C, FX and FXA microprocessor-based electronic controls. The tester can check the operation of the electronic control and the recloser.

Recloser operation is simulated with red and green indicating lights on the tester panel. A built-in time delay is also provided to simulate the response time of the solenoid-closing recloser mechanism to a trip signal and a closing signal from the control.

ACCESSORIES AND MOUNTING EQUIPMENT

TABLE 16
Service-Related; Hardware

Description	Catalog Number
Aluminized tank	KRK58FA
Oil sampling drain valve	KA809R
Junction Box*	KRK62FA
7 foot accessory cable and plug assembly**	KRK1100FA7

* Requires KRK1100FA7 cable
** Includes 7 feet of cable. If longer cable is required, add number of feet to catalog number KRK1100FA___.

TABLE 17
Mounting Equipment

Description	Catalog Number
Substation mounting equipment	
Basic mounting frame	KRK942F3
Removable tank-lifting windlass for KRK942F3 Frame	KRK942F5
Pole mounting equipment	
Pole mounting extension	KRK364FA
Steel/concrete pole	
Mounting frame	KA166L
Control and junction box mounting accessory, for use with substation mounting KRK942F3	KRK942F4
Auxiliary junction box mounting accessory, for use with substation mounting KRK942F3	KRK942F2

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