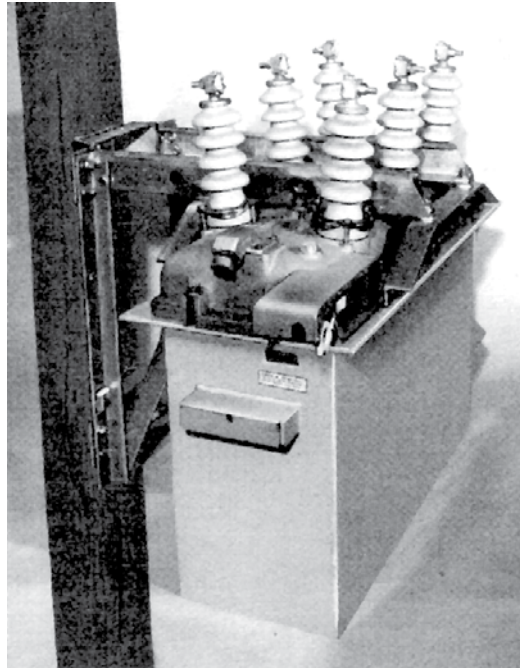


KA146W5 single pole-mounting hanger; KA146W2 tank lifting windlass assembly and installation instructions

For all W-group three-phase reclosers;
Types GW and GWC sectionalizers; and Type VRV oil switch



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Safety for life



Eaton meets or exceeds all applicable industry standards relating to product safety in its Cooper Power™ series products. We actively promote safe practices in the use and maintenance of our products through our service literature, instructional training programs, and the continuous efforts of all Eaton employees involved in product design, manufacture, marketing, and service.

We strongly urge that you always follow all locally approved safety procedures and safety instructions when working around high voltage lines and equipment, and support our “Safety For Life” mission.

Safety information

The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians who are familiar with this equipment should install, operate, and service it.

A competent technician has these qualifications:

- Is thoroughly familiar with these instructions.
- Is trained in industry-accepted high and low-voltage safe operating practices and procedures.
- Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.
- Is trained in the care and use of protective equipment such as arc flash clothing, safety glasses, face shield, hard hat, rubber gloves, clampstick, hotstick, etc.

Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

Hazard Statement Definitions

This manual may contain four types of hazard statements:

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in equipment damage only.

Safety instructions

Following are general caution and warning statements that apply to this equipment. Additional statements, related to specific tasks and procedures, are located throughout the manual.

DANGER

Hazardous voltage. Contact with hazardous voltage will cause death or severe personal injury. Follow all locally approved safety procedures when working around high- and low-voltage lines and equipment.

G103.3

WARNING

Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this manual. Improper operation, handling or maintenance can result in death, severe personal injury, and equipment damage.

G101.0

WARNING

This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply can result in death, severe personal injury and equipment damage.

G102.1

WARNING

Power distribution and transmission equipment must be properly selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install or maintain power distribution and transmission equipment can result in death, severe personal injury, and equipment damage.

G122.3

Product information

Introduction

This manual contains assembly and installation instructions for Eaton's Cooper Power™ series KA146W5 single pole-mounting hanger and the KA146W2 tank-lifting windlass.

Read this manual first

Read and understand the contents of this manual and follow all locally approved procedures and safety practices before installing or operating this equipment.

Additional information

These instructions cannot cover all details or variations in the equipment, procedures, or process described, nor to provide directions for meeting every possible contingency during installation, operation, or maintenance. For additional information, contact your Eaton representative.

Acceptance and initial inspection

This product is completely assembled, tested, and inspected at the factory. It is carefully calibrated, adjusted and in good condition when accepted by the carrier for shipment.

Upon receipt, inspect the carton for signs of damage. Unpack the contents and inspect them thoroughly for damage incurred during shipment. If damage is discovered, file a claim with the carrier immediately.

Handling and storage

Be careful during handling and storage of this equipment to minimize the possibility of damage.

Quality standards

ISO 9001 Certified Quality Management System

Description of operation

The KA146W5 suspension-type hanger enables the mounting of Eaton's Cooper Power series three-phase reclosers, GW and GWC sectionalizers, and VRV oil switches on single poles. No crossarms are required.

The KA146W2 tank-lifting windlass is easily attached as a unit to the back of the mounting hanger with only two bolts. The windlass simplifies lowering the recloser tank for inspection and maintenance, but can not be used for lowering the entire recloser.

KA146W5 single pole-mounting frame

The apparatus can be mounted broadside toward the pole in either direction. When installing three bushing current transformers on a recloser, it is recommended that the recloser be mounted with the current transformers on the outboard side. If a recloser must be mounted with the bushing current transformers on the inboard side, the interconnecting conduit and wiring (shown by dashed lines in Figure 1) must be assembled after the recloser has been installed in the mounting frame.

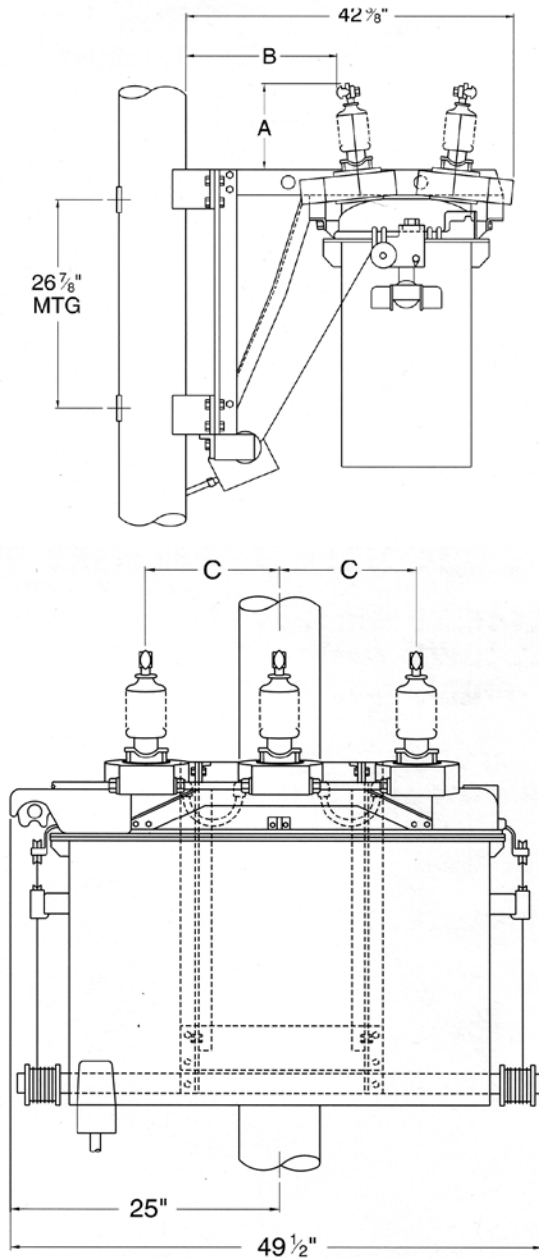


Figure 1. Outline dimensions of KA146W5 pole-mounting hanger and KA146W2 tank-lifting windlass.

A grounding connector is furnished to ground the complete equipment through the KA146W5 mounting frame. Reclosers with line-to-ground closing coil connections must use the ground connector on the recloser head casting to help assure proper operation.

Table 1. Mounting Hanger and Clearance Dimensions

Unit Type	Bushing Creepage	Dimension (in.)		
		A	B	C
VW, WVE, W, WE	Std. or 17"	8-1/2	25-7/8	11-3/8
VW, WVE, W, WE	Std. or 17"	13-1/4 w/ BCTs	25-5/8	11-3/8
VWV, VWVE, VWV27, VWVE27 WV, WVE, WVE27	Std.	13	25-1/16	11-3/8
VWV, VWVE, VWV27, VWVE27, WV, WVE, WVE27	Std. w/bcts	17-1/2	25-1/16	11-3/8
VWV, VWV27, VWV38, VWVE, VWVE27, VWVE38, WV, WV27, WV38, WVE, WVE27, WVE38	26-1/2"	17-1/8	25-1/8	11-3/8
WV38X, WVE38X, VWV38X, VWVE38X	26-1/2"	13-1/4	21-15/16	15-1/16
GW, GWC, VRV	Std.	13	25-1/8	11-3/8
RX, RXE	Std. or 17"	7-7/8	25-5/8	11-3/8
RX, RXE	Std. or 17" w/bcts	12-5/8	25-5/8	11-3/8
RV, RVE	Std.	13	25-1/16	11-3/8
RV, RVE	Std. w/BCTs	17-1/2	25-1/8	11-3/8

Assembling the mounting hanger

To minimize space for customer stocking and transport, the KA146W5 hanger is shipped disassembled and banded. For easier installation and to save mounting time aloft, it is recommended that the hanger be assembled to the recloser on the ground.

For reference, a parts list is provided giving each item a number and indicating the quantity used (Figure 2). Thru-bolts, 3/4 inch in diameter with nuts and washers, which are dependent on choice of pole size, must be furnished by the customer.

1. Dismantle the shipping bundle and check the components against the bill of material and the exploded view diagram and parts (Figure 2).
2. Initially, assemble all hardware just finger-tight. Begin by fastening the two support angles (1) to the tapped bosses on the switchgear head casting. Fasten with 1/2-13 x 1-1/2 inch bolts (14) and lockwashers (15).
3. Attach support channels (2 and 3) to outboard support angle (1), against side to be located away from pole. Insert a round spacer (4) between angle and channels. Fasten with 1/2-13 x 2 inch bolts (13), beveled washers (12), lockwashers (15), and nuts (16).
4. Inboard support
 - A. All reclosers except VVW38X, WV38X, WVE38X and VVWE38X reclosers
 1. Attach support channels (2 and 3), on inboard side, use holes marked A. Insert a round spacer (4) between angle and channels. Fasten with 1/2-13 x 2 inch bolts (13), beveled washers (12), lockwashers (15), and nuts (16).
 2. Fasten braces (5 and 6) to holes marked B. Fasten with 1/2-13 x 1-1/2 inch bolts (14), beveled washers (12), lockwashers (15), and nuts (16).
 - B. WV38X, WV38X, WVE38X and VVWE38X reclosers
 1. Align support channels (2 and 3), on inboard side, with holes marked B. Insert tabs on braces (5 and 6) between angle (1) and channels (2 and 3), and align assembly with holes marked B.
 2. Fasten assembly with 1/2-13x1-1/2 inch bolts (14), beveled washers (12), lockwashers (15), and nuts (16).
5. Attach two vertical angles (7 and 8) to support channels. Fasten with 1/2-13 x 1-1/2 inch bolts, lockwashers, and nuts (14,15, and 16).
6. Fasten braces (5 and 6) to inside surfaces of vertical angles, with 1/2-13 x 1-1/2 inch bolts, lockwashers, and nuts (14,15, and 16).
7. Attach upper pole mount (9, with keyhole slot) and lower pole mount (10) to the vertical angles (7 and 8). Fasten with 14,15, and 16.

8. Assemble ground connector to vertical angle (7). Fasten with 14,15, and 16.
9. With all frame members assembled, tighten each nut and bolt securely using an alternating pattern so frame squares properly.
10. Drill pole at desired height (on 26-7/8-inch centers) for mounting hardware. Hoist frame and apparatus to the mounting point and secure to the pole. Be sure to include the two spur-type curved washers (11) under the hardware on the back side of the pole.

CAUTION

Falling equipment. Use the lifting lugs provided and follow all locally approved safety practices when lifting and mounting the equipment. Lift the unit smoothly and do not allow the unit to shift. Improper lifting can result in severe personal injury, death, and/or equipment damage.

G106.3

Lifting the hanger and recloser/switchgear

When hoisting the recloser (switchgear) and KA146W5 hanger assembly aloft, lift only at the four 1-3/8-inch diameter lifting holes in the two support channels.

Never lift the entire assembly at the two lugs bolted to the switchgear head; they are for lifting the device only.

Use a four-point lift, as shown in the illustration below, to maintain as much load balance as possible. To avoid damaging porcelain bushings, be careful when attaching lifting chains.

Follow all approved safety practices for rigging and lifting. Lift the load smoothly, and do not allow it to shift.

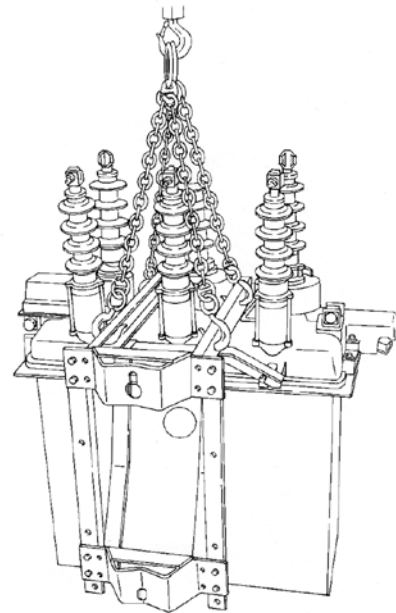


Table 2. Parts List for KA146W5 Pole-Mounting Hanger

Item	Description	Part No.	Qty
1	Support angle	KP308W	2
2	Support channel, right-hand	KP134WV	1
3	Support channel, left-hand	KP135WV	1
4	Washer	KP2028A61	4
5	Brace, right-hand	KP306W	1
6	Brace, left-hand	KP307W	1
7	Vertical angle, right-hand	KP277W	1
8	Vertical angle, left-hand	KP292W	1
9	Pole mount, upper	KA174W1	1
10	Pole mount, lower	KA174W2	1
11	Washer for pole bolts (not shown)	DT28X	2
12	Bevel washer	KP448R1	6
13	Hex bolt, 1/2-13 x 2 in.	K730101150200Q	6
14	Hex bolt, 1/2-13 x 1-1/2 in.	K730101150150Q	23
15	Lockwasher, 1/2-in.	K900801050000Z	29
16	Hex nut, 1/2-13 UNC-2B	K880201113050Q	21
17	Ground connector	KP1596R	1
18	Lifting decal	KP310W	2

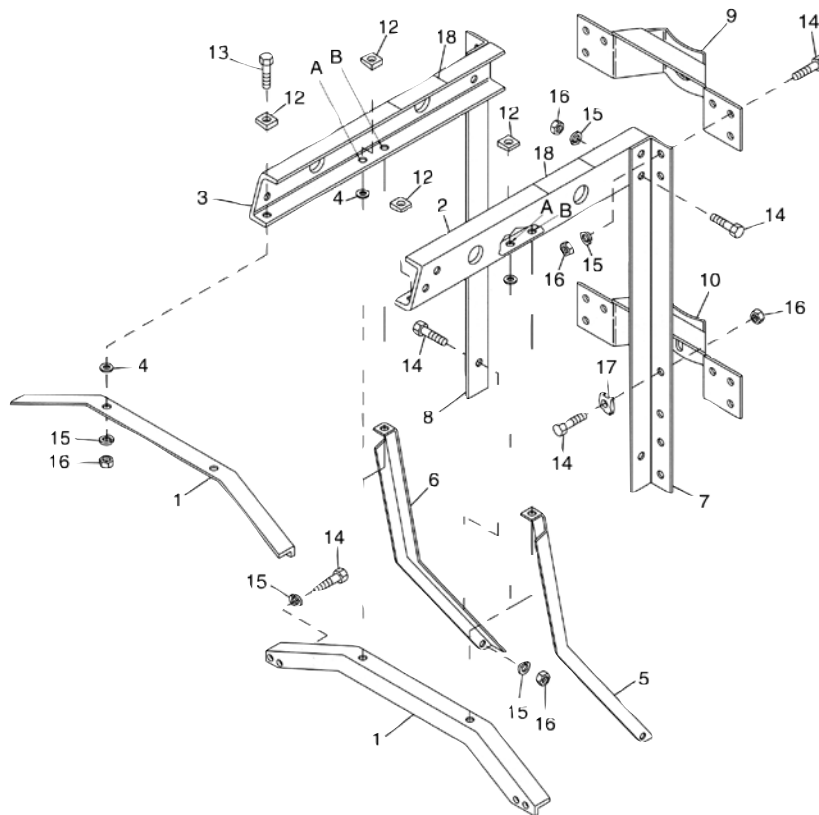


Figure 2. Exploded view and parts list for KA146W5 pole-mounting hanger.

KA146W2 tank-lifting windlass

Table 3. Parts List for KA146W2 Tank-Lifting Windlass

Item	Description	Part No.	Qty
1	Hex bolt, 1/2—13 x 1 inch	KP1085	4
2	1/2-inch lockwasher	KP1107	4
3	Hex nut, 1/2—13	KP1214	2
4	Gear box and spool assembly	KA151W	1
5	Spool and cable clamp assembly	KA15CE1	1
6	Pipe	KP1054CE11	1
7	Roll pin, 7/32 x 1-1/4-inch	KP1313	4
8	Support angle	KP294W	1
9	Flat washer between sheave brackets and head-casting flange	KP3015A28	2
10	Sheave bracket assembly, right hand	KA148W	1
11	Sheave bracket assembly, left hand	KA147W	1
12	Adapter (for upper sheave bracket when ground connector is on recloser head)	KP293W	1
13	Sheave assembly	KA121 R	2
14	Cable assembly	KA592R3	2
15	Crank	KP1031 R	1
16	Hex bolt, 1/2—13 x 1-1/2 inch	KP1354	2

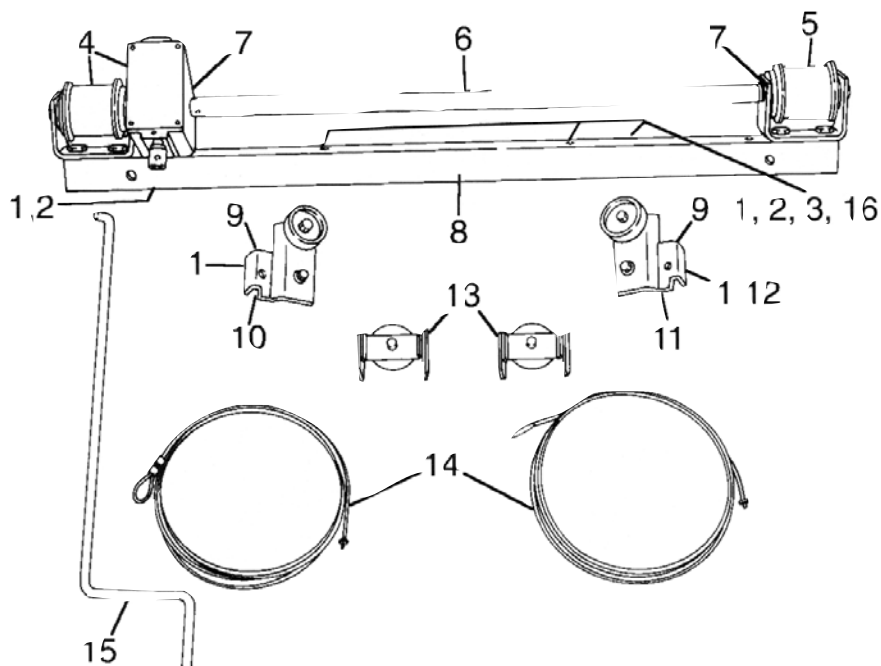


Figure 3. Exploded view and parts list for KA146W2 tank-lifting windlass.

Installation of the windlass

CAUTION

Falling equipment. Use the lifting lugs provided and follow all locally approved safety practices when lifting and mounting the equipment. Lift the unit smoothly and do not allow the unit to shift. Improper lifting can result in severe personal injury, death, and/or equipment damage.

G106.3

The windlass simplifies lowering the recloser tank for inspection and maintenance, but can not be used for lowering the entire recloser. Refer to the exploded view and parts list (see Figure 3) during assembly and installation of the tank-lifting windlass. The final assembly is diagrammed in Figure 4.

Note: Because of lack of clearance, this windlass can not be used with a Type GW or GWC electronic sectionalizer or a Type VRV oil switch.

1. The gear box and spool (4), spool assembly (5), pipe (6), and roll pins (7) may already be assembled to the support angle (8). If not, assemble as shown in Figure 3. Use two 1-inch bolts (1) and lockwashers (2) to fasten the gear box to the support angle. The spool assembly includes hardware.
2. Attach support angle (8) to bottom back portion of vertical angles on KA146W5 frame with 1/2-13 x 1-1/2 inch bolts (16), lockwashers (2), and nuts (3).
3. Using 1-inch bolts (1) and flat washers (9), attach the upper sheave brackets (10 and 11) to the head casting flange at the tapped hole on each end of the recloser. The flat washer should be placed under the sheave bracket between the bracket and the head casting flange.

If a ground connector is assembled in one of the tapped holes, remove the connector, fasten the sheave bracket with the threaded adapter (12) provided, and thread the connector into the tapped hole on the adapter.

4. Hook lower sheaves (13) onto the lug on each end of the recloser tank. Be sure the spring-loaded pin snaps into the hole on the tank lug.
5. Loosen the capscrews on the upper sheave brackets (10 and 11). Install the looped ends of the cable assemblies (14) onto the pulleys. Retighten the capscrews.
6. Remove the hex nut from the stud end of each cable. Thread the cables down through the tank sheaves, up over the upper sheaves, and down to the windlass spools (4 and 5). Fasten the stud end of the cables at the spools with the previously removed hex nuts.
7. Take up the slack in the cables by operating the windlass crank (15) while directing both cables in an even wind around the spools.
8. When the windlass operation is complete, install the two cable clamps (5) over the cable spools. This helps keep cable from unwinding when tension is released.

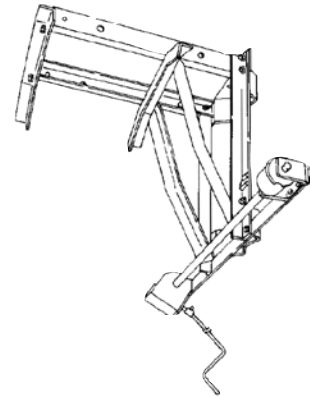


Figure 4. KA146W2 tank-lifting windlass installed on a hanger.

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