

Type E recloser kit KA718E installation instructions



Powering Business Worldwide

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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.

G122.2

Product information

Introduction

Service Information MN280025EN provides installation instructions for the KA718E Kit for Eaton's Cooper Power™ series Type E reclosers.

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, please contact your Eaton representative.

Acceptance and initial inspection

Each kit is inspected at the factory and is in good condition when accepted by the carrier for shipment.

Upon receipt, inspect the carton for signs of damage. Unpack the kit and inspect it 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 the kit to minimize the possibility of damage. If the kit is to be stored for any length of time prior to installation, provide a clean, dry storage area.

Standards

Eaton reclosers are designed and tested in accordance with ANSI® standards C37.60 and C37.85 and ANSI® guideline C37.61.

Quality standards

ISO 9001 Certified Quality Management System

Description

Kit KA718E is for use on Type E reclosers serial number 52000 and below. Aging Type E reclosers may have experienced an operational problem with the contacts sticking in the open position. Installing Kit KA718E resolves this concern. Disassembly of the recloser is required for installation of the parts in this kit.

For additional information on disassembly, reassembly, and testing procedures, refer to the appropriate instruction manual.

- *Service Information S280-10-8 Type E Installation Instructions*
- *Service Information S280-25-1 Type E Maintenance Instructions, Serial Numbers 13000 to 52000*
- *Service Information S280-25-5 Type E Maintenance Instructions, Serial Numbers 52000 and above*

Table 1. Kit Parts for KA718E

| Item | Description | Quantity |
|------|-----------------------------|----------|
| 1 | Contact arm assembly | 1 |
| 2 | Tension spring 1" | 1 |
| 3 | Fiber washer | 2 |
| 4 | Double groove pin | 1 |
| 5 | Spacer | 1 |
| 6 | C-ring | 6 |
| 7 | Heat-shrink tubing | 1 |
| 8 | Lever reset spring 1.875" * | 1 |

* This spring is only used on reclosers that are equipped with the non-reclosing accessory.

Kit installation

WARNING

Hazardous voltage. De-energize the switchgear before installing this kit. Follow all locally approved safety practices and procedures when working around high voltage lines and equipment. Failure to comply can result in contact with high voltage, which will cause death or severe personal injury.

T232.3

CAUTION

Equipment damage. Keep work areas clean to prevent debris from accumulating on or in the hydraulic mechanism during disassembly and reassembly procedures. Failure to comply can result in hydraulic failure and recloser misoperation.

T254.0

The entire installation process should be conducted in a clean environment, such as a repair shop.

Inspection and maintenance

Prior to kit installation, the Periodic Inspection and Maintenance procedure, outlined in the Type E Recloser Maintenance Manual, must be performed.

For additional information on maintenance, disassembly, reassembly, testing procedures, and inspection, refer to the appropriate instruction manual.

- *Service Information S280-10-8 Types E, 4E, V4E, H, 4H, V4H, L, and V4L Single-Phase Installation and Operation Instructions*
- *Service Information S280-25-1 Type E Maintenance Instructions, Serial Numbers 13000 to 52000*
- *Service Information S280-25-5 Type E Maintenance Instructions, Serial Numbers 52000 and above*

Each periodic check should include at least the following steps:

1. Bypass, trip, and de-energize the recloser.
2. Carefully transport the unit to a suitable service facility.
3. Inspect external components. Check for broken bushings, paint scratches, or other mechanical damage. The counter reading should be noted and entered in the recloser record.
4. Move the manual operating lever up and down to see if the counter is functioning properly. Move the operating lever down to open contacts.

WARNING

Do not operate this equipment if energized parts are not immersed in dielectric fluid. Operation when parts are not properly immersed in dielectric fluid may result in internal flashovers that will damage the equipment and can cause death or severe personal injury.

G104.4

5. With the recloser in the open position, untank the recloser. Loosen the four bolts that secure the tank to the head casting, and loosen the gasket seal between tank and head casting. Lift the mechanism out of the oil, and allow oil to drain off the mechanism.
6. Inspect moving contacts. Arcing tips of the moving contacts can experience considerable erosion before replacement is necessary. Contacts should be replaced before erosion extends to the load carrying surface of the contact tip. If the moving contacts are replaced, the stationary contact tubes should also be replaced.

CAUTION

Dielectric failure, equipment damage. Never use volatile solutions, detergents, or water-soluble cleaners when cleaning the interior of this equipment. These cleaners will contaminate the insulating oil, reducing its dielectric strength. Operation with contaminated insulating oil can result in internal flashovers that will cause equipment damage and possible personal injury.

T201.2

7. Clean all internal components. Remove all carbon traces by wiping with a clean, lint-free cloth. Pay particular attention to insulating members. Flush the mechanism with clean, dry transformer oil.
8. Inspect tank liners. Note that two liners are employed. The inner liner is fibrous and readily absorbs any moisture present. Soft or spongy areas indicate free water has been absorbed. Replace liner if these areas are present. The outer liner should not need to be replaced.
9. Remove any carbon or sludge from the tank, and flush tank with clean, dry transformer oil.
10. Fill tank with clean, dry transformer oil.

Contact arm assembly

1. Remove C-rings and pins that retain moving contact arm to contact links, Figure 1.

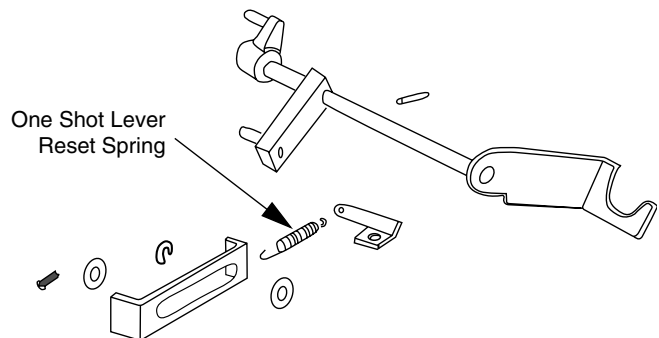


Figure 1. Remove C-rings.

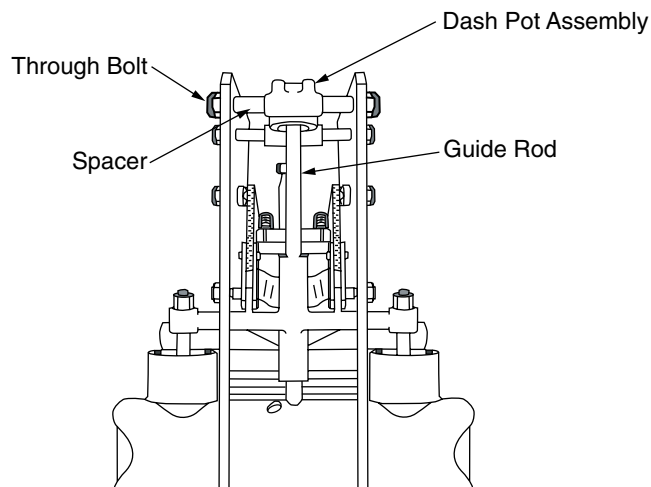


Figure 2. Moving dash pot to allow removal of moving contact arm assembly.

2. Remove the through bolt and swing the dash pot assembly up away from the guide rod, Figure 2.
3. Unhook toggle springs, note orientation of contact arm assembly, and carefully pry arm assembly from pivot pins and discard, Figure 3.

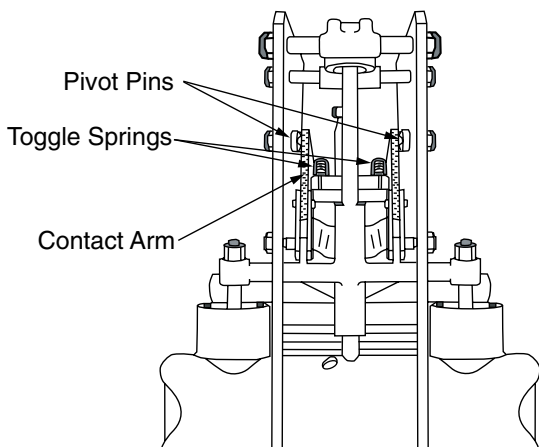


Figure 3. Contact arm removal.

4. Place replacement contact arm assembly, Item 1, into position and carefully snap over pivot pins.
5. Carefully stretch toggle springs and secure over contact link assembly.
6. Move dash pot assembly back over guide tube, and reinstall spacers and through bolt to secure, Figure 2.
7. Install pins and two C-rings, Item 6, to secure moving contact arm to contact links.
8. Remove old tension spring and install replacement, Item 2, Figure 4.

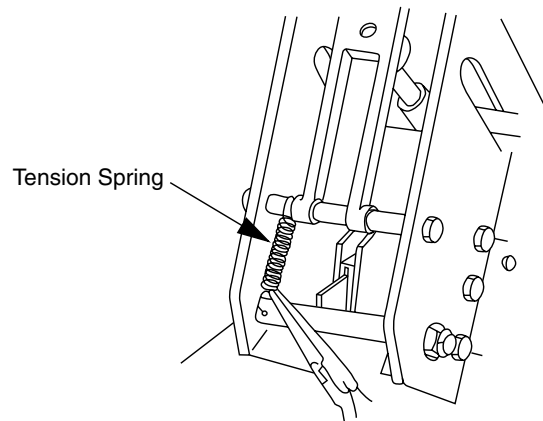


Figure 4. Tension spring replacement.

Fiber washers

The fiber washers, Item 3, included in the kit are beveled on one side to guide the moving contact as it enters the arc interrupting chamber. One is installed at the opening of each contact tube assembly. To install the fiber washers:

1. Disconnect bushing leads from contact tubes.

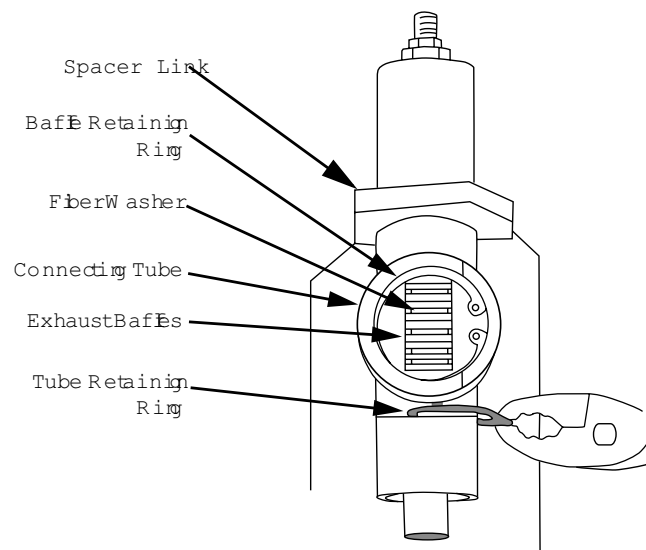


Figure 5. Contact tube removal.

2. Remove snap rings that retains exhaust baffles, and remove exhaust baffle assemblies, see Figure 5.
3. Remove tube retaining rings and contact tube assemblies.

Install washer with bevel toward outside

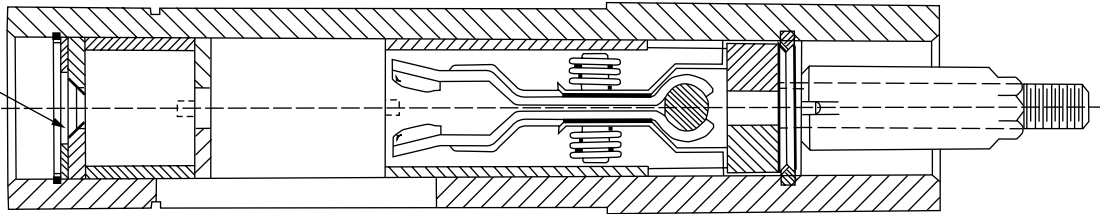


Figure 6. Contact tube.

4. Remove old fiber washers, and install new fiber washers, Item 3, with bevel as shown in Figure 6.
5. Reinstall contact tubes and position so exhaust baffle assemblies can be inserted. Secure with original retaining rings.
6. Install exhaust baffles, see Figure 7. Note that the two lower slots are separated by only one spacer while all other slots are separated by two spacers. Install retaining rings so eyelets are positioned at the 45° cut on the cross blast tube.

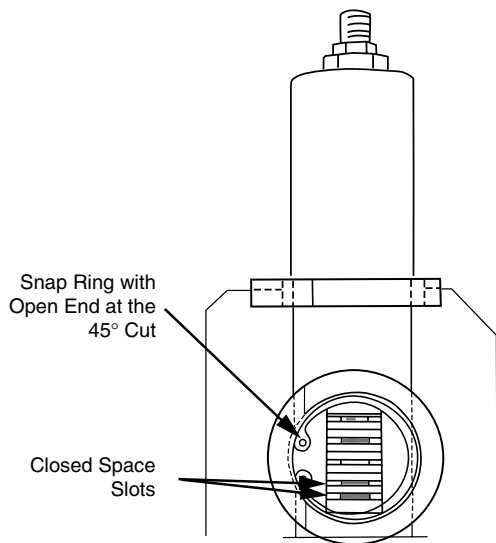


Figure 7. Exhaust baffle.

Operations counter operating lever roller

To install the operations counter operating lever roller, the entire operating mechanism must be removed from the head. On only those reclosers equipped with the non-reclose accessory, a tension spring, Item 8, is installed.

1. To remove mechanism, with contacts open and bushing leads disconnected, remove four bolts that secure mechanism assembly to head and carefully lift mechanism assembly out of head.

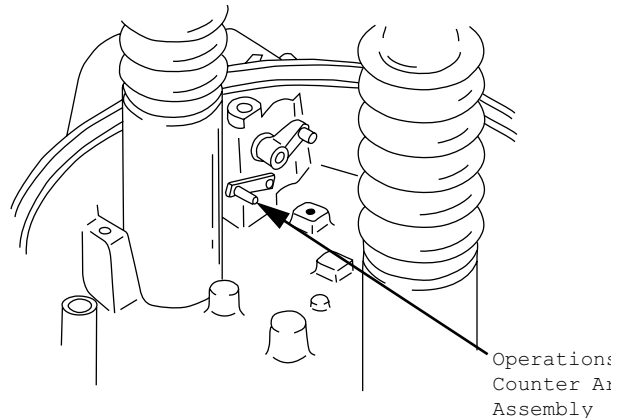


Figure 8. Operation counter operator arm placement.

2. Carefully remove roll pin from counter lever arm and discard, see Figure 8. In order to remove roll pin, it may be necessary to remove the counter lever arm assembly. Before the counter lever arm assembly can be removed, the operating handle and lever assembly must be removed. Carefully drive roll pin out and pull lever from operating handle assembly.
3. Install a C-ring, Item 6, on one side of double-grooved pin, Item 4, and slide assembly through lever arm, from sleet hood. See Figure 9.
4. Install roller spacer, Item 5, and a C-ring, Item 6.

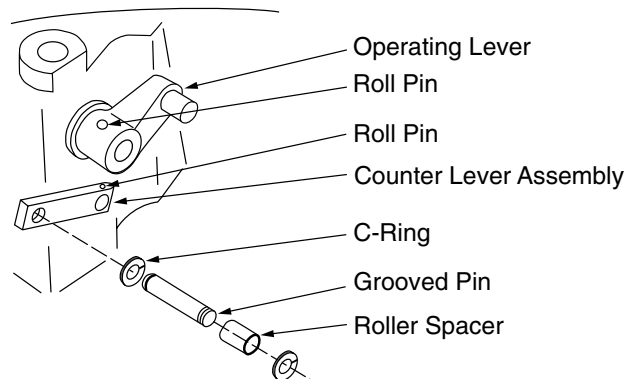


Figure 9. Operation counter operator arm assembly.

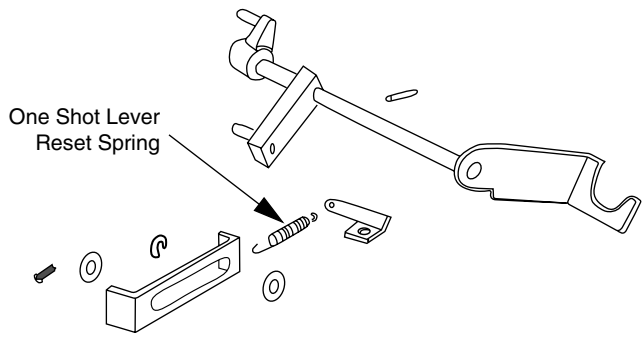


Figure 10. One-shot lever reset spring replacement.

5. If the recloser is equipped with the non-reclose accessory, remove the one shot lever reset spring and install the new spring, Item 8, as shown in Figure 10.
6. To reassemble recloser, hold yellow operating handle and non-reclose lever, if equipped, in the open position. Carefully lower operating mechanism assembly into head. Engage yellow operating handle and non-reclosing handle as the mechanism is being installed.
7. Install mounting bolts.

Heat-shrink tubing

The heat-shrinkable tubing is installed on the counter operating lever, under the sleet hood.

1. Position heat-shrink tubing, Item 7, on the counter lever, so it will contact counter arm as it actuates. See Figure 11.
2. Apply heat to shrink tubing.

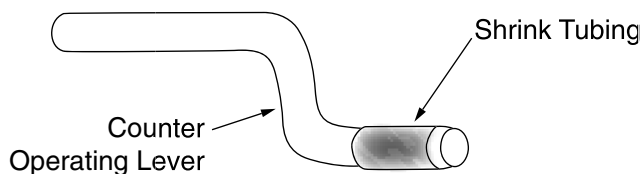


Figure 11. Installation of heat-shrinkable tubing onto counter lever.

Inspection points

Check these points, in addition to installing the kit.

IMPORTANT

Grit produced while sanding with crocus cloth can do permanent damage to the recloser operating mechanism. Such damage will adversely affect recloser operation. Carefully remove grit or other debris after sanding.

Contact box

1. Place the yellow operating handle into the closed position, and check that the moving contact yoke moves freely on the contact guide tube. If the moving contact yoke sticks or binds in any position, replace guide tube (KP38E) and the O-rings (KP2000A4) that are positioned between the guide tube and recess in the cross blast tube and the guide tube and dash pot.

Note: Reclosers prior serial number 7502 were not originally manufactured with the o-ring between the guide tube and cross blast tube recess; the o-ring will fit and should be added to prevent the guide tube from rotating.

2. Check that the moving contact yoke moves freely in and out of the contact dash pot. If any binding is evident, use crocus cloth to remove any rough edges or high spots and retest.
3. Check fiber washers in the stationary contact tubes, the beveled side must face the moving contact yoke.

Plunger and solenoid frame

1. Place the yellow operating handle into the closed position, hold contacts open with one hand, and lift up the plunger rod assembly. The plunger should move freely without sticking or binding. This can also be done with the contact box removed. See Figure 12. If the plunger rod assembly does not move freely, check the plunger and solenoid frame for rough edges or burrs; use crocus cloth to remove and retest.
2. Check the plunger and plunger stop for wear. If the solenoid frame appears to be good and the plunger sticks, replace the plunger and retest.

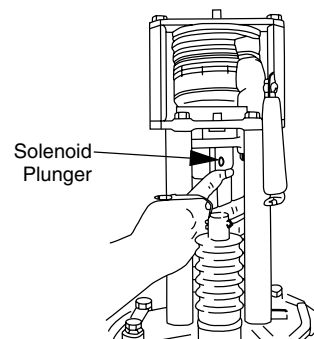


Figure 12. Checking solenoid plunger.

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Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

**Eaton's Cooper Power Systems
Division**
2300 Badger Drive
Waukesha, WI 53188
United States
Eaton.com/cooperpowerseries

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