

# Position Switch Kits

## Accessory Kits for EntelliGuard\* Retrofill Circuit Breakers

This position switch actuator, mounted on the cassette using simple hardware, is an actuator or actuator bracket. It makes a strong contact with the position switch assembly when the racked-in breaker provides mechanical pressure against the arm.

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## Related Publications

Publication	Publication Number
Brochure	DEA-532
Snapshot	DEE-543
Installation Manual AKD8	DEH-41549
Installation Manual AKD6	DEH-41548
Installation Manual AKD5	DEH-41547
Accessory: Door Interlock (Door Interlock Kit)	DEH-41529
Accessory Retrofill Doors Assembly	DEH-41563
Accessory: Position Switch Plate & Position Switch Assembly & Wiring (Position Switch Kit)	DEH-41530
Accessory: Neutral Rogowski CT Disconnect (Neutral Assemblies)	DEH-41531
Accessory: Programmer Disconnects	DEH-41532
Accessory: Finger Clusters (Cluster Assemblies)	DEH-41533
Accessory: Secondary Disconnects	DEH-41534
FAQ	DEQ-171
Application Guide	DET-753
Guideform Spec	DET-754
Spare/Renewal Parts Guide	DET-755

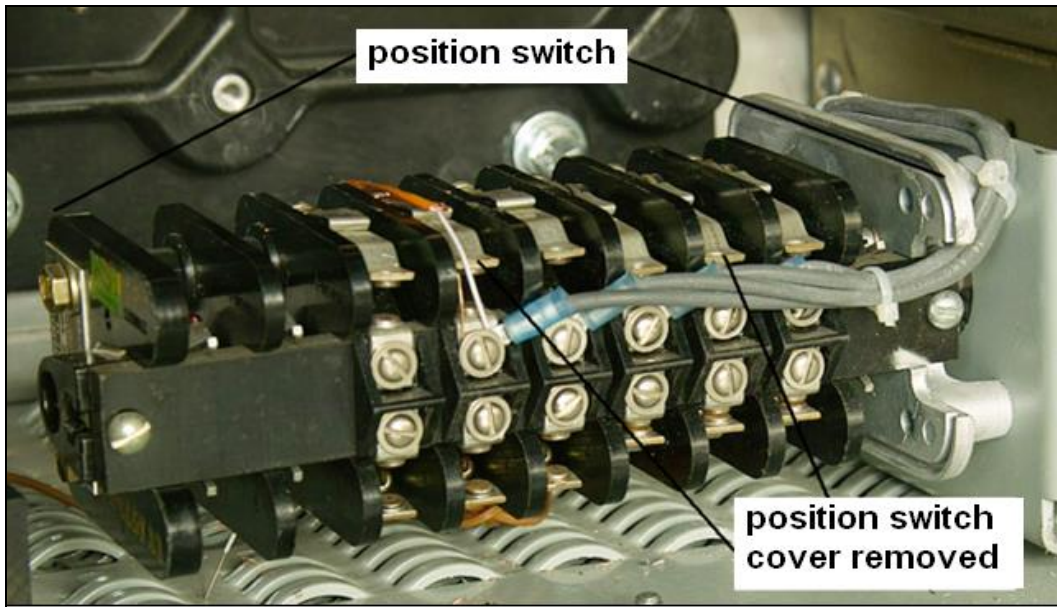
## Estimated Time to Complete Tasks

It takes about 15 minutes to install or replace the assembly.

## General Description

For the retrofill, the following information is for either installing or replacing the mechanism *for* the position switch (not the position switch itself) on the retrofill circuit breaker; the position switch assembly is already mounted in the compartment; if not, it can be ordered as an option. The mechanical subassembly is a simple ancillary lever-and-tension device that pushes against the position switch arm when the retrofill breaker is racked in completely. This device, mounted on the cassette using simple hardware, is called the *actuator* or *actuator bracket*. Its purpose is to make a strong contact with the position switch when the racked-in breaker provides mechanical pressure against the arm. The mechanical force on the lever and tension mechanism then activates the position switch. The position switch, when activated, determines that the racked-in circuit breaker is connected. Figure 1 is an example of an installed position switch. It is activated mechanically when the breaker is racked in.

Figure 1. Position Switch, an Example



The mechanical subassembly comes with mounting hardware, lever, and bracket. Depending on the switchgear, this simple device is mounted in different locations.



- Turn off all power to switchgear. Tagout and lockout main source, up-stream or main breaker.
- Failure to comply with these instructions will result in death or serious injury from severe burns caused by arc flashing that has exceedingly high temperatures.
- Always wear personal protection equipment according to OSHA standards and appropriate to the severity of potential burns.

- Ensure only qualified personnel install, operate, service, and maintain all electrical equipment.

Note:

- It is strongly advised that the LVS (low voltage switchgear) be completely de-energized before you assemble and mount the position switch actuator.
- The compartment position switch assembly is not part of the retrofit kit. If the customer desires to install or replace a position switch assembly in the compartment, the customer can order it separately. Refer to Table 1.

## Ordering Info

Table 1. Retrofill Portion—Position Switch Assemblies Ordering Information		
AK50	10106296G1	Position Switch Actuation Assembly - AK50 / AKT50
AK25	10106269G1	Position Switch Actuation Assembly - AK25
AKD6	10106480G1	Position Switch Actuation Assembly - AKD6 (Later models No Sep. Order Req'd)
AKD8	Not Applicable	No separate order required.
AKD10	Not Applicable	No separate order required.

## Compartment Switch Options

Available as an option for mounting within the base of the cassette/substructure or compartment, the position switch provides six single-pole changeover contacts for local or remote electrical indication of the circuit breaker status: CONNECTED, TEST, and DISCONNECTED. The DISCONNECTED position is indicated only when the minimum isolating distances between contacts on both the main (primary disconnects) and auxiliary (secondary disconnects) have been achieved. This option is in addition to the mechanical indicators, which are fitted as standard components. When installed, the switch is IP2X-protected and includes wiring to a terminal block on the left side of the cassette. Table 2 displays the available normally-open and normally-closed switches. The ratings for position switches are shown in Table 3.

Table 2. Position Switches		Table 3. Position Switch Ratings (Common NO/NC Contact Configuration)		
Switch Configuration	Catalog #	Ratings		
One NO/NC switch per position	GCPS1R	AC	120 Vac	6 A
			250 Vac	6 A
Set of two NO/NC switches per position	GCPS2R	DC	125 Vac	0.5 A
			250 Vac	0.25 A

## AKD-5—AK25 Position Switch Actuator

### Description

The position-switch actuator assembly for the AK25 should be mounted on the bottom plate of the cassette assembly of the AK25 retrofill. The actual actuator assembly consists of two plates, one each on the top and bottom of the baseplate. The top plate of the actuator interfaces with the breaker when it is racked in and its motion is transferred to the bottom plate, which interfaces with the position switch lever on the legacy compartment.

Completing the racking in of the EntelliGuard breaker into the cassette corresponds to the end-of-stroke of the position switch system in the compartment for AK25 in AKD-5 LVS. Figure 2 shows the exploded view of the AK25 retrofill position-switch actuator (actually a bracket assembly); Figure 3 displays the assembly from the bottom.

Figure 2. AKD-5—AK25 Retrofill Breaker, Actuator for Position Switch Assembly (Exploded View)

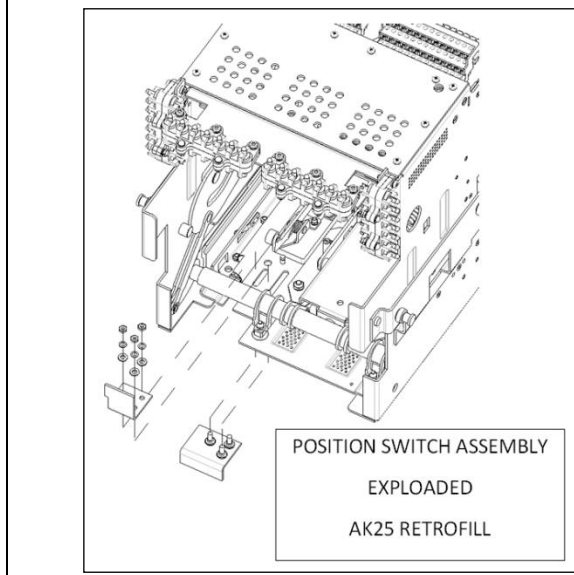
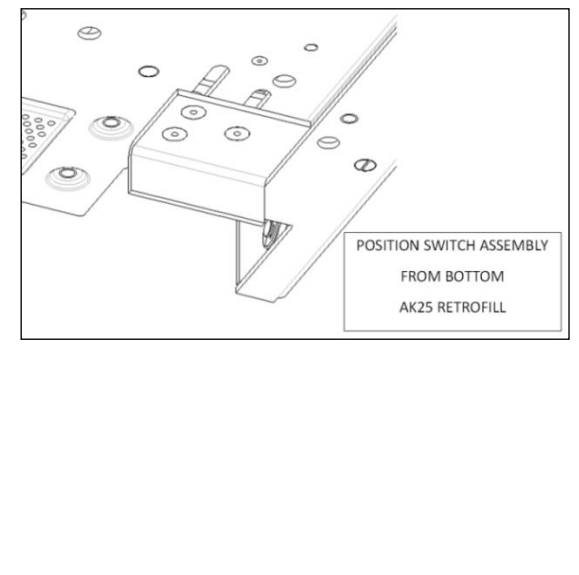


Figure 3. AKD-5—AK25 Retrofill Breaker, Actuator for Position Switch Assembly (Bottom View)



## AK25 Cassette

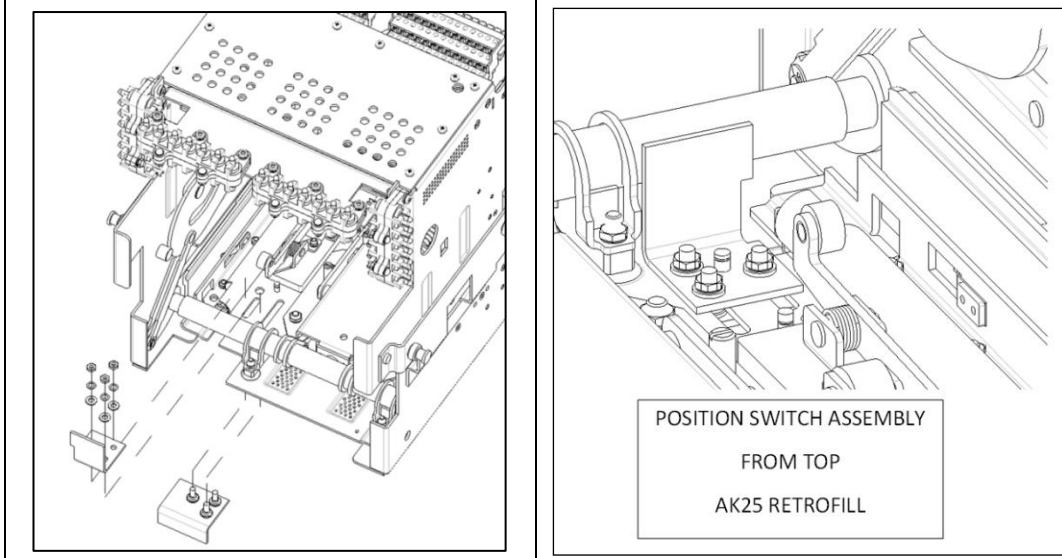
### Note:

While racking the EntelliGuard ACB breaker into the cassette, while actually racking in the breaker, the position indicator window begins to read “connected”. This position indicator means that the retrofit system has activated the existing position switch in the LVS.

Installing the position switch actuator needs to be done before the cassette is racked into the compartment. Steps for installing the position switch actuator are as follows:

1. Place the retrofit EntelliGuard ACB cassette assembly for AK25 on an elevated surface, such as a table, to mount the position switch actuator assembly on to the base plate. Sufficient space should be available at the bottom of the cassette and the mounting table to provide easy access for inserting the 3-pin bracket from the bottom.
2. Unpack the position switch actuator components and mount them as shown in the exploded view in Figure 4.

Figure 4. AKD-5—AK25 Retrofill Breaker, Actuator for Position Switch Assembly (Top View)



3. Insert the 3-pin bracket from the bottom of the base of the cassette assembly, such that the two pins are within the longer slot and the single pin goes inside the smaller slot of the plate.
4. Place the L-bracket from the top of the cassette assembly, such that the pins from the bottom 3-pin plate get inserted into the top plate.
5. Secure the connection by fastening the nuts and washers provided in the actuator kit.
6. Mount the extension springs between the groove of the pin on this actuator assembly and the fixed pin provided on the cassette base plate.
7. Check that the position switch actuator on the cassette is now installed and ready to function as the breaker is being racked in the compartment.
8. Mount the cassette assembly on the rails of the AK25 cabinet in the AKD-5 and rack the cassette into the compartment of the AKD-5 LVS.

## AKD-5—AK50 Position Switch Actuator

### Description

The position switch actuator assembly for the AK50 should be mounted on the bottom right side of the cassette assembly of the AK50 retrofill. The actuator assembly consists of a linkage system that interfaces with the racking shaft assembly at one end and the position switch actuator arm at the other. Completing the racking in of the EntelliGuard breaker in the cassette corresponds to the end-of-stroke of the position switch system in the compartment for AK50 in AKD-5 LVS.

Figure 5, below, shows the AK50 position switch actuator assembly in an exploded view. The position switch actuator for the AK50 is a field-fit type of assembly and is assembled on the retrofill cassette before inserting the cassette into the compartment of the AKD-5.

It needs to be ensured that the cassette is in the “disconnected” state. This can be verified by checking the racking position status in the window located at the right side window, located on the frame of the AK50 retrofill cassette, placed at the front. The position-switch actuator kit for the AKD5-AK50 retrofits needs to be installed on the bottom rear side of the right side sheet of the AK50 retrofit cassette.

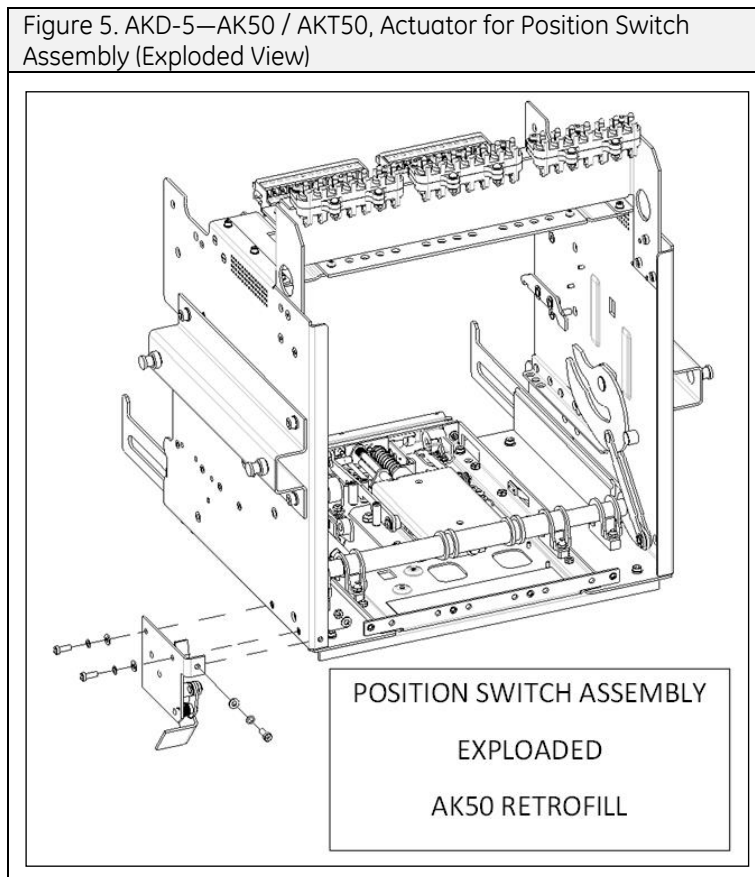
This installation can be done by placing the cassette on a work table. The cassette should be placed such that there is enough overhang of the side where there's room to insert the position switch actuator components from underneath. Alternately, the installation can also be achieved by placing the cassette assembly on the retrofit AK50, that is, on the telescopic rails of the AKD5 compartment that is being retrofit.

## Installation

1. Once the access for installing the position switch actuator is achieved, slide the assembly up from the bottom of the cassette. When inserted, the plate is placed on the outside of the cassette side sheet and the movable flaps are on the inside.
2. Line up the holes on the cassette side sheet with the holes on the actuator assembly.
3. Fasten the three M6-bolts and 6-mm washers, provided with the actuator assembly, to the three holes on the cassette side sheet. Two holes are placed on the side and one hole on back of the cassette assembly.
4. Check that the position switch actuator on the cassette is now installed and ready for use as the breaker is being racked into the compartment.
5. Mount the cassette assembly on the rails of the AK50 cabinet in the AKD-5 and rack the cassette into the compartment of the AKD-5 LVS.

### Note:

While racking the EntelliGuard ACB breaker into the cassette, as you rack in the breaker, the position indicator window reads "connected". This position indicator means that the retrofit system has activated the existing position switch in the LVS.





## AKD-6—Position Switch Actuator

### Description

Position switch actuator bracket can be installed on all versions of Retrofill EntelliGuard ACB for AKD6 LVS. Steps for installing are below:

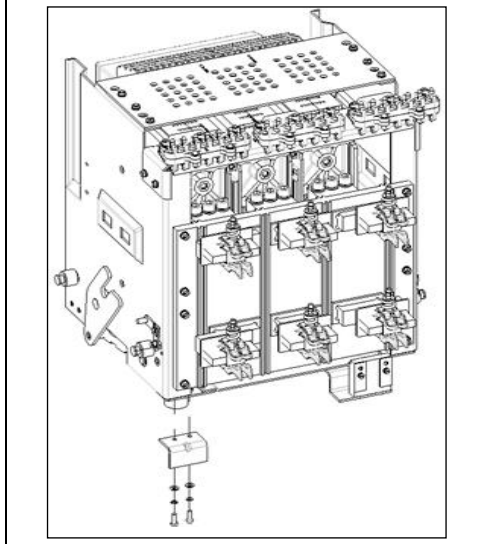
Retrofills use the legacy position switch already mounted in the cubicle. If a new position switch has to be installed, refer to legacy position switch installation manual.

### Installation

1. Unpack the position switch bracket. Each bracket is provided with a pair of M6X16mm Allen-type bolts and washers.
2. Place the bracket on the bottom right side of the AKD6 base. 2 locating holes are provided for mounting of the position switch bracket.
3. Fasten the 2 bolts to the locating holes after placing the washers so securely mount the bracket
4. The bracket is ready for use.

Note: Individual hardware for the position switch actuator cannot be ordered separately. The item numbers given below are for reference only (Table 4). The assembly comes as a unit or a kit. Order the actuator assembly by part number.

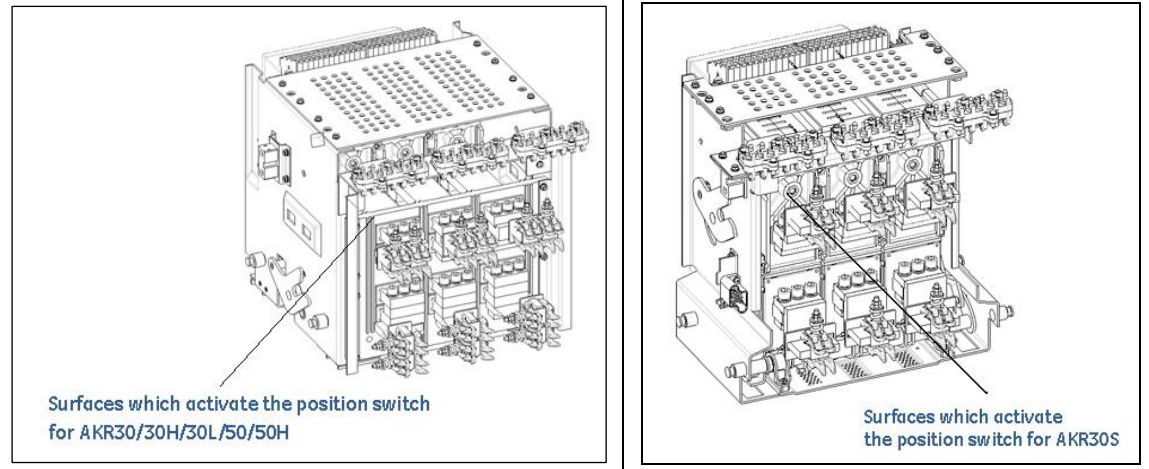
Level	Item or Part Number	Description	Quantity
1	10105289P1	POSITION SWITCH BRKT, AKD6	1
1	10100950P4	WASHER M6	2
1	10100380P1	SERRATED BELLEVILLE WASHER M6	2
1	10100545P1	CAP HEAD SCREW M6X16	2



## AKD-8—Position Switch Actuator

Position switch actuator comes pre-installed on all versions of Retrofill EntelliGuard ACB. Therefore, no installation is required (Figure 6). Retrofills use the legacy position switch already mounted in the cubicle. If a new position switch has to be installed, refer to legacy position switch installation manual.

Figure 6. AKD-8/10—Actuator for Position Switch Assembly (Exploded Views)



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Notes

These instructions do not cover all details or variations in equipment nor do they provide for every possible contingency that may be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise that are not covered sufficiently for the purchaser's purposes, the matter should be referred to the ABB Inc.

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