

Finger Cluster Replacement Parts

Primary Disconnects for EntelliGuard* Retrofill
Circuit Breakers

The primary disconnects are flexible connections between the breaker and line and load terminals and between the equipment line and load terminals.

Table of Contents

Related Publications.....2

Estimated Time to Complete Tasks1

Description.....2

 Assembly and Components2

 Remove.....3

 Replace.....3

 Mechanical Views.....5

 Ordering Information.....7

Notes8

Related Publications

Publication	Publication Number
Brochure	DEA-532
Snapshot	DEE-543
Installation Manual AKD10	DEH-41550
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
Guide form Spec	DET-754
Spare/Renewal Parts Guide	DET-755

Estimated Time to Complete Tasks

It takes about 20 minutes to install or replace the assembly.



WARNING

WARNING: Improper Installation, Operation, and Maintenance

- Ensure only qualified personnel install, operate, service, and maintain all electrical equipment.
- Do not adjust or install the cluster fingers when the breaker is mounted on the compartment rails or partly inserted into the compartment.
- **Ensure only qualified personnel install, operate, service, and maintain all electrical equipment.**
- It should be ensured that the breaker has been extracted from the compartment and placed on a level table/floor before any replacement or re-installation is conducted.
- **Failure to comply with these instructions could result in death or serious injury.**

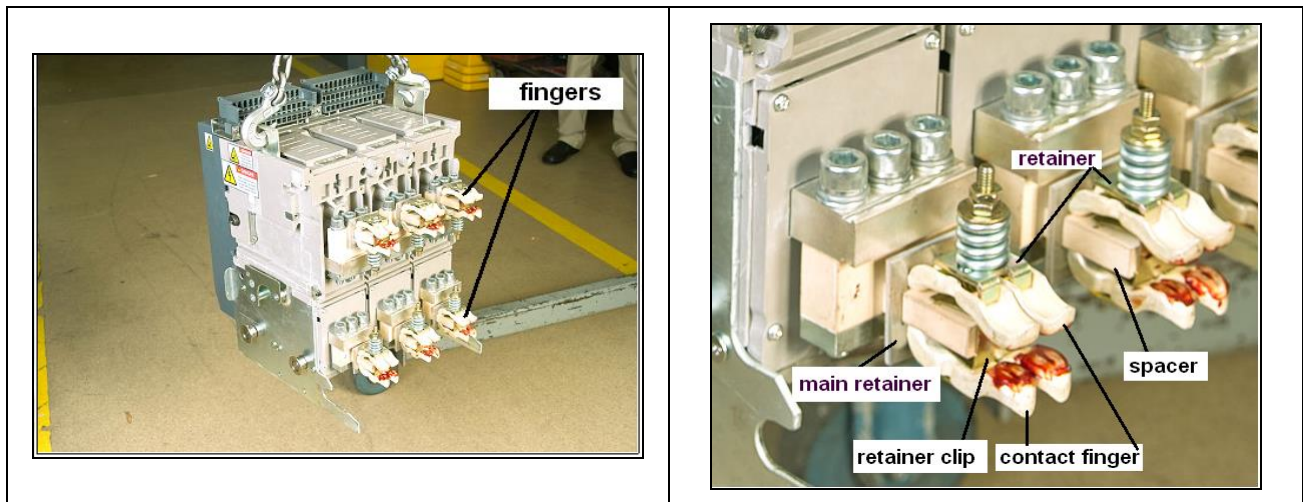
Description

The finger cluster assemblies are spring-loaded, flexible contacts that provide connection between the breaker line and load terminals, and between the equipment line and load terminals. All finger cluster assemblies are factory-installed and are assembled on EntelliGuard R Retrofill circuit breakers. Use this instruction sheet if damaged fingers need to be replaced. It takes about 30 minutes to dismantle and reinstall a new set of finger cluster assemblies on each breaker.

[Figure 1](#) shows finger clusters or primary disconnects on a retrofill circuit breaker. [Figure 2](#) details the finger-cluster assembly.

Figure 1. Circuit Breaker Removed, Featuring Primary Disconnects "Fingers" (Contacts)

Figure 2. Circuit Breaker, Fingers (Some Details)



Assembly and Components

The finger cluster assemblies are factory-adjusted with a gage to apply a 95 +/-10-lb force to a 1/2-inch thick copper bar for up to 1600A frame sizes and a 3/4-inch thick copper bar for the 2000A frame size, inserted between the upper and lower fingers. Set this force range, in the field, by tightening the nuts to set the spring dimension shown in [Figure 3](#). Note that this dimension (.766 to .797) is measured between the top of the retainer and the underside of the washer. Also note that no bar is inserted between the fingers when setting this dimension. Figure 4 calls out cluster components.

Figure 3. Adjustment

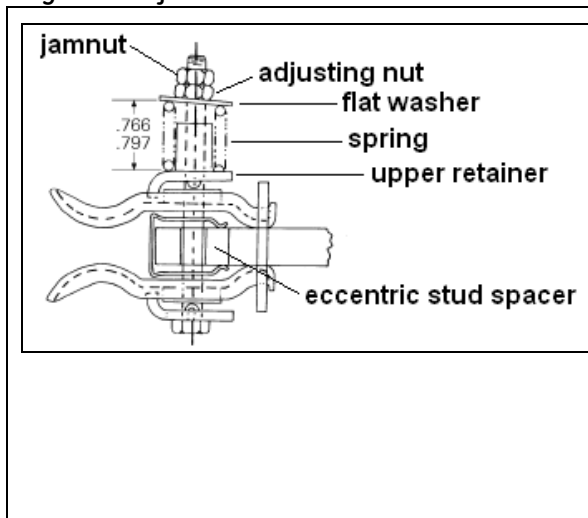
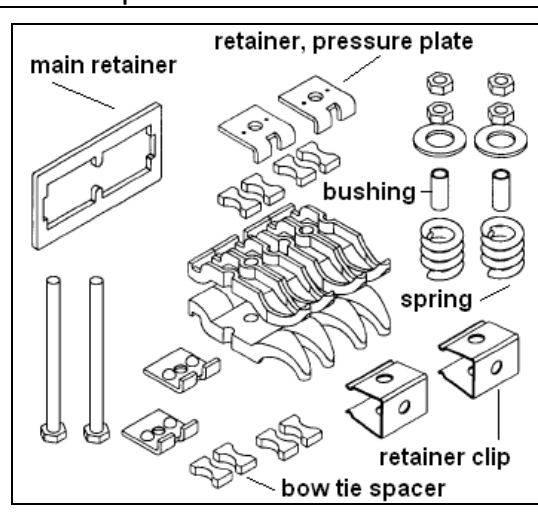


Figure 4. Components



Remove

1. Using proper safety procedures and wearing required Personal Protective Equipment (PPE), remove breaker from compartment, and place it on a solid work surface in a well-lit location.
2. To uninstall the primary disconnects, remove the two nuts from one of the long bolts holding the primary disconnect assembly together.
3. Carefully slide out the bolt while removing the flat washer, spring, bushing, upper retainer, bow-tie spacers, lower retainer, and fingers from the bottom of the assembly.
4. Do the same for the other assembly bolt and components.
5. Slide off the retainer clips.
6. Take off the main retainer from the stud.

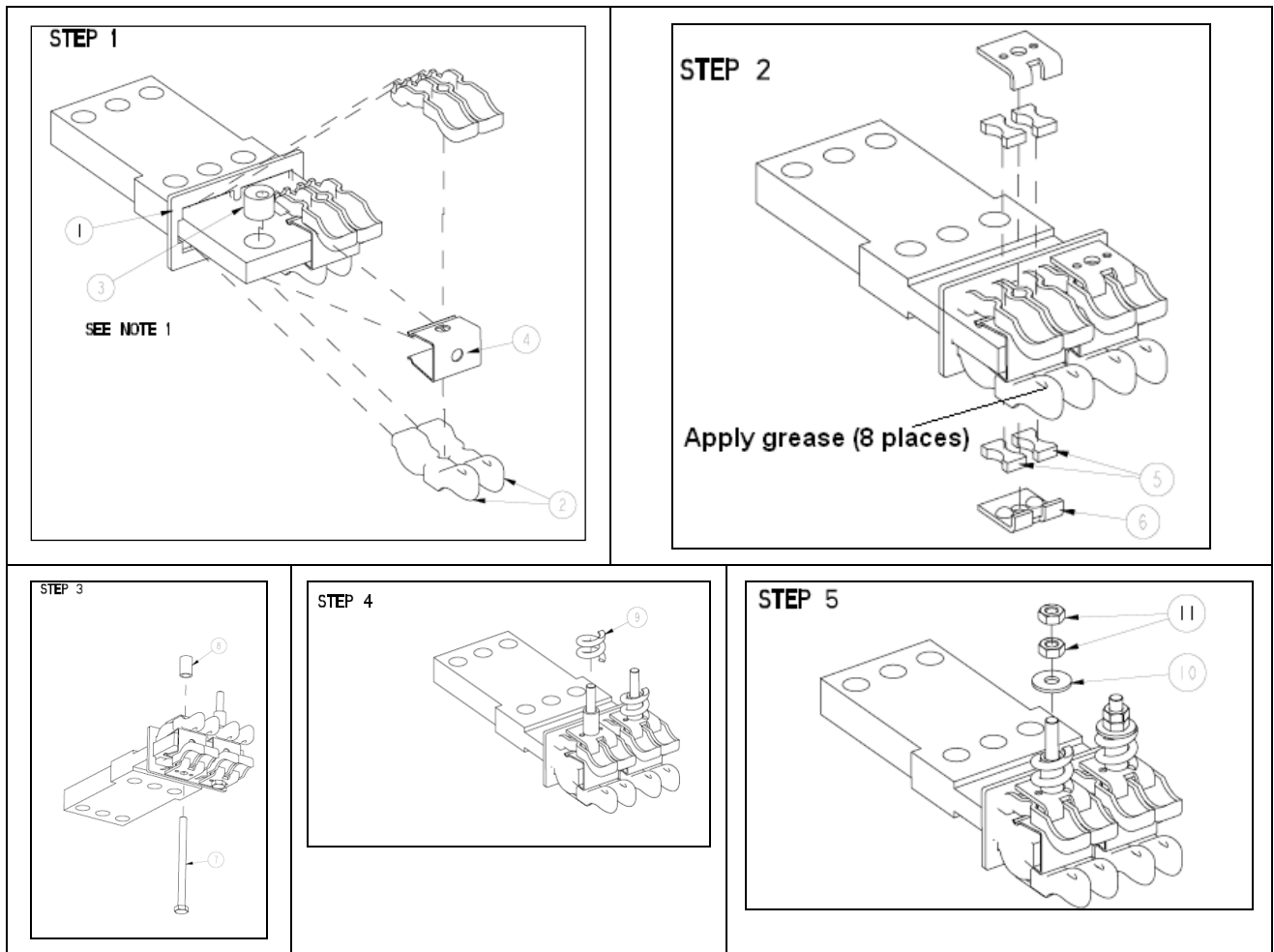
Replace

1. Slide the main retainer over the stud.
2. Install eccentric spacer and position spring clips on the stud.
3. Set a pair of bow-tie spacers into a pair of fingers, place a pressure plate retainer over the spacers to hold them in position, and then turn the subassembly over. Hook them into the main retainer.
4. Slide a long bolt through the hole in the retainer, between the finger, and then through the clip and eccentric stud spacer.
5. Hold the bottom finger subassembly in place.
6. Place two fingers around the bolt from the top, hooking the fingers into the main retainer. Then place a bow-tie spacer in each finger and hold them in position with a pressure plate retainer.
7. Place a spring, bushing, and flat washer over the bolt, then secure with the two nuts.
8. Do Steps 1 through 7 for each set of fingers.
9. Adjust the nut to get a spacing of 0.766–0.797 inch between the top of the upper retainer and the bottom of the flat washer.

10. Tighten the jam nut to lock in the adjustment.
11. Clean finger assemblies, if necessary, with a clean, lint-free rag and isopropyl alcohol or acetone.
12. Be sure to apply a thin film of Mobilgrease 28 (D50HD38) to the contact areas which slide onto the switchgear stabs (See [Figure 5](#), Step 2). This product is available in a 1-oz tube, Part #193A1751P1.

Figure 5 summarizes the steps for working with the primary contacts.

Figure 5. Steps in Exploded Views



Mechanical Views

Figure 6 provides further details.

Figure 6. Fingers or Clusters, Mechanical View, and Notes

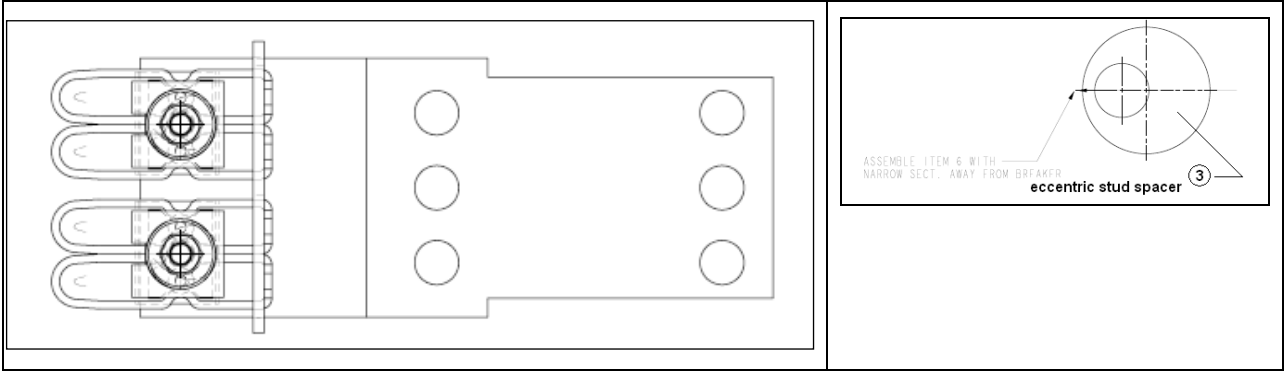


Figure 6. Fingers or Clusters, Mechanical View, and Notes (continued)

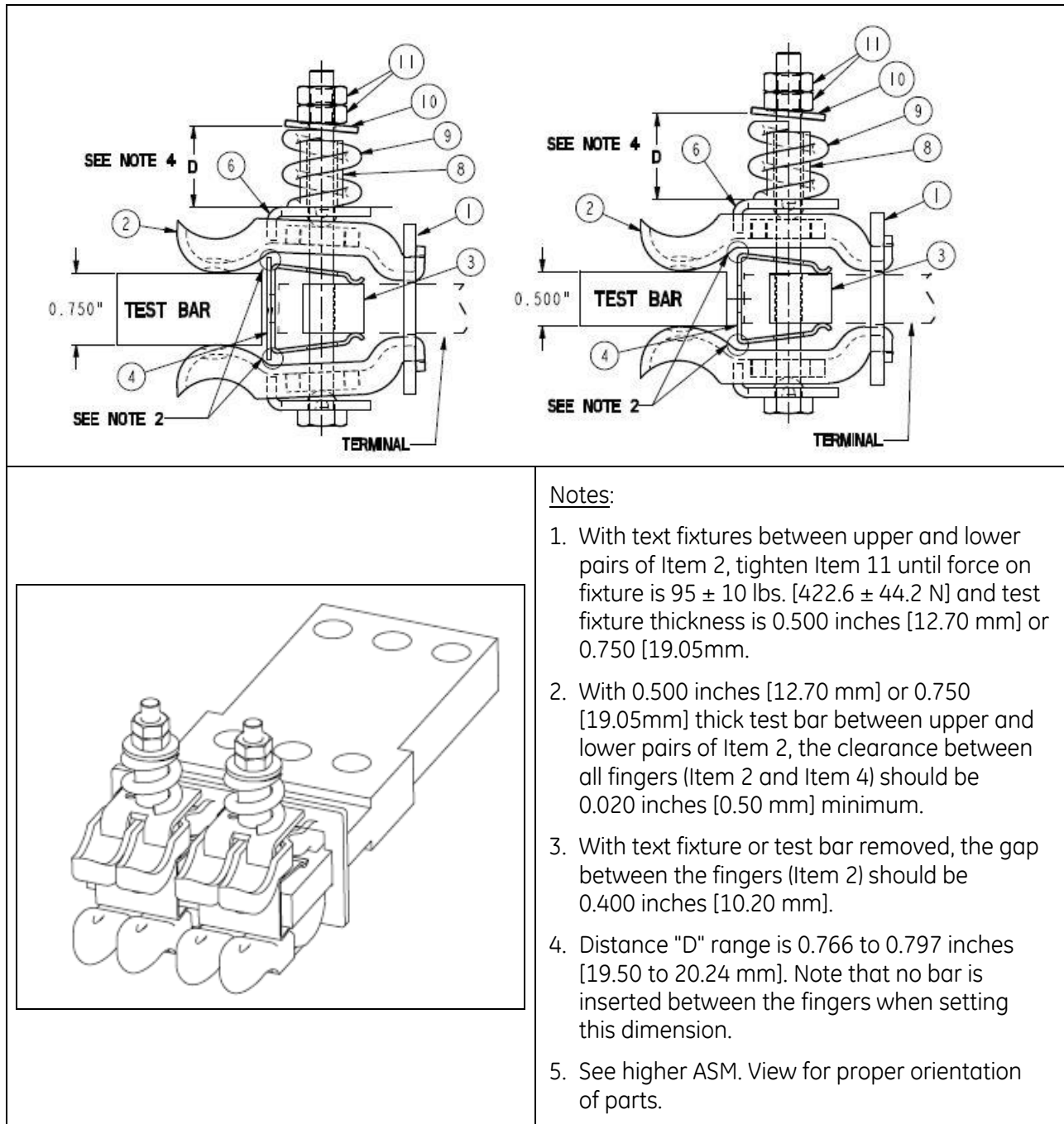


Figure 6. Fingers or Clusters, Mechanical View, and Notes (continued)

PART NUMBER	DESCRIPTION	ITEM NO	AK25	AK-50	AKT-50-2000A	AKR30S	AKR30H-AKD6	AKR50H-AKD6	AKR30H-AKD8	AKR50H-AKD8
			10102784G1	10102784G2	192A9668G17	10105967G1	10105291G1	192A9668G1	10105291G1	192A9668G1
192A9884P1	RETAINING RING	1	1	-	-	1	-	-	-	-
192A9667P1	RETAINING RING	1	-	1	1	-	-	1	-	1
10105968P1	RETAINING RING	1	-	-	-	-	1	-	1	-
192A9669P1	CONTACT FINGER (LONG/ORIGINAL)	2	-	-	-	4	4	8	4	8
10102785P1	CONTACT FINGER (SHORT)	2	4	8	8	-	-	-	-	-
192A9670P1	SPACER	3	1	2	2	1	1	2	1	2
192A9671P1	RETAINER	4	1	2	-	1	1	2	1	2
193A1746G1	RETAINER	4	-	-	2	-	-	-	-	-
192A9538P1	SPACER	5	4	8	8	4	4	8	4	8
192A9548P1	RETAINER	6	2	4	-	2	2	4	2	4
193A1745G1	RETAINER	6	-	-	4	-	-	-	-	-
N22P21056B6	BOLT, STEEL HEX 1/4-20X2-1/4	7	1	2	2	1	1	2	1	2
192A6774P47	SPACER, PRIMARY FINGERS	8	1	2	2	1	1	2	1	2
192A6990P166	SPRING	9	1	2	2	1	1	2	1	2
N402P41B6	WASHER, STL PLAIN GE	10	1	2	2	1	1	2	1	2
N210P21B6	HEX NUT	11	2	4	4	2	2	4	2	4
	FINGER FORCE		65±5 lbs	95±10 lbs	95±10 lbs	95±10 lbs	95±10 lbs	95±10 lbs	95±10 lbs	95±10 lbs
	BUS STAB TIP THICKNESS		0.500"	0.500"	0.750"	0.500"	0.500"	0.500"	0.500"	0.500"

Ordering Information

To order finger cluster for a particular breaker, refer to the cluster part numbers when ordering.

Switchgear	Retrofill Finger Cluster Quantity	Cluster Part Numbers
AK25	4 x 6 = 24 per CB	10102784G1
AK/AKS 50	8 x 6 = 48 per CB	10102784G2
AK/AKT 50	8 x 6 = 48 per CB	192A9668G17
AKD6-AKR30/30H	4 x 6 = 24 per CB	10105291G1
AKD6-AKR50/50H	8 x 6 = 48 per CB	192A9668G1
AKD6-AKR50/50H/T-50	8 x 6 = 48 per CB	192A9668G1
AKD8-AKR30/30H	4 x 6 = 24 per CB	10105291G1
AKD8-AKR50/50H	8 x 6 = 48 per CB	192A9668G1
AKD8-AKR30L	8 x 6 = 48 per CB (65kA)	192A9668G1
AKD8-AKR30S	4 x 6 = 24 per CB	10105967G1
AKD8-AKT50H	8 x 6 = 48 per CB	192A9668G1
AKD10-WPS/H-08	4 x 6 = 24 per CB	192A9668G1
AKD10-WPS/H-16	8 x 6 = 48 per CB	192A9668G1
AKD10-WPS/H-20	8 x 6 = 48 per CB	192A9668G1
All SKU		10107842P1
	All apply to the retrofill side.	

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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