
GUIDELINE

Electrification Business

K-Line Arc Chutes

Inspection and Replacement



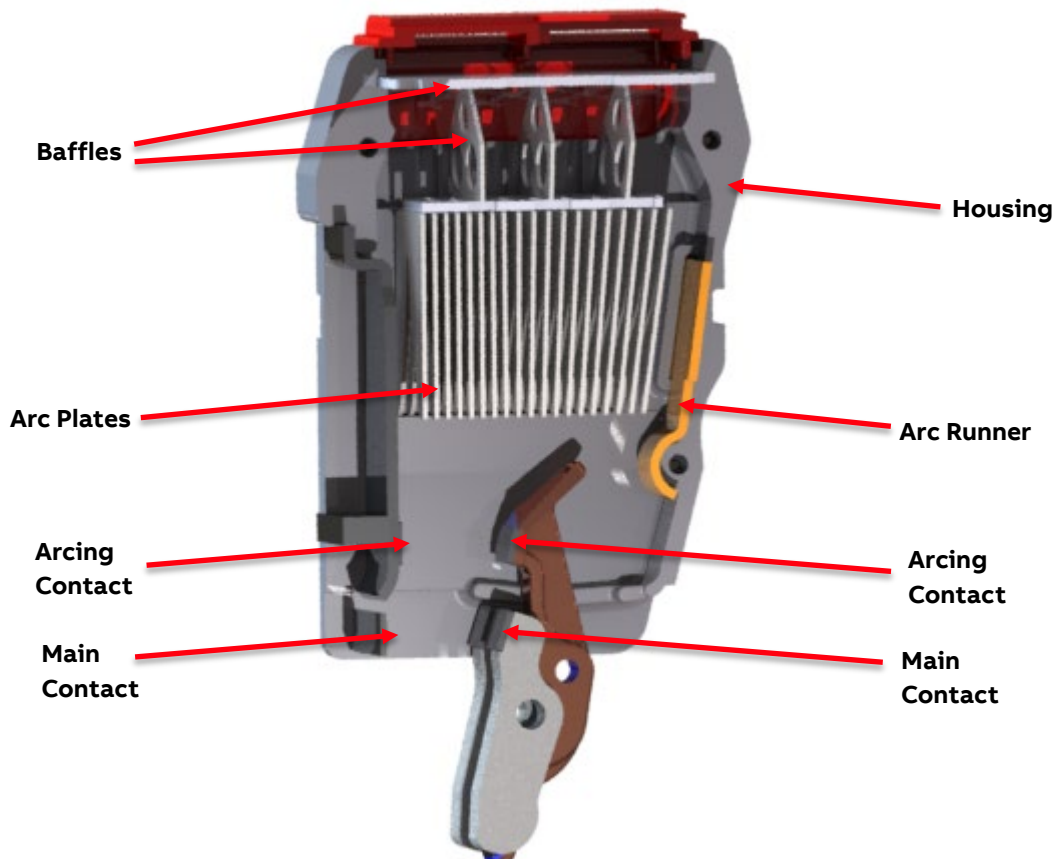
About Arc Chutes

Arc chutes are key components of circuit breakers. Proper care, maintenance, and replacement of the arc chutes are essential to safe operation. The inspection chart and information on the pages that follow are intended to assist in this.

When an air circuit breaker opens the main contacts separate before the arcing contacts. The arcing contacts therefore carry most of the arc generated from the breaking of the load current. The location and geometry of the arcing contact is designed to cause the arc to propagate up into the arcing bundle.

The arc bundle is made up of the arc runner and a series of nickel-plated steel arcing plates separated by an air gap. The top of the arc plates is spaced slightly wider apart than the bottom area where the arc enters the arc bundle. The increase in the air gap between the arc plates and to the arc runner causes an increase in the length of the arc as it moves up the arc bundle and the intensity of the arc is diminished. The increase in the length of the arc makes the continuation of the arc unsustainable at the voltage level present in the arc chute. The arc is extinguished as it moves through the arc bundle.

For this reason, it is important to ensure the arc chutes are in overall good condition. Take special care to verify the arc runner is clean and in condition to function as intended. There should be no blockages between the arcing plates, and they should be in the proper orientation.



Arc Chute Versions

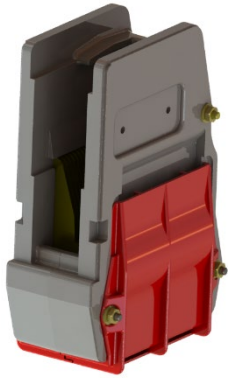


Characteristic	Portland Cement	Kleemite	MB4000
<i>Material</i>	Portland cement impregnated with Asbestos fibers	Kleemite, Melamine molded	Polyester thermoset molding
<i>Impact Strength</i>	0.37 ft-lbs/ in	0.31 ft-lbs/ in	7.0 to 7.5 ft-lbs/ in
<i>Flexural Strength</i>	5000 psi	12,900 psi (estimated)	13,000 to 15,000 psi
<i>Tensile Strength</i>	1,550 psi	4,905 psi	5,000 to 8,000 psi
<i>Dielectric Strength</i>	80 VPM	310 to 332 VPM	390 + VPM

Note:

The MB4000 is a longer lasting, more durable option as it is at least 3 times stronger than the original Portland Cement arc chute. The MB4000 is ABB's current offering for replacement arc chutes.

Arc Chute History



2014 to Present

MB4000

Polyester Thermoset Molding
(Stronger and more robust material)



1987

Hemite

Portland Cement Impregnated
with Wollastonite



1990

Kleemite

Melamine Molded

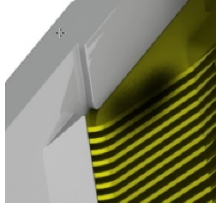
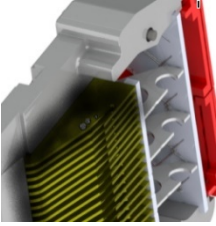
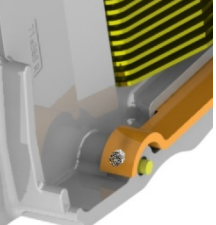
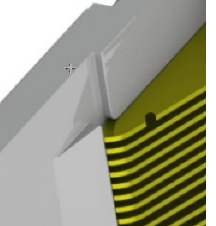



1957

Portland Cement

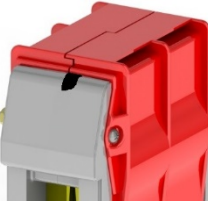
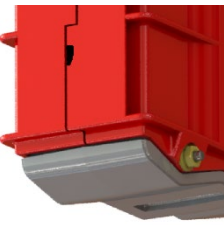


Impregnated with Asbestos
Fibers

Arc Chute Inspection Chart

Finding	Possible Cause	Action	
	Arc chamber minor soot or discoloration	Normal observation from arc dissipation	Clean arc chute with denatured alcohol and clean cloth. Replacement not required
	Arc chamber excessive carbon residue/ slag deposits	High current over long duration	Replacement needed
	Arc runner or plate very minor erosion	Normal observation from arc dissipation	Replacement not required
	Arc runner or plate significant erosion or burn thru holes	High current over long duration	Replacement needed
	Molding surface cracks, abrasions or indentations not penetrating through	Age, handling	Replacement not required

Note: In cases where it is difficult to determine the severity of damage, contact ABB @ 843-413-4700 .

Arc Chute Inspection Chart

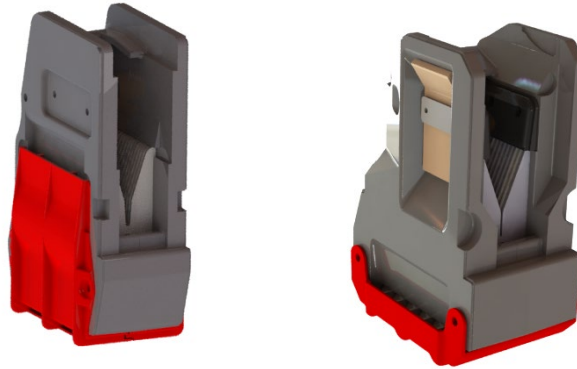
Finding	Possible Cause	Action	
	Surface defects greater than 1/4" square or that may have flashover potential	Age, handling	Replacement needed
	Gap between outer shell halves greater than 1/16"	Age, reassembly, handling	Replacement needed
	Molding defects or broken features effecting mounting of arc plates or arc chute assembly	Age, handling	Replacement needed
	Hardware that is broken, galled, loose or missing	Age, reassembly, handling	Replacement needed

Note: In cases where it is difficult to determine the severity of damage, contact ABB @ 843-413-4700 .

CAUTION:

The Arc Chutes are secured with a screw and a poly-glass retainer as mounted between the poles. Do not overtighten the screws to avoid breaking the retainer or chutes during re-installation. Tighten screws to a maximum of: 35 lb-in (Frames 225, 600 & 800), and 75 lb-in (Frames 1600 & 2000).

Arc Chute Replacements



Arc Chute Assy	706775T13	706775T12
K225	3	-
K600 – K800	3	-
K1600	-	3
K2000	-	3
K600S/ K800S(M)	3	-
K1600S(M)	-	3
K2000S(M)	-	3
K-Don 600/800	3	-
K-Don 1600	-	3
K-Don 600S/ 800S(M)	3	-
K-Don 1600S(M)	-	3



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Additional information

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