IB 6.1.1.7-3B

Installation/Maintenance Instructions
Low-Voltage Power Circuit Breakers

Tom: 814 432 7922

Type LK and LKE 800 thru 4200 Amperes
Type LKD 800 and 1600 Amperes 600 Volts
Model - 2A (Type MPS® Trip Device)

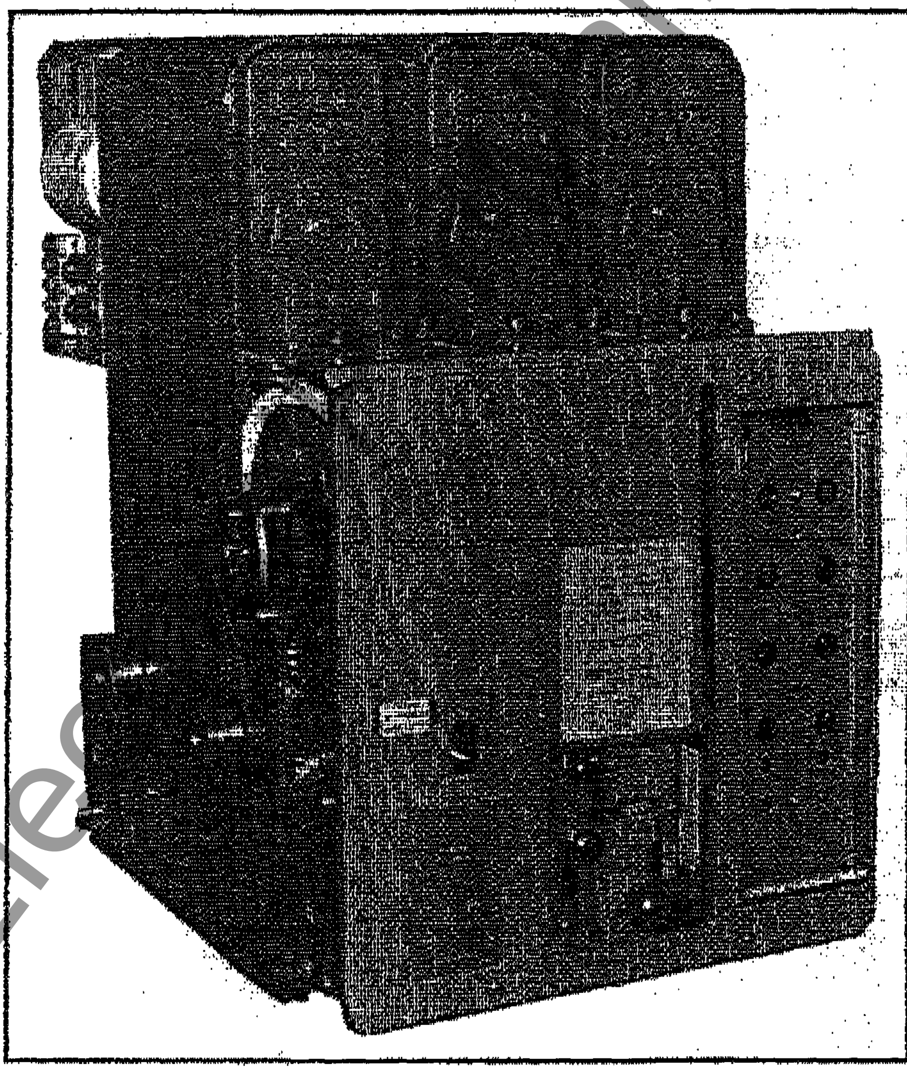

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ABB Power Distribution, Inc.
Circuit Breaker Division

ABB
ASEA BROWN BOVERI

Type "LK" Circuit Breaker Teardown Procedure

Note:
This procedure is written for an LK-8 Circuit Breaker. With very few exceptions, the operating mechanism for every LK Circuit Breaker is identical. Refer to the specific drawings for differences in the contact structure and base molding.

Removal of Miscellaneous Components

Note:
To facilitate circuit breaker teardown, the sequence of removal/disassembly of various components or assemblies may be performed at the discretion of the performer.

- Remove arc chutes.
- Remove the three guard plates surrounding the arcing and main stationary contacts which sit just behind the arc chutes.
- Remove front cover.
- Remove top cover plate. There are nuts on the bottom of the two cover plate screws which secure the P-clips for the wiring harness.
- Remove solid state trip unit.
- Rack the circuit breaker to the "test" position.
- Capture the closing springs as follows:
    1. Manually charge the closing springs.
    2. Place the special sleeves over the spring guide rods and secure with 1/2" nuts. Leave approximately 1/4" play between the bottom of the closing spring guides and the capture sleeves.
    3. Discharge the closing springs (manually shut the breaker).
    4. Trip the circuit breaker to release the tension on the opening springs.

[Drawing No. L-13087]

- Unhook the lower ends of both opening springs (6).
- Remove the bracket for the electric close and trip push buttons and charging motor switch.
- Remove the side plates (8, 18).
- Remove the MOC Actuator (7).
- Remove the Anti-Bounce Latch (20) from the left side plate.
- Unhook and remove the upper ends of the opening springs (6) from the opening spring pins (1, 5). Remove the two flatwashers (3) and the bushing (4) from the left side opening spring (1).
- Remove the Front Frame Channel (12).

[Drawing No. L-13088]

- Remove the Escutcheon Assembly (6) and Front Frame Angle (3).

Removal of Wiring Assembly and Electrical Components

The only terminal connections lifted during this step will be current transformer leads.

[Various Drawings]

Remove the following components in this order:

1. Disconnect the movable arm of the auxiliary switch from the left side of the toggle assembly. Remove the three mounting screws for the auxiliary switch.
2. Remove the Motor Cutoff Switch. If necessary, manually charge the operating mechanism to rotate the motor cutoff switch cam to facilitate removal of the motor cutoff switch. Once the motor cutoff switch is removed, fully charge the operating mechanism, then close and trip the breaker. With the opening springs removed, to open the breaker, hold up the manual trip lever, then manually pull the contacts open.
3. Remove the Magnetic Latch. Disconnect the mag latch knife connections from the wiring bundle.
4. Remove the Overcurrent Alarm Switch.

[Drawing L-11530 Sheet 1 of 2]

5. The lower lead from the closing coil will need to be cut and knife lugs installed on either side of the cut. Cut the lower wire approximately midway between the "Y" Relay and the rear guide for the slow close bracket. On most newer LK Type Circuit Breakers, this is done at the factory. Remove the Basic Close Device (23).
6. Remove the Shunt Trip (17).
7. Flip the circuit breaker upside down so that the breaker is resting on the upper molding.
8. Disconnect the terminal connections from the Current Transformers.
9. Remove the Secondary Disconnect Assembly (with molding fingers connected to bracket). The bolts securing the side support plate will need to be loosened to facilitate removal of the secondary disconnect assembly alignment pins in the side support plate.

[Drawing L-11530 Sheet 2 of 2]

10. Remove the "Y" Relay Assembly (20) and Interference Clip (19) by removing two 1/4 - 20 screws (18).
11. Disconnect the Charging Motor leads at the knife connection lugs.
12. The entire wiring harness can now be removed from the breaker.
13. Return the circuit breaker to it's upright position.

Removal of Operating Mechanism from Circuit Breaker Frame.

[Drawing No. L-13088]

- Remove the Arc Chute Support (5).

[Drawing L-13086]

- Remove the pin (item 1) from the toggle linkage.
- Remove the two pins (item 6) securing the closing springs to the jackshaft.
- From the rear of the breaker, remove the two hex head screws (item 7, Detail A)

securing the mechanism to the lower molding.
- The operating mechanism can now be separated from the frame.

Disassembly of the Upper Molding Assembly

[Drawing L-11542]

- Remove the three Contact Adjustment Screws (item 11) connecting the Push Rods (item 1) to the couplings (item 10) on the Jackshaft (item 13).
- Remove the four screws (16, 17) for the Jackshaft Supports (14), then remove the Jackshaft (item 13) and Shield (item 8).
- Remove Rubber Boots (not shown) and couplings (10) from the Jackshaft Sub-Assembly (13).
- Remove the Push Rods (item 1) from the Movable Contact Assemblies.

[Drawing L-11576]

- Remove the three current transformers (not shown) for the solid state trip unit.
- Remove the three movable contact assemblies (1) and shields (2).
- Remove the upper stationary contact assemblies (1) and shields (2).

[Drawing L-11514]

- Disassemble the movable contact assemblies as follows:
  1. Remove the bridge pivot screw (18), nut (12) and flat washers (13).
  2. Remove the two Lower Lead Supports (11) from the lower lead (6). Note: the lower lead will not be separated.
  3. Remove the two shouldered pins (16), spring washers (14) and bushing (17) from the lower lead.
  4. Remove the Bridge Blade Assembly (15) from the lower lead.

[Drawing L-11575]

- Remove the side supports (15, 17) from the molded housing. Note: there should be two large flatwashers used as shims between the molding and the side support in the front, and one thin shim in the rear.

Disassembly of the Operating Mechanism

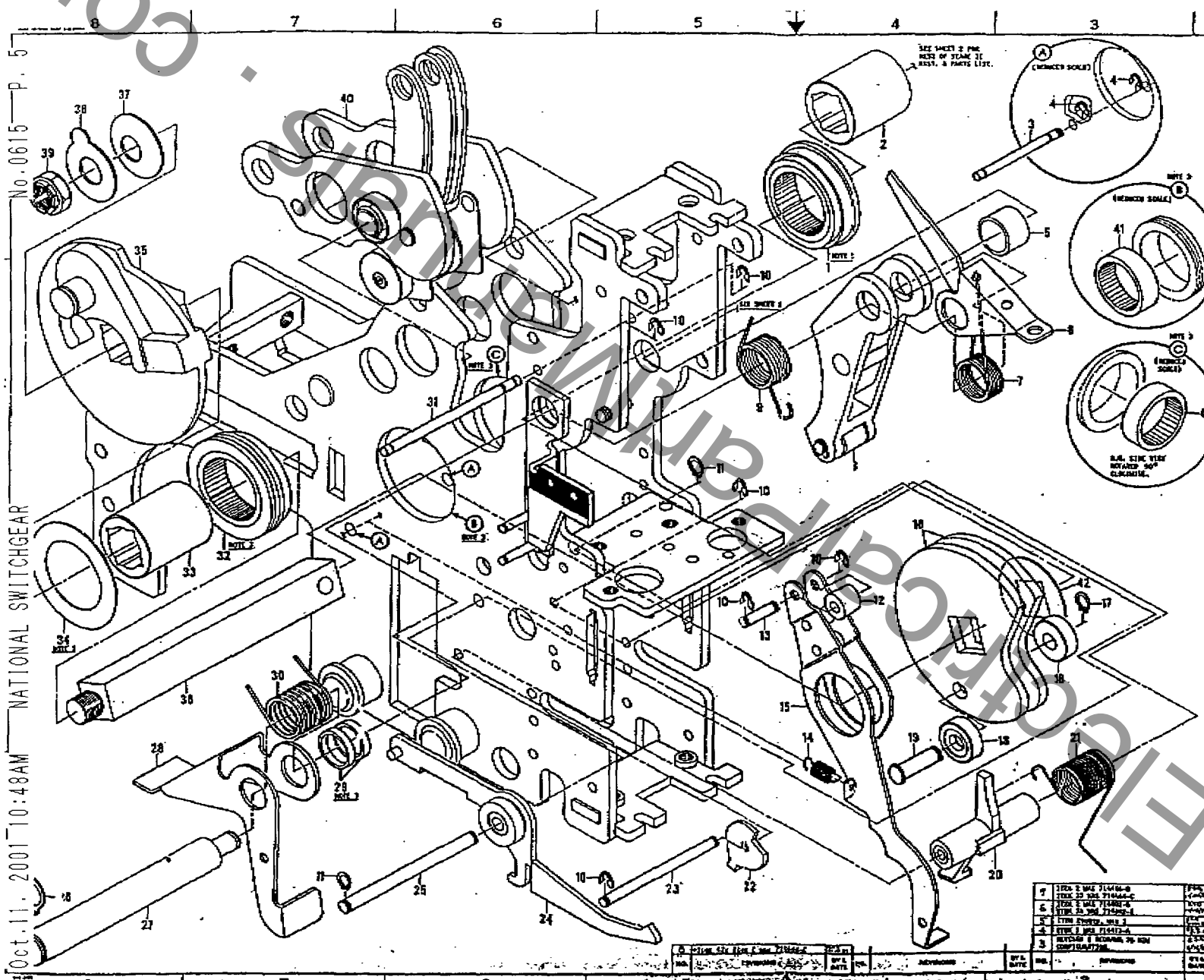
Note:
The following steps may be performed in any order to facilitate disassembly of the operating mechanism.

[Drawing L-11530 Sheet 2 of 2]

- Remove the closing springs, right hand side (26).
- Remove the right side Connecting Rod Assembly (32) by first removing the retainer (24) and thrust race (23).

[Drawing L-11530 Sheet 1 of 2]

- Remove the closing springs, left hand side (31).



PARTS LIST

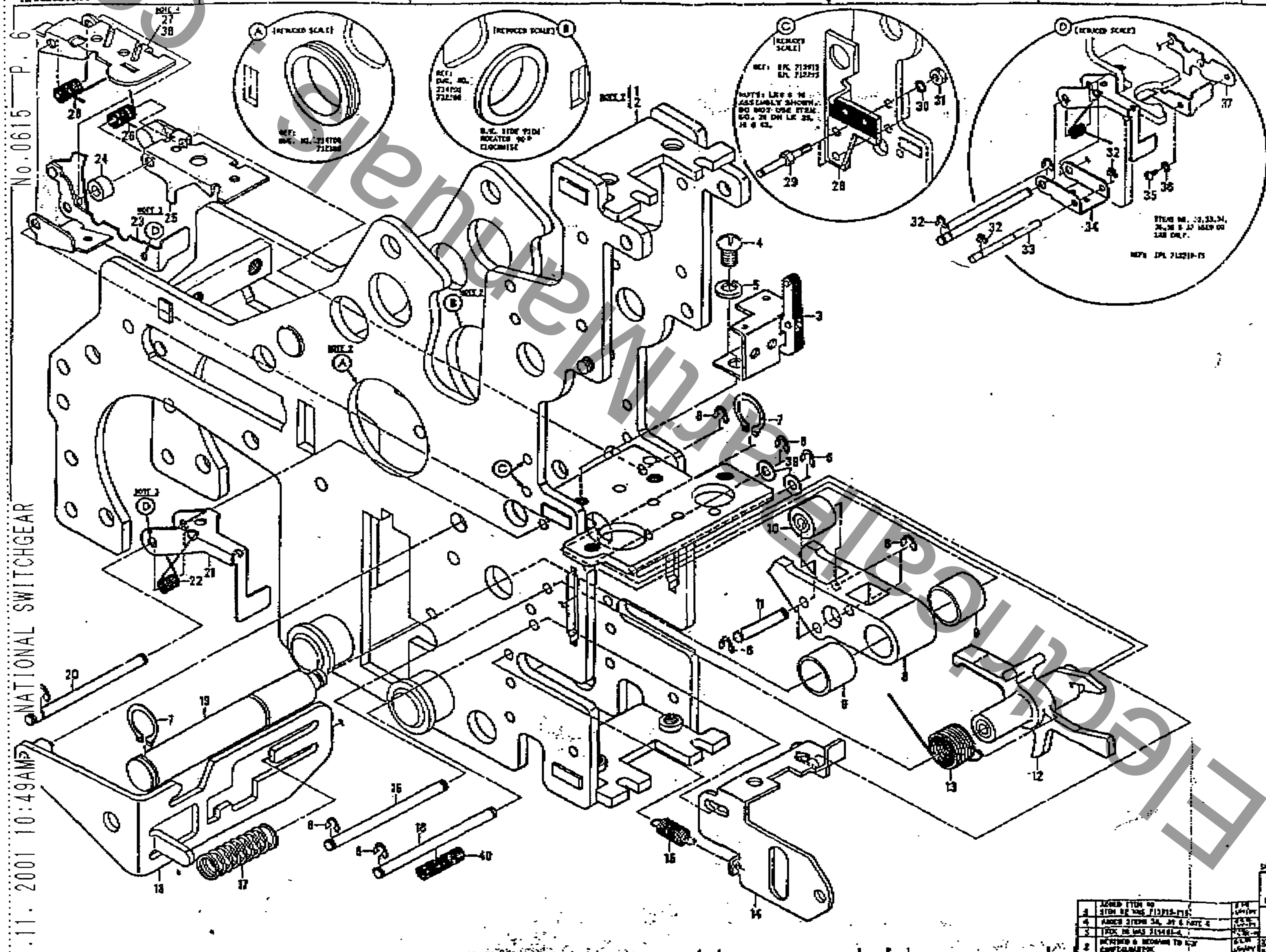
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	713903-17	1	CAMSHAFT BEARING ASSY. (R.H.)
2	714466-L	1	INNER RACE (R.H.)(1.554 LG)
3	650052-A1	1	PIN (.247 X 2.72 LG.)
4	703250-A	2	RETAINER
5	650501-E62	1	BUSHING (.634 X .750 X .53 LG.)
6	712338-A	1	VISUAL ACTUATOR
7	712538-B	1	SPRING, TORSION
8	713913-T18	1	CAM TRACK ASSY.
9	712538-C	1	SPRING, TORSION
10	703156-A	6	RETAINER
11	650440-E	2	RETAINER, INNARC
12	650501-E30	1	BUSHING (.188 X .500 X .905 LG.)
13	650050-C13	1	PIN, PIVOT (.139 X .81 LG.)
14	713520-B	1	SPRING, EXTENSION P/N SUPCD BY 7/93
15	712307-K1	1	INTERLOCK LEVER ASSY.
16	714430-A	2	CAM, CLOSING
17	650440-F	1	RETAINER, TORRIC
18	714794-A	2	ROLLER (CLOSE LATCH)
19	703256-A	1	PIN (CLOSE LATCH ROLLER)
20	713913-T7	1	CLOSE LATCH ASSY.
21	712503-A	1	SPRING, TORSION
22	713329-A	1	TRIP LEVER, WITHDRAWAL
23	650050-C14	1	PIN, PIVOT (.188 X 2.75 LG.)
24	712343-K1	1	POSITION INDICATOR ASSY.
25	714472-A	1	PIN, PIVOT (.247 X 3.125 LG.)
26	650440-K2	1	RETAINER, TORRIC
27	714492-A	1	PIN (5.00 LG.)
28	712322-A	1	MOTOR SWITCH LEVER
29	650501-E34	AR	BUSHING (.634 X .75 X .154 LG.)
30	712615-C	1	SPRING, TORSION
31	712327-A	1	PIN (.184 X 3.25 LG.)
32	713923-16	1	CAMSHAFT BEARING ASSY. (L.H.)
33	714466-A	1	INNER RACE (L.H.) (1.930 LG)
34	650351-B5	AR	WASHER (1.28 X 2.12 X 0.31)
35	714226-K1	1	CRANK ARM ASSY. (L.H.)
36	714229-A	1	RATCHET SHAFT
37	650341-A	1	BELLEVILLE SPRING WASHER (.505 I.D. X 1.252
38	714658-A	1	LOCKPLATE
39	650408-A1	1	LOCKOUT (.500-20)
40	713913-T3	1	TOGGLE & LINK ASSY.
41	851566-A	2	NEEDLE BEARING (1 1/4 X 1 1/2 X 1/2 LG.)
42	714474-A	AR	SPACER (CAM SHAFT)

NOTES:
1. FOR PART NO'S. WITH -L, REFER TO EPL'S FOR VARIOUS PARTS USED.
2. ITEM 34, SHIM AS REQUIRED.
3. LX8 & 15 SHOWN. SEE Ⓑ & Ⓒ FOR LX 25,32,42 FRAME ASSY. ITEMS NO. 1 & 32 INSERTED ON LX8 & 15 ONLY. ITEM NO. 42 INSERTED ON LX 25,32,42 ONLY. ITEM No. 29: USE QTY. OF 1 ONLY ON LX 8 & 15. ON LX 25, 32 & 42 USE QTY. OF 2.

BASIC OPERATING MECHANISM
STAGE II

Brown Boveri Electric, Inc.

L-11528



PARTS LIST

ITEM NO.	PART NO.	QTY	DESCRIPTION
1	712380-X3	1	Frame Assy. (LK8 & 16 Mech.)
2	712688-X4	1	Frame Assy. (LK25, 32 & 42 Mech.)
3	713915-T3	1	Latch Assy.
4	54353-F9	1	Screw, Rd Hd (.250-20 X .38 Lg.)
5	53103-F	1	Lockwasher (.250 I.D.)
6	703156-A	10	Retainer
7	650440-J2	2	Retainer
8	716768-A	1	Prop Latch
9	650301-E73	2	Bushing (.634 X .250 X .594 Lg.)
10	737913-T10	1	Roller Assy. (Prop Latch)
11	650050-C6	2	Pin, Pivot (.187 X 1.09 Lg.)
12	715923-T8	1	Trip Latch Assy.
13	714727-A	1	Spring, Torsion
14	712196-A	1	Padlock Hasp
15	712170-A	1	Spring, Extension
16	650050-C5	2	Pin, Pivot (.187 X 2.70 Lg.)
17	722181-A	1	Spring, Compression
18	722195-X1	1	Lock Plate Assy.
19	712347-A	1	Pin, Pivot (.621 X 4.25 Lg.)(Prop Latch)
20	650052-J	1	Pin, Pivot (.184 X 5.60 Lg.)
21	712354-A	1	Indicator (Spring Charged)
22	712615-1	1	Spring, Torsion
23	713003-X1	1	Auto Trip Indicator Assy.
24	650301-E56	1	Bushing (.20 X .375 X .218 Lg.)
25	714192-X1	1	Tripper Assy. (UV & Shunt Trip)
26	722151-A	2	Spring, Torsion
27	714193-X1	1	Tripper Assy. (Mag. Latch)
28	714636-A	1	Stud Keeper Plate (Mag. Latch)
29	650364-A5	2	Shouldered Stud (#8-32 X 1.50 Lg.)
30	53103-B	2	Lockwasher (#8)
31	54400-L	2	Nut, Hex (#8-32)
32	703156-A	3	Retainer
33	650050-C15	1	Pin, Trip (.153 X 2.00 Lg.)
34	713090-A	1	Brace
35	50337-K	1	Screw, Self Tap (#6-32 X .25 Lg.)
36	53263-C	1	Lockwasher (#6)
37	722127-A	1	Plate (O.F.T. Lockout)
38	714193-X2	1	Tripper Assy. (Mag Latch)
39	50706-A72	AR	Washer, Brass (.196 ID X .385 OD X 1/32)
40	716887-A	1	Bumper,Trip Latch(.156 I.D. X 1.00 Lg. (Vi...

NOTES:

1. For Part No's. with -T refer to EPL's for various parts.
2. LK8 & 16 Frame Assy. shown. See (A) & (B) for LK25, 32 & 42 Frame Assy. configuration difference.
3. Refer to EPL 712219-T5. Used when Open Fuse Trip Device is installed on LK8.
4. Item No. 27 used on LK8 & 16. Item No. 38 used on LK25, 32, 4...

REV.	REVISIONS	BY & DATE
4	ADDED ITEM 40 / ITEM 10 WAS 713915-T15	
4	ADDED ITEMS 38, 39 & NOTE 4	
3	ITEM 10 WAS 713915-T4	
2	REVISED & REDRAWN TO ... CONFIGURATION	

SCALE: 1:1

BASIC OPERATING MECHANISM STAGE I

BBC Brown Boveri Electric, Inc.

L-11527