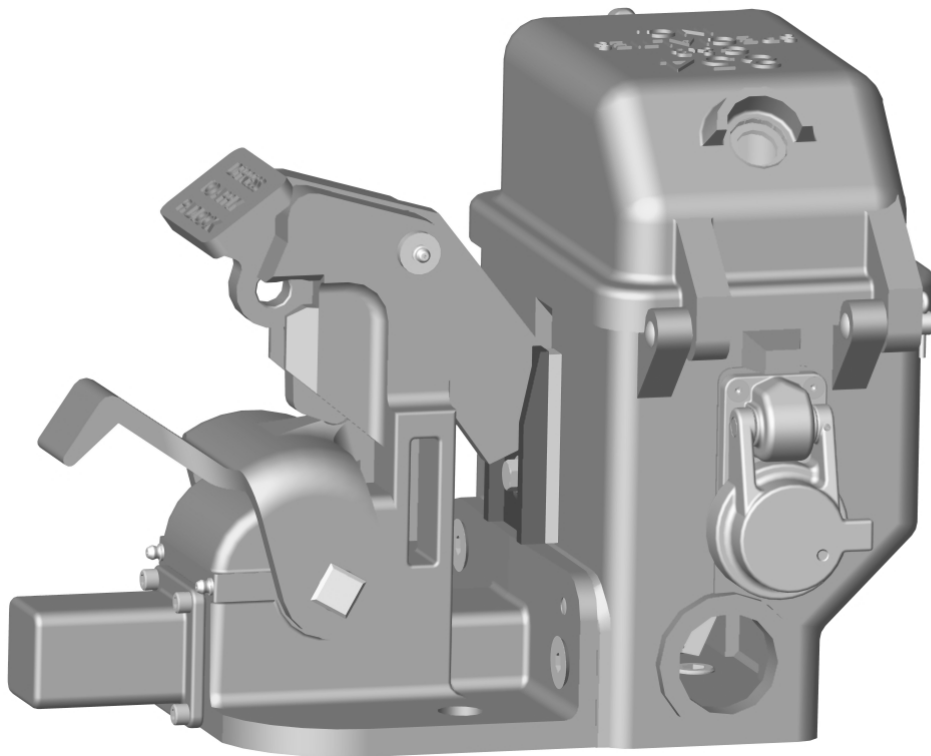




G & B Specialties, Inc.

Model 854 Electric Switch Lock



Installation • Operation • Maintenance

October 2002

Manual 8541

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SECTION 1

INTRODUCTION

SCOPE OF MANUAL

This manual contains information to enable a field maintainer or shop repairman to understand the operation of the Model 854 Electric Switch Lock, know how to test its operation and be able to order spare or replacement parts.

The G&B Model 854 Electric Switch Lock is used to securely lock the hand-throw lever of a hand operated switch machine or a ground-throw switch stand in the normal position, and it may be applied to either a right- or left-hand layout. The lock also interlocks a manually operated switch with signal circuits, so the switch cannot be operated unless traffic conditions permit, or unless the normally sealed emergency release is operated. This pamphlet describes the normal and emergency release operations, internal wiring, maintenance and installation of the lock with a variety of switch stands.

OPERATION - NORMAL RELEASE

Starting with the switch locked in its normal position, the following describes, step by step, the operation of the lock mechanism. The references to the various parts are shown in Figure 1-1.

WARNING!

When hand-operating switch machines, keep head and body clear of the path of the hand-throw lever. Stored mechanical energy, caused by improper adjustment, shifts in rails, and other switch components, or obstructions, can be transferred to the hand-throw lever during hand operation, causing it to move rapidly and forcefully.

Difficulty in hand-operating the switch could indicate a potential hazard. If any of these conditions are observed, check that the switch is adjusted properly as described in this publication.

Preliminary Unlock Position

When the padlock is removed from hole 2 in latch 1, the latch is forced upward by pedal 3, which is operated by spring 4 acting against the shoulder of plunger 6.

Plunger 6, moving forward under spring pressure, rotates cam 7, driving the sloped cam face under the roller on the underside of operating arm 13. Cam 7 continues to rotate in this same direction until the collar on plunger 6 strikes the end of its housing. The roller under arm 13, meanwhile, has moved up the sloped cam face, carrying arm 13 with it, and thereby tilting plate 9 and the fingers of the mechanically operated contacts, 2B, 3F, and

4B, which are attached to it. Thus, the normally closed (back) contacts are opened and the normally open (front) contacts are closed.

Unlock Position

With the padlock removed, the lock is still effective because the armature arm 15 is resting in a locking notch formed by a step on the cam face of operating cam 7 and a cast projection on the lock case. When conditions are such that the control circuit is energized, armature 8 is attracted to the pole faces of coil 12 and raises its attached armature arm 15 out of the locking notch. With operating cam 7 unlocked, it is free to rotate further as pressure is applied to pedal 3. With this additional level of the pedal, latch 1 withdraws completely from the hand-throw lever slot, thus permitting the raising of the hand-throw lever .

When armature 8 is attracted to the pole faces, it moves the fingers of the electrically operated contacts 1F and 5B which are attached to it. Thus, the normally closed (back) contacts are opened and the normally open (front) contacts are closed.

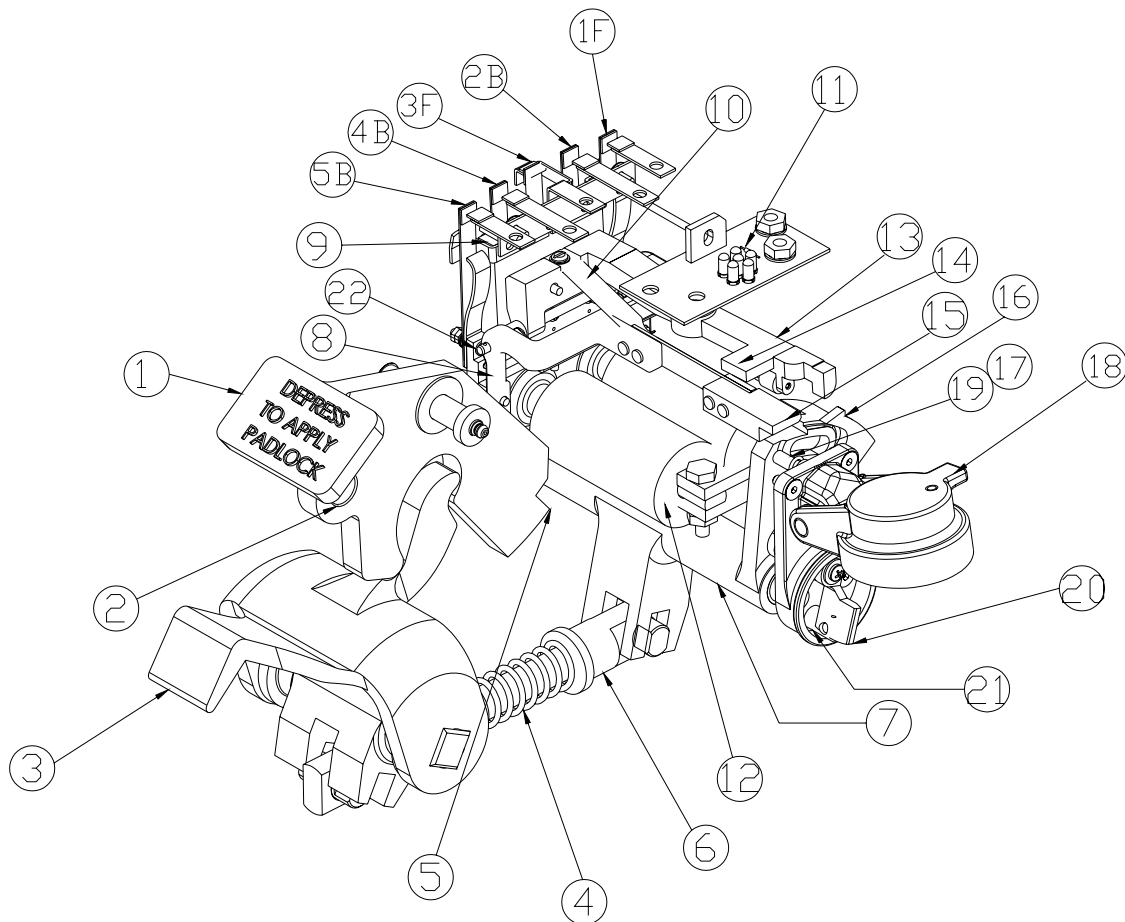


Figure 1-1. Operating Parts of Model 854 Switch Lock Shown Locked in Normal Position

Switch Reverse

Lighting of the green LED 11 indicates that the hand-throw lever may be lifted and moved to its reverse position. Stepping on pedal 3 now withdraws latch 1 and permits the hand-throw lever to be thrown to reverse position. Before the trainman can lock up the mechanism, it is necessary to restore the switch to its normal position. Otherwise, the latch rod will be in the way of projection 5 on the latch, and the pedal cannot move to its normally locked position and latch 1 cannot be down.

Relock Position

As the hand-throw lever is returned to its normal position, the latch rod slides clear of projection 5 on latch 1. This allows latch 1 to return to its preliminary unlock position.

Normal Position

Depressing latch 1 moves operating cam 7 back to its normal locked position. Operating bar 13 is forced down by spring pressure as cam 7 moves back. Armature arm 15 is forced down onto cam 7 by projection spur 14 on the operating arm and spring pressure. Thus, all contacts are forcibly returned to their normal positions. Lock coils 12 are de-energized by the forced opening of contact 3F, indication LEDs are de-energized by the forced opening of contact 1F.

Reinsert the padlock into hole 2.

OPERATION— EMERGENCY RELEASE

When the normal control circuit does not respond and the switch must be unlocked and operated for emergency reasons, the emergency release (an optional feature) must be used.

Starting with the switch locked in its normal position, the operation of the lock by the trainman and the resulting action of the mechanism is as follows:

Preliminary Unlock Position

When the padlock is removed from hole 2 in latch 1, the latch is forced upward by pedal 3, which is operated by spring 4 acting against the shoulder of plunger 6.

Plunger 6 moving forward under spring pressure, rotates operating cam 7, driving the sloped cam face under the roller on the underside of operating arm 13. Cam 7 continues to rotate in this same direction until the collar on plunger 6 strikes the end of its housing. The roller under arm 13, meanwhile, has moved up the sloped cam face, carrying arm 13 with it, and thereby tilting plate 9 and the fingers of the mechanically operated contacts, 2B, 3F, and 4B which are attached to it. Thus, the normally closed (back) contacts are opened and the normally open (front) contacts are closed.

Emergency Release Cover Raised

Note that cover 18 cannot be raised until the lock is in the preliminary unlock position; cam 7 must be moved forward to a point where rod 19 can enter slot 17 to allow cover 18 to be raised. Cover 18 will remain open unsupported.

Emergency Release Lever Turned

Removing seal 21 and turning emergency release lever 20 counterclockwise, until its movement is stopped by a flange, attached latch 16 moves under operating and armature arms 13 and 15, lifting armature arm 15 and positioning the contacts just as though the lock coils had been energized by the control circuit.

Hand-Throw Lever Reverse

Depressing pedal 3 moves latch 1 back out of the way. Latch 1 is free to move because armature arm 15 is raised out of the step in cam 7, thus leaving the cam free to rotate as pedal 3 moves plunger 6 forward. As the lever is lifted, the latch rod moves in and holds latch 1 in the unlocked position, preventing the mechanism from being locked up until the switch has been restored to the normal position.

Emergency Release Cover Closed

As emergency release cover 18 is closed, the projecting cam surface on the inside of the cover engages emergency release lever 20, turning it so that attached latch 16 moves out from armature arm 15. Spring 10 forces armature arm 15 down into its normal locked position on operating cam 7. As armature arm 15 assumes its locked position, it causes the electrically operated contacts to assume their normal position.

Latch 16 is furnished with a barb on its upper edge. This barb catches on the side of arm 13, hiding arm 13 and its associated contacts from returning to their normal positions. To restore the lock requires the attention of an authorized person as explained next.

Resetting Emergency Release

This must be done by a person who has a key to the housing padlock. See **WARNING!** on page 1-1

Remove the switch padlock and the mechanism case padlock.

Open mechanism case. Lift operating arm 13 to allow latch 16 to drop fully back to its normal position. When arm 13 is released, it restores to the preliminary unlock position. Now, when the latch is pressed down prior to inserting the padlock, the mechanically operated contacts as well as the electrically operated contacts will be in their normal position.

Open emergency release cover 18 and reseal emergency release lever 20. Close cover 18 and the mechanism case cover, and reinsert the padlocks.

Inserting Latch Padlock

Depress latch 1 to raise pedal 3. Cam 7 will move fully back to its normal position. Insert the padlock in hole 2, thus maintaining the normal locked position.

SECTION 2

INSTALLATION

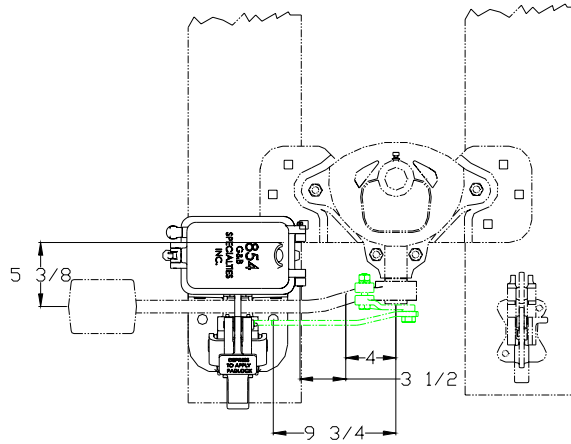
GENERAL

When installing Model 854 locks, refer to the switch layout drawing or railroad standard installations. Instructions for applying the lock to various types of switch stands are given on the following pages.

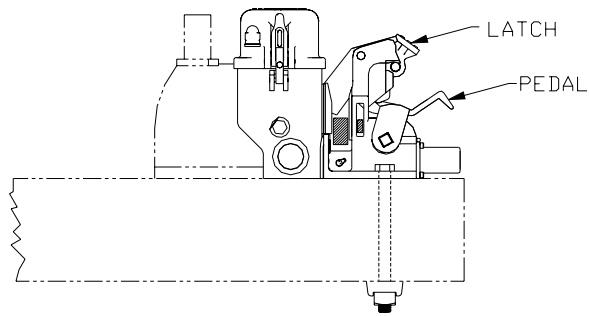
Locks are shipped with all parts to fit the switch stands described in this section. The lever guide is fitted with two 1/8-inch thick shims for 3/4-inch thick hand-throw levers. One of these shims may be removed when a 7/8-inch hand-throw lever is used and both shims may be removed when a 1-inch thick lever is used. There should be no more than 1/8-inch total clearance between the sides of the hand-throw lever and the sides of the pocket in Model 854 lock. See **WARNING!** on page 1-1.

Model 50/51 Switch Stand

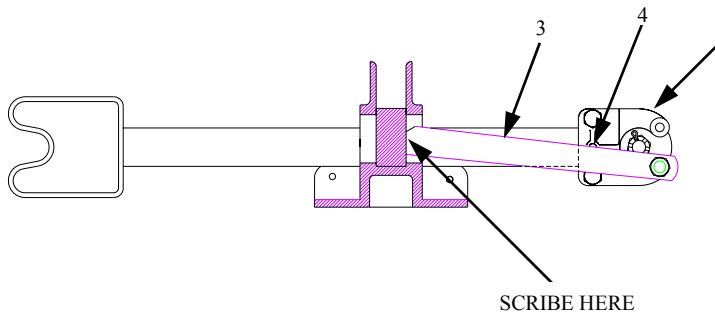
1. Bolt clamp 2 to switch lever, Figures 2-1A and 2-1D.
2. Using a 3/8-inch drill, drill through clamp and lever and install rivet 4, Figure 2-1D.
3. No tie dapping, Figure 2-1B.
4. Install cable entrance adapters and ventilators before bolting lock in place. Secure lock on tie with rods, grip washer, nuts, and lock washers as shown.
5. To assemble latch rod 3, place switch lever in locked-up position, Figure 2-1A. Press pedal down and insert latch rod through rectangular hole in lock stand. Insert stud 6 through pivot hole in latch rod and temporarily secure it to clamp. Depress latch as far as it will go and hold it in this position. Scribe across face of latch rod next to pedal casting, Figure 2-1C. Remove stud and latch rod. Cut off latch rod 1/32-inch short of scribe mark.
6. For adjustable latch rod follow previous procedure, except adjust latch rod in 1/8" increments instead of cutting.
7. In final assembly, tighten stud 6 with a wrench to secure latch rod to clamp. Drill through clamp and stud with a 1/8" drill. Insert pin 5, Figure 2-1D.



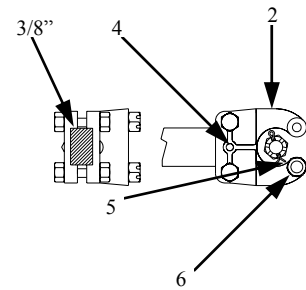
A - LAYOUT OF LOCK ON SWITCH STAND



B - INSTALLATION OF LOCK ON SWITCH STAND



C - LATCH ROD ARRANGEMENT

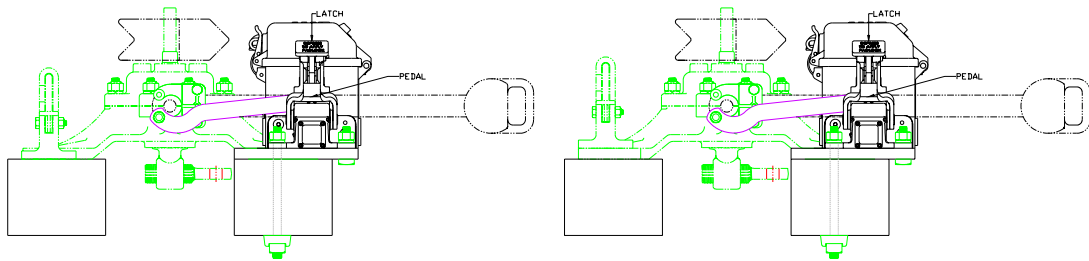


D - PIN THROUGH CLAMP & LEVER

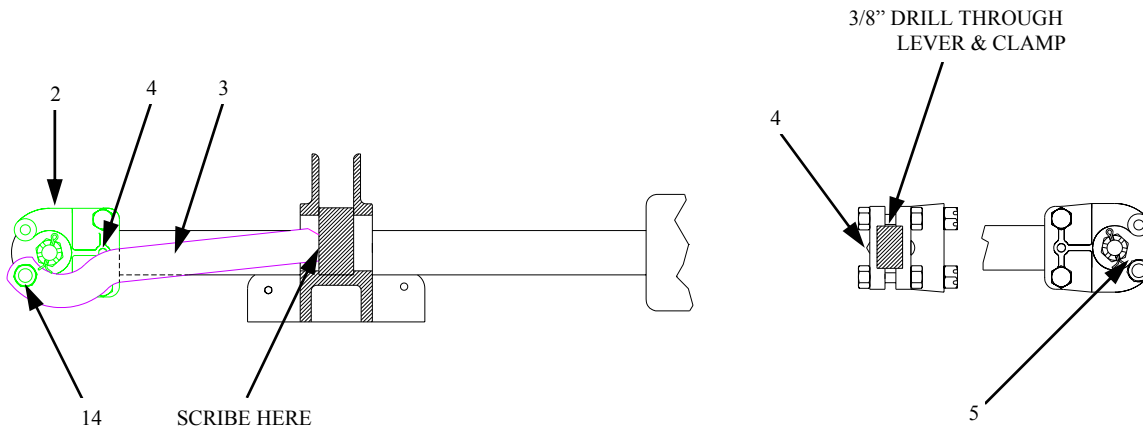
Figure 2-1. Model 854 Lock on Model 51/50 Switch Stand

Meridian (Racor) Switch Stands 36D & 36H

1. Bolt clamp 2 to switch lever, Figure 2-2C.
2. Using a 3/8-inch drill, drill through clamp and lever and install rivet 4, Figure 2-2C.
3. Install cable entrance adapters and ventilators before bolting lock in place. Secure lock on supporting plate 12 and tie with threaded rod, bolt, nuts, and washers to fit switch stand lever, Figure 2-2A.
4. To assemble latch rod 3, place switch lever in locked-up position, Figure 2-2B. Press pedal down and insert latch rod through rectangular hole in lock stand. Insert stud bolt 14 through pivot hole in latch rod and temporarily secure it to clamp. Depress latch as far as it will go and hold it in this position. Scribe across face of latch rod next to pedal casting, Figure 2-2B. Remove stud and latch rod. Cut off latch rod 1/32-inch short of scribe mark.
5. In final assembly, tighten stud 14 with a wrench to secure latch rod to clamp. Drill through clamp and stud with a 1/8" drill. Insert pin 5.



A - INSTALLATION OF LOCK ON SWITCH STAND



B - LATCH ROD ARRANGEMENT

C - PIN THROUGH CLAMP & LEVER

Model 854 Lock on Ramapo Ajax (Racor) 36D and 36H Switch Stand

Figure 2-2. Model 854 Lock on Meridian (Racor) 36D and 36H Switch Stand

SECTION 3

WIRING

GENERAL

To wire the Model 854 lock, Remove the relay assembly from the case by taking out the four screws which hold it in place. Run the wires into the case through the cable entrance adapters, cutting them long enough to leave slack after connecting to the terminals.

Remove the wire guides located on each side of the mechanism; separate the wires so that half of them come up each side of the relay. Strip the insulation and apply connectors. Replace the guides after the wires are connected to the terminals. Replace the relay assembly in the case, making sure that the armature arm is free to operate vertically without rubbing on the stop in the case.

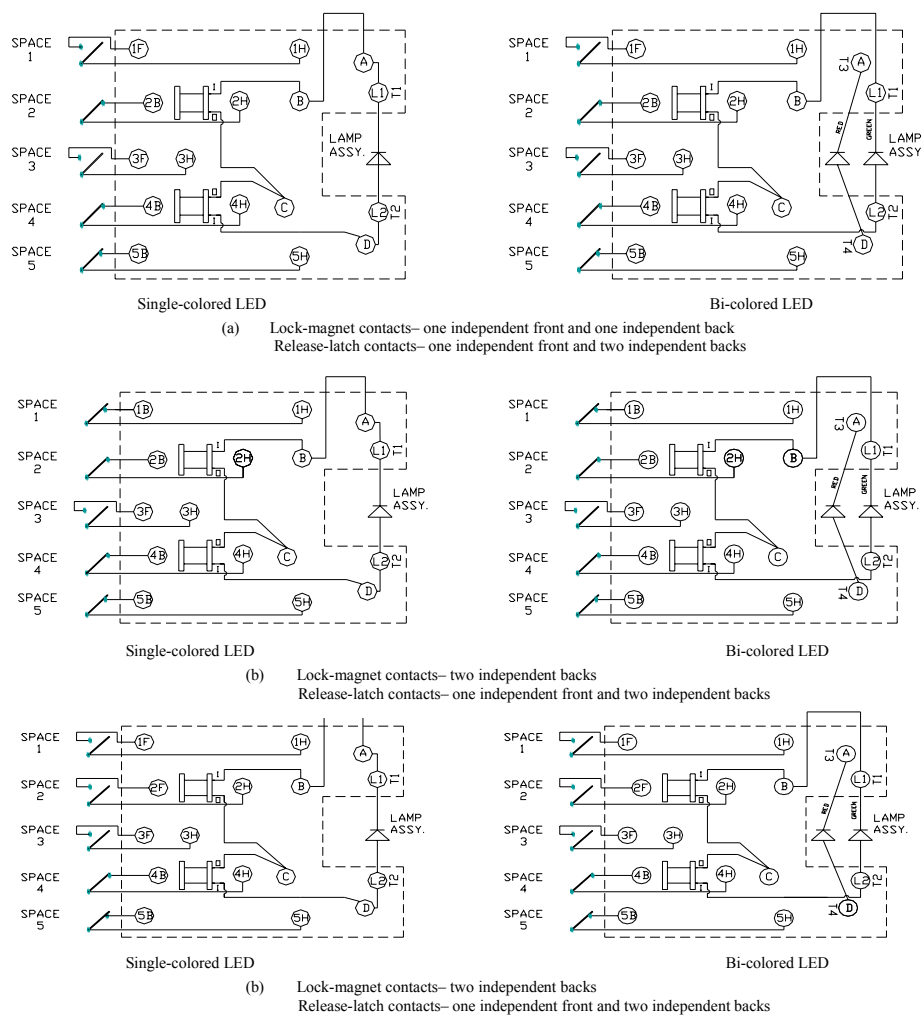
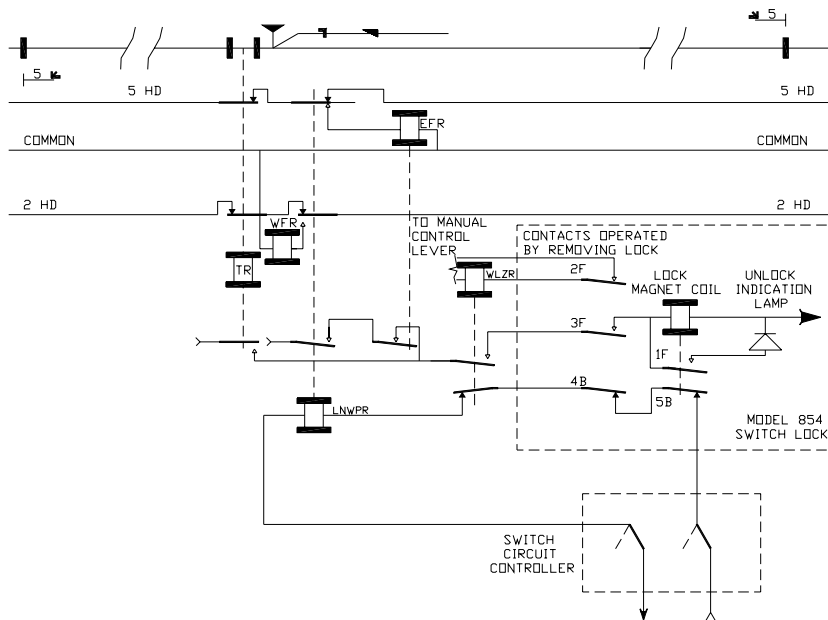
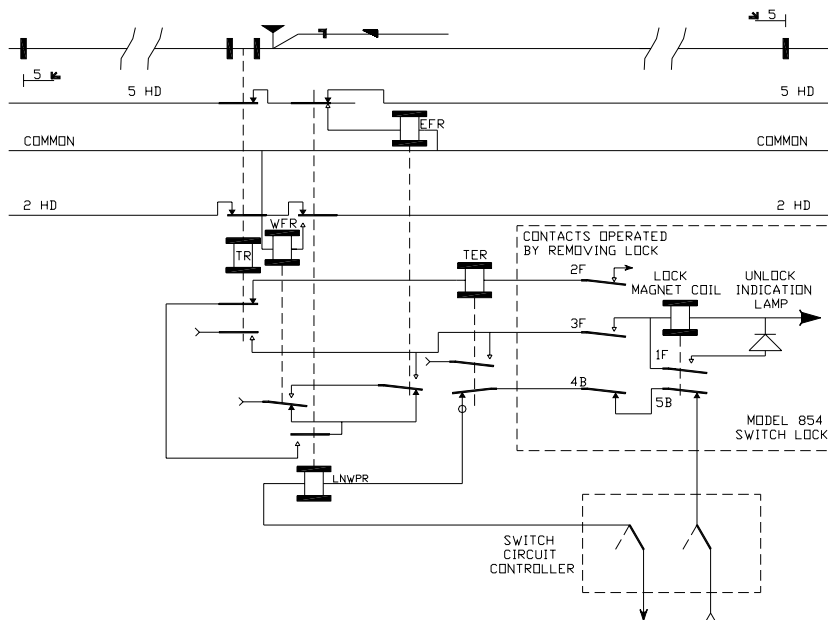


Figure 3-1. Typical Connection Diagrams Showing Binding Designations, Internal Wiring, and Contact Arrangements.



(a) Circuit for manual control.
For connection diagram see Figure 3-1 (c)



(b) Circuit for automatic control.
For connection diagram see Figure 3-1 (c)

Figure 3-2. Typical Application Circuits Showing the Model 854 Switch Lock Applied to Absolute Permissive Block Signaling.

SECTION 4

MAINTENANCE

LUBRICATION

Figure 4-1 shows the latch stand lubrication fittings A, B, C, and D. Lubricate latch stand with an all temperature, lithium-based grease not more than once every three months.

Referring to Figure 1-1, lubricate pin 22 occasionally with a light oil, such as Mobil Aero. Other bearing points are permanently lubricated and require no attention.

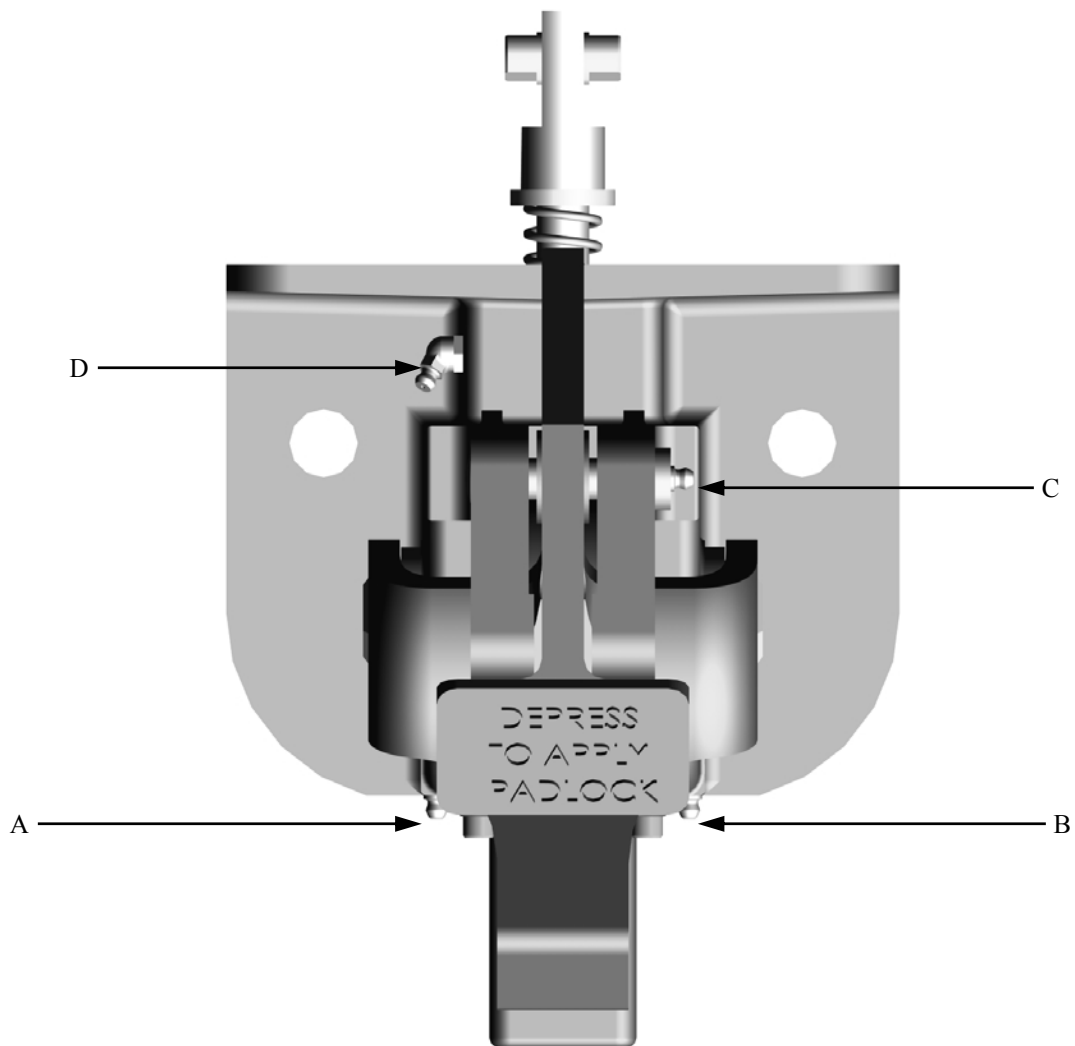


Figure 4-1. Latch Stand Lubrication Fittings

ADJUSTMENTS

The following information will be useful in checking the contact openings and pressures (adjust pressure by bending the stops; adjust opening by bending the contact fingers):

- A. Padlock in place
 - 1. Electrically operated contacts:
 - a. Front-open .050" minimum
 - b. Back-closed with pressure of 8 to 10 oz. This high pressure is obtain by mechanically driven back stop. See Figure 1-1.
 - 2. Mechanically operated contacts:
 - a. Front-open .050" minimum
 - b. Back-closed with pressure of 8 to 10 oz.
- B. Padlock removed -lock de-energized
 - 1. Electrically operated contacts:
 - a. Front-open .050" minimum
 - b. Back-closed with pressure of 3 oz min.
 - 2. Mechanically operated contacts:
 - a. Front-closed with pressure of 6 to 8 oz.
 - b. Back-open .050" minimum
- C. Padlock removed-lock energized
 - 1. Electrically operated contacts:
 - a. Front -closed with pressure of 3 oz min.
 - b. Back-open .050" minimum
 - 2. Mechanically operated contacts:
 - a. Front-closed with pressure of 6 to 8 oz.
 - b. Back-open .050" minimum

After the contact openings and pressures have been adjusted to the above specifications, the operating values, i.e., the pickup-up and drop-away currents, for operations on 8-10 volts (100 ohms) should be checked that they meet the specifications listed below. Spring, item #10, Figure 1-1, can be bent to adjust the downward pressure on the armature arm to achieve these specifications.

Lock Resistance	100 ohms ±10%
Maximum Pick-Up Current	.055 ampere
Minimum Pick-Up Current	.035 ampere
Minimum Drop-Away Current	.007 ampere

SECTION 5

PERIODIC INSPECTION

WEAR CHECK

At least yearly the switch lock should be checked for wear, using the following procedure:

There should be no more than 1/8-inch total clearance between the sides of the switch stand operating lever and the sides of the switch lock. Add shims, if necessary, to reduce the clearance to an 1/8-inch.

1. Place the switch lock in the locked position with a padlock in place.
2. Pull up on the “Depress to Apply Padlock” pedal.
3. The “Depress to Apply” pedal pawl should prevent the switch machine throw rod from being removed from the machine lock by a minimum of 1/8-inch (See Figure 5-1), with the switch stand operating lever driven toward the shimmed side of its opening.
4. If the pedal pawl restraint is less than 1/8-inch, replace the worn mechanical parts of the switch lock. (As a minimum, this would include both foot pedals, plus the associated shafts and bushings.)

If mechanical parts are replaced, it is recommended that the pedal pawl interference be at least 3/8-inch. When the 3/8-inch decreases to 1/8-inch, replace the worn parts again.

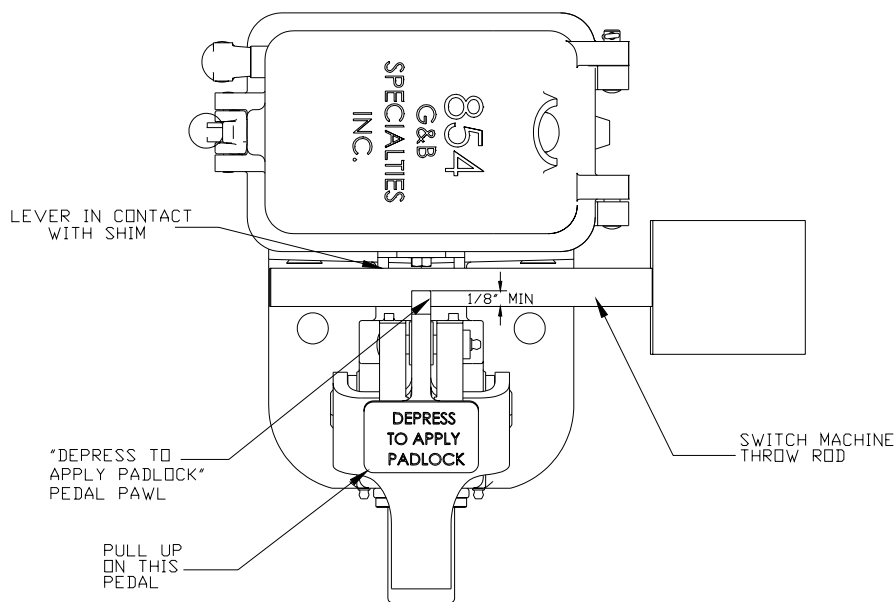


Figure 5-1. Model 854 Switch Stand Lock

SECTION 6

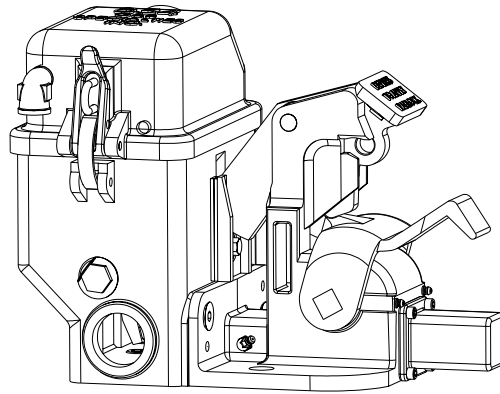
REPLACEMENT PARTS

GENERAL

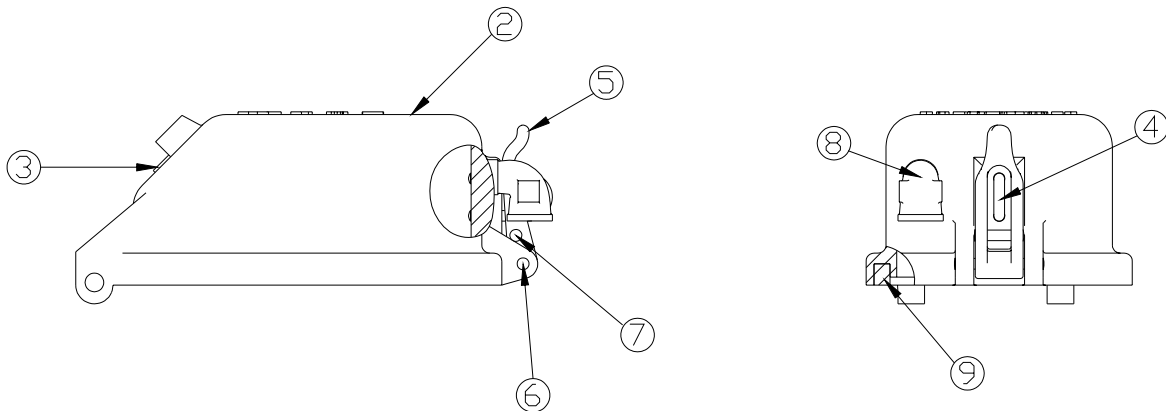
This section identifies and lists the component parts that may be ordered to replace the same in the field or at the shop level. Parts are identified by G & B part numbers.

PARTS LIST

Switch lock illustrations are followed by a parts list giving part descriptions, and numbers of replaceable parts. Index numbers are given in each parts list to precisely locate referenced parts in the illustration. This section of the manual covers currently manufactured parts that are available as spares.



Reference A



Reference B

Figure 6-1. Model 854 Switch Lock Mechanical Assembly

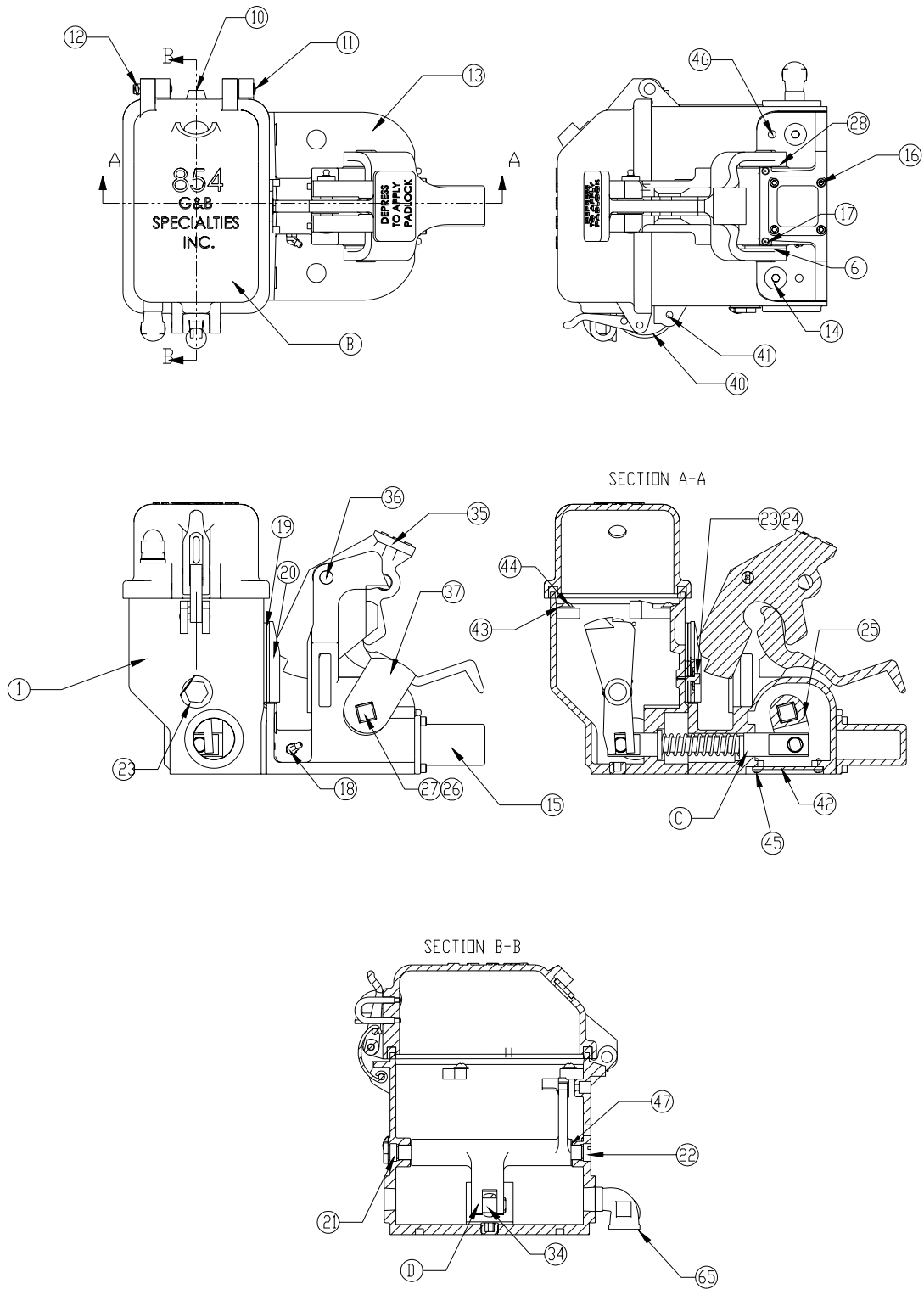
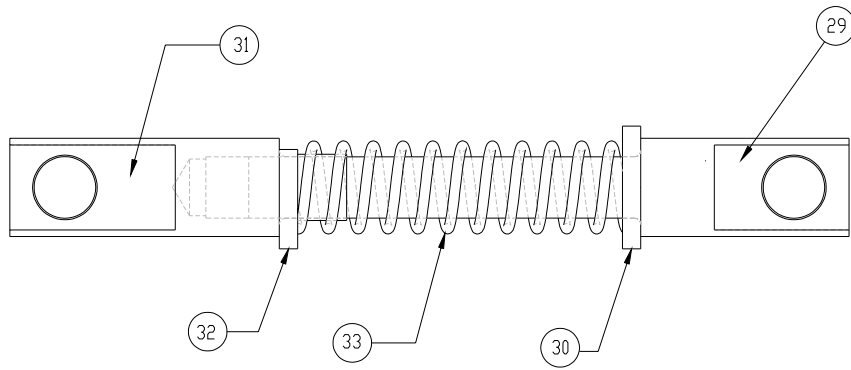
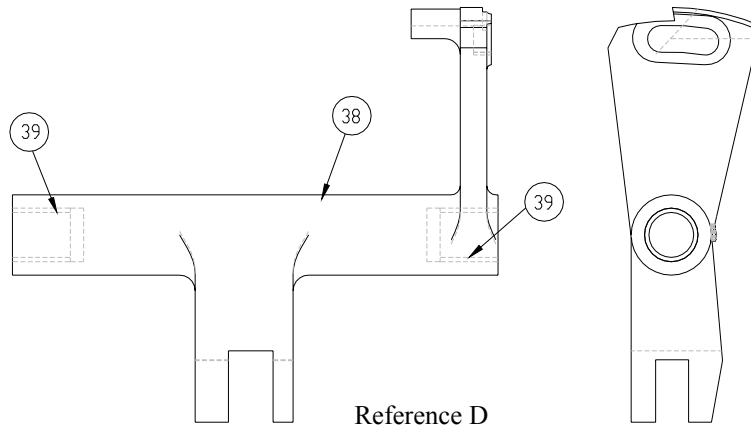


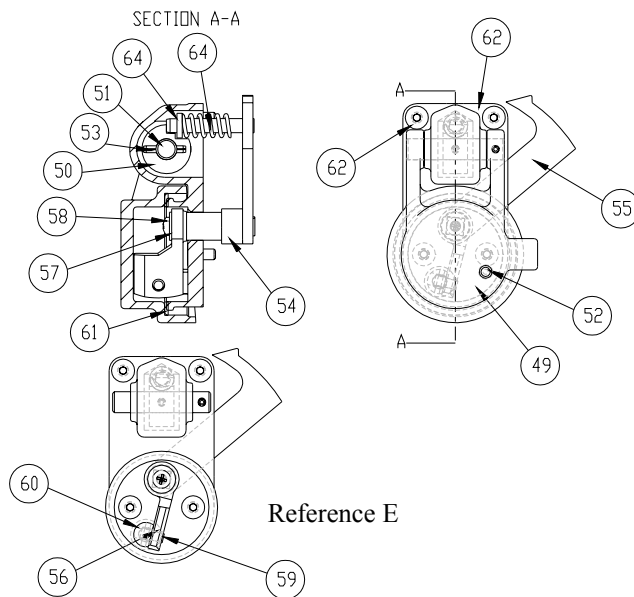
Figure 6-2. Model 854 Switch Lock Part References



Reference C



Reference D



Reference E

Figure 6-3. Model 854 Switch Lock Component Parts References

**Model 854 Electric Switch Lock
Replacement Parts**

Section 6
Replacement Parts

Ref.	Description	G&B Part Number
A	ELECTRIC LOCK, MECHANICAL ASSEMBLY	854600-000-00
1	BASE, 854 ELECTRIC LOCK	854133
B	COVER ASSEMBLY, LOCK	854134-001-01
2	COVER, LOCK	854134
3	LENS, SIGHT	854145
4	STAPLE	854148
5	HASP, MACHINED	854140
6	PIN, HASP	854151
7	PIN, HASP	854171
8	VENTILATOR, COMPLETE	857109-001X
9	GASKET, COVER	854134-030
10	HINGE PIN	854135-001
11	HINGE PIN	854135-002
12	COTTER PIN, 0.125 X 0.750 Z/Y	990506-075-02
13	BASE, FOOT LEVER	854102
14	SCREW, 0.500 X 0.750 FHSCS SS	073957-075-30
15	COVER, REAR	854107
16	SCREW, 1/4 BTN HEAD SKT CAP	073752-050-30
17	FITTING, 0.187 STR DRIVE	990900-004
18	FITTING, 0.125 65 DEG PTF	990900-007
19	SHIM, GUIDE PLATE	854120
20	PLATE, GUIDE	854119
21	TRUNNION,CAM	854110
22	TRUNNION,CAM	854111
23	WASHER, TRUNNION	854112
24	WASHER, 0.312 NARROW FLAT Z/Y	990600-031-002
24	SCREW, 0.312-18 X 0.750 HEX Z/Y	990723-075-22
25	CAM BLOCK, FOOT LEVER	854116
26	SET SCREW, CAM	854117
27	CAMSHAFT, FOOTLEVER	854100
28	BUSHING, CAM PEDAL	854113
C	ROD ASSY, CONNECTING	854105X
29	ROD, CONNECTING	854105

**Model 854 Electric Switch Lock
Replacement Parts (cont.)**

Section 6
Replacement Parts

Ref.	Description	G&B Part Number
30	ROD WASHER, CONNECTING	854105-001
31	SLEEVE, CONNECTING	854106
32	SLEEVE WASHER, CONNECTING	854106-001
33	SPRING, CONNECTING ROD	854153
34	PIN, LINK	854104
35	LATCH, LOCK LEVER	854101
36	PIN, LOCK LATCH	854114
37	CAM, FOOT LEVER	854103
D	CAM ASSEMBLY, OPERATING	854136X
38	CAM, OPERATING	854136
39	BUSHING, OPERATING CAM	854150
40	STRAP	G30804-018
41	PIN, HASP	854161
42	PLATE, BOTTOM COVER	854108
43	WASHER, .25 INT TOOTH S.S. LOCK	078113-025-40
44	SCREW, 0.250 X 0.750 RH SS	072589-075-30
45	SCREW, 10-32 X .5 FH PHIL S.S.	072682-050-30
46	PIN, #6 X 1.000 TAPER	069146-100-00
47	SHIM PACK	
	SHIM, OPERATING CAM	854160-005-40
	SHIM, OPERATING CAM	854160-010-40
	SHIM, OPERATING CAM	854160-020-40
	SHIM, OPERATING CAM	854160-031-40
	SHIM, OPERATING CAM	854160-040-40
E	RELEASE ASSY, EMERGENCY	854128-001-01
48	HOUSING, EMERGENCY RELEASE	854129
49	COVER, EMERGENCY RELEASE	854128
50	CAM, RELEASE LOCKOUT	854125
51	PIN, EMERGENCY RELEASE	854126
52	PIN, EMERGENCY RELEASE SAFETY	854124
53	PIN, 1/8 X 3/4 S.S. SPRING	990563-075-70
54	SHAFT, RELEASE PAWL	854137
55	PAWL, RELEASE	854138

**Model 854 Electric Switch Lock
Replacement Parts (cont.)**

Ref.	Description	G&B Part Number
56	HANDLE, EMERGENCY RELEASE	854121
57	WASHER, #8 FLAT Z/Y	033072-008-02
58	PIN, RELEASE SAFETY	854123
59	PIN, RELEASE STOP	854131
60	GASKET, EMERGENCY RELEASE	854130G
61	SCREW, #10-32 X 0.500 FHSCS SS	073871-050-30
62	PIN, RELEASE LOCKOUT	854122
63	SPRING, EMERGENCY RELEASE	854127
64	SCREW, #8-32 X 0.375 SLT RD HD	028863-037-01
65	VENTILATOR, COMPLETE	857109-001X

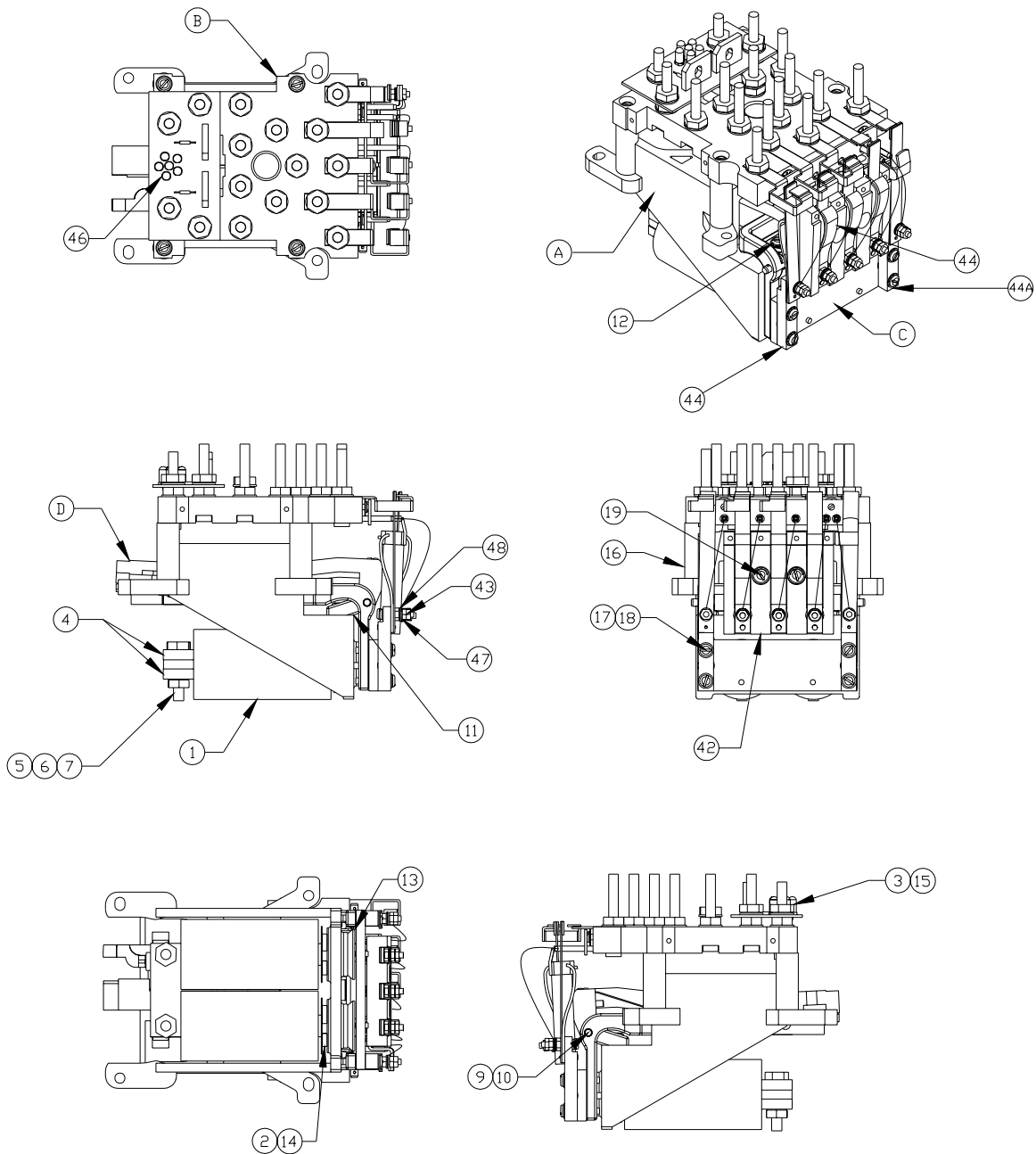
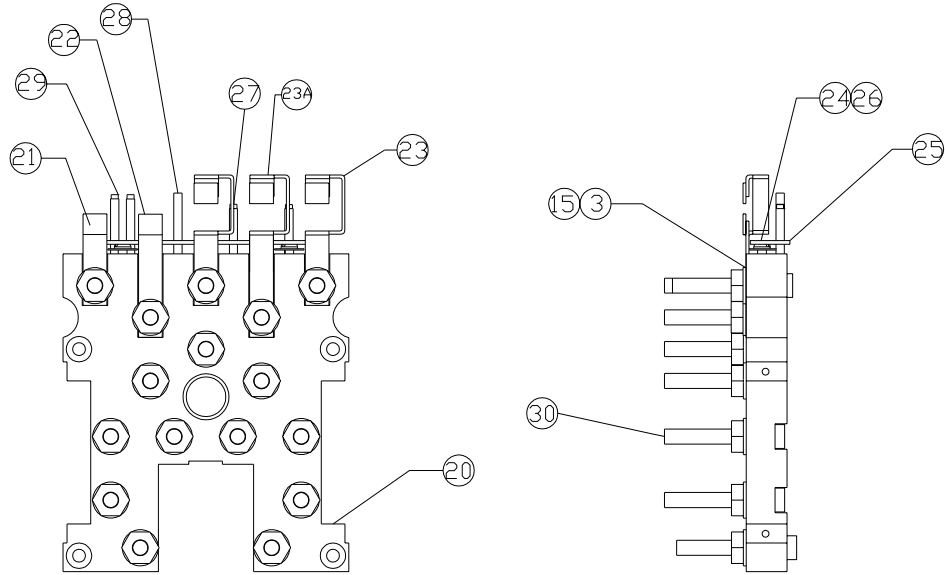
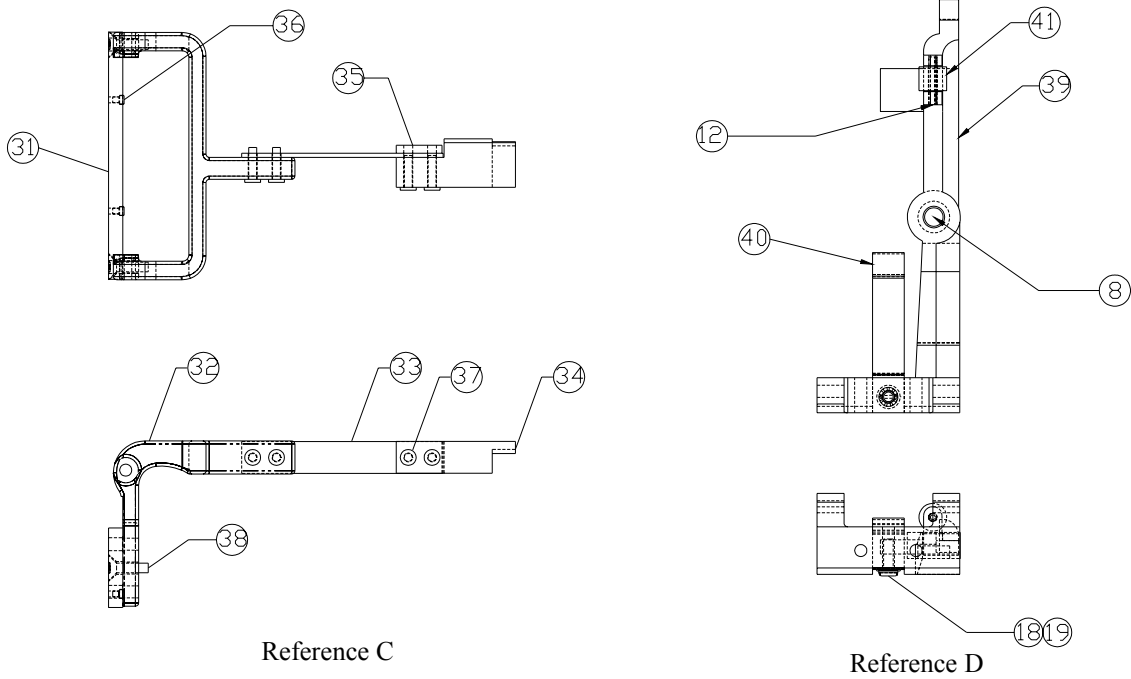


Figure 6-4. Model 854 Switch Lock Relay Assembly



Reference B



Reference C

Reference D

Figure 6-5. Model 854 Switch Lock Relay Components

**Model 854 Electric Switch Lock
 Relay Assembly Replacement Parts**

Ref.	Description	G&B Part Number
A	Relay Assembly Complete, has the following contact combination with bi-colored LED: 1F and 1B electrically operated 2F and 1B mechanically operated	854077-401-02
A1	Same as Ref. A, except has the following contact combination with single-colored LED: 1F and 1B electrically operated 2F and 1B mechanically operated	854077-401-01
A2	Same as Ref. A, except has the following contact combination with bi-colored LED: 2B electrically operated 1F and 2B mechanically operated	854077-400-02
A3	Same as Ref. A, except has the following contact combination with single-colored LED: 2B electrically operated 1F and 2B mechanically operated	854077-400-01
1	COIL, RELAY	854077-351
2	WASHER, WAVE SPRING	854077-352
3	POST, #14 X 2.250 AAR BINDING	990102-250-55
4	YOKE	854077-355
5	SCREW, .25-20 X 1.25 HX HD S.S.	990722-125-40
6	NUT, .25-20 HVY HX S.S.	990331-025-40
7	WASHER, .25 INT TOOTH S.S. LOCK	078113-025-40
8	SPRING, OPERATING BAR	854077-359
9	COTTER PIN, 0.062 X 0.375 Z/Y	990502-037-02
10	PIN, HINGE	854077-361
11	HINGE BLOCK	854077-364
12	PIN, 1/8 X 3/4 S.S. SPRING	990563-075-70
13	CORE	854077-367
14	NUT, CORE RETAINING	854077-368
15	WASHER, #14 AAR	990101-008-55
16	FRAME, RELAY	854077-371
17	SCREW, 10-32 X .875 PHILLIPS S.S.	072535-087-30
18	WASHER, #10 INT TOOTH LOCK S.S.	078109-010-40
19	SCREW, #10-32 X 0.500 PAN HD PHIL.	072515-050-30

**Model 854 Electric Switch Lock
Relay Assembly Parts (cont.)**

Section 6
Replacement Parts

Ref.	Description	G&B Part Number
B	BOARD ASSY, TERMINAL, with front contact in space 3 and back contacts in spaces 2 and 4, for Ref A1 & A2	854077-050-02
B1	As previous, except with front contacts in spaces 2 & 3 and back contact in space 4, for Ref A2 & A3	854077-050-01
20	BOARD, 854 LOCK TERMINAL	854077-001
21	CONTACT, SHORT BACK	854077-002-01
22	CONTACT ASSY, BACK	854077-003-01
23	CONTACT ASSY, FRONT	854077-004-01
23A	CONTACT, FRONT	854077-025-01
24	SCREW, #6-32 X .375 PHILLIPS S.S.	072385-037-30
25	SUPPORT, LEAD	854077-009
26	WASHER, #6 INT TOOTH S.S. LOCK	071105-006-60
27	LEAD ASSY, 2-4	854077-011-01
28	LEAD ASSY, #3	854077-012-01
29	LEAD ASSY, 1-5	854077-013-01
30	POST, #14 X 1.875 AAR BINDING	990102-187-55
C	ASSEMBLY, ARMATURE	854077-100-01
31	ARMATURE	854077-051
32	HINGE BRACKET	854077-052
33	EXTENSION ARM	854077-053
34	DOG, LOCK	854077-054
35	PLATE, WASHER	854077-055
36	RIVET, ARMATURE PLATE	854077-056
37	RIVET, .125 X .75 FH COPPER	854077-057
38	SCREW, 10-32 X .5 FH PHIL S.S.	072682-050-30
D	OPERATING BAR ASSEMBLY	854077-150-01
39	BAR, OPERATING	854077-101
40	SPRING, OPERATING BAR	854077-102
41	ROLLER, OPERATING BAR	854077-104
42	HEEL CONTACT ASSY, OPER BAR	854077-200-02
42A	HEEL CONTACT ASSY, OPER BAR for B1	854077-200-01
43	NUT, #6-32 S.S. HEX	070705-006-30
44	CONTACT ASSEMBLY, ARMATURE	854077-250-02

**Model 854 Electric Switch Lock
Relay Assembly Parts (cont.)**

Ref.	Description	G&B Part Number
44A	CONTACT ASSY, ARMATURE	854077-250-01
45	KIT, TERMINAL HARDWARE (not shown)	854077-350-01
46	BOARD ASSY, BI-COLOR LED	854077-300-02
46A	BOARD ASSY, LED (single-colored LED) (not shown)	854077-300-01
47	WASHER, #6 FLAT S.S.	071005-006-30
48	TERMINAL, RING TONGUE	34105

NOTES