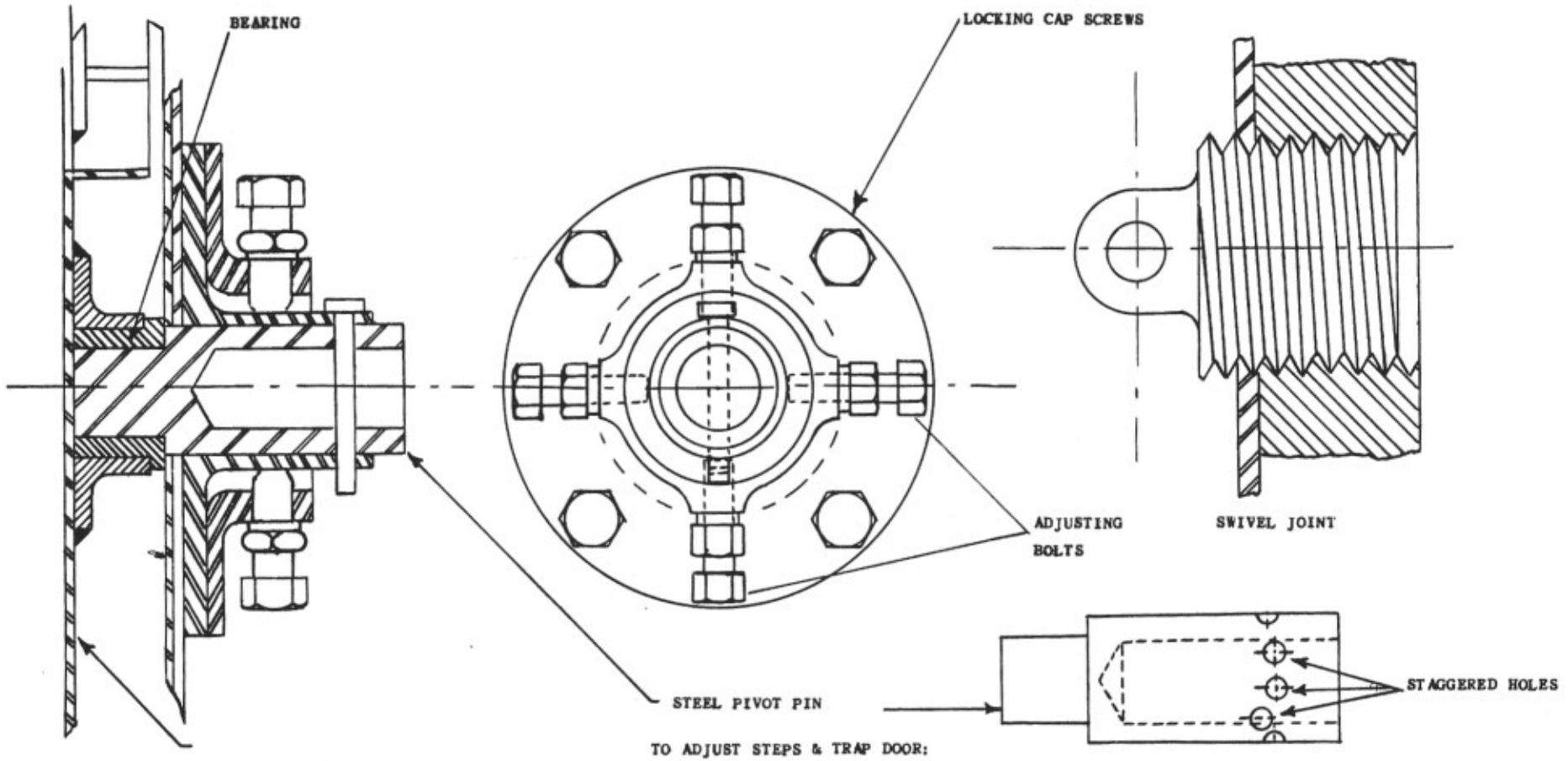


TO ADJUST STEPS & TRAP DOOR:

1. DISCONNECT OPERATING ARM BETWEEN STEP AND TRAP DOOR AT TRAP DOOR.

2. LOOSEN LOCKING CAP SCREWS.

3. ADJUST STEP FLUSH WITH SIDE SKIRT, AND IN CONTACT WITH TRAP DOOR WITH THE FOUR ADJUSTING BOLTS AT EACH PIVOT. FOR LATERAL MOVEMENT USE THE STAGGERED HOLES IN STEEL PIVOT PIN.

4. ROCK STEPS IN ALL DIRECTIONS TO CHECK FOR BEARING WEAR.

5. ADJUST TRAP DOOR

(A) REMOVE COVER PLATE FROM TRAP DOOR PIVOT ASSEMBLY.
(B) RE-CONNECT OPERATING ARM BETWEEN STEP AND TRAP DOOR.
(C) S FIG.142-A AND BY TRIAL ADJUST PIVOT BLOCK TO PROPER POSITION TO ELIMINATE EXCESS MOVEMENT OF OPERATING ARM AND YET HAVE NO STRAIN OR BINDING ACTION.
(D) PROPER SEATING OF TRAP DOOR AGAINST FOLDING STEP WITHOUT STRAIN IS VERY IMPORTANT.
(E) DISCONNECT ARM • APPLY COVER PLATE AND RE-CONNECT ARM.

Figure 142

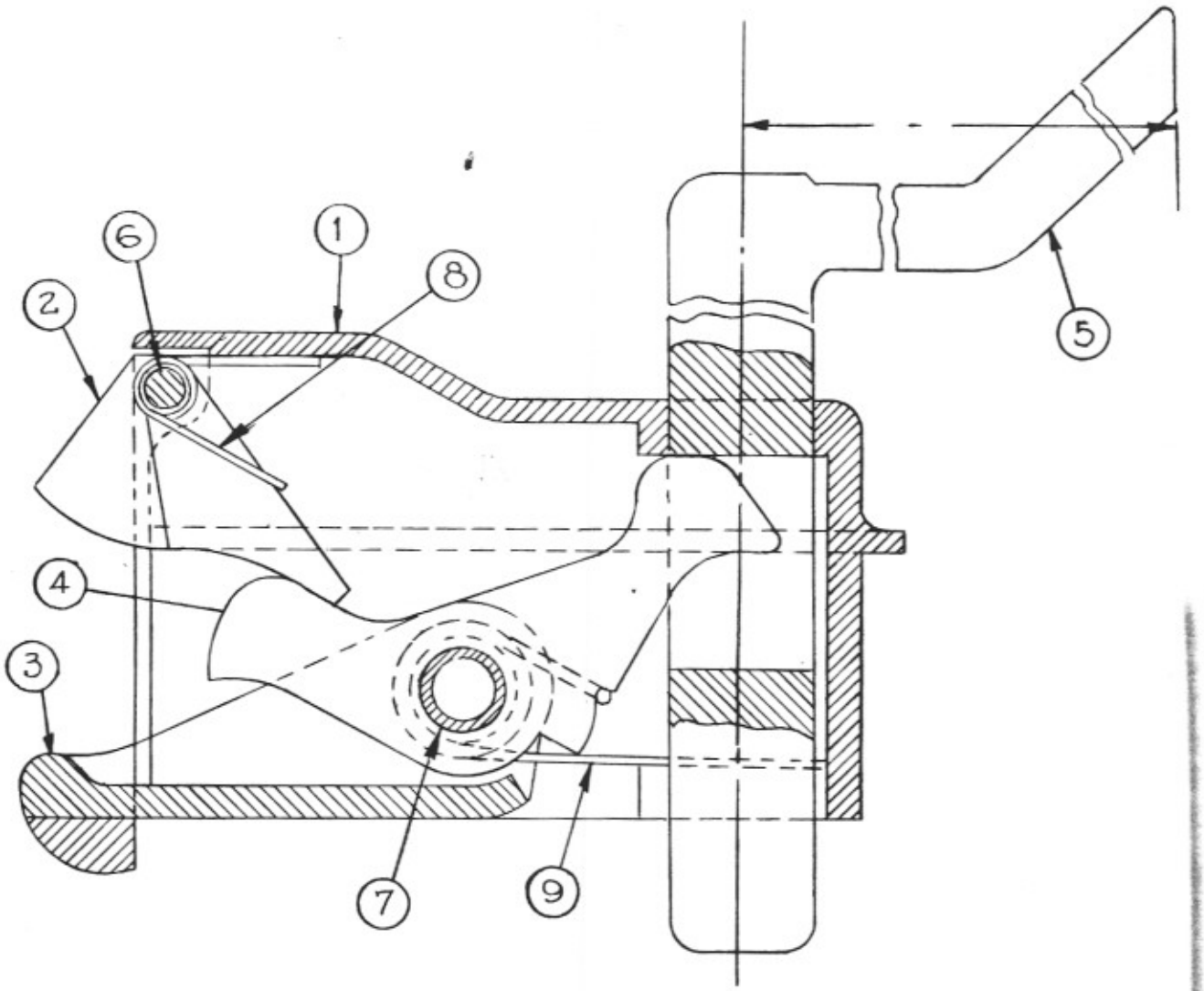


Figure 143

TRAP DOOR LOCK DESIGN H

ITEM No.	NAME OF PART	PART No	No. OF PC's.
1	CASE	45-14	1
2	BOLT	45-17	1
3	STARTER	45-16	1
4	LEVER	45-15	1
5	PIN	44-50	1
6	BOLT RIVET	M-2004	1
7	LEVER RIVET	M-2053	1
8	BOLT SPRING	M-2005	1
9	LEVER SPRING	M-2006	1

NATIONAL PNEUMATIC ELECTRIC DOOR CLOSER

DESCRIPTION OF EQUIPMENT The equipment consists of an operator engine, pressure and exhaust electromagnetic valves, time delay relay, door reversing switch, door reversing cut-out switch, door latch switch, porter's door switch and emergency door closing cylinder.

On these cars there are three types of National Pneumatic Electric Door closers. All parts on these closers are interchangeable with the exception of the mounting base and the gear segments. Because of this a complete unit is not interchangeable with a unit of a different model number.

The door is attached to two short shafts, one at the top and one at the bottom. The bottom shaft is pivoted in a bearing and it merely guides the door. The top shaft by which the door is hung extends into the compartment above the door. The engine is connected to the top shaft through gear segments and the movement of the engine piston rotates the door through an arc of about 90° to open and close.

OPERATOR ENGINE OPERATION The piston assembly of the operator engine has two different diameters, and fits into piston chambers of corresponding size. See Figure 144. As the pistons have different areas, when air pressure is present in both chambers the piston with the larger area exerts the greater force and overcomes the lesser opposing force of the smaller piston. Therefore, the piston assembly moves outward, closing the door.

When the control circuit energizes the exhaust-type magnet valve of the door operator this magnet valve exhausts the air pressure from the larger cylinder of the operator engine. With the larger cylinder open to exhaust the constant pressure entering the engine at the center port moves the piston assembly inward, thus opening the door.

To prevent the door from slamming open, a cushioning device is incorporated in the engine. As the door opens, the piston moves rapidly inward until the seal on the end of the cushioning plunger contacts the end of the large cylinder and closes the free exhaust port. The remainder of the air pressure in the cylinder is then exhausted through a small orifice in the cushioning plug. As the piston continues its stroke, an "Air Cushion" is built up which retards the engine speed and cushions the final movement of the door.

The door operator engine incorporates a constant speed feature. If the door is obstructed or held while opening, air continues exhausting from the large cylinder of the engine. To replenish the air leaving the large cylinder and thus maintain an air cushion so that the door, when released, will open at normal speed, compressed air from the center port of the engine flows constantly into the plunger assembly and passes out into the large cylinder chamber through openings in the cushioning plunger.

To close the door, the control circuit de-energizes the exhaust type magnet valve of the door operator which then admits air pressure to the large cylinder of the operator engine. This causes the piston assembly in the engine to move outward, forcing the constant line pressure present in the small piston chamber back into the air supply line. Just before the piston assembly reaches the end of the stroke in this direction, the air pressure which "builds up" in the smaller cylinder retards the piston movement and cushions the final movement of the door. Figure 145 shows relation of operator engine to emergency cylinder.

SETTING UP THE DOOR FOR AUTOMATIC OPERATION With the porter's switch in the "Automatic" position, a circuit is completed to the coil of the pressure magnet valve, which valves air pressure to and through the exhaust magnet valve into the end port of the engine, to the center port of the engine, and to the emergency cylinder, making the equipment operative. The door is closed and the piston of the emergency cylinder is held inward where it does not affect the automatic operation of the door.

The wiring as shown on Figures under "How it operates." are only for explanatory purposes. Wiring diagrams for these cars are shown on Figures 146 and 147. Complete wiring and piping diagram is shown on Figure 148 and 149. Reducing valve shown in Figure 150 operates the same as the reducing portion of the A 1 A governor reducer valve explained in the water system.

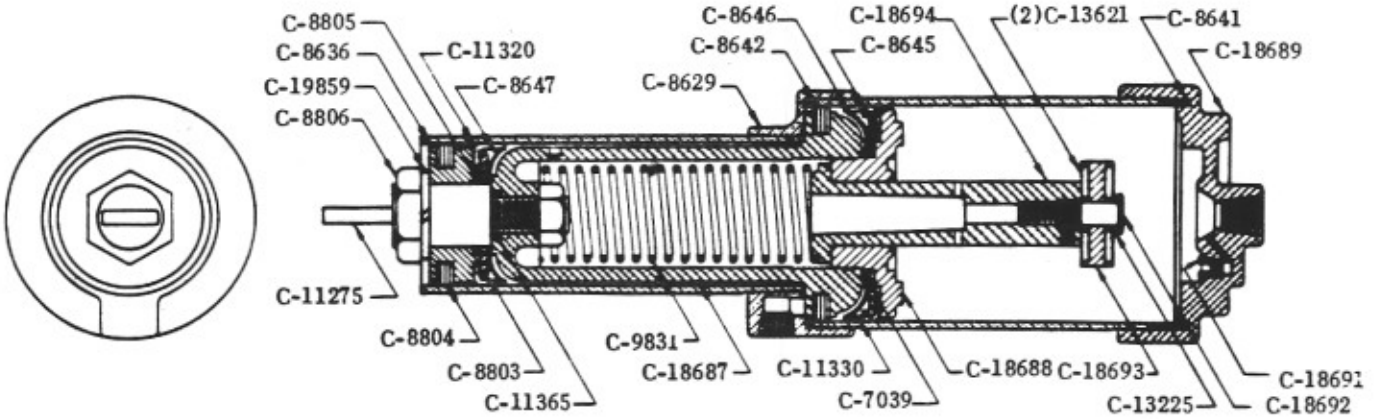


Figure 144

END DOOR OPERATOR ENGINE

PART LIST

C-7039	Gasket	C-8804	Felt Lubricating Ring	C-13621	Cushion Seal
C-8629	Cylinder	C-8805	Gasket	C-18687	Piston
C-8636	Piston Center	C-8806	Lock Nut	C-18688	Follower
C-8641	Gasket	C-9831	Plunger Spring	C-18689	Cylinder Cap
C-8642	Felt Lubricating Ring	C-11275	Stud	C-18691	Cushion Plug
C-8645	Cup Follower	C-11320	Cup	C-18692	Screw
C-8646	Cup Expander	C-11330	Cup	C-18693	Seal Retainer
C-8647	Cup Expander	C-11365	Gasket	C-18694	Cushioning Plunger
C-8803	Cup Washer	C-13225	Bushing	C-19859	Washer

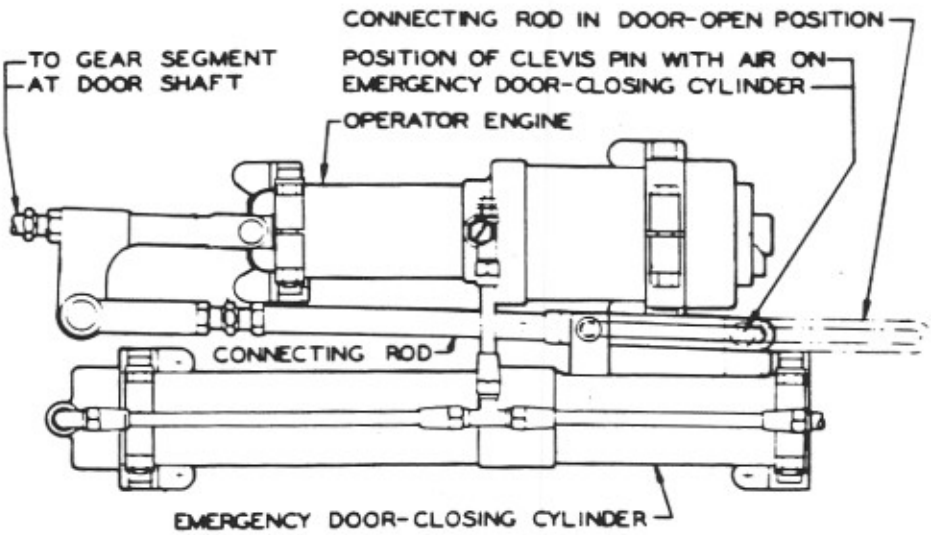
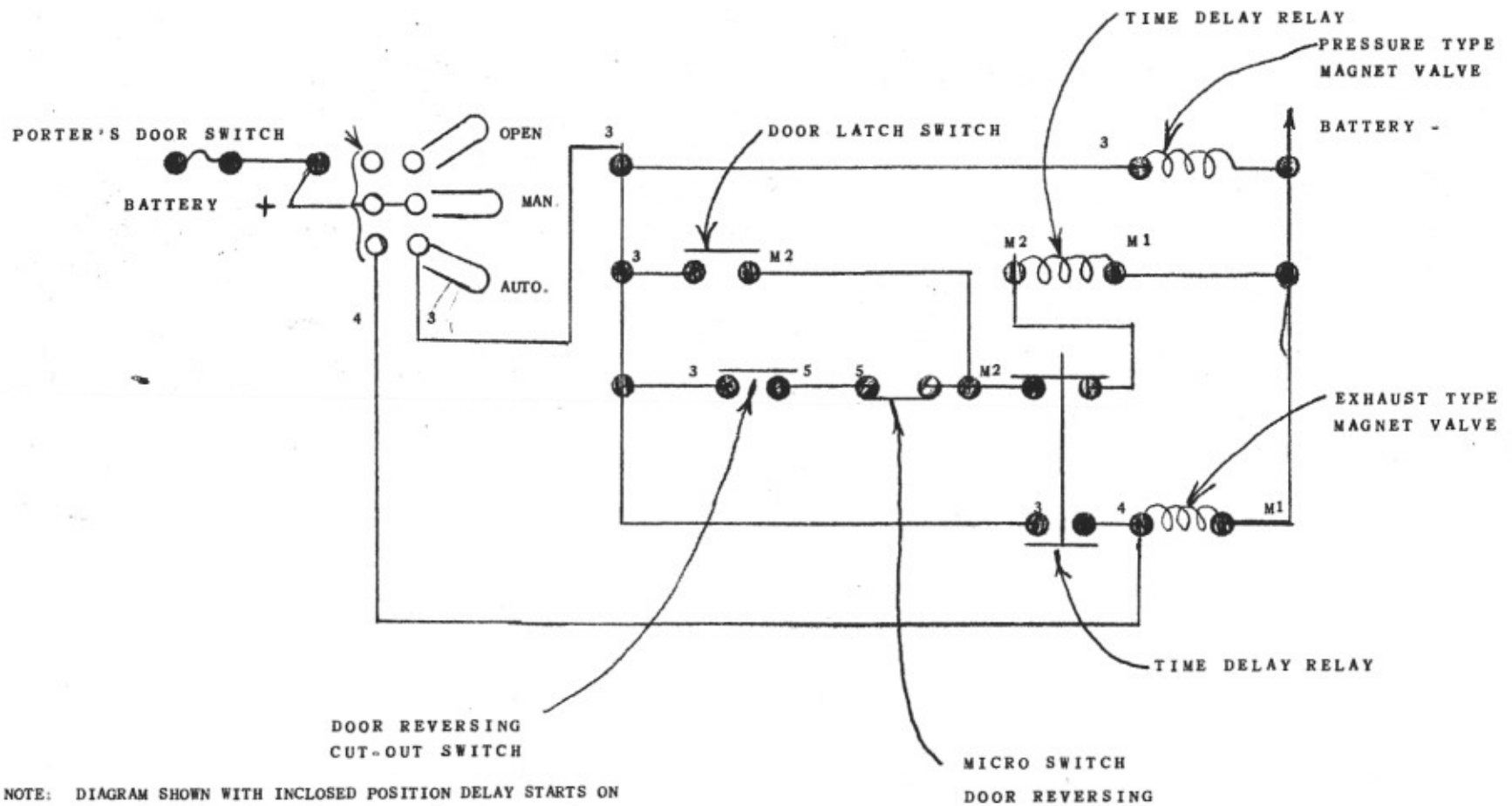
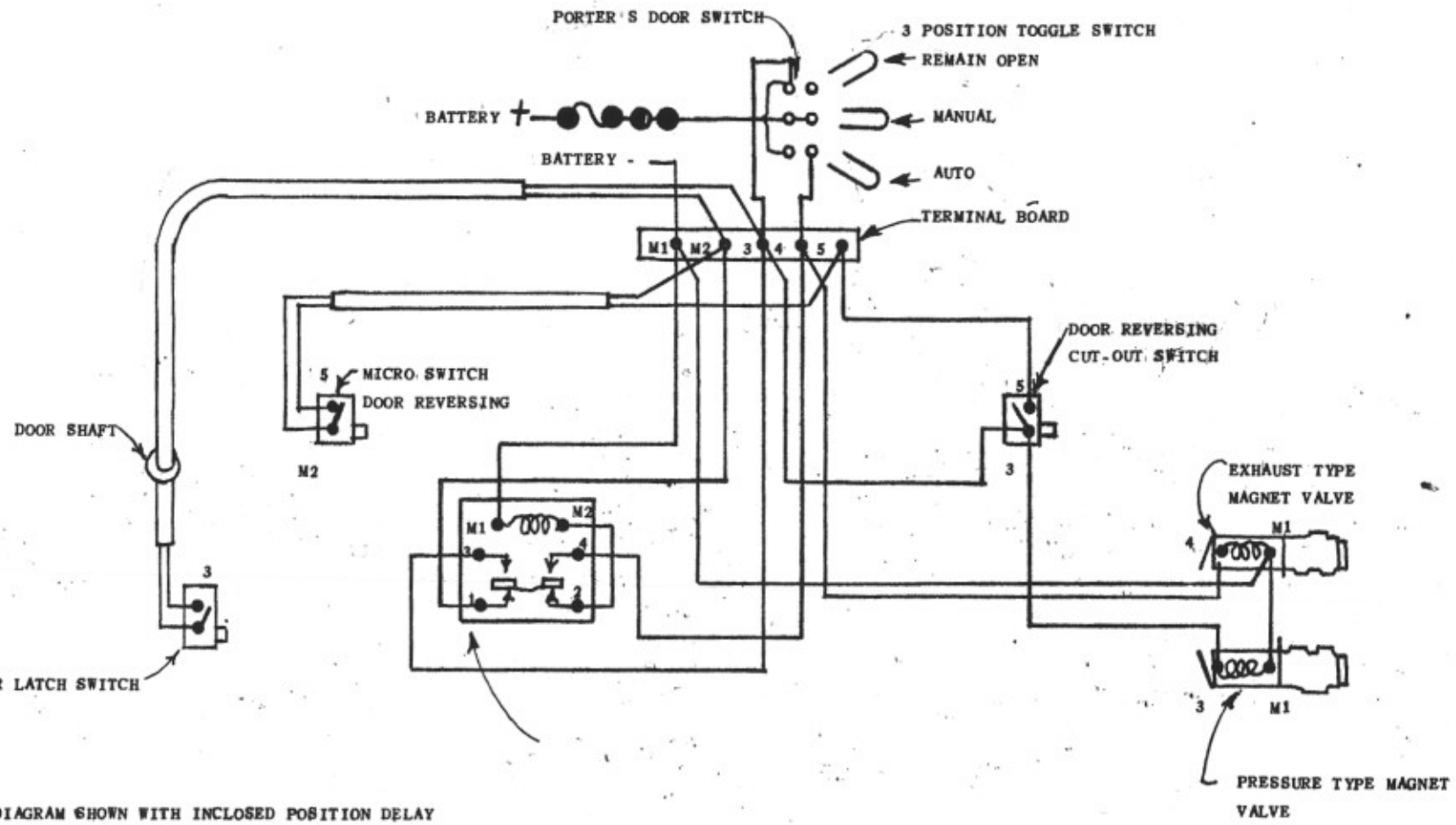


Figure 145



NOTE: DIAGRAM SHOWN WITH INCLOSED POSITION DELAY STARTS ON LATCH OR REVERSE SWITCH CONTACT. WHEN THE DOOR LEAVES THE JAMB THE CONTACTS OF THE DOOR REVERSING SWITCH OPEN AND THE CONTACTS OF THE DOOR REVERSING CUT-OUT SWITCH CLOSE.

Figure 146



NOTE: DIAGRAM SHOWN WITH INCLOSED POSITION DELAY STARTS ON LATCH OR REVERSE SWITCH CONTACT. WHEN THE DOOR LEAVES THE JAMB THE CONTACTS OF THE DOOR REVERSING SWITCH OPEN AND THE CONTACTS OF THE DOOR REVERSING CUT-OUT SWITCH CLOSE.

Figure 147

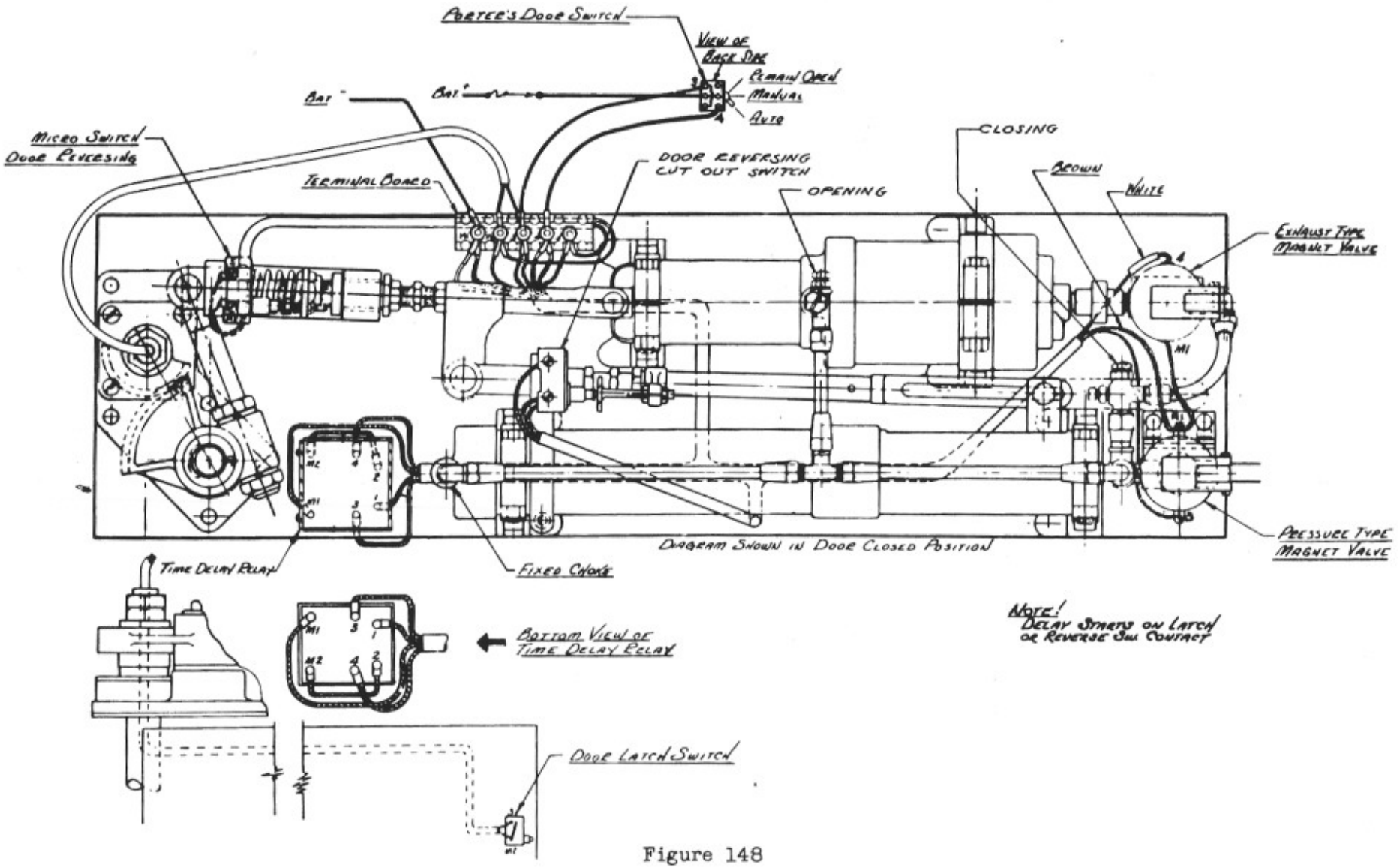
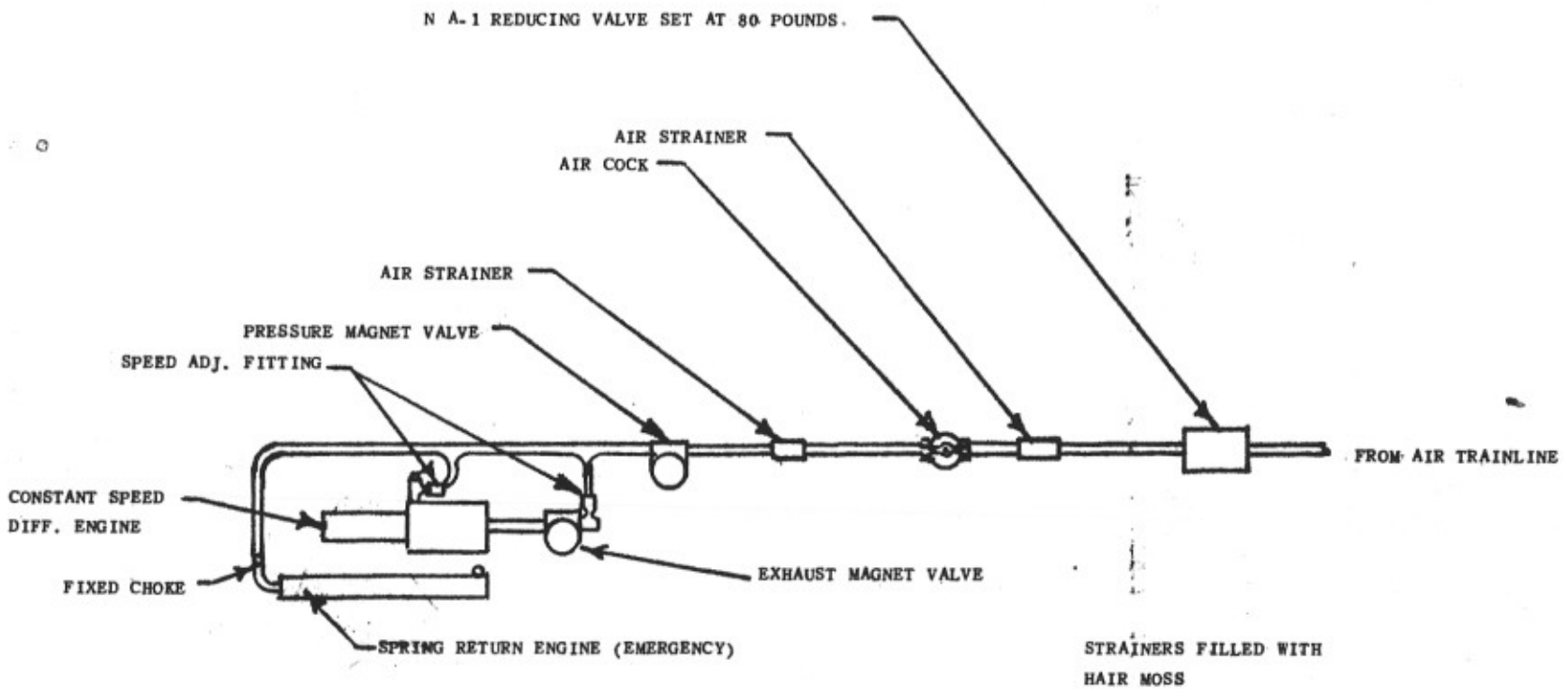


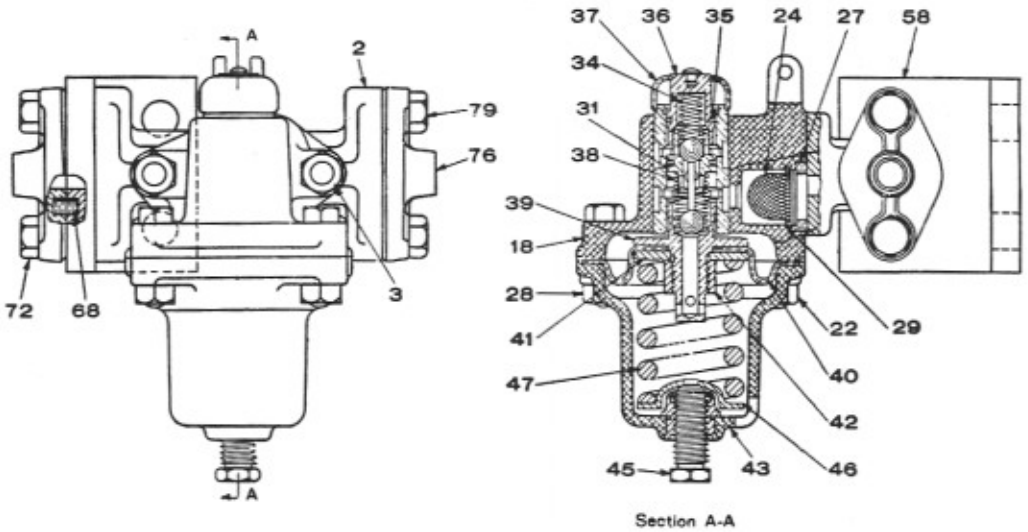
Figure 148

PIPING AND WIRING DIAGRAM
END DOOR OPERATOR



PIPING DIAGRAM

Figure 149



Section A-A

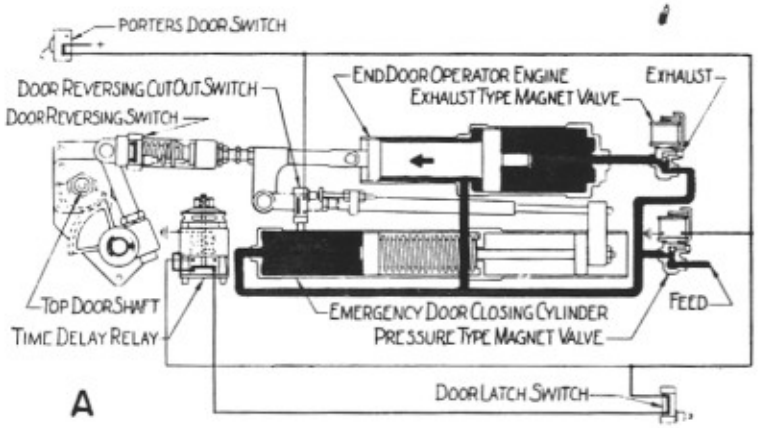
N-1-A REDUCING VALVE

Figure 150

Pc. No.	Ref. No.	
529445		Reducing Valve Portion, Complete
528352	2	Pipe Bracket (includes two of 3)
506967	3	3/8"x2 1/8" Reducing Valve Body Stud and Nut (2 Req'd)
526874	18	Reducing Valve Body (includes two of 22 and 29)
533084	22	5/16"x1 1/4" Spring Housing Stud and Nut (2 Req'd)
526835	24	Filter (2 Req'd)
99458	27	Filter Gasket (2 Req'd)
533085	28	5/16"x1 3/8" Spring Housing Bolt and Nut (2 Req'd)
529162	29	Filter Retaining Ring (2 Req'd)
526875		Inlet and Exhaust Valve Unit, Complete (includes 31, 34, 36 and two of 35)
527711	31	Inlet Valve Seat
*80554	34	Inlet Valve Spring
531868	35	3/4" O.D. Seal Wabco Packing Ring (2 Req'd)
526342	36	Inlet Valve Spring Housing
526344	37	Dirt Protector
*516445	38	Exhaust Valve Spring
526876		Diaphragm with Exhaust Valve Seat (includes 39, 40, 41 and 42)
526487	39	Exhaust Valve Seat
526346	40	Diaphragm
526345	41	Diaphragm Follower
526489	42	Exhaust Valve Seat Nut
526348	43	Spring Housing (includes 45)
526352	45	Adjusting Screw
526347	46	Spring Seat
*526749	47	Diaphragm Spring
527902	58	Mounting Bracket
93839	68	3/8" Fitting and Mounting Bracket Gasket (4 Req'd)
3207	72	3/8"x1 1/2" Wabcotite Fitting and Mounting Bracket Cap Screw (2 Req'd for Pc. No. 529054; 1 Req'd for 536120)
6897	72	3/8"x1 1/8" Wabcotite Offset Elbow and Mounting Bracket Cap Screw (for Pc. No. 536120)
515956	76	3/8" Wabcotite Sweat Fitting for 1/2" O.D. Copper Tube (2 Req'd for Pc. No. 529054)
527961	76	3/8" Wabcotite L.H. Offset Elbow Sweat Fitting for 1/2" O.D. Copper Tube (2 Req'd for Pc. No. 536120)
7978	79	3/8"x1" Wabcotite Fitting Cap Screw (2 Req'd for Pc. No. 529054; 1 Req'd for Pc. No. 536120)
3207	79	3/8"x1 1/2" Wabcotite Offset Elbow Long Cap Screw, for Pc. No. 536120

HERE'S HOW IT OPERATES

— indicates air pressure — indicates exhausting air

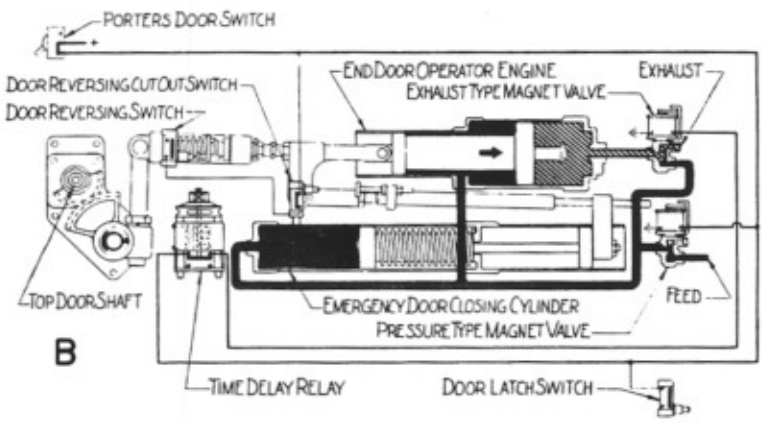


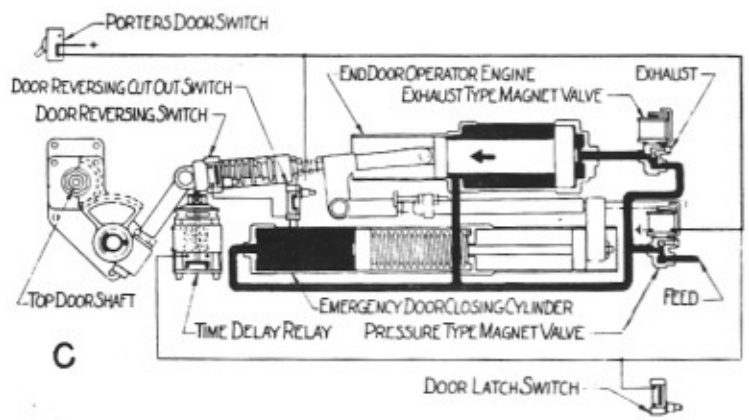
DOOR LATCH ACTUATED

The switch of the time delay relay is a double pole, double throw toggle switch, which is normally in the position shown in figure **A**. When the door handle or push bar is actuated to withdraw the latch, the micro switch in the door lock momentarily completes a circuit to the coil of the time delay relay across its lower set of contacts. The toggle switch of the relay then opens its lower contacts and closes its upper contacts, as shown in figure **B**.

DOOR OPENING

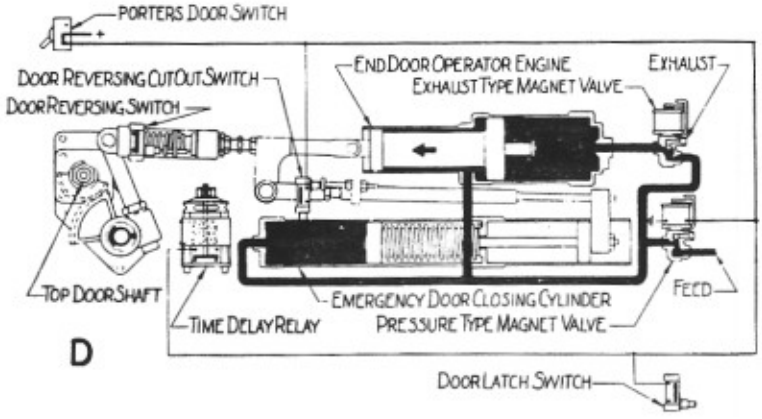
With the time delay relay contacts in the position shown in figure **B**, the circuit to the relay coil has been opened and a circuit is completed across the upper set of relay contacts to the coil of the exhaust type magnet valve. The time delay starts when the relay coil is de-energized, and it is usually set to hold the exhaust type magnet valve energized for about four seconds. While the exhaust type magnet valve is energized, it exhausts the air pressure from the end port of the end door operator engine and the pressure entering the center port moves the operator piston inward in the door opening direction.





DOOR CLOSING

When the door reaches the fully open position and at the expiration of the time at which the time delay relay is set, the relay de-energizes the exhaust type magnet valve and the door closes.



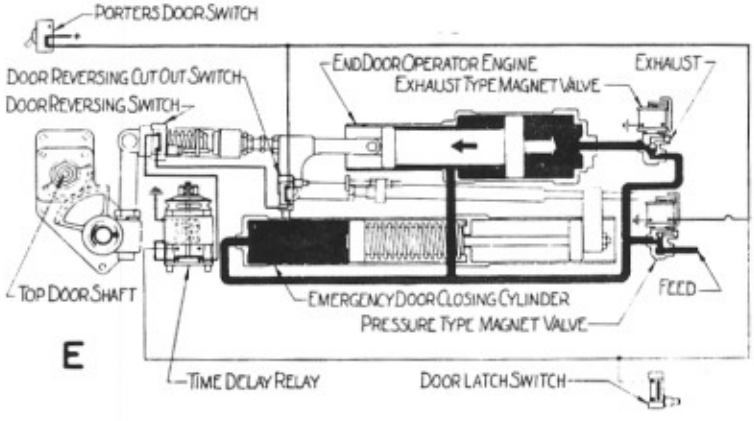
DOOR CLOSED

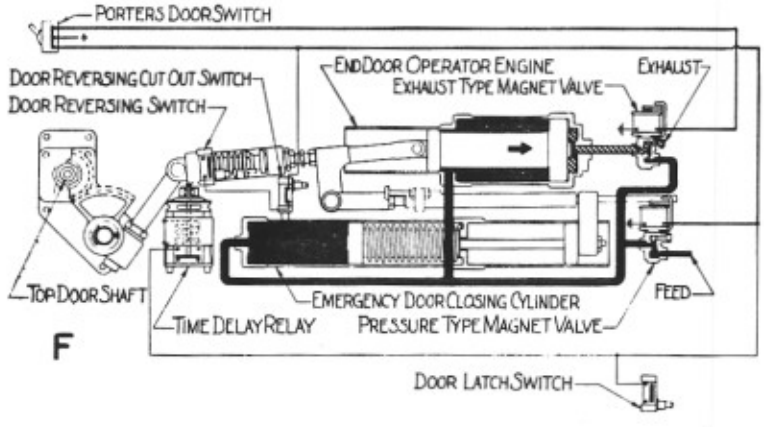
Air pressure valved into the end port of the end door operator engine by the exhaust type magnet valve moves the engine piston completely out to the door closed position.

The door reversing cut-out switch opens the circuit to the door reversing switch when the door enters the door jam, which cuts out the reversing feature. The full power of the end door operator engine is then available to completely and positively close the door.

DOOR REVERSES

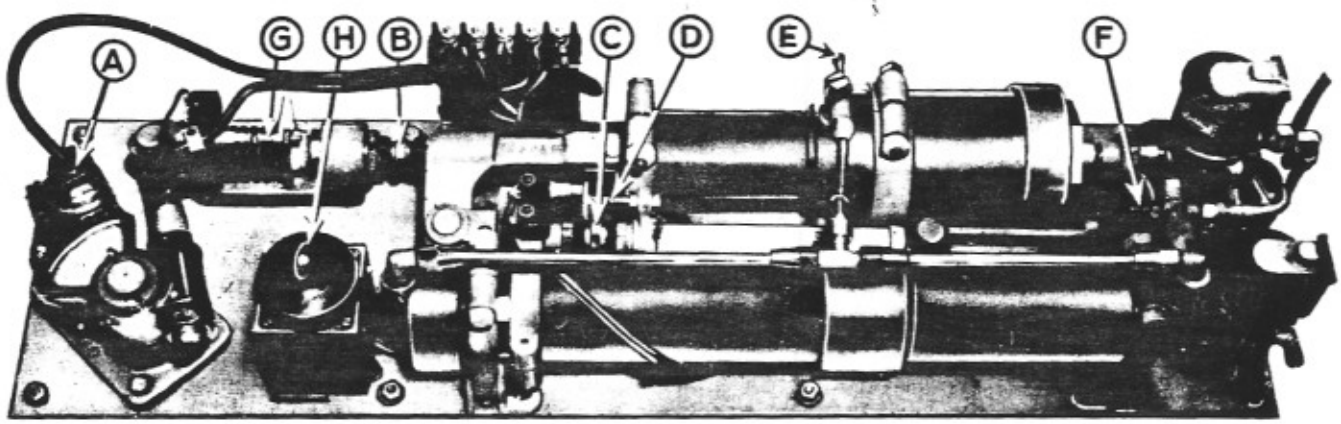
If the door is obstructed while closing, the end door operator engine builds up a pressure of 12 to 15 pounds at the door against the obstruction, which compresses a spring in the operator connecting rod and momentarily closes the door reversing switch. The door reversing switch momentarily completes a circuit to the coil of the time delay relay across its lower set of contacts, causing the toggle switch of the relay to open its lower contacts and close its upper contacts, completing a circuit to the exhaust type magnet valve. The door then re-opens and the sequence shown by figures B, C and D is repeated.





SETTING THE DOOR TO REMAIN OPEN

By setting the Porter's Door Switch in the "remain open" position, the exhaust type magnet valve is energized, which exhausts air pressure from the end port of the end door operator engine, opening the door. The exhaust type magnet valve remains energized and the door remains open until the setting of the porter's door switch is changed.



Adjustment Check List

If door binds at top or bottom, follow instructions under adjustment "A".

If, with the porter's door switch in "manual" position, the door does not close completely, check the door latch, the door seals and the door for binding. If these are in good order, follow instructions under adjustment "C".

If, with the porter's door switch in "automatic" position, the door reverses at the door jam, check the latch for sticking or interference and check the weather seals and door for binding. If these are in good order, follow instructions under adjustment "D".

If, with the porter's door switch in "automatic" position, the door does not open promptly when latch is actuated, check position of latch and keeper and make adjustments in accordance with lock instructions, which can be obtained from the lock manufacturer.

If door opens too quickly or too slowly, follow instructions under adjustment "E".

If door closes too quickly or too slowly, follow instructions under adjustment "F".

If door reverses without coming against an obstruction, check the door for binding. If door is free, follow instructions under adjustment "G". This condition can also be caused by the door closing too quickly which can be corrected by following instructions under adjustment "F".

If obstructed door fails to reverse, follow instructions under adjustment "D" and "G".

If timing of the door from release of latch to start of closing is incorrect, follow instructions under adjustment "H".

Mechanical Adjustments A-B-C
Air Adjustments E-F
Electrical Adjustments D-G-H

Adjustment Instructions

A Door Shaft Nuts

The two jam nuts at the top of the top door shaft must be adjusted to raise or lower the door until there is adequate clearance at both the top and bottom of the door, after which the jam nuts must be pulled tight to maintain the adjustment.

B Operator Connecting Rods

Before making adjustment "B", back striker "D" as far from micro switch as possible. With air on and porter's door switch in automatic position, adjust operator connecting rod with turnbuckle "B" so the nut on the operator piston is flush with the end of the cylinder as shown in figure G. Then re-adjust striker in accordance with instruction "D".

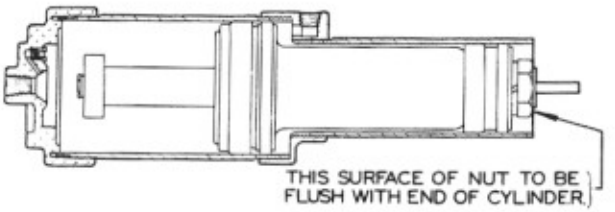


Figure G

C Emergency Door Closing Cylinder Connecting Rod

Before making adjustment "C", back striker "D" as far from micro switch as possible. With air on and porter's door switch in the "remain open" position, adjust turnbuckle "C" so the clevis pin just touches the end of the clevis slot. Then shorten the connecting rod by 1½ turns of turnbuckle "C". Re-adjust striker in accordance with instruction "D".

D Door Reversing Cut-Out Switch

With air on and porter's door switch in the "automatic" position, screw striker "D" toward the micro switch until the switch plunger is compressed about ⅛". Then open the door, hold a pencil or small screw driver blade across the inside frame of the door opening as shown in figure H, and permit the door to close against this object. Back striker "D" slowly away from the micro switch until the door reverses from this position.

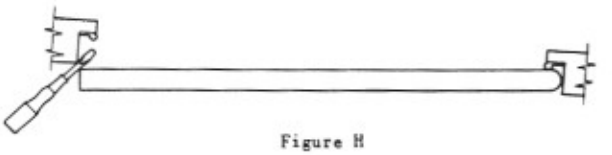


Figure H

★As the adjustment of the Door Opening and Door Closing Control Fittings is interdependent, the door opening fitting should always be adjusted before attempting to adjust the door closing fitting. When combined governors and pressure regulators are in the air feed line to the end door operators, adjustments can be made at any train line pressure exceeding the pressure at which the regulator is set. When combined governors and pressure regulators are not in the air feed line, all adjustments must be made at the service train line pressure. *(Above 100 lbs. with battery fully charged or generator operating).*

E Door Opening Control Fitting ★

With the door closed and latched, place the porter's door switch in the "remain open" position. After about five seconds, release the door latch. If the door has a tendency to slam open, loosen the jam nut and turn the adjusting screw into the door opening control fitting. If the door opens too slowly, back the adjusting screw out of the fitting until the proper speed is obtained. Then lock the adjusting screw in position with the jam nuts. The door opening speed is 3 to 3½ seconds.

F Door Closing Control Fitting ★

Place the porter's door switch in the "remain open" position. Allow the door to remain open for about five seconds, and then quickly place the porter's switch in the "automatic" position. If the door has a tendency to slam closed, loosen the jam nut and turn the adjusting screw into the door closing fitting. If the door closes too slowly, back the adjusting screw out of the fitting until the proper speed is obtained. Then lock the adjusting screw in position with the jam nut. The minimum door closing speed is 4 seconds.

G Door Reversing Switch Striker

Adjust the switch striker so that with the door in the closed position, and the porter's door switch in the "manual" position, there is 1/16" clearance between the switch striker and the micro switch plunger.

H Time Delay Relay

Rotate the adjusting screw clockwise to increase the delay and counterclockwise to decrease the delay. The setting *should be* four to five seconds from the time the latch is actuated until the door starts to close.

OPERATOR ENGINE - - - - - SHOP REPAIR

Remove the operator engine from the base plate as follows:

1. Disconnect the union which joins the air line between the port on the large cylinder end cap and the exhaust-type Magnet Valve.
2. Disconnect the air line leading to the door-opening control fitting at the center port of the operator engine.
3. Disconnect the main connecting rod between the door shaft and the engine.
4. Remove the two bolts from the clamps holding the operator engine fastened to the base plate.

To disassemble the operator engine:

1. Place it in a bench vise and remove the end cap.
2. Take out the entire piston assembly to examine the piston cups and lubricating rings.
3. The piston cap can be removed by unscrewing the lock nut.
4. The piston cup can be removed by unscrewing the follower.
5. Replace piston cups with new ones.
6. Inspect the felt lubricating rings and replace them.
7. Clean all metal parts in solvent and apply fresh grease to the piston cups and to the cylinder walls.
8. Saturate the two felt lubricating rings with SAE-30 oil.
9. Before re-assembling the operator engine, replace all gaskets.
10. Then install the re-assembled engine on the base plate and clamp it firmly in position.
11. Attach the main connecting rod and connect the air line piping to the center port door-opening control fitting.
12. Complete the installation, connect the piping between the cylinder end cap and the exhaust type Magnet Valve.

For valve grinding instructions, see Figures 151 and 152.

N.H.

MAGNET VALVE

(PRESSURE-TYPE)

PART LIST

C-4417 Spring
C-8920 Valve & Stem
C-10891 Plug
C-10896 Coil Core
C-10903 Push Rod
C-10905 Cap Nut
C-11364 Pivot Screw
C-24070 Bracket & Spring
C-24170 Armature Lever
C-44220 Valve Body & Seats

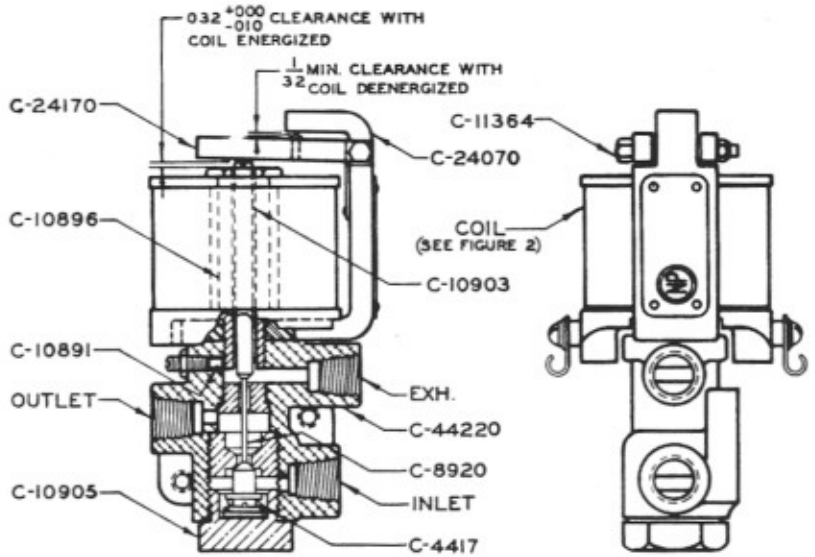


Figure 151

VOLTAGE	COIL NUMBER	MAGNET VALVE COMPLETE WITHOUT BRACKET
32	C-16630	C-43720
55-75	C-31670	C-43730
120	C-41950	C-43670

VALVE GRINDING

To grind the lower valve remove cap nut, spring, and valve. Then apply a small quantity of grinding compound to the face of the valve. Replace it in the magnet valve and rotate it with a screw driver until the valve face is smooth.

To grind the upper valve, remove the armature lever and push rod. Apply a small quantity of the grinding compound to the valve face of the push rod and replace it in the magnet valve. Rotate the push rod with a screw driver until all scores disappear from the valve face.

After the valves have been ground, the valve faces should be thoroughly washed in solvent and all air passages in the magnet valve should be blown out with compressed air to make certain that no particles of grinding compound remain in the magnet valve.

When the magnet valve has been re-assembled, make sure that the top of the push rod projects .032" plus .000" or minus .010" from the face of the coil core. If the push rod projects less than .022", it should be replaced with a new one.

The magnet valve may be tested for leakage with an air pressure gauge, or by applying soap and water solution to the ports. With the magnet valve coil energized, or with the armature lever depressed manually, no indication of pressure should be obtained at the outlet connection With the magnet valve coil de-energized, no pressure should be obtained at the exhaust connection.

Magnet valves require no lubrication.

MAGNET VALVE

(HEAVY DUTY EXHAUST TYPE)

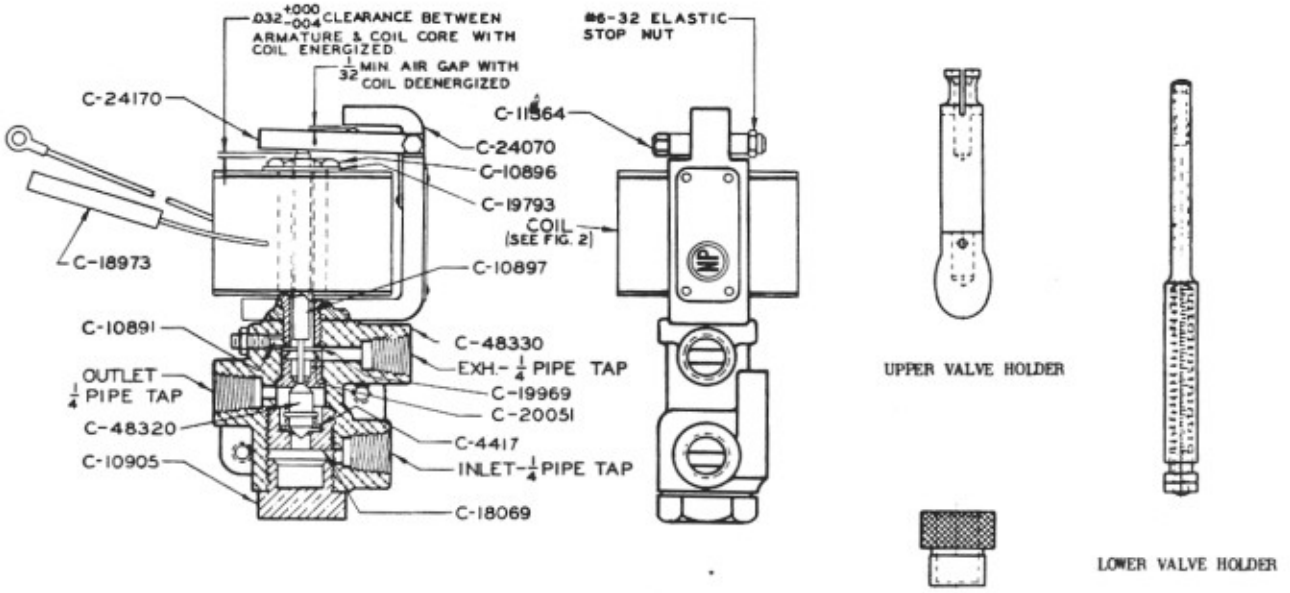


Figure 152

PART LIST

C-4417	Spring	C-19793	Spring Washer
C-10891	Plug	C-19969	Disc (Silencer)
C-10896	Coil Core	C-20051	Spring (Silencer Disc)
C-10897	Push Rod	C-24070	Bracket & Spring
C-10905	Cap Nut	C-24170	Armature Lever
C-11364	Pivot Screw	C-48320	Valve
C-18069	Valve Seat	C-48330	Body
C-18973	Sleeve	Coil - -	See table.

VOLTAGE	COIL NUMBER	MAGNET VALVE COMPLETE WITHOUT BRACKET
32	C-48340	C-48370
64	C-48350	C-48380
120	C-48360	C-48390

VALVE GRINDING

Use valve holder C-21300 for grinding the lower valve. Unscrew cap nut and the lower valve seat from the magnet valve body and remove the armature lever and push rod. Apply a small quantity of grinding compound to the lower face of the valve and replace it in the magnet valve housing, together with the spring and lower valve seat. The valve holder is then placed in the hole in the center of the coil so that the slotted end of the valve holder will fit over the stem of the valve. Rotate the valve holder and valve until the valve face is smooth.

The tool for grinding the upper valve face consists of a valve holder C-21290 and a guide C-13622. To grind the upper valve face, unscrew cap nut and remove the lower valve seat, spring, and valve from the magnet valve housing. The lower end of the valve is then placed in the end of the valve holder and the valve holder is pushed part way through the guide. A small quantity of grinding compound is now applied to the upper face of the valve. The valve holder guide, with the valve holder and valve, is then placed in the bottom of the magnet valve. The end of the valve holder which projects through the magnet valve is rotated until all scores disappear from the upper valve face.

After either valve has been ground, the valve faces should be thoroughly washed with solvent and all air passages in the magnet valve should be blown out with compressed air to make certain that no particles of grinding compound remain in the magnet valve.

After re-assembling the magnet valve, make sure that the top of the push rod projects .032" plus .000" or minus .004" from the face of the coil core, when the coil is energized. If the push rod projects less than .028" it should be replaced.

The magnet valve may be tested for leakage with an air pressure gauge, or by applying soap and water solution to the ports. With the magnet valve energized, or with the armature lever depressed manually, no indication of pressure should be obtained at the outlet connection. With the valve de-energized, no pressure should be obtained at the exhaust connection.

Magnet valves require no lubrication.

EMERGENCY DOOR CLOSING CYLINDER - - SHOP REPAIR:

Remove the emergency cylinder from the base plate as follows:

1. Remove the bolts from the mounting brackets holding the emergency cylinder in position on the base plate.

2. Take the pin out of the clevis jaw. The emergency cylinder can now be removed from the base plate for disassembling.

CAUTION: The spring in the emergency cylinder exerts a pressure of about 90 pounds against the coupling. Therefore, before attempting to dismantle the emergency cylinder, it is the best to be equipped with a spring releasing device like the one shown in Figure 153.

Disassemble the emergency cylinder as follows:

1. Place it in a bench vise in a vertical position, held by the cylinder cap port projection.

2. Remove the nut and washer from the end of the piston rod and detach the connecting rod jaw.

3. Using a spanner wrench, unscrew the slotted rear cylinder from the coupling, holding the coupling with a strap wrench to prevent it from turning.

4. Then lift the cup guide from the end of the piston rod.

5. The coupling should now be unscrewed from the main cylinder. Before doing this, however, screw a 12-inch extension rod (See Figure 154) to the threaded end of the piston rod to serve as a guide for the spring as it is being released from the cylinder.

6. Then place the spacer (shown in Figure 154) over the extension rod and on top of the inner flange of the coupling.

7. Place the slotted section of the spring-releasing lever over the extension rod and against the top of the spacer (See Figure 154).

8. Using a strap wrench, start unscrewing the coupling from the main cylinder, which must be held with another strap wrench to prevent it from turning in the cylinder end cap. When the coupling is almost fully unscrewed from the cylinder, be sure to hold the slotted spring releasing lever firmly against the spacer so as to release the spring slowly.

9. With the coupling off, unscrew the main cylinder from the end cap which is still held in the vise.

10. Then remove the spring, the piston rod and piston assembly from the cylinder. *NOTE:* To insure correct re-assembly mark the end of the main cylinder which was attached to the end cap.

11. Renew the piston cup and felt lubricating strip.

12. Remove the piston cup, unscrew the lock screw and follower washer and remove the expander and washer.

13. Clean all metal parts in solvent and apply fresh grease to the piston cup, the spring, and to the interior walls of the main cylinder.

14. Saturate the lubricating strip with S A E-30 oil.

15. Re-assemble the piston assembly as shown in Figure 155.

Re-assemble the emergency cylinder as follows:

1. Insert the piston rod and piston assembly through the end of the main cylinder which was previously marked for correct attachment to the end cap.

2. Replace the gasket in the end cap.

3. Then place the end cap port projection in the vise and screw the main cylinder into the end cap and tighten.

4. Screw the extension rod to the end of the piston rod (See Figure 154) and drop the spring into the cylinder.

5. Place the coupling over the piston rod extension with the recessed end of the coupling against the end of the spring.

6. Place the slotted section of the spring releasing lever over the piston rod extension and press the lever down on top of the spacer against the pressure of the spring until the threads of the coupling and the cylinder make contact. Screw the coupling to the cylinder and tighten with a strap wrench.

7. Remove the spacer and extension rod and place the cup guide on the piston rod, as shown in Figure 155.

8. Screw the rear cylinder into the coupling using a spanner wrench. Make certain that when tightened, the slotted side of the rear cylinder is exactly at right angles to the end cap port and on the correct side.

9. Apply a thin film of grease to the interior walls of the rear cylinder and to the edges of the slot in this cylinder.

10. Place the connecting rod jaw on tht end of the piston rod and fasten it with the lockwasher and lock nut. The emergency cylinder can now be attached to the base plate.

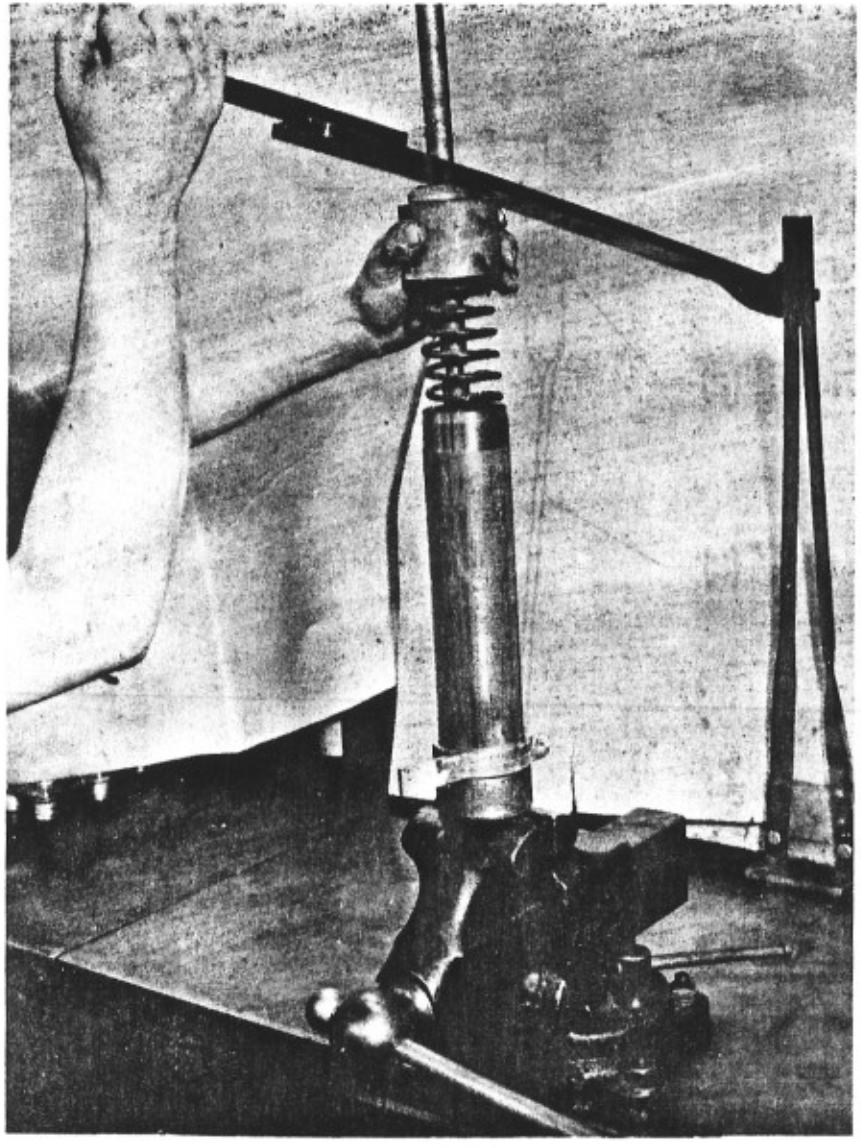
INSPECTION of the electric door operator will be as outlined in Superintendent of Yards letter dated July 1st, 1949 and Procedure dated May 1st, 1949.

In addition the following lubrication should also be given the door operator.

Lubricate two felt rings located in the small cylinder. This is done by applying the lubricant with an oil can through the four slots in the piston center with door fully closed.

The present inspection procedure calls for 20 to 30 drops of oil to be put in operator at fitting 'E'. This fitting can be seen in illustration on Page 208.

N.H.



EMERGENCY CYLINDER SPRING DEVICE

Figure 153

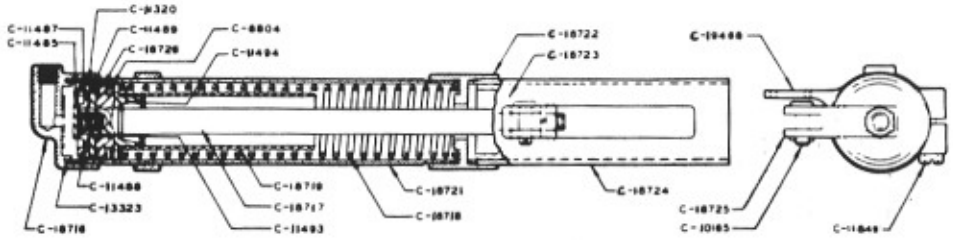


Figure 155

EMERGENCY CYLINDER

PART LIST

C-8804	Lubricating Strip
C-10165	Pin for Jaw
C-11320	Cup Assembly
C-11485	Lock Screw
C-11487	Follower Washer
C-11488	Expander
C-11489	Washer
C-11493	Plunger Gasket
C-11494	Lubricator Retainer
C-11849	Screw
C-13323	Gasket
C-18716	Cap
C-18717	Plunger (Rod)
C-18718	Spring
C-18719	Spring Guide
C-18721	Cylinder
C-18722	Coupling
C-18723	Cup Guide
C-18724	Rear Cylinder
C-18725	Connecting Rod Jaw
C-18726	Piston Center
C-19468	Bracket for Micro-switch

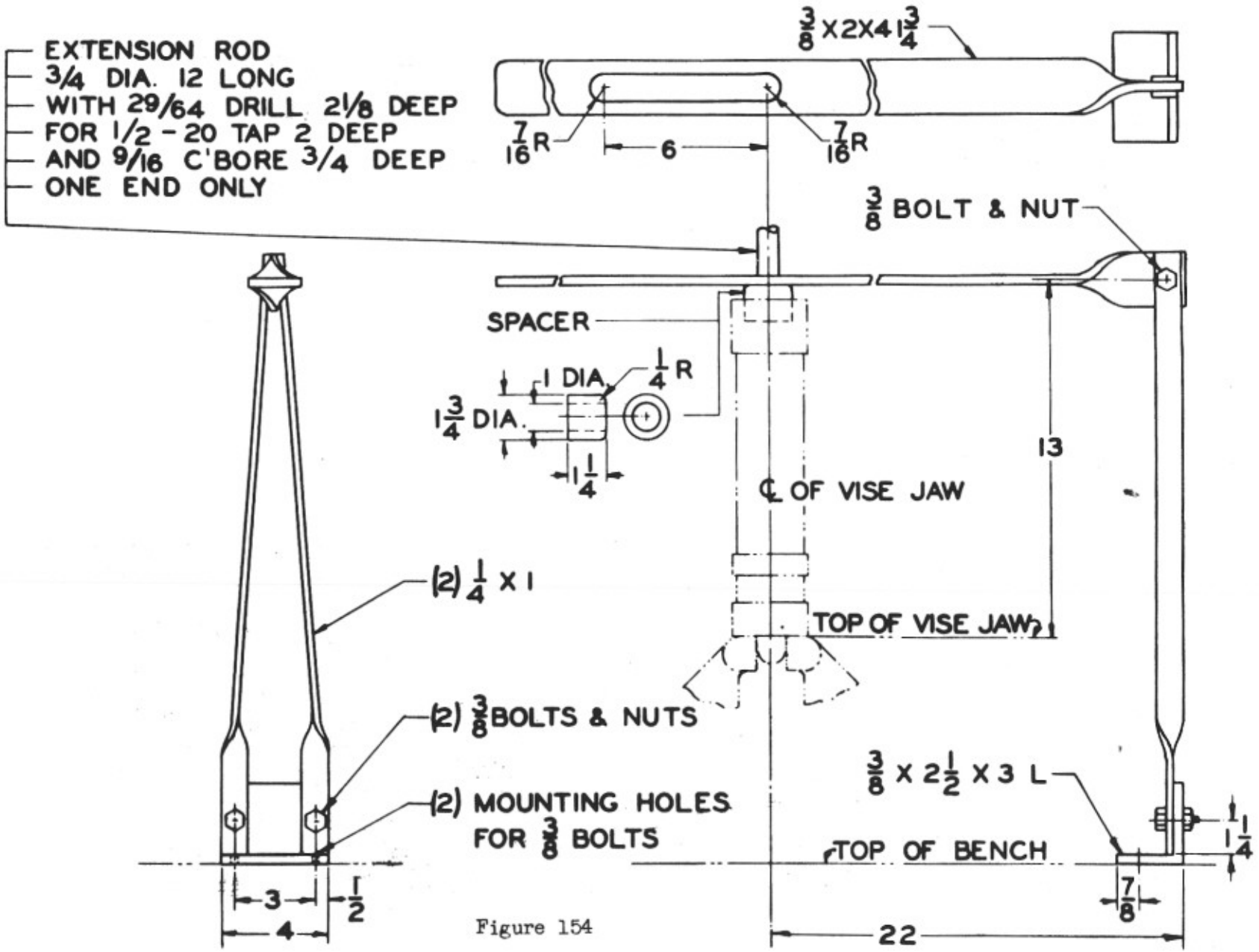


Figure 154

EMERGENCY CYLINDER SPRING DEVICE

TRUCKS

Postwar sleepers built by Pullman Standard have trucks designed per General Steel Castings Company Drawing 30280 and are assembled as follows

Truck has 8'-0" wheel base with 12'-10" overall in length and 7" in width. Pedestal openings are 13-3/8" into which fits Fafnir roller bearing journal box. The original wheel units consist of 36" diameter multiple wear solid wrought carbon steel wheels, Class B, mounted on 6 x 11 roller bearing axles equipped with Fafnir roller bearings and box. The axles furnished with the cars at time of delivery were not equipped with spline bushings but those bought for protection stock will have the spline bushings in each end. The protective wheel and axle units are carried on record as unit roller bearing with two races, inner and water seal Fafnir 6 x 11 mounted, T-3702 and will have Class A wheels. The journal boxes are grease type and are removable in the same manner as Hyatts so that only a small allotment of journals and bearings will be stocked per Fafnir Drg. R60-330 and carried as T3703. Bolster anchor located outside of frame between truck frame casting and bolster with correct measurement between center of lug on bolster and that on truck frame - a distance of 2'-1 1/2" nominal. Bolt used on this type anchor is T-3784 while the 6" diameter rubber pads are cataloged as T-2864. Trucks have helical coil springs, both bolster and equalizer governed, according to car weight and cushion with sound deadening Fabreeka pads over springs. Center plate per GSC Drawing 26349 with inside diameter of 15 1/16". Steel wear plate, T-2927 can be used in this type center plate. Truck frame on this arrangement is per Drawing No. 30281 and the outside type swing hanger arrangement is employed with bolster springs on outside of truck frame supported by swing hangers. Purpose of the outside Spring arrangement is to cushion roll of car and support weight at extreme openside point. The removal and applying of bolster springs on this arrangement reduces labor and is time saving. Monroe shock absorbers, per Monroe Drawing 13580-Catalog T-3721 are used to eliminate vertical motion and can be found on lower bracket attached to bolster with top of shock absorber attached to bracket on outside of truck frame. Brake cylinders are mounted on one end of each side of truck with slack adjuster mounted on other end.

Side bearings are Symington Gould resilient type carried in stock as T-3721. Lateral adjustment is held between 1/8" to 3/16" per a side.

Brake rigging per American Steel Foundry drawing 80430 with braking power 90% of lightweight of car at 36 pound brake cylinder pressure at service application and 150% with 60 pounds on emergency application.

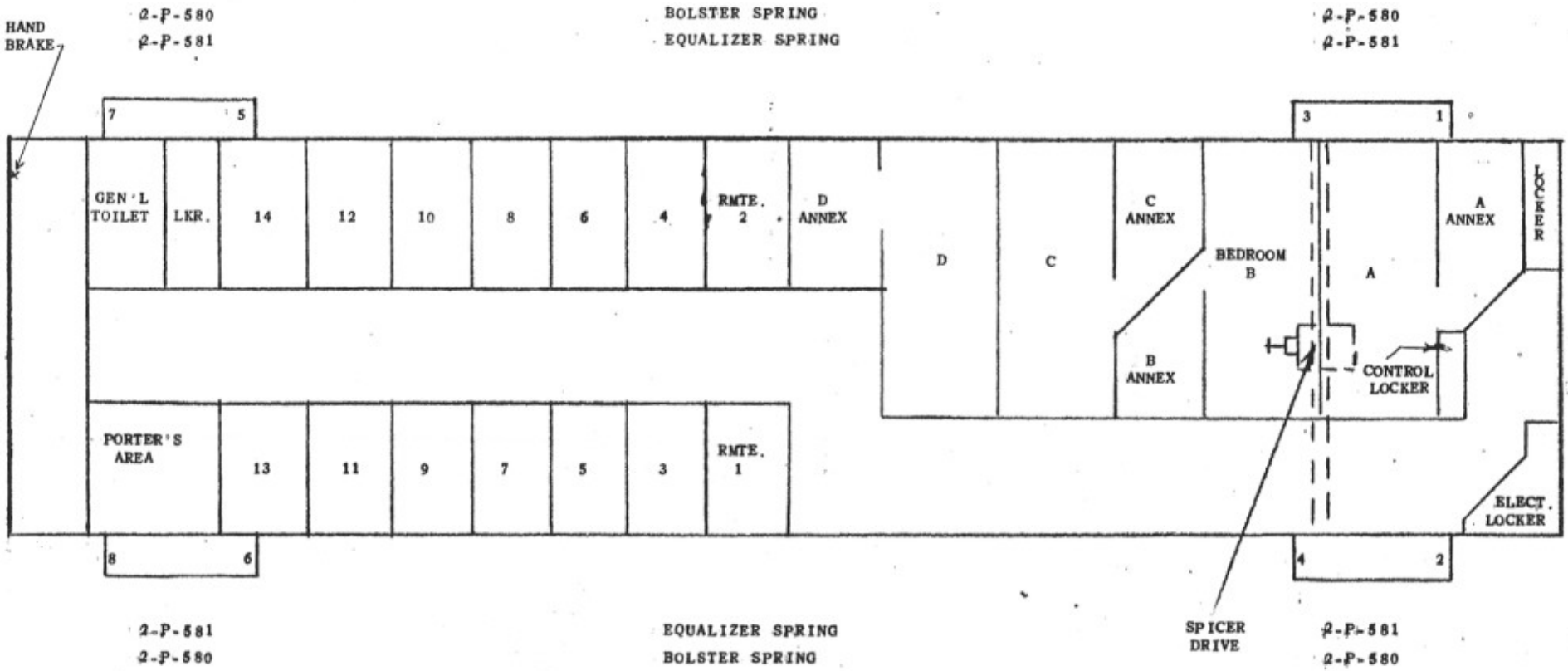
Brake beams used on this arrangement are cataloged as follows, inside beam T-3613, offset beam, spicer drive location T-3615 and other offset beam, T-3614.

Solid equalizer per Pullman Standard Drawing 170-C-25 with foot 3-3/4" x 7 1/2" employed in truck arrangement

On all cars, the trucks are secured to cars by a 3-piece safety locking center pin class L3 with method of removing pin to be indicated on plate located on side of truck frame.

N.Y.-N.H. & H.

PLAN 4159 - 14 ROOMETTES - 4 BEDROOMS



JOURNAL SIZE - 6 x 11
CLASP BRAKE - 80430
SHOCK ABSORBER - MONROE ONEWAY VERTICAL DRG. 13545
JOURNAL BOX - FAFNIR R-60-330
GSC ARRGT. DRG. - 30280
BOLSTER SPRINGS PER DRG. - 205-C-51
EQUALIZER SPRINGS PER DRG. - 205-C-52
SYMINGTON GOULD SIDE BEARING - TYPE R.S.B. 7A - DRG. R-55140