# FERRETION BOOK

Takens Tree Serial No. \_

A SETTED NO.



### THE RESERVICE AND CAMERICAL

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Page No.

## 401 AIR LOCOMOTIVE INDEX Operating Instructions

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| AIR LOCOMOTIVE GROUPS  | GAUGE                          |
| AXLE, FRONT       17         AXLE, REAR       18         BRAKE GROUP       22         BRAKE HANDLE ASSEMBLY       23         BRAKE SHOE       22 | JOURNAL BOX, FRONT             |
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#### **OPERATION**

The Air Locomotive has a two-speed transmission with neutral, driven by an air motor which is controlled by a three-position valve which changes direction of the air motor. The shifter lever on the gear box has three positions. The left position (facing forward on the locomotive) is the low gear position. Center position is neutral in which the machine is in free wheeling and the locomotive will coast. The right position is high gear. The air valve regulates the direction of motion and the speed of the locomotive. The valve is spring-centered so that when the handle is released it returns to neutral. Neutral position blocks the air from the receiver and also acts as a brake on the air motor.

For proper operation of the Air Locomotive, the two-speed transmission should be first engaged in low gear. The hand brake should be released and air applied to the air motor for the proper direction of travel. As soon as the locomotive gets up speed it may be shifted to high gear.

To stop the locomotive the air should be shut off by allowing the air valve to return to neutral. If it is necessary to make a fast stop, the air valve may be thrown in the reverse direction.

#### CAUTION:

Under no circumstances should the clutch be used to stop or slow down the locomotive. Clutch should always be fully engaged. It should be engaged before the locomotive is started but may be shifted from low to high, or from high to low while the locomotive is running, When shifted it should be fully engaged.

The brake is a parking brake only and should not be used for slowing down or stopping the locomotive. The brake shoe is intended only to hold the locomotive and train of cars when the train has come to a full stop.

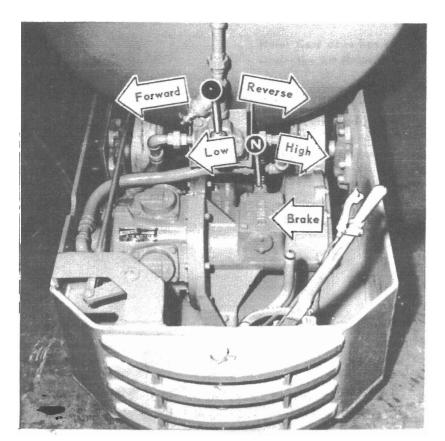
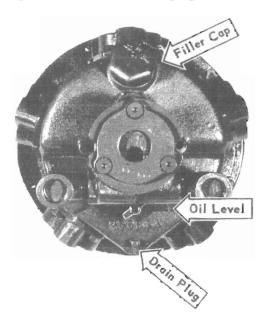


Fig. ]

#### LUBRICATION

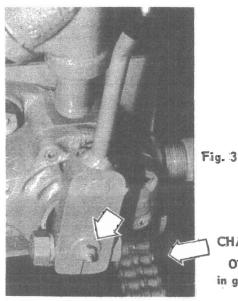
#### AIR MOTOR:

Fill with SAE-20 engine oil. (Viscosity 250/350 SUS at 100° F.) Carbon residue 0.30% maximum, neutralization No. 0.10 maximum. Check oil level daily and drain and refill weekly. Fill to oil level indicated by petcock on motor. Drain water frequently from the air motor drain plug.



#### AIR VALVE:

Grease daily with water-proof chassis grease.



#### GEAR BOX:

Use an SAE-10 engine oil (Viscosity 150/225 SUS. at 100° E) Carbon residue 0.20% maximum. neutralization No. 0.10 maximum. Do not use a high film strength oil. Keep filled to oil level plug. Do not over-fill the gear case. Drain and refill every three months.

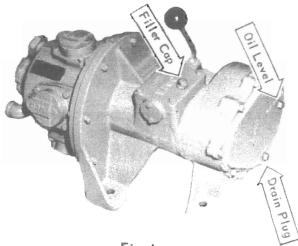


Fig. 4

Note: Gear case has a separate oil reservoir from the Air Motor.

#### WHEEL BEARINGS:

Lubricate weekly with a good grade of waterproof chassis grease (four places). Place grease on ways of front journal box.

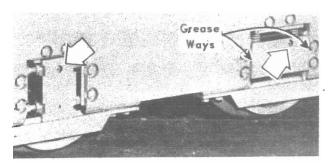


Fig. 5

#### CHAIN:

Oil chains occasionally with same oil as used in gear box.

#### **CLEANING**

#### AIR FILTER:

Open valve daily to discharge dirt and water. Every two weeks, or if the locomotive is sluggish with maximum pressure on the tank, remove the screen in the filter, clean and replace. Care should be taken to prevent damage of screen.

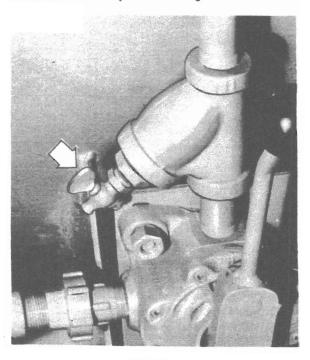


Fig. 6

#### AIR TANK:

The tank is mounted on the frame so that the front end is slightly lower than the back end. Remove the drain plug occasionally to drain off accumulated dirt and water.

#### CHAIN:

Clean all foreign matter from chain sprockets and chain guard as required.

#### **ADJUSTMENTS**

#### **BRAKE ADJUSTMENT:**

To take up the brake remove the clevis pin and shorten brake rod by turning clevis on rad.(Arrow 1)

Adjust brake shoe adjusting screw in back of brake shoe holder to prevent rubbing of shoe on wheel. (Arrow 2)



Fig. 7

#### CHAIN TAKE-UP:

To adjust the chain between the rear axle and the gear box, loosen the bolts holding the gear box to the frame and slide gear box forward to loosen chain and backward to tighten chain. Chain should be adjusted so there is about 1/4" lateral play in chain. To adjust the chain between the two axles use adjusting screws on the rear journal boxes (arrows below). The chain between the axles should be adjusted first and then the chain to the gear box. Adjustment of the journal box will affect the adjustment of the gear box chain.

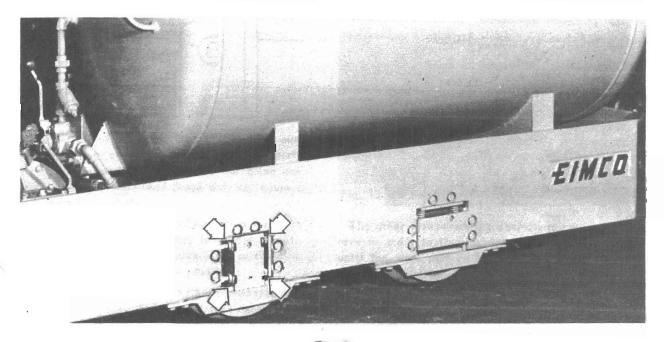
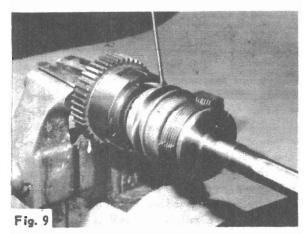


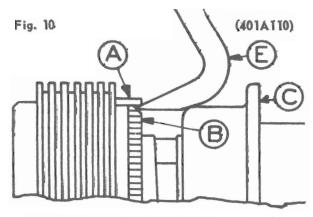
Fig. 8

#### CLUTCH ADJUSTMENT:

Remove gear box inspection cover. Adjust per illustrations and instructions following:



To adjust the clutch, before operation, first see that the shifter sleeve "C" is in neutral. Next lift spring "A" with tool "E" resting on sleeve, as shown. Do not use a screw driver. Lift spring just high enough for its lip to clear the teeth on collar "B". Then turn collar "B" one notch at a time, clockwise, BY HAND.



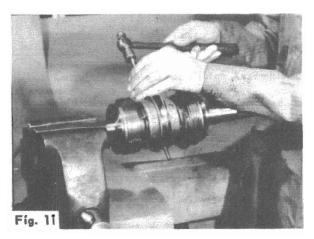
REMEMBER—Lifting the spring too high may cause breakage, or the spring to fly off. All parts will fit, if properly installed. Do not grind any parts except the keys—and these only to insure a good, tight fit in shaft.

After the clutch has been in operation for some time, it may become necessary to adjust it or to replace worn parts. If the clutch slips or the disc stack heafs up, adjustment is required.

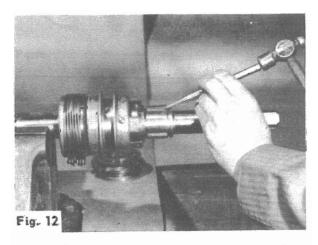
Adjustment can be made without removing the clutch from the shaft. The operation is exactly the same as explained previously. See that the shifter sleeve is in neutral. Lift the spring just high enough for the lip of the spring to clear the teeth

BY HAND. Turn clockwise to tighten—counter clockwise to loosen. Double clutches must be adjusted at both ends.

When the clutch is to be disassembled, to replace worn parts, the first step is to relieve the spring setting by lifting the adjustment spring and turning the adjustment collar counter clockwise (in the same way as described above) to its lowest point.



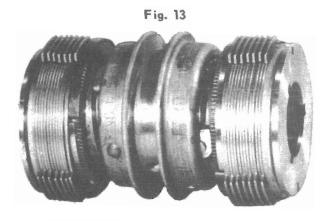
The next step is to drive out the anchor pin. Use a flat-nosed punch without taper, and a hammer for this operation.



The other disassembling operations are made in reverse order to the instructions for assembling, until the worn part is located. The exception is that keys must be removed by using a chisel and hammer, as shown.

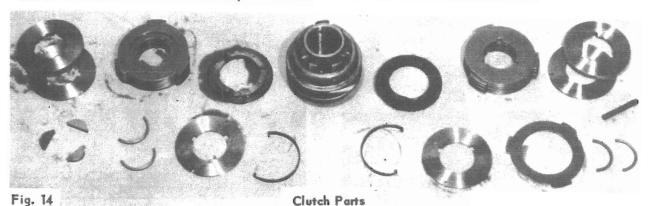
#### CLUTCH REPLACEMENT & REPAIR:

Remove air motor and gear box assembly from locomotive and unbolt air motor from gear box. Move shifting lever to high position. This will pull the clutch assembly from the bearing pocket. Remove inspection cover and shifting fork and withdraw complete clutch assembly. Remove cotter pin, nut, washer, bearings, spacer and gear from clutch shaft assembly. Move the shifter sleeve to neutral and lift adjustment spring, just high enough to clear teeth. Turn collar counter-clockwise as far as possible. Push plates and disks toward shifter sleeve and remove split ring. This allows the thrust plate, outer and inner discs and collar to be removed. Remove three keys from shaft, Rotate shifter sleeve until anchor pin is visible; then drift out pin. Remove shifter sleeve and clutch body. Remove adjusting collar, thrust plate, outer and inner discs. Reverse the above procedure for

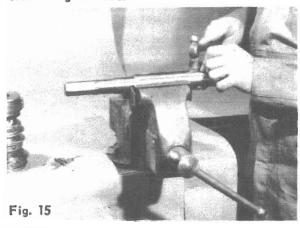


Complete Double Type Clutch Assembly

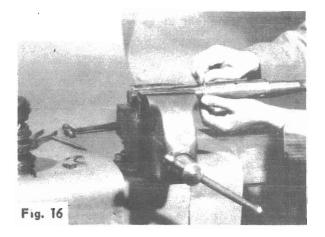
assembly, using new parts where required. Use only the "oil type" clutch parts and be sure to have the correct number of discs.



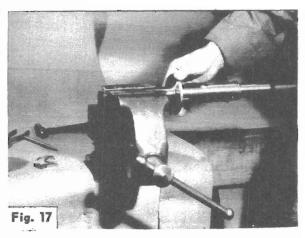
Assembling Procedure



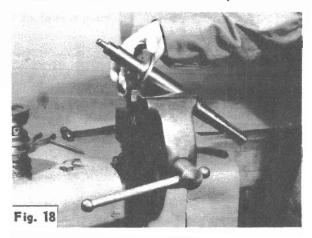
The first operation is to tap three keys into the slots in end of shaft, with a hammer as shown above. The keys should fit tightly in shaft. They must not rock. Grind LIGHTLY if necessary.



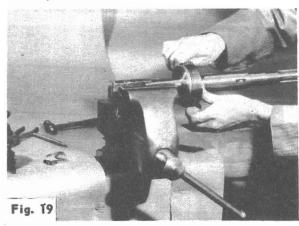
Next fit two split half rings into the groove provided for them in the shaft.



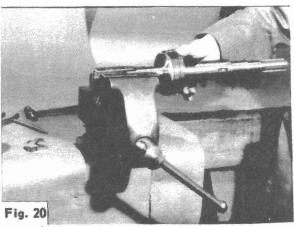
Then slip the thrust plate onto the shaft and over the keys and split ring. The split ring should fit into the counter-bore in the thrust plate.



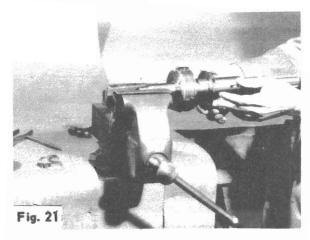
Next slip the first pressure plate onto the shaft from the distant end and slide back against the thrust plate.



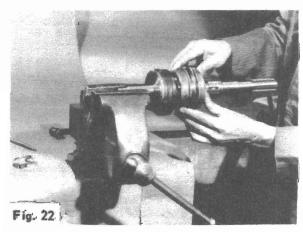
Slide the first stack of discs onto the shaft. Line up the key slots in the center of the round inner discs so they will slip over the keys. Be sure



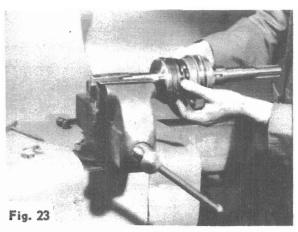
Then slide one pressure plate onto the shaft and over the keys. See that the spring is fastened securely in the notches of the pressure plate, as originally received.



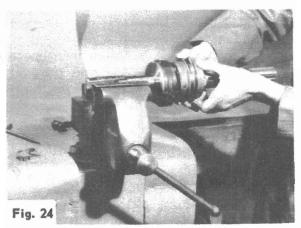
Next slide the adjustment collar onto the shaft but not all the way up to the pressure plate.



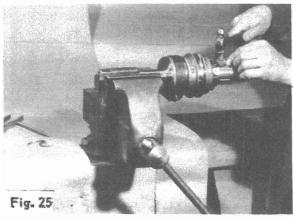
Then slip the clutch sleeve and body assembly onto the shaft. Line up the anchor pin hole in the body with the hole in the shaft, while pushing the body pin hole past the shaft pin hole.



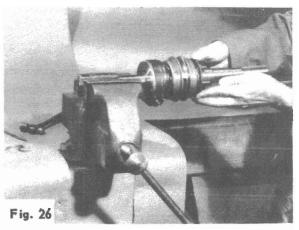
The adjustment collar should be pulled up against the body in position so that the curved cam in the collar fits around the dog. To do this, turn the collar to the left until it stops; which will be at the lowest point.



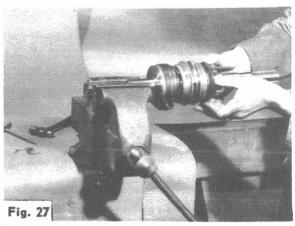
Then slide the assembly up against the discs. The anchor pin holes in the body assembly should be on a line with the hole in the shaft.



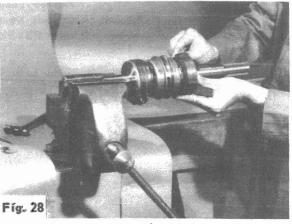
Next hammer three keys in the slots at the back of the shaft. The keys MUST fit tightly in shaft. Grind LIGHTLY, if necessary.



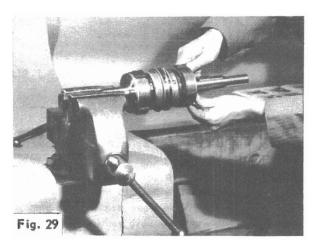
Then slide the adjustment collar onto the shoulder of the body assembly, and turn it to the right until the cam in the collar fits over the dog.



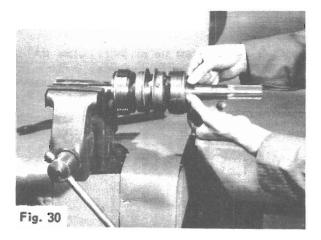
Next slide the pressure plate onto the shatt and over the keys. Be sure that the spring ends fit securely into the notches of the adjustment collar.



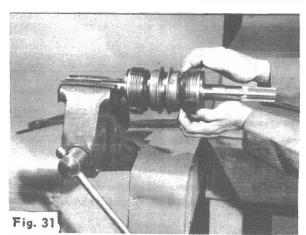
Slide the remaining stack of discs onto the shatt and line up the inner disc slots to slip over the keys. Inner and outer discs should ALTERNATE. there should be one more outer than inner discs in each stack, the same number of discs in both stacks.



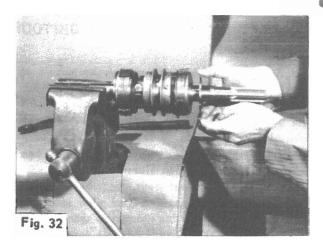
Slide the thrust plate onto the shaft and over the keys. Keep the counter-bored groove to the outside.



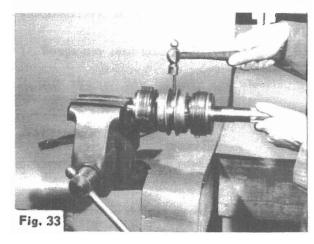
Insert the two halves of the split ring into the groove to form a complete ring.



Pull the last stack of discs, the thrust plate, the pressure plate and the adjustment collar back to the solit ring fits into the counter-hore in the



Next slide the pressure plate onto the shaft and forward against the thrust plate and split ring.



Return the body and shipper sleeve so the anchor pin hole in the body lines up perfectly with the hole in the shaft. Insert the anchor pin through the body assembly. Drive the pin through the shaft until the top of the pin is flush with the body. NEVER grind the anchor pin.

#### TROUBLE SHOOTING

#### AIR LEAKS:

- 1. Tighten loose fittings.
- 2. Tap handle on valve to see if disc is sticking or not seating correctly. If this does not stop a leak in the valve, disassemble valve and check surface of disc and valve cover. If damaged or scored, replace with new parts. When replacing either disc or valve cover, the new parts should be lapped together to insure a good seal.
- Quick-connect coupling on air receiver -- replace valve washer.
- Air motor valve in air motor worn. Replace complete valve assembly (below).



Fig. 34

The general practice of many customers to buy rotary valves only, or bushings only, to replace worn parts in air motor rotary valves has resulted in unsatisfactory conditions. This is because of the inability of the average shop to properly lap the new parts so that they operate correctly.

It has been our desire that when replacement parts are added to any Eimco product the original smooth operating efficiency be restored 100%.

To restore the original efficiency, with regards

to air motors, we are recommending that complete valve housing assemblies be purchased at the time the replacements are necessary. As an added service, now available to the customer, we suggest that valve housing, complete with bushing and valve be returned to us here at the factory, where we will install necessary parts, properly fit them and return them the same day billing the customer only for parts replaced with no charge for the labor of lapping and fitting.

Parts thus shipped should come to us prepaid as far as shipping charges are concerned.

#### LOCOMOTIVE SLUGGISH:

- 1. Gauge may read incorrectly -- replace.
- Air strainer may be dirty and blocking air supply. Remove and clean.
- 3. Excessive air leakage.
- Clutch slipping. May need adjusting or new discs.
- 5. Worn valve -- replace cover and disc.

#### BRAKE WILL NOT HOLD:

- 1. Adjust brake.
- 2. Replace brake shoe.

#### **BRAKE RUBS:**

- 1. Brake shoe needs adjusting.
- 2. Brake shoe lever spring broken or out of place.

#### CHAIN RUBS GUARD:

Take up chain by moving rear axle toward back of locomotive using journal block adjusting screws, This requires take-up of drive chain from gear box by moving gear box to rear of locomotive.

#### GEAR BOX RUNS HOT:

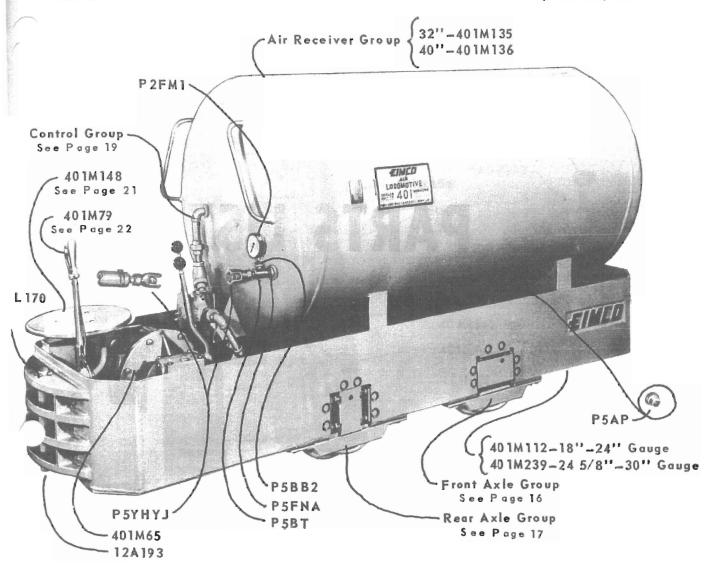
- 1. Qil level too low -- Drain and fill with new oil.
- 2. Clutch needs adjusting -- Adjust clutch.

LOCOMOTIVE CREEPS WHEN THE CONTROL VALVE HANDLE IS RELEASED AND THE SHIFTER LEVER IS IN EITHER HIGH OR LOW:

Valve handle is not returning to neutral due to foreign particles obstructing the return spring or a broken return spring. Clean or replace spring. The spring is a safety feature and should not be left off the valve.

#### **GEARSHIFT JUMPS INTO NEUTRAL:**

Clutch is adjusted too tightly so that it is not fully engaged. The clutch has an over-center position when it is fully engaged. If the adjustment is too tight the clutch cannot get into this over-center position, and consequently slips back into neutral. Loosen clutch one notch counter-clockwise and try operation.



#### AIR RECEIVER GROUP ONE REQUIRED

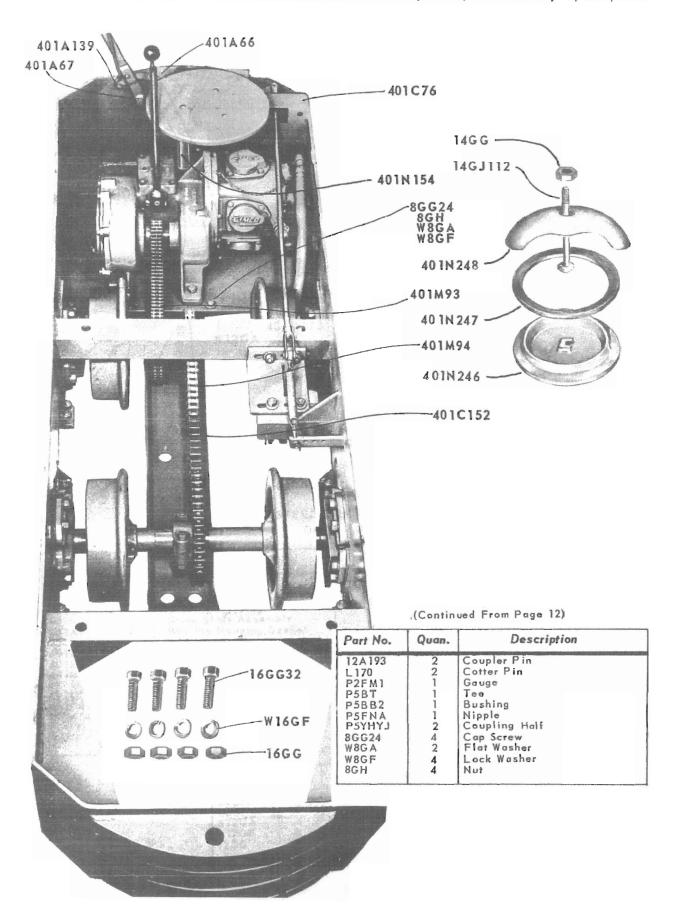
| Part No.    | Quan. | Description                     |  |  |  |
|-------------|-------|---------------------------------|--|--|--|
| See Page 17 | 1     | Front Axle Group                |  |  |  |
| See Page 18 | 1     | Rear Axle Group                 |  |  |  |
| See Page 19 | 1     | Control Group                   |  |  |  |
| 40 1M 65    | 1     | Two Speed Transmission Group    |  |  |  |
|             |       | (See Page 14)                   |  |  |  |
| 40 IM79     | 1     | Brake Group                     |  |  |  |
|             |       | (See Page 22)                   |  |  |  |
| 401M93      | 1     | Drive Chain Assembly-           |  |  |  |
|             |       | Double Strand (See Page 21)     |  |  |  |
| 40 1 M 9 4  | 1     | Drive Chain Assembly            |  |  |  |
|             |       | Single Strand (See Page 21)     |  |  |  |
| 401M112     | 1     | Frame Assembly-18"-24"Gauge     |  |  |  |
| 40 1M239    | 1     | Frame Assembly-24.5/8"-30"Gauge |  |  |  |
|             |       | Each Frame Assembly Includes:   |  |  |  |
| 40 1A 66    | 1     | Ratchet Mount                   |  |  |  |
| 40 1 A 67   | 1     | Brake Handle Pivot              |  |  |  |
| 401C76      | 1     | Bell Crank Mount                |  |  |  |
| 4 0 139     | 1     | Ratchet Mount                   |  |  |  |
| 4 54        | 1     | Seat Bracket                    |  |  |  |
| 40 148      | 1     | Swivel Seat Group(See Page 21)  |  |  |  |
| 40 1C 152   | 1     | Chain Guard                     |  |  |  |

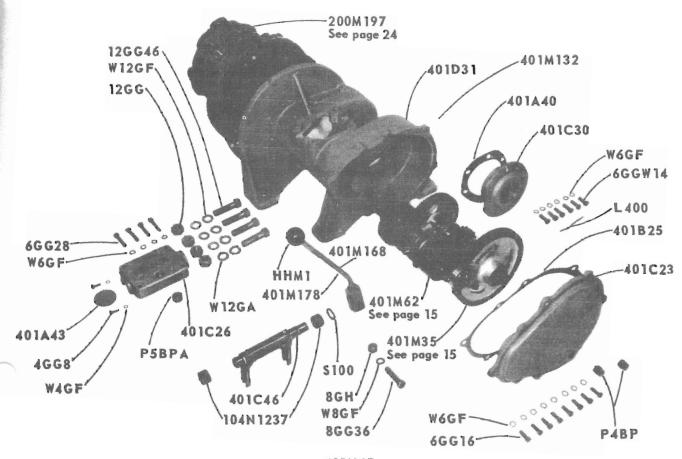
| Part No.   | Quan.             | Description ,   |  |  |  |  |  |
|--|-------------------|---|--|--|--|--|--|
| 40 1M135<br>40 1M136   | 1                 | Air Receiver Group—32" Receiver<br>Air Receiver Group—40" Receiver<br>Each Air Receiver Group Includes: |  |  |  |  |  |
| 40 1N246<br>40 1N247<br>40 1N248<br>14GJ112<br>14GG<br>16GG32<br>16GG<br>W16GF<br>P5AP | 1 1 1 1 4 4 4 4 2 | Manho le<br>Gaske t<br>Yoke<br>Bolt<br>Nut<br>Cap Screw<br>Nut<br>Lock Washer<br>Pipe Plug              |  |  |  |  |  |

BE SURE TO GIVE SERIAL NUMBER OF LOCOMOTIVE WHEN ORDERING PARTS

(Continued On Page 13)

55465



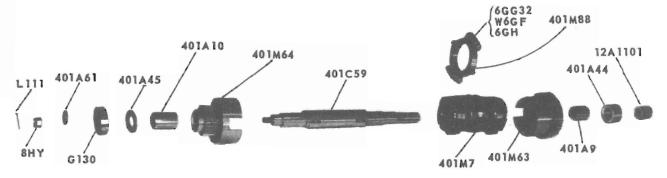


401M65
TWO SPEED TRANSMISSION GROUP
ONE REQUIRED

| Part No.   | Quan.   | Description   |  |
|--|---------|---|--|
| 401C23<br>401B25<br>401C30<br>401M35<br>401A40<br>401A43<br>401C46<br>401M62 |         | Cover Plate Cover Plate Gasket Bearing Housing Drive Shaft Assembly Bearing Housing Gasket End Plate Clutch Throw-out Yoke Clutch Shaft Group |  |
| 401M132<br>401C26<br>401D31<br>P5BPA<br>6GG28<br>W6GF                        | 1 1 4 4 | Gear Box Assembly Consists of: Inspection Cover Two Speed Gear Box Pipe Plug Cap Screw Lock Washer  |  |

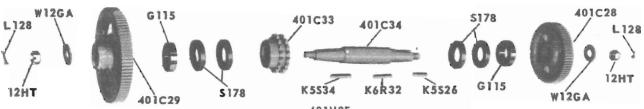
| Part No.  | Quan.       | Description                            |
|-----------|-------------|--|
| 40 1M 168 | 1           | Handle Group — Shifter<br>Consists of: |
| 401M178   | 1           | Handle Assembly-Shifter                |
| HHM1      | 1           | Handle Ball                            |
| 8G G36    | 1           | Cap Screw                              |
| W8GF      | 1           | Lock Washer                            |
| 8GH       | 1 2         | Nut                                    |
| 104N1237  | 2           | Bushing                                |
| 200M197   | 1           | Air Motor Assembly                     |
| L400      | 1           | Lock Wire                              |
| P4BP      | 2           | Pipe Plug                              |
| S100      | 1           | Seal                                   |
| 4GG8      | 2           | Cap Screw                              |
| 6GG16     | 2<br>8<br>6 | Cap Strew                              |
| 6GGW14    | 6           | Cap Screw                              |
| 12GG46    | 4           | Cap Screw                              |

| Part No.                               | Quan.             | Description   |
|--|-------------------|---|
| W4GF<br>W6GF<br>W12GA<br>W12GF<br>12GG | 2<br>14<br>4<br>4 | Lock Washer<br>Lock Washer<br>Flat Washer<br>Lock Washer<br>Nut |



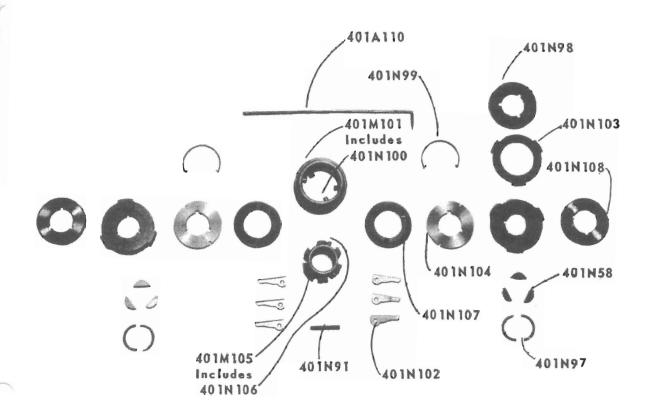
401M62 CLUTCH SHAFT GROUP One Required

| Part No. | Quan.            | Description                             |
|----------|------------------|---|
| 401M7    | 1                | Clutch (See Page 16)                    |
| 401A44   | 1                | Spacer                                  |
| 401A45   | 1                | Spacer                                  |
| 401C59   | 1                | Shaft                                   |
| 401A61   | 1                | Washer                                  |
| 401M63   | 1                | High Speed Pinion Assembly<br>Includes: |
| 401A9    | 1                | Bushing                                 |
| 401M64   | 1                | Low Speed Pinion Assembly<br>Includes:  |
| 401A10   | 1                | Bushing                                 |
| 401M88   | 1                | Clutch Throw-out Collar                 |
|          |                  | Includes:                               |
| 6GG32    | 2                | Cap Screw                               |
| W6GF     | 2                | Lock Washer                             |
| 6GH      | 2<br>2<br>2<br>1 | Nut                                     |
| 12A1101  | 1                | Spacer                                  |
| G130     | 1                | Bearing                                 |
| 8HY      | 1 1              | Nut                                     |
| L111     | 1                | Cotter Pin                              |
|          |                  |   |



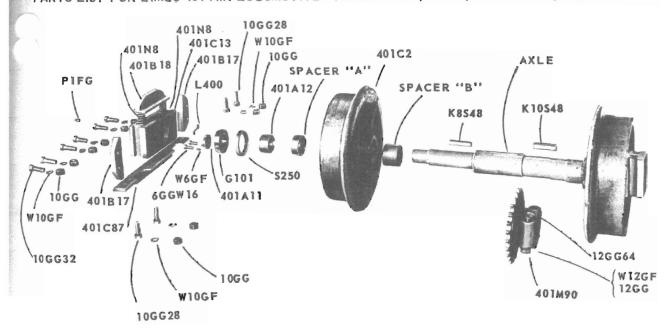
401M35 DRIVE SHAFT ASSEMBLY One Required

| Part No.   | Quan.               | Description   |  |  |
|--|---------------------|---|--|--|
| 401 C28<br>401 C29<br>401 C33<br>401 C34<br>G115<br>S178<br>K5S26<br>K5S34<br>K6R32<br>W12GA<br>12HT<br>L128 | 1 1 2 4 1 1 2 2 2 2 | High Gear Low Gear Sprocket Drive Shaft Bearing Seal Key Key Key Washer Nut |  |  |



401M7
CLUTCH ASSEMBLY
ONE REQUIRED

| Part No.  | Quan.                       | Description  |
|---|-----------------------------|--|
| 401N58<br>401N91<br>401N97<br>401N98<br>401N99<br>401M101     | 6<br>1<br>2 sets<br>12<br>2 | Key Anchor Pin Split Ring Inner Disc Adjustment Lock Spring Shipper Sleeve Includes: |
| 40 TN 100<br>40 TN 102<br>40 TN 103<br>40 TN 104<br>40 TM 105 | 6<br>6<br>14<br>4<br>7      | Dog Pressure Pin Dog Outer Disc Pressure Plate Clutch Body Includes:                 |
| 401N106<br>401N107<br>401N108<br>401A110                      | 6<br>2<br>2<br>1            | Dog Pivot Pin<br>Ádjustment Collar<br>Thrust Plate<br>Clutch Adjustment Tool         |



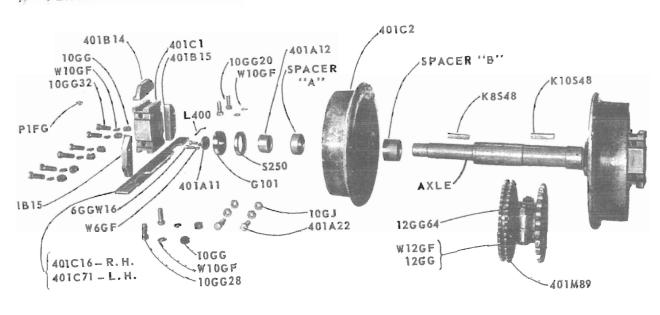
FRONT AXLE GROUP
(FOR GAUGE & GROUP NO. SEE CHART BELOW)

| Part No. | Quan. | Description                    |  |  |  |  |
|----------|-------|--------------------------------|--|--|--|--|
| 401C2    | 2     | Wheel                          |  |  |  |  |
| 40 1N8   | 4     | Spring                         |  |  |  |  |
| 401A11   | 2     | Keeper                         |  |  |  |  |
| 40 TA 12 | 2     | 2 Bearing Spacer               |  |  |  |  |
| 401C13   | 2     | 2 Front Journal Box<br>4 Guide |  |  |  |  |
| 401B17   | 4     |                                |  |  |  |  |
| 401B 18  | 2     | Spring Retainer                |  |  |  |  |
| See List | 1     | 2 Spring Retainer 1 Axle       |  |  |  |  |
| 401C87   | 2     | Retainer - Journal Box         |  |  |  |  |
| 401M90   | 1     | Sprocket Assembly              |  |  |  |  |
| 12GG64   | 2     | Cap Screw                      |  |  |  |  |
| W12GF    | 2 2 2 | Lock Washer                    |  |  |  |  |
| 12GG     | 2     | Nut                            |  |  |  |  |

| Part No.   | Quan.   | Description   |  |  |  |
|--|---|---|--|--|--|
| See List<br>G101<br>K8S48<br>K10S48<br>L400<br>P1FG<br>S250<br>6GGW16<br>W6GF<br>10GG28<br>10GG32<br>W10GF<br>10GG | 2<br>2<br>1<br>1<br>2<br>2<br>4<br>4<br>8<br>12<br>20<br>20 | Gauge Spacers "A" & "B" Bearing Key Key Lock Wire Grease Fitting Seal Cap Screw Lock Washer Cap Screw Cap Screw Lock Washer Nut |  |  |  |

#### FRONT AXLE GAUGE, SPACER & AXLE LIST

| Complete   | Gau    | ige  | Spacer         | 'A''  | Spacer         | "B"   | Axle           |
|------------|--------|------|----------------|-------|----------------|-------|----------------|
| Axle Group | inches | m.m. | Part<br>Number | Quan. | Part<br>Number | Quan. | Part<br>Number |
| 401M27     | 18     | 460  | 401A3          | 2     |                | 0     | 401C19         |
| 401M181    | 18-3/8 | 467  | 401A180        | 2     | 401A179        | 2     | 40 1C 19       |
| 401M158    | 19-5/8 | 500  | 401A160        | 2     | 401A161        | 2     | 401C19         |
| 401M117    | 20     | 510  | 401A114        | 2     | 40 1A 115      | 2     | 40 1C19        |
| 401MTT7    | 22     | 560  | 401A115        | 2     | 40 TA I 14     | 2     | 401C19         |
| 401M158    | 22-3/8 | 570  | 401A161        | 2     | 40 IA 160      | 2     | 40 1C 19       |
| 401M181    | 23-5/8 | 600  | 401A179        | 2     | 40 TA 180      | 2     | 401C19         |
| 401M27     | 24     | 610  |                | 0     | 401A3          | 2     | 401C19         |
| 401M226    | 30     | 760  |                | 0     | 401A3          | 2     | 40 1C 229      |



REAR AXLE GROUP

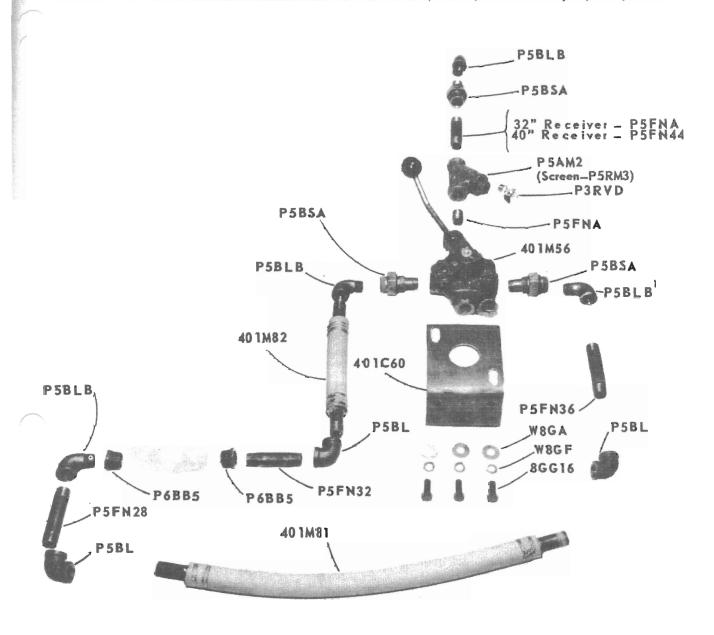
(FOR GAUGE & GROUP NO. SEE CHART BELOW)

| 1 | Part No.  | Quan.   | Description   |
|---|---|---|---|
|   | 401C1<br>401C2<br>401A11<br>401A12<br>401B14<br>401B15<br>401C16<br>See List<br>401A22<br>401C71<br>401M89<br>12GG64<br>WIZGF<br>T2GG | 2<br>2<br>2<br>2<br>2<br>2<br>4<br>1<br>1<br>8<br>1<br>1<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2 | Rear Journal Box Wheel Keeper Plate Bearing Spacer Guide Bracket Retainer - Right Side Axle Adjusting Bolt Retainer - Left Side Sprocket Assembly Includes: Cap Screw Lock Washer |

|  | Part No.  | Quan.   | Description  | Name and Address of the Owner, where |
|--|---|---|--|--------------------------------------|
| The state of the s | See List<br>G10 T<br>K8548<br>K10548<br>L400<br>P F G<br>S250<br>6GG W16<br>W6GF<br>10GG20<br>10GG28<br>10GG32<br>W10GF<br>10GG | 2<br>2<br>1<br>1<br>2<br>2<br>4<br>4<br>2<br>6<br>12<br>2<br>18<br>16 | Gauge Spacers "A" & "B" Bearing Key Key Lock Wire Grease Fifting Seal Cap Screw Lock Washer Cap Screw Cap Screw Cap Screw Lock Washer Nort Jam Nut | ACCOMM.                              |

### REAR AXLE GAUGE , SPACER & AXLE LIST

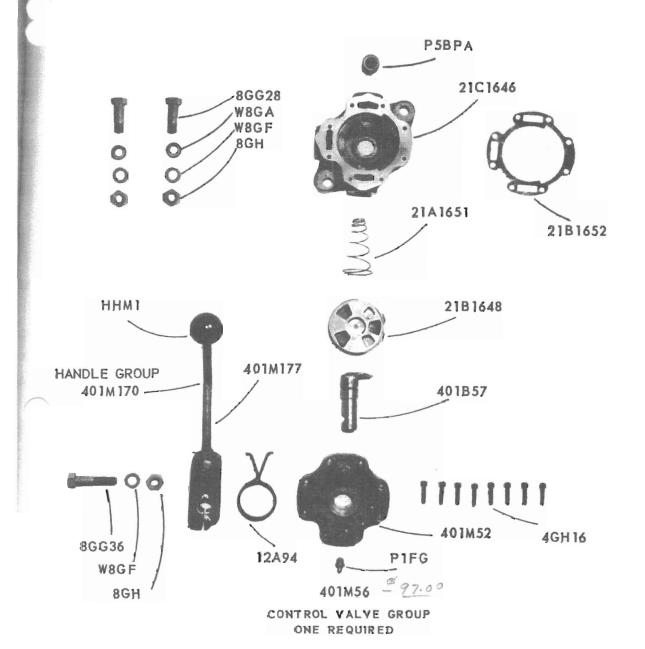
|                                  | REAR AXLE GAUGE , ST ACCIT OF  |   |   |  |  |  |   |   |
|----------------------------------|--|---|---|--|--|--|---|---|
|                                  |  | Gaug  | e   | Spacer"  | 'A''   | Spacer   | 'B"*                                      | Axle  |
| 23                               | omplefe<br>e Group   | inches  | m.m.  | Part<br>Number   | Quan.  | Part<br>Number   | Quan.                                     | Part<br>Number  |
| 40<br>40<br>40<br>40<br>40<br>40 | 0 1M 24<br>0 1M.18 2<br>0 1M.159<br>0 1M.16<br>0 1M.16<br>0 1M.159<br>0 1M 18 2<br>0 1M.24<br>0 TM.227 | 18.<br>18-3/8<br>19-5/8<br>20<br>22<br>22-3/8<br>23-5/8<br>24<br>30 | 460<br>467<br>500<br>510<br>560<br>570<br>600<br>610<br>760 | 40 TA3<br>40 TA 180<br>40 TA 160<br>40 TA 114<br>40 TA 115<br>40 TA 16 T<br>40 TA 16 T | 2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>2<br>0 | 401A179<br>401A161<br>401A114<br>401A114<br>401A160<br>401A180<br>401A3<br>401A3 | 0: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: 2: | 401C19<br>401C19<br>401C19<br>401C19<br>401C19<br>401C19<br>401C19<br>401C19<br>401C229 |



CONTROL GROUP 401M85 - 32" RECEIVER 401M86 - 40" RECEIVER

| Quan. | Description              |
|-------|--------------------------|
| ,     | Valve Group (See Pg. 20) |
|       | Bracket                  |
| 1 i   | Hose Assembly - Long     |
| l i   | Hose Assembly - Short    |
| l i   | Drain Cock               |
| 3     | Elbow                    |
| 1     | Strainer                 |
|       | Includes:                |
| 1     | Screen                   |
| 4     | Elbow                    |
| 3     | Union                    |
|       |                          |
|       | Quan.                    |

| Part No.  | Quan.                           | Description  |
|---|---------------------------------|--|
| P5FNA<br>P5FN28<br>P5FN32<br>P5FN36<br>P5FN44<br>P6BB5<br>8GG16<br>W8GA<br>W8GF | 2<br>1<br>1<br>1<br>2<br>3<br>3 | Nipple 32" Receiver Nipple 40" Receiver Nipple Nipple Nipple Nipple Nipple 40" Receiver Only Bushing Cap Screw Flat Washer Lock Washer |

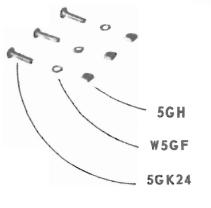


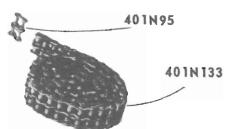
| Part No.   | Quan                                    | Description   |
|--|---|---|
| 401M52<br>401B57<br>401M170<br>401M177<br>HHM1<br>8GG36<br>W8GF<br>8GH | 1 | Valve Bonnet Assembly Valve Stem Valve Handle Group Includes: Handle Assembly Handle Ball Cap Screw Lock Washer |

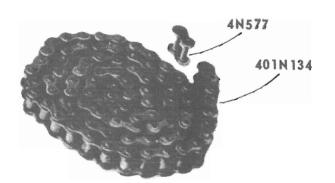
| Part No.  | Quan.     | Description   |
|---|-----------|---|
| 12A94<br>21C1646<br>21B1648<br>21A1651<br>21B1652<br>P1FG<br>P5BPA<br>4GH16<br>8GG28<br>W8GA<br>W8GF<br>BGH | 111182222 | Centering Spring Valve Body Valve Disc Valve Spring, Valve Gasket Grease Fitting Pipe Plug Cap Screw Cap Screw Washer Lock Washer |



| Part No.  | Quan.  | Desciption  |
|---|--------|---|
| 40 1B 143<br>40 1B 145<br>40 1M 174<br>40 1N 283<br>5GK 24<br>W5GF<br>5GH | 1 3333 | Seat Base<br>Seat<br>Pivot Arm Assembly<br>Ball<br>Bolt<br>Lock Washer<br>Nut |









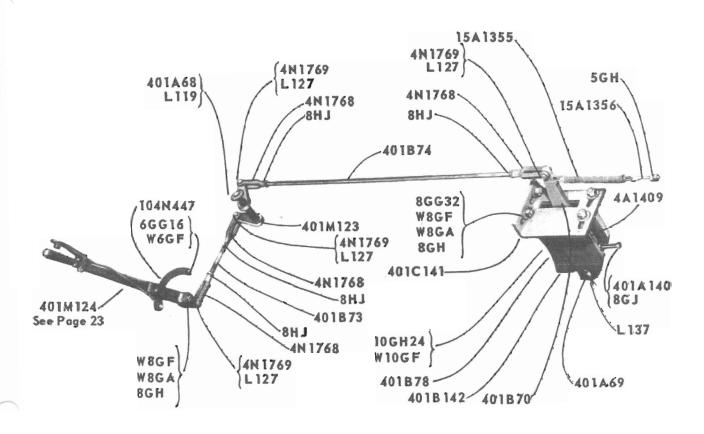
401M174

401N283

| Part No.            | Quan. | Description              |
|---------------------|-------|--------------------------|
| 40 1N133<br>40 1N95 | 1     | Chain<br>Connecting Link |

## 40 1M94 DRIVE CHAIN ASSEMBLY SINGLE STRAND ONE REQUIRED

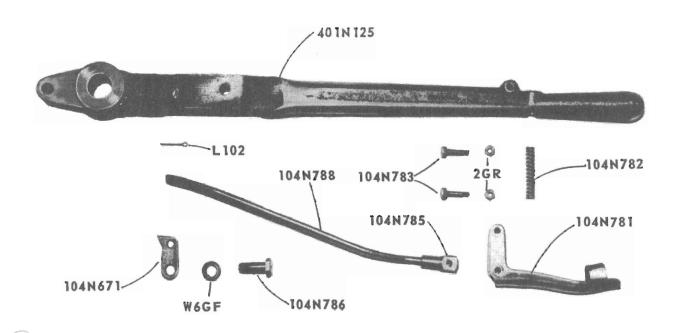
| Part No.         | Quan. | Description              |
|------------------|-------|--------------------------|
| 401N134<br>4N577 |       | Chain<br>Connecting Link |



401M79 BRAKE GROUP ONE REQUIRED

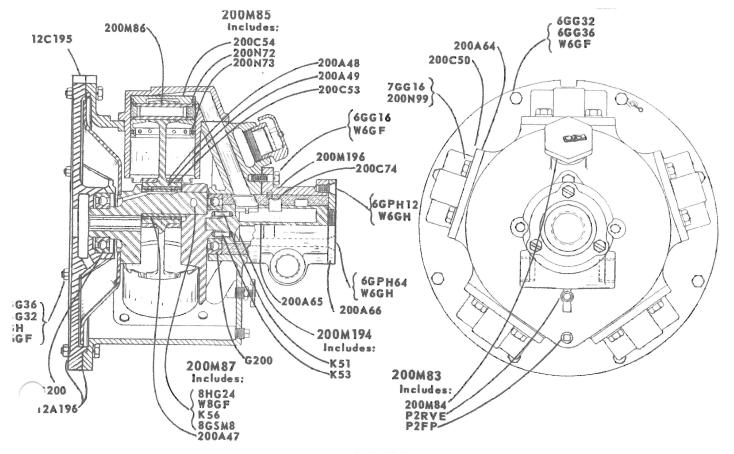
| Part No.   | Quan. | Description  |
|--|-------|--|
| 401A68<br>401A69<br>401B70<br>401B73<br>401B74<br>401B78<br>401M123<br>401M124<br>401A140<br>401C141 |       | Pin Pin Lever Rod (Short) Rod (Long) Shoe Bell Crank Assembly Handle Assembly (see pg. 23) Adjusting Screw |

| Part No.  | Quan.                | Description   |
|---|----------------------|---|
| 401B142<br>4A1409<br>4N1768<br>4N1769<br>15A1355<br>15A1356<br>104N447<br>L119<br>L127<br>L137<br>6GG16<br>8GG32<br>10GH24<br>W6GF<br>W8GA<br>W8GF<br>W10GF<br>5GH<br>8GH<br>8GJ<br>8HJ | 11441114224229522514 | Shoe Holder Pin Yoke End Pin Spring Adjusting Bolt Ratchet Coffer Pin Cotter Pin Cotter Pin Cap Screw Cap Screw Lock Washer Lock Washer Lock Washer Not Nut |



401M124
BRAKE HANDLE ASSEMBLY
ONE REQUIRED

| 401N125   1   Lever   104N671   1   Pawl   104N781   1   Latch   Spring   Latch   Screw   104N785   1   Rod End   Pawl   Screw   104N788   1   Pawl   Screw   104N788   1   Pawl   Screw   W6GF   1   Lock   Washe   Lock   Washe   Lock   Lock   Coffer   Pin   Lock   Coffer   Lock   Lo |  |
|--|--|



#### 200M197 - AIR MOTOR ASSEMBLY

|   | Description   |
|---|---|
| 30 A 47 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | Crank Sleeve Connecting Rod Retaining Ring Connecting Rod Bushing Cylinder Connecting Rod Piston Cylinder Gasket Valve Housing Gasket Valve Housing Gosket Valve Housing Cover Compression Ring Oil Ring Rotary Valve Bushing It is recommended that the complete valve and housing assembly, 200M196 be purchased instead of the bushing alone, since the bushing is reamed to proper size at the factory after assembly in the housing. Motor Housing Assembly, Includes: P2FP, P2RVE, 200M84 Vent Cap Assembly |

| Part No.          | Quan.         | Description  |
|-------------------|---------------|--|
| 200M85            | 5             | Piston Assembly,   |
| 200M86<br>200M87  | 5             | Includes: 200C54, 200N72, 200N73<br>Wrist Pin Assembly   |
| 200M88            | 1             | Plain Crankshaft Ássembly,<br>Includes: K56, 8GSM8, 8HG24, W8GF,<br>200A47<br>Complete Crankshaft Assembly,<br>Includes: 200M87, 2-200A48, 200A49, |
| 200N99            |               | 5-200C53, 2-G200   |
| 200N99<br>200M194 | 20            | Cylinder Cap Screw Washer<br>Rotary Valve Assembly,  |
|                   |               | Includes: 2-K51, K53   |
| 200M196           | 1             | Valve and Housing Assembly,<br>Includes: 200M194, 200C74   |
| 12C 195           | 1             | Motor Mounting Cover   |
| 12A196            |               | Motor Housing Gasket   |
| 6GG16             | 1             | Cap Screw  |
| 6GG32             | 2 1 2 6 1 2 6 | Motor Housing Cap Screw  |
| 6GG36             | 6             | Motor Housing Cap Screw  |
| 6GPH12            | 1             | Cap Screw  |
| 6GPH64            | 2             | Cap Screw  |
| 6GH<br>7GG16      | 20            | Nut  |
| 8GSM8             | 20            | Cylinder Cap Screw   |
| 8HG24             | i             | Set Screw  |
| G200              | 2             | Bearing  |
| K51               | 2 2 1         | Drive Pin (Small)  |
| K53               | 1             | Drive Pin (Small)  |
| K56               | 1             | Taper Pin  |
| P2FP              | 1             | Drain Plug   |
| P2RVE             | 1             | Stop Cock  |
| W6GF              | 9<br>3<br>1   | Lock Washer  |
| W6GH              | 3             | Lock Washer  |
| W8GF              | 2             | Lock Washer  |
| 200N95            | 2             | Jack Screw for removing Valve Housing,   |
| 1                 |               | (Not Shown)  |