

GENERAL

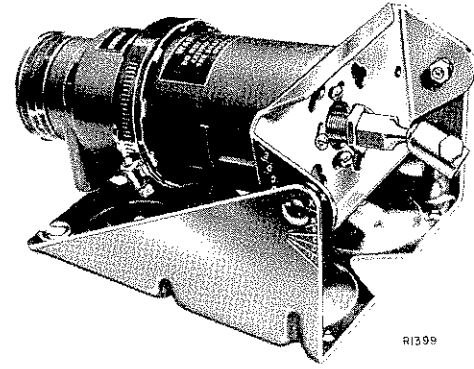
DESCRIPTION

The MP903 (inactive) and MP904 Pneumatic Damper Operators are used in HVAC systems for proportional or two-position control of mixing boxes and dampers. The MP903 is a smaller operator than the MP904. The MP904C model is a replacement for the MP904A, with a new style positive positioner. There is a new style positive positioner retrofit kit available to repair MP904A models (see REPAIR section).

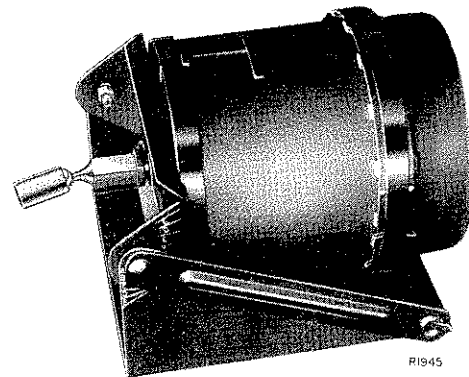
The MP903A models were inactivated in 1978 and the MP904A models were inactivated in 1981.

APPLICATION

MP903A or MP904A or C operators may be used with a direct-acting RP908A Controller and a sensor to control very large dampers in a mixed air system with outdoor air, return, and exhaust dampers. They are also used in sequencing applications. Figure 1 shows a typical hookup where positive positioning is used on large dampers.



MP903A



MP904B

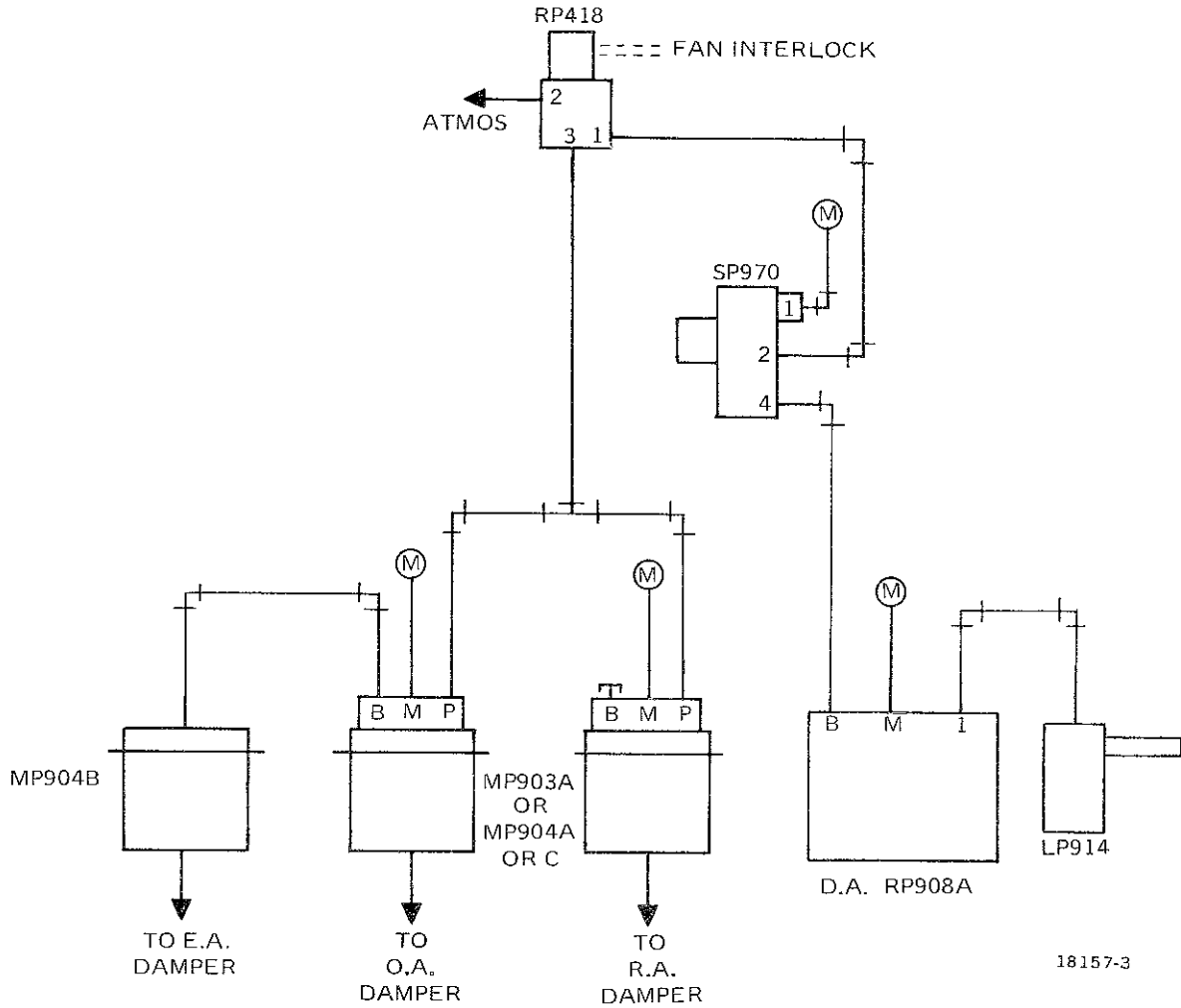


Fig. 1. MP904 Used with Mixed Air Controller to Control Outdoor, Return, and Exhaust Air Dampers.

A typical application for the MP903B or MP904B models (without positioner) is to control medium to large size dampers in a central fan system. This is done with a manual-positioning switch and electric-pneumatic relay (Fig. 2).

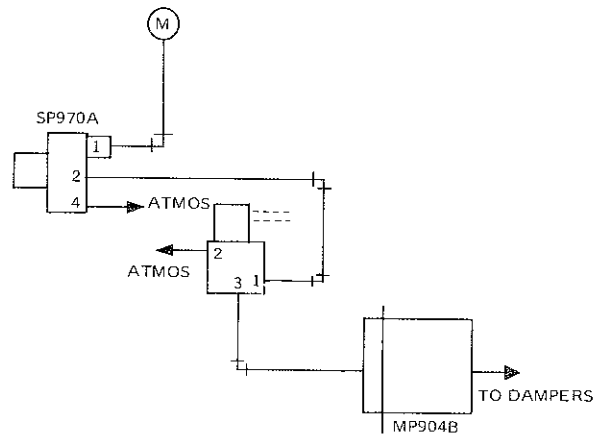


Fig. 2. MP904B Used for Damper Manual Positioning.

SPECIFICATIONS

MODELS:

MP903A, MP904A or C: Operator with positive positioner.

MP903B, MP904B: Operator without positive positioner.

MAXIMUM SAFE AIR PRESSURE: 25 lb/in² (172 kPa).

START POINT PRESSURE:

MP903A: 3 to 10 lb/in² (21 to 69 kPa).

MP904A: 0 to 10 lb/in² (0 to 69 kPa).

MP904C: 1.5 to 13 lb/in² (10 to 90 kPa).

OPERATING RANGE:

MP903A or MP904A: Adjustable 3, 5, or 10 lb/in² (21, 34, or 69 kPa).

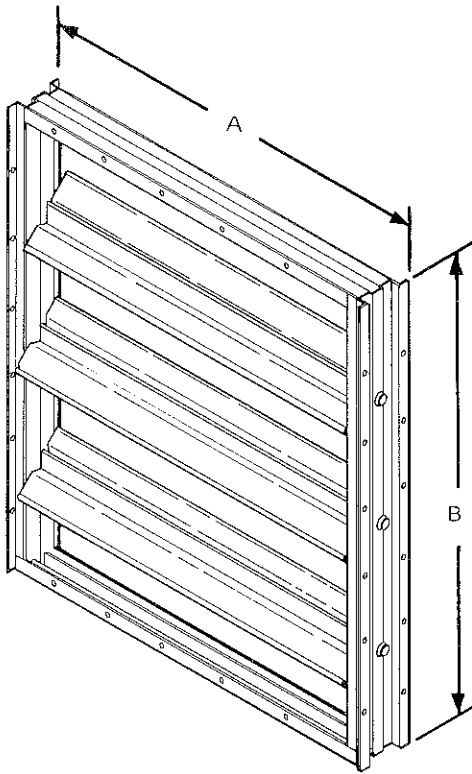
MP904C: Selectable, determined by feedback spring.

MP903B, MP904B:

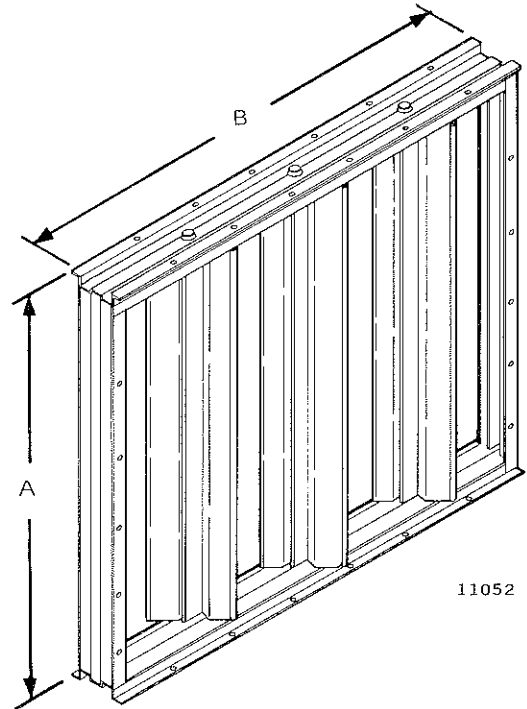
2 to 7, 3 to 13, or 7 to 13 lb/in² (14 to 48, 21 to 90, or 48 to 90 kPa).

AMBIENT TEMPERATURE RANGE: -20 to +160 F (-29 to +71 C).

DAMPER LOAD RATING: Refer to Tables I through V and Figure 3. Damper load ratings for Honeywell's Moduflow Dampers are figured by totaling the "B" dimension of all damper sections. The "A" dimension is parallel and the "B" dimension is perpendicular to the drive blade.



HORIZONTAL BLADES



VERTICAL BLADES

Fig. 3. Honeywell Moduflow Dampers Showing "A" and "B" Dimensions.

Table I. MP903A Maximum Damper Load Rating for "B" Dimensions in Inches (Millimeters).

Damper Model No.	Spring Pressure Range lb/in ² (kPa)	Modulating Service		2-Position Service		Old Sq Ft Rating
		Main Air Pressure		Main Air Pressure		
		13 lb/in ² (90 kPa)	18 lb/in ² (124 kPa)	18 lb/in ² (124 kPa)	18 lb/in ² (124 kPa)	
D640, D641	3 to 13 (21 to 90)	--	33 (838)	33 (838)	33 (838)	17
D642, D643, D644, D645	3 to 13 (21 to 90)	--	27 (686)	27 (686)	27 (686)	11

Table II. MP903B Maximum Damper Load Rating for "B" Dimensions in Inches (Millimeters).

Damper Model No.	Spring Pressure Range lb/in ² (kPa)	Modulating Service		2-Position Service		Old Sq Ft Rating
		Main Air Pressure		Main Air Pressure		
		13 lb/in ² (90 kPa)	18 lb/in ² (124 kPa)	18 lb/in ² (124 kPa)	18 lb/in ² (124 kPa)	
D640, D641	2 to 7 (14 to 48)	22 (559)	22 (559)	22 (559)	22 (559)	N/A
	3 to 13 (21 to 90)	--	22 (559)	33 (838)	33 (838)	N/A
	7 to 13 (48 to 90)	--	22 (559)	55 (1397)	55 (1397)	N/A
D642, D643, D644, D645	2 to 7 (14 to 48)	18 (457)	18 (457)	18 (457)	18 (457)	N/A
	3 to 13 (21 to 90)	--	18 (457)	27 (686)	27 (686)	N/A
	7 to 13 (48 to 90)	--	18 (457)	45 (1143)	45 (1143)	N/A
Unspecified	--	--	--	--	--	13

Table III. MP904A and MP904C Maximum Damper Load Rating for "B" Dimensions in Inches (Millimeters).

Damper Model No.	Spring Pressure Range lb/in ² (kPa) (After March 1973)	Modulating Service		2-Position Service		Old Sq Ft Rating
		Main Air Pressure		Main Air Pressure		
		18 lb/in ² (124 kPa)	20 lb/in ² (138 kPa)	18 lb/in ² (124 kPa)	20 lb/in ² (138 kPa)	
D640, D641	7 to 13 (48 to 90)	186 (4724)	258 (6553)	186 (4724)	258 (6553)	65
D642, D643, D644, D645	7 to 13 (48 to 90)	152 (3861)	214 (5436)	152 (3861)	214 (5436)	54

Table IV. MP904A and MP904C Damper Load Rating in Square Feet of Damper.

Damper Model No.	Spring Pressure Range lb/in ² (kPa) (Before March 1973)	Damper Area in Square Feet
Unspecified	3 to 13 (21 to 90)	50 sq ft at 1000 ft/min 25 sq ft at 3000 ft/min

Table V. MP904B Maximum Damper Loading Rating for "B" Dimensions in Inches (Millimeters).

Damper Model No.	Spring Pressure Range lb/in ² (kPa)	Modulating Service		2-Position Service	Old Sq Ft Rating
		Main Air Pressure		Main Air Pressure	
		13 lb/in ² (90 kPa)	18 lb/in ² (124 kPa)	18 lb/in ² (124 kPa)	
D640, D641	2 to 7 (14 to 48)	74 (1880)	74 (1880)	74 (1880)	28
	3 to 13 (21 to 90)	--	112 (2845)	112 (2845)	
	7 to 13 (48 to 90)	--	112 (2845)	186 (4724)	
D642, D643, D644, D645	2 to 7 (14 to 48)	60 (1524)	60 (1524)	60 (1524)	24
	3 to 13 (21 to 90)	--	92 (2337)	92 (2337)	
	7 to 13 (48 to 90)	--	92 (2337)	152 (3861)	

EXAMPLE:

A duct with an "A" dimension of 108 inches (2743 mm) and a "B" dimension of 36 inches (914 mm) requires three 36-inch (914 mm) damper sections. Total the "B" dimension of all three sections: 3 x 36 = 108 in. (3 x 914 = 2742 mm). Table V shows one MP904B operator with a spring range of either 3 to 13 or 7 to 13 lb/in² (21 to 90 or 48 to 90 kPa) is adequate for modulating or two-position service. Two 2 to 7 lb/in² (14 to 48 kPa) spring range MP904B operators are required for the same dampers.

OPERATION

When used with a direct acting RP908A controller as in Figure 1, with fan running, an increase in temperature at the mixed air sensor causes the controller to increase branch line pressure to the operators. If the branch line pressure decreases to a point below the pressure determined by minimum position switch S1 setting, the dampers remain at minimum position. When the fan shuts down, the outdoor air damper is fully closed and the return air damper is opened by R1. Full main air pressure at the operators allows positive damper positioning.

When using the MP904B in a central fan system with a manual positioning switch and an electric-pneumatic relay (Fig. 2), turning the fan on energizes the relay connecting Ports 1 and 3, supplying branch line pressure to the operator. The operator opens the damper to the position predetermined by the switch.

MAINTENANCE

EQUIPMENT REQUIRED

1. Thermostat key Part No. 301572A-00605 (for MP903A and MP904A).
2. Air Pressure Gage, 0 to 30 lb/in² (0 to 270 kPa) Part No. 305965 or equivalent.
3. Lubricant—Texaco Regal Starfack No. 2, Shell Alvania No. 2, or equivalent, available locally.

CLEANING AND LUBRICATION

Brush off any accumulation of dust and dirt, and visually check condition of air piping and connections, linkages, and operation of operator.

Wipe off operator shaft and apply a light coating of lubricant to the shaft and bearing.

OPERATIONAL CHECK

Install gage in branch line if none exists. Set start point on MP904C positive positioner dial (if applicable) to lowest value. Reduce branch line pressure to zero by adjusting controller setpoint and/or positioning switch. Observe dampers to be sure they are in their normal position and that normally closed dampers are completely closed. Increase the branch line pressure to pull main pressure slowly and observe the damper to check for smooth operation through the complete stroke and for proper final position.

If dampers are being operated in sequence, determine the branch line pressure where the damper is supposed to start its stroke and adjust the branch line pressure just beyond that point. The first damper should just start to move. Increase the pressure to the point where the actuator should finish its stroke or the point where the next damper in sequence should begin to operate, whichever comes first. Check all dampers in the system in this manner. Start and finish points of the operating range should be within $\pm 3/4$ lb/in² (5 kPa) of the settings. Adjust positive positioners ("A" models) if necessary. Return the setpoint adjustments of the controller and/or positioning switch to the proper setting.

OPERATING RANGE ADJUSTMENT

OLD STYLE POSITIVE POSITIONER (Gradutrol Relay)

Using the thermostat key, loosen the cover locking screw (Fig. 4). Unscrew and remove the start point adjustment knob and make range adjustments according to the directions inside. Select operating range according to application as follows.

3 lb/in² (21 kPa) range: Back off all screws to the friction stop.

5 lb/in² (34 kPa) range: Tighten plated screws, back off black screws to the friction stop.

10 lb/in² (69 kPa) range: Tighten all screws.

NEW STYLE POSITIVE POSITIONER (1982)

The operating range may be adjusted by changing the feedback spring, as shown in Figure 15 in PARTS AND ACCESSORIES section.

START POINT ADJUSTMENT

OLD STYLE POSITIVE POSITIONER

1. Reinstall and tighten the start point adjustment knob (Fig. 4) until it bottoms.
2. Back off the start point adjustment knob (one turn maximum) until the desired *start point of the correct range scale* lines up with the *indicator near the "B" marking*.
3. After making adjustments, make another operational check.
4. Make final adjustment, if needed, with the start point adjustment knob.
5. Tighten the cover locking screw.

NEW STYLE POSITIVE POSITIONER (1982)

Special application may require fine tuning the start point. Each click of the start point knob will adjust the start point 1/4 lb/in² (1.7 kPa).

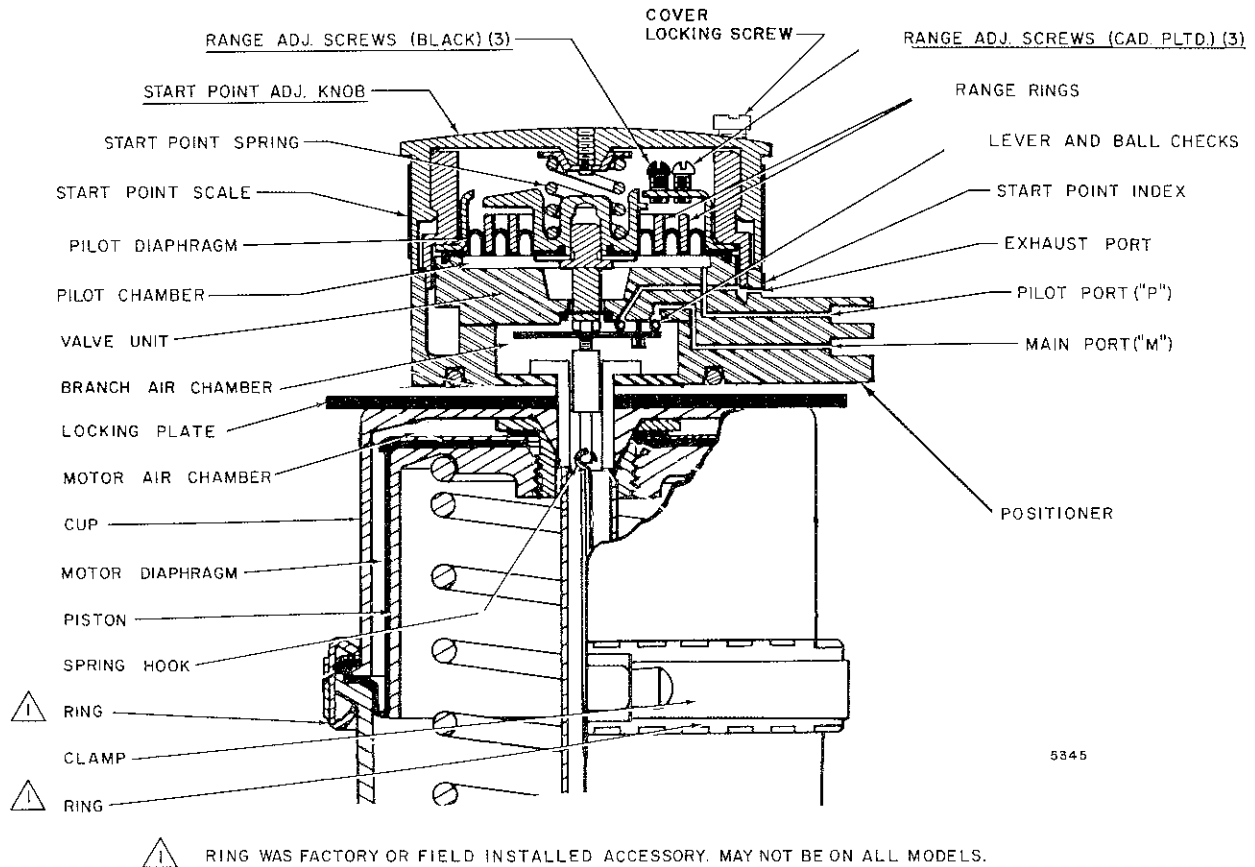


Fig. 4. Partial Cutaway Showing Old Style Positive Positioner Adjustment Locations.

STROKE TRAVEL ADJUSTMENT

Stroke stops are factory installed on certain models only. They may be field installed on any model of MP903 and MP904.

Most externally mounted operators require the full 3-1/2 in. (89 mm) stroke for proper damper blade movement. When required, operator stroke may be adjusted. Travel finish adjustment consists of two sliding limit stops positioned by a steel band and clamp. Travel start adjustment consists of positioning the travel start adjustment nut on the actuator shaft (Fig. 5).

A reduction in stroke reduces operating range. The actual operating range is obtained by dividing the actual travel set on the operator by 3.5 and multiplying by either:

1. Spring range of operator ("B" models), or
2. Operating range set on operator positioner ("A" models).

EXAMPLE:

An internally mounted operator requires 2-1/2 in. (64 mm) maximum travel with 5 in. (127 mm) wide damper blades. The operator has a positioner with a 5 lb/in² (34 kPa) range. The actual operating range would be:

$$\frac{2.5 \text{ in. (64 mm)}}{3.5 \text{ in. (89 mm)}} \times 5 \text{ lb/in}^2 (34 \text{ kPa}) =$$

$$3.6 \text{ lb/in}^2 (28 \text{ kPa}).$$

A Gradutrol Relay set for a 3 lb/in² (21 kPa) start and a 5 lb/in² (34 kPa) range would now start at 3 lb/in² (21 kPa) and finish at 6.6 lb/in² (46 kPa).

TRAVEL FINISH ADJUSTMENT PROCEDURE

1. Relieve the air pressure to the operator.
2. Loosen the travel adjusting band clamp screw (Fig. 5).
3. Slide the adjustment stop back.
4. Increase air pressure slowly until the desired damper blade finish position is obtained. Tighten the band clamp screw.

TRAVEL START ADJUSTMENT PROCEDURE

1. Apply pressure to operator.
2. Loosen the travel start adjusting nut (Fig. 5).
3. Reposition nut to desired value.
4. Decrease air pressure slowly until desired damper blade start position is obtained, repositioning nut if needed.
5. Tighten travel start adjusting nut.

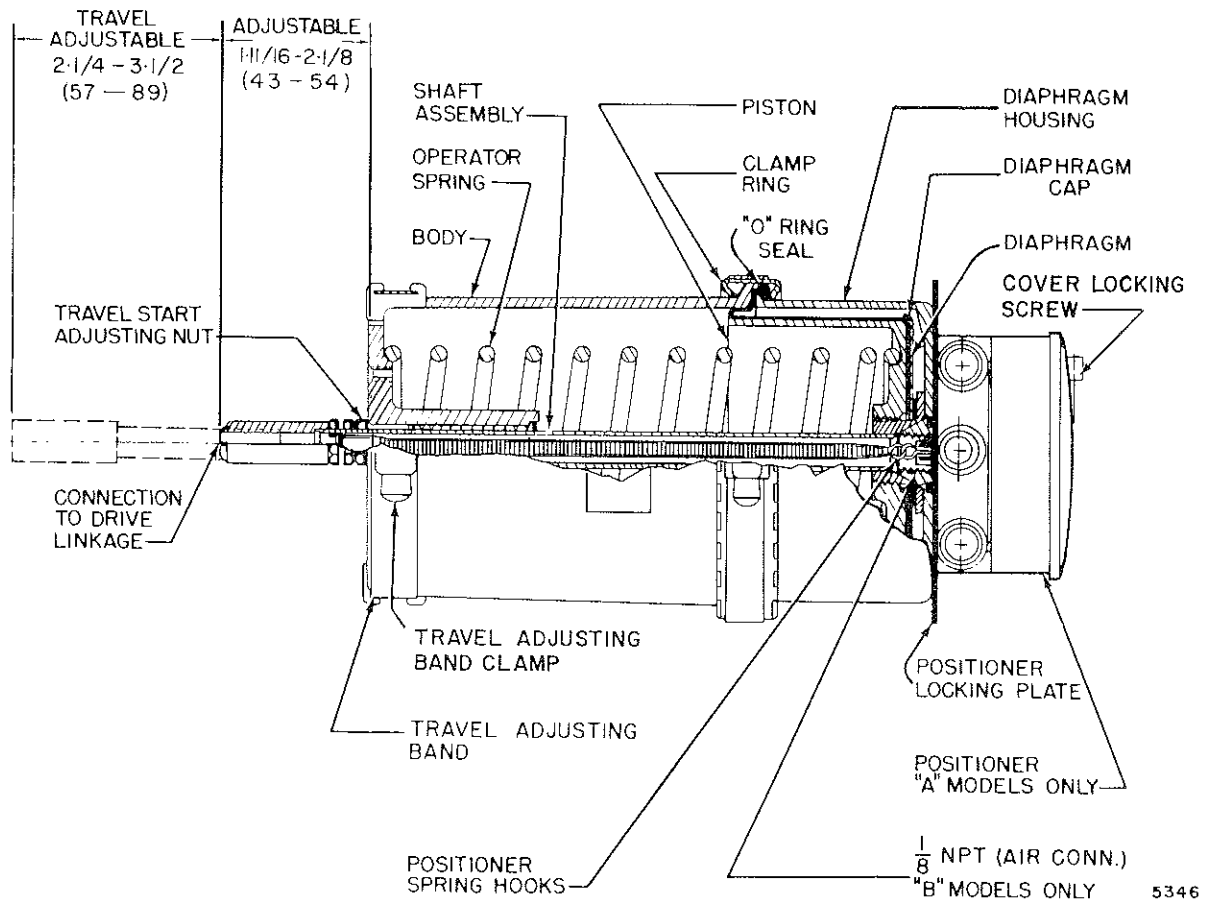
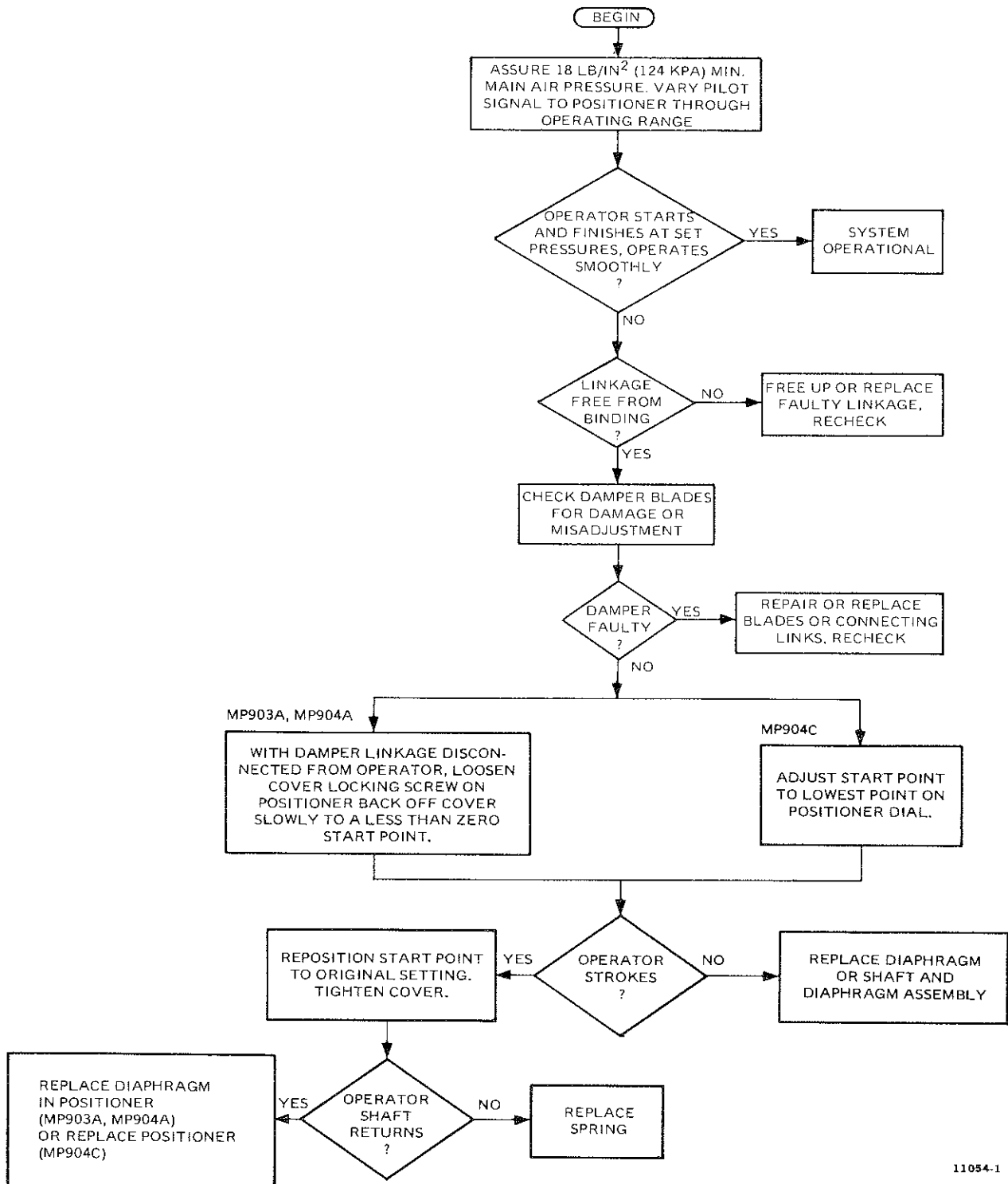


Fig. 5. Shaft Stroke Adjustments.

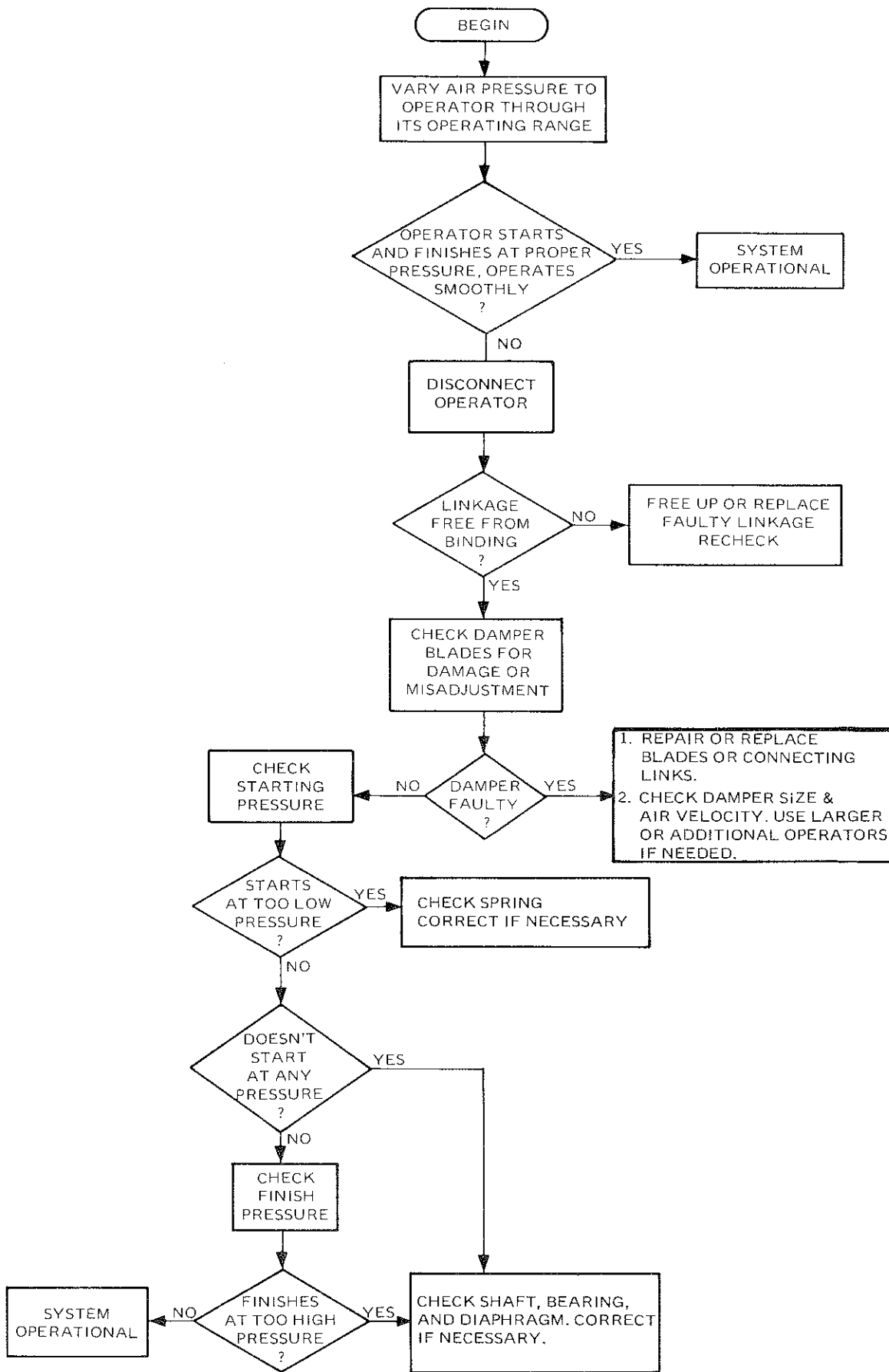
TROUBLESHOOTING

This section consists of two flowcharts. Use Figure 6 for models with positive positioners, and Figure 7 for models without positive positioners.



11054-1

Fig. 6. MP903A, MP904A and C Troubleshooting Flowchart.



11053-1

Fig. 7. MP903B, MP904B Troubleshooting Flowchart.

REPAIR

POSITIVE POSITIONER REPLACEMENT

1. Remove positioner by turning positioner locking plate (Fig. 8). **DO NOT TURN POSITIONER.**
2. When positioner assembly (Fig. 8) is disengaged, gently pull relay and disengage positioner spring hook (Fig. 5 in MAINTENANCE section) from follower spring. Let spring hang inside piston shaft.

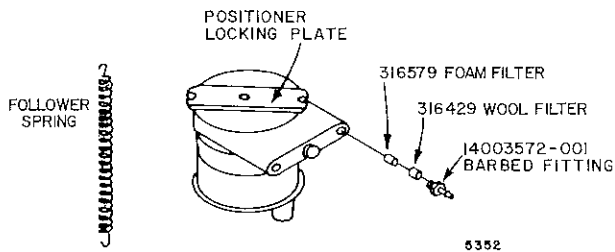


Fig. 8. Positive Positioner Gradutrol Relay Assembly No. 313555A-E. The Follower Spring, Shown Above, Is Included with 313555B and D.

3. Remove stud from shaft, withdraw spring holder, and discard follower spring.

To replace with old style positive positioner:

1. Fasten a string or wire to one end of the new spring. Run string or wire through piston shaft, from the spring holder end to the positioner end. Attach the free end of the follower spring to the spring holder and pull this assembly

through the piston shaft with the string (wire). Replace the stud on the piston shaft.

2. Rehook the spring to the new positioner assembly and remove the string (wire).
3. Engage relay and turn positioner locking plate clockwise. **DO NOT LET POSITIONER TURN.**

To replace with new style positive positioner:

1. Remove damper linkage from operator shaft.
2. Screw nut on operator shaft as far as it will go.
3. Install lever arm on operator shaft. Shaft end balljoint acts as lock nut to hold lever tight.
4. Reinstall linkage.
5. Secure positioner in place with clamp as shown in Figure 9. Feedback spring housing will orient correctly on operator by notches.
6. Install barbed fitting from kit into operator inlet.
7. Install tubing from operator inlet fitting to positioner branch port.
8. Select feedback spring from kit and hook spring to lever arm and positioner as shown in Figure 9.
9. Recalibrate start point.

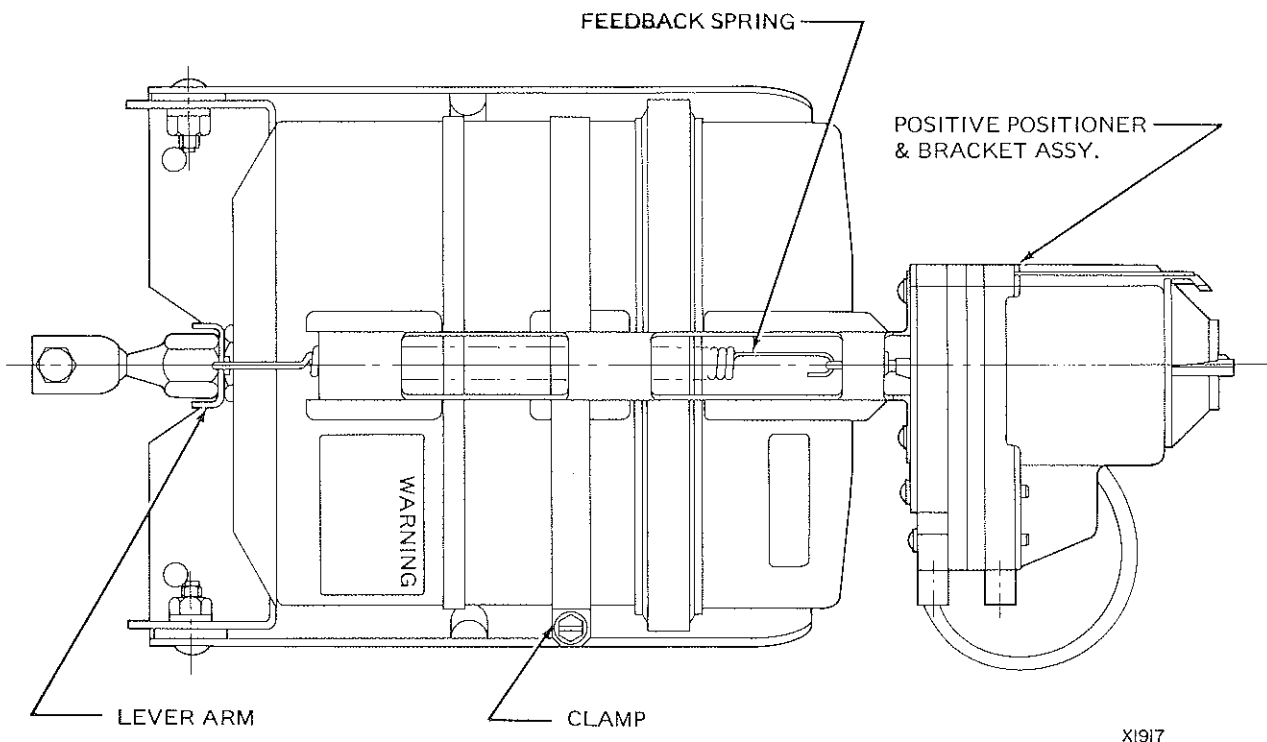


Fig. 9. MP904 Showing Mounting of Positive Positioner.

DIAPHRAGM AND SHAFT REPLACEMENT

CAUTION

The operator will not function if the diaphragm is wrinkled. The diaphragm will wrinkle if the shaft is pulled out by opening the damper manually after installation, or if the shaft is rotated.

1. Remove positioner on "A" models (see POSITIVE POSITIONER REPLACEMENT paragraph).
2. Remove stud and all but one nut from shaft (last nut must be close to housing). Loosen clamp screw on band and remove band and ring from operator.
3. Set operator on hard surface and hold firmly with shaft facing upwards.

WARNING

Maintain a firm hold on upper cup assembly to prevent injury from sudden decompression of main spring during removal of last nut.

Remove last nut slowly and guide upper cup assembly over shaft threads.

4. Remove lower cup from shaft and diaphragm assembly. Secure the motor shaft nut in a bench vice. The motor cup provides sufficient torque to unscrew the assembly by hand and retighten it after replacing diaphragm.
5. When reassembling operator for Series 1 and 2 of MP903A and MP903B, and Series 1 of MP904A and MP904B, make sure rim of diaphragm overlaps edge of lower cup. For Series 2 through 5 of MP904A, Series 2 and 3 of MP904B, make sure the diaphragm is trapped in the groove in the lower cup.
6. Guide upper cup assembly over threads of shaft, holding firmly against lower cup to compress main spring while nut is threaded to shaft.
7. Connect upper and lower cups per Figures 10, 11, or 12, and tighten locking screw. Tap rim to ensure proper seating, repeating tapping until band is tight.
NOTE: The band has two sets of ears holding the two-part body together. Refer to Figures 10, 11, or 12 for proper band positioning.
8. To check seal, install spring holder and stud on shaft end. Connect air source to port where the positioner mounts and apply pressure slowly—not over 25 lb/in² (172 kPa). Check band area for leakage with soap solution.
9. Reinstall positioner if applicable (see POSITIVE POSITIONER REPLACEMENT paragraph).

DIAPHRAGM REPLACEMENT

1. Remove positioner on "A" models (see POSITIVE POSITIONER REPLACEMENT paragraph).
2. Remove stud and all but one nut from shaft (last nut must be close to housing). Loosen clamp screw on band and remove band and ring from operator. Remove lower cup (Fig. 13).
3. Set operator on hard surface and hold firmly with shaft facing upwards.

WARNING

Maintain a firm hold on shaft and diaphragm assembly to prevent injury from sudden decompression of main spring during removal of last nut.

Remove last nut slowly and guide upper cup assembly over shaft threads.

4. Secure the motor shaft nut in a bench vise. The motor cup provides sufficient torque to unscrew the assembly by hand and retighten it after replacing diaphragm.
5. When reassembling operator for Series 1 and 2 of MP903A and MP903B, and Series 1 of MP904A and MP904B, make sure rim of diaphragm overlaps edge of lower cup. For Series 2 through 5 of MP904A, Series 2 and 3 of MP904B, and MP904C, make sure the diaphragm is trapped in the groove in the lower cup.
6. Guide upper cup assembly over threads of shaft, holding firmly against lower cup to compress main spring while nut is threaded to shaft.
7. Connect upper and lower cups per Figures 10, 11, or 12, and tighten locking screw. Tap rim to ensure proper seating, repeating tapping until band is tight.

NOTE: The band has two sets of ears holding the two-part body together. Refer to Figures 10, 11, or 12.

8. To check seal, install spring holder and stud on shaft end. Connect air source to port where the positioner mounts and apply pressure slowly—not over 25 lb/in² (172 kPa). Check band area for leakage with soap solution.
9. Reinstall positioner if applicable (see POSITIVE POSITIONER REPLACEMENT paragraph).

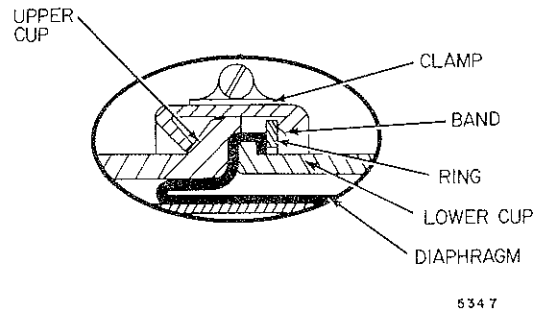


Fig. 10. Operator Body Assembly, MP903A and B Series 1 and 2; and MP904A and B Series 1.

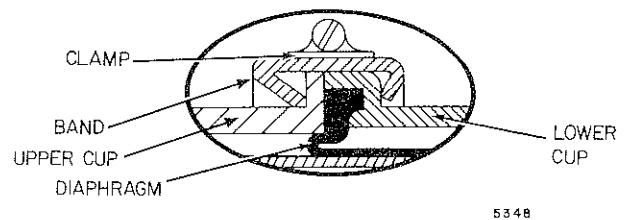


Fig. 11. Operator Body Assembly, MP904A Series 2 and 3; and MP904B Series 2.

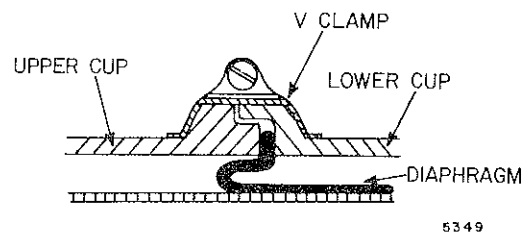


Fig. 12. Operator Body Assembly, MP904A Series 4 and 5, MP904B Series 3, and MP904C.

PARTS AND ACCESSORIES

PARTS LIST

Refer to Tables VI and VII and Figures 13 and 14. Part numbers are listed only for available parts. When ordering, indicate quantity, part number, description, and complete Order Specification Number (OS No.) of operator, including Series number.

EXAMPLE:

Qty	Part No.	Description	Ordering Specification Number
(1)	312799	Stud	(MP903 A1021) (1) OS No. Series No.

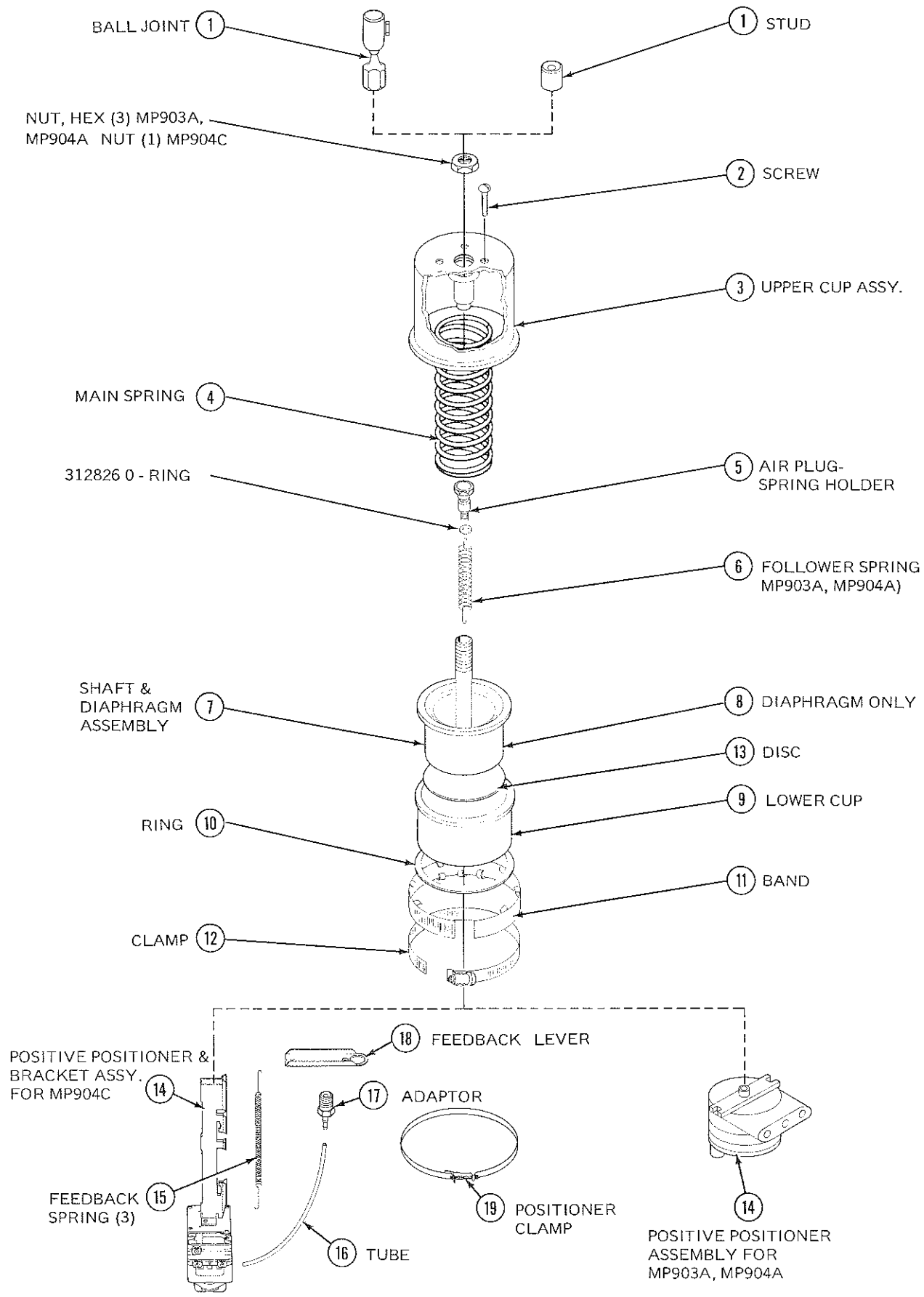


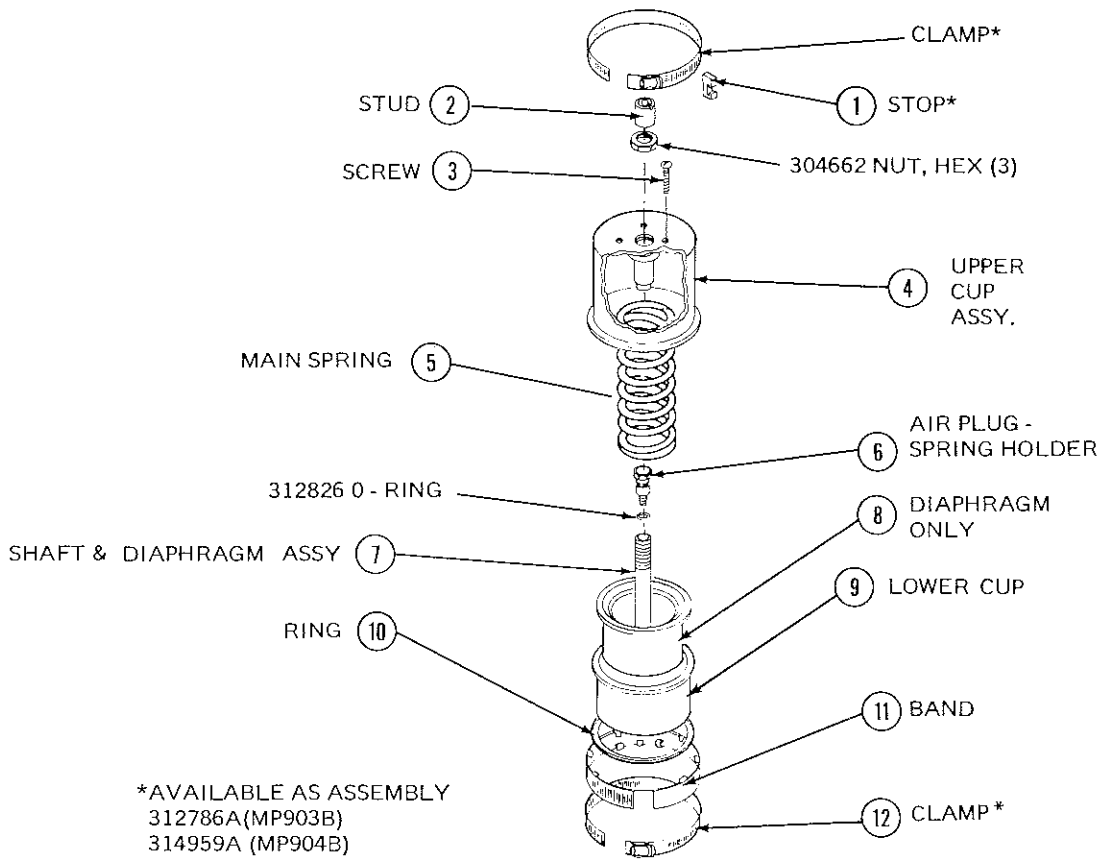
Fig. 13. MO903A, MO904A, MP904A, MP904C Operator.

H223-1

Table VI. MO903A, MO904A, MP903A, MP904A, MP904C Parts List (See Fig. 13).

Fig. 13 Ref. No.	Part No.	Description	Model Usage
1	315782-605	Ball Joint	For MP904C
1	312799	Stud	For MP903A models (where applicable)
2		*Screw, 1/4-28 NF x 1/2	(4) for MP904A & C
2		*Screw, 8-32 x 1/2 rd hd	(4) for MP903A
3		Upper Cup Assembly	For all MP903A only
3		Upper Cup Assembly	For all MP904A & C models. Also order "V" clamp 14001792-001 for Series 2 and 3 models plus 312809C tube and diaphragm assy and 313916 lower cup when repairing Series 1 models.
4		Main Spring	For MP903A
4	315045	Main Spring	For MP904A & C
5		Air Plug/Spring Holder	For MP903A Series 1
5	315598	Air Plug/Spring Holder	For MP903A Series 1 & 2
5	315599	Air Plug/Spring Holder	For MP904A & C
6	313890	Follower Spring	For MP903A1021 & 1039 Series 1 and all Series 2. MP904A1020, 1038, 1145, 1152 Series 1 through 5 no longer available. For MP903A1005, 1013 Series 1 or MP904A1004, 1012 Series 1. Replace with complete Grad Relay Kit No. 31355B.
7	312727B	Shaft and Diaphragm Assy	For MP903A
7	312809A-0153	Shaft and Diaphragm Assy	For MP904C Series 1
7	312809B	Shaft and Diaphragm Assy	For MP904A Series 1
7	312809C	Shaft and Diaphragm Assy	For MP904A Series 2 through 5
8	31361	Diaphragm	For MP904A Series 1
8	14001213-001	Diaphragm	For MP904A Series 2 through 5 and MP904C
8	313350	Diaphragm	For MP903A
9		Lower Cup	For MP903A
9	313916	Lower Cup	For MP904A Series 2, 3, 4, and 5; MP904C
10		Ring	For MP903 only
10		Ring	For MP904A Series 1
10	312826	O-Ring	For all MP904A, B, & C
11	312750	Band	For MP903A
11		Band	For MP904A Series 1, 2, and 3
11	14001792-001	V Clamp	For MP904A Series 4 and 5; MP904C Series 1
12	312835	Clamp	For MP903A
12	312828	Clamp	For MP904A Series 1, 2, and 3
13	313663-21	Disc	For MP904C
14	313555B	Positive Positioner Assy	For MP903A Series 1; MP904A Series 1 and 2
14	313555D	Positive Positioner Assy	For MP904A Series 3 and 4
14	313555C	Positive Positioner Assy	For MP903A Series 2; MP904A Series 5
14	313555E	Positive Positioner Assy	For MP903A1104 & 1120 and MP904A1145
14	14004074-001	Positive Positioner and Bracket Assy	For MP904C
15	14004012-001	Feedback Spring, orange, 3 lb/in ² (21 kPa) range	For MP904C1202
15	14004013-001	Feedback Spring, yellow 5 lb/in ² (34 kPa) range	For MP904C1210
15	14004014-001	Feedback Spring, blue, 10 lb/in ² (69 kPa) range	For MP904C1228
16	14000735-010	Tube	For MP904C
17	14003572-001	Adaptor	For MP904C
18	14003991-001	Feedback Lever	For MP904C
19	14004002-002	Clamp, Positioner	For MP904C

*Standard hardware parts should be obtained locally.



5351-1

Fig. 14. MP903B, MP904B Operator.

Table VIII. MP903B, MP904B Parts List (Fig. 14).

Fig. 14 Ref. No.	Part No.	Description	Model Usage
1		Stop	For MP904B
1		Stop	For MP903B
2	312799	Stud	For MP903B1003, 1011, 1060, 1078, 1086. For all MP904B Series 1 and MP904B1002, 1010, 1036, 1085 Series 2 and 3.
3		*Screw, 3-32 x 1/2 in. rd hd	(4) required for MP903B
3		*Screw, 1/2-28 NF x 1/2 in.	(4) required for MP904B
4		Upper Cup Assy	For MP903B
4	313914A	Upper Cup Assy	For all MP904B models. Also order V clamp 14001792-001 for Series 2 models plus 312809C tube and diaphragm assy and 313916 lower cup when repairing Series 1 models.
5		Main Spring	For all MP903B models except MP903B1045, 1052, 1094—3 to 13 lb/in ² (21 to 90 kPa)
5		Main Spring	For MP903B1045—2 to 7 lb/in ² (14 to 48 kPa)
5		Main Spring	For MP903B1052—7 to 13 lb/in ² (48 to 90 kPa)
5		Main Spring	For MP903B1094—5 to 10 lb/in ² (34 to 69 kPa)
5	313665	Main Spring	For all MP904B1002, 1028, 1036, 1119, 1127 & 1150—3 to 13 lb/in ² (21 to 90 kPa)
5	315044	Main Spring	For MP904B1044 & 1093—2 to 7 lb/in ² (14 to 48 kPa)
5	315045	Main Spring	For MP904B1051, 1101 & 1135—7 to 13 lb/in ² (48 to 90 kPa)
5	313666	Main Spring	For MP904B1010 & 1085—2 to 9 lb/in ² (14 to 62 kPa)
6	315598	Air Plug/Spring Holder	For MP903B
6	315599	Air Plug/Spring Holder	For MP904B
7	312727B	Shaft and Diaphragm Assy	For MP903B
7	312809B	Shaft and Diaphragm Assy	For MP904B Series 1
7	312809C	Shaft and Diaphragm Assy	For MP904B Series 2 and 3
8	313616	Diaphragm	For MP904B Series 1
8	14001213-001	Diaphragm	For MP904B Series 2 and 3
9		Lower Cup	For MP903B
9	313916	Lower Cup	For MP904B Series 2 and 3
10		Ring	For MP903B
10		Ring	For MP904B Series
11	312750	Band	For MP903B
11	14001792-001	Band	For MP904B Series 1 and 2
12	312835	Clamp	For MP903B
12	312828	Clamp	For MP904B Series 1 and 2
12	14001792-001	V Clamp	For MP904B Series 3

*Standard hardware parts should be obtained locally.

ACCESSORIES

MP904 Positive Positioner Retrofit Kit:
 Part No. 14004136-001 (Fig. 15). This retrofit kit includes Feedback Spring Kit Part No. 14004210-001 (Fig. 15) which can be ordered separately.

MP904 Stroke Stop Adjustment Kit:
 Part No. 314959A. This kit includes band clamp and two travel stops. Order separately two stroke stop adjustment nuts, Part No. 304662.

Linkages:
 External mounting, 1/2 in. (13 mm) O.D. shaft, Part No. 14002061-001.
 Internal mounting for normally open damper, Bag Assembly 14000693-001.
 Internal mounting for normally closed damper, Bag Assembly 14000716-001.

For additional accessories, see Figure 16 and Form No. 74-5413.

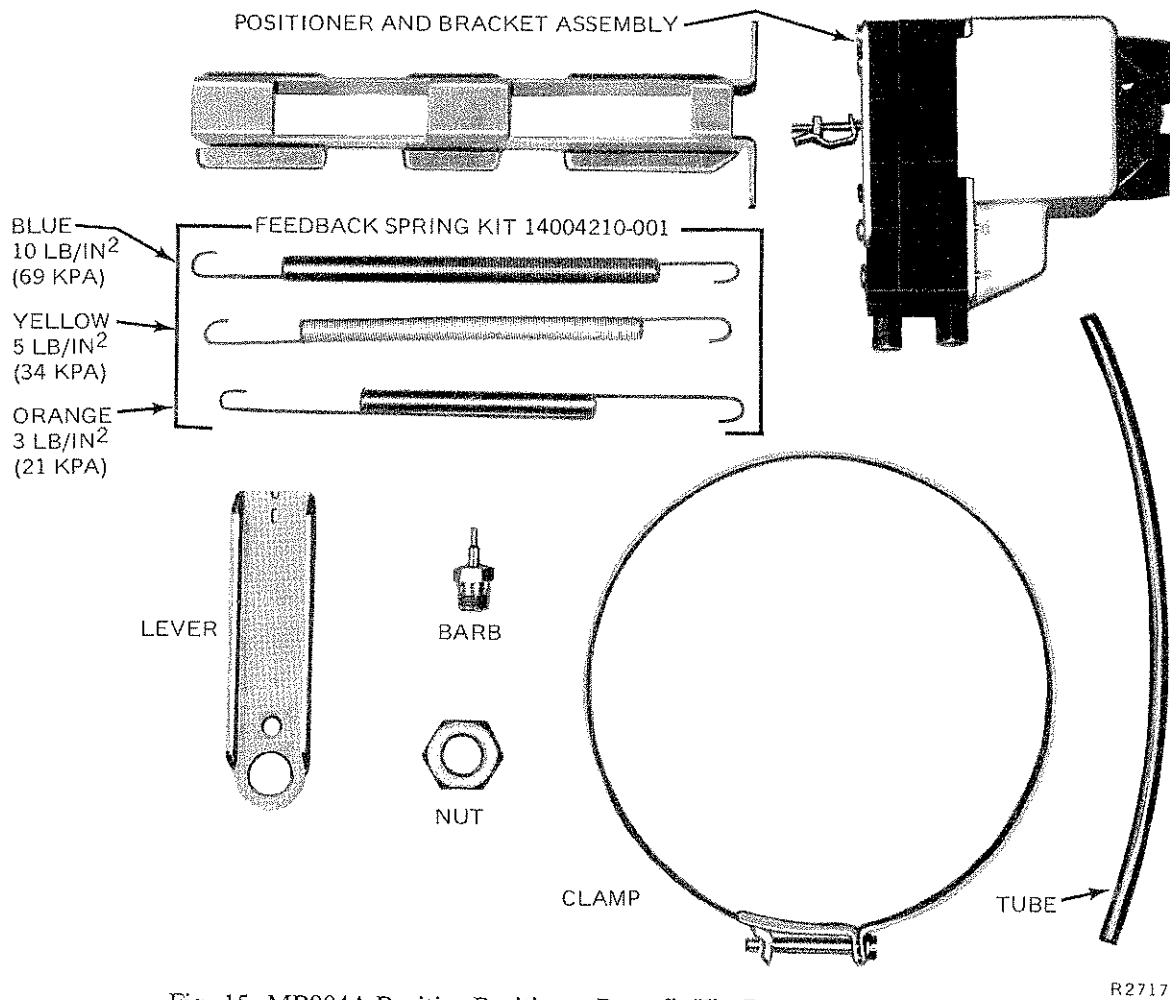
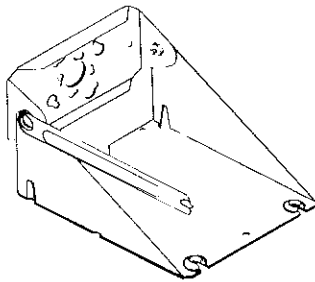
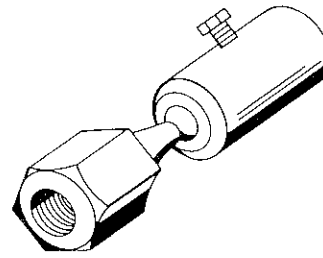


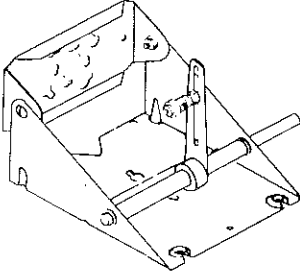
Fig. 15. MP904A Positive Positioner Retrofit Kit, Part No. 14004136-001.



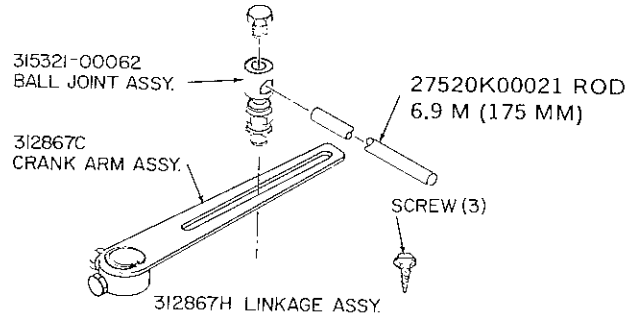
313471A BRACKET ASSEMBLY



315782-00605 BALL JOINT



313670B BRACKET ASSY (FOR MP904BIO36 ONLY)



7931-2

Fig. 16. Accessories.