

# STATIONARY AIR MOTORS

**Series AM Nonreversible Base-Mounted**

**Series AAM and AAUM Reversible Base-Mounted**

**Series AM56 Nonreversible Flange-Mounted**

**Series AAM56 and AAUM56 Reversible Flange-Mounted**

**WARNING:** Lubricate the Motor before using. To prevent leakage during shipment, the oil was drained from the Motor Case (1). A quantity of oil sufficient for one filling is contained in the can packed with the Motor. Unscrew the Vent Cap (3) and pour the entire contents of the can into the opening in the top of the Motor Case.

## LUBRICATION

**For Temperatures 30° F. to 80° F. (-1.1° C to 26.6° C),** use Ingersoll-Rand Medium Oil No. 50 or SAE 20 or 20W motor oil.

**For Temperatures Above 80° F. (26.6° C),** use SAE 30 motor oil.

**For Temperatures Below 30° F. (-1.1° C),** use SAE 10 or 10W motor oil.

**Check oil level daily as follows:**

**When The Motor Is Not Subjected To Freezing Temperatures.**

After the Motor has been idle for several hours or overnight, open the Oil Cock (2), located at the bottom of the Motor Case (1), and allow the accumulated water to drain out. Close the Oil Cock at the bottom and open the one on the side of the Motor Case. Remove the Vent Cap (3) and pour a sufficient quantity of the recommended lubricant into the vent to bring the level of oil up to the open Oil Cock. Close the Oil Cock and replace the Vent Cap.

**When the motor is subjected to freezing temperatures**

Allow the Motor to remain idle long enough for the water content of the Motor Case to separate from the oil, but not long enough for it to freeze. Drain the water and replenish the oil as in the preceding paragraph. Should this procedure be impractical, drain the entire contents of the Motor Case immediately after operation ceases and replace it before resuming operation. If the Motor Case is not drained, a sufficient quantity of water will eventually accumulate so that the Oil Splasher (16), which is attached to the Crank (13), will freeze fast.

## Base-Mounted Motors

The Motor Case (1) on a Stationary Motor can be rotated to any one of several different positions on the Base (28) depending on the position in which the Motor is to be installed. It is assumed that in most instances the foot pad on the Base will be fastened to the floor or to a horizontal platform, and the Motor Case is positioned accordingly at the time of assembly. When installation requires that the foot pad on the Base be attached to a wall or column, the Motor Case must be rotated on the Base so that the Oil Cock (2) is at the bottom or as close to the bottom vertical center as possible. Drain the oil from the Motor Case; remove the eight Motor Case Screws (30); rotate the Motor Case to the required position and replace the Motor Case Screws and oil.

**Caution:** The Motors should be mounted so that the axis of the Motor Shaft is horizontal. Operation of the Motor with the axis of the Shaft more than 10° from horizontal will result in lubrication difficulties.

**Notice:** The use of other than genuine Ingersoll-Rand replacement parts may result in decreased tool performance and increased maintenance, and may, at the Company's option, invalidate all warranties.

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## Flange-Mounted Motors

If your mounting provides a counterbore which is a close fit or the "centering pilot" on the No. AM-276 Motor Mounting Cover, provide a bearing for the outer end of the motor shaft. Locate the bearing as far from the motor as possible and be very careful to obtain good alignment. Pinions or shaft extensions **cannot** be used without an outboard bearing; i.e., they cannot be overhung from the motor shaft.

Do not make shaft extensions a tight fit in the broached hole in the Crank. An outboard bearing cannot be perfectly aligned with the Crank Bearings and the splined fit must act to a limited extent as a flexible coupling. Dimensions recommended for motor shaft splines will be furnished on receipt of mounting details and outboard bearing location.

## AIR SUPPLY AND AIR STRAINER

The use of 1/2" (13 mm) hose is recommended to transport the air supply to the air inlet, which is tapped 1/2" pipe tap. Keep the air line as free from dirt as possible. Before starting the Motor, blow all accumulated moisture out of the line by discharging it momentarily into free air.

The use of an Air Strainer (illustrated on page 3) in the air line, as near the Motor as possible, is recommended to prevent air line dirt from reaching the motor parts. By removing the Air Strainer Plug (664) and turning the air on momentarily, the Air Strainer is easily cleaned. Further cleaning can be accomplished by removing the Air Strainer Cap (663) and Air Strainer Screen (662) and washing the Screen in kerosene.

## THROTTLE MAINTENANCE FOR SERIES AAUM

A leaking Throttle can usually be attributed to particles of dirt lodging between the Poppet Throttle Valve (49) and its seat in the Valve Chest (33).

**To clean**, unscrew the Throttle Valve Cap (52) and withdraw the Throttle Valve Spring (51), Poppet Throttle Valve and the Throttle Valve Ball (50) from the Valve Chest. Wash the Valve thoroughly in kerosene and swab the seat in the Valve Chest. Cover the Valve and Ball with a film of light oil and reassemble.

If the leak persists after cleaning, coat the bevel face of the Valve with fine grain lapping compound and lap it to the seat in the Chest. Wash all parts thoroughly to remove all trace of the compound before reassembling.

In extreme cases the seat may have become pitted to the extent that lapping is not effective. If so, reface the seat using No. 22891 Throttle Valve Seat Reamer and lap the Valve to its seat.

There is very little clearance between the end of the Valve stem and the Throttle Valve Ball in the "off" position. Therefore, if the location of the Valve seat is lowered by refacing, it may be necessary to compensate by grinding the end of the Valve Stem. **Never shorten the stem more than is necessary to insure proper seating.** If the stem is shortened too much, it allows "lost motion" between the Poppet Throttle Valve and the Reverse Valve, resulting in failure of the Valve to open fully, thus restricting the air and reducing the power of the Motor.

## VALVE CHEST MAINTENANCE FOR SERIES AAUM

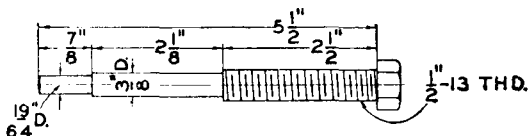
### Disassembly

Unscrew and remove the Valve Chest Screws (44 and 46) and lift the Valve Chest Cover (43) and Valve Chest Cover Gasket (48) from the Valve Chest (33). Screw a 7/16"-14 thread bolt into the Rotary Valve (41) and withdraw the Valve from the Chest.

Unscrew the Throttle Valve Cap (52) and remove it, the Throttle Valve Spring (51), the Poppet Throttle Valve (49) and the Throttle Valve Ball (50) from the Valve Chest. Screw a 1/2"-13 thread bolt into the Reverse Valve (54) and withdraw the Valve from the Chest. **Caution:** Never attempt to remove the Reverse Valve from the Chest with the Throttle Valve Ball in position.

In order to replace the Rotary Valve Bushing (34), Reverse Valve Bushing (40), Throttle Lever Spring (58), the Throttle Control Arm (56) or the Chest itself, the Valve Chest must be removed from the Motor Case (1). For no other reason should it be removed.

The use of Jack Bolts is recommended for removing the Valve Chest from the Motor Case. Jack Bolts for this purpose are available from Ingersoll-Rand (see Maintenance Tool No. D01-932) or can be made according to the dimensions shown in the following illustration.

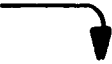


D-8734

Valve Chest Jack Bolts

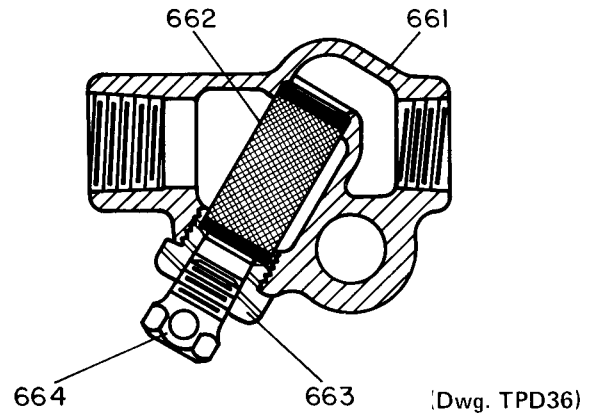
Screw a Jack Bolt into each of the two tapped holes in the Valve Chest from which the Long Valve Chest Screws (44) were removed. Run each Jack Bolt down until it seats in the tapped hole in the Motor Case; then turn each one a fraction of a turn at a time until the Valve Chest is removed from the Motor Case. Slip the Throttle Control Arm (56), and the Throttle Lever Spring (58) from the Reverse Valve Bushing.

### AIR STRAINER ASSEMBLY

PART NUMBER FOR ORDERING 

661	Air Strainer Assembly . . . . .	EU-A267
662	Air Strainer Screen . . . . .	P25-61A
663	Air Strainer Cap . . . . .	P25-268
664	Air Strainer Plug . . . . .	P25-536
*	Air Strainer Nipple (Required for attaching to the Motor) . . . . .	4H0-3
*	Reducing Bushing (2) . . . . .	D02-420

\* Not illustrated.



**Caution:** The Rotary Valve Bushing and Reverse Valve Bushing must be pressed from the Valve Chest exactly as directed. as using a pressing arbor of larger diameter than is recommended, placing the arbor over the keyway in the Bushings or pressing the Bushings out in the wrong direction will destroy the Bushing Keys (36) which protrude into the bores in the Chest.

Place a 1-5/8" (41 mm) diameter arbor on the Rotary Valve Bushing face which is flush with the face of the Valve Chest, locating it so that the keyway in the Bushing is not covered, and press the Bushing from the Valve Chest. Repeat this process to remove the Reverse Valve Bushing.

### Assembly

Rotary Valve Bushings (34) and Reverse Valve Bushings (40) are machined to size before being shipped from the factory and, if carefully installed, reaming after installation is seldom necessary. The Reverse Valve (54) is chrome plated and should never be lapped. If the fit is too tight, ream the Bushing 1.250" to obtain proper clearance. If the Rotary Valve (41) fits too tightly in the Bushing after the Bushing is installed, disassemble the motor and lap the Valve to a good running fit. If too tight to lap, ream the Bushing 1.000"; then lap if necessary. When lapping, use a mild, fine grain compound whose abrasive agent will rapidly disintegrate.

The Rotary Valve Bushing and Reverse Valve Bushing have the same outside diameter. The longer of the two Bushings is the Rotary Valve Bushing. Support the Valve Chest face that contacts the Valve Chest Cover (43). Align the keyway (the short slot) in the Rotary Valve Bushing with the Bushing Key (36), and press the Bushing into the long bore in the Valve Chest (33) until the leading face of the Bushing is flush with the supported face of the Chest.

Align the keyway in the Reverse Valve Bushing with the Bushing Key and press the Bushing into the remaining Valve Chest bore until the leading face of the Bushing is flush with the supported face of the Chest. Using the No. 23470 Throttle Stem Reamer, ream the hole in the wall of the Reverse Valve Bushing so that the Throttle Valve Ball (50) will pass through freely.

Fit the Reverse Valve in the Bushing. After the proper fit, between the Valve and Bushing is obtained, rotate the Valve to a position where the arrows stamped on the faces of the two parts point toward each other. Insert the Throttle Valve Ball, Poppet Throttle Valve (49) and the Throttle Spring (51) in the order named, into the Valve Chest. Place the Throttle Valve Cap Gasket (53) onto the Throttle Valve Cap (52) and screw the Cap into the Valve Chest.

Place the Throttle Lever Spring (58) over the end of the Reverse Valve Bushing that protrudes from the Valve Chest so that one leg of the Spring is against the Throttle Spring Stop Pin (38). Slide a suitable sleeve over the opposite leg and wind the Spring until this leg can be hooked over the opposite end of the Stop Pin. This action will tend to wind, not unwind, the Spring if it is properly performed.

Start the Throttle Control Arm (56) onto the square end of the Reverse Valve. As the Arm slides into position, enter the Stop Pin on the Arm between the legs of the Spring. This can be accomplished by engaging one leg of the Spring against the Stop Pin on the Arm and rotating the Arm slightly while pushing it completely onto the square shank of the Reverse Valve.

Align the screw holes in the Valve Chest with the screw holes in the Motor Case and start the protruding end of the Rotary Valve Bushing squarely into the Motor Case bore. Place a block of wood across the faces of the Rotary Valve Bushing and Valve Chest and, driving on the wooden block, enter the Bushing into the Motor Case until the Valve Chest seats.

Check the fit of the Rotary Valve in the Rotary Valve Bushing. Insert the Valve into the Bushing, entering the Valve Drive Pin (42) into the mating hole in the Crank (13). Apply the Valve Chest Cover Gasket (48) and the Valve Chest Cover (43) to the Valve Chest. Retain by installing the two Valve Chest Screws, Short (46) in the holes nearest the air inlet, and the two Valve Chest Screws, Long (44) in the remaining holes in the Valve Chest Cover.

## VALVE CHEST MAINTENANCE FOR SERIES AM AND AAM

### Disassembly

Unscrew and remove the Valve Chest Screws (44) and lift the Valve Chest Cover (43) from the Valve Chest (33). Screw a 7/16"-14 thread bolt into the Rotary Valve (41) and withdraw the Valve from the Rotary Valve Bushing (34).

The use of Jack Bolts is recommended for removing the Valve Chest from the Motor Case. Jack Bolts for this purpose are available from Ingersoll-Rand (see Maintenance Tool No. D01-932) or can be made according to the dimensions shown in the illustration on page 2.

Screw a Jack Bolt into each of the two tapped holes in the Valve Chest from which the Valve Chest Screws were removed. Run each Jack Bolt down until it seats in the tapped hole in the Motor Case; then turn each one a fraction of a turn at a time until the Valve Chest is removed from the Motor Case.

**Caution:** The Rotary Valve Bushing must be pressed from the Valve Chest exactly as directed. Using a pressing arbor of larger diameter than is recommended, placing the arbor over the keyway in the Bushing or pressing the Bushing out in the wrong direction will destroy the Bushing Key (36) which protrudes into the Chest bore.

Place a 1-5/8" (41 mm) diameter arbor on the Rotary Valve Bushing face which is flush with the face of the Valve Chest, locating it so that the keyway in the Bushing is not covered, and press the Bushing out of the Valve Chest.

### Assembly

**Note:** Rotary Valve Bushings (34) are machined to size before being shipped from the factory and, if carefully installed, reaming after installation is seldom necessary.

Support the face of the Valve Chest (33) that contacts the Valve Chest Cover (43). Align the keyway (the short slot) in the Rotary Valve Bushing with the Bushing Key (36) and press the Bushing into the Valve Chest until the leading face of the Bushing is flush with the supported face of the Valve Chest.

Align the screw holes in the Valve Chest with the screw holes in the Motor Case and start the protruding end of the Rotary Valve Bushing squarely into the Motor Case bore. Place a block of wood across the faces of the Rotary Valve Bushing and Valve Chest and, driving on the wooden block, enter the Bushing into the Motor Case until the Valve Chest seats.

Check the fit of the Rotary Valve (41) in the Rotary Valve Bushing. If the fit is too tight, disassemble the motor and lap the Valve to a good running fit in the Bushing. If too tight to lap, ream the Bushing 1.000"; then lap if necessary. When lapping, use a mild, fine grain compound whose abrasive agent will rapidly disintegrate. Clean thoroughly.

Insert the Valve into the Bushing, entering the Valve Drive Pin (42) into the mating hole in the Crank (13). Apply the Valve Chest Cover (43) to the Valve Chest and retain by installing a Valve Chest Screw (44) in each of the two holes in the Cover.

## MOTOR

### Removal

Open the lower Oil Cock (2) and drain the oil from the Motor Case (1).

Unscrew and remove the eight Motor Case Screws (30) and lift the motor from the Base (28).

### Disassembly

Unscrew and remove the Cylinder Cap Screws (8) from one of the Cylinder Caps (6) and pull the Cylinder Cap and Cylinder Sleeve (6A) from the Motor Case. Rotate the Crank (13) until the Piston (10), from which the Cylinder Sleeve was removed, is at top dead center. Slide the Wrist Pin (12) from the cross hole and lift the Piston from the Connecting Rod (18). Repeat this process until all the Cylinder Sleeves and Pistons are removed.

Grasp the Crank assembly and withdraw it from the Motor Case. **Note:** After the Pistons have been removed, the Crank assembly is held in place only by the fit of the Crank Bearing (21) in its seat, and can usually be removed by pulling on the Crank while tapping the Motor Case with a soft hammer. Should this method fail to loosen the Bearing, remove the Rotary Valve from the Valve Chest (see paragraph for Series AAUM, for Series AM and AAM or for Pendant Throttle). Insert a hardwood stick or brass rod into the bore of the Rotary Valve Bushing (34 or 76) and drive the Crank assembly from the Motor Case.

If replacement of the Crank Bearings is necessary, pry them from their respective hubs with two screwdrivers placed under diametrically opposite points on the Bearing rings.

Unscrew the Lock Pin Nut and remove the Lock Pin (15) from the Crank. Separate the two sections of the Crank and slide the Connecting Rod Rings (19), Connecting Rods, Connecting Rod Bushing (20) and Crank Pin Sleeve (14) from the Crank.

## Assembly

**Caution:** The two sections of the Crank (13) are joined and marked before final machining; therefore, only those parts having the same markings can be used together. If two or more Cranks are disassembled at one time, make sure the stampings on the two sections are identical before reassembling.

Press a Crank Bearing (21) onto the hub on each section of the Crank. Do all pressing on the inner ring of the Bearing, using a sleeve if necessary.

Slide the Crank Pin Sleeve (14), tang last, over the Crank pin; slide the Connecting Rod Bushing (20) over the Sleeve; then slide a Connecting Rod Ring (19), radiused inside edge last, over the Bushing. Position the Connecting Rods (18) around the Bushing, entering the foot on each Rod into the space between the Bushing and the Ring. Apply the second Connecting Rod Ring, radiused inside edge first, over the feet on the Rods.

Join the two sections of the Crank, aligning the Lock Pin holes and engaging the tang on the Crank Pin Sleeve with the slot in the web of the Crank. Insert the Crank Lock Pin (15), threaded end first, into the large end of the tapered hole. Tap the large end of the Lock Pin to insure seating and screw the Crank Lock Pin Nut onto the Lock Pin.

Align the hole in the end of the Crank with the Drive Pin (42) in the Rotary Valve (41) and insert the Crank assembly into the Motor Case until the Crank Bearing is seated.

Rotate the Crank until one of the Connecting Rods is at top dead center. Place a Piston (10) on the Rod and retain it with a Piston Wrist Pin (12). Slide a Cylinder Gasket (7) over the Cylinder Sleeve (6A) and against the flange on the Cylinder Cap (6), then slip the Cylinder Sleeve over the Piston and into the Motor Case. Retain the Cylinder Cap with the Cylinder Cap Screws (8), using a Cylinder Cap Screw Washer (9) (copper washer) under the head of each Cap Screw. Repeat this process until all Cylinders are installed.

## Installation

Place the Motor Case Gasket (32) on the face of the Base (28). Slide the spline-broached end of the Crank onto the splined end of the Motor Shaft (23) and apply the motor assembly to the Base. Slip a 5/16" (8 mm) Lock Washer (31) over each of the Motor Case Screws (30) and retain the Motor Case with the Screws.

## MOTOR SHAFT

### Removal

Remove the pulley or gear and the Shaft Key (26) from the Motor Shaft (23). Using a screwdriver, work the Retaining Ring (27) from its groove in the Base (28). Grasp the Motor Shaft and pull on it while tapping the boss on the Base with a soft hammer, to remove the Shaft and assembled parts from the Base. If the motor assembly has been removed from the Base, tap the splined end of the Shaft with a soft hammer to aid in removal.

### Disassembly

Using a screwdriver, work the Shaft Retainer (24) from its groove in the Motor Shaft (23) and slip the Bearing Spacer (22) from the Shaft. **Only if replacement of either the Motor Shaft or the Motor Shaft Bearing (25) is required**, support the outer ring of the Bearing and, pressing on the splined end of the Shaft, press the Shaft from the Bearing.

### Assembly

Using a sleeve, 1" (25 mm) inside diameter and at least 6-1/2" (165 mm) long, press the Motor Shaft Bearing (25) over the splined end of the Motor Shaft (23) until it seats. Slip the Bearing Spacer (22) over the splined end of the Shaft and retain by installing the Shaft Retainer (24) in the groove in the Shaft.

### Installation

Insert the splined end of the Motor Shaft (23) into the boss on the Base (28), engaging the splines on the Shaft with those in the Crank, and retain by installing the Retaining Ring (29) in the annular groove in the boss on the Base.

## PENDENT THROTTLE

### Throttle Maintenance For The Pendent Throttle Handle

A leaking Throttle can usually be attributed to particles of dirt becoming lodged between a Pendent Throttle Valve Seal Ring (101), located on a Pendent Throttle Valve (100), and the Valve seat in the Pendent Throttle Handle (97). To remove a Pendent Throttle Valve for cleaning, unscrew and remove the Pendent Throttle Valve Cap (103) and Pendent Throttle Spring (102) from the Handle. Screw a No. 10-24 thread bolt into the tapped hole in the Valve and pull the Valve from the Handle. Wash the Valve and Valve Seal Rings in kerosene and swab the seat in the Handle. If the Rings are visibly damaged or worn, remove them from the Valve and install new Rings. Insert the Pendent Throttle Valve, small diameter first, into the Handle. Install a Pendent Throttle Spring in the Pendent Throttle Valve Cap and screw the Cap into the Handle.

## Shuttle Valve Chest Removal

In order to replace the Rotary Valve Bushing (76) or the Shuttle Valve Bushing (78) it is necessary to remove the Shuttle Valve Chest (75) from the Motor Case (1). For no other reason should it be removed.

Disconnect the two Control Hoses (91) from the Shuttle Valve Chest by unscrewing the Hose Nuts (94) from the Hose Spuds (95). Unscrew and remove the two Valve Chest Screws (83) and lift the Shuttle Valve Chest Cover (84) from the Chest. Screw a 7/16"-14 thread bolt into the Rotary Valve (80) and withdraw the Valve from the Chest.

The use of Jack Bolts is recommended for removing the Shuttle Valve Chest from the Motor Case. Jack Bolts for this purpose are available from Ingersoll-Rand (see Maintenance Tool No. D01-932) or can be made according to the dimension shown in the illustration on page 2.

Screw a Jack Bolt into each of the two tapped holes in the Shuttle Valve Chest from which the Valve Chest Screws were removed. Run each Jack Bolt down until it seats in the tapped hole in the Motor Case; then turn each one a fraction of a turn at a time until the Shuttle Valve Chest is removed from the Motor Case.

## Rotary Valve Bushing Replacement

Remove the Shuttle Valve Chest from the Motor (see **Shuttle Valve Chest Removal**, above).

**Caution:** The Rotary Valve Bushing (76) must be pressed from the Shuttle Valve Chest (75) exactly as directed, as using a pressing arbor of larger diameter than is recommended, placing the arbor over the keyway in the Bushing or pressing the Bushing out in the wrong direction will destroy the Bushing Key (79) which protrudes into the Chest bore.

Place a 1-5/8" (41 mm) diameter arbor against the Rotary Valve Bushing face which is flush with the face of the Shuttle Valve Chest, locating it so that the keyway in the Bushing is not covered, and press the Bushing from the Chest.

**Note:** Rotary Valve Bushings are machined to size before being shipped and, if carefully installed, reaming after installation is seldom necessary.

Support the Shuttle Valve Chest face that contacts the Shuttle Valve Chest Cover. Align the keyway (the short slot) in the Rotary Valve Bushing with the Bushing Key and press the Bushing into the Chest until the leading face of the Bushing is flush with the supported face of the Chest.

Install the Shuttle Valve Chest on the Motor (see below).

## Shuttle Valve Bushing Replacement

Replacement of the Shuttle Valve Bushing (78) is seldom, if ever, necessary. However, if replacement becomes necessary, proceed as follows:

Remove the Shuttle Valve Chest from the motor.

Unscrew and remove the Shuttle Valve Caps (89) and withdraw the Shuttle Valve Springs (88), Shuttle Valve Washers (87) and the Shuttle Valve (86) from the Shuttle Valve Chest (75). Support one end of the Chest in such a way that will allow the shuttle Valve Bushing to project at least 3" (77 mm) below the supported end of the Chest. Using a 7/8" (22 mm) diameter arbor, at least 4-3/4" (121 mm) long, press the Shuttle Valve Bushing from the Shuttle Valve Chest.

Align the large port in the new Shuttle Valve Bushing with the exhaust port (the center boss) in the Chest. Support one end face of the Chest and, using a 7/8" (22 mm) diameter arbor at least 1-1/2" (38 mm) long, press the new Bushing into the Chest bore until it is centralized, in which case each face of the Bushing will be 1-1/2" from the face of the Chest.

Check the fit of the Shuttle Valve in the Bushing. If it is too tight, ream the Bushing .0005". Insert the Shuttle Valve into the Bushing. Insert a Shuttle Valve Washer and a Shuttle Valve Spring into each end of the Chest and retain by installing a Shuttle Valve Cap with a Shuttle Valve Cap Gasket, in each end of the Chest.

Install the Shuttle Valve Chest on the Motor (see below).

## Shuttle Valve Chest Installation

Align the screw holes in the Shuttle Valve Chest (75) with the screw holes in the Motor Case (1) and start the protruding end of the Rotary Valve Bushing (76) squarely into the Motor Case bore. Place a block of wood across the faces of the Bushing and Chest and, driving on the wooden block, enter the Bushing into the Motor Case until the Valve Chest seats.

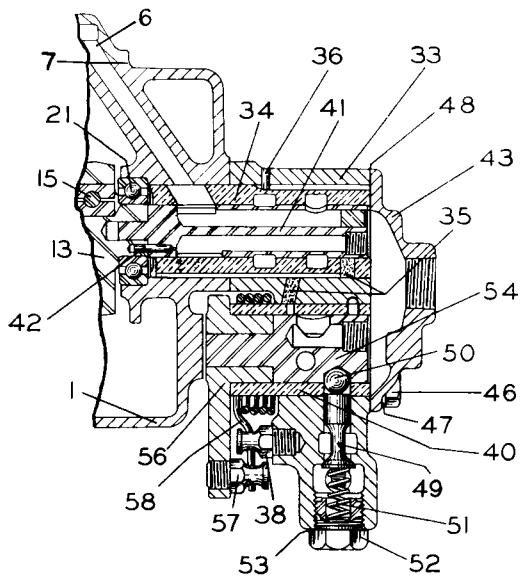
**If a new Rotary Valve Bushing has been installed**, check the fit of the Rotary Valve (80) in the Rotary Valve Bushing. If the fit is too tight, disassemble the motor and lap the Valve to a good running fit in the Bushing. If too tight to lap, ream the Bushing 1.000"; then lap if necessary. When lapping, use a mild, fine grain compound whose abrasive agent will rapidly disintegrate.

Apply the Shuttle Valve Chest Cover (84) to the Shuttle Valve Chest and retain by installing the two Valve Chest Screws (83) in the holes in the Cover.

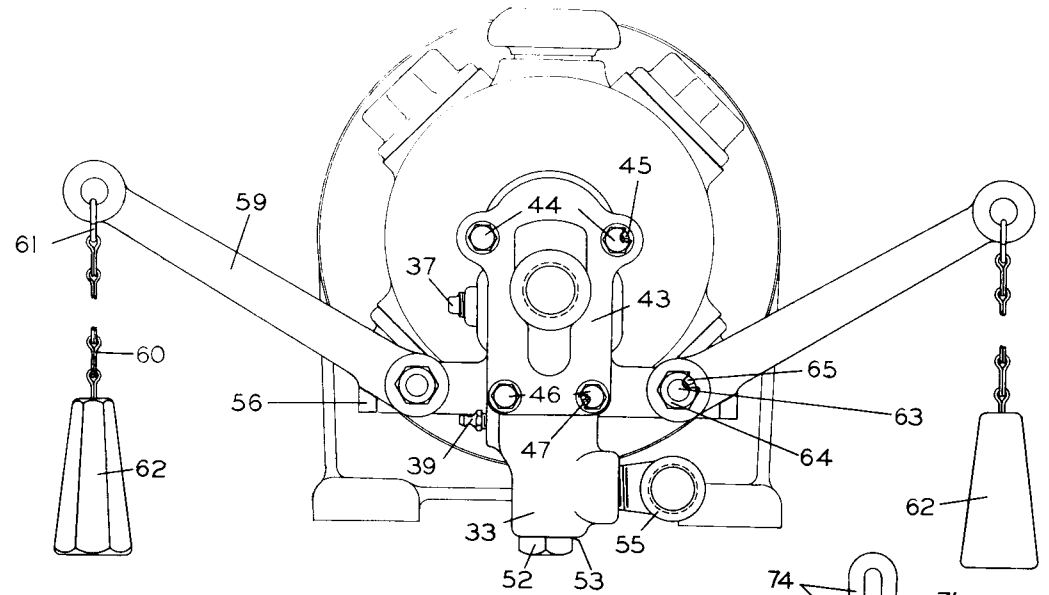
Connect the two Control Hoses (91) to the Shuttle Valve Chest by screwing the Hose Nuts (94) onto the Hose Spuds (95).

## MAINTENANCE TOOLS

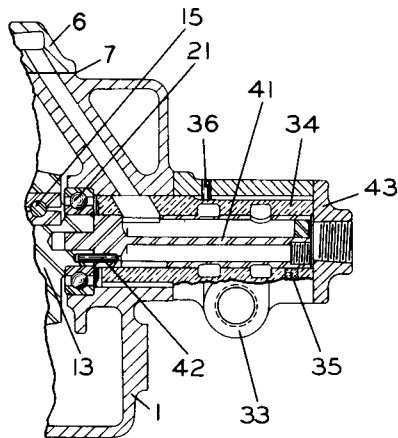
TOOL NUMBER FOR ORDERING	TOOL NAME FOR ORDERING	OPERATION
D02-426	Cylinder Cap Screw Wrench . . . . .	Loosening or tightening the Cylinder Cap Screws (8).
D01-932	Valve Chest Jack Bolt (2 required) . . .	Removing the Valve Chest (33) or Shuttle Valve Chest (75) from the Motor Case (1).
D01-933	Piston Ring Compressor . . . . .	Compressing the Piston Rings (11) in the grooves of the Piston (10) when installing a Cylinder Sleeve (6A).
7991	Rotary Valve Bushing Reamer . . . . .	Reaming the Rotary Valve Bushing (34 or 76) to size after installation.
22891	Throttle Valve Seat Reamer (for Series AAUM only) . . . . .	Refacing the seat in the Valve Chest (33) for the Poppet Throttle Valve (49).
23470	Throttle Stem Reamer (for Series AAUM only) . . . . .	Reaming the Throttle Valve Ball hole in the wall of the Reverse Valve Bushing (40) after installation.
36860	Shuttle Valve Bushing Reamer . . . . .	Reaming the Shuttle Valve Bushing (78) to size.



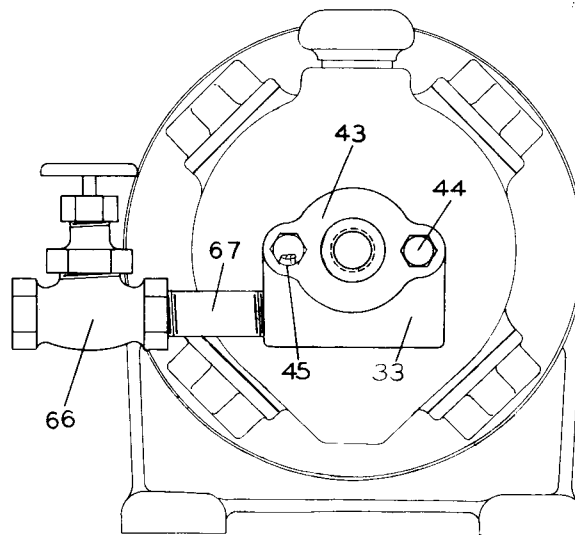
Series AAUM Motor Valve Chest



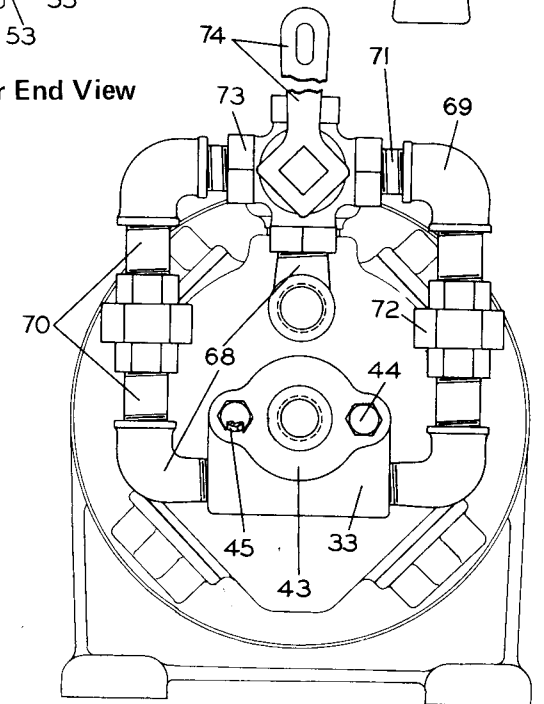
Series AAUM Motor End View



Series AM or AAM Motor Valve Chest



Series AM Motor End View



Series AAM Motor End View



PART NUMBER FOR ORDERING

PART NUMBER FOR ORDERING

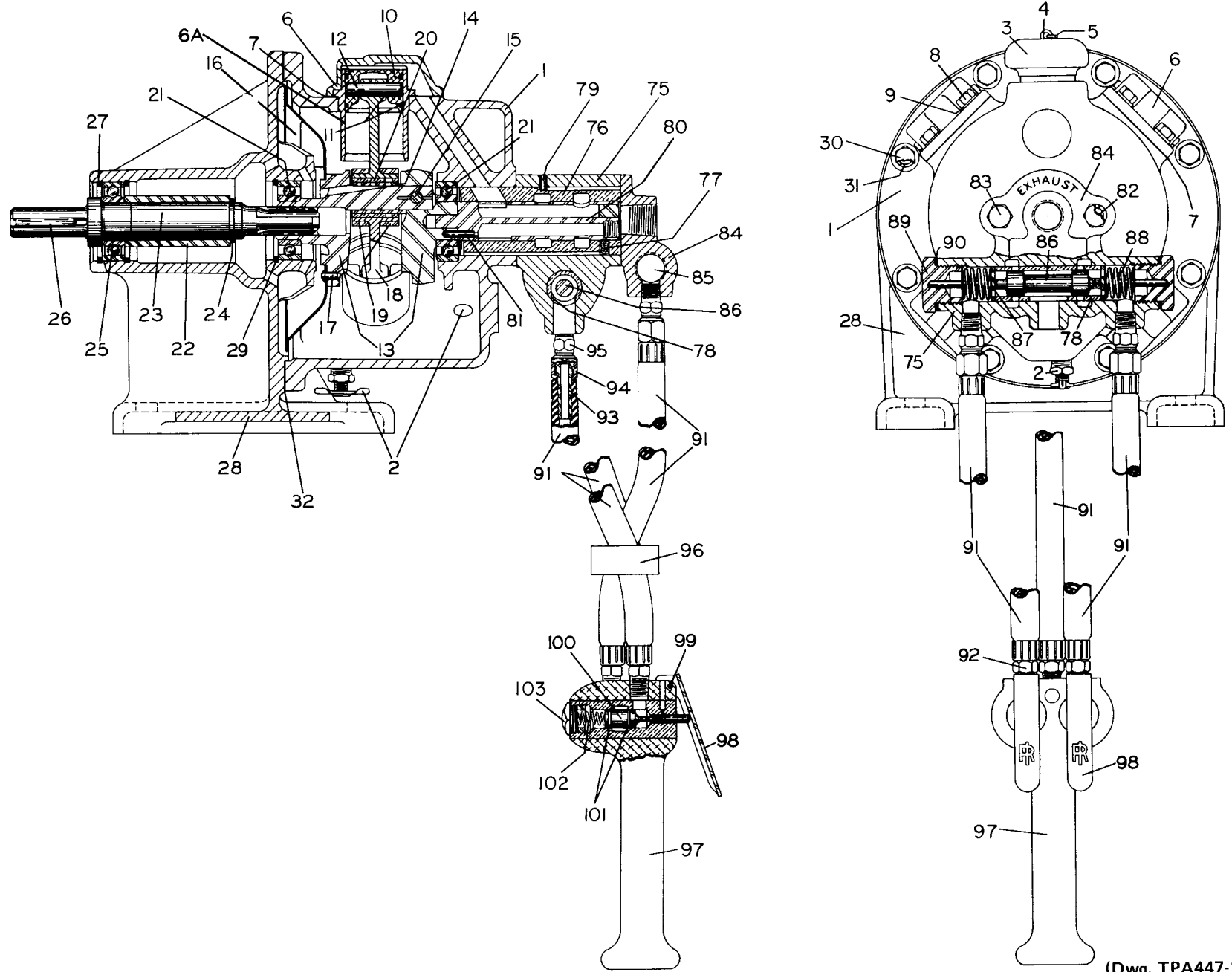
1	Motor Case . . . . .	D01-501C	▲ 22	Bearing Spacer . . . . .	AM-41
2	Oil Cock (2) . . . . .	D02-308	▲ 23	Motor Shaft . . . . .	AM-294
3	Vent Cap . . . . .	D02-303A	▲ 24	Motor Shaft Retainer . . . . .	21-408
4	Vent Cap Cotter . . . . .	D02-893	▲ 25	Motor Shaft Bearing (AFBMA No. 25BC02JDD) . . . . .	AM-318
5	Vent Cap Chain . . . . .	D01-891	▲ 26	Motor Shaft Key . . . . .	P25-150
*	S-Hook . . . . .	D02-421	▲ 27	Retaining Ring . . . . .	21-406
*	Vent Cap Screen . . . . .	D02-889	▲ 28	Base . . . . .	AM-292
*	Vent Cap Screen Retainer . . . . .	6CND-233-1/2	▲ 29	Retaining Ring (2) . . . . .	21-406
	Cylinder Assembly (4) . . . . .	D01-A505A	▲ 30	Motor Case Cap Screw (8) . . . . .	B8-240
6	Cylinder Head . . . . .	D01-H505A	31	Motor Case Cap Screw Lock Washer (5/16" Lock Washer) (8) . . . . .	T11-58
6A	Cylinder Sleeve . . . . .	D01-L505A	● 32	Motor Case Gasket . . . . .	D01-592A
● 7	Cylinder Gasket (4) . . . . .	D01-507	† *	Motor Mounting Cover . . . . .	AM-276
8	Cylinder Cap Screw (16) . . . . .	D01-506	† *	Oil Seal . . . . .	AM-271
9	Cylinder Cap Screw Washer (16) . . . . .	D01-504	† *	Blank Motor Shaft (Blank or Finished to customer's specifications) . . . . .	AM-277
10	Piston Assembly (4) . . . . .	D01-A513B	† *	Motor Case Bolt (8) . . . . .	SP9-11B
● 11	Piston Ring (8) . . . . .	D01-337	† *	Motor Case Bolt Nut (8) . . . . .	D02-428
12	Piston Wrist Pin (4) . . . . .	TC-389B			
	Crank Assembly . . . . .	D01-A516B			
13	Crank . . . . .	D01-516B			
14	Crank Pin Sleeve . . . . .	D01-519A			
15	Crank Lock Pin . . . . .	D01-520A			
*	Crank Lock Pin Nut . . . . .	501-639			
16	Oil Splasher . . . . .	D01-540A			
17	Oil Splasher Rivet (3) . . . . .	T06-66			
18	Connecting Rod (4) . . . . .	D01-509A			
19	Connecting Rod Ring (2) . . . . .	D01-510			
● 20	Connecting Rod Bushing . . . . .	D01-511A			
● 21	Crank Bearing (AFBMA No. 25BC02) (2) . . . . .	G7-24			

\* Not illustrated.

▲ These parts are used only on Sizes AM, AAM and AAUM.

† These parts are used only on Sizes AM56, AAM56 and AAUM56.

● To keep downtime to a minimum, it is desirable to have on hand certain repair parts. We recommend that you stock one (pair or set) of each part indicated by a bullet (●) for every four tools in service.



Series AAM Reversible Stationary Air Motor With Pendant Throttle

(Dwg. TPA447-1)

PART NUMBER FOR ORDERING

		↓	↓	↓	↓
		AM AM56	AAM AAM56	AAUM AAUM56	AAM, AAM56 with Pendent Throttle
33	Valve Chest . . . . .	D01-686A-4	D01-686-4	D01-545A-4	
● 34	Rotary Valve Bushing . . . . .	D01-525A	D01-525A	D01-525A	
35	Bushing Oiler (2 for AAUM; 1 for AM and AAM) . .	JA4-75	JA4-75	JA4-75	
36	Bushing Key (2 for AAUM; 1 for AM and AAM) . .	D02-538	D02-538	D02-538	
37	1/8" Pipe Plug . . . . .	---	---	TC-368	
38	Throttle Spring Stop Pin . . . . .	---	---	D02-553	
39	Grease Fitting . . . . .	---	---	R1-188	
40	Reverse Valve Bushing . . . . .	---	---	D01-945	
*	Valve Chest Gasket . . . . .	---	---	D01-128	
41	Rotary Valve				
	for counterclockwise rotation when facing				
	end of Shaft (Standard) . . . . .	AM-526	---	---	
	for clockwise rotation when facing end of				
	Shaft . . . . .	AM-526R	---	---	
	for equal performance in either direction				
	of rotation . . . . .	---	D00-526A	D00-526A	
42	Valve Drive Pin . . . . .	D01-527A	D01-527A	D01-527A	
43	Valve Chest Cover . . . . .	D01-698	D01-698	D01-546A	
44	Valve Chest Screw (2) . . . . .	D01-548	D01-548	D01-548	
45	Valve Chest Screw Lock Washer (2) . . . . .	D02-321	D02-321	D02-321	
46	Valve Chest Screw, Short (2) . . . . .	---	---	T33-68	
47	5/16" Lock Washer (2) . . . . .	---	---	T11-58	
48	Valve Chest Cover Gasket . . . . .	---	---	D01-928	
49	Poppet Throttle Valve . . . . .	---	---	D01-940	
50	Throttle Valve Ball . . . . .	---	---	D10-280	
51	Throttle Valve Spring . . . . .	---	---	B01-11	
52	Throttle Valve Cap . . . . .	---	---	D01-943	
53	Throttle Valve Cap Gasket . . . . .	---	---	D01-946	
54	Reverse Valve . . . . .	---	---	D00-944	
55	Inlet Elbow . . . . .	---	---	D01-581	
56	Throttle Control Arm . . . . .	---	---	D01-555A	
57	Throttle Spring Stop Pin . . . . .	---	---	D02-553	
58	Throttle Lever Spring . . . . .	---	---	D01-412A	
59	Pull Chain Throttle Lever (2) . . . . .	---	---	D01-556	
60	Throttle Lever Chain (2) . . . . .	---	---	D02-413	
61	S-Hook (4) . . . . .	---	---	D02-421	
62	Throttle Handle (2) . . . . .	---	---	MR-415	
63	Throttle Lever Bolt (2) . . . . .	---	---	D02-411A	
64	Throttle Lever Bolt Nut (2) . . . . .	---	---	D02-418A	
65	1/2" Lock Washer (2) . . . . .	---	---	D10-322	
66	Globe Valve . . . . .	AM-283	---	---	
67	Globe Valve Nipple . . . . .	NIP-8X3	---	---	
68	Street Elbow (3) . . . . .	---	J3-388	---	
69	1/2" Elbow (3) . . . . .	---	AAM-289	---	
70	Long Nipple (4) (1/2" Pipe Nipple) . . . . .	---	AAM-287	---	
71	Short Nipple (2) (1/2" Close Nipple) . . . . .	---	AAM-286	---	
72	1/2" Pipe Union (2) . . . . .	---	AAM-282	---	
73	Air Valve . . . . .	---	AAM-291	---	
74	Air Valve Lever . . . . .	---	AAM-278	---	

\* Not illustrated.

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PART NUMBER FOR ORDERING

		AM AM56	AAM AAM56	AAUM AAUM56	AAM, AAM56 with Pendent Throttle
	Shuttle Valve Chest Assembly . . . . .	---	---	---	D00-A245
75	Shuttle Valve Chest . . . . .	---	---	---	D00-245
76	Rotary Valve Bushing . . . . .	---	---	---	D01-525A
77	Bushing Oiler . . . . .	---	---	---	JA4-75
● 78	Shuttle Valve Bushing . . . . .	---	---	---	DLC-247
79	Shuttle Valve Chest Bushing Key . . . . .	---	---	---	D02-538
80	Rotary Valve . . . . .	---	---	---	D00-526A
81	Valve Drive Pin . . . . .	---	---	---	D01-527A
82	Valve Chest Screw Lock Washer (2) . . . . .	---	---	---	D02-321
83	Valve Chest Screw (2) . . . . .	---	---	---	D01-548
84	Shuttle Valve Chest Cover . . . . .	---	---	---	D01-241
85	Air Inlet Plug . . . . .	---	---	---	D02-351
86	Shuttle Valve . . . . .	---	---	---	DLC-246
87	Shuttle Valve Washer (2) . . . . .	---	---	---	DLC-248
88	Shuttle Valve Spring (2) . . . . .	---	---	---	DLC-268
89	Shuttle Valve Cap (2) . . . . .	---	---	---	DLC-238
90	Shuttle Valve Cap Gasket (2) . . . . .	---	---	---	G601-411
91	Control Hose (3)				
	7 ft. long (standard) . . . . .	---	---	---	D00-230
	Length as specified . . . . .	---	---	---	D00-L230
92	Hose Nipple (3) . . . . .	---	---	---	AV1-46
93	Hose Stem (3) . . . . .	---	---	---	78F-146
94	Hose Nut (3) . . . . .	---	---	---	F-147
95	Hose Spud (3) . . . . .	---	---	---	F-148
96	Hose Binder (3) . . . . .	---	---	---	HRE20A-283
97	Pendent Throttle Handle . . . . .	---	---	---	D01-269
98	Pendent Throttle Lever (2) . . . . .	---	---	---	R00H-273A
99	Throttle Lever Pin . . . . .	---	---	---	DLC-120
100	Pendent Throttle Valve (2) . . . . .	---	---	---	D01-264
101	Pendent Throttle Valve Seal Ring (4) . . . . .	---	---	---	R000BR-210
102	Pendent Throttle Valve Spring (2) . . . . .	---	---	---	D01-51
103	Pendent Throttle Valve Cap (2) . . . . .	---	---	---	D01-180
*	Control Hose Exhaust Valve (2) (required when Control Hose length exceeds 17 ft) . . . . .	---	---	---	MR-939
*	Reducing Bushing (4) (required for use with Control Hose Exhaust Valves) . . . . .	---	---	---	MC121-82
*	Nameplate . . . . .	D01-99	D01-99	D01-99	D01-99
*	Nameplate Screw (4) . . . . .	R4K-302	R4K-302	R4K-302	R4K-302

\* Not illustrated.

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