

# INSTRUCTIONS AND REPAIR PART LIST

## for

### MULTI-VANE AIR MOTORS

### NON-REVERSIBLE SIZES 91RM1 and 91RM2

### and

### REVERSIBLE SIZE 991RM1

#### LUBRICATION

Use an Air Line Lubricator with Series 91RM or 991RM Multi-Vane Motors. Ingersoll-Rand No. NFLU-12 Filter-Lubricator Unit is recommended. Fill the lubricator with Ingersoll-Rand Pneu-Lube® Medium Oil No. 50 or a good quality SAE 20 Motor Oil and set the valve for medium feed.

After each eight hours of motor operation, or as experience indicates, inject Ingersoll-Rand Light Grease No. 28 or a good quality No. 1 Cup Grease into the Grease Fitting (10) in the Housing Cover (9), and into the Grease Fitting (31) in the Gear Case (30). Two strokes from the No. P25-228 Grease Gun are sufficient for the Grease Fitting in the Housing Cover. Fifteen to twenty strokes from the No. P25-228 Grease Gun are sufficient for the Grease Fitting in the Gear Case.

#### OPERATION

For top performance and maximum durability of parts, operate the Series 91RM or 991RM Multi-Vane Motors on 90 psi of clean, dry air at the tool. Size 1" hose is recommended.

#### MAINTENANCE INSTRUCTIONS

The thread on the Rotor Bearing Lock Screw (17) is left-hand. Grasp the Rotor Pinion (18) in copper-covered vise jaws and turn the Screw clockwise to remove it from the Rotor (15).

Never clamp the Cylinder (14) in a vise. When disassembling the Multi-Vane motor, grasp the Cylinder in one hand, insert a 5/16" dia. rod about 5-1/2" long into the hole from which the Lock Screw was removed and drive on the rod until the rotor hub is driven from the Rear Rotor Bearing (8).

Do not press the Rotor Pinion (18) from the Rotor (15) unless a new Pinion is required. When installing a new Pinion, always start the serrations on its shank in the mating grooves cut in the Rotor by the old Pinion.

Press the Rotor Bearings (8 and 21), shielded side first, into the recesses in the End Plates (13 and 20) with an arbor that will contact only the outer ring of the Bearing. Press on the inner ring of the Bearing when installing an End Plate and Bearing assembly on the Rotor (15).

After installing the Front End Plate and Front Rotor Bearing assembly on the front hub of the Rotor (15), hold the Rotor vertical and clamp the Pinion (18) in copper-covered vise jaws. Insert a Vane (19) in each vane slot. Position the Cylinder (14) as follows and set it over the Rotor and onto the Front End Plate:

**For Size 91RM1**, the elongated slots and fins must be to the **right** as you face the air port in the side of the Cylinder.

**For Size 91RM2**, the elongated slots and fins must be to the **left** of the air port as you face the air port in the side of the Cylinder. *(Continued on Page 4)*

#### HOW TO ORDER

Order all repair parts for your Ingersoll-Rand Tool by the **NAME** and **NUMBER** shown in the Repair Part List section. **Never** use the illustration numbers which appear in the first column.

For prompt service and genuine Ingersoll-Rand parts, place orders with the nearest Ingersoll-Rand Branch Office.

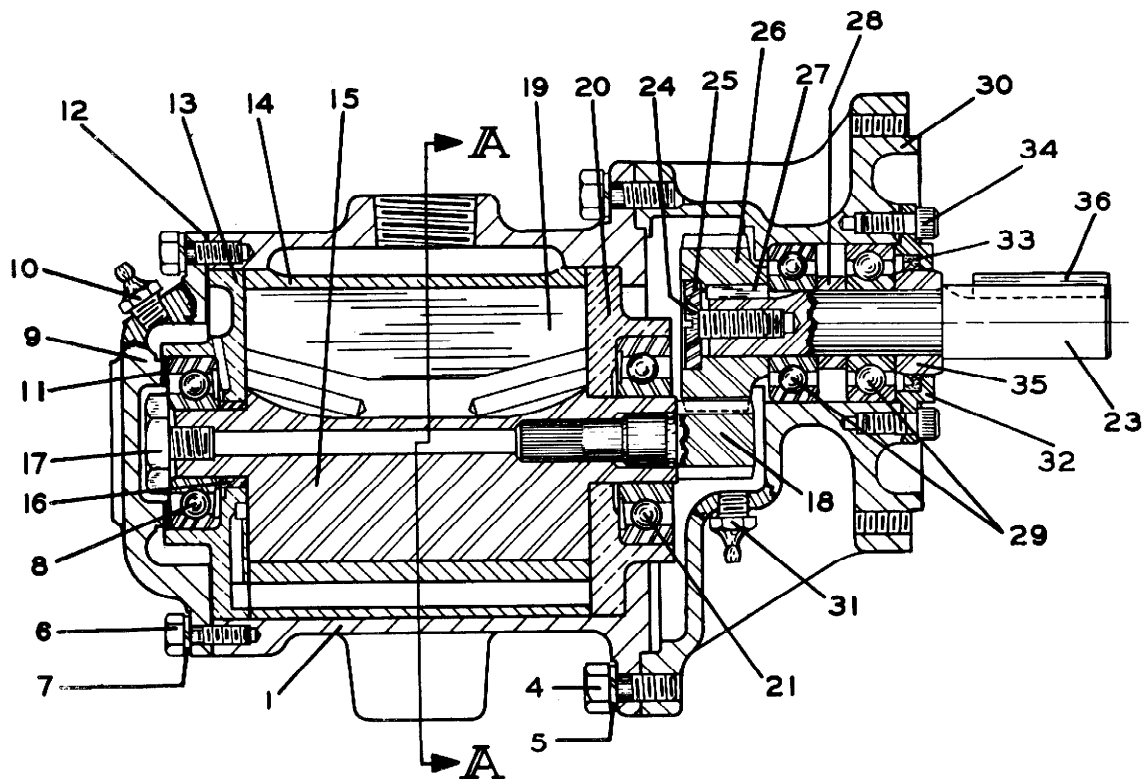
**Notice:** The use of other than genuine Ingersoll-Rand replacement parts may result in decreased tool performance and increased maintenance, and may, at the Company's option, invalidate all warranties.

Refer All Communications to the Nearest  
Ingersoll-Rand Branch Office or Distributor.

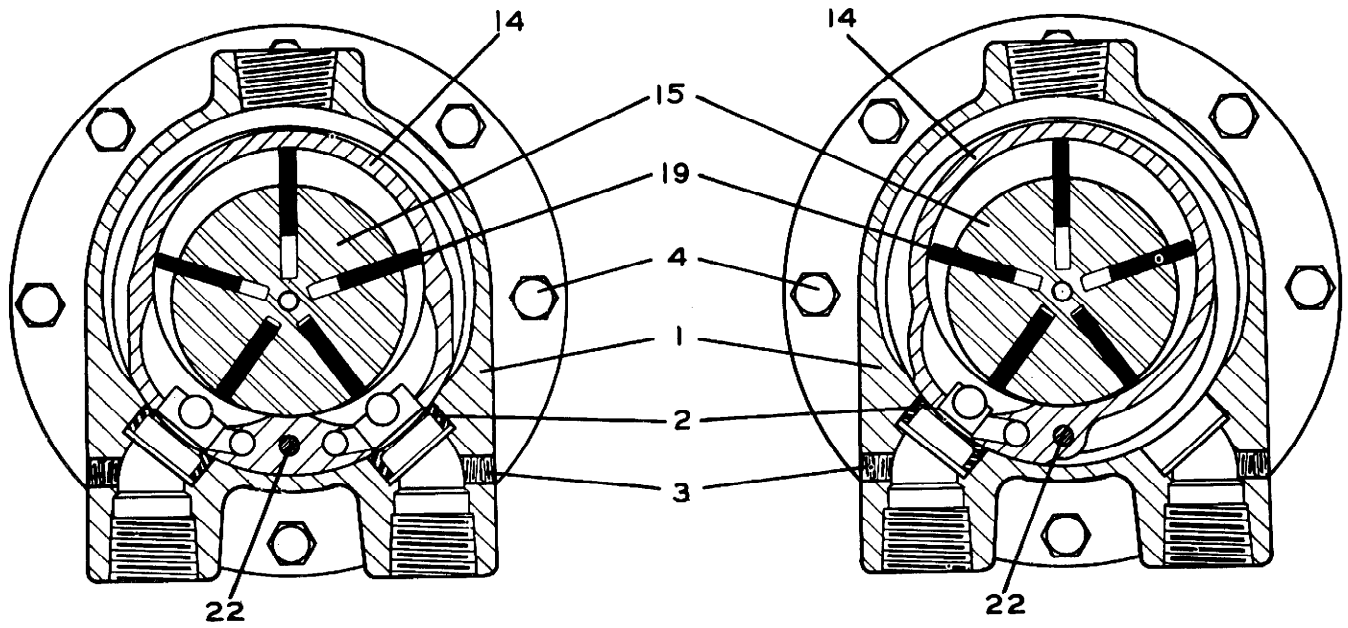
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Ingersoll-Rand



Size 91RM1, 91RM2 or 991RM1  
Multi-Vane Air Motor



Section A - A  
Size 991RM1

Section A - A  
Size 91RM1 or 91RM2

## REPAIR PART LIST

ILLUSTRATION NUMBER (Do not use for ordering)	PART NAME FOR ORDERING  Parts Indented After An Item Are Included With That Item	PART NUMBER FOR ORDERING
★ 1	Motor Housing . . . . .	9BM-40
2	Air Port Gasket (1 for Size 91RM1 and 91RM2; 2 for Size 991RM1). . . . .	R44H-210A
3	1/8" Pipe Plug (2) . . . . .	R2-227
4	Housing Cap Screw (8) . . . . .	FM-554
5	Housing Cap Screw Lock Washer (8) . . . . .	T11-58
6	Housing Cover Cap Screw (6) . . . . .	R3-7
7	Housing Cover Cap Screw Lock Washer (6) . . . . .	L01-67
● 8	Rear Rotor Bearing (special; purchase from Ingersoll-Rand) . . . . .	R5H-22
9	Housing Cover . . . . .	9BM-102
10	Grease Fitting . . . . .	23-188
11	Rotor Bearing Spring . . . . .	9BM-278
● 12	Housing Cover Gasket . . . . .	9BM-283
● 13	Rear End Plate . . . . .	9BM-12
● 14	Cylinder for Sizes 91RM1 and 91RM2 . . . . . for Size 991RM1 . . . . .	9BM-3 577-3 9BM-53
● 15	Rotor . . . . .	R5H-65
16	Rotor Bearing Spacer . . . . .	9BM-119
17	Rotor Bearing Lock Screw . . . . .	9BM-17
18	Rotor Pinion . . . . .	R5H-42-5
● 19	Vane Packet (Set of 5) . . . . .	9BM-11
● 20	Front End Plate . . . . .	R5H-24
● 21	Front Rotor Bearing (AFBMA No. 25BC03JP) . . . . .	205-1098
22	Cylinder Dowel . . . . .	9RM-508
23	Drive Shaft . . . . .	91RM-126
24	Drive Gear Retaining Screw . . . . .	9BM-13
25	Drive Gear Retaining Washer . . . . .	9BM-9A
26	Drive Gear . . . . .	9BM-610
27	Drive Gear Key . . . . .	9BM-111
28	Drive Shaft Bearing Spacer . . . . .	T02-33
● 29	Drive Shaft Bearing (AFBMA No. 20BC02) (2) . . . . .	91RM-237
30	Gear Case . . . . .	23-188
31	Grease Fitting . . . . .	91RM-378
32	Gear Case Cover . . . . .	92RM-271
33	Gear Case Cover Grease Seal . . . . .	R1M-56
34	Gear Case Cover Cap Screw (4) . . . . .	9BM-30A
35	Drive Shaft Collar . . . . .	107-54
36	Drive Shaft Key . . . . .	

★ **IMPORTANT:** Always specify the size symbol of the Motor when ordering a repair Motor Housing (1) so that the name plate on the new Housing will be correctly stamped.

## MAINTENANCE TOOLS

Tool Number For Ordering	Tool Name For Ordering	Operation
P25-228	Grease Gun . . . . .	Lubrication.

For Size 991RM1, the Cylinder can be installed either end first.

Be sure each Air Port Gasket (2) is in good condition and is installed, large open end first, in the air port in the wall of the Motor Housing (1). A Gasket is required in both ports for reversible Size 991RM1; for non-reversible Size 91RM1 or 91RM2, a Gasket is required only in the inlet port.

**IMPORTANT: A four-way Throttle Valve** (whether manually, remotely, or automatically controlled) must be used in the air supply line to Size 991RM1 Reversible Motor, as one motor inlet is expelling secondary exhaust air, and therefore must be open to atmosphere whenever the opposite inlet is admitting live air to the motor. The use of any throttle valve that closes or restricts the secondary exhaust line will result in sufficient back pressure to drastically reduce the speed and power of the motor.

When the application requires a separate Throttle Valve in each air line, then two three-way valves must be used.

## REPAIR PARTS

To keep costly downtime to a minimum, it is desirable to have on hand certain repair parts. To guide you in the stocking of repair parts, the Illustration Numbers of the Repair Part List are coded to indicate certain parts and quantities we recommend you carry in stock. Codings for the recommended repair parts are:

- One repair part for every four tools in service.
- + One repair part for every two tools in service.
- x One repair part for each tool in service.

If the tools are being used in remote geographical areas, or are subject to unusually severe service, the items and quantities should be increased. Contact the nearest Ingersoll-Rand Company Branch for recommendations.

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