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MULTI-VANE® Motors For Gas Operation

**Models 201RM16, 201RM16/VRM - 172
and 201RM21**

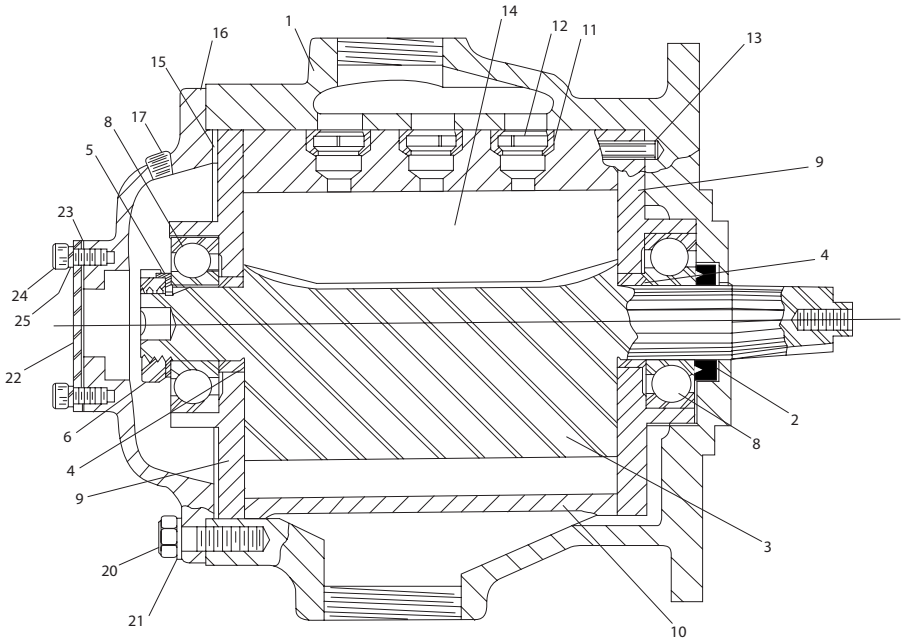
User Manual



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MULTI-VANE® Motors, Models 201RM16, 201RM16/VRM - 172 and 201RM21 - Sectional View



**SIZE 201RM21 MULTI VANE MOTOR
CONSTRUCTION TYPICAL OF SIZE 201RM16 OR 210RM16/VRM172**

MULTI-VANE® Motors, Models 201RM16, 201RM16/VRM - 172 and 201RM21 - Parts List

Item	Part Description	Part Number	Item	Part Description	Part Number
1	Motor Housing Assembly		13	Cylinder Dowell	20BM-98
	for size 201RM16	201RM16-A40	• 14	Vane Pack (set of 5 Vanes)	5S800-42A-5
	for size 201RM16/VRM172	VRM-206	• 15	Housing Cover Gasket	20BM-283
	for size 201RM21	201RM21-A40	16	Cover	20BM-202
• 2	Rotor Seal	201RM21-552	17	Pipe Plug (3)	R2-227
3	Rotor Assembly	201RM21-53	20	Housing Cover Cap Screw (8)	D10-312A
4	Rotor Bearing Spacer (2)	20BM-65	21	3/8" Lock Washer (8)	D02-321
5	Lock Nut Washer	215-66	22	Housing Cover Plate	201RM-104
6	Bearing Lock Nut	215-65	• 23	Cover Plate Gasket	20BM-105
• 8	Rotor Bearing (2)	5S800-22	24	Cover Plate Screw (3)	34U-667A
9	Cylinder End Plate (2)	201RM21-11	25	Plate Screw Lock Washer (3)	8U-58
10	Cylinder Assembly	201RM21-A3			
• 11	Air Port Gasket Assembly (3)	201RM21-A210			
• 12	Gasket Retaining Spring (1 For each Gasket)	20BM-200			

• 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.

Lubrication

A suitable air line lubricator is recommended for use with this Multi-Vane Motor. Fill the lubricator with a good quality SAE20 or 20W motor oil and set the valve for medium feed (120 drops per minute).

After each eight hours of motor operation, or as experience indicates, remove one of the 1/8" Pipe Plugs (17) from the Housing Cover (16). Insert approximately one tablespoonful (9 cc) of a good quality No. 2 cup grease. Do not pack the chamber.



It is imperative that gas-operated Motors be properly sealed to prevent gas leakage. Refer to SEALING PROCEDURES AND TEST when making repairs.

Sealing Procedure and Test

Each Motor for gas operation is painstakingly assembled using specially selected sealing material to prevent gas leakage and it is then rigidly tested so that no leakage is present when the motor is shipped from the factory.

When reassembling a gas operated motor, the following procedures are recommended to properly restore the sealing and to test the leaks:

1. Be sure the Housing cover Gasket (15) is in good condition; also the Rotor seal (2) located in the Motor Housing. If there are any questions about the serviceability of either part, replace it with a new one.
2. Be sure the contacting faces of the Housing Cover (16) and Motor Housing (1) are clean, they apply a light coat of **Ingersoll Rand SMB-431** Plastic Gasket, or G.E. RTV-102 White Silicone Rubber Adhesive Sealant to each. Apply a little of the sealant to the thread on each Pipe Plug (17) when installing it in the Housing Cover (16). Sealant should also be applied to each side of the Cover Plate Gasket (23) and around the Cover Plate Screws (24) if the Cover Plate (22) is being installed on the Housing Cover.
3. Test by plugging the exhaust with a pipe plug, applying 40 psig (2.75 bar/275 kPa) air pressure to the inlet and immersing the unit in oil.

Maintenance

Never Clamp the Cylinder (10) in a vise. When disassembling the Multi-Vane Motor, screw a 5/16"-24 thread cap screw into each of the two holes in the long hub on the Rotor (3). Lay the motor assembly on the workbench, grasp it by the Cylinder with one hand and drive the rotor front hub (long) out of the Front Rotor Bearing (8) by striking the cap screws with a soft hammer.

Unscrew the Rotor Bearing Lock Nut (6) from the rear hub on the Rotor (3), support the rear End Plate (9) as close as possible to the rotor body and press the rotor hub from the rear Rotor Bearing (8).

Observe the following procedure when assembling the motor:

Press the Rotor Bearings (8), shielded side first into the recesses in the End Plates (9) with an arbor that will contact only the outer ring of the Bearing. Press on the inner ring of the Bearing when installing an assembled End Plate and Bearing on the Rotor (3).

Examine the long hub of the Rotor (3) for nicks or burrs that would damage the Rotor Seal (2) located in the Motor Housing (1). Smooth the hub with an oil stone if any blemishes are noted.

Press one End Plate and Bearing assembly onto the long hub until the bearing ring contacts the Spacer (4).

Hold the Rotor vertically and grasp the long hub in copper-covered vise jaws.

Place a Vane (14) in each vane slot in the Rotor.

Observe that the Cylinder (10) contains four drilled holes. The largest, which is located nearest the outer rim of the Cylinder, is the cylinder dowel hole.

Position the Cylinder as follows and set it over the Rotor and onto the Front End Plate.

For Size 201RM21, the cylinder dowel hole must be to the left as you face the three large air ports in the cylinder wall.

For Sizes 201RM16 or 201RM16/VRM172, the cylinder dowel hole must be to the right as you face the three large air ports in the cylinder wall.

Install the remaining End Plate and Bearing assembly on the rear hub of the rotor and retain it with the Rotor Bearing Lock Nut (6) and Lock Nut Retaining Washer (5).

Be sure the Air Port Gaskets (11) are in good condition and that one is installed in each air port in the Cylinder (10).

Align the dowel hole in each End Plate (9) with the one in the Cylinder (10) and insert a rod at least twice as long as the assembled motor. Enter the end of the rod into the dowel hole in the bottom bore of the Motor Housing (1). Slide the motor assembly along the rod and into position in the Housing after making sure the Rotor Seal (2) is in good condition, is in position and that the hub aligns properly so that it will not damage the Seal on entry.

After applying sealer (refer to SEALING INSTRUCTIONS), install the Housing Cover (16) drawing it evenly into position by tightening each Cap Screw (20) a little at a time.

After the Housing Cover is installed, the operation of the unit can be checked before installing the pinion.

Note: Incorrect direction of rotation indicates that the cylinder (10) is inverted. To correct, remove the cylinder and turn it end for end on the Rotor (3).

Parts and Maintenance

When the life of the tool has expired, it is recommended that the tool be disassembled, degreased and parts be separated by material so that they can be recycled.

Tool repair and maintenance should only be carried out by an authorized Service Center. Refer all communications to the nearest **Ingersoll Rand** Office or Distributor.

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