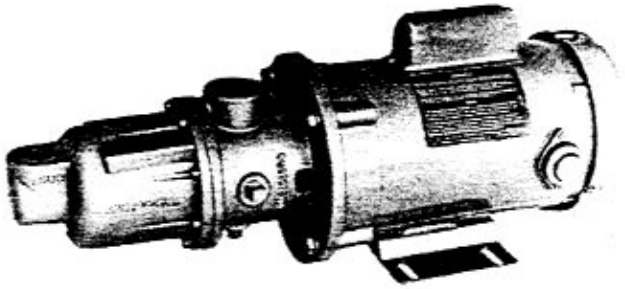
MOYNO
Always the Right Solution™

SERVICE MANUAL
MOYNO® 500 PUMPS
300 SERIES MOTORIZED
331, 332, 333, AND 344 MODELS

DESIGN FEATURES

Housing:	Cast iron/316 SS
Pump Rotor:	Chrome plated AISI 416 stainless steel/Chrome plated 316 stainless steel
Pump Stator:	NBR (Nitrile)
Seal:	Mechanical (carbon/ceramic)
Motor Shaft:	AISI 416 stainless steel/ANSI 316 stainless steel
Motor:	1/2 HP, 60 Hertz, 1725 rpm, totally enclosed, fan cooled (TEFC) C-Faced, 1 phase 115/230V or 3 phase 230/460V (other motor options available; consult sales representative)



Note: Alternate elastomers available. Refer to Repair/Conversion kit numbers pages 3 and 4.

INSTALLATION

Mounting Position. Pump may be mounted in any position. When mounting vertically, it is necessary to keep bearings above seals to prevent possible seal leakage into bearings.

Pre-Wetting. Prior to connecting pump, wet pump elements and mechanical seal by adding fluid to be pumped into suction and discharge ports. Turn pump over several times in a clockwise direction to work fluid into pump elements.

Piping. Piping to pump should be self-supporting to avoid excessive strain on pump housings. See Table 1 for suction and discharge port sizes of each pump model. Use pipe "dope" or tape to facilitate disassembly and to provide seal on pipe connections.

Electrical. Follow the wiring diagram on the motor nameplate or inside the terminal box for the proper connections. The wiring should be direct and conform to local electrical codes. Check power connections for proper voltage. Voltage variations must not exceed ±10% of nameplate voltage. Motor is provided with internal automatic overload protection.

To prevent damage to pump, pump rotation must be clockwise when facing pump from motor end.

OPERATION

Self-Priming. With wetted pumping elements, the pump is capable of 25 feet of suction lift with pipe size equal to port size. Be sure suction lines are air tight or pump will not self prime. Self-priming capabilities will vary due to fluid viscosity.

DO NOT RUN DRY. Unit depends on liquid pumped for lubrication. For proper lubrication, flow rate should be at least 10% of rated capacity.

Pressure and Temperature Limits. See Table 1 for maximum discharge pressure of each model. Unit is suitable for service at temperatures shown in Table 2.

Storage. Always drain pump for extended storage periods by removing bottom drain plug in pump body.

Caution: Suction pressure should never be greater than discharge pressure.

Table 1. Pump Data

Pump Model	Suction Port (NPT)	Discharge Port (NPT)	Voltage Rating (VAC)	Discharge Pressure (psig)
331	3/4	3/4	See Motor Name Plate For Voltage Ratings	150
332	3/4	3/4	See Motor Name Plate For Voltage Ratings	100
333	3/4	3/4	See Motor Name Plate For Voltage Ratings	50
344	3/4	3/4	See Motor Name Plate For Voltage Ratings	†30

†With *3/4* HP motor, pressure is 40 psig.

Table 2. Temperature Limits

Elastomer	Temperature Limits
*NBR	10°-160°F
*EPDM	10°-210°F
*FPM	10°-240°F

*NBR = Nitrile
EPDM = Ethylene-Propylene-Diene Terpolymer
FPM = Fluoroelastomer

TROUBLESHOOTING

WARNING: Before making adjustments, disconnect power source and thoroughly bleed pressure from system prior to disassembly. Failure to do so could lead to electric shock or serious bodily harm.

Failure To Pump.

1. Motor will not start: Check power supply. Voltage must be ± 10% of nameplate rating when motor is in locked rotor condition. Check for faulty capacitor on 1 phase Models.
2. Motor runs and thermally kicks out: Check for excessive discharge pressure. Check for defective centrifugal switch on 1 phase Models. Increase ventilation to motor. Do not use less than #14 wire size.
3. Stator torn; possible excessive pressure: Replace stator, check pressure at discharge port.
4. Flexible joint broken; possible excessive pressure:

   Replace joint, check pressure at discharge port.
5. Wrong rotation (3 phase only): Rotation must be clockwise when facing pump from motor end. Reverse the connections of any two line leads to the motor.
6. Excessive suction lift or vacuum.

Pump Overloads.

1. Excessive discharge pressure: Check pressure at discharge port for maximum ratings given in Table 1.
2. Fluid viscosity too high: Limit fluid viscosity to 100 CP or 500 SSU.

Noisy Operation.

1. Excessive suction lift or vacuum: Maximum suction lift is 25 feet for water.
2. Suction line too small: Check pipe size. Be sure lines are free from obstructions.
3. Pump Cavitates: Pump speed is 1725 rpm. Viscosity of fluid should not exceed 100 CP or 500 SSU.
4. Flexible joint worn: Replace joint. Check pressure at discharge port.
5. Insufficient mounting: Mount to be secure to a firm base. Vibration induced noise can be reduced by using mount pads and short sections of hose on suction and discharge ports.

Seal Leakage.

1. Leakage at startup: If leakage is slight, allow pump to run several hours to let faces run in.
2. Persistent seal leakage: Faces may be cracked from freezing or thermal shock. Replace seal.

Pump Will Not Prime.

1. Air leak on suction side: Check pipe connections.

PUMP DISASSEMBLY

WARNING: Before disassembling pump, disconnect power source and thoroughly bleed pressure from system. Failure to do so could result in electric shock or serious bodily harm.

1. Remove suction and discharge piping. Drain pump body by removing drain plug (261B).
2. Remove screws (112) holding suction housing (2) to discharge housing (1). Remove suction housing (2) and stator (21).
3. Remove rotor (22) from flexible joint (24) by turning counterclockwise (RH thread). On pinned, 3 phase models, remove rotor pin (45) with suitable punch.
4. Flexible joint (24) can be removed from motor shaft by using a 3/16 allen wrench in end of joint and turning counterclockwise. On 3 phase motors, remove motor pin (46) with suitable punch, then remove joint:
5. Slide mechanical seal (69) off motor shaft.
6. Remove discharge housing (1) from adaptor flange (12) by removing screws (1 12B).
7. Carefully pry seal seat out of discharge housing (1). If any parts of mechanical seal are worn or broken, the complete seal assembly should be replaced. Seal components are matched parts and are not interchangeable.
8. Remove adapter flange (12) from motor (70) by removing screws (112A).
9. Remove slinger ring (77).

PUMP ASSEMBLY

1. Install slinger ring (77).
2. Attach adaptor flange (12) to motor housing using screws (112A).
3. Attach discharge housing (1) to adaptor flange (12) using screws (1128). Be sure to center seal bore on shaft.
4. Install mechanical seal (69) in discharge housing (1) using the following procedure:
   a. Clean and oil sealing faces using clean oil (not grease).

Caution: Do not use oil on EPDM parts. Substitute glycerin or soap and water.

   b. Oil outer surfaces of the seal seat, and push assembly over the motor shaft and into the discharge housing (1) seating it firmly and squarely.
   c. After cleaning and oiling the shaft, slide the seal body along the motor shaft until it meets the seal seat.
   d. Install seal spring and spring retainer on shaft.
5. Thread flexible joint (24) into motor shaft in a clockwise direction (RH thread). Tighten with 3/16 allen wrench. On 3 phase models, install motor pin (46).
6. Thread rotor (22) onto flexible joint (24) in a clockwise direction (RH thread). On 3 phase models, install rotor pin (45).
7. Slide stator (21) on rotor (22). On 331 & 332 models, insert rounded end of stator ring (135) into end of stator prior to installing stator on rotor.
8. Secure stator (21) and suction housing (2) to discharge housing (1) using screws (112).
9. Lubricate rotor and stator by filling Suction housing and discharge housing with fluid to be pumped.
10. Connect Suction and discharge piping and power source.

PARTS LIST

To determine part numbers for all parts except standard motors, enter table with item number from pump illustration. Then locate part number under applicable model number (first three digits). Parts listed down the center are applicable to all pump models. To determine part numbers for standard motor (item 70), enter table at item 70 with the last two digits of model number: motor description and part number are on that line.

Item No.	Description	Pump Model Numbers			
		331	332	333	344
1	Discharge Housing	Cast Iron 350-1016-000/Stainless Steel 350-1016-007			
2	Suction Housing	Cast Iron 330-1064-002/Stainless Steel 330-1911-002			
*21	Stator	340-3501-120	340-3502-120	340-3503-120	340-3504-120
*22	Rotor (Threaded) 416 S5	320-2729-000	330-0906-000	320-1394-000	320-1841-000
*22	Rotor (Pinned) 416 SS	320-2729-004	320-4559-004	320-1584-002	320-1569-002
24	Flexible Joint (Threaded)	Carbon Steel 320-1511-000/Stainless Steel 320-3759-000			
240	Flexible Joint (Pinned)	Carbon Steel 320-1612-000/Stainless Steel 320-4415-000			
*45	Shaft Pin (2 req.)	320-4069-002			
*69	Mechanical Seal	320-2424-000			
70	Standard Motor				
	-59 1PH TEFC 1750 RPM	330-4529-000			
	-60 3PH TEFC 1750 RPM, Pin	330-4528-100			
	-52 1PH TEFC 1750 RPM	330-4529-1 00			
	-50 3PH TEFC 1750 RPM	330-4528-003			
77	Slinger Ring	320-6382-000			
112	Screw, Cap (8 req.)	Carbon Steel 619-1430-103 (10-24 x 5/8)/Stainless Steel 619-1432-120 (10-24 x 3/4)			
112A	Screw, Hex Hd (4 req.)	Carbon Steel 619-1530-161 (3/8-16 x 1)/Stainless Steel 320-6715-005 (3/8-16 x 1)			
135	Stator Ring	Carbon Steel 320-7812-000 /Stainless Steel 362-1774-000			
215	Lock Washer (8 req.)	320-6464-000			
215A	Lock Washer (4 req.)	Carbon Steel 623-0010-411/Stainless Steel 320-6717-002			
261	Pipe Plug, 1/4 NPT	Carbon Steel 610-0120-021/Stainless Steel 610-0420-020			
	Rotor (Threaded) 316 SS	320-2933-000	320-2942-000	320-2936-000	320-2934-000
	Rotor (Pinned) 316 SS	320-2933-002			

*Recommended spare parts.
Used on 3 phase models.

REPAIR/CONVERSION KIT NUMBERS

Item No.	Description	All 331 Models (Threaded Only)			All 332 Models (Threaded Only)		
		NBR	EPDM	FPM	NBR	EPDM	FPM
—	Kit No.	311-9026-000	311-9025-000	311-9054-000	311-9027-000	311-9038-000	311-9055-000
21	• Stator	340-3501-120	340-3501-320	340-3501-520	340-3502-120	340-3502-320	340-3502-520
24	• Joint	*320-1511-000	320-6367-000	320-4670-000	*320-1511-000	320-6367-000	320-4670-000
69	• Seal	320-2424-000	320-6379-000	320-6501-000	320-2424-000	320-6379-000	320-6501-000
		All 333 Models (Threaded Only)			All 344 Models (Threaded Only)		
Item No.	Description	NBR	EPDM	FPM	NBR	EPDM	FPM
—	Kit No.	311-9029-000	311-9028-000	311-9056-000	311-9031-000	311-9030-000	311-9057-000
21	• Stator	340-3503-120	340-3503-320	340-3503-520	340-3504-120	340-3504-320	340-3504-520
24	• Joint	*320-1511-000	320-6367-000	320-4670-000	*320-1511-000	320-6367-000	320-4670-000
69	• Seal	320-2424-000	320-6379-000	320-6501-000	320-2424-000	320-6379-000	320-6501-000

NBR = Nitrile
EPDM = Ethylene-Propylene-Diene Terpolymer
FPM = Fluoroelastomer
*Carbon steel joint, for 316 SS joint use 320-3759-000.

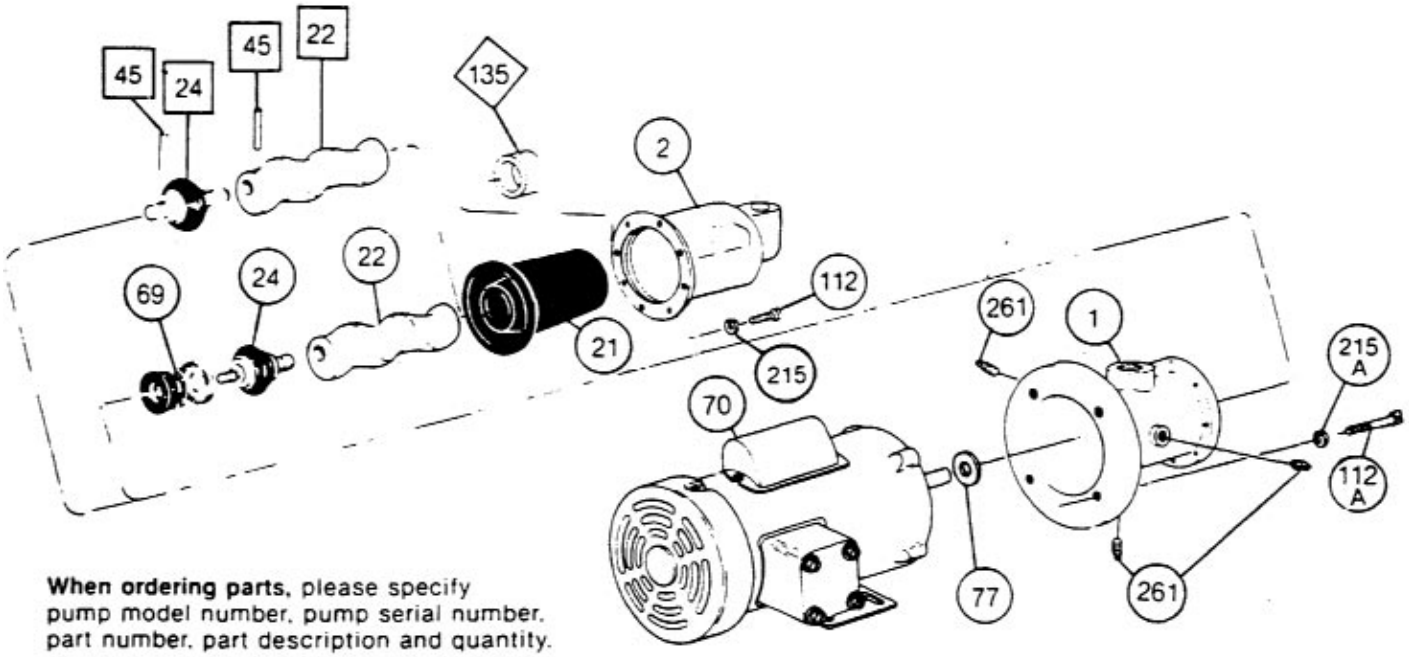
REPAIR/CONVERSION KIT NUMBERS (CONT.)

		All 331 Models (Pinned Only)			All 332 Models (Pinned Only)		
Item No.	**Description**	**NBR**	**EPDM**	**FPM**	**NBR**	**EPDM**	**FPM**
–	Kit No.	311-9104-000	311-9108-000	311-9112-000	311-9105-000	311-9109-000	311-9113-000
21	• Stator	340-3501-120	340-3501-320	340-3501-520	340-3502-120	340-3502-320	340-3502-520
24	• Joint	*320-1612-000	320-6973-000	320-6984-000	*320-1612-000	320-6973-000	320-6984-000
69	• Seal	320-2424.000	320-6379-000	320-6501-000	320-2424-000	320-6379-000	320-6501-000
45	• Pin (2 req.)	320-4069-002			320-4069-002		
		All 333 Models (Pinned Only)			**All 344 Models (Pinned Only)**		
Item No.	**Description**	**NBR**	**EPDM**	**FPM**	**NBR**	**EPDM**	**FPM**
–	• Kit No.	311-9106-000	311-9110-000	311-9114-000	311-9107-000	311-9111~000	311-9115-000
21	• Stator	340-3503-120	340-3503-320	340-3503-520	340-3504-120	340-3504-320	340-3504-520
24	• Joint	*320-1612-000	320-6973-000	320-6984-000	*320-1612-000	320-6973-000	320-6984-000
69	• Seal	320-2424-000	320-6379-000	320-6501-000	320-2424-000	320-6379-000	320-6501-000
45	Pin (2 req.)	320-4069-002			320-4069-002		

ABRASION RESISTANT SEALS

Elastomer	All 331 – 334 Models
NBR	320-6460-000
EPDM	320-6502-000
FPM	320-6503-000

NBR = Nitrile
EPDM = Ethylene-Propylene-Diene Terpolymer
FPM = Fluoroelastomer
*Carbon steel joint, for 316 SS joint use 320-4415-000.



When ordering parts, please specify pump model number, pump serial number, part number, part description and quantity.

◇ Used only on 331 & 332 Models.

□ Used on 3 Phase Models

Double The Length Of Your Moyno Pump Warranty For FREE!

For your *free* pump warranty extension, choose from one of the three options below:

1. Go to www.moyno.com and fill out the registration form online

2. Mail this form by placing it in an envelope and sending it to: **Moyno, Inc.**
Attn: Tish Wilson
P. O. Box 960
Springfield, OH 45501-0960
U.S.A.

3. Fax this form to 937-327-3177

Thank you for choosing a Moyno Pump. Please take the time to complete this warranty registration form. Upon receipt of your form, your standard limited warranty on defective material and workmanship will be extended to twice the standard period of time at no additional cost to you. We appreciate your business and look forward to serving you in the future.

LLOYD'S REGISTER QUALITY COMPANY ISO9001 NATIONAL ACCREDITATION OF CERTIFICATION BODIES
CERTIFICATE No. 101442

MOYNO
Always the Right Solution™

Always Insist on Genuine Moyno Replacement Parts!

Moyno® Pump Warranty Registration

Pump Model # _____ Pump Serial # _____
Purchased From _____ Date Purchased _____
Your Name _____ Your Title _____
Your Company Name _____
Address _____
City/State (Province)/Zip Code _____
Phone Number _____ Fax Number _____
E-mail _____

Application for Which This Pump Was Purchased

Material _____ Flow Rate _____ Process Temperature _____
Operating Speed _____ Viscosity _____ pH Value _____
Hours Operated per Day _____ Continuous _____ Intermittent _____
Discharge Pressure _____ Suction Pressure _____ NPSH Available _____
Percent of Solids _____ Particle Size _____ Abrasion Rating _____

How Did You First Hear of Moyno Pumps?

❑ Advertisement ❑ Postcard ❑ Trade Show ❑ Referral
❑ Distributor Salesperson ❑ Previous Experience With Moyno Pumps ❑ Other – Explain Below

Thank You!