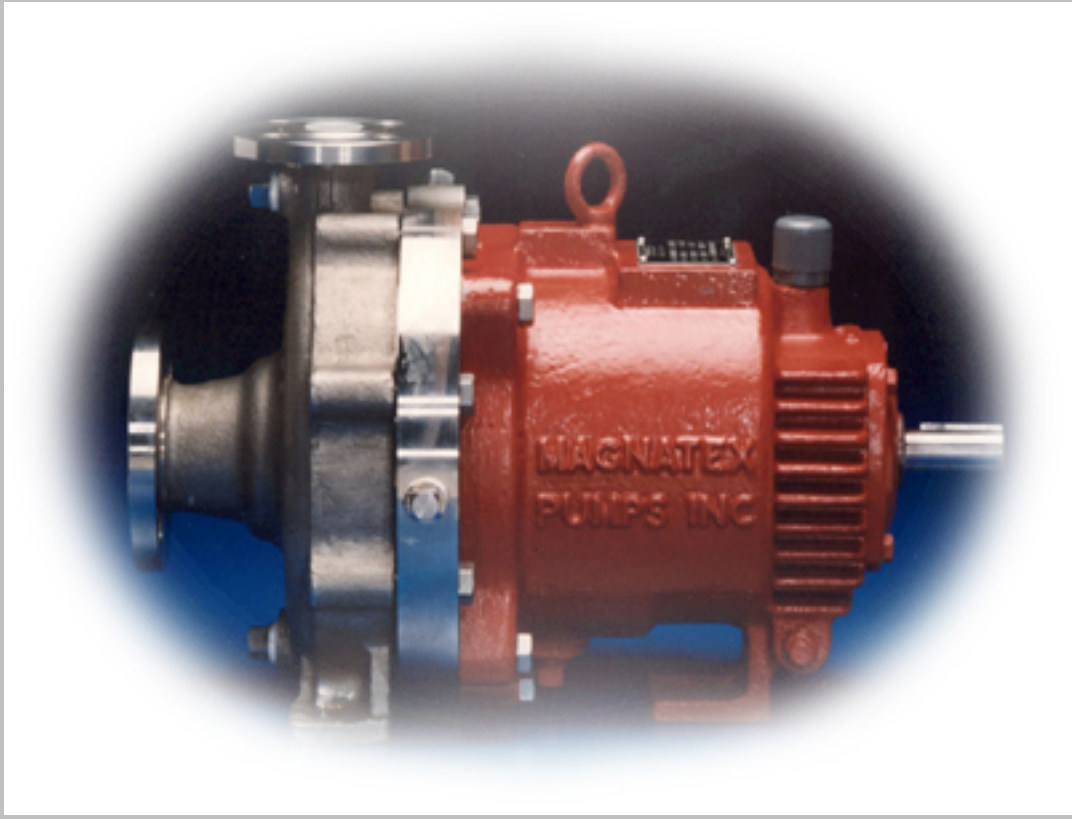
MAGNATEX® Pumps, Inc.

Operation and Maintenance Manual

MAXP Series ANSI



Magnetic Drive
Sealless Pumps

3575 West 12th Street Houston, TX 77008
Phone (713) 972-8666 Fax (713) 972-8665
www.magnatexpumps.com

!WARNING! - MAG DRIVE PUMP

DO NOT WORK ON THIS PUMP IF YOU ARE WEARING A MEDICAL DEVICE (DEFIBRILLATOR, PACEMAKER, ETC.) PERSONNEL WHO EXPERIENCE INTERFERENCE WITH THEIR MEDICAL DEVICE SHOULD MOVE AWAY FROM THE PUMP AND REFRAIN FROM HANDLING MAGNETIC PUMP COMPONENTS. SEEK IMMEDIATE MEDICAL ATTENTION IF YOU HAVE EXPERIENCED INTERFERENCE WITH YOUR MEDICAL DEVICE.

The rare earth permanent magnets in this pump have been manufactured such that the magnetic field is directional toward each half of the magnetic coupling. For this reason, the magnetic field that exists outside of the assembled magnetic coupling is minimal. When the two halves are apart, the magnetic field is exposed, which is why we recommend that personnel wearing medical devices DO NOT HANDLE the magnetic coupling components.

When the pump is assembled, the magnetic fields from the magnetic coupling components are not exposed and it is safe for wearers of medical devices to be in the general proximity of the assembled pump, whether the pump is in operation or not. In handling and transporting the mag-drive pump, we recommend the use of appropriate lifting devices and carts sized consistent with the weight of the pump to be moved.

TABLE OF CONTENTS

WARNING:
WHEN WORKING ON MAGNETICALLY DRIVEN PUMPS

- Strong magnetic fields may damage watches, credit cards, computer disks, calculators, and computer tapes.
- People with pacemakers should be cautioned that the strong magnetic field may upset the timing or cause the pacemaker to malfunction.
- When working on the pumps, be aware that tools or metal parts brought within close proximity to the magnets may suddenly be attracted trapping fingers in the process.

OPERATING INSTRUCTIONS
MAXP ANSI PUMPS

This instruction manual is intended to assist those responsible for the installation, operation and maintenance of **MAGNATEX** Magnetic Drive Sealless Pumps. We recommend thoroughly reading this manual and reviewing the Hydraulic Institute Standards regarding Horizontal Centrifugal Pump installation before installing and operating your pump.

RECEIPT OF EQUIPMENT

A. Prior to uncrating, check for physical damage to the pumping system and notify the common carrier **IMMEDIATELY** if any damage is found.

B. Check the nameplate on the pump against receiving and purchase order documents to be sure that the correct size pump and materials of construction have been supplied. If a motor has been supplied, check for correct horsepower, speed, and voltage.

C. Check to see if flange protectors are intact. If not, check for foreign objects which may have found their way into the pump casing through the flange openings.

D. Check for free rotation of the pump. Remove the coupling guard and rotate the pump using the motor shaft flexible coupling. Only slight resistance should be felt. If the pump has heavy resistance, or if any noise is heard, call your **MAGNATEX** representative or **MAGNATEX PUMPS INC.** (713-972-8666).

PUMP AND MOTOR ALIGNMENT

MAXP flexible coupled pumps have been pre-aligned with the customer's motor (where applicable) prior to shipment. Because pumps frequently receive rough treatment during shipment, they can become misaligned. To prevent inadvertent operation of a misaligned pump, the spacer coupling has been removed and packed separately with your shipment. The sleeve will need to be reinstalled and the coupling alignment checked prior to starting the pump. The spacer coupling is not designed to compensate for misalignment. Improper alignment will cause vibration and premature bearing failure.

FOUNDATION

The foundation should be firm and heavy to reduce vibration and prevent flexing which can result in misalignment. A concrete foundation with a solid baseplate is recommended. Foundation bolts of the correct size should be located by reference to certified drawings if the baseplate is supplied by **MAGNATEX**. A final alignment check should be made after the baseplate has been grouted and set, and the foundation bolts have been tightened.

LOCATION & PIPING

A. Locate the pump as close as practical to the source of liquid supply.

B. The suction line should be as short and straight as possible and contain a minimum number of elbows. Any elbows should be the large radius type. Elbows and fittings should be no closer than 20 pipe diameters to the pump suction to allow undisturbed flow to the pump impeller.

C. Generally, suction piping should be one or two sizes larger than the pump suction to keep friction loses to a minimum. This becomes more important as the distance between the pump and the liquid supply increases, or if fittings are located closer than 20 pipe diameters to the pump's suction.

D. The suction piping should have no high spots where air pockets can collect. All joints in the suction line should be tight to prevent air from entering into the system and creating the possibility of vapor locking. This is especially important when suction pressure is lower than the atmospheric pressure. A pressure gauge should be installed in the suction line as close as possible to the suction flange.

E. An air vent should be installed at the initial high point in the pump discharge line. A check valve and shut-off valve should be installed as close as possible to the pump discharge nozzle. The check valve is installed to protect the pump from excessive back pressure, including reverse flow / rotation, and back flow during shut down or driver failure. The discharge valve is located at the pump discharge to regulate flow and

isolate the pump for servicing. A pressure gauge should also be installed on the discharge side of the pump as close as possible to the discharge nozzle between the pump and the discharge valve.

F. Prior to starting the pump it is important to flush the piping to insure the system is free of foreign matter and particles such as pipe scale, welding beads, and dirt. Large particles can block the bearing lubrication ports in the pump causing serious damage. In addition, metallic particles can magnetically attach to the inner magnet also resulting in damage. If possible, a temporary startup strainer with a 40 X 40 mesh screen should be installed in the pump's suction line. **BE VERY CAREFUL** not to allow the temporary strainer to be plugged to the point of starving the pump of liquid, resulting in cavitation and the possibility of running the pump dry. Since running the pump dry can destroy the pump's bearings, it is recommended to install a pressure gauge between the strainer and pump to monitor possible plugging of the strainer. The discharge pressure may also be closely monitored. Any drop in the discharge pressure without discharge valve throttling could indicate strainer plugging (assuming constant demand to the system).

G. **MAGNATEX** pumps, although very rugged, are not designed to handle excessive pipe stress. The resulting forces and moments on the pump can result in misalignment and possible damage to the pump. Piping must be anchored and supported as close as possible to, but independent from the pump. Pump and pipe flanges must be positioned together before attempting to tighten flange bolts (see Nozzle Loading Criteria, page 37).

H. The pump **MUST NOT RUN DRY**. To ensure that adequate liquid is available to the pump suction, a flow sensor and/or amp monitor should be installed to shut the pump down in the event of dry run. MAGNATEX provides an optional Electronic Pump Protector to prevent dry run.

ROTATION CHECK AND START-UP

Prior to starting the pump the bearing housing should be filled to the middle of the oil gauge (Item 90) with the following lubrication oils (or equivalent):

Texaco - Regal Oil R & O 32
Shell - Turbo T32 Turbine Oil

To confirm the direction of rotation against the rotation arrow on the pump casing use the following procedure:

A. Open the suction and discharge valve and allow the pump to be filled with liquid.

WARNING! NEVER RUN THE PUMP DRY

B. Remove the coupling guard for visual inspection of rotation.

C. Bump the motor by quickly pushing the motor start/stop buttons. Rotation should be clockwise as seen from motor end. If the direction of rotation is incorrect, reverse two of the three-phase power leads to the motor.

D. After confirming proper rotation replace the coupling guard.

PRIMING

A. Open the suction and discharge valves and allow the pump to fill with liquid. If the direction of rotation has not been checked, this must be done as detailed under Rotation Check and Start-up before proceeding (see page 3).

WARNING! NEVER RUN THE PUMP DRY

B. Close the discharge valve to 1/4 open.

C. Start the motor and immediately check the discharge pressure gauge. The pressure should rise quickly and hold steady. If the pressure rises and then falls back, there is air or vapor in the system. **STOP THE PUMP IMMEDIATELY.** Wait 15 to 20 seconds before restarting the pump.

D. If after repeating Step C several times, the pressure gauge does not hold steady or does not yield the expected pressure (from performance curve), contact your Magnatex representative, or MAGNATEX PUMPS, INC., for assistance. Do not continue to operate the pump under these conditions.

E. Once the pump is fully primed and the discharge pressure is satisfactory, slowly open the discharge valve until the desired operating point is reached.

SEPARATE FLUSH TO THE REAR CASING

When the pump has been modified for a separate flush, the separate flush connection must supply liquid to the rear casing prior to starting the pump. **OPERATING THE PUMP WITHOUT LIQUID SUPPLY TO THE REAR CASING CAN CAUSE IMMEDIATE SERIOUS DAMAGE.**

A. Connect the separate flush piping to the ½" NPT flush connection located 90° to the right on the rear casing flange, as viewed from the suction end.

B. Allow the rear casing to vent by removing the vent plug or opening the vent valve (if installed) located at the top left side of the rear casing flange, as viewed from the suction end. **WARNING** - The rear casing vent should be hard piped when handling toxic or hazardous liquids.

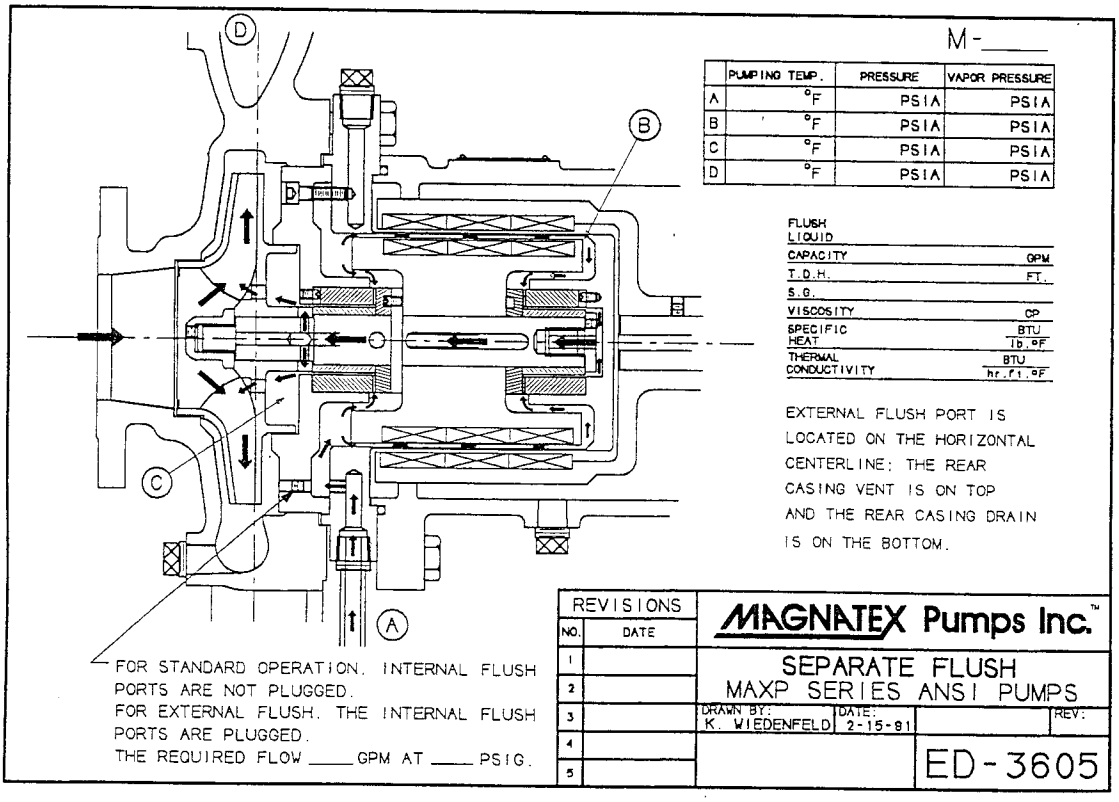
C. Initiate flow to the rear casing through the separate flush piping. Allow the rear casing to fully vent. Turn the pump shaft to expel any trapped air.

D. Close the rear casing vent and maintain separate flush flow to the rear casing. Verify separate flush pressure is adequate by comparing the field reading to the minimum pressure specified by MAGNATEX (Diagram ED-3605).

E. After the pressure check is satisfactory, open the suction and discharge valves and prime the pump as outlined in **PRIMING** (page 4).

F. If possible, when the pump is operating, verify the separate flush flow rate is at or above the minimum flow specified by MAGNATEX (Diagram ED-3605).

To drain the rear casing when using a separate flush, open the vent and remove the drain plug located at the bottom of the rear casing flange. The front casing may be drained through the plug at the bottom of the casing.



OPERATIONS AND MAINTENANCE

A. Operators should make frequent visual inspections to insure the pump is running smoothly without noise or vibration, and that the discharge pressure is holding steady without fluctuation. Any excessive heating of the pump or motor bearings is cause for alarm. The unit should be shut down immediately, an investigation made to determine the cause, and corrective action taken.

B. Follow the motor manufacturer's recommendations and keep the motor bearings lubricated properly.

> **WARNING!** Never throttle the pump by closing the valve on the suction side of the pump. Throttling the suction side can cause serious damage to the pump. Throttle only from the discharge valve.

> **WARNING!** Never operate the pump against a closed discharge valve. Low flow operation can cause rapid heating of the pumped liquid with possible vaporization and the pump bearings running dry, resulting in serious damage to the pump.

MAINTENANCE SCHEDULE

Part to be Inspected		Frequency
Bearing Housing	Fill with appropriate oil to the middle of the sight gauge as needed.	Monthly
Inner Magnet Sub-Assembly	Check Thrust Rings, Sleeves, and Bushings for wear. Use new gaskets and O-rings upon reassembly.	Silicon Carbide Every 2 to 3 Years (depending on service)
Motor manual.	As directed in the motor operations motor operations	As directed in the manual.

STORAGE PROCEDURES

As shipped, the pumps are suitable for short term storage only. If long term storage is necessary before the pump will be put into operation, contact your local representative or **MAGNATEX PUMPS** for long term storage recommendations.

For maximum protection cover the pump with plastic or some other protective material. Motors should be greased and rotated by hand every three (3) months.

Before start-up, refer to the section titled "Rotation Check and Start-Up" (page 3).

TORQUE CHECK

To determine the static breakaway torque of the magnet coupling, place a torque wrench on the impeller nut and hold the outer pump shaft with channel locks. Slowly turn the torque wrench counter-clockwise (as seen from motor end) until the magnets turn over (decouple).
The preferred method for checking torque is to insert the torque wrench through the suction nozzle, leaving the casing attached to the pump. An alternate method is to remove the pump from the casing. In doing so a support should be placed under the frame adapter to brace the pump.

GENERAL NOTES

A. All inner magnets are marked "Front" to assist in correct position for reassembly.

B. All casing covers and rear casings are marked "Up" on outer flange surface to assist in proper positioning.

RECOMMENDED TIGHTNESS FOR INTERNAL BOLTS AND SCREWS MAXP SERIES (ANSI) PUMPS

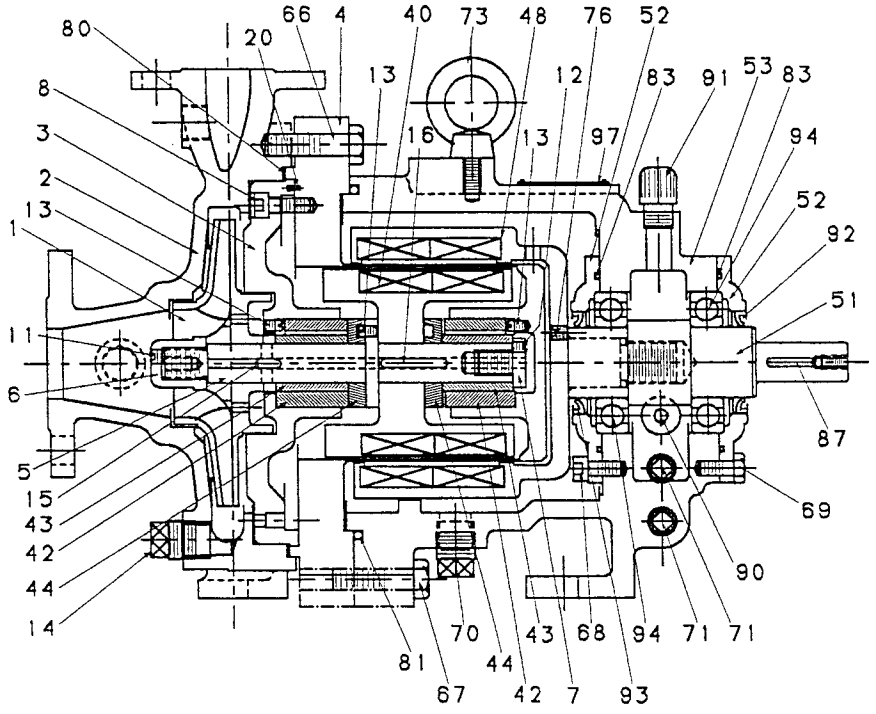
MODEL	6 Impeller Nut (ft.lbs.)	11 Impeller Nut Set Screw (in. lbs.)	7 Sleeve Bolt (ft. lbs.)	12 Sleeve Bolt Set Screw (in.lbs.)	8 Hex Socket Head Bolt (in.lbs.)
AA6-F AA8-F AB6-F	72	14.4	33	5.2	106
A10-6-S A50-8-S A60-8-S A70-8-S A05-10-S A50-10-S	72	14.4	33	5.2	106
A60-8-M A70-8-M A05-10-M A50-10-M A60-10-M A70-10-M	72	14.4	72	5.2	106
A20-13-M A30-13-M	72	14.4	72	5.2	212
A50-10-L A60-10-L A70-10-L A75-10-L A85-10-L A40-13-L A80-13-L	173	14.4	173	14.4	212

DISASSEMBLY AND REASSEMBLY

F SIZE

F25, F40, F65, F80

MARK	NAME OF PART	USE No.	SPARE No. REQ'D	REMARK
97	NAME PLATE	1		
95	SPACER	2		
94	BALL BEARING	2	2	No.6208
93	OIL SEAL	1	1	TC40588
92	OIL SEAL	1	1	VC40586
91	AIR VENT	1		PF 3/8
90	OIL GAUGE	1		ϕ21.5
87	MOTOR KEY	1		3/16x3/16x1.65
83	O-RING	2		G95
81	O-RING	1	1	G190
80	GASKET	1	1	205x219x1.5t
78	CASING HEX HEAD BOLT	2		M12x75L
76	OUTER MAGNET SET SCREW	1		M8x8L
73	EYE BOLT	1		M10
71	BEARING HOUSING PLUG	4		NPT 3/8
70	FRAME ADAPTER PLUG	1		NPT 1/2
69	HEX HEAD BOLT	4		M8x15L
68	SOCKET HEAD BOLT	4		M8x15L
67	HEX HEAD BOLT	4		M12x55L
66	CASING HEX HEAD BOLT	6		M12x45L
53	BEARING HOUSING	1		OIL:0.1L
52	BEARING COVER	2		
51	SHAFT, OUTER MAGNET W/KEYS	1		
48	OUTER MAGNET	1		
44	THRUST RING	2	2	443200
43	SLEEVE	2	2	433200
42	BUSHING	2	2	423200
40	INNER MAGNET	1		
20	DOWEL PIN	1		
16	INNER MAGNET KEY	1	1	5x5x36L
15	IMPELLER KEY	1	1	5x5x41L
14	DRAIN / FLUSH PLUG	1		NPT 1/2
13	SET BOLT	3	3	M6x6L
12	SLEEVE BOLT SET SCREW	1	1	M6x8L
11	IMPELLER NUT SET SCREW	1	1	M8x8L
8	HEX SOCKET HEAD BOLT	8	8	M8x25L
7	SLEEVE BOLT	1	1	
6	IMPELLER NUT	1	1	
5	SHAFT, INNER MAGNET W/KEYS	1	1	
4	REAR CASING	1		*H-C SHELL
3	CASING COVER	1		
2	CASING	1		
1	IMPELLER	1		D2=



FOR PUMP MODELS WITH "F" SIZE MAGNETS.

EXAMPLE:

MODEL AA6-F25

REVISIONS NO.	DATE
1	
2	
3	
4	
5	

MAGNATEX Pumps Inc.™

SECTIONAL DRAWINGS
MAXP SERIES ANSI PUMPS

DRAWN BY: K. WIEDENFELD | DATE: 7-14-80 | REV:

F TYPE | SD-3005

DISASSEMBLY OF WETTED END - F SIZE MAXP SERIES

1. Remove the coupling guard and motor coupling.

2. Remove the casing drain plug (Item 14) and empty the pump of any remaining liquid. If the pump is being operated with a separate flush, remove the rear casing drain plug (Item 18) and rear casing vent (see page 4, SEPARATE FLUSH TO THE REAR CASING).

3. Remove the 8 casing hex head bolts (Items 66 & 78) and the bolts attaching the bearing housing (Item 53) to the baseplate. The pump may now be removed leaving the casing attached to both the baseplate and piping.

4. Set the bearing housing so the motor shaft end is down. Brace the pump by positioning the shaft between supports for direct support to the bearing housing [Fig. 1]. Remove the gasket (Item 80).

5. Loosen the impeller nut set screw (Item 11) and remove the impeller nut (Item 6), the impeller (Item 1), and the impeller key (Item 15).

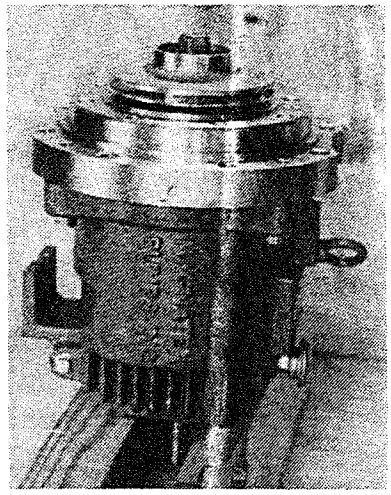


Figure 1

6. Remove the 4 hex head bolts (Item 67) which holds the rear casing (Item 4) to the bearing housing.

7. Place two M16 bolts (spaced at 180°) into the threaded ears of the bearing housing to jack the rear casing away from the bearing housing [Fig. 2]. Jack evenly to avoid binding between the rear casing and outer magnets.

8. After jacking is complete, pull the rear casing from the bearing housing. During this procedure remember that strong forces are working to keep the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND BEARING HOUSING.**

9. Remove the 8 hex socket head bolts (Item 8) on the rear casing cover (Item 3). Place the rear casing on its side for horizontal removal of the casing cover.

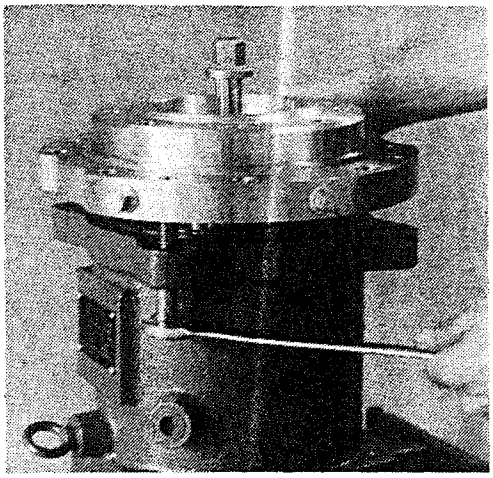


Figure 2

10. Carefully lift off the casing cover (Item 3). Both the bushing (Item 42) and the sleeve (Item 43) are now loose and may come out with the casing cover. Since both parts may be damaged if dropped, be prepared to hold them as the casing cover clears the shaft [Fig. 3].

11. Remove the bushing, sleeve, and thrust ring (Item 44).

12. Place the rear casing on its flat bottom and vertically lift out the shaft (Item 5) and inner magnet (Item 40). Be careful of the loose bushing located at the bottom of the rear casing (opposite shaft end).

13. Loosen the sleeve bolt set screw (Item 12) and remove the sleeve bolt (Item 7) [Fig. 4]. Remove the sleeve, the thrust ring, the inner magnet, and the inner magnet key (Item 16).

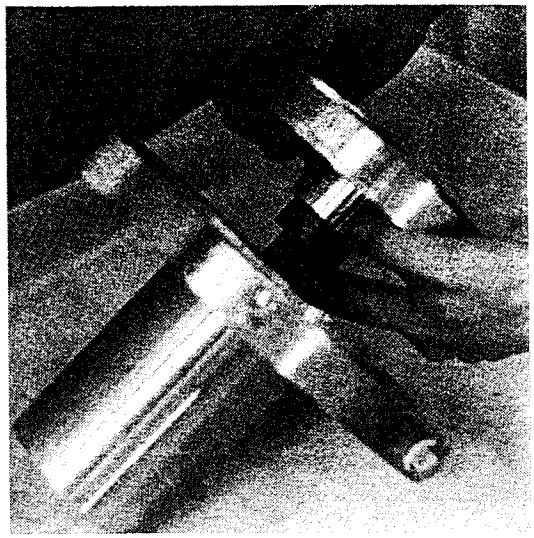


Figure 3

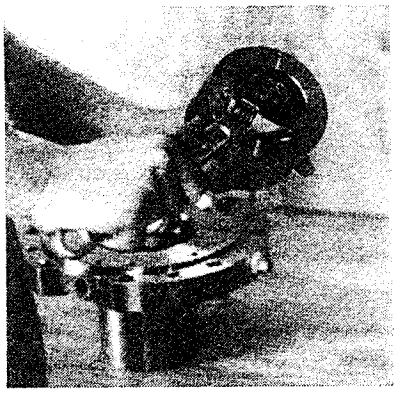


Figure 4

Remove the sleeve bolt by holding the inner magnet with the hand. DO NOT USE CHANNEL LOCKS OR A VISE ON THE INNER MAGNET.

DISASSEMBLY OF DRY END - F SIZE MAXP SERIES

There are two methods for removing the dry end from the wetted end: shop removal and field removal. Shop removal is outlined on page 10, DISASSEMBLY OF WETTED END - F SIZE MAXP SERIES, procedures 1 through 8. Field removal is outlined below. This procedure is for dry end removal without wet end removal.

1. Remove the coupling guard and motor coupling.

2. Remove the 4 hex head bolts (Item 67) which anchor the bearing housing (Item 53) to the rear casing (Item 4), and the bolts which secure the bearing housing to the baseplate.

3. Place two M16 bolts (spaced at 180 degrees) into the threaded ears of the bearing housing to jack the rear casing away from the bearing housing. Jack evenly to avoid binding between the rear casing and outer magnet.

4. Pull the dry assembly away from the wetted assembly. During this procedure remember that strong forces are working to keep the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND BEARING HOUSING.**

5. Remove the outer magnet set screw (Item 76).

6. Remove the plug located on the right side (centerline) of the bearing housing, as seen from the motor end.

7. Rotate the outer magnet (Item 48) to align the hole in the outer magnet with the bearing housing hole. Place a rod through the bearing housing hole and the outer magnet hole. Turn the outer magnet shaft (Item 51) counter-clockwise from the motor end to unscrew the outer magnet.

8. Remove the 4 hex head bolts (Item 69) which secure the bearing cover (Item 52) on the motor side to the bearing housing. Remove the oil seal (Item 92) and the O-ring (Item 83).

9. Remove the 4 socket head bolts (Item 68) which secure the bearing cover on the pump side to the bearing housing. Remove the oil seal (Item 93) and the O-ring (Item 83).

10. Slide the outer magnet shaft (Item 51) and ball bearings (Item 94) out of the bearing housing from the motor end. Press off the two sets of ball bearings.

ASSEMBLY OF DRY END - F SIZE MAXP SERIES

1. Place a set of ball bearings (Item 94) on each side of the outer magnet shaft (Item 51) and press the bearings to meet the larger radius portion of the shaft. Slide the shaft and bearing assembly into the bearing housing (Item 53) so the keyed end faces the motor.

2. Insert the oil seal (Item 93) and the O-ring (Item 83) into a bearing cover (Item 52) and place it onto the pump side of the magnet shaft. Slide toward the bearing housing and bolt in place with the 4 socket head bolts (Item 68). Insert the oil seal (Item 92) and O-ring (Item 83) into the remaining bearing cover and slide it onto the motor side of the magnet shaft. Bolt in place with the 4 hex head bolts (Item 69).

3. Thread the outer magnet into the outer magnet shaft. To tighten, remove the plug located on the right side (centerline) of the pump, as seen from the motor end. Insert a rod through the hole and through the corresponding hole on the outer magnet. Turn the shaft clockwise (from motor end) to tighten.

4. Secure the outer magnet in place with the outer magnet set screw (Item 76).

5. Thread two M16 bolts into the threaded ears of the bearing housing. Place the O-ring (Item 81) into the bearing housing.

FIELD ASSEMBLY

When the wetted end remains attached to the process piping, the following procedure should be used for assembling the dry end to the wetted end:

A. Slide the dry end assembly over the rear casing until the two M16 bolts contact the rear casing flange. During this procedure remember that strong forces are working to pull the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND BEARING HOUSING.**

B. Remove the two M16 bolts evenly to avoid binding between the rear casing and outer magnet. Bolt the bearing housing to the rear casing with the 4 hex head bolts.

C. Add oil to the bearing housing through the air vent (Item 91) until the oil is to the center of the oil gauge (Item 90).

SHOP ASSEMBLY

A. Place the bearing housing in a vertical position with supports under the bearing housing. Do not stand the dry assembly on its outer magnet shaft.

B. Lower the rotating assembly into the bearing housing until it rests on the two M16 bolts. Orientate the rotating assembly so the two internal flush holes (behind impeller) are aligned in a vertical position. During this procedure remember that strong forces are working to pull the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND BEARING HOUSING.** The assembly may be mechanically lowered by removing the impeller nut and threading on a M8 eye bolt.

C. Remove the two M16 bolts evenly to avoid binding between the rear casing and outer magnet. Bolt the bearing housing to the rear casing with the 4 hex head bolts.

D. Add oil to the bearing housing through the air vent (Item 91) until the oil is to the center of the oil gauge (Item 90).

ASSEMBLY OF WETTED END - F SIZE MAXP SERIES

1. Place the inner magnet key (Item 16) onto the inner magnet shaft (Item 5). Slide the inner magnet (Item 40) onto the shaft from the sleeve bolt end (opposite end impeller). The embossed numbers on the magnet's end should face the motor (rear) side of the pump.

2. Slide the thrust ring (Item 44) onto the inner magnet shaft from the sleeve bolt end. The hole in the thrust ring should face the inner magnet and the notch should engage the inner magnet key.

3. Slide a sleeve (Item 43) over the inner magnet shaft and engage the remaining portion of the inner magnet key with the notch on the sleeve end.

4. Thread the sleeve bolt (Item 7) onto the inner magnet shaft. Tighten and secure with the sleeve bolt set screw (Item 12).

5. Thread a set bolt (Item 13) into the rear bearing holder. Carefully slide a bushing (Item 42) into the rear bearing holder and engage the set bolt with the notch on the bottom of the bushing.

6. Thread a set bolt (Item 13) into the shaft flange from the impeller end and tighten. Lift the inner magnet assembly by the shaft and slowly slide it into the rear casing [Fig. 5]. Be careful of the tight tolerances between the rear bushing and sleeve. **This should only be done when the outer magnet is removed.**

7. Slide a thrust ring onto the shaft so the hole engages the set bolt. Slide a sleeve onto the shaft so the notch is opposite the thrust ring.

8. Place the rear casing on its side for horizontal installation of the casing cover. Align the keyed portion of the inner magnet shaft with the notch in the sleeve. Insert the impeller key (Item 15) onto the shaft and engage the sleeve notch with the rounded end of the key.

9. Insert a set bolt (Item 13) into the front bearing holder on the casing cover (Item 3). Slide the other bushing into the bearing holder and engage the set bolt with the notch on the bushing end.

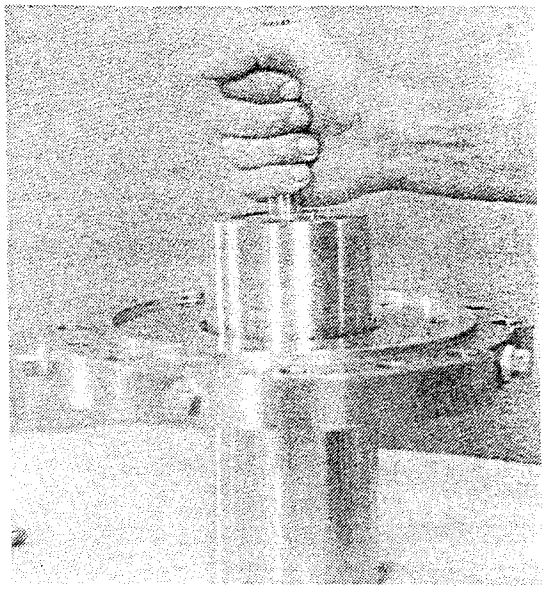


Figure 5

10. Align the two flush holes vertically on the casing cover so the pin located on the **VERTICAL POSITION** of the rear casing flange engages the hole in the casing cover. Hold the loose bushing while sliding the casing cover over the shaft [Fig. 6]. Be careful of the tight tolerances between the bushing and sleeve.

11. Bolt the casing cover to the rear casing using the 8 hex socket head bolts (Item 8). Tighten evenly to avoid binding. Check for free rotation of the assembly.

12. Slide the impeller onto the shaft and thread on the impeller nut. Tighten and secure with the impeller nut set screw (Item 11) (This completes the rotating assembly).

13. Place the gasket (Item 80) onto the rotating assembly and bolt the rotating assembly to the casing (Item 2) with the 8 casing hex head bolts (Items 66 & 78). Tighten the bolts evenly to avoid binding.

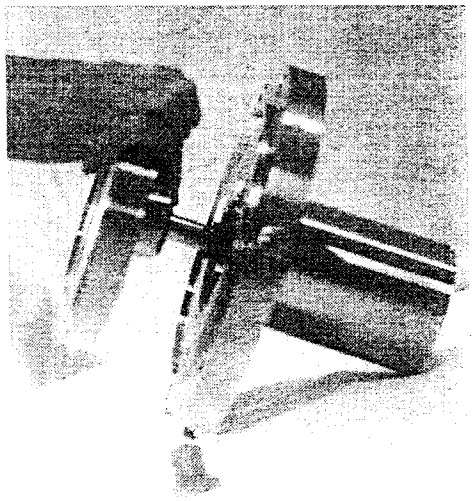


Figure 6

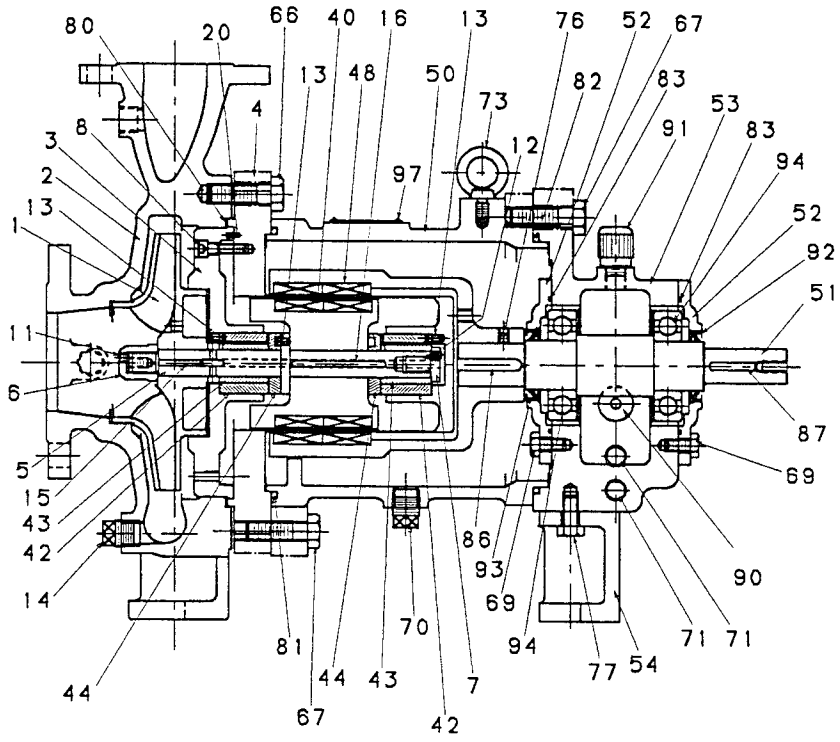
14. Make a final inspection by turning the pump shaft and checking for free rotation and listening for noise. If resistance or scraping is felt, or if noises are heard (scraping, etc.), inspect the pump to determine the cause, and take corrective action.

DISASSEMBLY AND REASSEMBLY

S SIZE

S25, S40, S65, S80

MARK	NAME OF PART	USE	SPARE	REMARK
		No.	REQ'D	
97	NAME PLATE	1		
95	SPACER	2		
94	BALL BEARING	2	2	No.6308
93	OIL SEAL	1	1	TC40588
92	OIL SEAL	1	1	VC40586
91	AIR VENT	1		PF 3/8
90	OIL GAUGE	1		ϕ28.5
87	MOTOR KEY	1		1/4x1/4x2.36"
86	OUTER MAGNET KEY	1		10x8x51L
83	O-RING	2		G105
82	O-RING	1		G200
81	O-RING	1	1	G210
80	GASKET	1	1	220x235x1.5t
78	CASING HEX HEAD BOLT	2		M16x80L
77	HEX HEAD BOLT	2		M12x25L
76	OUTER MAGNET SET SCREW	2		M8x8L
73	EYE BOLT	1		M10
71	BEARING HOUSING PLUG	3		NPT 3/8
70	FRAME ADAPTER PLUG	1		NPT 1/2
69	HEX HEAD BOLT	8		M10x20L
67	HEX HEAD BOLT	8		M16x50L
66	CASING HEX HEAD BOLT	8		M18x50L
54	SUPPORT	1		
53	BEARING HOUSING	1		OIL:0.2L
52	BEARING COVER	2		
51	SHAFT, OUTER MAGNET w/KEYS	1		
50	FRAME ADAPTER	1		
48	OUTER MAGNET	1		
44	THRUST RING	2	2	443200
43	SLEEVE	2	2	433200
42	BUSHING	2	2	423200
40	INNER MAGNET	1		
20	DOWEL PIN	1		
16	INNER MAGNET KEY	1	1	5x5x77L
15	IMPELLER KEY	1	1	5x5x52L
14	DRAIN / FLUSH PLUG	1		NPT 1/2
13	SET BOLT	3	3	M6x6L
12	SLEEVE BOLT SET SCREW	1	1	M6x8L
11	IMPELLER NUT SET SCREW	1	1	M8x8L
8	HEX SOCKET HEAD BOLT	8	8	M8x30L
7	SLEEVE BOLT	1	1	
6	IMPELLER NUT	1	1	
5	SHAFT, INNER MAGNET w/KEYS	1	1	
4	REAR CASING	1		*H-C SHELL
3	CASING COVER	1		
2	CASING	1		
1	IMPELLER	1		D2*



FOR PUMP MODELS WITH "S" SIZE MAGNETS.

EXAMPLE:

MODEL A10-6-S40

REVISIONS NO.	DATE
1	
2	
3	
4	
5	

MAGNATEX Pumps Inc.™

SECTIONAL DRAWINGS
MAXP SERIES ANSI PUMPS

DRAWN BY: K. WIEDENFELD | DATE: 7-14-90 | REV:

S TYPE | SD-3006

DISASSEMBLY OF WETTED END - S SIZE MAXP SERIES

1. Remove the coupling guard and motor coupling.

2. Remove the casing drain plug (Item 14) and empty the pump of any remaining liquid. If the pump is being operated with a separate flush, remove the rear casing drain plug (Item 18) and rear casing vent (see page 4, SEPARATE FLUSH TO THE REAR CASING).

3. Remove the 8 casing hex head bolts (Items 66 & 78) and the bolts attaching the bearing housing (Item 53) to the baseplate. The pump may now be removed leaving the casing attached to both the baseplate and piping.

4. Set the pump so the motor shaft end is down. Brace the assembly by positioning the shaft between supports for direct support to the bearing housing [Fig. 7]. Remove the gasket (Item 80).

5. Loosen the impeller nut set screw (Item 11) and remove the impeller nut (Item 6), the impeller (Item 1), and the impeller key (Item 15).

6. Remove the 4 hex head bolts (Item 67) which holds the frame adapter (Item 50) to the rear casing (Item 4).

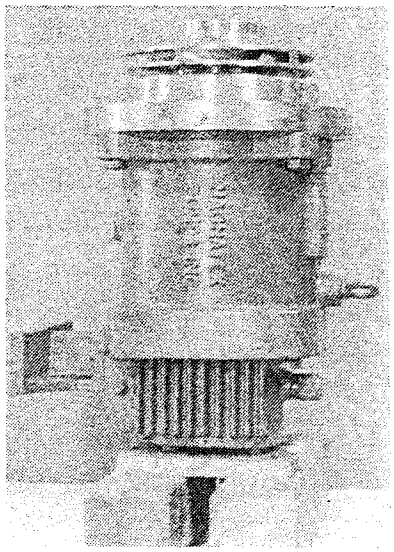


Figure 7

7. Place two M20 bolts (spaced at 180 degrees) into the threaded ears of the frame adapter to jack the rear casing away from the frame adapter [Fig. 8]. Jack evenly to avoid binding between the rear casing and outer magnets.

8. After jacking is complete, pull the rear casing from the outer magnet. During this procedure remember that strong forces are working to keep the inner and outer magnets together. It may be helpful to thread a M8 eye bolt into the end of the inner magnet shaft and mechanically lift the rear casing from the outer magnet. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND BEARING HOUSING.**

9. Remove the 8 hex socket head bolts (Item 8) on the rear casing cover (Item 3). Place the rear casing on its side for horizontal removal of the casing cover.

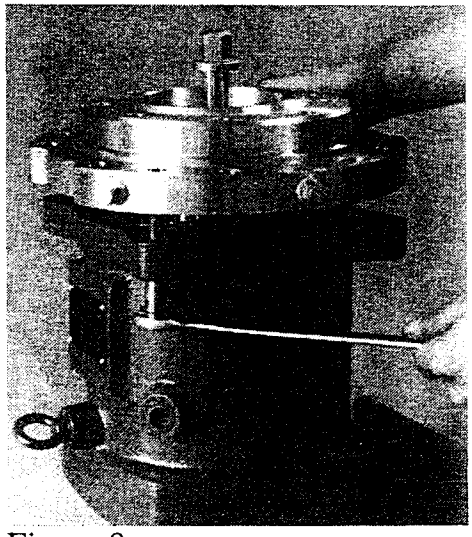


Figure 8

10. Carefully slide off the casing cover (Item 3). Both the bushing (Item 42) and the sleeve (Item 43) are now loose and may come out with the casing cover. Since both parts may be damaged if dropped, be prepared to hold them as the casing cover clears the shaft [Fig. 9].

11. Remove the bushing, sleeve, and thrust ring (Item 44).

12. Place the rear casing on its flat bottom and vertically lift out the shaft (Item 5) and inner magnet (Item 40). Be careful of the loose bushing located at the rear casing support (opposite shaft end).

13. Loosen the sleeve bolt set screw (Item 12) and remove the sleeve bolt (Item 7) [Fig. 10]. Remove the sleeve, the thrust ring, the inner magnet, and the inner magnet key (Item 16).

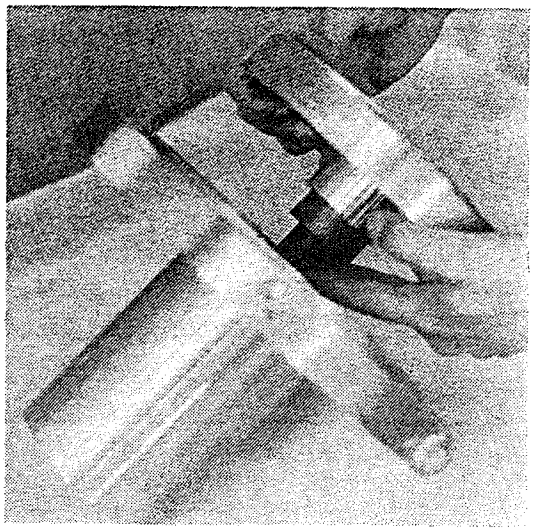


Figure 9

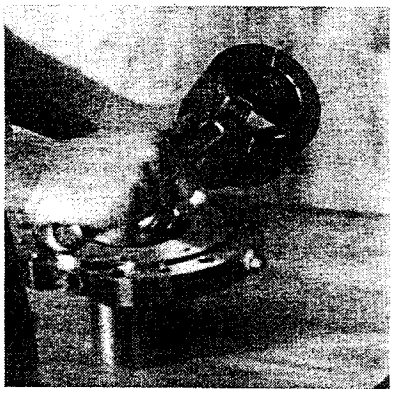


Figure 10

Remove the sleeve bolt by holding the inner magnet with the hand. DO NOT USE CHANNEL LOCKS OR A VISE ON THE INNER MAGNET.

DISASSEMBLY OF DRY END - S SIZE MAXP SERIES

There are two methods for removing the dry end from the wetted end; Shop removal and field removal. For shop removal see page 8, DISASSEMBLY OF WETTED END - S SIZE MAXP SERIES, procedures 1 through 8. Field removal is outlined below. This procedure is for dry end removal without wet end removal.

1. Remove the coupling guard and motor coupling.

2. Remove the 4 hex head bolts (Item 67) which anchor the frame adapter (Item 50) to the rear casing (Item 4). Remove the bolts which secure the bearing housing (Item 53) to the baseplate.

3. Place two M20 bolts (spaced at 180 degrees) into the threaded ears of the frame adapter to jack the rear casing away from the frame adapter. Jack evenly to avoid binding between the rear casing and outer magnet.

4. Pull the dry assembly away from the wetted assembly. During this procedure remember that strong forces are working to keep the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND FRAME ADAPTER.**

5. Remove the 4 hex head bolts (Item 67) which attach the frame adapter to the bearing housing. Remove the frame adapter and O-ring (Item 82).

6. Loosen the two outer magnet set screws (Item 76) and slide off the outer magnet (Item 48). A mechanical pulling device may be helpful in removing the outer magnet.

7. Remove the 4 hex head bolts (Item 69) which secure the bearing cover (Item 52) on the motor end to the bearing housing. Remove the oil seal (Item 92) and the O-ring (Item 83).

8. Remove the 4 hex head bolts which secure the bearing cover on the pump end to the bearing housing. Remove the oil seal (Item 93) and the O-ring.

9. Slide the outer magnet shaft (Item 51) and ball bearings (Item 94) out of the bearing housing from the motor end. Press off the two sets of ball bearings.

ASSEMBLY OF DRY END - S SIZE MAXP SERIES

1. Place a set of ball bearings (Item 94) on each side of the outer magnet shaft (Item 51) and press the bearings to meet the larger radius portion of the shaft. Slide the shaft and bearing assembly into the bearing housing (Item 53) so the smaller keyed end faces the motor.

2. Insert the oil seal (Item 93) and the O-ring (Item 83) into a bearing cover (Item 52) and place it onto the pump side of the magnet shaft. Slide toward the bearing housing and bolt in place with the 4 hex head bolts (Item 69). Insert the oil seal (Item 92) and O-ring (Item 83) into the remaining bearing cover and slide it onto the motor side of the magnet shaft. Bolt in place with the remaining 4 hex head bolts (Item 69).

3. Place the outer magnet key (Item 86) onto the outer magnet shaft and press on the outer magnet (Item 48). Secure the outer magnet with the two outer magnet set screws (Item 76).

4. Place the O-ring (Item 82) onto the frame adapter (Item 50) and slide the frame adapter over the outer magnet. Bolt the frame adapter to the bearing housing with the 4 hex head bolts (Item 67).

5. Bolt the support (Item 54) to the bearing housing.

6. Thread two M20 bolts into the threaded ears of the frame adapter. Place the O-ring (Item 81) onto the frame adapter.

FIELD ASSEMBLY

When the wetted end remains attached to the process piping, the following procedure should be used for assembling the dry end to the wetted end:

A. Slide the dry end assembly over the rear casing until the two M20 bolts contact the rear casing flange. During this procedure remember that strong forces are working to pull the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND FRAME ADAPTER.**

B. Remove the two M20 bolts evenly to avoid binding between the rear casing and outer magnet. Bolt the frame adapter to the rear casing with the 4 hex head bolts (Item 67).

C. Add oil to the air vent (Item 91) until the oil is to the center of the oil gauge (Item 90).

SHOP ASSEMBLY

A. Place the frame adapter in a vertical position with supports under the bearing housing. Do not stand the dry assembly on its outer magnet shaft.

B. Lower the rotating assembly into the frame adapter until it rests on the two M20 bolts. Orientate the rotating assembly so the two internal flush holes (behind impeller) are aligned in a vertical position. During this procedure remember that strong forces are working to pull the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND FRAME ADAPTER.** The assembly may be mechanically lowered by removing the impeller nut and threading on a M8 eye bolt.

C. Remove the two M20 bolts evenly to avoid binding between the rear casing and outer magnet. Bolt the frame adapter to the rear casing with the 4 hex head bolts (Item 67).

D. Add oil to the air vent (Item 91) until the oil is to the center of the oil gauge (Item 90).

ASSEMBLY OF WETTED END - S SIZE MAXP SERIES

1. Place the inner magnet key (Item 16) onto the inner magnet shaft (Item 5). Slide the inner magnet (Item 40) onto the shaft from the sleeve bolt end (opposite end impeller). The embossed numbers on the magnet's end should face the motor (rear) side of the pump.

2. Slide a thrust ring (Item 44) over the inner magnet shaft from the sleeve bolt end. The hole in the thrust ring should face the inner magnet and the notch should engage the exposed portion of the inner magnet key.

3. Slide a sleeve (Item 43) over the inner magnet shaft and engage the remaining portion of the inner magnet key with the notch on the sleeve end.

4. Thread the sleeve bolt (Item 7) into the inner magnet shaft. Tighten and secure with the sleeve bolt set screw (Item 12).

5. Thread a set bolt (Item 13) into the rear bearing holder. Carefully slide a bushing (Item 42) into the rear bearing holder and engage the set bolt with the notch on the bottom of the bushing.

6. Thread a set bolt (Item 13) into the shaft flange from the impeller end and tighten. Lift the inner magnet assembly by the shaft and slowly slide it into the rear casing [Fig. 11]. Be careful of the tight tolerances between the rear bushing and sleeve. **This should only be done when the outer magnet is removed.**

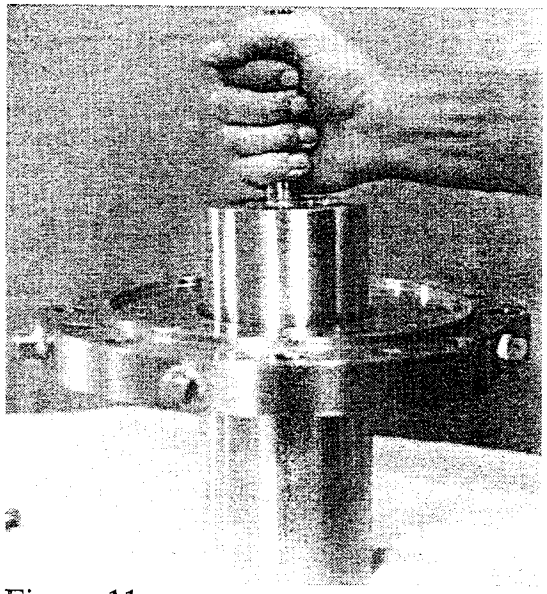


Figure 11

7. Slide a thrust ring onto the shaft so the hole engages the set bolt. Slide a sleeve onto the shaft so the notch is opposite the thrust ring.

8. Place the rear casing on its side for horizontal installation of the casing cover. Align the keyed portion of the inner magnet shaft with the notch in the sleeve. Insert the impeller key (Item 15) onto the shaft and engage the sleeve notch with the rounded end of the key.

9. Insert a set bolt (Item 13) into the front bearing holder on the casing cover (Item 3). Slide the other bushing into the bearing holder and engage the set bolt with the notch on the bushing end.

10. Align the two flush holes vertically on the casing cover so the pin located on the **VERTICAL POSITION** of the rear casing flange engages the hole in the casing cover. Hold the loose bushing in place while sliding the casing cover over the shaft [Fig. 12]. Be careful of the tight tolerances between the bushing and sleeve.

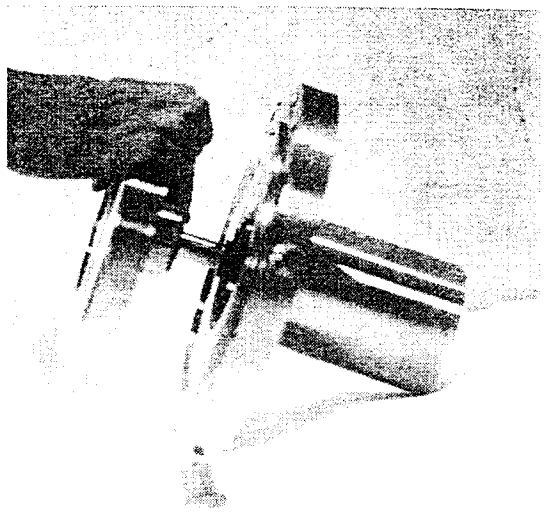


Figure 12

11. Bolt the casing cover to the rear casing using the 8 hex socket head bolts (Item 8). Tighten evenly to avoid binding. Check for free rotation of the assembly

12. Slide the impeller onto the shaft and thread on the impeller nut. Tighten and secure with the impeller nut set screw (Item 11). (This completes the rotating assembly.)

13. Place the gasket (Item 80) onto the rotating assembly and bolt the rotating assembly to the casing (Item 2) with the 8 casing hex head bolts (Items 66 & 78). Tighten the bolts evenly to avoid binding.

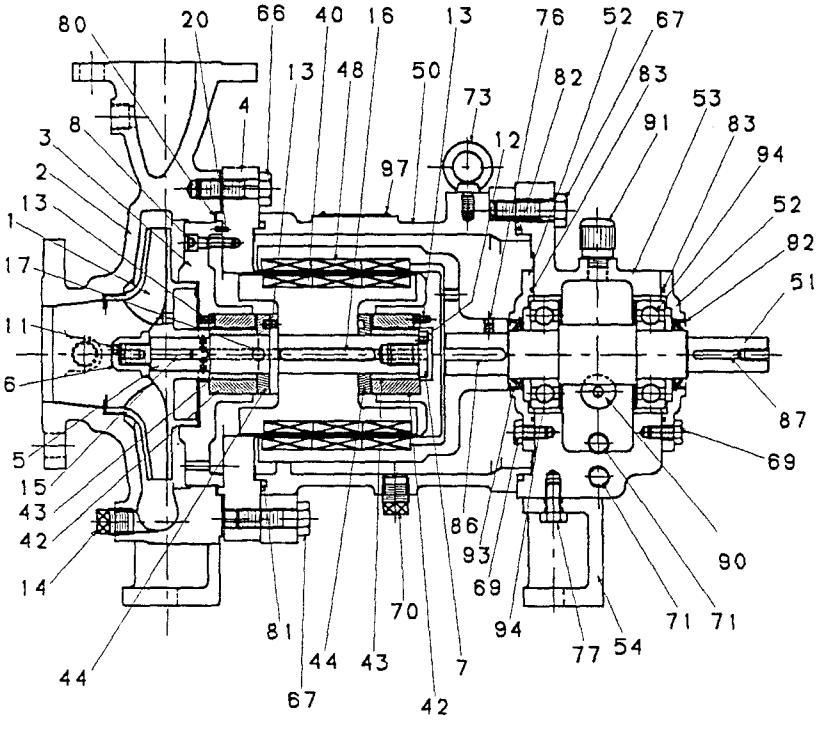
14. Make a final inspection by turning the pump shaft and checking for free rotation and listening for noise. If resistance or scraping is felt, or if noises are heard (scraping, etc.), inspect the pump to determine the cause, and take corrective action.

DISASSEMBLY AND REASSEMBLY

M SIZE

M40, M65, M80, M120

MARK	NAME OF PART	USE No. REQ'D	SPARE	REMARK
87	NAME PLATE	1		
85	SPACER	2		
84	BALL BEARING	2	2	No.6308
83	OIL SEAL	1	1	TC40588
82	OIL SEAL	1	1	VC40586
81	AIR VENT	1		PF 3/8
80	OIL GAUGE	1		ø28.5
87	MOTOR KEY	1		1/4x1/4x2.36"
86	OUTER MAGNET KEY	1		10x8x51L
83	O-RING	2		G105
82	O-RING	1		G200
81	O-RING	1	1	G210
80	GASKET	1	1	220x235x1.5t
78	CASING HEX HEAD BOLT	2		M16x80L
77	HEX HEAD BOLT	2		M12x25L
76	OUTER MAGNET SET SCREW	2		M8x8L
73	EYE BOLT	1		M10
71	BEARING HOUSING PLUG	3		NPT 3/8
70	FRAME ADAPTER PLUG	1		NPT 1/2
69	HEX HEAD BOLT	8		M10x25L
67	HEX HEAD BOLT	8		M16x50L
66	CASING HEX HEAD BOLT	6		M16x50L
54	SUPPORT	1		
53	BEARING HOUSING	1		OIL:0.2L
52	BEARING COVER	2		
51	SHAFT. OUTER MAGNET w/KEYS	1		
50	FRAME ADAPTER	1		
48	OUTER MAGNET	1		
44	THRUST RING	2	2	444200
43	SLEEVE	2	2	434200
42	BUSHING	2	2	424200
40	INNER MAGNET	1		
20	DOWEL PIN	1		
17	SLEEVE PIN	1	1	ø10x8L
16	INNER MAGNET KEY	1	1	10x8x77L
15	IMPELLER KEY	1	1	8x7x47L
14	DRAIN / FLUSH PLUG	1		NPT 1/2
13	SET BOLT	3	3	M6x6L
12	SLEEVE BOLT SET SCREW	1	1	M6x8L
11	IMPELLER NUT SET SCREW	1	1	M8x8L
8	HEX SOCKET HEAD BOLT	8	8	M8x30L
7	SLEEVE BOLT	1	1	
6	IMPELLER NUT	1	1	
5	SHAFT. INNER MAGNET w/KEYS	1	1	
4	REAR CASING	1		*H-C SHELL
3	CASING COVER	1		
2	CASING	1		
1	IMPELLER	1		D2-



FOR PUMP MODELS WITH "M" SIZE MAGNETS.

EXAMPLE:

MODEL A05-10-M65

REVISIONS NO.	DATE
1	
2	
3	
4	
5	

MAGNATEX Pumps Inc.™

SECTIONAL DRAWINGS
MAXP SERIES ANSI PUMPS

DRAWN BY: K. WIEDENFELD | DATE: 7-27-80 | REV:

M TYPE | SD-3007

DISASSEMBLY OF WETTED END - M SIZE MAXP SERIES

1. Remove the coupling guard and motor coupling.

2. Remove the casing drain plug (Item 14) and empty the pump of any remaining liquid. If the pump is being operated with a separate flush, remove the rear casing drain plug (Item 18) and rear casing vent (see page 4, SEPARATE FLUSH TO THE REAR CASING).

3. Remove the 8 casing hex head bolts (Items 66 & 78) and the bolts attaching the bearing housing (Item 53) to the baseplate. The pump may now be removed leaving the casing attached to both the baseplate and piping.

4. Set the pump so the motor shaft end is down. Brace the assembly by positioning the shaft between supports for direct support to the bearing housing [Fig. 13]. Remove the gasket (Item 80).

5. Loosen the impeller nut set screw (Item 11) and remove the impeller nut (Item 6), the impeller (Item 1), and the impeller key (Item 15).

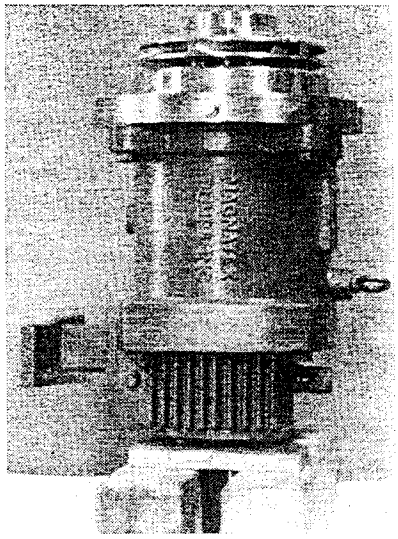


Figure 13

6. Remove the 4 hex head bolts (Item 67) which holds the frame adapter (Item 50) to the rear casing (Item 4).

7. Place two M20 bolts (spaced at 180 degrees) into the threaded ears of the frame adapter to jack the rear casing away from the frame adapter [Fig. 14]. Jack evenly to avoid binding between the rear casing and outer magnets.

8. After jacking is complete, pull the rear casing from the outer magnet. During this procedure remember that strong forces are working to keep the inner and outer magnets together. It may be helpful to thread a M8 eye bolt into the end of the inner magnet shaft and mechanically lift the rear casing from the outer magnet. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND BEARING HOUSING.**

9. Remove the 8 hex socket head bolts (Item 8) on the rear casing cover (Item 3). Place the rear casing on its side for horizontal removal of the casing cover.

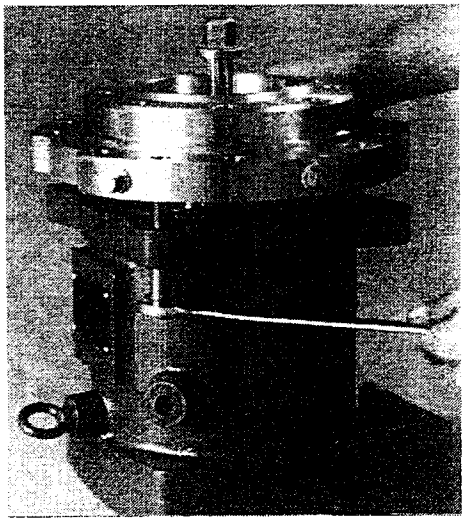


Figure 14

10. Carefully slide off the casing cover. Both the bushing (Item 42) and the sleeve (Item 43) are now loose and may come out with the casing cover. Since both parts may be damaged if dropped, be prepared to hold them as the casing cover clears the shaft [Fig. 15].

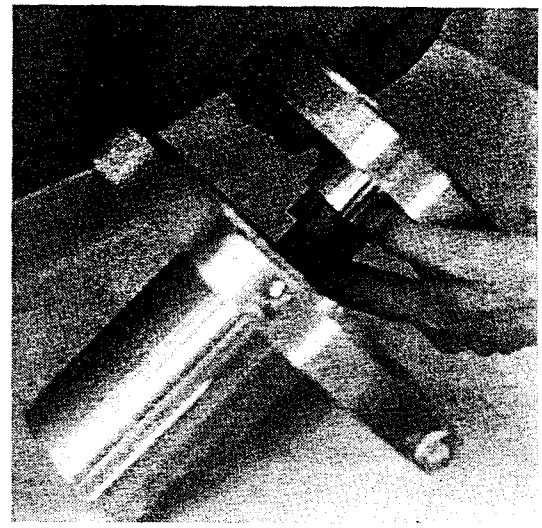


Figure 15

11. Remove the bushing, sleeve, and thrust ring (Items 44). The sleeve pin (Item 17) may also be removed if being replaced.

12. Place the rear casing on its flat bottom and vertically lift out the shaft (Item 5) and inner magnet (Item 40). You may wish to thread the impeller nut onto the shaft for better handling. Be careful of the loose bushing located at the bottom of the rear casing (opposite shaft end).

13. Loosen the sleeve bolt set screw (Item 12) and remove the sleeve bolt (Item 7) [Fig. 16]. Remove the sleeve, the thrust ring, the inner magnet, and the inner magnet key (Item 16).

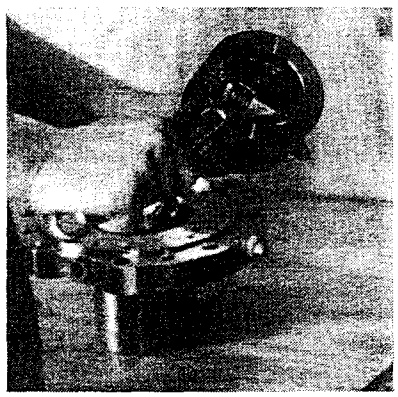


Figure 16

Remove the sleeve bolt by holding the inner magnet with the hand. DO NOT USE CHANNEL LOCKS OR A VISE ON THE INNER MAGNET.

DISASSEMBLY OF DRY END - M SIZE MAXP SERIES

There are two methods for removing the dry end from the wetted end: shop removal and field removal. Shop removal is outlined under "DISASSEMBLY OF WETTED END - M SIZE MAXP SERIES", procedures 1 through 8. Field removal is outlined below. This procedure is for dry end removal without wet end removal.

1. Remove the coupling guard and motor coupling.

2. Remove the 4 hex head bolts (Item 67) which anchor the frame adapter (Item 50) to the rear casing (Item 4). Remove the bolts which secure the bearing housing (Item 53) to the baseplate.

3. Place two M20 bolts (spaced at 180 degrees) into the threaded ears of the frame adapter to jack the rear casing away from the frame adapter. Jack evenly to avoid binding between the rear casing and outer magnet.

4. Pull the dry assembly away from the wetted assembly. During this procedure remember that strong forces are working to keep the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND FRAME ADAPTER.**

5. Remove the 4 hex head bolts (Item 67) which attach the frame adapter (Item 50) to the bearing housing (Item 53). Remove the frame adapter and O-ring (Item 82).

6. Loosen the two outer magnet set screws (Item 76) and slide off the outer magnet (Item 48). A mechanical pulling device may be helpful in removing the outer magnet. Remove the outer magnet key (Item 86).

7. Remove the 4 hex head bolts (Item 69) which secure the bearing cover (Item 52) on the motor end to the bearing housing. Remove the oil seal (Item 92) and the O-ring (Item 83).

8. Remove the 4 hex head bolts which secure the bearing cover on the pump end to the bearing housing. Remove the oil seal (Item 93) and the O-ring.

9. Slide the outer magnet shaft (Item 51) and ball bearings (Item 94) out of the bearing housing from the motor end. Press off the two sets of ball bearings.

ASSEMBLY OF DRY END - M SIZE MAXP SERIES

1. Place a set of ball bearings (Item 94) on each side of the outer magnet shaft (Item 51) and press the bearings to meet the larger radius portion of the shaft. Slide the shaft and bearing assembly into the bearing housing (Item 53) so the smaller keyed end faces the motor.

2. Insert the oil seal (Item 93) and the O-ring (Item 83) into a bearing cover (Item 52) and place it onto the pump side of the magnet shaft. Slide toward the bearing housing and bolt in place with the 4 hex head bolts (Item 69). Insert the oil seal (Item 92) and O-ring (Item 83) into the remaining bearing cover and slide it onto the motor side of the magnet shaft. Bolt in place with the remaining 4 hex head bolts (Item 69).

3. Place the outer magnet key (Item 86) onto the outer magnet shaft and press on the outer magnet (Item 48). Secure the outer magnet with the two outer magnet set screws (Item 76).

4. Place the O-ring (Item 82) onto the frame adapter (Item 50) and slide the frame adapter over the outer magnet. Bolt the frame adapter to the bearing housing with the 4 hex head bolts (Item 67).

5. Bolt the support (Item 54) to the bearing housing.

6. Thread two M20 bolts into the threaded ears of the frame adapter. Place the O-ring (Item 81) onto the frame adapter.

FIELD ASSEMBLY

When the wetted end remains attached to the process piping the following procedure should be used for assembling the dry end to the wetted end:

A. Slide the dry end assembly over the rear casing until the two M20 bolts contact the rear casing flange. During this procedure remember that strong forces are working to pull the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND FRAME ADAPTER.**

B. Remove the two M20 bolts evenly to avoid binding between the rear casing and outer magnet. Bolt the frame adapter to the rear casing with the 4 hex head bolts (Item 67).

C. Add oil to the air vent (Item 91) until the oil is to the center of the oil gauge (Item 90).

SHOP ASSEMBLY

A. Place the frame adapter in a vertical position with supports under the bearing housing. Do not stand the dry assembly on its outer magnet shaft.

B. Lower the rotating assembly into the frame adapter until it rests on the two M20 bolts. Orientate the rotating assembly so the two internal flush holes (behind impeller) are aligned in a vertical position. During this procedure remember that strong forces are working to pull the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND FRAME ADAPTER.** The assembly may be mechanically lowered by removing the impeller nut and threading on a M8 eye bolt.

C. Remove the two M20 bolts evenly to avoid binding between the rear casing and outer magnet. Bolt the frame adapter to the rear casing with the 4 hex head bolts (Item 67).

D. Add oil to the air vent (Item 91) until the oil is to the center of the oil gauge (Item 90).

ASSEMBLY OF WETTED END - M SIZE MAXP SERIES

1. Place the inner magnet key (Item 16) onto the inner magnet shaft (Item 5). Slide the inner magnet (Item 40) onto the shaft from the sleeve bolt end (opposite end impeller). The embossed numbers on the magnet's end should face the motor side of the pump.

2. Slide a thrust ring (Item 44) over the inner magnet shaft from the sleeve bolt end. The hole in the thrust ring should face the inner magnet and the notch should engage the exposed portion of the inner magnet key.

3. Slide a sleeve (Item 43) over the inner magnet shaft and engage the remaining portion of the inner magnet key with the notch on the sleeve end.

4. Thread the sleeve bolt (Item 7) onto the inner magnet shaft. Tighten and secure with the sleeve bolt set screw (Item 12).

5. Thread a set bolt (Item 13) into the rear bearing holder. Carefully slide a bushing (Item 42) into the rear bearing holder and engage the set bolt with the notch on the bottom of the bushing.

6. Thread a set bolt (Item 13) into the shaft flange from the impeller end and tighten. Place the sleeve pin (Item 17) onto the shaft.

7. Thread the impeller nut (Item 6) onto the threaded end. Lift the inner magnet assembly by the impeller nut and slowly slide it into the rear casing [Fig. 17]. Be careful of the tight tolerances between the rear bushing and sleeve. This should only be done when the outer magnet is removed.

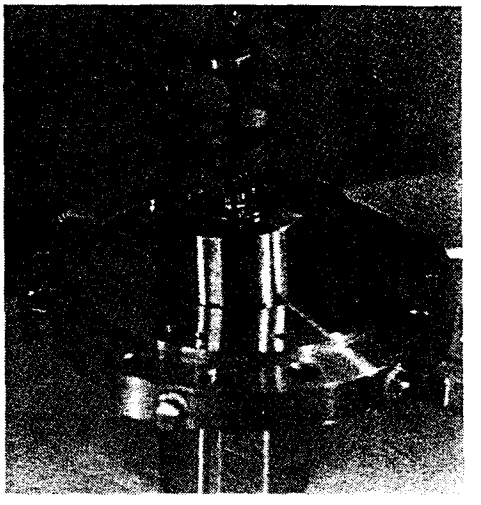


Figure 17

8. Slide a thrust ring (Item 44) onto the shaft so the hole engages the set bolt and slide a sleeve (Item 43) onto the shaft so the notch on the sleeve end engages the sleeve pin.

9. Insert a set bolt (Item 13) into the front bearing holder on the casing cover (Item 3). Slide the other bushing into the bearing holder and engage the set bolt with the notch on the bushing end.

10. Remove the impeller nut and carefully place the rear casing on its side for horizontal installation of the casing cover. Align the two flush holes vertically on the casing cover so the pin located on the **VERTICAL POSITION** of the rear casing flange engages the hole in the casing cover. Hold the loose bushing in place while sliding the casing cover over the shaft [Fig. 18]. Be careful of the tight tolerances between the bushing and sleeve.

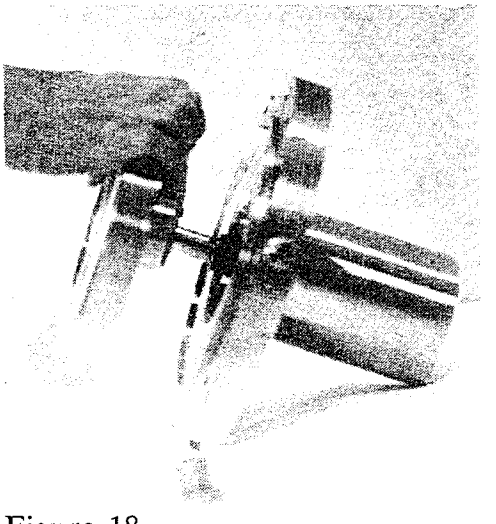


Figure 18

11. Bolt the casing cover to the rear casing using the 8 hex socket head bolts (Item 8). Tighten evenly to avoid binding. Check for free rotation of the assembly.

12. Place the impeller key (Item 15) onto the shaft so the flat end of the key faces the impeller nut. Slide the impeller (Item 1) onto the shaft and thread on the impeller nut. Tighten and secure with the impeller nut set screw (Item 11). (This completes the rotating assembly.)

13. Place the gasket (Item 80) onto the rotating assembly and bolt the rotating assembly to the casing (Item 2) with the 8 casing hex head bolts (Items 66 & 78). Tighten the bolts evenly to avoid binding.

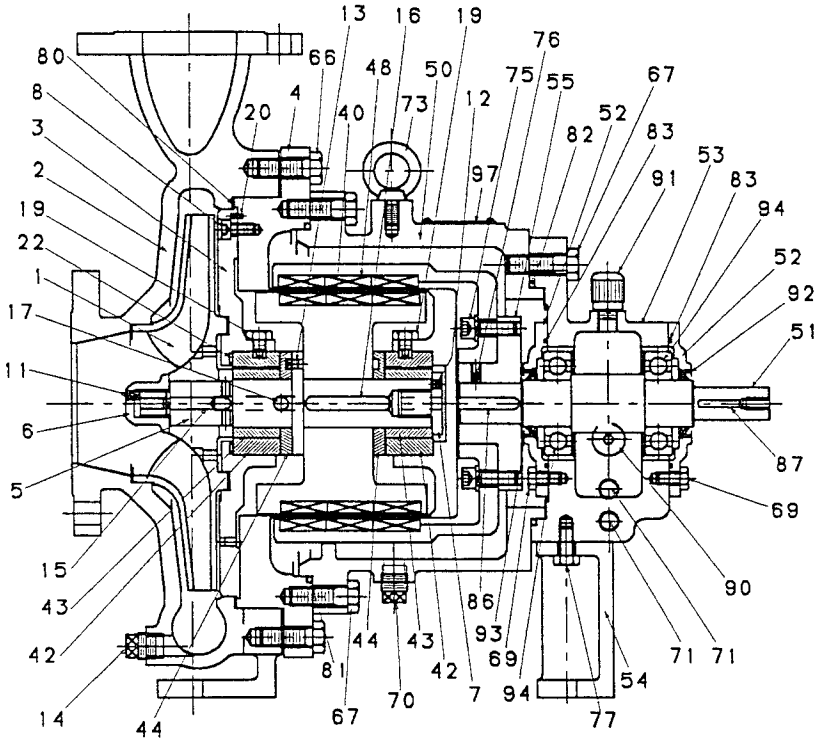
14. Make a final inspection by turning the pump shaft and checking for free rotation and listening for noise. If resistance or scraping is felt, or if noises are heard (scraping, etc.), inspect the pump to determine the cause, and take corrective action.

DISASSEMBLY AND REASSEMBLY

L SIZE

L80, L120, L160

MARK	NAME OF PART	USE No. REQ'D	SPARE No. REQ'D	REMARK
87	NAME PLATE	1		
95	SPACER	2		
84	BALL BEARING	2		No.6308
83	OIL SEAL	1		TC40588
82	OIL SEAL	1		VC40588
81	AIR VENT	1		PF 3/8
90	OIL GAUGE	1		ø28.5
87	MOTOR KEY	1		1/4x1/4x2.36"
86	OUTER MAGNET KEY	1		10x8x51L
83	O-RING	2		G105
82	O-RING	1		G200
81	O-RING	1	1	G300
80	GASKET	1	1	335x355x1.5t
78	CASING HEX HEAD BOLT	2		M16x75L
77	HEX HEAD BOLT	2		M12x25L
76	OUTER MAGNET SET SCREW	2		M8x8L
75	HEX SOCKET HEAD BOLT	6		M12x35L
73	EYE BOLT	1		M10
71	BEARING HOUSING PLUG	3		NPT 3/8
70	FRAME ADAPTER PLUG	1		NPT 1/2
69	HEX HEAD BOLT	8		M10x25L
67	HEX HEAD BOLT	8		M16x50L
66	CASING HEX HEAD BOLT	10		M16x45L
55	COUPLING BOSS	1		
54	SUPPORT	1		
53	BEARING HOUSING	1		OIL:0.2L
52	BEARING COVER	2		
51	SHAFT, OUTER MAGNET w/KEYS	1		
50	FRAME ADAPTER	1		
48	OUTER MAGNET	1		
44	THRUST RING	2	2	446000
43	SLEEVE	2	2	436000
42	BUSHING	2	2	426000
40	INNER MAGNET	1		
22	THRUST WASHER	1		
20	DOWEL PIN	1		
19	SET BOLT	2	2	M10x12L
17	SLEEVE PIN	1	1	ø12x8L
16	INNER MAGNET KEY	1	1	12x8x73L
15	IMPELLER KEY	1	1	10x8x51L
14	DRAIN / FLUSH PLUG	1		NPT 1/2
13	SET SCREW	1	1	M8x12L
12	SLEEVE BOLT SET SCREW	1	1	M6x8L
11	IMPELLER NUT SET SCREW	1	1	M8x8L
8	HEX SOCKET HEAD BOLT	12	12	M10x20L
7	SLEEVE BOLT	1	1	
6	IMPELLER NUT	1	1	
5	SHAFT, INNER MAGNET w/KEYS	1	1	
4	REAR CASING	1		*H-C SHELL
3	CASING COVER	1		
2	CASING	1		
1	IMPELLER	1		D2*



FOR PUMP MODELS WITH "L" SIZE MAGNETS.

EXAMPLE:

MODEL A80-13-L80

REVISIONS NO.	DATE
1	
2	
3	
4	
5	

MAGNATEX Pumps Inc.™

SECTIONAL DRAWINGS
MAXP SERIES ANSI PUMPS

DRAWN BY:	DATE:	REV:
K. WIEDENFELD	7-28-80	

L TYPE | SD-3008

DISASSEMBLY OF WETTED END - L SIZE MAXP SERIES

1. Remove the coupling guard and motor coupling.

2. Remove the casing drain plug (Item 14) and empty the pump of any remaining liquid. If the pump is being operated with a separate flush, remove the rear casing drain plug (Item 18) and rear casing vent (see page 4, SEPARATE FLUSH TO THE REAR CASING).

3. Remove the 12 casing hex head bolts (Item 66 & 78) and the bolts attaching the bearing housing (Item 53) to the baseplate. The pump may now be removed leaving the casing attached to both the baseplate and piping.

4. Set the pump so the motor shaft end is down. Brace the assembly by positioning the shaft between supports for direct support to the bearing housing [Fig. 19]. Remove the gasket.

5. Loosen the impeller nut set screw (Item 11) and remove the impeller nut (Item 6), the impeller (Item 1), and the impeller key (Item 15).

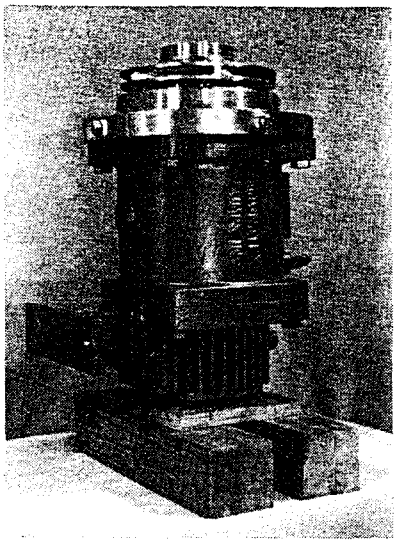


Figure 19

6. Remove the 4 hex head bolts (Item 67) which holds the frame adapter (Item 50) to the rear casing (Item 4).

7. Place two M20 bolts (spaced at 180 degrees) into the threaded ears of the frame adapter to jack the rear casing away from the frame adapter [Fig. 20]. Jack evenly to avoid binding between the rear casing and outer magnets.

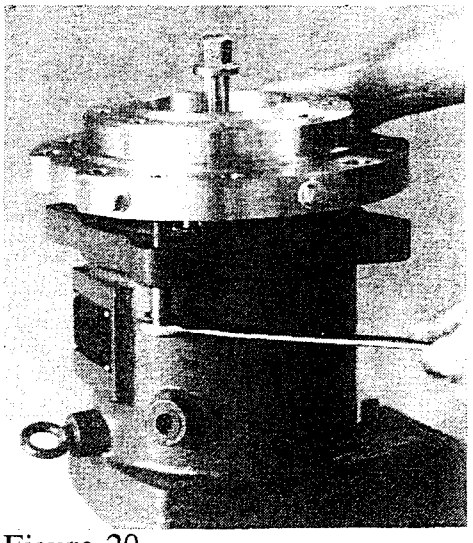


Figure 20

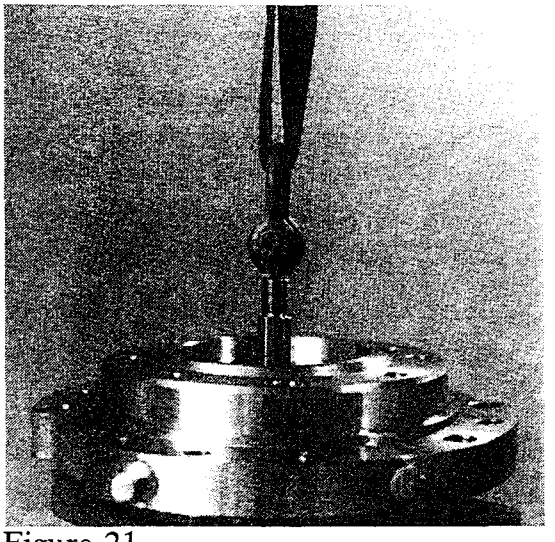


Figure 21

8. Thread a M10 eye bolt into the end of the inner magnet shaft and mechanically lift the rear casing away from the frame adapter [Fig. 21]. During this procedure remember that strong forces are working to keep the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND FRAME ADAPTER.**

9. Remove the 12 hex socket head bolts on the rear casing cover (Item 3). Place the rear casing on its side for horizontal removal of the casing cover.

10. Carefully slide off the casing cover. Since the sleeve (Item 43) is loose it may come out with the casing cover. Be prepared to hold the sleeve as the casing cover clears the shaft [Fig. 22].

11. Slide off the sleeve and thrust ring (Item 44). Remove the bushing set bolt (Item 19) and slide out the bushing (Item 42) and thrust washer (Item 22). The sleeve pin (Item 17) may also be removed if being replaced.

12. Place the rear casing on its flat bottom and thread the impeller nut onto the shaft. Carefully lift out the shaft and inner magnet assembly. You may wish to thread a M10 eye bolt into the shaft (instead of impeller nut) and mechanically lift out the shaft and inner magnet assembly.

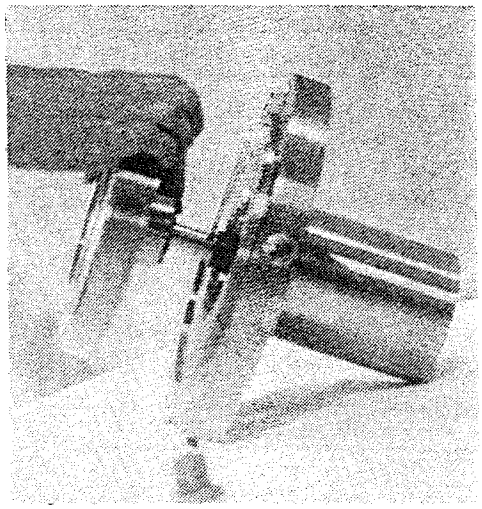


Figure 22

13. Loosen the sleeve bolt set screw (Item 12) and remove the sleeve bolt (Item 7) [Fig. 23]. Remove the sleeve, the thrust ring, the inner magnet, and the inner magnet key (Item 16).

14. Remove the bushing set bolt (Item 19) and slide out the remaining bushing.

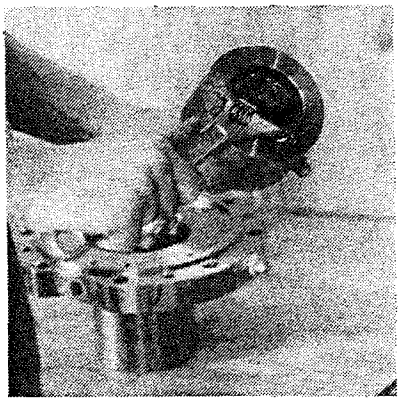


Figure 23

Remove the sleeve bolt by holding the inner magnet with the hand. DO NOT USE CHANNEL LOCKS OR A VISE ON THE INNER MAGNET.

DISASSEMBLY OF DRY END - L SIZE MAXP SERIES

There are two methods for removing the dry end from the wetted end: shop removal and field removal. Shop removal is outlined under "DISASSEMBLY OF WETTED END - L SIZE MAXP SERIES", procedures 1 through 8. Field removal is outlined below. This procedure is for dry end removal without wet end removal.

1. Remove the coupling guard and motor coupling.

2. Remove the 4 hex head bolts (Item 67) which anchor the frame adapter (Item 50) to the rear casing (Item 4). Remove the bolts which secure the bearing housing (Item 53) to the baseplate.

3. Place two M20 bolts (spaced at 180 degrees) into the threaded ears of the frame adapter to jack the rear casing away from the frame adapter. Jack evenly to avoid binding between the rear casing and outer magnets.

4. Pull the dry assembly away from the wetted assembly. During this procedure remember that strong forces are working to keep the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND FRAME ADAPTER.**

5. Remove the 4 hex head bolts (Item 67) which attach the frame adapter to the bearing housing. Remove the frame adapter and O-ring (Item 82).

6. Remove the six hex head bolts (Item 75) which secure the outer magnet (Item 48) to the coupling boss (Item 55). Slide off the outer magnet.

7. Loosen the two outer magnet set screws (Item 76) and slide off the coupling boss. A mechanical pulling device may be helpful. Remove the outer magnet key (Item 86).

8. Remove the 4 hex head bolts (Item 69) which secure the bearing cover (Item 52) on the motor end to the bearing housing. Remove the oil seal (Item 92) and the O-ring (Item 83).

9. Remove the 4 hex head bolts which secure the bearing cover on the pump end to the bearing housing. Remove the oil seal (Item 93) and the O-ring.

10. Slide the outer magnet shaft (Item 51) and ball bearings (Item 94) out of the bearing housing from the motor end. Press off the two sets of ball bearings.

ASSEMBLY OF DRY END - L SIZE MAXP SERIES

1. Place a set of ball bearings (Item 94) on each side of the outer magnet shaft (Item 51) and press the bearings to meet the larger radius portion of the shaft. Slide the shaft and bearing assembly into the bearing housing (Item 53) so the smaller keyed end faces the motor.

2. Insert the oil seal (Item 93) and the O-ring (Item 83) into a bearing cover (Item 52) and place it onto the pump side of the magnet shaft. Slide toward the bearing housing and bolt in place with the 4 hex head bolts (Item 69).

3. Insert the oil seal (Item 92) and O-ring (Item 83) into the remaining bearing cover and slide it onto the motor side of the magnet shaft. Bolt in place with the 4 hex head bolts.

4. Place the outer magnet key (Item 86) onto the outer magnet shaft and press on the coupling boss (Item 55). Secure the coupling boss with the two outer magnet set screws (Item 76).

5. Slide the outer magnet (Item 48) onto the coupling boss. Bolt the outer magnet to the coupling boss with the 6 hex head bolts (Item 75).

6. Place the O-ring (Item 82) onto the frame adapter and slide the frame adapter over the outer magnet. Bolt the frame adapter to the bearing housing with the 4 hex head bolts (Item 67).

7. Bolt the support (Item 54) to the bearing housing.

8. Thread two M20 bolts into the threaded ears of the frame adapter. Place the O-ring (Item 81) onto the frame adapter.

FIELD ASSEMBLY

When the wetted end remains attached to the process piping the following procedure should be used for assembling the dry end to the wetted end:

A. Slide the dry end assembly over the rear casing until the two M20 bolts contact the rear casing flange. During this procedure remember that strong forces are working to pull the inner and outer magnets together. **BE CAREFUL TO AVOID TRAPPING YOUR FINGERS BETWEEN THE REAR CASING AND FRAME ADAPTER.**

B. Remove the two M20 bolts evenly to avoid binding between the rear casing and outer magnet. Bolt the frame adapter to the rear casing with the 4 hex head bolts (Item 67).

C. Add oil to the air vent (Item 91) until the oil is to the center of the oil gauge (Item 90).

SHOP ASSEMBLY

A. Place the frame adapter in a vertical position with supports under the bearing housing. Do not stand the dry assembly on its outer magnet shaft.

B. Remove the impeller nut and thread an M8 eye bolt into the shaft end. Mechanically lower the rotating assembly (wetted end) into the frame adapter until it rests on the two M20 bolts. Orientate the rotating assembly so the two internal flush holes (behind impeller) are aligned vertically. Be careful of the strong magnetic forces which will pull the two assemblies together.

C. Remove the two M20 bolts evenly to avoid binding. Bolt the frame adapter to the rear casing with the 4 hex head bolts (Item 67).

D. Add oil to the air vent (Item 91) until the oil is to the center of the oil gauge (Item 90).

ASSEMBLY OF WETTED END - L SIZE MAXP SERIES

1. Place the inner magnet key (Item 16) onto the inner magnet shaft (Item 5). Slide the inner magnet (Item 40) onto the shaft from the sleeve bolt end (opposite end impeller). The embossed numbers on the magnet's end should face the motor (rear) side of the pump.

2. Slide a thrust ring (Item 44) over the inner magnet shaft from the sleeve bolt end. The hole in the thrust ring should face the inner magnet and the notch should engage the exposed portion of the inner magnet key.

3. Slide a sleeve over the inner magnet shaft and engage the remaining portion of the inner magnet key with the notch on the sleeve end.

4. Thread the sleeve bolt (Item 7) onto the inner magnet shaft. Tighten and secure with the sleeve bolt set screw (Item 12).

5. Carefully slide a bushing (Item 42) into the rear bearing holder. Align the notch on the bushing side with the hole in the bearing holder. Thread a set bolt (Item 19) into the bearing holder and engage the notch in the bushing.

6. Thread a set bolt (Item 13) into the shaft flange from the impeller end and tighten. Place the sleeve pin (Item 17) onto the shaft.

7. Thread on the impeller nut (Item 6). Lift the inner magnet assembly by the impeller nut and slowly slide it into the rear casing [Fig. 24]. You may wish to thread a M10 eye bolt into the shaft (instead of impeller nut) and mechanically lower the inner magnet assembly into the rear casing. Be careful of the tight tolerances between the rear bushing and sleeve. **This should only be done when the outer magnet is removed.**

8. Remove the impeller nut (or M10 eye bolt) and slide a thrust ring onto the shaft so the hole engages the set bolt. Slide a sleeve onto the shaft so the notch on the sleeve end engages the sleeve pin.

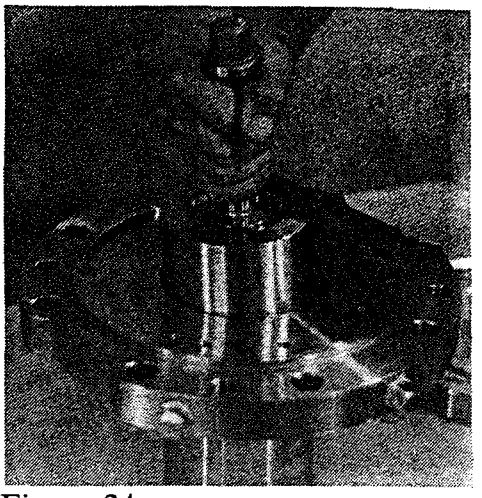


Figure 24

9. Place the thrust washer (Item 22) into the bearing holder on the casing cover (Item 3) and slide the other bushing into the bearing holder. Align the notch on the bushing side with the hole in the bearing holder. Thread a set bolt (Item 19) into the bearing holder and engage the notch in the bushing.

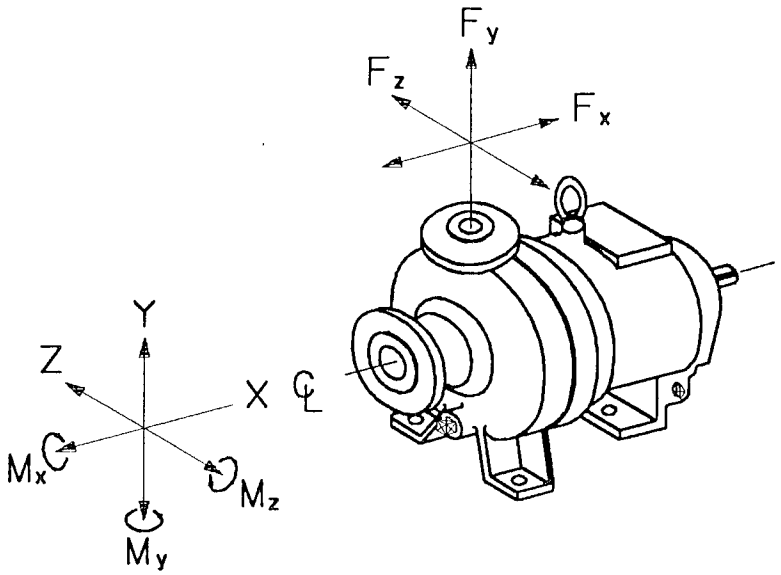
10. Place the rear casing on its side for horizontal installation of the casing cover. Align the two flush holes vertically on the casing cover so the pin located on the **VERTICAL** position of the rear casing flange engages the hole in the rear casing cover. Be careful of the tight tolerances between the bushing and sleeve.

11. Bolt the casing cover to the rear casing using the 12 hex socket head bolts (Item 8). Tighten evenly to avoid binding. Check for free rotation of the assembly.

12. Place the impeller key (Item 15) onto the shaft so the flat end of the key faces the impeller nut. Slide the impeller (Item 1) onto the shaft and thread on the impeller nut. Tighten and secure with the impeller nut set screw (Item 11). (This completes the rotating assembly.)

13. Place the gasket (Item 80) onto the rotating assembly and bolt the rotating assembly to the casing (Item 2) with the 12 casing hex head bolts (Items 66 & 78). Tighten the bolts evenly to avoid binding.

14. Make a final inspection by turning the pump shaft and checking for free rotation and listening for noise. If resistance or scraping is felt, or if noises are heard (scraping, etc.), inspect the pump to determine the cause, and take corrective action.



PUMP NOZZLE ANSI 150 lb. RF FLANGES		1″	1 1/2″	2″	3″	4″	6″	8″
BENDING MOMENT	Mx ft-lbs	290	370	440	730	950	1670	2610
	My ft-lbs	220	290	370	510	730	1310	1890
	Mz ft-lbs	150	190	220	370	510	870	1310
FORCE SUCTION FLANGE	Fx lbs	180	270	360	470	640	890	1280
	Fy lbs	140	200	250	310	400	620	820
	Fz lbs	140	220	290	400	510	710	1000
FORCE DISCHARGE FLANGE	Fx lbs	140	220	290	400	510	710	1000
	Fy(comp)lbs	180	270	360	470	640	890	1280
	Fy(tensile)lbs	90	140	180	240	320	440	640
	Fz lbs	140	200	250	310	400	620	820

REVISIONS NO.	DATE
1	
2	
3	
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5	

MAGNATEX Pumps Inc.™

NOZZLE LOADING CRITERIA
ANSI 150 LB. RF FLANGES

DRAWN BY: K. WIEDENFELD | DATE: 5-30-91 | REV:

MAXP SERIES ANSI PUMPS

ED-3603