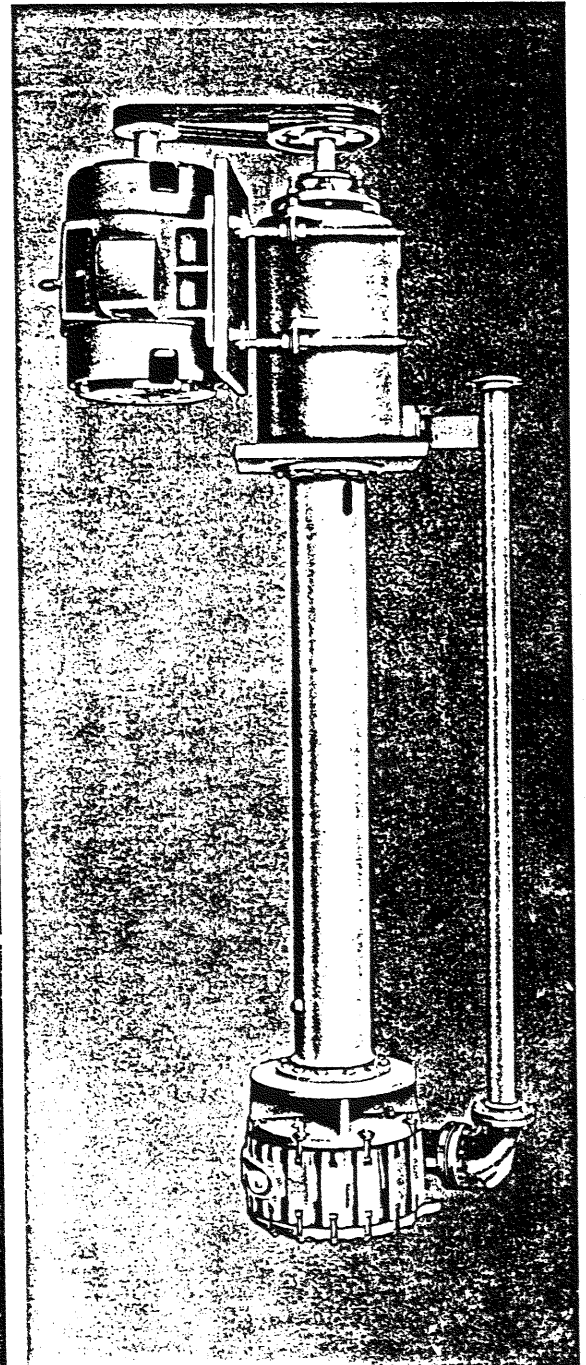
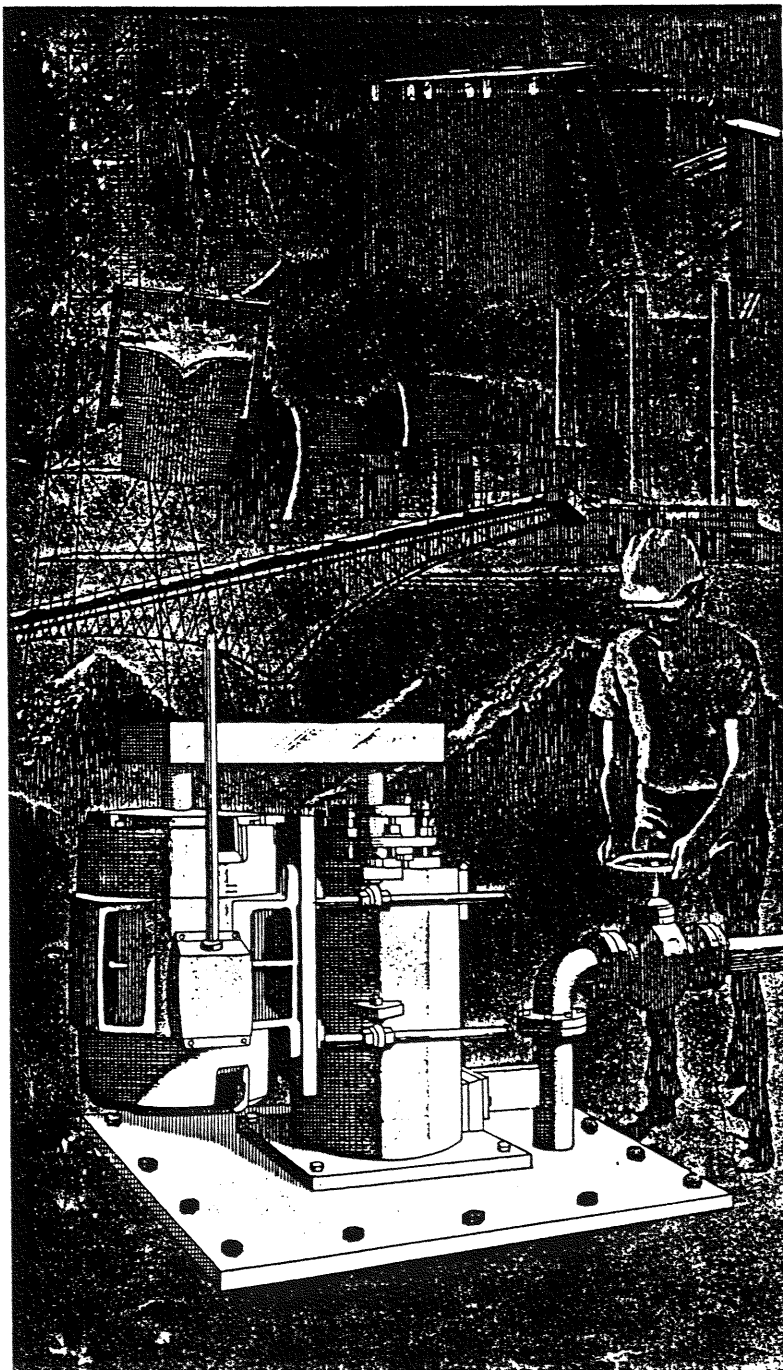




GOULDS PUMPS

MODEL 5100

Installation, Operation and Maintenance Instructions



IMPORTANT SAFETY NOTICE

To: Our Valued Customers

User safety is a major focus in the design of our products. Following the precautions outlined in this manual will minimize your risk of injury.

ITT Goulds pumps will provide safe, trouble-free service when properly installed, maintained, and operated.

Safe installation, operation, and maintenance of ITT Goulds Pumps equipment are an essential end user responsibility. This *Pump Safety Manual* identifies specific safety risks that must be considered at all times during product life. Understanding and adhering to these safety warnings is mandatory to ensure personnel, property, and/or the environment will not be harmed. Adherence to these warnings alone, however, is not sufficient — it is anticipated that the end user will also comply with industry and corporate safety standards. Identifying and eliminating unsafe installation, operating and maintenance practices is the responsibility of all individuals involved in the installation, operation, and maintenance of industrial equipment.

Please take the time to review and understand the safe installation, operation, and maintenance guidelines outlined in this Pump Safety Manual and the Instruction, Operation, and Maintenance (IOM) manual. Current manuals are available at www.gouldspumps.com/literature_ioms.html or by contacting your nearest Goulds Pumps sales representative.

These manuals must be read and understood before installation and start-up.

For additional information, contact your nearest Goulds Pumps sales representative or visit our Web site at www.gouldspumps.com.

SAFETY WARNINGS

Specific to pumping equipment, significant risks bear reinforcement above and beyond normal safety precautions.

⚠ WARNING

A pump is a pressure vessel with rotating parts that can be hazardous. Any pressure vessel can explode, rupture, or discharge its contents if sufficiently over pressurized causing death, personal injury, property damage, and/or damage to the environment. All necessary measures must be taken to ensure over pressurization does not occur.

⚠ WARNING

Operation of any pumping system with a blocked suction and discharge must be avoided in all cases. Operation, even for a brief period under these conditions, can cause superheating of enclosed pumpage and result in a violent explosion. All necessary measures must be taken by the end user to ensure this condition is avoided.

⚠ WARNING

The pump may handle hazardous and/or toxic fluids. Care must be taken to identify the contents of the pump and eliminate the possibility of exposure, particularly if hazardous and/or toxic. Potential hazards include, but are not limited to, high temperature, flammable, acidic, caustic, explosive, and other risks.

⚠ WARNING

Pumping equipment Instruction, Operation, and Maintenance manuals clearly identify accepted methods for disassembling pumping units. These methods must be adhered to. Specifically, applying heat to impellers and/or impeller retaining devices to aid in their removal is strictly forbidden. Trapped liquid can rapidly expand and result in a violent explosion and injury.

ITT Goulds Pumps will not accept responsibility for physical injury, damage, or delays caused by a failure to observe the instructions for installation, operation, and maintenance contained in this Pump Safety Manual or the current IOM available at www.gouldspumps.com/literature.

SAFETY

DEFINITIONS

Throughout this manual the words **WARNING**, **CAUTION**, **ELECTRICAL**, and **ATEX** are used to indicate where special operator attention is required.

Observe all Cautions and Warnings highlighted in this Pump Safety Manual and the IOM provided with your equipment.



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Example: Pump shall never be operated without coupling guard installed correctly.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Example: Throttling flow from the suction side may cause cavitation and pump damage.




ELECTRICAL HAZARD

Indicates the possibility of electrical risks if directions are not followed.

Example: Lock out driver power to prevent electric shock, accidental start-up, and physical injury.



When installed in potentially explosive atmospheres, the instructions that follow the Ex symbol must be followed. Personal injury and/or equipment damage may occur if these instructions are not followed. If there is any question regarding these requirements or if the equipment is to be modified, please contact an ITT Goulds Pumps representative before proceeding.






Example:  Improper impeller adjustment could cause contact between the rotating and stationary parts, resulting in a spark and heat generation.

General precautions



















WARNING:

A pump is a pressure vessel with rotating parts that can be hazardous. Hazardous fluids may be contained by the pump including high temperature, flammable, acidic, caustic, explosive, and other risks. Operators and maintenance personnel must realize this and follow safety measures. Personal injuries will result if procedures outlined in this manual are not followed. ITT Goulds Pumps will not accept responsibility for physical injury, damage or delays caused by a failure to observe the instructions in this manual and the IOM provided with your equipment.

WARNING		NEVER APPLY HEAT TO REMOVE IMPELLER. It may explode due to trapped liquid.
WARNING		NEVER use heat to disassemble pump due to risk of explosion from tapped liquid.
WARNING		NEVER operate pump without coupling guard correctly installed.
WARNING		NEVER run pump below recommended minimum flow when dry, or without prime.
WARNING		ALWAYS lock out power to the driver before performing pump maintenance.
WARNING		NEVER operate pump without safety devices installed.
WARNING		NEVER operate pump with discharge valve closed.
WARNING		NEVER operate pump with suction valve closed.
WARNING		DO NOT change service application without approval of an authorized ITT Goulds Pumps representative.
WARNING		<p>Safety Apparel:</p> <ul style="list-style-type: none"> • Insulated work gloves when handling hot bearings or using bearing heater • Heavy work gloves when handling parts with sharp edges, especially impellers • Safety glasses (with side shields) for eye protection • Steel-toed shoes for foot protection when handling parts, heavy tools, etc. • Other personal protective equipment to protect against hazardous/toxic fluids
WARNING		Receiving:

4 General precautions

		Assembled pumping units and their components are heavy. Failure to properly lift and support equipment can result in serious physical injury and/or equipment damage. Lift equipment only at specifically identified lifting points or as instructed in the current IOM. Current manuals are available at www.gouldspumps.com/literature_ioms.html or from your local ITT Goulds Pumps sales representative. Note: Lifting devices (eyebolts, slings, spreaders, etc.) must be rated, selected, and used for the entire load being lifted.
WARNING		Alignment: Shaft alignment procedures must be followed to prevent catastrophic failure of drive components or unintended contact of rotating parts. Follow coupling manufacturer's coupling installation and operation procedures.
WARNING		Before beginning any alignment procedure, make sure driver power is locked out. Failure to lock out driver power will result in serious physical injury.
CAUTION		Piping: Never draw piping into place by forcing at the flanged connections of the pump. This may impose dangerous strains on the unit and cause misalignment between pump and driver. Pipe strain will adversely effect the operation of the pump resulting in physical injury and damage to the equipment.
WARNING		Flanged Connections: Use only fasteners of the proper size and material.
WARNING		Replace all corroded fasteners.
WARNING		Ensure all fasteners are properly tightened and there are no missing fasteners.
WARNING		Startup and Operation: When installing in a potentially explosive environment, please ensure that the motor is properly certified.
WARNING		Operating pump in reverse rotation may result in contact of metal parts, heat generation, and breach of containment.
WARNING		Lock out driver power to prevent accidental start-up and physical injury.
WARNING		The impeller clearance setting procedure must be followed. Improperly setting the clearance or not following any of the proper procedures can result in sparks, unexpected heat generation and equipment damage.
WARNING		If using a cartridge mechanical seal, the centering clips must be installed and set screws loosened prior to setting impeller clearance. Failure to do so could result in sparks, heat generation, and mechanical seal damage.
WARNING		The coupling used in an ATEX classified environment must be properly certified and must be constructed from a non-sparking material.
WARNING		Never operate a pump without coupling guard properly installed. Personal injury will occur if pump is run without coupling guard.

WARNING		Make sure to properly lubricate the bearings. Failure to do so may result in excess heat generation, sparks, and / or premature failure.
CAUTION		The mechanical seal used in an ATEX classified environment must be properly certified. Prior to start up, ensure all points of potential leakage of process fluid to the work environment are closed.
CAUTION		Never operate the pump without liquid supplied to mechanical seal. Running a mechanical seal dry, even for a few seconds, can cause seal damage and must be avoided. Physical injury can occur if mechanical seal fails.
WARNING		Never attempt to replace packing until the driver is properly locked out and the coupling spacer is removed.
WARNING		Dynamic seals are not allowed in an ATEX classified environment.
WARNING		DO NOT operate pump below minimum rated flows or with suction and/or discharge valve closed. These conditions may create an explosive hazard due to vaporization of pumpage and can quickly lead to pump failure and physical injury.
WARNING		Ensure pump is isolated from system and pressure is relieved before disassembling pump, removing plugs, opening vent or drain valves, or disconnecting piping.
WARNING		Shutdown, Disassembly, and Reassembly: Pump components can be heavy. Proper methods of lifting must be employed to avoid physical injury and/or equipment damage. Steel toed shoes must be worn at all times.
WARNING		The pump may handle hazardous and/or toxic fluids. Observe proper decontamination procedures. Proper personal protective equipment should be worn. Precautions must be taken to prevent physical injury. Pumpage must be handled and disposed of in conformance with applicable environmental regulations.
WARNING		Operator must be aware of pumpage and safety precautions to prevent physical injury.
WARNING		Lock out driver power to prevent accidental startup and physical injury.
CAUTION		Allow all system and pump components to cool before handling them to prevent physical injury.
CAUTION		If pump is a Model NM3171, NM3196, 3198, 3298, V3298, SP3298, 4150, 4550, or 3107, there may be a risk of static electric discharge from plastic parts that are not properly grounded. If pumped fluid is non-conductive, pump should be drained and flushed with a conductive fluid under conditions that will not allow for a spark to be released to the atmosphere.
WARNING		Never apply heat to remove an impeller. The use of heat may cause an explosion due to trapped fluid, resulting in severe physical injury and property damage.
CAUTION		Wear heavy work gloves when handling impellers as sharp edges may cause physical injury.
CAUTION		Wear insulated gloves when using a bearing heater. Bearings will get hot and can cause physical injury.

4 General precautions

WARNING		<p>Noise:</p> <p>Sound pressure levels may exceed 80 dbA in operating process plants. Clear visual warnings or other indicators should be available to those entering an area with unsafe noise levels. Personnel should wear appropriate hearing protection when working on or around any equipment, including pumps. Consider limiting personnel's exposure time to noise or, where possible, enclosing equipment to reduce noise. Local law may provide specific guidance regarding exposure of personnel to noise and when noise exposure reduction is required.</p>
WARNING		<p>Temperature:</p> <p>Equipment and piping surfaces may exceed 130°F (54°C) in operating process plants. Clear visual warnings or other indicators should alert personnel to surfaces that may reach a potentially unsafe temperature. Do not touch hot surfaces. Allow pumps operating at a high temperature to cool sufficiently before performing maintenance. If touching a hot surface cannot be avoided, personnel should wear appropriate gloves, clothing, and other protective gear as necessary. Local law may provide specific guidance regarding exposure of personnel to unsafe temperatures.</p>
WARNING		<p>This product contains Tetrafluoroethylene a chemical known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov</p>

ATEX CONSIDERATIONS and INTENDED USE

Special care must be taken in potentially explosive environments to ensure that the equipment is properly maintained. This includes but is not limited to:

1. Monitoring the pump frame and liquid end temperature.
2. Maintaining proper bearing lubrication.
3. Ensuring that the pump is operated in the intended hydraulic range.

The ATEX conformance is only applicable when the pump unit is operated within its intended use. Operating, installing or maintaining the pump unit in any way that is not covered in the Instruction, Operation, and Maintenance manual (IOM) can cause serious personal injury or damage to the equipment. This includes any modification to the equipment or use of parts not provided by ITT Goulds Pumps. If there is any question regarding the intended use of the equipment, please contact an ITT Goulds representative before proceeding. Current IOMs are available at www.gouldspumps.com/literature_ioms.html or from your local ITT Goulds Pumps Sales representative.

All pumping unit (pump, seal, coupling, motor and pump accessories) certified for use in an ATEX classified environment, are identified by an ATEX tag secured to the pump or the baseplate on which it is mounted. A typical tag would look like this:



The CE and the Ex designate the ATEX compliance. The code directly below these symbols reads as follows:

- II = Group 2
- 2 = Category 2
- G/D = Gas and Dust present
- T4 = Temperature class, can be T1 to T6 (see Table 1)

Code	Max permissible surface temperature °F (°C)	Max permissible liquid temperature °F (°C)
T1	842 (450)	700 (372)
T2	572 (300)	530 (277)
T3	392 (200)	350 (177)
T4	275 (135)	235 (113)
T5	212 (100)	Option not available
T6	185 (85)	Option not available

The code classification marked on the equipment must be in accordance with the specified area where the equipment will be installed. If it is not, do not operate the equipment and contact your ITT Goulds Pumps sales representative before proceeding.

PARTS



The use of genuine Goulds parts will provide the safest and most reliable operation of your pump. ITT Goulds Pumps ISO certification and quality control procedures ensure the parts are manufactured to the highest quality and safety levels.

Please contact your local Goulds representative for details on genuine Goulds parts.

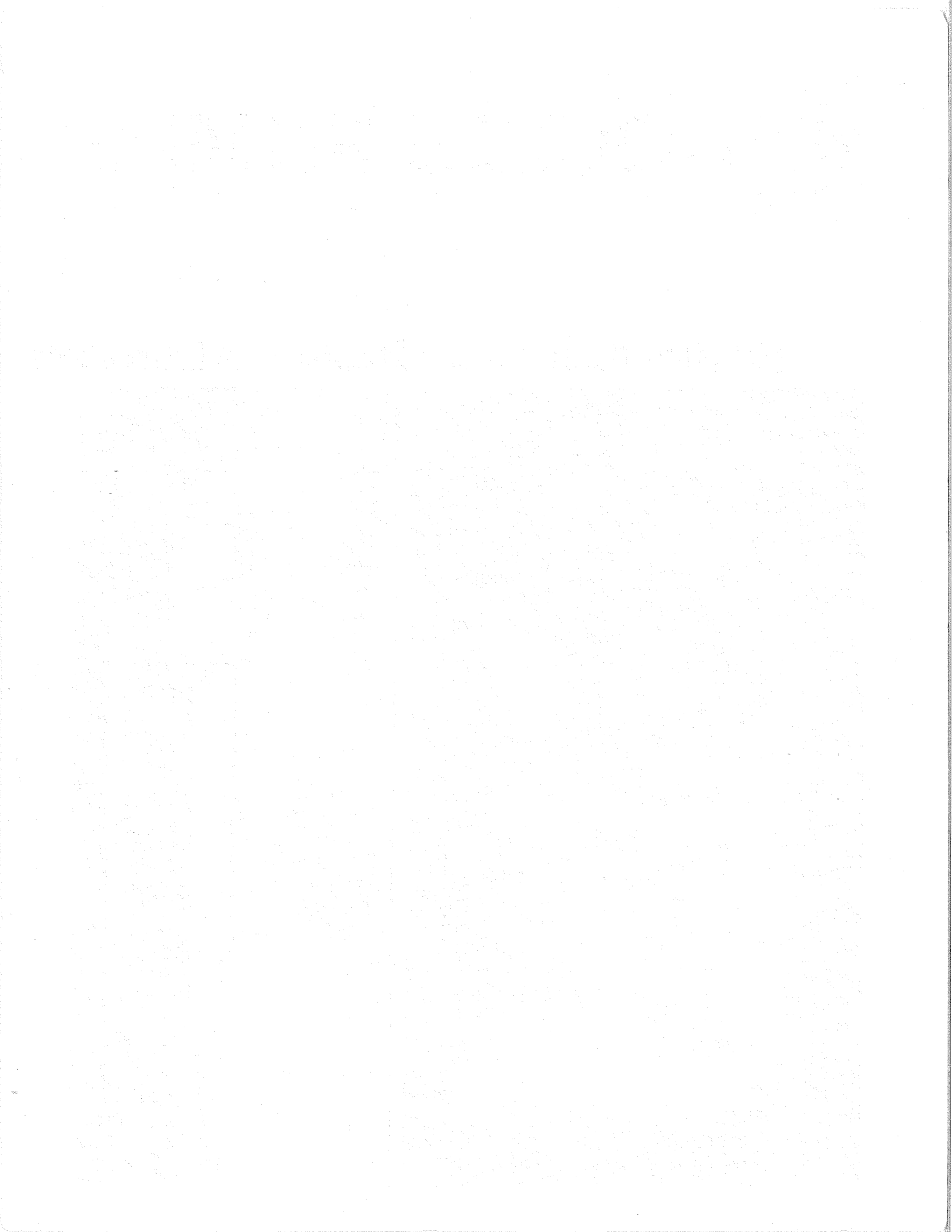
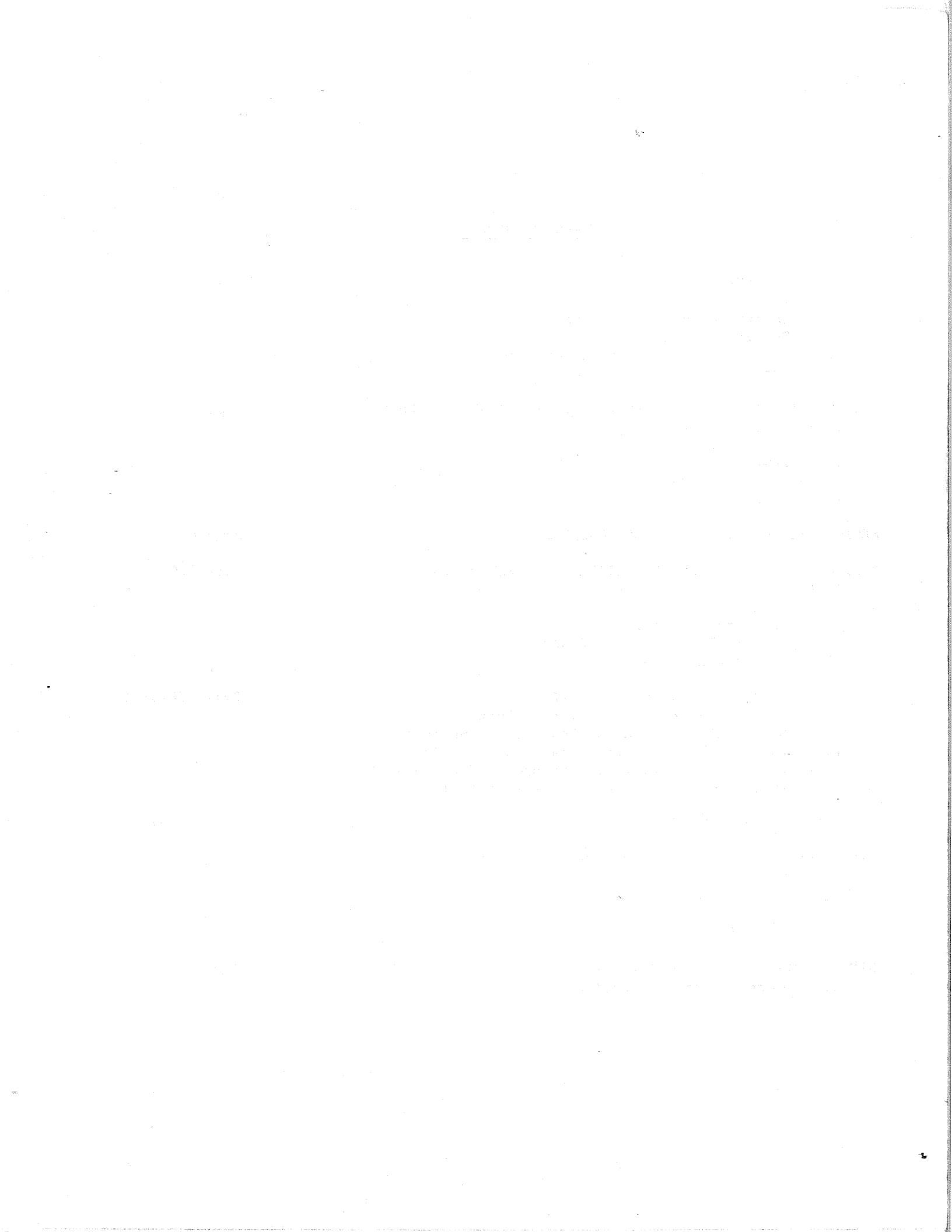


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SECTION 1 - GENERAL

INTRODUCTION

This instruction manual is intended to assist those involved with the installation, operation and maintenance of Goulds SPD slurry pumps. It is recommended that this manual be thoroughly reviewed prior to installing or performing any work on the pump or motor.

I-A. IMPORTANCE OF INSTRUCTIONS

The design, material and workmanship incorporated in the construction of Goulds Pumps makes them capable of giving long, trouble-free service. The life and satisfactory service of any mechanical unit, however, is enhanced and extended by periodic inspection and careful maintenance. This Instruction Manual was prepared to assist operators in understanding the construction and correct methods of installing, operating, and maintaining these pumps.

Study thoroughly Sections I, II, III, IV and carefully follow the instructions for installation and operation. Sections V, VI, VII and VIII are answers to trouble and maintenance questions. Keep this instruction manual handy for reference. Further information can be obtained by contacting the Slurry Pump Division, P.O. Box 419, Baldwinsville, New York, 13027 or your local representative listed on the back cover.

I-B. SPECIAL WARNINGS

Goulds Slurry Pump Division will not be liable for any damages or delay caused by failure to comply with the provisions of this Instruction Manual. This pump is not to be operated at speeds, working pressures, discharge pressures, or temperatures higher than, nor used with liquids other than, stated in the original order acknowledgement, without written permission of the Slurry Pump Division, Goulds Pumps, Inc.

I-C. RECEIVING INSPECTION - SHORTAGES

Care should be taken when unloading pumps. If shipment is not delivered in good order and in accordance with the bill of lading, note the damage or shortage on both receipt and freight bill. MAKE ANY CLAIMS TO THE TRANSPORTATION COMPANY PROMPTLY.

Instruction sheets on various components as well as the Instruction Book for the pump are included in the shipment. DO NOT DISCARD.

I-D. PRESERVATION AND STORAGE

Goulds' Slurry Pump Division's normal domestic shipping and storage preparation is suitable for protecting the pump during shipment in covered trucks. It also provides protection during covered storage at the jobsite and for a short period between installation and start-up. If the pump is to be idle and exposed to the elements for an extended period, either before or after installation, special precautions are required. One approach is to provide special preservatives and wrapping before shipment. However, after installation, the protective wrappings will have been removed. Therefore, application of preservatives after installation is considered good practice. Hand rotation of the unit is recommended every 30 days to prevent damage to bearings.

SECTION II - INSTALLATION INSTRUCTIONS

VERTICAL PUMPS

II-A. PUMP SUPPORT

The pump support must be sufficiently substantial and level to give rigid support to the pump and to absorb vibration.

The bolts which secure the pump to the foundation should be 1/8" less in diameter than the holes in the pump frame (size is shown on the certified dimensions drawing).

CAUTION

Provision must be made to support discharge piping independently from the pump to prevent excessive loads and maintain pump-driver alignment.

II-B. DISCHARGE PIPE

The pipe must be supported independently near the pump to prevent any strain being transmitted to the pump.

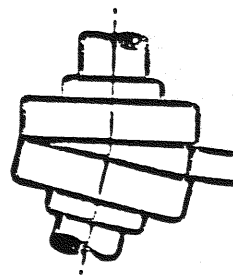
Arrangements should be made to keep the pump from back-spinning severely during shutdown. On a long discharge line, a non-slam check valve should be installed. At no point should the pump be started while the impeller is in reverse rotation.

II-C. SUMP

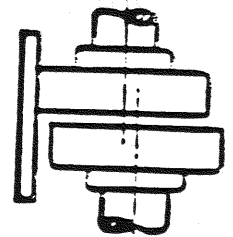
The sump must be screened to prevent any foreign objects from falling into the sump and damaging the pump. The openings in the screening should be the same size or smaller than the openings in the pump strainer.

II-D. DIRECT CONNECTION

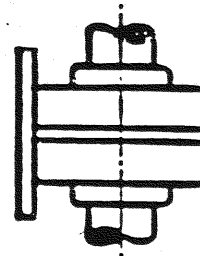
Check parallel alignment by placing a straight edge across the two coupling flanges or using a dial indicator. Check angular alignment with a micrometer or feeler gauge. Measure from the outside of one flange to the outside of the other at intervals around the periphery of the coupling. Alignment of drive and pump should be within .003". See Fig. 1.



Angular Misalignment



Parallel Misalignment



Perfect Alignment

II-E. V-BELT DRIVES

Well designed and properly installed V-belt drives are capable of running for years without maintenance. There are a few points that should be checked periodically.

1. Check Belt Fit

Regardless of the belt section used, the belt should never be allowed to bottom in the groove. This will cause the belts to lose their wedging action and slippage can occur. Sheaves or belts that permit such a condition to occur should be changed.

2. Keep Belts Clean

Dirt and grease reduce belt life. Belt dressing affects performance only temporarily and is never recommended. Maintaining a clean drive is a better idea.

3. Use Belt Guards

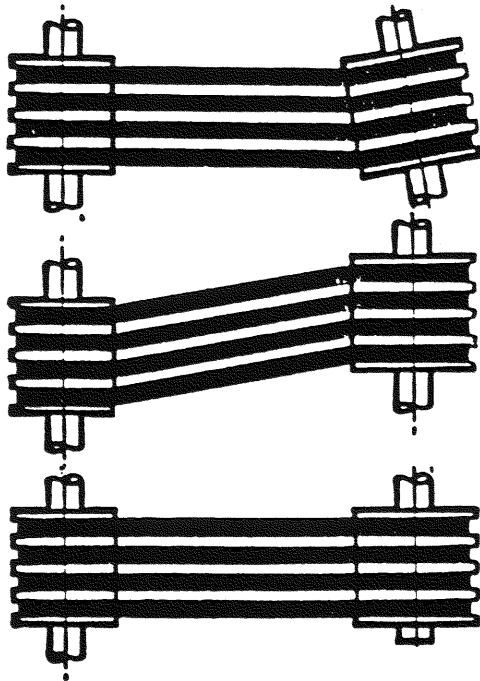
Belt guards protect personnel from danger and the drive from contamination. Inspect periodically to assure that belts do not rub against guard.

4. Maintain Proper Belt Tension

Proper tension is the primary reason for long belt life. Improper tension could cause belt fatigue and/or hot bearings.

5. Sheave Alignment

Alignment must be maintained for full power transmission, minimum vibration, and long drive life. Make sure sheaves are aligned by placing a straight edge or string along the faces of each sheave. See Fig. II. If any questions arise pertaining to the drive limitations, consult the manufacturer.



Angular Misalignment

Parallel Misalignment

Perfect Alignment

SECTION III - STARTING A VERTICAL PUMP

Before starting a new pump, check the pump supports and piping to be certain that they conform to the specifications in the "Installation Instructions" section.

The bearing housing is properly filled with grease before shipment. Under normal conditions, grease should be added as required at regular intervals.

Turn the pump shaft by hand. If the pump does not turn freely, it should be checked to determine what is causing the binding.

Check the motor rotation to be certain that it will drive the pump in the correct direction.

The bearing housing seals may generate some heat until broken in. Oil may be applied to them if the heat becomes excessive at the time the pump is started.

The pump must be primed. The pump must not be started unless the liquid level is above the impeller.

Do not operate the pump with a closed discharge line. At the shutoff point, with no water flow, the horsepower delivered to the pump is rapidly converted into heat and presents a great danger.

WARNING:

DO NOT OPERATE THE PUMP WITHOUT
PROPER DRIVE GUARD IN PLACE.

SECTION IV - OPERATING AND MAINTENANCE INSTRUCTIONS

IV-A. LUBRICATION

WARNING

OPERATION OF THE UNIT WITHOUT PROPER LUBRICATION CAN RESULT IN OVERHEATING OF THE BEARINGS, BEARING FAILURES, PUMP SEIZURES AND ACTUAL BREAKUP OF THE EQUIPMENT EXPOSING OPERATING PERSONNEL TO PERSONAL INJURY.

The bearing housing is properly filled before shipment. Under normal conditions, grease should be added at regular intervals and care should be taken not to over-lubricate. Use Shell Alvania No. 2, Mobil Mobilux No. 2, Texaco Multifak No. 2, Sun Oil Company Prestige No. 42, American Oil Company Amolith Grease No. 2 or equal. When it becomes necessary to replace the bearing housing seals, the housing and the bearings should be flushed clean with a solvent and repacked with new grease. Over-lubrication results in excessive bearing temperatures.

IV-B. SEALS

The upper bearing housing seals may generate some heat until broken in. Oil may be applied to it if the heat becomes excessive at the time the pump is started. Make sure the seal area is free of dust and dirt prior to start.

IV-C. MAINTAINED CAPACITY

The amount of liquid being pumped will lessen as wear occurs between the faces of the impeller and suction liner. To maintain full pump capacity, the impeller clearance must be adjusted periodically. Each application is different and it is necessary to

IV-C. MAINTAINED CAPACITY (Cont'd.)

determine the amount of wear for a certain time limit before setting up a schedule for adjustment.

1. Impeller Clearance Adjustment

(a) Loosen the thrust bearing housing locking stud nuts (370C) (Fig. IV).

(b) Turn impeller clearance adjusting bolts (370D/cw) to move the bearing housing up until the impeller (101) touches the suction liner (100B). Turn the bolts to lower the bearing housing .03", which gives the recommended operating clearance. Make sure the impeller turns freely through the entire rotation.

(c) Tighten housing locking stud nuts and bolts (370C).

IV-D. DUPLEX THRUST BEARING REPLACEMENT

Duplex bearings are made up of two single row bearings manufactured with controlled relationship between the axial location of the inner and outer ring faces and are supplied as matched pairs or sets.

When it becomes necessary to replace a duplex bearing, both halves of the new bearing must be marked with the letter "D". Under no circumstances should a duplex bearing be made by using two single row bearings not specifically marked for duplex use.

When replacing a duplex bearing, mount the two mated bearings back-to-back so that the stamped faces (high shoulders) of the outer rings are together.

In case of making replacements for bearings which have been installed and run, it is recommended that both halves be replaced. This avoids the dangers involved in attempting to match two bearings, one of which has unknown internal characteristics.

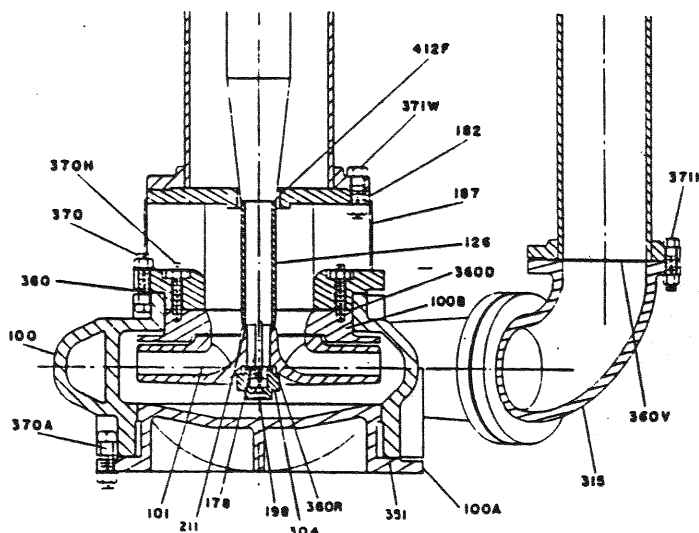
IV-E. GASKETS AND O-RING SEALS

When making inspections or repairs, be sure to replace all gaskets and O-rings. Pumps will operate at reduced capacities if gaskets O-rings are not installed.

SECTION V - DISASSEMBLY AND REASSEMBLY

V-A. DISASSEMBLY OF TOP SUCTION PUMP - 5100

1. Lock out power supply to motor.
2. Shut off valves controlling flow from the pump. Remove all auxiliary piping and tubing.
3. Remove pump from sump.
4. Loosen V-belts or disconnect coupling. Remove either from shaft.
5. Remove motor and motor mount if a direct connected pump.
6. Remove rear cover (100A) and gasket (351).
7. Remove impeller locking screw (198) and impeller nut (304). The impeller nut has righthand threads and the locking screw has lefthand threads.
8. Thread impeller puller onto shaft and insert pulling rods into the two corresponding slots on the impeller hub. Rotate the puller slightly to engage the tips of the rods and pull the impeller from the shaft.
9. Remove fiber gaskets (211, 360R) from between impeller nut, impeller and sleeve.
10. Unbolt studs and nuts (370H) and remove suction liner (100B) with rubber gasket (360D).
11. Slide shaft sleeve (126) from shaft (122).
12. Remove nuts from housing locking studs (370C).
13. Draw bearing housing and shaft assembly from the frame (228A).
14. Disassemble column pipe (192) and discharge pipe (195).



V-C. INSPECTION AND PARTS REPLACEMENT GUIDELINES

1. Impeller - Replace if impeller shows excessive erosion, corrosion, extreme wear or vane breakage. Impeller hub must be in good condition. Reduction in hydraulic performance may be caused by excessive impeller wear, especially along the suction liner mating surface. Replace if impeller adjustment is gone.
2. Suction Liner - Replace if impeller mating surface is worn flush.
3. Shaft Sleeve - Sleeve surface and throttle bushing must be smooth. If badly grooved or cut, replace.
4. Casing - Suction Cover - Replace if worn.
5. Shaft - Check for runout (.006" max.) to see that shaft has not been bent. Bearing seats and oil seal area must be smooth and free of scratches or grooves. Shaft threads must be in good condition. Replace if necessary.
6. Bearings - Replace if worn, loose or rough and noisy when rotated.
7. Oil Seals - Replace if worn or otherwise damaged.
8. General - All parts should be clean before assembly. All burrs should be removed.

NOTE: STANDARD BEARING MANUFACTURER FITS AND TOLERANCE DIMENSIONS ARE USED IN THE MANUFACTURE OF SPD VERTICAL PUMPS.

V-D. REASSEMBLY OF BEARING HOUSING AND SHAFT ASSEMBLY

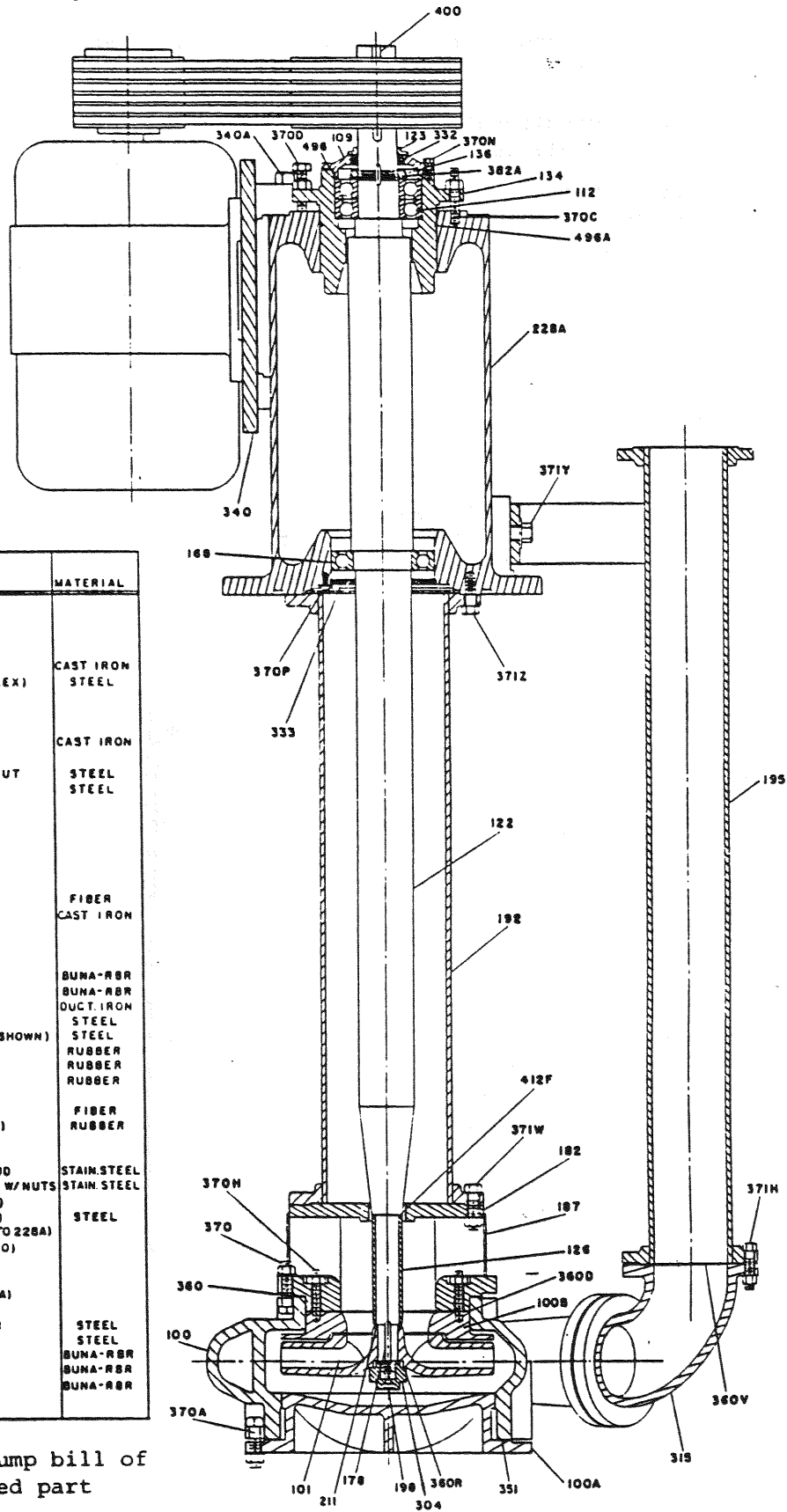
1. Clean shaft (122) thoroughly, checking for nicks or worn areas.
2. Press outboard seal (332) into outboard end cover (109), positioning the seal so that the lip points upward when installed with the pump. Press inboard seal (333) into frame (228A) with the lip pointing downward and secure with capscrews (370P).
3. Press outboard bearing (112) onto drive end of shaft (See Section IV about duplex bearings).
4. Position outboard bearing locknut (136) and lockwasher (382A) against the bearing shoulder and tighten firmly. Bend "tang" of lockwasher into slot in locknut.
5. Hand pack outboard bearing with recommended grease (See Section IV). Mound a small amount of grease above bearing to insure sufficient lubrication.
6. Insert bearing housing (134) over the impeller end of shaft and pull over outboard bearing. Attach end cover (109) with O-Ring (496). Tighten bolts evenly so outboard bearing seats properly. A gap of approximately .06" should exist between the end cover flange and the bearing housing. This gap assures the bearing is tight into the bearing housing.
7. Press inboard bearing (168) onto shaft until inner race seats onto shaft shoulder.
8. Hand pack radial bearing with recommended grease. (See Section IV). Mound a small amount of grease above bearing to insure sufficient lubrication.
9. Place deflector (123) above outboard end cover (109).

V-E. PUMP REASSEMBLY - VERTICAL TOP SUCTION - 5100

1. Install O-Ring (496A) onto bearing housing (134).
2. Remove impeller nut (304) and key (178) from shaft and tape shaft threads for protection.
3. Insert bearing housing and shaft assembly into frame (228A).
4. Reassemble column pipe (192), frame (228A), discharge pipe (195), casing (100), discharge elbow (315), and throttle bushing (473) as required.
5. Position bearing housing shaft assembly so that the shaft is as far into the water end as possible. This will assure proper placement of the impeller (101) on the shaft.
6. Install nuts on bearing housing locking studs (370C).
7. Screw studs (370H) into suction liner (100B) and place rubber gasket (360D) into position. Use slight amount of grease to hold gasket into position.
8. Insert suction liner (100B) through casing (100) and bolt onto suction cover (182). Tighten studs evenly, making sure the gasket (360D) remains in place.
9. Slide shaft sleeve (126) with O-Ring on shaft after coating shaft with an anti-seizing compound such as "Never Seez" or equal. Make sure the O-Ring and sleeve butt against the lip on the shaft.
10. Remove protective tape from shaft threads. Place fiber gasket (211) against end of shaft sleeve (126). Position impeller key (178) in shaft.
11. Thread impeller puller onto shaft. Dress shaft and impeller bore fit.
12. Slide impeller (101) onto shaft (122) engaging impeller key. Make sure impeller contacts sleeve (126).
13. Place fiber gasket (360R) on impeller nut (304). Apply a light coating of grease on the gasket to eliminate tearing during tightening.
14. Screw impeller nut on threaded portion of shaft. The threads are righthand. Tighten impeller nut (304) using impeller nut wrench supplied with pump.
15. Insert impeller locking screw (198) into end of shaft and tighten. The threads are lefthand.
16. Rotate shaft to assure that all parts are free.

17. Turn impeller clearance adjusting bolts to move the bearing housing up until the impeller (101) touches the suction liner (100B). Turn in the opposite direction to lower the bearing housing .03" which is the recommended operating clearance. Make sure the impeller turns freely through the entire rotation. Lock adjusting bolts in place.
18. Tighten housing locking studs (370C).
19. Place gasket (351) on rear cover (100A) using a slight amount of grease to hold in place. Position rear cover into the casing (100) and bolt it in place. Tighten all bolts evenly so that rear cover will not become misaligned.
20. Attach motor mount if a direct connected pump.
21. Connect V-belt drive or coupling.
22. Follow procedures for installation of vertical pumps.

SECTION VI - 5100 SECTIONAL DRAWING



ITEM NO	QTY. PER PUMP	PART NAME	MATERIAL
100	1	CASING	
100A	1	REAR COVER	
100B	1	SUCTION LINER	
101	1	IMPELLER	
109	1	OUTBOARD END COVER	CAST IRON
112	1	OUTBOARD BEARING (OUPLEX)	STEEL
122	1	SHAFT	
123	1	DEFLECTOR	
126	1	SHAFT SLEEVE	
134	1	BEARING HOUSING	CAST IRON
136	1	OUTBOARD BEARING LOCKNUT	STEEL
168	1	INBOARD BEARING	STEEL
178	1	IMPELLER KEY	
182	1	SUCTION COVER	
187	1	SUCTION STRAINER	
192	1	COLUMN PIPE	
195	1	DISCHARGE PIPE	
198	1	IMPELLER LOCKING SCREW	
211	1	GASKET (101 TO 126)	FIBER
228A	1	FRAME	CAST IRON
304	1	IMPELLER NUT	
315	1	DISCHARGE ELBOW	
332	1	OUTBOARD SEAL	BUNA-RBR
333	1	INBOARD SEAL	BUNA-RBR
340	1	MOTOR MOUNT	DUCT. IRON
340A	2	MOTOR MOUNT BOLT	STEEL
340B	1	MTR. MT. ADJUST. BOLT (NOT SHOWN)	STEEL
351	1	GASKET-(100 TO 100A)	RUBBER
360	1	GASKET-(100 TO 182)	RUBBER
360D	1	GASKET-(100B TO 182)	RUBBER
360R	1	GASKET-(101 TO 304)	FIBER
360V	2	GASKET-(100 TO 315 TO 195)	RUBBER
370	1	H ND BOLT-(100 TO 182)	
370A	1	H ND BOLT-(100 TO 100A)	
370C	4	BEARING HSG. LOCKING STUD	STAIN. STEEL
370D	4	IMPELLER ADJUSTING BOLT W/NUTS	STAIN. STEEL
370H	1	STUD W/NUT (100B TO 182)	
370N	1	H CAP SCREW (109 TO 134)	STEEL
370P	4	H CAP SCREW W/WASH (333 TO 228A)	
371H	1	H ND BOLT (315 TO 195 & 100)	
371W	1	H ND BOLT (192 TO 182)	
371Y	2	H CAP SCREW (195 TO 228A)	
371Z	1	H ND BOLT (228A TO 192)	
382A	1	OTB. BEARING LOCKWASHER	STEEL
400	1	DRIVE KEY	STEEL
412F	1	O-RING (126)	BUNA-RBR
496	1	O-RING (109)	BUNA-RBR
496A	1	O-RING (134)	BUNA-RBR

Refer to specific pump bill of material for detailed part description.

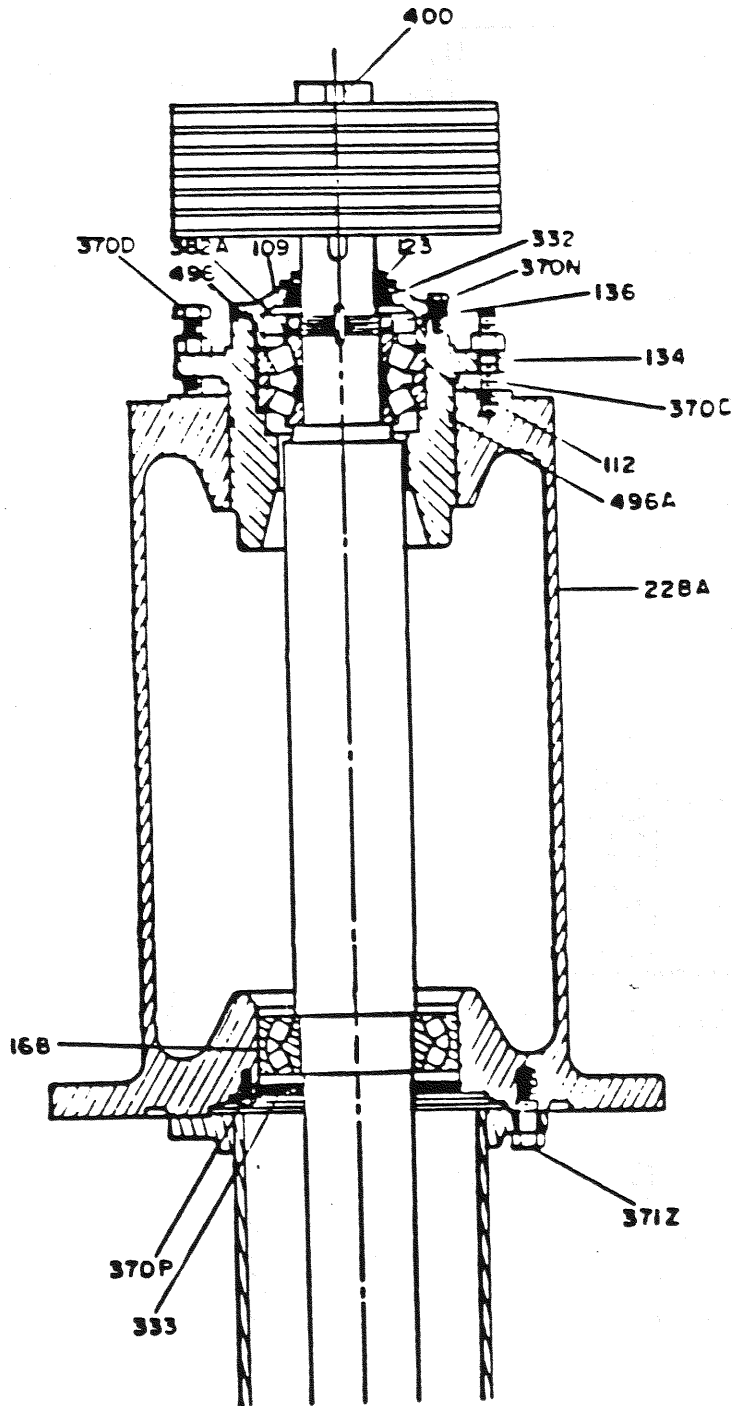
SECTION VI-B. SECTIONAL DRAWING

C5 & C6 BEARING ASSEMBLIES

NOTE: Consult Page 1 of pump bill of material for bearing size used in your pump.

Pumps manufactured with bearing assemblies C1 - C4 use ball bearings.

Pumps manufactured with bearing assemblies C5 & C6 use spherical roller bearings (item 168) and tapered roller bearings (item 112).



1917

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GOULDS PUMPS INC.

SLURRY PUMP DIVISION

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