WDP3500 Hydraulic Sump Pump
User's Manual

E.H. Wachs Company
100 Shepard Street
Wheeling, IL 60090
www.wachsco.com

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Table of Contents

Chapter 1
About This Manual

PURPOSE OF THIS MANUAL

This manual explains how to operate and maintain your WDP3500 Hydraulic Sump Pump. It includes instructions for set-up, operation, and routine maintenance. It also contains parts lists, assembly diagrams, and troubleshooting instructions to help you order replacement parts and perform user-serviceable repairs.

Before operating your WDP3500 Hydraulic Sump Pump, you should read through this manual and become familiar with all instructions. At a minimum, make sure you read and understand the following chapters:

- Chapter 1, About This Manual
- Chapter 2, Safety
- Chapter 3, Introduction
- Chapter 5, Operating Instructions.

If you will be performing service or repairs, make sure you read and understand these chapters:

- Chapter 1, About This Manual
- Chapter 4, Assembly, Disassembly, and Storage
- Chapter 6, Routine Maintenance
- Chapter 7, Service and Repair.

You will also want to refer to Chapter 8, Parts Lists and Drawings.

In This Chapter

Throughout this manual, refer to this column for warnings, cautions, and notices with supplementary information.

HOW TO USE THE MANUAL

This manual is organized to help you quickly find the information you need. Each chapter describes a specific topic on using or maintaining your WDP3500 Hydraulic Sump Pump.

Each page is designed with two columns. This large column on the inside of the page contains instructions and illustrations. Use these instructions to operate and maintain your WDP3500 Hydraulic Sump Pump.

The narrower column on the outside contains additional information such as warnings, special notes, and definitions. Refer to it for safety notes and other information.

SYMBOLS AND WARNINGS

The following symbols are used throughout this manual to indicate special alerts and notes. They appear in the outside column of the page, next to the section they refer to. Make sure you understand what each symbol means, and follow all instructions for cautions and warnings.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

NOTE

This symbol indicates a user notice. **Notices** provide additional information to supplement the instructions, or tips for easier operation.

MANUAL UPDATES AND REVISION TRACKING

Occasionally, we will update manuals with improved operation or maintenance procedures, or with corrections if necessary. Revised chapters will be available for customers. If you receive revised chapters for your manual, remove the old chapters from your binder and replace them with the new chapters.

When a manual is revised, we will update the revision history on the title page and at the bottom of the pages in the revised chapters. It is important to put the current title page with the revision history in your manual. This will help you make sure you have all current information.

You may have factory service or upgrades performed on your equipment. If this service changes any technical data or operation and maintenance procedures, we will include revised sections of the manual when we return the equipment to you. Remove the old chapters from your manual and replace them with the revised chapters.

Current versions of E.H. Wachs Company manuals are also available in PDF format. You can request an electronic copy of this manual by emailing customer service at sales@wachsco.com.

Chapter 2
Safety

The E.H. Wachs Company takes great pride in designing and manufacturing safe, high-quality products. We make user safety a top priority in the design of all our products.

⚠ WARNING

Read this chapter carefully before operating your WDP3500 Hydraulic Sump Pump. Serious injury or death could result from improper repair or service of this equipment.

Repair and/or service to this equipment must only be done by an authorized and certified dealer.

OPERATOR SAFETY

Follow these guidelines for safe operation of any mechanical equipment associated with the data logger.

- **READ THE OPERATING MANUAL.** Make sure you understand all setup and operating instructions before you begin.
- **INSPECT MACHINE AND ACCESSORIES.** Before starting the machine, look for loose bolts or nuts, leaking lubricant, rusted components, and any other physical conditions that may affect operation. Properly maintaining the machine can greatly decrease the chances for injury.

In This Chapter

Look for this symbol throughout the manual. It indicates a personal injury hazard.

- **ALWAYS READ PLACARDS AND LABELS.** Make sure all placards, labels, and stickers are clearly legible and in good condition. You can purchase replacement labels from E.H. Wachs Company.
- **KEEP CLEAR OF MOVING PARTS.** Keep hands, arms, and fingers clear of all rotating or moving parts. Always turn machine off before doing any adjustments or service.
- **SECURE LOOSE CLOTHING AND JEWELRY.** Secure or remove loose-fitting clothing and jewelry, and securely bind long hair, to prevent them from getting caught in moving parts of the machine.
- **KEEP WORK AREA CLEAR.** Keep all clutter and nonessential materials out of the work area. Only people directly involved with the work being performed should have access to the area.

Safety Symbols

This icon is displayed with any safety alert that indicates a personal injury hazard.

⚠ WARNING

This safety alert indicates a potentially hazardous situation that, if not avoided, **could** result in **death or serious injury**.

⚠ CAUTION

This safety alert, with the personal injury hazard symbol, indicates a potentially hazardous situation that, if not avoided, **could** result in **minor or moderate injury**.

NOTICE

This alert indicates a situation that, if not avoided, **will** result in **damage to the equipment**.

IMPORTANT

This alert indicates a situation that, if not avoided, **may** result in **damage to the equipment**.

SAFETY LABELS

The safety tag illustrated in Figure 2-1 is attached to the pump when it is shipped from the factory. Read and understand the instructions listed on this tag before you remove it. We suggest you retain this tag and attach it to the tool when it is not in use.

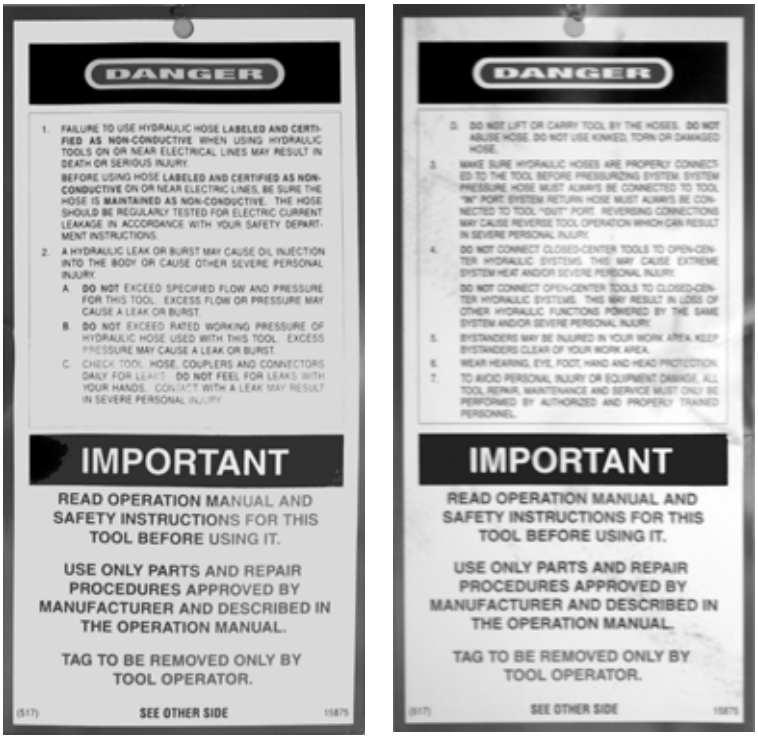


Figure 2-1. The front and back sides of the safety tag attached to the pump. (Tag is part no. STN-15875.)

SAFETY PRECAUTIONS

Tool operators and maintenance personnel must always comply with the safety precautions given in this manual and on the stickers and tags attached to the tool and hose.

These safety precautions are given for your safety. Review them carefully before operating the tool and before performing general maintenance or repairs.

WARNING
Failure to follow the instructions for safe operation could result in operator injury.

Supervising personnel should develop additional precautions relating to the specific work area and local safety regulations. If so, place the added precautions in the space provided in this manual.

The model WDP3500 Hydraulic Sump Pump will provide safe and dependable service if operated in accordance with the instructions given in this manual. Read and understand this manual and any stickers and tags attached to the pump and hoses before operation. Failure to do so could result in personal injury or equipment damage.

- Operator must start in a work area without bystanders. The operator must be familiar with all prohibited work areas such as excessive slopes and dangerous terrain conditions.
- Establish a training program for all operators to ensure safe operations.
- Do not operate the tool unless thoroughly trained or under the supervision of an instructor.
- Always wear safety equipment such as goggles, head protection, and safety shoes at all times when operating the tool.
- Do not inspect or clean the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.
- Do not operate this tool without first reading the Operating Instructions.
- Do not install or remove this tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.
- Never operate the tool near energized transmission lines. Know the location of buried or covered services before starting work.
- Do not wear loose fitting clothing when operating the tool. Loose fitting clothing can get entangled with the tool and cause serious injury.
- Supply hoses must have a minimum working pressure rating of 2500 psi/175 bar.
- Be sure all hose connections are tight.
- The hydraulic circuit control valve must be in the "OFF" position when coupling or uncoupling the tool. Wipe all couplers clean before connecting. Failure to do so may result in damage to the quick couplers and cause overheating. Use only lint-free cloths.

- Do not operate the tool at oil temperatures above 140° F/60° C. Operation at higher oil temperatures can cause operator discomfort and may cause damage to the tool.
- Do not operate a damaged, improperly adjusted, or incompletely assembled tool.
- To avoid personal injury or equipment damage, all tool repair, maintenance and service must only be performed by authorized and properly trained personnel.
- Do not exceed the rated limits of the tool or use the tool for applications beyond its design capacity.
- Always keep critical tool markings (such as labels and warning stickers) legible.
- Always replace parts with replacement parts recommended by the E.H. Wachs Company.
- Check fastener tightness often and before each use daily.

MACHINE SAFETY

Observe the following guidelines for reliable machine operation and care.

- Make sure all couplers are wiped clean before connection.
- The hydraulic circuit control valve must be in the "OFF" position when coupling or uncoupling hydraulic tools. Failure to do so may result in damage to the quick couples and cause overheating of the hydraulic system.
- Always store the tool in a clean dry space, safe from damage or pilferage.
- Make sure the circuit PRESSURE hose (with male quick disconnect) is connected to the "IN" port. The circuit RETURN hose (with female quick disconnect) is connected to the opposite port. Do not reverse circuit flow. This can cause damage to internal seals.
- Always replace hoses, couplings, and other parts with replacement parts recommended by the E.H. Wachs Company. Supply hoses must have a minimum working pressure rating of 2500 psi (172 bar).
- Do not exceed the rated flow (see Specifications in Chapter 3) for correct flow rate and model number. Rapid failure of the internal seals may result.
- Always keep critical tool markings, such as warning stickers and tags, legible.

NOTICE

Failure to follow the instructions for machine safety could result in damage to the equipment.

- Do not use the pump for applications for which it is not intended.
- Pump repair should be performed by experienced personnel only.
- Make certain that the recommended relief valves are installed in the pressure side of the system.

Chapter 3
Introduction to the WDP3500 Hydraulic Sump Pump

Read this chapter carefully to become familiar with the components and features of your WDP3500 hydraulic sump pump.

In This Chapter

USAGE AND APPLICATIONS

The WDP3500 is a high-power dewatering pump with a flow rate of up to 500 gallons per minute (1850 l/min). Its small size allows you to use it in a box as small as 10 inches square and 11 inches deep. The pump is submersible, with no priming required, and can run dry without damage.

Figure 3-1 illustrates the components of the WDP3500 hydraulic sump pump.

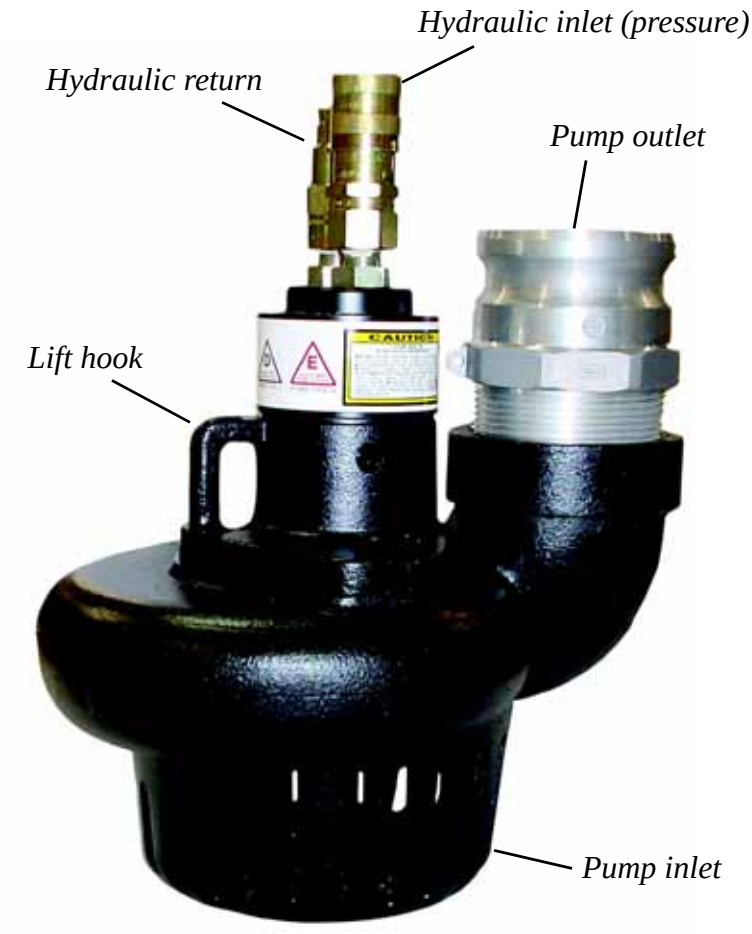


Figure 3-1. WDP3500 hydraulic sump pump components

Figure 3-2 illustrates the product decal fastened to the pump housing.

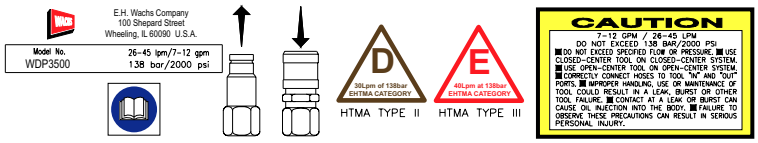


Figure 3-2. WDP3500 combined decal (part no. 08-003-00).

REQUIREMENTS

Hydraulic Hose Requirements

Hose Types

The following hose types are approved for use with the WDP3500:

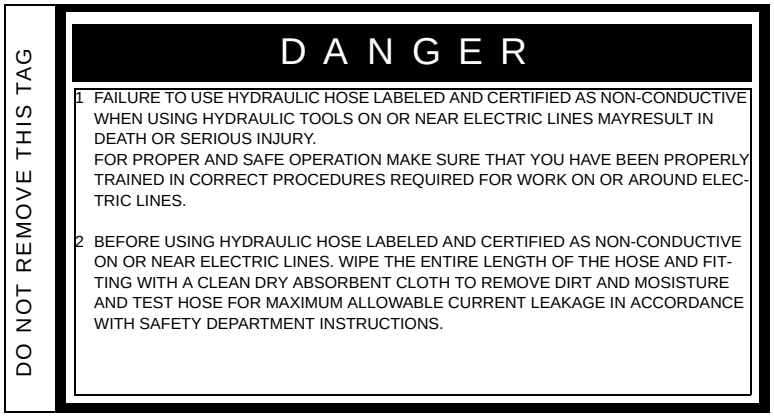
1. Certified non-conductive
2. Wire-braided (conductive)
3. Fabric-braided (not certified or labeled non-conductive).

Hose 1 listed above is the only hose authorized for use near electrical conductors.

Hoses 2 and 3 listed above are conductive and **must never** be used near electrical conductors.

Hose Safety Tags

The following DANGER tags are attached to all hoses supplied by the E.H. Wachs company for use with the WDP3500 pump. DO NOT REMOVE THESE TAGS.



CAUTION:

If the information on a tag is illegible because of wear or damage, replace the tag immediately. A new tag may be obtained from your the E.H. Wachs Company.

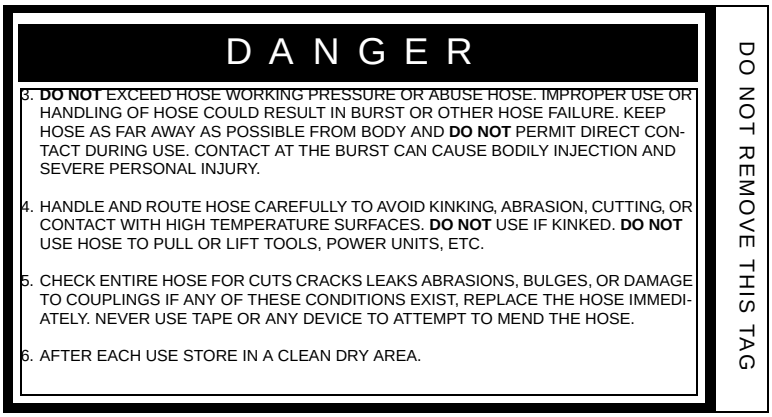


Figure 3-3. Tag attached to "Certified Non-Conductive" hose (front and back).

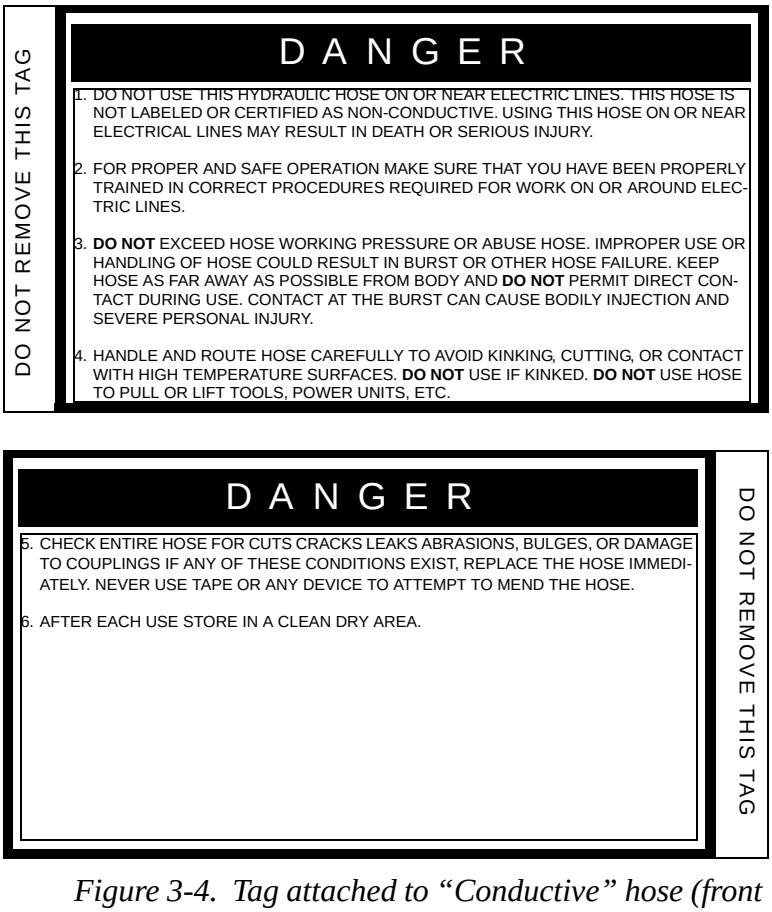


Figure 3-4. Tag attached to "Conductive" hose (front and back).

Hose Pressure Rating

The rated working pressure of the hydraulic hose must be equal to or higher than the relief valve setting on the hydraulic system.

HTMA Requirements

HYDRAULIC SYSTEM REQUIREMENTS	TOOL CATEGORY C TYPE 1	D TYPE II	TYPE III	TYPE RR
FLOW RATE	4-6 gpm (15-23 lpm)	7-9 gpm (26-34 lpm)	11-13 gpm (42-49 lpm)	9-10.5 gpm (34-40 lpm)
TOOL OPERATING PRESSURE (at the power supply outlet)	2000 psi (138 bar)	2000 psi (138 bar)	2000 psi (138 bar)	2000 psi (138 bar)
SYSTEM RELIEF VALVE SETTING (at the power supply outlet)	2100-2250 psi (145-155 bar)	2100-2250 psi (145-155 bar)	2100-2250 psi (145-155 bar)	2200-2300 psi (152-159 bar)
MAXIMUM BACK PRESSURE (at tool end of the return hose)	250 psi (17 bar)	250 psi (17 bar)	250 psi (17 bar)	250 psi (17 bar)
Measured at a max. fluid viscosity of: (at min. operating temperature)	400 ssu* (82 centistokes)	400 ssu* (82 centistokes)	400 ssu* (82 centistokes)	400 ssu* (82 centistokes)
TEMPERATURE Sufficient heat rejection capacity to limit max. fluid temperature to: (at max. expected ambient temperature)	140° F (60° C)	140° F (60° C)	140° F (60° C)	140° F (60° C)
Min. cooling capacity at a temperature difference of between ambient and fluid temps	3 hp (2.24 kW) 40° F (22° C)	5 hp (3.73 kW) 40° F (22° C)	7 hp (4.47 kW) 40° F (22° C)	6 hp (5.22 kW) 40° F (22° C)
NOTE: Do not operate the tool at oil temperatures above 140° F (60° C). Operation at higher temperatures can cause operator discomfort at the tool.				
FILTER Min. full-flow filtration Sized for flow of at least: (For cold temp. startup and max. dirt-holding capacity)	25 microns 30 gpm (114 lpm)	25 microns 30 gpm (114 lpm)	25 microns 30 gpm (114 lpm)	25 microns 30 gpm (114 lpm)
HYDRAULIC FLUID Petroleum based (premium grade, anti-wear, non-conductive) VISCOSITY (at min. and max. operating temps)	100-400 ssu*	100-400 ssu* (20-82 centistokes)	100-400 ssu*	100-400 ssu*
NOTE: When choosing hydraulic fluid, the expected oil temperature extremes that will be experienced in service determine the most suitable temperature viscosity characteristics. Hydraulic fluids with a viscosity index over 140 will meet the requirements over a wide range of operating temperatures.				

*SSU = Saybolt Seconds Universal

NOTE:

These are general hydraulic system requirements. See tool Specification page for tool specific requirements.

PUMP SPECIFICATIONS

Capacity	500 gpm/1890 lpm
Weight	21 lbs/9.5 kg
Length	10.5 in./26.7 cm
Width	10 in./25.4 cm
Pressure	1000-2000 psi/70-140 bar
Flow Range	7-12 gpm/26-45 lpm
Maximum Flow	12 gpm/45 lpm
Porting	-8 SAE O-Ring
Connect Size and Type	3/8 in. Flush Face Quick Disconnect Couplers
Discharge Diameter	3 in./7.6 cm
Sound Pressure	<85 dBA @ 1 m

ACCESSORIES

- Lay-flat discharge hose, 3 in. x 25 ft with camlock fittings (part no. 08-400-03).

Chapter 4
Assembly, Disassembly, and Storage

The WDP3500 hydraulic sump pump is shipped fully assembled from the factory. It is ready to operate as soon as you remove it from its shipping/storage case.

In This Chapter

CARE OF HYDRAULIC HOSES/CONNECTORS

Before storing the pump (either short-term or long-term), securely fasten protective caps over the hydraulic connectors on the pump. Also install caps on the hoses, or connect the male and female ends of the hose together to seal the connectors and keep dirt and contaminants out of the hoses.

ENVIRONMENTAL REQUIREMENTS

The pump should not be used to pump volatile liquids, or water containing volatiles.

If you use the pump in a corrosive environment, be sure to clean it thoroughly. If possible, pump clean water through to rinse the interior components, and spray the outside of the pump.

LONG-TERM STORAGE

Always store the pump in a clean, dry place safe from damage.

Chapter 5
Operating Instructions

In This Chapter

PRE-OPERATION PROCEDURES

Check Power Source

1. Using a calibrated flow meter and pressure gauge, make sure the hydraulic power source develops a flow of 7-12 gpm (26-45 lpm) at 1000-2000 psi (70-140 bar).
2. Make certain that the power source is equipped with a relief valve set to open at 2100 psi (145 bar) maximum.
3. Make certain that the power source return pressure does not exceed 250 psi (17 bar).
4. Make sure the pump inlet is clear of debris. Remove any obstruction before operating. Refer to the pump cleaning procedures in Chapter 6.

IMPORTANT
Improper pressure or relief on the power source could damage the pump.

Connect Hoses

1. Wipe all hose couplers with a clean lint free cloth before making connections.
2. Connect the hoses from the hydraulic power source to the couplers on the pump or hoses. It is a good practice to connect return hose first and disconnect it last to minimize or avoid trapped pressure within the pump motor.
3. Observe the arrow on the couplers to ensure that the flow is in the proper direction. The female coupler on

If uncoupled hoses are left in the sun, pressure increase inside the hoses might make them difficult to connect. Whenever possible, connect the free ends of the hoses together.

the pump is the inlet (pressure) coupler.

PUMP OPERATION

The WDP3500 is not designed for use with a suction pipe inlet. The diameter of the suction screen at the bottom of the pump provides maximum pump efficiency. Reducing the size of this inlet will greatly reduce pump performance.

1. Observe all safety precautions.
2. Connect a hose fitted with a 3 inch (76.2 mm) female camlock coupler to the pump outlet fitting. Make sure the fitting is securely tightened. For best performance, keep the hose as short as possible and lay it out to avoid sharp bends or kinks.
3. Lower the pump into the liquid to be pumped. Locate the outlet end of the discharge hose to disperse the liquid as required. Remove any kinks from the hose to assure maximum water flow.

WARNING:
Never point the hose at bystanders. Personal injury could result.

4. Turn on the hydraulic power source. Watch for solids in the liquid being pumped. If solids are excessive, the discharge flow might decrease. If this happens, stop the pump and check for the cause of the problem.

Under some conditions, the liquid being pumped might be slowed enough so It can no longer push particles in the liquid. If this happens, particles can accumulate in the hose and backup the pumping chamber, causing further restriction. The impeller then acts as a "grinding wheel" which causes accelerated pump wear. Reduced liquid flow can be caused by the following:

- The pump sinks into solids at the bottom of the hole.
- The end of the outlet hose is too high, causing an excessive lift height for the column of liquid being pushed by the pump. This slows the flow of liquid to a level where it can no longer carry solids out the end of the hose.
- The flow and pressure of hydraulic fluid to the pump is too low, which reduces impeller speed. A 20% decrease in hydraulic fluid flow can reduce pump performance by 50%. When operating at reduced hydraulic flow and pressure, the end of the outlet hose should not be more than 30 ft (9 m) above the liquid.

5. When pumping is complete, set the hydraulic control valve to the "OFF" position. Lift the pump from the work area.

COLD WEATHER OPERATION

If the pump is to be used during cold weather, preheat the hydraulic fluid at low power source speed. When using the normally recommended fluids, fluid should be at or above 50°F (10° C) (400 ssu/82 centistokes) before use. Damage to the hydraulic system or pump motor seals can result from use with fluid that is too viscous or thick.

Chapter 6
Routine Maintenance

The WDP3500 pump is reliable and requires little maintenance. Use the procedure in this chapter to clean the pump, and refer to Chapter 7 for any required repair procedures.

In This Chapter

PUMP CLEANING PROCEDURE

Debris such as weeds, sand and other solids may become trapped in the water hose and pumping chamber. This can reduce pump performance. It is important that the pumping chamber be kept clean at all times. The chamber can be cleaned using the following procedure.

1. Remove motor and impeller by removing the two M12 x 1.75 Hex Head capscrews.
2. Remove all debris from the pump screen.
3. Thoroughly clean the volute and impeller. Do not remove the impeller unless necessary for repair or replacement or to remove trapped debris.
4. Assemble the motor and impeller to the volute. Clean the capscrews and lubricate the threads with underwater grease before installation.
5. Remove all debris from the hose. Otherwise, solids will backfill the pump.

Chapter 7
Service and Repair

For the procedures in this chapter, refer to the parts drawing on the next page. The reference numbers in the procedures refer to the drawing.

In This Chapter

PUMP DISASSEMBLY

Clean the exterior of the pump and put it on a clean work surface.

Remove Volute

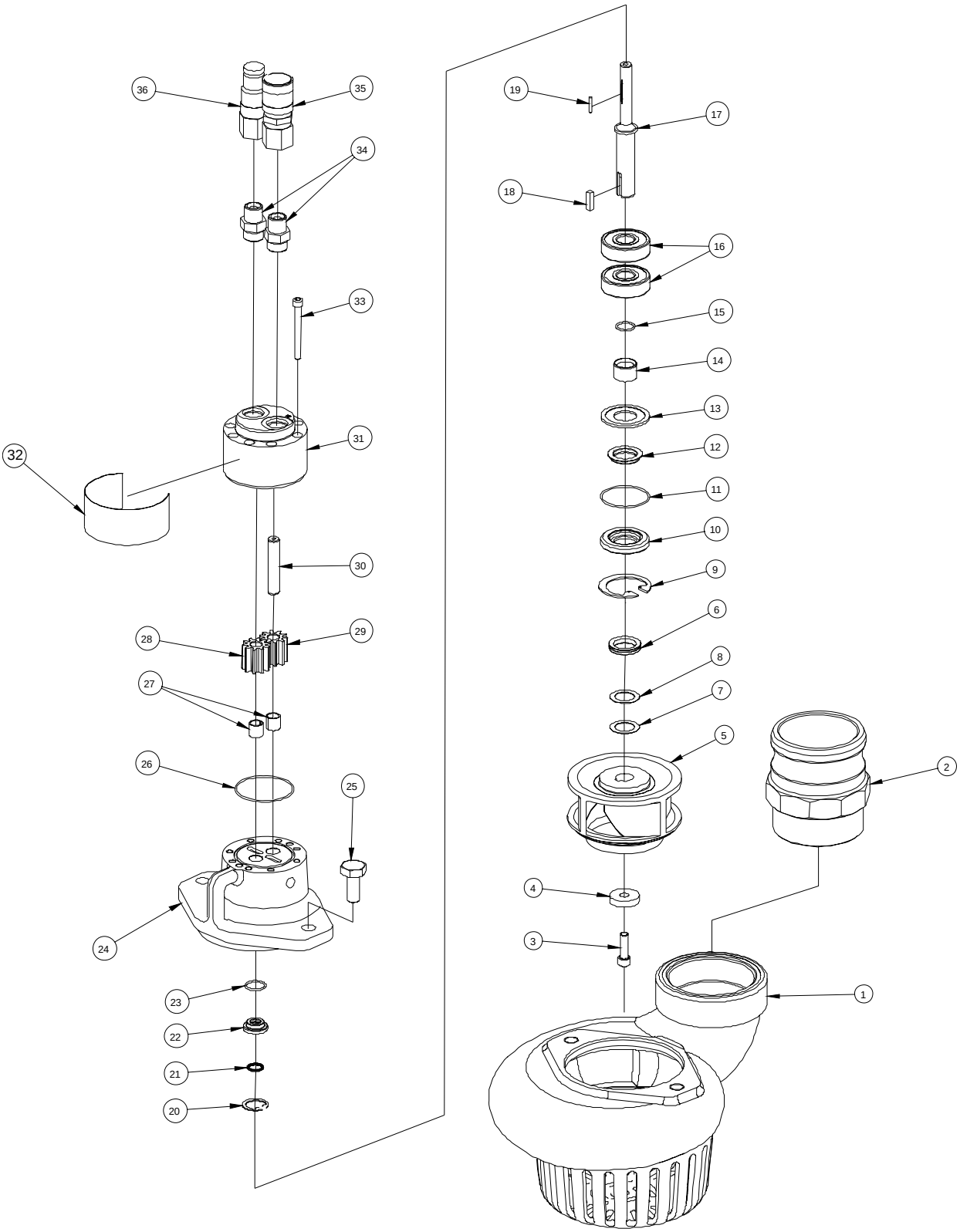
1. Remove the volute (1) by first removing the hex head cap screws (25) and pulling the motor and impeller off the volute.

Remove Impeller

1. Remove hex socket head capscrew (3) and washer (4) before lifting impeller (5) off motor assembly.
2. Remove key (18) and shim stack (7 & 8) from impeller.

Remove Motor Cap

1. Remove the hex socket head cap screws (33) that secure the motor cap (31) to the front bearing housing (24) and remove the motor cap. Do not in any way excessively force the motor cap off the front bearing housing.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2. Remove the o-ring (26) from the motor cap.

Remove Drive Shaft

1. Remove idler gear (29), idler shaft (30), drive gear (28), and needle roller (19) from front bearing housing.
2. Remove the v-ring (6) from the seal race (14) before pulling the seal race off the drive shaft.
3. Remove retaining ring (9).
4. Using a pick, remove the seal carrier (10), cup seal (12), o-ring (11), seal retainer (13), and o-ring (15) from the bearing cavity.
5. Press the drive shaft (17) and bearings (16) from the front bearing housing.
6. Spin the ball bearings on the drive shaft. The bearing should turn smoothly. To replace the bearing, support the outer race and press down on the drive shaft from the threaded end. Do not reuse the ball bearing once it has been removed from the drive shaft.

Remove Drive Shaft Seal

1. Remove the retaining ring (20), quad ring (21), seal gland (22), and o-ring (23) from the drive shaft bore using a pick.

STN-65132 Motor assembly used on sump pumps with serial numbers 600 and above. This motor can only be purchased as an assembly; individual parts are not available.

CLEANING AND INSPECTION

Cleaning

Clean all parts with a degreasing solution. Blow dry with compressed air or use lint-free cloths.

Gear Chamber (Motor Cap)

The chamber bores and bottoms around the shaft bushings should be polished and not rough or grooved. If the bushing bores are yellow-bronze, replace them and investigate the cause of wear.

The flat surfaces around the chamber and bolt holes should be flat and free of nicks or burrs that could cause misalignment or leaks.

Bushings

The inside of the bushings should be gray with some bronze showing through. If significant yellow-bronze shows, replace the bushings. Inspect the motor shaft and idler shaft for corresponding wear and replace as required.

Gears

The drive and idler gears should have straight tips without nicks, square tooth ends, and a smooth even polish on the teeth and end faces. Replace the gear if cracks are present.

Front Bearing Housing

The surface near the gears should show two interconnecting polished circles without a step.

Shafts

The shaft diameter at the bearing and seal locations must be smooth. Grooves, roughness or a reduced diameter indicate fluid contamination or damaged bushings. Grit particles may have been imbedded in the bushings, grinding into the hardened shaft. If abnormal shaft wear as noted above occurs (more than normal polishing), replace both the shaft and associated bushings.

Also check the hydraulic system for excess contamination in the fluid and for filter condition. Operating conditions may require changing from a 25-micron filter to an oversized 10-micron filter.

PUMP REASSEMBLY

Drive Shaft Seal

1. Heavily lubricate and install a new o-ring (23) and quad ring (21) into seal gland (22). Ensure the quad ring is not twisted during assembly.

2. Install seal gland and attached parts into front bearing housing and secure with retaining ring (20).

Drive Shaft

1. Install bearings (16) onto lubricated drive shaft (17) by supporting the inner races of the bearings and pressing drive shaft through bearings until the bearings rest against the shoulder. Installation by the outer race will cause bearing damage.
2. Pack grease into needle roller groove on drive shaft and insert drive shaft into the seal gland. Using a bearing pusher or a sleeve / socket with a diameter slightly smaller than the bearing bore, press the bearing assembly into place using the outer race. Installation by the inner race will result in bearing damage.
3. Lubricate and install o-ring (15) and seal race (14) onto drive shaft.
4. Lubricate and install seal retainer (13) and o-ring (11) into bearing bore.
5. Heavily lubricate with underwater grease and install cup seal (12) and seal carrier (10) into bearing bore and secure with retaining ring (9). Installation of seal carrier and cup seal before seal race has been installed will result in damage to cup seal.
6. Lubricate with underwater grease and install v-ring (6) onto seal race.
7. Install idler shaft (30) and idler gear (29).
8. Use grease to hold needle roller (19) in place before installing drive gear (28).

Motor Cap

1. Lubricate and install o-ring (26) into motor cap (31).
2. Lubricate hex socket head capscrews (33) with an antiseize compound and install motor cap to front bearing housing. Tighten capscrews to 8-10 lb ft. Note the orientation of the motor cap as the bolt holes will only line up one way.

IMPORTANT
Do not force parts together. You could damage the pump's components.

Impeller

1. Install shim stack (7&8) onto drive shaft.
2. Install key (18) and impeller (5) to drive shaft and, using loctite, secure with washer (4) and hex socket head capscrew (3). Tighten capscrew to 15 lb ft.
3. Using a depth mic, measure the distance from the bottom of the motor flange to the bottom of the stepped diameter as shown below. Adjust shim stack accordingly to achieve a 2.285 / 2.270 offset.

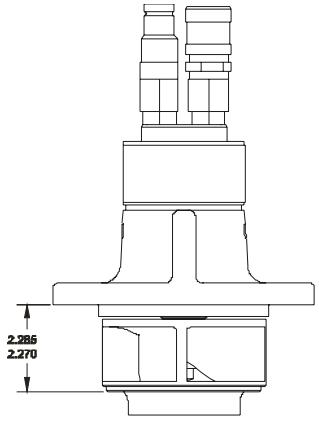

Figure 7-1. There should be an offset of between 2.270 and 2.285 inch from the bottom of the motor flange to the bottom of the stepped diameter.

Volute

1. Assemble motor and impeller to volute (1) and secure with hex head cap screws (25).
2. Use an allen wrench to ensure that the impeller with freewheel after assembly.

TROUBLESHOOTING

Refer to the troubleshooting chart on the following page.

If symptoms of poor performance develop, the following chart can be used as a guide to correct the problem.

When diagnosing faults in operation, always make sure the hydraulic power source is supplying the correct hydraulic flow and pressure as listed in the table. Use a flowmeter know to be accurate. Check the flow with the hydraulic fluid temperature at least 80° F/27° C.

PROBLEM	CAUSE	SOLUTION
Pump will not start.	No hydraulic fluid flow or pressure.	Turn on power unit and check that 7-12 gpm/26-45 lpm at 1000-2000 psi/70-140 bar is available at the pump.
	Defective couplers.	Check the couplers. Replace if necessary.
	Impeller jammed with debris.	Clean the pumping chamber as described in the Maintenance section in this manual.
	Impeller rubbing against wear plates.	Check and adjust the impeller clearance as described in the Service Instructions section in this manual.
	Defective hydraulic motor.	Repair or replace motor.
Poor pump performance.	Hydraulic flow reversed.	Check that the hoses are correctly connected to the pump motor ports. The female coupler should be connected to the "IN" port. The return fluid must never flow through a reversing valve.
	Improper hydraulic fluid flow.	Check that 7-12 gpm/26-45 lpm at 1000-2000 psi/70-140 bar is available at the trash pump. A 20% decrease in flow can result in a 50% decrease in pump performance.
	Pump submersed in sediment.	Lift the pump from the bottom of the hole or chamber. Use a flat support under the pump if necessary.
	Trash pump inlet restricted.	Remove suction screen and thoroughly clean. Reassemble.
	Discharge hose kinked or restricted.	Straighten the hose. If the hose must bend at the top of the hole, use a piece of split rigid conduit with large diameter of the expanded hose. This keeps the hose from kinking.
	Discharge hose too small.	Use a 3-inch diameter fire hose.
	Water lift too high.	Lower the outlet end of the discharge hose. Increase hydraulic flow (12 gpm/45 lpm max).
	Impeller worn or damaged.	Check impeller for damage and excessive wear. Replace if necessary.
	Pump not matched to application	Obtain higher capacity pump.
	Hose used on suction side of pump.	Remove. Use no plumbing on suction side of pump.
Poor pump performance with excessive wear.	Too many solids in the water. Water speed out of the hose may be too slow, thereofre hose and pump load up with solids.	Reduce solids content. Increase pump speed.

Chapter 8
Parts Lists and Drawings

Refer to the drawing and the parts list on the following pages for ordering spare and replacement parts.

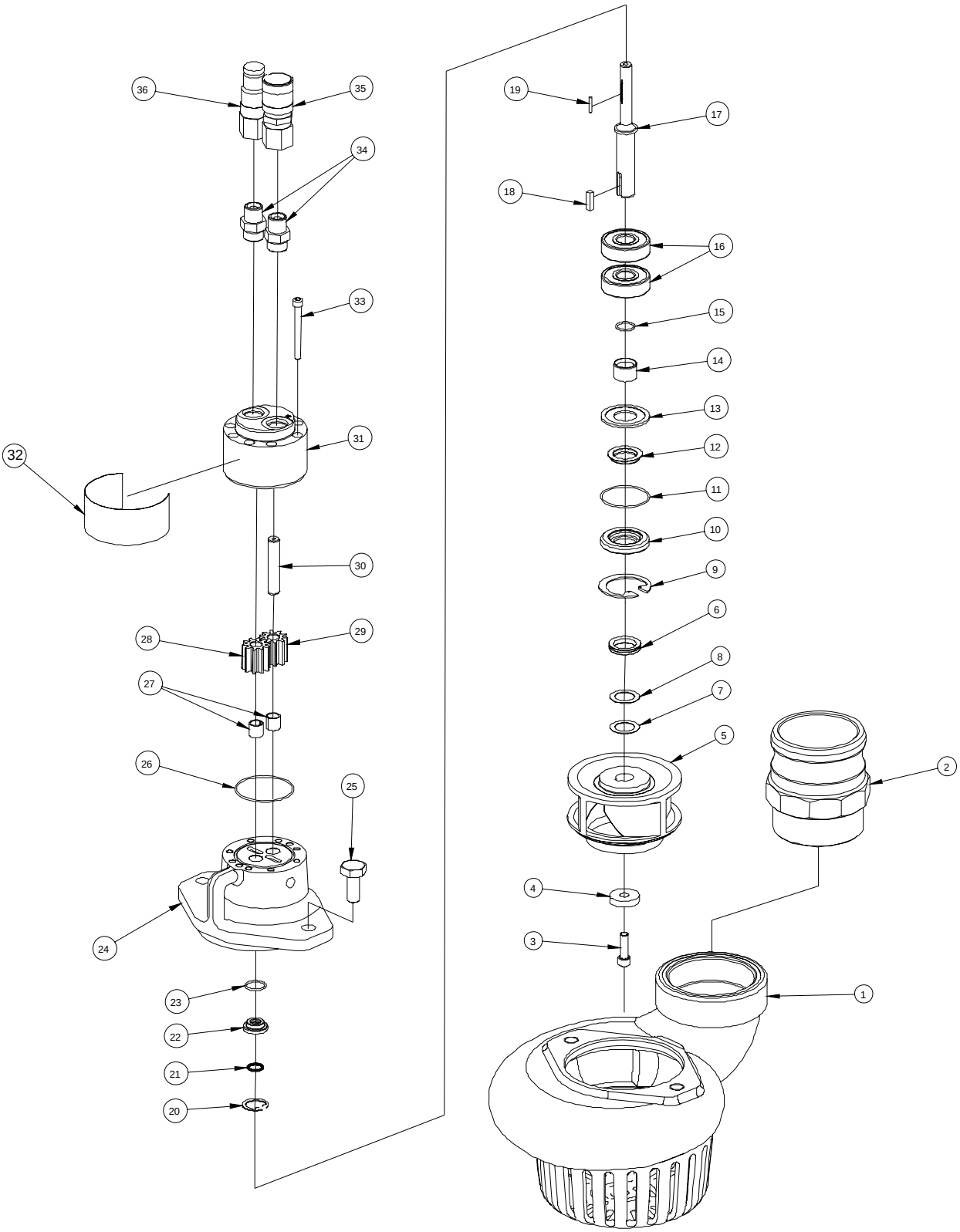
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Table 1: WDP3500 Parts List

Item No.	Part No.	Qty	Description
1	STN-52669	1	Volute
2	STN-52720	1	Camlock Coupling 3 in.
3	STN-13815	1	HSHCS 5/16-18 x 3/4
4	STN-56763	1	Washer
5	STN-52671	1	Impeller
6	STN-52716	1	V-Ring
7	STN-31032	*	Shim .020
8	STN-31033	*	Shim .010
9	STN-00166	1	Retainer Ring
10	STN-52719	1	Seal Carrier
11	STN-01262	1	O-ring 1-3/4 x 1-7/8 x 1/16-031
12	STN-58651	1	Cup Seal
13	STN-56658	1	Seal Retainer
14	STN-56697	1	Seal Race
15	STN-01211	1	O-ring 5/8 x 3/4 x 1/16-016
16	STN-00148	2	Bearing
17	STN-52696	1	Drive Shaft
18	STN-00635	1	Key
19	STN-06881	1	Needle Roller
20	STN-00170	1	Retainer Ring
21	STN-00669	1	Quad Ring 1/2 x 5/8 x 1/16-014
22	STN-19884	1	Seal Gland
23	STN-00171	1	O-Ring 11/16 x 13/16 x 1/16-017
24	STN-52693	1	Front Bearing Housing
25	STN-52718	2	HHCS M12-1.75 x 30 mm
26	STN-00178	1	O-ring 2-1/8 x 2-1/4 x 1/16-034
27	STN-06316	2	Bushing
28	STN-06853	1	Drive Gear
29	STN-06855	1	Idler Gear
30	STN-06854	1	Idler Shaft
31	STN-06857	1	Gear Housing
32	08-003-00	1	Name Tags and Safety Sticker
33	STN-00612	8	HSHCS 1/4-20 x 2-1/4
34	STN-00936	2	Adapter
35	09-025-00	1	Female Flush Face Coupler Body 3/8 NPT
36	09-026-00	1	Male Flush Face Coupler Nose 3/8 NPT
	14-401-00	1	Coupler Set

Notes: A. Items 9-24, 26-31, and 33 are used on pumps with serial numbers 599 and below.
B. All pumps with a serial number 600 and above are shipped with motor assembly STN-65132 installed. A separate seal kit (STN-65133) is available for this motor.
C. For pumps with serial numbers 599 and below, you may purchase individual parts in the table or purchase a complete STN-65132 motor assembly.

Chapter 9
Accessories

Table 1 lists accessories available for the WDP3500 hydraulic sump pump.

Part No.	Description	
08-400-03	Lay-flat discharge hose, 3 in. x 25 ft. with cam-lock fittings	*(no photo available)*

Table 1: Accessories for WDP3500 Hydraulic Sump Pump

Chapter 10
Ordering Information

To place an order, request service, or get more detailed information on any E.H. Wachs Company products, call us at one of the following numbers:

U.S.	800-323-8185
International:	847-537-8800

Ordering Replacement Parts

When ordering parts, refer to the parts lists in Chapter 8. Please provide the part description and part number for all parts you are ordering.

Repair Information

Please call us for an authorization number before returning any equipment for repair or factory service. We will advise you of shipping and handling. When you send the equipment, please include the following information:

- Your name/company name
- Your address
- Your phone number
- A brief description of the problem or the work to be done.

Before we perform any repair, we will estimate the work and inform you of the cost and the time required to complete it.

In This Chapter

WARRANTY INFORMATION

Enclosed with the manual is a warranty card. Please fill out the registration card and return to E.H. Wachs Company. Retain the owner's registration record and warranty card for your information.

RETURN GOODS ADDRESS

Return equipment for repair to the following address.

E.H. Wachs Company
100 Shepard Street
Wheeling, Illinois 60090 USA