

**CHEMTUBE® PPS
S SERIES**

BOOK NO. WT.490.200.001.UA.IM.1107

EQUIPMENT SERIAL NO. _____

DATE OF START-UP _____

START-UP BY _____

Prompt service available from nationwide authorized service contractors.

ORDERING INFORMATION

In order for us to fill your order immediately and correctly, please order material by description and part number, as shown in this book. Also, please specify the serial number of the equipment on which the parts will be installed.

WARRANTY

Seller warrants for a period of one year after shipment that the equipment or material of its manufacture is free from defects in workmanship and materials. Corrosion or other decomposition by chemical action is specifically excluded as a defect covered hereunder, except this exclusion shall not apply to chlorination equipment. Seller does not warrant (a) damage caused by use of the items for purposes other than those for which they were designed, (b) damage caused by unauthorized attachments or modifications, (c) products subject to any abuse, misuse, negligence or accident, (d) products where parts not made, supplied, or approved by Seller are used and in the sole judgement of the Seller such use affects the products' performance, stability or reliability, and (e) products that have been altered or repaired in a manner in which, in the sole judgement of Seller, affects the products' performance, stability or reliability. **SELLER MAKES NO OTHER WARRANTY OF ANY KIND, AND THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR OF FITNESS OF THE MATERIAL OR EQUIPMENT FOR ANY PARTICULAR PURPOSE EVEN IF THAT PURPOSE IS KNOWN TO SELLER.** If Buyer discovers a defect in material or workmanship, it must promptly notify Seller in writing; Seller reserves the right to require the return of such defective parts to Seller, transportation charges prepaid, to verify such defect before this warranty is applicable. In no event shall such notification be received by Seller later than 13 months after the date of shipment. No action for breach of warranty shall be brought more than 15 months after the date of shipment of the equipment or material.

LIMITATION OF BUYER'S REMEDIES. The **EXCLUSIVE REMEDY** for any breach of warranty is the replacement f.o.b. shipping point of the defective part or parts of the material or equipment. Any equipment or material repaired or replaced under warranty shall carry the balance of the original warranty period, or a minimum of three months. Seller shall not be liable for any liquidated, special, incidental or consequential damages, including without limitation, loss of profits, loss of savings or revenue, loss of use of the material or equipment or any associated material or equipment, the cost of substitute material or equipment, claims of third parties, damage to property, or goodwill, whether based upon breach of warranty, breach of contract, negligence, strict tort, or any other legal theory; provided, however, that such limitation shall not apply to claims for personal injury.

Statements and instructions set forth herein are based upon the best information and practices known to Siemens Water Technologies Corp., but it should not be assumed that every acceptable safety procedure is contained herein. Of necessity this company cannot guarantee that actions in accordance with such statements and instructions will result in the complete elimination of hazards and it assumes no liability for accidents that may occur.

SIEMENS

Water Technologies
1901 West Garden Road, Vineland, NJ 08360

INTRODUCTION

This instruction book consists of Technical Data, Installation, Operation, and Maintenance information for the Wallace & Tiernan Chemtube® PPS S Series Pumps.

The Chemtube® PPS S Series pump is a positive displacement peristaltic pump system designed to handle a wide variety of chemicals and liquids. Simple operation consists of two rotating rollers that gradually compress an elastomeric hose, forcing liquid just ahead of each roller. The hose snaps back to its original shape after the rollers pass, refilling with liquid for the next discharge revolution. The pump liquid only comes in contact with the hose interior and the end fittings.



WARNING: TO AVOID POSSIBLE SEVERE PERSONAL INJURY OR DAMAGE TO THE EQUIPMENT, THIS EQUIPMENT SHOULD BE INSTALLED, OPERATED, AND SERVICED ONLY BY TRAINED, QUALIFIED PERSONNEL WHO ARE THOROUGHLY FAMILIAR WITH THE ENTIRE CONTENTS OF THIS INSTRUCTION BOOK.

NOTE: When ordering material, always specify model and serial number of apparatus.

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VERY IMPORTANT SAFETY PRECAUTIONS

This page provides very important safety information related to safety in installation, operation, and maintenance of this equipment.

WARNING

TO AVOID POSSIBLE SEVERE PERSONAL INJURY OR EQUIPMENT DAMAGE, OBSERVE THE FOLLOWING:

THIS EQUIPMENT HANDLES HAZARDOUS MATERIALS WHICH CAN CAUSE SEVERE PERSONAL INJURY. THIS EQUIPMENT SHOULD BE INSTALLED, OPERATED, AND SERVICED ONLY BY TRAINED, QUALIFIED PERSONNEL WHO ARE THOROUGHLY FAMILIAR WITH THE ENTIRE CONTENTS OF THIS INSTRUCTION BOOK. TURN OFF AND LOCK OUT POWER BEFORE SERVICING TO AVOID SHOCK HAZARD AND/OR PERSONAL INJURY. USE RIGID PIPE WHEN PUMPING HAZARDOUS MATERIALS OR AT HIGH FLUID TEMPERATURES OR AT HIGH DISCHARGE PRESSURES.

OBTAIN SAFETY INFORMATION FROM THE CHEMICAL SUPPLIER AND REFER TO THE INSTRUCTION BOOK FOR FURTHER DETAILS. USE PERSONAL PROTECTIVE EQUIPMENT RECOMMENDED BY THE CHEMICAL SUPPLIER.

PINCH HAZARD. DO NOT REMOVE FRONT COVER.

USE ONLY SIEMENS WATER TECHNOLOGIES LISTED PARTS EXCEPT FOR COMMERCIALLY AVAILABLE PARTS WHICH ARE IDENTIFIED BY COMPLETE DESCRIPTION ON PARTS LIST. THE USE OF UNLISTED PARTS CAN RESULT IN EQUIPMENT MALFUNCTIONS HAVING HAZARDOUS CONSEQUENCES.

DO NOT DISCARD THIS INSTRUCTION BOOK UPON COMPLETION OF INSTALLATION. INFORMATION PROVIDED IS ESSENTIAL FOR PROPER & SAFE OPERATION AND MAINTENANCE.

ADDITIONAL OR REPLACEMENT COPIES OF THIS INSTRUCTION BOOK ARE AVAILABLE FROM:

Siemens Water Technologies Corp.
1901 West Garden Road
Vineland, New Jersey 08360
Phone: (856) 507-9000
Fax: (856) 507-4125

VERY IMPORTANT SAFETY PRECAUTIONS (CONT'D)**NOTE**

Minor part number changes may be incorporated into Wallace & Tiernan® products from time to time that are not immediately reflected in the instruction book. If such a change apparently has been made in your equipment and does not appear to be reflected in your instruction book, contact your local Siemens Water Technologies sales office for information.

Please include the equipment serial number in all correspondence. It is essential for effective communication and proper equipment identification.

CHEMTUBE® PPS - S SERIES

PREVENTIVE MAINTENANCE SCHEDULE AND RECORD OF PERFORMANCE

This equipment should receive preventive maintenance on a one (1) year cycle.* It is recommended that the following table be used to plan, schedule, and record this important work.

Date of Installation	
----------------------	--

Serial No.	Pin No.

Preventive Maintenance Log	
Schedule Date	Date Performed

***NOTE:** This is the recommended cycle. Your local operating conditions may call for more frequent preventive maintenance.



PROTECT YOUR EQUIPMENT INVESTMENT

MINIMIZE DOWNTIME

**ORDER A PREVENTIVE MAINTENANCE KIT NOW ...
KEEP ONE ON HAND**





NOTES ON PROTECTIVE EQUIPMENT AND CLOTHING

The following Warning appears in several locations in this book. It is general in nature due to the variety of hazardous liquids this equipment is capable of handling.

WARNING: WHEN DEALING WITH HAZARDOUS MATERIAL, IT IS THE RESPONSIBILITY OF THE OPERATOR TO OBTAIN AND FOLLOW ALL SAFETY PRECAUTIONS RECOMMENDED BY THE MATERIAL MANUFACTURER/SUPPLIER.

It is good general practice to make use of protective equipment when handling any hazardous material.

IT IS RECOMMENDED THAT SUCH PROTECTIVE EQUIPMENT BE USED BY ALL PERSONS SERVICING THIS PUMP, ASSOCIATED PIPING, TUBING, VALVES, AND ACCESSORIES, WHEN THE EQUIPMENT IS HANDLING ANY HAZARDOUS MATERIAL.

1. Goggles, flexible fitting, hooded ventilation (per ANSI Z87.1)	
2. Face Shield (per ANSI Z87.1)	
3. Chemical Apron	
4. Chemical Gloves	

NOTE: (1) ANSI Z87.1 "practice for occupational.....eye and face protection" recommends goggles (#1 above) as the "preferred protection" when handling chemicals that present a hazard from splash, acid burns or fumes; for severe exposure, a face shield (#2 above) over the goggles is recommended.

(2) An eye flushing fountain and a deluge-type shower may be recommended or required by insurance carriers or governmental safety agencies, which should be consulted for specific requirements.

REGIONAL OFFICES**INSTALLATION, OPERATION, MAINTENANCE, AND SERVICE INFORMATION**

Direct any questions concerning this equipment that are not answered in the instruction book to the Reseller from whom the equipment was purchased. If the equipment was purchased directly from Siemens Water Technologies Corp., Vineland, NJ, contact the office indicated below.

UNITED STATES

1901 West Garden Road
Vineland, NJ 08360
TEL: (856) 507-9000
FAX: (856) 507-4125

CANADA

If the equipment was purchased directly from Siemens Water Technologies Canada, Inc., contact the nearest office indicated below.

ONTARIO

250 Royal Crest Court
Markham, Ontario
L3R3S1
(905) 944-2800

QUEBEC

243 Blvd. Brien
Bureau 210
Repentigny, Quebec
(450) 582-4266

SECTION 1 - TECHNICAL DATA

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Model S26 Capacity Chart	490.200.190.030A&B

1.1 Technical Data

Type	Peristaltic hose pump
Models	S5A, S5B, S10A, S10B, S16A, S16B, S26A, S26B
Service	Metering or transfer of most liquids, including corrosive fluids, polyelectrolytes, and slurries.
Capacity range	Refer to Dwgs. 490.200.190.010, 490.200.190.020, and 490.200.190.030.
Maximum liquid temp.	167° F - Buna N tubular 185° F - Natural Isoprene tubular 200° F - EPDM tubular 185° F - Hypalon
Maximum back pressure	30 PSI: S26A 50 PSI: S10A, S16A 60 PSI: S5A 120 PSI: S5B, S10B, S16B, S26B
Suction lift	28 feet of water
Tubular material	Natural Isoprene (Natural rubber) Ethylene propylene (EPDM) *Nitrile Butadene (Buna N) Hypalon
Compatibility	Refer to Compatibility Guide (WT.490.200.000.IE.CG)
Drive unit	Right-angle worm gear reducer
Variable speed	Inverter motor with VFD: 10:1 turn-down ratio
Connection sizes	S5 & S10: ½" NPT S16: ¾" NPT S26: 1¼" NPT
Connection material	PVC for pressure up to 90 PSI 316SS for pressure up to 120 PSI Titanium for pressure up to 120 PSI
Leak detector (standard)	Dry contact rating 100VA max., 250 VAC max.

* Not available on S5.

1.2 Operating Principle

The tubular element is progressively compressed by the rollers. The alternating compression and relaxation of the tubular element generates continuous fluid suction and delivery. Dry operation, i.e., the pump is empty, does not cause any damage.

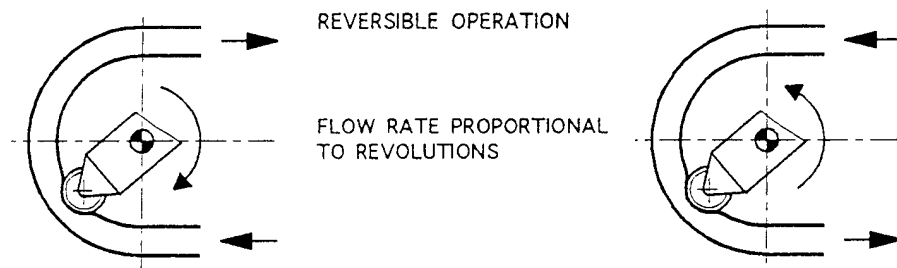


Figure 1.1 - Flow Diagram

The moving mechanical parts are protected by guards that can be removed only by mechanical disassembly. During use, all parts of the pump must be correctly fitted.

Movement of the rollers is protected by the transparent cover (26) as shown in Figure 1.2.

Collapse of the tubular element (44) due to fatigue may cause leakage of the pumped liquid. Adopt the precautions given in paragraph 2.3, Pipe Installation - Flooded Suction.

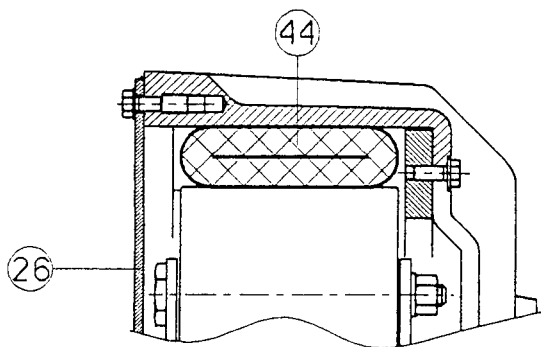


Figure 1.2 - Mechanical Parts

CAUTION: The pump is a positive displacement-type: valves closed in the discharge line will cause overpressure. (Refer to paragraph 2.3, Pipe Installation - Pressure Relief Valve, for more information.)

WARNING: ALL OPERATIONS REQUIRING OPENING OF THE ELECTRICAL CONTROL PANEL AND/OR OPENING OF THE MOTOR TERMINAL BOARD BOX (ELECTRICAL PARTS), MUST BE CARRIED OUT BY TRAINED PERSONNEL.

1.3 Optional Components

- Pulsation dampener
- In-line pressure relief valve
- Calibration column

NOTE: Refer to Section 6 - Spare Parts List at the end of this manual for optional components part numbers and specifications.

1.4 Tubular Element

The tubular element determines the use and limits of the peristaltic pump.

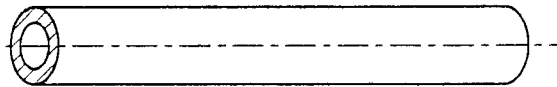


Figure 1.3 - Tubular Element

Optimum choice depends on many factors:

- Chemical compatibility
- Operating pressure
- Operating temperature
- Pump revolutions
- Suction capacity
- Duty cycle
- Durability expected
- Compatibility with food products

The factory must be informed of the application when the order is placed. For non-scheduled fluids or conditions, consult the factory.

CAUTION: Dispose of the used tubular elements properly. They can be considered solid urban refuse and classified as special refuse if they contain toxic-harmful pollution due to the pumped fluid.

1.5 Model S Gear Reducers

1.5.1 Right-Angle Fixed Speed Gearbox

Only the right-angle gearbox is offered on S Series models (see Figure 1.4). The input and output shaft are at 90° angles with each other. Speed ratio is made possible by different worm shaft and worm gear combinations. They come filled with synthetic oil and do not require any oil changes, therefore there is no oil fill plug or oil drain plug. A flange is provided for mounting the gearbox. The pump rotor shaft engages the hollow worm through a key to the drive.

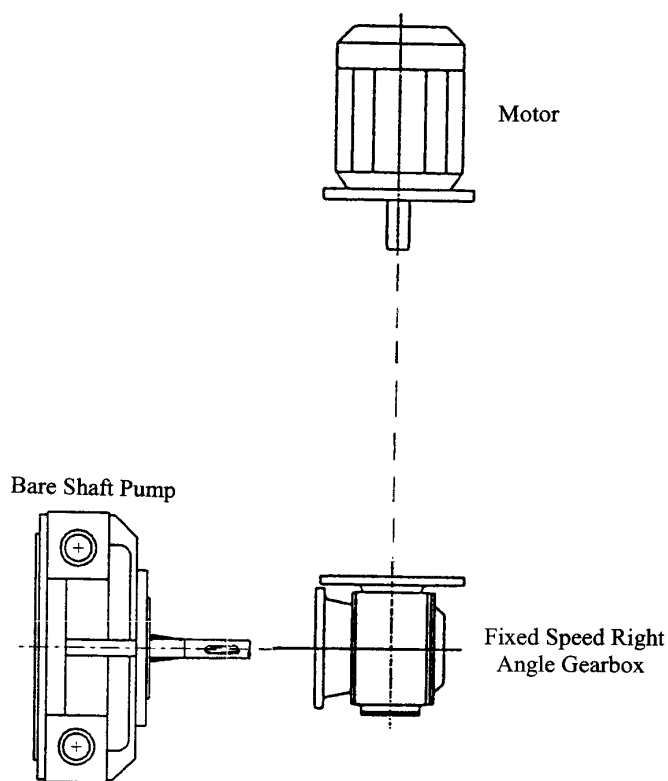


Figure 1.4 - Fixed Speed Gearbox and Variable Speed Gearbox

CHEMTUBE® PPS - S SERIES

S5 & S10 Fixed Speed Capacity Chart

RPM	30 PSI		60 PSI		120 PSI		HP Ind (Inv/SCR)	Duty cycle
	S5 GPH (LPH)	S10 GPH (LPH)	S5 GPH (LPH)	S10 GPH (LPH)	S5 GPH (LPH)	S10 GPH (LPH)		
17.5	1.8 (6.8)	6.5 (24.6)	1.7 (6.4)	5.5 (21)	1.5 (6)	4.5 (17)	1/4 (1/2)	Continuous
25	2.6 (9.8)	9.5 (35.9)	2.5 (9.5)	8.5 (32.2)	2.2 (8.3)	7 (26.5)	1/4 (1/2)	
29	2.84 (10.8)	11 (41)	2.8 (10.8)	9 (34)	2.5 (9.5)	8.5 (32.2)	1/4 (1/2)	
38	3.9 (14.6)	14 (53)	3.8 (14.3)	13 (49)	3.4 (12.8)	11 (43)	1/2 (1/2)	Intermittent*
50	5.1 (19.3)	18.8 (71)	5 (19)	17 (64)	4.4 (16.6)	15.5 (58.7)	1/2 (1/2)	
62.5	6.4 (24.2)	23.5 (88.9)	6.3 (23)	22 (83)	5.6 (21)	19.5 (73)	1/2 (1/2)	
87.5	8.9 (33.7)	32.8 (124)	8.7 (33)	31 (117.3)	7.8 (29.5)	28 (105)	1/2 (1/2)	
125	–	47 (174)	–	44 (165)	–	40 (150)	1/2 (1/2)	

S10 Mechanical Variable Speed Capacity Chart

RPM	30 PSI		60 PSI		120 PSI		HP Ind (Inverter)	Duty Cycle
	GPH	LPH	GPH	LPH	GPH	LPH		
6-36	2.4-13	8.9-48.8	2.2-12	8.2-45	1.9-10.5	7.2-39.4	1/4 (1/2)	Continuous
8-45	3-16.5	11.2-62	2.7-15.5	10.5-58.1	2.4-13.5	9.2-50.6	1/4 (1/2)	
11-63	4.4-24	16.4-90	4-22	15-82.5	3.6-20	13.6-75	1/4 (1/2)	Intermittent*
23-125	8.5-46.5	32-174.4	8-44	30-165	7.3-40	27.3-150	1/4 (1/2)	

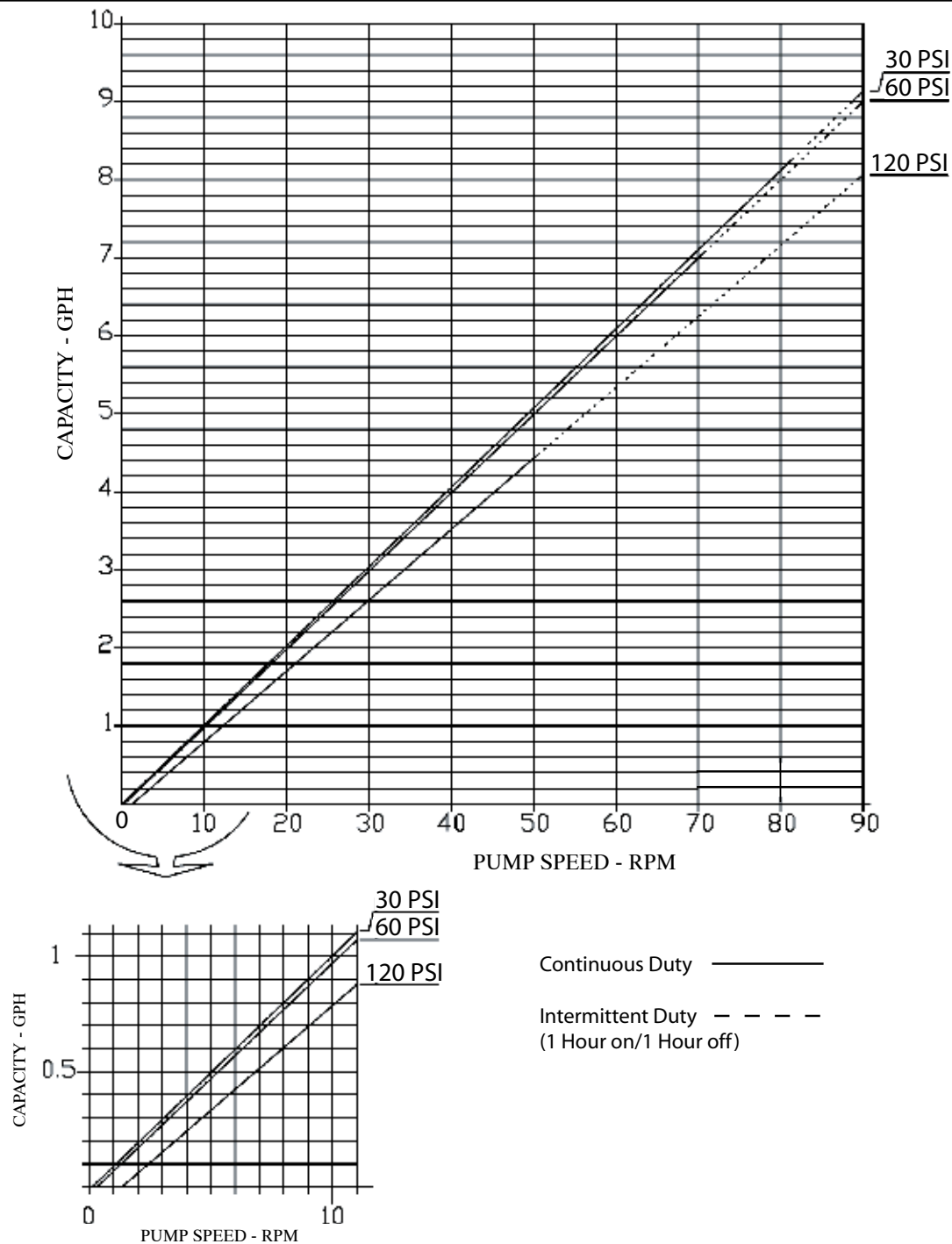
* Intermittent Duty: Max. 1 hour running; Min. 1 hour off

CHEMTUBE® PPS - MODELS S5 & S10 - CAPACITY CHART

490.200.190.010A

ISSUE 1 3-05

CHEMTUBE® PPS - S SERIES



NOTE: SELECT MAXIMUM CAPACITY DESIRED. FOLLOW HORIZONTAL LINE FROM THAT POINT ACROSS TO BACK PRESSURE LINE CLOSEST TO CUSTOMER CONDITIONS* THEN VERTICALLY TO RPM LINE. (RECOMMENDED CONTINUOUS RPM SHOULD BE BELOW 30 FOR LONGER HOSE LIFE.)

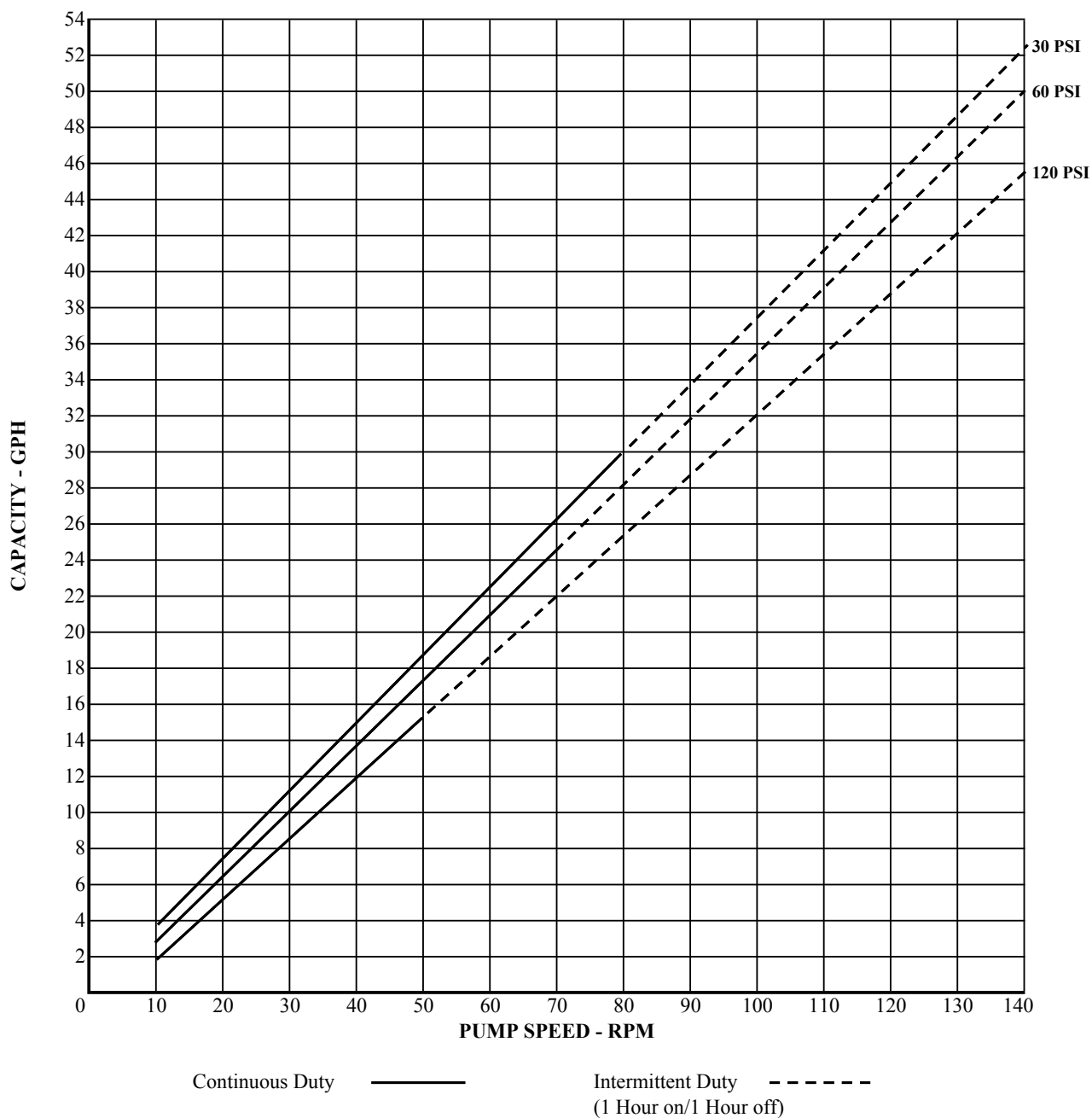
* FOR BACK PRESSURES THAT FALL BETWEEN THOSE INDICATED, IT IS RECOMMENDED THE NEXT HIGHEST VALUE BE USED.

CHEMTUBE® PPS - MODEL S5 - CAPACITY CHART

490.200.190.010B

ISSUE 1 3-05

CHEMTUBE® PPS - S SERIES



NOTE: SELECT MAXIMUM CAPACITY DESIRED. FOLLOW HORIZONTAL LINE FROM THAT POINT ACROSS TO BACK PRESSURE LINE CLOSEST TO CUSTOMER CONDITIONS* THEN VERTICALLY TO RPM LINE. (RECOMMENDED CONTINUOUS RPM SHOULD BE BELOW 30 FOR LONGER HOSE LIFE.)

* FOR BACK PRESSURES THAT FALL BETWEEN THOSE INDICATED, IT IS RECOMMENDED THE NEXT HIGHEST VALUE BE USED.

CHEMTUBE® PPS - MODEL S5 - CAPACITY CHART

490.200.190.010C
ISSUE 1 3-05

CHEMTUBE® PPS - S SERIES

S16 Fixed Speed Capacity Chart

RPM	30 PSI		60 PSI		120 PSI		HP Ind (Inverter)	Duty Cycle
	GPH	LPH	GPH	LPH	GPH	LPH		
17.5	25	93.8	20	75	15	56.3	1/4 (1/2)	Continuous
25	36	135	31	116.3	25	93.7	1/4 (1/2)	
29	40	150	35	131.3	30	112.5	1/4 (1/2)	
38	53	198.8	46	172.5	40	150	1/4 (1/2)	
50	73	273.8	64	243.8	58	217.5	1/4 (1/2)	
62.5	90	337.5	83	311.2	75	281.3	1/4 (1/2)	Intermittent*
87.5	127	476.3	117	438.8	105	393.8	1/4 (1/2)	
125	180	675	170	637.5	155	581.5	1/4 (1/2)	

S16 Mechanical Variable Speed Capacity Chart

RPM	30 PSI		60 PSI		120 PSI		HP Ind (Inverter)	Duty Cycle
	GPH	LPH	GPH	LPH	GPH	LPH		
6-36	9.5-52	35.5-195	8.4-46	31.4-172.5	7.3-40	27.3-150	1/4 (1/2)	Continuous
8-45	11.8-65	44.3-244	12-60	41-225	9.5-52	35.5-195	1/4 (1/2)	
11-63	16.7-92	62.7-345	11.8-85	58-319	13.6-75	51-282	1/4 (1/2)	
23-125	32.7-180	122.7-675	31-170	116-638	28-153	104.4-574	1/4 (1/2)	Intermittent*

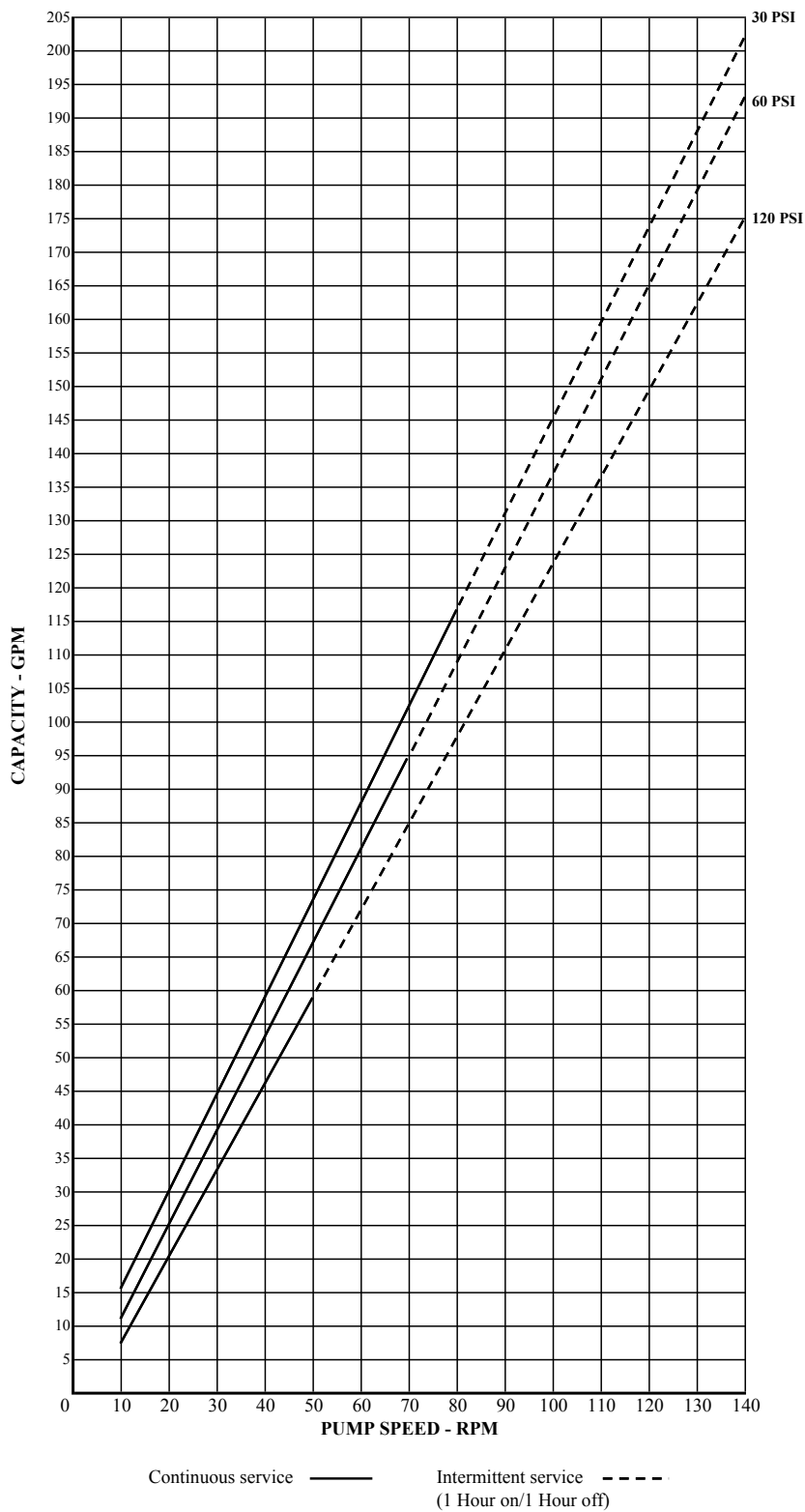
* Intermittent Duty: Max. 1 hour running; Min. 1 hour off

CHEMTUBE® PPS - MODEL S16 - CAPACITY CHART

490.200.190.020A

ISSUE 0 5-01

CHEMTUBE® PPS - S SERIES



NOTE: SELECT MAXIMUM CAPACITY DESIRED. FOLLOW HORIZONTAL LINE FROM THAT POINT ACROSS TO BACK PRESSURE LINE CLOSEST TO CUSTOMER CONDITIONS* THEN VERTICALLY TO RPM LINE. (RECOMMENDED CONTINUOUS RPM SHOULD BE BELOW 30 FOR LONGER HOSE LIFE.)

* FOR BACK PRESSURES THAT FALL BETWEEN THOSE INDICATED, IT IS RECOMMENDED THE NEXT HIGHEST VALUE BE USED.

CHEMTUBE® PPS - MODEL S16 - CAPACITY CHART

490.200.190.020B
ISSUE 0 5-01

CHEMTUBE® PPS - S SERIES

S26 Fixed Speed Capacity Chart

RPM	30 PSI			60 PSI			90 PSI			120 PSI			Duty Cycle
	GPH	LPH	HP	GPH	LPH	HP	GPH	LPH	HP	GPH	LPH	HP	
17.5	115	435.3	1/2 (1)	87	329.3	1/2 (1)	75	283.9	1/2 (1)	65	246	1 (1½)	Continuous
22	140	529.9	1/2 (1)	120	454.2	1/2 (1)	115	435.3	1/2 (1)	90	340.7	1 (1½)	
27	175	662.4	1/2 (1)	150	567.8	1/2 (1)	120	454.2	1/2 (1)	110	416.4	1 (1½)	
39	235	889.5	1/2 (1)	215	813.8	1/2 (1)	190	719.2	1/2 (1)	175	662.4	1 (1½)	
46	280	1060	1/2 (1)	250	946.3	1/2 (1)	230	870.6	1/2 (1)	220	832.7	1 (1½)	
58	350	1324.8	1/2 (1)	320	1211.2	1 (1½)	300	1135.5	1 (1½)	X	X	X	
73	430	1627.6	1/2 (1)	410	1551.9	1 (1½)	380	1438.3	1 (1½)	X	X	X	Intermittent*
92	550	2082	1/2 (1)	520	1968.2	1 (1½)	460	1741.1	1 (1½)	X	X	X	
117	680	2573.8	1/2 (1)	650	2460.3	1 (1½)	580	2195.3	1 (1½)	X	X	X	
140	820	3104	1/2 (1)	780	2952.3	1 (1½)	705	2668.4	1 (1½)	X	X	X	

S26 Mechanical Variable Speed Capacity Chart

RPM	30 PSI		60 PSI		90 PSI		120 PSI		HP	Duty Cycle
	GPH	LPH	GPH	LPH	GPH	LPH	GPH	LPH		
6-36	41-225	153-844	36-200	136-750	32-175	119.3-656.3	29-160	109-600	1½ (2)	Continuous
8-45	47.3-260	117-975	42-230	157-863	39-215	146.6-806.3	36.4-200	136-750	1½ (2)	
11-63	69-380	259-1425	66-365	249-1369	X	X	X	X	1½ (2)	Intermittent*
23-125	133-730	496-2738	X	X	X	X	X	X	1½ (2)	

() denotes HP of Inverter duty motor

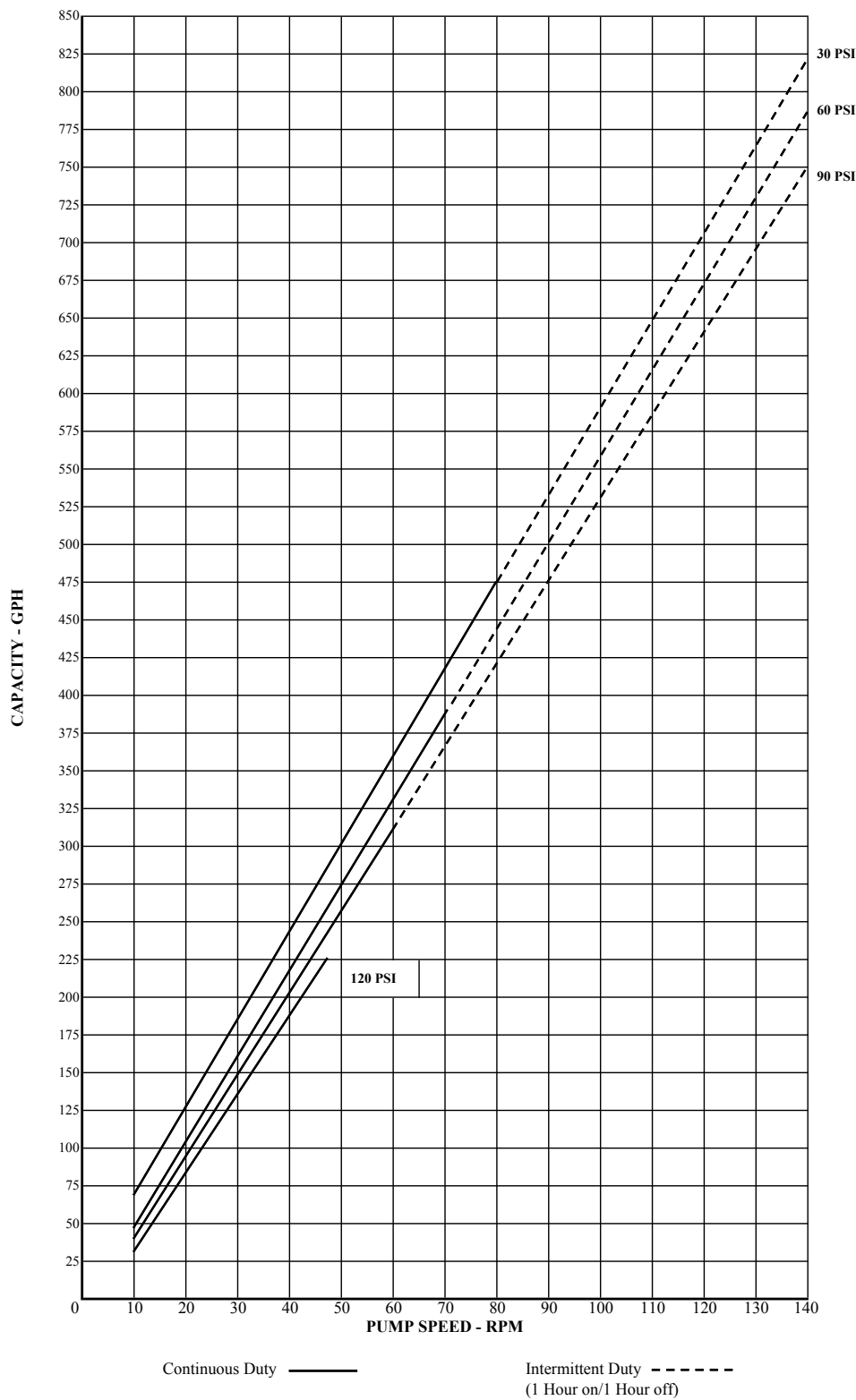
* Intermittent Duty: Max. 1 hour running; Min. 1 hour off

CHEMTUBE® PPS - MODEL S26 - CAPACITY CHART

490.200.190.030A

ISSUE 0 5-01

CHEMTUBE® PPS - S SERIES



NOTE: SELECT MAXIMUM CAPACITY DESIRED. FOLLOW HORIZONTAL LINE FROM THAT POINT ACROSS TO BACK PRESSURE LINE CLOSEST TO CUSTOMER CONDITIONS* THEN VERTICALLY TO RPM LINE. (RECOMMENDED CONTINUOUS RPM SHOULD BE BELOW 30 FOR LONGER HOSE LIFE.)

* FOR BACK PRESSURES THAT FALL BETWEEN THOSE INDICATED, IT IS RECOMMENDED THE NEXT HIGHEST VALUE BE USED.

CHEMTUBE® PPS - MODEL S26 - CAPACITY CHART

490.200.190.030B
ISSUE 0 5-01

SECTION 2 - INSTALLATION

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Model S16 Dimensions	490.200.100.020
Model S26 Dimensions	490.200.100.030

2.1 Transport, Storage, and Lifting

- **Transport**

The pump is protected by its packing consisting of a hard base (pallet) and cardboard wrapping.

NOTE: The packing materials are recyclable.

During transport, the roller is set to the rest position (see Figure 2.1).

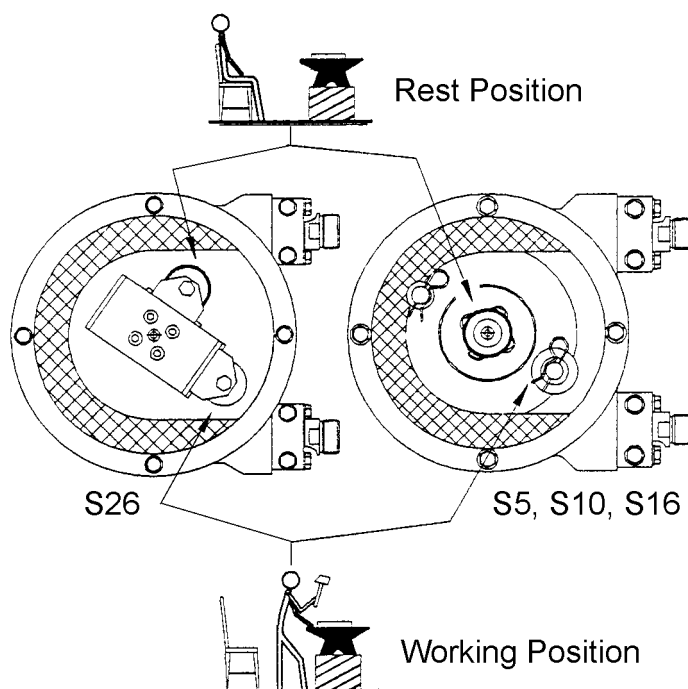


Figure 2.1 - Pump Transport

- **Storage**

The roller must be set to the rest position.

Open, exposed, and excessively damp areas must not be used for storage.

For storage periods of over 60 days, protect any coupling surfaces (flanges for reducers or motors) with suitable anti-oxidizing products.

CAUTION: The spare tubular elements must be stored in a dry place sheltered from direct sunlight.

- **Lifting**

Model S26 may require lifting equipment. The components of Models S5, S10, and S16 are comparatively light.

Pump Model	Bare Shaft Pump with Base	Right Angle Gearbox	Inverter Duty Motor
S5, S10	18 lbs.	5 lbs.	32 lbs. (1/2 HP)
S16	27 lbs.	5 lbs.	53 lbs. (1 HP)
S26	77 lbs.	14 lbs.	62 lbs. (1½ HP)

2.2 Typical Installation

2.2.1 Inspection

Having removed the pump from its packing, check that the pump has not been grazed or damaged.

Check that the power supply voltage corresponds to the motor voltage.

Check the piping connection to the pump.

Check that the type of tubular element is suitable for the fluid to be pumped. If the fluid pumped has a constant temperature of over 60° C, the walls of the pump will reach temperatures which make them dangerous to touch and suitable warnings or guards must therefore be provided.

The electrical control panel and the connection cables must comply with local electrical codes. (The panel must be preset to invert the rotational direction of the motor, if necessary.)

If the command and control panel is remote, a start button and a stop-emergency button (which cannot be cut off from the panel) must be fitted near the pump to be used for maintenance. The pump should be "off" and "locked out" from its source of power prior to performing any electrical maintenance.

2.2.2 Space for Operating and Maintenance

The pump must be positioned to ensure adequate accessibility to the tubular element, as well as other parts that require routine maintenance. See Figure 2.2 for clearance recommendations.

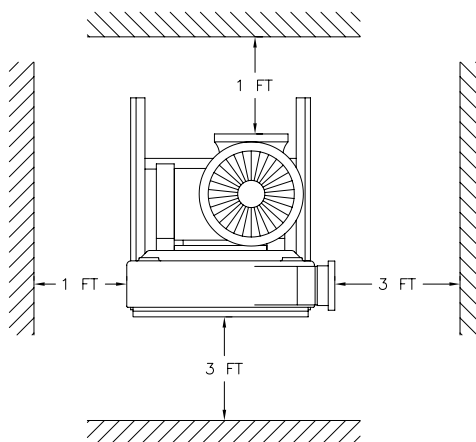


Figure 2.2 - Minimum Clearance Requirements

As a general rule, the pump must be installed in a ventilated place well away from sources of heat. If the pump must be installed outdoors, shelter must be provided to protect it from inclement weather and direct sunlight.

2.2.3 Piping

The pump must be as close as possible to the fluid source so that the suction pipe is as short and straight as possible.

- Suction Line

The suction piping must be perfectly airtight. It must be made of material that cannot be crushed by the internal vacuum and is compatible with the fluid being handled.

NOTE: The minimum diameter must be equal to that of the tubular element; viscous fluids require larger diameters.

The pump is self-priming; no foot valve is needed.

- Discharge Line

To reduce the power absorbed, use pipes as short and straight as possible. The diameter will be equal to the rated pump diameter unless specific calculations require otherwise. Viscous fluids require larger diameters. The discharge line piping must be made of material that is compatible with the fluid being handled.

NOTE: Connect the fixed pipes to the pump with a **UNION** or **FLANGE** to facilitate maintenance. Attach the pipes securely and avoid loads on the pump or piping.

NOTE: The flow pulsates slightly - the pulsations increase as the number of revolutions and the pressure increase.

If there is the risk of the pulsations damaging the pipes or disturbing the utilities downstream, suitable pulsation dampeners must be fitted. Refer to Section 6 - Spare Parts List at the end of this manual for pulsation dampener part numbers and specifications.

2.2.4 Pump Mounting

The pump is supplied with a metal frame and must be bolted securely to the base.

2.3 Pipe Installation

- Minimum suction distance – Lay the delivery pipe sloping towards the outlet. (See Figure 2.3.)

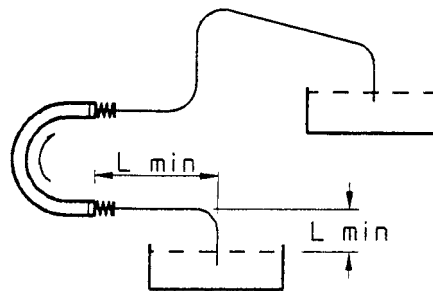


Figure 2.3 - Optimum Layout for Fluids

- Flooded suction – Fit a safety device that will cut in if the tubular element breaks. For corrosive or dangerous substances, provide a retaining compartment. (See Figure 2.4.)

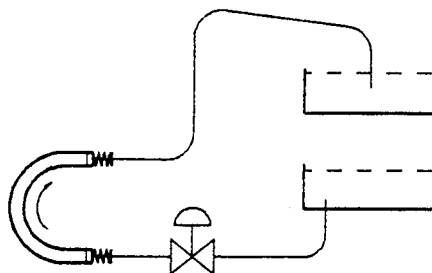


Figure 2.4 - Layout for Viscous Products, Flooded Suction

- Pressure Relief Valve – If there is the possibility of a valve being closed on the discharge pipe, provide a pressure relief valve. The same danger can exist on the suction piping in the event of inverse rotation. (See Figure 2.5.)

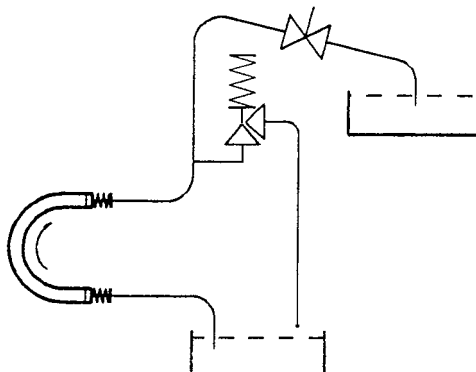


Figure 2.5 - Pressure Relief Valve

- Pump at a standstill – With “H” above 13 feet (four meters), the fluid causes the pump to rotate backwards, flowing back in the pipe towards the suction line. Avoid this problem with self-braking motors, variable frequency drives, or single-acting valves. (See Figure 2.6.)

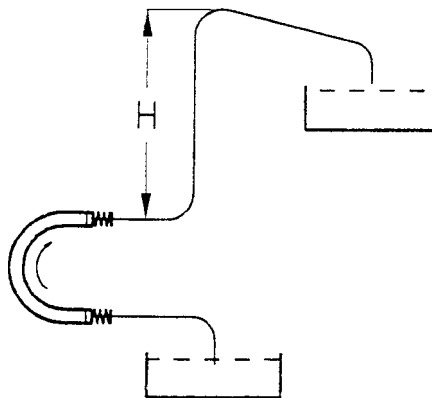
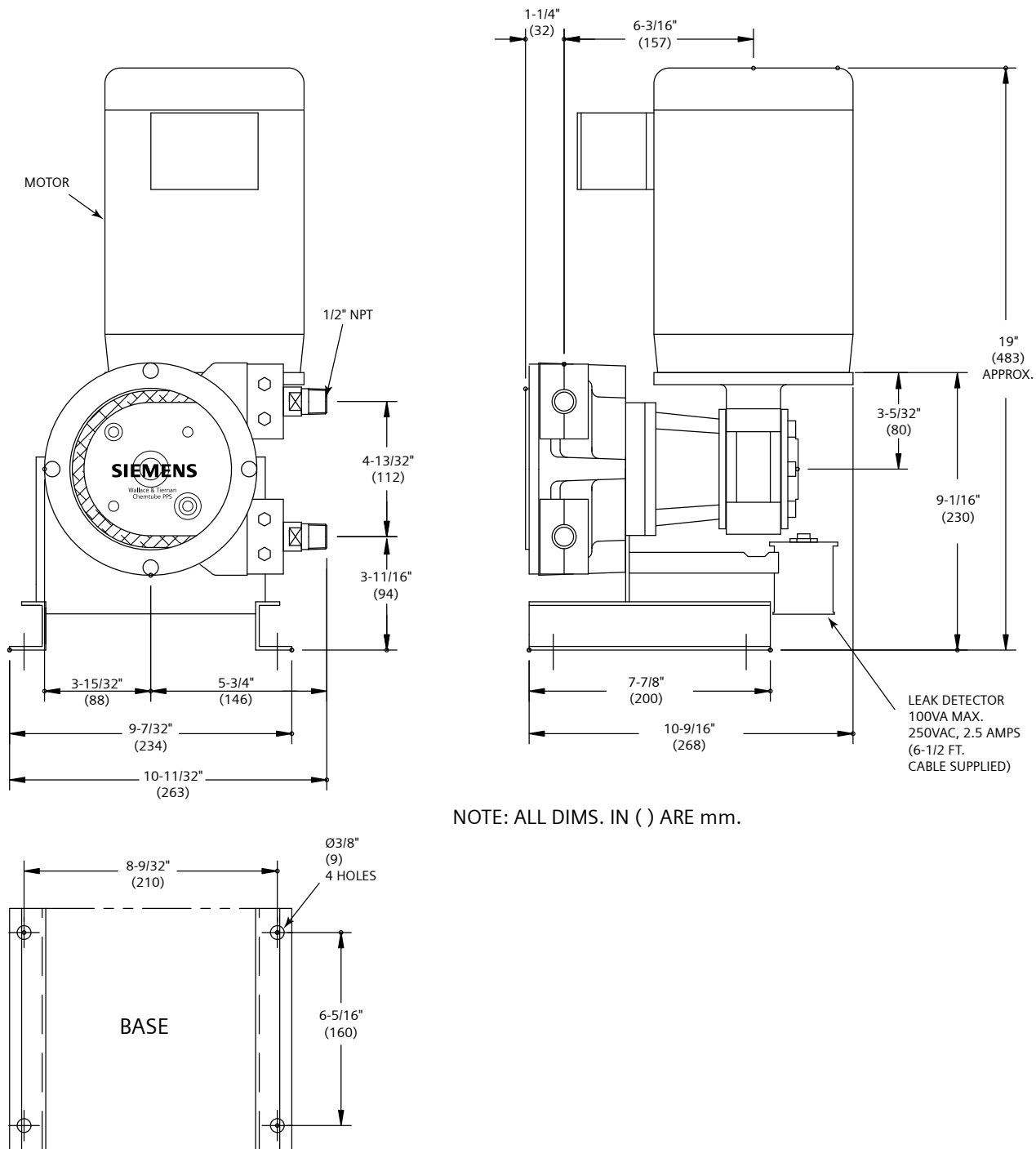


Figure 2.6 - Pump at a Standstill

NOTE: To avoid leakages and/or flooding of the machine stator, the system should be provided with the tubular element leak detector. Refer to paragraph 4.4, Tubular Element Leak Detector, for more information on using a tubular element leak detector.

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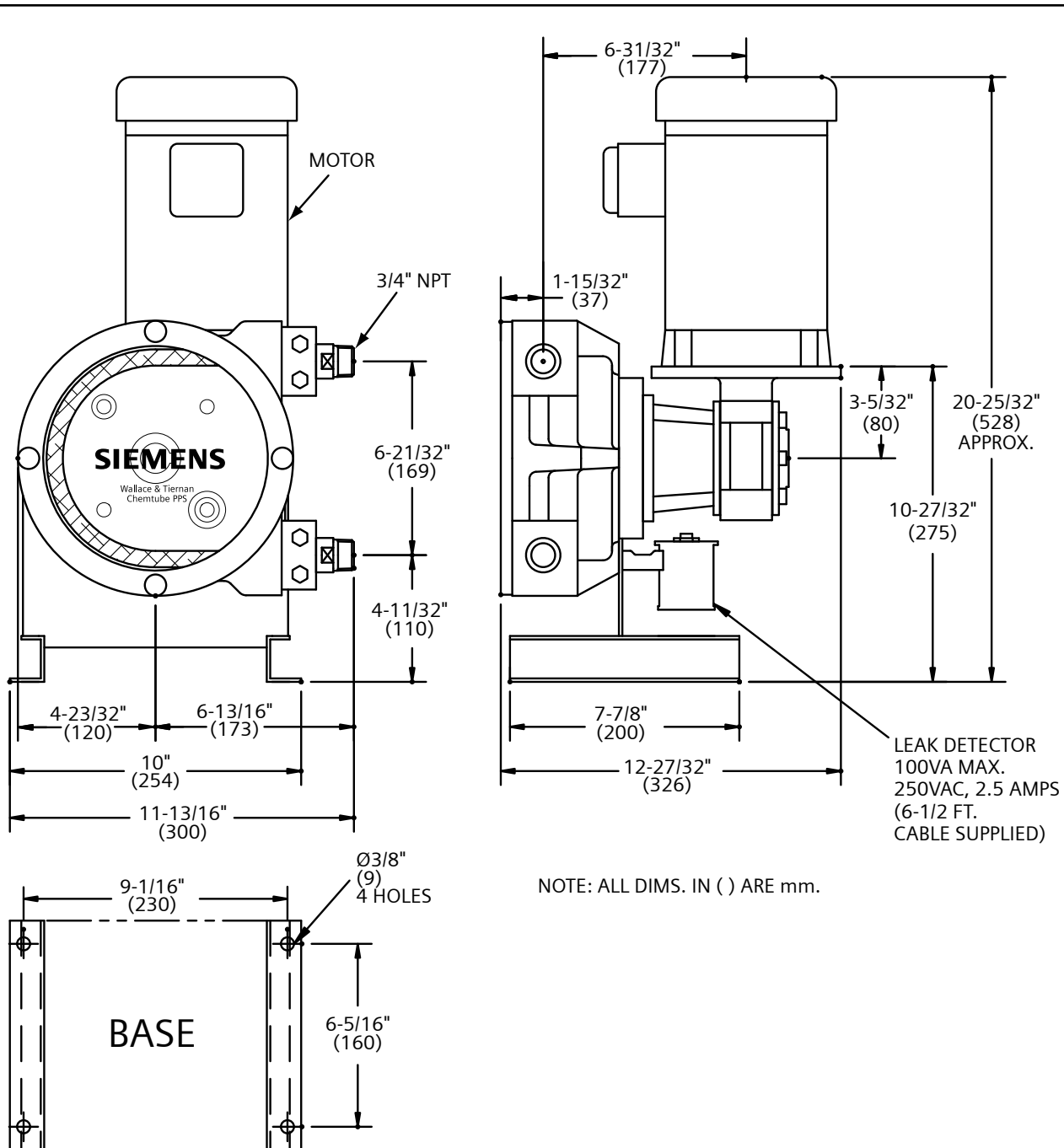


NOTE: ALL DIMS. IN () ARE mm.

CHEMTUBE® PPS - MODELS S5 & S10 - DIMENSIONS

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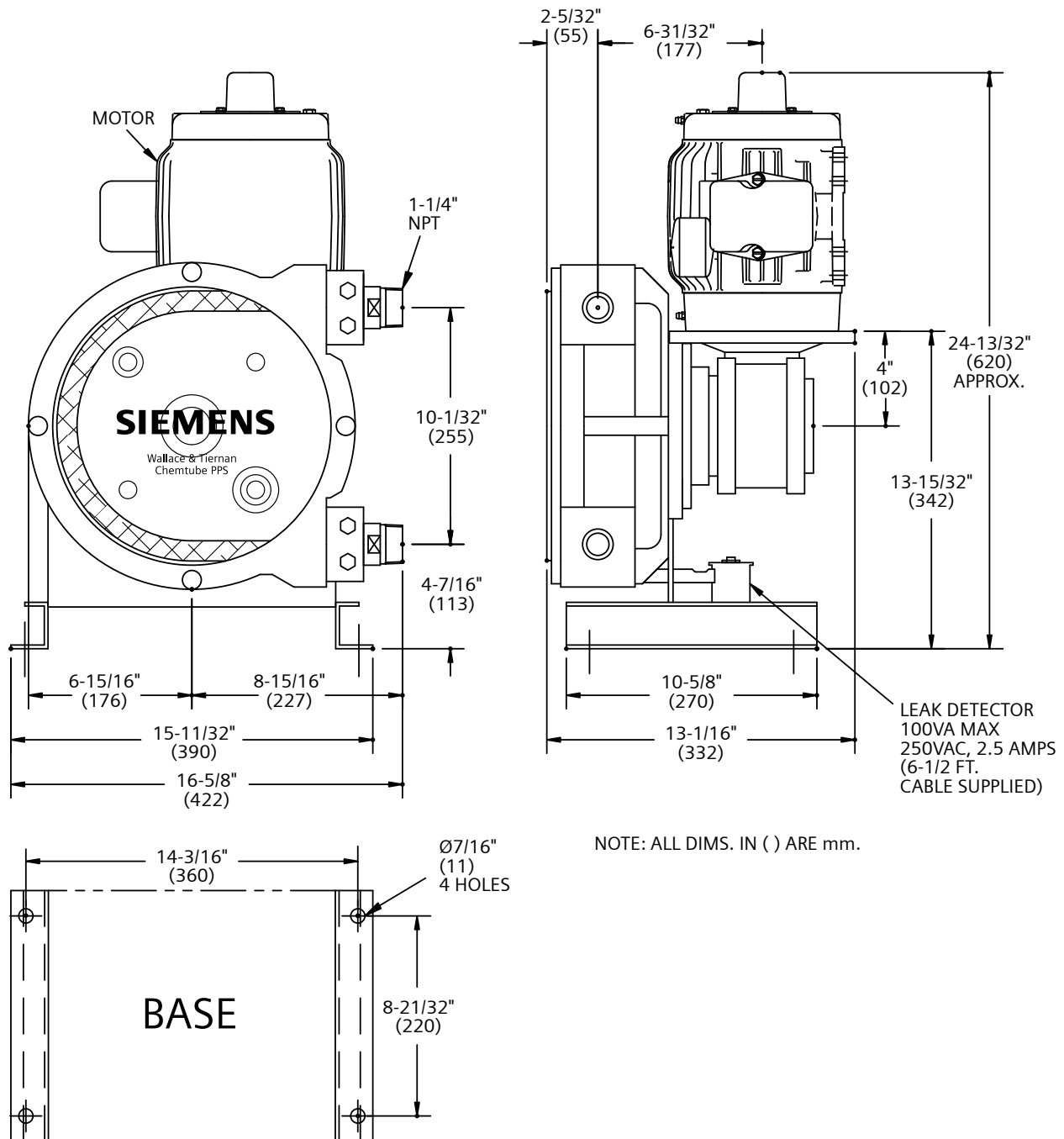
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CHEMTUBE® PPS - MODEL S16 - DIMENSIONS

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CHEMTUBE® PPS - S SERIES



CHEMTUBE® PPS - MODEL S26 - DIMENSIONS

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ISSUE 2 9-07

SECTION 3 - OPERATION

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Running	3.2
Stopping	3.3
Residual Risks	3.4
Configuration	3.5
Altering the Configuration	3.5.1

3.1 Starting

Before starting the pump, ensure that:

- The type of tubular element is suitable for the fluid to be pumped.
- The oil in the variable speed gear box (if present) is at the correct level.
- The power supply voltage corresponds to the motor voltage and electrical control panel.
- The guards are fitted on the moving parts.
- The motor thermal protection is set according to the values on the motor rating plate.

NOTE: In the case of a variable frequency drive, check that the maximum frequency that can be delivered corresponds to the maximum number of pump and motor revolutions.

- The rotation direction is as required; perform a rotation test. (Refer to Figure 1.1, Flow Diagram, in Section 1.)
- Any optional electrical components are connected to the control panel and operation has been tested.
- Delivery pressure is correct. Use a pressure gauge on the delivery line if any uncertainty exists.

3.2 Running

- Set the rollers to the work position.
- Start the pump with valves open and at minimum speed (if adjustable).
- Start and stop a few times to check operation of the controls and system seal.
- If there is the danger of working with closed valves, test the efficiency of the safety devices (pressure relief valve).
- Check, in working conditions, that the flow rate, pressure, and motor current draw on three phases are correct.

- Do not change fluids without cleaning the inside of the pump; the mixture of chemicals can be highly dangerous.
- Never leave the pump full, particularly in the case of fluids that can deposit residues or polymerize or corrosive fluids that can eventually attack the tubular element.
- Do not increase the setting of the motor protections beyond the limits specified on the rating plate. If motor performance is insufficient, check the system data and contact USF/W&T technical service.
- When cleaning the pump with a stream of water, do not aim it directly at the motor or electrical equipment.

3.3 Stopping

- Switch the motor off to stop the flow. The pump operates similar to a pinch valve (compression of the tubular element) with the exception of the condition described in paragraph 2.3, Pipe Installation - Pump at a Standstill.
- Drainage of the pump is easy as the fluid is present only inside the tubular element: rotate the pump towards the drain provided in the piping system.
- The piping and tubular element must be cleaned with fluids that are compatible with both the tubular element and the chemical being pumped.
- For prolonged standstills, follow the directions in paragraph 4.5, Long-Term Shut-Down.

3.4 Residual Risks

The pump can be used for food-grade fluids if tubular elements classified for specific use with a food, stainless steel fittings, and adequate cleaning procedures are employed. The pump must not be used for food-grade fluids if these conditions are not observed.

It is not possible to accurately forecast the duration of the tubular element; therefore, precautions for breakage with leakage of the liquid must be taken in advance. The tubular element leak detector can be wired to stop the pump and to sound an alarm. In any case, if the fluid is dangerous due to corrosion or fumes, the following must be provided:

- Retaining compartments (in the case of flooded suction and/or very long deliveries).
- Adequate suction or ventilation (for fluids that can emit toxic or harmful fumes).

3.5 Configuration

The capacity of the pump to supply discharge pressure depends on the compression of the tubular elements by the rollers. See Figure 3.1.

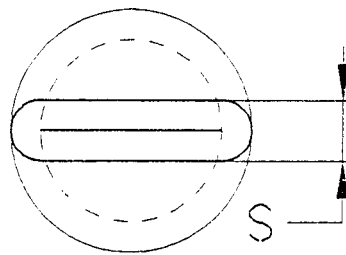


Figure 3.1 - Supply Configurations

There are two supply configurations that are set at the factory. For S5, S10 and S16 the roller shafts are installed into the holes marked either "4" or "8" on the rotor. For S26 two sets of spacers with "4" or "8" markings are provided.

"4" marking for operating pressures lower than 60 psi (4 Bars).

"8" marking for operating pressures from 60 psi up to 120 psi (8 Bars)

The configuration used is established during assembly of the pump according to the pressure it will pump against with. Subsequent variations must be authorized by Siemens Water Technology.

The roller on S5, S10 and S16 was re-designed to incorporate ball bearings as the rolling element. A new roller shaft was re-designed as well. It is recommended to replace the older design with the ball bearing design. No replacement part is available for the older design. Retrofit kits are made available for this purpose that includes all the necessary parts and tool to do the change. For roller replacement only, order the Roller Kit. Instruction Sheet is also included with the Kits.

Part Number for the Kits can be found on Section 6, Paragraph 6.2.4.

3.5.1 Altering the Configuration

Pump Models S5, S10, and S16: Without Cover and Tubular Element.

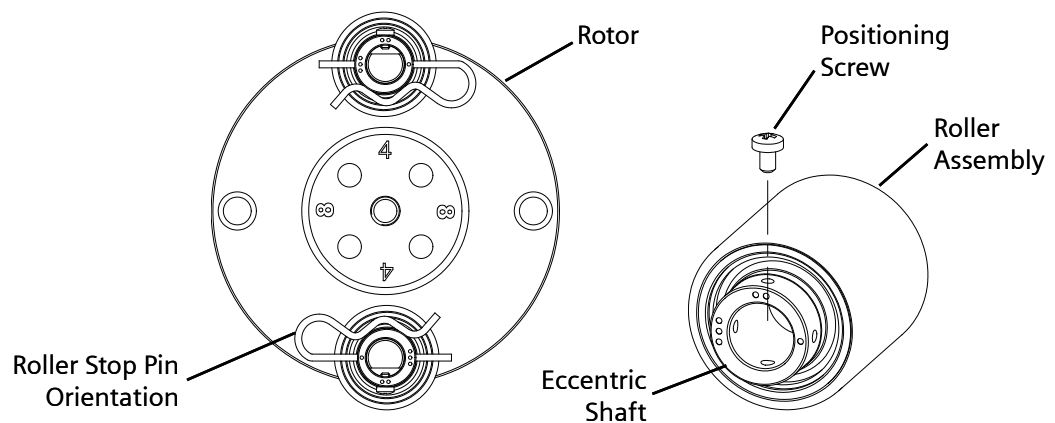
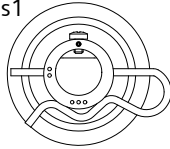
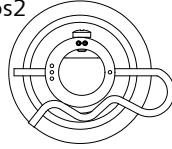
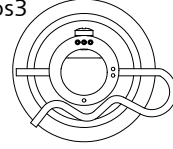
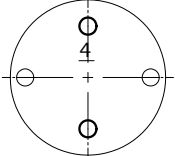
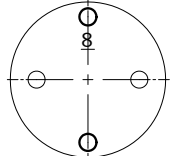


Figure 3.2 - Roller Assembly, Ball Bearing Design

The new ball bearing design made it possible to alter the configuration in two ways; repositioning the screw to the holes with the corresponding number of dots and by installing the roller shafts in the rotor to the holes with either markings of "4" or "8". See Figure 3.2.

Shown below are the resulting operating pressures:

<div>ROLLER</div> <div>roller</div> <div>ROTOR</div> <div>pin into rotor</div>	pos1	pos2	pos3
			
	0 PSI	Below 60 PSI	60 TO 120 PSI
	Below 60 PSI	60 TO 120 PSI	120 to 180 PSI

The standard location of the positioning screw is at the holes with two dots (Position 2) and the roller shafts are installed in either holes with markings of "4" or "8". The roller is riding on an eccentric, and if the positioning screw is screwed at the holes with two dots (Position 2) the roller is on the center of the roller shafts. This design enables us to change the configuration without the disassembly of the rotor. With the combination of the roller shaft location "4" and "8" holes on the rotor, as shown above it is possible to easily configure the pump to operate at a higher operating pressure. However, by doing so, the life of the tube will be shortened. It is always recommended to configure the pump at the lowest operating pressure as required.

- Remove the roller stop pins and slide the rollers out.
- Verify the marking of the holes in the rotor where the roller shaft is installed.
- Refer to the operating pressure shown above relocate the positioning screw accordingly.
- Install the roller and secure with the roller stop pin. Refer to Figure 3.2 for the proper orientation of the pins.
- Reassemble.

NOTE: If the roller shaft has to be relocated, refer to Paragraph 4.3, Removal and Installation of Roller Assembly, for instruction on roller and rotor disassembly and installations.

Pump Models S26: Without Tubular Element (See Figure 3.3)

- a. Dismantle the support roller by removing two hex bolts.
- b. Dismantle the spacer and replace it with the one marked "8") Part No. AAB8945) or "4" (Part No. AAB7943).
- c. Reassemble.

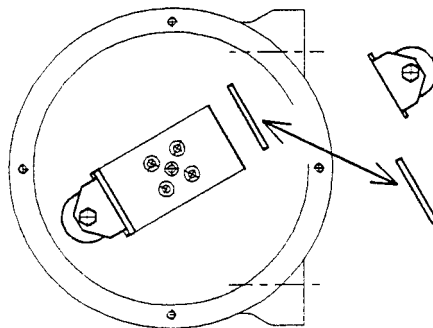


Figure 3.3 - Pump Type S26: Without Tubular Element

SECTION 4 - SERVICE

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4.1 Maintenance

All work on the pump must be carried out with the pump at a standstill and the power disconnected.

The only component subject to normal wear is the tubular element, which must therefore be periodically replaced.

The tubular element must be lubricated at initial assembly with the spray lubricant supplied.

Lubricate the hose once a week (or approximately every 100 operating hours) with the supplied spray lubricant.

CAUTION: Use only the supplied spray lubricant on the tubular element. Other lubricants will damage the tubular element.

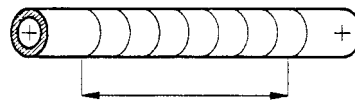


Figure 4.1 - Area to be Lubricated

Periodically (approximately every 100 working hours) check that the wall of the stator where the tubular element rests is slightly lubricated. If necessary, inject a small amount of the supplied spray lubricant.

WARNING: BEFORE OPENING THE PUMP, ENSURE THAT THE PIPING IS EMPTY. ANY FLUID COLUMN COULD CAUSE THE MACHINE TO ROTATE.

4.2 Replacing the Tubular Element

4.2.1 Tubular Element Removal - Models S5, S10, and S16 (See Figure 4.2)

NOTE: This procedure applies only to a pump that has been in operation.

- a. Jog the rotor so that one roller (18) is at the 2 o'clock position.
- b. Disconnect the power to the pump at the control box.
- c. If water-flushing connection is available, flush as follows; if not, go to Step c1 and proceed to Step d.

- 1) Close the suction and discharge valve and open the drain valve, to relieve the system pressure.
 - 2) Remove the transparent cover (1) by removing the four acorn nuts (22).
 - 3) Remove the roller assembly that is at the 2 o'clock position by removing the retaining pin (30) and pulling out the roller assembly (18).
 - 4) Temporarily install the transparent cover, (1).
 - 5) Turn the power to the pump and jog the rotor so that the other roller (18) is not in contact with the tubular element (33).
 - 6) Turn off the power at the control box.
 - 7) Open the flushing valve, if the tubular element (33) is leaking, water will be collected inside the pump housing and will drain through the leak detector drain line.
 - 8) Close the water-flushing valve.
- d. Disconnect the suction and discharge line connection to the system.
- e. Remove one side of the top clamping bracket (32), by unscrewing two bolts.

NOTE: Clamping bracket (32) comes in a pair with the same marking stamped at the ends.

NOTE: On S5, there are half clamps on each of the clamping brackets. Do not lose them. See Dwg. 490.200.000.110A (47).

NOTE: The two bolts are shorter and must only be installed at the same location.

- f. Slice the tubular element (33) about 2" long at the connection end. Be careful not to damage the PVC connection (31).
- g. Pull the connection (31) out of the tubular element (33) and set it aside.

- h. Remove one side of the bottom-clamping bracket (32) and pull the connection (31) and the tubular element (33) out together.
- i. Remove the second connection (31) by following Step f.
- j. Clean the inside of the pump housing completely, including the transparent cover (1) and the connections.
- k. Clean the leak detector as follows:
 - 1) Carefully pull the probe and cover assembly from the housing.
 - 2) Pull down the bottom cover.
 - 3) Clean all of the parts thoroughly.
 - 4) Assembly is the reverse of the disassembly.

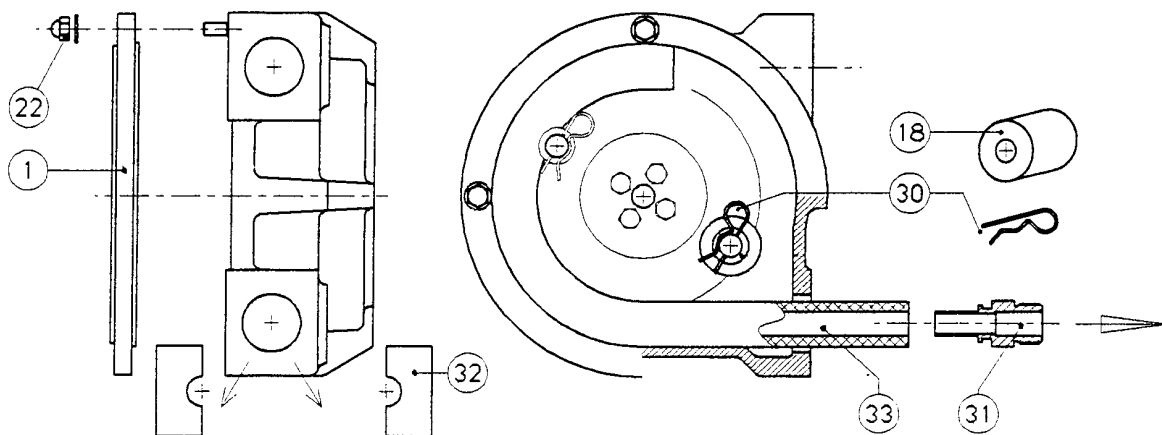


Figure 4.2 - Replacing the Tubular Element: Models S5, S10, and S16

4.2.2 Tubular Element Installation - Models S5, S10, and S16 (See Figure 4.2)

- a. Lubricate the connection (31) and insert it into one end of the tubular element (33) all the way against the shoulder.
- b. Lubricate the outer wall of the tubular element (33) along the area that will be in contact with the housing and the rollers (18).
- c. Insert the end of the tubular element (33) without the connection (31) through the bottom opening. Slide the tubular element around the stator housing and out through the top opening.
- d. Position the connection properly into the first half of the clamp-

ing bracket (32), and install the second half. Ensure that the correct pair is installed and in the proper orientation.

- e. On S5, position the half clamps into the clamping brackets. See Dwg. 490.200.000.110A (47).
- f. Secure the clamping bracket (32) with the two shorter bolts.
- g. Lubricate the other connection (31) and insert it into the top end of the tubular element (33), then repeat Steps d and e for the top clamping bracket.
- h. Tighten all of the bolts. (S5 and S10: M6 bolts, torque to 75 ft-lbs. S16: M8 bolts, torque to 16 ft-lbs.)
- i. Install the transparent cover (1) temporarily and turn the power on.
- j. Turn the rotor so that the roller shaft without the roller assembly is at the 2 o'clock position. Turn the power off and remove the transparent cover (1).
- k. Install the roller assembly (18) and secure by the roller stop pin (30).
- l. Install the transparent cover (1). Do not over tighten the four acorn nuts (22).
- m. Reconnect the suction and discharge lines. Close the drain valve, and then open the suction and discharge valves.
- n. Turn the power on.

4.2.3 Tubular Element Removal - Model S26 (See Figure 4.3)

NOTE: This procedure applies only to a pump that has been in operation

- a. Jog the rotor so that one roller is at the 2 o'clock position.
- b. Disconnect the power to the pump at the control box.
- c. If water-flushing connection is available, flush as follows; if not, go to Step c1 and proceed to Step d.
 - 1) Close the suction and discharge valve and open the drain valve, to relieve the system pressure.

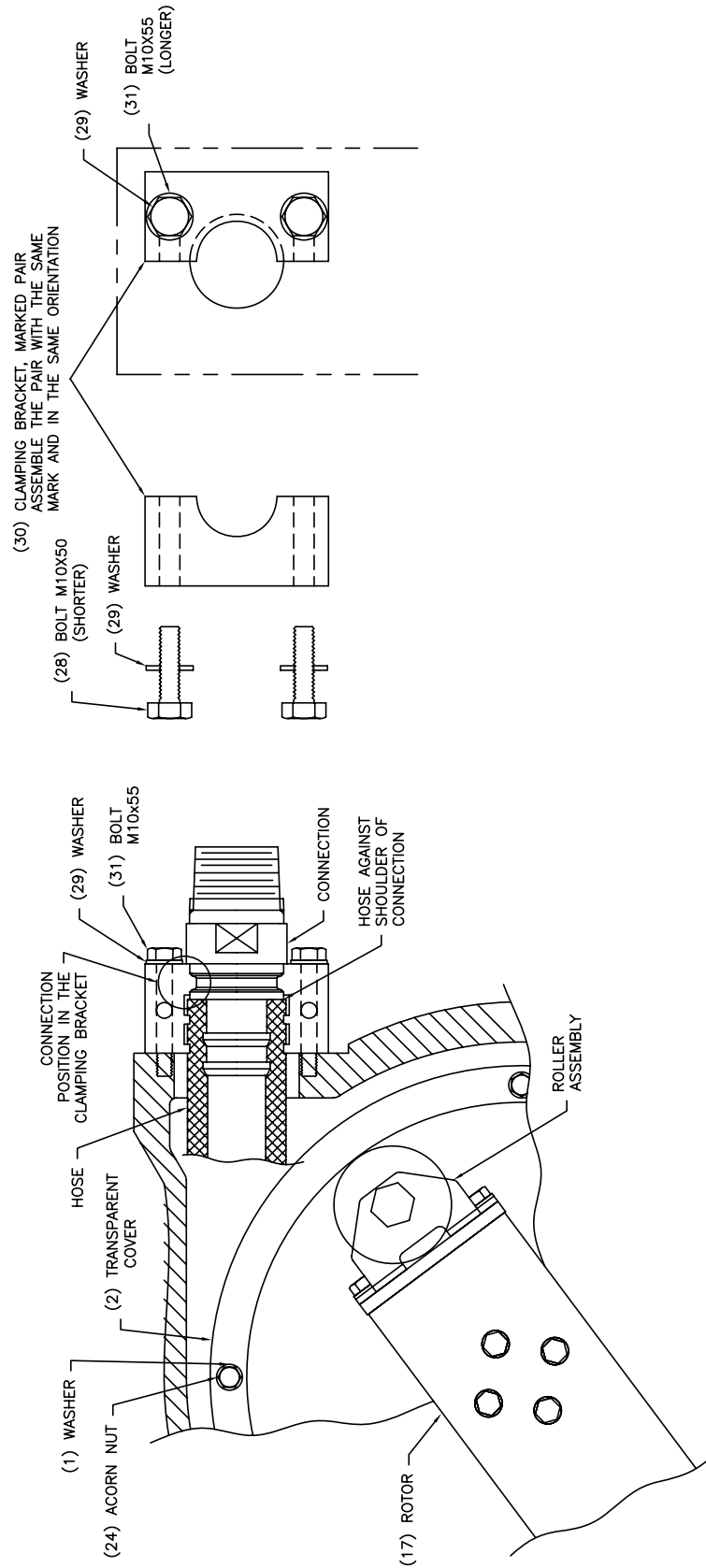


Figure 4.3 - Replacing the Tubular Element: Model S26

- 2) Remove the transparent cover (2) by removing the four acorn nuts (24).
 - 3) Remove the roller assembly that is at the 2 o'clock position.
 - 4) Temporarily install the transparent cover, (2).
 - 5) Turn the power to the pump and jog the rotor so that the other roller is not in contact with the tubular element.
 - 6) Turn off the power at the control box.
 - 7) Open the flushing valve, if the tubular element is leaking, water will be collected inside the pump housing and will drain through the leak detector drain line.
 - 8) Close the water-flushing valve.
- d. Disconnect the suction and discharge line connection to the system.
 - e. Remove one side of the top clamping bracket, (30), by unscrewing two M10x50 bolts, (28).

NOTE: Clamping bracket (30) comes in a pair with the same marking stamped at the ends.

NOTE: The two bolts, (28), are shorter and must only be installed at the same location.

- f. Slice the tubular about 2" long at the connection end. Be careful not to damage the PVC connection.
- g. Pull out the connection from the tubular element and set it aside.
- h. Remove one side of the bottom-clamping bracket (30) and pull out the connection and the tubular element together.
- i. Remove the second connection by following Step f.
- j. Clean the inside of the pump housing completely, including the transparent cover (2) and the connections.
- k. Clean the leak detector as follows:

- 1) Carefully pull the probe and cover assembly from the housing.
- 2) Pull down the bottom cover.
- 3) Clean all of the parts thoroughly.
- 4) Assembly is the reverse of the disassembly.

4.2.4 Tubular Element Installation - Model S26 (See Figure 4.3)

- a. Lubricate the connection and insert it into one end of the tubular element all the way against the shoulder.
- b. Lubricate the outer wall of the tubular element along the area that will be in contact with the housing and rollers.
- c. Insert the end of the tubular element without the connection through the bottom opening. Slide the tubular element around the stator housing and out through the top opening.
- d. Position the connection properly into the first half of the clamping bracket (30), and install the second half. Ensure that the correct pair is installed and in the proper orientation.
- e. Secure the clamping bracket (30) with the two shorter bolts (28).
- f. Lubricate the other connection (31) and insert it into the top end of the tubular element (33), then repeat Steps d and e for the top clamping bracket.
- g. Tighten all of the M10 bolts, (28) and (31). Torque to 31 ft-lbs.
- h. Install the transparent cover (2) temporarily and turn the power on.
- i. Turn the rotor so that the end without the roller is at the 2 o'clock position. Turn the power off. Remove the transparent cover (2).
- j. Install the other roller assembly, noting that the side with the double nut must be to the inside of the pump.
- k. Install the transparent cover (2). Do not over tighten the acorn nuts, (24).
- l. Reconnect the suction and discharge lines. Close the drain valve,

and then open the suction and discharge valves.

m. Turn the power on.

4.3 Removal and Installation of Roller Assembly

4.3.1 Roller Assembly Removal - Models S5, S10, and S16 (See Figure 4.4)

- a. Jog the rotor so that one roller is at the 3 o'clock position.
- b. Disconnect the power to the pump at the control box.
- c. Disassemble the transparent cover by removing the four acorn nuts and washers.
- d. Remove the roller assembly that is at the 2 o'clock position by removing the roller stop pin and pulling out the roller assembly.
- e. Temporarily install the transparent cover.
- f. Turn on the power to the pump and jog the rotor so that the other roller is in the 2 o'clock position and not in contact with the tubular element.
- g. Turn off the power at the control box and remove the transparent cover again.
- h. Repeat procedure in Step d.
- i. Assembly is the reverse of disassembly. Ensure that the positioning screw is installed into the holes marked with two dots (Position 2) for standard configurations.
- j. Secure the rollers with the roller stop pins. Refer to Figure 3.2 for proper pin orientation.
- k. Replace the transparent cover and tighten the four acorn nuts.

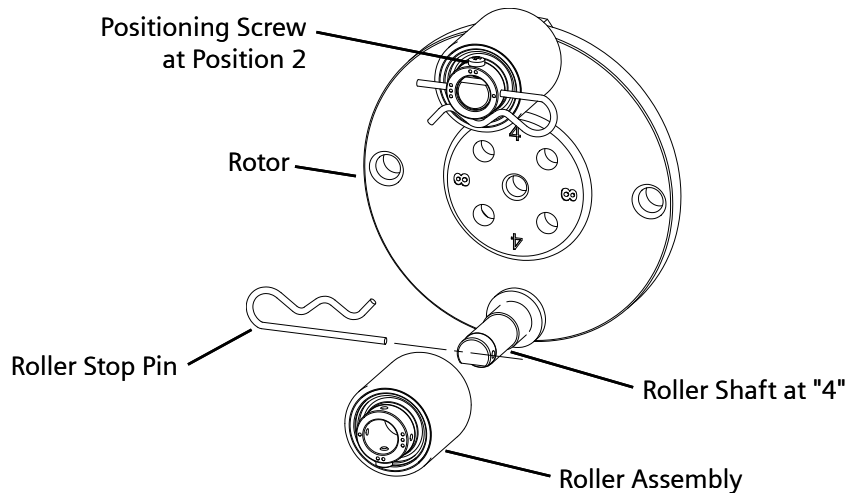


Figure 4.4 - Roller Assembly, Roller Shaft and Rotor

4.3.2 Roller Shafts Removal and Installations - Models S5, S10, and S16 (See Figure 4.5)

- a. Remove the tubular element as described in Section 4.2.1.
- b. Remove the roller assembly as described in Section 4.3.1.
- c. Unscrew the four hex bolts located around the center post and pull out the rotor. The screw in the center post can also be tightened clockwise to "jack" the rotor out.
- d. Clean the rotor, secure it in a vise and remove the two roller shafts and discard. Note the location of the roller shafts. They are opposite its other and can be either in the holes marked "4" or "8". Refer to Figure 4.5. Take note of the location.
- e. Position the roller shafts opposite its other to the holes marked "4" or "8" as noted in the disassembly procedure d above.
- f. Install the washer and the nut. Tighten the nut slightly by hand.
- g. Secure the rotor in a vise, refer to Figure 4.5, position the tool to orient the roller shaft in the correct position and keep them from turning. Note that the holes marked "4" or "8" in the tool match with holes marked "4" or "8" on the rotor. Tighten the nut 10-12 ft. lbs. and remove the tool.
- h. Once the roller shafts are properly secured to the rotor, install the rotor assembly into the center shaft using the four hex bolts.

- i. Install the roller assembly per Section 433.1 and the tubular element per Section 4.2.1.
- j. Replace the transparent cover and tighten the four acorn nuts.

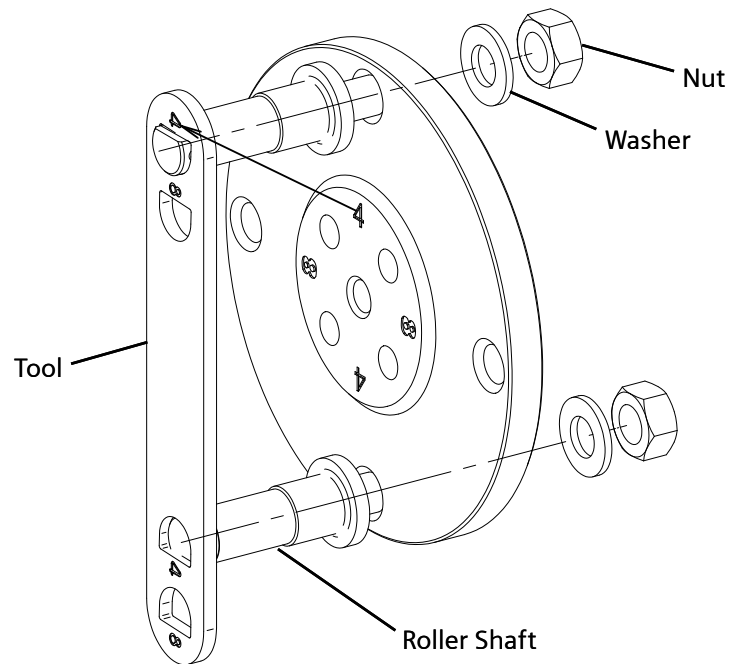


Figure 4.5 - Installation of the Roller Shafts

4.3.3 Roller Assembly Removal - Model S26 (See Figure 4.6)

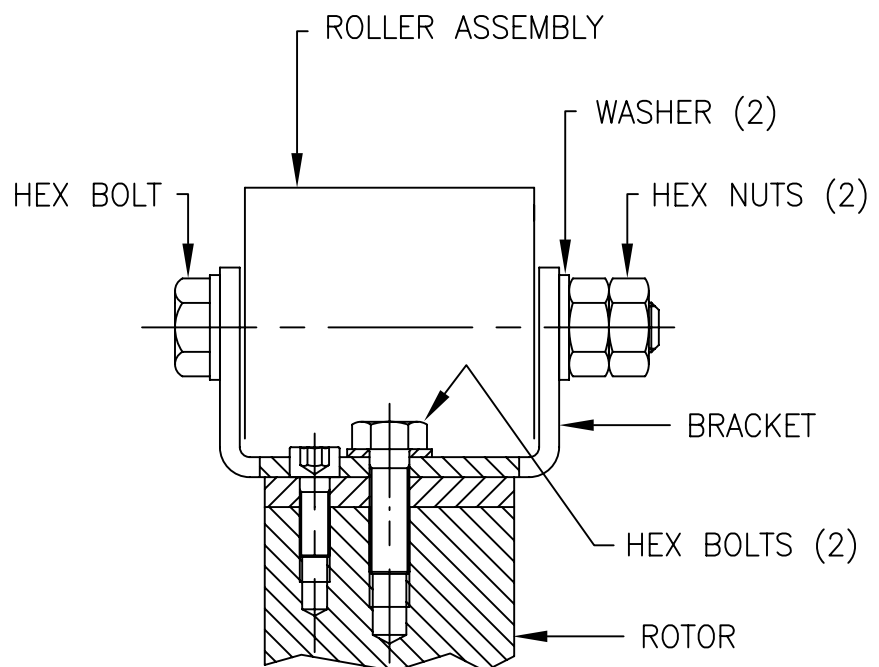


Figure 4.6 - Roller/Bracket Assembly: Model S26

- a. Jog the rotor so that one roller is at the 3 o'clock position.
- b. Disconnect the power to the pump at the control box.
- c. Disassemble the transparent cover by removing the four acorn nuts and washers.
- d. Remove the roller bracket assembly that is at the 3 o'clock position by first removing two hex bolts which secure the roller bracket to the rotor.
- e. Temporarily install the transparent cover.
- f. Turn on the power to the pump and jog the rotor so that the other roller is in the 3 o'clock position, and not in contact with the tubular element.
- g. Turn off the power at the control box and remove the transparent cover again.
- h. To remove the roller assembly from the bracket, simply loosen two hex nuts on one end and remove the bolt from the bracket and roller. Inspect the roller assemblies for defects or looseness. Replace as required. A kit is available (part no. AAC7937) to rebuild one pump.
- i. Assemble the new roller and bracket using existing hardware from the pump; i.e., one hex bolt, two washers, and two hex nuts. Be sure to tighten both nuts against one another to prevent the roller assembly from loosening during operation.

4.3.4 Roller Assembly Installation - Model S26 (See Figure 4.7)

- a. Jog the rotor so that one end is at the 3 o'clock position, if not done so already.
- b. When installing the roller/bracket assembly onto the rotor, be sure to mount it with the nuts on the bolt facing the inside of the housing, or with the head of the bolt facing towards you. Use two existing hex bolts and washers in the center holes of the bracket to secure the assembly to the end of the rotor, using the additional holes in the bracket to guide it over the alignment pins, one on top and one on the bottom.
- c. Temporarily install the transparent cover.
- d. Turn on the power to the pump and jog the rotor so that the other end of the rotor is in the 3 o'clock position, and not in contact with the tubular element.
- e. Turn off the power at the control box and remove the transparent cover again.
- f. Repeat procedures found in Steps b and c.
- g. Replace the transparent cover and tighten the four acorn nuts.

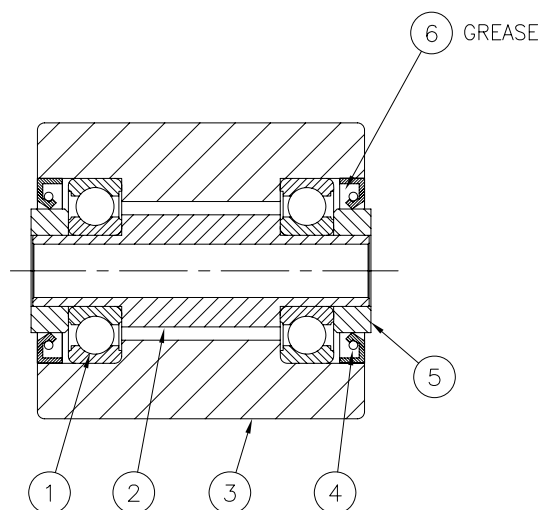


Figure 4.7 - Roller Assembly: Model S26

4.4 Tubular Element Leak Detector (See Figure 4.8)

This is a safety device that can be wired to stop the motor or sound an alarm if the tubular element breaks and the fluid leaks out inside the pump. It does not require any maintenance, but it is good practice to periodically ensure that the float is free to move. The probe is integral with the cover (46). The liquid can be emptied from the unit by removing the plug (48) below the support (49). An overflow connection is provided to direct the fluid to a container.

NOTE: The leak detector is not suitable for use with flammable fluids.

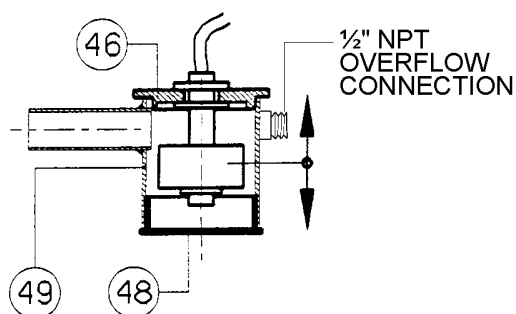


Figure 4.8 - Tubular Element Leak Detector

4.4.1 Wiring the Leak Detector

It is recommended that the leak detector be wired to stop the pump in case of a leak. It is also possible to wire the leak detector to sound an alarm or turn the lights on to indicate a leak. The leak detector is a normally closed float switch with dry contact. A six-foot cable with two #20 wires is provided for connection to a relay or VFD controller. See Figure 4.9 for the wiring for an induction motor installation. Refer to the VFD instruction manual for wiring the leak detector to the controller for stopping the motor.

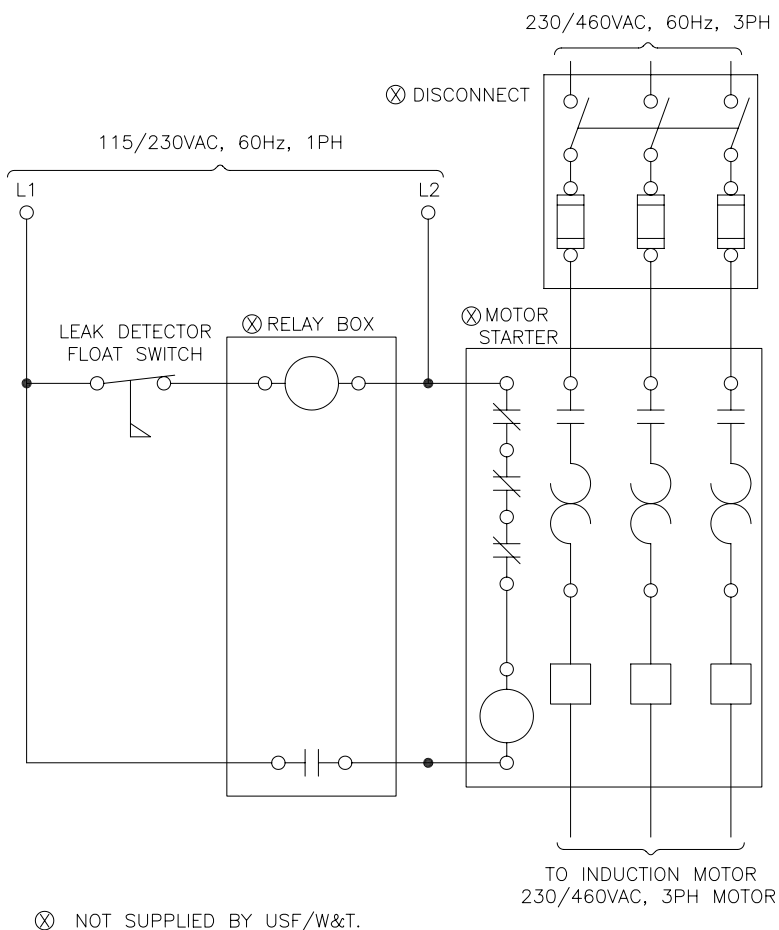


Figure 4.9 - Leak Detector Wiring

4.5 Long-Term Shut-Down (See Figure 4.10)

If the pump is out of use for longer than one month, ensure that the tubular element is not unnecessarily stressed by setting the roller to the rest position.

- Turn the rotor until one of the rollers is free from contact with the tubular element.
- Disconnect the power.
- Unscrew the acorn nuts (22) and remove the transparent cover (1).
- Remove the retaining pin (30) and pull out the roller assembly (18). Slide the roller assembly into the central pin (13/14) of the rotor (16).
- Replace the transparent cover and tighten the four acorn nuts.
- Reconnect the power.
- Turn the rotor until the tubular element is free.

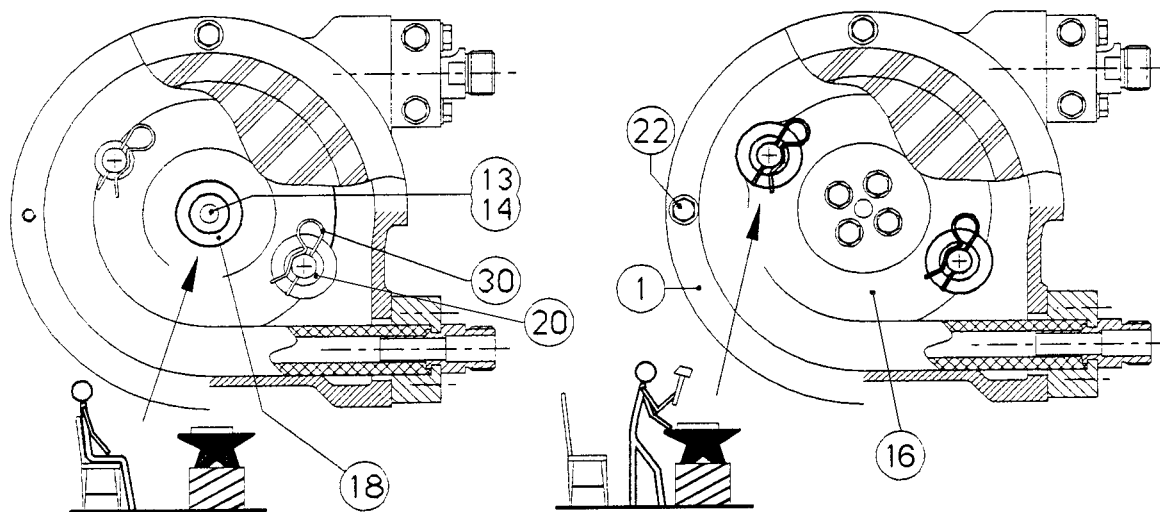


Figure 4.10

NOTE: The roller bearings are lubricated for life.

4.6 Troubleshooting

The following troubleshooting table is provided for determining and correcting most common troubles.

Table 4.1 - Troubleshooting

PROBLEMS	CAUSES	SOLUTIONS
THE PUMP DOES NOT PRIME.	The pump has been left inactive for a long time without observing the procedure in paragraph 4.5.	Leave the pump running for a short time, after which it will return to full efficiency. If the problem occurs when pumping from underground tanks, the pump must first be used to pump from a tank above ground.
	The suction pipe is collapsed, one of its internal linings has become detached or the pipe is clogged.	In addition to satisfying the requirements of paragraph 2.2.3, the bottom of the suction pipe must be fitted with a rigid coupling to guarantee complete opening.
POOR PERFORMANCE.	Air enters from the suction pipe.	Check for damage and check the pipe gaskets.
	Suction pipe too long.	Adhere as close as possible to the specifications given in paragraph 2.2.3.
	High gas content in the liquid pumped.	Consult Technical Service.
EXCESSIVE WEAR OF THE TUBULAR ELEMENT	Incompatibility of the fluid to the tubular element.	Refer to the compatibility guide.
	Temperature of the fluid too high.	Lower the fluid temperature.
	Back pressure too high.	Check for any resistance on the discharge line.
	Not enough lubrication or wrong spray lubricant.	Follow lubrication schedule and use proper spray lubricant.
	RPM too high.	Check the motor revolution. It must not exceed 1750 rpm. Consult Technical Service.
	Roller is not turning.	Attain the kit to rebuild the roller assembly.

Table 4.1 - Troubleshooting (Cont'd)

PROBLEMS	CAUSES	SOLUTIONS
PIPES SHAKE.	Insufficient gas cushion in pulsation dampeners.	Consult Technical Service.
	Suction pipe kinked.	Consult Technical Service.
EXCESSIVE HEATING OF ELECTRICAL MOTOR. NOTE: First check the current draw on the three phases and compare it with the values on the motor rating plate.	System too demanding for motor.	Consult Technical Service.
	Electrical cables too long or with insufficient size.	Consult Technical Service.
	Drop in power supply voltage or unbalanced phases.	Consult Technical Service.
	Insufficient ventilation.	Ensure that the motor fan is integral with the shaft.
NOISES AND RATTLING INSIDE THE PUMP.	Excessive suction head.	Consult Technical Service.
	Pipes kinked.	Consult Technical Service.
	Pipes with insufficient diameters.	Consult Technical Service.
NOTE: For any problems not included in the above list, contact the Siemens Water Technologies Technical Service.		

WARNING LABELS

The following warnings are attached to the equipment.

AAB8513: THIS EQUIPMENT HANDLES HAZARDOUS MATERIALS WHICH CAN CAUSE SEVERE PERSONAL INJURY. THIS EQUIPMENT SHOULD BE INSTALLED, OPERATED, AND SERVICED ONLY BY TRAINED, QUALIFIED PERSONNEL WHO ARE THOROUGHLY FAMILIAR WITH THE ENTIRE CONTENTS OF THIS INSTRUCTION BOOK. TURN OFF AND LOCK OUT POWER BEFORE SERVICING TO AVOID SHOCK HAZARD AND/OR PERSONAL INJURY. USE RIGID PIPE WHEN PUMPING HAZARDOUS MATERIALS OR AT HIGH FLUID TEMPERATURES OR AT HIGH DISCHARGE PRESSURES.

AAB7898: OBTAIN SAFETY INFORMATION FROM THE CHEMICAL SUPPLIER AND REFER TO THE INSTRUCTION BOOK FOR FURTHER DETAILS. USE PERSONAL PROTECTIVE EQUIPMENT RECOMMENDED BY THE CHEMICAL SUPPLIER.

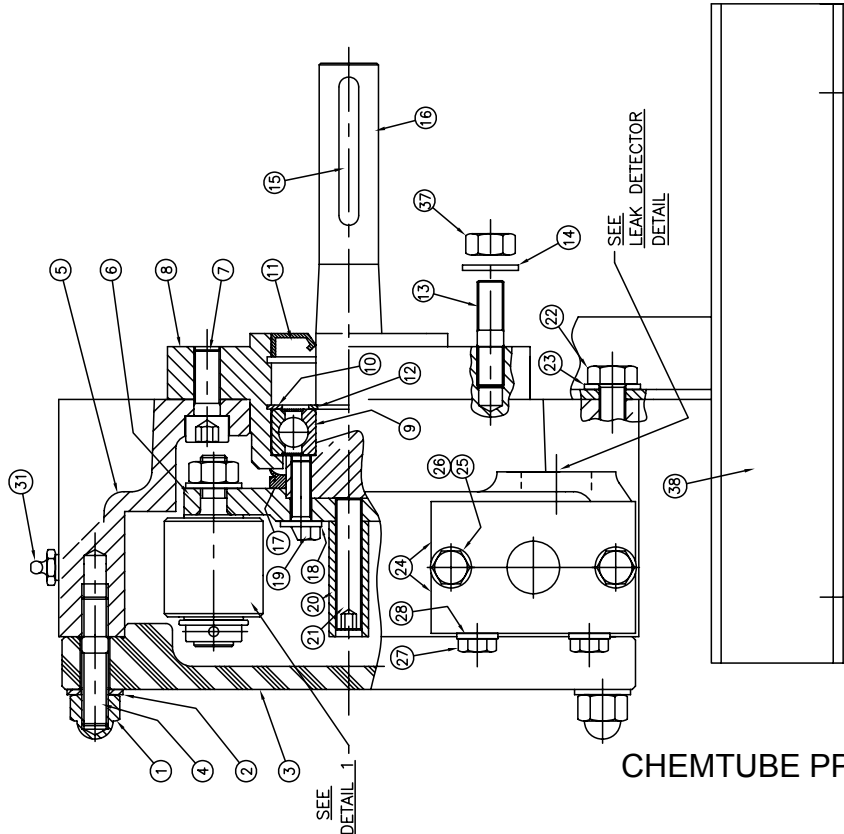
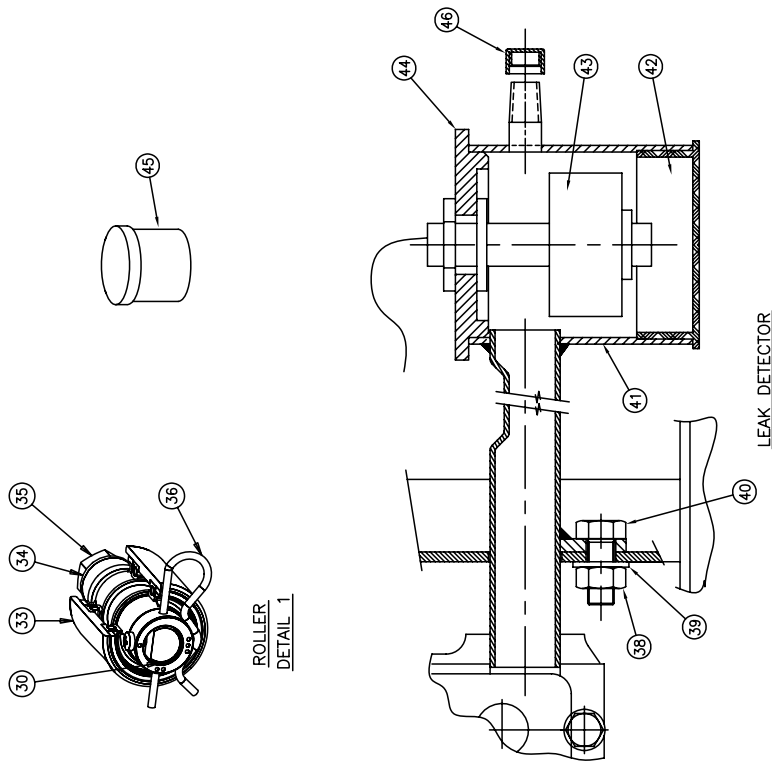
AAB8510: PINCH HAZARD. DO NOT REMOVE FRONT COVER.

SECTION 5 - ILLUSTRATIONS

List of Contents

	DWG. NO.
Parts	
S5 & S10 Pump	490.200.000.110A&B
S16 Pump	490.200.000.120A&B
S26 Pump	490.200.000.130A&B
S10 Gear Reducer	490.200.000.140
S16 Gear Reducer	490.200.000.150
S26 Gear Reducer	490.200.000.160

CHEMTUBE® PPS - S SERIES



CHEMTUBE PPS - S5 & S10 PUMPS
- PARTS

490.200.000.110A

ISSUE 2 9-07

NOTE: FOR PARTS LIST, SEE DWG. 490.200.000.110B.

CHEMTUBE® PPS - S SERIES

KEY NO.	PART NO.	QTY.	DESCRIPTION
1	AAB7250	4	NUT, BLIND M8
2	AWO5392	4	WASHER, M8
3	AAB7256	1	TRANSPARENT GUIDE
4	AAB7262	4	CATIVE SCREW, M8X39
5	---	1	STATOR
6	---	1	ROTOR
7	AXS3656	4	SCREW, M8X20
8	---	1	ROTOR SUPPORT
9	AAB7265	1	BEARING, 6204
10	AAB7268	1	CIRCLIP I 47
11	AAB7274	1	OIL SEAL, 47-20-7
12	AAB7280	1	CIRCLIP E 20
13	AAB7283	4	CAPTIVE SCREW, M8X32
14	AWO5392	4	WASHER, ø8
15	AAB7295	1	KEY
16	AAB7304	1	SHAFT, CONTROL
17	AAB7307	1	OIL SEAL, V-RING, M38
18	AAA1146	4	WASHER, ø6
19	AAB7319	4	SCREW, M6X20
20	---	1	ROLLER PROTECTION, REST MODE
21	AAB7322	1	HEX. SOC. SET SCREW, M8X40, FLAT PT.
22	AAB8141	3	SCREW, M8X5
23	AWO5392	3	WASHER, M8
24	AAB7835	2	BRACKET
25	AAA1146	4	WASHER, ø6
26	AAA1539	4	SCREW, M8X15
27	AAB7841	4	SCREW, M6X30
28	AAA1146	4	WASHER, ø6
29	---	1	FRAME
30	AAD2822	2	ROLLER SHAFT
31	AAD2825	1	GREASER, M10 HEAD
32	---	-	---
33	AAD2801	2	ROLLER
34	AWO5392	2	WASHER, ø8
35	AAA1698	2	NUT, M8
36	AAB7865	2	ROLLER STOP
37	AAA1698	4	NUT, M8
38	AAA1698	1	NUT, M8
39	AWO5392	1	WASHER, ø8
40	AAB7229	1	SCREW, M8X20
41	AAB7232	1	PROBE SUPPORT
42	AAB7238	1	PLUG
43	AAB7244	1	PROBE
44	AAB7247	1	COVER
45	AAB8147	1	SILICONE GREASE, TUBULAR ELEMENT
46	AAB9767	1	PLUG

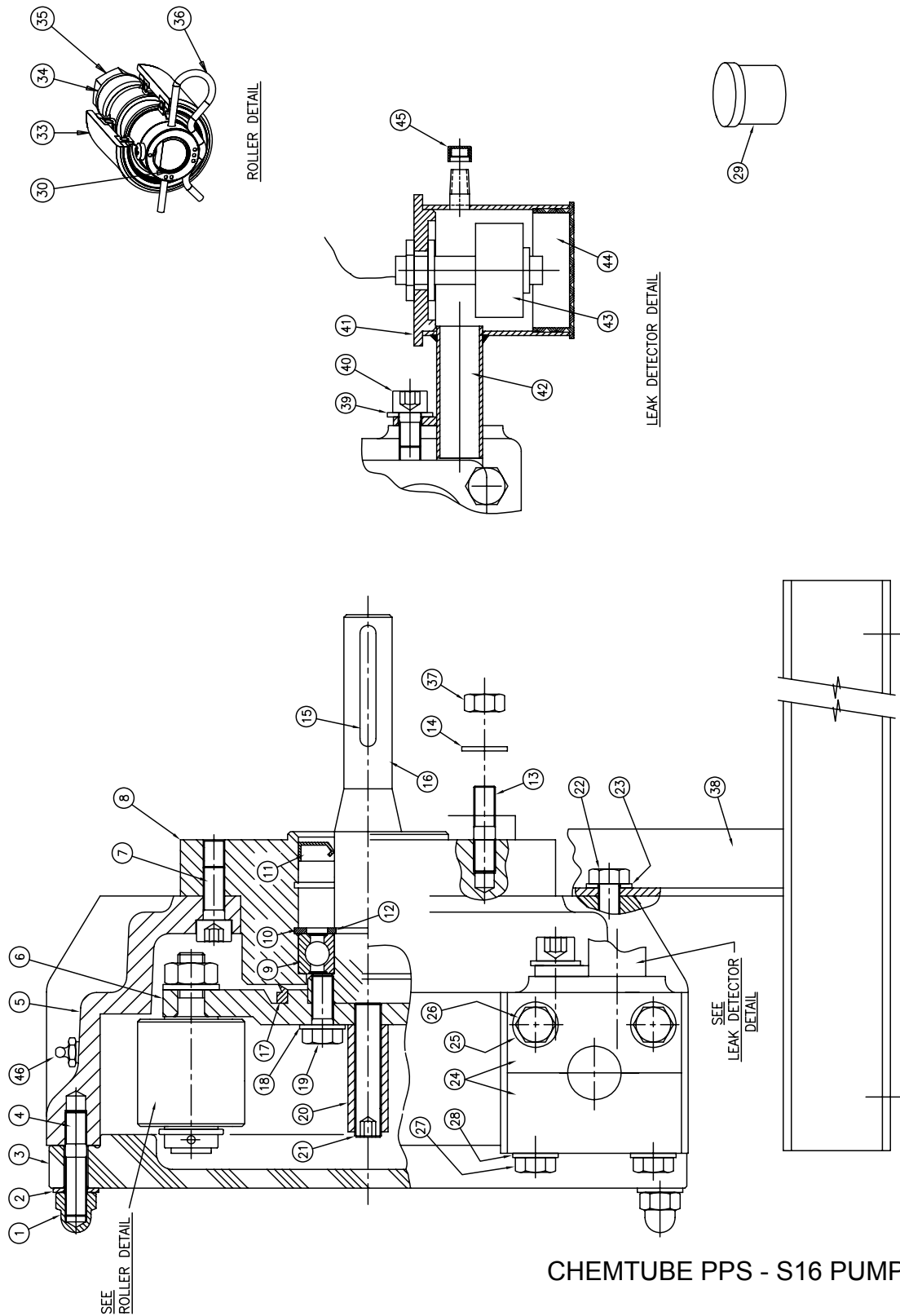
WHEN ORDERING MATERIAL, ALWAYS SPECIFY MODEL AND SERIAL NUMBER OF APPARATUS.

CHEMTUBE PPS - S5 & S10 PUMPS - PARTS LIST

490.200.000.110B

ISSUE 2 9-07

CHEMTUBE® PPS - S SERIES



CHEMTUBE PPS - S16 PUMP - PARTS

490.200.000.120A

ISSUE 2 9-07

CHEMTUBE® PPS - S SERIES

KEY NO.	PART NO.	QTY.	DESCRIPTION
1	AAB7250	4	NUT, BLIND, M8
2	AWO5392	4	WASHER, ø8
3	AAB7874	1	TRANSPARENT GUIDE
4	AAB7262	4	CAPTIVE SCREW, M8X39
5	---	1	STATOR
6	---	1	ROTOR
7	AAA1545	4	SCREW, M8X20
8	---	1	ROTOR SUPPORT
9	AAB7877	1	BEARING, 6205
10	AAB7880	1	CIRCLIP I 52
11	AAB7883	1	OIL SEAL, 52-25-7
12	AAB7886	1	CIRCLIP E 25
13	AAB7283	4	CAPTIVE SCREW, M8X32
14	AWO5392	4	WASHER, ø8
15	AAB7295	1	KEY, 6.6.45
16	AAB7889	1	CONTROL SHAFT
17	AAB7892	1	OIL SEAL V-RING, ø60
18	AWO5392	4	WASHER, ø8
19	AAA1545	4	SCREW, M8X20
20	---	1	ROLLER PROTECTION, REST MODE
21	AAB7895	1	HEX. SOC. SET SCREW, M10X50, FLAT POINT
22	AX53568	3	SCREW, M8X15
23	AWO5392	3	WASHER, ø8
24	AAB7901	2	BRACKET
25	AWO5392	4	WASHER, ø8
26	AAA1647	4	SCREW, M8X45
27	AAA1647	4	SCREW, M8X45
28	AWO5392	4	WASHER, ø8
29	AAB8147	1	SILICONE GREASE, TUBULAR ELEMENT
30	AAD2834	2	ROLLER SHAFT
31	---	-	---
32	---	-	---
33	AAD2798	2	ROLLER
34	AAA1452	2	WASHER, ø10
35	ATI3434	2	NUT, M10
36	AAB7865	2	ROLLER STOP
37	AAA1698	4	NUT, M8
38	---	1	FRAME
39	AWO5392	1	WASHER, ø8
40	AAB7868	1	SCREW, M10X15
41	AAB7247	1	COVER
42	AAB8264	1	PROBE SUPORT
43	AAB7244	1	PROBE
44	AAV7238	1	PLUG
45	AAB9767	1	PLUG
46	AAD2825	1	GREASER, M10 HEAD

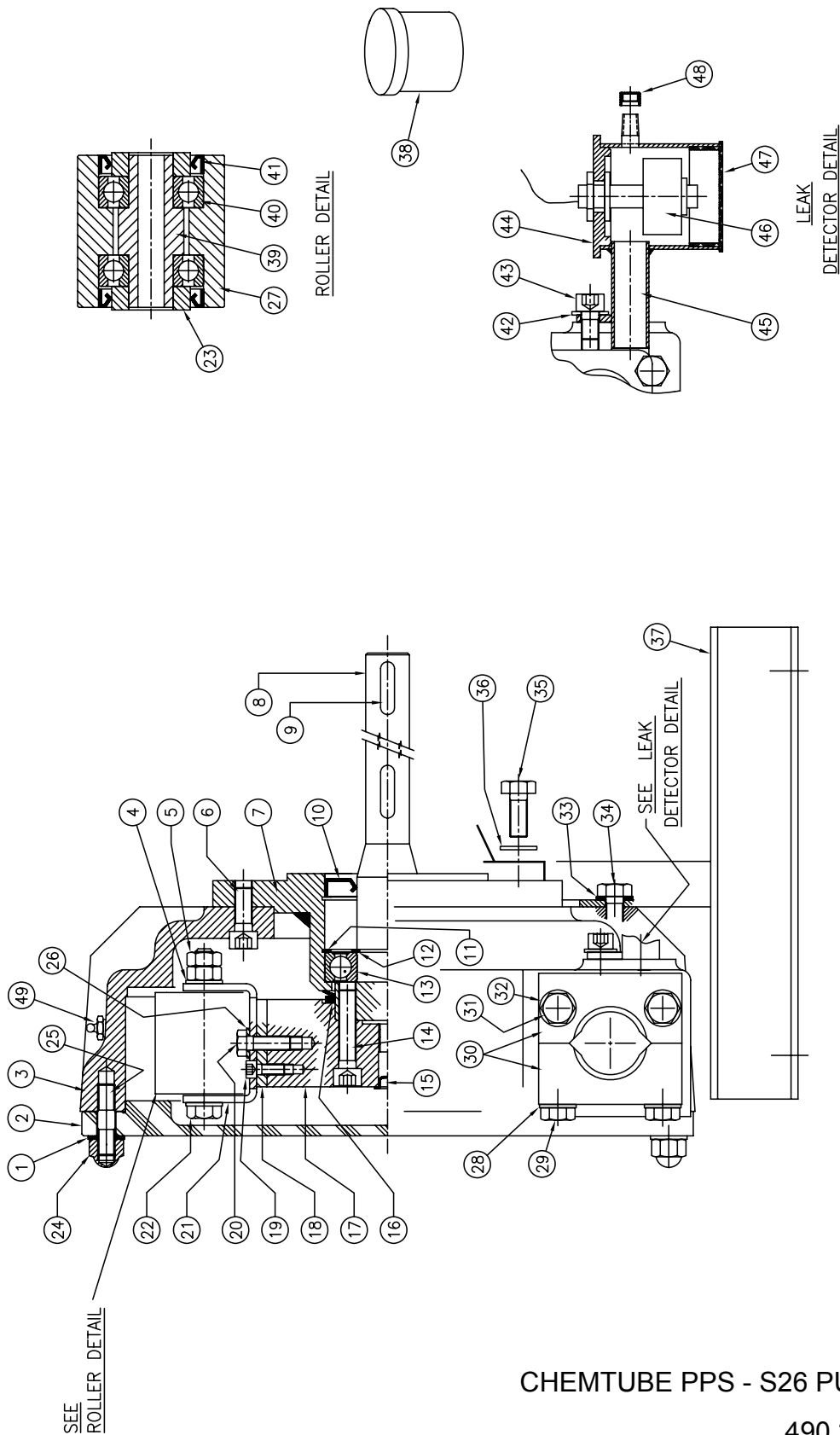
WHEN ORDERING MATERIAL, ALWAYS SPECIFY MODEL AND SERIAL NUMBER OF APPARATUS.

CHEMTUBE PPS - S16 PUMP - PARTS LIST

490.200.000.120B

ISSUE 1 3-05

CHEMTUBE® PPS - S SERIES



CHEMTUBE PPS - S26 PUMP - PARTS

490.200.000.130A

ISSUE 2 9-07

CHEMTUBE® PPS - S SERIES

KEY NO.	PART NO.	QTY.	DESCRIPTION
1	AAA1452	4	WASHER, ø10
2	AAB7916	1	TRANSPARENT GUIDE
3	---	1	STATOR
4	AAA1452	4	WASHER, ø10
5	ATI3434	4	NUT, M10
6	ASG3667	4	SCREW, M10X25
7	---	1	ROTOR SUPPORT
8	AAB7919	1	CONTROL SHAFT
9	AAB7922	2	KEY, 8.7.30
10	AAB7925	1	OIL SEAL, 72.35.10
11	AAB7928	1	CIRCLIP I 72
12	AAB7931	1	CIRCLIP E 35
13	AAB7934	1	BEARING, 6207
14	AAB8081	4	SCREW, M10X45
15	AAB7937	1	PLUG, ø10.5
16	AAB7892	1	OIL SEAL V-RING, V60A
17	---	1	ROTOR
18	AAB7943	2	ADJUSTMENT SPACER, 4 BAR
	AAB8945	2	ADJUSTMENT SPACER, 8 BAR
19	AXQ3929	4	SCREW, M6X15
20	AAA1593	4	SCREW, M8X25
21	AAB7949	2	ROLLER SUPPORT
22	AAA7785	2	SCREW, M10X90
23	AAB7952	4	ROLLER SPACER
24	AAB7955	4	BLIND NUT, M10
25	AWO5392	4	CAPTIVE SCREW, M10X41
26	AAB7958	4	WASHER, M8
27	ATI5686	2	ROLLER
28	AAA1452	4	SCREW, M10X50
29	AAB7904	4	WASHER, ø10
30	AAB7904	2	BRACKET
31	AAA1674	4	SCREW, M10X55
32	AAA1452	4	WASHER, ø10
33	AAA1452	4	WASHER, ø10
34	AAA1419	3	SCREW, M10X20
35	AAA1530	4	SCREW, M10X25
36	AAA1452	3	WASHER, ø10
37	---	1	FRAME
38	AAB8147	1	SILICONE GREASE, TUBULAR ELEMENT
39	AAB7907	2	CONTROL SHAFT
40	AAB7910	4	BEARING, 6203
41	AAB7913	4	OIL SEAL, 30.40.7
42	AAA1452	1	WASHER, ø10
43	AAB8084	1	SCREW, M10X15
44	AAB7247	1	SAFETY PROBE COVER
45	AAB8264	1	SAFETY PROBE SUPPORT
46	AAB7244	1	SAETY PROBE
47	AAB7238	1	PLUG
48	AAB9767	1	PLUG
49	---	1	GREASER, M10 HEAD

WHEN ORDERING MATERIAL, ALWAYS SPECIFY
MODEL AND SERIAL NUMBER OF APPARATUS.

CHEMTUBE PPS - S26 PUMP - PARTS LIST

490.200.000.130B

ISSUE 2 9-07

CHEMTUBE® PPS - S SERIES

S10 Fixed Speed Capacity Chart

RPM	30 PSI		60 PSI		120 PSI		HP Ind (Inverter)	Gearbox No.	Motor Frame
	GPH	LPH	GPH	LPH	GPH	LPH			
17.5	6.5	24.4	5.5	20.6	5	18.8	1/4 (1/2)	AAB7394	N56C
25	9	33.8	8	30	7	26.3	1/4 (1/2)	AAB7397	
29	11	41.3	9	33.8	8	30	1/4 (1/2)	AAB7400	
38	14	52.5	12.5	46.9	11	41.3	1/4 (1/2)	AAB7403	
50	19	71.3	17	63.8	15	56.3	1/4 (1/2)	AAB7406	
62.5	24	90	22	82.5	19.5	73.1	1/4 (1/2)	AAB7409	
87.5	32	120	30.5	114.4	28	105	1/4 (1/2)	AAB7412	
125	46.5	174.4	44	165	40	150	1/4 (1/2)	AAB7415	

S10 Mechanical Variable Speed Capacity Chart

RPM	30 PSI		60 PSI		120 PSI		HP Ind (Inverter)	Combined Gearbox	Fxd Spd Gearbox	Vrbl Spd Gearbox	Motor Frame
	GPH	LPH	GPH	LPH	GPH	LPH					
6-36	2.4-13	8.9-48.8	2.2-12	8.2-45	1.9-10.5	7.2-39.4	1/4 (1/2)	AAB8678	AAB7406	AAB7373	N56C
8-45	3-16.5	11.2-62	2.7-15.5	10.5-58.1	2.4-13.5	9.2-50.6	1/4 (1/2)	AAB8681	AAB7409		
11-63	4.4-24	16.4-90	4-22	15-82.5	3.6-20	13.6-75	1/4 (1/2)	AAB8684	AAB7412		
23-125	8.5-46.5	32-174.4	8-44	30-165	7.3-40	27.3-150	1/4 (1/2)	AAB8687	AAB7418		

WHEN ORDERING MATERIAL, ALWAYS SPECIFY MODEL AND SERIAL NUMBER OF APPARATUS.

CHEMTUBE PPS - MODEL S10 GEAR REDUCER - PARTS

490.200.000.140

ISSUE 0 5-01

CHEMTUBE® PPS - S SERIES

S16 Fixed Speed Capacity Chart

RPM	30 PSI		60 PSI		120 PSI		HP Ind (Inverter)	Gearbox No.	Motor Frame
	GPH	LPH	GPH	LPH	GPH	LPH			
17.5	25	93.8	20	75	15	56.3	1/4 (1/2)	AAB7394	N56C
25	36	135	31	116.3	25	93.7	1/4 (1/2)	AAB7397	
29	40	150	35	131.3	30	112.5	1/4 (1/2)	AAB7400	
38	53	198.8	46	172.5	40	150	1/4 (1/2)	AAB7403	
50	73	273.8	64	243.8	58	217.5	1/4 (1/2)	AAB7406	
62.5	90	337.5	83	311.2	75	281.3	1/4 (1/2)	AAB7409	
87.5	127	476.3	117	438.8	105	393.8	1/4 (1/2)	AAB7412	
125	180	675	170	637.5	155	581.5	1/4 (1/2)	AAB7415	

S16 Mechanical Variable Speed Capacity Chart

RPM	30 PSI		60 PSI		120 PSI		HP Ind (Inverter)	Combined Gearbox	Fxd Spd Gearbox	Vrbl Spd Gearbox	Motor Frame
	GPH	LPH	GPH	LPH	GPH	LPH					
6-36	9.5-52	35.5-195	8.4-46	31.4- 172.5	7.3-40	27.3-150	1/4 (1/2)	AAB8678	AAB7406	AAB7373	N56C
8-45	11.8-65	44.3-244	12-60	41-225	9.5-52	35.5-195	1/4 (1/2)	AAB8681	AAB7409		
11-63	16.7-92	62.7-345	11.8- 85	58-319	13.6- 75	51-282	1/4 (1/2)	AAB8684	AAB7412		
23- 125	32.7- 180	122.7- 675	31-170	116-638	28-153	104.4- 574	1/4 (1/2)	AAB8687	AAB7418		

WHEN ORDERING MATERIAL, ALWAYS SPECIFY MODEL AND SERIAL NUMBER OF APPARATUS.

CHEMTUBE PPS - MODEL S16 GEAR REDUCER - PARTS

490.200.000.150

ISSUE 0 5-01

CHEMTUBE® PPS - S SERIES

S26 Fixed Speed Capacity Chart

RPM	30 PSI			60 PSI			90 PSI			120 PSI			Gearbox No.	Motor Frame
	GPH	LPH	HP	GPH	LPH	HP	GPH	LPH	HP	GPH	LPH	HP		
17.5	115	435.3	1/2 (1)	87	329.3	1/2 (1)	75	283.9	1/2 (1)	65	246	1 (1½)	AAB7421	N145TC
22	140	529.9	1/2 (1)	120	454.2	1/2 (1)	115	435.3	1/2 (1)	90	340.7	1 (1½)	AAB7424	
27	175	662.4	1/2 (1)	150	567.8	1/2 (1)	120	454.2	1/2 (1)	110	416.4	1 (1½)	AAB7427	
39	235	889.5	1/2 (1)	215	813.8	1/2 (1)	190	719.2	1/2 (1)	175	662.4	1 (1½)	AAB7430	
46	280	1060	1/2 (1)	250	946.3	1/2 (1)	230	870.6	1/2 (1)	220	832.7	1 (1½)	AAB7433	
58	350	1324.8	1/2 (1)	320	1211.2	1 (1½)	300	1135.5	1 (1½)	X	X	X	AAB7436	
73	430	1627.6	1/2 (1)	410	1551.9	1 (1½)	380	1438.3	1 (1½)	X	X	X	AAB7439	
92	550	2082	1/2 (1)	520	1968.2	1 (1½)	460	1741.1	1 (1½)	X	X	X	AAB7442	
117	680	2573.8	1/2 (1)	650	2460.3	1 (1½)	580	2195.3	1 (1½)	X	X	X	AAB7445	
140	820	3104	1/2 (1)	780	2952.3	1 (1½)	705	2668.4	1 (1½)	X	X	X	AAB7448	

S26 Mechanical Variable Speed Capacity Chart

RPM	30 PSI		60 PSI		90 PSI		120 PSI		HP	Combined Gearbox	Fxd Spd Gearbox	Vrbl Spd Gearbox	Motor Frame
	GPH	LPH	GPH	LPH	GPH	LPH	GPH	LPH					
6-36	41 - 225	153 - 844	36 - 200	136 - 750	32 - 175	119.3 - 656.3	29 - 160	109 - 600	1½ (2)	AAB8690	AAB7433	AAB8702	N154TC
8-45	47.3 - 260	117 - 975	42 - 230	157 - 863	39 - 215	146.6 - 806.3	36.4 - 200	136 - 750	1½ (2)	AAB8693	AAB7436		
11-63	69 - 380	259 - 1425	66 - 365	249 - 1369	X	X	X	X	1½ (2)	AAB8696	AAB7442	AAB7382	
23-125	133 - 730	496 - 2738	X	X	X	X	X	X	1½ (2)	AAB8699	AAB7448		

NOTE: () DENOTES HP OF INVERTER MOTOR.

WHEN ORDERING MATERIAL, ALWAYS SPECIFY MODEL AND SERIAL NUMBER OF APPARATUS.

CHEMTUBE PPS - MODEL S26 GEAR REDUCER - PARTS

490.200.000.160

ISSUE 0 5-01

SECTION 6 - ACCESSORIES & SPARE PARTS LIST

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Calibration Column	6.1.3
Conversion Kits.....	6.1.4
Spares	6.2
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Connections	6.2.2
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6.1 Accessories

6.1.1 Pulsation Dampener

Pump Model	Maximum Pressure	Body Material	Bladder Material	Part Number	Connection
S5	150 psi	PVC	EPDM	AAC7871	Flow-through ½" NPT (F)
			Hypalon	AAC7874	
			Viton	AAC7877	
	300 psi	Stainless Steel	EPDM	AAC7880	Single Inlet 3/8" NPT (F)
			Hypalon	AAC7883	
			Viton	AAC7886	
S10	150 psi	PVC	EPDM	AAB8654	½" NPT (F)
			Hypalon	AAB8657	
			Viton	AAB8660	
	300 psi	Stainless Steel	EPDM	AAB8846	
			Hypalon	AAB8849	
			Viton	AAB8852	
S16	150 psi	PVC	EPDM	AAB8855	¾" NPT (F)
			Hypalon	AAB8858	
			Viton	AAB8861	
	300 psi	Stainless Steel	EPDM	AAB8864	
			Hypalon	AAB8867	
			Viton	AAB8870	
S26	150 psi	PVC	EPDM	AAB8873	1" NPT (F)
			Hypalon	AAB8876	
			Viton	AAB8879	
	300 psi	Stainless Steel	EPDM	AAB8882	
			Hypalon	AAB8885	
			Viton	AAB8888	

6.1.2 Pressure Relief Valve

Flow Rate GPH	Pressure Setting psi	Connections & Body Material	Diaphragm Material	Part Number
5.5	25 - 170	¼" NPT, PVC	PTFE/Hypalon	U25776
		¼" NPT, Kynar	PTFE/Hypalon	U25777
60	25 - 170	¾" NPT, PVC	PTFE/Hypalon	U26654
		¾" NPT, Kynar	PTFE/Hypalon	U26655
100	25 - 100	1" NPT, PVC	PTFE/Hypalon	U26656
		1" NPT, Kynar	PTFE/Hypalon	U26657
300	10 - 150	½" NPT, PVC	PTFE/EPDM	AAB8816
		½" NPT, 316 SS	PTFE/EPDM	AAB8819
300	10 - 150	¾" NPT, PVC	PTFE/EPDM	AAB8822
		¾" NPT, 316 SS	PTFE/EPDM	AAB8825
1500	10 - 150	1" NPT, PVC	PTFE/EPDM	AAB8828
		1" NPT, 316 SS	PTFE/EPDM	AAB8831

6.1.3 Calibration Column

Pump Capacity, GPH	Calibration Column Capacity, mL	Connections	Part Number
0 - 4	250	½" NPT	AAC2546
0 - 8	500	¾" NPT	AAC2549
0 - 16	1000	¾" NPT (female)	AAC2552
0 - 64	4000	1" NPT	AAC2558
320	10000	2" NPT	AAB6890
640	20000	2" NPT	AAB9065

6.1.4 Conversion Kits

Kit	Component	Part Number
S10 to S5 Conversion	PVC Connections with Natural Rubber Tube	AAC7907
	PVC Connections with Hypalon Tube	AAC7910
	Stainless Steel Connections with Natural Rubber Tube	AAC7913
	Stainless Steel Connections with Hypalon Tube	AAC7916
S5 to S10 Conversion	PVC Connections with Natural Rubber Tube	AAC7919
	PVC Connections with Hypalon Tube	AAC7922
	Stainless Steel Connections with Natural Rubber Tube	AAC7925
	Stainless Steel Connections with Hypalon Tube	AAC7928

6.2 Spares

6.2.1 Tubular Element

NOTE: Order one (1) per pump, check the color of the stripe on the tubular.

Pump Model	Description	Pressure Limits (PSI)	Tubular Color Code	Part Number
S5	Natural Isoprene/Natural Rubber	150	Blue Stripe	AAC7742
	Ethylene Propylene (EPDM)	90	Green Stripe	AAC7745
	Hypalon	150	Orange Stripe	AAC7748
S10	Natural Isoprene/Food Grade	75	Red Stripe	AAB7673
	Natural Isoprene/Natural Rubber	120	Blue Stripe	AAB7676
	Ethylene Propylene (EPDM)	120	Green Stripe	AAB7679
	Nitrile Butadiene/Food Grade	75	White Stripe	AAB7682
	Nitrile Butadiene (Buna N)	120	Yellow Stripe	AAB7685
	Hypalon	120	Orange Stripe	AAC1799
S16	Natural Isoprene/Food Grade	75	Red Stripe	AAB7688
	Natural Isoprene/Natural Rubber	120	Blue Stripe	AAB7691
	Ethylene Propylene (EPDM)	120	Green Stripe	AAB7694
	Nitrile Butadiene/Food Grade	75	White Stripe	AAB7697
	Nitrile Butadiene (Buna N)	120	Yellow Stripe	AAB7700
	Hypalon	120	Orange Stripe	AAC1802
S26	Natural Isoprene/Food Grade	75	Red Stripe	AAB7703
	Natural Isoprene/Natural Rubber	120	Blue Stripe	AAB7706
	Ethylene Propylene (EPDM)	120	Green Stripe	AAB7709
	Nitrile Butadiene/Food Grade	75	White Stripe	AAB7712
	Nitrile Butadiene (Buna N)	120	Yellow Stripe	AAB7715
	Hypalon	120	Orange Stripe	AAC1805

6.2.2 Connections

NOTE: Order two inserts for suction and discharge

Pump Model	Connection Size	Connection Material	Part Number
S5	½" NPT	PVC	AAC7637
		316 SS	AAC7634
		Titanium	AAC7889
S10	½" NPT	PVC	AAB8516
		316 SS	AAB7040
		Titanium	AAB7043
S16	¾" NPT	PVC	AAB7046
		316 SS	AAB7049
		Titanium	AAB7052
S26	1¼" NPT	PVC	AAB7055
		316 SS	AAB7058
		Titanium	AAB8519

6.2.3 Tubular Clamping Bracket

NOTE: Order two (2) pairs for suction and discharge.

Pump Model	Part Number
S5	AAB7835 & AAC7631 (4 pcs., half clamp)
S10	AAB7835
S16	AAB7901
S26	AAB7904

6.2.4 Roller Kits and Retrofit Kits

- NOTES:**
1. Order one (1) kit per pump
 2. Roller Retrofit Kit - to change the roller assembly to ball bearing design.
 3. Roller Kit - Replacement Kit for the roller assembly of the ball bearing design.

Pump Model	Roller Retrofit Kit (Roller Kit + Tool & Roller Shafts)	Roller Kit (Roller Assembly & Pin)
S5 & S10	AAD2807	AAC7931
S16	AAD2804	AAC7934
S26	Not Applicable	AAC7937

6.2.5 Lubrication

Where to Use	Type of Lubricant	Container Size	Part Number
Spray for tubular element	Silicone Spray	400 ml	AAB7844
Oil for right angle gearbox	Poly-glycol base Synthetic oil ISO460	1 gal. can	AAB9287
Oil for variable speed gearbox	"Dexron II" transmission oil	1 qt. bottle	AAB9278

6.2.6 Leak Detector Parts

Description	Part Number
Probe Support - S5, S10	AAB7232
Probe Support - S16, S26	AAB8264
Probe	AAB7244
Cover	AAB7247
Plug	AAB7238

