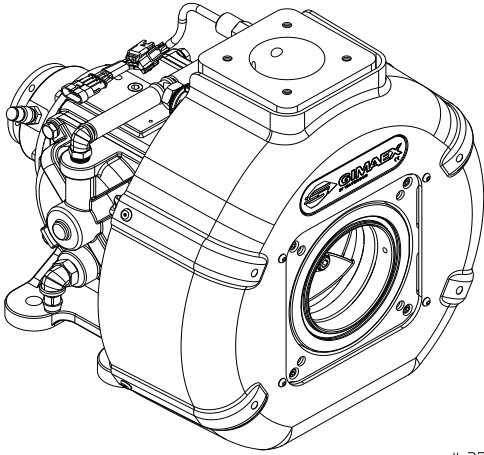


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IL3771



Read through the safety information and operating instructions carefully

before using your S200-G Series Fire Pump.

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NOTE: Instructions subject to change without notice

Safety Information



Read through the safety information and operating instructions before using your Fire Pump.

WARNING

Death or serious personal injury might occur if proper operating procedures are not followed. The pump operator, as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with these pump operating instructions as well as other operating instructions and manuals for the apparatus, water hydraulics and component limitation.

WARNING

Pressure Hazard. May result in personal injury.

Prior to connection or removal of hoses, caps or other closures with pump intake or pump discharge connections, relieve pressure by opening drains or bleeder valves. Bleeder valves should also be used while filling a hose connected to an intake with water.

WARNING

Scalding Water Hazard. May result in serious burns.

When operating the pump, be sure to open at least one discharge valve slightly to prevent the pump from overheating. If the pump runs for a few minutes completely closed, it may heat the water enough to scald someone when the valve is opened. Overheating can damage the packing, seals and other pump parts. If the apparatus builder has installed a by-pass system or other provision designed to prevent overheating, opening a discharge valve may be unnecessary.

WARNING

Unexpected Truck Movement. May result in serious personal injury or death.

Failure to properly shift transmission in accordance to the transmission operation instructions may result in unexpected truck movement which may result in serious personal injury or death.

Intended Uses

The S200-G series pump is a centrifugal water pump that is intended to be used for firefighting operations. It is an incomplete machine that is intended to be incorporated into completed apparatus such as firefighting vehicles.

The S200-G series pump is not intended to pump fuels, combustible liquids, oil, solids or slurries.

Operator Training

It is intended that the S200-G series pumps will be operated by personnel trained in firefighting tactics and the use of centrifugal firefighting water pumps.

Noise

While the pump is in operation, use appropriate ear protection to guard against the noise generated by the pump.

The maximum sound pressure level is 85dB as measured at factory conditions.

Pump Operation

- Make sure all rotating components are adequately guarded to prevent accidental contact.
- Do not place any object or hand into the intake of the pump while in operation.
- Do not disconnect the discharge hoses while they are pressurized.
- Do not unfasten any component while the pump is in operation.
- Use suitable hoists or lifting devices when removing or installing the pump.

Safety Information



Read through the safety information and operating instructions before using your Fire Pump.



WARNING

Hose Testing Hazard. May result in serious personal injury.

Due to a potential for catastrophic hose failure during service testing of fire hose, it is vital that safety precautions be taken to prevent exposure of anyone to this danger. Fire pumps on fire department apparatus are not designed for and should not be used for service testing of fire hoses. Hose testing machines should be used for service testing of fire hoses.



WARNING

Pressure Hazard. May result in serious personal injury.

If a fire pump on a fire department apparatus is used for service testing of fire hoses, the procedures in NFPA 1962 **MUST be followed** including the use of a fire department gate valve with a ¼-inch (6 mm) hole drilled through the gate installed between the fire apparatus discharge outlet and the hose test layout to prevent a volume surge from the pump in the event a hose bursts during testing.



WARNING

Scalding Water Hazard. May result in serious burns.

If a fire pump on a fire department apparatus is used for service testing of fire hoses, pump discharge water must be circulated through a by-pass system or discharged through a slightly open discharge valve, or some other provision must be used to prevent overheating. If the pump runs for a few minutes without adequate flow through the pump, water may be heated enough to scald someone when a valve is opened.

Introduction

This instruction contains the information needed for operation and maintenance of the S200-G Series fire pump.

General Description

The S200-G series are pedestal mounted fire pumps designed to meet the EN 1028 Standard:

1500 L/min @ 10 bar	1500 L/min @ 15 bar
2000 L/min @ 10 bar	2000 L/min @ 15 bar
3000 L/min @ 10 bar	3000 L/min @ 15 bar

Before operating the S200-G pump, read the following instructions carefully.

Operational Limits

Maximum Angle of Inclination

The maximum angle of inclination for pump operation is 15 degrees.

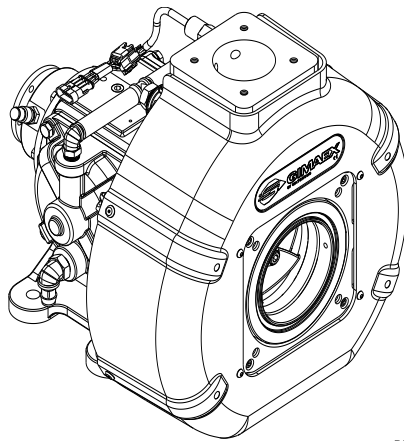
Maximum Pump Speed

The pump has a maximum operating speed that is listed in Table 1. **Do not exceed this speed.**

Priming Speed

When priming, the optimal pump speed is 2000 rpm. Priming pump at speeds less than 2000 rpm is acceptable but priming time will increase. Do not exceed pump priming speed of 2200 rpm.

S200-G Series



IL3771

Table 1: S200-G Specifications

EN Designation (EN 1028-1)		FPN 10-1500	FPN 15-1500	FPN 10-2000	FPN 15-2000	FPN 10-3000	FPN 15-3000
Nominal Flow Rate Q _N	l/min	1500	1500	2000	2000	3000	3000
Nominal Rated Pressure P _N	bar	10	15	10	15	10	15
Nominal Speed N _N	min ⁻¹	2950	3600	2970	3610	3180	3780
Maximum Speed N _o	min ⁻¹	3600	4050	3600	4050	3600	4050
Limit Pressure P _{alim}	bar	17	20	17	20	17	20
Priming Speed N _s	min ⁻¹	2000	2000	2000	2000	2000	2000
Priming Time for 6m Suction Height (EN 1846-3)	sec	≤30 (1) DN100 Hose	≤30 (1) DN100 Hose	≤40 (1) DN100 Hose	≤40 (1) DN100 Hose	≤40 (2) DN100 Hoses or (1) DN150 Hose	≤40 (2) DN100 Hoses or (1) DN150 Hose

Components

Body Assembly

The body is constructed of corrosion-resistant bronze and other composite components.

Impeller

The impeller is constructed of bronze with wear-resistant flame plated hubs.

Impeller Shaft Assembly

The impeller shaft assembly consists of an impeller mounted on a stainless steel shaft with self-lubricated sealed bearings.

Pedestal (Primer Housing)

The pedestal is constructed of anodized aluminum and supports the piston primers and main bearings. Contains no oil so no maintenance is required.

Mechanical Seal

The mechanical seal consists of a flat, highly polished (lapped), self-adjusting (spring-fed) carbon ring that is sealed in the pump body. The carbon ring presses against a highly-polished rotating ring that is sealed to and rotates with the impeller. Mechanical seal is retained in an easily removable seal housing.

Pump Drain

One 3/4" drain with a 1/4 turn manual valve is provided on the volute.

Automatic Piston Primer

The pump is equipped with two automatic piston primers. For best performance, operate primers at 2000 rpm (pump speed). The primers will still perform at lower speeds, however, the priming time will increase. Do not exceed pump priming speed of 2200 rpm. Primer may be equipped with a manual shut-off.

Thermal Relief Valve

The thermal relief valve opens as the temperature of the water inside the pump reaches 490 C. The valve opens and diverts water to one of the following locations:

To the holding tank, vehicle tank or to atmosphere (ground).

Tachometer Connection

A magnetic pick-up feeds the pump shaft revolutions to a tachometer which displays the pump impeller speed in revolutions per minute (four pulses per revolution).

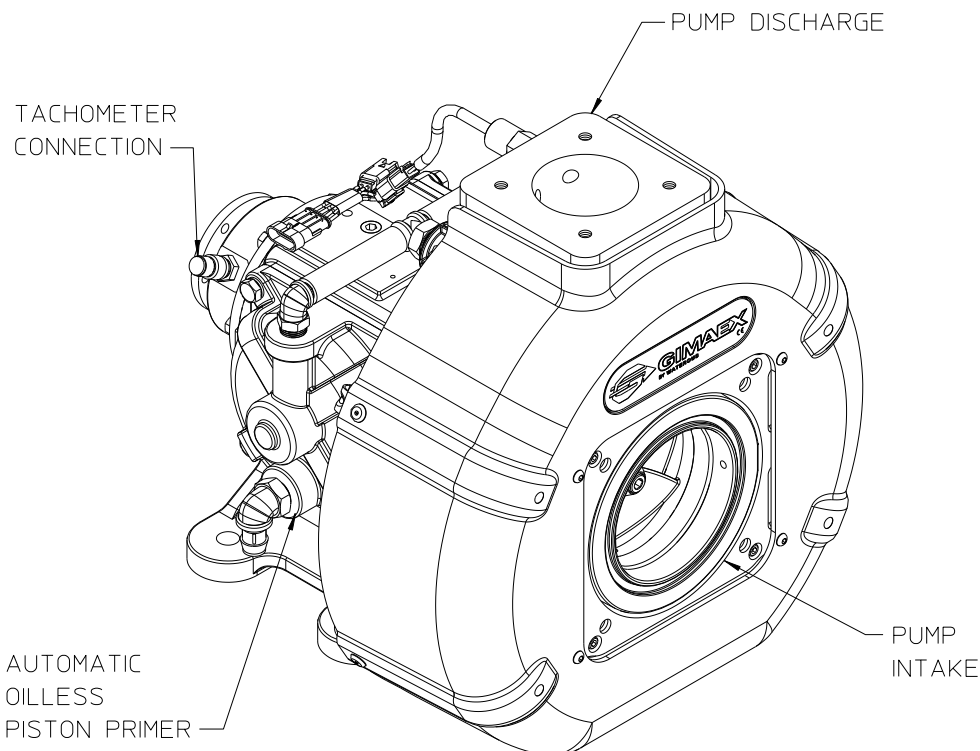
Lubrication

No lubrication is required as the bearings are sealed, pedestal and primers are oil-free and the mechanical seal is maintenance free.

Corrosion-Resistant Stripping Edge

Titanium tipped stripping edge (cut water) directs water from the impeller to the discharge passageway.

Components



Operating Instructions

Pumping from Hydrant or in Relay

WARNING

Pressure Hazard. May result in personal injury.

Prior to connection or removal of hoses, caps or other closures with pump intake or pump discharge connections, relieve pressure by opening drains or bleeder valves. Bleeder valves should also be used while filling a hose connected to an intake with water.

WARNING

Scalding Water Hazard. May result in serious burns.

When operating the pump, be sure to open at least one discharge valve slightly to prevent the pump from overheating. If the pump runs for a few minutes completely closed, it may heat the water enough to scald someone when the valve is opened. Overheating can damage the packing, seals and other pump parts. If the apparatus builder has installed a bypass system or other provision designed to prevent overheating, opening a discharge valve may be unnecessary.

1. Open intake, hydrant and other valves as necessary to allow water to enter the pump.
2. Allow about 30 seconds for water to flow into pump.
3. Engage pump drive in accordance with the vehicle operation instructions and accelerate engine to obtain desired discharge pressure and capacity.

NOTICE

This pump has a mechanical seal, limit intake pressure to 75 psi (5 bar) if possible. Although the pump will operate properly with higher intake pressure, such operation will greatly accelerate mechanical seal wear.

NOTE: The S200-G pump has an automatic priming system that will engage or disengage when the discharge pressure rises above or falls below a predetermined setting.

4. Open discharge valves and accelerate engine to obtain desired discharge pressure and capacity.

NOTICE

Do not attempt to pump more water than is available from the hydrant or relaying pumper. Always make sure the intake pressure compound-gage reading stays above zero. Some fire departments operate at a minimum intake pressure of 15 psi (1 bar) when pumping from hydrant or in relay to prevent a "soft" intake hose from collapsing.

5. Set low pressure relief valve or other governing device to desired pressure (relief valve or governing device not supplied by Waterous).

After Pumping

1. If pumping anything but clean water, remove all intake and discharge caps, open all valves and open all drains. Flush entire system with clean, fresh water for several minutes to remove all traces of impurities.
2. Cycle the piston primers. Operate them until all the fluid is discharged from the piston primer discharge pipes.

NOTICE

Freezing water hazard. May cause damage to the pump.

If the pump is exposed to freezing temperatures, drain all water from pump, lines and accessories.

3. If pump is kept full of water when not in use, make sure water is clean and non-corrosive. Make sure the pump is completely full or completely drained (never partially full).
4. Disengage pump drive in accordance with the vehicle operation instructions.
5. Close all drains and install intake and discharge caps.

Pumping from Water Tank

WARNING

Pressure Hazard. May result in personal injury.

Prior to connection or removal of hoses, caps or other closures with pump intake or pump discharge connections, relieve pressure by opening drains or bleeder valves. Bleeder valves should also be used while filling a hose connected to an intake with water.

WARNING

Scalding Water Hazard. May result in serious burns.

When operating the pump, be sure to open at least one discharge valve slightly to prevent the pump from overheating. If the pump runs for a few minutes completely closed, it may heat the water enough to scald someone when the valve is opened. Overheating can damage the packing, seals and other pump parts. If the apparatus builder has installed a bypass system or other provision designed to prevent overheating, opening a discharge valve may be unnecessary.

1. Open valve(s) in piping between water tank and pump intake and at least one discharge valve.
2. Allow about 30 seconds for water to flow into pump.

NOTE: The S200-G pump has an automatic priming system that will engage or disengage when the discharge pressure rises above or falls below a predetermined setting.

3. Engage pump drive in accordance with the vehicle operation instructions and accelerate engine to obtain desired discharge pressure and capacity.

NOTICE

Do not attempt to pump more water than is available from the water tank. Always make sure the intake pressure compound gage reading stays above zero.

4. Open discharge valves and accelerate engine to obtain desired discharge pressure and capacity.
5. Set low pressure relief valve or other governing device to desired pressure (relief valve or governing device not supplied by Waterous).

After Pumping

1. If pumping anything but clean water, remove all intake and discharge caps, open all valves and open all drains. Flush entire system with clean, fresh water for several minutes to remove all traces of impurities.
2. Cycle the piston primers. Operate them until all the fluid is discharged from the piston primer discharge pipes.

NOTICE

Freezing water hazard. May cause damage to the pump.

If the pump is exposed to freezing temperatures, drain all water from pump, lines and accessories.

3. If pump is kept full of water when not in use, make sure water is clean and non-corrosive. Make sure the pump is completely full or completely drained (never partially full).
4. Disengage pump drive in accordance with the vehicle operation instructions.
5. Close all drains and install intake and discharge caps.

Pumping from Draft

WARNING

Pressure Hazard. May result in personal injury.

Prior to connection or removal of hoses, caps or other closures with pump intake or pump discharge connections, relieve pressure by opening drains or bleeder valves. Bleeder valves should also be used while filling a hose connected to an intake with water.

WARNING

Scalding Water Hazard. May result in serious burns.

When operating the pump, be sure to open at least one discharge valve slightly to prevent the pump from overheating. If the pump runs for a few minutes completely closed, it may heat the water enough to scald someone when the valve is opened. Overheating can damage the packing, seals and other pump parts. If the apparatus builder has installed a bypass system or other provision designed to prevent overheating, opening a discharge valve may be unnecessary.

NOTE: To get full capacity, quick prime and maintain pump efficiency:

- a. Position vehicle as near as possible to water supply.
- b. Avoid humps and sharp bends in intake hose. Make sure no part of hose is higher than pump inlet. (Air pockets in intake hose may cause loss of prime or erratic pump action, and may reduce pump capacity.)
- c. Make sure all intake connections are tight and discharge valves are closed.
- d. Immerse intake strainer at least two feet (.5 M) below water surface to prevent pump from drawing air. (Whirlpools forming above intake strainer indicate that strainer is too close to surface of water.)
- e. Make sure intake strainer is far enough from bottom to prevent sand, gravel and other foreign matter from being drawn into the pump.
6. Open suction valve (if equipped) as necessary to allow water to enter the pump.
7. Engage pump drive in accordance to with the vehicle operation instructions and accelerate engine to obtain desired discharge pressure and capacity.

NOTE: The S200-G pump has an automatic priming system that will engage or disengage when the discharge pressure rises above or falls below a predetermined setting.

8. Open discharge valves, and accelerate engine to obtain desired discharge pressure and capacity.
9. Set low pressure relief valve or other governing device to desired pressure (relief valve or governing device not supplied by Waterous).

After Pumping

1. If pumping anything but clean water, remove all intake and discharge caps, open all valves and open all drains. Flush entire system with clean, fresh water for several minutes to remove all traces of impurities.
2. Cycle the piston primers. Operate them until all the fluid is discharged from the piston primer discharge pipes.

NOTICE

Freezing water hazard. May cause damage to the pump.

If the pump is exposed to freezing temperatures, drain all water from pump, lines and accessories.

3. If pump is kept full of water when not in use, make sure water is clean and non-corrosive. Make sure the pump is completely full or completely drained (never partially full).
4. Disengage pump drive in accordance with the vehicle operation instructions.
5. Close all drains and install intake and discharge caps.

Fire Hose Testing

WARNING

Hose Testing Hazard. May result in serious personal injury.

Due to a potential for catastrophic hose failure during service testing of fire hose, it is vital that safety precautions be taken to prevent exposure of anyone to this danger. Fire pumps on fire department apparatus are not designed for and should not be used for service testing of fire hoses. Hose testing machines should be used for service testing of fire hoses.

NFPA 1962 *Standard for the Inspection, Care, and use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose* provides requirements and testing procedures for service-testing fire hose at least annually. NFPA 1962 includes procedures for service testing with either a hose testing machine or with a pump on a fire department fire apparatus.

WARNING

Pressure Hazard. May result in serious personal injury.

If a fire pump on a fire department apparatus is used for service testing of fire hoses, the procedures in NFPA 1962 **MUST be followed** including the use of a fire department gate valve with a ¼-inch (6 mm) hole drilled through the gate installed between the fire apparatus discharge outlet and the hose test layout to prevent a volume surge from the pump in the event a hose bursts during testing.

During fire hose testing with a fire pump on a fire department fire apparatus, the fire pump is required to be operated at high discharge pressure with little or no flow out of the apparatus.

WARNING

Scalding Water Hazard. May result in serious burns.

If a fire pump on a fire department apparatus is used for service testing of fire hoses, pump discharge water must be circulated through a by-pass system or discharged through a slightly open discharge valve, or some other provision must be used to prevent overheating. If the pump runs for a few minutes without adequate flow through the pump, water may be heated enough to scald someone when a valve is opened.

CAUTION

If a fire pump on a fire department apparatus is used for service testing of fire hoses, operating the pump at high discharge pressure with little or no flow may result in severe damage to the pump.

Maintenance

NOTICE

All pump maintenance can be performed using standard tools.

Mechanical Seal

NOTICE

The pump shaft is sealed with a mechanical seal and no adjustment is required. When the pump is in operation, the water being pumped lubricates and cools the seal. If the seal leaks, replace the entire seal.

NOTICE

Prolonged dry pump operation or operating a dry pump at high speeds will reduce the life of the mechanical seal.

Lubrication

NOTICE

No lubrication is needed. The bearings are sealed, the primer and pedestal are oil-free and the mechanical seal is lubricated by water..

Testing

NOTICE

An annual test should be performed to check pump performance. This will reveal the condition of the internal components and if any repairs are required.

Parts Lists

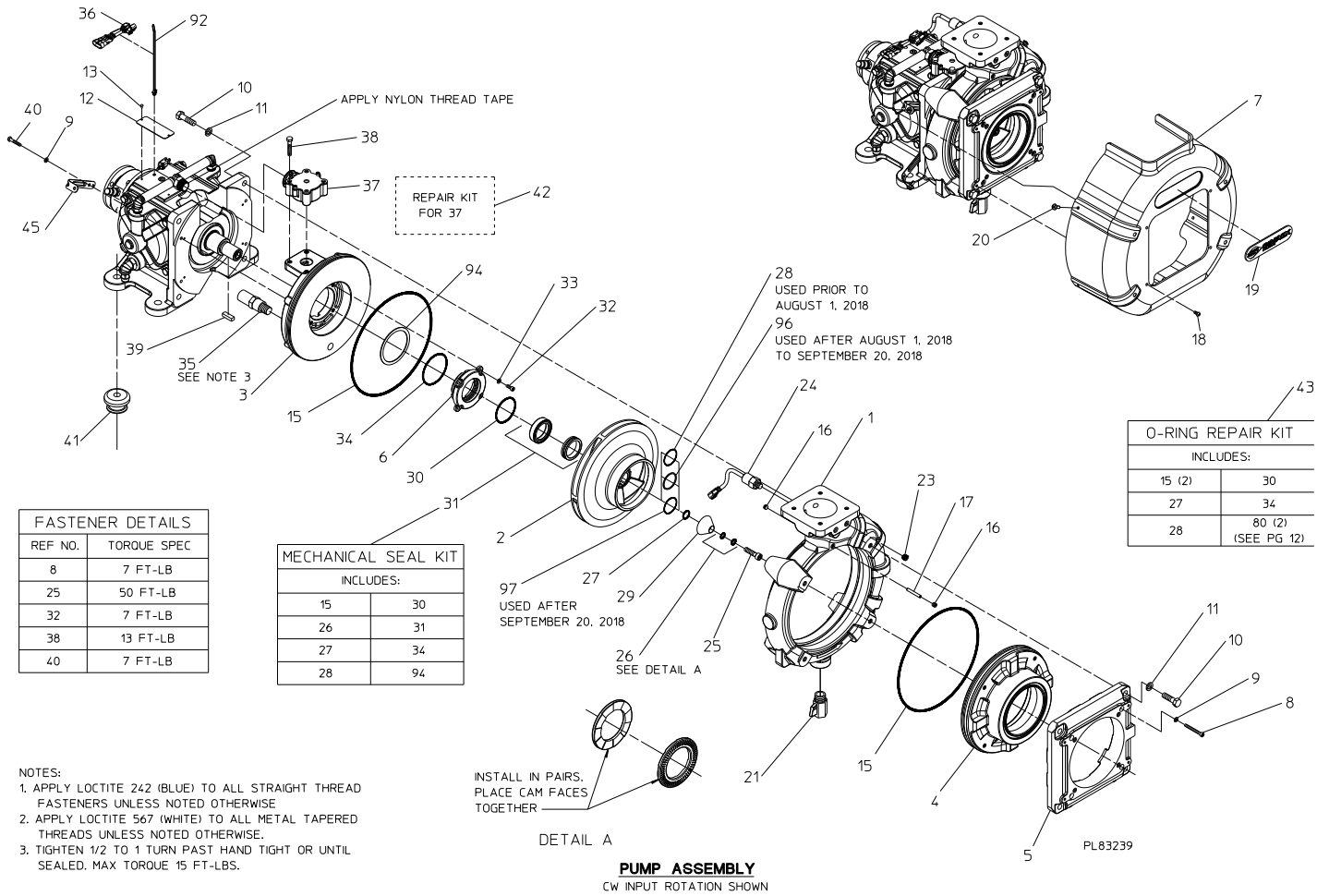
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Parts Lists

Pump Assembly (CW Rotation)



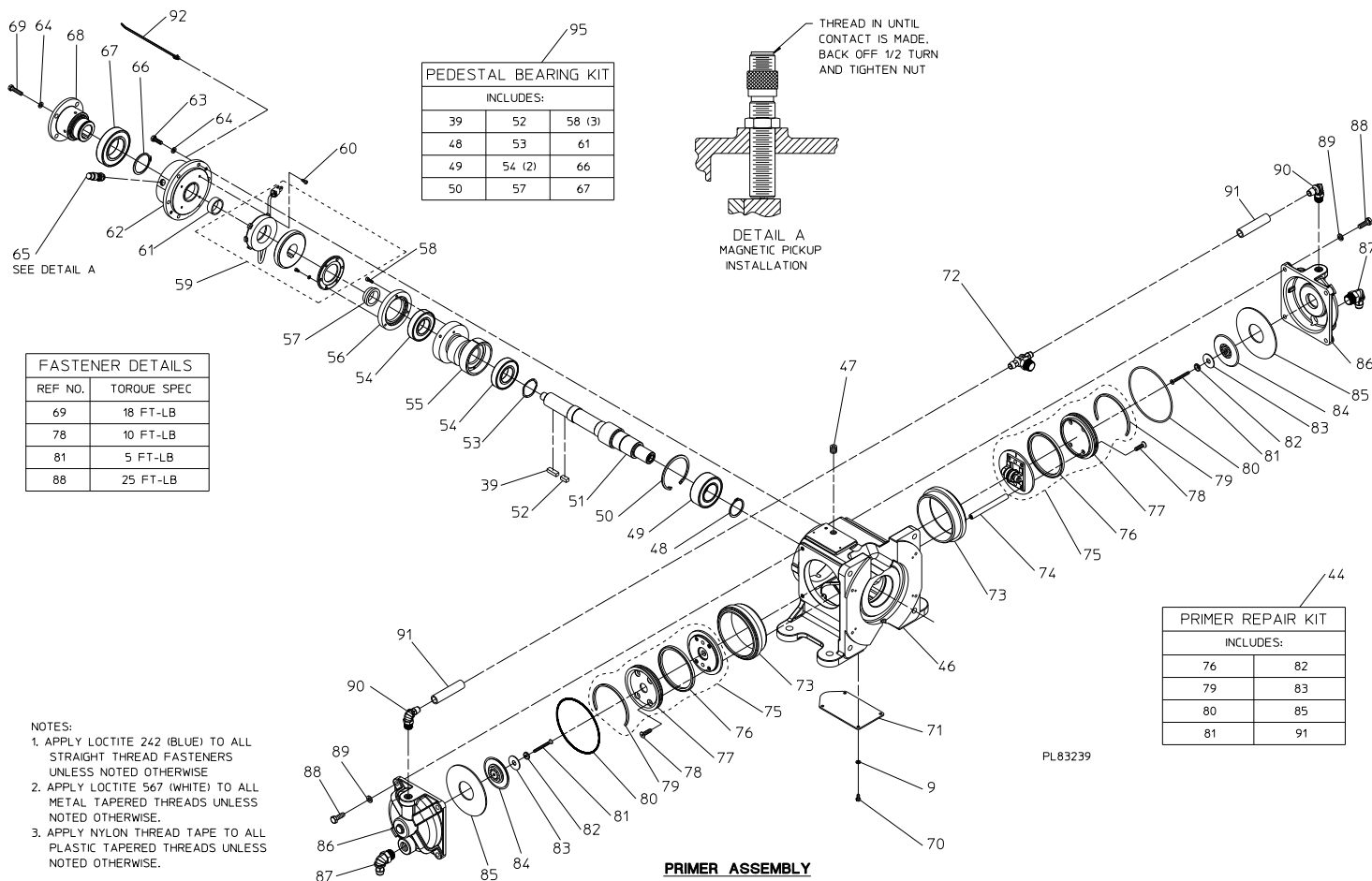
NOTE: When ordering parts, provide Pump Serial Number.

Pump Assembly (CW Rotation)

Reference No.	Description
1	Volute
2	Impeller
3	Pump Head
4	Intake Head
5	Intake Adapter
6	Seal Housing
7	Shroud
8	Socket Head Screw, 6mm x 55mm
9	Lockwasher, 6mm
10	Hex Head Screw, 12mm x 50mm
11	Lockwasher, 12mm
12	Serial Plate
13	Round Head Drive Screw, #6 x 1/4 in.
14	Male Connector, 6mm x 1/4 BSPT
15	O-ring, 10-1/2 x 10-7/8 in.
16	Headless Pipe Plug, 1/8 BSPT
17	Straight Dowel Pin, 1/4 x 1-3/4 in.
18	Button Head Screw, 6mm x 12mm
19	Gimaex Name Plate
20	Plastic Rivet
21	Drain Valve, 3/4 in.
23	Headless Pipe Plug, 1/4 BSPT

Reference No.	Description
24	Pressure Switch, 1/4 BSPT
25	Socket Head Screw, 10mm x 40mm
26	Nordlock Washer, 10mm
27	O-ring, 3/4 x 15/16 in.
28	O-ring, 1-5/8 x 1-3/4 in.
29	Impeller Washer
30	O-ring, 2-1/2 x 2-3/4 in.
31	Mechanical Seal
32	Socket Head Screw, 6mm x 16mm
33	Lockwasher, 6mm
34	O-ring, 3 x 3-1/4 in.
35	Thermal Relief Valve
36	Headless Pipe Plug, 1/2 NPT
37	Priming Valve Assembly
38	Hex Head Screw, 8mm x 45mm
39	Key, 8mm x 10mm x 32mm
40	Hex Head Screw, 6mm x 35mm
41	Vibration Mount
42	Priming Valve Repair Kit
43	O-ring Repair Kit (Includes 15, 27, 28, 30, 34)
45	Shroud Bracket
94	Gasket
96	Impeller Gasket
97	O-ring, 1-1/2 x 1-11/16

Primer Assembly



NOTE: When ordering parts, provide Pump Serial Number.

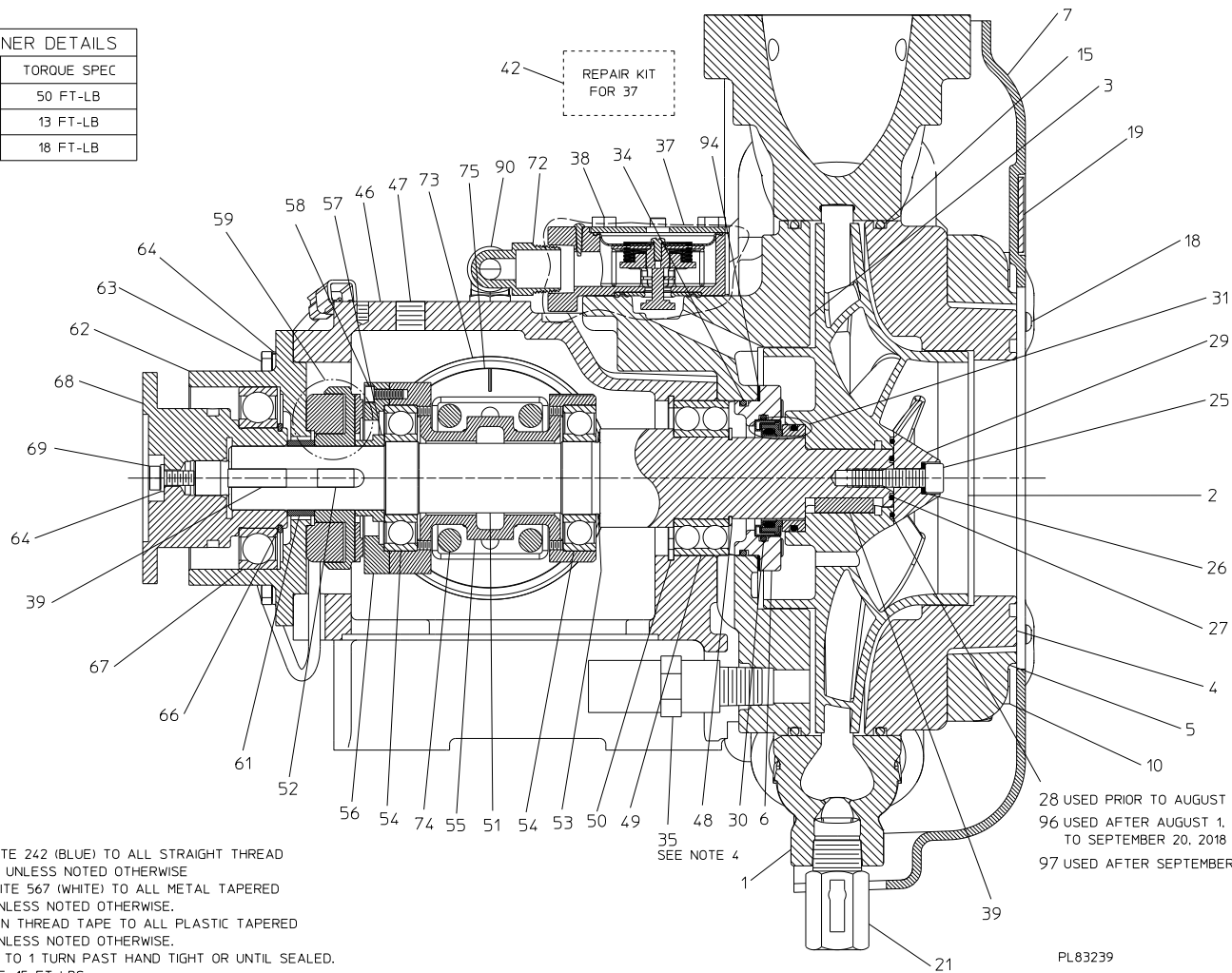
Primer Assembly

Reference No.	Description
9	Lockwasher, 6mm
39	Key, 8mm x 10mm x 32mm
44	Primer Repair Kit
46	Pedestal Body
47	Plug, 5/8-18 x 5/8 in.
48	Retaining Ring
49	Double Row Ball Bearing
50	Retaining Ring
51	Impeller Shaft
52	Key, 8mm x 10mm x 20mm
53	Wave Spring
54	Single Row Ball Bearing
55	Eccentric Shaft
56	Eccentric Cover
57	Spacer
58	Socket Head Screw, 5mm x 16mm
59	Electro-Magnetic Clutch
60	Socket Low Head Screw, 5mm x 12mm
61	Spacer
62	Bearing Housing
63	Hex Head Screw, 8mm x 25mm
64	Lockwasher, 8mm
65	Magnetic Pick-Up
66	Retaining Ring
67	Single Row Ball Bearing
68	Companion Flange

Reference No.	Description
69	Hex Head Screw, 8mm x 35mm
70	Hex Head Screw, 6mm x 12mm
71	Pedestal Cover
72	Barbed Tee, 5/8 x 3/4 NPT
73	Primer Cylinder
74	Tie Rod
75	Piston Body Subassembly
76	Piston Seal
77	Piston Head
78	Socket Head Screw, Counter Sunk, 8mm x 30mm
79	Wear Strip
80	O-ring, 5-3/4 x 6 in.
81	Socket Screw, Counter Sunk, 6mm x 60mm
82	Washer
83	Inlet Diaphragm
84	Diaphragm Retainer
85	Outlet Diaphragm
86	Piston Cover
87	Barbed Elbow, 3/4 x 3/4 NPT
88	Hex Head Screw, 10mm x 30mm
89	Plain Washer, 10mm
90	Barbed Elbow, 5/8 x 1/2 NPT
91	Tube, 5/8 x 3-7/8 in.
95	Pedestal Bearing Kit

Pump and Primer Assembly (Cross-Section View)

FASTENER DETAILS	
REF NO.	TORQUE SPEC
25	50 FT-LB
38	13 FT-LB
69	18 FT-LB



- NOTES:
1. APPLY LOCTITE 242 (BLUE) TO ALL STRAIGHT THREAD FASTENERS UNLESS NOTED OTHERWISE
 2. APPLY LOCTITE 567 (WHITE) TO ALL METAL TAPERED THREADS UNLESS NOTED OTHERWISE.
 3. APPLY NYLON THREAD TAPE TO ALL PLASTIC TAPERED THREADS UNLESS NOTED OTHERWISE.
 4. TIGHTEN 1/2 TO 1 TURN PAST HAND TIGHT OR UNTIL SEALED. MAX TORQUE: 15 FT-LBS

28 USED PRIOR TO AUGUST 1, 2018
 96 USED AFTER AUGUST 1, 2018 TO SEPTEMBER 20, 2018
 97 USED AFTER SEPTEMBER 20, 2018

PUMP AND PRIMER ASSEMBLY
 CROSS-SECTION VIEW

PL83239

NOTE: When ordering parts, provide Pump Serial Number.

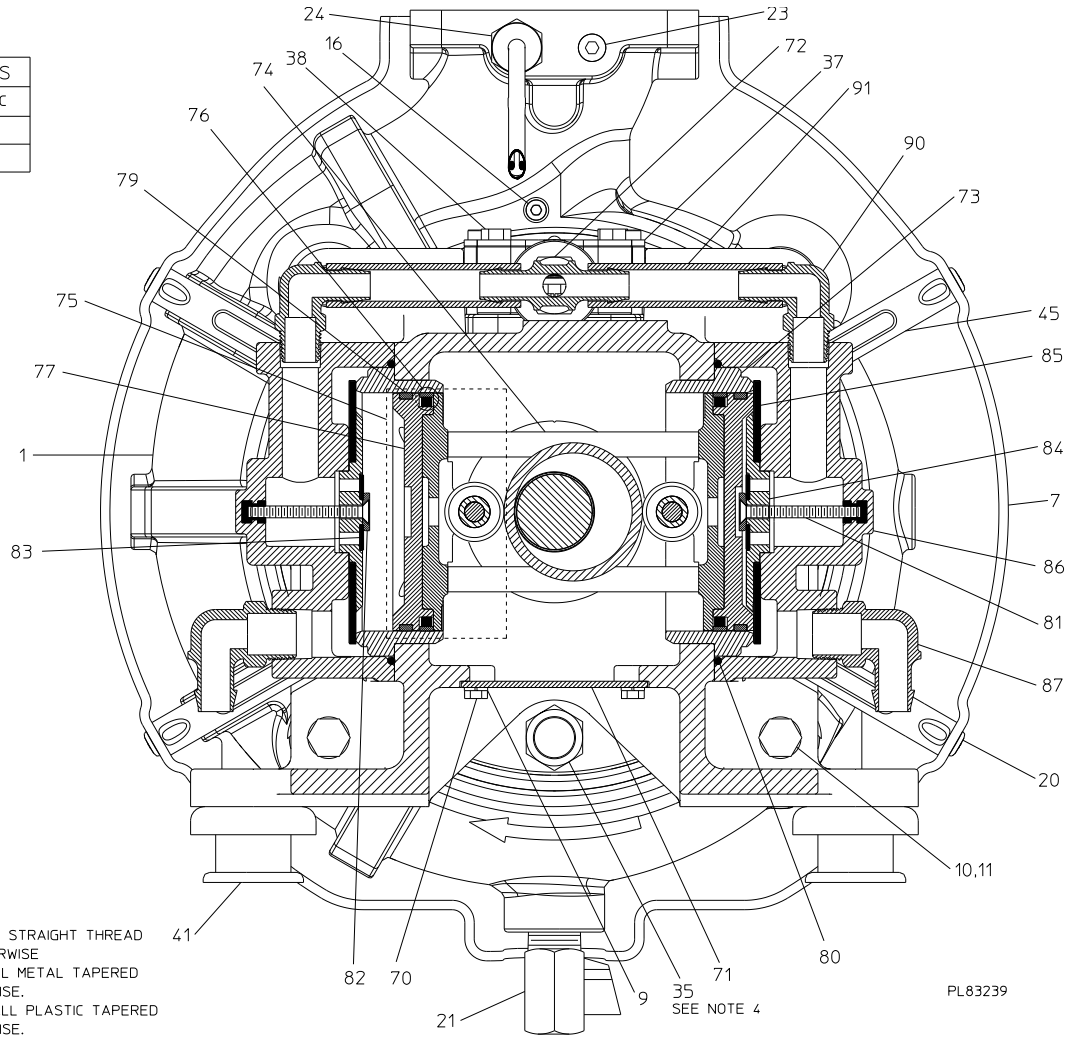
Pump and Primer Assembly (Cross-Section View)

Reference No.	Description
1	Volute
2	Impeller
3	Pump Head
4	Intake Head
5	Intake Adapter
6	Seal Housing
7	Shroud
10	Hex Head Screw, 12mm x 50mm
11	Lockwasher, 12mm
12	Serial Plate
13	Round Head Drive Screw, #6 x 14 in.
15	O-ring, 10-1/2 x 10-7/8 in.
18	Button Head Screw, 6mm x 12mm
19	Gimaex Name Plate
21	Drain Valve, 3/4 in.
22	Reducing Bushing, 3/4 NPT x 1/2 NPT
25	Socket Head Screw, 10mm x 40mm
26	Nordlock Washer, 10mm
27	O-ring, 3/4 x 15/16 in.
28	O-ring, 1-5/8 x 1-3/4 in.
29	Impeller Washer
30	O-ring, 2-1/2 x 2-3/4 in.
31	Mechanical Seal
34	O-ring, 3 x 3-1/4 in.
35	Thermal Relief Valve
36	Headless Pipe Plug, 1/2 NPT

Reference No.	Description
37	Priming Valve Assembly
38	Hex Head Screw, 8mm x 45mm
39	Key, 8mm x 10mm x 32mm
46	Pedestal Body
47	Plug, 5/8-18 x 5/8 in.
48	Retaining Ring
49	Double Row Ball Bearing
50	Retaining Ring
51	Impeller Shaft
52	Key, 8mm x 10mm x 20mm
53	Wave Spring
54	Single Row Ball Bearing
55	Eccentric Shaft
56	Eccentric Cover
57	Spacer
58	Socket Head Screw, 5mm x 16mm
59	Electro-Magnetic Clutch
61	Spacer
62	Bearing Housing
63	Hex Head Screw, 8mm x 25mm
64	Lockwasher, 8mm
66	Retaining Ring
67	Single Row Ball Bearing
68	Companion Flange
69	Hex Head Screw, 8mm x 35mm
94	Gasket
96	Impeller Gasket
97	O-ring, 1-1/2 x 1-11/16

Primer Assembly (RPOP Primer, Cross-Section View)

FASTENER DETAILS	
REF NO.	TORQUE SPEC
38	13 FT-LB
81	5 FT-LB



NOTES:

1. APPLY LOCTITE 242 (BLUE) TO ALL STRAIGHT THREAD FASTENERS UNLESS NOTED OTHERWISE
2. APPLY LOCTITE 567 (WHITE) TO ALL METAL TAPERED THREADS UNLESS NOTED OTHERWISE.
3. APPLY NYLON THREAD TAPE TO ALL PLASTIC TAPERED THREADS UNLESS NOTED OTHERWISE.
4. TIGHTEN 1/2 TO 1 TURN PAST HAND TIGHT OR UNTIL SEALED. MAX TORQUE: 15 FT-LBS

PL83239

PRIMER ASSEMBLY
RPOP PRIMER, CROSS-SECTION VIEW

NOTE: When ordering parts, provide Pump Serial Number.

Primer Assembly (RPOP Primer, Cross-Section View)

Reference No.	Description
1	Volute
7	Shroud
9	Lockwasher, 6mm
10	Hex Head Screw, 12mm x 50mm
11	Lockwasher 12mm
16	Headless Pipe Plug, 1/8 BSPT
20	Plastic Rivet
21	Drain Valve, 3/4 in.
23	Headless Pipe Plug, 1/4 BSPT
24	Pressure Switch, 1/4 BSPT
35	Thermal Relief Valve
37	Priming Valve Assembly
38	Hex Head Screw, 8mm x 45mm
41	Vibration Mount
45	Shroud Bracket
70	Hex Head Screw, 6mm x 12mm
71	Pedestal Cover

Reference No.	Description
72	Barbed Tee, 5/8 x 3/4 NPT
73	Primer Cylinder
74	Tie Rod
75	Piston Body Subassembly
76	Piston Seal
77	Piston Head
79	Wear Strip
80	O-ring, 5-3/4 x 6
81	Socket Screw, Counter Sunk, 6mm x 60mm
82	Washer
83	Inlet Diaphragm
84	Diaphragm Retainer
85	Outlet Diaphragm
86	Piston Cover
87	Barbed Elbow, 3/4 x 3/4 NPT
90	Barbed Elbow, 5/8 x 1/2 NPT
91	Tube, 5/8 x 3-7/8