

**P1 Single Pressure  
P2 Twin Pressure**

# Installation and Operation Manual



**Prima P1**



**Prima P2**

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## AMENDMENT RECORD

**Model: Prima Pump P1 and P2**

<b>Mod No.</b>	<b>Date</b>	<b>Page/s</b>	<b>Amendment</b>	<b>New Issue No.</b>
	May 2011		New Issue	
1	Nov 2011	5	Notice on cleaning fluid deposit	2
2	May 2012	6, 25-26, 30	Gearbox oil capacity – revised to 1.2 litres	2
3	May 2012	31	Water ring primer lift-off clearance. Improved explanation and photograph	2
4	October 2014	11	Tachometer – additional information on power rating	3
5	September 2015	4, 27	Warning on not running pump dry	4
6	June 2016	4, 6, 27	Maximum allowable inlet pressure is 12 bar	5

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## SAFETY

Please read this manual before operating the machinery.  
Safety notices -



= non-compliance could affect safety

**IMPORTANT**

= in case of damage to pump

**ATTENTION**

= in case of personal hazards

### In operation

- Rotating parts must be guarded against accidental contact.
- Do not insert items into the suction tube when pump is running.
- Discharge hoses must not be disconnected when the unit is running.
- No components must be unfastened when the unit is running.
- When installing or removing the pump, suitable lifting equipment must be used.
- Suitable ear protection must be worn when pump is running – if necessary.
- Maximum allowable inlet pressure is 12 bar.
- Do not run the pump without water for more than one minute.

### Training

Godiva pumps must only be operated by trained personnel.

### Maintenance

The user must maintain the equipment in an operational condition, as per regulation 5 in the Provision and Use of Work Equipment Regulations 1998.

### Environmental Protection

Used oil from the pump bearing housing must be disposed of in accordance with your local regulations

### Risk Assessment

It is the duty of the pump installer to make a method statement and risk assessment of their operations when installing the pump, please contact Godiva Ltd. if assistance is required.

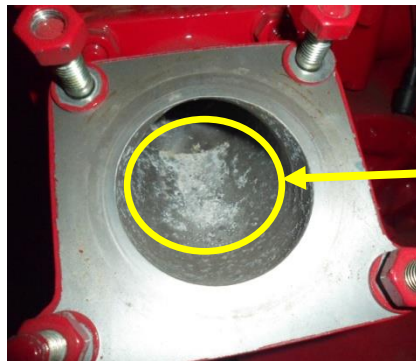
### Transportation and Storage

The pump is supplied mounted on a wooden pallet and covered with a tri-walled cardboard box. This protection is suitable for standard methods of freight handling using forklift trucks. No more than one pump should be stacked on top of another. The tri-walled cardboard box is not suitable for storage outside, or when open to the elements. The pump is sprayed internally with a moisture inhibitor when leaving the factory, this treatment may be required if the pump is in long term storage (6 months or more) before

use. On receipt of the pump a full inspection must be carried out, if any damage has occurred please contact Godiva Ltd.

### Post-production Cleaning Fluid

Immediately after production a special cleaning solution is used to clear the pump of any oil or grease that may be remaining inside the pump. Occasionally this cleaning solution leaves a deposit. This deposit has no effect on the performance and will be flushed away when the pump is first used.



Cleaning fluid deposit – will be flushed away when pump is used

### Warranty

For all issues relating to warranty claims please contact Godiva Ltd. Please be prepared to quote the six figure pump serial number located on the pump volute.

### Associated Publications

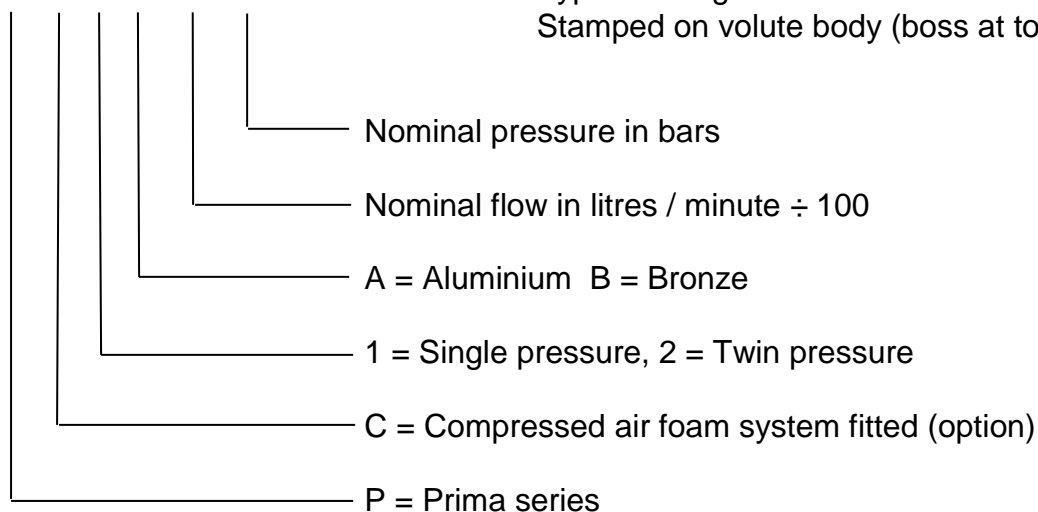
Publication	Part No
Workshop Manual P1/P2 model	GP/290
Spare Parts Manual P1 model	GP/281
Spare Parts Manual P2 model	GP/258

### PUMP SPECIFICATION NUMBERING

**P C 1 A 20 10**

**601123** = typical six figure serial number

Stamped on volute body (boss at top left)



## TECHNICAL DATA

**Features unique to P1 or P2 model only are indicated, other parts are common**

### Description

Pump type P1	One stage - centrifugal
Pump type P2	Two stage. 1 <sup>st</sup> stage centrifugal, 2 <sup>nd</sup> stage regenerative
Shaft	Stainless steel
Seal	Self-adjusting mechanical type
Material	Aluminium or gunmetal (applies to main castings) See Materials of Construction list for details
Direction of rotation	Clockwise (viewed from drive flange), Counter clockwise available
Priming system	Reciprocating, positive displacement pistons (standard) Water ring primer (alternative)
Temperature range	-15°C to +40° ambient (ref: EN1028-1)
Lubrication - bearing housing	SAE 10W/40 or 15W/40. 1.0 litre
Lubrication - gearbox, if fitted	BP Energol GR XP68, 1.2 litre capacity approximate
Safety devices	42°C Thermal relief valve (74°C option). Fitted as standard on P2, optional on P1
	P2 only - Suction pressure relief valve opens at 13 Bar
Maximum inlet pressure	12 bar
Angle of inclination	15° in any plane
Accessories	Gearbox, foam systems, instrument panel available
Mass moment of inertia -	

<b>Pump</b>	<b>Kg.m<sup>2</sup></b>	<b>Pump</b>	<b>Kg.m<sup>2</sup></b>
P2A 2010/3010	0.0248	P1A 2010/3010	0.009
P2A 4010	0.0280	P1A 4010	0.012
P2A 6010	0.031	P1A 6010	TBA
P2B 2010/3010	0.0687	P1B 2010/3010	0.053
P2B 4010	0.0811	P1B 4010	0.0651
P2B 6010	0.089	P1B 6010	TBA

### EN Designation (EN 1028:-1:2002)

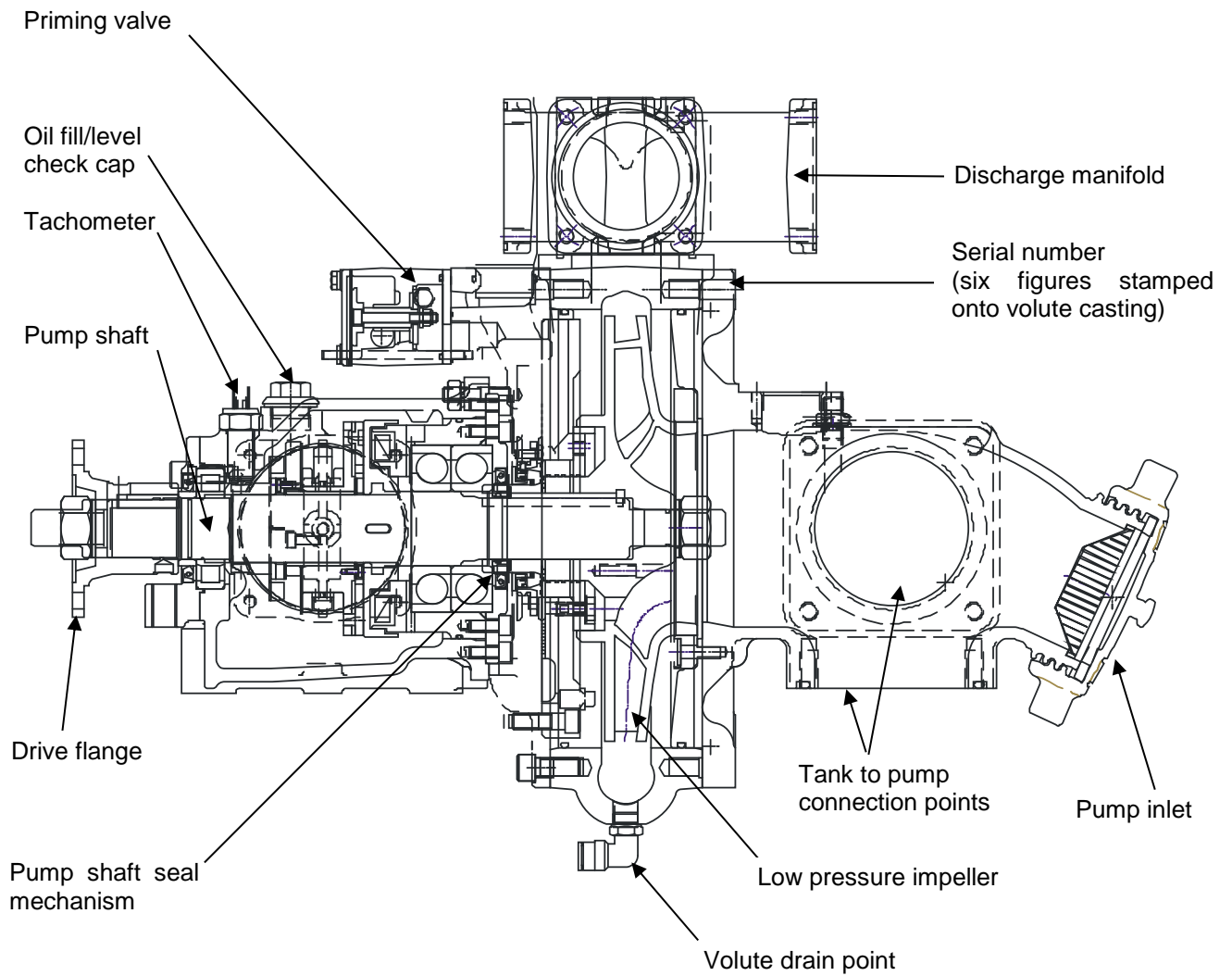
<b>Godiva Description and specification</b>	<b>European standard</b>	<b>Classification</b>	<b>Limit pressure <math>p_a</math> lim bar</b>
Fire fighting centrifugal pump 2010, low pressure	EN 1028-1	FPN 10 – 2 000	17
Fire fighting centrifugal pump 3010, low pressure	EN 1028-1	FPN 10 – 3 000	17
Fire fighting centrifugal pump 4010, low pressure	EN 1028-1	FPN 10 – 4 000	17
Fire fighting centrifugal pump – 6010, low pressure	EN 1028-1	FPN 10 – 6 000	17
Fire fighting centrifugal pump – 2010, 3010, 4010, 6010, high pressure	EN 1028-1	FPH 40-250	54.5

### Materials of construction

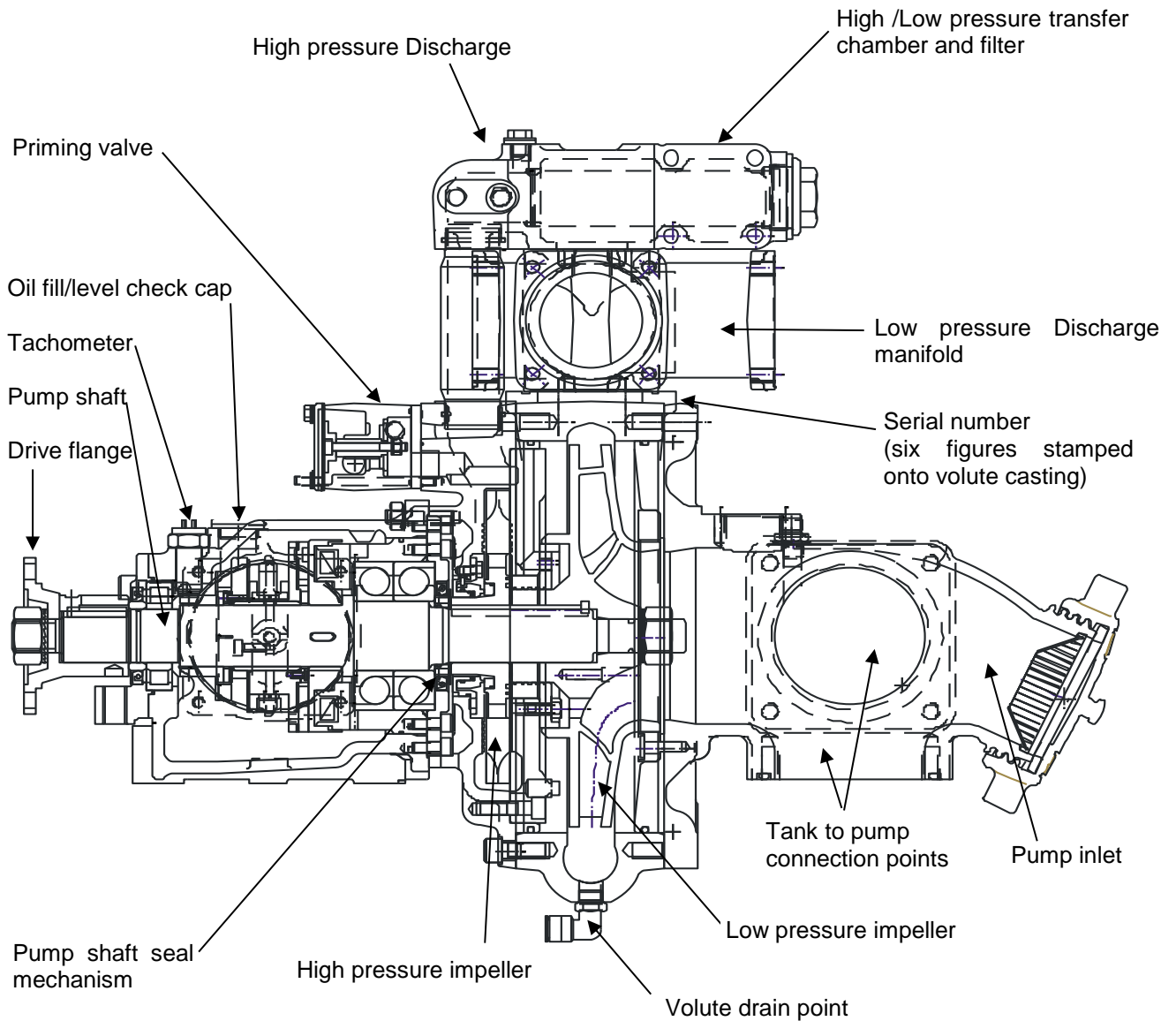
	Material	Material
Component	Aluminium alloy pump	Gunmetal pump
Volute casing	Aluminium Alloy	Gunmetal
Pump head	Stainless steel	Stainless steel
Suction cover	Aluminium Alloy	Gunmetal
L.P. Impeller	Aluminium Alloy	Gunmetal
Front wear ring	Delrin Polymer	Delrin Polymer
Rear wear wing	Delrin Polymer	Delrin Polymer
Bearing housing	Iron	Iron
Shaft	Stainless steel	Stainless steel
Mechanical seal	Silicon carbide / Carbon	Silicon carbide / Carbon
Other mechanical seal components	Stainless steel	Stainless steel
H.P. Impeller – P2 only	Stainless steel	Stainless steel
Cover Plate – P2 only	Stainless steel	Stainless steel



**Figure 1. Cross Section of Prima P1 Pump – Typical**



**Figure 2. Cross Section of Prima P2 Pump – Typical**



## Essential installation data

Fastening bolts, pump to chassis cross-member	M16, high tensile cap screws, four off
Alignment of pump drive lines	7° Effective joint angle - maximum
Tank to suction pipework	2010 pumps Ø 100mm 3010 & 4010 pumps Ø 125mm Must incorporate a pliable element for flexibility.
Pump speed sensor (accessory)	Electronic. Tachometer is available from Godiva if required – p/n 60875. 24V. Consumes maximum of 20mA. FET output rating of 0.5A maximum.
Fasteners	ISO specification
Utility requirements	Water supply to pump inlet Electricity supply to clutch, and control panel if fitted. 24V/5A or 12V/10A
Special assembly tools for installation	Connector tool for attaching plugs (where supplied) to wires for control panel models
Angle of installation (in any plane)	± 15°

## INSTALLATION

1. Before installation check the pump for any transit damage.

### 2. Mounting Platform

If a mounting platform is fitted, note the bolt points (see drawing in fig.15 or 16) to secure the pump to the vehicle chassis –



Fastening bolt points –  
M16, high tensile cap  
screws, four off

Figure 3.

### 2. Priming System

Piston Primer Type –

Connect two flexible pipes (25mm, 1inch internal dia.) to the discharge ports on each primer.

Discharge can be piped to the ground.

Discharge can be piped back to main tank – if no foam system is used.

Discharge can be piped to a separate holding tank.



Piston primer discharge –  
connect 25mm (1in)  
flexible pipe. Length to be  
sufficient to discharge  
safely away from operator

Figure 4.

Primer disengagement – connect wire from bearing housing to pressure switch



Connect this flying lead from pressure switch to light on optional instrument panel for light and/or manual control.  
Note: plug is supplied loose and not wired  
See Sheet DS634 for primer wiring schematic (end of this section)

Figure 5.

### Water Ring Primer (WRP)

This type requires a header tank (4.5 litres, 1 gallon capacity minimum) to be installed by the vehicle builder. Information sheet ref. DS325 (page 22) provides details.

In cold weather a suitable anti-freeze concentration must be maintained in the tank.

3. Pump draining

*Without Mounting Platform fitted -*

The pump should be fitted with a drain system from the plug (G 3/8") at the bottom of the volute. This should terminate at a ball valve located lower than the pump.

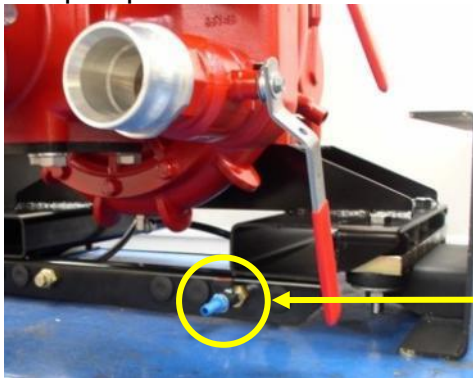


Volute, Rp 3/8" -  
Can be fitted with drain  
valve and tubing.

Figure 6.

*With Mounting Platform fitted –*

The pump water will drain to the tap fitted on the right side of the platform.



Volute drain tap -  
Can be fitted with Ø9.5mm  
ID drain tubing

Figure 7.

4. Suction – Sideline Connection

Tank to suction line must incorporate a flexible coupling to allow for any movement. The tank to suction line must be clear of the pump to allow for removal of the piston primer components, the minimum clearance space is detailed on the installation drawing.

5. Filter – P2 model only

The high pressure filter limits particles entering the high pressure stage. It should be regularly removed, flushed with clean water and replaced. This should be carried out when pump is not in operation



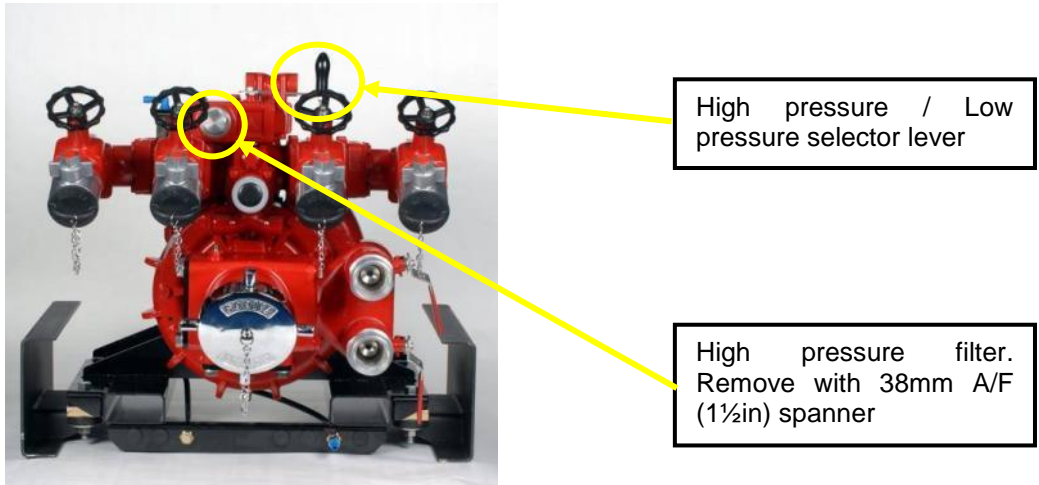


Figure 8.

6. High pressure selector valve – P2 model only

The position of this valve on the top of the pump allows the handle to project through an instrument panel attached to the front of the pump. When the handle is to the right, low pressure is available in the hose reels. With the handle to the left, high pressure is available in the hose reels. Note: Low pressure water is available on the high pressure outlet when high pressure is not selected.

7. Instrument panel – optional feature

If an instrument panel is fitted some of the gauges may not already be connected. Refer to additional gauge instructions applicable to the gauges on the panel.

If an instrument panel includes electrical connections a wiring diagram will be available. To obtain the correct diagram please quote the pump specification and serial number.

8. Pipework for Instrumentation and Safety Devices

Vacuum and pressure gauge connection points are indicated in Figures 9-11 below. All connections and tubing must have a minimum working pressure rating of 19 bar.

Pressure gauge connection – on top of discharge manifold

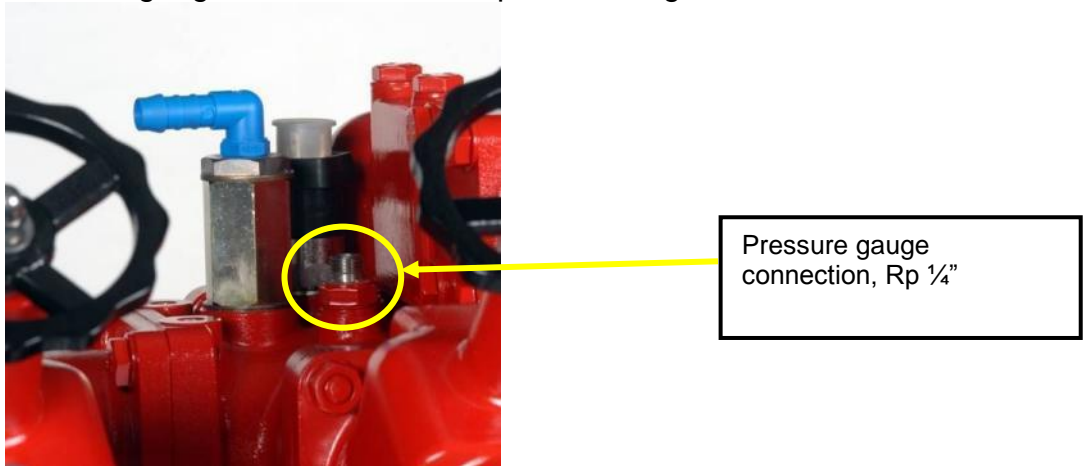


Figure 9.

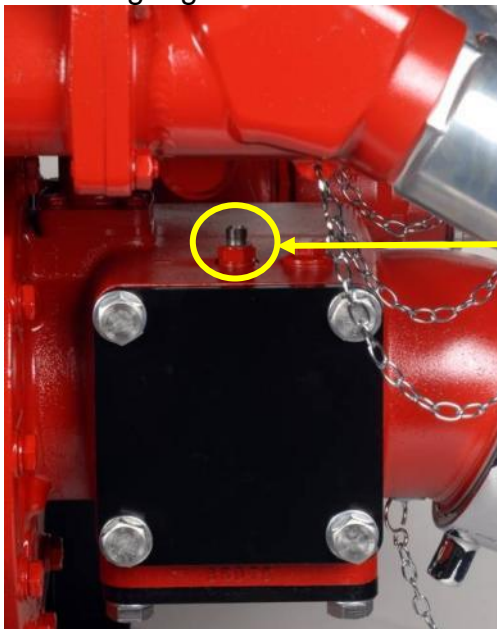
P2 - High pressure gauge connection – on side of high pressure discharge manifold



High pressure gauge connection, Rp 1/4"

Figure 10 .

Vacuum gauge connection – on suction tube



Vacuum gauge connection, Rp 1/4"

Figure 11.

Thermal relief valve



Figure 12.

**THERMAL RELIEF VALVE**  
Elbow accepts 12mm (1/2 in) bore flexible hose  
DO NOT PLUG THIS VALVE.  
FEED DISCHARGE AWAY FROM OPERATOR.  
MAY BE FED INTO TANK IF FOAM IS NOT USED.

**THERMAL RELIEF VALVE** – available in two types, 42°C and 74°C.



## Tachometer - connection on bearing housing



Figure 13.

Tachometer sender connection (p/n 60015/01).

For connection to Godiva Tachometer p/n 60875, see sheets DS639 and DS639/1, page 23-24

## P2 - Pressure relief valve

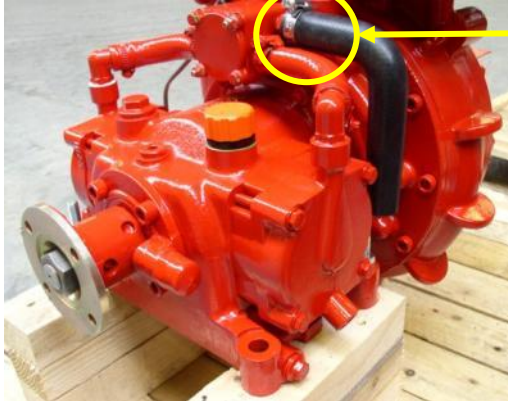


Figure 14.

Pressure relief valve is fitted to relieve high pressure in hose reels when discharge nozzles are closed. The valve must discharge to atmosphere.

Figure 15. General arrangement drawing - Prima P1\_2010 with 2 valves

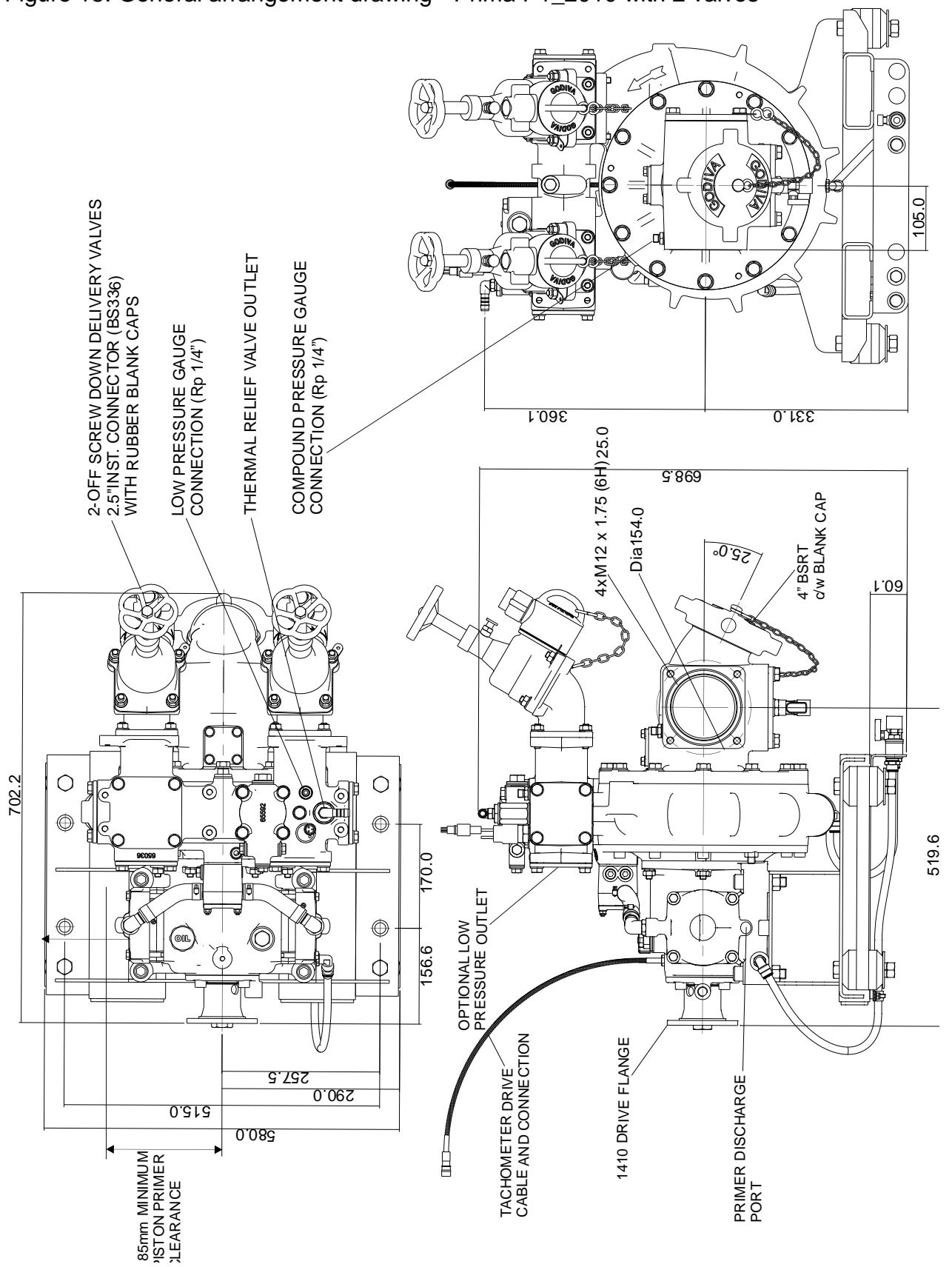


Figure 16. General arrangement drawing - Prima P2\_2010 with 2 valves.

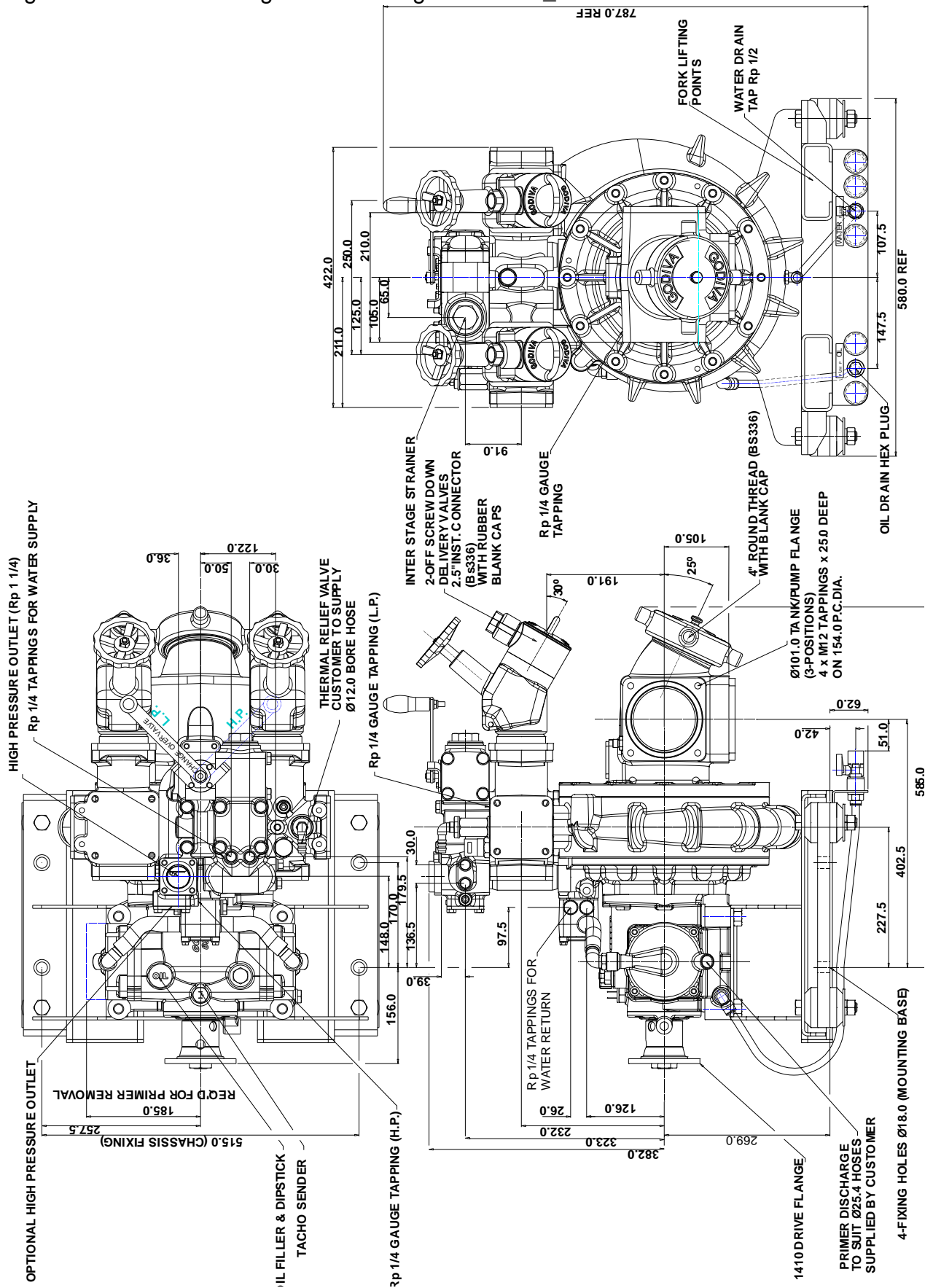


Figure 17. Primer Wiring Schematic

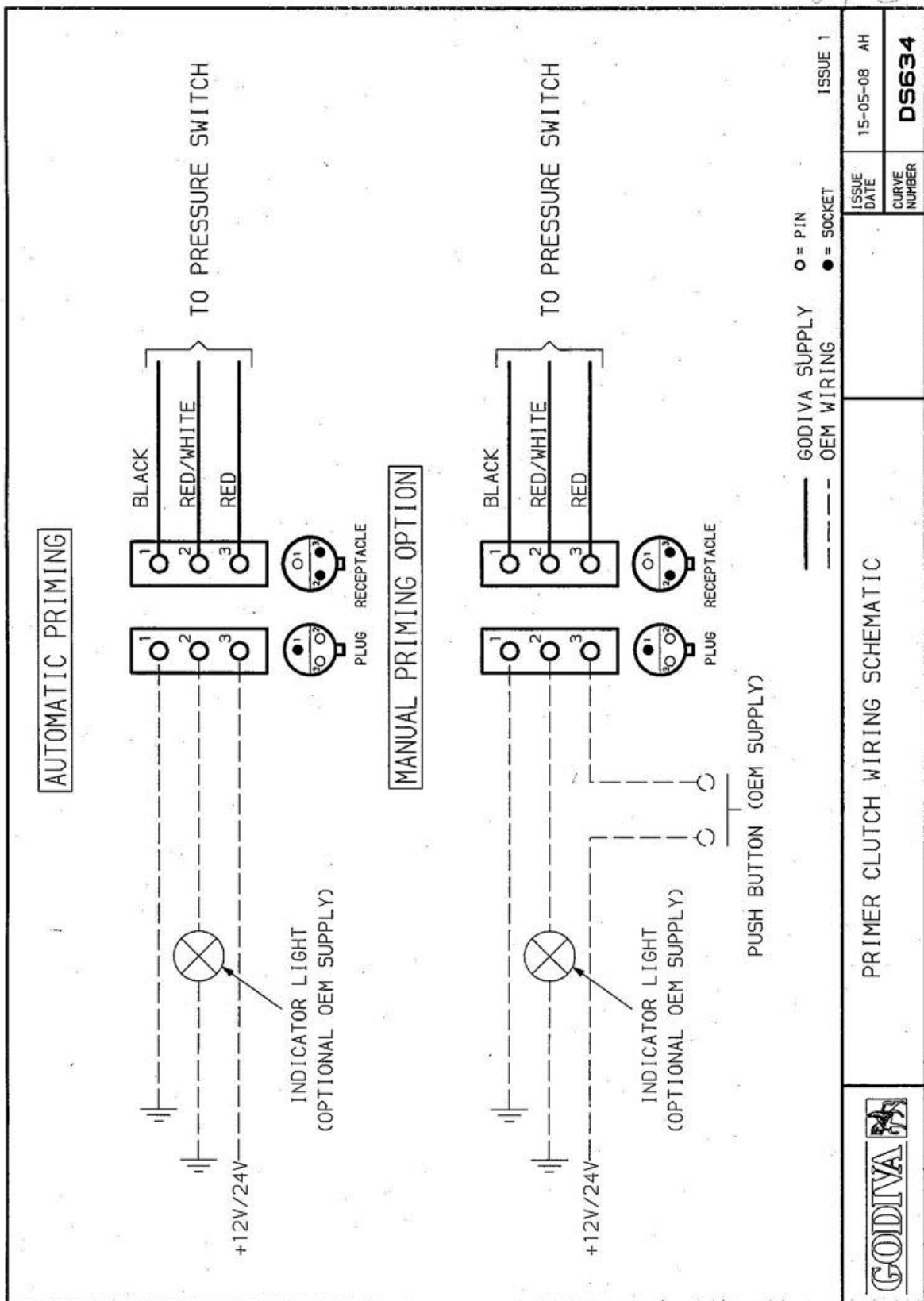


Figure 18. Water Ring Primer Installation

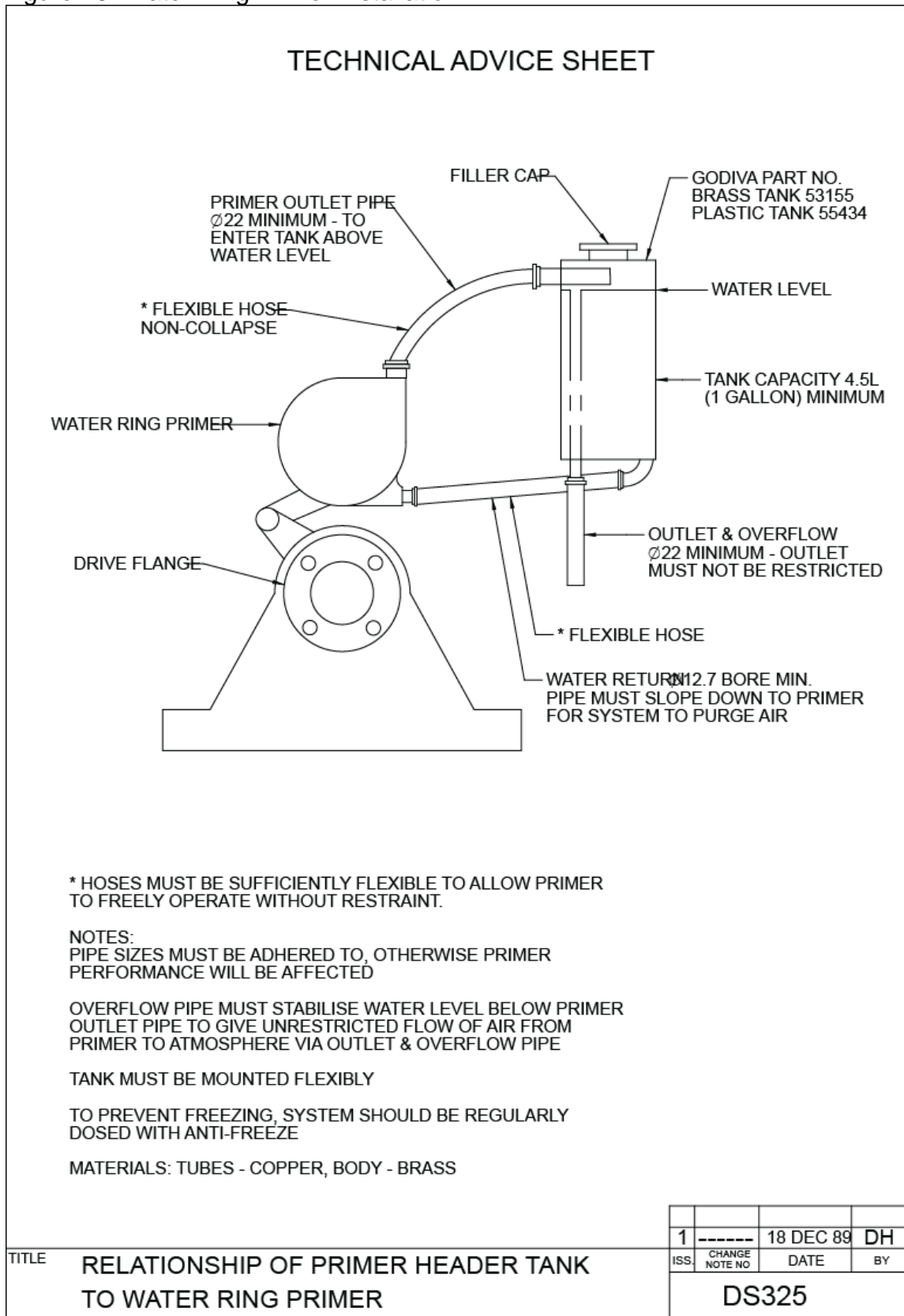




Figure 19. Tachometer (p/n 60875) Connection Details – Part 1

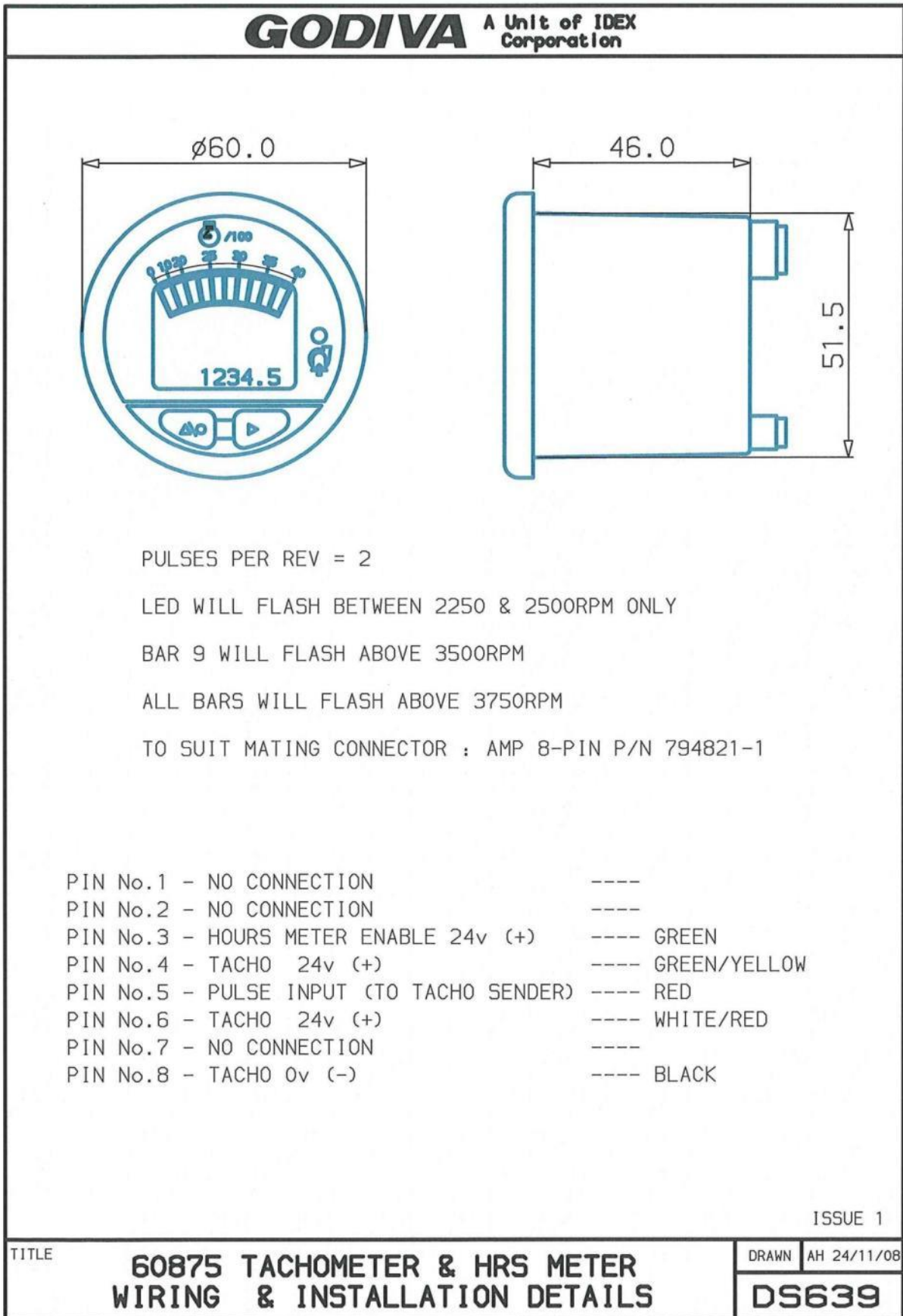


Figure 20. Tachometer (p/n 60875) Connection Details – Part 2

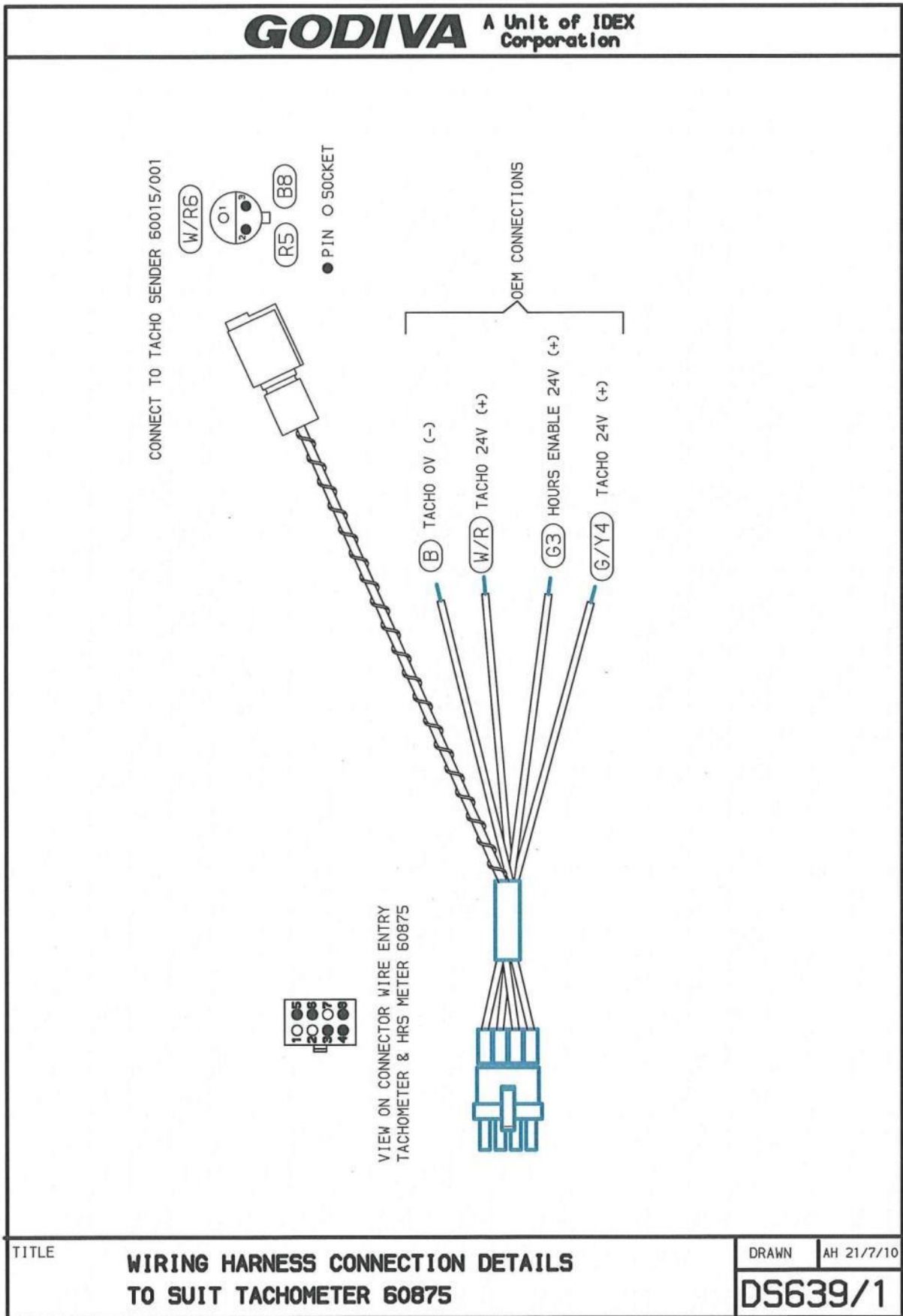

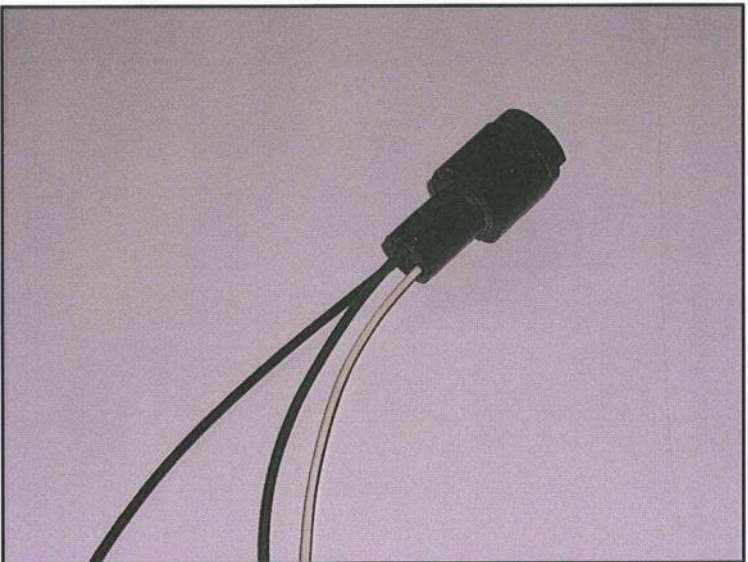



Figure 21. Tachometer sender unit wiring (p/n60015/001) – if Godiva Tachometer is not supplied – Part 3





**SENDER UNIT'S WIRE INFORMATION**



**SENDER UNIT VIEWED FROM CONNECTION END**

GREEN WIRE, SOCKET 1 = 12/24V POS(+) FUSED SWITCHED SUPPLY

⚠ WHITE/BLACK WIRE, PIN 2 = SIGNAL TO TACHO

BLACK WIRE, PIN 3 = 12/24V NEG(-) SUPPLY

2	C00588	30 SEP 10	ACS
1		24 JUN 10	ACS
ISS.	CHANGE NOTE NO.	DATE	BY
TITLE <b>65627 - TACHO SENDER CONNECTION INFORMATION</b>			<b>DS651</b>



## COMMISSIONING

- Check all mountings are secure.
- Check all pipework has been connected.
- Check engine rotation against PTO rotation.
- Ensure drive is connected.
- Ensure water is available and connected
- Ensure power is available and connected.

### Preparation for use

Fill the bearing housing with the specified grade and quantity of oil (see Technical Data).

Check oil level only when vehicle is stationary and level. If the pump has been running, allow 5 minutes for the oil to settle.

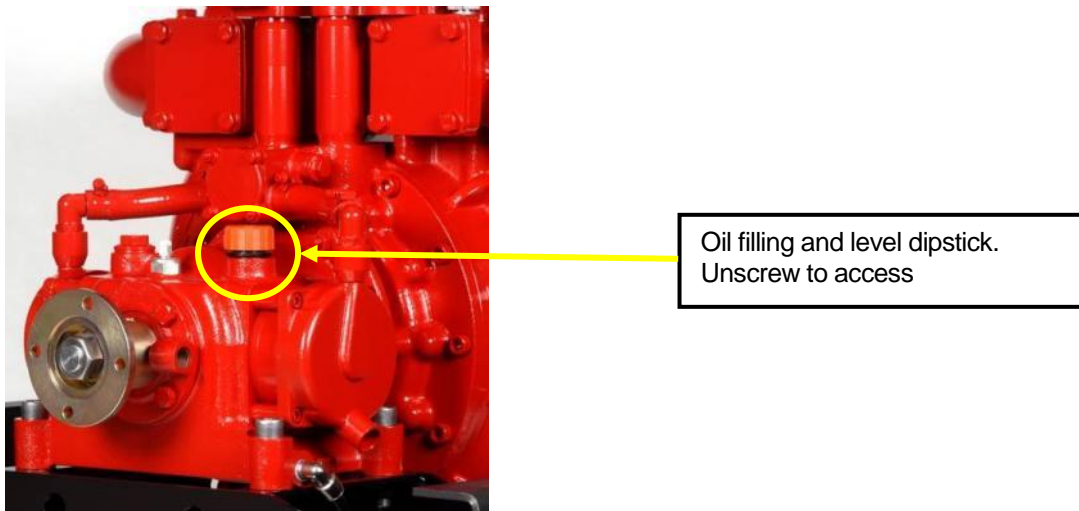


Figure 22.

If a gear box is fitted, fill with the specified grade and quantity of oil (see Technical Data). When replacing oil fill/level plugs use Loctite 572 to ensure a good seal, hand tighten with a suitable spanner.

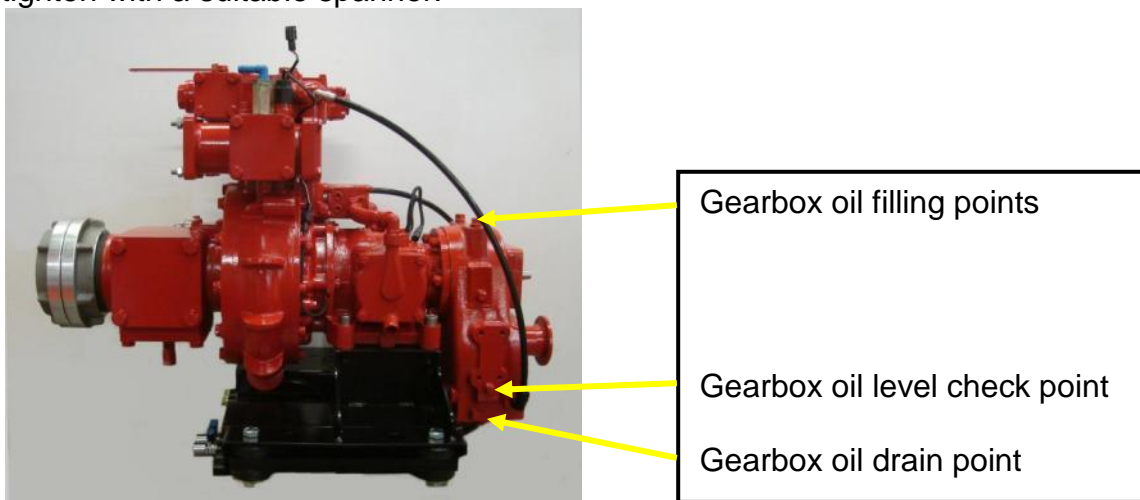


Figure 23.

Remove the plugs from the gearbox filling point and oil level check point.

Figure 23 (and part of Figure 24) shows the gearbox in the down position. In this position there are two possible oil filling points on top of the gearbox and two oil level check points, one either side of the gearbox towards the bottom. Use the points that are the most accessible.

Fill the gearbox until the oil flows from the oil level check point. This is the only accurate method of checking that the correct amount of oil has been added to the gearbox, as it allows for different sizes of gear ratios. The approximate capacity is 1.2 litres.

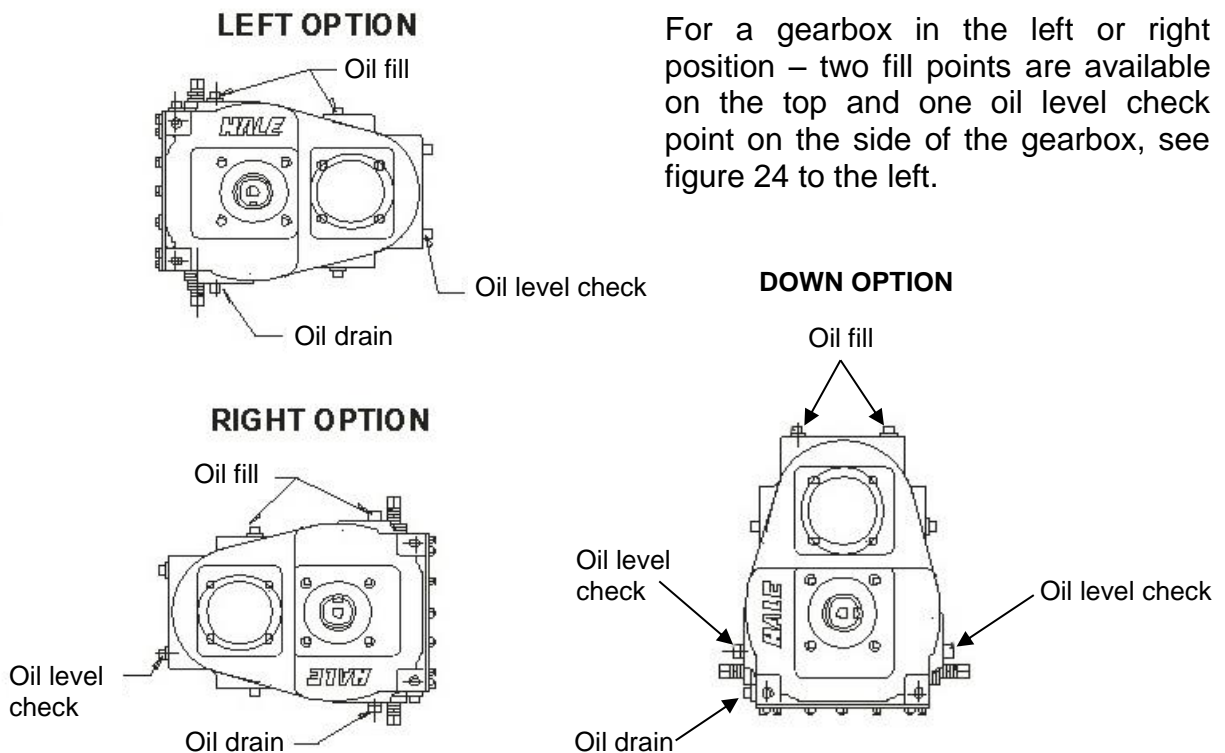


Figure 24.

Check that any electrical components are functioning correctly, e.g. the instrument panel gauges, tachometer.

Water Ring Primer (if option installed) – ensure that the primer header tank is full of water, approximately 4.5 litres.

## OPERATION



- Do not use the pump in explosive environments
- Do not use the pump without the inlet screen fitted
- Do not run the pump without water for longer than one minute, as dry running will damage the seal.
- Do not exceed the maximum inlet pressure of 12 bar.

### Basic Operation

The Godiva Prima pump is designed for extinguishing fires with an unrestricted water source.

Water must be as clean as possible and can be fresh water or sea water. For long term use with sea water, gunmetal material pumps are strongly recommended.

### Operator Controls

Operation of the pump is by two basic controls – discharge valve and pump speed control.

Typical location of controls –



Pump speed control.  
Location will vary according to installation

Discharge valves.  
Screw down type shown  
(Turn clockwise to close, anti-clockwise to open)

Suction tube connection

Figure 25.

### Operation – from an open water source, Piston Priming

Ensure that a suitable strainer (with holes of maximum 10mm diameter) is secured to the end of the suction hose and suspended below the water but not resting in mud or sand.

Connect the suction hoses securely to the suction tube and close the discharge valves. Engage the pump drive and increase the pump speed to 2600rpm.

The pump has two modes of priming operation, configured by the OEM – automatic or manual.

### Automatic Priming (if installed by OEM)

When the pump is running, the primers will automatically engage if the pump pressure drops below 0.75 bar, and disengage when pump pressure rises above 0.75 bar.

When priming is in operation the LED will illuminate (if configured by the OEM).

## Manual Priming (if installed by the OEM)

Press the Manual Prime button to activate the primer.

Note: when prime is achieved, the primers will automatically disengage.

It is not possible to operate the primers if the pump pressure is above 0.75 bar.

If the pump pressure drops below 0.75 bar, the primers will not activate unless the Manual Primer engage button is depressed.

### IMPORTANT

Do not operate the pump for extended periods with the discharge valves closed. This may cause the pump to overheat. On P2 and PC2 pumps a thermal relief valve is fitted as standard to help prevent overheating.

## Operation – from a pressurised source, e.g. hydrant or vehicle tank

If water is supplied from a pressurised source then priming is not necessary.

## P2 - High Pressure Operation

By moving the High/Low pressure selector lever to –

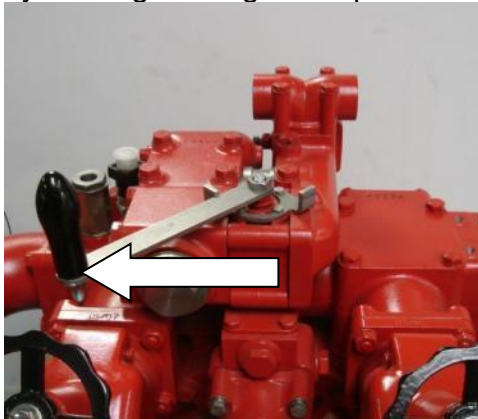


Figure 26.

Left – High pressure will be available to the hose reels

Low pressure also available at low pressure discharge

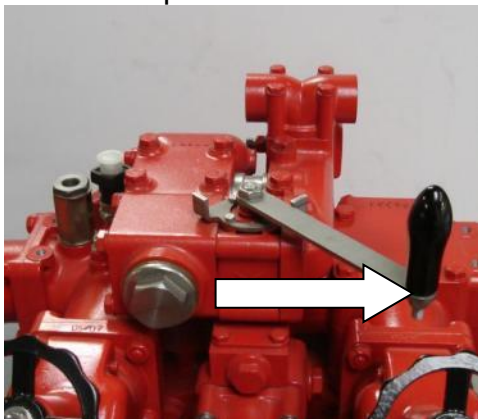


Figure 27.

Right – Low pressure only available to hose reels

Low pressure also available at low pressure discharge

When not required the high/low pressure selector lever should be left in the low pressure position (to the right). This will minimise pump power demand, consume less fuel and produce less emissions and noise.

### **Collecting Head Use**

If using the factory fitted Godiva collecting head always ensure the collecting head valves are either fully opened or fully closed depending on the required operational status. Valves left partially open may inadvertently close in operation due to water pressure.

### **Shutdown**

Return the pump to idling speed before disengaging the pump drive.  
Drain the pump of any water by opening the drain tap at the bottom of the mounting platform (or at the bottom of the volute if no platform is fitted).

## MAINTENANCE

Maintenance intervals and action required

Interval	Action required	Items Required
<b>After each use –</b>	Flush pump through with clean water	Supply of clean water
<b>Every 3 months -</b>		
Check oil level in bearing housing	Remove filler/dipstick on bearing housing to check level	10w/40 or 15w/40 multigrade engine oil
Vacuum test	See separate instructions on page 32	
Pressure test – for tracing location of vacuum leak	See separate instructions on page 32	Access to pressurised water source
P2 - High pressure filter	Remove the filter from the housing and flush with clean water	
<b>Every 12 months -</b>		
Change oil in bearing housing	Drain oil from bearing housing and refill with new oil	1 litre SAE10w/40 or 15w/40 multigrade engine oil
Change oil in gearbox - if fitted	Drain oil from gearbox and refill with new oil	1.2 litres BP Energol GR XP 68 or similar
<b>Every 2 years -</b>		
Piston primer seals in cover and body	See Maintenance Manual procedures	Repair kits Special tools (contact Godiva)
Thermal Relief Valve Test	See separate instructions on page 33	



## Vacuum Test

Place the blanking cap(s) in position on the inlet(s) of the pump and close the delivery valves. Run the pump at 1300-1500 rpm and observe the vacuum/compound needle. When a vacuum of 0.81bar is obtained, stop the pump. This vacuum should be maintained for at least 15 seconds or drop no more than 0.07bar in a minute.

If the pump will not hold the vacuum with the blanking caps in position, a leak is present in the pump, and the pressure test detailed below must be carried out to trace it. Should the pump not reach a vacuum of 0.81bar but will hold a lower pressure, a fault in the priming system is indicated.

## Pressure Test – carried out without pump running.

This test is to be carried out if the pump will not hold a vacuum with blanking cap(s) in position, and is intended to trace the leaks responsible for the loss of vacuum. Apply a water pressure of 3.5 - 7.0 bar to the pump and check for leaks. The area causing the leak should be visible, and can be dismantled and rectified. Check each primer drain hole for water leakage. If leakage is found, replace the primer seals and O rings as described in the Maintenance Manual Procedures. If the pump will not achieve 0.81 bar vacuum, and will not hold what it does achieve, there is a leak, and possibly also a fault, in the priming system.

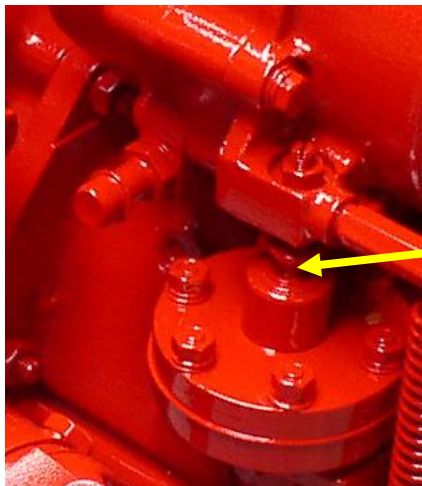
If no leaks are apparent, the leakage must lie between the priming valve and the primer. Points to be checked are:

- The inlet seal in the primer end cap
- The priming valve diaphragm

## Water Ring Primer (optional priming system)

If a water ring primer is fitted carry out the same vacuum test as described above but run the pump at 2300rpm to achieve a vacuum. Should the pump not reach a vacuum of 0.78bar but will hold a lower pressure, a fault in the priming system is indicated. Check as follows –

See that the primer drive (fibre pulley) is engaged with the pump pulley and runs without slipping. When the primer is in the engaged position there must be a 3mm clearance between the lift-off pad attached to the primer and the lift-off piston just below.



When water ring primer is in engaged position (fibre pulley is running in drive flange) there must be a 3mm gap between lift-off pad on primer and cylinder piston below.

Figure 28

Check that the primer is filled with water

Check the primer seal drain hole for leakage. If leakage is found, fit a new seal to the primer.

If the pump will not hold a vacuum apply the pressure test (as above) and check for leaks. Defective joints and seals must be replaced. If no leaks are apparent, the leakage must be in the line from form the priming valve to the water ring primer, points to be checked are the priming valve sealing washer, the water ring primer non-return valve and the rubber hose and clip.

### **P2 - Thermal Relief Valve (TRV) Test**

With the pump primed, close all discharges. Run the pump, with high pressure selected, at approximately 2800rpm to permit it to heat up. The TRV should open and discharge water when the pump temperature is in the order of 45 - 55°C with the standard temperature option and 70-75°C with the high temperature option. Observe the valve discharge, if it is open to atmosphere, or feel the discharge pipe become warm if it returns to the vehicle tank. Open a pump discharge valve to permit cool water to enter the pump. The flow from the TRV should now cease.

### **Gauges (if fitted)**

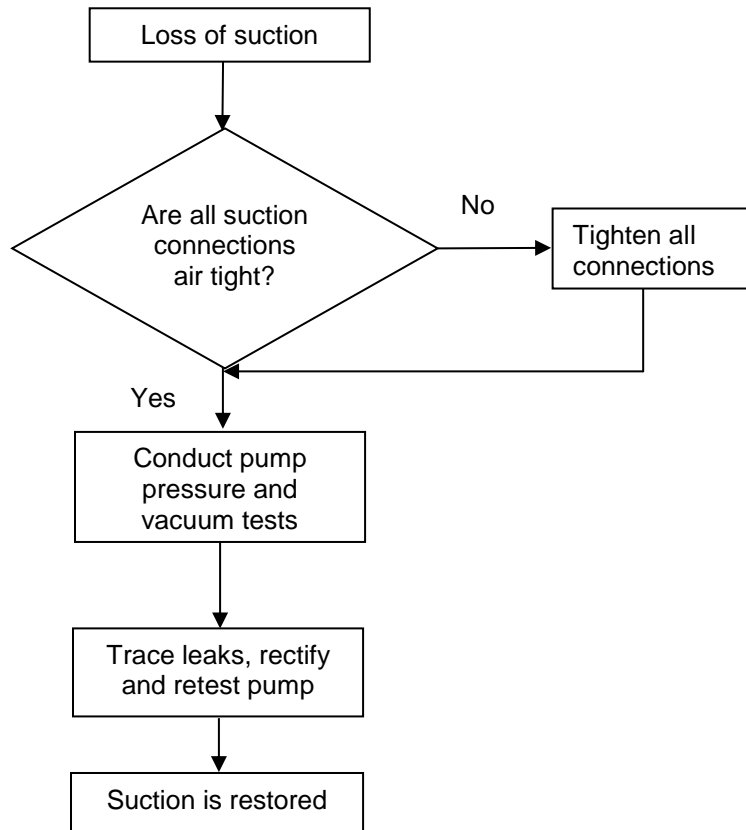
Do not clean the glass surfaces of the gauges with abrasive or solvent cleaners. These will cloud the glass surface, use a mild detergent and water.



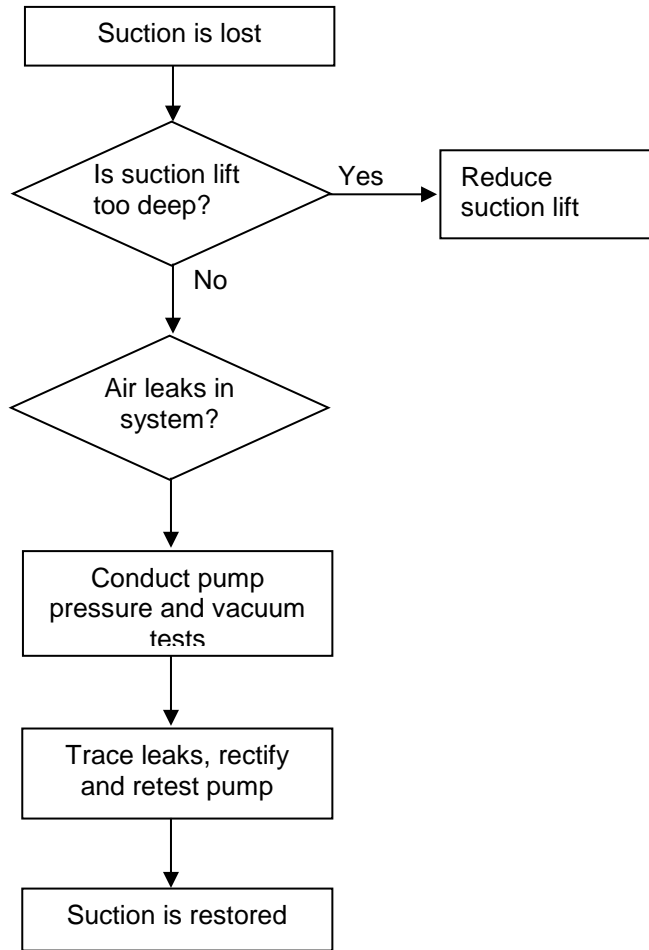
### FAULT FINDING

The following conditions may occur –  
Figure 29 Loss of suction 1  
Figure 30 Loss of suction 2  
Figure 31 Cavitation  
Calendar

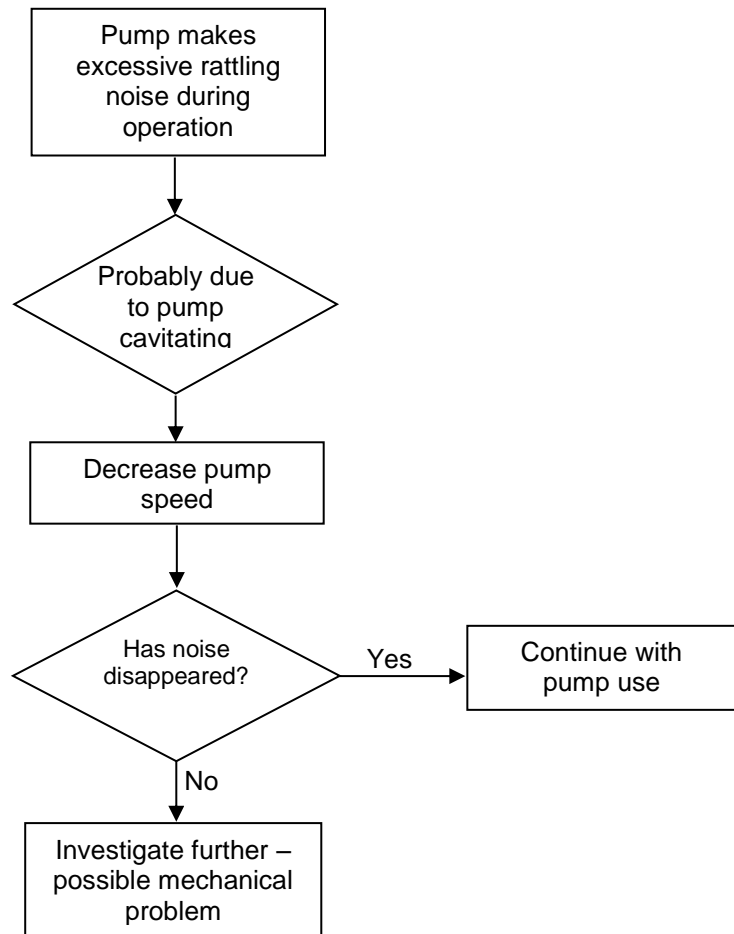
**Figure 29. Loss of suction 1**



**Figure 30. Loss of suction 2**



**Figure 31. Cavitation**



### OPERATOR MAINTENANCE LOG

Pump serial number .....

Use this log to record faults, part replacements and major overhauls.  
Please contact Customer Services at **Godiva Ltd.** prior to any proposed return of either a single part, or a complete assembly.

Date	Hours Run	Inspection / Fault	Parts Renewed	Reason for Renewal	Initial