

greasemaster3

Greasemaster3 is purposely designed to provide grease to single line progressive distribution systems.

Grease is delivered through a unique filtration process which protects the system it feeds from contamination. Robust construction and heavy-duty pump station to power automatic grease systems on machines working in tough environments.

Grease up to NLGI 2** are delivered to bearings in pre-determined ratios by means of **blocmaster** distribution blocks Blocmaster : <http://www.bignall.co.uk/masterlube/blocmaster.asp> .

Greasemaster3 may be filled by standard (54mm Dia.) grease cartridge or by hand grease gun.

SPECIFICATION

Weight (Empty)	6.2Kg
Capacity	5Ltrs Nominal
Grease Specification**	Lithium NLGI 2**
Voltage	12v/24v dc Polarity Protected
Current	2A Max
Output Pressure	Adjustable up to 200bar***
Delivery	12v ~ 2.5cc / 24v ~ 6.0cc
Temperature Range	+40°C / -15°C
Filling	Grease Nipple / Cartridge Fill

NOTE

- *All tests carried out at ambient temp. to air
- ** <http://www.bignall.co.uk/masterlube/grease-recommendations.asp>
- *** Do not operate pump without 190 or 200 Bar pressure relief valve

On receiving the pump, fill the reservoir to within 15mm / 3/4" of the top of the reservoir tube with good quality grade II lithium base grease**.

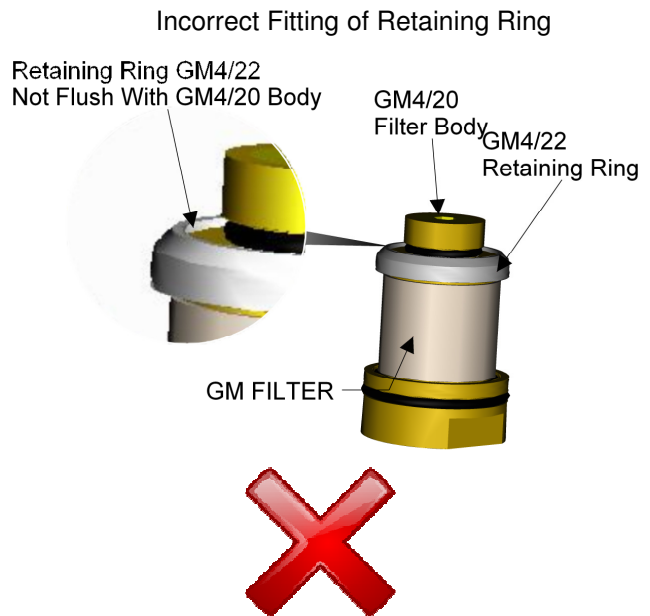
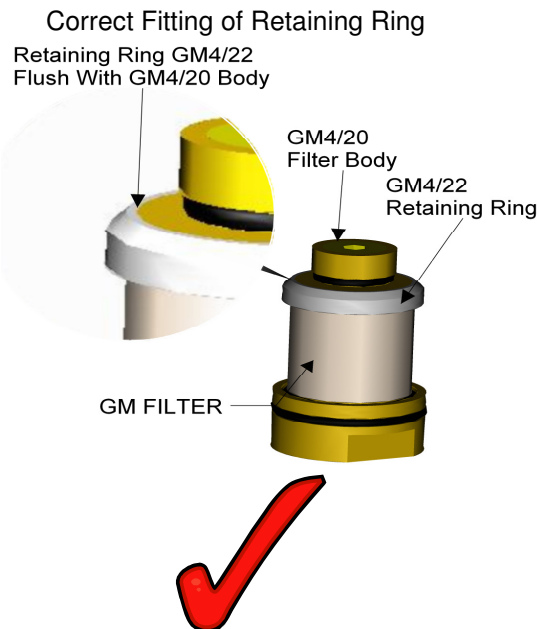
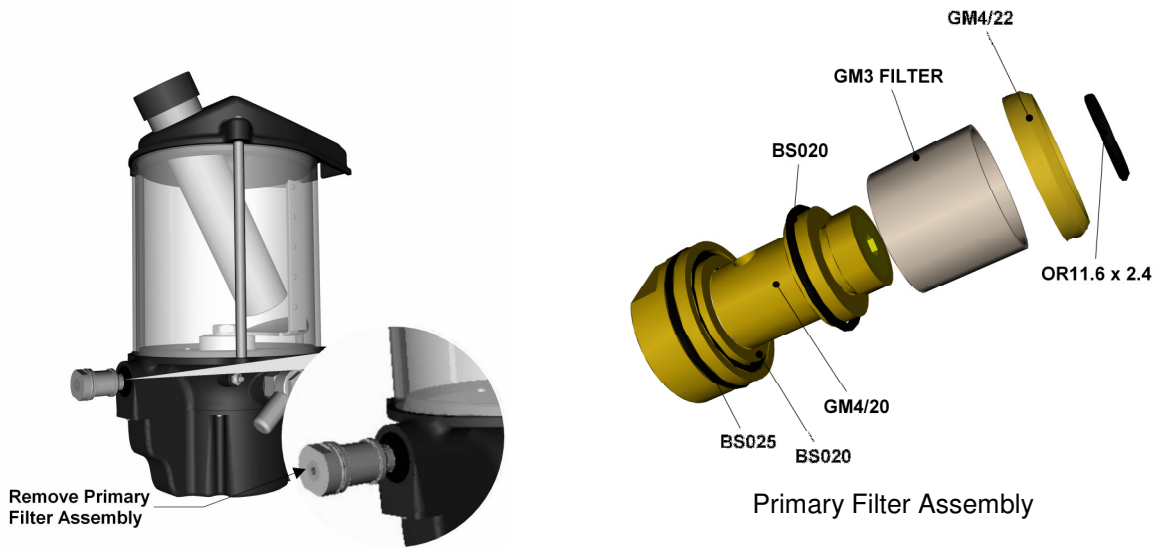
Connect the pump to a suitable power supply using suitable cable (**RED - POSITIVE +ve** / **BLACK – NEGATIVE –ve**). Ensure specification of cable is sufficient to prevent voltage loss along its length.

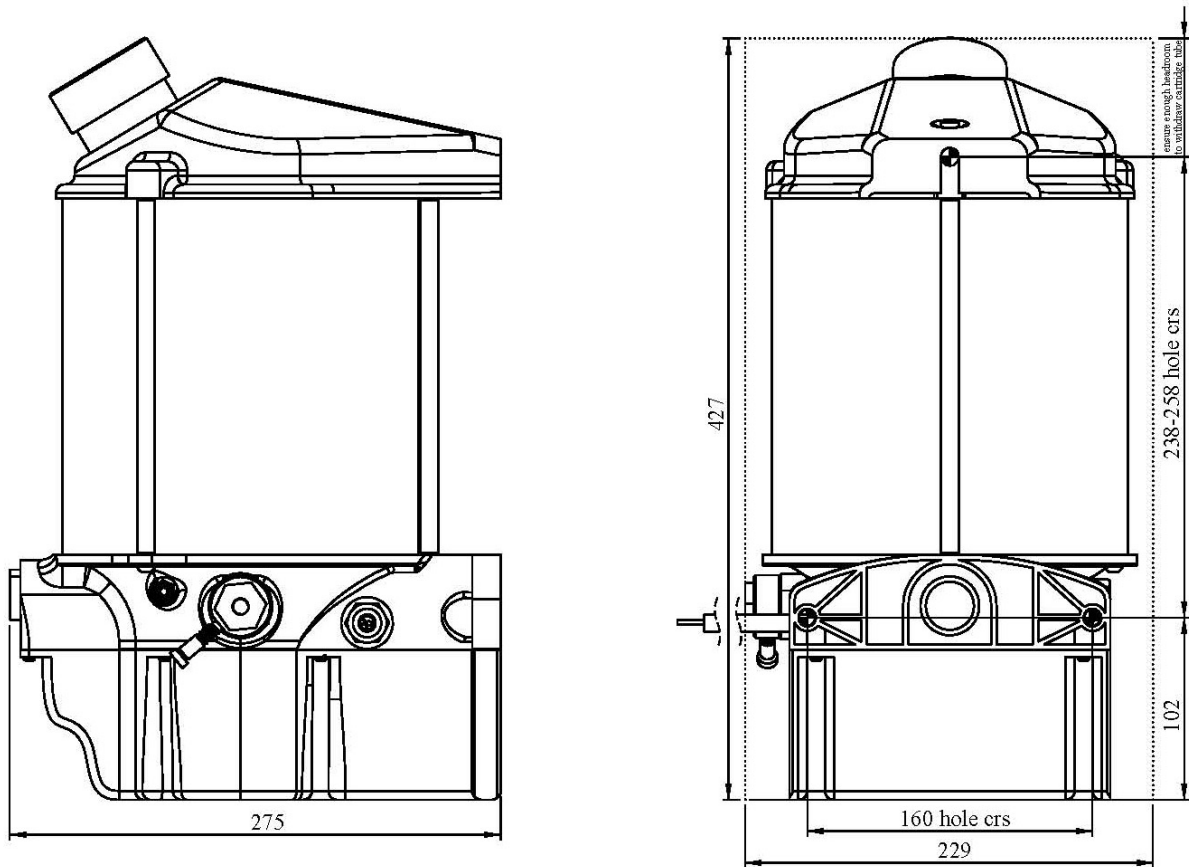
MAINTENANCE

Fill the grease pump regularly and avoid long periods of running the pump empty. *Do not overfill*. Keep the reservoir tube clean on the outside so that levels can be observed. Clean the filter every 2500 hours of machine (not pump) operation. If contamination is noted, this period should be altered accordingly

Filter Maintenance

1. Remove filter cartridge from base using a 1" A/F open ended Spanner / Adjustable Spanner
2. Unscrew Retaining Ring, remove GM3 Filter.
3. Wash the filter in a suitable solvent/Paraffin Bath and blow away any remaining debris if necessary. Replace the filter mesh if it is damaged with Part No. GM3 FILTER
4. Refit GM3 Filter.
5. Screw Retaining Ring onto housing. Ensure that the Retaining Ring is in correct position (See Diagram below.)
6. Refit Filter, *Do Not Over tighten*





Spares Parts

Code	Description	Code	Description
9900278	12/24 v Motor Unit	GM4/12	GM3 Motor Cover
BLANK PLUG	GM3 Blank plug	GM4/16	GM3 impellor assembly
BS264	Reservoir O-ring	GM4/22	GM3 FILTER retaining ring
GM3 FILTER	GM3 FILTER Mesh	GM4/30	GM3 FILTER Cartridge assembly
GM3/10	Reservoir Pillar Rods (5 ltr) (3 per kit)	GRM/PE	GM3 pump element assembly
GM3/18	5 ltr Reservoir	PRV190	Pressure Regulator Valve @ 190 BAR
GM3/28	GM3 Lid assembly complete	PRV200	Pressure Regulator Valve @ 200 BAR
GM3/29	Grease cartridge filler rod assembly		
GM3/32	Banjo Bolt Assembly		

OPERATING THE PUMP

The pump is designed to be controlled by a timing device, which has a set duty cycle according to grease requirements of the system. There are two timer settings:

- 2.5 minutes ON cycle / 2.5 minutes OFF cycle
- 4 minutes ON cycle / 1 minutes OFF cycle

The timer has been set at the factory in accordance to order/grease requirements. This can be altered to suit individual requirements.

There will be three leads coming from the timer (blue circuit board).

1. Black – Negative
2. Thick Red – Positive for 2.5mins ON / 2.5mins OFF
3. Thick & Thin Red – Positive for 4mins ON / 1min OFF

To set for 2.5mins ON / 2.5mins OFF only wire up one black and thick red lead.

To set for 4mins ON / 1min OFF connect the two red leads together and wire up as normal.

- Green – To terminal block as shown
- Red – To terminal block as shown

Once mounted and connected to a suitable supply, fill the pump with grease (see grease recommendation pg 8) and let it run. If the pump is already primed with grease it will start delivering. (Primed pumps are always primed with lithium-based grease.) Empty pumps will self-bleed and will take some minutes to do so.

GREASE SEPARATION

This occurs when the oil suspended in the soap base separates out leaving just the soap base. This will display itself as a wax like substance, which will clog both the filtration and distribution blocks within a system. Greasemaster 3 (GB) has a unique filtration system. Grease separation is most likely to show in the filter. The filter should be carefully cleaned and cause rectified.

Separation will be due to one of the following causes:

- Adding incompatible grease
- Using poorly mixed unstable or poor quality grease
- Forcing grease through a partly blocked filter mesh
- Grease being left in the system over the winter period

To ensure that the system functions correctly it is important to operate the system frequently especially during the downtime period of the machine.

SYSTEM PRINCIPLE

The principle of progressive distribution is that each point is fed in turn through the system. Each block wafer has a piston which delivers grease from each end in predetermined ratios.

Each piston delivers in turn within the block, delivering its grease to an outlet port. Having moved it then opens the port to its neighbour which then delivers greaseand so on. The process continues down one side of the block and then the other. Each piston **MUST** therefore deliver for the cycle to continue.

Each of the distribution blocks is fitted with a cycle indicator pin. This pin moves in and out of the block as a visual confirmation that the block is cycling.

There are three piston sizes that give a nominal 0.05, 0.10 & 0.2cc outputs per side. By pre-drilling these; outputs may be twinned so both outputs deliver from just one side.

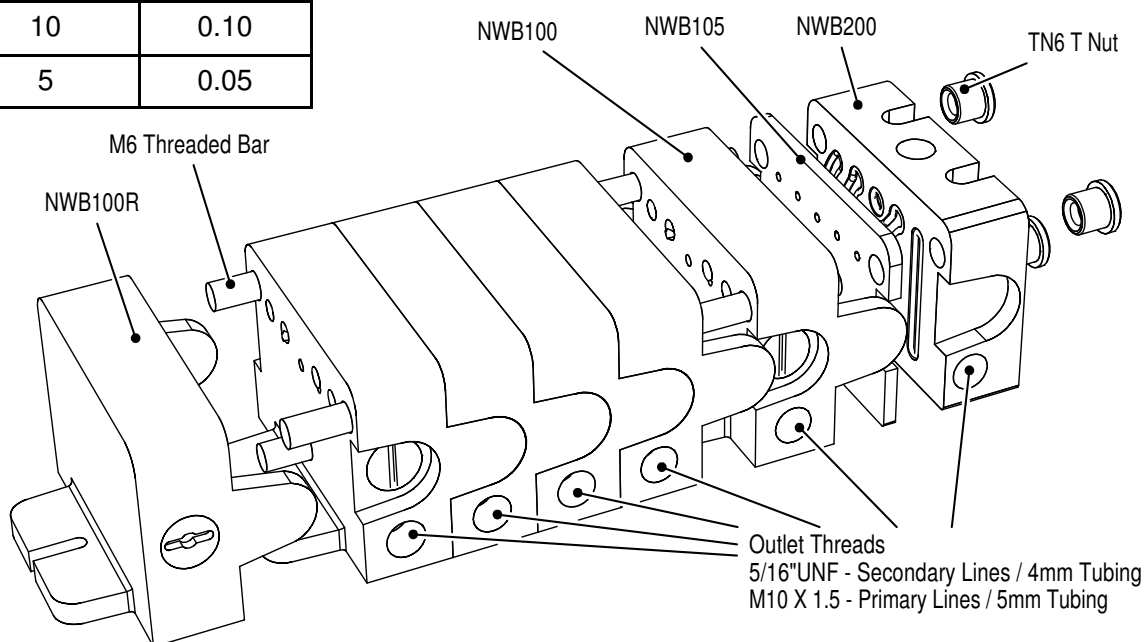
Blocmaster blocks may be used in a number of applications. A wide and flexible variety of configurations are available to suit both manually and automatically operated systems.

They consist of a reversing wafer containing a No. 20 piston which feeds two outlets and an start wafer that contain between them between 2 and 15 wafers each delivering to up to two points. In this way a single block can feed between 3 and 30 points. The blocks are held together by means of three studs and secured with T nuts.

A minimum of three pistons are required to cycle a block. Each wafer containing a piston delivers its output via the next block in line. Where all piston sizes in the block are the same (no.20) then blocks are usually unmarked. Where piston sizes in the block vary the outputs are marked as per table below. There are two main outlet threads available; 5/16" UNF suitable for Secondary Lines and M10 x 1.5 which is suitable for larger tubing or Primary Lines.

The Inlet thread is a 1/8" BSP; as standard this is fitted with a 1/8" BSP Straight Grease Nipple. Hydraulic fittings are available.

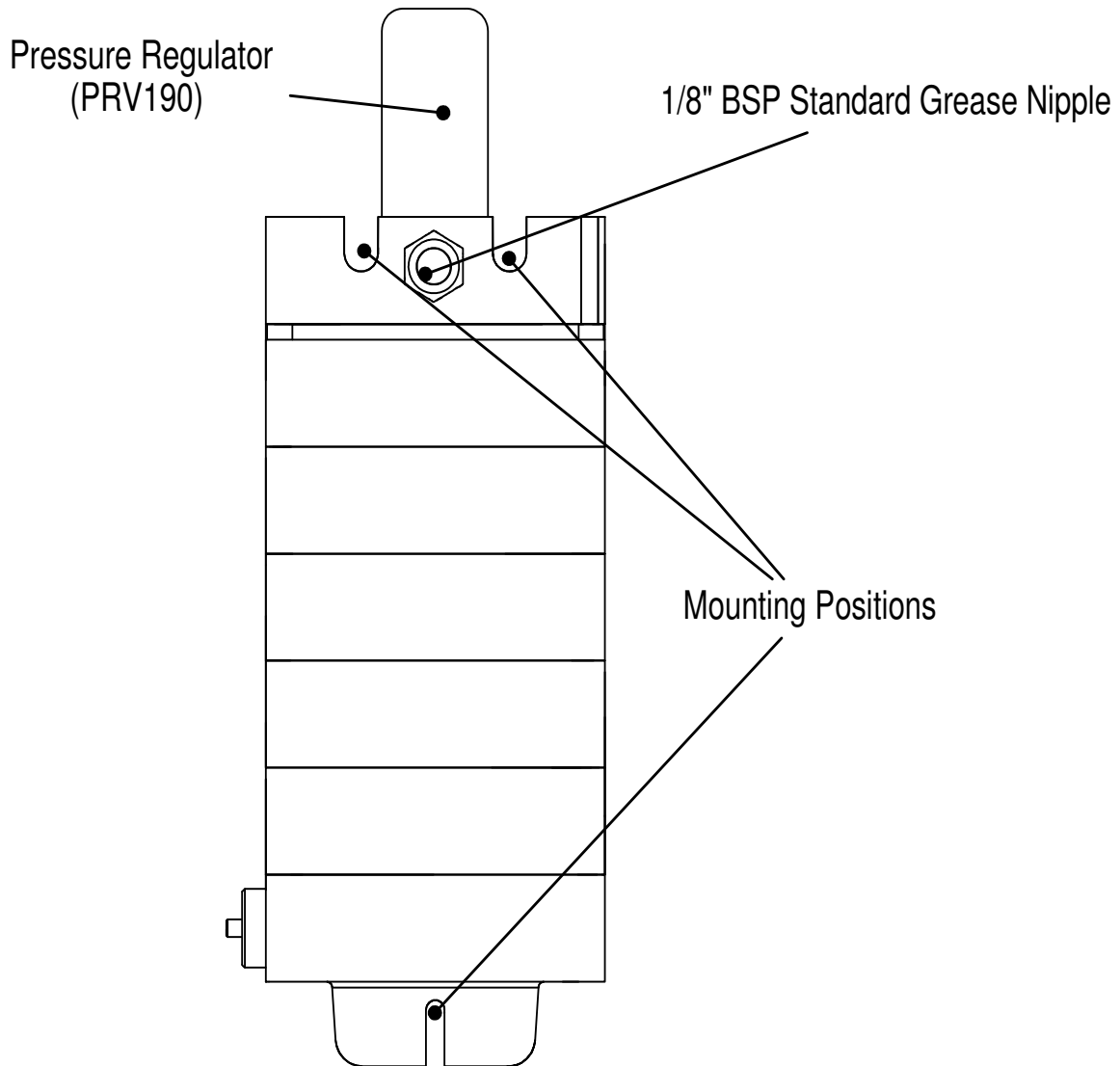
Marking	Output (cc)
40	0.40
No Markings	0.20
10	0.10
5	0.05



MOUNTING THE BLOCMASTER

To avoid block distortion the Blocmaster must be mounted on a flat surface using the three mounting positions on the Blocmaster. Use M6 through bolts or similar fixings.

Mounting spacers are available when ground clearance is needed.



CARE & MAINTENANCE

CARE MUST BE TAKEN TO USE ONLY CLEAN GREASE

Avoid refilling grease gun from open containers and ensure all nipples/zerks are clean and free of dirt.

Examine all Pipe work regularly to ensure there is no damage. If a pipe is damaged, replace the pipe as soon as practical but **NEVER** blank off the outlet, as this will stall the block.

Grease released from open outlet due to damaged pipe-work will not affect the amount delivered to other points.

If points appear dry then disconnect and clear any blockage by greasing manually. Check that the pipe-work is not damaged.

NOTE: Larger bearings and those close to crop may appear dry but can still be adequately lubricated inside. If this is the case, low backpressure will be noted, and the expelled grease will not be discoloured.

When greasing points by hand maintain an even steady pressure, do not force the grease through.

DO NOT use a high-pressure air driven pump.

It is recommended to operate the system at least once per day depending if operating conditions allow.

If a point is not regularly greased, dust and spent grease can block bearings causing grease to take longer to deliver or even stall the block.

New machines may take longer to grease due to tighter bearings.

IF UNDER LUBRICATION OR ANY OTHER PROBLEMS PERSIST CONSULT WITH YOUR NEAREST DEALER.

Information and contacts are available via:

www.bignall.co.uk

GREASE RECOMMENDATIONS

All Masterlube Greasemaster range of pumps are designed to operate with Lithium base NGLI grade 2 greases

These greases make up 70% of the current grease market.

Occasionally equipment manufacturers may recommend other greases for special reasons. Often this can be simply for the longer life properties. Where an automatic system is in use, clearly this requirement is already taken care of, however before reverting to a simple Lithium grade 2 grease the operator should check with the manufacturer to make sure the specification is not for the reason of other considerations such as shock loading, water ingress, heat etc.

Masterlube Greasemaster pumps will also pump other greases of NGLI grade 2 consistency, however when using these, the following points should be noted:

1. Although most of the more common grease bases will mix with our recommendation, (with the notable exception of Calcium), it is always advised to flush out the system before changing.
2. Lithium Complex and Lithium/Calcium Complex greases, although meeting NGLI grade 2 specifications, will be between 2 and five times harder to pump. This will lead to higher system pressures especially in colder weather. These greases are unlikely, however, to cause pressures exceeding the design parameters of the system.
3. Grease bases have a fibrous structure and in some cases these can be large enough to prevent it passing through the filter supplied with the Greasemaster II and 3 pumps. This will particularly be the case with Complex base greases and a few simple base greases where the manufacturing process has not fully homogenised the structure. In these cases it is open to the operator to either change greases (recommended), increase the frequency of filter cleaning or to remove the filter gauze. In the latter case it will then be necessary to take extra care when filling.
4. As well as oil and thickener (soap base) greases contain additives to enhance properties. These are unlikely to affect the system with the exception of Graphite which will build up on surfaces and effect tolerances.

All greases are subject to the gradual leaching out of oil over a period of time, this can cause blockages to occur within the system. This is not normally going to affect equipment which is in continual use. Where equipment is to be stood down for a period of months it is recommended to operate the system occasionally to move the older grease out of the system. It is also recommended that operators make their last fills with an NGLI grade 1 grease as this will slow the process

TROUBLE SHOOTING GUIDE

Fault: Pump operates, but no grease is delivered

Probable causes:

- Reservoir level low Fill with grease
- Secondary filters blocked (grease may show at relief port on LHS of filter housing) Remove filters and clean. Clean reservoir and fill with clean grease.
- Primary filter blocked (indicator pin may not be moving or moving only slightly) Remove filter and clean. Check for debris at inlet inside reservoir. Clean reservoir and fill with clean grease.
- Pump element non return valve has failed or come loose..... Remove, clean and reassemble with new parts as required.
- Reservoir contains grease that is too heavy. Max. NGLI grade 2 grease recommended, grade 1 for 0°C and below Remove incorrect grease and replace with recommended grade.

Fault: Pump operates, but grease comes out of pressure regulator valve on element. (on no account try to reset the valve to a high pressure, the valve is there to protect the system and warn of faults. Overriding the valve will not cure the fault.)

Probable Causes:

- One of the distribution blocks has seized. This may be due to contaminants entering the system during assembly, repair or a failed filter. Another cause maybe separation of the grease itself. Certain poorly mixed greases or poor quality greases may separate out when forced through drillings in the blocks leaving the solid soap base blocking ports. This separation may also be caused by mixing incompatible greases (e.g. calcium and lithium base greases) blocks are unsuitable for servicing by the customer and should be replaced or returned to Masterlube Systems for rework
- One of the bearings supplied by the system has become blocked (possibly after being immobile for sometime). Where this is the cause, the pump may operate for some hours before the back pressure builds to a point where it opens the pressure relief valve locate the blocked point by looking for dry points and seeing if the system starts again when the point is disconnected. The point must be freed before reconnection to the system.
- The master block may have an individual non return valve for each outlet. If these seize the system will stall remove each and check in turn. Free off or replace.

Fault: The timer cycles but the pump does not operate the pump.

Probable Causes:

- The fuse in the timer has blown Check and rectify any short circuit and replace fuse
- The cable to the pump has been damaged Replace
- The pump has been disconnected and rewired with the incorrect polarity Reverse the polarity
- The pump has seized causing the re settable fuse to operate Locate the reason for seizure and solve. Remove power to reset fuse and reconnect.
- Re settable fuse or diode have failed These protect the pump from reverse polarity and motor burn out and are located inside the motor cover. Test and replace if necessary.
- Motor has failed The pump is not suitable for customer servicing and should be replaced or returned to Masterlube Systems for rework.

TOOLS REQUIRED FOR FITMENT

- 1 Set Of Combination Spanners 8mm – 15mm
- 2 Pairs Of 7" Pliers
- 1 x 6" Mole grips
- 1 Set 3/8" Drive Socket Set
- 1 Pair Of Double Edged Snips (For Cutting Hoses Square)
- Slotted & Cross-Head Screwdrivers
- Electricians Screw Driver
- Electric Drill & Selection Of Drill Bits
- 32mm Open Ended Spanner
- 28mm Open Ended Spanner
- 1" (25.4mm) Open Ended Spanner