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A TIMKEN Brand

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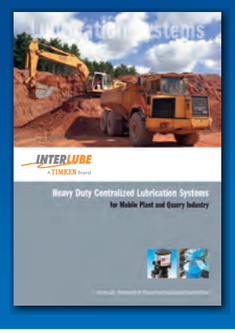

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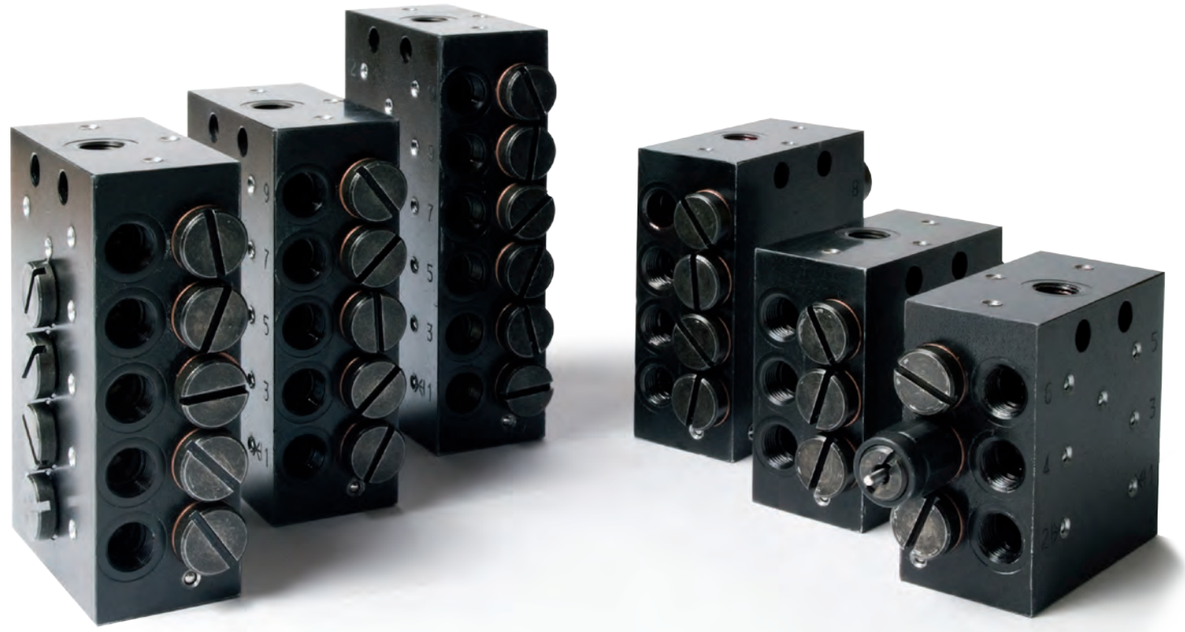

SPL + XPL RANGE

Progressive Divider Valves

Part of the HDI range of lubrication systems

Interlube Systems Ltd - Heavy Duty Industrial Lubrication Systems

Simple Systems

Manual Centralised Lubrication Systems

The progressive divider valves will deliver set amounts of lubricant to each point, inturn, without missing a point out.

The lubrication is delivered to each connected point irrespective of feed length and back pressure.

The lubrication from the standard side lever grease gun or hand pump is positively divided into six equal amounts.

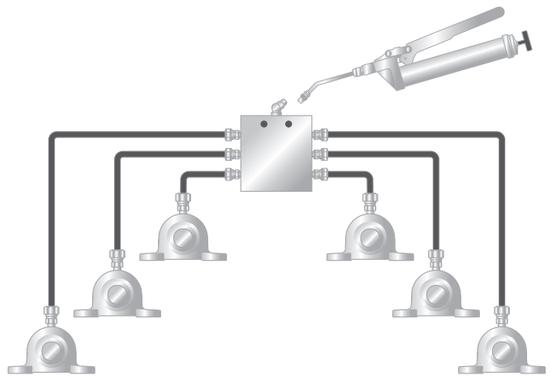

FIG 1

Once the lubricant supply is stopped or interrupted the valve will continue to lubricate where it last stopped, irrespective of time intervals.

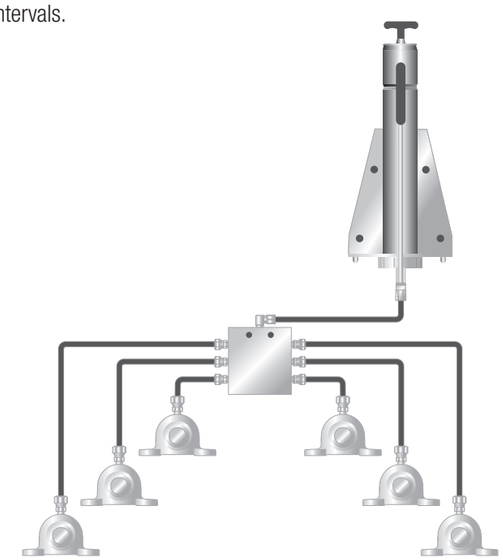

FIG 2

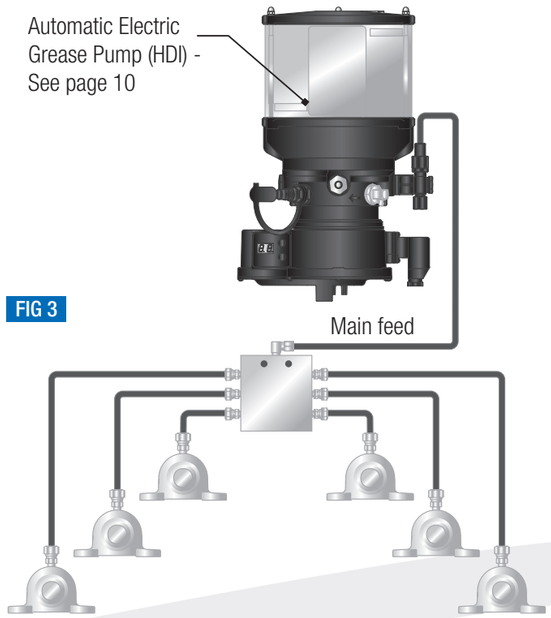

FIG 3

Automatic Centralised Lubrication Systems

The progressive divider valve will operate exactly as detailed in the manual centralised system, except the HDI pump will automatically feed lubricant to the valve.

On operation the pump will deliver lubricant to the SPL/XPL divider valve. This valve will split the lubricant into calculated amounts and feed each point in turn never missing a point out irrespective of time delays.

(See separate HDI pump catalogue)

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Typical progressive system feeding 32 lubrication points with equal amounts of lubricant.

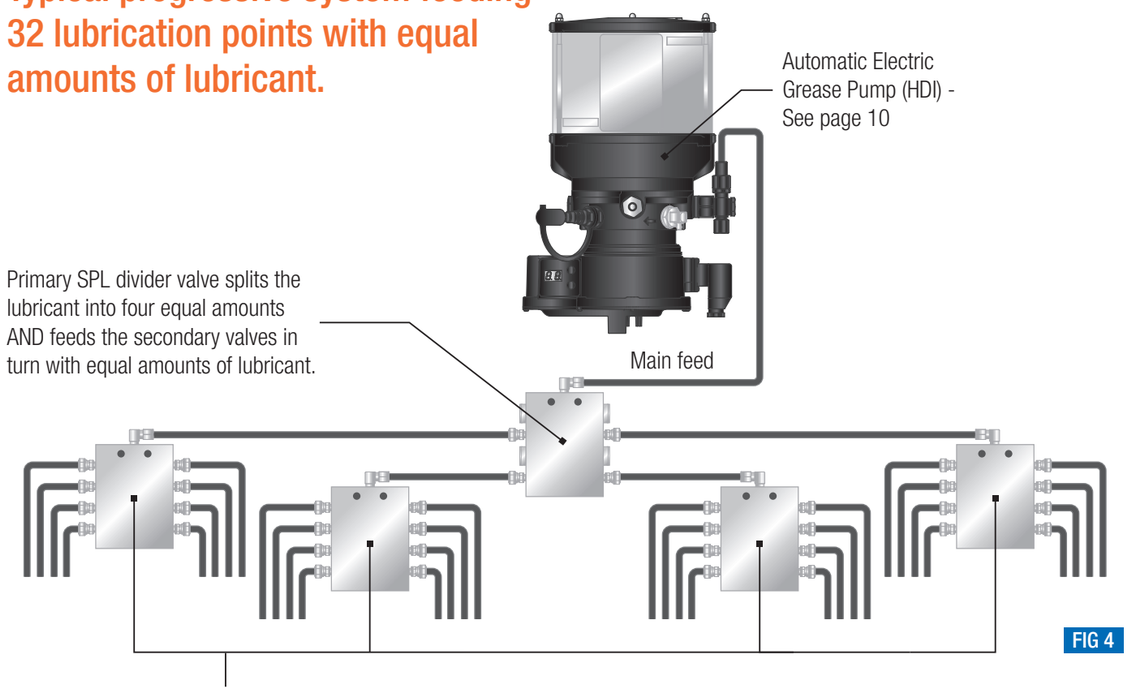


FIG 4

Progressive system feeding 13 points with various amounts of lubricant

Example: The pump output is 3.2cc per minute. If the pump runs for 6 minutes, the feeds would be as detailed.

(See page 3 for divider valve combination details)

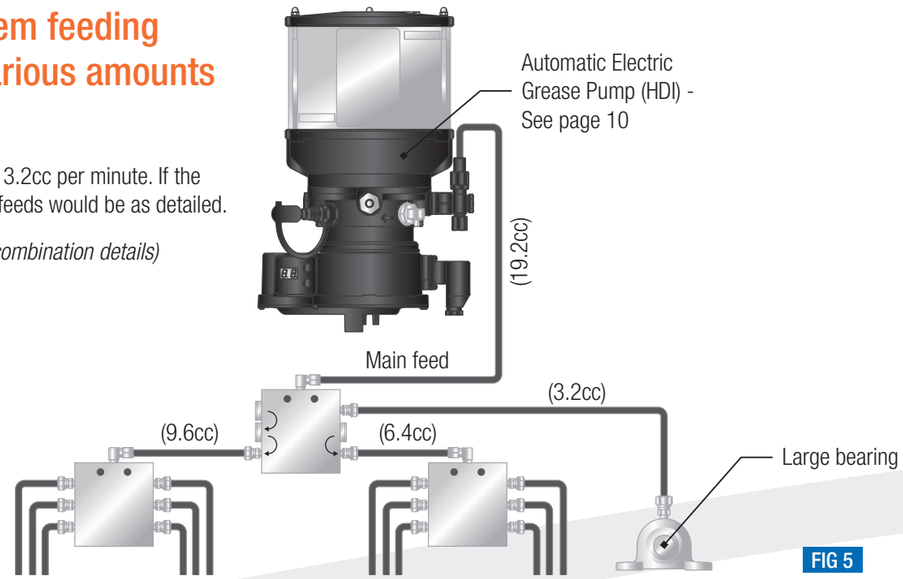


FIG 5

Outlet Combinations

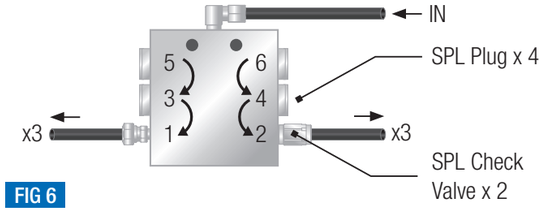


FIG 6

SPL06 - 6 Outlet Valve

Fig 6 illustrates the SPL06 valve splitting the lubricant into two equal amounts.

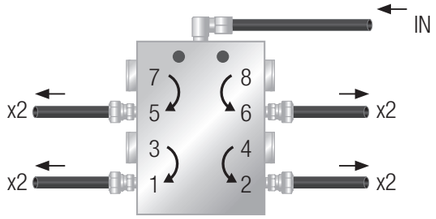


FIG 7

SPL08 - 8 Outlet Valve

Fig 7 illustrates the SPL08 valve splitting the lubricant into four equal amounts.

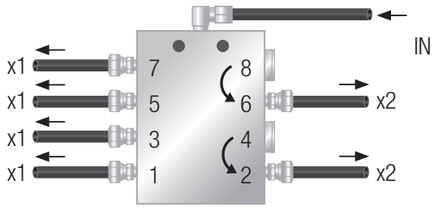


FIG 8

SPL08 - 8 Outlet Valve

Fig 8 illustrates the SPL valve splitting the lubricant into four single and two double amounts.

Note: *Never plug ports 1 and 2 off.*

Examples below showing the outlet feeds (in cm³/stroke)

When an outlet is plugged off using an SPL blanking plug, the lubricant is automatically directed internally to the port below.

Note: *Outlets 1 and 2 must never be plugged. Always use SPL blanking plugs and SPL check valves.*

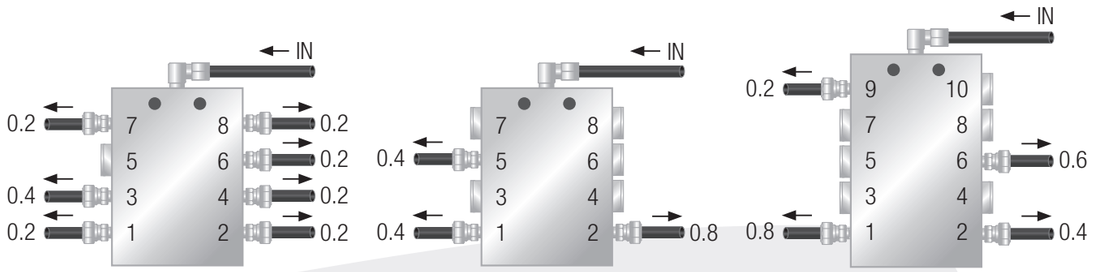
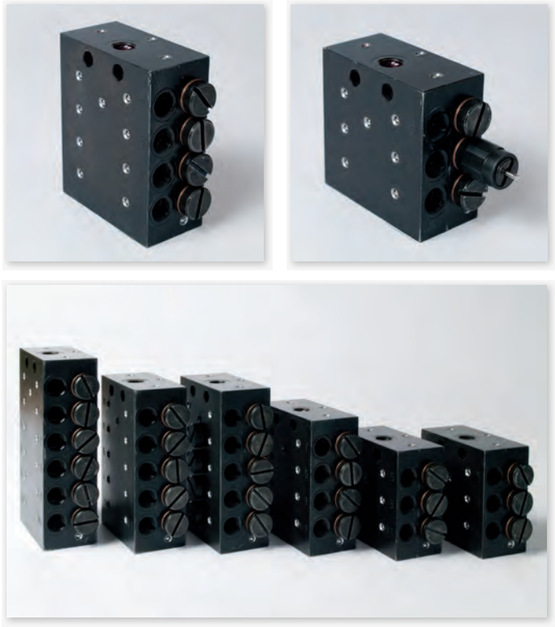


FIG 9

Standard SPL Progressive Divider Valves for Grease or Oil

Range



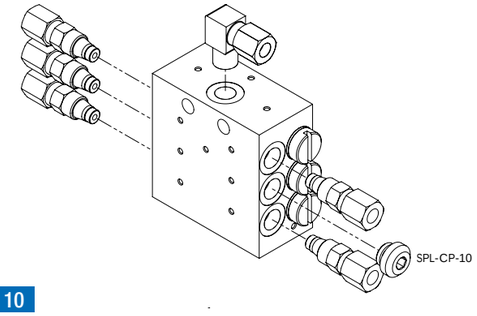


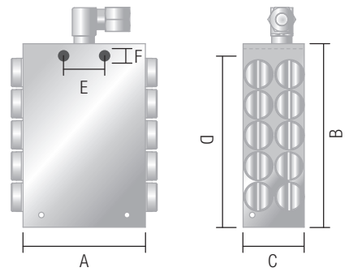
FIG 10

Each SPL divider valve can be installed using the accessories shown. For best results, and to eliminate any possibility of damage or proof operation of the system, only SPL parts should be used.

Outlets which are not required should be closed with SPL closure plugs. If an outlet is closed, the adjacent outlet on the same side delivers a double quantity of lubricant. Note: outlets 1 and 2 of SPL divider valves must never be closed.

When an outlet is closed in the pump with one of the closure plugs, lubricant is automatically redirected internally to the next adjacent outlet in ascending numerical order.

Specifications



SPL10 Valve**

Model	Outlets	Inlet Thread	Indicator Pin	Max Oil Volume/Min*	A	B	C	D	E	F
SPL06	6 Outlets	1/8" BSP (Female)	No	200cm3	60	60	30	54	20	6.6
SPL06K			Yes	200cm3	60	60	30	54	20	6.6
SPL08	8 Outlets		No	600cm3	60	75	30	69	20	6.6
SPL08K			Yes	600cm3	60	75	30	69	20	6.6
SPL10	10 Outlets		No	700cm3	60	90	30	84	20	6.6
SPL10K			Yes	700cm3	60	90	30	84	20	6.6
SPL12	12 Outlets		No	800cm3	60	105	30	99	20	6.6
SPL12K			Yes	800cm3	60	105	30	99	20	6.6

*Volume is approximate and can vary depending on oil viscosity and operating temperature.

Material	Max Operation Pressure	Min Operation Pressure	Max Grease Viscosity*	Min Oil Viscosity*	Output/Stroke/Outlet
Carbon Steel	370 BAR (5365psi)	17 BAR (247psi)	NLGI2	68Cst	0.2 cc / 0.12 cu in

*SPL Valves will only work with grease and oil
**All tests carried out with NGG2 grease at ambient temp

Note: *All SPL Progressive Divider Valves must be used with approved lubricants/ Lubricants with solids/additives are not recommended*

Typical Progressive System (XPL) Feeding 18 Lubrication Points with Equal Amounts of Lubricant

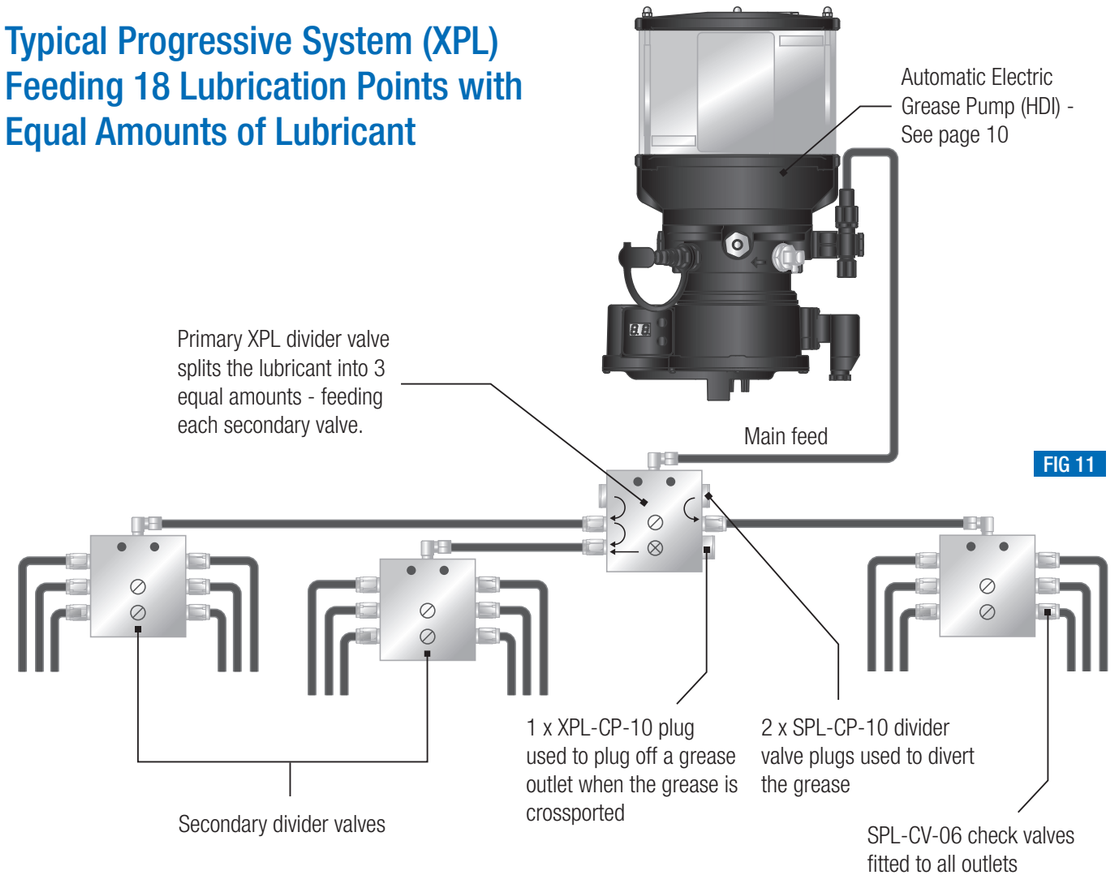
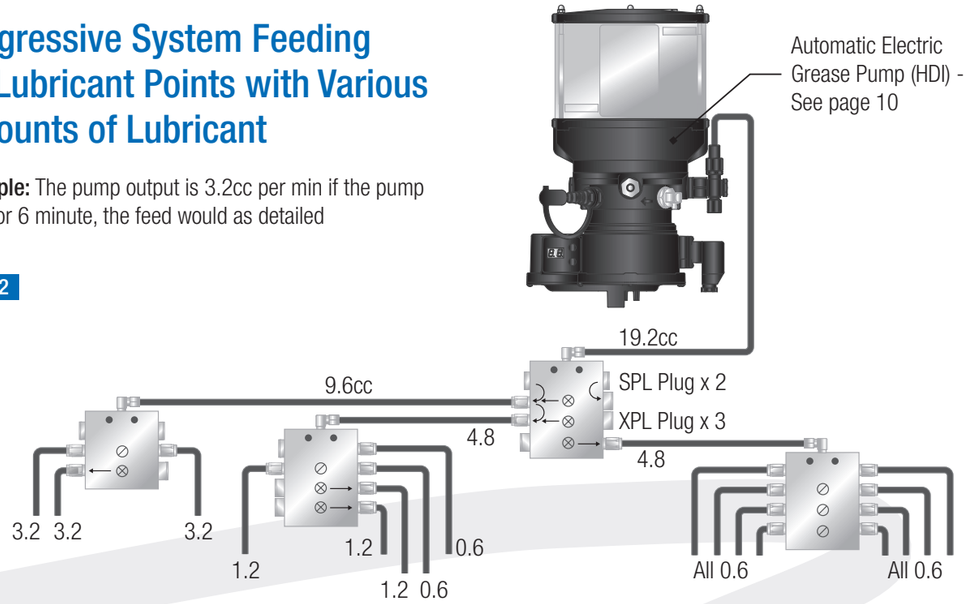


FIG 11

Progressive System Feeding 14 Lubricant Points with Various Amounts of Lubricant

Example: The pump output is 3.2cc per min if the pump runs for 6 minute, the feed would as detailed

FIG 12



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Outlet Combinations

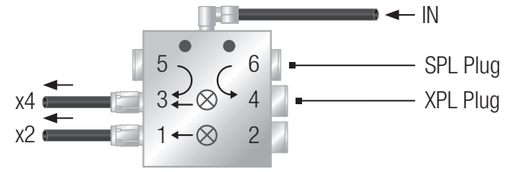


FIG 13

XPL06 - 6 Outlet Valve

Fig 13 illustrates the XPL cross porting divider valve splitting the grease into set amounts:

Port 3 = x4
Port 1 = x2

Note: *⊗ This means the middle disc has been removed allowing the grease to be cross ported*

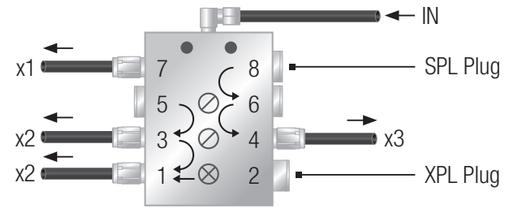


FIG 14

XPL08 - 8 Outlet Valve

Fig 14 illustrates the XPL valve splitting the grease as follows:

Port 1 = x2
Port 2 = x2
Port 4 = x3
Port 7 = x1

Note: *If cross porting use the XPL divider valve plug. Never plug ports 1 and 2 off.*

Outlet Combinations

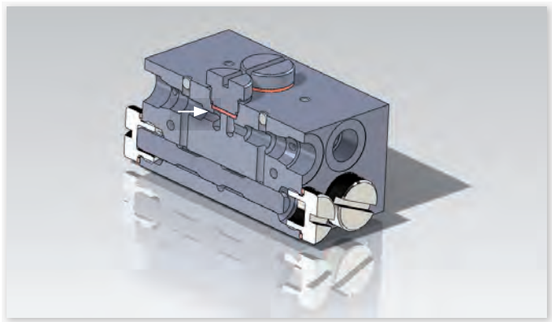


FIG 15

Fig 15 illustrates the plug in position with copper disc, not allowing the grease to be cross ported.

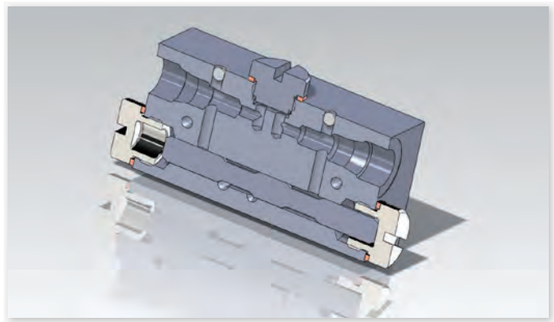


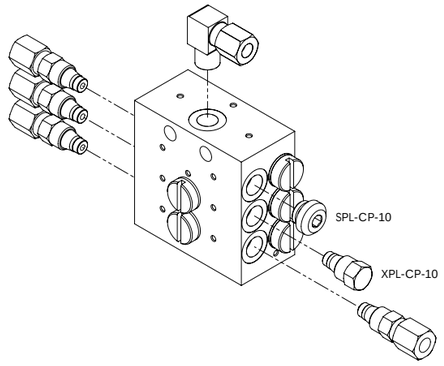
FIG 16

Fig 16 illustrates the internal disc being removed and the plug sealed with copper washer to allow for cross porting. Each XPL valves is supplied with copper washers to allow for cross porting.

INTERLUBE A TIMKEN Brand

Standard XPL Progressive Divider Valves for Grease and Oil

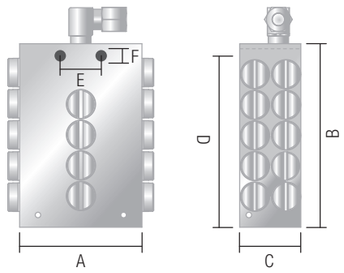
Installation Information



(a) = 6mm O.D check valve outlet
(b) = SPL plug for sequential diverting of the SPL valves
(c) = XPL plug for cross porting

Each XPL divider valve can be installed using accessories shown. For best results, and to eliminate any possibility of damage or poor operation of the system only Interlube parts should be used.

Specifications



XPL10K Valve**

Model	Outlets	Inlet Thread	Indicator Pin	Max Oil Volume/Min*	A	B	C	D	E	F
XPL06	6 Outlets	1/8" BSP (Female)	No	200cm3	60	60	30	54	20	6.6
XPL06K			Yes	200cm3	60	60	30	54	20	6.6
XPL08	8 Outlets		No	600cm3	60	75	30	69	20	6.6
XPL08K			Yes	600cm3	60	75	30	69	20	6.6
XPL10	10 Outlets		No	700cm3	60	90	30	84	20	6.6
XPL10K			Yes	700cm3	60	90	30	84	20	6.6
XPL12	12 Outlets		No	800cm3	60	105	30	99	20	6.6
XPL12K			Yes	800cm3	60	105	30	99	20	6.6

Volume is approximate and can vary depending on oil viscosity and operating temperature.

Material	Max Operation Pressure	Min Operation Pressure	Max Grease Viscosity*	Min Oil Viscosity*	Output/Stroke/Outlet
Carbon Steel	370 BAR (5365psi)	17 BAR (247psi)	NLGI2	68Cst	0.2 cc / 0.12 cu in

*XPL Valves will only work with grease and oil
**All tests carried out with NGG2 grease at ambient temp

Note: *All XPL Progressive Divider Valves must be used with approved lubricants/ Lubricants with solids/additives are not recommended*

Check Valve Outlet Fittings

Part No.	Description
SPL-CV-LL	M10x1 Check Valve Body
SPL-CN-6-LL	6mm o.d Coupling Nut
SPL-OL-6-LL	6mm o.d Olive

Closure Plug

Part No.	Description
SPL-CP-10	Closure Plug
XPL-CP-10	Closure Plug for XPL Valves

SPL Flow Indicator Sensors

Part No.	Description
SPL-PA	SPL Proximity Adaptor
SPL-PS	Proximity Switch

SPL Weld Plates (6mm thick)

Part No.	Description	Thread Size
SPL-BP6	Weld Plate	2 x M6x1
SPL-BP8	Weld Plate	2 x M6x1
SPL-BP10	Weld Plate	2 x M6x1
SPL-BP12	Weld Plate	2 x M6x1

Cap Head Bolts

Part No.	Description
Bolt M6x35	M6 Cap Head Bolt 35mm Long
Bolt M6x40	M6 Cap Head Bolt 40mm Long
Bolt M6x45	M6 Cap Head Bolt 45mm Long
Bolt M6x75	M6 Cap Head Bolt 75mm Long
M6 Washer	M6 Spring Washer
M6 Nut	M6 Hex Head Nut

Main Feed Line Tube (Braided)

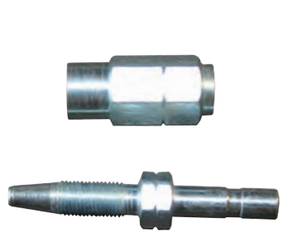
Part No.	Description	Burst Pressure
TML-8.6-2.3F	8.6mm x o.d 2.3mm Wall Tube Grease Filled	400 BAR
TML-8.6-2.3U	8.6mm x o.d 2.3mm Wall Tube Unfilled	400 BAR
TML-12.0-2.5F	12mm x o.d 2.3mm Wall Tube Grease Filled	400 BAR
TML-12.0-2.5U	12mm x o.d 2.3mm Wall Tube Unfilled	400 BAR

Secondary Feed Line Tube (Polyamide Nylon)

Part No.	Description	Burst Pressure
TSL-6.0-1.5F	6mm o.d x 1.5mm Wall Grease Filled	250 BAR
TSL-6.0-1.5U	6mm o.d x 1.5mm Wall Grease Unfilled	250 BAR

Re-usable Studs (Inserts) and Sleeves (Ferrules) for Main Line Braided Tube 8.6mm+

Part No.	Description	Tube
TML-8.6-FE	Re-usable Sleeve	8.6mm ø
TML-8.6-ST	Re-usable Stud - 6mm o.d	8.6mm ø
TML-8.6-ST-90	Re-usable Stud - 6mm o.d (90°)	8.6mm ø
TML-12-0-FE	Re-usable Sleeve	12mm ø
TML-12.0-ST	Re-usable Stud - 6mm o.d	12mm ø



Straight Compression Fittings

Part No.	Description
CF6-1-6	6mm o.d x M6x1 Male Connector
CF6-1-8	6mm o.d x M8x1 Male Connector
CF6-1-10	6mm o.d x M10x1 Male Connector
CF6-1-1/4	6mm o.d x 1/4" BSPT Male Connector
CF6-1-1/8	6mm o.d x 1/8" BSPT Male Connector

Elbow Compression Fittings

Part No.	Description
CF6-2-6	6mm o.d x M6x1 Male Connector
CF6-2-8	6mm o.d x M8x1 Male Connector
CF6-2-10	6mm o.d x M10x1 Male Connector
CF6-2-1/8	6mm o.d x 1/8" BSPT Male Connector
CF6-2-1/4	6mm o.d x 1/4" BSPT Male Connector

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Typical Applications such as:-

Chassis/Agricultural


Cultivator

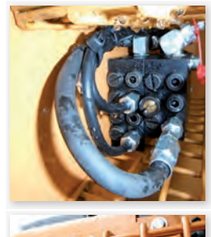

Sprayer

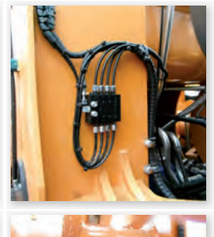

Trailed Press


Chassis

Mobile Plant


Case Loading Shovel





Industrial


Food Industry


Steel Industry


Grease Spray Systems

INTERLUBE
A TIMKEN Brand

RS

Automatic Oil Level Replenishment System.

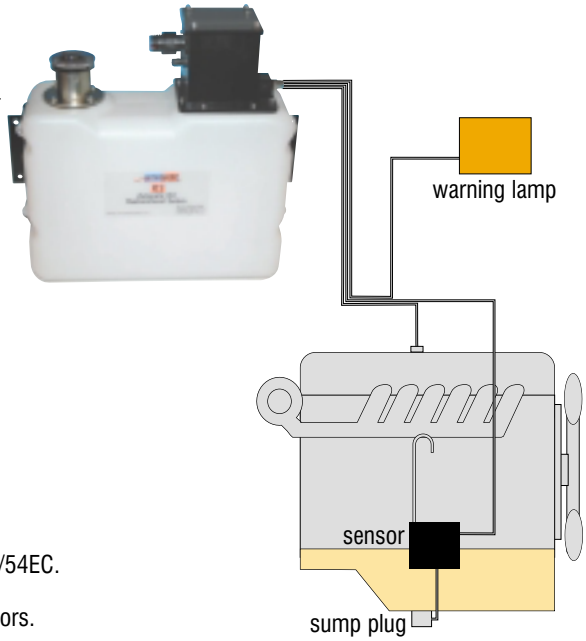
Oil is one of the highest costs a logistic or bus company can have. Maintaining an optimal oil level at all times improves engine efficiency, minimises emissions, and provides substantial cost savings to the operator. Trying to do this manually relies on vigilance and discipline from the driver and the maintenance staff.

*Interlube Systems **"RS"** monitors the oil level in the engine and if necessary supplies a measured pre-set volume of oil from it's own reservoir until the engine oil level is once again at optimum. This removes the need for daily dipstick checks.*

"RS" provides substantial saving in the following ways:

- *Only oil purchased from the depot is used.*
- *Oil is of consistent quality.*
- *Operation at optimum oil level ensured.*
- *Less maintenance time on oil level checks.*
- *Full history of oil consumption by vehicle available.*
- *Reduced vehicle down time and repairs.*

System Features



- Engine ignition initiates oil level check.
- System health check performed on every start-up.
- A tilt switch fitted to the electronic control unit (ECU) overrides any erroneous readings.
- ECU has complete memory function, monitors system status, and controls and counts pump filling cycles.
- Field adjustable number of filling cycles.
- Fault diagnosis available in real time
- Cab mounted test push button with system status lights.
- Transient, Polarity and Short Circuit protection; and EMC compliant to 95/54EC.
- System comes complete with mounting brackets, pipe work and connectors.

System Components

- Resevoir - semi transparent plastic available in 15 litre option. Fitted with anti splash filler breather assembly and low level sensor for monitoring filling cycles.
- Optional locking filler cap available.
- Pump - 300cc/min. gear pump driven by 12v. or 24v. d.c. 67W bi-directional motor supplying a 250cc measuring chamber. Measuring chamber expandable to a maximum 500cc.
- Sump Oil Sensing Chamber - fitted with a level sensor the unit is mounted adjacent to the sump and piped directly to a sump plug adaptor. The level window ensures that the unit is fitted in the optimum position. Supplied complete with wiring and connectors for connection to the ECU.
- Systems come complete with oil replenishment pipe work and connectors to the engine.

Technical Specifications

Pump Module Supply Voltage:	l2Vdc	or	24Vdc
Power Consumption:	2.6A		1.3A
Dimensions (mm)	15 litres		15 litres
	355x355x150		355x355x150
Operating Temperature	-25°C to +40°C		
EMC Tested			
IP66 protection			
Mounting Brackets: (designed to suit)			

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RADIAL GREASE SYSTEM Centralised Lubrication System
Multi-Industry Applications

Radial Major and Minor pumps are available for direct drive (parent machine) or as complete motorised/reduction drive assemblies.

Lubricant delivery is provided by individual adjustable pumping units located radially around the pump body and actuated by an internal cam.

Each pumping unit is calibrated to permit adjustment during operation. When the optimum delivery rate is established the setting is locked and no further action is necessary.

The Radial Minor has a maximum of 4 pumping units while the Major can accommodate up to 10,20 and 30 pumping units.

The feed line from the pumping unit is generally routed direct to the bearing point but additional points can be included by utilising a progressive distributor block in the line.

Motorised Radials are available with a choice of geared reduction drives to govern maximum delivery rates and with a range of reservoir capacities.

Interlube Systems Ltd - maximising industrial performance world-wide...

RADIAL MAJOR - Motorised Reduction Drive

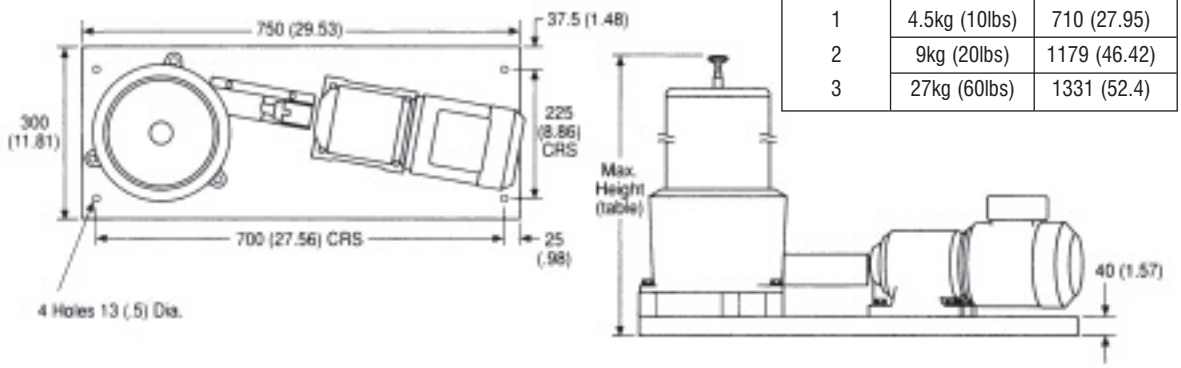
This assembly comprises a Radial Major lubricator driven by a helical geared electric motor mounted on a base plate. The integral reservoir includes a level indicator and an impeller which insures that the pumping units remain continually primed.

Performance

Delivery per pumping unit per hour		
Geared Motor Speed (RPM)	MIN	MAX
36	0.5 cc	13 cc
57	0.8 cc	21 cc
90	1.3 cc	34 cc
148	2.2 cc	55 cc

Other geared motors are available to special order.

Note: *All dimensions are in Millimetres with Inch equivalents in brackets.*



Pump Assembly	Reservoir Capacity	Max Height
1	4.5kg (10lbs)	710 (27.95)
2	9kg (20lbs)	1179 (46.42)
3	27kg (60lbs)	1331 (52.4)

METHOD OF ORDERING

Radial Major motorised assemblies are ordered by compiling a simple matrix from the following information:

MR □ □ □ □

Pump Assembly
- 1 - Up to 10 pumping units
- 2 - Up to 20 pumping units
- 3 - Up to 30 pumping units

Reservoir Capacity
- 1 - 4.5 kg (10 lbs)
- 2 - 9 kg (20 lbs)
- 3 - 27 kg (60 lbs)

Geared Motor Speed
- 4 - 36 rpm
- 5 - 57 rpm
- 6 - 90 rpm
- 7 - 148 rpm

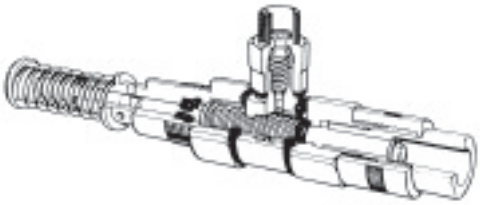
Voltage
- * 1 - 110V 1ph 50Hz
- * 2 - 220V 1ph 50Hz
- 7 - 380/440V 3ph 50Hz

** Not available for 36 rpm assemblies: Other voltage available on request.*

NB: Radial Major pumping units, blanking plugs and sealing washers are ordered and supplied separately.

Example: MR2252 is a 20 unit assembly fitted with a 9 kg (20lbs) reservoir. The geared motor speed is 57 rpm powered by a 220V 1 ph 50 Hz electric motor.

PUMPING UNITS



The required output is obtained by rotating a knurled ring and locking it into position with a hexagonal adjuster. To facilitate adjustment, three grooves are machined in the body indicating maximum, two thirds and one third output. Full clockwise rotation reduces output to the minimum value of 0.02 cc per stroke.

SPECIFICATION

Delivery Per Stroke	0.02 - 0.5 cc
Max pressure	100 Bar (1450 lbf/in²)
Outlet connection	3/8 in OD (metric also available)
Lubricants	Heavy oil and NGLI Grade 2 greases. For Grade 3 grease applications please consult Interlube Systems Ltd.
Pumping Unit	Part No 67688
Blanking Plug	Part No 106050 } unused outlets
Sealing Washer	Part No 28280 } unused outlets

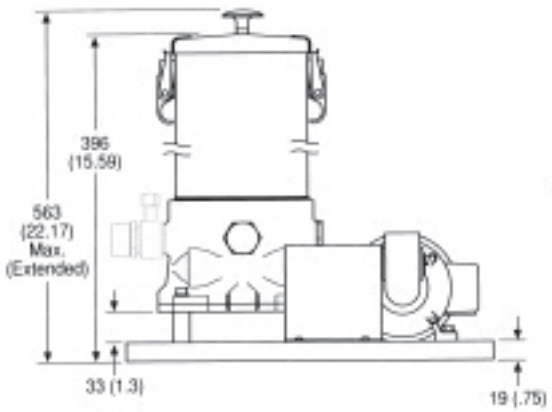
RADIAL MINOR - Motorised Reduction Drive

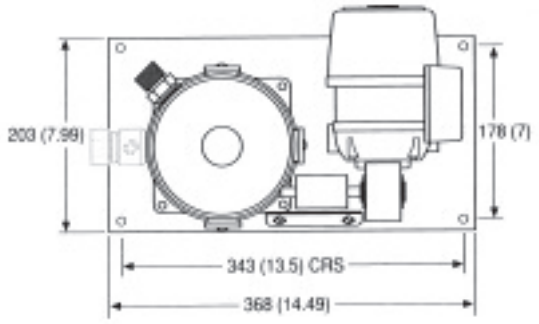
This assembly comprises a Radial Minor lubricator driven by an electric motor and mounted on a base plate. the integral reservoir includes a level indicator and an impeller which ensures that the pumping units remain continually primed .

Performance

Delivery per pumping unit per hour		
Geared Motor Speed (RPM)	MIN	MAX
39	Adjustable to Zero	9.36 cc
56		13.44 cc
97		23.28 cc
150		36 cc

Other geared motors are available to special order.





Note: *All dimensions are in Millimetres with Inch equivalents in brackets.*

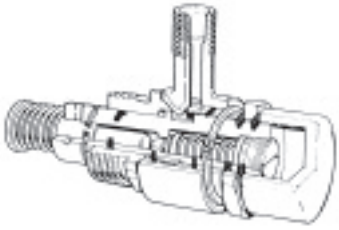
METHOD OF ORDERING

Catalogue No.	Gearbox RPM	Voltage
AF1501	150	100/110V 1ph 50Hz (.5 Amp - 30 Watt)
AF1502	97	
AF1503	56	
AF1504	39	
AF1507	150	200/220V 1ph 50Hz (.3 Amp - 30 Watt)
AF1508	97	
AF1509	56	
AF1510	39	
AF1513	150	230/250V 1ph 50Hz (.25 Amp - 30 Watt)
AF1514	97	
AF1515	56	
AF1516	39	
AF1519	150	380/440V 3ph 50Hz (.15 Amp - 30 Watt)
AF1520	97	
AF1521	56	
AF1522	39	

NB: Radial Minor Pumping units and plugs for unwanted outlets are ordered and supplied separately.

Example: AF1514 is fitted with a 97 rpm gearbox and a 230/250V 1 ph 50 Hz electric motor.

PUMPING UNITS



Output is controlled by rotating a spring loaded adjuster screw clockwise to increase and anticlockwise to decrease. The adjuster screw is then secured by a lock nut.

SPECIFICATION

Delivery Per Stroke	0 - 0.2 cc
Max pressure	70 Bar (1015 lbf/in^2)
Max No. Pumping Units	4
Reservoir Capacity	3kg (7lbs)
Outlet connection	1/4 in OD (metric also available)
Lubricants	Heavy oil and NGLI Grade 2 greases. For Grade 3 grease applications please consult Interlube Systems Ltd.
Pumping Unit	Part No 67801
Blanking Plug	Part No 34232-207] unused
Sealing Washer	Part No 28280] outlets

RADIAL MAJOR - Direct Rotary Drive (from parent machine)

METHOD OF ORDERING

Prefix	AFA	AFB	AFC
Reservoir Capacity	4.5 kg (10lbs)	9 kg (20lbs)	27 kg (60 lbs)

No. of Outlets	Catalogue No.
10	1448
20	1449
30	1450

Example: AFA 1449 is a 10 lbs (4.5 kg) capacity lubricator with 20 outlets.

SPECIFICATION

Max Drive Shaft Speed	1000 rpm
Min Drive Shaft Speed	10 rpm
Internal Reduction Ratio	80 : 1
Max No. of Pumping Units	30
Reservoir Capacities	4.5 kg (10lbs) 9kg (20lbs) 27kg (60lbs)
Lubricants	Heavy oil and NGLI Grade 2 greases. For Grade 3 grease applications please consult Interlube Systems Ltd.

NB: Radial Major pumping units, blanking plugs and sealing washers are ordered and supplied separately.
See page 2 for this information

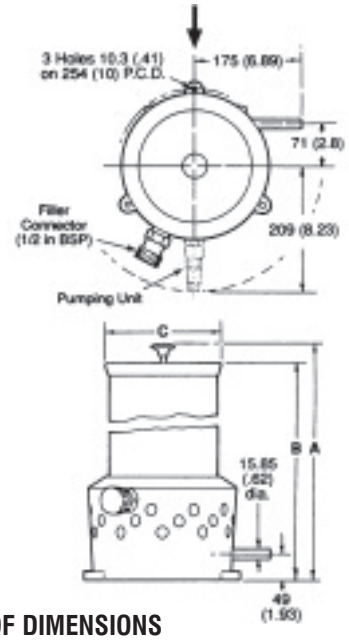


TABLE OF DIMENSIONS

Type	'A'	'B'	Dia.'C'
AFA	629 (24.76)	438 (17.24)	187 (7.36)
AFB	1098 (43.23)	641 (25.24)	187 (7.36)
AFC	1251 (49.25)	730 (28.74)	259 (10.2)

Note: *All dimensions are in Millimetres with Inch equivalents in brackets.*

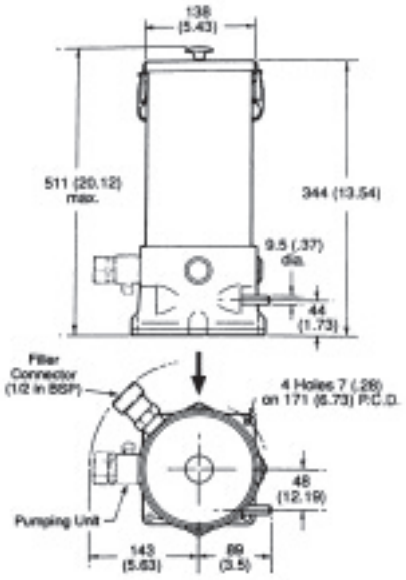
RADIAL MINOR - Direct Rotary Drive (from parent machine)

SPECIFICATION

Catalogue No.	AF1467
Max Drive Shaft Speed	500 rpm
Min Drive Shaft Speed	25 rpm
Internal Reduction Ratio	50 : 1
Max No. of Pumping Units	4
Reservoir Capacities	3 kg (7lbs)
Lubricants	Heavy oil and NGLI Grade 2 greases. For Grade 3 grease applications please consult Interlube Systems Ltd.

NB: Radial Minor pumping units and their blanking plugs are ordered and supplied separately.
See page 3 for this information

Direction of Drive
LH drive as viewed from the arrow is supplied as standard, RH drive is available to special order.



INTERLUBE
A TIMKEN Brand

INTERLUBE

A TIMKEN Brand

Product Portfolio

2014

Issue 1

ILS_PP_001_EN1

Timken ILS, helping your business...

Boost profitability

Optimise productivity

Reduce process downtime

Improve performance

Wind Energy Solutions

The Wind Energy Lubrication System is an engineered system that meters the flow of grease in and out of the main shaft bearings, optimising bearing and seal performance. It ensures that fresh grease is provided over the lifecycle of the bearing, and that old grease is purged.

The Timken® Wind Energy Lubrication System - LP offers a value added, active-purge system that positively removes old grease without internal bearing cavity pressure.

The Timken® Wind Energy Lubrication System – HP provides continuous lubrication via an economical series-progressive method using the conventional method of pressure purging of old grease.

Fig 1

The Wind Energy Lubrication System brings you the option of two pumps:

The first option features a single pump capable of working with either series-progressive or injector-based lubricant delivery methods (Fig.1).

The second option features a single pump using a multiline lubricant delivery method; this cuts out the need for injectors and divider valves (Fig.2).

Fig 2

Global Leaders in Lubrication Systems

When looking to add value, choose Timken ILS products to help increase uptime, reduce maintenance costs and improve reliability.

Timken ILS Ltd has an exclusive product portfolio of lubrication equipment, oil filtration, oil management systems and fuel filtration products.

All Timken products are grounded in the knowledge of motion, lubrication friction and metallurgy resulting in more options to improve productivity.

This product portfolio enables Timken customers to see the vast range of products together with the extensive range of accessories that are on offer.

For each product detailed, Timken ILS has specific literature that relates to the equipment, this literature is detailed on the back cover of this brochure.

INTERLUBE A TIMKEN Brand

Lubrication

Interlube, established in 1922, is now a Timken brand. Timken ILS Ltd offers lubrications solutions, from single low cost gravity feed systems to automatic monitoral centralised lubrication systems for both grease and oil. All of our products are designed to increase uptime, reduce maintenance and improve efficiency.

FILTAKLEEN A TIMKEN Brand

Oil Filtration

Filtakleen is now a Timken brand. Filtakleen has been designed to extend machine life and reliability. We also offer an advanced oil filtration system to improve the cleanliness and extend the life of both hydraulic and engine oils.

Disclaimer: Whilst every effort has been made to ensure that this brochure is correct at the time of going to press, due to circumstances beyond Timken's reasonable control, changes may occur to products and prices offered. For latest specifications and prices please visit: www.interlubesystems.com

Contents

DF – Gravity Feed Lubricators

The DF lubricators can drip oil directly on to cams, gears or slideways or brush oil on to chains.

These DF lubricators are ideal for small industrial or agricultural applications, when the installation of automatic lubrication is not viable.

Both "DF" versions of the Gravity Feed Lubricator are available as solenoid operated and manually operated and are supplied as standard with:

- Steel Mounting Plate/Lid
- Oil Filler Cap
- Robust Polypropylene Reservoir 1/2, 1 or 2 Ltr
- Fully adjustable drip feed regulator with sight glass

Solenoid

12V/24V DC electric shut off valve is connected to the machine. When the machine is shut off the solenoid will automatically isolate, preventing over lubrication if the machine is not in operation.

Manual

Manual shut off valve on/off.

Fig 1: Solenoid

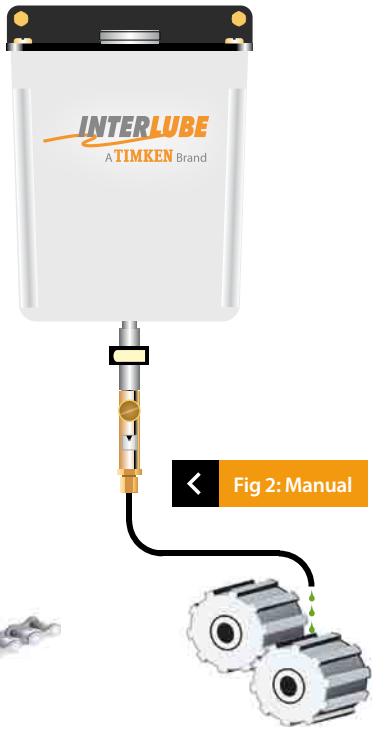


Fig 2: Manual

For further information please ask for a technical information sheet.

Metered Valves / Positive Displacement

Meter Valve systems

Timken ILS flow units are non-adjustable capillary fittings installed at each lubrication point or fitted on a manifold to feed the lubricant points directly. The valves are suitable for hand operated pumps or automatic cyclic pumps LubeplusE or GX.

The flow is one direction only, indicated by an arrow. The flow value number is stamped on the body; each increase in number doubles the oil delivery.

Positive Displacement Systems

Positive Displacement Valves (PDUs) deliver a precise volume of lubricant at the beginning of each pump cycle. Each unit in the range is stamped with a reference number denoting the discharge volume. The total oil delivery to a system can be further controlled by the pump lubrication frequency. The system operates intermittently, allowing PDUs to recharge for the next cycle.

Flow Value/Output Guide

Flow Value	Output at 100psi in cc/min
20	0.10
21	0.20
22	0.40
23	0.80
24	1.60
25	3.20
26	6.40
27	12.80
28	25.60
29	51.20

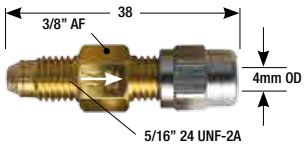
Lubeplus E

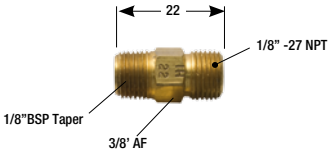
Lubeshot

GX Pump with in-built controller

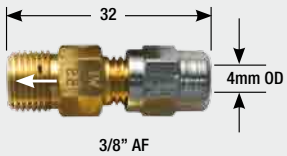
Meter Valves (0.8 - 25 Bar) - Medium Pressure System

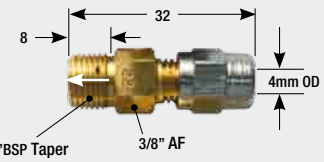
Junction IM	Flow Value	Part No	Tee IH	Flow Value	Part No
Screwed into tapped holes or junctions when feeding bearings through tail pipes	20	IM20	Used where connection is made with the main supply through a junction header	20	IH20
	21	IM21		21	IH21
	22	IM22		22	IH22
	23	IM23		23	IH23
	24	IM24		24	IH24
	25	IM25		25	IH25
	26	IM26		26	IH26
	27	IM27		27	IH27
	28	IM28		28	IH28
	29	IM29		29	IH29





Straight IW	Flow Value	Part No	Straight IB	Flow Value	Part No
For direct connection into bearings. Mounted directly at the bearing and used at the end of pressure lines	20	IW20	Mounted directly at the bearing and used at the end of pressure lines	20	IB20
	21	IW21		21	IB21
	22	IW22		22	IB22
	23	IW23		23	IB23
	24	IW24		24	IB24
	25	IW25		25	IB25
	26	IW26		26	IB26
	27	IW27		27	IB27
	28	IW28		28	IB28
	29	IW29		29	IB29



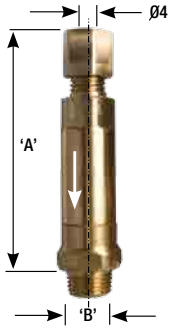


Suitable for oil viscosity 10-1800Cst

Meter Valves (10 - 30 Bar)

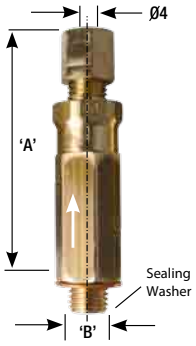
Bearing Mounted

Part No	Discharge Volume (cc)	Thread 'B'	Dim 'A' (mm)
PD3103	0.03	1/8in BSPT	51.5
PD3106	0.06		51.5
PD3110	0.10		51.5
PD3116	0.16		51.5
PD3125	0.25		57.5
PD3140	0.40		57.5
PD3160	0.60		57.5
Supplied complete with nut and cone			



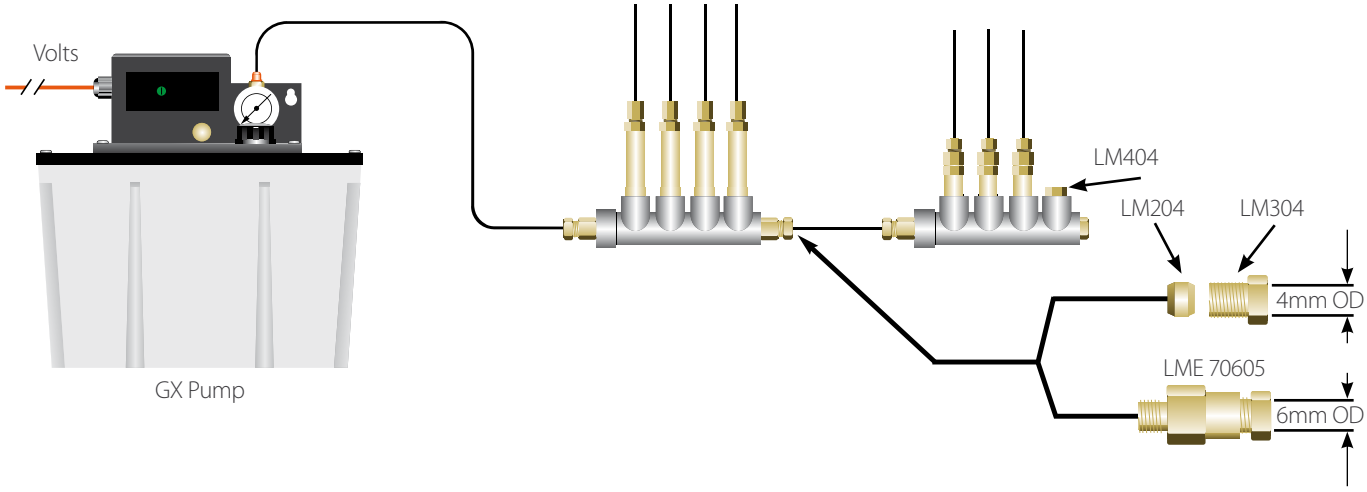
Manifold Mounted

Part No	Discharge Volume (cc)	Thread 'B'	Dim 'A' (mm)
PD3403	0.03	M8 x 1	49.5
PD3406	0.06		49.5
PD3410	0.10		49.5
PD3416	0.16		49.5
PD3425	0.25		57.5
PD3440	0.40		57.5
PD3460	0.60		57.5
Supplied complete with nut, cone and sealing washer			



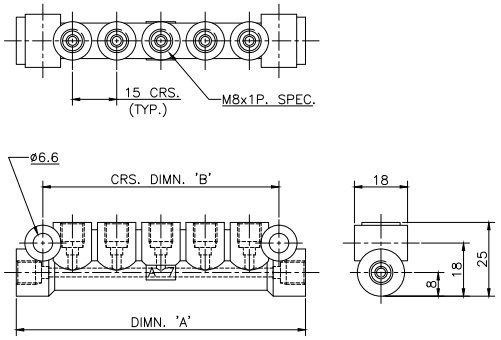
Suitable for Oils 10 - 1800cSt or NLGI000 Fluid greases.

Typical Setup



4 to 12 Way Single Manifolds

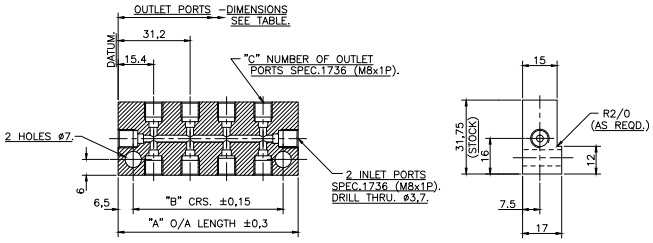
Type	Part No	'A'	'B'	'C'
4-way	MMS4	50	35	2
5-way	MMS5	65	51	3
6-way	MMS6	86	68	4
7-way	MMS7	98	80	5
8-way	MMS8	115	94	6
10-way	MMS10	137	123	8
12-way	MMS12	166	151	10



MMS6 Single Manifold

4 to 12 Way Double Manifolds

Type	Part No	'A'	'B'	'C'
6-way	MMD6	48	35	4
8-way	MMD8	65	51	6
10-way	MMD10	83	70	8
12-way	MMD12	97	83	10
14-way	MMD14	112	99	12



MMD 14 Double Manifold

Junction and Junction Headers

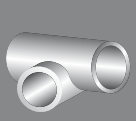


Fig 1

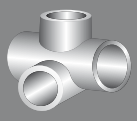


Fig 2

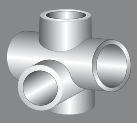


Fig 3

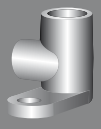


Fig 4

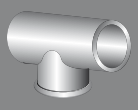


Fig 5

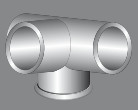


Fig 6

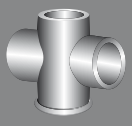


Fig 7

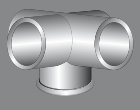


Fig 8

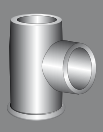


Fig 9

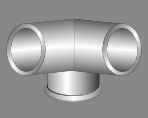


Fig 10

Junctions

Manufactured from Zinc Alloy suitable for 4mm (5/32") OD tubing

Part No	Description
114829	2 way junction Fig 1
114830	3 way junction Fig 2
114831	4 way junction Fig 3
118278	2 way junction Fig 4

Junction Headers

Manufactured from Zinc Alloy, one hole tapped 1/8"NPT. Remaining holes tapped for 4mm (5/32) OD tubing

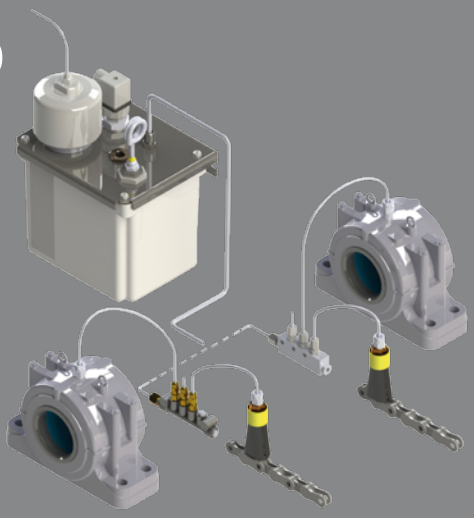
Part No	Description
114837	2 way junction Fig 5
114838	3 way junction Fig 6
114839	4 way junction Fig 7
114840	5 way junction Fig 8
114841	3 way junction Fig 9
114843	3 way junction Fig 10

Dynamic – Positive Displacement System

Dynamic systems operate at high pressures and can cycle repeatedly quicker than conventional positive displacement pumps. Pump discharge is 10cm³ per stroke with maximum pump output of 100 Bar.

Note: All the PDUs in the system must be discharged by one stoke of the pump. Total volume output of the PDUs must not exceed 70% of the pump discharge.

Typical Setup

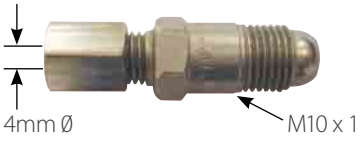


1:9 Ratio Piston Pump

Parts and Accessories

Dynamic Valves (15-100 Bar)

Part No	Valve Type	Output per cycle (cc)
28090-052	Dynamic Valve (5)	0.005
28090-102	Dynamic Valve (10)	0.010
28090-252	Dynamic Valve (25)	0.025
28090-502	Dynamic Valve (50)	0.050
28091-102	Dynamic Valve (100)	0.100
28091-252	Dynamic Valve (250)	0.250
28091-502	Dynamic Valve (500)	0.500
28092-102	Dynamic Valve (1000)	1.000



Dynamic Valve

Deutsche Tecalemit Fittings for Dynamic PDU Systems

Profile	Manifolds Part No	Description
	43113-101	3 way single M10x1 threads
	43113-201	4 way single M10x1 threads
	43113-301	5 way single M10x1 threads
	43113-401	6 way single M10x1 threads
	43115-101	4 way double M10x1 threads
	43115-201	6 way double M10x1 threads
	43115-301	8 way double M10x1 threads
	43115-401	10 way double M10x1 threads

Profile	Misc Fittings	
	41560-251	Blanking plug M10x1
	41391-106	Sleeve nut 6mm tube x M10x1
	41388-301	6mm olive

Lubeplus E – Automatic Lubrication Kit

Lubeplus E automatically lubricates up to six chains/gears. This is a low cost, compact system which has been used successfully for many years. The kits detailed include all of the equipment required to feed up to six application points automatically. The pump will operate at pre-set time intervals feeding flow units which are calibrated to apportion oil to a specific point.

Kit comprises:

- 1 x Lubeplus E cycle pump
- 1 x flow unit manifold
- 6 x flow units and blanks
- 6 x brushes
- 10m 4mm O.D nylon tube
- 2m x 6mm O.D steel tube (1m lengths)
- 6 x anchor blocks
- 4mm/6mm O.D compression fittings
- Clips + self tapping screws

Kit No	Cycle Time	Voltage
LIN 1821	60min	110/240
LIN 1822	30min	110/240
LIN 1823	5min	24V DC

Lubeplus E >

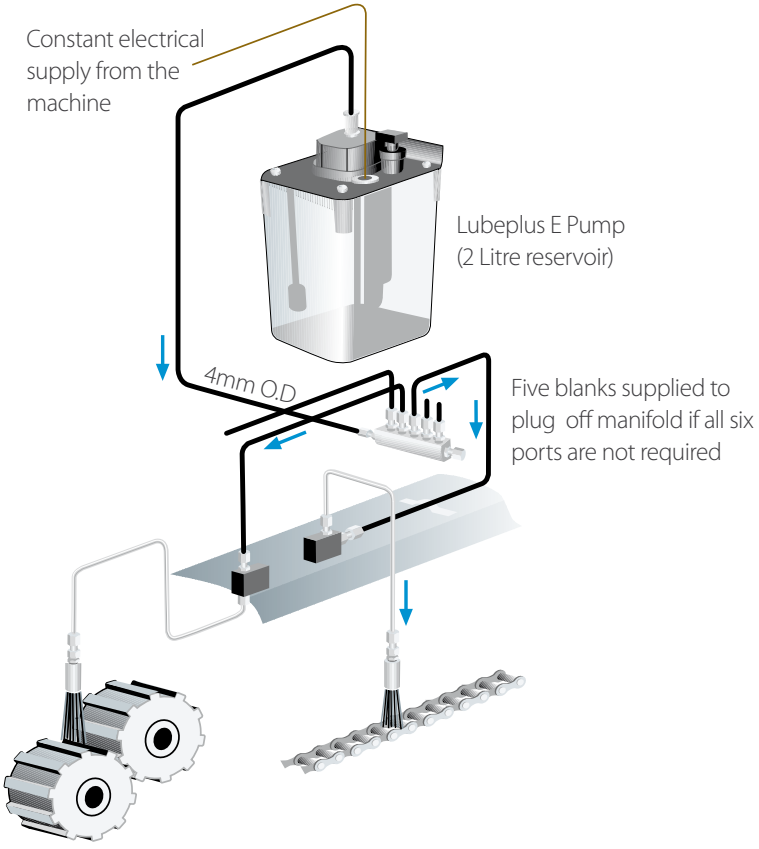
Ordering Method

Before selecting the model number it will be necessary to decide the mains operating voltage, the output required and the free delivery cycle time, referring to the list of model numbers.

Example shown is a two litre reservoir, 115/230 V 50/60 Hz operating voltage with a two minute lubrication cycle, with an adjustable lubricant output of 7.5 to 75ml/hour.

LF	2	5	02
Reservoir Capacity	Operating Voltage	Cycle Time	Output - CCs
0.5 litre	115/230V. 50/60Hz	2 minutes	7.5 to 75
2 litre	115/230V. 60Hz	5 minutes	3.0 to 30
1 litre		10 minutes	1.5 to 15
		20 minutes	0.75 to 7.5
		30 minutes	0.5 to 5.0
		60 minutes	0.25 to 2.5

24 V DC versions available on request



Note: Motors are dual voltage 115/230V 50/60Hz

Keeping the world moving...

AC - Multi-Line Pumps

These multi-line pumps are reliable and compact and offer large pump capability - they are capable of pumping lubricants from oil SAE 80/90 to NLGI2 greases.

AC pumps are available in 12 and 24 volt versions and have reservoir capabilities ranging from 1kg to 6kg.

The AC multi-line pumps feed grease directly to each connected point. The outlets on the AC pumps range from 1 to 60 points.

AC1

AC2

AC3

Parts and Accessories

Pump Elements

Profile	Colour	Stroke output cc	Part No (Ø4 Tube)
	Red	0.010	78033
	Green	0.015	78034
	Yellow	0.025	78035
	Blue	0.040	78036
	Grey	0.060	78037
	Black	0.100	78038

Capable of pumping oil or grease

Blanking Plugs

Profile	Part No.	Description
	34237-402	Pump Blanking Plug. To blank off unused ports on multi-line.

Nylon Tube

Profile	Part No.	Description
	152823/25	4mm OD primed with 000 grade grease 25m coil
	152823/50	4mm OD primed with 000 grade grease 50m coil
	152821/25	4mm OD primed with NLGI 2, 25m coil

Push Fittings - Straight Connectors

Profile	Part No.	Description
	PM 80412	4mm OD x 1/8" NPT
	PM 80484	4mm OD x 1/4" x 28UNF
	PM 80485	4mm OD x 5/16" x 24UNF
	PM 80487	4mm OD x 1/8" BSPT
	PM 80489	4mm OD x M6 x 1
	PM 80490	4mm OD x M8 x 1
	PM 80491	4mm OD x M8 x 1.25
	PM 80492	4mm OD x M10 x 1
	PM 80493	4mm OD x M10 x 1.5
	25478-056	4mm OD x 4mm OD Connector
	25487-020	5mm OD x 1/8BSPP
	25487-023	6mm OD x 1/8BSPP
	25487-024	4mm OD x 1/8BSPP
	25487-025	6mm OD x M8 x 1
	25487-056	4mm OD x M5 x 0.8
	25487-058	8mm OD x 1/4BSP
	25477-904	5mm OD x 1/8BSP

Push Fittings - 90° Elbows

Profile	Part No.	Description
	PM 90412	4mm OD x 1/8" NPT
	PM 90484	4mm OD x 1/4" x 28UNF
	PM 90485	4mm OD x 5/16" x 24UNF
	PM 90487	4mm OD x 1/8" BSPT
	PM 90489	4mm OD x M6 x 1
	PM 90490	4mm OD x M8 x 1
	PM 90491	4mm OD x M8 x 1.25
	PM 90492	4mm OD x M10 x 1
	PM 90493	4mm OD x M10 x 1.5
	25487-031	4mm Swivel elbow 1/4BSP
	25487-043	6mm Swivel elbow 1/8BSP
	25487-044	4mm Swivel elbow 1/8BSP
	25487-045	6mm Swivel elbow 1/4BSP
	25487-059	8mm Swivel elbow 1/4BSP
	25487-064	4mm Swivel elbow M6 x 1
	25478-051	5mm Swivel elbow M12 x 1

Conduit/Spiral Binding

Profile	Part No.	Description
	1837-001	Spiral binding 6mm ID 1-2 tubes
	1837-002	Spiral binding 8mm ID 3-4 tubes
	1837-003	Spiral binding 10mm 5-3 tubes
	1837-004	Spiral binding 14mm 8-12 tubes
	1837-005	Spiral binding 20mm 12 -18 tubes
	27315 - 907	Split conduit 7mm
	27315 - 910	Split conduit 10mm
	27315 - 912	Split conduit 12mm
	27315 - 917	Split conduit 17mm

Numbered Sleeves

Profile	Part No.	Description
	OA 50397/1	for up to 12 point system
	OA 50397/2	for 13-24 point system
	OA 50397/3	for 25-36 point system
	OA 50397/4	for 37-48 point system
	OA 50397/5	for 49-60 point system

Features Include

- The multi-line concept allows each friction point to be lubricated independently by a pump element and via a pipe. The operation will take place whilst the vehicle/machine is in motion/operation.
- Fully adjustable controls
- Simple and easy to install
- Pre loomed kits can be supplied for OEM fitments.
- The AC multi-line pumps are used on many applications such as
  - Tippers & Trucks
  - Refuge vehicles
  - Buses
  - Cranes
  - Agricultural machines etc

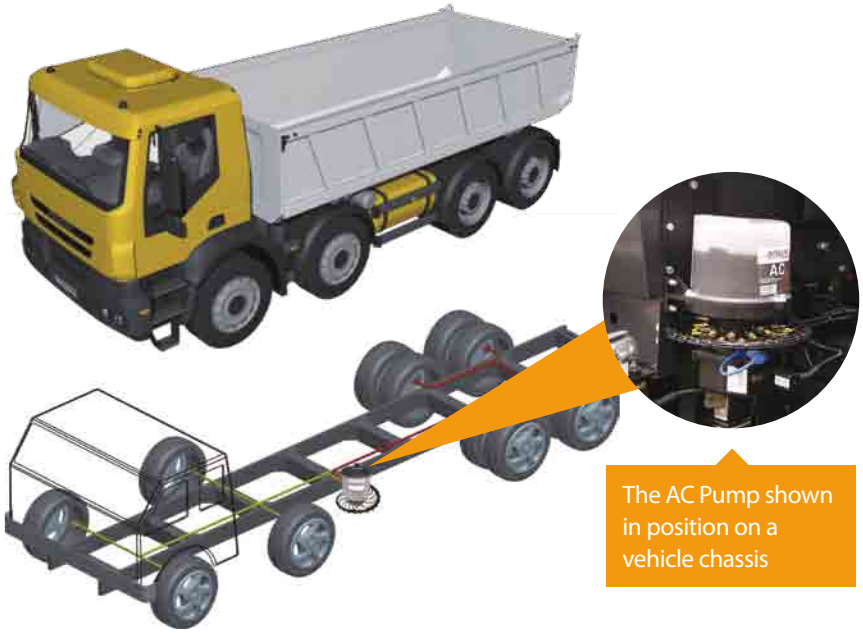
AC 12/24V

Typical Chassis Setup

Select a suitable mounting point for the Interlube AC pump on the chassis or vehicle body.

The loom to the lubrication points would be formed using 4 mm OD Semi Rigid Polyamide tube and push in fittings.

For repeat installations on fleets or for OEM fitments the looms can be pre-made prior to the installation to reduce installation time, which is a key factor in the cost.



The AC Pump shown in position on a vehicle chassis

AX – Multi-Line Pumps

The AX multi-line pumps are used in many industrial applications with the motors being specified as 110V or 240V.

The pumps operate in the same way as the AC range and utilise the same pump elements/accessories detailed on page 9, 10 and 11.

AX pumps are used on small to medium sized industrial machines such as:

- Packaging machines
- Food processing machines
- Paper converting machines
- Recycling machines etc

AX1

AX2

AX3

Parts and Accessories

Pump Elements

Profile	Colour	Stroke output cc	Part No (Ø4 Tube)
	Red	0.010	78033
	Green	0.015	78034
	Yellow	0.025	78035
	Blue	0.040	78036
	Grey	0.060	78037
	Black	0.100	78038

Capable of pumping oil or grease

Heavy Duty Multi-Outlet Grease Pumps

Multi-Outlet Grease Pump

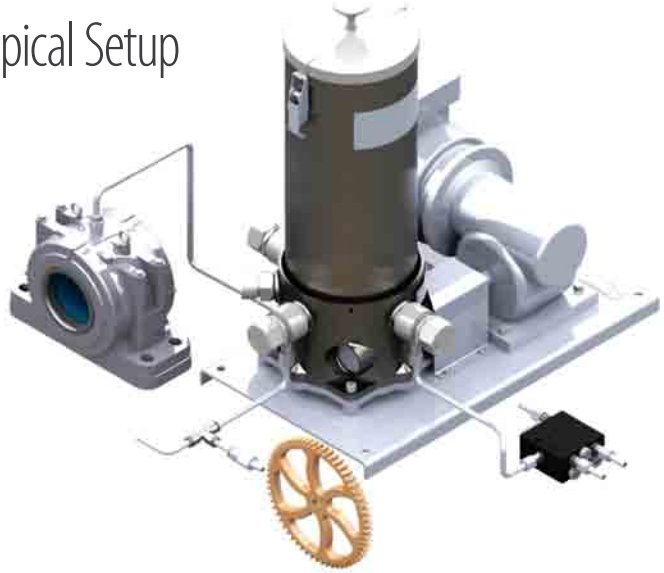
Major Radial Pumping Elements

Profile	Part No	Description
	67688	Pumping unit 3/8 OD tube
	67688/106	Pumping unit 8mm OD tube
	67688/107	Pumping unit 10mm OD tube
	67688/108	Pumping unit 1/4BSP male
	106050	Plug for unused outlets
	28280	Washer for plug

Delivery per stroke 0.02-0.5cc. Maximum output pressure 100 Bar.

Radial Major
Outlets: 1-30
Reservoir sizes: 4.5, 9, 27KG

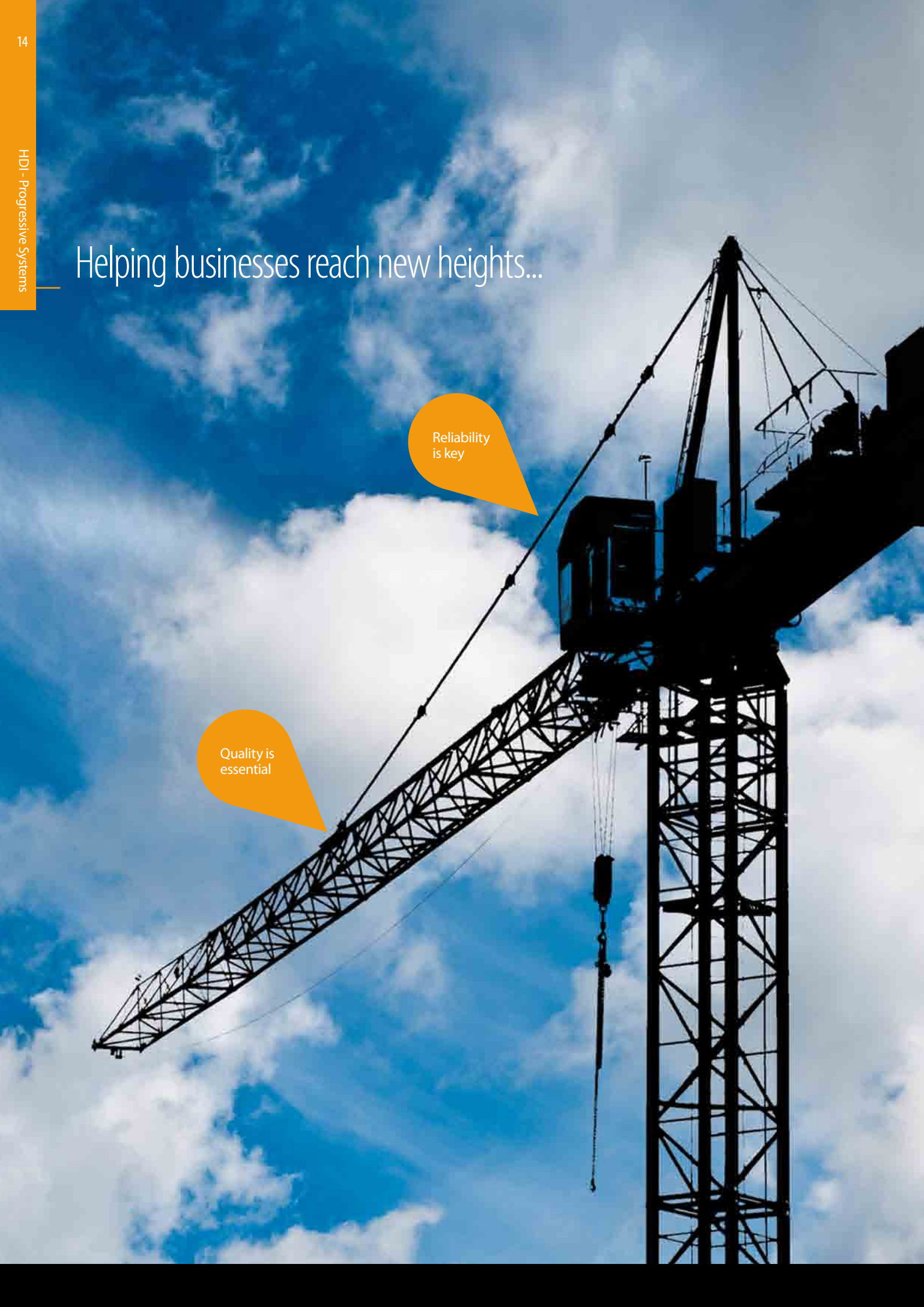
Typical Setup



Major Radial Pumps are available for direct mechanical drive or complete motorised drive. There are many variations on drive speeds and together with fully adjustable pump elements the Radial Pump system can be designed to apply lubricant to some of the most demanding industrial applications. The outputs for the Radial pump can be used to feed SPL progressive divider valves. Typical Installations are:

- Water Treatment Works
- Cargo Cranes
- Steel Works etc

Helping businesses reach new heights...



HDI – Progressive Systems

Progressive Systems are designed to operate with industrial, on road and off road applications.

The durability and reliability of the HDI pumps and the SPL range of Progressive Divider Valves lend themselves to harsh applications.

The Timken ILS range of equipment is manufactured to the highest quality with pumps, valves and associated equipment being able to operate at over 350 Bar pressure if required to do so.

HDI Pump

Features Include

- An economical solution for medium sized machines, progressive systems are capable of lubricating 100 or more points from one single pump, depending on machine size.
- The flow to each point with a progressive system is controlled by fixed proportions.
- Every lubrication point connected to the progressive system is monitored for blockages.
- Progressive systems can be used for oils and greases up to and including most greases to NLGI2.

Parts and Accessories

Pump Elements with In-built Relief Valves

Part No	Max output/min pressure (Bar/PSI)	Output/min Volume (cc)	Output/min Volume (cu in)
PU 300-350	300 (4410)	3.2	(0.20)
PU 300-350-A	300 (4410)	3.2 - 1.4	(0.20-0.08)
PU 400-350	300 (4410)	3.2	(0.20)
PU 400-350-A	300 (4410)	3.2 - 1.4	(0.20 -0.08)

Operation conditions +40 C to -30C. Pump Element Outlet Size 6mm OD

Relief Valve Setting 350 BAR 5145 PSI

Standard HDI pump operates at 19/23revs/min

PU 300-350

PU 300-350-A

Standard Progressive Divider Valves

Part No	Number of Outlets	Monitoring	Max flow per min
SPL06	6		200 cc
SPL06-K	6	Indicator Pin	200 cc
SPL08	8		600 cc
SPL08-K	8	Indicator Pin	600 cc
SPL10	10		700 cc
SPL10-K	10	Indicator Pin	700 cc
SPL12	12		800 cc
SPL12-K	12	Indicator Pin	800 cc

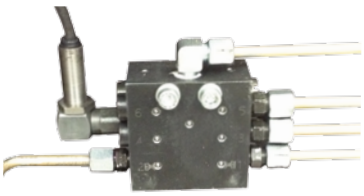
Standard Progressive Divider Valves

Typical progressive system feeding 32 lubrication points with equal amounts of lubricant.

The HDI Range 3, 6, 9 & 15 KG Reservoirs

Parts and Accessories

Progressive Valve Fitted with Proximity Sensor



Divider Valve Fitted with a proximity sensor to monitor electrically the flow of lubricant

Low Level Sensor

Kit comprises: low level sensor, cable, plug, pump plug with internal loom to PCB

Part No	Description
HDI SP9/3P	Low level kit for 3Ltr moulded reservoir
HDI SP9/3	Low level kit for standard reservoir
HDI SP9/6	Low level kit for standard 6Ltr reservoir
HDI SP9/9	Low level kit for 9Ltr reservoir
HDI SP9/15	Low level kit for 15Ltr reservoir

Replacement Control Card

HD1 SP15

Return to Tank

Profile	Part No	Description
	HDI SP28	Pump outlet blanking plug
	HDI RT1	Return to tank fitting
	HDI SP3	Quick fill adaptor (m)

Check Valve Outlet Fittings

Profile	Part No PU 300 - 350	Description
	SPL - CV - LL	MIO X 1 Check valve body
	SPL - CN - 6 - LL	Coupling nut 6mm OD
	SPL - OL - 6 - LL	Olive 6mm OD

Proximity Sensor Conversion Kit

Part No	Description
HDI SP4	Power/push button plug with 10m cable (A)
HDI SP8	Proximity alarm plug with internal loom (A+B)
HDI SP12/12-24V	7 pin plug & internal loom to PCB (B)

Proximity alarm plug A plus pump plug with internal loom to PCB

A

B

Proximity Adaptors

SPL-PA

Proximity Switch

SPL-PS

Fuse Holder

FU11

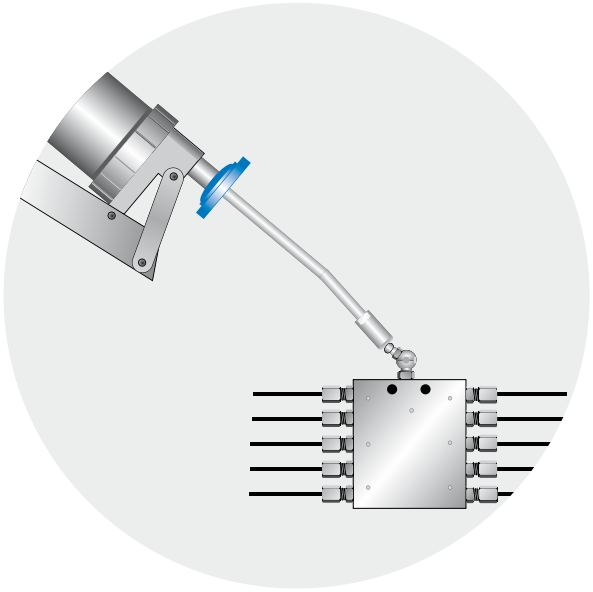
Closure Plug

SPL-CP-10

Push Button

12V HDI - PB-12
24V HDI - PB-24

Grease Guns and Grease Pumps



Heavy Duty Side Lever Grease Gun

Part No	Description
IL-356PK	Heavy duty side lever grease gun suitable for bulk fill or 400gm cartridges. Grease gun fitted with air bleed valve and supplied with a 6" rigid stem and 4 jaw hydraulic connector.

IL-356PK

Hand Operated Grease Pump

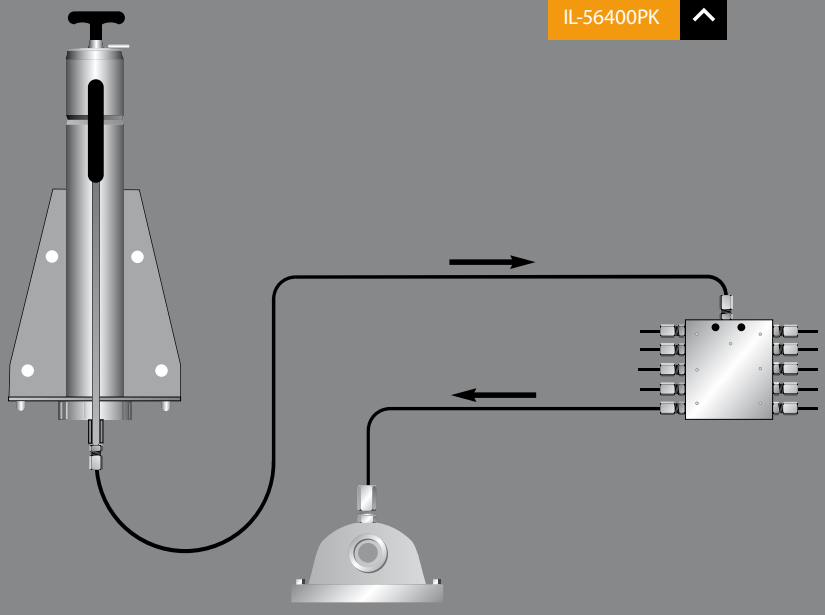
Heavy duty hand pump suitable for progressive divider valves.

Part No	Description
IL-56400PK	Bracket mounted Hand Operated Grease Pump Reservoir capacity 500cc Bulk fill 400gm cartridges Maximum output: 300 bar Output per stroke 1.5cc/stroke

IL-56400PK

In certain progressive applications, where electrical or pneumatic supplies are not available, using a hand pump is often the best option.

When connected to a progressive system, operation of the hand pump will dispense grease to each connected point in turn. The system will not miss a point out and on re-lubrication will carry on where it finished during the previous lubrication cycle. (This is an economical alternative to the automatic system)



For our range of **GREASE** see page 20

Grease Guns and Grease Pumps

Air Operated Grease Pump Kit

- 50 : 1 Ratio pump
- Drum cover
- Follower plate
- 4m discharge hose and control valve
- 1.5m air hose
- Filter regulator and trolley
- Fixed systems for large capacity drums, (same as mobile units without trolley)

Part No	Description
FP12.5	Follower plate 190mm to 260mm
FP18	Follower plate 260mm to 298mm
FP20	Follower plate 300mm to 340mm
FP50	Follower plate 330mm to 370mm
FP180	Follower plate 550mm to 590mm

Part No	Keg Size		Description
IL-424150	12-18KG	(35lb)	Mobile unit 310mm cover, 450mm down tube
IL-425150	50KG	(120lb)	Mobile unit 405mm cover, 725mm down tube
IL-429000	180KG	(400lb)	Static unit 610mm cover, 950mm down tube
IL-428243	180KG	(400lb)	Mobile unit 610mm cover, 950mm down tube

Battery Operated Grease Gun -
Manual Lubrication Made Safe

- 12V DC Grease gun suitable for bulk fill or cartridge
- Case and Strap
- Two batteries and 220-240V battery charger
- Output pressure 7500 PSI/518 Bar

Part No	Description
LX-1163-E	Superluber kit complete
LX-1167	220V-240V charger
LX-1166	Field battery charger 12V
LX-1164	Spare battery

LX-1163-E

The battery operated grease gun with shoulder harness and one hand trigger requirement is designed specifically for one hand operation. This allows the free hand to locate the grease nipple on the machine and hold the connector on to the nipple regardless of location. Lubrication and greasing schedule times are reduced considerably using the Superluber.

Lubricants

Part No	Description	Sizes Available					Temp Range Deg C
		400gm	12.5kg	20kg	50kg	180kg	
Multipurpose EP2	Centralized lubrication system	✔	✔	✔	✔	✔	-20 to + 140
Heavy plant grease	Centralized systems on heavy plant	✔	✔	✔	✔	✔	-30 to + 150
FG fluid grease 000	Centralized lubrication			1 LTR Bottle			-35 to +40
FG fluid grease 000	Centralized lubrication		✔	✔			-35 to +40

Cartridges

Kegs

1 Litre Bottle

Greases

NLGI 2 Grade (Heavy Grease)	
Part No	Description
25717-270/12.5kg	12.5kg drum
25717-270/20kg	20kg drum
25717-270/50kg	50kg drum

NLGI 000 Grade (Fluid Grease)	
Part No	Description
25717-284	12 x 1 Litre bottles
25717-284/12.5kg	12.5kg drum
25717-284/20kg	20kg drum
25717-284/50kg	50kg drum

Heavy Duty Plant Grease

A premium quality grease for lubrication points via centralised lubrication systems on static and mobile plant

The grease has:

- Anti-wear additives
- Excellent load carrying properties
- Resistant to water washout
- Resistant to salt and chemicals
- Wide temperature range -30 to +150

All of the above help to prolong the life of the grease so re-lubrication does not have to be carried out as often, therefore reducing grease consumption and improving efficiency.

Grease Filler Guns and Pumps

Hand Operated Bulk Fill Pump

1.5m hose, female quick release coupling to fit directly on to the Interlube quick connect fitting on the pump.

Ideal for use with NLGI 1 or 2 greases.

Part No	Description
IL-108501	European Pump (12.5-18 KG), cover 265mm to 310mm
IL-108502	USA Pump (35lb), cover 285mm to 330mm
FP18	Grease follower plate 260mm to 298mm
FP20	Grease follower plate 300mm to 340mm

Hand Operated Quick-Fill Gun

Quick, easy and simple method of filling grease reservoirs, minimising the likelihood of contamination. For use with standard 400gm grease cartridges.

Part No	Description
QF-G-400	Quick Fill Gun
QF-G-AS	Straight Adaptor
QF-G-A90	90° Adaptor
QF-G-AL	Long Straight Adaptor

Parts and Accessories

QF-G-400

Pump filling adaptors

QF-G-AL

QF-G-A90 90 Degree

QF-G-AS

KEG PUMP

Versatile range of electric grease pumps for industrial and off-road applications

Electric Grease Pumps

Industrial and Off-Road Applications

The KP keg pump is available to suit a range of keg sizes and has a multi functional controller built in to suit different types of system applications.

KP Grease Pump

- 24V dc
- 102 grams per min ouput
- 350 Bar maximum output pressure
- Supplied with or without controller
- To suit keg or (pail sizes):

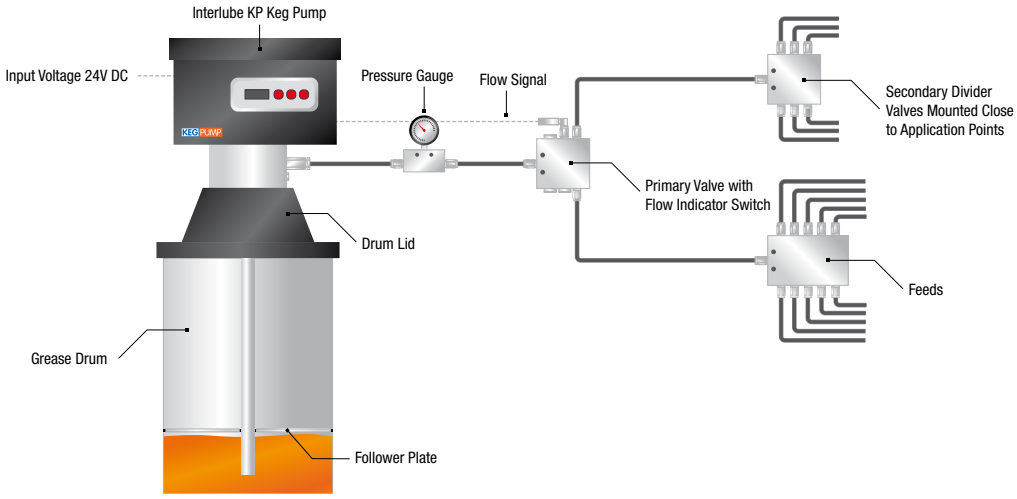
  12.5 (35lb), 20kg, 50kg (120lb) or 180kg (400lb)

Multi-Functional Pump

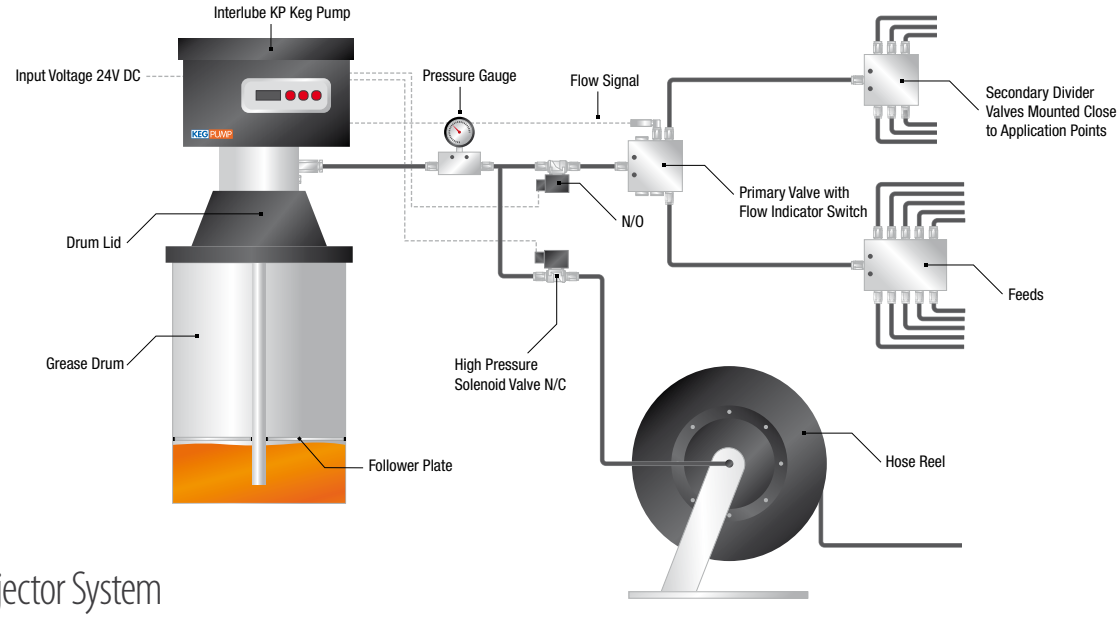
- Progressive systems
- Automatic systems with manual hose reel back up facility
- Injector systems
- Dual line systems
- Grease spray systems

Typical Setup

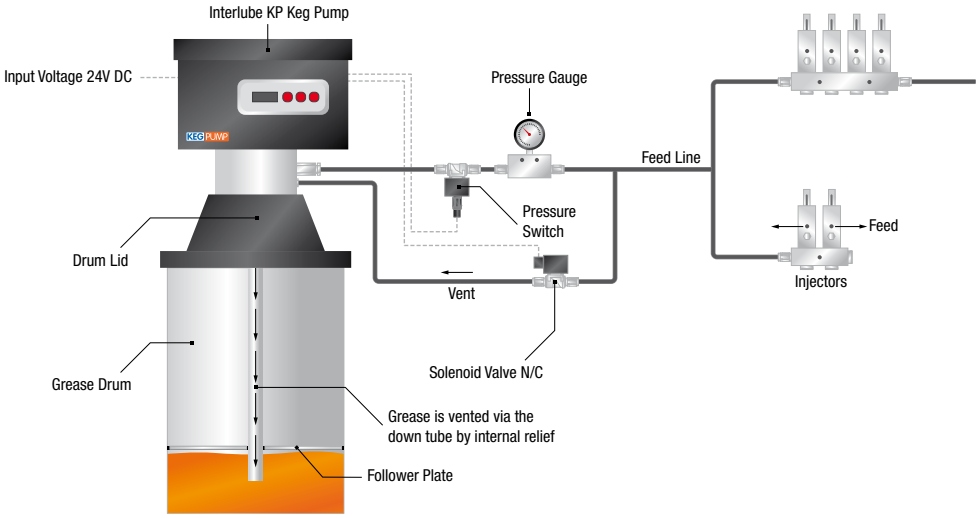
KP1100 Standard Progressive System



KP1200 - Hose Reel & Progressive Systems



KP1200 - Injector System



Grease Spray Systems

Grease Spray Systems supplied by Timken ILS are of the KP and progressive valve combination as illustrated below.

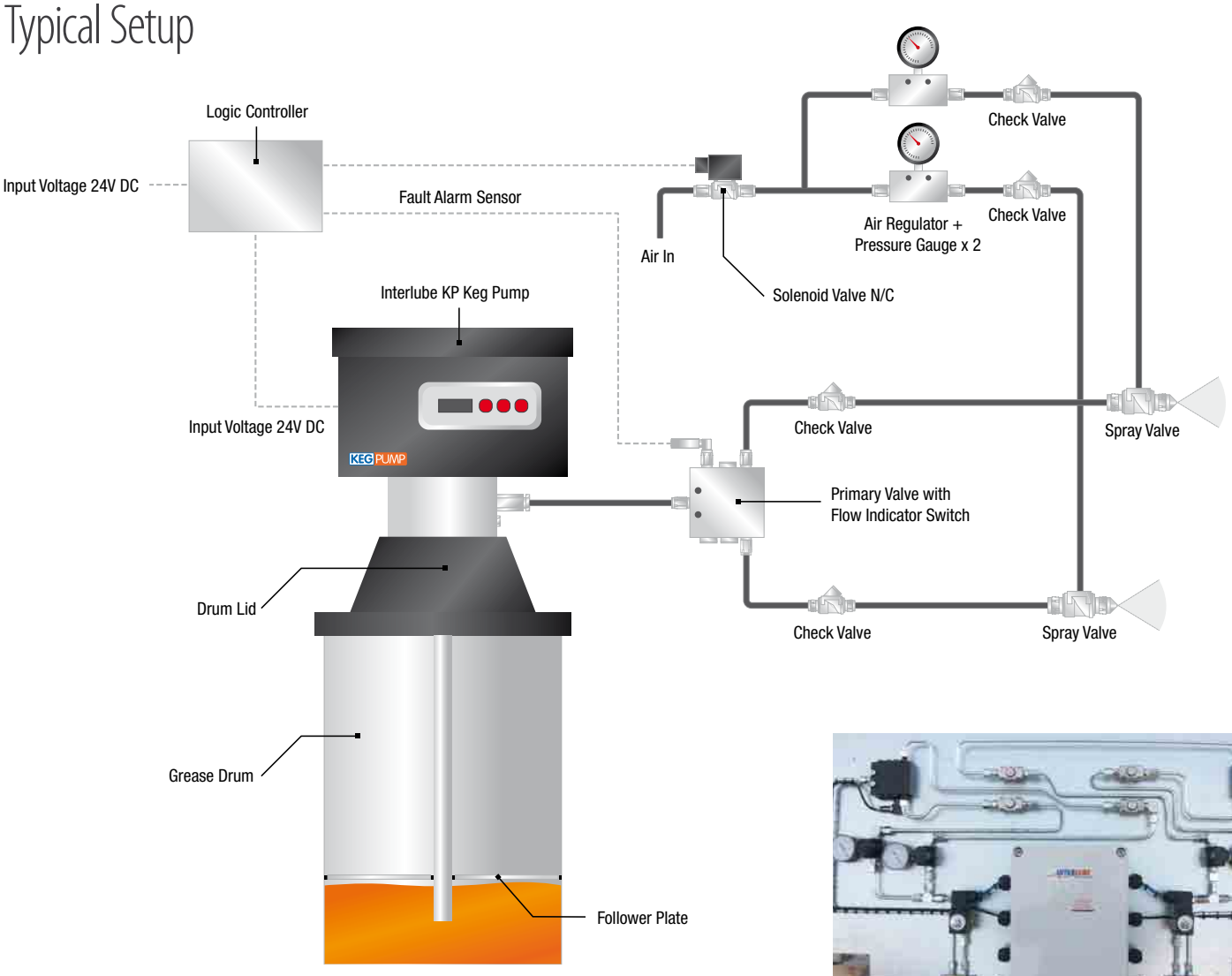
The system uses air to assist and carry the greases on to the gears.

Typical applications involve spraying measured amounts of grease on to the girth gears in Rotary Kilns, Coolers, Rod and Ball Mills and Crushers.

The KP pump and air solenoid valves will be controlled by the machine's own PLC or a Timken ILS stand-alone controller.

The controller or PLC will operate the pump and valves at pre-determined intervals and can be programmed to monitor system operation (correct flow of grease)

Typical Setup



Operation

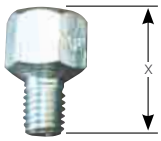
- Pump receives signal from logic controller.
- The logic controller operates the solenoid and a few seconds later operates the pump for the specified 'on' time.
- The pump delivers grease to divider block (with proximity flow sensor if required).
- With air and grease supplied to spray valve, the mixture is applied to the gear as long as pump is running.
- Air remains on for a few seconds after pump stops to clear grease from spray valves.

Adaptors, Fittings and Accessories

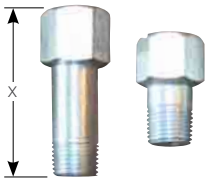
Timken ILS Lubrication fittings and accessories can be used for all your lubrication requirements.

Our fittings are used in all associated industries including; automotive, marine, truck and bus, construction, agricultural and process.

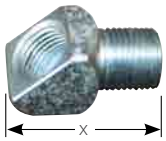
Reducing Adaptors

Profile	Part No	Description	Length mm X
	FRA-1/8F-1/4UNF	1/8"BSP(F) x 1/4" UNF(M)	22
	FRA-1/4F-1/8UNF	1/4"BSP(F) x 1/8" UNF(M)	16.5
	FRA-1/8F-8	1/8"BSP(F) x M8 x 1(M)	22
	FRA-8F-6M	8 x 1(F) x M6 x 1(M)	18

Extension Pieces

Profile	Part No	Description	Length mm X
	EXT-1/8-1	1/8"BSP(M)x(F)	23
	EXT-1/8-2	1/8"BSP(M)x(F)	35
	EXT-1/8-3	1/8"BSP(M)x(F)	50
	EXT-8	M8 x 1 (M)x(F)	18
	EXT-10	M10 x 1 (M)x(F)	18

45 Degree Adaptors

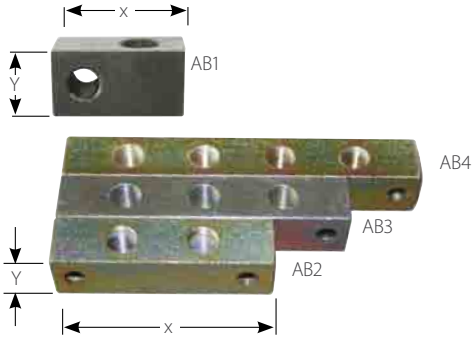
Profile	Part No	Description	Length mm X
	ADP-3-1/8F-1/8	1/8"BSP(M) x 1/8" BSP(F)	23
	ADP-3-8F-8	M8x1(M) x M8 x 1(F)	23

90 Degree Adaptors

Profile	Part No	Description	Length mm X
	ADP-2-1/8F-1/8	1/8"BSP(F) x 1/8"BSP(M)	23
	ADF-2-8F-8	M8 x 1(F) x M8 x 1(M)	23

Anchor Blocks

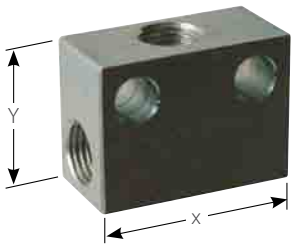
Part No	Description	Length mm X	
		X	Y
AB1	1 Way 1/8" BSP (F)	32	16
AB2	2 Way 1/8" BSP (F)	62	16
AB3	3 Way 1/8" BSP (F)	86	16
AB4	4 Way 1/8" BSP (F)	108	16
AB5	5 Way 1/8" BSP (F)	132	18
AB6	6 Way 1/8" BSP (F)	154	16



All Anchor Blocks are steel-plated and use standard M6x1 fixing bolts.

3-Way Anchor Block

Part No	Description	Length mm X	
		X	Y
ABT-1/4	3 Way 1/4" BSP	40	30



Compression Fittings

Male Connectors

Profile	Part No	Tube Size	Thread Size
	CF4 - 1 - 1/8	4mm	1/8" BSP
	CF4 - 1 - 6	4mm	M6x1
	CF4 - 1 - 8	4mm	M8x1
	CF4 - 1 - 10	4mm	M10x1
	CF6 - 1 - 1/4	6mm	1/4 BSP
	CF6 - 1 - 6	6mm	M6x1
	CF6 - 1 - 8	6mm	M8x1
	CF6 - 1 - 1/8	6mm	1/8BSP
	CF8 - 1 - 1/8	8mm	1/8
	CF10 - 1 - 1/4	10mm	1/4
	CF10 - 1 - 1/8	10mm	1/8

Straight Coupling

Profile	Part No	Tube Size
	CFU-4-4	4mm OD
	CFU-6-6	6mm OD
	CFU-8-8	8mm OD
	CFU-10-10	10mm OD

Reducing Connectors

Profile	Part No	Tube Size
	CFU-6-10	10mm to 6mm OD

Profile	Part No	Tube Size
	SWV-1-1/8-1/8F	Straight Swivels M/F 1/8"BSP
	SWV-2-1/8-1/8F	90° Swivel M/F

Male Elbows

Profile	Part No	Tube Size	Thread Size
	CF4 - 2 - 1/8	4mm	1/8"
	CF4 - 2 - 6	4mm	M6x1
	CF4 - 2 - 8	4mm	M8x1
	CF4 - 2 - 10	4mm	M10x1
	CF6 - 2 - 6	6mm	M6x1
	CF6 - 2 - 8	6mm	M8x1
	CF6 - 2 - 1/8	6mm	1/8BSP
	CF6 - 2 - 10	6mm	M10x1
	CF6 - 2 - 1/4	6mm	1/4

Equal Tees

Profile	Part No	Tube Size
	CF4-T	4mm OD
	CF6-T	6mm OD

Swivel Connectors 90°

Profile	Part No	Tube Size	Thread Size
	SWV-2-4D-1/8	1/8BSP	4mm
	SWV-2-6D-6	M6x1	6mm
	SWV-2-6D-8	M8x1	6mm
	SWV-2-6D-10	M10x1	6mm
	SWV-2-6D-1/8	1/8BSP	6mm

Miscellaneous Fittings

Straight Connectors

Profile	Part No	Tube Size	Thread Size
	LE 80512	4mm	1/8 NPT
	LE 80584	4mm	1/4 x 28UNF
	LE 80585	4mm	5/16 x 24UNF
	LE 80587	4mm	1/8 BSPT
	LE 80589	4mm	M6 x 1
	LE 80590	4mm	M8 x 1
	LE 80591	4mm	M8 x 1.25
	LE 80592	4mm	M10 x 1
	LE 80687	3/16in	1/8 BSP
	LE 80887	1/4in	1/8 BSP
	LME 70605	6mm	M8 x 1 (To fit into Manifolds)

Elbow Connectors

Profile	Part No	Tube Size	Thread Size
	LE 90512	4mm	1/8 NPT
	LE 90584	4mm	1/4 x 28UNF
	LE 90585	4mm	5/16 x 24UNF
	LE 90587	4mm	1/8 BSPT
	LE 90589	4mm	M6 x 1
	LE 90590	4mm	M8 x 1
	LE 90591	4mm	M8 x 1.25
	LE 90687	3/16in	1/8 BSP
	LE 90887	1/4in	1/8 BSP
	LE 90888	1/4in	1/4 BSP
	LE 91088	5/16in	1/4 BSP
	LE 91288	3/8in	1/4 BSP

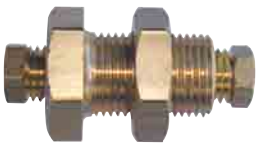
Double Ended Connectors

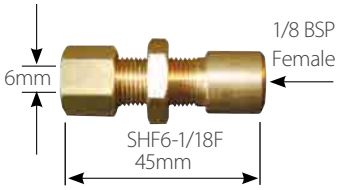
Profile	Part No	Tube Size	Description
	25478-056	4mm	Push fit connector
	LE 505	4mm	Compression type
	LE 508	1/4in	Compression type
	LE 510	5/16in	Compression type
	LE 512	3/8in	Compression type
	LM 506	6mm	Compression type

Tee Assemblies

Profile	Part No	Tube Size	Description
	LE 05	4mm	Compression type
	LE 06	3/16in	Compression type
	LE 10	5/16in	Compression type
	LM 06	6mm	Compression type

Bulkhead Connectors





Profile	Part No	Tube Size	Description
	LE 60525	4mm	For 6mm plate
	LE 60550	4mm	For 13mm plate
	7616/1	4mm	For 3mm plate
	7616/2	4mm	For 16mm plate
	BHF6-1/8F	6mm x 1/8 BSP	BSF (F)

Sleeve Nuts

Profile	Part No	Tube Size	Thread Size
	LE 305	4mm (5/32)	5/16 x 24 UNF
	LE 306	3/16in	3/8 x 24 UNF
	LE 308	1/4in	7/16 x 20 UNF
	LE 310	5/16in	1/2 x 20 UNF
	LE 312	3/8in	9/16 x 18 UNF
	LM 304	4mm	M8 x 1
	LM 306	6mm	M10 x 1
	LM 308	8mm	M12 x 1
	LM 310	10mm	M16 x 1

Cones

Profile	Part No	Description
	LE 205	For 4mm (5/32) tube
	LE 206	For 3/16in tube
	LE 208	For 1/4in tube
	LE 210	For 5/16in tube
	LE 212	For 3/8in tube
	LM 206	For 6mm tube
	LM 308	For 8mm tube
	LM 210	For 10mm tube

Pipes and Tubes

Nylon Tube

Profile	Part No	Burst Pressure	Description
	152823/25	140 bar	4mm OD black tube filled with NLGI 000 grade x 25m
	152823/50	140 bar	4mm OD black tube filled with NLGI 000 grade x 50m
	152821/25	140 bar	4mm OD black tube filled with NLGI 2 grease x 25m
	152057/50	140 bar	4mm OD black tube unfilled x 50m
	152057/100	140 bar	4mm OD black tube unfilled x 100m
	152826/25	140 bar	4mm OD black tube filled with food grade grease x 25m
	136782	75 bar	6mm OD black tube unfilled 100m coil
	152820/25	75 bar	6mm OD black tube filled with NLGI 2 grease x 25m
	136873	68 bar	4mm OD natural tube unfilled 100m coil
	151083	68 bar	8mm OD black tube unfilled 100m coil
	136558	68 bar	6mm OD natural tube unfilled 100m coil
	152058	70 bar	5mm OD black tube unfilled 100m coil

Nylon Tube (High Pressure) Polyimide Tube

Profile	Part No	Tube (mm)	Burst Pressure
	TSL-6.0-1.5F	6mm O.D x 1.5mm wall grease filled	250 bar
	TSL-6.0-1.5U	6mm O.D x 1.5mm wall unfilled	250 bar

8.6mm High Pressure Braided Tube

Profile	Part No	Tube (mm)	Burst Pressure
	TML-8.6-2.3F	8.6mm OD x 2.3mm wall grease filled	250 bar
	TML-8.6-2.3U	8.6mm OD x 2.3mm wall unfilled	250 bar

Heavy Duty R2T Braided Hose

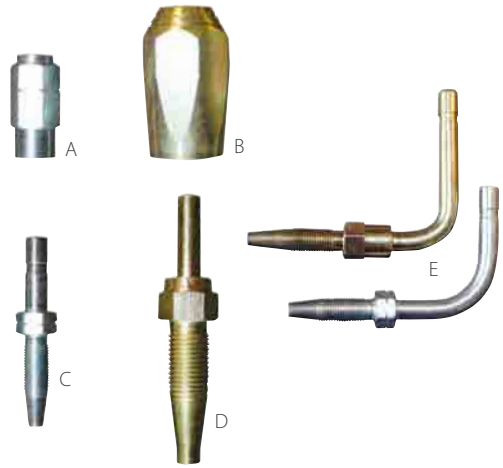
Profile	Part No	Description
	R2T - 1/4	Two wire double braided flexible hose ideal for heavy plant applications that are prone to site damage

Steel Tube

Profile	Part No	Description
	STP-6-1-SS	6mm x 1mm O.D Stainless steel
	STP-6-1	6mm x 1mm O.D Steel bundy
	STP-10-2	10mm x 2mm O.D Steel bundy
	STP-10-3.5	10mm x 3.5mm O.D Thick wall tube

Pipes and Tubes Accessories

Re-usable Studs and Sleeves

Profile	Part No	Description
	A) TML-8.6-FE	Re-usable sleeve for 8.6mm HP pipe
	B) 2RT-1/4-FE	Re-usable sleeve for Heavy Duty 2RT Hose
	C) TML-8.6-ST	Re-usable stud for 8.6mm H/P pipe (6mm O.D)
	D) 2RT-1/4-ST	Re-usable stud for Heavy Duty 2RT Hose (6mm)
	E) TML-8.6-ST-90L	Re-usable 90 Deg stud for 8.6 Hose (Long)
	TML-8.6-ST-90S	Re-usable 90 Deg stud for 8.6 Hose

*For stainless steel prefix with SS

Protective Helix Plastic and Steel

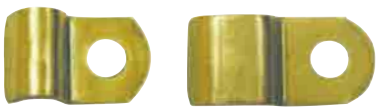
Profile	Part No	Description	
	HLX-P-12	Plastic Helix (12mm)	25m coil
		(see page 10 for additional sizes)	
	HLX-S-10	10mm Steel Helix	10m coil
	HLX-S-20	20mm Steel Helix	10m coil

Heavy duty hose protected

P Clips

Profile	Part No	Description
	PC-6-10	6mm P Clip (10mm OD fixing hole)
	PC-10-10	10mm P Clip (10mm OD fixing hole)
	PC-13-10	13mm P Clip (10mm OD fixing hole)
	PC-16-10	16mm P Clip (10mm OD fixing hole)
	PC-21-10	21mm P Clip (10mm OD fixing hole)
	PC-25-10	25mm P Clip (10mm OD fixing hole)

Pipe Clips

Profile	Part No	Description
	120859	1 way for 4mm tube
	3821	2 way for 4mm tube
	3822	3 way for 4mm tube
	120863	1 way for 6mm tube
	120864	1 way for 10mm tube

Miscellaneous Fittings

Blanking Plugs

Profile	Part No	Description
	LE 405	For manifold fitting 5/16 x 24UNF thread
	LM 404	For manifold fitting M8 x 1 thread
	100727	With 1/8 BSP thread
	102017	With 1/4 BSP thread
	34237-402	For AC/AX/XGS pumps M12 x 1 thread

Brushes

Profile	Part No	Description	Dimensions (mm)
 BR-A040 BR-A060 BR-A100	BR-A18	18mm flat nylon 1/8 BSP	25(W) x 55(L)
 BR-A18	BR-A020	20mm Dia nylon 1/4 BSP	25(W) x 75(L)
 BR-A020	BR-A040	40 x 30 Flat nylon 1/4 BSP	40(W) x 30(D) x 40(H)
	BR-A060	60 x 30 Flat nylon 1/4 BSP	60(W) x 30(D) x 40(H)
	BR-A100	100 x 30 Flat nylon 1/4 BSP	100(W) x 30(D) x 40(H)

Off-Road Accessories

Central Bracket

STL-BKT-C

Steering Bracket

Note: With this bracket the pipe clamps need to be ordered separately.

STL-BRT-STEER

Link Arm Brackets (Dog Bone)

STL-BKT-DB

Tee Bracket

STL-BKT-T

STL-BKT-T

Off road accessories are key to successful and reliable installations. The off road machines are operated to their limits in harsh and arduous conditions, making it important that systems are installed correctly to improve durability and efficiency.

Off-Road Accessories

Bearing Inlet Adaptors

STL-SF-CAT1

STL-SF-CAT1H

STL-SF-CAT1L

Insert Adaptors

Part No	Description	Length mm X	
		Y	Ø
STL-SF-CIN	Bearing insert for 10mm thick tube, no thread	30	20
STL-SF-CI	Adaptor threaded M10 x 1 for the central bracket on opposite page	15	25
STL-SF-TB30	Welded Adaptor threaded M10 x 1 for Tee Bracket	30	18
STL-SF-TB60	Double weld adaptor threaded M10 x 1 double length	60	18

Pipe Clamps

Profile	Part No	Description
	TC-9.5S	Pipe Clamp 9.5mm Single pipe
	TC-9.5D	Pipe Clamp 9.5mm Double pipe
	TC-16S	Pipe Clamp 16mm Single Pipe
	TC-16D	Pipe Clamp 16mm Double Pipe

Weld Plates for SPL Divider Valves

Profile	Part No	Description
	SPL-BP6	Weld Plate for SPL06 Divider Valve
	SPL-BP8	Weld Plate for SPL08 Divider Valve
	SPL-BP10	Weld Plate for SPL10 Divider Valve
	SPL-BP12	Weld Plate for SPL12 Divider Valve

Bearing insert adaptor for 10mm thick tube

Inlet adaptor designed to protect the compression fitting

Rotalube Chain Lubrication Systems

The Rotalube Chain lubrication system is a unique and precise method of applying accurate amounts of oil on to the chain linkages.

The Rotalube is a controlled applicator that does not suffer from excessive wear, and maintains accurate lubrication whatever the condition of chain.

Technical Details

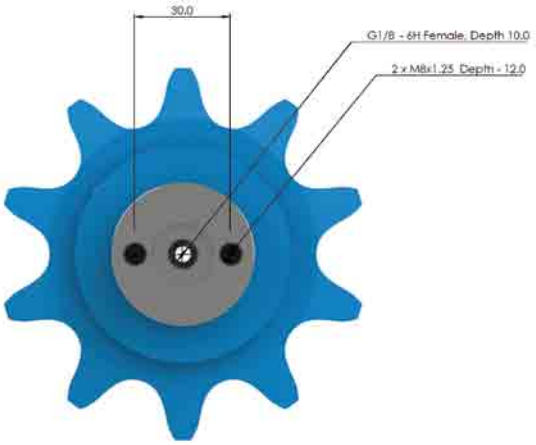
Lubricant Viscosity: Max 100Cst and Min 68Cst
Material: Stainless Steel Hub and Nylatrone Sprocket
Max Speed: 50m per min
Air Pressure: 5 to 20 PSI
Temp Max: 70 ºC (158ºF)
Temp Min: -20 ºC (-68ºF)

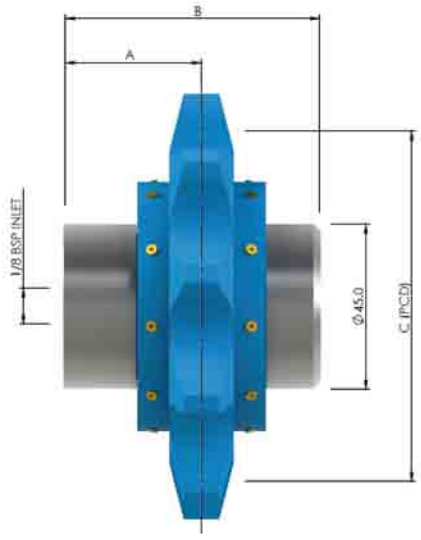
Benefits

At present, common systems used to lubricate chains are:-

- Drip feed systems
- Manual application
- Brush application
- Spit/spray systems

Rotalube lubricates more accurately, efficiently, reliably and significantly reduces lubricant consumption.





Standard Rotalube Applicators (Simplex)						A,B,C Dimensions mm
WITH brass inserts		British Standard	American Standard	A	B	C
Part No	Size					
RL-08B1	1/2in	✔		26.9	48.8	89.2
RL-10B1	5/8in	✔		28.3	51.5	91.4
RL-12B1	3/4in	✔		29.5	54.0	91.6
RL-16B1	1in	✔		35.9	66.8	98.1
RL-ASA40-1	1/2 in		✔	27.2	49.3	89.2
RL-ASA50-1	5/8in		✔	29.0	53.0	91.4
RL-ASA60-1	3/4in		✔	31.4	57.7	91.6
RL-ASA80-1	1in		✔	34.6	64.2	98.1
RL-ASA100-1 1	1/4in		✔	37.65	70.15	102.7
RL-ASA120-1 1	1/2in		✔	43.5	82.15	111.4

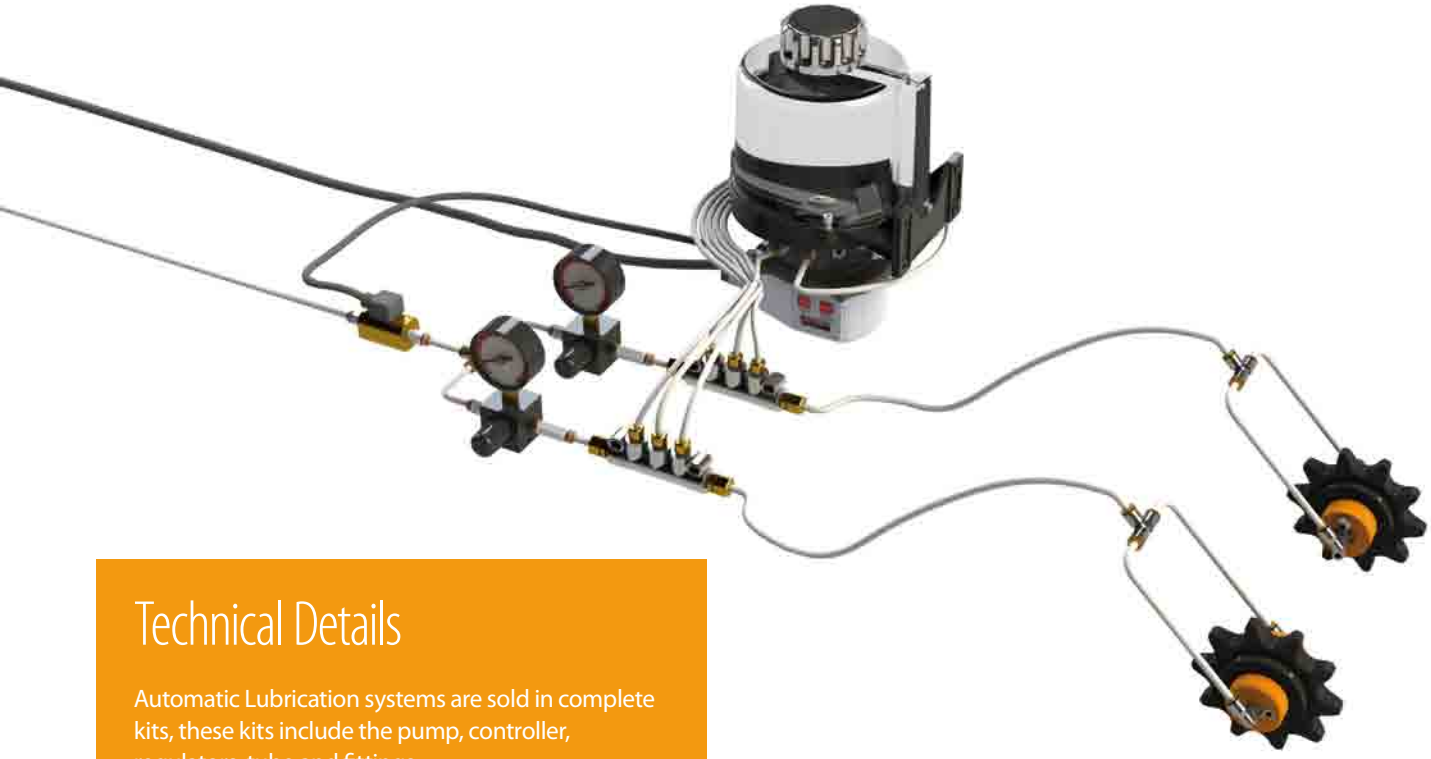
Standard Rotalube Applicators (Simplex)						A,B,C Dimensions mm
WITHOUT brass inserts		British Standard	American Standard	A	B	C
Part No	Size					
RL-08B1W	1/2in	✔		26.9	48.8	89.2
RL-10B1W	5/8in	✔		28.3	51.5	91.4
RL-12B1W	3/4in	✔		29.5	54.0	91.6
RL-16B1W	1in	✔		35.9	66.8	98.1
RL-ASA40-1W	1/2 in		✔	27.2	49.3	89.2
RL-ASA50-1W	5/8in		✔	29.0	53.0	91.4
RL-ASA60-1W	3/4in		✔	31.4	57.7	91.6
RL-ASA80-1W	1in		✔	34.6	64.2	98.1
RL-ASA100-1W 1	1/4in		✔	37.65	70.15	102.7
RL-ASA120-1W 1	1/2in		✔	43.5	82.15	111.4

Typical Setup for One Standard Rotalube (RLK001)

ACR3 Pump

ACR6 Pump

Typical Setup for Two Standard Rotalubes (RLK003)



Technical Details

Automatic Lubrication systems are sold in complete kits, these kits include the pump, controller, regulators, tube and fittings.

Please see RFQ link **http://interlubesystems.co.uk/downloads/Rotalube_RFQ.pdf** This is a request for quotation form and enables us to fully understand your chain lubrication requirements.

RS – Automatic Oil Replenishment Systems

Maintaining an optimal oil level at all times improves engine efficiency, minimises emissions and provides substantial cost savings to the operator. Trying to do this manually relies on vigilance and discipline from the driver and the maintenance staff.

Interlube Systems "RS" monitors the oil level in the engine and, if necessary, supplies a measured pre-set volume of oil from its own reservoir until the engine oil level is once again at an optimum level, thus removing the need for daily dipstick checks.

Applications include:

- Buses and coaches
- Refuse vehicles
- Generators
- Off-road applications

Remote Fill Model

Substantial Savings

The 12V/24V DC electric shut off valve is connected to the machine. When the machine is shut off, the solenoid will automatically isolate, preventing over-lubrication if the machine is not in operation.

Bulk Fill Model

System Features

- Engine ignition initiates oil level check.
- System health check performed on every start-up.
- A tilt switch fitted to the electronic control unit (ECU) overrides any erroneous readings.
- The ECU has complete memory function, monitors system status and controls and counts pump filling cycles.
- Field adjustable number of filling cycles.
- Fault diagnosis available in real time
- Cab mounted test push button with system status lights.
- Transient, Polarity and Short Circuit protection; and EMC compliant to 95/54EC.
- System comes complete with mounting brackets, pipe work and connectors.

Substantial Savings

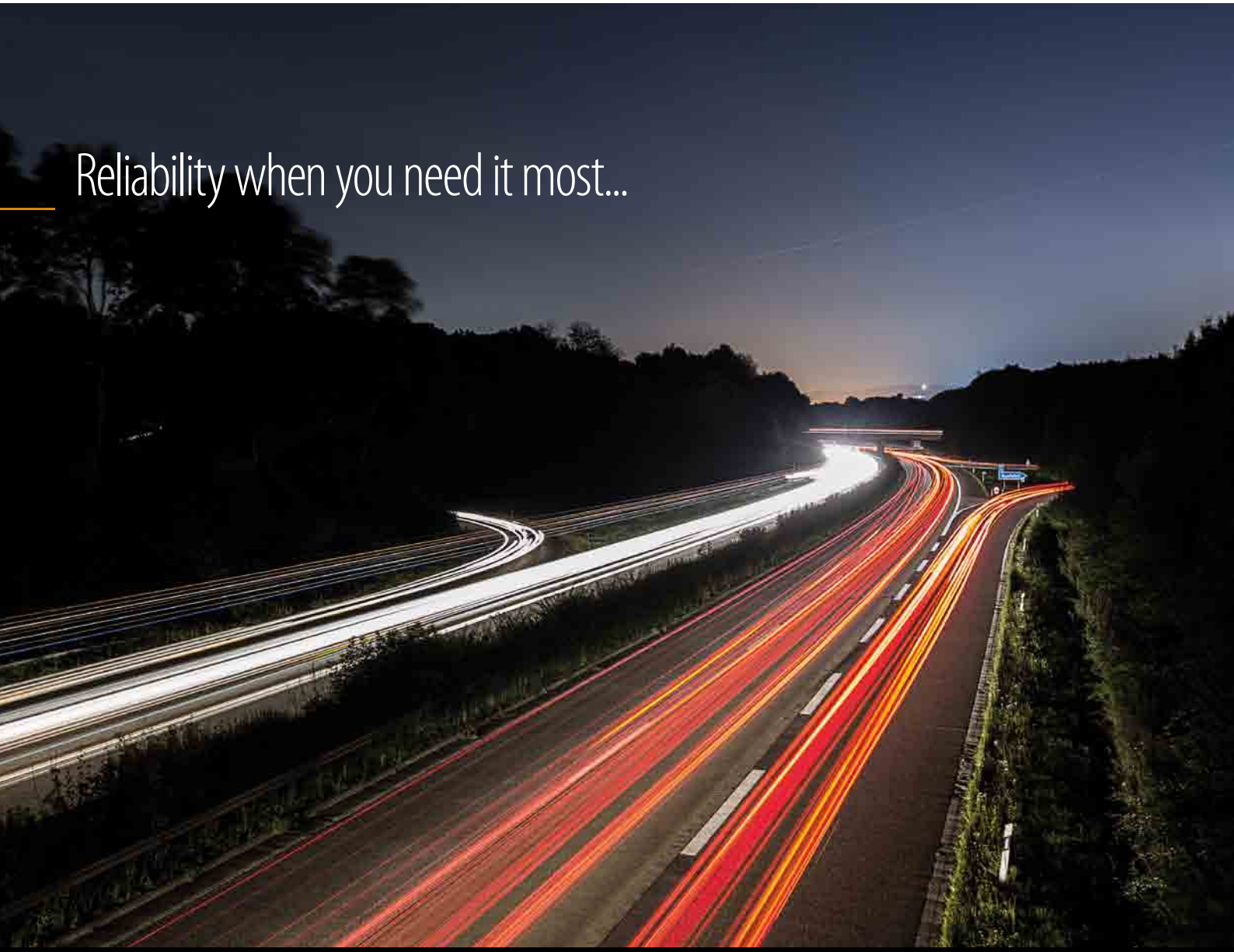
- Only oil purchased from the depot is used
- Oil is of consistent quality
- Operation at optimum oil level ensured
- Less maintenance time on oil level checks
- Full history of oil consumption
- Reduced vehicle down time and repairs

System Components

- Reservoir - semi transparent plastic, available in 5 litre and 15 litre options. Fitted with anti-splash filler breather assembly and low level sensor for monitoring filling cycles.
- Optional locking filler cap available.
- Pump - 300cc/min. gear pump driven by 12v. or 24v. d.c. 67W bi-directional motor supplying a 250cc measuring chamber.
- Measuring chamber expandable to a maximum 500cc.
- Sump oil sensing chamber - fitted with a level sensor the unit is mounted adjacent to the sump and piped directly to a sump plug adaptor. The level window ensures that the unit is fitted in the optimum position. Supplied complete with wiring and connectors for connection to the ECU.
- Systems come complete with oil replenishment pipe work and connectors to the engine.

Technical Specifications

Description	Specifications
Pump module supply voltage	12vdc or 24vdc
Power consumption	2.6A or 1.3A
Dimensions (mm) - 5 litres	338x373x159mm
Dimensions (mm) - 15 litres	355x355x150mm
Operating temperature	-25c to +40c
Complies with	EMC Tested / IP66 Protection



FILTAKLEEN
A TIMKEN Brand

By Pass Oil Filtration Systems

The Filtakleen range of filters have been developed to filter hydraulic oils, engine oils and other types of oil such as Gearbox Oil.

Benefits

- Prevents system wear: removes the sandpaper effect of fine particles and corrosion caused by the presence of water
- Enhance performance: prevents fine tolerance valves from sticking and increases the efficiency of the engine
- Improves reliability: Less component wear and reduces the risk of system failure
- Oil life: Increases oil life considerably.

Hydraulic Kit*

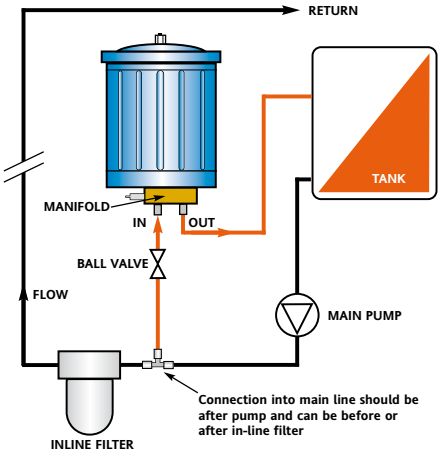
Part No	Description	Qty
7067A	Ball Valve 1/4 bsp	1
7070	R/U 3/8 Swept Elbow	1
7055	R/U RIT 3/8 Ferrule	2
7092	R/U 1/4 Swept Elbow	1
7054	R/U R2T 1/4 Insert	1
7052	R/U 1/4 Insert	1
7072	R/U 3/8 Insert	1
7060	R/U 3/8 90 Degree Elbow	1
7069	1/4 90 Degree Swivel Adaptor	1
7091	R/U 1/4 90 Degree Compact Elbow	1
7016A	Manifold block	1

Engine Kit*

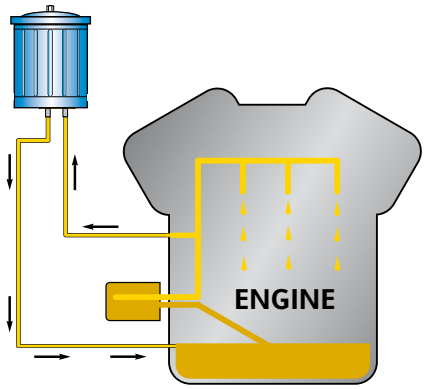
Part No	Description	Qty
17-17092	R/U 1/4 Swept Elbow	2
17-17052	R/U 1/4 Insert	2
17-17076	1/4 BSP 1/4 BSP Male Adaptor	2
17-17074T	1/8 BSP 1/4 BSP Male Adaptor	1
17-17056	R/U RIT 1/4 Ferrile	4

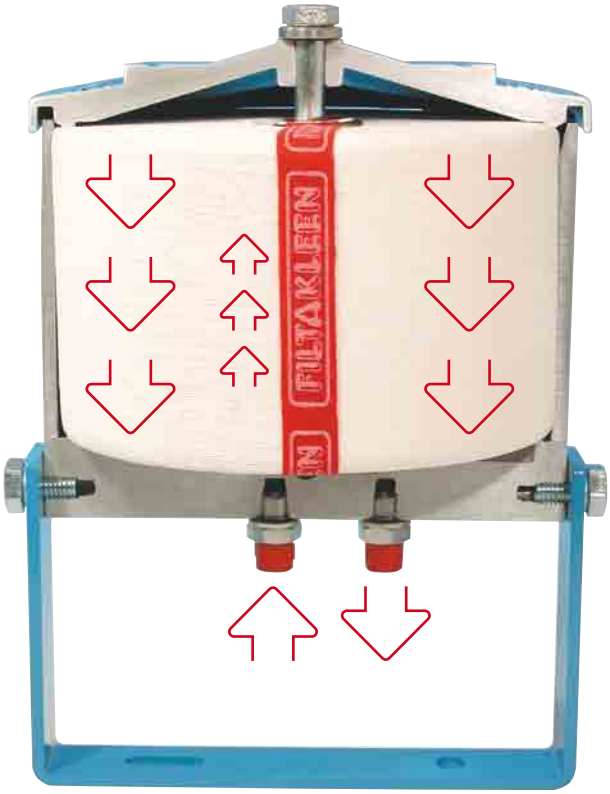
*Hose not supplied

Hydraulic System Fitment



Engine System Fitment





The high tech cartridges give continuous all round protection against ultra fine debris and water.

The changing of the filter element is extremely quick and easy. The lid is removed by unscrewing the retaining bolt and the old filter is simply removed and replaced by a new filter.

Cartridges

Part No	C58	C68	HYC78	MYC88	HYC78	MYC88
Height	78mm	114mm	114mm	114mm	114mm	114mm
Diameter	102mm	102mm	14mm	190mm	145mm	190mm
Filter Length	102m	114m	272m	460m	272m	460m
Surface Area	80,000 sq cm	130,000 sq cm	490,000 sq cm	524,000 sq cm	490,000 sq cm	524,000 sq cm
Weight	184g	300g	630g	1060g	630g	1060g

Mobile Cleaning Station (see pg 40)

Description	MX200	MX300
Mobile filtration unit with transfer ability	Yes	No
Transfer rate	20 Ltrs / Min	20 Ltrs / Min
Filtration rate	7.6 Ltrs / Min	7.6 Ltrs / Min
Dirt holding capacity	200g	200g
Water holding capacity	800 cc	800 cc
Motor	110V	110V
Oil cleanliness monitoring	No	No
Spare filter	MXC 88	MXC 88

MX200 / MX300 Mobile Filtration Units

Both the Filtakleen MX200 and MX300 models are supplied with one gear pump, trolley, two maxi filters, starter and interconnecting pipework.

The maxi filters are fitted In-line and will filter the oil to one micron.

The units are designed to be moved from one machine to the next so that routine filtration of sumps can be carried out around the factory floor.

The MX 200 has the capability to by-pass the two filters and be used as an oil transfer unit.

The MX Models can be used for:

- Periodic clean ups
- Pre-filtering of new oils
- Filling of tanks-sumps or reservoirs
- Oil transfer (no filtering) MX 200 only.

FILTAKLEEN
FUEL KLENZE

Economic Benefits

- Improves engine life
- Reduces downtime
- Extends the life of the standard filter
- Maintenance free - no moving parts
- Extends the life of injectors and pump(s)
- No ongoing costs

Environmental Benefits

- Cleaner engine combustion
- Save on paper consumables
- Reduction in land-fill
- Fewer unscheduled repairs and call outs
- Less filter replacement
- Improved fuel consumption

The Fuel Klenze units are fitted in the machine fuel line to remove 95% of solid contamination and 99.9% of visible water, including emulsified water, found in all types of fuels.

INTERLUBE

A TIMKEN Brand

PNEUMATIC PISTON PUMP Centralised Lubrication Systems Multi-Industry Applications

Interlube Systems Ltd - maximising industrial performance world-wide...

Issue 1

technical specifications

PISTON PUMP

The types of piston pump covered in this brochure are purpose designed for pneumatic applications. They are suitable for use with oil or fluid grease and have a delivery of 10cm³ per stroke.

Both types can be supplied either as a bare pump or complete with a cast aluminium or a clear CAB reservoir of 1.5, 2 or 4.5 litres capacity. An extensive range of Positive Displacement Units (PDU's) is also available for use with these pumps.

NB. All PDU's in the system must be discharged by one stroke of the pump. Total stroke volume of PDU's must not exceed 70% of pump discharge.

CAST ALUMINIUM

CLEAR CAB

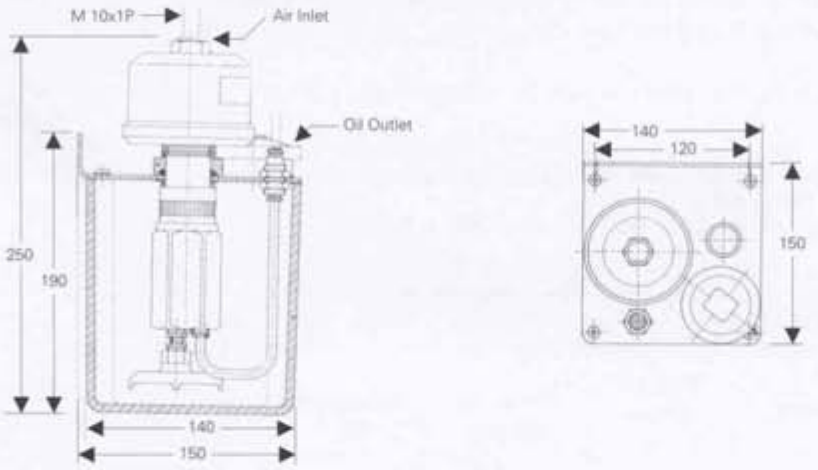
TECHNICAL SPECIFICATIONS

Discharge Volume:	10 cm³/stroke
Maximum Pressure:	100 bar
Residual Relief Pressure:	1 bar
Air Supply Pressure:	4 - 10 bar
Ratio Air/Oil:	1 : 9
Air Cylinder Volume:	110cm³ / strokes
Operating Temperatures:	- 25°C to + 80°C
Recommended Lubricants:	Oil 10 - 1500 cSt Fluid Grease - NLGI 00/000
Reservoir Sizes:	1.5 ltr & 4.5 ltr (both cast aluminium) and 2 ltr (clear ABS)

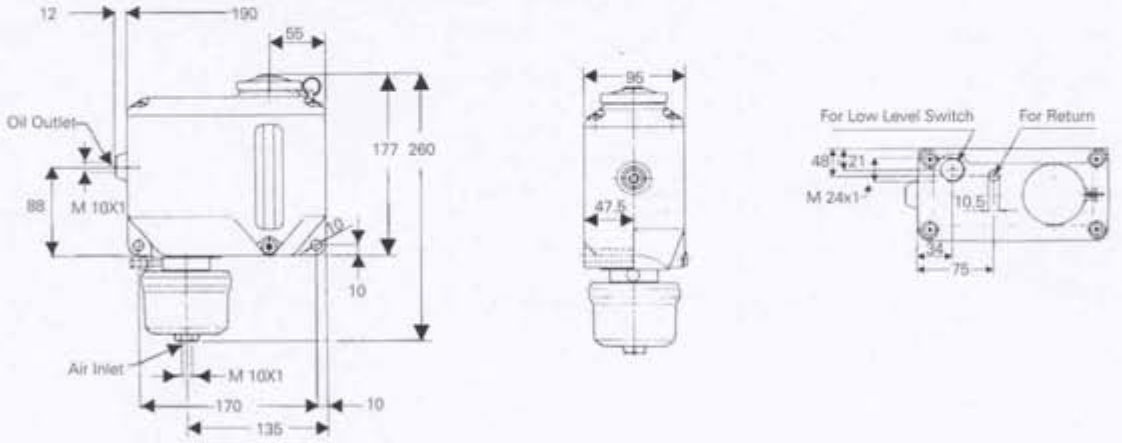
ORDERING METHOD

Model	Lubricant	Weight	Reservoir Capacity (Mat: aluminium)	Part No.
Pump 10P-E1,5	Oil	3.7kg	1.5 ltr	14111-303
Pump 10P-E4,5	Oil	4.5kg	4.5 ltr	14111-403
Pump 10P-E1,5	Fluid Grease	3.7kg	1.5 ltr	14111-353
Pump 10P-E4,5	Fluid Grease	4.5kg	4.5 ltr	14111-453
Pump 10P	Oil	1.1kg	Pump Only	14111-002
Pump 10P-E2	Oil	2.3kg	2 ltr	14111-251
Pump 10P-E2	Fluid Grease	2.3kg	2 ltr	14111-211

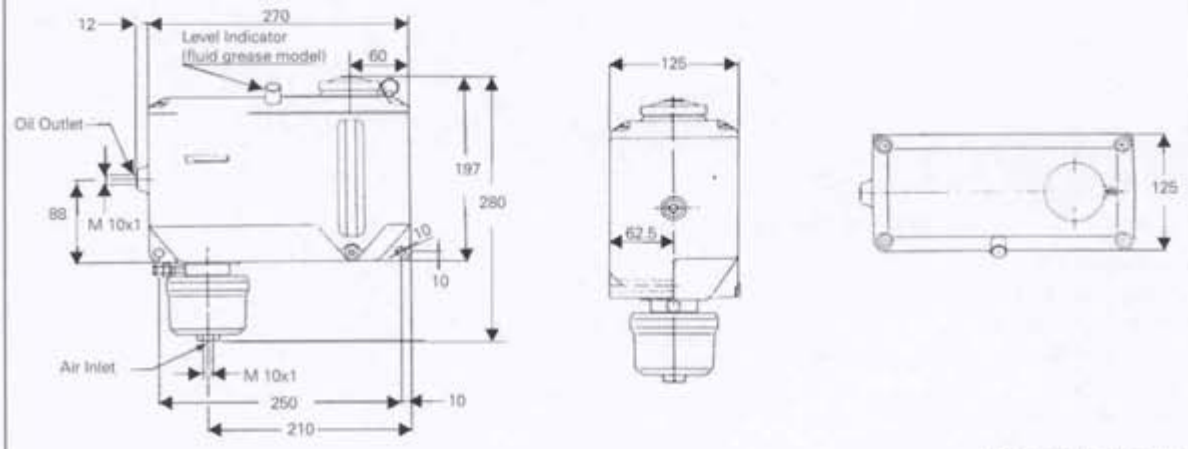
DIMENSIONS - 2 litre model, clear CAB Reservoir



DIMENSIONS - 1.5 litre, cast aluminium reservoir



DIMENSIONS - 4.5 litre, cast aluminium reservoir



All dimensions are in mm

DYNAMIC POSITIVE DISPLACEMENT UNIT

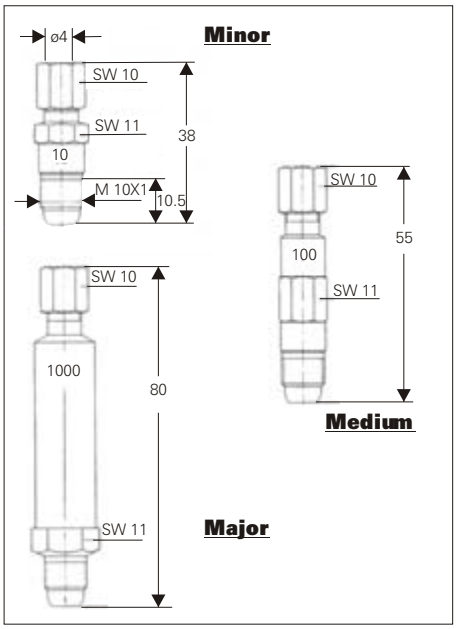
Designed for small to medium size machines, this unit features a dynamic displacement method for lubricant distribution. At each cycle, the pump provides a high pressure pulse to the valves which deliver a precise volume of lubricant to the application points.

The system is cyclic total loss and will handle a wide range of lubricants.

Recommended lubricant:Oil 20-1800 cSt / NLGI Grade 000 fluid grease
Operating Pressure: 15-100 Bar
Discharge range: .005 .010 .025 .05 .10 .25 .50 1.00 cc

ORDERING METHOD

Designation	Range	Dose per Stroke (cc)	Weight kg 100 pcs	Reference No.
Meter valve 5	Minor	0.005cc	2.3	2.80 90-05.2
Meter valve 10	Minor	0.010cc	2.3	2.80 90-10.2
Meter valve 20	Minor	0.025cc	2.3	2.80 90-25.2
Meter valve 50	Minor	0.05cc	2.3	2.80 90-50.2
Meter valve 100	Medium	0.10cc	2.5	2.80 91-10.2
Meter valve 250	Medium	0.25cc	2.5	2.80 91-25.2
Meter valve 500	Major	0.5cc	6.0	2.80 91-50.2
Meter valve 1000	Major	1cc	6.0	2.80 92-10.2



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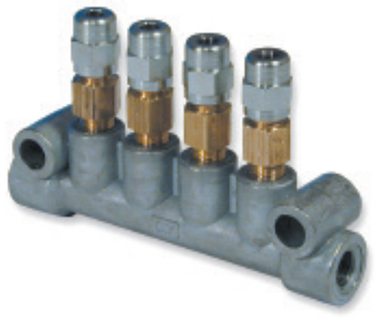
FLOW UNITS



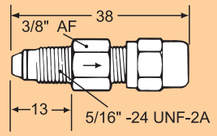
Single Line Metering System

Interlube Flow Units are non-adjustable capillary fittings installed at each lubrication point to regulate oil delivery and are suitable for use with hand operated or automatic cyclic pumps.

Flow is in one direction only, indicated by an arrow. The flow value number is also stamped on the body; each increase in number doubles the oil delivery.

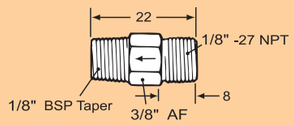
Flow Units are supplied complete with capnut and cone, ready to assemble.

JUNCTION IM
Screwed into tapped holes or junctions when feeding bearings through tail pipes.



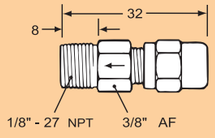
Flow Value	Part No.
20	**IM20**
21	**IM21**
22	**IM22**
23	**IM23**
24	**IM24**
25	**IM25**
26	**IM26**
27	**IM27**
28	**IM28**
29	**IM29**

TEE IH
Used where connection is made with the main supply through a junction header.



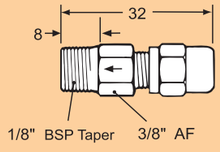
Flow Value	Part No.
20	**IH20**
21	**IH21**
22	**IH22**
23	**IH23**
24	**IH24**
25	**IH25**
26	**IH26**
27	**IH27**
28	**IH28**
29	**IH29**

STRAIGHT IW
For direct connection into bearings. Mounted directly at the bearing and used at the end of pressure lines.



Flow Value	Part No.
20	**IW20**
21	**IW21**
22	**IW22**
23	**IW23**
24	**IW24**
25	**IW25**
26	**IW26**
27	**IW27**
28	**IW28**
29	**IW29**

STRAIGHT IB
Mounted directly at the bearing and used at the end of pressure lines.



Flow Value	Part No.
20	**IB20**
21	**IB21**
22	**IB22**
23	**IB23**
24	**IB24**
25	**IB25**
26	**IB26**
27	**IB27**
28	**IB28**
29	**IB29**

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Positive Displacement Units & Flow Units

Interlube Systems Ltd - maximising industrial performance world-wide...

POSITIVE DISPLACEMENT UNITS

Positive Displacement Units (PDU's) deliver a precise volume of lubricant at the beginning of each pump cycle. Each unit in the range is stamped with a reference number denoting the discharge volume. The total oil delivery to a system can be further controlled by the pump lubrication frequency. The system operates intermittently, allowing PDU's to recharge for the next cycle, and is generally total loss.

Operating performance is unaffected by back pressure or air entrapment.

A PDU system can be monitored for correct pressure by installing a pressure switch at the pump or, in large systems, at the end of the line. Functional pressure is measured through the system main line and terminates at the PDU's. It is possible to monitor the entire system pipework through PDU's directly mounted at the bearing entry point.

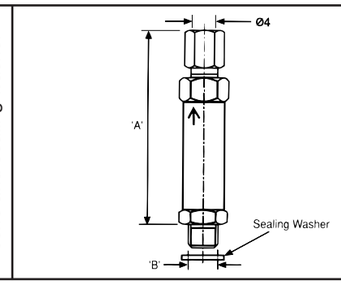
Manifold or bearing mounted units are available with conventional compression fittings **or PUSH-IN connectors which considerably reduce installation time.**

POSITIVE DISPLACEMENT UNITS - Oil and Fluid Grease

Manifold Mounted

Part No.	Discharge Volume (cc)	Thread 'B'	Dim 'A' (mm)
PD3403	0.03	M8x1	49.5
PD3406	0.06		49.5
PD3410	0.10		49.5
PD3416	0.16		49.5
PD3425	0.25	M8x1	57.5
PD3440	0.40		57.5
PD3460	0.60		57.5

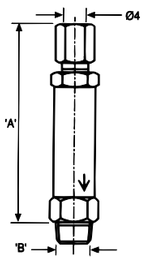
Supplied complete with nut, cone and sealing washer



Bearing Mounted

Part No.	Discharge Volume (cc)	Thread 'B'	Dim 'A' (mm)
PD3103	0.03	1/8in BSPT	51.5
PD3106	0.06		51.5
PD3110	0.10		51.5
PD3116	0.16		51.5
PD3125	0.25	1/8in BSPT	57.5
PD3140	0.40		57.5
PD3160	0.60		57.5

Supplied complete with nut and cone



POSITIVE DISPLACEMENT UNITS - Push in Type

Suitable for use with 4mm dia nylon, steel or brass tube

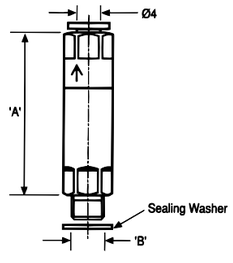
Manifold Mounted

Part No.	Discharge Volume (cc)	Thread 'B'	Dim 'A' (mm)
PD2403	0.03	M8x1	40
PD2406	0.06		40
PD2410	0.10		40
PD2416	0.16		40

Note: Manifold mounted PDU's with outputs from 0.25 to 0.60cc are available to special order and bearing mounted push-in units can also be supplied.

Please contact our sales Department for further information.

Supplied complete with sealing washer



SPECIFICATION

Operating Pressure

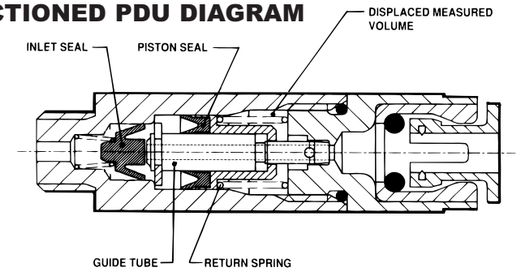
Min 10 Bar
Max 30 Bar

Recommended Lubricants

Oil 10 - 1800 cSt
at ambient (20˚C)

Fluid Grease NLGI 000

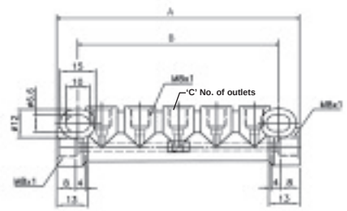
SECTIONED PDU DIAGRAM



MANIFOLDS FOR POSITIVE DISPLACEMENT UNITS

4 to 12 Way Single Manifolds

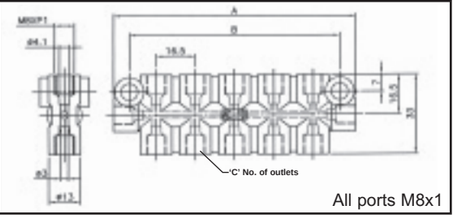
Type	Part No	'A'	'B'	'C'
4-way	MMS4	50.0	35.0	2
5-way	MMS5	65.0	51.0	3
6-way	MMS6	86.0	68.0	4
7-way	MMS7	98.0	80.0	5
8-way	MMS8	115.0	94.0	6
10-way	MMS10	137.0	123.0	8
12-way	MMS12	166.0	151.0	10



All ports M8x1

6 to 14 Way Double Manifolds

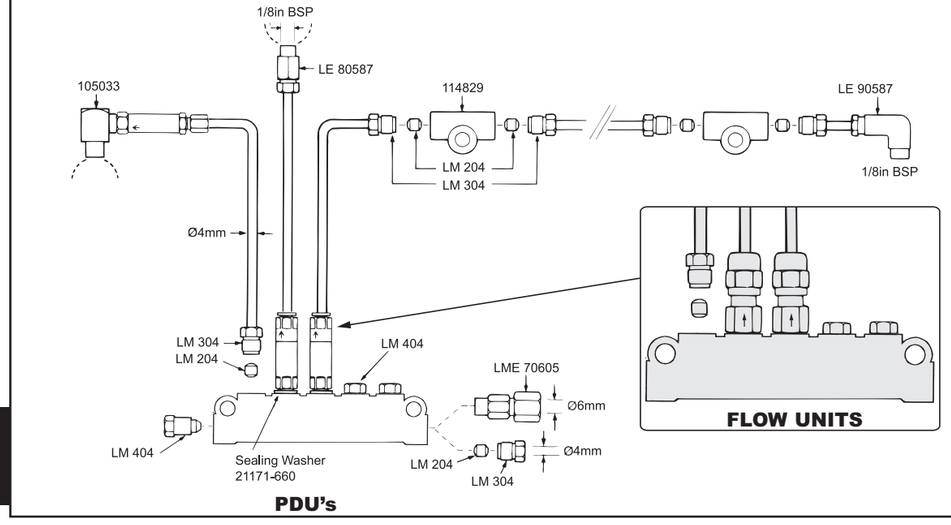
Type	Part No	'A'	'B'	'C'
6-way	MMD6	48.0	35.0	4
8-way	MMD8	65.0	51.0	6
10-way	MMD10	83.0	70.0	8
12-way	MMD12	97.0	83.0	10
14-way	MMD14	112.0	99.0	12



All ports M8x1

All dimensions are in millimetres

TYPICAL INSTALLATION EXAMPLE



PDU

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LUBEPLUS ‘E’ Centralised Lubrication System
Multi-Industry Applications

Interlube Systems Ltd - maximising industrial performance world-wide...

Issue 1

ORDERING METHOD

Before selecting the model number it will be necessary to decide the mains operating voltage, the output required and the free delivery cycle time, referring to the list of model numbers.

Example shown is 2 litre reservoir, 115/230 V 50/60 Hz. operating voltage with a 2 minute lubrication cycle, with an adjustable lubricant output of 7.5 to 75ml/hour.

LF 2 5 02

Reservoir Capacity	
1	0.5 litre
2	2 litre
5	1 litre

Operating Voltage	
5	115/230V. 50/60Hz
6	115/230V. 60Hz

Cycle Time	
02	2 minutes
05	5 minutes
10	10 minutes
20	20 minutes
30	30 minutes
60	60 minutes

Note:
Motors are dual voltage 115/230V 50/60Hz

24 V DC versions available on request.

PUMP OUTPUTS PER HOUR

CYCLE TIME	OUTPUT - CCs
2 minutes	7.5 to 75
5 minutes	3.0 to 30
10 minutes	1.5 to 15
20 minutes	0.75 to 7.5
30 minutes	0.5 to 5.0
60 minutes	0.25 to 2.5

SPARES

LF/SP1 - Filter Housing Including Inlet and Outlet Check Valves

MOTOR/GEARBOX SPARES

PUMP NO.	MOTOR/GEARBOX PART
LFx502	83338-210
LFx602	83338-220
LFx505	83338-211
LFx605	83338-221
LFx510	83338-212
LFx610	83338-222
LFx520	83338-213
LFx620	83338-223
LFx530	83338-215
LFx630	83338-225
LFx560	83338-214
LFx660	83338-224

RESERVOIRS

1/2 LITRE - RES 1
1 LITRE - RES 2
2 LITRE - RES 3

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ISF114 02-03-07

technical specifications

LUBEPLUS E - ELECTRICALLY OPERATED SINGLE LINE METERED SYSTEM

Automatic centralised lubrication systems are generally recognised by both designers and users as being superior to manual methods. Regular planned lubrication reduces maintenance costs and extends machine life, and can also improve machine performance. Under lubrication can cause a serious failing-off in performance, either in the throughput quantity or poor quality output. When prolonged under-lubrication occurs on a manually lubricated machine, a missed bearing could lead to an expensive shutdown due to a seized or failed bearing. The financial penalty can be heavy, not only for replacement parts but more especially in the resulting downtime and loss of production.

Lubeplus 'E' has been designed as a compact cyclic system, to meet the lubrication requirements of todays sophisticated machinery.

Lubeplus 'E' combines Interlube's extensive knowledge of industrial lubrication requirements with modern production technology, to provide an off-the-shelf lubrication system, covering a wide range of lubricants and applications.

Lubeplus 'E' has been manufactured using the highest engineering standards to give trouble free continuous and automatic operation.

2 Litre Capacity Pump

OPERATION

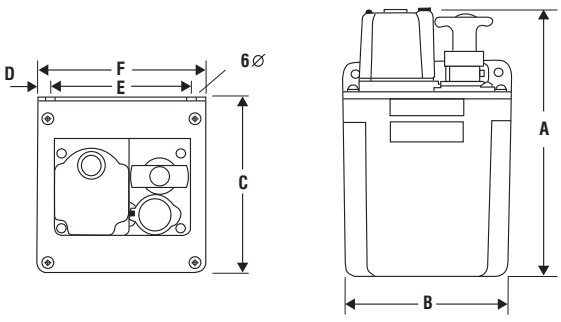
The pump is a compact (adjustable discharge) self-contained, electrically operated automatic lubricator complete with integral float switch. The pump operating lever mechanism is driven by a continuous running electric motor which operates a spring loaded discharge piston at various set time intervals (see cycle times). When the lever arm mechanism reaches the maximum point of travel the piston is released and discharges a preset volume of lubricant into the system. Discharge control is obtained by varying the effective output stroke of the piston, which is externally adjustable between 0.25ml and 2.5ml. With different combinations of motor/gearbox it is possible to obtain outputs of 0.25ml to 75ml per hour.

MANUAL PRIMING FEATURE

The pump is also fitted with a "priming handle" connected to the discharge piston which can be used to manually operate the system after completing the installation or at intervals when the machine has been inoperative for a period of time.

A patented 'lost motion' mechanism obviates restriction of the upward stroke of the piston should the handle be inadvertently depressed during operation.

DIMENSIONS



Dimension	Size		
	1/2 LTR	1LTR	2LTR
A	162	165	222
B	113	131	136
C	85	120	151
D	9	9	10
E	98	118	122
F	116	136	142

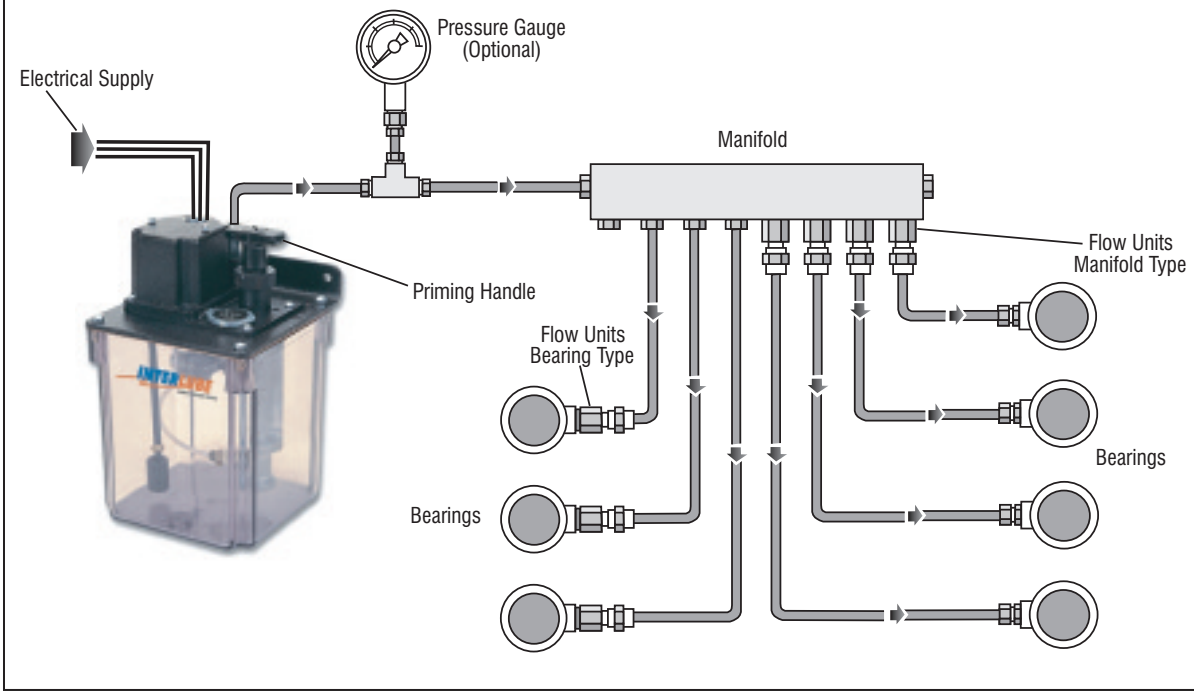
CONDITION MONITORING

Warning of pressure failure can be achieved by installing a pressure switch in the system which can be interfaced with the general machine control. The integral float switch monitors low level lubricant in the transparent reservoir. Typically Lubeplus 'E' systems are capable of serving up to 15-20 lubrication points depending on their size and usage.

TECHNICAL DATA

Recommended Lubricants	10-1800 Centistokes oil
Output Volume	0.25ml-75ml/hour (over complete range)
Output Stroke	0.25ml - 2.5ml adjustable
Operating Pressure	4 bar nominal
Operating Voltages	115/230V 50/60 Hz (24 V DC available upon request)
Power Rating	4 VA
Level Switch	Supplied Normally Closed Special order for Normally Open Contact Capacity watts - 50W Max
Rating	Volts - 150 VAC/200 VDC Max Amps - 200 m A Max
Reservoir capacity	0.5, 1.0 & 2.0 litre
Output Connection	1/8 BSP with compression fitting for 4mm O/D tube
Electrical Connection	M20 x 1.5 entry

TYPICAL INSTALLATION



INTERLUBE
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ILS_KP_001_EN1

KEG PUMP

Stronger. **Commitment.** Stronger. **Value.** Stronger. **Worldwide.** Stronger. **Together.** | **Stronger.** By Design.

KEG PUMP

Versatile range of Interlube electric grease pumps for industrial & off road applications

The KP keg pump is available to suit a range of Keg sizes and has multi functional controller in built for different types of system applications.

KP Grease Pump

- 24V dc
- 102 grams per min ouput
- 350 Bar maximum output pressure
- Supplied with or without controller
- To suit keg or (pail sizes)
  12.5 (35lb)
  20kg
  50kg (120lb)
  180kg (400lb)

Multi-Functional Pump

- Progressive systems
- Automatic systems with manual hose reel back up facility
- Injector systems
- Dual line systems
- Grease spray systems

INTERLUBE A TIMKEN Brand

KP1300 Pump with no Controller

The KP1300 pump is supplied with no controller. This pump head and relevant down tube assembly kit can be used to pump grease directly from kegs of grease.

The pump can be connected to a seperate controller on the machine or switched on/off manually as required.

- Operating temp range: -20 to +40 degrees C
- Pump outlet size: 1/4 " BSP(F)
- Pump return line: 1/4 " BSP(F)
- Motor: 24 volt dc (10A maximum running current)
- IP Rating: 56

KP1100 Standard Progressive System

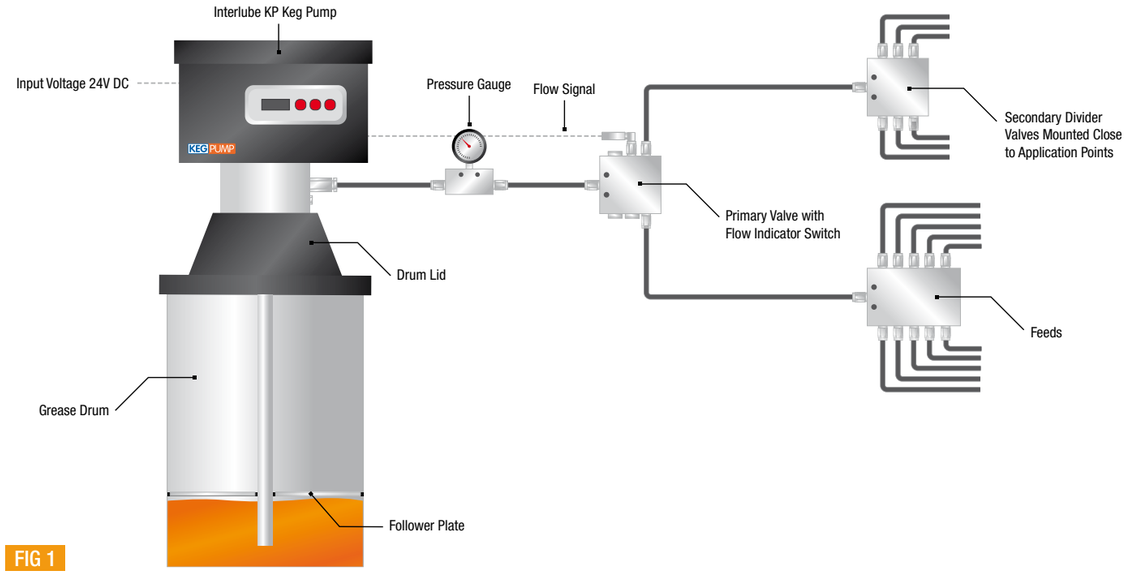


FIG 1

Standard Mode - KP1100

The pump run time is adjustable between 1 minutes and 3 minutes in 10 second steps with the delay time adjustable between 15 minutes and 24 hours 45 minutes in 15 minute steps. The controller monitors the operation of the primary valve and should the controller not get a signal from the valve within 30-45 seconds the pump will show an alarm and shut down.

KP1200 - Hose Reel & Progressive Systems

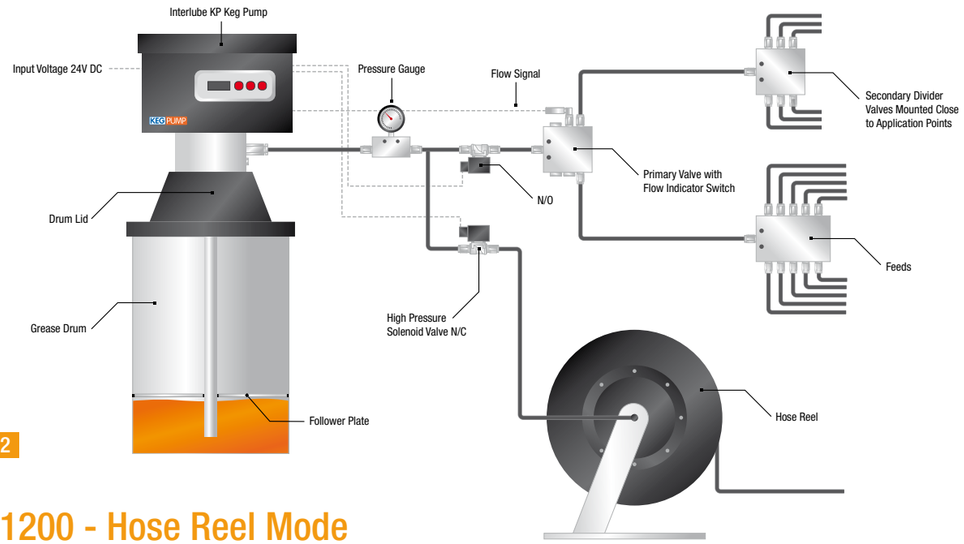


FIG 2

KP1200 - Hose Reel Mode

This is similar to the standard mode with the addition of the hose reel function, which when activated diverts the output from the pump to a hydraulic hose reel and runs the pump for 10 minutes before dropping back into normal run mode and re directing the output back to the lubrication system.

KP1200 - Injector System

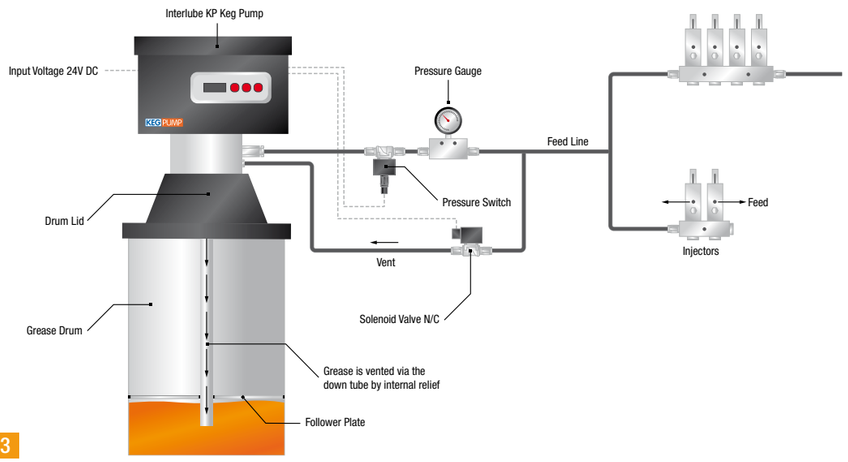


FIG 3

KP1200 - Injector Mode

The pump is designed to operate grease injectors and the run time is controlled via a pressure switch fitted to the system and the delay time is adjustable between 15 minutes and 24 hours 45 minutes in 15 steps.

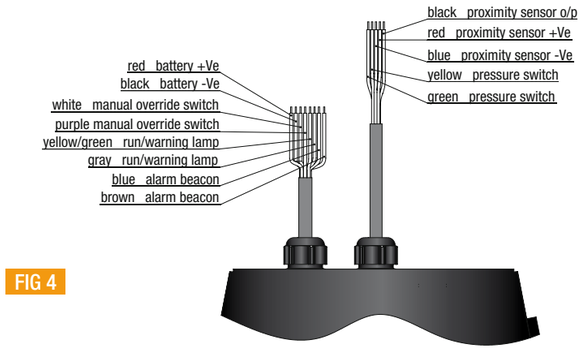


FIG 4

KP1100 -
Pump for Standard Progressive System

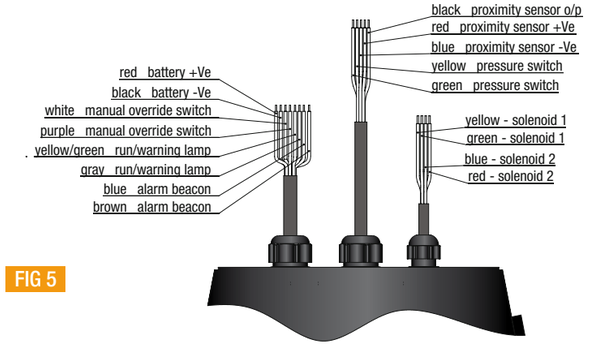


FIG 5

KP1200 -
Pump for Hose Reel and Progressive System

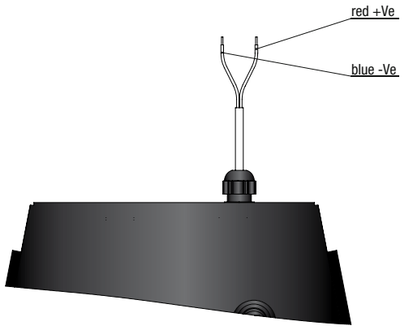


FIG 6

KP1300 -
Pump with no internal controller

Electrical Data

- 24v dc
- Running current Max 10A
- 250 Watts

Programming of Keg Pump

1. Press the **'Select'** and **'Enter'** buttons together for 5 seconds, this puts the pump into programming mode
Display will show **'S1'** (this sets the operating mode)

FIG 7

2. Press the **'Enter'** button to set this parameter
Display will show **'Std'** for Standard Mode.

FIG 8

Press the **'Enter'** button to accept this mode, press the **'Select'** button to toggle the display to show **'HOS'** for Hose Reel Mode. Pressing **'Enter'** will acept this mode, pressing **'Select'** Button again will toggle the display to show **'InJ'** for Injector Mode. Again pressing **'Enter'** button will accept this more and pressing **'Select'** Button will toggle the display again to show **'Std'** for Standard Mode.
Display will show **'S2'** (This set sets the Run Time)

FIG 9

3. Press the **'Enter'** button to set this parameter
Display will show **'60'** this is equivalent to a run time of 60 seconds.

FIG 10

Press the **'Enter'** button to accept this setting, pressing the **'Select'** button will increment the time in 10 second steps up to a maximum of 180 seconds, the time will then reset to 60 seconds. When the required run time is displayed press the **'Enter'** button to accept the time displayed.
Display will show **'S3'** (This sets the Delay Time)

FIG 11

4. Press the **'Enter'** button to set this parameter
Display will show **'00H'** this is equivalent to the dwell time in hours.

FIG 12

Press the **'Enter'** button to accept this setting, pressing the **'Select'** button will increment the time in 1 hour steps, when the required time in hours is shown press the **'Enter'** button to accept this value.
Display will show **'.15'** this is equivalent to the dwell time in minutes.

FIG 13

Pressing the **'Select'** button will increment the time displayed in 15 minute steps (15, 30, 45 & 0)

If dwell time in hours set at 0 hours then dwell time of 0 minutes is not allowed.
Display will show **'PC'**

FIG 14

This indicates that the programming is complete the pump will drop back into "Run" mode and a run time sequence.

INTERLUBE A TIMKEN Brand

Pump Head

Part No.	Maximum Output	Maximum Pressure	Power	Controller
KP1100	102 Grams per min	300 bar	24v dc	Yes
KP1200	102 Grams per min	300 bar	24v dc	Yes
KP1300	102 Grams per min	300 bar	24v dc	No

Internal relief valve factory set at 300 bar

Kits

KP12.5 / KP35 KIT

KP20 KIT

KP50 / KP120 KIT

KP180 / KP400 KIT

			Dimensions		
Part No.	Euro Size	USA Size	Follower Plate	Drum Lids (Diameter)	Extension Tube Overall Length
KP12.5	12.5 KG	35lb	298-260mm	310mm	332mm
KP20	20 KG	-	340-300mm	310mm	332mm
KP35	-	35lb	298-260mm	310mm	332mm
KP50	50 KG	-	370-330mm	400mm	560mm
KP180	180 KG	-	590-550mm	609mm	770mm
KP120	-	120lb	370-330mm	400mm	560mm
KP400	-	400lb	590-550mm	609mm	740mm

Outlet Fittings

Part No.	Description
25783-400	Pressure Gauge
ABT-1/4	¼"BSP Anchor block
CF6-1-1/4	6mm OD x ¼"BSPT Male stud connector straight
CF6-2-1/4	6mm OD x ¼"BSPT Male stud connector Elbow

Solenoid Valve

Part No.	Description
23781-350	24v dc Solenoid Valve N/O
23781-351	24v dc Solenoid Valve N/C

Pressure Switch

Part No.	Description
23773-100	Fully Adjustable Pressure Switch

Divider Value

Part No.	Description
SPL-06K	6-Way Divider Value with Indicator Pin
SPL-08K	8-Way Divider Value with Indicator Pin
SPL-10K	10-Way Divider Value with Indicator Pin
SPL-12K	12-Way Divider Value with Indicator Pin
SPL-PA	Proximity Adapter
SPL-PS	Proximity Switch
SPL-CP10	Divider Valve Plug
SPL-CV-LL	Divider Valve CHQ Valve
SPL-DL-6-LL	Check Valve Nut
SPL-DL-6-LL	Check Valve Olive

INTERLUBE A TIMKEN Brand

Standard Set Up

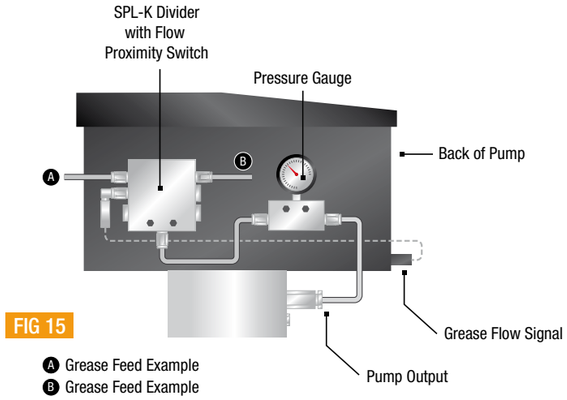


FIG 15

A Grease Feed Example
B Grease Feed Example

Hose Reel & Progressive Set Up

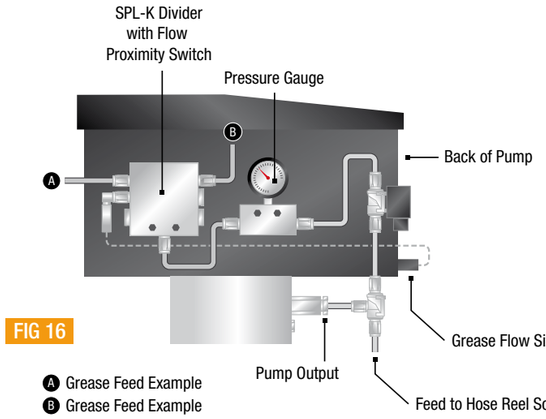
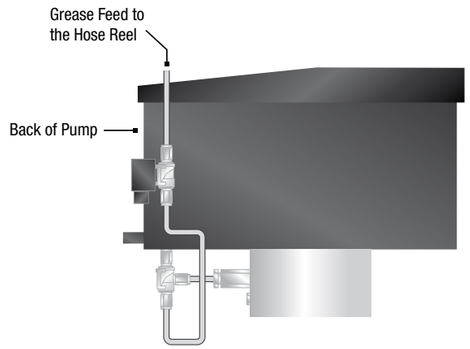


FIG 16

A Grease Feed Example
B Grease Feed Example



Injector Set Up

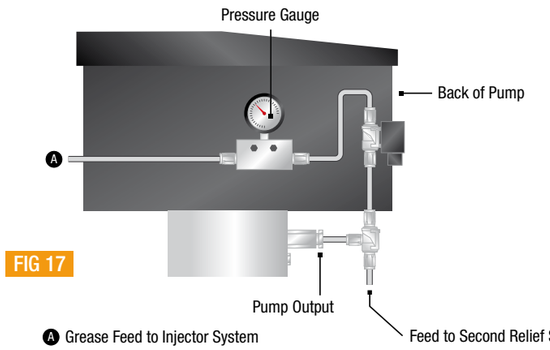
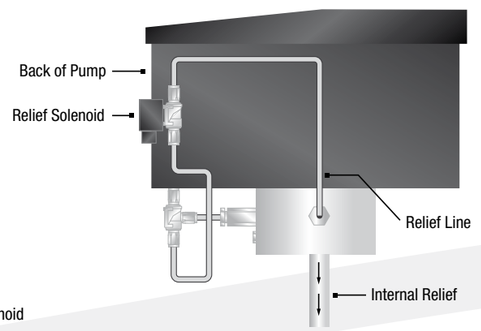


FIG 17

A Grease Feed to Injector System



Main Feed Line Tube (Braided)

Part No.	Description	Burst Pressure
TML-8.6-2.3F	8.6mm x o.d 2.3mm Wall Tube Grease Filled	400 bar
TML-8.6-2.3U	8.6mm x o.d 2.3mm Wall Tube Unfilled	400 bar
TML-12.0-2.5F	12mm x o.d 2.3mm Wall Tube Grease Filled	400 bar
TML-12.0-2.5U	12mm x o.d 2.3mm Wall Tube Unfilled	400 bar

Secondary Feed Line Tube (Polyamide Nylon)

Part No.	Description	Burst Pressure
TSL-6.0-1.5F	6mm o.d x 1.5mm Wall Grease Filled	250 bar
TSL-6.0-1.5U	6mm o.d x 1.5mm Wall Grease Unfilled	250 bar

Re-usable Studs (Inserts) and Sleeves (Ferrules) for Main Line Braided Tube 8.6mm+

Part No.	Description	Tube
TML-8.6-FE	Re-usable Sleeve	8.6mm ø
TML-8.6-ST	Re-usable Stud - 6mm o.d	8.6mm ø
TML-8.6-ST-90	Re-usable Stud - 6mm o.d (90°)	8.6mm ø
TML-12-0-FE	Re-usable Sleeve	12mm ø
TML-12.0-ST	Re-usable Stud - 6mm o.d	12mm ø

Straight Compression Fittings

Part No.	Description
CF6-1-6	6mm o.d x M6x1 Male Connector
CF6-1-8	6mm o.d x M8x1 Male Connector
CF6-1-10	6mm o.d x M10x1 Male Connector
CF6-1-1/4	6mm o.d x 1/4" BSPT Male Connector
CF6-1-1/8	6mm o.d x 1/8" BSPT Male Connector

Elbow Compression Fittings

Part No.	Description
CF6-2-6	6mm o.d x M6x1 Male Connector
CF6-2-8	6mm o.d x M8x1 Male Connector
CF6-2-10	6mm o.d x M10x1 Male Connector
CF6-2-1/8	6mm o.d x 1/8" BSPT Male Connector
CF6-2-1/4	6mm o.d x 1/4" BSPT Male Connector

INTERLUBE A TIMKEN Brand

SELECT pump for specific application

KP1100 – Standard Progressive system with controls

KP1200 – Hose Reel & Progressive systems, Injector systems with controls

KP1300 – No controller

SELECT grease keg kit

KP12.5 – For 12.5kg grease keg

KP12.5 – For 35lb USA keg

KP20 – For 20kg keg

KP50 – For 50kg keg

KP180 – For 180kg keg

KP120 – For 120lb USA keg

KP400 – For 400lb USA keg

CONTACT US - Contact details can be found on the back cover

INTERLUBE
A TIMKEN Brand

HDI PUMP

SERVICE & MAINTENANCE MANUAL

SERVICE and MAINTENANCE MANUAL for INTERLUBE LUBRICATION SYSTEM

Issue 1

SAFETY

As with all equipment, all due care must be used when servicing the HDI lubrication system.

Throughout this manual there will be information provided which requires special attention. This information will be displayed under the headings of **WARNING**, **CAUTION**, or **NOTE**.

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TUV UKQA GB 00195 UKAS MANAGEMENT SYSTEMS 005

INTERLUBE A TIMKEN Brand

1. INTRODUCTION

This manual gives instructions for operating, maintaining, and servicing the Interlube HDI Pump & Distribution systems. Because of the importance of providing the correct lubricant amount to the moving parts of the equipment, read this manual to become familiar with your HDI pump and system.

Review and follow the procedures given before attempting maintenance or service. Illustrations are provided to aid in disassembly and reassembly.

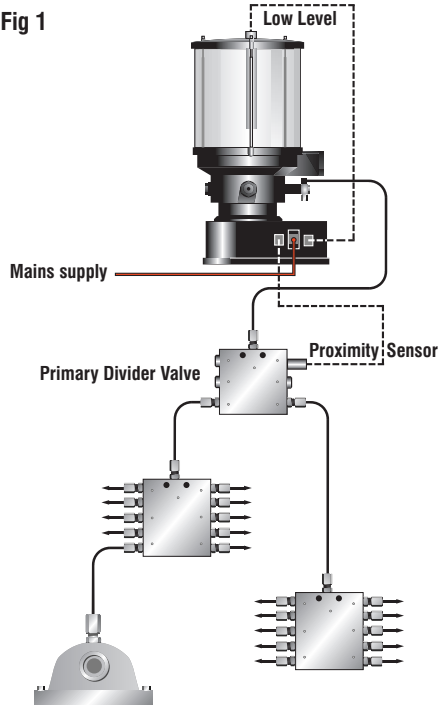
If there are any questions not answered by this manual, contact Interlube Systems.

2. GENERAL DESCRIPTION

A typical HDI lubrication system includes the following components (see fig 1):

- Pump with integral controls and reservoir
- Pumping Units
- Divider Valves
- Tubing to the lubrication points
- Fittings at the lubrication points

Fig 1



Pumps are available with 3, 6, 9 and 15 litre reservoirs. Fig 2 shows 6 litre version. There is a specific version for the USA with push/pull style pumping units

Fig 2

The HDI pumps are electrically operated (12/24v DC) piston pumps able to accept up to 3 pumping units.

These pumping units (either fixed or adjustable output,fixed pumping elements are fitted as standard) feed lubricant to the primary divider valve which in turn feeds (where applicable) further secondary divider valves. The bearings on the machine/plant are connected to the secondary divider valves by hose or tube, bearings can also be fed direct from the pump.

Ordering Method

						1 12V D.C.	
						2 24V D.C.	
HDI							A USA VERSION
Reservoir size (ltr)	Options	Pumping Units					P Moulded Reservoir 3 litre only
3	0 Base Pump	0 No pumping unit fitted					
6	1 End of Line	1 1- off fitted in position 1					
9	2 Low level	2 2- off fitted in position 1 & 2					
15	3 End of line + Low Level	3 3- off fitted in position 1,2 & 3					
	4 No controls						

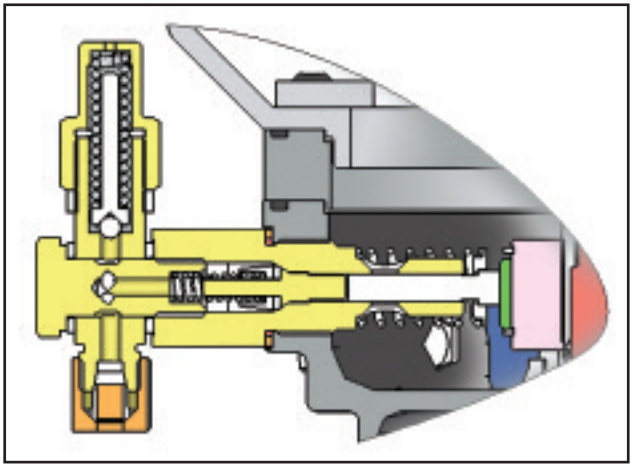
All pumps have dual fill options, quick fill and grease nipple.

3. COMPONENT OPERATION

3.1 HDI Pump Outputs

All HDI Pumps are supplied with one pump element as standard. Up to three pump elements can be fitted into one HDI pump

Fig 3



Pumping Unit Spares

Pump Elements Standard Pump

Spring Return
Element
PU 300-350
PU 400-350

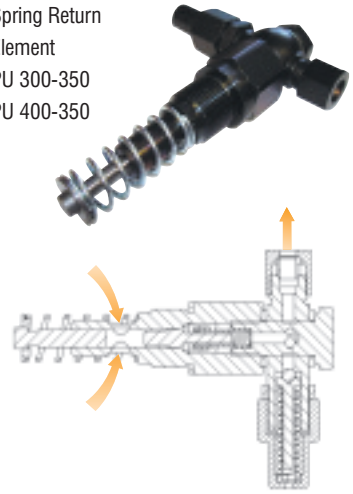
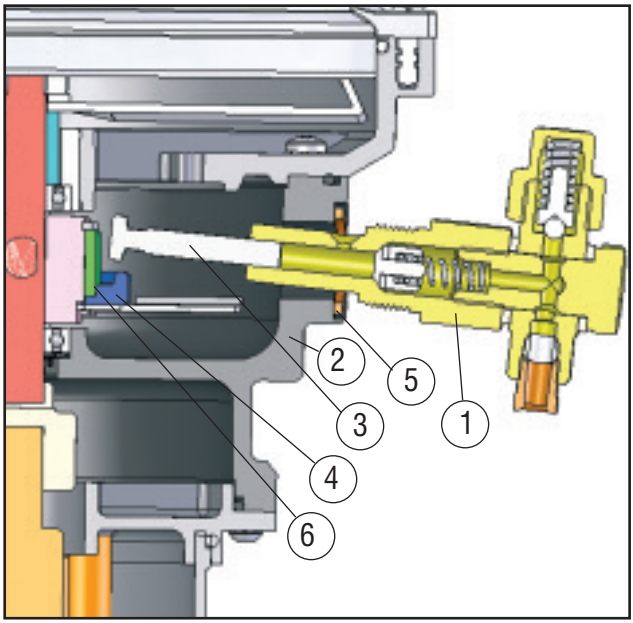
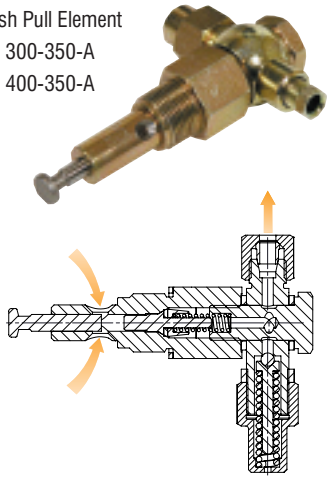


Fig 4



Pump Elements - USA Pumps

Push Pull Element
PU 300-350-A
PU 400-350-A



Operation

The electric motor drives an eccentric cam during the pumps operating time.

The pump element piston sucks the grease from the reservoir and then dispenses an accurate precise amount of lubricant to the connected metering device.

Pump Output

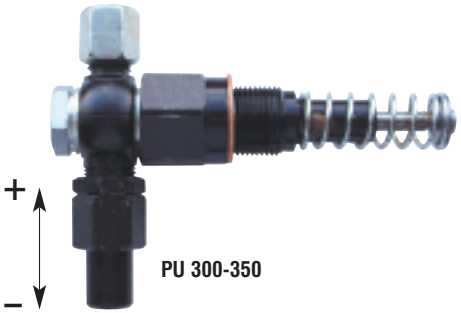
Standard HDI pump operates at 19/23revs/min					
Part No	**Max output/min pressure (BAR/PSI)**	**Output/min (cc)**	**Volume (cu in)**	**Pump Element Outlet Size**	**Relief Valve Setting 350 BAR 5145 PSI**
PU 300-350	400 (5880)	3.2	(0.20)	6mm O.D	
PU 300-350-A	400 (5880)	3.2-1.4	(0.20-0.08)	6mm O.D	
PU 400-350	400 (5880)	3.2	(0.20)	6mm O,D	
PU 400-350-A	400 (5880)	3.2- 1.4	(0.20-0.08)	6mm O.D	
Operation conditions +40C° to - 30C°					

The grease output figures were based on NLGI 2 Grease at ambient conditions, the output volume may vary depending on lubricant specification and temperature

(USA Version) Fig 4

USA Version

3.3 Relief Valve Settings



PU 300-350

Pumping unit replacement

Using a 27mm AF spanner loosen pumping unit body (1) and unscrew until the thread is clear of the pump body (2). Tilt the pumping unit body (1) to lift the piston (3) clear of the cam ring (4) and then remove. Ensure the piston does not remain in the pump body.

To replace unit pull out the piston (3) from the body (1) of the new pumping unit to the end of it's stroke. Ensure the copper washer (5) is in position and insert the pumping unit body (1) into the pump body (2). This should be done with the pumping unit body (1) tilted upwards. When the piston (3) touches the cam ring (6) the pumping unit body (1) should be moved to a horizontal position. This should now seat the piston (3) into the cam ring (4). Tighten the pumping unit body (1) using the 27mm AF spanner.

The relief valve is a fixture of the pump elements, both spring return and push pull type.
The relief valves are factory set to 350 Bar to protect the pump from damage should a blockage occur in the system.
The relief valve can be adjusted manually to vent at lower pressure. this can be adjusted on-site using a standard spanner.

4. WIRING

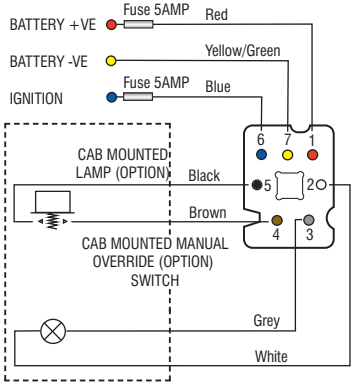
Fig 5

Pump supplied with power/push button plug with 10m of 7 core cable

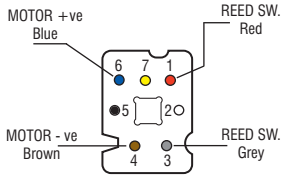
Note:
Terminal 5 is connected to the ignition of the vehicle or mobile plant. If terminal 1 is connected to the Battery + then the pump will operate without the ignition on.

4.1 WIRING DETAILS

Wiring Diagram for HDI Pump (With Controls)



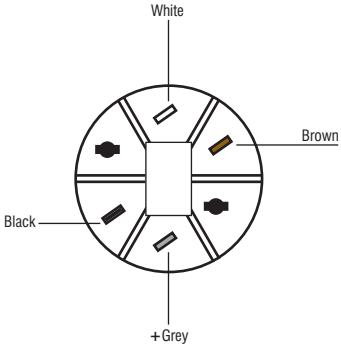
4.2 Wiring Diagram for HDI (Without Controls)



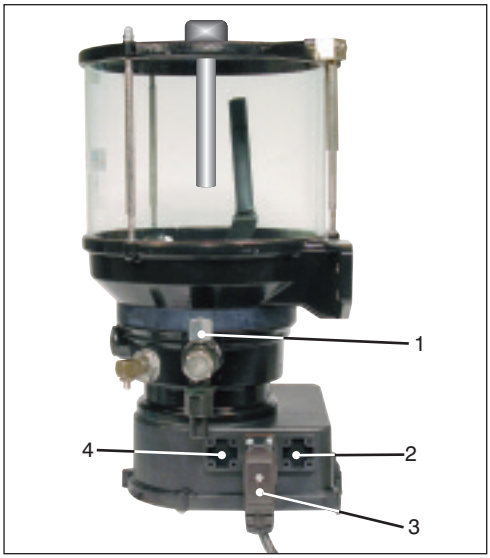
Push Button

12V HDI - 36070-5
24V HDI - 36070-6

Push Button Wiring diagram

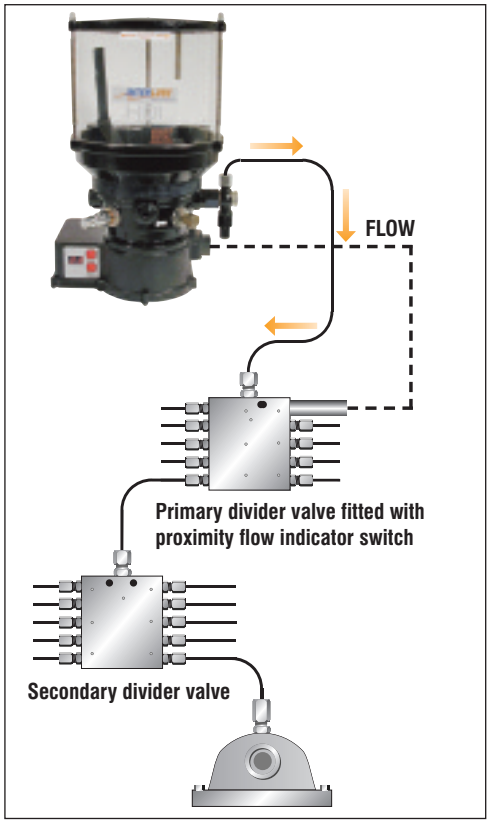


4.3. ALARM FUNCTIONS



1. **Pump elements (see page 4 & 5)**
2. **Low level connection (not supplied as standard on base models)**
3. **Power cable (30ft) and 7 pin connector supplied as standard with all models (see details on page 8 and wiring diagram on page 6)**
4. **End of line or primary flow proximity sensor alarm connection (not supplied as standard on base models)**

Flow Alarm



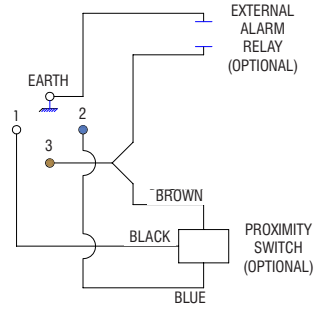
4.4. Remote Alarm Functions

The HDI Pump can be supplied with or without an internal controller (PCB).

The pump without control facility is fitted with an internal reed switch; this can be used to monitor the pumps internal cam rotation.

The pump with control facility has an in-built alarm function, which can be connected to an external alarm relay as an option.
In general the HDI is connected to progressive divider valves as illustrated.
The progressive divider valves are designed to feed a positive set amount of grease to each connected point in turn, without missing a point out. The primary divider valve is fitted with a proximity flow indicator switch, which will signal positive flow back to the HDI PCB. Should the pump operate and the PCB not receive a flow signal the pump would alarm. This alarm signal could be connected to an external remote audio or visual alarm on the machine or alternatively connected to the machines PLC.The PLC could be programmed to stop the machine from operating should the lubrication system fail to operate correctly.

Wiring for Alarm Switch



4.5. Low Level Sensors

These highly reliable capacitive sensors are fully sealed and encapsulated to operate in the most arduous conditions with NLGI 2 grease.

Fig 6 shows pictorial view and Fig 7 the version for a 3 litre pump. (Extensions are used for larger capacity reservoirs).

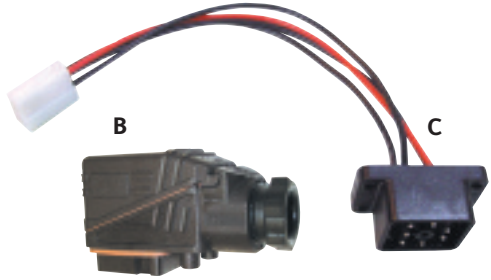
Low Level Kit

Part No	Description
HDI/SP9/3P	3 Ltr Moulded Kit
HDI/SP9/6	6 KG Standard Kit
HDI/SP9/9	9 KG Standard Kit
HDI/SP9/15	15 KG Standard Kit

Kit comprises of pump connector, low level and plug

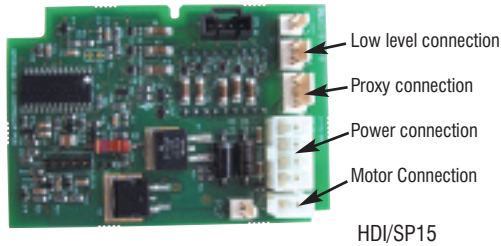
4.6 Proximity sensor Conversion kit

Proximity alarm plug A plus pump plug with internal loom to PCB



Part No	Description
HDI/SP9	Low level External Alarm Facility (B+C)
HDI/SP4	Power/push button plug with 10m cable (A)
HDI/SP8	Proximity alarm plug (B+C)

Control Card 12/24V (HDI/SP15)



HDI/SP15

5. HDI PROGRAMME SETTING

Programming the HDI Controller

Programming is carried out using the select and enter buttons as shown in the picture.

The setting details are shown on the digital display at each stage.

Pump Run Time Options
With Time “ON” Mode (t) from 1 min to 99 mins.
Pump Delay Time
Variable from 1 min to 99 hours 59 mins.

Time "ON"/Time "OFF" mode

Press select and enter buttons together for 5 seconds to enter programme mode.

1) Display will show "S1" (Run time) Press enter button then select button to set run time in minutes from "01" to "99" (for example 05 gives a run time of 5 mins). Will provide run time from 1 min to 99 mins Press enter to accept

2) Display will show "S2" (Delay time) Press enter button, for example to set a delay time of 1 hour 20 mins, press select button to display "OI " then enter to accept, then select button to display "20". Press enter to accept.

3) Display will show "S3" (End of line switch setting) Press enter button, display shows "EL" press select to choose between a) When "EL" is flashing end of line sensing is "OFF" or b) When "EL" is continuously lit end of line sensing is "ON" Press enter to accept. If end of line switch is "ON" next display will show "OI Select between "OI " to "10" for the number of cycles of the lubrication system Press enter to accept.

4) Display will show "S4" (low level option) Press enter button, display shows "LL" press select to choose between a) When "LL" is flashing low level sensing is "OFF" or b) When "LL" is continuously lit low level sensing is "ON" Press enter to accept

5) Display shows "PC" (Programming complete) After 10 seconds return to run mode.

CHANGING PROGRAMME

Press select and enter buttons together for 5 Secs to enter programming mode

1) Display will show S1

2) Press select button to choose the setting you want to change S2,S3 etc then press enter

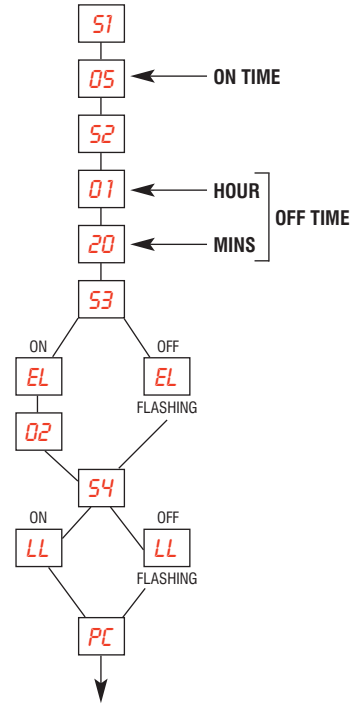
3) After making the change press enter to accept

4) Press select button until display shows ‘PC’ “Programme complete” PC

Notes: -

To view current programmed settings
a) press the "select" button for 10 seconds this will activate the programme view mode displaying the setting of each step for 3 seconds. After showing "PC" for 3 seconds the pump will return to run mode.

Low level warning
b) If a low level alarm is triggered the pump will continue operating and any alarm warnings will continue until the reservoir is re-filled.



PROGRAMMED CYCLE

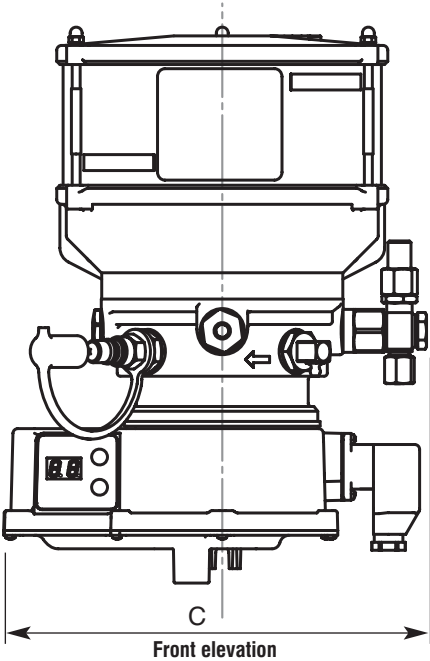
To prime the system
c) set the delay time to "00" hours and "00" minutes. Please note this time setting is not intended as an operating mode.

Note:-

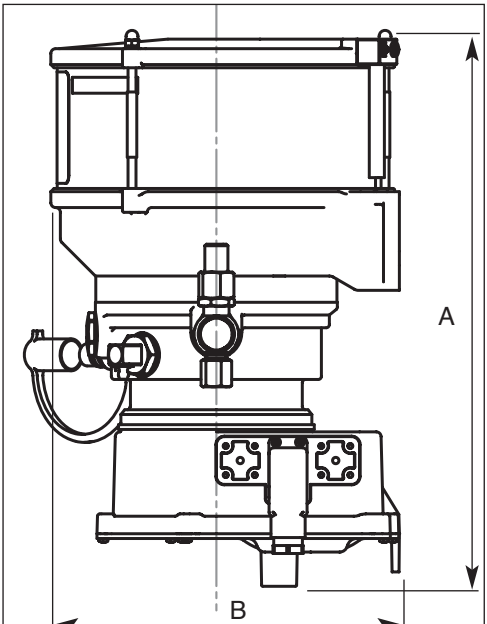
The manual override button on the pump can be operated at any time without the need for the ignition circuit to be on, a positive safety benefit. Operating the manual override will start one cycle of the pre-set run time.

6. PUMP DIMENSIONS

Diagram shows a standard HDI pump



Front elevation



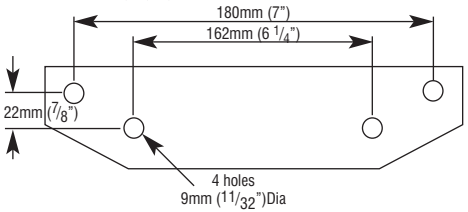
Side elevation

Pump Dimensions

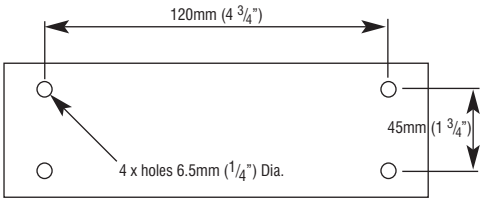
Reservoir Size	A		B		C	
3 Ltr Moulded	340mm	13 1/2"	260mm	10"	270mm	10 1/2"
3 Ltr Standard	300mm	12"	260mm	10"	270mm	10 1/2"
6 Ltr Standard	400mm	16"	260mm	10"	270mm	10 1/2"
9 Ltr Standard	490mm	19 1/2"	260mm	10"	270mm	10 1/2"
15 Ltr Standard	700mm	27 1/2"	260mm	10"	270mm	10 1/2"

Mounting Positions of the HDI Pump

Standard HDI 3, 6, 9, 15 Ltr



HDI 3Ltr (Moulded Reservoir Model)



7. TECHNICAL DATA

7.1. Pump with integral controls

- Available with 3, 6, 9 or 15 litre reservoirs
- Supplied in either 12 or 24v DC. Output speed 19/23 RPM.
  - 12v DC max running current 5A
  - 24v DC max running current 5A
  - Start up current 10A
- PCB dual voltage & EMC compliant
- Built in memory, recommencing either run or delay cycle on power up.
- Transient protection to ISO 7637 Road Vehicles.
- Dual LED digital display used for programming & run information
- IP65 protected
- Uses lubricants from SAE 80 oil up to & including NLGI 2 Grease.
- Operating temperature +40ºC to - 30ºC (using low temperature grease)
- 2 fill options - quick fill or grease nipple
- Can be used with divider valves
- Maximum of 3 pumping units per pump.
- Low level sensor an option

8. PUMP FILLING

HDI FILLING METHODS

HDI Dual Fill

All HDI models are supplied with dual fill

(A) standard grease nipple use air operated grease pump to fill the reservoir.

(B) quick release coupling use a hand operated volume bucket pump.

(C) Or alternatively fit the pump with a quick fill adapter and use a quick fill gun to fill the reservoirs.

Quick Fill Gun

Hand operated quick fill gun

Part No.	Description
HDI - 57549-1	Quick fill gun
HDI - 36763-1	Straight adapter for the pump
HDI - 36763-2	90°adapter

Bucket Pump

Hand operated bulk fill pump complete with:
1.5m hose, female quick release coupling to fit directly onto the Interlube quick connect fitting fitted to the pump. Ideal for use with NLGI 1 or 2 greases.

Part No	Description
IL-108501	European Pump (12.5-18 KG), cover 265mm to 310mm
IL-108502	USA Pump (35lb) cover 285mm to 330mm
IL-417001	Grease follower plate 260mm to 298mm
IL-417003	Grease follower plate 300mm to 340mm

9. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY
A. All lubrication points appear dry.	1. Empty reservoir 2. Inoperative pump 3. Time between lube cycle is too long. 4. Reservoir has been filled with an unsuitable lubricant. 5. Inoperative Pumping Unit 6. Pumping unit not "sitting" in cam ring (USA Version) 7. Main Pressure Line damaged/broken. 8. Reservoir vent blocked from over filling.	1. Refill the reservoir, using the correct lubricant. 2. Refer to **PROBLEM** "E". 3. Adjust pump **CYCLE TIME** setting. 4. Remove the lubricant and replace with correct grade of lubricant. 5. Replace Pumping Unit 6. Remove & refit correctly. 7. Find breakage & replace with new hose. 8. Clear vent and only fill to max level.
B. One or more lubrication point appears dry while others receive sufficient lubrication.	1. Broken or severed secondary grease lines. 2. Incorrect specification of divider valves.	1. Determine cause, and if necessary, re-route. 3. Re-configure divider valve specification to higher output.
C. All lubrication points are over-lubricated.	1. Incorrect setting of "on-time" or "Delay Time".	1. Reduce "On Time" or increase "Delay Time", or both.
D. One or more lubrication points are over-lubricated.	1. Incorrect specification of divider valves.	1. Re-configure divider valve specification to lower output.
E. Inoperative pump.	1. No input power. 2. Fuse is blown. 3. Loose wire connection inside the pump. 4. Defective PCB. 5. Defective Motor.	1. Check for power to the pump. and controller. 2. Check in-line fuse. Replace if necessary. 3. Check all wires and connections in the pump. 4. Replace PCB. 5. Replace Motor.
F. Inoperative Pumping Unit.	1. Pumping Unit not "sitting" in cam ring. (USA Version) 2. Inoperative Pump 3. No Grease flow	1. See Section 7.5 2. Refer to **PROBLEM** "E". 3. Replace pumping unit
G. Grease flowing from Pumping Unit Relief Valve.	1. One or more lubrication points are blocked, and will not accept grease. 2. Fault in Divider valve assembly.	1. Remove pipe from fitting and flush bearing through with grease gun. 2. Replace the faulty Divider valve

10. SERVICE PROCEDURES

The rugged design and simple construction of the HDI lubrication system assures the operator of a long and trouble free service. If service is necessary use the following procedures to ensure correct replacement of parts.

10.1. Lid Replacement - All models (does not apply to moulded reservoir pumps)

10.1.1. Remove 3 nuts (5) holding lid to tie rods (6)
10.1.2. Remove lid (7) and 'O' ring (8)
10.1.3. Replace with new lid (7) and 'O' ring (8) position on reservoir (3) and tie rods (6) tighten nuts (5)

10.2. Reservoir replacement - (Clear models)

10.2.1. Remove lid as in 7.1
10.2.2. Withdraw reservoir (3) and lower 'O' ring (9)
10.2.3. Clean around area where new reservoir will be fitted. Position 'O' Ring (9) and replace reservoir between tie rods
10.2.4. Replace lid as in 7.1.3.

(3 Litre moulded version)

10.2.5. Remove the 3 screws holding the reservoir in position on the pump body
10.2.6. Remove reservoir and 'O' Ring
10.2.7. Position new 'O' ring on new reservoir
10.2.8. Re-assemble reservoir to pump body ensuring the breather tube is closest to the mounting bracket
10.2.9. Insert & tighten screws to torque 3Nm, be careful not to overtighten screws.

10.3. Paddle Assy Replacement - All models

10.3.1. Remove lid and reservoir as in 7.1 and 7.2
10.3.2. Remove nut (10) and washer (11) then remove paddle (16)
10.3.3. Replace new paddle (12) then washer (11)and nut (10). Tighten to 6.5Nm
10.3.4. Replace Reservoir and lid as in 7.1.3 and 7.2.3

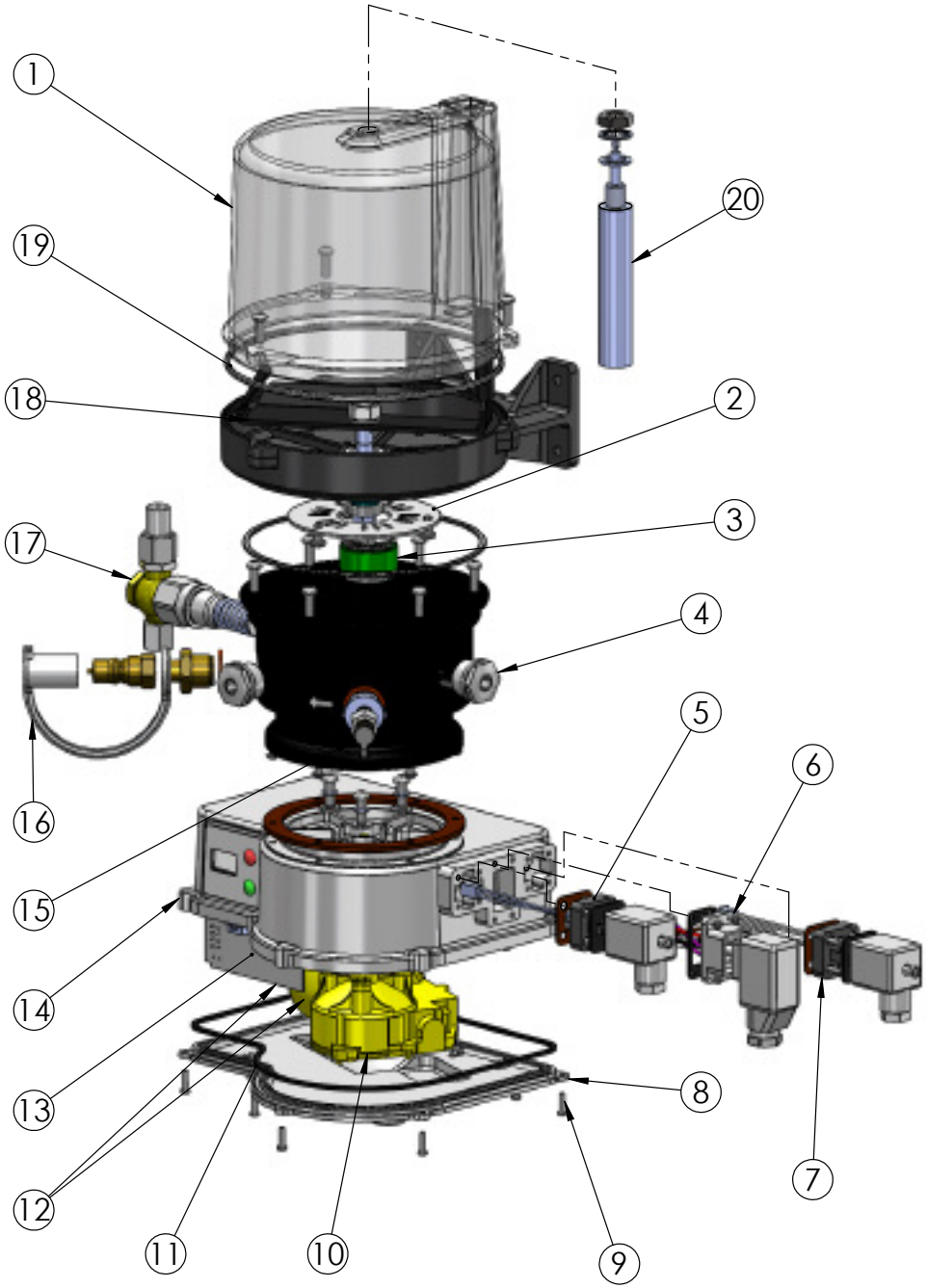
10.4. Replace PCB - All models.

10.4.1. Remove 8 screws (13) securing the bottom cover (4) and 'O' ring (15)
10.4.2. Slide out PCB (18) from housing (19) and remove all the electric connectors
10.4.3. Replace all connectors on new PCB (18) and slide back into housing (19)
10.4.4. Replace cover (14) and 'O' ring (15) securing with 8 screws (13). Tighten to 0.6Nm

10.5 Pumping unit replacement spring return version (Fig 9)

10.5.1. Using a 27mm AF spanner loosen pumping unit body. Remove spring loaded pumping unit. Ensure there is no loose dirt around the pumping unit aperture then screw in the new pumping unit tightening with a 27mm AF spanner.

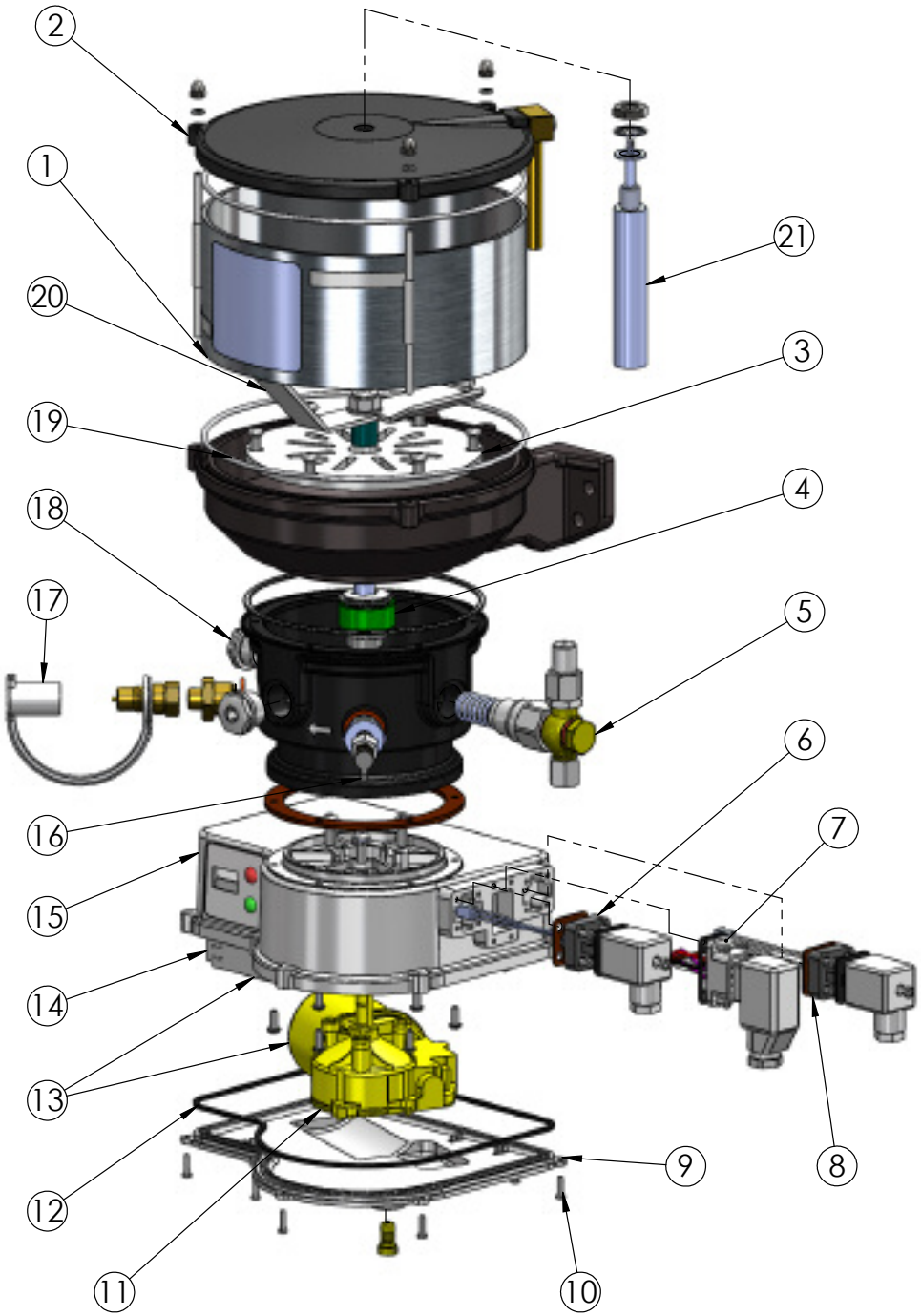
11 Pump - Exploded View 3Ltr Moulded



11.1 Parts List

Item	Part No	Description	QTY	Notes
1	HDI SP7/3P	3 LT Reservoir	1	O Ring (SP10/P) and Screws Incl
2	HDI SP13/P	Restrictor Plate	1	
3	HDI SP4 HDI SP4/A	Cam Assy & Seals	1	Cam for spring return pump element Cam for push-pull pump element
4	HDI SP28	Blanking Plug	2	
5	HDI SP8	Proximity Alarm Plug Conversion Kit with Internal Loom	1	Gaskets, Connector Base, Screws & Din Connector Incl
6	HDI 2P12/12-24	7 Way Connector Assy & PCB Internal Loom 12/24V	1	Gasket, 7 Way Connector, Screws and 7 Pin Hirschmann CNCTR Incl.
7	HDI SP9/3P	Low Level Conversion Kit with Internal Loom + Low Level sensor	1	Gaskets, Connector Base, Screws & Din Connector Incl.
8	HDI SP24	Bottom Cover Assy	1	Screws, Seal & Vent Incl.
9	HDI SP25	Bottom Cover Fixing Screws (BULK)		
10	HDI SP1 HDI SP2	Spare HDI 12V Motor Spare HDI 24V Motor		
11	HDI SP26	Bottom Cover O Ring (BULK)	1	
12	HDI SP14	Motor to PCB Loom	1	
13	HDI SP15	12-24V Standard PCB CNTRL Board	1	
14	HDI SP18 HDI SP19	Housing W/O Controls Housing with Controls	1	Gasket Included
15	HDI SP27	Grease Nipple with Adaptor	1	
16	HDI SP3	Quick Fill Adaptor (MALE)	1	
17	PU300/350 PU300/350/A	Pump Element with PRV (UNIT) 350BAR	1	Spring Return Pump Element Push-Pull Pump Element
18	HDI SP11/3P	Paddle Blade Assy	1	Nut Included
19	HDI SP10P	Reservoir Seal 3LTR Moulded	1	
20	HDI SP5/3P	Spare Low Level Sensor 3LTR	1	Lead, Nut & Washers Incl.
21	HDI SP29	Reed Switch	1	Supplied with no Control Version HDI

12. Pump - Exploded View 3, 6, 9 & 15 Litre Standard

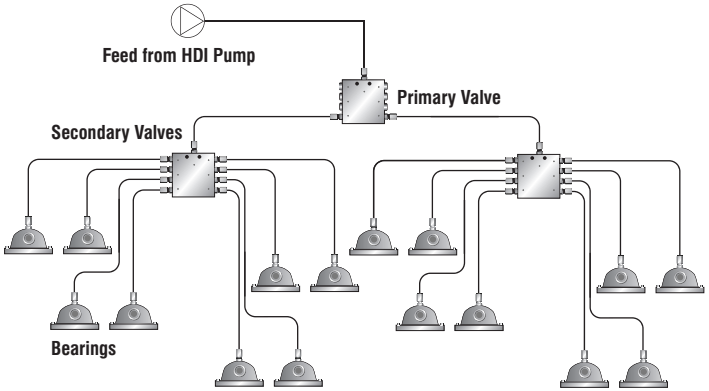


12.1 Parts List

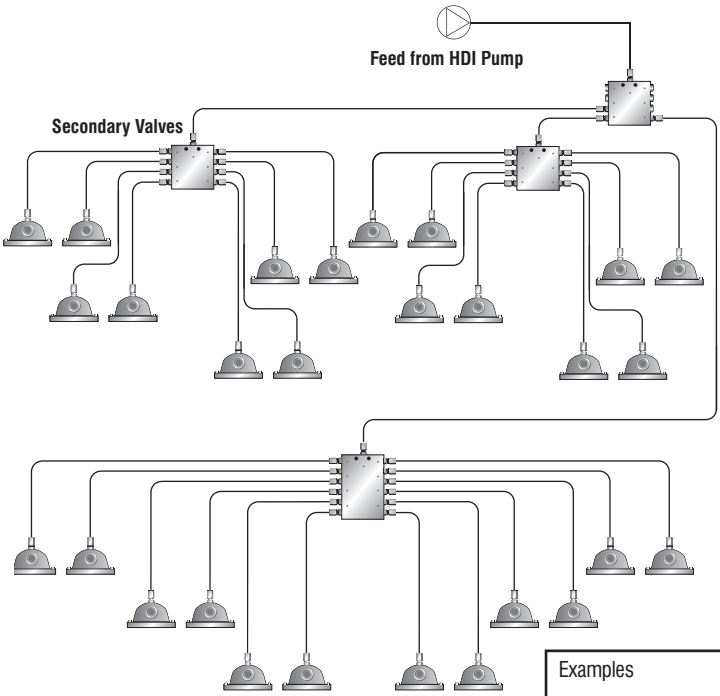
Item	Part No	Description	QTY	Notes
1	HDI SP7/3 HDI SP7/6 HDI SP7/9 HDI SP7/15	3 LT Reservoir 6 LT Reservoir 9 LT Reservoir 15 LT Reservoir	1 1 1 1	Tie Rods, Nuts and O Ring Incl.
2	HDI SP6	Cast Lid Assy with Breather		
3	HDI SP13/C	Internal Plate		
4	HDI SP4 HDI SP4/A	Cam Assy & Seals	1	Seals Incl.
5	PU300/350 PU300/350A	Pump Element with PRV (UNIT) 350 Bar	1	Spring Return Pump Element Push-Pull Pump Element
6	HDI SP8	Proximity Alarm Plug Conversion Kit with Internal Loom	1	Gaskets, Connector Base, Screws & Din Connector Incl
7	HDI SP12/12-24	7 Way Connector Assy & PCB Internal Loom 12/24V	1	Gasket, 7 Way Connector, Screws and 7 Pin Hirschmann CNCTR Incl.
8	HDI SP9/3 HDI SP9/6 HDI SP9/9 HDI SP9/15	Low Level Conversion Kit with Internal Loom + Low Level sensor	1	Gaskets, Connector Base, Screws & Din Connector Incl.
9	HDI SP24	Bottom Cover Assy	1	Screws, Seal & Vent Incl.
10	HDI SP25	Bottom Cover Fixing Screws (BULK)	1	
11	HDI SP1 HDI SP2	Spare HDI 12V Motor Spare HDI 24V Motor	1	
12	HDI SP26	Bottom Cover O Ring (BULK)	1	
13	HDI SP14	Motor to PCB Loom	1	
14	HDI SP15	12-24V Standard PCB CNTRL Board	1	
15	HDI SP18 HDI SP19	Housing W/O Controls Housing with Controls	1	Gasket Included
16	HDI SP27	Grease Nipple with Adaptor	1	
17	HDI SP3	Quick Fill Adaptor (MALE)	1	
18	HDI SP28	Blanking Plug	2	
19	HDI SP10/C	Standard Reservoir Seal	1	
20	HDI SP11/3 HDI SP11/6 HDI SP11/9 HDI SP11/15	Paddle Blade Assy for 3Ltr Reservoir Paddle Blade Assy for 6Ltr Reservoir Paddle Blade Assy for 9Ltr Reservoir Paddle Blade Assy for 15Ltr Reservoir	1 1 1 1	Nut Included
21	HDI SP5/3 HDI SP5/6 HDI SP5/9 HDI SP5/15	Spare Low Level Sensor 3LTR Spare Low Level Sensor 6LTR Spare Low Level Sensor 9LTR Spare Low Level Sensor 15LTR	1 1 1 1	Lead, Nut & Washers Incl.
22	HDI SP29	Reed Switch	1	Supplied with no Control Version HDI

13. HDI PROGRESSIVE SYSTEM EXAMPLES USING INTERLUBE SPL VALVES.

16 Lubrication points, from one central application point



28 Lubrication points, from one central application point



Specification and outlet combinations for the lubricant divider valves

Since the divider valves are positive progressive piston displacement devices, it means that whatever quantity of lubricant is continuously supplied to the inlet port, it is positively divided in relation to the outlet port combinations and equals the sum total of the output quantities.

Delivery sequence

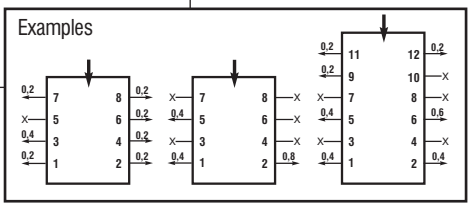
The commencement of the delivery sequence depends on the position of the delivery pistons. In each case the lubricant divider valves operate until all the lubricant which has been supplied, is completely delivered. If the lubricant supply is interrupted by a pause in the lubrication, then, after supply is resumed, the delivery sequence will be continued where it was stopped.

Outlet combinations

When an outlet is closed with one of the closure plugs, the lubricant is automatically redirected internally to the next adjacent outlet in descending numerical order

Note: Outlets 1 and 2 must never be closed.

Examples

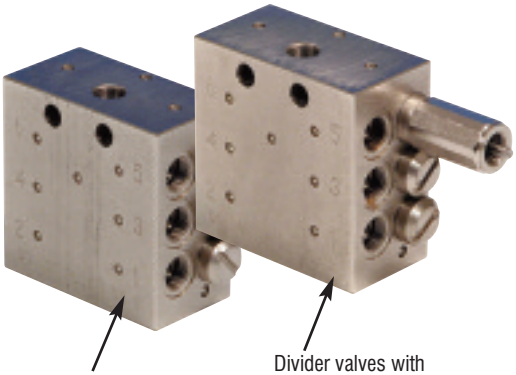


closed outlet —X

open outlet (in cm^3/stroke) →

(lubricant output in cm^3/stroke)

13.1 DIVIDER VALVES
Standard Progressive Divider Valves



Standard Divider Valve

Divider valves with visual indicator pin

Part No	Number of outlets	Monitoring	Max flow per min
SPL-06	6		200 cc
SPL-06K	6	Indicator Pin	200 cc
SPL-08	8		600 cc
SPL-08K	8	Indicator Pin	600 cc
SPL-10	10		700 cc
SPL-10K	10	Indicator Pin	700 cc
SPL-12	12		800 cc
SPL-12K	12	Indicator Pin	800 cc
SPL-14	14		900 cc
SPL-14K	14	Indicator Pin	900 cc

Divider Valves

- Monobloc design with number of outlets from 6 to 14
- Each outlet delivers 0.20ccs/cycle
- Crossporting and single outlets possible
- Available with cyclic indicator pins
- Max operating pressure 350bar
- Operating temperature -30ºC to 100ºC
- Outlets Tapped M10 x 1
- Inlet Tapped 1/8 BSP
- Proximity sensor an option

13.2 DIVIDER VALVE ACCESSORIES
Proximity Switch

SPL 512-4482

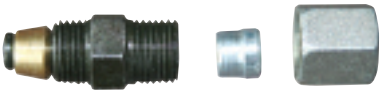
Proximity Adapters

SPL36713-1

IMPORTANT

All SPL DIVIDER VALVE OUTLETS MUST BE FITTED WITH SPL CHECK VALVES OR BLANKED OFF WITH SPL CLOSURE PLUGS. NEVER BLANK PORTS 1 & 2 ON A SPL VALVE

Check Valve Outlet Fittings

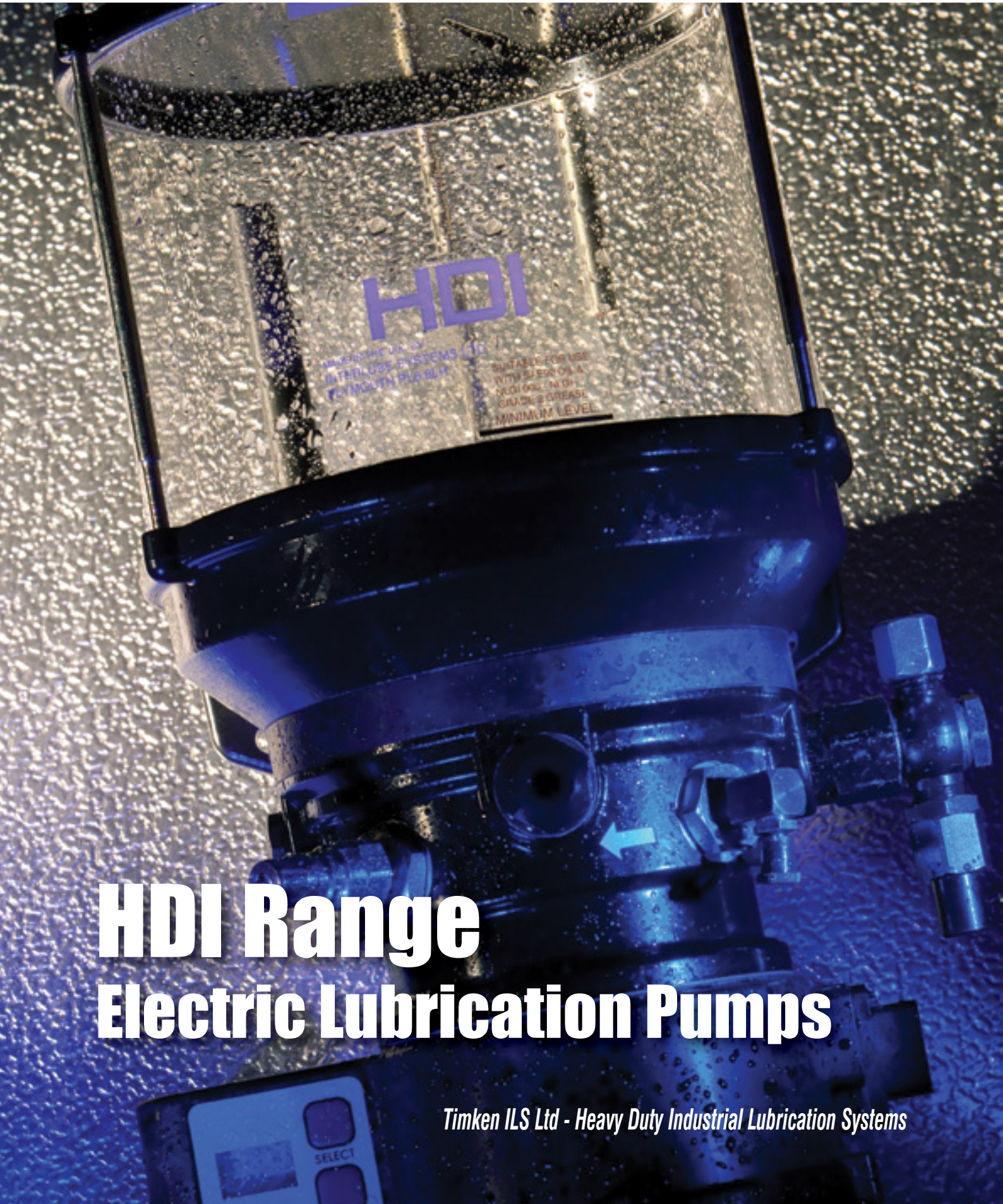


SPL-30364-4 M10x1 Check Valve
SPL-12374-9 6mm Nut
SPL-12295-2 6mm Olive

Closure Plug

SPL- 17499-3

INTERLUBE
A TIMKEN Brand



HDI Range
Electric Lubrication Pumps

Timken ILS Ltd - Heavy Duty Industrial Lubrication Systems

The HDI Family

Electric Centralized lubrication Pumps with 3, 6, 9 & 15kg Perspex Reservoirs

**** HDI 3 Litre moulded style reservoir***

Type HDI Electric Pumps
(Suitable for Grease or Oil)

The HDI pumps, when used with progressive divider valves makes an ideal lubrication system for:

- **Off road construction vehicles**
- **Static plant**
- **Agricultural machinery**
- **Food & Beverage machinery and many other industries where reliability is key to profitability**
- **Wind and Energy applications**

The positive displacement action of the HDI pump elements ensure precise, consistent delivery of lubricant during the pumps operation.

All HDI models can be controlled by an in-built PCB or the pump can be supplied without controls so that the pump can be controlled externally by a separate controller or the machines own PLC.

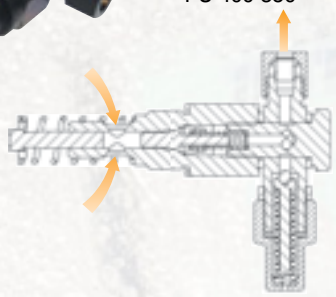
80 YEARS

HDI Pump Outputs

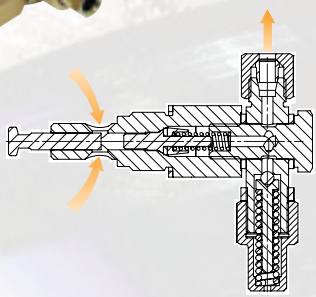
All HDI Pumps are supplied with one pump element as standard.
Up to three pump elements can be fitted into one HDI pump

Pump Elements

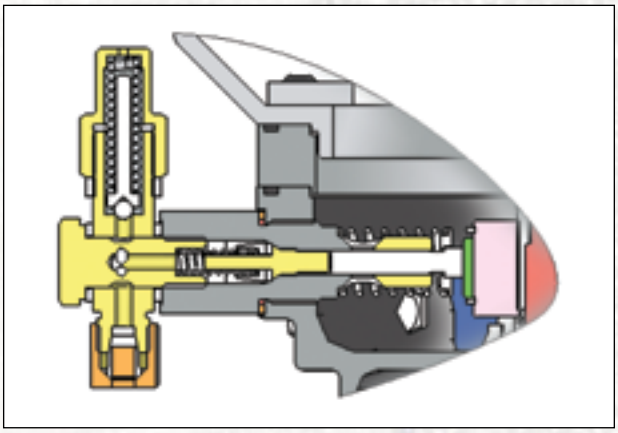
Spring return Element
PU 300-350
PU 400-350



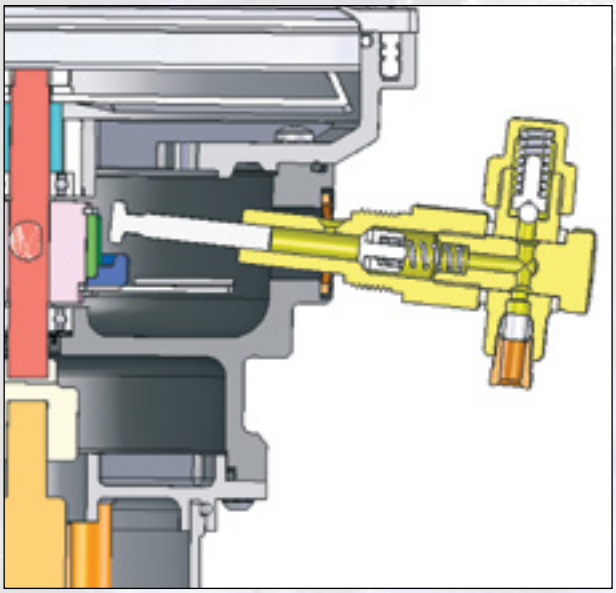
Push Pull Element
PU 300-350-A
PU 400-350-A



Spring Return Version



Push Pull Version



Operation

The electric motor drives an eccentric cam during the pumps operating time.

The pump element piston sucks the grease from the reservoir and then dispenses an accurate precise amount of lubricant to the connected metering device.

Pump Output

Standard HDI pump operates at 19/23revs/min					
Part No	**Max output/min pressure (BAR/PSI)**	**Output/min (cc)**	**Volume (cu in)**	**Pump Element Outlet Size**	**Relief Valve Setting 350 BAR 5145 PSI**
PU 300-350	300 (4410)	3.2	(0.20)	6mm O.D	
PU 300-350-A	300 (4410)	3.2-1.4	(0.20-0.08)	6mm O.D	
PU 400-350	300 (4410)	3.2	(0.20)	6mm O,D	
PU 400-350-A	300 (4410)	3.2- 1.4	(0.20-0.08)	6mm O.D	
Operation conditions +40°C to - 30°C					

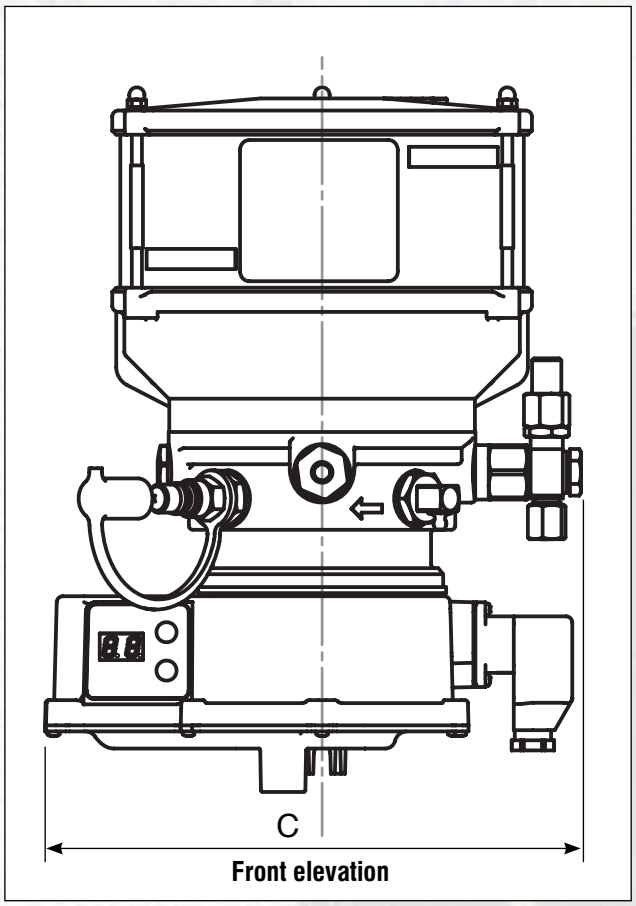
The grease output figures were based on NLGI 2 Grease at ambient conditions, the output volume may vary depending on lubricant specification and temperature.

HDI Dimensions

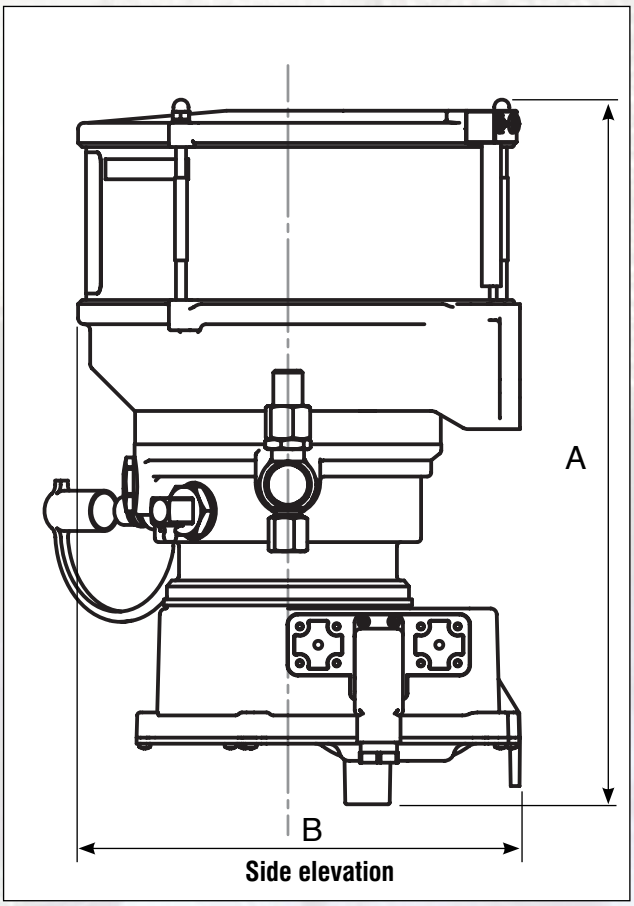
Pump Dimensions

Reservoir Size	A		B		C	
3 Ltr Moulded	340mm	13 1/2"	260mm	10"	270mm	10 1/2"
3 Ltr Standard	300mm	12"	260mm	10"	270mm	10 1/2"
6 Ltr Standard	400mm	16"	260mm	10"	270mm	10 1/2"
9 Ltr Standard	490mm	19 1/2"	260mm	10"	270mm	10 1/2"
15 Ltr Standard	700mm	27 1/2"	260mm	10"	270mm	10 1/2"

Diagram shows a standard HDI pump



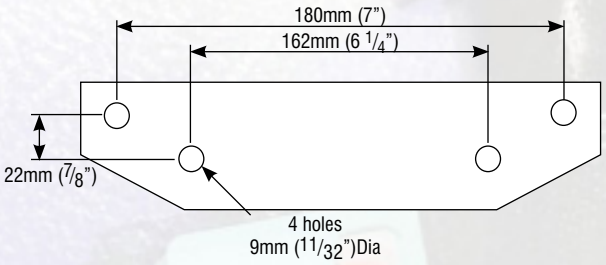
Front elevation



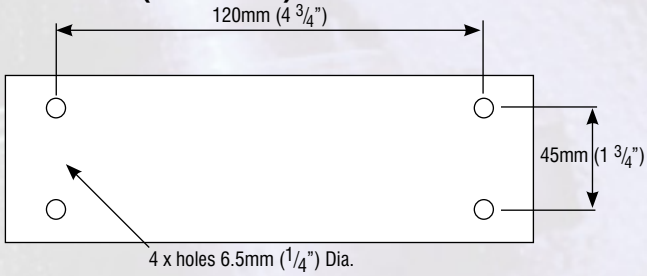
Side elevation

Mounting Positions of the HDI Pump

Standard HDI 3, 6, 9, 15 Ltr

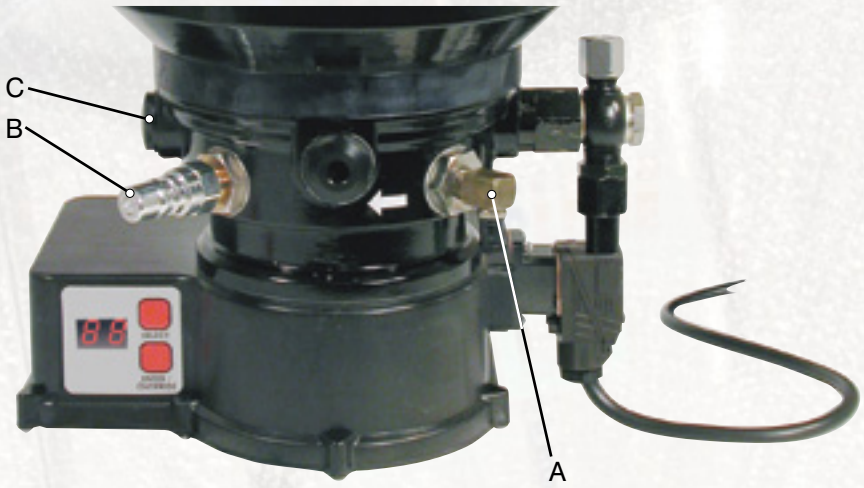


HDI 3Ltr (moulded)



HDI filling methods

HDI Dual Fill



All HDI models are supplied with dual fill

(A) Standard grease nipple use air operated grease pump to fill the reservoir.

(B) Quick release coupling use a hand operated volume bucket pump.

(C) Or alternatively fit the pump with a quick fill adapter and use a quick fill gun to fill the reservoirs.

Quick Fill Gun

Hand operated quick fill gun

Part No.	Description
HDI - 57549-1	Quick fill gun
HDI - 36763-1	Straight adapter for the pump
HDI - 36763-2	90°adapter

HDI-36763-1

HDI-36763-2

Bucket Pump

Hand operated bulk fill pump complete with: 1.5m hose, female quick release coupling to fit directly onto the Interlube quick connect fitting fitted to the pump. Ideal for use with NLGI 1 or 2 greases.

Part No	Description
IL-108501	European Pump (12.5-18 KG), cover 265mm to 310mm
IL-108502	USA Pump (35lb) cover 285mm to 330mm
IL-417001	Grease follower plate 260mm to 298mm
IL-417003	Grease follower plate 300mm to 340mm

HDI Electrical Data

HDI Models can be supplied with or without in built controller.

With Controller
The HDI in-built controller has a dual LED digital display for programming and running the pump.

Without Controller
HDI without controller can be supplied in two standard variations:
1) Direct to motor
2) Direct to motor with integral reed switch to monitor rotation

HDI Electrical data

Electrical supply = 12v/24vDC
maximum amps 12v Pump = 5A
maximum amps 24v Pump = 5A
Dual voltage PCB = 12v/24v
IP65 protected

EMC Compliant
Transient protection to ISO 7637
Operating conditions +40C to -30C
Use 5 Amp slow blow inline fuse for all pumps

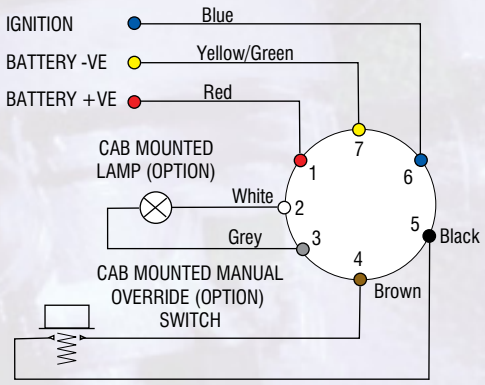
figure 1

All HDI models can be supplied with or without in built controller.

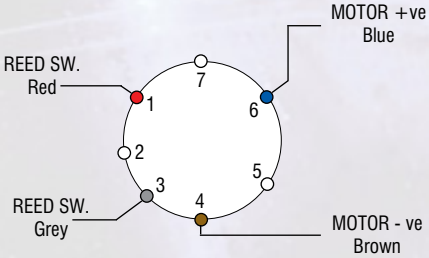
The HDI in-built controller has a dual LED digital display for programming and running the pump.

Control criteria
Pump run times can be selected with time on mode (t) adjustable from 1-99 min. Pump delay time is variable from 1 min to 99 hours 59 min.
The controller has a manual override facility.

Wiring diagram for HDI with controller



Wiring diagram for HDI without controller



HDI Control and Alarm Functions

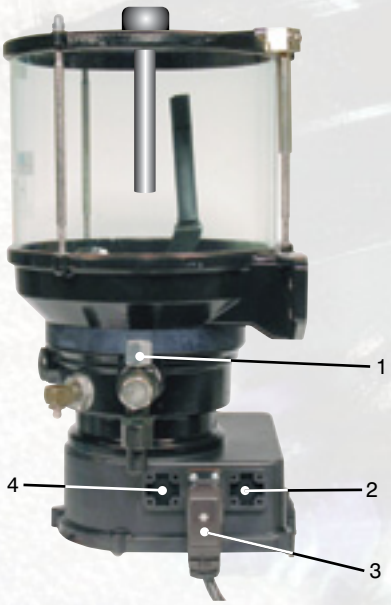
HDI With Controller

HDI Fully programmable controller

- **Pump run times and pump delay time are totally variable, giving full customization for all applications**
- **The controller has a manual override facility. (see information manual ISF294)**
- **Low level**
- **Grease flow monitor**

CONTROL CRITERIA	
Minimum Pause time	1 minute
Maximum Pause time	99 hours
Minimum Run time	1 minute
Maximum Run time	99 minute

Low level



1. Pump elements (see page 2)
2. Low level connection (not supplied as standard)
3. Power cable (30ft) and 7 pin connector supplied as standard with all models (see fig 1 on page 5)
4. End of line or primary flow proximity sensor alarm connection (not supplied as standard)

Part No.	Low Level Reservoir Kit for:
HDI SP9/3P	3 Ltr Moulded Reservoir
HDI SP9/3	3 Ltr Standard Reservoir
HDI SP9/6	6 Ltr Standard Reservoir
HDI SP9/9	9 Ltr Standard Reservoir
HDI SP9/15	15 Ltr Standard Reservoir

To detect low grease level Interlube have developed high reliability capacitive sensors, fully sealed and encapsulated to operate in the most arduous industrial environments. Two versions available, for 000 grade fluid grease & NLGI grade 2 grease

Grease Low Level Sensor Kits

The Grease low level kit comprises of a low level sensor to suit the reservoir size, pump connector and connector with internal loom to connect onto the standard HDI 12/24v DC PCB.

10-40V DC

Maximum current 100mA

PNP Output

Normally open (reservoir empty)

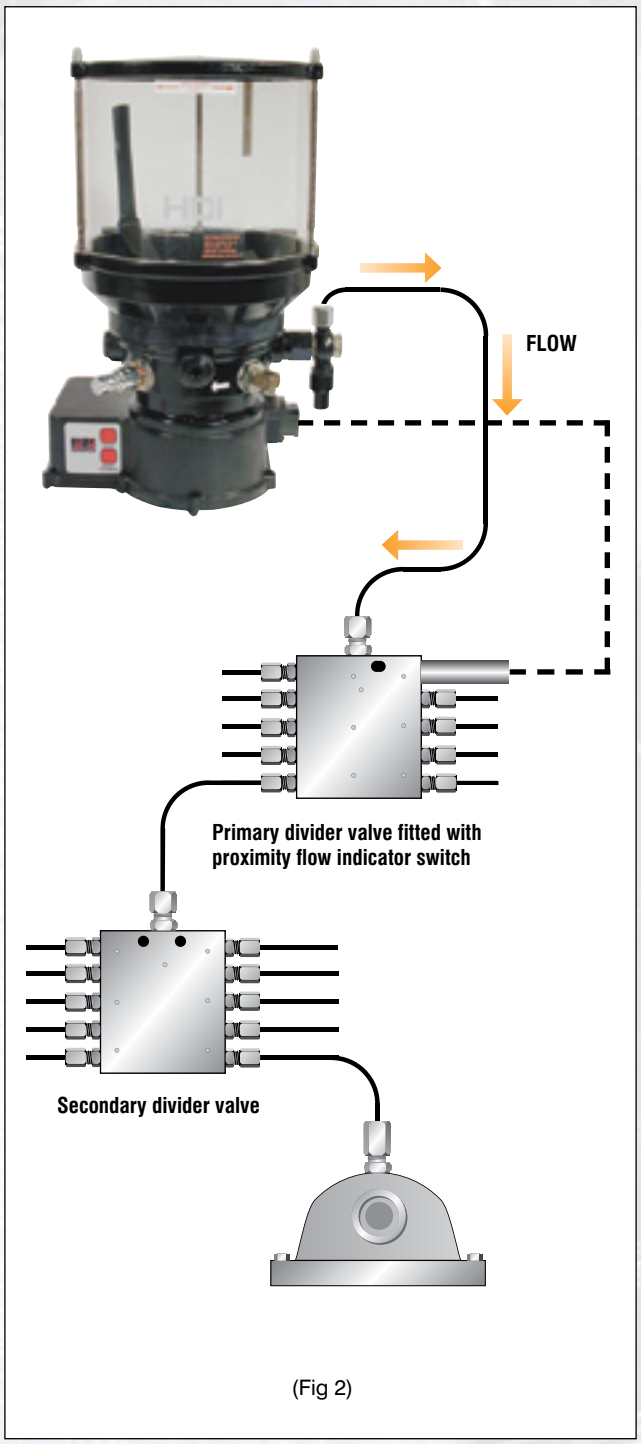
Protection to IP67

Sensing distance 20mm max withdrawing sensor from grease

ferrous sensing distance 15mm max

Alarm Functions

Grease Flow Monitor



(Fig 2)

Remote Alarm Functions

The HDI Pump can be supplied with or without an internal controller (PCB).

The pump without control facility is fitted with an internal reed switch; this can be used to monitor the pumps internal cam rotation.

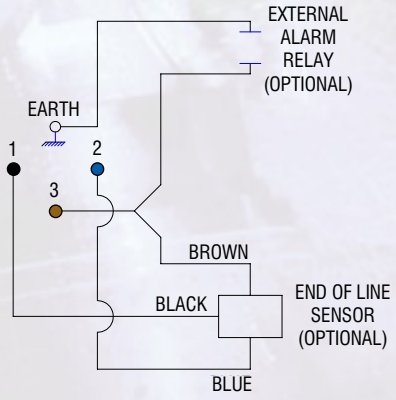
The pump with control facility has an in-built alarm function, which can be connected to an external alarm relay as an option.

In general the HDI is connected to progressive divider valves as illustrated in Fig (2).

The progressive divider valves are designed to feed a positive set amount of grease to each connected point in turn, without missing a point out. The primary divider valve is fitted with a proximity flow indicator switch, which will signal positive flow back to the HDI PCB.

Should the pump operate and the PCB not receive a flow signal the pump would alarm. This alarm signal could be connected to an external remote audio or visual alarm on the machine or alternatively connected to the machines PLC.The PLC could be programmed to stop the machine from operating should the lubrication system fail to operate correctly.

Wiring for Alarm SW



HDI Installations

Specialist Plant in the Steel Industry

HDI on the most demanding plant in the most arduous conditions

Mobile Plant

- High Quality
- Reliable
- Robust
- Fully Programmable

Loading Shovels, Dump Trucks and Excavators

HDI Installations

Agricultural

Chassis Applications

- Low Cost
- Durable
- 5 x Reservoir Sizes
- Compact
- Transient Protection to ISO 7637/-Road Vehicles

HDI for Heavy Industry

HDI reliability for remote installations

Industrial Applications

- System Fault Detection
- Remote Monitored Systems

Can Filler and Seamer Lubrication Systems

Crushers

Steel Mill

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LUBEPLUS GX Centralised Lubrication System
Multi-Industry Applications

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Issue 1

technical specifications

LUBEPLUS GX ELECTRICALLY OPERATED SINGLE LINE SYSTEM

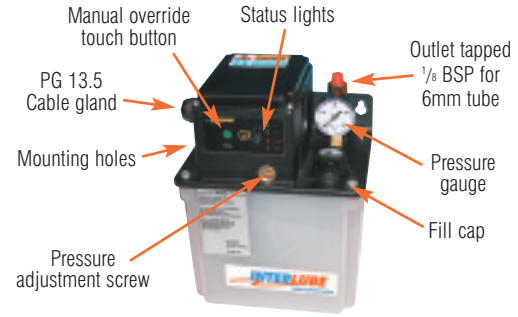
LUBEPLUS GX has been designed to operate with a positive displacement unit (PDU) or with metering flow unit systems. The lubricator is available with a wide combination of condition monitoring features and a choice of 'with' or 'without' microprocessor control.

The microprocessor provides the option of timed or impulse count control and automatically monitors pressure failure and low level condition in the reservoir.

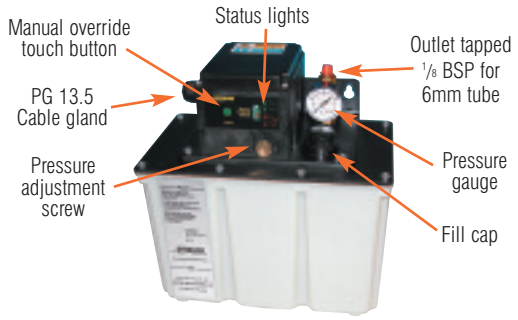
A lubricator without microprocessor enables the user to control the lubrication cycle from the parent machine. A range of condition monitoring features is available as an option.

Lubrication points in a typical LUBEPLUS GX system may be fitted with flow units used with oil or the more precise Interlube Positive Displacement Units (PDU's) which handle fluid greases and oil.

GX (3 litre Reservoir)

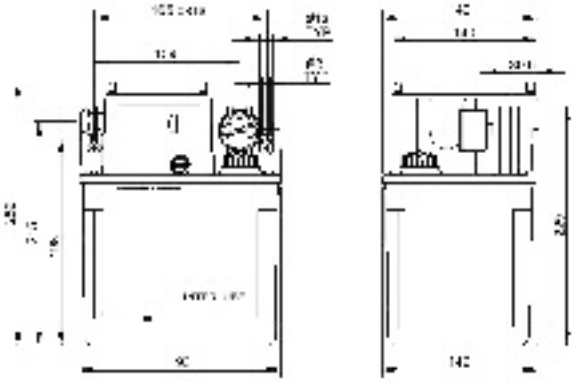


GX (6 litre Reservoir)

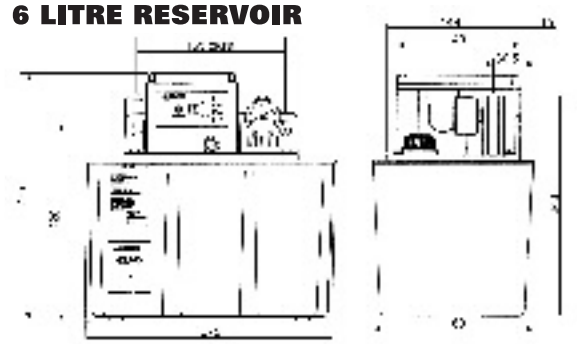


GX DIMENSIONS

3 LITRE RESERVOIR



6 LITRE RESERVOIR



TECHNICAL DATA

ELECTRICAL DETAILS	
Voltage/rating:	230/240 VAC or 110/120 VAC at 50/60 Hz
Motor Type:	Open frame shade pole motor
Motor R.P.M.:	2500 at 50 Hz / 3180 at 60 Hz
Electrical Connection:	Terminal block
Electrical Entry:	Pg 13.5
Power Consumption	100W
Current Draw	1A at 220V 2A at 110V
Float Switch	
Voltage/rating:	150VAC / 200VDC 0.7ADC
Mode	Normally Closed
Pressure Switch	
Voltage/rating:	42V Max, 100V A.
LUBRICATOR DETAILS	
Pump Output Volume:	110 cc/min at 50 Hz 130 cc/min at 60 Hz
Ambient Temperature:	40° C
Recommended Lubricants:	15-480 cSt Oil and NLGI000 fluid grease
Operating Pressure:	3 - 25 bar
Oil Temperature:	60° C
Reservoir Capacity:	3 or 6 litre
Weight (full):	5.5 or 9 kg
Protection Class:	IP54
Pressure Switch Settings	
Flow Units:	3 bar
PDU's:	12 bar
Pressure Gauge:	0 - 40 bar

LUBEPLUS GX with controls

The standard unit is supplied with an integral controller, which allows selection of either a TIMED MODE of operation or a COMBINATION MODE of time period and impulse count delay period. Selection of modes and settings is achieved via a simple DIL switch.

CONTROL SELECTIONS

Pump 'ON' Time IN SECONDS (8 OPTIONS)		Pump 'DELAY' Time IN MINUTES (16 OPTIONS)		Impulse 'DELAY' IN PULSES (16 OPTIONS)	
12	36	2	60	20	2600
16	44	4	75	100	3000
20	52	8	90	500	3400
28	60	10	120	750	3800
		12	180	1000	4200
		15	240	1400	4600
		30	360	1800	5400
		45	480	2200	5800

** The motor contains an automatic thermal cut-out, but to ensure the motor does not overheat it is advised that the pump is operated by no more than 12 seconds in every 2 minute period.* ** Other TIMED/PULSE delay options are available*

STANDARD FEATURES

Pressure monitoring
An internal, factory-set pressure switch monitors the system pressure. This switch is connected to the control board signalling a low pressure warning to the RED LED.

A low pressure warning stops the operation of the lubricator until corrective action has been taken. A pressure gauge is also provided for visual monitoring.

Lubricant level monitoring
A low level switch is mounted within the reservoir. Linked via the microprocessor to the RED LED on the lubricator fascia, it can also be connected externally via the control board, providing to operate an external alarm signal or stop machining cycles. A low level warning will not automatically stop the lubricator.

This may be connected externally to provide a signal to the parent machine.

GREEN LED showing:
Steady on = pump in delay mode
Flashing = pump operating

RED LED showing:
Off: no warning signals
Steady on = pump lubricant low level warning.
Flashing + sounder = pump lubricant low pressure warning

Manual Override/Reset
A touch panel is provided to enable an instant lubrication cycle to be achieved at any time. This will last for the duration of the touch, plus the selected ON period when released. In each control mode pressing the override panel causes the lubricator controller to reset and commence a lubrication cycle.

Pre-lubrication Cycle
LUBEPLUS GX lubricators with control provide an instant pressure cycle on machine start-up or reset (if the supply is routed via the machine on/off system).

LUBEPLUS GX without controls

This model is normally operated in conjunction with the control system of the parent machine. The physical size and mounting arrangement is identical to a GX lubricator with controls. If the pump is to be operated for more than 12 seconds the 'DELAY' period must be not less than 2 minutes. For applications inside this time span please consult Interlube Systems Ltd.

Condition monitoring

The following condition monitoring options are available: Pressure Switch, Pressure Gauge, Float Switch for oil, Float Switch for soft grease, 'Power on' Lamp and a Manual override press button.

Ordering method

When ordering a LUBEPLUS GX system the required Part No. Is compiled from matrix 1 for pumps without controls and from matrix 2 for those with controls (see below).

Reservoir Sizes

Both 3 litre and 6 litre pumps come complete with a "Plastic" reservoir. A 6 litre sheet metal reservoir is available as an option.

GX DIMENSIONS (matrix 1 & 2)

1. WITHOUT CONTROLS

GX X X X X

				FLOAT SWITCH	PRESSURE SWITCH	PRESSURE GAUGE		
1	P.D.U.	1	110/120 VAC 50/60 Hz	-	-	-	3	3 LITRE RESERVOIR
2	FLOW UNIT	2	220/240 VAC 50/60 Hz	X	-	-	6	6 LITRE RESERVOIR
				X	X	-		
				X	-	X		
				X	X	X		
				-	X	-		
				-	X	X		
				-	-	X		

E.g.: Gx1243 is a GX gear pump using a PDU system at 220VAC with float switch and pressure gauge with a 3 litre reservoir.

2. WITH CONTROLS

GX X X X X

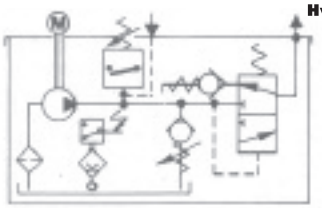
3	P.D.U.	1	110/120 VAC 50/60 Hz	0	STANDARD CONTROLS	3	3 LITRE RESERVOIR
4	FLOW UNIT	2	220/240 VAC 50/60 Hz			6	6 LITRE RESERVOIR

OPTIONS

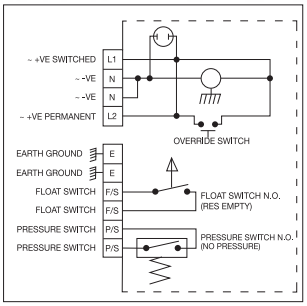
- Fluid grease option available with electronic level sensor
- Cable entry available left (standard) or right hand side of the GX pump
- Pressure relief adjustment available, located in the front facia or within the reservoir
- Optional lubricant outlet threads and connections available

CIRCUIT DIAGRAM

Hydraulic Circuit (PDU's only)



Without Controls



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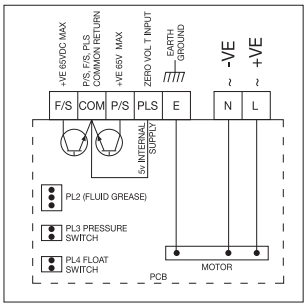

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Multi-Industry Applications

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Issue 1

technical specifications

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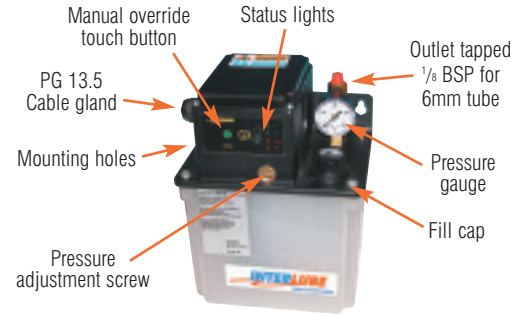
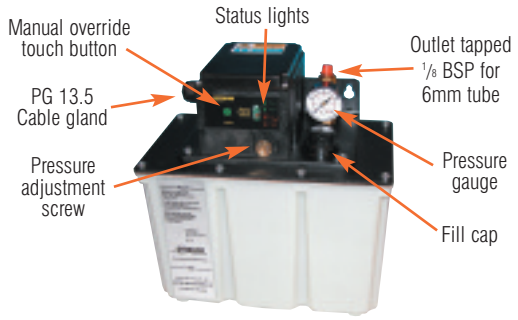
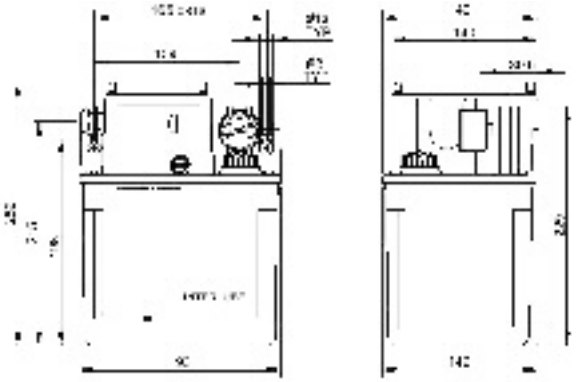


GX (6 litre Reservoir)



GX DIMENSIONS

3 LITRE RESERVOIR



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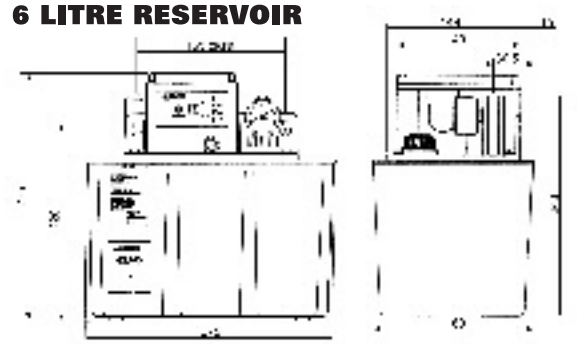

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PDU's:	12 bar
Pressure Gauge:	0 - 40 bar

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LUBEPLUS GX without controls

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GX DIMENSIONS (matrix 1 & 2)

1. WITHOUT CONTROLS

GX X X X X

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2	FLOW UNIT	2	220/240 VAC 50/60 Hz	X	-	-	6	6 LITRE RESERVOIR
				X	X	-		
				X	-	X		
				X	X	X		
				-	X	-		
				-	X	X		
				-	-	X		

E.g.: Gx1243 is a GX gear pump using a PDU system at 220VAC with float switch and pressure gauge with a 3 litre reservoir.

2. WITH CONTROLS

GX X X X X

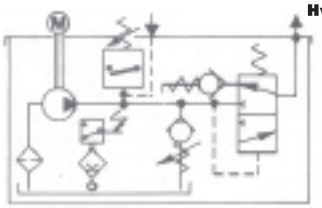
3	P.D.U.	1	110/120 VAC 50/60 Hz	0	STANDARD CONTROLS	3	3 LITRE RESERVOIR
4	FLOW UNIT	2	220/240 VAC 50/60 Hz			6	6 LITRE RESERVOIR

OPTIONS

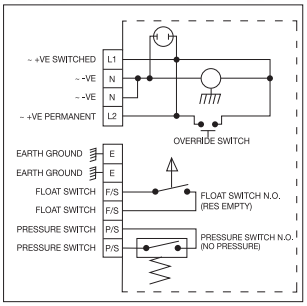
- Fluid grease option available with electronic level sensor
- Cable entry available left (standard) or right hand side of the GX pump
- Pressure relief adjustment available, located in the front facia or within the reservoir
- Optional lubricant outlet threads and connections available

CIRCUIT DIAGRAM

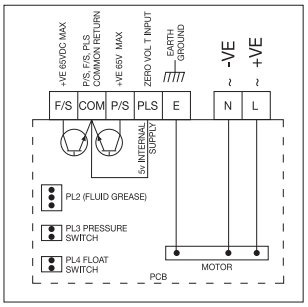
Hydraulic Circuit (PDU's only)



Without Controls



With Controls



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GEAR PUMP Centralised Lubrication System
Multi-Industry Applications



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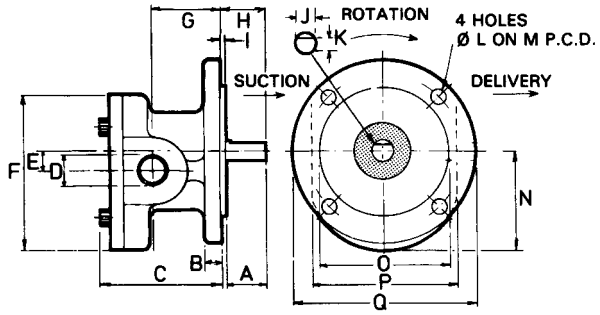
FLANGED GEAR PUMPS

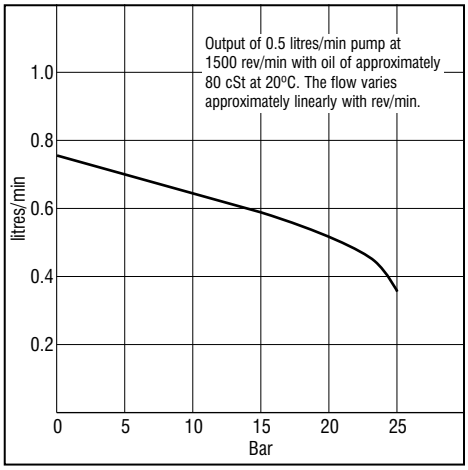
Interlube gear pumps are specifically designed for continuous and cyclic automatic lubrication systems. They are supported by an extensive range of accessories suitable for a wide variety of industrial applications.

The pump bodies are manufactured from high grade cast iron, the rotors and shafts are steel, and the seals nitrile rubber. The pumps are suitable for oils and fluid grease.

Pumps are available with flange mounting for mechanical drive, motorised foot mounted, or reservoir mounted. Four sizes of pump are available with outputs of 0.5, 3, 9 and 16 lt/min. On motorised versions the maximum rated operating pressure is 25 bar for the 0.5 lt/min pump, 10 bar for the 3 lt/min and 9 lt/min, and 5 bar for the 16 lt/min pump. For higher pressures consult Interlube Systems Ltd.

Gear Pump - 0.5 litres/min (1.0 ltr/min @2,800 rpm)





Dimensions																
A	B	C	D	E	FØ	G	H	I	JØ	K	LØ	M	N	OØ	P	Q
16	6	48	1/4 BSP	8.2	63	26	18	2	7.99 7.98	6.45 6.35	5.5	60	40	49.975 49.950	58	73

Part No. GP1
Maximum permissible pressure 25 bar
Maximum permissible rev/minute at 25 Bar - 1500
Maximum permissible rev/minute at 5 Bar - 3000

MOTORISED GEAR PUMPS

FOOT MOUNTED MOTORISED GEAR PUMPS

All motors are continuously rated, TEFC, minimum IP54 rating, nominal 1400 rev/min

Standard Voltage options:-
110V, 1 ph, 50/60 Hz
240V, 1 ph, 50/60 Hz
380/440V, 3 ph, 50/60 Hz

See ordering details, for alternative voltages contact Interlube Systems Ltd.

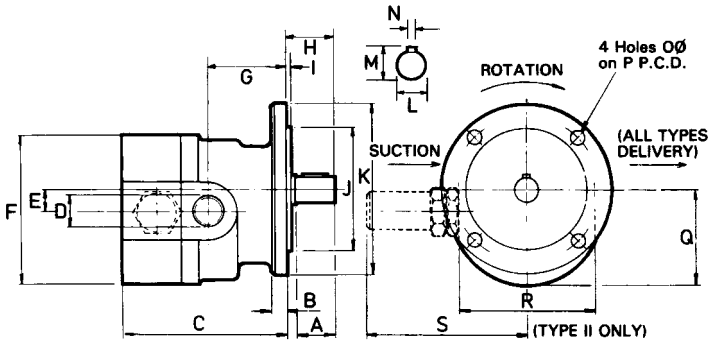
Recommended pipe bare sizes (mm)

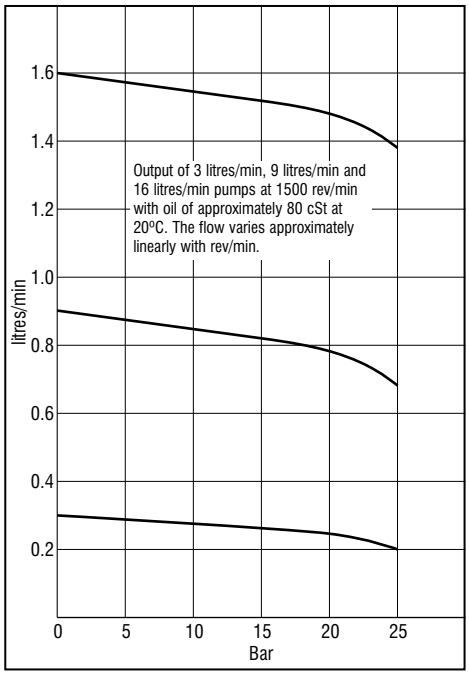
	0.5 L/min	3 L/min	9 L/min	16 L/min
Suction	8	10	12	18
Delivery	4	6	10	12

Bi-rotational gear pumps

Bi-rotational versions of the pump are available to special order. These units can be driven in either direction without affecting the position of suction and delivery, the positions of which must be specified.

Gear pumps - 3,9,16 Litres/min

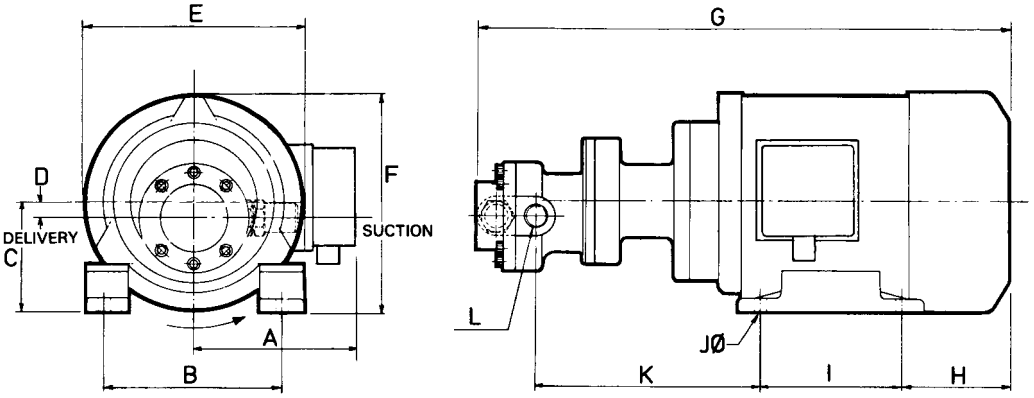




Model Variants			
Type	**Outputs & Part Numbers**		
	3 L/min	**9 L/min**	**16 L/min**
Type I (standard pump)	GP2	GP3	GP4
Type II (standard pump with adjustable relief valve)	GP21	GP31	GP41
Type III (bi-rotational pump)	GP22	GP32	GP42

Dimensions

Size	A	B	C	D	E	FØ	G	H	I	JØ	K	LØ	M	N	OØ	P	Q	R	S
3 lt/min	15	6	69	1/4 BSP	9	61	32	18	2	49.975 49.950	70	10.007 9.998	11.2	3	5.5	60	40	56	66
9 lt/min	20	7	91	3/8 BSP	13	82	44	25	3	69.970 69.940	100	12.008 11.997	13.5	4	7	84	54	76	76
16 lt/min	20	8	111	1/2 BSP	15	98	54	25	3	89.964 89.929	120	14.008 13.997	16	5	7	100	65	90	85



Size (nominal)	Motor Size	Maximum Pressure	Dimensions A	B	C	D	E	F	G	H	I	J	K	L
0.5 lt/min	63 frame, 0.18 kW	25 bar	95	100	63	8	123	125	295	73	80	6	122	1/4 BSP
3 lt/min	63 frame, 0.18 kW	10 bar	95	100	63	9	123	125	316	73	80	6	128	1/4 BSP
9 lt/min	71 frame, 0.37 kW	10 bar	115	112	71	13	142	142	374	80	90	7	159	3/8 BSP
16 lt/min	71 frame, 0.37 kW	5 bar	115	112	71	15	142	142	394	80	90	7	169	1/2 BSP

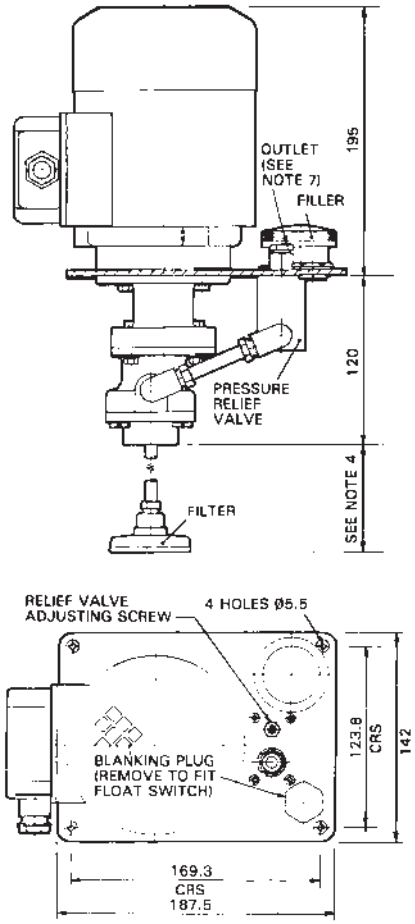
Note: Dimensions are in mm except where stated.

Other flow rates at various alternative motor speeds available on request.

RESERVOIR-MOUNTED GEAR PUMPS

Reservoirs are available in three standard sizes - 6, ,12 and 25 litres. Other sizes of reservoir can be provided by special arrangement.
Interlube recommend that the ratio of the reservoir capacity in litres to the pump output in lt/min should not exceed 10:1.

PLATE MOUNTED



NOTES

1. Relief valve setting must not exceed maximum pressure of motorised pump (see previous details).
2. See previous pages for pump and motor details.
3. The mounting centres suit the standard range of reservoirs - 6, 12 and 25 lt. Other reservoirs are available to special order.
4. When supplied without reservoir, filter is supplied with 300 mm of tube to be cut to required length.
5. A float switch is available as an optional extra and must be ordered separately. To fit float switch remove the banking plug.
6. Outlet: 1/4 BSP/6mm OD for 0.5lt/min pump.
   1/4 BSP/10mm OD for 3lt/min pump.

METHOD OF ORDERING (ALL MOTORISED AND RESERVOIR MODELS)

Part No. MGP **X X X O** -VARIATIONS

PUMP OUTLET (Nominal)
1 0.5 lt/min
2 3 lt/min
3 9 lt/min
4 16 lt/min

MOUNTING OPTION
1 Foot Mounted
2 Foot Mounted with Relief Valve
5 Plate Mounted (R/Valve standard)
6 Plate Mounted with 6 lt Reservoir
7 Plate Mounted with 12 lt Reservoir
8 Plate Mounted with 25 lt Reservoir

VOLTAGE
1 110V, 1 ph, 50 Hz
2 240V, 1 ph, 50 Hz
3 380/440V, 3 ph, 50/60 Hz
4 110V, 60 Hz
5 240V, 60 Hz

Notes
1. 9 lt/min and 16 lt/min models not supplied plate mounted.
2. 0.5 lt/min foot mounted model not available with integral relief valve.
3. Single phase only available on 0,5 lt/min pump.
4. IP54 Motors are standard.

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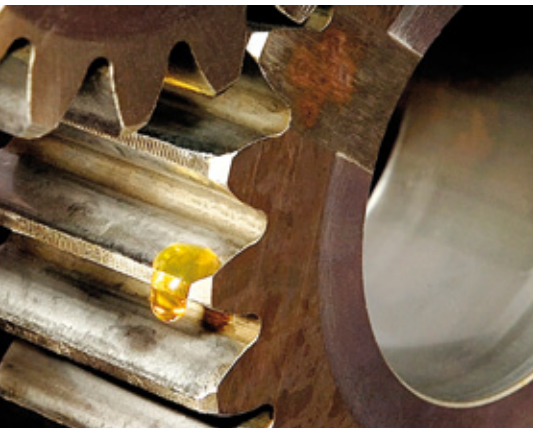


Lubrication solutions to keep systems running smoothly

DF

Gravity Feed Lubricators

ILS_DF_001_EN2

DF - Gravity Feed Lubricators

The DF lubricators can drip oil directly on to cams, gears or slideways or brush oil on to chains.

These DF lubricators are ideal for small industrial or agricultural applications, when the installation of automatic lubrication is not viable.

Both “DF” versions of the Gravity Feed Lubricator are available as solenoid operated and manually operated and
are supplied as standard with:

- Steel Mounting Plate/Lid
- Oil Filler Cap
- Robust Polypropylene Reservoir 1/2, 1 or 2 Ltr
- Fully adjustable drip feed regulator with sight glass

Solenoid

12V/24V DC electric shut off valve is connected to the machine. When the machine is shut off the solenoid will automatically isolate, preventing over lubrication if the machine is not in operation.

Manual

Manual shut off valve on/off.

The Solenoid Version is also available without the Drip Feed Regulator when Multi Drip Feeds are required.
- Contact Us if you require this Option

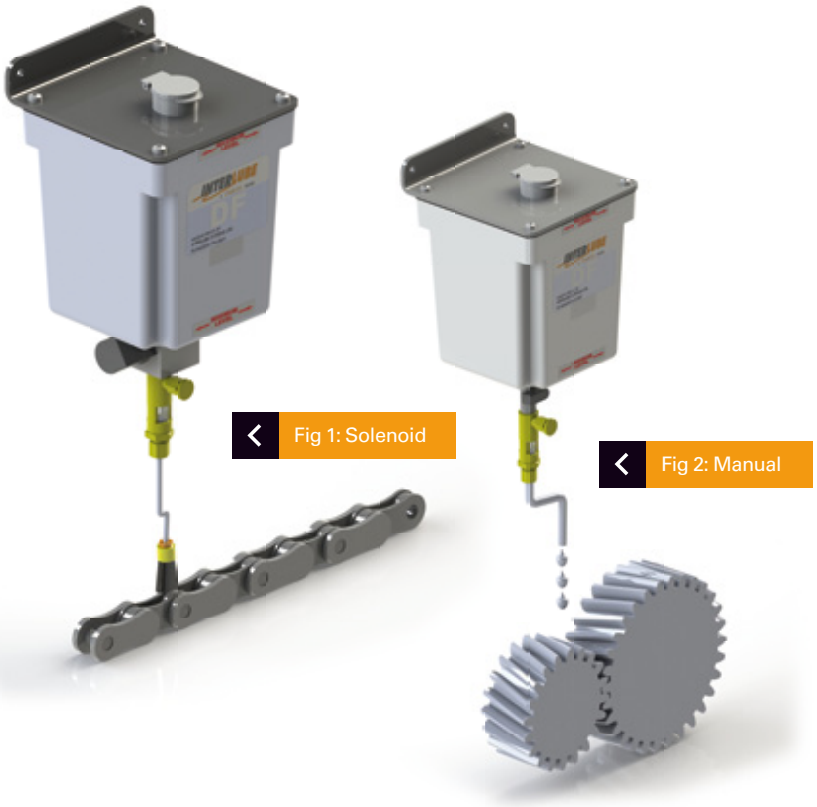
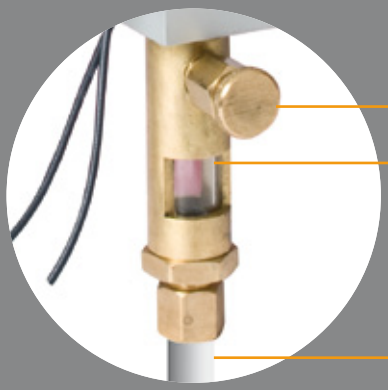


Fig 1: Solenoid

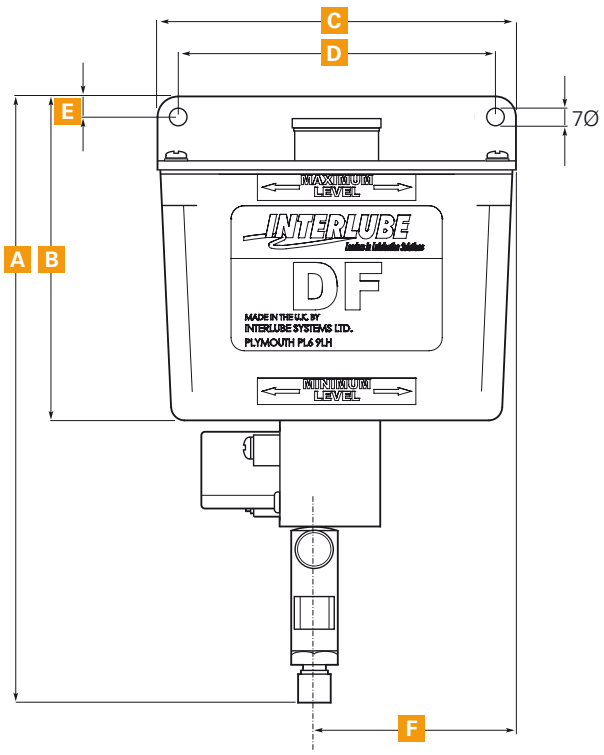
Fig 2: Manual

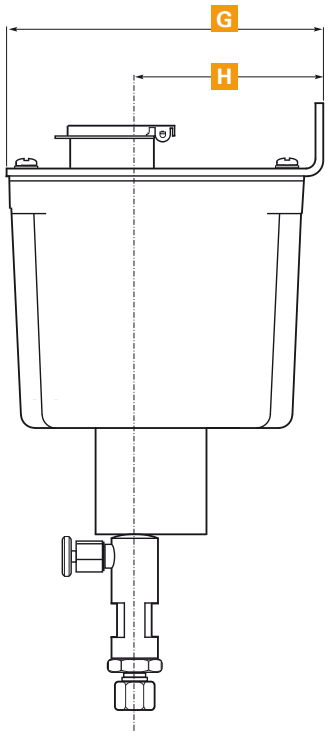


Technical Info

Temp Range: Up to 100 oC
Reservoir: Polyproplylene
Mounting Bracket: Plated Steel
Mounting Holes: 7mm O
Outlet Size: 4mm O.D. compression
Voltage: 12V or 24V DC

Polypropylene has excellent chemical, temperature and fatigue resistance.





Manual Version (Dimensions mm)

Part No	Reservoir Size	A	B	C	D	E	F	G	H
DF1100	(2) Ltr - 4.24 pints	303	186	142	120	11	79	151	80
DF1200	(1) Ltr - 2.12 pints	241	123	136	120	8	76	120	63
DF1300	(0.5) Ltr - 1.06 pints	247	129	115	98	8	66	85	47

12V DC Solenoid Version

DF2110	(2) Ltr - 4.24 pints	293	186	142	120	11	79	151	80
DF2210	(1) Ltr - 2.12 pints	230	123	136	120	8	76	120	66
DF2310	(0.5) Ltr - 1.06 pints	236	129	115	98	8	66	85	47

24V DC Solenoid Version

DF2120	(2) Ltr - 4.24 pints	293	186	142	120	11	79	151	80
DF2210	(1) Ltr - 2.12 pints	230	123	136	120	8	76	120	66
DF2220	(0.5) Ltr - 1.06 pints	236	129	115	98	8	66	85	47

INTERLUBE
A TIMKEN Brand

AX Range

Centralised Lubrication System
Multi-Industry Applications

Interlube Systems Ltd - maximising industrial performance world-wide...

Issue 1

technical specifications

AX RANGE ELECTRICALLY OPERATED MULTI-LINE SYSTEM

The Interlube AX Range is a compact electrically operated multi-line system that offers a very economical means of providing centralised lubrication. The pumps are constructed from waterproof and corrosion proof materials, and have fully self contained controls which can be adjusted to give precise amounts of lubrication over a given time period. The AX Range is easy to install and operate, and is virtually maintenance free, making it ideal for a wide range of industrial applications.

- Electrically operated 110/240v
- Suitable for use with SAE 80/90 oil and grease up to NLGI Grade 2
- Serves up to 60 points as standard, larger sizes available upon request
- Multi position timer with memory
- Six colour coded pumping units available with outputs from 0.01cc – 0.1cc
- High quality reliable product. Made in the UK

PUMPING UNITS

Positive displacement pumping units are available in six different stroke outputs to cater for varying size bearings.

They are supplied complete with outlet fittings suitable for 4mm tubing.

Colour code	Output/Stroke (cc)	Part No.
Red	0.010	78033
Green	0.015	78034
Orange	0.025	78035
Blue	0.040	78036
Silver	0.060	78037
Black	0.100	78038
Blanking Plug (for unused outlets)		34237-402

TECHNICAL DATA

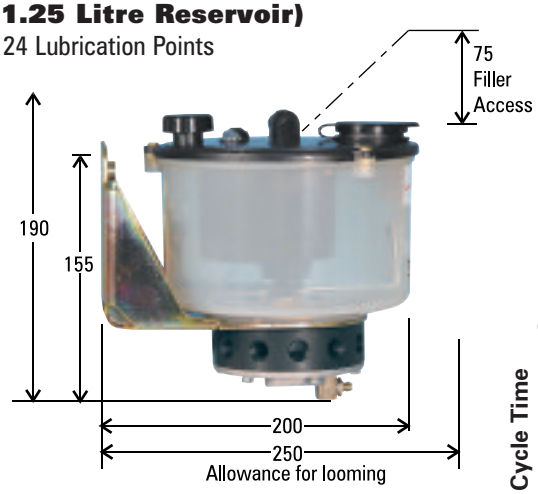
LUBRICANT	
NLGI Grade 2	Down to 10°F / -12°C
NLGI Grade 1	Down to 0°F / -18°C
NLGI Grade 0	Down to -10°F / -23°C
NLGI Grade 00	Down to -20°F / -29°C
NLGI Grade 000	Down to -30°F/ -35°C

Do not use heavy, tackified greases or Bentone (clay based) high temperature grease.

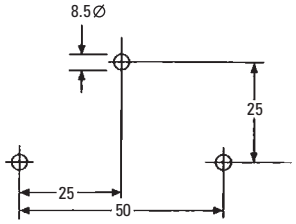
AX RANGE TECHNICAL DATA

AX1 (1.25 Litre Reservoir)

Maximum 24 Lubrication Points



AX1 - PUMP MOUNTING CENTRES

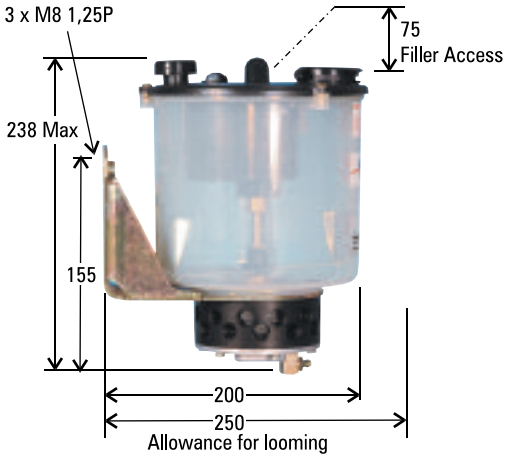


Ordering Method AX1 X X X

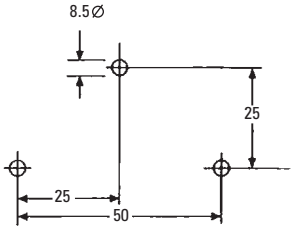
Cycle Time					
1	6 Mins	3	110V 50/60 Hz.	1	12 POINTS
2	15 Mins	4	240V 50/60 Hz.	2	24 POINTS
3	30 Mins			3	36 POINTS
4	60 Mins				

AX2 (2 Litre Reservoir)

Maximum 36 Lubrication Points



AX2 - PUMP MOUNTING CENTRES

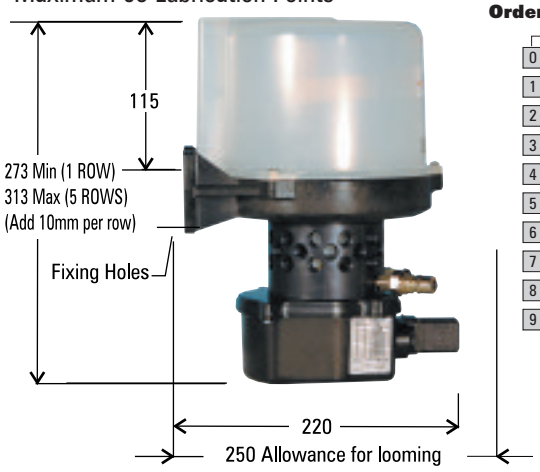


Ordering Method AX2 X X X

Cycle Time					
1	6 Mins	1	110V	1	12 POINTS
2	15 Mins	2	240V	2	24 POINTS
3	30 Mins			3	36 POINTS
4	60 Mins				

AX3 (3 Litre Reservoir)

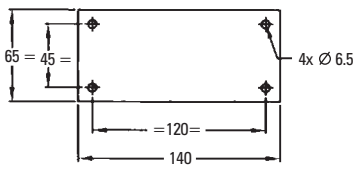
Maximum 60 Lubrication Points



Ordering Method AX3 XXXX

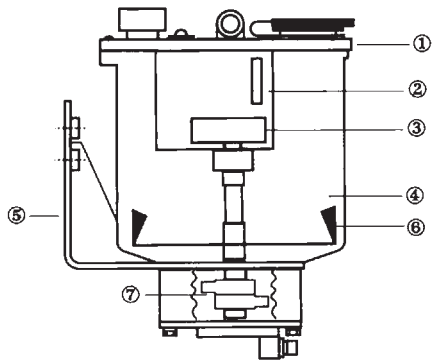
0	Continuous	1	110V	1	12 POINTS	1	GREASE NIPPLE FILLER
1	3 Minute delay	2	240V	2	24 POINTS	2	QUICK RELEASE COUPLING
2	7 Minute delay			3	36 POINTS		
3	10 Minute delay			4	48 POINTS		
4	20 Minute delay			5	60 POINTS		
5	30 Minute delay						
6	45 Minute delay						
7	60 Minute delay						
8	90 Minute delay						
9	120 Minute delay						

AX3 - PUMP MOUNTING CENTRES



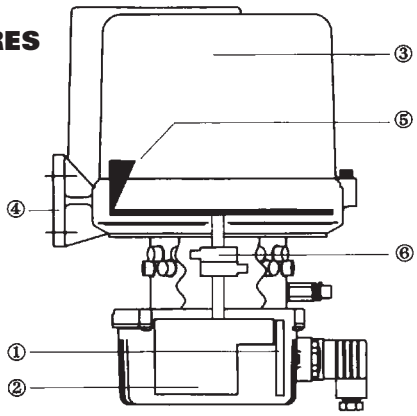
SPARES REFERENCE

AX1 & AX2 SPARES



ITEM	AX1	AX2
1. LID ASSY	AX/SP1/P	AX/SP1/P
2. PCB ASSY	AX/SP2	AX/SP2
3. ELECTRIC MOTOR	AX/SP3/110v	AX/SP3/110v
	AX/SP3/240v	AX/SP3/240v
4. RESERVOIR	AX/SP4/P	AX/SP9/P
5. BRACKET	83341-803	83341-803
6. PADDLE ASSY	AX/SP8	AX/SP8
7. CAMSHAFT ASSY	12 UNIT	AX/SP5/1
	24 UNIT	AX/SP5/2
	38 UNIT	AX/SP5/6

AX3 SPARES



ITEM	SPARES REF NUMBER	
1. PCB ASSY	AX3/SP2/110v	AX3/SP2/240v
2. ELECTRIC MOTOR	AX3/SP8/110v	AX3/SP8/240v
3. RESERVOIR	AX3/SP9	
4. BRACKET	38580-126	
5. PADDLE ASSY	AX3/SP7	
6. CAMSHAFT ASSY	12 UNIT	AX3/SP5/1
	24 UNIT	AX3/SP5/2
	36 UNIT	AX3/SP5/3
	46 UNIT	AX3/SP5/4
	60 UNIT	AX3/SP5/5
7. MOTOR COVER + PCB	AX3/SP10/110v	AX3/SP10/240v

DISTRIBUTION SYSTEM

Each lubrication point is serviced by its own individual feed line, via a dedicated pumping unit. The system is capable of handling SAE 80/90 oil up to and including NLGI Grade 2 grease with a 24 unit pump and up to '000' Grade grease on a 36 unit pump with the AX1 and AX2. The AX3 is capable of handling SAE 80/90 oil up to NLGI Grade 2 grease up to 60 points. The feed lines are 4mm O/D semi rigid black nylon tube. UV stabilised, rated 140 bar (14 MN/m^2).

Individual bearing lubrication on a multi-line system ensures that an accidental pipe breakage affects only one lubrication point, not the complete system.

INTERLUBE
A TIMKEN Brand

technical specifications

AC ELECTRICALLY OPERATED MULTILINE SYSTEM RANGE

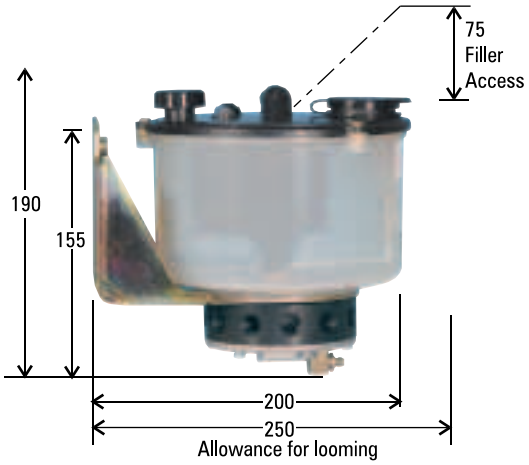
The **Interlube AC Range** is a compact all electrically operated multi-line system, with three reservoir sizes. The multi line concept enables each bearing to be lubricated independently, and damage to one feed line does not render the system inoperable. The AC Range is easy to operate, and virtually maintenance free. It is fully adjustable, and will deliver precise lubrication whenever the vehicle is in motion.

- Electrically operated 12/24volts
- Suitable for use with oil and grease upto NLGI grade 2
- Serves upto a maximum of 60 points
- Multi position timer with memory
- Six colour coded pumping units available with outputs from 0.01cc to 0.1cc
- High quality, reliable product. Made in the UK.

AC1 (1.25 Litre Reservoir)

Maximum 12 Lubrication Points

Operates for up to 750 hours on each reservoir filling.

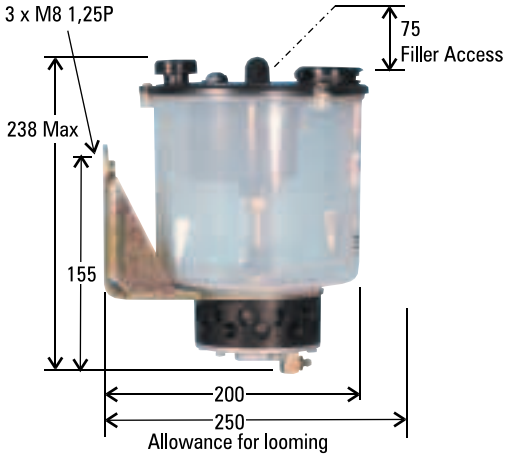


AC Pump Assembly (12 volt/12 outlets).....AC 1111
AC Pump Assembly (24 volt/12 outlets) .....AC 1121
(Pumps with 24 outlets are available to special order)
Motor Type.....Geared
Synchronous Power Consumption.....4 VA
Pump Cycle Time.....12 Minutes
Nominal Reservoir Capacity.....1.25 litres
Nominal Weight (Full).....3.25 kg

AC2 (2 litre Reservoir)

Maximum 36 Lubrication Points

Operates for up to 1500 hours on each reservoir filling.



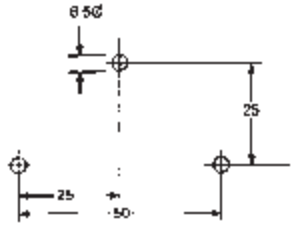
Ordering Method AC2 X X X

1 2.5 Mins*	1 12V. D.C.	1 12 POINTS
2 9 Mins	2 24V. D.C.	2 24 POINTS
3 12 Mins		3 36 POINTS**
4 15 Mins		

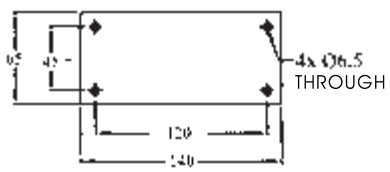
Cycle Time = (minutes per rev)
*Continuous Trailer Option - 1.33 Mins/Rev motor available as option
**Suitable for oil and fluid grades up to '000' grade only.

AC RANGE - PUMP MOUNTING CENTRES

AC1 & AC2



AC3



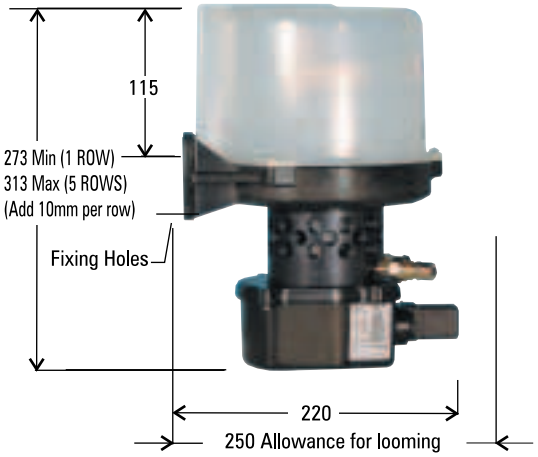
AC RANGE MINIMUM OPERATING TEMP

PUMP TYPE	RECOMMENDED LUBRICANTS					
	OILS SAE 80/90	NLGI GREASES				
		000 Fluid	00 Semi Fluid	0 Soft	1 Stiff	2 Hard
AC2XX1 12 Points	–40°C	–35°C	–30°C	–25°C	–20°C	–15°C
AC2XX2 24 Points	–30°C	–25°C	–20°C	–15°C	–10°C	–5°C
AC2XX3 36 Points	–20°C	–15°C	–	–	–	–
AC1111 12 Points,12/24 Volt	–40°C	–35°C	–30°C	–25°C	–20°C	–15°C
AC3 up to to 60 points 12/24 Volt	–25°C	–25°C	–25°C	–25°C	–25°C	–25°C
Upper Temp Limit	+40°C for all pumps					

AC3 (3 Litre Reservoir)

Maximum 60 Lubrication Points

Operates for up to 2000 hours on each reservoir filling.



Ordering Method AC3 X X X / X

0 Continuous double speed	1 12V.	1 12 POINTS	1 Grease Nipple Filler
1 Continuous normal speed	2 24V.	2 24 POINTS	2 Quick Release Coupling
2 3 Minute delay		3 36 POINTS	
3 7 Minute delay		4 48 POINTS	
4 11 Minute delay		5 60 POINTS	
5 15 Minute delay			
6 19 Minute delay			
7 24 Minute delay			
8 30 Minute delay			
9 36 Minute delay			

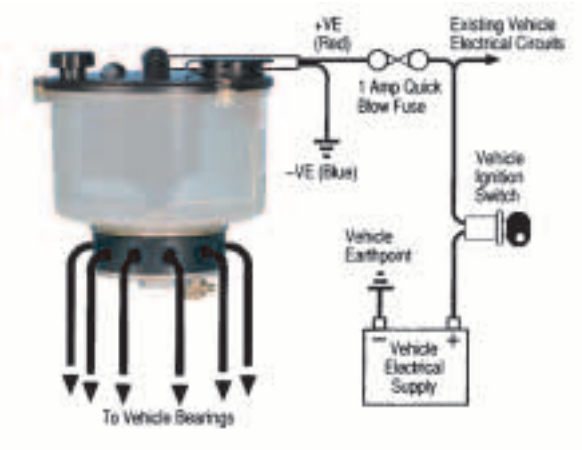
Motor Type: Geared
Nominal Reservoir Capacity: 3 Litres
Nominal Weight (Full): Approx. 5kg

2 low level options available for the AC3 pump, capacitive sensor type and a collapsable bellows/reed switch type for both fluid and heavy grease. Both can be wired for visual/audible warnings.

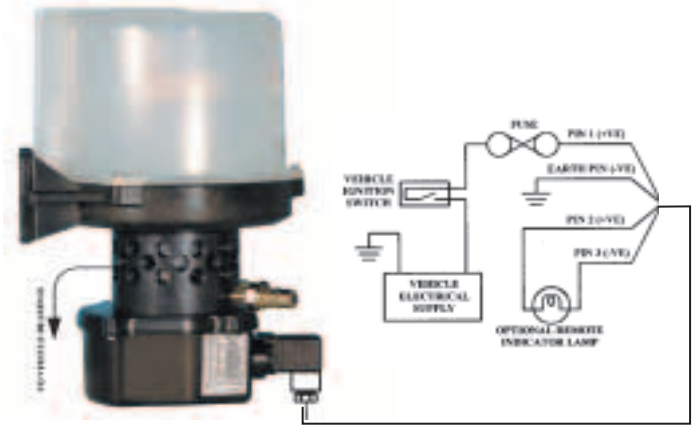
DISTRIBUTION SYSTEM

Installation is similar for the AC Range of pumps. Direct connections to the vehicle ignition system, provides automatic lubrication whenever the ignition is switched on.
A memory built into the pump's printed circuit board removes the possibility of over-lubrication on a short trip/multi-drop operation.

INSTALLATION DIAGRAM AC1 & AC2



INSTALLATION DIAGRAM AC3



DISTRIBUTION SYSTEM

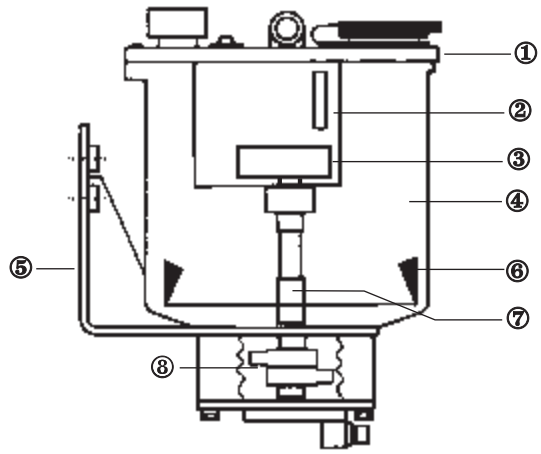
Each lubrication point is serviced by its own individual feed line, via a dedicated pumping unit. The system is capable of handling SAE 80/90 oil up to NLGI Grade 2 grease (limited on 36 unit pump up to '000' Grade grease on AC2) and up to 60 points on all suitable lubricants with AC3. The feed lines are 4mm O/D semi rigid black nylon tube, UV stabilised, rated 140 bar (14 MN/m^2).
Individual bearing lubrication on a multiline system ensures that an accidental pipe breakage affects only one lubrication point, not the complete system.

PUMPING UNITS

Positive displacement pumping units are available in six different stroke outputs to cater for varying output requirements, and are colour coded for easy identification. They are supplied complete with outlet fittings suitable for 4mm tubing

Colour	Stroke output cc	Part No
Red	0.010	78033
Green	0.015	78034
Yellow	0.025	78035
Blue	0.040	78036
Grey	0.060	78037
Black	0.100	78038
Blanking plug for unused outlets		34237-004

AC1 & AC2 SPARES



SPARES REFERENCE

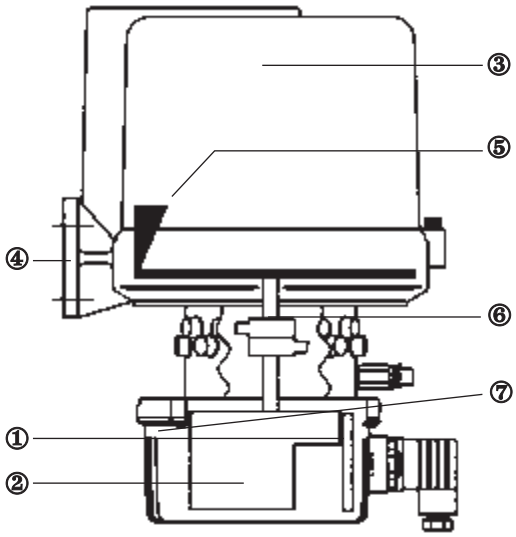
ITEM No	ITEM	SPARES REF NUMBER	
		AC1	AC2
1	LID ASSY	AC/SP1	AC/SP1
2	PCB ASSY	AC/SP2	AC/SP2
3	ELECTRIC MOTOR	AC/SP8/12v AC/SP8/24v	AC/SP8/12v AC/SP8/24v
4	RESERVOIR	AC/SP4	AC/SP9
5	BRACKET	83341-803	83341-803
6	PADDLE ASSY	AC/SP7	AC/SP7
7	DRIVE ADAPTOR	AC/SP6	AC/SP10
8	CAMSHAFT ASSY 12 UNIT 24 UNIT 36 UNIT		AC/SP5/1 AC/SP5/2 AC/SP5/3

Note: AC pumps built prior to JULY 1999 spares option for electric motor replacement are: AC/SP3/12V AC/SP3/24V

INTERLUBE WARRANTY

The INTERLUBE AC Range carries a 2 year warranty on ALL parts, (subject to normal terms and conditions of sale), in line with completion of our 'System Warranty Registration Card.'

AC3 SPARES



SPARES REFERENCE

ITEM No	ITEM	SPARES REF NUMBER
1	PCB ASSY	AC3/SP2/12V AC3/SP2/24V
2	ELECTRIC MOTOR	AC3/SP8/12V AC3/SP8/24V
3	RESERVOIR	AC3/SP9
4	BRACKET	38580 - 126
5	PADDLE ASSY	AC3/SP7
6	CAMSHAFT ASSY 12 UNIT 24 UNIT 36 UNIT 48 UNIT 60 UNIT	 AC3/SP5/1 AC3/SP5/2 AC3/SP5/3 AC3/SP5/4 AC3/SP5/5
7	Motor Cover and PCB	AC3/SP10/12V AC3/SP10/24V

SYSTEM ACCESSORIES

The AC Range, is complemented by a comprehensive range of system accessories, which enable INTERLUBE SYSTEMS to provide the complete lubrication package from vehicle ignition to bearing point - system filling to lubricant. See TECHNICAL DATA SHEET (number ISF100) 'System Accessories' for further information.

INTERLUBE
A TIMKEN Brand

AC1 - AC2 - AC3 PUMPS

12/24v PUMPS

SERVICE AND MAINTENANCE MANUAL
FOR
INTERLUBE MULTI-LINE LUBRICATION SYSTEM

Issue 1

SAFETY

As with all equipment, all due care must be used when servicing the AC chassis lubrication system.

Throughout this manual there will be information provided which requires special attention. This information will be displayed under the headings of **WARNING, CAUTION,** or **NOTE**.

TABLE OF CONTENTS

1. INTRODUCTION

This manual gives instructions for operating, maintaining, installing and servicing the Interlube AC multi-line lubrication system. Because of the importance of providing the correct lubricant amount to the moving parts of the equipment, read this manual to become familiar with your AC lubrication system.

Review and follow the procedures given before attempting installation maintenance or service. Illustrations are provided to aid in disassembly and reassembly.

If there are questions not answered by this manual, contact your Interlube distributor, dealer, or Interlube direct.

2. GENERAL DESCRIPTION

A typical AC Multi-line lubrication system includes the following components:

- Pump with Plastic Reservoir
- Adjustable Controller
- Pump Elements
- Tubing directly to lubrication points
- Fittings

The AC family of pumps have a range of 12 to 60 outlets each outlet can be fitted with a pump element. There are six elements to choose from, each having different output capacities (see page 12).
Each pump element feeds directly the lubrication point via a pipe which can be numbered at the pump and bearing to assure accurate lubrication + identification 3kg maximum outputs

AC1 PUMP

1.25 kg (2.75lbs) Reservoir maximum outputs 12

AC2 PUMP

2 kg (4.12lbs) Reservoir maximum outputs 36

AC3 PUMP

3 kg (6.6lbs) Reservoir maximum outputs 60

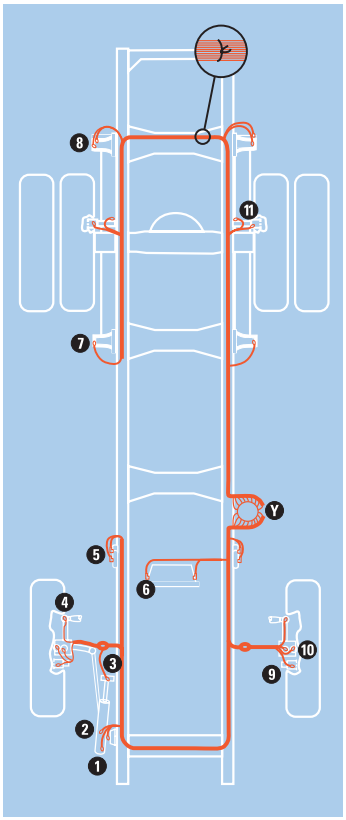
3. SYSTEM PLANNING

The AC Multi-Line Pump is used on chassis and Industrial applications. In the case of a chassis fitment (TILT CAB when applicable):

- Flush out all bearings to be connected to the system and clean the bearing surfaces.
- Remove grease nipples and insert connectors to establish the number of bearings being lubricated.
- Note the list of bearings to be connected to and choose relevant pump element to directly feed that point.

Typical Bearing Chart	Pumping Unit	
1. Power Steering Cylinder Front	0.015	0.025
2. Power Steering Cylinder Intermediate	0.015	0.025
3. Power Steering Cylinder Rear	0.015	0.025
4. Track Rod End	0.040	0.040
5. Shackle Pins Front	0.025	0.040
6. Clutch operating Shaft (Split Feed* - see note)	0.010	0.015
7. Spring Pins	0.015	0.025
8. Shackle Pins Rear	0.040	0.040
9. Brake Cam Shaft Front	0.010	0.015
10. King Pins	0.025	0.040
11. Brake Cam Shaft Rear	0.010	0.015
*Split Feeds are only permitted on oil lubrication systems.		
Other Bearings usually connected to the lubrication system:		
Balance Beam Bearings (2 feeds)	2 x 0.040	2 x 0.040
Drag Link Ball Joint	0.040	0.040
Gear Lever Linkage	0.010	0.015
Accelerator Cross Shaft	0.010	0.015
Pedal Linkages	0.010	0.015
Brake Slack Adjusters	0.015	0.025
Tipping Body Hinges	0.015	0.025
Fifth Wheel Coupling Pivot Point	0.015	0.025
Fifth Wheel Coupling Jaws	0.015	0.025

MULTI-LINE CHASSIS LAYOUT



Y AC Pump

FIG 1

3.1 Replacement of Motor Assembly AC1 & 2.

Fit the relevant pump elements chosen for each bearing feed into the pump carcass ring (take care not to overtighten). if any outlet positions are unused, blank using blanking plugs shown on page 23.

3.2 Pumping Elements (see page 12)

Each bearing requires a measured amount of grease this is determined by size and function. To meet this requirement there are a range of six pumping units to choose from.

3.3 Mounting of the Pump (see pages 9 + 10)

Select a suitable mounting point for the pump on the chassis or machine, preferably in a position where it is protected from debris. Ensure adequate clearance for re-filling is made (see page XX). Do not mount the pump on ancillary equipment, such as battery covers etc. Using the pump mounting adhesive template supplied, position and drill the bracket holes (mounting positions are detailed on page 9 + 10). Use bolts/nuts and spring washers to securely mount the pump in position.

3.4 Pump Settings (see pages 5 + 7)

4. INSTALLATION

4.1 Making the Looms

The loom should be formed using Interlube 4mm semi-rigid nylon tubing. it is recommended that grease filled tube is used so that the system does not have to be primed prior to operation. From the pump position ascertain the most convenient favourable route for the looms. The number of looms required will depend on pump location and quantity and positioning of grease points. Using looming stands if available, form individual tubes into a loom allowing sufficient length for connection to pump and bearings and allowing for chassis movements (e.g. springs, steering, lifts etc). In conjunction with the installation record sheet fit number identification sleeves to tubing at pump and bearing ends. The loom should be protected along its length with the conduit/spiral binding/sleeving, and/or tape (for part numbers see page 23). The loom can consist of tubes of varying lengths which can leave the loom at the required point (fig 2)

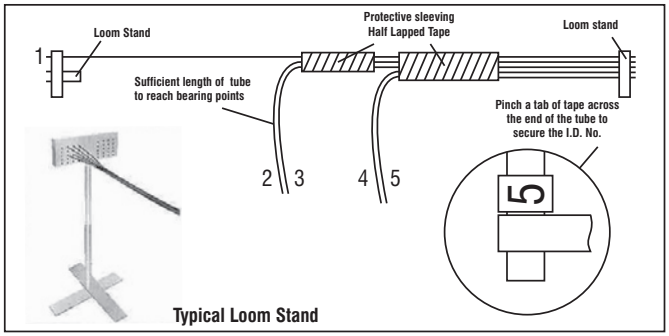


FIG 2

FIG 3

4.2 Connecting the Looms

Cut each tube to length ensuring a clean square cut is achieved, and connect to bearing using push fit connectors. ENSURE TUBING IS PUSHED FIRMLY INTO CONNECTOR. TEST ASSEMBLY BY PULLING FIRMLY ON THE TUBE. Using System Specification Sheet connect the loom to corresponding numbered pumping units. When running the tubing into the pumping units, to give the loom strength and rigidity, the tubes should be clipped together to form an arrangement as shown in fig 3 below. The starting point for the loom can be as required. On the underside of the AC2 a mark indicates a suggested starting point. Starting with the bottom row of outlets, and pumping unit 1, the loom should then run right around the pump, then on to connect with the next row of pumping units are connected. Alternatively the pump units in all rows can be connected by working around the pump ring, the the loom should still be formed as per fig 3. Alternatively the look can be run in the opposite direction. Approximate distance of the loom from pump should be approx 60mm. Tubes should be clipped together every 6 pump units. The loom/looms can then be routed on to the chassis as required.

4.3 Fitting the Looms

Working from the furthest point from the pump, feed the loom through the chassis following existing vehicle services where possible. Ensure tubes are positioned to fit bearing connectors. Where bearing is on a moving part, ensure tube length is sufficient to allow for full movement. To avoid rubbing or friction with chassis, grommets or protective sleeving should be used.

4.4 Test the AC System

For AC1 and AC2 see page 6
For AC3 see page 8

5. AC1 + AC2 ADJUSTABLE CONTROLLER

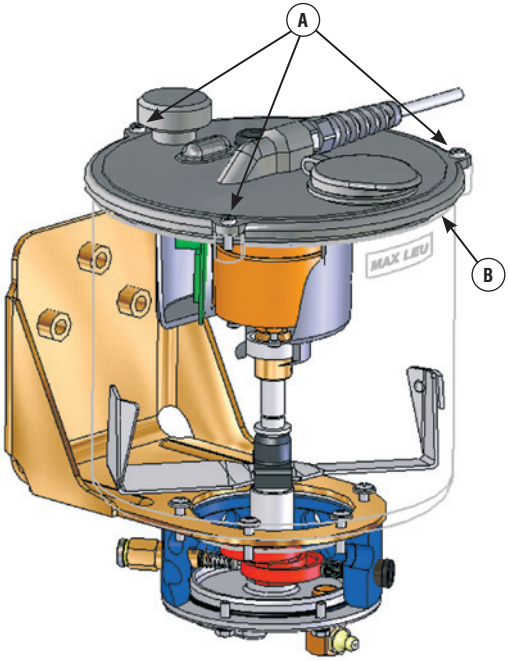


FIG 4

How to access internal PCB on an AC1/AC2 pump and adjust the run settings:

1. Remove screws x 3 (A)
2. Remove Lid (B)
3. Remove screws x 2 (C) under lid (see fig 5)
4. Access PCB (D)

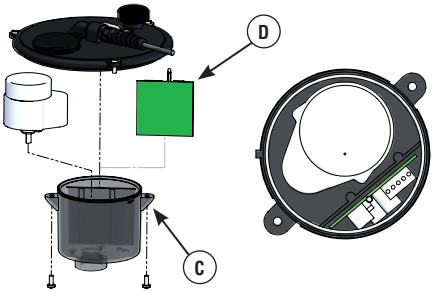


FIG 5

For AC1/2:

Rotary Switch

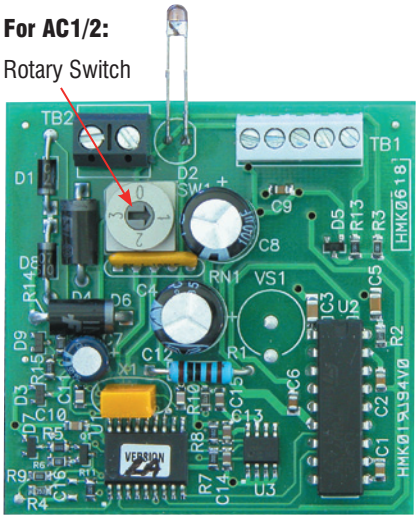


FIG 6

Cycle settings are selected through the 4 position rotary switch located on the circuit board (D), inside of the motor housing assembly (C).

PCB ADJUSTMENTS

The pump cycle time can be changed from the factory set option, if required.

Rotary Switch Position	Cycle Time
0	Continuous/2.5 mins
1	9 minutes
2	12 minutes
3	15 minutes

- Switch position 0 indicates continuous operation at a speed of 0.4rpm.
- Switch positions 1-3, cycle times include 2.5 mins run time and delay period.
- A faster motor with a speed of 0.75rpm is available giving a continuous cycle time of 1.33 mins.

6. TEST & INSPECTION PROCEDURE FOR AC1/2 PUMPS

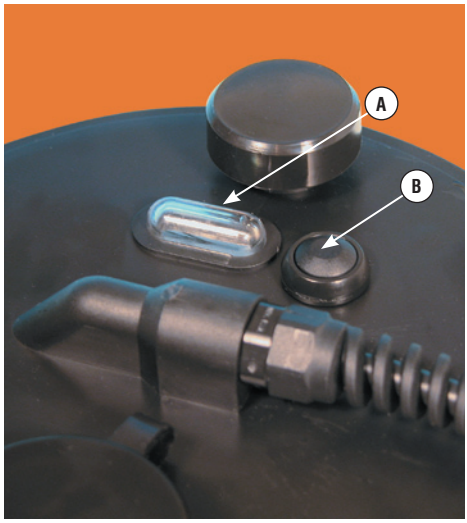


FIG 7

Indication Lamp (A)

- Continuously on supply to circuit + during delay mode
- Slow flash = motor operating

Press the manual overide button (B) and the pump will operate for one complete revolution, as the pump operates the indicator light will flash

The following inspection procedures are recommended to help ensure proper operation of the AC chassis lubrication system. Once the reservoir refill interval has been determined - every 3 days, once a week, every 3 weeks, etc. - make certain that interval is part of your scheduled maintenance.

A. Inspect all lubrication points for signs of FRESH grease.

B. Check the condition of all fittings and connections. Tighten or replace loose or damaged fittings.

C. Check all lubrication lines; make certain that there are not any breaks. Check for wear or chaffing that may lead to leakage.

D. Confirm pump operation by pressing Manual Override button (29) and checking indication light flashes.

7. WIRING DIAGRAM FOR AC1 & AC2 MODELS

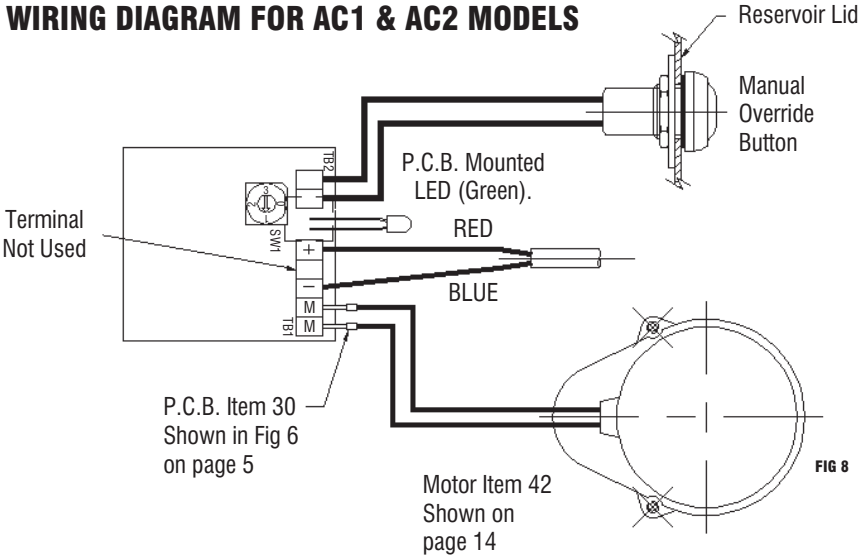


FIG 8

8. AC3 ADJUSTABLE CONTROLLER

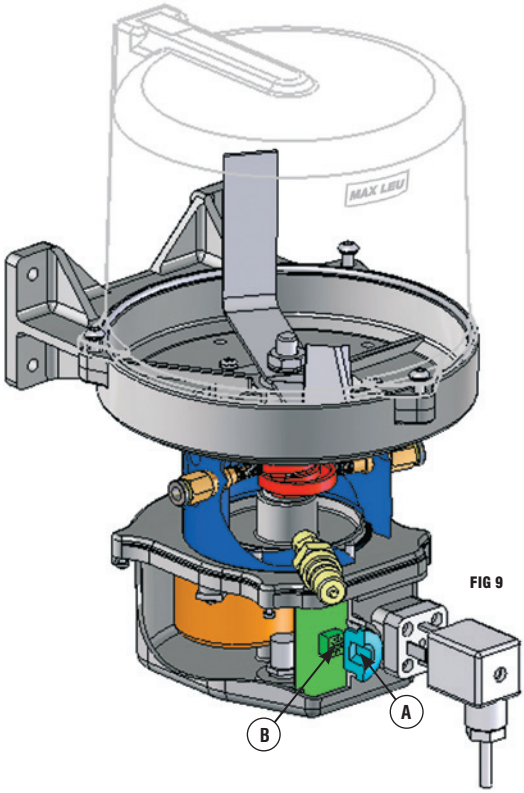


FIG 9

How to access internal PCB on an AC3 pump and adjust the run settings:

1. Remove plastic plug with 8mm allen key (A)
2. Once plastic plug has been removed, the PCB adjustment switch (B) can be accessed and adjusted with a screwdriver

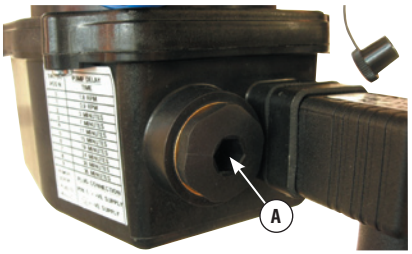


FIG 10

Note: The pump is available with 10 settings with delay timer. The delay is adjusted via the rotary switch (B) in Fig 11. The motor, for each operation will run for 1 min 8 seconds.

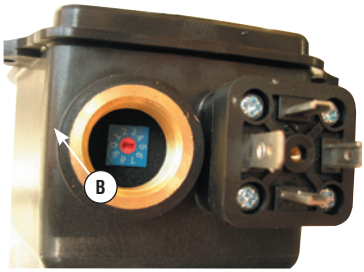


FIG 11

PCB ADJUSTMENTS

Switch Position	Setting
0	Continuous operation 1.8rpm
1	Continuous operation 0.9rpm
2	3 minute delay
3	7 minute delay
4	11 minute delay
5	15 minute delay
6	19 minute delay
7	24 minute delay
8	30 minute delay
9	36 minute delay

9. TEST & INSPECTION PROCEDURE FOR AC3 PUMPS

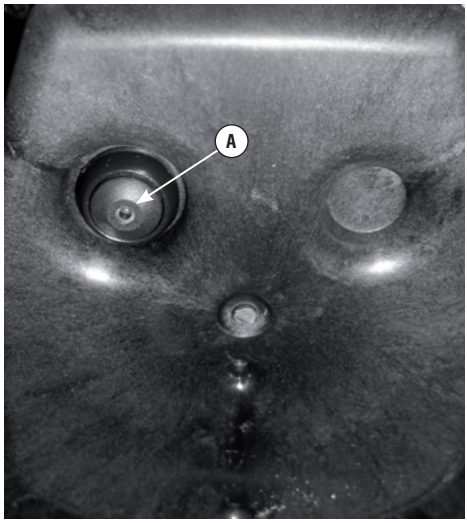


FIG 12

Manual Overide (A)

Press the manual overide button (A) and the pump will operate for one complete revolution, as the pump operates the indicator light will flash.

- Continuously on: supply to pump on and during delay mode
- Slow flash = pump running
- Fast flash = motor failure

The following inspection procedures are recommended to help ensure proper operation of the AC chassis lubrication system. Once the reservoir refill interval has been determined – every 3 days, once a week, every 3 weeks, etc. – make certain that interval is part of your scheduled maintenance.

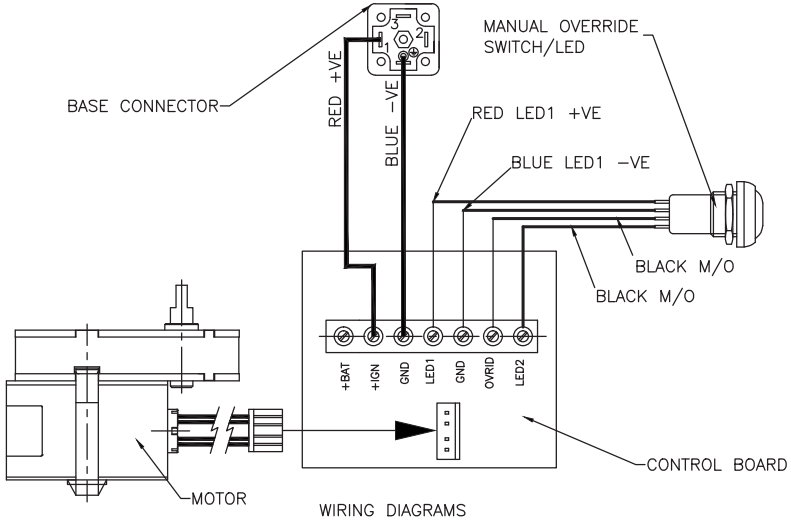
A. Inspect all lubrication points for signs of FRESH grease.

B. Check the condition of all fittings and connections. Tighten or replace loose or damaged fittings.

C. Check all lubrication lines; make certain that there are not any breaks. Check for wear or chaffing that may lead to leakage.

D. Confirm pump operation by pressing Manual Override button (29) and checking indication light flashes.

10 WIRING DIAGRAM FOR AC3 MODEL



WIRING DIAGRAMS

11. AC1 & AC2 PUMP DIMENSIONS

AC1

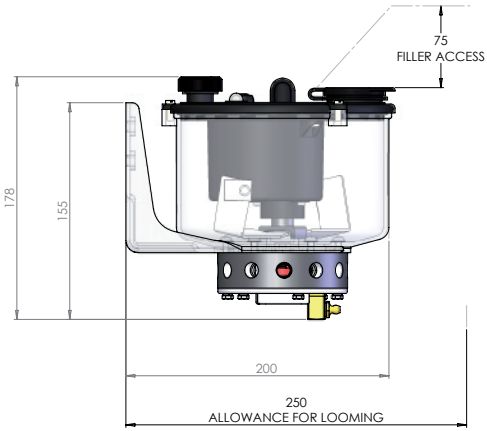


FIG 14

AC2

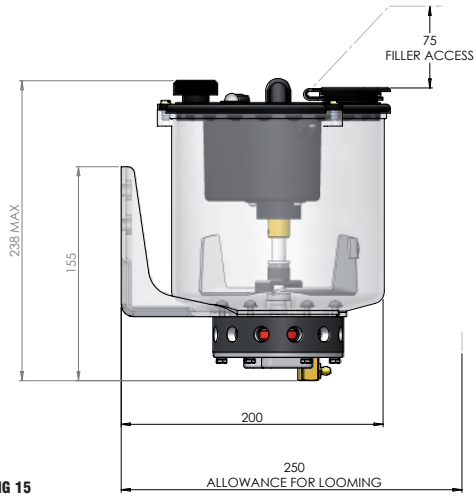


FIG 15

Mounting Dimensions

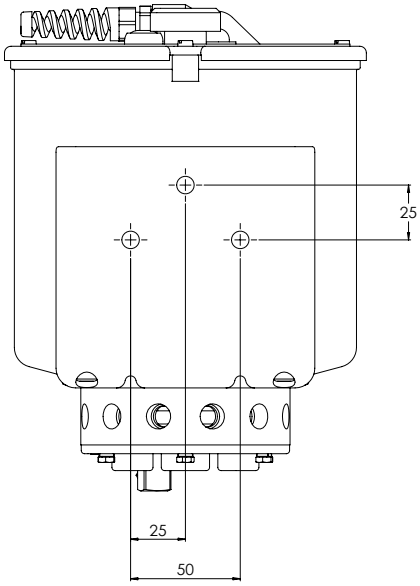


FIG 16

Technical Data

Power Consumption:	2 AMPS max
Reservoir Capacity:	AC1 1.25kg (2.75lbs) AC2 2kg (4.12lbs)

Nominal weight of AC2 with 24 outlets and full of grease

Max ambient temp:	160°F/66°C
Min ambient temp:	-35°C with 000 grease -12°C with grade 2 grease
IP Rating:	IP67
Max Viscocity:	NLGI grade 2 grease
Min Viscocity:	SAE80 oil

AC1 AND AC2

12. AC3 PUMP DIMENSIONS

AC3

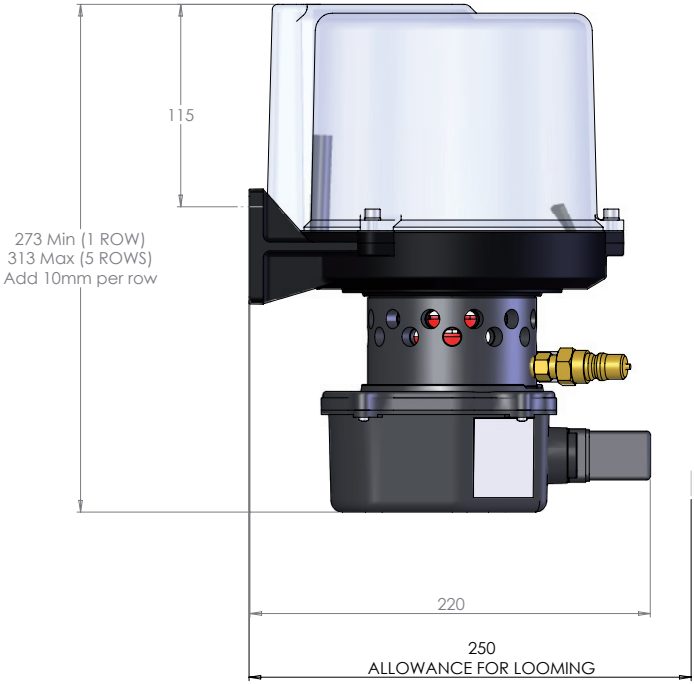


FIG 17

Mounting Dimensions

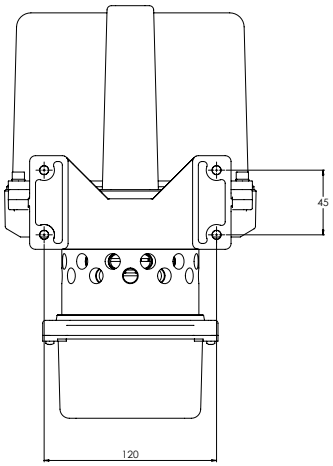


FIG 18

AC3

Technical Data

Power Consumption:	2 AMPS max
Reservoir Capacity:	3 kg / 6.6 lbs
Nominal weight full with 60 outlets:	7 kg / 15 lbs
Max ambient temp:	160°F/66°C
Min ambient temp:	-35°C with 000 grease -12°C with grade 2 grease
IP Rating:	IP67
Max Viscocity:	NLGI grade 2 grease
Min Viscocity:	SAE80 oil

13. PUMP FILLING

AC1 & AC2 Pump

FIG 19

The AC1/AC2 can be filled either through the filler cap in the lid (1), or via the grease nipple fill point (22). Initial filling should be through the grease nipple to prevent against any air pockets in the pump chamber or reservoir.

Systems Lubricants & Filling Methods

All Interlube Systems' multiline pump options are fitted as standard with both bulk top fill (suitable for oil and fluid grease up to NGLI '000') and bottom fill adaptors for filling of grease NGLI to Grade 2-this avoids the possibility of air entrapment.

If the reservoir (12) must be filled through the reservoir cap moulding (5), be certain the cap (1) is secured to the reservoir cap moulding (5) when finished. Take care to prevent air pockets in the reservoir.

AC3 Pump

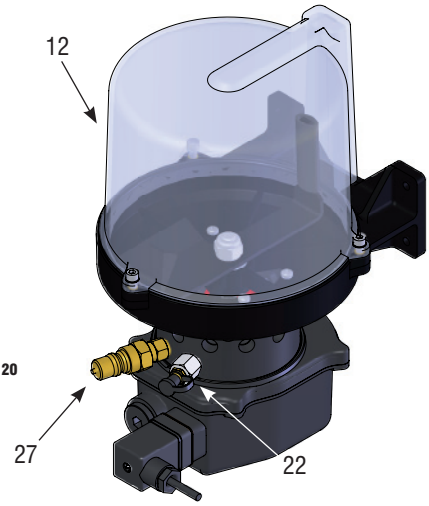


FIG 20

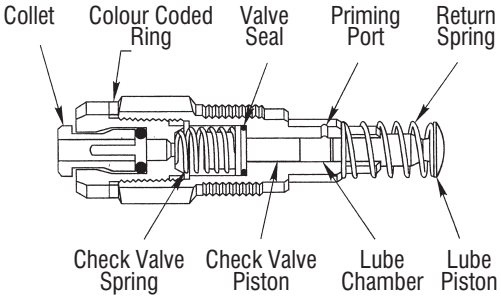
The AC3 is filled using the grease nipple or quick fill connector (27) located in the carcass ring.

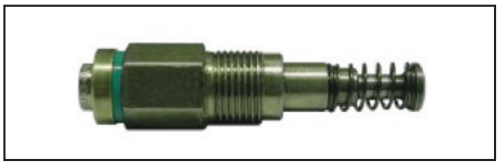
Caution

Do not overfill the reservoir (12). Fill only to Max Level label (28). Subsequent refilling of the reservoir (12) should be done through the grease nipple (22) or quick coupling (27) to minimise any contaminate from entering the reservoir

14. Pump Elements

Standard Pump elemets for AC1, 2 and 3 Pumps			
Part No:	**Output/stroke**	**Colour**	**Outlet Size**
78033	0.010 cc	Red	4mm OD Push Type
78034	0.015 cc	Green	
78035	0.025 cc	Yellow	
78036	0.040 cc	Blue	
78037	0.060 cc	Grey	
78038	0.0100 cc	Black	

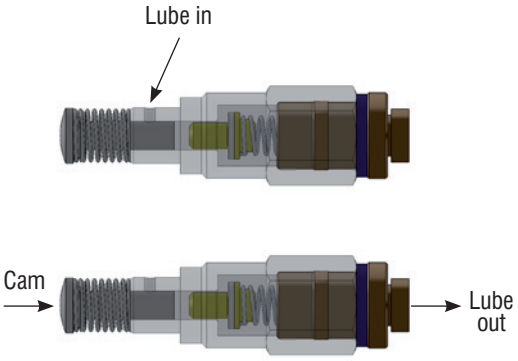




Output pressure	
Maximum output pressure from each	1740 PSI
Pump Element	120 Bar

Lubricants	
Maximum viscocity	NLGI grade 2 grease
Minimum viscocity	SAE80 oil

General Benefits of Interlube AC Multi-Line Lubrication Pumps



The electric motor drives an eccentric cam during the pumps operating time.

The pump element piston sucks the grease from the reservoir and then dispenses a precise amount of lubricant to the connected metering device.

15. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	REMEDY
A. All lubrication points appear dry.	1. Empty reservoir 2. Inoperative pump 3. Time between lube cycle is too long. 4. Reservoir has been filled with an unsuitable lubricant.	1. Refill the reservoir, using the correct lubricant. 2. Refer to **PROBLEM** "E". 3. Adjust pump **CYCLE TIME** setting. 4. Remove the lubricant and replace with correct grade of lubricant.
B. One or more lubrication point appears dry while others receive sufficient lubrication.	1. Broken or severed lube lines. 2. Inoperative injector. 3. Injector is undersized. 4. Injectors have been switched.	1. Determined cause, and if necessary, re-route, or protect the lines to avoid a recurrence. Use a connector (25478-056) to reconnect the line. 2. Refer to **PROBLEM** "G". 3. Replace with a larger capacity injector. 4. Check the lube schematic or installation record, making sure the correct injector is supplying the lube point.
C. All lubrication points are over-lubricated.	1. Time between lube cycles is too short.	1. Adjust pump **CYCLE TIME** setting.
D. One or more lubrication points are over-lubricated.	1. Injector(s) is oversized.	1. Replace the injector(s) with a smaller capacity injector.
E. Inoperative pump.	1. No input power. 2. Fuse is blown. 3. Loose wire connection inside the pump. 4. Defective PCB. 5. Camshaft is worn of broken. 6. Inoperative injector	1. Check for power to the pump. 2. Check in-line fuse. Replace if necessary. 3. Check all wires and connections in the pump. 4. Replace PCB. 5. Inspect the camshaft. Replace if necessary. 6. Refer to **PROBLEM** "G"
F. Reservoir Paddle is not rotating.	1. Bolt securing the paddle to the camshaft is loose. 2. Drive adaptor (AC1 & 2) is disengaged.	1. Tighten the bolt. 2. Remove lid assembly and re-engage adaptor.

15. TROUBLESHOOTING (CONTINUED)

PROBLEM	POSSIBLE CAUSE	REMEDY
G. Inoperative injector causing the pump to stall.	1. Lube piston cannot dispense lubricant. 2. Lube piston is frozen.	1. Loosen the line fittings individually from the injectors. Actuate the **MANUAL OVERRIDE** button to identify the stalled injector. Trace the line and check for: A. Clogged bearing. B. Crimped line. C. Blocked line. 2. Loosen the injectors individually from the pump body. Actuate the **MANUAL OVERRIDE** button to identify which injector frees the system. Replace the injector. Check for contaminates in the reservoir. Replace the lubricant if contaminates are found.
H. Inoperative injector but the pump is able to operate.	1. Return spring on the injector is not attached. 2. Lube piston is missing. 3. Outlet check valve is not seating properly.	1. Secure the return spring to the lube piston and injector body. 2. Replace the injector. 3. Remove and clean the injector. If this does not remedy the problem, replace the injector. Check for contaminates in the reservoir. Replace the lubricant if contaminates are found.
I. Lubricant is coming out of the tape / harness.	Broken or severed line.	Refer to **PROBLEM** "B – 1".

16. AC1/2 PARTS BREAKDOWN

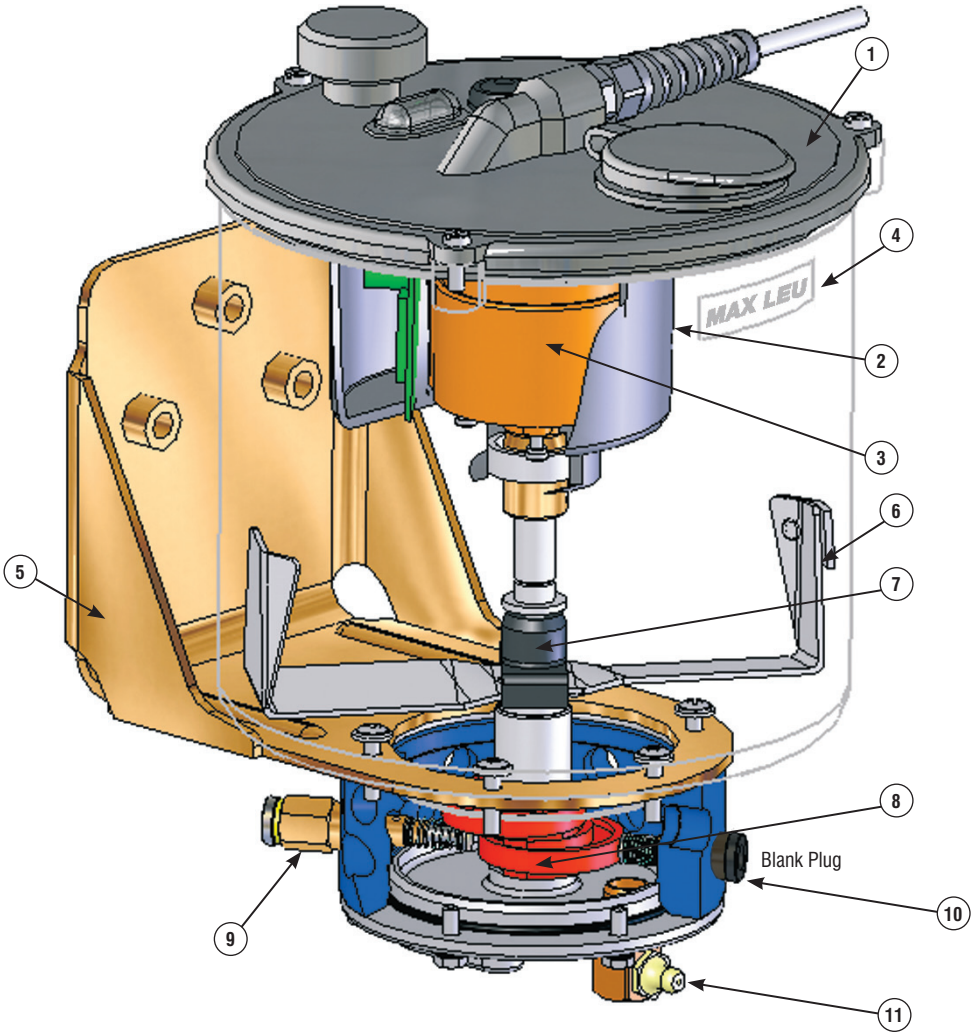


FIG 21

16.1. PARTS LIST

Item	Part No	Description	Qty	Notes
1	AC/SP1/P	LID ASSEMBLY	1	
2	AC/SP2	PCB ASSEMBLY	1	
3	AC/SP8/12V AC/SP8/24V	ELECTRIC MOTOR	1	
1,2 & 3	AC/SP15 (12V) AC/SP16 (24V)	SUPPLIED AS LID & MOTOR ASSEMBLY	1	
4	AC/SP4/P (AC1 AC/SP9/P (AC2)	RESERVOIR	1	
5	83341-803	BRACKET	1	
6	AC/SP7	PADDLE ASSEMBLY	1	
7	AC/SP10/P (AC2 ONLY)	DRIVE ADAPTOR	1	
8	AC/SP5/1 – 12 OUTLET AC/SP5/2 – 24 OUTLET AC/SP5/3 – 36 OUTLET	CAMSHAFT ASSEMBLY	1	
9	78033 – 0.010cc 78034 – 0.015cc 78035 – 0.025cc 78036 – 0.040cc 78037 – 0.060cc 78038 – 0.10cc	PUMPING UNIT	1	
10	34237-402	BLANKING PLUG	1	
11	83416-037	GREASE NIPPLE FILL POINT	1	

AC1 & 2 PUMPS GREASE DELIVERED PER PUMPING UNIT IN 10 HOUR PERIOD

	15 min cycle time 2.5 min/rev motor	45 min cycle time 2.5 min/rev motor standard motor	Set on continuous 2.5min/rev motor Standard motor	15 min cycle time 12 min/rev motor	45 min cycle time 12 min/rev motor	Set on continuous 12 min/rev motor
78034 GREEN pumping unit 0.015cc/stroke	0.60cc	0.21cc	3.60cc	0.13cc	0.05cc	0.75cc/hr
78035 YELLOW pumping unit 0.025cc/stroke	1.00cc	0.34cc	6.00cc	0.21cc	0.07cc	1.25cc/hr
78036 BLUE pumping unit 0.04cc/stroke	1.60cc	0.54cc	9.60cc	0.34cc	0.12cc	2.00cc/hr
Typical 6 point system 4-off YELLOW 2-off GREEN	5.20cc	1.78cc	31.20cc	1.10cc	0.38cc	6.50cc/hr
Refill period	**3846 hours**	**11236 hours**	**641 hours**	**18181 hours**	**52632 hours**	**3076 hours**
Typical 12 point system 8-off YELLOW 4-off GREEN	10.40cc	3.56cc	62.40cc	2.20cc	0.76cc	13.00cc/hr
Refill period	**1932 hours**	**5617 hours**	**320 hours**	**9090 hours**	**26316 hours**	**1538 hours**
Typical 18 point system 12-off YELLOW 6-off GREEN	15.60cc	5.34cc	93.60cc	3.30cc	1.14cc	19.50cc/hr
Refill period	**1282 hours**	**3745 hours**	**214 hours**	**6060 hours**	**17543 hours**	**1025 hours**

AC3

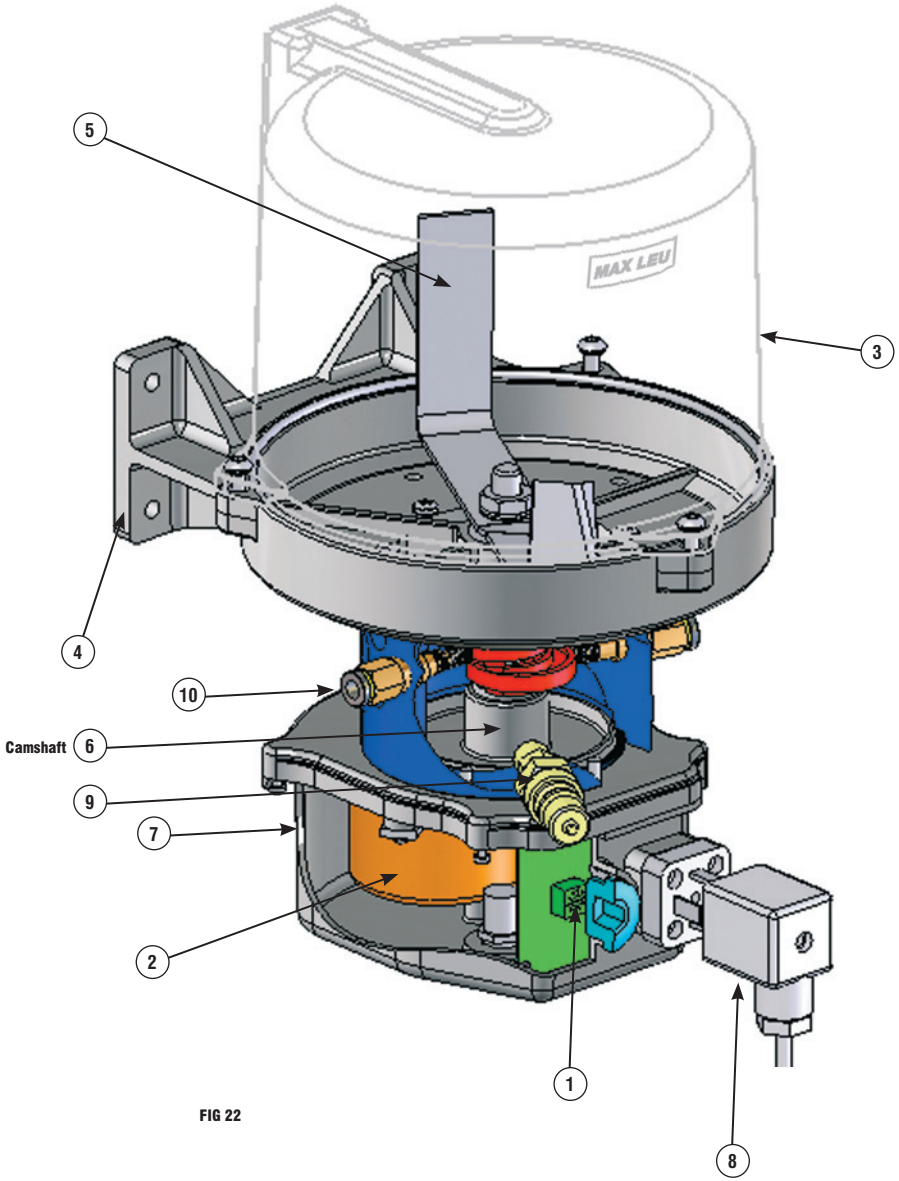


FIG 22

17.1 PARTS LIST

Item	Part No	Description	Qty	Notes
1	AC3/SP2/12V AC3/SP2/24V	PCB ASSEMBLY	1	
2	AC3/SP8/12V AC3/SP8/24V	ELECTRIC MOTOR	1	
3	AC3/SP9	RESERVOIR	1	
4	38580-126	BRACKET	1	
5	83416-352	PADDLE ASSEMBLY	1	
6	AC3/SP5/1 – 12 OUTLET AC3/SP5/2 – 24 OUTLET AC3/SP5/3 – 36 OUTLET AC3/SP5/4 – 48 OUTLET AC3/SP5/5 – 60 OUTLET AC3/SP5/6 – 72 OUTLET AC3/SP5/7 – 84 OUTLET	CAMSHAFT ASSEMBLY	1	
7	AC3/SP10/12V AC3/SP10/24V	MOTOR COVER AND PCB	1	
8	AC3/SP12	CONNECTOR ASSEMBLY AND CABLE	1	
9	83416-317	QUICK FILL CONNECTION	1	
10	78033 – 0.010CC 78034 – 0.015CC 78035 – 0.025CC 78036 – 0.040CC 78037 – 0.060CC 78038 – 0.100CC	PUMPING UNIT	1	

AC3 PUMP GREASE DELIVERED PER PUMPING UNIT IN 10 HOUR PERIOD

	Set on continuous 1.8 rpm motor speed	Set on continuous 0.9 rpm motor sped	3 min delay 0.9 rpm motor speed	15 min delay 0.9 rpm motor speed	36 min delay 0.9 rpm motor speed
78034 GREEN pumping unit 0.015cc/stroke	16.20cc	8.10cc	2.25cc	0.57cc	0.25cc/hr
78035 YELLOW pumping unit 0.025cc/stroke	27.00cc	13.50cc	3.75cc	0.94cc	0.41cc/hr
78036 BLUE pumping unit 0.04cc/stroke	43.20cc	21.60cc	6.00cc	1.50cc	0.66cc/hr
Typical 18 point system 12-off YELLOW 6-off GREEN **Refill period**	421.20cc **72 hours**	210.60cc **143 hours**	58.50cc **513 hours**	14.70cc **2040 hours**	6.42cc/hr **4673 hours**
Typical 24 point system 16-off YELLOW 8-off GREEN **Refill period**	561.60cc **53 hours**	280.80cc **106 hours**	78.00cc **385 hours**	19.60cc **1530 hours**	8.56cc/hr **3505 hours**
Typical 36 point system 24-off YELLOW 12-off GREEN **Refill period**	842.40cc **36 hours**	421.20cc **72 hours**	117.00cc **256 hours**	29.40cc **1020 hours**	12.84cc/hr **2336 hours**
Typical 48 point system 32-off YELLOW 16-off GREEN **Refill period**	1123.20cc **26 hours**	561.60cc **53 hours**	156.00cc **192 hours**	39.20cc **765 hours**	17.12cc/hr **1752 hours**

18. PUMP SERVICE PROCEDURES FOR AC1 & A2 MODELS

Service Procedures

The rugged design and simple construction of the AC lubrication system assures the operator of a long and trouble-free service. If service is necessary, use the following procedures to ensure proper disassembly and assembly of components.

Refer to figure 21 or 22 on pages 15 -17 – Exploded View for the location of the components referenced in the following procedures. Refer to ***REPLACEMENT PARTS*** for kit ordering information.

Because of the critical nature of supplying clean lubricant to the lubrication points, the AC must be serviced in a clean area, without potential of contamination.

CAUTION

At any time the AC is disassembled for service, the exposed components should be cleaned and checked for wear or damage. **DO NOT USE ACETONE-BASED SOLVENTS TO CLEAN**. Use clean towels to wipe the surfaces clean of excess lubricant. Solvents will harm the reservoir.

WARNING

Unless otherwise noted, whenever servicing any AC lubrication system component, disconnect electrical power from the system at the nearest disconnects before beginning.
Observe appropriate safety procedures to prevent any accidents while servicing the AC system.

18.1. Lid Assembly Replacement AC1& 2.

18.1.1. Use a screwdriver to remove the three pan head screws (6) from the reservoir lid (5).

18.1.2. Remove the lid assembly from the reservoir (12). Make certain the O-ring (7) is removed and discarded.

18.1.3. Carefully remove any old lubricant from the upper lip of the reservoir (12).

18.1.4. Place the new O-ring (7) in the lid (5).

18.1.5. Place the lid assembly on the reservoir (12) and align the mounting holes.

18.1.6. Install the three pan head screws (6). **Torque to 6 Lb-In / 0.7 Nm**. Do not over-tighten the screws (6).

Ensure drive adaptor is located on the paddle.

18.2. Reservoir Paddle Assembly Replacement AC1 & 2.

18.2.1. Refer to 18.1, above, and remove the reservoir lid assembly. Remove the lubricant from the reservoir (12).

18.2.2. Remove one Blanking Plug (32), and insert a screw driver to prevent the cams (17) from rotating

18.2.3. Unscrew the paddle assembly (10) from the camshaft (18) by hand

18.2.4. Screw new paddle assembly onto camshaft (18), hand tight.

NOTE

The camshaft (18) must be secured to prevent rotation.

Ensure the drive adaptor (33) is located correctly over the new paddle (10)

18.2.5. Carefully wipe the reservoir (12) and reservoir lid moulding (5) clean.

18.2.6. Refer to 7.1, above, and install the reservoir lid assembly.

PUMP SERVICE PROCEDURES CONTINUED: AC1 & A2 MODELS

18.3. Reservoir Replacement AC1 & 2.

18.3.1. Refer to 7.1, above, and remove the reservoir lid assembly. Remove the lubricant from the reservoir (12).

18.3.2. Refer to 7.2, above, and remove the reservoir paddle assembly.

18.3.4. Remove the six screws (13) and washers (14) from the bottom of the reservoir (12). Discard the old washers (14).

183.5. Carefully remove the reservoir (12) from the carcass ring (21). The mounting bracket (15) and O-ring (20) must be separated from the reservoir (12) and carcass ring (21). Discard the reservoir (12) and O-ring (20).

18.3.6. Carefully remove any old lubricant from the lid moulding (5). Wipe the carcass ring (21) and AC mounting bracket (15) clean.

18.3.7. Set the reservoir (12) on the mounting bracket (15). Install the O-ring (20) onto the flange of the reservoir (12). Align the mounting holes.

18.3.8. Carefully install the reservoir / bracket / O-ring (12, 15, 20) onto the carcass ring (21). Align the mounting holes of all three pieces.

18.3.9. Install the six new washers (14) and screws (13). **Torque to 6 Lb-In/0.7Nm**. Do not over-tighten the screws (13).

18.3.10. Refer to **18.2** above, and install the reservoir paddle assembly.

18.3.11. Refer to **18.1**, above, and install the reservoir lid assembly.

PUMP SERVICE PROCEDURES CONTINUED: AC1 & A2 MODELS

18.5. Replacement of Motor Assembly AC1 & 2.

18.5.1. Refer to **18.1** and remove lid assembly.

18.5.2. Remove the two screws that secure the motor housing (38) to the lid (5). Retain the 'O' ring seal (39) for reuse.

18.5.3. Remove the two screws that hold the motor (42) in place.

18.5.4. Loosen the two wires on the PCB (30) connector, noting the location of the two wires on the connector.

18.5.5. Pull the motor (42) off the "D" drive on the motor drive shaft .

18.5.6. Position the replacement motor in the motor housing (38) and fix in position with the two original screws. Ensure the drive adaptor (33) fits over the "D" on the motor drive shaft.

18.5.7. Reconnect the motor wires to the PCB (30).

18.5.8. Fix motor housing (38) to the lid (5), ensure the '0' ring (39) is correctly positioned.

NOTE

Look for the location of the "fixing ident" to ensure correct position of the motor housing (31) on the lid (5).

18.5.9. Refer to **18.1** for replacing the lid assembly.

18.6. Replacement of P.C.B. AC1 & 2.

18.6.1. Refer to **18.1.** for removal of lid, motor housing and P.C.B.

18.6.2. Loosen and disconnect RED and BLUE power cables from P.C.B. (30)

18.6.3. Loosen and disconnect manual override, if fitted, and LED cables from PCB connector.

18.6.4. Remove existing PCB. Insert new one, having first reset rotary switch to original positions.

18.6.5. Reconnect wires as in **18.6.2.**

18.6.6. See **18.1** for reassembly of motor housing.

18.7. Cam Assembly Replacement AC1 & 2.

18.7.1. Refer to **18.1**, above, and remove the reservoir lid assembly. Remove the lubricant from the reservoir (12).

18.7.2. Refer to **18.2**, above, and remove the paddle assembly (10).

18.7.3. Remove the bottom cover (34) by removing the 6 screws (35). Be careful not to damage the 'O' ring (36).

18.7.4. Loosen each injector to allow the cams (17) enough clearance to easily remove the cam assembly.

CAUTION

If the injectors must be removed from the carcass ring (21), be certain to mark the location for each one. Place the injectors in a clean container to prevent contamination.

18.7.5. Insert the new cam assembly through the manifold (21) and onto the bottom of the reservoir (12).

CAUTION

Be certain the new cam assembly has the same number of cams (17) as the old one.

18.7.6. Refer to 18.2, above, and install the reservoir paddle assembly.

NOTE

After the reservoir paddle assembly is installed, and any loosened injectors have been tightened, you should be able to turn the reservoir paddle (10) in a CCW rotation without excessive force. If the paddle will not rotate, check the cams (17) and injectors for any misalignment.

18.7.7. Refer to 7.1, above, and install the reservoir lid assembly.

18.7.8. Reassemble the bottom cover (34) ensuring the O ring (36) is correctly positioned. Tighten the 6 screws to torque 1 Nm.

19 PUMP SERVICE PROCEDURES FOR AC3 PUMP

19.8. AC3 Reservoir Replacement.

19.8.1. Remove the three screws holding the reservoir (12) in position on the pump body (2).

19.8.2. Remove reservoir (12) and 'O' ring (3) .

19.8.3. Position new 'O' ring on new reservoir.

19.8.4. Reassemble reservoir (12) to pump body (2), ensuring the breather is closest to the mounting bracket (47).

19.8.5. Insert and tighten screws to torque 3Nm. Be careful not to over tighten screws.

19.9. AC3 Paddle Replacement.

19.9.1. Refer to **19.8** to remove reservoir.

19.9.2. Remove M10 nut and washer (7&8) that holds paddle assembly in position.

19.9.3. Lift paddle blade (10) off drive shaft (18).

19.9.4. Position new paddle blade on drive shaft (18) ensuring correct position on the "D" drive location.

19.9.5. Put washer and M10 nut (7&8) in position and tighten to torque 7Nm.

19.9.6. Refer to **19.8** to refit reservoir (12).

7.10. AC3 Motor Replacement.

19.10.1. Loosen and remove the four screws that hold the motor cover (45) to the motor housing (44).

19.10.2. Pull the motor cover (45) away from the housing (44), and dispose of the old 'O' ring (46).

19.10.3. Disconnect the motor molex connector from the PCB. Put the motor housing assembly aside.

19.10.4. Loosen the two screws that hold the retaining plate (48) over the motor (42).

19.10.5. Remove the motor and place the new one in position, ensuring the motor drive shaft fits into the camshaft drive.

19.10.6. Place retaining plates (48) in position and tighten the screws to torque 1.5Nm.

19.10.7. Reconnect the molex connector from the new motor to the PCB (30).

19.10.8. Locate new 'O' ring seal (46) on motor cover (44).

19.10.9. Fit motor housing (45) to motor cover (44) and fix with the four original screws to torque 0.3Nm.

19.11. AC3 Replacement of PCB.

19.11.1. Refer to **7.10.1. / 7.10.2. / 7.10.3.** to access PCB (30).

19.11.2. Loosen and disconnect the RED and BLUE power cables from the PCB (30). Loosen and disconnect the manual override (29) and LED cables

19.11.3. Remove existing PCB (30) and insert new one.

19.11.4. Reconnect wires as in **7.10.7.**

19.11.5. See **7.10.8 & 7.10.9.** for re-assembly of motor housing.

19.11.6. Remove motor cover plug (43) to expose 10 position rotary switch.

19.11.7. Using a small slotted screwdriver, adjust the rotary switch to the original position.

19.11.8. Replace plug (43).

20. ACCESSORIES

STRAIGHT CONNECTORS

Straight Connectors

Part Number	Thread Size
PM80412	1/8 PTF SAE
PM80484	1/4-28UNF
PM80485	5/16-24UNF
PM80487	1/8 BSPT
PM80489	M6X1P
PM80490	M8X1P
PM80491	M8X1,25P
PM80492	M10X1P
PM80493	M10X1,5P
25478-056	4mm o/d x 4mm o/d

ELBOW CONNECTORS

Elbows

Part Number	Thread Size
PM90412	1/8 PTF SAE
PM90484	1/4-28UNF
PM90485	5/16-24UNF
PM90487	1/8 BSPT
PM90489	M6X1P
PM90490	M8X1P
PM90491	M8X1,25P
PM90492	M10X1P
PM90493	M10X1,5P

TUBE

Nylon Tube 4mm O.D		
Part No:	**Description**	
152823/25	25m coil filled with soft grease	
152823/50	50m coil filled with soft grease	
152821/25	25m coil filled with heavy grease	
27233-507	Cable Tie	
1755-830	Black Tape 1"	

PUMPING BLANKING PLUG

Blanking Plug		
Part No:	**Description**	
34237-402	Plug to blank off unused ports on the AC Pump	

CONDUIT/SPIRAL BINDING

1837-001	Spiral binding 6mm ID 1-2 tubes	
1837-002	Spiral binding 8mm ID 3-4 tubes	
1837-003	Spiral binding 10mm 5-3 tubes	
1837-004	Spiral binding 14mm 8-12 tubes	
1837-005	Spiral binding 20mm 12-18 tubes	
27315 - 907	Split Conduit 7mm	
27315 - 910	Split Conduit 10mm	
27315 - 912	Split Conduit 12mm	
27315 - 917	Split Conduit 17mm	

NUMBERED SLEEVES

OA 50397/1	for up to 12 point system	
OA 50397/2	for up to 13-24 point system	
OA 50397/3	for up to 25-36 point system	
OA 50397/4	for up to 37-48 point system	
OA 50397/5	for up to 49-60 point system	

21. GREASE FILLER PUMPS

Hand Operated Bulk Fill Pump

Hand operated bulk fill pump complete with:

1.5m hose, female quick release coupling to fit directly onto the Interlube quick connect fitting fitted to the pump.

Ideal for NLGI grade 1 or grade 2 grease

Part No:	Description
IL-108501	European Pump (12.5-18 Kg), cover 265mm to 310mm
IL-108502	USA Pump (35lb) cover 285mm to 330mm
IL-417001	Grease follower plate 260mm to 298mm
IL-417003	Grease follower plate 300mm to 340mm

HIGH PRESSURE GREASE PUMPS

Air Operated Grease Pumps

Quality range of Interlube Air Operated Grease Pumps Kits comprise of:

- 50 : 1 Ratio Pump
- Drum Cover
- Follower plate
- 4m Discharge hose and control valve
- 1.5m Air Hose
- Filter regulator and trolley

Fixed systems for large capacity drums, (same as mobile units without trolley)

Part No:	Description
IL-417001	follower plate 298mm to 260mm
IL-417005	follower plate 300mm to 340mm
IL-417003	follower plate 417mm to 360mm
IL-417004	follower plate 590mm to 550mm

Part No:	Keg Size	Description
IL-424150	12-18 Kg (35lb)	Mobile unit 310mm cover 450 mm down tube
IL-425150	50 Kg (120lb)	Mobile unit 405mm cover, 725mm down tube
IL-429000	180 Kg (400lb)	Static unit 610mm cover, 950mm down tube
IL-428243	180 Kg (400lb)	Mobile unit 610mm cover, 950mm down tube

22. LUBRICANTS

Part No.
25717-284

Part No.
25717-284/12.5K

Do not use heavy tackified greases or Bentone

Interlube FG3,0 High Performance Fluid Grease
FG3,0 is premium grade calcium based grease containing selected extreme pressure additives. Manufactured from highly refined mineral oil, and inhibited against oxidation and corrosion, it has been specifically designed to meet the arduous demands of modern fleet lubrication requirements. FG3,0 has excellent mechanical stability and is able to withstand severe working without breakdown in structure, and to operate in low temperature conditions.

GREASE

Premium Grade NGLI 000 / FG3,0

25717-284	12 x 1 Litre Bottles
25717-284 / 12.5K	12.5 KG Pail
25717-284 / 25K	25 KG Pail
25717-284 / 50K	50 KG Pail
25717-284 / 180K	180 KG Pail

NLGI Grade 2

25717-270 / 12.5K	12.5 KG Pail
25717-270 / 25K	25 KG Pail

GREASE SPECIFICATIONS

NGLI 000 / FG3,0

Colour	Amber
Texture	Fluid, Tacky
NLGI	000
Soap Type	Calcium
Penetration @ 25°C	445-475
Base Viscosity @ 40°C	35 to 45 CST
Drop Point	N/A

NLGI Grade 2

Colour	Pale Amber
Texture	Slightly Fibrous
NLGI	2
Soap Type	Lithium
Penetration @ 25°C	265-295
Base Viscosity @ 40°C	125cSt
Drop Point	185°C

23. ORDERING METHOD

AC1 (1.25 Litre Reservoir)

Maximum 12 Lubrication Points

Operates for up to 750 hours on each reservoir filling.

AC Pump Assembly (12 volt/12 outlets).....AC 1111
AC Pump Assembly (24 volt/12 outlets) .....AC 1121
(Pumps with 24 outlets are available to special order)
Motor Type.....Geared
Synchronous Power Consumption.....4 VA
Pump Cycle Time.....12 Minutes
Nominal Reservoir Capacity.....1.25 litres
Nominal Weight (Full).....3.25 kg

AC2 (2 litre Reservoir)

Maximum 36 Lubrication Points

Operates for up to 1500 hours on each reservoir filling.

Ordering Method AC2 X X X

1 2.5 Mins*	1 12V. D.C.	1 12 POINTS
2 9 Mins	2 24V. D.C.	2 24 POINTS
3 12 Mins		3 36 POINTS**
4 15 Mins		

Cycle Time = (minutes per rev)
*Continuous Trailer Option - 1.33 Mins/Rev motor available as option
**Suitable for oil and fluid grades up to '000' grade only.

AC3 (3 Litre Reservoir)

Maximum 60 Lubrication Points

Operates for up to 2000 hours on each reservoir filling.

Ordering Method AC3 X X X / X

0 Continuous double speed	1 12V.	1 12 POINTS	1 Grease Nipple Filler
1 Continuous normal speed	2 24V.	2 24 POINTS	2 Quick Release Coupling
2 3 Minute delay		3 36 POINTS	3 Dual Fill
3 7 Minute delay		4 48 POINTS	
4 11 Minute delay		5 60 POINTS	
5 15 Minute delay			
6 19 Minute delay			
7 24 Minute delay			
8 30 Minute delay			
9 36 Minute delay			

Motor Type: Geared
Nominal Reservoir Capacity: 3 Litres
Nominal Weight (Full): Approx. 5kg

2 low level options available for the AC3 pump, capacitive sensor type and a collapsable bellows/reed switch type for both fluid and heavy grease. Both can be wired for visual/audible warnings.