

**INSTRUCTION BOOK**

# **FORRERS**

**GEARED, SELF OILING, ENCLOSED  
POWER PUMPS**

# **FORRERS Pty. Ltd.**

## **GEARED, SELF-OILING, ENCLOSED POWER PUMPS**

### **INSTRUCTION BOOK**

Your Forrers pump is built to give you many years of reliable service. Read this instruction book, carry out installation and maintenance as suggested here, and it will serve you well.

The selection of the right pump for your work is a specialist's job and provided the pump is used within its capacity as outlined in our pumping tables, you will be well satisfied with it.

YOUR FORRERS PUMP IS COVERED BY THIS WARRANTY

### **WARRANTY**

Forrers pumps are well made from quality materials. The Company warrants with the original purchaser of Forrers pumps that any parts proven to be defective in materials or workmanship, will be repaired or replaced free of charge, f.o.r. Ipswich, provided that the original parts are returned freight prepaid to Ipswich, Queensland, on request.

The Company accepts no further or contingent liability whatsoever. Equipment and accessories not made by the company are sold without warranty other than that given by the original purchaser.

## PUMP SITE

Set the pump as close to the water level as possible, where the suction line can be run straight to the water supply. Select a site which will allow the shortest suction pipe with the lowest vertical lift. Under ideal conditions at sea level the practical vertical lift is 24 feet.

For each 1200 feet of altitude deduct 1 foot from the practical suction lift. For example, if the pump is installed at an altitude of 2,400 feet, the practical limit of suction lift would be about 22 feet.

Water may be drawn horizontally several hundred feet. However, on all suction lines, particularly those longer than 50 feet, allowance for friction in suction pipe must be allowed, so that the total vertical height from lowest water level to the pump, **including friction** does not exceed 24 feet.

On sites subject to flooding, Forrers Self Oiling Enclosed, Power Pumps have been under water on many occasions.

They have continued working well, after the oil has been drained, from the crankcase, replaced with fresh oil, and the pump generally checked over. Many ingenious systems have been devised to protect pumps in flood areas and a check in your district, plus your knowledge of it will show you how to protect your plant best.

## FOUNDATION

The pump must be installed on a firm foundation of heavy logs or preferably concrete. If you are not familiar with concrete work of this nature, it is suggested that you have your Forrers distributor arrange installation for you.

The pump should be set level so that oil does not run out on to the pulley or through the front of the crankcase near the packing gland.

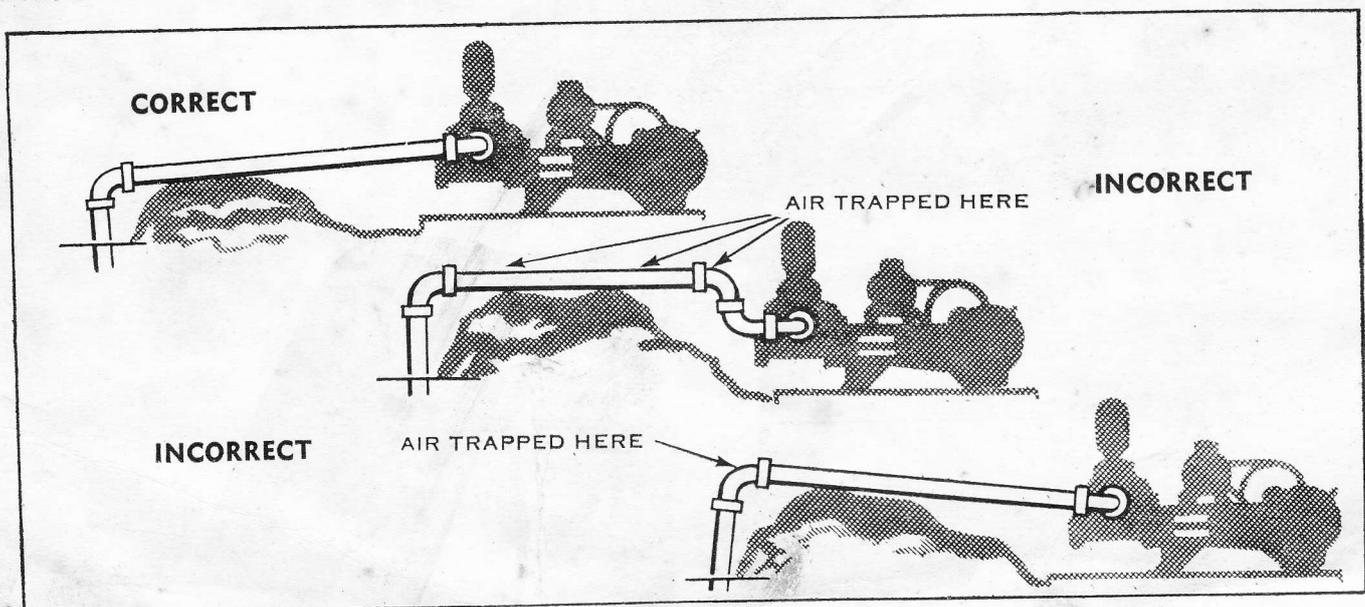
## SUCTION LINE

The installation of suction line correctly is very important for the efficient operation of the pump. Your Forrers pump is equipped with a suction chamber without extra charge. Under certain conditions your Forrers distributor may recommend an additional suction chamber where there is an extra long suction pipe or where there is extra high water velocity in larger pumps.

Connect the suction pipe to the pump suction chamber using a pipe diameter no smaller than that for which the pump is screwed. On long pipe lines or where a large volume of water is pumped, your Forrers distributor may recommend a larger diameter pipe. Take this recommendation; never restrict suction pipe size.

Keep the suction line rising at all times towards the pump, and avoid high points to ensure that no air is trapped in the suction line. Avoid all sudden changes of direction in the suction pipe, use 45 deg. spring bends in preference to 90 deg. Suction can be by galvanised pipe, galvanised flanged fluming, aluminium designed for suction, or wire reinforced suction hose. Where water level rises and falls appreciably, a suction line may be floated on a water tight oil drum.

The attached illustrations will show correct and incorrect suction lines.



## **SUCTION LINE (continued)**

Make sure all joints whether screwed or flanged on the suction line are air tight. On screwed joints use hemp and/or a reliable pipe jointing compound.

To make future servicing easier and to enable the piping to be screwed up tightly a barrel union or flanged joint should be fitted to the suction line.

Where the water level is higher than the pump, fit a gate valve in the suction line so that water may be shut off if it becomes necessary to work on the pump. Make sure this gate valve is open whenever the pump is working.

## **FOOTVALVE**

Where water level is below the pump, a reliable footvalve must be fitted.

Some makes must be installed in the water vertically, others at an angle. Where the footvalve has a hinged clack valve, make sure the hinge is at the top.

## **OLD SUCTION LINE**

Before installing a new pump on an old suction line, make sure the pipe is clean, not corroded or full of holes.

## **DISCHARGE LINE**

The diameter of the discharge line will depend on the work the pump is to do, including friction in that line. As a general rule, it should be no smaller than the size of the pump discharge. The use of smaller pipe than that recommended builds up a friction load which wastes power.

The saving in the cost of power will very quickly pay for the slightly higher cost of the right size pipe.

Fit a check valve in the discharge line as close as possible to the pump. This protects the pump from water hammer, from damage through flow back of water in the discharge line and holds back this water when maintenance is being carried out on the pump.

To make future servicing easier and to enable the piping to be screwed up tightly, fit a barrel union or flanged joint on the discharge side between the check valve and the pump.

## **UNDUE STRAIN ON PUMP**

Delivery pipe should be buried wherever possible. Both suction and delivery pipe must be supported independently of the pump. The pump casing must not carry this weight.

Do not force home bolts on flanges or threads of pipes. These must match up with their mating pipe without undue pressure to avoid distortion of the pump.

## **OPERATION**

Fill the pump with oil to a point about level with the bottom of the oil return channel in the crankcase. Use a good grade of medium automobile oil such as Castrol Alpha 717 (standard pumps), 817 (heavy duty pumps).

It is advisable after the first 48 hours of actual pumping to drain the original oil and replace with fresh. Inspect the oil level every few months.

Replace when the oil becomes mixed with water or exceptionally dirty.

In addition, where a pump is in constant use, once a year, drain and flush the crankcase; refill with fresh oil.

## **PRIMING PUMP (WITH FOOT VALVE FITTED)**

Remove plug from the top of the suction chamber. Fill this and the suction line completely with water. Before replacing plug, watch water level for a short time to see if the footvalve is holding. Replace plug and start pump. Water should be pumped immediately.

### **(NO FOOT VALVE FITTED)**

We recommend that a foot valve always be used. However, if for special reason, one is not, proceed as follows.

Remove the plug in the top of the air chamber on the top of the pump, or remove this air chamber.

Fill the delivery chamber around the delivery valve with water.

Start and stop the pump alternately until the water discharges over the pump body. Replace the air chamber, tighten evenly and firmly and restart the pump immediately. The pump should start delivering water within a few minutes.

If the pump does not deliver water, prime again. If it still fails to function, check the installation throughout. Make sure everything is perfectly air tight, that the end of the suction line is under water, that a clack type foot valve has the hinge on the top and that the lift does not exceed the recommended maximum.

## **PROTECTION**

Always use a relief valve on the discharge line near the pump to protect the pump from damage in case the discharge line is shut off or becomes blocked for any reason.

## **MAINTENANCE (IF THE PUMP KNOCKS)**

The valves may be sticking.

The suction may be blocked.

The water may be flowing from the well into the pump causing water hammer. If the latter refer to suction line in former paragraphs.

A snifter valve fitted into the suction side of the pump will keep air chambers full of air and sometimes eliminates water hammer.

Even when a snifter valve is fitted, after a long period of use the air chamber can become water logged. If water hammer develops suddenly, after the pump has been operating well, check the air chamber and drain it.

## **IF PUMP RUNS BUT DOES NOT DELIVER ANY WATER**

Have you primed the pump?

Are the suction line priming plugs, drain plugs, valve caps, cylinder head, and packing nut air tight.

Is the end of the suction pipe below water level.

Is the vertical suction lift more than the recommended distance.

Is the end of the suction pipe resting on the bottom of the well and becoming clogged.

Has a build up of silt blocked the pump suction pipe or foot valve?

Use a strainer of liberal size on the suction line if there is a chance of foreign substances being drawn into the suction pipe. The packing nut should be tightened to allow for a slight leak to lubricate the piston rod with water.

## **TO RENEW PUMP BUCKETS**

Remove the cylinder head, and, after running the plunger as far forward as possible by turning the pump by hand, remove the nuts from the end of the piston rod. Screw threaded bolts into the plunger plate and pull the plunger assembly out.

The pump buckets may have to be assisted with a pointed object. Replace pump buckets with new ones, making sure that the radius of the pump buckets is against the centre bucket plate, and the inner bucket plates are fitted into each leather. Tighten the piston rod nuts firmly, replace cylinder end. It may be necessary to spread the outer edges of the leathers to ensure a neat fit into the cylinder liner. If the pump fails to deliver full capacity after a long period of service renew the bucket leathers and rubber valves and make sure that the suction line is clear and has not developed any air leaks.

## **TO RENEW THE CYLINDER LINER**

If time permits the cylinder body can be removed and despatched to our works. The old liner would be removed and a new liner fitted. The cylinder would be returned the same day.

If the liner is to be renewed at the pump site remove the cylinder end, extract the piston rod nuts and pump bucket. Remove the cylinder holding studs on the crankcase flange. Crack the joint between the cylinder flange and packing gland plate. Lift the cylinder away from the crankcase, making sure that it does not fall onto the piston rod and damage the thread.

The liner can be cut through its thinnest part (generally at the bottom of the barrel) with a sharp long chisel. If in the process of cutting the liner the seals are broken and the liner becomes loose in the barrel: Spring the liner over the cut and remove it through the barrel.

Fit the new liner into the barrel and even the ends with the cylinder end flange faces.

With a round ended punch and hammer beat the ends of the liner over and against the sealing faces, making sure that the ends of the liner remain even with the flange faces. Working on each end alternatively will ensure this.

Remove any burrs you may have raised on the inside of the liner. Clean the cylinder flange faces, and using a new cylinder end packing, refit the cylinder to the crankcase. Refit the leathers, piston rod nuts, and cylinder end.

## TO REMOVE VALVE SEATS

All valve seats with the exception of the 7" x 8" and any special pump are fitted on a taper and are easily removed.

Remove the valve covers and air chamber. On every size excluding the  $1\frac{3}{4} \times 3$ ,  $2\frac{1}{4} \times 4$ , and  $3 \times 5$ , the valve post can be removed by fitting a spanner to the hexagon on the valve post head and unscrewing as with a right hand thread. Care must be taken when reaching the end of the thread as the valve spring has a tendency to spring the post out of the cylinder body resulting in the valve rubber and valve plate falling into the cylinder barrel.

After the posts, plates, springs, and rubbers have been removed, lay a plate about 2" x  $\frac{1}{2}$ " with a hole in the centre across the valve port opening, insert a bolt of the size of the valve seat thread and of sufficient length through the plate and into the valve seat centre.

Load the bolt as with a wheel puller, and strike the outside of the cylinder body with a hammer in the vicinity of the valve seat.

The seat should spring from its seal.

If the seats are scoured and uneven they must be faced or replaced.

The  $1\frac{3}{4} \times 3$ ,  $2\frac{1}{4} \times 4$ , and  $3 \times 5$  valve seats are removed with pullers.

Remove the air chamber. Lift the valves from their seats and out of the cylinder body. Remove the delivery valve seats first.

A threaded plate is fitted vertically through the opening in the seat and set horizontal. A bolt of sufficient length is fitted through the top puller plate set over the valve chest opening. This plate has a hole in the centre to take the puller bolt. The bolt is then loaded and the outside of the cylinder body struck with a hammer. The seat should spring from the cylinder body.

To replace proceed as with ordinary seats.

The 7 x 8 valve seats are screwed into position. A spanner can be made from a piece of pipe. If the seats cannot be moved by spanner they can be heated (seats only) and quenched immediately with water. This action compresses the brass and loosens the thread. They can then be removed for facing.

After refitting the repaired or new seats and screwing firmly make sure there are no marks left on the seat by the spanner.

## TO REPLACE THE VALVE SEATS

Insert the seat into position, making sure that it is clean and the cylinder seals are clean. Using a flat block of wood on the seat face, strike the wood sharply with a hammer to drive the seat into place. Replace the valves, plates, springs, and posts.

When tightening the posts, tighten firmly.

Take care in this operation as the posts are cast brass and can be sheered if too much force is used. Before replacing the valve covers and air chamber, fill the valve chambers with water, this ensures priming.

## TO DISMANTLE MECHANICAL END OF PUMP

Drain the oil from the gear case. Remove the gearcase cover. Loosen the lock nut holding the gear shaft locking screw in the centre of the gear and eccentric. Remove the locking screw which fits a countersunk hole in the gear shaft. Remove the setscrews holding the gear shaft bearings to the gear case and withdraw the two gear shaft bearings.

With a wooden block drive the gear shaft through the gear and out of the gear case through the bearing holes.

Remove the pump buckets and three piston rod nuts (to Renew Pump Leathers) unscrew the baffle plate locking screw. Revolve the gear until the eccentric is at the bottom. Withdraw the gear and assembly complete with piston rod from the gear case making sure that the Baffle Plate is removed as the Piston Rod is withdrawn.

## TO REMOVE THE PISTON ROD FROM THE CROSSHEAD

The 2 x 2 XL and  $2\frac{1}{2} \times 3$  are locked with pins through the crosshead boss. All other sizes are locked with a setscrew. Remove the pin or setscrew and screw the rod from the crosshead boss (right hand thread).

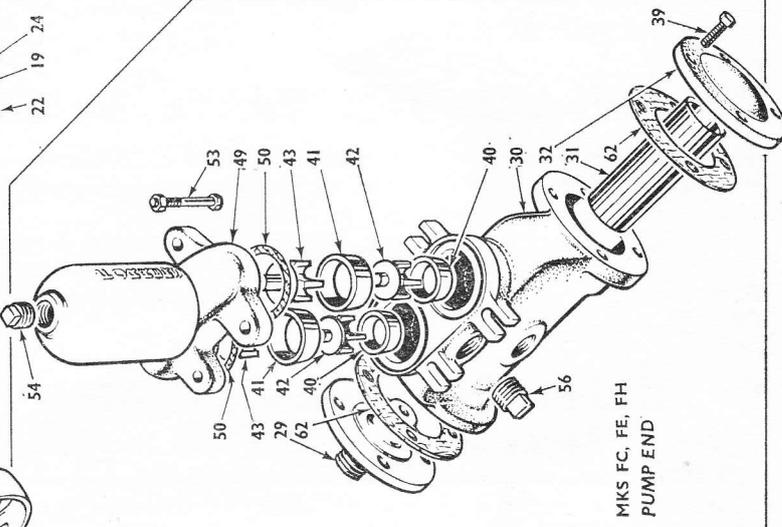
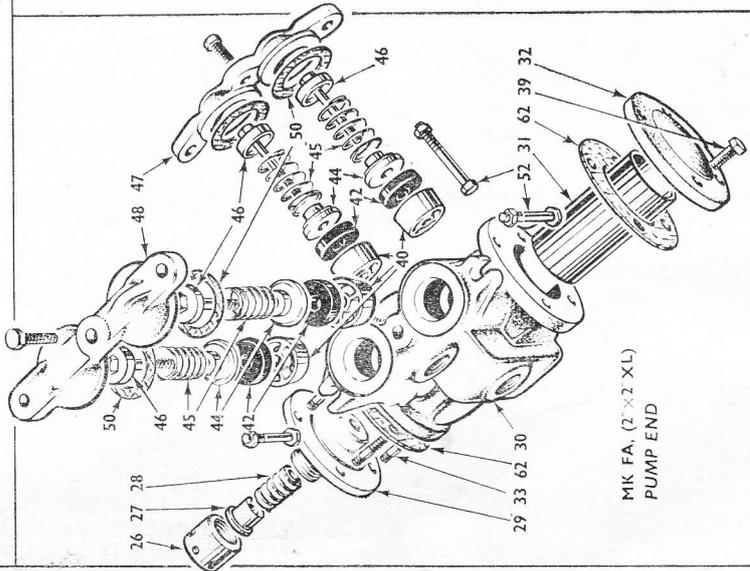
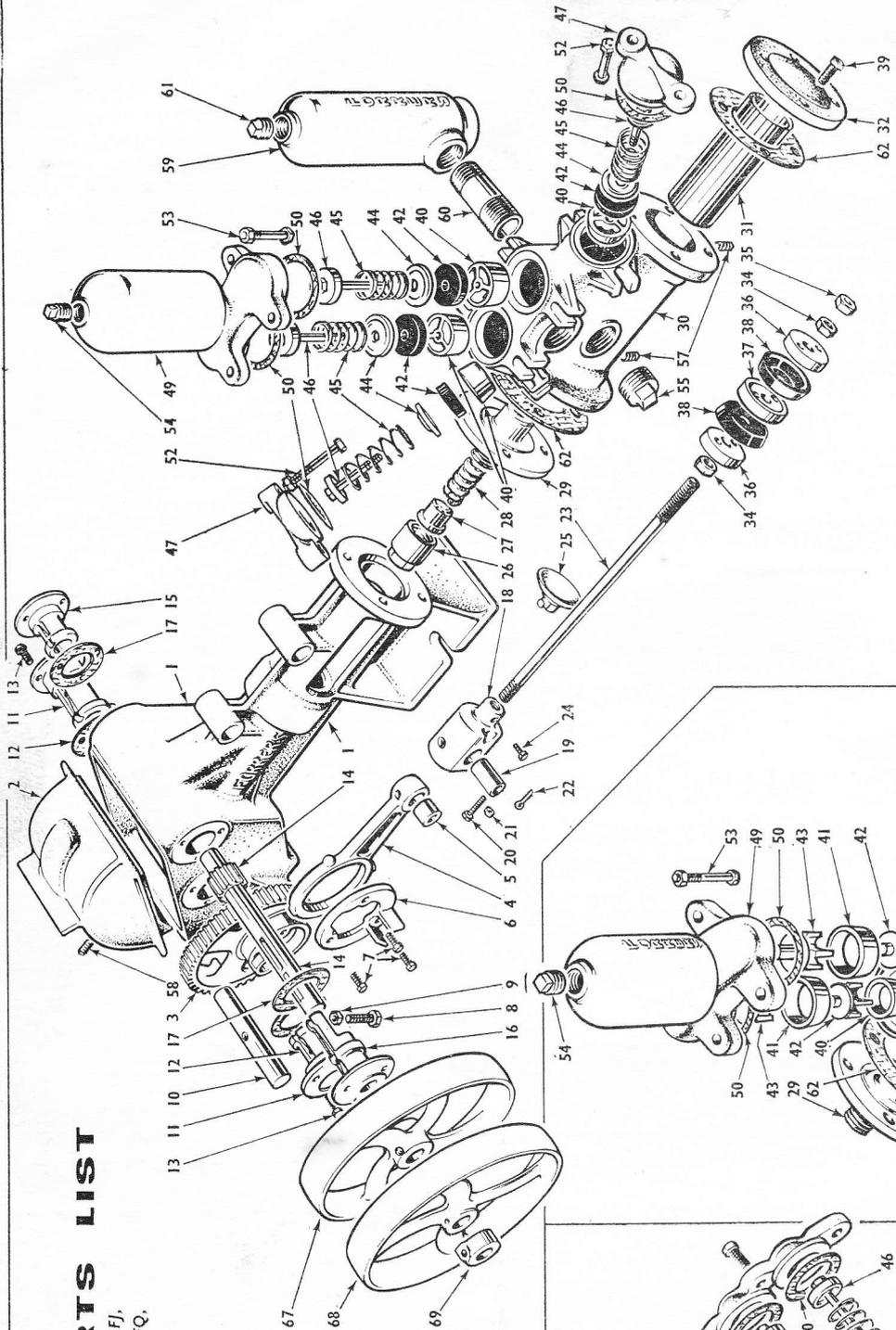
## TO REMOVE CROSSHEAD FROM THE CONNECTING LINK

Loosen the lock nut and extract the locking screw. The crosshead pin is a sliding fit through one boss and tight fit through the opposite boss. The sliding fit is on the side of the locking screw. Drive the pin through from the tight side and out through the locking screw side.

When reassembling make sure that the oil holes in the crosshead and connecting link correspond. When fitting the gear assembly into the gear case make sure that the crosshead oil hole is at the top.

# FORRERS PARTS LIST

STANDARD PUMP: MKS FB, FD, FF, FG, FJ,  
FK, FL, FM, FO, FP, FQ,  
FR, FS, FT.



**Gear Box ends in all F series pumps are similar in design to that shown above**

**Only the Pump Ends (illustrated at left) differ**

# FORRERS PARTS LIST

PART No.	NAME OF PART	PART No.	NAME OF PART
1	Gear and Eccentric Case	23	Piston Rod
2	Gear Case Lid	24	Piston Rod Locking Screw
3	Gear and Eccentric	25	Baffle Plate
4	Connecting Link	26	Packing Nut
5	Connecting Link Bush	27	Packing Gland Bush
6	Retaining Ring	28	Set of Gland Packings
7	Locking Screws Ret. Ring	29	Cylinder Head with Packing Box
8	Locking Screw Gear Shaft	30	Cylinder Body
9	Locking Nut Gear Shaft	31	Cylinder Liner
10	Gear Shaft	32	Cylinder Head (Plain)
11	Gear Shaft Bearing	33	Crankcase to Cylinder Studs.
12	Packing Rings—Gear Shaft Bearing	34	Piston Rod Nuts
13	Set Screws—Gear Shaft Bearing and Pinion Bearing	35	Piston Rod Lock Nut
14	Pinion and Shaft	36	Bucket Plates Inner
15	Pinion Bearing Short	37	Bucket Plates Between
16	Pinion Bearing Long	38	Pump Buckets
17	Packing Rings for Pinion Bearing.	39	Cylinder Head Plain Studs
18	Crosshead	40	Suction Valve Seats
19	Crosshead Pin	41	Delivery Valve Seats
20	Locking Screw—Crosshead Pin	42	Suction Valves
21	Locking Nut—Crosshead Pin	43	Delivery Valves
22	Split Pin for Crosshead Pin.	44	Delivery Valve (high pressure)
			Valve Plates
		45	Valve Springs
		46	Valve Posts
		47	Cap Over Valve Suction
		48	Cap Over Valve Delivery
		49	Air Chamber
		50	Cap Over Valve Gaskets
		51	Air Vessel Gaskets
		52	Bolts Cap Over Valve
		53	Bolts—Air Vessel
		54	Plug—Air Chamber
		55	Cylinder Plugs—Suction
		56	Cylinder Plugs—Delivery
		57	Drain Plugs—Cylinder.
		58	Drain Plug—Gear Case
		59	Vacuum Chamber
		60	Barrel Nipple—Vacuum Chamber
		61	Plug—Vacuum Chamber
		62	Cylinder End Packings
		63	Crankcase Extension
		64	Packing Box
		65	Inside Neck Bush—Packing Box
		66	Cylinder Stand
		67	(8. 68) Fast and Loose Pulleys
		69	Shaft Collar

Every pump 8 in. stroke and over only (not illustrated)

## When ordering parts please note the following:

EACH STANDARD PUMP HAS A MARK NUMBER AS SHOWN BELOW.

<table style="width: 100%;"> <tr> <td style="text-align: center;">Mark No.</td> <td style="text-align: center;">FA</td> <td style="text-align: center;">2" x 2" XL</td> <td style="text-align: center;">Mark No.</td> <td style="text-align: center;">FO</td> <td style="text-align: center;">4" x 8"</td> </tr> <tr> <td></td> <td style="text-align: center;">FB</td> <td style="text-align: center;">2 1/2" x 3"</td> <td></td> <td style="text-align: center;">FP</td> <td style="text-align: center;">6" x 8"</td> </tr> <tr> <td></td> <td style="text-align: center;">FC</td> <td style="text-align: center;">1 3/4" x 3"</td> <td></td> <td style="text-align: center;">FQ</td> <td style="text-align: center;">7" x 8"</td> </tr> <tr> <td></td> <td style="text-align: center;">FD</td> <td style="text-align: center;">3" x 4"</td> <td></td> <td style="text-align: center;">FR</td> <td style="text-align: center;">5" x 10"</td> </tr> <tr> <td></td> <td style="text-align: center;">FE</td> <td style="text-align: center;">2 1/4" x 4"</td> <td></td> <td style="text-align: center;">FS</td> <td style="text-align: center;">6" x 10"</td> </tr> <tr> <td></td> <td style="text-align: center;">FF</td> <td style="text-align: center;">4" x 5"</td> <td></td> <td style="text-align: center;">FT</td> <td style="text-align: center;">7" x 10"</td> </tr> </table>	Mark No.	FA	2" x 2" XL	Mark No.	FO	4" x 8"		FB	2 1/2" x 3"		FP	6" x 8"		FC	1 3/4" x 3"		FQ	7" x 8"		FD	3" x 4"		FR	5" x 10"		FE	2 1/4" x 4"		FS	6" x 10"		FF	4" x 5"		FT	7" x 10"	<table style="width: 100%;"> <tr> <td style="text-align: center;">Mark No.</td> <td style="text-align: center;">FG</td> <td style="text-align: center;">5" x 5"</td> <td style="text-align: center;">Mark No.</td> <td style="text-align: center;">FO</td> <td style="text-align: center;">4" x 8"</td> </tr> <tr> <td></td> <td style="text-align: center;">FH</td> <td style="text-align: center;">3" x 5"</td> <td></td> <td style="text-align: center;">FP</td> <td style="text-align: center;">6" x 8"</td> </tr> <tr> <td></td> <td style="text-align: center;">FJ</td> <td style="text-align: center;">6" x 6"</td> <td></td> <td style="text-align: center;">FQ</td> <td style="text-align: center;">7" x 8"</td> </tr> <tr> <td></td> <td style="text-align: center;">FK</td> <td style="text-align: center;">3" x 6"</td> <td></td> <td style="text-align: center;">FR</td> <td style="text-align: center;">5" x 10"</td> </tr> <tr> <td></td> <td style="text-align: center;">FL</td> <td style="text-align: center;">4" x 6"</td> <td></td> <td style="text-align: center;">FS</td> <td style="text-align: center;">6" x 10"</td> </tr> <tr> <td></td> <td style="text-align: center;">FM</td> <td style="text-align: center;">5" x 8"</td> <td></td> <td style="text-align: center;">FT</td> <td style="text-align: center;">7" x 10"</td> </tr> </table>	Mark No.	FG	5" x 5"	Mark No.	FO	4" x 8"		FH	3" x 5"		FP	6" x 8"		FJ	6" x 6"		FQ	7" x 8"		FK	3" x 6"		FR	5" x 10"		FL	4" x 6"		FS	6" x 10"		FM	5" x 8"		FT	7" x 10"
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Please identify the part required with the part number, mark number and the pump size e.g.

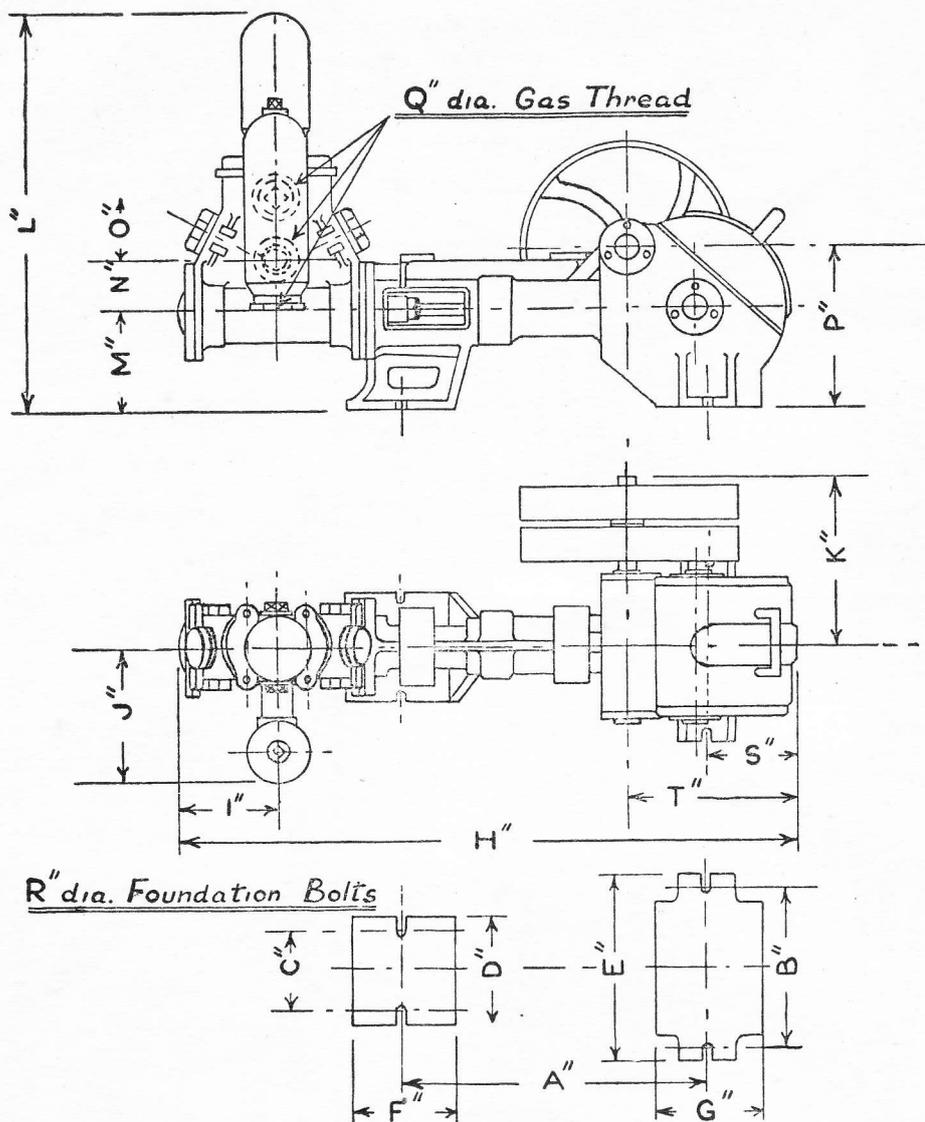
"1—Part No. 2 Gear Case lid for Mark FB 2 1/2" x 3" pump."

Always give the pump size as well as the mark number because some parts are interchangeable in different sizes.

Where the pump end differs in design from the standard pumps for example in the Mark FA 2" x 2" XL, the Mark FC 1 3/4" x 3", FE 2 1/4" x 4" and FH 3" x 5" pumps, these are shown in the inset drawings.

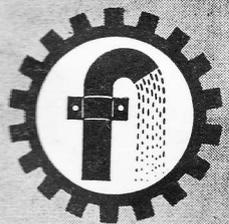
Where your pump is a special one or a high pressure pump not shown here, this parts list will be a guide to the parts you require, but when you order, give the part name, the pump size, and details of the work. Parts can be supplied for Myers pumps.

## DIMENSIONS DRAWING



Pumps	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	Ins.
2 × 2XL	10 <sup>3</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>4</sub>	4	6	4 <sup>1</sup> / <sub>2</sub>	3	24	4 <sup>1</sup> / <sub>4</sub>	—	6 <sup>3</sup> / <sub>4</sub>	7	3 <sup>3</sup> / <sub>4</sub>	—	—	6	1	3 <sup>3</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>2</sub>	„
2 <sup>1</sup> / <sub>2</sub> × 3	17	9 <sup>1</sup> / <sub>4</sub>	5	6 <sup>1</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>2</sub>	6	6 <sup>1</sup> / <sub>4</sub>	34 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>2</sub>	11	22 <sup>3</sup> / <sub>4</sub>	5 <sup>3</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>4</sub>	9	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	5	9	„
3 × 4	21 <sup>1</sup> / <sub>8</sub>	10 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>4</sub>	6 <sup>7</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>2</sub>	7	8 <sup>1</sup> / <sub>2</sub>	42	7	12	12 <sup>1</sup> / <sub>2</sub>	29	7 <sup>1</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>4</sub>	4 <sup>7</sup> / <sub>8</sub>	10 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>2</sub>	„
4 × 5	28 <sup>1</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>4</sub>	8 <sup>5</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>8</sub>	14 <sup>1</sup> / <sub>2</sub>	9	10	53	8	12	17	36	7 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>2</sub>	6	13 <sup>1</sup> / <sub>2</sub>	2	1 <sup>1</sup> / <sub>2</sub>	7	15 <sup>1</sup> / <sub>2</sub>	„
5 × 5	28 <sup>1</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>4</sub>	8 <sup>5</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>8</sub>	14 <sup>1</sup> / <sub>2</sub>	9	10	55	9	14	17	36	7 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>4</sub>	5	13 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	7	15 <sup>1</sup> / <sub>2</sub>	„
6 × 6	33 <sup>5</sup> / <sub>8</sub>	14	6 <sup>1</sup> / <sub>2</sub>	8	15 <sup>1</sup> / <sub>2</sub>	7	11 <sup>1</sup> / <sub>4</sub>	63 <sup>1</sup> / <sub>2</sub>	10 <sup>3</sup> / <sub>4</sub>	15	19	42	11 <sup>1</sup> / <sub>4</sub>	6	7	16 <sup>1</sup> / <sub>2</sub>	3	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	18	„
2 <sup>1</sup> / <sub>4</sub> × 4	21 <sup>1</sup> / <sub>8</sub>	10 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>4</sub>	6 <sup>7</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>2</sub>	7	8 <sup>1</sup> / <sub>2</sub>	42	7	8 <sup>1</sup> / <sub>2</sub>	12 <sup>1</sup> / <sub>2</sub>	27	7 <sup>1</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>4</sub>	10 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>2</sub>	„
3 × 5	28 <sup>1</sup> / <sub>4</sub>	13 <sup>1</sup> / <sub>4</sub>	8 <sup>5</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>8</sub>	14 <sup>1</sup> / <sub>2</sub>	9	10	54	8 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>2</sub>	17	38 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>	6	13 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>2</sub>	7	15 <sup>1</sup> / <sub>2</sub>	„
4 × 6	33 <sup>5</sup> / <sub>8</sub>	14	6 <sup>1</sup> / <sub>2</sub>	8	15 <sup>1</sup> / <sub>2</sub>	7	11 <sup>1</sup> / <sub>4</sub>	62	10	15	19	46	11 <sup>1</sup> / <sub>4</sub>	5	8 <sup>1</sup> / <sub>8</sub>	16 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	18	„
1 <sup>3</sup> / <sub>4</sub> × 3	17	9 <sup>1</sup> / <sub>4</sub>	5	6 <sup>1</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>2</sub>	6	6 <sup>1</sup> / <sub>4</sub>	34 <sup>3</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>2</sub>	8	11	21 <sup>3</sup> / <sub>4</sub>	5 <sup>3</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>4</sub>	9	3 <sup>3</sup> / <sub>4</sub> /1	1 <sup>1</sup> / <sub>2</sub>	5	9	„

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