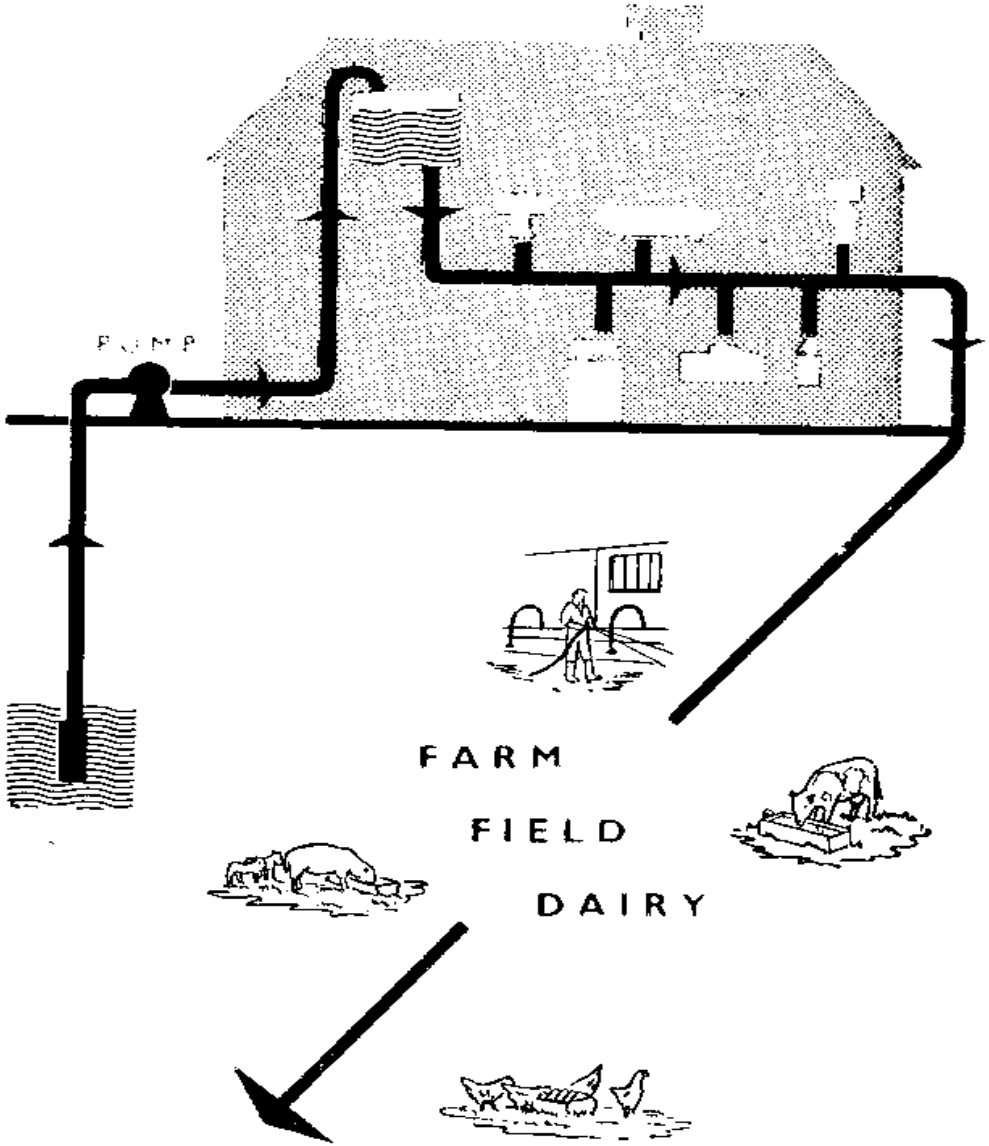


Lister water pumps

R. A. LISTER & CO. LTD.
DURSLEY . GLOUCESTERSHIRE
Telephone: Dursley 2371 'Grams Machinery, Dursley

B. 5M. PP 7/62

Lister

HANDBOOK OF

pumps

and

pumping sets

for

farm, estate and household duties

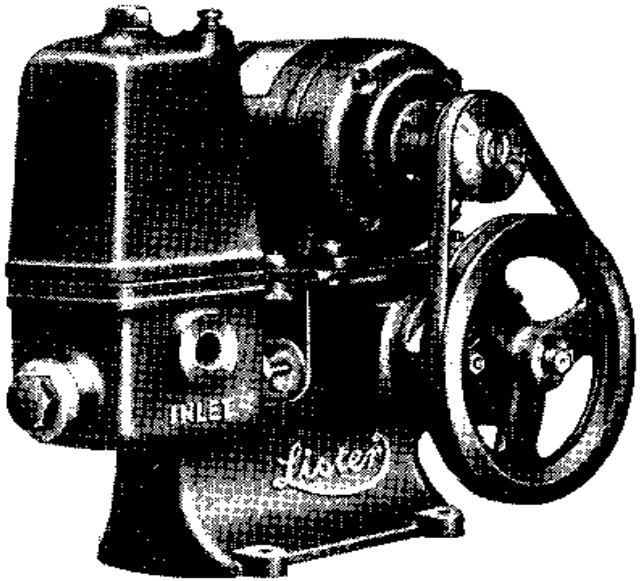
Lister *handbook of pumps and pumping sets*

Note: Throughout this handbook all references to 'gallons' are to **Imperial gallons**

HOW TO SELECT

Note: All Lister D.E.P. pumps (electric and engine) have both suction and delivery tapped ¾" BSP

The Lister D.E.P pump



ELECTRICALLY-DRIVEN

180 to 250 gallons per hour; heads up to 250', including 25' suction lift. Reliable and quiet running. Automatic lubrication.

Storage water-level control by float switch if required.

	Imp. Galls per hour	Total head	Pump speed r.p.m.	Motor h.p.
D.E.P. 1	250	80 ft.	500	¼
D.E.P. 2	250	120 ft.	500	⅓
D.E.P. 3	250	150 ft.	500	½
D.E.P. 5	180	250 ft.	360	½

Standard AC single-phase voltages: 200–220 v, 230–240 v 240–250 v. *Other voltages AC or DC can be supplied.*

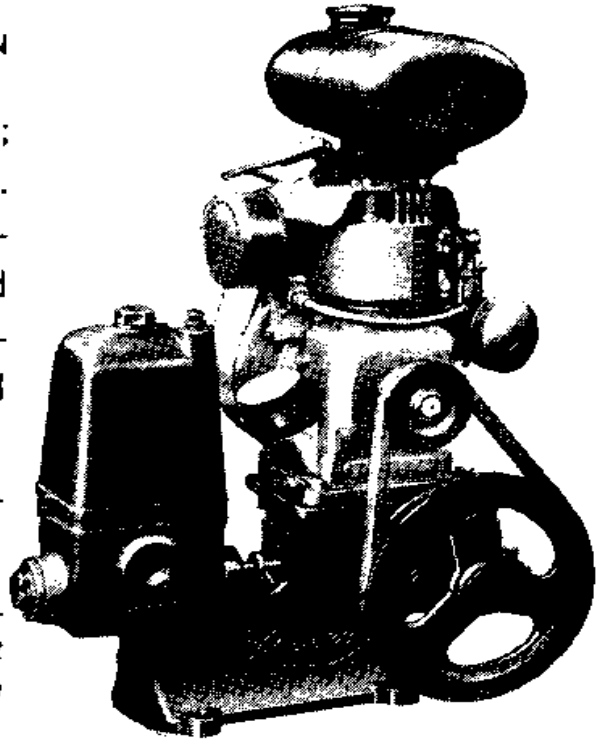
Float switch, **foot valve** and **strainer** are available as extras.

ENGINE-DRIVEN

250 gallons per hour; heads up to 250 ft. including 25 ft. suction lift. Powered by 4-stroke air-cooled petrol engine.

Rope Recoil Starter — Extra.

Can be supplied less engine and fitted with flat or vee pulley to drive from existing power unit.



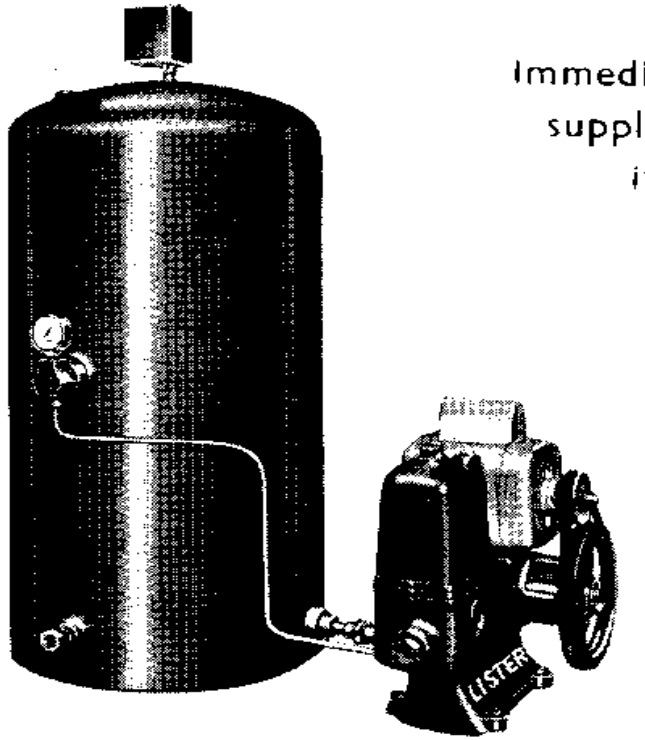
	Imp. Galls per hour	Total head	Pump speed r.p.m.	Engine h.p.
D.E.P. 4	250	150 ft.	500	¾
D.E.P. 6	250	250 ft.	500	1

ALLOW FOR PIPE FRICTION: PAGE 26

	Gallons per hour	Maximum suction lift	Static Delivery head	Motor h.p.
A.P.S. 1	250	22ft.	40ft.	¼
A.P.S. 2	250	22ft.	70ft.	⅓
A.P.S. 3*	250	22ft.	90ft.	½

Standard AC single-phase voltages: 200-220 v, 230-240v 240-250 v. *Other voltages AC or DC can be supplied.*

Automatic pressure set

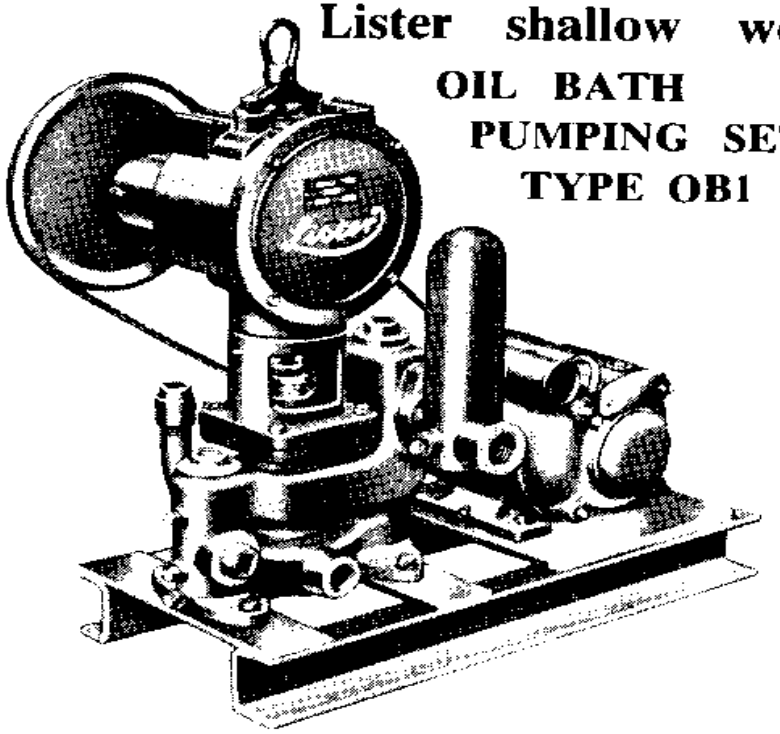


Immediate supply from its own storage

*Note: A safety valve (relief pressure 70 lbs.) must be fitted between the delivery outlet of the pump and the pressure tank when an APS3 set is installed.

Lister shallow well

OIL BATH PUMPING SETS TYPE OB1



TYPE	OB1—1	OB1—2	OB1—3
Galls per hr	350	240	150
Max. Total head in ft.	150	250	370
Pump rpm	1000	700	430
Motor H.P.	1	1	1

Suction and Delivery Tapped 1" B.S.P.

Three Phase A.C. supply 380/440 volts ...
Single Phase A.C. supply 200/250 volts ...

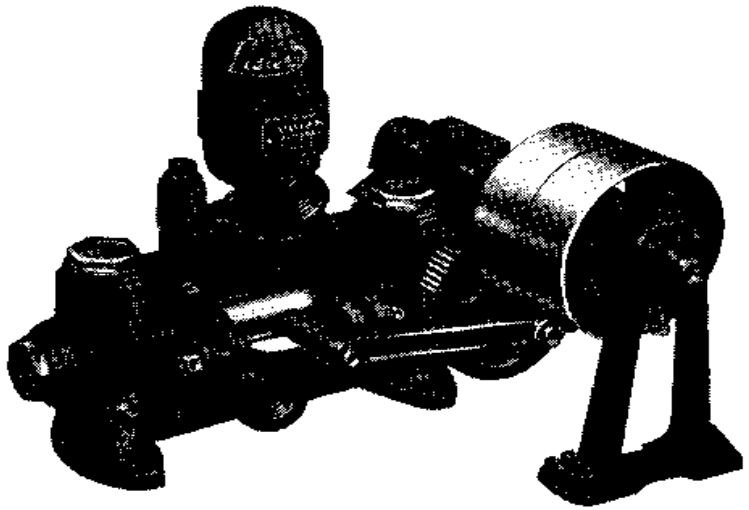
Voltage must be specified when ordering.

May also be powered by a Lister Petrol or Diesel Engine.

Can be controlled by time, pressure or float switch.

Shallow well pump

for depths to 25 ft. maximum



Heavy duty double-acting plunger pump

	H1	H2	H3	H4	H5	H6	H7
Gallons per hour	300	450	750	1000	1400	1700	2900
Max. total head in feet	250	375	250	350	250	200	250
Equivalent pressure in lbs/sq. inch	108	162	108	152	108	87	108
Engine h.p. necessary for maximum head	2	3	3	4½	4½	4½	7
Speed of countershaft (pulley) R.P.M.	1000	600	600	600	600	740	375
Pump suction and dly. BSP thread	1″	1¼″	1¼″	2″	2″	2½″	3″
Pulleys diameter	5″	8″	8″	8″	8″	8″	16″
Pulleys face	2⅛″	2⅝″	2⅝″	3⅝″	3⅝″	3⅝″	4⅝″

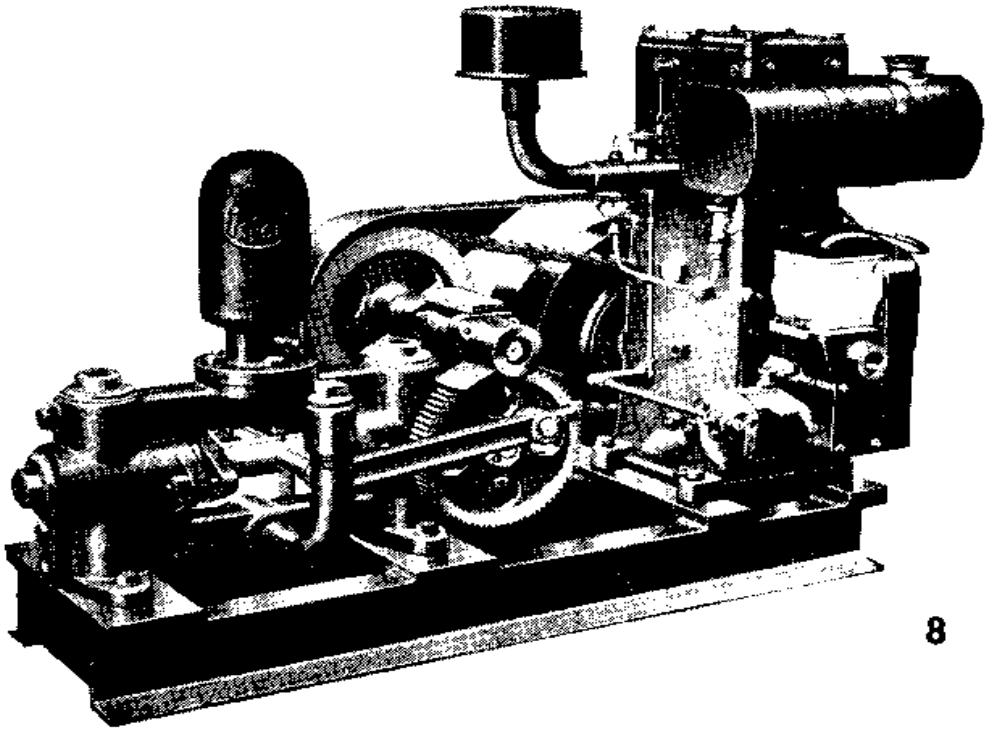
Pedestal bearing not required for type H1. For accessories see page 11.

Shallowwell pumping set

V-belt driven by Lister D-type petrol engine

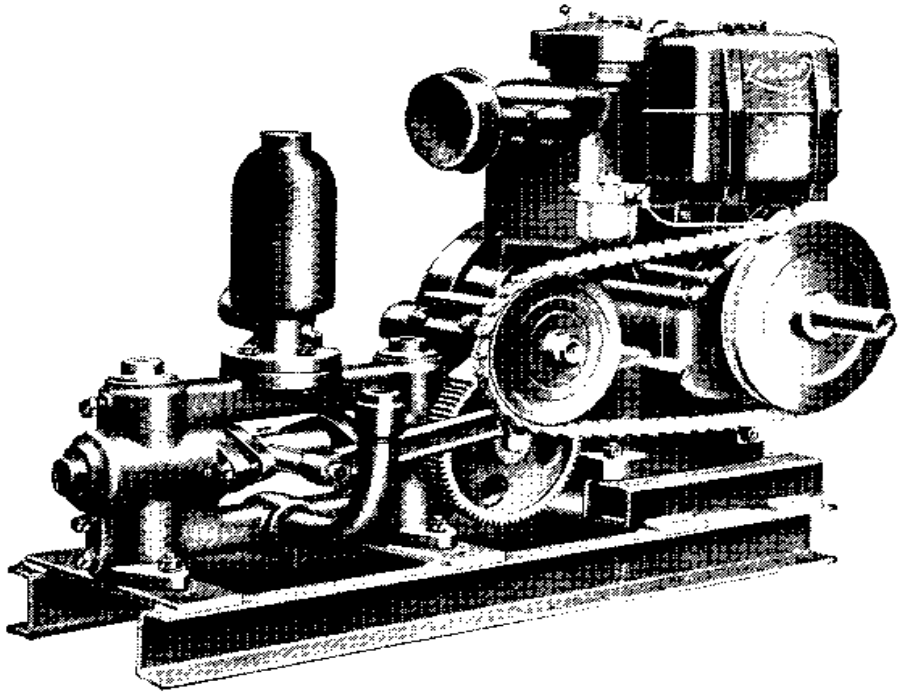
Engines can be fitted to run on vapourising oil

	PS1	PS2	PS3	PS4	PS5	PS6	PS7
Gallons per hour	200	300	350	500	500	850	850
Max. total head in ft.	350	250	375	250	350	150	200
Equivalent pressure in lbs/sq. inch	150	110	160	110	150	65	87
Engine h.p.	1	1½	1½	1½	2	1½	2
Engine R.P.M.	500	700	700	700	1000	700	1000
Pump type	H1	H1	H2	H2	H2	H3	H3
Pump R.P.M.	700	1000	480	700	700	700	700
Pump suction and dely. BSP thread	1″	1″	1¼″	1¼″	1¼″	1¼″	1¼″



Shallow well pumping set

V-belt driven by Lister LD air-cooled diesel engine



	PS8	PS9	PS10	PS11	PS12	PS13	PS14	PS15	PS16	PS17
Galls. per hour	200	300	350	480	500	835	850	750	1000	1400
Maximum total head in feet	350	250	375	300	350	170	250	250	200	140
Equivalent pressure in lbs/sq. inch	150	110	160	130	150	84	108	108	87	61
Engine h.p.	1¾	3	1¾	1¾	3	1¾	3	3	3	3
Engine R.P.M. half-speed shaft	450	750	450	450	750	450	750	750	750	750
Pump type	H1	H1	H2	H2	H2	H3	H3	H3	H4	H5
Pump R.P.M.	700	1000	475	690	700	690	700	600	600	600
Pump suction and dely. BSP thread	1"	1"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	2"	2"

HOW TO SELECT: SEE PAGES 24-26

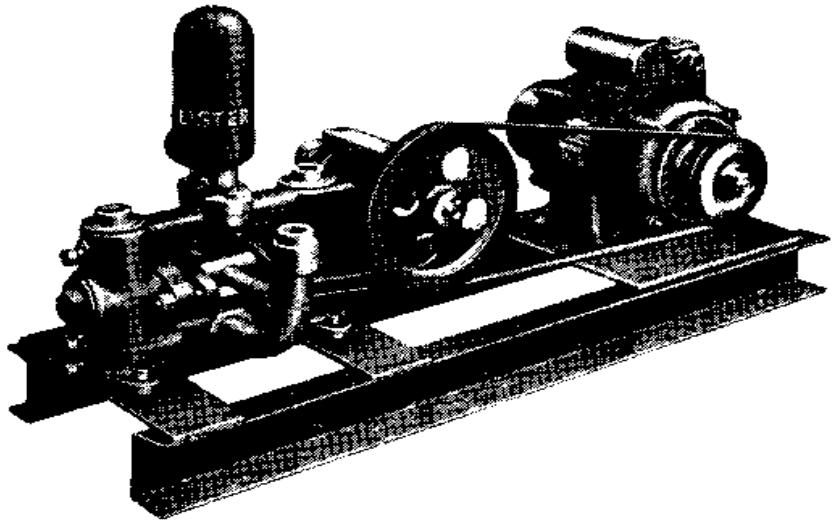
Shallow well pumping set

V-belt driven by electric motor

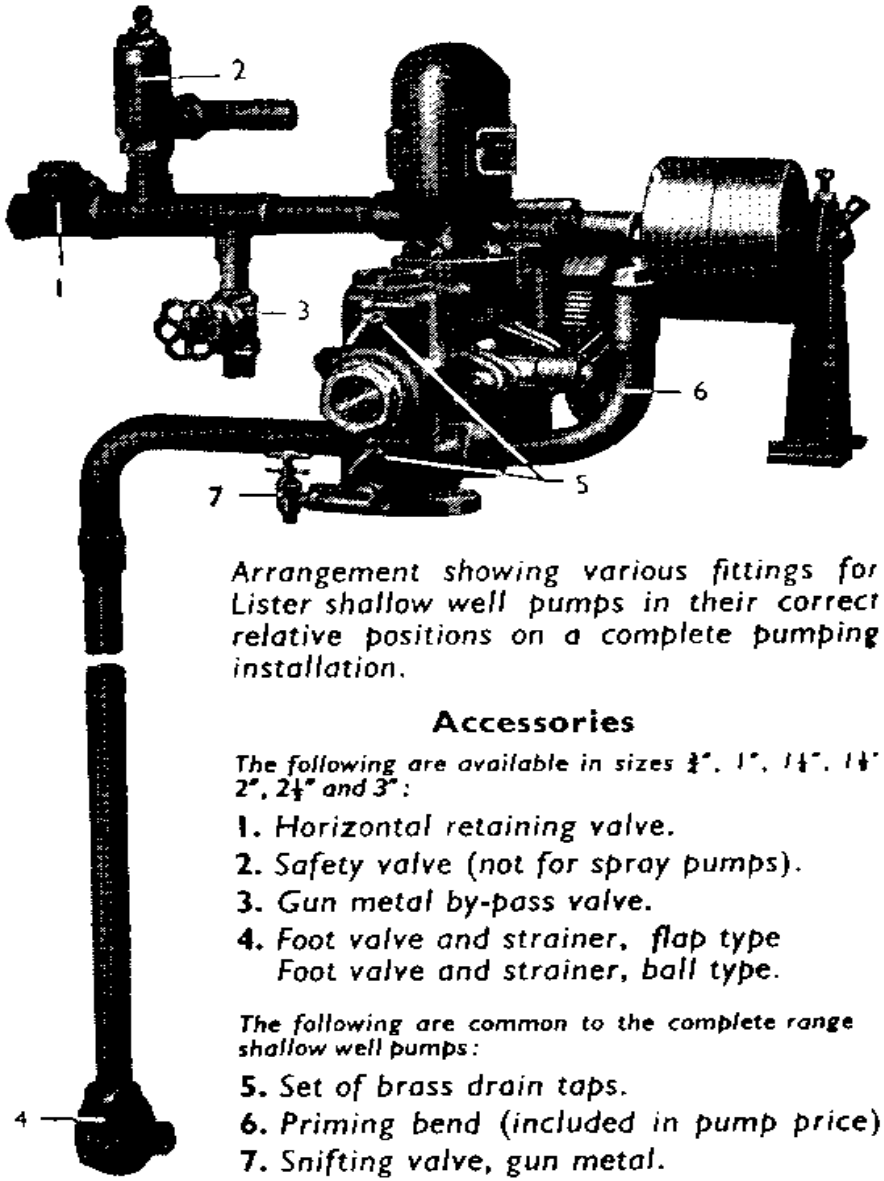
Can be controlled by time, pressure or float switch

	H2 AC	H2 AC3	H3 AC	H3 AC3	H4 AC3	H5 AC3
Galls. per hour ...	450	450	750	750	1000	1400
Maximum total head in feet ...	160	350	100	250	300	210
Motor h.p. ...	1	2	1	2	3	3
Pump R.P.M. ...	600	600	600	600	600	600
Pump suction/del. BSP thread ...	1¼"	1¼"	1¼"	1¼"	2"	2"

Voltage must be specified when ordering.



ALLOW FOR PIPE FRICTION: SEE PAGE 26



Arrangement showing various fittings for Lister shallow well pumps in their correct relative positions on a complete pumping installation.

Accessories

The following are available in sizes ¾", 1", 1¼", 1½" 2", 2½" and 3":

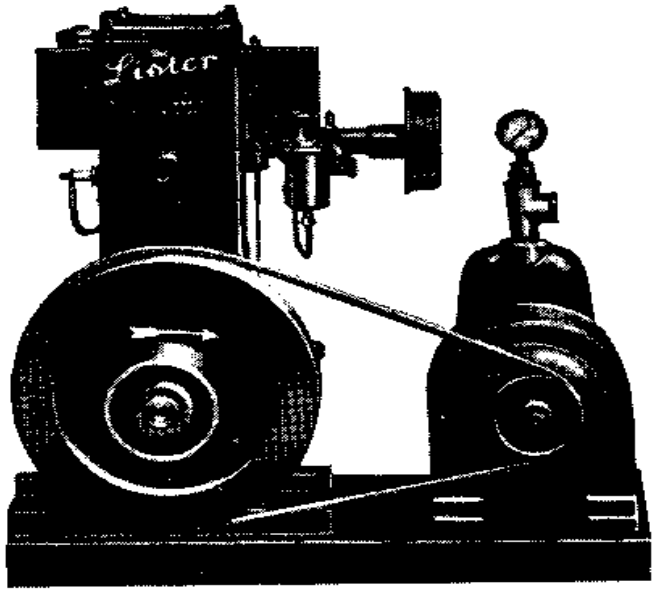
1. *Horizontal retaining valve.*
2. *Safety valve (not for spray pumps).*
3. *Gun metal by-pass valve.*
4. *Foot valve and strainer, flap type*
   Foot valve and strainer, ball type.

The following are common to the complete range shallow well pumps:

5. *Set of brass drain taps.*
6. *Priming bend (included in pump price).*
7. *Snifting valve, gun metal.*

Lister Jet Pump

Use the same pump for all duties



LP As a **shallow well** pump without ejector. Recommended for total heads up to 95 ft., including maximum suction 20 ft.

SEE TABLES, PAGE 14

LQ As a **shallow well** pump with ejector in pump. Recommended for total heads to 200 ft., including maximum suction 20 ft.

SEE TABLES, PAGE 15

LR As a **deep well** pump with deep well type ejector. Recommended where lift is between 20 ft. and 120 ft. with delivery heads up to 100 ft.

SEE TABLES, PAGE 16

NOTE: Where electric motor drive is specified in tables on pages 14, 15 and 16, the lower number stated is the single-phase motor, the higher number the three-phase motor

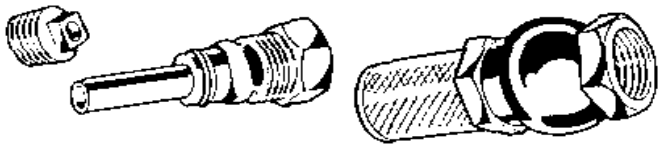
ALLOW FOR PIPE FRICTION SEE PAGE 26

Lister Jet Pumps

ESSENTIAL FITTINGS

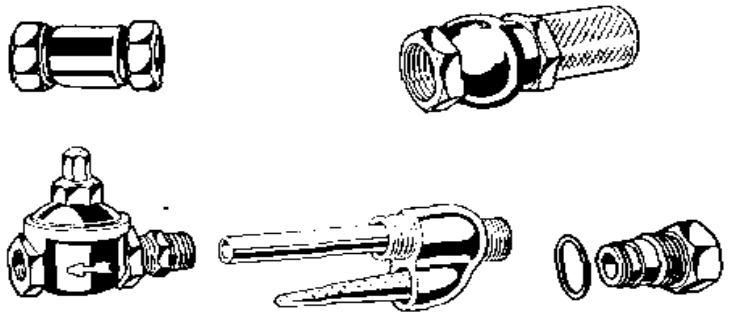
Type **LP** *without ejector for shallow wells*

SHALLOW WELL EJECTOR PACK



Type **LQ** *with ejector in pump for shallow wells*

DEEP WELL EJECTOR PACK



Type **LR** *deep well pump with deep well ejector pack. Minimum borehole diameter* $4\frac{1}{2}$"

HOW TO SELECT: SEE PAGES 24–26

Lister Jet Pump Type **LP**

TABLE 1 Pump speed 2,900 R.P.M.

Output:

990 to 1500 g.p.h. — $\frac{3}{4}$ h.p. electric motor (LP2 or 5)

1620 to 2250 g.p.h. — 1 h.p. electric motor (LP3 or 6)

Delivery head in feet	Suction lift in feet (including pipe friction) 0	5	10	15	20
	Output in gallons per hour				
15	2250	2160	2050	1800	1710
25	2100	2020	1910	1780	1620
35	1890	1850	1750	1630	1500
45	1710	1630	1500	1380	1210
55	1500	1380	1210	990	—

TABLE 2 Pump speed 3,500 R.P.M.

Output:

900 to 1500 g.p.h.	$1\frac{1}{2}$ h.p. Lister 'D' type engine (LP1) 1 h.p. electric motor (LP4 or 7)
1625 to 2500 g.p.h.	2 h.p. Lister 'D' type engine (LP1) $1\frac{1}{2}$ h.p. electric motor (LP9 or 10) $1\frac{1}{2}$ h.p. Lister air-cooled diesel engine (LP8)

Delivery head in feet	Suction lift in feet (including pipe friction) 0	5	10	15	20
	Output in gallons perhour				
15	2500	2360	2250	2035	1790
25	2420	2360	2240	2035	1790
35	2380	2340	2230	2035	1790
45	2280	2235	2145	2000	1790
55	2130	2080	1960	1870	1710
65	1950	1875	1750	1625	1490
75	1750	1719	1485	1395	1310
85	1500	1400	1108	1100	900
95	1150	1100	1000	—	—

ALLOW FOR PIPE FRICTION SEE PAGE 26

Lister Jet Pump — Type LQ

TABLE 3 — Pump speed 2,900 R.P.M

Output:

90 to 850 g.p.h. — ¾ h.p. electric motor (LQ2 or 5).

Delivery head in feet	Suction lift in feet (including pipe friction) 10	15	20	Fitted with ejector
	Output in gallons per hour			
25	850	730	580	A2
45	800	680	500	
70	750	680	500	
90	280	212	150	A3
110	200	180	120	
130	120	100	90	

TABLE 4 — Pump speed 3,500 R.P.M

Output:

90 to 990 g.p.h. — 1½ h.p. Lister 'D' type engine (LQ1); 1 h.p. electric motor (LQ4 or 7); 1¾ h.p. Lister air-cooled diesel engine (LQ8)

Delivery head in feet	Suction lift in feet (including pipe friction) 10	15	20	Fitted with ejector
	Output in gallons per hour			
25	990	855	630	A1
45	950	845	585	
70	900	805	520	
90	810	700	610	A2
115	780	675	600	
135	430	400	325	
160	235	190	115	A3
185	215	180	110	
200	155	120	90	

ALLOW FOR PIPE FRICTION: SEE PAGE 26

Lister Jet Pump — Type LR

TABLE 5 — Pump speed 2,900 R.P.M.

Output:

200–405 g.p.h. — ¾h.p. electric motor (LR2 or LR5)

Minimum operating pressure 20 lb. per sq. inch

Delivery head in feet	Ejector A8 40	Ejector A5 50	60	70
	Depth from pump to low water level in feet			
	Output in gallons per hour			
50	405	360	300	260
60	350	315	250	200
70	300	265	200	—
80	250	215	—	—

TABLE 6 — Pump speed 3,500 R.P.M.

Output:

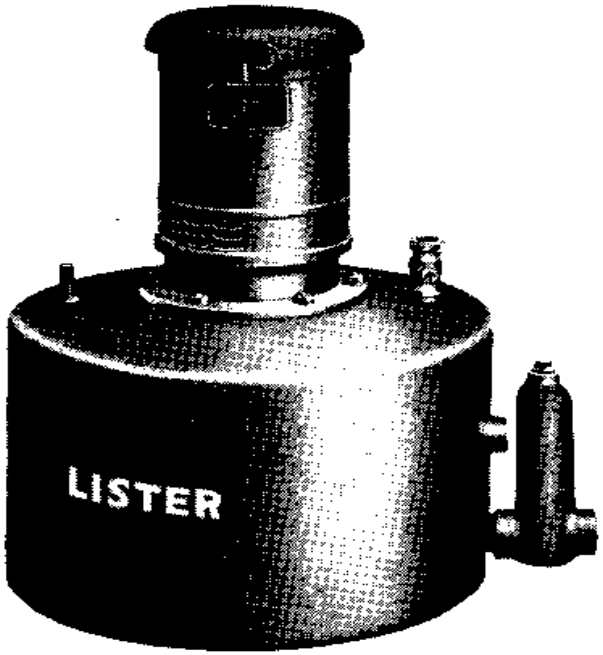
280–855 g.p.h. — 1½ h.p. Lister 'D' type engine (LR1); 1 h.p. electric motor (LR4 or 7); 1¾ h.p. Lister air-cooled diesel engine (LR8

Minimum operating pressure 30 lb. per sq. inch.

Dely. head in ft.	Ejector A6 25	40	50	Ejector A7 60	70	80	Ejector A5 90	100	110	120
	Depth from pump to low water level in feet									
	Output in gallons per hour									
50	855	760	632	585	497	414	350	290	240	200
60	855	760	632	585	497	414	350	290	240	200
70	760	674	541	503	441	375	325	275	230	190
80	685	565	452	432	385	342	—	—	—	—
90	618	496	398	380	347	313	—	—	—	—
100	510	452	361	347	314	280	—	—	—	—

ALLOW FOR PIPE FRICTION: SEE PAGE 26

Lister Jet Minor Pump



This electrically-driven pump is suitable for open tank or automatic pressure control with both shallow or deep wells.

Output in gallons per hour

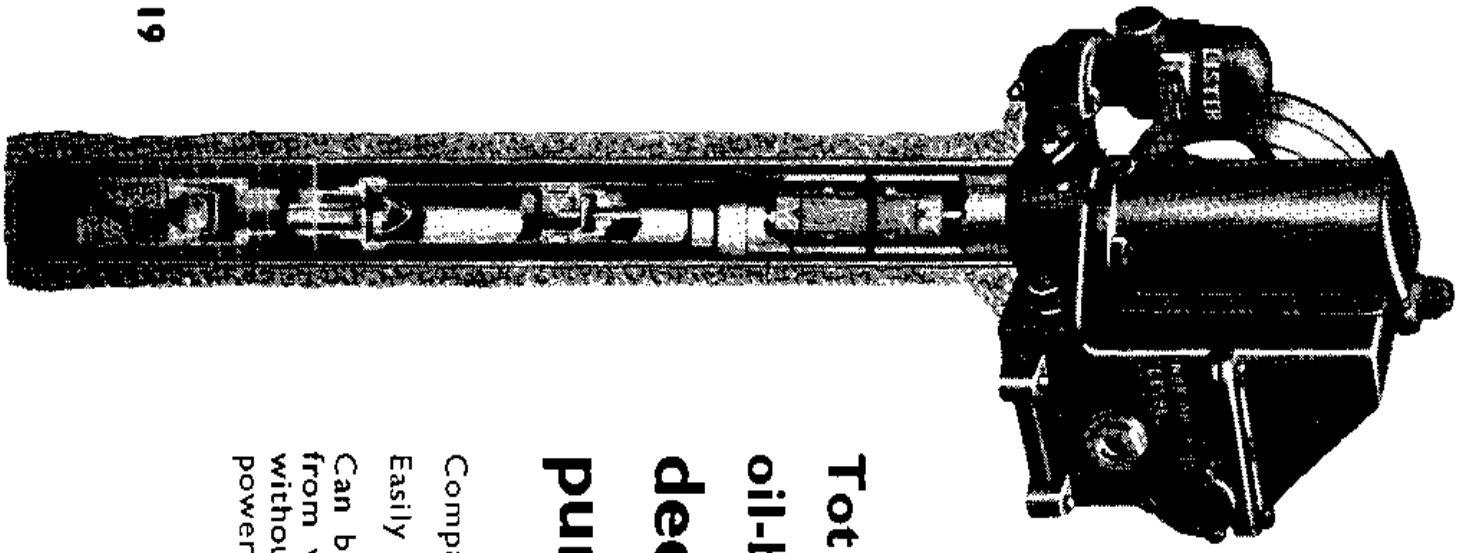
SHALLOW WELL

Delivery hd. feet	Suction lift in feet			
	5	10	15	20
25	270	195	155	105
35	255	185	145	100
45	240	175	135	100
55	200	150	105	85
65	150	100	75	50

DEEP WELL

Dely. hd. in feet	Suction lift in feet (including pipe friction)					
	25	30	35	40	45	50
	Output in gallons per hour					
25	210	190	160	130	130	125
35	200	150	130	95	100	95
45	170	135	125	80	65	60
55	140	105	100	50	40	30
65	110	85	75	25	—	—

When ordering, state suction lift



Totally enclosed oil-bath deep well pump

Compact design

Easily accessible

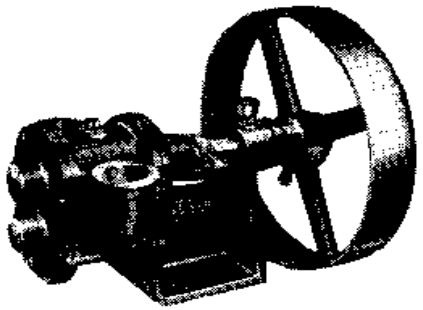
Can be serviced from well head without disturbing power head

PARTICULARS OF DEEP WELL PUMPS

	Galls. per hour	Total head in ft.	Wkg. barrel diam.	Stroke	Stroke per min.	Fast & loose pulleys			H.p. reqd. for max. duty		Dely. outlet BSP	Smallest bore-hole inside diam.
						Dia.	Face	RPM	Engine	Motor		
D01	200	80	2¼″	3″	90	10″	1⅝″	360	1	½	1″	3¾″
D02	120	130	1¾″									3″
D03	75	170	1⅜″									2½″
D04	50	200	1⅛″									2¼″
D101	420	150	3¼″	6″	45	15″	2⅛″	180	1½	1	1½″	5″
D102	300	210	2¾″									4½″
D103	200	310	2¼″									3¾″
D104	120	400	1¾″									3″
D201	1200	80	4¾″	9″	40	18″	3″	200	3	2	2½″	6½″
D202	950	105	4¼″									6″
D203	750	135	3¾″									5½″
D204	560	180	3¼″									5″
D205	400	250	2¾″									4½″
D206	270	370	2¼″									3¾″
D207	160	450	1¾″									3″

Balance weight arrangement is recommended on all electric-driven plants and where well is over 60 ft. deep

Low cost; high output



No. 1A

No. 1

Lister rotary pumps

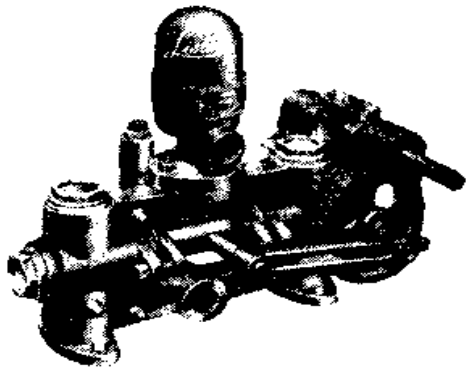
Pump Size	H.p. required to drive	R.P.M.	Total head in feet	Galls. per hour
1	¾	100	30	200
	1	200	30	300
	1½	300	30	400
1A	1	100	30	280
	1½	200	60	500
	2	300	100	850

Pump Size	Suction & dely. BSP	No. of pulleys and size	Max.suct. lift	Recom speed
1	¾"	1–10" × 2"	14ft.	275r.p.m
1A	1¼"	1–10" × 2½"	20ft.	300r.p.m.

No. 1A can be supplied on base with fast and loose pulleys.

ALLOW FOR PIPE FRICTION: SEE PAGE 26

Spraying pump



A heavy duty double-acting plunger pump provided with ball valves and bare driving shaft to which customer's driving sprocket or pulley can be attached.

	R.P.M.	Galls. per hour	Max. press. lb/sq. in	Suction tapped BSP	Dely. tapped BSP	H.P. reqd. to drive
H1L	420	120	250	1"	1"	¾
H1H	350	100	300	1"	1"	¾
H2L	400	280	250	1¼"	2–½"	2
H2H	300	220	400	1¼"	2–½"	2½
H4L	325	500	250	1½"	1¼"	3
H4H	216	340	400	1½"	1¼"	3½

Stainless steel plungers for corrosive fluids, pressure gauge (graduated to 400 lb/sq. in.), safety valve at extra cost.

†† *Also available powered by a Lister hopper-cooled petrol engine, mounted complete on trolley.*

ALLOW FOR PIPE FRICTION: SEE PAGE 26

Starters for electric motors

FOR AC HAND CONTROL

Direct on starter with no volt and overload release.

For standard voltages:
single or three phase up to 3 h.p.

FOR AC FLOAT SWITCH CONTROL

Direct on starter with overload release and float switch.

For standard voltages:
single or three phase up to 3 h.p.

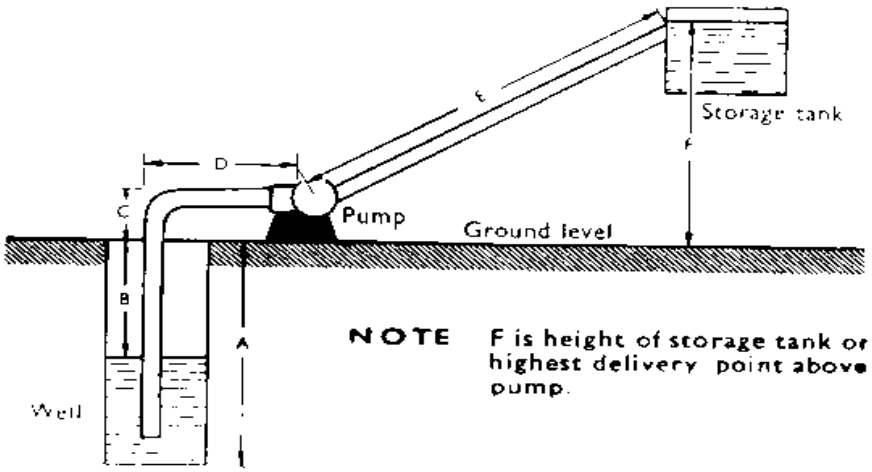
Alternative controls

Where float switch control is considered to be uneconomical owing to the length of cable involved, or for other reasons, quotations can be given for hand starting with remote or automatic stopping; alternatively, complete automatic control by time switch, pressure switch, or a combination of both, is available to suit the particular installation.

Information required for quoting

Please supply the following details for quoting:

1. Is pump required
   (a) with engine
   (b) without engine
   (c) with electric motor?
2. If electric motor, give details of electricity supply.
3. Dimensions as diagram below.
4. If suction and delivery pipes exist, give diameter of bore; if not in existence, we would be pleased to advise.
5. Gallons of water required per hour or per day.
6. Rate of water flowing in to well in dry seasons (gallons per day).
7. Capacity of storage tank.



NOTE F is height of storage tank or highest delivery point above pump.

Installation Notes

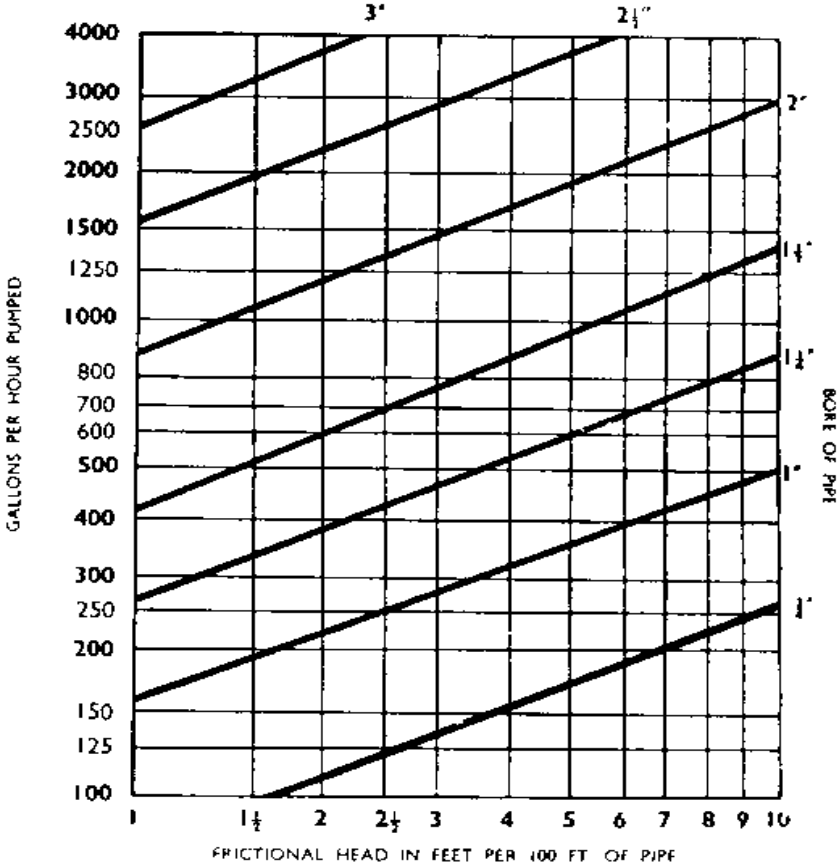
OF GENERAL APPLICATION

1. Install pump as near well as possible.
2. A foot valve and strainer should always be fitted
3. Avoid sharp bends and obstructions in pipe lines.
4. It is recommended that all fittings have bore not smaller than that of pipe.
5. If a stop valve or ball valve is fitted in delivery pipe, a safety valve should be fitted close to the pump.
6. On engine-driven piston pumps (direct or V-belt coupled) a by-pass valve, to permit pump to work without forcing water up delivery pipe, is desirable to facilitate starting engine.
7. To reduce water hammer, an additional air-vessel may be an advantage on some installations.
8. Piping must be of sufficient bore to keep total head within range of pump.

OF PARTICULAR APPLICATION TO JET PUMPS

9. Pump suction is 1½" BSP thread; delivery, 1" BSP thread; pressure tapping for deep well duties, 1¼" BSP. Pump shaft diameter is ¾".
10. When the type LR deep well pump is installed up to 150 ft. away from the foot valve, standard size 1½" suction and 1¼" pump-to-ejector pipes may be used. (See A of footnote under pipe friction graph, page 26.) For distances from 150 ft. to 300 ft. the pipe sizes should be 2" and 1½" respectively. (See B of footnote under pipe friction graph, page 26.)
11. Ensure that pump is not run dry or in wrong direction

We shall be pleased to give advice on installations, either on site or by post—send details in accordance with page 24



GRAPH FOR CALCULATING PIPE FRICTION

For deep well plunger type pumps double the quantity of water delivered by pump when referring to this graph.

The **pressure in lbs. per sq. in.** is 0.434 times the head in feet.

Gallons per hour output. The figures quoted for Lister pumps are the average quantities of water actually delivered. Some variation due to the characteristics of each installation will occur.

Jet Pumps (see page 25). **A.** Add one fifth of the horizontal distance to the suction measurement to allow for the friction in the two pipes

B. Add one tenth of the horizontal distance to the suction measurement to allow for the friction in the two pipes.