

# PACKAGED HYDRO-PNEUMATIC BOOSTER SETS WITH COMPRESSOR

Publication No.

1624/J

Section

3



Holden and Brooke Limited

July 1986

## INTRODUCTION

Designed for use on larger systems, where the system is separated from the municipal mains by a break tank.

Sets comprise 2 or 3 pumps, a pressure vessel, control panel mounted on a support frame, manifolds with isolating and non-return valves, compressor, pressure switches and pressure relief valve, all mounted onto a combination bedplate.

Holden and Brooke sets are so designed, that in the event of one pump failing, the remaining unit(s) will always provide the full capacity. On a 2 pump set, each pump will give the full duty requirements and so on a 3 pump set, each of the pumps is sized to pass 50% of the total set capacity against the required system pressure.

The choice between a 2 or 3 pump set is governed by the inter-action

between the required flowrate, motor power, price and clients own preferences. Within these constraints, we will offer the most economical solution.

## OPERATION OF THE SET

With the control switches set to automatic, a small demand by the system will be met by water from the vessel. As the demand continues, the pressure will drop and the "run" pump will start and continue to operate whilst there is a demand from the system. When the demand ceases, the system will repressurise and the pump will cut-out.

Over a period of time, the air in the vessel will be absorbed by the water and the water level will rise. Periodically, the compressor will start under the control of its float and pressure switches, to restore the

water to its correct level.

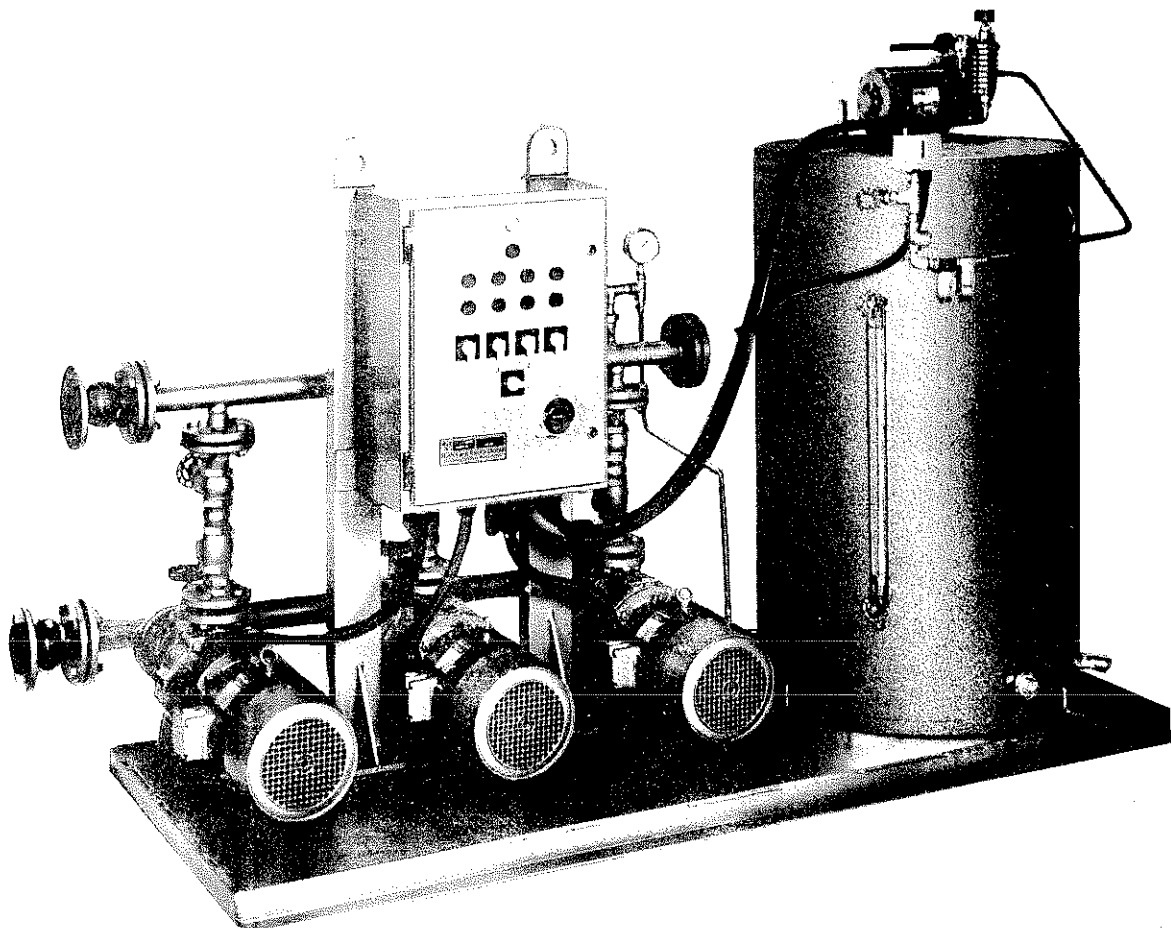
To obviate the possibility of the pump "hunting", minimum run timing relays are fitted into the control panel, which over-ride the pressure switches, when the pump is meeting relatively small demands.

The duty and standby pump(s), can be alternated by the selector switch on the control panel which can be manual or automatic.

## DUTY RANGE

The duty selection charts show our standard sets using 2900/3500rpm pumps from our Starbloc and Multistage range.

Where 1450/1750 rpm sets are a mandatory requirement these can be readily accommodated and sets supplied accordingly.



**SPECIFICATION**

**Bedplate**

Fabricated mild steel with support for control panel.

**Manifolds**

Material and flanges as shown on tender. The pressure gauge and pressure switches will be fitted on the delivery.

**Valves**

Each pump will have isolating valves on the suction and delivery and non-return valves on the delivery.

Water board stamped valves will only be fitted when specifically ordered.

**Controls**

An individual pressure switch with timer relay for each pump. The compressor is controlled by pressure and float level switch. Prevention of dry running is controlled by either a break tank floatswitch or a suction manifold low pressure switch to suit application.

**Vessel**

Fabricated steel designed to BS1500 part 2 and fitted with manhole cover, pressure release valve, water level floatswitch, sight glass with shut off cocks and drain valve. The vessel will be galvanised as standard.

**Compressor**

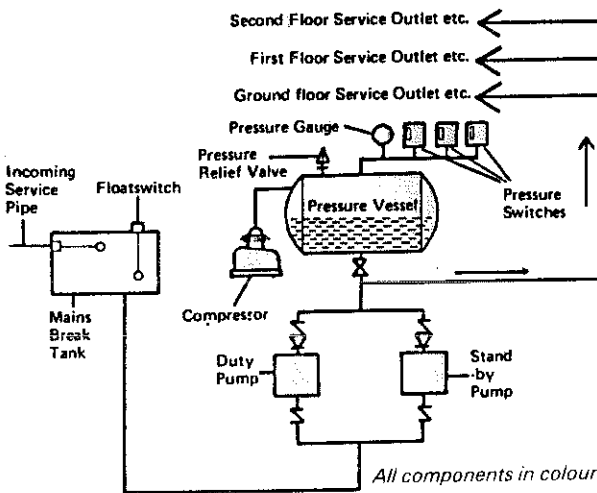
Single or two stage compressors are used, dependent upon operating pressure, driven by 0.55kW T.E.F.C. motors. Complete with suction filter/muffler and non-return valve.

**Control panel**

These are pressed mild steel construction, damp and dust proof to IP55 fitted with Test/Off/Auto switches and run/trip lamps for each pump, selector switch, low water and panel energised lamps, lockable door, door interlocked isolator. HRC fuses for motors and control circuit, motor starters and overloads along with terminals and labels. Panels are made suitable for 35°C ambient for temperate zones and 50°C ambient for tropical and sub-tropical zones.

**Electrical wiring**

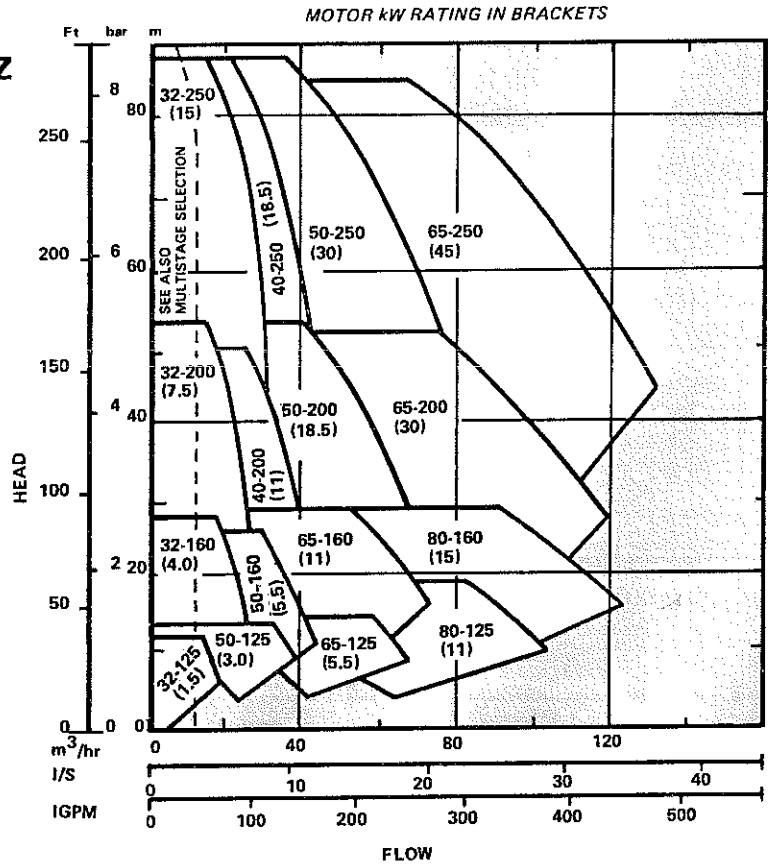
Wiring to IEE wiring regulations 15th edition.



Schematic Diagram for a 2 Pump Hydro-Pneumatic Set with Compressor

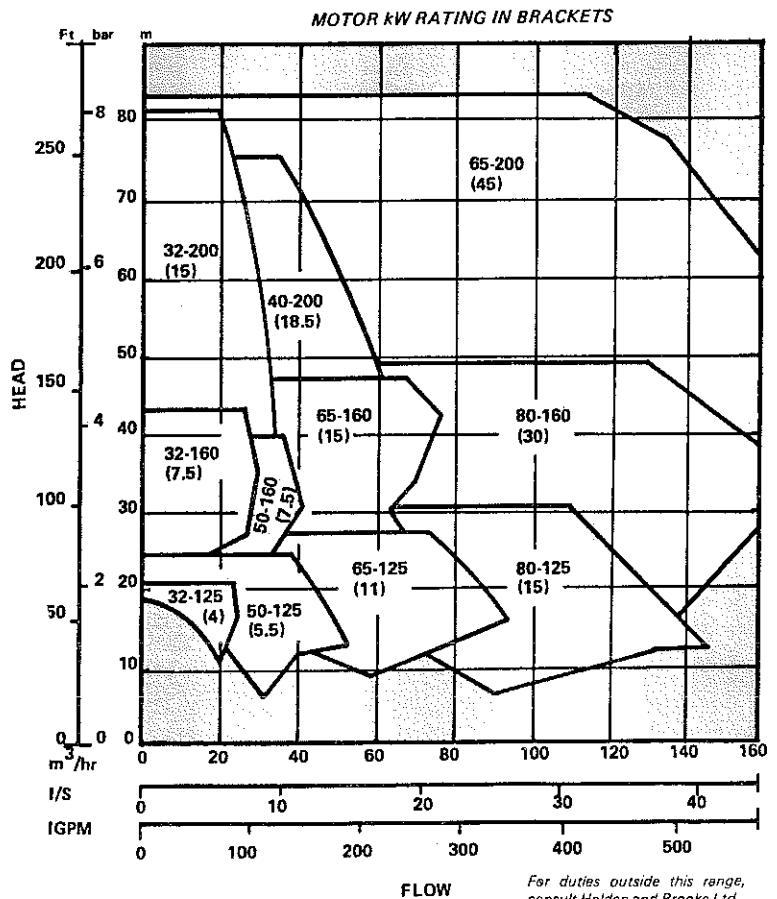
**SELECTION CHART  
STAR RANGE END SUCTION PUMPS—2900 RPM  
PERFORMANCE ON WATER SG = 1.0**

**50 Hz**

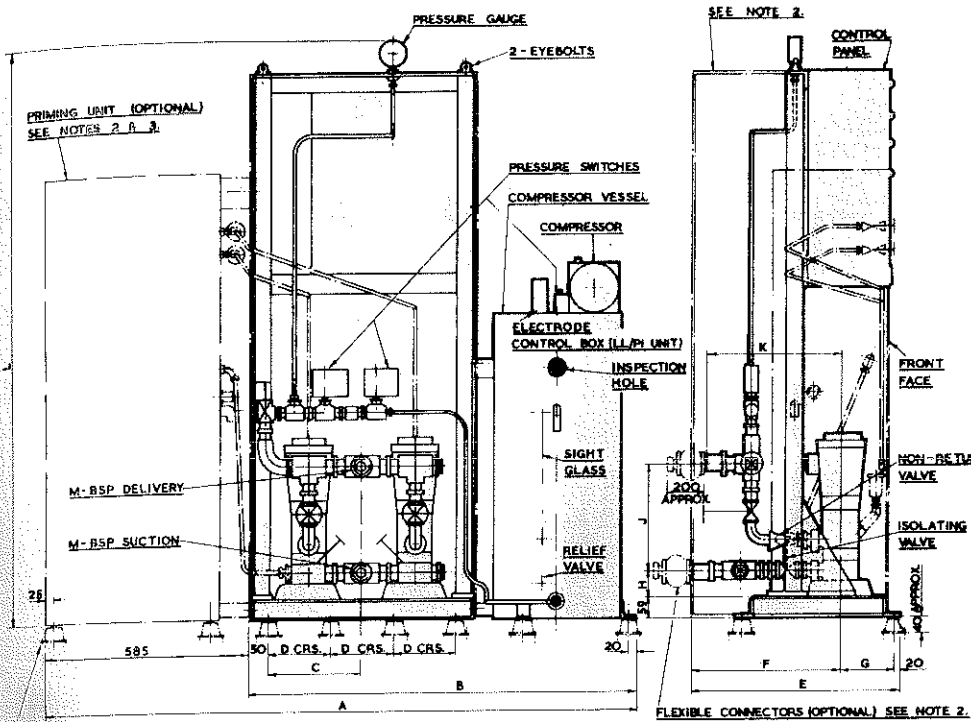


**SELECTION CHART  
STAR RANGE END SUCTION PUMPS—3500 RPM  
PERFORMANCE ON WATER SG = 1.0**

**60Hz**



For duties outside this range, consult Holden and Brooke Ltd.

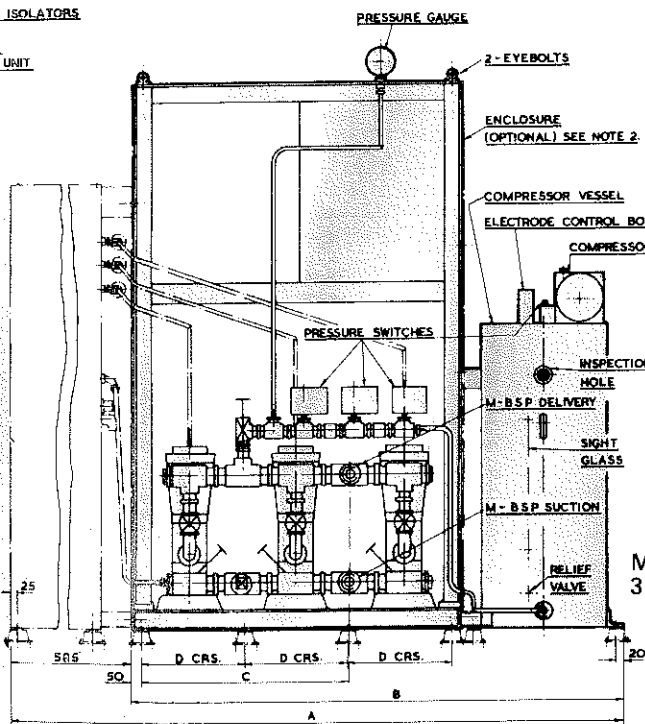


MULTISTAGE 2 PUMP SET

SIDE VIEW DIMENSIONS APPLICABLE TO BOTH 2 & 3 PUMP SETS

MAXIMUM WORKING PRESSURE OF STANDARD SET 8.6 Bar (89m)

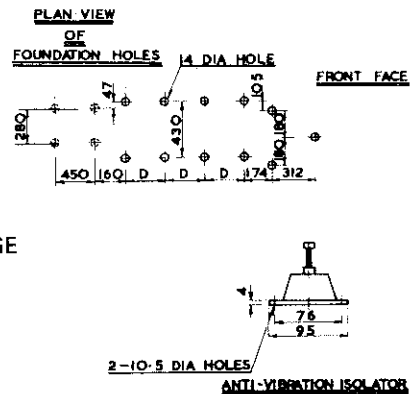
ANTI-VIBRATION ISOLATORS (OPTIONAL)  
 1 FOR BEDPLATE  
 4 FOR PRIMING UNIT  
 2 FOR VESSEL  
 SEE NOTE 2.



MULTISTAGE 3 PUMP SET

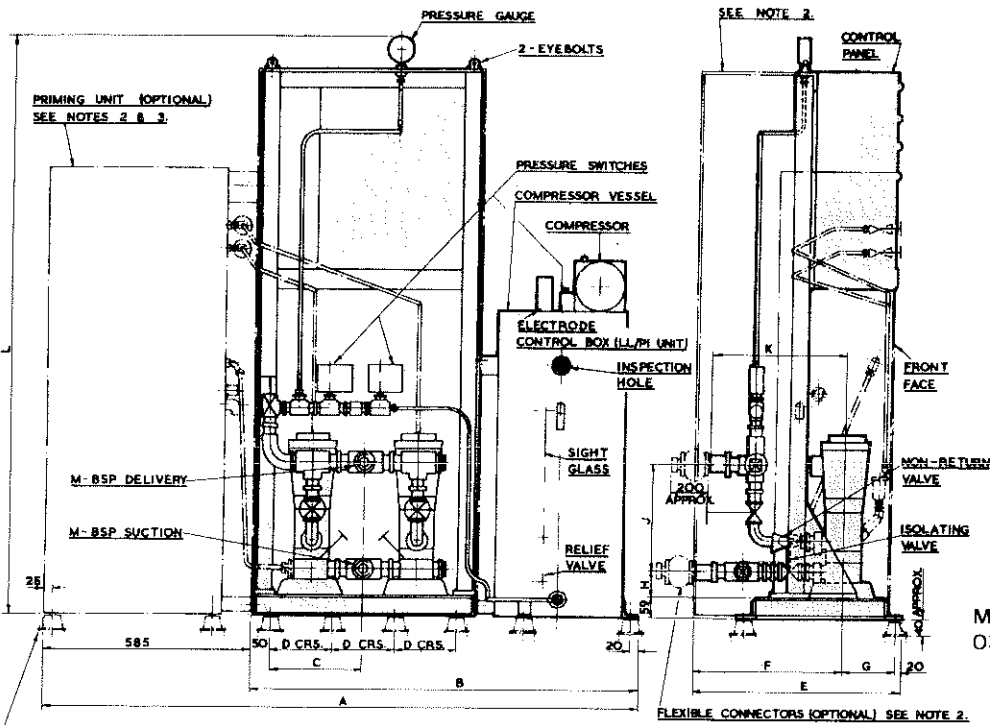
NOTE

1. TO CLARIFY THE SIDE VIEW THE PRESSURE VESSEL HAS NOT BEEN SHOWN.
2. ANTI-VIBRATION ISOLATORS, PRIMING UNIT, ENCLOSURE AND FLEXIBLE CONNECTORS ARE ONLY SUPPLIED WHEN ORDERED.
3. PRIMING UNIT IS ONLY REQUIRED WHERE A SUCTION LIFT IS INVOLVED. WEIGHT OF PRIMING UNIT IS 100 Kg.



TYPE & SIZE OF PUMPS	MOTOR KW 50 HZ 60 HZ	2 PUMP SETS					3 PUMP SETS					2 & 3 PUMP SETS							
		A	B	C	D	WT Kg	A	B	C	D	WT Kg	E	F	G	H	J	K	L	M
CP2-20	0.37														280				
CP2-30	0.37					350				415					300				
CP2-40	0.55					355	1930	1345	530	263	420	625	392	213	72	340	375	1390	1 1/2"
CP2-50	0.75	1645	1060	255	168	360					430					380		1455	
CP2-70	1.1					365					440					440		1515	
CP2-80/100	1.1					360					430					325			
CP3-20	0.37					365					430					360		1435	
CP3-30	0.55					370					450					390			
CP3-40	0.75					375	1940	1355	535	266	460	655	415	220	50	425	390	1470	1 1/2"
CP3-50	1.1	1655	1070	260	171	380					465					455		1500	
CP3-60	1.5					395					490					525		1580	
CP3-80	2.2					425					525					590		1670	
CP3-90/100	2.2					405					500					455		1445	
CP8-20	0.75					415					515					500		1490	
CP8-30	1.1					435					545	760	493	247	60	545	480	1545	2"
CP8-40	1.5	1740	1155	300	200	460	2075	1490	621	311	585					590		1615	
CP8-50	2.2					470					595					635		1660	
CP8-60	3.0					605					640					725		1795	

Dimensions (in mm)

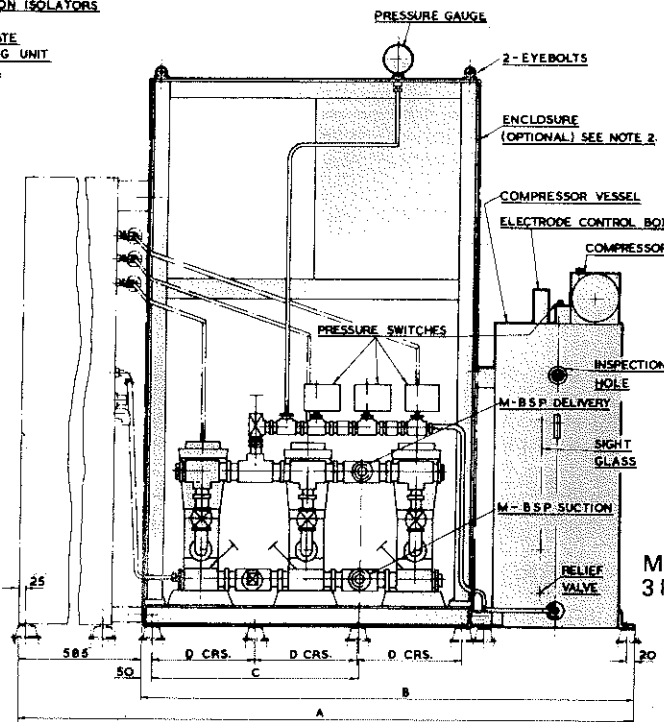


MAXIMUM WORKING PRESSURE OF STANDARD SET 8.6 Bar (89m)

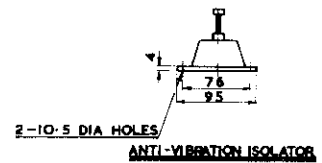
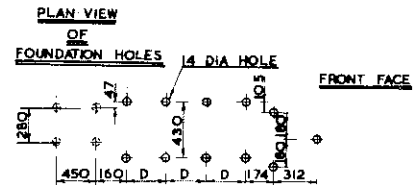
ANTI-VIBRATION ISOLATORS (OPTIONAL)  
 8 FOR BEDPLATE  
 4 FOR PRIMING UNIT  
 3 FOR VESSEL  
 SEE NOTE 2.

**NOTE**

1. TO CLARIFY THE SIDE VIEW THE PRESSURE VESSEL HAS NOT BEEN SHOWN.
2. ANTI-VIBRATION ISOLATORS, PRIMING UNIT, ENCLOSURE AND FLEXIBLE CONNECTORS ARE ONLY SUPPLIED WHEN ORDERED.
3. PRIMING UNIT IS ONLY REQUIRED WHERE A SUCTION LIFT IS INVOLVED. WEIGHT OF PRIMING UNIT IS 100 Kg.



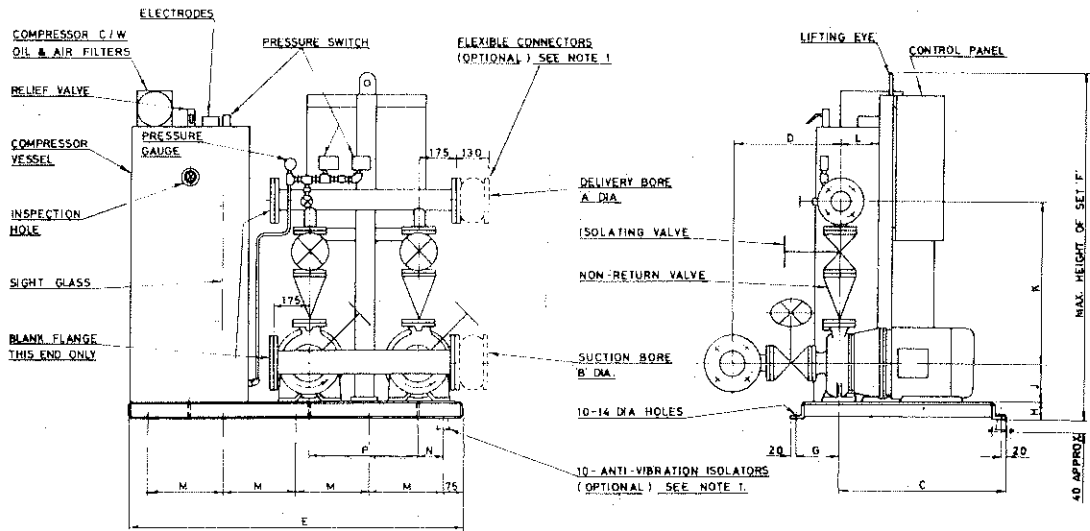
MULTISTAGE 3 PUMP SET



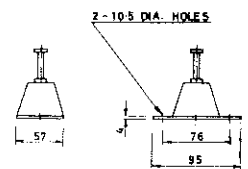
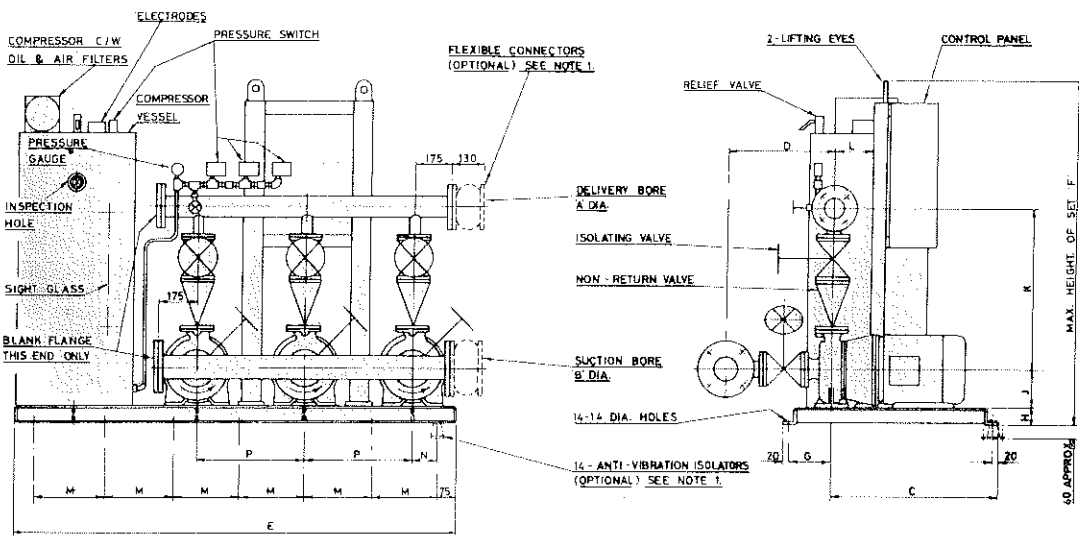
TYPE & SIZE OF PUMPS	MOTOR KW		2 PUMP SETS					3 PUMP SETS					2 & 3 PUMP SETS							
	50 HZ	60 HZ	A	B	C	D	WT kg	A	B	C	D	WT kg	E	F	G	H	J	K	L	M
CP2-20	0.37	0.37					350					415					280			
CP2-30	0.37	0.55					350					415					300			
CP2-40	0.56	0.75	1645	1060	255	168	355	1930	1345	530	263	420	625	392	213	72	340	375	1390	1 1/2"
CP2-50	0.56	1.1					360					430					380			1455
CP2-70	0.75	1.5					365					440					440			1515
CP2-80/100	1.1	-					360					430					325			
CP3-20	0.37	0.75					365					435					360			1435
CP3-30	0.56	1.1					370					450					390			
CP3-40	0.75	1.5	1655	1070	260	171	375	1940	1355	535	266	460	655	415	220	50	425	390	1470	1 1/2"
CP3-50	1.1	2.2					380					465					455			1500
CP3-60	1.5	-					395					490					525			1580
CP3-80	1.5	-					425					525					590			1670
CP3-90/100	2.2	-					405					500					455			1445
CPB-20	0.75	1.5					415					515					500			1490
CPB-30	1.1	2.2					435	2075	1490	621	311	545	760	493	247	60	545	480		1545
CPB-40	1.5	3.0	1740	1165	300	200	460					585					590			1615
CPB-50	2.2	3.7					470					595					635			1660
CPB-60	3.0	-					505					640					725			1795

Dimensions (in mm)

**STARBLOC  
2 PUMP SET**



**STARBLOC  
3 PUMP SET**



DETAILS OF ANTI-VIBRATION ISOLATOR

FLANGED TO BS 4504 10 bar.

**Note**  
1. ANTI-VIBRATION ISOLATORS AND FLEXIBLE CONNECTORS ARE ONLY SUPPLIED WHEN ORDERED:

**MAXIMUM WORKING PRESSURE OF SET 8.6 bar (89m)**

PACKAGED SETS AVAILABLE WITH PRIMING UNIT. DETAILS ON REQUEST.

PUMP SIZE	MOTOR		2 PUMP SETS				3 PUMP SETS				2 & 3 PUMP SETS												
	FRAME SIZE	kW MAX	E	F	M	WT kg	E	F	M	WT kg	A	B	C	D	G	H	J	K	L	N	P		
32-125	D90	2.2	1325		295	558	1705		260	682	50	65	470	410	130	58	112	560		95	380		
	D100	3.0		1330		578			260	712													132
32-160	D112	4.0	1420			598	1875	1330		781	50	65	470	410	130	58			125	115	455		
	D100	3.0			320	643			290	817													
32-200	D112	4.0				633				802	50	65	470	410	130	58			160	600			
	D100	3.0			345	732	2055	1560	320	938													
32-250	D132	7.5	1520			782				1013	50	65	470	410	130	58			180	645	150	165	620
	D160	15.0	1685		385	909	2305	1860	360	1223									460	430	140		
32-250	C160	15.0				859				1150	50	65	470	410	130	58			210				
	D112	4.0	1620	1540	370	935	2075	1540	320	1122									750				
40-200	D132	7.5	1720			1120	2505	1560		1392	50	80	470	410	130	58			180				
	D160	11.0	1885		435	1096			390	1356									875				
40-250	D132	7.5	1720			1064	2255			1306	50	80	470	410	130	58			180				
	D160	18.5	1885		435	1240	2505	1860	390	1584									740	430			
40-250	C160	22.0				1184				1512	50	80	470	410	130	58			180				
	D180	22.0	1910	1860	440	1314	2540	1995	400	1704									865		140		
50-125	D90	2.2	1525			860	1905			1012	50	80	750	410	130	58			112				
	D100	3.0	1620	1540	370	897	2075		320	1079									875				
50-125	D112	4.0				921				1115	50	80	750	410	130	58							
	D90	2.2	1525	1540	345	880	1905	1540	290	1042									875				
50-160	D100	3.0	1620			913	2075			1103	50	80	750	410	130	58							
	D112	4.0			370	937			320	1139									875				
50-160	D132	5.5	1720			1005	2255			1232	50	80	750	410	130	58							
	D160	18.5	1885	1560	435	1268	2505	1860	390	1601									875	450			
50-200	D160	18.5				1338				1706	50	100	875	450	140	60							
	C160	18.5	1885	1560	435	1284	2505	1860	390	1632									865				
50-250	D180	22.0				1412	2540			1826	50	100	875	450	140	60							
	C180	22.0	1910	1860	440	1413	2540	1995	400	1831									905	475	140		
50-250	D200	37.0	2010			1653	2745			2196	50	100	875	450	140	60							
	D90	2.2	1525			953	1905		290	1119									975				
65-125	D90	2.2	1525			953	1905			1119	50	100	750	410	130	58							
	D100	3.0	1620	1540	370	998	2075	1540	320	1194									875				
65-125	D112	4.0				1022				1230	50	100	750	410	130	58							
	D132	7.5	1720	1560	390	1095	2255	1560	350	1327									875				
65-160	D112	4.0	1620	1540	370	1035	2075	1540	320	1245	50	100	750	410	130	58							
	D132	7.5	1720	1560	390	1111	2255	1560	350	1351									875				
65-160	D160	11.0	1885	1560	435	1220	2505	1560	390	1522	50	100	875	450	140	60							
	C160	11.0	1885	1560	435	1176	2505	1560	390	1486									875				
65-200	D160	18.5	2005			1623	2625	1925	410	1991	50	100	875	450	140	60							
	C160	18.5	2005		465	1593	2625	1925	410	1951									865				
65-200	D180	22.0				1697	2660			2111	50	100	875	450	140	60							
	C180	22.0	2030		470	1643	2660		420	2030									905	500	140		
65-200	D200	30.0	2130			1953	2865			2500	50	100	875	450	140	60							
	C160	22.0	2005	1925	465	1663	2625	1995	410	2060									975				
65-250	D180	22.0				1783	2660			2240	50	150	885	525	160	58							
	C180	22.0	2030		470	1784	2660		420	2245									885				
65-250	D200	37.0	2130			2000	2865			2574	50	150	885	525	160	60							
	C200	55.0	2220		515	2115	3005		475	2645									955				
65-250	D225	45.0	2130	1995	495	2206	2865		2190	2849	50	150	885	525	160	60							
	D250	55.0	2220	2190	515	2475	3005		475	3245									1005				
80-125	D100	3.0				1312	2195			1535	50	150	840	500	140	58							
	D112	4.0	1740		395	1336	2195		340	1571									840				
80-125	D132	7.5	1840			1324	2375			1698	50	150	840	500	140	58							
	D160	11.0	2005	1925	465	1479	2625	1925	410	1878									840				
80-160	C160	11.0	2005			1515				1842	50	150	840	500	140	58							
	D132	7.5	1840		420	1344	2375		370	1728									840				
80-160	D160	18.5	2005			1615	2625			2004	50	150	840	500	140	58							
	C160	18.5	2005		465	1567	2625		410	1932									865				

Dimensions in mm using 50 Hz Motors  
Sets using 60 Hz Motors details on request.

Motor Frames  
'D' = Totally Enclosed Fan Ventilated  
'C' = Drip Proof Enclosure

CERTIFIED DRAWINGS WILL BE SUPPLIED ON APPLICATION.  
SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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