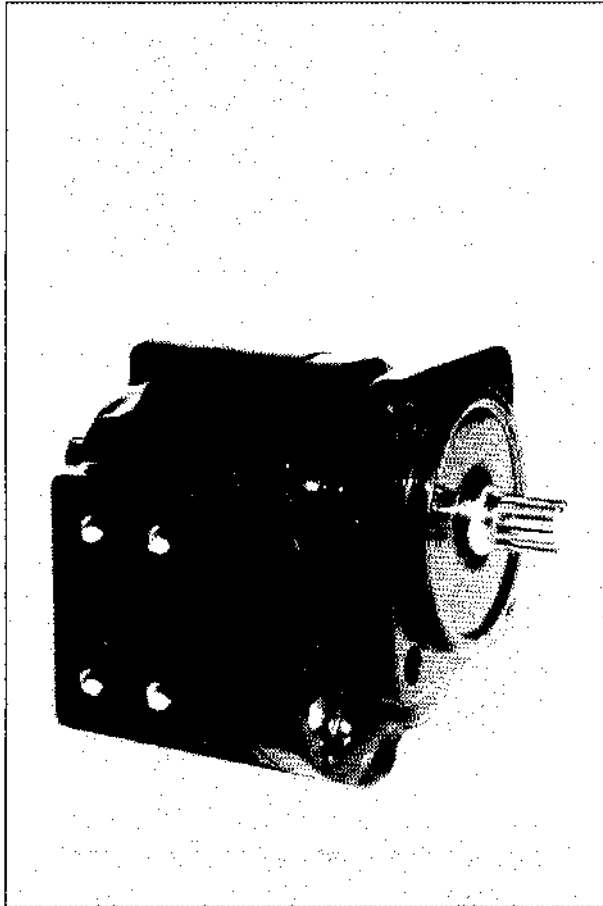


1900

S E R I E S
GEAR PUMPS & MOTORS



**22.0 TO 74.2 CM³/REV.
250 BAR. PEAK PRESSURE**

OPERATION NOTES

All components are designed to operate within the limits of performance of an Average Production Unit as stated herein.

For operations outside the Standard specification it is essential that prior approval be obtained from

David Brown Hydraulics.

The Company's Terms of Warranty are specified on our written quotations, and are also available separately on request.

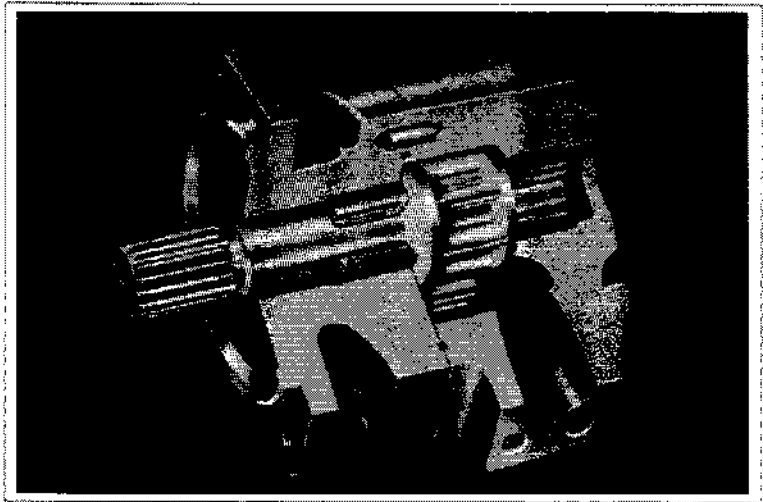
Dirt, metal particles and other contaminants are harmful to all precision built hydraulic components.

Always ensure that the system is initially clean and fluid cleanliness is maintained at ISO.4406 16/11 (optimum), 19/15 (max).

Before pressurising the Pump, Motor or Control Valve, confirm that:

- ▶ All pipes and fittings are properly installed and connected.
- ▶ The system is filled with fluid of the correct specification.

Servicing Instructions and spare Parts Sheets for all **David Brown Hydraulics** units are available from our Service Department.



Illustrated is a motor with needle roller bearings

Features marked* are preferred standard.

Standard pumps have plain (bush) bearings for maximum economy whilst standard motors have needle roller bearings for maximum torque. See page 4.

1900 GENERAL DATA

INTRODUCTION

The information contained in this leaflet covers all 1900 Series Gear Pumps and Motors forming part of the wide range of Hydraulic Pumps, Motors, Control Control and Auxiliary Valves produced by **David Brown Hydraulics.**

Our extensive coverage is specifically designed to provide manufacturers of construction equipment and mechanical handling plant with the best possible combination of pumps, motors and control equipment at competitive prices.

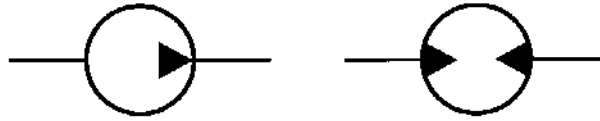
The high rate of technical innovation demanded by equipment manufacturers constantly adds new features to our products, usually as the result of intensive practical development undertaken to improve the operation or economics of a specified type of machine. Such features cannot always be covered in a publication of this nature but our application engineers are always ready to help in finding a practical solution.

Hydraulically, your business is our business and we believe our company to be uniquely qualified to assist you to get the best out of your machines.

This professional technical service is freely at your disposal.

Our fully equipped plant provides us with the most up-to-date production facilities in Europe.

Qualified distributors or subsidiary companies in the most important industrial markets ensure that parts and service are available internationally.



THEORETICAL DISPLACEMENT

Units	1905	1907	1909	1911	1913	1916
cm ³ /rev	22.00	33.43	41.50	51.80	62.10	74.20

GENERAL DATA

Drive Shafts	See Page 5
Shaft Seal Designs	See Page 5
Mounting Flanges	See Page 6
Port Connections	See Page 7
Rotation - Pumps	Either direction (not reversible)
Rotation - Motors	Either direction (reversible)
Speed Range Pumps	600-2700 rev/min
Speed Range Motors	600-3000 rev/min
Dimensions	See Page 5 & Page 8
Weight	See Page 5
Mounting Position	No attitude limitation
Ambient Temperature Range	-20°C to + 60°C
Hydraulic Fluid Temperature Range	-20°C to + 80°C
Maximum viscosity for Cold Start	850mm ² /sec (cSt)
Maximum for normal working conditions	250mm ² /sec (cSt)
Minimum permissible viscosity	10mm ² /sec (cSt)
For optimum 'life' and efficiency, fluid viscosity should be in the range of 15 to 25mm ² / (cSt) during normal working conditions.	
Performance Data	} See Pages 9-14
Overall Efficiencies	
Pressure/ Speed Limitations	

OPERATING PRESSURE - PUMPS

Inlet Pressure Range	Minimum	See Page 4
	Maximum 2 bar	
Outlet	1905 to 1913	Nominal 210 bar Peak 250 bar
	1916	Nominal 170 bar Peak 210 bar

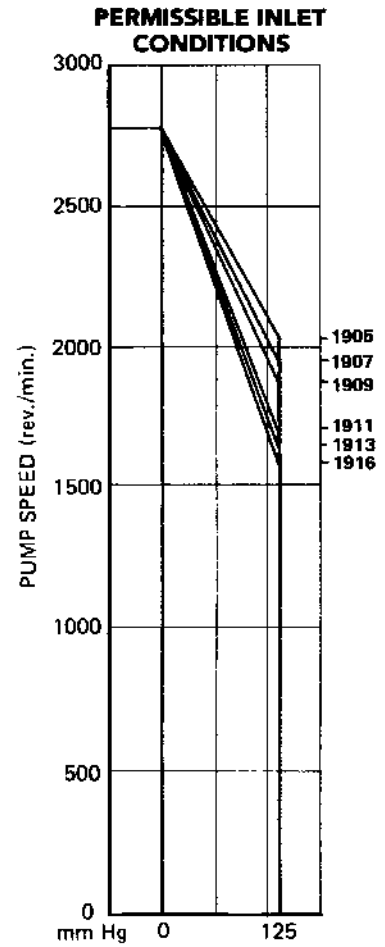
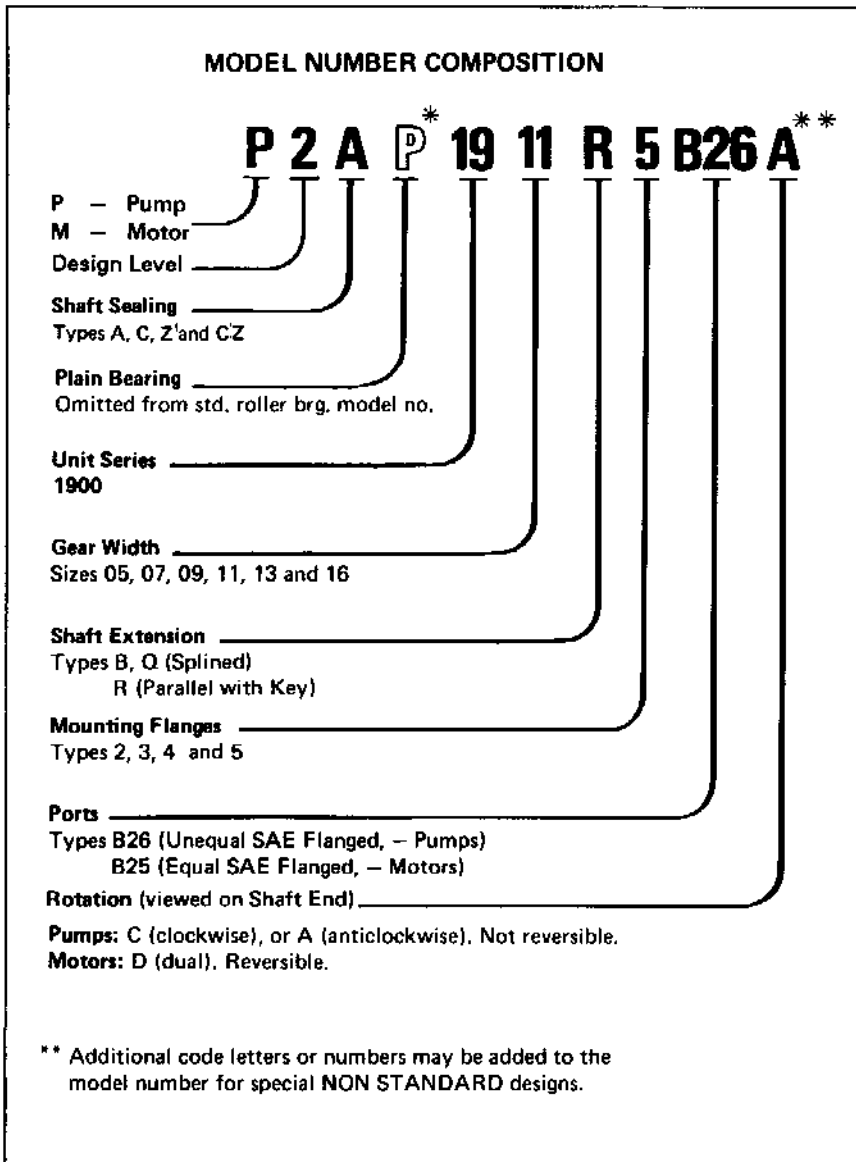
OPERATING PRESSURE - MOTORS

Inlet/Outlet	1905 to 1913	Nominal 210 bar Peak 250 bar
	1916	Nominal 170 bar Peak 210 bar
Drain Line Pressure		Maximum 1 bar

ALL DATA IS OBTAINED FROM AVERAGE PERFORMANCE OF REGULAR PRODUCTION PUMPS USING GOOD QUALITY S.A.E. 10 MINERAL HYDRAULIC OIL AT 50°C. GENERALLY CORRESPONDING TO A VISCOSITY OF 23 mm²/sec (cSt).

Critical Dimensions of all Shafts, Flanges and Ports conform to S.A.E. Standards where these are specified.

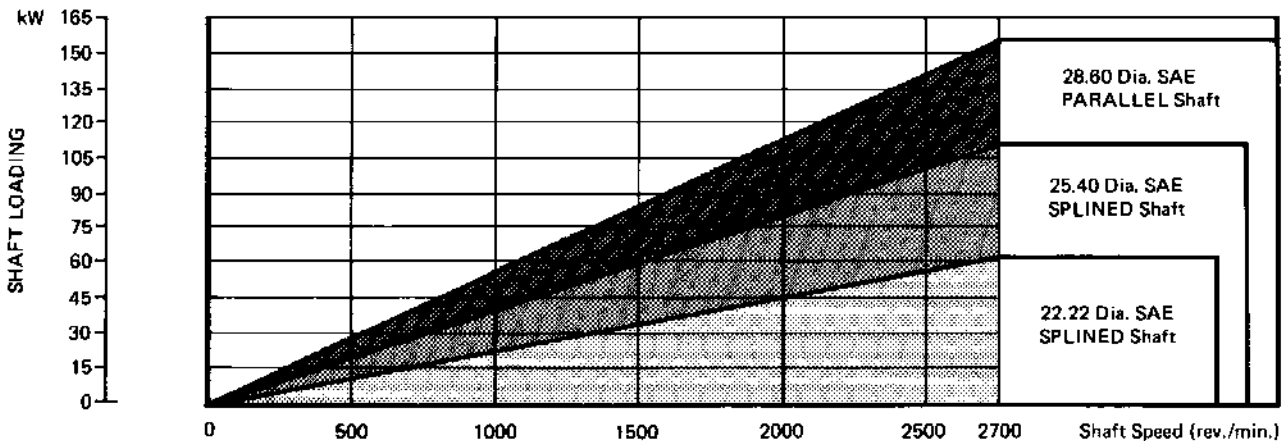
1900 GENERAL DATA



Pumps with standard size ports will operate without detriment when inlet conditions are within the outlined area of the chart. For operation within the shaded area, consult **David Brown Hydraulics**.

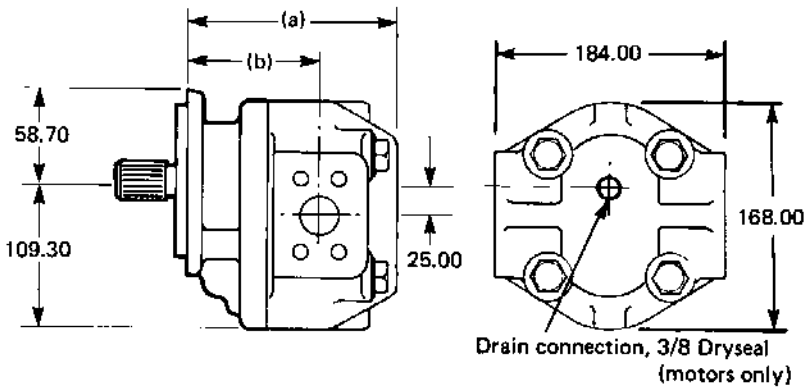
DRIVE SHAFT POWER LIMITATIONS

The shafts listed below are recommended for use where the horsepower to be transmitted at any given speed lies within the shaded areas of the accompanying graph, - for requirements outside these limitations refer to **David Brown Hydraulics**.



1900 INSTALLATION DATA

GENERAL DIMENSIONS (mm)



DIMENSIONS (a) & (b) CHANGE WITH ADAPTOR & HOUSING

UNIT SIZE	(a)	(b)	WEIGHT (kg)
1905	143	94	17.70
1907	143	94	17.90
1909	159	97	18.10
1911	159	102	18.40
1913	172	102	18.60
1916	172	102	18.80

C of G position approx. 50% of Dim. A

SHAFT SEAL DESIGNS

A * Preferred Feature
Suitable for external shaft or flexible drive couplings.

C Visible-bleed drilling in both sides of adaptor. Remove uppermost screw after installation.

Incorporates extra seals and visible bleed facility making it suitable for direct mounting on torque converters and gear boxes.

Z
Suitable for most Dual-Rotation Units the HP lip seal will withstand back-pressures of up to 20 bar.

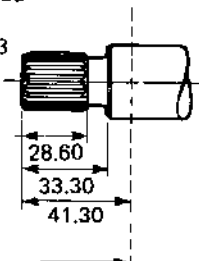
CZ
CZ Functions as Z type, but has visible-bleed facility (in top of adaptor only)

DRIVE-SHAFTS

B 22.2 Dia. SAE (7/8")
13 Tooth Involute Spline
*Standard for Single Pumps

INVOLUTE SPLINE DATA

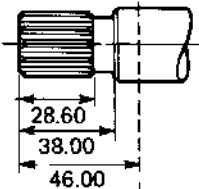
Side fit – Flat Root
Diametral Pitch 16/32
Pressure Angle 30°
Number of Teeth 13
Major Diameter : 21.79/21.69



Standard Flange Mounting Face

Q 25.40 Dia. SAE (1")
15 Tooth Involute Spline
*Standard for Multiple Pumps

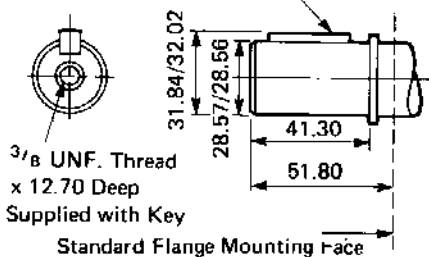
Diametral Pitch 16/32
Pressure Angle 30°
Number of Teeth 15
Major Diameter : 24.87/24.97



Standard Flange Mounting Face

R 28.60 Dia. (1 1/8")
Parallel Shaft with Key

31.80 x 7.90 sq. key



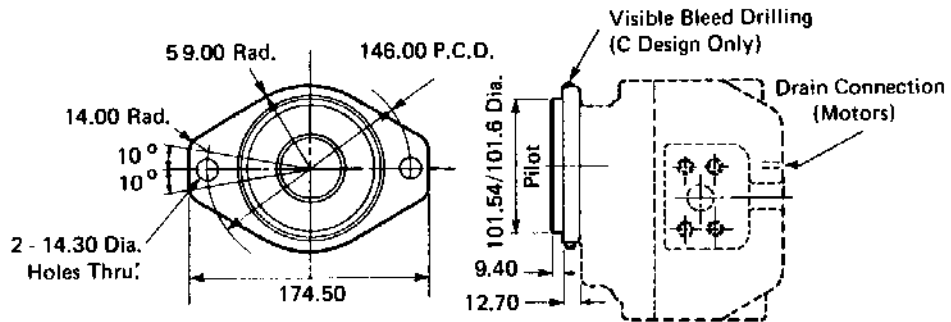
Standard Flange Mounting Face

1900 INSTALLATION DATA

FLANGES

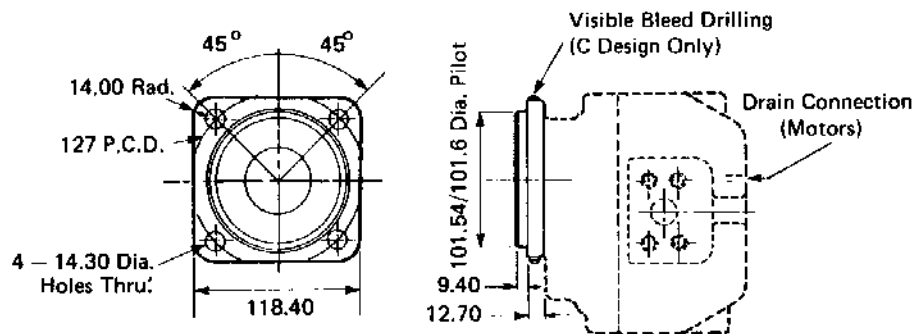
Dimensions in millimetres

- 2** SAE B 2 Hole
Available for
Designs A, C

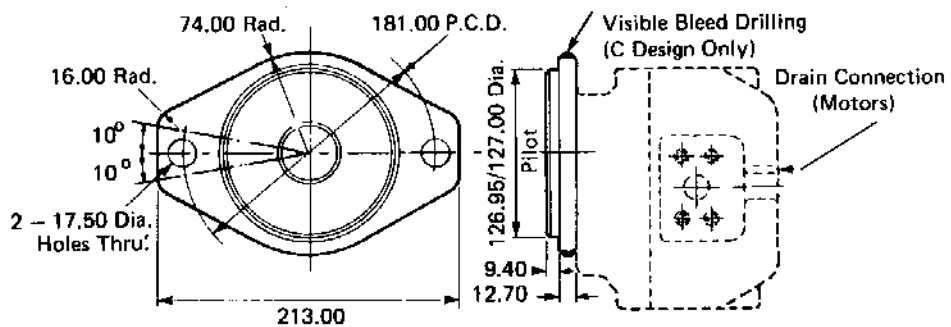


- 3** SAE B 4 Hole
Available for
Designs A, C

* Preferred Feature

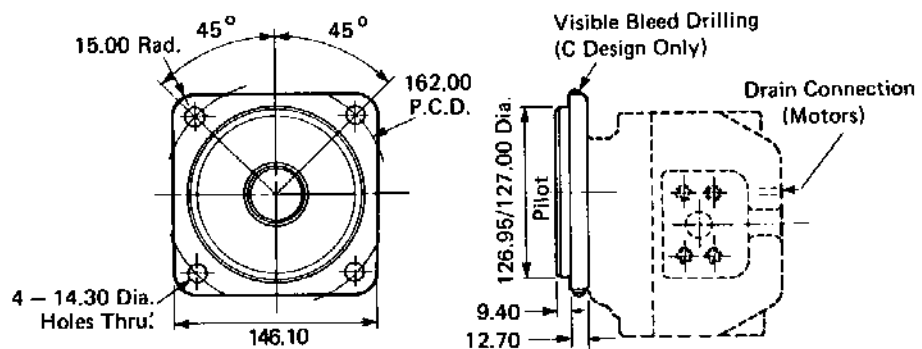


- 4** SAE C 2 Hole
Available for
Designs A, C



- 5** SAE C 4 Hole
Available for
Designs A, C

* Preferred Feature



Visible Bleed Drillings (C Design Only).

Adaptors for C design Units will have a plug fitted in BOTH bleed drillings when initially assembled.
The UPPERMOST plug should be removed when a C design unit is installed.

1900 INSTALLATION DATA

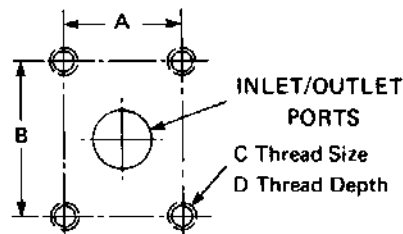
PORTS (PUMPS)

Dimensions in millimetres

B26

Unequal SAE Flanged Ports
(METRIC Tapping)

* Preferred Feature



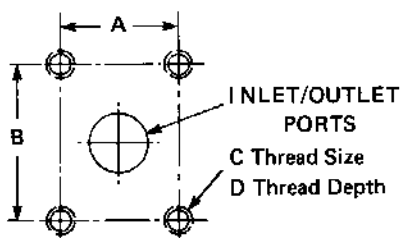
PUMP SIZE	INLET					OUTLET				
	DIA.	A	B	C (B26)	D	DIA.	A	B	C (B26)	D
1905	25.4	26.00	52.40	M10 x 1.5	28.60	19.00	22.00	47.60	M10 x 1.5	28.60
1907						25.40	26.00	52.40		
1909						32.00	30.00	58.70		
1911	38.00	35.70	70.00	M12 x 1.75		32.00	30.00	58.70		
1913										
1916										

PORTS (MOTORS)

B25

Equal SAE Flanged Ports
(METRIC Tapping)

* Preferred Feature



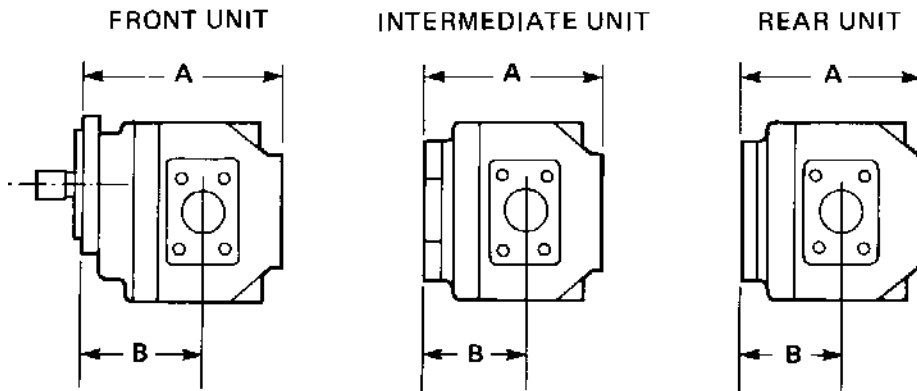
MOTOR SIZE	DIA.	A	B	C (B25)	D
1905	19.00	22.00	47.60	M10 x 1.5	28.60
1907					
1909					
1911	25.40	26.00	52.40		
1913	32.00	30.00	58.70		
1916					

NOTE THAT PORTS CAN BE SUPPLIED WITH UNC BOLT HOLES.

1900 INSTALLATION DATA

INSTALLATION DIMENSIONS – MULTIPLE UNITS

Dimensions in millimetres



ALL SEAL DESIGNS									
2200					1900				
SIZE		FRONT	INTER	REAR	SIZE		FRONT	INTER	REAR
2208	A	178	167	159	1905	A	156	145	132
	B	108	97	97		B	94	83	83
2210	A	178	167	159	1907	A	162	151	132
	B	108	97	97		B	97	86	83
2213	A	184	173	165	1909	A	167	156	148
	B	116	105	105		B	97	86	86
2215	A	194	193	185	1911	A	167	156	148
	B	116	115	115		B	102	90	90
2216	A	194	193	185	1913	A	179	168	160
	B	116	115	115		B	102	90	90
–	–	–	–	–	1916	A	179	168	160
						B	102	90	90

For dimensions not shown refer to the separate units section.

Total H.P./SPEED requirements must be within the limits given in the SHAFT LOADING CHARTS (see page 4).

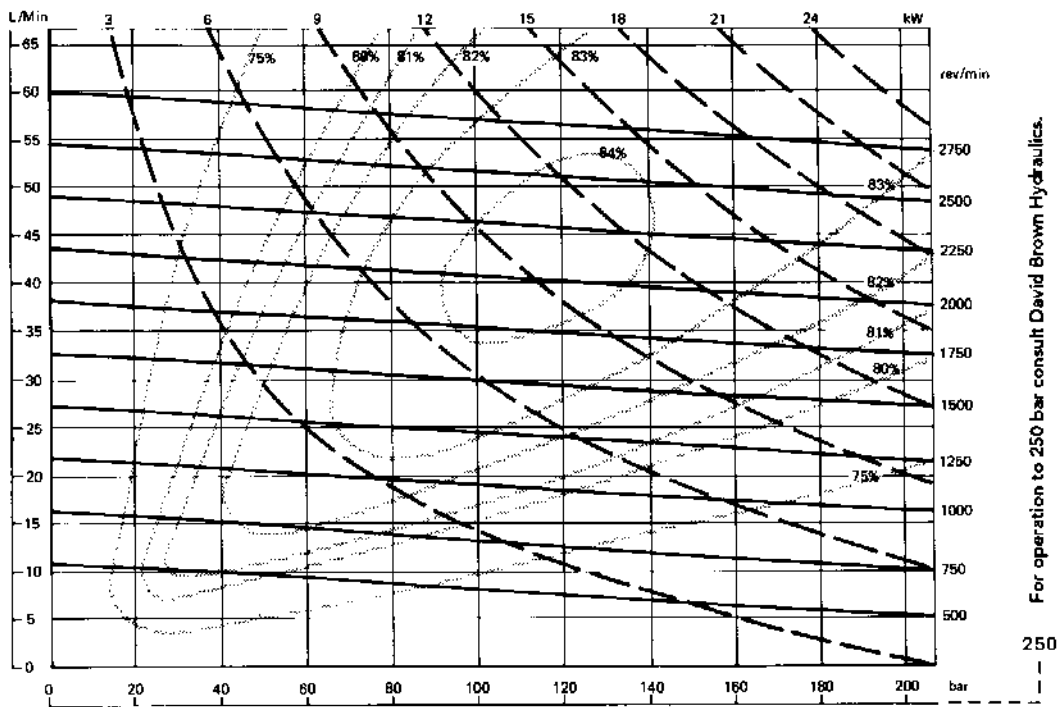
Smallest capacity pump units are normally mounted in REAR position only.

In multiple MOTOR assemblies each unit is normally of the same size and capacity.

For Variations of Design, Performance and Specification see the relevant Selection Data Sheets for each unit.

1900 PERFORMANCE DATA

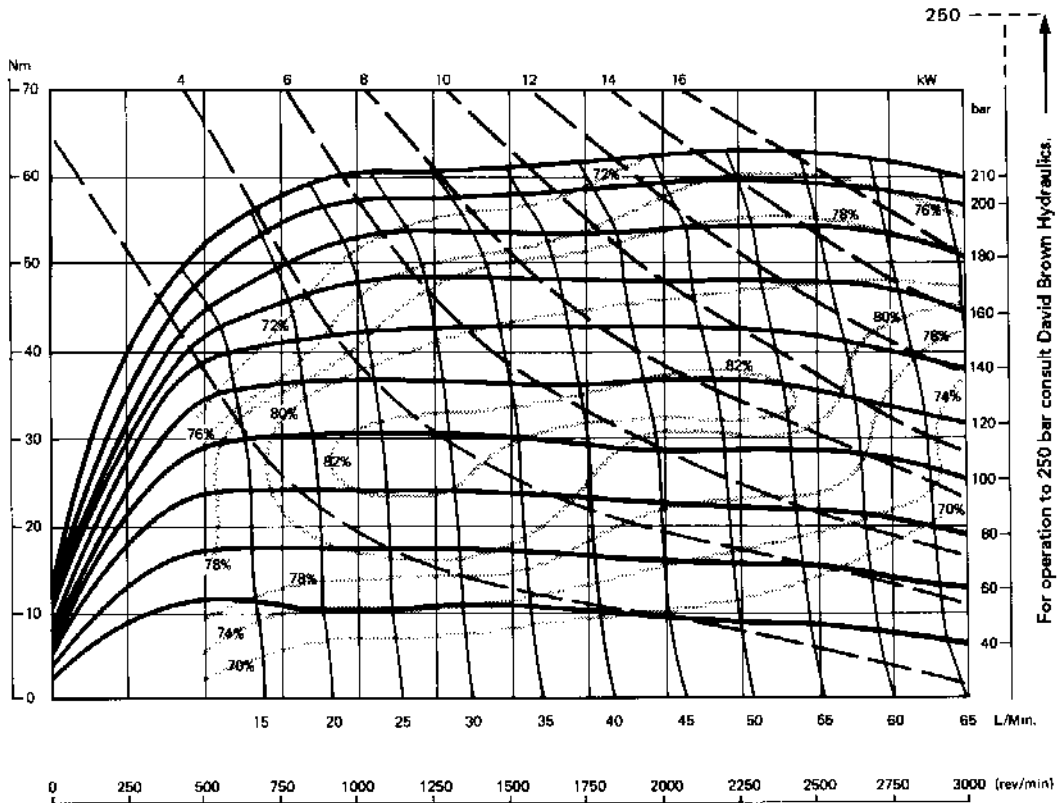
1905 PUMP



Key : Flow ——— Power Absorption - - - Overall Efficiency ·····

For operation to 250 bar consult David Brown Hydraulics.

1905 MOTOR

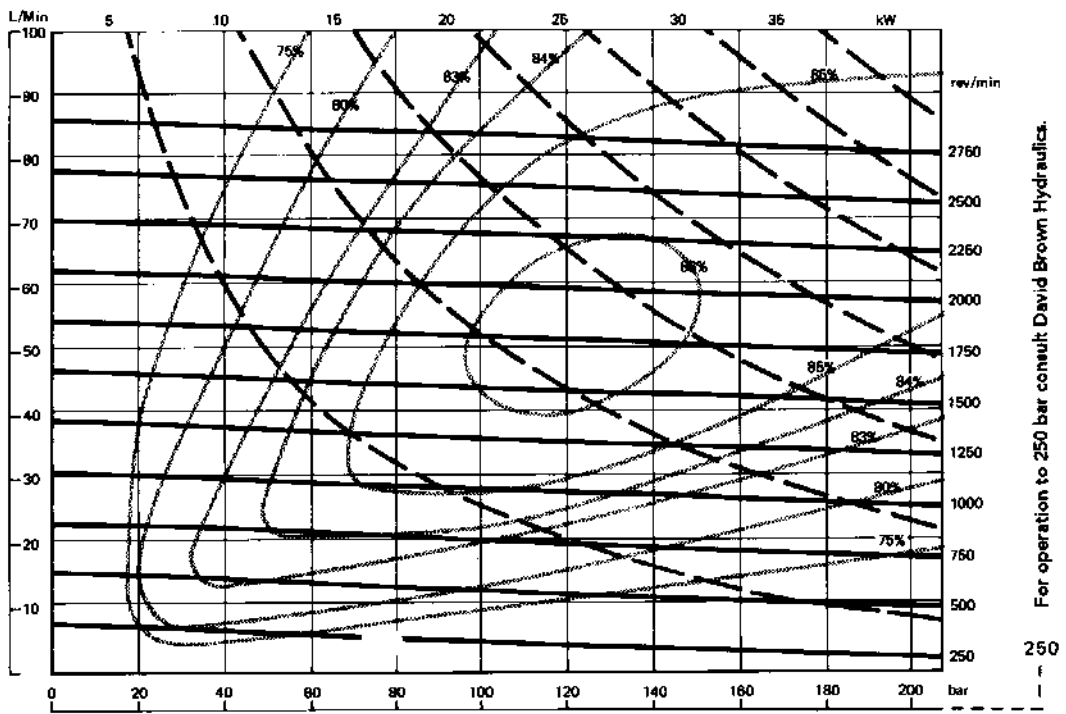


Key : Pressure ——— Power - - - Flow ——— Overall Efficiency ·····

For operation to 250 bar consult David Brown Hydraulics.

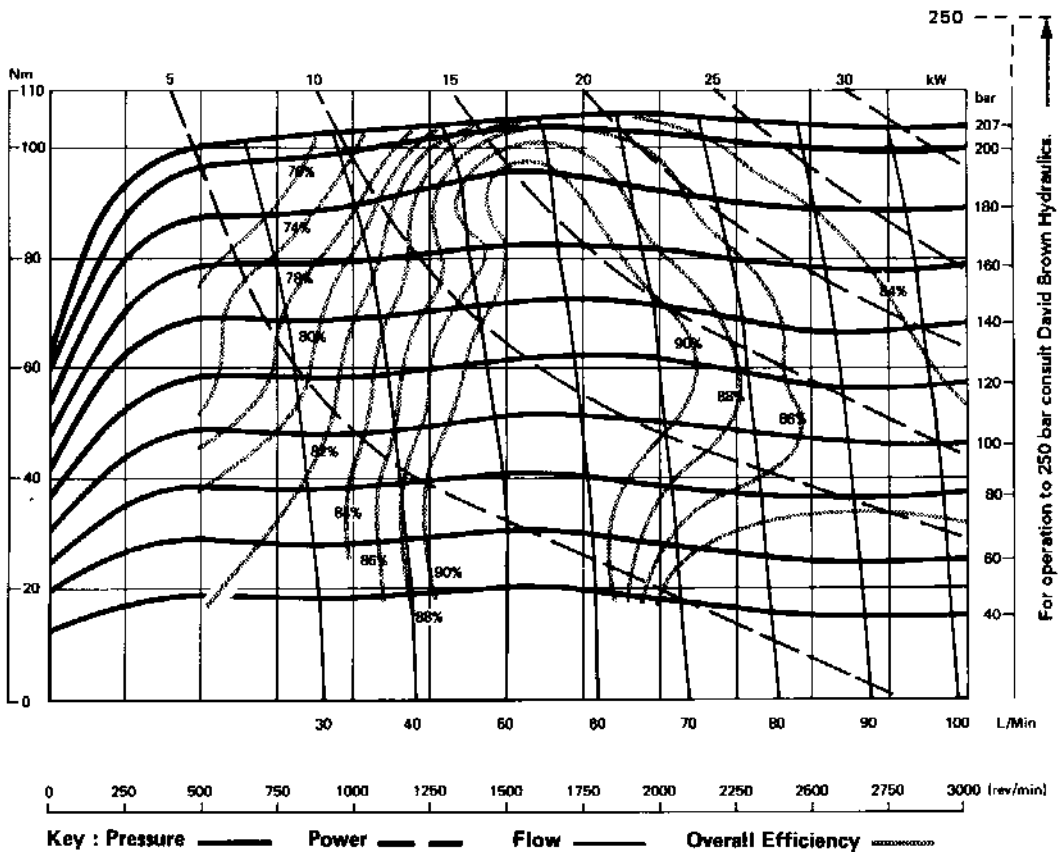
1900 PERFORMANCE DATA

1907 PUMP



Key : Flow ——— Power Absorption ——— Overall Efficiency ———

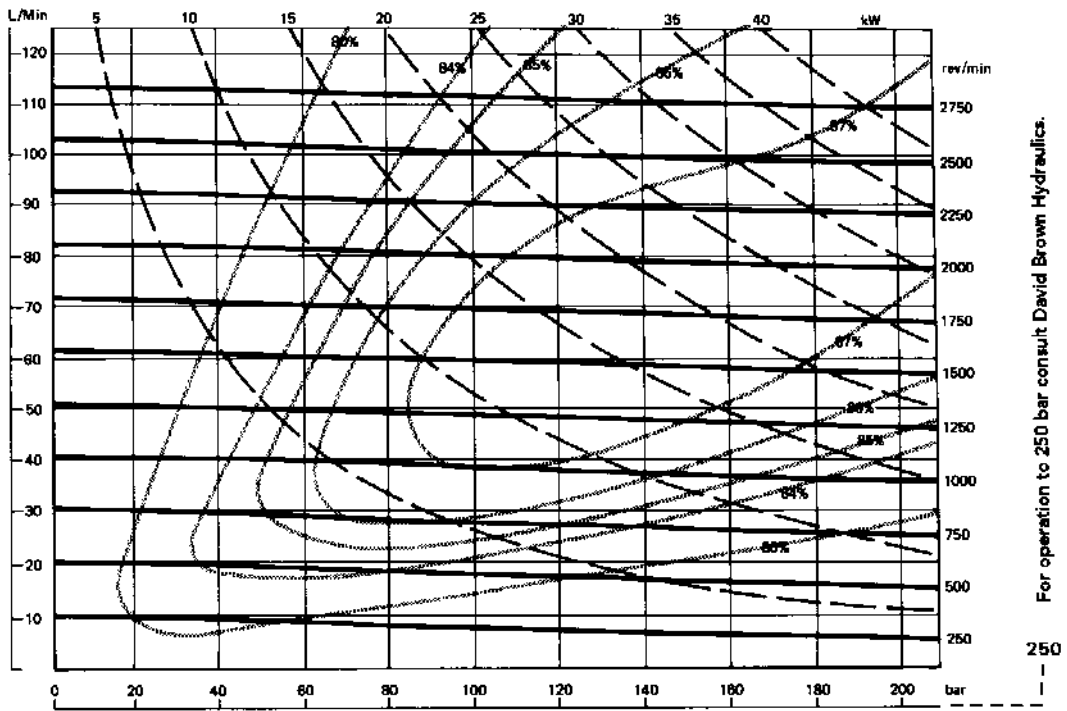
1907 MOTOR



Key : Pressure ——— Power ——— Flow ——— Overall Efficiency ———

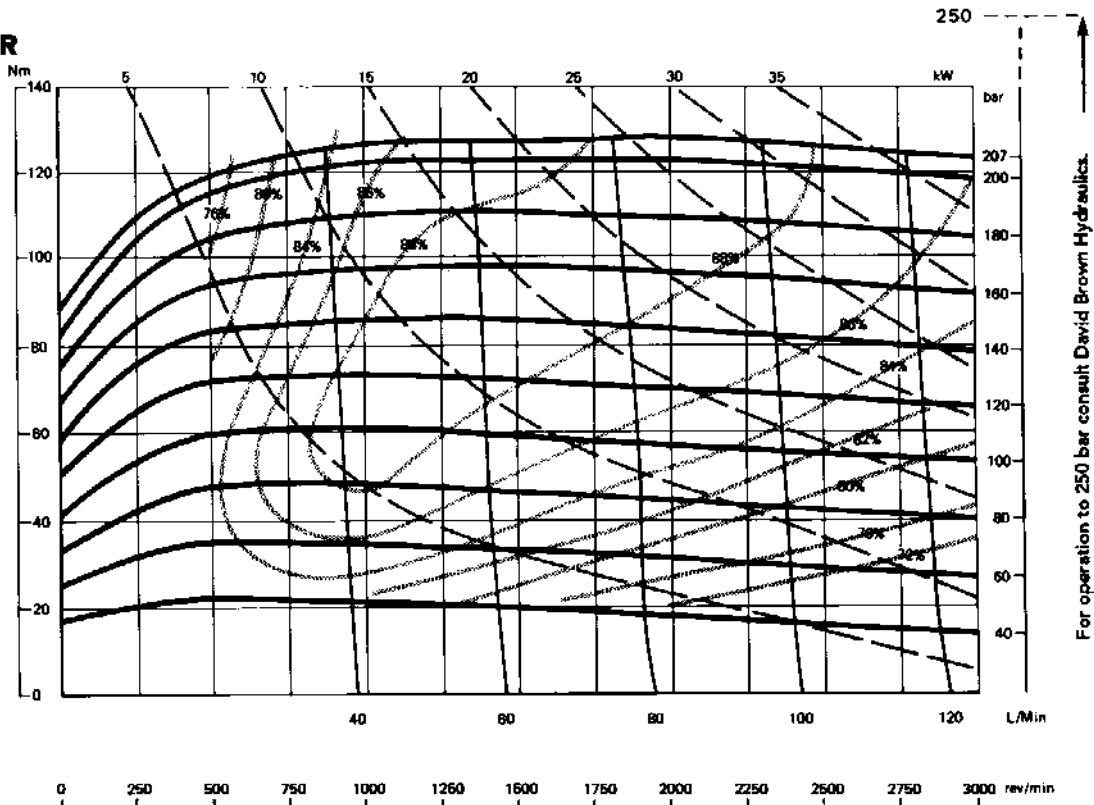
1900 PERFORMANCE DATA

1909 PUMP



Key : Flow ——— Power Absorption ——— Overall Efficiency ———

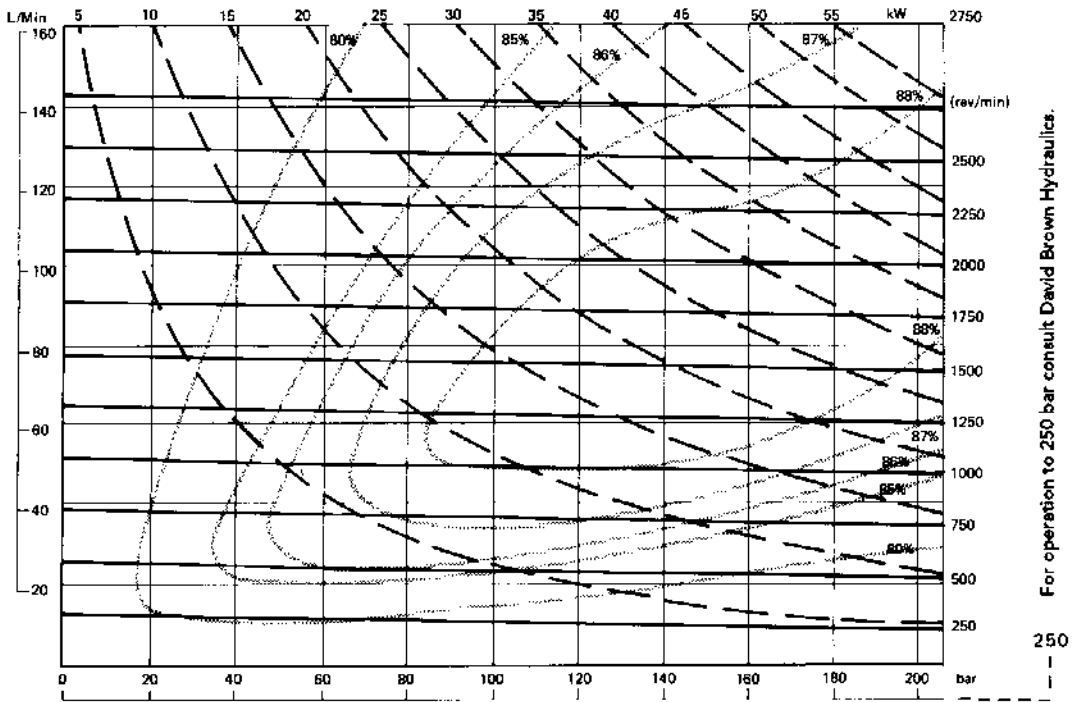
1909 MOTOR



Key : Pressure ——— Power ——— Flow ——— Overall Efficiency ———

1900 PERFORMANCE DATA

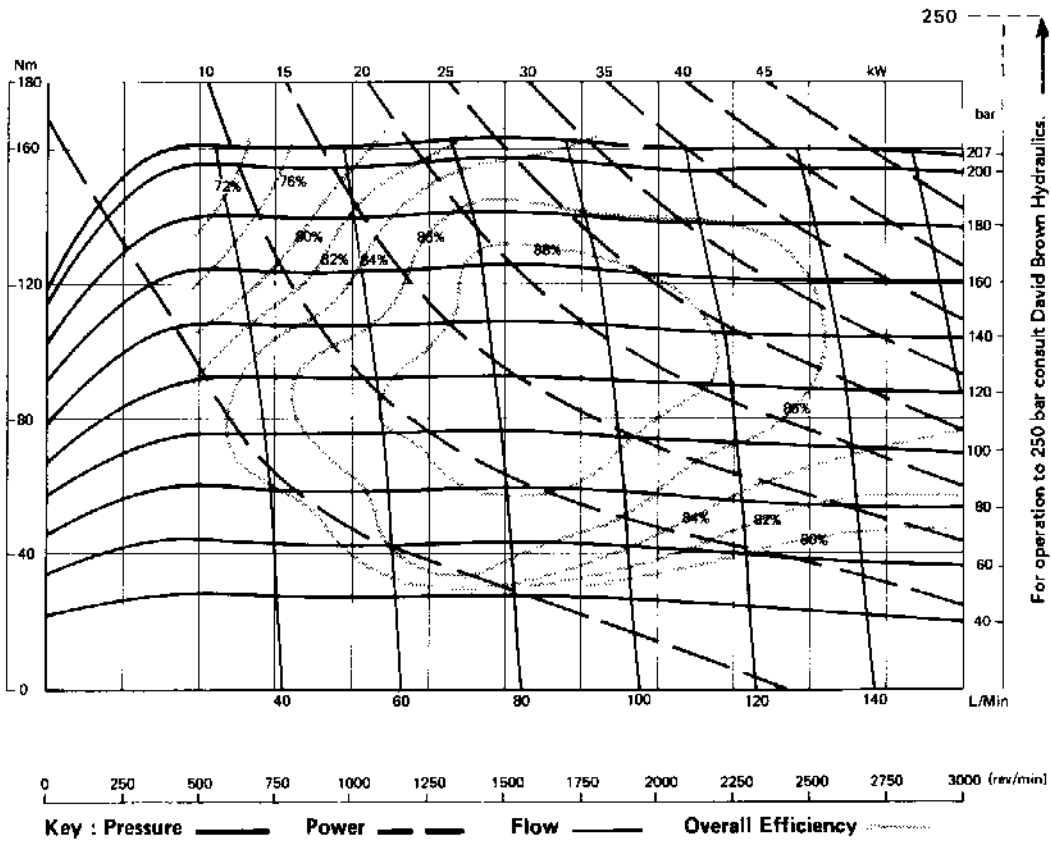
1911 PUMP



Key : Flow ——— Power Absorption - - - Overall Efficiency ······

For operation to 250 bar consult David Brown Hydraulics.

1911 MOTOR

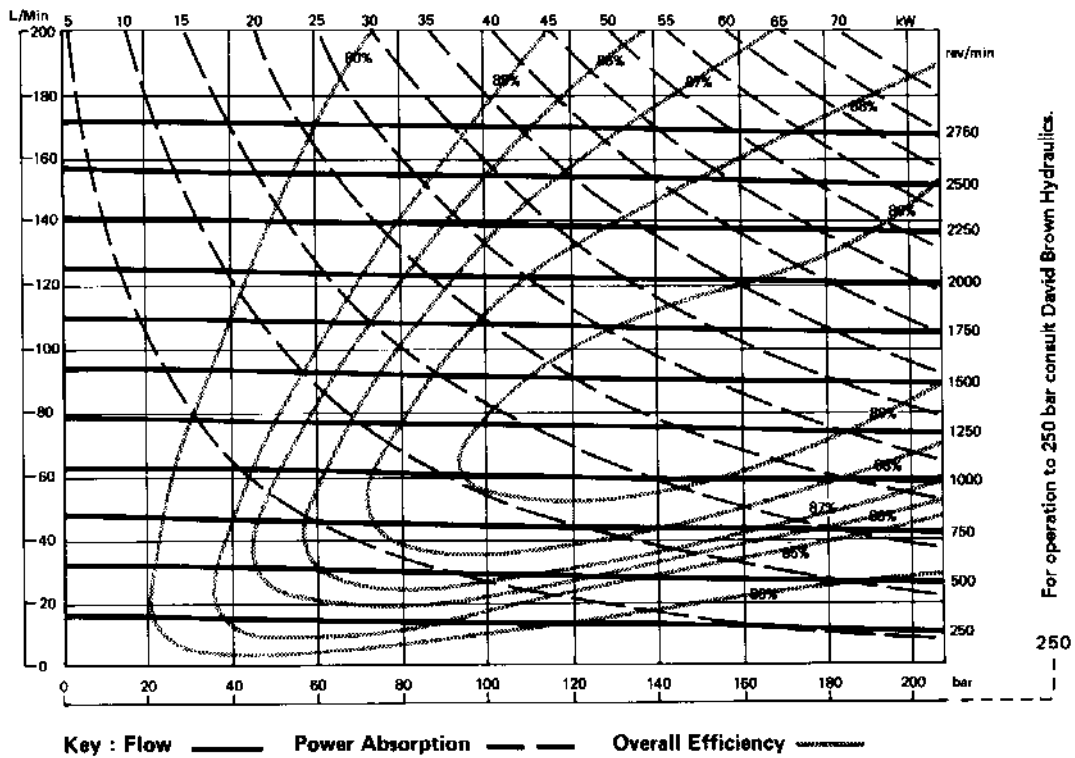


Key : Pressure ——— Power - - - Flow ——— Overall Efficiency ······

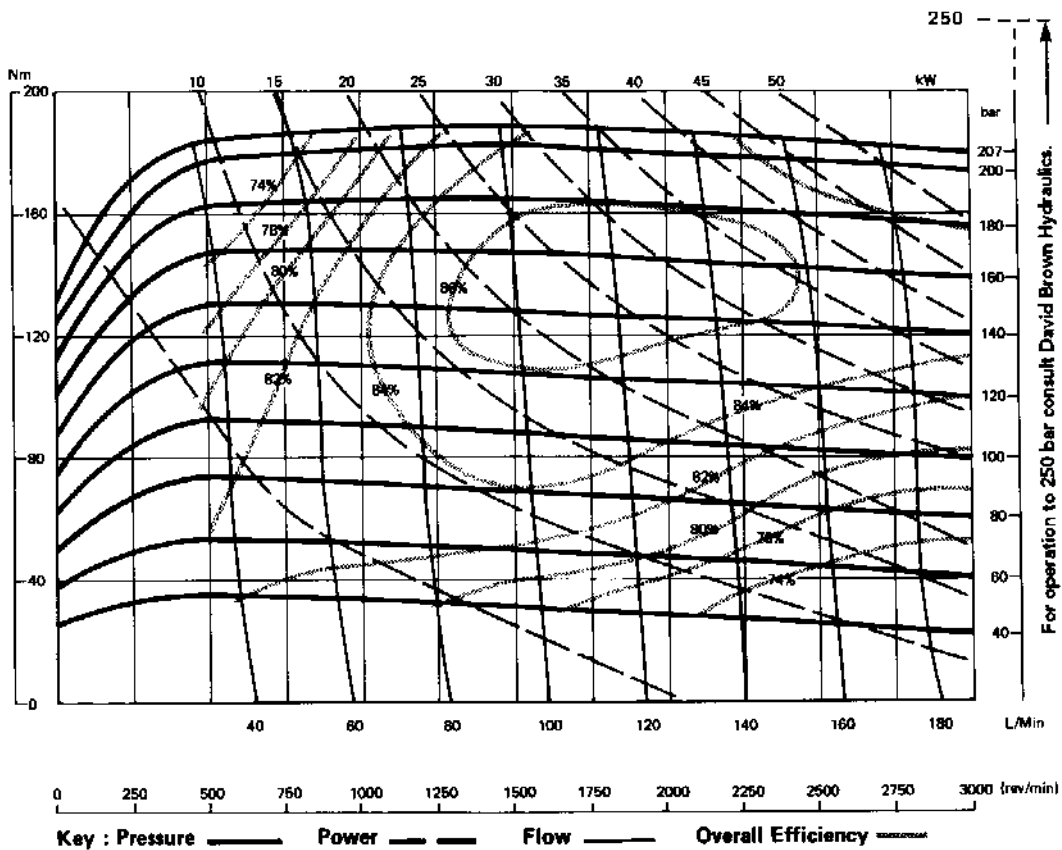
For operation to 250 bar consult David Brown Hydraulics.

1900 PERFORMANCE DATA

1913 PUMP

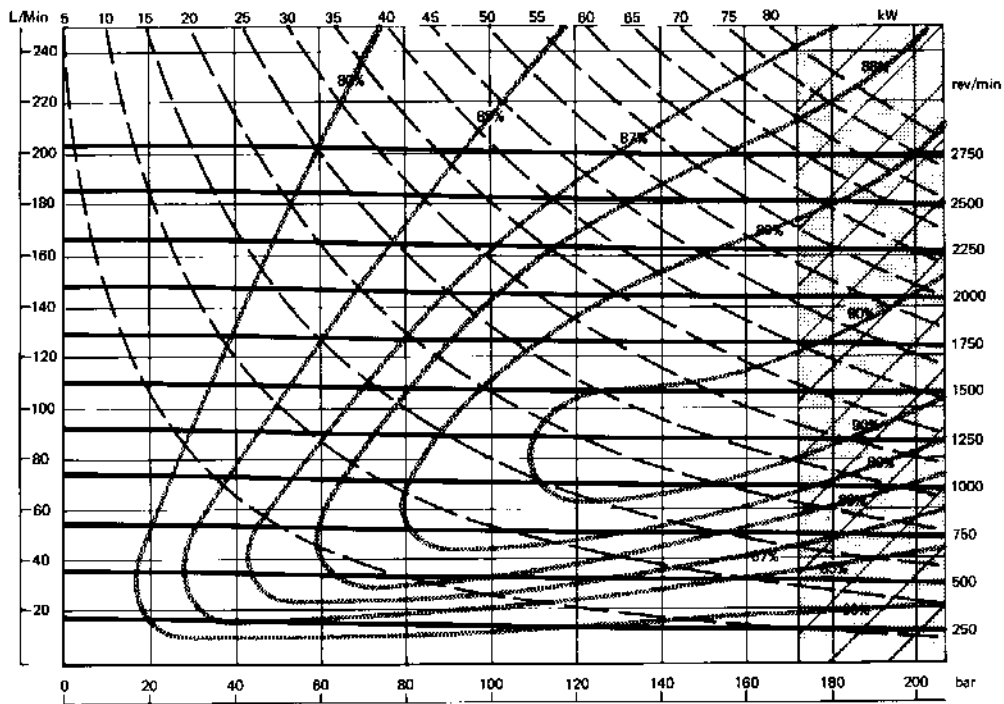


1913 MOTOR



1900 PERFORMANCE DATA

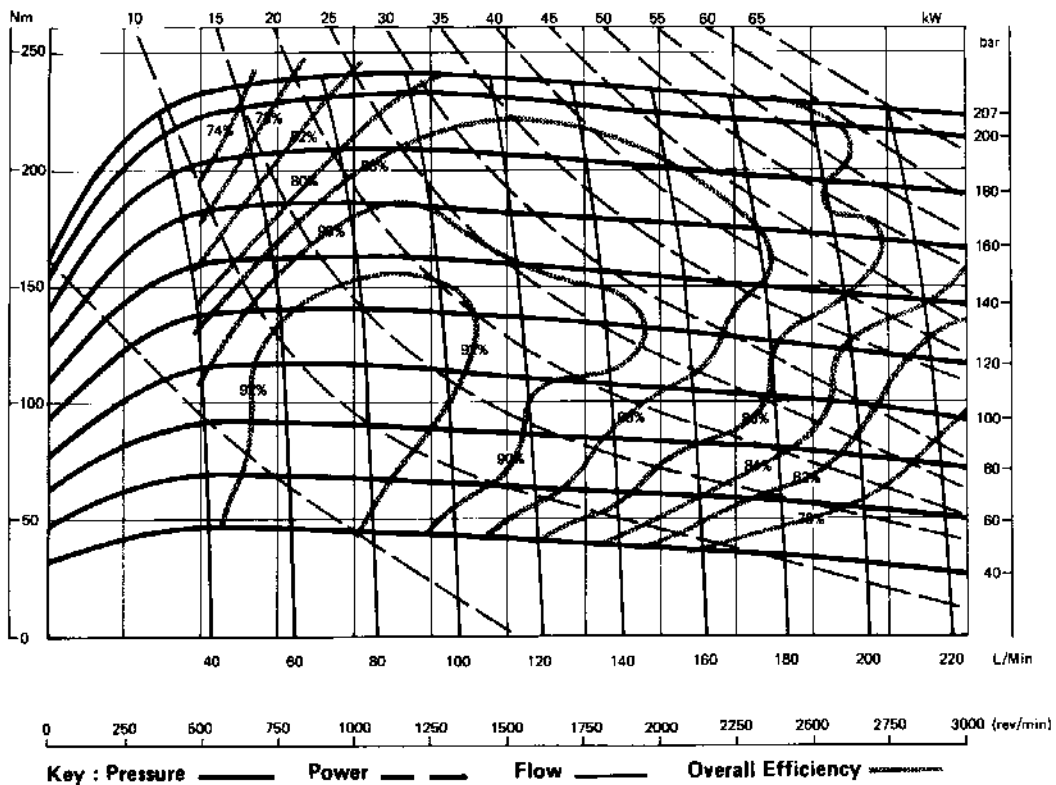
1916 PUMP



Key : Flow ——— Power Absorption ——— Overall Efficiency ———

For operation within the shaded area refer to David Brown Hydraulics.

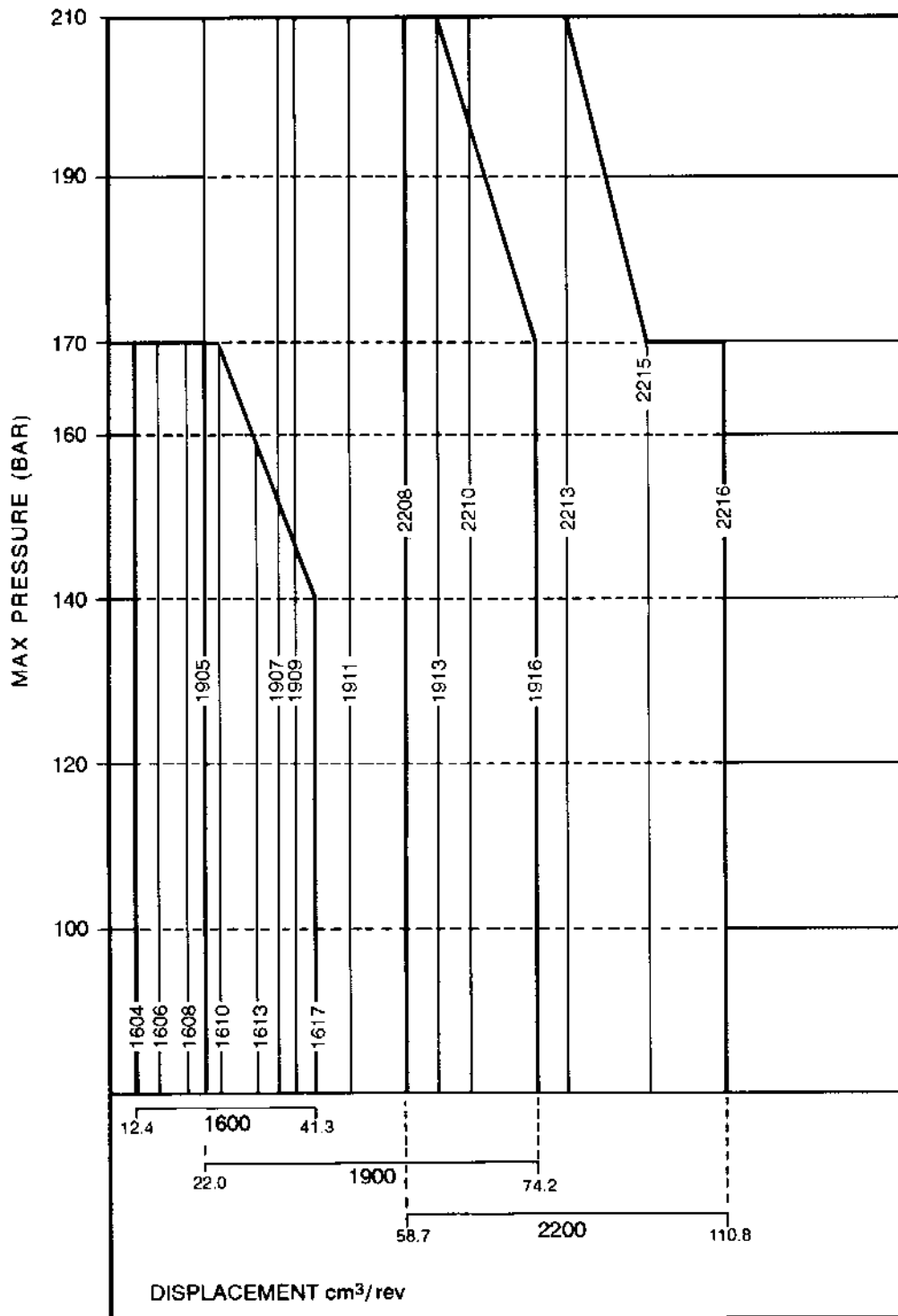
1916 MOTOR



Key : Pressure ——— Power ——— Flow ——— Overall Efficiency ———

1900 GENERAL DATA

THE CHART BELOW SHOWS THE DISPLACEMENT AND OPERATING PRESSURES AVAILABLE FROM THE 1600, 1900 AND 2200 RANGE OF GEAR PUMPS AND MOTORS.



Global Hydraulics combines the businesses of David Brown Hydraulics, Hydreco, and Powauto and supports worldwide customers with application expertise and famously reliable products.

The Global Hydraulics range includes pumps, motors, valves, pilot valves and power take offs to provide transport and mobile hydraulic solutions to customers seeking reliability combined with advanced performance.

For assistance see contact information below.



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