

HC Series

Multiple Section Pumps



These Gear Pumps are available in a combination of 25 different displacements in both European Group Mount or SAE - 2 Bolt Mount. Suction oil must be delivered to each pump which is individually ported. A common suction port for these combination pumps is not available.

Performance of units comprising multiple pumps is the same as those listed for the corresponding single pumps, thus the maximum rotation speed of a multiple pump is governed by the maximum speed of the largest pump in the combination.

We advise use of mineral based hydraulic oils having anti-foaming, anti-oxidant, corrosion proof and with a high viscosity rate. Pump drives must avoid axial and radial loads on the shaft. A flexible coupling used should compensate for small alignment errors.

In selecting a pump combination, consideration should be given to the amount of torque that the through shaft of the front pump (and subsequent pumps) are able to transmit through to drive following pumps.

GENERAL SPECIFICATIONS

MATERIAL

Body	Aluminium Alloy
Mounting Flange & Rear Cover	Aluminium Alloy
(Group 1 & Group 4 & SAE 'B')	
Mounting Flange & Rear Cover	Cast Iron
(Group 2 & Group 3 & SAE 'A')	
Shaft & Gears	One Piece - Hardened Alloy Steel
Seals.....	Buna N

OPERATING CONDITIONS

Normal Operating Temperature	-20°C to + 65°C
Min. - Max. Operating Temperature	-15°C to + 80°C
Filtration.....	25 Micron (Nominal)
Recommended Oil Viscosity.....	15mm ² /sec - 92mm ² /sec
Flow & Pressure	Refer to Chart

TORQUE

Maximum torque required to drive each single pump is derived from the formula:

$$M = \frac{C \times p}{64}$$

Where: M = Maximum Input torque (Nm)

C = Pump displacement (cc/rev)

p = Max. Working Pressure (bar)

Based on the above formula, the maximum torque that may be transmitted by the through coupling is indicated by the following table.

COUPLING TORQUE LIMITS (TANDEM PUMPS)			
FRAME SIZE	TORQUE (Nm)	FRAME SIZE	TORQUE (Nm)
Group 1	18	SAE 'A'	98
Group 2	98	SAE 'B'	240
Group 3	240		

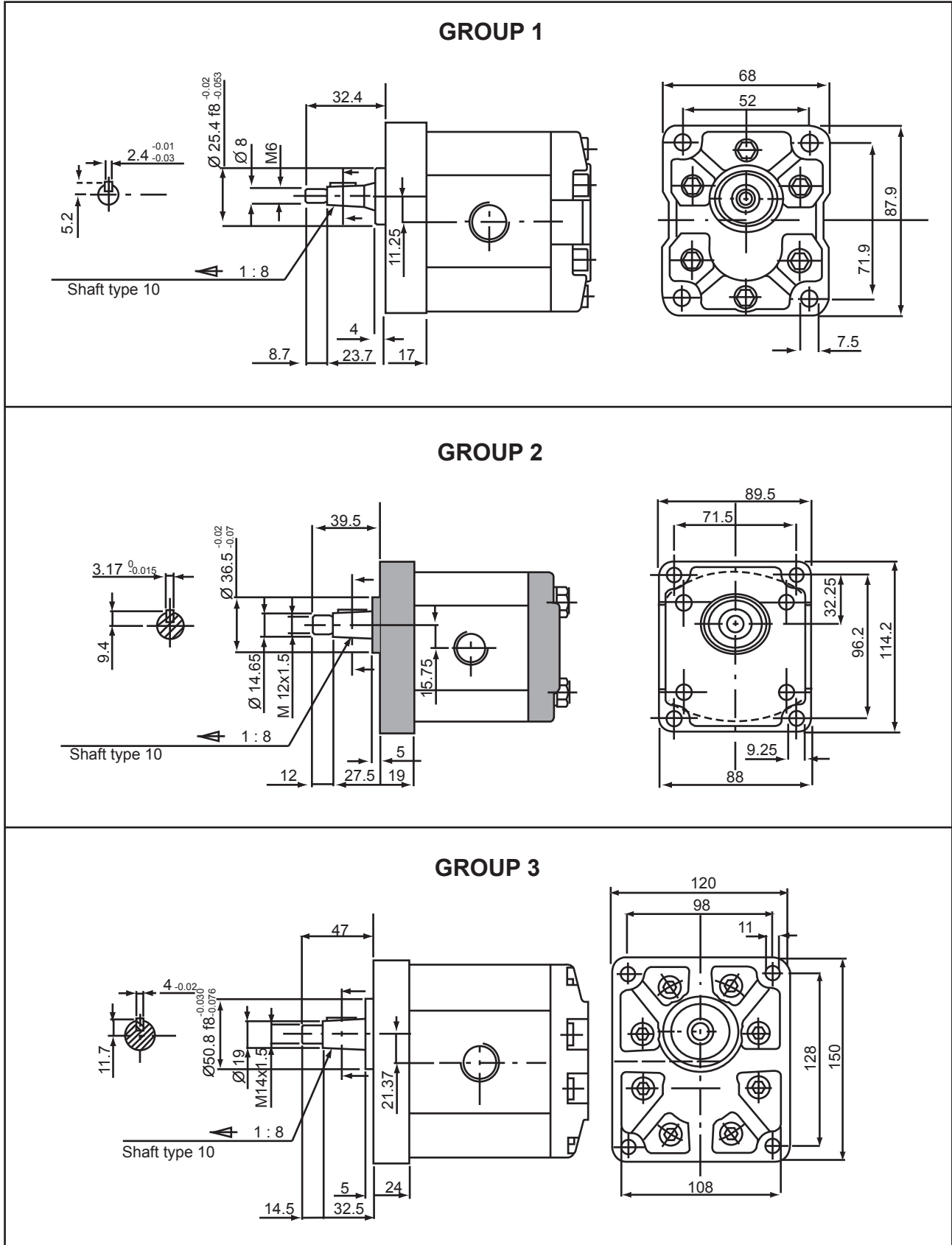
NOTES:

SAE Mount front pumps will always be followed by Group Mount rear pumps.

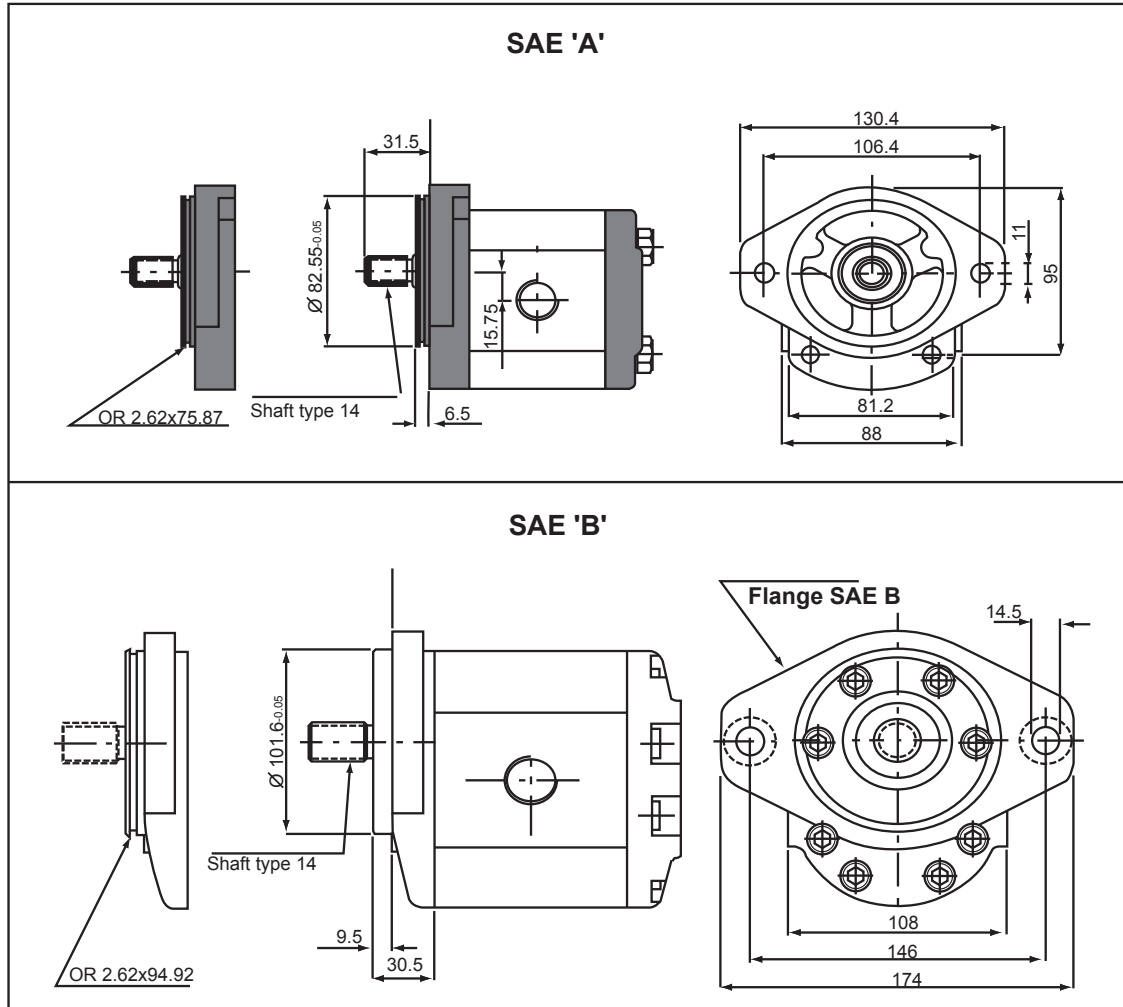
Pumps are supplied assembled for a designated rotation. The direction of rotation must be nominated when ordering.

PERFORMANCE SPECIFICATIONS (SINGLE PUMPS)						
TYPE	DISPLACEMENT cc/rev	MAX. SPEED rpm	MAX. FLOW Litres/min	MIN. SPEED rpm	MAX. CONT. PRESSURE	
					bar	psi
HC 1P 1	1.3	6000	7.16	400	240	3480
HC 1P 2	1.9	6000	10.46	400	240	3480
HC 1P 3	3.2	5500	16.19	400	230	3335
HC 1P 4	4.1	5000	18.86	400	220	3190
HC 1P 5	5.0	4500	20.7	400	200	2900
HC 1P 6	6.3	4000	23.18	400	190	2755
HC 2P 4	4.0	4000	15.2	500	280	4060
HC 2P 6	6.0	4000	22.8	500	280	4060
HC 2P 8	8.5	3500	28.2	500	280	4060
HC 2P 11	11.0	3500	36.5	500	280	4060
HC 2P 14	14.0	3500	46.5	500	270	3915
HC 2P 16	16.5	3500	54.8	500	230	3335
HC 2P 19	19.5	3300	31.1	500	210	3045
HC 2P 22	22.5	2800	59.8	500	190	2755
HC 2P 26	26.0	2500	61.7	500	170	2465
HC 3P 19	19.0	3500	61.1	700	240	3480
HC 3P 22	22.3	3500	71.8	700	240	3480
HC 3P 29	29.3	3300	88.9	700	220	3190
HC 3P 36	36.4	3300	110.5	700	210	3045
HC 3P 44	43.5	3000	120.0	700	200	2900
HC 3P 52	51.7	3000	142.6	700	200	2900

PUMP MOUNTING CHART



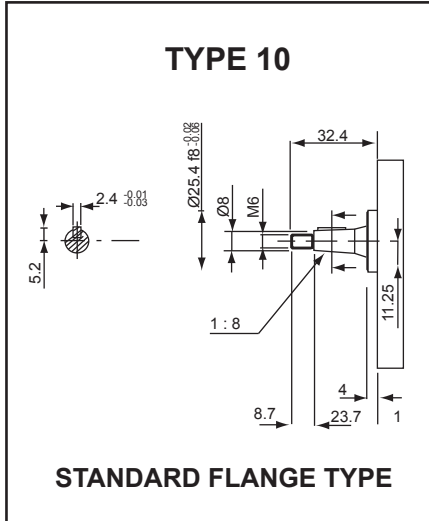
PUMP MOUNTING CHART (Continued)



PORTING CHART

PUMP SERIES	SUCTION PORT	DELIVERY PORT
HC 1 P (All)	3/8" BSPP	3/8" BSPP
HC 2P 4	7/8" UN O-RING	7/8" UN O-RING
HC 2P 6	7/8" UN O-RING	7/8" UN O-RING
HC 2P 8	7/8" UN O-RING	7/8" UN O-RING
HC 2P 11	1-1/16" UN O-RING	7/8" UN O-RING
HC 2P 14	1-1/16" UN O-RING	7/8" UN O-RING
HC 2P 16	1-1/16" UN O-RING	7/8" UN O-RING
HC 2P 19	1-1/16" UN O-RING	7/8" UN O-RING
HC 2P 22	1-1/16" UN O-RING	7/8" UN O-RING
HC 2P 26	1-1/16" UN O-RING	7/8" UN O-RING
HC 3P (All)	1-5/16" UN O-RING	1-1/16" UN O-RING

PUMP - GROUP 1

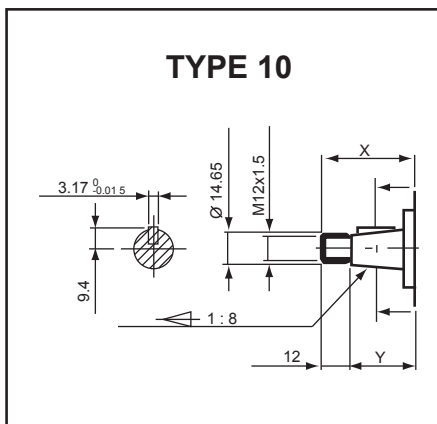


SHAFT DIMENSIONAL DETAILS

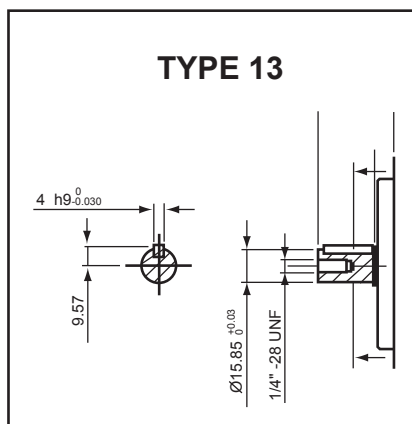
NOTE:

THE SHAFT 'TYPE 10' IS ONLY AVAILABLE WITH THE STANDARD MOUNTING FLANGE.
SHAFTS 'TYPE 13' AND 'TYPE 14' ARE ONLY AVAILABLE WITH THE SAE MOUNTING FLANGES.

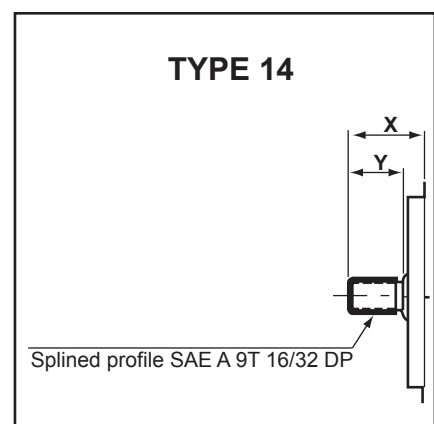
PUMPS - GROUP 2



Flange Type	X	Y
Standard	39.5mm	27.5mm

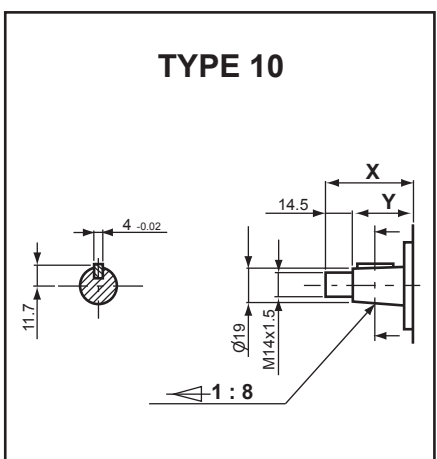


Flange Type	X	Y
SAE 'A'	32mm	24mm

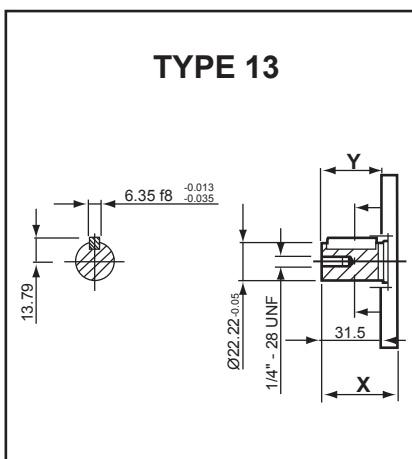


Flange Type	X	Y
SAE 'A'	31.5mm	23mm

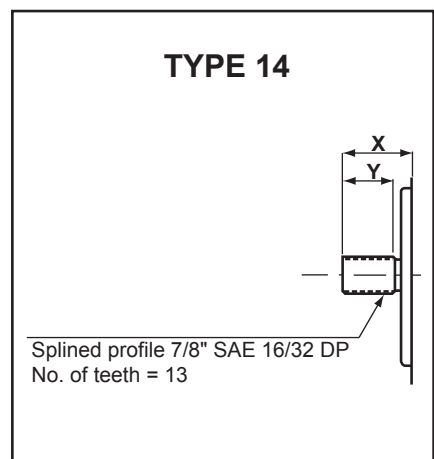
PUMPS - GROUP 3



Flange Type	X	Y
Standard	47mm	32.5mm



Flange Type	X	Y
SAE 'B'	41mm	33mm



Flange Type	X	Y
SAE 'B'	41mm	34mm

MULTIPLE PUMP ASSEMBLIES

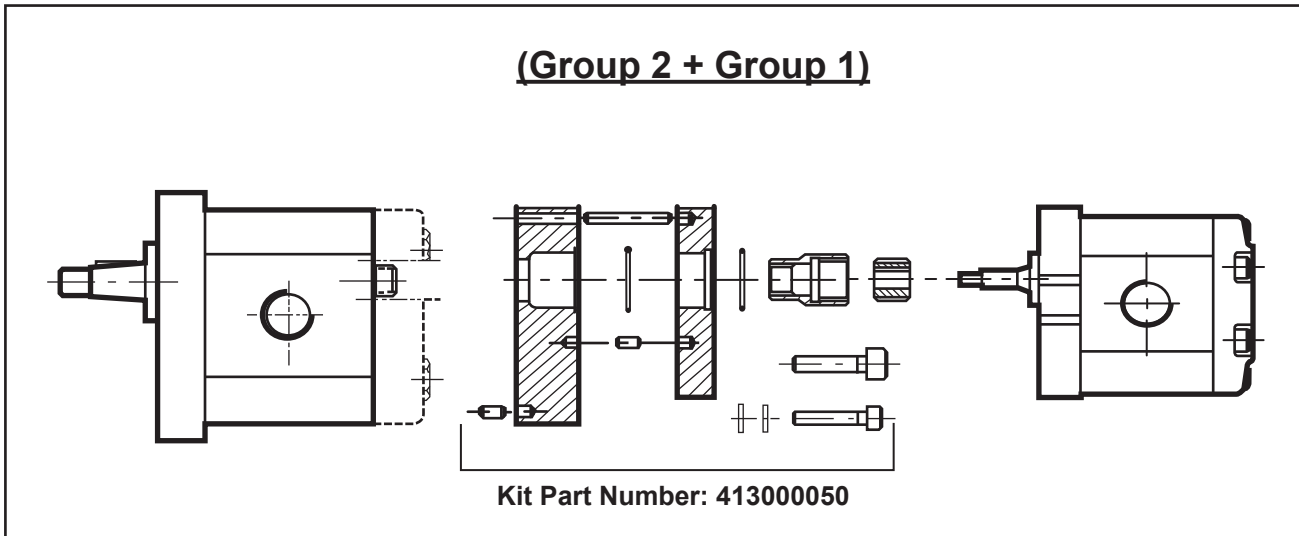
Multiple pump assemblies are a combination of single pumps coupled with the appropriate intermediate kit.

Refer to the table below for a listing of adaptor kits which enable the coupling of a second and subsequent pumps to the rear of a front pump.

MULTIPLE PUMP - INTERFACE ADAPTOR KIT

COMBINATION	ADAPTOR KIT PART NO:
GR1 + GR1	413000049
GR2 + GR1	413000050
GR2 + GR2	413000057
GR3 + GR1	413000058
GR3 + GR2	413000059
GR3 + GR3	413000060

TYPICAL ASSEMBLY



MAXIMUM & MINIMUM ASSEMBLY LENGTHS

The maximum assembly length of a multiple pump is determined by the overall length of each pump in the combination plus the length of the adaptor kit. Within the various frame sizes of pumps, each displacement pump has an individual length.

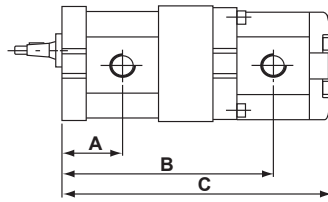
Space prohibits the publication of the assembly length of ever possible combination however as a compromise published in the table on the next page is the maximum and minimum length of the various possible frame size combinations. Intermediate displacement pump lengths of the various frame sizes will lie between the maximum and minimum overall dimensions published in the table.

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MAXIMUM & MINIMUM ASSEMBLY LENGTHS



DIMENSIONAL DETAILS

MAXIMUM LENGTH			
PUMP COMBINATION	A mm	B mm	C mm
HC 1P 6 + HC 1P 6	47.2	161.5	208.5
HC 2P 26 + HC 1P 6	62.7	193.1	239.2
HC 2P 26 + HC 2P 26	625.7	221.1	288
HC 3P 52 + HC 1P 6	78	222	269
HC 3P 52 + HC 2P 26	78	255	317.5
HC 3P 52 + HC 3P 52	78	275	354

MINIMUM LENGTH			
PUMP COMBINATION	A mm	B mm	C mm
HC 1P 1 + HC 1P 1	39.2	137.5	176.5
HC 2P 4 + HC 1P 1	44.4	148.5	166.6
HC 2P 4 + HC 2P 4	44.4	166.2	214.8
HC 3P 19 + HC 1P 1	64	186	225
HC 3P 19 + HC 2P 4	64	204.5	253
HC 3P 19 + HC 3P 19	64	233	298

HOW TO ORDER (SINGLE PUMPS)

HC 1P	A	3	D	STND	10	G
Pump Type						Porting Connections
Flange & Cover						G = BSPP (Grp 1 only)
A = Aluminium (Grp 1 & Grp 3 SAE 'B' only)						U = UN O-Ring (All except Grp 1)
G = Cast Iron (Grp 2 & SAE 'A' only)					Shaft Type	
					(From Table)	
Displacement (cc/rev)						Flange Type
(From Table)						'STND' = European 4 - Bolt
Rotation						'SAE A' = SAE 'A' - 2 Bolt Mount
'D' = Clockwise						'SAE B' = SAE 'B' - 2 Bolt Mount
'S' = Anti-Clockwise						

HOW TO ORDER (MULTIPLE PUMPS)

HC 2P G 14	+	HC 11 A 3	D	STND	10	U
First (Front) Pump Type		Second Pump Type				Porting
						G = BSPP
						U = UN O-Ring
		Rotation			Shaft Type	
		'D' = Clockwise			(From Table)	
		'S' = Anti-Clockwise				Flange Type
						'STND' = European 4 - Bolt
						'SAE A' = SAE 'A' - 2 Bolt Mount
						'SAE B' = SAE 'B' - 2 Bolt Mount