



ADVANCED HYDRAULIC TECHNOLOGIES

Q SERIES

HYDRAULIC GEAR PUMPS



16 TO 240 CM³/REV (1 TO 14.6 CU.IN/REV)
280 BAR (4000 PSI) PEAK PRESSURE

HYDRECO HYDRAULICS



With its headquarters in the UK, other Hydreco Hydraulics companies located in Europe & Australia, and approved stockists & distributors located throughout the world, Hydreco Hydraulics is able to offer global sales and service support for its mobile hydraulics products.



■ Pumps

■ Motors



■ Directional Valves

■ Pilot Controllers

■ Subplate Valves

■ Cartridge Valves



Hydreco Hydraulics' Engineers have years of experience of working with customers to establish optimum hydraulic circuits. Where possible standard products are specified but, if applicable, customised or special designs can be produced.



Q SERIES HYDRAULIC PUMPS INDEX

This brochure covers in detail, single, double and multiple pumps of each of the 4 frame sizes Q4, Q5, Q6 and Q7 in spur gear (R) and helical gear (S) types.

It is possible to connect pumps of different sizes as triples or even quadruple units but it is not practicable to cover the huge number of permutations in a publication of this type. Please consult your Hydreco Hydraulics representative - see back cover. Overall dimensions of these multiple pumps are shown on Page 39.

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“At a Glance” and Model Number details to enable you to select a pump and create its model number are shown on Pages 4 and 5. Description & Benefits of the range are shown on Page 6.

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* Please note that the model codes for features such as shafts, ports etc are indicated on the relevant pages together with pump model number examples.

Before ordering, please ensure that the pump will be operating within quoted pressure, temperature, speed and fluid parameters and that the pD factors are not exceeded (see Pages 12, 20, 28, 35 and 38).

AT A GLANCE HYREDCO HYDRAULICS Q SERIES PUMP RANGE

QR SERIES Spur Gears			
MODEL	DISPLACEMENT cm ³ /rev (in ³ /rev)	OUTLET PRESSURE	
		Rated bar (psi)	Peak bar (psi)
R4016	16 (0.975)	250 (3625)	280 (4060)
R4019	19 (1.158)	250 (3625)	280 (4060)
R4023	23 (1.402)	250 (3625)	280 (4060)
R4027	27 (1.646)	250 (3625)	280 (4060)
R4032	32 (1.951)	250 (3625)	280 (4060)
R4038	38 (2.317)	250 (3625)	280 (4060)
R4045	45 (2.746)	250 (3625)	280 (4060)
R4053	53 (3.230)	210 (3045)	235 (3408)
R4060	60 (3.660)	180 (2610)	200 (2900)
R5045	45 (2.746)	250 (3625)	280 (4060)
R5053	53 (3.231)	250 (3625)	280 (4060)
R5063	63 (3.841)	250 (3625)	280 (4060)
R5073	73 (4.451)	250 (3625)	280 (4060)
R5085	85 (5.183)	250 (3625)	280 (4060)
R5100	100 (6.098)	210 (3045)	235 (3408)
R5120	120 (7.317)	180 (2610)	200 (2900)
R6100	100 (6.098)	250 (3625)	280 (4060)
R6117	117 (7.134)	250 (3625)	280 (4060)
R6137	137 (8.354)	250 (3625)	280 (4060)
R6160	160 (9.756)	250 (3625)	280 (4060)
R6187	187 (11.402)	210 (3045)	235 (3408)
R6220	220 (13.415)	180 (2610)	200 (2900)

QS SERIES Helical Gears			
MODEL	DISPLACEMENT cm ³ /rev (in ³ /rev)	OUTLET PRESSURE	
		Rated bar (psi)	Peak bar (psi)
S4016	16.0 (0.975)	250 (3625)	280 (4060)
S4023	22.2 (1.341)	250 (3625)	280 (4060)
S4027	26.1 (1.585)	250 (3625)	280 (4060)
S4032	30.9 (1.884)	250 (3625)	280 (4060)
S4037	35.8 (2.183)	250 (3625)	280 (4060)
S4042	40.6 (2.476)	210 (3045)	235 (3408)
S5045	43.5 (2.652)	250 (3625)	280 (4060)
S5051	49.3 (3.006)	250 (3625)	280 (4060)
S5060	58.0 (3.537)	250 (3625)	280 (4060)
S5070	67.7 (4.128)	250 (3625)	280 (4060)
S5085	82.2 (5.012)	210 (3045)	235 (3408)
S6083	80.3 (4.896)	250 (3625)	280 (4060)
S6097	93.8 (5.720)	250 (3625)	280 (4060)
S6113	109.3 (6.665)	250 (3625)	280 (4060)
S6132	127.6 (7.780)	250 (3625)	280 (4060)
S6155	149.9 (9.140)	210 (3045)	235 (3408)
S7155	149.9 (9.140)	250 (3625)	280 (4060)
S7180	174.1 (10.615)	250 (3625)	280 (4060)
S7208	201.1 (12.262)	250 (3625)	280 (4060)
S7248	239.8 (14.622)	250 (3625)	280 (4060)

Note: Theoretical flow rate = $\frac{(\text{cm}^3/\text{rev} \times \text{rev}/\text{min})}{1000}$ (litre/min)
= (.00433 x cu.in/rev x rev/min) (US gal/min)

Q SERIES MODEL NUMBERS*

Front or single pump
Rear pump (omit for single pumps)
Front or single port configuration
Rear port configuration (omit for single pump)

R1A4016R4016B12A1H1A0X1AA

Gear type

R = spur
S = helical

1 = design mark

Shaft seals

A = seal and wiper
C = seal wiper, seal with tell-tale

Frame size

4, 5, 6, 7

Displacements

R Series	DISPLACEMENT		R Series	DISPLACEMENT	
	cm ³ /rev	in ³ /rev		cm ³ /rev	in ³ /rev
R4016	16.0	0.975	S4016	16.0	0.975
R4019	19.0	1.158	S4023	22.2	1.341
R4023	23.0	1.402	S4027	26.1	1.585
R4027	27.0	1.646	S4032	30.9	1.884
R4032	32.0	1.951	S4037	35.8	2.183
R4038	38.0	2.317	S4042	40.6	2.476
R4045	45.0	2.746	S5045	43.5	2.652
R4053	53.0	3.230	S5051	49.3	3.006
R4060	60.0	3.660	S5060	58.0	3.537
R5045	45.0	2.746	S5070	67.7	4.128
R5053	53.0	3.231	S5085	82.2	5.012
R5063	63.0	3.841	S6083	80.3	4.896
R5073	73.0	4.451	S6097	93.8	5.720
R5085	85.0	5.183	S6113	109.3	6.665
R5100	100.0	6.098	S6132	127.6	7.780
R5120	120.0	7.317	S6155	149.9	9.140
R6100	100.0	6.098	S7155	149.9	9.140
R6117	117.0	7.134	S7180	174.1	10.615
R6137	137.0	8.354	S7208	201.1	12.262
R6160	160.0	9.756	S7248	239.8	14.622
R6187	187.0	11.402			
R6220	220.0	13.415			

Drive Shafts

Code	Description	Frame Sizes			
A	5/8" - SAE A spline	4			
E	5/8" - SAE A parallel	4			
B	7/8" - SAE B spline	4	5		
F	7/8" - SAE B parallel	4			
Q	1" - SAE BB spline	4	5		
H	1" - SAE BB parallel	4	5		
C	1.1/4" - SAE C spline		5	6	7
G	1.1/4" - SAE C parallel		5	6	7
T	1.1/2" - SAE CC spline			6	7
N	1.1/2" - SAE CC parallel			6	7
D	1.3/4" - SAE D spline				7
P	1.3/4" - SAE D parallel				7
See page number		12	20	28	35

Mounting Flanges

Code	Description	Frame Sizes			
1	2 bolt SAE A	4			
2	2 bolt SAE B	4	5		
3	4 bolt SAE B	4	5		
4	2 bolt SAE C	4	5	6	
5	4 bolt SAE C	4	5	6	7
7	4 bolt SAE D				7
See page number		13	21	29	36

Rotation

from shaft end
A = anti-clockwise
C = clockwise

See port options below

Outlet port sizes - see pages 15, 23, 31 & 37

Port Code	Port Size
A	1/2
B	3/4
D	1
E	1.1/16
F	1.1/4
G	1.5/16
H	1.1/2
J	1.5/8
K	2

Outlet port type - see pages 15, 23, 31 & 37

Code	Description
1	SAE split flange - metric bolts - Code 61
2	SAE split flange - UNC bolts - Code 61
3	BSP.P thread
4	SAE UNF 'O'-ring thread

Inlet port sizes - see pages 15, 23, 31 & 37

Port Code	Port Size	Port Code	Port Size
A	1/2	H	1.1/2
B	3/4	J	1.5/8
C	7/8	K	2
D	1	L	2.1/2
E	1.1/16	M	3
F	1.1/4	N	4
G	1.5/16	X	No Port

Inlet port type - see pages 15, 23, 31 & 37

Code	Description
0	No port
1	SAE split flange - metric bolts- Code 61
2	SAE split flange - UNC bolts - Code 61
3	BSP.P thread
4	SAE UNF O'ring thread

Inlet port positions - see pages 14, 22, 31 & 37

Code	Description	Single Pump	Double Pump	Dual Pump
A	Inlet port in front section		✓	
B	Separate inlet ports	✓	✓	
C	Common inlet port			✓

Number of pump sections

Code	Description
1	1 pump section
2	2 pump sections
3	3 pump sections
4	4 pump sections

* Use this chart to compile standard dual and double pump model numbers. For special features and for triple and quadruple pumps please consult your Hydreco Hydraulics representative.

Before ordering please check that the pump will be operated within quoted parameters and that drive shaft "pD" factors are not exceeded. See page 38.

HYDRECO HYDRAULICS Q SERIES PUMP RANGE

In response to market needs, the QR and QS ranges have been developed to combine very high efficiencies with very low noise levels while retaining the rugged simplicity of well-proven hydraulic gear pumps.

Both series are of cast iron construction and high quality steel gears are supported by hydro dynamic plain (bush) bearings which are lubricated by a system which draws cool fluid from the inlet port.

QR spur gear pumps are designed for minimum pressure ripple while the QS Series features patented helical gears which reduce ripple and noise levels even further.

The pumps will work to peak pressures up to 280 bar (4060 psi) and careful attention to inlet porting enables most pumps to run at up to 3000 rev/min.

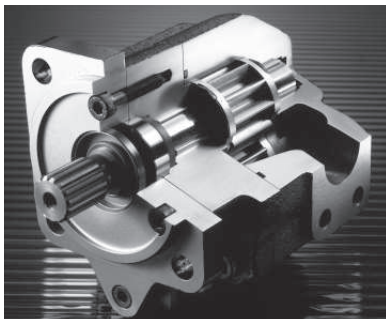
QR SERIES PUMP EFFICIENCIES COMPARE WITH THE VERY BEST SPUR GEAR PUMPS WHILE NOISE GENERATION IS REDUCED TO NEW LOW LEVELS.

QS SERIES HELICAL GEAR PUMPS - FOR REALLY NOISE CRITICAL APPLICATIONS - RETAIN THE HIGH EFFICIENCY LEVELS OF THE QR SERIES BUT GENERATE EVEN LOWER NOISE DUE TO PRESSURE RIPPLE REDUCTIONS OF UP TO 75%.

Q SERIES

QR SERIES

Advanced spur gears for Low Noise Levels



High pressure ratings - 280 bar (4060 psi)

Wide speed range 450 - 3000 rev/min

Wide range of sizes - 16 to 240 cm³/rev (1 to 14.6 cu.in/rev)

Very high efficiencies - up to 98% volumetric at 250 bar (3625 psi)

Long-life plain bearings

Up to 100oC (212oF) operation

Compact size

Wide range of drives, mountings and ports

Cast iron construction

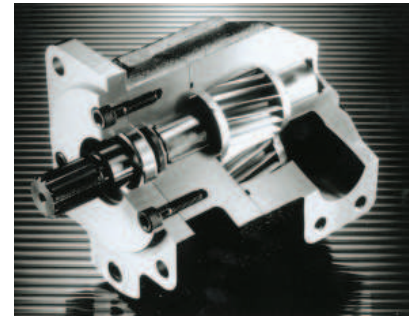
Suitable for rigorous mobile applications

Multiple pumps on one shaft

Shared inlet ports on multiple pumps

QS SERIES

Patented helical gears for Very low Noise Levels



Q SERIES TECHNICAL DATA

OPERATING PARAMETERS

Q Series pumps are designed to provide high performance levels and long life when operated with in the parameters shown. For operation out side these parameters please consult your Hydreco Hydraulics representative.

Maximum outlet port pressures	- see Page 4.	
Inlet port pressures	- see below.	
Speed Range	Q4	450 - 3000 rev/min
	Q5	450 - 3000 rev/min
	Q6	450 - 2750 rev/min
	Q7	450 - 2400 rev/min
Temperature	Minimum at start-up	-40oC (-40oF)
	Maximum continuous	+80oC (+176oF)
	Maximum intermittent.....	+100oC (+212oF)
Viscosity	Maximum at start-up	2000 mm2/sec (9,000 SSU)
	Maximum continuous	250 mm2/sec (1150 SSU)
	Minimum continuous	10 mm2/sec (60 SSU)
	Optimum	15-25 mm2/sec (78-124 SSU)
Fluid Cleanliness	To ISO4406 solid contaminant	
	Start-up period	21/17
	Maximum in service	19/15
	Optimum	16/11
	Maximum water.....	0.1%
Fluid Velocity	Maximum in INLET line	2.5 m/sec (8 ft/sec)
	Recommended in INLET line	1.5 m/sec (5 ft/sec)Shaft
Loads	Maximum end load.....	250 N (56 lb)
	Maximum radial load	500 N (112 lb)
Fluids	All data is quoted for mineral oils HM and HV. For fire resistant and environmentally aware fluids please contact your Hydreco Hydraulics representative.	
Moments of Inertia	See page 11, 19, 27, 34	
Rotation	Clockwise or Anti-clockwise viewed from shaft end (not reversible).	
'C' Seal Design	The outer seal is rated to 0.3 bar	

INLET CONDITIONS

It is essential that pumps are installed so that they can always fill with fluid.

'Q' Series pump inlet porting is designed to facilitate full volume fill but the following machine design recommendations should be followed.

- Never run pumps dry - particular care should be taken to open any shut-off valves.
- Use large diameter pipes and fittings and avoid sharp bends and long lengths.

Inlet fluid velocity should not exceed 2.5 m/sec (8.0 ft/sec) calculated by:

$$V = \frac{21.22Q}{D^2} \text{ m/sec where}$$

$$V = \text{velocity (m/sec)}$$

$$Q = \text{fl ow rate (l/min)}$$

$$D = \text{bore diameter (mm)}$$

$$V = \frac{0.408Q}{D^2} \text{ ft/sec where}$$

$$V = \text{velocity (ft/sec)}$$

$$Q = \text{flow rate (US gal/min)}$$

$$D = \text{bore diameter (inches)}$$

- If possible mount the pump below the lowest level of fluid in the tank. If necessary prime the pump on start-up.
- Ensure that inlet lines are airtight.
- Particular care should be taken where high speeds and/or high fluid viscosities are involved.

As a general rule pressure at the pump inlet should not be less than 0.8 bar absolute (6" Hg depression) at normal viscosity of 23 mm2/sec (110 SSU).

Hydreco Hydraulics' Engineers will be pleased to advise on any installation

QR4/QS4 DIMENSIONAL DATA

Note Drawings show clockwise rotation pumps. For anti-clockwise rotation pumps reverse the inlet and outlet port positions. (Rotation convention - view from pump shaft end).

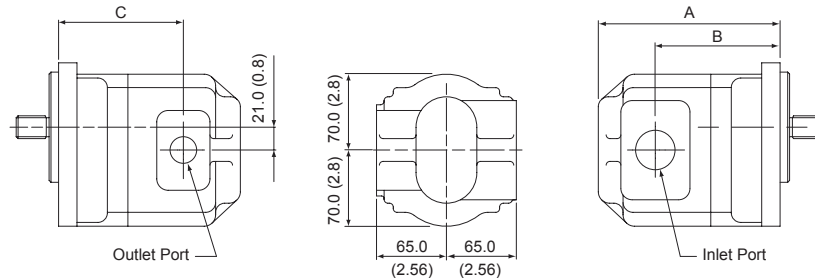
Full detailed dimensions are shown on the relevant pages covering drive shafts, mounting flanges and ports.

SINGLE PUMPS - standard ports

Code **A**

Example

R1A4016A11**A**1D1AC

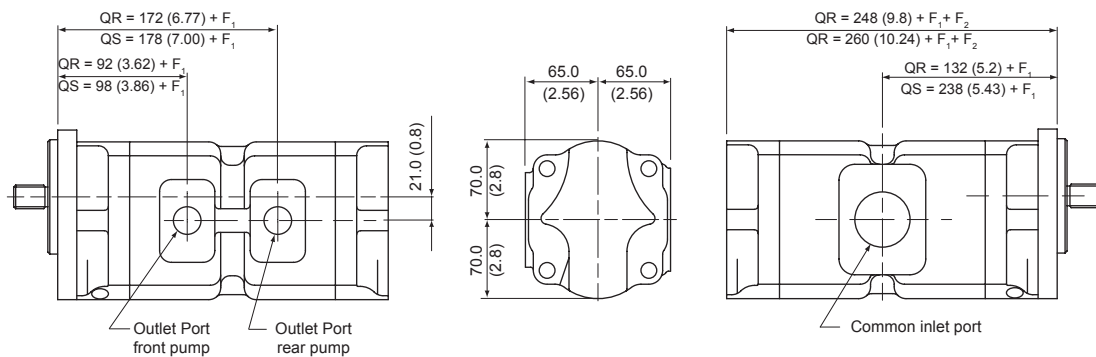


DUAL PUMPS - 1 inlet/2 outlets

Code **C**

Example

R1A4016R4016F12**C**1K1A0X1AC

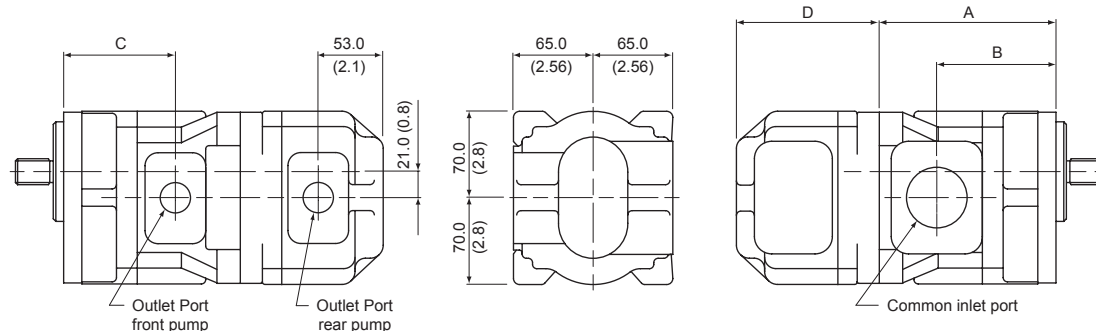


DOUBLE PUMPS - 1 inlet/2 outlets

Code **A**

Example

R1A40164016A12**A**1K1A0X1AC

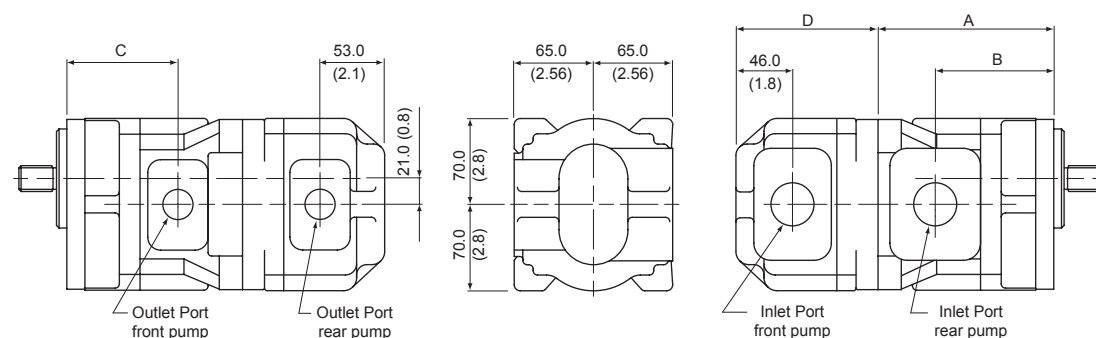


DOUBLE PUMPS - 2 inlets/2 outlets

Code **B**

Example

R1A4016R4016B12**B**1D1A1D1AC



TRIPLE AND QUADRUPLE PUMPS - See Pages 38 and 39.

QR4/QS4 DIMENSIONAL DATA

PUMP	A mm (in)	B mm (in)	C mm (in)	D mm (in)	F1 Front Pump mm (in)	F2 Rear Pump mm (in)	WEIGHT kg lb)		
							Single*	Front*	Rear*
R4016	145.0 (5.71)	99.0 (3.90)	92.0 (3.62)	115.0 (4.53)	0	0	11.7 (25.7)	13.9 (30.6)	11.2 (24.6)
R4019	147.0 (5.79)	101.0 (3.98)	94.0 (3.70)	118.0 (4.65)	3.0 (0.12)	3.0 (0.12)	12.0 (26.4)	14.2 (31.2)	11.5 (25.3)
R4023	150.0 (5.91)	104.0 (4.09)	97.0 (3.82)	121.0 (4.76)	6.0 (0.24)	6.0 (0.24)	12.2 (26.8)	14.4 (31.7)	11.7 (25.7)
R4027	154.0 (6.06)	108.0 (4.25)	101.0 (3.98)	124.0 (4.88)	9.0 (0.35)	9.0 (0.35)	12.6 (27.7)	14.8 (32.6)	12.1 (26.6)
R4032	158.0 (6.22)	112.0 (4.41)	105.0 (4.13)	128.0 (5.04)	13.0 (0.51)	13.0 (0.51)	13.0 (28.6)	15.2 (33.4)	12.5 (27.5)
R4038	163.0 (6.42)	117.0 (4.61)	110.0 (4.33)	133.0 (5.24)	18.0 (0.71)	18.0 (0.71)	13.5 (29.7)	15.7 (34.5)	13.0 (28.6)
R4045	169.0 (6.65)	123.0 (4.84)	116.0 (4.57)	139.0 (5.47)	24.0 (0.94)	24.0 (0.94)	14.0 (30.8)	16.2 (35.6)	13.5 (29.7)
R4053	175.0 (6.89)	129.0 (5.08)	122.0 (4.80)	146.0 (5.75)	31.0 (1.22)	31.0 (1.22)	14.7 (32.3)	16.9 (37.2)	14.2 (31.2)
R4060	181.0 (7.13)	135.0 (5.31)	128.0 (5.04)	151.0 (5.94)	36.0 (1.42)	36.0 (1.42)	15.2 (33.4)	17.4 (38.3)	14.7 (32.3)
S4016	151.0 (5.94)	104.0 (4.09)	98.0 (3.86)	121.0 (4.76)	0	0	12.3 (27.0)	14.5 (31.9)	11.8 (26.0)
S4023	158.0 (6.22)	112.0 (4.41)	105.0 (4.13)	129.0 (5.08)	8.0 (0.31)	8.0 (0.31)	13.0 (28.6)	15.2 (33.4)	12.5 (27.5)
S4027	163.0 (6.42)	117.0 (4.61)	110.0 (4.33)	134.0 (5.28)	13.0 (0.51)	13.0 (0.51)	13.5 (29.7)	15.7 (34.5)	13.0 (28.6)
S4032	169.0 (6.65)	123.0 (4.84)	116.0 (4.57)	139.0 (5.47)	18.0 (0.71)	18.0 (0.71)	14.0 (30.8)	16.2 (35.6)	13.5 (29.7)
S4037	175.0 (6.89)	129.0 (5.08)	122.0 (4.80)	145.0 (5.71)	24.0 (0.94)	24.0 (0.94)	14.5 (31.9)	16.7 (36.7)	14.0 (30.8)
S4042	181.0 (7.13)	135.0 (5.31)	128.0 (5.04)	151.0 (5.94)	30.0 (1.18)	30.0 (1.18)	15.0 (33.0)	17.2 (37.8)	14.5 (31.9)

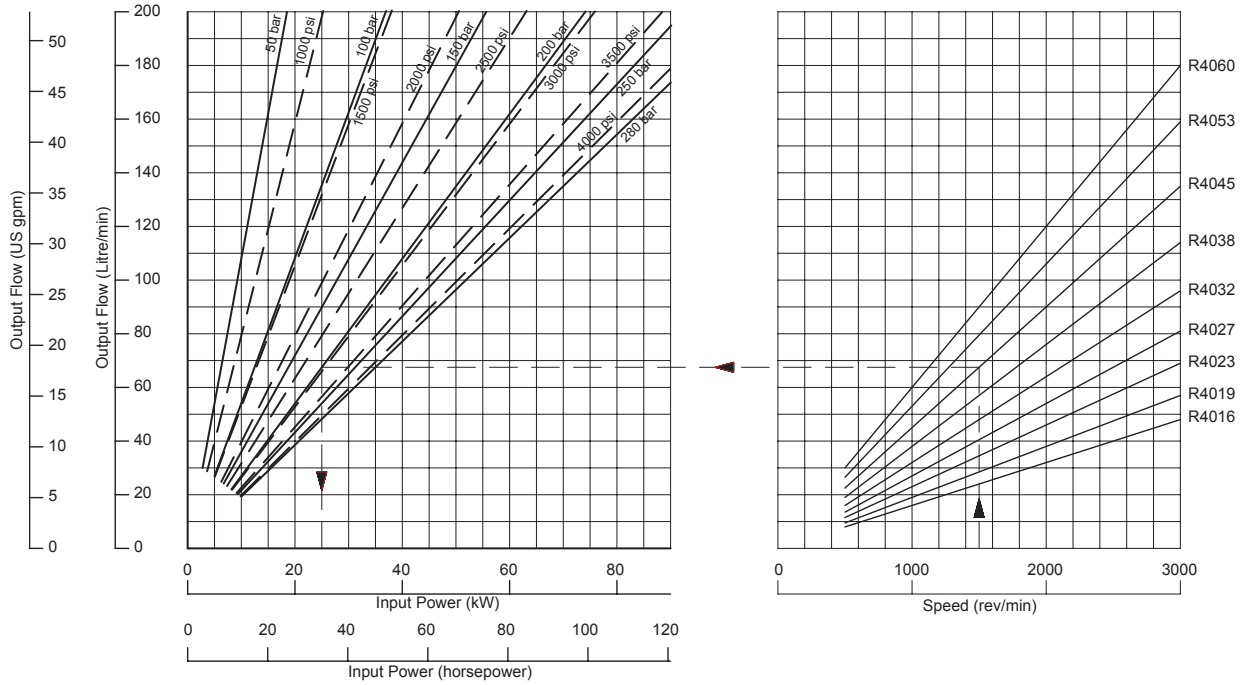
Note: Weights are approximate

Double pump weight = (front + rear) weights

Dual pump weight = (front + rear) weights - 4.5 kg (10 lb)

QR4/QS4 PERFORMANCE DATA

QR4 SERIES

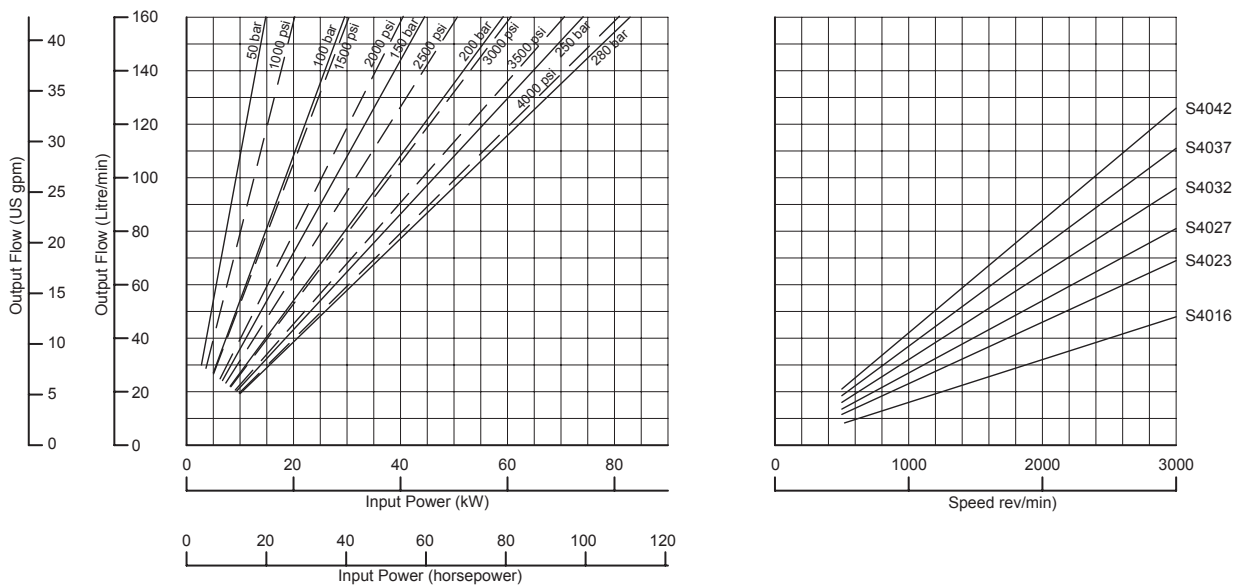


OUTPUT FLOWS are theoretical. Generally volumetric efficiencies are in excess of 95%. Your Hydreco Hydraulics representative will advise for specific conditions.

INPUT POWERS are actual, taking into account average efficiencies. Please consult your Hydreco Hydraulics representative when output pressure is less than 50 bar.

Example R4045 at 1500 rev/min gives output flow of 67.5 l/min (17.8 US gal/min) and requires 25 kW (33.5 hp) to drive it at 200 bar (2900 psi).

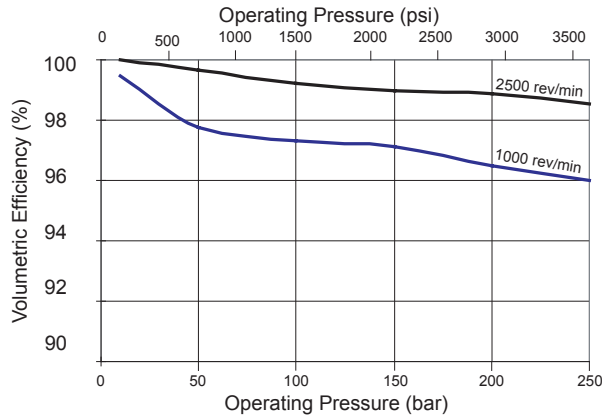
QS4 SERIES



Curves drawn for average pumps at 50°C (120°F) - fluid viscosity 23 mm²/sec (110 SSU).

QR4/QS4 EFFICIENCIES, NOISE LEVELS, MOMENTS OF INERTIA

PUMP EFFICIENCIES

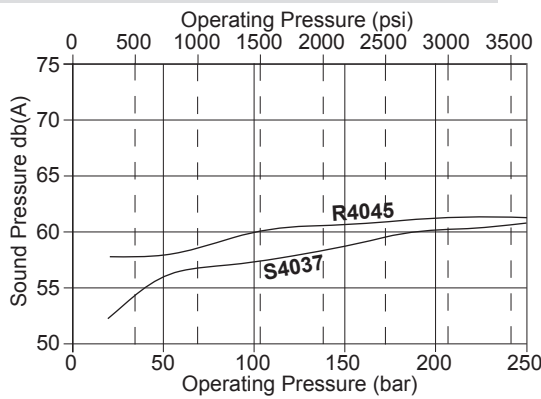


All Q Series pumps share very high efficiencies. The graph shows typical QS4 volumetric efficiency curves at 1000 and 2500 rev/min.

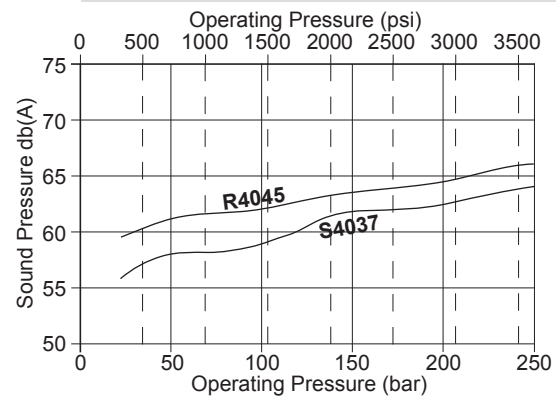
NOISE LEVELS

As described on Page 6, the reduction of noise levels was a major factor in the development of the Q Series pumps. The following graphs show QR4 and QS4 sound pressure levels at one metre from the pump obtained in accordance with ISO 9614-4.

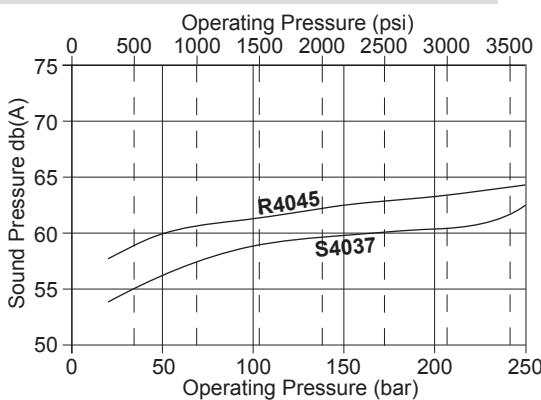
Q4 Sound Pressure at 1 metre - 1000 rpm



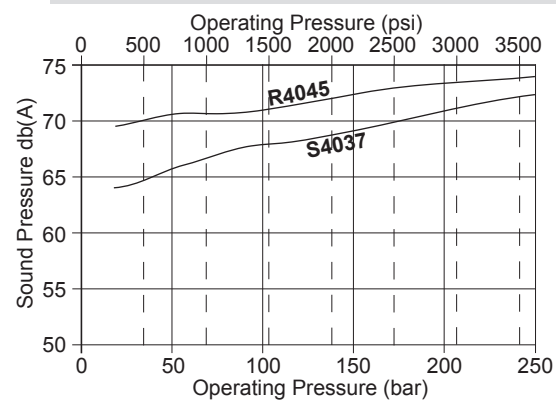
Q4 Sound Pressure at 1 metre - 1500 rpm



Q4 Sound Pressure at 1 metre - 1800 rpm



Q4 Sound Pressure at 1 metre - 2500 rpm



MOMENTS OF INERTIA

QR4 SERIES

PUMP SIZE		R4016	R4019	R4023	R4027	R4032	R4038	R4045	R4053	R4060
Moment of Inertia	kg cm ²	1.42	1.61	1.70	1.86	2.06	2.30	2.59	2.91	3.19
	(lb in ²)	(.48)	(.55)	(.58)	(.63)	(.70)	(.78)	(.88)	(.99)	(1.09)

QS4 SERIES

PUMP SIZE		S4016	R4023	R4027	R4032	R4037	R4042
Moment of Inertia	kg cm ²	2.05	2.41	2.63	2.91	3.18	3.46
	(lb in ²)	(.70)	(.82)	(.90)	(.99)	(1.08)	(1.18)

QR4/QS4 SHAFT SEALS AND DRIVE SHAFTS

SHAFT SEALS

Code **A** Shaft seal and wiper for external drives

Example R1**A**4016A11A1D1AA

Code **C** Shaft seal, wiper and seal with tell-tale hole for torque converter and gearbox drives. The tell-tale hole indicates leakage before mixing of fluids can occur.

Example R1**C**4016A11A1D1AA

DRIVE SEALS

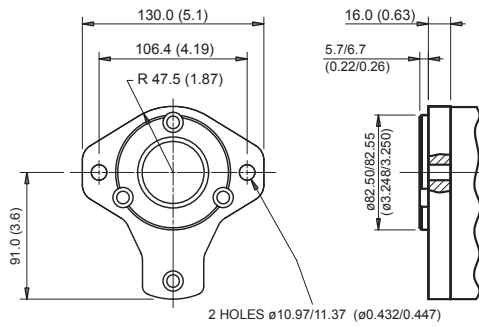
<p>Code A SAE 16-4 (A) 5/8" spline Example R1A4016A11A1D1AA</p> <p>INVOLUTE SPLINE 9 TEETH 16/32 DP FLAT ROOT SIDE FIT 30° PRESSURE ANGLE</p> <p>MAJOR DIA: 15.44/15.34 (0.608/0.604)</p> <p>$p \times D = 5200$ (bar x cm³/rev)* $p \times D = 4600$ (psi x cu.in/rev)*</p>	<p>Code E SAE 16-1 (A) 5/8" parallel Example R1A4016E11A1D1AA</p> <p>$p \times D = 5200$ (bar x cm³/rev)* $p \times D = 4600$ (psi x cu.in/rev)*</p>
<p>Code B SAE 22-4 (B) 7/8" spline Example R1A4016B11A1D1AA</p> <p>INVOLUTE SPLINE 13 TEETH 16/32 DP FLAT ROOT SIDE FIT 30° PRESSURE ANGLE</p> <p>MAJOR DIA: 21.79/21.69 (0.858/0.854)</p> <p>$p \times D = 14226$ (bar x cm³/rev)* $p \times D = 12590$ (psi x cu.in/rev)*</p>	<p>Code F SAE 22-1 (B) 7/8" parallel Example R1A4016F11A1D1AA</p> <p>$p \times D = 14226$ (bar x cm³/rev)* $p \times D = 12590$ (psi x cu.in/rev)*</p>
<p>Code Q SAE 25-4 (BB) 1" spline Example R1A4016Q11A1D1AA</p> <p>INVOLUTE SPLINE 15 TEETH 16/32 DP FLAT ROOT SIDE FIT 30° PRESSURE ANGLE</p> <p>MAJOR DIA: 24.97/24.87 (0.983/0.979)</p> <p>$p \times D = 22450$ (bar x cm³/rev)* $p \times D = 19869$ (psi x cu.in/rev)*</p>	<p>Code H SAE 25-1 (BB) 1" parallel Example R1A4016H11A1D1AA</p> <p>$p \times D = 22450$ (bar x cm³/rev)* $p \times D = 19869$ (psi x cu.in/rev)*</p>

* p = pressure, D = displacement. The stated values must not be exceeded.

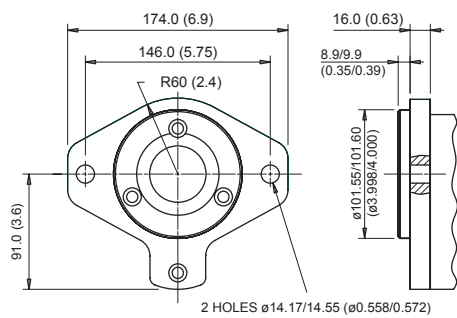
Note For multiple pumps the sum of the $p \times D$ values must not exceed the stated value. See Page 38.

QR4/QS4 MOUNTING FLANGES

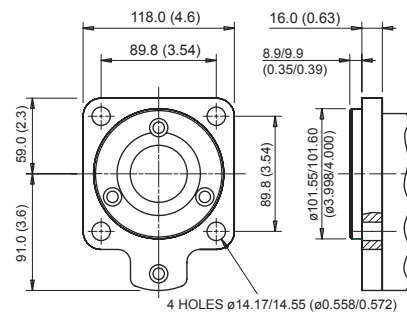
Code **1** SAE 82-2 (A - 2 bolt)
 Example R1A4016A**1**1A1D1AA



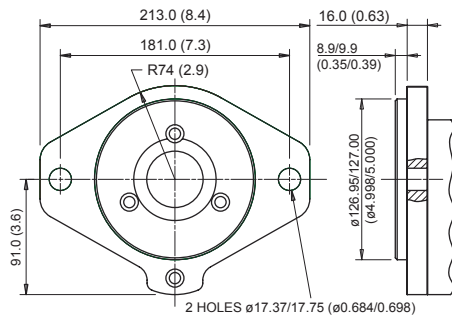
Code **2** SAE 101-2 (B - 2 bolt)
 Example R1A4016B**2**1A1D1AA



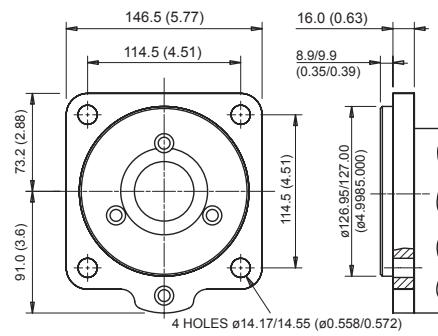
Code **3** SAE 101-4 (B - 4 bolt)
 Example R1A4016A**3**1A1D1AA



Code **4** SAE 127-2 (C - 2 bolt)
 Example R1A4016A**4**1A1D1AA



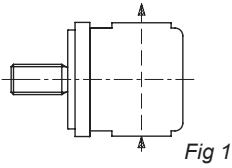
Code **5** SAE 127-4 (C - 4 bolt)
 Example R1A4016A**5**1A1D1AA



QR4/QS4 PORT POSITIONS & TYPES, SAE FLANGE DETAILS

NUMBER OF PUMP SECTIONS AND INLET PORT POSITIONS

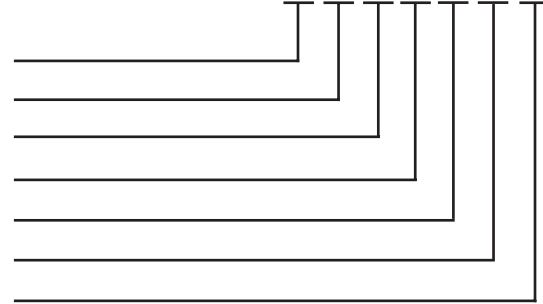
Code **A**



SINGLE PUMP Example

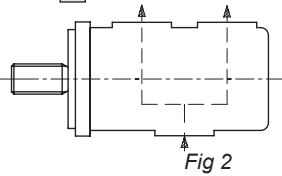
R 1 A 4 0 2 7 B 5 1 A 1 F 1 B C

Number of pump sections
 Inlet port position - see fig 1
 Inlet port type - see table 1
 Inlet port size - see table 1
 Outlet port type - see table 2
 Outlet port size - see table 2
 Rotation - viewed from shaft

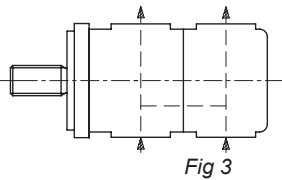


A = anti-clockwise
 C = clockwise

Code **C**



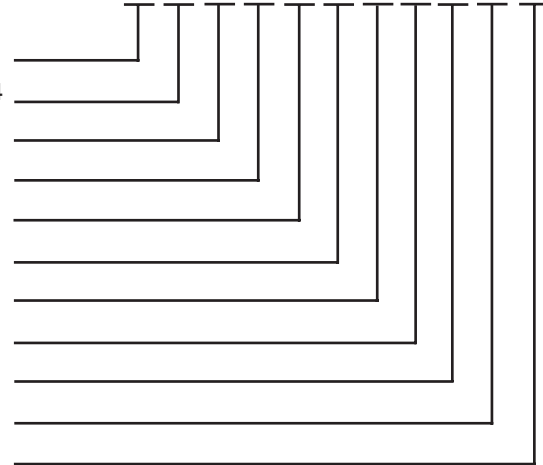
Code **B**



MULTI PUMP Example

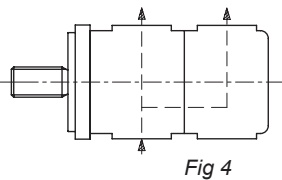
R 1 A 4 0 2 7 S 4 0 2 7 Q 5 2 B 1 H 3 B 1 F 3 B C

Number of pump sections
 Inlet port position - see figs 2, 3 or 4
 1st Inlet port type - see table 1
 1st Inlet port size - see table 1
 1st Outlet port type - see table 2
 1st Outlet port size - see table 2
 2nd Inlet port type - see table 1
 2nd Inlet port size - see table 1
 2nd Outlet port type - see table 2
 2nd Outlet port size - see table 2
 Rotation - viewed from shaft



A = anti-clockwise
 C = clockwise

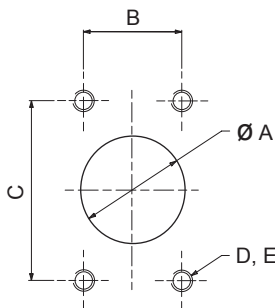
Code **A**



MULTIPLE PUMPS - Please consult your Hydreco Hydraulics' representative.

SAE FLANGE PORT DETAILS

SAE code 61.
 Standard pressure series



SAE FLANGE SIZE	A mm (in)	B mm (in)	C mm (in)	D	E DEPTH mm (in)
1/2" (A)	12.7	17.48	38.10	M8 x 1.25	24.0
	(0.500)	(0.688)	(1.500)	5/16"-18 UNC	(0.95)
3/4" (B)	19.1	22.23	47.63	M10 x 1.5	22.4
	(0.750)	(0.875)	(1.875)	3/8"-16 UNC	(0.88)
1" (D)	25.4	26.19	52.37	M10 x 1.5	22.4
	(1.000)	(1.031)	(2.062)	3/8"-16 UNC	(0.88)
1.1/4" (F)	31.8	30.18	58.72	M10 x 1.5	28.4
	(1.250)	(1.188)	(2.312)	7/16"-14 UNC	(1.12)
1.1/2" (H)	38.1	35.71	69.85	M12 x 1.75	26.9
	(1.500)	(1.406)	(2.750)	1/2"-13 UNC	(1.06)
2" (K)	50.8	42.88	77.77	M12 x 1.75	26.9
	(2.000)	(1.688)	(3.062)	1/2"-13 UNC	(1.06)

QR4/QS4 PORT OPTIONS

INLET PORT OPTIONS - Table 1

Port Type	SINGLE PUMP INLET PORT OPTIONS										COMMON INLET PORT OPTIONS								DUAL INLET PORT OPTION							
Port Type Code	3		1			2			4		1				2				1			2				
Port Type	BSP		SAE Flange Metric			SAE Flange UNC			UNF O-ring		SAE Flange Metric				SAE Flange UNC				SAE Flange Metric			SAE Flange UNC				
Port Size Code	D	F	D	F	H	D	F	H	G	J	D	F	H	K	D	F	H	K	F	H	K	F	H	K		
Port Size	1	1.1/4	1	1.1/4	1.1/2	1	1.1/4	1.1/2	1.5/16	1.5/8	1	1.1/4	1.1/2	2	1	1.1/4	1.1/2	2	1.1/4	1.1/2	2	1.1/4	1.1/2	2		
R4016	■	□	■	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	
R4019	■	□	■	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	
R4023	■	□	■	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	
R4027	□	■	□	■	□	□	■	□	□	■	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	
R4032	□	■	□	■	□	□	■	□	□	■	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	
R4038			□	■	□	□	■	□	□	■	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	
R4045			□	□	■	□	□	■			□	□	■		□	□	■		□	□	■	□	□	■	□	□
R4053			□	□	■	□	□	■			□	□	■		□	□	■		□	□	■	□	□	■	□	□
R4060			□	□	■	□	□	■			□	□	■		□	□	■		□	□	■	□	□	■	□	□
S4016	■	□	■	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	
S4023	■	□	■	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	
S4027	□	■	□	■	□	□	■	□	□	■	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	
S4032	□	■	□	■	□	□	■	□	□	■	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	
S4037	□	■	□	■	□	□	■	□	□	■	□	□	■	□	□	■	□	□	□	■	□	□	■	□	□	
S4042			□	□	■	□	□	■			□	□	■		□	□	■		□	□	■	□	□	■	□	□

- Preferred port size
- Non-preferred port size

Note: When coding, for single inlet multiple pumps, use '0' in '2nd inlet port type' and 'X' in '2nd inlet port size' in the model number.

OUTLET PORT OPTIONS - Table 2

Port Type Code	3				1			2			4			
Port Type	BSP				SAE Flange Metric			SAE Flange UNC			UNF O-ring			
Port Size Code	A	B	D	F	A	B	D	A	B	D	C	E	G	J
Port Size	1/2	3/4	1	1.1/4	1/2	3/4	1	1/2	3/4	1	7/8	1.1/16	1.5/16	1.5/8
R4016	■	□	□	□	■	□	□	■	□	□	■	□	□	□
R4019	■	□	□	□	■	□	□	■	□	□	■	□	□	□
R4023	■	□	□	□	■	□	□	■	□	□	■	□	□	□
R4027	□	■	□	□	□	■	□	□	■	□	□	■	□	□
R4032	□	■	□	□	□	■	□	□	■	□	□	■	□	□
R4038	□	■	□	□	□	■	□	□	■	□	□	■	□	□
R4045	□	■	□	□	□	■	□	□	■	□	□	■	□	□
R4053	□	■	□	□	□	■	□	□	■	□	□	■	□	□
R4060	□	■	□	□	□	■	□	□	■	□	□	■	□	□
S4016	■	□	□	□	■	□	□	■	□	□	■	□	□	□
S4023	■	□	□	□	■	□	□	■	□	□	■	□	□	□
S4027	□	■	□	□	□	■	□	□	■	□	□	■	□	□
S4032	□	■	□	□	□	■	□	□	■	□	□	■	□	□
S4037	□	■	□	□	□	■	□	□	■	□	□	■	□	□
S4042	□	■	□	□	□	■	□	□	■	□	□	■	□	□

- Preferred port size
- Non-preferred port size

QR5/QS5 DIMENSIONAL DATA

Note Drawings show clockwise rotation pumps. For anti-clockwise rotation pumps reverse the inlet and outlet port positions. (Rotation convention - view from pump shaft end).

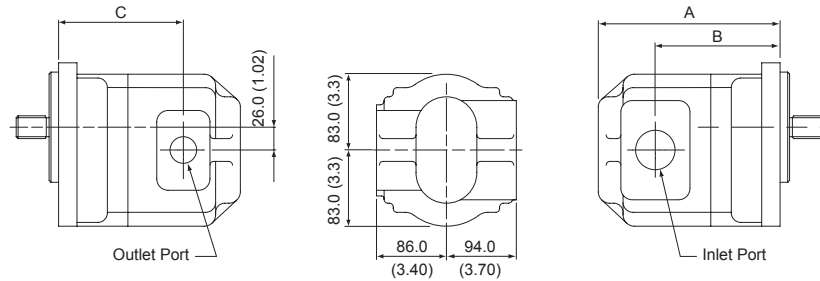
Full detailed dimensions are shown on the relevant pages covering drive shafts, mounting flanges and ports.

SINGLE PUMPS - standard ports

Code **A**

Example

R1A5045B21**A**1H1DC

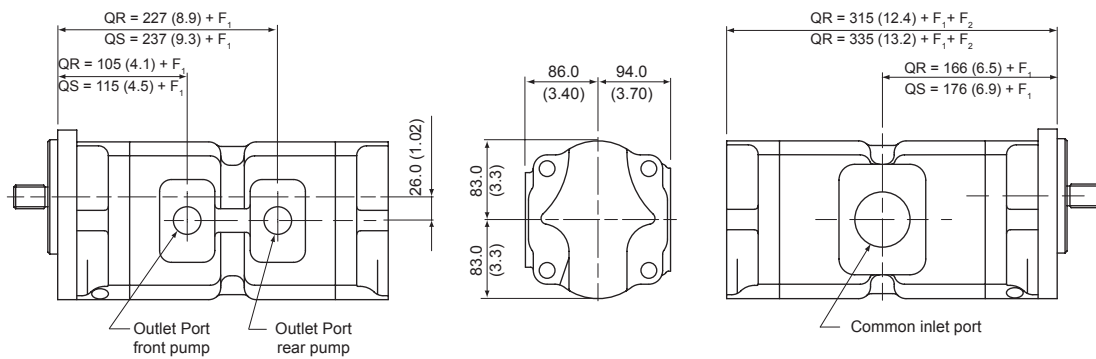


DUAL PUMPS - 1 inlet/2 outlets

Code **C**

Example

R1A5045R5045B22**C**1L1D0X1DC

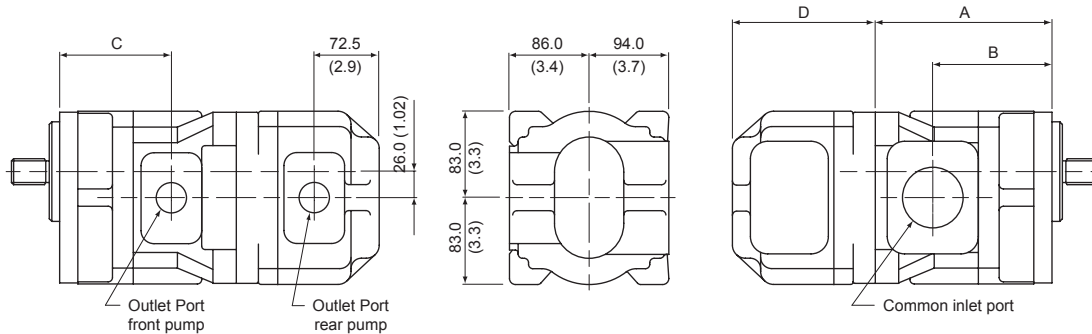


DOUBLE PUMPS - 1 inlet/2 outlets

Code **A**

Example

R1A5045R5045B22**A**1L1D0X1DC

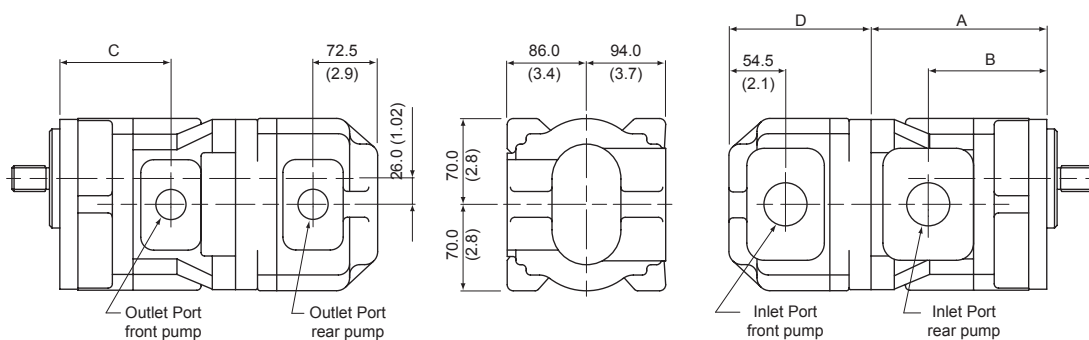


DOUBLE PUMPS - 2 inlets/2 outlets

Code **B**

Example

R1A5045R5045B22**B**1H1D1H1DC



TRIPLE AND QUADRUPLE PUMPS - See Pages 38 and 39.

QR5/QS5 DIMENSIONAL DATA

PUMP	A mm (in)	B mm (in)	C mm (in)	D mm (in)	F1 Front Pump mm (in)	F2 Rear Pump mm (in)	WEIGHT kg lb)		
							Single*	Front*	Rear*
R5045	178.0 (7.00)	123.0 (4.84)	105.0 (4.13)	144.0 (5.67)	0	0	19.7 (43.3)	23.2 (51.9)	17.2 (37.8)
R5053	182.0 (7.16)	127.0 (5.00)	109.0 (4.29)	148.0 (5.83)	4.0 (0.16)	4.0 (0.16)	20.8 (45.8)	24.3 (53.5)	18.3 (40.3)
R5063	187.0 (7.36)	133.0 (5.24)	115.0 (4.53)	154.0 (6.06)	10.0 (0.39)	10.0 (0.39)	21.7 (47.7)	25.2 (55.4)	19.2 (42.2)
R5073	193.0 (7.60)	138.0 (5.43)	120.0 (4.72)	159.0 (6.26)	15.0 (0.59)	15.0 (0.59)	22.5 (49.5)	26.0 (57.2)	20.0 (44.0)
R5085	199.0 (7.83)	145.0 (5.71)	127.0 (5.00)	166.0 (6.53)	22.0 (0.87)	22.0 (0.87)	23.5 (51.7)	27.0 (59.4)	21.0 (46.2)
R5100	207.0 (8.15)	153.0 (6.02)	135.0 (5.31)	174.0 (6.85)	30.0 (1.18)	30.0 (1.18)	25.0 (55.0)	28.5 (62.7)	22.5 (49.5)
R5120	218.0 (8.58)	164.0 (6.46)	146.0 (5.75)	185.0 (7.28)	40.0 (1.57)	40.0 (1.57)	26.5 (58.3)	30.0 (66.0)	24.0 (52.8)
S5045	188.0 (7.40)	133.0 (5.24)	115.0 (4.53)	154.0 (6.06)	0	0	24.0 (53.0)	27.5 (60.5)	21.5 (47.3)
S5051	192.0 (7.56)	138.0 (5.43)	120.0 (4.72)	159.0 (6.26)	5.0 (0.20)	5.0 (0.20)	24.5 (54.0)	28.0 (61.6)	22.0 (48.4)
S5060	199.0 (7.83)	145.0 (5.71)	127.0 (5.00)	166.0 (6.53)	12.0 (0.47)	12.0 (0.47)	25.0 (55.0)	28.5 (62.7)	22.5 (49.5)
S5070	207.0 (8.15)	152.0 (5.98)	134.0 (5.28)	173.0 (6.81)	20.0 (0.79)	20.0 (0.79)	25.5 (56.0)	29.0 (63.8)	23.0 (50.6)
S5085	218.0 (8.58)	164.0 (6.50)	146.0 (5.75)	185.0 (7.28)	31.0 (1.22)	31.0 (1.22)	26.8 (59.0)	30.3 (66.7)	24.3 (50.0)

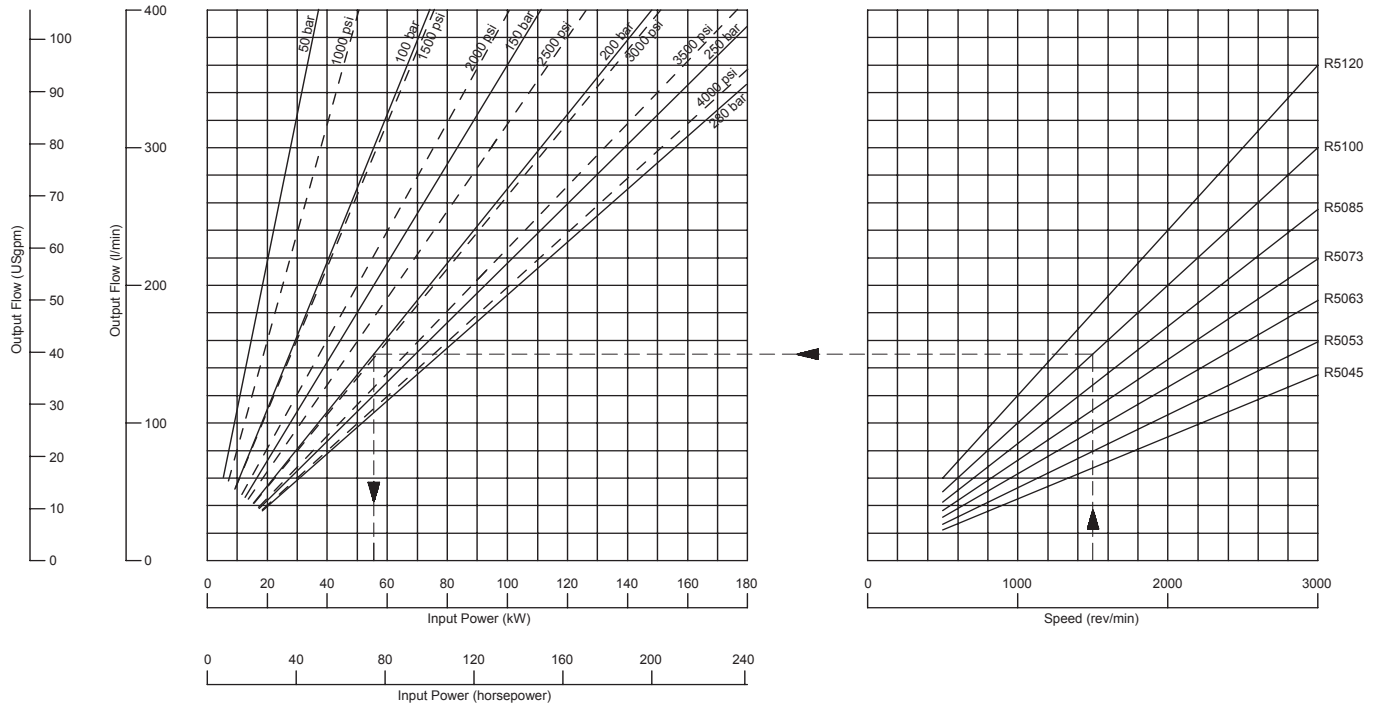
Note: Weights are approximate

Double pump weight = (front + rear) weights

Dual pump weight = (front + rear) weights - 6 kg (13 lb)

QR5/QS5 PERFORMANCE DATA

QR5 SERIES

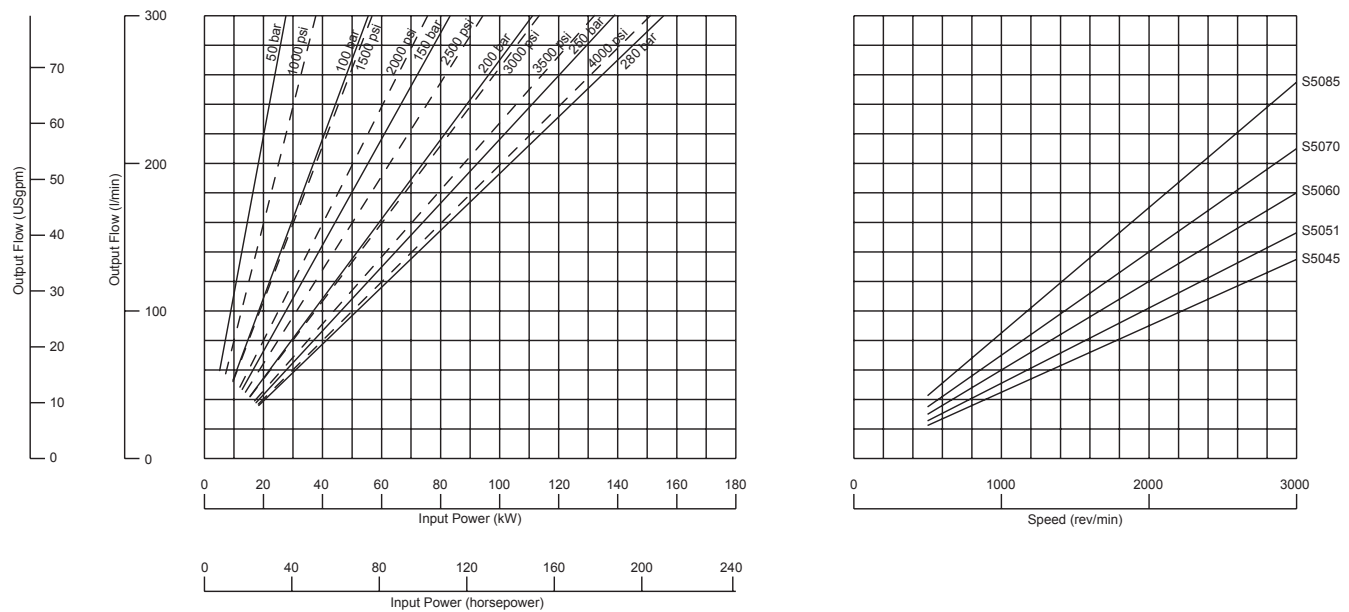


OUTPUT FLOWS are theoretical. Generally volumetric efficiencies are in excess of 95%.
Your Hydreco Hydraulics representative will advise for specific conditions.

INPUT POWERS are actual, taking into account average efficiencies.
Please consult your Hydreco Hydraulics representative when output pressure is less than 50 bar.

Example R5100 at 1500 rev/min gives output flow of 150 l/min (39.6 US gal/min) and requires 56 kW (75 hp) to drive it at 200 bar (2900 psi).

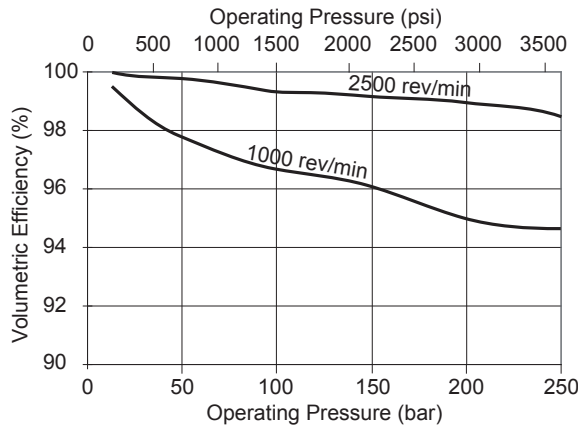
QS5 SERIES



Curves drawn for average pumps at 50°C (120°F) - fluid viscosity 23 mm²/sec (110 SSU).

QR5/QS5 EFFICIENCIES, NOISE LEVELS, MOMENTS OF INERTIA

PUMP EFFICIENCIES

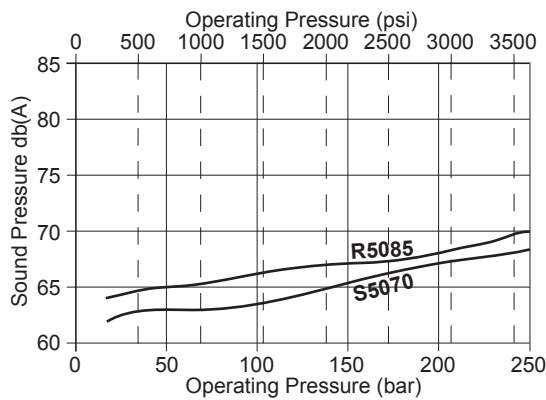


All Q Series pumps share very high efficiencies. The graph shows typical QS5 volumetric efficiency curves at 1000 and 2500 rev/min.

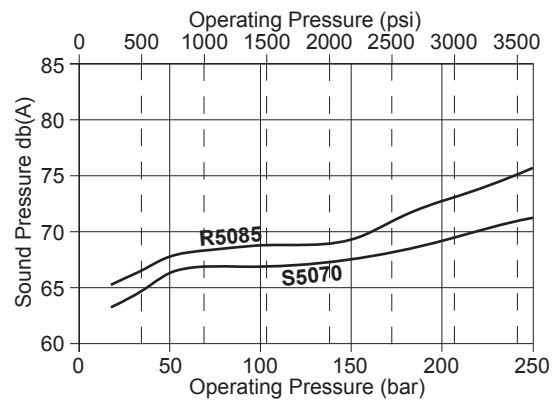
NOISE LEVELS

As described on Page 6, the reduction of noise levels was a major factor in the development of the Q Series pumps. The following graphs show QR5 and QS5 sound pressure levels at one metre from the pump obtained in accordance with ISO 9614-4.

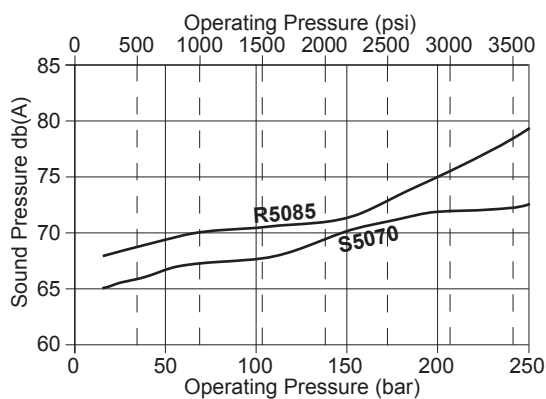
Q5 Sound Pressure at 1 metre - 1000 rpm



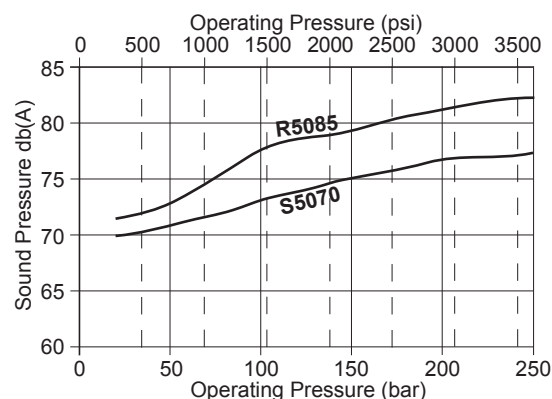
Q5 Sound Pressure at 1 metre - 1500 rpm



Q5 Sound Pressure at 1 metre - 1800 rpm



Q5 Sound Pressure at 1 metre - 2500 rpm



MOMENTS OF INERTIA

QR5 SERIES

PUMP SIZE		R5045	R5053	R5063	R5073	R5085	R5100	R5120
Moment of Inertia	kg cm ²	5.18	5.70	6.33	6.95	7.71	8.65	9.91
	(lb in ²)	(1.76)	(1.94)	(2.15)	(2.38)	(2.62)	(2.94)	(3.37)

QS5 SERIES

PUMP SIZE		S5045	S5051	S5060	S5070	S5085	S5100
Moment of Inertia	kg cm ²	7.18	7.68	8.44	9.28	10.54	12.40
	(lb in ²)	(2.44)	(2.61)	(2.87)	(3.15)	(3.58)	(4.22)

QR5/QS5 SHAFT SEALS AND DRIVE SHAFTS

SHAFT SEALS

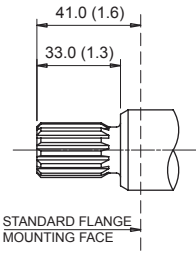
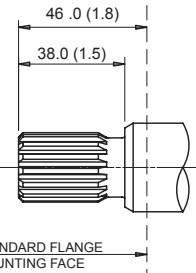
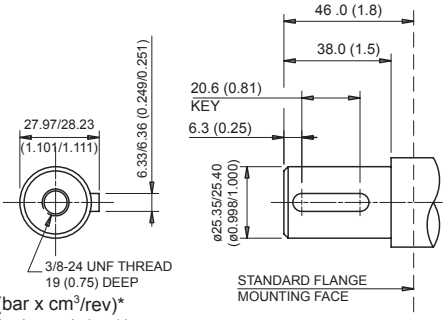
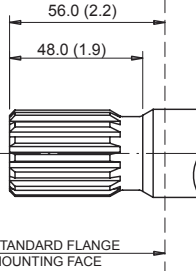
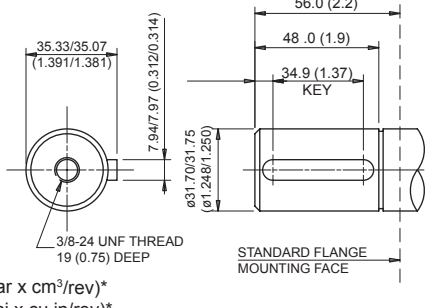
Code **A** Shaft seal and wiper for external drives

Example R1 **A**5045Q51A1H1DA

Code **C** Shaft seal, wiper and seal with tell-tale hole for torque converter and gearbox drives.
The tell-tale hole indicates leakage before mixing of fluids can occur.

Example R1 **C**5045H2A1H1DA

DRIVE SHAFTS

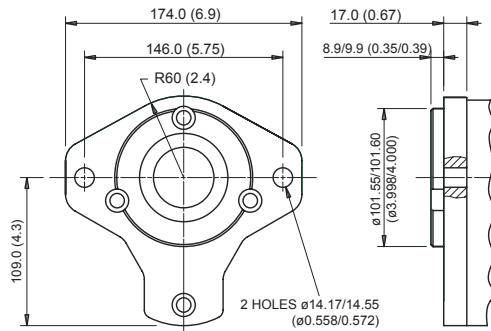
<p>Code B SAE 22-4 (B) 7/8" spline Example R1A5045 B21A1H1DA</p> <p>INVOLUTE SPLINE 13 TEETH 16/32 DP FLAT ROOT SIDE FIT 300 PRESSURE ANGLE</p> <p>MAJOR DIA: 21.79/21.69 (0.858/0.854)</p> <p>$p \times D = 14226 \text{ (bar} \times \text{cm}^3/\text{rev)}^*$ $p \times D = 12590 \text{ (psi} \times \text{cu.in/rev)}^*$</p> 	
<p>Code Q SAE 25-4 (BB) 1" spline Example R1A5045 Q21A1H1DA</p> <p>INVOLUTE SPLINE 15 TEETH 16/32 DP FLAT ROOT SIDE FIT 30° PRESSURE ANGLE</p> <p>MAJOR DIA: 24.97/24.87 (0.983/0.979)</p> <p>$p \times D = 22450 \text{ (bar} \times \text{cm}^3/\text{rev)}^*$ $p \times D = 19869 \text{ (psi} \times \text{cu.in/rev)}^*$</p> 	<p>Code H SAE 25-1 (BB) 1" parallel Example R1A5045 H21A1H1DA</p>  <p>$p \times D = 22450 \text{ (bar} \times \text{cm}^3/\text{rev)}^*$ $p \times D = 19869 \text{ (psi} \times \text{cu.in/rev)}^*$</p>
<p>Code C SAE 32-4 (C) 1.1/4" spline Example R1A5045 C2A1H1DA</p> <p>INVOLUTE SPLINE 14 TEETH 12/24 DP FLAT ROOT SIDE FIT 30° PRESSURE ANGLE</p> <p>MAJOR DIA: 31.22/31.12 (1.229/1.225)</p> <p>$p \times D = 45565 \text{ (bar} \times \text{cm}^3/\text{rev)}^*$ $p \times D = 40325 \text{ (psi} \times \text{cu.in/rev)}^*$</p> 	<p>Code G SAE 32-1 (C) 1.1/4" parallel Example R1A5045 G21A1H1DA</p>  <p>$p \times D = 45565 \text{ (bar} \times \text{cm}^3/\text{rev)}^*$ $p \times D = 40325 \text{ (psi} \times \text{cu.in/rev)}^*$</p>

* p = pressure, D = displacement. The stated values must not be exceeded.

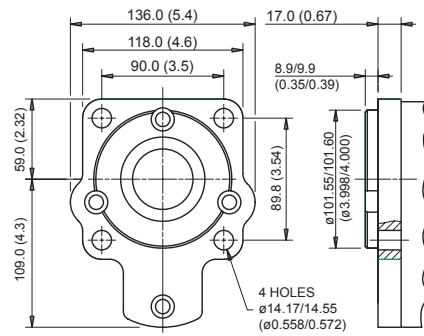
Note For multiple pumps the sum of the $p \times D$ values must not exceed the stated value. See Page 38.

QR5/QS5 MOUNTING FLANGES

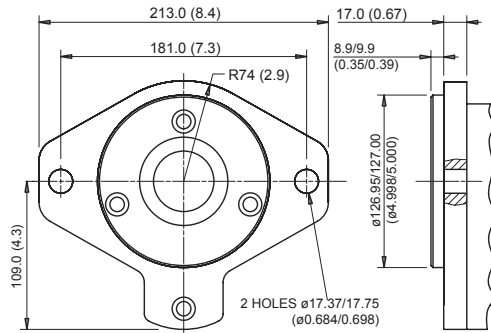
Code **H** SAE 101-2 (B - 2 bolt)
 Example R1A5045B**2**1A1H1DA



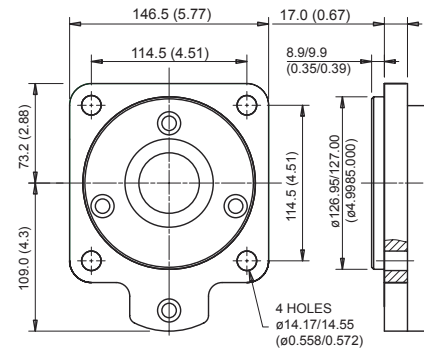
Code **3** SAE 101-4 (B - 4 bolt)
 Example R1A5045B**3**1A1H1DA



Code **4** SAE 127-2 (C - 2 bolt)
 Example R1A5045B**4**1A1H1DA



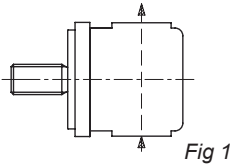
Code **5** SAE 127-4 (C - 4 bolt)
 Example R1A5045B**5**1A1H1DA



QR5/QS5 PORT POSITIONS & TYPES, SAE FLANGE DETAILS

NUMBER OF PUMP SECTIONS AND INLET PORT POSITIONS

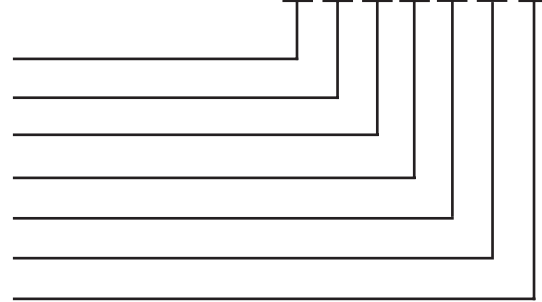
Code **A**



SINGLE PUMP Example

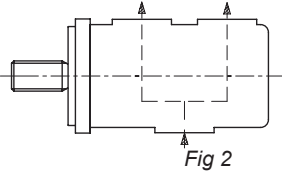
R 1 A 5 0 6 3 Q 5 1 A 1 H 1 D C

Number of pump sections
 Inlet port position - see fig 1
 Inlet port type - see table 1
 Inlet port size - see table 1
 Outlet port type - see table 2
 Outlet port size - see table 2
 Rotation - viewed from shaft



A = anti-clockwise
 C = clockwise

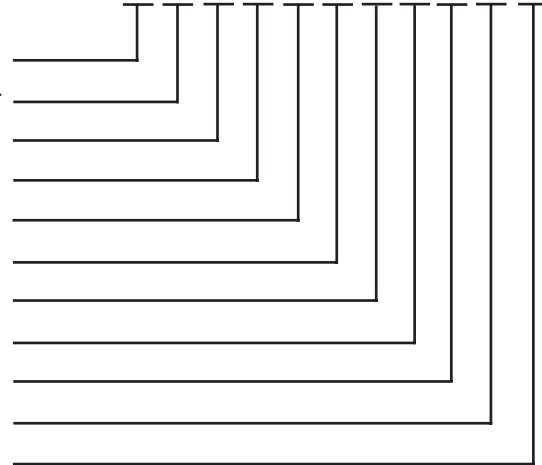
Code **C**



MULTI PUMP Example

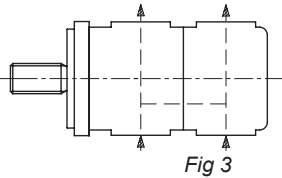
R 1 A 5 0 8 5 R 5 0 5 3 C 3 2 C 1 L 1 F 0 X 1 D C

Number of pump sections
 Inlet port position - see figs 2, 3 or 4
 1st Inlet port type - see table 1
 1st Inlet port size - see table 1
 1st Outlet port type - see table 2
 1st Outlet port size - see table 2
 2nd Inlet port type - see table 1
 2nd Inlet port size - see table 1
 2nd Outlet port type - see table 2
 2nd Outlet port size - see table 2
 Rotation - viewed from shaft

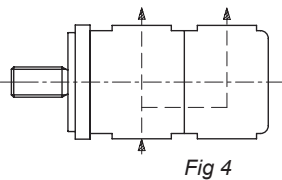


A = anti-clockwise
 C = clockwise

Code **B**



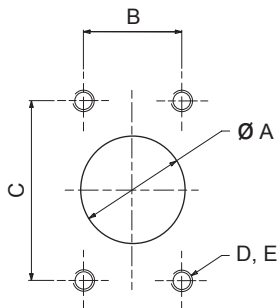
Code **A**



MULTIPLE PUMPS - Please consult your Hydreco Hydraulics' representative.

SAE FLANGE PORT DETAILS

SAE code 61.
 Standard pressure series



SAE FLANGE SIZE	A mm (in)	B mm (in)	C mm (in)	D	E DEPTH mm (in)
1" (D)	25.4	26.19	52.37	M10 x 1.5	22.4
	(1.000)	(1.031)	(2.062)	3/8"-16 UNC	(0.88)
1.1/4" (F)	31.8	30.18	58.72	M10 x 1.5	28.4
	(1.250)	(1.188)	(2.312)	7/16"-14 UNC	(1.12)
1.1/2" (H)	38.1	35.71	69.85	M12 x 1.75	26.9
	(1.500)	(1.406)	(2.750)	1/2"-13 UNC	(1.06)
2" (K)	50.8	42.88	77.77	M12 x 1.75	26.9
	(2.000)	(1.688)	(3.062)	1/2"-13 UNC	(1.06)
2.1/2" (L)	63.5	50.8	88.90	M12 x 1.75	30.2
	(2.500)	(2.000)	(3.500)	1/2"-13 UNC	(1.19)

QR5/QS5 PORT OPTIONS

INLET PORT OPTIONS - Table 1

Port Type	SINGLE PUMP INLET PORT OPTIONS												COMMON INLET PORT OPTIONS					DUAL INLET PORT OPTION									
Port Type Code	1				2				4				1					2									
Port Type	SAE Flange Metric				SAE Flange UNC				UNF O-ring				SAE Flange Metric					SAE Flange UNC									
Port Size Code	D	F	H	K	D	F	H	K	C	E	G	J	D	F	H	K	L	D	H	K	L	H	K	L	H	K	L
Port Size	1	1.1/4	1.1/2	2	1	1.1/4	1.1/2	2	7/8	1.1/16	1.5/16	1.5/8	1	1.1/4	1.1/2	2	2.1/2	1	1.1/4	2	2.1/2	1.1/2	2	2.1/2	1.1/2	2	2.1/2
R5045	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
R5053	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
R5063	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
R5073	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
R5085	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
R5100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
R5120	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
S5045	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
S5051	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
S5060	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
S5070	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
S5085	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

- Preferred port size
- Non-preferred port size

Note: When coding, for single inlet multiple pumps, use '0' in '2nd inlet port type' and 'X' in '2nd inlet port size' in the model number.

OUTLET PORT OPTIONS - Table 2

Port Type Code	3				1				2				4			
Port Type	BSPP				SAE Flange Metric				SAE Flange UNC				UNF O-ring			
Port Size Code	A	B	D	F	A	B	D	F	A	B	D	F	C	E	G	J
Port Size	1/2	3/4	1	1.1/4	1/2	3/4	1	1.1/4	1/2	3/4	1	1.1/4	7/8	1.1/16	1.1/16	1.5/8
R5045	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
R5053	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
R5063	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
R5073	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
R5085	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
R5100	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
R5120	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S5045	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S5051	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S5060	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S5070	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S5085	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Preferred port size
- Non-preferred port size

QR6/QS6 DIMENSIONAL DATA

Note Drawings show clockwise rotation pumps. For anti-clockwise rotation pumps reverse the inlet and outlet port positions. (Rotation convention - view from pump shaft end).

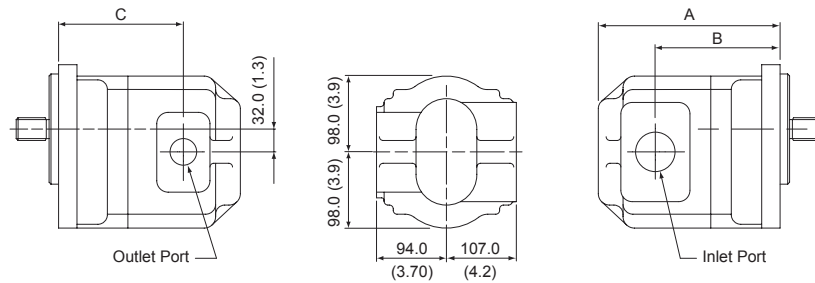
Full detailed dimensions are shown on the relevant pages covering drive shafts, mounting flanges and ports.

SINGLE PUMPS - standard ports

Code **A**

Example

R1A6100C41**A**1L1HC

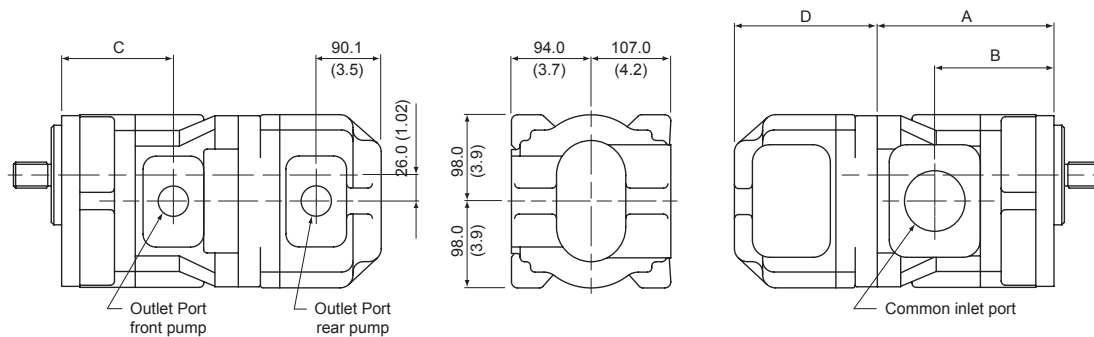


DOUBLE PUMPS - 1 inlet/2 outlets

Code **A**

Example

R1A6100R6100T42**A**1M1H0X1HC

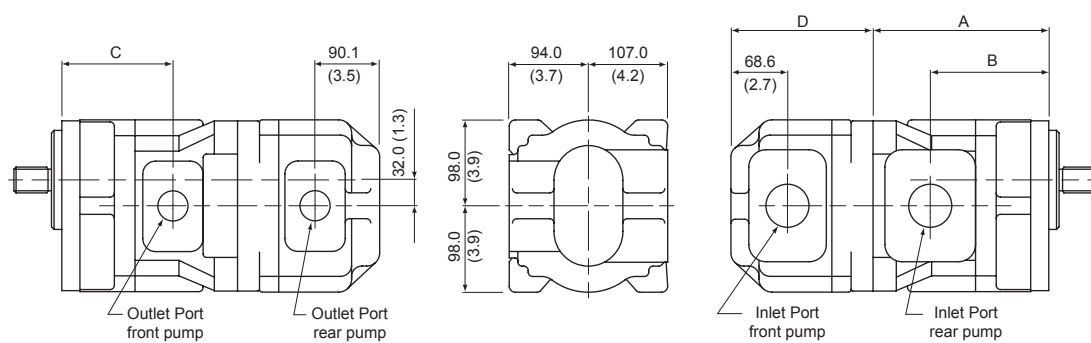


DOUBLE PUMPS - 2 inlets/2 outlets

Code **B**

Example

R1A6100R6100T42**B**1L1H1L1HC



TRIPLE AND QUADRUPLE PUMPS - See Pages 38 and 39.

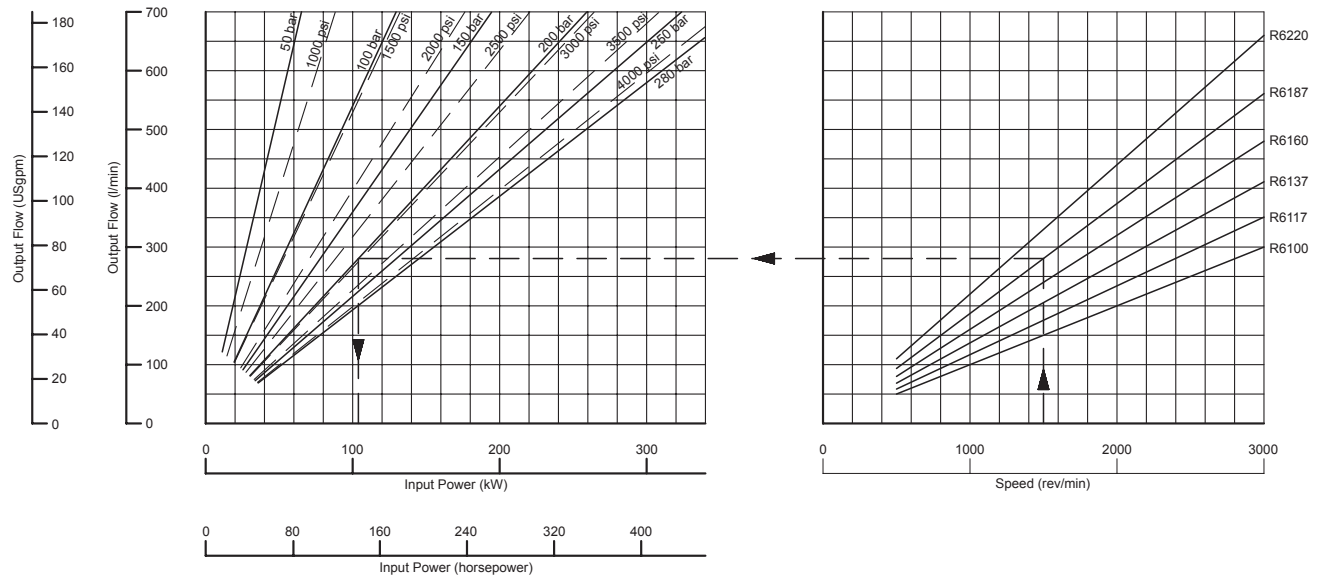
QR6/QS6 DIMENSIONAL DATA

PUMP	A mm (in)	B mm (in)	C mm (in)	D mm (in)	WEIGHT kg lb)		
					Single*	Front*	Rear*
R6100	220.0 (8.66)	152.0 (5.98)	130.0 (5.12)	182.0 (7.16)	35.0 (77.0)	40.0 (88.0)	30.0 (66.0)
R6117	226.0 (8.90)	158.0 (6.22)	136.0 (5.35)	188.0 (7.40)	36.5 (80.0)	41.5 (91.0)	31.5 (69.0)
R6137	233.0 (9.17)	165.0 (6.50)	143.0 (5.63)	195.0 (7.68)	39.0 (86.0)	44.0 (97.0)	34.0 (75.0)
R6160	241.0 (9.49)	173.0 (6.81)	151.0 (5.94)	203.0 (7.99)	42.0 (92.0)	47.0 (103.0)	37.0 (81.0)
R6187	251.0 (9.88)	182.0 (7.16)	161.0 (6.34)	213.0 (8.38)	45.3 (100.0)	50.3 (111.0)	40.3 (89.0)
R6220	263.0 (10.35)	194.0 (7.64)	173.0 (6.81)	225.0 (8.86)	49.0 (108.0)	54.0 (119.0)	44.0 (97.0)
S6083	226.0 (8.90)	158.0 (6.22)	136.0 (5.35)	188.0 (7.40)	40.5 (39.0)	45.5 (100.0)	35.5 (77.0)
S6097	234.0 (9.21)	165.0 (6.50)	143.0 (5.63)	196.0 (7.72)	42.0 (92.0)	47.0 (103.0)	37.0 (87.0)
S6113	242.9 (9.56)	173.0 (6.81)	151.0 (5.94)	204.0 (8.03)	43.5 (96.0)	48.5 (107.0)	38.5 (85)
S6132	251.0 (9.88)	183.0 (7.20)	161.0 (6.34)	213.0 (8.39)	45.5 (100.0)	50.5 (111.0)	40.5 (89.0)
S6155	263.0 (10.35)	194.0 (7.64)	173.0 (6.81)	225.0 (8.86)	47.5 (105.0)	52.5 (116.0)	42.5 (94.0)

Note: Weights are approximate
Double pump weight = (front + rear) weights

QR6/QS6 PERFORMANCE DATA

QR6 SERIES

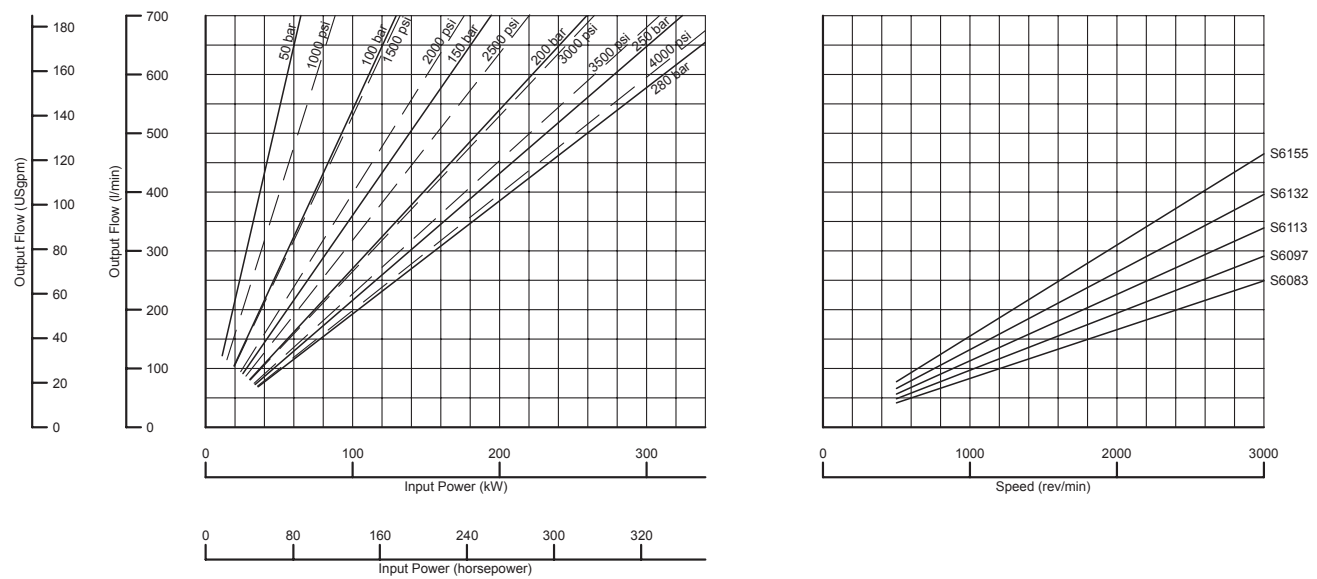


OUTPUT FLOWS are theoretical. Generally volumetric efficiencies are in excess of 95%. Your Hydreco Hydraulics representative will advise for specific conditions.

INPUT POWERS are actual, taking into account average efficiencies. Please consult your Hydreco Hydraulics representative when output pressure is less than 50 bar.

Example R6187 at 1500 rev/min gives output flow of 281 l/min (74 US gal/min) and requires 107 kW (144 hp) to drive it at 200 bar (2900 psi).

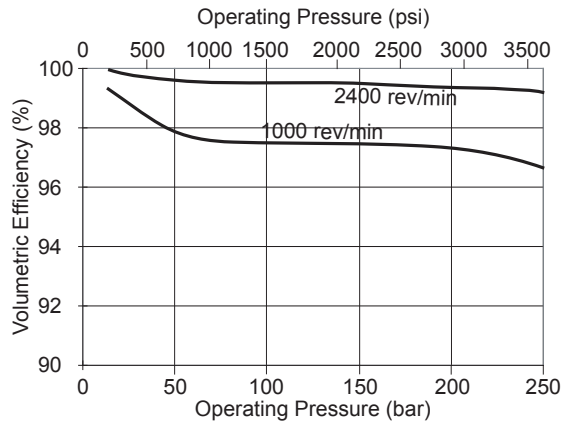
QS6 SERIES



Curves drawn for average pumps at 50°C (120°F) - fluid viscosity 23 mm²/sec (110 SSU).

QR6/QS6 EFFICIENCIES, NOISE LEVELS, MOMENTS OF INERTIA

PUMP EFFICIENCIES

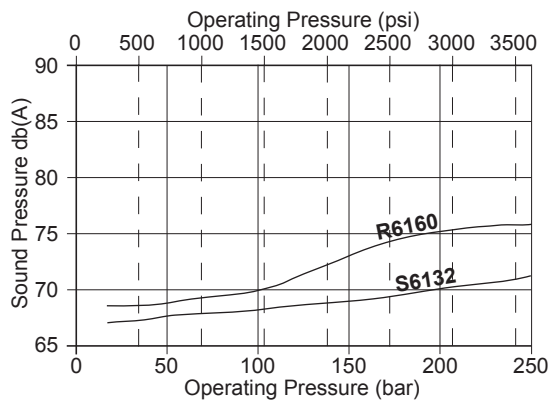


All Q Series pumps share very high efficiencies. The graph shows typical QS6 volumetric efficiency curves at 1000 and 2400 rev/min.

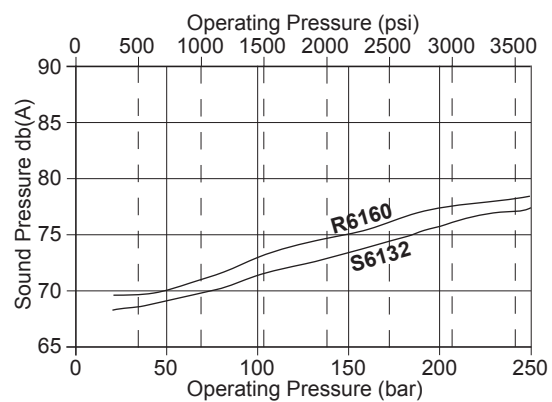
NOISE LEVELS

As described on Page 6, the reduction of noise levels was a major factor in the development of the Q Series pumps. The following graphs show QR6 and QS6 sound pressure levels at one metre from the pump derived from measurements of sound power levels to ISO9614-4.

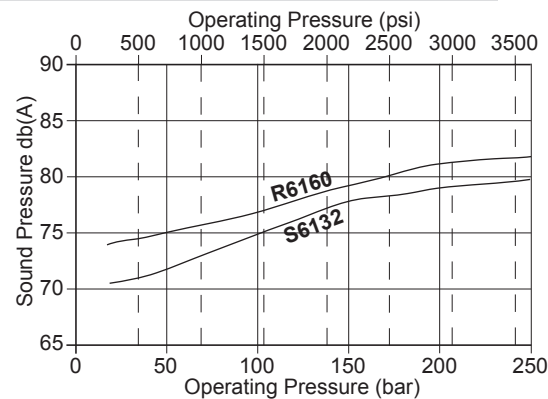
Q6 Sound Pressure at 1 metre - 1000 rpm



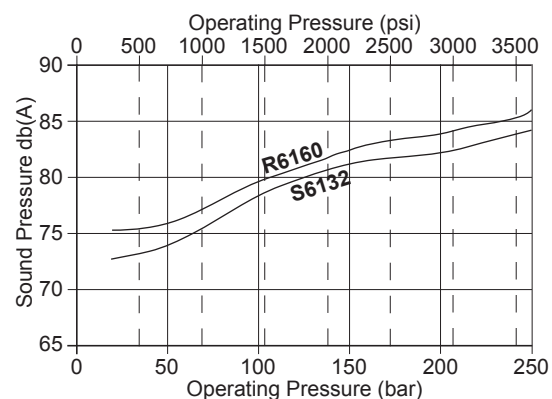
Q6 Sound Pressure at 1 metre - 1500 rpm



Q6 Sound Pressure at 1 metre - 1800 rpm



Q6 Sound Pressure at 1 metre - 2400 rpm



MOMENTS OF INERTIA

QR6 SERIES

PUMP SIZE		R6100	R6117	R6137	R6160	R6187	R6220
Moment of Inertia	kg cm ²	16.18	17.76	19.61	21.74	24.24	27.29
	(lb in ²)	(5.50)	(6.04)	(6.67)	(7.40)	(8.24)	(9.28)

QS6 SERIES

PUMP SIZE		S6083	S6097	S6113	S6132	S6155
Moment of Inertia	kg cm ²	21.71	23.50	25.55	27.98	30.92
	(lb in ²)	(7.38)	(7.99)	(8.69)	(9.51)	(10.51)

QR6/QS6 SHAFT SEALS & DRIVE SHAFTS

SHAFT SEALS

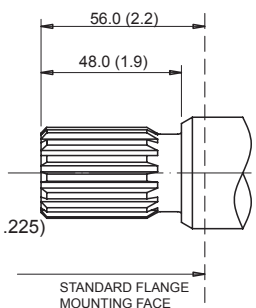
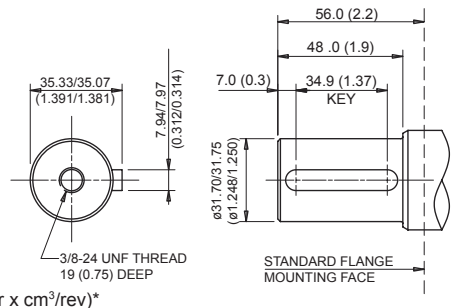
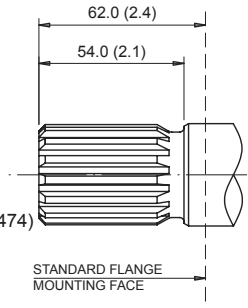
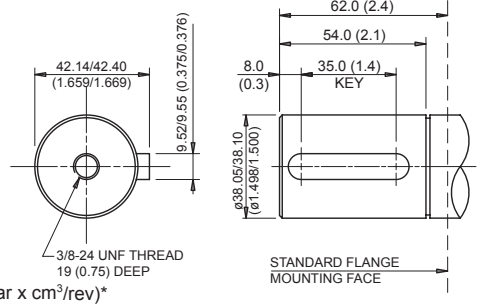
Code **A** Shaft seal and wiper for external drives

Example R1**A**6100C51A1L1HA

Code **C** Shaft seal, wiper and seal with tell-tale hole for torque converter and gearbox drives.
The tell-tale hole indicates leakage before mixing of fluids can occur.

Example R1**C**6100C41A1L1HA

DRIVE SHAFTS

<p>Code C SAE 32-4 (C) 1.1/4" spline Example R1A6100C41A1L1HA</p>  <p>INVOLUTE SPLINE 14 TEETH 12/24 DP FLAT ROOT SIDE FIT 30° PRESSURE ANGLE MAJOR DIA: 31.22/31.12 (1.229/1.225)</p> <p>$p \times D = 45565$ (bar x cm³/rev)* $p \times D = 40325$ (psi x cu.in/rev)*</p> <p>STANDARD FLANGE MOUNTING FACE</p>	<p>Code G SAE 32-1 (C) 1.1/4" parallel Example R1A6100G41A1L1HA</p>  <p>35.33/35.07 (1.391/1.381) 7.94/7.97 (0.312/0.314) 7.0 (0.3) 34.9 (1.37) KEY 63.170/31.75 (61.248/1.250) 3/8-24 UNF THREAD 19 (0.75) DEEP STANDARD FLANGE MOUNTING FACE</p> <p>$p \times D = 45565$ (bar x cm³/rev)* $p \times D = 40325$ (psi x cu.in/rev)*</p>
<p>Code T SAE 38-4 (CC) 1.1/2" spline Example R1A6100T41A1L1HA</p>  <p>INVOLUTE SPLINE 17 TEETH 12/24 DP FLAT ROOT SIDE FIT 30° PRESSURE ANGLE MAJOR DIA: 37.57/37.44 (1.479/1.474)</p> <p>$p \times D = 86950$ (bar x cm³/rev)* $p \times D = 76950$ (psi x cu.in/rev)*</p> <p>STANDARD FLANGE MOUNTING FACE</p>	<p>Code N SAE 38-1 (CC) 1.1/2" parallel Example R1A6100N41A1L1HA</p>  <p>42.14/42.40 (1.659/1.669) 9.62/9.55 (0.375/0.376) 8.0 (0.3) 35.0 (1.4) KEY 83.805/38.10 (61.498/1.500) 3/8-24 UNF THREAD 19 (0.75) DEEP STANDARD FLANGE MOUNTING FACE</p> <p>$p \times D = 86950$ (bar x cm³/rev)* $p \times D = 76950$ (psi x cu.in/rev)*</p>

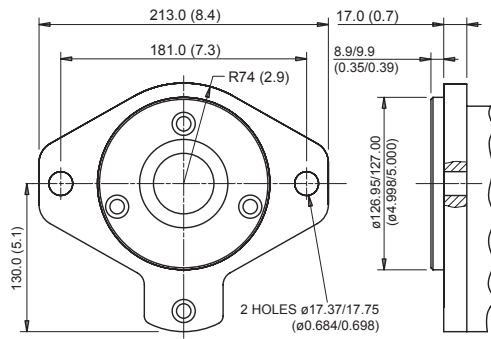
* p = pressure, D = displacement. The stated values must not be exceeded.

Note For multiple pumps the sum of the p x D values must not exceed the stated value. See Page 38.

QR6/QS6 MOUNTING FLANGES

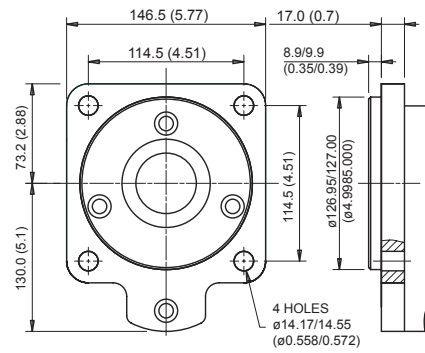
Code **4** SAE 127-2 (C - 2 bolt)

Example R1A6100C**4**1A1L1HA



Code **5** SAE 127-4 (C - 4 bolt)

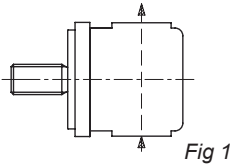
Example R1A6100C**5**1A1L1HA



QR6/QS6 PORT POSITIONS & TYPES, SAE FLANGE DETAILS

NUMBER OF PUMP SECTIONS AND INLET PORT POSITIONS

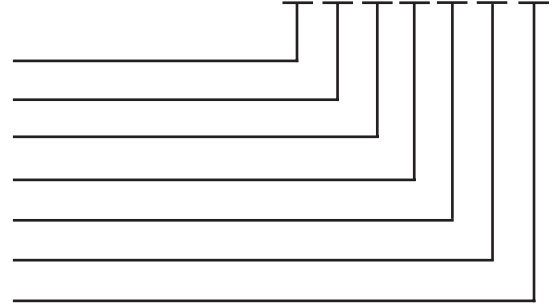
Code **A**



SINGLE PUMP Example

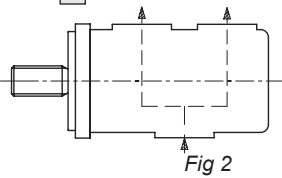
R 1 A 6 1 6 0 C 5 1 A 1 L 1 H C

- Number of pump sections
- Inlet port position - see fig 1
- Inlet port type - see table 1
- Inlet port size - see table 1
- Outlet port type - see table 2
- Outlet port size - see table 2
- Rotation - viewed from shaft

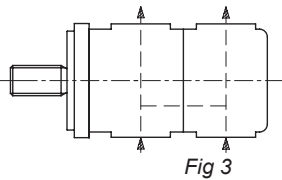


A = anti-clockwise
C = clockwise

Code **C**



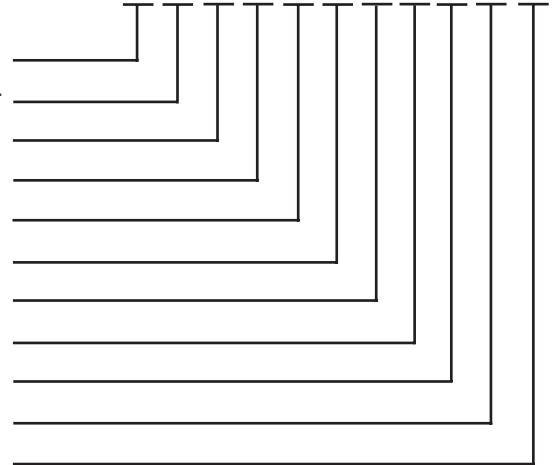
Code **B**



MULTI PUMP Example

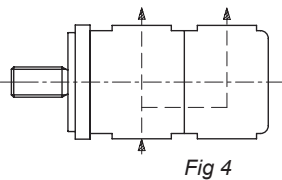
R 1 A 6 1 6 0 R 6 1 0 0 T 5 2 A 1 M 1 H 0 X 1 H C

- Number of pump sections
- Inlet port position - see figs 2, 3 or 4
- 1st Inlet port type - see table 1
- 1st Inlet port size - see table 1
- 1st Outlet port type - see table 2
- 1st Outlet port size - see table 2
- 2nd Inlet port type - see table 1
- 2nd Inlet port size - see table 1
- 2nd Outlet port type - see table 2
- 2nd Outlet port size - see table 2
- Rotation - viewed from shaft



A = anti-clockwise
C = clockwise

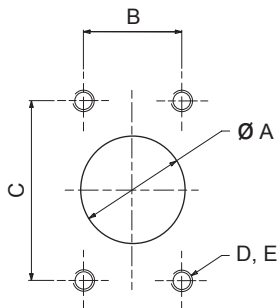
Code **A**



MULTIPLE PUMPS - Please consult your Hydreco Hydraulics' representative.

SAE FLANGE PORT DETAILS

SAE code 61.
Standard pressure series



SAE FLANGE SIZE	A mm (in)	B mm (in)	C mm (in)	D	E DEPTH mm (in)
1.1/2" (H)	38.1	35.71	69.85	M12 x 1.75	26.9
	(1.500)	(1.406)	(2.750)	1/2"-13 UNC	(1.06)
2.1/2" (L)	63.5	50.8	88.90	M12 x 1.75	30.2
	(2.50)	(2.000)	(3.500)	1/2"-13 UNC	(1.19)
3" (M)	76.2	61.9	106.4	M16 x 2.00	30.2
	(3.000)	(2.437)	(4.189)	5/8"-11 UNC	(1.190)

QR6/QS6 PORTS, DOUBLE & MULTIPLE PUMPS - SAE FLANGE DETAILS

INLET PORT OPTIONS - Table 1

Port Type	SINGLE PUMP INLET PORT OPTIONS						COMMON INLET PORT OPTIONS							
Port Size Code	1			2			1				2			
Port Type	SAE Flange Metric			SAE Flange UNC			SAE Flange Metric				SAE Flange UNC			
Port Size Code	K	L	M	K	L	M	K	L	M	N	K	L	M	
Port Type	2	2.1/2	3	2	2.1/2	3	2	2.1/2	3	4	2	2.1/2	3	4
R6100	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
R6117	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
R6137	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
R6160	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
R6187	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
R6220	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S6083	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S6097	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S6113	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S6132	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S6155	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Preferred port size
- Non-preferred port size

Note: When coding, for single inlet multiple pumps, use '0' in '2nd inlet port type' and 'X' in '2nd inlet port size' in the model number.

OUTLET PORT OPTIONS - Table 2

Port Type Code	1					2				
Port Type	SAE Flange Metric					SAE Flange UNC				
Port Size Code	A	B	D	F	H	A	B	D	F	H
Port Size	1/2	3/4	1	1.1/4	1.1/2	1/2	3/4	1	1.1/4	1.1/2
R6100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
R6117	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
R6137	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
R6160	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
R6187	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
R6220	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
S6083	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
S6097	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
S6113	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
S6132	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
S6155	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- Preferred port size
- Non-preferred port size

QS7 DIMENSIONAL DATA (S SERIES ONLY AVAILABLE)

Note Drawings show clockwise rotation pumps. For anti-clockwise rotation pumps reverse the inlet and outlet port positions. (Rotation convention - view from pump shaft end).

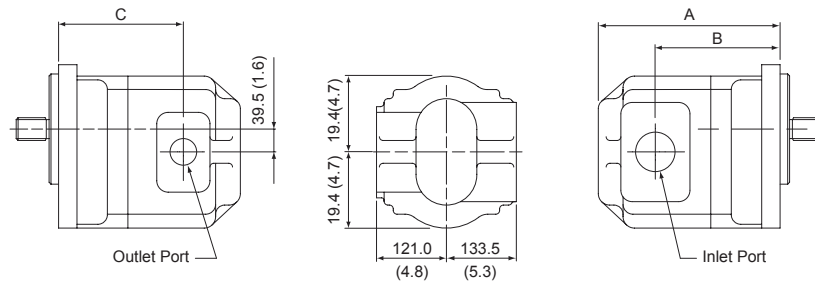
Full detailed dimensions are shown on the relevant pages covering drive shafts, mounting flanges and ports.

SINGLE PUMPS - standard ports

Code **A**

Example

S1A7155C51**A**1L1HC

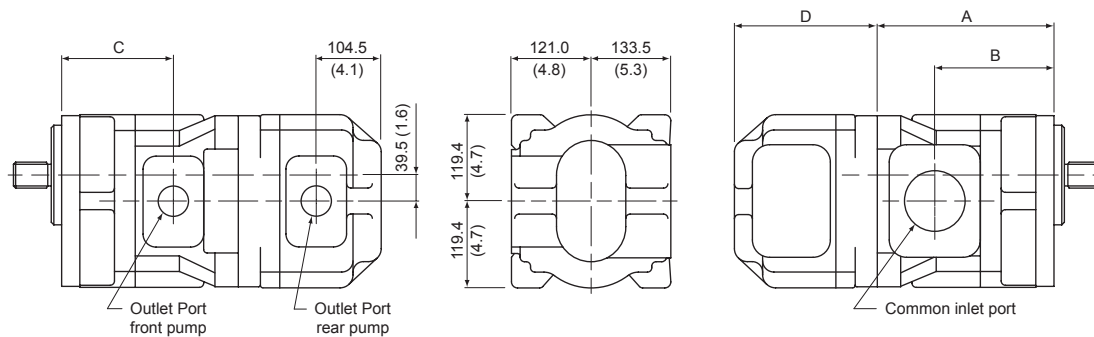


DOUBLE PUMPS - 1 inlet/2 outlets

Code **A**

Example

S1A7155S7155T52**A**1M1H0X1HC

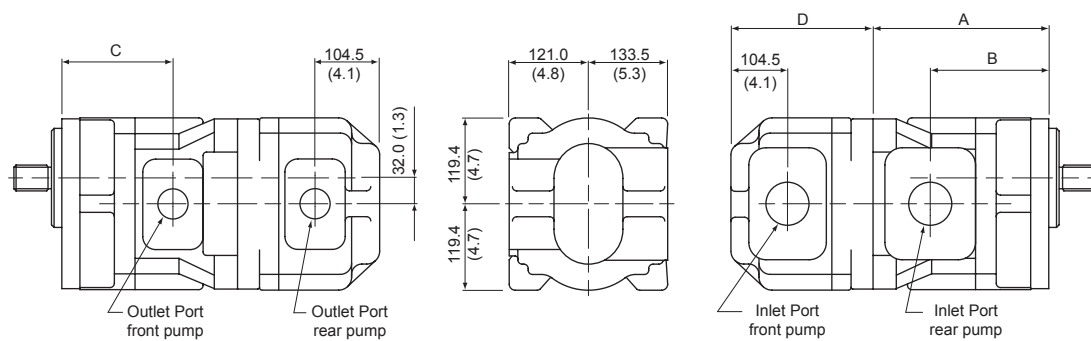


DOUBLE PUMPS - 2 inlets/2 outlets

Code **B**

Example

R1A6100R6100T42**B**1L1H1L1HC



TRIPLE AND QUADRUPLE PUMPS - See Pages 38 and 39.

QS7 DIMENSIONAL DATA, PERFORMANCE DATA

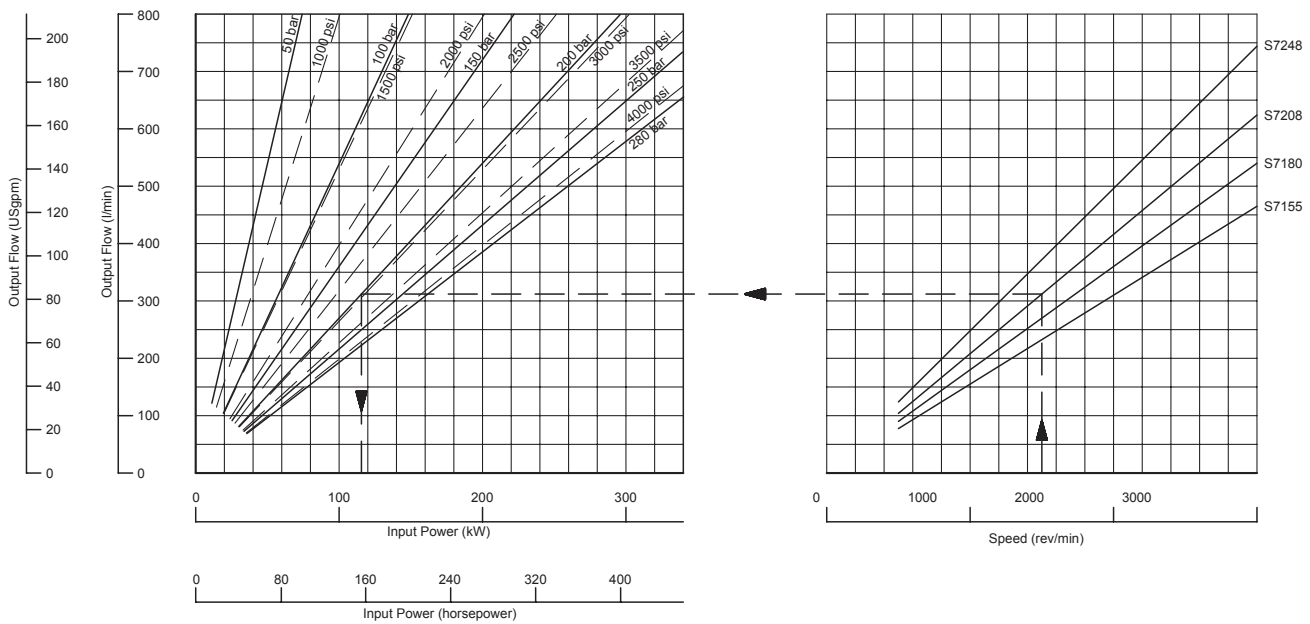
PUMP	A mm (in)	B mm (in)	C mm (in)	D mm (in)	WEIGHT kg lb)		
					Single*	Front*	Rear*
S7155	288.0 (11.338)	183.0 (7.205)	183.0 (7.205)	~	79.0 (174.0)	84.0 (185.0)	67.0 (147.0)
S7180	296.0 (11.653)	191.0 (7.520)	191.0 (7.520)	~	82.0 (180.0)	87.0 (191.0)	70.0 (154.0)
S7208	305.0 (12.000)	201.0 (7.913)	201.0 (7.913)	~	86.0 (190.0)	91.0 (200.0)	74.0 (163.0)
S7248	318.0 (12.520)	214.0 (8.425)	214.0 (8.425)	~	91.0 (200.0)	96 (211.0)	79.0 (174.0)

~ Please contact your Hydreco Hydraulics' representative.

Note: Weights are approximate
Double pump weight = (front + rear) weights

PERFORMANCE

Curves drawn for average pumps at 50oC (120oF) - fluid viscosity 23 mm²/sec (110 SSU).



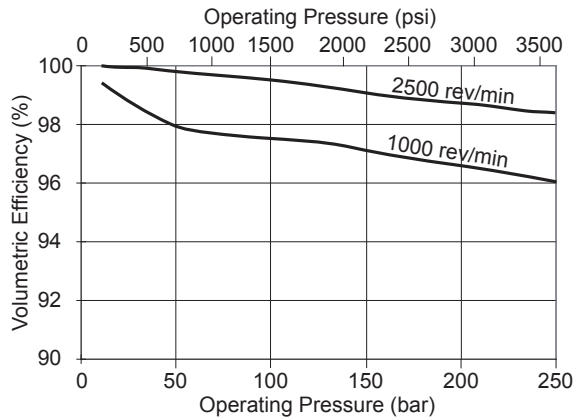
OUTPUT FLOWS are theoretical. Generally volumetric efficiencies are in excess of 95%.
 Your Hydreco Hydraulics representative will advise for specific conditions.

INPUT POWERS are actual, taking into account average efficiencies.
 Please consult your Hydreco Hydraulics representative when output pressure is less than 50 bar.

Example S7208 at 1500 rev/min gives output flow of 302 l/min (80 US gal/min) and requires 118 kW (159 hp) to drive it at 200 bar (2900 psi).

QS7 EFFICIENCIES, NOISE LEVELS, MOMENTS OF INERTIA

PUMP EFFICIENCIES

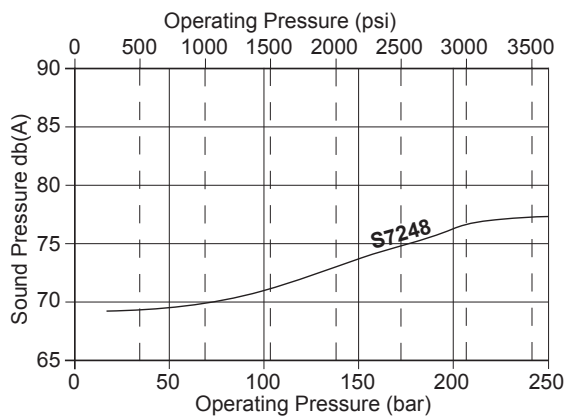


All Q Series pumps share very high efficiencies. The graph shows typical QS7 volumetric efficiency curves at 1000 and 2250 rev/min.

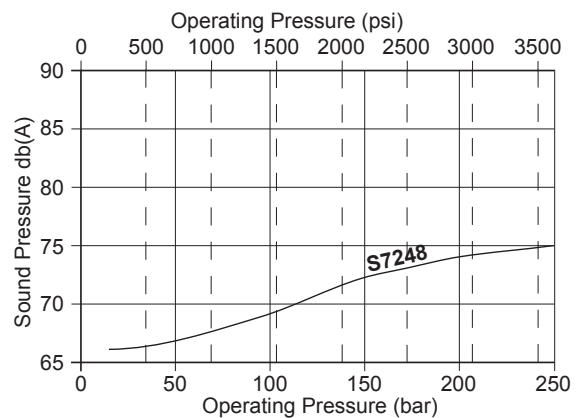
NOISE LEVELS

As described on Page 6, the reduction of noise levels was a major factor in the development of the Q Series pumps. The following graphs show QS7 sound pressure levels at one metre from the pump derived from measurements of sound power levels to ISO9614-4.

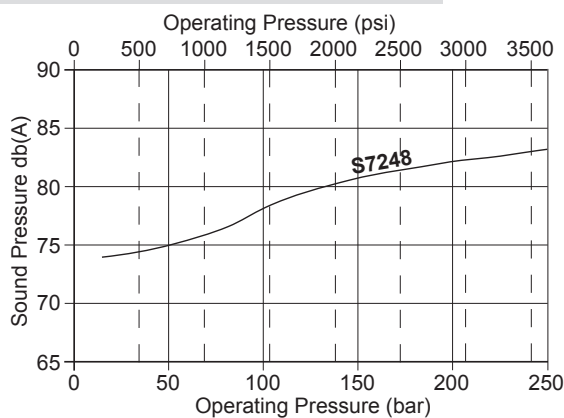
Q7 Sound Pressure at 1 metre - 1000 rpm



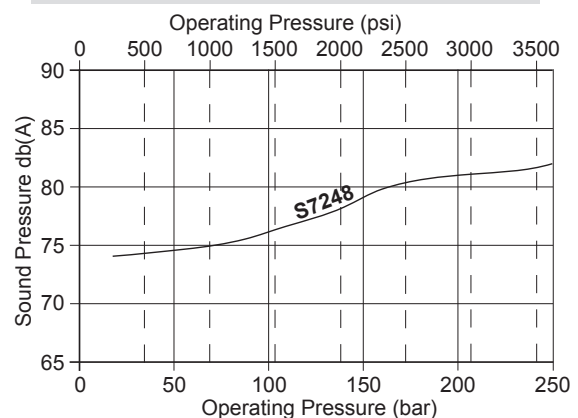
Q7 Sound Pressure at 1 metre - 1500 rpm



Q7 Sound Pressure at 1 metre - 1800 rpm



Q7 Sound Pressure at 1 metre - 2250 rpm



MOMENTS OF INERTIA

QS7 SERIES

PUMP SIZE		S7155	S7180	S7208	S7248
Moment of Inertia	kg cm ² (lb in ²)	60.33 (20.51)	65.21 (22.17)	70.68 (24.03)	78.49 (26.69)

QS7 SHAFT SEALS & DRIVE SHAFTS

SHAFT SEALS

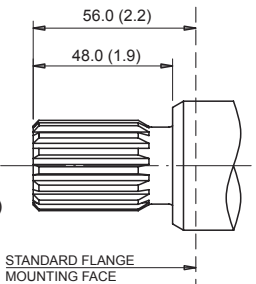
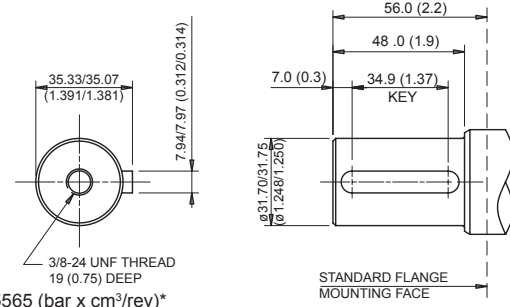
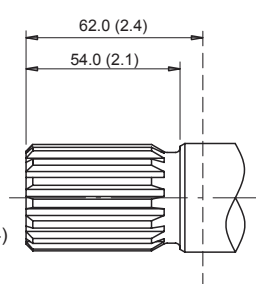
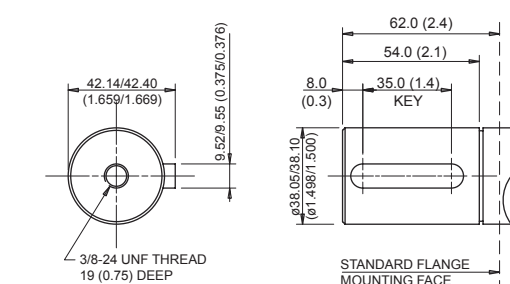
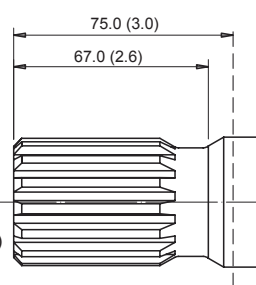
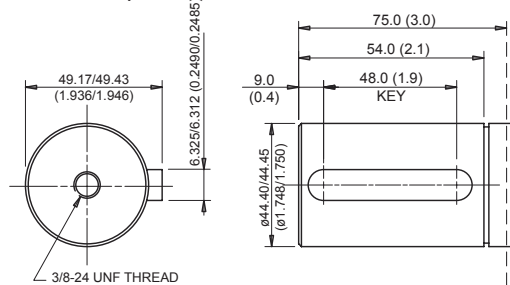
Code **A** Shaft seal and wiper for external drives

Example S1 **A**7155C51A1L1HA

Code **C** Shaft seal, wiper and seal with tell-tale hole for torque converter and gearbox drives.
The tell-tale hole indicates leakage before mixing of fluids can occur.

Example S1 **C**7155C51A1L1HA

DRIVE SHAFTS

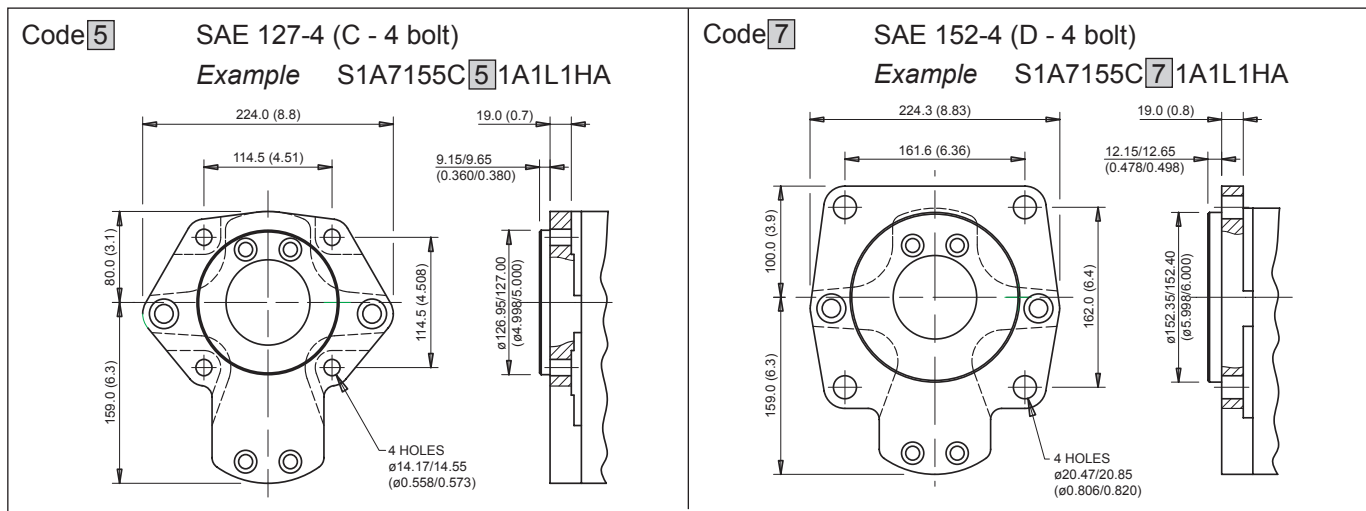
<p>Code C SAE 32-4 (C) 1.1/4" spline Example S1A7155 C51A1L1HA</p> <p>INVOLUTE SPLINE 14 TEETH 12/24 DP FLAT ROOT SIDE FIT 30° PRESSURE ANGLE</p> <p>MAJOR DIA: 31.22/31.12 (1.229/1.225)</p> <p>p x D = 45565 (bar x cm³/rev)* p x D = 40325 (psi x cu.in/rev)*</p> 	<p>Code G SAE 32-1 (C) 1.1/4" parallel Example S1A7155 G51A1L1HA</p>  <p>p x D = 45565 (bar x cm³/rev)* p x D = 40325 (psi x cu.in/rev)*</p>
<p>Code T SAE 38-4 (CC) 1.1/2" spline Example S1A7155 T51A1L1HA</p> <p>INVOLUTE SPLINE 17 TEETH 12/24 DP FLAT ROOT SIDE FIT 30° PRESSURE ANGLE</p> <p>MAJOR DIA: 37.57/37.44 (1.479/1.474)</p> <p>p x D = 86950 (bar x cm³/rev)* p x D = 76950 (psi x cu.in/rev)*</p> 	<p>Code N SAE 38-1 (CC) 1.1/2" parallel Example S1A7155 N51A1L1HA</p>  <p>p x D = 86950 (bar x cm³/rev)* p x D = 76950 (psi x cu.in/rev)*</p>
<p>Code D SAE 44-4 (D) 1.3/4" spline Example S1A7155 D5A1A</p> <p>INVOLUTE SPLINE 13 TEETH 8/16 DP FLAT ROOT SIDE FIT 30° PRESSURE ANGLE</p> <p>MAJOR DIA: 43.71/43.59 (1.721/1.716)</p> <p>p x D = 121400 (bar x cm³/rev)* p x D = 107439 (psi x cu.in/rev)*</p> 	<p>Code P SAE 44-1 (D) 1.3/4" parallel Example S1A7155 P51A1L1HA</p>  <p>p x D = 121400 (bar x cm³/rev)* p x D = 107439 (psi x cu.in/rev)*</p>

* p = pressure, D = displacement. The stated values must not be exceeded.

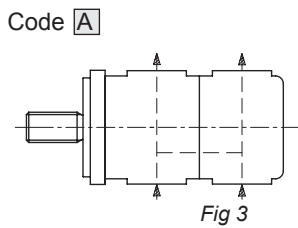
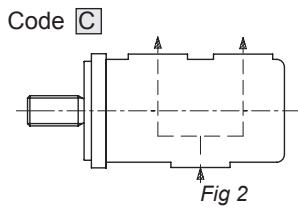
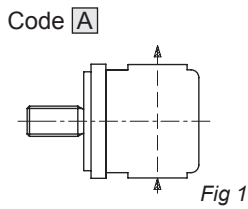
Note For multiple pumps the sum of the p x D values must not exceed the stated value. See Page 38.

QS7 MOUNTING FLANGES, PORTS - SINGLE PUMPS

MOUNTING FLANGES



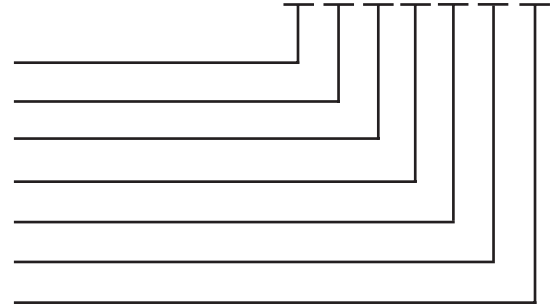
NUMBER OF PUMP SECTIONS AND INLET PORT POSITIONS



SINGLE PUMP *Example*

- Number of pump sections
- Inlet port position - see fig 1
- Inlet port type - see table 1
- Inlet port size - see table 1
- Outlet port type - see table 2
- Outlet port size - see table 2
- Rotation - viewed from shaft

S 1 A 7 2 4 8 T 5 1 A 1 M 1 K C

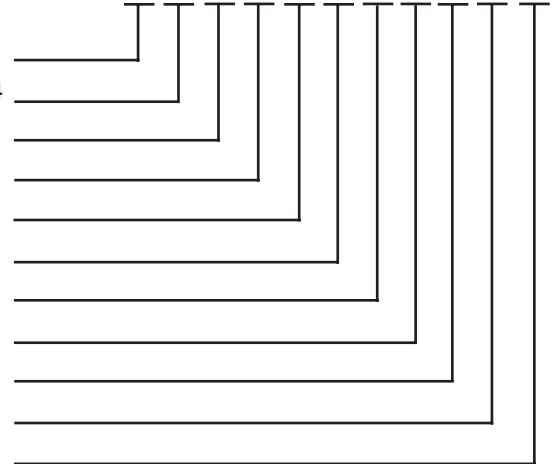


A = anti-clockwise
 C = clockwise

MULTI PUMP *Example*

- Number of pump sections
- Inlet port position - see figs 2, 3 or 4
- 1st Inlet port type - see table 1
- 1st Inlet port size - see table 1
- 1st Outlet port type - see table 2
- 1st Outlet port size - see table 2
- 2nd Inlet port type - see table 1
- 2nd Inlet port size - see table 1
- 2nd Outlet port type - see table 2
- 2nd Outlet port size - see table 2
- Rotation - viewed from shaft

S 1 A 7 2 0 8 S 7 1 8 0 T 5 2 B 1 M 1 K 1 L 1 H C



A = anti-clockwise
 C = clockwise

QS7 PORTS - DOUBLE PUMPS - SAE FLANGE DETAILS

INLET PORT OPTIONS - Table 1

Port Type	SINGLE PUMP INLET PORT OPTIONS								COMMON INLET PORT OPTIONS							
Port Type Code	1				2				1				2			
Port Type	SAE Flange Metric				SAE Flange UNC				SAE Flange Metric				SAE Flange UNC			
Port Size Code	H	K	L	M	H	K	L	M	K	L	M	N	K	L	M	N
Port Size	1.1/2	2	2.1/2	3	1.1/2	2	2.1/2	3	2	2.1/2	3	4	2	2.1/2	3	4
S7155	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S7180	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S7208	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S7248	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Preferred port size
- Non-preferred port size

Note: When coding, for single inlet multiple pumps, use '0' in '2nd inlet port type' and 'X' in '2nd inlet port size' in the model number.

NOTE:

A common inlet is only available when an S7 is fitted with a pump of a different frame size, i.e.S6, R6, S5, R5, S4, R4.
A common inlet is not possible with a double S7

OUTLET PORT OPTIONS - Table 2

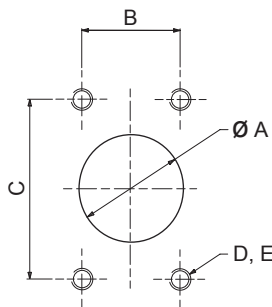
Port Type Code	1						2					
Port Type	SAE Flange Metric						SAE Flange UNC					
Port Size Code	A	B	D	F	H	K	A	B	D	F	K	K
Port Size	1/2	3/4	1	1.1/4	1.1/2	2	1/2	3/4	1	1.1/4	1.1/2	2
S7155	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S7180	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S7208	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
S7248	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- Preferred port size
- Non-preferred port size

MULTIPLE PUMPS - Please consult your Hydreco Hydraulics' representative.

SAE FLANGE PORT DETAILS

SAE code 61.
Standard pressure series



SAE FLANGE SIZE	A mm (in)	B mm (in)	C mm (in)	D	E DEPTH mm (in)
1.1/2" (H)	38.1	35.71	69.85	M12 x 1.75	26.9
	(1.500)	(1.406)	(2.750)	1/2"-13 UNC	(1.06)
2" (K)	50.8	42.88	77.77	M12 x 1.75	26.9
	(2.000)	(1.688)	(3.062)	1/2"-13 UNC	(1.06)
2.1/2" (L)	63.5	50.8	88.90	M12 x 1.75	30.2
	(2.50)	(2.000)	(3.500)	1/2"-13 UNC	(1.19)
3" (M)	76.2	61.9	106.4	M16 x 2.00	30.2
	(3.000)	(2.437)	(4.189)	5/8"-11 UNC	(1.190)
4" (N)	101.6	77.77	130.18	M16 x 2.00	30.2
	(4.000)	(3.062)	(5.125)	5/8"-11 UNC	(1.19)

Q SERIES MULTIPLE PUMPS

Both R Series and S Series pumps of the same or different frame sizes may be connected together to form multiple (double, triple or even quadruple) pumps driven by the same shaft.

IT IS ALSO POSSIBLE TO MOUNT ALUMINIUM PUMPS FROM THE 'A' SERIES RANGE TO "R" AND "S" SERIES PUMPS. PLEASE CONSULT YOUR HYDRECO HYDRAULICS' REPRESENTATIVE.

Multiple pump combinations may be limited by the torque capacity of the drive shaft and couplings.
The torque factors listed below must not be exceeded.

Torque factor $T = pD$ where p = outlet pressure, D = displacement.

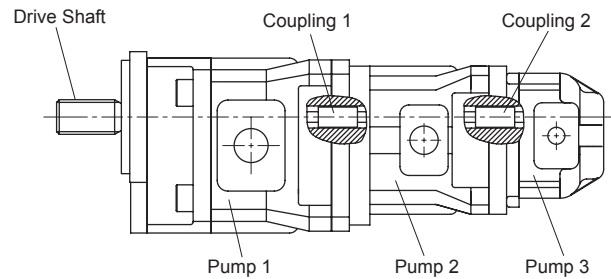
For a triple pump, for example

$$T_{\text{shaft}} = p_1 D_1 + p_2 D_2 + p_3 D_3$$

$$T_{\text{coupling 1}} = p_2 D_2 + p_3 D_3$$

$$T_{\text{coupling 2}} = p_3 D_3$$

(p_1 , p_2 and p_3 are maximum simultaneous pressures)

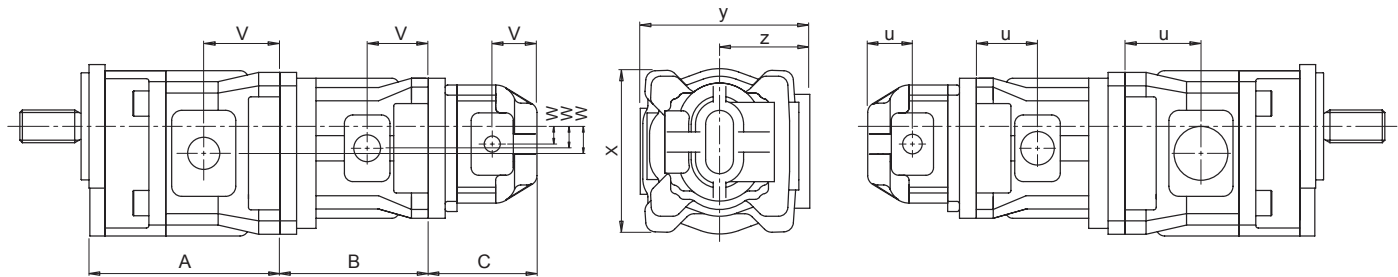


The T values must not exceed those shown in the table below

CODE	SHAFT TYPE	T = pD MAXIMUM	
		bar x cm ³ /rev	psi x cu.in/rev
A	SAE 'A' 5/8" spline	5,200	4,600
E	SAE 'A' 5/8" parallel	5,200	4,600
B	SAE 'B' 7/8" spline	14,226	12,590
F	SAE 'B' 7/8" parallel	14,226	12,590
Q	SAE 'BB' 1" spline	22,450	19,869
H	SAE 'BB' 1" parallel	22,450	19,869
C	SAE 'C' 1.1/4" spline	45,565	40,325
G	SAE 'C' 1.1/4" parallel	45,565	40,325
T	SAE 'CC' 1.1/2" spline	86,950	76,950
N	SAE 'CC' 1.1/2" parallel	86,950	76,950
D	SAE 'D' 1.3/4" spline	121,400	107,439
P	SAE 'D' 1.3/4" parallel	121,400	107,439
	Coupling Q4-Q4	11,250	9,956
	Coupling Q5-Q4	11,250	9,956
	Coupling Q5-Q5	21,250	18,806
	Coupling Q6-Q4	11,250	9,956
	Coupling Q6-Q5	21,250	18,806
	Coupling Q6-Q6	40,000	35,400
	Coupling Q7-Q4	11,250	9,956
	Coupling Q7-Q5	21,250	18,806
	Coupling Q7-Q6	40,000	35,400
	Coupling Q7-Q7	62,000	54,870

Q SERIES MULTIPLE PUMPS - MAJOR DIMENSIONS

These drawings give a quick reference to the overall dimensions of the QR and QS Series pumps. Multiple pumps are shown made up of individual sections connected together. The 'dual' type housing is not depicted.



	u (inlets)		v (outlets)		w		x		y		z	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
QR4/QS4	46.0	1.81	53.0	2.09	21.0	0.83	140.0	5.51	130.0	5.12	65.0	2.56
QR5/QS5	54.5	2.15	72.5	2.85	26.0	1.02	166.0	6.53	180.0	7.09	94.0	3.70
QR6/QS6	68.6	2.70	90.1	3.55	32.0	1.26	196.0	7.72	201.0	7.91	107.0	4.21
QS7	104.5	4.11	104.5	4.11	39.5	1.56	239.0	9.41	254.5	10.02	133.5	5.26

Pump lengths: Single = A

Double = A+C

Triple = A+B+C

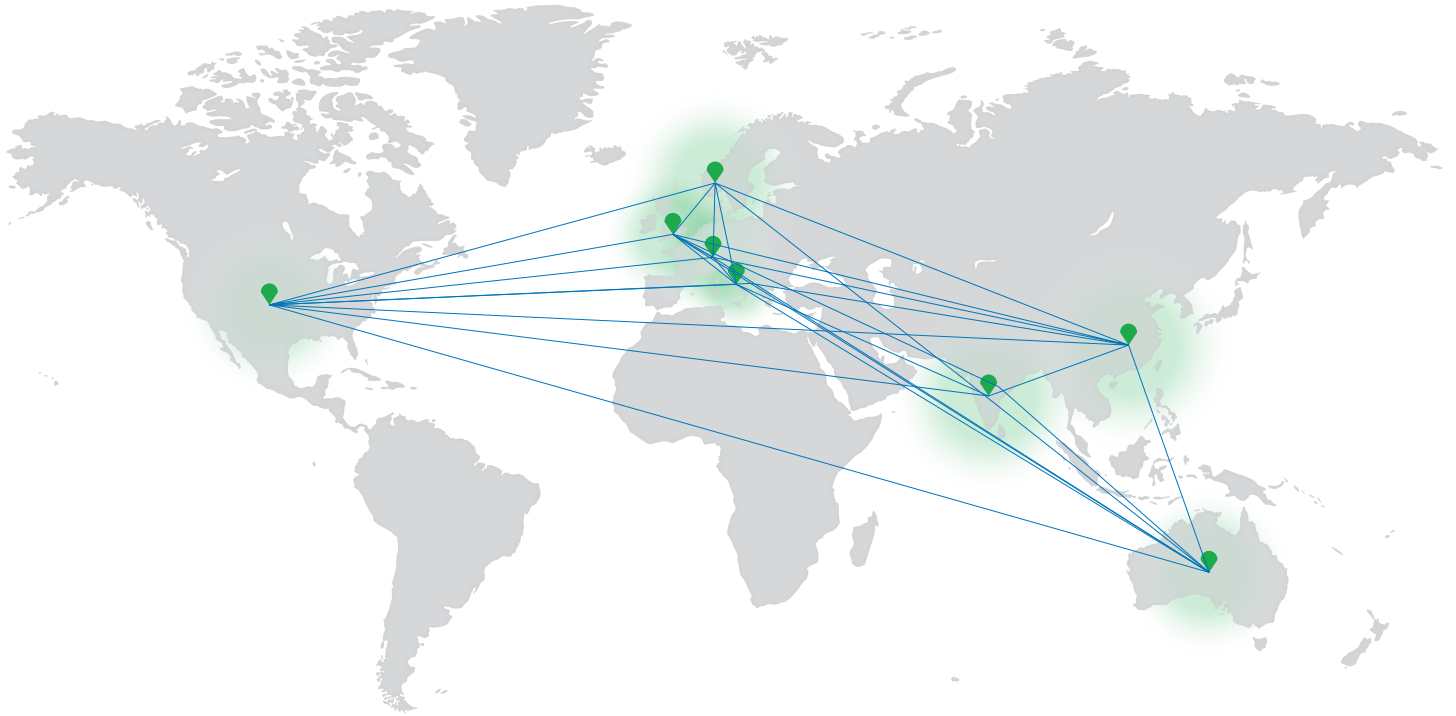
R SERIES	A		B		C	
	mm	in	mm	in	mm	in
R4016	145.0	5.71	115.0	4.53	115.0	4.53
R4019	147.0	5.79	118.0	4.65	118.0	4.65
R4023	150.0	5.91	121.0	4.76	121.0	4.76
R4027	154.0	6.06	124.0	4.88	124.0	4.88
R4032	158.0	6.22	128.0	5.04	128.0	5.04
R4038	163.0	6.42	133.0	5.24	133.0	5.24
R4045	169.0	6.65	139.0	5.47	139.0	5.47
R4053	175.0	6.89	146.0	5.75	146.0	5.75
R4060	181.0	7.12	151.0	5.95	151.0	5.94
R5045	178.0	7.01	144.0	5.67	144.0	5.67
R5053	182.0	7.16	148.0	5.83	148.0	5.83
R5063	187.0	7.36	154.0	6.06	154.0	6.06
R5073	193.0	7.60	159.0	6.26	159.0	6.26
R5085	199.0	7.83	166.0	6.53	166.0	6.35
R5100	207.0	8.15	174.0	6.85	174.0	6.85
R5120	218.0	8.58	185.0	7.28	185.0	7.28
R6100	220.0	8.66	182.0	7.16	182.0	7.16
R6117	226.0	8.90	188.0	7.40	188.0	7.40
R6137	233.0	9.17	195.0	7.68	195.0	7.68
R6160	241.0	9.49	203.0	7.99	203.0	7.99
R6187	251.0	9.88	213.0	8.39	213.0	8.38
R6220	263.0	10.35	225.0	8.86	225.0	8.86

S SERIES	A		B		C	
	mm	in	mm	in	mm	in
S4016	151.0	5.94	121.0	4.76	121.0	4.76
S4023	158.0	6.22	129.0	5.08	129.0	5.08
S4027	163.0	6.42	134.0	5.27	134.0	5.27
S4032	169.0	6.65	139.0	5.47	139.0	5.47
S4037	175.0	6.89	145.0	5.71	145.0	5.71
S4042	181.0	7.12	151.0	5.94	151.0	5.94
S5045	188.0	7.40	154.0	6.06	154.0	6.06
S5051	192.0	7.56	159.0	6.26	159.0	6.26
S5060	199.0	7.83	166.0	6.53	166.0	6.53
S5070	207.0	8.15	173.0	6.81	173.0	6.81
S5085	218.0	8.58	185.0	7.28	185.0	7.28
S6083	226.0	8.90	188.0	7.40	188.0	7.40
S6097	234.0	9.21	196.0	7.72	196.0	7.72
S6113	242.0	9.53	204.0	8.03	204.0	8.03
S6132	251.0	9.88	213.0	8.38	213.0	8.39
S6155	263.0	10.35	225.0	8.86	225.0	8.86
S7155	~	~	~	~	~	~
S7180	~	~	~	~	~	~
S7208	~	~	~	~	~	~
S7248	~	~	~	~	~	~

~ Please contact your Hydreco Hydraulics' representative.

Note: when mounting Q4 to Q6 add 18 mm to dimensions B and C.

SUPPORTED BY A WORLDWIDE SUPPLY CHAIN



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