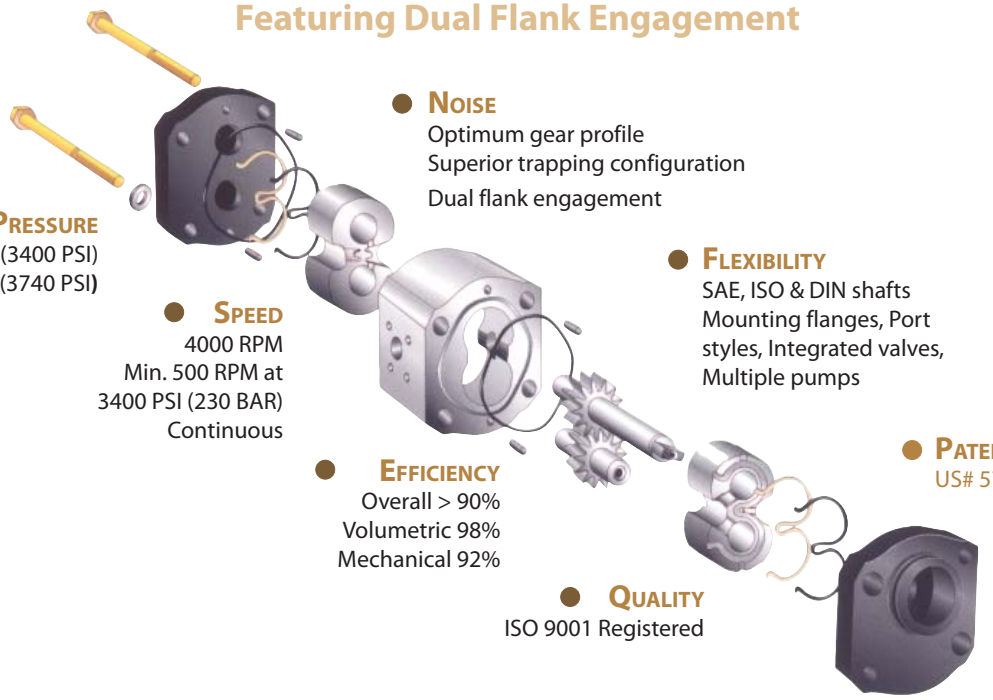
WQ900 HIGH EFFICIENCY LOW PULSATION GEAR PUMP

WQ900

Low Pulsation Gear Pump

Featuring Dual Flank Engagement



Noise
Optimum gear profile
Superior trapping configuration
Dual flank engagement

Pressure
(P1) 230 BAR (3400 PSI)
(P2) 258 BAR (3740 PSI)

Flexibility
SAE, ISO & DIN shafts
Mounting flanges, Port styles, Integrated valves, Multiple pumps

Speed
4000 RPM
Min. 500 RPM at 3400 PSI (230 BAR)
Continuous

Patented Design
US# 5730589

Efficiency
Overall > 90%
Volumetric 98%
Mechanical 92%

Quality
ISO 9001 Registered

Quiet Efficiency

Concentric is the world's leading source for high efficiency gear pumps and now we have taken the next step by developing dual flank engagement gear pump technology. This technology has produced the WQ pump. The WQ pump provides the same high operating efficiency of the Concentric W Series pump with added low pressure pulsation to reduce fluid borne noise in hydraulic systems.

Dramatically Reduced Hydraulic System Noise

Noise in hydraulic systems is generally caused by the pressure pulsation created by the pump. This activity excites other components in the hydraulic system and the structural components of the machine to the point where they resonate with and amplify the pulsation generated by the pump (noise). Concentric WQ pump with dual flank engagement dramatically reduces system pressure pulsation, thereby dramatically reducing fluid borne noise.

Global Manufacturing

The WQ Series is a global product. Our North American and European engineers have worked together to develop and refine the design and manufacturing technology. The product specifications and manufacturing specifications are the same. This ensures customers that we can provide the best international service and technical support of any gear pump manufacturer.

Performance Information

Model Code		060	080	100	110	140	160	190	230
Displacement	cm^3/rev	6	8	10	11	14	16	19	23
	in^3/rev	.366	.488	.610	.671	.854	.976	1.159	1.403
Inlet Pressure	BAR (PSI)	min. 0.2 BAR below atmospheric (6 IN.HG) max. 2.0 BAR (29 PSI)							
Max. Continous Pressure (P1)	(BAR	230 BAR							207
	PSI)	3400 PSI							3000
Max. Intermittent Pressure (P2)	(BAR	258 BAR							228
	PSI)	3740 PSI							3300
Min. Rotational Speed At (P1)		500							
Max. Rotational Speed At (P1)		4000		3600		3300	3000		2800
Input Power	KW	3.01	4.02	5.02	5.52	7.03	8.03	9.54	9.24
@ P1 @ 1000 RPM	HP	4.0	5.4	6.7	7.4	9.4	10.8	12.8	12.4

WQ vs. Traditional Gear Pumps

In a gear pump gear mesh there is a volume of trapped oil between the suction and pressure sides of the gears. This amount of trapped oil and the manner in which it is dissipated determines the magnitude of pressure pulsation in a gear pump.

The WQ with dual flank engagement technology reduces pressure pulsation by 75% over traditional gear pump designs. This is accomplished by dividing and reducing the volume of trapped oil and by improved management of the trapped oil.

Figure 1
Figure 1 shows the trapped oil of a standard gear pump and of a WQ pump. The resulting pulsation shows a higher amplitude and lower frequency for standard gear pumps. The optimum is lower amplitude as demonstrated by the WQ with dual flank engagement.

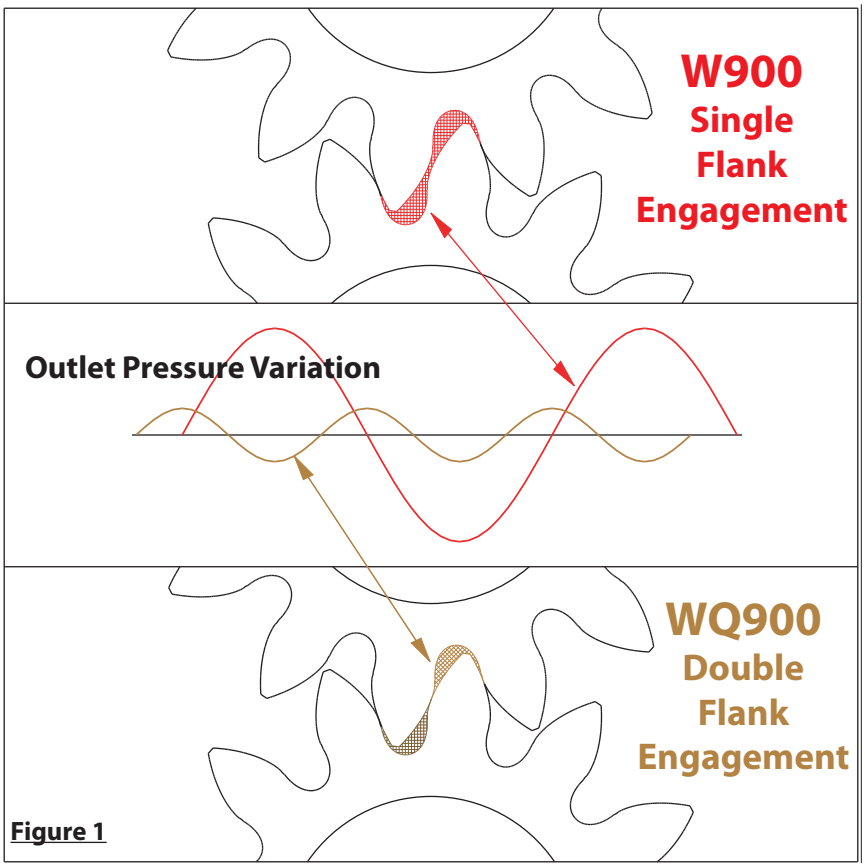
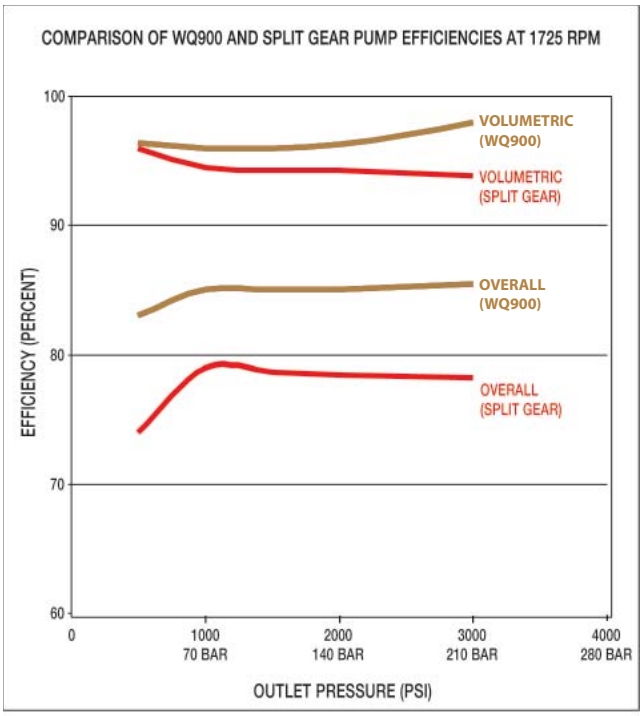


Figure 1

WQ vs. Split Gear Pumps

Split gear pump designs incorporate two sets of gears offset to accomplish lower amplitude and higher frequency pressure pulsation. Fluid borne noise reduction is achieved by this design, but efficiency is sacrificed. Reduced efficiency is a result of additional leak paths and frictional surfaces inherent in the offset gear design.

Figure 2
Figure 2 shows a comparison in efficiency between comparable WQ and split gear pumps.

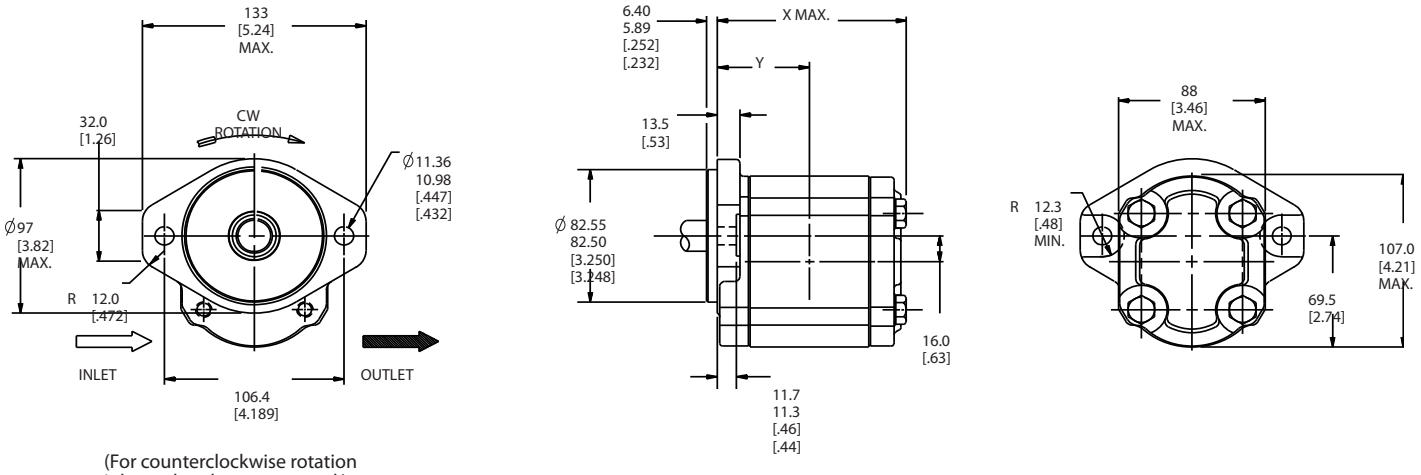


Pictures on front page are used with the kind permission of eg: Atlet, BT, Huddig, Scania, Toro and Volvo Construction Equipment.

DIMENSIONS & MOUNTING FLANGE OPTIONS

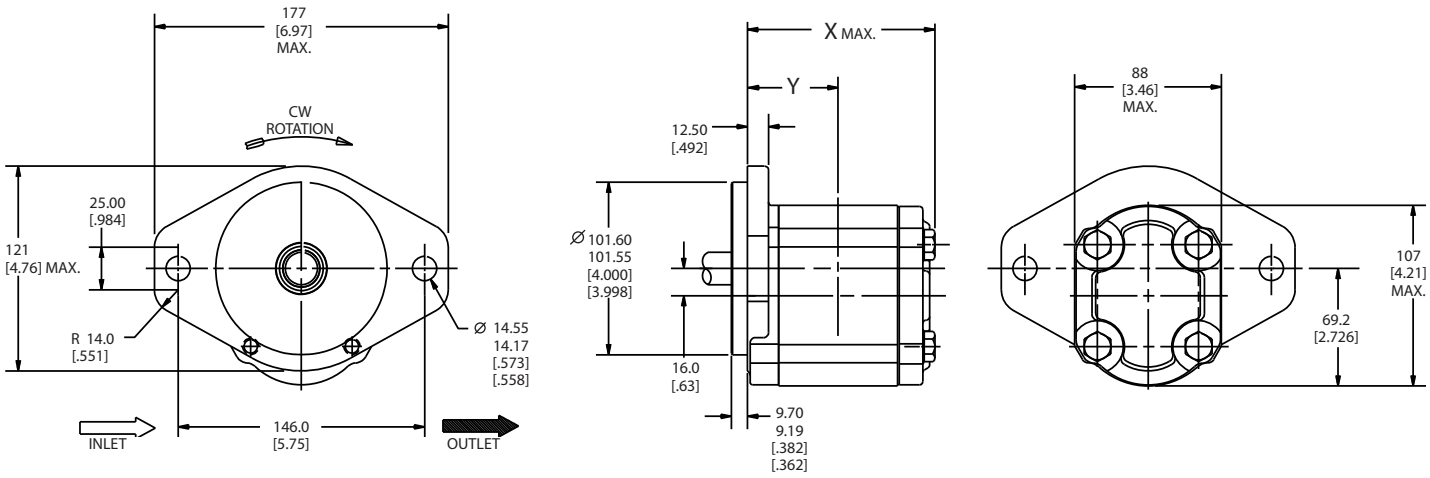
For its displacement and pressure range, the WQ 900 family features one of the most compact envelopes available from any manufacturer. Standard international mounting flange options are outlined below. Dimensions shown outside of brackets are metric units. (See bottom of page 5 for dimensional chart showing "X" and "Y" dimensions.

SAE "A" 2-BOLT ORDER CODE 03

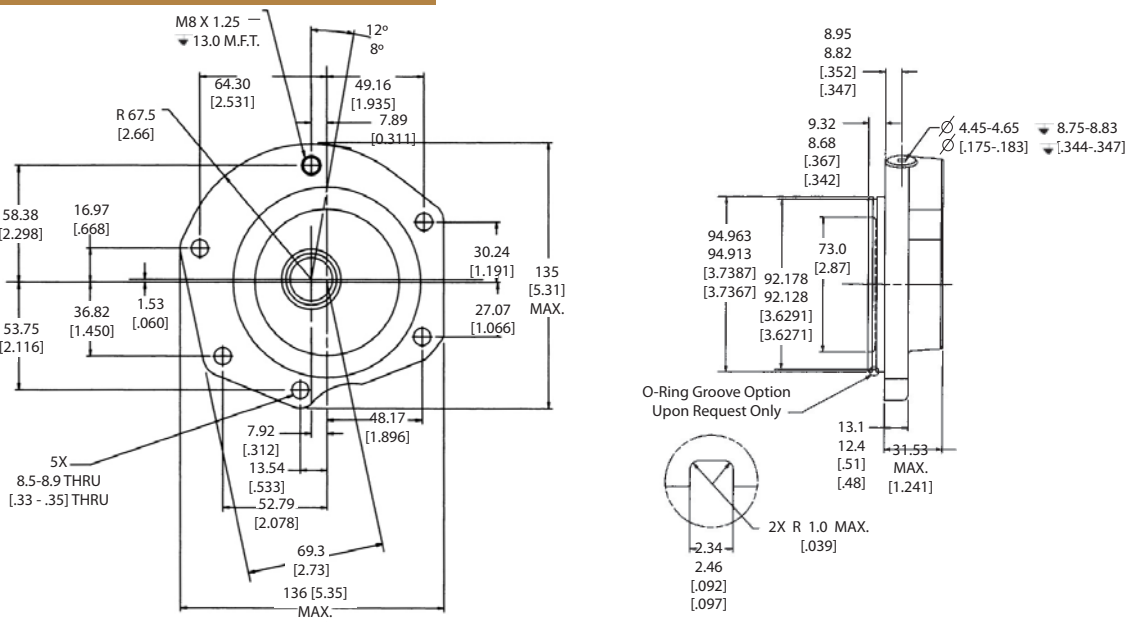


(For counterclockwise rotation inlet and outlet are reversed.)

SAE "B" 2-BOLT ORDER CODE 05

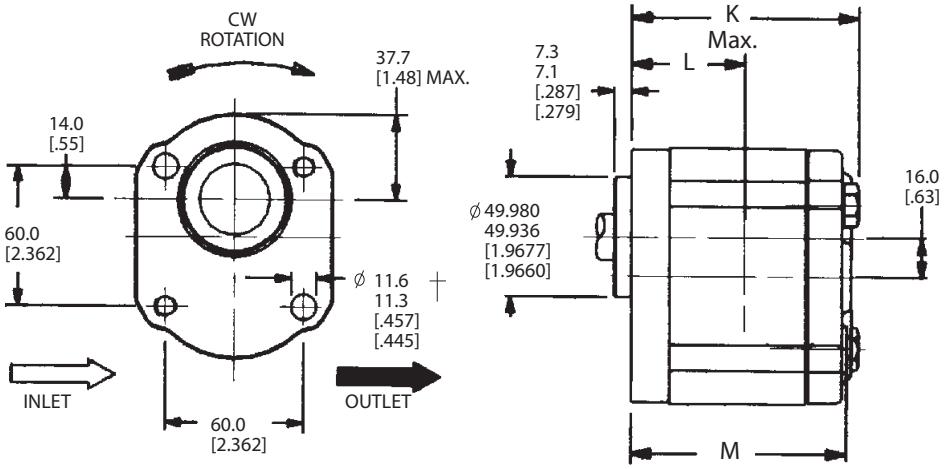


STANDARD PERKINS 5-BOLT FLANGE ORDER CODE 50

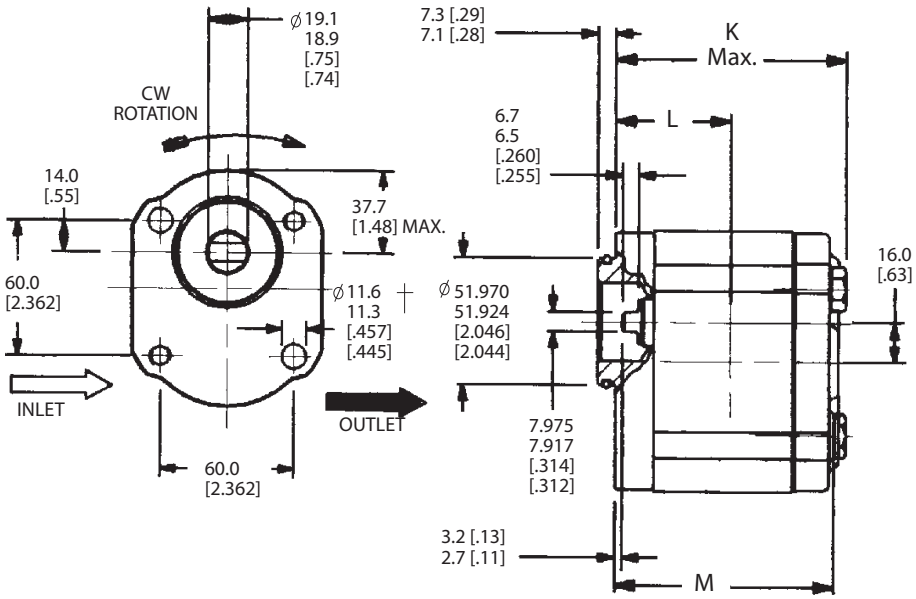


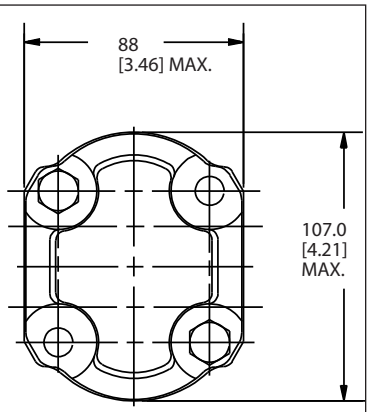
DIMENSIONS & MOUNTING FLANGE OPTIONS

THROUGH BOLT (50.0 mm Pilot) ORDER CODES 10 & 11 *

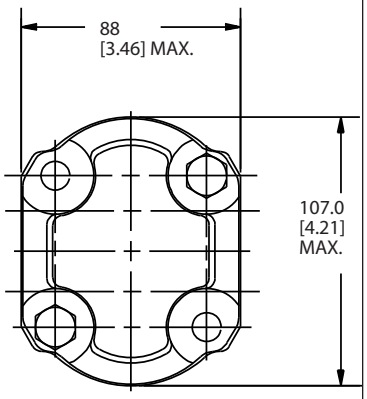


THROUGH BOLT (52.0 mm Pilot) ORDER CODES 12 & 13 **





View A



View B

View A shows mounting bolt orientation for Order Codes 10 & 12.

View B shows orientation for Order Codes 11 & 13.

* Cannot be used with Shaft Order Code QB.

** Only available with a wet tang drive (Shaft Order Code QB).

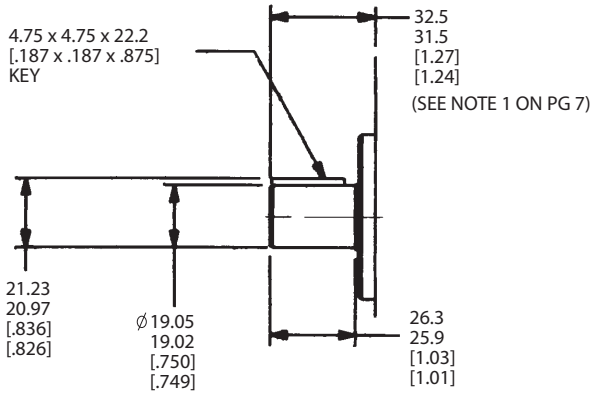
† Use M10-10.9 screws with lockwashers. Torque screws to 60 +10/-0 Nm [528 +88/-0 lb. in.]

			Dims. & Weights with Flange Options 03 & 05			Dims. & Weights with Flange Options 10 thru 13			
Order Code	Displacement cm³	Displacement in³	X Max.	Y (To Port Centerline)	Approx. Wt./ kg. [lbs.]	K Max.	L (To Port Centerline)	M ± 0.28 [± .011]	Approx. Wt. kg. [lbs.]
060	6.0	.370	92.7 [3.65]	44.0 [1.732]	3.6 [7.9]	90.2 [3.55]	41.5 [1.634]	82.6 [3.252]	3.2 [7.0]
080	8.0	.490	95.0 [3.74]	45.5 [1.791]	3.7 [8.1]	92.5 [3.64]	43.0 [1.693]	85.6 [3.370]	3.3 [7.2]
100	10.0	.610	97.9 [3.85]	47.0 [1.850]	3.78 [8.3]	95.4 [3.75]	44.5 [1.752]	88.5 [3.484]	3.4 [7.4]
110	11.0	.670	100.1 [3.94]	47.7 [1.866]	3.82 [8.4]	97.6 [3.84]	45.2 [1.780]	90.0 [3.543]	3.45 [7.6]
140	14.0	.850	103.9 [4.09]	50.0 [1.969]	4.0 [8.8]	101.4 [3.99]	47.5 [1.870]	94.5 [3.720]	3.6 [7.9]
160	16.0	.980	107.5 [4.23]	51.4 [2.02]	4.1 [9.0]	105.0 [4.13]	48.9 [1.925]	97.4 [3.835]	3.7 [8.1]
190	19.0	1.16	111.3 [4.38]	53.7 [2.114]	4.2 [9.2]	108.8 [4.28]	51.2 [2.016]	101.9 [4.012]	3.8 [8.3]
230	23.0	1.40	117.2 [4.61]	56.6 [2.228]	4.4 [9.6]	114.7 [4.52]	54.1 [2.130]	107.8 [4.244]	4.0 [8.8]

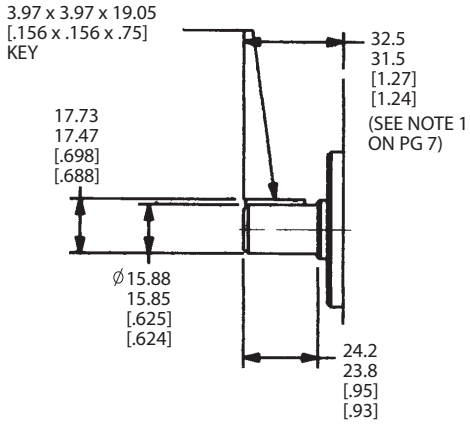
SHAFT OPTIONS

A critical element which must be considered when specifying a WQ900 pump for your application is the shaft drive system. Concentric has both the product and the application experience to insure that your WQ900 pump incorporates the correct shaft for your application. The following depict the 7 standard shaft options for the WQ900 family. Our flexible manufacturing capabilities can accommodate a wide variety of shaft configurations.

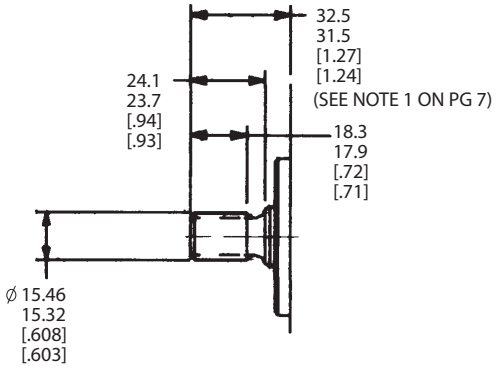
STRAIGHT SHAFT SAE "A" ORDER CODE BA



STRAIGHT SHAFT SAE ORDER CODE CA

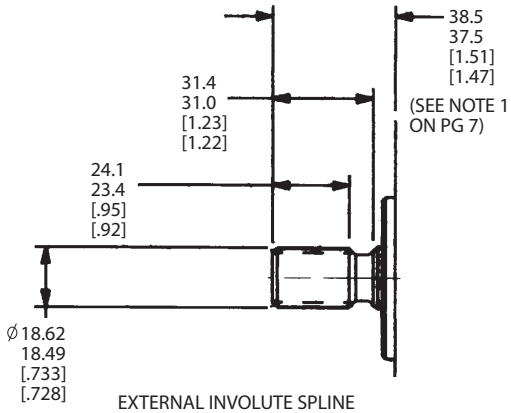


SAE "A" SPLINE ORDER CODE FA



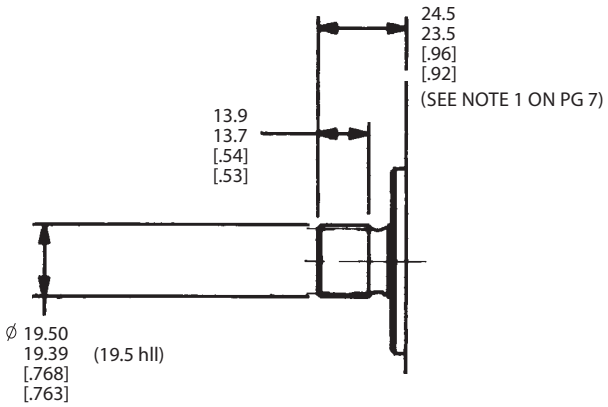
EXTERNAL INVOLUTE SPLINE
16/32 DP, 9 TEETH,
FLAT ROOT, SIDE FIT

SAE "A" SPLINE ORDER CODE GA



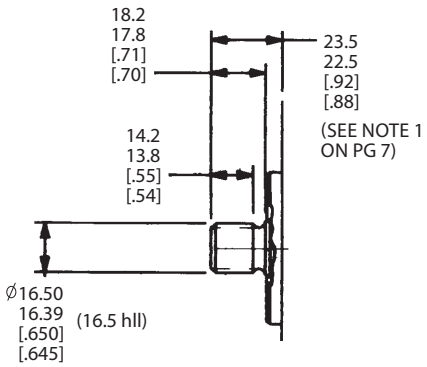
EXTERNAL INVOLUTE SPLINE
16/32 DP, 11 TEETH,
FLAT ROOT, SIDE FIT

DIN 5480 SPLINE SHAFT ORDER CODE HA



EXTERNAL INVOLUTE SPLINE
W20 x 1.25 x 9g, DIN 5480, 14 TEETH
FLAT ROOT, SIDE FIT

DIN 5482 SPLINE SHAFT ORDER CODE JA

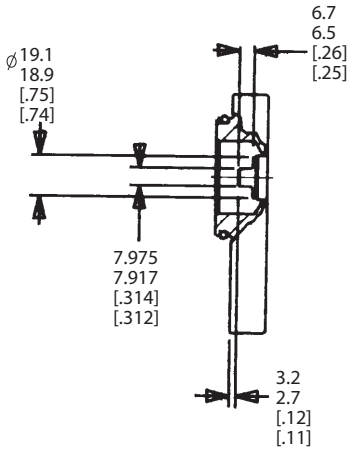


EXTERNAL INVOLUTE SPLINE
B17 x 14, DIN 5482, 9 TEETH
FLAT ROOT, SIDE FIT

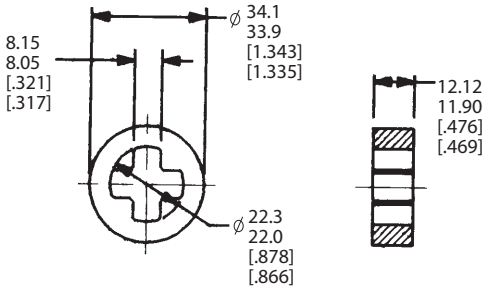
SHAFT OPTIONS

TANG ORDER CODE QB

WET TANG DRIVE (SEE MOUNTING FLANGE OPTIONS 12 & 13 FOR SHAFT DIMENSIONS)



STANDARD COUPLING INCLUDED WITH SHAFT OPTION QB



Key, washer and nut included with pump, where applicable.

SINGLE SECTION SHAFT LOADING

P1 x V ≤ MAX PERMITTED VALUE IN TABLE BELOW

WHERE:
P1 = PRESSURE (BAR)
V = DISPLACEMENT (CM^3/REV)

CALCULATIONS USING METRIC UNITS	
SHAFT OPTION	MAX.PERMITTED VALUE
BA	10488
CA	5500
FA	5240
GA	9608
HA	11304
JA	6215
QB	4917

WHERE:
P1 = PRESSURE (PSI)
V = DISPLACEMENT (IN^3/REV)

CALCULATIONS USING ENGLISH UNITS	
SHAFT OPTION	MAX.PERMITTED VALUE
BA	9257
CA	5005
FA	4640
GA	8505
HA	10010
JA	5505
QB	4353

Note 1: Dimension represents shaft extension for flange Options 03 & 05.

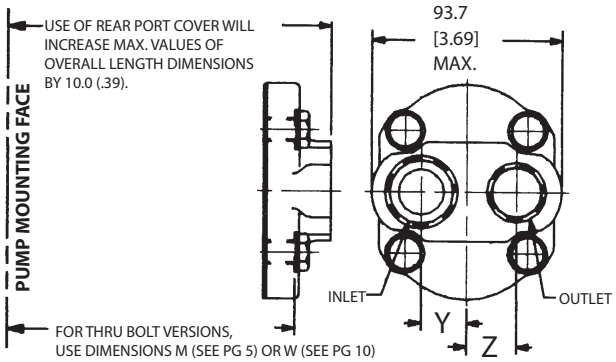
For Through Bolt Options 10 and 11, add 2.5 mm (.098 in.) to the min. & max. shaft extension shown.

PORT OPTIONS

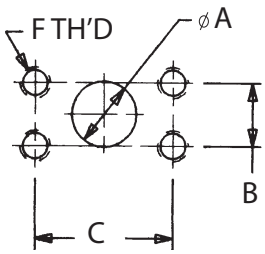
SEE PAGES 4, 5, 9 & 10 FOR DIMENSIONS FROM FLANGE MOUNTING FACE TO PORT CENTERLINE.

The standard size for each type of port is outlined below.

S.A.E. STRAIGHT THREAD PORT PER S.A.E. j514b					INLET	OUTLET
DISP. ORDER CODE	SIDE PORT CODE	REAR PORT CODE	PORT SIZE INLET / OUTLET	COUNTERBORE DIAMETER MIN.	Y ±0.3 [±.012]	Z ±0.3 [±.012]
060	101	501	7/8-14 / 3/4-16	34.14 [1.344] / 30.18 [1.188]	20.2 [.795]	20.2 [.795]
080-160	102	502	1-1/16-12 / 7/8-14	41.28 [1.625] / 34.14 [1.344]	20.2 [.795]	20.2 [.795]
190-230	103	503	1-5/16-12 / 1-1/16-12	48.51 [1.910] / 41.28 [1.625]	24.2 [.950]	22.2 [.870]
BSPP STRAIGHT THREAD PORT PER DIN 3852, PART 2						
060-190	121	521	G 3/4 / G 1/2	33.0 [1.29] / 28.0 [1.10]	20.2 [.795]	20.2 [.795]
230	122	522	G 1 / G 3/4	41.0 [1.61] / 33.0 [1.29]	24.2 [.950]	22.2 [.870]



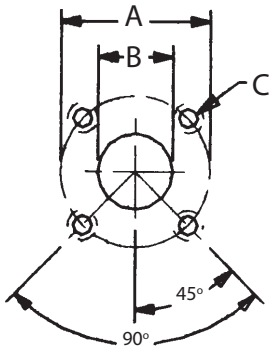
PERFORMANCE ON PAGE 2 REPRESENTS THAT WHICH CAN BE EXPECTED FROM UNITS INCORPORATING FLANGE PORTS.



S.A.E. SPLIT FLANGE PER S.A.E. j518c (STANDARD PRESSURE SERIES)						
DISP. ORDER CODE	SIDE PORT CODE	PORT SIZE INLET / OUTLET	ø A	B	C	F TH'D X MIN. FULL TH'D DEPTH
160-190	140	[3/4] / [1/2]	19.05 [.750] / 12.7 [.500]	22.22 [.875] / 17.47 [.688]	47.63 [1.875] / 38.1 [1.50]	3/8-16 X 22 [.88] / 5/16-18 X 24 [.94]
230	141	[1.0] / [3/4]	25.4 [1.00] / 19.05 [.750]	26.19 [1.031] / 22.22 [.875]	52.37 [2.062] / 47.63 [1.875]	7/16-14 X 22 [.88] / 3/8-16 X 22 [.88]

METRIC SPLIT FLANGE PER ISO/DIS 6162 (35 to 350 BAR SERIES)						
DISP. ORDER CODE	SIDE PORT CODE	PORT SIZE INLET / OUTLET	ø A	B	C	F TH'D X MIN. FULL TH'D DEPTH
160-190	145	19 / 13	19.05 [.750] / 12.7 [.500]	22.22 [.875] / 17.47 [.688]	47.63 [1.875] / 38.1 [1.50]	M10 X 25 [.984] / M8 X 21 [.823]
230	146	25 / 19	25.4 [1.00] / 19.05 [.750]	26.19 [1.031] / 22.22 [.875]	52.37 [2.062] / 47.63 [1.875]	M10 X 23 [.906] / M10 X 25 [.984]

SEE PAGES 4, 5, 9 & 10 FOR DIMENSIONS FROM FLANGE MOUNTING FACE TO PORT CENTERLINE.



SEE PAGES 4, 5, 9 & 10 FOR DIMENSIONS FROM FLANGE MOUNTING FACE TO PORT CENTERLINE.

EUROPEAN 4-BOLT FLANGE					
DISP. ORDER CODE	SIDE PORT CODE	PORT SIZE INLET / OUTLET	ø A	ø B	C TH'D X MIN. FULL TH'D DEPTH
060-190	150	20 / 15	40.0 [1.575] / 35.0 [1.378]	20 [.78] / 15 [.59]	M6 X 13 [.51] / M6 X 13 [.51]
230	151	26 / 18	55.0 [2.165] / 55.0 [2.165]	26 [1.02] / 18 [.71]	M8 X 13 [.51] / M8 X 13 [.51]

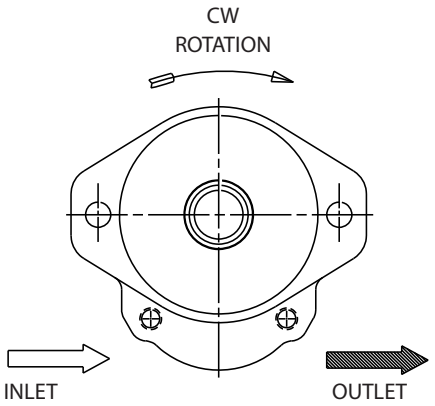
WQ900 MULTIPLE PUMPS

The WQ900 offers multiple pump configurations up to 3 sections standard. Multiple pumps provide multiple hydraulic functions from one power source at a significantly lower cost than separate pumps.

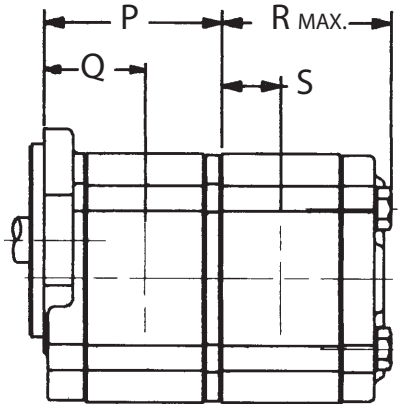
The drawings and charts provide dimensional information as well as shaft and coupling load information for WQ900 two and three section pumps. If the shaft loading, coupling, and section sequence requirements outlined on page 10 are met, WQ900 multiple pumps will exhibit the same performance as WQ900 single section pumps outlined on page 2 of this catalog.

Please contact Concentric for assistance with your WQ900 4 section multiple pump applications.

DOUBLE SECTION / DUAL INLET

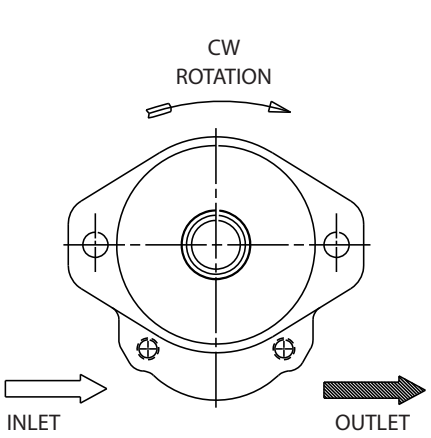


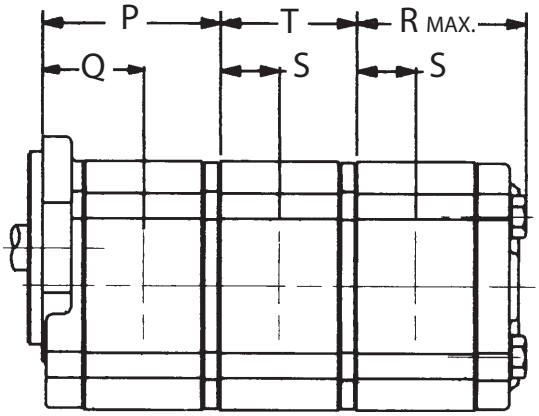
(For counterclockwise rotation, inlet and outlet are reversed.)



Dimensions P & Q are for use with Flange Options 3, 6 & 7.

TRIPLE SECTION / TRIPLE INLET

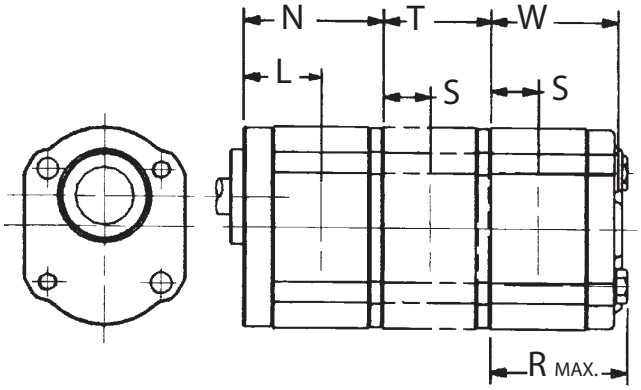




Order Code	Displacement		P ±0.26 [±.010]	Q (To Port Centerline)	Approx. Wt. P Section kg. [lbs.]	R Max.	S (To Port Centerline)	Approx. Wt. R Section kg. [lbs.]	T ±0.26 [±.010]	Approx. Wt. T Section kg. [lbs.]	N ±0.26 [±.010]	L (To Port Centerline)	Approx. Wt. N Section kg [lbs.]	W ±0.15 [±.006]
	cm^3	in^3												
060	6.0	.370	77.6 [3.055]	44.0 [1.73]	3.1 [6.9]	73.4 [2.88]	25.6 [1.01]	2.7 [6.1]	59.1 [2.327]	1.8 [4.1]	75.1 [2.957]	41.5 [1.63]	2.7 [6.1]	66.6 [2.622]
080	8.0	.490	80.6 [3.173]	45.6 [1.79]	3.2 [7.1]	76.4 [3.01]	27.0 [1.06]	2.8 [6.3]	62.1 [2.445]	1.9 [4.3]	78.1 [3.075]	43.0 [1.69]	2.8 [6.3]	69.6 [2.740]
100	10.0	.610	83.5 [3.287]	47.0 [1.85]	3.31 [7.3]	79.3 [3.12]	28.5 [1.12]	2.95 [6.5]	65.0 [2.559]	2.0 [4.5]	81.0 [3.189]	44.5 [1.75]	2.95 [6.5]	72.5 [2.855]
110	11.0	.670	85.0 [3.346]	47.8 [1.88]	3.36 [7.4]	80.8 [3.18]	29.2 [1.14]	2.99 [6.6]	66.5 [2.618]	2.1 [4.6]	82.5 [3.248]	45.2 [1.77]	2.99 [6.6]	74.0 [2.914]
140	14.0	.850	89.5 [3.524]	50.0 [1.96]	3.5 [7.7]	85.2 [3.35]	31.5 [1.24]	3.1 [6.9]	71.0 [2.795]	2.2 [4.9]	87.0 [3.425]	47.5 [1.87]	3.1 [6.9]	78.5 [3.091]
160	16.0	.980	92.4 [3.638]	51.4 [2.02]	3.6 [7.9]	88.1 [3.46]	33.0 [1.29]	3.2 [7.1]	73.9 [2.909]	2.3 [5.1]	89.9 [3.53]	48.9 [1.92]	3.2 [7.1]	81.4 [3.205]
190	19.0	1.16	96.9 [3.815]	53.7 [2.11]	3.7 [8.2]	92.7 [3.64]	35.2 [1.38]	3.4 [7.4]	78.4 [3.087]	2.4 [5.4]	94.4 [3.717]	51.2 [2.01]	3.4 [7.4]	85.9 [3.382]
230	23.0	1.40	102.8 [4.047]	56.6 [2.22]	3.9 [8.6]	98.6 [3.88]	38.2 [1.50]	3.5 [7.8]	[84.3 [3.319]	2.6 [5.8]	100.3 [3.949]	57.1 [2.24]	3.5 [7.8]	91.8 [3.614]

WQ900 MULTIPLE PUMPS

Dimensions N & L are for use with Flange Options 10 thru 13.



REDUCED INLET MULTIPLE PUMPS

Based on your application requirements the WQ900 multiple pump may be supplied with a single inlet on two section pump applications, dual inlets on three section pump applications and ***3 inlets on four section applications. (Note: Contact Concentric for assistance with your 4 section applications.)** Reduced inlets provide overall system savings by reducing the cost of redundant inlet hose and fittings. Contact Concentric regarding your reduced inlet multiple pump application.

MULTIPLE SECTION SHAFT LOADING

TWO SECTION:
(P1 x V1) + (P2 x V2) ≤ MAX. PERMITTED VALUE IN TABLE BELOW

THREE SECTION:
(P1 x V1) + (P2 x V2) + (P3 xV3) ≤ MAX. PERMITTED VALUE IN TABLE BELOW

*CONTACT HALDEX FOR FOUR SECTION PUMPS.

WHERE:
P1 = PRESSURE (BAR)
V = DISPLACEMENT (CM^3/REV)

CALCULATIONS USING METRIC UNITS	
SHAFT OPTION	MAX.PERMITTED VALUE
BA	10488
CA	5500
FA	5240
GA	9608
HA	11304
JA	6215
QB	4917

WHERE:
P1 = PRESSURE (PSI)
V = DISPLACEMENT (IN^3/REV)

CALCULATIONS USING ENGLISH UNITS	
SHAFT OPTION	MAX.PERMITTED VALUE
BA	9257
CA	5005
FA	4640
GA	8505
HA	10010
JA	5505
QB	4353

COUPLING LOADING

TWO SECTION: **(P2 x V2) ≤**	**4849 (METRIC)**	**4293 (ENGLISH)**
THREE SECTION: **(P2 x V2) + (P3 xV3) ≤**	**4849 (METRIC)**	**4293 (ENGLISH)**

In multiple pumps, shaft end section must have largest displacement. Each consecutive section must have displacement equal to or smaller than section preceding.

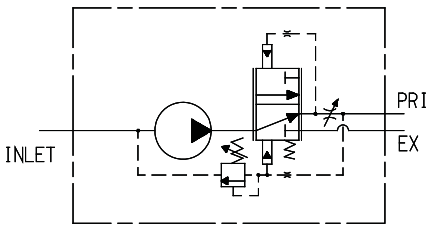
VALVE OPTIONS

An optional rear cover provides multiple valve options for the WQ900 family.

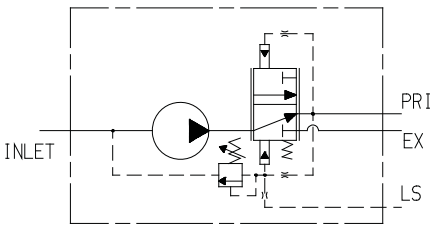
OPTIONS	DESCRIPTION
AA*	Priority Flow Control, Relief on Priority - Side Ports
BA	Dynamic Load Sense, Relief on Priority - Side Ports
CA*	Priority Flow Control, Relief on Priority - Rear Ports
DA	Dynamic Load Sense, Relief on Priority - Rear Ports
EA	Relief Valve, External To Tank - Side Ports

* Must specify flow control setting. See page 14, Option 10.

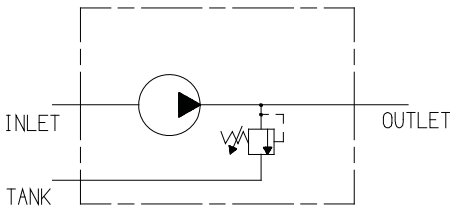
SCHEMATICS



OPTIONS AA & CA



OPTIONS BA & DA

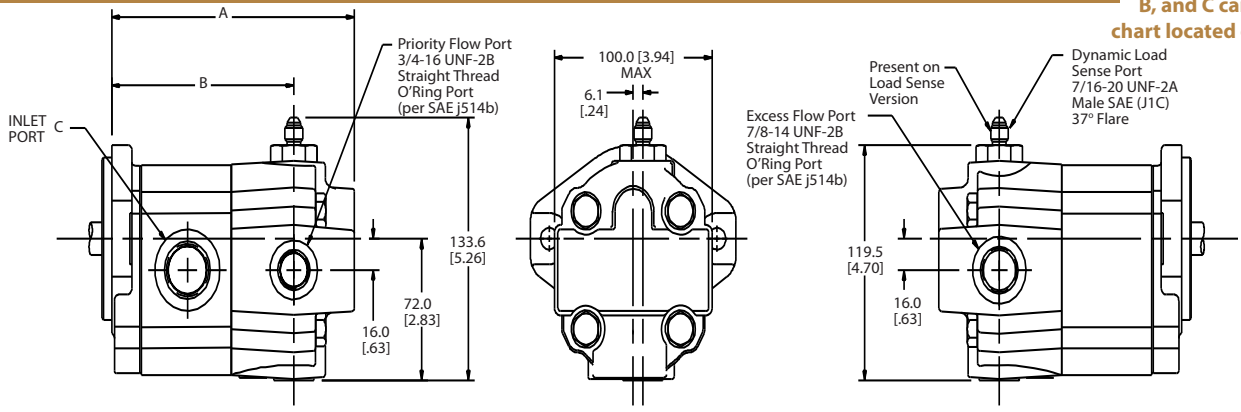


OPTION EA

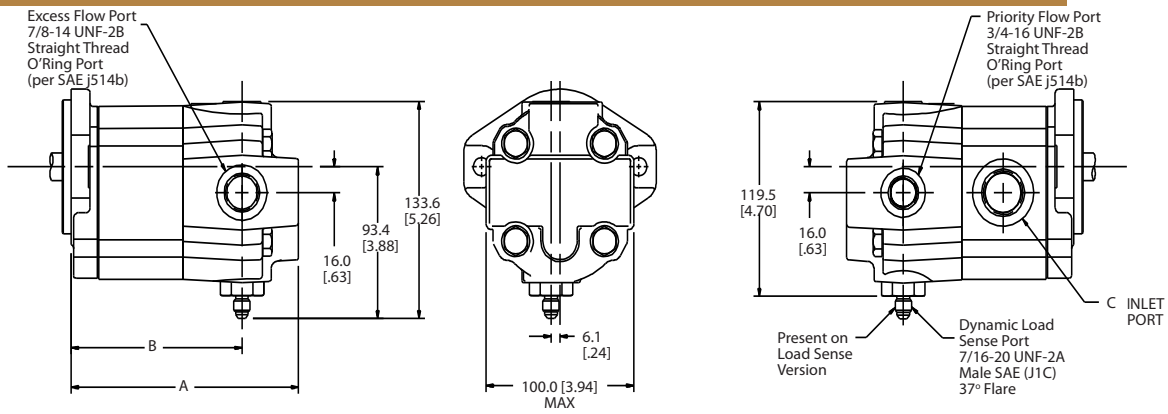
VALVE OPTION DIMENSIONS

Priority Flow Control / Dynamic Load Sense - Side Ports - CCW Rotation (as viewed from shaft end) - ORDER CODES AA & BA

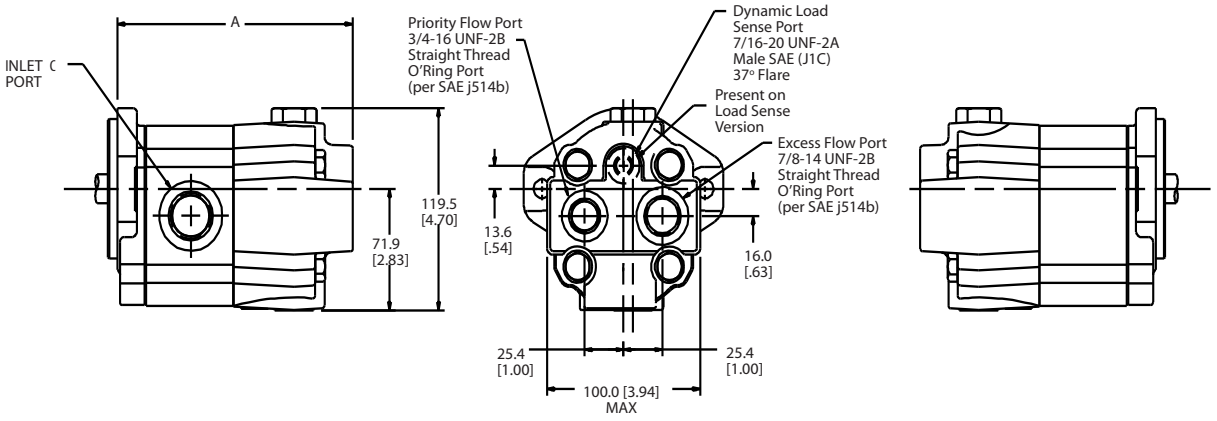
NOTE: Dimensions A, B, and C can be found in chart located on bottom of page 12.



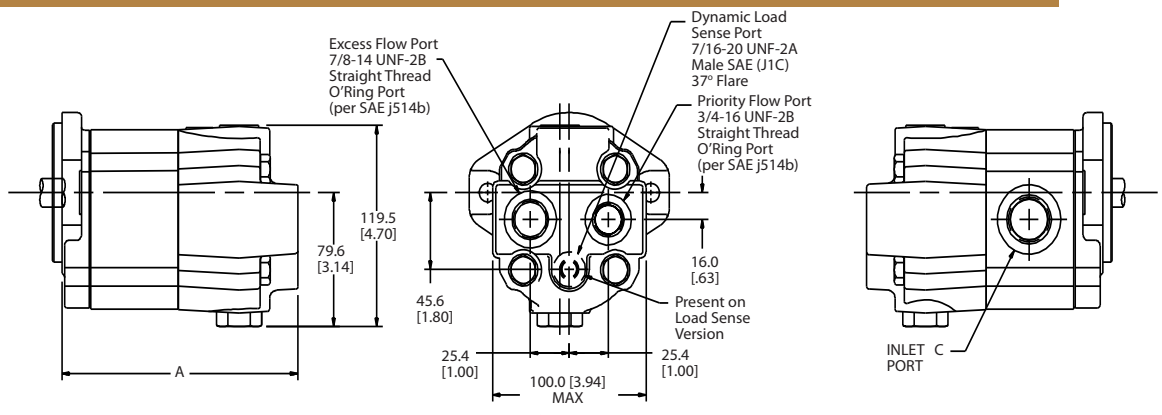
Priority Flow Control / Dynamic Load Sense - Side Ports - CW Rotation (as viewed from shaft end) - ORDER CODES AA & BA



Priority Flow Control / Dynamic Load Sense - Rear Ports - CCW Rotation (as viewed from shaft end) - ORDER CODES CA & DA

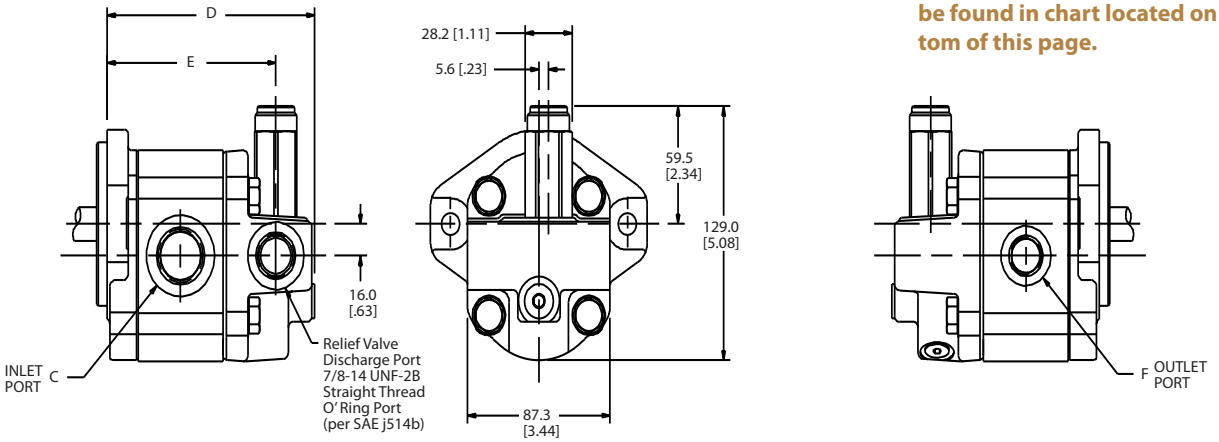


Priority Flow Control / Dynamic Load Sense - Rear Ports - CW Rotation (as viewed from shaft end) - ORDER CODES CA & DA



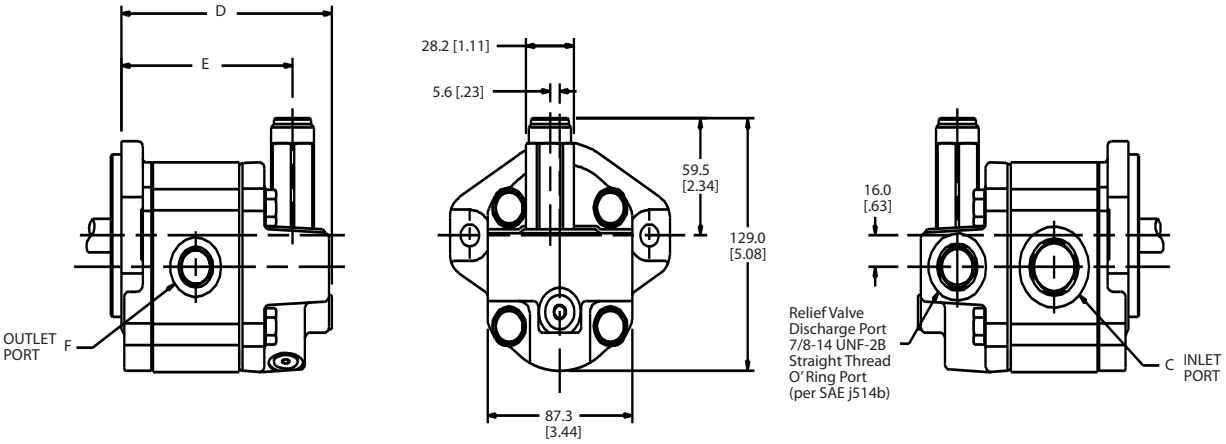
VALVE OPTION DIMENSIONS
(Cont.)

Cartridge Relief Valve - Side Ports - CCW Rotation (as viewed from shaft end) - ORDER CODE EA



NOTE: Dimensions D, E, and F can be found in chart located on bottom of this page.

Cartridge Relief Valve - Side Ports - CW Rotation (as viewed from shaft end) - ORDER CODE EA



Tabulated Chart for Valve Option Dimensions

(See dimensional drawings on page 11 and above.)

DISPLACEMENT		A MAX.		B (TO PORT CENTERLINE)		C	D MAX.		E (TO PORT CENTERLINE)		F
CM³	IN³	FLANGE OPTIONS 3, 6 & 7	FLANGE OPTIONS 10 THRU 13	FLANGE OPTIONS 3, 6 & 7	FLANGE OPTIONS 10 THRU 13	INLET PORT	FLANGE OPTIONS 3, 6 & 7	FLANGE OPTIONS 10 THRU 13	FLANGE OPTIONS 3, 6 & 7	FLANGE OPTIONS 10 THRU 13	OUTLET PORT
6.0	.37	147.7 [5.81]	145.2 [5.71]	109.7 [4.32]	107.2 [4.22]	7/8-14	125.5 [4.94]	123.0 [4.84]	101.8 [4.01]	99.3 [3.91]	3/4-16
8.0	.49	150.7 [5.93]	148.2 [5.83]	112.7 [4.44]	110.2 [4.34]	1-1/16-12	128.5 [5.06]	126.0 [4.96]	104.8 [4.12]	102.3 [4.03]	7/8-14
10.0	.61	153.6 [6.05]	151.1 [5.95]	115.6 [4.55]	113.1 [4.45]	1-1/16-12	131.4 [5.17]	128.9 [5.07]	107.7 [4.24]	105.2 [4.14]	7/8-14
11.0	.67	155.1 [6.10]	152.6 [6.01]	117.1 [4.61]	114.6 [4.51]	1-1/16-12	132.9 [5.23]	130.4 [5.13]	109.2 [4.30]	106.7 [4.20]	7/8-14
14.0	.85	159.6 [6.28]	157.1 [6.18]	121.6 [4.79]	119.1 [4.69]	1-1/16-12	137.4 [5.41]	134.9 [5.31]	113.7 [4.47]	111.2 [4.38]	7/8-14
16.0	.98	162.5 [6.40]	160.0 [6.30]	124.5 [4.90]	122.0 [4.80]	1-1/16-12	140.3 [5.52]	137.8 [5.43]	116.6 [4.59]	114.1 [4.49]	7/8-14
19.0	1.16	167.0 [6.57]	164.5 [6.47]	129.0 [5.08]	126.5 [4.98]	1-5/16-12	144.8 [5.70]	142.3 [5.60]	121.1 [4.77]	118.6 [4.67]	1-1/16-12
23.0	1.40	172.9 [6.81]	170.4 [6.71]	134.9 [5.31]	132.4 [5.21]	1-5/16-12	150.7 [5.93]	148.2 [5.83]	127.0 [5.00]	124.5 [4.90]	1-1/16-12

INSTALLATION INFORMATION

DIMENSIONS

Dimensions shown in brackets are in English units. Dimensions shown outside of brackets are metric units.

FLUIDS

Most premium grade petroleum base fluids can be used with WQ900 pumps. Optimum operating viscosity is 16-40 cSt (74-185 SSU). Minimum operating viscosity is 10 cSt (59 SSU) at maximum rated pressure and maximum rated speed. Maximum operating viscosity is 750 cSt (3465 SSU). Maximum cold start viscosity is 2000 cSt (9240 SSU). Contact Concentric for additional information regarding the WQ900 performance using other fluids.

OPERATING TEMPERATURES

Fluid temperature range:

Mineral Oil: Max. 93°C (200°F) continuous
Max. 105°C (221°F) intermittent

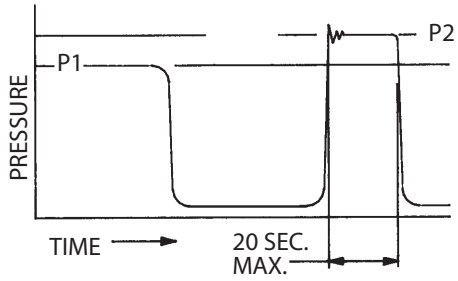
FILTRATION

Proper filtration is critical to the trouble free operation of any hydraulic system. For optimum pump life ISO 4406/1986 (Code 18/14) is recommended.

INLET CONDITIONS

Inlet vacuum should not exceed 0.35 Bar below atmospheric pressure (10 In.Hg.). Continuous operation at vacuums in excess of 0.2 Bar below atmospheric pressure (6 In.Hg.) are not recommended. Max. gauge pressure for pressurized inlet is 2.0 Bar (29 PSI).

PRESSURE RATINGS



P1 - Continuous
P2 - Intermittent

Total cycle for P2 is 40 seconds.

ORDERING INFORMATION

	STANDARD PUMP												VALVE OPTIONS		
	1	2	3	3	3	4	5	6	7	7	7	8	9	10	11
	DESIGN CODE	SEAL MATERIAL	DISPLACEMENT	DISPLACEMENT	DISPLACEMENT	ROTATION	FLANGE	SHAFT	PORT	PORT	PORT	VALVE OPTION	VALVE TYPE	FLOW SETTING	RELIEF VALVE SETTING
EXAMPLE	WQ09A3	B	060	080	100	R	03	BA	101	102	102	A	AA	12	R34
Your Options	WQ09A3												A*		

1. DESIGN CODE

WQ09A1	WQ09A2	WQ09A3	WQ09A4

2. SEAL MATERIAL

B	Buna
V	Viton
C	Combination of Both

3. DISPLACEMENT

Order Code	Cm.³	In.³
060	6	.366
080	8	.488
100	10	.610
110	11	.671
140	14	.854
160	16	.976
190	19	1.159
230	23	1.403

4. ROTATION

R	Clockwise
L	Counter Clockwise

5. MOUNTING FLANGES

03	SAE "A" 2-Bolt
05	SAE "B" 2-Bolt
10	Through Bolt (50 mm pilot, 60 x 60 mm bolt pattern) (Non-Tang) +
11	Same as Order Code 10, but with opposite mounting bolt orientation +
12	Through Bolt (52 mm pilot, 60 x 60 mm bolt pattern) (Wet Tang Only) +
13	Same as Order Code 12, but with opposite mounting bolt orientation +
50	Standard Perkins 5-Bolt Flange

6. DRIVE SHAFTS

BA	SAE "A" Straight Shaft 3/4" Dia.
CA	SAE Straight Shaft 5/8" dia.
FA	SAE "A" Spline (9 Tooth)
GA	SAE "A" Spline (11 Tooth)
HA	DIN 5480 Spline Shaft (W20 x 1.25 x 9g - 14T) +
JA	DIN 5482 Spline Shaft (B17 x 14 - 9T) +
QB	Tang (Wet Tang Only) +

7. STANDARD PORTING

DISP. ORDER CODE	SIDE PORT CODE	REAR PORT CODE	DESCRIPTION
060	101	501	SAE Straight Thread (7/8-14,3/4-16)
080-160	102	502	SAE Straight Thread (1-1/16-12,7/8-14)
190-230	103	503	SAE Straight Thread (1-5/16-12,1-1/16-12)
060-190	121	521	BSPP Straight Thread (G3/4,G1/2)
230	122	522	BSPP Straight Thread (G1,G3/4)
160-190	140	N/A	SAE Split Flange (3/4,1/2)
230	141	N/A	SAE Split Flange (1.0,3/4)
160-190	145	N/A	Metric Split Flange (19,23)
230	146	N/A	Metric Split Flange (25,19)
060-190	150	N/A	European 4-Bolt Flange (20,15)
230	151	N/A	European 4-Bolt Flange (26,18)

Note: Above are standard offerings. For other porting options, please contact factory. Rear inlet port is not available with any valve option. Side inlet must be used on all valve options.

8. VALVE OPTIONS

A	Priority Flow Control, Relief on Priority/**Side** Ports
B	Priority Flow Control with Dynamic Load Sense, Relief on Priority / **Side** Ports
C	Priority Flow Control, Relief on Priority/**Rear** Ports
D	Priority Flow Control with Dynamic Load Sense, Relief on Priority/**Rear** Ports
E	Relief Valve with **External** Drain
N	Not Applicable

9. VALVE TYPE DESIGNATION

AA	Priority Flow Control, Relief on Priority/**Side** Ports
BA*	Priority Flow Control with Dynamic Load Sense, Relief on Priority/**Side** Ports
CA	Priority Flow Control, Relief on Priority/**Rear** Ports
DA*	Priority Flow Control with Dynamic Load Sense, Relief on Priority/**Rear** Ports
EA	Relief Valve with **External** Drain
NN	Not Applicable

* Cannot specify flow control for valve type options BA and DA (above).

10. FLOW CONTROL SETTINGS

03	3 LTR (.79 GPM)
06	6 LTR (1.58 GPM)
09	9 LTR (2.37 GPM)
12	12 LTR (3.17 GPM)
15	15 LTR (3.96 GPM)
18	18 LTR (4.75 GPM)
21	21 LTR (5.54 GPM)
24	24 LTR (6.34 GPM)
NN	Not Applicable

11. RELIEF VALVE SETTINGS

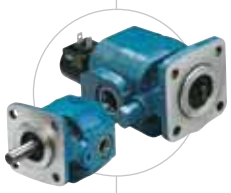
R**	
**	Relief pressure divided by 100. Available in 100 PSI increments to 3400 PSI. Example: R34 = 3400 PSI
NN	Not Applicable

Note: Relief valve setting is defined at .25 GPM full bypass.

All pumps require a minimum 25-piece order with the exception of those options designated with "+" (100-piece minimum).

PUMPS & MOTORS

Cast Iron Pumps — Heavy Duty



GC Series Pumps

Displacements
0.065 to 0.711 cu. In. (1.06 to 11.65 cc)

GC Series High/Low Pumps

High Pressure Displacements
0.065 to 0.258 cu. In. (1.06 to 4.22 cc)
Low Pressure Displacements
0.258 to 0.776 cu. In. (4.22 to 12.71 cc)
Maximum Pressure
4,000 psi (276 bar)
Maximum Speed
4,000 rpm

F12 & F15 Ferra Series Pumps

F12 Displacements
0.976 to 2.502 cu. In. (16 – 41 cc)
F15 Displacements
1.159 to 3.051 cu. In. (19 to 50 cc)
Maximum Pressure
4,000 psi (276 bar)
Maximum Speed
3,600 rpm

F20/F30 Pumps & F20-LS/F30-LS Load Sense Ferra Series Pumps

Displacements
1.41 to 9.82 cu. In. (23 to 161 cc)
Maximum Pressure
4,000 psi (276 bar)
Maximum Speed
3,600 rpm

D Series Pumps

Displacements
0.232 to 1.395 cu. In. (3.80 to 22.85 cc)

D Series High/Low Pumps

High Pressure Displacements
0.465 cu. In. (7.62 cc)
Low Pressure Displacements
0.930 to 1.395 cu. In. (15.24 to 22.86 cc)
Maximum Pressure
3,000 – 4,000 psi (207 – 276 bar)
Maximum Speed
3,600 – 4,000 rpm

Aluminum Pumps — Medium/Light Duty

W-Series Pumps

W100 Displacements
0.031 to 0.122 cu. In. (0.50 to 2.00 cc)
W300 Displacements
0.049 to 0.347 cu. In. (0.80 to 5.70 cc)
W600 Displacements
0.244 to 0.732 cu. In. (4 to 12 cc)
W900 Displacements
0.305 to 1.891 cu. In. (5 to 31 cc)
W1200 Displacements
1.526 to 2.014 cu. In. (25 to 33 cc)
W1500 Displacements
1.159 to 3.051 cu. In. (19 to 50 cc)
Maximum Pressure
4,000 psi (276 bar)
Maximum Speed
500 to 4,000 rpm

WK900 CALMA Pumps

Displacements
0.305 to 1.648 cu. In. (5 to 27 cc)
Maximum Pressure
3,336 psi (230 bar)
Maximum Speed
4,000 rpm

Fluid Motors

Cast Iron

Displacements
0.065 to 9.82 cu. In. (1.06 to 161 cc)
Speed
Up to 10,000 rpm

Aluminum

Displacements
0.244 to 3.050 cu. In. (4 to 50 cc)
Speed
Up to 4,000 rpm

Flow Dividers

GC & D Series

GC Displacements
0.097 to 0.517 cu. In. (1.58 to 8.47 cc)
D Displacements
0.232 to 0.813 cu. in. (3.8 to 13.32 cc)
Maximum Pressure
4,500 psi (310 bar)
Maximum Input Flow Per Section
14 gpm (53 lpm)

CONCENTRIC

Call us for more information
For application assistance or detailed literature on any Concentric product line, call us toll-free: **1-800-572-7867.**
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PRODUCT RANGE

HE Powerpacks
12/24/48 VDC 0.3 – 4.5 kW and
0.75 – 3 kW AC modular power packs

HE Box Powerpacks
12/24/48 VDC modular powerpacks
in weatherproof boxes

Pressure Switches
5 - 350 bar, connecting/disconnecting

W100 Hydraulic pumps
0,5 - 2,0 cc 227 bar

W300 Hydraulic pumps
0,8 – 5,7 cc 230 bar

W600 Hydraulic pumps / motors
3 – 12 cc 276 bar

W900 Hydraulic pumps / motors
5 – 31 cc/section 276 bar

Calma The new quiet pumps
6,2 - 23,7 cc/section 250 bar

WQ900 The quiet pumps
5 - 23 cc/section 230 bar

WP900X Hydraulic pumps
16 - 31 cc/section 276 bar

W1500 Hydraulic pumps / motors
19 - 50 cc/section 276 bar

F12 FERRA Heavy duty pumps
16 - 41 cc/section 276 bar

F15 FERRA Heavy duty pumps
19 - 50 cc/section 276 bar

F20/F30 (LS) Hydraulic pumps / motors
23 – 161 cc/section 276 bar

GPA Internal Gear pumps
1,7 – 63 cc/section 100 bar

GC Hydraulic pumps / motors
1,06 – 11,65 cc/section 276 bar

D Hydraulic pumps
3,8 – 22,9 cc/section 207 bar

H Hydraulic pumps
9,8 – 39,4 cc/section 207 bar

II-Stage Hydraulic pumps
4,2 – 22,8 cc/section 276 bar

Rotary Flow Dividers
3,8 – 13,3 cc/section 300 bar

Transmission pumps

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Concentric is an innovator in flow control and fluid power, supplying proprietary systems and components for trucks, buses and industrial vehicles, worldwide. With 1,156 employees and sales of 1,977 million Swedish Kronor, Concentric AB is listed on the Stockholm Stock Exchange (www.concentricAB.com).

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