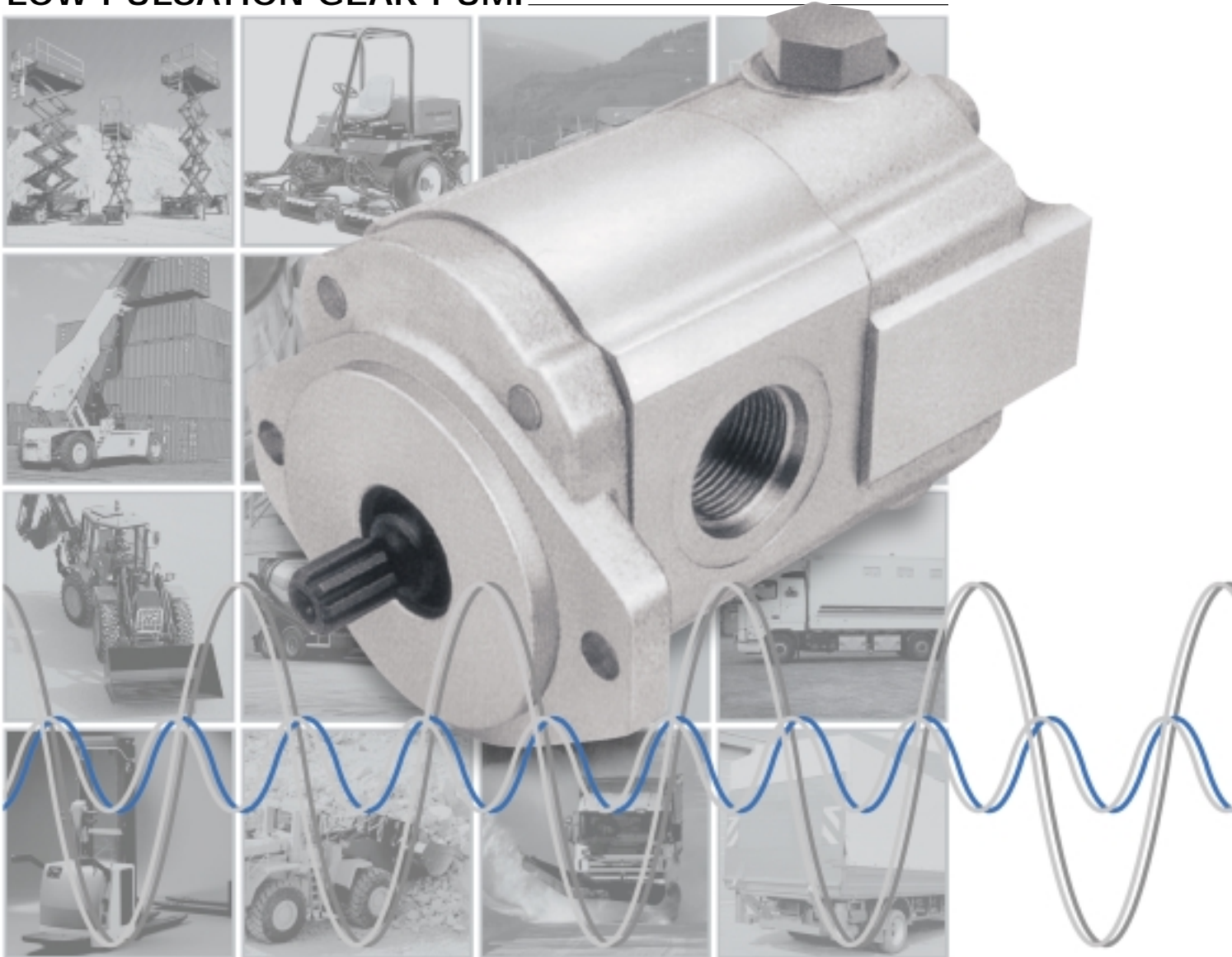


**Haldex**

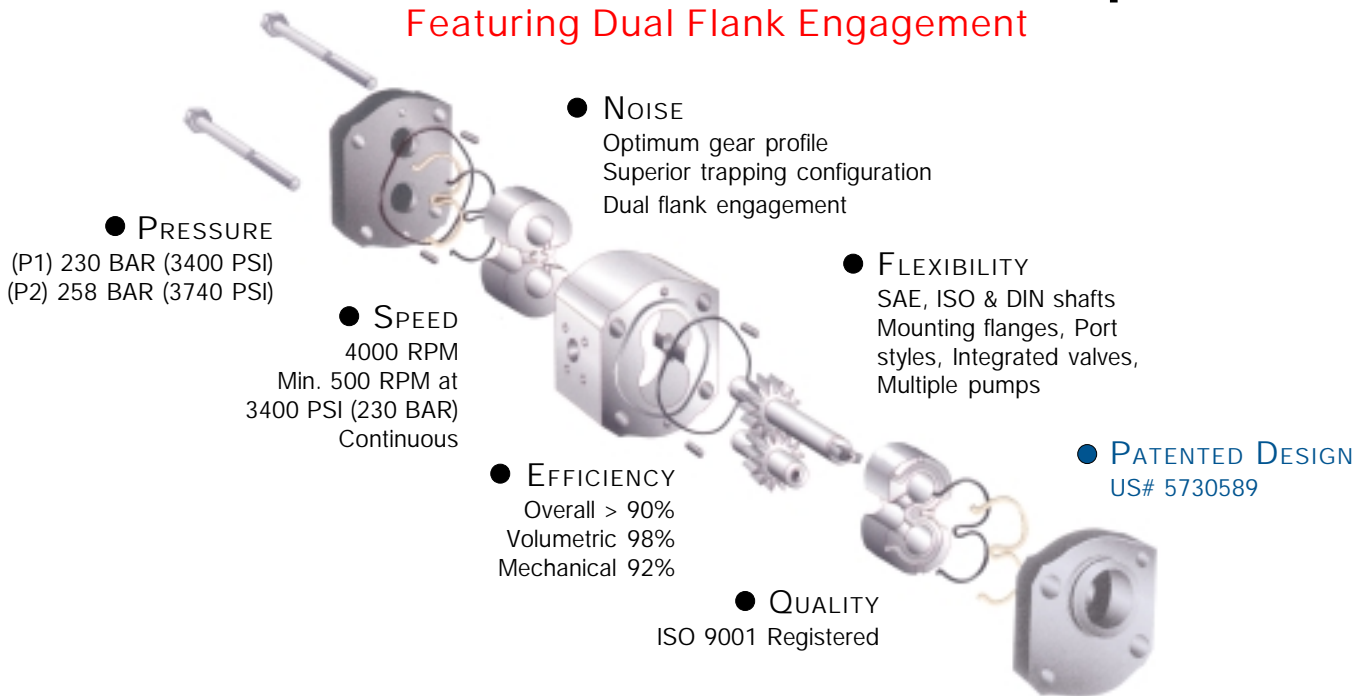
**WQ900 HIGH EFFICIENCY  
LOW PULSATION GEAR PUMP**



# WQ900

## Low Pulsation Gear Pump

Featuring Dual Flank Engagement



### Quiet Efficiency

Haldex 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 Haldex 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). Haldex 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

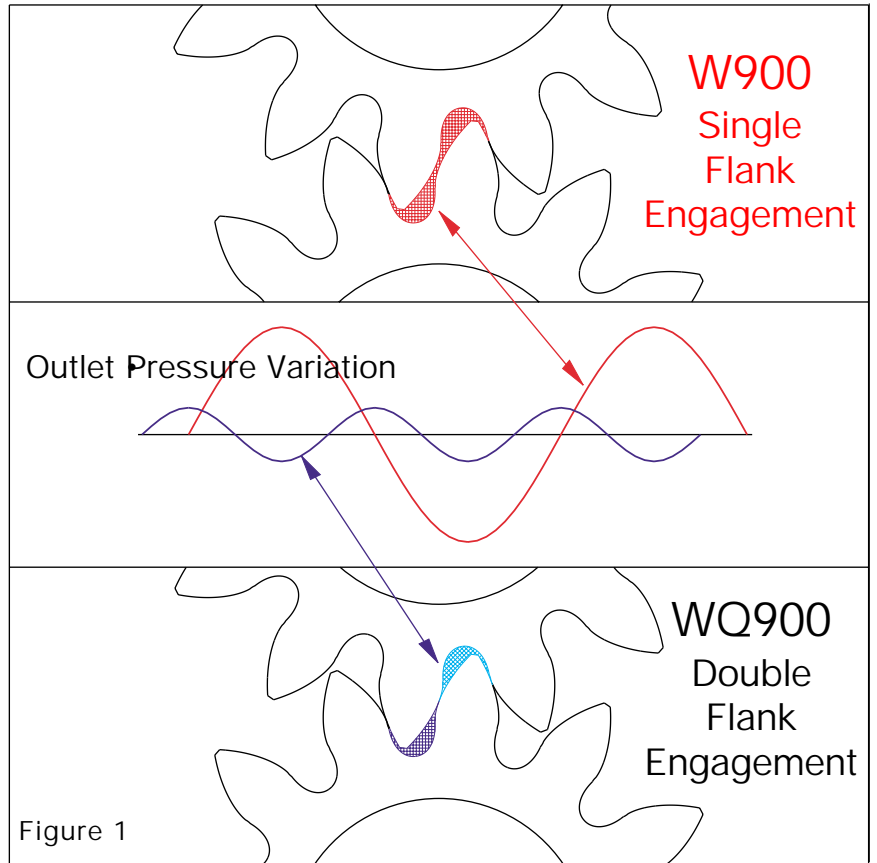
Model Code		060	080	100	110	140	160	190	230
Displacement	cm <sup>3</sup> /rev	6	8	10	11	14	16	19	23
	in <sup>3</sup> /rev	.366	.488	.610	.671	.854	.976	1.159	1.403
Inlet Pressure	BAR (PSI)	min. 0.2 BAR below atmospheric (6 IN.HG) max. 2.0 BAR (29 PSI)							
Max. Continuous Pressure (P1)	BAR	230 BAR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

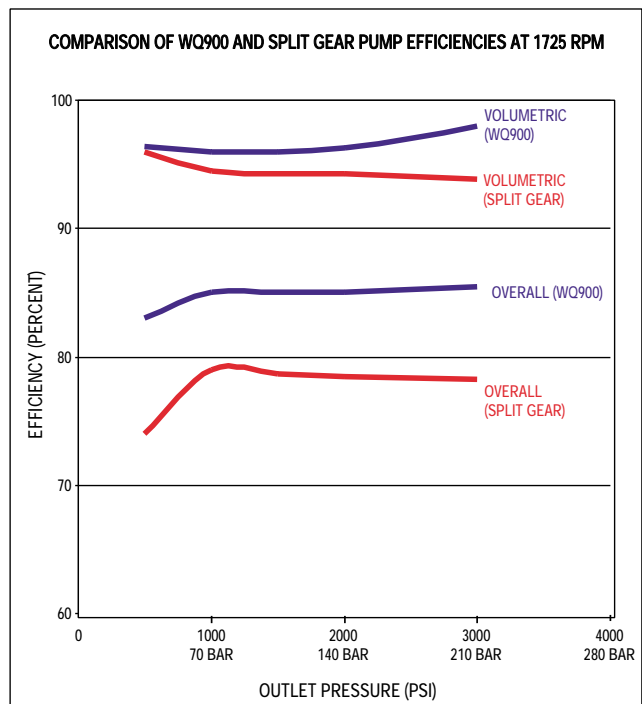
Figure 1  
 Figure 1 shows the trapped oil of a standard gear pump and of a WQ pump. The resulting pulsation shows a higher amplitude and lower frequency for standard gear pumps. The optimum is lower amplitude as demonstrated by the WQ with dual flank engagement.



# 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.

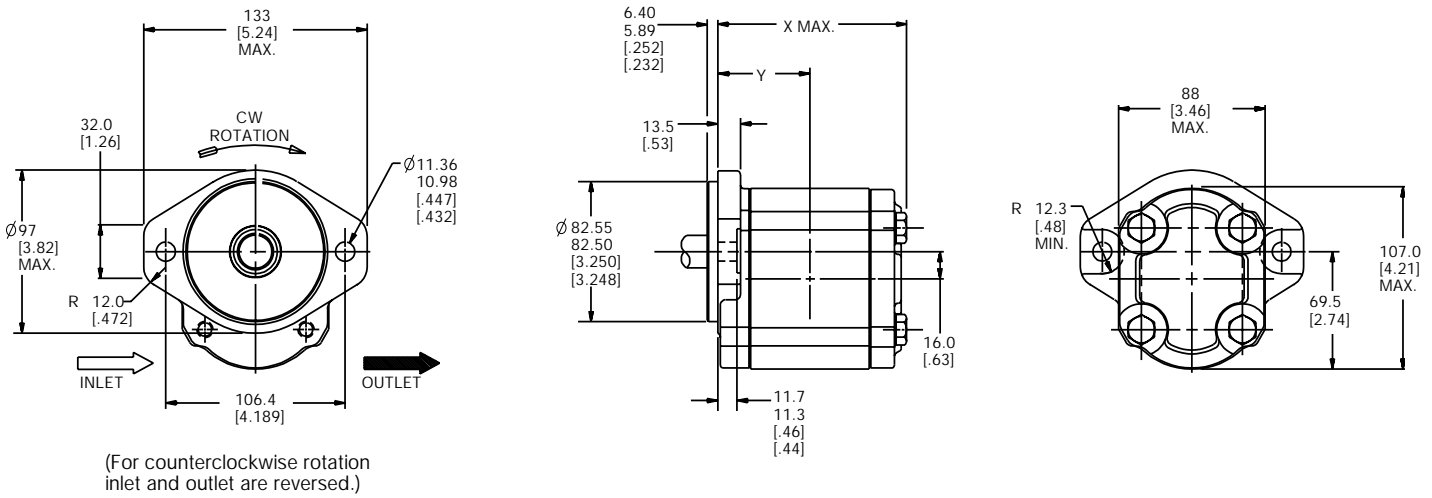


Pictures on front page are used with the kind permission of eg: Atlet, BT, Huddig, Scania, Toro and Volvo Construction Equipment.

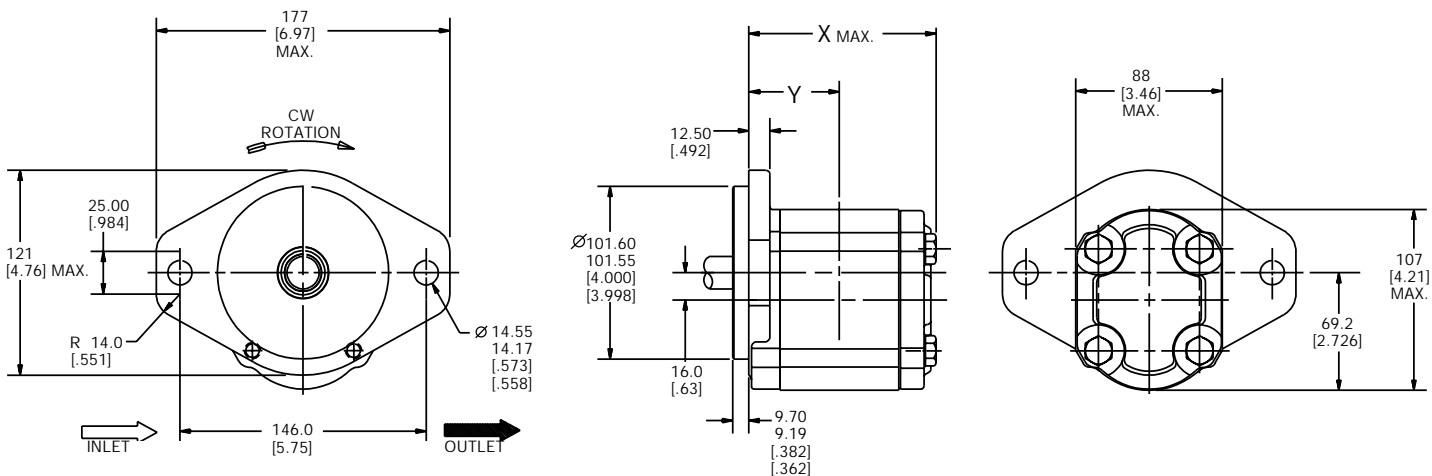
# 4 DIMENSIONS & MOUNTING FLANGE OPTIONS

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.)

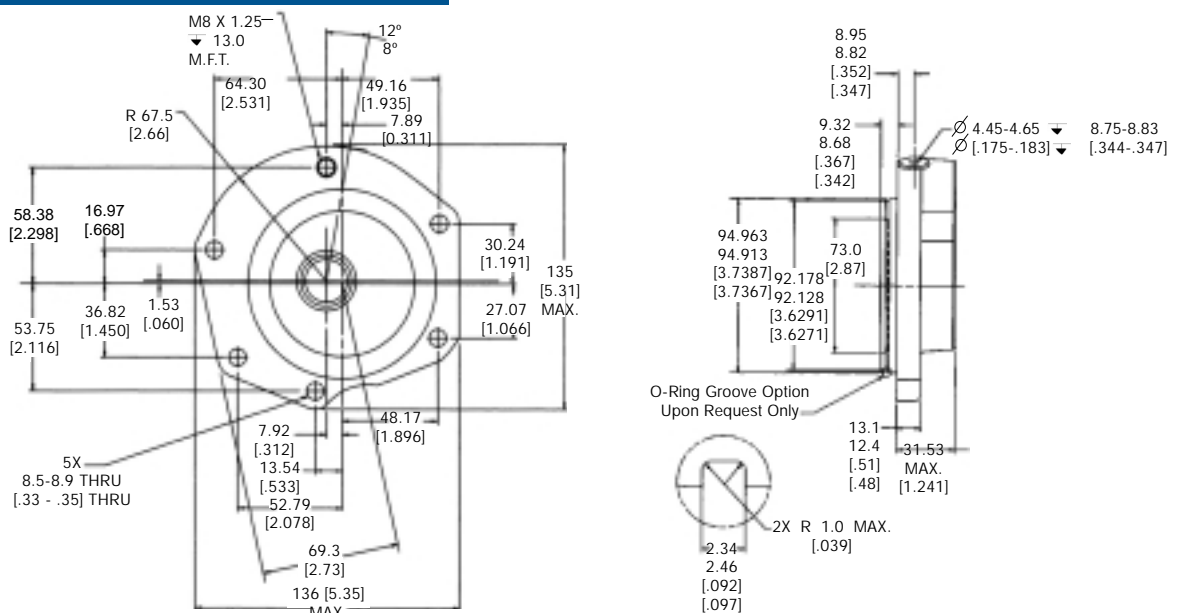
## SAE "A" 2-BOLT ORDER CODE 03



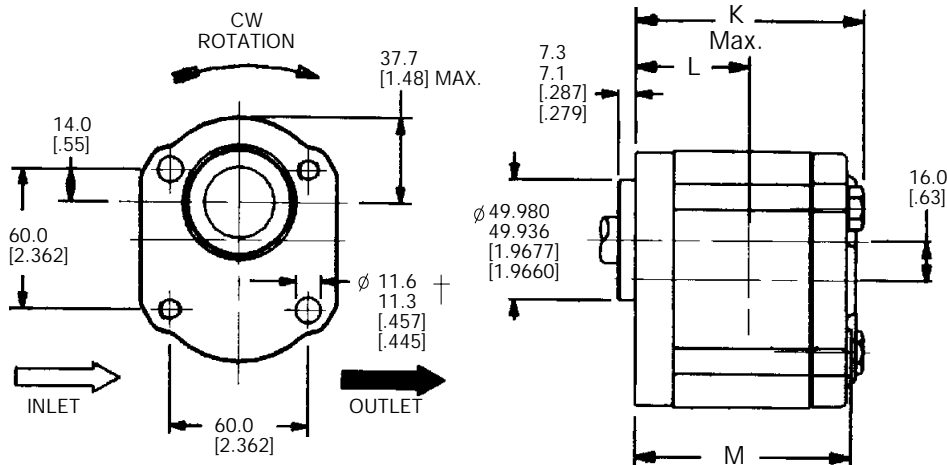
## SAE "B" 2-BOLT ORDER CODE 05



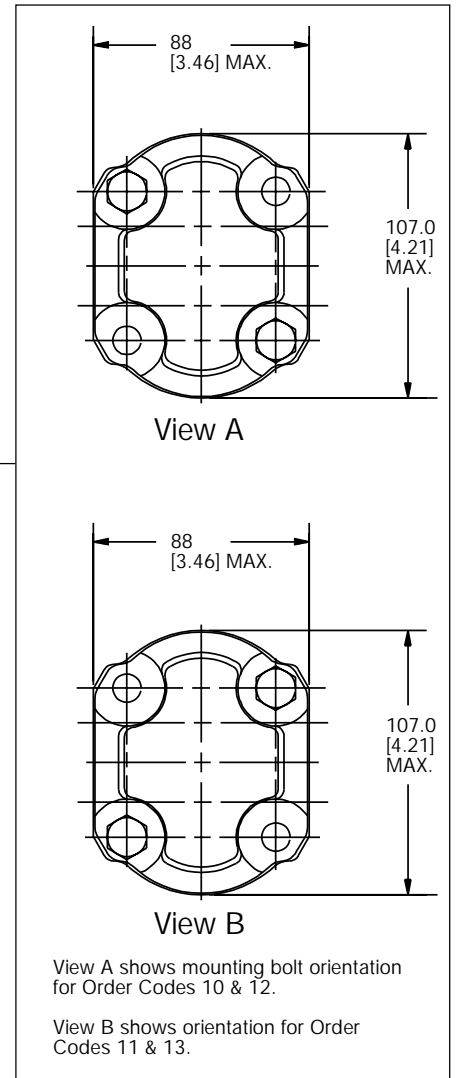
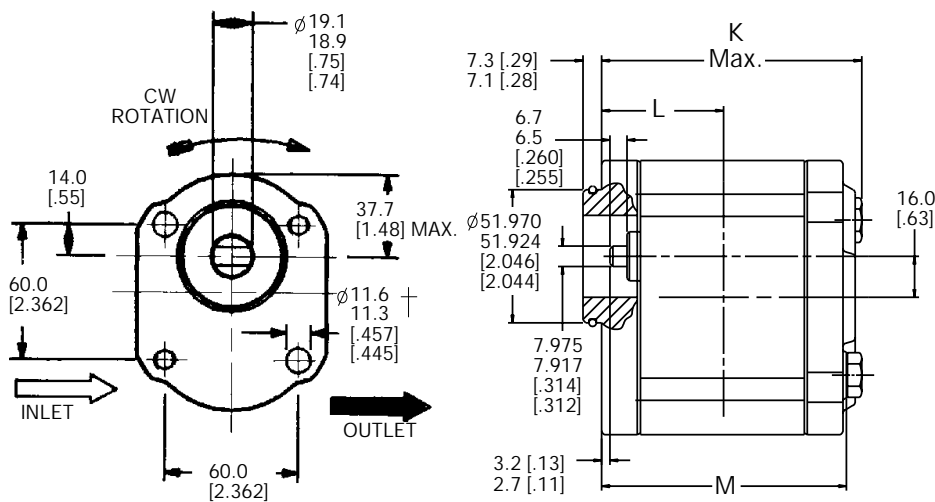
## STANDARD PERKINS 5-BOLT FLANGE ORDER CODE



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



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



\* Cannot be used with Shaft Order Code QB.

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

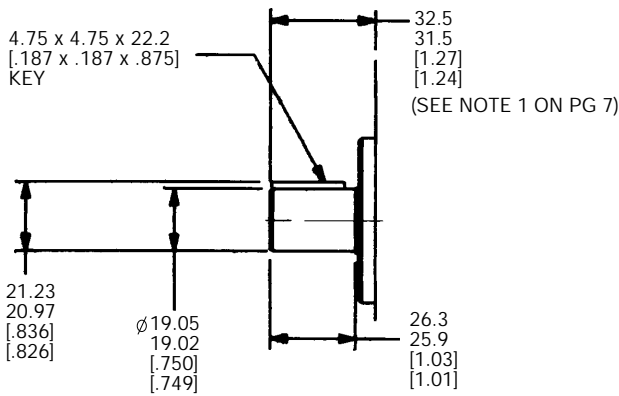
† Use M10-10.9 screws with lockwashers. Torque screws to 60 +10/-0 Nm [528 +88/-0 lb. in.]

Order Code	Displacement cm <sup>3</sup> in <sup>3</sup>		Dims. & Weights with Flange Options 03 & 05			Dims. & Weights with Flange Options 10 thru 13			
			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]

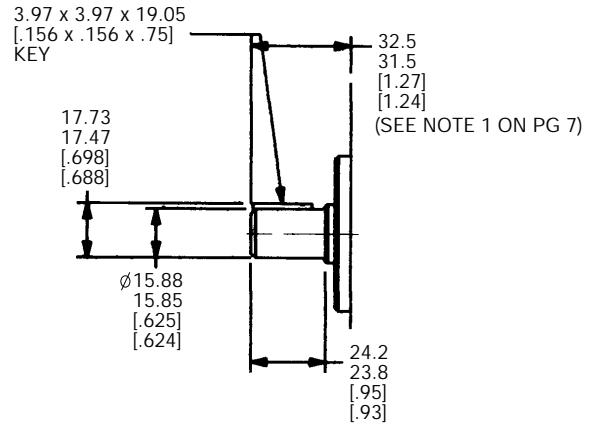
# SHAFT OPTIONS

A critical element which must be considered when specifying a WQ900 pump for your application is the shaft drive system. Haldex 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.

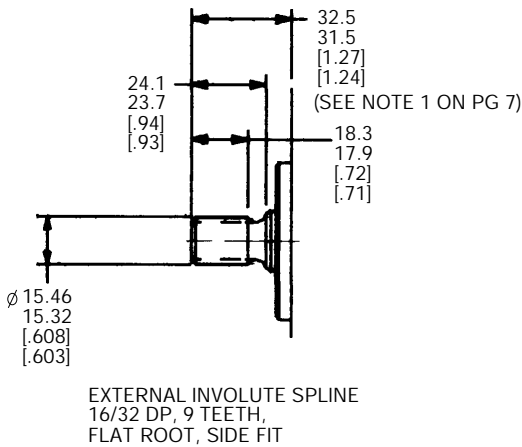
**STRAIGHT SHAFT SAE "A" ORDER CODE BA**



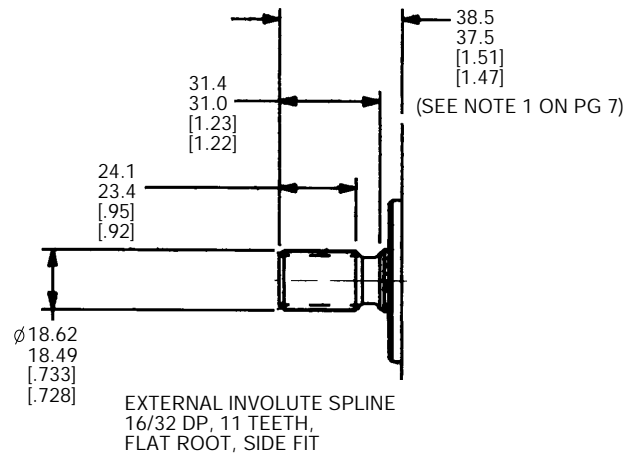
**STRAIGHT SHAFT SAE ORDER CODE CA**



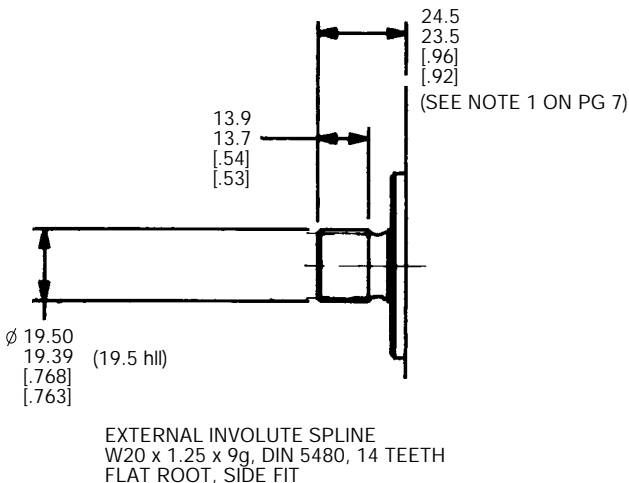
**SAE "A" SPLINE ORDER CODE FA**



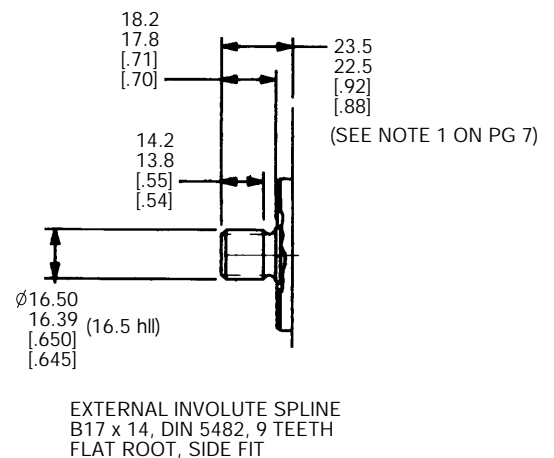
**SAE "A" SPLINE ORDER CODE GA**



**DIN 5480 SPLINE SHAFT ORDER CODE HA**

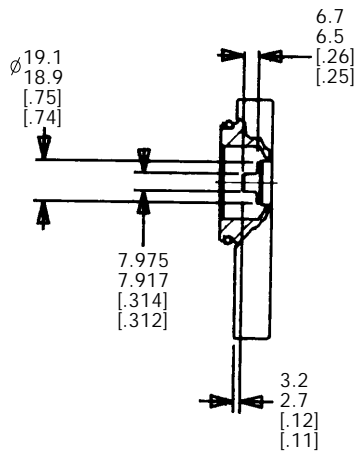


**DIN 5482 SPLINE SHAFT ORDER CODE JA**

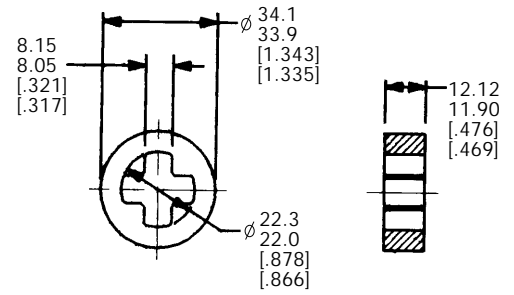


## TANG ORDER CODE QB

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

$P1 \times V < \text{MAX PERMITTED VALUE IN TABLE BELOW}$

WHERE:

P1 = PRESSURE (BAR)

V = DISPLACEMENT (CM<sup>3</sup>/REV)

WHERE:

P1 = PRESSURE (PSI)

V = DISPLACEMENT (IN<sup>3</sup>/REV)

### CALCULATIONS USING METRIC UNITS

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

### 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.

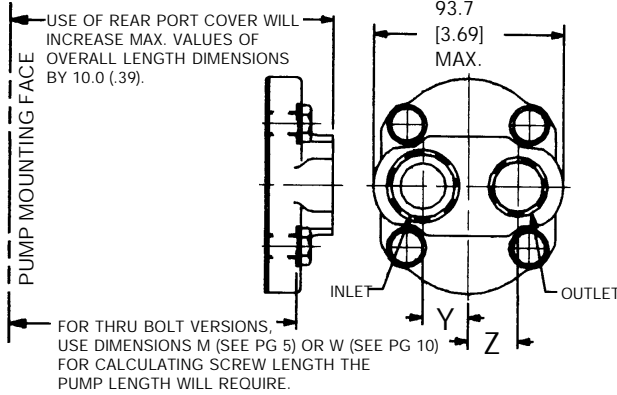
For Through Bolt Options 10 and 11, add 2.5 mm (.098 in.) to the min. & max. shaft extension shown.

# PORT OPTIONS

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



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

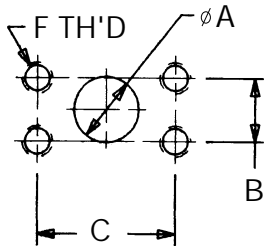


S.A.E. STRAIGHT THREAD PORT PER S.A.E. j514b					INLET	OUTLET
DISP. ORDER CODE	SIDE PORT CODE	REAR PORT CODE	PORT SIZE INLET OUTLET	COUNTERBORE DIAMETER MIN.	Y + 0.3 [+.012]	Z + 0.3 [+.012]
060	101	501	7/8-14 3/4-16	34.14 [1.344] 30.18 [1.188]	20.2 [.795]	20.2 [.795]
080-160	102	502	1-1/16-12 7/8-14	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]
BSPB 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)

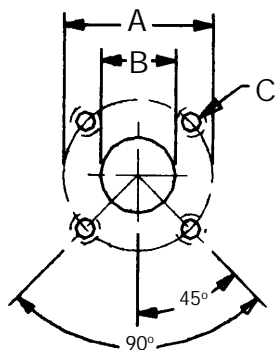
DISP. ORDER CODE	SIDE PORT CODE	PORT SIZE INLET OUTLET	ø A	B	C	F TH'D X MIN. FULL TH'D DEPTH
160-190	140	3/4 1/2	19.05 [.750] 12.7 [.500]	22.22 [.875] 17.47 [.688]	47.63 [1.875] 38.1 [1.50]	3/8-16 X 22 [.88] 5/16-18 X 24 [.94]
230	141	1.0 3/4	25.4 [1.00] 19.05 [.750]	26.19 [1.031] 22.22 [.875]	52.37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



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

## 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.

## EUROPEAN 4-BOLT FLANGE

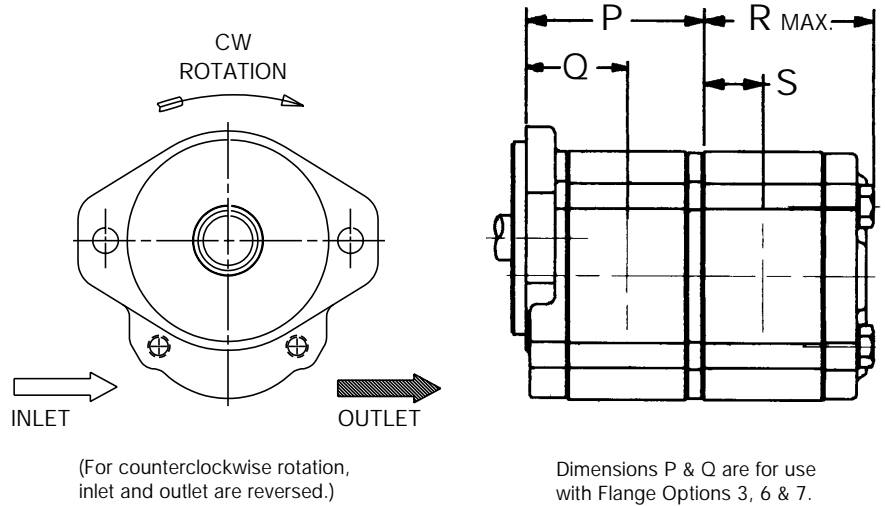
DISP. ORDER CODE	SIDE PORT CODE	PORT SIZE INLET OUTLET	ø A	ø B	C TH'D X MIN. FULL TH'D DEPTH
060-190	150	20 15	40.0 [1.575] 35.0 [1.378]	20 [.78] 15 [.59]	M6 X 13 [.51] M6 X 11 [.51]
230	151	26 18	55.0 [2.165] 55.0 [2.165]	26 [1.02] 18 [.71]	M8 X 11 [.51] M8 X 11 [.51]

## DOUBLE SECTION / DUAL INLET

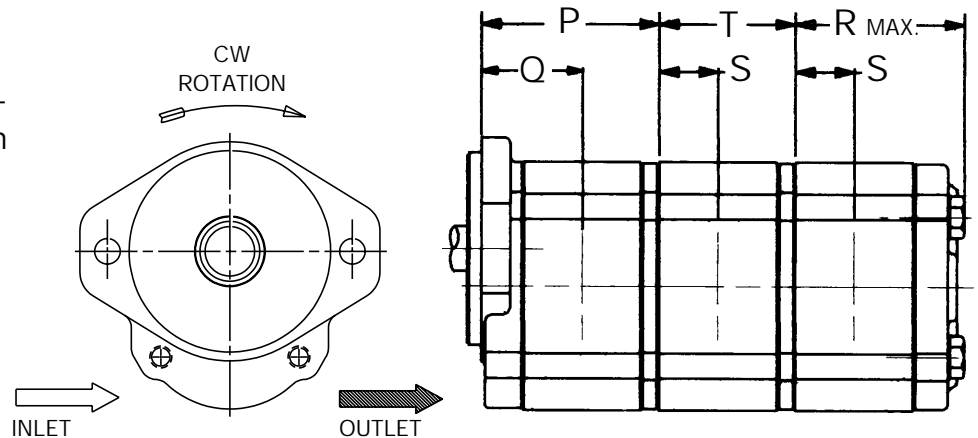
The WQ900 offers multiple pump configurations up to 3 sections standard. Multiple pumps provide multiple hydraulic functions from one power source at a significantly lower cost than separate pumps.

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 sequencing 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 Haldex for assistance with your WQ900 4 section multiple pump applications.



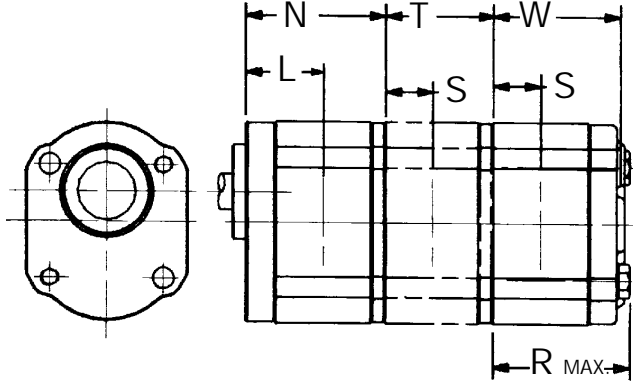
## TRIPLE SECTION / TRIPLE INLET



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 <sup>3</sup>	in <sup>3</sup>												
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 Haldex for assistance with your 4 section applications.) Reduced inlets provide overall system savings by reducing the cost of redundant inlet hose and fittings. Contact Haldex regarding your reduced inlet multiple pump application.

## MULTIPLE SECTION SHAFT LOADING

TWO SECTION:  
 $(P1 \times V1) + (P2 \times V2) < \text{MAX. PERMITTED VALUE IN TABLE BELOW}$

THREE SECTION:  
 $(P1 \times V1) + (P2 \times V2) + (P3 \times V3) < \text{MAX. PERMITTED VALUE IN TABLE BELOW}$

\*CONTACT HALDEX FOR FOUR SECTION PUMPS.

WHERE:  
 P1 = PRESSURE (BAR)  
 V = DISPLACEMENT (CM<sup>3</sup>/REV)

WHERE:  
 P1 = PRESSURE (PSI)  
 V = DISPLACEMENT (IN<sup>3</sup>/REV)

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

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:  
 $(P2 \times V2) < 4849 \text{ (METRIC)} \quad 4293 \text{ (ENGLISH)}$

THREE SECTION:  
 $(P2 \times V2) + (P3 \times V3) < 4849 \text{ (METRIC)} \quad 4293 \text{ (ENGLISH)}$

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

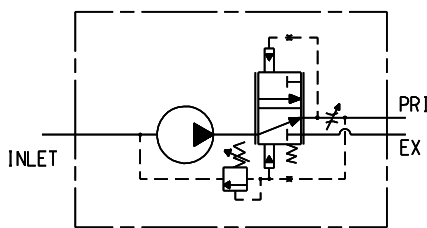
## VALVE OPTIONS

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

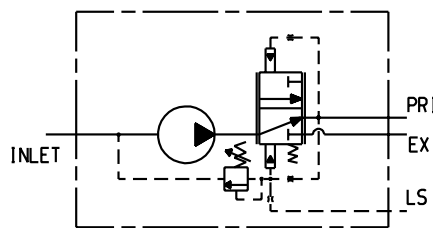
OPTIONS	DESCRIPTION
AA*	Priority Flow Control, Relief on Priority - Side Ports
BA	Dynamic Load Sense, Relief on Priority - Side Ports
CA*	Priority Flow Control, Relief on Priority - Rear Ports
DA	Dynamic Load Sense, Relief on Priority - Rear Ports
EA	Relief Valve, External To Tank - Side Ports

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

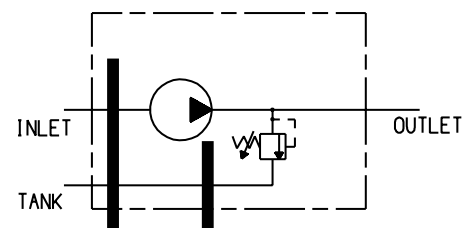
### SCHEMATICS



OPTIONS AA & CA



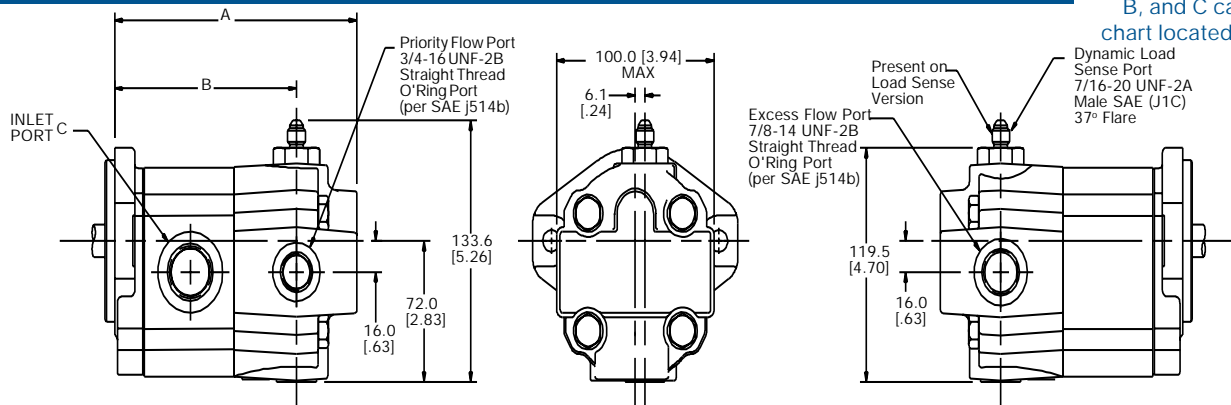
OPTIONS BA & DA



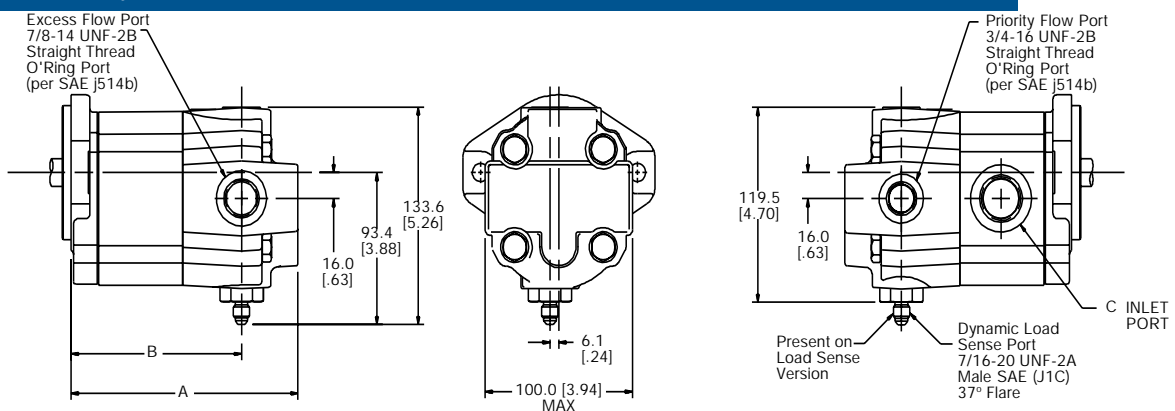
OPTION EA

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

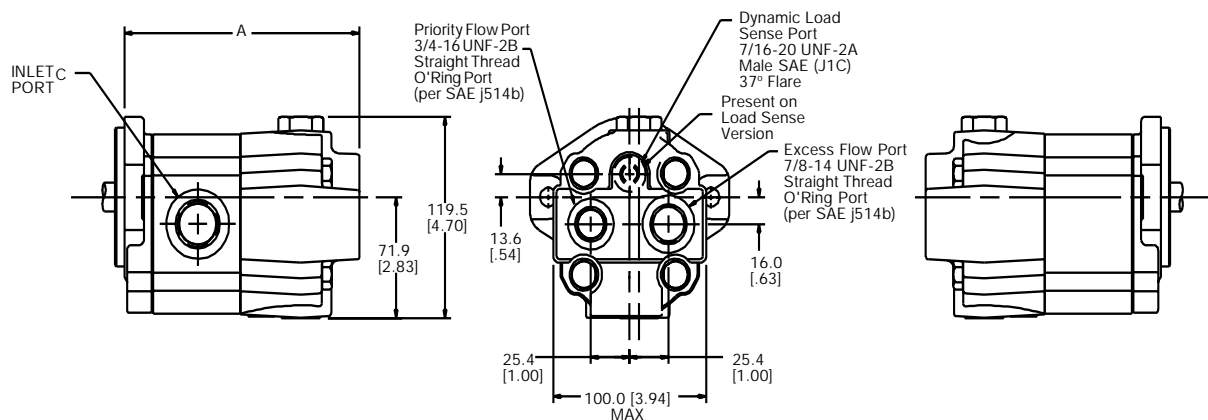
NOTE: Dimensions A, B, and C can be found in chart located on bottom of page 12.



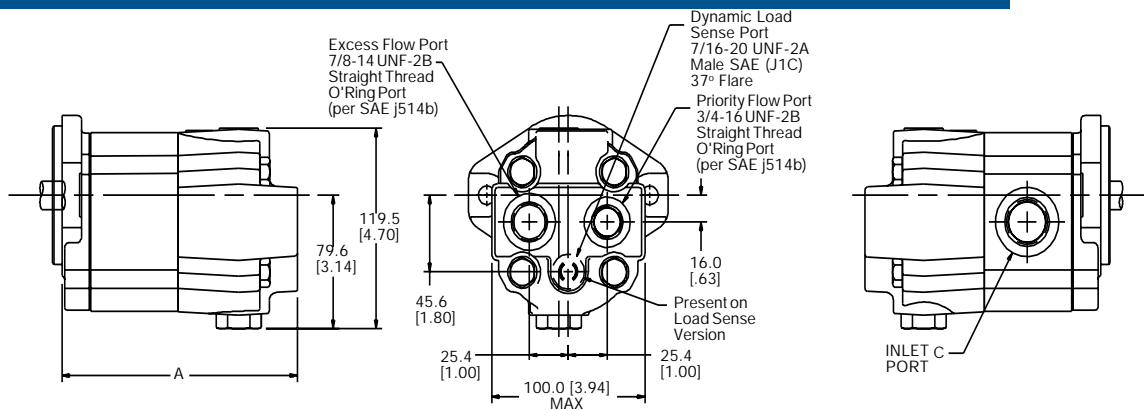
Priority Flow Control / Dynamic Load Sense - Side Ports - CW Rotation (as viewed from shaft end) - ORDER CODES AA & BA



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

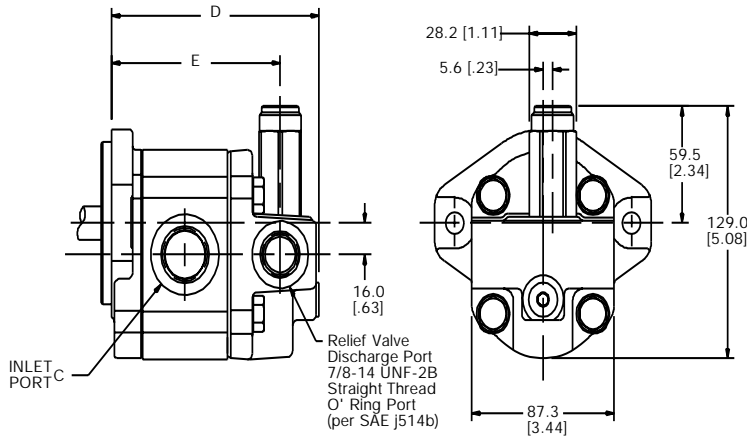


Priority Flow Control / Dynamic Load Sense - Rear Ports - CW Rotation (as viewed from shaft end) - ORDER CODES CA & DA

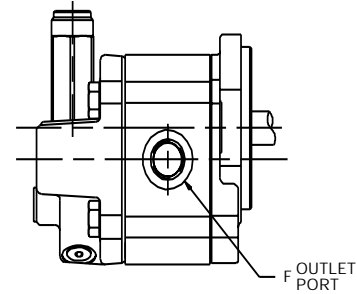


# VALVE OPTION DIMENSIONS (Cont.)

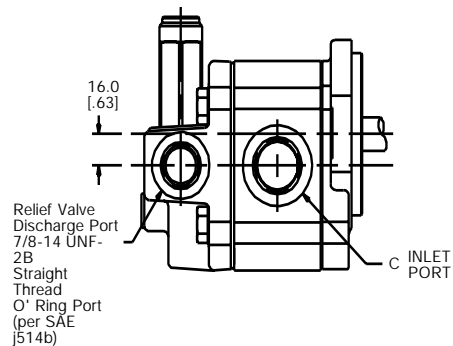
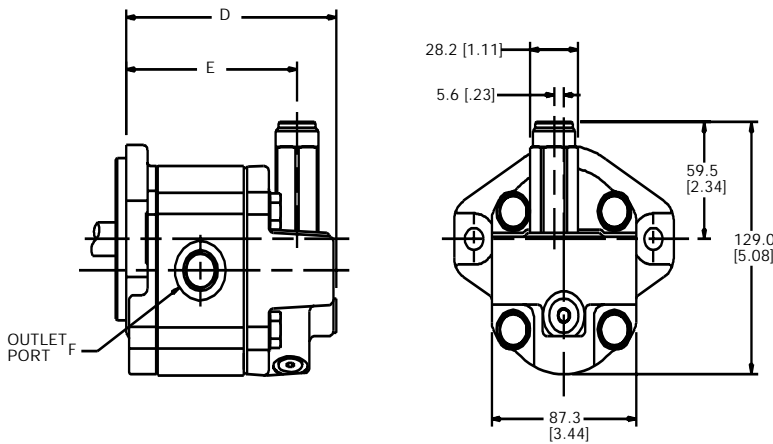
Cartridge Relief Valve - Side Ports - CCW Rotation (as viewed from shaft end) - ORDER CODE EA



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
		FLANGE OPTIONS	FLANGE OPTIONS	FLANGE OPTIONS	FLANGE OPTIONS		FLANGE OPTIONS	FLANGE OPTIONS	FLANGE OPTIONS	FLANGE OPTIONS	
CM <sup>3</sup>	IN <sup>3</sup>	3, 6 & 7	10 THRU 13	3, 6 & 7	10 THRU 13	INLET PORT	3, 6 & 7	10 THRU 13	3, 6 & 7	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

## 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 Haldex 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

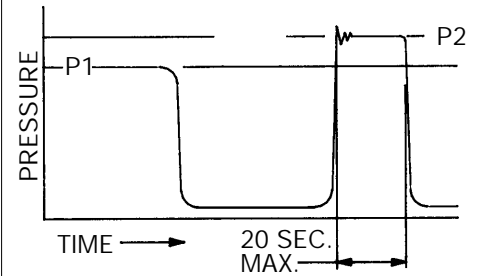
## FILTRATION

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).

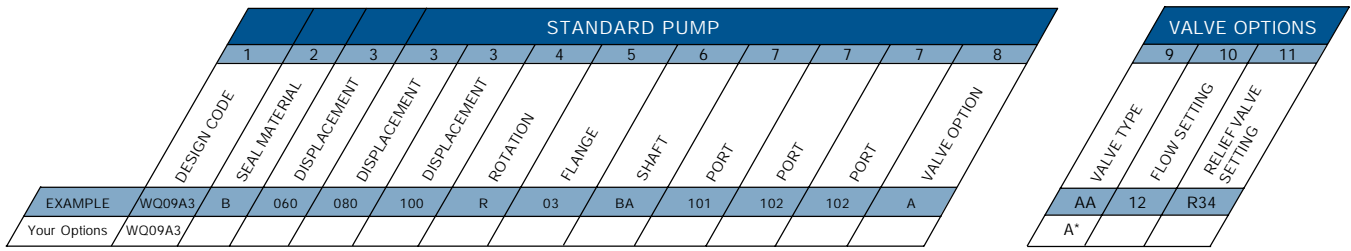
## PRESSURE RATINGS



P1 - Continuous  
P2 - Intermittent

Total cycle for P2 is 40 seconds.

# ORDERING INFORMATION



1. DESIGN CODE	WQ09A1	WQ09A2	WQ09A3	WQ09A4
----------------	--------	--------	--------	--------

2. SEAL MATERIAL	B Buna	V Viton	C Combination of Both
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3. DISPLACEMENT	Order Code	cm <sup>3</sup>	in. <sup>3</sup>
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
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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/ <i>Side</i> Ports
B	Priority Flow Control with Dynamic Load Sense, Relief on Priority / <i>Side</i> Ports
C	Priority Flow Control, Relief on Priority/ <i>Rear</i> Ports
D	Priority Flow Control with Dynamic Load Sense, Relief on Priority/ <i>Rear</i> Ports
E	Relief Valve with <i>External</i> Drain
N	Not Applicable

9. VALVE TYPE DESIGNATION	
AA	Priority Flow Control, Relief on Priority/ <i>Side</i> Ports
BA*	Priority Flow Control with Dynamic Load Sense, Relief on Priority/ <i>Side</i> Ports
CA	Priority Flow Control, Relief on Priority/ <i>Rear</i> Ports
DA*	Priority Flow Control with Dynamic Load Sense, Relief on Priority/ <i>Rear</i> Ports
EA	Relief Valve with <i>External</i> 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

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) +

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).

# Only Haldex offers this extensive range of pumps, hydraulic motors, power units and flow dividers worldwide.

## GC Series Hydraulic Pumps

Compact cast iron gear pumps with a wide variety of integrated options provide custom systems capability and high-efficiency performance. Displacements from 0.065 to 0.711 cu. in. (1.066 to 11.65 cc) per revolution. Pressures to 4,000 psi (275 Bar).

## W Series Gear Pumps

Highly efficient pumps feature 4,000 psi continuous operation, speed range from 500 to 4,000 rpm, low noise operation and overall efficiency greater than 90%. Displacements from .183 to 3.05 cu. in. (3 to 50 cc) per revolution. Other features include SAE, ISO and DIN shafts, flanges and ports; integrated valves and multiple pump configurations.

## G20-LS/G-30LS Load Sense Variable Discharge Gear Pumps

Offers the horsepower conservation of a load sense system and the low cost reliability of a gear pump. Featuring cast iron construction and 4,000 psi continuous operation for severe-duty applications. Displacements from 1.41 to 9.82 cu. in. (23 to 161 cc).

## G20 & G30 Series Gear Pumps

Rugged cast iron pumps offer high performance for severe-duty applications. Available in single, multiple and through-drive versions. Displacements from 1.41 to 9.82 cu. in. (23 to 161 cc) per revolution. Pressures to 4,000 psi (275 Bar) continuous.

## G20 / G30 Specialty Products

- G20-DM Pump/Motor Series, G20 series pump with direct mount motor options. Motor options --- 7.5 HP, 10 HP, and 15 HP and displacements from 1.41 to 2.94 cu. in. (23 to 48 cc) for pump/motor units. Integral manifold options also available.
- G20 / G30 PTO Pump Series. Specifically designed pump options and features for PTO (power take off) applications. Displacements from 1.41 to 9.82 cu. in. (23 to 161 cc).
- G20 / G30 two section flow dividers. Displacements from 1.41 to 9.82 cu. in. (23 to 161 cc) per section. Pressures to 4,000 psi continuous (275 Bar).

## Gerotor Pumps

High-efficiency, low-maintenance design with quiet operation and uniform flow. Extremely tolerant of contamination. Displacements from 0.05 to 8.29 cu. in. (0.8 to 135.8 cc) per revolution. Pressures to 2,000 psi (136 Bar).

## GC-9500 AC Hydraulic Power Units

AC power units offering the ultimate in design versatility and ordering flexibility. It can be ordered completely assembled or in kits. Standard options include: 81 motors (1/2-5 hp, TEFC, open, drip-proof, explosion proof motors); 4 reservoirs (5, 10, 15 and 20 gal.); and 18 pumps (pressure balanced and high/low with flows to 28 gpm and pressures to 3500 psi).

## HE 2000 AC & DC Hydraulic Power Packs

Self-contained modular power systems in fully assembled or component form; wide range of standard pumps, motors, switches, mounts, valves, and reservoirs. Custom options also available. Pressures to 4,000 psi (276 Bar). Flows from 0.20 to 7.0 GPM.

## Hydraulic Motors

Available in the GC, W and G20 Series in unidirectional and birotational configurations. Motors available with modular valve, bearing, seal and shaft options for maximum flexibility. Displacements from 0.065 to 5.30 cu. in. (1.06 to 87.0 cc) per revolution. Pressures to 4,000 psi (275 Bar).

## Two-Stage Hydraulic Pumps

External gear pumps designed for high-speed positioning combined with maximum working pressure. High-pressure displacements from 0.258 to 1.395 cu. in. (4.23 to 22.86 cc) per revolution. Pressures to 4,000 psi (275 Bar). Flows from 5 to 28 GPM.

## Rotary Flow Dividers

Rotary-gear units up to four sections for synchronized operation of multiple cylinders or motors, proportional division of output or intensified flow. Single-section displacements from 0.065 to 0.813 cu. in. (1.0 to 13.32 cc) per revolution. Pressures to 4,500 psi (306 Bar).

## Call us for more information

For application assistance or detailed literature on any Haldex product line, call us toll-free: 1-800-572-7867. Visit our web site: <http://www.hbus.haldex.com> E-mail us: [sales@hbus.haldex.com](mailto:sales@hbus.haldex.com)





## PRODUCT RANGE

He Power Packs  
12/24/48 VDC 0.8 – 3.5 kW and  
0.75 – 3 kW AC modular power  
packs

Pressure Switches  
5 - 350 bar, connecting/  
disconnecting

He Classic Power Packs  
12/24/48 VDC modular  
powerpacks in weatherproof  
boxes

W300 Hydraulic pumps  
0.8 – 5.7 cc/section 230 bar

W600 Hydraulic pumps  
4 – 12 cc/section 276 bar

WM600 Hydraulic motors  
4 – 12 cc/section 276 bar

W900 Hydraulic pumps  
5 – 31 cc/section 276 bar

WM900 Hydraulic motors  
5 - 31 cc/section 276 bar

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

W1500 Hydraulic pumps  
19 - 50 cc/section 276 bar

WM1500 Hydraulic motors  
19 - 50 cc/section 276 bar

G25 Hydraulic pumps  
23 – 87 cc/section 250 bar

GM25 Hydraulic motors  
23 – 87 cc/section 250 bar

GPA Internal Gear pumps  
1.7 – 63 cc/section 100 bar

GC Hydraulic pumps / fluid motors  
1.06 – 11.65 cc/section 276 bar

II-Stage Hydraulic pumps  
4.2 – 22.8 cc/section 276 bar

Rotary Flow Dividers  
3.8 – 13.3 cc/section 300 bar

D Hydraulic pumps  
3.8 - 22.9 cc/section 207 bar

G20/G30 Hydraulic pumps  
23 – 161 cc/section 276 bar

GM20/GM30 Hydraulic motors  
23 – 161 cc/section 276 bar

G20/G30 (LS) Hydraulic pumps  
23 – 161 cc/section 276 bar

Transmission pumps

Fuel pumps

[www.hbus.haldex.com](http://www.hbus.haldex.com)



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