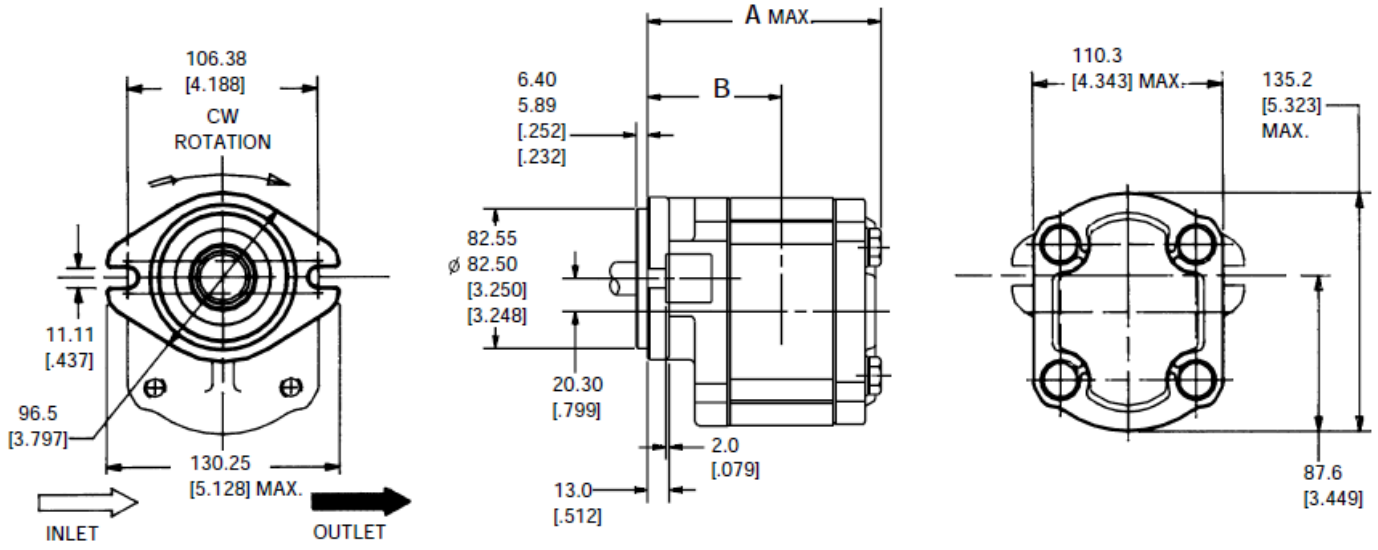
WM1500 FLANGE OPTIONS

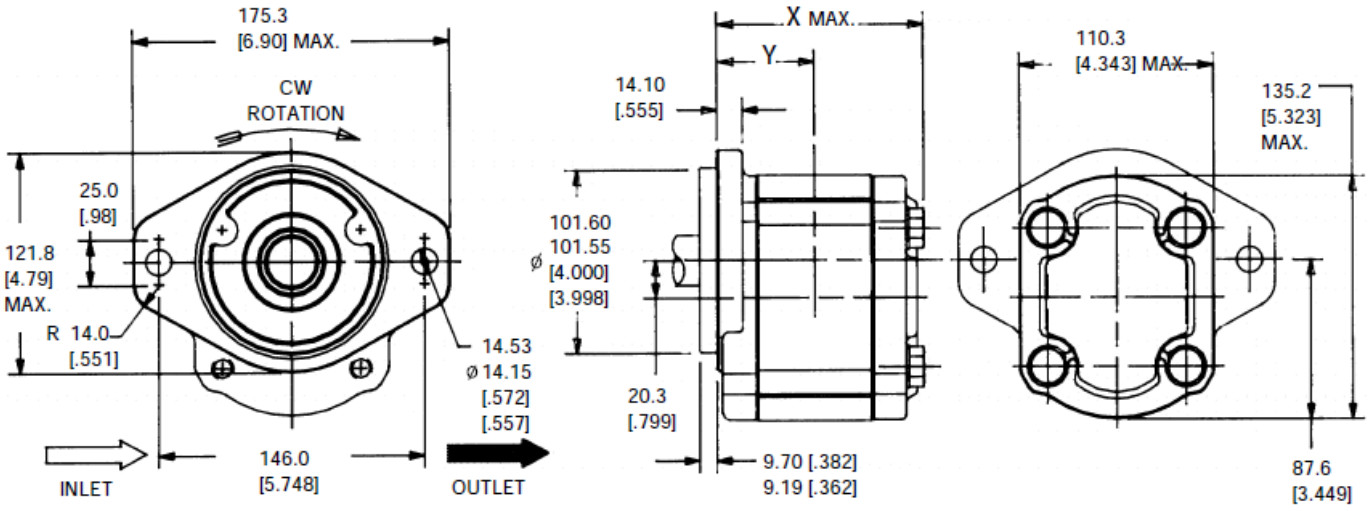
For its displacement and pressure range, the WM1500 family features one of the most compact envelopes available from any manufacturer. Standard international mounting flange options are outlined below. Dimensions shown outside of brackets are metric units. See page 23 for dimensional chart showing "A", "B", "X", and "Y" dimensions.

SAE "A" 2-BOLT ORDER CODE 04



(For counterclockwise rotation inlet and outlet are reversed.)

SAE "B" 2-BOLT ORDER CODE 05



(For counterclockwise rotation inlet and outlet are reversed.)

WM1500 Dimensions & Weights

* NOTE: For port code options 05 & 06, subtract 2 mm from the port centerline dimension on the 19 cc displacement only.

** NOTE: For port code options 05 & 06, subtract 2 mm from the port centerline dimension on the 28 cc displacement only.

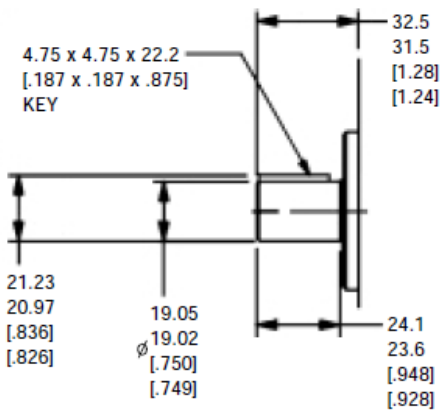
(See dimensional drawings on page 22.)

			Dims. & Weights with Flange Option 04			Dims. & Weights with Flange Options 05		
Order Code	Displacement CM³	Displacement IN³	A Max.	B (To Port Centerline)	Approx. Wt. kg. [lbs.]	X Max.	Y (To Port Centerline)	APPROX. Wt. kg. [lbs]
190	19.0	1.159	152.0 [5.98]	* 89.3 [3.52]	8.44 [18.62]	124.5 [4.90]	* 63.3 [2.49]	8.04 [17.73]
230	23.0	1.403	156.2 [6.15]	91.4 [3.60]	8.64 [19.05]	128.7 [5.07]	65.4 [2.57]	8.23 [18.14]
250	25.0	1.525	158.4 [6.24]	92.5 [3.64]	8.74 [19.27]	130.9 [5.15]	66.6 [2.62]	8.32 [18.35]
280	28.0	1.708	161.4 [6.35]	94.0 [3.70]	8.88 [19.59]	133.9 [5.27]	68.0 [2.68]	8.46 [18.66]
330	33.0	2.013	166.6 [6.56]	** 96.6 [3.80]	9.12 [20.12]	139.1 [5.48]	** 70.6 [2.78]	8.69 [19.16]
380	38.0	2.318	171.8 [6.76]	99.2 [3.91]	9.38 [20.66]	144.3 [5.68]	73.2 [2.88]	8.93 [19.68]
440	44.0	2.684	178.0 [7.01]	102.3 [4.83]	9.67 [21.32]	150.5 [5.93]	76.3 [3.00]	9.21 [20.30]
500	50.0	3.050	184.2 [7.25]	105.4 [4.15]	9.96 [21.97]	156.7 [6.17]	79.4 [3.13]	9.49 [20.92]

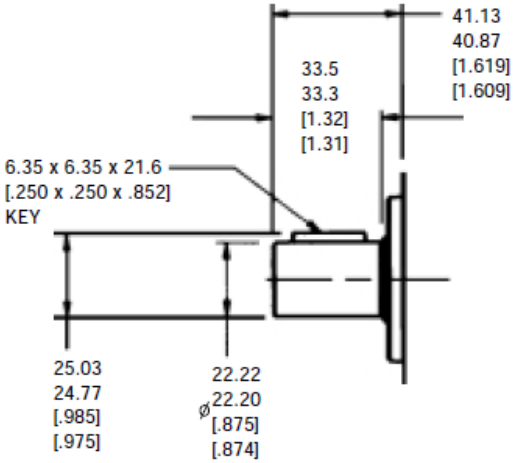
WM1500 Shaft Options

See additional shaft options on page 24.

STRAIGHT SHAFT SAE "A" ORDER CODE BA

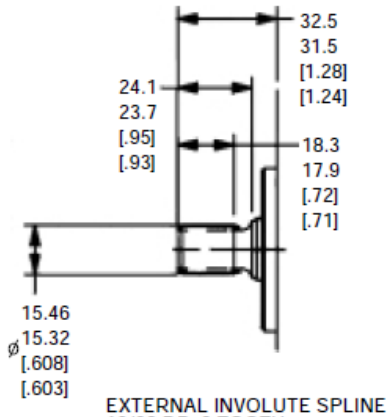


STRAIGHT SHAFT SAE "B" ORDER CODE DA



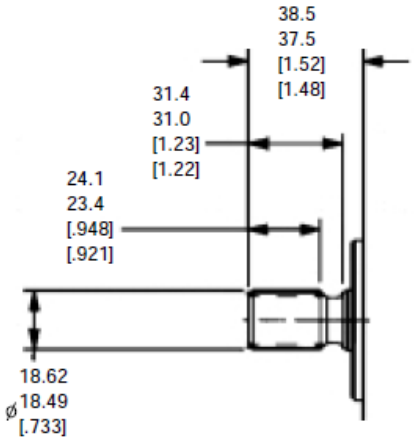
WM1500 Shaft Options (cont.)

SAE "A" 9T SPLINE ORDER CODE FA



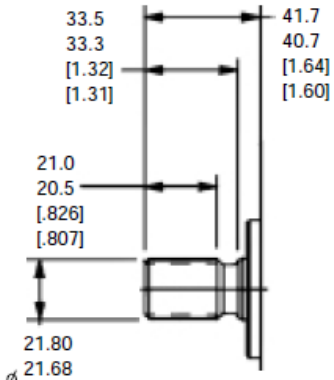
EXTERNAL INVOLUTE SPLINE
16/32 DP, 9 TOOTH,
FLAT ROOT, SIDE FIT

SAE "A" 11T SPLINE ORDER CODE GA



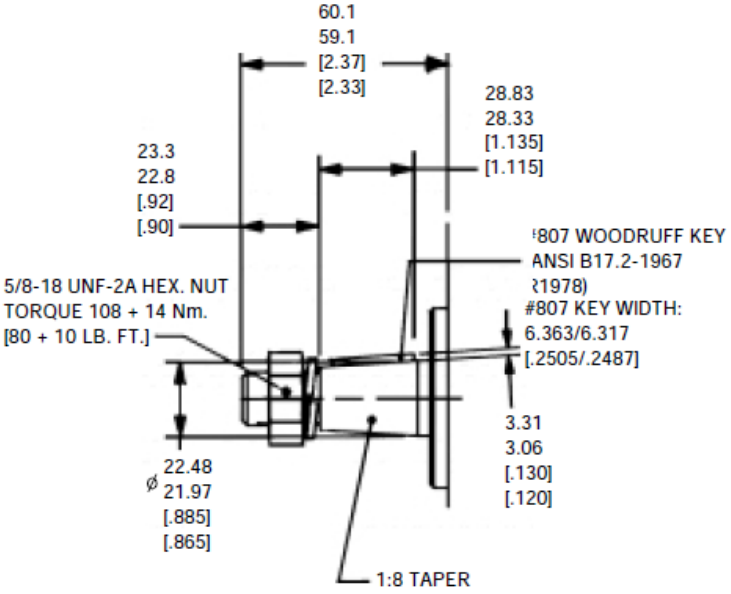
EXTERNAL INVOLUTE SPLINE
16/32 DP, 11 TOOTH,
FLAT ROOT, SIDE FIT

SAE "B" SPLINE SHAFT ORDER CODE KA



EXTERNAL INVOLUTE SPLINE
16/32 DP, 13 TOOTH
FLAT ROOT, SIDE FIT

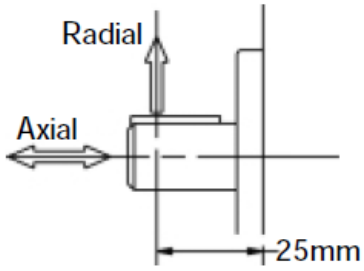
SAE "B" TAPERED (1:8) ORDER CODE UB



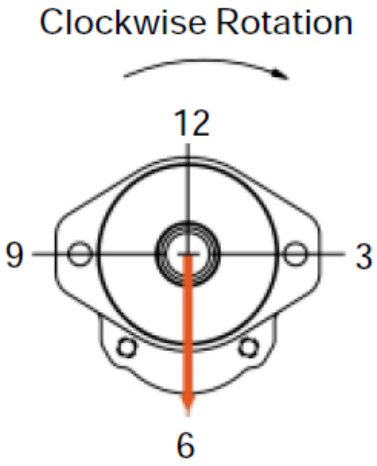
WM1500 Axial/Radial Load

MAXIMUM FLUID MOTOR AXIAL LOADS

- MAX. 1200 N AT VISCOSITY OF 10 CST (BOTH DIRECTIONS)
- WHERE AXIAL AND RADIAL FORCES SUM TO 1800 N



MAXIMUM FLUID MOTOR RADIAL LOADS



Pressure		Max. Radial Load at 6 O'Clock	
PSI	BAR	LBS	N
0-1800	0-124	340	1512
1801-2300	125-159	200	890

For all other angles and pressures, consult factory.

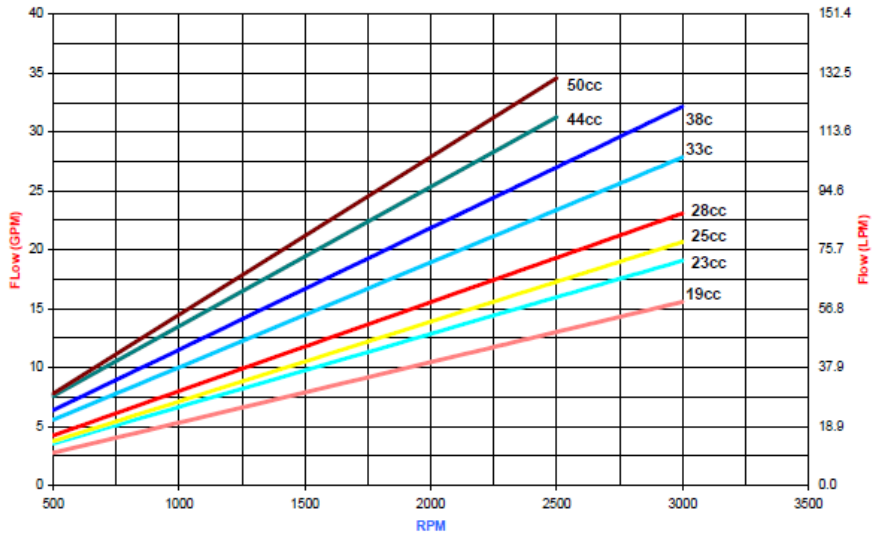
WM1500 Pressure/Velocity Factors

To insure that the performance capabilities of the shaft seal are not exceeded, use the chart below. Multiply as follows: (PV Factor = PSI x Shaft Dia. (in.) x π (3.1415926) x RPM. Take this product and ÷ by 12 in./ft.). This figure must not exceed the PV factor shown in column 4. Max. seal pressure ratings must not be exceeded.

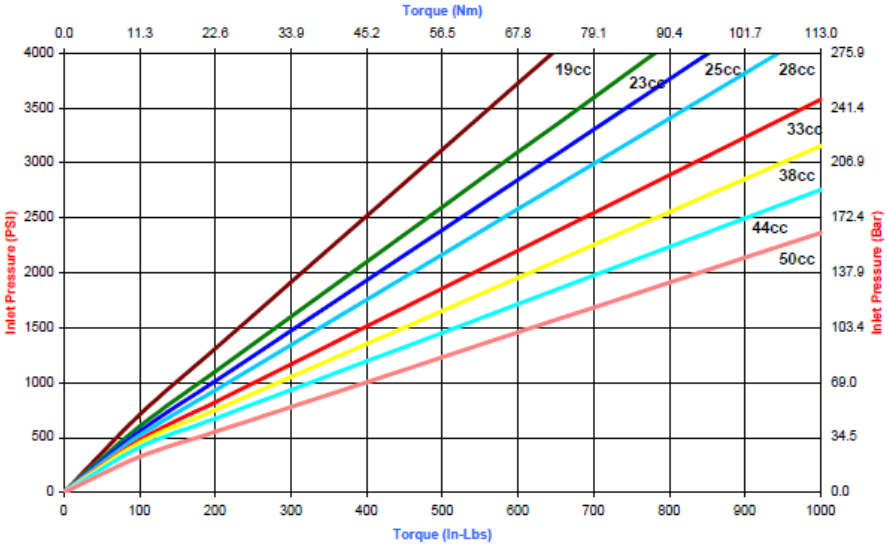
Description	Max. Pressure PSI (Bar)	Temp. Range °F (°C)	PV Factor (psi-fpm)
Standard Buna	44 (3)	-31 to 248 (-35 to 120)	45339
Standard Viton	44 (3)	-31 to 400 (-35 to 204)	45339
High Pressure Viton	150 (10.5) cont. / 250 (17) int.	-31 to 320 (-35 to 160)	1288805

WM1500 Performance Curves @ 100 SSU

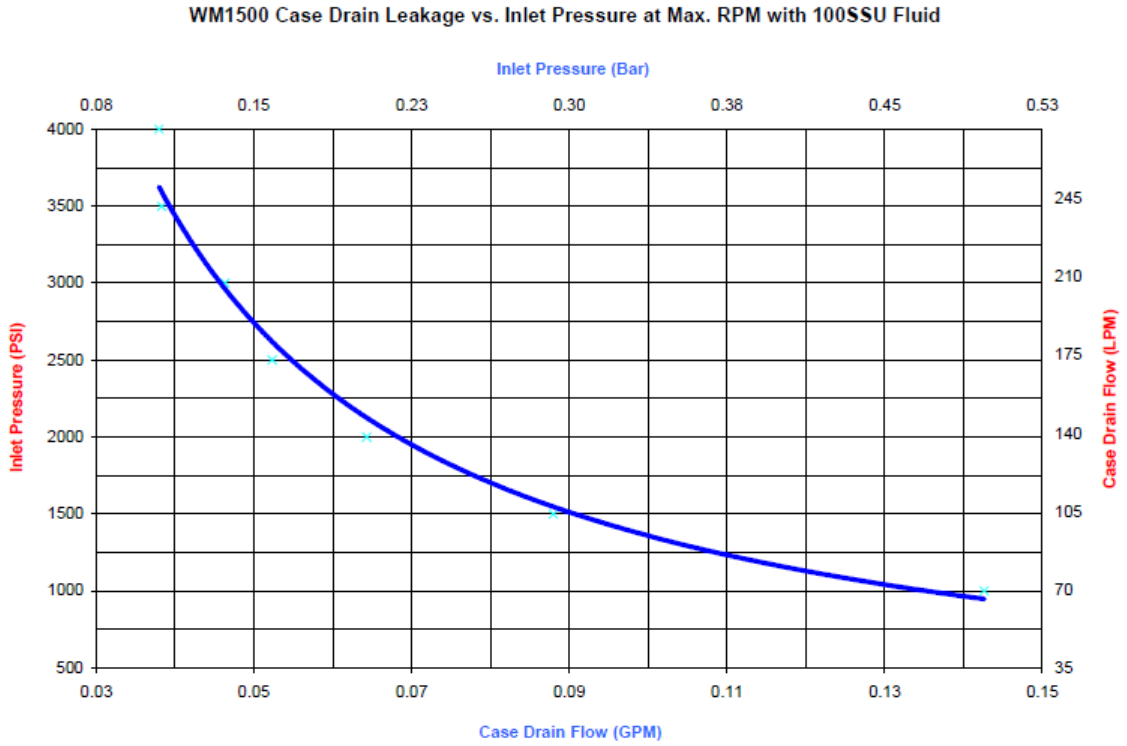
WM1500, Flow vs. RPM at Max. P1 Pressure with 100SSU Fluid



WM1500, Inlet Pressure vs. Output Torque at Max. RPM with 100SSU Fluid



WM1500 Case Drain



Installation Information

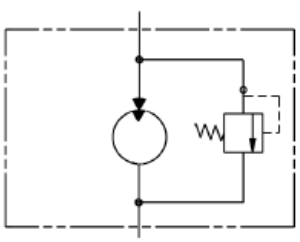
FLUIDS - Most premium grade petroleum base fluids can be used with WM1500 Motors. Optimum operating viscosity is 16-40 cSt (74-185 SSU) at maximum rated speed. Minimum operating viscosity is 10 cSt (59 SSU). Maximum operating viscosity is 750 cSt (3409 SSU). Maximum cold start viscosity is 2000 cSt (9240 SSU). Contact Haldex Barnes for additional information regarding the W1500 performance using other fluids.

OPERATING TEMPERATURES - Fluid temperature range (Mineral Oil): Max. 93°C (200°F) continuous and Max. 105°C (221°F) intermittent.

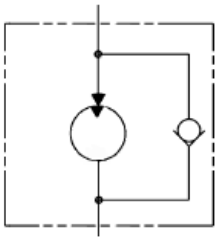
FILTRATION - Proper filtration is critical to the trouble free operation of any hydraulic system. For optimum motor life at maximum pressure ISO 4406/1986 (Code 18/14) is recommended. A 10-micron filter sized to accommodate full system return flow is recommended for most operating environments.

WM1500 Valve Options

The schematic drawings shown below illustrate standard valve options offered on the WM1500 hydraulic motors.



FA
Inlet Relief
Valve



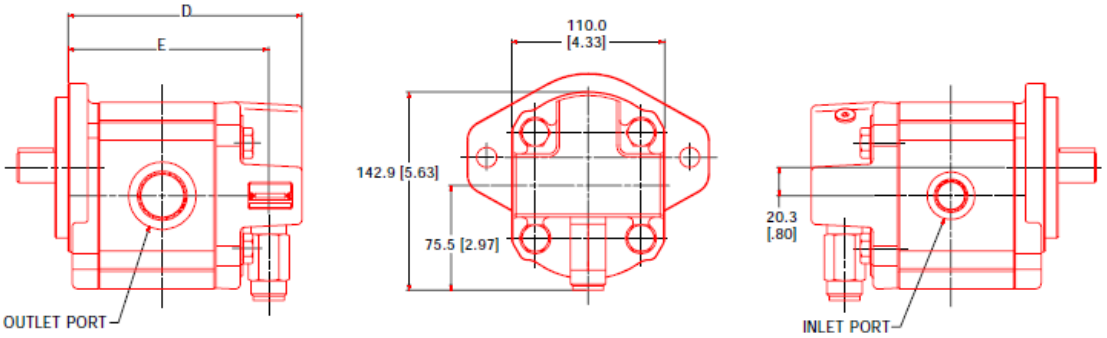
GF
Overruning
Check Valve

OPTIONS	
FA	Inlet Relief Valve
GF	Overrunning Check Valve

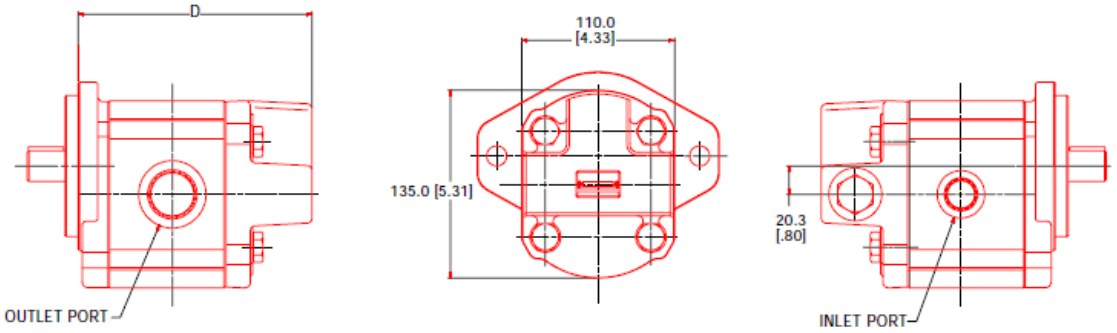
WM1500 Valve Option Dimensions

The drawings below depict the overall dimensions for the valve options specified on page 27.

CARTRIDGE RELIEF VALVE, CW ROTATION



OVER-RUNNING CHECK, CW ROTATION



DISPLACEMENT CM³	DISPLACEMENT IN³	D MAX. FLANGE OPTION 04	D MAX. FLANGE OPTIONS 05 & 08	E (TO PORT CENTERLINE) FLANGE OPTION 04	E (TO PORT CENTERLINE) FLANGE OPTIONS 05 & 08
19.0	1.159	186.6 [7.35]	160.0 [6.30]	151.3 [5.96]	124.9 [4.92]
23.0	1.403	190.8 [7.51]	164.2 [6.47]	155.5 [6.12]	129.1 [5.08]
25.0	1.525	193.0 [7.60]	166.4 [6.55]	157.7 [6.21]	131.3 [5.17]
28.0	1.708	196.0 [7.72]	169.4 [6.67]	160.7 [6.33]	134.3 [5.29]
33.0	2.013	201.2 [7.92]	174.6 [6.88]	165.9 [6.53]	139.5 [5.49]
38.0	2.318	206.4 [8.13]	179.8 [7.08]	171.1 [6.74]	144.7 [5.70]
44.0	2.684	212.6 [8.37]	186.0 [7.32]	177.3 [6.98]	150.9 [5.94]
50.0	3.050	218.8 [8.61]	192.2 [7.57]	183.5 [7.22]	157.1 [6.19]

WM1500 Hydraulic Motor Order Code

STANDARD MOTOR									
	1	2	3	4	5	6	7	8	9
	DESIGN CODE	SEAL MATERIAL	DISPLACEMENT	ROTATION	FLANGE	SHAFT	PORT	VALVE OPTION	RELIEF VALVE SETTING
EXAMPLE	WM15A1	B	380	R	04	BA	104	FA	R35
Your Options	WM15A1								

2.

SEAL MATERIAL	
B	Buna
V	Viton
C	Combination of Both

3.

DISPLACEMENT		
Order Code	Cm.³	In.³
190	19	1.159
230	23	1.403
250	25	1.525
280	28	1.708
330	33	2.013
380	38	2.318
440	44	2.684
500	50	3.050

4.

ROTATION	
R	Clockwise
L	Counter Clockwise
B	Bi-Rotational (Case Drain)
C	Bi-Rotational (Check Valves)

5.

MOUNTING FLANGES	
04	SAE "A" 2-Bolt
05	SAE "B" 2-Bolt

6.

DRIVE SHAFTS	
BA	SAE "A" Straight Shaft 3/4" Dia.
DA	SAE "B" Straight Shaft 7/8" Dia.
FA	SAE "A" Spline (9 Tooth)
GA	SAE "A" Spline (11 Tooth)
KA	SAE "B" Spline Shaft
UB	SAE "B" Tapered (1:8)

7.

STANDARD PORTING			
DISP. ORDER CODE	SIDE PORT CODE	REAR PORT CODE	DESCRIPTION
190-250	103	503	SAE Straight Thread (1-5/16-12,1-1/16-12)
280-500	104	504	SAE Straight Thread (1-5/8-12,1-5/16-12)
190-250	122	522	BSPP Straight Thread (G1,G3/4)
280-500	123	523	BSPP Straight Thread (G1-1/4,G1)
190-250	141	N/A	SAE Split Flange (1.0,3/4)
280-500	142	N/A	SAE Split Flange (1-1/4,1.0)
190-250	146	N/A	Metric Split Flange (25,19)
280-500	147	N/A	Metric Split Flange (32,25)
190-500	151	N/A	European 4-Bolt Flange (26,18)

Note: Above are standard offerings. For other porting options, please contact factory.

8.

VALVE OPTIONS	
FA	Inlet Relief Valve
GF	Overrunning Check Valve
N	Not Applicable

9.

RELIEF VALVE SETTINGS	
R**	
**	Relief pressure divided by 100. Available in 100 PSI increments to 4000 PSI. Example: R35 = 3500 PSI
NN	Not Applicable

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

All motors require a minimum 25-piece order with the exception of those options designated with "+" (100-piece minimum). A selected number of distributor stock motors are available with no minimum order quantity.