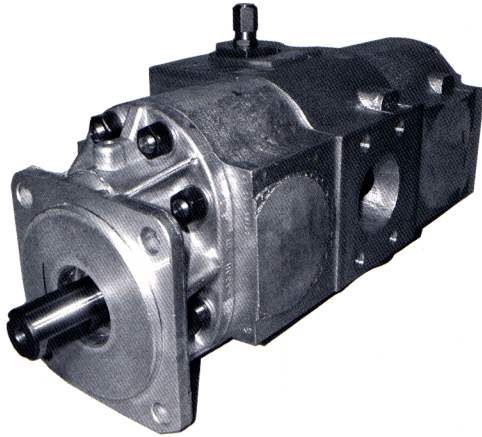


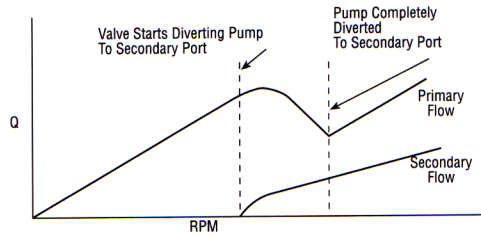
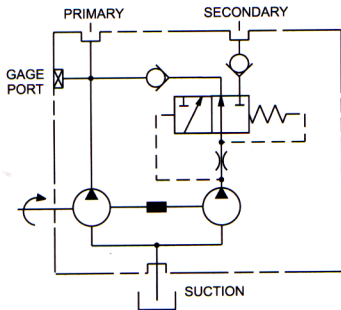
Model NSD20



Description Flow Sensitive Unloading Gear Pumps
 Combined Flow Range To 197 GPM (745.7 LTR)
 Displacements To 9.10 IN³ Each Section (149.12 CC's/REV.)
 Maximum Pressure to 2500 PSI (172 BAR)
 Maximum Speed to 2500 RPM
 Rotation A or C
 Bearings Journal
 Construction Aluminum

Tandem Pump with Flow Sensitive Unloading Valve and Power Beyond Port For the Unloaded Pump

This system consists of a tandem pump and unloading valve with the unloaded valve being sensitive to pump speed. The system has primary and secondary discharge ports such that both pumps are diverted to the primary port at low pump speeds. At an intermediate pump speed, one of the tandem pumps is metered from the primary port and a portion is diverted to the secondary port. At a predetermined higher speed, the pump is completely diverted to the secondary port.



Performance Data

PUMP MODEL	SECTION SIZE	DISPLACEMENT/REVOLUTION (Theoretical)					MAXIMUM PRESSURE		MAXIMUM SPEED
		US Gallons	Cubic Inches	Liters	Cubic Centimeters	Imperial Gallons	PSI	BAR	RPM
NSD20	150	.0131	3.02	.0496	49.849	.0108	2500	172	2500
NSD20	200	.0175	4.04	.0662	66.204	.0146	2500	172	2500
NSD20	250	.0219	5.06	.0829	82.919	.0182	2500	172	2500
NSD20	300	.0262	6.05	.0992	99.142	.0218	2500	172	2500
NSD20	350	.0306	7.07	.1158	115.857	.0255	2500	172	2500
NSD20	400	.0350	8.08	.1325	132.408	.0292	2500	172	2500
NSD20	450	.0394	9.10	.1491	149.123	.0328	2500	172	2500

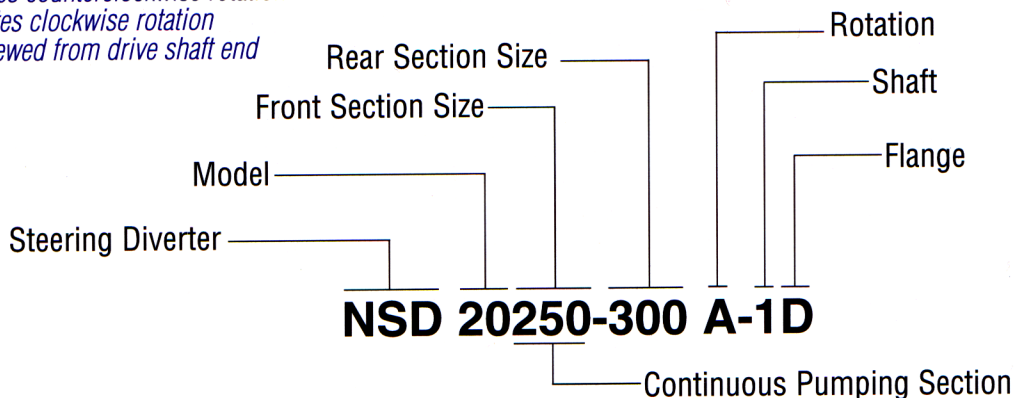
All data based on SAE 10W oil at 150°F
 Available with Viton Seals for use with phosphate ester based fluid.

CAUTION: "Inlet vacuum" should not exceed 5" Hg at normal operating speed and temperature.
 Operation of pumps in excess of 5" Hg requires factory approval.

When sizing pumps, refer to the performance charts in the back of the catalog to determine the volumetric efficiency and input horsepower requirements.

How To Order

'A' denotes counterclockwise rotation
 'C' denotes clockwise rotation
 When viewed from drive shaft end



Note: Add prefix 'V' to pump model number (VNSD20) when ordering pumps with Viton Seals for use with phosphate ester base fluids.

Shafts Available

<p>1 SAE 'C' 1-1/4" 14 Tooth Flat Root Side Fit Torque limit 655 Lbs. Ft. (888, Nm) "Tandem" Pumps only</p> <p>Spline Data Diametral Pitch 12/24 Pressure Angle 30° No. Of Teeth 14</p>	<p>3 SAE 'C' 1-1/4" Straight Torque limit 655 Lbs. Ft. (888, Nm) Available on all sizes</p>	<p>5 1-1/4" Straight Shaft Torque limit 655 Lbs. Ft. (888, Nm) Available on all sizes</p>
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Mounting Flanges Available

<p>D SAE 'C' 4-Bolt</p>	<p>E SAE 'B' 4-Bolt</p>
<p>F SAE 'C' 2-Bolt</p>	<p>M Pad Mount</p>

Dimensional Data

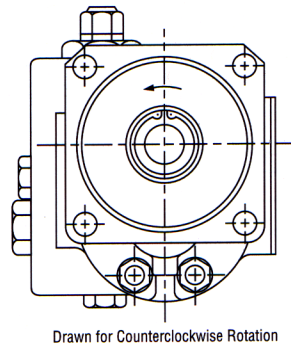
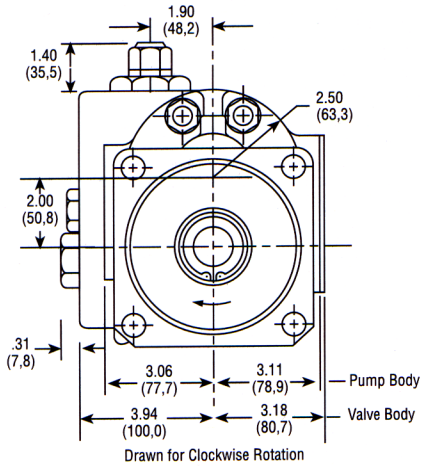
Mounting Dimensions

FRONT SECTION SIZE	REAR SECTION SIZE	Conn. Size	DISCHARGE Front Section Hole Dia.	A		B		C		D		SHIPPING WEIGHTS (Approx.)	
										lbs.	kgs.		
20150	—150	1"	.93 (23,6)	3.60 (91,4)	7.07 (179,5)	12.68 (322,0)	7.28 (184,0)	56	20.9				
	—200	1"	.93 (23,6)	3.60 (91,4)	7.07 (179,5)	13.54 (343,9)	7.28 (184,0)	57	21.3				
	—250	1"	.93 (23,6)	3.60 (91,4)	7.07 (179,5)	13.93 (353,8)	7.28 (184,0)	58	21.7				
	—300	1"	.93 (23,6)	3.60 (91,4)	7.07 (179,5)	14.22 (361,1)	7.28 (184,0)	60	22.4				
	—350	1"	.93 (23,6)	3.60 (91,4)	7.07 (179,5)	13.83 (351,2)	7.28 (184,0)	62	23.1				
	—400	1"	.93 (23,6)	3.60 (91,4)	7.07 (179,5)	14.11 (358,3)	7.28 (184,0)	64	23.9				
	—450	1"	.93 (23,6)	3.60 (91,4)	7.07 (179,5)	14.40 (365,7)	7.28 (184,0)	66	24.6				
20200	—150	1-1/2"	1.19 (30,2)	3.75 (95,2)	7.97 (202,4)	13.58 (344,9)	8.18 (207,7)	58	21.7				
	—200	1-1/2"	1.19 (30,2)	3.75 (95,2)	7.97 (202,4)	14.44 (366,7)	8.18 (207,7)	59	22.0				
	—250	1-1/2"	1.19 (30,2)	3.75 (95,2)	7.97 (202,4)	14.83 (376,3)	8.18 (207,7)	60	22.4				
	—300	1-1/2"	1.19 (30,2)	3.75 (95,2)	7.97 (202,4)	15.11 (383,7)	8.18 (207,7)	62	23.1				
	—350	1-1/2"	1.19 (30,2)	3.75 (95,2)	7.97 (202,4)	14.72 (373,8)	8.18 (207,7)	64	23.9				
	—400	1-1/2"	1.19 (30,2)	3.75 (95,2)	7.97 (202,4)	15.00 (381,0)	8.18 (207,7)	66	24.6				
	—450	1-1/2"	1.19 (30,2)	3.75 (95,2)	7.97 (202,4)	15.29 (388,3)	8.18 (207,7)	68	25.4				
20250	—150	1-1/2"	1.19 (30,2)	4.00 (101,6)	8.25 (209,5)	13.86 (352,0)	8.46 (214,8)	59	21.7				
	—200	1-1/2"	1.19 (30,2)	4.00 (101,6)	8.25 (209,5)	14.71 (373,6)	8.46 (214,8)	60	22.4				
	—250	1-1/2"	1.19 (30,2)	4.00 (101,6)	8.25 (209,5)	15.11 (383,7)	8.46 (214,8)	62	23.1				
	—300	1-1/2"	1.19 (30,2)	4.00 (101,6)	8.25 (209,5)	15.39 (390,9)	8.46 (214,8)	64	23.9				
	—350	1-1/2"	1.19 (30,2)	4.00 (101,6)	8.25 (209,5)	15.00 (381,0)	8.46 (214,8)	66	24.6				
	—400	1-1/2"	1.19 (30,2)	4.00 (101,6)	8.25 (209,5)	15.28 (388,1)	8.46 (214,8)	68	25.4				
	—450	1-1/2"	1.19 (30,2)	4.00 (101,6)	8.25 (209,5)	15.57 (395,4)	8.46 (214,8)	70	26.1				
20300	—150	1-1/2"	1.19 (30,2)	4.14 (105,1)	8.54 (216,9)	14.15 (359,4)	8.75 (222,2)	60	22.4				
	—200	1-1/2"	1.19 (30,2)	4.14 (105,1)	8.54 (216,9)	15.00 (381,0)	8.75 (222,2)	64	23.9				
	—250	1-1/2"	1.19 (30,2)	4.14 (105,1)	8.54 (216,9)	15.40 (391,1)	8.75 (222,2)	66	24.6				
	—300	1-1/2"	1.19 (30,2)	4.14 (105,1)	8.54 (216,9)	15.68 (398,2)	8.75 (222,2)	68	25.4				
	—350	1-1/2"	1.19 (30,2)	4.14 (105,1)	8.54 (216,9)	15.29 (388,3)	8.75 (222,2)	70	26.1				
	—400	1-1/2"	1.19 (30,2)	4.14 (105,1)	8.54 (216,9)	15.57 (395,4)	8.75 (222,2)	72	26.9				
	—450	1-1/2"	1.19 (30,2)	4.14 (105,1)	8.54 (216,9)	15.86 (402,8)	8.75 (222,2)	74	27.6				
20350	—150	1-1/2"	1.19 (30,2)	4.35 (110,4)	8.82 (224,0)	14.43 (366,5)	9.03 (229,3)	62	23.1				
	—200	1-1/2"	1.19 (30,2)	4.35 (110,4)	8.82 (224,0)	15.28 (388,1)	9.03 (229,3)	64	23.9				
	—250	1-1/2"	1.19 (30,2)	4.35 (110,4)	8.82 (224,0)	15.68 (398,2)	9.03 (229,3)	66	24.6				
	—300	1-1/2"	1.19 (30,2)	4.35 (110,4)	8.82 (224,0)	15.96 (405,3)	9.03 (229,3)	70	26.1				
	—350	1-1/2"	1.19 (30,2)	4.35 (110,4)	8.82 (224,0)	15.57 (395,4)	9.03 (229,3)	72	26.9				
	—400	1-1/2"	1.19 (30,2)	4.35 (110,4)	8.82 (224,0)	15.85 (402,5)	9.03 (229,3)	74	27.6				
	—450	1-1/2"	1.19 (30,2)	4.35 (110,4)	8.82 (224,0)	16.14 (409,9)	9.03 (229,3)	76	28.4				
20400	—150	1-1/2"	1.37 (34,7)	4.35 (110,4)	9.10 (231,1)	14.71 (373,6)	9.31 (236,4)	64	23.9				
	—200	1-1/2"	1.37 (34,7)	4.35 (110,4)	9.10 (231,1)	15.56 (395,2)	9.31 (236,4)	66	24.6				
	—250	1-1/2"	1.37 (34,7)	4.35 (110,4)	9.10 (231,1)	15.96 (405,3)	9.31 (236,4)	68	25.4				
	—300	1-1/2"	1.37 (34,7)	4.35 (110,4)	9.10 (231,1)	16.24 (412,4)	9.31 (236,4)	70	26.1				
	—350	1-1/2"	1.37 (34,7)	4.35 (110,4)	9.10 (231,1)	15.85 (402,5)	9.31 (236,4)	72	26.9				
	—400	1-1/2"	1.37 (34,7)	4.35 (110,4)	9.10 (231,1)	16.13 (409,7)	9.31 (236,4)	76	28.4				
	—450	1-1/2"	1.37 (34,7)	4.35 (110,4)	9.10 (231,1)	16.42 (417,0)	9.31 (236,4)	78	29.1				
20450	—150	1-1/2"	1.37 (34,7)	4.66 (118,3)	9.39 (238,5)	15.00 (381,0)	9.61 (244,0)	66	24.6				
	—200	1-1/2"	1.37 (34,7)	4.66 (118,3)	9.39 (238,5)	15.85 (402,5)	9.61 (244,0)	68	25.4				
	—250	1-1/2"	1.37 (34,7)	4.66 (118,3)	9.39 (238,5)	16.25 (412,7)	9.61 (244,0)	70	26.1				
	—300	1-1/2"	1.37 (34,7)	4.66 (118,3)	9.39 (238,5)	16.53 (419,8)	9.61 (244,0)	74	27.6				
	—350	1-1/2"	1.37 (34,7)	4.66 (118,3)	9.39 (238,5)	16.14 (409,9)	9.61 (244,0)	76	28.4				
	—400	1-1/2"	1.37 (34,7)	4.66 (118,3)	9.39 (238,5)	16.42 (417,0)	9.61 (244,0)	78	29.1				
	—450	1-1/2"	1.37 (34,7)	4.66 (118,3)	9.39 (238,5)	16.71 (424,4)	9.61 (244,0)	80	29.9				

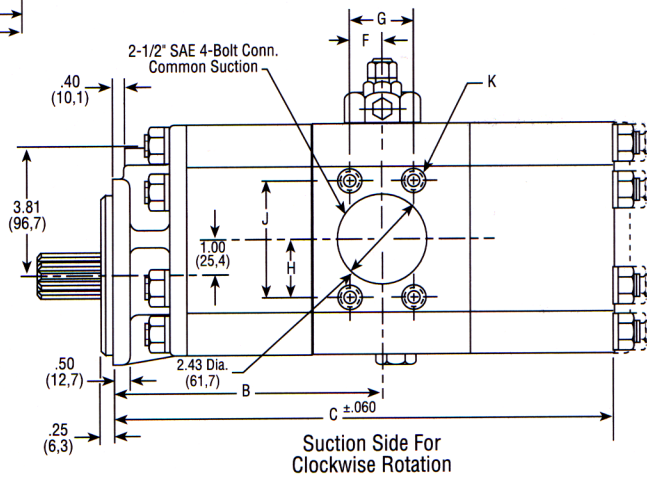
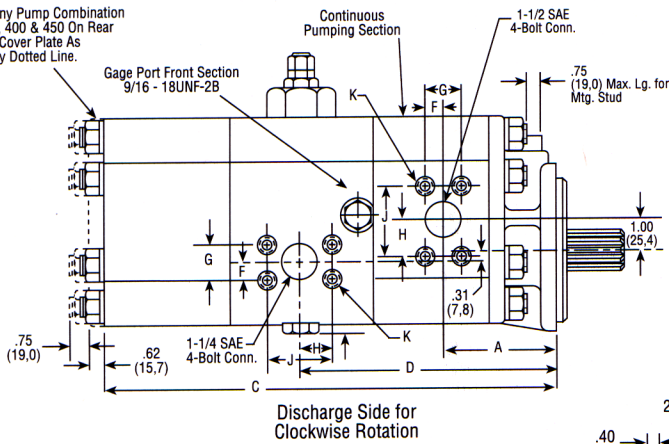
Dimensional Data

SAE 4-Bolt Connector Ports

Size	F	G	H	J	K
1"	.51 (12,9)	1.03 (26,1)	1.03 (26,1)	2.06 (52,3)	3/8-16NC
1-1/4"	.58 (14,7)	1.16 (29,4)	1.15 (29,3)	2.31 (58,6)	7/16-14NC
1-1/2"	.70 (17,7)	1.40 (35,5)	1.37 (34,7)	2.75 (69,8)	1/2-13NC
2-1/2"	1.00 (25,4)	2.00 (50,8)	1.75 (44,4)	3.50 (88,9)	1/2-13NC



NOTE: Any Pump Combination with 350, 400 & 450 On Rear Will Use Cover Plate As Shown By Dotted Line.



* These dimensions locate \bar{C} of bolt pattern only

SAE 4-Bolt NPT Connectors are available. See Accessory Section