



Bulletin B-420C

Bell & Gossett



VSC®/VSCS® Pumps – Technical Bulletin

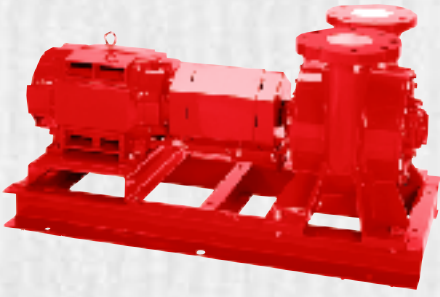


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Useful Pump Formulas

$$\begin{aligned} \text{Pressure (PSI)} &= \frac{\text{Head (Feet)} \times \text{Specific Gravity}}{2.31} \\ \text{Head (Feet)} &= \frac{\text{Pressure (PSI)} \times 2.31}{\text{Specific Gravity}} \\ \text{Vacuum (Inches of Mercury)} &= \frac{\text{Dynamic Suction Lift (Feet)} \times .883}{\text{Specific Gravity}} \\ \text{Horsepower (Brake)} &= \frac{\text{GPM} \times \text{Head (Feet)} \times \text{Specific Gravity}}{3960 \times \text{Pump Efficiency}} \\ \text{Horsepower (Water)} &= \frac{\text{GPM} \times \text{Head (Feet)} \times \text{Specific Gravity}}{3960} \\ \text{Efficiency (Pump)} &= \frac{\text{Horsepower (Water)}}{\text{Horsepower (Brake)}} \times 100 \text{ Per Cent} \\ \text{NPSH (Available)} &= \text{Positive Factors} - \text{Negative Factors} \end{aligned}$$

Affinity Laws: Effect of change of speed or impeller diameter on centrifugal pumps.

	GPM Capacity	Ft. Head	BHP
Impeller Diameter Change	$Q_2 = \frac{D_2}{D_1} Q_1$	$H_2 = \left(\frac{D_2}{D_1}\right)^2 H_1$	$P_2 = \left(\frac{D_2}{D_1}\right)^3 P_1$
Speed Change	$Q_2 = \frac{RPM_2}{RPM_1} Q_1$	$H_2 = \left(\frac{RPM_2}{RPM_1}\right)^2 H_1$	$P_2 = \left(\frac{RPM_2}{RPM_1}\right)^3 P_1$

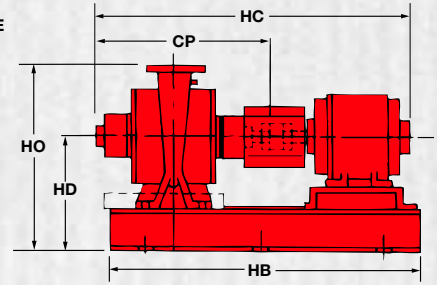
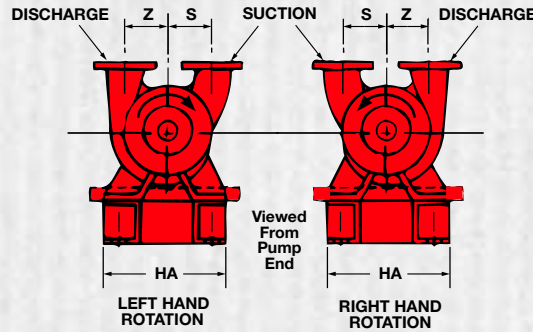
Where Q = GPM, H = Head, P = BHP, D = Impeller Dia., RPM = Pump Speed

DIMENSIONS

Dimensions subject to change without notice. Do not use for construction purposes.

NOTE: Flanges are 125# ANSI Standard.
Optional 250# ANSI rating is available.

Right hand rotation is furnished unless otherwise specified.



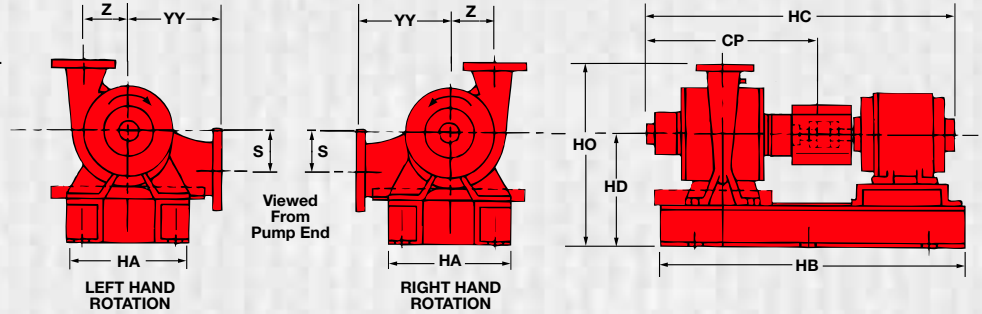
PUMP SIZE	MOTOR FRAME	STANDARD MECHANICAL SEAL CONSTRUCTION PUMP MODEL VSC, VSC-F								STUFFING BOX CONSTRUCTION VSC-PF, VSC-S & VSC-D							
		DIMENSIONS IN INCHES (MM)								DIMENSIONS IN INCHES (MM)							
		CP	HA	HB	HC MAX.	HD	HO	S	Z	CP	HA	HB	HC MAX.	HD	HO	S	Z
4x4x9 1/4L	182T-184T	19(483)	19 1/2(495)	38 1/4(972)	40 1/4(1019)	13 1/4(337)	22 3/4(578)	6(152)	6(152)	25 1/4(641)	19 1/2(495)	38 1/4(972)	46 1/4(1178)	13 1/4(337)	22 3/4(578)	6(152)	6(152)
	43 3/4(1102)			43 3/4(1102)	49 3/4(1260)							49 3/4(1260)					
	43 3/4(1102)			48 1/4(1222)	49 3/4(1260)							54 3/4(1381)					
4x4x9 1/4L 3500 RPM	254T-256T	19(483)	19 1/2(495)	49 3/4(1260)	49 3/4(1260)	13 1/4(337)	22 3/4(578)	6(152)	6(152)	25 1/4(641)	19 1/2(495)	49 3/4(1260)	56 1/4(1426)	13 1/4(337)	22 3/4(578)	6(152)	6(152)
	284TS-286TS			50 3/4(1289)	50 3/4(1289)							57(1448)					
	324TS-326TS			54 1/4(1375)	54 1/4(1375)							60 3/4(1534)					
	364TS-365TS			56 3/4(1432)	56 3/4(1432)							62 5/8(1591)					
5x5x9 3/4B	182T-184T	19(483)	19 1/2(495)	38 1/4(972)	40 1/4(1019)	13 1/4(337)	23 3/4(603)	7 1/4(184)	7 1/4(184)	25 1/4(641)	19 1/2(495)	38 1/4(972)	46 1/4(1178)	13 1/4(337)	23 3/4(603)	7 1/4(184)	7 1/4(184)
	213T-215T			43 3/4(1102)	43 3/4(1102)							49 3/4(1260)	49 3/4(1260)				
	254T-256T			43 3/4(1102)	49 3/4(1260)							49 3/4(1260)	56 1/4(1426)				
5x5x9 3/4B 3550 RPM	284TS	19(483)	19 1/2(495)	49 3/4(1260)	49 1/4(1251)	13 1/4(337)	23 3/4(603)	7 1/4(184)	7 1/4(184)	25 1/4(641)	19 1/2(495)	49 3/4(1260)	55 1/2(1410)	13 1/4(337)	23 3/4(603)	7 1/4(184)	7 1/4(184)
	286TS				50 3/4(1289)							50 3/4(1289)	57(1448)				
	324TS				52 5/8(1337)							52 5/8(1337)	58 7/8(1495)				
	326TS				54 1/4(1375)							54 1/4(1375)	60 3/4(1534)				
	364TS				55 1/4(1416)							55 1/4(1416)	62(1575)				
	365TS				56 3/4(1432)							56 3/4(1432)	62 5/8(1591)				
	404TS-405TS				58 3/4(1489)							58 3/4(1489)	64 7/8(1648)				
444TS	26(660)	59 1/4(1505)	64 1/2(1638)	18(457)	28 1/2(724)	26(660)	59 1/4(1505)	70 3/4(1797)	18(457)	28 1/2(724)							
5x5x12B 5x5x12L	213T-215T	19(483)	19 1/2(495)	38 1/4(972)	43 3/4(1102)	13 1/4(337)	24 3/4(629)	8(203)	8(203)	25 1/4(641)	19 1/2(495)	43 3/4(1102)	49 3/4(1260)	13 1/4(337)	24 3/4(629)	8(203)	8(203)
	254T-256T			43 3/4(1102)	49 3/4(1260)							49 3/4(1260)	56 1/4(1426)				
	284T-286T			49 3/4(1260)	52 1/4(1324)							52 1/4(1324)	58 3/4(1483)				
	324T-326T			49 3/4(1260)	55 5/8(1413)							55 5/8(1413)	61 7/8(1572)				
6x6x9 3/4B 6x6x9 1/4L	213T-215T	22 1/4(578)	26(660)	53 3/4(1365)	48 1/4(1222)	15 1/2(394)	27(686)	8(203)	8(203)	30 3/4(772)	26(660)	53 3/4(1365)	55 3/4(1416)	15 1/2(394)	27(686)	8(203)	8(203)
	254T-256T			53 3/4(1365)	53 3/4(1365)							61 1/4(1556)					
	284T-286T			55 1/4(1419)	55 1/4(1419)							63 1/2(1613)					
6x6x9 3/4B 3550 RPM	324T	22 1/4(578)	26(660)	53 3/4(1365)	58(1473)	15 1/2(394)	27(686)	8(203)	8(203)	30 3/4(772)	26(660)	59 1/4(1505)	65 5/8(1667)	15 1/2(394)	27(686)	8(203)	8(203)
	286TS				54 1/2(1384)							54 1/2(1384)	62 1/4(1578)				
	324TS				56 3/4(1432)							56 3/4(1432)	64(1626)				
	326TS				57 7/8(1470)							57 7/8(1470)	65 1/2(1664)				
	364TS				59 1/2(1511)							59 1/2(1511)	67 1/4(1705)				
	365TS				60 1/4(1527)							60 1/4(1527)	67 3/4(1721)				
	404TS				62 3/4(1584)							62 3/4(1584)	70(1778)				
405TS	63 7/8(1622)	63 7/8(1622)	71 1/2(1816)														
444TS	32(813)	68 1/4(1734)	20(508)	31 1/2(800)	32(813)	71(1803)	75 7/8(1927)	20(508)	31 1/2(800)								
6x8x9 3/4H 6x8x9 1/4HL	213T-215T	21 3/4(552)	26(660)	53 7/8(1368)	47 1/4(1197)	15 1/2(394)	28(711)	8 1/4(210)	8 1/4(210)	28 1/2(729)	26(660)	53 7/8(1368)	54 1/4(1375)	15 1/2(394)	28(711)	8 1/4(210)	8 1/4(210)
	254T-256T			52 3/4(1337)	52 3/4(1337)							59 3/4(1514)					
	284T-286T			54 7/8(1394)	54 7/8(1394)							61 3/4(1568)					
	324T-326T			58 3/4(1483)	58 3/4(1483)							65 3/4(1661)					
6x6x12L	215T	22 3/4(578)	26(660)	53 7/8(1368)	48 1/4(1222)	15 1/2(394)	28(711)	8 3/4(222)	8 3/4(222)	30 3/4(772)	26(660)	53 7/8(1368)	55 3/4(1416)	15 1/2(394)	28(711)	8 3/4(222)	8 3/4(222)
	254T-256T				53 3/4(1362)							53 3/4(1362)	61 1/4(1556)				
	284T-286T				55 7/8(1419)							55 7/8(1419)	63 3/4(1613)				
	324T-326T				59 3/4(1508)							59 3/4(1508)	67(1702)				
	364TS				59 1/2(1511)							59 1/2(1511)	67 1/8(1705)				
8x8x10 1/2 8x8x11 3/4L	254T-256T	23 1/2(608)	26(660)	53 7/8(1368)	54 7/8(1394)	15 1/2(394)	29 1/2(749)	8 1/2(216)	8 1/2(216)	31 3/4(802)	26(660)	53 7/8(1368)	62 1/2(1588)	15 1/2(394)	29 1/2(749)	8 1/2(216)	8 1/2(216)
	284T-286T			57(1448)	57(1448)							64 3/4(1641)					
	324T-326T			60 3/4(1540)	60 3/4(1540)							68 1/4(1734)					
	364TS-365TS			61 1/4(1556)	61 1/4(1556)							68 7/8(1749)					
8x8x13B	256T	23 1/2(608)	26(660)	53 3/4(1368)	54 7/8(1394)	17(432)	31(787)	9 1/2(241)	9 1/2(241)	31 3/4(802)	26(660)	53 3/4(1368)	62 1/2(1588)	17(432)	31(787)	9 1/2(241)	9 1/2(241)
	284T-286T				57(1448)							57(1448)	64 3/4(1641)				
	324T-326T				60 3/4(1540)							60 3/4(1540)	68 1/4(1734)				
	364TS-365TS				61 3/4(1559)							61 3/4(1559)	69(1753)				
	404TS				63 3/4(1616)							63 3/4(1616)	71 1/4(1810)				
10x10x13 10x10x13L	286T	27 3/8(695)	32(813)	71(1803)	60 1/2(1537)	20(508)	37(940)	11(279)	11(279)	35 5/8(905)	32(813)	60 1/2(1537)	68 3/4(1746)	20(508)	37(940)	11(279)	11(279)
	324T-326T				64(1626)							64(1626)	72 1/4(1835)				
	364T-365T				64 3/4(1645)							64 3/4(1645)	75 1/4(1908)				
	364TS-365TS				68 1/2(1740)							68 1/2(1740)	73(1854)				
	404TS-405TS				74 7/8(1902)							74 7/8(1902)	76 3/4(1949)				
444TS-445TS	66 7/8(1699)	66 7/8(1699)	83 1/4(2111)	83 1/4(2111)													

DIMENSIONS

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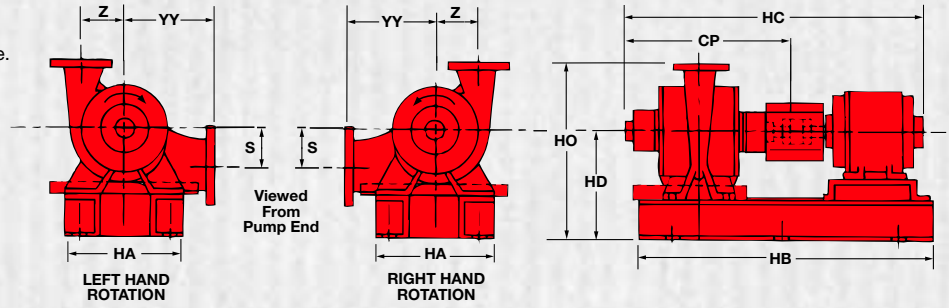
PUMP SIZE	MOTOR FRAME	STANDARD MECHANICAL SEAL CONSTRUCTION PUMP MODEL VSCS, VSCS-F									STUFFING BOX CONSTRUCTION VSCS-PF, VSCS-S & VSCS-D								
		DIMENSIONS IN INCHES (MM)									DIMENSIONS IN INCHES (MM)								
		CP	HA	HB	HC MAX.	HD	HO	S	YY	Z	CP	HA	HB	HC MAX	HD	HO	S	YY	Z
4x5x14 ^{3/4}	254T-256T	22 ^{3/4} (578)	26(660)	53 ^{3/4} (1365)	55 ^{5/8} (1413)	17(432)	30(762)	6(152)	15(381)	9(229)	30 ^{3/8} (772)	26(660)	53 ^{3/4} (1365)	61 ^{1/4} (1556)	17(432)	30(762)	6(152)	15(381)	9(229)
	55 ^{5/8} (1419)				63 ^{1/2} (1613)														
	59 ^{3/8} (1508)				67(1702)														
	60 ^{1/8} (1527)				67 ^{3/4} (1721)														
5x6x9 ^{3/4} B	364TS-365TS	19(483)	19 ^{1/2} (495)	38 ^{1/4} (972)	40 ^{1/8} (1019)	13 ^{1/4} (337)	23 ^{3/4} (603)	3(76)	13(330)	7 ^{1/4} (184)	25 ^{1/4} (641)	19 ^{1/2} (495)	38 ^{1/4} (972)	46 ^{3/8} (1178)	13 ^{1/4} (337)	23 ^{3/4} (603)	3(76)	13(330)	7 ^{1/4} (184)
	40 ^{1/8} (1019)				46 ^{3/8} (1178)														
	43 ^{3/8} (1102)				49 ^{3/8} (1260)														
	49 ^{3/8} (1260)				56 ^{1/8} (1426)														
5x6x9 ^{3/4} B 3550 RPM	284TS	19(483)	19 ^{1/2} (495)	49 ^{3/8} (1260)	49 ^{3/8} (1260)	14 ^{1/4} (362)	24 ^{3/4} (629)	3(76)	13(330)	7 ^{1/4} (184)	25 ^{1/4} (641)	19 ^{1/2} (495)	49 ^{3/8} (1260)	55 ^{1/2} (1410)	14 ^{1/4} (362)	24 ^{3/4} (629)	3(76)	13(330)	7 ^{1/4} (184)
	286TS				50 ^{3/4} (1289)								57(1448)						
	324TS				52 ^{5/8} (1337)								57 ^{3/8} (1470)						
	326TS				54 ^{1/8} (1375)								60 ^{3/8} (1533)						
	364TS				55 ^{1/2} (1416)								62(1575)						
	365TS				56 ^{3/8} (1432)								62 ^{5/8} (1591)						
5x6x12B 5x6x12L	213T-215T	19(483)	19 ^{1/2} (495)	43 ^{3/8} (1102)	43 ^{3/8} (1102)	13 ^{1/4} (337)	24 ^{3/4} (629)	2(51)	12 ^{7/8} (327)	8(203)	25 ^{1/4} (641)	19 ^{1/2} (495)	43 ^{3/8} (1102)	49 ^{3/8} (1260)	13 ^{1/4} (337)	24 ^{3/4} (629)	2(51)	12 ^{7/8} (327)	8(203)
	254T-256T				49 ^{3/8} (1260)								56 ^{1/8} (1426)						
	284T-286T				52 ^{1/8} (1324)								58 ^{3/8} (1483)						
	324T-326T				55 ^{1/8} (1413)								61 ^{1/8} (1572)						
5x6x15 ^{1/2}	254T-256T	23 ^{15/16} (608)	26(660)	53 ^{3/4} (1365)	54 ^{7/8} (1394)	17(432)	30(762)	4 ^{9/16} (116)	17 ^{3/4} (451)	10 ^{1/2} (267)	31 ^{9/16} (802)	26(660)	53 ^{3/4} (1365)	62 ^{1/2} (1588)	17(432)	30(762)	4 ^{9/16} (116)	17 ^{3/4} (451)	10 ^{1/2} (267)
	284T-286T				57(1448)								64 ^{3/8} (1641)						
	324T-326T				60 ^{3/8} (1540)								68 ^{1/4} (1734)						
	364TS-365TS				61 ^{3/8} (1559)								69(1753)						
	404TS				65 ^{1/8} (1654)								72 ^{1/4} (1848)						
6x8x9 ^{3/4} B 6x8x9 ^{3/4} L	213T-215T	22 ^{3/4} (578)	26(660)	53 ^{3/4} (1365)	48 ^{1/8} (1222)	15 ^{1/2} (394)	27(686)	3(76)	15(381)	8(203)	30 ^{3/8} (772)	26(660)	53 ^{3/4} (1365)	55 ^{3/4} (1416)	15 ^{1/2} (394)	27(686)	3(76)	15(381)	8(203)
	254T-256T				53 ^{3/8} (1362)								61 ^{1/4} (1556)						
	284T-286T				55 ^{1/8} (1419)								63 ^{1/2} (1613)						
	324T				58(1473)								65 ^{3/8} (1667)						
	286TS				54 ^{1/2} (1384)								62 ^{1/8} (1578)						
	324TS				56 ^{3/8} (1432)								64(1626)						
6x8x9 ^{3/4} B 3550 RPM	326TS	22 ^{3/4} (578)	26(660)	53 ^{3/4} (1365)	57 ^{3/8} (1470)	15 ^{1/2} (394)	27(686)	3(76)	15(381)	8(203)	30 ^{3/8} (772)	26(660)	53 ^{3/4} (1365)	62 ^{1/8} (1578)	15 ^{1/2} (394)	27(686)	3(76)	15(381)	8(203)
	364TS				59 ^{1/2} (1511)								67 ^{1/8} (1705)						
	365TS				60 ^{1/8} (1527)								67 ^{3/4} (1721)						
	404TS				62 ^{3/8} (1584)								70(1778)						
	405TS				63 ^{1/8} (1622)								71 ^{1/2} (1816)						
	444TS				68 ^{1/4} (1734)								75 ^{3/8} (1927)						
6x8x9 ^{3/4} H 6x8x9 ^{3/4} HL	213T-215T	21 ^{3/4} (552)	26(660)	53 ^{3/4} (1365)	47 ^{1/8} (1197)	15 ^{1/2} (394)	28(711)	5(127)	16(406)	8 ^{1/4} (210)	28 ^{11/16} (729)	26(660)	53 ^{3/4} (1365)	54 ^{1/8} (1375)	15 ^{1/2} (394)	28(711)	5(127)	16(406)	8 ^{1/4} (210)
	254T-256T				52 ^{3/8} (1337)								59 ^{3/8} (1514)						
	284T-286T				54 ^{1/8} (1394)								61 ^{3/8} (1568)						
	324T-326T				58 ^{3/8} (1483)								65 ^{3/8} (1661)						
6x8x12L	215T	22 ^{3/4} (578)	26(660)	53 ^{3/4} (1365)	48 ^{1/8} (1222)	15 ^{1/2} (394)	28(711)	2 ^{1/2} (64)	15(381)	8 ^{3/4} (222)	30 ^{3/8} (772)	26(660)	53 ^{3/4} (1365)	55 ^{3/4} (1416)	15 ^{1/2} (394)	28(711)	2 ^{1/2} (64)	15(381)	8 ^{3/4} (222)
	254T-256T				53 ^{3/8} (1362)								61 ^{1/4} (1556)						
	284T-286T				55 ^{1/8} (1419)								63 ^{1/2} (1613)						
	324T-326T				59 ^{1/8} (1508)								67(1702)						
	364TS				59 ^{1/2} (1511)								67 ^{1/8} (1705)						
8x10x10 ^{1/2} 8x10x11 ^{3/4} L	254T-256T	23 ^{15/16} (608)	26(660)	53 ^{3/4} (1365)	54 ^{7/8} (1394)	15 ^{1/2} (394)	29 ^{1/2} (749)	4 ^{1/2} (114)	17(432)	8 ^{1/2} (216)	31 ^{9/16} (802)	26(660)	53 ^{3/4} (1365)	62 ^{1/2} (1588)	15 ^{1/2} (394)	29 ^{1/2} (749)	4 ^{1/2} (114)	17(432)	8 ^{1/2} (216)
	284T-286T				57(1448)								64 ^{3/8} (1641)						
	324T-326T				60 ^{3/8} (1540)								68 ^{1/4} (1734)						
	364TS-365TS				61 ^{1/8} (1556)								68 ^{3/8} (1749)						
8x10x13B	256T	23 ^{15/16} (608)	26(660)	53 ^{3/4} (1365)	54 ^{7/8} (1394)	17(432)	31(787)	5 ^{1/2} (140)	17(432)	9 ^{1/2} (241)	31 ^{9/16} (802)	26(660)	53 ^{3/4} (1365)	62 ^{1/2} (1588)	17(932)	31(787)	5 ^{1/2} (140)	17(432)	9 ^{1/2} (241)
	284T-286T				57(1448)								64 ^{3/8} (1641)						
	324T-326T				60 ^{3/8} (1540)								69 ^{1/4} (1759)						
	364TS-365TS				61 ^{3/8} (1559)								69(1753)						
	404TS				63 ^{3/8} (1616)								71 ^{1/4} (1810)						
10x12x11 10x12x11 ^{3/4} L	256T	23 ^{15/16} (608)	26(660)	53 ^{3/4} (1365)	54 ^{7/8} (1394)	18 ^{1/2} (470)	34 ^{1/2} (876)	4 ^{1/2} (114)	18(457)	10(254)	31 ^{9/16} (802)	26(660)	53 ^{3/4} (1365)	62 ^{1/2} (1588)	18 ^{1/2} (470)	34 ^{1/2} (876)	4 ^{1/2} (114)	18(457)	10(254)
	284T-286T				57(1448)								64 ^{3/8} (1641)						
	324T-326T				60 ^{3/8} (1540)								68 ^{1/4} (1734)						
	364TS-365TS				61 ^{3/8} (1559)								69(1753)						
10x12x13 10x12x13L	404TS-405TS	27 ^{3/8} (695)	32(813)	71(1803)	65 ^{1/8} (1654)	20(508)	37(940)	6 ^{1/2} (165)	21(533)	11(279)	35 ^{5/8} (905)	32(813)	59 ^{1/4} (1505)	72 ^{1/4} (1848)	20(508)	37(940)	6 ^{1/2} (165)	21(533)	11(279)
	286T				60 ^{1/2} (1537)								68 ^{3/8} (1746)						
	324T-326T				64(1626)								72 ^{1/4} (1835)						
	364T-365T				66 ^{1/8} (1699)								75 ^{1/8} (1908)						
	364TS-365TS				64 ^{3/4} (1645)								73(1854)						

DIMENSIONS

Dimensions subject to change without notice. Do not use for construction purposes.

NOTE: Flanges are 125# ANSI Standard.
Optional 250# ANSI rating is available.

Right hand rotation is furnished unless otherwise specified.



PUMP SIZE	MOTOR FRAME	DIMENSIONS IN INCHES (MM)									
		CP	HA	HB	HC MAX.	HD	HO	S	YY	Z	
8x10x17 Stuffing Box Only	284T-286T	31 ⁹ / ₁₆ (802)	32 (813)	71 (1803)	64 ⁹ / ₁₆ (1641)	20 (508)	39 (991)	5 ¹ / ₂ (140)	21 (533)	11 ⁷ / ₈ (302)	
	324T-326T				68 ¹ / ₄ (1734)						
	364T-365T				71 ¹ / ₈ (1807)						
	364TS-365TS				69 ¹ / ₈ (1753)						
	404TS-405TS				72 ³ / ₄ (1848)						
444TS-445TS	79 ¹ / ₈ (2010)										
8x10x17L Standard Mechanical Seal Only	286T	23 ¹⁵ / ₁₆ (608)	32 (813)	71 (1803)	57(1448)	20 (508)	39 (991)	5 ¹ / ₂ (140)	21 (533)	11 ⁷ / ₈ (302)	
	324T-326T				60 ⁵ / ₈ (1540)						
	364T-365T				63 ¹ / ₂ (1613)						
	365TS				61 ³ / ₈ (1559)						
	404T-405T				65 ¹ / ₈ (1554)						
	404TS-405TS				71 ¹ / ₂ (1816)						
	444TS-445TS				68 ¹ / ₈ (1730)						
10x12x17 Stuffing Box Only	326T	36 ¹ / ₈ (918)	32 (813)	71 (1803)	72 ³ / ₄ (1848)	21 ¹ / ₂ (546)	40 ¹ / ₂ (1029)	7 (178)	21 (533)	12 ³ / ₁₆ (310)	
	364T-365T				75 ⁵ / ₈ (1921)						
	404T-405T				80 ¹ / ₄ (2038)						
	444T				85 ³ / ₈ (2169)						
	404TS-405TS				77 ¹ / ₄ (1962)						
	444TS-445TS				83 ⁵ / ₈ (2124)						
	250 HP 1800 RPM 300 HP 1800 RPM				36 (914)						*
10x12x17L Standard Mechanical Seal Only	326T	29 ¹ / ₈ (740)	32 (813)	71 (1803)	65 ³ / ₄ (1670)	21 ¹ / ₂ (546)	40 ¹ / ₂ (1029)	7 (178)	21 (533)	12 ³ / ₁₆ (310)	
	364T-365T				68 ⁵ / ₈ (1743)						
	404T-405T				73 ¹ / ₄ (1861)						
	444T				78 ³ / ₈ (1991)						
	404TS-405TS				70 ¹ / ₄ (1784)						
	444TS-445TS				76 ⁵ / ₈ (1946)						
	250 HP and Larger				Consult Factory						
12x14x12 ¹ / ₂ Stuffing Box Only	284T-286T	36 ¹ / ₈ (918)	32 (813)	71 (1803)	69 ¹ / ₄ (1759)	21 ¹ / ₂ (546)	39 ¹ / ₂ (1003)	6 ³ / ₄ (171)	21 (533)	10 ⁷ / ₈ (276)	
	324T-326T				72 ³ / ₄ (1848)						
	364TS-365TS				73 ¹ / ₂ (1867)						
	404TS-405TS				77 ¹ / ₄ (1962)						
	444TS-445TS				83 ⁵ / ₈ (2124)						
12x14x12 ³ / ₄ L Standard Mechanical Seal Only	324T-326T	29 ¹ / ₈ (740)	32 (813)	71 (1803)	65 ³ / ₄ (1670)	21 ¹ / ₂ (546)	39 ¹ / ₂ (1003)	6 ³ / ₄ (171)	18 (457)	10 ⁷ / ₈ (276)	
	364T-365T				68 ⁵ / ₈ (1743)						
	404T				71 ³ / ₄ (1822)						
	364TS-365TS				66 ¹ / ₂ (1689)						
	404TS-405TS				70 ¹ / ₄ (1784)						
	444TS-445TS				76 ⁵ / ₈ (1946)						
	250 HP and Larger				Consult Factory						
12x14x17 ¹ / ₂ B (Not available in PF Construction) Stuffing Box Only	365T	41 ³ / ₄ (1060)	36 (914)	81 (2057)	81 ¹ / ₄ (2063)	23 ¹ / ₂ (597)	45 ¹ / ₄ (1149)	7 ³ / ₄ (197)	25 (635)	13 ¹ / ₂ (343)	
	404T-405T				85 ⁷ / ₈ (2181)						
	444T-445T				93(2362)						
	445TS				89 ¹ / ₄ (2267)						
	250 HP 1800 RPM 300 HP 1800 RPM				*						*
	350 HP 1800 RPM 400 HP 1800 RPM										
	450 HP 1800 RPM										
	250 HP and Larger				Consult Factory						
12x14x17 ¹ / ₂ L Standard Mechanical Seal Only	365T	34 (864)	36 (914)	81 (2057)	73 ¹ / ₂ (1867)	23 ¹ / ₂ (597)	45 ¹ / ₄ (1149)	7 ³ / ₄ (197)	25 (635)	13 ¹ / ₂ (343)	
	404T-405T				78 ¹ / ₈ (1984)						
	444T-445T				85 ¹ / ₄ (2165)						
	444TS-445TS				81 ¹ / ₂ (2070)						
	250 HP and Larger				Consult Factory						

* Varies with motor manufacturer.

VSC/VSCS Construction Materials

STANDARD SEAL CONFIGURATION

PART NAME	STANDARD CONSTRUCTION	ASTM NO.
Casing	Cast iron	A159 Class G3000
Volute cover plate (Outboard)	Cast iron	A159 Class G3000
Volute cover plate (Inboard)	Cast iron	A159 Class G3000
Impeller	Bronze	B584 Alloy C87500
Shaft	18-8 Stainless	A276 Type 304
Shaft Collar	Bronze	B16 Alloy C36000
Impeller nut	Bronze	B16 Alloy C36000
Bearing housing (radial/thrust)	Cast iron	A159 Class G3000
Bearing (Radial/thrust)**	Grease lubricated	
Bearing cover (radial/thrust)	Cast iron	A159-70 Class G2500
Gasket	Cellulose fiber/SBR	Lexide SV-360
Shaft seal/seat (standard)	Buna/Carbon/Ceramic	Type 21***
Shaft seal/seat (optional)	Buna/Carbon/Ceramic	Type 2/52
	EPT/Carbon/Tungsten Carbide	Type 2/52
Wear ring (optional)	Bronze	B584 Alloy C93200

STUFFING BOX CONSTRUCTION

PART NAME	STANDARD CONSTRUCTION	ASTM NO.
Casing	Cast iron	A159 Class G3000
Volute cover plate (Outboard)	Cast iron	A159 Class G3000
Volute cover plate (Inboard)	Cast iron	A159 Class G3000
Impeller	Bronze	B584 Alloy C87500
Shaft	Carbon steel	A108 Grade 1144
Shaft sleeve	18-8 Stainless*	A269 Type 304
Shaft sleeve collar	Carbon steel	SAE 1018
Impeller nut	Bronze	B16 Alloy C36000
Bearing housing (radial/thrust)	Cast iron	A159 Class G3000
Bearing (radial/thrust)**	Grease lubricated	
Bearing cover (radial/thrust)	Cast iron	A159-70 Class G2500
Gasket	Cellulose fiber	Lexide SV-360
Shaft seal/seat		
Single seal (-S)	Carbon/Tungsten Carbide standard	Durametallic RO Durametallic CRO
Wear ring (optional)	Bronze	B584 Alloy C93200

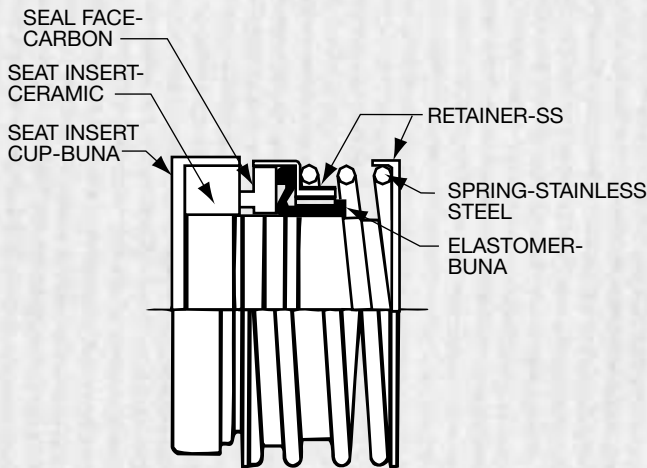
* Bronze for 12x14x17^{1/2} ASTM B505 Alloy C93200

** Wide inner ring type (except 10x12x17, 12x14x12^{1/2} and 12x14x17^{1/2})

*** Type 2/52 is standard on sizes 10x12x17L, 12x14x12^{3/4}L and 12x14x17^{1/2}L.

Engineering Data VSC/VSCS Series

MECHANICAL SEALS

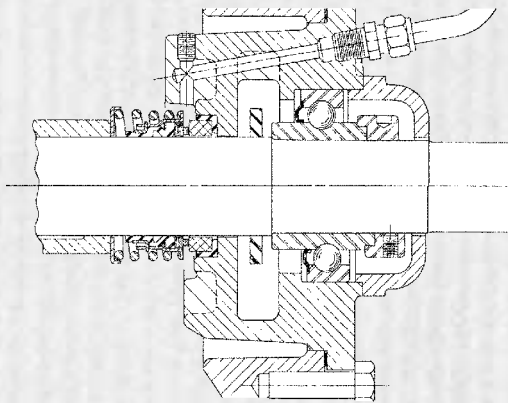


SELECTION GUIDE

Standard Size VSC/VSCS Series

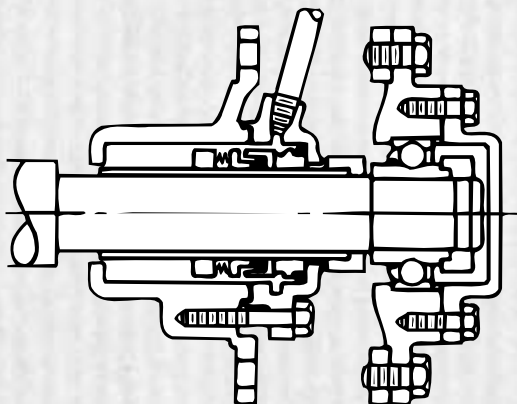
Type 21*, Carbon/Ceramic, Buna elastomer, 316 S.S. spring. Temperature range -20° to 225°F . PH limitation 7-9. Ideally suited for open or closed systems with relatively clean liquid and few abrasives.

Also available in Carbon/Tungsten Carbide, EPT elastomers construction. Temperature range -20 to 250°F . PH limitation 7-11.



VSC/VSCS-F

Standard configuration pump, Type 21*, Buna elastomer, Carbon/Ceramic seal supplied with an external flush to the seal faces. Temperature range -20 to 225°F , PH limitation 7-9. Best suited for fluid environments containing moderate amounts of abrasives. Ideal for cooling tower applications.



VSC/VSCS-S

Stuffing box configuration pump utilizes a Durametall RO, Carbon/Tungsten Carbide with an external flush to the seal faces. Elastomers are EPR (ethylene propylene rubber) and wetted metal parts 316 S.S. Temperature range -20 to 300°F^{**} , PH limitations 7-11. For use on open or closed systems where temperature or pressure requirements exceed the limits of the standard seal.

NOTE: Refer to product submittals for individual temperature and pressure capabilities.

* Type 2/52 is standard on sizes 10x12x17L, 12x14x12³/₄L and 12x14x17¹/₂L

** For operating temperatures above 250°F a cooled flush is recommended for optimum seal life. On closed systems cooling is accomplished by inserting a small heat exchanger in the flush line to cool the seal flushing liquid.

Flush-line Filters and Sediment Separators are available on special request.

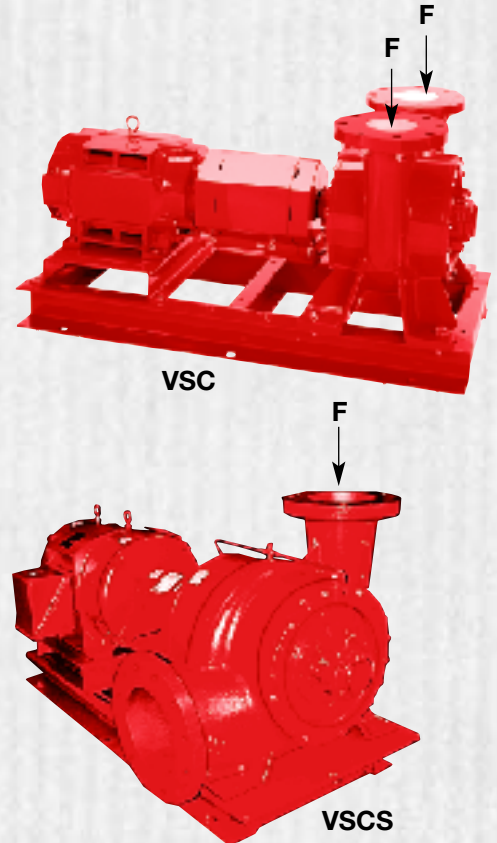
Engineering Data VSC/VSCS Series

ALLOWABLE STATIC FLANGE LOADINGS

The orientation of the nozzles on the VSC/VSCS Series Pumps permits static loads which can be supported without impairing pump operation.

The following schedule gives the maximum vertical static forces (downward) which we know from experience and judgment can be tolerated.

VSC PUMPS	VSCS PUMPS	FORCE (F) IN POUNDS ON EACH VERTICAL FLANGE
4x4x9 ¹ / ₄ L	—	2,000
5x5x9 ³ / ₄ B	5x6x9 ³ / ₄ B	2,750
5x5x12B & L	5x4x5x12B & L	2,200
6x6x9 ³ / ₄ B & L	6x8x9 ³ / ₄ B & L	3,300
6x8x9 ³ / ₄ H & HL	6x8x9 ³ / ₄ H & HL	4,800
6x6x12L	6x8x12L	3,600
8x8x10 ¹ / ₂	8x10x10 ¹ / ₂	5,000
8x8x13B	8x10x13B	5,000
—	4x5x14 ³ / ₄	2,900
—	5x6x15 ¹ / ₂	4,000
10x10x13B & L	10x12x13B & L	6,200
—	8x10x17L	5,700
—	10x12x11 & 11 ³ / ₄ L	7,500
—	10x12x17 & L	6,800
—	12x14x12 ¹ / ₂	8,100
—	12x14x12 ³ / ₄ L	8,100
—	12x14x17 ¹ / ₂ B & L	9,000

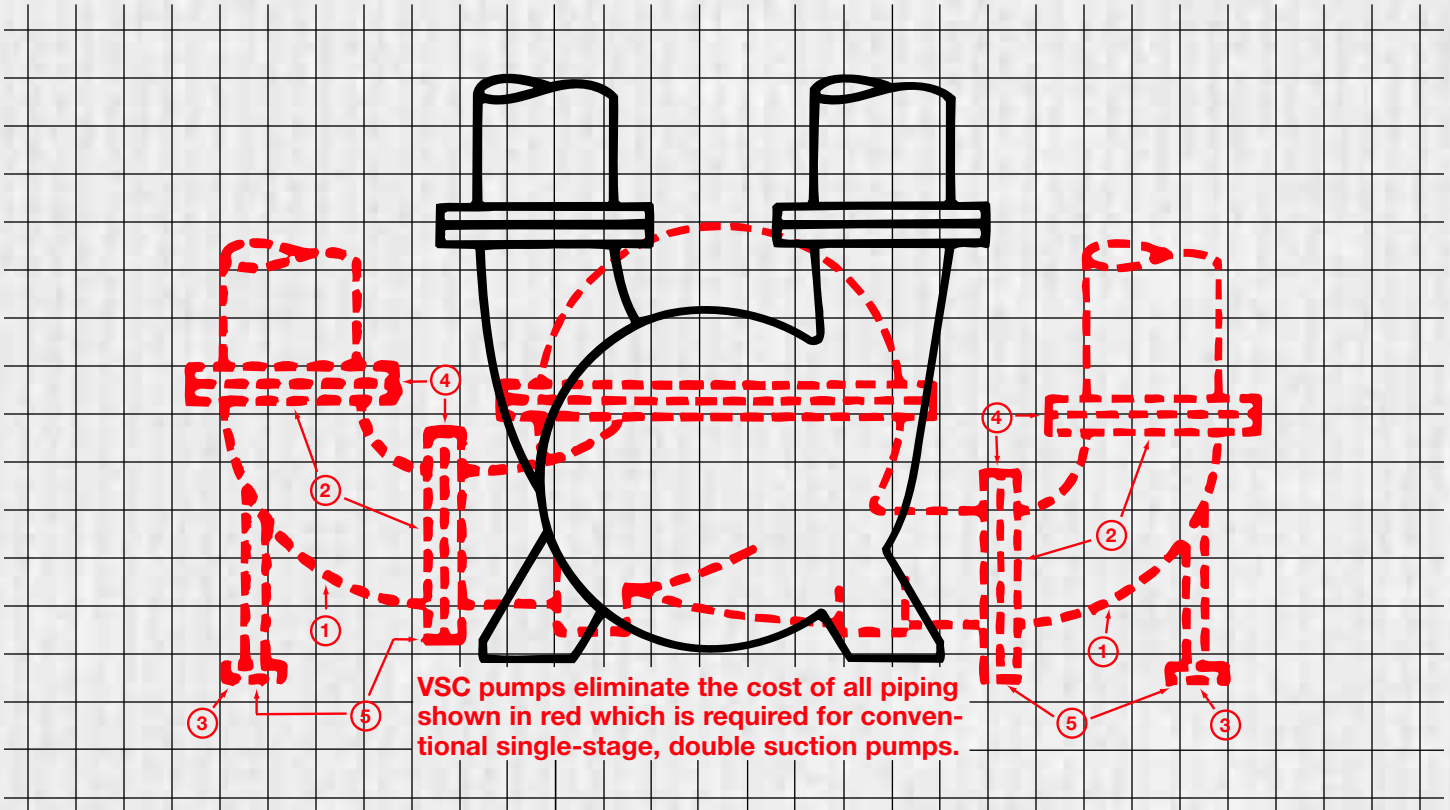


- a. The VSC/VSCS Series Pumps must be installed, with the baseplate completely grouted in accordance with Bell & Gossett and Hydraulic Institute Standards.
- b. No external moments or transverse forces should be applied to the nozzles of the VSC/VSCS Series Pumps.

Should the schedule of maximum vertical static forces (F) be exceeded, or the above limitations not be considered, malfunction of the pump and shorter life of the wearing parts will occur.

VSC/VSCS Series

FLOOR SPACE SAVINGS FOR A VSC/VSCS PUMP AS COMPARED TO A HORIZONTAL SPLIT CASE PUMP.



ESTIMATED ADDITIONAL INSTALLED COSTS FOR HORIZONTAL SPLIT CASE SINGLE-STAGE DOUBLE-SUCTION PUMPS

ITEM	DESCRIPTION	4" PIPE	6" PIPE	8" PIPE	10" PIPE
1	Two 90° long radius butt weld elbows	\$ 24.00	\$ 62.00	\$ 115.00	\$ 207.00
2	Four welding neck flanges	71.00	107.00	199.00	311.00
3	Materials for fabricating two pipe supports	14.00	17.00	24.00	38.00
4	Time for welding four flanges to elbows, gapping and setting flange	8 hrs	9.6 hrs	12.6 hrs	15.8 hrs
5	Time for locating and welding two pipe supports; positioning and bolting two elbow assemblies.	1.9 hrs	2.1 hrs	2.6 hrs	2.8 hrs
6	Total labor time	10 hrs	11.7 hrs	15.2 hrs	18.6 hrs
7	Labor @ \$35.00 per hr	\$350.00	\$409.00	\$532.00	\$651.00
8	Total estimated additional installed cost over B&G VSC Pump	\$459.00	\$595.00	\$870.00	\$1207.00

FLOOR SPACE SAVED WITH B&G VSC PUMPS

PIPE SIZE	AREA FOR CONVENTIONAL PUMPS	AREA FOR VSC PUMPS	AREA SAVED WITH VSC PUMPS
4"	16 sq. ft.	10 sq. ft.	6 sq. ft.
6"	19 sq. ft.	12 sq. ft.	7 sq. ft.
8"	24 sq. ft.	15 sq. ft.	9 sq. ft.
10"	32 sq. ft.	20 sq. ft.	12 sq. ft.

COST SAVINGS IN FLOOR SPACE WITH B&G VSC PUMPS

PIPE SIZE	AVERAGE FLOOR SPACE SAVED WITH VSC PUMPS	SAVINGS WITH VSC PUMPS \$80.00* PER SQ. FT.
4"	6 sq. ft.	\$480.00
6"	7 sq. ft.	560.00
8"	9 sq. ft.	720.00
10"	12 sq. ft.	960.00

The above estimated additional installed costs for conventional single-stage, double-suction pumps are conservative. Actual cost differentials will depend upon locale and piping practices employed.

1994 Price of Labor Estimated

* Based on average construction costs per sq. ft. of various buildings as supplied by Dodge Construction Statistic for 1994.

Typical Specifications

Furnish and install pumps with performance characteristics as shown on plans. Pumps shall be double suction vertically-split case design to facilitate servicing all internal components without disturbing the pump piping, electrical motor connections, or motor. The pump volute shall be supplied with plugged vent, drain and gage tappings. The pump casing shall be Class 30 cast iron, suitable for 175 PSI working pressure (standard) or 300 psi working pressure (optional). Flanges shall be 125 PSI ANSI (standard) or 250 PSI ANSI (optional).

The impeller shall be enclosed double suction type in cast bronze construction and shall be balanced to ANSI/HI 1.1-1.5-1994, section 1.4.6.1.3.1, figure 1.106, balance grade G6.3 for quiet operation.

The liquid cavity shall be sealed off at the pump shaft by an internally-flushed mechanical seal with ceramic seal seat and carbon seal ring, suitable for continuous operation at 225°F. The seals shall be capable of being serviced without disconnecting the pump from piping.

The pump bearings shall be regreaseable ball bearing type with provision for purging or flushing through the bearing surface, and capable of being inspected by removing the bearing covers. The shaft shall be of 18-8 stainless steel* on standard mechanical seal models.

A flexible type, center drop-out spacer coupling, capable of absorbing torsional vibration, shall be employed between the pump and motor. Pumps for variable speed application shall be provided with a suitable coupler sleeve. The coupling shall be shielded by a dual rated ANSI B15.1, Section 8 & OSHA 1910.219 compliant coupling guard and contain viewing windows for inspection of the coupling.

The pump(s) vibration limits shall conform to Hydraulic Institute ANSI/HI 1.1-1.5-1994, section 1.4.6.1.1 for recommend acceptable unfiltered field vibration limits (as measured per HI 1.4.6.5.2, Figures 1.107) for pumps with rolling contact bearings.

Base plate shall be of structural steel or fabricated steel channel with fully enclosed sides and ends, and securely welded cross members. Grouting area shall be fully open. The combined pump and motor baseplate shall be sufficiently stiff as to limit the susceptibility of vibration. The minimum base plate stiffness shall conform to ANSI/HI 1.3.4-1997 for *Horizontal Baseplate Design* standards.

The seismic capability of the pump shall allow it to withstand a horizontal load of 0.5g, excluding piping and/or fasteners used to anchor the pump to mounting pads or to the floor, without adversely affecting pump operation.

Motor shall meet NEMA and EPACT '92 (where applicable) specifications and shall be of the size, voltage and enclosure called for on the plans. Pump and motor shall be factory aligned, and shall be realigned by the contractor per factory recommendations after installation.

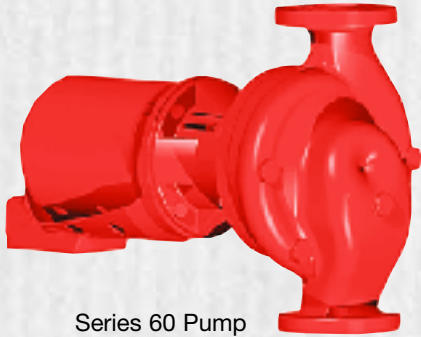
The pump(s) selected shall conform to ANSI/HI 9.6.3.1 standards for Preferred Operating Region (POR) unless otherwise approved by the engineer. The pump NPSH shall conform to the ANSI/HI 9.6.1-1997 standards for *Centrifugal and Vertical Pumps for NPSH Margin*.

Each pump shall be factory hydrostatically tested per Hydraulic Institute standards. It shall then be thoroughly cleaned and painted with at least one coat of high grade paint prior to shipment.

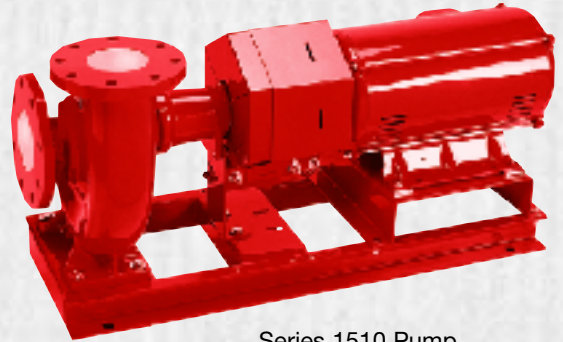
The pump(s) shall be manufactured, assembled and tested in an ISO 9001 approved facility. Pumps shall be Series VSC, VSC/S as manufactured by ITT Bell and Gossett or equal.

*Carbon steel shaft on the following pumps: VSCS 8x10x17; VSCS 10x12x17; VSCS 12x14x12¹/₂; VSCS 12x14x17¹/₂

A Complete Line of Centrifugal Pumps



Series 60 Pump



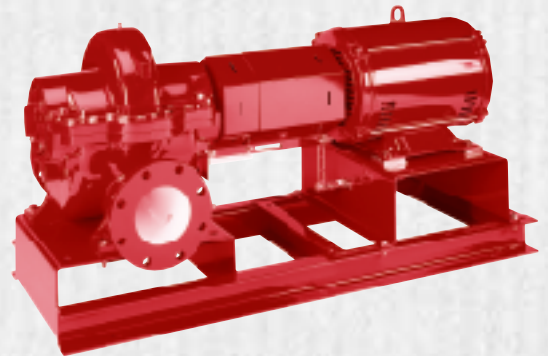
Series 1510 Pump



Series 90 Pump



Series 1531 Pump



Series HSC³ Pump



**ISO 9001
Certified**

Bell & Gossett

USA
Bell & Gossett
8200 N. Austin Avenue
Morton Grove, IL 60053
Phone: (847) 966-3700
Facsimile: (847) 966-9052
<http://www.bellgossett.com>

INTL.
Bell & Gossett / Export Dept.
8200 N. Austin Avenue
Morton Grove, IL 60053
Phone: (847) 966-3700
Facsimile: (847) 966-8366
<http://www.bellgossett.com>

CANADA
Fluid Products Canada
55 Royal Road
Guelph, Ontario,
N1H 1T1, Canada
Phone: (519) 821-1900