FILIPUSI

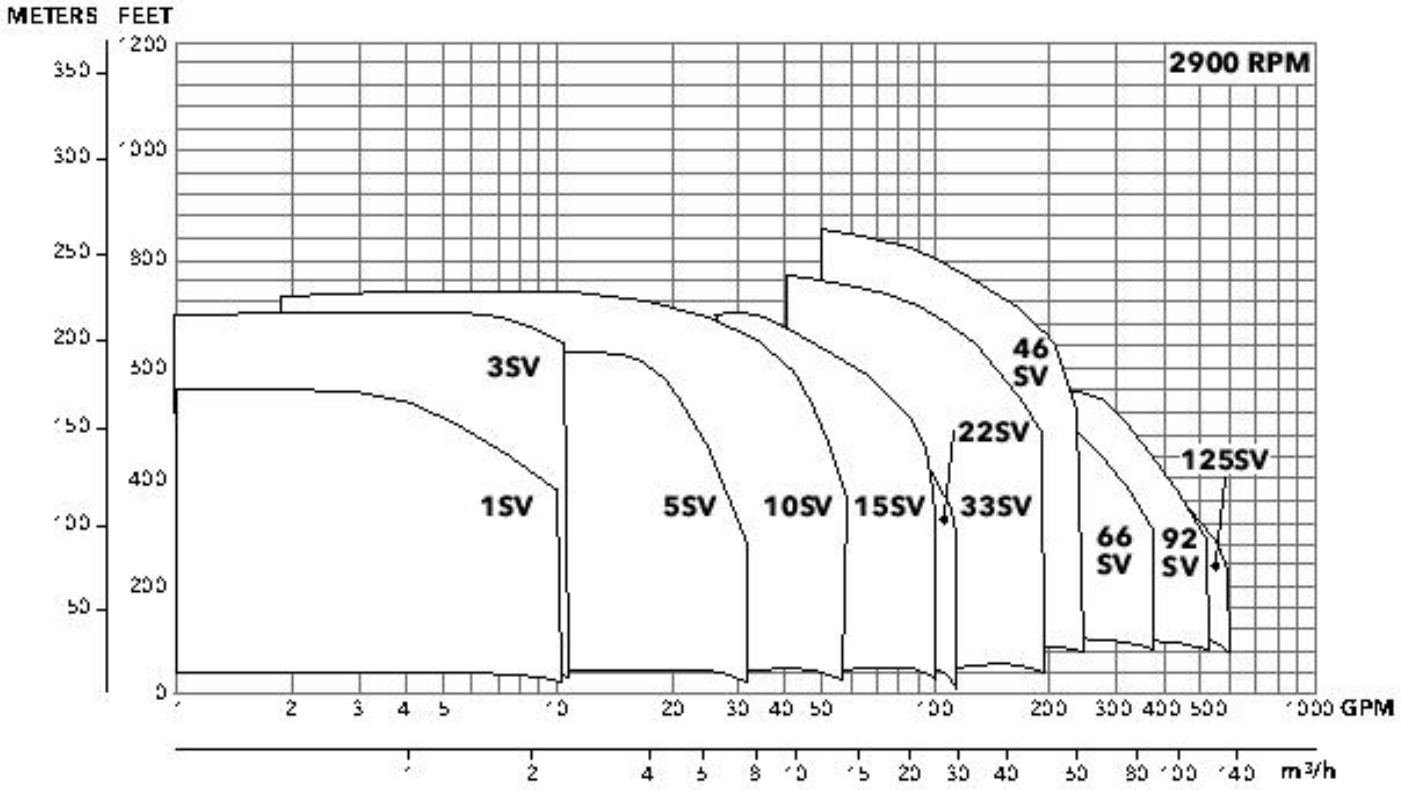
VS™ 50 Hz

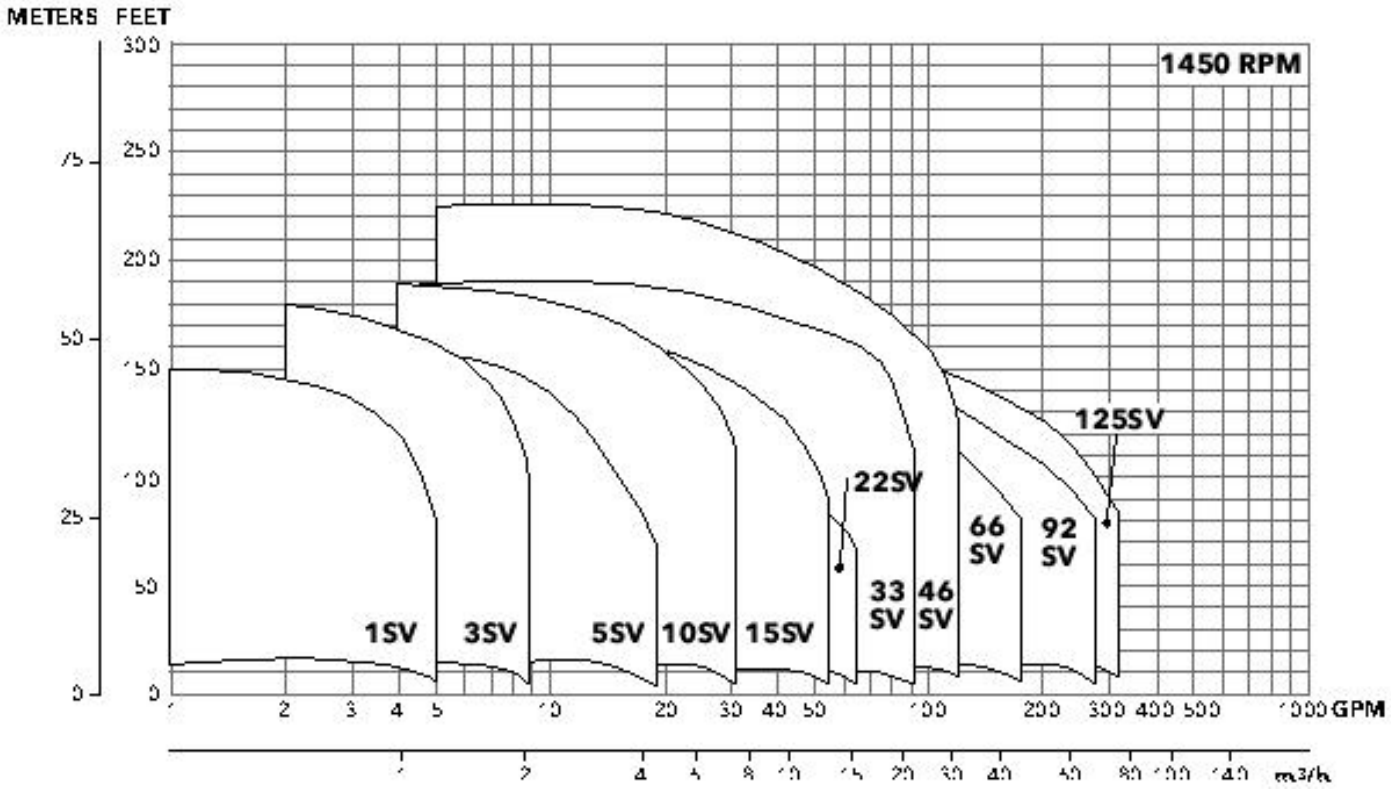
VS SERIES VERTICAL MULTISTAGE PUMPS

TECHNICAL BROCHURE

Contents

VS Coverage Curve



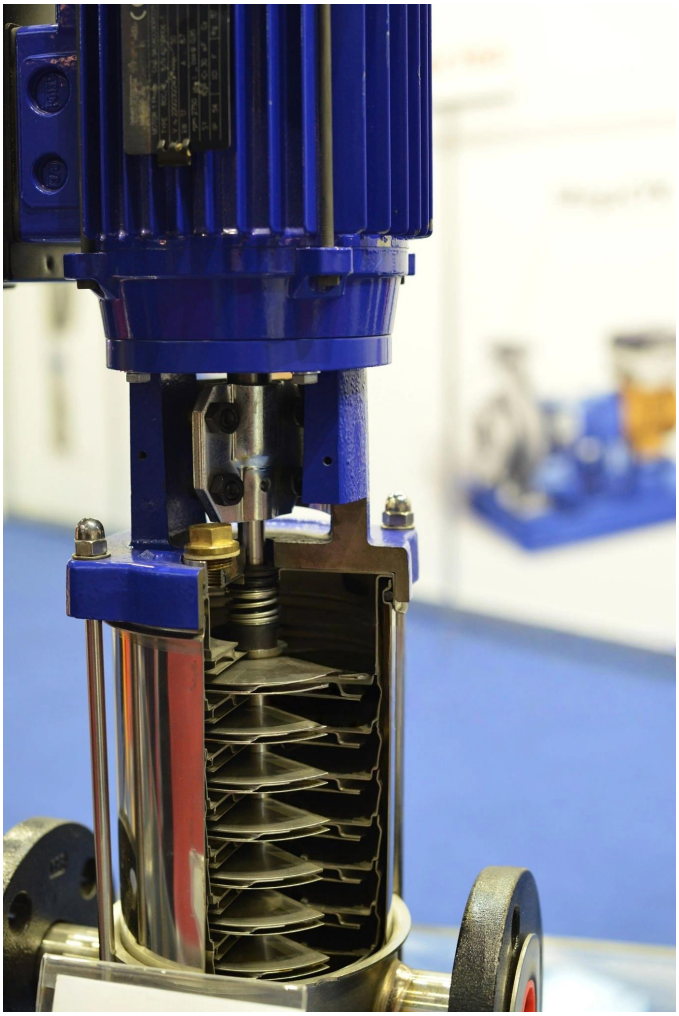


VS General Market Specifications

MUNICIPAL, AGRICULTURAL, LIGHT INDUSTRY,
WATER TREATMENT, HEATING AND AIR CONDITIONING

Applications

- Handling of water, free of suspended solids, in the municipal, industrial and agricultural markets
- Pressure boosting and water supply systems
- Fire fighting jockey pumps
- Irrigation systems
- Wash systems
- Water treatment plants: reverse osmosis
- Handling of moderately aggressive liquids, demineralized water, water and glycol, etc.
- Circulation of hot and cold water for heating, cooling and conditioning systems
- Boiler feed



Specifications

PUMP

The VS pump is a non-self priming vertical multistage pump coupled to a standard motor.
The liquid end, located between the upper cover and the pump casing, is held in place by tie rods. The pump casing is available with different configurations and connection types.

- Delivery: up to 160 m^3/hr (700 GPM)
- Head: up to 250 m (850 feet)
- Temperature of pumped liquid:
  -20°F to 250°F (-30°C to 120°C) standard version
- Optional temperature range up to 300°F (149°C) high temperature version
- Maximum operating pressure
  - VS1-22 with oval VSanges: 230 PSI (16 bar)
  - VS1-22 with round VSanges or Victaulic: 360 or 575 PSI (25 or 40 bar)
  - VS33, 46: 360 or 580 PSI (25 or 40 bar)*
  - VS 66, 92: 360 or 580 PSI (25 or 40 bar)*
  - VS 125: 360 or 580 PSI (25 or 40 bar)
- Direction of rotation: clockwise looking at the pump from the top down (marked with an arrow on the adapter and on the coupling).

MOTOR

- Standard NEMA TC Frame motors in open drip proof or totally enclosed fan cooled.
- 2900 RPM nominal
- Standard voltage:
  - Single phase version: 115-208/230 V, 50 Hz up to 2 HP or 208-230 V for 3 HP
  - Three phase version, 2 pole: 208-230/460 V, 50 Hz up 60 HP

* Based on pump staging

VS Characteristics

1VS, 3VS, 5VS, 10VS, 15VS, 22VS Series

- Vertical multistage centrifugal pump. All metal parts in contact with the pumped liquid are made of stainless steel.
- The following versions are available:

  F – ANSI VSanges, in-line delivery and suction ports, AISI 304 T – Oval VSanges (NPT), in-line delivery and suction ports, AISI 304

  R – ANSI VSanges, delivery port above the suction port, with four adjustable positions, AISI 304

  N – ANSI VSanges, in-line delivery and suction ports, AISI 316

  P – Victaulic couplings, in-line delivery and suction ports, AISI 316

  G – ANSI VSange, in-line delivery and suction ports, Class 35/40B cast iron.

  C – ISO clamp, AISI 316

- Innovative axial load compensation system on pumps with higher head. This ensures reduced axial thrusts and enables the use of standard NEMA TC motors that are easily found in the market.
- Seal housing chamber designed to prevent the accumulation of air in the critical area next to the mechanical seal
- Mechanical seal according to EN 12756 (ex DIN 24960) and ISO 3069
- Versions with ANSI VSanges that can be coupled to ANSI raised face counter-VSanges
- Threaded oval counter-VSanges made of stainless steel are standard supply for the T versions
- Easy maintenance. No special tools required for assembly or disassembly
- Standard version for temperatures ranging from: -20°F to 250°F (30°C to 120°C)

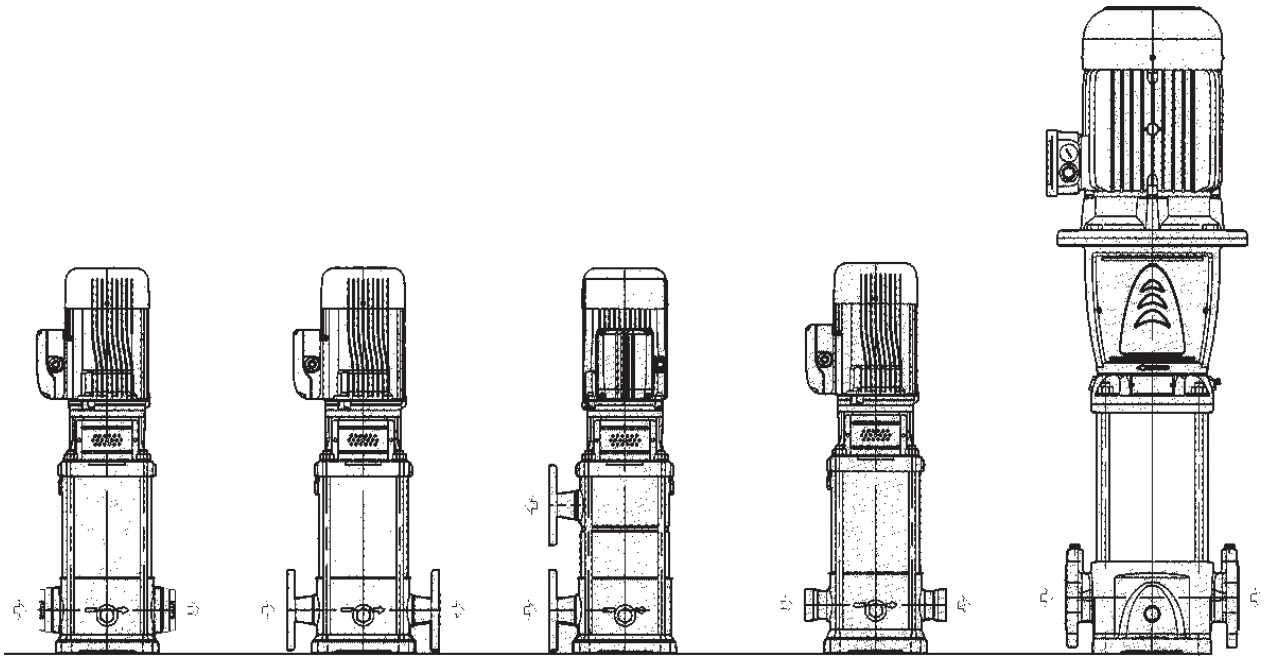
33VS, 46VS, 66VS, 92VS, 125VS Series

- Vertical multistage centrifugal pump with impellers, diffusers and outer sleeve made entirely of stainless steel, and with pump casing and motor adapter made of cast iron in the standard version
- Rotating components made entirely of AISI 316 stainless steel
- High heads and capacities five sizes: 33VS, 46VS, 66VS, 92VS, 125VS
- R designed liquid end provides improved efficiency and energy savings
- Innovative axial load compensation system on pumps with higher head. This ensures reduced axial thrusts and enables the use of standard NEMA TC motors that are easily found in the market.
- Balanced mechanical seal according to EN 12756 (ex DIN 24960) and ISO 3069, which can be replaced without removing the motor from the pump
- Seal housing chamber designed to prevent the accumulation of air in the critical area next to the mechanical seal
- Standard version for temperature ranging from: -20°F to 250°F (-30°C to 120°C)
- Pump body fitted with taps for installing pressure gauges on both suction and delivery VSanges
- In-line ports with ANSI VSanges that can be coupled to counter-VSanges, in compliance with ANSI raised face.
- Mechanical sturdiness and easy maintenance. No special tools required for assembly or disassembly.

Optional Features

- Horizontal version
- Special voltages, 50 Hz frequency
- Special materials for the mechanical seal, gaskets and elastomers
- Tropicalized motors
- Premium E and explosion proof motors
- 1450 RPM, 4 pole motors
- Passivation

General Characteristics - 2-pole



SERIES VST 1VS, 3VS, 5VS, 10VS, 15VS, 22VS

SERIES VSF, VSN 1VS, 3VS, 5VS, 10VS, 15VS, 22VS

SERIES VSR 1VS, 3VS, 5VS, 10VS, 15VS, 22VS

SERIES VSP VICTAULIC 1VS, 3VS, 5VS, 10VS, 15VS, 22VS

SERIES VSG, VSN 33VS, 46VS, 66VS, 92VS, 125VS

VS Product Range	1VS	3VS	5VS	10VS	15VS	22VS	33VS	46VS	66VS	92VS	125VS
Nominal VSow (GPM)	9	15	30	50	80	110	150	220	350	450	600
VSow Range(GPM)	2-12	3-22	7-45	9-75	18-125	21-150	30-195	45-285	70-420	90-580	120-700
Max. Head (Ft)	860	1085	975	1150	1060	880	1125	1210	850	715	570
Max. Working Pressure (PSIG)	580					360/580					
Temperature Range (˚F)	Standard -20˚F - 250˚F (-30˚C - 121˚C)										
High Temp Option	up to 300˚F (150˚C)						-				
Motor Power [HP]	½ - 5 HP	½ - 7½	¾ - 10	¾ - 20	2 - 25	3 - 30	3 - 60	7½ - 75	10 - 75	15 - 75	20 - 75
Max Pump Efficiency	51%	60%	70%	70%	70%	71%	76%	78%	78%	80%	79%
Materials of Construction											
VST	304 SS						-				
VSF	304 SS						-				
VSN	316L SS						Cast Stainless Steel / 316L SS				
VSR	304 SS						-				
VSP	316L SS						-				
VSC	316L SS						-				
VSG	ASTM Class 35/40B Cast Iron / 304 SS										
Connection Sizes											
VST - Oval NPT	1¼"	1¼"	1¼"	2"	2"	2"					
VSF - Round ANSI Size/Class	1¼" 300#	1¼" 300#	1¼" 300#	2" 300#	2" 300#	2" 300#	-				
VSN - Round ANSI Size/Class	1¼" 300#	1¼" 300#	1¼" 300#	2" 300#	2" 300#	2" 300#	2½" 150/300#	3" 150/300#	4" 150/300#	4" 150/300#	5" 150/300#
VSR - Top/Bottom Round ANSI Size/Class	1¼" 300#	1¼" 300#	1¼" 300#	2" 300#	2" 300#	2" 300#	-				
VSP - Victaulic	1¼"	1¼"	1¼"	2"	2"	2"	-				
VSC - Clamp	1½"	1½"	1½"	2"	2"	2"	-				
VSG - Cast Iron Size/Class	1¼" 250#	1¼" 250#	1¼" 250#	2" 250#	2" 250#	2" 250#	2½" 125/250#	3" 125/250#	4" 125/ 250#	4" 125/ 250#	5" 125/250#

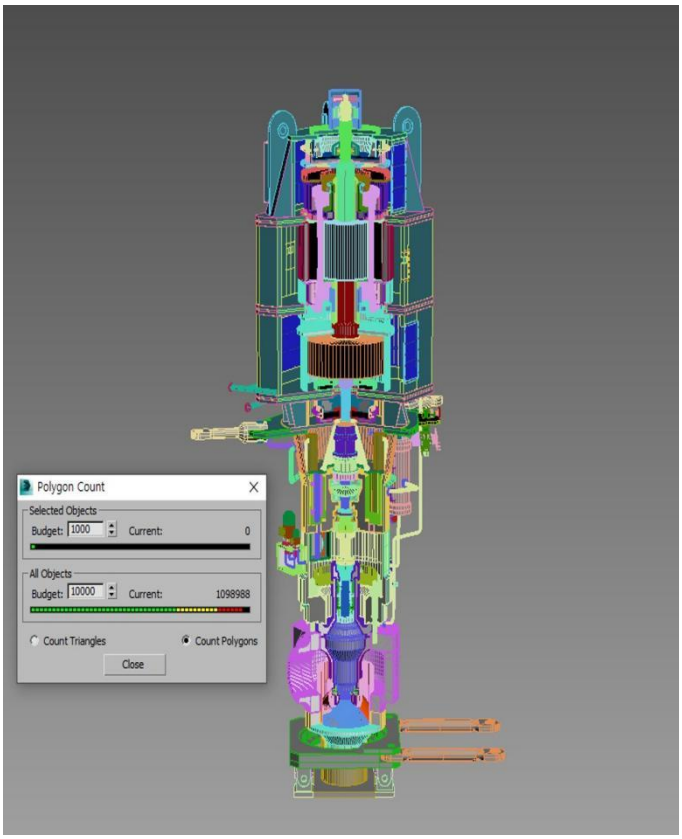
Typical Applications of VS Series Multi-Stage Pumps

Water Supply and Pressure Boosting

- Pressure boosting in buildings, hotels, residential complexes
- Pressure booster stations, supply of water networks
- Booster packages

Water Treatment

- Ultra filtration systems
- Reverse osmosis systems
- Water softeners and d mineralization
- Distillation systems
- Filtration



Light Industry

- Washing and cleaning plants (washing and degreasing of mechanical parts, car and truck wash tunnels, washing of electronic industry circuits
- Commercial washers
- Fire fighting system pumps

Irrigation and Agriculture

- Greenhouses
- Humidifiers
- Sprinkler irrigation

Heating, Ventilation and Air Conditioning (HVAC)

- Cooling towers and systems
- Temperature control systems
- Refrigerators
- Induction heating
- Heat exchangers
- Boilers
- Water recirculation and heating

VS Product Line
Numbering System for 1 – 22VS Liquid End Only

The various versions of the VS line are identified by a product code number on the pump label. This number is also the catalog number for the pump. The meaning of each digit in the product code number is shown below.
Note: Not all combinations are possible.

Example Product Code

22 VS 0 2 F E 3 0

Special Configurations (optional Characters)

A = Cooling Chamber only
B = Cooling Chamber + Passivation
C = Cooling Chamber + Low NPSH
F = Destaged - 1 stage
G = Destaged - 2 stage
H = Horizontal mount only
J = Horizontal mount + Passivation
K = Horizontal mount + Low NPSH
L = Horizontal mount + High Pressure
N = Low NPSH only
P = Passivation only
S = Customized Configuration
Z = High pressure only

Seal Material

0 = Carb-SilCar-Viton (Standard)
1 = Carb-SilCar-AVSAS (HighTemp)
2 = SilCar-SilCar-Viton
4 = SilCar-SilCar-EPR
6 = Carb-SilCar-EPR

Pol Hz

1 = 2-50 3 = 2-60
2 = 4-50 4 = 4-60

Motor Frame (NEMA)

A = 56C D = 250TC
B = 180TC E = 280TC
C = 210TC

Configuration

C = Clamp-316 P = Victaulic-316 R = (VSC) 12Suct-12Disch
F = Round-304 (VSB) T = Oval-304 (VSA) W = (VSC) 12Suct-03Disch
G = CI-304 X = (VSC) 12Suct-06Disch
N = Round-316 (VSD) Y = (VSC) 12Suct-09Disch

Top / Bottom Suction discharge location

Total Number of Impeller Stages (may be 1 or 2 characters)

Product Line:

VS - Stainless Vertical

Nominal VSow:

1 = 5 GPM 10 = 53 GPM
3 = 16 GPM 15 = 80 GPM
5 = 26 GPM 22 = 116 GPM

VS Product Line
Numbering System for 33 – 125VS Liquid End Only

The various versions of the VS line are identified by a product code number on the pump label. This number is also the catalog number for the pump. The meaning of each digit in the product code number is shown below.
Note: Not all combinations are possible.

Example Product Code

125 VS 8 1 2 B F E 2 0

Special Configurations (optional Characters)
F = Destaged - 1 stage (33 and 46 only)
G = Destaged - 2 stage (33 and 46 only)
H = Horizontal mount only
J = Horizontal mount + Passivation
K = Horizontal mount + Low NPSH (33, 46 and 66 only)
L = Horizontal mount + High Pressure
N = Low NPSH only (33, 46 and 66 only)
S = Customized Configuration
Z = High pressure (250/300# pump body)

Seal Material
0 = Carb-SilCar-Viton
2 = SilCar-SilCar-Viton
4 = SilCar-SilCar-EPR
6 = Carb-SilCar-EPR
7 = Carb-SilCar-Viton (Cart)
8 = SilCar-SilCar-EPR (Cart)

Pol Hz
1 = 2-50 3 = 2-60
2 = 4-50 4 = 4-60

Motor Frame (NEMA)
B = 180TC E = 280TC
C = 210TC F = 320TSC
D = 250TC G = 360TSC

Configuration
G = Round-CI-304
N = Round-316

125VS ONLY
Reduced Trim Diameter A = 141 mm B = 136 mm C = 145 mm (full dia.)
Blank if 33-92VS

Number of Reduced Trim Impellers

Total Number of Impellers/Stages

Product Line: VS - Stainless Vertical

Nominal VSow:
33 = 175 GPM
46 = 240 GPM
66 = 350 GPM
92 = 485 GPM

VS Product Line
Numbering System for 1 – 22VS Pump & Motor Combination

The various versions of the VS line are identified by a product code number on the pump label. This number is also the catalog number for the pump. The meaning of each digit in the product code number is shown below.
Note: Not all combinations are possible.

Example Product Code

2 VS 2 2 F A 2 F 5 1 A H

Special Configurations (1 or 2 Characters)

A = Cooling Chamber only	K = Horizontal mount + Low NPSH
B = Cooling Chamber + Passivation	L = Horizontal mount + High Pressure
C = Cooling Chamber + Low NPSH	M = i-Alert
F = Destaged - 1 stage	N = Low NPSH only
G = Destaged - 2 stage	P = Passivation only
H = Horizontal mount only	S = Customized Configuration
J = Horizontal mount + Passivation	Z = High Press (250/300# pump body)

Seal Material

0 = Carb-SilCar-Viton	4 = SilCar-SilCar-EPR
1 = Carb-SilCar-AVSAS (HighTemp)	6 = Carb-SilCar-EPR
2 = SilCar-SilCar-Viton	

Motor Enclosure

1 = ODP	5 = Prem-ODP	9 = Marine
2 = TEFC	6 = Prem-TEFC	A = Chem
3 = X-Proof	7 = Prem-XP	B = Prem-Chem
4 = WD - Tropical	8 = Prem-WD	C = Class 1 Div 2

Voltage

A = 115/230	H = 190/380	R = 220
B = 230	J = 115/208-230	S = 415
C = 230/460	K = 208	T = 220/380 WYE
D = 460	L = 208-230	U = 380-660 WYE
E = 575	M = 190-380/415	V = 208-230/460 WYE
F = 208-230/460	N = 380	
G = 200	P = 110/220	

Pol Hz-Phase

1 = 2-50-1 5 = 4-50-1 2 = 2-50-3 6 = 4-50-3 3 = 2-60-1 7 = 4-60-1 4 = 2-60-3 8 = 4-60-3

HP Rating

A = 0.50	F = 3	L = 20
B = 0.75	G = 5	M = 25
C = 1.00	H = 7.5	N = 30
D = 1.50	J = 10	P = 40
E = 2	K = 15	

Configuration OPTION

C = Clamp-316
F = Round-304 (VSB)
G = CI-304
N = Round-316 (VSD)
P = Victaulic-316
T = Oval-304 (VSA)

Suction discharge location — Top / Bottom

R =	(VSC) 12Suct-12Disch
W =	(VSC) 12Suct-03Disch
X =	(VSC) 12Suct-06Disch
Y =	(VSC) 12Suct-09Disch

Total Number of Impeller Stages (may be 1 or 2 characters)

Product Line:

VS - Stainless Vertical

Nominal VSow:

1 = 5 GPM	10 = 53 GPM
3 = 16 GPM	15 = 80 GPM
5 = 26 GPM	22 = 116 GPM

VS Product Line
Numbering System for 33 – 125VS Pump & Motor Combination

The various versions of the VS line are identified by a product code number on the pump label. This number is also the catalog number for the pump. The meaning of each digit in the product code number is shown below.
Note: Not all combinations are possible.

Example Product Code

125 VS 8 2 A G K 3 F 2 0

Special Configurations (1 or 2 Characters)

F = Destaged - 1 stage (33 and 46 only)	M = i-Alert
G = Destaged - 2 stage (33 and 46 only)	N = Low NPSH only (33, 46 and 66 only)
H = Horizontal mount only	P = Passivation only
J = Horizontal mount + Passivation	S = Customized Configuration
K = Horizontal mount + Low NPSH	Z = High Press (250/300# pump body/Casing)
L = Horizontal mount + High Pressure	

Seal Material

0 = Carb-SilCar-Viton	6 = Carb-SilCar-EPR
2 = SilCar-SilCar-Viton	7 = Carb-SilCar-Viton (Cart)
4 = SilCar-SilCar-EPR	8 = SilCar-SilCar-EPR (Cart)

Motor Enclosure

1 = ODP	5 = Prem-ODP	9 = Marine
2 = TEFC	6 = Prem-TEFC	A = Chem
3 = X-Proof	7 = Prem-XP	B = Prem-Chem
4 = WD - Tropical	8 = Prem-WD	C = Class 1 Div 2

Voltage

A = 115/230	H = 190/380	R = 220
B = 230	J = 115/208-230	S = 415
C = 230/460	K = 208	T = 220/380 WYE
D = 460	L = 208-230	U = 380-660 WYE
E = 575	M = 190-380/415	V = 208-230/460 WYE
F = 208-230/460	N = 380	
G = 200	P = 110/220	

Pol Hz-Phase

1 = 2-50-1	4 = 2-60-3	7 = 4-60-1
2 = 2-50-3	5 = 4-50-1	8 = 4-60-3
3 = 2-60-1	6 = 4-50-3	

HP Rating

F = 3	L = 20	R = 50
G = 5	M = 25	S = 60
H = 7.5	N = 30	T = 75
J = 10	P = 40	U = 100
K = 15		

Configuration

G = Round-CI-304 N = Round-316

125VS ONLY

Reduced Trim Diameter A = 141 mm B = 136 mm C = 145 mm (full dia.)

Blank if 33-92VS

Number of Reduced Trin Impeller

Total Number of Impeller Stages (may be 1 or 2 characters)

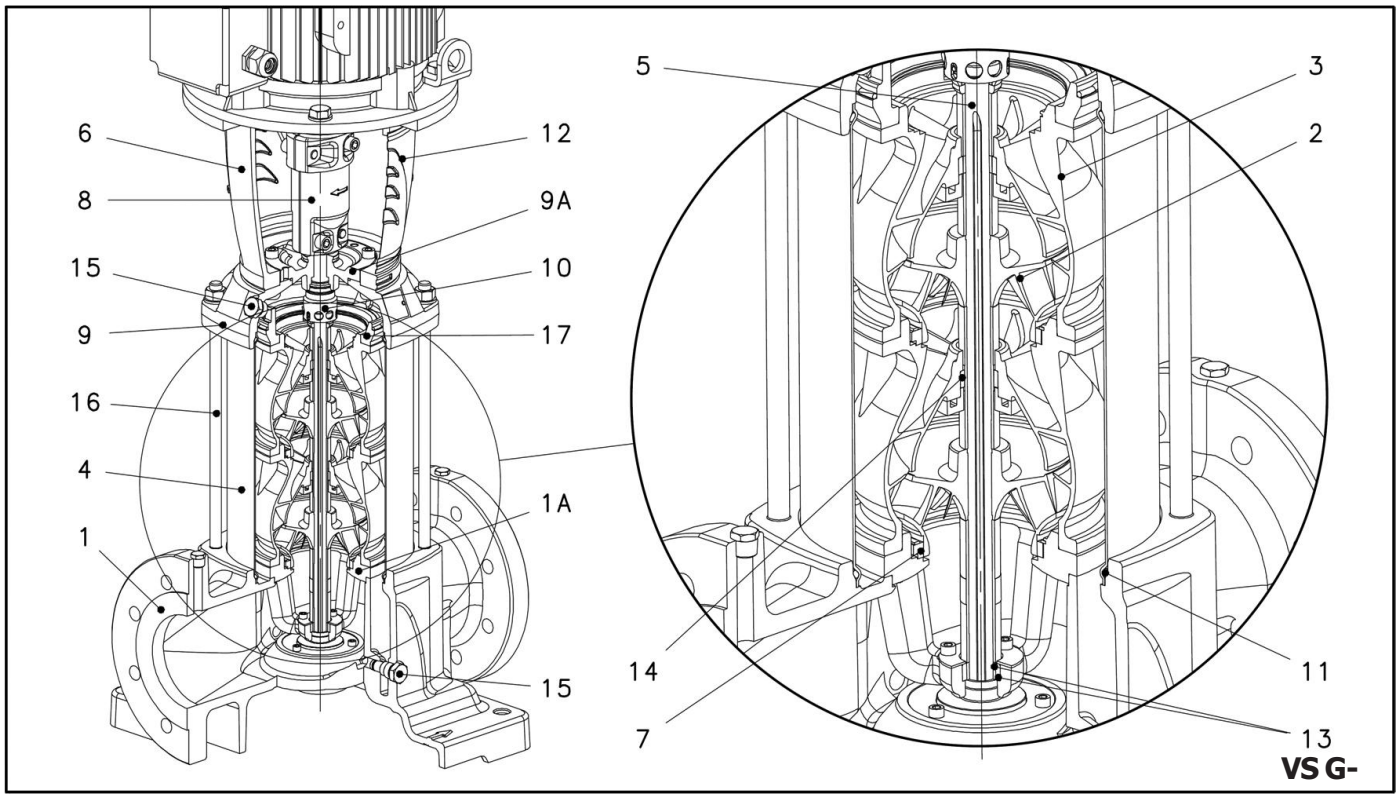
Product Line:

VS - Stainless Vertical

Nominal VSow:

33 = 175 GPM	66 = 350 GPM	125 = 660 GPM
46 = 240 GPM	92 = 485 GPM	

Base Models: 1-22VS — Major Components



Base Models: 1-22VS — Major Components

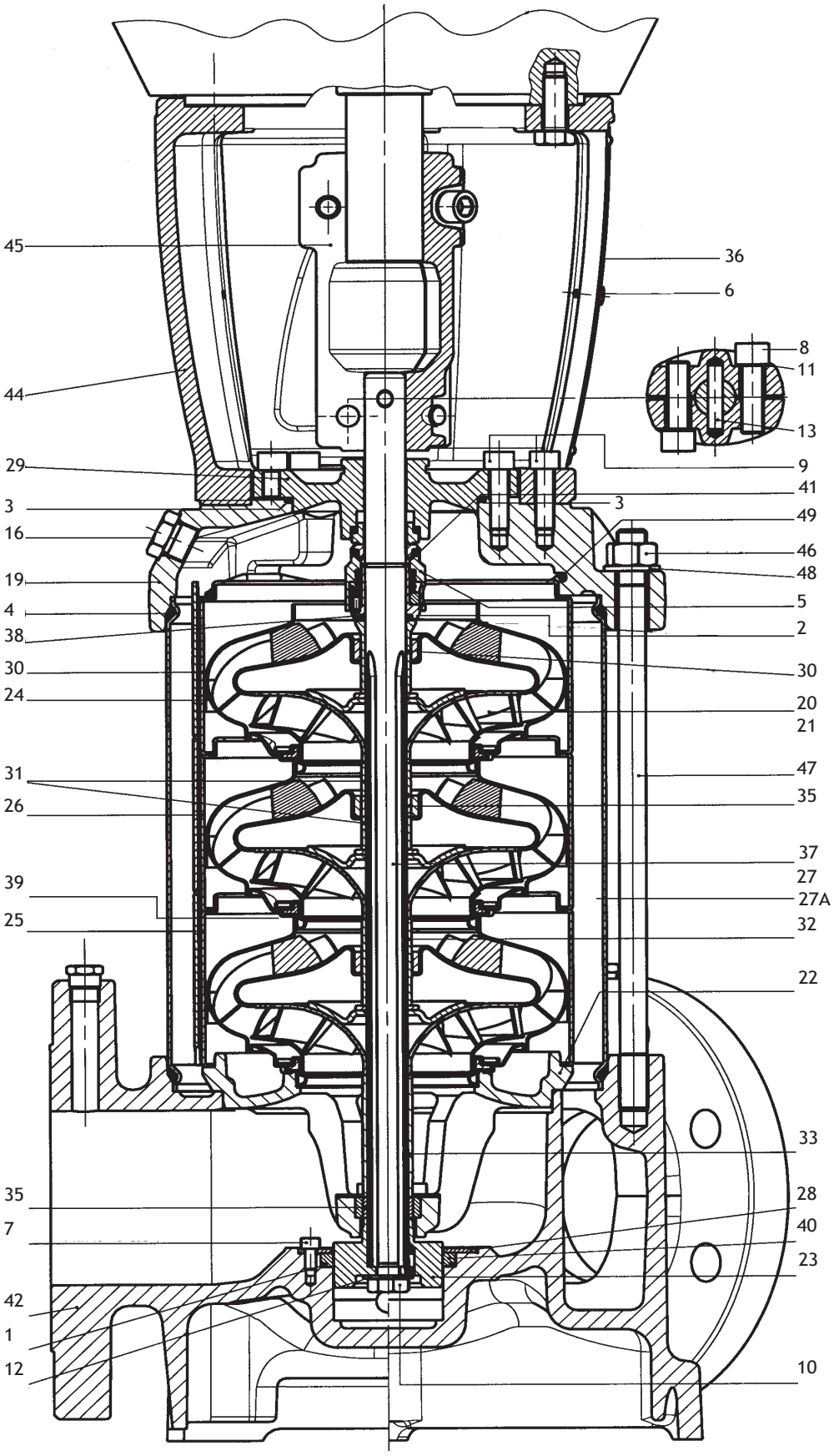
F, G, P, R VERSIONS

Ref. No.	Name	Material	Reference Standards	
			USA	Europe
1	Pump Body	Stainless Steel (F, P, R)	AISI 304	EN 10088-1-X5-CrNi18-10 (1.4301)
		Cast Iron (G)	ASTM Class 35/40B	EN 1561 GJL 250 (JL1040)
2	Impeller	Stainless Steel	AISI 304	EN 10088-1-X5-CrNi18-10 (1.4301)
3	Diffuser	Stainless Steel	AISI 304	EN 10088-1-X5-CrNi18-10 (1.4301)
4	Casing	Stainless Steel	AISI 316L	EN 10088-1-X2-CrNiMo17-12-2 (1.4404)
5	Shaft	Stainless Steel	AISI 316	EN 10088-1-X2-CrNiMo17-12-2 (1.4401)
6	Adapter	Cast Iron	ASTM Class 35/40B	EN 1561-GJL-250 (JL1040)
7	Base	Aluminum (F, P, R)	A384.0-F	EN 1706-AC-AlSi11Cu2(Fe) (AC46100)
		N/A (G)	N/A	N/A
8	Coupling	Aluminum	A384.0-F	EN 1706-AC-AlSi11Cu2(Fe) (AC46100)
9	Seal Plate	Stainless Steel	AISI 316L	EN 10088-1-X2-CrNi17-12-2 (1.4404)
10	Mechanical Seal	Silicon Carbide / Carbon / Viton (opt. EPDM)		
11	Elastomers	Viton (opt. EPDM)		
12	Coupling Guard	Stainless Steel	AISI 304	EN 10088-1-X5-CrNi18-10 (1.4301)
13	Shaft Sleeve and Bushing	Tungsten Carbide		
14	Fill/Drain Plugs	Stainless Steel	AISI 316	EN 10088-1-X2-CrNiMo17-12-2 (1.4401)
15	Tie Rods	Carbon Steel / Zinc Plated	A29 Gr. 1045	EN 10277
16	Wear Ring	PPS		
17	Seal Gland	Stainless Steel	AISI 316	EN 10088-1-X2-CrNiMo17-12-2 (1.4401)

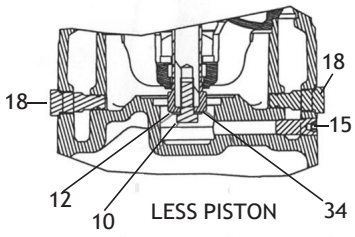
N, P, C VERSIONS

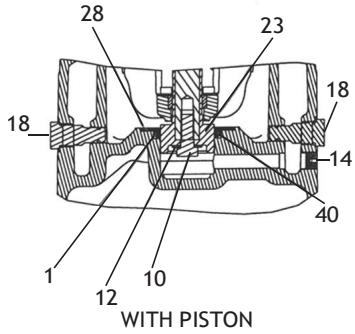
Ref. No.	Name	Material	Reference Standards	
			USA	Europe
1	Pump Body	Stainless Steel	AISI 316L	EN 10088-1-X2-CrNiMo17-12-2 (1.4404)
2	Impeller	Stainless Steel	AISI 316L	EN 10088-1-X2-CrNiMo17-12-2 (1.4404)
3	Diffuser	Stainless Steel	AISI 316L	EN 10088-1-X2-CrNiMo17-12-2 (1.4404)
4	Casing	Stainless Steel	AISI 316L	EN 10088-1-X2-CrNiMo17-12-2 (1.4404)
5	Shaft	Stainless Steel	AISI 316	EN 10088-1-X2-CrNiMo17-12-2 (1.4401)
6	Adapter	Cast Iron	ASTM Class 35/40B	EN 1561-GJL-250 (JL1040)
7	Base	Aluminum	A384.0-F	EN 1706-AC-AlSi11Cu2(Fe) (AC46100)
8	Coupling	Aluminum	A384.0-F	EN 1706-AC-AlSi11Cu2(Fe) (AC46100)
9	Seal Plate	Stainless Steel	AISI 316L	EN 10088-1-X2-CrNi17-12-2 (1.4404)
10	Mechanical Seal	Silicon Carbide / Carbon / Viton (opt. EPDM)		
11	Elastomers	Viton (opt. EPDM)		
12	Coupling Guard	Stainless Steel	AISI 304	EN 10088-1-X5-CrNi18-10 (1.4301)
13	Shaft Sleeve and Bushing	Tungsten Carbide		
14	Fill/Drain Plugs	Stainless Steel	AISI 316	EN 10088-1-X2-CrNiMo17-12-2 (1.4401)
15	Tie Rods	Carbon Steel / Zinc Plated	A29 Gr. 1045	EN 10277
16	Wear Ring	PPS		
17	Seal Gland	Stainless Steel	AISI 316	EN 10088-1-X2-CrNiMo17-12-2 (1.4401)

Base Model: 33VS, 46VS, 66VS and 92VS — Major Components



VS G-N

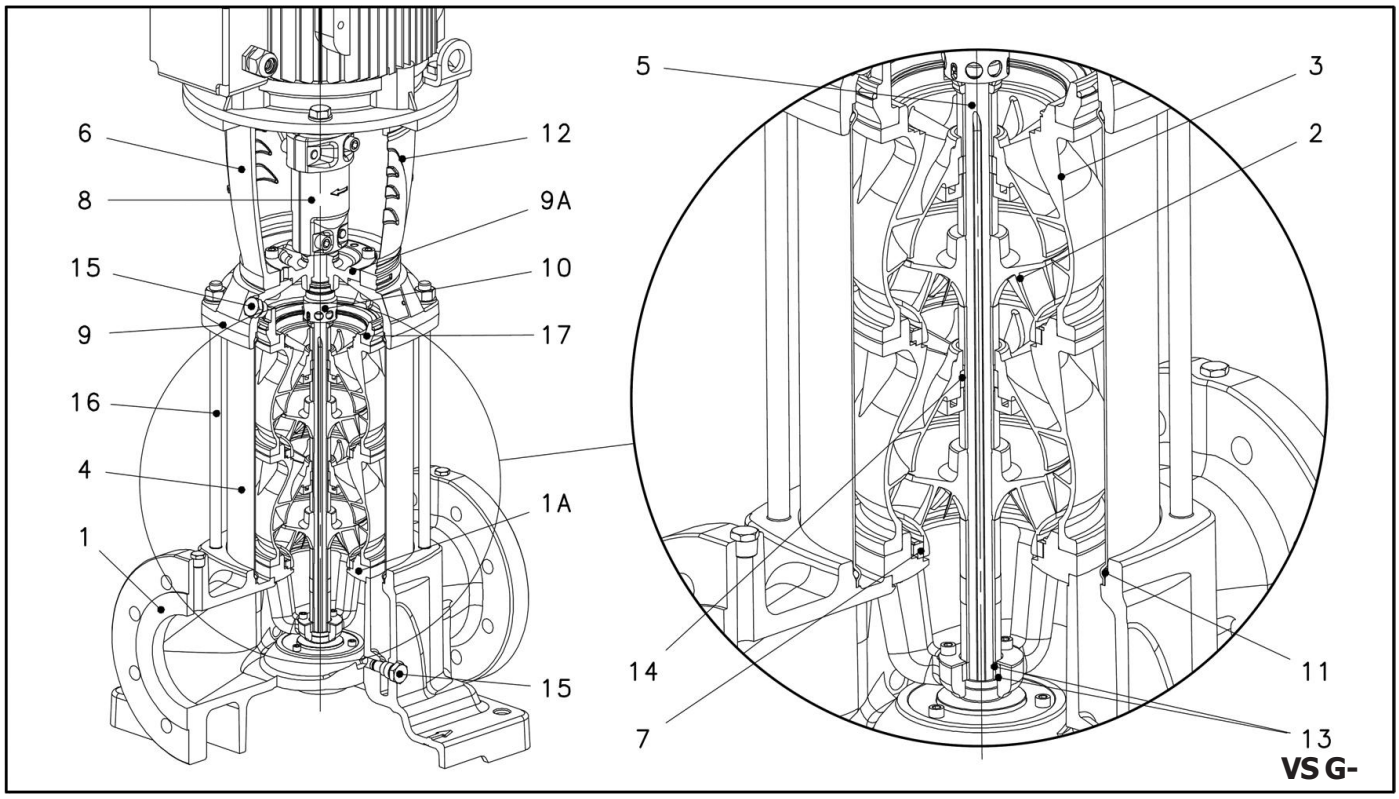




Base Model: 33VS, 46VS, 66VS and 92VS — Major Components

No.	Description	VSG (33 – 92VS)			VSN (33 – 92VS)		
		Material	ASTM	DIN	Material	ASTM	DIN
1	O-Ring, Piston Seal	Viton (std) EPDM (opt)			Viton (std) EPDM (opt)		
2	O-Ring, Mechanical Seal Sleeve	Viton (std) EPDM (opt)			Viton (std) EPDM (opt)		
3	O-Ring, Seal housing	Viton (std) EPDM (opt)			Viton (std) EPDM (opt)		
4	O-Ring, Sleeve	Viton (std) EPDM (opt)			Viton (std) EPDM (opt)		
5	Mechanical Seal	See Seal Materials Chart for Complete DetailSee Seal			Materials Chart for Complete Details		
5A	Cartridge Seal (not shown)						
6	Screw, Guard	Stainless Steel	A193-304	1.4301	Stainless Steel	A193-304	1.4301
7	Screw, Piston Holding Disc	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401
8	Screw, Coupling	Zinc Plated Steel	B363		Zinc Plated Steel	B633	
9	Screw, MA and Seal Housing	Zinc Plated Steel	B633		Zinc Plated Steel	B633	
10	Screw, Impeller	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401
11	Washer, Coupling	Carbon Steel	A108		Carbon Steel	A108	
12	Washer, Impeller	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401
13	Pin, Coupling	Carbon Steel	A108		Carbon Steel	A108	
14	Plug, with Piston	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401
15	Plug, without Piston	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401
16	Plug, Fill	Stainless Steel/O-Ring	A193-316	1.4401	Stainless Steel/O-Ring	A193-316	1.4401
17	Plug, Vent (not shown)	Stainless Steel/O-Ring	A193-316	1.4401	Stainless Steel/O-Ring	A193-316	1.4401
18	Plug, Drain	Stainless Steel/O-Ring	A193-316	1.4401	Stainless Steel/O-Ring	A193-316	1.4401
19	Pump Head	Cast Iron	A48 Class 35	JL1030	Stainless Steel	316 CF8M	1.4408
20	Impeller, Full Diameter	Stainless Steel	A193-316L	1.4404	Stainless Steel	A193-316L	1.4404
21	Impeller, Reduced Diameter	Stainless Steel	A193-316L	1.4404	Stainless Steel	A193-316L	1.4404
22	Lower Bearing Assembly	SS/Cast Iron	A193-316L/A48 Class 35	1.4404/JL1030	Stainless Steel	A193-316L/316 CF8M	1.4404/1.4408
23	Piston	Duplex SS	A182-F51	1.4462	Duplex SS	A182-F51	1.4462
24	Diffuser, Final	Stainless Steel	A193-316L	1.4404	Stainless Steel	A193-316L	1.4404
25	Diffuser with Carbon Bushing	Stainless Steel	A193-316L	1.4404	Stainless Steel	A193-316L	1.4404
26	Diffuser with Tungsten Bushing	Stainless Steel	A193-316L	1.4404	Stainless Steel	A193-316L	1.4404
27	Outer Sleeve, 25 Bar	Stainless Steel	A193-316L	1.4404	Stainless Steel	A193-316L	1.4404
27A	Outer Sleeve, 40 Bar	Stainless Steel	A193-316L	1.4404	Stainless Steel	A193-316L	1.4404
28	Holding Disc, Piston Seal	Stainless Steel	A193-316L	1.4404	Stainless Steel	A193-316L	1.4404
29	Seal Housing	Cast Iron	A48 Class 35	JL1030	Stainless Steel	316 CF8M	1.4408
30	Spacer, Impeller Final	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401
31	Spacer, Shaft Bushing	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401
32	Spacer, Impeller	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401
33	Spacer, Impeller Lower (66-92VS)	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401
34	Bushing, Non-Piston	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401
35	Tungsten Carbide Bushing	Tungsten Carbide			Tungsten Carbide		
36	Coupling Guard	Stainless Steel	A193-304	1.4301	Stainless Steel	304	1.4301
37	Shaft	Duplex SS	A182-F51	1.4462	Duplex SS	A183-F51	1.4462
38	Mechanical Seal Shaft Sleeve	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401
39	Wear Ring, Impeller	PPS Glass Filled			PPS Glass Filled		
40	Piston Seal	Impregnated Carbon			Impregnated Carbon		
41	Stop Ring, Impeller	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401
42	Pump Body	Cast Iron	A48 Class 35	JL1030	Stainless Steel	316 CF8M	1.4408
43	Motor Adapter Plate (not shown)	Cast Iron	A48 Class 25	JL1030	Cast Iron	A48 Class 25	JL1030
44	Motor Adapter	Cast Iron	A48 Class 25	JL1030	Cast Iron	A48 Class 25	JL1030
45	Coupling, Half	Cast Iron	A48 Class 25	JL1030	Cast Iron	A48 Class 25	JL1030
46	Nut, Ti Rod	Zinc Plated Steel	B633		Zinc Plated Steel	B633	
47	Ti Rod	Zinc Plated Steel	B633		Zinc Plated Steel	B633	
48	Washer, Ti Rod	Zinc Plated Steel	B633		Zinc Plated Steel	B633	
49	Spring, Final Diffuser	Stainless Steel	A193-316	1.4401	Stainless Steel	A193-316	1.4401

Base Models: 125VS — Major Components



Base Models: 125VS — Major Components

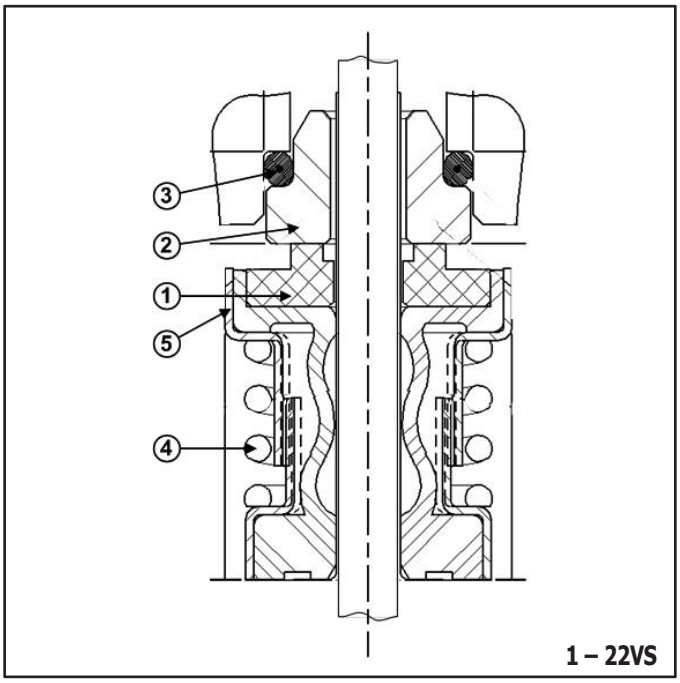
G VERSIONS

Ref. No.	Name	Material	Reference Standards	
			USA	Europe
1	Pump Body	Cast Iron	ASTM Class 35/40B	EN 1561-GJL-250 (JL1040)
2	Impeller	Stainless Steel	AISI 304	EN 10088-1-X5-CrNi18-10 (1.4301)
3	Diffuser	Stainless Steel	AISI 304	EN 10088-1-X5-CrNi18-10 (1.4301)
4	Casing	Stainless Steel	AISI 316L	EN 10088-1-X2-CrNiMo17-12-2 (1.4404)
5	Shaft	Duplex Stainless Steel	UNS S 31803	EN 10088-1-X17-CrNiMoN22-5-3 (1.4507)
6	Adapter (up to 40HP)	Cast Iron	ASTM Class 25	EN 1561-GJL-200 (JL1040)
	Adapter (50HP and higher)		ASTM Class A536	EN 1561-GJL-500-7 (JS1050)
7	Wear Ring	PPS		
8	Coupling (up to 40HP)	Cast Iron	A384.0-F	EN 1706-AC-AlSi11Cu2(Fe) (AC46100)
	Coupling (50HP and higher)			
9-9A	Upper Head / Seal Housing	Cast Iron	ASTM Class 35/40B	EN 1561-GJL-250 (JL1040)
10	Mechanical Seal	Silicon Carbide / Carbon / Viton (opt. EPDM)		
11	Elastomers	Viton (opt. EPDM)		
12	Coupling Guard	Stainless Steel	AISI 304	EN 10088-1-X5-CrNi18-10 (1.4301)
13	Shaft Sleeve and Bushing	Tungsten Carbide		
14	Bushing for Diffuser	Carbon		
15	Fill/Drain Plugs	Stainless Steel	AISI 316	EN 10088-1-X2-CrNiMo17-12-2 (1.4401)
16	Tie Rods	Carbon Steel / Zinc Plated	A29 Gr. 1045	EN 10277
17	Adapter Ring	Stainless Steel	AISI 304	EN 10088-1-X5-CrNi18-10 (1.4301)

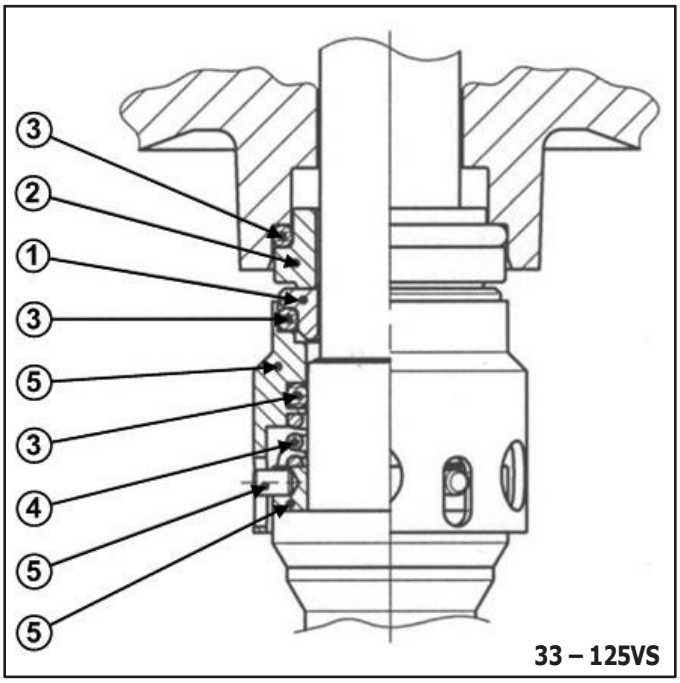
N VERSIONS

Ref. No.	Name	Material	Reference Standards	
			USA	Europe
1	Pump Body	Stainless Steel	AISI 316	EN 10088-1-X2-CrNiMo17-12-2 (1.4401)
2	Impeller	Stainless Steel	AISI 316	EN 10088-1-X2-CrNiMo17-12-2 (1.4401)
3	Diffuser	Stainless Steel	AISI 316	EN 10088-1-X2-CrNiMo17-12-2 (1.4401)
4	Casing	Stainless Steel	AISI 316L	EN 10088-1-X2-CrNiMo17-12-2 (1.4404)
5	Shaft	Duplex Stainless Steel	UNS S 31803	EN 10088-1-X17-CrNiMoN22-5-3 (1.4507)
6	Adapter (up to 40HP)	Cast Iron	ASTM Class 25	EN 1561-GJL-200 (JL1040)
	Adapter (50HP and higher)		ASTM Class A536	EN 1561-GJL-500-7 (JS1050)
7	Wear Ring	PPS		
8	Coupling (up to 40HP)	Cast Iron	A384.0-F	EN 1706-AC-AlSi11Cu2(Fe) (AC46100)
	Coupling (50HP and higher)			
9-9A	Upper Head / Seal Housing	Stainless Steel	AISI 316	EN 10088-1-X2-CrNiMo17-12-2 (1.4401)
10	Mechanical Seal	Silicon Carbide / Carbon / Viton (opt. EPDM)		
11	Elastomers	Viton (opt. EPDM)		
12	Coupling Guard	Stainless Steel	AISI 304	EN 10088-1-X5-CrNi18-10 (1.4301)
13	Shaft Sleeve and Bushing	Tungsten Carbide		
14	Bushing for Diffuser	Carbon		
15	Fill/Drain Plugs	Stainless Steel	AISI 316	EN 10088-1-X2-CrNiMo17-12-2 (1.4401)
16	Tie Rods	Carbon Steel / Zinc Plated	A29 Gr. 1045	EN 10277
17	Adapter Ring	Stainless Steel	AISI 304	EN 10088-1-X5-CrNi18-10 (1.4301)

VS Mechanical Seals



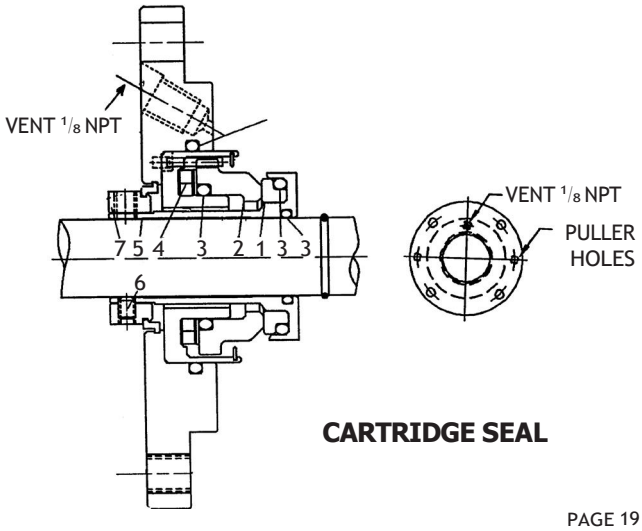
1 – 22VS



33 – 125VS

Pump	Code	Rotating Face 1	Stationary Face 2	Elastomers 3	Spring 4	Metal Components 5	Elastomer Temp Limits °F (°C)	Seal Temp Limits °F (°C)	Max. Working Pressure	Application
1VS thru 22VS	0	Carbon	Silicon Carbide Graphite Filled	Viton	316SS	316SS	-14 - 392°F (-10 - 200°C)	-22 - 250°F	580 psi (40 bar)	General Service
	2	Silicon Carbide Graphite Filled								Severe Duty
	4			EPR			-30 - 300°F (-34 - 150°C)			Severe Duty Boiler Feed
	6	Carbon								General Service Boiler Feed
	1	FDA Grade Carbon		AVSAS			-14 - 392°F (-10 - 200°C)	up to 300°F (149°C)	255 psi (17.6 bar)	Boiler Feed
33VS thru 125VS	0	Carbon	Silicon Carbide Graphite Filled	Viton	316SS	316SS	-14 - 392°F (-10 - 200°C)	-22 - 250°F (-30 - 120°C)	580 psi (40 bar)	General Service
	2	Silicon Carbide Graphite Filled								Severe Duty
	4			EPR			-22 - 250°F (-30 - 120°C)			Severe Duty Boiler Feed
	6	Carbon								General Service Boiler Feed

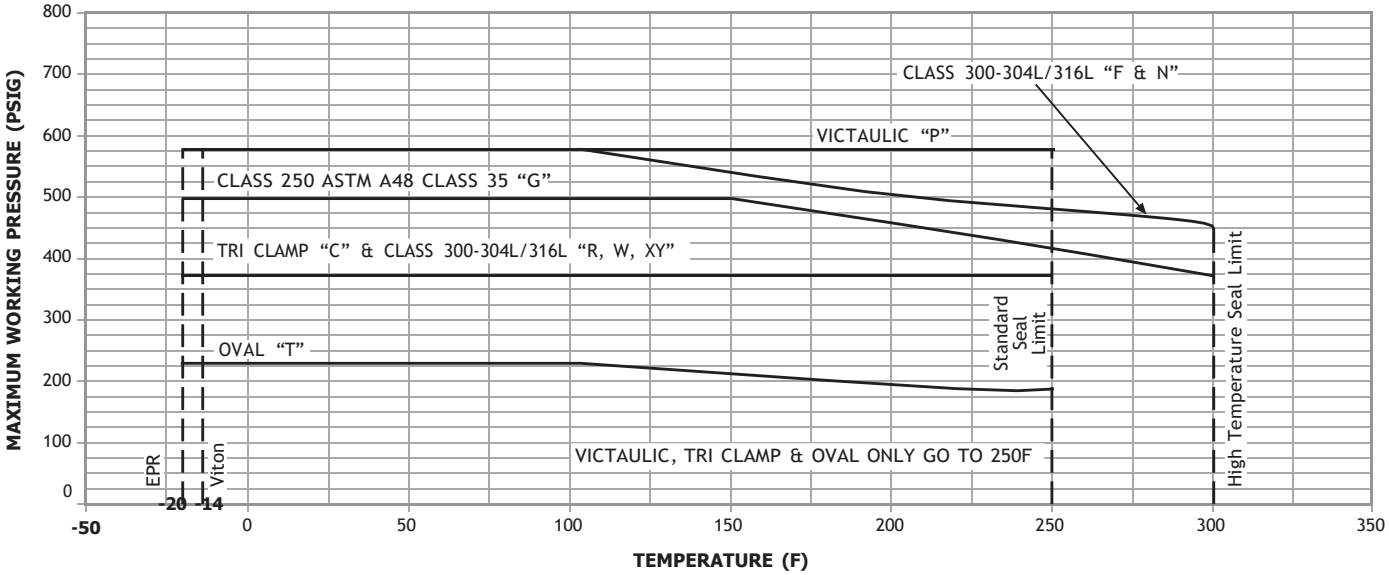
Pump	Rotating Face 1	Stationary Face 2	Elastomers 3	Spring 4	Sleeve 5	Set Screw 6	Locking Collar
33VS	Silicon Carbide	Carbon	Viton	316SS	316SS	300SS	316SS
46VS							
66VS		Silicon Carbide	EPR				
92VS							



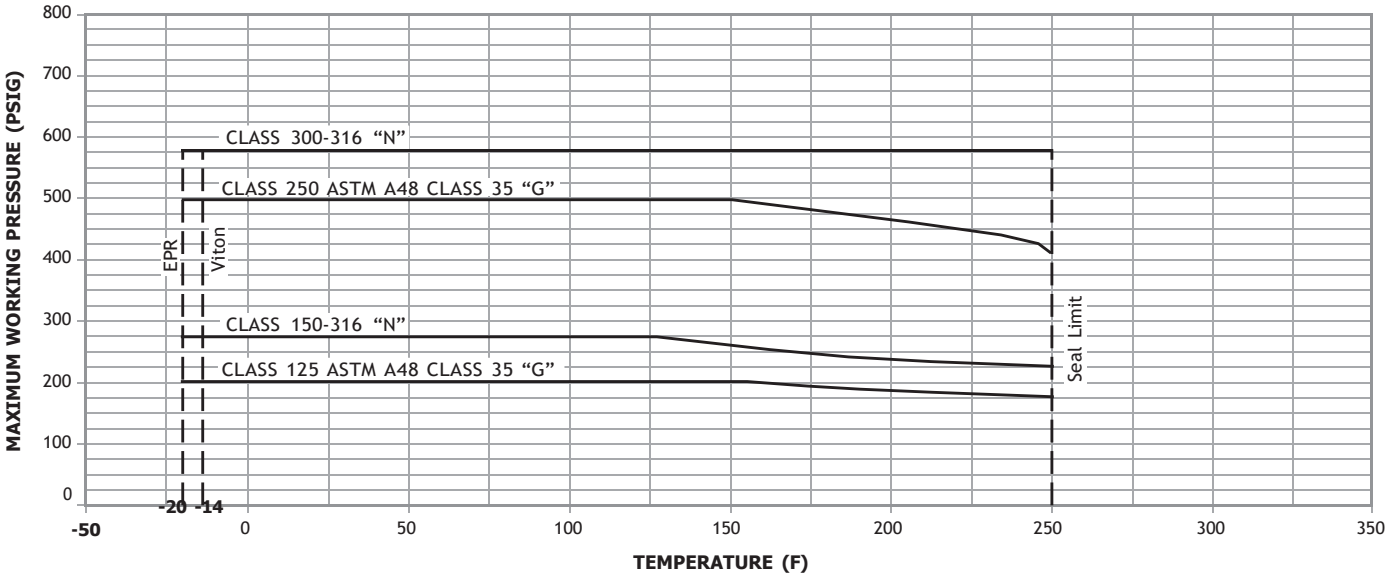
CARTRIDGE SEAL

Maximum Allowable Working Pressure Charts

1VS-22VS

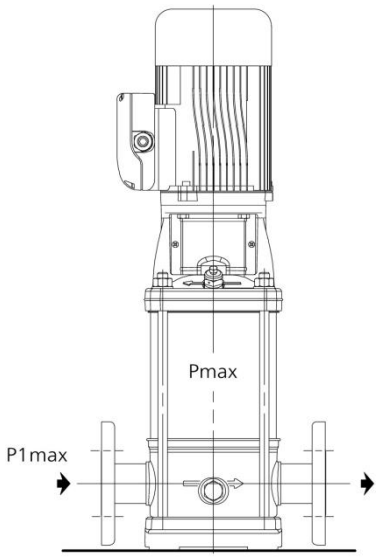


33VS-125VS



Maximum Inlet Pressure

The following table shows the maximum permissible inlet pressure. However, the actual inlet pressure + pressure against a closed valve must always be lower than the maximum permissible operating pressure.



$p_{1max} \leq PN - pmax$

Having the following meaning of the symbols:

p_{max} = Maximum pressure delivered by the pump

p_{1max} = Maximum inlet pressure

PN = Maximum operating pressure

Motor Data – Starts per Hour / Minimum Run Time

HP	Maximum Starts per Hour*	Minimum run time between starts (seconds)
0.5	24	120
0.75	24	120
1	15	75
1.5	13	76
2	12	77
3	9	30
5	8	83
7.5	7	88
10	6	92
15	5	100
20	5	110
25	5	115
30	4	120
40	4	130
50	3	145
60	3	170
75	3	180

NOTE(S)

1) Recommended motor starts per hour and minimum run time calculated based on NEMA standards MG1-12.44 in accordance to manufacturers allowable tolerance for heat rise and insulation breakdown.
2) Applied voltage and frequency in accordance with NEMA MG1-12.44
3) Starts based on NEMA three phase design A and design B AC induction motors.
4) External load WK2 is equal to or less than the values listed in NEMA MG1-12.54
5) Applicable to all NEMA (JM, JP, T and TC frame) motors used for FILIPUSI Pumps products.
6) Applicable to three phase motors only.

Motor Data

2900 RPM, 50Hz

HP	Phase	Enclosure	Voltage	SF	NEMA Frame	Speed / Pole	
						2900 / 2	1450 / 4
0.50	1	ODP	110/200	1.25	56C	V04A14K1BB3S	V04A14K1BB3S
		TEFC				V04A14K2BB3S	V04A14K2BB3S
	3	ODP	190/380-415			0V05741Z	V04A34U1BB3S
		TEFC				0V05742Z	V04A34U2BB3S
		TEPE				V04B32U5BB2S	V04A34U5BB3S
		ODPE				V04A34U4BB3S	V04A34U4BB3S
0.75	1	ODP	110/200			V05B12K1BB2S	V05B14K1BB2S
		TEFC				V05B12K2BB2S	V05B14K2BB2S
	3	ODP	190/380-415			0V06741Z	V05A34U1BB3S
		TEFC				0V06742Z	V05A34U2BB3S
		TEPE				V05B32U5BB2S	V05B34U5BB2S
		ODPE				V05B32U4BB2S	V05B34U4BB2S
1.00	1	ODP	110/200	1.15		V06B12K1BB2S	V06B14K1BB2S
		TEFC				V06B12K2BB2S	V06B14K2BB2S
	3	ODP	190/380-415			0V07741Z	V06A34U1BB2S
		TEFC				0V07742Z	V06A34U2BB2S
		ODPE				V06B32U4BB2S	V06B34U4BB2S
		TEPE				V06B32U5BB2S	V06B34U5BB2S
1.50	1	ODP	110/200			V07B12K1BB2S	V07B14K1BB2S
		TEFC				0V08722Z	V07B14K2BB2S
	3	ODP	190/380-415			0V08741Z	V07A34U1BB2S
		TEFC				0V08742Z	V07A34U2BB2S
		ODPE				V07B32U4BB2S	V07B34U4BB2S
		TEPE				V07B32U5BB2S	V07B34U5BB2S
2	1	ODP	110/200			V08B12K1BB2S	V08B14K1BD2S
		TEFC				V08B12K2BB2S	V08B14K2BD2S
	3	ODP	190/380-415			0V09741Z	V08A34U1BB2S
		TEFC				0V09742Z	V08A34U2BB2S
		ODPE				V08B32U4BB2S	V08B34U4BD2S
		TEPE				V08B32U5BD2S	V08B34U5BD2S
3	1	ODP	110/200		182TC	V09B12K1BD2S	V09B14K1BD2S
		TEFC				V09B12K2BD2S	V09B14K2BD2S
	3	ODP	190/380-415		184TC	0V10741ZA	V09A34U1BD2S
		TEFC				0V10742ZA	V09A34U2BD2S
		ODPE			182TC	V09B32U4BD2S	V09B34U4BD2S
		TEPE				V09B32U5BD2S	V09B34U5BD2S
5	1	ODP	110/200		184TC	V10B12N1BD2S	V10B14N1BD2S
		TEFC				V10B12N2BD1S	V10B14N2BE2S
	3	ODP	190/380-415		213TC	0V11741ZA	V10B34U1BE2S
		TEFC				0V11742ZA	V10B34U2BE2S
		ODPE			184TC	V10B32U4BD2S	V10B34U4BD2S
		TEPE				V10B32U5BD2S	V10B34U5BD2S
7.5	1	ODP	110/200		215TC	V11B12N1BE2S	V11A14K1BE2S
		TEFC			184TC	V11B12N2BD2S	V11A14K2BD2S
	3	ODP	190/380-415		213TC	0V12741Z	V11A34U1BE2S
		TEFC				0V12742Z	V11A34U2BE2S
		ODPE				V11B32U4BE2S	V11B34U4BE2S
		TEPE			215TC	V11B32U5BE2S	V11B34U5BE2S

Motor Data

2900 RPM, 50Hz

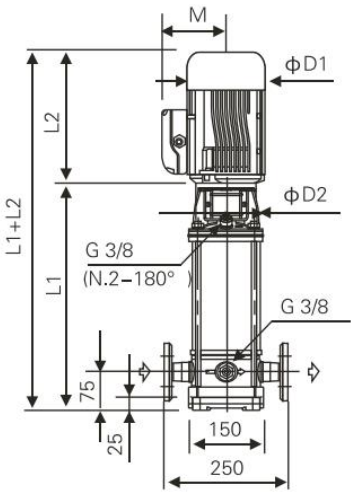
HP	Phase	Enclosure	Voltage	SF	NEMA Frame	Speed / Pole	
						2900 / 2	1450 / 4
10	3	ODP	190/380-415	1.15	254TC	0V13741Z	V12B34U1BK2S
		TEFC			254TC	0V13742Z	V12B34U2BK2S
		ODPE			215TC	V12B32U4BE2S	V12B34U4BE2S
		TEPE			215TC	V12B32U5BK2S	V12B34U5BE2S
15	3	ODP			256TC	0V14741Z	V13B34U1BK2S
		TEFC			256TC	0V14742Z	V13B34U2BK2S
		ODPE			215TC	V13B32U4BE2S	V13B34U4BK2S
		TEPE			254TC	V13B32U5BK2S	V13B34U5BK2S
20	3	ODP			284TC	0V15741Z	V14B34U1BL2S
		TEFC			284TC	0V15742Z	V14B34U2BL2S
		ODPE			256TC	V14B32U4BK2S	V14B34U4BK2S
		TEPE			256TC	V14B32U5BK2S	V14B34U5BK2S
25	3	ODP			286TC	0V16741Z	V15B34U1BL2S
		TEFC			286TC	0V16742Z	V15B34U2BL2S
		ODPE			256TC	V15B32U4BK2S	V15B34U4BL2S
		TEPE			284TC	V15B32U5BL2S	V15B34U5BL2S
30	3	ODP			286TC	0V17741Z	V16B34U1BL2S
		TEFC			286TC	0V17742Z	V16B34U2BL2S
		ODPE			286TC	V16B32U4BL2S	V16B34U4BL2S
		TEPE			286TC	V16B32U5BL2S	V16B34U5BL2S
40	3	ODP			324TSC	0V18741SZ	V17B34U1BM2S
		TEFC			324TSC	0V18742SZ	V17B34U2BM2S
		ODPE			286TC	V17B32U4BL2S	V17B34U4BM2S
		TEPE			324TSC	X17B32U5BM2S	V17B34U5BM2S
50	3	ODP			324TSC	X18A34U1BM2S	V18B34U1BM2S
		TEFC			324TSC	0V19742SZ	V18B34U2BM2S
		ODPE			324TSC	X18B32U4BM2S	V18B34U4BM2S
		TEPE			326TSC	X18B32U5BM2S	V18B34U5BM2S
60	3	ODP			324TSC	X19A34U1BM2S	V19B34U1BP2S
		TEFC			324TSC	0V20742SZ	V19B34U2BP2S
		ODPE			326TSC	X18B32U4BM2S	V19B34U4BP2S
		TEPE			364TSC	X18B32U5BP2S	V19B34U5BP2S

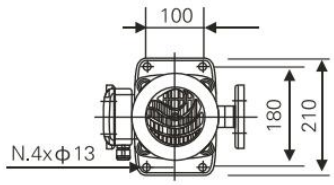
Dimensions and Weights

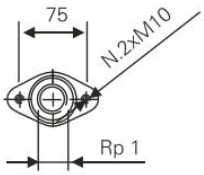
1VS Series 2900 RPM

50 Hz

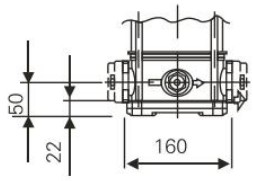
FLPS1 F-N(DN25)



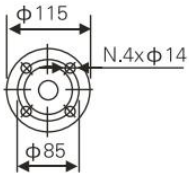




FLPS1 T(DN25)

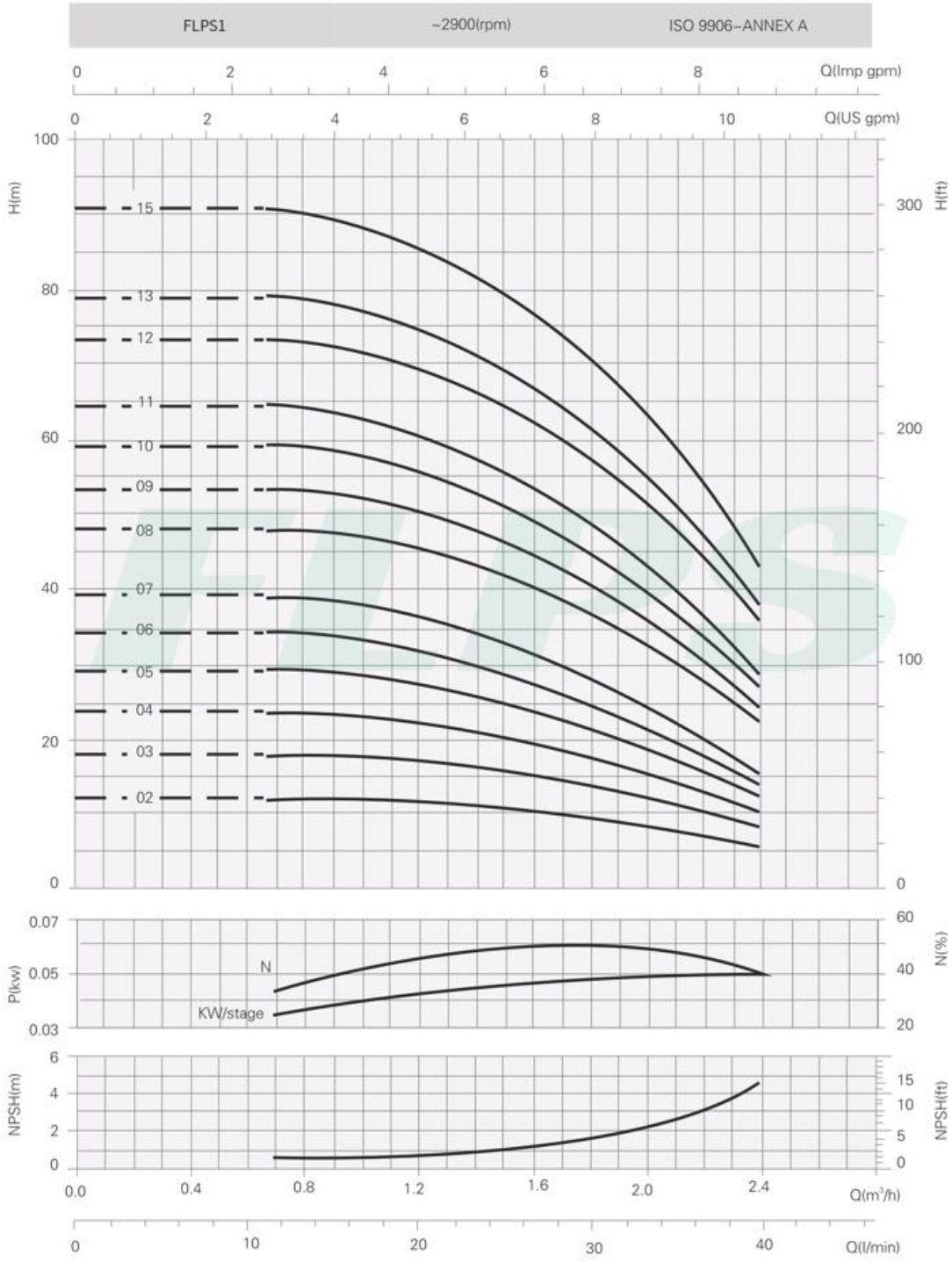


FLPS1 F-N-R(DN25)法兰



Model	Motor		Size (mm)													Weight (KG)	
				L2						M		D1				Pump	Total
	KW		L1	1-	3-	L3	L4	L5	L6	1-	3-	1-	3-	D2		
FLPS1-02	0.37	71	278	209	209	-	-	253	253	111	111	120	120	105	8.3	13
FLPS1-03	0.37	71	278	209	209	-	-	253	253	111	111	120	120	105	8.6	13.4
FLPS1-04	0.37	71	298	209	209	-	-	273	273	111	111	120	120	105	9	13.8
FLPS1-05	0.37	71	318	209	209	-	-	293	293	111	111	120	120	105	9.4	14.2
FLPS1-06	0.37	71	338	209	209	-	-	313	313	111	111	120	120	105	9.8	14.6
FLPS1-07	0.37	71	358	209	209	358	207	333	333	111	111	120	120	105	10.2	14.9
FLPS1-08	0.55	71	378	231	231	378	227	353	353	121	121	140	140	105	10.5	15.2
FLPS1-09	0.55	71	398	231	231	398	247	373	373	121	121	140	140	105	10.9	15.6
FLPS1-10	0.55	71	418	231	231	418	267	393	393	121	121	140	140	105	11.3	16
FLPS1-11	0.55	71	438	231	231	438	287	413	413	121	121	140	140	105	11.7	16.4
FLPS1-12	0.75	80	468	226	263	468	307	443	443	121	129	140	155	120	12.7	23.7
FLPS1-13	0.75	80	488	226	263	488	327	463	463	121	129	140	155	120	13.1	24.1
FLPS1-15	0.75	80	528	226	263	528	367	503	503	121	129	140	155	120	13.9	25

Performance Curve **1VS 2900** **50 Hz**

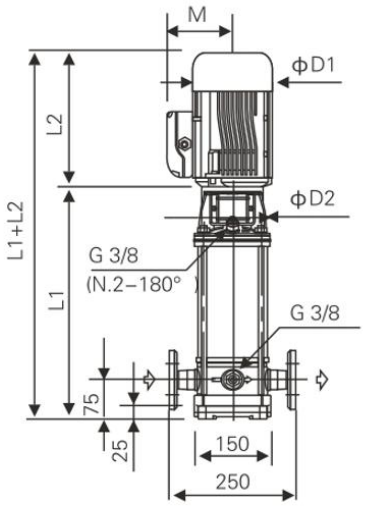


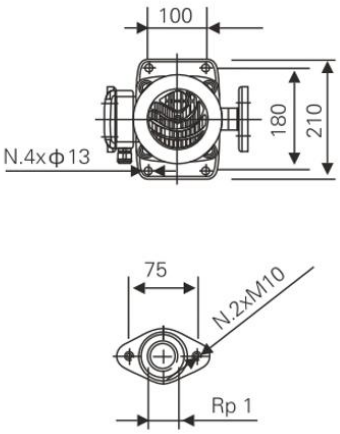
Dimensions and Weights

3VS Series 2900 RPM

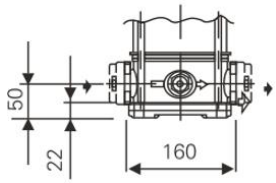
50 Hz

FLPS3 F–N(DN25)

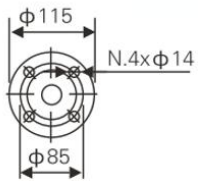




FLPS3 T(DN25)



FLPS3 F–N–R(DN25)

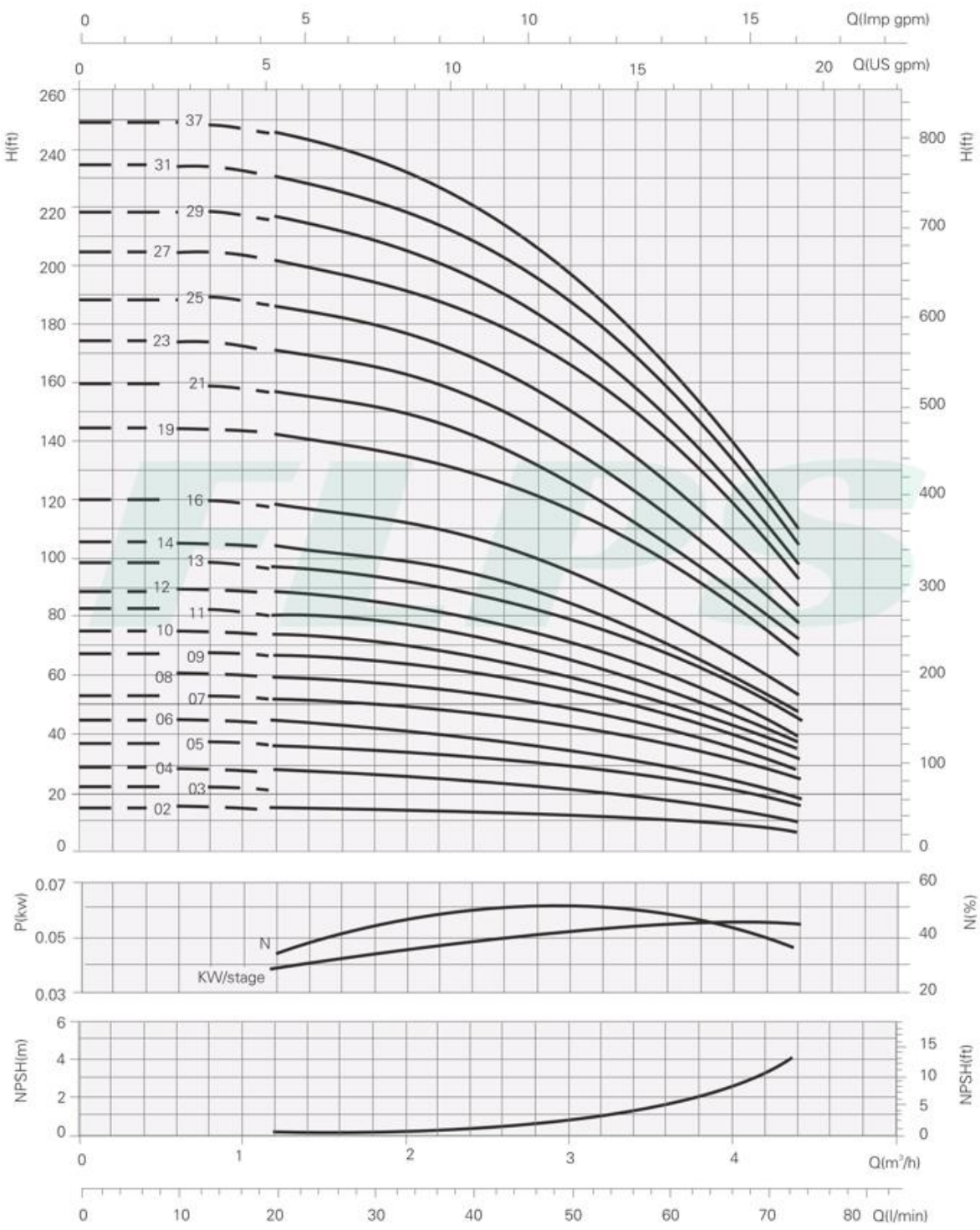


Model	Motor		Size (mm)													Weight (KG)	
				L2						M		D1					
	KW		L1	1–	3–	L3	L4	L5	L6	1–	3–	1–	3–	D2	Pump	Total
FLPS3–02	0.37	71	278	209	209	–	–	253	253	111	111	120	120	105	8	12.8
FLPS3–03	0.37	71	278	209	209	–	–	253	253	111	111	120	120	105	8.4	13.2
FLPS3–04	0.37	71	298	209	209	–	–	273	273	111	111	120	120	105	8.8	13.6
FLPS3–05	0.55	71	318	231	231	–	–	293	293	121	121	140	140	105	9.2	14
FLPS3–06	0.55	71	338	231	231	–	–	313	313	121	121	140	140	105	9.7	16.4
FLPS3–07	0.75	80	368	226	263	368	207	343	343	121	129	140	155	120	10.9	16.8
FLPS3–08	0.75	80	388	226	263	388	227	363	363	121	129	140	155	120	11.3	21.9
FLPS3–09	1.1	80	408	263	263	408	247	383	383	137	129	155	155	120	11.7	24.4
FLPS3–10	1.1	80	428	263	263	428	267	403	403	137	129	155	155	120	12.1	24.8
FLPS3–11	1.1	80	448	263	263	448	287	423	423	137	129	155	155	120	12.5	25.2
FLPS3–12	1.1	80	468	263	263	468	307	443	443	137	129	155	155	120	13.3	25.6
FLPS3–13	1.5	90	498	263	298	498	327	473	473	137	134	155	174	140	14	30.6
FLPS3–14	1.5	90	518	263	298	518	347	493	493	137	134	155	174	140	14.4	31
FLPS3–16	1.5	90	558	263	298	558	387	533	533	137	134	155	174	140	15.2	31.8
FLPS3–19	2.2	90	618	298	298	618	447	593	593	151	134	174	174	140	16.4	34.4
FLPS3–21	2.2	90	658	298	298	658	487	633	633	151	134	174	174	140	17.2	35.2
FLPS3–23	2.2	90	698	298	298	698	527	–	673	151	134	174	174	140	18	36
FLPS3–25	2.2	90	738	298	298	738	567	–	713	151	134	174	174	140	18.9	36.8
FLPS3–27	3	100	788	–	298	788	607	–	763	–	134	–	174	160	20.7	42.6
FLPS3–29	3	100	828	–	298	828	647	–	803	–	134	–	174	160	21.5	43.4
FLPS3–31	3	100	868	–	298	868	687	–	843	–	134	–	174	160	22.3	44.2
FLPS3–33	3	100	908	–	298	908	727	–	883	–	134	–	174	160	23.1	45

Perfo

FLPS3	~2900(rpm)	ISO 9906–ANNEX A

50 Hz

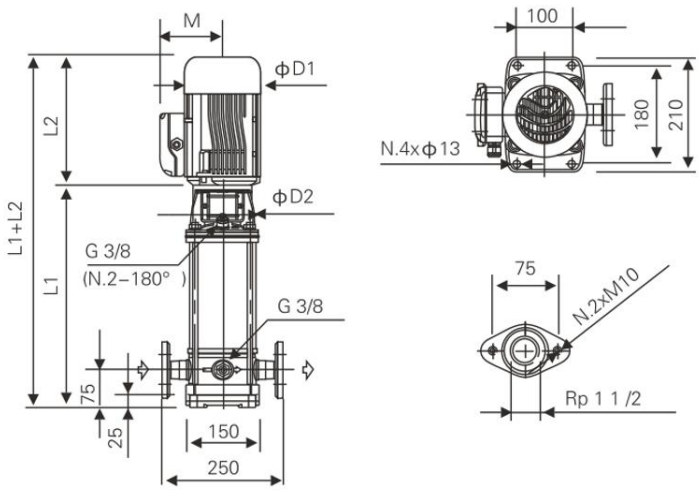


Dimensions and Weights

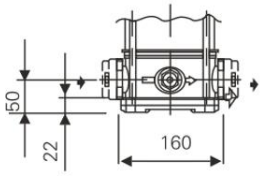
5VS Series 2900 RPM

50 Hz

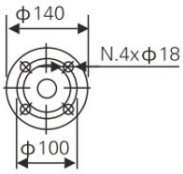
FLPS5 F–N(DN32)



FLPS5 T(DN32)

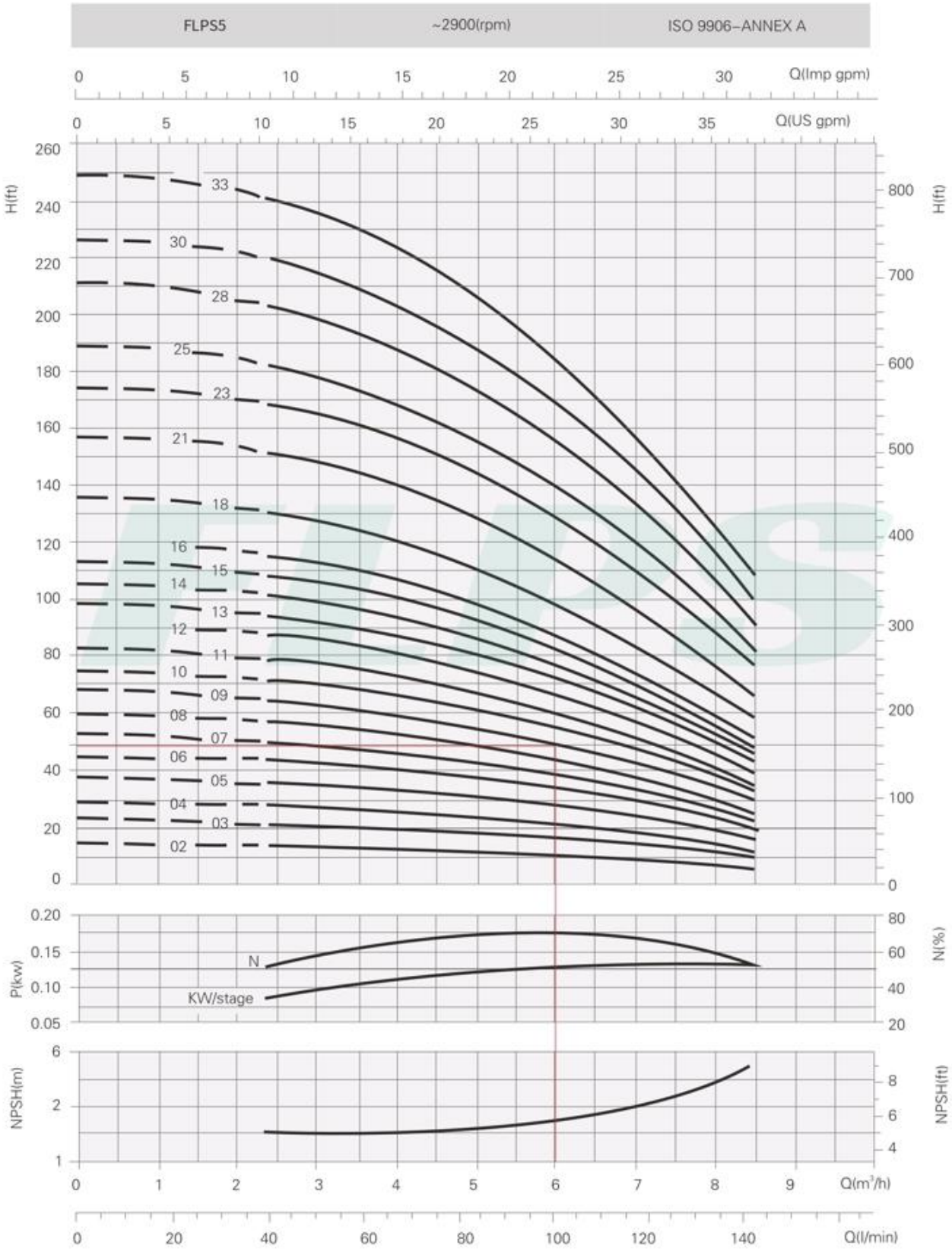


FLPS5 F–N–R(DN32)



Model	Motor		Size (mm)													Weight (KG)	
				L2						M		D1				Pump	Total
	KW		L1	1–	3–	L3	L4	L5	L6	1–	3–	1–	3–	D2		
FLPS5–02	0.37	71	268	209	209	–	–	243	243	111	111	120	120	105	8.4	13.2
FLPS5–03	0.55	71	293	231	231	–	–	268	268	121	121	140	140	105	8.9	15.7
FLPS5–04	0.55	71	318	231	231	–	–	293	293	121	121	140	140	105	9.4	16.1
FLPS5–05	0.75	80	353	226	263	–	–	328	328	121	129	140	155	120	10.5	21.5
FLPS5–06	1.1	80	378	263	263	–	–	353	353	137	129	155	155	120	11	23.6
FLPS5–07	1.1	80	403	263	263	403	242	378	378	137	129	155	155	120	11.5	24
FLPS5–08	1.1	80	428	263	263	428	267	403	403	137	129	155	155	120	12.1	24.5
FLPS5–09	1.5	90	463	263	298	463	292	438	438	137	134	155	174	140	12.7	30.9
FLPS5–10	1.5	90	488	263	298	488	317	463	463	137	134	155	174	140	13.1	31.3
FLPS5–11	1.5	90	513	263	298	513	342	488	488	137	134	155	174	140	13.6	31.8
FLPS5–12	2.2	90	538	298	298	538	367	513	513	151	134	174	174	140	14.1	32.3
FLPS5–13	2.2	90	563	298	298	563	392	538	538	151	134	174	174	140	14.6	32.8
FLPS5–14	2.2	90	588	298	298	588	417	563	563	151	134	174	174	140	15	33.2
FLPS5–15	2.2	90	613	298	298	613	442	588	588	151	134	174	174	140	15.5	33.7
FLPS5–16	2.2	90	638	298	298	638	467	613	613	151	134	174	174	140	16	34.2
FLPS5–18	3	100	698	–	298	698	517	673	673	–	134	–	174	160	18	39
FLPS5–21	3	100	773	–	298	773	592	748	748	–	134	–	174	160	19.4	40.4
FLPS5–23	4	112	823	–	319	823	642	–	798	–	154	–	197	160	20.4	47
FLPS5–25	4	112	873	–	319	873	692	–	848	–	154	–	197	160	21.3	48
FLPS5–28	4	112	948	–	319	948	767	–	923	–	154	–	197	160	23	49.4
FLPS5–30	5.5	132	1018	–	375	1018	817	–	993	–	168	–	214	300	28.1	65.7
FLPS5–33	5.5	132	1093	–	375	1093	892	–	1068	–	168	–	214	300	29.5	67.1

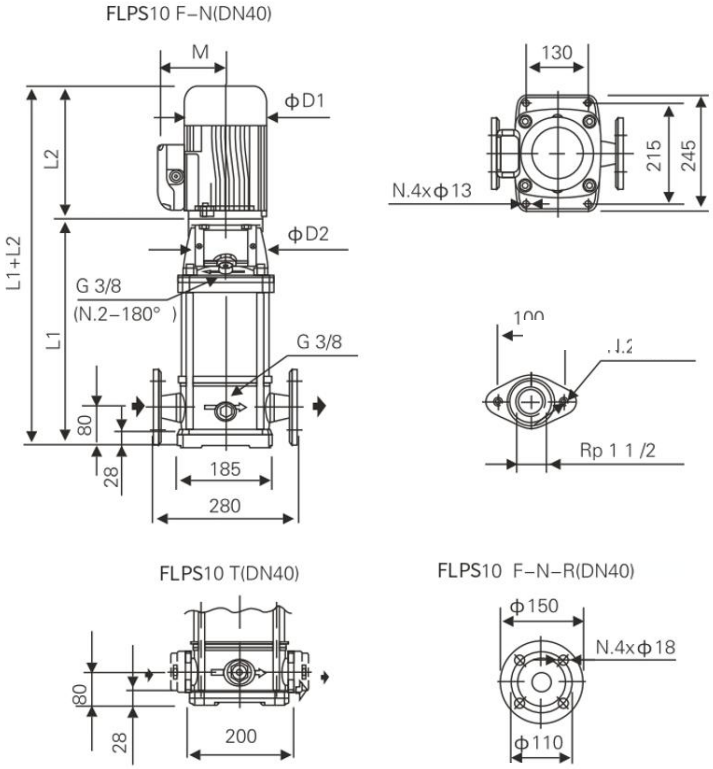
Performance Curve **5VS 2900** **50 Hz**



Dimensions and Weights

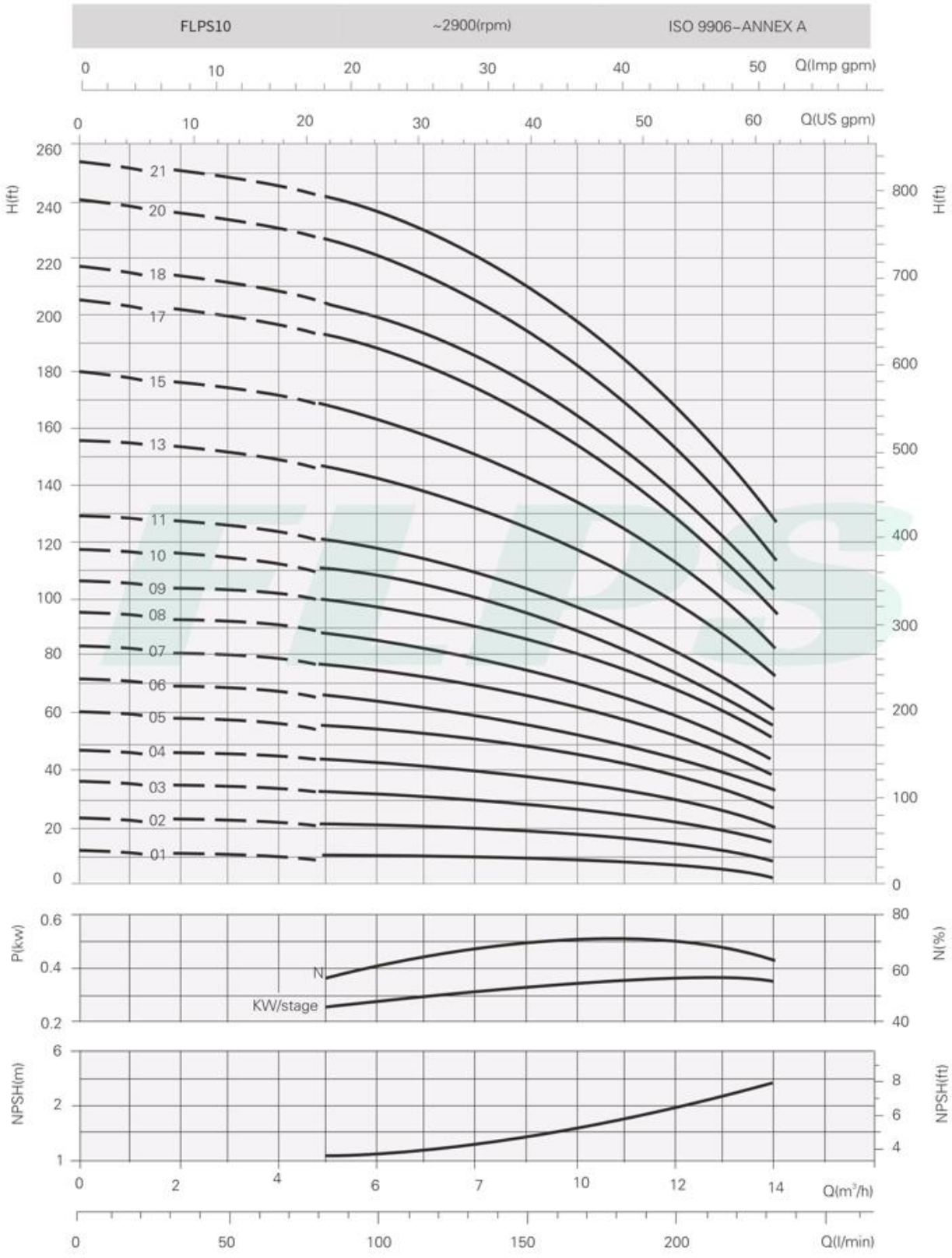
10VS Series 2900 RPM

50 Hz



Model	Motor		Size (mm)													Weight (KG)	
				L2						M		D1					
	KW		L1	1–	3–	L3	L4	L5	L6	1–	3–	1–	3–	D2	Pump	Total
FLPS10–01	0.75	80	357	226	263	–	–	357	367	121	129	140	155	120	14.2	25.4
FLPS10–02	0.75	80	357	226	263	–	–	357	367	121	129	140	155	120	15.1	26.3
FLPS10–03	1.1	80	389	263	263	–	–	389	399	137	129	155	155	120	16.1	29
FLPS10–04	1.5	90	431	263	298	–	–	431	441	137	134	155	174	140	17.6	33.8
FLPS10–05	2.2	90	463	298	298	463	259	463	473	151	134	174	174	140	18.5	36.7
FLPS10–06	2.2	90	495	298	298	495	291	495	505	151	134	174	174	140	19.7	37.9
FLPS10–07	3	100	537	–	298	537	323	537	547	–	134	–	174	160	21.5	42.5
FLPS10–08	3	100	569	–	298	569	355	569	579	–	134	–	174	160	224	43.4
FLPS10–09	4	112	601	–	319	601	387	601	611	–	154	–	197	160	23.3	49.7
FLPS10–10	4	112	633	–	319	633	419	633	643	–	154	–	197	160	24.3	50.7
FLPS10–11	4	112	665	–	319	665	451	665	675	–	154	–	197	160	25.2	52
FLPS10–13	5.5	132	796	–	375	796	515	796	806	–	168	–	214	300	33.1	71
FLPS10–15	5.5	132	860	–	375	860	579	–	870	–	168	–	214	300	35	73
FLPS10–17	7.5	132	924	–	367	924	643	–	934	–	191	–	256	300	36.9	93
FLPS10–18	7.5	132	956	–	367	956	675	–	966	–	191	–	256	300	37.8	94
FLPS10–20	7.5	132	1020	–	367	1020	739	–	1030	–	191	–	256	300	39.6	96
FLPS10–21	11	160	1082	–	428	1082	771	–	1092	–	191	–	256	350	42.2	113

Performance Curve **10VS 2900** **50 Hz**

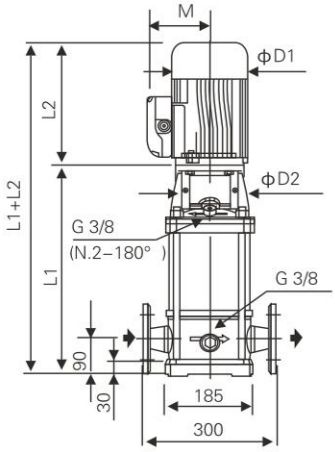


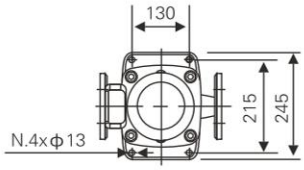
Dimensions and Weights

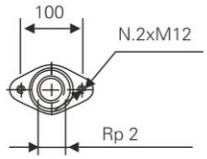
15VS Series 2900 RPM

50 Hz

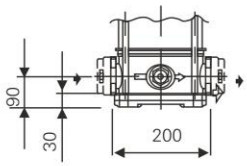
FLPS15 F–N(DN50)



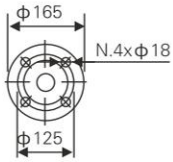




FLPS15 T(DN50)

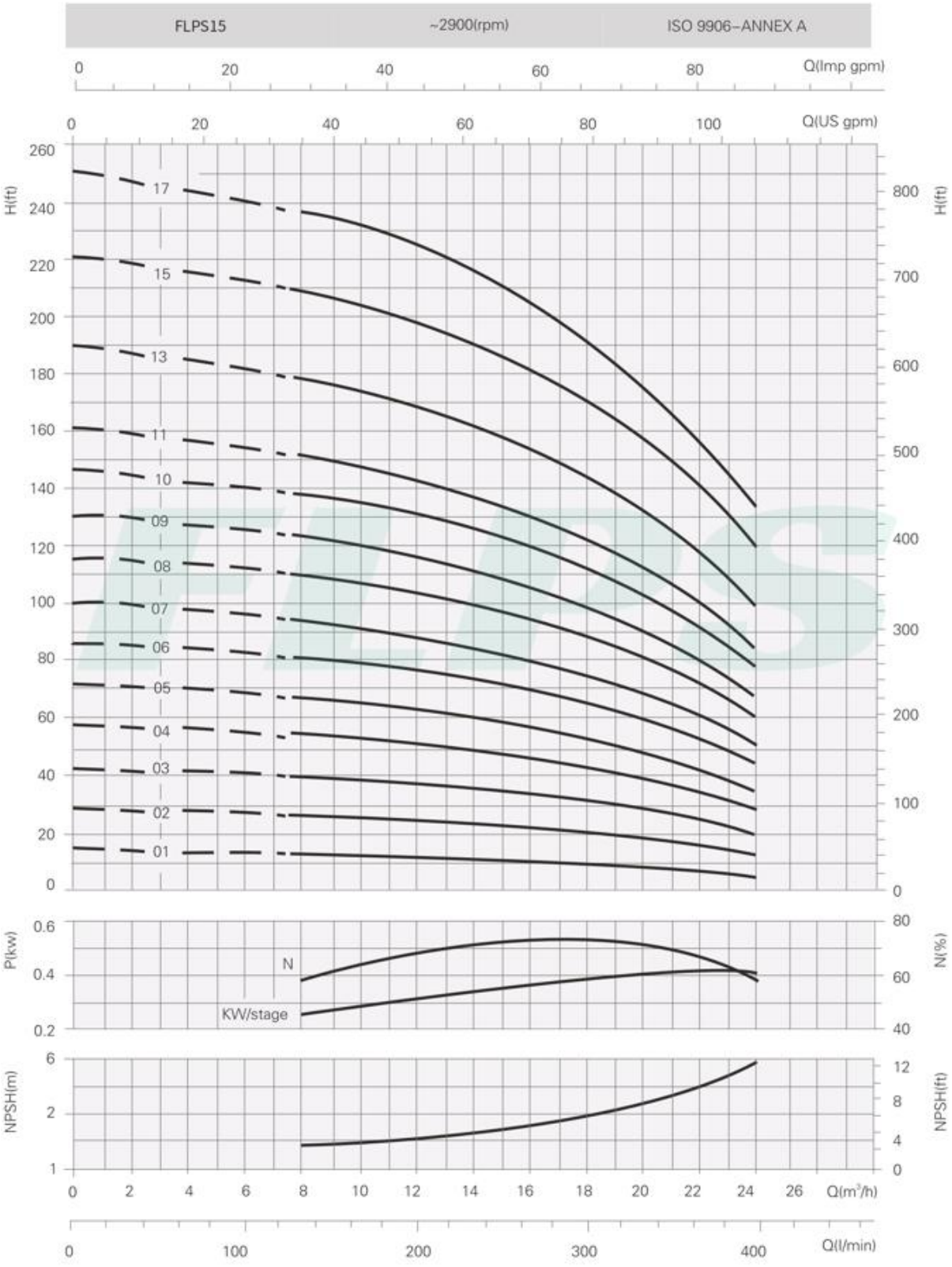


FLPS15 F–N–R(DN50)



Model	Motor		Size (mm)											Weight (KG)	
				L2					M		D1				
	KW		L1	1–	3–	L3	L4	L5	1–	3–	1–	3–	D2	Pump	Total
FLPS15–01	1.1	80	399	263	263	–	–	399	137	129	155	155	120	15	28.2
FLPS15–02	2.2	90	409	298	298	–	–	409	151	134	174	174	140	16.8	34.7
FLPS15–03	3	100	467	–	298	–	–	467	–	134	–	174	160	19	40
FLPS15–04	4	112	515	–	319	515	301	515	–	154	–	197	160	20.3	46.8
FLPS15–05	4	112	563	–	319	563	349	563	–	154	–	197	160	21.5	47.9
FLPS15–06	5.5	132	678	–	375	678	397	678	–	168	–	214	300	28.9	67
FLPS15–07	5.5	132	726	–	375	726	445	726	–	168	–	214	300	30.2	68
FLPS15–08	7.5	132	774	–	367	774	493	774	–	191	–	256	300	31.5	88
FLPS15–09	7.5	132	822	–	367	822	541	822	–	191	–	256	300	32.8	90
FLPS15–10	11	160	900	–	428	900	589	900	–	191	–	256	350	37	108
FLPS15–11	11	160	948	–	428	948	637	–	–	191	–	256	350	38.3	109
FLPS15–13	11	160	1044	–	428	1044	733	–	–	191	–	256	350	41	112
FLPS15–15	15	160	1140	–	494	1140	829	–	–	240	–	313	350	43.7	146
FLPS15–17	15	160	1236	–	494	1236	925	–	–	240	–	313	350	46.7	149

Performance Curve **15VS 2900** **50 Hz**

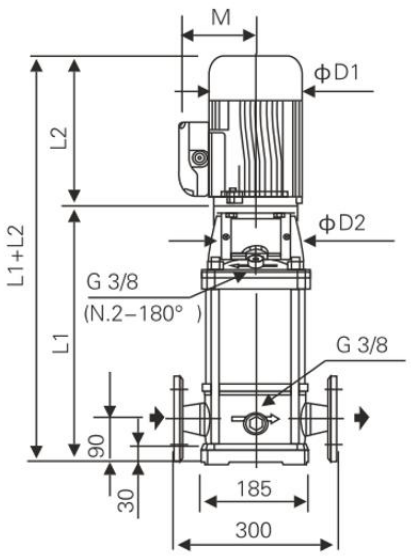


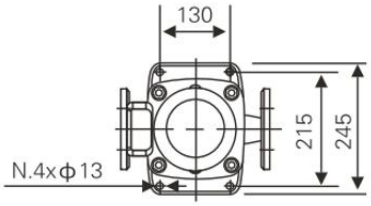
Dimensions and Weights

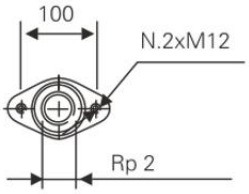
22VS Series 2900 RPM

50 Hz

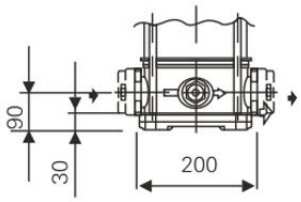
FLPS22 F–N(DN50)



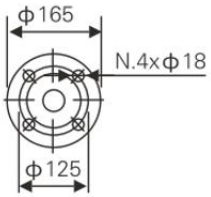




FLPS22 T(DN50)

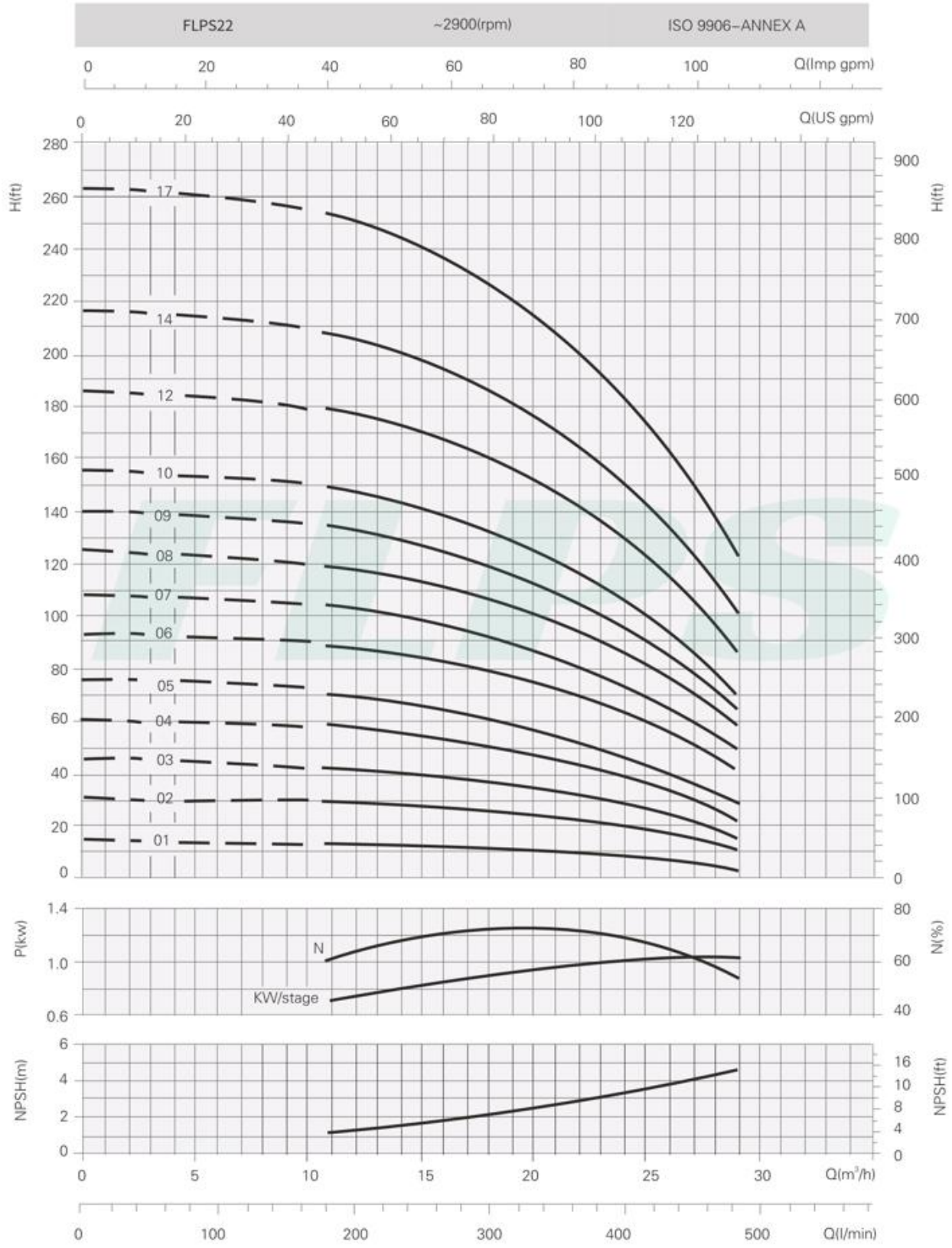


FLPS22 F–N–R(DN50)



Model	Motor		Size (mm)											Weight (KG)	
			L2					M				D1			
	KW		L1	1–	3–	L3	L4	L5	1–	3–	1–	3–	D2	Pump	Total
FLPS22–01	1.1	80	399	263	263	–	–	399	137	129	155	155	120	15.5	28.3
FLPS22–02	2.2	90	409	298	298	–	–	409	151	134	174	174	140	17.2	35.4
FLPS22–03	3	100	467	–	298	–	–	467	–	134	–	174	160	19.4	40.4
FLPS22–04	4	112	515	–	319	515	301	515	–	154	–	197	160	20.7	47.1
FLPS22–05	5.5	132	630	–	375	630	349	630	–	168	–	214	300	26.7	65
FLPS22–06	7.5	132	678	–	367	678	397	678	–	191	–	256	300	28	84
FLPS22–07	7.5	132	726	–	367	726	445	726	–	191	–	256	300	29.3	86
FLPS22–08	11	160	804	–	428	804	493	804	–	191	–	256	350	33.1	104
FLPS22–09	11	160	852	–	428	852	541	852	–	191	–	256	350	34.4	105
FLPS22–10	11	160	900	–	428	900	589	900	–	191	–	256	350	35.8	107
FLPS22–12	15	160	996	–	494	996	685	–	–	240	–	313	350	38.4	141
FLPS22–14	15	160	1092	–	494	1092	781	–	–	240	–	313	350	41.1	144
FLPS22–17	18.5	160	1236	–	494	1236	925	–	–	240	–	313	350	45.1	156

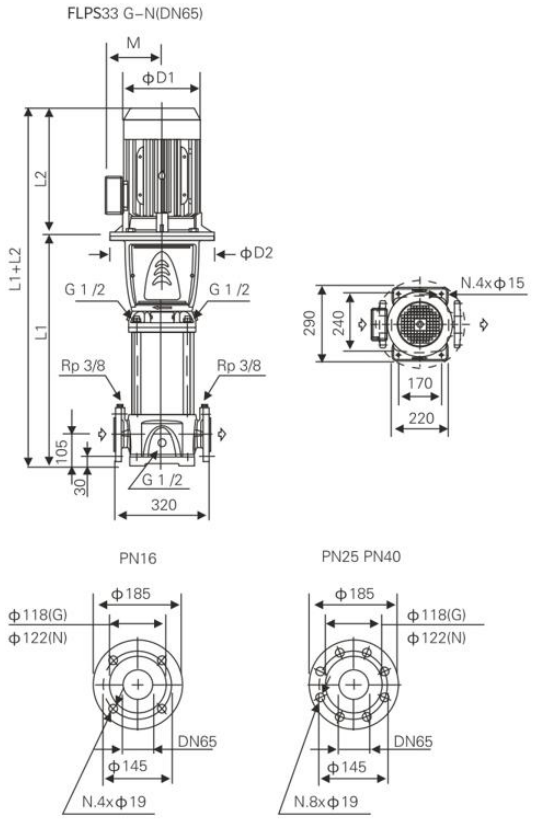
Performance Curve **22VS 2900** **50 Hz**



Dimensions and Weights

33VS Series 2900 RPM

50 Hz



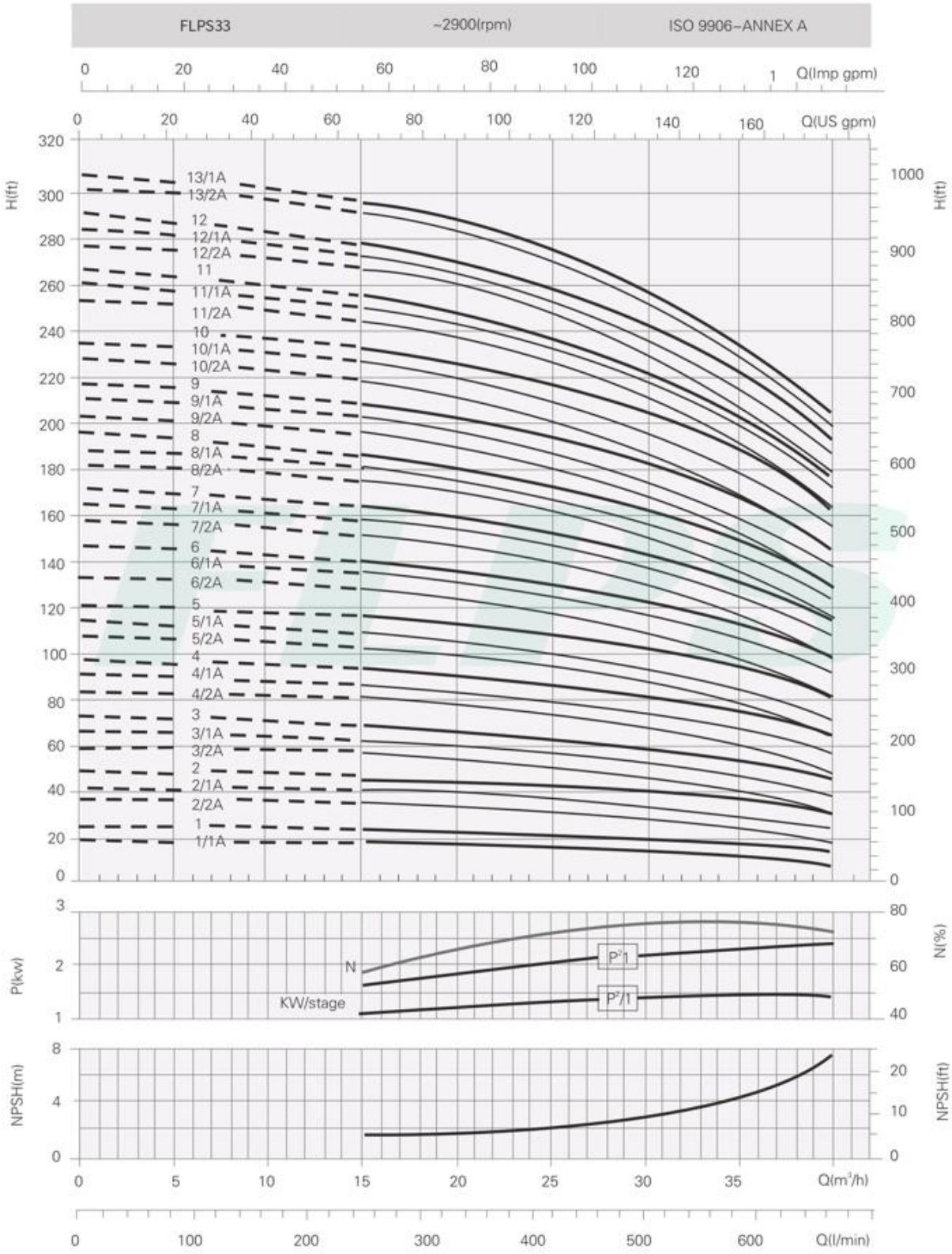
Model	Motor		Size (mm)					Weight (KG)		
	KW		L1	L2	D1	D2	M	PN	Pump	Total
FLPS33-1/1A	2.2	90	489	287	183	164	139	16	52	67
FLPS33-1	3	100	489	309	205	164	152	16	52	76.2
FLPS33-2/2A	4	112	564	335	229	164	167	16	56	81.8
FLPS33-2/1A	4	112	564	335	229	164	167	16	56	81.8
FLPS33-2	5.5	132	584	357	265	300	186	16	61	104.8
FLPS33-3/2A	5.5	132	659	357	265	300	186	16	65	108.8
FLPS33-3/1A	7.5	132	659	357	265	300	186	16	65	113
FLPS33-3	7.5	132	659	357	265	300	186	16	65	113
FLPS33-4/2A	7.5	132	734	357	265	300	186	16	69	117
FLPS33-4/1A	11	160	769	530	325	350	224	16	73	150.5
FLPS33-4	11	160	769	530	325	350	224	16	73	150.5
FLPS33-5/2A	11	160	844	530	325	350	224	16	77	154.5
FLPS33-5/1A	11	160	844	530	325	350	224	16	77	154.5
FLPS33-5	15	160	844	530	325	350	224	16	77	169.3
FLPS33-6/2A	15	160	919	530	325	350	224	16	81	173.3
FLPS33-6/1A	15	160	919	530	325	350	224	25	81	173.3
FLPS33-6	15	160	919	530	325	350	224	25	81	173.3
FLPS33-7/2A	15	160	994	530	325	350	224	25	84	176.3
FLPS33-7/1A	18.5	160	994	530	325	350	224	25	84	188.3

Model	Motor		Size (mm)					Weight (KG)		
	KW		L1	L2	D1	D2	M	PN	Pump	Total
FLPS33-7	18.5	160	994	530	325	350	224	25	84	188.3
FLPS33-8/2A	18.5	160	1069	530	325	350	224	25	88	192.3
FLPS33-8/1A	18.5	160	1069	530	325	350	224	25	88	192.3
FLPS33-8	22	180	1069	620	368	350	260	25	89	215.4
FLPS33-9/2A	22	180	1144	620	368	350	260	25	93	219.4
FLPS33-9/1A	22	180	1144	620	368	350	260	25	93	219.4
FLPS33-9	22	180	1144	620	368	350	260	25	93	219.4
FLPS33-10/2A	22	180	1219	620	368	350	260	25	97	223.4
FLPS33-10/1A	30	200	1219	635	368	400	260	25	104	248
FLPS33-10	30	200	1219	635	368	400	260	25	104	248
FLPS33-11/2A	30	200	1294	635	368	400	260	40	118	262
FLPS33-11/1A	30	200	1294	635	368	400	260	40	118	262
FLPS33-11	30	200	1294	635	368	400	260	40	118	262
FLPS33-12/2A	30	200	1369	635	368	400	260	40	122	266
FLPS33-12/1A	30	200	1369	635	368	400	260	40	122	266
FLPS33-12	30	200	1369	635	368	400	260	40	122	266
FLPS33-13/2A	30	200	1444	635	368	400	260	40	127	271
FLPS33-13/1A	30	200	1444	635	368	400	260	40	127	271

Performance Curve

33VS 2900 RPM

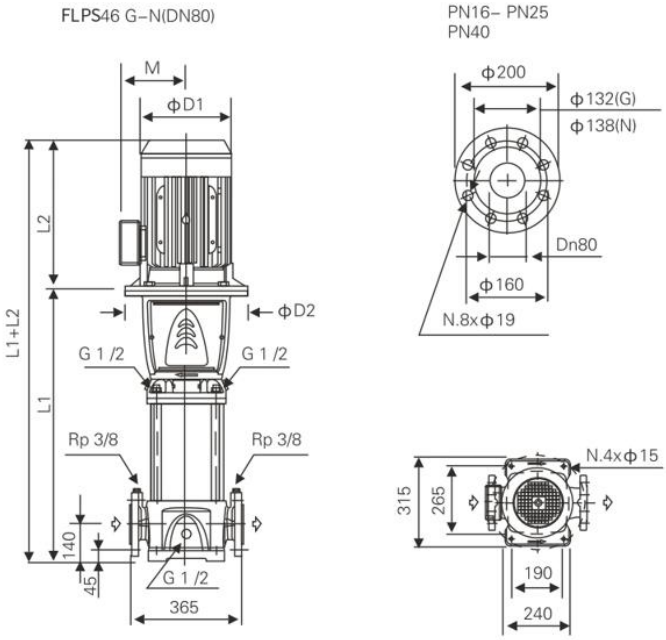
50 Hz



Dimensions and Weights

46VS Series 2900 RPM

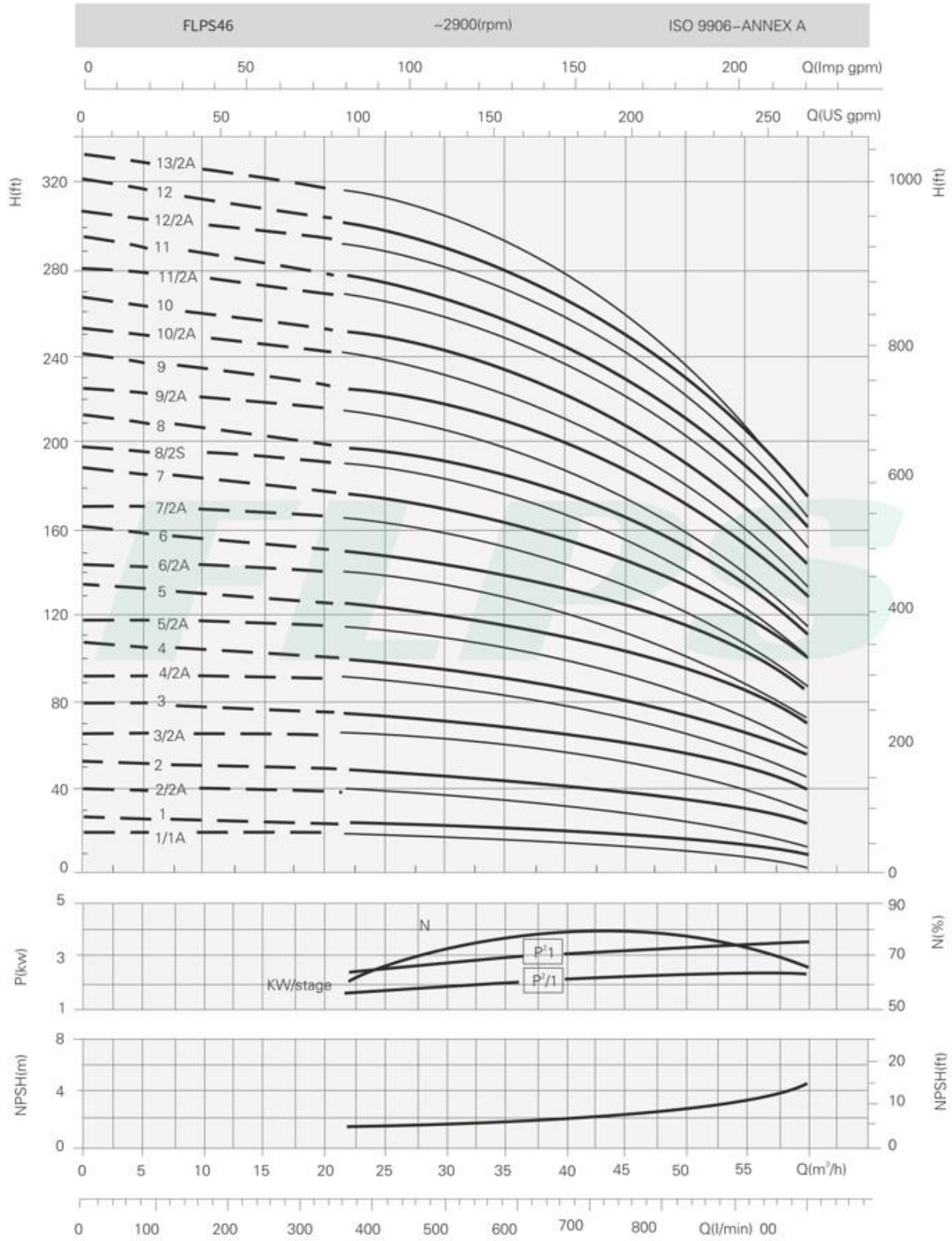
50 Hz



Model	Motor		Size (mm)					Weight (KG)		
	KW		L1	L2	D1	D2	M	PN	Pump	Total
FLPS46-1/1A	3	100	529	309	205	164	152	16	58	82.2
FLPS46-1	4	112	529	335	229	164	167	16	58	83.8
FLPS46-2/2A	5.5	132	624	357	265	300	186	16	66	109.8
FLPS46-2	7.5	132	624	357	265	300	186	16	66	114
FLPS46-3/2A	11	160	734	530	325	350	224	16	74	151.5
FLPS46-3	11	160	734	530	325	350	224	16	74	151.5
FLPS46-4/2A	15	160	809	530	325	350	224	16	78	170.3
FLPS46-4	15	160	809	530	325	350	224	16	78	170.3
FLPS46-5/2A	18.5	160	884	530	325	350	224	16	82	186.3
FLPS46-5	18.5	160	884	530	325	350	224	16	82	186.3
FLPS46-6/2A	22	180	959	620	368	350	260	25	87	213.4
FLPS46-6	22	180	959	620	368	350	260	25	87	213.4
FLPS46-7/2A	30	200	1034	635	368	400	260	25	97	241
FLPS46-7	30	200	1034	635	368	400	260	25	97	241
FLPS46-8/2A	30	200	1109	635	368	400	260	25	101	245
FLPS46-8	30	200	1109	635	368	400	260	25	101	245
FLPS46-9/2A	30	200	1184	635	368	400	260	25	105	249
FLPS46-9	37	200	1184	635	368	400	260	25	105	256
FLPS46-10/2A	37	200	1259	635	368	400	260	40	114	265

Model	Motor		Size (mm)					Weight (KG)		
	KW		L1	L2	D1	D2	M	PN	Pump	Total
FLPS46-10	37	200	1259	635	368	400	260	40	114	265
FLPS46-11/2A	45	225	1334	699	465	450	328	40	126	446
FLPS46-11	45	225	1334	699	465	450	328	40	126	446
FLPS46-12/2A	45	225	1409	699	465	450	328	40	131	451
FLPS46-12	45	225	1409	699	465	450	328	40	131	451
FLPS46-13/2A	45	225	1409	699	465	450	328	40	135	455

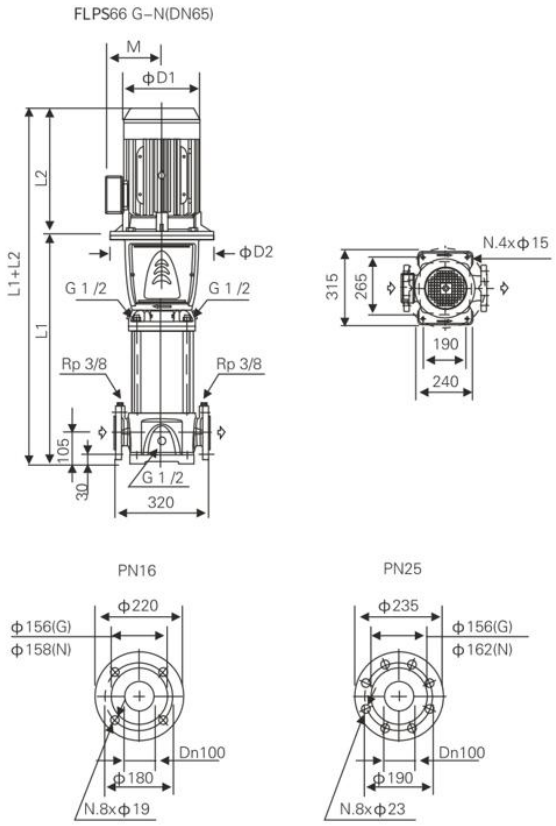
Performance Curve **46VS 2900** **50 Hz**



Dimensions and Weights

66VS Series 2900 RPM

50 Hz



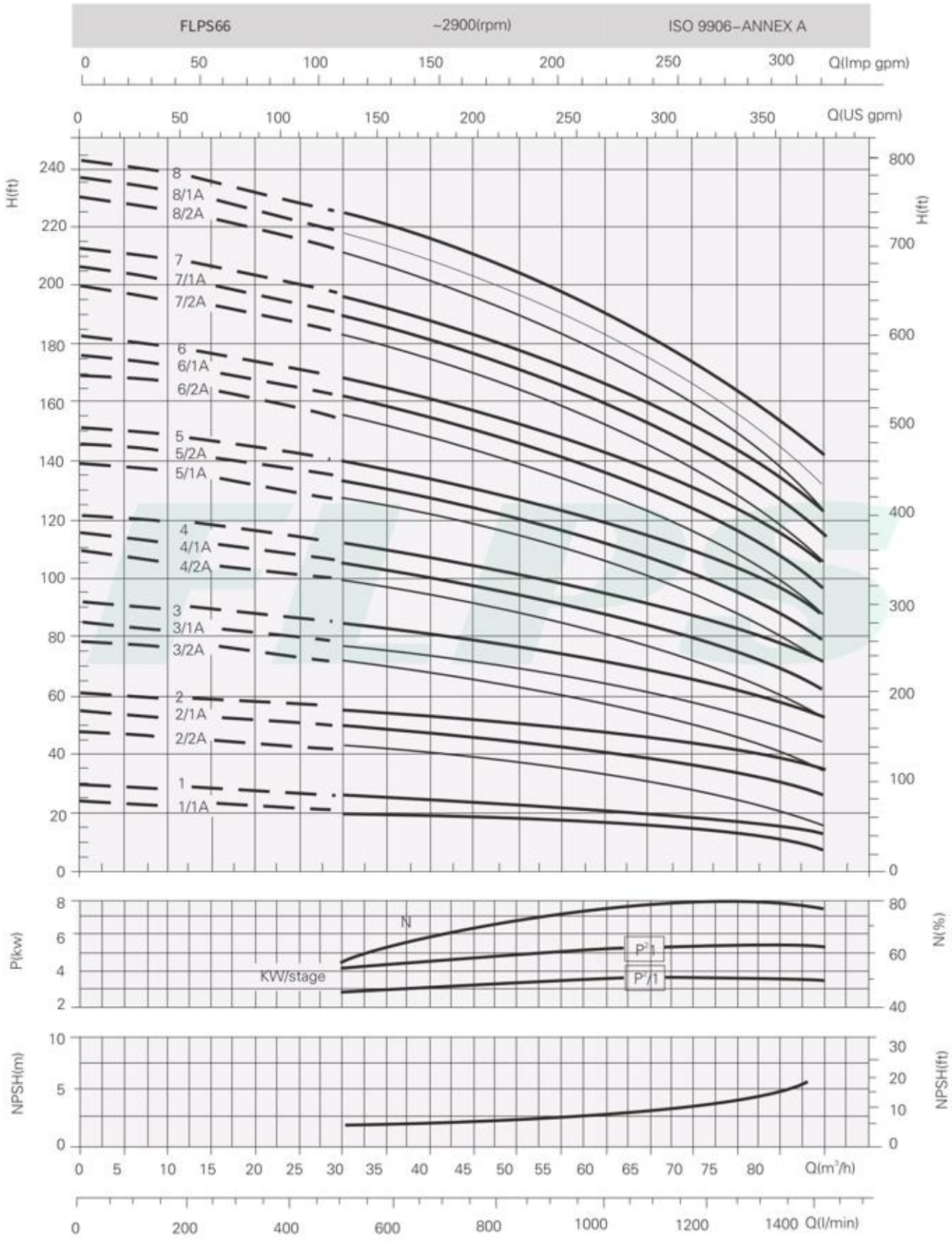
Model	Motor KW		Size (mm) L1	L2	D1	D2	M	Weight (KG) PN	Pump	Total
FLPS66-1/1A	4	112	554	335	229	164	167	16	66	91.8
FLPS66-1	5.5	132	574	357	265	300	186	16	72	115.8
FLPS66-2/2A	7.5	132	664	357	265	300	186	16	77	125
FLPS66-2/1A	11	160	699	530	325	350	224	16	81	158.5
FLPS66-2	11	160	699	530	325	350	224	16	81	158.5
FLPS66-3/2A	15	160	789	530	325	350	224	16	86	178.3
FLPS66-3/1A	15	160	789	530	325	350	224	16	86	178.3
FLPS66-3	18.5	160	789	530	325	350	224	16	86	190.3
FLPS66-4/2A	18.5	160	879	530	325	350	224	16	92	196.3
FLPS66-4/1A	22	180	879	620	368	350	260	16	93	219.4
FLPS66-4	22	180	879	620	368	350	260	16	93	219.4
FLPS66-5/2A	30	200	969	635	368	400	260	16	105	249
FLPS66-5/1A	30	200	969	635	368	400	260	16	105	249
FLPS66-5	30	200	969	635	368	400	260	16	105	249
FLPS66-6/2A	30	200	1059	635	368	400	260	25	113	257
FLPS66-6/1A	30	200	1059	635	368	400	260	25	113	257
FLPS66-6G	37	200	1059	635	368	400	260	25	113	264
FLPS66-7/2A	37	200	1149	635	368	400	260	25	118	269
FLPS66-7/1A	37	200	1149	635	368	400	260	25	118	269

Model	Motor KW		Size (mm) L1	L2	D1	D2	M	Weight (KG) PN	Pump	Total
FLPS66-7	45	225	1149	699	465	450	328	25	122	442
FLPS66-8/2A	45	225	1239	699	465	450	328	25	127	447
FLPS66-8/1A	45	225	1239	699	465	450	328	25	127	447
FLPS66-8	45	225	1239	699	465	450	328	25	127	447

Performance Curve

66VS 2900 RPM

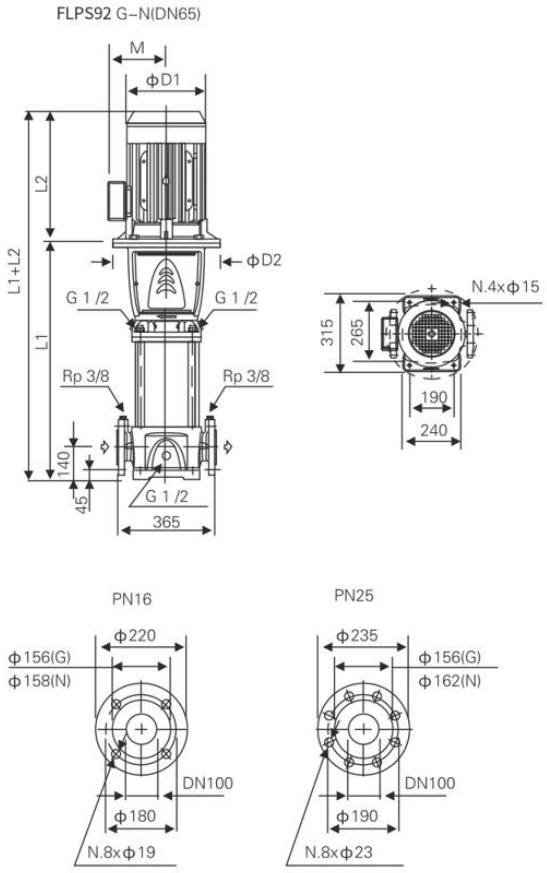
50 Hz



Dimensions and Weights

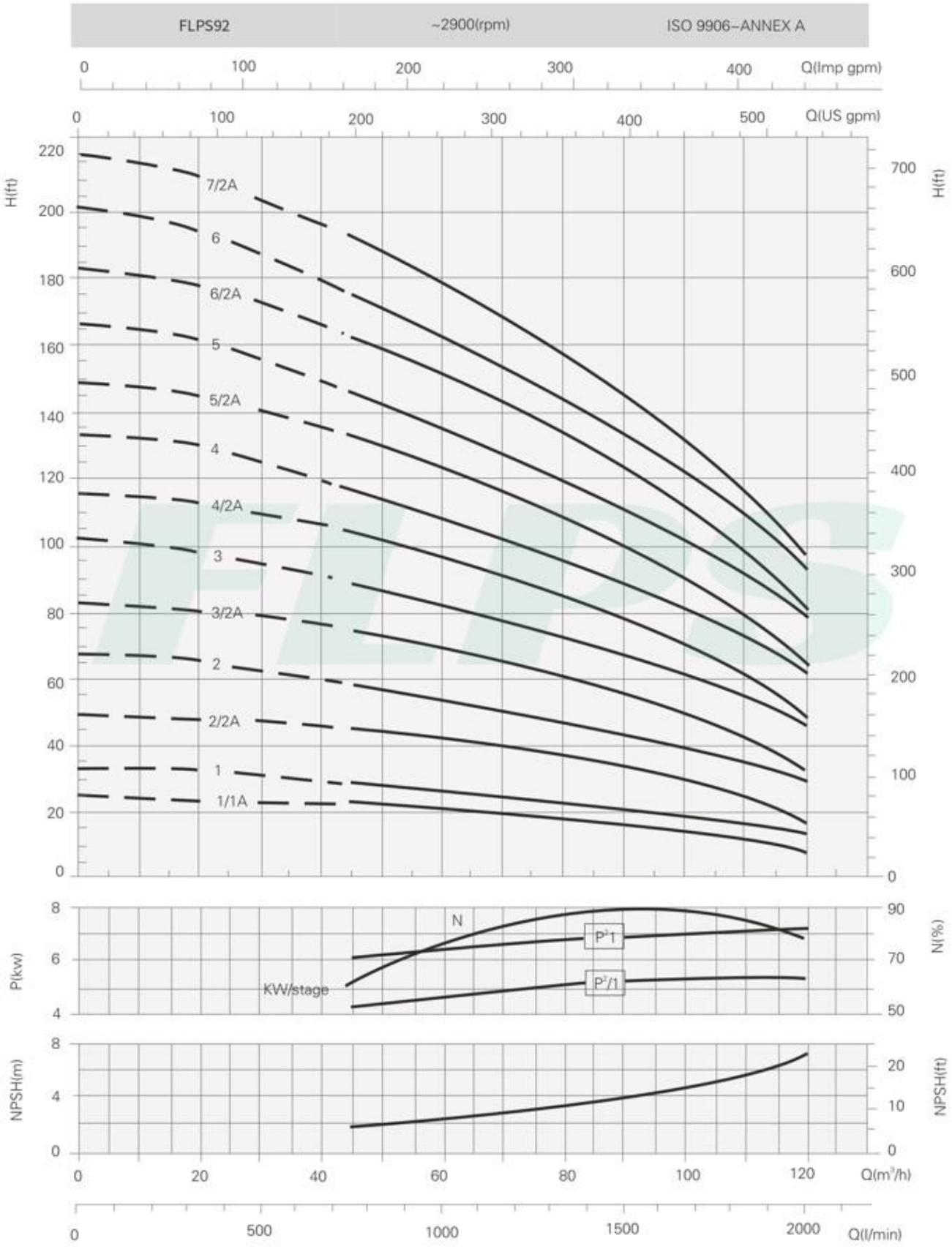
92VS Series 2900 RPM

50 Hz



Model	Motor		Size (mm)					PN	Weight (KG)	
	KW		L1	L2	D1	D2	M		Pump	Total
FLPS92–1/1A	5.5	132	574	357	265	300	186	16	71	114.8
FLPS92–1	7.5	132	574	357	265	300	186	16	71	119
FLPS92–2/2A	11	160	699	530	325	350	224	16	80	157.5
FLPS92–2	15	160	699	530	325	350	224	16	80	172.3
FLPS92–3/2A	18.5	160	789	530	325	350	224	16	86	190.3
FLPS92–3	22	180	789	620	368	350	260	16	87	213.4
FLPS92–4/2A	30	200	879	635	368	400	260	16	99	243
FLPS92–4	30	200	879	635	368	400	260	16	99	243
FLPS92–5/2A	37	200	969	635	368	400	260	25	107	258
FLPS92–5	37	200	969	635	368	400	260	25	107	258
FLPS92–6/2A	45	225	1059	699	465	450	328	25	116	436
FLPS92–6	45	225	1059	699	465	450	328	25	116	436
FLPS92–7/2A	45	225	1149	699	465	450	328	25	121	441

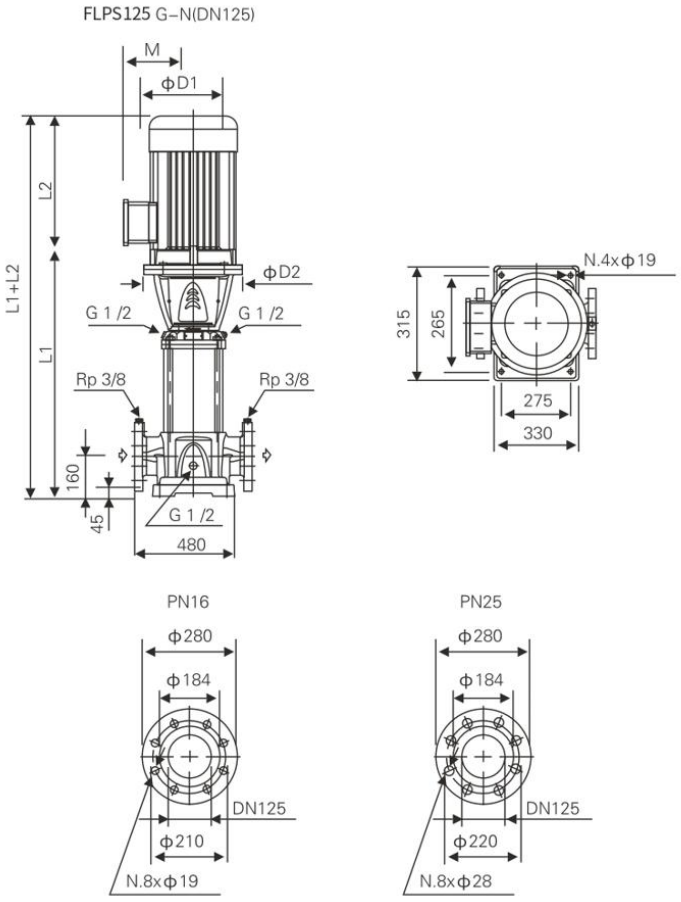
Performance Curve **92VS 2900** **50 Hz**



Dimensions and Weights

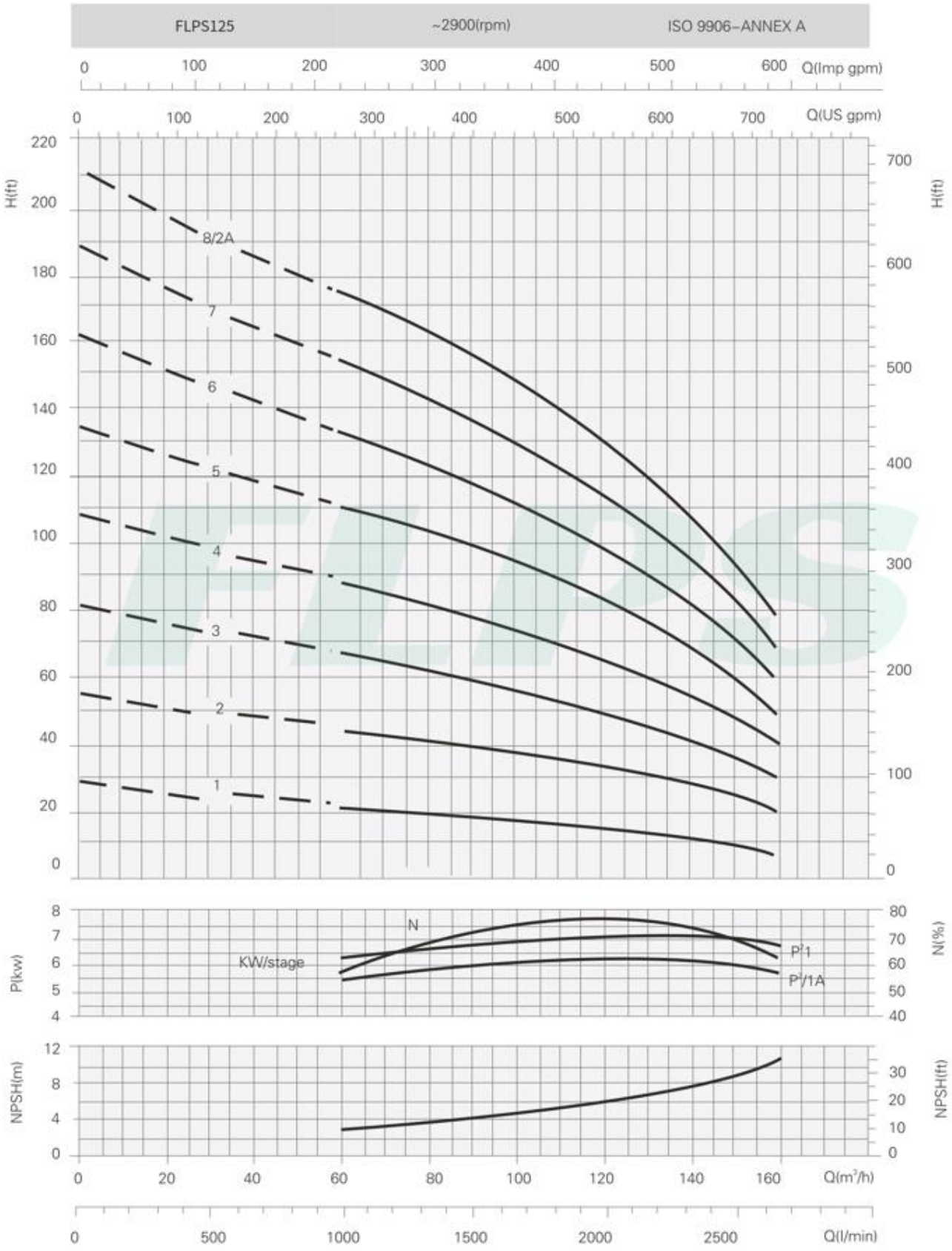
125VS Series 2900 RPM

50 Hz



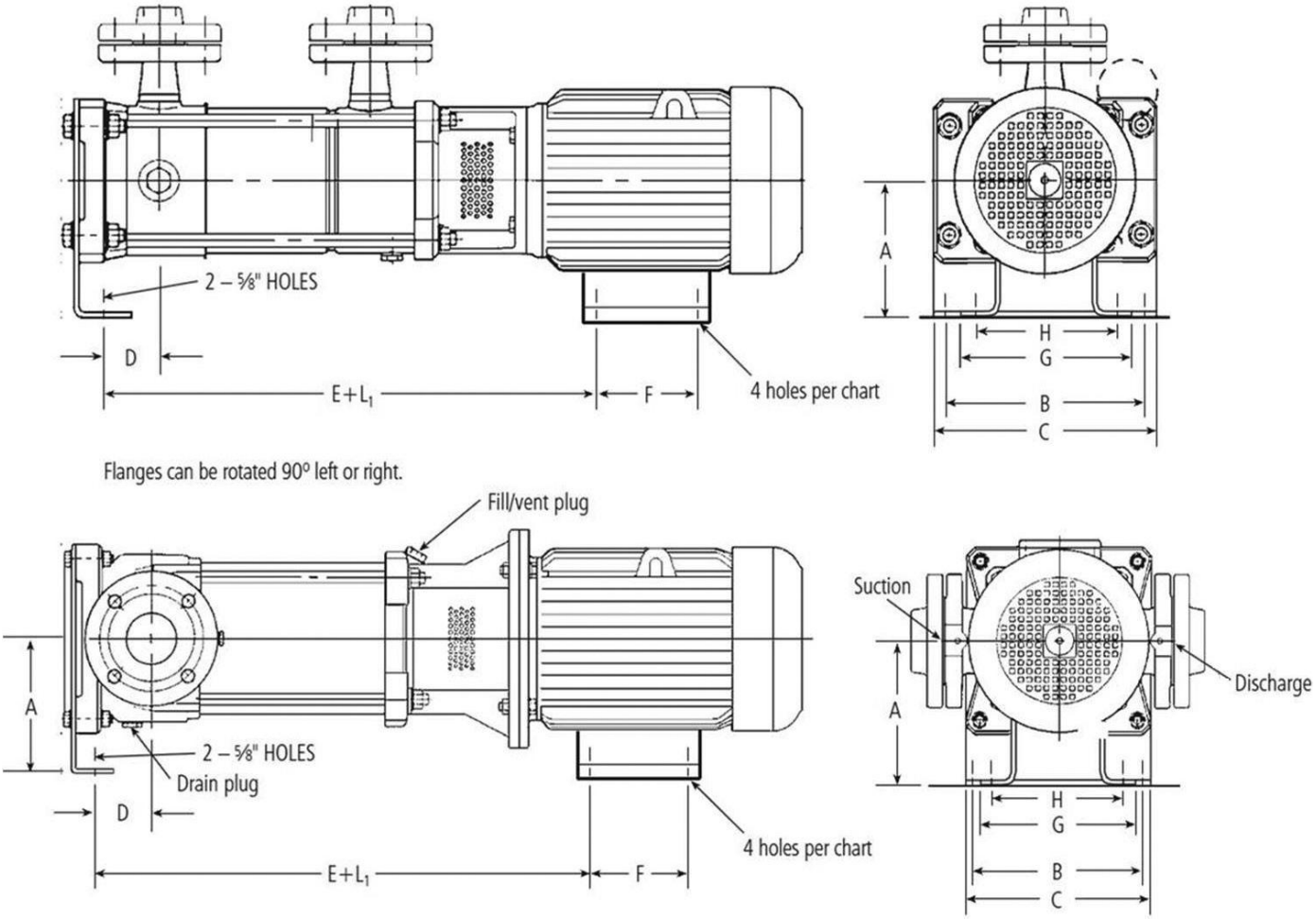
Model	Motor		Size (mm)					PN	Weight (KG)	
	KW		L1	L2	D1	D2	M		Pump	Total
PSL125–1	7.5	132	693	357	265	300	186	16	116	164
PSL125–2	15	160	878	530	325	350	224	16	131	223
PSL125–3	22	180	1028	620	368	350	260	16	143	269
PSL125–4	30	200	1178	635	368	400	260	16	161	305
PSL125–5	37	200	1328	635	368	400	260	16	172	323
PSL125–6	45	225	1478	699	465	450	328	16	187	507
PSL125–7	55	250	1658	778	506	550	366	25	216	628
PSL125–8/2A	55	250	1808	778	506	550	366	25	229	641

Performance Curve **125VS 2900** **50 Hz**



1VS – 22VS Horizontal Mounting Option

- Consists of VS pump with base mounting foot and footed motor for horizontal installations.
- Unit depicted may not show actual pump configuration. Use for mounting location only.

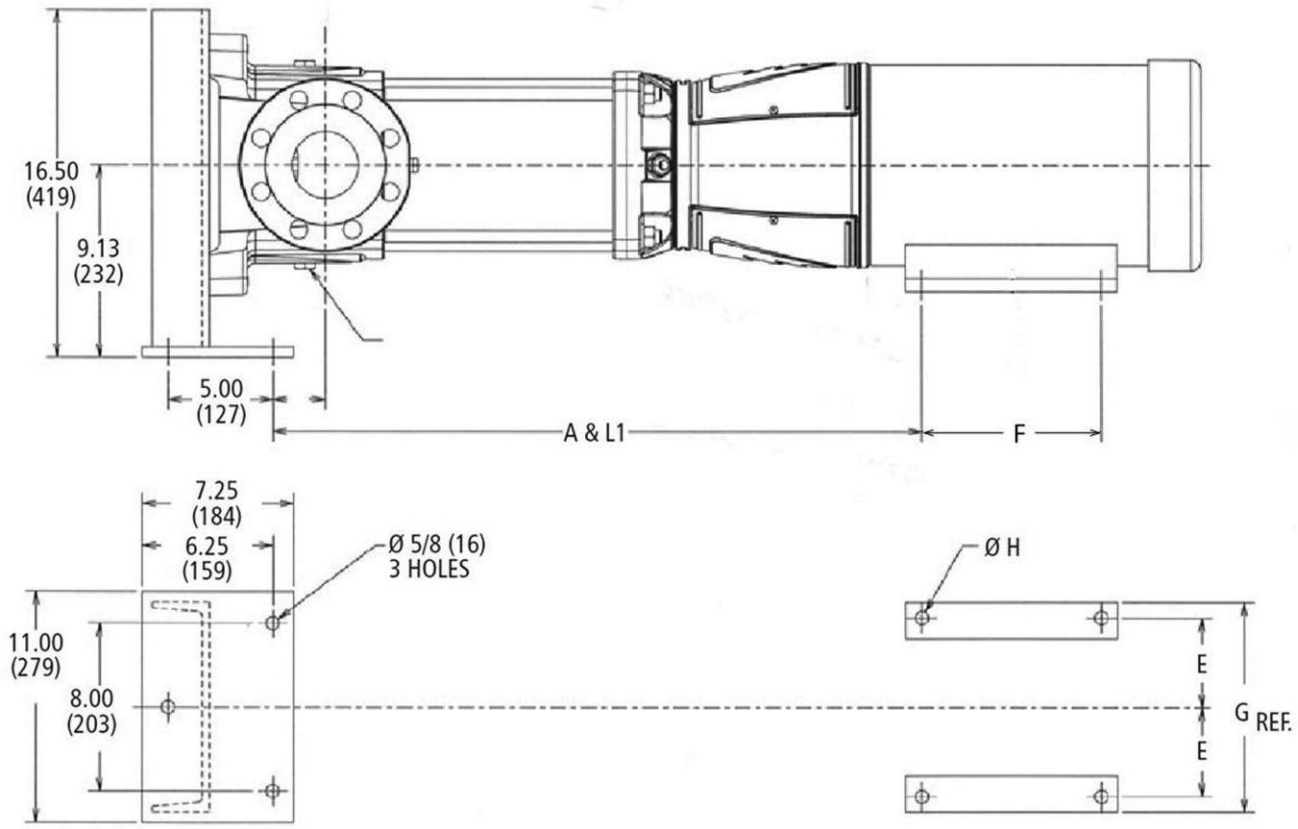


1VS – 22VS Horizontal Mounting Option

Series	Motor Frame	VSange	A	B	C	D	E	F	G	H	Motor Shim Thickness	Pump Shim Thickness
1VS	56C	T	4.5	7	9	0.219	0.810	3	6.563	4.825	1	-
		F, N, P, G, C	4.5	7	9	1.125	0.810	3	6.563	4.825	1	-
		R	4.5	11	12	1.254	0.940	3	6.563	4.825	1	-
3VS	56C	T	4.5	7	9	0.219	0.81	3	6.563	4.825	1	-
		F, N, P, G, C	4.5	7	9	1.125	0.81	3	6.563	4.825	1	-
		R	4.5	11	12	1.254	0.94	3	6.563	4.825	1	-
	180TC	T	4.5	7	9	0.219	1.88	5.5	6.563	4.825	-	-
		F, N, P, G, C	4.5	7	9	1.125	1.88	5.5	6.563	4.825	-	-
		R	4.5	11	12	1.254	2.01	5.5	6.563	4.825	-	-
	210TC	T	4.5	7	9	0.219	2.5	7	6.563	4.825	-	0.75
		F, N, P, G, C	4.5	7	9	1.125	2.5	7	6.563	4.825	-	0.75
		R	4.5	11	12	1.254	2.63	7	6.563	4.825	-	0.75
5VS	56C	T	4.5	7	9	0.219	0.81	3	6.563	4.825	1	-
		F, N, P, G, C	4.5	7	9	1.125	0.81	3	6.563	4.825	1	-
		R	4.5	11	12	1.254	0.94	3	6.563	4.825	1	-
	180TC	T	4.5	7	9	0.219	1.88	5.5	6.563	4.825	-	-
		F, N, P, G, C	4.5	7	9	1.125	1.88	5.5	6.563	4.825	-	-
		R	4.5	11	12	1.254	2.01	5.5	6.563	4.825	-	-
	210TC	T	4.5	7	9	0.219	2.5	7	6.563	4.825	-	0.75
		F, N, P, G, C	4.5	7	9	1.125	2.5	7	6.563	4.825	-	0.75
		R	4.5	11	12	1.254	2.63	7	6.563	4.825	-	0.75
10VS	56C	T	6.25	9.125	10.50	1.59	1	3	6.563	4.825	2.75	-
		F, N, P, G, C	6.25	9.125	10.50	1.983	1	3	6.563	4.825	2.75	-
		R	6.25	11.875	13.25	1.983	1	3	6.563	4.825	1	-
	180TC	T	6.25	9.125	10.50	1.59	2.07	5.5	8.625	7.50	1.75	-
		F, N, P, G, C	6.25	9.125	10.50	1.983	2.07	5.5	8.625	7.50	1.75	-
		R	6.25	11.875	13.25	1.983	2.07	5.5	8.625	7.50	-	-
	210TC	T	6.25	9.125	10.50	1.59	2.69	7	9.500	8.50	1	-
		F, N, P, G, C	6.25	9.125	10.50	1.983	2.69	7	9.500	8.50	1	-
		R	6.25	11.875	13.25	1.983	2.69	7	9.500	8.50	-	0.75
	250TC	T	6.25	9.125	10.50	1.59	3.19	10	11.500	10.00	-	-
		F, N, P, G, C	6.25	9.125	10.50	1.983	3.19	10	11.500	10.00	-	-
		R	6.25	11.875	13.25	1.983	3.19	10	11.500	10.00	-	1.75
15VS	56C	T	6.25	9.125	10.50	1.59	1	3	6.563	4.825	2.75	-
		F, N, P, G, C	6.25	9.125	10.50	1.983	1	3	6.563	4.825	2.75	-
		R	6.25	11.875	13.25	1.983	1	3	6.563	4.825	1	-
	180TC	T	6.25	9.125	10.50	1.59	2.07	5.5	8.625	7.50	1.75	-
		F, N, P, G, C	6.25	9.125	10.50	1.983	2.07	5.5	8.625	7.50	1.75	-
		R	6.25	11.875	13.25	1.983	2.07	5.5	8.625	7.50	-	-
	210TC	T	6.25	9.125	10.50	1.59	2.69	7	9.500	8.50	1	-
		F, N, P, G, C	6.25	9.125	10.50	1.983	2.69	7	9.500	8.50	1	-
		R	6.25	11.875	13.25	1.983	2.69	7	9.500	8.50	-	0.75
	250TC	T	6.25	9.125	10.50	1.59	3.19	10	11.500	10.00	-	-
		F, N, P, G, C	6.25	9.125	10.50	1.983	3.19	10	11.500	10.00	-	-
		R	6.25	11.875	13.25	1.983	3.19	10	11.500	10.00	-	1.75
	280TC	T	6.25	9.125	10.50	1.59	3.19	11	12.750	12.50	-	0.75
		F, N, P, G, C	6.25	9.125	10.50	1.983	3.19	11	12.750	12.50	-	0.75
		R	6.25	11.875	13.25	1.983	3.19	11	12.750	12.50	-	2.50
22VS	56C	T	6.25	9.125	10.50	1.59	1	3	6.563	4.825	2.75	-
		F, N, P, G, C	6.25	9.125	10.50	1.983	1	3	6.563	4.825	2.75	-
		R	6.25	11.875	13.25	1.983	1	3	6.563	4.825	1	-
	180TC	T	6.25	9.125	10.50	1.59	2.07	5.5	8.625	7.50	1.75	-
		F, N, P, G, C	6.25	9.125	10.50	1.983	2.07	5.5	8.625	7.50	1.75	-
		R	6.25	11.875	13.25	1.983	2.07	5.5	8.625	7.50	-	-
	210TC	T	6.25	9.125	10.50	1.59	2.69	7	9.500	8.50	1	-
		F, N, P, G, C	6.25	9.125	10.50	1.983	2.69	7	9.500	8.50	1	-
		R	6.25	11.875	13.25	1.983	2.69	7	9.500	8.50	-	0.75
	250TC	T	6.25	9.125	10.50	1.59	3.19	10	11.500	10.00	-	-
		F, N, P, G, C	6.25	9.125	10.50	1.983	3.19	10	11.500	10.00	-	-
		R	6.25	11.875	13.25	1.983	3.19	10	11.500	10.00	-	1.75
	280TC	T	6.25	9.125	10.50	1.59	3.19	11	12.750	12.50	-	0.75
		F, N, P, G, C	6.25	9.125	10.50	1.983	3.19	11	12.750	12.50	-	0.75
		R	6.25	11.875	13.25	1.983	3.19	11	12.750	12.50	-	2.50

33VS – 92VS Horizontal Mounting Option

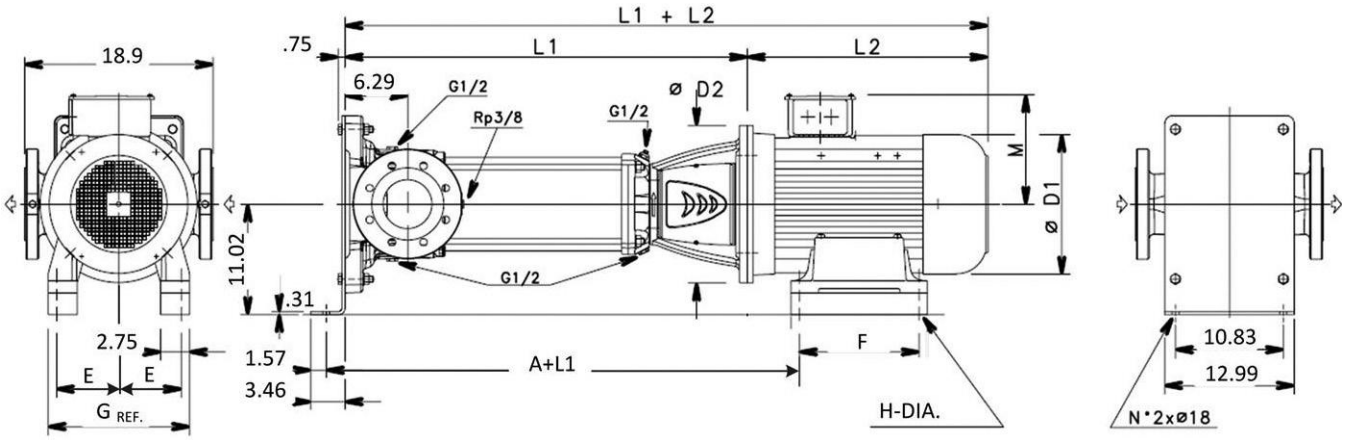
- Consists of VS pump with base mounting foot and footed motor for horizontal installations.
- Unit depicted may not show actual pump configuration. Use for mounting location only.



Series	Motor Frame	VSange	A	B	E	F	G	H - DIA.
33VS	182TC	G, N	0.5	1.13	3.5	2.25	8.63	13/32
	184TC					2.75		
	213TC		1.25		4.25	2.75	9.5	
	215TC					3.5		
	254TC		1.75		5	4.12	11.25	17/32
	256TC					5		
	284TC		1.75		5.5	4.75	12.25	
	286TC					5.5		
	324TSC		2.25		6.25	5.25	16	21/32
	326TSC					6		
	364TSC		2.88		7	5.63	18	
	365TSC					6.12		
46/66/92VS	182TC	G, N	0.5	2.5	3.7	2.25	8.63	13/32
	184TC					2.75		
	213TC		1.25		4.25	2.75	9.5	
	215TC					3.5		
	254TC		1.75		5	4.12	11.25	17/32
	256TC					5		
	284TC		1.75		5.5	4.75	16.5	
	286TC					5.5		
	324TSC		2.25		6.25	5.25	15.25	21/32
	326TSC					6		
	364TSC		2.88		7	5.63	17	
	365TSC					6.12		

125VS Horizontal Mounting Option

- Consists of VS pump with base mounting foot and footed motor for horizontal installations.
- Unit depicted may not show actual pump configuration. Use for mounting location only.



Series	Motor Frame	VSange	A	E	F	G (ref.)	H - Dia.
125VS	182TC	G, N	5.20	3.5	2.25	8.63	13/32
	184TC				2.75		
	213TC		5.82	4.25	2.75	9.5	
	215TC				3.5		
	254TC		6.32	5	4.12	11.25	17/32
	256TC				5		
	284TC		6.32	5.5	4.75	12.25	
	286TC				5.5		
	324TSC		6.82	6.25	5.25	16	21/32
	326TSC				6		
	364TSC		7.45	7	5.63	18	
	365TSC				6.12		

Technical Data – Pump Hydraulics / Motor Sizing

1VS 2900 RPM

No. of Impellers	Maximum HP draw	Motor Selection using SF			Motor Selection 1.0 SF			Shutoff TDH (meters)	Shutoff TDH (feet)	Shutoff TDH (psi)	Shutoff TDH (bar)	Casing/ Sleeve Pressure Rating (standard assembly)	Pump VSange Rating	R Configuration [Top/ Bottom]	T Configuration [Oval]
		Rated HP	NEMA Motor Frame		Rated HP	NEMA Motor Frame									
			ODP	TEFC		ODP	TEFC								
30	2.01	2.00	56C		2.00	56C		176	578	250	17.3	25 Bar (362 psi)	Class 250 / 300	Yes	No
29	1.94							170	559	242	16.7				
28	1.87							165	540	234	16.1				
27	1.81							159	521	226	15.6				Yes
26	1.74	1.50						153	502	217	15.0				
25	1.67							147	483	209	14.4				
24	1.61							142	465	201	13.9				
23	1.54							136	447	194	13.4				
22	1.46				1.50			131	429	186	12.8				
21	1.40							125	410	177	12.3				
20	1.33							119	391	169	11.7				
19	1.26							113	371	161	11.1				
18	1.20							107	352	152	10.5				
17	1.13	1.00						101	333	144	9.9				
16	1.07							95	311	134	9.3				
15	0.99				1.00			88	288	125	8.6				
14	0.93							82	269	117	8.0				
13	0.86	0.75						76	250	108	7.5				
12	0.80							70	231	100	6.9				
11	0.73				0.75			64	210	91	6.3				
10	0.66							58	191	83	5.7				
9	0.59							52	172	75	5.1				
8	0.53	0.50						47	153	66	4.6				
7	0.46				0.50			41	134	58	4.0				
6	0.39							35	115	50	3.4				
5	0.33							29	96	41	2.9			No	
4	0.26							23	77	33	2.3				
3	0.20							18	58	25	1.7				
2	0.13							12	39	17	1.2				

3VS 2900 RPM

No. of Impellers	Maximum HP draw	Motor Selection using SF			Motor Selection 1.0 SF			Shutoff TDH (meters)	Shutoff TDH (feet)	Shutoff TDH (psi)	Shutoff TDH (bar)	Casing/ Sleeve Pressure Rating (standard assembly)	Pump VSange Rating	R Configuration [Top/ Bottom]	T Configuration [Oval]
		Rated HP	NEMA Motor Frame		Rated HP	NEMA Motor Frame									
			ODP	TEFC		ODP	TEFC								
30	3.26	3.00	182TC	184TC	5.00	184TC		217	712	308	21.3	25 Bar (362 psi)	Class 250 / 300	Yes	No
29	3.11							210	689	298	20.6				
28	3.01				3.00	182TC	184TC	203	665	288	19.9				
27	2.90							195	641	278	19.2				
26	2.79							188	617	267	18.4				
25	2.69							181	593	257	17.7				
24	2.58							174	570	247	17.0				
23	2.47							167	546	237	16.3				
22	2.36							159	523	226	15.6				
21	2.25	2.00	56C					152	499	216	14.9				Yes
20	2.15							145	475	206	14.2				
19	2.04							138	451	195	13.5				
18	1.93				2.00	56C		130	427	185	12.8				
17	1.82							123	403	174	12.0				
16	1.72	1.50						115	378	164	11.3				
15	1.61							108	355	154	10.6				
14	1.50				1.50			101	332	144	9.9				
13	1.39							94	308	133	9.2				
12	1.31							86	283	123	8.5				
11	1.20							79	260	113	7.8				
10	1.09	1.00						72	236	102	7.1				
9	0.98				1.00			65	213	92	6.4				
8	0.87	0.75						58	189	82	5.7				
7	0.76							50	165	71	4.9				
6	0.64				0.75			43	142	61	4.2				
5	0.53	0.50						36	118	51	3.5			No	
4	0.43							29	95	41	2.8				
3	0.32				0.50			22	71	31	2.1				
2	0.21							14	47	20	1.4				

Technical Data – Pump Hydraulics / Motor Sizing

5VS 2900 RPM

No. of Impellers	Maximum HP draw	Motor Selection using SF			Motor Selection 1.0 SF			Shutoff TDH (meters)	Shutoff TDH (feet)	Shutoff TDH (psi)	Shutoff TDH (bar)	Casing/ Sleeve Pressure Rating (standard assembly)	Pump VSange Rating	R Configuration [Top/ Bottom]	T Configuration [Oval]
		Rated HP	NEMA Motor Frame		Rated HP	NEMA Motor Frame									
			ODP	TEFC		ODP	TEFC								
27	5.02	5.00	184TC		5.00	184TC		194	638	276	19.1	25 Bar (362 psi)	Class 250 / 300	Yes	No
26	4.83							187	614	266	18.4				
25	4.59							180	591	256	17.6				
24	4.41							173	567	245	16.9				
23	4.22							166	543	235	16.2				
22	4.04							158	520	225	15.5				Yes
21	3.85							151	496	215	14.8				
20	3.67							144	473	205	14.1				
19	3.49							137	449	194	13.4				
18	3.30	3.00	182TC	184TC				130	425	184	12.7				
17	3.12							122	402	174	12				
16	2.93				3.00	182TC	184TC	115	378	164	11.3				
15	2.75							108	354	153	10.6				
14	2.57							101	331	143	9.9				
13	2.39							94	307	133	9.2				
12	2.20	2.00	56C					86	283	123	8.5				
11	2.03							80	261	113	7.8				
10	1.84				2.00	56C		72	237	103	7.1				
9	1.66	1.50						65	213	92	6.4				
8	1.47				1.50			58	190	82	5.7				
7	1.29							51	166	72	4.9				
6	1.11	1.00						43	142	61	4.2				
5	0.95				1.00			36	119	52	3.6				
4	0.76	0.75						29	95	41	2.8				
3	0.56	0.50			0.75			22	71	31	2.1				
2	0.38				0.50			15	48	21	1.4				

10VS 2900 RPM

No. of Impellers	Maximum HP draw	Motor Selection using SF			Motor Selection 1.0 SF			Shutoff TDH (meters)	Shutoff TDH (feet)	Shutoff TDH (psi)	Shutoff TDH (bar)	Casing/ Sleeve Pressure Rating (standard assembly)	Pump VSange Rating	R Configuration [Top/ Bottom]	T Configuration [Oval]
		Rated HP	NEMA Motor Frame		Rated HP	NEMA Motor Frame									
			ODP	TEFC		ODP	TEFC								
20	9.55	10.00	215TC	254TC	10.00	215TC	254TC	228	749	324	22.4	25 Bar (362 psi)	Class 250 / 300	Yes	No
19	9.07							217	712	308	21.2				
18	8.60	7.50	213TC	215TC				206	674	292	20.1				
17	8.12							194	637	276	19				
16	7.64							183	600	260	17.9				
15	7.18				7.50	213TC	215TC	171	562	243	16.8				
14	6.70							160	525	227	15.7				
13	6.22							149	487	211	14.6				
12	5.75	5.00	184TC					136	446	193	13.3				
11	5.17							123	405	175	12.1				
10	4.71				5.00	184TC		112	368	159	11				
9	4.24							101	331	143	9.9				
8	3.74							91	299	129	8.9				
7	3.27	3.00	182TC	184TC				80	261	113	7.8				Yes
6	2.87				3.00	182TC	184TC	68	224	97	6.7				
5	2.39							57	187	81	5.6				
4	1.89	2.00	56C		2.00	56C		46	150	65	4.5				
3	1.45	1.50			1.50			34	112	49	3.3				
2	0.97	1.00			1.00			23	74	32	2.2				
1	0.47	0.50			0.50			11	37	16	1.1				

Technical Data – Pump Hydraulics / Motor Sizing

15VS 2900 RPM

No. of Impellers	Maximum HP draw	Motor Selection using SF			Motor Selection 1.0 SF			Shutoff TDH (meters)	Shutoff TDH (feet)	Shutoff TDH (psi)	Shutoff TDH (bar)	Casing/ Sleeve Pressure Rating (standard assembly)	Pump VSange Rating	R Config-uration [Top/ Bottom]	T Config-uration [Oval]
		Rated HP	NEMA Motor Frame		Rated HP	NEMA Motor Frame									
			ODP	TEFC		ODP	TEFC								
15	15.11	15.00	254TC	256TC	15	254TC	256TC	210	688	298	20.5	25 Bar (362 psi)	Class 250 / 300	Yes	No
14	14.11							196	642	278	19.2				
13	13.09							182	596	258	17.8				
12	12.08							168	550	238	16.5				
11	11.08	10.00	215TC	254TC				154	505	218	15.1				Yes
10	10.07				10.00	215TC	254TC	140	459	198	13.7				
9	9.22							125	411	178	12.3				
8	8.20	7.50	213TC	215TC				111	365	158	10.9				
7	7.16				7.50	213TC	215TC	98	320	139	9.6				
6	6.14							84	274	119	8.2				Yes
5	4.87	5.00	184TC		5.00	184TC	184TC	69	227	98	6.8				
4	3.90							55	182	79	5.4				
3	2.98	3.00	182TC	184TC	3.00	182TC	184TC	41	136	59	4.1				
2	2.01	2.00	56C		2.00	56C		27	89	39	2.7			No	
1	1.08	1.00			1.50			13	44	19	1.3				

22VS 2900 RPM

No. of Impellers	Maximum HP draw	Motor Selection using SF			Motor Selection 1.0 SF			Shutoff TDH (meters)	Shutoff TDH (feet)	Shutoff TDH (psi)	Shutoff TDH (bar)	Casing/ Sleeve Pressure Rating (standard assembly)	Pump VSange Rating	R Config-uration [Top/ Bottom]	T Config-uration [Oval]
		Rated HP	NEMA Motor Frame		Rated HP	NEMA Motor Frame									
			ODP	TEFC		ODP	TEFC								
12	15.78	15.00	254TC	256TC	15.00	254TC	256TC	176	576	249	17.2	25 Bar (362 psi)	Class 250 / 300	Yes	No
11	14.47							161	529	229	15.8				Yes
10	13.37							147	483	209	14.4				
9	12.03							132	434	188	13				
8	10.70	10.00	215TC	254TC				118	386	167	11.5				
7	9.36				10.00	215TC	254TC	103	338	146	10.1				
6	8.02	7.50	213TC	215TC				88	290	125	8.6				
5	6.54				7.50	213TC	215TC	72	238	103	7.1				
4	5.23	5.00	184TC					58	190	82	5.7				
3	3.92				5.00	184TC		43	143	62	4.3				
2	2.61	3.00	182TC	184TC	3.00	182TC	184TC	29	95	41	2.8				
1	1.39	1.50	56C		1.50	56C		14	46	20	1.4				

Technical Data – Pump Hydraulics / Motor Sizing

33VS 2900 RPM

No. of Impellers	Maximum HP draw	Motor Selection using SF			Motor Selection 1.0 SF			Shutoff TDH (meters)	Shutoff TDH (feet)	Shutoff TDH (psi)	Shutoff TDH (bar)	Casing/ Sleeve Pressure Rating (standard assembly)	Pump VSange Rating	Stages Requiring Thrust Balancing Piston
		Rated HP	NEMA Motor Frame		Rated HP	NEMA Motor Frame								
			ODP	TEFC		ODP	TEFC							
10	32.0	30	286TC		40	324TSC	326TSC	233	764	331	22.8	25 Bar (362 psi)	Class 250 / 300	Thrust Piston Required
10/1	30.5							226	742	321	22.2			
10/2	29.0				30	286TC		219	719	311	21.5			
9	28.8	25	284TC	286TC				210	689	298	20.6			
9/1	27.3							204	669	290	20.0			
9/2	25.8							196	644	279	19.2			
8	25.6							189	619	268	18.5			
8/1	24.1				25	284TC	286TC	182	597	258	17.8			
8/2	22.6	20	254TC	284TC				175	575	249	17.2			
7	22.4							166	543	235	16.2			
7/1	20.9							159	522	226	15.6			
7/2	19.4				20	254TC	284TC	152	500	217	15.0			
6	19.2							143	468	203	14.0			
6/1	17.7							136	446	193	13.3		Class 125 / 150	
6/2	16.2	15	254TC	256TC				129	422	183	12.6			
5	16.0							118	388	168	11.6			
5/1	14.6				15	254TC	256TC	112	367	159	11.0			
5/2	13.1							105	345	149	10.3			
4	12.9							96	314	136	9.4			
4/1	11.4	10	215TC	254TC				89	292	126	8.7			
4/2	9.9				10	215TC	254TC	82	270	117	8.1			
3	9.7							73	239	104	7.2			
3/1	8.2	7.5	213TC	215TC				66	217	94	6.5			
3/2	6.6				7.5	213TC	215TC	60	195	85	5.8			
2	6							50	164	71	4.9			
2/1	4.9	5	184TC		5	184TC		43	142	62	4.3			
2/2	3.5							38	124	54	3.7			
1	3.2	3	182TC	184TC				27	90	39	2.7			

Technical Data – Pump Hydraulics / Motor Sizing

46VS 2900 RPM

No. of Impellers	Maximum HP draw	Motor Selection using SF			Motor Selection 1.0 SF			Shutoff TDH (meters)	Shutoff TDH (feet)	Shutoff TDH (psi)	Shutoff TDH (bar)	Casing/ Sleeve Pressure Rating (standard assembly)	Pump VSange Rating	Stages Requiring Thrust Balancing Piston
		Rated HP	NEMA Motor Frame		Rated HP	NEMA Motor Frame								
			ODP	TEFC		ODP	TEFC							
10	45.8	40	324TSC	326TSC	50	324TSC	326TSC	253	831	360	24.8	25 Bar (362 psi)	Class 250 / 300	Thrust Piston Required
10/1	44.3							246	808	350	24.2			
10/2	42.4							239	785	340	23.5			
9	41.3							228	748	324	22.4			
9/1	39.6				40			221	725	314	21.7			
9/2	37.8							214	702	304	21.0			
8	36.7							203	665	288	19.9			
8/1	35.0	30	286TC					195	641	277	19.2			
8/2	33.3							188	616	267	18.4			
7	32.0							179	586	254	17.5			
7/1	30.3							171	559	242	16.7			
7/2	28.6	25	284TC	286TC	30	286TC		162	533	231	15.9			
6	27.5							153	503	218	15.0			
6/1	25.7							145	476	206	14.2			
6/2	24.0							137	449	194	13.4			
5	22.9	20	254TC	284TC				128	419	181	12.5		Class 125 / 150	
5/1	21.2							119	392	170	11.7			
5/2	19.4				20	254TC	284TC	111	365	158	10.9			
4	18.4							102	334	145	10.0			
4/1	16.9	15	254TC	256TC				95	311	134	9.3			
4/2	14.9				15	254TC	256TC	87	287	124	8.6			
3	13.8							77	253	109	7.6			
3/1	12.1							69	228	99	6.8			
3/2	10.3	10	215TC	254TC				62	203	88	6.1			
2	9.1				10	215TC	254TC	50	165	72	4.9			
2/1	7.4	7.5	213TC	215TC	7.5	213TC	215TC	44	143	62	4.3			
2/2	5.6	5	184TC					37	121	52	3.6			
1	4.6				5	213TC	215TC	26	86	37	2.6			

66VS 2900 RPM

No. of Impellers	Maximum HP draw	Motor Selection using SF			Motor Selection 1.0 SF			Shutoff TDH (meters)	Shutoff TDH (feet)	Shutoff TDH (psi)	Shutoff TDH (bar)	Casing/ Sleeve Pressure Rating (standard assembly)	Pump VSange Rating	Stages Requiring Thrust Balancing Piston
		Rated HP	NEMA Motor Frame		Rated HP	NEMA Motor Frame								
			ODP	TEFC		ODP	TEFC							
6	41.0	40	324TSC	326TSC	50	324TSC	326TSC	173	569	246	17.0	25 Bar (362 psi)	Class 250 / 300	Thrust Piston Required
6/1	39.1				40			167	549	238	16.4			
6/2	37.3							161	529	229	15.8			
5	34.0	30	286TC					145	474	205	14.2			
5/1	32.3							138	454	197	13.6			
5/2	30.5							132	434	188	13.0		Class 125 / 150	
4	27.1	25	284TC	286TC	30	286TC		116	379	164	11.3			
4/1	25.3							109	359	156	10.7			
4/2	23.7							103	339	147	10.1			
3	20.5	20	254TC	284TC				87	284	123	8.5			
3/1	18.7				20	254TC	284TC	81	264	114	7.9			
3/2	16.9	15	254TC	256TC				74	244	106	7.3			
2	13.6				15	254TC	256TC	58	190	82	5.7			
2/1	11.9							52	170	73	5.1			
2/2	10.1	10	215TC	254TC				46	150	65	4.5			
1	6.8	7.5	213TC	215TC	7.5	213TC	215TC	28	92	40	2.8			

Technical Data – Pump Hydraulics / Motor Sizing

92VS 2900 RPM

No. of Impellers	Maximum HP draw	Motor Selection using SF			Motor Selection 1.0 SF			Shutoff TDH (meters)	Shutoff TDH (feet)	Shutoff TDH (psi)	Shutoff TDH (bar)	Casing/ Sleeve Pressure Rating (standard assembly)	Pump VSange Rating	Stages Requiring Thrust Balancing Piston
		Rated HP	NEMA Motor Frame		Rated HP	NEMA Motor Frame								
			ODP	TEFC		ODP	TEFC							
6	54.0	50	324TSC	326TSC	60	364TSC	364TSC	191	627	271	18.7	25 Bar (362 psi)	Class 250 / 300	Thrust Piston Required
6/1	51.7							183	599	259	17.9			
6/2	49.4				50	324TSC	326TSC	174	571	247	17.1			
5	45.0							159	521	226	15.6			
5/1	42.1	40						150	494	214	14.8			
5/2	40.0				40	324TSC	326TSC	142	467	202	13.9			
4	35.5							127	417	180	12.5		Class 125 / 150	
4/1	33.2	30	286TC					119	390	169	11.6			
4/2	31.0							110	362	157	10.8			
3	26.6	25	284TC	286TC	30	286TC		98	322	140	9.6			
3/1	24.3							88	290	126	8.7			
3/2	22.0	20	254TC	284TC				79	258	112	7.7			
2	17.8				20	254TC	284TC	65	213	92	6.4			
2/1	15.5	15	254TC	256TC				56	184	80	5.5			
2/2	13.1				15	254TC	256TC	47	155	67	4.6			
1	9.0	10	215TC	254TC	10	215TC	254TC	33	107	46	3.2			
1/1	6.8	7.5	213TC	215TC	7.5	213TC	215TC	24	77	34	2.3			

125VS 2900 RPM

No. of Impellers	Maximum HP draw	Motor Selection using SF			Motor Selection 1.0 SF			Shutoff TDH (meters)	Shutoff TDH (feet)	Shutoff TDH (psi)	Shutoff TDH (bar)	Casing/ Sleeve Pressure Rating (standard assembly)	Pump VSange Rating	Stages Requiring Thrust Balancing Piston
		Rated HP	NEMA Motor Frame		Rated HP	NEMA Motor Frame								
			ODP	TEFC		ODP	TEFC							
8/1B	68.26	60.00	364TSC	365TSC	Contact Factory			201	659	285	19.7	25 Bar (362 psi)	Class 250 / 300	Thrust Piston Required
7/3B	56.61	50.00	324TSC	326TSC	60.00	364TSC	365TSC	168	553	239	16.5			
6/2B	49.36				50.00	324TSC	326TSC	146	480	208	14.4			
5/0C	43.61	40.00	324TSC	326TSC				128	419	181	12.5		Class 125 / 150	
4/4A	32.62	30.00	286TC	286TC	40.00	324TSC	326TSC	95	311	135	9.3			
3/2A	24.87	25.00	284TC	286TC	30.00	286TC	286TC	73	239	104	7.2			
2/2A	18.65	20.00	254TC	284TC	20.00	254TC	284TC	49	161	70	4.8			
1/0C	9.57	10.00	215TC	254TC	10.00	215TC	254TC	27	88	38	2.6			

Technical Data – Water Property Chart

Temp ºF	Temp ºC	Specific Volume (Cubic ft/lb)	Specific Gravity			Weight (lb/cubic ft)	Vapor Pressure (psi Abs)
			* 39.2ºF	* 60ºF	* 68ºF		
32	0.0	0.01602	1.000	1.001	1.002	62.42	0.088
35	1.7	0.01602	1.000	1.001	1.002	62.42	0.100
40	4.4	0.01602	1.000	1.001	1.002	62.42	0.122
50	10.0	0.01603	0.999	1.001	1.002	62.38	0.178
60	15.6	0.01604	0.999	1.000	1.001	62.34	0.256
70	21.1	0.01606	0.998	0.999	1.000	62.27	0.363
80	26.7	0.01608	0.996	0.998	0.999	62.19	0.507
90	32.2	0.0161	0.995	0.996	0.997	62.11	0.698
100	37.8	0.01613	0.993	0.994	0.995	62.00	0.949
120	48.9	0.0162	0.989	0.990	0.991	61.73	1.692
140	60.0	0.01629	0.983	0.985	0.986	61.39	2.889
160	71.1	0.01639	0.977	0.979	0.979	61.01	4.741
180	82.2	0.01651	0.970	0.972	0.973	60.57	7.510
200	93.3	0.01663	0.963	0.964	0.966	60.13	11.526
212	100.0	0.01672	0.958	0.959	0.960	59.81	14.696
220	104.4	0.01677	0.955	0.956	0.957	59.63	17.186
240	115.6	0.01692	0.947	0.948	0.949	59.10	24.97
260	126.7	0.01709	0.938	0.939	0.940	58.51	35.43
280	137.8	0.01726	0.928	0.929	0.930	58.00	49.20
300	148.9	0.01745	0.918	0.919	0.920	57.31	67.01
320	160.0	0.01756	0.908	0.909	0.910	56.66	89.66
340	171.1	0.01787	0.896	0.898	0.899	55.96	118.01
360	182.2	0.01811	0.885	0.886	0.887	55.22	153.04
380	193.3	0.01836	0.873	0.874	0.875	54.47	195.77
400	204.4	0.01864	0.859	0.860	0.862	53.65	247.31
420	215.6	0.01894	0.846	0.847	0.848	52.80	308.83
440	226.7	0.01926	0.832	0.833	0.834	51.92	381.59
460	237.8	0.0196	0.817	0.818	0.819	51.02	466.9
480	248.9	0.02	0.801	0.802	0.803	50.00	566.1
500	260.0	0.0204	0.785	0.786	0.787	49.02	680.8
520	271.1	0.0209	0.765	0.766	0.767	47.85	812.4
540	282.2	0.0215	0.746	0.747	0.748	46.51	962.5
560	293.3	0.0221	0.726	0.727	0.728	45.30	1133.1
580	304.4	0.0228	0.703	0.704	0.704	43.90	1325.8
600	315.6	0.0236	0.678	0.679	0.680	42.30	1542.9
620	326.7	0.0247	0.649	0.650	0.650	40.50	1786.6
640	337.8	0.026	0.617	0.618	0.618	38.50	2059.7
660	348.9	0.0278	0.577	0.577	0.578	36.00	2365.4
680	360.0	0.0305	0.525	0.526	0.527	32.80	2708.1
700	371.1	0.0369	0.434	0.435	0.435	27.10	3093.7

Technical Data – NPSH

NPSH

The minimum operating values that can be reached at the pump suction end are limited by the onset of cavitation.

Cavitation is the formation of vapor-filled cavities within liquids where the pressure is locally reduced to a critical value, or where the local pressure is equal to, or just below the vapor pressure of the liquid.

The vapor-filled cavities VSow with the current and when they reach a higher pressure ares the vapor contained in the cavities condenses. The cavities collide, generat- ing pressure waves that are transmitted to the walls.
These, being subjected to stress cycles, gradually become deformed and yield due to fatigue. This ph nomenon, characterized by a metallic noise produced by the hammering on the pipe walls, is called incipient cavitation.

The damage caused by cavitation may be magnified by electrochemical corrosion and a local rise in temperature due to the plastic deformation of the walls. The materials that offer the highest resistance to heat and corrosion are alloy steels, especially austenitic steel. The conditions that trigger cavitation may be assessed by calculating the total net suction head, referred to in technical literature with the acronym NPSH (Net Positive Suction Head).

The NPSH represents the total energy (expressed in feet) of the liquid measured at suction under conditions of incipient cavitation, excluding the vapor pressure (expressed in feet) that the liquid has at the pump inlet.

To find the static height (hz) at which to install the machine under safe conditions, the following formula must be verified:

$$h_p + h_z \geq (NPSHr + 2\ ft) + h_f + h_{pv}$$

where:

h_p is the absolute pressure applied to the free liquid surface in the suction tank, expressed in feet of liquid; hp is the quotient between the barometric pressure and the specific weight of the liquid.

h_z is the suction lift between the pump axis and the free liquid surface in the suction tank, expressed in feet; hz is negative when the liquid level is lower than the pump axis.

h_f is the VSow resistance in the suction line and its accessories, such as: fittings, foot valve, gate valve, elbows, etc.

h_{pv} is the vapor pressure of the liquid at the operating temperature, expressed in feet of the liquid. hpv is the quotient between the Pv vapor pressure and the liquid‘s specific weight.

0.5 is the safety factor.

The maximum possible suction head for installation depends on the value of the atmospheric pressure (i.e. the elevation above sea level at which the pump is installed) and the temperature of the liquid.

To help the user, with reference to water temperature (40°F) and to the elevation above sea level, the following tables show the drop in hydraulic pressure head in relation to the elevation above sea level, and the suction loss in relation to temperature.

Water Temperature (°F)	68	104	140	176	194	230	248
Suction Loss (ft)	-.7	2.3	6.6	16.4	24.3	50.5	70.5

Elevation Above Sea Level (ft)	1600	3300	4900	6500	8200	9800
Suction Loss (ft)	1.8	3.6	5.4	7.2	9.0	10.8

To reduce it to a minimum, especially in cases of high suction head (over 13 – 16 feet) or within the operating limits with high VSow rates, we recommend using a suction line having a larger diameter than that of the pump’s suction port. It is always a good idea to position the pump as close as possible to the liquid to be pumped.

Technical Data – Compatability Chart for Materials in Contact with Most Commonly Used Liquids

Liquid	Concentration (%)	Temperature Min/Max °F	Specific Weight (lb/in³)	VS 2, 4, 8, 16		VS 33, 46, 66, 92		Recommended Seal	Elastomers
				304	316	Cl/316	316		
Water	100	23/248		•	•	•	•	Q_1BEGG	E
Deionized, demineralized or distilled water	100	-13/230		•	•	•	•	Q_1BEGG	E
Water and oil emulsion	any	23/194		•	•	•	•	Q_1BVGG	V
Acetic acid (•)	80	14/158	.038	•	•	•	•	Q_1BEGG	E
Citric acid	5	14/158	.056	•	•	•	•	Q_1BEGG	E
Hydrochloric acid	2	23/77	.043		•		•	Q_1Q_1VGG	V
Phosphoric acid	10	23/86	.048		•		•	Q_1BEGG	E
Nitric acid (•)	50	23/86	.053	•	•	•	•	Q_1Q_1VGG	V
Sulphuric acid (•)	2	14/77	.066		•		•	Q_1BVGG	V
Tannic acid	20	32/122			•		•	Q_1BEGG	E
Tartaric acid	50	14/77	.063	•	•	•	•	Q_1Q_1VGG	V
Uric acid	80	14/176	.068	•	•	•	•	Q_1BEGG	E
Benzoic acid	70	32/158	.047	•	•	•	•	Q_1BVGG	V
Boric acid	Saturated	14/194	.052	•	•	•	•	Q_1Q_1VGG	V
Formic acid (•)	5	5/77	.044	•	•	•	•	Q_1BEGG	E
Ethyl alcohol (•)	100	23/104	.029	•	•	•	•	Q_1BEGG	E
Methyl alcohol (•)	100	23/104	.029	•	•	•	•	Q_1BEGG	E
Propyl alcohol (•)	100	23/176	.029	•	•	•	•	Q_1BEGG	E
Butyl alcohol	100	23/176	.030	•	•	•	•	Q_1BVGG	V
Denatured alcohol (•)	100	23/158	.030	•	•	•	•	Q_1BEGG	E
Ammonia in water (•)	25	-4/122	.038	•	•	•	•	Q_1BEGG	E
Chloroform		14/86	.053	•	•	•	•	Q_1BVGG	V
Caustic soda	25	32/158	.077	•	•	•	•	Q_1Q_1EGG	E
Water, detergents, mineral oils mixture		23/176		•	•	•	•	Q_1Q_1VGG	V
Cleaning products		23/212		•	•	•	•	Q_1Q_1VGG	V
Glycerine	100	68/194	.046	•	•	•	•	Q_1BEGG	E
Sodium Hypochlorite	1	14/77			•		•	Q_1Q_1VGG	V
Phosphates/polyphosphate s		23/194			•		•	Q_1Q_1VGG	V
Sodium nitrate	Saturated	14/176	.081	•	•	•	•	Q_1BEGG	E
Cutting VSuid	100	23/230	.033	•	•	•	•	Q_1BVGG	V
Peanut oil (•)	100	23/230	.034	•	•	•	•	Q_1BEGG	E
Colza oil (•)	100	23/230	.034	•	•	•	•	Q_1BEGG	E
Linseed oil (•)	100	23/230	.034	•	•	•	•	Q_1BEGG	E
Coconut oil (•)	100	-4/194	.033	•	•	•	•	Q_1BEGG	E
Soybean oil (•)	100	32/194		•	•	•	•	Q_1BEGG	E
Diathermic oil	100	23/230	.033	•	•	•	•	Q_1BVGG	V
Hydraulic oil	100	23/230		•	•	•	•	Q_1BVGG	V
Mineral oil	100	23/230	.034	•	•	•	•	Q_1BVGG	V
Sodium sulfate	15	14/104	.094	•	•	•	•	Q_1Q_1EGG	E
Aluminum sulfate	30	23/122	.097		•		•	Q_1Q_1EGG	E
Ammonium sulfate	10	14/140	.064		•		•	Q_1Q_1EGG	E
Iron sulfate	10	23/86	.076		•		•	Q_1BEGG	E
Copper sulfate	20	32/86	.082		•		•	Q_1Q_1VGG	V
Trichloroethylene		14/104	.053	•	•	•	•	Q_1BVGG	V
Perchlorethylene		14/86	.057	•	•	•	•	Q_1BVGG	V

Legend

Q_1 = Silicon carbide
B = Impregnated carbon
E = EPDM
V = Viton
G = AISI 316 (spring, metal components)

(•) A special version may be necessary for this VSuid. For additional information, please contact our sales network.

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1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

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