

Pump Performance Datasheet

Customer	:		Quote Number / ID	:	1143354
Customer ref. / PO	:		Model	:	20959-2P-20HP VLSE
Tag Number	:	Hurley Engineering	Stages	:	1
Service	:	HYDRONIC	Based on curve number	:	VLSE_20959_2P_20HP Rev 0.0
Quantity	:	1	Basic model number	:	-
			Date last saved	:	04/02/2020 12:28 PM

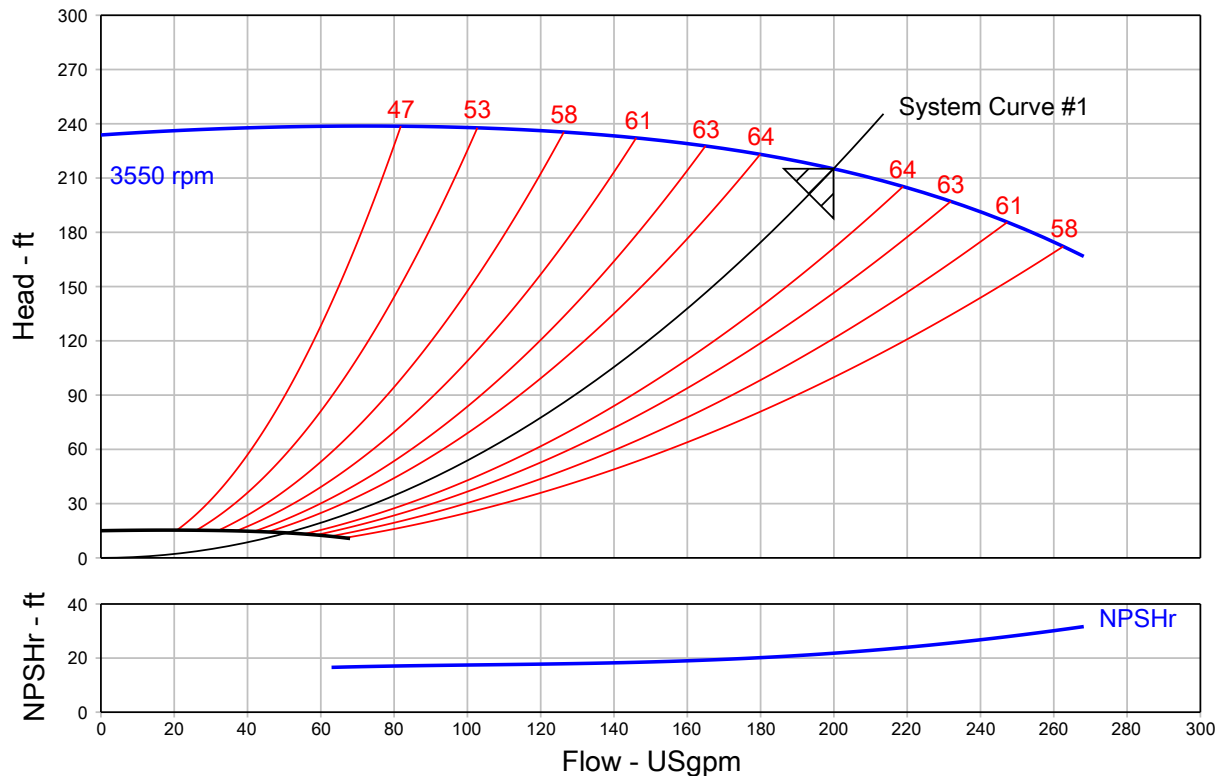
Operating Conditions		Liquid	
Flow, rated	: 199.9 USgpm	Liquid type	: Cold Water
Differential head / pressure, rated (requested)	: 215.1 ft	Additional liquid description	:
Differential head / pressure, rated (actual)	: 215.1 ft	Solids diameter, max	: 0.00 in
Suction pressure, rated / max	: 0.00 / 0.00 psi.g	Solids concentration, by volume	: 0.00 %
NPSH available, rated	: Ample	Temperature, max	: 68.00 deg F
Frequency	: 60 Hz	Fluid density, rated / max	: 1.000 / 1.000 SG

Performance		Material	
Speed, rated	: 3550 rpm	Material selected	: Cast Iron
Speed, maximum	: 3550 rpm		
Speed, minimum	: 900 rpm		

Impeller diameter, rated	: 7.51 in		
Efficiency	: 64.51 %		
NPSH required / margin required	: 21.79 / 0.00 ft		
nq (imp. eye flow) / S (imp. eye flow)	: 18 / 98 Metric units		
MCSF	: 61.19 USgpm		
Head maximum, rated speed	: 238.8 ft		
Head rise to shutoff	: 8.68 %		
Flow, best eff. point	: 199.9 USgpm		
Flow ratio, rated / BEP	: 100.00 %		
Speed ratio (rated / max)	: 100.00 %		
Head ratio (rated speed / max speed)	: 100.00 %		
Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00		
Selection status	: Acceptable		

Energy Indexes		Pressure Data	
PEI (VL)	: 0.51	Maximum working pressure	: 103.3 psi.g
ER (VL)	: 49	Maximum allowable working pressure	: 175.0 psi.g
		Maximum allowable suction pressure	: 250.0 psi.g
		Hydrostatic test pressure	: 263.0 psi.g

Driver & Power Data (@Max density)	
Motor sizing specification	: Max power (non-overloading)
Margin over specification	: 0.00 %
Service factor	: 1.00
Power, hydraulic	: 10.86 hp
Rated power (based on duty point)	: 16.83 hp
Max power (non-overloading)	: 19.93 hp
Nameplate motor rating	: 20.00 hp / 14.91 kW (Fixed)



Grundfos Series VLSE - Split Coupled Vertical In-Line with Integrated VFD

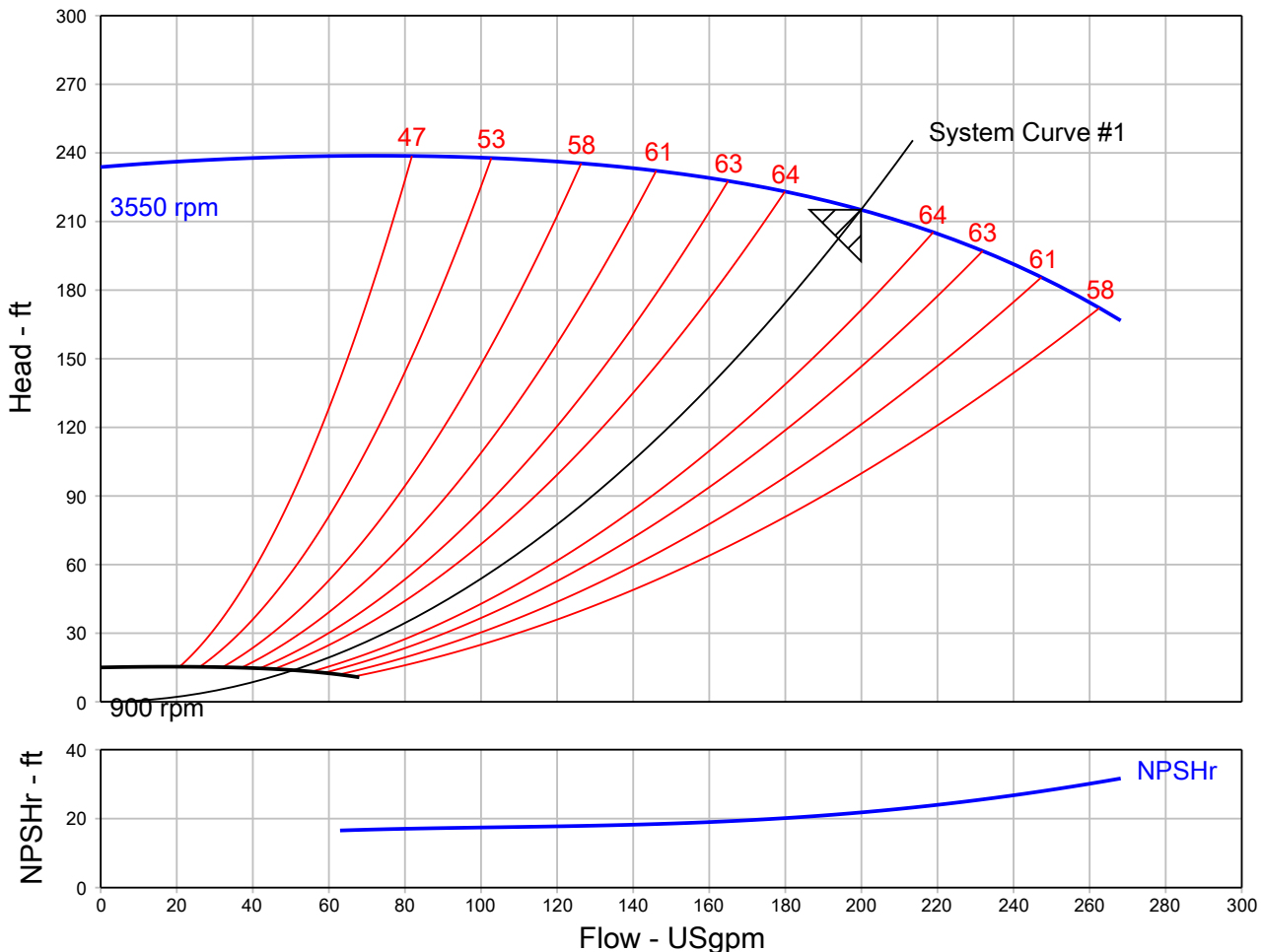
QUOTE NUMBER / ID 1143354	UNIT TAG Hurley Engineering	QUANTITY 1
	SERVICE HYDRONIC	
REPRESENTATIVE	SUBMITTED BY	DATE
ENGINEER	APPROVED BY	DATE
CONTRACTOR	ORDER #	DATE



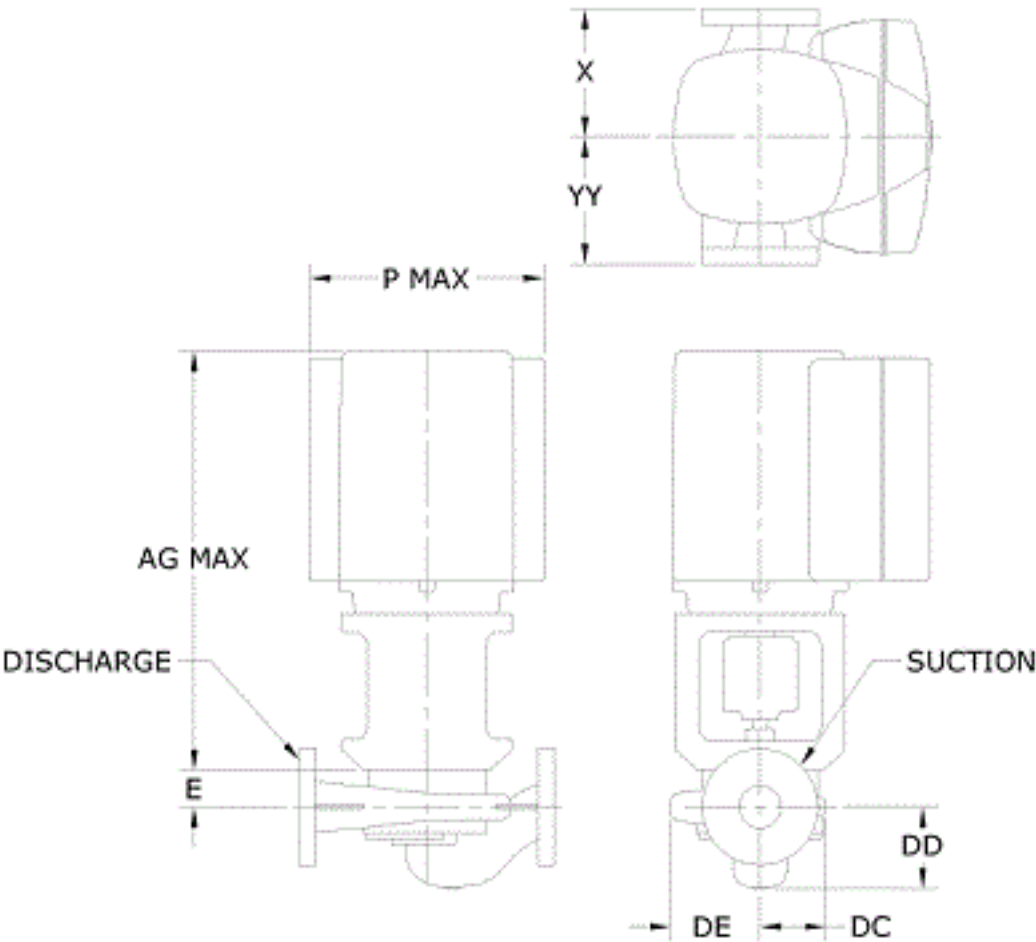
VLSE 20959-2P-20HP
3600 rpm

Part Number N/A

Conditions of Service		Pump Data		Motor Data	
Flow	199.9 USgpm	Impeller Diameter	7.51 in	Motor HP	20 HP
Head	215.1 ft	Efficiency	64.51 %	BHP	16.83
Liquid	Cold Water	Suction	2 in.	Enclosure	TEFC
Temperature	68.00 deg F	Discharge	2 in.	Voltage	460 V
NPSHr	21.79 ft	PEI (VL)	0.51	Phase	3 Phase
Viscosity	1.00 cP	ER (VL)	49	Cycle	60
Specific Gravity	1.000 SG			Frame Size	256TC



Grundfos Series VLSE - Split Coupled Vertical In-Line with Integrated VFD



NOT FOR CONSTRUCTION, unless certified and referenced on order

Units	Frame	S x D	AG (Max)	DC	DD	DE	E	P (Max)	X	YY
inches	256TC	2 X 2	37.00	6.00	4.88	6.25	1.50	17.00	9.00	9.00

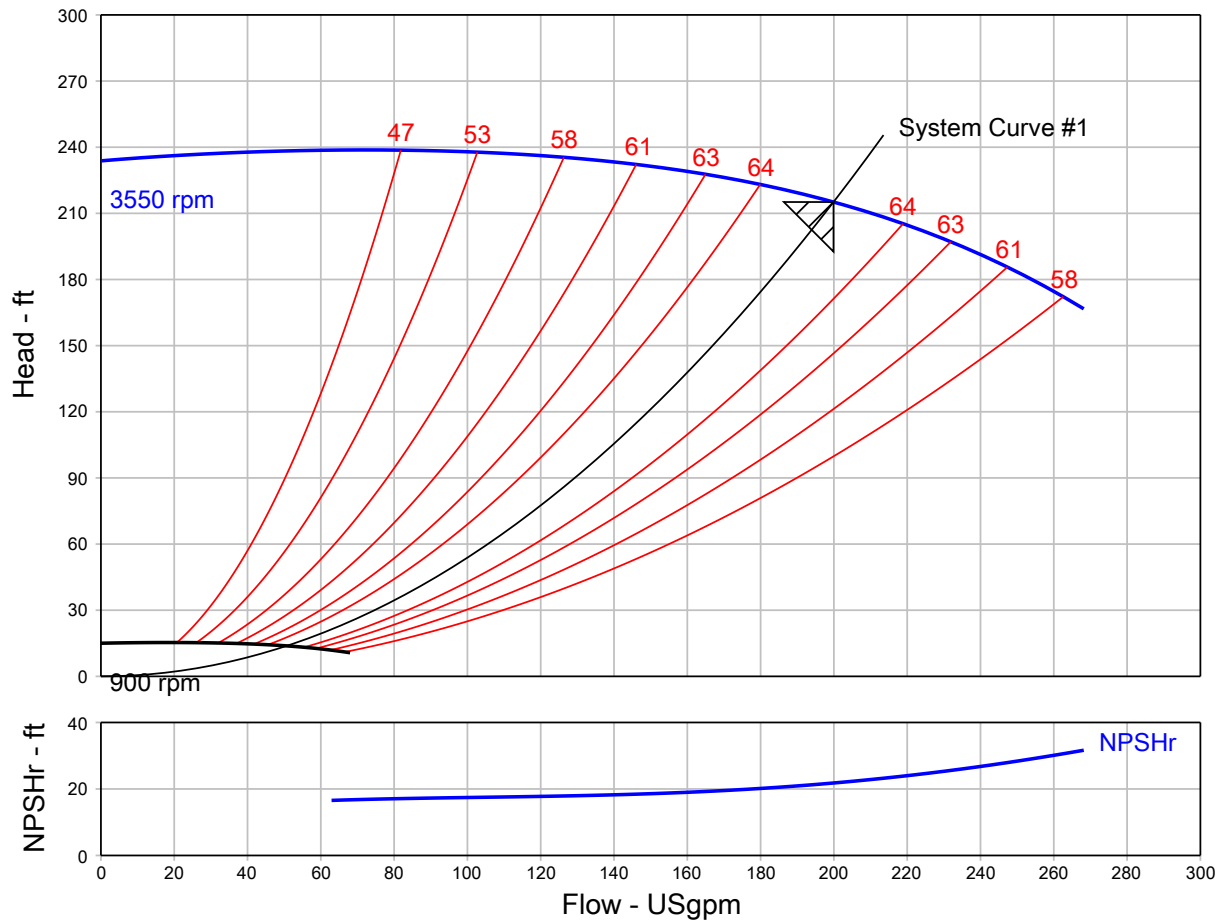
Grundfos Series VLSE - Split Coupled Vertical In-Line with Integrated VFD

QUOTE NUMBER / ID 1143354	UNIT TAG Hurley Engineering	VLSE 20959-2P-20HP
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MATERIALS OF CONSTRUCTION			
PART	MATERIAL	PART	MATERIAL
Rotation Options	Clockwise	Impeller Washer	S.S., AISI-303
Base/Stand Type	No Stand Provided	Impeller Key	S.S., AISI-303
Connections	125# ANSI	Sleeve Material	Bronze, III932, C89835 or No Sleeves
Coupling Options	Rigid Radially Split Coupling	Wear Ring Type	Case Wear Ring
Wear Ring Material	NiAl-Bronze, ASTM-B148, C95500	Pump Coatings	Standard Paint
Seal Type	Type 21	Seal Material	Ceramic/Carbon/Buna
Casing	Cast Iron, ASTM-A48, CL 30	O-Rings	Buna N
Motor Shaft	Steel, AISI 1045 or S.S	Seal Flush Options	External Flush, plastic tubing
Backplate/Seal Plate	Cast Iron, ASTM-A48, CL 30	Gaskets	Vegetable Fiber
Motor Bracket	Cast Iron, ASTM-A48, CL 30	Casing Bolts	Steel, Grade 5
Impeller	Stainless Steel, AISI-304	Impeller Cap Screw	S.S., AISI-303

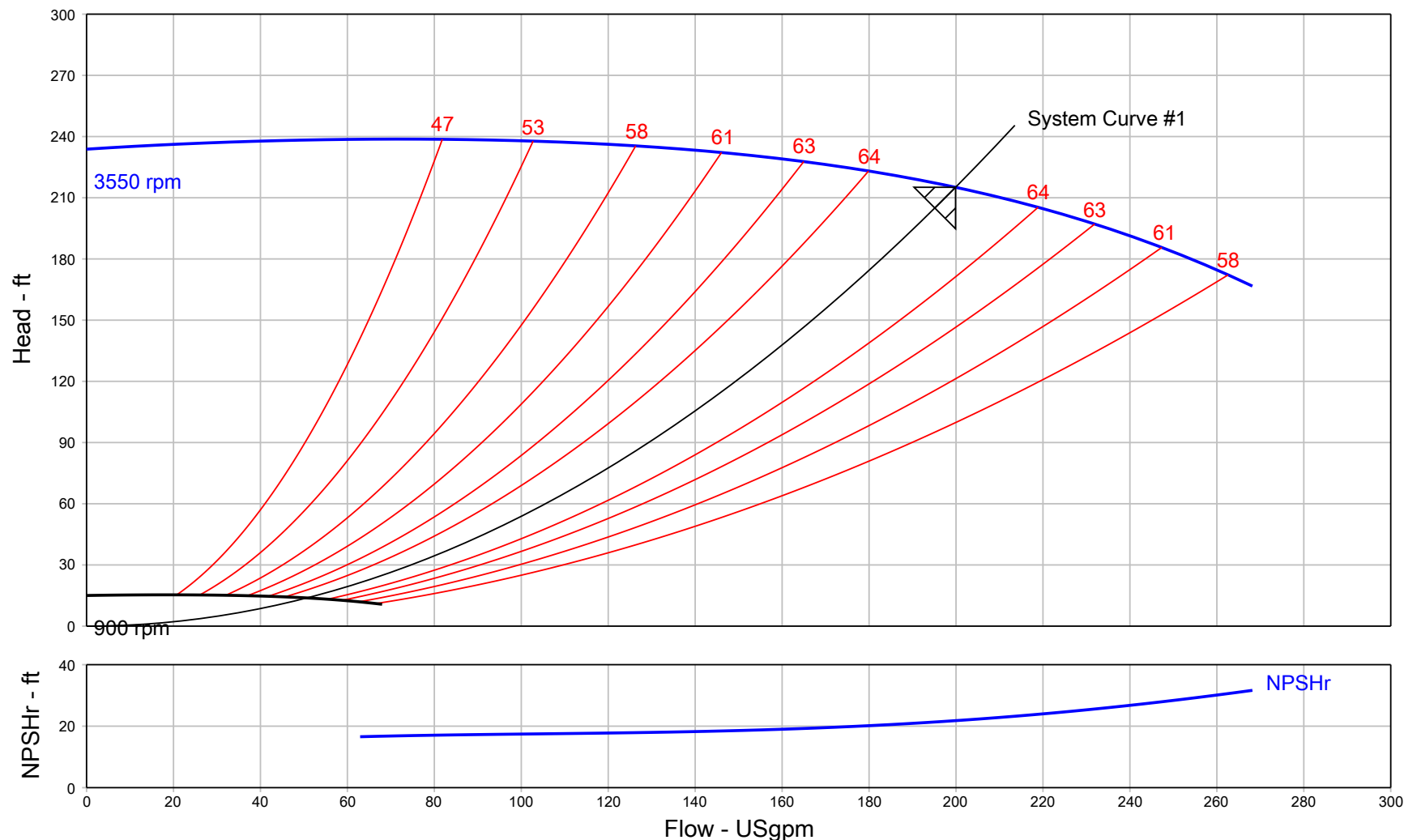
* All materials based on STANDARD configuration

Pump Performance Curve



Customer	:	Model	: 20959-2P-20HP VLSE
Customer ref. / PO	:	Stages	: 1
Tag Number	: Hurley Engineering	Speed, rated	: 3550 rpm
Service	: HYDRONIC	Based on curve number	: VLSE_20959_2P_20HP Rev 0.0
Quantity	: 1	Efficiency	: 64.51 %
Quote Number / ID	: 1143354	Rated power (based on duty point)	: 16.83 hp
Date last saved	: 04/02/2020 12:28 PM	NPSH required	: 21.79 ft
Flow, rated	: 199.9 USgpm	Viscosity	: 1.00 cP
Differential head / pressure, rated	: 215.1 ft	Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
Fluid density, rated / max	: 1.000 / 1.000 SG	Impeller diameter, rated	: 7.51 in
		PEI (VL)	: 0.51
		ER (VL)	: 49

Pump Performance Curve

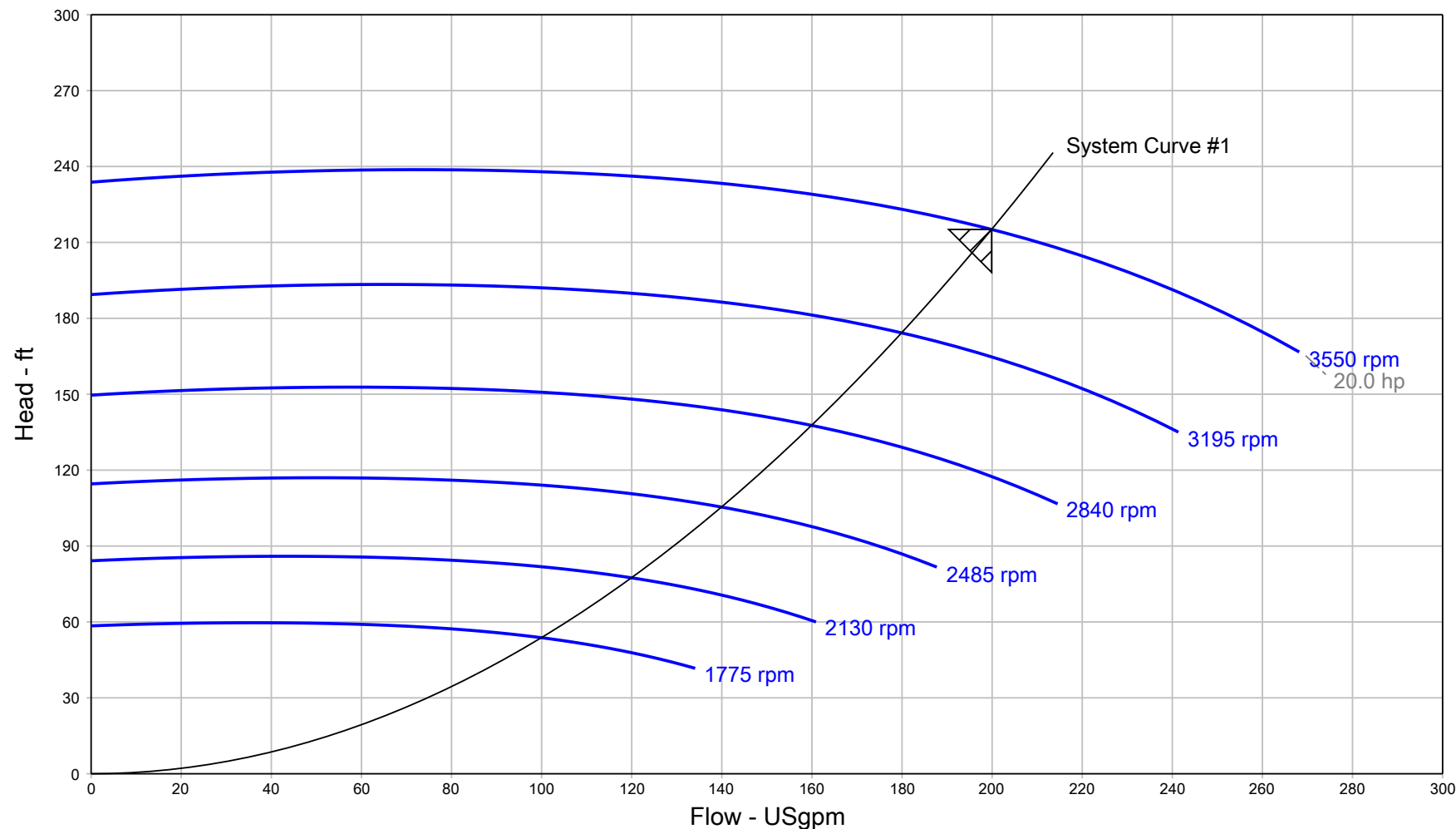


Project name : VLSE project
 Consulting engineer :
 Customer :
 Customer ref. / PO :
 Quote Number / ID : 1143354
 Date last saved : 04/02/2020 12:28 PM
 Based on curve number : VLSE_20959_2P_20HP Rev 0.0

Tag Number : Hurley Engineering
 Service : HYDRONIC
 Model : 20959-2P-20HP VLSE
 Quantity : 1
 Quoted By (Sales Office) : HURLEY ENGINEERING COMPANY
 Quoted By (Sales Engineer) : Steven Leingang
 Stages : 1
 Speed, rated : 3550 rpm

Flow, rated : 199.9 USgpm
 Differential head / pressure, rated : 215.1 ft
 Rated power (based on duty point) : 16.83 hp
 Max power (non-overloading) : 19.93 hp
 Efficiency : 64.51 %
 Impeller diameter, rated : 7.51 in
 PEI (VL) : 0.51
 ER (VL) : 49

Multi-Speed Performance Curve



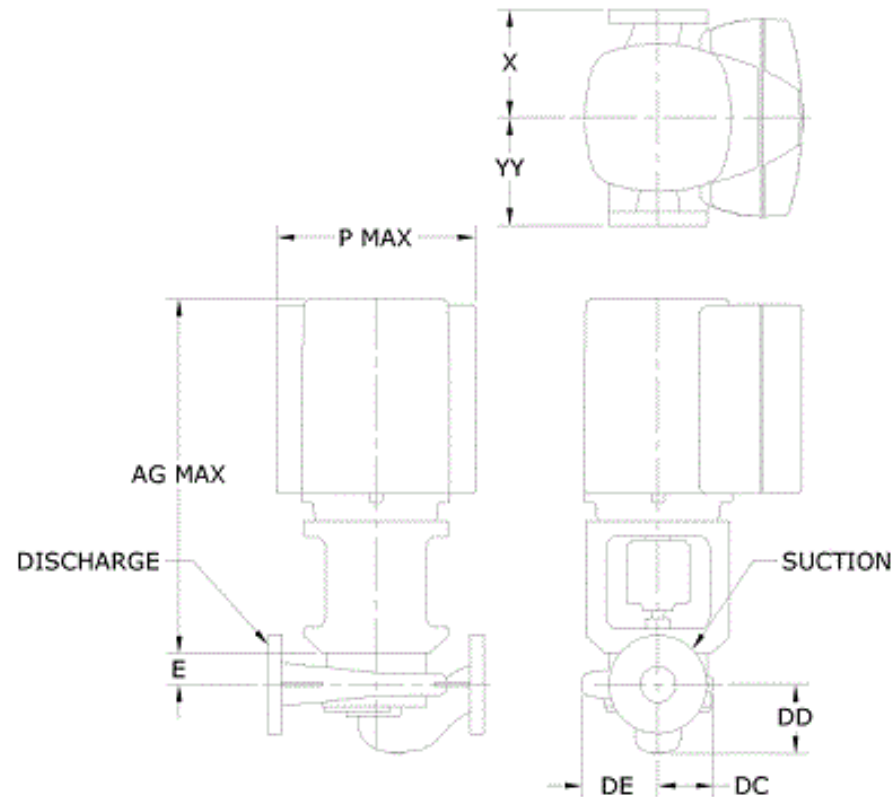
Project name	: VLSE project	Tag Number	: Hurley Engineering	Speed, rated	: 3550 rpm
Consulting engineer	:	Service	: HYDRONIC	Flow, rated	: 199.9 USgpm
Customer	:	Model	: 20959-2P-20HP VLSE	Differential head / pressure, rated	: 215.1 ft
Customer ref. / PO	:	Quantity	: 1	Fluid density, rated / max	: 1.000 / 1.000 SG
Quote Number / ID	: 1143354	Quoted By (Sales Office)	: HURLEY ENGINEERING COMPANY	Viscosity	: 1.00 cP
Date last saved	: 04/02/2020 12:28 PM	Quoted By (Sales Engineer)	: Steven Leingang	Cq/Ch/Ce/Cn [ANSI/HI 9.6.7-2010]	: 1.00 / 1.00 / 1.00 / 1.00
		Stages	: 1	Based on curve number	: VLSE_20959_2P_20HP
					Rev 0.0

Construction Datasheet

Project name : VLSE project				Tag Number : Hurley Engineering	
Consulting engineer :				Service : HYDRONIC	
Customer : HURLEY ENGINEERING COMPANY				Model : 20959-2P-20HP VLSE	
Customer ref. / PO :				Quantity : 1	
Quote Number / ID : 1143354				Quoted By (Sales Office) : HURLEY ENGINEERING COMPANY	
Date last saved : 04/02/2020 12:28 PM				Quoted By (Sales Engineer) : Steven Leingang	
Construction				Motor Information	
Nozzle	Size (in.)	Nozzle Configuration	Pos'n	Manufacturer : Grundfos MLE	
Suction	2	125# ANSI	-	Frame Size : 256TC	
Discharge	2	125# ANSI	-	Power : 20.00 hp	
Orientation / Configuration : Vertical				RPM : 3600 rpm	
Rotation : Clockwise				Enclosure : TEFC	
Wear Ring Configuration : Single - Case				Operating Power Supply : 460/3/60	
Discharge Elbow Size : -				Efficiency : Premium	
Subplate : -				Service factor : 1.15	
Sump Depth (feet) : -				Motor Application : Intergrated Variable Frequency Drive	
Bearing Frame : -				Motor Options/Accessories : -	
Bearing Frame Foot : -				Cord Length (feet) : -	
Bearing Type (Radial/Thrust) : -				Materials	
Bearing Lubrication : Regreasable				Case : Cast Iron, ASTM A48 - Class 30	
Thrust Bearing : -				Motor Bracket : Cast Iron, ASTM-A48, CL 30	
Intermediate Bearing : -				Impeller : Stainless Steel, AISI-304 (H304)	
Lower Bearing : -				Impeller Cap Screw and Washer : Stainless Steel, AISI-303	
Bearing Housing Accessories : -				Impeller Key : Stainless Steel, AISI 316	
PACO Construction code : 28-20959-140268-25I1MS1				Case wear ring : Tin Bronze, ASTM B584-90500 (B18)	
Baseplate, Coupling and Guard				Impeller wear ring : -	
Baseplate : Not Applicable				Pump Shaft : Stainless Steel, AISI-303	
Drip Pan : -				Sleeve : -	
Coupling : Rigid, Axial Split Coupling (aluminum) RASC3				Line Shaft : -	
Guard : OSHA Approved				Column : -	
Seal & Packing Construction				Discharge Pipe : -	
Sealing Method : Single Seal, Type 21				Discharge Elbow : -	
Seal Material : Buna Carbon Ceramic SS-Spring and Hardware				Suction Elbow : -	
Packing Gland : -				Subplate : -	
Lantern Ring : -				Hardware : Steel, Grade 5	
Recirculation Lines : Nylon Tubing with Brass Fittings				O Rings : Buna N	
Weights (Approx.)				Pump Coatings : Standard Manufacturers Paint	
Pump : 121.0 lb					
Baseplate : -					
Driver : 307.0 lb					
Estimated Shipping gross weight : 428.0 lb					

General Arrangement

Project name	: VLSE project	Tag Number	: Hurley Engineering
Consulting engineer	:	Service	: HYDRONIC
Customer	: HURLEY ENGINEERING COMPANY	Model	: 20959-2P-20HP VLSE
Customer ref. / PO	:	Quantity of pumps	: 1
Quote Number / ID	: 1143354	Quoted By (Sales Office)	: HURLEY ENGINEERING COMPANY
Date last saved	: 04/02/2020 12:28 PM	Quoted By (Sales Engineer)	: Steven Leingang

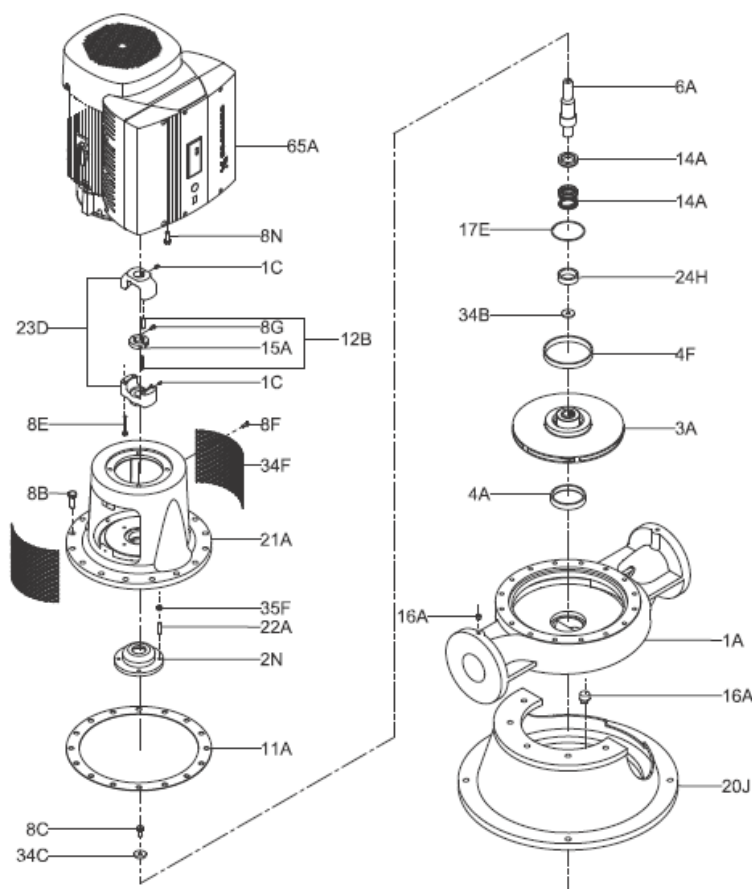


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Units	Frame	S x D (in.)	AG (Max)	DC	DD	DE	E	P (Max)	X	YY	Weight ea
inches	256TC	2 X 2	37.00	6.00	4.88	6.25	1.50	17.00	9.00	9.00	428.0
Conditions of Service			Motor Data								
Flow: 199.9 USgpm	Fluid: Cold Water	HP: 20	Encl: TEFC	Phase: 3	Efficiency: Premium						
TDH: 215.1 ft	Temp.: 68.00 deg F	RPM: 3600 rpm	Hz: 60	Voltage: 460	S.F.: 1.15						

Grundfos VLSE Cross Section

Type VLSE, cross section and parts list



TM06 1076 1514

Pos.	Description	Pos.	Description
1A	Volute	14A*	Seal assembly
1C	Set screw	15A	Locating ring
2N	Seal cap	16A	Pipe plug
3A*	Impeller	17E	Seal cap o-ring
4A*	Case wear ring	20J	Cast iron stand
4F	Balance ring	21A	Motor bracket
6A	Pump shaft	22A	Seal cap studs
8B	Volute screw	23D	Coupling halves
8C	Pump shaft screw	24H	Bushing
8E	Coupling screw	34B*	Impeller washer
8F	Coupling guard screw	34C	Pump shaft washer
8G	Locating ring screw	34F	Coupling guard
8N	Motor screw	35F	Seal cap nut
11A*	Volute gasket	65A	Motor
12B	Coupling key		

* Recommended spare parts