



Approved – Rotary Pump
Gear, Screw, Vane, Lobe, Progressive cavity pump
Additional Information

Datasheet Details

Sheet Name	Rotary Pump	Sheet Description	Gear, Screw, Vane, Lobe, Progressive cavity pump
Additional Description	Additional Information	Client Document Number	101
Client Project Number	101	Company Document Number	101
companyProjectNum	101	Area Name	North Process Area
Package Name	Rotary Pump Package	Revision Number	1
Revision Date	2025-05-05	Prepared By	Carol Engineer
Prepared Date	2025-05-05	Modified By	-
Modified Date	-	Rejected By	-
Rejected Date	-	Rejection Comment	-
Verified By	Bob Supervisor	verifiedByDate	2025-05-10
Approved By	Jeff Abayon	approvedByDate	2025-05-15

Equipment Details

Equipment Name	Rotary Pump Equipment	Equipment Tag Number	101
Service Name	Rotary Pump Service	Required Quantity	101
Item Location	Item Location	Manufacturer Name	Manufacturer One
Supplier Name	Velocity Industrial Ltd.	Installation Package Number	Installation Package Number
Equipment Size	101	Model Number	101
Driver	-	Piping and Instrumentation Diagram	101
installDWG	-	codeStandard	101
Category Name	Pump	Client Name	Client One
Project Project	Project Client 1a		

Operating Conditions

Label	UOM	Options	Value
Pumped Fluid *			Filled - Pumped Fluid
Hazardous service *			Yes
Location *			Pumphouse 1
Pumping Temperature (min) *	°F		68.00
Pumping Temperature (norm.) *	°F		140.00
Pumping Temperature (max) *	°F		176.00

Label	UOM	Options	Value
Density at Pour Temperature (min) *	lb/ft³		56.81
Density at Pour Temperature (norm.) *	lb/ft³		58.06
Density at Pour Temperature (max) *	lb/ft³		59.31
Vapor Pressure at Pour Temperature (min) *	psi(g)		0.03
Vapor Pressure at Pour Temperature (norm.) *	psi(g)		0.07
Vapor Pressure at Pour Temperature (max) *	psi(g)		0.13
Viscosity at Pour Temperature (min) *	lb/(ft·s)		0.01
Viscosity at Pour Temperature (norm.) *	lb/(ft·s)		0.02
Viscosity at Pour Temperature (max) *	lb/(ft·s)		0.05
Specific Gravity (min) *			0.95
Specific Gravity (norm.) *			1.0
Specific Gravity (max) *			1.2
Corrosive/Erosive *			Yes
Percent solids *	% w/w		2.5
Max. Solid size	in		0.47
Flow rate (Rated) *	cfm		4590.91
Flow rate (Design) *	cfm		4944.06
Total Dynamic Head (Rated) *	ft		90.22
Total Dynamic Head (Design) *	ft		98.43
Discharge Pressure (Rated) *	psi(g)		1.45
Discharge Pressure (Design) *	psi(g)		1.81
Suction pressure (Rated) *	psi(g)		0.75
Suction pressure (Design) *	psi(g)		0.84
Differential Pressure (Rated) *	psi(g)		0.90
Differential Pressure (Design) *	psi(g)		1.02
Differential Head (Rated) *	ft		328.08
Differential Head (Design) *	ft		393.70
Net Positive Suction Head Available (Rated) *	ft		17.06
Net Positive Suction Head Available (Design) *	ft		19.03
Net Positive Inlet Pressure Available (Rated) *	psi(g)		0.80
Net Positive Inlet Pressure Available (Design) *	psi(g)		0.87
Hydraulic power (Rated) *	hp		14.08
Hydraulic power (Design) *	hp		16.63
Maximum Suction Pressure	psi(g)		1.23
Operation hr/yr *			8760
Maximum Noise level	ft		255.91

Characteristics

Label	UOM	Options	Value
Performance Curve No.			Filled - Performance Curve No.
Speed *	rpm		1800
Net Positive Suction Head Required *	ft		12.80
Net Positive Inlet Pressure Required *	psi(g)		0.61
Efficiency Normal) *	%		75.0
Efficiency Rated) *	%		78.0
Absorbed Power (Normal) *	hp		24.81
Absorbed Power (Rated) *	hp		29.50
Shut-Off pressure *	psi(g)		1.81
Head @ No Flow *	ft		492.13
Rotor diameter (Rated)	in		2.96
Rotor diameter (Min)	in		1.06
Rotor diameter (Max)	in		2.44
Absorbed power @ maximum rotor	hp		33.53
Rotation (from coupling end) *			CW

Construction

Label	UOM	Options	Value
Code *			ISO 13709
Pump type *			Internal gear
Casing *			Cast Iron
Timing gears			Spur Gear Type, Hardened Steel
Connections *			Flanged ANSI B16.5
Nozzles Suction flange (Size)			6 inch
Nozzles Suction flange (Rating)			150#
Nozzles Suction flange (Facing)			Raised Face
Nozzles Suction flange (Location)			Side
Nozzles Discharge flange (Size)			4 inch
Nozzles Discharge flange (Rating)			150#
Nozzles Discharge flange (Facing)			Raised Face
Nozzles Discharge flange (Location)			Top
Nozzles Rotor type (Size)			2 inch
Nozzles Rotor type (Rating)			300#
Bearing type *			Anti-friction
Bearing Lubrication *			Grease
Coupling Manufacturer			Lovejoy

Label	UOM	Options	Value
Control type			PID Loop
Baseplate *			Fabricated Steel
Model			AlphaMax
Actuator type			Pneumatic

Seal

Label	UOM	Options	Value
Packing *			Graphite Braided
Gland Material			Graphite
Mechanical Seal Type *			Single Cartridge
Model *			SPX-2000
Manufacturer *			FlowServe
Material *			316 SS
Seal Fluid			Water/Glycol Mix
Flow *	gpm		39.63
Pressure *	psi(g)		4.03
Seal piping plan			API Plan 32
Stuffing Box pressure	psi(g)		0.46

Cooling

Label	UOM	Options	Value
Available water			15.0
System			Closed-loop with heat recovery
Auxiliary Piping Plan			API Plan 32
Pressure	psi(g)		5.55
Temperature	°F		194.00
Water consumption	cfm		81.22

Materials

Label	UOM	Options	Value
Casing Code			CST-400
Casing Specification			ASTM A216 WCB
Stator/Liner Code			STN-992
Stator/Liner Specification			EPDM Rubber
End Plates Code			EP-101
End Plates Specification			ASTM A36
Rotor(s) Code			Filled - Rotor(s) Code

Label	UOM	Options	Value
Rotor(s) Specification			Filled - Rotor(s) Specification
Vanes Code			VN-771
Vanes Specification			AISI 304 Stainless
Shaft Code			SHFT-416
Shaft Specification			AISI 316
Sleeve(s) Code			SLV-601
Sleeve(s) Specification			Bronze Alloy
Gasket Code			GSK-304
Gasket Specification			PTFE Spiral Wound
Baseplate Code			BP-STD-101
Baseplate Specification			ASME B73.1

Shop Tests

Label	UOM	Options	Value
Hydrostatic			Yes
Running & Performance *			Stable operation confirmed under rated conditions.
NPSH/NPIP *			4.8
Disassembly			Back Pull-Out
Hydrostatic Test Pressure *	psi(g)		2.61

Weights

Label	UOM	Options	Value
Pump *	lb		282.01
Motor *	lb		33.07
Total *	lb		220.46
Reducer	lb		49.23
Baseplate	kg		Grouted Base

Motor

Label	UOM	Options	Value
Item Tag No. *			P-101A
Classification Area			Hazardous - Class 1 Div 2
Zone			Zone 2, Div 1
Class			Class 300
Group			Group II, Cat 3
Enclosure			TEFC
Mounting			Horizontal

Label	UOM	Options	Value
Supplier			Sulzer Pumps
Mfr.			KSB
Power *	hp		72.46
Efficiency *	%		72.5
Speed	rpm		1750
Type *			Centrifugal
Insulation class			Class F
Frame			143T
Bearing *			Ball Bearing
Lubrication			Grease
Full load Amps			42
Volt/Phase/Cycles *			460V / 3Ø / 60Hz
Temp. Increase			25
Service factor			1.15
Block rotor Amps			60
Space heaters			Yes
VFD			Available, ABB ACS880
RTD			Yes

Vertical Pumps

Label	UOM	Options	Value
Sump depth	in		62.99
Minimum level	in		11.81
Minimum submergence required	in		17.72
Column pipe			6 inch Schedule 40
Length	in		47.24
Diameter	in		13.78
Shaft diameter	in		1.77
No Bearings			2
Bearing lubrication			Oil Bath
Axial thrust Up	lb		5.95
Axial thrust Down	lb		7.05
Strainer			Basket Type, 40 mesh

Speed Reducer

Label	UOM	Options	Value
Type *			Horizontal

Label	UOM	Options	Value
Speed ratio			2.0
Sevice Class			Class II
Service Factor			1.15
Speed reducer lubrification			Oil bath