

I. SCOPE

The contractor shall provide _____ (quantity) horizontal close-coupled, end suction centrifugal pump unit/s, Model e-SHX as manufactured by Goulds Water Technology.

All pump units shall be of one manufacturer and include Xylem hydrovar X integrated motor and variable frequency drive.

II. CONDITIONS OF SERVICE

A. Equipment item number	_____	_____	_____
B. Flange Inside Diameter			
Suction (inches) RF	_____	_____	_____
Discharge (inches) RF	_____	_____	_____
C. Design Service Condition			
Capacity (GPM)	_____	_____	_____
Total Head (feet)	_____	_____	_____
Efficiency (%)	_____	_____	_____
D. Minimum Total Head at Shutoff (feet)	_____	_____	_____
E. Maximum Impeller Diameter (inches)	_____	_____	_____
F. Operating Speed (RPM)	_____	_____	_____
G. Maximum Motor HP	_____	_____	_____

III. PUMP CONSTRUCTION

Each pump shall be designed for clockwise rotation viewed from driven end and include the following design features.

A. PUMP END COMPONENTS

A.1. Casing

The pump casing shall be concentric volute type, back pull-out design with ANSI class 150 flanged suction and discharge connections and shall be constructed of AISI TYPE 316L stainless steel material.

The pump discharge nozzle shall be center line oriented to allow simplified system design and installation.

The complete pump unit shall be supported by the motor.

Pump casing drain shall be provided with stainless steel plugs.

A.2. Wear Ring

A replaceable labyrinth type suction wear ring of AISI TYPE 316L stainless steel shall be provided and held securely by means of an interference fit in the casing suction.

A.3. Impeller

The pump impeller shall be of enclosed design, constructed of CF-8M Cast 316 stainless steel material, and key driven. A stainless steel bolt and washer shall provide positive attachment of the impeller to the motor shaft.

A.4. Seal Housing

The seal housing shall be constructed of AISI TYPE 316L stainless steel material and shall hold the stationary seat of the mechanical shaft seal. The seal housing shall be clamped in place over a machined fit on the motor adapter by the pump casing to maintain component alignment and is "O-ring" sealed to insure against leakage.

A.5. Mechanical Seal

The pump shaft seal shall be a Type 21 mechanical seal, or equal, constructed of the following materials:

Materials				
Seal Type	Rotary Ring	Stationary Ring	Elastomers	Metal Parts
Standard (2)	Carbon	Sil-Carb	FKM	316SS
Option (4)			EPR	
Option (W)	Sil-Carb		FKM	

A.6. Shaft Sleeve

The pump shaft sleeve shall be constructed of AISI TYPE 316L stainless steel and shall be of the hook type design. Locked in place by the impeller without necessity of other mechanical locking devices. The sleeve design must allow the motor shaft to remain dry during pump operation.

A.7. Motor Mounting Adapter

The rigid motor adapter of ASTM A48 CL20 cast iron construction shall support the pump liquid end and maintain pump to motor alignment. A bottom port shall be provided to allow condensation or seal leakage to drain and not be retained within the adapter.

IV. hydrovar X INTEGRATED MOTOR AND DRIVE

The motors shall be non-overloading NEMA standard designs with JM shaft extensions, totally enclosed fan cooled (TEFC) enclosures, and IE5 motor efficiencies. The hydrovar X+ drive shall have NEMA 4 enclosures and IES2 power drive system (PDS) efficiencies.

_____HP, _____ RPM, _____ phase, _____ Hz, _____ volts, _____ enclosure
1.15 Service Factor, High Efficiency.

V. TESTING

Production hydrostatic testing will be conducted by the manufacturer on each pump unit at 1.3 times pump operating pressure.



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