



e-HMX Smart Pumps

Integrated pump, motor & variable speed drive solutions, **powered by hydrovar® X**

Typical Engineering Specifications

I. Scope

The contractor shall provide _____ (quantity) multistage centrifugal pump unit/s, Model e-HMX as manufactured by Goulds Water Technology, a Xylem brand. All pump units shall be from one manufacturer and provided complete including electric motor drive.

II. Conditions of Service

A. Equipment Item Number	_____	_____	_____
B. Discharge Connection Size	_____	_____	_____
C. Primary Service Condition			
Capacity (GPM)	_____	_____	_____
Total Head (feet)	_____	_____	_____
Efficiency (%)	_____	_____	_____
D. Minimum Shutoff Head	_____	_____	_____
E. Minimum Flow Allowed	_____	_____	_____
F. Operating Speed	_____	_____	_____
G. Maximum Motor HP	_____	_____	_____

III. Pump Construction

Each pump shall include the following design features:

A. Pump End Components

A.1 Pump Body

The pump body shall be of AISI 316L construction and capable of withstanding the maximum working pressure. The suction (inlet) connection shall be compatible with 1", 1.25", 1.5", or 2" NPT type threading depending on the pump model selected. The discharge (outlet) connection shall be compatible with 1", 1.25" and 1.5" NPT type threading depending on the pump model selected.

A.2 Wear Ring

Wear rings shall be constructed of glass-filled PPS.

A.3 Impeller

Impellers shall be of enclosed design and constructed of AISI 316L stainless steel.

A.4 Diffuser Bowl

Each stage shall have a bowl with attached diffuser and spacer constructed of AISI 316L.

A.5 Shaft Sleeve and Bearing

The pump shall be fitted with a Tungsten Carbide shaft sleeve and ceramic bearings.

A.6 Coupling and Guard

The shaft shall be of AISI 316 stainless steel construction.

A.7 Hardware

The pump shall be completely assembled with stainless steel fasteners.

A.8 Elastomers

Pump elastomers shall be either Viton or EPDM in construction.

A.9 Mechanical Seal

The pump shall be fitted with a mechanical seal of Carbon/Silicon Carbide/EPDM construction or an alternative option listed in Table 1. Seal material combinations are available according to the combinations listed in Table 2.

Table 1: e-HMX Mechanical Seal Materials

Component	Rotory Face	Stationary Face	Elastomers	Hardware
Materials	B - Carbon		E - EPDM (EPR)	All 316 SS
	Q - Sil Carbide		V - Viton	-
	V - Ceramic		K - Kalrez	-

Table 2: e-HMX Valid Seal Material Combinations

Seal Code
BQE
BQV
QQE
QQV
QQK
BQK

IV. hydrovar X INTEGRATED MOTOR AND DRIVE

A. General Performance and Design

The unit shall be coupled to a hydrovar X variable-speed, permanent magnet (non-rare earth) assisted reluctance (PMAREL) motor-drive. The hydrovar X unit shall include provisions to disconnect the drive and motor independently. The motor-drive combination shall perform in accordance with the PDS (power drive system) values indicated on the unit motor nameplate and as outlined by IEC standards for IE5 and IES2 efficiencies. The motor-drive unit mounting dimensions shall conform to the frame size and type indicated on the unit nameplate. All hydrovar X units shall be rated for an environmental protection rating of NEMA 4/IP55 and working temperatures of -4 to 122°F (-20 to +50°C). hydrovar X units shall be compatible with both 3-phase 50 Hz or 60 Hz supply and rated for either 200-240V (+/- 10%) or 380-480V (+/- 10%) ranges. The motor-drive combination will not require shaft grounding rings.

B. Drive Controls and Wiring

Units shall be fitted with a full-color HMI (human machine interface) display controlled by rubber button physical input controls. hydrovar X units shall be compatible with Modbus RTU and BACNet MS/TP communication protocols. Units shall be equipped with the ability to perform wireless communication via the Xylem X App. The unit shall support up to (4) analog inputs, (5) digital inputs, (1) analog output, (2) relay outputs (Form C), and (1) 10V output supply. Supported analog input and output ranges are: 0-20 mA, 4-20 mA, 0-10V, and 2-10V. hydrovar X units shall be equipped with (2) RS485 terminal block connections. The unit shall feature a removable gland plate of which the power supply opening is dimensioned for standard U.S. trade size conduit fittings.

hydrovar X units shall be capable of multi-pump controls up to (8) pumps in parallel and feature a suite of input-driven control programming options including pressure, flow, temperature, and level as well as quadratic and linear proportional pressure control.

hydrovar X units shall support the ability to operate at a user-defined fixed rotational speed (Actuator mode) without external input controls.

V. Testing

- A. Production performance testing will be conducted by the manufacturer on each pump unit. Head at three operating points (70% of BEP, BEP and 120% of BEP) will be measured to verify performance.
- B. Pump performance shall be ANSI/HI 14.6 Grade 2B compliant.



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