



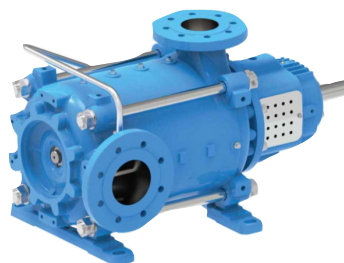
e-MP multistage pumps

Performance plus efficiency in a versatile ring section pump for high pressure applications

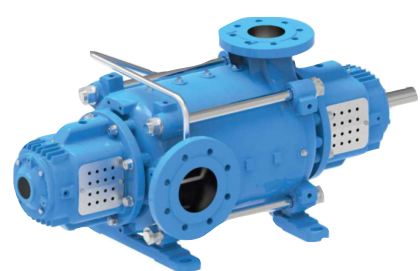
e-MPA



e-MPR



e-MPD



This specification covers the horizontal e-MPs, e-MPR, e-MPA, and e-MPD Pumps. The e-MP is a high pressure, multistage, centrifugal pump for municipal and industrial applications such as manufacturing, power generation, oil & gas, mining, commercial building, agricultural, water utilities and leisure industries. The pump shall be manufactured by Xylem with cast casing, impellers, and diffusers and design compliant to ISO 5199. Each unit shall be furnished with a pump, coupling, and driver unless otherwise specified.

The pump shall have a horizontal footprint, capable of up to 914 psi (63 bar), optional up to 1450 psi (100bar), with an angular bearing on discharge side.

Pump performance

The hydraulic pump performance shall be ANSI/HI 14.6 and ISO 9906:2012 Grade 2B as standard. Optional test grades include 1B or 1U. Within the pump performance range, any requested duty point must be achievable through impeller trimming which assures pump performances compliant with system demand.

Pump construction

1. Pump rotation

- The rotation of the pump shall be clockwise when viewed from the drive end.
- Counterclockwise rotation is only available in the suction side driven version of the e-MPD.

2. Material combinations

- The pump shall include the following design options:

Material combination	Casings	Impellers	Diffusers
DNC	EN-GJS-400-15, Ductile Iron	ASTM CF8M, Stainless Steel	EN-GJL-150, Cast Iron
NNN	ASTM CF8M, Stainless Steel	ASTM CF8M, Stainless Steel	ASTM CF8M, Stainless Steel
RNN	ASTM CD4MCuN, Duplex SS	ASTM CF8M, Stainless Steel	ASTM CF8M, Stainless Steel
RRR	ASTM CD4MCuN, Duplex SS	ASTM CD4MCuN, Duplex SS	ASTM CD4MCuN, Duplex SS
TTT	ASTM CE3MN, Super Duplex SS	ASTM CE3MN, Super Duplex SS	ASTM CE3MN, Super Duplex SS

3. Stage and horsepower limitations

Stage number & power limits 60HZ				
		Design	e-MPA/R/D	
		Speed [rpm]	3550	1750
Size	Hydraulic			
50	A	Max Stages [-]	11	16
		Max Power [HP]	100	25
	B	Max Stages [-]	10	16
		Max Power [HP]	125	25
65	A	Max Stages [-]	7	13
		Max Power [HP]	150	50
	B	Max Stages [-]	6	12
		Max Power [HP]	150	60
100	A	Max Stages [-]	5	10
		Max Power [HP]	400	100
	B	Max Stages [-]	5	10
		Max Power [HP]	500	125
125	A	Max Stages [-]	4	7
		Max Power [HP]	850	150
	B	Max Stages [-]	3	7
		Max Power [HP]	950	250
150	A	Max Stages [-]	-	6
		Max Power [HP]	-	350
	B	Max Stages [-]	-	6
		Max Power [HP]	-	500

4. Temperature limitations

- MPA, MPR and MPD are suitable in standard constructions for temperatures between -10 °F and 200 °F
- For temperatures exceeding 200F up to 284F, MPD will be required with the following criteria:
suction side drive, oil lubricated bearings, high temperature seals, aflas elastomers, and all steel construction

5. Inlet pressure limits

Inlet pressure limits	
e-MPA	145 psi
e-MPR	145 psi
e-MPD	580 psi

6. Working pressure limit

- a. The standard version of the e-MPR, e-MPA and e-MPD shall have a working pressure up to 914 psi (63 bar). The high-pressure version of the e-MP: e-MPRE, e-MPAE, and e-MPDE will have a working pressure of up to 1450 psi (100 bar).

7. Suction impeller

- a. The first stage suction impeller is engineered with a wider inlet diameter reducing the velocity of the liquid for reduced friction and increased suction capability (or low NPSH, as required).

8. Stage impellers

- a. The impellers shall be enclosed type and positively keyed to the pump drive shaft.
- b. Impeller trimming shall be limited to the impeller vanes only for higher efficiencies.
- c. Impellers shall be dynamically balanced in accordance with ISO G6.3 guidelines.

9. Shaft

- a. The shaft shall be equipped with removable shaft sleeve in correspondence of the seal working area, to prevent the wear of the shaft itself and facilitate maintenance.
- b. Shaft and shaft seal material shall be ASTM431 Stainless Steel with optional ASTM F51 Duplex Stainless Steel.

10. Wear rings

- a. Optional case wear rings shall be available for ductile iron casing material combination.
- b. Wear rings shall be standard for stainless steel and duplex stainless steel casing combinations.

11. Bearings

- a. The pump design shall include its own thrust bearing with double angular ball bearings on discharge side which bear the axial load and preserve the motor bearings.
- b. The e-MPA and e-MPR pumps shall have suction side plain bearings which are lubricated by the liquid being pumped.
- c. The e-MPD shall include a single groove deep ball bearing on the suction side.
- d. Deep-groove ball bearings are unconstrained to accommodate thermal expansion.
- e. Bearings shall be re-greaseable.
- f. Bearings shall be designed for an L10 life of 100,000 hours at shutoff point.
- g. Bearing bracket with safety guards and large dimensions for a better heat dissipation, to avoid increased bearing temperature during the operation.

12. Flanges

- a. Suction flanges shall be drilled to ANSI B16.5 Class 150 with optional upgrade to Class 300.
- b. Discharge flanges shall be drilled to ANSI B16.5 Class 150 with optional upgrades to Class 300 and Class 600.
- c. Flanges shall be available with the following orientation options: upwards (0°), 90°, 270° (-90°) when viewed from the driver end.
- d. The e-MPA shall have an axial, in-line suction flange.

13. Baseplate

- a. Baseplate shall be structural steel or fabricated steel channel with fully closed sides and ends.
- b. The combined pump, motor and baseplate assembly shall be securely welded to be sufficiently stiff to limit vibration.
- c. Baseplate shall be fitted with eight (8) motor alignment screws for standard motors above 215 frame size.

14. Coupling and guard

- a. Couplings shall be flexible non-spacer type. Spacer type shall be available as an optional upgrade.
- b. Couplings shall be shielded by an ANSI B11.19-2010, OSHA 1910.219, and ISO 14120:2015 compliant coupling guard. The guard shall be sheet metal, painted blue and completely protect all rotating elements between the motor and pump.
- c. Coupling shall be factory aligned prior to shipment.

15. Mechanical seal

- a. The mechanical seal and the mechanical seal housing must comply with ISO 3069 - EN 12756 standard.
- b. Seal assemblies shall be Carbon/Silicon, Carbide/EPDM where a carbon face rotates against a stationary Silicon Carbide face. Seal elastomers shall be made of EPDM or FKM rubber.
- c. Seal housing shall be large, self-cleaning seal housing transports particles outwards along the conical-shaped chamber to the relief piping, then back from sealing chamber to suction side to ensure seal longevity. Seal housing shall be 316 Stainless Steel construction.
- d. The seal shall be rated for 63 Bar (914 psi) working pressure.
- e. The e-MPD shall contain two (2) mechanical seals, one (1) on the drive end and one (1) on the non-drive end.

16. Balancing system

- a. Balancing drum system to reduce axial thrust of the bearings and the load on the mechanical seal improving the pump's life and reducing wear on both the components.
- b. The balancing drum system consists of a rotating hardened stainless-steel drum, that turns integrated with the shaft, which works paired with a static bushing, fixed to the stage casing, constructed of cathaphoretic coated iron or hardened stainless steel to reduce any wear linked to galling and friction during the pump operation.
- c. External balance line shall be included, running between discharge side seal chamber and suction casing, to reduce mechanical seal chamber pressure.

17. Paint

- a. Non-duplex stainless steel and non-stainless steel pumps shall be painted with at least one coat of high-grade Pantone 298 (RAL 5015) Reducible Air-Dry Enamel paint under product code 72-3162 prior to shipment:

Liquid paint standards:		Cured film properties:	
Gallon Weight (lbs./gallon)	9.10 +/- .2	At 1.5 mil dry film thickness over Bondrite 1000 Panel	
Weight Solids	34%+/-2%	60° Gloss ASTM D-523	60 +/- 5
Volume Solids	25%+/-2%	Hardness ASTM D 3363	H-2H
Viscosity #4Zahn@. 77°F	20"-25"	Adhesion ASTM 3359	5B (100%)
VOC sans water	2.74 lbs.gl	Impact Resistance Direct ASTM D 2794	100 in/lbs.
VOC as supplied	1.12 lbs.gl	Humidity Resistance ASTM D 4585	500 hours
		Degree of Blistering ASTM D 714	None
		Salt Spray ASTM B 117	500 hours
		Creepage, Method 2	1/16" - 1/8"

18. Testing

- a. The pump shall be hydrostatically tested per Hydraulic Institute standards, tested to 1.5 times working pressure for 30 minutes.
- b. PE certified performance testing and hydraulic testing is available as an adder.

19. Sensors

- a. The pump shall include Xylem optimize® Condition Monitoring Sensor.
- b. The pump shall also be built with optional sensor interfaces for condition monitoring and allow connectivity to an intelligent plant monitoring and/or diagnostic system.
- c. Sensor interfaces shall be available through:
 - i. Suction and discharge pressure ports
 - ii. Temperature ports on the bearing bracket
 - iii. Horizontal and vertical vibration sensor ports on the bearing bracket

Position	Connection	Size
PM1	Vacuum gauge	G 1/4
PM2	Pressure gauge	G 1/4
D	Drain	G 1/4
G	Grease nipple	M8
L	Leakage	G 1/2
V	Vent	G 1/4

20. NSF/ANSI 61 and 372 certification

- a. The e-MPD with NNN4 (ASTM CF8M casing; impeller and diffuser material) configuration is NSF-61 certified.



Drinking Water
Low Lead Content
NSF/ANSI 61 & 372
File#: 009553_0_000

NSF/ANSI 61 (*Drinking Water System Components - Health Effects*) is a certification standard for products that come into contact with drinking water. NSF/ANSI 372 (*Drinking Water System Components - Lead Content*) verifies the lead content of drinking water products meets levels determined by the Safe Drinking Water Act. These requirements are based on EPA and Health Canada Requirement.

Technical features and benefits

1. High suction capabilities provided by the e-MP's suction impeller ensures an NPSHR of less than 20 feet in most applications.
2. The pump design allows access to the drive side bearing, the mechanical seal, and the balancing drum system without having to disassemble the pump from the piping. This facilitates easier repairs in the field.
3. The e-MP's modular design minimizes the number of parts required and simplifies inventory management.
4. The salient rounded edges of the U-turn channels in each stage casing ensure a balanced velocity allocation of the liquid being pumped, reducing losses, and increasing hydraulic efficiency from one stage to the next.
5. High hydraulic efficiency achieved by computational fluid dynamics calculations and advanced channels configuration, which provide constant cross section and therefore constant fluid speed inside the hydraulic, to create an ideal flow of pumped liquid from stage to stage.

Recommended spare parts

The following spare parts are recommended:

- Mechanical seal (two (2) mechanical seals in case of e-MPD)
- O-ring set
- Pump bearing set
- Balancing drum/bushing

*This document was prepared by the Xylem Industrial
Application Engineering Team in Morton Grove, Illinois.*



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e-MP products**

Xylem Product Cybersecurity

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