



**MATERIALS of CONSTRUCTION**  
**Models: MLN4B, MRLN4B<sup>1</sup>**

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**NOTE:** Temperature and viscosity ratings given below apply to individual components **Only**. For actual maximum temperatures and viscosities for the rated pump, see **"Operating Limits"** on backside.

PART NAME	STANDARD MATERIALS	AVAILABLE OPTIONS
Casing, Heads, Hubs	Ductile Iron: ASTM 536	
Liner	Ductile Iron: ASTM 536	
Discs	Cast Iron: ASTM A48	
Optional Jacketed Heads	Ductile Iron: ASTM 536 150 psi (1034 kPa) Max. Pressure	
Bearing Covers	Ductile Iron: ASTM 536	
Bushings (Sleeve Bearings)	Internal Sleeve Bearing: Metal Impregnated Graphite	Internal Sleeve Bearing: Bronze
<b>Rotor &amp; Shaft</b>		
Rotor	Hardened Ductile Iron: ASTM 536	
Shaft	High Strength Steel	
Optional Relief Valve (R/V)	Cast Iron	
Relief Valve Body, Cap, Cover	Ductile Iron: ASTM 536	
Blanking Plates – Standard	Ductile Iron: ASTM 536	
Relief Valve Spring	Chrome Vanadium 400°F (204°C)	
R/V Spring Ranges	76-125 psi (5.2-8.6 Bar)	Optional springs range from 45-200 psi (3.1-13.8 Bar) - See Parts List.
O-Rings: Other than Mechanical Seal	Fluorocarbon (FKM) to 400°F (204°C)	PTFE to 500°F (260°C)
Gasket: R/V Cap	Composition	
<b>Vanes</b>	<b>Laminate</b> - Full Size with 316 Stainless Steel Wear Plate to 240°F (115°C); 20,000 SSU (4,250 cP) Maximum.	<b>EC Bronze</b> - Extra-Clearance to 500°F (260°C); 500 SSU (105 cP) Minimum. <b>EC Laminate</b> - Extra-Clearance to 350°F (176°C); with 100 psi (689 kPa) Max., 40,000 SSU (8,500 cP) Max. <b>EC Hardened Ductile Iron</b> - Extra-Clearance to 400°F (204°C); 500 SSU (105 cP) Minimum.
Push Rods	Case Hardened Steel	

Centipoise (cP) = centistokes (cSt) at fluid specific gravity of 1.0.

<sup>1</sup> MRLN4 has a Low Displacement Liner – flow rate and horsepower are 75% of published characteristic curves.

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PART NAME	STANDARD MATERIALS	AVAILABLE OPTIONS
Mechanical Seals	---	John Crane Single (Type 59U): 350°F (176°C) Max. 10,000 SSU (2,200 cP) Max.
Shaft Packing	PTFE to 400°F (204°C)	Optional Triple-Lip Seal
Packing Follower	Ductile Iron: ASTM 536	
Gage Ports	1/4" NPT	
Flanges	4" 150lb Flat Face ANSI Compatible, Ductile Iron	

**Blackmer Triple – Lip Seal**

PERFORMANCE		MATERIALS	
Pressure	Seal to 150 PSI (10 bar)	Metal Parts	316SS
Vacuum	Full vacuum when element is facing away from vacuum source	Set Screws	Hastelloy C
Temperature	To 300°F (150°C) Over 300°F Consult Factory	O-Rings	AFLAS®
Surface Speed	To 700 fpm (3.5 m/s) dry running; Over 700 fpm consult Factory	Seal Elements	PTFE
Runout	.005" T.I.R. (.13 mm)	Sleeve Coating	Chrome oxide standard
Axial end Play	Not Affected		

**OPERATING LIMITS**

	STANDARD MATERIALS	OPTIONAL MATERIALS
Maximum Temperature	240°F (115°C)	400°F (204°C) with FKM or PTFE O-rings and Metal Vanes
Maximum Viscosity	30,000 SSU (6,300 cP)	<b>500,000 SSU</b> (108,000 cP) Max. with Metal Vanes <b>40,000 SSU</b> (8,500 cP) Max. with EC Laminate Vanes <b>500 SSU</b> (105 cP) Minimum with Metal Vanes
Maximum Differential Pressure *	150 psi (10.3 Bar)	200 psi (13.8 Bar) with Mechanical Seals, Non-abrasive Lubricating Fluid with Viscosities from 500 to 20,000 SSU (105 to 4,250 cP) Only.
Maximum Working Pressure	175 psi (12.1 Bar)	225 psi (15.5 Bar) with Mechanical Seals, Non-abrasive Lubricating Fluid with Viscosities from 500 to 20,000 SSU (105 to 4,250 cP) Only.

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\* Maximum Relief Valve Setting

Centipoise (cP) = centistokes (cSt) at fluid specific gravity of 1.0.