



**MATERIALS OF CONSTRUCTION**  
 Models: NP1.5B, NP2F, NPH2F,  
 NP2.5F,  
 NPH2.5F, NP3F, NPH3F, NP4F, NPH4F

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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
Cylinder	NP1.5" – 3"	Cast Iron: ASTM A48
	NP4" and NPH2"-4"	Ductile Iron: ASTM 536
Heads	1.5"	Cast Iron: ASTM A48
	2"	Ductile Iron: ASTM 536
	2.5", 3", 4"	Ductile Iron: ASTM 536
Packing Follower	1.5"	Cast Iron
	2", 2.5", 3", 4"	Ductile Iron
Bearing Covers	1.5"	Cast Iron
	2", 2.5", 3", 4"	Steel
Bushing (Sleeve Bearing)	Metallized Carbon	
<b>Rotor &amp; Shaft</b>	Open Rotor	Closed Rotor – 125 psi max. differential pressure (2", 2.5", 3" & 4" only)
Rotor	Ductile Iron: ASTM 536	Cast Iron: ASTM A48
Shaft	High Strength Steel	High Strength Steel
Relief Valve (R/V)	Cast Iron: ASTM A48	Nickel Plated Cast Iron
Relief Valve Cover	1.5" – 3"	Ductile Iron: ASTM 536 (with 200 psi RV spring only)
	4"	Ductile Iron: ASTM 536
Relief Valve Cap	1.5", 2", 2.5"	Steel
	2", 2.5", 3" 4"                    3", 4"	Ductile Iron: ASTM 536
Relief Valve Spring	Plated Steel to 300°F (149°C)	Stainless Steel to 500°F (260°C)
R/V Spring Ranges	1.5", 2", 4"	51-75 psi (3.5-5.2 bar)
	2.5", 3"	51-110 psi (3.5-7.6 bar)
O-Rings:	Fluorocarbon (FKM) to 400°F (204°C)	PTFE to 500°F (260°C) Buna-N to 240°F (115°C)
Gaskets: RV Cap	1.5", 2", 2.5"	Copper
	2", 2.5", 3" 4"                    3", 4"	PTFE
Gaskets: NPT Flange	Composition to 500°F (260°C)	
<b>Shaft Sealing</b>	PTFE Packing to 500°F (260°C)	Lip Seal – Carbon Filled PTFE to 500°F (260°C) Commercial Options - See Page 2
<b>Vanes</b>	<b>Duravane</b> - Full Size with Stainless Steel Wear Plate to 240°F (115°C); 20,000 SSU (4,250 cP) Maximum. (NP4, NPH4: 150 psi maximum)	<b>EC Laminate</b> - Extra-Clearance with Stainless Steel Wear Plate to 350°F (176°C); 40,000 SSU (8,500 cP) Max. (Not avail. on 1.5" models.) <b>EC Cast Iron</b> - Extra-Clearance to 500°F (260°C); 500 SSU (105 cP) Minimum. <b>EC Bronze</b> - Extra-Clearance to 500°F (260°C); 500 SSU (105 cP) Minimum.
Push Rods	Case Hardened Steel	
Gage Ports	1/4" NPT	

Models: NP1.5B, NP2F, NPH2F, NP2.5F, NPH2.5F, NP3F, NPH3F, NP4F, NPH4F

### 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		

### OPTIONAL COMMERCIAL MECHANICAL SEALS

<b>1.5" only: John Crane #9</b> Max. Temperature: 350°F (176°C) Max. Viscosity: 7200 SSU (1500 cP) Ni-resist, Carbon, FKM	<b>2" – 4" models: John Crane 5610</b> Max. Temperature: 400°F (204°C) Max. Viscosity: 7200 SSU (1500 cP) Single Cartridge, Sil-Car, Carbon, FKM
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### PIPE COMPANION FLANGES

PUMP SIZE	STANDARD	OPTIONAL <sup>1</sup>
1.5"	1.5" NPT Tapped Ports	
2"	2" Cast Iron, ASTM A48, NPT Tapped	2" Steel Weld, ASTM A216 WCB 2" 150# RF ANSI compatible
2.5"	2.5" Cast Iron, ASTM A48, NPT Tapped	2.5" Steel Weld, ASTM A216 WCB 2.5" 150# RF ANSI compatible
3"	3" Cast Iron, ASTM A48, NPT Tapped	3" Steel Weld, ASTM A216 WCB 3" 150# RF ANSI compatible
4"	4" Cast Iron, ASTM A48, NPT Tapped	4" Steel Weld, ASTM A105 4" 150# RF ANSI compatible

### OPERATING LIMITS

	STANDARD MATERIALS	OPTIONAL MATERIALS
Maximum Temperature	240°F (115°C)	500°F (260°C) With PTFE O-Rings, Metal Vanes, Stainless R/V Spring
Minimum Temperature	-25°F (-31°C)	
Maximum Viscosity	20,000 SSU (4,250 cP)	100,000 SSU (22,000 cP) with Metal Vanes & Open Rotor Consult Factory for Higher Viscosities
Maximum Jacketed Head Pressure	150 psi (10.3 Bar)	
Maximum Differential Pressure*	150 psi (10.3 Bar) – Open Rotor 125 psi (8.6 Bar) – Closed Rotor	200 psig (13.8 bar) with High Press. Relief Valve Option & Open Rotor. NP4 also requires Laminate, Bronze or Iron Vanes.
Maximum Working Pressure	175 psig (12.1 Bar)	225 psig (15.5 bar) with High Press. R/V Option and Mechanical Seal

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

\* Maximum Relief Valve Setting

AFFF service pumps include: Nickel Plated. High Press. RV, 200 psi RV spring, Buna O-rings, Cylinder w/ Drain, Lip Seal & DuraVanes (1.5"-3") or EC Laminate Vanes (4").

