

F20 PRO SERIES

Maximum Flow Rate: 1.0 gpm (3.8 l/min)

Maximum Pressure: 1500 psi (103 bar) for Metallic Pump Head
350 psi (24 bar) for Non-metallic Pump Head

WANNER™ HYDRA-CELL® PRO
SEAL-LESS PUMP TECHNOLOGIES

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UK
CA CE

*F20 close-coupled (hollow shaft)
for 56C frame motors, shown with
Brass pump head.*

Versatile, reliable pumps for a wide range of applications.

- Pumps the full spectrum of low-to-high viscosity fluids.
- Features a seal-less design and horizontal disk check valves that enable the pump to handle abrasives and particulates that might damage or destroy other types of pumps.
- Simple, compact design reduces initial investment and lowers maintenance costs.
- Operational efficiencies reduce energy costs.
- Tolerates non-ideal operating conditions.
- Minimizes maintenance and downtime because there are no mechanical or dynamic seals, packing, or cups to leak, wear, or replace.

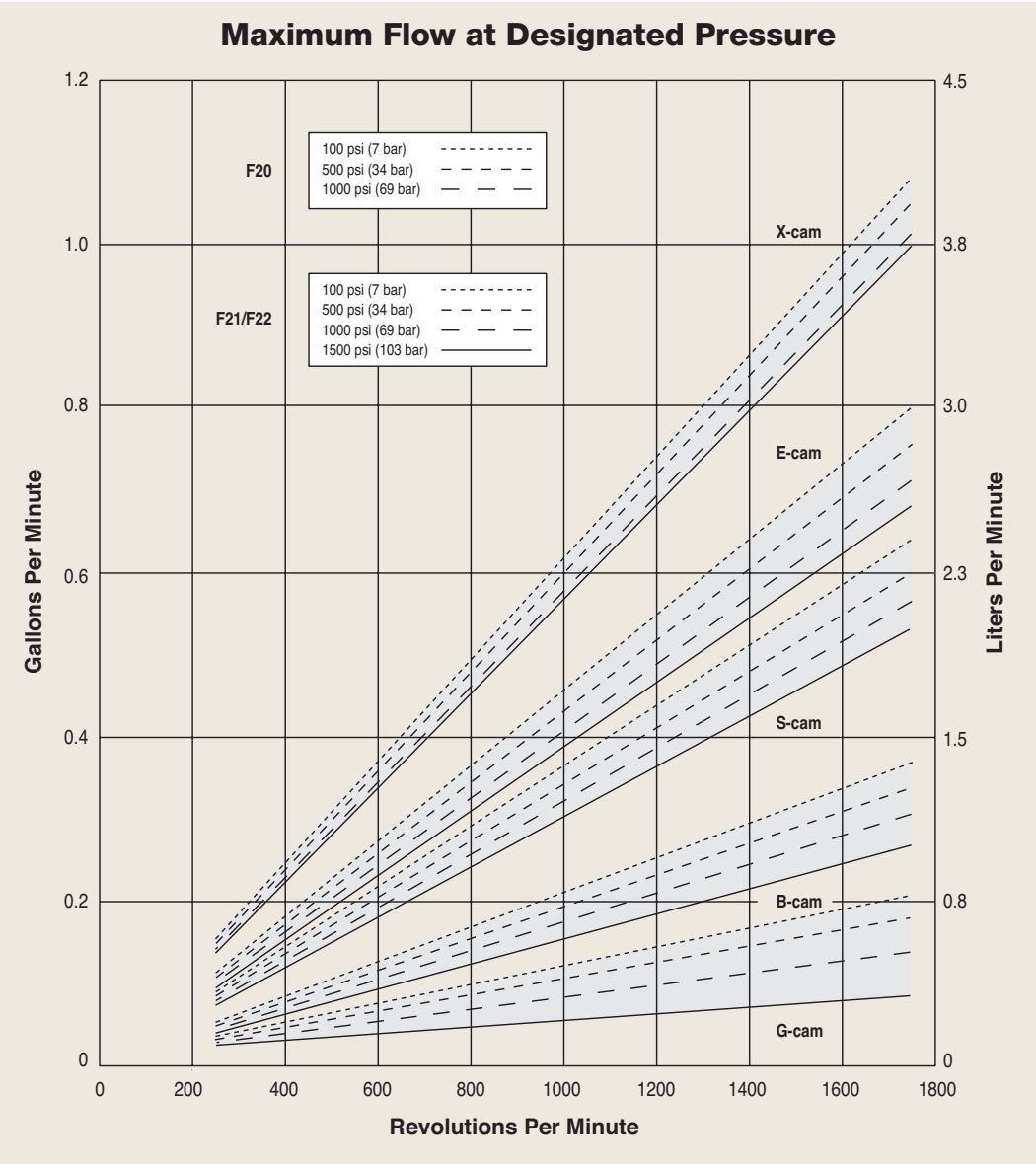


F20 Pro Series | Performance

Capacities

Model	Max. Input rpm	Max. Flow Capacities @1000 psi (69 bar)		Max. Inlet Pressure		Max. Discharge Pressure							
						Metallic Heads				Non-metallic Heads			
		gpm	l/min	psi	bar	F20 psi bar	F21 psi bar	F22 psi bar		Polypropylene psi bar		PVDF psi bar	
F20-X	1750	1.01	3.82	250	17	1000 69	1500 103	1500 103		250 17		350 24	
F20-E	1750	0.71	2.69	250	17	1000 69	1500 103	1500 103		250 17		350 24	
F20-S	1750	0.56	2.12	250	17	1000 69	1500 103	1500 103		250 17		350 24	
F20-B	1750	0.31	1.17	250	17	1000 69	1500 103	1500 103		250 17		350 24	
F20-G	1750	0.20	0.76	250	17	1000 69	1500 103	1500 103		250 17		350 24	

Performance and specification ratings apply to F20, F21 and F22 configurations unless specifically noted otherwise.



F20 Pro Series | Specifications

Flow Capacities @1000 psi (69 bar)			
Model	rpm	gpm	l/min
F20-X	1750	1.01	3.82
F20-E	1750	0.71	2.69
F20-S	1750	0.56	2.12
F20-B	1750	0.31	1.17
F20-G	1750	0.20	0.76

Delivery @1000 psi (69 bar)		
Model	gal/rev	liters/rev
F20-X	0.0006	0.0022
F20-E	0.0004	0.0015
F20-S	0.0003	0.0012
F20-B	0.0002	0.0007
F20-G	0.0001	0.0004

Maximum Discharge Pressure	
Metallic Heads:	F20 to 1000 psi (69 bar) F21 to 1500 psi (103 bar) F22 to 1500 psi (103 bar)
Non-metallic Heads:	250 psi (17 bar) Polypropylene 350 psi (24 bar) PVDF

Maximum Inlet Pressure	250 psi (17 bar)
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Maximum Operating Temperature	
Metallic Heads:	250°F (121°C) – Consult factory for correct component selection for temperature from 160°F (71°C) to 250°F (121°C).
Non-metallic Heads:	140°F (60°C)

Maximum Solids Size	200 microns
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Inlet Port	1/2 inch NPT
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Discharge Port	3/8 inch NPT
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Calculating Required Power

$$\frac{\text{rpm} + 1000}{7000} + \frac{\text{gpm} \times \text{psi}}{1,460} = \text{electric motor hp}$$

$$\frac{\text{rpm} + 1000}{9383} + \frac{\text{l/min} \times \text{bar}}{511} = \text{electric motor kW}$$

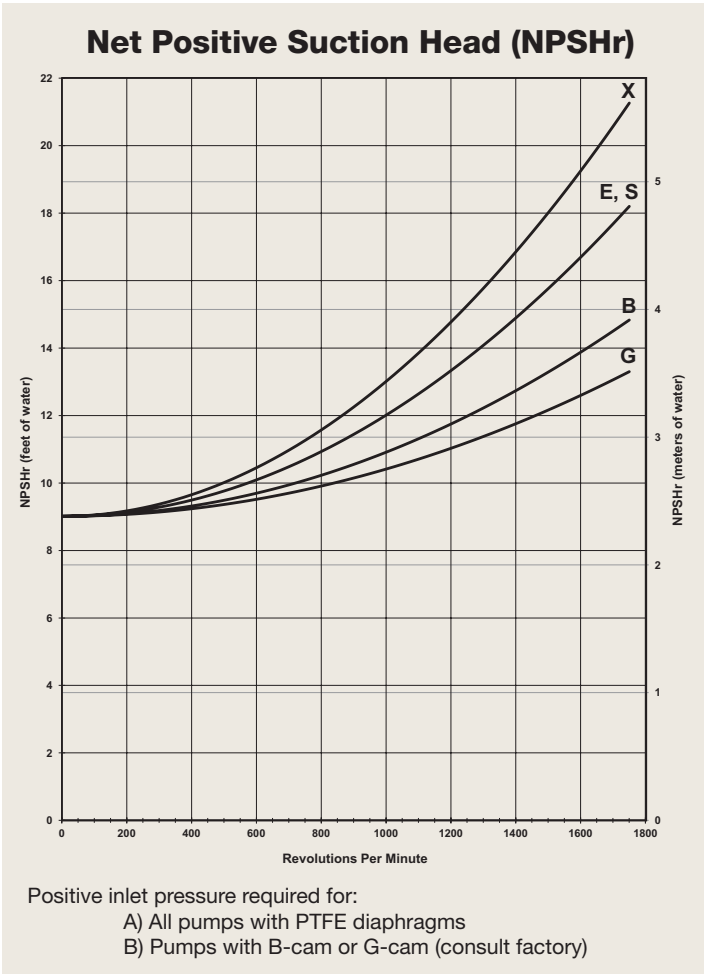
Attention!

When using a variable frequency drive (VFD) controller, calculate the hp or kW at minimum and maximum pump speed to ensure the correct hp or kW motor is selected. Note that motor manufacturers typically de-rate the service factor to 1.0 when operating with a VFD.

Calculating Pulley Size

$$\frac{\text{motor pulley OD}}{\text{pump rpm}} = \frac{\text{pump pulley OD}}{\text{motor rpm}}$$

Shaft Diameter	F20: 5/8 inch hollow shaft F21 & F22: 5/8 inch (15.9 mm)
Shaft Rotation	Reverse (bi-directional)
Bearings	Precision ball bearings
Oil Capacity	0.125 US quart (0.12 liters)
Weight	
Metallic Heads:	12 lbs. (5.5 kg)
Non-metallic Heads:	9 lbs. (4.1 kg)

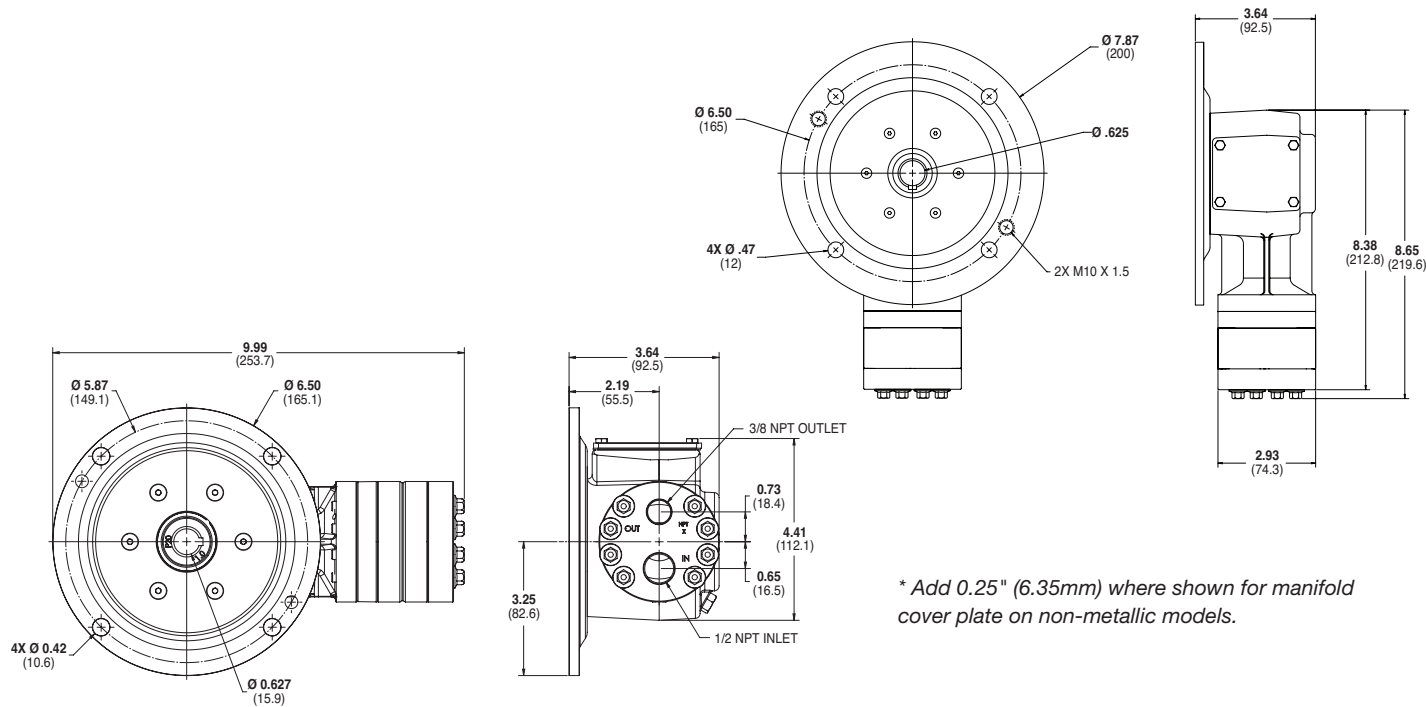


Suction Lift

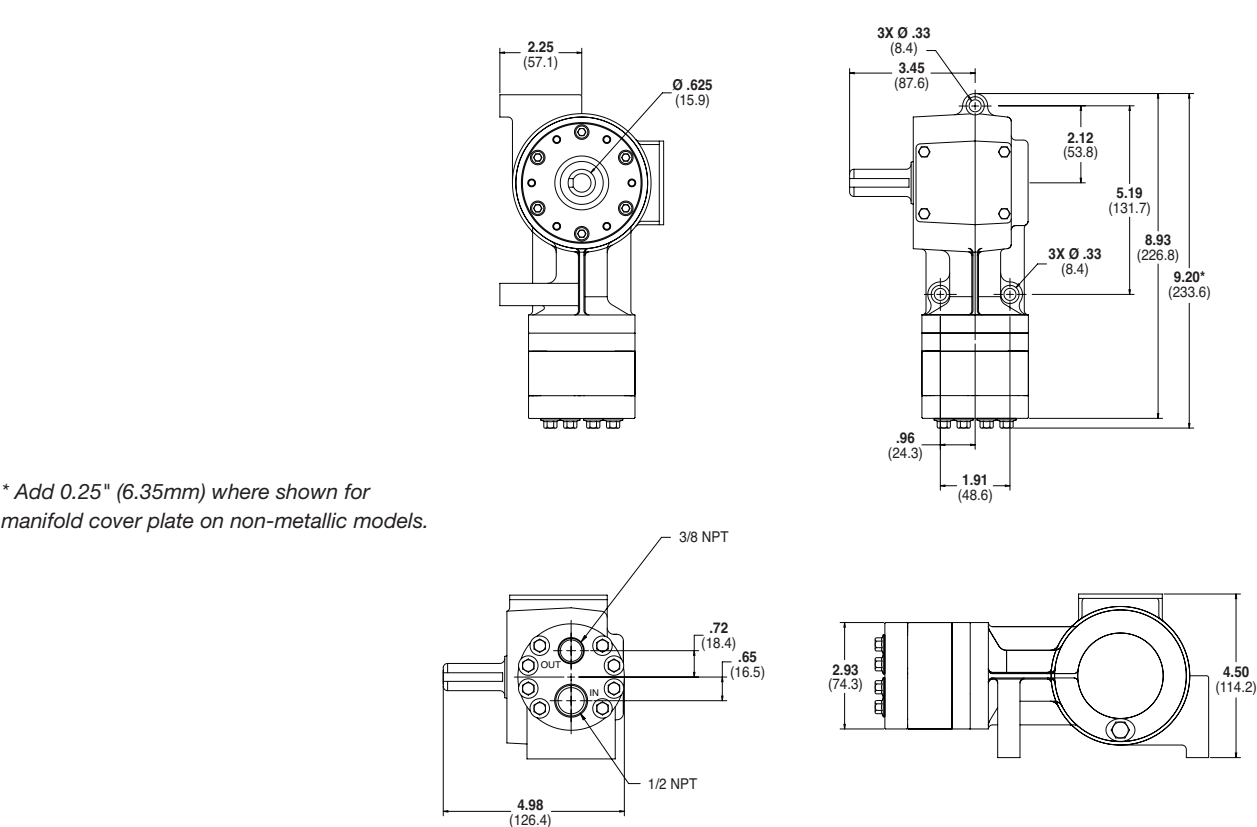
Each Hydra-Cell pump has different lift capability depending on model size, cam angle, speed, and fluid characteristics. To ensure that your specific lift characteristics are met, refer to the inlet calculations regarding friction, and acceleration head losses in your Hydra-Cell Product Manual. Compare those calculations to the NPSHr curves above.

F20 Pro Series | Representative Drawings

F20 Models with Metallic Pump Head Inches (mm)



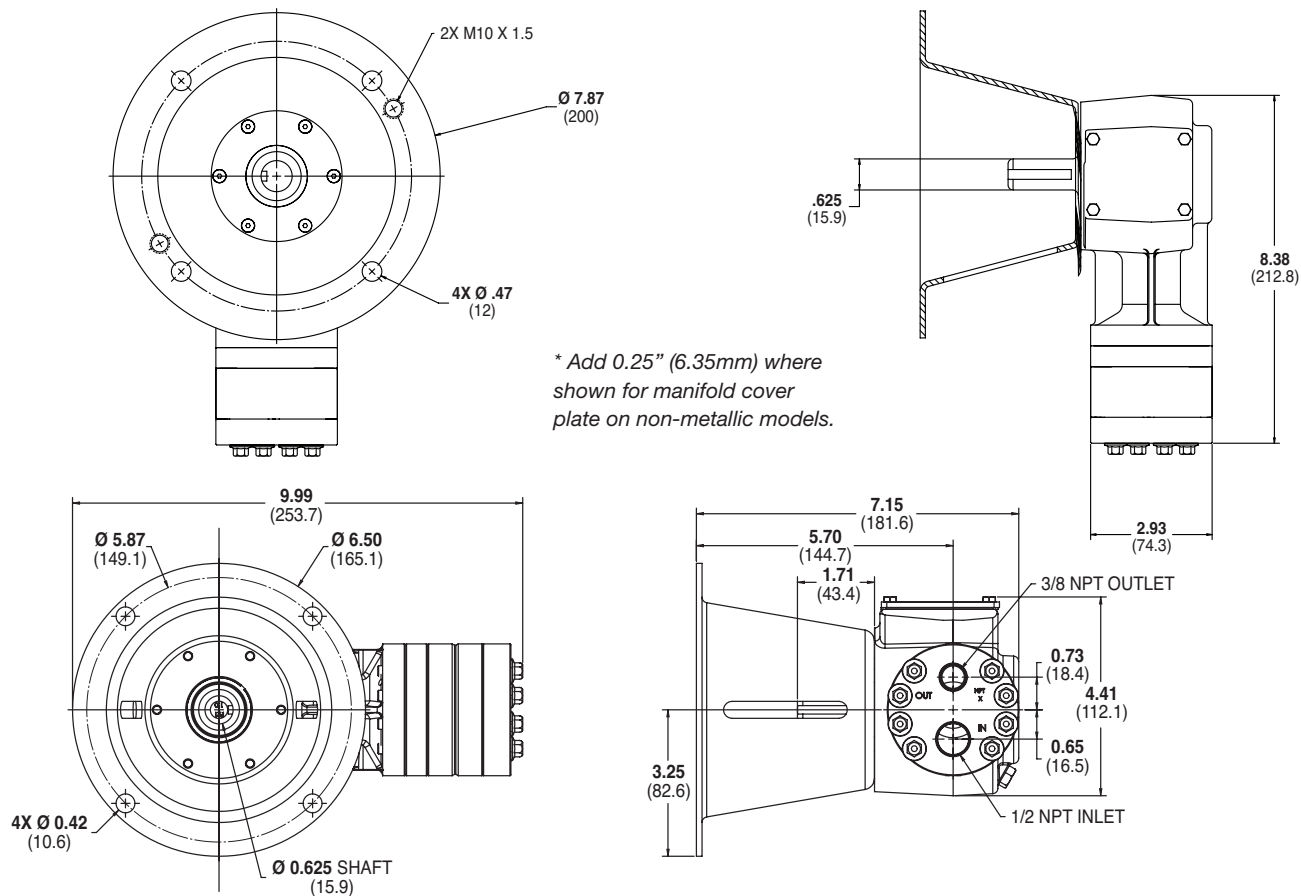
F21 Models with Metallic Pump Head Inches (mm)



Note: Dimensions are for reference only. Contact factory for certified drawings.

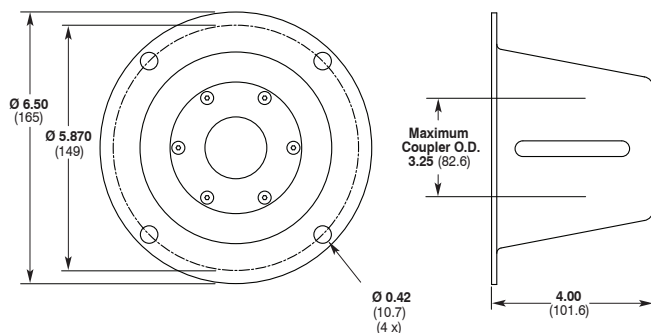
F20 Pro Series | Drawings / Adapters / Valves

F22 Models with Metallic Pump Head Inches (mm)



Note: Dimensions are for reference only. Contact factory for certified drawings.

Pump/Motor Adapter Inches (mm)



Part Number: A04-005-1200

Must be ordered separately for F22 models (optional for F21 models) for use with 56C, 143TC and 145TC frame motors.

Metric adapter available - consult factory.

Valve Selection

Valve Selection

A Hydra-Cell F20, F21 or F22 pumping system uses a **C46 Pressure Regulating Valve**.



For complete specifications and ordering information, consult the Hydra-Cell Master Catalog.

F20 Pro Series | How to Order

Ordering Information

A complete F20 Series Model Number contains 12 digits including 8 customer-specified design and materials options, for example: F20GAPGHFECG.

1	2	3	4	5	6	7	8	9	10	11	12
F	2			A							

Digit	Order Code	Description
1-3		Pump Configuration
	F20	Close-coupled to NEMA 56C footed motor (NPT Ports)
	F21	Shaft-driven (NPT Ports)*
	F22	For use with pump/motor adapter (NPT Ports)* *Pump/motor adapters ordered separately. See previous page.
4		Hydraulic End Cam
	X	Max 1.01 gpm (3.8 l/min) @ 1750 rpm
	E	Max 0.71 gpm (2.7 l/min) @ 1750 rpm
	S	Max 0.56 gpm (2.1 l/min) @ 1750 rpm
	B	Max 0.31 gpm (1.2 l/min) @ 1750 rpm**
	G	Max 0.20 gpm (0.8 l/min) @ 1750 rpm**
5		Pump Head Version
	A	NPT Ports (for all F20, F21 & F22 pumps)
6		Pump Head Material
	B	Brass
	M	PVDF
	P	Polypropylene
	S	316L Stainless Steel
	T	Hastelloy C
7		Diaphragm & O-ring Material
	A	Aflas diaphragm/PTFE O-ring
	E	EPDM (requires EPDM-compatible oil – Digit 12 oil code J)
	G	FKM
	J	PTFE (available with X and E cams only)**
	P	Neoprene
	T	Buna-N
8		Valve Seat Material
	C	Ceramic
	D	Tungsten Carbide
	H	17-4 Stainless Steel
	S	316L Stainless Steel
	T	Hastelloy C

Digit	Order Code	Description
9		Valve Material
	C	Ceramic
	D	Tungsten Carbide
	F	17-4 Stainless Steel
	N	Nitronic 50
	T	Hastelloy C
10		Valve Springs
	E	Elgiloyl
	T	Hastelloy C
11		Valve Spring Retainers
	C	Celcon
	H	17-7 Stainless Steel (used with metallic heads only)
	M	PVDF
	P	Polypropylene
	T	Hastelloy C (used with metallic heads only)
	Y	Nylon
12		Hydra-Oil
	G	5W30 cold-temp severe-duty synthetic oil
	J	EPDM-compatible oil
	K	Food-contact oil

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**Positive inlet pressure required for B and G cams and for PTFE diaphragms.

F20 Pro Series | Options

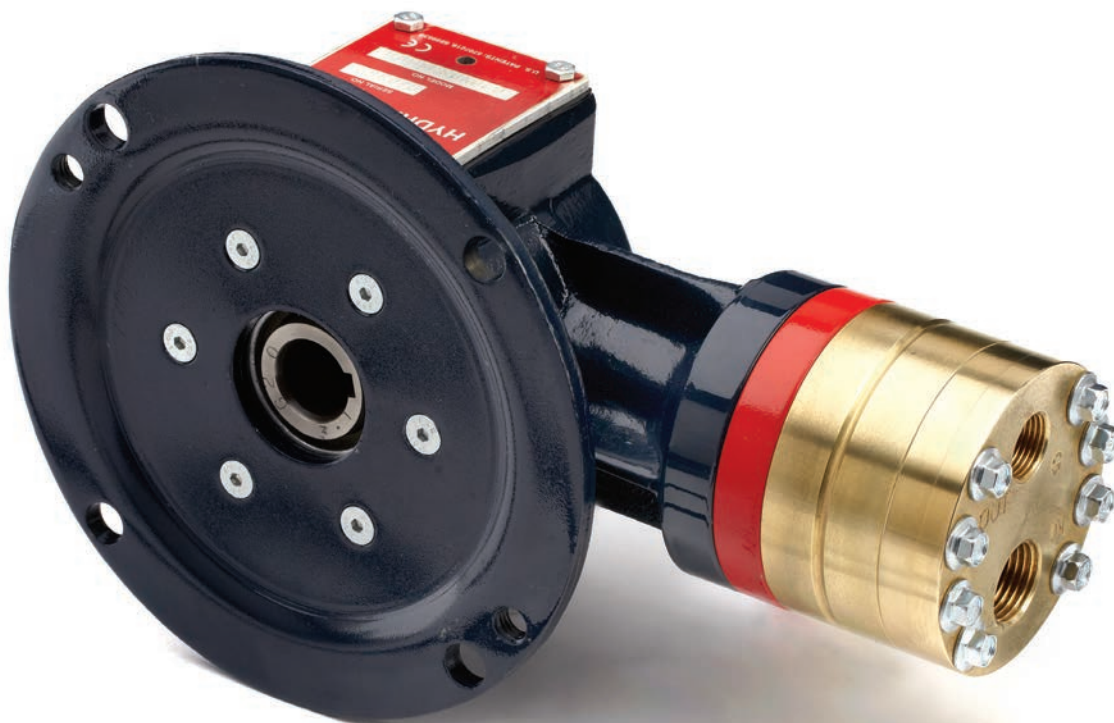
Consult the Hydra-Cell Master Catalog for:

- Motors, bases, couplings and other pump accessories
- Hydra-Oil selection and specification information
- Design considerations, installation guidelines, and other technical assistance in pump selection

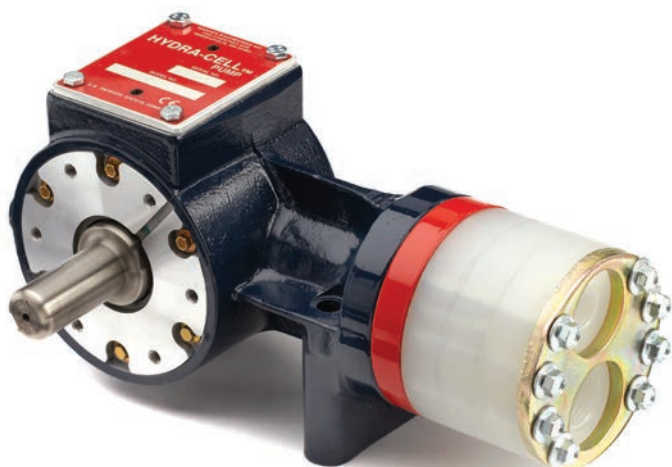
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F20 close-coupled (hollow shaft) for 56C frame motors, shown with Brass pump head.



F21 external shaft-driven with Polypropylene pump head.



F22 flexible-coupled to 56C, 142TC, and 145TC frame motors, shown with 316L Stainless Steel pump head.