



F003 / F008 / F02 / F04 / F07 / F15 / F30

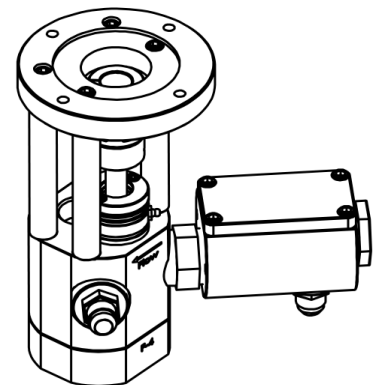
F-Series Pump Manual

Pump identification, operation, parts and service

TECHNICAL MANUAL

Rev E | 2026.09.19

Document BCP-F-PM



BearCat Pumps

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SCOPE

Common pump reference for F003, F008, F02, F04, F07, F15 and F30. Use the VP System Manual for vertical systems and the F-Series Legacy System Manual for existing horizontal and belt-driven systems. The F-series pump family remains current.

1 Pump sizes and operating data

Record the complete model and serial number before ordering parts or changing settings.

SPEED LIMIT

All F-series pumps are capped at **1,200 pump RPM**. Verify actual pump speed and set the drive to enforce this limit.

Model	Displacement US gal/rev	Reference flow at 1,200 RPM	
		GPM	lbs/min
F003	0.0003	0.3	2.8
F008	0.0008	0.9	7.6
F02	0.0020	2.3	19.0
F04	0.0040	4.6	38.0
F07	0.0070	8.4	70.1
F15	0.0150	18.0	150.1
F30	0.0300	36.0	300.2

Delivered flow

Delivered flow depends on viscosity, differential pressure, inlet conditions and internal slip. Use the installed meter when delivered quantity matters. The pump curves are on pages 16-17.

Select the system manual

BearCat favors vertical systems for new equipment. Motor selection, mounting, piping, metering and system controls belong in the matching system manual.

[VP System Manual, Rev G - vertical installation and motor sizes](#)

[F-Series Legacy System Manual, Rev B - existing drive arrangements](#)

2 Safety and pump operation

Apply these pump requirements with the instructions for the installed system.

Before work

Only qualified personnel may install, wire or service the equipment. Stop and isolate the drive, prevent automatic restart, relieve trapped pressure and verify zero hazardous energy before opening the pump or removing guards. Cool hot equipment and contain the product.

Any pump that is heated or pumping hot liquid should be operated with Safety Blankets properly installed. Use PPE appropriate to the product and temperature.

Pressure protection

This is a positive-displacement pump. Provide suitable system pressure protection and an open discharge path. Where fitted, an internal relief valve is not a pressure regulator. Its setting is where opening begins; it does not guarantee maximum pressure or unlimited bypass flow. An anode/blocked passage provides no internal relief.

Start and operate

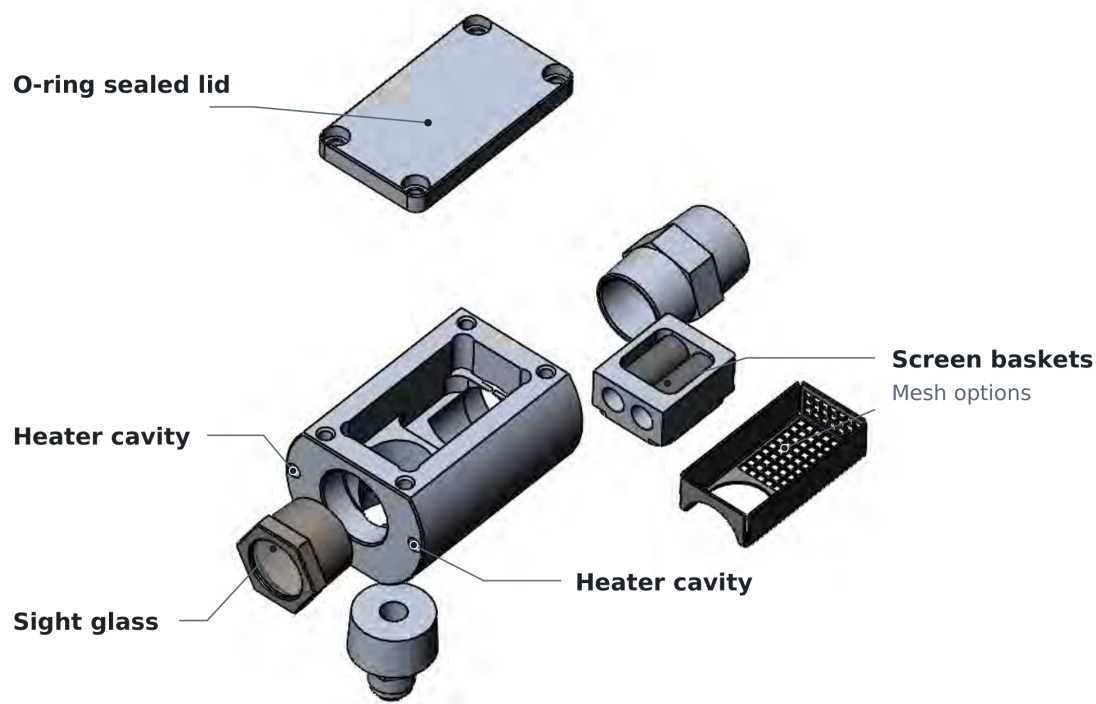
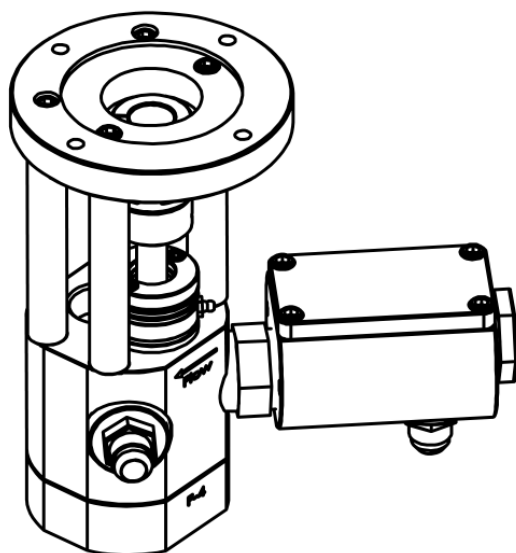
1. With the drive isolated, confirm the assembly is free to turn by the approved service method. Restore all coupling, shaft and drive guards.
2. Confirm inlet supply, valve positions, discharge path and pressure protection. Bring temperature-sensitive product and the pump to the required operating condition.
3. At first commissioning or after the pump has been opened and drained for service, fill with compatible liquid while stopped and depressurized. Close all fill points before operation.
4. Verify rotation against the installed pump markings. Start slowly, check delivery, pressure and leakage, then increase speed as conditions allow. Keep pump speed at or below 1,200 RPM.

Stop and isolate

Use the installed stop sequence. Before service, isolate the drive and product supply, prevent restart, relieve trapped pressure and verify the equipment is safe to open. Follow the system manual for line clearing and shutdown.

3 Pump and screen box

The screen box is an integral part of the vertical pump assembly.



The screen box screens incoming product and provides the inlet geometry needed for **liquid lock**.

The displacement body sits below the screen box outlet. With the upward discharge, the liquid charge cannot escape during reversing. No replenishment is needed between cycles. Preserve the screen box ledge and port elevations.

Two baskets show examples of available mesh options.
Install one basket at a time.

Clean and inspect the screen box

1. Stop, isolate and depressurize before removing the lid. Contain liquid and protect personnel from hot or hazardous product.
2. Remove and clean the basket. Inspect the basket, lid, O-ring and sealing faces; replace damaged parts.
3. Reinstall the basket and O-ring, secure the lid, and check for leaks during a slow restart.

4 Identify the pump assembly

Use the complete model, serial number and actual parts when selecting service items.

Displacement body and idler arrangement

Pump models	Idler arrangement
F003 / F008 / F02 / F04	Blind bushing; fixed idler shaft only as tall as the idler gear.
F07 / F15 / F30	Idler shaft fits a through-bushing in the shaft plate.

Identify the installed options

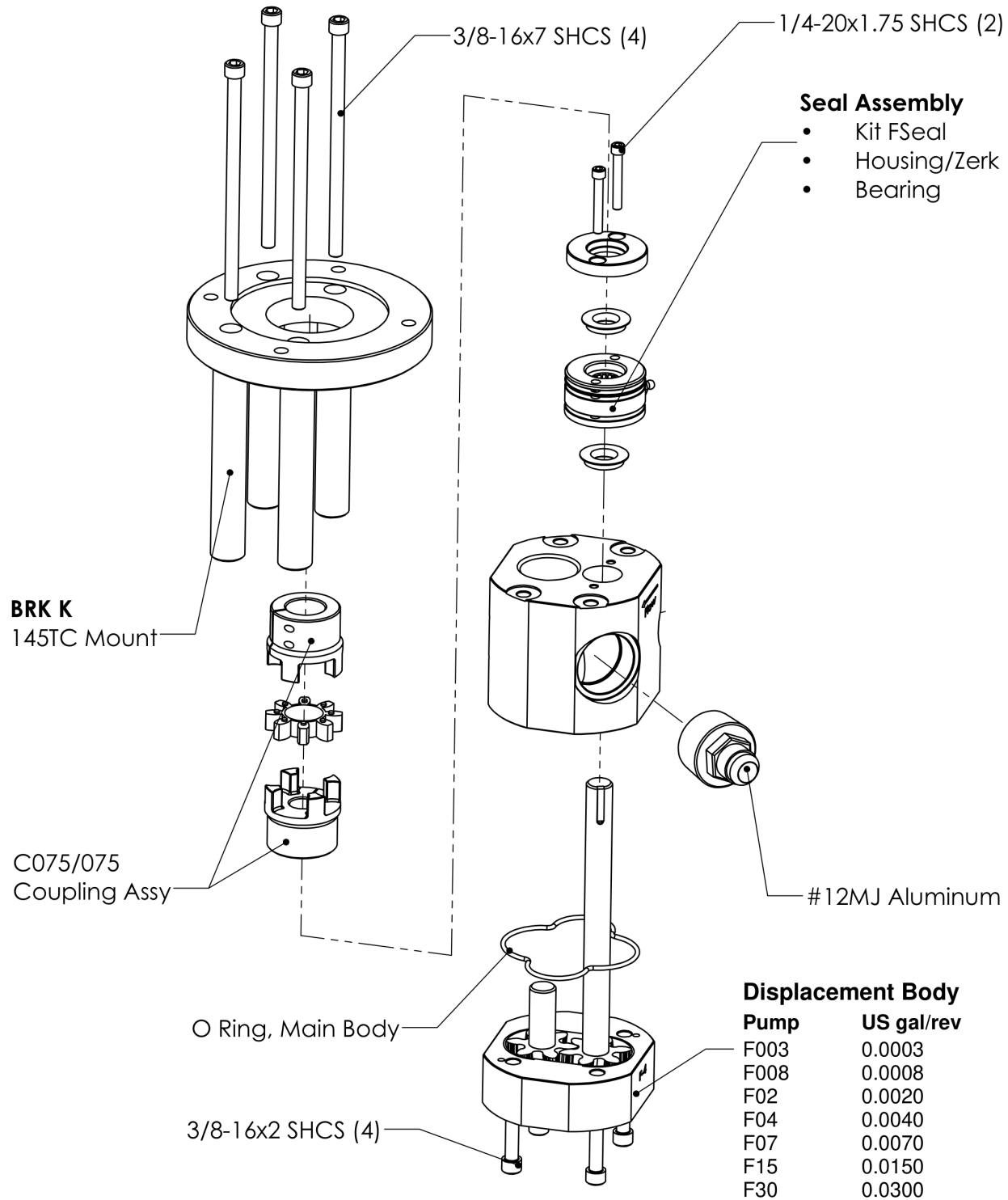
Item	Source identification
Pump and rebuild identity	F: steel pump; FA: aluminum pump; R: rebuild kit. Retain all model suffixes when ordering.
Shaft seal	Match the actual assembly. FSeal is shown on page 7. D double-seal and M modified single-seal kits are shown on page 9. P identifies a packing option in the original model convention.
Bushing material	I: iron; B: bronze; S: hardened steel. Specify the installed material and duty when ordering.
Relief / anode	A identifies the anode/blocked passage with no internal relief. A relief option must be identified and set for the actual application; its code alone is not a verified pressure limit.
Mount and clearance	Identify the physical motor interface or base and the complete factory model. Use the matching dimensional drawing; do not infer clearance from pump size.

The through-shaft drawings also support matching older assemblies. Keep the installed configuration with the equipment record; do not substitute one shaft, seal or bushing arrangement for another from model size alone.

Seal or bushing material temperature limits are not the rating of the complete pump. Housing, seals, clearances, product, pressure and drive must all suit the duty.

5 F003-F04 pump assembly

F003 / F008 / F02 / F04 assembly; displacement bodies listed for the complete F-series range.

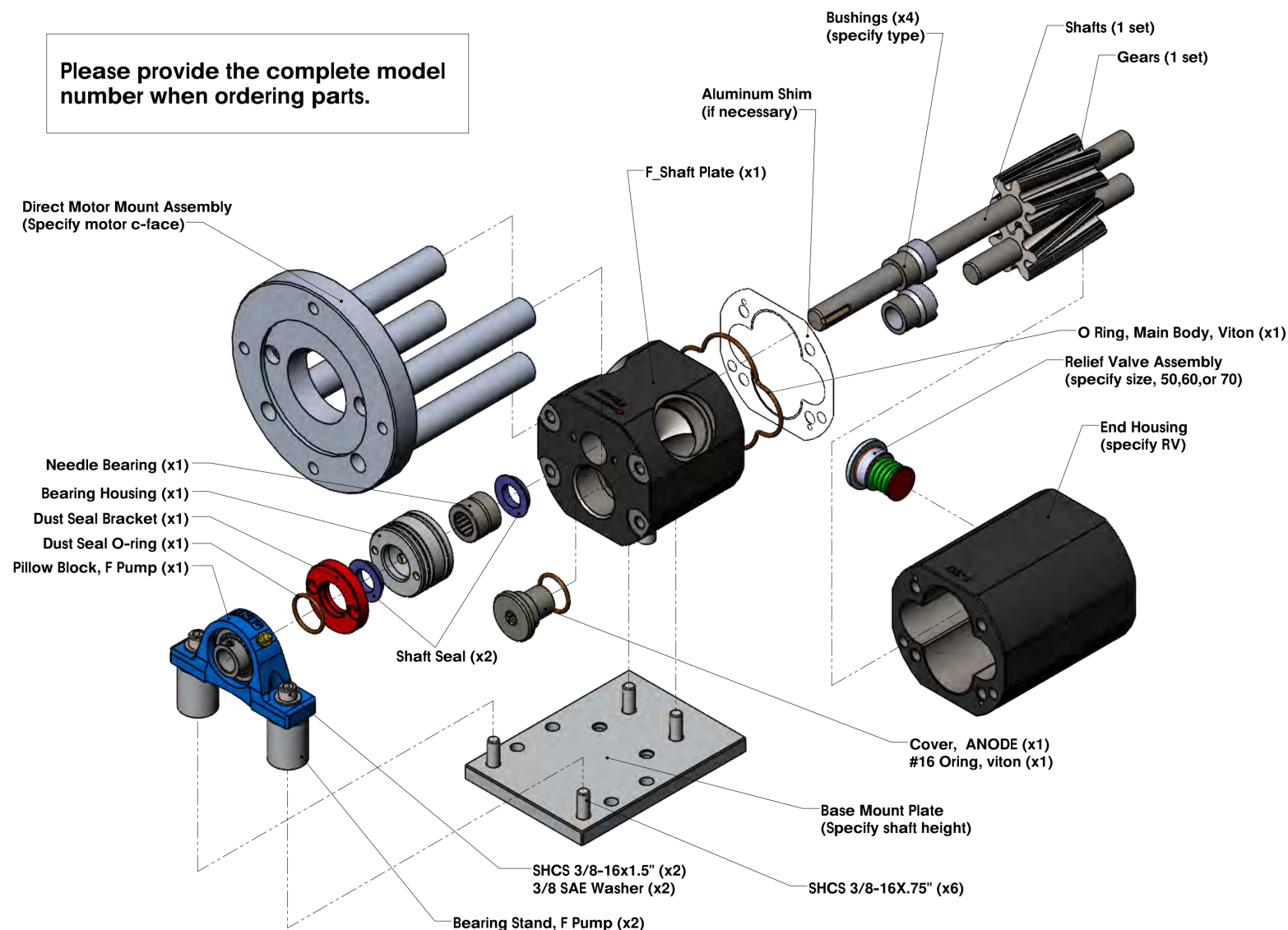


F07-F30: Idler shaft fits a through-bushing in the shaft plate.

F003-F04: Blind bushing; fixed idler shaft is only as tall as the idler gear.

6 Through-shaft pump parts

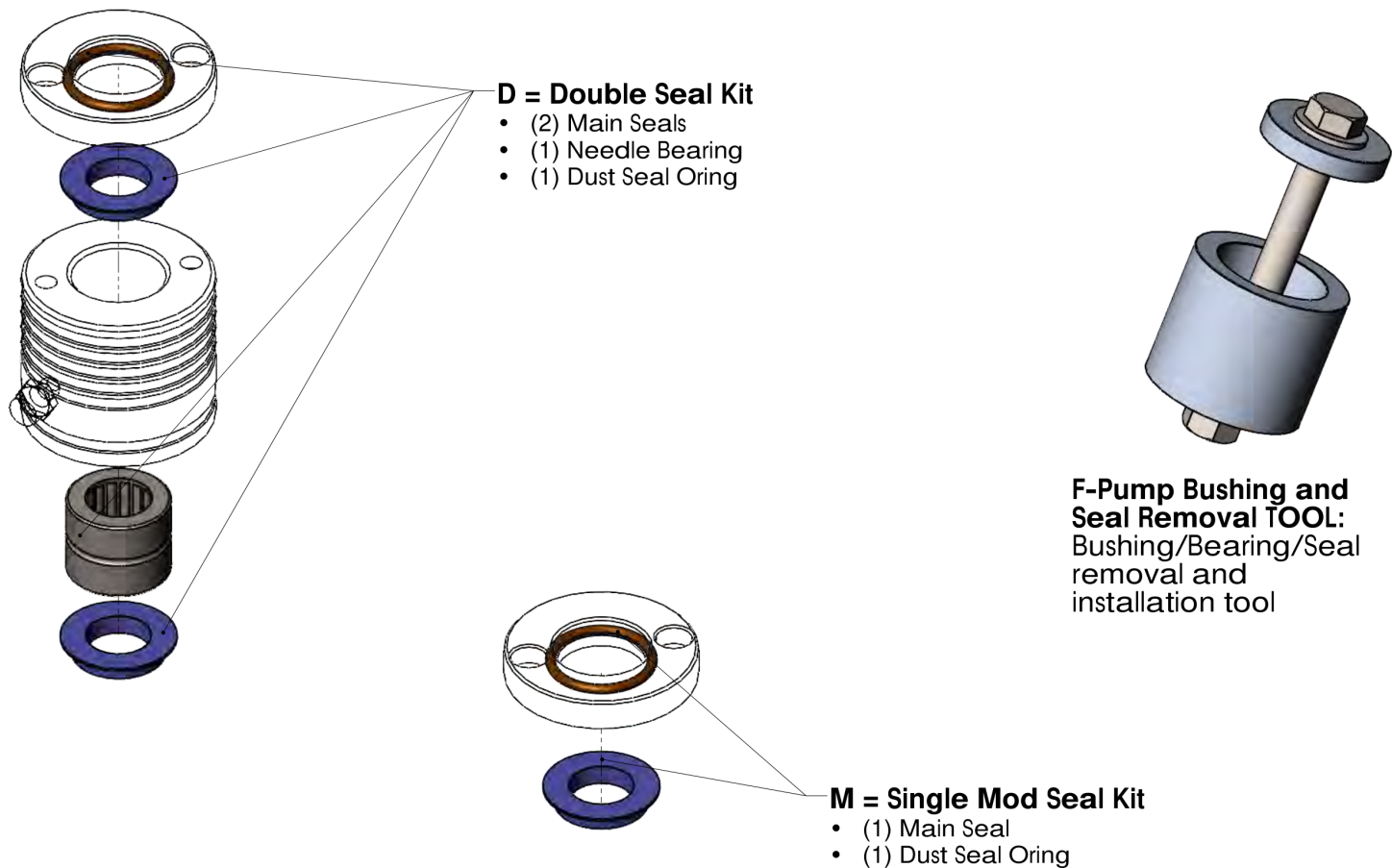
F07-F30 through-shaft arrangement. Match the installed seal, relief option and mounting interface.



This source view includes alternative pump mounting parts. Order the actual configuration by complete model and serial number. Use the assembly-specific tightening specification.

7 Shaft-seal kits

D double-seal and M modified single-seal assemblies; use the kit matching the installed housing.



D: two main seals, one needle bearing and one dust-seal O-ring. M: one main seal and one dust-seal O-ring. The FSeal assembly is identified separately on page 7.

8 Displacement-body rebuild

Through-shaft rebuild arrangement; confirm body size, seal kit and relief/anode configuration.

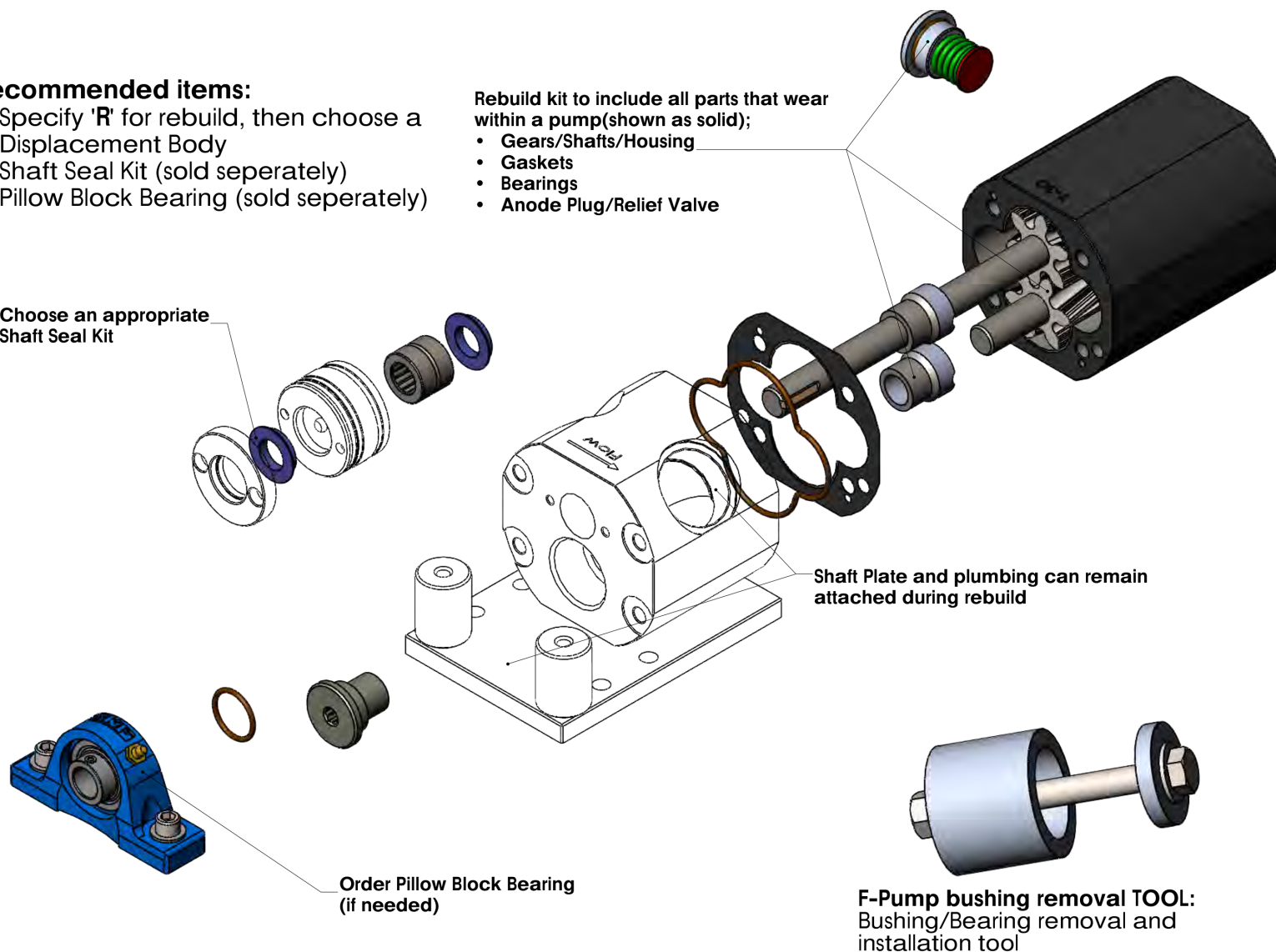
Recommended items:

- Specify 'R' for rebuild, then choose a Displacement Body
- Shaft Seal Kit (sold separately)
- Pillow Block Bearing (sold separately)

Rebuild kit to include all parts that wear within a pump (shown as solid);

- Gears/Shafts/Housing
- Gaskets
- Bearings
- Anode Plug/Relief Valve

Choose an appropriate Shaft Seal Kit



Shaft Plate and plumbing can remain attached during rebuild

Order Pillow Block Bearing (if needed)

F-Pump bushing removal TOOL:
Bushing/Bearing removal and installation tool

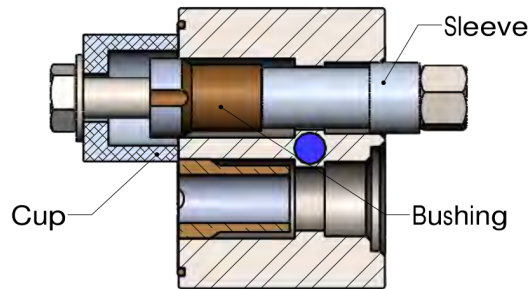
Support the pump parts and contain product. The illustrated shaft plate and plumbing can remain attached during rebuild. Seal and pillow-block kits are separate source items.

9 Bushing service

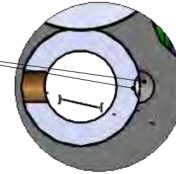
Tooling method for the illustrated through-bushing assemblies.

Bushing Removal and Installation

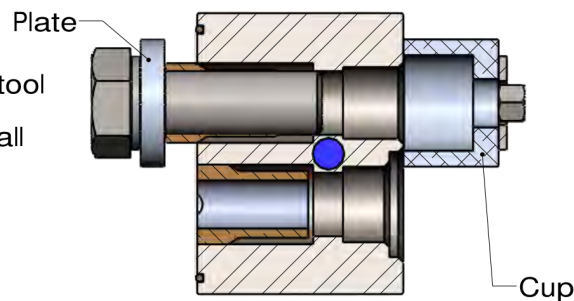
1) Use Rebuild tool as shown in drawing to remove both bushings



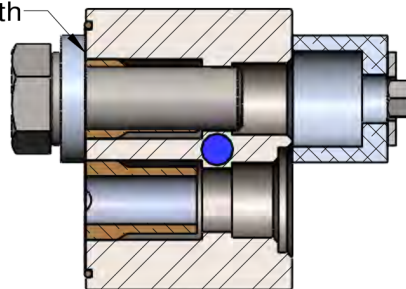
2) Align lubrication slot on bushing with feed chamfer on housing face



3) Use Rebuild tool as shown in drawing to install both bushings



4) Bushing face should be flush with housing face.

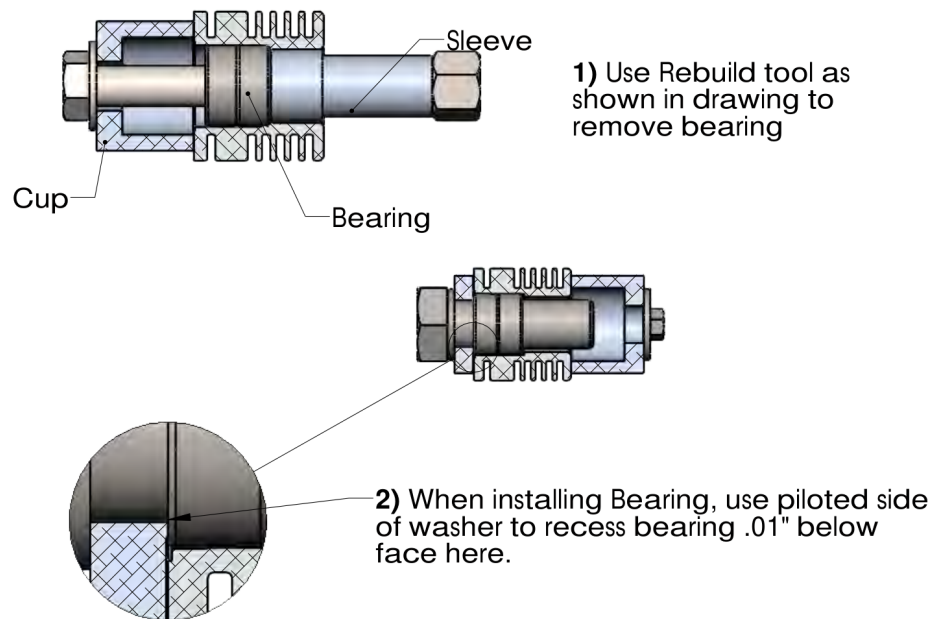


Align each lubrication slot with the housing feed chamfer and finish the bushing face flush with the housing face. This through-bushing procedure does not describe the small-pump blind bushing.

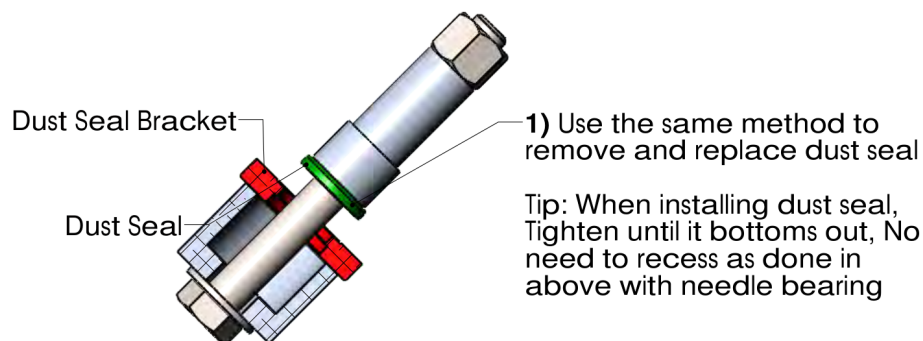
10 Needle bearing and dust seal

Use these methods only with the illustrated bearing housing and dust-seal bracket.

Needle Bearing



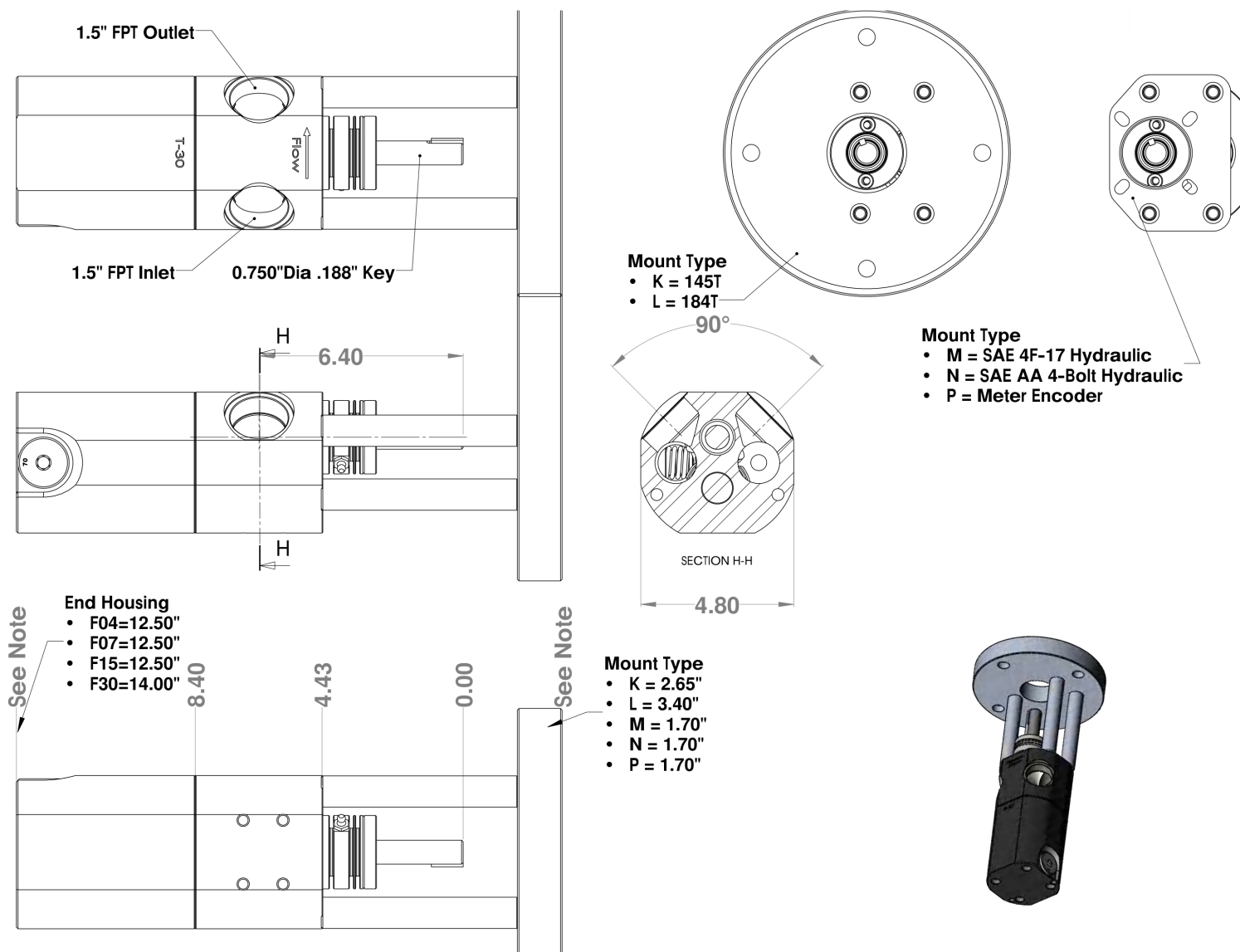
Dust Seal Removal



Use the piloted washer to recess the illustrated needle bearing 0.01 in below the housing face. Seat the dust seal as shown; do not apply the needle-bearing recess to it.

11 Face-mount pump dimensions

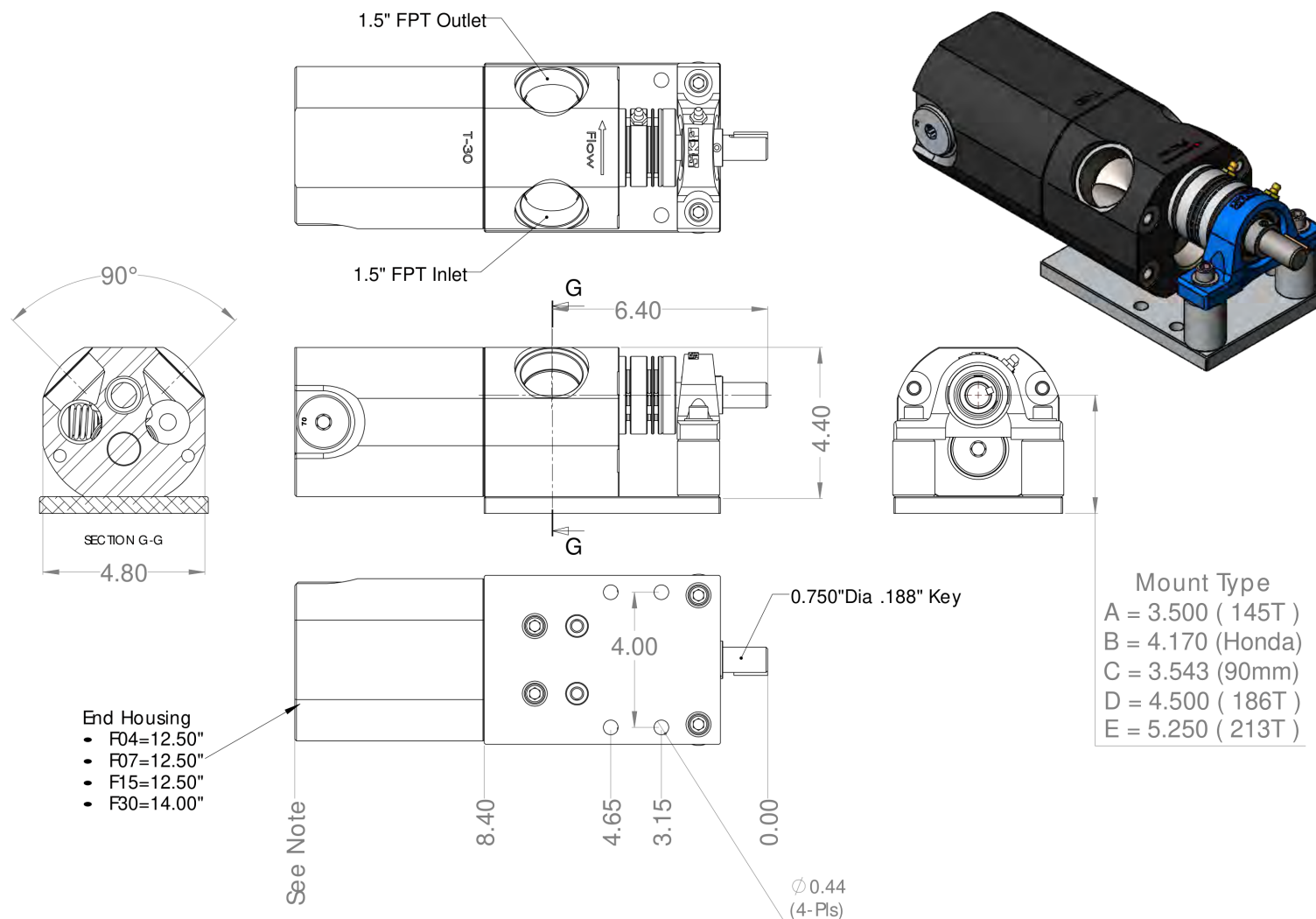
Original F04-F30 pump reference. Dimensions in inches unless indicated otherwise.



Match the actual motor/hydraulic interface and supplied assembly drawing. Source mount-code descriptions vary; confirm the physical flange. Obtain the model-specific drawing for F003-F02.

12 Base-mount pump dimensions

Original F04-F30 pump reference. Dimensions in inches unless indicated otherwise.



Select the installed base and shaft-center height. These are pump interface dimensions; system skid drawings are in the companion system manuals. Obtain the model-specific drawing for F003-F02.

13 Maintenance and service support

Keep pump identity and service history with the equipment.

Inspect and record

Check product leakage, mounting hardware, guards and changes in noise or measured delivery. Record product, temperature, pump RPM, discharge pressure and inlet vacuum when available.

Inspect the installed seal assembly and grease fitting. Use the lubricant and quantity specified for that assembly and temperature; do not mix unknown lubricants.

Before disassembly, identify the correct body, seal kit, bushings, clearances and tightening specification. Bolt size alone is not a torque specification.

Return to service

Isolate, depressurize and drain or contain product before opening the pump. Support removed components. After reassembly, refill the opened pump with compatible liquid, restore guards and restart slowly. Follow the matching system manual for piping, controls and line clearing.

SEND PHOTOS BEFORE CALLING

Send wide, well-lit, high-resolution photos from several angles: the complete pump, drive, piping, valve positions, controls and surrounding installation. Close-ups may supplement the wide views. BearCat can zoom in; it cannot zoom out.

Include model and serial numbers, product and temperature, operating readings, when the issue occurs, what still works, and recent work or replacements. For controlled systems, include HMI/PLC versions and drive indicators.

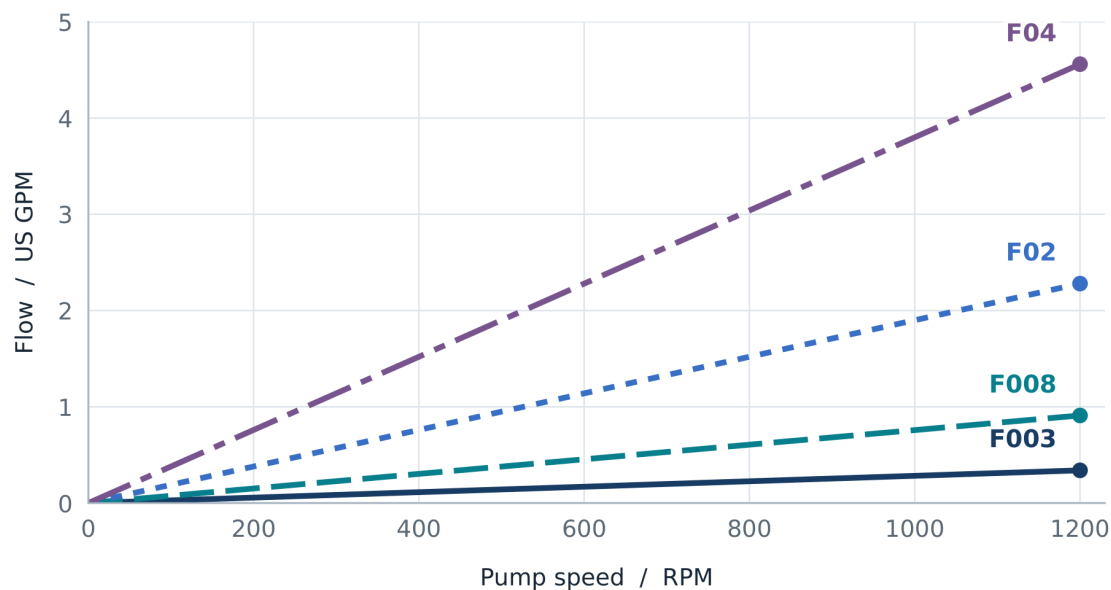
Rev E - 2026.09.19. Corrects heater-cavity leaders to the two front-face holes. Rev D improved screen-basket labels. Rev C added the screen-box detail and one-decimal reference-flow tables; Rev B added the integral screen box and liquid-lock explanation. Rev A (2026.09.18) established the shared pump reference. Sources: BearCat F-Pump (2023), VP (May 2025), Rev C curve data and BearCat design guidance.

14 F003-F04 pump curves

Flow and hydraulic power references. All models shown stop at 1,200 RPM.

01 FLOW / SPEED

Published flow references | F02 = 0.5 x F04

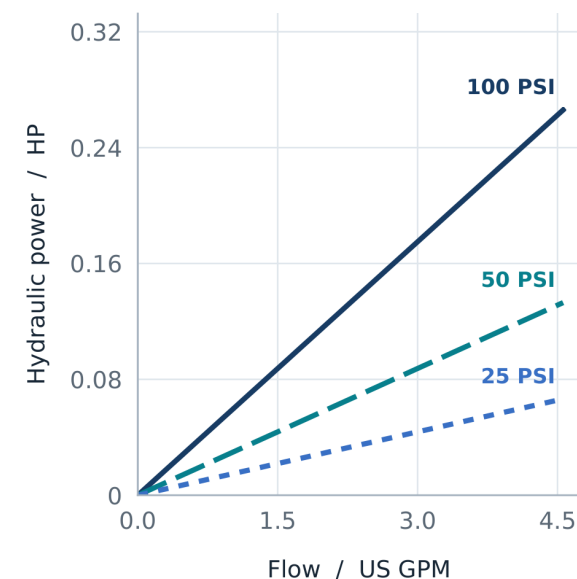


REFERENCE POINTS

Model	Reference flow at 1,200 RPM	
	GPM	lbs/min
F003	0.3	2.8
F008	0.9	7.6
F02	2.3	19.0
F04	4.6	38.0

02 HYDRAULIC POWER

Differential pressure across the pump



READ THE CURVES

Flow is a reference, not guaranteed delivery. Actual output depends on viscosity, pressure, inlet conditions and internal slip.

HP = GPM × differential PSI ÷ 1,714. This is hydraulic power only; friction, viscosity, efficiency and motor service margin are excluded.

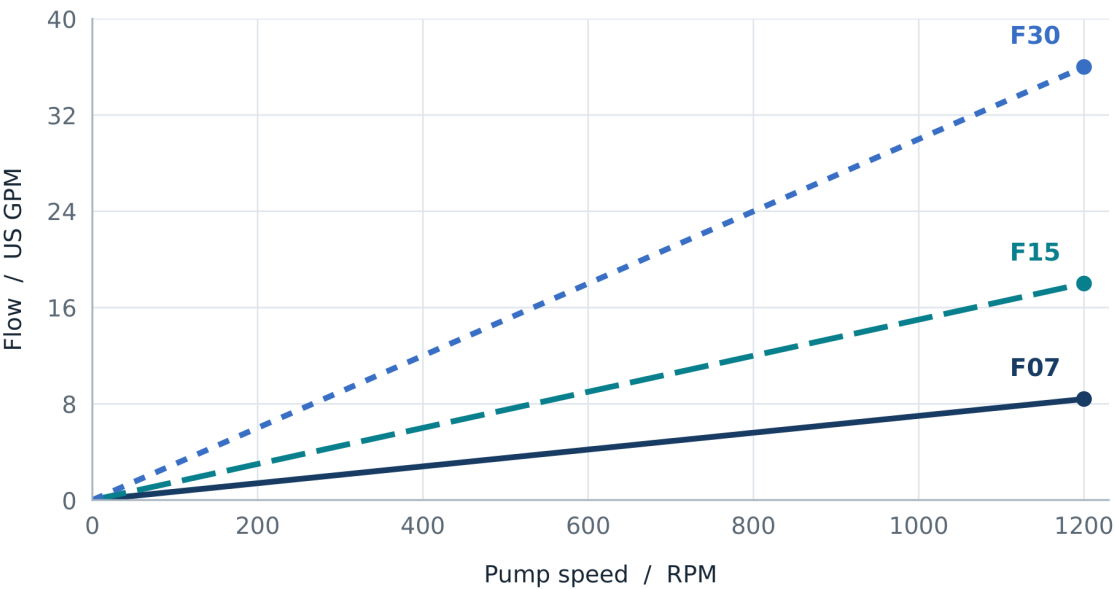
The 25 / 50 / 100 PSI lines are calculation examples, not pressure ratings or relief settings.

15 F07-F30 pump curves

Flow and hydraulic power references. All models shown stop at 1,200 RPM.

01 FLOW / SPEED

Nominal displacement flow

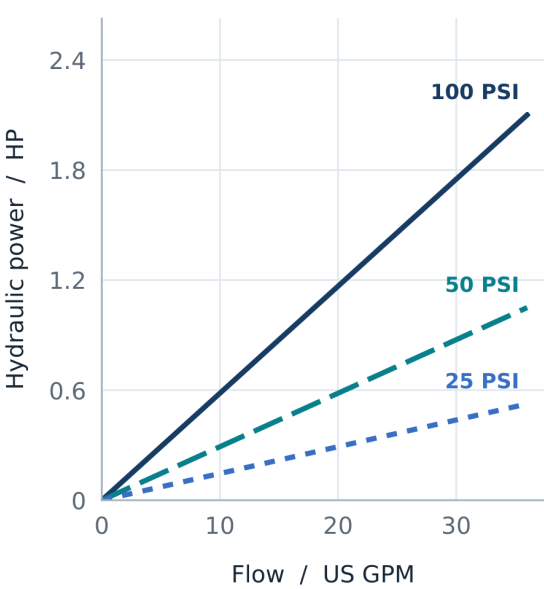


REFERENCE POINTS

Model	Reference flow at 1,200 RPM	
	GPM	lbs/min
F07	8.4	70.1
F15	18.0	150.1
F30	36.0	300.2

02 HYDRAULIC POWER

Differential pressure across the pump



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Flow is a reference, not guaranteed delivery. Actual output depends on viscosity, pressure, inlet conditions and internal slip.

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