



SCREENBOX SERIES

Screenbox Manual

1.5in | 4in | 6in

Installation, operation and maintenance

TECHNICAL MANUAL

Rev A | 2026.09.29

Document BCP-SB-SM

Common instructions with size-specific service



BearCat Pumps

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Identify your screenbox

This manual covers BearCat 1.5in, 4in and 6in screenboxes. Use the common instructions, then the section that matches the installed housing. The 2in model is reserved for a future revision and is not covered here.

1 Overview and safety	3
2 Installation and priming	4
3 Start-up, operation and shutdown	5
4 Basket cleaning - common procedure	6
5 1.5in screenbox	7
6 4in lid service	8
7 4in reference dimensions	9
8 4in parts and ordering	10
9 6in assembly and seals	11
10 6in reference drawing	12
11 Troubleshooting and support	13

Match the physical assembly

Size	Identification	Service pages
1.5in	Compact housing; O-ring lid and sight glass	7
4in / SC4	Two saddle clamps; one clamp has a lifting cam	8-10
6in / SC6	Bolted top plate; stacked housings and heated column	11-12

RATINGS ARE MODEL-SPECIFIC

The 4in ratings on page 8 apply only to that model. Pressure, temperature and flow limits for the 1.5in and 6in units are not established by the supplied references; confirm the installed unit with BearCat before specifying or operating outside its documented limits.

Overview and safety

A screenbox captures debris before it reaches the pump or downstream equipment. A clean basket and sound lid seal help preserve flow and keep suction-side air out. Select the screen opening for the material and the equipment being protected.

BEFORE OPENING OR DISTURBING A JOINT

Stop the pump, wait for rotation to stop and lock out the drive. Isolate all energy sources, including heating. Close valves that can feed the screenbox and verify zero pressure. Account for tank head, trapped liquid and the heating circuit.

Safety Blankets and hot-product protection

Any pump that is heated or pumping hot liquid should be operated with Safety Blankets properly installed. Provide protection against hot surfaces and hot-product spray at the screenbox. The equipment owner and operator are responsible for maintaining that protection. Wear suitable gloves, face protection and long sleeves.

Restore Safety Blankets and other protection removed for service before restarting. Blankets do not replace isolation, depressurization or PPE. Contain drained material and control exposure to hot or hazardous product.

Use the matching parts and procedure

Item	Rule
Basket	Install one basket at a time. Match its dimensions and opening to the housing and application.
Lid and seals	Match the actual assembly. The 4in clamp procedure does not apply to the bolted 6in top plate.
Heating	Use the supplied heating arrangement and its documented limits. Isolate the heating circuit separately for service.
Connections	A flange pattern identifies a connection; it does not establish the housing pressure rating.

Installation and priming

1 Provide access

Install in the intended upright orientation. Leave room above the lid for full basket withdrawal and around the clamps or top-plate bolts for service. Keep heating and any vent connections accessible.

2 Support and align

Support the piping independently. Align mating flanges without pulling them together with bolts. Allow thermal expansion without loading or twisting the housing.

3 Match connections and seals

Use the supplied adapters, compatible gaskets and undamaged O-rings. Check the size-specific reference pages before fabricating piping; confirm the actual assembly and flange specification.

4 Connect the heating arrangement

Connect heating only as specified for the supplied installation. The heated base or column helps liquefy retained material before start-up. Check both product and heating connections for leaks.

Priming depends on the installation

Model	Priming guidance
1.5in on vertical F-Series	Preserve the screenbox ledge and port elevations. The displacement body below the outlet and upward discharge retain a liquid charge between cycles.
4in beside a pump	The raised inlet retains liquid. For an initial prime, the 4in manual specifies 1-2 US gallons of compatible oil, added only with the pump stopped, isolated and at zero pressure.
6in	Establish a liquid prime using the supplied pump/system procedure. A priming quantity is not specified in the 6in assembly drawing.

KEEP AIR OUT

A suction-side joint may admit air without showing an external liquid leak. Check the lid seal and inlet joints when prime or metering becomes unstable.

Start-up, operation and shutdown

Before starting

Check	Ready condition
Basket and lid	Correct basket seated; seal clean and undamaged; lid and all retaining hardware secured by the matching procedure.
Flow route	Supply and discharge paths established; valves set for the intended direction.
Product and heating	Retained product is liquid and able to flow. The installed equipment remains within its documented limits.
Protection	Guards, required Safety Blankets and other hot-product protection fitted. Personnel clear and wearing suitable PPE.

Start slowly and watch the result

- 1 Open the supply gradually**
Avoid a sudden surge. Follow the installed valve procedure.
- 2 Run at minimum pump speed**
Confirm delivery and check the lid, seals, adapters and heating joints for leakage. Stop if flow does not establish; more speed does not replace a liquid prime.
- 3 Increase only after flow stabilizes**
Watch for falling flow, unusual noise, rising suction restriction, loss of prime or unstable metering. Stop and investigate a change from normal operation.

Shutdown

Stop the pump using the system procedure. Set valves and heating for the intended shutdown condition. Before opening the screenbox, carry out the isolation and zero-pressure checks on page 6.

AFTER THE FIRST HEAT CYCLE

Gaskets can relax as the assembly heats. Recheck connections by the approved gasket and bolting procedure after stopping, isolating and depressurizing. Do not adjust a leaking pressurized joint.

Basket cleaning - common procedure

HOT PRODUCT AND STORED PRESSURE

Plan cleaning while the material can still be removed safely. Isolate and verify zero pressure before releasing any lid hardware. No discharge from a blocked vent is not proof of zero pressure.

1 Stop, lock out and isolate

Stop the pump and wait for rotation to stop. Lock out the drive. Isolate heating and close upstream and downstream valves that can feed the housing.

2 Verify zero pressure

Use the installed pressure-verification procedure. Check both the product space and the heating circuit before work on either. Do not assume a stopped pump means the housing is depressurized.

3 Open by the correct procedure

Follow page 7 for 1.5in, page 8 for 4in or page 11 for 6in. Record the lid and basket orientation before removal.

4 Clean and inspect

Clean the basket by a method compatible with the product and screen. Inspect for torn mesh, distorted frames and blocked openings. Inspect lid seals, grooves, sealing faces and retaining hardware; replace damaged parts.

5 Reassemble and verify

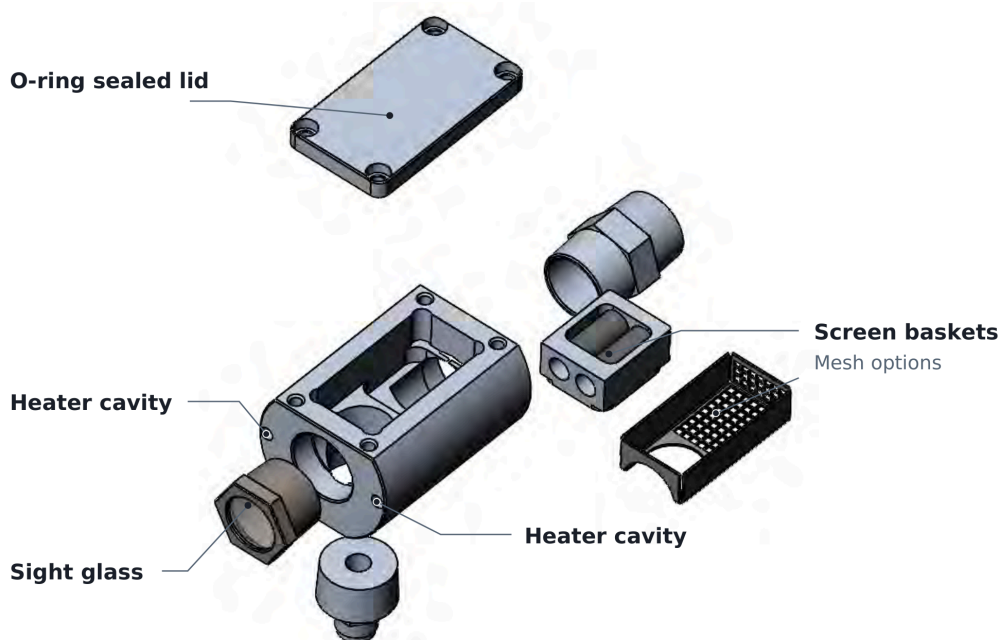
Seat the basket and correct seal without debris or distortion. Secure the lid using the matching procedure. Restore protection and the valve/heating lineup. Restart slowly and confirm leak-free delivery.

CHOOSE THE CLEANING FREQUENCY FROM THE SERVICE

Check basket loading when flow falls, suction restriction increases or debris changes. Establish the cleaning frequency from actual material and operating experience; do not keep running against a loaded screen.

1.5in screenbox

Compact screenbox with an O-ring-sealed lid, removable screen and sight glass. The view below shows the integral arrangement used with a vertical F-Series pump; supplied port-adaptor arrangements vary.



Basket and lid service

- 1 Isolate before lid removal**
Complete page 6. Record the installed lid and screen orientation. Remove the lid retaining hardware only after zero pressure is verified.
- 2 Clean the screen and inspect the seal**
Remove the screen. Inspect the lid O-ring, sealing faces and sight glass. Replace damaged parts with items matched to the actual assembly.
- 3 Refit and check**
Seat one matching screen, refit the undamaged O-ring and secure the lid by the supplied hardware procedure. Restart slowly and check for leaks.

For parts, send the screenbox and pump identity, screen opening and clear photographs. The source does not provide a 1.5in lid-bolt torque or a complete seal part-number list; obtain the matching service data from BearCat.

4in lid service and operating limits

The 4in housing uses two saddle clamps. One clamp has a cam extension for lifting the lid from its seal. Follow these steps after the common isolation procedure on page 6.

- 1 Verify pressure and vent condition**
 Use the approved pressure-verification procedure. Carefully loosen the air-bleed cap without removing it. If air or liquid escapes, retighten and eliminate the pressure source before proceeding.
- 2 Release the clamps**
 Once zero pressure is verified, loosen the saddle-clamp bolts enough to pivot the clamps 90 degrees. Pivot the cam clamp past 90 degrees to lift the lid from its seal.
- 3 Clean and refit**
 Clean the basket, O-ring and housing seal face. Apply compatible anti-seize to the top flat of the housing where the seal seats. Refit the basket and lid in their original orientation.
- 4 Secure the lid**
 Tighten clamp bolts until the lid contacts the housing, then an additional 1/4-1/2 turn. Tighten the air-bleed cap. If the lid or clamps do not seat normally, correct the fit before restarting.

4in ratings - apply only to this model

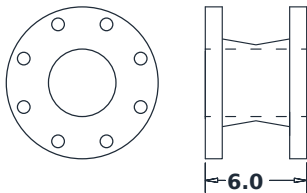
Limit / reference	4in value
Maximum operating pressure	50.0 PSI (3.5 bar)
Maximum operating temperature	500°F (260°C)
Coarse basket reference flow	500.0 GPM (1,890.0 L/min)
Fine basket reference flow	250.0 GPM (950.0 L/min)

Flow values are references under ideal conditions. Viscosity, material, basket loading and piping can reduce actual flow. Use the lowest applicable limit for all installed components.

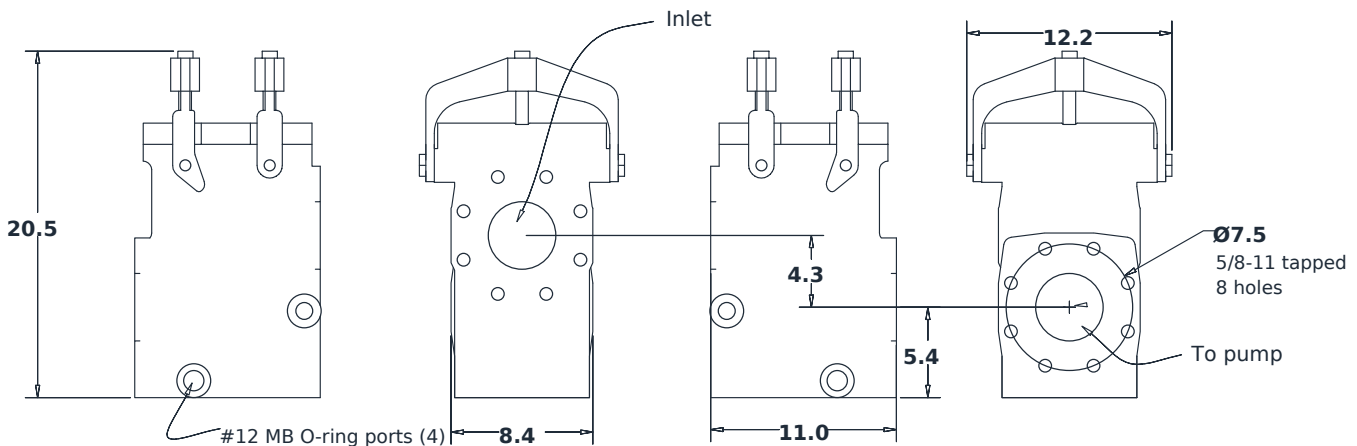
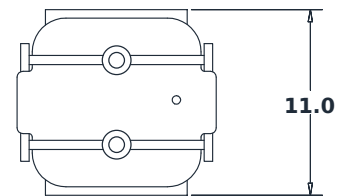
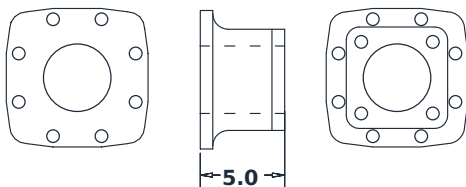
4in reference dimensions

Reference dimensions in inches. Use the supplied assembly drawing for final piping layout and fabrication.

4in to 4in adapter



4in to 3in adapter



Port connections

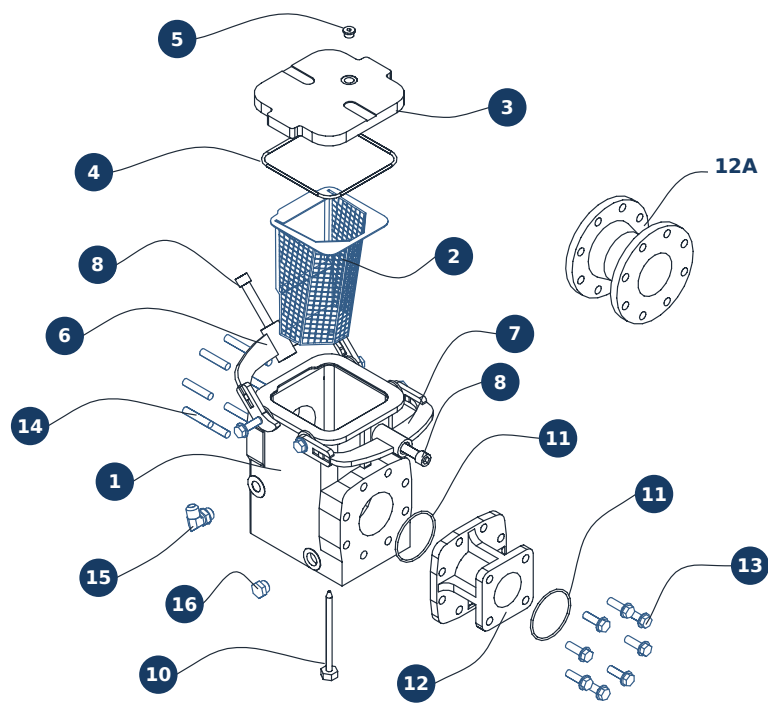
The housing opening is a 5-inch pump port with the bolt pattern of a 4-inch ANSI 150 flange. The drawing shows 4-to-4 and 4-to-3 adapters. For a 5-inch line connection, obtain the appropriate flange specification from BearCat.

LEAVE SERVICE ACCESS

Allow basket withdrawal above the lid and full clamp swing beside the housing. The connection pattern does not change the 50.0 PSI screenbox limit.

4in parts and ordering

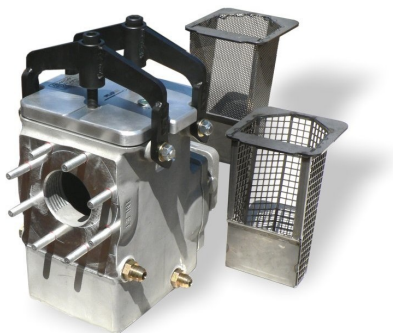
Item numbers match the 4in assembly view. Specify screenbox size, basket option and actual port-connector arrangement when ordering.



Item	Description
1	Main housing
2	Basket - fine or coarse
3	Lid
4	Lid O-ring
5	Vent cap with O-ring
6	Saddle clamp with cam
7	Saddle clamp
8	Saddle-clamp bolt
10	Base plug with rod
11	Port-connector O-ring
12	3-to-4 pump-port connector
12A	Other ANSI port connectors
13	5/8-11 x 2 in hex bolt
14	5/8-11 x 3 in stud
15	#12 MB to #12 MJ, 90° elbow
16	#12 MB plug

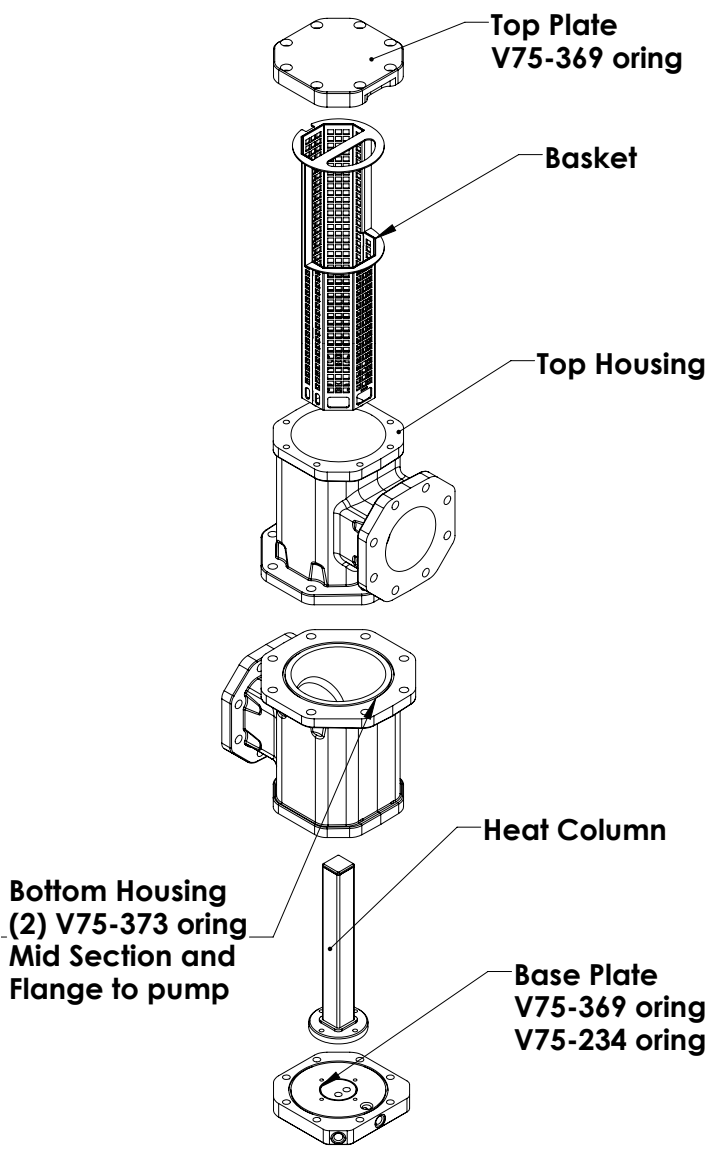
Basket selection

Coarse is the standard selection for current builds; choose fine when smaller debris must be captured. Match the screen to the equipment being protected and confirm the opening when ordering. Install one basket at a time.



6in assembly and seals

The 6in heated screenbox has a bolted top plate, stacked top and bottom housings, a removable basket, heat column and base plate. The top housing can be clocked in 90-degree increments relative to the bottom housing.



Location	Drawing identification
Top plate	V75-369 O-ring
Bottom housing	(2) V75-373 O-rings: mid-section and flange to pump
Base plate	V75-369 O-ring and V75-234 O-ring
Internal parts	Basket; heat column

Basket access

After isolation and verified zero pressure, remove the top-plate hardware and top plate. Withdraw the basket, clean and inspect it, then refit the basket, matching top-plate O-ring and plate.

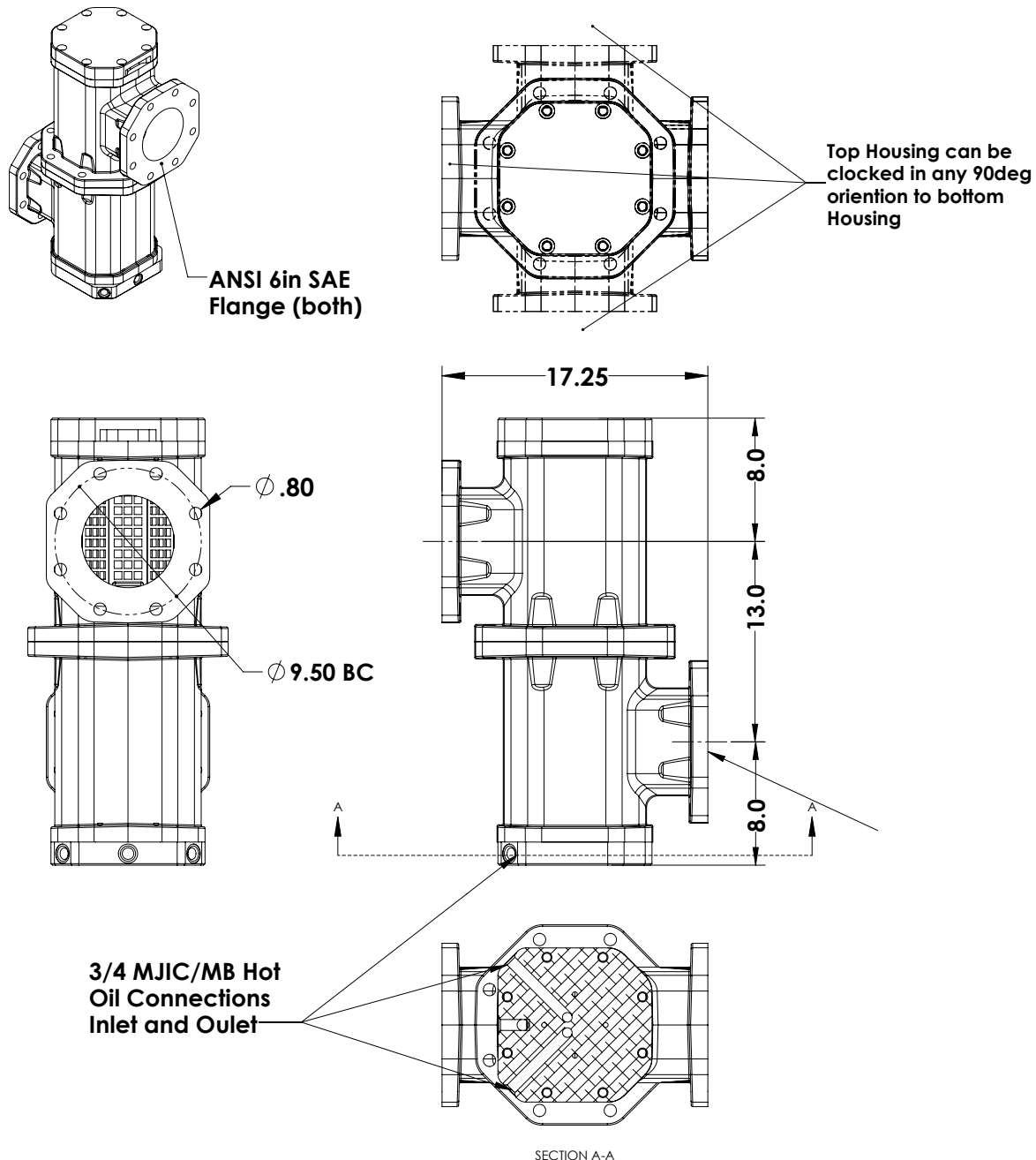
Secure the top plate with the supplied bolting procedure before restoring protection and restarting slowly. Do not use the 4in clamp tightening instructions.

HOUSING AND HEATING SERVICE

Basket cleaning does not require dismantling the housing stack or heating column. Before separating those joints or changing housing orientation, obtain the matching assembly/bolting procedure from BearCat. The drawing does not specify bolt torque.

6in reference drawing

Dimensions in inches, reproduced from the supplied 6in Heated Screen Box assembly drawing, Rev A. Use the verified supplied assembly for final fabrication.



CONFIRM THE MATING FLANGE

The source labels the ports "ANSI 6in SAE Flange (both)" and shows a 9.50 in bolt circle with 0.80 in holes. Confirm the flange standard and mating hardware with BearCat before ordering or fabricating. Heating inlet/outlet are labeled 3/4 MJIC/MB.

Troubleshooting and support

Record the symptom and operating readings before changing anything. Change one condition at a time. Use the isolation procedure before internal inspection.

Symptom	Check	Action / expected result
Little or no delivery	Product state, valve lineup, prime and basket loading.	Stop; restore liquid prime or clear restriction. Restart slowly and verify delivery.
Flow falls during a run	Basket debris; viscosity or temperature change; inlet restriction.	Compare with the previous condition. Clean or correct the cause and confirm flow recovers.
Unstable metering	Suction-side air entry, lid seal and inlet connections.	Correct the leak or supply problem. Record readings before changing meter settings.
Lid or joint leakage	Seal damage, debris, lid seating, gasket relaxation or piping strain.	Stop and isolate. Repair the joint or damaged parts; verify leak-free low-speed operation.

SEND PHOTOS BEFORE CALLING

Send wide, well-lit, high-resolution photos of the **complete installation from several angles**: screenbox, pump, drive, piping, valve positions, controls and surroundings. Add a closer view of the affected area. BearCat can zoom in, but cannot zoom out.

Include size and identifying marks, basket and port arrangement, product and temperature, pump speed, flow/pressure readings, what still works, when the fault occurs and recent work. Include screen messages, software revisions and PLC/drive indicators when relevant.

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Revision and source basis

Revision / date	Change and engineering basis
A / 2026.09.29	First consolidated manual. 4in Manual Rev B; F-Series Pump Manual Rev E; supplied 6in assembly drawing Rev A and photograph. 2in reserved for a later revision.