

BEARCAT PUMPS

SCREENBOX SERIES

4in Screenbox Manual

Installation, operation and maintenance

TECHNICAL MANUAL

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4-inch-port model

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Index and operating limits

For the BearCat **4in Screenbox** used in asphalt pumping and metering systems. The procedures cover the two-clamp lid, removable basket, port adapters and heated base shown in this manual.

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Operating limits

Limit	Value
Maximum operating pressure	50.0 PSI (3.5 bar)
Maximum operating temperature	500°F (260°C)

Use the lowest applicable limit for the supplied screenbox, seals, fittings and connected equipment. The flange pattern does not raise the screenbox pressure limit.

Reference flow

Basket	GPM	L/min
Coarse	500.0	1,890.0
Fine	250.0	950.0

Published reference capacities under ideal conditions. Viscosity, material, screen loading and piping can reduce actual flow. Specify the basket opening for the application when ordering.

Overview and safety

The 4in Screenbox removes debris ahead of the pump or meter. Its sealed lid helps prevent suction-side air entry, and its raised inlet retains liquid near an adjacent pump for the next prime.

SAFETY BOUNDARY

Before opening the lid or disturbing piping, stop the pump, wait for rotation to stop, lock out the drive and isolate all energy sources. Close the valves that can feed the screenbox and verify zero pressure. Account for hot product, tank head pressure and the heating circuit.

Two basket options

Coarse basket

For high-flow service and protection of the pump and downstream components.

Fine basket

For smaller debris that may obstruct downstream spray nozzles or equipment.



The two baskets shown are alternatives. **Install one basket at a time.**

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.

Keep Safety Blankets and other hot-product protection properly fitted and maintained for the supplied installation. Restore protection removed for service before restarting. Blankets do not replace isolation, depressurization or PPE.

Installation and priming

1

Place the screenbox for access

Install upright, close to the pump inlet where practical. Leave room to loosen and swing the clamps, lift the lid and remove the basket. Keep the vent and heating connections accessible.

2

Support and align the piping

Align mating flanges without pulling them together with the bolts. Check alignment only with the system isolated, depressurized and safe to work on. Correct piping that springs, twists or moves out of parallel when released.

3

Allow for expansion and heat

Support the piping so thermal expansion does not load the housing. Connect the supplied heating arrangement as specified for the installation. The oil-jacketed base helps re-liquefy retained material before start-up.

4

Fit the connectors and seals

Use the supplied port-adaptor arrangement, compatible gaskets and undamaged O-rings. The reference drawing is on page 7; confirm the actual assembly before fabricating piping.

Retain a liquid prime

The inlet is above the outlet to the pump. This geometry retains some liquid when lines are emptied by reversing the pump. The retained charge assists the next start once the material is liquid.

For an adjacent pump that needs an initial prime, add **1-2 US gallons** of oil compatible with the product and the pump. Add it only with the pump stopped, the screenbox isolated and zero pressure verified.



Example pump and metering installation.
Supplied arrangements vary.

KEEP AIR OUT

A clean lid seal and sound inlet connections help keep air out of the pump and mass-flow meter. An external liquid leak may be absent even when a suction-side joint admits air.

Start-up and operation

Before starting

Check	Ready condition
Lid, basket and vent	Basket seated; lid correctly oriented; both clamps secured; vent cap tightened.
Flow route	Supply and discharge paths are established; valves are set for the intended direction.
Product and heating	Retained material is liquid and able to flow. Product and equipment remain within their applicable limits.
Protection	Guards, Safety Blankets where required, and other hot-product protection are properly installed. Personnel are clear and wearing the required PPE.

Start slowly, then verify

1 Open the supply gradually

Open upstream valves slowly to avoid a pressure surge. Allow about 10 seconds to fully open a quarter-turn plug valve; follow the installed valve procedure.

2 Run the pump at minimum speed

Confirm delivery, pressure and leakage before increasing speed. Watch the lid, adapters and connected piping. Stop if delivery does not establish; increasing speed is not a substitute for a liquid prime.

3 Increase to normal operation

Increase speed cautiously only after flow is stable and connections are leak-free. Watch for reduced flow, loss of prime, unusual noise, suction restriction or unstable metering.

AFTER THE FIRST HEAT CYCLE

Gaskets can relax as the assembly heats. Recheck the flange connections using the approved gasket and bolting procedure after stopping, isolating and depressurizing the system. Do not loosen or tighten a leaking pressurized joint during operation.

Basket cleaning and lid service

HOT PRODUCT AND STORED PRESSURE

Service while the material remains liquid enough to remove safely. Isolate the screenbox and verify zero pressure before releasing either clamp. A blocked vent may hide trapped pressure; no discharge at the vent is not proof of zero pressure.

1 Stop and isolate

Stop the pump and wait for all rotation to stop. Lock out the drive, isolate the heating source and close the upstream and downstream valves that can feed the screenbox.

2 Verify zero pressure

Use the approved pressure-verification procedure. Carefully loosen the air-bleed cap without removing it. If air or liquid escapes, retighten it and eliminate the pressure source before proceeding.

3 Release the lid

Once zero pressure is verified, loosen the saddle-clamp bolts enough for the clamps to pivot 90 degrees. One clamp has a cam extension; pivot it past 90 degrees to lift the lid off its seal.

4 Clean and inspect

Lift out the basket and clean it by a method compatible with the product and screen. Inspect the basket, lid, O-ring, clamp hardware and sealing faces. Replace damaged parts.

5 Reassemble

Reinstall the basket. Clean the lid O-ring and housing sealing face. Apply compatible anti-seize to the top flat of the housing where the seal seats. Refit the lid in its original orientation.

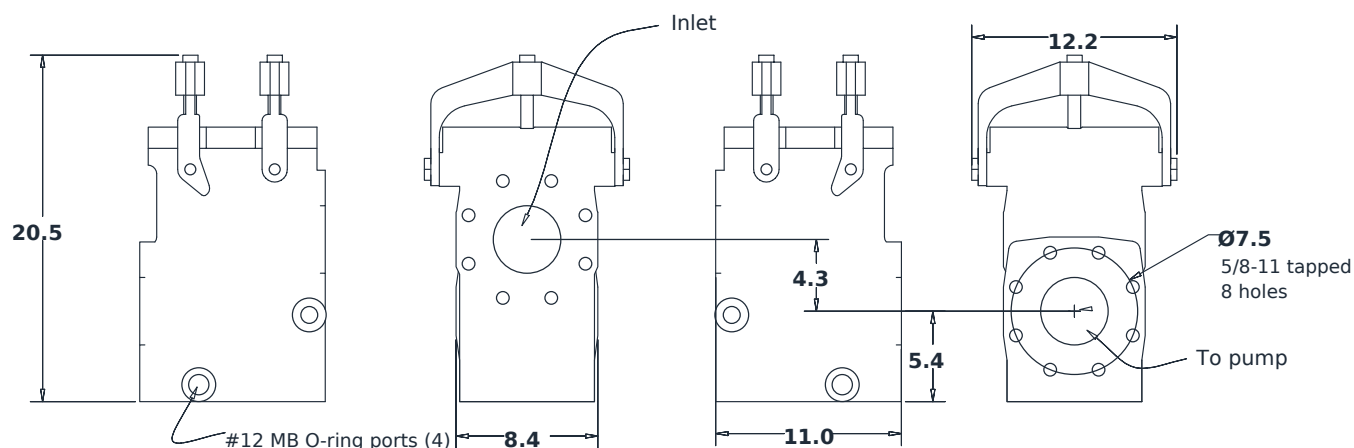
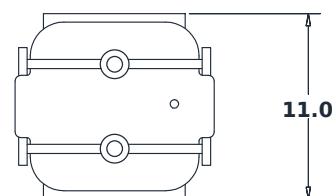
6 Secure and restart

Tighten the clamp bolts until the lid contacts the housing, then an additional 1/4-1/2 turn. Tighten the air-bleed cap. Restore the operating lineup, Safety Blankets and other protection removed for service. Restart at low speed and check for leakage.

If the lid will not seat or the clamps do not engage normally, stop and correct the fit before running. Do not force the lid down over debris or a displaced basket.

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

Technical drawing of a circular flange. The front view shows a circle with 8 small circles (holes) arranged in two concentric rings. The side view shows the flange's profile with a width dimension of 6.0.

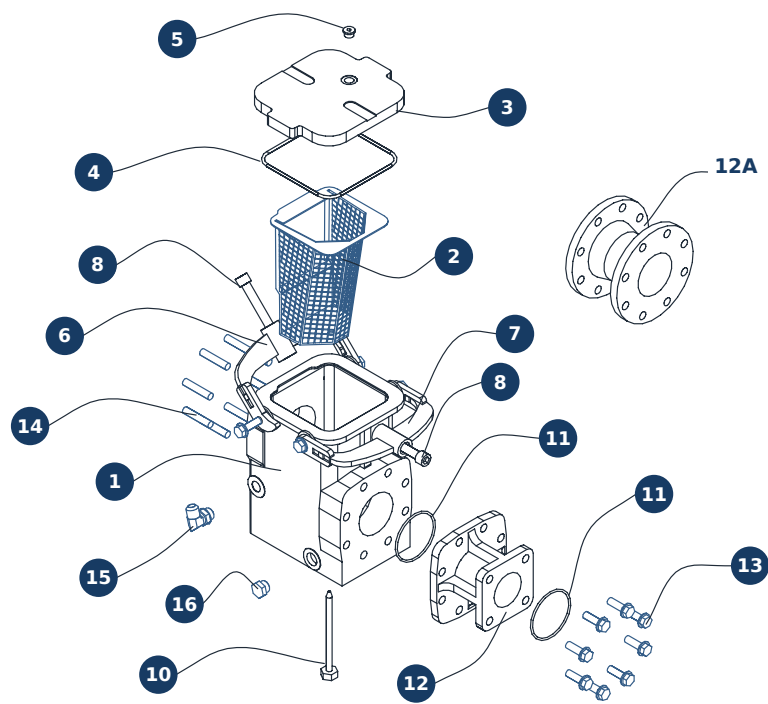


The housing opening is a 5-inch pump port with the bolt pattern of a 4-inch ANSI 150 flange. The drawing shows 4-to-4 and 4-to-3 adapters. For a 5-inch line connection, obtain the appropriate flange specification from BearCat.

Allow space above the lid for basket removal and beside both clamps for their full swing. Adapter and piping arrangements affect the installed envelope. The connection pattern does not change the 50.0 PSI screenbox limit.

Parts and ordering

Use the item numbers below with the original assembly drawing. Specify **4in Screenbox**, the port-connector arrangement and the basket option when ordering.



Item	Description
1	Main housing
2	Screen 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 options

Fine and coarse baskets serve different duties. Identify the installed opening and required filtration before ordering; use one basket at a time.

Match the supplied arrangement

Adapter and heating connections vary. Send a photograph of the assembly and the requested item so the replacement can be matched to the equipment.

Item numbers match the assembly drawing. Refer to the service procedure before disassembly.

Troubleshooting and support

Record the symptom and readings before changing anything. Change one condition at a time, then compare the result. Use the isolation procedure before any internal inspection.

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

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 the screenbox size and identifying marks, basket and port arrangement, product and temperature, pump speed, flow and pressure readings, what still works, when the problem occurs, and recent work. For a controlled system, include the screen message, software revisions and PLC/drive indicators when relevant.

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Revision record

Revision / date	Change
B / 2026.09.20	Modernized drawings; corrected adapter bolt-hole positions. Removed pump pressure-protection discussion; clarified Safety Blankets checks.