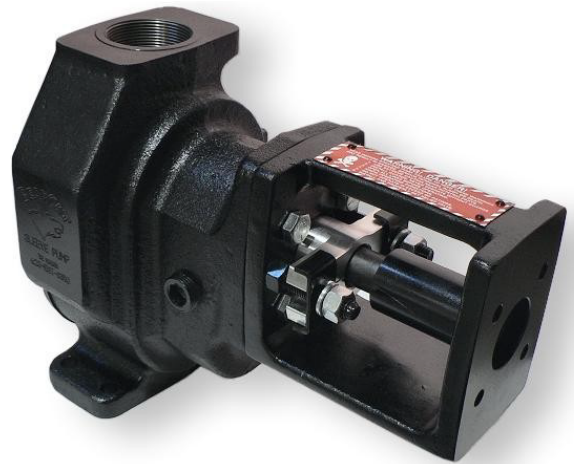




LEGACY CRACK-SEALER PUMP

110 / 170 Crack Sealer Pump

Installation, operation, maintenance and field service



OBSOLETE PRODUCT

Current replacement platform: Delta series

Use this manual for installed 110 and 170 pumps. Specify Delta series pumps for new builds and field replacements.

REVIEW DRAFT

Rev E | 2026.09.03

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LEGACY SUPPORT MANUAL

110 / 170 installed-pump service

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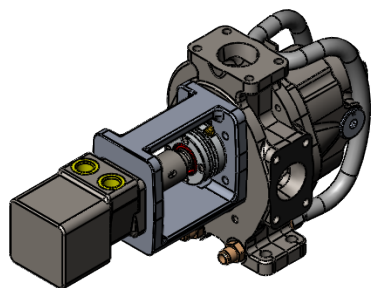
Obsolete product and contents

OBSELETE PRODUCT - DELTA SERIES REPLACEMENT

The BearCat 110 and 170 crack-sealer pumps are obsolete. Use this manual only to support pumps already in service. BearCat's Delta series is the current platform for new equipment and field replacements.

Selecting a Delta replacement

Do not replace a 110 or 170 by model number alone. Confirm displacement, heat, pressure protection, shaft seal, bushing, mount, ports and controls with BearCat Pumps for the actual machine and material.



Delta series pump - current replacement platform; exact configuration is application-specific.

FIELD NOTE | The 110/170 earned its retirement one packing adjustment at a time.

Field-support contents

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Revision history

[OPEN DELTA PUMP MANUAL](#)

Rev	Date	Change
B	2026.09.03	T7 rebuild; obsolete-product and Delta notice.
C	2026.09.03	Layout refinement and lip-seal context.
D	2026.09.03	Corrected section spacing.
E	2026.09.03	Condensed to an 11-page legacy field-support manual.

Safety essentials

Read the complete machine manual and material Safety Data Sheet (SDS). Installation, operation and service are for qualified personnel familiar with hot crack-sealing material, hydraulic drives and positive displacement pumps.

HOT MATERIAL - PROTECT FACE AND SKIN

Wear long sleeves, heat-resistant gloves, a face shield, safety footwear and clothing appropriate for the material and temperature whenever starting, operating or servicing the pump. Any pump that is heated or pumping hot liquid should be operated with Safety Blankets properly installed.

Before service

1	Stop the drive and lock out or otherwise secure every energy source against unexpected movement.
2	Isolate the pump. Open or vent the system through a safe path and verify zero pressure. Trapped hot material may remain pressurized after shutdown.
3	Allow enough time for the pump and material to cool. Follow the SDS and the machine builder's service procedure.
4	Never loosen a port, plug, relief component, packing gland or fastener to test whether pressure is gone.

Before and during operation

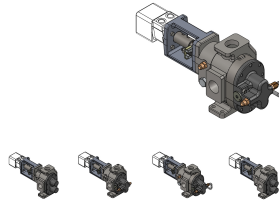
Check	Required condition
Guards	Installed over the coupling, shaft and other moving parts.
Safety Blankets	Installed, secure and undamaged. Replace missing or damaged blankets before use.
Flow path	A safe discharge or recirculation path is open before the pump starts. Never deadhead the pump.
Work area	People and tools are clear of ports, joints, the relief return, hot surfaces and rotating parts.

STOP IMMEDIATELY FOR:

Leakage or spray; a missing blanket or guard; abnormal noise, vibration or cavitation; stalled rotation; loss of flow; or an unexplained pressure rise.

Identification and installation

Use the complete model code when ordering parts or requesting service. Similar-looking pumps may have different displacement, heat and relief configurations.



Code	Meaning
BC / CI / CR	BearCat / Cimline / Crafco equipment configuration
110	0.11 gallon per revolution
170	0.17 gallon per revolution
H	Heated housing
R	Heated end plate with internal relief valve
X or blank	Non-heated housing or standard end plate, as applicable

Common field models include CI-110, BC-110HR, CR-170HR and CR-110H. Verify the actual nameplate; the hydraulic motor and connection fittings are not part of the base pump.

Install and pre-start

- Mount the pump securely, align the drive and install a fixed coupling guard. Support piping independently.
- Keep the inlet full-size, short and unrestricted. Route every relief or bypass return to a safe, unrestricted destination.
- Connect heat only on a configuration designed for it. Warm the pump and material by the approved machine procedure before starting.
- Confirm drive direction, speed and torque limits for the actual application. Do not use the pump ports to pull piping into alignment.

Pre-start check

Check	Required condition
Identity	Correct model and heat/relief configuration
Mechanical	Pump secure; piping supported; coupling aligned; guard installed
Hot material	Safety Blankets installed; pump and material at approved temperature
Flow path	Discharge or recirculation path open; relief return unrestricted
Work area	People and tools clear; no visible leakage or loose components

Operation, shutdown and pressure

Use the machine builder's valve sequence. The pump must always have a safe, open flow path while it turns.

Start and operate

1	Complete the pre-start check. Heat the pump and material to the approved processing temperature.
2	Open a safe discharge or recirculation path. Do not start against a closed path or congealed material.
3	Start at low speed. Verify rotation, flow and normal sound before increasing delivery.
4	Set delivery with the approved recirculation or drive control. Open the wand/application valve fully during use.

During operation

Observe	Required response
Leaks or spray	Stop. Keep clear; isolate, vent and cool before inspection.
Noise, vibration or cavitation	Stop before damage progresses. Check heat, inlet supply, mounting and obstruction.
Loss of flow or stalled rotation	Stop. Do not increase drive pressure or close another valve to force material through.
Pressure rising or relief repeating	Stop and locate the restriction. Verify the complete pressure-protection path.

RELIEF VALVE IS NOT A PRESSURE REGULATOR

The listed setting is where the valve begins to open - not a guaranteed maximum pressure. Opening is progressive, so pressure rises as bypass flow increases and also depends on material, speed and relief-path capacity.

Pressure protection

- Provide suitable pressure protection on every installation. Use an external relief device when the pump has no internal valve.
- Keep the jump hose or relief return unrestricted. Never rely on the relief valve to make closed-discharge operation safe.
- After relief service or a system change, verify start-to-open behavior using the actual material, temperature, pump speed and bypass condition.

Shutdown

Use the machine's normal shutdown sequence. Before service: stop and lock out the drive; isolate and vent the system; verify zero pressure; and allow the pump to cool.

Packing adjustment and replacement

Controlled packing leakage provides lubrication. The goal is a stable, small leak without overheating the shaft or gland - not zero leakage.

NORMAL OPERATING TARGET

Adjust for approximately one drop per minute while operating, unless an approved configuration-specific procedure states otherwise. Observe from a safe position. Stop and lock out the machine before touching the gland or nuts.

Adjustment

- If leakage is excessive, stop, lock out, vent and cool the pump before adjustment.
- Tighten both gland nuts evenly in small increments. Restart and observe leakage from a safe position after each adjustment.
- Do not overtighten. Excess compression can overheat or seize the shaft and accelerate packing wear.
- If the gland bottoms before leakage is controlled, add a ring only when the stuffing box and existing packing are serviceable; otherwise replace the packing set.

Replacement procedure

1	Stop, lock out and secure the drive. Isolate, vent and cool the pump; verify zero pressure.
2	Remove the retaining clips and packing gland, then remove all old packing with a suitable extraction tool.
3	Clean and inspect the shaft, gland and stuffing box. Correct damage that would cut or overheat new packing.
4	Install rings one at a time. Stagger adjacent splits 180 degrees. Use a clean lubricant compatible with the packing and pumped material. Seat each ring evenly.
5	Install the gland and nuts. The gland must enter the stuffing box at least 1/8 inch after tightening. Tighten evenly to about 1-1/2 turns past finger-tight as the initial setting.
6	Reinstall clips and guarding. Restart at low speed and make only small, even adjustments until leakage is stable near the target.

FIELD NOTE - THE SEALING WORLD HAS MOVED ON

Packing is the fax machine of shaft seals: it still works, but nobody wants to build the future around it. BearCat's current pump designs are moving toward lip-seal systems for a reason.

Troubleshooting

Check temperature, open flow path and actual shaft rotation before assuming the pump is worn. Change one condition at a time.

Symptom	Check	Action
Will not turn or prime	Pump/material temperature; inlet level and restriction; valve positions; drive response; actual shaft movement.	Do not increase drive pressure. Restore heat and an open path. Isolate, vent and cool before removing an obstruction.
Low or unstable flow	Pump speed; temperature; recirculation position; wand valve; inlet leakage or restriction; packing leakage.	Open the application valve fully. Set delivery with approved controls. Correct temperature, restrictions and leakage.
High or unstable pressure	Discharge restriction; valve positions; jump hose/return; pump speed; material condition; start-to-open behavior.	Stop. Find the restriction and verify the complete pressure-protection path under actual conditions.
Packing leaks or overheats	Leak rate; gland travel and evenness; shaft heat/scoring; packing condition and compatibility.	Follow Section 5. Make small, even adjustments after lockout. Replace packing if the gland bottoms or heat persists.
Noise, vibration or cavitation	Inlet restriction; cold material; loose mount or coupling; misalignment; debris; intermittent supply.	Stop before damage progresses. Correct supply, heat, mounting or alignment before restarting.
Repeated blockage or wear	Contamination; settled filler; cured chunks; heat history; pressure history; wand-valve throttling.	Remove the source, clean by the machine procedure and correct restrictions. Do not use pump pressure to break an unknown obstruction.

BEFORE CALLING FOR SERVICE

Send the complete pump model, machine identity, material and temperature, speed, observed pressure, valve positions, recent work and clear photos. One useful photo and four readings beat a description of how terrible it sounds.

Parts reference

The illustration may not exactly match every configuration. Use the complete model code, item number and part description when ordering.

Item	Part	Ordering note
1	Housing	Specify model/configuration
2	Motor mount	Base-pump component
3	Short bushing	1 required
4	Drive shaft	Specify model/configuration
5	Idler shaft	Specify model/configuration
6	Gland assembly	Gland set, clips, studs and hardware
7	Packing	Sold in sets
8	Crack-sealer coupler	Drive coupling
9	Long bushing	3 required
10	End plate	Specify heated relief-valve or standard
11	Relief-valve assembly	Poppet/spring, O-ring and plug
12	3/8-16 x 1-1/4 hex bolt	Original reference: HBOLT
13	3/8-16 x 2 socket-head screw	1-1/2-inch thread length
14	1/2-13 x 1-1/4 hex bolt	Original reference: HBOLT
15	1-1/2-inch extension housing	Specify configuration
16	#8 JIC straight fitting	NPT connection
17	Gears	Sold in matched sets
18	Crack-sealer jump hose	Relief return hose
19	Gasket	Specify end-plate configuration

ORDER WITH THE COMPLETE IDENTITY

Send the full model code, item number and part name. Add a clear photo when the pump has been modified or the nameplate is missing. Same name does not always mean same configuration.

Parts diagram

Original Rev F exploded view and configuration reference.

Hydraulic Motor
(shown for reference)

Gland sold as assembly;
• Gland Set
• Clips
• Studs and hardware

Note: This diagram may not be the exact model of your pump. Please have your pump model number when calling to order parts as gears, housing, shafts etc. use the same part number, but different configurations depending on specific models.

Parts Diagram

Standard End Plate

BC

CI

CR

Relief Valve sold as assembly;
• Poppet and Spring
• Oring
• Plug

ITEM NO.	PART NUMBER
1	Housing
2	Motor Mount
3	Short Bushing, 1-req'd
4	Drive Shaft
5	Idler Shaft
6	Gland Assembly
7	Packing (sold in sets)
8	Coupler, Crack Sealer
9	Long Bushing, 3-req'd
10	End Plate (specify heated RV or standard)
11	Relief Valve Assembly
12	HBOLT 0.3750-16x1.25x1-N
13	HX-SHCS 0.375-16x2x1.5-N
14	HBOLT 0.5000-13x1.25x1.25-N
15	Extension Housing, 1.5in
16	#8 JIC Straight, NPT
17	Gears (sold in sets)
18	Jump Hose, Crack Sealer
19	Gasket

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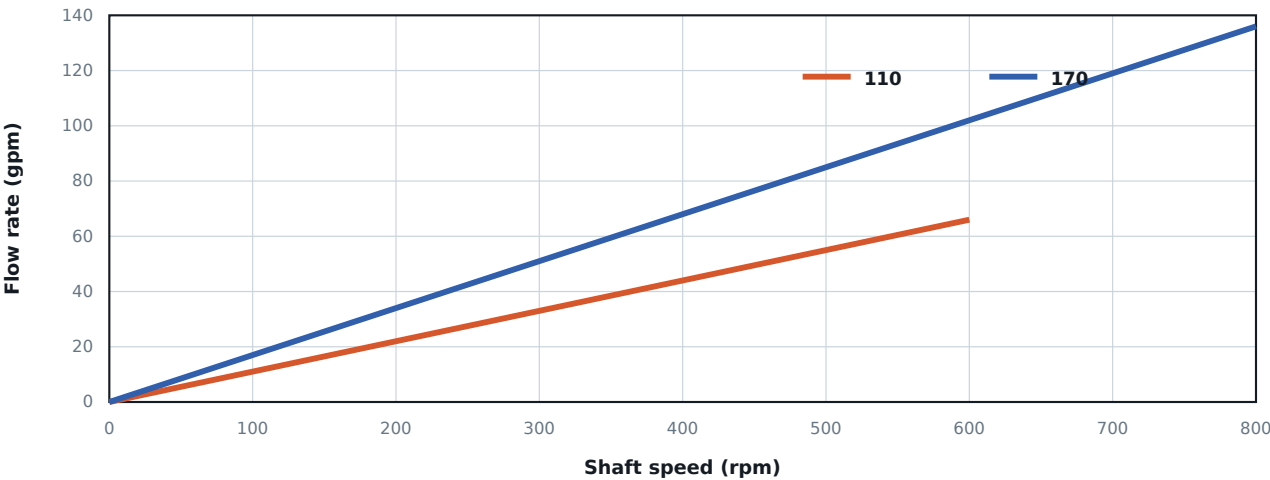
Original Rev F drawing for the 170 heated relief-valve assembly. Hydraulic motor shown for reference only and not included.



Performance reference

Model	Published displacement	Maximum speed shown	Theoretical flow shown	Port size
110	0.11 gal/rev	600 rpm	66 gpm	2-inch FPT
170	0.17 gal/rev	800 rpm	136 gpm	2-inch FPT

Theoretical displacement flow



Flow = speed x displacement. This is displacement math, not a guaranteed system delivery rate.

Theoretical hydraulic power at the published maximum flow

Model	Flow	At 25 psi	At 50 psi	At 100 psi
110	66 gpm	0.96 hp	1.93 hp	3.85 hp
170	136 gpm	1.98 hp	3.97 hp	7.93 hp

Hydraulic hp = gpm x psi / 1714. Actual drive sizing must include material viscosity, mechanical losses and service factor.

APPLICATION LIMITS GOVERN

These are theoretical references from the published legacy curves. Actual delivery and allowable speed depend on the complete machine, material, temperature, restrictions and drive. Confirm the application before changing speed.