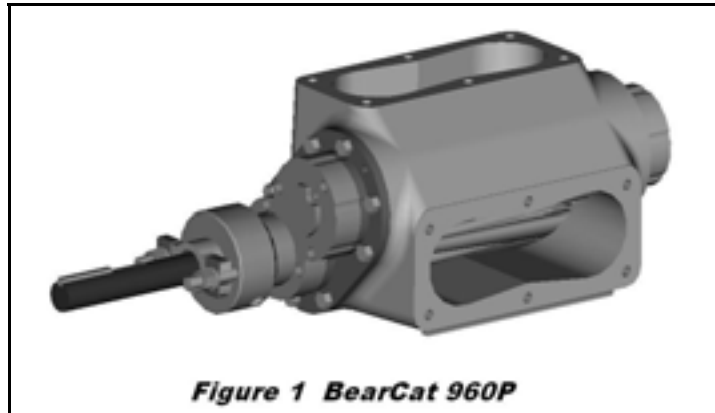


# 960 Technical Service Manual

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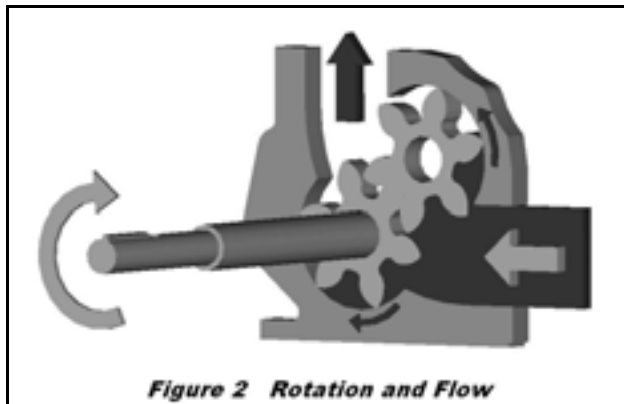
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### **DANGER**

**Before starting pump, be sure all drive equipment guards are in place.**

**Failure to properly mount guards may result in serious injury or death.**



## **INTRODUCTION**

This manual deals exclusively with the 960 series Pumps. Included in this manual are most general issues pertaining to this pump. For special applications not covered in the manual, please refer to the factory or authorized service personnel.

## **HOW IT PUMPS**

**Pumping:** The pumps operate equally in clockwise or counter clockwise rotation. The rotational direction determines which port is suction and which discharge. Figure 2 shows how the liquid travels the outside of the gears to get from inlet to outlet.

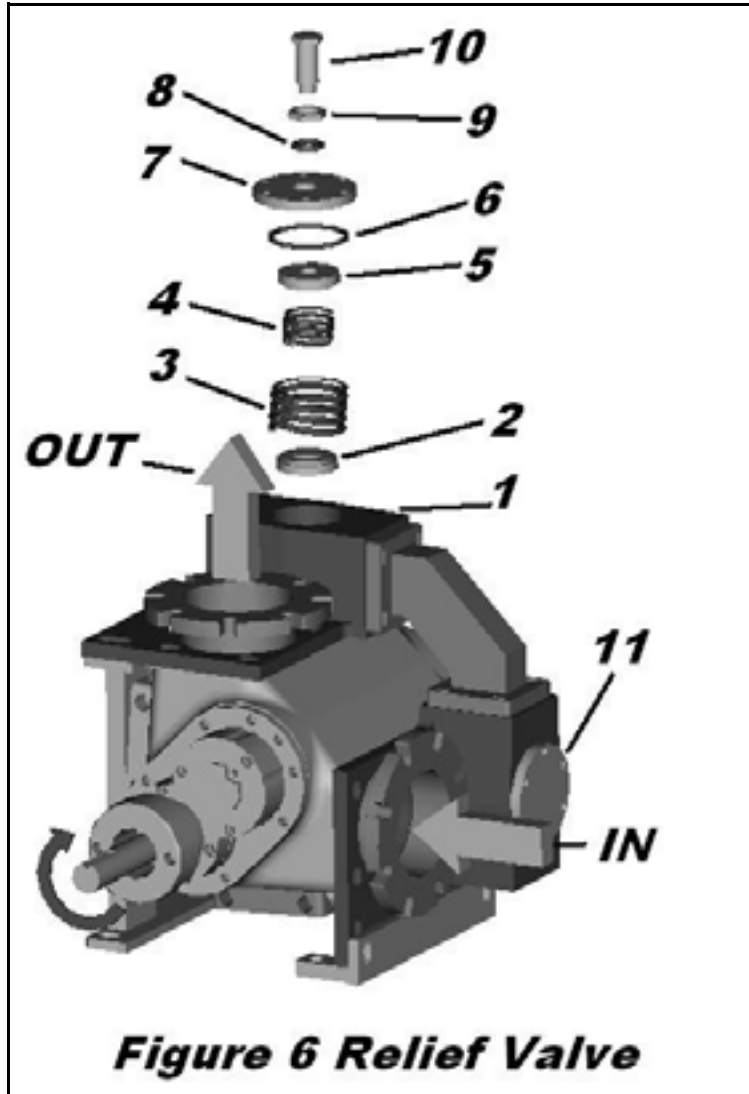
### **Pressure Relief Valve:**

BearCat Pumps are positive displacement

pumps and must have some sort of pressure protection. This may be a relief valve mounted to the backside of the pump. The Pressure Relief Valve is made up of a plate that is held against a port by a spring. The spring tension can be adjusted for varying pressures. When the pressure exceeds the adjusted amount, it pushes the plate (Inner Poppet) back, allowing the liquid to flow back to the inlet side of the pump.

If a pump is rotated in reverse of normal operation, the end plate with the relief valve must be rotated 180 degrees. Pressure relief valves cannot be used to control flow or regulate pressure.

# 960 Technical Service Manual



Item	Description
1	RV Housing Box
2	Inner Poppet
3	Outer Spring
4	Inner Spring
5	Outer Poppet
6	Cap O-ring
7	Adjuster Cap
8	Bolt O-ring
9	Adjuster Lock Nut
10	Pressure Adjuster Bolt
11	Inlet Cap

## RELIEF VALVE

It may become necessary to access the inside of the pressure relief valve. If the Relief Plate is removed for repairs, be sure to replace it in the proper orientation in relation to the outlet port. (See Figure 6)

### REMOVAL:

1. Measure the Pressure adjuster bolt distance from back of the Cap to the end of the Adjuster Bolt before proceeding.
2. Release spring compression by loosening the Adjuster Lock Nut and Bolt.
3. Remove  $\frac{1}{2}$  bolts securing the Adjuster Cap. Remove items 2-6 (Fig 6). Clean and inspect.
4. Re-assemble in reverse order.
5. Set Adjuster Bolt to distance measurement established in step 1.

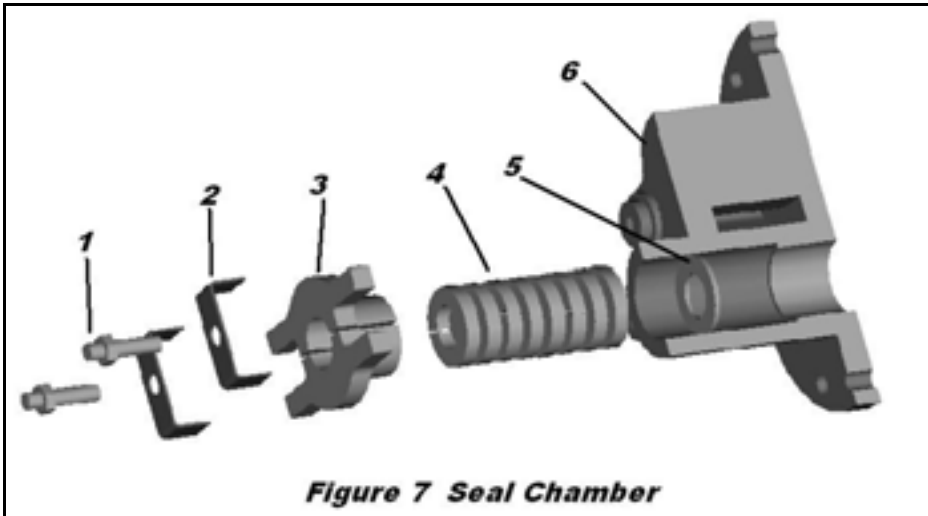
### DANGER

Before servicing any BearCat Pump liquid chamber or Relief Valve ensure that:

- Pressure inside pump has been completely vented through appropriate openings or connections.
- The drive system has been locked out so that it cannot be started while work is being done.
- Sufficient time has expired for the liquid to cool sufficiently inside the pump. Observe any Material Safety Data Sheets (MSDS) for the liquid to be sure these precautions are understood.

Failure to follow the above listed precautionary measures may result in injury or death.

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Item	Description
1	½ Studs, Nuts
2	Gland Clips
3	Packing Gland
4	Packing Set
5	Packing Washer
6	Jacketed Shaft Plate

**Figure 7 Seal Chamber**

## **DANGER**

Before servicing any BearCat Pump liquid chamber or Relief Valve ensure that:

- Pressure inside pump has been completely vented through appropriate openings or connections.
- The drive system has been locked out so that it cannot be started while work is being done on the pump.
- Sufficient time has expired for the liquid to cool sufficiently inside the pump. Observe any Material Safety Data Sheets (MSDS) for the liquid to be sure these precautions are understood.

Failure to follow the above listed precautionary measures may result in injury or death.

## **PACKING BOX**

Periodic service of the packing seal can improve pump performance as well as extend service life.

### **Packing Replacement:**

1. Remove Clips and Gland.
2. Remove old packing. (Use a packing hook, or T-handle cork screw tool). Be sure to remove ALL packing.
3. Install new packing one at a time. Stagger the split of each ring at 180° intervals. Lubricate the rings with oil or grease to aid in assembly. A length of pipe or tubing will help in seating the packing rings.
4. Install the Packing Gland and Nuts. The gland must enter the stuffing box at least one-eighth of an inch after tightening the Packing Gland Nuts. Be sure the glands are tightened evenly. Tighten Packing Nuts to about 1-1/2 turns past figure tight. DO NOT over tighten; further adjustment should be done while pump is operating.

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## **MAINTENANCE**

The 960 series pumps are designed for long, trouble free service under an extended variety of applications with minimal maintenance, however, the following should be considered.

1. **PACKING ADJUSTMENT:** New packed pumps generally require some initial packing adjustment to control leakage as packing is broken in. **DO NOT** over-tighten the packing gland. After initial adjustment, occasionally inspect for further adjustment, and or packing replacement.
2. **PORT FLANGE:** Re-tighten the port flanges after initial heat-up, as the gasket material tends to soften and leaks can develop. Inspect connections frequently during first few days of operation.
3. **STORAGE:** If the pump is to be stored for an extended length, a light coat of lubricating and preservative oil should be applied to the internal parts.

### **DANGER**

**Before starting pump, be sure all drive equipment guards are in place.**

**Failure to properly mount guards may result in serious injury or death.**

### **WARRANTY**

**BearCat Pumps warrants all products manufactured by it to be free from defects in workmanship or material for a period of one year from date of shipment.**

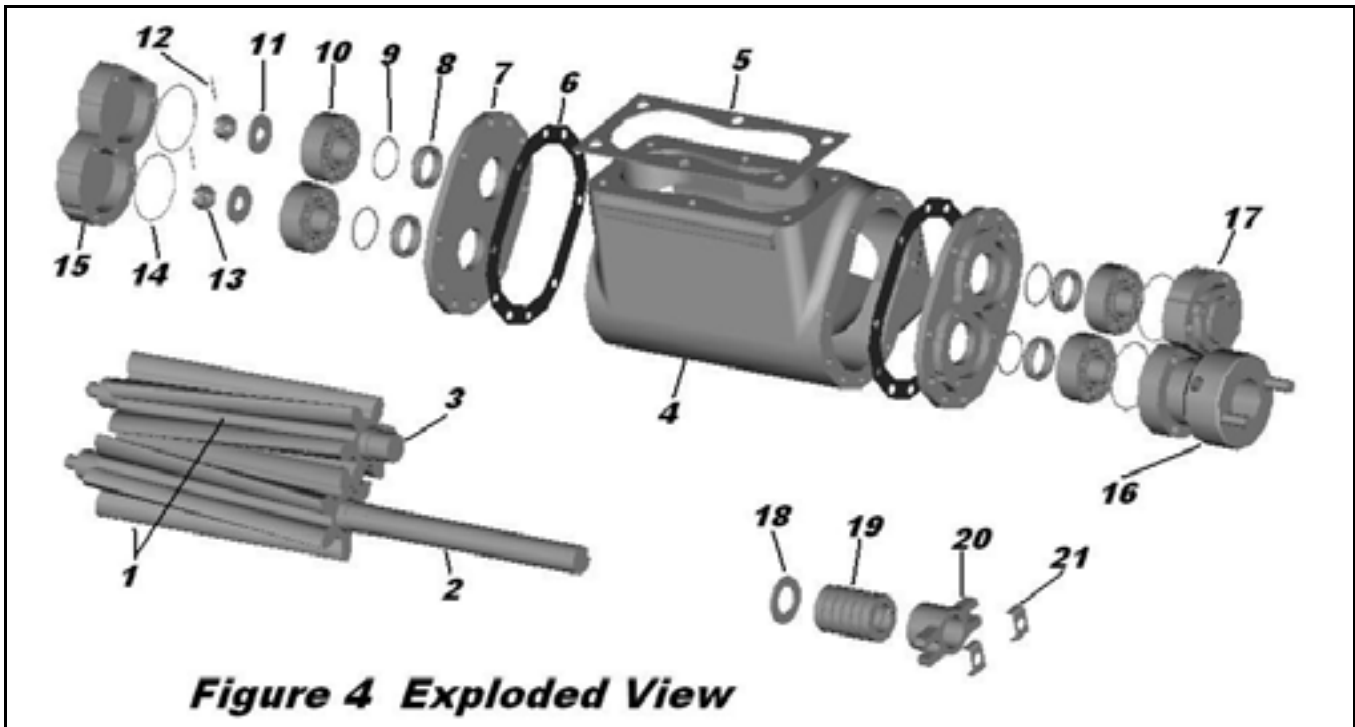
**Due to the inconsistencies in blend formulas and operating methods, BearCat Pumps does not assume responsibility for pump wear life. After material has entered a pump, all warranty claims will be determined by factory-authorized personal.**

**BearCat Pumps assumes no liability for consequential damages of any kind and the purchaser, by acceptance of delivery assumes all liability for the consequences of the use or misuse of BearCat products by the purchaser, his employees or others. BearCat Pumps will assume no field expenses for service or parts unless authorized by it in advance.**

**This is BearCat's sole warranty and is in lieu of all other warranties, expressed or implied, which are hereby excluded, including in particular all warranties of merchantability or fitness for a particular purpose.**



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Item	Description	Part Number	Item	Description	Part Number
1	Gear Set	GER-83680	13	Castle Nut (2)	FAS-88678
2	Drive Shaft (short)	PTM-83643	14	Cap O-ring	RNG-83614
2B	Drive Shaft (long)	PTM-83644	15	Domed Bearing Cap (2)	HSG-83605
3	Idle Shaft	PTM-83640	16	Packing Housing	HSG-83611
4	Housing Body	HSG-83601	17	Blind Bearing Cap	HSG-83606
5	Port Gasket (2)	RNG-89071	18	Packing Washer	N/A
6	End Plate Gasket (2)	RNG-69993	19	Packing Set	SET-83695
7	End Plate (2)	HSG-83603	20	Packing Gland	BRK-83689
8	Piston Ring Bracket (4)	MSC-83666	21	Retainer Clip	BRK-83725
9	Piston Ring (4)	FAS-83614	22	½-13 x 1.5 Hex Bolt (16)	N/A
10	Bearing (4)	PTM-83612	23	3/8-16x1.75 SHCS (6)	N/A
11	Belleville Washer (2)	N/A	24	3/8-16x1.25 Hex Bolts (4)	N/A
12	Cotter Pin (2)	GER-64502	25	1/8 NPT Grease Zerk (4)	N/A

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## 960 PUMP CURVES

