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## FPL 1000, 1100 Aluminum Bead Breaker



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## CHAPTER 1

# FPL Bead Breaker 1000 Service & Parts

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## Introduction

This volume includes information on operating and maintaining the FPL Bead Breaker 1000. It is your responsibility to operate and maintain this unit in a manner that will result in the safest working conditions possible.

Warranty of this unit will be void on any part of the unit subjected to misuse due to overloading, abuse, lack of maintenance and unauthorized modifications. No warranty - verbal, written or implied - other than the official, published FPL new machinery and equipment warranty will be valid with this unit. In addition, it is your responsibility to be aware of existing Federal, State and Local codes and regulations governing the safe use and maintenance of this unit.

Throughout this manual, three means are used to draw information to your attention. They are NOTES, CAUTIONS and WARNINGS and are defined as follows:

### NOTE

A NOTE is used to either convey additional information or to provide further emphasis for a previous point.

### CAUTION

A CAUTION is used when there is a very strong possibility of damage to the equipment or premature equipment failure.

### WARNING

A WARNING is used when there is potential for personal injury or death.

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## Specifications

The FPL 1000 Bead Breaker tool operates using two cylinders - a clamping cylinder and a breaker cylinder at a 90° angle with respect to each other. Both the clamping and bead breaking actions are performed automatically, and no mid-sequence operation by the user is required.

The 1000 Bead Breaker can bead break tires up to 29.5 x 29.

## Operation

### WARNING

The optional air/hydraulic pump is capable of generating fluid pressure up to 10,000 PSI. Keep both hands on the handles and away from the clamping jaw or breaker tongue. Make certain that the tool is properly aligned on the rim before allowing the bead breaking action. Do not continue to operate the air/hydraulic pump once the breaker rod is completely extended. Failure to comply with these instructions could result in personal injury or equipment damage.

To operate the bead breaker:

- 1 Make certain the tire is completely deflated. Using rubber lubricant, lubricate the area where you plan to break the bead.



*Deflate tire.*



*Lubricate with rubber lubricant.*

- 2 Connect the hose of an air/hydraulic pump to the hydraulic coupling on the bead breaker tool. Connect the air supply line to the air/hydraulic pump. The air supply should be between 5 and 10 CFM at 100 PSI to obtain proper operating characteristics. In addition, the air line should be equipped with an air line filter.
- 3 Position the bead breaker so that the jaw makes solid contact with the rim and the teeth are positioned in the crevice between the bead of the tire and the rim.

**NOTE**

When a tire has a trash guard, you may have to drive two straight tire irons between the rim and the tire bead to get a starting point for the teeth.

- 4 Step on the PUMP end of the pump pedal. The clamping rod will begin to extend and the jaw will grip the rim.

The FPL 1000 includes a clamping jaw pivot pin which can be placed in one of four jaw pivot positions for use on different width flanges. The top hole (closest to the handle) is used for smaller rim flanges, and the bottom hole (furthest from the handle) is used for larger rim flanges.



*The FPL Bead Breaker 1000 has four jaw pivot positions.*



*Bead breaker with pin in highest position.*



*Bead breaker with pin in lowest position.*

### CAUTION

Make certain that the teeth slip in between the rim flange and the bead. If not, depress the RELEASE end of the pump pedal and realign the tool. If the tool is not positioned correctly, extending the breaker rod may damage the tire bead or sidewall, the rim flange, or the tool. If the tool is not pushing parallel to the bead seat area, reposition before continuing.

- 5 Continue pumping until the tongue of the bead breaker pushes the bead free of the rim.
- 6 Repeat the process as needed around the diameter of the rim. The tool can be used on the front and back bead areas.
- 7 Once the bead is free of the rim, depress the RELEASE end of the pump pedal.

## Purging Air

These instructions are designed for use with the FPL Air/Hydraulic Pump. If using a different pump, use this information as a guide only. Purge air from the pump and bead breaker as follows:

- 1 Remove the snap rings on the rod connectors (items 35 and 38 on the parts drawing).
- 2 Connect the air/hydraulic pump to the tool.
- 3 Connect the pump to the air supply.
- 4 Position the pump so that it is higher than the tool and depress the PUMP end of the pedal.
- 5 After the clamping and breaker rods are fully extended, depress the RELEASE end of the pedal. Repeat this cycle (PUMP - RELEASE) about five times.
- 6 Extend both rods and keep them extended. Check for leaks. Make certain that the rods do not "creep" back into the cylinders.



## Cleaning

Wash the exterior of the bead breaker with warm, soapy water. Rinse with clean water and blow the tool dry with an air nozzle. Also pay particular attention to the cleanliness of the pump.

### CAUTION

Avoid seal damage. Do not use solvent to clean the bead breaker.

## Storage

Prior to storing the bead breaker:

- 1 Completely retract both rods. An exposed rod may be subject to rusting, pitting and damage from striking other tools.
- 2 If chloride is spilled on the tool, rinse with clean water and blow dry.
- 3 Dress rod surface nicks and dents with fine grit emery paper. Rod surface nicks and dents, if left untended, provide a starting point for rust.

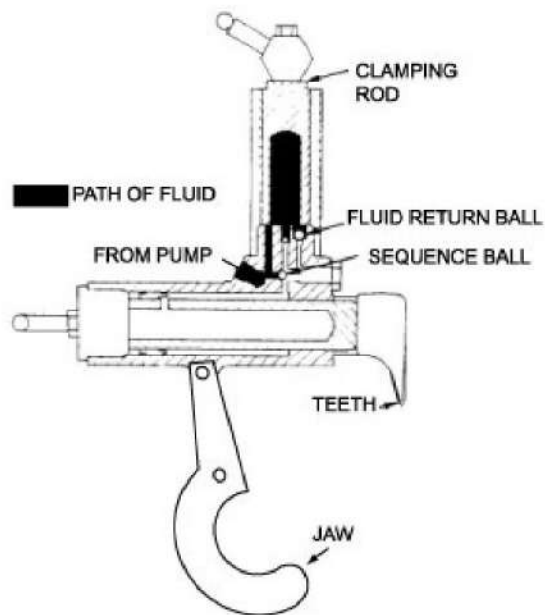
### NOTE

The chrome plated rod surfaces provide the seal for the tool. Any steps taken to ensure the continuing quality of the rod surfaces will increase the service life of the tool.

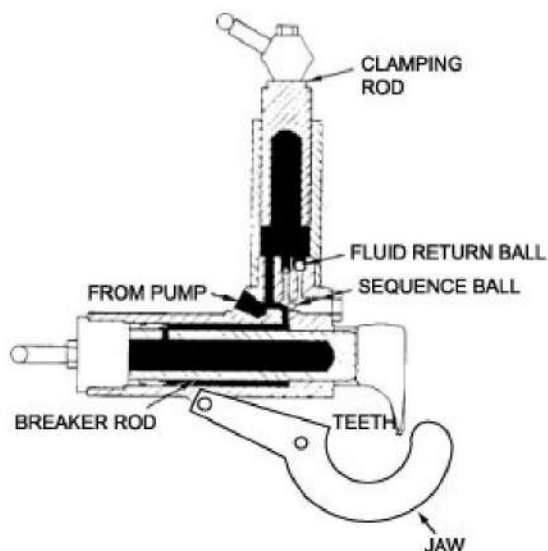
## Hydraulic Flow

Use the hydraulic flow information to help troubleshoot problems with the FPL Bead Breaker 1000/1100

The bead breaker works via an air/hydraulic pump which supplies hydraulic fluid pressure to the clamping cylinder. Fluid pressure is restricted to the clamping cylinder by spring pressure on the sequence ball and by the mated surfaced of the fluid return ball and its seat. As the clamping rod moves out of the cylinder, the jaw clamps firmly on the rim.



The internal hydraulic pressure of the clamping cylinder is sufficient to overcome the spring pressure against the sequence ball. The ball is forced away from the seat and pressure increases inside the breaker cylinder.



## Troubleshooting

SYMPTOM	PROBABLE CAUSE	RESOLUTION
Rods extend too slowly.	Insufficient hydraulic pressure from pump.	Check air supply.
		Check clearance of inlet check ball. Ball must be flush with or below end of filter adapter.
Rods fail to retract.	Hydraulic pump does not release.	Dirt under pedal in release valve area. Clean pedal.
	Bearing is misaligned on breaker rod.	Correct or replace.
	Broken or weak springs.	Replace.
Both rods extend at the same time. Hydraulic pressure in breaker cylinder is not being released.	Sequence ball not seated, or spring is broken or weak.	Correct or replace.
	Loose screw and ball not seated.	Correct or replace.
Breaker rod retracts after clamping rod. Hydraulic pressure in breaker cylinder is not being released.	Fluid return ball did not restart.	Correct or replace.
	Dirt plugging return port.	Clean port.
	Weak or broken spring in breaker cylinder.	Replace.
Pump does not reciprocate.	Air piston stuck.	Check cylinder bore of pump for contamination or lack of lubrication.
	Piston poppet not sealing.	Replace.
Pump reciprocates. Ram will not extend.	Check prime.	Depress both air valve and hydraulic release valve at the same time.
Pump extends ram but will not hold system pressure.	Outlet check ball not sealing properly.	Correct or replace.
	Release valve mechanism not sealing properly.	Check pin, ball, release poppet, and poppet retainer. Correct or replace.
Pump extends ram but will not build to maximum pressure. No visible sign of leakage.	Check air supply.	5 - 10 CFM at 100 PSI
	Check for internal leakage.	Release valve mechanism.
		Low relief valve setting.
Pump extends ram but will not build maximum pressure. Visible sign of leakage through exhaust muffler.	Check piston sub-assembly.	Replace copper gasket and assemble in vertical position.
		Replace piston packing.

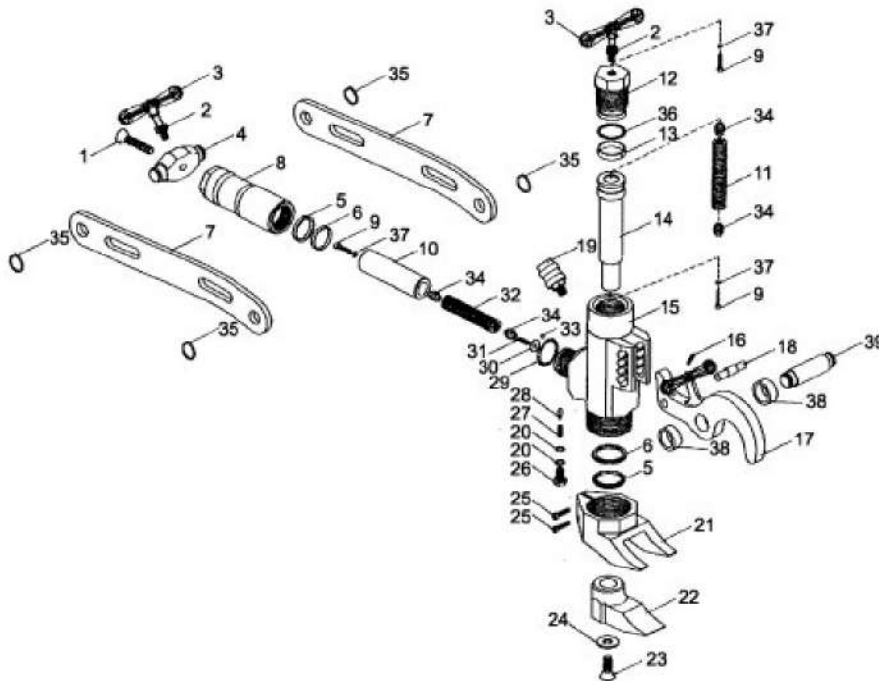
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## Parts

To order repair parts:

- 1 Give the bead breaker model number.
- 2 Give the part number, description, and quantity required.

### Bead Breaker 1000/1100 Assembly



Parts list on next page.

51718925 PARTS LIST								
ITEM		DESCRIPTION	QTY		ITEM		DESCRIPTION	QTY
1.		BOLT	1		21.		TEETH, CLAMPING	1
2.		NUT	1		22.		TONGUE	1
3.		HANDLE	1		23.		SCREW	1
4.		BASE, CONNECTING ROD	1		24.		WASHER	1
5.		RING, SEAL	1		25.		SCREW	1
6.		RING, SEAL	1		26.		PLUG	1
7.		ROD CONNECTOR	1		27.		SPRING	1
8.		HOUSING, CLAMP CYL	1		28.		BALL, SEQUENCING	1
9.		SCREW	1		29.		O-RING	1
10.		ROD, CLAMP CYL.	1		30.		WASHER	1
11.		SPRING	1		31.		SCREW	1
12.		HEAD, BREAKER CYL.	1		32.		SPRING	1
13.		SEALS	2		33.		BALL	1
14.		ROD, BREAKER CYL.	1		34.		NUT	1
15.		BODY	1		35.		SNAP RING	2
16.		SCREW	1		36.		SEAL	1
17.		JAW	1		37.		NUT	1
18.		PIN, JAW PIVOT	1		38.		SNAP RING	2
19.		PLUG	1		39.		PIN, ROD CONNECTOR	1
20.		WASHER	1		40.		SEAL KIT (INCL. 5,6,13,36)	1

# BEAD BREAKER

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