
FTI OPERATIONS, MAINTENANCE, AND REPAIR MANUAL

Little Brute Puller Unit

Part #2720-006, Log #01151
Revision M

February 16, 2024



CE

Original Instruction

ABOUT FATIGUE TECHNOLOGY INC.

Fatigue Technology Inc. (FTI) is a world-leading aerospace engineering and manufacturing company. FTI pioneered Cold Expansion (Cx™) technology (which provides solutions to fatigue problems associated with holes in metal structures) back in 1969 and has advanced this science to develop innovative bushing and fastener products. These proprietary products and associated tooling may be covered by patents or agreements owned by, or exclusively licensed to, Fatigue Technology Inc. Use of tooling procured from other than a licensed source may constitute patent infringement.

The detailed tooling information in this manual was compiled and written by FTI. The tooling was designed specifically for use with FTI's Cold Expansion systems. FTI cannot be held responsible for damage or injury as a result of operating this equipment if it is used for other than the process intended, with any other tooling not provided by FTI, or not used in accordance with the instructions contained in this manual. To avoid personal injury, please observe all safety precautions and instructions. FTI reserves the right to change specifications or configurations of equipment detailed in this manual as part of our ongoing technical and product improvement programs. If you have any questions about the use or serviceability of this equipment, please contact our Sales Department.

FTI's Cold Expansion systems and processes are the subject matter of one or more of the following patents: 4,809,420; 4,885,829; 4,934,170; 5,083,363; 5,096,349; 5,103,548; 5,127,254; 5,129,253; 5,218,854; 5,245,743; 5,305,627; 5,341,559; 5,380,136; 5,405,228; 5,433,100; 5,468,104; 6,077,010; 6,183,180; 6,487,767; 6,792,657; 6,990,722; 7,024,908; 1,061,276; 513,898; 692015124; 581,385; 69310828; 468,598; 69105390; 643,231; 69414946; 696,686; 785,366; 1032769; and other patents pending. These systems and processes are tooling critical and must be performed in accordance with FTI's specifications or controlling documents. To ensure proper results from FTI's Cold Expansion systems and to be licensed to use FTI's patented processes, it is essential that FTI's complete integrated system of tooling be purchased and utilized. The use of tooling purchased from other than a licensed supplier could jeopardize fatigue life enhancement and may constitute patent infringement.

Fatigue Technology Inc. (FTI) has provided innovative solutions to fatigue problems in metal structures since 1969. Complete systems of tooling are used worldwide to enhance the fatigue life of holes in airframes, turbine engines, and other critical structures.

The FTI staff of professionals provides a full range of support services including:

- * Application engineering.
- * Detailed project planning, implementation, and management.
- * On-site assistance, including training and tool room setup.

The Sales Department is always available to assist with special fatigue enhancement requirements. Please contact FTI with questions at any time.

This manual can be made available in other languages. Please contact the Sales Department to request a copy.

TABLE OF CONTENTS

SECTION	DESCRIPTION	PAGE
1.0	Introduction.....	1
1.1	About the Little Brute Puller Unit.....	1
1.2	General Specifications.....	1
1.3	General Description.....	2
2.0	Safety.....	5
2.1	Hydraulic Hose Safety.....	7
3.0	Puller Unit Operating Instructions.....	8
3.1	Puller Unit Setup Procedure.....	8
3.2	Actuation of the Puller.....	9
4.0	Maintenance.....	10
4.1	General Cleaning.....	10
4.2	Preventative Maintenance.....	10
4.3	Lubrication.....	10
4.4	Inspection.....	10
4.5	Assembly and Disassembly.....	11
4.6	Little Brute Seal Kit (LB-SK).....	13
5.0	Troubleshooting.....	14
5.1	PowerPak Will Not Build Full Hydraulic Pressure.....	14
5.2	Puller Retracts on Trigger Actuation, But Will Not Return to Start Position.....	15
5.3	Mandrel Sticks in Hole When Puller Is Activated.....	16
6.0	Illustrated Parts Breakdown.....	17
6.1	Little Brute Assembly Diagrams.....	17
6.2	Little Brute Part Lists.....	19
Appendix A	Legacy Units.....	51
A.1	Trigger Rework (FTI-CT-RK and LB-CT-RK).....	51
A.2	Legacy Trigger Assembly.....	53
A.3	Handle Revisions.....	54
Appendix B	E.C. Declaration of Conformity.....	55

TABLE OF CONTENTS (Continued)

SECTION	DESCRIPTION	PAGE
FIGURES		
Figure 1.3-1	Little Brute Puller Unit Parts	2
Figure 2.0-1	Safety Labels.....	5
Figure 2.0-2	Location of Air Disconnect.....	6
Figure 2.1-1	Strain Reliever	7
Figure 2.1-2	Example Hydraulic Hose Identification.....	7
Figure 3.1-1	PowerPak Connection Ports.....	8
Figure 3.1-2	Hydraulic Coupler Connection	9
Figure 4.5.1-1	Transfer Tube.....	11
Figure 4.6-1	Little Brute Seal Locations	13
Figure 5.2-2	Enerpac CT-604 Pressure Relief Tool	15
Figure 6.1-1	Little Brute Exploded View	17
Figure 6.1-2	Little Brute Section View	18
Figure A.1-1	FTI-CT-RKT Tool Kit Pieces	51
Figure A.1-2	Diagram of Cartridge Trigger Assembly	52
Figure A.2-1	Diagram of Legacy Trigger Assembly.....	53
Figure A.3-1	Handle Revisions	54

TABLE OF CONTENTS (Continued)

SECTION	DESCRIPTION	PAGE
TABLES		
Table 1.3-1	Little Brute Specifications	3
Table 4.6-1	Little Brute Seal Kit	13
Table 6.2-1	LB-10 Parts List	20
Table 6.2-2	LB-10A Parts List	21
Table 6.2-3	LB-10B Parts List	22
Table 6.2-4	LB-10-H25 Parts List	23
Table 6.2-5	LB-10-V Parts List	24
Table 6.2-6	LB-10-4K Parts List	25
Table 6.2-7	LB-15 Parts List	26
Table 6.2-8	LB-15A Parts List	27
Table 6.2-9	LB-15B Parts List	28
Table 6.2-10	LB-15-20D4 Parts List	29
Table 6.2-11	LB-15-V Parts List	30
Table 6.2-12	LB-20 Parts List	31
Table 6.2-13	LB-20A Parts List	32
Table 6.2-14	LB-20B Parts List	33
Table 6.2-15	LB-20-H25 Parts List	34
Table 6.2-16	LB-20-V Parts List	35
Table 6.2-17	LB-25 Parts List	36
Table 6.2-18	LB-25A Parts List	37
Table 6.2-19	LB-25B Parts List	38
Table 6.2-20	LB-25-V Parts List	39
Table 6.2-21	LB-30 Parts List	40
Table 6.2-22	LB-30A Parts List	41
Table 6.2-23	LB-30B Parts List	42
Table 6.2-24	LB-30-H25 Parts List	43
Table 6.2-25	LB-30-V Parts List	44
Table 6.2-26	LB-35 Parts List	45
Table 6.2-27	LB-35A Parts List	46
Table 6.2-28	LB-35B Parts List	47
Table 6.2-29	LB-35-H20 Parts List	48
Table 6.2-30	LB-35-V Parts List	49
Table 6.2-31	LB-35-H20-V Parts List	50
Table A.1-1	FTI-CT-RKT Trigger Assembly Replacement Tool Kit	51

TABLE OF CONTENTS (Continued)

SECTION	DESCRIPTION	PAGE
Table A.1-2	FTI-CT-RK Trigger Rework Kit.....	52
Table A.1-3	LB-CT-RK Little Brute Rework Kit.....	52
Table A.2-1	Parts List for Legacy Trigger Assembly	53

SECTION 1.0: INTRODUCTION

This instruction manual contains information on the operation and maintenance of the Little Brute Puller Unit. To obtain optimum performance and many years of trouble-free service, operate the puller unit properly and carefully follow maintenance procedures. **Read this manual before operating the puller unit** and retain the manual for future reference. If requested, FTI will provide this manual in the language of the end-user.

1.1 ABOUT THE LITTLE BRUTE PULLER UNIT

The Little Brute hydraulic puller unit is a powerful, compact, lightweight tool specifically designed for use with Fatigue Technology Inc. (FTI) patented Split Sleeve Cold Expansion™ (SsCx™) process. The Little Brute is designed to pull a mandrel through a hole with the pre-lubricated stainless steel split sleeves used in this process. The puller is also compatible with other FTI processes including ForceMate®, ForceTec®, GromEx®, etc.

Little Brute (LB) pullers have a maximum pull force of 8,000 pounds (35,585N) at 10,000 psi (689.5 bar) pump pressure. The Little Brute is available in sizes (models) for cold expanding holes up to 1/2 inch (12.7 mm) in diameter and 3-1/2 inches (88.9 mm) deep in aluminum, and 3/8 inch (9.53 mm) in diameter and 3-1/2 inches (88.9 mm) deep in steel and titanium. Larger diameters may be evaluated on a case by case basis, contact FTI Sales for application assistance.

The Little Brute is available in various models to accommodate multiple material stack-ups, hose options, and mandrel adapters:

- LB-xx where ‘-xx’ relates to material stack (see Table 1.3-1).
- LB-xx-V where ‘-V’ represents high visibility hoses.
- LB-xx-Hxx where ‘-Hxx’ represents a unique hose length other than the standard 10 feet.
- LB-xxA comes with a LB-CA-4 mandrel adapter.
- LB-xxB comes with a LB-CA-6 mandrel adapter.
- LB-15-20D4 is a special LB-15 puller with an LB-20 front barrel.
- LB-xx-4K is designed for the reduced pressure PowerPak (FT-20-4K) with 4,000 psi maximum.

The Little Brute has a fail-safe air control system that causes the puller retraction cycle to be interrupted and return the puller unit to its original position whenever the operator releases finger pressure on the trigger or in the event of an air hose failure. All puller units operate in conjunction with either of FTI’s PowerPak air-hydraulic power units, the standard FT-200D, FT-200C, or portable FT-20 (and are compatible with older units FT-200B, IW100MF, and IW10MF). The Little Brute has proven to be very reliable and requires minimal maintenance.

Use the puller unit only with FTI tooling and accessories. Refer to the FTI Tooling Catalog for more information or contact the FTI Sales department for assistance.

1.2 GENERAL SPECIFICATIONS

Hydraulic Fluid Requirements	U.S. MIL-Spec #5606
Stackup Capacity (Grip)	Material up to 3.5 inches (88.9 mm)
Actuation / Operation.....	Pneumatic / Hydraulic
Compatible PowerPaks	FT-200D, FTI-200C or FT-20
Replacement Seal Kit.....	LB Seal Kit (LB-SK)
Emission sound pressure level at the work station (according to EN ISO 11201:1995) on load	83.1 dB(A)
Weighted hand-arm vibration at the handle (according to EN 28662-1:1993) on load	<2.5 m.S ²

1.3 GENERAL DESCRIPTION

- Air actuated, hydraulic puller capable of cold expanding up to 1/2 inch (12.7 mm) in diameter in aluminum and mild steel, and up to 3/8 inch (9.53 mm) diameter in titanium and high-strength steel.
- Maximum pull force of 8,000 pounds (35,584 N) at 10,000 psi (689.5 bar) hydraulic pressure.
- Includes a hose assembly, spanner wrench, and nosecap pin wrench. Threaded adapter(s), or chuck(s) are also included depending on model (see Table 1.3-1). All models come packaged in a tool case with foam, except as noted.
- Available in various lengths depending on the model, up to 3.5 inches (88.9 mm) material stackup capacity.
- Hydraulic pressure provided by the FT-200D, FTI-200C, or FT-20 PowerPak.



Figure 1.3-1
Little Brute Puller Unit Parts

**Table 1.3-1
Little Brute Specifications**

Model Number	Maximum Stackup	Length	Mandrel Attachment	Weight (Excluding Hoses)	Stroke	Hose
LB-10	1.0 inch (25.4 mm)	8.3 inch (210.9 mm)	7/16-20 Thread	3.9 lbs (1.77 kg)	2.08 inch (52.8 mm)	Standard 10 foot (3.0 m)
LB-10A	1.0 inch (25.4 mm)	8.3 inch (210.9 mm)	LB-CA-4 Chuck	4.1 lbs (1.86 kg)	2.08 inch (52.8 mm)	Standard 10 foot (3.0 m)
LB-10B	1.0 inch (25.4 mm)	8.3 inch (210.9 mm)	LB-CA-6 Chuck	4.1 lbs (1.86 kg)	2.08 inch (52.8 mm)	Standard 10 foot (3.0 m)
LB-10-H25	1.0 inch (25.4 mm)	8.3 inch (210.9 mm)	7/16-20 Thread	3.9 lbs (1.77 kg)	2.08 inch (52.8 mm)	Standard 25 foot (7.6 m)
LB-10-V	1.0 inch (25.4 mm)	8.3 inch (210.9 mm)	7/16-20 Thread	3.9 lbs (1.77 kg)	2.08 inch (52.8 mm)	High-Vis 10 foot (3.0 m)
LB-10-4K ¹	1.0 inch (25.4 mm)	8.3 inch (210.9 mm)	7/16-20 Thread	3.9 lbs (1.77 kg)	2.08 inch (52.8 mm)	Special 10 foot (3.0 m)
LB-15	1.5 inch (38.1 mm)	9.3 inch (236.3 mm)	7/16-20 Thread	4.1 lbs (1.86 kg)	2.58 inch (65.5 mm)	Standard 10 foot (3.0 m)
LB-15A	1.5 inch (38.1 mm)	9.3 inch (236.3 mm)	LB-CA-4 Chuck	4.3 lbs (1.95 kg)	2.58 inch (65.5 mm)	Standard 10 foot (3.0 m)
LB-15B	1.5 inch (38.1 mm)	9.3 inch (236.3 mm)	LB-CA-6 Chuck	4.3 lbs (1.95 kg)	2.58 inch (65.5 mm)	Standard 10 foot (3.0 m)
LB-15-20D4 ²	1.5 inch (38.1 mm)	9.8 inch (249.0 mm)	7/16-20 Thread	4.2 lbs (1.91 kg)	2.58 inch (65.5 mm)	Standard 10 foot (3.0 m)
LB-15-V	1.5 inch (38.1 mm)	9.3 inch (236.3 mm)	7/16-20 Thread	4.1 lbs (1.86 kg)	2.58 inch (65.5 mm)	High-Vis 10 foot (3.0 m)
LB-20 ³	2.0 inch (50.8 mm)	10.3 inch (261.7 mm)	7/16-20 Thread	4.3 lbs (1.95 kg)	3.08 inch (78.2 mm)	Standard 10 foot (3.0 m)
LB-20A	2.0 inch (50.8 mm)	10.3 inch (261.7 mm)	LB-CA-4 Chuck	4.5 lbs (2.05 kg)	3.08 inch (78.2 mm)	Standard 10 foot (3.0 m)
LB-20B	2.0 inch (50.8 mm)	10.3 inch (261.7 mm)	LB-CA-6 Chuck	4.5 lbs (2.05 kg)	3.08 inch (78.2 mm)	Standard 10 foot (3.0 m)
LB-20-H25	2.0 inch (50.8 mm)	10.3 inch (261.7 mm)	7/16-20 Thread	4.3 lbs (1.95 kg)	3.08 inch (78.2 mm)	Standard 25 foot (7.6 m)
LB-20-V	2.0 inch (50.8 mm)	10.3 inch (261.7 mm)	7/16-20 Thread	4.3 lbs (1.95 kg)	3.08 inch (78.2 mm)	High-Vis 10 foot (3.0 m)
LB-25	2.5 inch (63.5 mm)	11.3 inch (287.0 mm)	7/16-20 Thread	4.5 lbs (2.04 kg)	3.58 inch (90.9 mm)	Standard 10 foot (3.0 m)
LB-25A	2.5 inch (63.5 mm)	11.3 inch (287.0 mm)	LB-CA-4 Chuck	4.7 lbs (2.14 kg)	3.58 inch (90.9 mm)	Standard 10 foot (3.0 m)
LB-25B	2.5 inch (63.5 mm)	11.3 inch (287.0 mm)	LB-CA-6 Chuck	4.7 lbs (2.14 kg)	3.58 inch (90.9 mm)	Standard 10 foot (3.0 m)
LB-25-V	2.5 inch (63.5 mm)	11.3 inch (287.0 mm)	7/16-20 Thread	4.5 lbs (2.04 kg)	3.58 inch (90.9 mm)	High-Vis 10 foot (3.0 m)

¹ The LB-10-4K is a special puller designed for the FT-20-4K PowerPak (with reduced 4,000 psi hydraulic pressure). Pull force at this reduced pressure is 3,200 pounds. It is fitted with a different hydraulic connection to match the pump, and green heat shrink on the hoses for identification.

² The LB-15-20D4 is a special LB-15 that has a longer LB-20 front barrel.

³ LB-20 is the standard model.

Continued on next page.

**Table 1.3-1 (Continued)
Little Brute Specifications**

Model Number	Maximum Stackup	Length	Mandrel Attachment	Weight (Excluding Hoses)	Stroke	Hose
LB-30	3.0 inch (76.2 mm)	12.3 inch (312.5 mm)	7/16-20 Thread	4.7 lbs (2.14 kg)	4.08 inch (103.6 mm)	Standard 10 foot (3.0 m)
LB-30A	3.0 inch (76.2 mm)	12.3 inch (312.5 mm)	LB-CA-4 Chuck	4.9 lbs (2.23 kg)	4.08 inch (103.6 mm)	Standard 10 foot (3.0 m)
LB-30B	3.0 inch (76.2 mm)	12.3 inch (312.5 mm)	LB-CA-6 Chuck	4.9 lbs (2.23 kg)	4.08 inch (103.6 mm)	Standard 10 foot (3.0 m)
LB-30-H25	3.0 inch (76.2 mm)	12.3 inch (312.5 mm)	7/16-20 Thread	4.7 lbs (2.14 kg)	4.08 inch (103.6 mm)	Standard 25 foot (7.6 m)
LB-30-V	3.0 inch (76.2 mm)	12.3 inch (312.5 mm)	7/16-20 Thread	4.7 lbs (2.14 kg)	4.08 inch (103.6 mm)	High-Vis 10 foot (3.0 m)
LB-35	3.5 inch (88.9 mm)	13.3 inch (337.9 mm)	7/16-20 Thread	4.9 lbs (2.23 kg)	4.58 inch (116.3 mm)	Standard 10 foot (3.0 m)
LB-35A	3.5 inch (88.9 mm)	13.3 inch (337.9 mm)	LB-CA-4 Chuck	5.1 lbs (2.32 kg)	4.58 inch (116.3 mm)	Standard 10 foot (3.0 m)
LB-35B	3.5 inch (88.9 mm)	13.3 inch (337.9 mm)	LB-CA-6 Chuck	5.1 lbs (2.32 kg)	4.58 inch (116.3 mm)	Standard 10 foot (3.0 m)
LB-35-H20	3.5 inch (88.9 mm)	13.3 inch (337.9 mm)	7/16-20 Thread	4.9 lbs (2.23 kg)	4.58 inch (116.3 mm)	Standard 20 foot (6.1 m)
LB-35-V	3.5 inch (88.9 mm)	13.3 inch (337.9 mm)	7/16-20 Thread	4.9 lbs (2.23 kg)	4.58 inch (116.3 mm)	High-Vis 10 foot (3.0 m)
LB-35-H20-V	3.5 inch (88.9 mm)	13.3 inch (337.9 mm)	7/16-20 Thread	4.9 lbs (2.23 kg)	4.58 inch (116.3 mm)	High-Vis 20 foot (6.1 m)

Nosecap Selection: The Little Brute Puller Unit is compatible with standard nose caps or extension nose caps (Refer to Section 2.3 of the FTI Tooling Catalog for more information).

Mandrel Selection: Models with 7/16-20 threaded adapters are directly compatible with standard Type 1 threaded mandrels (Refer to Section 2.3 of the FTI Tooling Catalog for more information). Models equipped with chucks are used with tang mandrels.

SECTION 2.0: SAFETY

Consult PowerPak manual for safety precautions before connecting the puller unit.

When used in accordance with these instructions, the puller unit is safe and easy to use. All general safety precautions associated with hydraulic and pneumatically operated power tools should be observed. Many of these are noted in this section. Ultimately, the operator is responsible for personal safety; however, the following general safety precautions should be observed.

1. Operators must read this manual in its entirety before using the Little Brute. Wear eye and hearing protection when operating the puller unit. Do not strike any part of the tool with a hammer or equivalent object. Keep hands and fingers clear of the nose cap, as they could be crushed between the nose cap and the workpiece. Safety labels on the tool act as a reminder to these instructions and are shown in Figure 2.0-1.

Read manual before using



Always wear eye protection



Always wear hearing protection




Do not strike



Keep fingers away from nosecap



**Figure 2.0-1
Safety Labels**

2.  This puller unit must be used with an FT-200D, FT-200C, or FT-20 PowerPak hydraulic pump. This manual does not cover the use and safety precautions of these accessories. Refer to the PowerPak operator manual for the specific pump being used.

3. ⚠️ Disconnect the air supply from the PowerPak when:
 - Maintenance is to be performed.
 - Tooling (mandrels, nosecaps, etc.) is to be installed.
 - Hydraulic hose is disconnected.
 - PowerPak is not in use.

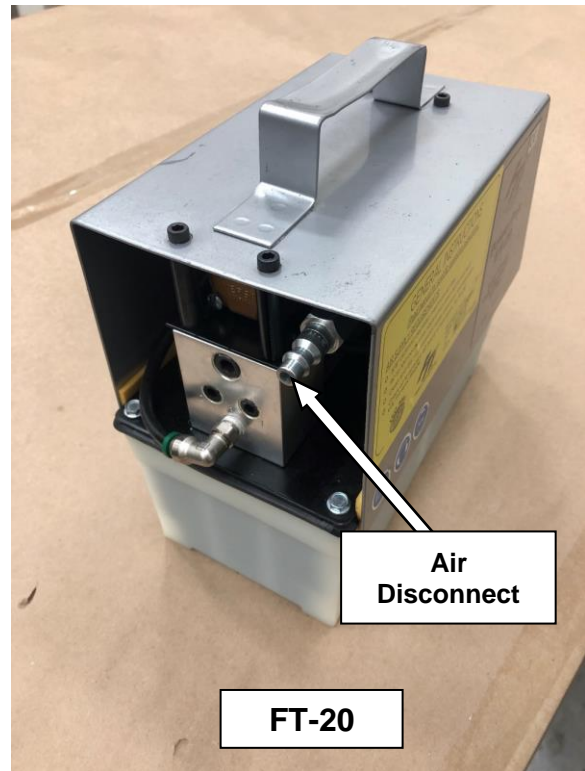
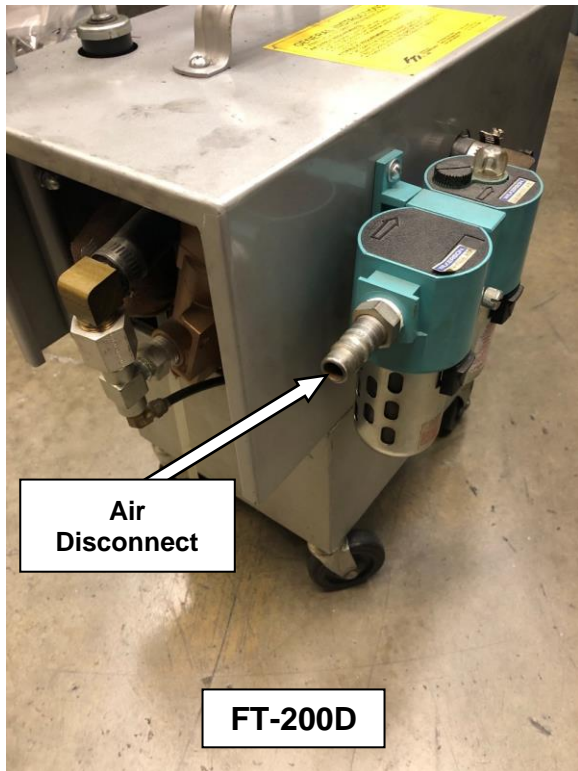


Figure 2.0-2
Location of Air Disconnect

4. ⚠️ In the event of a ruptured or leaking hydraulic hose, **IMMEDIATELY RELEASE THE TRIGGER AND DISCONNECT THE AIR LINE** from the PowerPak at the air coupler (see Figure 2.0-2). **Never use your hands** to grasp a leaking hose under pressure. The force of escaping hydraulic fluid could cause serious injury. If hydraulic oil should penetrate the skin, medical attention must be sought immediately.
5. ⚠️ **DO NOT** operate the puller or connect the hoses while any component is disassembled, missing, or loose. Injury may occur.
6. ⚠️ Before operating the pump, ensure all hose couplings are tightened securely by hand. Do not overtighten the connections. Couplings need only be tightened securely and leak-free. See Figure 3.1-2.
7. ⚠️ **DO NOT** use in potentially explosive atmospheres.

⚠️ IMPORTANT: FTI completed a risk assessment on this unit at our factory. Any modifications done by a third party, or the final user are excluded from that risk assessment. As a result, modifications done by a third party, or the final user nullify the CE marking.

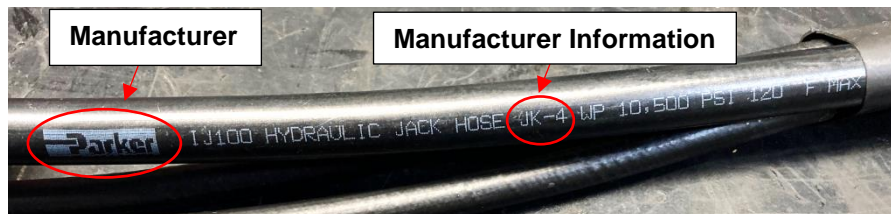
2.1 HYDRAULIC HOSE SAFETY

1. ⚠ Inspect hydraulic hose for signs of wear (cuts, abrasions, or kinks) to the outer shell materials before each use. Pump clean oil through the entire length. Pressurize the hose and check for leaks at the crimped connectors, between the hose material and the fitting, and between the fitting and the coupler.
2. ⚠ **DO NOT** attempt to disconnect the hydraulic hose while it is under pressure, without first disconnecting air supply from pump.
3. ⚠ **DO NOT** expose hoses to potential hazards such as extreme heat or cold, sharp surfaces, or heavy impact.
4. ⚠ **DO NOT** allow hoses to kink, twist, curl, or bend so tightly that the oil flow within the hose is blocked or reduced. Inspect the hose and fittings for wear or damage before use that could cause premature failure of the hose or fittings and possibly result in injury. Damaged hoses must be replaced immediately.
5. ⚠ **DO NOT** use the hose to move attached equipment.
6. ⚠ **DO NOT** remove strain reliever from hoses. Hose strain relievers must be placed around hose fittings during use. Hoses with damaged strain relievers must be replaced immediately.



**Figure 2.1-1
Strain Reliever**

7. ⚠ Hose material and coupler seals must be compatible with hydraulic fluid that meets the requirements of U.S. MIL-SPEC #5606.
8. ⚠ Hoses must not come in contact with toxic materials such as creosote-impregnated objects and some paints. Keep couplers and hoses clean and free of paint. Hose deterioration due to chemical degradation may cause the hose to fail under pressure. Damaged hoses must be replaced immediately. To find specific chemical compatibility information, first look at the hose to find the manufacturer and type. The hose manufacturer will be able to provide a chemical compatibility chart, typically on their website. For example, the hose below is from Parker and is type JK; the chart can be found here: <https://www.mfcp.com/technical-info/chemical-compatibility-rubber-hose>.



**Figure 2.1-2
Example Hydraulic Hose Identification**

9. ⚠ Hoses can be a trip hazard. Keep hoses clear of all walkways and footpaths.
 10. If hoses require replacement, contact the FTI Sales Department.
-

SECTION 3.0: PULLER UNIT OPERATING INSTRUCTIONS

Become familiar with these instructions before operating the puller.

3.1 PULLER UNIT SETUP PROCEDURE

Refer to Section 6.0 (Illustrated Parts Breakdown) for parts identification.

1. ⚠️ Ensure that the PowerPak is NOT connected to the air supply. If needed, disconnect the PowerPak from the air supply, following the appropriate operator manual for the pump model being used.
2. Uncoil the hose assembly of the puller unit, and inspect all threads, couplings, and hoses for damage and degradation.
3. If the chuck assembly/adapter (see Figure 6.1-1, Item Number 10) needs to change, remove the front barrel (Item Number 2) with the provided spanner wrench (Item Number 23). Thread on the appropriate adapter, then reattach the barrel.
4. Identify the connection ports on the FTI PowerPak where the puller unit hoses will go. See Figure 3.1-1 below.

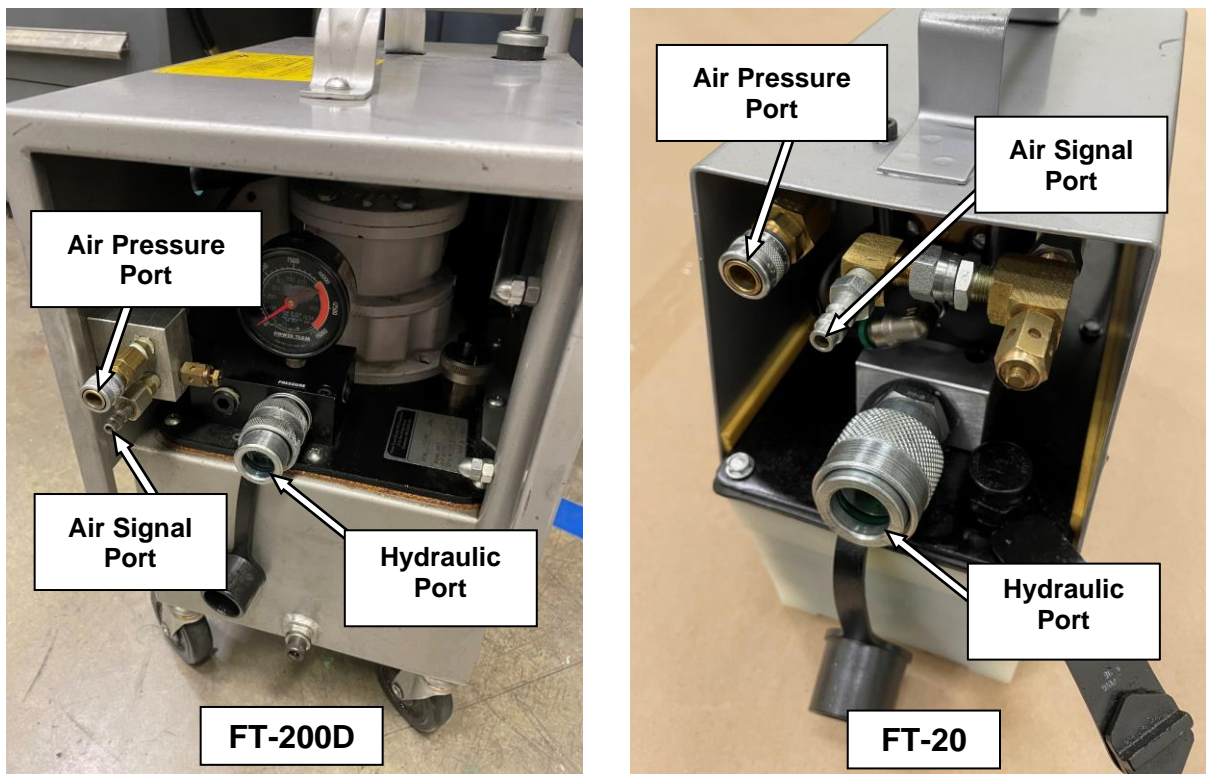


Figure 3.1-1
PowerPak Connection Ports

5. Remove protective caps from the hydraulic fittings and thread the hydraulic hose fitting from the puller unit (male) onto the hydraulic fitting of the FTI PowerPak (female). Wipe fittings clean prior to connecting. Make sure to thread couplers completely together, with no gap visible. See Figure 3.1-2 below.

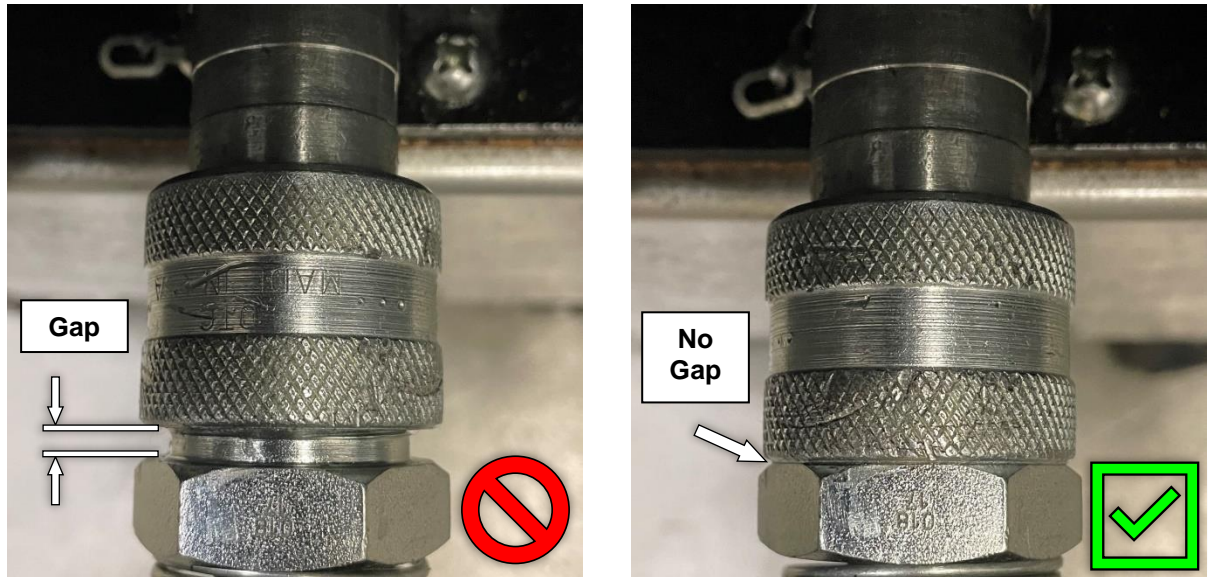


Figure 3.1-2
Hydraulic Coupler Connection

6. Connect the male/female air quick-disconnects from the puller unit to the FTI PowerPak.
7. Install the appropriate mandrel into the threaded adapter (hand tight).
8. Install the appropriate nose cap assembly over the mandrel and thread onto the barrel (hand tight).
9. Connect the PowerPak to the air supply, following the appropriate operator manual for the pump model being used.

3.2 ACTUATION OF THE PULLER

1. The puller unit can be activated only when connected to an FTI PowerPak.
 2. Activate the puller unit by depressing the trigger on the handle. Hydraulic pressure is transmitted through the hose to the cylinder of the puller unit which then retracts the hydraulic piston.
 3. Release the trigger once the mandrel clears the workpiece. This changes pressure at the pilot valve to stop the pull cycle and return the puller unit to its original position.
 4. If the puller unit fails to operate as detailed above, refer to Section 5.0 (Troubleshooting).
-

SECTION 4.0: MAINTENANCE

The puller unit requires routine checking and periodic preventative maintenance to ensure safe, trouble-free operation. No special maintenance is required. The following maintenance actions are suggested.

⚠ WARNING
Disconnect the PowerPak from the air supply before performing any maintenance or repair procedures.

4.1 GENERAL CLEANING

1. Keep the outer surfaces of the puller unit free of dirt and grime. If hydraulic hoses require cleaning, refer to Section 2.1 for important safety considerations.
2. Keep all hose connections free of dirt and grime. Install protective caps whenever a hose connection is disengaged.

4.2 PREVENTATIVE MAINTENANCE

1. Whenever the puller is to be stored for longer than 2 weeks, maintain a thin coat of 10-weight oil on the outside of black oxide surfaces to prevent rusting.

4.3 LUBRICATION

1. There is no internal lubrication requirement for the puller unit.

4.4 INSPECTION

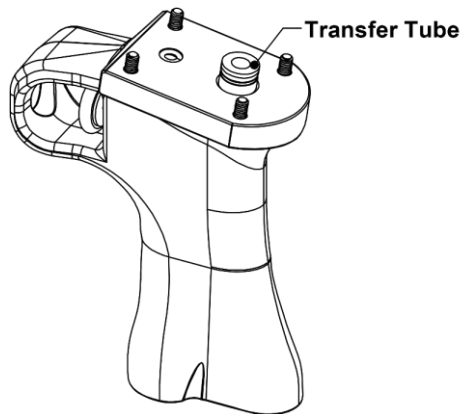
1. Inspect the puller for cracks, leaks, or other damage before each use. Repair and replace immediately.
2. Inspect safety labels (refer to Section 2.0 for required labels) before each use. If any are missing or illegible, replace immediately.

4.5 ASSEMBLY AND DISASSEMBLY

The puller unit may need to be disassembled for replacement of seals. Refer to the Illustrated Parts Breakdown, Section 6.1 for item numbers.

4.5.1 Disassembly

1. Unthread and remove any tooling accessories, such as nose caps and mandrels.
2. Remove the handle assembly (5) by removing the four socket-head screws, using a 9/64-inch hex driver. Hydraulic oil will spill out of the assembly, so be prepared with a suitable container.
3. Remove the transfer tube from the handle assembly. Remove and discard the o-rings and backup rings on both ends of the tube.



**Figure 4.5.1-1
Transfer Tube**

4. Loosen the lockring (Item Number 8) using the spanner wrench (23).
 5. Unthread and remove the end cap (4) using the spanner wrench (23).
 6. Unscrew and remove the barrel (2) from the housing (1) using the spanner wrench (23).
 7. Unthread and remove the threaded adapter (10) or chuck assembly if so equipped; use the flats on the back of the threaded adapter (10) and mating brass piston head (3).
 8. Push the piston all the way forward and remove the small spring pin. Take care not to damage the brass piston head.
 9. Unthread the brass piston head from the piston rod assembly (3). To keep the piston from spinning, use a large flat screwdriver on the back end of the piston.
 10. Remove the piston rod assembly (3) by pushing on the threaded end (mandrel end) of the piston rod until the threads engage the sleeve (6). Unthread the piston rod through the o-ring and remove the piston rod assembly.
 11. Using the provided pin wrench (24), unthread and remove the sleeve retainer (7).
 12. Remove the sleeve assembly (6).
 13. Discard all used seals before reassembly.
-

4.5.2 Reassembly

Important: (1) Thoroughly clean all parts prior to reassembly.
(2) Install o-rings toward hydraulic pressure, with backup rings “behind.”
Reference Figure 4.6-1.

1. Replace the 1046-002 o-ring and 1046-003 backup ring on the outside of the brass sleeve (6). Next, replace the 1046-014 inner o-ring and 1046-015 inner backup ring.
2. Drop the brass sleeve assembly (6) into the front of the housing (1) and push in until fully seated.
3. Thread the sleeve retainer (7) in using the provided pinwrench (24).
4. Replace the 1046-002 o-ring and 1046-003 backup ring on the back end of the piston assembly (3).
5. Install the piston assembly (3) into the housing (1) by gently threading the piston through the sleeve assembly (6). Then push the piston (3) to the full forward position. Lubricating the piston rod and threads with hydraulic oil will help prevent damage to the sleeve seals.
6. Wrap Teflon tape around the threads of the piston rod. Thread on the brass piston head until the small hole lines up with the matching hole in the piston rod.
7. Install a new 1187-093 roll pin. The pin must be slightly underflush to the brass surface to avoid scratching the housing. A small punch may be needed to drive the pin in all the way.
8. Replace the 1046-017 Omni seal on the piston head. Ensure that the orientation matches Figure 4.6.1 with the open end towards the rear. Next, replace the 1046-112 o-ring on the threaded end of the piston rod.
9. Replace the 1046-016 o-ring and install the barrel (2). Tighten with the spanner wrench (23).
10. Ensure the lockring (8) is hand threaded on all the way forward. Thread on the end cap (4) and tighten with the spanner wrench (23). Then, tighten the lockring (8) against the endcap (4) using the spanner wrench (23).
11. Install new 1046-045 o-rings and 1046-044 backup rings on the transfer tube (part of the handle sub-assembly). Note that the o-rings go on the ends of the tube and the backup rings will be towards the middle.
12. Place the small 1046-012 o-ring in place on the handle. Install the handle assembly (5) onto the housing with four socket-head screws, using a 9/64-inch hex driver.
13. The puller is now ready for use. Select the appropriate mandrel/nosecap combination and install.

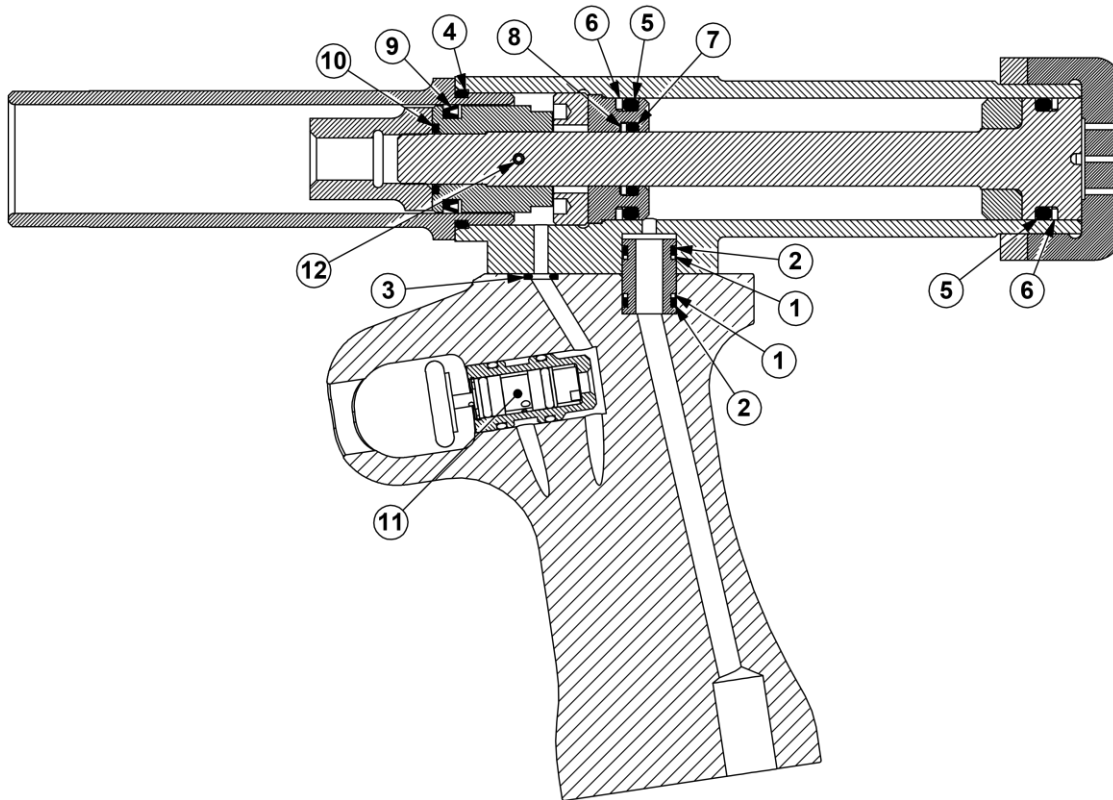
4.6 **LITTLE BRUTE SEAL KIT (LB-SK)**

This kit is used to replace seals in all Little Brute models. It is also included as part of the Little Brute Rework Kit (see Appendix A.1). Table 4.6-1 is a parts list for the Little Brute Seal Kit.

**Table 4.6-1
Little Brute Seal Kit (LB-SK)**

Item Number	Quantity	Part Number	Description
N/A*	1	2040-001	Seal, Trigger
1	2	1046-044	Backup Ring MS28782-7
2	2	1046-045	O-Ring MS28775-012
3	1	1046-012	O-Ring MS28775-008
4	1	1046-016	O-Ring MS28775-122
5	2	1046-002	O-Ring MS28775-212
6	2	1046-003	Backup Ring MS28782-17
7	1	1046-014	O-Ring AN6227B-10
8	1	1046-015	Backup Ring MS28782-10
9	1	1046-017	Omni Seal 125-00750
10	1	1046-112	O-Ring 2-110 N674-70
11	1	1187-622	Valve, Cartridge Trigger
12	1	1187-093	Roll Pin, 3/32 x 7/8

*Used with legacy triggers (See Table A.2-1, Item 6)



**Figure 4.6-1
Little Brute Seal Locations**

SECTION 5.0: TROUBLESHOOTING

This section provides solutions to some basic trouble spots. If you cannot solve your maintenance or operational problems with the information provided in this section, contact the nearest FTI representative.

Note: Should difficulties originate in the PowerPak, consult the specific PowerPak Operations, Maintenance, and Repair Manual.

5.1 POWERPAK WILL NOT BUILD FULL HYDRAULIC PRESSURE

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
POWERPAK WILL NOT BUILD FULL HYDRAULIC PRESSURE	One or more of the key air or hydraulic lines has not been securely connected.	Check the following hose connections, See Figures 2.0-2, 3.1-1 and 3.1-2: <ol style="list-style-type: none">1. Male air-line quick-disconnect fitting from shop air system to PowerPak.2. Hydraulic quick couplings connecting the hoses to the PowerPak manifold, and the puller to the hydraulic hoses.3. Two male/female air-line quick-disconnect fittings connecting the puller to the PowerPak manifold.4. Check that the main air supply has not been interrupted.

⚠ CAUTION

Hydraulic oil under extreme pressure may cause serious injuries if not handled carefully. For technical assistance, please contact the FTI Sales Department.

5.2 PULLER RETRACTS ON TRIGGER ACTUATION, BUT WILL NOT RETURN TO START POSITION

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
PULLER RETRACTS ON TRIGGER ACTUATION, BUT WILL NOT RETURN TO START POSITION	The puller unit requires hydraulic oil to lubricate the piston and cylinder.	Disconnect the hydraulic line and install the CT-604 Pressure Relief Tool onto the end of the hose. Disconnect the air signal line (see Figure 3.1-1) but leave the air pressure line connected. Leave the pump connected to the air supply. Remove the back end cap on the Little Brute. Use a screwdriver and the screwdriver slot in the piston to push the piston rod all the way forward. This will cause hydraulic fluid to pour out of the line, so be prepared with a suitable container. Reinstall the back end cap. Once forward, cycle the trigger several times – DO NOT bottom it out – to introduce hydraulic fluid into the cylinder (20+ short cycles).
As above, AND the hydraulic hose is difficult to bend or coil (indicating unrelieved pressure built up in the hose).	The hydraulic quick coupler line has not been completely tightened at the PowerPak manifold (there should be no space between the PowerPak coupler and the hose fitting flange). See Figure 3.1-2.	Once hydraulic pressure has been introduced to the hydraulic hose, the pressure must be relieved before the coupler can be sufficiently tightened.

Procedure for relieving hydraulic pressure:
<ol style="list-style-type: none"> 1. Disconnect the main air supply. 2. Disconnect the hydraulic hose from the PowerPak. 3. Connect Enerpac CT-604 to free end of the hose and bleed off hydraulic oil to relieve the built-up pressure. Figure 5.2-2 shows the Enerpac CT-604 Pressure Relief Tool. 4. Once pressure is relieved, reconnect the hydraulic hose to the PowerPak. 5. Re-attach air lines to get the puller unit to return to the forward position.



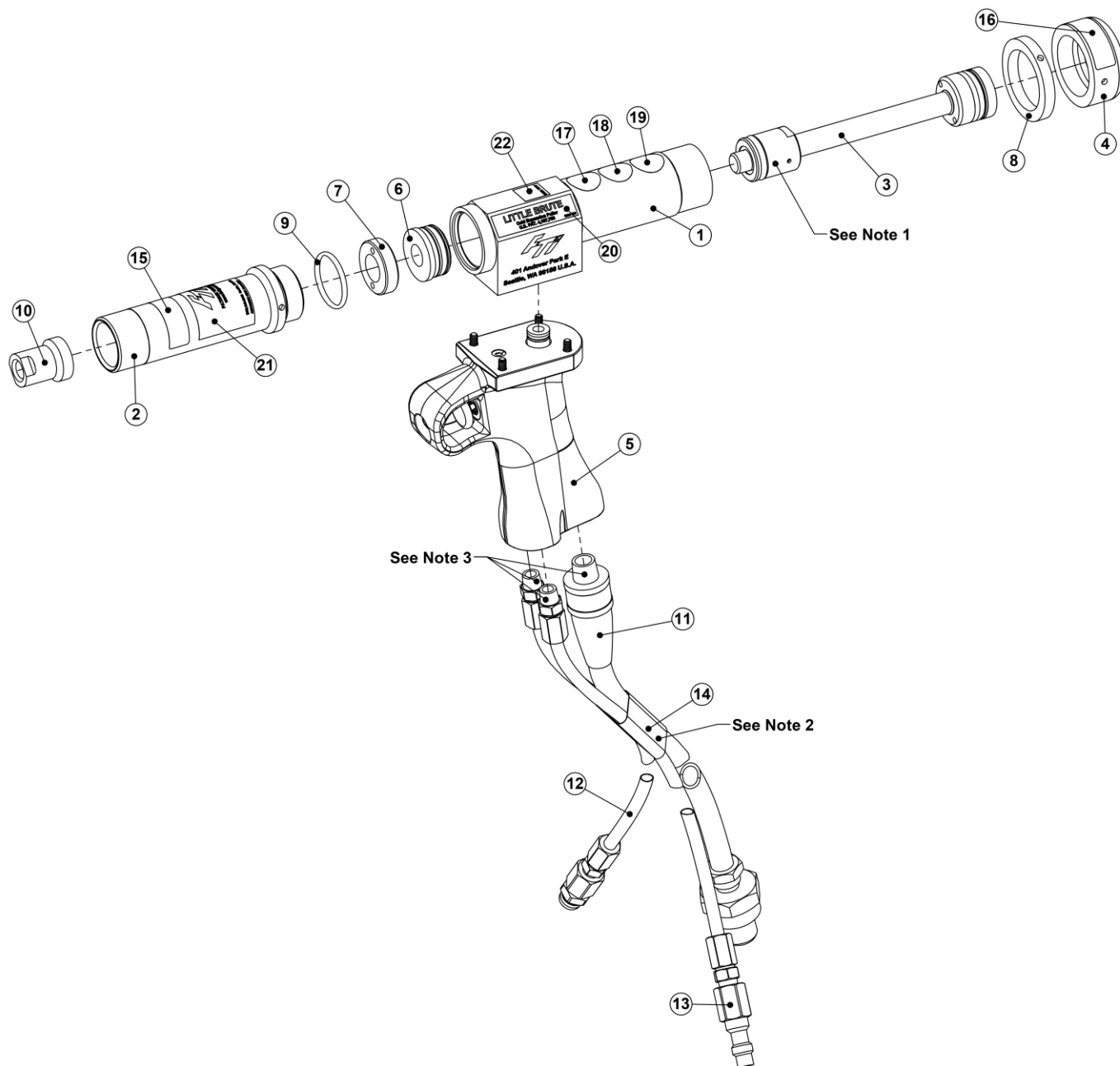
**Figure 5.2-2
Enerpac CT-604 Pressure Relief Tool
(FTI Part Number 1187-770)**

5.3 MANDREL STICKS IN HOLE WHEN PULLER IS ACTIVATED

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
<p>MANDREL STICKS IN HOLE WHEN PULLER IS ACTIVATED</p>	<p>Not enough pressure used to generate pull forces. If the Little Brute is being used with an FT-20 PowerPak, proceed to solution 4.</p>	<p>Use the following procedure to analyze the problem:</p> <ol style="list-style-type: none"> 1. Activate the puller unit and observe the pressure reading on the PowerPak pressure gage (FT-200D or FT-200C PowerPak only). 2. The pressure gage should read 10,000 psi (689.5 bar). Note: The FT-20 PowerPak is factory set at 10,000 psi and cannot be adjusted. The FT-20-4K is factory set at 4,000 psi and cannot be adjusted. 3. If an increase in pressure is required, refer to the FT-200D or FT-200C operator manual for instructions to adjust the pressure limit. 4. If the mandrel remains stuck at 10,000 psi (689.5 bar), disconnect all hoses connecting the puller to the pump. Disengage the mandrel from the puller unit, then push the mandrel out using an impact hammer. Contact the FTI Sales Department for additional assistance.

SECTION 6.0: ILLUSTRATED PARTS BREAKDOWN

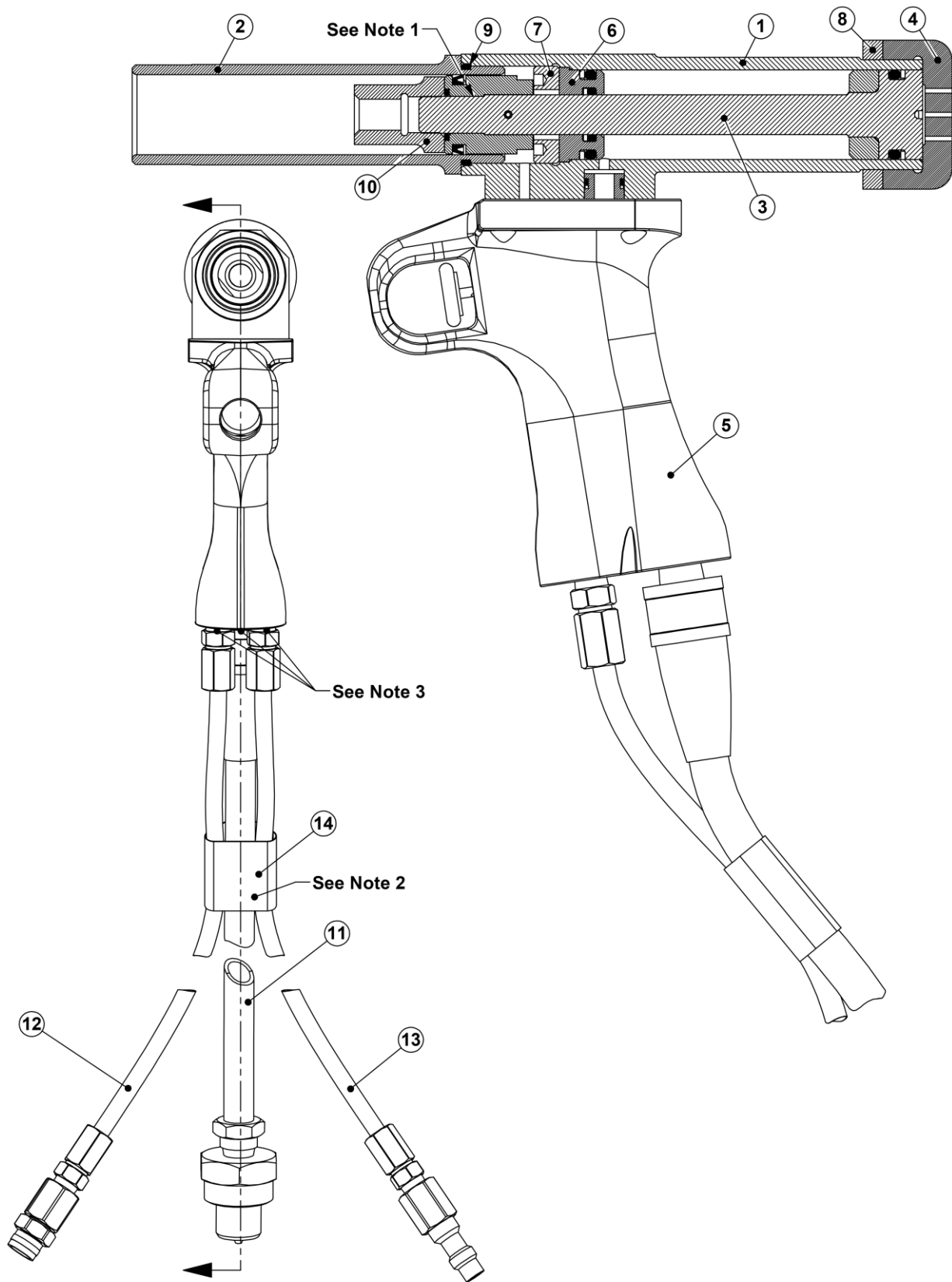
6.1 LITTLE BRUTE ASSEMBLY DIAGRAMS



**Figure 6.1-1
Little Brute Exploded View**

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube.
3. Install indicated items using teflon tape on threads.



**Figure 6.1-2
Little Brute Section View**

6.2 *LITTLE BRUTE PART LISTS*

Table 6.2-1	LB-10 Parts List	20
Table 6.2-2	LB-10A Parts List	21
Table 6.2-3	LB-10B Parts List.....	22
Table 6.2-4	LB-10-H25 Parts List	23
Table 6.2-5	LB-10-V Parts List	24
Table 6.2-6	LB-10-4K Parts List	25
Table 6.2-7	LB-15 Parts List	26
Table 6.2-8	LB-15A Parts List	27
Table 6.2-9	LB-15B Parts List.....	28
Table 6.2-10	LB-15-20D4 Parts List	29
Table 6.2-11	LB-15-V Parts List	30
Table 6.2-12	LB-20 Parts List	31
Table 6.2-13	LB-20A Parts List	32
Table 6.2-14	LB-20B Parts List.....	33
Table 6.2-15	LB-20-H25 Parts List	34
Table 6.2-16	LB-20-V Parts List	35
Table 6.2-17	LB-25 Parts List	36
Table 6.2-18	LB-25A Parts List	37
Table 6.2-19	LB-25B Parts List.....	38
Table 6.2-20	LB-25-V Parts List	39
Table 6.2-21	LB-30 Parts List	40
Table 6.2-22	LB-30A Parts List	41
Table 6.2-23	LB-30B Parts List.....	42
Table 6.2-24	LB-30-H25 Parts List	43
Table 6.2-25	LB-30-V Parts List	44
Table 6.2-26	LB-35 Parts List	45
Table 6.2-27	LB-35A Parts List	46
Table 6.2-28	LB-35B Parts List.....	47
Table 6.2-29	LB-35-H20 Parts List	48
Table 6.2-30	LB-35-V Parts List	49
Table 6.2-31	LB-35-H20-V Parts List.....	50

**Table 6.2-1
LB-10 Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-001	Housing		
2	1	2335-001	Barrel		
3	1	2334-001	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-2
LB-10A Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-001	Housing		
2	1	2335-001	Barrel		
3	1	2334-001	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2477-001	LB-CA-4 Chuck Assembly		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-3
LB-10B Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-001	Housing		
2	1	2335-001	Barrel		
3	1	2334-001	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2477-002	LB-CA-6 Chuck Assembly		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-4
LB-10-H25 Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-001	Housing		
2	1	2335-001	Barrel		
3	1	2334-001	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-008	Assembly, 25-foot Hydraulic Hose		2, 3
12	1	2106-016	Assembly, 25-foot Air Hose (Female)		2, 3
13	1	2106-015	Assembly, 25-foot Air Hose (Male)		2, 3
14	12	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-5
LB-10-V Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-001	Housing		
2	1	2335-001	Barrel		
3	1	2334-001	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	8	2638-025	Tube, Yellow Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every one foot. Do not apply any heat shrink tubing within 18 inches from either end of the hoses.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-6
LB-10-4K Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-001	Housing		
2	1	2335-001	Barrel		
3	1	2334-001	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	8	2638-026	Tube, Green Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	1086-214	Hydraulic Fitting for FT-20-4K	PowerTeam 9793	3, 5
26	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
27	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every one foot. Do not apply any heat shrink tubing within 18 inches from either end of the hoses.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.
5. Existing fitting is removed from end of hydraulic hose assembly and replaced.

**Table 6.2-7
LB-15 Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-002	Housing		
2	1	2335-002	Barrel		
3	1	2334-002	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-8
LB-15A Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-002	Housing		
2	1	2335-002	Barrel		
3	1	2334-002	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2477-001	LB-CA-4 Chuck Assembly		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-9
LB-15B Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-002	Housing		
2	1	2335-002	Barrel		
3	1	2334-002	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2477-002	LB-CA-6 Chuck Assembly		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-10
LB-15-20D4 Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-002	Housing		
2	1	2335-003	Barrel		
3	1	2334-002	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-11
LB-15-V Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-002	Housing		
2	1	2335-002	Barrel		
3	1	2334-002	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	8	2638-025	Tube, Yellow Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every one foot. Do not apply any heat shrink tubing within 18 inches from either end of the hoses.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-12
LB-20 Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-003	Housing		
2	1	2335-003	Barrel		
3	1	2334-003	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-13
LB-20A Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-003	Housing		
2	1	2335-003	Barrel		
3	1	2334-003	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2477-001	LB-CA-4 Chuck Assembly		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-14
LB-20B Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-003	Housing		
2	1	2335-003	Barrel		
3	1	2334-003	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2477-002	LB-CA-6 Chuck Assembly		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-15
LB-20-H25 Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-003	Housing		
2	1	2335-003	Barrel		
3	1	2334-003	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-008	Assembly, 25-foot Hydraulic Hose		2, 3
12	1	2106-016	Assembly, 25-foot Air Hose (Female)		2, 3
13	1	2106-015	Assembly, 25-foot Air Hose (Male)		2, 3
14	12	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-16
LB-20-V Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-003	Housing		
2	1	2335-003	Barrel		
3	1	2334-003	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	8	2638-025	Tube, Yellow Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every one foot. Do not apply any heat shrink tubing within 18 inches from either end of the hoses.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-17
LB-25 Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-004	Housing		
2	1	2335-004	Barrel		
3	1	2334-004	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-18
LB-25A Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-004	Housing		
2	1	2335-004	Barrel		
3	1	2334-004	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2477-001	LB-CA-4 Chuck Assembly		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-19
LB-25B Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-004	Housing		
2	1	2335-004	Barrel		
3	1	2334-004	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2477-002	LB-CA-6 Chuck Assembly		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-20
LB-25-V Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-004	Housing		
2	1	2335-004	Barrel		
3	1	2334-004	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	8	2638-025	Tube, Yellow Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every one foot. Do not apply any heat shrink tubing within 18 inches from either end of the hoses.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-21
LB-30 Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-005	Housing		
2	1	2335-005	Barrel		
3	1	2334-005	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-22
LB-30A Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-005	Housing		
2	1	2335-005	Barrel		
3	1	2334-005	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2477-001	LB-CA-4 Chuck Assembly		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-23
LB-30B Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-005	Housing		
2	1	2335-005	Barrel		
3	1	2334-005	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2477-002	LB-CA-6 Chuck Assembly		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-24
LB-30-H25 Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-005	Housing		
2	1	2335-005	Barrel		
3	1	2334-005	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-008	Assembly, 25-foot Hydraulic Hose		2, 3
12	1	2106-016	Assembly, 25-foot Air Hose (Female)		2, 3
13	1	2106-015	Assembly, 25-foot Air Hose (Male)		2, 3
14	12	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-25
LB-30-V Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-005	Housing		
2	1	2335-005	Barrel		
3	1	2334-005	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	8	2638-025	Tube, Yellow Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every one foot. Do not apply any heat shrink tubing within 18 inches from either end of the hoses.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-26
LB-35 Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-006	Housing		
2	1	2335-006	Barrel		
3	1	2334-006	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-27
LB-35A Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-006	Housing		
2	1	2335-006	Barrel		
3	1	2334-006	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2477-001	LB-CA-4 Chuck Assembly		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-28
LB-35B Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-006	Housing		
2	1	2335-006	Barrel		
3	1	2334-006	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2477-002	LB-CA-6 Chuck Assembly		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	4	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-29
LB-35-H20 Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-006	Housing		
2	1	2335-006	Barrel		
3	1	2334-006	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-002	Assembly, 20-foot Hydraulic Hose		2, 3
12	1	2106-004	Assembly, 20-foot Air Hose (Female)		2, 3
13	1	2106-003	Assembly, 20-foot Air Hose (Male)		2, 3
14	9	2638-001	Tube, Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every two feet.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-30
LB-35-V Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-006	Housing		
2	1	2335-006	Barrel		
3	1	2334-006	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-001	Assembly, 10-foot Hydraulic Hose		2, 3
12	1	2106-002	Assembly, 10-foot Air Hose (Female)		2, 3
13	1	2106-001	Assembly, 10-foot Air Hose (Male)		2, 3
14	8	2638-025	Tube, Yellow Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every one foot. Do not apply any heat shrink tubing within 18 inches from either end of the hoses.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

**Table 6.2-31
LB-35-H20-V Parts List**

Item Number	Quantity	Part Number	Description	Reference Information	Notes
1	1	2333-006	Housing		
2	1	2335-006	Barrel		
3	1	2334-006	Piston Assembly		1
4	1	2136-001	End Cap		
5	1	5211-001	Handle Assembly		
6	1	2337-001	Sleeve Assembly		
7	1	2338-001	Sleeve Retainer		
8	1	2120-003	Lockring		
9	1	1046-016	O-Ring	MS28775-122	
10	1	2340-001	7/16-20 Threaded Adapter		
11	1	2107-002	Assembly, 20-foot Hydraulic Hose		2, 3
12	1	2106-004	Assembly, 20-foot Air Hose (Female)		2, 3
13	1	2106-003	Assembly, 20-foot Air Hose (Male)		2, 3
14	18	2638-025	Tube, Yellow Heat Shrink 3-inch Piece		2
15	1	1009-185	Nosecap Warning Label		
16	1	1009-184	Do Not Strike Label		
17	1	1187-105	Ear Protection Label		
18	1	1187-106	Eye Protection Label		
19	1	1187-107	Read Manual Label		
20	2	1009-186	Little Brute Label		
21	1	1009-094	FTI Logo Label		
22	1	1166-001	CE Label		
23	1	1045-018	Spanner Wrench	34-351	4
24	1	2369-001	Pinwrench Assembly	CBC-1-PW	4
25	1	6575-001	Pelican Kit Case with Foam	FT-BX-20-15-9	4
26	1	2720-006	Little Brute Operator Manual		4

Notes:

1. While installing sleeve assembly (item number 6) onto rod of piston, rotate piston until the threads pass the o-ring. This will prevent the o-ring from being damaged by the threads. Then, apply teflon tape to threads on piston (item number 3) before installing the brass piston head and pinning in place.
2. Hoses are to be fastened together using heat shrink tube, every one foot. Do not apply any heat shrink tubing within 18 inches from either end of the hoses.
3. Install indicated items using teflon tape on threads.
4. Indicated items are included as part of assembly but are not installed into puller.

APPENDIX A: LEGACY UNITS

Various design changes and improvements have been made to the Little Brute series. These older units can be upgraded or refurbished to the new configuration if desired.

A.1 TRIGGER REWORK (FTI-CT-RK AND LB-CT-RK)

FTI redesigned the puller unit trigger assembly to a cartridge system in 2005. The new design reduces the occurrence of trigger air leaks, performs more reliably (better pump actuation), and is easier to maintain.

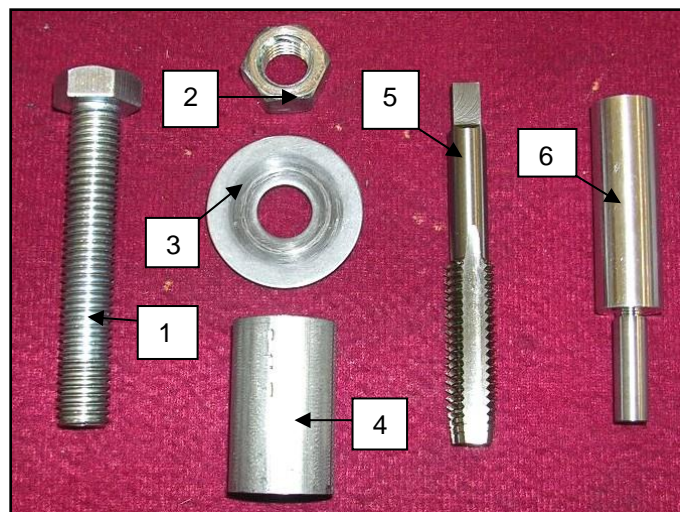
The legacy trigger design detailed in Section A.2 can be easily replaced with this improved trigger assembly detailed in Section A.1. Two part numbers are needed for replacement:

- Either the Cartridge Trigger Assembly Kit (FTI-CT-RK) or the Little Brute Rework Kit (LB-CT-RK) – (see kit differences in Table A.1-2 and A.1-3), and
- Puller Trigger Rework Tool Kit (FTI-CT-RKT) – (see kit in Table A.1-1).

One FTI-CT-RK or LB-CT-RK kit is required for each puller unit converted. Only one tool kit (FTI-CT-RKT) is required regardless of the number of pullers converted. The FTI-CT-RKT kit includes the tools (punch, tap, etc.) required and detailed instructions on how to perform the modification.

**Table A.1-1
FTI-CT-RKT Trigger Assembly Replacement Tool Kit**

Item Number	Quantity	Part Number	Description
1	1	1199-029	Hex Head Cap Screw, fully threaded, 3 inches long, 1/2-13UNC
2	1	1045-464	Hex nut, 1/2-13UNC
3	1	1187-633	Flat washer, 9/16 inch ID, 1 3/16 inches OD
4	1	1199-028	Metal Tubing, 1.5 inches long, 7/8 inch ID
5	1	1187-634	Hand tap, 1/2 x 13UNC, HSS, Class H2, Plug
6	1	3471-001	Hand punch, piloted, .35 inch pilot dia.
7	1	2720-072	Puller Trigger Replacement Instructions (DM #160918) – not shown



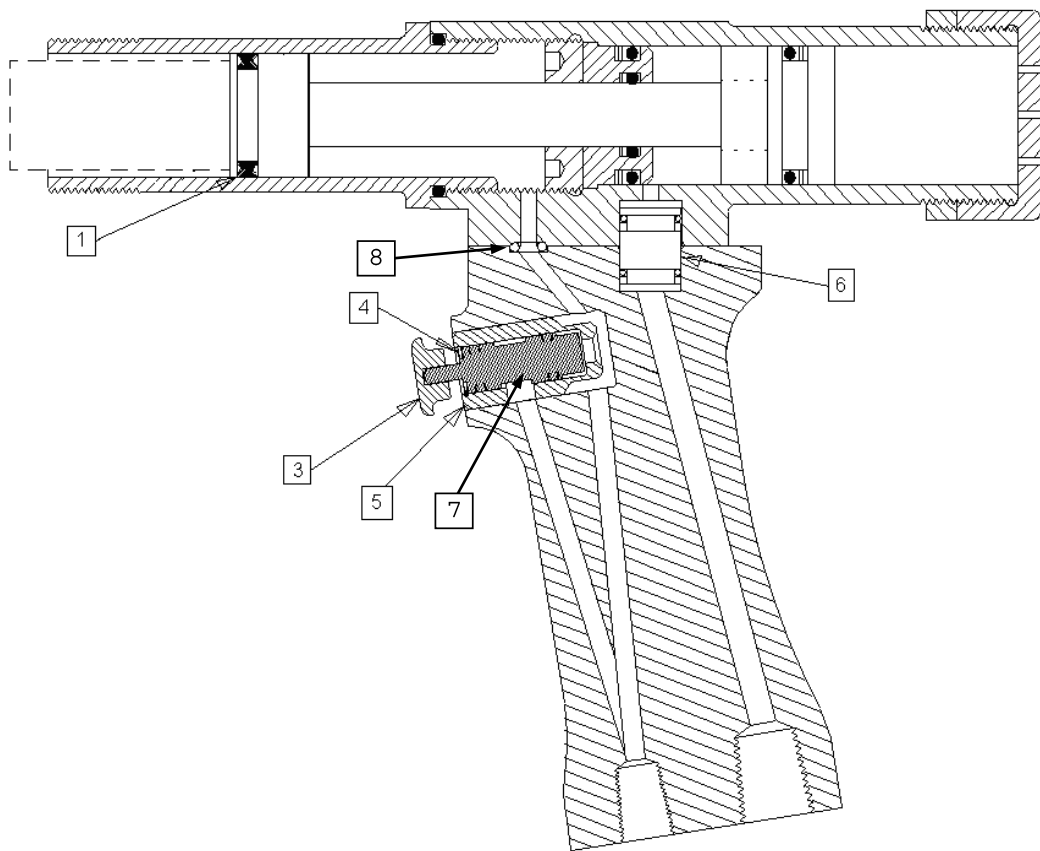
**Figure A.1-1
FTI-CT-RKT Tool Kit Pieces**

**Table A.1-2
FTI-CT-RK Trigger Rework Kit**

Item Number	Quantity	Part Number	Description
3	1	1187-623	Push Button, Brass
4	1	1187-624	Retaining Ring, Internal
5	1	3196-001	Sleeve, Puller Handle Trigger
7	1	1187-622	Cartridge Valve

**Table A.1-3
LB-CT-RK Little Brute Rework Kit**

Item Number	Quantity	Part Number	Description
1	1	2339-001	LB Air Seal (Brass Piston Head and Seals)
Not Pictured	4	1026-002	Screw, SHC (8-32UNC X 3/8")
3	1	1187-623	Pushbutton, Brass
4	1	1187-624	Retaining Ring, Internal
5	1	3196-001	Sleeve, Puller Handle Trigger
6	1	2039-001	LB Transfer Tube
7	1	1187-622	Cartridge Valve
8	1	1046-012	O-Ring
See Section 4.6	1	8000-484	Little Brute Seal Kit (LB-SK)



**Figure A.1-2
Diagram of Cartridge Trigger Assembly**

A.2 LEGACY TRIGGER ASSEMBLY

The legacy trigger design detailed here can be easily replaced with the improved trigger assembly detailed in Section A.1. Table A.2-1 is a parts list for the old-style trigger assembly.

Table A.2-1
Parts List for Legacy Trigger Assembly

Item Number	Quantity	Part Number	Description
1	1	2042-001	Trigger, LB Handle
2	1	1005-003	Spring, LB Handle
3	1	2043-001	Retainer, LB Handle
4	1	1045-025	Ball, .250 Diameter Steel
5	1	1045-026	Spring Pin, 1/8 x 3/4
6	1	2040-001	Seal, LB Handle
7	1	2044-001	Sleeve, LB Handle

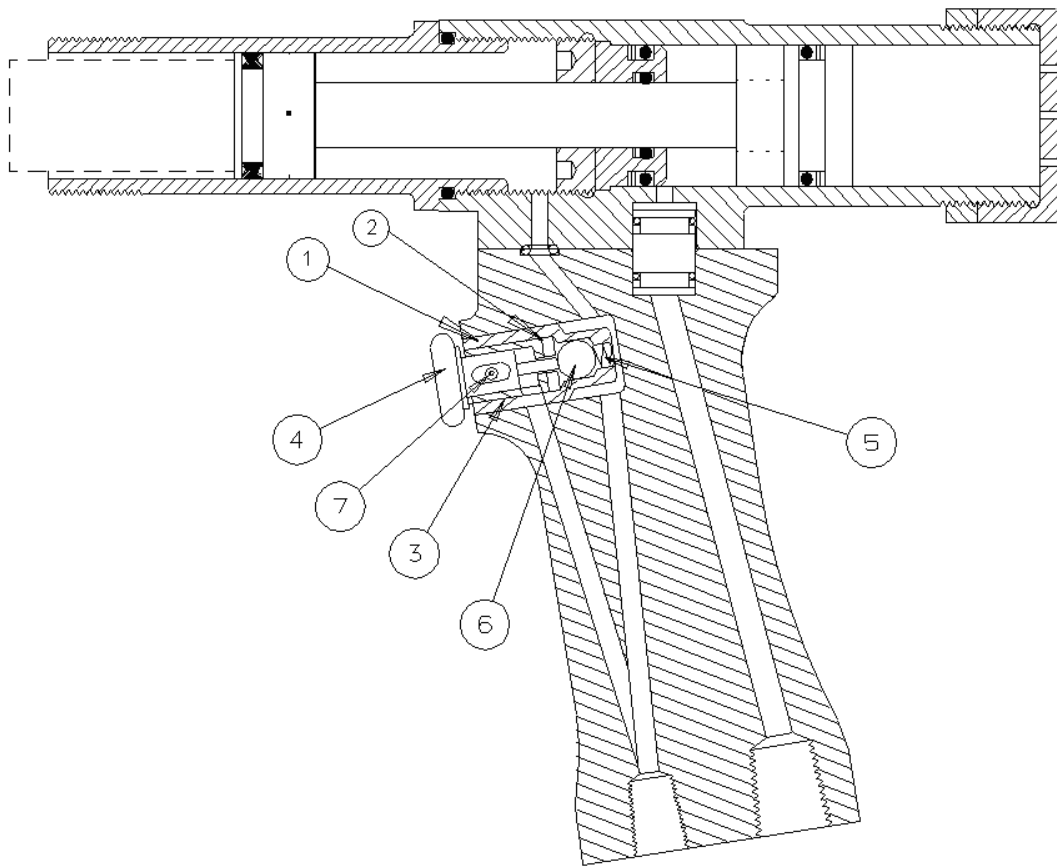
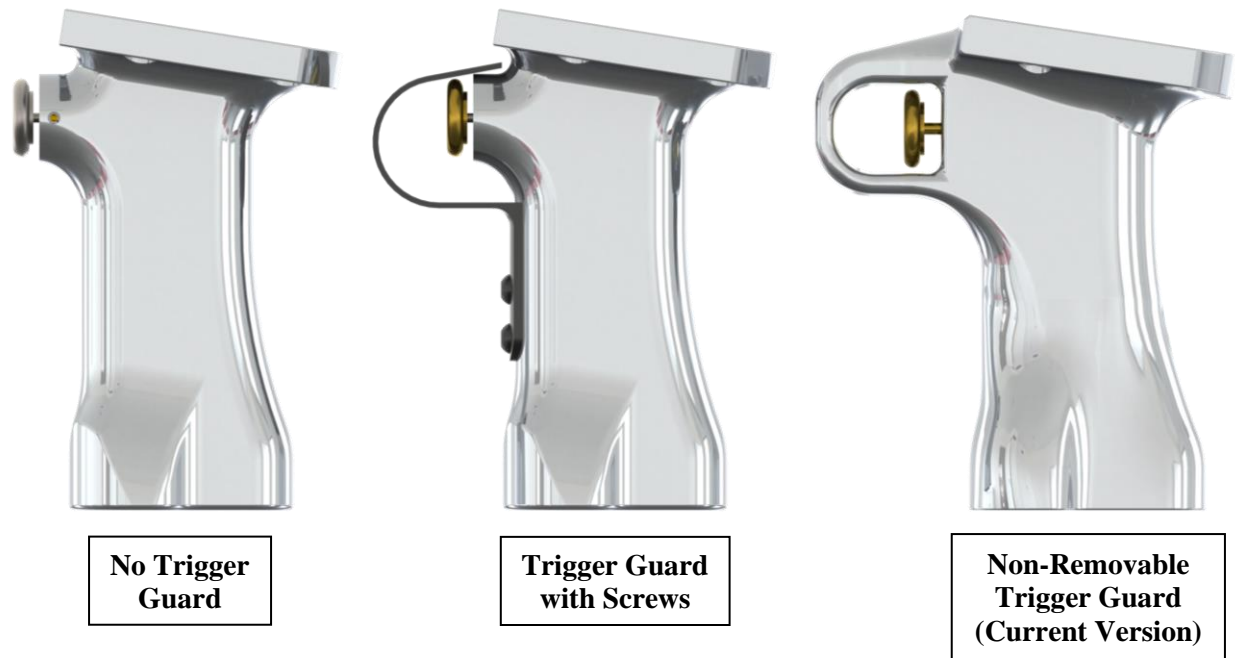


Figure A.2-1
Diagram of Legacy Trigger Assembly

A.3 HANDLE REVISIONS

There have been two major variations of the handle design before the current model. See Figure A.3-1.



**Figure A.3-1
Handle Revisions**

The trigger guard is an important safety feature that was added to minimize the chances of accidental activation. A sheet metal guard attached with screws was originally available as an option but was made a standard feature in 2013.

In 2019 this design was replaced by an integrated trigger guard that is non-removable. This prevents the operator from removing the guard and causing an unsafe condition. The design also improves operator comfort since the protruding screw heads are removed.

If desired, the older model handles can be replaced by purchasing the new version. The sub-assembly (5211-001) also includes an installed trigger, so the rework options described in Appendix A.1 are not necessary.

APPENDIX B: E.C. DECLARATION OF CONFORMITY

FATIGUE TECHNOLOGY
401 Andover Park East
Seattle, Washington 98188-7605
USA



E.C. DECLARATION OF CONFORMITY

Manufacturer: Fatigue Technology
401 Andover Park East
Seattle, WA 98188-7605

Telephone: (206) 246-2010
Fax: (206) 244-9886

The undersigned declares that the machinery described:

Type: LB-xx where '-xx' denotes stack-up capability.
LB-xx-V where '-V' represents high visibility hoses.
LB-xx-Hxx where '-Hxx' represents a unique hose length.
LB-15-20D4 is a special LB-15 puller with an LB-20 front barrel.
LB-xx-4K where 4K denotes 4,000 psi max used with PowerPak (FT-20-4K)

For a full list of applicable model numbers, see Table 1.3-1 in the operator manual.

Conforms to the following Directive(s), Regulation(s), and/or Normative Document(s):

2006/42/EC	EU Machinery Directive
ISO 11148-1	Hand-Held Non-Electric Power Tools – Safety Requirements – Part 1
ISO 12100-1	Safety of machinery - General Principles for design - Risk assessment and risk reduction
ISO 4413	Hydraulic fluid power – General rules and safety requirements for systems and their components
ISO 4414	Pneumatic fluid power – General rules and safety requirements for systems and their components
ISO 7010	Graphical symbols — Safety colours and safety signs — Registered safety signs

Responsible Person in E.C.:
Permaswage SAS
Boitelle, Sevara
5 Rue des Dames
78344 Les Clayes Sous Bois
France

Telephone: 33 (0)6-76-61-83-90

Signature: _____

Date: 16.02.2024

DM# 961919

