

LITTLE BEAVER[®]

EARTH DRILLS & AUGERS

PS-18H/PS-19D/PS-20HA/PS-24H HYDRAULIC POWER UNIT



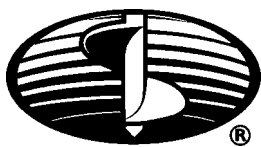
OPERATOR'S MANUAL

WITH

**MAINTENANCE AND
PARTS INFORMATION**

1-800-227-7515

0107



LITTLE BEAVER, INC.

P.O. BOX 840 • LIVINGSTON, TEXAS 77351

PH# 936/327-3121 • FAX# 936/327-4025

Web: www.littlebeaver.com • E-Mail: sales@littlebeaver.com

MFG. BY: LITTLE BEAVER, INC. - LIVINGSTON, TEXAS USA

CUSTOMER SERVICE

Ph: 800/227-7515 or 936/327-3121 or Fax 936/327-4025

ORDERS...

Place your orders by telephone, fax, or mail. When calling, please have your parts manual handy for reference. Our hours are 8:00 am - 4:30 pm central time, Monday thru Friday. When ordering by mail or fax, include a description and LITTLE BEAVER part number for the items you are ordering, your return address, and payment or your authorization for COD shipment.

All orders are shipped UPS where possible. Freight charges will be added to your invoice. Some items are oversize, resulting in a higher shipping cost. Power units and larger augers are shipped via motor freight due to their weight.

PAYMENT TERMS...

COD, Cash in Advance, Visa, Mastercard or NET 30 with approved credit. COD limit for new accounts is \$500.00. Personal or company checks on new accounts will be held until they clear the bank. To eliminate this delay, you may pay by wire transfer or send a certified or cashiers check. For a NET 30 open account, please call or write for a credit application.

SERVICE AND REPAIR...

Your LITTLE BEAVER Hydraulic Power Unit has been designed for user repair with ordinary hand tools. No special tools are required. Consult the appropriate section of the parts manual for instructions.

Service or technical consultation is available, free of charge, from the factory in Livingston, Texas. We will be pleased to help you with any problems or questions. Just write, fax, or call. Our hours are 8:00am - 4:30pm central time, Monday thru Friday.

Factory repair is available. If you return a part to the factory, please include the following information: Your name and return address, a description of the problem and payment or authorization to return the repaired item COD for the repair and shipping charges.

RETURNS...

Please call the factory for a return authorization. This will help to ensure that your parts are handled properly. Include your name and address, customer account #, invoice # under which the returned parts were ordered, and a brief description of the problem with the parts or the reason for returning them. Parts to be considered for warranty must be returned to the factory for inspection within 10 days after receipt of replacement parts. Be sure to prepay the shipping charges, we will not accept collect or COD packages.

Our mailing address...

LITTLE BEAVER, Inc.

P. O. Box 840


Livingston, Texas 77351



SAFETY ALERT SYMBOL 

The symbol shown above is used to call your attention to instructions concerning your personal safety. **WATCH THIS SYMBOL** — It points out important safety precautions. It means — **ATTENTION! BECOME ALERT! YOUR PERSONAL SAFETY IS INVOLVED!**

Read the message that follows and be alert to the possibility of *Personal Injury or Death!*

 **WARNING:** The Engine Exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

1 YEAR LIMITED WARRANTY

For 1 year from purchase, LITTLE BEAVER, INC. will replace for the original purchaser, free of charge, any part or parts, found upon examination by any factory authorized service center, or by the factory at Livingston, Texas, to be defective in material or workmanship or both. If your equipment can not be repaired, it will be replaced. All transportation charges on parts submitted for replacement under this warranty must be borne by purchaser.

There is no other express warranty.

Implied warranties, including those of merchantability and fitness for a particular purpose, are limited to 1 year from purchase and to the extent permitted by law. Any and all implied warranties are excluded. This is the exclusive remedy and liability for consequential damages under any and all warranties are excluded to the extent exclusion is permitted by law.

*Notice: Engines are warranted by the manufacturer of the engine. See separate engine warranty enclosed.

MACHINE SERIAL NUMBER

The machine serial number for your Hydraulic Power Unit is located on the front plate of the frame. For your convenience, when requiring service or parts information, refer to this number and your model number. Record the model number, engine make, machine serial number and date of purchase in the space provided below:

MODEL NUMBER _____ ENGINE MAKE _____

MACHINE SERIAL NUMBER _____ DATE OF PURCHASE _____



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OPERATORS MANUAL

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PARTS MANUAL

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SAFETY INSTRUCTIONS



WARNING: Failure to observe safety instructions and reasonable safety practices can cause Property Damage, Serious Bodily Injury and/or Death. BE CAREFUL!! WATCH OUT FOR BYSTANDERS!!



DANGER: NEVER run engine inside building or enclosed area. Exhaust gases contain carbon monoxide, an odorless and deadly poison.



DANGER: NEVER drill holes where there is a possibility of underground power cables or other hazards. The exact location of underground services must be determined prior to drilling. Inadvertent severing of telephone, fiber optic or CATV transmission cable, or damage to sewer pipe is costly; RUPTURING OF GAS OR WATER LINES CAN CAUSE SERIOUS BODILY INJURY AND/OR DEATH. COMING INTO CONTACT WITH BURIED POWER LINES CAN CAUSE SERIOUS BODILY INJURY, SEVERE BURNS, AND/OR ELECTROCUTION. Call local utility companies or your local "One-Call" number at least 48 hours before digging and have underground utilities marked.



WARNING: Never use hands to search for leaks. Instead, use a piece of cardboard or wood. Escaping hydraulic fluid under pressure can have sufficient force to penetrate the skin, causing serious injury. Before disconnecting lines, be sure to relieve pressure. Before applying pressure, be sure connections are tight and fittings and hoses are not damaged.

If injured by escaping fluid, see a doctor at once. Serious infection and/or reaction can develop if proper medical treatment is not administered immediately.



CAUTION:

1. Read and understand this operator's manual and the operator's manual for the engine before operating.
2. Read and understand the operator's manual for the equipment to be operated with the Hydraulic Power Source.
3. Always correctly install the torque tube before operating the earth drill.
4. Make sure everyone is clear before operating.
5. Keep bystanders at least 10 feet away from work area.
6. Before starting, be sure hydraulic pressure is off.
7. Relieve hydraulic pressure before disconnecting lines.
8. Shut off engine to adjust, service, clean or re-fuel.
9. Keep all safety shields and devices in place.
10. Keep hands, feet and clothing away from moving parts.
11. Do not leave machine unattended with engine running.
12. Wear safety glasses.

NOTICE

It is the responsibility of the contractor, owner and user to maintain and operate the Hydraulic Power Source in compliance with operating instructions provided. Observe all listed safety instructions and other reasonable safety practices. LITTLE BEAVER, INC. accepts no responsibility for damages to this machine, and other property damage and/or bodily injury due to careless or improper operations.

LITTLE BEAVER, INC. does not recommend or condone any unauthorized modifications to the Hydraulic Power Source.

LITTLE BEAVER, INC. reserves the right to make changes in design and changes for improvements upon its product without imposing any obligation upon itself to install the same upon its products theretofore manufactured.

Your operators manual offers recommendations for prolonged and satisfactory service.



MAINTENANCE AND LUBRICATION

Engines are shipped without oil or gasoline. Refer to MANUFACTURER'S INSTRUCTIONS for proper procedures and recommended fluids.



SHUT OFF ENGINE to adjust, service, clean or refuel the machine.

HYDRAULIC RESERVOIR:

The hydraulic reservoir should be filled to the "FULL" mark on the dipstick with recommended hydraulic oil.

Hydraulic Oil Recommendation: Most premium grade, mineral-oil based hydraulic fluids with an anti-foam inhibitor is suitable.

ISO VG 46 fluids are recommended for normal temperature operation while ISO VG 32 fluids can be used in colder climates and ISO VG 68 can be used in warmer climates.

The hydraulic oil and return line oil filter should be changed after the first 15 hours of use and once every 500 hours or 3 months thereafter.

IMPORTANT: Never attempt to start engine with a low hydraulic oil level. A low hydraulic oil level will cause excessive heat and premature component failures.

NOTE: Both engine oil and hydraulic oil levels should be checked prior to each day's use.



WARNING: NEVER use hands to search for leaks, instead, use a piece of cardboard or wood. Escaping hydraulic fluid under pressure can have sufficient force to penetrate the skin, causing serious injury. Before disconnecting lines, be sure to relieve pressure. Before applying pressure, be sure connections are tight and fittings and hoses are not damaged.

If injured by escaping fluid, see a doctor at once. Serious infection and/or reaction can develop if proper medical treatment is not administered immediately.

HYDRAULIC OIL LEAKAGE: If any hydraulic oil leakage is encountered, check and properly tighten the associated fitting. (Refer to torque chart for proper assembly torque). If the leakage persists, it may be necessary to replace the associated fitting or hose assembly.

IMPORTANT: All nuts, fasteners, and fittings must be kept tightened. Refer to Torque Chart for proper assembly torque.

WIRING INFORMATION:

The cooling fan and hour meter are connected to the Load (LO) wire from the engine wiring harness. See the engine owner's manual for specific information.



BEFORE STARTING THE ENGINE. Be sure that:

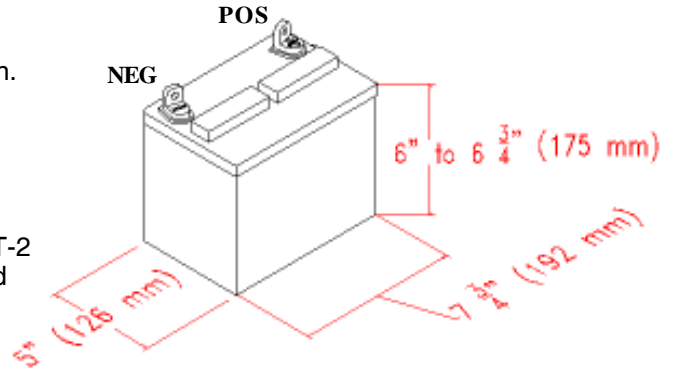
- 1) Engine is properly prepared to Manufacturer's specifications. Refer to engine manufacturer's instructions.
- 2) Fuel valve is open.
- 3) Hydraulic fluid level is maintained properly.
- 4) Hydraulic flow valve lever is in "START/OFF" position.
- 5) Battery is properly charged.

Recommended Battery

U1 - 12 volt - 250-350 cca
Lawn & Garden tractor battery.
Example: Champion Lawn/Garden Part # GT-2
275 series. Terminals arranged as indicated

Maximum Battery Size:

8 1/2" L x 5 1/2" W x 8 1/2" H
216mm x 140mm x 216mm



OPERATING INSTRUCTIONS



DANGER: NEVER run engine inside building or enclosed area. Exhaust gases contain carbon monoxide, an odorless and deadly poison.

TO START THE ENGINE:

Pull the choke lever out to choke the engine. Set the throttle lever between one-half throttle and full throttle. Turn the key clockwise to start the engine. After the engine starts, gradually push the choke lever in fully and allow the engine to warm-up for 2 to 3 minutes.



READ AND UNDERSTAND THE OPERATOR'S MANUAL FOR THE EQUIPMENT TO BE OPERATED WITH THE HYDRAULIC POWER SOURCE.

THROTTLE/HYDRAULIC FLOW:

The nominal operating flow of the power source is:

18 HP = 8 gpm
19/20 HP = 10 gpm
24 HP = 12 gpm

The rpm of the engine may be reduced to reduce the flow rate if necessary.

NOTE: Running engine for a prolonged period of time at too low an RPM will result in battery discharge which will reduce fan speed, causing the hydraulic oil to become too hot.



MAKE SURE EVERYONE IS CLEAR BEFORE OPERATING.



operating instructions, continued...

HYDRAULIC FLOW BYPASS VALVE:

The PS-18/19/20/24 hydraulic power source is equipped with a hydraulic flow bypass valve which diverts the hydraulic flow to the reservoir ("START/OFF" position), or to the pressure coupling ("ON" position).

The hydraulic flow bypass valve allows tools to be coupled and uncoupled to the power source without shutting off the engine. Be sure the valve lever is in the "START/OFF" position when coupling or uncoupling the tools.

IMPORTANT: When coupling the quick disconnect fittings, connect the "RETURN" ("R") first and the "PRESSURE" ("M") second. When uncoupling the quick disconnect fittings, disconnect the "PRESSURE" first and the "RETURN" second. This will ease coupling and uncoupling by minimizing pressure in the hydraulic lines.



KEEP ALL SAFETY SHIELDS AND DEVICES IN PLACE.



KEEP HANDS, FEET, AND CLOTHING AWAY FROM MOVING PARTS.

CHANGING THE PRESSURE RELIEF SETTING:

The PS-18/19/20/24 hydraulic power source is equipped with a pressure relief valve to protect the equipment from high pressure spikes in the oil circuit. It is factory set to 2500 PSI (3000 PSI when used with the Big Beaver) for compatibility with most hydraulic tools, but may be adjusted to a higher or lower setting if required. (Min. 1000 PSI, Max. 3000 PSI).

The relief valve is located on the side of the manifold valve (behind the front panel). Loosen the locking nut using a 17 mm open end wrench, then use an 8 mm hex wrench, adjust the relief valve. Turning the wrench clockwise will increase the pressure setting, counter-clockwise will decrease the pressure setting.

Check the setting by starting the engine, then with no tools connected to the quick disconnects, briefly move the bypass valve to the "ON" position and note the reading of the pressure gauge. Tighten locking nut when desired pressure setting is obtained.



CAUTION: Do not operate the power source in relief as described above for more than 5 seconds. Overheating and damage to the equipment may occur.



WARNING: Operating tools at a higher pressure than recommended may cause damage to the tool, resulting in serious injury or death to the operator.



CONNECTING TOOLS:

Before connecting any tool to the hydraulic power source, make sure that it is compatible with the flow and pressure range of the power source. Also make certain that the relief valve setting, which determines the maximum pressure that the unit will apply to the tool, is properly adjusted.

IMPORTANT: CHECK the flow direction of the tool. The pressure (in) hose from the tool should have a female quick disconnect fitting. The return (out) side should have a male quick disconnect fitting.

Place the hydraulic flow bypass valve lever to the "START/OFF" position, (it is OK for the engine to be left running).

Connect the "RETURN" ("R") side first by aligning the male and female quick disconnects and pushing them together firmly. You will hear or feel a click and the locking collar will snap closed when they are correctly seated. Rotate the locking collar slightly to avoid inadvertent uncoupling. Connect the "PRESSURE" ("M") side in the same manner. To start the flow of oil to the tool, first check that bystanders are clear of the tool and that the operator is ready, then move the bypass valve lever to the "ON" position.



CAUTION: MAKE sure everyone is clear before operating.



CAUTION: READ and understand the operator's manual for the equipment to be operated with the hydraulic power source.



WARNING: Operating tools at a higher pressure than recommended or with the flow reversed may cause damage to the tool, resulting in injury or death to the operator.

IMPORTANT: Do not allow hydraulic oil temperature to exceed 180 degrees Fahrenheit (F). Also, only allow intermittent hydraulic oil temperatures exceeding 165 degrees Fahrenheit (F). Hydraulic component damage may occur when operating unit with hydraulic oil temperatures exceeding 180 degrees Fahrenheit (F) or temperatures exceeding 165 degrees Fahrenheit (F) for extended periods of time. **NOTE:** If oil temperature becomes too high, reduce oil pressure by reducing load on tools (place valves in neutral position). Allow oil to circulate at reduced pressure (<500 psi) until oil temperature is adequately reduced.

TO STOP THE ENGINE,

- 1.) Push the throttle lever down to idle position.
- 2.) Turn key counterclockwise to off position.

DISCONNECTING TOOLS:

Place the hydraulic flow bypass valve lever to the "Start/Off" position.

Disconnect the "PRESSURE" side first by rotating the locking collar until the notch aligns with the bead on the female fitting. Push the locking collar toward the bead and the fittings will disconnect. Disconnect the "RETURN" side in the same manner.



NOTES:

PS-18H/PS-19D PS-20HA/PS-24H HYDRAULIC POWER UNIT

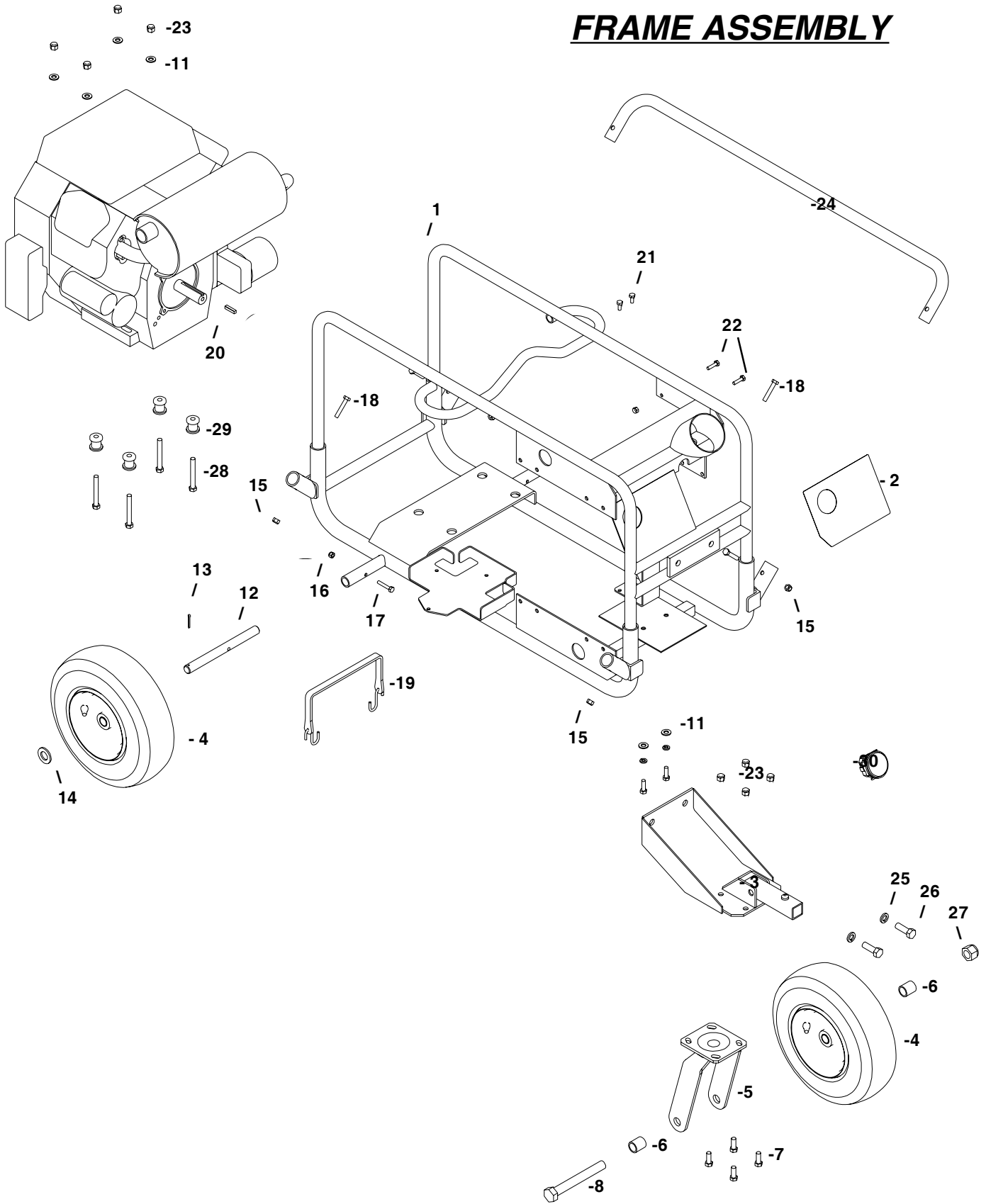
PARTS INFORMATION

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FRAME ASSEMBLY

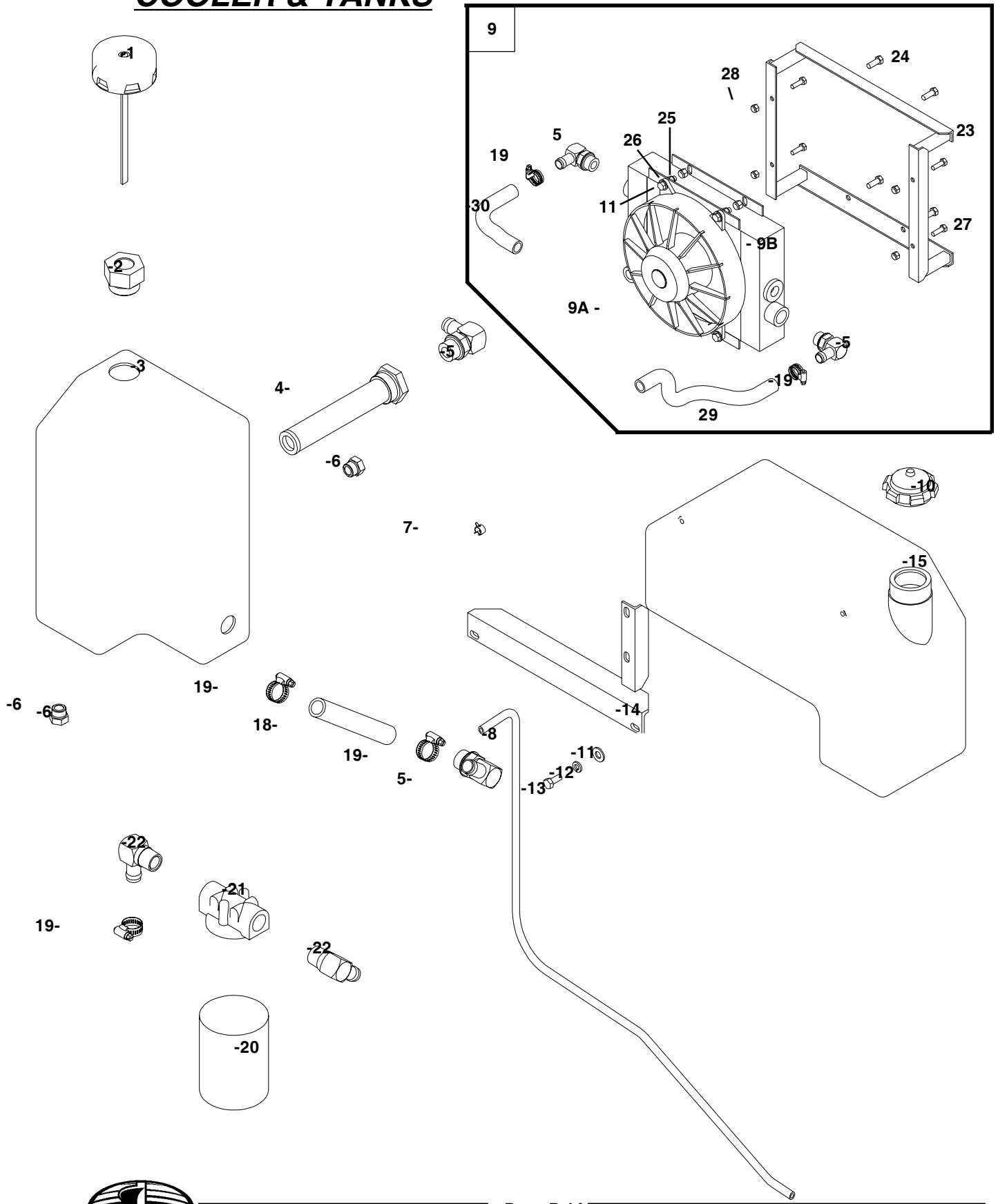


FRAME ASSEMBLY

<u>ITEM</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	35505	Frame, Main	1
	35505-LD	Frame, Main, Diesel	1
2	35545	Panel, Safety Sign	1
3	35119	Bracket Assy., Front	1
	9058	Spring & Button (not pictured)	1
4	30348	Wheel, 12" diameter	3
5	30253-A	Swivel Rig	1
6	30351	Bushing	2
7	3012-2	Bolt, Hex, 3/8" x 1"	4
8	30155-A	Bolt, Hex, 3/4" x 6"	1
10	35150	Pull Handle (not pictured)	1
11	3002-B	Washer, Flat, 3/8" Hvy	4
12	35544	Axle	2
13	30163	Cotter Pin, 1/8" x 1"	2
14	30164	Washer, Flat, 3/4" SAE	2
15	30318	Nut, Hex, 5/16" w/ NIL	4
16	30204	Nut, Hex, 1/4" w/ NIL	2
17	30412	Bolt, Hex, 1/4" x 1 1/2"	2
18	3002-A	Bolt, Hex, 5/16" x 2"	4
19	35561	Bungee Cord, 10"	1
20	4081	Key, Engine Shaft	1
21	4008-1	Bolt, Hex, 1/4" x 7/8"	2
22	9024-BP	Bolt, Hex, 1/4" x 1"	2
23	30154	Nut, Hex, 3/8" w/ Nylon Lock	8
24	35516	Tube, Side Guard	2
25	35312	Washer, Lock, 3/8"	2
26	30408	Bolt, Hex, 1/2" x 1 1/2"	2
27	9096	Nut, Hex, 3/4" w/ NIL	1
28	KT022	Bolt, Hex NC, 3/8" x 2-1/4" 4	
29	35548	Isolation Mount	4
30	35215	Hour Meter	1
Not Shown	GL952A02-B1S	Throttle Cable - Diesel Only	1



COOLER & TANKS

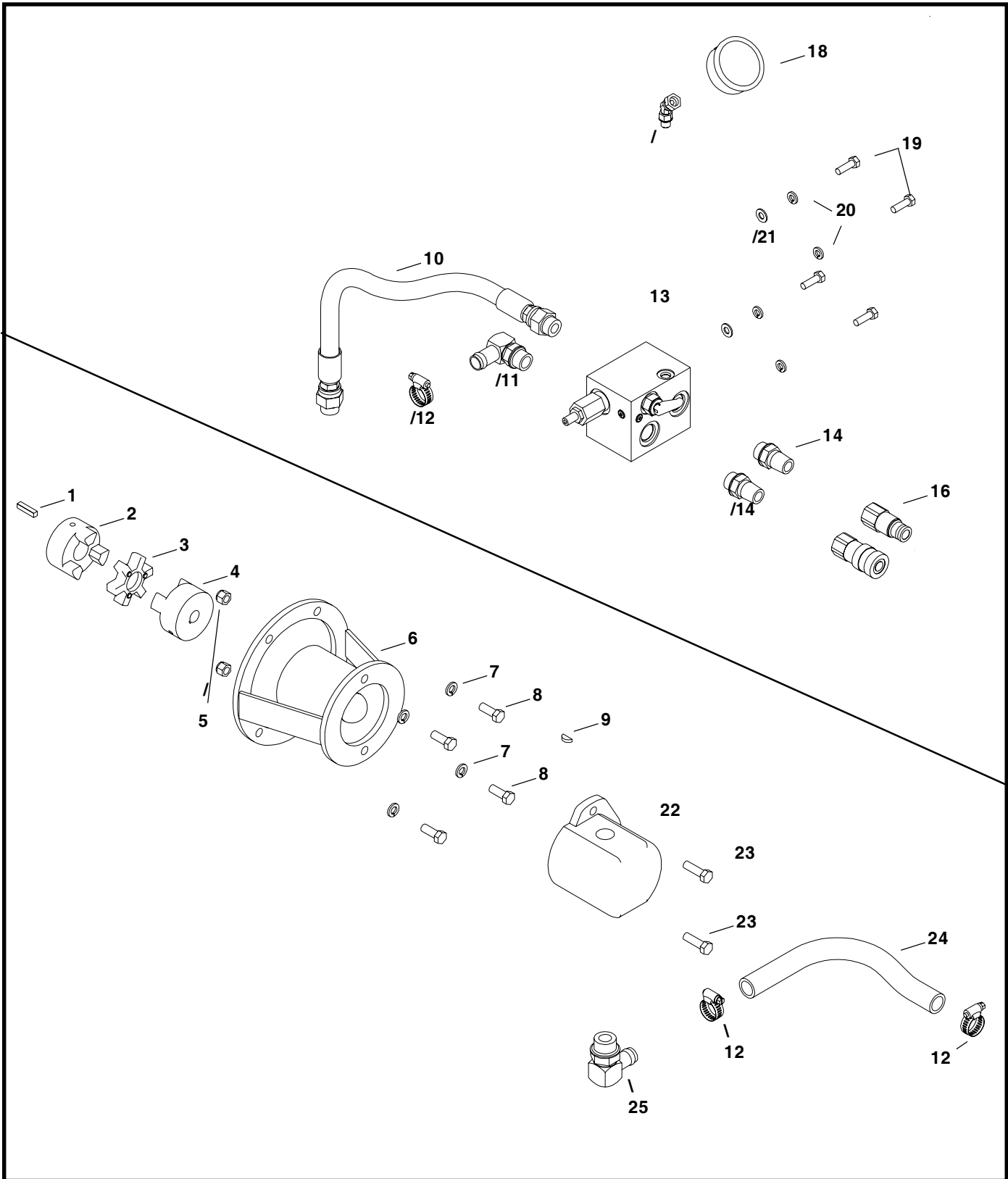


COOLER & TANKS

<u>ITEM</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	35239	Cap, Filler/Breather	1
2	35293	Adaptor, 6410-6-8	1
3	35235	Reservior, Hyd. Nylon	1
4	35292	Suction Strainer	1
5	35280	Elbow, 90, 3/4 NPT	4
6	35295	Fitting, 06U-R68	2
7	4062	Clamp, Gas Line	2
8	35549	Hose, Fuel Line	1
	35549-D1	Hose, Fuel Line, Bottom, Diesel	1
	35549-D2	Hose, Fuel Line, Top, Diesel	1
	70362	Bulkhead Fuel Line Fitting (not shown)	1
9	35527-TT	Heat Exchanger/Fan Assy.	1
9A	35527-F	Fan Only, Thermal Transfer	1
9B	35527	Cooler w/Fan Thermal Transfer	1
10	35241	Cap, Fuel	1
11	3002-B	Washer, Flat, 3/8" Hvy	8
12	3002-C	Washer, Lock, 5/16"	4
13	3012-1T	Bolt, Hex, 5/16" x 3/4"	2
14	35521	Bracket, Fuel Tank	1
15	35240	Tank, Fuel	1
	35240-Diesel	Tank, Fuel, Diesel	1
16	35242	Clamp, Hose (not pictured)	1
17	4063	Cut off Valve, Gas Tank (not pictured)	1
18	35555	Hose, Filter to Tank	1
19	30270-3	Clamp, Hose	3
20	30280	Filter	1
21	30281	Base, Filter	1
22	35286	Elbow, 90, 3/4" NPT	2
23	35540	Bracket, T-T Cooler	1
24	3012-2	Bolt, Hex, 3/8" x 1"	4
25	30154	Nut, Hex, 3/8" w/NIL	8
26	9027-8	Bolt, Hex, 3/8" x 1 1/4"	4
27	9024-1	Bolt, Hex, 5/16" x 1"	6
28	30318	Nut, Hex, 5/16" w/NIL	4
29	35552	Hose, Manifold to Cooler	1
30	35554	Hose, Cooler to Filter	1



PUMP & VALVE



PUMP & VALVE

<u>ITEM</u>	<u>PART #</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	4081	Key, Engine Shaft	1
2	30268	Coupling, 1" Bore	1
3	30269	Spider	1
4	30267-58	Coupling, 5/8" Bore	1
5	30154	Nut, Hex, 3/8" w/ NIL	2
6	35528	Bracket, Pump	1
7	3012-3	Washer, Lock, 3/8"	4
8	3012-2	Bolt, Hex, 3/8" x 1"	4
9	30168-505	Key, Woodruff, Pump	1
10	35550	Hose Assy., Hyd.	1
	35550-Diesel	Hose Assy., Hyd. Diesel	1
11	35294	Elbow, 90, 3/4" NPT	1
12	30270-3	Clamp, Hose	3
13	35500	Manifold Valve Assy.	1
14	35504	Fitting, 6401-10-8-0	2
15	35260	Quick Disconnect, 1/2" Female	1
16	35261	Quick Disconnect, 1/2" Male	1
17	35284	Adaptor, 6410-6-8	1
18	35210	Gage Pressure, Center Back	1
19	9024-1	Bolt, Hex, 5/16" x 1"	4
20	3002-C	Washer, Lock, 5/16"	4
21	10305	Washer, Flat, 5/16"	2
22	35245	Pump, Hyd., .61 CID, 18 HP	1
	35252-Spline	Pump, Hyd., .67 CID, 19 HP Diesel	1
	35252	Pump, Hyd., .67 CID, 20 HP	1
	35257	Pump, Hyd., .85 CID, 24 HP	1
23	9027-8	Bolt, Hex, 3/8" x 1 1/4"	2
24	35552	Hose Tank, Pump	1
25	35280	Elbow, 90, 3/4" NPT	1







** Items 1-9 not required for Diesel engines **



NOTES:

IMPORTANT: All nuts, fasteners, and fittings must be kept tightened. Refer to torque chart for proper assembly torque.

TORQUE INFORMATION

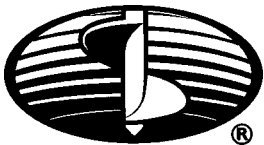
 TYPE SIZE	HEX HEAD			SOCKET	
	 GRADE 5	 GRADE 8	 WRENCH SIZE	 WRENCH SIZE	 WRENCH SIZE
			inch		
No. 4	8 in lb	12 in lb	1/4"	12 in lb	3/32"
No. 6	16 in lb	23 in lb	5/16"	21 in lb	7/64"
No. 8	30 in lb	41 in lb	11/32"	42 in lb	9/64"
No.10	43 in lb	60 in lb	3/8"	60 in lb	5/32"
1/4"	8 ft lb	12 ft lb	7/16"	12 ft lb	3/16"
5/16"	17 ft lb	25 ft lb	1/2"	24 ft lb	1/4"
3/8"	30 ft lb	45 ft lb	9/16"	43 ft lb	5/16"
7/16"	50 ft lb	70 ft lb	5/8"	69 ft lb	3/8"
1/2"	75 ft lb	110 ft lb	3/4"	105 ft lb	3/8"
9/16"	110 ft lb	150 ft lb	13/16"	158 ft lb	-----
5/8"	150 ft lb	220 ft lb	15/16"	195 ft lb	1/2"
3/4"	260 ft lb	380 ft lb	1-1/8"	353 ft lb	5/8"

HYDRAULIC FITTINGS

<u>SIZE</u>	<u>TORQUE</u>	<u>SIZE</u>	<u>TORQUE</u>
1/4 NPT	25 ft.lb.	7/16-20 SAE O-Ring	12 ft.lb.
3/8 NPT	50 ft.lb.	9/16-18 SAE O-Ring	20 ft.lb.
1/2 NPT	75 ft.lb.	3/4-16 SAE O-Ring	35 ft.lb.
3/4 NPT	110 ft.lb.	7/8-14 SAE O-Ring	50 ft.lb.
		1-1/16-12 SAE O-Ring	70 ft.lb.



**THINK
SAFETY
FIRST!**



LITTLE BEAVER, INC.

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