CH1355 HANDIPAK INSTRUCTIONS

REIMANN & GEORGER CORPORATION
CONSTRUCTION PRODUCTS **BUFFALO, NY**
P/N 6122015 **8/08/03**

PRE-OPERATIVE CHECKLIST

This checklist must be checked prior to each use of the Handi Pak. This checklist is to be used as a guideline in conjunction with the maintenance and inspection procedures outlined in this manual. The Handi Pak and related equipment must be thoroughly inspected prior to each use by a trained person. A trained person is one who has read and thoroughly understands this instruction manual and related equipment manuals and, through training and experience, has shown knowledge regarding the safe operational procedures. If you do not have such a person in your organization, please contact Reimann & Georger Corporation or its distributors and they will assist you in providing such a "trained person." Do not permit any person who is not fully trained to operate this Handi Pak or the associated hydraulic tool. It is recommended that this checklist be maintained as a permanent record.

- [ ] Insure construction area is secured from all unauthorized personnel.
- [ ] All crew members at the construction site must be wearing personal protective equipment as defined by their employer.
- [ ] Insure Handi Pak has been properly maintained.
- [ ] Insure flammable storage is at least ten feet from Handi Pak.
- [ ] Insure hydraulic heat exchanger is clean and free of obstructions.
- [ ] Insure Handi Pak is located in a well ventilated area.
- [ ] Insure Handi Pak is positioned to minimize the amount of construction dust and debris it receives.
- [ ] Insure engine oil level is full.
- [ ] Check hydraulic fluid level using sight gage on reservoir.
- [ ] Insure the shipping cap has been replaced with the provided chrome filler/breather cap.
- [ ] Insure hydraulic hoses are properly connected and in good condition.
- [ ] Insure the Handi Pak is connected to an open center tool.
- [ ] Insure the flow control valve is in the OFF position before starting the Handi Pak.

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1.1 INTRODUCTION

Your Reimann & Georger Corporation CH1355 Handi Pak has been engineered to provide performance, long term economics and safety advantages that no other type can match. However, even a well-designed and well-built hydraulic power unit can malfunction or become hazardous in the hands of an inexperienced and/or untrained user. Therefore, read this manual and related equipment manuals thoroughly before operating your Handi Pak to provide maximum safety for all operating personnel, and to get the maximum benefit from your equipment.

1.2 SAFETY DEFINITIONS

A safety message alerts you to potential hazards that could injure you or others or cause property damage. The safety messages or signal words for product safety signs are **DANGER**, **WARNING**, and **CAUTION**. Each safety message is preceded by a safety alert symbol and is defined as follows:

DANGER: Indicates an imminently hazardous situation which, if not avoided, **will** cause death or serious injury. This safety message is limited to the most extreme situations.

WARNING: Indicates potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, **may** result in minor or moderate injury. It may also be used to alert against unsafe practices and property-damage-only accidents.

1.3 HANDI PAK SAFETY LABELS

These labels warn you of potential hazards that could cause injury. Read them carefully. If a label comes off or becomes illegible, contact Reimann & Georger Corporation for a free replacement.

1.4 HANDI PAK SAFETY RULES

1. Operators must be thoroughly trained before operating the Handi Pak and associated equipment. A trained person is one who has read and thoroughly understands this instruction manual and related equipment manuals and, through training and experience, has shown knowledge regarding the safe operational procedures.

2. Follow the Pre-Operative Checklist before using the equipment.

3. Do not use a Handi Pak or associated equipment that shows any signs of damage.

4. Never use the Handi Pak in an explosive atmosphere and/or near combustible material that could be ignited by a spark.

5. Work area is to be kept clear of unauthorized personnel at all times. Place barricades or secure the area in such a manner that no personnel can be injured.

6. Use all personal protective equipment as defined by the employer. As a minimum, eye and ear protection, safety shoes, hard hat, work gloves and sleeves should be worn.

7. Keep all clothing and all body parts clear of moving parts.

8. Always connect the return (tank) hose connections before the supply (pressure) connections.

9. Never exceed the flow or pressure for which the hydraulic equipment is rated.

10. Use an approved fuel container in a well-ventilated area when refueling. Move fuel container at least ten feet from fueling point before starting.

11. Operate the Handi Pak in a well-ventilated area.

12. Do not touch a hot muffler or engine.

13. Do not adjust the Handi Pak while it is running.

14. Never adjust or service the associated hydraulic equipment during operation or while connected to the Handi Pak.

15. Know how to stop the Handi Pak quickly in case of emergency.

16. Allow engine to cool two minutes before refueling. Never add oil or fuel with the engine running.

17. Never disconnect hydraulic hoses or fittings while the Handi Pak is running.

18. At end of operation, secure the Handi Pak and the associated hydraulic equipment to prevent unauthorized use. Never assume you will find the equipment in the same condition in which you left it.

19. Only trained personnel are authorized to do repairs.

20. Do not use the Handi Pak or associated hydraulic equipment when you are tired or fatigued.

21. Do not operate the Handi Pak or associated hydraulic equipment when under the influence of drugs, alcohol, or medication.

2 SPECIFICATIONS

2.1 INTRODUCTION

The CH1355 Handi Pak is a lightweight, compact, portable hydraulic power source ideal for work areas with limited space. A stainless steel frame fitted with folding handles for easy maneuvering provides all round protection. Servicing has been simplified with all regular maintenance procedures being easily done without the need to remove the protective frame.

2.2 TECHNICAL DATA

Engine:	13 hp Honda
Number of cylinders	1
Oil Type >40F	SAE 10W-30
Oil Type <0F	SAE 5W-30
Oil Capacity	1.16 qt.
Fuel Capacity	1.7 gal.
Fuel Consumption @ 3600 RPM	0.8 gph
Weight:	165 lbs.
Hydraulic System:	Open Center
Operating Pressure (maximum)	2000 psi
Back Pressure	<90 PSI @ 5 GPM
Pump Type	Positive Displacement Gear
Flow Setting	5 GPM
Couplings	1/2” HTMA Flush Face
Filter	10 micron
Suction screen	10 mesh
Filler/Breather	100 mesh
Standard Features:	
Rough Terrain Wheels	
Oil Level Sight Gauge	

2.3 RECOMMENDED HYDRAULIC OIL

Many types of compatible hydraulic oil are available through your local dealer/distributor. As an original equipment manufacturer, RGC uses a Grade ISO VG 32 hydraulic oil.

Extreme weather conditions or operating environments may require using a different viscosity oil or fluid type than what is provided. If you have any question concerning the type of oil suitable for CH1355 operation, please consult your local supplier or Reimann & Georger Corporation for details.

2.4 NAMEPLATE AND SERIAL NUMBER TAG

It is important to identify your Handi Pak completely and accurately whenever ordering spare parts or requesting assistance in service. The Handi Pak has a product nameplate that shows the model and serial numbers as shown in Figure 2-1. Record the model and serial numbers for future reference.

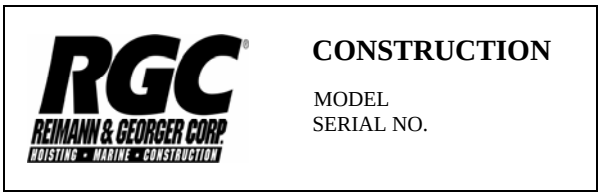

Figure 2-1.
Typical Handi Pak Product Nameplate

MODEL **CH1355**

SERIAL NUMBER _____

1 OPERATION

1.0 BEFORE OPERATING THE HANDI PAK

WARNING:

ONLY TRAINED PERSONNEL SHALL OPERATE THIS EQUIPMENT. A TRAINED PERSON IS ONE WHO HAS READ AND THOROUGHLY UNDERSTANDS THIS INSTRUCTION MANUAL AND RELATED EQUIPMENT MANUALS AND, THROUGH TRAINING AND EXPERIENCE, HAS SHOWN KNOWLEDGE REGARDING THE SAFE OPERATIONAL PROCEDURES.

WARNING:

FOLLOW THE PRE-OPERATIVE CHECKLIST IN THE FRONT OF THIS MANUAL BEFORE OPERATING.

CAUTION:

USE THE HANDI PAK WITH OPEN CENTER TOOLS ONLY.

1. Thoroughly read the engine and associated hydraulic equipment instruction manuals for complete safety, operating and maintenance information before operating.

2. Obey all the safety labels provided on your hydraulic tool and Handi Pak. These labels warn you of potential hazards that can cause death or serious injury. If a label comes off or becomes hard to read, contact Reimann & Georger Corporation for replacement information.

1. Construction area is to be kept clear of unauthorized personnel. Place barricades or secure the area in such a manner that no personnel can be injured.

2. Position the Handi Pak to minimize the amount of construction debris and dust it receives.

1.0.0 Checking the Engine

1. Check engine oil level. Refer to Section 2.2 for the type and amount of oil to add. **The low oil protection will prevent the engine from starting if the oil level in the crankcase is inadequate.**

2. Check the engine cylinder fins, air cleaner, and air intake screen for dirt or obstructions. Clean as required.

3. Fill the fuel tank using an approved fuel container in a well ventilated area. Make sure the gas caps on the Handi Pak and fuel container are properly tightened. Move fuel container at least ten feet from the Handi Pak before starting the engine.

CAUTION:

THE ENGINE THROTTLE LEVER HAS BEEN FACTORY PRESET TO PROVIDE THE CORRECT HYDRAULIC FLOW AND PRESSURE. DO NOT RE-ADJUST THIS SETTING WITHOUT FIRST CONSULTING REIMANN & GEORGER CORPORATION OR YOUR AUTHORIZED DEALER.

4. For high altitude operation, a carburetor jet kit is required. Consult your local supplier or Reimann & Georger Corporation for details.

2.0.0 Checking the Hydraulic System

1. Check hydraulic reservoir as follows.

a. Replace the shipping cap with the chrome filler/breather cap provided.

b. Check fluid level using sight gage on reservoir.

2. Before making any hydraulic connections, inspect all hydraulic lines, fittings and hoses for leaks and risks of rupture as follows:

   a. Inspect each hydraulic line, fitting, and hose for breaks, cracks, worn spots, bulges, chemical attack, kinks or any other damage. Never try to stop any detected leak with any body parts. Do not put your face close to suspected leaks. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of hydraulic oil.

   b. Replace a damaged line, fitting or hose immediately. Never repair the part.

WARNING:

LIQUID UNDER HIGH PRESSURE CAN PIERCE THE SKIN, CAUSING DEATH OR SERIOUS INJURY. IN CASE OF INJURY, GET IMMEDIATE MEDICAL ATTENTION.

3. The Handi Pak uses flush-face quick-release couplings that are durable and easy to clean. Wipe the mating surfaces of the couplings with a clean rag prior to making connection. They are always fitted such that the male coupling gives oil and the female coupling receives oil.

   a. Connect the return (tank) line from the Handi Pak tank port to the return port of the hydraulic tool.

   b. Then connect the pressure line from the hydraulic tool pressure port to the pressure port on the Handi Pak.

   c. When making connections, do not over stretch the hoses or bend them at a sharp angle.

WARNING:

ENSURE HYDRAULIC HOSES ARE PROPERLY CONNECTED AND IN GOOD CONDITION.

2.0 STARTING AND OPERATING THE HANDI PAK

1. Insure the flow control valve is in the OFF position before starting.

2. Move the engine choke control to start or choke position.

3. Open fuel shut-off valve.

4. Turn engine switch to ON position.

5. Firmly pull recoil starter until engine starts. Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.

6. After starting the engine, open the choke slowly towards the “run” position until engine runs smoothly. Opening the choke fully requires an engine warm-up period of several seconds to several minutes, depending on the temperature.

7. Turn the flow control valve to the ON position to operate the tool.

WARNING:

WHEN OPERATING THE HANDI PAK, OBSERVE ALL SAFETY PRECAUTIONS DESCRIBED IN THE HANDI PAK, ENGINE AND HYDRAULIC TOOL INSTRUCTION MANUALS. FAILURE TO COMPLY COULD RESULT IN DEATH, SERIOUS INJURY AND/OR EQUIPMENT DAMAGE.

8. Do NOT attempt to make any equipment adjustments during operation.

3.0 STOPPING THE HANDI PAK

At the end of operation, secure the equipment to prevent unauthorized use. Never assume you will find the equipment in the same condition that you left it. Proceed as follows:

1. Let the Handi Pak run at idle for about five (5) minutes to cool hydraulic oil and components, or for ten (10) minutes under severe operating conditions.

2. Turn the flow control valve to the OFF position.

3. Turn the engine switch to OFF position.

4. Turn the fuel valve on engine OFF.

CAUTION:

INSURE THE FUEL VALVE IS TURNED OFF BEFORE TRANSPORTING THE HANDI PAK.

4 INSPECTION AND MAINTENANCE

4.1 GENERAL MAINTENANCE RULES

1. Proper maintenance of the Handi Pak and related hydraulic equipment consists of adhering to all the guidelines given in this chapter and in the Pre-Operative Checklist in the front of this manual. Proper maintenance is required to maintain the system in good condition, which is defined as each part being free of damage or functional defects.

2. Review and follow all the safety rules given in Chapter 1 before attempting any maintenance.

3. Only authorized personnel should be allowed in the maintenance area. Authorized personnel are the trained people as defined below and their supervision.

4. Repairs must be made only by trained personnel. A trained person is one who has read and thoroughly understands this instruction manual and related equipment manuals and, through training and experience, has shown knowledge regarding the safe operational procedures.

5. All authorized maintenance personnel must wear the appropriate personal protective equipment as defined by their employer. As a minimum, eye and ear protection, safety shoes, hard hat, work gloves and sleeves should be worn.

WARNING:

SHUT DOWN THE HANDI PAK BEFORE DOING ANY MAINTENANCE OR REPAIRS. PREVENT ACCIDENTAL STARTUP BY TURNING OFF THE ENGINE SWITCH KEY AND DISCONNECTING THE SPARK PLUG CAP.

WARNING:

DO NOT ADJUST OR REMOVE HYDRAULIC COMPONENTS, LINES, OR FITTINGS WHILE THE HANDI PAK IS RUNNING OR WHENEVER THE HYDRAULIC FLUID IS HOT.

LIQUID UNDER HIGH PRESSURE CAN PIERCE THE SKIN, CAUSING DEATH OR SERIOUS INJURY. IN CASE OF INJURY, GET IMMEDIATE MEDICAL ATTENTION.

4.2 HYDRAULIC SYSTEM INSPECTION AND MAINTENANCE

1. Check to see that the hydraulic fluid is clean, and change oil and filter at recommended intervals to extend the life of the Handi Pak. Refer to the maintenance summary in Section 4.4.

2. Clean debris from heat exchanger daily.

3. Before making any hydraulic connections, inspect all hydraulic lines, fittings and hoses for leaks and risks of rupture as follows:

   a. Inspect each hydraulic line, fitting, and hose for breaks, cracks, worn spots, bulges, chemical attack, kinks or any other damage. Never try to stop any detected leak with any body parts. Do not put your face close to suspected leaks. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of hydraulic oil.

   b. Replace a damaged line, fitting or hose immediately. Never repair the part.

4. The Handi Pak uses flush-face quick-release couplings that are durable and easy to clean. Wipe the mating surfaces of the couplings with a clean rag prior to making connection. They are always fitted such that the male coupling gives oil and the female coupling receives oil.

4.3 ENGINE INSPECTION AND MAINTENANCE

1. The following rules must be observed when doing engine maintenance:

    a. Do not check for a spark with the spark plug removed. Use an approved tester.

    b. Do not crank the engine with the spark plug removed.

    c. Do not operate the engine without a muffler.

    d. Do not start the engine with the air cleaner or air cleaner cover removed.

2. Check fuel lines and fittings frequently for cracks or leaks. Replace if necessary.

3. Clean the air cleaner daily. Do not use petroleum solvents (such as kerosene) or pressurized air for this purpose. Replace if very dirty or damaged.

4. Check oil level daily. If oil level is between the ADD and FULL marks on the dipstick, but a low oil level engine shutdown occurs, do not try to use the Handi Pak before contacting an authorized service representative. If oil level is below the ADD mark on dipstick, add oil to bring level to the FULL mark before starting the engine.

5. Insure the fan blade is clean and free to rotate.

4.4 MAINTENANCE SCHEDULE

The following table summarizes the type and frequency of maintenance required. Follow the applicable manufacturer's instructions for detailed maintenance information on the engine and pump. For repairs, contact the nearest authorized service center.

TYPE OF MAINTENANCE	SERVICE FREQUENCY
Check and clean obstruction from air intake at recoil starter screen	Daily
Check and clean obstruction from heat exchanger*	Daily
Check fuel level in gas tank—add if required	Daily
Check engine oil level—add if required	Daily
Check hydraulic fluid level using sight gage on reservoir—add if required	Daily
Check that hydraulic oil is clean	Daily
Wash air filter pre-cleaner	25 hrs.
Change engine oil after first 8 hrs. **	50 hrs.
Check air cleaner filter—replace if necessary	100 hrs.
Check and clean obstructions from cooling fins and external surfaces	100 hrs.
Replace engine oil filter	100 hrs.
Check, clean, and replace spark plug	100 hrs.
Have cylinder head removed and cleaned (leaded fuel)	100 hrs.
Have cylinder head removed and cleaned (unleaded fuel)	200 hrs.
Replace reservoir filter and oil after first 50 hrs. ***	250 hrs.
Clean suction screen in reservoir	250 hrs.
Check coupling spider	250 hrs.
Check ignition timing	500 hrs.
Check fuel filter in line	500 hrs.
Check valves and tappet clearance	500 hrs.

* The hydraulic heat exchanger must always be kept clean and free of obstructions. Check it daily before operating and frequently during use. If debris builds up on the screen during operation, remove debris as soon as it is safely possible.

CAUTION:

AN OBSTRUCTED HEAT EXCHANGER WILL CAUSE THE HYDRAULIC SYSTEM AND ENGINE OIL TO OVERHEAT AND FAIL PREMATURELY.

** Change every 25 hours if engine is operated under heavy load or in high ambient temperatures.

*** Change more often under heavy duty, high temperature, or high altitude applications. When draining the oil, clean filler/breather cap and replace if damaged

5 TROUBLESHOOTING

The following chart is intended to assist with troubleshooting the CH1355 Handi Pak. While not all inclusive, the chart outlines the most common causes of a problem and the recommended course of action.

The troubleshooting guide for the associated hydraulic tool is in the manual specifically for this equipment.

CAUTION:

IF THE PROBLEM WITH THE ENGINE IS NOT CERTAIN, ALWAYS FOLLOW THE MANUFACTURER'S WARRANTY POLICY BEFORE ANY OTHER REPAIR OR MAINTENANCE IS ATTEMPTED.

SYMPTOM	CAUSE AND CORRECTIVE ACTION
Handi Pak won't operate hydraulic tool—engine operating normally.	Low fluid level in reservoir—fill to required level. No hydraulic oil pressure caused by: a. Flow valve off—if the flow is shut off, there can be no pressure. b. Handi Pak pressure relief setting of 2000 psi is too low for the hydraulic tool being used—check hydraulic tool requirement. c. Air in fluid—inspect for oil leaks and repair to correct. d. No work being done—open center tools only produce pressure under load. No hydraulic oil flow caused by: a. Flow control valve off—turn to ON position. b. Hose disconnected—check hose connections. c. Coupling key sheared—inspect and replace. d. Damaged pump—inspect and replace. Flow restriction caused by: a. Kinked or damaged hose b. Pinched or damage steel line c. Poor connection in either a hose or steel line. Coupling between engine and pump damaged—replace the following items as required: a. Coupling spider worn out b. Pump or engine key sheared. Pump defective—contact the nearest authorized service center.
Handi Pak is operating hydraulic tool slowly or erratically—engine operating normally.	Hydraulic tool is being overloaded when working on the construction medium—check hydraulic tool specifications and reduce load on tool as required. Low fluid level in reservoir—fill to required level. One or more of the following flow restrictions: a. Hose kinked or damaged b. System filter clogged—fluid going through bypass. c. Suction filter clogged—fluid going through bypass. d. Steel line pinched or damaged. e. Heat exchanger clogged.

Handi Pak is operating hydraulic tool slowly or erratically—engine operating normally (continued).	Erratic pressure caused by: a. Contamination in fluid—drain fluid, then inspect and replace filters and fluid. b. Air in fluid—inspect for oil leaks and repair to correct. Oil viscosity too heavy for cold climate—contact your local supplier or Reimann & Georger Corporation for information. Pump damaged or worn—contact your nearest authorized service center. System relief valve malfunctioning: a. Stuck partially open b. Has broken spring. Pressure relief setting of 2000 psi is too low for the hydraulic tool being used—check tool pressure requirement.
System overheats—engine operating normally.	Low fluid level in reservoir—fill to required level. Air in fluid—inspect for oil leaks and repair to correct. Severe operating conditions caused by: a. Extremely high ambient temperature-- use a higher viscosity hydraulic oil. Consult your local supplier or Reimann & Georger Corporation for details. b. Extended duty cycle—operate Handi Pak intermittently to provide cooling periods Heat exchanger not functioning efficiently because: a. Air intake or internal parts of heat exchanger clogged/dirty—clear debris as required. b. Cooling fan is damaged—repair or replace as required.
Oil is foaming.	Low fluid level in reservoir—fill to required level. Water in oil. Pump shaft seal worn out causing air to be drawn into pump. Air leak in suction line. Improper type of hydraulic oil--as an original equipment manufacturer, RGC uses a Grade ISO VG 32 hydraulic oil. If you have any questions concerning the type of oil you should use for your Handi Pak, consult your local supplier or RGC for details.
Pump leaks.	Plugged reservoir filler/breather. Shipping cap installed—use chrome filler/breather cap supplied. Shaft seal worn on pump. Cracked inlet/outlet fitting.

Engine does not start	Low oil level protection has tripped—refer to Section 2.2 for the amount of oil to add to the crankcase. Engine switch not in ON position. Engine choke control not in correct position—choke should be closed if engine is cold and open if engine is hot. Fuel valve not turned ON. Insufficient fuel in fuel tank. Fuel not reaching the carburetor—to check, loosen the drain screw with the fuel valve ON. IF ANY FUEL IS SPILLED, MAKE SURE THE AREA IS DRY BEFORE TESTING THE SPARK PLUG OR STARTING THE ENGINE. SPILLED FUEL OR FUEL VAPOR MAY IGNITE. No spark at spark plug—test as follows: a. Remove the spark plug cap. Clean any dirt from around the spark plug base; then remove the spark plug. b. Install the spark plug into the plug cap. c. Insure the engine switch is ON. d. Ground the side electrode to any engine ground. Pull the recoil starter to see if sparks jump across the gap. e. Replace the plug. If a spark was observed, try starting the engine again. If the engine still does not start, or if no spark was observed during the test, contact Reimann & Georger Corporation or your authorized dealer. Flow control valve is not OFF—turn to OFF position.
Engine starts, then stalls almost immediately.	Flow control valve is not OFF—turn to OFF position.
Engine running roughly.	Engine out of adjustment—tune engine after consulting engine manufacturer.
Engine frozen.	No oil in crankcase—service at engine manufacturer service center or replace engine with equivalent.

6 PARTS LISTS

Each item number on the following parts lists can be matched with the number shown on the corresponding drawing as described in the following sections.

6.1 HANDI PAK ASSEMBLY

Refer to Figure 6-1.

Item Number	Part Number	Quantity	Description
1	70106	1	CHASSIS ASSEMBLY
2	70213	1	COWL
3	94056	1	Power On Demand ASSEMBLY
4	406/5/56	4	HEX HEAD BOLT 5/16" UNF X 3-1/2" LONG
5	003-1016	1	INNER ENGINE SPACER
6	004-1168	1	SPACER TUBE
7	70220	1	OIL COOLER
8	70105	1	COOLER GUARD
9	0969-00	1	SUCTION STRAINER
10	70222	1	FILTER BREATHER ASSEMBLY
11	500/6/30	18	M6 X 30 BUTTON HEAD CAP SCREW
12	420/8/40	2	M8 X 40 WASHER
13	70235	1	FRAME
14	0162-00	2	WHEEL 1" BORE 9" DIAMETER
15	0970-00	1	SIGHT GAUGE
16	70224	1	TANK GASKET
17	0206-00	2	FOOT
18	418/8	4	M8 WASHER
19	455/8/35	4	M8 X 35 SOCKET HEAD CAP SCREW
20	480/8	4	M8 NYLOC NUT
21	435/6/140	2	HEX BOLT M6 X 140
22	420/6	2	M6 WASHER
23	70232	2	M6 ACORN NUT
24	70150	2	GROMMET
25	0087-00	1	GROMMET
26	70258	1	TANK RETURN PIPE
27	70201	2	PIPE CLAMP
28	1855041	2	3/8 BSP BONDED SEAL
29	200-0016-00	1	NIPPLE 3/4 BSP--3/8 BSP
30	70259	1	HOSE SUCTION
31	84012	1	NIPPLE 3/8 BSP M/M
32	004-1046-00	1	HOSE PUMP TO VALVE
33	70178	1	HANDLE
34	70219	2	PLUG
35	70218	2	SPRING
36	94055	1	DRIVE ASSEMBLY (SEE SEC. 6.3 FOR DETAIL)
37	435/8/50	2	HEX BOLT M8 X 50
38	435/8/70	2	HEX BOLT M8 X 70
39	70012	1	HOSE COOLER RETURN
40	70237	1	Power On Demand BRACKET
41	94054	1	MANIFOLD ASSEMBLY (SEE SEC. 6.2 FOR DETAIL)
42	70010	1	Power On Demand HOSE
43	70223	2	HAND GRIP
44	455/6/35	2	M6 X 35 SOCKET CAP SCREW
45	480/6	8	M6 NYLOC NUT

46	440/6	1	M6 FULL NUT
47	437/6/12	1	M6 X 12 HEX SCREW
48	70268	2	FOAM STRIP
49	70267	2	FOAM STRIP
50	94066	4	ISOLATION MOUNT
51	70279	4	M6 LUG NUT

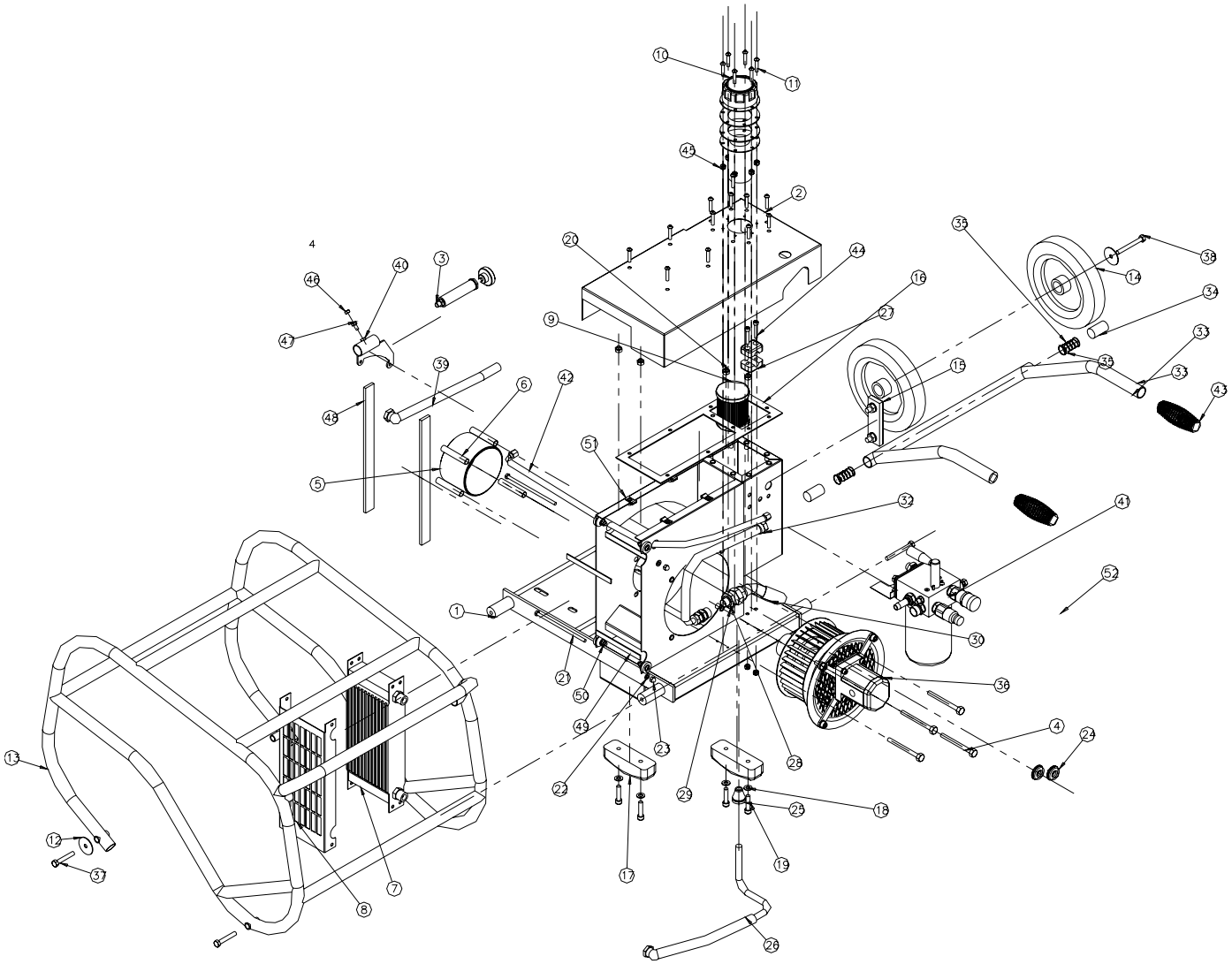

Figure 6-1.
Handi Pak Assembly

6.2 MANIFOLD ASSEMBLY

Refer to Figure 6-2.

Item Number	Part Number	Quantity	Description
1	001-0911	1	MANIFOLD BLOCK
2	003-0912	1	SPOOL (DIVERTER)
3	013-1604-00	3	ROLL PIN M4 X 16
4	83968	1	HANDLE
5	0172-00	1	RELIEF VALVE
6	83073	1	O RING
7	1855041	6	3/8 BSP BONDED SEAL
8	84012	3	NIPPLE 3/8 BSP M/M
9	1012	1	3/8 BSP HOSE TAIL
10	462/8/30	3	M8 X 30 SKT SET SCREW
11	1855124	1	QUICK RELEASE COUPLING FEMALE
12	1855125	1	QUICK RELEASE COUPLING MALE
13	0263-00	1	FILTER SPIGOT
14	W88066	1	1/4 BSP SWIVEL X 8MM ELBOW
15	W88065	1	8 MM X 150MM BLACK NYLON TUBE
16	1855025	3	1/8 BSPT PLUG
17	455/5/10	1	M5 X 10 SKT HD CAP SCREW
18	82050	1	O RING
19	004-0936	1	MANIFOLD GASKET
20	004-0913	1	CLAMP PLATE
21	70231	1	TANK BAFFLE
22	417/8	3	M8 SHAKEPROOF WASHER
23	440/8	3	M8 FULL NUT
24	80807	1	1/8" BONDED SEAL
25	200-0001-00	1	1/8 BSP MALE/MALE NIPPLE
26	6004725	1	FILTER ELEMENT
27	94057	1	BYPASS VALVE ASSEMBLY

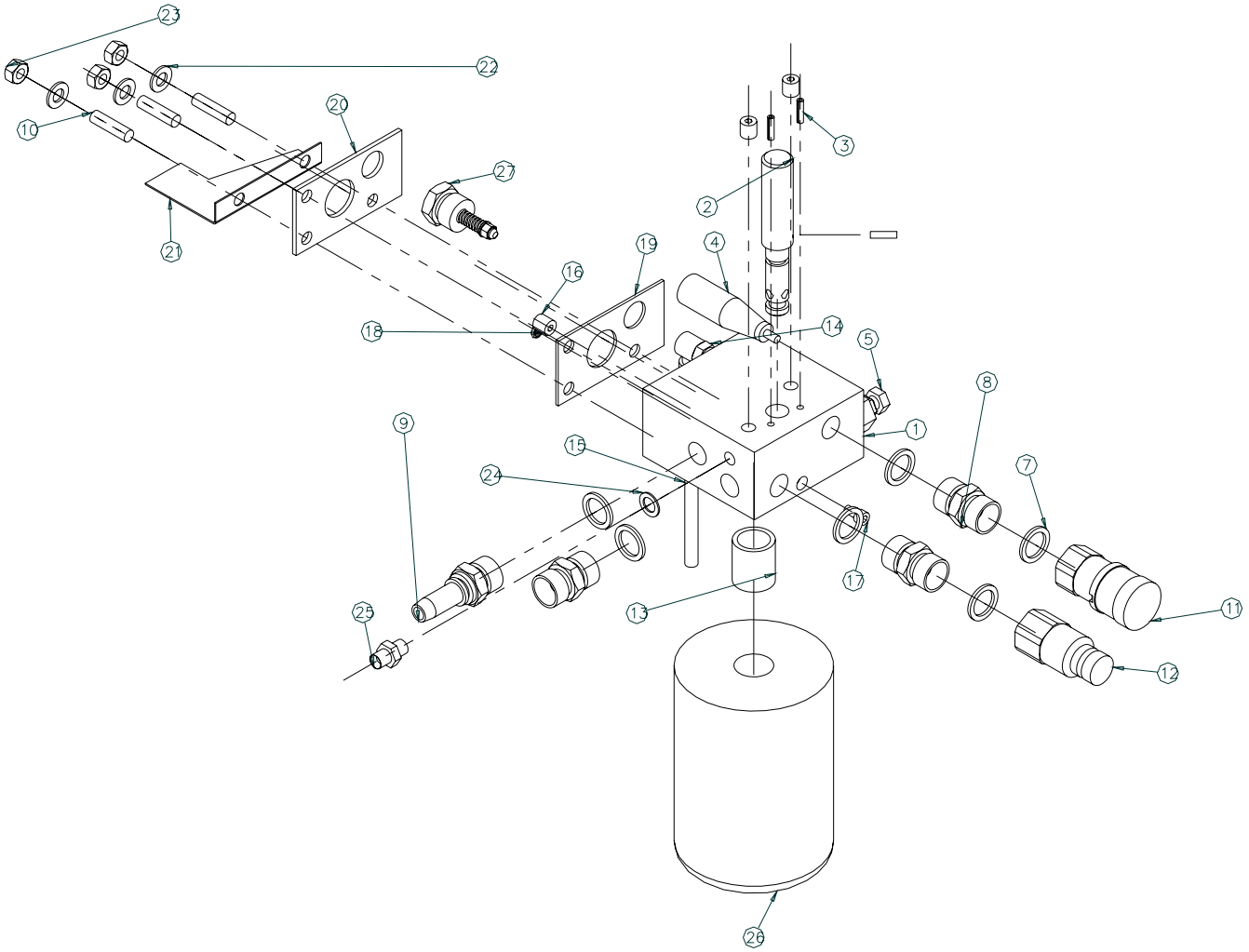

Figure 6-2.
Manifold Assembly

6.3 DRIVE ASSEMBLY

Refer to Figure 6-3.

Item Number	Part Number	Quantity	Description
1	002-0685	1	FAN INLET
2	70273	1	FAN GUARD AND PUMP SPIDER
3	1148-65	1	GROUP 1 PUMP 20 LITER
4	1072-00	1	PUMP COUPLING
5	1074-00	1	COUPLING SPIDER
6	70281	1	MOTOR COUPLING
7	002-0621	1	FAN
8	417/8	4	M8 SHAKEPROOF WASHER
9	455/8/20	4	M8 X 20 SKT HD CAP SCREW
10	420/6	4	M6 WASHER
11	455/6/30	4	M6 X 30 SKT HD CAP SCREW
12	480/6	4	M6 NYLOC NUT
13	003/1198	1	SHAFT EXTENSION
14	70221	1	1/4" X 1/4" KEY STOCK
15	70272	1	TOP HAT
16	406/6/64	1	3/8” X 4” UNF HEX HEAD BOLT

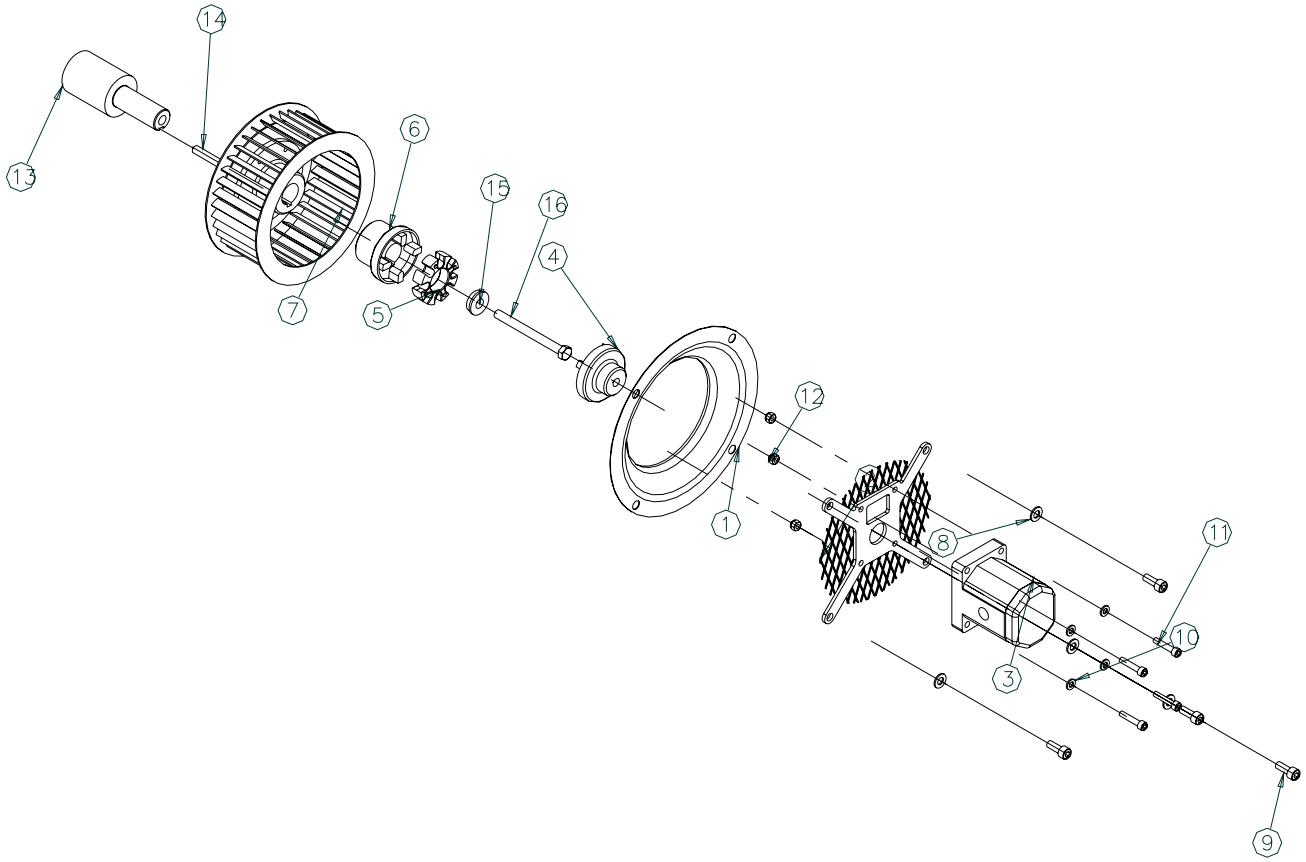

Figure 6-3.
Drive Assembly

LIMITED PRODUCT WARRANTY

Reimann & Georger Corporation
Hoisting and Construction Products

A. LIMITED WARRANTY

Reimann & Georger Corporation (the "Manufacturer") warrants to the original purchaser (the "Buyer") that all Reimann & Georger Hoisting and Construction products shall be free of defects in material and workmanship for a period of one (1) year from date of original purchase.

B. MANUFACTURER'S OBLIGATIONS

The Manufacturer's sole obligation under this Limited Warranty is the repair or, at the Manufacturer's discretion, the replacement of parts found to be defective. Parts and equipment must have authorization from the Manufacturer prior to return to the Manufacturer or repair by an authorized service person. Costs of transportation and other expenses connected with replacing or repairing parts are not covered under this Limited Warranty.

C. PARTS MANUFACTURED BY OTHERS

This Limited Warranty does not cover any parts manufactured by others. Such parts are subject to the warranty, if any, of their respective manufacturers, and are to be repaired only by a respective authorized service person for such parts. The Manufacturer shall have no obligation to undertake repairs of parts manufactured by others.

D. NO SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES

IN NO EVENT SHALL THE MANUFACTURER BE LIABLE TO THE BUYER OR ANY OTHER PERSON FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL LOSSES OR DAMAGES CONNECTED WITH THE USE OF THE PRODUCT UNDER THIS LIMITED WARRANTY. SUCH DAMAGES FOR WHICH THE MANUFACTURER SHALL NOT BE RESPONSIBLE INCLUDE, BUT ARE NOT LIMITED TO, LOST TIME AND CONVENIENCE, LOSS OF USE OF THE PRODUCT, THE COST OF A PRODUCT RENTAL, COSTS OF GASOLINE, TELEPHONE, TRAVEL, OR LODGING, THE LOSS OF PERSONAL OR COMMERCIAL PROPERTY, AND THE LOSS OF REVENUE.

E. NO LIABILITY IN EXCESS OF PURCHASE PRICE

IN NO EVENT SHALL THE MANUFACTURER'S OBLIGATIONS UNDER THIS LIMITED WARRANTY EXCEED THE PURCHASE PRICE OF THE PRODUCT.

F. NO EXTENSION OF STATUTE OF LIMITATIONS

ANY REPAIRS PERFORMED UNDER THIS WARRANTY SHALL NOT IN ANY WAY EXTEND THE STATUTES OF LIMITATIONS FOR CLAIMS UNDER THIS LIMITED WARRANTY.

G. WAIVER OF OTHER WARRANTIES

THE EXPRESS WARRANTIES SET FORTH IN THIS LIMITED WARRANTY ARE IN LIEU OF AND EXCLUDE ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

H. PROCEDURE FOR WARRANTY PERFORMANCE

If the product fails to perform to the Manufacturer's specifications, the Buyer must provide the Manufacturer with the applicable model and serial numbers, the date of purchase, and the nature of the problem.

I. ADDITIONAL EXCLUSIONS FROM THIS LIMITED WARRANTY. THIS LIMITED WARRANTY DOES NOT COVER ANY OF THE FOLLOWING:

1. Equipment which has been abused, damaged, used beyond rated capacity, or repaired by persons other than authorized service personnel.

2. Damage caused by acts of God which include, but are not limited to, hailstorms, windstorms, tornadoes, sandstorms, lightning, floods, and earthquakes.

3. Damage under conditions caused by fire or accident, by abuse or by negligence of the user or any other person other than the Manufacturer, by improper installation, by misuse, by incorrect operation, by "normal wear and tear", by improper adjustment or alteration, by alterations not completed by authorized service personnel, or by failure of product parts from such alterations.

4. Costs of repairing damage caused by poor or improper maintenance, costs of normally scheduled maintenance, or the cost of replacing any parts unless done as the result of an authorized repair covered by the one (1) year Limited Warranty.

5. Costs of modifying the product in any way once delivered to the Buyer, even if such modifications were added as a production change on other products made after the Buyer's product was built.

J. NO AUTHORITY TO ALTER THIS LIMITED WARRANTY

No agent, representative, or distributor of the Manufacturer has any authority to alter the terms of this Limited Warranty in any way.