



HV1858C BI-DIRECTIONAL HYDRAPAK INSTRUCTIONS

**REIMANN & GEORGER CORPORATION
CONSTRUCTION PRODUCTS
P/N -----**

**BUFFALO, NY
6/3/08**

PRE-OPERATIVE CHECKLIST

This checklist must be checked prior to each use of the HydraPak. This checklist is to be used as a guideline in conjunction with the maintenance and inspection procedures outlined in this manual. The HydraPak 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 HydraPak or the associated hydraulic tool. It is recommended that this checklist be maintained as a permanent record.

- Ensure 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.
- Ensure HydraPak has been properly maintained.
- Ensure flammable storage is at least ten feet from HydraPak.
- Ensure hydraulic heat exchanger is clean and free of obstructions.
- Ensure HydraPak is located in a well ventilated area.
- Ensure HydraPak is positioned to minimize the amount of construction dust and debris it receives.
- Ensure engine oil level is full.
- Ensure fluid level in hydraulic reservoir is one inch from top.
- Ensure the shipping cap has been replaced with the provided chrome filler/breather cap.
- Ensure hydraulic hoses are properly connected and in good condition.
- Ensure the flow control knob is in the OFF position before starting the HydraPak.

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
1	SAFETY	1
1.1	Introduction	1
1.2	Safety Definitions	1
1.3	HydraPak Safety Labels	1
1.4	HydraPak Safety Rules	1
2	SPECIFICATIONS	3
2.1	Technical Data	3
2.2	Recommended Hydraulic Oil	3
2.3	Nameplate and Serial Number Tag	4
3	OPERATION	5
3.1	Before Operating the HydraPak	5
3.1.1	Checking the Engine	5
3.1.2	Checking the Hydraulic System	5
3.2	Starting and Operating the HydraPak	6
3.3	Stopping the HydraPak	7
4	INSPECTION AND MAINTENANCE	8
4.1	General Maintenance Rules	8
4.2	Hydraulic System Inspection and Maintenance	8
4.3	Electrical Inspection and Maintenance	9
4.4	Engine Inspection and Maintenance	9
4.5	Maintenance Schedule	10
5	TROUBLESHOOTING	11
6	PARTS LIST	15

LIST OF FIGURES

FIGURE	DESCRIPTION	PAGE
2-1	Typical HydraPak Product Nameplate	4
6-1	HV1858 Bi-Directional Assembly Drawing	16

1 SAFETY

1.1 INTRODUCTION

Your Reimann & Georger Corporation HV1858 Bi-Directional HydraPaks have 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 HydraPak 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 HYDRAPAK 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 replacement information.

1.4 HYDRAPAK SAFETY RULES

1. Operators must be thoroughly trained before operating the HydraPak 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 HydraPak or associated equipment that shows any signs of damage.
4. Never use the HydraPak 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.
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 HydraPak in a well-ventilated area.
12. Do not touch a hot muffler, or engine.

13. Do not adjust the HydraPak while it is running.
14. Never adjust or service the associated hydraulic equipment during operation or while connected to the HydraPak.
15. Know how to stop the HydraPak quickly in case of emergency.
16. Allow engine to cool two minutes before refueling.
17. Never disconnect hydraulic hoses or fittings while the HydraPak is running.
18. At end of operation, secure the HydraPak 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 HydraPak or associated hydraulic equipment when you are tired or fatigued.
21. Do not operate the HydraPak or associated hydraulic equipment when under the influence of drugs, alcohol, or medication.

2 SPECIFICATIONS

2.1 TECHNICAL DATA

Model No.:	HV1858 Bi-Directional
Engine:	18 hp Vanguard V-Twin w/ auto idle
Number of cylinders	2
Oil Type >40F	SAE 30W
Oil Type <0F	SAE 10W-30
Oil Capacity	56 oz. w/ filter
Fuel Capacity	9 qt.
Fuel Consumption @ 3600 RPM	0.9 gph
Weight:	290 lbs.
Hydraulic System:	Open Center
Operating Pressure (maximum)	2250 psi
Back Pressure	<100 PSI @ 8 GPM
Reservoir	6 U.S. gallons— shipping cap and vented fill cap provided
Cooling Capacity	16,000 BTU/HR
Pump Type	Positive Displacement Gear
Flow Settings	5 or 8 GPM
Couplings	1/2" HTMA Flush Face
Filter	10 micron
Suction Screen	10 mesh
Filler/Breather	100 mesh
Electrical:	
Charging System	12-14V/16 AMP regulated to battery
Battery Type	12V/15 Plate/400 CCA
Fuse Automotive	Ignition 5 AMP
Blade Type	Fan 25 AMP
Standard Features:	
Hour meter	No
Electronic governor	Yes
Tires:	
Size 4.80 x 8	
Inflation 30 psi	
Axle 5/8" diameter	

2.2 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 HV1858 Bi-Directional operation, please consult your local supplier or Reimann & Georger Corporation for details.

2.3 NAMEPLATE AND SERIAL NUMBER TAG

It is important to identify your HydraPak completely and accurately whenever ordering spare parts or requesting assistance in service. The HydraPak 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 HydraPak Product Nameplate

MODEL _____

SERIAL NUMBER _____

3 OPERATION

3.1 BEFORE OPERATING THE HYDRAPAK



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 HYDRAPAK 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 HydraPak. 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.
3. 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.
4. Position the HydraPak to minimize the amount of construction debris and dust it receives.

3.1.1 Checking the Engine

1. Check engine oil level. Refer to Section 2.1 for the type and amount of oil to add.
2. Check the engine cylinder fins, air cleaner, and air intake screen for dirt or obstructions. Clean as required.
3. Fill the fuel tank with an approved fuel container in a well ventilated area. Make sure the gas caps on the HydraPak and fuel container are properly tightened. Move fuel container at least ten feet from HydraPak before starting the engine.
4. For high altitude operation, a carburetor jet kit is required. Consult your local supplier or Reimann & Georger Corporation for details.

3.1.2 Checking the Hydraulic System

1. Check hydraulic reservoir as follows.
 - a. Replace the shipping cap with the chrome filler/breather cap provided.
 - b. Fluid level should be one inch from the top of tank.

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 HydraPak 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 HydraPak tank port to the return port of the hydraulic tool.
 - b. Then connect the pressure line from the hydraulic tool pressure port to the right (pressure) port on the HydraPak.
 - 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.

3.2 STARTING AND OPERATING THE HYDRAPAK

1. Ensure the flow control lever is in the “off” (middle) position before starting.
2. Move the engine choke control to start or choke position.
3. Open fuel shut-off valve
4. Put the throttle in the middle position when starting the engine.
5. Ensure the auto idle toggle switch is in the down or “on” position.



CAUTION:

DO NOT OPERATE THE HYDRAPAK WITH THE BATTERY DISCONNECTED.

6. Start the engine by turning the ignition key clockwise to the START position. Repeat if necessary using short starting cycles (15 sec./min.). If using the pull start, the ignition key must be turned clockwise to the first or “run” position.
7. 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.
8. Use the 5/8 knob to select an output of either 5 or 8 GPM in accordance with your hydraulic tool instruction manual. Do not exceed the recommended flow and pressure for the hydraulic tool in use.
9. Move the flow control lever to the up position to pressurize the top output and to the down position to pressurize the bottom output.



WARNING:

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

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

3.3 STOPPING THE HYDRAPAK

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 HydraPak 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 knob to the OFF position.
3. Turn the key counter-clockwise to OFF. When the ignition key is in the OFF position, no electrical power is available to operate the fan or any accessories.



CAUTION:

INSURE THE IGNITION KEY IS TURNED OFF TO PREVENT POWER DRAINAGE FROM THE BATTERY.

4. Turn the fuel valve on engine OFF.



CAUTION:

INSURE THE FUEL VALVE IS TURNED OFF BEFORE TRANSPORTING THE HYDRAPAK.

4 INSPECTION AND MAINTENANCE

4.1 GENERAL MAINTENANCE RULES

1. Proper maintenance of the HydraPak 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.



WARNING:

SHUT DOWN THE HYDRAPAK BEFORE DOING ANY MAINTENANCE OR REPAIRS. PREVENT ACCIDENTAL STARTUP BY REMOVING THE SPARK PLUG WIRE AND DISCONNECTING THE NEGATIVE WIRE FROM THE BATTERY TERMINAL.



WARNING:

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



WARNING:

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 HydraPak. Refer to the maintenance summary in Section 4.5.
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 HydraPak 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 ELECTRICAL INSPECTION AND MAINTENANCE

The electrical system requires the following visual inspections before each use of the HydraPak:

1. Fuses must be secured in their holders.
2. All terminal connections must be intact.
3. Insure that battery terminal bolts/nuts are tight.
4. Battery fluid level should be full to within 1/8 inch from bottom of vent well neck.
5. If the battery charge is insufficient to start the engine, recharge the battery with a 12-volt charger at a rate of 5-30 amp/hour. Rapid charging reduces the life expectancy of any battery. If an overnight charge is possible, proceed with the recommended rate.
6. Insure the fan blade is clean and free to rotate.

4.4 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 the start 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 ADD and FULL mark on dipstick, but a low oil pressure engine shutdown occurs, do not try to use the HydraPak 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.

4.5 MAINTENANCE SCHEDULE

The following table summarizes the type and frequency of maintenance required. Follow the manufacturer's instructions for proper lubrication and detailed maintenance. 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 that reservoir oil level is within one inch below filler cap—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 battery electrolyte—add if necessary	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.
Grease wheel bearings	500 hrs.
Check ignition timing	500 hrs.
Check fuel filter in line	500 hrs.
Check valves and tappet clearance	500 hrs.
Lightly oil throttle cable	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 HH1358, HV1658, and HV1858 HydraPaks. 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
<p>HydraPak won't operate hydraulic tool—engine operating normally.</p>	<p>Low fluid level in reservoir—fill to required level.</p> <p>No hydraulic oil pressure caused by:</p> <ol style="list-style-type: none"> a. Flow knob off—if the flow is shut off, there can be no pressure. b. HydraPak pressure relief setting of 2250 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. <p>No hydraulic oil flow caused by:</p> <ol style="list-style-type: none"> a. Flow control knob off—turn to ON position and select either 5 or 8 GPM as described in Chapter 3. b. Hose disconnected—check hose connections. c. Coupling key sheared—inspect and replace. d. Damaged pump—inspect and replace. <p>Flow restriction caused by:</p> <ol style="list-style-type: none"> a. Kinked or damaged hose b. Pinched or damage steel line c. Poor connection in either a hose or steel line. <p>Coupling between engine and pump damaged—replace the following items as required:</p> <ol style="list-style-type: none"> a. Coupling spider worn out b. Pump or engine key sheared. <p>Pump or motor defective—contact the nearest authorized service center.</p>
<p>HydraPak is operating hydraulic tool slowly or erratically—engine operating normally.</p>	<p>Hydraulic tool is being overloaded when working on the construction medium—check hydraulic tool specifications and reduce load on tool as required.</p> <p>Low fluid level in reservoir—fill to required level.</p>

<p>HydraPak is operating hydraulic tool slowly or erratically—engine operating normally (continued).</p>	<p>One or more of the following flow restrictions:</p> <ol style="list-style-type: none"> Hose kinked or damaged System filter clogged—fluid going through bypass. Suction filter clogged—fluid going through bypass. Steel line pinched or damaged. Heat exchanger clogged. <p>Erratic pressure caused by:</p> <ol style="list-style-type: none"> Contamination in fluid—drain fluid, then inspect and replace filters and fluid. Air in fluid—inspect for oil leaks and repair to correct. <p>Oil viscosity too heavy for cold climate—contact your local supplier or Reimann & Georger Corporation for information.</p> <p>Pump or motor damaged or worn—contact your nearest authorized service center.</p> <p>System relief valve malfunctioning:</p> <ol style="list-style-type: none"> Stuck partially open Has broken spring. <p>HydraPak pressure relief setting of 2250 psi is too low for the hydraulic tool being used—check tool pressure requirement.</p> <p>Extension hoses too long:</p> <ol style="list-style-type: none"> Hoses over 50 feet long add sufficient friction to the hydraulic system to slow down the hydraulic tool slightly. Where possible, use as few quick disconnects as possible. An increase in system pressure may be required to compensate for long hose runs. Consult your local supplier or Reimann & Georger Corporation for information. <p>Hydraulic oil flow set too low—select 8 gpm on the 5-8 gpm knob.</p>
<p>Hydraulic tool is overspeeding</p>	<p>Flow is set too high—select 5 gpm on the flow control knob.</p>
<p>System overheats—engine operating normally.</p>	<p>Low fluid level in reservoir—fill to required level.</p> <p>Air in fluid—inspect for oil leaks and repair to correct.</p> <p>Severe operating conditions caused by:</p> <ol style="list-style-type: none"> Extremely high ambient temperature-- use a higher viscosity hydraulic oil. Consult your local supplier or Reimann & Georger Corporation for details. Extended duty cycle—operate HydraPak intermittently to provide cooling periods

<p>System overheats—engine operating normally. (continued)</p>	<p>Heat exchanger not functioning efficiently because:</p> <ol style="list-style-type: none"> a. Air intake or internal parts of heat exchanger clogged/dirty—clear debris as required. b. Fan is not running—see detailed troubleshooting guide below. <p>Fan is not running because:</p> <ol style="list-style-type: none"> a. Battery was disconnected during a pull start—turn ignition switch to ON position to start fan. b. Fan connection unplugged—check and secure all fan plug connections at fan motor, fan relay, and at any fan override switch on control panel. c. Blown fuse on fan circuit or ignition—replace with specified fuse. d. Defective relay—replace. e. No battery in HydraPak or battery is dead—fan requires a charged 12 volt battery to operate.
<p>Oil is foaming.</p>	<p>Low fluid level in reservoir—fill to required level.</p> <p>Water in oil.</p> <p>Pump shaft seal worn out causing air to be drawn into pump.</p> <p>Air leak in suction line.</p> <p>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 HydraPak, consult your local supplier or RGC for details.</p>
<p>Pump leaks.</p>	<p>Plugged reservoir filler/breather.</p> <p>Shipping cap installed—use chrome filler/breather cap supplied.</p> <p>Shaft seal worn on pump.</p> <p>Cracked inlet/outlet fitting.</p>
<p>Engine does not start</p>	<p>Low oil pressure wire is not disconnected during a pull start—disconnect the wire during a pull start and then reconnect after the engine starts.</p> <p>Battery connection when using starter key—check for loose terminal connection(s).</p> <p>Flow control knob is not OFF—turn to OFF position.</p>
<p>Engine starts, then stalls almost immediately.</p>	<p>Flow control knob is not OFF—turn to OFF position.</p>

Engine running roughly.	Engine out of adjustment—tune engine after consulting engine manufacturer.
Engine stalls when load is applied.	Defective actuator on HV1858 electronic governor is failing to move throttle lever—replace actuator as described in the engine manual.
Engine fails to return to idle after a load is removed.	Defective actuator on HV1858 electronic governor is failing to move throttle lever—replace actuator as described in the engine manual. Auto idle switch on HV1858 model has been left in “bypass”—push switch down to put engine in auto idle mode.
Engine races uncontrollably at full throttle.	Defective control module on HV1858 electronic governor is triggering actuator to move throttle to wide open position—replace module as described in the engine manual.
Engine frozen.	No oil in crankcase—service at engine manufacturer service center or replace engine with equivalent.
Problem with split frame reassembly	Misalignment of top/bottom halves—align and assemble using grease to lube four frame telescoping sleeves, then secure with appropriate hardware.

6 PARTS LIST

The following parts list applies to the HV1858C Bi-Directional HydraPaks only. Each item number on this parts list can be matched with the item number shown on the Figure 6-1 assembly drawing.

Item Number	Part Number	Quantity	Description
1	2546004	1	MAIN FRAME
2	0557447	1	ENGINE 18 HP HV1858 (CUT SHAFT)
	5507742	1	MUFFLER (HV1858 ONLY)
3	2510872	1	RESERVOIR ASSEMBLY (INCLUDES ITEM #S 4 & 5)
4	6000921	1	FILLER BREATHER CAP
5	6000908	1	SUCTION STRAINER ASSEMBLY
6	2546006	1	FRAME FORMED HANDLE
7	5800138	4	CLEVIS PIN ROUNDED SNAP
8	5411512	1	WIRE HARNESS VANGUARD (HV1658 + HV1858)
9	2514302	1	HEAT EXCHANGER ASSEMBLY
10	6000855	1	HEAT EXCHANGER CORE
11	5401513	1	FAN 10"
12	5800387	2	COTTER HAIR PIN
13	6905358	1	HYDRAULIC PUMP 5/8 GPM
14	5400861	1	BATTERY
	5401564	1	BATTERY STRAP
15	6900454	1	PUMP BRKT BF-2A-C-1-4.0
	6901502	1	PUMP BRACKET COVER
16	5493623	1	POSITIVE BATTERY WIRE
17	5401562	1	TOGGLE SWITCH (HV1858 ONLY)
18	6001883	1	COUPLING 1/2" MALE
19	2514381	1	CONTROL PANEL
20	7600871	2	TIRE AND RIM ASSEMBLY
21	6004723	1	HYDRAULIC FILTER ELEMENT
22	6000904	1	HYDRAULIC FILTER ASSEMBLY
23	6004722	1	HYDRAULIC FILTER HEAD
24	2504743	1	AXLE
25	5401511	1	FAN RELAY
26	6205679	1	DECAL RGC LOGO
27	6001884	1	COUPLING 1/2" FEMALE
28	6004795	1	FLOW CONTROL VALVE
29	5600912	1	HEX BUSHING 3/4 NPTM X 1/2 NPTM
30	6000865	1	1/2" BALL VALVE
31	5604752	1	3/4" CLOSED NIPPLE
32	5600909	3	90D ADAPTER 3/4 HOSE BEAD X 3/4 NPT
33	5604752	1	1/2" CLOSED NIPPLE
34	5600958	2	1/2" HEX NIPPLE
35	6011553	1	PRESSURE SWITCH (HV1858) AUTO IDLE
36	0556017	1	AUTO IDLE SENSOR FTG HV 1858
37	6700873	1	COUPLING HALF 1/2" - PUMP
38	6700907	1	COUPLING INSERT
39	6700906	1	COUPLING HALF 1" - ENGINE

HV1858C BI-DIRECTIONAL

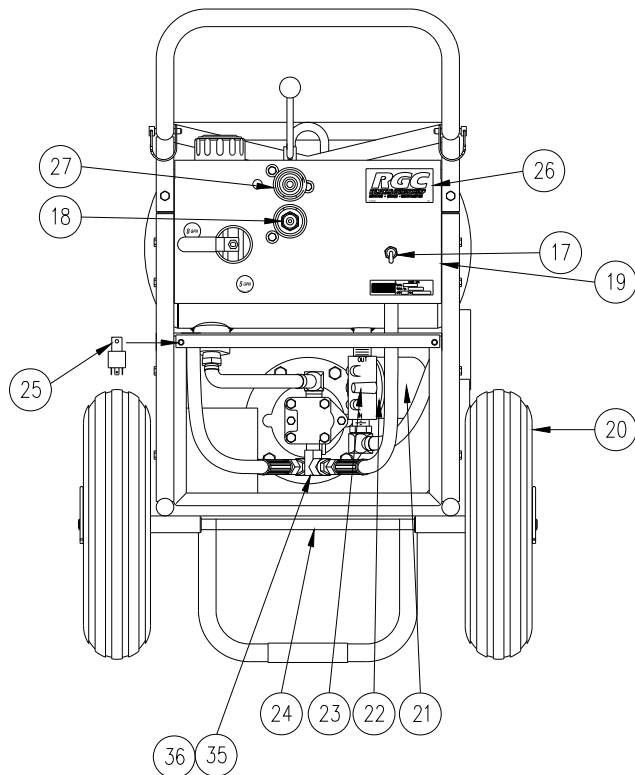
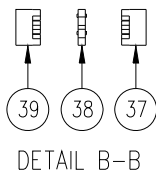
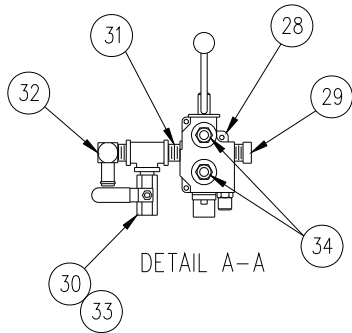
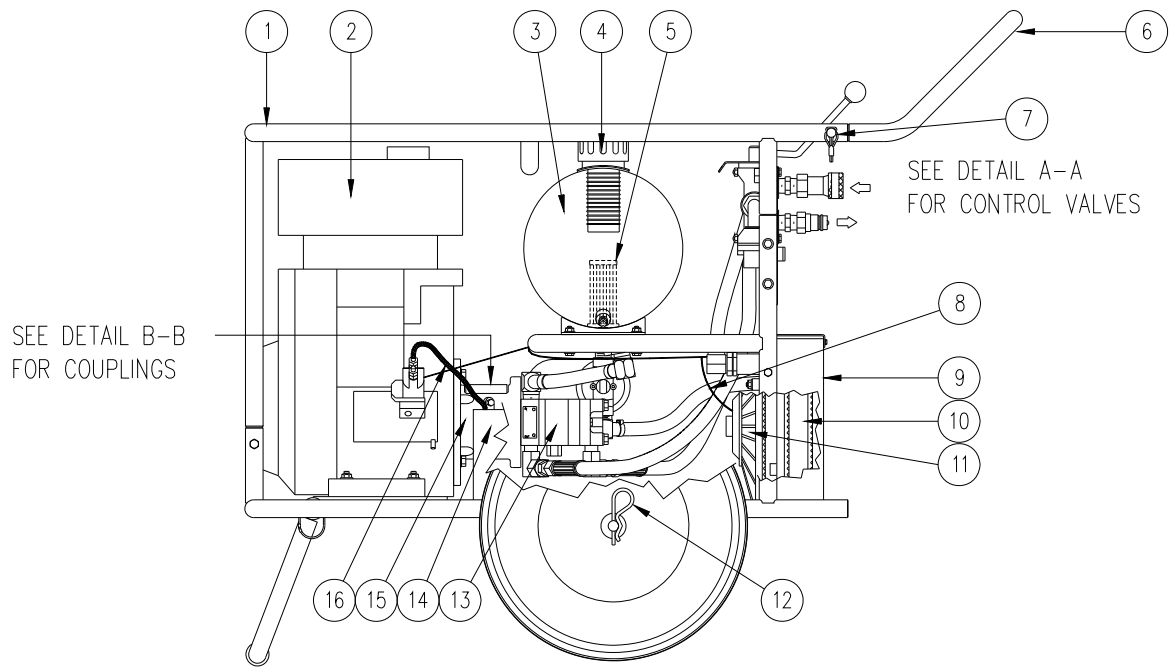


Figure 6-1.
HV1858C Bi-Directional Assembly Drawing

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.