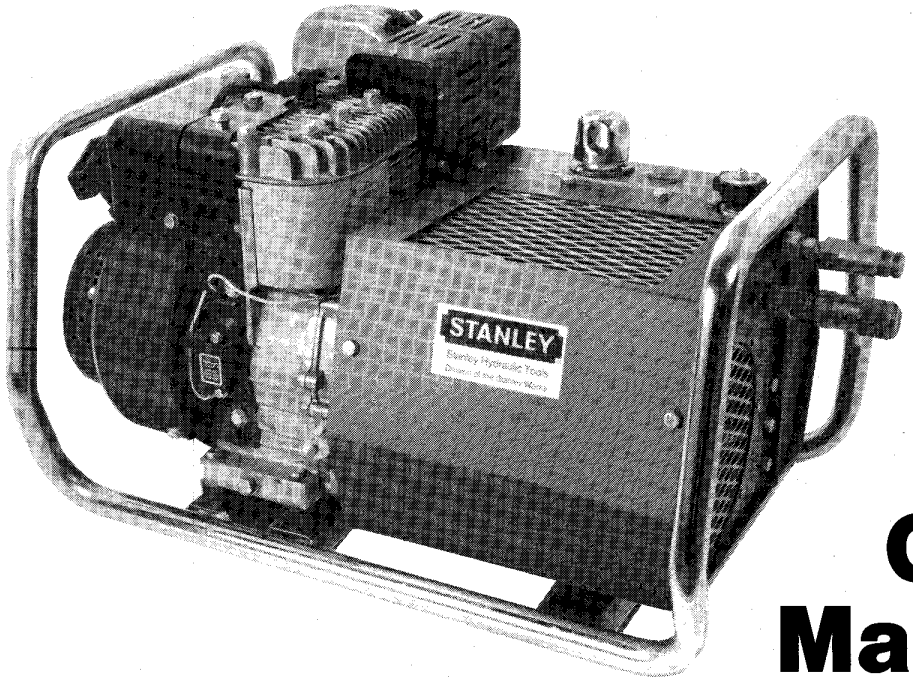
HP05
POWER UNIT



Safety, Operation, Maintenance and Repair Manual

STANLEY®

17226 U.S.A. 06/91 R

CONTENTS

⚠ WARNING

READ ALL SAFETY INSTRUCTIONS BEFORE OPERATING THE POWER UNIT.

STANLEY

SAFETY INSTRUCTIONS

Tool operators and maintenance personnel must always comply with the safety precautions given in this manual and on the stickers and tags attached to the tool and hose.

These safety precautions are given for your safety. Review them carefully before operating the tool and before performing maintenance or repairs.

Supervising personnel should develop additional precautions relating to the specific work area and local safety regulations. If so, place the added precautions in the space provided on page 4.

GENERAL SAFETY PRECAUTIONS

- The HP05 Power Unit is designed to provide safe and dependable service if operated according to instructions. Read and understand this manual and any stickers attached to the unit before operating. Failure to do so could result in personal injury or equipment damage.
- Check the rules and regulations at your location. The rules may include an employer's work safety program. Regulations may identify hazards such as working around utility supply lines or hazardous slopes.

Be trained thoroughly before operating the unit alone.

- Operator training must consist of a demonstration and verbal instruction. This training is given by the dealer before the power unit is delivered.
- The new operator must start in an area without bystanders and use all the controls until able to control the power unit fully under the conditions for the work area.

Know the work conditions.

- The operator must know any prohibited uses or work areas for the power unit. For example, excessive slopes and poor or dangerous terrain conditions.

Obey safety rules.

- Do not attempt to locate hydraulic leaks by feeling around hoses and fittings with bare hands. "Pin-hole" leaks can penetrate the skin.
- Never operate the power unit in a closed space. Inhalation of engine exhaust can be fatal.
- Check that hoses and fittings are undamaged and tight before starting the unit.
- Keep clear of hot engine exhaust.
- Never use flammable solvents around a hot engine.
- Clean up oil and fuel spills immediately. Do not overfill fluids.
- Always shutdown the engine before performing any maintenance or adjustment on the unit unless otherwise specified.
- Always wear the appropriate safety equipment such as goggles, ear protection and toe guards.
- Make sure all hoses are connected for correct flow direction to and from the tool being used.
- Unauthorized modifications to the power unit may impair the function and/or safety and impair machine life. Use only approved service parts or accessories.

- Do not operate the engine if the odor of gasoline is present.
- Keep the power unit at least 3.3 ft/1 m away from buildings, obstructions and flammable objects. Do not aim engine exhaust at materials that could catch fire.
- Do not operate if the air cleaner is removed (exept for adjustments).
- Always drain gasoline before transporting or placing in storage. Allow the engine to cool before storing in any enclosure.
- Operating the engine at excessive speeds increases the danger of personal injury. Do not change governor setting or tamper with governor components which may increase the governed engine speed.
- When servicing the engine always remove the spark plug or plug cap to prevent accidental starting.
- Keep all fasteners tight to be sure the unit is in a safe working condition.
- Always shutdown the engine before performing any maintenance or adjustments on the unit unless otherwise specified in this manual.
- To avoid personal injury or equipment damage, all tool repair, maintenance and service must only be performed by authorized and properly trained personnel.

SAFETY SYMBOLS

Safety symbols are used to emphasize all operator, maintenance and repair actions which, if not strictly followed, could result in a life-threatening situation, bodily injury or damage to equipment.

DANGER

This safety symbol may appear on the tool. It is used to alert the operator of an action that could place him/her or others in a life-threatening situation.

⚠ WARNING

This safety symbol appears in these instructions to identify an action that could cause bodily injury to the operator or other personnel.

IMPORTANT

This safety symbol appears in these instructions to identify an action or condition that could result in damage to the tool or other equipment.

Always observe safety symbols. They are included for your safety and for the protection of the unit.

LOCAL SAFETY REGULATIONS

Enter any local safety regulations here. Keep these instructions in an area accessible to the operator and maintenance personnel.

HYDRAULIC HOSE REQUIREMENTS

HOSE TYPES

Hydraulic hose types authorized for use with Stanley Hydraulic Tools are as follows:

1. Labeled and certified non-conductive
2. Wire braided (conductive)
3. Fabric braided (not certified or labeled non-conductive)

Hose 1 listed above is the only hose authorized for use near electrical conductors.

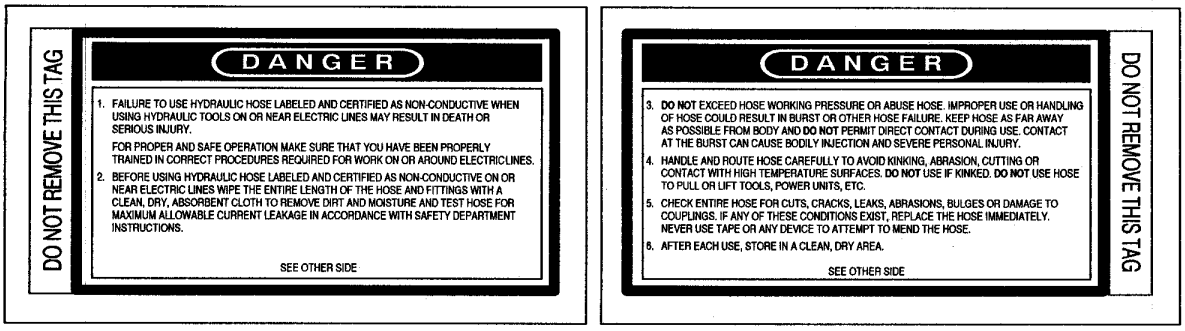
Hoses 2 and 3 listed above are conductive and must never be used near electrical conductors.

To help ensure your safety, the following DANGER tags are attached to all hoses purchased from Stanley Hydraulic Tools. DO NOT REMOVE THESE TAGS.

If the information on a tag is illegible because of wear or damage, replace the tag immediately. A new tag can be obtained at no charge from your Stanley distributor.

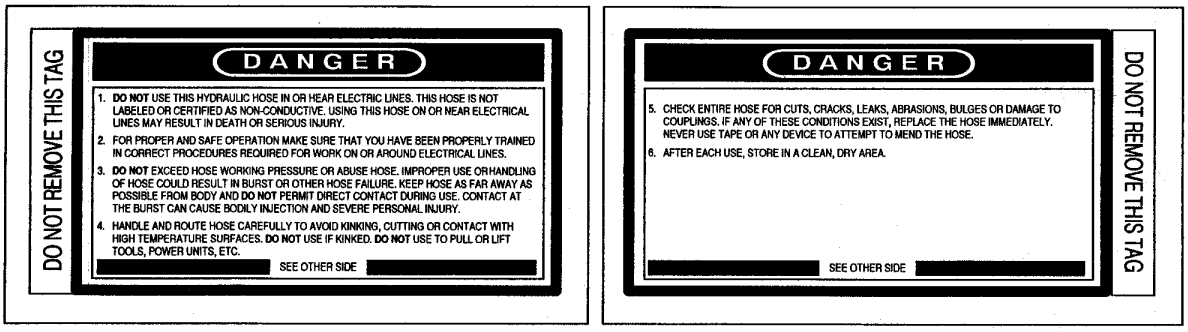
1 CERTIFIED NON-CONDUCTIVE HOSE

This tag is attached to all certified and labeled **non-conductive** hose.



2 AND 3 WIRE- AND FABRIC-BRAIDED (NOT CERTIFIED OR LABELED NON-CONDUCTIVE) HOSE

This tag is attached to all **conductive** hose.



HOSE PRESSURE RATING

The rated working pressure of the hydraulic hose must be at least 2500 psi/175 bar.

1. General Information

1. GENERAL.

The HP05 Power Unit provides hydraulic flow and pressure for operation of hydraulic tools in the H.T.M.A. Type I class.

The HP05 provides hydraulic power through a single open-center circuit at a maximum flow of 4 gpm/15 lpm and an operating pressure of 1100 psi/77 bar.

The unit's portability permits its placement close to the job site to reduce hose length, which increases efficiency.

Power for the hydraulic circuit is provided by a 5 hp/3.7 kW Kawasaki or Briggs and Stratton engine. The fuel and hydraulic system are self-contained with the required reservoirs, filtration and level indicator for the hydraulic tank.

The supply (pressure) and return hoses connect at the control block. The upper coupler (nearest the ON/OFF control knob) is the pressure connection.

Engine speed is manually controlled. The engine control lever is adjusted for a constant speed during tool use and set to idle when the tool is not in use or prior to engine shutdown.

2. HYDRAULIC FLUID REQUIREMENTS.

The HP05 is shipped from the factory with the recommended fluid. Oils meeting the specifications listed below will provide good all-season operation if normal maintenance is performed (periodic filter change, draining of condensate, etc.). The hydraulic tank holds 1.3 g/4.9 l.

Viscosity (Fluid Thickness)

U.S.	METRIC
50° F 450 SSU Maximum	10° C 95 Centistokes
100° F 130-200 SSU	38° C 27-42 Centistokes
140° F 85 SSU Minimum	60° C 16.5 Centistokes

Pour Point -10° F/-23° C Minimum (for cold start-up)

Viscosity Index (ASTM D 2220) 140 Minimum

Demulsibility (ASTM D-1401) 30 Minutes Maximum

Flash Point (ASTM D-92) 340° F/171° C Minimum

Rust Inhibition (ASTM D-665 A & B) Pass

Oxidation (ASTM D943) 1000 Hours Minimum

Pump Wear Test (ASTM D2882) 60 mg Maximum

The following fluids work well over a wide temperature range at startup, allow moisture to settle out, and resist biological growth likely in cool operating hydraulic circuits. These fluids are recommended by Stanley Hydraulic Tools. Other fluids that meet or exceed the specifications of these fluids may also be used.

Ams-Oil Hydraulic Fluid A/W 150 SSU, 100 V.I.

Chevron AW-MV-32

Exxon "Univis" J-26

Mobil D.T.E. 13

Gulf "Harmony" AW-HVI-150-32

Shell Lo-HYDRAUL 32

Sun "Sunvis" 805 MG

Texaco "Rando" HD-AZ

Union "Unax" AW-WR-32

3. ENGINE TYPE.

The engine is a gasoline-powered, 5 hp/3.7 kW, 4-stroke, single cylinder, Kawasaki FA210 or a Briggs and Stratton model 132232 engine. Fuel consumption is about 0.6 g/2.3 l per hour.

4. FUEL REQUIREMENTS.

Use regular gasoline only. Fuel tank capacity is 0.7 g/2.6 l.

5. TOOL HOSE RECOMMENDATIONS.

The HP05 is easily moved close to the job site. It is not often necessary or advisable to use long hoses. Use two 3/8-inch diameter hoses, 15 to 25 ft/5 to 8 m long, rated for a working pressure of at least 2500 psi/175 bar. All hoses must have an oil resistant inner surface and an abrasion resistant outer surface. Each hose must have male pipe ends for most applications. Longer hoses can be used when necessary, but can affect the operation of the engine due to resistance in the hose. Use 1/2-inch diameter hose rated at 2500 psi/175 bar operating pressure if longer hose is required.

If small diameter or long hoses are used, or if restrictive fittings are connected to the supply and return ports, the pressure required to push the fluid through the system and back to the tank will be higher. This will reduce tool power.

2. Preparation for Use

1. ENGINE CRANKCASE OIL LEVEL.

IMPORTANT

The engine oil sump must never be overfilled. Overfilling can cause the engine to overheat and cause crankshaft seal damage.

Always check the oil level before starting the engine. Make sure the oil level is at the "full" mark on the dipstick. Do not overfill.

2. ENGINE FUEL LEVEL.

Check the fuel level. If low, fill with regular gasoline only.

3. HYDRAULIC FLUID.

The HP05 is shipped with the recommended fluid as specified in Section 1. Check the sight pipe on the hydraulic tank for proper oil level. The proper oil level is indicated when the center section of the sight pipe is dark.

4. HYDRAULIC CONNECTIONS.
(See Figure 1.)

The pressure and return hoses are connected to the control block. A 1/2-inch male pipe hose end can be connected, or H.T.M.A. flat-nosed quick-disconnect couplings (available through your Stanley dealer) can be used.

The upper port of the control block is the **pressure** (oil out) fitting. A male H.T.M.A. quick-disconnect coupling (without lockring) must be connected to the tool end of the hose, which is connected to this port.

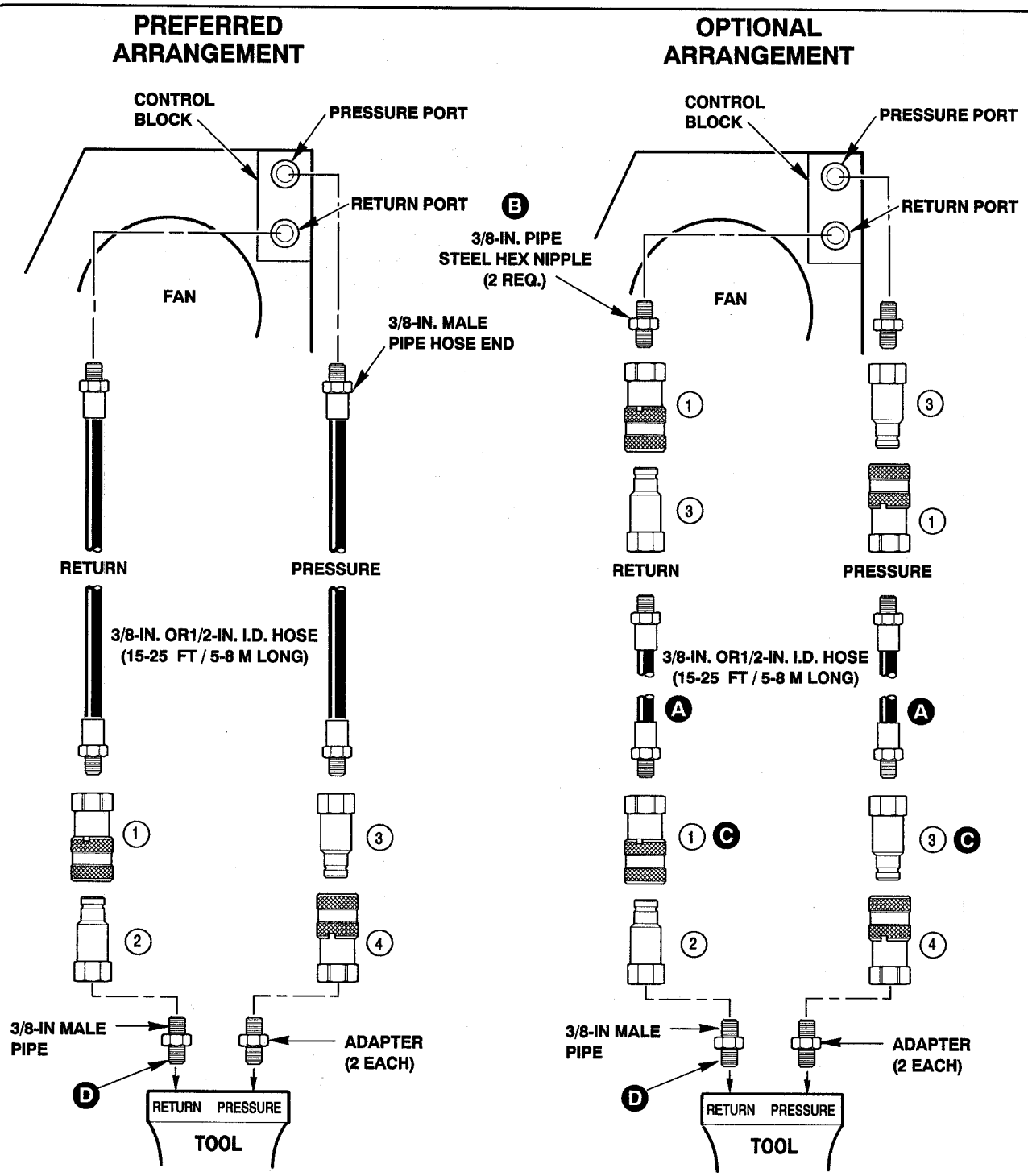
IMPORTANT

Oil should always flow from the male coupler to the female coupling.

The bottom port is the **return** port. A female H.T.M.A. quick-disconnect coupling should be connected to the tool end of the hose, which is connected to this port.

NOTE

The pressure increase in uncoupled hoses left in the sun may make them difficult to connect. When possible after use, connect the free ends of operating hoses together.



① H.T.M.A. 1/2-in. Female Quick-Disconnect Coupler

② H.T.M.A. 3/8-in. Male Quick-Disconnect Coupler

③ H.T.M.A. 1/2-in. Male Quick-Disconnect Coupler

④ H.T.M.A. 3/8-in. Female Quick-Disconnect Coupler

Ⓐ 3/8-in. Wire-Braided Hose is preferred for lengths up to 25 feet / 8 m .

Ⓑ Use 1/2 to 3/8-in. Pipe Steel Hex Adapter here when using 3/8-in. I.D. Hose.

Ⓒ Use H.T.M.A. 3/8-in. Coupler here when using 3/8-in. I.D. Hose.

Ⓓ Use Adapter with threads which match tool port.

Figure 1. Hydraulic Connections.

3. Operating Instructions

1. BEFORE STARTUP.

Perform the checks specified in Section 2 before operating the HP05. Make sure the following conditions are met.

- Engine oil level is at "full mark" on the dipstick. Do not overfill. Refer to Section 2.
- The **center** section of the hydraulic tank sight pipe must be dark indicating that the fluid level is correct.
- Fuel level must be adequate. If starting up for the first time after purchasing or repairing, fill the fuel tank completely.
- All hoses, fasteners and fittings must be tight.
- Power unit must be full free of leaves, dirt, oil and other contaminants which may inhibit cooling or create a fire hazard.

2. POSITIONING THE POWER UNIT.

The HP05 can be carried to the job site by lifting the unit by the frame. Place the unit on a level surface away from buildings, obstructions, and other flammable objects.

Position the unit so the engine exhaust is not aimed at materials that could ignite.

3. STARTUP (KAWASAKI ENGINE)

a. Observe all safety precautions.

b. Turn the control valve fully counterclockwise (OFF). (See Figure 2.)

c. Turn the engine ON/OFF switch to the "ON" position. (See Figure 3.)

d. Position the engine control lever to the START position.

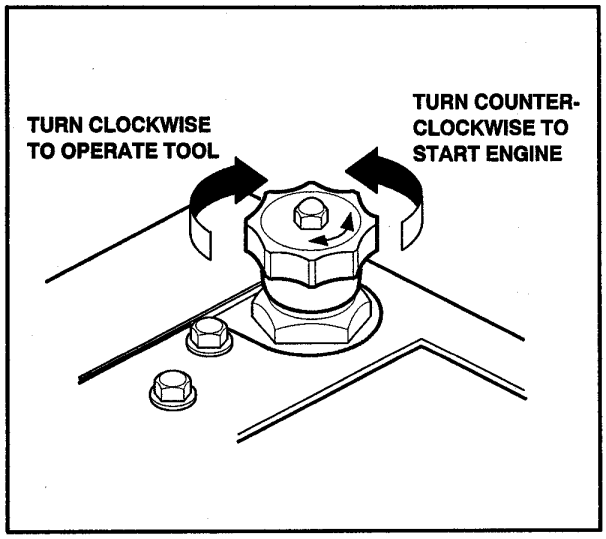


Figure 2. Hydraulic Control Valve

e. Before pulling recoil starter, set the choke lever to the CLOSED position when the engine is cold or to the half way open position when the engine is warm (re-starting).

NOTE

If the engine fails to start after three trials, return the choke lever to the open position and try again. Otherwise too much fuel in the carburetor and cylinder will make starting more difficult.

f. Pull the starter handle slowly until you feel compression; then return the handle back and pull the starter handle again.

g. When the engine starts, adjust the choke lever to keep the engine running for 3 to 5 minutes while leaving the control lever unchanged.

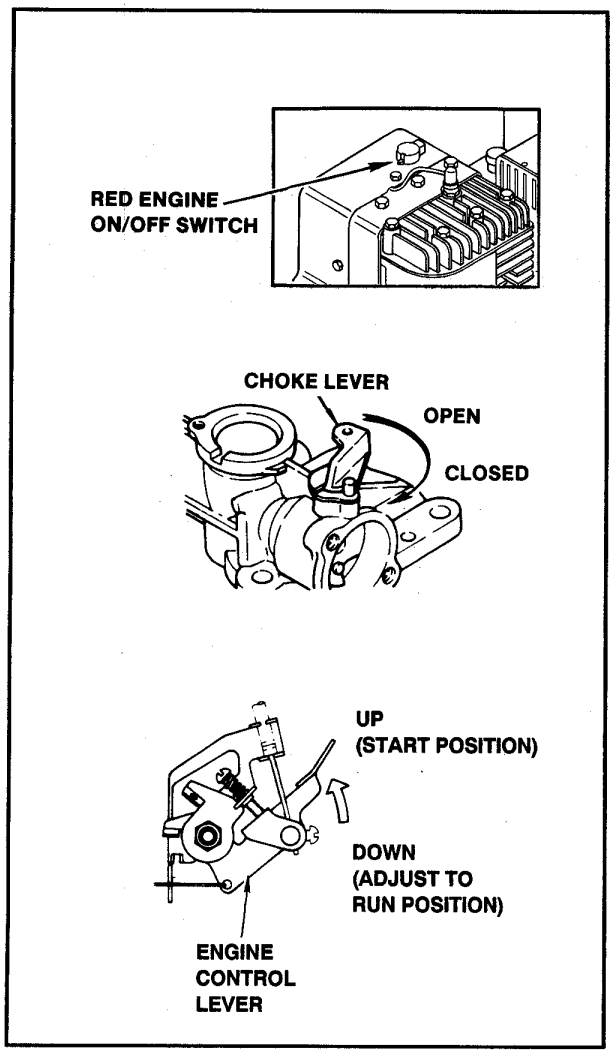


Figure 3. Kawasaki Engine Controls

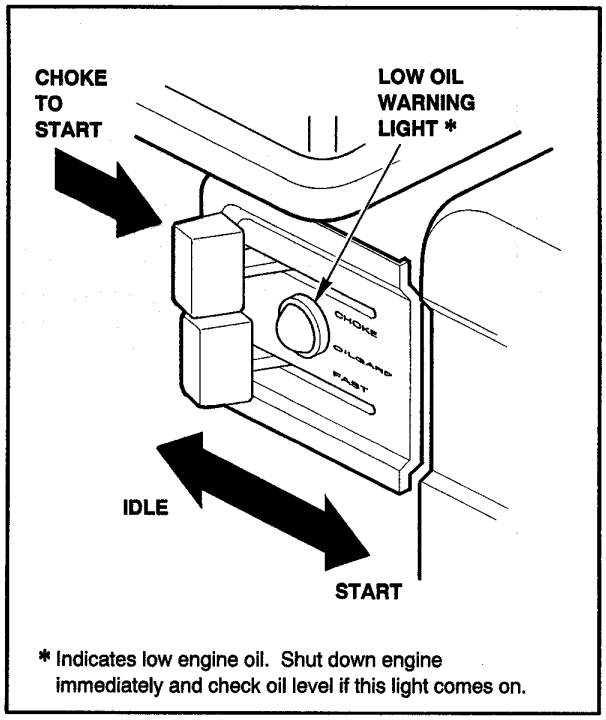


Figure 4. Briggs and Stratton Engine Controls

IMPORTANT

Make sure the control valve is in the full counterclockwise position before connecting or disconnecting hoses to the tool.

Tools used with the HP05 must be designed for operation with open-center systems.

STARTUP (BRIGGS AND STRATTON ENGINE)

a. Observe all safety precautions.

b. Turn the control valve knob fully counterclockwise. (See Figure 2.)

c. Slide the RUN/CHOKE control (figure 4) to the CHOKE position if the engine is cold. Set the control to the center position to restart a warm engine.

d. Slide the OFF/IDLE/FAST control lever to FAST.

e. Start the engine as described in steps **f** and **g** of Kawasaki starting procedures.

4. OPERATION.

a. Observe all safety precautions.

b. Connect the hoses to the tool. Make certain that the hoses are tightened securely to the fittings at the tool and the HP05.

c. After the engine has warmed up, engine speed can be controlled by the control lever. Move the control lever to the desired position. The engine will continue running at a constant speed.

d. Position the control valve fully clockwise "ON" to supply hydraulic power to the tool.

5. COLD WEATHER OPERATION.

Hydraulic fluids are thicker in cold weather; therefore, run the engine at low idle long enough to bring the fluid temperature up to a minimum of 50° F/10° C or until the top of the hydraulic tank feels warm.

Run the engine (and pump) at low speed with the control valve fully counterclockwise until the engine and hydraulic system are warm. This will reduce pressure in the hoses caused by cold fluid. In cold weather, a cover over the cooler (not the engine duct) will allow faster warm-up.

6. SHUTDOWN.

Normal Shutdown.

IMPORTANT

Always turn the control valve "OFF" before setting the ENGINE switch to "OFF". Stopping the engine with the control lever "ON", can cause the exhaust system to load with gasoline during "coast down". This can cause damaging exhaust "backfire".

a. Observe all safety precautions.

b. Turn the control valve fully counterclockwise.

c. Move the engine control lever up to the minimum (START) position.

d. Maintain the engine at idle for a short while; then set the engine switch to "OFF".

Emergency Shutdown.

In the event of an emergency, such as fire, immediately set the ENGINE switch to "OFF".

4. Maintenance Instructions

1. HYDRAULIC SYSTEM MAINTENANCE.

Observe the following for maximum performance and sevice life from the hydraulic system.

- Use the correct fluid. (See Section 1.)
- Always keep hydraulic system and fluids clean. A clean system will operate efficiently for many years.
- Keep water out of fluid. (See paragraph **b.** below.)
- Keep air out of lines. Hydraulic system overheating and foam at the hydraulic tank breather indicate that air is present in the lines. Tighten all suction line fittings and clamps.
- Hydraulic system wear is noted by increased heat during tool operation, reduced tool performances, and eventual system breakdown.

NOTE

Do not overfill. If overfilled, fluid will be forced out of the hydraulic tank breather.

a. Reservoir Fill. Make sure engine is stopped before opening filter cap. Fill slowly with recommended fluid as listed in Section 1. Fluid must be visible on the sight pipe gauge at all times. Add fluid as needed. Stop filling when the sight pipe changes from center dark to full dark. Secure cap before restarting engine.

b. Removal of Condensed Moisture from Hydraulic Fluid.

IMPORTANT

Water in the fluid reduces lubrication and causes premature parts wear. Pump cavitation may also occur.

Condensation is a frequent problem with cool mobile hydraulic circuits. This condition occurs in moist or cold climates. When warm air in the hydraulic tank draws moisture from the cooler air outside, water accumulates in the tank.

To remove water from the system, use the "pressure" hose without the quick-disconnect coupler attached. Start engine and pump fluid into a clean 2 g/8 l container. Allow the fluid to sit long enough for the water to settle to the bottom. Slowly pour the fluid back into the tank, avoiding the water at the bottom of the container. (See paragraph 1.a.)

IMPORTANT

Turn engine "OFF" as soon as hydraulic tank (resevoir) is empty. DO NOT operate engine with an empty hydraulic tank as pump damage may occur.

NOTE

Operate with the fluid temperature at 50° F to 140° F (10° C to 60° C) for improved seal and hose life, and maximum efficiency.

c. Check Suction Hose. Check that the suction hose (from the hydraulic tank to the pump inlet) is not kinked and that it is clamped securely. This will reduce the risk of pump cavitation and sucking air into the system. All pump fittings should be tight.

d. Check Hydraulic Lines and Fittings. Check for loose fittings, leaks, etc., throughout the hydraulic circuit.

⚠ WARNING

Do not attempt to locate hydraulic leaks by feeling around hoses and fittings with bare hands — "Pinhole" leaks can penetrate the skin. To inspect for leaks, turn off the unit, clean around suspected area, run the unit and visually check for leaks.

e. **Changing Hydraulic Filter.** The filter element should be changed after 200 hours of operation. Change more often if operated under cold, moist or dusty conditions.

To replace filter element, stop the engine and remove the pump cover. Remove the element using a strap or chain wrench.

Use a Zinga BE-10-18 replacement element. Apply a thin film of fluid to the gasket surface. Install the new element and tighten one-half turn after initial gasket contact.

2. ENGINE MAINTENANCE.

Always check the engine oil level, clean the air filter element, and change engine oil at the intervals specified in the Kawasaki literature supplied with the power unit.

Engine warranty and service is provided by an authorized Kawasaki distributor. Most servicing can be performed without engine removal.

NOTE

See Section 6 for engine removal instructions.

5. Testing and Troubleshooting

1. GENERAL.

The hydraulic system and engine should be tested periodically to verify that the power unit is operating at peak efficiency.

Performing the recommended tests will help to isolate problems that may exist in the engine and hydraulic system.

Stanley Hydraulic Tester, (Part Number 04182), is recommended for all tests.

Always perform the recommended maintenance instructions given in Section 4 before making performance tests. Start the engine and listen for any unusual sounds. Check the engine fuel and cooling system for leaks before performing any tests.

2. TESTING THE HYDRAULIC CIRCUIT.

When testing the hydraulic circuit, make sure the control valve is in the fully counterclockwise "OFF" position before connecting the circuit tester. Test the hydraulic circuit as follows:

a. Observe all safety precautions.

b. Connect hydraulic hoses to the appropriate connectors on the control block. Connect the tester to the opposite end of the hoses. Make sure flow direction is correct.

c. Start the engine and allow the hydraulic fluid to warm to about 100° F/38° C.

d. Open the tester restrictor valve (fully open). This represents minimum load.

e. Turn the control valve clockwise "ON" to energize the circuit. Position the engine control lever for maximum engine speed.

f. Check the flow rate and pressure on the tester gauges. Record the flow and pressure. The flow should be between 4.8 and 5.2 gpm/18 and 20 lpm. The pressure gauge will indicate system backpressure.

g. Position the engine control lever to produce 4.3 -4.8 gpm/16-18 lpm. With the engine at this speed, observe the flow and pressure gauges while slowly closing the tester restrictor valve.

h. As the hydraulic system relief valve begins to crack (open) and bypass fluid through the valve, the flow rate will begin to drop. At this time, the pressure in the system should be between 1100 and 1500 psi/77 and 105 bar.

i. If the pressure is not as specified, adjust the relief valve (the relief valve is located on the hydraulic pump).

j. During the procedures given in steps **c** through **i**, the engine should hold a nearly constant speed. With a constant engine speed, any drop in flow more than 0.5 gpm/1.9 lpm of that recorded in step **f** indicates wear inside the hydraulic pump or control valve. Changes in hydraulic flow can be analyzed as follows:

- If the pressure stabilizes between 1100 and 1500 psi/77 and 105 bar, and the flow rate begins to drop at this time, the relief valve is opening and the system operating properly.
- If the flow rate gradually decreases with increased system pressure, the pump or control valve may be worn.
- If the flow remains constant, but pressure does not increase, the relief valve may be defective.

NOTE

Determine the cause for any internal wear. Poor maintenance practices cause most circuit wear. Proper maintenance is essential for preventing problems. **Always keep the hydraulic circuit clean.**

3. TROUBLESHOOTING.

The following table lists the most common problems that occur, their probable cause and the corrective action that should be taken.

PROBLEM	CAUSE	REMEDY
Engine will not start.	Engine switch off.	Set the switch to "ON" before pushing control lever to the start position.
	Engine flooded (too much fuel in the carburetor and cylinder).	Set the choke lever to the open position and try again.
	No fuel.	Fill fuel tank.
	Loose or defective spark plug wire	Repair or replace.
	Defective spark plug.	Remove plug, check gap, clean or replace.
Engine smokes.	Engine oil level too high.	Fill only to full mark on dip-stick.
	Air cleaner clogged.	Clean and-or replace.
Oil leak from cooler.	Defective pump seal.	Replace pump seal.
	Fluid overfull.	Correct fluid level.
	Loose Circuit Fittings.	Tighten, repair or replace.
Hydraulic tools won't operate.	Control valve setting incorrect.	Turn valve fully clockwise.
	Incorrect hose connection to tool.	Check that tool hose circuit goes from upper (pressure) fitting to tool and back to the bottom fitting. Fluid always flows from the male to the female quick-connect fittings.
	Quick-disconnect fittings defective.	Detach from hose, connect set together and check for free flow.
	Hydraulic fluid level low.	Check for correct fluid level. Use recommended fluid. (See Section 1.)
	Pump not coupled.	Check coupling between pump and engine. Coupling should feel tight at both ends.

PROBLEM	CAUSE	REMEDY
Hydraulic tools won't operate (Cont.)	Relief valve stuck open	Replace valve block.
	Suction hose kinked.	Make sure suction hose from fluid reservoir to pump inlet has a natural curve.
	Tool is defective.	Repair as necessary.

6. Repair

1. GENERAL.

Power unit repairs given in this section are limited to removal, disassembly, assembly and installation of major assemblies found to be defective. Follow all recommendations and procedures in the order given.

IMPORTANT

Always keep parts clean. Dirt and similar contaminants can seriously damage hydraulic systems components.

2. HYDRAULIC SYSTEM AND RELATED PARTS. (See Figures 4 and 5.)

Perform the test and troubleshooting procedures given in Section 5 to determine the cause of problems prior to major disassembly.

a. Control Block Removal.

1. Observe all safety precautions.
2. Remove the hydraulic fluid from the system as described in Section 4, paragraph 1.b.
3. Disconnect the tool hoses and fittings from the control block.
4. Thoroughly clean the outside surfaces of the power unit.
5. Remove the twelve 1/4NC x 1/2 inch/13 mm long hex head bolts securing the pump cover. Remove the pump cover, cooler guard, and the five plastic cooler seal strips.
6. Loosen the hose clamp at the valve block upper fitting and pull the hose free.
7. Loosen the hose clamp at the lower (return) fitting at the rear of the control block and pull the hose free.
8. Lift out the oil cooler and attached hose assemblies.
9. Disconnect the braided hose from the upper (pressure) fitting at the rear of the control block.
10. Remove the two 1/4NC x 1/2 inch/13 mm long hex head bolts holding the control block and lift free.

b. Control Block Replacement.

1. Install the new control block using two 1/4NC x 1/2 inch/13 mm long hex head bolts.
2. Connect the braided hose to the upper (pressure) fitting of the control block.
3. Install the oil cooler. The bottom hose is the return hose from the control block. Push the free end of this hose onto the lower control block (return) fitting. Position and tighten the hose clamp.
4. Push the free end of the upper oil cooler hose onto the top fitting on the valve block. Position and tighten the hose clamp.

NOTE

The pump suction hose should be free of kinks to avoid hose collapse during a cold start.

5. Fill the hydraulic tank with fluid. Check the tank for leaks.
6. Install the five plastic cooler strips, cooler guard, and pump cover. Secure the pump cover using the twelve 1/4NC x 1/2 inch/13 mm long hex head bolts.
7. Install the tool hose fittings in the control block. Connect the tool hoses to these fittings. (See Figure 1.)

c. Pump Removal.

1. Perform the control block removal procedure.

2. Take out the remaining two 1/4NC x 1/2 inch/13 mm long hex head bolts and remove the panel assembly.

3. Loosen the fan hub set screw and pull the fan assembly free of the pump output shaft. Remove the shaft woodruff key if it did not drop out.

4. Loosen the hose clamp at the pump suction fitting and pull the hose free.

5. Disconnect the braided hose from the pump pressure fitting.

6. Loosen the coupler set screw on the pump drive shaft. Remove the two 5/16NC x 3/4 inch/19 mm long hex head bolts and lockwashers and pull the pump free of the coupler assembly. Remove the shaft woodruff key if it did not drop out.

7. Place the pump in a soft-jawed vise and remove the suction and pressure fittings. Note each fitting orientation before removing the fitting.

d. Pump Replacement.

1. Place the new pump in a soft-jawed vise and install the suction and pressure fittings with the proper orientation.

2. Install the woodruff key on the pump drive shaft. Align the shaft with the coupler and press the pump into the coupler assembly.

3. Secure the pump to its mount using the two 5/16NC x 3/4 inch/19 mm long hex head bolts and lockwashers. Tighten the coupler set screw.

4. Install the braided hose on the pump pressure fitting and the rubber hose on the pump suction fitting.

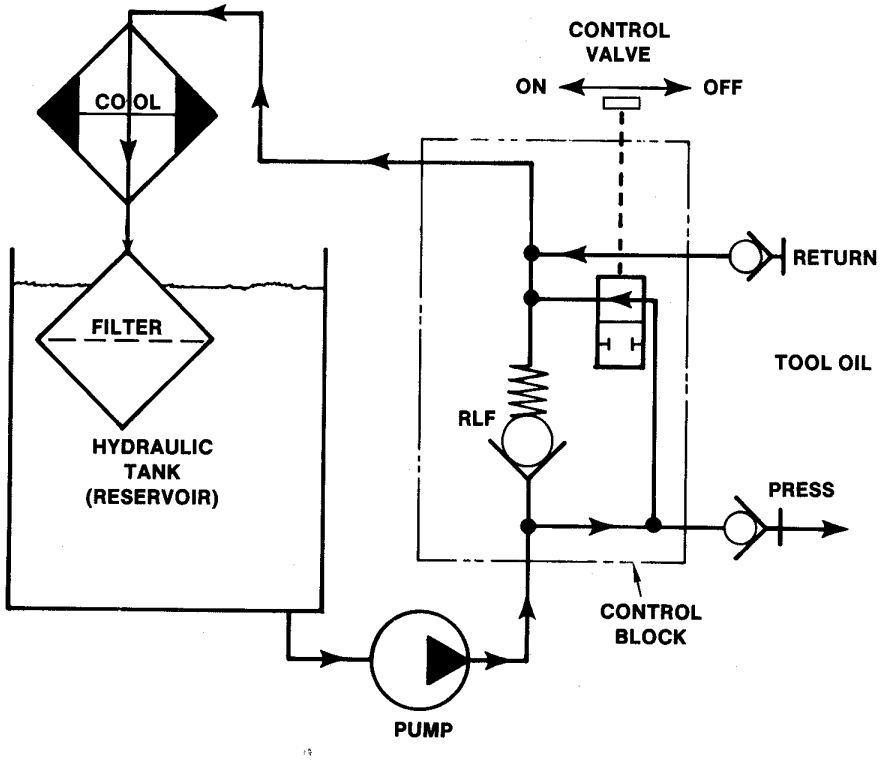


Figure 4. Hydraulic Interconnection Diagram.

5. Install the woodruff key on the pump output shaft. Align the fan hub with the shaft and press on the fan assembly. Tighten the fan hub set screw.

6. Install the panel assembly and hold in place with the two lower right 1/4NC x 1/2 inch/13 mm long hex head bolts.

7. Perform the control block replacement procedure.

e. Coupler Removal.

1. Perform the control block and pump removal procedures.

2. Remove the filter element from the valve block.

3. Loosen the engine-end coupler set screw. Remove the four 5/16NF x 1-3/4 inch/44 mm long hex head bolts and pull the pump mount (and coupler assembly) free of the engine output drive shaft. The coupler assembly will now drop out in your hand.

4. Remove the woodruff key from the engine output shaft if it did not drop out in Step 3.

f. Coupler Replacement.

1. Install the woodruff key on the engine output drive shaft.

2. Place the coupler assembly in the pump mount and align the engine-end hub with the shaft and press on the coupler mount assembly. Install the four 5/16NF x 1-3/4 inch/44 mm long hex head bolts to secure the pump mount.

3. Position the coupler assembly on the engine output drive shaft so it is approximately centered within the pump mount. Tighten the engine-end coupler set screw.

4. Install the filter element on the valve block.

5. Perform the pump and control block replacement procedures.

g. Valve Block and Hydraulic Tank Removal.

1. Perform the control block, pump, and coupler removal procedures.

2. Remove the 1/4NC x1/2 inch/13 mm long hex head bolt, lockwasher, and two flat washers securing the valve block motor mount to the frame.

3. Remove the filter-breather cap and slide the valve block and tank assembly out of the frame. Remove the engine block spacer.

4. Place the valve block and tank assembly on a clean work surface.

5. Loosen the hose clamps from the valve block return and suction hoses. Pull the hoses free then remove both fittings.

6. Separate the valve block from the tank by removing the eight 1/4NC x 1-1/4 inch/32 mm long allen head bolts and prying the valve block away from the tank. Note o-ring seal orientation.

7. Remove the motor mount from the valve block.

8. Replace the valve block and/or the hydraulic tank as a complete unit.

h. Valve Block and Hydraulic Tank Replacement.

1. Install new o-ring seals in the same positions as they were when removed during disassembly. Make sure the seals are completely seated in their recesses during reassembly.

2. Install the valve block motor mount. Mount the valve block on the tank using the eight 1/4NC x 1-1/4 inch/32 mm long allen head bolts. Tighten to 4 (ft lb) (in. lb) /6 Nm of torque.

3. Install the return and suction fittings; then connect the hoses. Position and tighten the hose clamps.

4. Place the engine block spacer on the engine output drive shaft.

5. Slide the valve block and tank assembly into the frame. Install the 1/4NC x 1/2 inch/13 mm long hex head bolt, lockwasher, and two flat washers to secure the valve block shock mount to the frame.

6. Align the engine block spacer with the bolt holes in the rear panel.

7. Perform the coupler, pump, and control block replacement procedures.

3. ENGINE AND RELATED COMPONENTS.
(See Figure 5.)

NOTE
Most engine repairs can be accomplished without removing the engine.

a. Engine Removal.

1. Perform the control block, pump, and coupler removal procedures.

2. Remove the four 1/4NC x 1-1/4 inch/32 mm long hex head bolts and lockwashers securing the engine to the motor mounts.

NOTE
It is not necessary to remove the hydraulic tank from the frame during engine removal.

3. Pull the engine away from the hydraulic tank's rear panel while at the same time lifting the engine up off the four motor mounts. Remove the engine block spacer. The engine can now be transported to an authorized Kawasaki dealer for repair.

b. Engine Replacement.

1. Place the engine spacer on the output drive shaft.

2. Lift the engine onto the motor mounts while guiding the output shaft through the hole in the hydraulic tank's rear panel. Secure the engine to the motor mounts using the four 1/4NC x 1-1/4 inch/32 mm long hex head bolts and lockwashers.

3. Perform the coupler, pump, and control block replacement procedures.

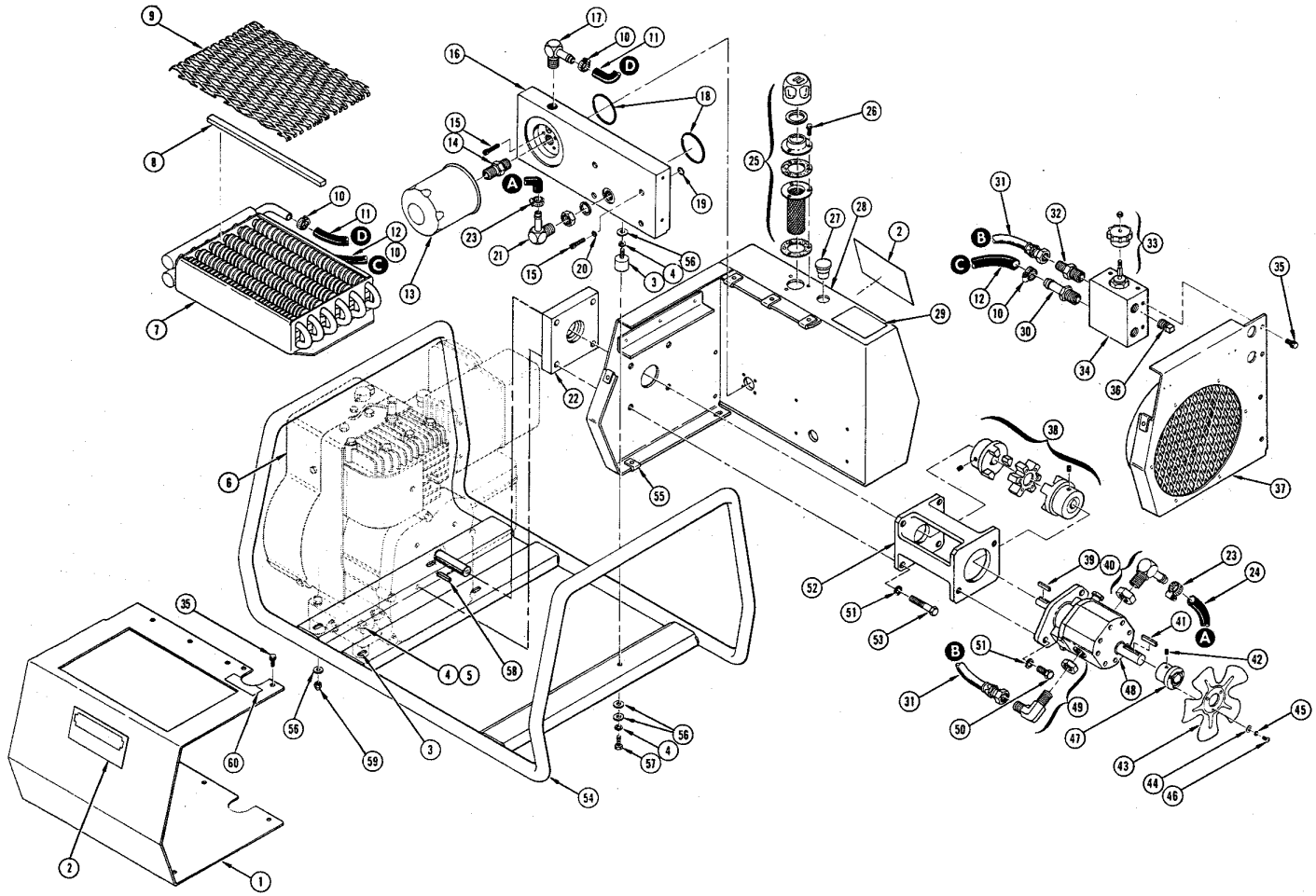
SERVICE LOG

Hour Meter	Engine Oil Change	Engine Fuel Filter Change	Engine Air Filter Change	Hydraulic Fluid Condensate Drain	Hydraulic Filter Change	

SERVICE AND REPAIR NOTES

SERVICE AND REPAIR NOTES

SERIAL NO. 881485 AND LOWER

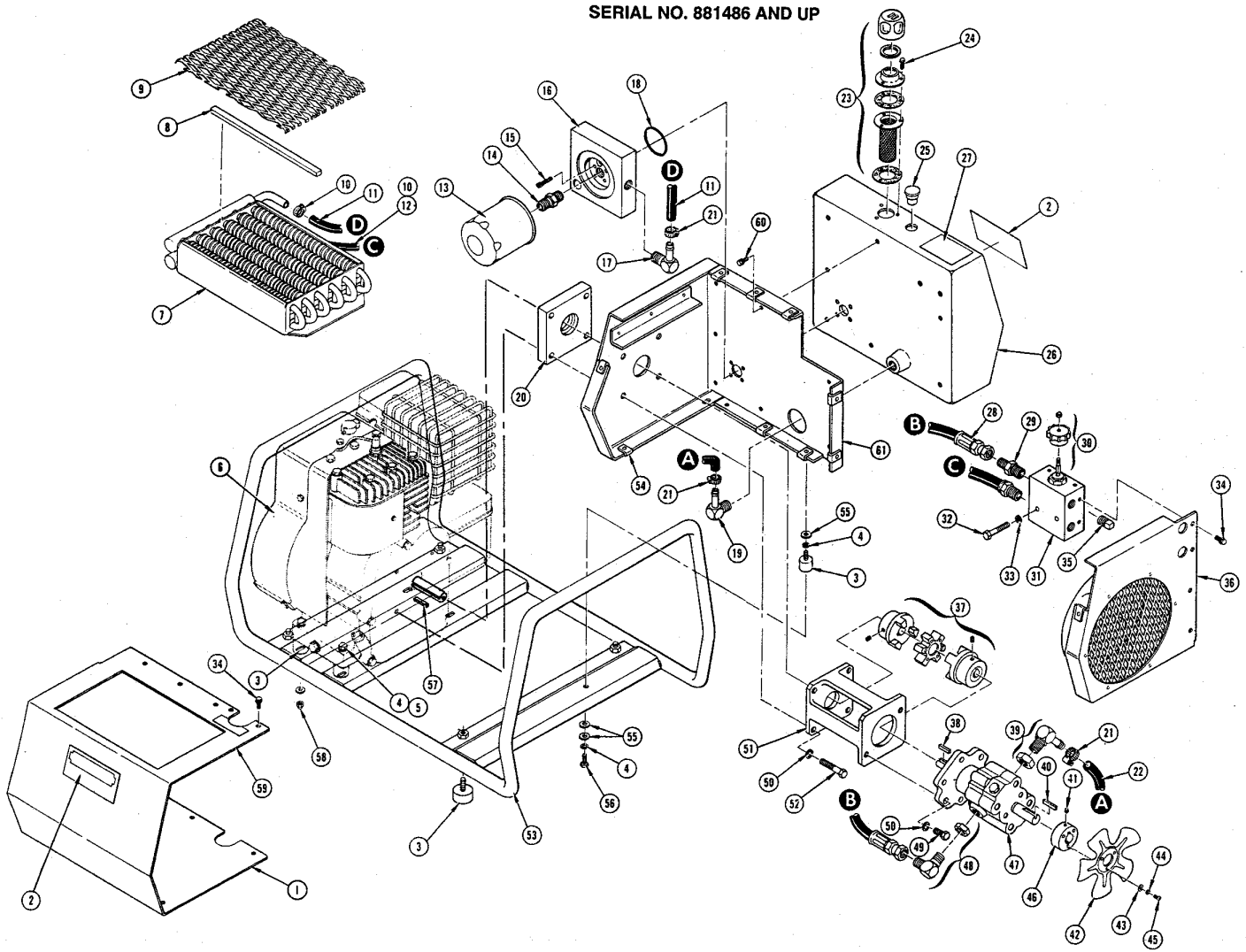


PARTS LIST

Item No.	Part No.	Qty	Description
1	15803	1	Pump Cover
2	05152	2	Sticker - Stanley
3	15804	5	Motor Mount
4	01289	6	Lockwasher, 1/4
5	15805	4	Bolt, 1/4NC x 1-1/4 HH PL #5
6	15806	1	Engine, #FA21OD-3500
7	15807	1	Oil Cooler
8	15808	5	Cooler Seal Strip
9	15809	1	Cooler Guard
10	15810	4	Hose Clamp
11	15811	1	Hose (Return), 3/8 x 12 (D)
12	15812	1	Hose (Return), 3/8 x 6-1/4 (C)
13	15813	1	Filter Element
14	15814	1	Fitting (Filter)
15	00045	8	Bolt, 1/4NC x 1-1/4 Allen HD
16	15815	1	Valve Block
17	15816	1	Fitting
18	07572	2	O-Ring, Seal
19	15817	4	O-Ring, Seal, 5/16
20	00717	4	O-Ring, Seal,1/4
21	15818	1	Fitting
22	15819	1	Spacer
23	15820	2	Hose Clamp
24	15821	1	Hose, 1/2 x 3-3/4 (A)
25	15822	1	Hydraulic Filler Cap Assy
26	15823	3	Bolt, 8-32 x 1/2 Self-Tapping
27	15824	1	Sight Gauge
28	15825	1	Hydraulic Tank
29	15826	1	Sticker - Fluid Level
30	15827	1	Fitting
31	15828	1	Hose, #FG 108-7-G00-D194 (B)
32	15829	1	Fitting
33	15830	1	Control Valve, On/Off
34	15831	1	Control Block
35	03769	18	Bolt, 1/4NC x1/2 HSH
36	09059	2	Plug, 5/8 (Shipping)
37	15832	1	Panel
38	15833	1	Coupler Assy
39	15834	1	Key, 1/8 x 1/8 x 1
40	15835	1	Fitting (Return)
41	15836	1	Woodruff Key, 1/8 x 1/2
42	03236	1	Set Screw, 1/4-28 x 1/4
43	15837	1	Cooling Fan
44	15838	3	Washer, 3/16 Flat
45	04420	3	Lockwasher, 10-32
46	04644	3	Screw, 10-32 x 3/4 RD HD ST
47	15839	1	Fan Hub
48	15840	1	Hydraulic Pump
49	15841	1	Fitting (Pressure)
50	15842	2	Bolt, 5/16NC x 3/4 HH PL #5
51	00283	6	Lockwasher, 5/16 Plated
52	15843	1	Pump Mount
53	15844	4	Bolt, 5/16NF x 1-3/4 HH PL #5
54	15845	1	Frame
55	15846	7	Jam Nut
56	15847	7	Washer, 1/4 Flat Plated
57	15848	1	Bolt, 1/4NC x 1/2 HH PL #5
58	01316	1	Key, 3/16 x 1
59	00719	4	Nylock Nut, 1/4
60	15849	1	Sticker - On/Off

NOTE: Use Part Name and Part Number when ordering.

SERIAL NO. 881486 AND UP



PARTS LIST

Item No.	Part No.	Qty.	Description
1	20639	1	Pump Cover
2	05152	2	Sticker - Stanley
3	15804	5	Motor Mount
4	01289	6	LockWasher, 14
5	15805	4	Bolt, 1/4NC x 1-1/4 HH PL #5
6	15806	1	Engine, #FA21OD-3500
7	15807	1	Oil Cooler
8	15808	5	Cooler Seal Strip
9	20631	1	Cooler Guard
10	15810	4	Hose Clamp
11	15811	1	Hose (Return), 3/8 x 12 D
12	15812	1	Hose (Return), 3/8 x 6-1/4 C
13	20637	1	Filter Element
14	15814	1	Fitting (filter)
15	00045	8	Bolt, 1/4NC x 1-1/4 Allen HD
16	15815	1	Valve Block
17	15816	1	Fitting
18	20635	2	O-Ring Seal
19	15818	1	Fitting
20	15819	1	Spacer
21	15820	2	Hose Clamp
22	20632	1	Hose, 1/2 x 3-3/4 A
23	20630	1	Hydraulic Filter Cap Assy
24	15823	3	Bolt, 8-32 x 1/2 Self-Tapping
25	15824	1	Sight Gauge
26	20636	1	Hydraulic Tank
27	15826	1	Sticker - Fluid Level
28	15828	1	Hose, #FG 108-7-G00-D194 B
29	15829	1	Fitting
30	15830	1	Control valve, On/Off
31	15831	1	Control Block
32	02255	2	Capscrew, 1/4NC x 2 HH
33	04539	2	Washer,1/4
34	03769	18	Bolt, 1/4NC x 1/2 HSH
35	09059	2	Plug, 5/8 (Shipping)
36	20638	1	Panel
37	15833	1	Coupler Assy
38	15834	1	Key, 1/8 x 1/8 x 1
39	15835	1	Fitting (Return)
40	15836	1	Woodruff Key, 1/8 x 1/2
41	03236	1	Set Screw, 1/4-28 x 1/4
42	15837	1	Cooling Fan
43	15838	3	Washer, 3/16 Flat
44	04420	3	Lockwasher, 10-32
45	04644	3	Screw, 10-32 x 3/4 RD HD ST
46	15839	1	Fan Hub
47	15840	1	Hydraulic Pump
48	15841	1	Fitting (Pressure)
49	15842	2	Bolt, 5/16NC x 3/4 HH PL #5
50	00283	6	Lockwasher, 5/16 Plated
51	15843	1	Pump Mount
52	15844	4	Bolt, 5/16NF x 1-3/4 HH PL #5
53	15845	1	Frame
54	15846	7	Jam Nut
55	15847	7	Washer, 1/4 Flat Plated
56	15848	1	Bolt, 1/4NC x 1/2 HH PL #5
57	01316	1	Key, 3/16 x 1
58	00719	4	Nylock Nut, 1/4
59	15849	1	Sticker - On/Off
60	20634	20	Bolt
61	20640	1	Hydraulic Tank Support

NOTE: Use Part Name and Number when ordering.

STANLEY®

helps you do things right

Stanley Hydraulic Tools
Division of The Stanley Works
3810 S.E. Naef Road
Milwaukie, Oregon 97267-5698
Phone: 503/659-5660
Telex: 360771
Fax: 503/652-1780