

HPR20271 HPR20271A HPR20271D

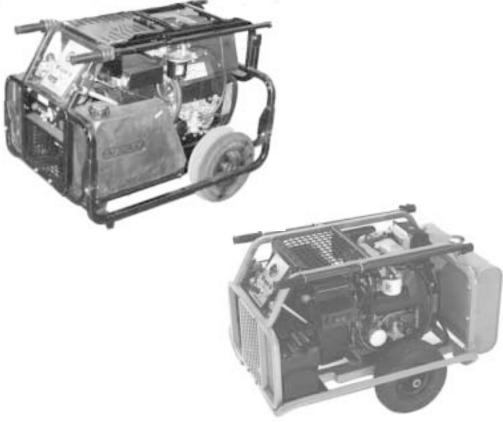
HYDRAULIC POWER UNIT TWIN CIRCUIT DIESEL

A WARNING

SERIOUS INJURY OR DEATH COULD RESULT FROM IM-PROPER REPAIR OR SERVICE OF THIS TOOL.

REPAIRS AND/OR SERVICE TO THIS TOOL MUST ONLY BE DONE BY AN AUTHORIZED AND CERTIFIED DEALER.





SAFETY, OPERATION AND MAINTENANCE **SERVICE MANUAL**

Stanley Hydraulic Tools

3810 SE Naef Road Milwaukie OR 97267-5698 503-659-5660 FAX 503-652-1780 www.stanley-hydraulic-tools.com

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SERVICING THE STANLEY POWER UNIT: This manual contains safety, operation, and routine maintenance instructions. Stanley Hydraulic Tools recommends that servicing of hydraulic tools, other than routine maintenance, must be performed by an authorized and certified dealer. Please read the following warning.

A WARNING

SERIOUS INJURY OR DEATH COULD RESULT FROM THE IMPROPER REPAIR OR SERVICE OF THIS TOOL.

REPAIRS AND / OR SERVICE TO THIS TOOL MUST ONLY BE DONE BY AN AUTHORIZED AND CERTIFIED DEALER.

For the nearest authorized and certified dealer, call Stanley Hydraulic Tools at the number listed on the back of this manual and ask for a Customer Service Representative.

SAFETY SYMBOLS

Safety symbols and signal words, as shown below, 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.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



This safety alert and signal word indicate an imminently hazardous situation which, if not avoided, will result in death or serious injury.



This safety alert and signal word indicate a potentially hazardous situation which, if not avoided, <u>could</u> result in <u>death or serious injury</u>.



This safety alert and signal word indicate a potentially hazardous situation which, if not avoided, <u>may</u> result in <u>minor or moderate injury</u>.

CAUTION

This signal word indicates a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE

This signal word indicates a situation which, if not avoided, will result in damage to the equipment.



This signal word indicates a situation which, if not avoided, <u>may</u> result in <u>damage to the equipment</u>.

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

LOCAL SAFETY REGULATIONS

Keep these instructions in an area accessible to the operator and mainte-

SAFETY PRECAUTIONS



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 equipment.

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

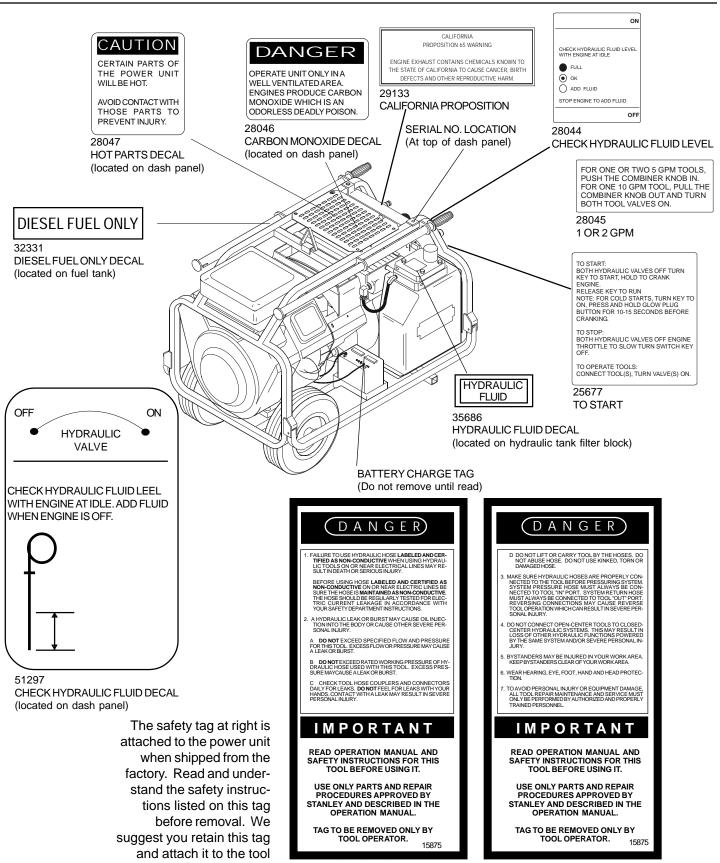
Supervising personnel should develop additional precautions relating to the specific work area and local safety regulations. If so, place the added precautions in the space provided on page 4.

In addition to this manual, read and understand safety and operating instructions in the Engine Operation Manual furnished with the power unit.

The HPR20271 Hydraulic Diesel Power Unit will provide safe and dependable service if operated in accordance with the instructions given in this manual. Read and understand this manual and any stickers and tags attached to the Power Unit. Failure to do so could result in personal injury or equipment damage.

- Operator must start in a work area without bystanders. The operator must be familiar with all prohibited work areas such as excessive slopes and dangerous terrain conditions.
- Establish a training program for all operators to ensure safe operation.
- Do not operate the power unit unless thoroughly trained or under the supervision of an instructor.
- Always wear safety equipment such as goggles, ear, head protection, and safety shoes at all times when operating the
 power unit and a hydraulic tool.
- · Do not inspect or clean the power unit while it is running. Accidental engagement of the unit can cause serious injury.
- Always us hoses and fittings rated at 2500 psi/172 bar with a 4 to 1 safety factor. Be sure all hose connections are tight.
- · Be sure all hoses are connected for correct flow direction to and from the tool being used.
- · Do not inspect hoses and fittings for leaks by using 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.
- Do not operate a damaged, improperly adjusted power unit.
- · Never wear loose clothing that can get entangled in the working parts of the power unit.
- Keep all parts of your body away from the working parts of the power unit.
- Keep clear of hot engine exhaust.
- Do not add fuel to the power unit while the power unit is running or is still hot.
- Do not operate the power unit if gasoline odor is present.
- · Do not use flammable solvents around the power unit engine.
- Do not operate the power unit within 3.3 ft/1 m of buildings, obstructions or flammable objects.
- Do not reverse tool rotation direction by changing fluid flow direction.
- Allow power unit engine to cool before storing in an enclosed space.
- · Always keep critical tool markings, such as lables and warning stickers legible.
- To avoid personal injury or equipment damage, all tool repair, maintenance and service must only be performed by authorized and properly trained personnel.

TOOL STICKERS & TAGS



SAFETY TAG (shown smaller then actual size)

when not in use.

HYDRAULIC HOSE REQUIREMENTS

HOSE TYPES

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

- 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.

HOSE SAFETY TAGS

To help ensure your safety, the following DANGER tags are attached to all hose 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 may be obtained from your Stanley Distributor.

THE TAG SHOWN BELOW IS ATTACHED TO "CERTIFIED NON-CONDUCTIVE" HOSE





(shown smaller than actual size)

THE TAG SHOWN BELOW IS ATTACHED TO "CONDUCTIVE" HOSE.





(shown smaller than actual size)

HOSE PRESSURE RATING

The rated working pressure of the hydraulic hose **must be equal to or higher than** the relief valve setting on the hydraulic system.

HTMA REQUIREMENTS

TOOL CATEGORY

HYDRAULIC SYSTEM REQUIREMENTS	C DESCRIPTION DIVIDIO CATEGORY TYPE 1	D JOIL SERVE & 1 30 NOR BHTTHA CATEGORY TYPE II	TYPE III	TYPE RR
FLOW RATE TOOL OPERATING PRESSURE (at the power supply outlet)	4-6 gpm	7-9 gpm	11-13 gpm	9-10.5 gpm
	(15-23 lpm)	(26-34 lpm)	(42-49 lpm)	(34-40 lpm)
	2000 psi	2000 psi	2000 psi	2000 psi
	(138 bar)	(138 bar)	(138 bar)	(138 bar)
SYSTEM RELIEF VALVE SETTING	2100-2250 psi	2100-2250 psi	2100-2250 psi	2200-2300 psi
(at the power supply outlet)	(145-155 bar)	(145-155 bar)	(145-155 bar)	(152-159 bar)
MAXIMUM BACK PRESSURE	250 psi	250 psi	250 psi	250 psi
(at tool end of the return hose)	(17 bar)	(17 bar)	(17 bar)	(17 bar)
Measured at a max. fluid viscosity of:	400 ssu*	400 ssu*	400 ssu*	400 ssu*
(at min. operating temperature)	(82 centistokes)	(82 centistokes)) (82 centistokes) (82 centistokes)
TEMPERATURE Sufficient heat rejection capacity to limit max. fluid temperature to: (at max. expected ambient temperature)	140° F	140° F	140° F	140° F
	(60° C)	(60° C)	(60° C)	(60° C)
Min. cooling capacity	3 hp	5 hp	7 hp	6 hp
at a temperature difference of	(2.24 kW)	(3.73 kW)	(4.47 kW)	(5.22 kW)
between ambient and fluid temps	40° F	40° F	40° F	40° F
NOTE:	(22° C)	(22° C)	(22° C)	(22° C)
Do not operate the tool at oil temperatures above 140° I discomfort at the tool.	F (60° C). Operati	on at higher temp	peratures can ca	use operator
FILTER Min. full-flow filtration Sized for flow of at least: (For cold temp. startup and max. dirt-holding capacity)	25 microns	25 microns	25 microns	25 microns
	30 gpm	30 gpm	30 gpm	30 gpm
	(114 lpm)	(114 lpm)	(114 lpm)	(114 lpm)
HYDRAULIC FLUID Petroleum based (premium grade, anti-wear, non-conductive) VISCOSITY	100-400 ssu*	100-400 ssu* (20-82 c	100-400 ssu* entistokes)	100-400 ssu*

NOTE:

When choosing hydraulic fluid, the expected oil temperature extremes that will be experienced in service determine the most suitable temperature viscosity characteristics. Hydraulic fluids with a viscosity index over 140 will meet the requirements over a wide range of operating temperatures.

(at min. and max. operating temps)

NOTE:

These are general hydraulic system requirements. See tool Specification page for tool specific requirements.

^{*}SSU = Saybolt Seconds Universal

PREPARATION FOR USE

ENGINE



Do not operate the power unit until you have read the engine operating and maintenance instructions manual furnished in addition to this manual.

ENGINE CRANKCASE OIL LEVEL

Always check the oil level before starting tne engine. Make sure the oil level is at the FULL MARK on the dipstick. Do not overfill. Use oil as specified in the engine operating and maintenance manual.



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

ENGINE FUEL LEVEL

Check the fuel level. If low, fill with DF-1 or DF-2 diesel fuel (A.S.T.M. D975-66T No. 1 or no. 2 dark).



Shut the engine off before attempting to add fuel to the fuel tank. Do not remove the fuel cap while the engine is running. Do not add fuel to the tank while the engine is hot. Do not fill the fuel tank to a point of overflowing.

HYDRAULIC FLUID

Check the sight pipe in the hydraulic fluid reservoir for the proper fluid level. Proper fluid level is indicated when the center section of the sight pipe is dark. If the center section of the sight pipe is not dark, add hydraulic fluid. Use fluids

meeting the following specifications.

Viscosity (Fluid Thickness)

U.S. METRIC

50°F 450 SSU Maximum 1 100°F 130-200 SSU 3 140°F 85 SSU Minimum 6

10°C 95 Centistokes 38°C 27-42 C.S.

60°C 16.5 C.S. Minimum

PourPoint -10°F/-23°C Minimum (for cold startup)

Vicsosity 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 D-943) 1000 Hours Minimum

Pump Wear Test (ASTM D-2882) 60 mg Maximum

The following fluids work well over a wide temperature range at starup, allow moisture to settle out and resist biological growth that may occur 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.

Chevron AW-MV-32

Exxon "Univis" J-26

Mobil D.T.E. 13

Gulf "Harmony" AW-HVI-150-32

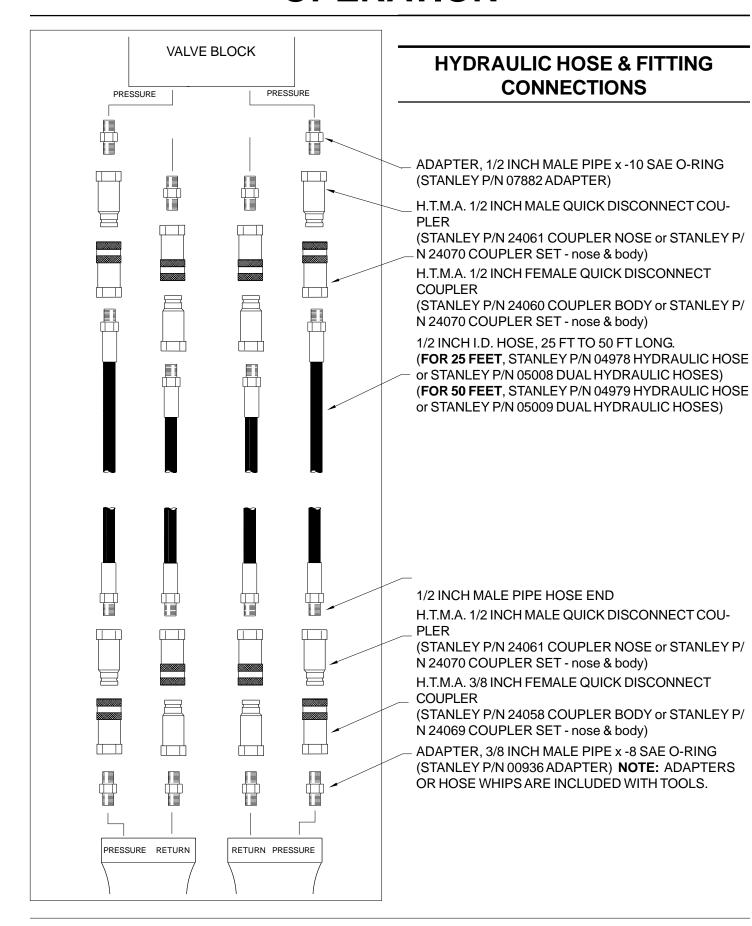
Shell "Tellus" T-32

Texaco "Rando" HD-AZ

Union "Unax" AW-WR-32

BATTERY

The supplied battery is maintenance free.



HYDRAULIC CIRCUIT CONTROLS

The HPR Diesel Power Unit provides two circuits, each with an oil flow of 5 gpm/19 lpm up to 2000 psi

/140 bar. Or, - the two circuits may be combined into one circuit providing 10 gpm/38 lpm up to 2000 psi/140 bar.

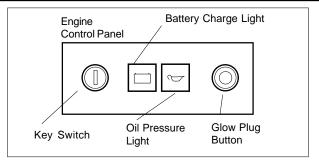
The HPR Diesel Power Unit contains a hydraulic pump with two sections. Each pump section will provide 5 gpm/19 lpm at the maximum, governed engine throttle. The output (5 gpm/19 lpm) of each pump section is directed to the panel control valve assembly. It is the position of the hydraulic circuit combiner knob on the panel control valve assembly which keeps the output of each pump section separated or combined.

When the hydraulic circuit combiner knob is pulled **out**, the two circuits are combined into **one 10 gpm/38 lpm circuit**. One hydraulic tool may be connected to one circuit. The other circuit must not have a tool connected to it or have the hoses connected. The circuit is activated by pushing **both** circuit levers up.

When the hydraulic circuit combiner knob is pushed **in**, the two circuits are not combined and each circuit provides **5 gpm/19 lpm**. One hydraulic tool may be connected to each circuit. Each circuit is activated by pushing the circuit lever up.

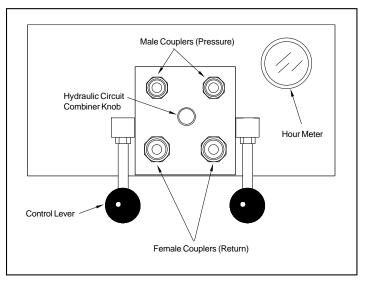
Oil flow is regulated by pulling the throttle control to the full throttle position. This setting will produce 10 gpm/38 lpm up to 2000 psi/140 bar.

STARTING & STOPPING



- 1.Before starting the engine make sure the hydraulic circuit control levers are in the "OFF" position.
- 2. Turn the key clockwise until the engine begins to crank. When the engine starts, release the key.

For cold starts, turn the key until the battery charge light comes on and then press and hold the glow plug button for



Panel Control Valve for the HPR Diesel Power Unit

- 10-15 seconds (on models HPR20271 and HPR20271D with this feature). Release the glow plug button and then turn the key to crank the engine.
- 3. When the engine is warmed up the throttle may be advanced and the hydraulic tool circuits may be used.

ENGINE SHUTDOWN

Place the circuit control levers in the "OFF" position. Push the throttle control completely in. Allow the engine to idle for approximately one minute and then turn the key to "OFF". On models HPR20271 and HPR20271D, pull the "STOP" knob to shutdown the unit.

INSTRUMENTS

BATTERY CHARGE LIGHT

A problem with the charging circuit exists if the battery charge light remains on after the engine has started. Shutdown the engine and then have the charging circuit serviced by a qualified technician.

OIL PRESSURE LIGHT

A problem with the engine oil lubricating system exists if the oil pressure light remains on after the engine has started. Shutdown the engine and then have the lubricating system serviced by a qualified technician.

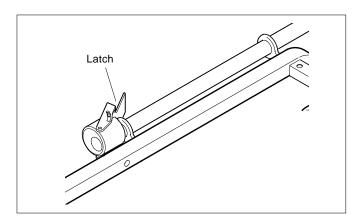
COLD WEATHER STARTUP

- 1. Use the procedures described under "Starting The Engine" and then follow the procedures below.
- 2. Hydraulic fluids are thicker in cold weather, therefore, it is recommended that the engine be run 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 filter feels warm.
- 3. If the tools and tool hoses are cold, it is recommended to allow hydraulic fluid to circulate through the tool hoses until warm before using the tools.

USING HANDLE BARS

The power unit is equipped with retractable handle bars so it can easily be moved at the job site.

- 1. To use the handle bars, pull each handle bar straight out until the bar locking mechanism engages. The power unit may now be pushed about in a wheel-barrow fashion.
- 2. To retract the handle bar, push the latch away from the handle bar to release the lock. Then push the handle bar in.



Model HPR20271 Latch Mechanism

STORAGE

- Clean the unit thoroughly before storage. Do not use water pressure.
- Always store the unit in a clean and dry facility.
- If the unit will be stored for a prolonged period (over 30 days and up to 6 months), replace the fuel filter then add diesel fuel preservative to the fuel tank. Follow the directions provided with the fuel preservative.
- Check hydraulic reservoir for water. If water is found, hange the oil and circulate it through the tool hose and tool. (See "HYDRAULIC SYSTEM MAINTENANCE" later in this section).
- · Disconnect tool hoses.

ROUTINE MAINTENANCE

ENGINE MAINTENANCE

Follow the maintenance schedule and general maintenance instructions in the engine maintenance and operation manual furnished with the power unit. Normal maintenance includes:

- Inspect the air filter daily. Clean if necessary.
- Replace dry air filter every 200 hours of operation.
- Replace fuel filter every 100 hours of operation.
- Change engine oil after first 50 hours of operation, then after every 200 hours of operation. Change more often if cold, moist or dusty conditions exist.
- Change oil filter when engine oil is changed.
- · Check oil level daily.
- Each day, remove dirt and debris from engine with a cloth or brush. Do not use water spray.

HYDRAULIC SYSTEM MAINTENANCE

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

- Always keep hydraulic system and fluids clean.
- Keep water out of fluid.
- Check hydraulic lines and fittings daily for leaks, kinks, etc. Do not use your hand to perform this check.
- Make sure the suction hose (from the hydraulic tank to the inlet manifold) is clamped securely. This reduces the risk of pump cavitation. All pump fittings should be tight.
- Change the hydraulic filter element every 200 hours of operation. Change more often if cold, moist or dusty conditions exist.
- Check oil cooler for debris. Remove debris with air pressure.
- Keep air out of hydraulic lines. Hydraulic system overheating and foam at the hydraulic tank breather indicate air is present in the lines. Keep all suction line fittings and clamps tight.

- Hydraulic system wear is noted by increased heat during tool operation, reduced tool performance and eventual system breakdown.
- Operate with the fluid temperature at 50° 140° F/10° 60°
 C for improved seal and hose life, and maximum efficiency.

FILLING THE RESERVOIR

- 1. Make sure the engine is stopped before opening the filler cap. Fill slowly with the recommended fluid as listed in the "Operation" section of this manual.
- 2. Add fluid as needed. Stop filling when the sight pipe changes from center dark to full dark. Fluid must be visible in the sight pipe gauge at all times.
- 3. Secure the filler cap before restarting the engine.

REMOVING CONDENSED MOISTURE FROM HYDRAULIC FLUID

Condensation is a frequent problem with cool 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.

- 1. To remove water from the hydraulic system, use the "PRESSURE" hose without the quick-disconnect coupler attached. Start the engine and let it run at the idle speed. Pump the fluid into a clean 5 gal./20 ltr container.
- 2. Turn the engine "OFF" as soon as the hydraulic tank (reservoir) is empty. DO NOT operate the engine with an empty hydraulic tank as pump damage may occur.
- 3. Allow the fluid to sit long enough for the water to settle to the bottom of the container. Slowly pour the fluid back into the hydraulic tank, avoiding the water at the bottom of the container.

TESTING & TROUBLESHOOTING

GENERAL

Tests and adjustments should be performed periodically to ensure the power unit is operating at maximum efficiency. Stanley Circuit Tester (Part Number 04182) is recommended. This tester can be used to isolate problems in both the engine and hydraulic system prior to any power unit disassembly.

TESTING THE HYDRAULIC CIRCUIT

The following tests can be performed to ensure that the hydraulic pump is supplying the correct flow and pressure and that the system relief valve is operating properly.

During these tests, make sure the engine is warm and operating smoothly. If test results are not as specified, refer to the troubleshooting table given in this section for possible causes.

TESTING THE 5 GPM HTMA TYPE I CIRCUITS

To test either of the two circuits, proceed as follows:

- 1. Set both Circuit Control Levers to the "OFF" (down) position. Push the Combiner Knob "IN" to separate the two circuits.
- 2. Connect the Stanley Circuit Tester across two hose ends (where the tool would normally be connected) of one circuit.
- 3. Fully open the tester restrictor valve (counter clockwise).
- 4. Start the engine and allow it to run until warm.
- 5. Pull the engine throttle control completely "OUT" so that the engine is running at full RPM.
- 6. Move the Circuit Control Lever for the circuit to be tested to the "ON" (up) position.
- 7. With the engine at high speed, the test flow gauge should read 4-5 gpm/15-19 lpm.
- 8. Slowly turn the restrictor valve clockwise while watching the pressure gauge. The flow rate should stay at 4-5 gpm/15-19 lpm as the pressure gauge reaches 2100-2200 psi/148-155 bar.
- 9. At 2100-2200 psi/148-155 bar the relief valve should begin to open. The pressure at which the relief valve just begins to

open is commonly referred to as the "cracking pressure". At the "cracking pressure", the flow rate should start to drop because the relief valve is allowing fluid to bypass to the hydraulic reservoir. The "cracking pressure" is preset at the factory and if it is not within the above range, the relief valve must be reset as follows:

- a. Access to the relief valves can be gained through the top of the power unit between the dash panel and top grille. If more room is required, remove the dash panel. Use a open end or box end wrench to remove the cap on the relief valve.
- b. Use an Allen wrench to adjust the relief valve. Turn clockwise to raise the pressure and counterclockwise to reduce the pressure.
- c. Replace the cap and test for 2100-2200 psi/148-155 bar as described above.
- d. Repeat the above test with the hoses and tester connected to the other circuit.

TESTING THE 10 GPM HTMA TYPE RR CIRCUIT

The 10 gpm circuit is formed when the combiner knob is pulled out and both circuit control levers are set to the "ON" (up) position. This allows the output of both pump sections to be combined at one set of fittings to provide 10 gpm/38 lpm flow to a single tool. To test the circuit, proceed as follows:

- 1. Perform steps 1 through 5 under "Testing The 5 gpm HTMA Type I Circuits". Make sure a tool and hoses ARE NOT CONNECTED to the other tool circuit.
- 2. Pull the combiner knob "OUT" to combine the two circuits.
- 3. Raise both control levers to the "ON" position.
- 4. With the engine at high speed, the test flow gauge should read 9-10 gpm/34-38 lpm as the pressure gauge reaches 2100-2200 psi/148-155 bar.
- 5. Perform step 9 under "Testing The 5 gpm HTMA Type I Circuits".

TROUBLESHOOTING

PROBLEM CAU	ISE REMEDY
-------------	------------

Engine will not run.	Battery not connected.	Attach battery cables, check wires.
	Weak battery.	Test battery, charge or replace.
	No fuel.	Add Fuel.
	Fuel filter plugged.	Replace fuel filter.
Fluid blowing out of fluid reservoir vent.	Defective pump seal.	Replace pump seal.
	Hydraulic tank overfilled.	Correct the fluid level.
Hydraulic tool won't operate.	Control lever setting incorrect.	Set control lever to "TOOL ON".
	Incorrect hose connection to tool.	Make sure the tool hose goes from pressure fitting to tool and back to the return fitting. Fluid always flows from the male to female 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. Fill using the recommended fluid.
	Pump coupling defective.	Check coupling between pump and blower. The coupler should slide only0306 in./.80-1.60 mm inches between blower and pump.
	Relief valve stuck open.	Adjust or replace valve.
	Incorrect throttle setting	Pull throttle completely out so that engine runs at full rpm.

SPECIFICATIONS

70-140 bar / 1000-2000 psi TMA Flush Face Type Male & Female
TMA Flush Face Type Male & Female
• •
152 kg / 335 lbs
152 kg / 335 lbs 169 kg / 372 lbs
3
99 cm / 39 in
99 cm / 39 in. 90 cm / 35.5 in.
76.2 om / 20 in
76.2 cm / 30 in.
61 cm / 24 in.
73.6 cm / 29 in.
74 cm / 29 in.
gerini MD191, 2 cylinder, diesel, 19 hp
18.9 ltr / 5 gal
16 ltr / 4.2 gal
11 ltr / 2.7 gal
'D" (30 lpm @ 138 bar)
- (55 .p 5 155 24.)

ACCESSORIES

DESCRIPTION	PART NO.
50 ft. Dual Hydraulic Hose, 1/2 in. ID, Wire Braid, with Couplers	
25 ft. Dual Hydraulic Hose, 1/2 in. ID, Wire Braid, with Couplers	31972
50 ft. Dual Hydraulic Hose, 1/2 in. ID, (2) Wire Braid, Abrasion Resistant Cover, with Couplers	58448
25 ft. Dual Hydraulic Hose, 1/2 in. ID, (2) Wire Braid, Abrasion Resistant Cover, with Couplers	58451
Faster Flush Face Coupler Set, 1/2 in. NPT	24070
Bruning Flush Face Coupler Set, 1/2 in. NPT	03974
Flow and Pressure Tester	04182
Adapter, 1/2 SAE to 3/8 in. Male Pipe	00936
Bushing, 1/2 in. to 3/4 in.	02151
Hex Nipple, 1/2 in. Male Pipe	04192
Hex Nipple, 3/8 in. Male Pipe	

SERVICE INSTRUCTIONS

GENERAL

Service instructions in this section are limited to parts and components manufactured by Stanley Hydraulic Tools.

Other major components such as the engine and hydraulic pump should be serviced by representatives of the respective manufacturers as follows:

ENGINE

Duetz Ruggerini, 19 hp Model MD191

The engine should be serviced only by *Ruggerini Dealers*. It is recommended to contact the Deutz Corporation for the nearest authorized Ruggerini dealer at 1-770-564-7100.

HYDRAULIC PUMP

Casappa PLP20.6,3-31SI-LOC/OC/20.6,3-LOC/OC-D-N-EL

ENGINE REMOVAL

Most engine servicing can be performed without removing the engine. Consult with your Ruggerini Dealer regarding engine repairs.

- 1. Remove both battery connections. Remove the battery strap or battery hold down. Remove the battery.
- 2. Remove the wheels by first removing one retaining ring, slide one washer and wheel off of the axle, then pull the other wheel and axle out of the axle brackets.

FUEL LINES AND FUEL TANK

3. Follow the applicable instructions below to disconnect engine fuel lines.

Model HPR20271: The hoses at the fuel tank must be disconnected. Obtain the following materials for plugging the fuel tank ports and the fuel hoses.

- a. Two short lengths (2 to 3 inches) of fuel hose one with 1/4 inch inside diameter and one with 1/8 inch inside diameter.
- b. Four plug fittings or wood dowels to plug one end of each of the short hoses and also the ends of the hoses disconnected from the fuel tank.

Using the fittings or the wood dowels, plug one end of each of the short hoses.

c. Thoroughly clean the exterior of the connections of the fuel supply line (16, fig 5) and the fuel return line (12, fig 5) where they are connected to the fuel tank. Disconnect one fuel line at a time, quickly plugging the fuel line and the tank port with the wood dowels or fittings and the short hose lengths to minimize spillage. Wipe up any spillage using appropriate disposal methods.

Model HPR20271A/HPR20271D: The fuel tank must be removed in order to remove the engine.

- a. Disconnect the hoses (13 & 14, fig 5A) and plug them with a plug fittings or wood dowels.
- b. Remove the 3 capscrews (23, fig 2A) that secure the tank to the frame. Remove the fuel tank.
- 4. Remove the air cleaner cover and air cleaner.
- 5. Remove the top grille (8, fig 2 or 47, fig 2A).
- 6. Remove the fasteners that retain the cooler mounts (6 & 10, fig 1 & fig 1A) and the cooler brace (12, fig 1 and fig 1A) and remove the mounts and brace. The switch box (7, fig 1) and wiring will be loose after this procedure and can then be removed with the engine (this does not apply to model HP20271A).
- 7. Tie the cooler (8, fig 1 and fig 1A) to the frame rails of the frame (55, fig 2 or 39 fig 2A) so that it will not interfere with removal of the engine.
- 8. Disconnect the two wires leading to the hour meter.
- 9. Disconnect the throttle cable (6, fig 2 or fig 2A) at the engine. On model HP20271A, disconnect the stop cable (1, fig 2A) at the engine.
- 10. Using an Allen wrench, loosen the setscrews on the coupling assy (27 & 28, fig 2 or 16, fig 2A).
- 11. Unscrew and remove the nuts (37, fig 2 or 35, fig 2A) and capscrews (20, fig 1 & fig 1A) and washers.
- 12. Slide the engine forward being careful not to entangle the electrical wiring and not to damage other components.
- 13. Remove the coupling sleeve (28, fig 2 or 17, fig 2A).

SERVICE

14. Slide the engine, with blower housing attached, out the battery side of the frame for the HP20271 model. For the HP20271A model, slide the engine out the fuel tank side of the frame.

b. Install capscrews which hold the blower wheel to the blower hub using Loctite $^{\text{TM}}$ 680 and torque to 80-100 lb. in.

TO REINSTALL ENGINE

- 1. Reverse the above procedures to reinstall the engine.
- 2. Install the capscrews (20, fig 1 & fig 1A) so that one washer (21, fig 1 or 36 fig 1A) is installed next to the head of the capscrew, one washer is installed between the engine mounting bracket and the frame and one washer is installed between the nut (37, fig 2 or 35, fig 2A) and the frame. Tighten the capscrews and nuts to 20 ft. lb torque.
- 3. After installing the engine, adjust the coupling sleeve as follows:
- a. Move the coupling flange forward or backwards on the engine drive shaft until the drive shaft is recessed into the coupling flange bore .435 inches. Tighten the setscrews.
- b. Adjust the coupling flange on the pump until the coupling sleeve has 1/32-1/16 inch end play.

BLOWER HUB, BLOWER WHEEL, INLET RING, & BLOWER HOUSING

- 1. Remove the engine as described earlier in this section.
- 2. To remove the blower wheel, remove the five screws (31, fig 1 or fig 1A) around the housing inlet ring (30, fig 1 or 1A) and remove the ring.
- 3. Remove the blower wheel (26, fig 1 or 24, fig 1A) with the blower hub (it may be required to remove the three screws and use them as jack screws in the adjacent holes) (25, fig 1 or 1A) by loosening the set screws on the coupler flange (28, fig 1 or 1A).
- 4. Remove the four capscrews (14, fig 1 or 1A) holding the blower housing (16, fig 1 or 1A) to the engine. Remove the housing.

RE-ASSEMBLY

- 1. Reverse the above procedure to reinstall the above components and observe the following added procedures.
- a. Install capscrews which hold the blower housing to the engine using Loctite[™] 242.

OIL COOLER

- 1. Remove the top grille (8, fig 2 or 47, fig 2A).
- 2. Remove the hoses (3 & 11, fig 5 or 5A).
- 3. Remove the fasteners that retain the cooler mounts (6 & 10, fig 1 or 1A) and the cooler brace (12, fig 1 or 1A) and remove the mounts and brace. The switch box (7, fig 1) and wiring will be loose after this procedure (this does not apply to model HP20271A).
- 4. Lift the cooler out.

RE-ASSEMBLY

1. Reverse the above procedure to reinstall the cooler.

HYDRAULIC PUMP

- 1. First remove the hydraulic fluid from the tank by either pumping it out with a portable drill pump or draining it into a container.
- 2. Remove the grille (19, fig 2 or 5, fig 2A).
- 3. Disconnect the pressure hoses and inlet manifold at the pump.
- 3. Remove the 2 capscrews (21, fig 2 or 10, fig 2A) and then remove the pump.

RE-ASSEMBLY

- 1. Reverse the above procedure to reinstall the pump and observe the following step.
- a. Insure the coupling sleeve is installed correctly (see REINSTALL ENGINE).

FUEL TANK

1. If the fuel tank contains fuel, take extreme precautions to

SERVICE

remove the fuel into approved containers. Do not attempt to service the fuel tank in unventilated areas or in areas containing electric or natural gas appliances which may start-up unexpectantly or in shop areas where grinding or welding is present, all of which can ignite the fuel vapors.

2. Follow step 3 under "ENGINE REMOVAL" to disconnect and plug the fuel lines.

To remove the tank on the model HP20271, remove the capscrews (47, fig 2) and brackets (44, fig 2) at the top of the fuel tank only. Lift the fuel tank out of the lower brackets.

To remove the tank on the model HP20271A, remove three capscrews (23, fig 2A) and bracket 37, fig 2A). Slide the tank out.

RE-ASSEMBLY

1. Reverse the above procedures to reinstall the fuel tank.

HYDRAULIC TANK

- 1. First remove the hydraulic fluid from the tank by either pumping it out with a portable drill pump or draining it into a container.
- 2. Remove the grille (19, fig. 2 or 5, fig 2A) by removing the 4 capscrews (9, fig. 2 or 3, fig 2A).
- 3. Remove the hoses (7 & 11, fig. 5 or 5A) by loosening the hose clamps.
- 4. The hydraulic tank can now be removed by removing the 2 capscrews (32, fig. 2 or 23, fig 2A) and the tank support tab (29, fig. 2 or 26, fig 2A).
- 5. The filter can be removed from the filter head (6, fig. 4) by spinning it off counter clockwise (this does not apply to model HP20271A).
- 6. On model HP20271, the filter block (4, fig. 4) is removed by first removing the capscrews (2, fig. 4). Hold the grip plate in place with your fingers to prevent it from falling into the tank. For the model HP20271A, the filter assembly is removed by first removing the breather (6, fig 4A) and the dipstick bolt (12, fig 4A).

RE-ASSEMBLY

1. Reinstall the components and complete assembly to the frame by reversing the above procedures.

DASH PANEL & VALVE ASSY

- 1. If it is necessary to remove the valve assembly, the battery must first be removed in order to gain access to the hose fittings and wiring located on the back of the panel (HPR20271).
- 2. After the hoses are removed, the valve assembly may be removed by first removing the capscrews (15, fig. 2 or 3, fig 2A and 27, fig. 3). Then remove the capscrews (27, fig 3) holding the valve to the dash panel.

VALVE SPOOLS & COMBINER SPOOL

- 1. To remove the valve spools, remove the retaining rings (14, fig. 3) and pull the valve spools out of the valve body.
- 2. The combiner spool is removed by first unscrewing the knob (24, fig. 3) and then pushing the valve spool out.
- 3. Inspect the finish of the valve spools and bores of the valve block. If scored or scratched, replace the part(s).

RELIEF VALVES

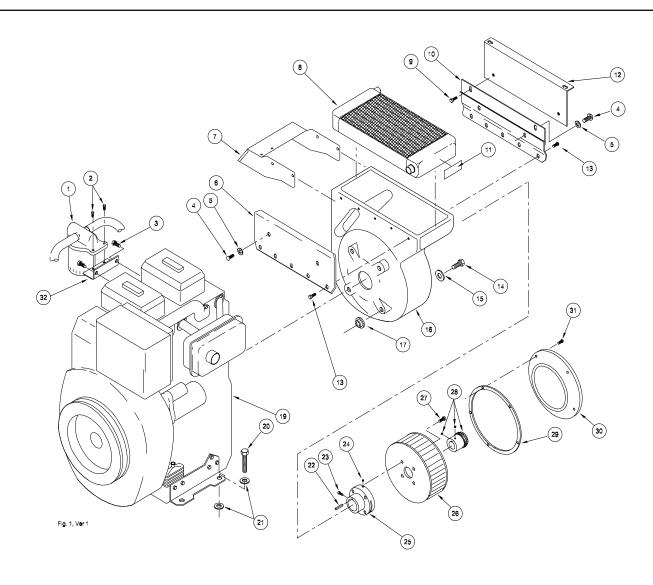
DESCRIPTION: The relief valves allow oil to by-pass to the reservoir when the system pressure reaches a pre-set value. The relief valves are set to by-pass at a "cracking" pressure of 2100-2200 psi/148-155 bar.

While adjustments can be made to the relief settings (see TESTING and TROUBLESHOOTING), the parts of the relief valves are not serviceable.

RE-ASSEMBLY

1. Reverse the above procedure to reinstall the above components.

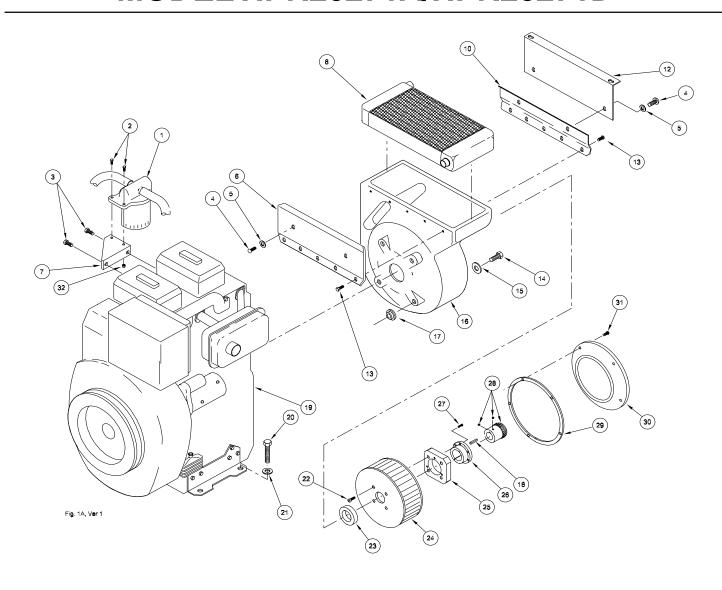
FIGURE 1 ENGINE & BLOWER PARTS MODEL HPR20271



ITEM	P/N	QTY	DESCRIPTION	ITEM	P/N	QTY	DESCRIPTION
1			Fuel Filter Assy	17	21681	4	Spacer
2	02073	2	Capscrew	18			No Item
3		2	Capscrew	19	21675	1	Engine, Ruggerini MD191
4	31241	4	Capscrew	20	14876	4	Capscrew
5	03031	4	Lockwasher	21	04585	AR	Washer
6	07752	1	Cooler Mount	22	07818	1	Square Key
7	31918	1	Switch Box	23	01521	1	Capscrew
8	07802	1	Oil Cooler	24	00720	1	Setscrew
9	27931	2	Capscrew	25	32217	1	Blower Hub
10	21724	1	Cooler Mount	26	32216	1	Blower Wheel
11	25610	1	Sticker, "Help Desk"	27	32232	4	Capscrew
12	21709	1	Cooler Brace	28	21687	1	Coupler Assy
13	08668	10	Sheet Metal Screw	29	08669	1	Gasket
14	02474	4	Capscrew	30	07809	1	Inlet Ring
15	02477	4	Washer	31	08667	5	Tapping Screw
16	07783	1	Blower Housing	32	21683	1	Bracket

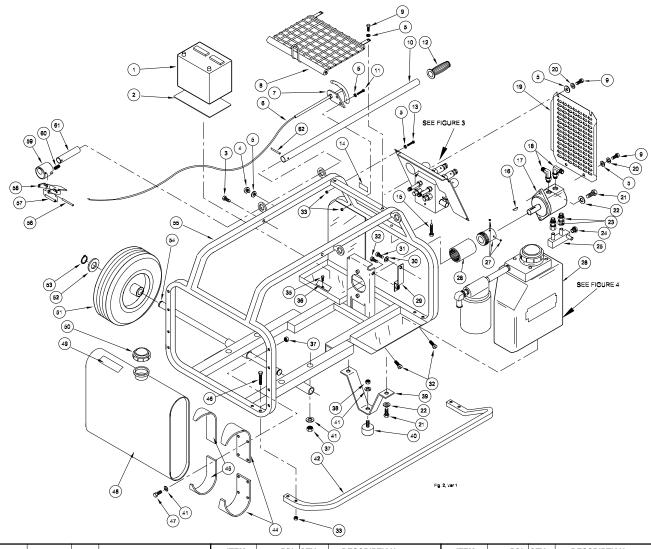
AR = As Required

FIGURE 1A ENGINE & BLOWER PARTS MODEL HPR20271A/HPR20271D



ITEM	P/N	QTY	DESCRIPTION	ITEM	P/N	QTY	DESCRIPTION
1		1	Filter Bracket (Supplied	17	21681	4	Spacer
			with Item 19)	18	07818	1	Key
2	370508	2	Capscrew	19	56641	1	Engine, Ruggerini MD191
3		2	Capscrew (Supplied	20	14876	4	Capscrew
			with Item 19)	21	04585	22	Washer
4	31241	7	Capscrew	22	32232	4	Capscrew
5	03031	10	Lock Washer	23	38878	1	Spacer
6	40053	1	Cooler Mount	24	56640	1	Blower Wheel
7	56670	1	Fuel Filter Bracket	25	38877	1	Blower Hub
8	40078	1	Cooler	26	39057	1	QD Bushing
9			NOITEM	27		4	Capscrew (Supplied with
10	40054	1	Cooler Mount				Item 26)
11			NOITEM	28	21687	1	Coupling Assy
12	56637	1	Cooler Brace	29	08669	1	Gasket
13	08668	10	Sheet Metal Screw	30	56643	1	Inlet Ring
14	02474	4	Capscrew	31	08667	5	Tapping Screw
15	02477	8	Washer	32	03906	2	Locknut
16	07783	1	Blower Housing				

FIGURE 2 FRAME PARTS MODEL HPR20271



ITEM	P/N	QTY	DESCRIPTION	ITEM	P/N	QTY	DESCRIPTION	ITEM	P/N	QTY	DESCRIPTION
1	21695	1	Battery	22	01459	2	Lockwasher	42	21701	2	Carry Handle
2	10499	1	Battery Pad	23	35346	2	Tube Fitting	43			No Item
3	15479	2	Capscrew	24	350237	1	SAE Plug	44	31553	4	Fuel Tank Bracket
4	21714	2	Bumper	25	35106	1	Inlet Manifold	45	31554	4	Bracket Liner
5	04539	14	Washer	26		-	Hydraulic Tank	46	16251	8	Capscrew
6	21715	1	Throttle Cable				Assy (See Fig. 6)	47	15479	8	Capscrew
7	35133	1	Throttle Bracket	27		-	Part of Coupling	48	31552	1	Fuel Tank
8	21716	1	Top Grille				Assy #28	49	32231	1	Decal
9	21319	6	Capscrew	28	21687	1	Coupler Assy				"Diesel Fuel Only"
10	08076	2	Handle Tube	29	08669	1	Gasket	50			Cap(Incld w/tank)
11	370101	2	Capscrew	30	07809	1	Inlet Ring	51	16310	2	Wheel
12	08080	2	Handle Grip	31	08667	5	Tapping Screw	52	21318	2	Washer
13	21319	4	Capscrew	32	04416	3	Capscrew	53	31240	2	Retaining Ring
14	29133	1	Sticker, "Warning"	33	00719	14	Locknut	54	33372	1	Axle
15	21319	2	Capscrew	34		-	No Item	55	35194	1	Frame
16		-	Key	35	03760	1	Capscrew	56	10762	2	Roll Pin
			(Included w/pump)	36	21696	1	Battery Clamp	57	10759	2	Latch Pin
17	35345	1	Pump	37	04353	12	Locknut	58	10760	2	Handle Latch
18	27767	2	90° Elbow	38	00147	1	Nut	59	10757	2	Handle Stop
19	27759	1	Grille	39	21700	1	Foot	60	10750	2	Spring
20	01298	4	Lockwasher	40	21713	1	Vibration Mount	61	10760	2	Bar
21	12116	2	Capscrew	41	04585	12	Washer	62	03047	2	Roll Pin

FIGURE 2A FRAME PARTS MODEL HPR20271A/HPR20271D

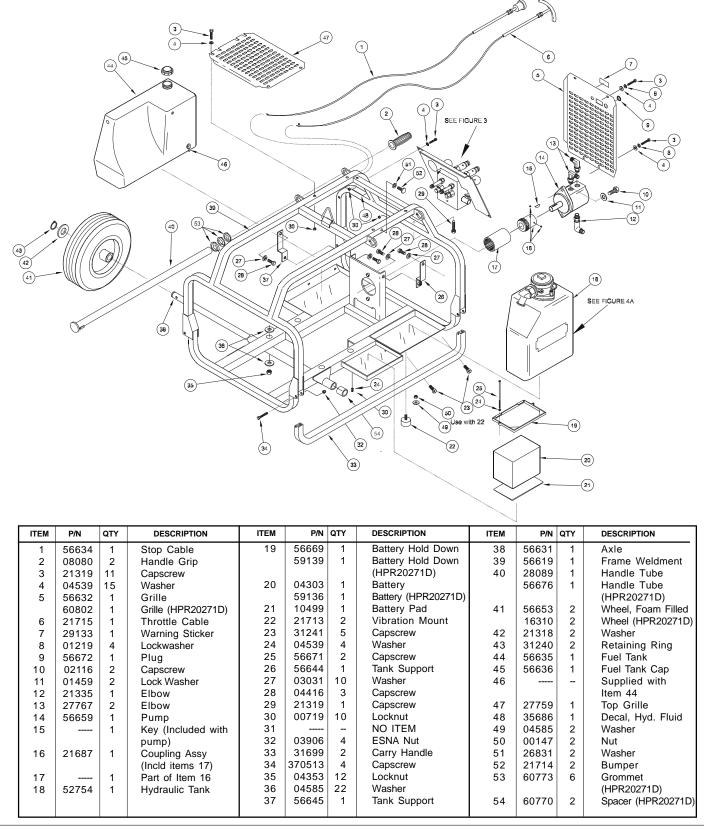
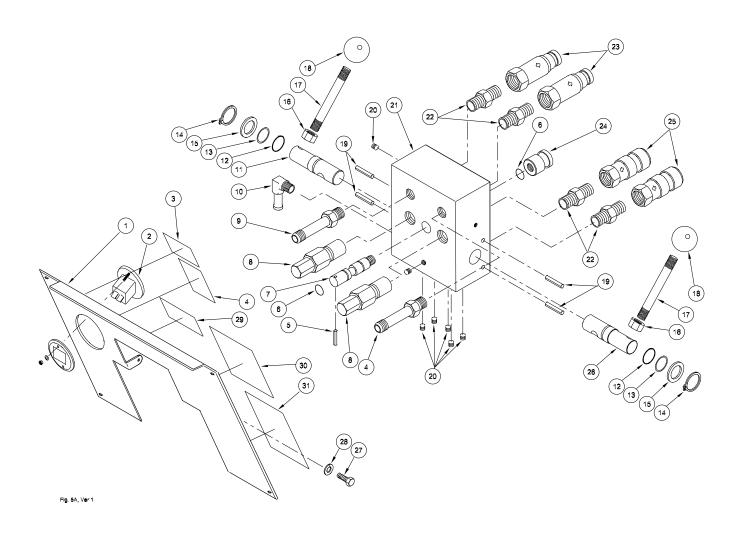


FIGURE 3 VALVE & DASH PANEL MODEL HPR20271/HPR20271A/HPR20271D



ITEM	P/N	QTY	DESCRIPTION	ITEM	P/N	QTY	DESCRIPTION
1	35112	1	Dash Panel	18	02633	2	Knob
2	20606	1	Hour Meter	19	07492	4	Spirol Pin
3	28046	1	Decal, Carbon Monoxide	20	01545	7	Pipe Plug
4	28047	1	Decal, Hot Parts	21	27661	1	Control Block
5	07492	4	Spirol Pin	22	07882	2	Adapter
6	00016	2	O-ring				-10 SAE x 1/2 Male NPT
7	05848	1	Combiner Spool	23	24061	2	Male Coupler Body
8	05043	2	Relief Valve	24	05847	1	Combiner Knob
9	07161	2	Adapter, Long	25	24060	2	Female Coupler Body
10	07821	1	Elbow, Hose Barb	26	05843	1	ON/OFF Spool, RH
11	05844	1	ON/OFF Spool, LH	27	27931	2	Capscrew
12	06989	2	O-ring	28	04532	2	Washer
13	06988	2	Back-up Ring	29	28045	1	Decal, Circuit 1 or 2
14	04313	2	Retaining Ring	30	35677	1	Decal, To Start
15	04216	2	Washer	31	51297	1	Decal, Check Hydraulics
16	00147	2	Nut				
17	05849	2	Rod				

FIGURE 4 HYDRAULIC TANK PARTS MODEL HPR20271

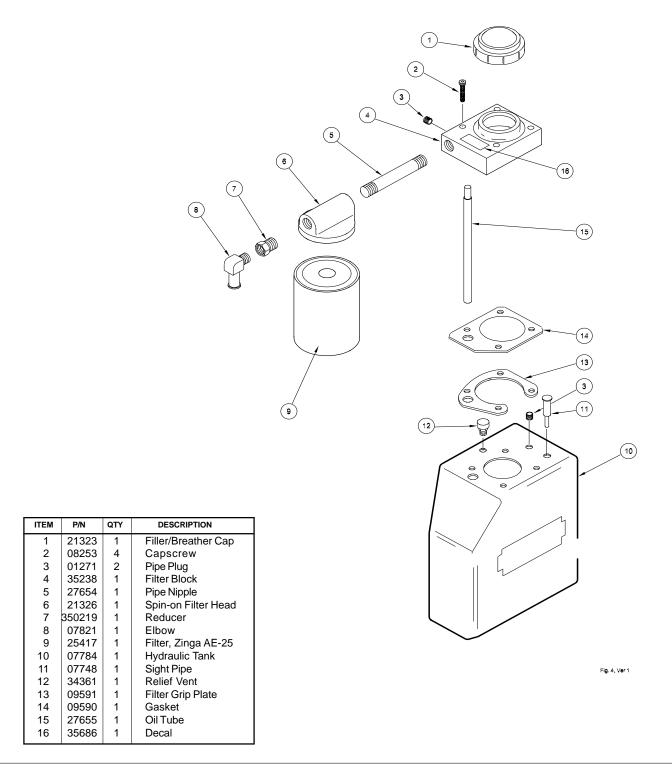
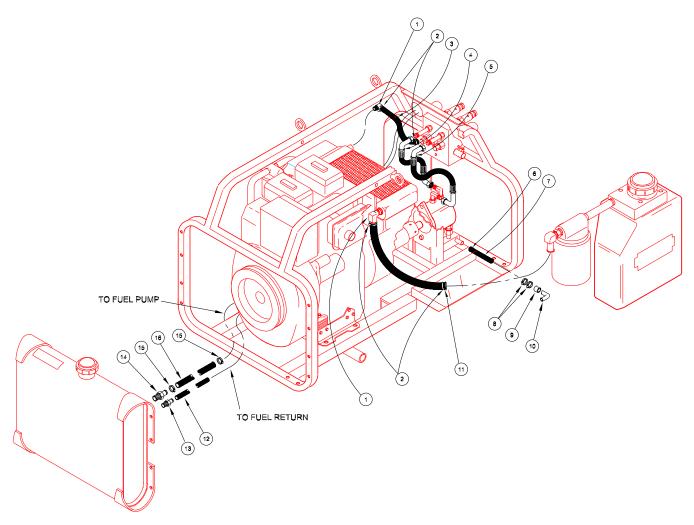


FIGURE 4A HYDRAULIC TANK PARTS MODEL HPR20271A/HPR20271D

ITEM	P/N	QTY	DESCRIPTION	
	52754	1	Hydraulic Tank Kit	
1	52774	1	Lid	(2)
2	52775	1	Spring	
3	01202	1	O-Ring	(3)
4	40408 40080	1	Filter Element	
5	58487	1	Filter Assy (Incl items 1-5 & 11-13) Filter Bowl	
6	26070	1	Breather Vent	(4), (b)
7	40364	1	Elbow, 45°	
8	43688	1	Capscrew	
9	58650	1	Tank	
10	40133	1	Grip Plate	
11	52782	1	Gasket	
12	52773	1	Dipstick Bolt	
13	52772	1	Dipstick	(5)
14	04306	1	Hose	
15 16	58486 03044	1	Filter Head	
17	58460	1	Nipple Coupling	
18	58489	1	Plastic Washer	
19	04889	1	Hose Clamp	6 (20)
20	01258	1	O-Ring	\bigcap
				16
				(13)
				15)
		SE	RVICE KIT P/N 43592	
	03652	2 1	Lid	
		1	O-Ring	(18)
		1	Filter Receptacle	(19)
		1	O-Ring	
		1	Breather Element	
		1	Breather Cover	
				(8)
				(14)
				/ 4

FIGURE 5 HOSES, FITTINGS & CLAMPS MODEL HPR20271



ITEM	P/N	QTY	DESCRIPTION
1	07821	2	90° Elbow
2	04889	4	Hose Clamp
3	35220	1	Hose, Cooler Supply
4	35218	1	Hose Assy
5	35217	1	Hose Assy
6	08045	1	Hose Clamp
7	35343	1	Hose, Suction
8	11179	2	Hose Clamp
9	07747	1	Sleeve, Suction
10	27781	1	Tube, Suction
11	27998	1	Hose, Cooler Return
12	21711	1	Hose, Fuel Return
13	09898	1	Male Connector
14	21750	1	Hose Barb
15	04317	2	Hose Clamp
16	04308	1	Hose, Fuel Supply

FIGURE 5A HOSES, FITTINGS & CLAMPS MODEL HPR20271A/HPR20271D

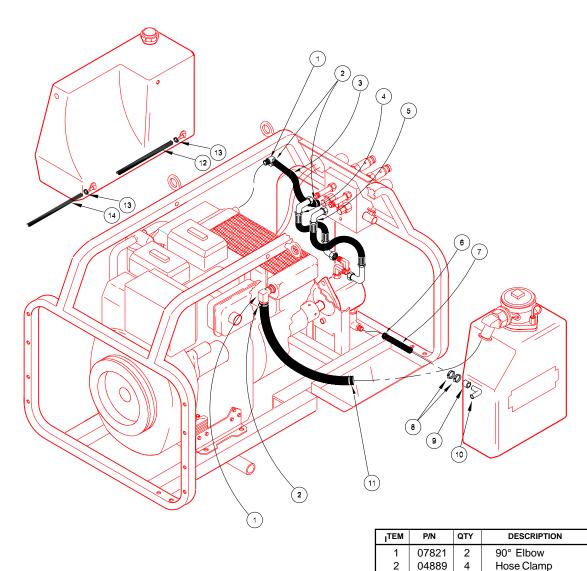
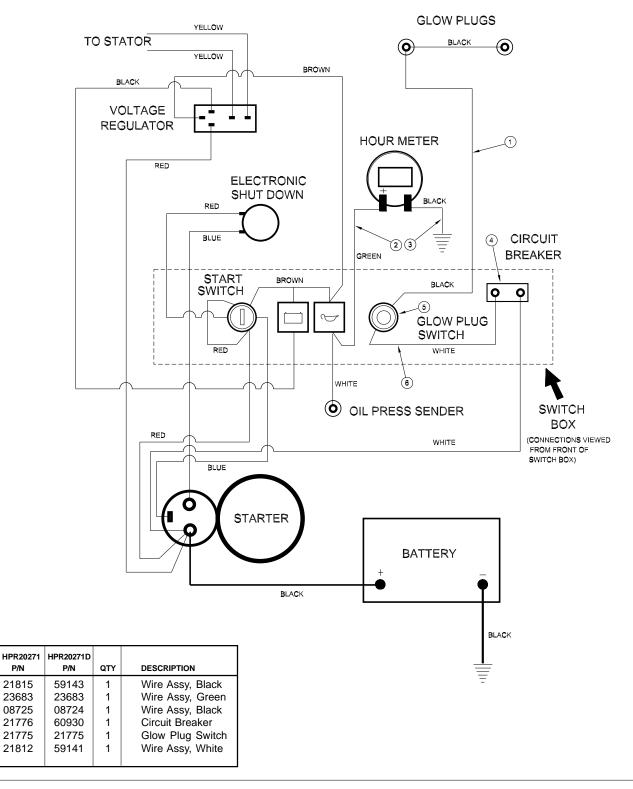


FIGURE 6 **WIRING DIAGRAM MODEL HPR20271/HPR20271D**



ITEM

1

2

3

4

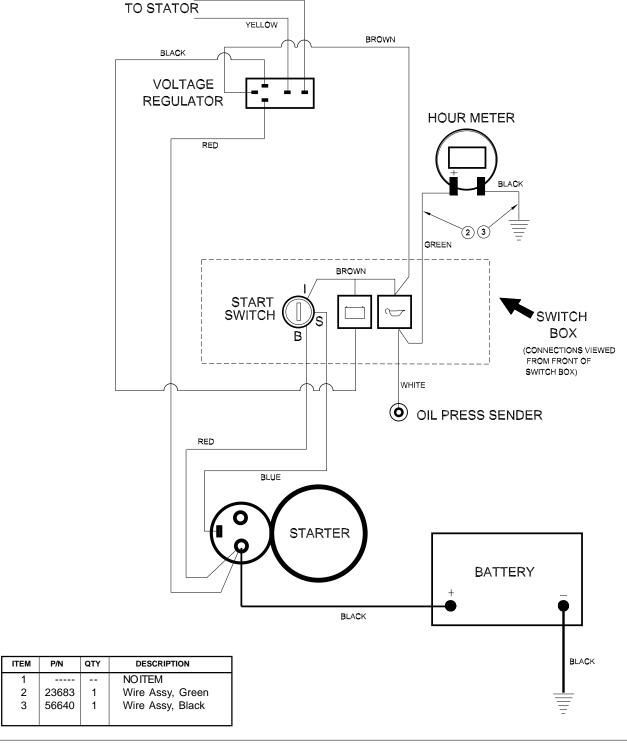
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6

P/N

FIGURE 6A WIRING DIAGRAM MODEL HPR20271A

YELLOW



WARRANTY

Stanley Hydraulic Tools (hereinafter called "Stanley"), subject to the exceptions contained below, warrants new hydraulic tools for a period of one year from the date of sale to the first retail purchaser, or for a period of 2 years from the shipping date from Stanley, whichever period expires first, to be free of defects in material and/or workmanship at the time of delivery, and will, at its option, repair or replace any tool or part of a tool, or new part, which is found upon examination by a Stanley authorized service outlet or by Stanley's factory in Milwaukie, Oregon to be DEFECTIVE IN MATERIAL AND/OR WORKMANSHIP.

EXCEPTIONS FROM WARRANTY

NEW PARTS: New parts which are obtained individually are warranted, subject to the exceptions herein, to be free of defects in material and/or workmanship at the time of delivery and for a period of 6 months after the date of first usage. Seals and diaphragms are warranted to be free of defects in material and/or workmanship at the time of delivery and for a period of 6 months after the date of first usage or 2 years after the date of delivery, whichever period expires first. Warranty for new parts is limited to replacement of defective parts only. Labor is not covered.

FREIGHT COSTS: Freight costs to return parts to Stanley, if requested by Stanley for the purpose of evaluating a warranty claim for warranty credit, are covered under this policy if the claimed part or parts are approved for warranty credit. Freight costs for any part or parts which are not approved for warranty credit will be the responsibility of the individual.

SEALS & DIAPHRAGMS: Seals and diaphragms installed in new tools are warranted to be free of defects in material and/or workmanship for a period of 6 months after the date of first usage, or for a period of 2 years from the shipping date from Stanley, whichever period expires first.

CUTTING ACCESSORIES: Cutting accessories such as breaker tool bits are warranted to be free of defects in material and or workmanship at the time of delivery only.

ITEMS PRODUCED BY OTHER MANUFACTURERS: Components which are not manufactured by Stanley and are warranted by their respective manufacturers.

a. Costs incurred to remove a Stanley manufactured component in order to service an item manufactured by other manufacturers.

ALTERATIONS & MODIFICATIONS: Alterations or modifications to any tool or part. All obligations under this warranty shall be terminated if the new tool or part is altered or modified in any way.

NORMAL WEAR: any failure or performance deficiency attributable to normal wear and tear such as tool bushings, retaining pins, wear plates, bumpers, retaining rings and plugs, rubber bushings, recoil springs, etc.

INCIDENTAL/CONSEQUENTIAL DAMAGES: To the fullest extent permitted by applicable law, in no event will STANLEY be liable for any incidental, consequential or special damages and/or expenses.

FREIGHT DAMAGE: Damage caused by improper storage or freight handling.

LOSS TIME: Loss of operating time to the user while the tool(s) is out of service.

IMPROPER OPERATION: Any failure or performance deficiency attributable to a failure to follow the guidelines and/or procedures as outlined in the tool's operation and maintenance manual.

MAINTENANCE: Any failure or performance deficiency attributable to not maintaining the tool(s) in good operating condition as outlined in the Operation and Maintenance Manual

HYDRAULIC PRESSURE & FLOW, HEAT, TYPE OF FLUID: Any failure or performance deficiency attributable to excess hydraulic pressure, excess hydraulic flow, excessive heat, or incorrect hydraulic fluid.

REPAIRS OR ALTERATIONS: Any failure or performance deficiency attributable to repairs by anyone which in Stanley's sole judgement caused or contributed to the failure or deficiency.

MIS-APPLICATION: Any failure or performance deficiency attributable to mis-application. "Mis-application" is defined as usage of products for which they were not originally intended or usage of products in such a matter which exposes them to abuse or accident, without first obtaining the written consent of Stanley. PERMISSION TO APPLY ANY PRODUCT FOR WHICH IT WAS NOT ORIGINALLY INTENDED CAN ONLY BE OBTAINED FROM STANLEY ENGINEERING.

WARRANTY REGISTRATION: STANLEY ASSUMES NO LIABILITY FOR WARRANTY CLAIMS SUBMITTED FOR WHICH NO TOOL REGISTRATION IS ON RECORD. In the event a warranty claim is submitted and no tool registration is on record, no warranty credit will be issued without first receiving documentation which proves the sale of the tool or the tools' first date of usage. The term "DOCUMENTATION" as used in this paragraph is defined as a bill of sale, or letter of intent from the first retail customer. A WARRANTY REGISTRATION FORM THAT IS NOT ALSO ON RECORD WITH STANLEY WILL NOT BE ACCEPTED AS "DOCUMENTATION".

NO ADDITIONAL WARRANTIES OR REPRESENTATIONS

This limited warranty and the obligation of Stanley thereunder is in lieu of all other warranties, expressed or implied including merchantability or fitness for a particular purpose except for that provided herein. There is no other warranty. This warranty gives the purchaser specific legal rights and other rights may be available which might vary depending upon applicable law.

