



Operator's Manual

NEXTracker Hydraulic Power Unit, HPU-6.0 hp and HPU-9.5 hp

PDM-000134 Rev. A

Operator's Manual NEXTracker Hydraulic Power Unit, HPU-6.0 hp and HPU-9.5 hp

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Foreword

About this Manual

This is the operator's manual for the NEXTracker Hydraulic Power Unit, the HPU-6.0 hp and the HPU-9.5 hp. It presents detailed installation requirements and instructions, safety reminders, key steps, and other information; best means and methods of work are determined by the installer.

Safety Notations

The following notes, warnings, and critical items appear throughout this manual.



NOTE: This box contains information that makes assembly of NEXTracker components faster and easier.



WARNING: This box alerts the reader to a condition that could lead to critical consequences.



CRITICAL: This box gives urgent and important information. Disregarding it may lead to accidental injury, loss of life, and damage to equipment, tools or components; it may compromise the NEXTracker warranty. This information notes steps that are critical to installing components so they meet quality requirements.

In addition to general construction best practices, appropriate use of personal protective equipment (PPE) is essential when handling heavy components and equipment that may be pressurized with hydraulic fluid or air. A variety of items must be part of the PPE.

- Safety glasses
- Hearing protection
- Safety gloves
- Reflective safety vest/jacket
- Safety-toe shoes
- Hard hat
- Any additional PPE required by the contractor

Scope Limitations

This is a universal manual covering a NEXTracker product; project-specific configurations are covered elsewhere. Please see the [Construction Set](#) and [Part Number Reference List](#) for project-specific details.

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1. Safety Introduction

Before using the Hydraulic Power Unit (HPU-6.0 hp or HPU-9.5 hp, shown in Figure 1-1) or associated tools, a 30-minute training session with NEXTracker personnel is recommended.

- The HPU, its hoses, and associated tools must be inspected before use on each work shift. Any repairs must be done by a qualified repair person trained on this HPU, its hoses, and associated tools.
- Operators of the HPU must read this manual before using the HPU, hoses, or associated tools.
- All MSDS sheets related to the HPU—i.e., motor oil, hydraulic oil, and battery—must be reviewed and kept onsite.
- Proper eye protection must be worn when operating or working on the HPU, hoses, or associated tools.



Figure 1-1. The NEXTracker Hydraulic Power Unit, HPU-6.0 hp and HPU-9.5 hp.



WARNING: Only genuine NEXTracker parts are to be used as replacement parts. Use of any other parts may result in personal injury.



CRITICAL: This HPU uses **DIESEL** fuel only. DO NOT use gasoline.



CRITICAL: DO NOT OPERATE the HPU above 5,000 psi hydraulic oil pressure measured at the outlet pressure gauges at quick couplers. Damage to the HPU and/or personal injury may occur.

Adherence to the safety instructions of all third-party vendors is recommended as well. Please be aware of hazards resulting from projectiles, repetitive motion, noise, vibration, and other aspects of using hydraulic, pneumatic, and power tools.

2. Safety Essentials

SAFETY FIRST



CRITICAL: This symbol, the industry's "Safety Alert Symbol" is used on labels on the HPU-6.0 hp or HPU-9.5 hp to warn of the possibility of personal injury. It is essential that you read all instructions and safety regulations accompanied by this label carefully before you attempt to repair or use the HPU.

2.1 Work Safely

- Do not work on the machine while under the influence of alcohol, medication, or other substances, or while fatigued.
- Wear close-fitting clothing and safety equipment appropriate for the job.
- Use tools appropriate to the work. Makeshift tools, parts, and procedures are not recommended.
- When servicing is performed together by two or more persons, take care to work as safely as you do on your own.
- Do not touch the rotating or hot parts of the engine while it is running.
- Never remove the radiator cap while the engine is running or immediately after stopping, or hot water will spout out from the radiator. Remove the radiator cap only when cool enough to touch with bare hands. Slowly loosen the cap to relieve pressure first, before removing completely.
- Escaping fluid (fuel or hydraulic oil) under pressure can penetrate the skin, causing serious injury. Relieve pressure before disconnecting hydraulic or fuel lines. Tighten all connections before applying pressure.
- Wear a suitable device to protect hearing, such as earmuffs or earplugs, to protect against objectionable or uncomfortable loud noises.

2.2 Avoid Fires

- Fuel is extremely flammable and explosive under certain conditions. Do not smoke or allow flames or sparks in your work area.
- To avoid sparks from an accidental short circuit, always disconnect the battery negative cable first and connect it last.
- Battery gas can explode. Keep sparks and open flame away from the top of the battery, especially when charging the battery.
- Make sure that no fuel has been spilled on the engine.

2.3 Before Servicing and Repairing

- Read all instructions and safety warnings in this manual and on the safety decals found on the engine of the HPU.
- Clean the work area and the engine.
- Park the machine on firm and level ground.
- Allow the engine to cool before proceeding.
- Stop the engine and remove the key.
- Disconnect the battery negative cable.

2.4 Start Safely

- Do not start the engine by shorting across starter terminals or bypassing the safety start switch.
- Unauthorized modifications to the engine may impair the function and/or safety and affect engine life.

2.5 Ventilate Work Area

- If the engine must be running, make sure the area is well ventilated. Never run the engine in a closed area. The exhaust gas contains carbon monoxide, which can be harmful enough, when inhaled, to overcome you in minutes without warning, causing you to lose consciousness and suffocate.

2.6 Dispose of Fluids Properly

- Do not pour fluids into the ground; down a drain; or into a stream, pond, or lake. Observe relevant environmental protection regulations when disposing of oil, fuel, coolant, electrolytes, and other harmful waste.

2.7 Prevent Acid Burns

- Sulphuric acid in the battery electrolyte is poisonous. It is strong enough to burn skin, burn clothing, and cause blindness if splashed into eyes. Keep electrolyte away from eyes, hands, and clothing. If you spill electrolyte on yourself, flush with water and get medical attention immediately.

2.8 Prepare for Emergencies





- Keep a first aid-kit and fire extinguisher handy at all times.
- Keep emergency numbers for medical doctors, ambulance, hospital, and fire department near your telephone.

3. Tools

A NEXTracker HPU video showing complete operation and systems of the HPU is available online. Please contact your NEXTracker representative for the URL.

Table 3-1 shows the tools needed to operate the HPU, which are provided by NEXTracker and Kubota.

Table 3-1. Tools provided by NEXTracker and Kubota for operating the HPU.

Tool	Photo of Tool
Replacement cartridge valves	
Extra relay	
Test switch	
Reverse couplers	

Test pressure gauge



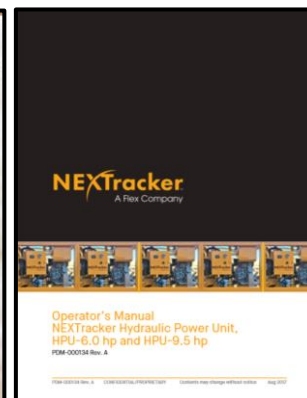
Kubota motor wrenches



Cartridge valve wrench, 7/8 in. x 15/16 in. x 5 in.



The items described above, a copy of the Kubota Diesel Operator's Manual, and the NEXTracker Operator's Manual are included in the NEXTracker tool bag.



4. Description of the HPU

The HPU is a diesel-powered hydraulic power unit designed to power hydraulic tools used in the construction of ground-mounted solar projects.

4.1 Summary of Operation

The NEXTracker HPU is a diesel-powered hydraulic pump. The HPU uses a low-pressure (less than 3,000 psi) hydraulic Bosch gear pump that feeds hydraulic oil into a low-pressure valve block.

When the pull function is engaged by pulling the trigger at the hydraulic tool, the pull valve opens and diverts hydraulic oil to one of two pressure boosters that boosts the low-pressure hydraulic oil (2,400 psi) to high-pressure hydraulic oil (4,800 psi). After the booster, the high-pressure hydraulic oil travels through 25- to 35-ft long hydraulic hoses to the hydraulic tool, depressing a hydraulic piston, thus activating the pull function at the hydraulic tool.

When the trigger is released, the pull valve closes and starts the return sequence. The return sequence activates an electronic timer that opens the return valve, which diverts low-pressure hydraulic oil (2,400 psi) for ± 1.5 seconds to the hydraulic tool, thus returning the hydraulic piston back to its starting point.



NOTE: The pull-return sequence is based on time and is adjustable inside the electrical box, as shown in Figure 4-1.

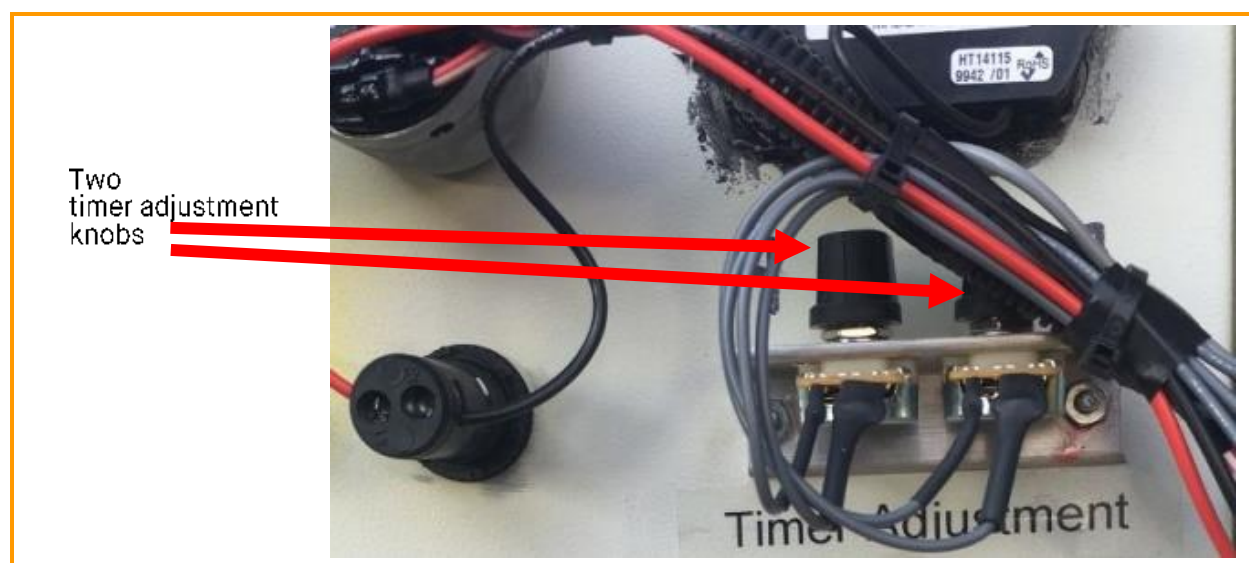


Figure 4.1. Timer adjustment knobs for return function, for both A and B.

4.2 Detailed Engine Information

- **Engine:** Kubota OC60-E4 and OC95-E4.
- **Lubricants and fuel:** See Table 4-1.
- **Maintenance checklist:** See Table 4-2.
- **Engine:** Kubota 6.0-hp diesel and Kubota 9.5-hp diesel
- **Hydraulic pump:** 4.0 gpm Bosch
- **Hydraulic reservoir capacity:** 4.0 U.S. gallons ISO-32
- **Pressure settings:**
 - **Pull:** 4,800 psi measured at booster quick coupler gauges
 - **Return:** 2,400 psi system pressure = 50% of "pull" setting
- **Maximum hydraulic oil temperature:** 140°F (60°C)
- **Weight:** 400 lb (181 kg)
- **Height:** 24 in. (61 cm)
- **Width:** 24 in. (61 cm)
- **Length:** 30 in. (76 cm)

Table 4-1. Lubricants and fuel used in the HPU-6.0 hp and the HPU-9.5 hp.

No.	Place	Capacity		Lubricants, fuel, and coolant
		OC60-E4 for HPU-6.0 hp	OC95-E4 for HPU-9.5 hp	
1	Engine oil	1.3 L 1.4 U.S. qts 1.1 Imp qts	1.7 L 1.8 U.S. qts 1.5 Imp qts	Higher than CC class (API) Above 25°C (77°F): SAE10W-30 SAE10W-40 SAE30 0 to 25°C 23 to (77°F): SAE10W-30 SAE10W-40 SAE20 Below 0°C (32°F): SAE10W-30 SAE10W-40 SAE10
2	Fuel	3.6 L 0.95 U.S. qts 0.79 Imp qts	5.5 L 1.45 U.S. qts 1.21 Imp qts	Diesel fuel No. 2-D (No. 1 diesel fuel, if temperature is below -10°C [14°F])

Table 4-2. Maintenance checklist for HPU-6.0 hp and HPU-9.5 hp.

No.	Item		Service interval								Reference page in Kubota manual
			Daily	Initial 25 h	Every 100 h	Every 500 h	Every 800 h	Every 1500 h	Every year	Every 2 years	
1	Engine oil	Checking	★								G-6
		Changing		★	★						G-7
2	Oil strainer	Cleaning		★	★						G-7
3	Rubber hoses and clamp bands	Checking	★								G-6
		Changing								★	G-10
4	Air cleaner	Cleaning			★						G-8
		Changing	Once a year or after 6 cleanings								G-10
5	Fuel filter	Cleaning			★						G-8
		Changing				★					G-8
6	Valve clearance	Checking					★				G-9
7	Nozzle injection pressure and spraying condition	Checking						★			G9, 10
		Cleaning						★			G9, 10

5. Pre-Operation Check

Perform the following steps before beginning operation of the HPU.

- Visually check for damaged fittings, hoses, filters, wiring, etc.
- Visually and physically check for any loose parts or bolts/screws.
- Make sure ALL quick couplers are clean before coupling the hoses to the HPU or the hydraulic tools.
- Plug in the low-voltage electrical cords that run with the hydraulic lines to the electrical control box (12 volts). Note the A and B markings on the HPU.
- Check the engine oil level at the dip stick.
- Check hydraulic oil at the sight glass on reservoir.
- Visually check for hydraulic leaks.

6. Operation

This section describes starting the engine, warming up the engine, achieving approximately 3,600 rpm, and idling the engine before shutting it down.

- Insure the throttle lever (see Figure 6-1) is in the idle position.
- To start the engine, turn the key to the GL position for 5 seconds. This will heat the glow plugs.
- Turn the key to the ST position, which will engage the starter. When the engine starts, release the key.
- Allow the engine to warm up for 5 minutes.
- Move the throttle lever to the right to achieve approximately 3,600 rpm.
- Before shutting down the HPU (using the engine stop lever shown in Figure 6-1), allow the engine to run at idle for 5 minutes to cool down.

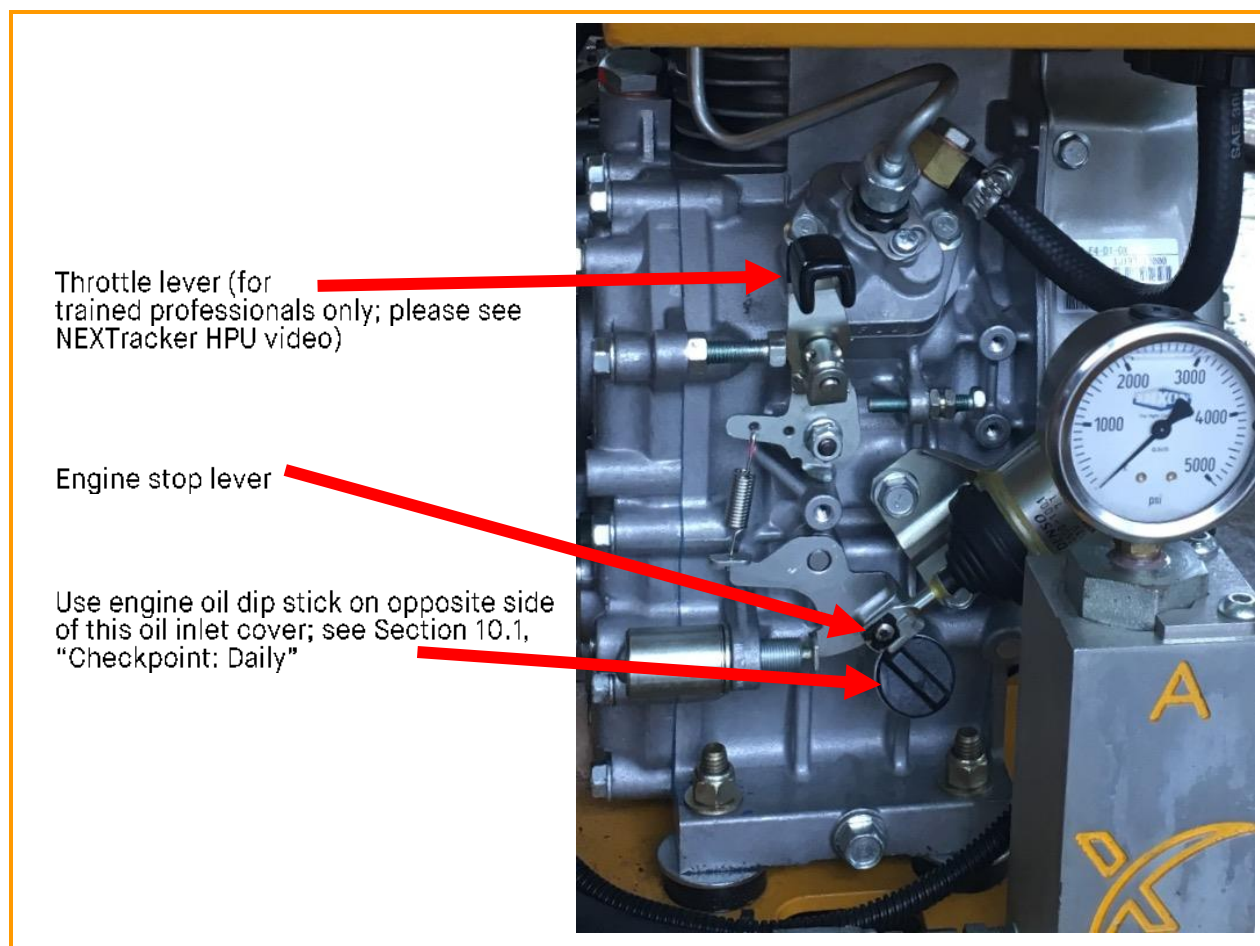


Figure 6-1. Starting the HPU.

7. Checking/Adjusting Hydraulic Pressures



CRITICAL: Only trained personnel may adjust hydraulic pressures.

- Adjust pressure with hydraulic hoses and hydraulic tools hooked up to the HPU. (Do not use a BOM gun due to the internal recirculating function of the tool.)
- The system pressure and the return function pressure are the same adjustment. The system pressure equals 50% of the booster pressure. Monitor the 5,000 psi gauge (see the test pressure gauge in Table 3-1) located at the top of the booster block and set pressure to 4,700 to 4,800 psi with tool activated and bottomed out. DO NOT EXCEED 4,800 psi.
- Figure 7-1 shows the cartridge valve manifold assembly and its three key parts. See the NEXTracker HPU video before adjusting components in the cartridge valve manifold assembly.
- Figure 7-2 shows the booster block assembly and pressure gauge; the NEXTracker HPU video gives more detailed information about the booster block shown in Figure 7-2.



CRITICAL: DO NOT EXCEED 4,800 psi.

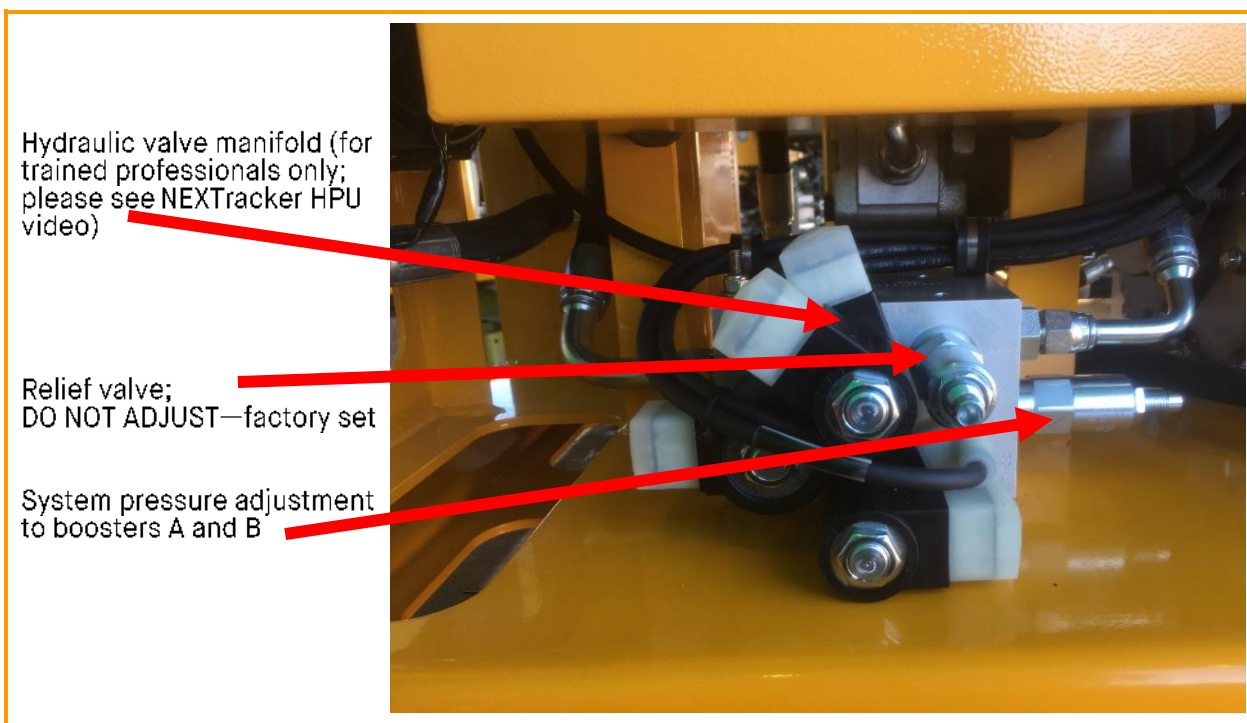


Figure 7-1. Three valves in the cartridge valve manifold assembly for special adjustments after discussion with your NEXTracker representative. Please also see the NEXTracker HPU video for instructions.

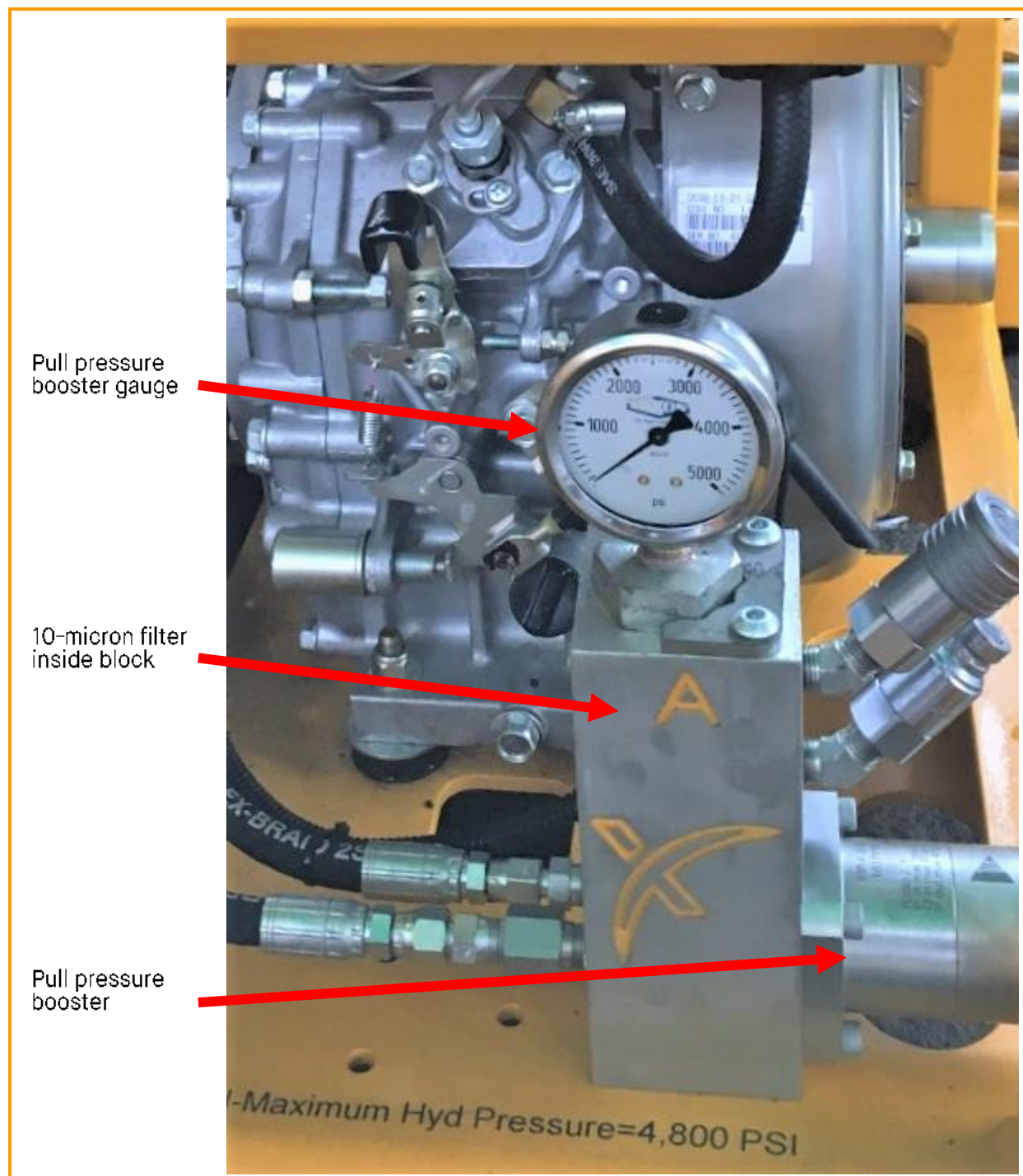


Figure 7-2. The booster block assembly and pressure gauge.

8. HPU Electrical System

The HPU is a 12-V fused (30-amp fuse) electrical system. When the key is turned to the ON position, the green indicator light illuminates, indicating that there is power to the control system that operates the tools. See Figures 8-1 and 8-2. If the light does NOT illuminate, the fuse may be blown and the tools will not operate. (Extra fuses are provided.)

Insure that the key is turned to the OFF position when the engine is not running to avoid a dead battery.

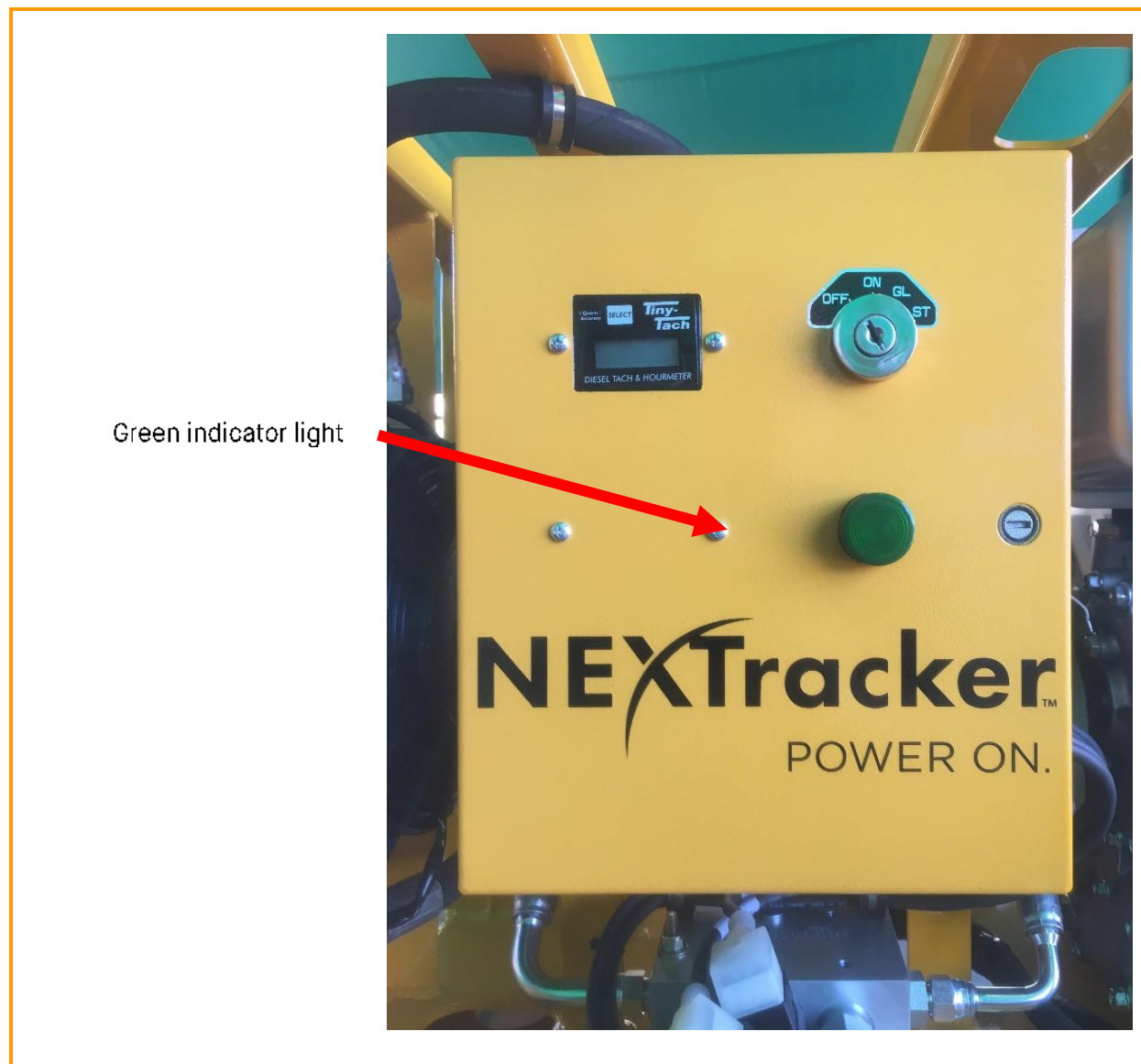


Figure 8-1. When the HPU is turned on, the green indicator light illuminates.

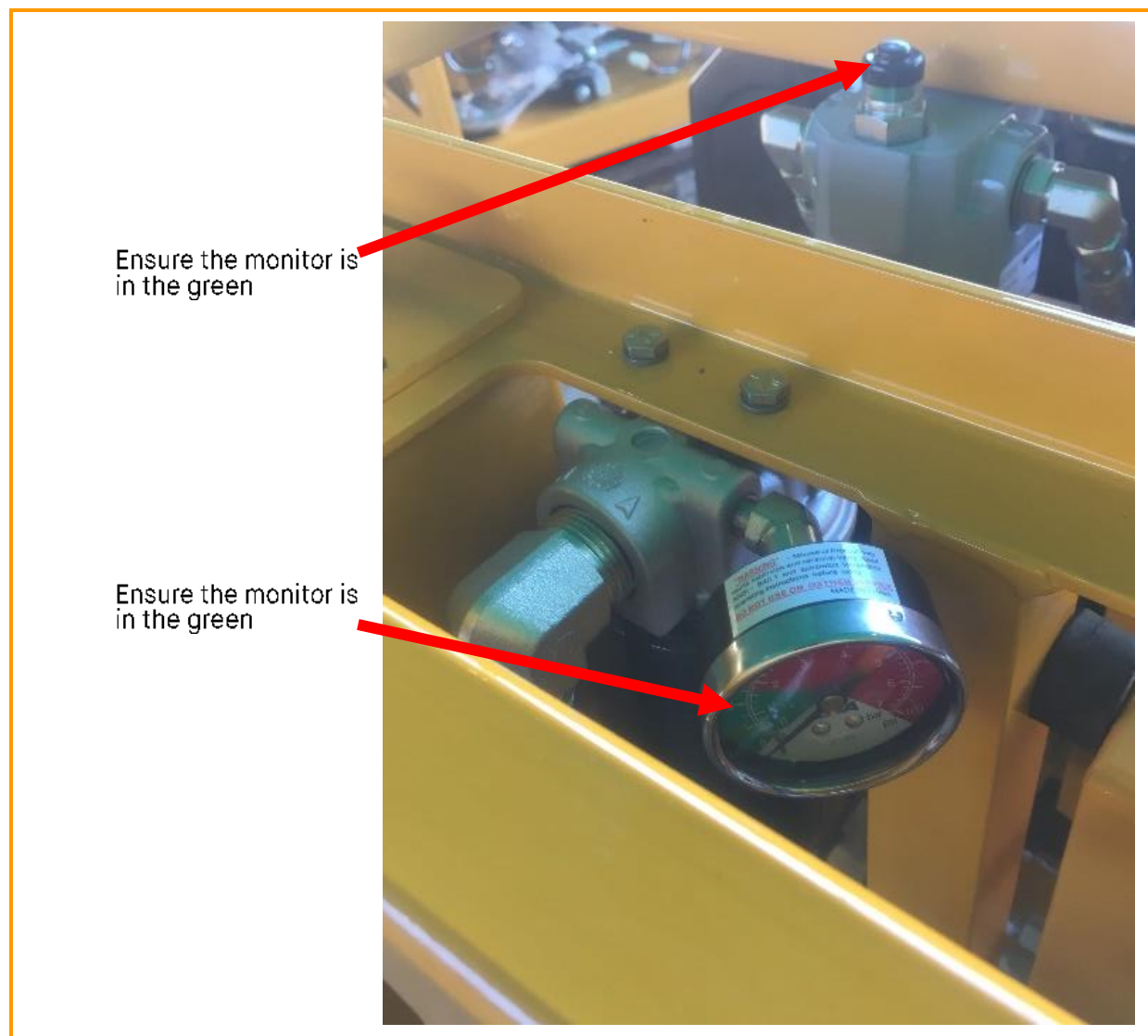


Figure 8-2. When the HPU is turned on, the green indicator light illuminates.

9. Maintenance of the HPU

Hydraulic System: The hydraulic system has four filters that must be monitored along with the hydraulic oil level in the reservoir. See Figure 9-1.

High-Pressure Filter (Supply): Check the monitor; if it is red, the filter element must be cleaned or replaced.

Low-Pressure Filter (Return): Check the monitor; if it is red, the filter element must be replaced.

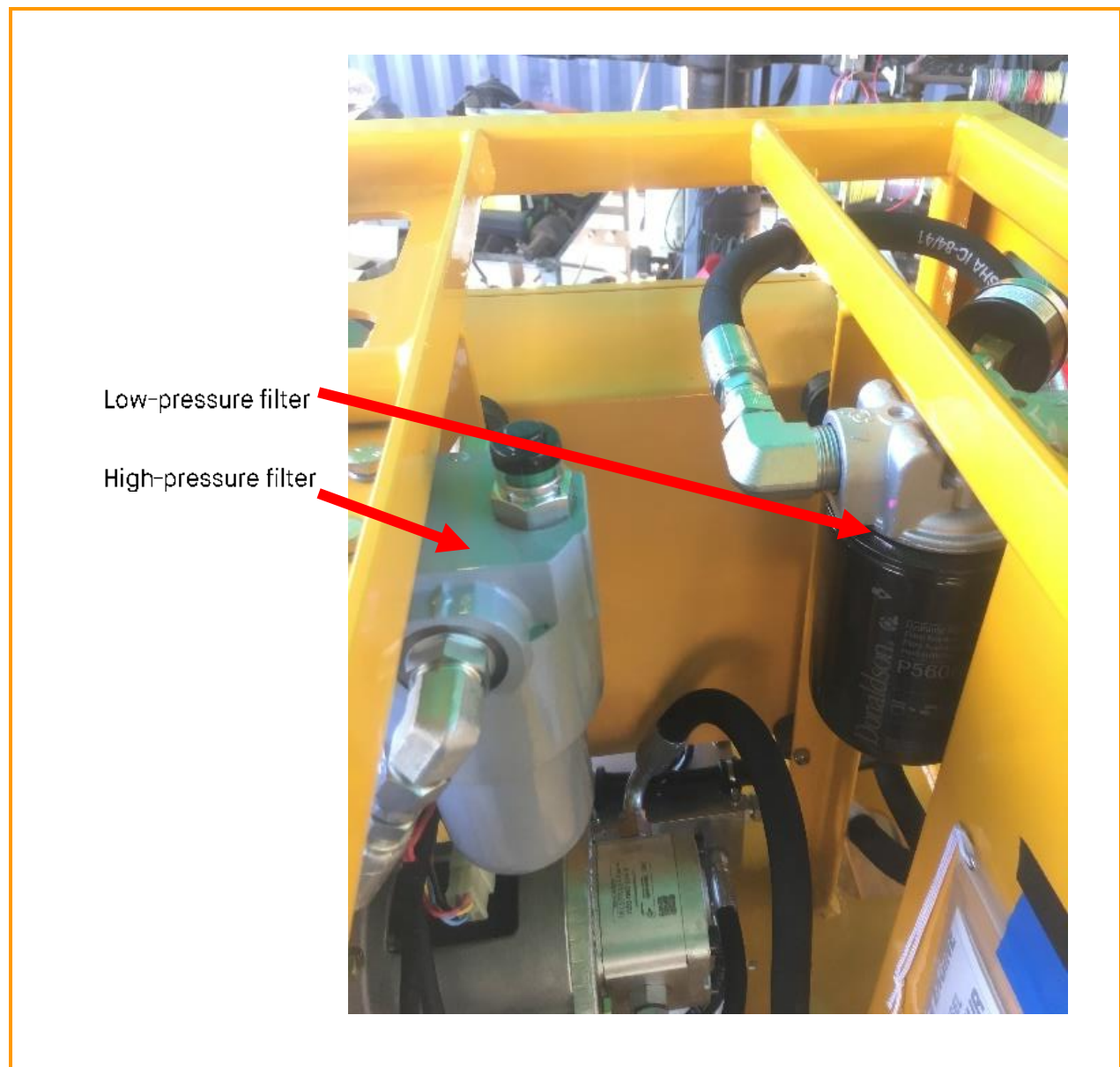


Figure 9-1. High-pressure filter and low-pressure filter.

Two High-Pressure 10-Micron Strainers: Check/clean every 1,000 hours. These two strainers aim to prevent any dirt or foreign matter from entering the HPU through the quick couplers. To clean, first remove the four bolts securing the booster to the booster block and remove the booster. Use Q-tips to stop oil leakage from the outside holes.

Remove end cap, two springs, and the 10-micron strainer from inside the booster block. See Figure 9-2. Clean or replace the 10-micron strainer using compressed air, insuring that the interior of the booster block and oil passages are clean and free of any foreign particles. Any contamination may result in booster damage.

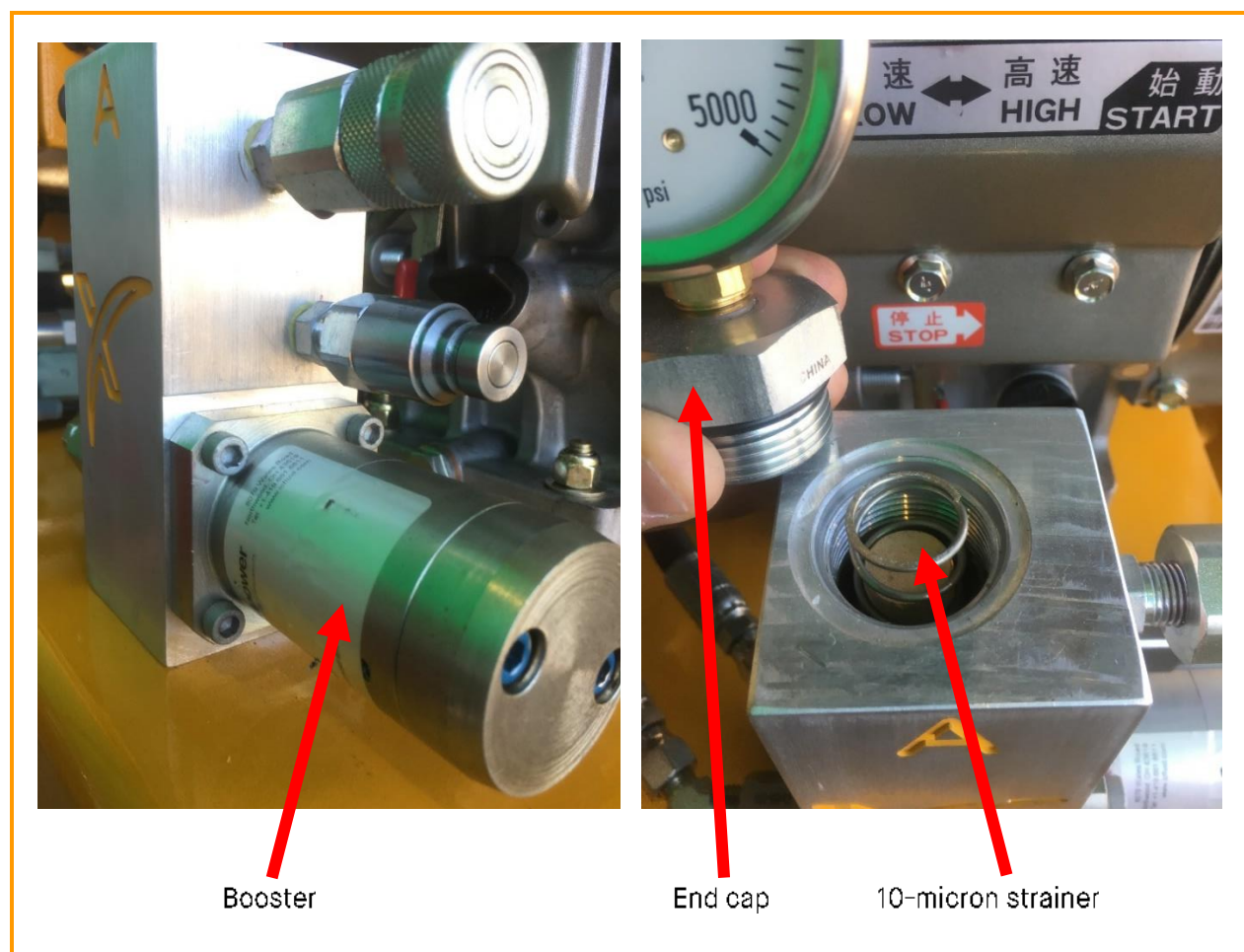


Figure 9-2. Cleaning the 10-micron strainer.

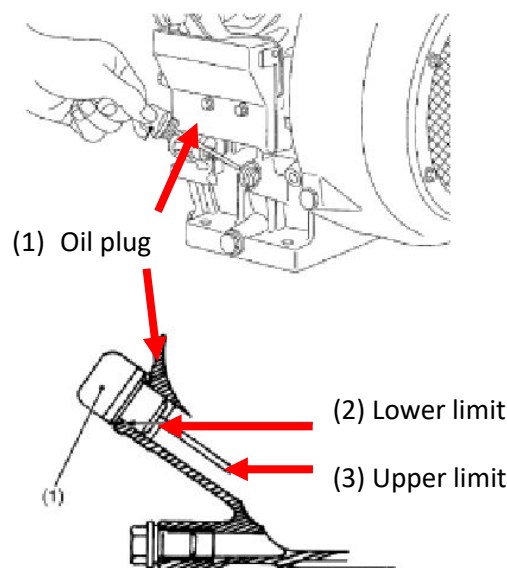
10. Safety Checkpoint Timetable

10.1 Checkpoint: Daily

Checking Engine Oil Level:

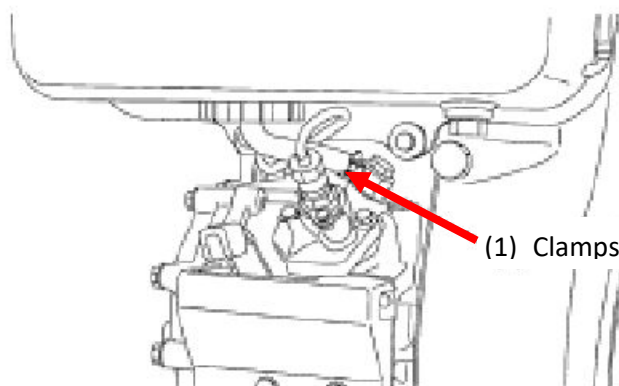


NOTE: Use the proper engine oil viscosity (SAE) according to the ambient temperature. See Table 4-1.



1. Put the engine on a flat surface and check the amount and the condition of the oil with an oil plug (1).
2. If the oil level is below the lower limit (2), add new oil up to the upper limit (3).
3. When using oil from a different supplier or of a different viscosity from the previous one, remove all old oil. Never mix two different types of oil.

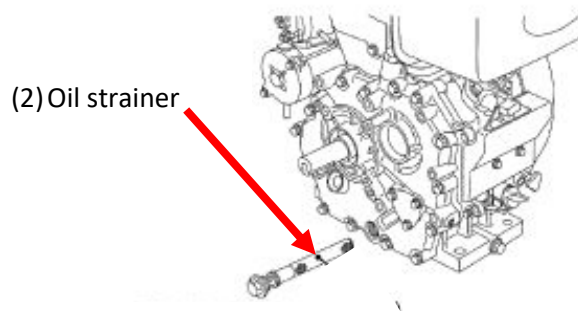
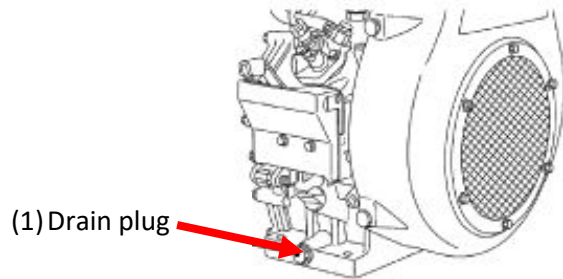
Checking Fuel Hose and Clamp Bands:



1. If the clamps (1) are loose, replace with new ones.
2. The fuel and lubricating hoses are made of rubber that ages regardless of period of service. Change the fuel pipes together with the clamps every two years.
3. However, if the fuels and lubricating hose and clamp are found to be damaged or have deteriorated earlier than in two years, replace with new ones.

10.2 Checkpoint: at Initial 25 Hours

Changing Engine Oil and Cleaning Oil Strainer:



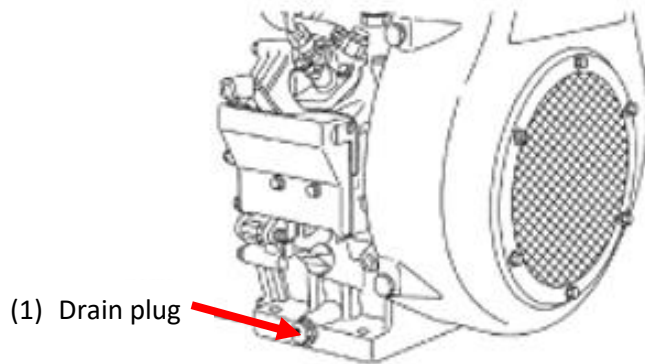
1. After warming up the engine, remove the drain plug (1) and drain the oil completely.
2. Replace the drain plug and supply the specified quantity of the specified oil through the oil inlet.
3. When cleaning the oil strainer (2):
 - Clean the oil strainer with fuel oil.
 - If the oil strainer is deformed or broken, replace it.



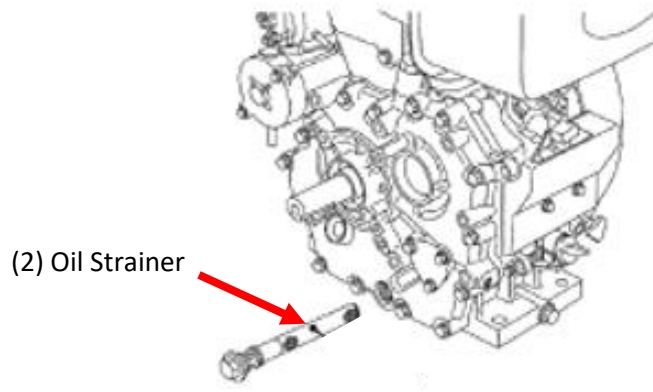
NOTE: Clean the oil strainer (2) each time oil is changed.

10.3 Checkpoint: Every 100 Hours

Changing Engine Oil and Cleaning Oil Strainer:



1. After warming up the engine, remove the drain plug (1) and drain the oil completely.
2. Replace the drain plug and supply the specified quantity of the specified oil through the oil inlet.
3. When cleaning the oil strainer (2):
 - Clean the strainer with fuel oil.
 - If the oil strainer is deformed or broken, replace it.

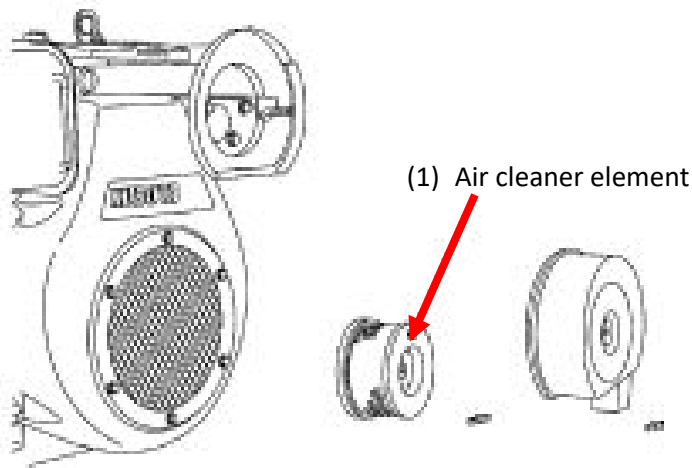


NOTE: Clean the oil strainer (2) each time oil is changed.

Cleaning and Changing Air Cleaner Element:

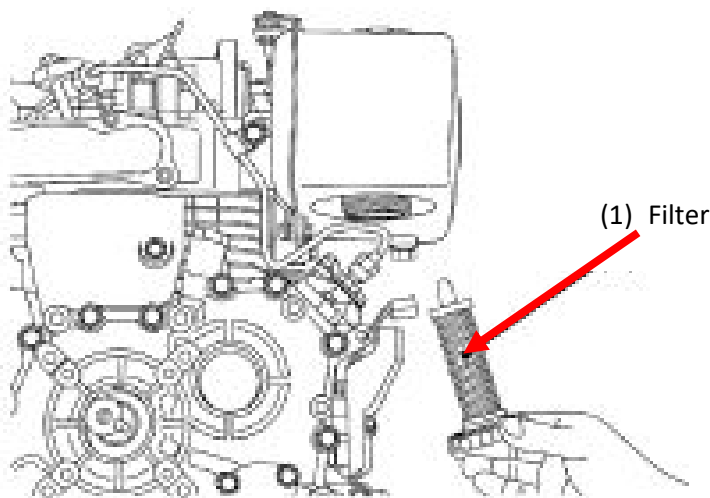


NOTE: Change the air cleaner element (1) once a year or after six cleanings.



1. Clean the air cleaner element (1) when dry dust adheres.
2. To clean the element, use clean, dry compressed air on the inside of the element.
3. Air pressure at the nozzle must not exceed 205 kPa (2.1 kgf/cm², 30 psi).
4. Maintain reasonable distance between the nozzle and the filter.

Cleaning the Fuel Filter:



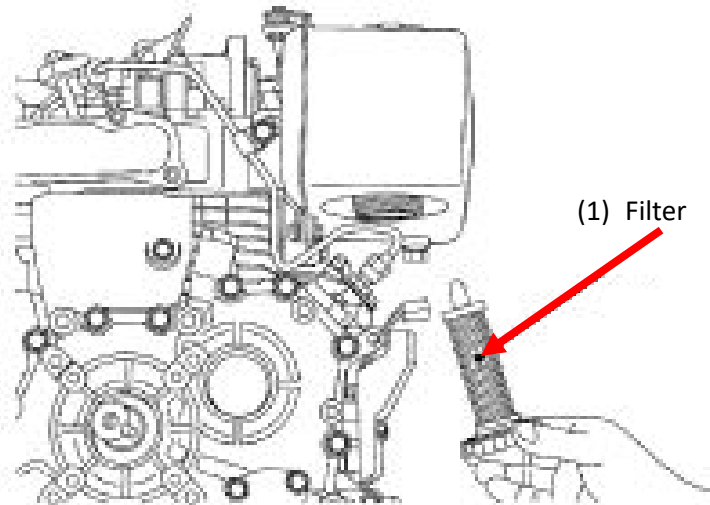
1. Empty the fuel tank and disconnect the fuel pipe.
2. Loosen the ring nut and take out the filter (1).
3. Wash the filter clean of impurities with fresh fuel.
4. Handle the element carefully because it is very fragile.



NOTE: If the element has holes, replace it with a new one. A damaged element shortens the service life of the nozzle and injection pump.

10.4 Checkpoint: Every 500 Hours

Changing the Fuel Filter:



1. Empty the fuel tank and disconnect the fuel pipe.
2. Loosen the ring nut and take out the filter (1).
3. Replace the filter.
4. Handle the filter carefully because it is very fragile.



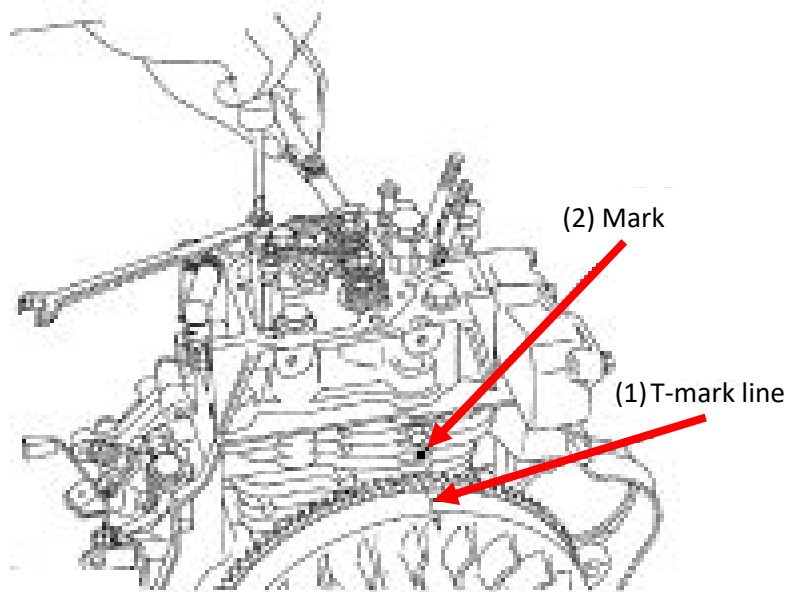
NOTE: A **damaged** element shortens the service life of the nozzle and injection pump.

10.5 Checkpoint: Every 800 Hours

Checking Valve Clearance:



WARNING: Valve clearance must be checked and adjusted when engine is cold.



1. Remove the cylinder head cover.
2. Align the T-mark line (1) on the flywheel and the mark (2) on the fin at the top dead center (TDC) in the compression stroke.
3. Check the intake and exhaust valve clearance with a thickness gauge.
4. If the clearance is not within the factory specifications, adjust with the adjusting screw.
5. After adjusting the valve clearance, firmly tighten the lock nut on the adjusting screw.



NOTE: After rotating the flywheel clockwise twice or three times, check the valve clearance again.

Factory specifications for valve clearance are: 0.0055 to 0.0071 in. (0.14 to 0.18 mm).

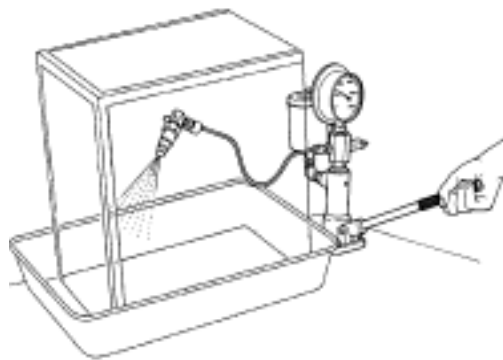
10.6 Checkpoint: Every 1,500 Hours

Checking Nozzle Injection Pressure:



CRITICAL: After confirming that no one is standing in the direction the fume goes, check the nozzle injection pressure and condition.

If fumes from the nozzle penetrate the human body, cells may be destroyed and blood poisoning may result.

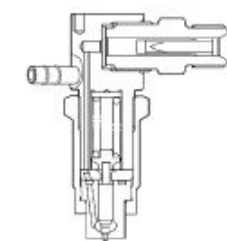


1. Set the injection nozzle to the nozzle tester.
2. Slowly move the tester handle to measure the pressure at which fuel begins jetting out from the nozzle.
3. If the measurement is not within the factory specifications, disassemble the injection nozzle and change adjusting washer until the proper injection pressure is obtained.

Factory specification for nozzle injection pressure is:

13.9 to 14.7 MPa
142 to 150 kgf/cm²
2019 to 2133 psi

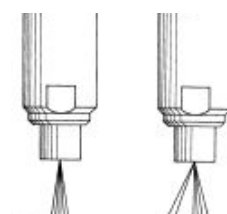
Nozzle spraying condition:



1A

Good

Bad



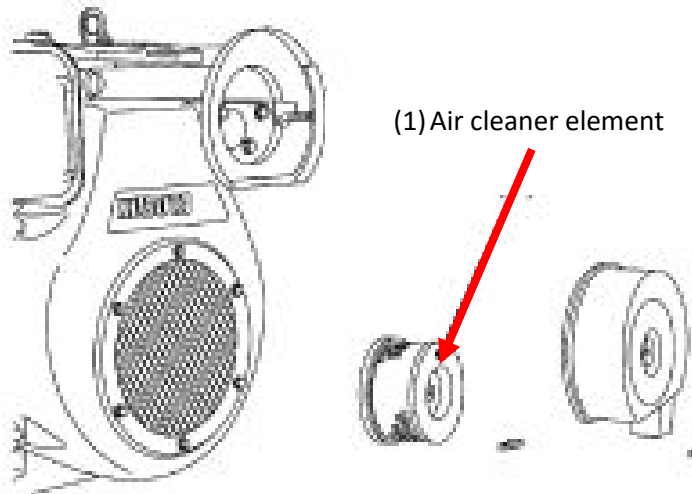
1. Check the nozzle spray condition.
2. If the spray pattern and spraying direction are faulty, replace the nozzle piece.

10.7 Checkpoint: Every Year

Cleaning and Changing Air Cleaner Element:



NOTE: Change air cleaner element once a year or after six cleanings.



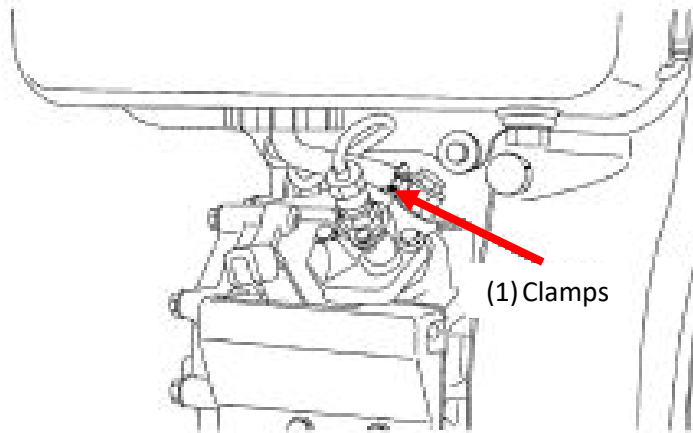
1. Change air cleaner element (1) once a year or after six cleanings.
2. Clean air filter element when dry dust adheres.
3. To clean the element, use clean, dry compressed air on the inside of the element.

Air pressure at the nozzle must not exceed 205 kPa (2.1 kgf/cm², 30 psi).

Maintain reasonable distance between the nozzle and the filter.

10.8 Checkpoint: Every 2 Years

Checking Fuel Hose and Clamps:



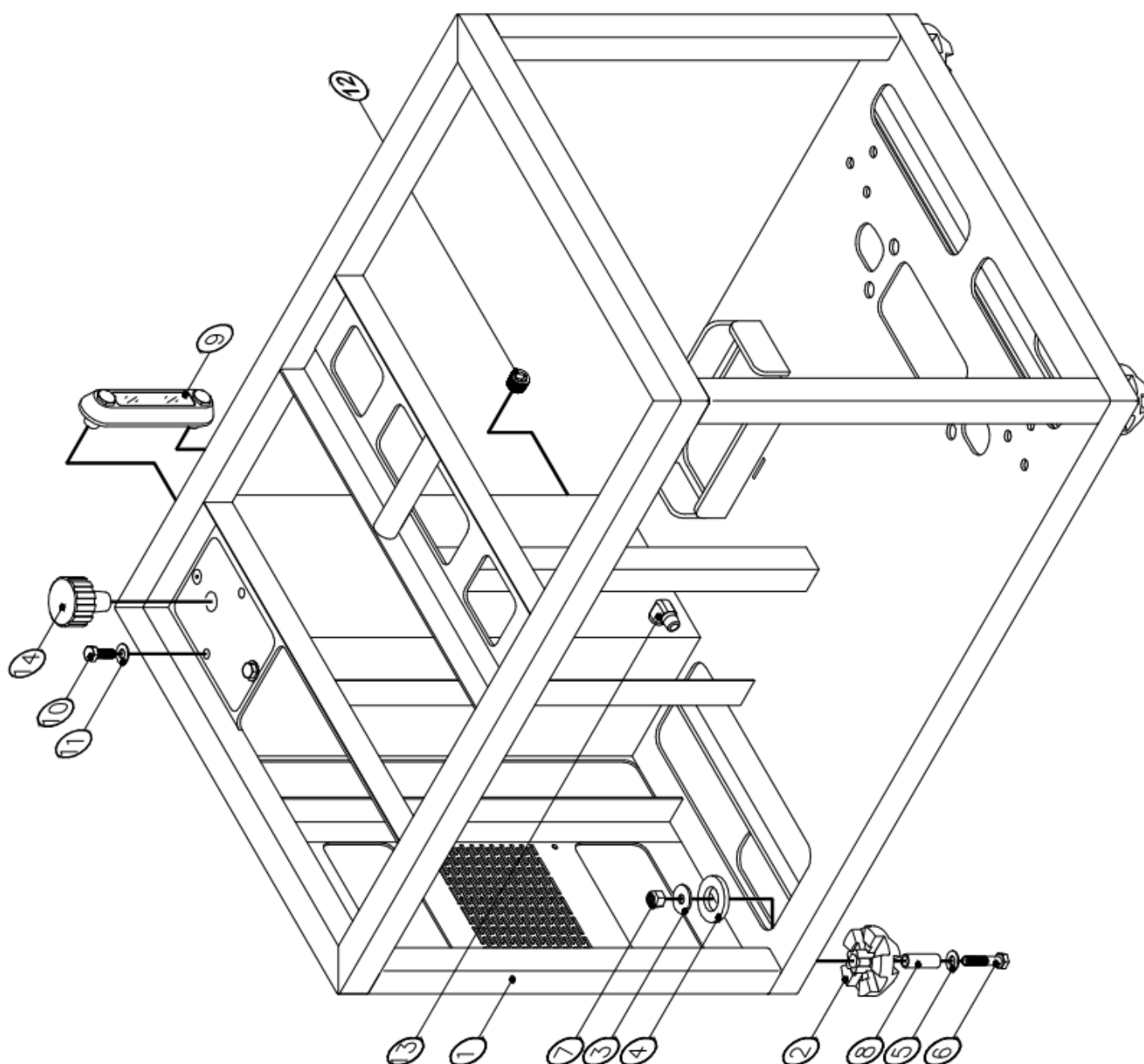
1. If the clamps (1) are loose, replace with new ones.
2. The fuel and lubricating hoses are made of rubber, which ages regardless of period of service. Change the fuel pipes together with the clamps every two years.
3. However, if the fuel and lubricating hose and clamp are found to be damaged, or have deteriorated earlier than two years, replace them with new ones.

Appendix A: HPU Materials List

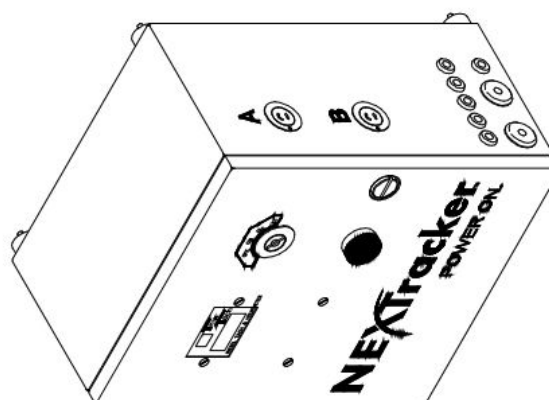
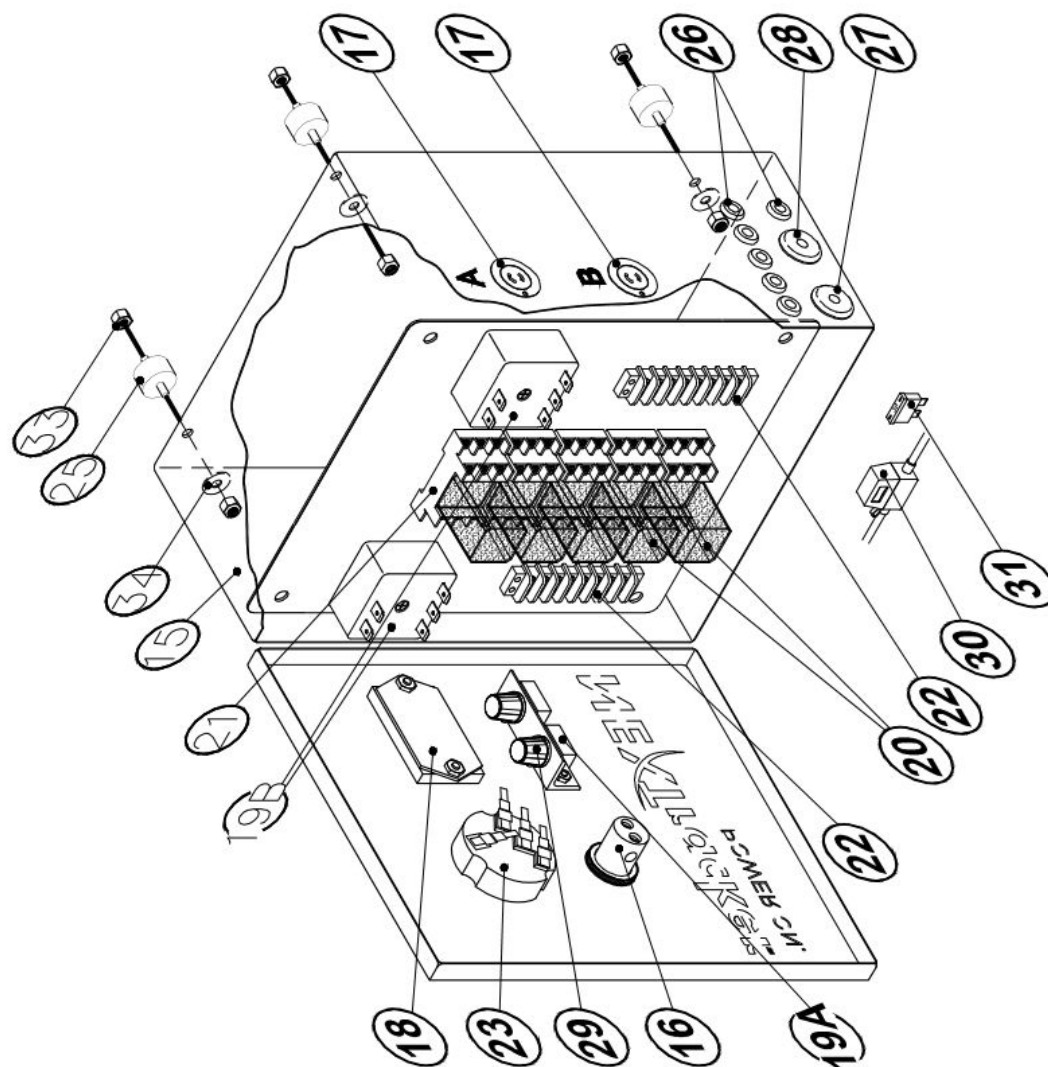


NOTE: The following materials list is the same for the HPU-6.0 hp and the HPU-9.5 hp.

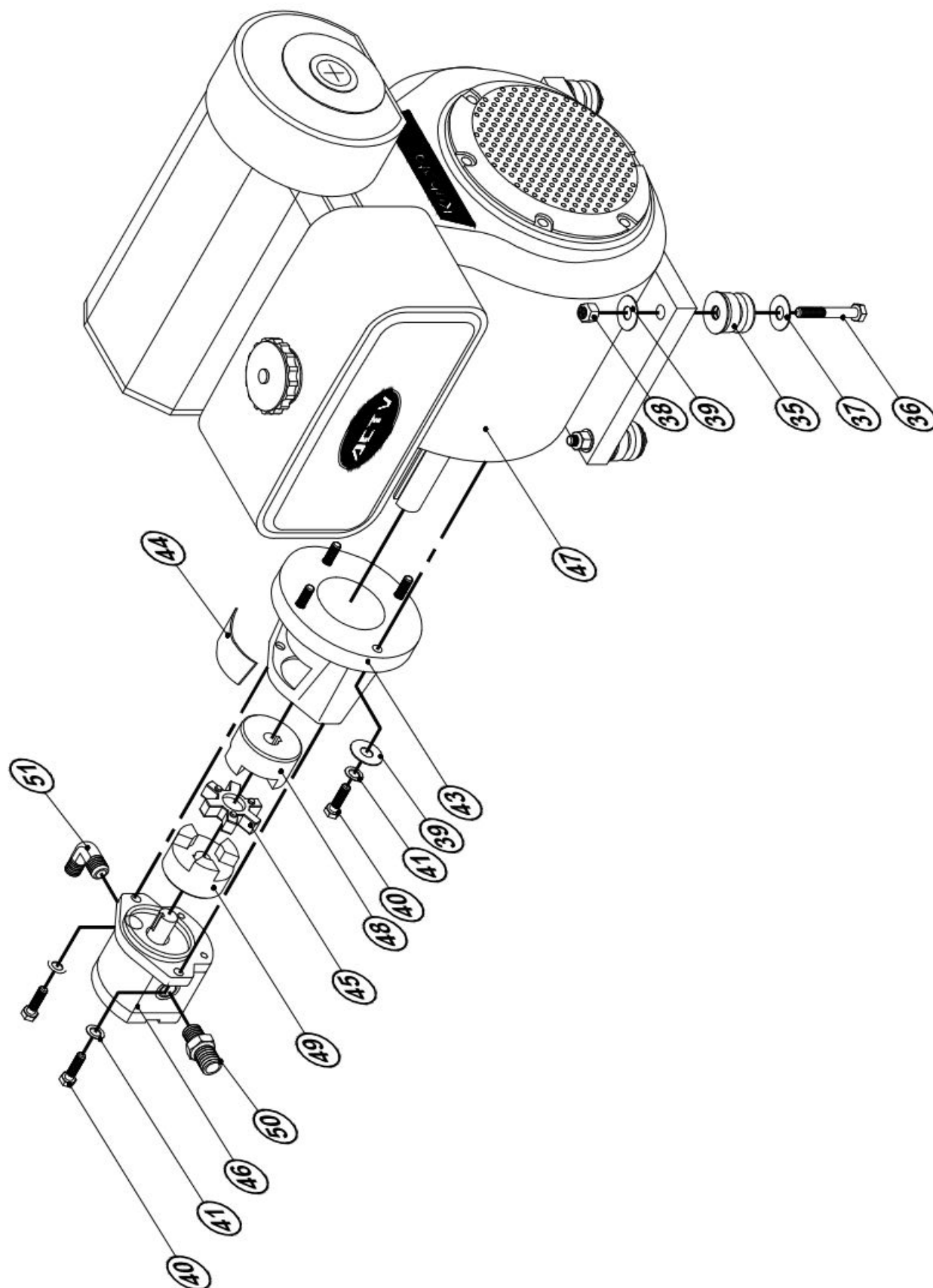
ITEM	QTY.	DESCRIPTION	SFS#
1	1	FRAME UNIT	SFS01S17
2	4	MOUNTS, VIBRATION DAMPING, RUBBER STYLE 4, 300LB. CAP	SFS20M17
3	4	WASHER, .406" I.D. x 1.25" O.D., .052" THK., ZINC PLATED	SFS43H17
4	4	WASHER, 1.062" I.D. x 2.00" O.D. x .25" THK., GRADE 8	SFS44H17
5	4	WASHER, .406" I.D. x .875" O.D. x .043" THK., S.S.	SFS45H17
6	4	SCREW, HEX HEAD, 3/8"-16 x 2.00" LG., GRADE 8	SFS46H17
7	4	NUT, NYLON LOCKNUT, 3/8"-16 GRADE 8	SFS47H17
8	4	SPACER, ROUND TUBE, .625" I.D. x .120" WALL THK.	SFS48H17
9	1	LEVEL INDICATOR, W/ THERMOMETER 10PSI @ 70°F	SFS21M17
10	4	SCREW, HEX HEAD, 1/4"-20 x .75" LG., GRADE 8	SFS49H17
11	4	WASHER, .281" I.D. x .625" O.D. x .051" THK., GRADE 8	SFS50H17
12	1	TANK PLUG W/ SEALANT, SQUARE DRIVE, 1/2" NPTF	SFS51H17
13	1	TANK ELBOW, SQUARE DRIVE, 1/2" NPTF	SFS52H17
14	1	BREATHER VENT, 3/4" POLYAMIDE, 40 MICRONS, MAX 210°F	SFS22M17



ITEM	QTY.	DESCRIPTION	SFS#
15	1	ENCLOSURE, WASHDOWN, EASY ACCESS	SFS04E17
16	1	PANEL LIGHT, FLAT, OIL RESISTANT, (GREEN)	SFS05E17
17	2	RECEPTACLE, FEMALE, FLANGED PANEL MOUNT 125V AC 15AMP	SFS06E17
18	1	DIESEL TACH, HOURMETER, 12V	SFS07E17
19A/B	2	POTENTIOMETER (A), SURFACE-MOUNT, TIMER RELAY (B)	SFS08E17
20	5	TERMINAL RELAY, 12V DC 100mA	SFS09E17
21	5	TERMINAL RELAY SOCKET, 12V DC 100mA	SFS10E17
22	2	TERMINAL BLOCK, 8 POSITION	SFS11E17
23	1	KEY SWITCH, 4 POS 12V	SFS12E17
24	-	-	-
25	4	MOUNTS, VIBRATION DAMPING, STYLE 1, 1/4"-20	SFS23M17
26	6	GROMMET, .250" I.D. x .438" O.D. x .313" THK.	SFS24M17
27	1	GROMMET, x .250" THK.	SFS25M17
28	1	GROMMET, x .250" THK.	SFS26M17
29	2	INDICATOR KNOB, COMFORT GRIP	SFS27M17
30	1	FUSE HOLDER, INLINE	SFS13E17
31	1	FUSE, BLADE STYLE, 32V AC/DC, 30 AMP	SFS14E17
32	2	BUTT SPLICE, SURE CONNECT, SEALED	SFS14E17
33	4	NUT, NYLON LOCKNUT, 1/4"-20, GRADE 8	SFS53H17
34	4	FLAT WASHER, 1/4" S.S	SFS54H17



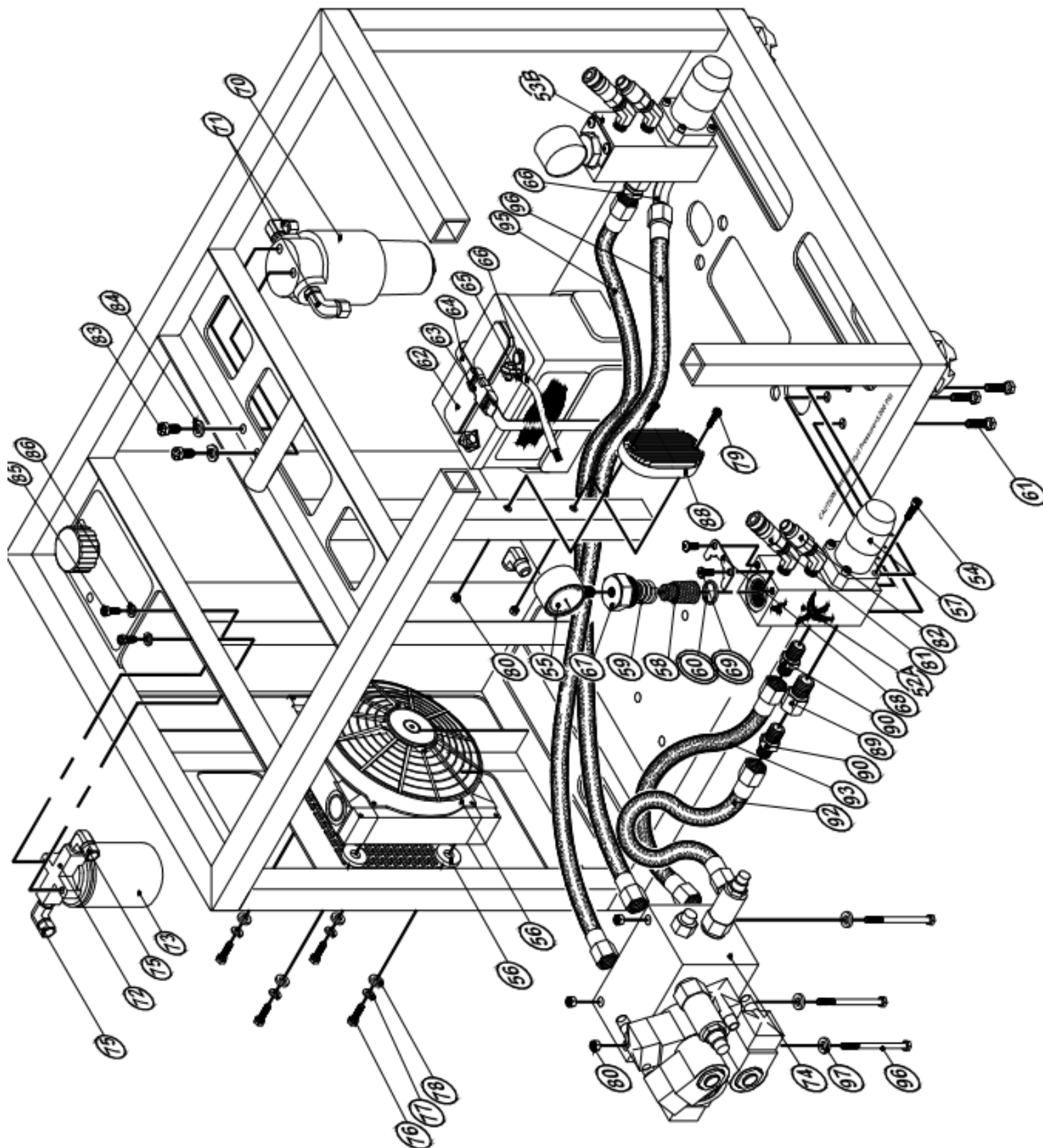
ITEM	QTY.	DESCRIPTION	SFS#
35	4	MOTOR MOUNT, ANTI-VIBRATION	SFS10M17
36	4	BOLT, HEX HEAD, 3/8"-16 x 3", GRADE 8	SFS36H17
37	4	WASHER,	SFS37H17
38	4	NUT, NYLON LOCKNUT, 3/8"-16, GRADE 8	SFS38H17
39	8	FLAT WASHER, 3/8"	SFS39H17
40	6	BOLT, HEX HEAD, 3/8"-16 x 1.25", GRADE 8	SFS40H17
41	6	LOCK WASHER, 3/8", GRADE 8	SFS41H17
42	2	GROUNDING BOLT, HEX HEAD, M8X16MM	SFS42H17
43	1	PUMP MOUNTING BRACKET	SFS11M17
44	1	ACCESS COVER	SFS12M17
45	1	BUNA N INSERT	SFS13M17
46	1	HYDRAULIC PUMP	SFS14M17
47	1	ENGINE, KB 1J190-12000, 6.0 HP or 9.5 HP	SFS15M17
48	1	COUPLING, SHAFT KEY HUB, 1" BORE x 1/4"	SFS16M17
49	1	COUPLING, SHAFT KEY HUB, 5/8" BORE x 5/32"	SFS17M17
50	1	PUMP INLET	SFS18M17
51	1	PUMP OUTLET	SFS19M17



52A	1	BOOSTER BLOCK A,	SFS01N17
53B	1	BOOSTER BLOCK B,	SFS02N17
54	8	BOOSTER CAP SCREW, SOCKET HEAD, M6X1 x 25MM LG.	SFS09H17
55	2	PRESSURE GAUGE, 0-5,000 PSI, 1/4" NPT	SFS10H17
56	1	OIL COOLER, 12 V	SFS01M17
57	2	BOOSTERS	SFS02M17
58	2	BOOSTER FILTER, 10 MICRON	SFS03M17
59	2	FILTER SPRING KIT	SFS04M17
60	2	BOOSTER O-RING (SQUARE)	SFS11H17
61	6	BOOSTER BLOCK MOUNTING BOLTS, 5/16" x 7/8"	SFS12H17
62	1	BATTERY, 12V	SFS01E17
63	1	BATTERY BUCKLE	SFS05M17
64	2	BATTERY STRAPS	SFS06M17
65	2	BATTERY CABLE ENDS	SFS02E17
66	2	BATTERY CABLE	SFS03E17
67	2	PIPE PLUG, MODIFIED, (MACHINING REQ'D)	SFS13H17
68	2	LOCK PLATE	SFS14H17
69	4	SCREW, SOCKET BUTTON HEAD, 5/16"-24 x .500 LG.	SFS15H17
70	1	HIGH PRESSURE FILTER	SFS01F17
71	2	HIGH PRESSURE FILTER FITTINGS	SFS02F17
72	1	LOW PRESSURE FILTER HEAD	SFS03F17
73	1	LOW PRESSURE FILTER	SFS04F17
74	1	HYDRAULIC MANIFOLD	SFS07M17
75	2	LOW PRESSURE FILTER FITTINGS	SFS16H17
76	4	CAP SCREW, HEX HEAD, M6X1 x 18MM LG.	SFS17H17
77	4	SPLIT LOCK WASHER, FOR M6 SCREW	SFS18H17
78	4	FLAT WASHER	SFS19H17
79	2	CAP SCREW, HEX HEAD, 1/4"-20, GRADE 8	SFS20H17
80	5	LOCKNUT, NYLON INSERT, 1/4"-20	SFS21H17
81	2	QUICK COUPLING, FEMALE	SFS08M17
82	2	QUICK COUPLING, MALE	SFS09M17
83	2	CAP SCREW, HEX HEAD, 5/16"-21 x 3/4", GRADE 8	SFS22H17
84	2	SPLIT LOCK WASHER, FOR M6 SCREW	SFS23H17
85	2	CAP SCREW, HEX HEAD, 1/4"-20 x 3/4", GRADE 8	SFS24H17
86	2	SPLIT LOCK WASHER, FOR 1/4" SCREW, GRADE 8	SFS25H17
87	4	SPACER	SFS26H17
88	1	VOLTAGE REGULATOR	SFS03E17
89	2	FLOW RESTRICTOR, (.068 ORIFACE)	SFS27H17
90	3	QUICK COUPLE, MALE	SFS28H17
91	1	ELBOW, 45° 1/4" NPT	SFS29H17
92	1	HYDRAULIC HOSE, (OUTSIDE PORT/PULL) x 22.5" LG.	SFS30H17
93	1	HYDRAULIC HOSE, (INSIDE PORT/RETRACT) x 24.5" LG.	SFS31H17
94	1	HYDRAULIC HOSE, (OUTSIDE PORT/PULL) x 19.5" LG.	SFS32H17
95	1	HYDRAULIC HOSE, (INSIDE PORT/RETRACT) x 21.5" LG.	SFS33H17
96	3	CAP SCREW, HEX HEAD, 1/4"-20, x 4.5" LG. GRADE 8	SFS34H17
97	3	FLAT WASHER, 1/4"	SFS35H17



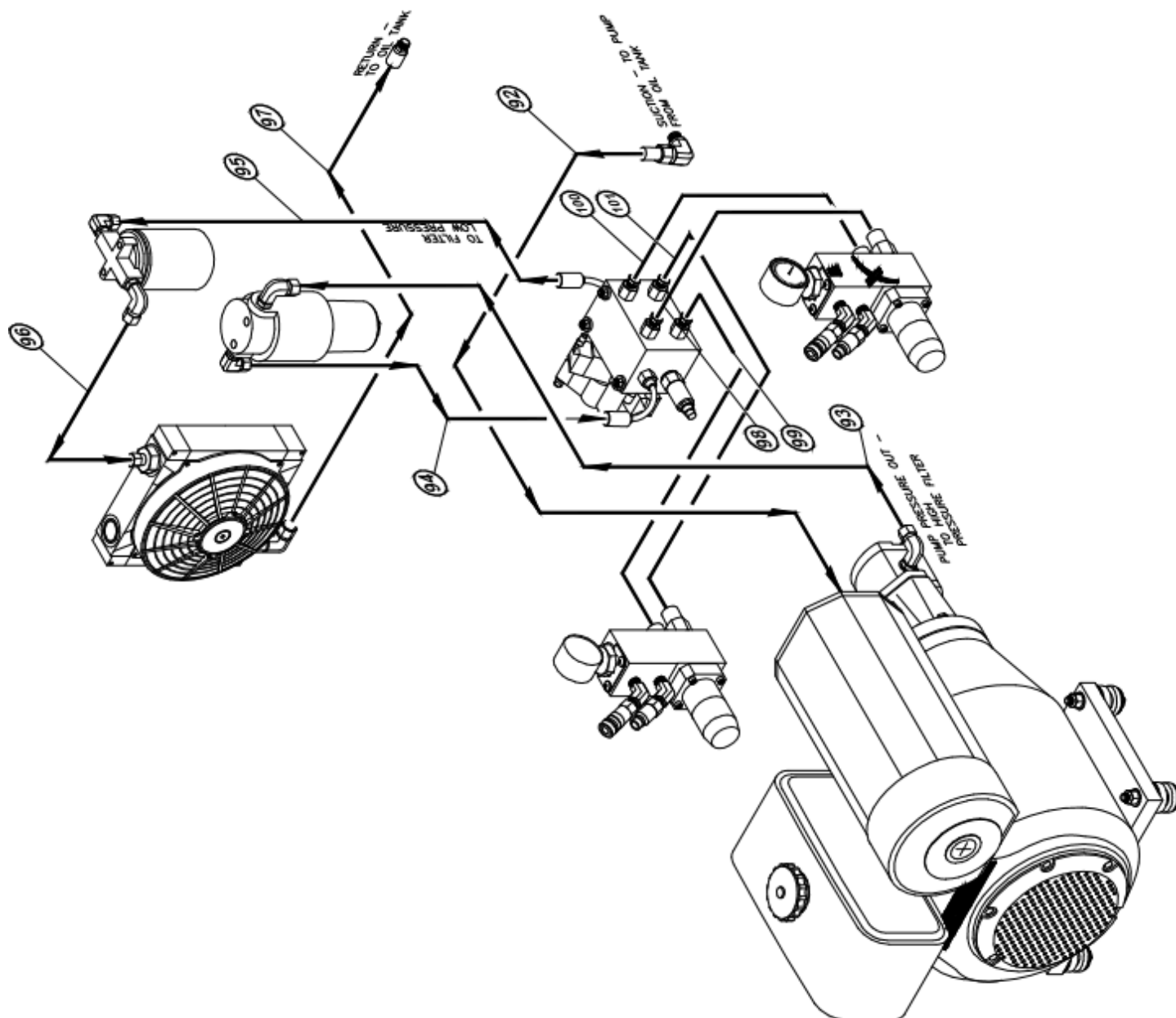
NOTE: Item numbers on this page refer to the drawing on the next page only.



ITEM	QTY.	DESCRIPTION	SFS#
92	1	Tank to Pump #8 FJIC 90deg x #8 FJIC x 17.5" OAL	SFS01H17
93	1	Pump to HP Filter #6 FJIC x #6 FJIC x 17.0" OAL	SFS02H17
94	1	HP Filter to Manifold #6JIC Long 90deg x #6FJIC x 35.0" OAL	SFS03H17
95	1	Manifold to LP Filter #8JIC Long 90deg x #8FJIC x 19.5" OAL	SFS04H17
96	1	LP Filter to Oil Cooler #8 FJIC x #8 FJIC 45deg x 18.0" OAL	SFS05H17
97	1	Oil Cooler to Tank #8 FJIC x #8 MNPT x 10.0" OAL	SFS06H17
98	1	Manifold A1 to "B" Block #4 FJIC x #4 MNPT x 19.5" OAL	SFS07H17
99	1	Manifold A2 to "A" Block #4 FJIC x #4 MNPT x 21.75" OAL	SFS08H17
100	1	Manifold B1 to "B" Block #4 FJIC x #4 MNPT x 24.0" OAL	SFS09H17
101	1	Manifold B2 to "A" Block #4 FJIC x #4 MNPT x 25.75" OAL	SFS10H17



NOTE: Item numbers on the previous page refer to the drawing on this page only.



Appendix B: NEXTracker Warranty



NEXTRACKER INC. LIMITED WARRANTY ON HYDRAULIC POWER UNIT EFFECTIVE AUGUST 24, 2017

OUR WARRANTY TO YOU

We warrant to you, the original purchaser, that all parts (except the engine, which is covered by our supplier's warranty) of your new NEXTracker Hydraulic Power Unit ("NX HPU") purchased from us will be free from defects in materials or workmanship for 90 days from date of sale.

WHAT WE WILL DO

We will, at our option, repair or replace any part covered by this warranty which becomes defective, malfunctions or otherwise fails to conform with this warranty under normal use and service during the term of the warranty at no charge for parts or labor.

ENGINE WARRANTY

See Kubota Engine America Corporation's Industrial Engines Limited Warranty.

WHAT YOU MUST DO TO OBTAIN WARRANTY SERVICE

To obtain warranty repair/replacement on your NX HPU, you must contact your NEXTracker representative or call our US headquarters at 510-270-2500.

WHAT THE WARRANTY DOES NOT COVER

This warranty **does not** cover:

1. Damage, malfunctions or failures resulting from accidents, abuse, misuse, modifications, alteration, improper servicing, or lack of performance of required maintenance service.
2. Normal maintenance services or replacement of maintenance items such as preheater plugs, indicator and resistant coils, filter elements, lubricants, oils, spark plugs, coolant, or belts.
3. Installation of replacement parts, unless originally installed by NEXTracker.
4. Non-genuine original brand parts.
5. Any engines damaged by use of either or any starting aid, or greater than a 50/50% solution of antifreeze and water.
6. Injection nozzle wear or any engine damage caused by injection nozzle wear or sticking.
7. Damage caused by water entering the engine due to any cause.
8. Used Products.
9. Any damage caused by overheating that is not a direct result of a defect in materials or workmanship.

THIS IS THE ONLY EXPRESS WARRANTY ON OUR NX HPU PRODUCT

We neither assume nor authorize anyone to assume for us any other express warranty. Only NEXTracker authorized representatives have authority to make representations or promises on behalf of NEXTracker or to modify the terms of this warranty in any way.

LIMITATIONS ON OUR RESPONSIBILITY

This warranty is in lieu of all other warranties, express or implied, and of any other obligations or liability or on our part. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. Our responsibility for any and all losses and damages resulting from any cause whatsoever, including our negligence, alleged damage or defective goods, whether such defects are discoverable or latent, shall be limited to the repair or replacement of defective parts as stated above. IN NO EVENT WILL WE BE LIABLE FOR LOSS OF USE, LOSS OF PROFITS, LOSS OF OR DAMAGE TO OTHER PROPERTY, INCONVENIENCE, COMMERCIAL LOSS, OR OTHER SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER.



NOTE: The NEXTracker warranty is the same for the HPU-6.0 hp and the HPU-9.5 hp.

Appendix C: Engine Warranty



KUBOTA ENGINE AMERICA CORPORATION LIMITED WARRANTY ON INDUSTRIAL ENGINES AND REPLACEMENT PARTS EFFECTIVE MAY 1, 2009

OUR WARRANTY TO YOU

We warrant to you, the original purchaser, that all parts (except those referred to below) of your new Kubota Industrial engine and replacement parts purchased from an Authorized Kubota Industrial Engine Distributor or OEM Distributor in the United States will be free from defects in materials or workmanship during the following periods. (Refer to Service Policy for further details)

1. Industrial Engines for 2 years or 2,000 hours, whichever occurs first.
2. Industrial Engines Major Component Warranty (MCW), 3 years or 3000 hours, whichever occurs first, parts only.

MCW covers cylinder block, cylinder head, crankshaft, camshaft, gears, pistons, rods, flywheel, flywheel housing, oil pump, pulleys, governor, intake manifold, oil pan, ignition distributor.

MCW does not cover rings, bearings, water pump, any electrical component, valve train components, accessory parts, seals, gaskets, carburetors, exhaust manifold, hoses, all fuel system components, muffler, any filters, radiator, fan, belts, thermostat, spark plugs, fuel transfer pumps.

3. Replacement parts for 1 year.

WHAT WE WILL DO

We will, at our option, repair or replace any part covered by this warranty which becomes defective, malfunctions or otherwise fails to conform with this warranty under normal use and service during the term of the warranty at no charge for parts or labor. (Parts only for MCW)

WHAT YOU MUST DO TO OBTAIN WARRANTY SERVICE

In order to obtain warranty repairs, you must deliver the product, together with proof of purchase, to an Authorized Kubota Industrial Engine Distributor or Dealer at your expense. The names and addresses of such Authorized Kubota Industrial Engine Distributors can be found on the Internet at www.kubotaengine.com, by calling 1-800-532-8805, via email at EEVRI@kubotaengine.com or by contacting:

Kubota Engine America Corporation
505 Scheller Road
Lincolnshire, IL 60069

WHAT THE WARRANTY DOES NOT COVER

This warranty **does not** cover:

1. Damage, malfunctions or failures resulting from accidents, abuse, misuse, modifications, alteration, improper servicing, or lack of performance of required maintenance service.
2. Normal maintenance services or replacement of maintenance items such as light bulbs, preheater plugs, indicator and resistant coils, filter elements, lubricants, oils, spark plugs, coolant, or belts.
3. Installation of replacement parts, unless originally installed by an Authorized Kubota Industrial Engine Distributor or Dealer.
4. Non-genuine Kubota parts.
5. Any engines damaged by use of ether or any starting aid, or greater than a 50/50% solution of antifreeze and water.
6. Injection nozzle wear or any engine damage caused by injection nozzle wear or sticking.
7. Damage caused by water entering the engine due to any cause.
8. Used Products.
9. Any damage caused by overheating that is not a direct result of a defect in materials or workmanship.
10. Any Engine not application reviewed.

APPLICATION REVIEW PROCESS: The Kubota Engine America (KEA) application review process is intended to assist the OEM with engine installation to optimize functionality/performance within the OEM's equipment in order to maintain durability, customer satisfaction, and reduce warranty failures and expenses. Kubota cannot anticipate all potential failures and issues that may occur with the engine or product in the field during an application review. Therefore, machine durability testing by the OEM either in a test facility and/or in the field is critical to further reduce the potential for field failures.

The amount of time spent by KEA on an application review is significantly less than the amount of time spent by the OEM's design engineers on the application. Because of this, the KEA application review is intended to identify issues that are within the scope of the application review testing performed and in some cases recommend possible solutions. The KEA application review should never take the place of proper design and testing of the finished product by the OEM.

The KEA application review does not in any way express or imply any additional warranty coverage other than what is stated in Kubota's Limited Warranty Agreement. Kubota and its subsidiary companies are not responsible for (including, but not limited to): failures resulting from any components that are not manufactured by Kubota, misrepresented or incorrect information provided from an OEM, any changes made without KEA's knowledge, any decision by the OEM not to follow KEA's recommendations, or any application related problems or deficiencies that may arise that were not found by KEA's limited application review or the OEM's durability testing.

THIS IS THE ONLY EXPRESS WARRANTY ON OUR PRODUCTS

We neither assume nor authorize anyone to assume for us any other express warranty. The Kubota Distributor/ Dealer has no authority to make any representation or promise on behalf of Kubota Engine America Corporation or to modify the terms or limitations of this warranty in any way.

LIMITATIONS ON OUR RESPONSIBILITY WITH RESPECT TO PRODUCTS PURCHASED AND USED FOR PERSONAL, FAMILY OR HOUSEHOLD USE.

Our responsibility is to repair or replace defective parts as stated above. We will not be responsible for any other expenses, losses or inconvenience which you may sustain as a result of the purchase, use, malfunction or defective condition of our products. ANY IMPLIED WARRANTIES INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED IN DURATION TO THE PERIOD SET FORTH ABOVE AND IN NO EVENT WILL WE BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER. Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

LIMITATIONS ON OUR RESPONSIBILITY WITH RESPECT TO PRODUCTS USED FOR RENTAL OR FOR COMMERCIAL, INDUSTRIAL OR AGRICULTURAL PURPOSES.

This warranty is in lieu of all other warranties, express or implied, and of any other obligations or liability on our part. IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. Our responsibility for any and all losses and damages resulting from any cause whatsoever, including our negligence, alleged damage or defective goods, whether such defects are discoverable or latent, shall be limited to the repair or replacement of defective parts as stated above. IN NO EVENT WILL WE BE LIABLE FOR LOSS OF USE, LOSS OF PROFITS, LOSS OF OR DAMAGE TO OTHER PROPERTY, INCONVENIENCE, COMMERCIAL LOSS, OR OTHER SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER.



NOTE: The engine warranty is the same for the HPU-6.0 hp and the HPU-9.5 hp.

Revisions for this Manual

Revision	Notes	Effective Date
A	Initial release.	08/25/2017



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