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INTRODUCTION

You are now the proud owner of a PT-3000 Idle Reduction System. The PT-3000 is an auxiliary power unit designed to operate completely separate from your main truck systems. It provides 120 volts AC to power an electric air-conditioning and heating unit. The PT-3000 also provides AC power for use with other devices such as, television, microwave, engine block heater and other appliances.

FORWARD

This PT-3000 System is a product of Power Technology Southeast, Inc. PT-3000 systems are made with the finest materials and manufactured under the strictest quality control standards to assure you long satisfactory service.

To obtain the best results from your PT-3000 system, please read and follow this manual carefully. It will help you become familiar with the operation of the system and contains many helpful hints regarding use and maintenance.

This manual was written to assist with the installation of the PT-3000. Although the manual is not specific to any particular vehicle, the information in this manual will provide the installer with the necessary information to correctly and safely install the unit. The PT-3000 can be easily installed by a qualified mechanic. The installer must also have a basic understanding of electricity and electrical wiring.

Use this manual as a guide when installing the PT-3000 system, and then refer to the appropriate operation section for specific instructions. The installation of a PT-3000 system shall comply with current standards of NFPA 70, NFPA 551, and applicable articles of the National Electric Code. Generator set installations must also comply with state and local requirements.

Follow all instructions in this manual to ensure proper installation and operation. Each generator set features a dependable Kubota diesel engine, rotating-field alternating current generator, and an ECU engine controller. Located on the unit mounted Control Panel is an on/off switch to reset the controller or lockout the remote switch to prevent accidental starting while servicing the unit.
After the unit is attached to the frame of the vehicle, all that is usually required to make it operational are the following.

- Install the fuel pick-up tube assembly
- Route and install fuel lines
- Install and connect remote panel
- Attach Load Leads to vehicle’s AC electrical circuit
- Install and connect Battery Charger
- Check radiator coolant level
- Check crankcase lubricating oil level
- Connect DC battery cables.

Continuing improvements and advancements in product design may cause changes not included in this manual. Please contact Power Technology’s Customer Service Department for the latest information regarding your PT-3000 system.

TO OUR CUSTOMER

Thank you for your purchase of a PT-3000 System. The information contained in this manual applies only to PT-3000 Idle Reduction Systems. In the event you should experience a problem with your system please contact the sales dealer, authorized PT-3000 Service Center or Power Technology’s Customer Service Department directly at (352) 365-2777 from 8:00 a.m. to 5:00 p.m. EST Monday through Friday. Please have the system model and serial numbers available when you call, this will help expedite service and parts to you.

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REQUIREMENTS FOR INSTALLATION

PARTS LIST

1 - PT-3000 Unit
1 - Battery Charger
1 - Terminal block
1 - Terminal block cover
2 - Frame Mounting Angle Brackets (L&R)
8 - ½” x 2 Mounting Bolts, Nuts and Washers
6 - 5/8” x 2 ½” Mounting Bolts, Nuts and Washers
1 - Fuel pickup tube
1 - Cab mounted Start/Stop panel
1 - 1 ¼ rubber grommet
4 - #4 hose clamps
2 - Battery cable ends
2 - Heat shrinks (for battery cable ends)
10 - Sheet metal screws
20 - Wire ties

TOOLS REQUIRED

Typical mechanics tools
Drill
1 ¼” Hole saw
Tape measure
Utility knife
Tubing cutter
½” NPT Tap (for fuel pickup tube)
3/4” Drill bit or tapered drill bit (for ½” NPT tap)
Heavy grease (to keep metal shavings out of fuel tank)
Liquid thread sealant
Transmission jack, forklift or overhead hoist
SAFETY ALERTS AND PRECAUTIONS

A generator set can be potentially dangerous if not properly maintained and operated. The Best safeguard against a dangerous situation is education, good judgment and common sense. For safe trouble free operation of your generator set some general precautions are listed below. Be sure to read, understand and follow these precautions.

SAFETY PRECAUTIONS

1) **HOT PIPING** - An engine and exhaust system may get extremely hot while running. Do not work on a generator set until it has sufficiently cooled.

2) **DANGEROUS FUELS** - Use extreme caution when handling, storing and using fuels. All fuels are highly explosive in a vaporous state. Store fuel in a well ventilated area away from spark producing equipment. Keep fuels and all chemicals out of the reach of children. Never add fuel to the tank while the engine is running. Spilled fuel may ignite on contact with hot parts or from ignition spark. Always keep fuel lines and connections tight and in good condition. Don’t replace flexible lines with rigid lines. If you notice any fuel leakage, fuel accumulation or electrical sparks, DO NOT OPERATE THE GENERATOR SET.

3) **EXPLOSIVE BATTERY GASES** - The gases generated by a battery being charged are highly explosive. Do not smoke or permit any flames or sparks to occur near a battery at any time, especially when it is being charged. Avoid contact between terminals with tools to prevent sparks and possible burns. Always remove wristwatch, rings, or other jewelry before handling a battery. Any compartment containing batteries should be well ventilated to prevent the accumulation of explosive gases. To avoid sparks never disturb the battery charging connections while the battery is being charged. Always turn off the battery charger before disconnecting the terminal clips.

4) **ELECTROCUTION** - Failure to install a generator set with an electrical system consistent with governing regulations and standards is UNLAWFUL and may cause ELECTROCUTION. Your generator set must not be used to “Back Feed” by connecting it to a building or outdoor electrical circuit. Back feeding can cause serious injury or death to utility personnel working to repair a power outage and may also seriously injure persons in your vehicle. Unauthorized connections are unlawful in some states and/or localities. A transfer switch must be installed to prevent interconnection of the generator set power and outside power.

5) **MOVING PARTS** - Keep hands, feet, and clothing away from belts, fan and related pulleys when unit is running. Replace guards, covers and screens before operating the generator set. Serious personal injury may occur from contact with moving parts.
6) **HIGH VOLTAGE** - Remember the function of a generator set is to produce electricity. Wherever electricity is present there is a potential danger of electrocution. Apply the same precautions to the vehicles electrical appliances as you would for any home appliance. Keep away from electrical circuits and wiring while the generator set is running. Have electrical service performed only by qualified electricians. Be sure any unauthorized person; especially children are denied access to the generator set. Keep the compartment door closed or secured at all times. Be sure the generator set is properly grounded to chassis. Never touch generator electrical leads or appliances with wet hands, or when standing on wet ground.

7) **EXPLOSION** - Never connect the negative (-) battery cable to the positive (+) connection terminal of the starter solenoid, or test the battery by shorting the terminals together. This could ignite fuel vapors or cause the battery to explode. To disconnect the battery remove the negative battery cable first and reconnect it last. Do not modify the propulsion engine fuel system. Your vehicle must be equipped with a fuel pick-up arrangement as described in the Fuel System section of this manual. Fuel tank and installation must conform to applicable regulations.

8) **HOT COOLANT** - Allow engine to cool and release pressure from the cooling system before opening the radiator pressure cap. To release the pressure, cover the radiator cap with a thick cloth then turn it slowly counterclockwise to the first stop. After the pressure is released and the engine has cooled, remove the cap.

9) **LETHAL EXHAUST GAS** - When installing an exhaust system position the tailpipe end so that the discharged gases may not be drawn into the vehicle interior through windows, doors, air conditioners, etc. The engine powering your generator set discharges deadly carbon monoxide as part of the exhaust gas when running. It is essential that the exhaust system should be leak proof and routinely inspected.

10) **EXCESSIVE NOISE** - Never operate the generator set without an adequate muffler or with a faulty exhaust system. Exposure to excessive noise can lead to hearing impairment.

11) **ELECTRICAL SHOCK** - A battery can cause electrical burns and shocks. Use reasonable care when working near the battery to avoid electrical connections by contacting the battery terminals with tools. Remove wristwatch, rings, and all jewelry when working on the generator set.

12) **FLASH FIRE** - A sudden flash fire can cause serious burns. To avoid the possibility of a flash fire do not smoke or permit a flame or spark to occur near the fuel lines, fuel filter, fuel pump or other potential source of spilled fuel or vapors.

13) **FIRE HAZARD** - Be careful when parking your vehicle to prevent grass fires from being started by hot exhaust gases or exhaust system. Keep away from hot engine and generator parts to avoid burning yourself. Keep the generator set and compartment clean and free of debris, especially combustible materials. Never store fuel, oil or rags in the generator compartment.
14) **UNIT STARTS WITHOUT NOTICE** - To prevent accidental starting of the unit with remote start/stop switch, always turn the ON/OFF switch located on the set mounted Control Panel to the **OFF** position, then disconnect the battery by removing the negative (-) terminal first and then the positive (+). Always disconnect the unit in this manner before working on the generator or any equipment connected to it.

15) **LOOSE COMPONENTS** - Periodically check for and tighten any fasteners that may have become loose from vibration or road shock. Serious damage may possibly occur if components become dislodged or misaligned.

16) **DIESEL ENGINE DAMAGE** - To prevent engine damage from occurring, do not operate the unit before completing the installation which includes, checking engine oil level, connecting fuel lines, checking coolant level, and making sure all electrical connections are made.

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**CALIFORNIA Proposition 65 Warning**

Diesel Engine Exhaust and some of its constituents are known by the State of California to cause Cancer, Birth Defects and Other Reproductive harm.
INSTALLING THE PT-3000

PREPERATION OF PT-3000

Select the location for the PT-3000. Determine if you will need spacers to clear any bolts or anything that may interfere with installing the unit to the frame rail. If spacers are required, longer mounting bolts may be required for the install.

LOCATE THE PT-3000 ON THE FRAME RAIL

When choosing a location for the PT-3000, several things need to be considered. Vehicles with a longer wheel base should have the PT-3000 mounted to avoid obstructions in the road such as railroad tracks, speed bumps, curbs, etc. Each truck is different and may require a different installation process. Before beginning the installation, lay out the placement of all the components that will be installed.

The PT-3000 is designed to be mounted on the existing frame rails of the truck. Mounting the unit on the frame rail with supplied frame angle brackets and hardware is the only acceptable installation. Fabrication of another mounting rail may be unsafe with the given weight and balance of the unit.

**Standard PT-3000 Location:** Vehicle passenger side.

This is the standard installation choice. Replaces steps into vehicle cab or further back by the cat walk. Some trucks have steps to the catwalk on the drivers’ side frame rail, however the passenger side will usually have fewer obstructions.

**Alternate PT-3000 Location:** Vehicle Driver Side.

This is a secondary installation location. It may be necessary to remove existing steps to the catwalk.

**Radiator must have free air flow with no obstructions**

**Radiator must be protected from grease sling**

Cooling air for the PT-3000 engine and generator is drawn into the enclosure through an air duct and discharges through the rear panel. These areas must remain free of any obstructions that would restrict normal air flow.

ASSEMBLE THE MOUNTING BRACKETS

The PT-3000 comes with all the hardware required for the complete installation of the unit. The loose parts contain all the necessary bolts, nuts and washers for assembling the frame rail mounting angle brackets.
MOUNTING THE PT-3000 TO THE FRAME

Be sure to use a forklift, transmission jack, overhead lift or other device to lift the PT-3000. Make sure the unit is stable before trying to place it on the frame rail. Determine the height the unit needs to be installed and secure the mounting brackets to the enclosure. Place the unit in the desired location and mark the mounting holes on the frame side rail. Drill the frame rail to accept the 5/8” bolts and securely fasten.

EXHAUST PIPE

Maintain a minimum 3” clearance between any exhaust components and any surrounding combustible materials. If the minimum clearance cannot be met an insulating shield designed for exhaust components must be used. Extend the exhaust outlet a minimum of 1” past the perimeter of the vehicle. The exhaust system CANNOT be terminated under the vehicle chassis. Exhaust outlet must be in a position, which prevents exhaust gases from entering the living quarters. The exhaust system should be routed in a manner, which eliminates the possibility of re-circulation into the PT-3000 enclosure. A skid plate may be installed to protect the PT-3000 and exhaust system from road hazards. Joining the PT-3000 exhaust together with the trucks main exhaust may cause irreparable harm. Please consult with Power Tech prior to making any such connections.

EXHAUST GASES AND FIRE PREVENTION

- Engine exhaust fumes can be very harmful if allowed to accumulate. Be sure to run the engine in a well-ventilated area where there are no people or livestock near by.
- The exhaust gas from the muffler is very hot. To prevent a fire, do not expose dry grass, oil or any other combustible materials to exhaust gas. Keep the engine and mufflers clean all the time.
- To avoid a fire, be alert for leaks of flammables from hoses and lines. Be sure to check for leaks from hoses and pipes, such as fuel and hydraulic by following the maintenance check list.
- To avoid a fire, do not short across power cables and wires. Check to see that all power cables and wires are in good condition. Keep all power connections clean. Bare wire or frayed insulation can cause a dangerous electrical shock and personal injury.
GENERAL CONSIDERATIONS

Diesel fuel vapors can be very explosive. Use caution when working in or around the area of the fuel tank.

Before drilling into a fuel tank it is recommended to drain all fuel from the tank.

Be very careful when drilling into a fuel tank. Sparks can be caused by an electric drill or a drill bit that may cause an explosion. (SUGGESTION) Apply heavy grease around the holes when drilling and tapping into fuel tank to keep metal shavings from falling into fuel tank.

DO NOT SMOKE WHILE WORKING NEAR FUEL TANK.

VERY IMPORTANT!! Check fuel tank for baffles and gauge arms before drilling into fuel tank. A fuel pick-up could interfere with the floats and render your fuel gauge inoperable.
The diesel fuel system for the PT-3000 must be designed to operate independently from the vehicle's main engine. In most installations, both engines operate from a common fuel tank with separate pick-up tubes for each engine, not a Tee fitting arrangement. This prevents either or both engines from being starved for fuel. The APU's fuel pick-up tube should be shorter than the vehicle's; therefore, fuel may not be available to the APU when fuel supply is low. This will prevent the APU from depleting the fuel supply needed by the main drive engine.

**NOTE:** Using a simple Tee fitting to supply both engines from a common fuel line is not recommended. This practice may possibly cause a fuel starvation situation to either or both engines. Also, if excessive pressure were to build up in the main supply line, it could possibly cause a failure of the APU's fuel lines or connectors and a hazardous fuel leak may occur.

Care must be taken when routing the fuel lines from the main tank to the APU. Keep the fuel line as short as possible while maintaining adequate clearance from the exhaust system and moving components. Fuel lines must be run along the frame side rails or under carriage. Never run fuel lines inside the cab. Securely fasten the fuel lines with the hardware that is recommended for the type of fuel line that is used. Allow a minimum of 8 inches of flexible fuel line to make the connection.

**Fuel Pick-up Tube Assembly**

Fuel Pick-up should be at least 3” shorter than the depth of the fuel tank. Measure the fuel tank and cut pick-up tubes to desired length. Carefully bend the 3/16” return tube 3” to 4” away from the supply tube. Pull both tubes together and insert into tank. Return tube will spring back to the bent position. Tighten fitting and attach fuel hoses.
**INSTALL TANK PICK-UP**

After checking for baffles and fuel gauge linkage, pick a spot on fuel tank for the fuel pick-up tubes (usually top center of tank on end closest to the APU). Apply heavy grease to spot where hole is to be drilled. The grease will help keep metal shavings out of fuel tank. Drill a ¼” pilot hole. You may want to use several different drill bit sizes to get up to the ¾” bit required for the fuel pick-up tube. Once you have a ¾” hole, clean all metal shavings from the hole. Reapply heavy grease and using the ½” NPT tap the threads for the fuel pick-up tube. Clean area very thoroughly.

Determine the length needed for the pick-up tube. The recommended length for the pick-up tube is 3” shorter than the depth of the fuel tank. Cut pick-up tube to length needed. Apply thread sealant to the threads of the pick-up tube and screw into fuel tank. Be sure that pick-up tube connections are suitably positioned to allow connecting the fuel hoses and clamps.

**ROUTING AND CONNECTING THE FUEL LINES**

Care must be taken when routing the fuel lines. You must route lines so they can be strapped securely and in a way that they will not come into contact with anything hot, or any moving components. Suggested routing of fuel lines is as follows: Lines coming out of the APU, run up into the inside of frame rails. Strap lines either to the backside of the unit, or at first bend in the frame rail. Run along the inside of the frame rail until you reach the fuel tank and the fuel pick-up tubes. Be sure that you have no kinks in the line and that the line is run away from anything abrasive. Strap fuel lines securely with tie straps or clamps.

Once fuel line is secure, cut the fuel lines to desired length with a hose cutter or utility knife. Trim the hose loom back approximately 1 ½”. There are 2 different size hoses. The 5/16 hose is for fuel supply and the 3/16 hose is for fuel return. Place 2 - #4 hose clamps (provided) on the end of the 5/16-fuel line and slip onto the larger of the two tubes on the fuel pick-up tube. Tighten both clamps on the 5/16-fuel line. Once the supply line is secure, do the same with the 3/16 return line. Make sure all 4 clamps are secure.
INSTALLING THE BATTERY CABLES

IMPORTANT! DO NOT CONNECT BATTERY POSITIVE CABLE UNTIL THE PT-3000 UNIT IS READY TO BE TEST RUN.

Turn the main power switch on the PT-3000 to the OFF position to ensure the unit will not start prematurely.

Route the positive and negative battery cables from the PT-3000 to the batteries. Cut battery cables to desired length. Strip the insulation on both cables back about ½”. Slide heat shrink over the end of the cables. Place copper connector onto the end of the positive cable and crimp with a crimping tool. Slide heat shrink up over the crimped spot on the connector and apply heat to heat shrink. Use the same procedure on the negative battery cable.

Be sure the areas where the battery cables are to be connected are clean and free of debris that may cause a bad connection. DO NOT connect the positive battery cable until the installation is complete.

ROUTING AC POWER WIRES AND REMOTE CONTROL WIRES

The remote start wires should be routed with the AC output wires. Make sure the remote wires are secured inside the frame rail. Run the remote start wires through the same grommet used for the AC power cable. Secure harness using wire ties. Route the harness to the location where the control panel will be mounted.

INSTALLING THE AC POWER OUTPUT WIRES

The AC power output wires (SO cord / cable) should be routed in a way that they will not come into contact with anything abrasive. Suggested routing of the power cable is, run the loose end of the cable up to the frame rail. Clamp or tie the cable. Run the cable inside the frame rail making sure they are secured. Once under the cab, route cable to the underside of the bunk area.

Inside the sleeper, lift bunk, determine where the heating and air conditioner unit will be installed (see section on installing heating and air conditioner) locate an area to mount the terminal block. The terminal block will be the central power connection from the PT-3000. Once desired location is determined, use a 1 ¼” hole saw to make a hole for the AC output leads to come into the sleeper area. After hole is drilled, place 1 ¼” grommet in the hole to assure that chaffing doesn’t occur. Run AC output leads through this grommet. Secure the terminal block to the floor using the screws provided.

NOTE: To prevent cracking the terminal block, mount to a hard flat surface.
**AC POWER TERMINAL BLOCK DIAGRAM**

- **Black Wire** - 25 Amp AC Circuit
- **White Wire** - AC Neutral
- **Green Wire** - Ground
Connect Wires to Switch as Shown

**White/Red Wire** – sends start/stop signal to the APU

**Red Wire** - 12v DC constant

**Orange Wire** - LED Indicator

**Gray Wire** - 12v DC Power to hour meter, operating time.

**Green Wire** - Ground
MOUNTING THE CONTROL BOX

Once all connections are made to the start/stop switch and the hour meter, fasten the control box to the desired location with the screws provided.

INSTALLING THE POWER OUTLET BOX

SELECT LOCATION

Determine the location for the AC power outlet box. It should be mounted where the driver has easy access to the outlets. Consideration should be taken as to the devices the driver will need AC power for such as, Television, microwave, refrigerator etc. Suggestion, mount the outlet box where most of the appliances a driver may use will be within reach of the outlets without the use of extension chords.

MOUNTING THE POWER OUTLET BOX

Secure the power outlet box to desired location with the screws provided.

ROUTING WIRES

Once location has been chosen for the power outlet box, route the wires back to the terminal block making sure the wires are secured with wire ties or clamps. These wires should be ran in a way that they will not interfere with anything under the bunk and clear of anything abrasive.

CONNECTIONS

Once wires are secured connections for the AC power can be made. Cut the outlet box cord to the desired length. Carefully remove approximately 2” to 2 ½” of the outer jacket from the cord. Separate the 3 wires and crimp the appropriate terminal connector to each wire. Connect the black positive (+) wire to the black wire on the terminal block. Connect the white wire to the white wire on the terminal block and the green wire to the ground (green) wire on the terminal block.
INSTALLING THE AIR CONDITIONING AND HEATING SYSTEM
(Optional)

The PT-3000 system uses a heating and air conditioning unit manufactured by the Dometic Corporation. A complete installation manual is with the heating and air conditioning system. Use this manual to successfully install the heating and air conditioner unit.

When making electrical connections for the heating and air conditioning system, be sure to use the RED wire on the terminal block to power the system. The white and green wires will be connected to the terminals along with the power outlet box white and green wires. It is **VERY IMPORTANT** these connections be made this way to prevent overload to a single circuit. Make certain all connections are tight and secure.

Once all connections are made, install the terminal block cover using the screws provided.

---

**BATTERY CHARGER INSTALLATION**

The PT-3000 system includes a separate battery charger which will be installed in the cab of the vehicle. Choose a convenient location with adequate spacing (3” min.) and ventilation for the fan. **Follow the manufacturers’ installation manual included with the battery charger.** Two leads (Red & Black) are supplied with the loose parts and will be used to connect the battery charger to the vehicle batteries. Carefully route all wiring and secure with appropriate hardware.
FINISHING THE INSTALLATION

CHECK LIST

- Unit is securely mounted to vehicle
- All fasteners are torque to specification
- Fuel lines are properly secured
- Battery cables are properly secured
- Power cable is properly secured
- Cables and fuel lines are away from moving components
- Cables and fuel lines are away from exhaust
- Fuel lines are double clamped and all clamps are tight
- All AC power connections are complete and tight
- Driver control panel installation is complete
- Power outlet box installation is complete
- Battery Charger installation is complete
- Heating and Air conditioner installation is complete (optional)

FIRST TIME START UP

Before starting the PT-3000:
- Check oil level in the Engine
- Check coolant level
- Make sure all electrical connections are complete
- Make sure fuel lines are connected and contain no kinks
- Make sure driver control panel Start/Stop switch is in OFF position
- Make sure the main power switch in the control panel on the APU is in OFF position
- Connect the positive battery cable from the APU to the truck battery
- Purge all air from fuel system (See Below)
- Check that Air Conditioner / Heater and all AC loads are Turned OFF.

IMPORTANT: Purging Air from Fuel System

Before starting the PT-3000 for the first time it is important to purge the fuel system of all air trapped in the fuel lines. To do this disconnect the Positive + terminal of the electric fuel pump from the wiring harness and jumper it to a +12V DC source (Positive + Battery post on starter). The pump will begin pumping fuel and force any trapped air out through the return line. Continue pumping fuel through the system for 1 minute. Disconnect the jumper wire and reconnect the Positive + terminal of the fuel pump to the wiring harness. The PT-3000 is now ready to start.

Turn the main power switch located on the control panel inside the APU to the ON position. Inside the truck, turn the driver’s control switch to the ON position. The APU will begin the pre-heat and engine cranking cycle.

WARNING: Be careful of moving parts!!!
Once the engine has started, check the APU for coolant, fuel, oil and exhaust leaks. Place the APU cover on the unit.

With a multi-meter, check the voltage at the AC power outlet box in the sleeper of the truck. Voltage should read between 120 to 125 volts AC.

Allow APU to run for approximately 10 minutes and check again for coolant, oil, fuel and exhaust leaks. After checking the APU over thoroughly, test the heating and air conditioning unit for proper operation. Allow the APU to run for 30 minutes with the heating and air conditioning unit in operation. This will put a load on the APU and allow the unit to build up more heat. At the end of the 30-minute time period, turn the heating and air conditioning unit off and push the driver control panel switch to the OFF Position. Remove the front cover and check for coolant leaks. If no leaks are visible, replace front cover.

Congratulations, The installation is complete.
OPERATION OF THE PT-3000

Engine Break-in Period
During the engine break-in period, first 50 hours of operation observe the following recommendations:

1. Change the engine oil and oil filter cartridge after the first 50 hours of operation. (See “ENGINE OIL” in ENGINE MAINTENANCE SERVICE SCHEDULE)
2. In ambient temperature above 32°F (0°C) approximately 3-5 minutes without a load is sufficient for engine warm up. Allow additional warm up time when temperatures are below 32°F (0°C) before placing an operating load on the Engine.

Daily Checks and Maintenance Schedule

Daily Check
To prevent future engine problems from occurring, it is important to know and keep track of the engines condition. Below are items to be inspected and checked on a daily basis.

CAUTION: To avoid personal injury:
- Be sure all safety shields and guards are attached to the engine when operating.
- To prevent a fire hazard, keep foreign materials, fuel and oil away from the battery, wiring, muffler and engine. Check and clear them daily. Be aware of the muffler and exhaust gas heat underneath the engine compartment, this heat may ignite grass or other flammable materials.
- Follow all safety precautions as outlined in the “SAFE OPERATION” section.

1. For accurate readings the engine should be on level ground when checking engine fluids.

2. Check fluids before starting the engine (cold engine)
   - Lubrication System: Check oil level
     Check for engine oil leaks.
   - Cooling System: Check coolant level and condition
     Check for coolant leaks
     Check for proper installation of the radiator cap
   - Fuel System: Check for sufficient quantity of fuel
     Check for fuel leaks

3. Check engine after starting. (Warm engine)
   - Proper operation: Check for easy engine start
     Check for fluid leaks
     Check for abnormal engine noises
     Check for abnormal exhaust gases/smoke
Starting and Stopping the PT-3000

CHECK BEFORE OPERATING THE ENGINE

- If the engine is malfunctioning DO NOT operate until repairs are made.
- Be sure cover, guards and shields are in place before operating the engine. Replace any that are damaged or missing.
- Check to see that the area around the engine is clear of foreign objects before starting.
- DO NOT allow children or animals to approach the APU while in operation.
- DO NOT start the engine by shorting across starter terminals.

**Engine starting controls**

1) PT-3000 Main switch (located on the internal control panel on the APU) must be in ON position.
   **NOTE:** This switch should be in the ON position except when performing maintenance or to prevent starting for any reason.
2) Toggle the driver control panel switch to the ON position.
3) Glow plugs will preheat for 8 seconds. LED light flashes slowly.
4) Preheating will cease during engine cranking cycle. LED light continues flashing.
5) Engine begins an 8 second crank cycle, After 4 seconds of cranking the PT ECU-64 will check for an AC signal from the generator. If an AC signal is verified the engine will start and the LED will remain ON during the normal run operation. If the AC signal is not verified the PT ECU-64 will terminate the cranking cycle and LED light will flash a fault code.
6) Starter disengages immediately after engine run is verified.
7) PT ECU-64 deactivates the low Oil Pressure and high Water Temperature switches for 6 seconds; this will assure oil pressure build up time. If oil pressure does not build up the engine will immediately shut down and go into a fault mode. Likewise for a high temperature situation.
8) If engine will not start on the first attempt the PT ECU-64 will initiate the start cycle 2 more times before going into fault mode. Glow plugs will preheat for 8 seconds per attempt. Engine will crank for 8 seconds per attempt.
9) To shut down the engine under normal operations, push the driver control box switch to the STOP position.
10) If a fault occurs during the normal operation of the PT-3000 the LED on the driver control box will repeat a flashing code. This code will help troubleshoot the problem. Count the flashes to determine the problem and refer to the service manual for corrective procedures. The fault codes are as follows

   LED Flashes 1 Time: Failure to Start
   LED Flashes 2 Times: High Water Temperature
   LED Flashes 3 Times: Low oil Pressure
   LED Flashes 4 Times: No AC signal
3) If a fault occurs during the operation of the PT-3000, correct the problem and then reset the PT ECU-64. To do this the main power switch for the APU (located on the internal control panel on the APU) must be turned OFF then back ON. This will clear the fault code.

**IMPORTANT**: Make sure driver control panel switch is in the OFF position before attempting to clear fault codes. If driver control panel switch is in ON position when resetting the ECU, the unit will start and possibly cause injury.

**Stopping the Engine**

It is recommended to disconnect or reduce the power load by turning off appliances before shutting down the engine. Push the drivers control switch to the STOP position, the engine will stop.

**Powering Appliances and Auxiliary Systems**

Once the PT-3000 is running, you will have AC power through the power outlet box. Plug devices such as television, DVD player, cell phone charger etc. directly into outlet.

For heating and air conditioning system please refer to the user’s guide supplied with the heating and air conditioning system.

**IMPORTANT**: Damage to starter motor, starter solenoid, run solenoid or any generator component due to excessive or prolonged starting attempts, or attributed to an external low battery control monitoring or auto start system not approved by Power Technology SE Inc. will not be covered by the Power Technology SE inc. limited warranty.
APPLIANCE LOADS

PT-3000 may be used to supply AC voltage for appliances. With the exception of a resistance-type load such as a heating element, requirements for appliances are usually low. However, such loads must not be overlooked when calculating the total wattage requirements. To avoid an overload situation, reserve capacity should also be calculated for unanticipated appliance loads. The average power requirements for some common electrical appliances are listed below as a guide.

### DETERMINING ALTERNATOR LOAD REQUIREMENTS

<table>
<thead>
<tr>
<th>CHECK</th>
<th>APPLIANCE</th>
<th>WATTS REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>VCR</td>
<td>70</td>
</tr>
<tr>
<td>✓</td>
<td>LIGHT BULB</td>
<td>100</td>
</tr>
<tr>
<td>✓</td>
<td>RADIO</td>
<td>100</td>
</tr>
<tr>
<td>✓</td>
<td>TELEVISION</td>
<td>100</td>
</tr>
<tr>
<td>✓</td>
<td>STEREO</td>
<td>100</td>
</tr>
<tr>
<td>✓</td>
<td>FRY PAN</td>
<td>150</td>
</tr>
<tr>
<td>✓</td>
<td>HOME COMPUTER</td>
<td>150</td>
</tr>
<tr>
<td>✓</td>
<td>REFRIGERATOR</td>
<td>500</td>
</tr>
<tr>
<td>✓</td>
<td>TOASTER</td>
<td>1000</td>
</tr>
<tr>
<td>✓</td>
<td>COFFEE MAKER</td>
<td>1200</td>
</tr>
<tr>
<td>✓</td>
<td>HAIR DRYER</td>
<td>1200</td>
</tr>
<tr>
<td>✓</td>
<td>MICROWAVE OVEN</td>
<td>1500</td>
</tr>
<tr>
<td>✓</td>
<td>10,000 BTU A/C UNIT – COOLING</td>
<td>1500</td>
</tr>
<tr>
<td>✓</td>
<td>10,000 BTU A/C UNIT – HEATING</td>
<td>2300</td>
</tr>
<tr>
<td>✓</td>
<td>14,000 BTU A/C UNIT – COOLING</td>
<td>1900</td>
</tr>
<tr>
<td>✓</td>
<td>14,000 BTU A/C UNIT – HEATING</td>
<td>2900</td>
</tr>
</tbody>
</table>

**WATTS CHECKED**

**TOTAL**

**NOTE**: 120 Volts x Amps = Watts

### EXTENSION CORDS

An extension cord is normally used to provide electrical power from the APU to a remote location. The extension cord size (AWG#) and length must be adequate to safely maintain the amperage requirements. A proper size extension cord will help minimize the voltage drop between the APU and remote location.

<table>
<thead>
<tr>
<th>AMPS</th>
<th>LOAD IN WATTS</th>
<th>CORD LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>120 VOLTS</td>
<td>AWG#10</td>
</tr>
<tr>
<td>5</td>
<td>600</td>
<td>500 FT</td>
</tr>
<tr>
<td>10</td>
<td>1200</td>
<td>250 FT</td>
</tr>
<tr>
<td>20</td>
<td>2400</td>
<td>125 FT</td>
</tr>
<tr>
<td>30</td>
<td>3600</td>
<td>60 FT</td>
</tr>
</tbody>
</table>
ENGINE SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Kubota E-300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Output</td>
<td>5.0 HP @ 2200 rpm</td>
</tr>
<tr>
<td>Cubic Capacity</td>
<td>18.86 in³ (309cc)</td>
</tr>
<tr>
<td>Bore and Stroke</td>
<td>2.95” x 2.76” (75 x 70mm)</td>
</tr>
<tr>
<td>Number of Cylinders</td>
<td>1</td>
</tr>
<tr>
<td>Compression Ratio</td>
<td>23:1</td>
</tr>
<tr>
<td>Engine Oil Capacity</td>
<td>1.4 US Qts. (1.3L)</td>
</tr>
<tr>
<td>Coolant Capacity</td>
<td>4 US Qts.</td>
</tr>
<tr>
<td>Fuel and Type</td>
<td>Diesel No. 2-D 4 Cycle</td>
</tr>
<tr>
<td>DC Battery Charging</td>
<td>In Cab</td>
</tr>
</tbody>
</table>

SERVICE PARTS

Power Technology Part #

- Air Filter Complete: 04AC3KW
- Air Filter Element: 04FA3KW
- Fuel Filter: 08FFER12T
- Oil Filter Screen and “O” Ring: 04FS3KW
- Drive Belt: 03BELT3KW
- Battery Charger: 05BATCHARGE45

EXHAUST SYSTEM REQUIREMENTS

The exhaust system components must be approved and properly installed to meet the codes and regulations required by Federal and State agencies. Exhaust Mufflers and Spark Arrestors supplied by Power Technology meet code and standard requirements set forth by the USDA Forest Service.

Laws pertaining to application and maintenance of a Spark Arrestor may vary depending on your location and State regulations. Federal laws apply on Federal lands. If a generator is used in a forest, on brush or grass covered unimproved land it must be equipped with a Spark Arrestor. It is the responsibility of the vehicle owner or operator to install and maintain the entire exhaust system in good working condition.

CAUTION: Any person (s) who installs an unapproved Muffler, Spark Arrestor or other exhaust system component, and/or modifies an exhaust system or component that may result in a hazardous condition is liable for damages, injuries or warranty expense caused by such unapproved installation and/or modification.
## ENGINE MAINTENANCE SERVICE SCHEDULE

<table>
<thead>
<tr>
<th>Maintenance Service Item</th>
<th>*See Note</th>
<th>Daily</th>
<th>Min. Every 25 Hours</th>
<th>Every 100 Hours</th>
<th>Every 250 Hours</th>
<th>Every 500 Hours</th>
<th>Every 1000 Hours</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine Oil Level Deterioration &amp; Leakage</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine Oil Change</td>
<td>*</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>Or Once a Year</td>
</tr>
<tr>
<td></td>
<td>**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coolant Level</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coolant Leakage</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coolant Change</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Or Once a Year</td>
</tr>
<tr>
<td>Fuel Filter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Leakage</td>
<td>****</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Filter Replacement</td>
<td>***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Or Once a Year</td>
</tr>
<tr>
<td>Replace Fuel Hoses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>Or Every Two Years</td>
</tr>
<tr>
<td>Check Radiator Hoses &amp; Clamps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>Once a Year</td>
</tr>
<tr>
<td>Abnormal Engine Noise</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abnormal Generator Noise</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muffler Condition</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaust Gas Condition</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- * Engine oil must be changed after the first 50 hours of operation. Then every 100 hours or once a year whichever comes first.
- ** Oil Filter Screen should be removed and cleaned with every oil change.
- *** Air filter replacement interval will vary depending on operating conditions. Adverse conditions may require frequent service.
- **** Routinely check fuel hose clamps for tightness. Do not over tighten clamp. Replace hose if necessary.

### ACCESS FOR ROUTINE MAINTENANCE

A removable service door is provided for easy access to components which require routine maintenance. An oil drain hole in the base pan is provided for convenient oil draining at scheduled intervals. The oil level gauge (dip stick) and oil fill port are located just above the oil drain plug on the side of the engine block. The air filter element is replaced by twisting the end of the air filter housing CCW and pulling out. Other components such as Fuel Filter and Run Solenoid are easily accessed through the service door. Electrical controls are conveniently located on the generator end cover.

**NOTE:** Under normal operation items such as Belts, Hoses and Filters are not covered by Power Technology Southeast, Inc. Limited Warranty.
ENGINE OIL MAINTENANCE

CHECKING ENGINE OIL LEVEL

1. Maintain the engine oil level between “ADD” mark and “FULL” mark on Oil Level Gauge. Do not fill crankcase above “FULL” mark.

2. Remove the Oil Filler Cap to add oil, if necessary. Clean the Oil Filler Cap and replace.

3. The Kubota E-300 is equipped with an Oil Filter Screen which is attached to the Oil Drain Plug. Remove the Drain Plug and slide the Filter Screen completely out. Clean the Filter Screen with a suitable solvent and air dry. Lubricate the “O-Ring” and replace unit, tighten securely.

NOTE: Inspect “O-Ring” for damaged, replace if necessary.

KUBOTA E-300 ENGINE REFILL CAPACITIES

Crankcase Oil Sump 1.4 US Qts. (1.3L)

LUBRICATING OIL VISCOSITY RECOMMENDATIONS

The minimum ambient temperature during cold engine start-up and the maximum ambient temperature during engine operation determine the proper SAE viscosity grade of oil.

Refer to the Engine Oil Viscosity Table below (Minimum Temperature) in order to determine the required oil viscosity for starting an engine in cold conditions.

Refer to the Engine Oil Viscosity Table below (Maximum Temperature) in order to select the oil viscosity for engine operation at the highest ambient temperature that is anticipated.

LUBRICATING OIL SPECIFICATION

Use only good quality lubricating oil, which meets the following Specification

API Class CF Engine Oil

<table>
<thead>
<tr>
<th>Ambient Temperature</th>
<th>Oil Viscosity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above 25°C (77°F)</td>
<td>SAE 30 or SAE 10W-30</td>
</tr>
<tr>
<td>0 to 25°C (32° to 77°F)</td>
<td>SAE 20 or SAE 10W-30</td>
</tr>
<tr>
<td>Below 0°C (32°F)</td>
<td>SAE 10 or SAE 10W-30</td>
</tr>
</tbody>
</table>
ENGINE COOLANT MAINTENANCE

COOLANT RECOMMENDATIONS

For optimum performance, Power Technology recommends a 1:1 mixture of water / glycol.

NOTE: Use a mixture that will provide protection against the lowest ambient temperature.

NOTE: 100 percent pure glycol will freeze at a temperature of –23°C (-9°F).

Most conventional heavy-duty coolant / antifreezes use Ethylene Glycol. Propylene Glycol may also be used in a 1:1 mixture with water. Ethylene and Propylene Glycol provide similar protection against freezing and boiling. See the tables below.

<table>
<thead>
<tr>
<th>ETHYLENE GLYCOL</th>
<th>Freeze</th>
<th>Boil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration</td>
<td>Protection</td>
<td>Protection</td>
</tr>
<tr>
<td>50 Percent</td>
<td>-36°C (-33°F)</td>
<td>106°C (223°F)</td>
</tr>
<tr>
<td>60 Percent</td>
<td>-51°C (-60°F)</td>
<td>111°C (232°F)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PROPYLENE GLYCOL</th>
<th>Freeze</th>
<th>Boil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration</td>
<td>Protection</td>
<td>Protection</td>
</tr>
<tr>
<td>50 Percent</td>
<td>-29°C (-20°F)</td>
<td>106°C (223°F)</td>
</tr>
</tbody>
</table>

NOTE: Do not use Propylene Glycol in concentrations that exceed 50 percent glycol because of Propylene Glycol’s reduced heat transfer capability. Use Ethylene Glycol in conditions that require additional protection against boiling or freezing.

COOLANT SERVICE LIFE

<table>
<thead>
<tr>
<th>Coolant Type</th>
<th>Service Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Heavy-Duty</td>
<td>3000 Service Hours</td>
</tr>
<tr>
<td>Coolant/Antifreeze that</td>
<td>or Two Years</td>
</tr>
<tr>
<td>Meets “ASTM D5345”</td>
<td></td>
</tr>
</tbody>
</table>

| Commercial Heavy-Duty            | 3000 Service Hours |
| Coolant/Antifreeze that          | or One Year        |
| Meets “ASTM D4985”               |                    |

NOTE: Do not use a commercial coolant/antifreeze that only meets the ASTM D3306 or D4656 specification. This type of coolant/antifreeze is made for light duty automotive applications.

CHECKING RESERVOIR TANK COOLANT LEVEL

(At a Minimum of 25 Hours of Operation)

Ensure that the coolant level of the radiator reservoir tank is between the upper limit (FULL) and the lower limit (LOW).

CLEANING RADIATOR CORE

Visually inspect the core for any obstructions such as dirt or debris. Use running water to clean particles from between fins.

IMPORTANT: Never use hard objects to clean radiator core, damage to core could result.
### OPERATING HOURS and SERVICE LOG

THIS SERVICE LOG IS PROVIDED TO HELP YOU KEEP AN ACCUMULATIVE RECORD OF OPERATION HOURS ON YOUR GENERATOR SET AND THE DATES REQUIRED SERVICES WERE PERFORMED. ENTER TIME TO THE NEAREST HOUR.

<table>
<thead>
<tr>
<th>OPERATING HOURS</th>
<th>SERVICE RECORD</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE</td>
<td>DATE</td>
</tr>
<tr>
<td>HRS. RUN</td>
<td>SERVICES</td>
</tr>
<tr>
<td>CUMLATIVE</td>
<td></td>
</tr>
</tbody>
</table>

27
SERVICE PROCEDURES

FUEL FILTER / WATER SEPARATOR

The following procedure outlines the steps required for servicing the Racor Fuel Filter / Water Separator installed on PT-3000 generators. Suggested fuel filter element change at 500 hour intervals is standard for Racor filters. Operating in adverse conditions or poor quality fuel may require frequent filter replacements. Follow all safety guidelines when handling fuel and properly discard contaminated fuel and used element. Avoid injury, shutdown APU and turn OFF Main Switch located on the APU Control Panel. Allow hot surfaces sufficient time to cool before handling.

1. Open drain valve at the bottom of the See-thru Bowl and drain fuel into a suitable container for disposal. Open vent plug on filter head to facilitate draining if necessary.
2. Spin off filter element from filter mounting head, separate See-thru Bowl from element and discard used element.
3. Clean out See-thru Bowl and close drain valve. Lubricate O-Ring and spin onto new filter element, tighten firmly by hand.
5. Turn ON Main Switch located on the APU Control Panel and press the Start Button located on the Drivers Control Panel.
6. With engine running visually check for fuel leaks. Correct if necessary with engine shutdown and Main Switch in the OFF position.

NOTE: If it is not convenient to fill the filter bowl with fuel, it is recommended to purge the air from the filter by following the procedure outlined in the section on “First Time Start-up”.

AIR FILTER ELEMENT

Suggested air filter element change at 500 hours is standard, however operating in adverse conditions may require frequent filter replacements.

1. Un-screw end cap of air filter housing.
2. Remove used air filter element and discard.
3. Wipe clean the inside of the housing and cap.
4. Install new filter element and replace housing cap.

GENERATOR DRIVE BELT

INFORMATION

PT-3000 utilizes an exclusively engineered drive system between the engine and the generator end. A combination of custom designed components produces a smooth and reliable drive connection. The Poly V-Belt is specifically manufactured to Power Technology’s engineering standards and is backed up with a Life Time Warranty. (See Warranty Page for Details)

Should the Drive Belt ever require service or replacement contact your nearest Dealer or Power Technology’s Service Dept. at (352)365-2777.
PT-3000 – PT-ECU-64
WIRING SCHEMATIC
RESISTANCE CHART

<table>
<thead>
<tr>
<th>KW</th>
<th>COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Blue/Brown – Black/White</td>
</tr>
<tr>
<td>4.322</td>
<td>N/A</td>
</tr>
</tbody>
</table>

NOTE: THESE READINGS WILL VARY DEPENDING ON AMBIENT TEMPERATURE

AC ELECTRICAL CIRCUIT FOR 3 KW “S” GENERATORS
120 VOLTS LINE TO NEUTRAL
1) Generator Main Switch must be in the ON position.
2) Toggle the Start/Stop Switch to the START position.
3) Glow Plugs will preheat for 8 seconds. LED flashes slowly.
4) Preheating will cease during engine cranking cycle. LED continues flashing.
5) Engine begins an 8 seconds crank cycle. After 4 seconds of cranking the PT-ECU-64 will check for an AC signal from the generator. If an AC signal is verified the engine will start and the LED will remain ON during the normal run operation. If the AC signal is not verified the PT-ECU-64 will terminate the cranking cycle and LED will flash a fault code.
6) Starter disengages immediately after engine run is verified.
7) PT-ECU-64 deactivates the Low Oil Pressure and High Water Temperature Switches for 6 seconds, this will assure oil pressure build-up time. If oil pressure does not build-up the engine will immediately shut down and go into a fault mode. Likewise for a high temperature situation.
8) If engine will not start on the first attempt the PT-ECU-64 will initiate the start cycle 2 more times before going into a fault mode. Glow Plugs will preheat for 8 seconds per attempt. Engine will crank for 8 seconds per attempt.
9) To shut down the engine under normal operations, press the Start/Stop Switch to the STOP position.
10) If a fault occurs turn Generator Main Switch OFF and then ON to reset PT-ECU-64.

Fault Codes:

<table>
<thead>
<tr>
<th>Fault Condition</th>
<th>LED Flashes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to start</td>
<td>1</td>
</tr>
<tr>
<td>Engine High Water Temperature</td>
<td>2</td>
</tr>
<tr>
<td>Low Oil Pressure</td>
<td>3</td>
</tr>
<tr>
<td>No AC Signal</td>
<td>4</td>
</tr>
</tbody>
</table>

Diagram:

- Master Switch
- Start/Stop Switch
- Low Oil
- Temp
- PT-ECU-64
- Starter
- Fuel Pump
- Glow Plugs
- Remote LED
- Twisted Pair
- 120 VAC
- 12 VDC
ENGINE RUNS ROUGH OR SLOW

No Visible Exhaust Smoke

Insufficient Fuel to Engine

Check Fuel Level

Replace Fuel Filter

Air in Fuel System

Check Fuel Pump

Check Safety Shutdowns And Fuel Solenoid

Excessive Exhaust Smoke

BLUE SMOKE

Excessive Oil Level

Excessive Oil Consumption

BLACK SMOKE

Dirty Air Filter

Engine Overheated

Engine Overloaded

Clogged Muffler

Over Fueling Injector

High Altitude

GREY/WHITE SMOKE

Engine Cold

Incomplete Combustion

Over Fueling Injector

Glow Plug Circuit Not Operating
ENGINE TROUBLE SHOOTING

ENGINE STARTS BUT WON’T RUN

CODE 1
Check Flash Code Indicator at Start / Stop Switch

Check Battery Voltage

Failure To Start

If “OK” Check Fuel System

Check Fuel Filter/Supply

Bleed Air From System

If “OK” Replace Actuator

Check Circuit To Actuator

If “OK” Check Fuel Pump / Circuit

Check Fuel System

Failure To Start

CODE 2

Engine High Water Temp.

Check Coolant Level/Condition

Fill System With 50/50 Mix

Check Coolant Temp. Switch

Disconnect Wire Start Engine

Check Radiator Air Flow / Belts

If “NOT” Check Wiring

If “OK” Replace Switch

Clean Core Tighten / Replace Belts
ENGINE TROUBLE SHOOTING

ENGINE STARTS BUT WON’T RUN
CONTINUED

Check Flash Code Indicator at Start / Stop Switch

CODE 3

Check Oil Level/Condition
Low Oil Pressure

If “OK” Check Single Pole Oil Pres. Switch
Disconnect wire Start Engine
If “OK” Replace ECU
If “Starts” Replace Switch
If “Not” Check Wiring From Switch to Terminal 9 at ECU

CODE 4

No AC Signal

Check Main AC And Voltage at Breakers
Check Terminal Connections at 11 & 12 on ECU
If A/C Signal Present Replace ECU
If “Tripped” Check Generator Drive Belt
Check Generator Wiring and Capacitor
Replace Defective Parts as Needed
ZERO or LOW VOLTAGE

Check Gen Capacitor
- BAD: Replace Capacitor
- OK: Wiring To Panel

Check Main Breakers are “ON”
- ON: Main Coil Output to Breakers
- OFF: Turn “ON” Breaker / s

Main Coil Output to Breakers
- OK: Defective Breaker / s
- BAD: Check Ohm’s On Main Stator Leads

Check Ohm’s On Main Stator Leads
- BAD: Replace Stator
- OK: Check Rotor Ohm’s
VOLTAGE TEST

- Zero or Low Voltage
  - Check Main Breaker / s On Generator
    - Check Gen End

- High Voltage
  - Replace Capacitor

- Overload
  - Check AMP Draw From equipment

- Output Voltage OK
OVERLOAD CONDITION

Check AMP Draw

Check Load

Check Drive Belt Tension/Condition

Engine Problem

See Engine Troubleshooting

Check Stator Coil Resistance

Replace Stator

See Engine Troubleshooting
Limited Warranty on Power Tech Generators

Power Technology Southeast, Inc. warrants to you, the original purchaser, that each product of our manufacture is free from defects in materials, and workmanship. That each generator will deliver its rated output as indicated on The Power Technology Nameplate, if properly installed, serviced, and operated under normal conditions in accordance with Power Technology’s instructions.

THE WARRANTY COVERAGE TERMS:
2 years from date of purchase, or 3000 hours whichever comes first, or 36 months from the date of manufacture. Parts, and labor, including diagnostic labor, removal, and reinstallation are covered for the first 12 months from date in service or 1000 hours whichever comes first.

Parts and labor are covered only on the following generator and engine parts for 2 years or 3000 hours whichever comes first. Generator Parts: Main Rotor and Main Stator. Engine Parts: Cylinder Block, cylinder head, crankshaft, camshaft, cylinder head gears, connecting rods, flywheel and flywheel housing, intake and exhaust manifold (only if flexible connection is used).

3) Stand-by Units are covered for a period of 1 year from date of installation, or 1000 hours, or 24 months from the date of manufacture whichever comes first.
4) Replacement Parts are warranted: 30 days. (Excluding the following: voltage regulators, fuses, controllers, capacitors, brushes, and switches)

WHAT POWER TECHNOLOGY WILL DO:
Power Tech will at our option, repair or replace any part covered by this warranty which becomes defective, malfunctions or otherwise fails to conform to this warranty under normal use and service during the term of this warranty.

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 Power Tech service facility. In the case of repairs pertaining to the engine only, you must use an authorized dealer or distributor of that make of engine, to be covered under their warranty. Engines used in the manufacture of Power Tech products are warranted solely by the engine manufacturer.

PRIOR APPROVAL IS REQUIRED FOR ANY WARRANTY SERVICE:
Failure to obtain authorization prior to the repair being performed will result in the claim being denied.

All claims must be submitted within 30 days of the repair. Along with the following: a copy of the original repair order, Power Tech authorization number, Power Tech serial number, and operation hours shown on the genset mounted hour meter.

This Warranty does not cover the following:
A. Normal wear items, including but not limited to: turbo-chargers, fuel injector(s), starter, alternator, and electronic components, as well as normal engine and/or generator wear. A1. Travel time and fuel charges to and from the repair facility or travel time and fuel charges for mobile service. (Except stationary units with a maximum of 2-hours travel time).
B. Defects, malfunctions or failure resulting from accidents, abuse, misuse, improper servicing, improper installation, improper storage, and lack of performance of required maintenance service.
C. Products which have been subjected to alteration, modification, neglect or unauthorized repairs.
D. Troubleshooting, routine service, tune-ups, replacement of filters, belts, coolant, lubricants, hoses, clamps, exhaust system components, fuel system components, gaskets and/or seals.
E. Electrical items damaged by welding or jump-starting.
F. Damage caused by water ingestion or electrolysis.
G. Damage caused by ingestion of substances other than clean filtered air, fuel, or intake water.
H. Damage caused by faulty repairs performed by a repair facility not authorized in writing by Power Tech.
I. Damage caused by operation with improper fuel or at speeds, loads, conditions, maintenance or other items that are contrary to published specifications or recommendations.
J. Original installation charges and startup costs.
K. Removal and re-installation charges of more than 1 hour for outside units, 2-hours for compartment mounted units, and 3-hours for below deck marine units.
L. Customer is responsible for additional labor/charges due to difficult access, removal or installation.
M. Starting batteries and labor or charges related to battery service.
N. Loss of revenue or the rental of equipment due to down time.
O. Generator repairs made within the warranty period other than by an authorized Power Tech service dealer without prior written approval from Power Tech warranty department.

Call 1-352-365-2777 or write to Power Tech Warranty Department, P.O. Box 490133 Leesburg, FL 34749 USA.

Power Tech must be notified in writing within five (5) business days of any product failure.

General Conditions:
This Warranty is the sole property of the original owner/user.
A transfer of ownership shall terminate this Warranty.
This Warranty is only valid within the contiguous United States and Canada.
Warranty coverage is available outside the U.S. and Canada; please speak to a factory representative for those details.
This Warranty does not cover any products or parts not purchased from Power Technology.
Power Technology reserves the right to make design improvements and model changes without any obligation to change units or parts previously manufactured.
Warranty registration card must be completed and mailed to Power Tech at the above address to validate the Warranty.

This is the only express warranty on Power Tech products
No person, agent, or dealer is authorized to give any Warranties on behalf of Power Technology Southeast, Inc., and not to assume for Power Technology Southeast, Inc. any other liability in connection with any of its products unless made in writing and signed by an officer of Power Technology Southeast, Inc.

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 OR FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED IN DURATION TO THE PERIOD SET FORTH ABOVE.

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.

Our responsibility for any and all losses and IN NO EVENT WILL WE BE LIABLE FOR LOSS OF USE, LOSS OF PROFITS, INCONVIENCE, COMMERCIAL LOSS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER.

Power Technology S.E., Inc.
P.O. Box 490133 Leesburg, FL 34749 USA.