FUEL SYSTEM THEORY OF OPERATION

Ferris IS6200 Series Zero-Turn Riding Mowers

5111443
Revision A

Manual Contents:

Service Maintenance Safety

WARNING

Amputation and crushing hazard.

Specific steps must be taken in order to perform service and maintenance procedures safely.

Read and follow all the applicable safety and instructional messages in the owner's manual.

Always disengage the mower blades, set the parking brake, turn the engine OFF, remove the ignition key, and wait for all movement to stop prior to performing service and maintenance procedures.

Always disconnect the spark plug wire(s) and fasten it away from the plug before beginning any maintenance or service procedures in order to prevent accidental ignition.

General Information

Model Series: Ferris IS6200 Series

The object of this document is not to give you a failure mode and how to troubleshoot it. It is to give you knowledge on how the system works so that you may formulate a troubleshooting strategy and identify the point(s) of failure.

Models used on:

5901849, 5901850, 5901851, 5902162 & 5902163

Fuel System Theory of Operation

The object of this document is not to give you a failure mode and how to troubleshoot it. It is to give you knowledge on how the system works so that you may formulate a troubleshooting strategy and identify the point(s) of failure.

Never run the fuel pump without fuel in both tanks and fuel in the fuel lines, running the pump without fuel can damage the electric pump and the high pressure injector pump.

The diesel fuel system comprises two tanks, a pre filter, a water separator/filter, two pumps and a pressure release valve. By design and requirement of the engine manufacturer the fuel system does not have a fuel shutoff or a tank selector valve.

Function

Supply a constant predetermined flow of diesel fuel to the engine injectors.

Unit Run Conditions

- Key switch in the run position or in the crank position.
- Engine running or cranking.
- Diesel fuel in both fuel tanks.

Fuel System Theory Of Operation

Fuel is pulled by the fuel pump from both unit fuel tanks simultaneously from a bottom draw fitting on each tank. The tank fuel lines are joined under the seat with a “T” fitting and run as a single line to the prefilter. From the pre filter fuel is pulled into the electric fuel pump.

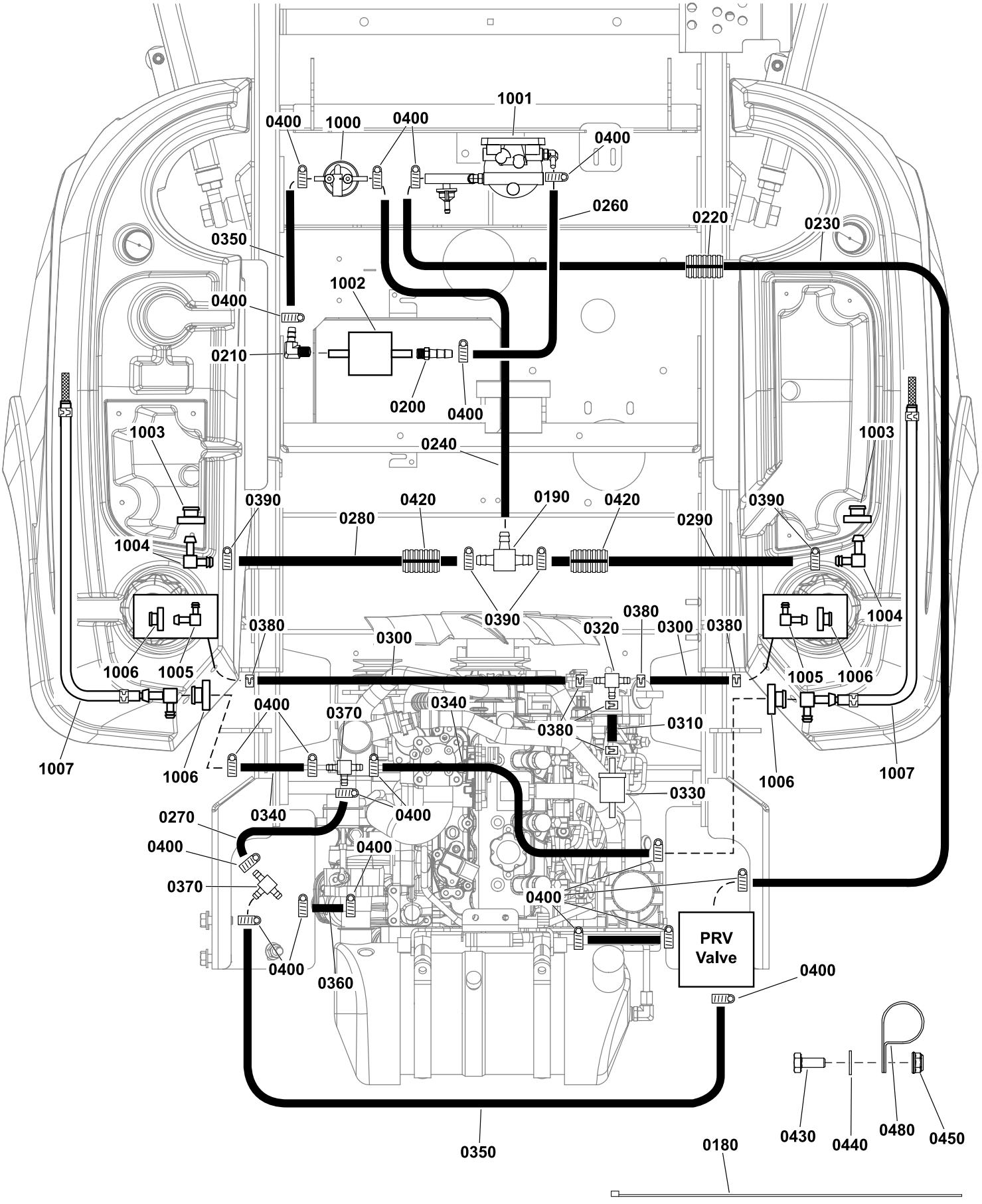
The electric fuel pump pushes fuel into the water separator filter, from the water separator filter, fuel is pushed into the PRV (pressure relief valve). The PRV is a mechanical pressure regulator with one inlet port and 2 outlet ports. The PRV supplies a predetermined flow of fuel to the high pressure engine injector pump and diverts excess to the return fuel line. Fuel flow to the high pressure injector pump is regulated by the PRV based on engine demand.

Excess fuel is diverted out of the PRV to a “T” fitting where excess fuel from the high pressure injector pump is also diverted. The excess fuel is combined into one line where it runs to a “T” fitting that is connected to a fuel return line. The fuel return lines are connected to the top of each fuel tank. Inside the fuel tank, the excess returned fuel is pushed through a fuel line and routed to the bottom of the tank to minimize any foaming.

Both fuel tanks have a top mounted vent line, these vent lines are routed to the center of the mower above the radiator and connect to a “T”. The “T” is connected to a short piece of fuel line that is connected to a small fuel filter. This fuel filter is designed to keep debris out of the vent lines while allowing both tanks to pull in air as fuel is consumed by the engine.

Note: Fault code SPN 157 on the operator display could be generated from a loss of fuel or fuel pressure. If this code is in an active status on the operator dash display, the fuel system needs immediate attention. Please always reference the model search on the Power Portal to see if there are any bulletins that have not been completed that may relate to this condition. Regardless, all action required bulletins need to be completed.

Fuel System Diagram and Component Descriptions



Note: See the Illustrated Parts List on ferrismowers.com for the part numbers of the components shown here.

Reference Number	Description
0180	Tie, Self-Locking, 12"
0190	Fitting, Tee, 1/2 X 5/16 X 1/2, Hose Barb
0200	Fitting, 5/16 X 1/8, Straight, Brass
0210	Fitting, 5/16 X 1/, 90 Deg, Brass
0220	5/8 Loom, 61"
0230	Hose, 5/16 Fuel, 63.00"
0240	Hose, 5/16 Fuel, 21"
0260	Hose, 5/16 Fuel, 12"
0270	Hose, 5/16 Fuel, 24"
0280	Hose, 1/2 Fuel, 42.5"
0290	Hose, 1/2 Fuel, 38"
0300	Hose, 1/4 Fuel, 35"
0310	Hose, 1/4 Fuel, 1.50"
0320	1/4" Barbed Tee
0330	Fuel Filter
0340	Hose, 5/16, Fuel, 27.00"
0350	Hose, 5/16, Fuel, 7.00"
0360	Hose, 5/16, Fuel, 5.00"
0370	Fitting, Tee, 5/16 Hose
0380	Clamp, Hose
0390	Clamp, #6 Hose, Stainless
0400	Clamp, #4 Hose, Stainless
0420	Wire Loom, 3/4 ID X 25 IN
0430	Capscrew, Hex Head, 1/4-20 X 5/8
0440	Washer, 1/4 SAE
0450	Nut, 1/4-20 Hex Nylock Flange
0480	Clamp, Vinyl Insulated, 1.00"
1000	Fuel Filter Assembly
1001	Water Separator Assembly
1002	Fuel Pump
1003	Grommet
1004	Fitting, 90 deg with screen
1005	Fitting, Elbow
1006	Bushing, Fuel Tank, Red Rubber
1007	Pickup Tube

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OPERATOR'S MANUAL