

G38 Engine

Safety, Operation, Maintenance & Parts Manual

LT40 Series

rev. F3.03



Safety is our #1 concern! Read and understand all safety information and instructions before operating, setting up or maintaining this machine.

Form #2414

Table of Contents

Section-Page

SECTION 1	OPERATION	1-1
1.1	Starting The Engine.....	1-1
1.2	Engine Specifications.....	1-3
SECTION 2	MAINTENANCE	2-1
2.1	Safety.....	2-1
2.2	Engine Oil & Filter.....	2-2
2.3	Cooling System.....	2-2
2.4	Air Cleaner.....	2-2
2.5	Fuel Filter.....	2-3
2.6	Battery.....	2-3
2.7	Alternator Belt.....	2-4
2.8	RPM Adjustments.....	2-5
2.9	Miscellaneous Maintenance.....	2-6
SECTION 3	REPLACEMENT PARTS	3-1
3.1	How To Use The Parts List.....	3-1
3.2	Sample Assembly.....	3-1
3.3	G38 Engine Assembly.....	3-2
3.4	Alternator Assembly.....	3-3
3.5	Engine Guards and Belt Support Assembly.....	3-5
3.6	Throttle Cable.....	3-7
3.7	Fuel Tank Assembly.....	3-9
APPENDIX A	EFI DIAGNOSTIC INSTRUCTIONS	A-1

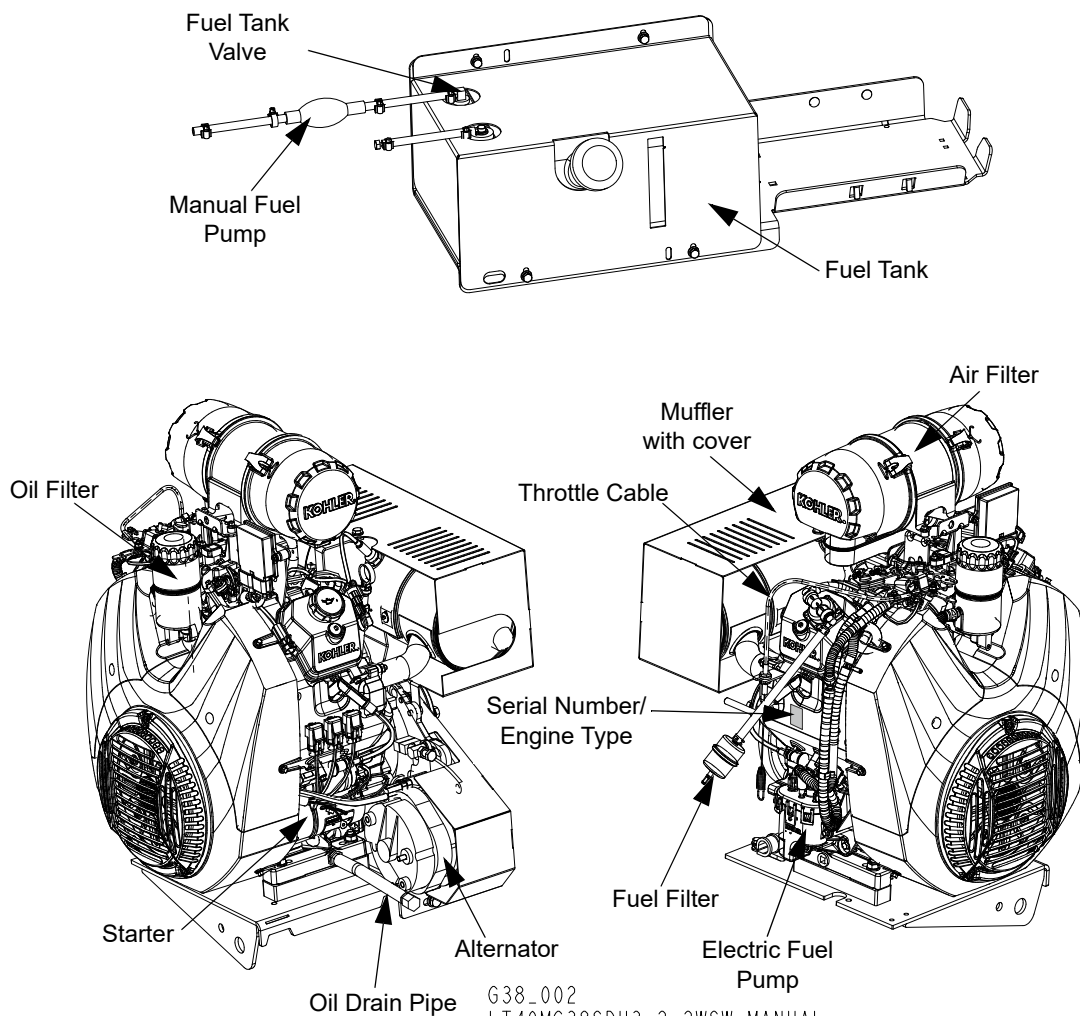
ABOUT THIS MANUAL

This manual is provided as a supplement to the equipment manufacturer's manuals. This manual provides information specific to the use of this equipment on the Wood-Mizer® sawmill. Refer to the sawmill operator's manual and manufacturer's manual before attempting to operate this equipment.



IMPORTANT! Read the sawmill operator's manual and engine manufacturer's manual for instructions and safety precautions before operating this equipment.

The information and instructions given in this manual do not amend or extend the limited warranties for the equipment given at the time of purchase.



ENGINE COMPONENTS

SECTION 1 OPERATION

1.1 Starting The Engine

Engine Control Lights

See Figure 1-1. The following indicator lights are located on the sawmill control panel.



Battery Charge Indicator: Lights up if the alternator is not charging the battery



Oil Indicator: Lights up if the oil pressure is too low.



EFI Diagnostic Indicator: A diagnostic light is provided to help troubleshoot the electronic fuel injection system. [Appendix A](#) for details.

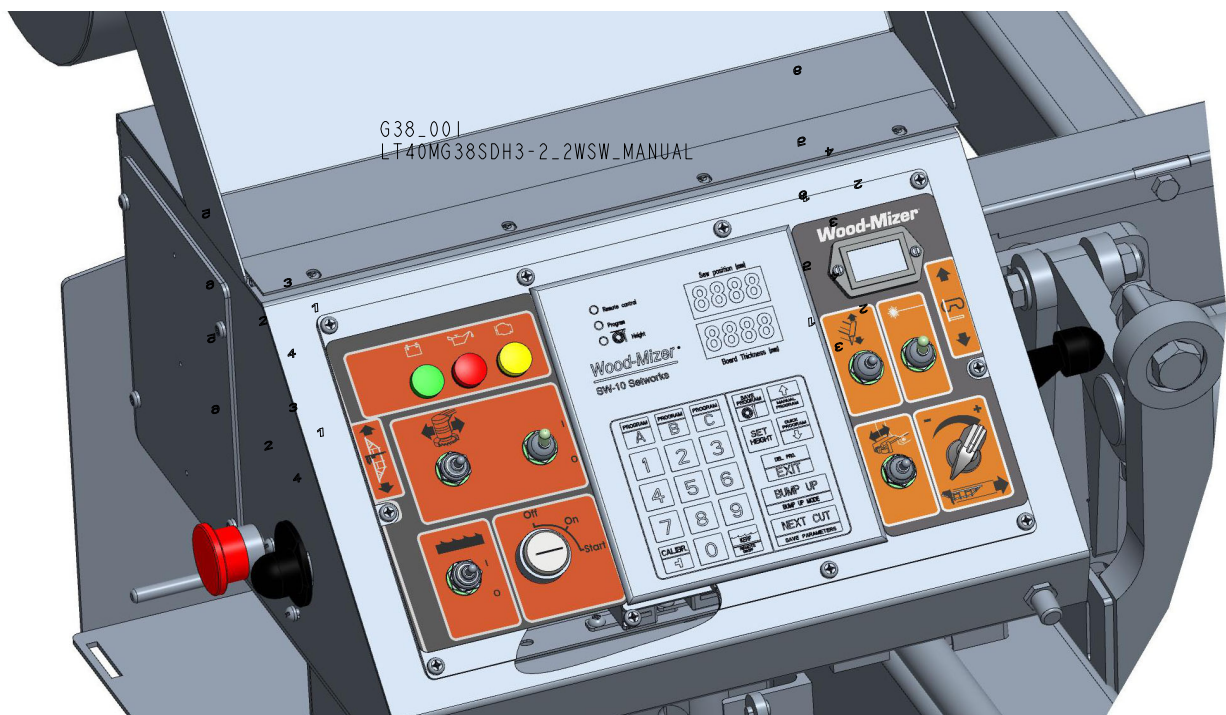


FIG. 1-1

Engine Start



DANGER! Always be sure the blade is disengaged and all persons are out of the path of the blade before starting the

engine Failure to do so will result in serious injury.

DANGER! Operate your engine/machine only in well ventilated areas. The exhaust gases of your engine can cause nausea, delirium and potentially death unless adequate ventilation is present.

DANGER! Never operate an engine with a fuel or oil leak. The leaking fuel or oil could potentially come in contact with hot surfaces and ignite into flames.



WARNING! Be sure the power feed switch is in the neutral position before turning the key switch to the “ON” or “START” position. This prevents accidental carriage movement, which may cause serious injury or death.

WARNING! Do not operate engine without proper and operational spark arrester/muffler. Sparks emitted from the engine exhaust could ignite surrounding materials, causing serious injury or death.



IMPORTANT! Let cool engine idle for 1 minute before applying load.

Open the fuel valve located on the fuel tank.

Turn the key switch to the “START” position and release.

For more information, see the engine manufacturer’s operation manual.

NOTE: If the engine dies after starting, check that the fuel pump is running.

Engine Shutoff

Turn the key switch to the “OFF” position.

1.2 Engine Specifications

	G38 Kohler ECH980
Type	Air cooled, 4-cycle, gasoline, OHV, aluminum block, electronic fuel injection
Number of cylinders	2
Bore and stroke mm	90 x 78,5
Total displacement cm³	999
Power H.P. (SAEJ 1349) [HP/min⁻¹ (rpm)]	38/3600
Peak Torque (Nm)	78,6
Dry Weight kg [lbs.]	60 [132]
Oil Capacity (w/filter)	1.9L

SECTION 2 MAINTENANCE

Refer to the manufacturer's manual for maintenance intervals and procedures unless otherwise instructed in this manual. Follow the manufacturer's recommendations for dusty conditions.



IMPORTANT! This manual only provides information about additional procedures or procedures to be performed at different time intervals than found in the manufacturer's manuals. Refer to the manufacturer's manual for complete maintenance instructions.

2.1 Safety

Use caution when performing maintenance or service to the engine.



DANGER! Always be aware of and take proper protective measures against rotating shafts, pulleys, fans, etc. Always stay a safe distance from rotating members and make sure that loose clothing or long hair does not engage rotating members resulting in possible injury.

DANGER! Engine components can become very hot during operation. Avoid contact with any part of a hot engine. The exhaust components of your engine are especially hot during and following operation. Contact with hot engine components can cause serious burns. Therefore, never touch or perform service functions on a hot engine. Allow the engine to cool sufficiently before beginning any service function.



WARNING! Remove the blade before performing any engine service. Failure to do so may result in serious injury.

WARNING! Always wear proper and necessary safety equipment when performing service functions. Proper safety equipment includes eye protection, breathing protection, hand protection and foot protection.



This symbol identifies the interval (hours of operation) at which each maintenance procedure should be performed. "AR" signifies maintenance procedures which should be performed as required.

2.2 Engine Oil & Filter

8

Check the oil level every 8 hours of operation. Add oil as necessary. See the engine manual for oil viscosity and grade recommendations.

150



IMPORTANT! During initial break-in, change the oil and the oil filter after the first 50 hours and every 150-200 hours thereafter. Continue to check oil level every 8 hours of operation and refill as necessary.

NOTE: Engine in factory is filled with 10W/40 Shell Helix HX7, semi-synthetic oil.

2.3 Cooling System

50

Brush off sawdust and debris every 50 hours of operation. Clean the grass screen, cooling fins, and external surfaces. Remove any dust, dirt or oil. See engine manual for further instructions.

2.4 Air Cleaner

8

Empty the air debris collector every 8 hours of operation.

Open the air filter intake cover by loosening latches and remove all debris and dust. After all debris has been emptied close the cover.



WARNING! Always wear proper and necessary safety equipment when performing service functions. Proper safety equipment includes eye protection, breathing protection, hand protection and foot protection.

250

Replace the outer air cleaner cartridge and check the inner cartridge every 250 hours of operation or more often if operating the sawmill in dirty conditions or if engine performance indicates a new cartridge is necessary.



CAUTION! Do not clean elements with water or compressed air. Do not handle the inner element unless it is to be changed. Handle new elements carefully. Contact with the element could cause damage and prevent the filter from operating properly.

1200

Replace the inner air cleaner cartridge every 1200 hours of operation or more often if operating the sawmill in dirty conditions.

2.5 Fuel Filter



Replace the fuel filter every 100 hours of operation or as required for engine performance.

2.6 Battery



Check the battery electrolyte level every 50 hours of operation. See manufacturer's manual for instructions.



DANGER! Batteries expel explosive gases. Keep sparks, flames, burning cigarettes, or other ignition sources away at all times. Always wear safety goggles and a face shield when working near batteries. Failure to do so will cause serious injury.¹



WARNING! Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

1. Battery Council International, copyright 1987

2.7 Alternator Belt

AR Adjust the alternator belt as needed. Check the alternator belt for tension and wear when battery is not charging properly or when the alternator belt is squealing.

To Tighten The Belt:

1. Unscrew two bolts (**A**) and remove alternator belt cover.

See Figure 2-1.

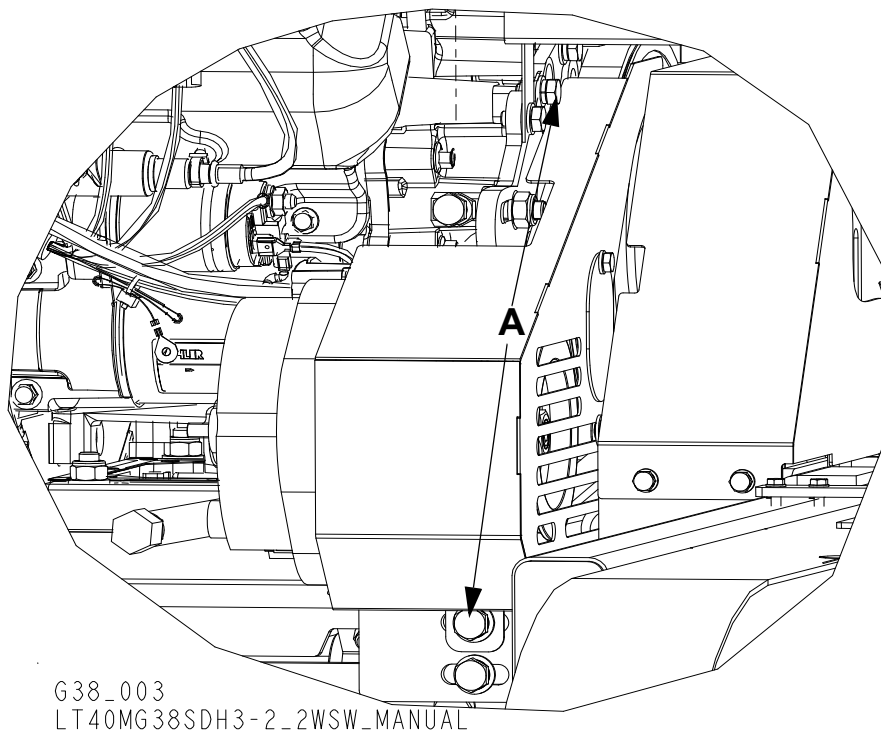


FIG. 2-1

- Loosen the locking nut (**B**) and locking bolt (**C**).

See Figure 2-2.

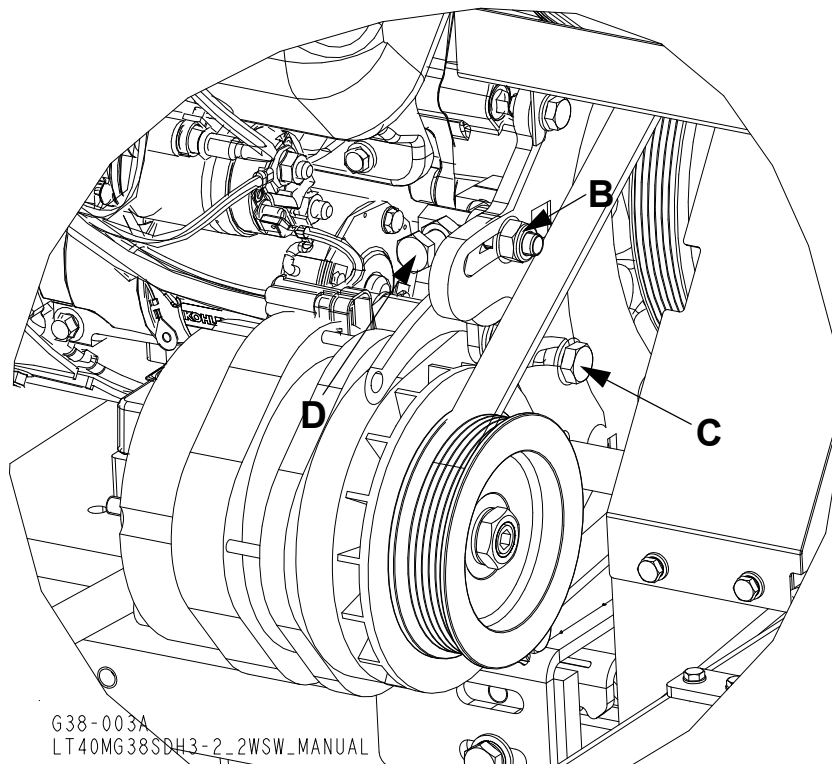


FIG. 2-2

- Using the adjustment bolt (**D**) set the alternator belt tension until the belt has 5 mm deflection with a 2.5 kg. deflection force. Re-tighten the locking nut.
- Reinstall alternator belt cover.

2.8 RPM Adjustments



WARNING! Remove the blade before performing any engine service. Failure to do so may result in serious injury.

200

Check the RPM with a tachometer after the first 20 hours of operation and every 200 hours thereafter. High-end RPM should be 3600 RPM and low-end RPM should be 1500 RPM (± 100).

Before checking the RPM, make sure the drive belt tensions is correct (See Sawmill Maintenance). Also check oil, fuel, and coolant levels.

Make sure the throttle cable does not affect the engine RPM when the clutch handle is disengaged. Make sure the cable is not bent or kinked. Check that the cable spring, cable guide, cable, and throttle brackets are aligned. **NOTE:** It is important that the above components are aligned. Proper alignment allows any slack in the cable (when engine is idling) to slide down into the cable spring. This maintains free operation of the cable and prevents the cable from kinking. Make sure the shoulder bolt does not rub against the crankcase vent tube.

1. Start the engine to measure the low-end RPM.
2. Refer to the engine manual to adjust the low-end RPM.
3. Engage the clutch handle to throttle the engine and measure the high-end RPM. The high-end RPM is factory-set at 3600. Readjust the throttle cable if necessary to increase or reduce the high-end engine speed.

The throttle cable should be tensioned just enough so that the engine revs as soon as the clutch/brake handle is engaged. **NOTE:** A properly adjusted throttle will extend the cable spring 6.5 - 9.5 mm (1/4" to 3/8") when running and have a slight amount of slack in the cable when idling.

2.9 Miscellaneous Maintenance



Clean and inspect the spark arresters every 50 hours of operation. Replace if damaged.



Inspect the spark plugs every 100 hours of operation. Remove any deposits and adjust gap if necessary. See engine manual for further information.



CAUTION! Do not remove the plug wire to check for electrical spark. Damage to the ignition circuit will result.

SECTION 3 REPLACEMENT PARTS

3.1 How To Use The Parts List

- Use the index above to locate the assembly that contains the part you need.
- Go to the appropriate section and locate the part in the illustration.
- Use the number pointing to the part to locate the correct part number and description in the table.
- Parts shown indented under another part are included with that part.
- Parts marked with a diamond (◆) are only available in the assembly listed above the part.

See the sample table below. Sample Part #A01111 includes part F02222-2 and subassembly A03333. Subassembly A03333 includes part S04444-4 and subassembly K05555. The diamond (◆) indicates that S04444-4 is not available except in subassembly A03333. Subassembly K05555 includes parts M06666 and F07777-77. The diamond (◆) indicates M06666 is not available except in subassembly K05555.

3.2 Sample Assembly				
REF.	DESCRIPTION (◆ Indicates Parts Available In Assemblies Only)	PART #	QTY	
	Sample Assembly, Complete (Includes All Indented Parts Below)	A01111	1	
4	Sample Part	F02222-22	1	
	Sample Subassembly (Includes All Indented Parts Below)	A03333	1	
5	Sample Part (◆ Indicates Part Is Only Available With A03333)	S04444-4	1	◆
	Sample Subassembly (Includes All Indented Parts Below)	K05555	1	
6	Sample Part (◆ Indicates Part Is Only Available With K05555)	M06666	2	◆
7	Sample Part	F07777-77	1	

To Order Parts:

- From Europe call our European Headquarters and Manufacturing Facility in Kolo, Poland at **+48-63-2626000**. From the continental U.S., call our toll-free Parts hotline at **1-800-525-8100**. Have your customer number, vehicle identification number, and part numbers ready when you call. From other international locations, contact the Wood-Mizer distributor in your area for parts.

Office Hours:

Country	Monday - Friday	Saturday	Sunday
Poland	7-15	Closed	Closed
US	8 a.m.- 5 p.m.	8 a.m. - 5 p. m.	Closed

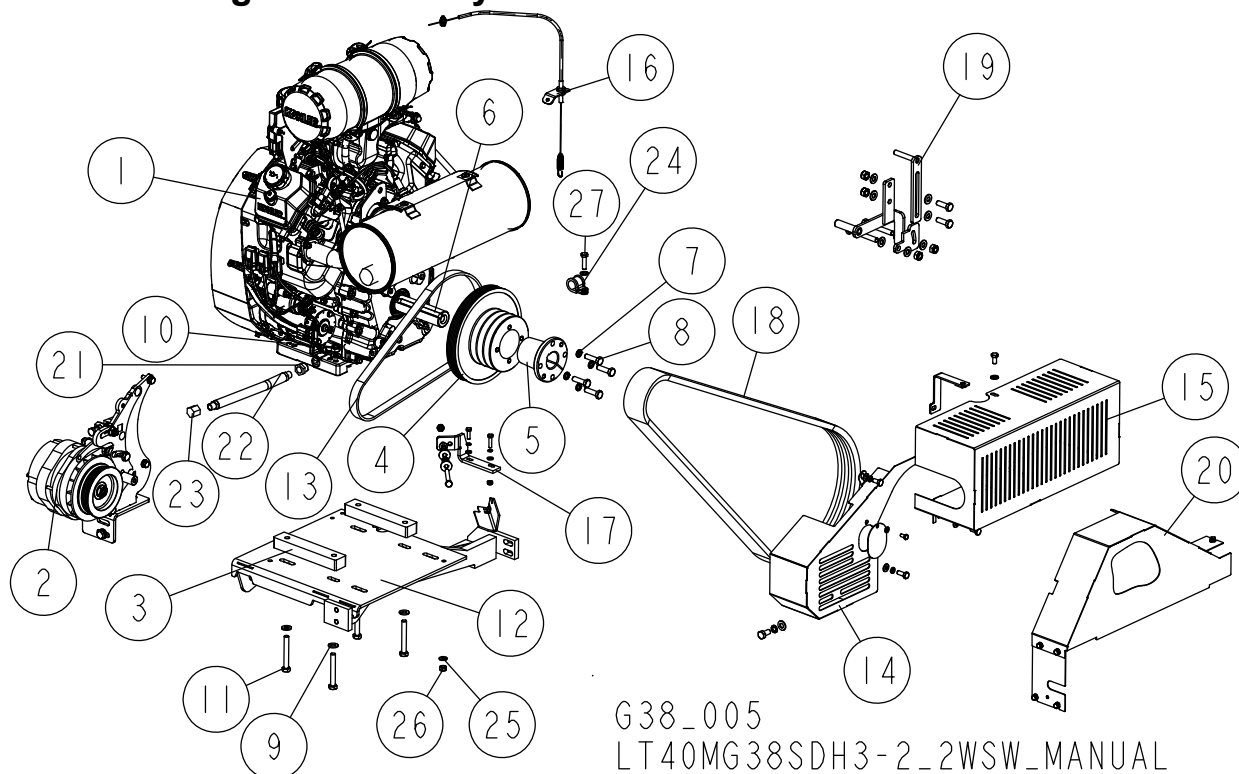


CAUTION! It is strongly recommended that only original spare parts be used.

3 REPLACEMENT PARTS

G38 Engine Assembly

3.3 G38 Engine Assembly



REF.	DESCRIPTION (* indicates parts available in assemblies only)	PART #	QTY
-	ENGINE ASSEMBLY, G38	543865	1
1	ENGINE, 38HP KOHLER EFI GAS	079384	1
	Filter, Kohler Primary Air #25-083-01-S	046553	1
	Filter, Kohler Secondary Air #25-083-04-S	046554	1
	Filter, Kohler Oil #52-050-02-S	014717	1
	Filter, Kohler Fuel #24-050-13	P12758	1
	Plug, Kohler G35 (G38) Spark #62-132-04-S	061003	2
	Pump, Fuel #62-559-01S	061156	1
	Starter Assembly, #25 098 21S	061371	1
2	ALTERNATOR ASSEMBLY, G38 See Section 3.4	539379	1
3	BAR, G38 ENGINE MOUNT	539381-1	2
4	PULLEY, G38 ENGINE	540166	1
5	BUSHING, G38 TAPER	539380	1
6	KEY, 3/8X3/8X110	543864	1
7	WASHER, Z 10.2 SPLIT LOCK ZINC	F81055-2	4
8	BOLT, M10X35 8.8 HEX HEAD FULL THREAD ZINC	F81003-17	4
9	WASHER, 10.5 FLAT ZINC	F81055-1	8
10	NUT, M10-8-B HEX NYLON ZINC LOCK	F81033-1	4
11	BOLT, M10X75-8.8 HEX HEAD ZINC	F81003-15	4
12	PLATE, G38 ENGINE MOUNT	540116-1	1

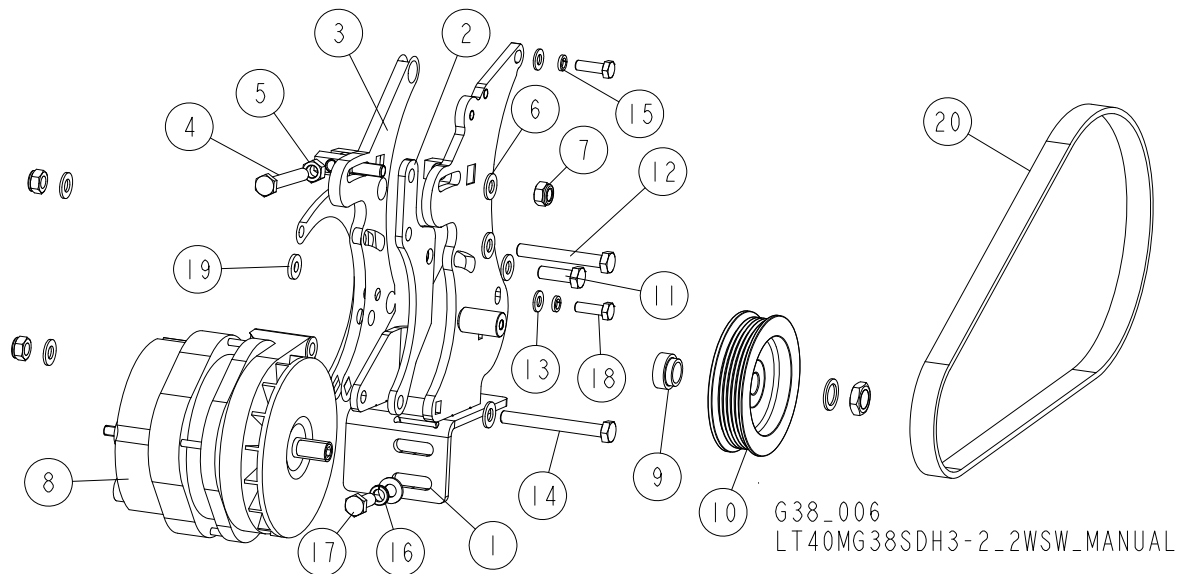
REPLACEMENT PARTS

Alternator Assembly

3

REF.	DESCRIPTION (* indicates parts available in assemblies only)	PART #	QTY
13	V-BELT, CONTI V MULTITRIB 6PK-1060	543869	1
14	GUARD, G38 ALTERNATOR - COMPLETE See Section 3.5	543560	1
15	GUARD, G38 MUFFLER - COMPLETE See Section 3.5	543559	1
16	CABLE ASSEMBLY, LT40-G38 THROTTLE See Section 3.6	543855	1
17	BRACKET, COMPLETE See Section 3.6	543853	1
18	BELT, 3BX74	014249	1
19	SUPPORT ASSEMBLY, G38 ENGINE BELT See Section 3.5	543867	1
20	GUARD, BELT - COMPLETE See Section 3.5	543860	1
21	BUSHING, 1/2 MPTX3/8 FPT BRASS	003227	1
22	HOSE, 3/8NPTX9 5/8 RUBBER	P10082	1
23	CAP, 3/8 PIPE GALVANIZE	P04332	1
24	CLIP, RSGU 1.20/20 RETAINING	F81087-2	1
25	WASHER, 8.4 FLAT ZINC	F81054-1	2
26	NUT, M8-8-B HEX NYLON ZINC LOCK	F81032-2	1
27	BOLT, M8X30 8.8 HEX HEAD FULL THREAD ZINC	F81002-7	1

3.4 Alternator Assembly



REF.	DESCRIPTION (* indicates parts available in assemblies only)	PART #	QTY
-	ALTERNATOR ASSEMBLY, G38	539379	1
1	BRACKET, G38 ENGINE ALTERNATOR	539374-1	1
2	PLATE WELDMENT, ALTERNATOR PIVOT	540168-1	1
3	STUD, BELT TENSION ADJUSTMENT ZINC-PLATED	091694-1	1
4	BOLT, M10X70 8.8 HEX HEAD FULL THREAD ZINC	F81003-20	1
5	NUT, M10 8 HEX ZINC	F81033-3	1
6	WASHER, 10.5 FLAT ZINC	F81055-1	7

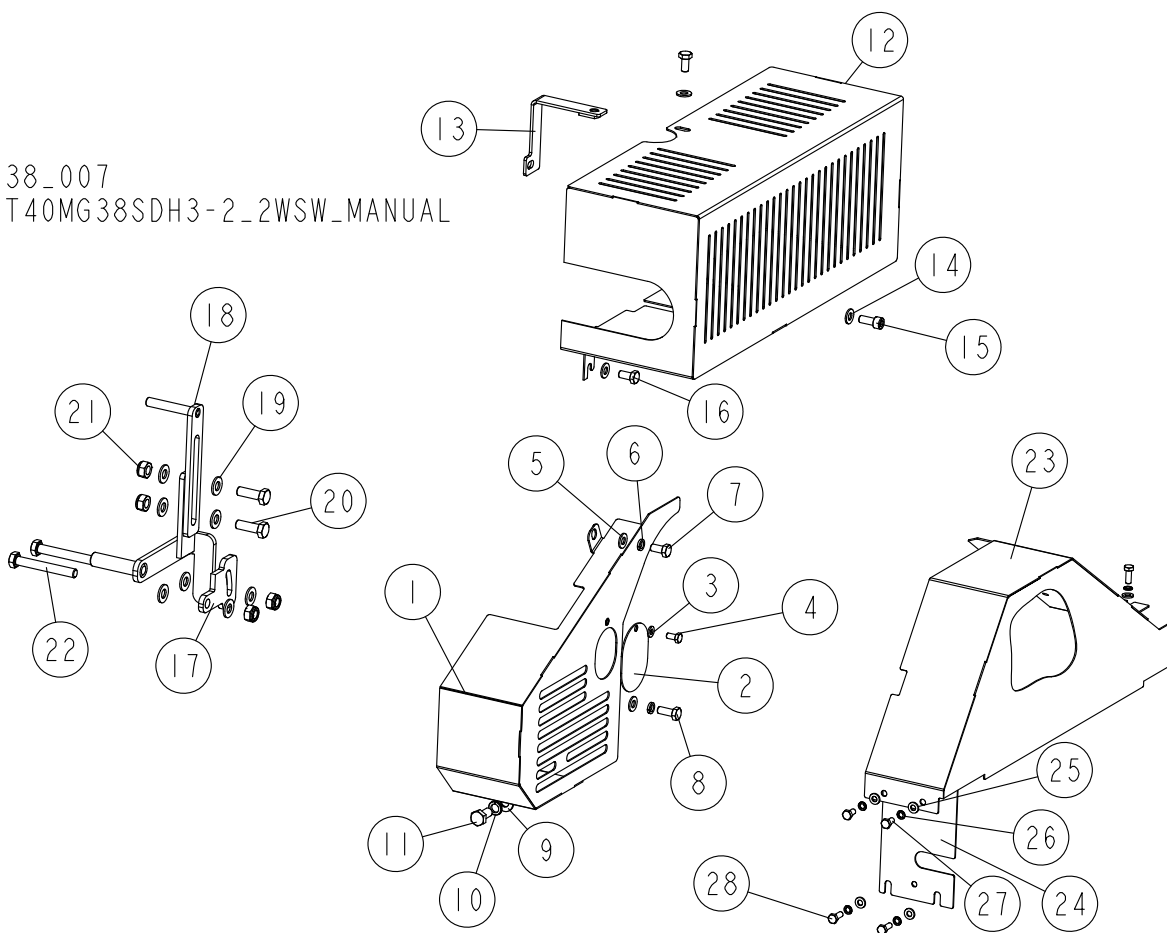
3 REPLACEMENT PARTS

Alternator Assembly

REF.	DESCRIPTION (* indicates parts available in assemblies only)	PART #	QTY	
7	NUT, M10-8-B HEX NYLON ZINC LOCK	F81033-1	3	
-	ALTERNATOR ASSEMBLY, 140 AMP	023730	1	
8	ALTERNATOR, 140 AMP	023695	1	
9	SPACER, 023694 ALTERNATOR SHEAVE	036571	1	
10	PULLEY, 140A ALTERNATOR	023694	1	
11	SCREW, DIN933-M10X30-8.8-A2E HEX CAP FULL THREAD	F81003-111	1	
12	BOLT, M10X75-8.8 HEX HEAD ZINC	F81003-15	1	
13	WASHER, 8.4 FLAT ZINC	F81054-1	2	
14	BOLT, M10X90-8.8 HEX HEAD FULL THREAD ZINC	F81003-90	1	
15	WASHER, 8.2 SPLIT LOCK ZINC	F81054-4	2	
16	WASHER, Z 10.2 SPLIT LOCK ZINC	F81055-2	1	
17	BOLT, M10X25 8.8 HEX HEAD FULL THREAD ZINC	F81003-11	1	
18	BOLT, M8X25-8.8-B HEX HEAD FULL THREAD ZINC	F81002-5	2	
19	WASHER, 8.2/20-3	543863-1	1	
20	V-BELT, CONTI V MULTITRIB 6PK-1060	543869	1	

3.5 Engine Guards and Belt Support Assembly

G38_007
 LT40MG38SDH3-2_2WSW_MANUAL



REF.	DESCRIPTION (* indicates parts available in assemblies only)	PART #	QTY
-	GUARD, G38 ALTERNATOR - COMPLETE	543560	1
1	GUARD, G38 ALTERNATOR BELT (140A)	540105-1	1
2	PLATE, ALTERNATOR GUARD COVER	093367-1	1
3	WASHER, 6.4 FLAT ZINC	F81053-1	1
4	BOLT, M6X12 8.8 HEX HEAD FULL THREAD ZINC	F81001-7	1
5	WASHER, 8.4 FLAT ZINC	F81054-1	2
6	WASHER, 8.2 SPLIT LOCK ZINC	F81054-4	2
7	BOLT, M8X16-8.8-B HEX HEAD FULL THREAD ZINC	F81002-20	1
8	BOLT, M8X20 8.8 HEX HEAD FULL THREAD ZINC	F81002-4	1
9	WASHER, 10.5 FLAT ZINC	F81055-1	1
10	WASHER, Z 10.2 SPLIT LOCK ZINC	F81055-2	1
11	BOLT, ISO 4017-M10X20-8.8-A2E HEX HEAD FULL THREAD	F81003-53	1
-	GUARD, G38 MUFFLER - COMPLETE	543559	1

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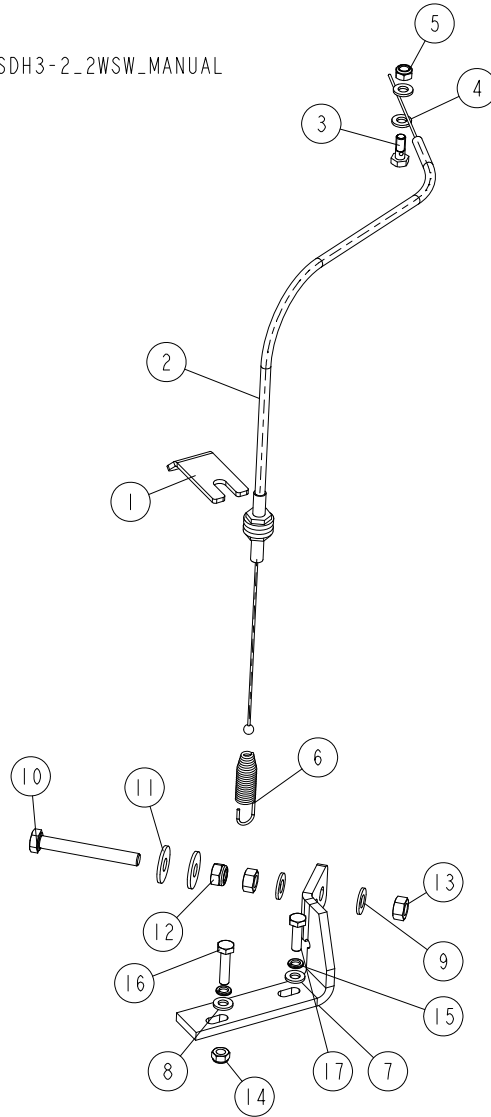
REPLACEMENT PARTS

Engine Guards and Belt Support Assembly

REF.	DESCRIPTION (* indicates parts available in assemblies only)	PART #	QTY	
12	GUARD WELDMENT, G38 MUFFLER	540113-1	1	
13	BRACKET WELDMENT	543558-1	1	
14	WASHER, 8.4 FLAT ZINC	F81054-1	3	
15	SCREW, M8X20-8.8 HEX SOCKET HEAD CAP ZINC	F81002-30	1	
16	BOLT, M8X16-8.8-B HEX HEAD FULL THREAD ZINC	F81002-20	2	
-	SUPPORT ASSEMBLY, G38 ENGINE BELT	543867	1	
17	SUPPORT, ENGINE BELT LOWER	085922-1	1	
18	SUPPORT, D40/D30/E25 ENGINE BELT UPPER	085865-1	1	
19	WASHER, 10.5 FLAT ZINC	F81055-1	8	
20	SCREW, DIN933-M10X30-8.8-A2E HEX CAP FULL THREAD	F81003-111	2	
21	NUT, M10-8-B HEX NYLON ZINC LOCK	F81033-1	4	
22	BOLT, M10X75-8.8 HEX HEAD ZINC	F81003-15	2	
-	GUARD, BELT - COMPLETE	543860	1	
23	GUARD, LT40-G38 PULLEY	543859-1	1	
24	COVER, SIDE	543862-1	1	
25	WASHER, 6.4 FLAT ZINC	F81053-1	5	
26	WASHER, Z 6.1 SPLIT LOCK ZINC	F81053-3	5	
27	BOLT, M6X12 8.8 HEX HEAD FULL THREAD ZINC	F81001-7	2	
28	BOLT, M6X16-8.8 HEX HEAD FULL THREAD ZINC	F81001-15	3	

3.6 Throttle Cable

G38_008
LT40MG38SDH3-2_2WSW_MANUAL



REF.	DESCRIPTION (* indicates parts available in assemblies only)	PART #	QTY
-	CABLE ASSEMBLY, LT40-G38 THROTTLE	543855	1
1	BRACKET, THROTTLE CABLE	543851-1	1
2	CABLE, G38 ENGINE THROTTLE (CABLE L=670/CASING L=390)	543852	1
3	BOLT, THROTTLE CABLE CLAMPING	543854-1	1
4	WASHER, 6.4 FLAT ZINC	F81053-1	2
5	NUT, M6-8-B HEX NYLON ZINC LOCK	F81031-2	1
6	SPRING, 35X9.5X1.6 SPECIAL	097443	1
-	BRACKET, THROTTLE CABLE SPRING - COMPLETE	543853	1
7	BRACKET, THROTTLE CABLE SPRING	091587-1	1
8	WASHER, 6.4 FLAT ZINC	F81053-1	2

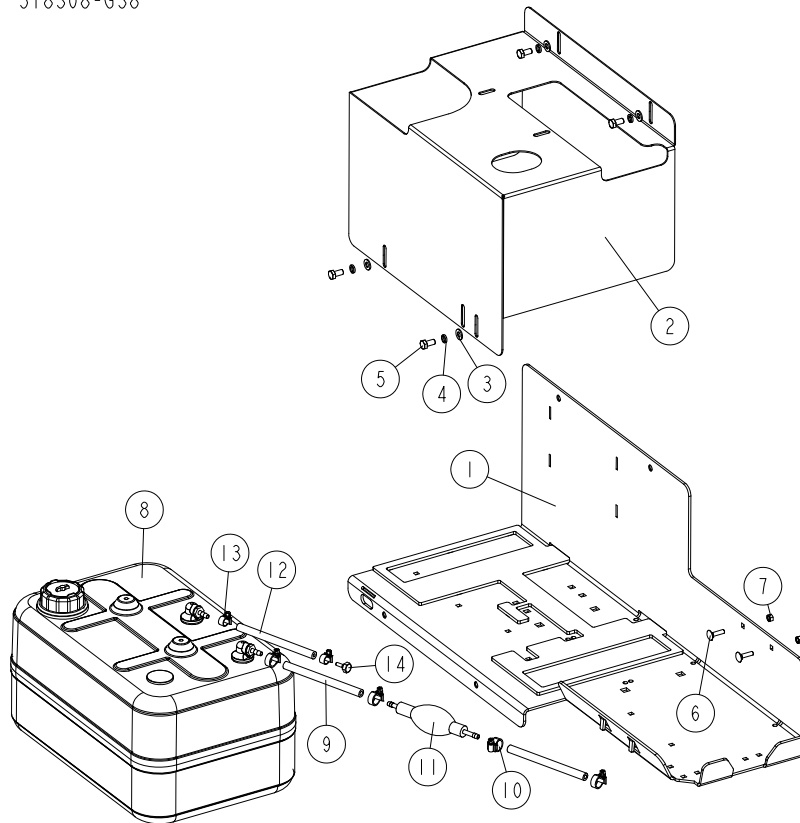
3 REPLACEMENT PARTS

Throttle Cable

REF.	DESCRIPTION (* indicates parts available in assemblies only)	PART #	QTY	
9	WASHER, 8.4 FLAT ZINC	F81054-1	2	
10	BOLT, M8X65 8.8 HEX HEAD FULL THREAD ZINC	F81002-9	1	
11	WASHER, ISO 7093-1-8-200 HV-A2E.	F81054-11	2	
12	NUT, M8-8-B HEX NYLON ZINC LOCK	F81032-2	1	
13	NUT, M8-8-B HEX ZINC	F81032-1	2	
14	NUT, M6-8-B HEX NYLON ZINC LOCK	F81031-2	1	
15	WASHER, Z 6.1 SPLIT LOCK ZINC	F81053-3	2	
16	BOLT, M6X25 -8.8 HEX HEAD FULL THREAD ZINC	F81001-3	1	
17	BOLT, M6X20 8.8 HEX HEAD FULL THREAD ZINC	F81001-2	1	

3.7 Fuel Tank Assembly

518308-G38_001
518308-G38



REF	DESCRIPTION (u indicates parts available in assemblies only)	PART #	QTY
-	TANK ASSEMBLY, LT40-G38 FUEL	518308-G38	1
1	PLATE WELDMENT, FUEL TANK MOUNT.	557141-1	1
2	COVER, FUEL TANK	550769-1	1
3	WASHER, 8.4 FLAT ZINC	F81054-1	4
4	WASHER 8,2 ZC SPRING LOCK DIN 127	F81054-4	4
5	BOLT, M8X16-8.8-B HEX HEAD FULL THREAD Z	F81002-20	4
6	BOLT, M6X25-8.8 ZINC	F81001-20	2
7	NUT, M6 8 HEX ZINC	F81031-1	2
8	FUEL TANK, 25-LITRE	550767	1
9	FUEL LINE, DIESEL ENGINE	P642	2
10	CLAMP, 12-20	F81080-3	4
11	BULB, FUEL PRIMER	014481	1
12	HOSE, 5X12 FUEL	R80703-4	1
13	CLAMP, 8-12MM DIA. WORM	F81080-1	2
14	CAP	543868-1	1

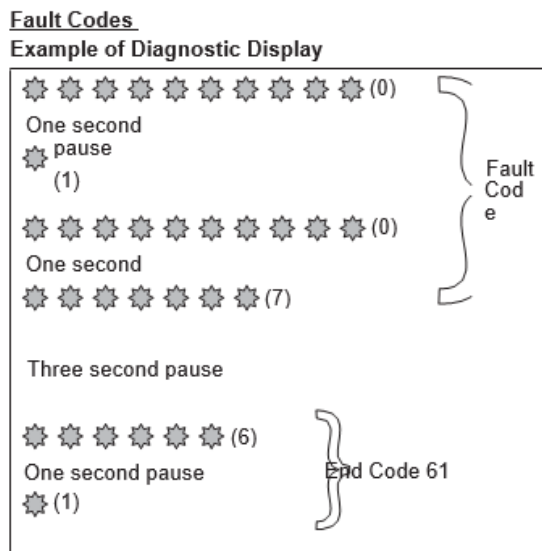


APPENDIX A EFI DIAGNOSTIC INSTRUCTIONS

Function of fuel system is to provide sufficient delivery of fuel at system operating pressure of 39 psi \pm 3. If an engine starts hard, or turns over but will not start, it may indicate a problem with EFI fuel system. A quick test will verify if system is operating.

- Disconnect and ground spark plug leads.
- Complete all safety interlock requirements and crank engine for approximately 3 seconds.
- Remove spark plugs and check for fuel at tips.
 - ⌚ If there is fuel at tips of spark plugs fuel pump and injectors are operating.
 - ⌚ If there is no fuel at tips of spark plugs, check following:
 - a) Make sure fuel tank contains clean, fresh, proper fuel.
 - b) Make sure that vent in fuel tank is open.
 - c) Make sure fuel tank valve (if equipped) is fully opened.
 - d) Make sure battery is supplying proper voltage.
 - e) Check that fuses are good, and that no electrical or fuel line connections are damaged or broken.

f) Test fuel pump module operation as described earlier under Fuel Pump.



Diagnostic Fault Code Summary

Fault Code	Connection or Failure Description
0031	Oxygen Sensor Heater Circuit Low Voltage
0032	Oxygen Sensor Heater Circuit High Voltage
0107	Manifold Absolute Pressure (MAP or TMAP) Sensor Circuit Low Voltage or Open
0108	Manifold Absolute Pressure (MAP or TMAP) Sensor Circuit High Voltage
0112	Intake Air Temperature (IAT or TMAP) Sensor Circuit Low Voltage
0113	Intake Air Temperature (IAT or TMAP) Sensor Circuit High Voltage or Open
0117	Coolant/Oil Temperature Sensor Circuit Low Voltage
0118	Coolant/Oil Temperature Sensor Circuit High Voltage or Open
0122	Throttle Position Sensor Circuit Low Voltage or Open
0123	Throttle Position Sensor Circuit High Voltage
0131	Oxygen Sensor 1 Circuit Low Voltage, or Open
0132	Oxygen Sensor 1 Circuit High Voltage
0171	Maximum Adaptation Limit Exceeded
0172	Minimum Adaptation Limit Exceeded
0174	Lean Fuel Condition at High Load (Open Loop)
0201	Injector 1 Circuit Malfunction
0202	Injector 2 Circuit Malfunction
0230	Fuel Pump Module Circuit Low Voltage or Open
0232	Fuel Pump Module Circuit High Voltage
0336	Crankshaft Position Sensor Noisy Signal
0337	Crankshaft Position Sensor No Signal
0351	Cylinder 1 Ignition Coil Malfunction
0352	Cylinder 2 Ignition Coil Malfunction
0562	System Voltage Low



Maintenance

0563	System Voltage High
0650	MIL Circuit Malfunction
1693	Tach Output (ECU) Low
1694	Tach Output (ECU) High
61	End of Code Transmission

ECU continuously monitors engine operation against preset performance limits. If operation is outside limits, ECU activates MIL, if equipped, and stores a diagnostic code in its fault memory. If component or system returns to proper function, ECU will turn off MIL. If MIL stays illuminated, it warns customer a fault is currently happening, and dealer service is required. Upon receipt, dealer technician can access fault code(s) to help determine what portion of system is malfunctioning.

Codes are accessed through key switch and displayed as blinks or flashes of MIL. Access codes as follows:

- Check that battery voltage is above 11 volts.
- Start with key switch OFF.
- Turn key switch to ON and OFF, then ON and OFF, then ON, leaving it on in third sequence. Do not start engine. Time between sequences must be less than 2.5 seconds.
- MIL will blink a series of times. Number of times MIL blinks represents a number in blink code.
- A sequence of four digits make up a fault code. There is a one (1) second pause between blinks of a fault code. There is a three (3) second pause between separate fault codes. After fault code(s) are blinked a two digit 61 is blinked to indicate program has completed.

a) It's a good idea to write down codes as they appear, as they may not be in numerical sequence.

b) Code 61 will always be last code displayed, indicating end of code transmission. If code 61 appears immediately, no other fault codes are present.

After problem has been corrected, fault codes may be cleared by following ECU Reset and TPS Learn Procedures. Diagnostic Fault Code Summary lists fault codes, and what they correspond to. Diagnostic Code Summary is a list of individual codes with an explanation of what triggers them, what symptoms might be expected, and probable causes.

A MIL is provided with engine.