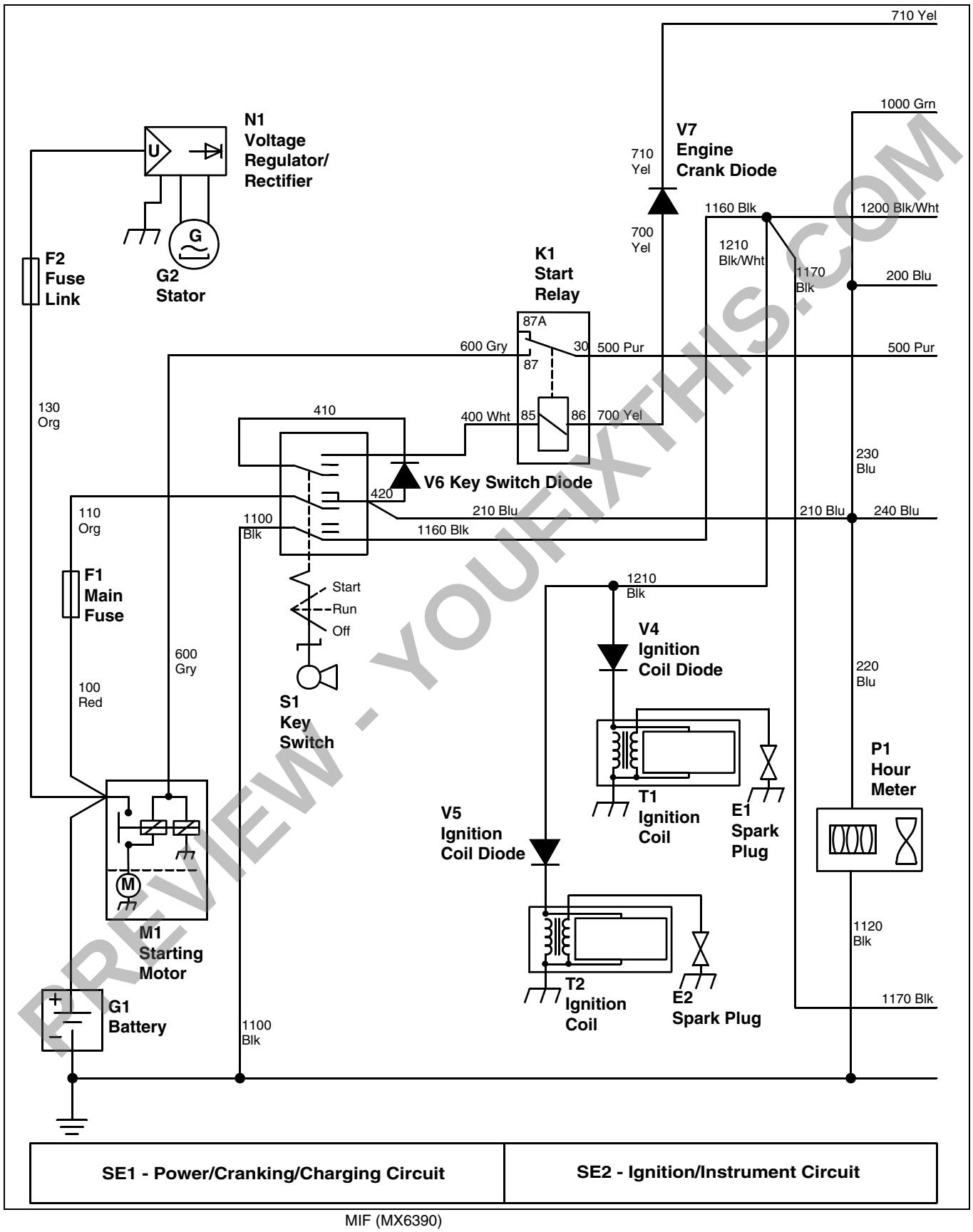
Schematics and Harnesses **Electrical Schematic**

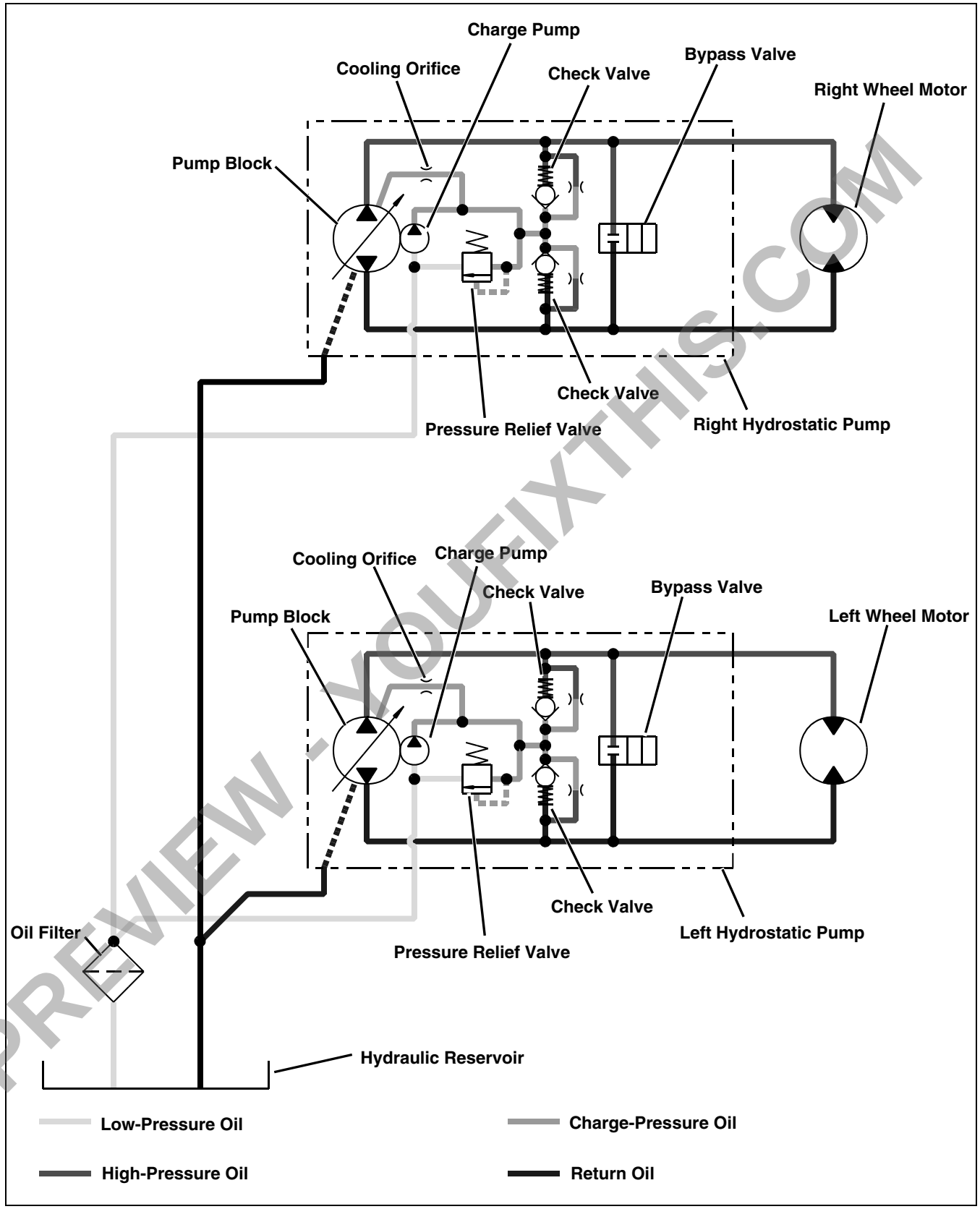


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Hydrostatic System Schematic



MX6385

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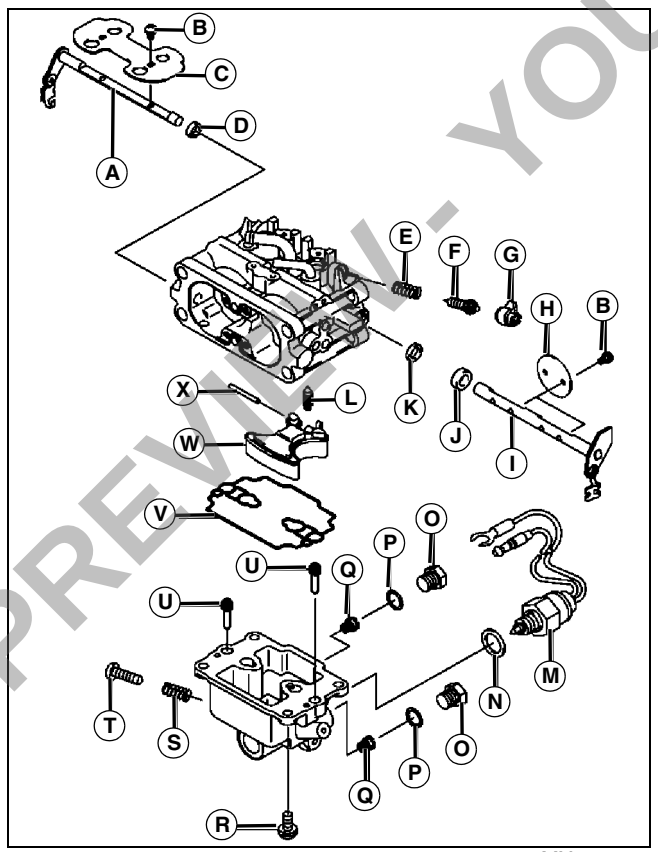
Carburetor Disassembly/Assembly

CAUTION: Avoid injury! Gasoline is extremely flammable. DO NOT smoke. Always work in a ventilated area away from open flame or spark producing equipment; this includes equipment that utilizes pilot lights.

IMPORTANT: Avoid damage! DO NOT attempt to repair, replace jets, or adjust the carburetor unless you are a factory trained technician with authorization to service CARB/EPA Certified Emissions Carburetors.

Other Material

Part No.	Part Name	Part Use
TY9370 (US) 242 (LOCTITE®) TY9477 (Canada)	Thread Lock and Sealer (Medium Strength)	Applied to threads of throttle and choke plate screws before installation.



MX6311

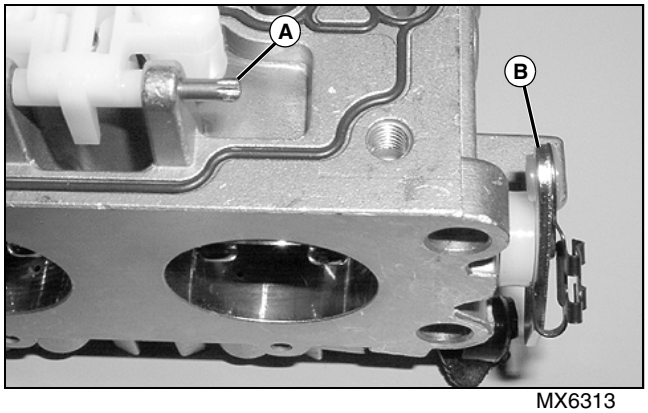
A - Choke Shaft
B - Screw (4 used)
C - Choke Plate
D - Seal
E - Spring
F - Pilot Screw (2 used)
G - Pilot Screw Limiter
H - Throttle Plate (2 used)
I - Throttle Shaft
J - Collar
K - Seal
L - Float Valve
M - Fuel Shutoff Solenoid
N - O-Ring
O - Plug (2 used)
P - Gasket (2 used)
Q - Main Jet (2 used)
R - Screw (4 used)
S - Spring
T - Drain Valve
U - Pilot Jet (2 used)
V - Float Chamber Seal
W - Float
X - Float Pivot Pin

1. Remove carburetor from engine. (See “Carburetor Removal/Installation” on page 59.)

NOTE: There are several ball-type passage plugs. DO NOT attempt to remove.

2. Remove float bowl.

IMPORTANT: Avoid damage! The float pin (A) is knurled on the end nearest the throttle shaft lever (B). Be sure to drive the pin out from the opposite end.



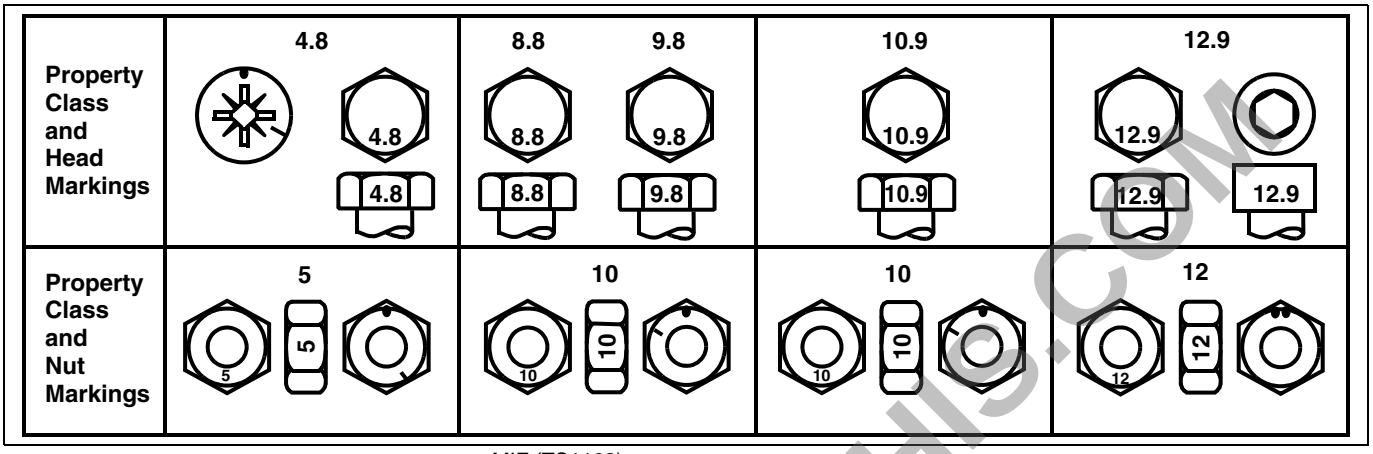
MX6313

3. Remove float pin (A), float valve, and float.
4. Remove fuel shutoff solenoid.

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Repair Information

Metric Fastener Torque Values



MIF (TS1163)

	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]	
SIZE	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	109
M16	100	73	125	92	190	140	240	175	275	200	350	225	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these hand torque values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only and include a ±10% variance factor. Check tightness of fasteners periodically. DO NOT use air powered wrenches.

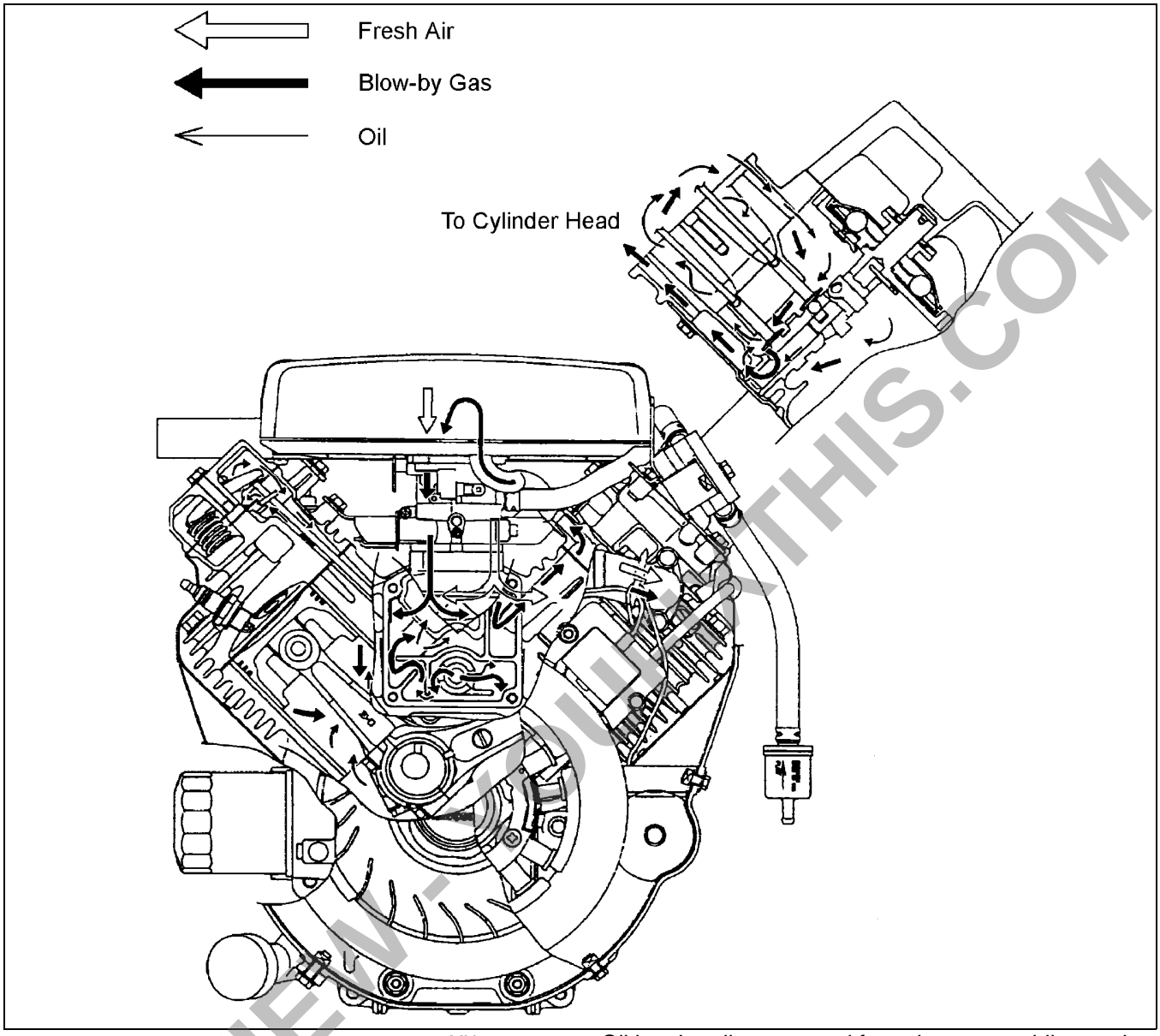
Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same class. Make sure fastener threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

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Crankcase Breather Operation



MX14496

Function

To remove blow-by gasses and provide oil to lubricate valves and rocker arms.

Theory of Operation

The function of the breather is to create a vacuum in the crankcase which prevents oil from being forced out of the engine through the piston rings, oil seals or gaskets. A sealed-type crankcase emission control system is used to eliminate blow-by gases. The blow-by gases are led to the breather chamber through the crankcase and the camshaft. Then it is drawn through the rocker arm covers and into the clean side of the air cleaner to be mixed with the clean air flow to be burned along with normal combustion.

Oil is primarily separated from the gases while passing through the inside of the rocker arm covers to provide lubrication for the rocker arms and valves. Oil is secondly separated from the gases in the breather chamber, and then returned back to the crankcase.

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General Specifications

Vehicle Specifications

NOTE: Specifications and design subject to change without notice.

Engine	
Make	**Kawasaki**
Type	**OHV, Vertical shaft, 4-cycle, 90° V-twin**
Model	**FH601V**
Model	**FH680V**
Aspiration	**Natural**
Horsepower (FH601V)	**14.2 kW (19 hp)**
Horsepower (FH680V)	**17.2 kW (23 hp)**
Cylinders	**2**
Displacement	**675 cm^3 (41.2 cu in.)**
Stroke/Cycle	**4 cycle**
Bore	**75.2 mm (2.96 in.)**
Stroke	**76 mm (2.99 in.)**
Compression Release	**Automatic**
Lubrication	**Positive displacement pump**
Cooling System	**Air cooled**
Air Cleaner	**Dual-stage, dry, replaceable**
Engine Oil Capacity (with Filter)	**1.7 L (1.8 qt)**
Oil Filter	**Replaceable, full flow**
Weight, Dry (without Muffler)	**40.5 kg (89.3 lb)**
Electrical System	
Charging System	**Flywheel alternator**
Ignition	**Flywheel magneto**
Starter	**Solenoid shift**
Fuel System	
Fuel Tank Location	**Left side of operator**
Fuel Tank Capacity	**29.5 L (7.8 gal)**
Fuel (Minimum Octane)	**Unleaded gasoline, 87 octane**
Fuel Delivery	**Pulse**
Carburetor	**Float-type, fixed main jet, two barrel**
Fuel Filter	**Replaceable, in-line**
Fuel Shutoff Solenoid	**In carburetor float bowl**
Drive Train	
Type	**Hydrostatic**
Pumps	**HydroGear BDP10A**
Wheel Motors	**Parker MB-15**

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Checks, Tests, and Adjustments

Throttle and Choke Cable Adjustment

Reason

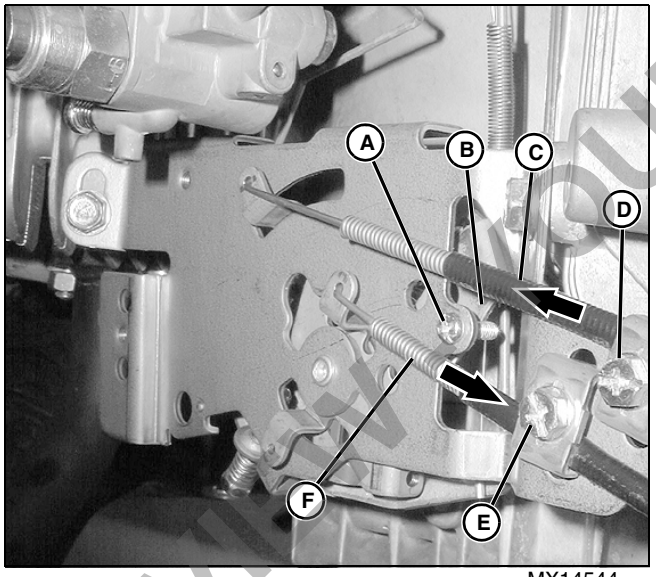
To make sure the throttle and choke operate through the full range of movement.

Procedure

CAUTION: Avoid injury! Engine and muffler might be hot.

NOTE: Adjust throttle cable before adjusting choke.

1. Park machine safely and stop engine. (See “Park Machine Safely” on page 3.)
2. Remove rear grille to gain access to the throttle control plate.
3. Move throttle control lever to FULL throttle position.



MX14544

4. Loosen cap screws (D and E) and PULL throttle cable (F) to remove all slack. Be sure that inner throttle lever (B) is tight against stop screw (A). Tighten cap screw (E)
5. Push operator choke control in. Choke (butterfly) should be fully open.
6. PUSH choke cable housing (C) to remove all slack. Tighten cap screw (D).
7. Move operator throttle lever and choke knob through full range to be sure throttle or choke linkage is not binding.
8. Install rear grille.

Slow Idle Speed Adjustment

IMPORTANT: Avoid damage! DO NOT attempt to adjust carburetors that meet California Air Resource Board/Environmental Protection Agency (CARB/EPA) restrictions unless you are a factory trained technician with authorization to service CARB/EPA Emissions Carburetors.

Reason

To set engine slow idle mixture and rpm.

NOTE: Throttle cable should be properly adjusted prior to setting slow idle speed.

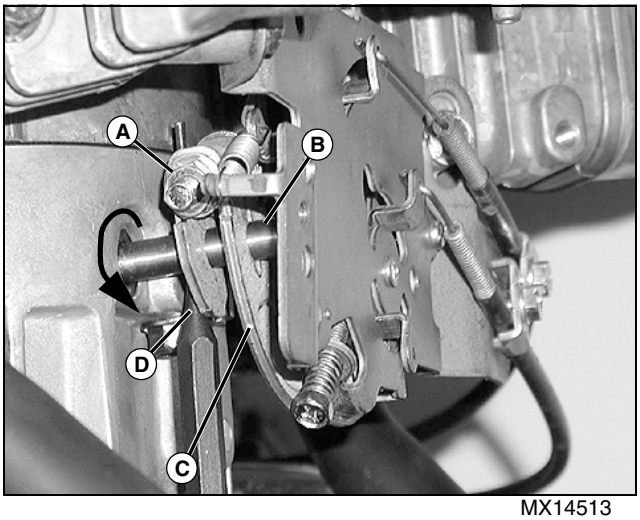
Required Tools

Tool Name	Tool No.	Tool Use
Pulse Tachometer	JT07270	Used to check engine rpm.

Procedure

1. Park machine safely. (See “Park Machine Safely” on page 3.)
2. Operate engine until it has reached normal operating temperature.
3. Stop engine and remove rear grille to gain access to the throttle control plate.

CAUTION: Avoid injury! Engine and muffler will be hot.

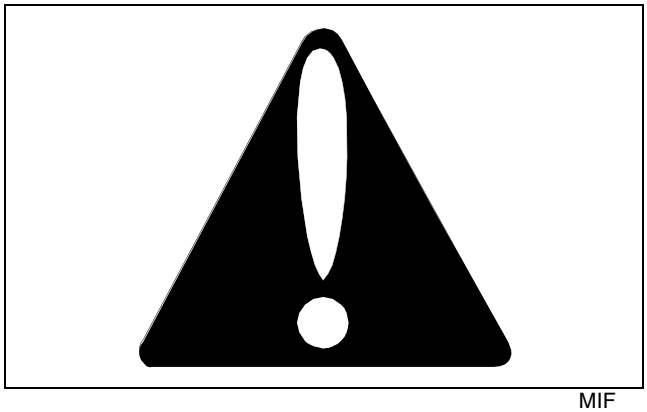


MX14513

4. Ensure governor arm and shaft are properly adjusted.
   a. Loosen clamp screw nut (A).

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Recognize Safety Information



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This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

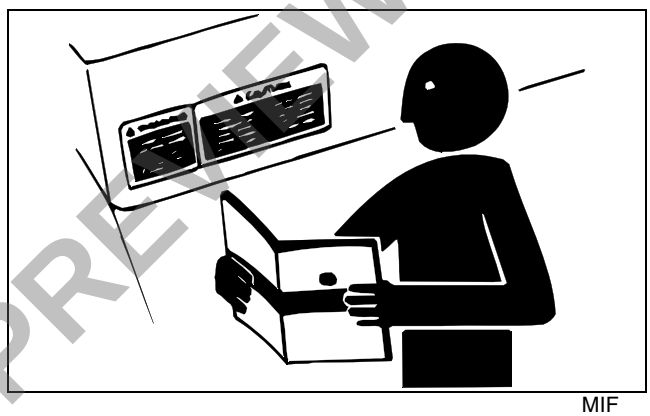
Follow recommended precautions and safe servicing practices.

Understand Signal Words

A signal word - DANGER, WARNING, or CAUTION - is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

Replace Safety Signs



MIF

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.

Be Prepared for Emergencies



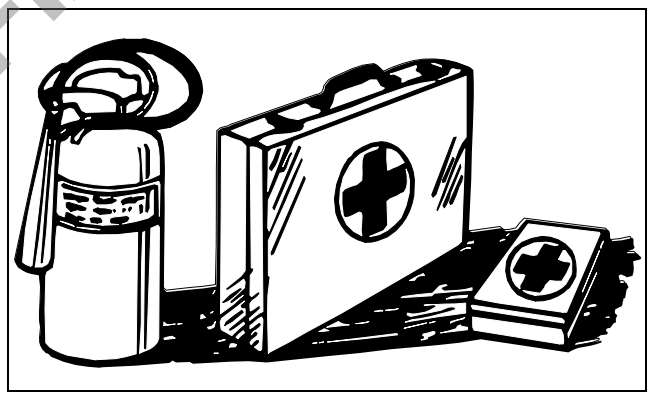
MIF

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.



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Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.

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INTRODUCTION

Manual Description

This technical manual is written for an experienced technician and contains sections that are specifically for this product. It is a part of a total product support program.

The manual is organized so that all the information on a particular system is kept together. The order of grouping is as follows:

- Table of Contents
- Specifications
- General Information
- Identification Numbers
- Tools and Materials
- Component Location
- Schematics and Harnesses
- Theory of Operation
- Operation and Diagnostics
- Diagnostics
- Tests and Adjustments
- Repair
- Other

NOTE: Depending on the particular section or system being covered, not all of the above groups may be used.

The bleed tabs for the pages of each section will align with the sections listed on this page. Page numbering is consecutive from the beginning of the Safety section through the last section.

We appreciate your input on this manual. If you find any errors or want to comment on the layout of the manual please contact us.

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Safety
Specifications and Information
Engine
Electrical
Hydrostatic Power Train
Brakes
Attachments
Miscellaneous

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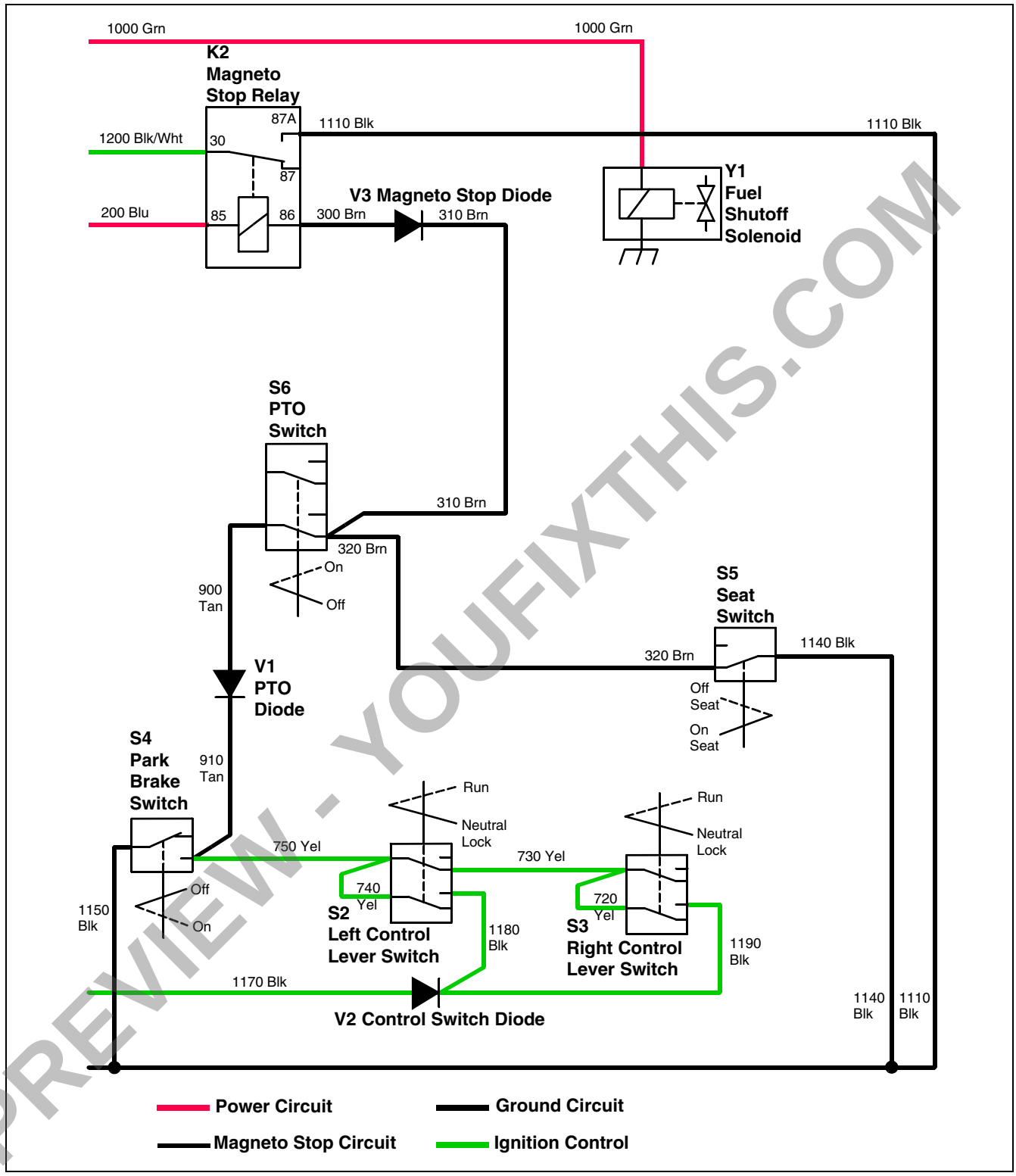
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