LX172, LX173, LX176, LX178, LX186 & LX188 Lawn Tractors

TECHNICAL MANUAL

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John Deere
Lawn & Grounds Care Division

TM1492 (31MAY96)

Litho in U.S.A

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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
- Component Location
- System Schematic
- Theory of Operation
- Troubleshooting Chart
- Diagnostics
- Tests & Adjustments
- Repair

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

Each section will be identified with a tab symbol rather than a number. The groups and pages within a section will be consecutively numbered.

All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

We appreciate your input on this manual. To help, there are postage paid post cards included at the back. If you find any errors or want to comment on the layout of the manual please fill out one of the cards and mail it back to us.

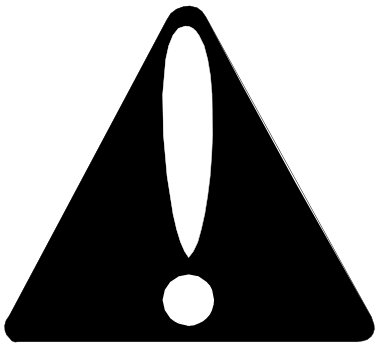
Safety
Specifications and Information
Engine—Kawasaki
Engine—Kohler
Electrical
Power Train (Gear)
Power Train (Hydrostatic)
Steering
Brakes
Attachments
Miscellaneous
M

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RECOGNIZE SAFETY INFORMATION



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.

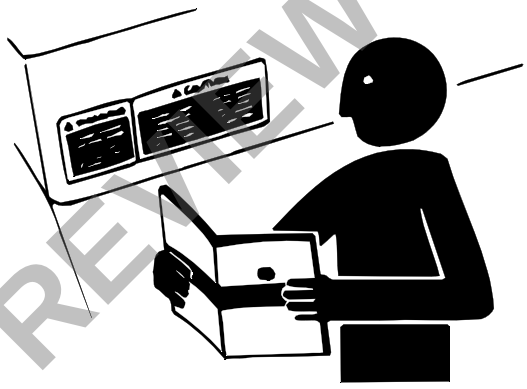
Follow recommended precautions and safe servicing practices.

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

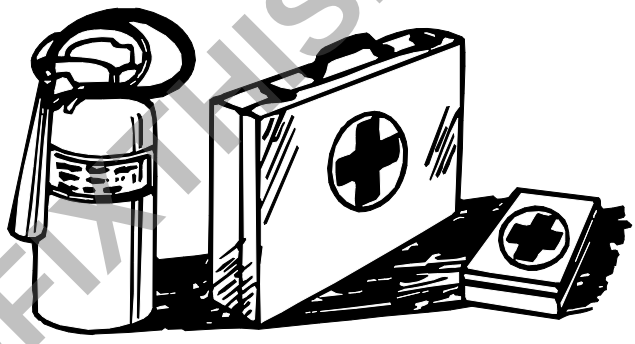


Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.

HANDLE FLUIDS SAFELY-AVOID FIRES

Be Prepared For Emergencies





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.

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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GENERAL VEHICLE SPECIFICATIONS

ENGINE—LX172 AND LX176

Make	John Deere “K” Series
Type	Gasoline
Model	FC420V
Aspiration	Natural
Horsepower	10.4 kW (14 hp)
Cylinders	1
Displacement	423 mL (25.8 cu. in.)
Stroke/Cycle	4 Cycle
Bore	89 mm (3.500 in.)
Stroke	68 mm (2.68 in.)
Slow Idle	1550 ±75 rpm
Fast Idle	3350 ±50 rpm
Valving	Overhead Valves
Lubrication	Pressurized
Oil Filter	Full Flow Filter
Engine Oil Capacity (with filter)	1.50 L (3.2 U.S. pt)
Cooling System	Air Cooled
Air Cleaner	Two-stage with replaceable filter element
Muffler	Horizontal discharge below frame

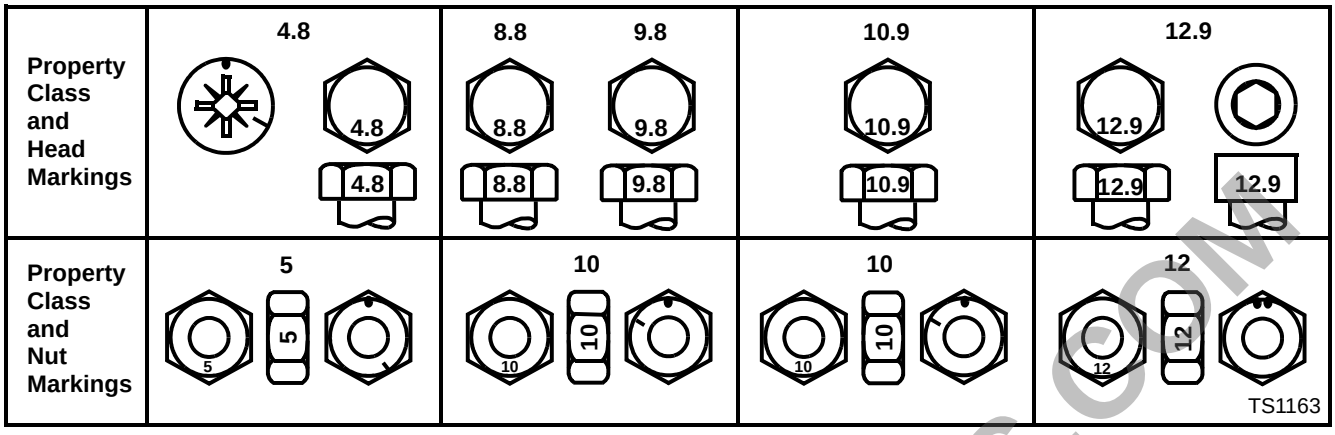
ENGINE—LX173

Make	Kohler
Series	Command LT
Type	Gasoline
Model	CV15S
Aspiration	Natural
Horsepower	11.19 kW (15.0 hp)
Cylinders	1
Displacement	426 cc (26.0 cu. in.)
Stroke/Cycle	4 Cycle
Bore	90 mm (3.60 in.)
Stroke	67 mm (2.64 in.)
Slow Idle	1650 ±75 rpm
Fast Idle (Domestic)	3350 ±50 rpm
Valving	Overhead Valves
Lubrication	Pressurized
Oil Filter	Full Flow Filter (w/o By-Pass Valve)
Engine Oil Capacity (with filter)	1.8 L (1.9 U.S. qt)
Cooling System	Air Cooled
Air Cleaner	Paper with outer foam element
Muffler	Horizontal discharge below frame
Compression Release	Automatic/Centrifugal
Compression Ratio (Cranking)	2:1
Compression Ratio (Running)	8.5:1

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METRIC FASTENER TORQUE VALUES



	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	48	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 grade. Make sure fastener threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

When bolt and nut combination fasteners are used, torque values should be applied to the **NUT** instead of the bolt head.

Tighten toothed or serrated-type lock nuts to the full torque value.

[a] *"Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated (yellow dichromate - Specification JDS117) without any lubrication.*

Reference: JDS—G200.

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GASOLINE ENGINE COOLANT—NORTH AMERICA

The engine cooling system when filled with a proper dilution mixture of anti-freeze and deionized or distilled water provides year-round protection against corrosion, cylinder or liner pitting, and winter freeze protection down to –37°C (–34°F).

The following John Deere coolant is **PREFERRED:**

- **PRE-DILUTED DIESEL ENGINE ANTI-FREEZE/ SUMMER COOLANT™ (TY16036)**.

This coolant satisfies specifications for "Automobile and Light Duty Engine Service" and is safe for use in John Deere Lawn and Grounds Care/Golf and Turf Division equipment, including aluminum block gasoline engines and cooling systems.

The above preferred pre-diluted anti-freeze provides:

- adequate heat transfer
- corrosion-resistant chemicals for the cooling system
- compatibility with cooling system hose and seal material
- protection during extreme cold and extreme hot weather operations
- chemically pure water for better service life
- compliance with ASTM D4656 (JDM H24C2) specifications

If above preferred pre-diluted coolant is not available, the following John Deere concentrate is **recommended**:

- **DIESEL ENGINE ANTI-FREEZE/SUMMER COOLANT CONCENTRATE™ (TY16034).**

If either of above recommended engine coolants are available use any Automobile and Light Duty Engine Service **ethylene glycol base coolant**, meeting the following specification:

- ASTM D3306 (JDM H24C1).

Read container label completely before using and follow instructions as stated.

IMPORTANT: To prevent engine damage, DO NOT use pure anti-freeze or less than a 50% anti-freeze mixture in the cooling system. DO NOT mix or add any additives/conditioners to the cooling system in Lawn and Grounds Care/Golf and Turf Division equipment. Water used to dilute engine coolant concentrate must be of high quality—clean, clear, potable water (low in chloride and hardness–Table 1) is generally acceptable. DO NOT use salt water. Deionized or distilled water is ideal to use. Coolant that is not mixed to these specified levels and water purity can cause excessive scale, sludge deposits, and increased corrosion potential.

Water Quality

Property	Requirements
Total Solids, Maximum	340 ppm (20 grns/gal)
Total Hardness, Max.	170 ppm (10 grns/gal)
Chloride (as Cl), Max.	40 ppm (2.5 grns/gal)
Sulfate (as SO_4), Max.	100 ppm (5.8 grns/gal)

Mix 50 percent anti-freeze concentrate with 50 percent distilled or deionized water. This mixture and the pre-diluted mixture (TY16036) will protect the cooling system down to -37°C(-34°F) and up to 108°C (226°F).

Certain geographical areas may require lower air temperature protection. See the label on your anti-freeze container or consult your John Deere dealer to obtain the latest information and recommendations.

GASOLINE ENGINE COOLANT DRAIN INTERVAL—NORTH AMERICA

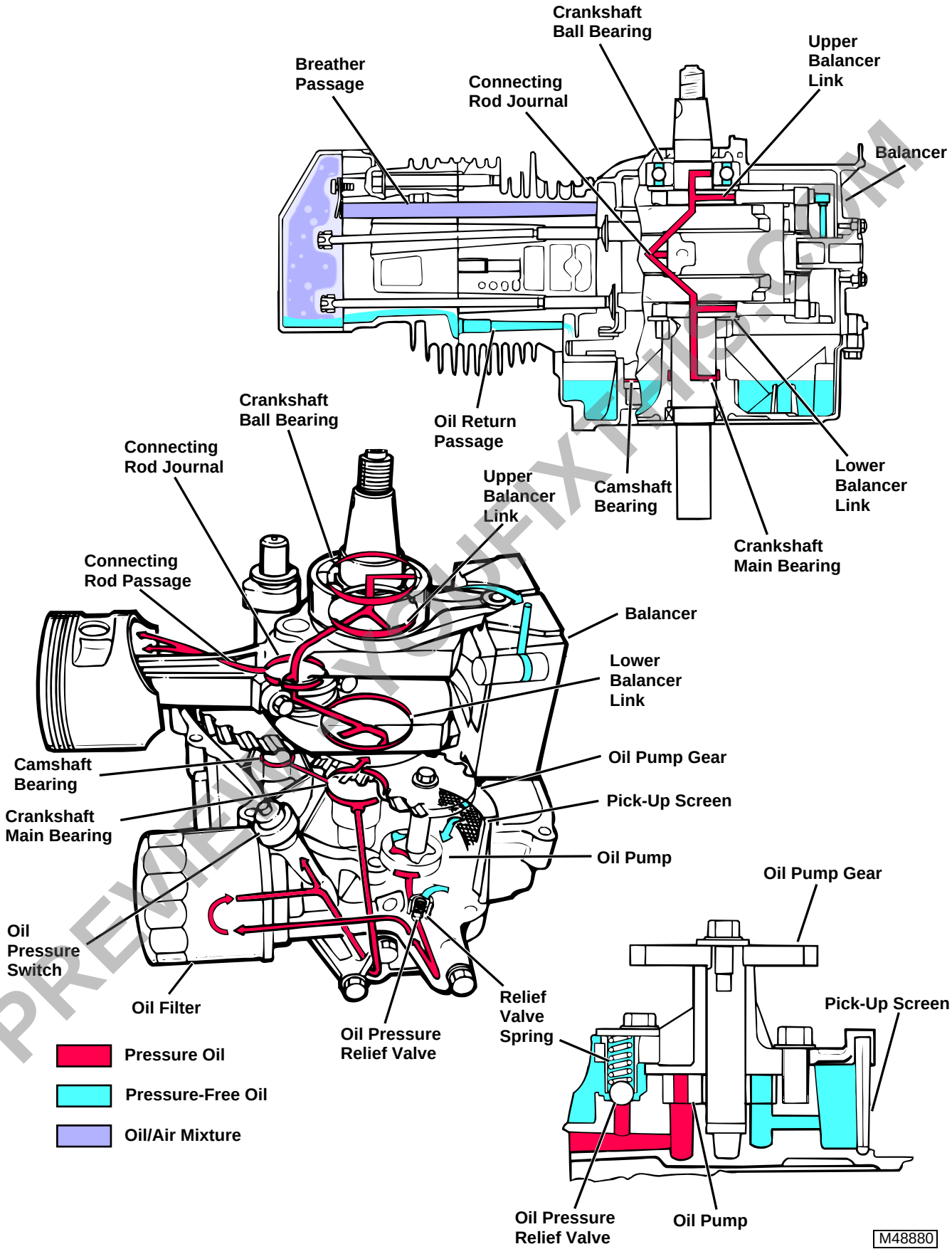
When using **John Deere Pre-Diluted (TY16036)** Automobile and Light Duty Engine Service coolants, drain and flush the cooling system and refill with fresh coolant mixture every **36 months or 3,000 hours** of operation, whichever comes first.

When using **John Deere Concentrate (TY16034)** Automobile and Light Duty Engine Service coolants, drain and flush the cooling system and refill with fresh coolant mixture every **24 months or 2,000 hours** of operation, whichever comes first.

If above John Deere Automobile and Light Duty Engine Service coolants **are not** being used; drain, flush, and refill the cooling system according to instructions found on product container or in equipment operator's manual or technical manual.

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TROUBLESHOOTING

ENGINE AND FUEL SYSTEM TROUBLESHOOTING CHART

PROBLEM OR SYMPTOM / CHECK OR SOLUTION	Engine cranks but will not start or starts hard	Engine will not stay running, runs rough, or irratically	Engine dies frequently	Engine backfires (afterbang)	Engine surges, or has uneven or uncontrolled rpm	Engine has low power	Engine has no spark	Engine will not crank	Lack of fuel in carburetor	Engine floods	Exhaust smoke black or uses too much fuel	Exhaust smoke blue or has excessive oil consumption	Engine has low oil pressure	Fuel in oil	Engine overheats	Excessive engine noise or vibration
Spark plug fouled, defective, or gap not correct. Incorrect spark plug	●	●				●	●			●	●			●	●	
Defective ignition components	●	●	●	●	●	●	●			●	●			●		
Starter worn. Cranking rpm too slow	●							●								
Fuel filter or line restricted. Fuel pump weak, restricted, or leaking. Fuel stale, contains water, or wrong type	●	●	●	●	●	●			●		●	●				
Fuel pump not operating	●	●							●							
Air filter element(s) plugged, oil soaked, or restricted	●	●			●	●				●	●			●		
Choke, throttle, or governor linkage misadjusted. Carburetor misadjusted	●	●	●	●	●	●			●	●	●			●		
Carburetor worn, contaminated with debris or varnish. Passages plugged. Wrong jets	●	●	●	●	●	●			●					●		
Carburetor, intake & exhaust manifold, or cylinder head gaskets leaking or damaged	●	●		●	●	●										●
Low compression from worn piston, rings, cylinder, valves or warped head	●	●				●						●		●		●

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TESTS AND ADJUSTMENTS

THROTTLE CABLE TEST AND ADJUSTMENT

Reason:

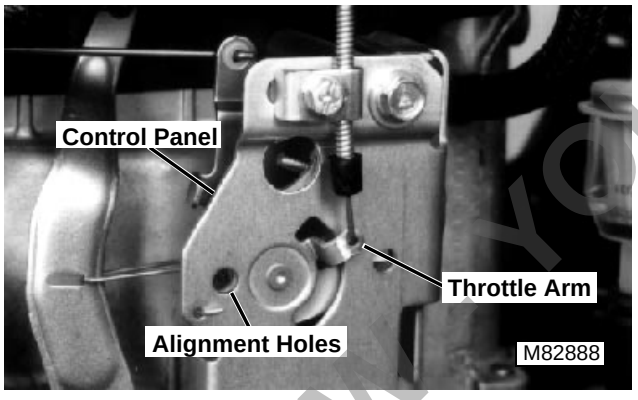
To make sure the throttle control lever obtains the full range of motion from SLOW idle, to FAST idle, and into FULL CHOKE position at the throttle control panel.

Equipment:

- 6 mm (15/64 in.) Drill Bit or
- 6 x 30 mm Flat Head Pin (45M7036)

Test Procedure:

1. Move throttle control lever from SLOW idle to FAST idle position. A solid "detent" should be felt to assure that the control lever is in the FAST idle position.



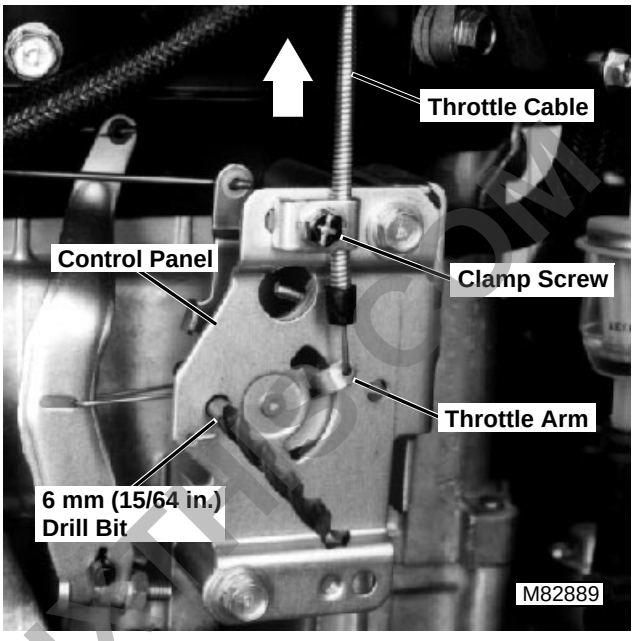
2. Check alignment holes in control panel and throttle arm. They MUST be in visual alignment.
3. Move throttle control lever into CHOKE position, then back into FAST idle position. Again, holes in control panel and throttle arm MUST be aligned.

Results:

- If holes align in FAST idle position, throttle cable is adjusted properly. Test and adjust choke plate. (See CHOKE PLATE TEST AND ADJUSTMENT.
- If holes DO NOT align in FAST idle position, perform following Adjustment Procedure.

Adjustment Procedure:

1. Move throttle control lever to FAST idle position.



2. Loosen clamp screw.
3. Align hole in throttle arm with hole in control panel. Insert a 6 mm (15/64 in.) drill bit or 6 x 30 mm flat head pin (45M7036) through holes to keep throttle arm from moving. Be sure drill bit or flat head pin is perpendicular to the control panel.
4. Pull throttle cable up (arrow) and tighten screw.
5. Remove drill bit.
6. Repeat test procedure.
7. Move throttle control lever through full range several times to be sure linkage is not binding.

CHOKE PLATE TEST AND ADJUSTMENT

Reason:

To make sure that the choke plate is fully closed when the throttle control lever is in the FULL CHOKE position and completely opens choke plate at FAST idle position.

Test Procedure:

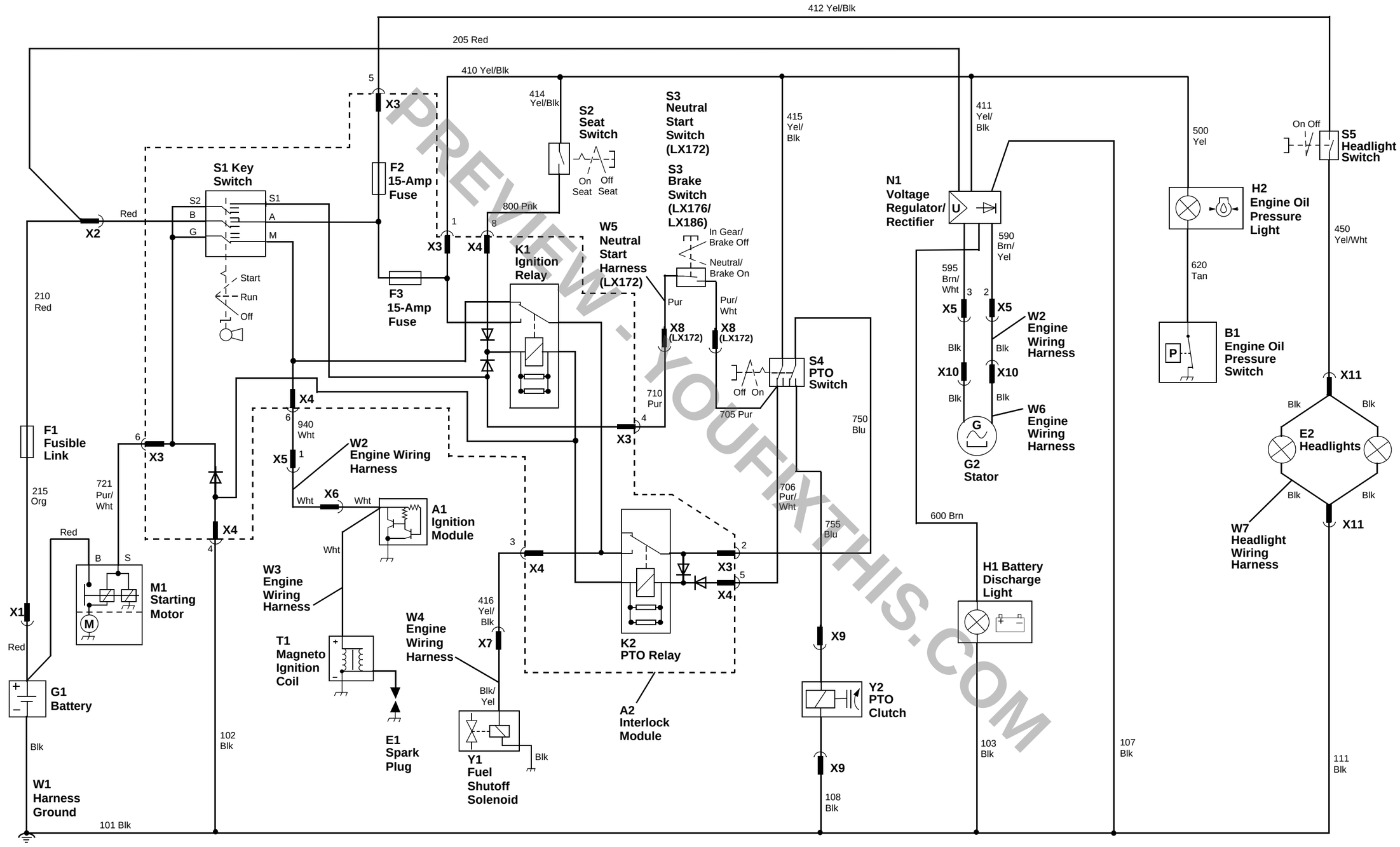
IMPORTANT: Check and adjust throttle cable before adjusting choke, to ensure accurate choke adjustment.

1. Check and adjust throttle cable.
2. Move throttle control lever to full CHOKE position.

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ELECTRICAL SCHEMATIC—LX172/LX176/LX186

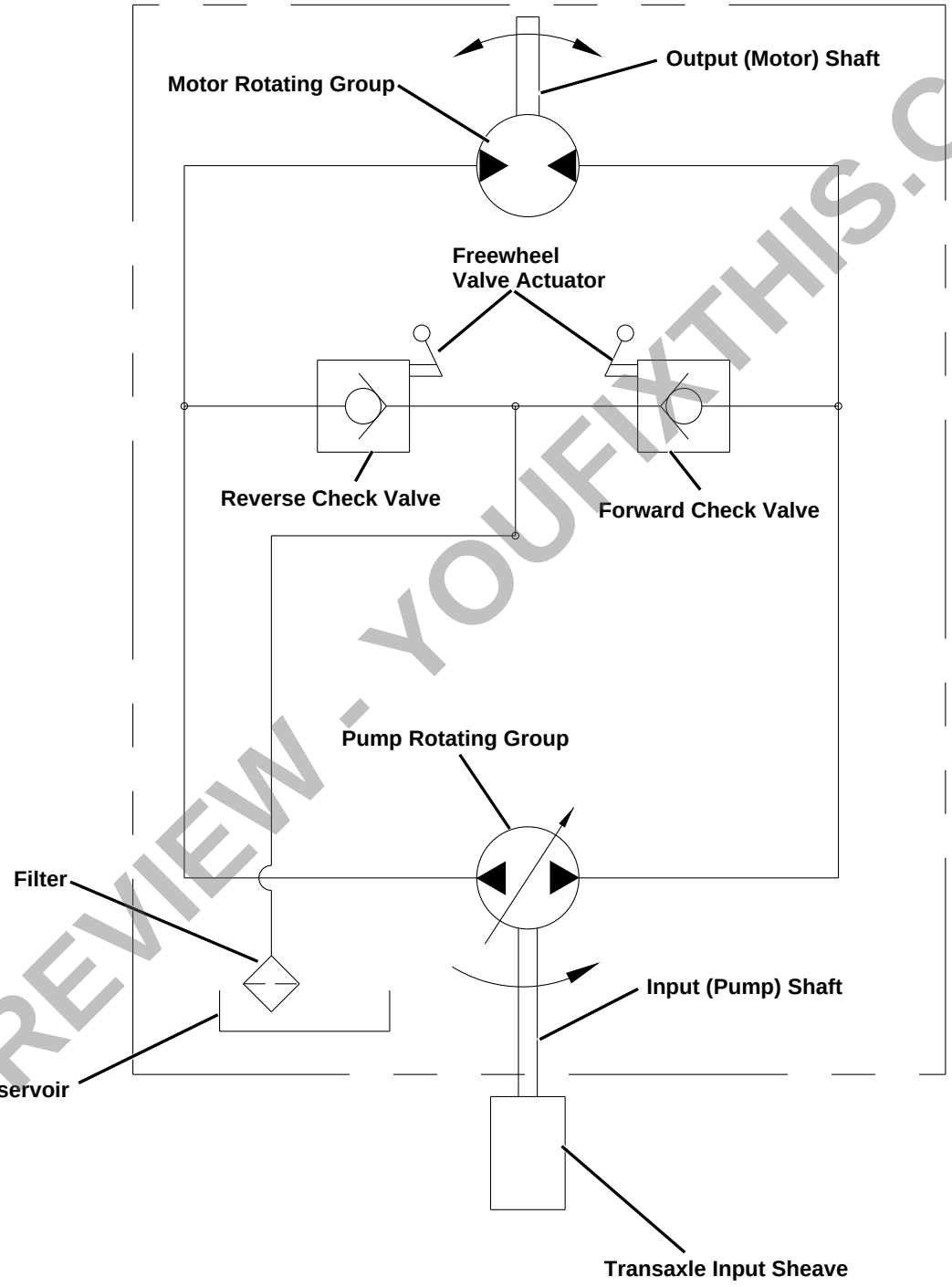


SE1-Power and Starting Circuit	SE2-Ignition and Fuel Shutoff Circuit	SE3-PTO and Interlock Circuit	SE4-Charge Circuit	SE5-Engine Oil Pressure Circuit	SE6-Light Circuit

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HYDRAULIC/HYDROSTATIC SCHEMATIC

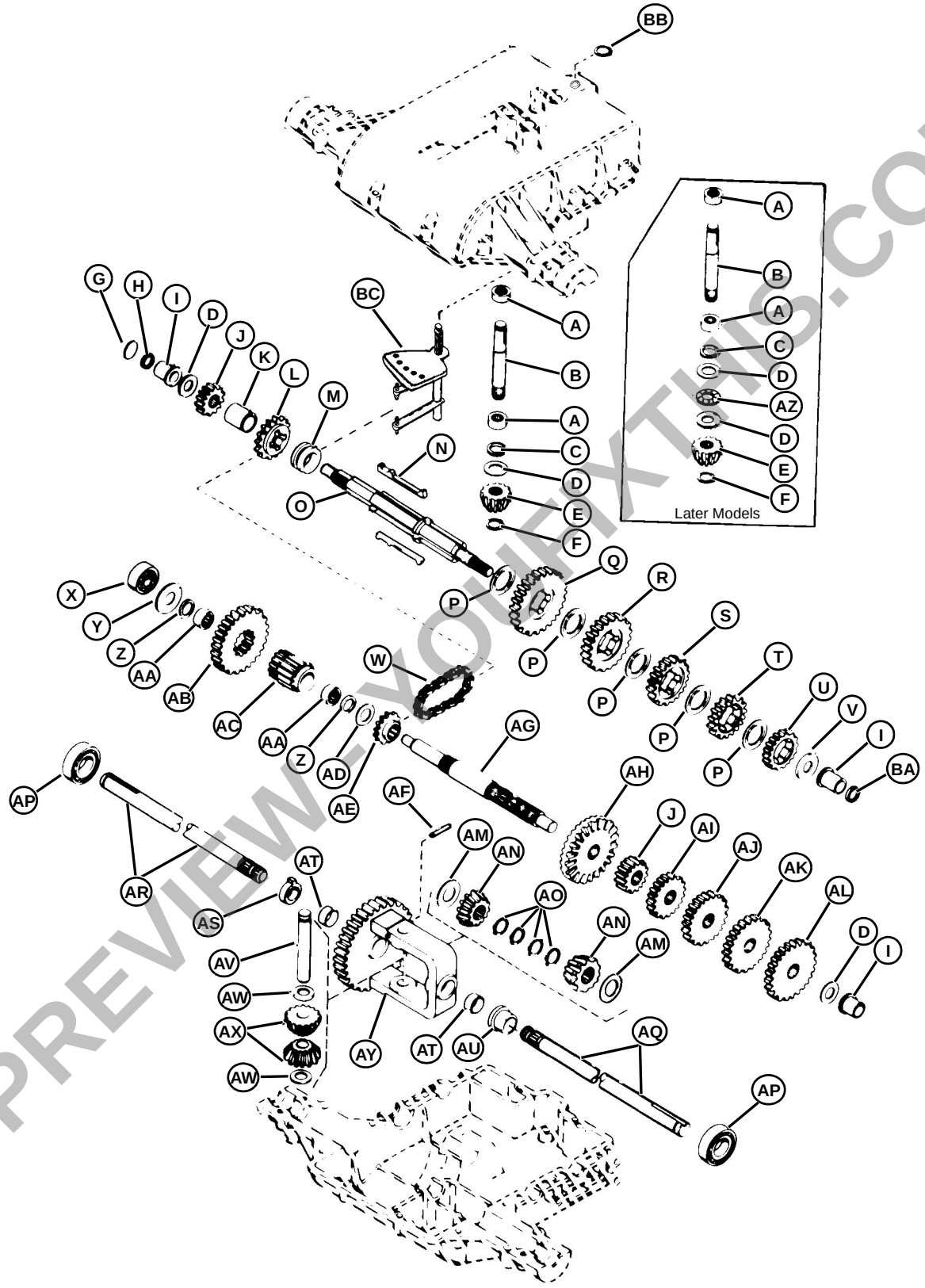


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GEAR TRANSMISSION—EXPLODED VIEW



M54708

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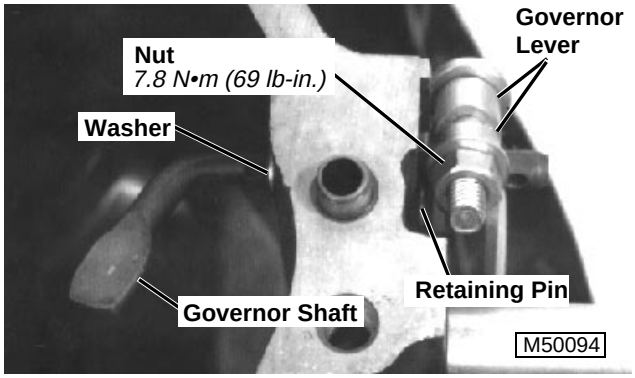
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GOVERNOR SHAFT

Inspection/Replacement

NOTE: It is not necessary to remove governor shaft unless damaged.

1. Remove crankshaft cover. (See CRANKCASE COVER—Removal/Installation on page 3-54.)
2. Inspect shaft for wear or damage. Replace entire assembly only when necessary.



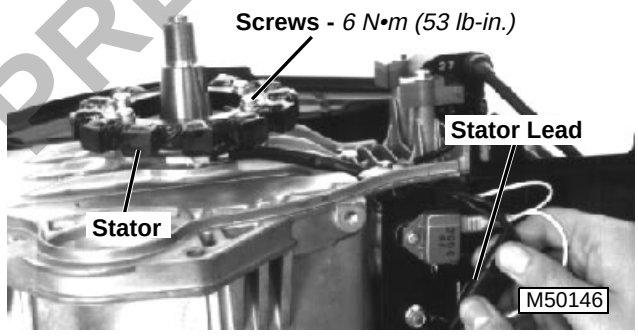
To replace governor shaft:

1. Scribe a mark across shaft and lever to aid in installation.
2. Loosen nut on lever.
3. Remove retaining pin, governor shaft and washer.
4. Install washer, shaft and retaining pin.
5. Align marks made during removal.
6. Tighten nut to **7.8 N•m (69 lb-in.)**.

STATOR

Removal/Installation

1. Remove flywheel. (See FLYWHEEL—Removal/Installation on page 3-48.)



2. Disconnect stator lead.
3. Remove screws and stator.

Installation is done in the reverse order of removal.

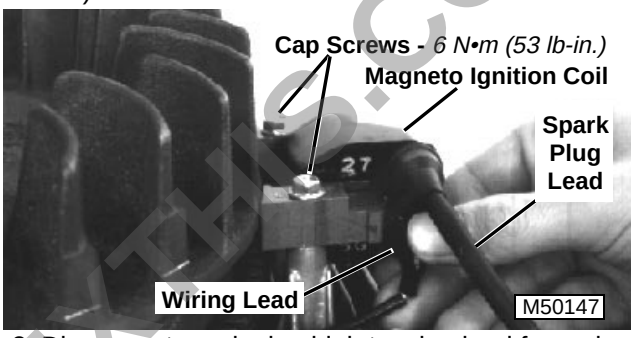
- Tighten stator cap screws to specification.

MAGNETO IGNITION COIL

ENDING ENGINE SERIAL NUMBERS:
(FC420V —B50632)
(FC540V —A00384)

Removal/Installation

1. Remove blower housing. (See BLOWER HOUSING—Inspection/Replacement on page 3-48.)



2. Disconnect spark plug high tension lead from plug.
3. Disconnect wiring lead.
4. Remove cap screws and magneto ignition coil.
5. Test magneto ignition coil resistance. (See MAGNETO IGNITION COIL RESISTANCE TEST on page 3-39.)

Installation is done in the reverse order of removal.

- Adjust coil air gap. (See Air Gap Adjustment on next page.)
- Tighten cap screws to specification.

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Opening Test

Reason:

To determine opening temperature of the thermostat.

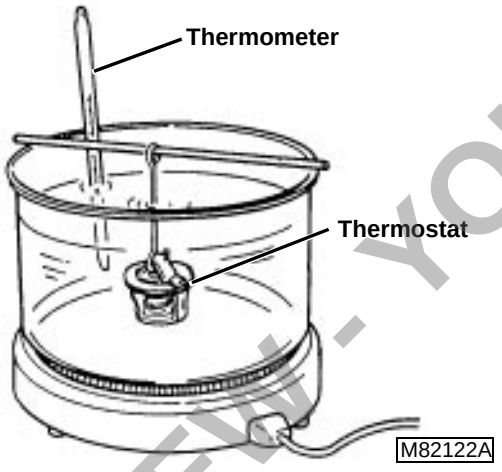
Test Equipment:

- Thermometer
- Glass Container
- Heating Unit

Procedure:

⚠ CAUTION

DO NOT allow thermostat or thermometer to rest against the side or bottom of the glass container when heating water. Thermometer or glass container may rupture if overheated.



1. Suspend thermostat and a thermometer in a container of water.
2. Heat and stir the water. Observe opening action of thermostat and compare temperatures with specifications.
3. Remove thermostat and observe its closing action as it cools.

Specifications:

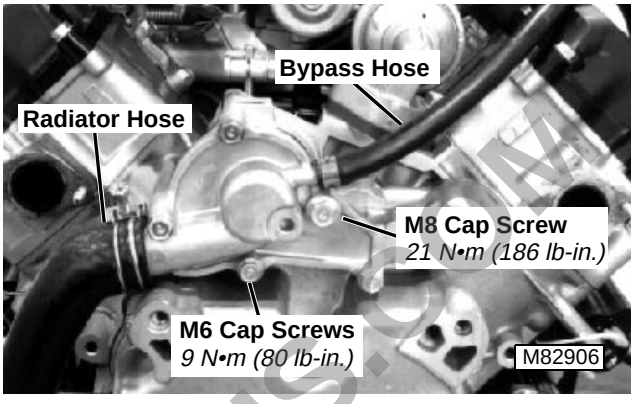
Begin Opening . . . . . 63–66°C (145–150°F)
Fully Open . . . . . 80°C (176°F)

Results:

- If thermostat does not open according to specifications, replace.
- If closing action is not smooth and slow, replace thermostat.

COOLANT PUMP

Removal/Installation



NOTE: Note length and position of mounting cap screws to aid in installation.

1. Disconnect radiator and bypass hoses. Remove mounting cap screws, pump and gaskets.
2. Inspect all parts for wear or damage. (See Disassembly/Inspection procedure.)

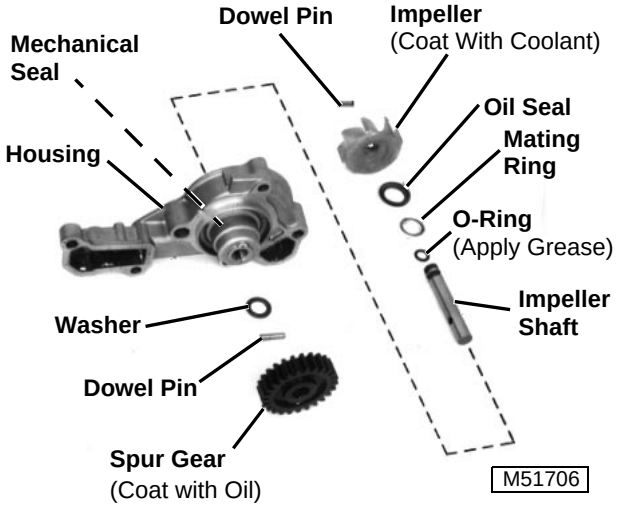
Installation is done in the reverse order of removal.

- Use new gaskets for installation.

NOTE: M8 cap screw goes through crankcase cover into crankcase.

Disassembly/Inspection/Assembly

IMPORTANT: Leakage from the coolant pump will drain into the engine block and could cause engine damage. If there is any doubt of the condition of the coolant pump, replace it as a complete assembly.



1. Remove spur gear using a puller.
2. Remove impeller assembly from housing. Disassemble impeller assembly.

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11. Remove test plug, install spark plug [tighten spark plug to **40 N•m (354 lb-in.)],** and install hood.

Results:

- If the exhaust valve **DOES NOT** open beyond the minimum specification, the ACR mechanism is faulty and camshaft assembly must be replaced. (See CAMSHAFT—Removal/Installation on page 4-42.)

CRANKCASE VACUUM TEST

Reason:

To measure the amount of crankcase vacuum, which ensures the crankcase is not pressurized. A pressurized crankcase will force oil past the seals and gaskets and through the breather into the carburetor.

Test Equipment:

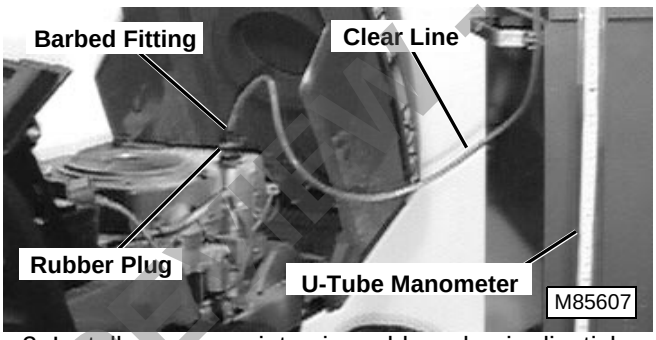
- JT05697 U-Tube Manometer Test Kit or
- JT03503 Crankcase Vacuum Test Kit

Procedure:

JT05697 U-Tube Manometer Test Kit—

1. Park machine on level surface.
2. Raise engine hood and remove dipstick.

IMPORTANT: Check oil fill tube, dipstick cap and O-ring for cracks or damage, replace as necessary.

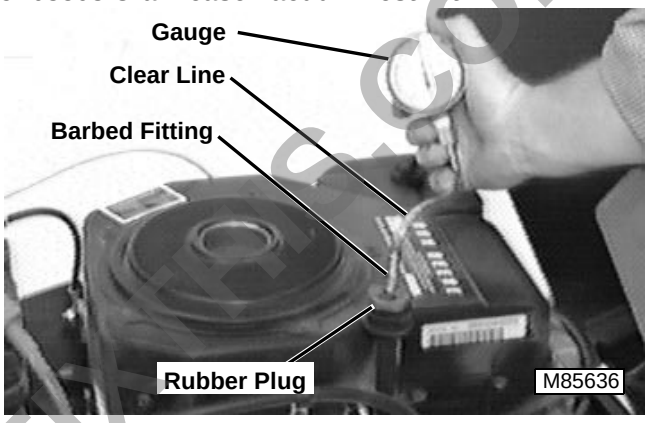


3. Install an appropriate size rubber plug in dipstick tube.
4. Insert barbed fitting in rubber plug and connect clear line to barbed fitting.

IMPORTANT: DO NOT make connection between U-Tube Manometer and clear line BEFORE engine is running or fluid in manometer could be drawn into crankcase. DO NOT turn engine OFF until clear line has been disconnected from U-Tube Manometer.

5. Start and run engine at SLOW idle.
6. Connect clear line to open U-Tube Manometer spigot.
7. Run engine at FAST idle.
8. Record crankcase vacuum reading. Manometer should show a **minimum vacuum of 10.2 cm (4.0 in.) of water movement**.
9. Run engine at SLOW idle. **DO NOT TURN ENGINE OFF!**
10. Disconnect clear line from open manometer spigot.
11. Turn engine OFF.
12. Remove plug from dipstick tube and install dipstick.

JT03503 Crankcase Vacuum Test Kit—



1. Repeat Steps 1–3 in JT05697 test procedure.
2. Assemble gauge, clear line, and barbed fitting on workbench.

IMPORTANT: DO NOT make connection between test gauge assembly and rubber plug BEFORE engine is running at FAST idle or gauge damage may result. After test reading is made, DO disconnect test gauge assembly WHILE engine is running at FAST idle to prevent gauge damage.

3. Hold finger over rubber plug hole to keep oil from spraying out. Start engine and run at FAST idle.
4. Connect gauge, clear line, and barbed fitting to rubber plug.
5. Record crankcase vacuum reading. Gauge should show a **minimum vacuum of 10.2 cm (4.0 in.)**.
6. Disconnect barbed fitting, clear line, and gauge from rubber plug while engine is running at FAST idle. Hold finger over rubber plug hole to keep oil from spraying out.
7. Move throttle to SLOW idle and turn engine OFF.
8. Remove rubber plug and install dipstick.

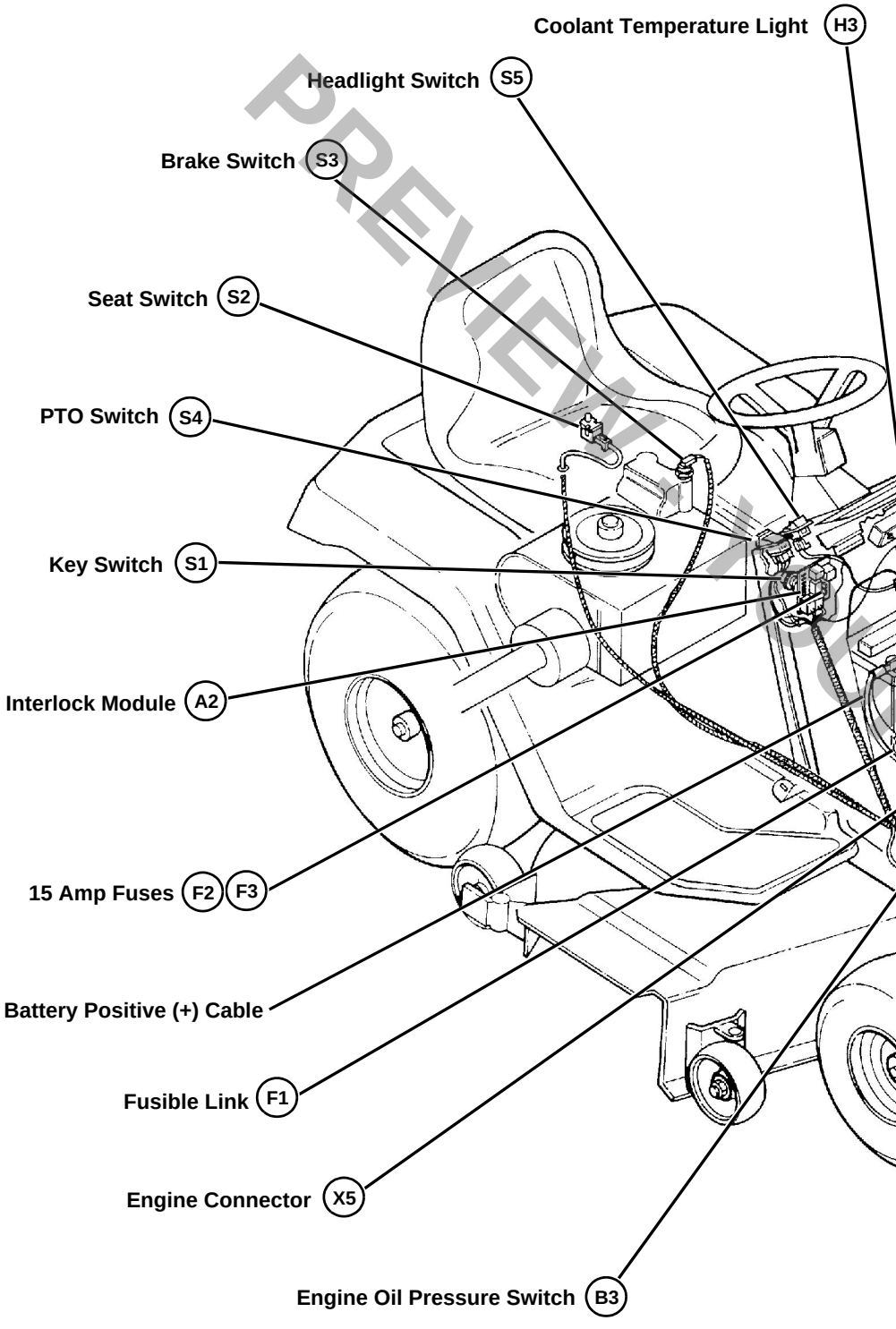
Results:

- If crankcase vacuum is BELOW specification, check the following:
  - Breather reed valve clearance and condition.
  - Seals and gaskets for leakage.
  - Rocker arm cover O-ring for leakage.
  - Valve and valve seats for wear or damage.
  - Head warpage.
  - Rings, piston, and cylinder bore for wear or damage.

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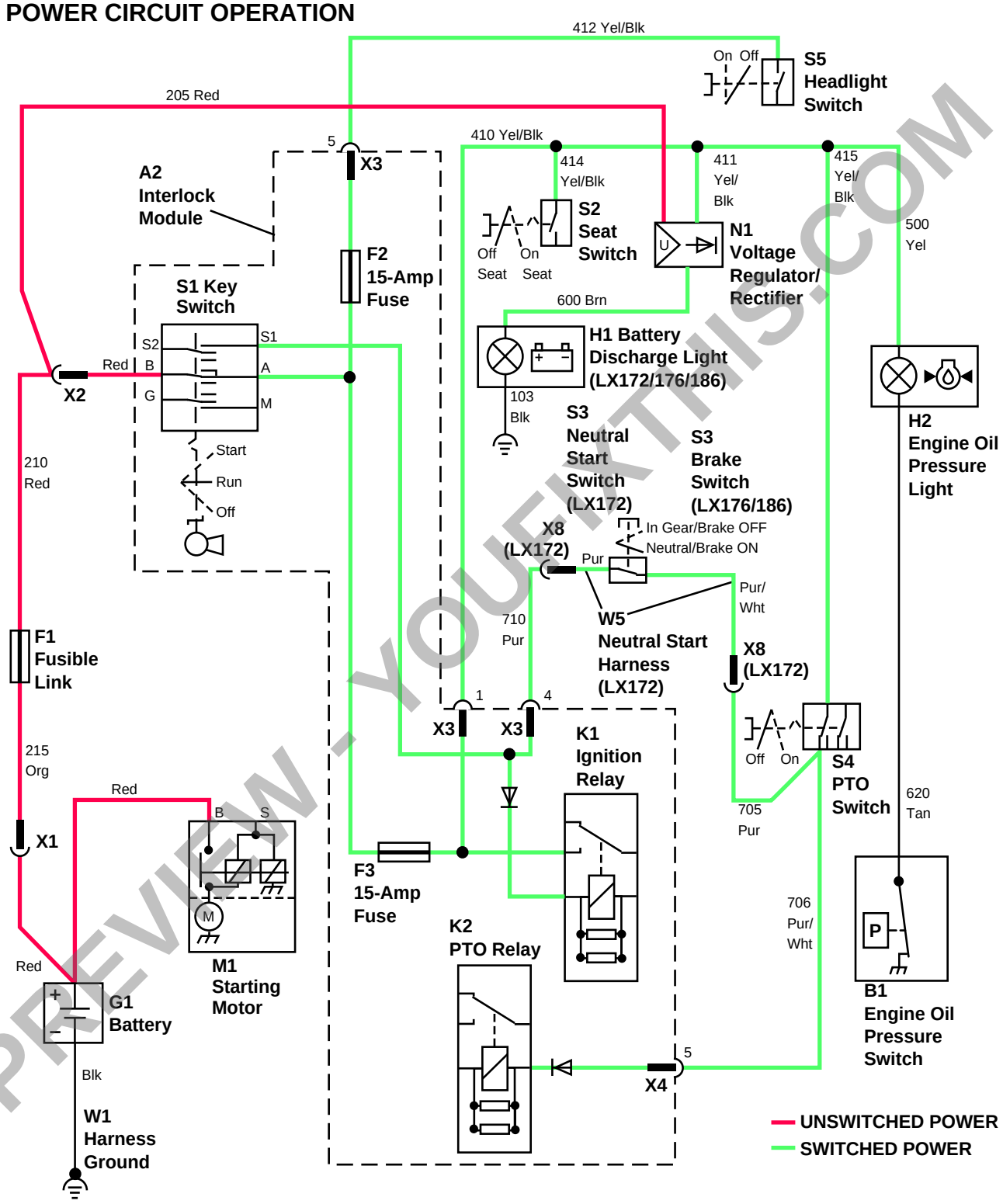
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ELECTRICAL COMPONENTS—LX178/LX188



PREVIEW

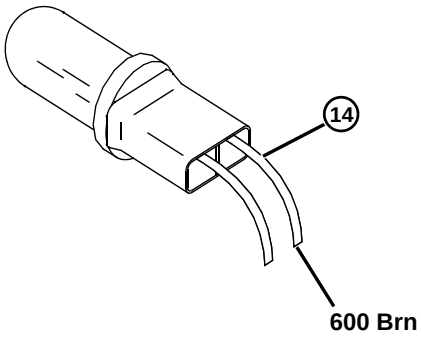
POWER CIRCUIT OPERATION



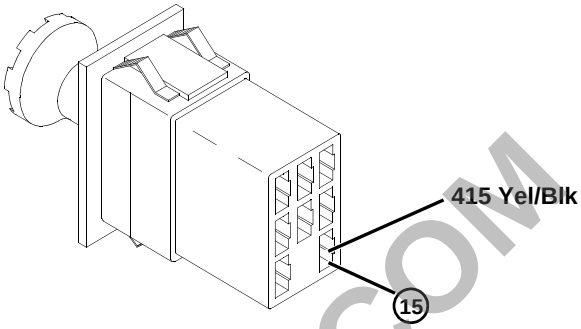
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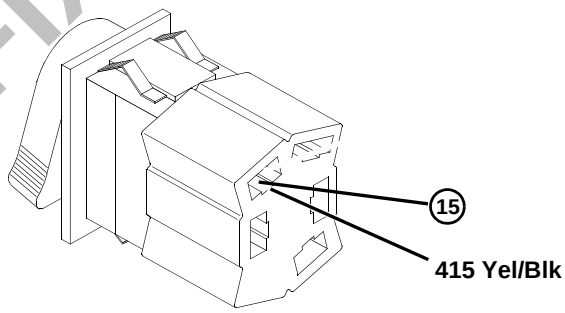
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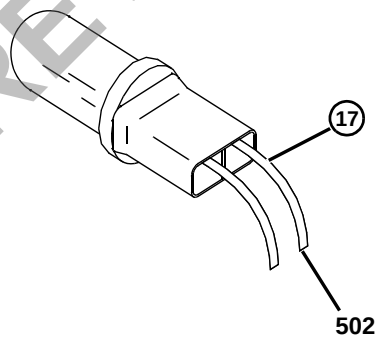
H1 Battery Discharge Light



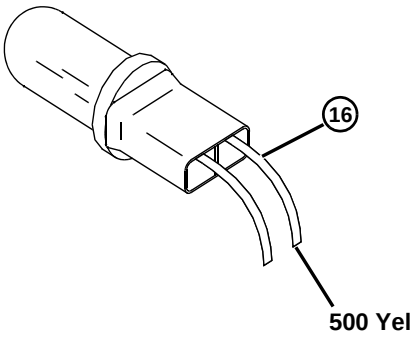
S4 PTO Switch (Late Model)



S4 PTO Switch (Early Model)

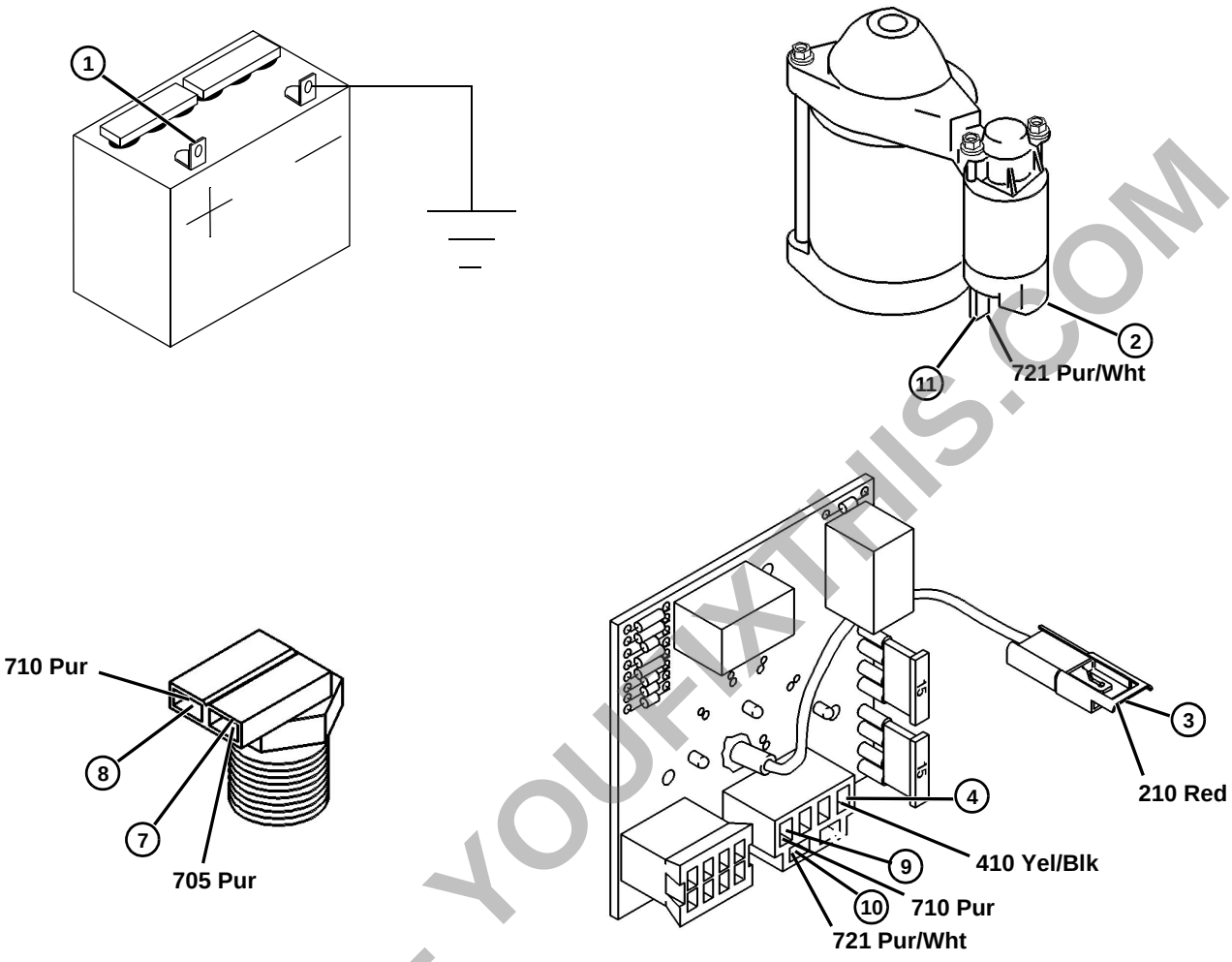


H3 Engine Coolant Temperature Light



H2 Engine Oil Pressure Light

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COOLANT TEMPERATURE SWITCH TEST—LX178/LX188

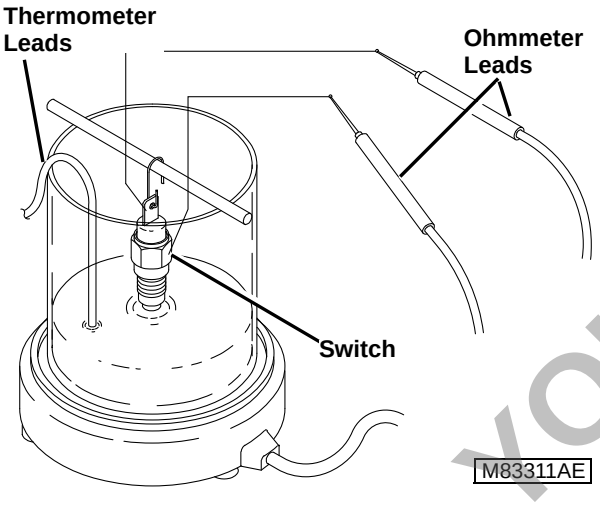
Reason:

To determine operating temperature of switch.

Test Equipment:

- Ohmmeter
- JT05800 Digital Thermometer
- Glass Container
- Heating Unit

Procedure:



1. Connect ohmmeter leads to switch terminal and body.
2. Suspend switch in a container of engine coolant solution.
3. Place digital thermometer lead in coolant.
4. Heat and stir the coolant. Observe temperature of coolant when continuity occurs. Coolant temperature should be 111°C (232°F).

Results:

- If continuity does not occur within specification, replace switch.

FUEL SHUTOFF SOLENOID TEST

Reason:

To determine if the fuel shut-off plunger retracts when the solenoid is energized.

Test Equipment:

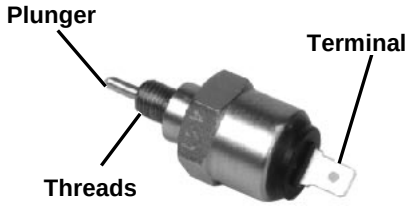
- 2 Jumper Wires

Procedure:

⚠ CAUTION

Keep gasoline away from sparks, flame, or hot engine parts or personal injury can result.

1. Remove drain screw and spring to drain gasoline from float bowl.
2. Disconnect fuel shut-off solenoid connector.
3. Remove fuel shut-off solenoid, washer and float bowl.



4. Connect a jumper wire from the battery positive (+) terminal to solenoid terminal.

NOTE: It may be necessary to push plunger inward slightly for plunger to retract.

5. Connect a jumper wire from the battery negative (-) terminal to solenoid threads. Plunger must retract when solenoid is energized.
6. Remove jumper wire from the battery negative (-) terminal. Plunger must extend.

Results:

- If plunger does not move, replace solenoid.

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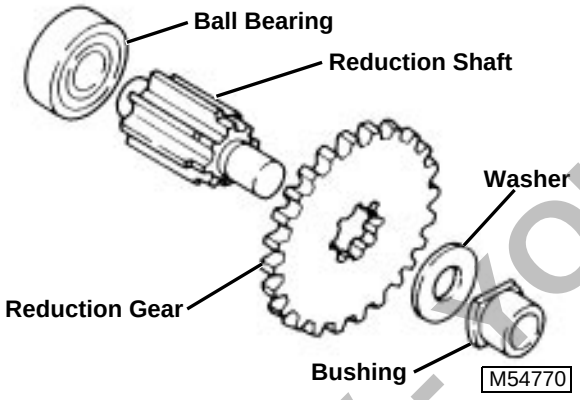
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M54775

18. Measure I.D. of bushings. Replace if measurement is **greater than 22.15 mm (0.872 in.)**.
19. Measure O.D. of axle shafts. Replace if measurement is **less than 21.98 mm (0.865 in.)**.
20. Subtract axle shaft O.D. from bushing I.D. to find clearance. Replace parts if clearance is **greater than 0.50 mm (0.020 in.)**.
21. Remove reduction shaft assembly.



M54770

22. Remove ball bearing, bushing, washer and reduction gear from reduction shaft.
23. Inspect all parts for wear or damage. Replace parts as necessary.


M54774

24. Measure I.D. of bushings. Replace if measurement is **greater than 15.13 mm (0.596 in.)**.
25. Measure O.D. of reduction shaft. Replace if measurement is **less than 14.97 mm (0.589 in.)**.
26. Subtract reduction shaft O.D. from bushing I.D. to find clearance. Replace parts if clearance is **greater than 0.50 mm (0.020 in.)**.

A—Seal
B—Snap Ring
C—Ball Bearing
D—Top Case Half
E—O-Ring
F—Spring
G—Freewheel Lever Shaft
H—Rod
I—Snap Ring
J—Check Valve Arm
K—Plain Bearing
L—Variable Position Swash Plate
M—Sleeve
N—Plate
O—Roller Bearing
P—Plate
Q—Piston (12 used)
R—Disk (12 used)
S—Spring (12 used)
T—Cylinder Block
U—Spring
V—Snap Ring
W—Input (Pump) Shaft
X—E-Clip
Y—Roller
Z—Clip
AA—Brake Rod
AB—Brake Lever
AC—O-Ring
AD—Guide Spring
AE—O-Ring
AF—Brake Shaft
AG—O-Ring
AH—Swash Plate Control Cam
AI—Neutral Return Spring
AJ—Shift Block (2 used)
AK—Neutral Adjustment Eccentric Shaft
AL—O-Ring
AM—Actuating Plunger (2 used)
AN—Spring (2 used)
AO—Valve Cap (2 used)
AP—Valve Body (2 used)
AQ—Back-Up Ring (2 used)
AR—O-Ring (2 used)
AS—Ball (2 used)
AT— Seat (2 used)
AU—Spring (2 used)
AV—Spring Guide (2 used)
AW—Pin (2 used)
AX—Bushing
AY—Valve Body
AZ—Gasket
BA—Filter
BB—O-Ring
BC—Fill Port
BD—O-Ring
BE—Pipe Plug
BF—Case Half—K60 (Cover—K61)
BG—Magnet
BH—Bearing Assembly
BI—Fixed Position Swash Plate
BJ—Output (Motor) Shaft
BK—Seal

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