E100, E110, E120, E130, E140, E150, E160, E170, and E180 Lawn Tractors (S.N. 010001-)

TECHNICAL MANUAL
E100, E110, E120, E130, E140, E150, E160, E170, and E180 Lawn Tractors

TM151119 21OCT19 (ENGLISH)

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John Deere Power Products
PRINTED IN U.S.A.

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Previous Editions
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Recognize Safety Information

This is a 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 operating practices.



T81389 —UN—28JUN13

DX,ALERT -19-29SEP98-1/1

Understand Signal Words



TS187 —19—30SEP88

DANGER; The signal word DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING; The signal word WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION; The signal word CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. CAUTION may also be used to alert against unsafe practices associated with events which could lead to personal injury.

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.

DX,SIGNAL -19-05OCT16-1/1

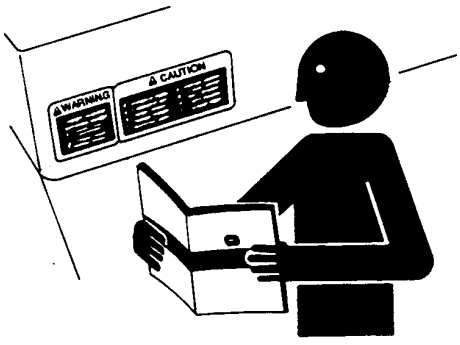
Follow Safety Instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your John Deere dealer.

There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.



TS201 —UN—15APR13

If you do not understand any part of this manual and need assistance, contact your John Deere dealer.

DX,READ -19-16JUN09-1/1

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Machine Specifications

NOTE: Specifications and design subject to change without notice.

	E100 Series	
Ground Speed (Hydrostatic Machines):		
Forward	0—8.9 km/h (0—5.5 mph)	
Reverse	0—5.1 km/h (0—3.2 mph)	
Ground Speed (CVT Machines):		
Forward	0—8.9 km/h (0—5.5 mph)	
Reverse	0—4.8 km/h (0—3.0 mph)	
Engines:		
Make	Briggs & Stratton	
Engine Power Information	http://www.briggsandstratton.com	
Engine	Model Number	Series
Model E100	31	Intek™ Single cylinder
Model E110	33	TL-200A
Model E120	40	TL-200A
Model E130, E140	40	TL-200A
Model E150	40	Extended Life Series™ V-Twin
Model E160	44	Extended Life Series™ V-Twin
Model E170	44	Extended Life Series™ V-Twin
Model E180	44	Extended Life Series™ V-Twin
Fuel System:		
Type	Mechanical Vacuum Pump	
Tank Capacity	9 L (2.4 gal)	
Electrical System:		
Type	12 Volt Negative Ground	
Stator Output	6—16.6 A regulated at 12.2—13.8 V	
Battery	12 volt	
Battery Type	BCI Group U1	
Spark Plug Torque	20 N·m (180 lb·in)	
Spark Plug Gap	0.76 mm (0.030 in)	
Ignition Coil Air Gap	0.20—0.30 mm (0.008—0.012 in)	
Power Train:		
E100	General Transmissions RT400 CVT Transaxle	
E110, E120, E130, E140, E150, E160	TL-200A	
E170, E180	Tuff Torq® K46BE Transaxle	
Transaxle Oil (factory fill)	10W-30 Engine Oil	
Transaxle Oil (extreme or high hour applications)	John Deere Hy-Gard (J20C), or 5W-50	

Engine Specifications:				
	M31	M33	M40	M44
Low Idle Speed (Governed)	1750 ± 100 rpm			
High Idle Speed	3350 ± 100 rpm			
Displacement	0.501 L ($30.59\ in.^3$)	0.540 L ($32.95\ in.^3$)	0.656 L ($40.03\ in.^3$)	0.725 L ($44.24\ in.^3$)
Bore	90.48 mm (3.562 in)	94.02 mm (3.702 in)	79.25 mm (3.12 in)	

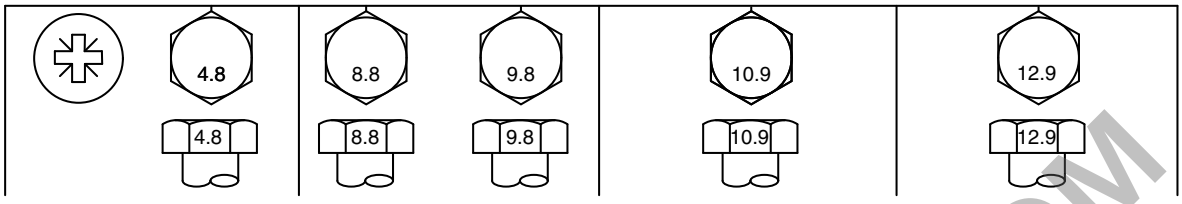
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MG39705,0000249 -19-16SEP19-1/2

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Metric Bolt and Screw Torque Values

TS1742 —UN—31MAY18



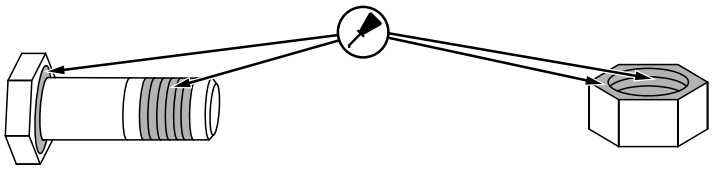
Bolt or Screw Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Hex Head[a]		Flange Head[b]		Hex Head[a]		Flange Head[b]		Hex Head[a]		Flange Head[b]		Hex Head[a]		Flange Head[b]	
	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in	N·m	lb·in
M6	3.6	31.9	3.9	34.5	6.7	59.3	7.3	64.6	9.8	86.7	10.8	95.6	11.5	102	12.6	112
									N·m	lb·ft	N·m	lb·ft	N·m	lb·ft	N·m	lb·ft
M8	8.6	76.1	9.4	83.2	16.2	143	17.6	156	23.8	17.6	25.9	19.1	27.8	20.5	30.3	22.3
			N·m	lb·ft	N·m	lb·ft	N·m	lb·ft								
M10	16.9	150	18.4	13.6	31.9	23.5	34.7	25.6	46.8	34.5	51	37.6	55	40.6	60	44.3
	N·m	lb·ft														
M12	—	—	—	—	55	40.6	61	45	81	59.7	89	65.6	95	70.1	105	77.4
M14	—	—	—	—	87	64.2	96	70.8	128	94.4	141	104	150	111	165	122
M16	—	—	—	—	135	99.6	149	110	198	146	219	162	232	171	257	190
M18	—	—	—	—	193	142	214	158	275	203	304	224	322	245	356	263
M20	—	—	—	—	272	201	301	222	387	285	428	316	453	334	501	370
M22	—	—	—	—	365	263	405	299	520	384	576	425	608	448	674	497
M24	—	—	—	—	468	345	518	382	666	491	738	544	780	575	864	637
M27	—	—	—	—	683	504	758	559	973	718	1080	797	1139	840	1263	932
M30	—	—	—	—	932	687	1029	759	1327	979	1466	1081	1553	1145	1715	1265
M33	—	—	—	—	1258	928	1398	1031	1788	1319	1986	1465	2092	1543	2324	1714
M36	—	—	—	—	1617	1193	1789	1319	2303	1699	2548	1879	2695	1988	2982	2199

The nominal torque values listed are for general use only with the assumed wrenching accuracy of 20%, such as a manual torque wrench.
DO NOT use these values if a different torque value or tightening procedure is given for a specific application.
For lock nuts, for stainless steel fasteners, or for nuts on U-bolts, see the tightening instructions for the specific application.

Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original.

- Make sure that fastener threads are clean.
- Apply a thin coat of Hy-Gard™ or equivalent oil under the head and on the threads of the fastener, as shown in the following image.
- Be conservative with the amount of oil to reduce the potential for hydraulic lockup in blind holes due to excessive oil.
- Properly start thread engagement.

TS1741 —UN—22MAY18

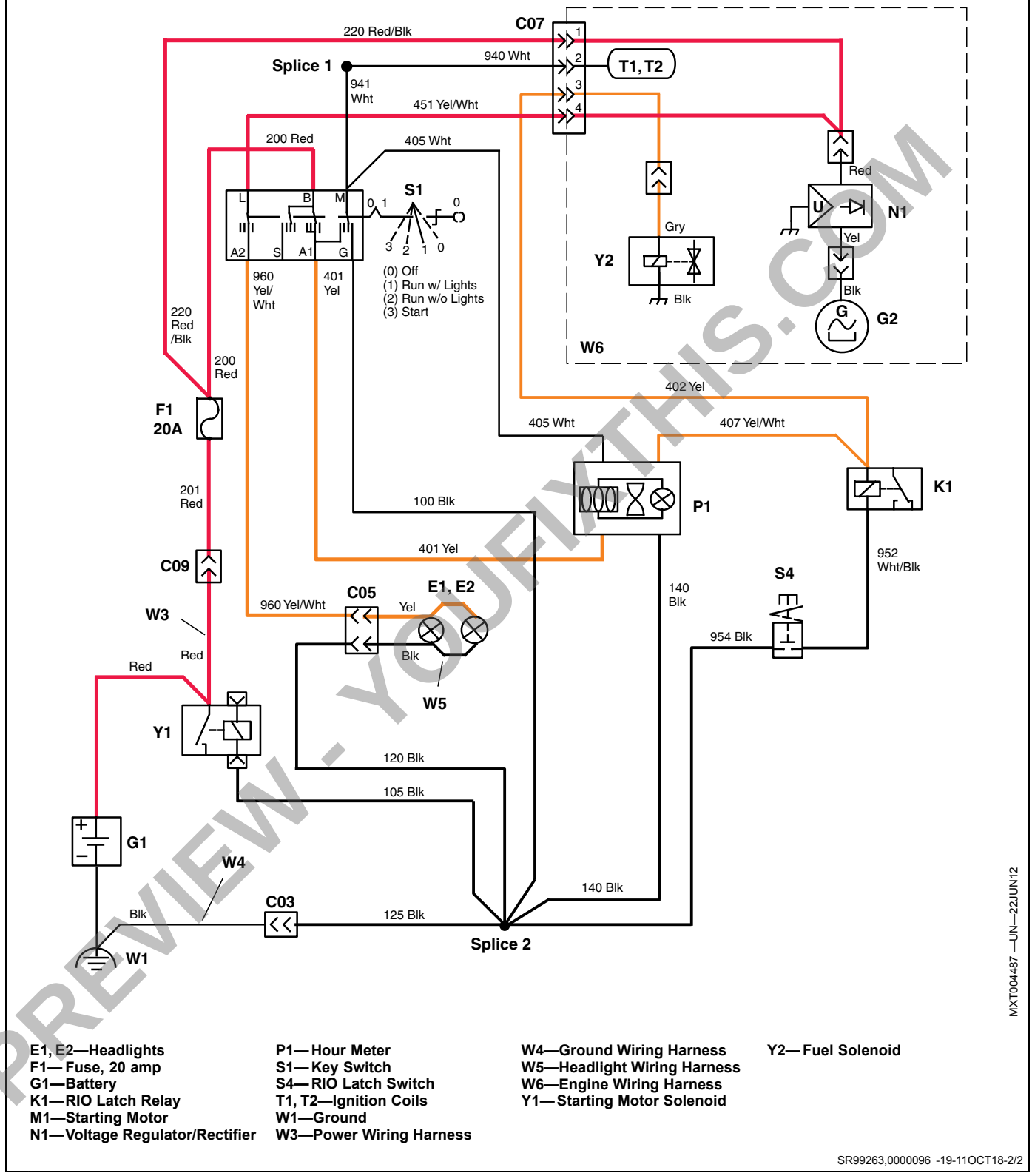


[a] Hex head column values are valid for ISO 4014 and ISO 4017 hex head, ISO 4162 hex socket head, and ISO 4032 hex nuts.
[b] Hex flange column values are valid for ASME B18.2.3.9M, ISO 4161, or EN 1665 hex flange products.

DX,TORQ2 -19-30MAY18-1/1

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E1, E2—Headlights
F1— Fuse, 20 amp
G1—Battery
K1—RIO Latch Relay
M1—Starting Motor
N1—Voltage Regulator/Rectifier
P1— Hour Meter
S1— Key Switch
S4— RIO Latch Switch
T1, T2—Ignition Coils
W1—Ground
W3—Power Wiring Harness
W4—Ground Wiring Harness
W5—Headlight Wiring Harness
W6—Engine Wiring Harness
Y1— Starting Motor Solenoid
Y2— Fuel Solenoid

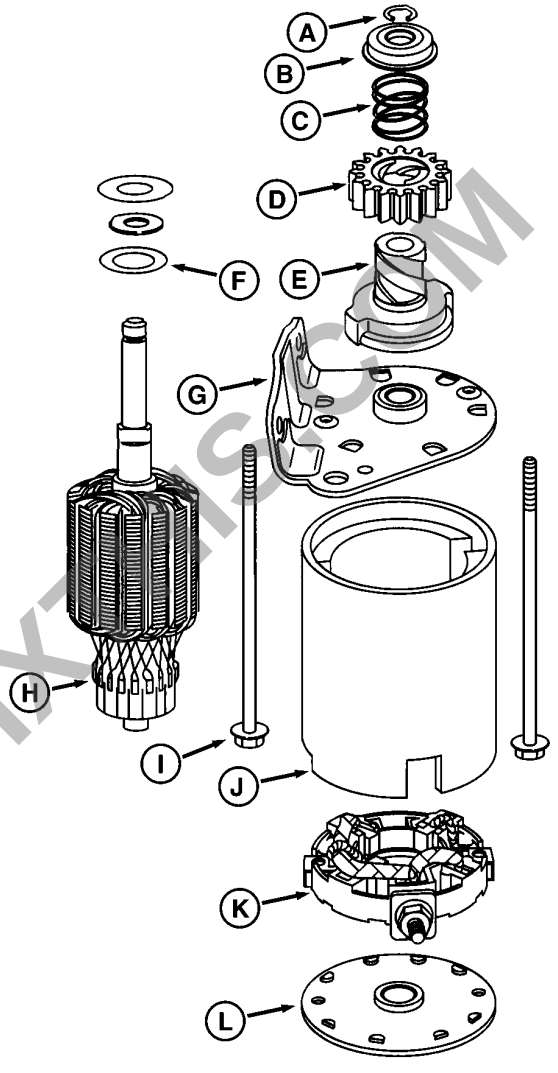
SR99263,0000096 -19-11OCT18-2/2

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Inertia Starting Motor Components, Single Cylinder

A—C-Ring
B—Retainer
C—Spring
D—Drive Gear
E—Helix Starter Clutch
F—Wave Washer
G—Drive End Head
H—Armature
I— Through Bolt
J—Housing
K—Brush Holder
L—End Cap



MXT002890 —UN—03FEB12

RM87422,0000951 -19-23JAN18-1/1

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Engine Will Not Crank (Single Cylinder)

Engine Will Not Crank (Single Cylinder)

Symptom	Problem	Solution
Engine Will Not Crank	Battery	a. Charge and test battery. (See Charge Battery, and Battery, Charging, and Starting System Tests.) b. Replace the battery if it will not take or hold a charge.
	Starting motor does not rotate when ignition switch is turned to start position.	a. Cranking circuit problem. (See Cranking Circuit Operation, All Models.) b. Key switch malfunction. (See Key Switch Test.) c. Starting relay malfunction. (See Relay Test.)

OUMX258,0000429 -19-10JAN17-1/1

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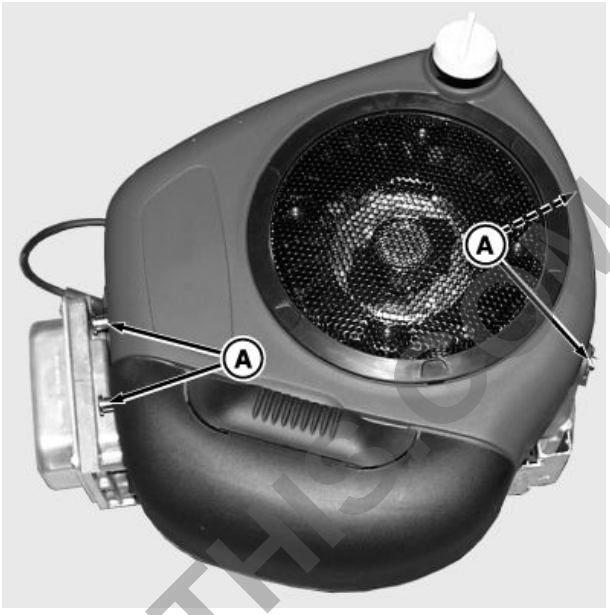
Remove and Install Upper Blower Housing

1. Remove four screws (A)
2. Remove the air filter cover and air filter.
3. Lift upper blower housing up and off engine.
4. Remove the screw holding the dipstick tube in place.
5. Install in reverse order of removal.
6. Tighten screws to specification.

Specification

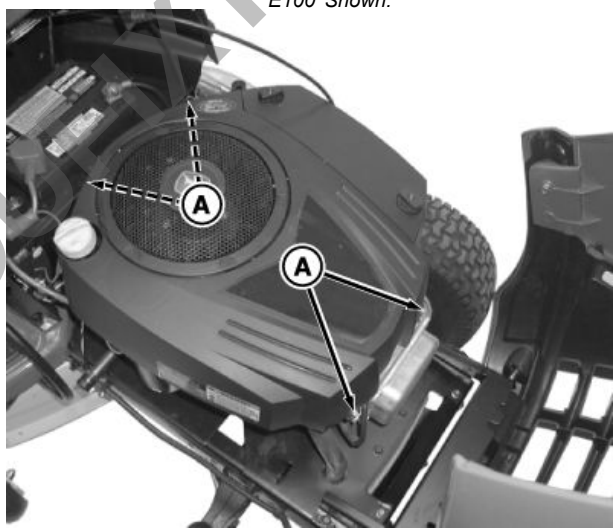
Blower Housing Screws—Torque	10 N·m (85 lb·in.)

A—Screws



MXT005076 —UN—11JUL12

E100 Shown.



MXT005077 —UN—11JUL12

E110 Shown.

MG39705,000011E -19-23OCT18-1/1

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Summary of References

- Remove and Install Upper Blower Housing
- Remove Carburetor
- Service Air Filter
- Install Carburetor
- Disassemble Carburetor
- Inspect Carburetor
- Assemble Carburetor
- Service Breather Valve, Single Cylinder Engine
- Remove Muffler, Single Cylinder Engine
- Install Muffler, Single Cylinder Engine
- Remove Engine, Single Cylinder Engine
- Install Engine, Single Cylinder Engine
- Remove Cylinder Head, Single Cylinder Engine
- Install Cylinder Head, Single Cylinder Engine
- Inspect and Repair Cylinder Head, Single Cylinder
- Remove Valves
- Reface Valves
- Install Valves
- Remove and Install Governor
- Piston and Rings
- Inspect Cylinder Bore, Single Cylinder
- Hone Cylinder Bore, Single Cylinder
- Clean Cylinder Bore, Single Cylinder
- Resize Cylinder Bore, Single Cylinder
- Remove Piston and Connecting Rod
- Inspect Piston and Connecting Rod, Single Cylinder
- Assemble and Install Connecting Rod and Piston
- Remove and Install Flywheel
- Remove Crankshaft
- Remove Oil Pump, Single Cylinder Engine
- Install Oil Pump, Single Cylinder Engine
- Install Crankshaft
- Remove Balance System
- Install Balance System
- Inspect Magneto and Cam Bearing
- Inspect PTO Journal
- Inertia Starting Motor Components, Single Cylinder
- Disassemble Inertia Starting Motor, Single Cylinder
- Assemble Inertia Starting Motor, Single Cylinder
- Replace Inertia Pinion Gear, Single Cylinder

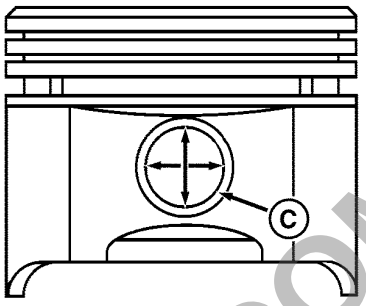
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3. If piston pin bore (C) is worn **0.01 mm (0.001 in.)** out of round or below reject size, it must be replaced.

C—Piston Pin Bore



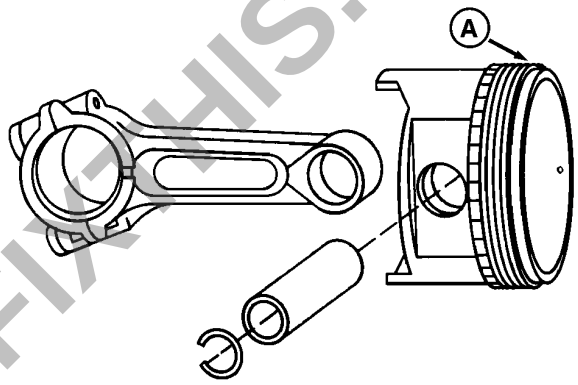
MXT002222 —UN—26JAN12

RM87422,0000950 -19-23JAN18-3/3

Assemble and Install Connecting Rod and Piston

1. The piston pin is a slip fit in both the piston and the connecting rod.
2. Install a piston pin lock in groove on one side of piston.
3. Piston must be installed with notch or arrow (A) toward flywheel side of cylinder. Dot on piston can face either direction.
4. Insert piston pin from opposite side of piston until pin stops against piston pin lock. Then install other piston pin lock. Be sure that both locks are seated in grooves.

A—Arrow

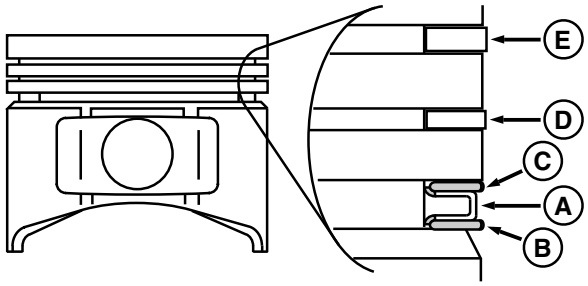


MXT003947 —UN—23MAY12

OUMX258,0000238 -19-01SEP15-1/7

5. Install oil expander (A) first. Spiral the lower scraper (B) into the top ring groove, then into second ring groove and finally into position below the expander. Repeat procedure when placing the upper scraper ring above the expander.
6. Position gap of oil ring expander, and scraper rings approximately **120°** apart from each other.

A—Oil Expander
B—Lower Scraper Ring
C—Upper Scraper Ring
D—Center Compression Ring
E—Upper Compression Ring



MXT015777 —UN—01SEP15

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OUMX258,0000238 -19-01SEP15-2/7

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7. Remove two nuts (H) holding the air cleaner elbow to the carburetor.
8. Separate air cleaner elbow, carburetor body, and intake manifold.

H—Nut



GXT001541 —UN—25JUN14

MG39705,0000127 -19-03JAN19-3/3

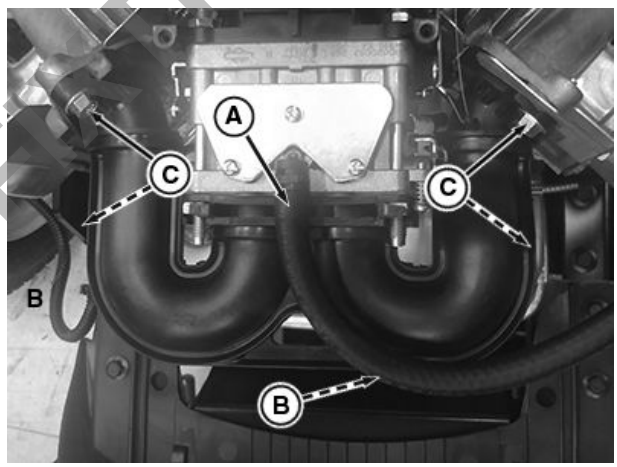
Remove Two Barrel Carburetor

1. Remove upper blower housing.

CAUTION: Avoid Injury! Gasoline is extremely flammable. Do not smoke. Always work in a well ventilated area away from open flame or spark producing equipment; including equipment that utilizes pilot lights.

2. Remove and plug the fuel inlet line (A).
3. Remove the throttle and choke cable (B).
4. Remove 4 cap screws (C) holding the intake manifold to the cylinder block.

A—Fuel Inlet Line
B—Choke Cable
C—Cap Screw

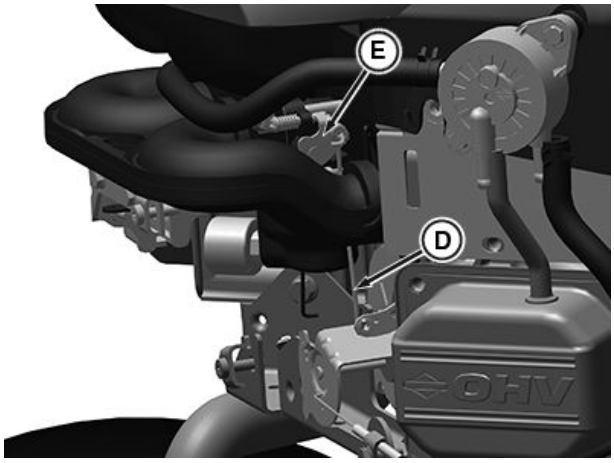


APY15401 —UN—03JAN19

MG39705,0000192 -19-12FEB19-1/4

5. Disconnect the throttle link (D) from the throttle lever (E) while carefully pulling the carburetor and manifold assembly away from the engine.

D—Throttle Link
E—Throttle Lever



APY11869 —UN—03JAN19

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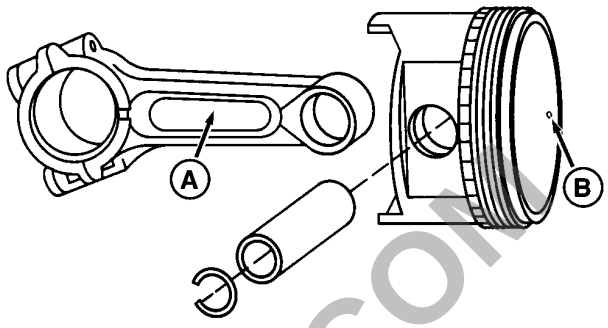
MG39705,0000192 -19-12FEB19-2/4

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Assemble Piston and Rod

1. The piston pin is a slip fit in both piston and connecting rod. Use a thin nose pliers or screwdriver and install a piston pin lock in groove on one side of piston. Refer to above drawing to determine correct location of rod (“Out 1” cylinder number one, or “Out 2” cylinder number two) (A) in relation to notch or circle (B) on piston. Insert piston pin from opposite side of piston until pin stops against piston pin lock. Then install other piston pin lock. Be sure both locks are seated in grooves.

A—Rod Location **B—Piston Marking**

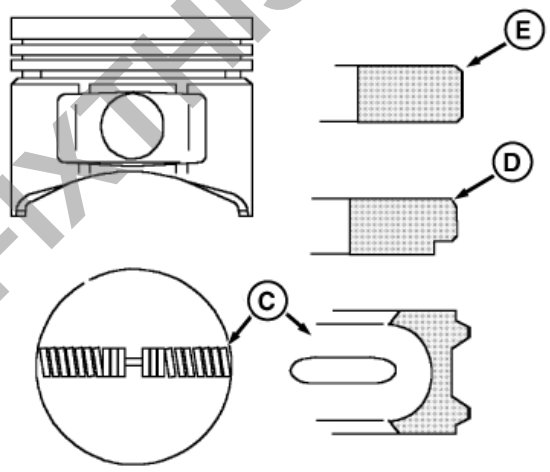


MXT001691 —UN—13OCT11

OUMX258,0000405 -19-13JUL12-1/2

2. The correct piston ring positions are shown above. The oil ring is installed with the expander (C) between the two oil control rings. The top and second compression rings are installed with “ID” mark toward top of piston.
3. Install expander first. Spiral bottom oil control ring into top ring groove, then into second ring groove and into position below expander. Repeat procedure for top oil control ring.
4. Using ring expander, install center compression ring (taper face) (D) then, top compression ring (barrel face) (E) as shown above.

C—Expander **E—Top Compression Ring**
D—Center Compression Ring



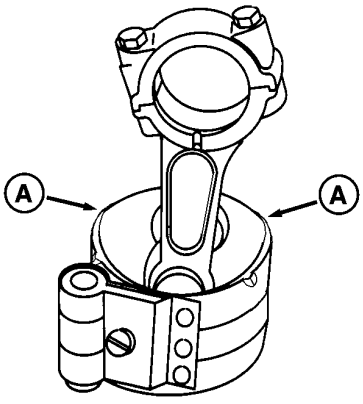
MXT004596 —UN—13JUL12

OUMX258,0000405 -19-13JUL12-2/2

Install Piston and Rod

NOTE: Approximate location of projections (A) on ring compressor shown. These will be inserted to the cylinder bore when assembling piston to cylinder.

A—Projection



MXT001693 —UN—17OCT11

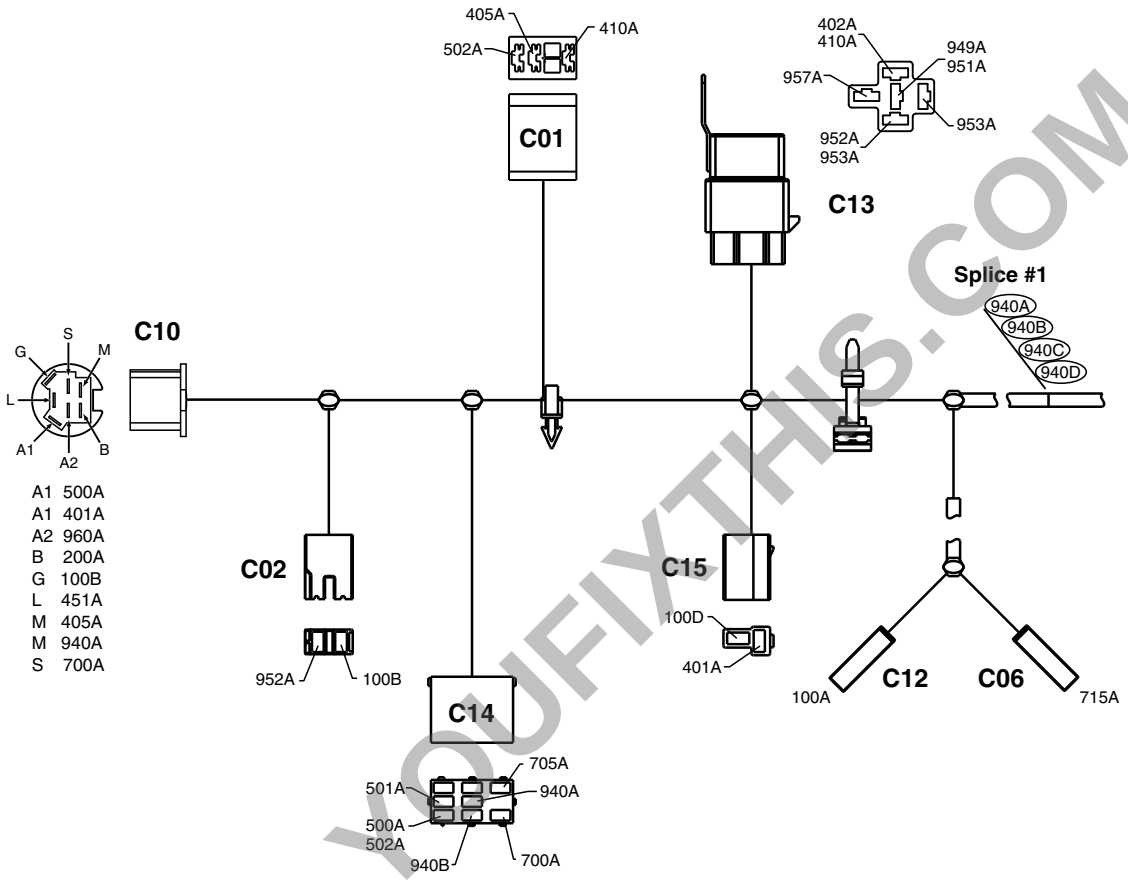
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OUMX258,0000406 -19-20JUN12-1/5

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E140, E150, E160, E170, and E180 Front Main Wiring Harness



GXT001752 —UN—20NOV14

C01— Hour Meter
C02— RIO Switch
C15— Power Port
C06, C12—Start Solenoid Coil
C10— Key Switch
C13— RIO Latch Relay
C14— PTO Switch

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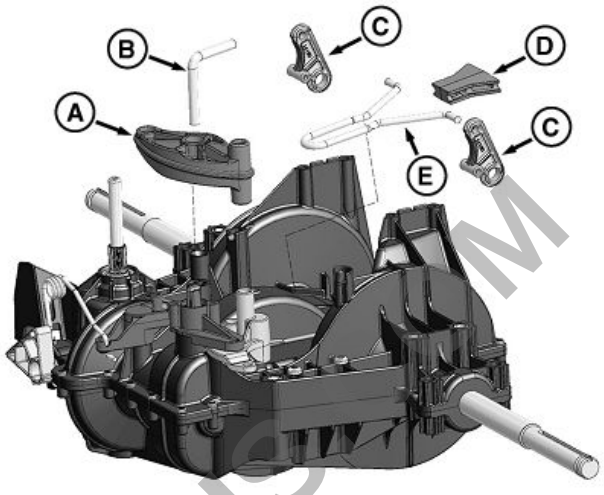
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Remove Variation Assembly

1. Park machine safely. See the “Safety Section”.
2. Remove transmission from machine. (See Remove CVT Transmission.)
3. Remove secondary variator. (See Disassemble Secondary Variator.)
4. Remove primary variator.
5. Remove shift cam. (See Remove Transmission Shift Cam.)
6. Remove variation components from upper transmission case.
7. Inspect for wear or damage. Replace as necessary.

A—Control Lever
B—Rod
C—Lever
D—Rod Support
E—Variation Rod



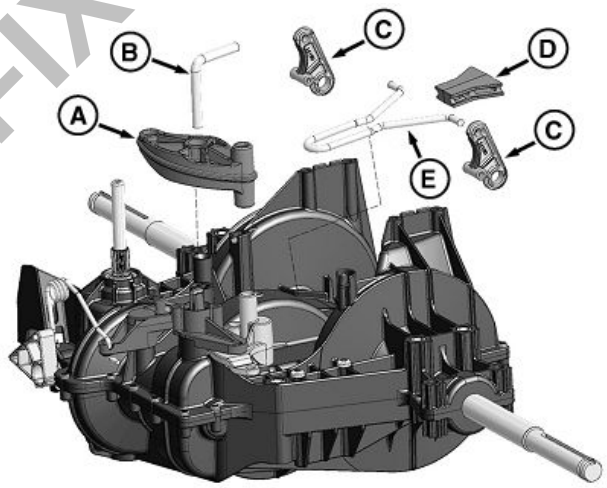
MXT005481 —UN—08AUG12

OUMX258,000048B -19-22DEC14-1/1

Install Variation Assembly

1. Inspect variation components for wear or damage. Replace as necessary.
2. Install components to upper transmission case.

A—Control Lever
B—Rod
C—Variation Levers
D—Rod Support
E—Variation Rod



MXT005481 —UN—08AUG12

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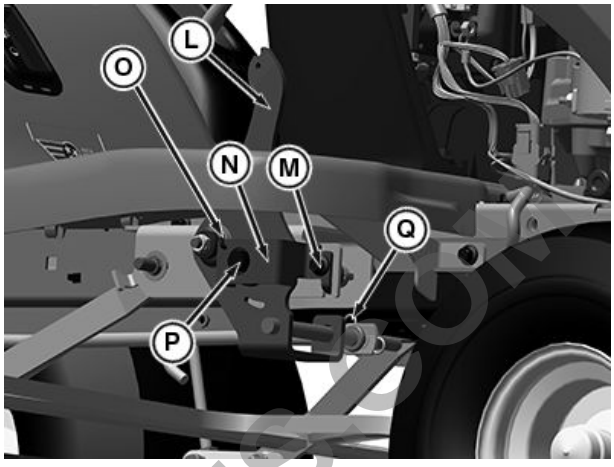
SR99263,0000105 -19-24JAN19-1/3

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11. Remove screw (M) from bracket (N) on forward pedal bracket (L). Remove torsion spring (O) from bracket (N).
12. Remove locking pin (Q) from forward pedal assembly (L).

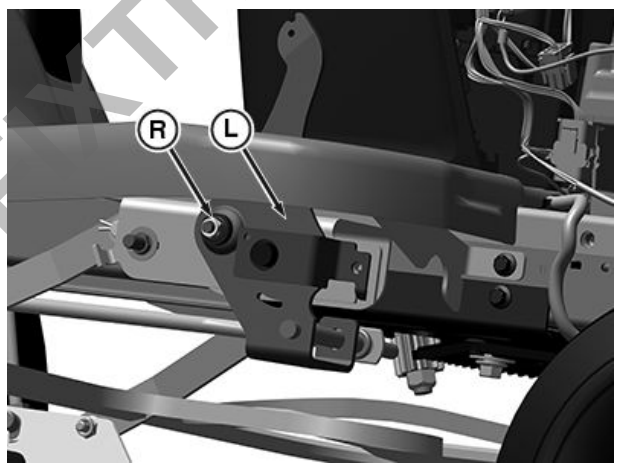
L—Forward Pedal Bracket
M—Screw
N—Bracket
O—Torsion Spring
P—Shaft
Q—Locking Pin



APY11864 —UN—06OCT18

MG39705,0000139 -19-24OCT18-4/7

13. Remove Locknut and ball bearing (R) and remove forward pedal bracket (L).

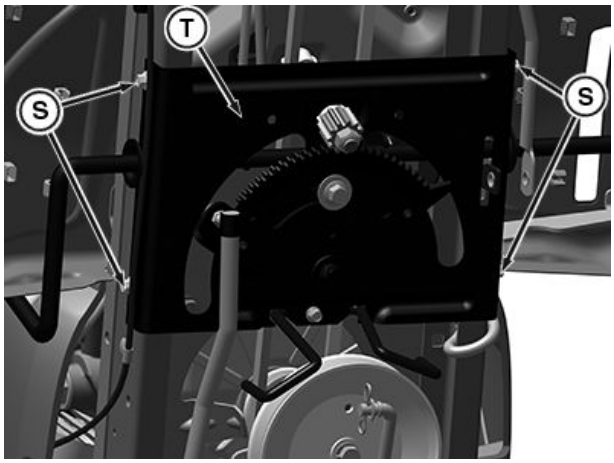


APY11865 —UN—06OCT18

MG39705,0000139 -19-24OCT18-5/7

14. Remove four screws (S) and lower the steering plate (T).

S—Screws (four no.s)
T—Steering Plate



APY11867 —UN—08OCT18

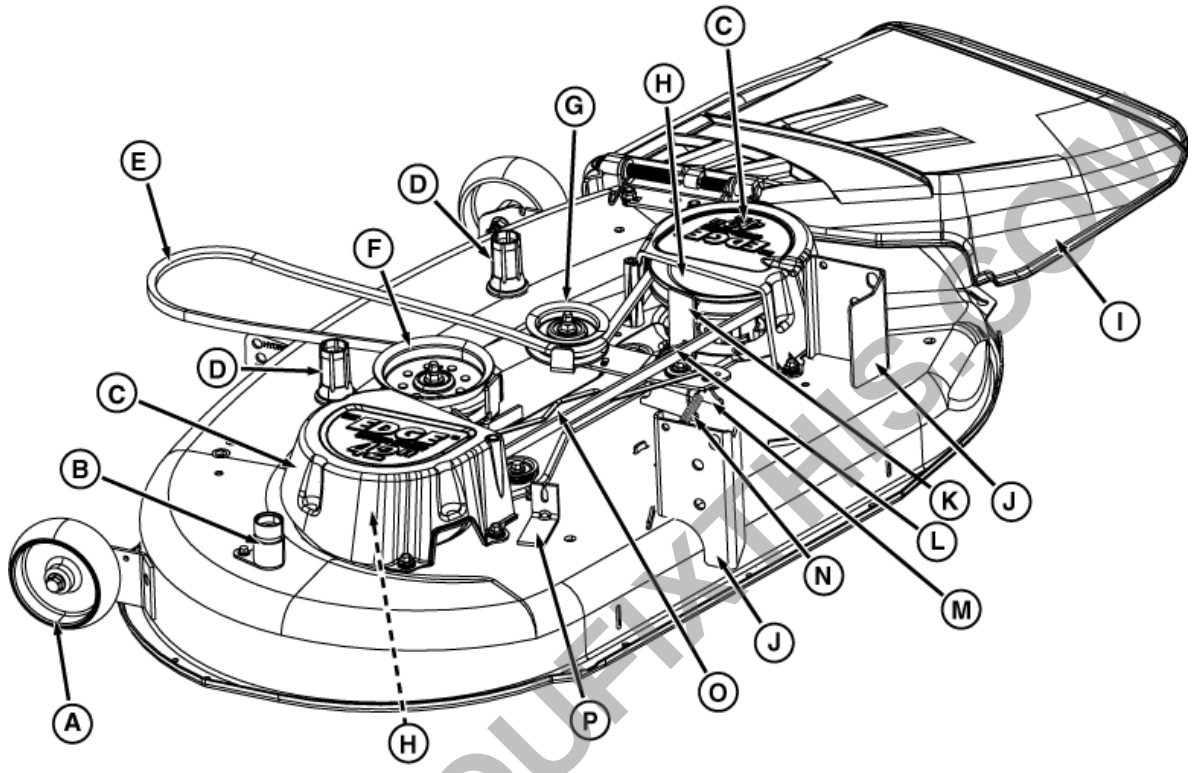
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MG39705,0000139 -19-24OCT18-6/7

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Mower Deck (42 inch)
(S.N. 010001-)



A—Gage Wheel (2 Used)
B—Wash Port
C—Belt Cover
D—Upstop (2 Used)
E—Primary Drive Belt
F—Fixed Idler Sheave
G—Tension Idler Sheave
H—Spindle Sheave (2 Used)
I— Discharge Chute and Metal Deflector
J— Deck Leveling Bracket (2 Used)
K—Blade Brake Assembly (2 Used)
L—Spring
M—Idler Arm
N—Spring
O—Left Brake Rod
P—PTO Cable Mounting Bracket

MG39705,000024E -19-11SEP19-1/1

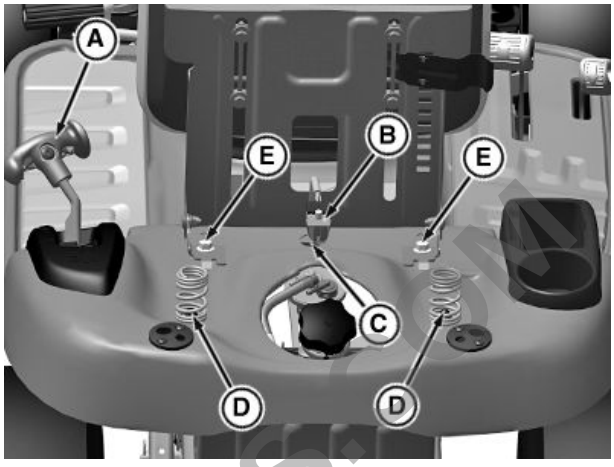
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Install Fender Deck

1. Place fender deck on frame, carefully placing lift arm (A) into slot of fender deck and guiding wiring harness (B) through fender deck hole (C).
2. Place rubber grip onto lift arm.
3. Secure two springs with screws (D) through fender deck onto frame.
4. Place seat assembly onto fender deck and secure with two screws (E).
5. Connect wiring harness (B) onto seat switch.

A—Lift Arm
B—Wiring Harness
C—Hole
D—Screws, Fender Deck
E—Screws, Seat Bracket



PY44632 —UN—13NOV17

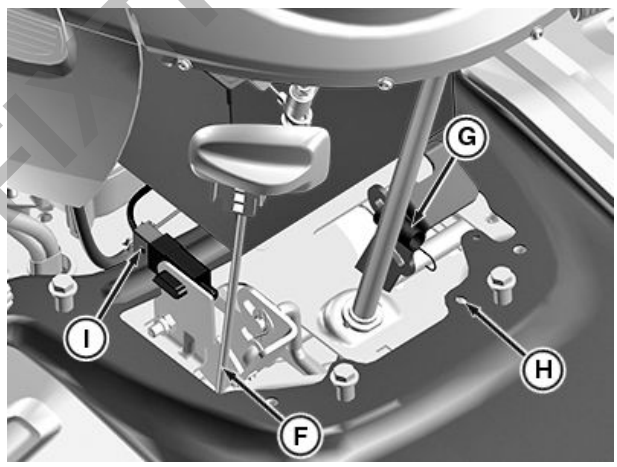
RM87422,0000870 -19-26OCT17-1/2

6. Install brake rod (F) onto parking brake bracket.
7. Connect spring (G) into hole (H) in fender deck and brake arm.
8. Connect wiring harness to brake switch. (I)
9. Install cruise rod (J).

NOTE: Install spring (K) in position shown. If installed correctly, spring remains in place when cruise control rod is moved up and down

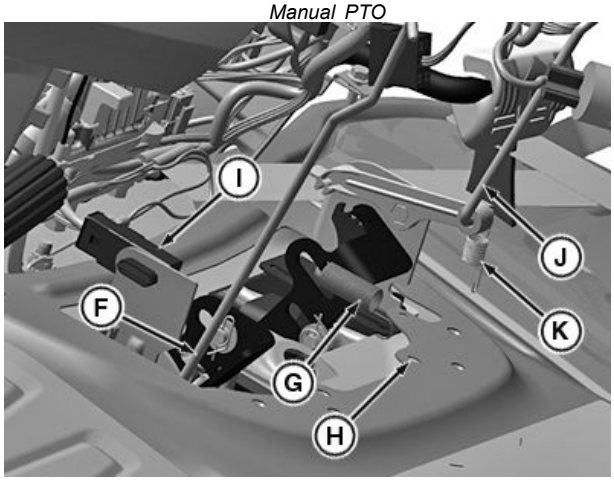
10. Install steering wheel, shaft, and pedestal. (See Install Steering Shaft and Pedestal.)

F—Brake Rod
G—Spring, Brake rod
H—Hole
I— Brake Switch
J—Cruise Rod
K—Spring, Cruise



PY46513 —UN—25OCT17

Manual PTO



PY48341 —UN—26OCT17

Electric PTO

RM87422,0000870 -19-26OCT17-2/2

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Engine Will Not Crank, V-Twin

Engine Will Not Crank (V-Twin)

Symptom	Problem	Solution
Engine Will Not Crank	Battery	a. Charge and test battery. (See Charge Battery, and Battery, Charging, and Starting System Tests.) b. Replace the battery if it will not take or hold a charge.
	Starting motor does not rotate when ignition switch is turned to start position.	a. Cranking circuit problem. (See Cranking Circuit Operation, All Models.) b. Key switch malfunction. (See Key Switch Test.) c. Starting relay malfunction. (See Relay Test.)

OUMX258,0000437 -19-10JAN17-1/1

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Ignition and Shutoff Circuit, All Models

Function:

To create a spark at the correct time that ignites the fuel/air mixture in the cylinder. To keep the engine running by eliminating ground paths that shunt the ignition module primary coil.

Operating Conditions:

To produce a spark, the key switch must be in the start or run position. The operator can be on or off the seat; however, the PTO must be disengaged and the brake switch must be engaged (brake pedal depressed or park brake on) to start the engine.

Once the engine is running, the operator must be on the seat to disengage the brake or engage the PTO.

The engine will shut off when the key switch is turned to the off position, the operator leaves the seat without locking the parking brake and disengaging the PTO, or the operator places the machine in reverse with the PTO engaged and not pressing the RIO latch switch to its momentary on position to energize the RIO latch relay.

System Operation:

The ignition system is a transistor-controlled magneto design. Ignition timing is controlled by the transistor and is not adjustable. The engine is shut off by grounding both sides of the ignition primary coil(s). With the ignition primary coil(s) grounded, a spark cannot be produced.

When the engine is turning over, the flywheel magnet induces current into the magneto ignition coil(s), which in turn produces current high enough to jump the spark plug gap, creating a spark to ignite the engine fuel/air mixture.

Placing the key switch in the start or run position eliminates the path to ground for the Wht wire from the engine magneto, 940 and 941 Wht wires, key switch contacts (normally closed), 100, and 125 Blk wires.

The seat switch controls two paths to ground. When the operator is on the seat, the brake and PTO switches can be either on or off. These paths are eliminated when the operator is on the seat (seat switch open). This condition breaks the ground circuit 940 and 942 Wht wires, brake switch, 945 Wht/Blk wire, and 130, 110, and 125 Blk wires. This condition also breaks the ground circuit 940 and 943 Wht wires, PTO switch, 949 Wht/Blk wire, 951 Blk/Wht wire, seat switch, and 111, 130, 120, 110, and 125 Blk wires.

If the operator is off the seat (seat switch closed), then the brake switch must be on (park brake engaged) and the PTO must be off (disengaged).

If the operator is off the seat and the brake switch is also off this creates the ground circuit path 940, 942 Wht wires, brake switch, 945 Wht/Blk, seat switch, 130, 110, and 125 Blk wires.

If the operator is off the seat and the PTO is on, this creates the ground circuit 940, 943 Wht wires, PTO switch, 949 Wht/Blk, 951 Blk/Wht, seat switch, and 111, 130, 120 (E140/150/160/170/180), 110, and 125 Blk wires to the W4 negative jumper wiring harness.

An additional path to ground will be created with the engine running if the operator places the machine in reverse while the PTO is engaged and the RIO latch switch is not pressed to its momentary on position to energize the RIO latch relay. This condition also creates the ground circuit 940, 943 Wht wires, PTO switch, 949 Wht/Blk wire, RIO latch relay (normally closed contacts) 957 Wht wire, reverse switch (normally open contacts), 120 (E140/150/160/170/180), 110, and 125 Blk wires to ground.

Continued on next page

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❷ **(continued)**	Move voltmeter negative lead to 952 Wht/Blk wire terminal (B). Does meter read battery voltage when S4 RIO latch switch is pressed?	**YES:** Release switch. Go to step ❸ **NO:** Check 952 Wht/Blk and 954, 125 Blk wires. **NO:** Test S4 RIO latch switch. (See "Power Circuit Diagnosis, E100, E110, E120, E130" in this Section.)

SU68010,000012F -19-21JUL18-7/9

❸ **(continued)**	Move voltmeter negative lead to 953 Wht/Blk wire terminal. Does meter read battery voltage when S4 RIO latch switch is pressed?	**YES:** Release switch. Go to step ❹ **NO:** Test 953 Blk/Wht wire on relay socket.

SU68010,000012F -19-21JUL18-8/9

❹ **(continued)**	Move voltmeter negative lead to 957 Wht wire terminal. Does meter read battery voltage when reverse pedal is pressed?	**YES:** Test RIO latch relay. (See Relay Test.) **NO:** Check 957 Wht and 110 Blk wires. **NO:** Test S6 reverse switch. (See Reverse Switch Test.)

SU68010,000012F -19-21JUL18-9/9

PTO with RIO Circuit Diagnosis E140, E150, E160, E170, E180

Refer to PTO with RIO circuit E140, E150, E160, E170, E180 theory of operation and schematic. (See PTO with RIO Circuit Operation, E140, E150, E160, E170, E180.)

RM87422,000085A -19-30OCT17-1/11

Test Procedure A

RM87422,000085A -19-30OCT17-2/11

❶ **PTO Switch**	**Test Conditions:** • Park machine safely. • Battery fully charged. • Key switch in run position engine not running. • Operator off seat. • PTO in on position. Unplug harness connector from the PTO switch. Is continuity present between PTO switch connector 949 Blk/Wht wire and ground?	**YES:** Go to step ❷ **NO:** Check 949 Wht/Blk, 951 Blk/Wht, S5 seat switch (See Seat Switch Test.), 111, 130, 120, 110, 125 Blk wires, and connections.

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RM87422,000085A -19-30OCT17-3/11

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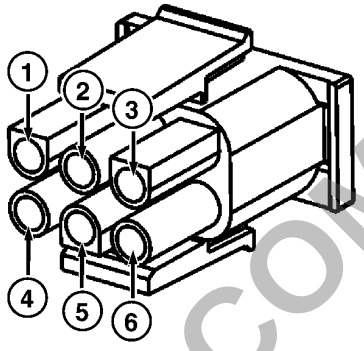
Front to Engine Harness Connector

Schematic:	W1 Main Schematic
Wiring Harness:	W1 Main Harness
Terminal	**Circuit Number**
1	220A Red/Blk
2	940D Wht
3	402A Yel
4	451A Blk/Wht

E100, E110, E120, E130

Schematic:	W1 Main Schematic
Wiring Harness:	W1 Main Harness
Terminal	**Circuit Number**
1	220A Red/Blk
2	940C Wht
3	402A Yel
4	451A Blk/Wht

E140, E150, E160, E170, E180



MXT004997 —UN—27JUN12

SU68010,00000F2 -19-21JUL18-1/1

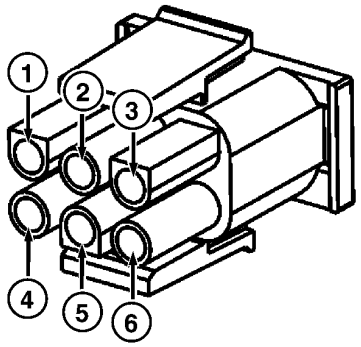
Front to Rear Harness Connector

Schematic:	W1 Main Schematic
Wiring Harness:	W1 Main Harness
Terminal (6-pin connector)	**Circuit Number**
1	710A Pur
2	715A Pur/Wht
3	100F Blk
4	957A Wht
5	951A Blk/Wht
6	945A Wht/Blk

100, E110, E120, E130

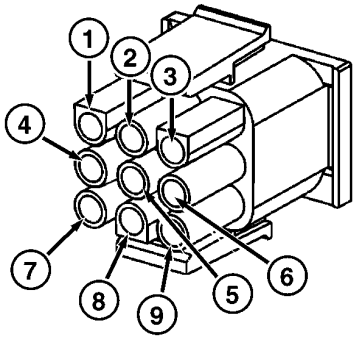
Schematic:	W1 Main Schematic
Wiring Harness:	W1 Main Harness
Terminal (9-pin connector)	**Circuit Number**
1	501A Yel
3	100F Blk
4	957A Wht
5	951A Blk/Wht
6	945A Wht/Blk
7	710A Pur
8	715A Pur/Wht

E140, E150, E160, E170, E180



6-pin Connector

MXT004997 —UN—27JUN12



9-pin Connector

MXT005885 —UN—13NOV12

SU68010,00000F7 -19-21JUL18-1/1

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Summary of References

- Traction Drive Belt System
- Transaxle—Hydrostatic Transaxle
- Forward and Reverse Pedals
- Freewheel System
- Brake System
- Cruise Control
- Internal Dampening System (IDS)
- Hydrostatic System Operation

MX52301,00009D1 -19-21OCT19-1/1

Traction Drive Belt System

Function:

The traction drive belt transfers power from the engine to the input sheave of the hydrostatic transaxle.

Theory of Operation:

The traction drive belt is driven by the upper pulley of the engine drive sheave. The traction belt transmits engine power to the input sheave of the hydrostatic transaxle.

The traction drive belt is tensioned by two idler sheaves, which are mounted on a spring loaded bracket. The tension spring runs from the idler arm to the deck lift rod that mounts across the top of the frame rails.

OUMX068,0000537 -19-21JUN12-1/1

Transaxle—Hydrostatic Transaxle

Function:

The function of the transaxle is to transfer power from the traction drive belt system (driven by the engine), to the rear wheels, and allow the operator to select ground speed and direction.

Theory of Operation:

The drive belt turns the transaxle input pulley, and transaxle input shaft. This, in turn drives the transaxle hydrostatic pump. When the hydrostatic drive is in neutral, the pump pistons do not move up and down in their bores, therefore, no pressure is built up in the pump. When the operator engages the forward or reverse pedals, the pedal linkage tilts a swash plate inside the transaxle. This causes the pump pistons to travel up and down in their bores. The pump pistons create hydraulic pressure which drives the hydrostatic motor. The motor drives the rear axle and wheels through a reduction gear and differential assembly.

The transaxle provides infinite ground speed selections in forward and reverse.

OUMX068,0000538 -19-22DEC14-1/1

Forward and Reverse Pedals

Neutral:

When the engine is running, the traction drive belt turns the transaxle input pulley, cooling fan, and input shaft. The input shaft turns the hydrostatic pump input shaft and pump body inside the transaxle. When the forward/reverse pedals are not depressed, the control lever on the transaxle holds the control linkage in the NEUTRAL (centered) position, and the drive axles do not turn.

Forward:

When the forward pedal is depressed, the bottom of the forward pedal bracket is rotated rearward, pushing the forward/reverse control rod rearward. This pushes the control lever on the transaxle rearward, turning the control shaft inside the transaxle, and causing the drive axles to turn in the FORWARD direction.

Reverse:

When the reverse pedal is depressed, the reverse pedal bracket (seated in the forward pedal bracket) rotates the bottom of the forward pedal bracket forward and moves the forward/reverse control rod forward. This pulls the control lever on the transaxle forward, turning the control shaft inside the transaxle, and causing the drive axles to turn in the REVERSE direction.

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Summary of References

- Test Park Brake
- Test Drive
- Adjust Brake—CVT Transaxle
- Adjust Brake—Hydrostatic Transaxle

MX52301,00009D0 -19-21OCT19-1/1

Specifications

Item	Measurement	Specification
Brake Spring (Hydrostatic Transaxle)		
Spring Length	Length	35—46 mm (1.38—1.81 in.)
Nominal Spring Length	Length	44 mm (1.73 in.)

SR99263,0000091 -19-09OCT18-1/1

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