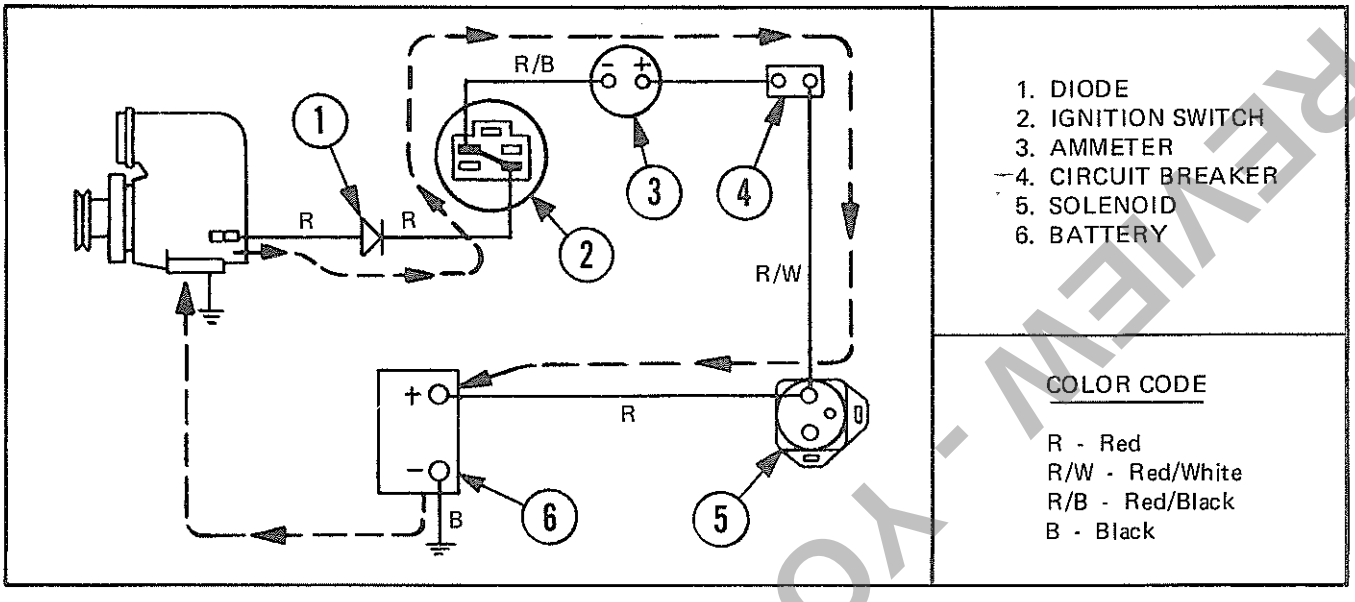
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CIRCUIT DIAGRAM

1058, 1060 AND 1160 S/N 0100101 AND UP

CHARGING CIRCUIT

(Ignition switch in "RUN" position)



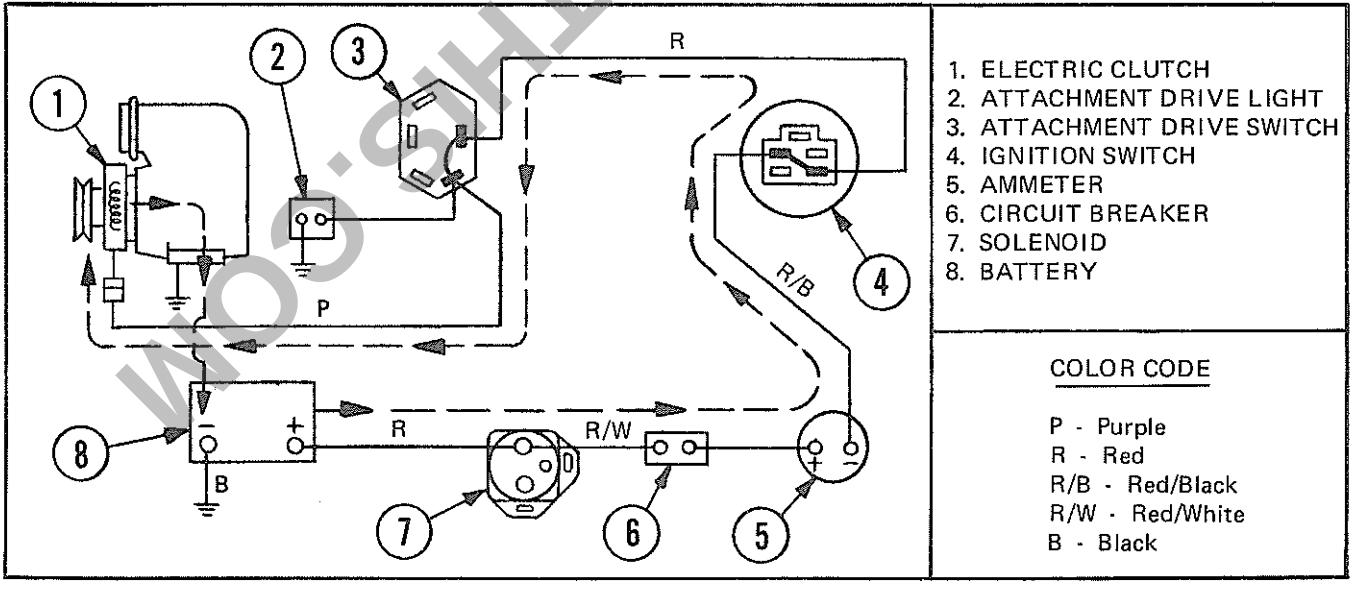
1. DIODE
2. IGNITION SWITCH
3. AMMETER
4. CIRCUIT BREAKER
5. SOLENOID
6. BATTERY

COLOR CODE

R - Red
R/W - Red/White
R/B - Red/Black
B - Black

ATTACHMENT DRIVE CIRCUIT

(Ignition switch in "RUN" position and Attachment switch in ON)



1. ELECTRIC CLUTCH
2. ATTACHMENT DRIVE LIGHT
3. ATTACHMENT DRIVE SWITCH
4. IGNITION SWITCH
5. AMMETER
6. CIRCUIT BREAKER
7. SOLENOID
8. BATTERY

COLOR CODE

P - Purple
R - Red
R/B - Red/Black
R/W - Red/White
B - Black

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PRINCIPLE OF OPERATION

The hydraulic system is made up of five major components. These are: the hydrostatic transmission charge pump, attachment lift valve, attachment lift cylinder, filter and all external lines and hoses. The source of the fluid flow is a roller type charge pump mounted on the hydrostatic package, which is driven by the engine. This charge pump provides hydraulic pressure. The fluid reservoir is the transmission and final drive housing. All flow is first routed through the attachment lift valve.

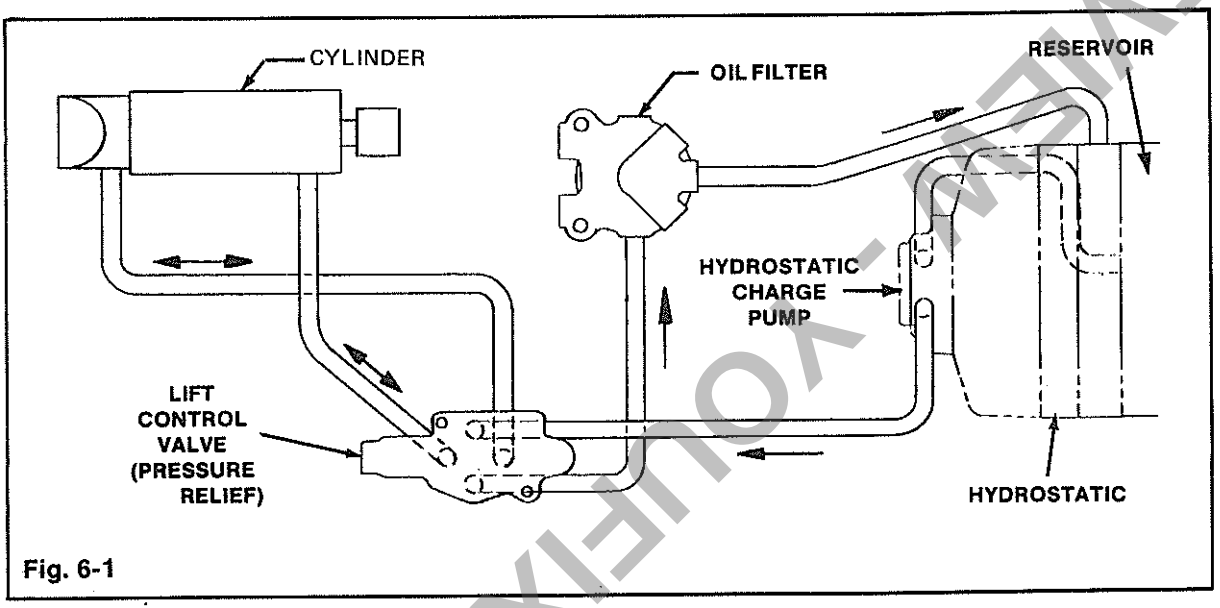


Fig. 6-1

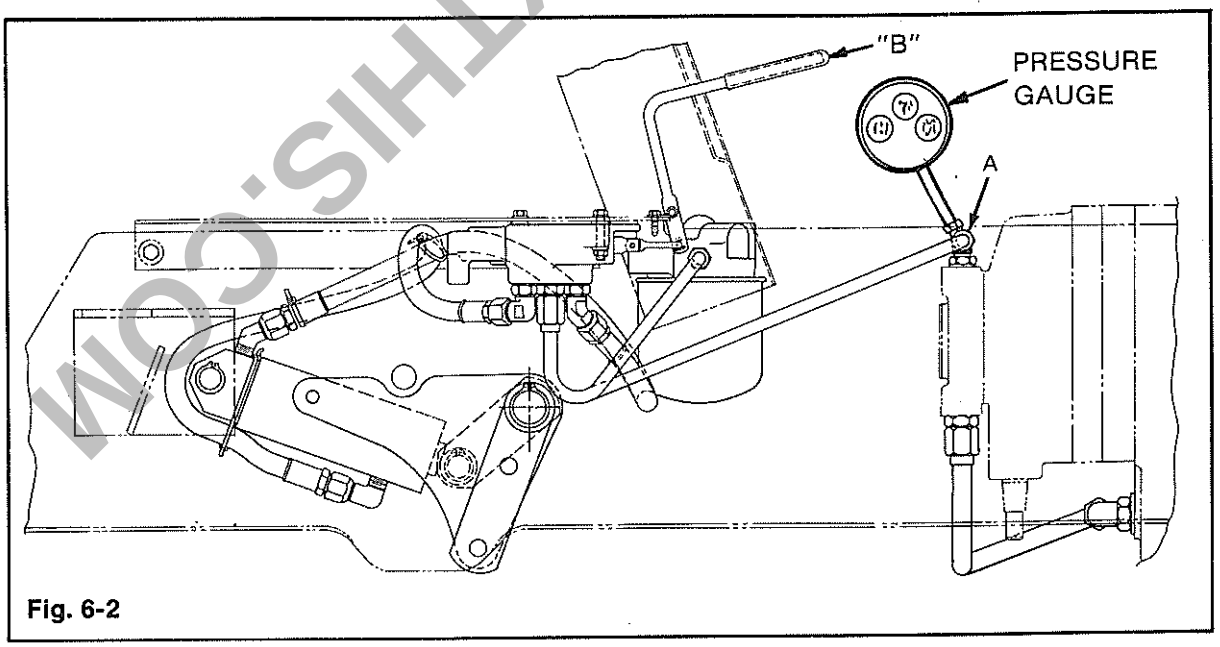


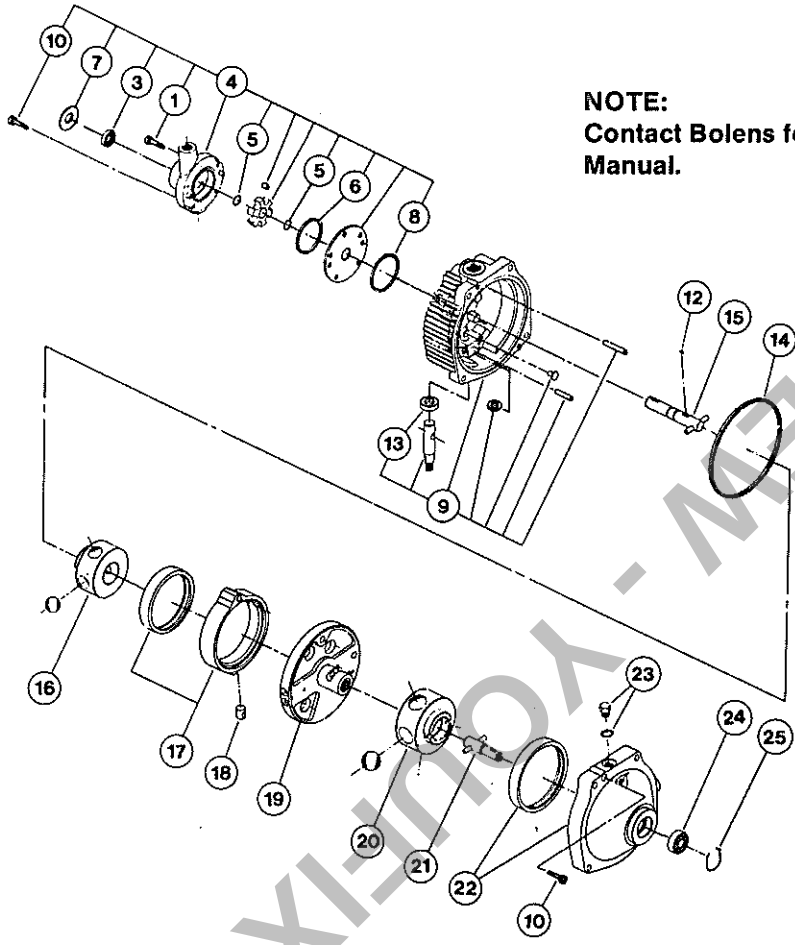
Fig. 6-2

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DRIVE TRAIN (Continued)

HYDROSTATIC BREAKDOWN



NOTE:
Contact Bolens for an Eaton Repair Manual.

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REFER TO THE INDIVIDUAL TRACTOR PARTS LIST FOR PART NUMBERS

1 Socket Screw 5/16-18 x 1-3/4 (Incl. w/Ref. 4) 1
3 Oil Seal (Incl. w/Ref. 4) 1
4 Charge Pump Kit (Incl. Ref. 1, 3, 5, 6, 7, 8, 10, 12) 1
5 Snap Ring (Incl. w/Ref. 4) 1
6 Sq. Seal Ring (Incl. w/Ref. 4) 1
7 Grass Shield (Incl. w/Ref. 4) 1
8 Sq. Seal Ring (Incl. w/Ref. 4) 1
9 Cover Sub Ass'y (Incl. w/Ref. 13) ...1
10 Socket Hd. Screw 5/16-18 x 1-1/4 (Incl. w/Ref. 4) 1
12 Drive Pin (Incl. w/Ref. 4) 1
13 Oil Seal (Incl. w/Ref. 9) 1
14 Square Seal Ring 1
15 Input Shaft Sub Ass'y.....1
16 Pump Rotor & Ball Ass'y 1
17 Cam Ring Ass'y 1
18 Cam Ring Insert 1
19 Pintle Ass'y (Incl. Internal Parts) ...1
20 Motor Rotor & Ball Sub Ass'y 1
21 Output Shaft Sub Ass'y 1
22 Body Ass'y (Incl. Ref. 21, 24 & 25) 1
23 O-Ring Plug Sub Ass'y 1
24 Ball Bearing (Output).....1
25 Retaining Ring 1

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TORQUE VALUE FOR CAP SCREWS

SIZE	SAE GRADE 2			SAE GRADE 5			SAE GRADE 8		
	Lb. In.	Nm	Kgm	Lb. In.	Nm	Kgm	Lb. In.	NM	Kgm
1/4 - 20	49	5.5	0.6	75	8.5	0.9	108	12.2	1.2
1/4 - 28	56	6.3	0.6	86	9.7	1.0	120	13.6	1.4
	Lb. Ft.			Lb. Ft.			Lb. Ft.		
5/16 - 18	8	10.8	1.1	13	17.6	1.8	18	24.4	2.4
5/16 - 24	9	12.2	1.2	14	18.9	1.9	20	27.1	2.7
3/8 - 16	15	20.3	2.0	23	31.2	3.1	35	47.4	4.8
3/8 - 24	17	23.0	2.3	25	33.9	3.4	35	47.4	4.8
7/16 - 14	24	32.5	3.3	35	47.4	4.8	55	74.5	7.6
7/16 - 20	25	33.9	3.4	40	54.2	5.5	60	81.3	8.3
1/2 - 13	35	47.4	4.8	55	74.5	7.6	80	108.4	11.0
1/2 - 20	40	54.2	5.5	65	88.1	9.0	90	122.0	12.4
9/16 - 12	55	74.5	7.6	80	108.4	11.0	110	149.1	15.2
9/16 - 18	60	81.3	8.3	90	122.0	12.4	130	176.2	18.0
5/8 - 11	75	101.6	10.3	110	149.1	15.2	170	230.4	23.5
5/8 - 18	85	115.2	11.7	130	176.2	18.0	180	243.9	24.9
3/4 - 10	130	176.2	18.0	200	271.0	27.7	280	379.4	38.7
3/4 - 16	145	196.5	20.0	220	298.1	30.4	320	433.6	44.3
7/8 - 9	125	169.4	17.3	320	433.6	44.3	460	623.3	63.7
7/8 - 14	140	189.7	19.3	350	474.3	48.4	500	677.5	69.2
1 - 8	190	257.5	26.3	480	650.4	66.5	680	921.4	94.2
1 - 12	200	271.0	27.7	530	718.2	73.4	740	1002.7	102.5

Conversion Formula: To obtain Nm multiply ft. lbs by 1.355.
To obtain Kgm multiply ft. lbs by 0.138

All torques ± 10% unless otherwise specified.
All torque values are for capscrews that have been lubricated with engine oil or grease.

Multiply standard assembly torque by the following factors:

A. 1.25 when threads are dry
B. 0.85 when parts are plated
C. 0.75 when parts are parkerized
D. 0.70 when parts are coated with Molykote
E. 0.65 for jam nuts

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HYDROSTATIC REMOVAL

NOTE: SEE TRANSAXLE REMOVAL page 3-6 before removing hydro. Some models may require removing transaxle before hydrostatic removal.

HYDROSTATIC REMOVAL (Fig. 3-2 & 3-3)

1. Remove tunnel, seat & fenders.
2. Remove driveshaft from input shaft.
3. Clean any dirt or grease from hydraulic line (A) fittings.
4. Disconnect hydraulic lines (A) from hydro. Have oil pan to catch excess oil.
5. Remove nut and washer on control shaft and slide control arm assembly (B) off shaft.

   NOTE: A puller may have to be used when removing the control arm.
6. Remove the four (4) mounting cap screws (C) securing the hydostatic to the transaxle.

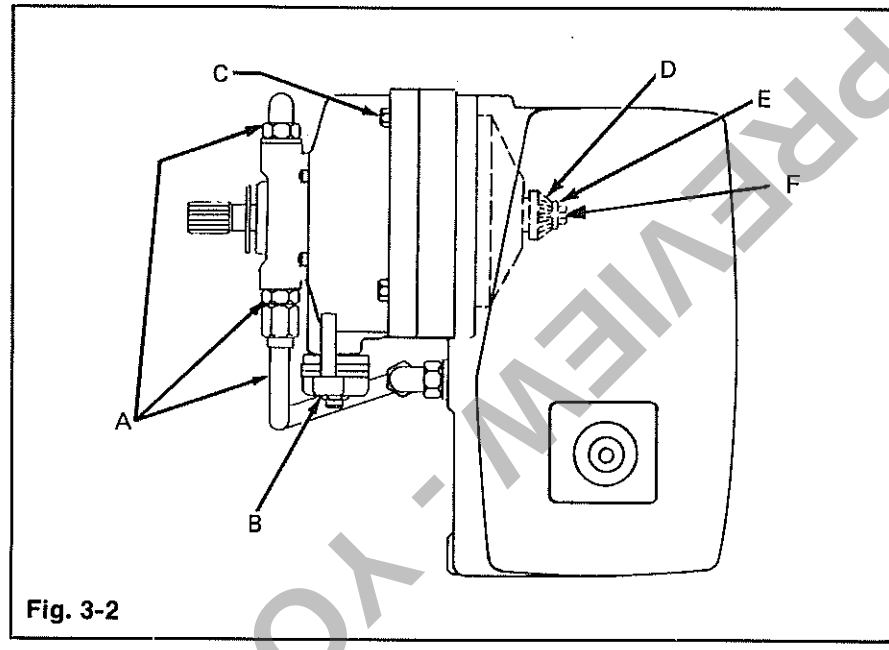


Fig. 3-2

7. If replacing complete hydro, remove bevel gear (D) & shims from output shaft. To disassemble, hold spacer (E) in place when loosening bolt (F). Position shims & bevel gear onto new hydrostatic and fasten. Torque bolt with spacer to 24 ft./lbs. (23.5 N-m).

Carefully remove hydro from transaxle.

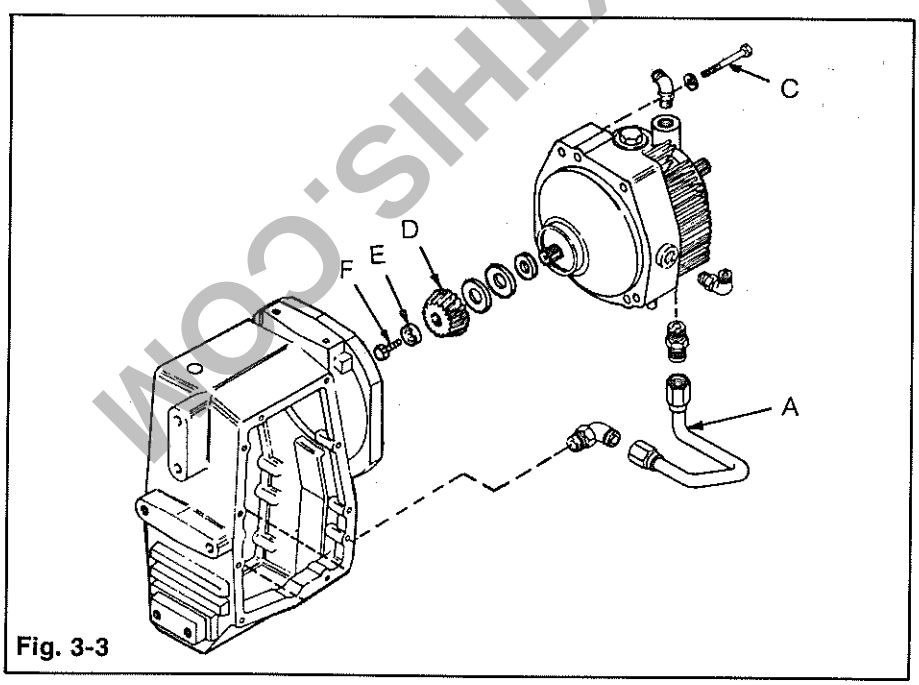


Fig. 3-3

HYDROSTATIC REPAIR

If the hydrostatic transmission is in need of repair, refer to the **Eaton Repair Manual.** This manual is available from the factory.

EATON HYDRO TESTING

For testing procedure, **refer to Hydraulic Section, page 6-3.**

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3

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TROUBLE SHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	REMEDY
Starter Motor does not energize and solenoid does not click.	1. Attachment drive engaged. 2. Brake pedal not depressed. 3. Corroded or loose electrical solenoid connections. 4. Inoperative switches - Attachment drive, brake and key switch. 5. Inoperative solenoid. 6. Defective key switch.	1. Disengage PTO. 2. Depress brake pedal. 3. Clean and tighten Red/White wire at solenoid. 4. Check and replace if necessary. (Refer to switch testing.) 5. Check and replace if necessary. (Refer to solenoid testing.) 6. Check and replace if necessary. (Refer to ignition switch test.)
Starter Motor does not energize but solenoid clicks.	1. Discharged battery. 2. Corroded or loose electrical connections on solenoid, or starter. 3. Defective solenoid.	1. Charge battery. 2. Check solenoid or starter. 3. Check and replace if necessary.
Engine cranks slowly.	1. Weak or discharged battery. 2. Corroded or loose electrical connections at battery.	1. Check battery, charge or replace if necessary. 2. Clean and tighten.
Battery discharges rapidly.	1. Low water level. 2. Defective battery.	1. Check and refill. 2. Check and replace if necessary.
Battery will not charge.	1. Corroded or loose battery cables. 2. Defective battery. 3. Inoperative diode or rectifier/regulator.	1. Clean and tighten. 2. Replace battery. 3. Check diode and replace if necessary. Check rectifier/regulator by substitutions. (Refer to diode test.)

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SPECIFICATIONS

Manufacturer	BRIGGS & STRATTON	
Model/Spec	253417-013101	Models 1058, 1060 & 1160
	400437-012201	Model 1467 (S/N 0100101 thru 0199999)
	400437-120501	Model 1467 (S/N 0200101 and later)
	290447-0108	Model 1468
	402437-066601	Models 1659 & 1662
	402437-066601	Models 1667 & 1668 (S/N 0100101-0299999)
	402437-070001	Models 1667 & 1668 (S/N 0300101-0499999)
	402437-120501	Model 1668, 1668L (S/N 0500101 and later)
	303447-0131	Model 1669, 1669L
Type	Model 253417	Hor. shaft, air cooled, 1 cyl., 4 cycle
	Model 402437	Hor. shaft, air cooled, 2 cyl., 4 cycle
	Model 400437	Hor. shaft, air cooled, 2 cyl., 4 cycle
	Model 290447	Hor. shaft, air cooled, 2 cyl., 4 cycle
	Model 303447	Hor. shaft, air cooled, 2 cyl., 4 cycle
Bore and Stroke (in/mm)	11 HP Models	3.438/87.4 x 2.625/66.5
	14 & 16 Models	3.437/87.31 x 2.156/54.77
Piston Displacement (cu. in./cm)	11 HP Models	24.36/399.5
	14 & 16 HP Models	40/656
Mfr's HP Rating	11 HP Models	11 HP (8.2 kW) @ 3600 RPM
	14 HP Models	14 HP (10.4 kW) @ 3600 RPM
	16 HP Models	16 HP (11.9 kW) @ 3600 RPM
Crankshaft Extension	All Models	1.000/.999 Dia. Keyway, .375-24 Tap
Air Cleaner	All Models	Dry type, with foam precleaner element
Oil Capacity (pts./liters)	All Models	3.0 pints/1.4 liters
Oil Capacity (pts./liters)	Models w/Oil Filters	3.5 pints/1.6 liters
Fuel Capacity (gal./liters)	Models 1060, 1058, 1160, 1659, 1662, 1668L, 1669 & 1669L	1.6 gal./6.1 liters
	Models 1467, 1667 & 1668	3.5 gal./13.2 liters
Governor Setting	All Models	Mechanical-3600 + 150 RPM
Speed Control	All Models	Remote, cable operated
Spark Plug	11 HP Models	Champion RCJ8 or equivalent
	14 & 16 HP Models	Champion J-8 or equivalent (Refer to Engine Manual for proper equivalents)
Spark Plug Gap	All Models	030 in. (.076 mm)

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MAINTENANCE CHART

MAINTENANCE REQUIRED	Length of Operation	Type of Maintenance
Engine Cooling Air Screen -	Tecumseh Models 25 Hrs.* B & S Models - 100 Hrs.*	Brush Clean
Engine Air Cleaner -	25 Hrs.*	Refer to Section 4, FUEL SYSTEM
	When no longer serviceable	Replace
Engine Oil Filter (If Equipped)	100 Hrs.	Replace
Cooling Fins - (Engine) -	Yearly or every 50 Hrs.	Clean - use Air Hose if Available
Spark Plugs -	100 Hrs.	Service or Replace
Breaker Points - (Battery Ignition) -	100 Hrs.*	Service or Replace
Ignition Timing - (Battery Ignition)	100 Hrs.*	Adjust
Fuel Filter -	100 Hrs.*	Replace
Battery -	25 Hrs.	Check Water Level - Add As Necessary
Hydrostatic and Rear Axle Fins - (Hydrostatic Models)	Daily or 10 Hrs.*	Clean - Use Air Hose if Available
Belts -	50 Hrs.*	Check for Wear and Adjust
Tires -	30 Hrs.	Check for Damage and Air Pressure
Transmission Filter - (Hydrostatic)-	After First 5 Hours, then After Every 100 Hours or with oil change	Change - Use Bolens Filter**
Brake -	As Required	Adjust Linkage
Rear Axle -	50 Hrs.*	Adjust End Play

* More often under extreme conditons.

** An equivalent substitute is acceptable.

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