108, 111, 111H 112L, and 116 Lawn Tractors

JOHN DEERE

TECHNICAL MANUAL

108, 111, 111H 112L, and 116
Lawn Tractors

TM1206 (01MAY85) English

John Deere
Lawn & Grounds Care Division
TM1206 (01MAY85)

LITHO IN U.S.A.
ENGLISH

108, 111, 111H, 112L AND 116 TRACTORS TECHNICAL MANUAL TM-1206 (MAY-85)

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All information, illustrations and specifications contained in this technical 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.

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Section 10
GENERAL

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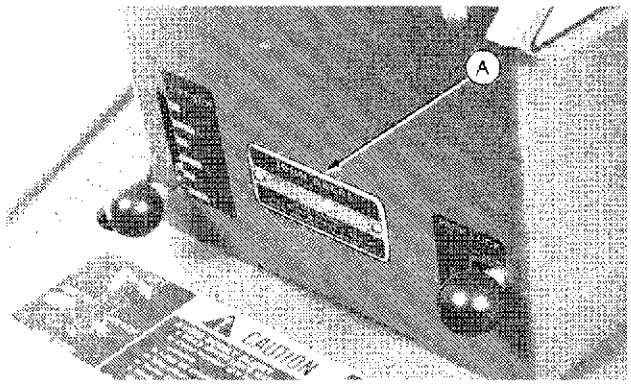
PRODUCT IDENTIFICATION NUMBER ON 108, 111, AND 111H TRACTORS (S.N. - 285000)

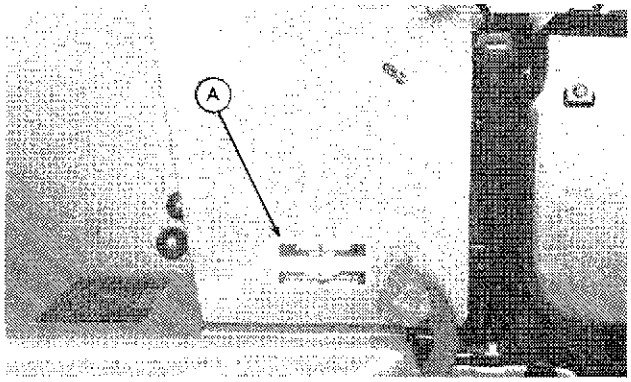
The product identification number plate (A) is located on the pedestal below the steering wheel.



4A0;M30049 M21;;1005G A 190285

PRODUCT IDENTIFICATION NUMBER ON 108, 111, AND 111H TRACTORS (S.N. 285001-) AND 112L AND 116 TRACTORS

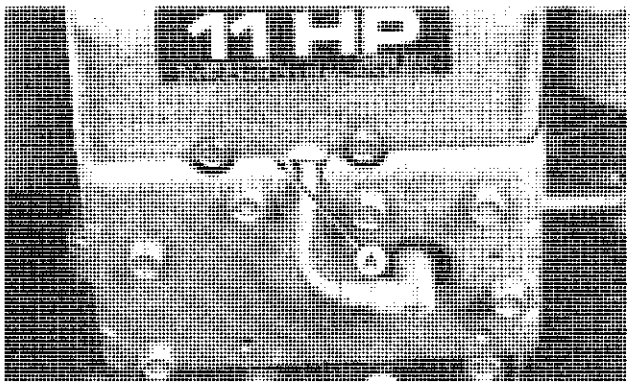
The product identification number plate (A) is located on the right side of the pedestal.



4A0;M29856 M21;;1005G B 190285

ENGINE SERIAL NUMBER ON 108, 111, AND 111H TRACTORS

The engine serial number (A) is located on the front of the blower housing above the spark plug.



4A0;M30050 M21;;1005G C 190285

ENGINE SERIAL NUMBER ON 112L TRACTOR

The engine serial number is on the cylinder head cover.

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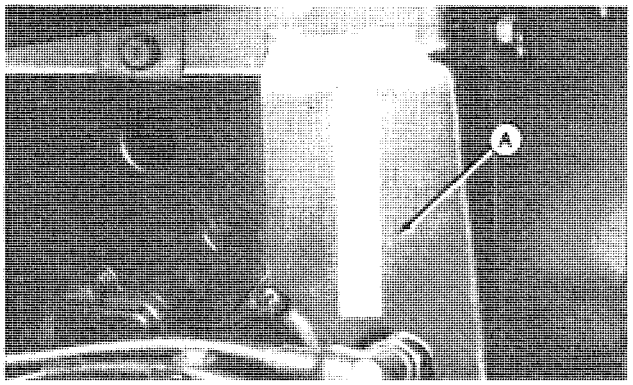
ENGINE SERIAL NUMBER ON 116 TRACTOR

The engine serial number (A) is located on the left-hand engine shroud above the spark plug.



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TRACTOR SPECIFICATIONS FOR 108 AND 111 TRACTOR

Item	108 Tractor	111 Tractor
Engine		
Model Number	191707	252707
Manufacturer	Briggs and Stratton	Briggs and Stratton
Cylinders	One	One
Crankshaft	Vertical	Vertical
Stroke/Cycle	Four	Four
Bore	76 mm (3 in.)	87 mm (3-716 in.)
Stroke	70 mm (2-3/4 in.)	67 mm 2-5/8 in.)
Displacement	318 cm^3(19.4 cu. in.)	416 $cm^3$24.4 cu. in.)
Horsepower	6 kW (8 hp)	8 kW (11 hp)
Valve Clearance		
Intake (Cold)	0.127 to 0.178 mm (0.005 to 0.007 in.)	0.127 to 0.178 mm (0.005 to 0.007 in.)
Exhaust (Cold)	0.228 to 0.279 mm (0.009 to 0.011 in.)	0.228 to 0.279 mm (0.009 to 0.011 in.)
Engine Speed		
Fast (No Load)	3300 to 3500 rpm	3300 to 3500 rpm
Idle	1750 to 1850 rpm	1750 to 1850 rpm
Air Filter	Dry Element	Dry Element
ELECTRICAL SYSTEM		
Spark Plug (RFI)	AC CS-45 Champion CJ-8 Autolite A79	AC CS-45 Champion CJ-8 Autolite A79
Spark Plug Gap	0.76 mm (0.030 in.)	0.76 mm (0.030 in.)
Breaker Point Gap (Serial No. -222,000)	0.50 mm (0.020 in.)	0.50 mm (0.020 in.)
Charging System		
(Serial No. 95,001-120,000)	Flywheel Alternator (3 amps)	Flywheel Alternator (3 amps)
(Serial No. 120,001-)	Flywheel Alternator (5 amps)	Flywheel Alternator (5 amps)
Starter	Battery (U-1) Neg. Ground	Battery (U-1) Neg. Ground
CAPACITIES		
Fuel Tank		
(Serial No. 95,001-190,000)	6 L (1.5 gal)	6 L (1.5 gal)
(Serial No. 190,001-)	9 L (2.5 gal)	9 L (2.5 gal)
Crankcase	1.1 L (2-1/4 pt)	1.4 L (3 pt)
Transaxle	0.76 L(1-1/2 pt)	0.76 L (1-1/2 pt)

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Item	108 Tractor	111 Tractor
TRANSMISSION		
Type	Transaxle	Transaxle
Gear Selections	5 Forward, 1 Reverse	5 Forward, 1 Reverse
Travel Speeds (3400 rpm)		
First	2.2 km/hr (1.4 mph)	2.2 km/hr (1.4 mph)
Second	3.5 km/hr (2.2 mph)	3.5 km/hr (2.2 mph)
Third	5.3 km/hr (3.3 mph)	5.3 km/hr (3.3 mph)
Fourth	6.7 km/hr (4.2 mph)	6.7 km/hr (4.2 mph)
Fifth	7.9 km/hr (4.9 mph)	7.9 km/hr (4.9 mph)
Reverse	2.5 km/hr (1.6 mph)	2.5 km/hr (1.6 mph)
DIMENSIONS		
Wheelbase	1135 mm (44.7 in.)	1135 mm (44.7 in.)
Overall Length	1573 mm (62.0 in.)	1573 mm (62.0 in.)
Overall Height	998 mm (39.3 in.)	998 mm (39.3 in.)
Overall Width	1039 mm (40.9 in.)	1260 mm (49.6 in.)
Turning Radius	575 mm (23 in.)	559 mm (22 in.)
Wheel Tread		
Front	666 mm (26.2 in.)	724 mm (28.5 in.)
Rear	605 mm (23.8 in.)	645 mm (25.4 in.)
TIRES		
Front	13 x 5.00-6, 2-ply Tubeless	15 x 6.00-6, 2-ply Tubeless
Rear	18 x 6.50-8, 2-ply Tubeless	18 x 8.50-8, 2-ply Tubeless
INFLATION PRESSURE		
Front	80 kPa (12 psi)	60 kPa (10 psi)
Rear	70 kPa (10 psi)	70 kPa (8 psi)
BRAKES		
Type	Transmission—Disk	Transmission—Disk
Parking	Right-Hand Pedal with Clutch Interlock	Right-Hand Pedal with Clutch Interlock
CLUTCH	Left-Hand Pedal, V-Belt	Left-Hand Pedal, V-Belt
PTO CLUTCH		
(Serial No. 95,001-120,000)	Lever-Actuated, Mechanical	Lever-Actuated, Mechanical
(Serial No. 120,001-	Switch-Actuated, Electric	Switch-Actuated, Electric

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Item	108 Tractor	111 Tractor
STEERING		
(Serial No. 95,001-120,000)	Enclosed Sector, Pinion	Enclosed Sector, Pinion
(Serial No. 120,001-	Open Sector, pinion	Open Sector, Pinion
LIFT	Manual with Adjustable Stop	Manual with Adjustable Stop
WEIGHT		
(Machine with mower and no fuel)	184 kg (405 lb)	213 kg (470 lb)
LUBRICANTS		
Engine Crankcase		
Above 0°C (32°F)	SAE 30	SAE 30
Below 0°C (32°F)	SAE 5W-20	SAE 5W-20
Transaxle	John Deere High-Temperature Grease or equivalent (Part No. AT30408)	John Deere High-Temperature Grease or equivalent (Part No. AT30408)
Grease Fittings	John Deere Multi-Purpose Lubricant	John Deere Multi-Purpose Lubricant

(Specifications and design subject to change without notice.)

M21;;1010G C 190285

TRACTOR SPECIFICATIONS FOR 111H, 116, AND 116H TRACTORS

Item	111H Tractor	116 and 116H Tractor
ENGINE		
Model Number	252707	402707
Manufacturer	Briggs and Stratton	Briggs and Stratton
Cylinders	One	Two
Crankshaft	Vertical	Vertical
Stroke/Cycle	Four	Four
Bore	87 mm (3-7/16 in.)	87 mm (3-7/16 in.)
Stroke	67 mm (2-5/8 in.)	55 mm (2-5/32 in.)
Displacement	416 cm^3(24.4 cu. in.)	656 cm^3(40 cu. in.)
Horsepower	8 kW (11 hp)	12 kW (16 hp)
Valve Clearance		
Intake (Cold)		
With Spring	. . . . .	0.102 to 0.152 mm (0.004 to 0.006 in.)
Without Spring	0.127 to 0.178 mm (0.005 to 0.007 in.)	0.152 to 0.203 mm (0.006 to 0.008 in.)
Exhaust (Cold)		
With Spring	. . . . .	0.178 to 0.229 mm (0.007 to 0.009 in.)
Without Spring	0.228 to 0.279 mm (0.009 to 0.011 in.)	0.229 to 0.279 mm (0.009 to 0.011 in.)
Engine Speed		
Fast (No Load)	3300 to 3500 rpm	3400 rpm
Idle	1750 to 1850 rpm	1400 rpm
Air Filter	Dry Element	Dry Element/Wet Pre-Cleaner
ELECTRICAL SYSTEM		
Spark Plug (RFI)	AC CS-45 Champion CJ-8 Autolite A79	AC R-46 Champion RJ-12 Autolite 308
Spark Plug Gap	0.76 mm (0.030 in.)	0.76 mm (0.030 in.)
Breaker Point Gap		
Serial No. (-222,000)	0.50 mm (0.020 in.)	
Charging System	Flywheel Alternator (5 amps)	Flywheel Alternator (10 amps)
Starter	Battery (U-1) Neg. Ground	Battery (U-1) Neg. Ground
CAPACITIES		
Fuel Tank	9.L (2.5 gal)	9 L (2.5 gal)
Crankcase	1.4 L (3 pt)	1.4 L (3 pt)
Transaxle	. . . . .	116—0.76L (1.5 pt)
Differential	0.7 L (1.5 pt)	116H—0.7 L (1.5 pt)
Hydrostatic System	1.1 L (2.25 pt)	116H—1.1 L (2.25 pt)

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Item	111H Tractor	116 and 116H Tractor
TRANSMISSION		
Type	Hydrostatic	116—Transaxle; 116H—Hydrostatic
Gear Selections	Infinite	116—5 Forward, 1 Reverse
Travel Speeds (3400 rpm)		
Forward	0. to 8 km/h (0.to 5 mph)	116H—0 to 8 km/h (0 to 5 mph)
First	. . . . .	116—2.4 km/h (1.5 mph)
Second	. . . . .	116—3.8 km/h (2.4 mph)
Third	. . . . .	116—5.6 km/h (3.5 mph)
Fourth	. . . . .	116—7.2 km/h (4.5 mph)
Fifth	. . . . .	116—8.5 km/h (5.3 mph)
Reverse	0 to 4 km/h (0 to 2.5 mph)	116—2.8 km/h (1.7 mph) 116H 0 to 4 km/h (0 to 2.5 mph)
DIMENSIONS		
Wheelbase	1135 mm (44.7 in.)	1135 mm (44.7 in.)
Overall Length	1573 mm (62.0 in.)	1573 mm (62.0 in.)
Overall Height	1000 mm (39.4 in.)	1020 mm (40.2 in.)
Overall Width	1260 mm (49.6 in.)	1448 mm (57.0 in.)
Turning Radius		
with 38-in Mower	559 mm (22 in.)	559 mm (22 in.)
with 46-in. Mower	. . . . .	553 mm (21 in.)
Wheel Tread		
Front	724 mm (28.5 in.)	724 mm (28.5 in.)
Rear	645 mm (25.4 in.)	645 mm (25.4 in.)
TIRES		
Front	15 x 6.00, 2-ply Tubeless	15 x 6.00, 2-ply Tubeless
Rear		
With 38-in. Mower	18 x 8.50-8, 2-ply Tubeless	18 x 8.50-8, 2-ply Tubeless
With 46-in. Mower	. . . . .	20 x 10.00-8, 2-ply Tubeless
Inflation Pressure		
Front	(70 kPa) 10 psi	(80 kPa) 12 psi
Rear		
With 38-in. Mower	(60 kPa) 8 psi	(60 kPa) 8 psi
With 46-in. Mower		(40 to 70 kPa) 6 to 10 psi

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Item	111H Tractor	116 and 116H Tractor
BRAKES		
Type	Transmission—Disk	Transmission—Disk
Parking	Right-hand Pedal with Latch	116 Right-Hand Pedal with Clutch Interlock 116H Right-Hand Pedal with latch
CLUTCH	Hydrostatic Control, Pump Cam	116 Left-Hand Pedal, V-Belt 116H Hydrostatic Control, Pump Cam
PTO CLUTCH	Switch Actuated, Electric	Switch Actuated, Electric
STEERING	Open Sector, Pinion	Open Sector, Pinion
LIFT	Manual, with Adjustable Stop	Manual, with Adjustable Stop
WEIGHT (Machine with mower and no fuel)		
With 38-in. Mower	(213 kg) 470 lbs)	(213 kg) 470 lbs)
With 46-in. Mower	----	(238 kg) 522 lbs)
LUBRICANTS		
Engine Crankcase		
Above 0.°C (32°F)	SAE 30	SAE 30
Below 0.°C (32°F)	SAE 5W-20	SAE 5W-20
Transaxle	----	116—John Deere High-Temperature Grease (Part No. AT30408) or equivalent
Differential	SAE 90 or 30 W	116—SAE 90
Transmission	SAE 20 Engine Oil below 0°C (32°F) SAE 30 Engine Oil above 0°C (32°F)	116H—SAE 20 Engine Oil below 0°C (32°F) SAE 30 Engine Oil above 0°C (32°F)
Grease Fittings	John Deere Multi-Purpose Grease	John Deere Multi-Purpose Grease

(Specification's and design subject to change without notice.)

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TRACTOR SPECIFICATIONS FOR 112L TRACTOR

ENGINE	
Model Number	FB460V
Manufacturer	Kawasaki Heavy Industry, Ltd.
Cylinders	One
Crankshaft	Vertical
Stroke/Cycle	Four
Bore	89 mm (3.51 in.)
Stroke	74 mm (2.92 in.)
Displacement	460 cm^3(28.1 cu in.)
Horsepower	9.33 kW (12.5 hp)
Valve Clearance	
Intake (Cold)	0.10 to 0.16 mm (0.0039 to 0.0063 in.)
Exhaust (Cold)	0.10 to 0.16 mm (0.0039 to 0.0063 in.)
Engine Speed	
Fast (No Load)	3275 to 3425 rpm
Idle	1300 to 1500 rpm
Air Filter	Semi-cyclone-type, dual element
ELECTRICAL SYSTEM	
Spark Plug (RFI)	NGK BMR-4A
Spark Plug Gap	0.64 mm (0.025 in.)
Charging System	Flywheel Alternator (13 amps)
Starter	Bendix-type (12-volt)
CAPACITIES	
Fuel Tank	9 L (2.5 gal)
Crankcase	1.4 L (Approx 3 pt)
Differential	0.7 L (1.5 pt)
Hydrostatic System	1.1 L 2-1/4 pt
TRANSMISSION	
Type	Hydrostatic
Gear Selections	Infinite
Travel Speeds (3400 rpm)	
Forward	0 to 8 km/h (0. to 5 mph)
Reverse	0 to 4 km/h (0 to 2.5 mph)

DIMENSIONS	
Wheelbase	1135 mm (44.7 in.)
Overall Length	1573 mm (62.0 in.)
Overall Height	1000 mm (39.4 in.)
Overall Width	1260 mm (49.6 in.)
Turning Radius	559 mm (22 in.)
TIRES	
Wheel Tread	
Front	15 x 6.00, 2-ply Tubeless
Rear	18 x 8.50, 2-ply Tubeless
Inflation Pressure	
Front	70 kPa (10 psi)
Rear	60 kPa (8 psi)
BRAKES	
Type	Transmission—Disk
Parking	Right-Hand Pedal with Latch
CLUTCH	Hydrostatic Control, Pump Cam
PTO CLUTCH	Switch-Actuated, Electric
STEERING	Open Sector, Pinion
LIFT	Manual with Adjustable Stop
WEIGHT (machine with Mower and No Fuel)	213 kg (470 lb)
LUBRICANTS	
Engine Crankcase	
Above 0° C (32° F)	SAE 30
Below 0° C (32° F)	SAE 5W-20
Differential	SAE 90
Transmission	SAE 20 Engine Oil below 0° C (32° F) SAE 30 Engine Oil above 0° C (32°F)
Grease Fittings	John Deere Multi-Purpose Grease

(Specifications and design subject to change without notice.)

M21;;1010G G 200285

MOWER SPECIFICATIONS

Item	30-Inch	38-Inch	46-Inch
Type	Rotary	Rotary	Rotary
Cutting Blades	One	Two	Three
Blade Length	762 mm (30 in.)	496 mm (19.5 in.)	407 mm (16 in.)
Cutting Width	762 mm (30-in.)	965 mm (38 in.)	1170 mm (46 in.)
Cutting Height	25.4 to 102 mm (1.00 to 4.00 in.)	25.4 to 102 mm (1.00 to 4.00 in.)	25.4 to 102 mm (1.00 to 4.00 in.)

Specifications and design subject to change without notice.

M21;;1010G H 200285

INCH FASTENER TORQUE CHART

SAE-2 SAE-5 SAE-8

Newton-Meters				Pound-Feet		
SAE-2	SAE-5	SAE-8	Bolt Diameter	SAE-2	Sae-5	Sae-8
8	14	19	1/4 in.	6	10	14
18	27	40	5/16 in.	13	20	30
30	45	70	3/8 in.	23	35	50
45	75	110	7/17 in.	35	55	80
75	115	160	1/2 in.	55	85	120
100	175	240	9/16 in.	75	130	175
140	230	325	5/8 in.	105	170	240
250	410	575	3/4 in.	185	300	425
220	600	930	7/8 in.	*160	445	685
345	910	1400	1 in.	255	670	1030
450	1230	1980	1-1/8 in.	330	910	1460
650	1700	2700	1-1/4 in.	480	1250	2060

NOTE: Allow a tolerance of plus or minus 10 per cent on all torques given in this chart.

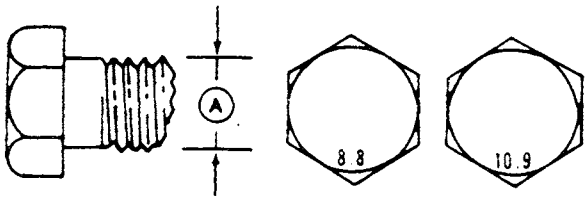
Multiply readings by 12 for lb-in. values.

**"SAE-2" grade bolts, larger than 3/4 in. are sometimes formed hot rather than cold which accounts for the lower recommended torque.*

4A0;M30320 M21;;1010G I 200285

METRIC FASTENER TORQUE CHART

Newton-Meters		Bolt Diam. (A)	Pound-Feet	
8.8	10.9		8.8	10.9
5	7	5 mm	4	5
8	12	6 mm	6	9
20	30	8 mm	15	23
40	60	10 mm	30	45
70	105	12 mm	50	80
175	255	16 mm	130	190
350	500	20 mm	260	370
600	850	24 mm	445	630
1430	1700	30 mm	1055	1250
2100	2980	36 mm	1550	2200



NOTE: Allow a tolerance of plus or minus 10 per cent on all torques given in this chart.

Multiply reading by 12 for lb-in. values.

4A0;M38165 M21;;1010G J 200285

SET SCREW SEATING TORQUE CHART

Screw Size	Cup Point	Square Head
#5	1 N·m (9 lb-in.)	
#6	1 N·m (9 lb-in.)	
#8	2 N·m (20 lb-in.)	
#10	4 N·m (33 lb-in.)	
1/4	10 N·m (87 lb-in.)	24 N·m (212 lb-in.)
5/16	19 N·m (165 lb-in.)	48 N·m (420 lb-in.)
3/8	33 N·m (290 lb-in.)	94 N·m (830 lb-in.)
7/16	49 N·m (430 lb-in.)	
1/2	70 N·m (620 lb-in.)	237 N·m (2100 lb-in.)
9/16	70 N·m (620 lb-in.)	
5/8	139 N·m (1225 lb-in.)	480 N·m (4250 lb-in.)
3/4	240 N·m (2125 lb-in.)	870 N·m (7700 lb-in.?

Divide readings by 12 for lb-ft values.

NOTE: Allow a tolerance of plus or minus 10 per cent on all torques given in this chart.

M21;;1010G K 200285

FUEL

CAUTION: Handle fuel carefully. If the engine is hot or running, do not fill the fuel tank. Do not smoke while you fill the fuel tank or service the fuel system. Fill fuel tank only to bottom of filler neck.

IMPORTANT: Do not use additives, such as carburetor cleaners, de-icers, or moisture-removing liquids in the gasoline.

Do not mix oil with gasoline. Always use a clean container.

1. Unleaded fuel is recommended. Regular leaded gasoline with an anti-knock index of 87 or higher may be used. Avoid switching from unleaded to regular gasoline to prevent engine damage.

2. Use of gasohol is acceptable as long as the ethyl-alcohol blend does not exceed 10 per cent. Unleaded gasohol is preferred over leaded gasohol.

M21;;1015G A 200285

ENGINE OIL

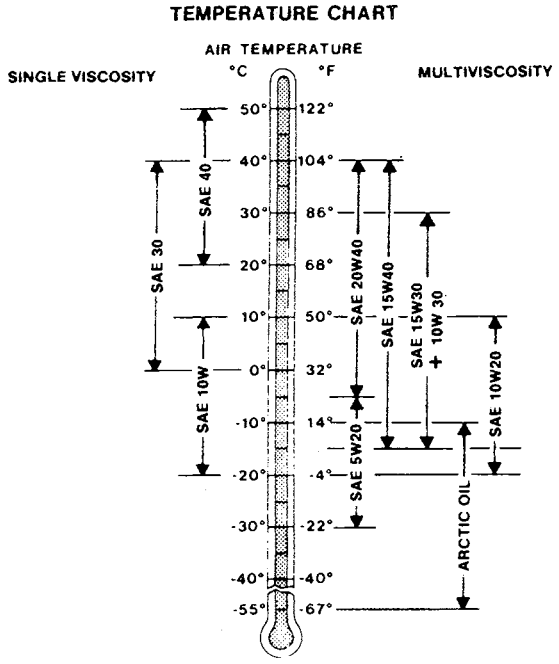
Depending upon the expected air temperature range during the drain interval, use oil viscosity shown on the adjoining temperature chart.

John Deere TORQ-GARD SUPREME ® engine oil is recommended. If other oils are used, they must be premium quality engine oils meeting performance requirements of:

—API Service Classification SD, SE, SE/CC or SF.

Quality engine oils are blended, so additives are neither required nor recommended.

Some increase in oil consumption may be expected when SAE 5W-20 oil is used. Check oil level frequently.



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TRANSAXLE GREASE

Use John Deere High Temperature Grease (Part No. AT30408) in the tractor transaxle. Shell Darina EP2 or AMOCO Rykon 2EP may also be used.

The transaxle is a sealed unit and needs new lubricant only if it is disassembled for repair.

M21;;1015G C 200285

TRANSMISSION OIL

IMPORTANT: Do not use Type "F" Automatic Transmission Fluid.

In the hydrostatic transmission, use SAE 20 or 30 engine oil with an API Classification of SE, CC, or CD. SAE 20 oil is recommended for temperatures below 0° C (32° F). SAE 30 oil can be used for temperatures above 0° (32°F)

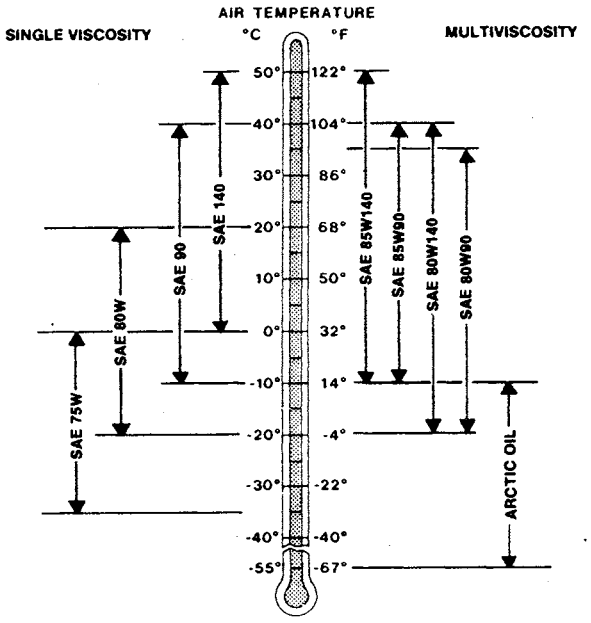
M21;;1015G D 200285

DIFFERENTIAL OIL

IMPORTANT: DO NOT put SAE 90 oil in the hydrostatic transmission.

Use oil viscosity as shown on the temperature chart for the expected air temperature range during the drain interval.

SAE 90 oil is recommended in the differential. Other oils shown in the chart can also be used. DO NOT mix oils of different viscosities.



4A0;X9322 M21;;1015G E 200285

M90;01015 02 250385

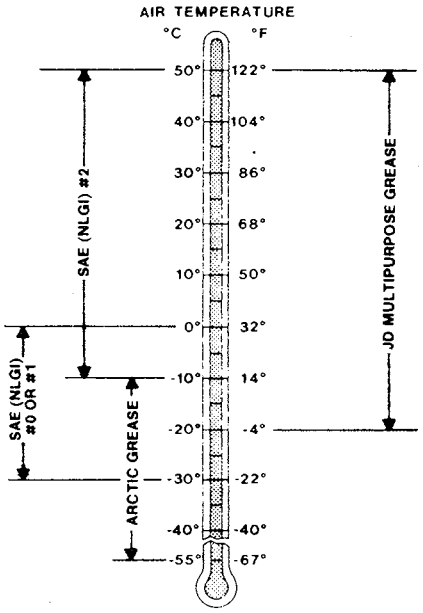
GENERAL PURPOSE GREASE

Depending upon the expected air temperature range during the service interval, use grease as shown on the adjoining temperature chart.

John Deere Multipurpose Grease is recommended. If other greases are used, use:

—SAE Multipurpose Grease
—SAE Multipurpose Grease containing 3 to 5 per cent molybdenum disulfide.

At temperatures below -30°C (-22°F), use arctic greases such as those meeting Military Specification MIL-G-10924C.



AB6;X9326 053;GREAS2 120584

CAPACITIES

Fuel Tank
108 and 111 (Serial No. -190,000) . 6 L (1.5 gal)
108 and 111 (Serial No. 190,001-) . . . . . 9 L (2.5 gal)
111H, 112L, 116, 116H . . . . . 9L (2.5 gal)

Crankcase
108 . . . . . 1.1 L (2-1/4 pt)
111, 111H, 112L, and 116 . . . . . 1.4 L (3 pt)

Differential
111H, 112L, 116H . . . . . 0.76 L (1.5 pt)

Transaxle
108 and 111 . . . . . 0.76 L (1.5 pt)
116 . . . . . 0.76 L (1.5 pt)

Hydrostatic System
111H, 112L, 116H . . . . . 1.1 (2.25 pt)

M21;;1015G G 200285

SERVICE INTERVALS

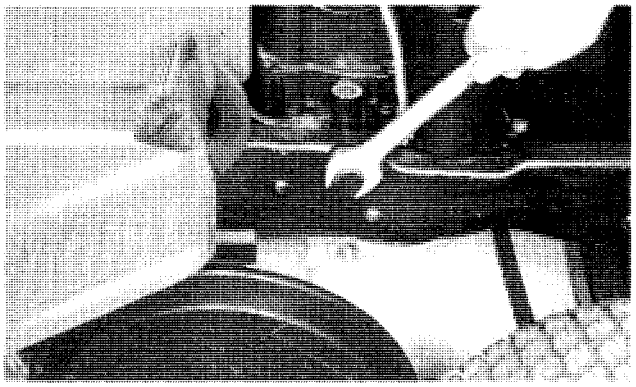
See the operator's manual for all the latest service intervals.

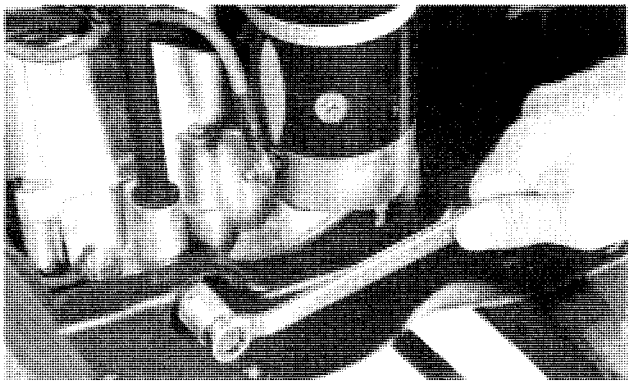
M21;;1015G H 200285

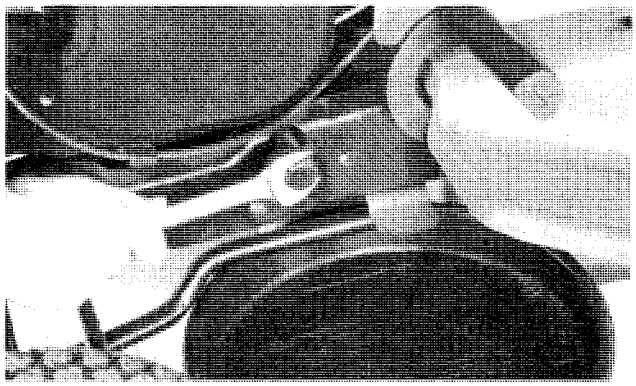
CHANGE ENGINE OIL

NOTE: For all 108, 111, and 116 Tractors, change oil every 25 hours. For 112L Tractor, change oil every 50 hours.

1. Run engine to warm the oil.
2. Park tractor on level surface.
3. Remove drain cap to drain oil.
4. Install drain cap.







108 and 111 Tractors (upper)
112L Tractor (middle)
116 Tractor (lower)

4A0;M32818 M32819 M21;;1015G I 200285

5. 108 Tractor: remove fill plug (top photograph).

112L Tractor: remove dipstick (middle photograph).

111 and 116H Tractor: remove dipstick (bottom photograph).

6. Add oil. (See Engine oil in Fuels and Lubricants section for correct oil.)

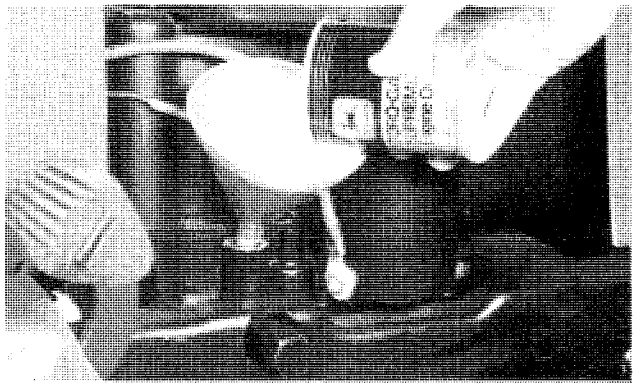
Engine Oil Capacity

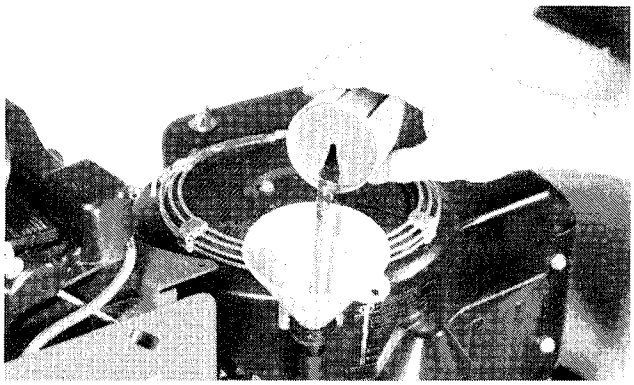
108 Tractor	1 L (2-1/4 pt)
111 and 112L Tractors (without filter)	1.4 L (3 pt)
112L Tractor with filter	1.7 L (3-1/2 pt)
116 Tractor	1.4 L (3 pt)

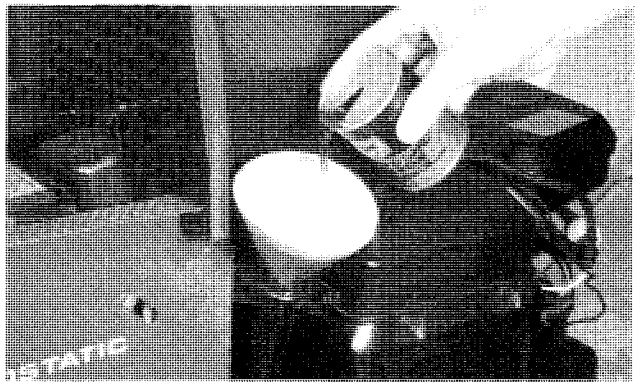
7. Tractors with oil plug: fill the plug housing full.

Tractor with dipstick: oil must be between "ADD" and "FULL" marks on dipstick. Before you check a 111 or 116 tractor dipstick, screw dipstick cap down. Before you check a 112L tractor dipstick, let dipstick cap threads rest on top of dipstick tube.

8. Install and tighten oil plug or dipstick.







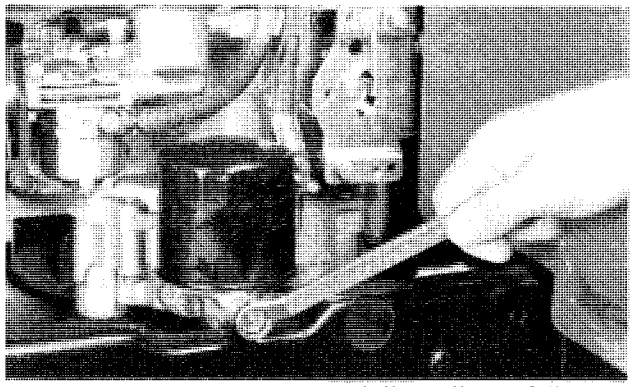
4A0;M32870 M32873 M21;;1015G J 200285

CHANGE ENGINE OIL FILTER—112L TRACTOR

NOTE: Change oil filter every 100 hours.

1. Remove drain cap to drain oil.

2. Install cap.



4A0;M35434 M21;;1015G K 200285

3. Turn filter counterclockwise to remove it.

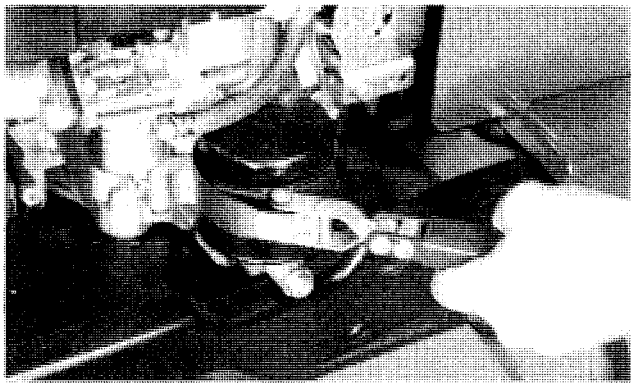
4. Apply a film of clean engine oil on seal of new filter.

5. Install filter. Turn filter until seal contacts mounting surface. Then turn filter BY HAND 1/2 turn more.

6. Run engine at slow speed 2 minutes. Check for leaks around filter.

7. Stop engine. Check oil level. Add oil only to "FULL" mark on dipstick.

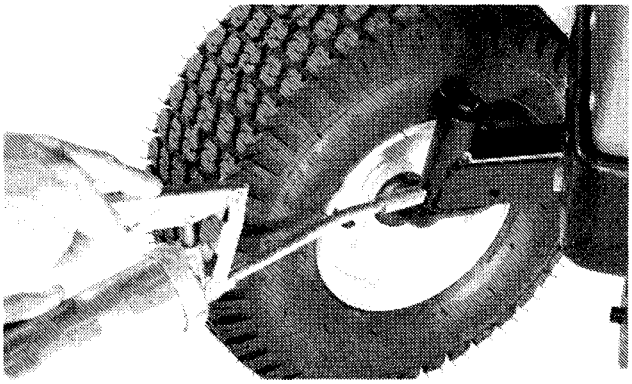
8. Install and tighten dipstick. Lower hood.



4A0;M35435 M21;;1015G L 200285

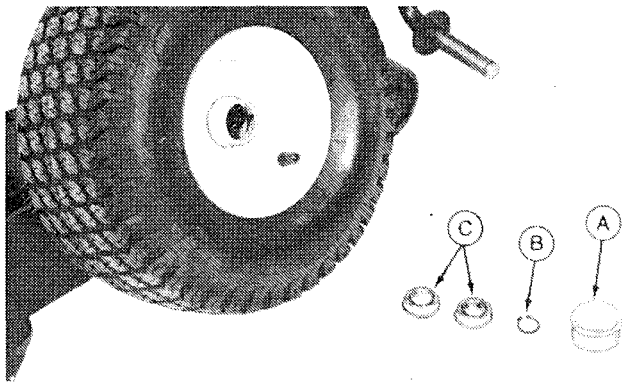
LUBRICATE FRONT WHEEL SPINDLES

Lubricate the grease fitting on each spindle with John Deere Multi-Purpose Lubricant or its equivalent every 10 hours.



4A0;M32880 M21;;1015G M 200285

REPACK FRONT WHEEL BEARINGS



Repack front wheel bearings yearly or every 100 hours of operation.

1. Remove cap (A), snap ring (B), wheel, and bearings (C).

2. Clean bearings and inside of wheel with solvent. Dry with compressed air. DO NOT use gasoline to clean bearings.

3. Repack bearings with John Deere Multi-Purpose Grease or its equivalent.

4. Pack inside of wheel with multi-purpose grease.

5. Install bearings (C) in wheel.

6. Install snap ring (B) and cap (A).

4A0;M29967 M21;;1015G N 200285

TEST ENGINE COMPRESSION

Before performing extensive tune-up, test engine compression as instructed in Group 05 of the appropriate engine section:

Section 20—108, 111, and 111H Tractors Engine
Section 22—116 Tractor Engine
Section 24—112L Tractor Engine

The compression test will help determine if a tune-up will restore operating efficiency.

M21;;1020G A 200285

ACQUIRE ACCESS TO BREAKER POINTS

Perform the following steps to gain access for breaker point adjustment.

1. Remove hood. See Group 10 of appropriate engine section as necessary.

2. On tractors (Serial No. 95,001—190,000) only, Remove fuel tank:

   a. Disconnect and remove battery.
   b. Remove battery base.
   c. Remove vent line from top of tank.
   d. Drain fuel and remove tank.

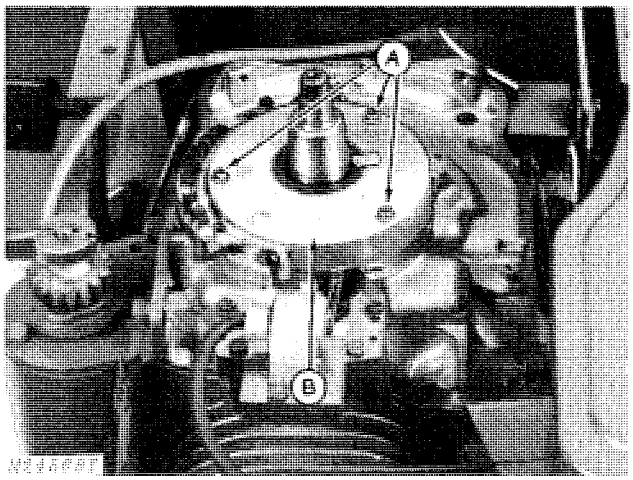
3. Remove blower housing. Refer to Group 15 of appropriate engine section as necessary.

4. Remove flywheel. Refer to Group 20 of appropriate engine section as necessary.

M21;;1020G B 200285

ADJUST BREAKER POINT GAP

1. Remove screws (A) securing breaker cover (B).



4A0;M24568 M21;;1020G C 200285

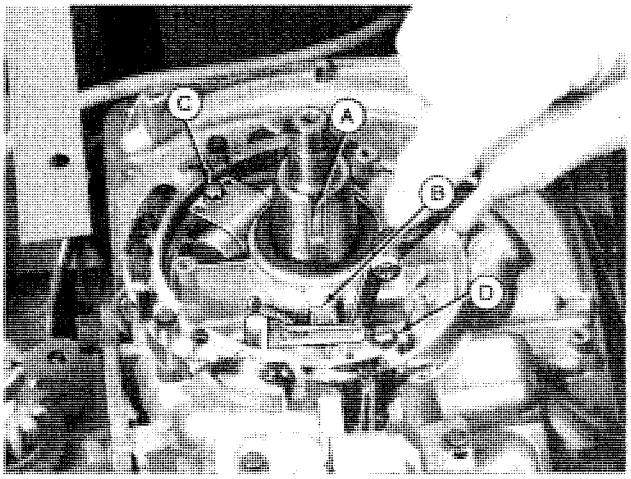
2. Rotate crankshaft until keyway (A) aligns with the breaker plugs (B).

3. Check for (0.508 mm) 0.020-in. breaker point gap with a flat feeler gauge.

4. If gap is incorrect, loosen screw (C) very slightly to move condenser (108 Tractor) or screw (D) to move breaker points (111 and 112L Tractors) until the (0.508 mm) 0.020-in. gap is obtained. Tighten screw.

5. Install breaker cover and tighten screws.

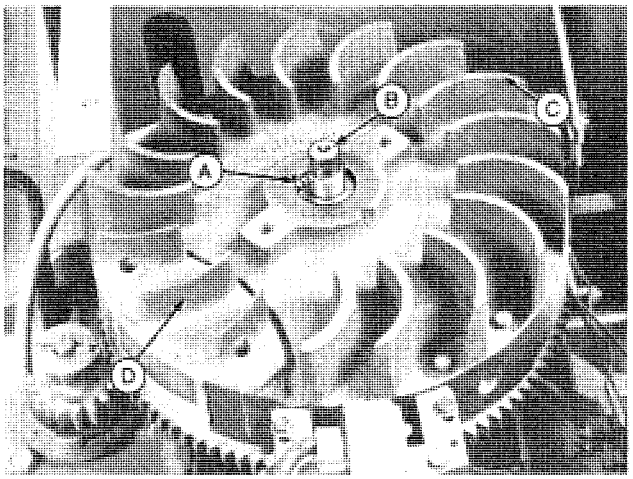
6. Seal opening for wires with No. 2 Permatex.



A—Keyway
B—Breaker Plunger
C—Screw
D—Screw

4A0;M29968 M21;;1020G D 200284

INSTALL FLYWHEEL



1. Put flywheel (C) on crankshaft (B).

2. Align keyways (A) and install key.

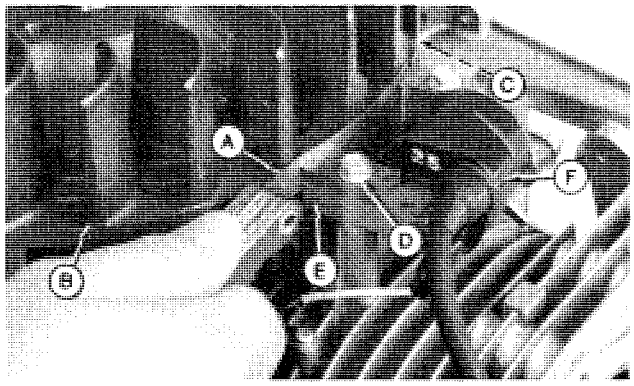
3. Install attaching hardware. Refer to Group 20 of the appropriate engine section as necessary.

IMPORTANT: Do not hold bar against three small fins (D) of the flywheel.

4. Hold flywheel with a bar or JTO1693 strap wrench and tighten retaining nut to 91 N·m(67 lb-ft).

4A0;M29927 M21;;1020G E 200285

ADJUST ARMATURE AIR GAP



1. Turn flywheel so that magnet (C) is away from armature legs (E).

2. Loosen the two armature screws (D) and move armature legs away from flywheel.

3. Place a 0.3 mm (0.012 in.) feeler gauge (A) against the flywheel (B).

4. Turn flywheel until feeler gauge is under armature legs.

5. Push armature against feeler gauge and tighten both mounting screws (D). Turn flywheel to remove gauge.

4A0;M38033 M21;;1020G F 200285

CLEAN ENGINE INTAKE SCREEN, BLOWER HOUSING AND COOLING FINS

1. Remove grass, leaves or any foreign material on the air intake screen. Blockage of air flow will cause engine overheating and damage.

2. Remove all dirt and chaff from blower housing, cylinder, and cylinder head cooling fins.

M21;;1020G G 200285

CHECK SPARK PLUG GAP

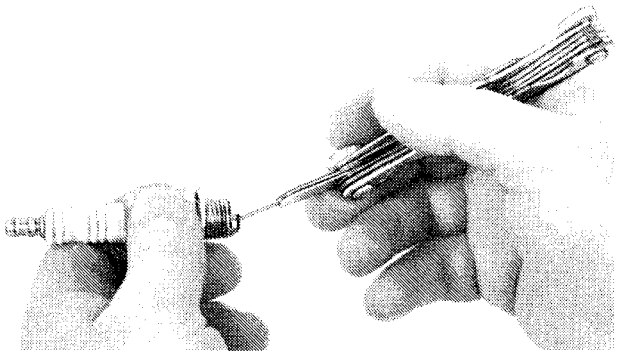
NOTE: Check spark plug yearly.

1. Remove and inspect spark plugs.

2. Replace spark plugs if damaged.

3. Use a round wire-type feeler gauge to check for a (0.76 mm) 0.030-in. gap. Bend only outer electrode when setting gap.

4. Install and carefully tighten spark plug to (20 to 27 N·m) 15 to 20 ft-lbs torque. Do not overtighen.



4A0;M22010 M21;;1020G H 040485

ASSEMBLE TRACTOR

1. Install blower housing. Refer to Group 15 of appropriate engine section as necessary.

2. Install fuel tank on tractors (serial No. 95,001—190,000) only:

   a. Put tank on tractor
   b. Install vent line to top of tank
   c. Install battery base
   d. install battery.

NOTE: Before installing battery, you may want to perform battery service as instructed below.

3. Install hood. Refer to Group 10 of appropriate engine section.

M21;;1020G I 200285

SERVICE BATTERY

NOTE: Complete battery service procedure is covered in Section 40, Group 10.

1. Remove and clean battery. Inspect cables and clean terminals.

2. Check battery hold-down and battery base.

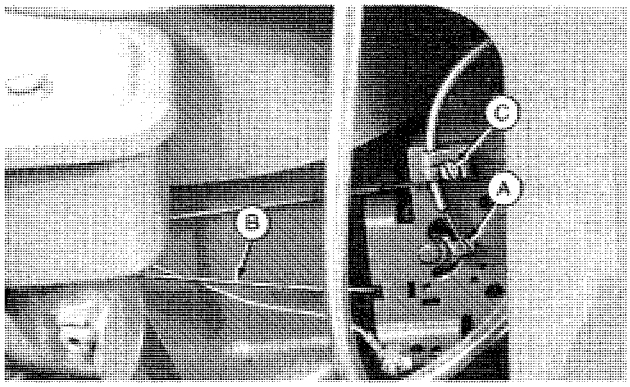
3. Make hydrometer test. Add water if necessary.

4. Recharge battery if necessary.

5. Install battery. Connect positive cable first, then negative.

M21;;1020G J 200285

ADJUST CARBURETOR (108, 111, AND 111H)



CAUTION: Before adjusting carburetor, depress both the clutch and brake pedals and engage parking brake.

NOTE: Shift transmission into neutral "N" position and pull PTO lever to the rear (disengaged).

1. Move throttle lever (in console) up in slot to the "FAST" position.

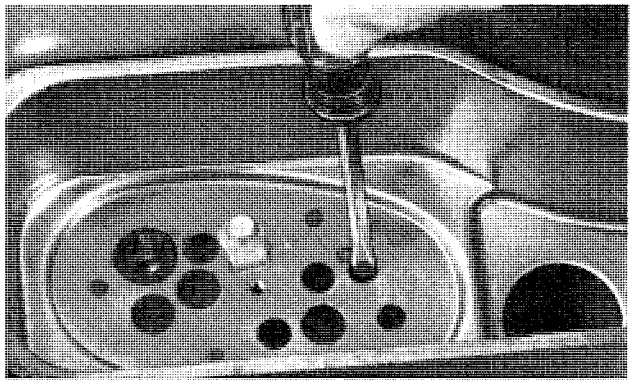
2. Governor control lever (A) should be positioned in the wide open position but not enough to move the choke link (B). If adjustment is necessary, loosen throttle cable clamp (C) and move throttle cable. Retighten clamp.

4A0;M30058 M21;;1020G K 040485

3. Remove air cleaner cover and air filter.

NOTE: Steps 4 and 5 are preliminary adjustments and will allow engine to start.

4. Turn the idle mixture screw in until it just seats and then back screw out 1-1/4 turns.



4A0;M30059 M21;;1020G L 200285

5. Turn fast idle screw (A) in until it just seats and then back screw out 1-1/8 turns.

6. Start and run the engine and allow it to warm up. Move throttle lever to "SLOW" position.

7. Slowly turn the idle mixture screw in, until engine just starts to falter. Back screw out until engine runs smoothly.

8. Use a vibration tachometer and adjust idle speed screw (B) until idle speed is 1750 to 1850 rpm.

9. Move throttle lever on console from "SLOW" to "FAST" rapidly. Engine should speed up immediately without faltering. Readjust idle mixture screw if necessary.

10. Stop engine and install air cleaner and cover.

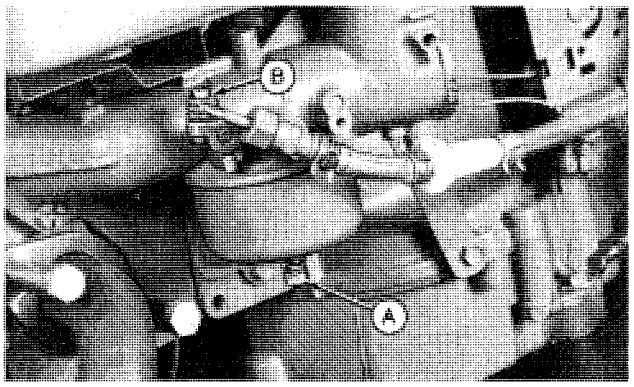
11. Restart engine and move throttle lever on console to the "FAST" position.

CAUTION: DO NOT burn yourself on engine exhaust when adjusting fast idle screw (A).

12. Use a vibration tachometer and turn fast idle screw (A) in until the governor starts to "HUNT". At this point, the engine surges and the idle speed screw "FLUTTERS".

NOTE: When fast idle screw is backed out and the governor stops "hunting," the idle speed screw will not "flutter" and will remain stationary.

13. Back out the fast idle screw (B) slowly until engine runs smoothly at 3300 to 3500 rpm. Continue backing the screw out 1/8 of a turn.



4A0;M29929 M21;;1020G M 200285

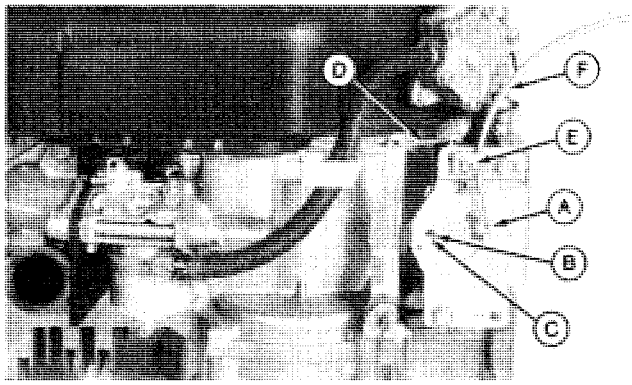
ADJUST CARBURETOR

CAUTION: Before you adjust carburetor, push down both the clutch and brake pedals and lock the park brake. Put transmission lever into "N" (neutral) position. Put PTO switch in "OFF" position.

IMPORTANT: Keep engine shrouds and air cleaner on engine when you make this adjustment.

1. Put throttle lever in FAST position.

2. Put holes (B and C) in line with throttle lever (A) without moving the choke rod (D). If adjustment is necessary, loosen throttle cable clamp bolt (E) and adjust throttle cable (F). Tighten clamp.



A—Throttle Control Lever
B—Hole
C—Hole
D—Choke Rod
E—Throttle Cable Clamp Bolt
F—Throttle Cable

4A0;M38014 M21;;1020G N 020585

CAUTION: Engine is hot. Do not use fingers to adjust idle mixture screw. Use a long 7 mm wrench.

3. Turn idle mixture screw (A) in until it just seats, then back it out 1-1/8 turns.

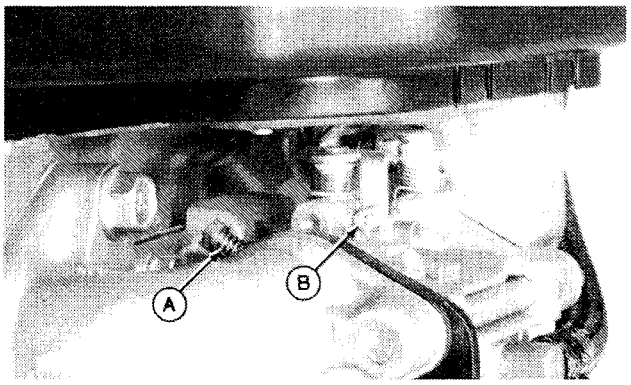
4. Start and run the engine. Allow engine to warm up. Move throttle lever on dash to SLOW position.

5. Put a vibration tachometer on the engine. Adjust idle speed screw (B) until the idle speed is 1350-1450 rpm.

6. Adjust idle mixture screw (A) until engine runs at highest idle speed.

7. Turn idle mixture screw (A) back out 1/4 turn more.

8. Adjust idle speed screw (B) idle speed is 1400 rpm.



4A0;M38020 M21;;1020G O 200285

CAUTION: Avoid burns from engine exhaust when you adjust fast idle speed.

9. Move throttle lever on dash to FAST position.

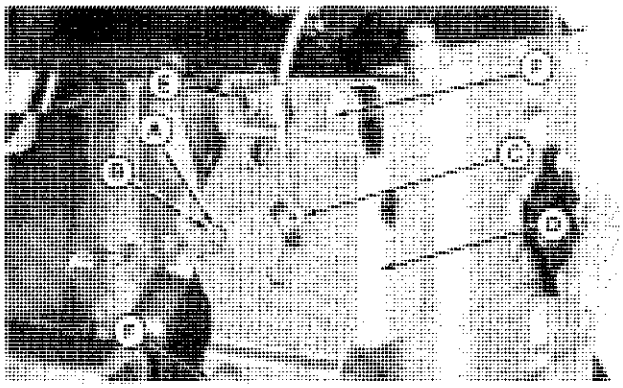
10. Align hole (A) with hole (B) by inserting a 15/64-in. drill bit. Tighten throttle cable clamp bolt (E).

11. Loosen control plate bolts (F).

12. Put a vibration tachometer on the engine. Move control plate (D) left or right until fast idle speed is 3350 rpm.

13. Tighten control plate bolts (F).

A—Hole
B—Hole
C—Throttle Control Lever
D—Control Plate
E—Clamp Bolt
F—Bolt



4A0;M38018 M21;;1020G P 200285

CLEAN AIR CLEANER ELEMENT (108, 111, AND 111H)

NOTE: Replace air cleaner element yearly or every 25 hours as required.

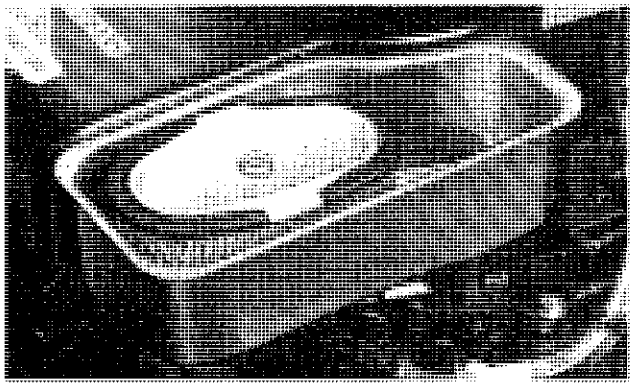
1. Remove cover from air cleaner base.

2. Remove air cleaner element.

NOTE: Do not clean element with water, solvent or compressed air.

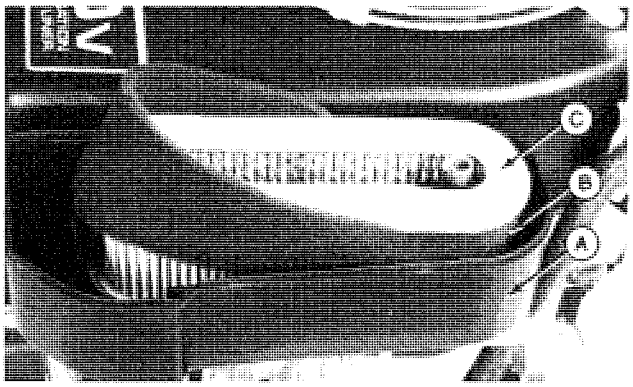
3. Tap element on hand or hard flat surface to shake loose dirt and debris.

4. Replace element in base and install cover and gasket if used.



4A0;M29930 M21;;1020G Q 150485

CLEAN AIR CLEANER ELEMENT (112 L)



NOTE: Replace paper air cleaner element yearly or as necessary.

1. Remove cover from air cleaner body (A).

2. Remove air cleaner elements (B and C).

NOTE: Do not clean elements with solvent or compressed air.

3. Wash foam element (B) in detergent and water. Dry element.

4. Apply engine oil to element. Squeeze out excess.

5. Clean paper element (C) by tapping it gently to remove dust.

6. IF element is very dirty, replace it or wash it in detergent and water. Dry element.

4A0;M38007 M21;;1020G R 040385

LUBRICATE TRACTOR

1. Change engine crankcase oil. See Section 10, Group 15.

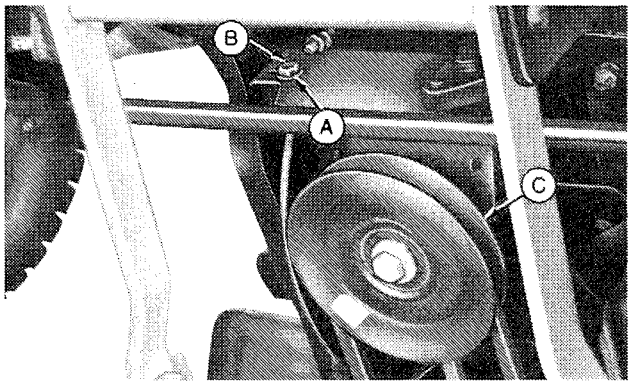
2. Lubricate front wheel spindles. See Section 10, Group 15.

3. Repack front wheel bearings. See Section 10, Group 15.

M21;;1020G S 200285

ADJUST POWER TAKE-OFF (PTO) CLUTCH

NOTE: The 108 and 111 Tractors (Serial No. 95,001–120,000) are equipped with an adjustable mechanical PTO clutch. The 108, 111 and 111H tractors (Serial No. 120,001–190,001), and 112L Tractors are equipped with an electric PTO clutch with normally does not require adjustment. On tractors equipped with electric PTO clutch, refer to Section 50, Group 30 for adjusting instructions if necessary.



1. Stop engine. Do not set parking brake. Put the transmission shift lever in gear to hold tractor.

2. Move PTO lever forward (engaged position).

3. Loosen cap screw (A) and slide block (B) back and forth to center clutch cone (C) in fork. Clearance should be approximately (1.5 mm) 1/16 in. on each side of cone between cone and fork.

4. Tighten cap screw (A).

4A0;M30060 M21;;1020G T 160485

ADJUST TRANSMISSION DRIVE BELT

NOTE: The transmission drive belt on the 111H and 112L Tractors is not adjustable.

1. Stop engine. DO NOT set parking brake. Put transmission shift lever in gear to hold tractor.

2. Foot clutch must be "UP" in engaged position.

3. Loosen nut (A) on idler.

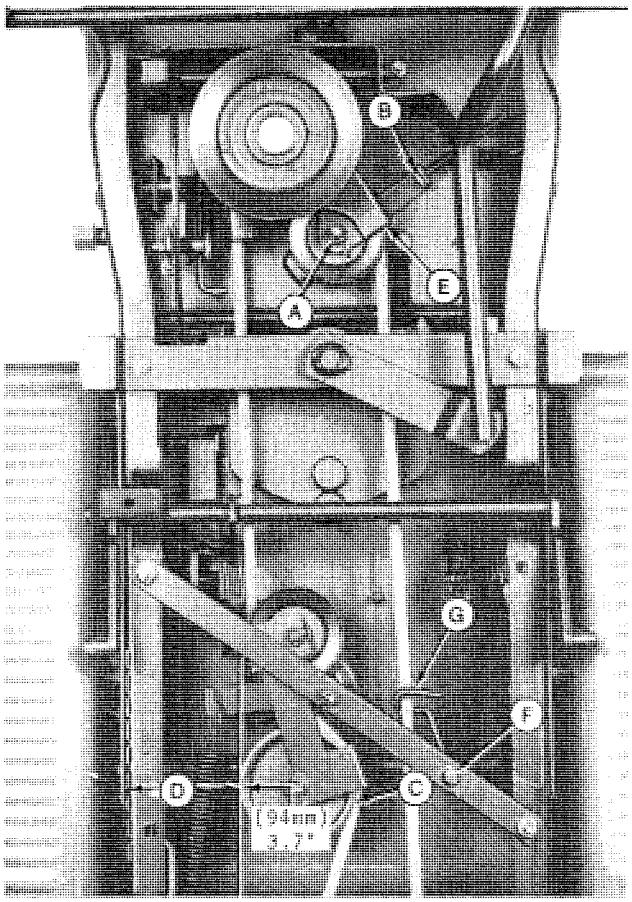
4. Turn adjusting bolt (B) (in or out) until a (94 mm) 3.7-in. dimension is obtained between inner surface of flat idler (C) and inside of frame (D).

5. Adjust belt guide (E) for (4.76 mm) 3/16-in. clearance between guide and belt on the engine side of guide.

6. Tighten nut (A) on idler.

7. Loosen bolt (F) and move guide (G) until belt is centered. Tighten bolt.

A—Nut
B—Adjusting Bolt
C—Idler
D—Frame
E—Belt Guide
F—Bolt
G—Guide



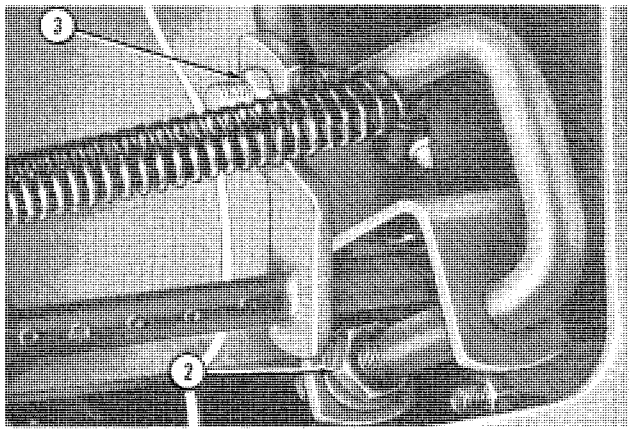
4A0;M29969 M21;;1020G U 200285

ADJUST TRANSMISSION SHIFT LEVER (108 AND 111 TRACTORS)

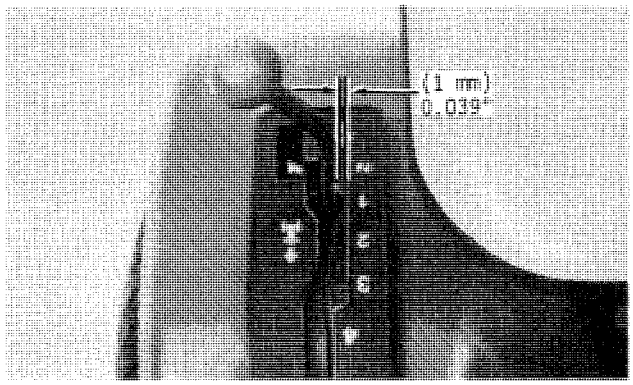
NOTE: If transmission shift lever does not go in "NEUTRAL" slot when in neutral position, adjust shift lever.

1. Stop engine. Set parking brake.

2. Turn nuts (one on each side) to move shift lever forward or rearward until it centers in slot.



3. Loosen jam nut and turn stop screw until lever is 1 mm 0.039 in. from edge of slot. Tighten jam nut.



4A0;M24325 M29931 M21;;1020G V 210285

CHECK TRANSMISSION NEUTRAL-START ADJUSTMENT (111H AND 112L TRACTORS)

CAUTION: Be prepared to stop tractor quickly if transmission neutral start adjustment is not correct.

1. Put tractor on a level surface. With parking brake released and engine running at full rpm, check that tractor remains stationary when transmission lever is in the neutral zone.

2. Adjust if necessary. See Section 50, Group 35.

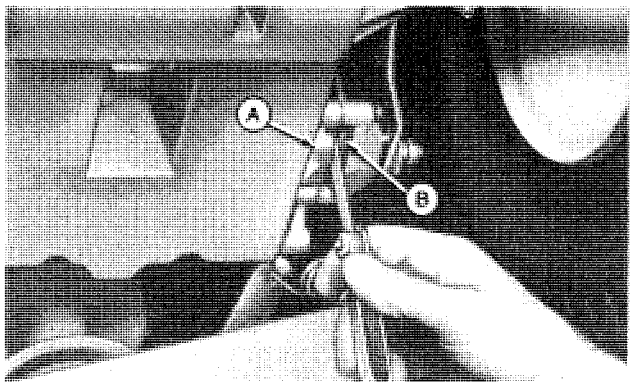
M21;;1020G W 210285

ADJUST FOOT BRAKE

1. Stop engine. DO NOT set parking brake.

2. Place a feeler gauge between brake puck (A) and disk (B), to check adjustment.

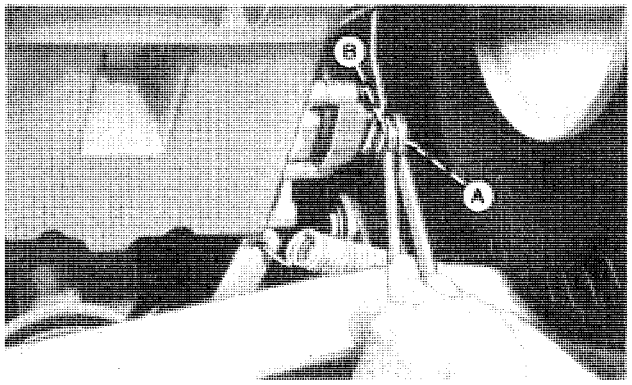
3. Clearance between puck and disk should be (0.254 mm) 0.010 in.



4A0;M30061 M21;;1020G X 210285

4. To adjust brakes, loosen jam nut (A) and turn inside adjusting nut (B) to obtain proper clearance.

5. Hold adjusting nut and tighten the jam nut.



4A0;M30062 M21;;1020G Y 210285

CHECK TIRE PRESSURE

NOTE: Use the following tire pressures when tractor is equipped with mower.

Tractor	Front	Rear
108	(83 kPa) 12 psi	(69 kPa) 10 psi
111, 111H, 112L	(69 kPa) 10 psi	(55 kPa) 8 psi

NOTE: Use the following tire pressures when tractor is equipped with either snow thrower or front blade.

Tractor	Front	Rear
108	(138 kPa) 20 psi	(69 kPa) 10 psi
111, 111H, 112L	(117 kPa) 17 psi	(55 kPa) 8 psi

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CHECK BELTS AND EQUIPMENT

1. Check condition of all belts and equipment.

2. Repair or adjust as necessary.

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