MACHINE SPECIFICATIONS

	F710	F725
ENGINE		
Make	John Deere “K” Series	John Deere “K” Series
Type	OHV	OHV
Model	FC540V	FD590V
Horsepower	12.6 kW (17 hp)	15 kW (20 hp)
Number of Cylinders	1	2 (V-twin)
Displacement	535 cm^3 (32.64 cu. in.)	585 cm^3 (35.7 cu in.)
Bore and Stroke	89 x 86 mm (3.5 x 3.38 in.)	74 x 68 mm (2.9 x 2.68 in.)

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JOHN DEERE ENGINE REPAIR—USE CTM-5

For complete repair information the component technical manual (CTM) is also required.

Use the component technical manual in conjunction with this machine manual.



-UN-17JAN89
TS225

M22,2001G,1 -19-15JAN91

OTHER MATERIAL

Number	Name	Use
PT569	John Deere NEVER-SEEZ® Lubricant	Apply to engine crankshaft.

NEVER-SEEZ is a trademark of the Emhart Chemical Group.

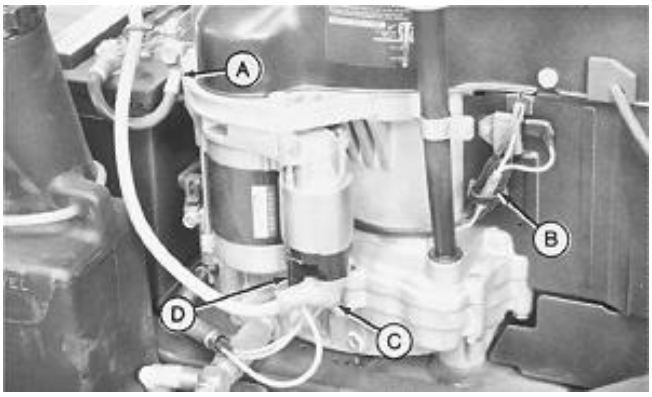
MX,2005FS,A1 -19-15JAN91

REMOVE ENGINE

1. Disconnect negative (-) cable (A).
2. Remove hydrostatic oil cooler. (See Section 70, Group 15.)

NOTE: Engine oil capacity is 2.0 L (4.2 U.S. pt).

3. Drain engine oil.
4. Disconnect cable and wiring leads (C).
5. Disconnect wiring connectors (B and D).



-UN-20DEC90
M80078

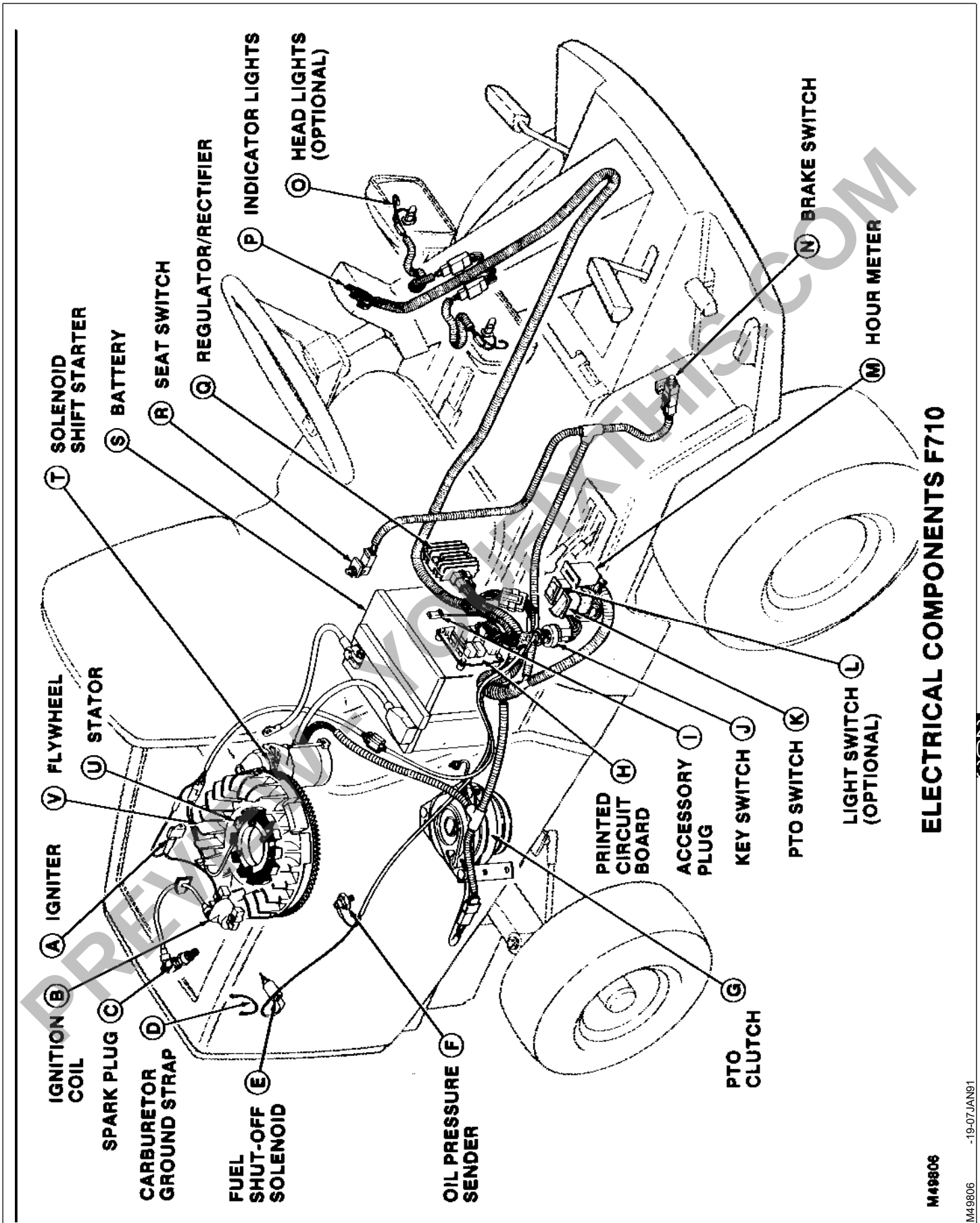
Left Side Shown

A—Negative (-) Battery Cable
B—Engine Wiring Connectors
C—Starter Cable and Wiring Leads
D—Starter Solenoid Wiring Connector

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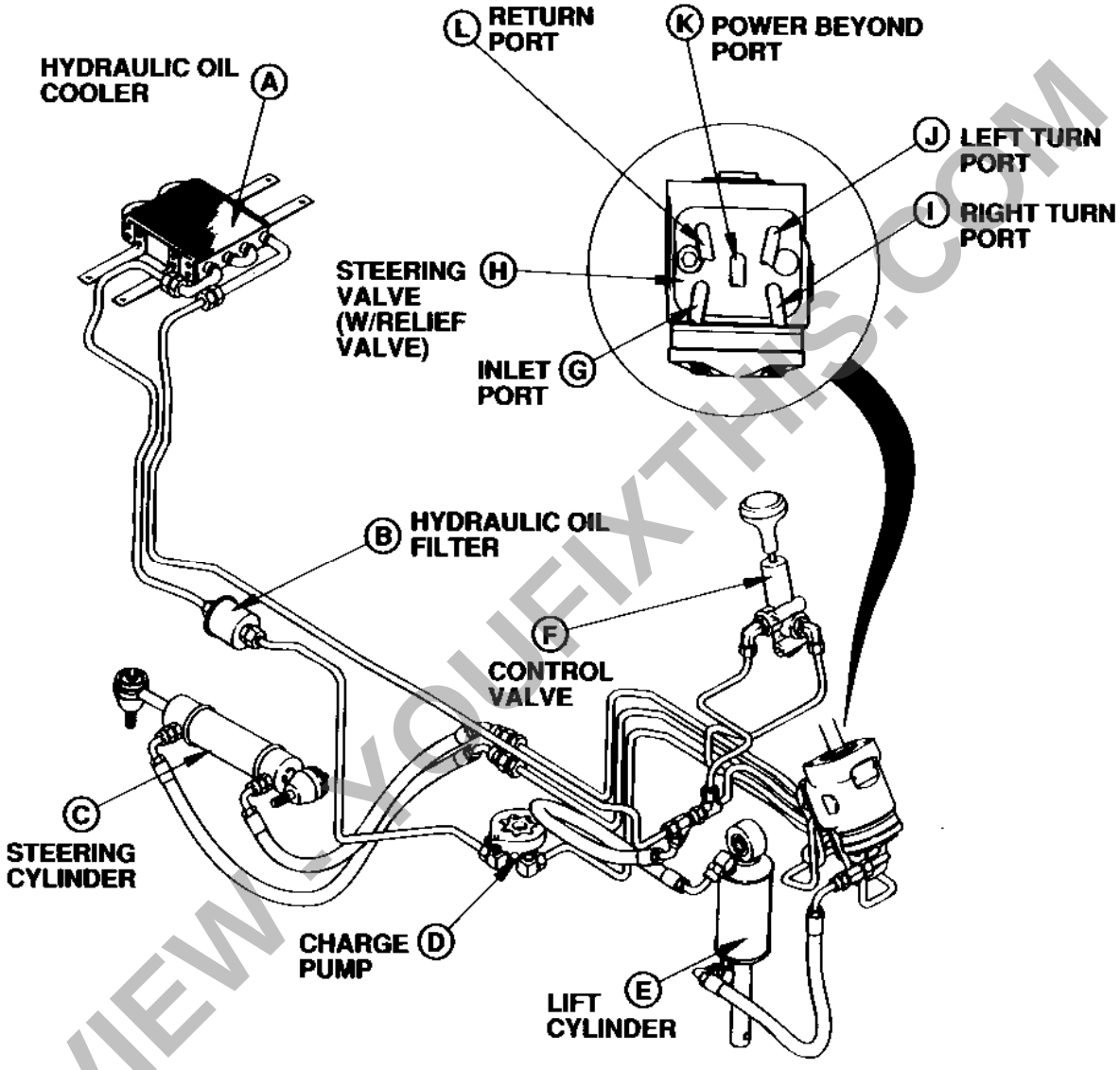
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HYDRAULIC SYSTEM COMPONENT LOCATION



M49788

HYDRAULIC SYSTEM COMPONENTS

-19-12JAN91

M49788

A—Hydraulic Oil Cooler
B—Hydraulic Oil Filter
C—Steering Cylinder
D—Charge Pump
E—Lift Cylinder
F—Control Valve
G—Inlet Valve
H—Steering Valve W/Relief Valve
I—Right Turn
J—Left Turn
K—Power Beyond
L—Return

Slide M49788

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270 05 2

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METRIC CAP SCREW TORQUE VALUES

Property Class and Head Markings	4.6	4.8	8.8	9.8	10.9	12.9
Property						

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Contents

SECTION 10—GENERAL INFORMATION
- Group 05—Safety
- Group 10—General Specifications
- Group 15—Repair Specifications
- Group 20—Fuels and Lubricants
- Group 25—Serial Number Locations
- Group 30—Features and Attachments
- Group 35—Service Information Bulletin Listing

SECTION 20—ENGINE REPAIR—F710
- Group 05—Engine—FC540V
- Group 10—Muffler—F710

SECTION 25—ENGINE REPAIR—F725
- Group 05—Engine—FD590V
- Group 10—Muffler—F725
- Group 15—Cooling System—F725

SECTION 30—FUEL AND AIR REPAIR—F710
- Group 05—Fuel System—FC540V
- Group 10—Air System—FC540V

SECTION 35—FUEL AND AIR REPAIR—F725
- Group 05—Fuel System—FD590V
- Group 10—Air System—FD590V

SECTION 40—ELECTRICAL REPAIR
- Group 05—Battery and Cables
- Group 10—Electrical System Components
- Group 15—Electric PTO Clutch
- Group 20 —Wiring Harness

SECTION 50—POWER TRAIN REPAIR
- Group 05—Hydrostatic Transmission and Differential Assembly
- Group 10—Hydrostatic Transmission
- Group 15—Differential Assembly

SECTION 60—STEERING AND BRAKE REPAIR
- Group 05—Steering System Repair
- Group 10—Brake Repair

SECTION 70—HYDRAULIC REPAIR
- Group 05—Hydraulic Control Valve
- Group 10—Hydraulic Lift Cylinder
- Group 15—Hydrostatic Oil Cooler and Filter
- Group 20—Hydraulic Lines

SECTION 80—MISCELLANEOUS REPAIR
- Group 05—PTO Assembly
- Group 10—Rear Axle
- Group 15—Wheels and Bearings
- Group 20—Seat
- Group 25—Lift Arm Assembly
- Group 30—Mower Deck Repair

SECTION 210—TEST & ADJUSTMENT SPECIFICATIONS/OPERATIONAL CHECKOUT PROCEDURE
- Group 05—Test & Adjustment Specifications
- Group 10—Operational Checkout Procedures

SECTION 220—ENGINE OPERATION, TESTS AND ADJUSTMENTS - FC540V ENGINE
- Group 05—Component Location
- Group 10—Theory of Operation
- Group 15—Diagnosis, Tests & Adjustments

SECTION 225—ENGINE OPERATION, TESTS, AND ADJUSTMENTS - FD590V ENGINE
- Group 05—Component Location
- Group 10—Theory of Operation
- Group 15—Diagnosis, Tests & Adjustments

SECTION 230—FUEL/AIR OPERATION TESTS & ADJUSTMENTS - FC540V ENGINE
- Group 05—Component Location
- Group 10—Theory of Operation
- Group 15—Diagnosis, Tests & Adjustments

SECTION 235—FUEL/AIR OPERATION TESTS & ADJUSTMENTS - FD590V ENGINE
- Group 05—Component Location
- Group 10—Theory of Operation

Continued on next page

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TM1493-19-16JAN91

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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 operating practices.



T81389 -UN-07DEC88

DX,ALERT -19-04JUN90

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.



TS187 -19-30SEP88

DX,SIGNAL -19-04JUN90

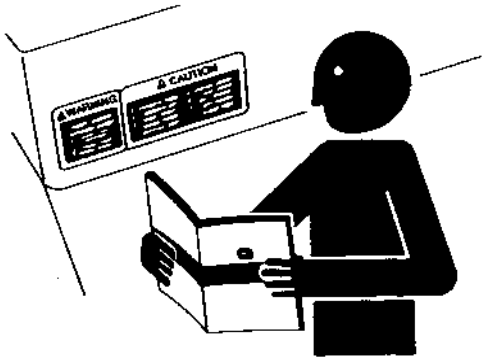
FOLLOW SAFETY INSTRUCTIONS

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.

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.

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



TS201 -UN-23AUG88

DX,READ -19-04JUN90

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Group 15—Diagnosis, Tests & Adjustments

10

SECTION 240—ELECTRICAL OPERATION TESTS & ADJUSTMENTS - FC540V ENGINE
Group 05—Component Location
Group 10—Theory of Operation
20 Group 15—Diagnosis, Tests & Adjustments
Group 20—Wiring Schematics

SECTION 245—ELECTRICAL OPERATION TESTS & ADJUSTMENTS - FD590V engine
25 Group 05—Component Location
Group 10—Theory of Operation
Group 15—Diagnosis, Tests & Adjustments
Group 20—Wiring Schematics

30

SECTION 250—POWER TRAIN OPERATION TESTS & ADJUSTMENTS
Group 05—Component Location
Group 10—Theory of Operation
Group 15—Diagnosis, Tests & Adjustments

35

SECTION 260—STEERING & BRAKES OPERATION TESTS & ADJUSTMENTS
Group 05—Component Location
40 Group 10—Theory of Operation
Group 15—Diagnosis, Tests & Adjustments

SECTION 270—HYDRAULIC OPERATION TESTS & ADJUSTMENTS
50 Group 05—Component Location
Group 10—Theory of Operation
Group 15—Diagnosis, Tests & Adjustments
Group 20—Hydraulic Schematic

SECTION 280—MISCELLANEOUS OPERATION TESTS & ADJUSTMENTS
60 Group 05—Component Location
Group 10—Theory of Operation
Group 15—Diagnosis, Tests & Adjustments

70 **Index**

80

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MOWER DECK SERIAL NUMBER LOCATION

48 inch mower deck serial number plate (A) is located on the top right-hand side of deck.

54 inch mower deck serial number plate (A) is located on the top left-hand side of deck.



M80049 -UN-19DEC90

48 Inch Deck



M80050 -UN-19DEC90

54 Inch Deck

MX,1025GC,A7 -19-15JAN91

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Section 30
FUEL AND AIR REPAIR—F710

Contents

Page

Group 05—Fuel System—FC540V
Carburetor Repair—Use CTM5 30-05-1
Other Materials 30-05-1
Service Parts Kits 30-05-1
Remove and Install Carburetor 30-05-2
Remove, Inspect and Install Fuel Pump . . 30-05-4
Replace Fuel Filter 30-05-4
Remove, Inspect and Install
  Fuel Tank 30-05-6
  Fuel Gauge Sender 30-05-6
Replace
  Fuel Hoses 30-05-7
  Throttle Control Lever and Cable Assembly 30-05-7

Group 10—Air System—FC540V
Remove and Install Blower Housing 30-10-1
Flywheel Screen Adjustment 30-10-2

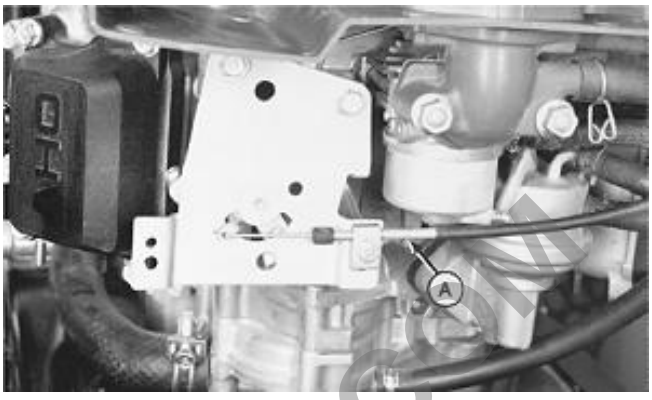
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REPLACE HOURMETER

1. Disconnect battery negative (-) cable.
2. Unscrew knob (A). Pull handle (B) from lever.
3. Remove instrument panel (C).
4. Disconnect wiring connector (D).
5. Replace hourmeter.
6. Connect wiring connector.
7. Install panel, knob and handle.
8. Connect battery cable.

A—Park Brake Knob
B—Throttle Handle
C—Instrument Panel
D—Wiring Connector



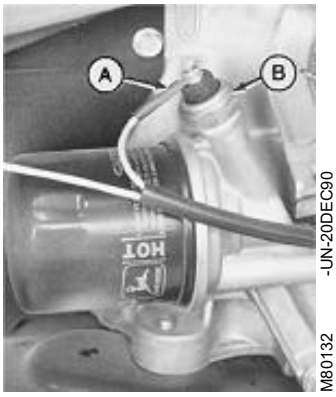


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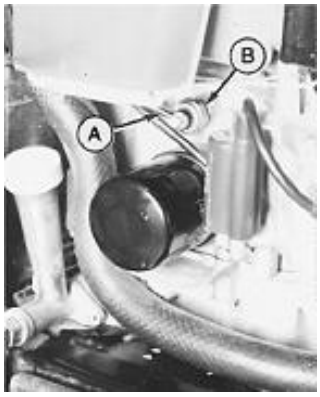
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REPLACE OIL PRESSURE SENSOR

1. Disconnect wiring lead (A).
2. Replace oil pressure sensor (B).
3. Connect wiring lead.



F710



F725

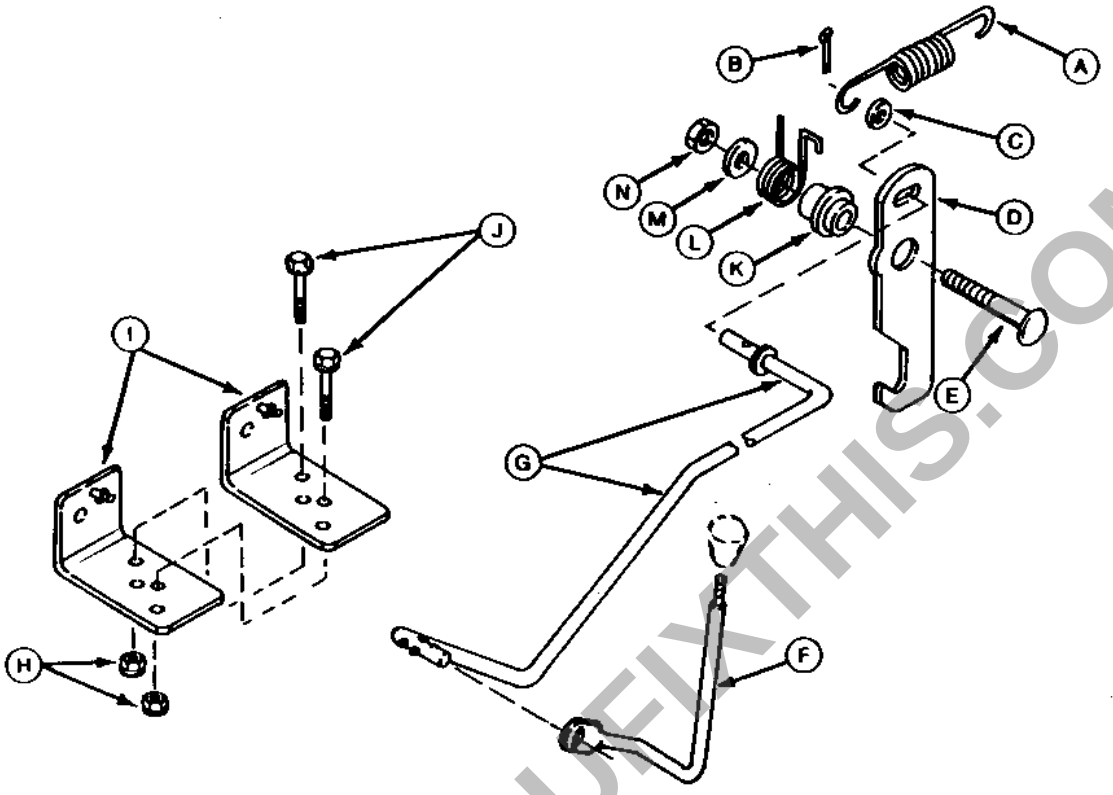
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A—Spring
B—Cotter Pin
C—Washer
D—Lock Bracket
E—Cap Screw
F—Lock Lever
G—Lock Rod
H—Lock Nuts
I—Mount Brackets
J—Cap Screws
K—Bushing
L—Spring
M—Wave Washer
N—Nut

3. Remove mower deck. (See Section 80, Group 30.)

4. Disconnect spring (A).

5. Remove parts (B—N).

6. Inspect parts for wear or damage. Replace as necessary.

7. Install all parts.

8. Install mower deck.

9. Install instrument panel and knobs.

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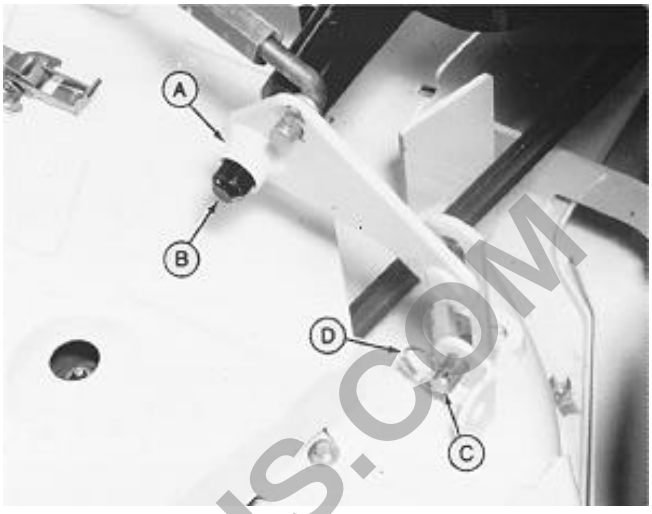
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15. Install brackets (A) on each side of shaft (B).

16. Install pin (C) and ring pin (D) on each side.

17. Install drive shaft.

A—Bracket
B—Push Arm Shaft
C—Drilled Pin
D—Ring Pin



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WEIGHT TRANSFER VALVE TEST



M49828 -UN-14DEC90

210
10
15

CONDITIONS:
•Machine parked on a level surface.
•Attachment installed on machine.
•Operator on seat.
•Park brake engaged.
•Engine running at fast idle.
•PTO disengaged.

PROCEDURE:
•Turn weight transfer valve knob to off position (counter-clockwise) and try to lift attachment by hand.
•Turn weight transfer valve knob to on position (clockwise) and try to lift attachment by hand.

NORMAL:
•Attachment lifts easier when weight control knob in on position.

IF NOT NORMAL:
•Go to Section 270, Group 15 for hydraulic diagnosis, tests, and adjustments.

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ENGINE SURGES

CONDITIONS:
•Key switch in off position.
•Spark plug wire removed and grounded.
•PTO disengaged.
•Park brake engaged.
•Engine and fuel/air tests found in this group.

Test Location	Normal	If Not Normal
1. Carburetor inlet hose.	Free flow of fuel when hose removed from carburetor inlet fitting.	Check fuel pump pressure and flow. Check for plugged tank vent. Check for open fuel shut-off valve. Check for plugged filter. Check for plugged or pinched hose.
2. Carburetor.	Fuel in float bowl. Choke linkage free and choke fully open when throttle control is not in choke position.	Check for dirty or sticking inlet needle. Check for binding linkage at carburetor and governor panel. Check for correct adjustment of throttle cable.
3. Crankcase.	Governor arm tight on governor shaft. Governor arm and governor shaft both rotated as far clockwise as possible.	Adjust governor and tighten clamp nut. Adjust governor.

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A—Carburetor
B—Air Filter Housing
C—Air Filter Element
D—Fuel Pump Outlet Hose
E—Fuel Pump
F—Fuel pump Impulse Hose
G—Fuel Filter
H—Throttle Control
I—Fuel Filter Inlet Hose
J—Tank Vent Hose
K—Fuel Shut-Off Valve
L—Fuel Pump Inlet Hose
M—Fuel Tank Cap
N—Fuel Tank
O—Throttle Cable
P—Cooling Fan
Q—Fuel Shut-Off Solenoid
R—Fan Housing
S—Air Passage

FUEL/AIR SUPPLY SYSTEM OPERATION - FC540V engine

FUNCTION:
Under a variety of conditions, supply the correct amount of fuel and air to the engine to allow it to run.

MAJOR COMPONENTS:
•Tank
•Shut-Off Valve
•Fuel Filter
•Air Filter
•Air Filter Housing
•Fuel Pump

THEORY OF OPERATION:
The fuel supply for this engine is a pressure-feed type. Fuel is drawn from the tank (N) through the fuel shut-off valve (K), fuel filter (G) to fuel pump (E) and then pumped to the carburetor (A). The carburetor meters the fuel to supply the correct amount for the various operating conditions. The vent hose (J) for the fuel tank is routed across the top of the fuel tank. The fuel shut-off solenoid (Q) in the carburetor closes off the main jet circuit when the key switch is turned to the off position. This is done to reduce the possibility of a combustible mixture getting into the muffler and cause a backfire.
The air supply is drawn into the air filter housing (B) through the air filter element (C). This filter is a two-stage design consisting of a paper element and a foam element. The air for the filter system is supplied by the cooling fan (P) of the engine. Air from the engine fan shroud (R) is supplied to the air filter housing through air passage (S).

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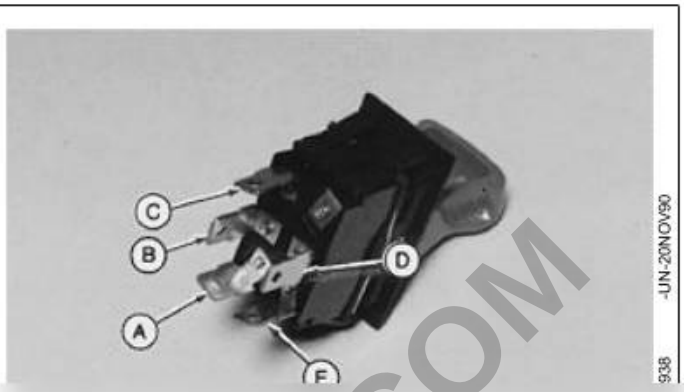
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PTO SWITCH TEST

REASON:
Determine proper operation of PTO switch.

EQUIPMENT:
•Ohmmeter.

PROCEDURE:
1. Set ohmmeter for 1X ohms scale.



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STARTING SYSTEM OPERATION - F725

A—Key Switch
B—Start Relay
C—Battery
D—Starting Motor
E—Starter Solenoid
F—Ground
G—Ignition
H—Ignition Relay
I—PTO Switch
J—Brake Switch
K—Power Circuit
L—Ground Circuit
M—Energizing
N—Ignition Circuit

FUNCTION:
Offer a non-manual method of starting the engine.

MAJOR COMPONENTS:
•Battery
•Starter Motor
•Key Switch

THEORY OF OPERATION:
The ignition relay (H) and the start relay (B) must both be energized to have the engine start. These relays are energized through energizing circuit (M). The PTO switch (I) must be turned off and the park brake switch (J) must be depressed (park brake pedal depressed) to supply power from the key switch (A) to the relays. With the ignition relay energized, the ignition circuit (N) is powered allowing the ignition (G) to function.
When the key switch is turned to the start position, the start relay circuit is completed to the ground circuit (L). The start relay energizes and power is supplied directly from the battery (C) through the starter solenoid (E) to the starting motor (D).

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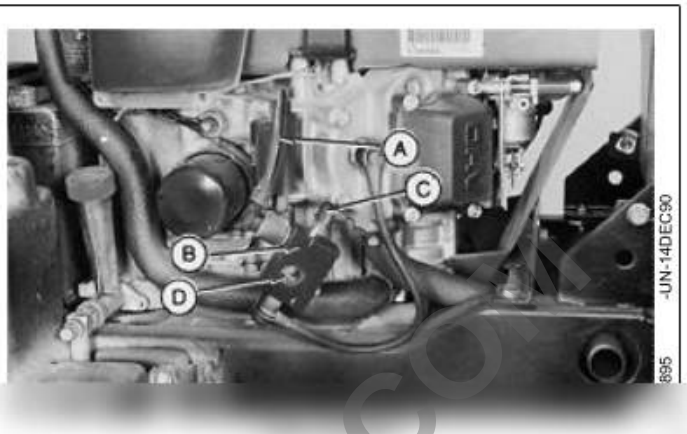
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SPARK TEST

REASON:
Check overall condition of ignition system.

EQUIPMENT:
•D-05351ST .. Spark Tester

CONNECTIONS:
1. Park brake engaged. PTO disengaged.



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DIFFERENTIAL OPERATION

A—Balls
B—Yoke
C—Spool
D—Axles
E—Motor Shaft
F—Pinion Gear
G—Ring Gear
H—Idler Gears
I—Differential Gear
J—Differential Lock
K—Spider Gears
L—Lever
M—Axle Gears

FUNCTION:
Allow different speeds of the drive wheels when making corners. Lock up the differential to prevent wheel spin in poor traction conditions.

MAJOR COMPONENTS:
•Pinion Gear
•Ring Gear
•Differential Lock

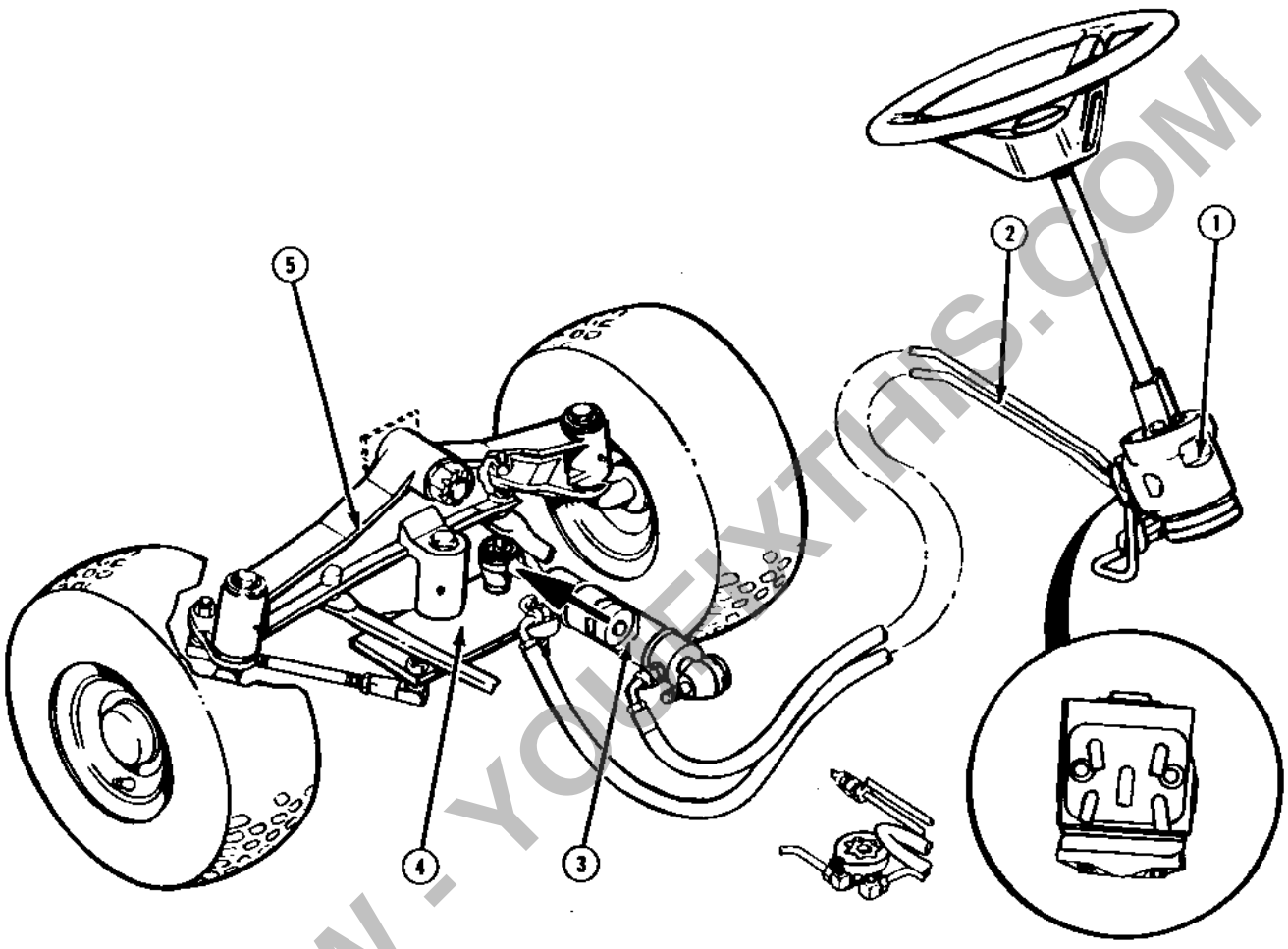
THEORY OF OPERATION:
The differential takes the vertical input from the hydrostatic transmission motor shaft (E) and changes it to horizontal rotation with the pinion (F) and ring (G) gears. The rotating speeds are then lowered by idler gears (H) and the differential gear (I). In the differential assembly, the spider gears (K) are driven by the differential gear. Under normal conditions the spider gears do not rotate. They connect the differential assembly to the axle gears (M). The spider gears can rotate to allow the axle gears and axles (D) to turn at different speeds when the machine is turning or when one wheel is spinning. The differential lock (J) prevents unwanted wheel spin by locking one axle to the differential assembly. Spool (C) is moved by yoke (B) to engage balls (A) which lock the axle and differential assembly. Lever (L) actuates the yoke. The differential lock foot pedal is connected to the lever by a cable.

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M49911

STEERS HARD OR NO STEERING-ONE DIRECTION

-19-07JAN91

M49911

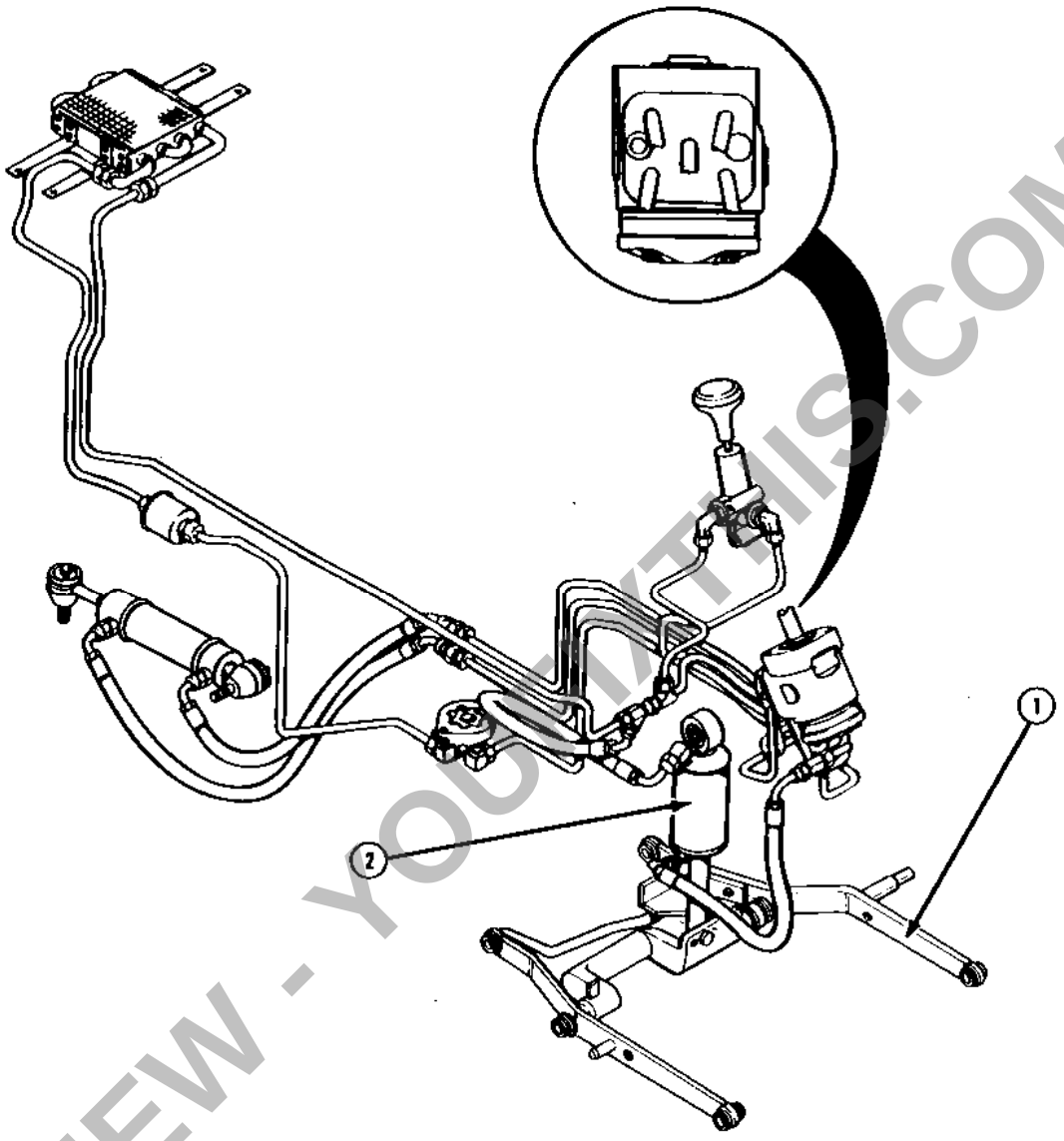
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M49918

ATTACHMENT DOES NOT LIFT OR LOWER EVENLY

-19-07JAN91

M49918

Slide M49918

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