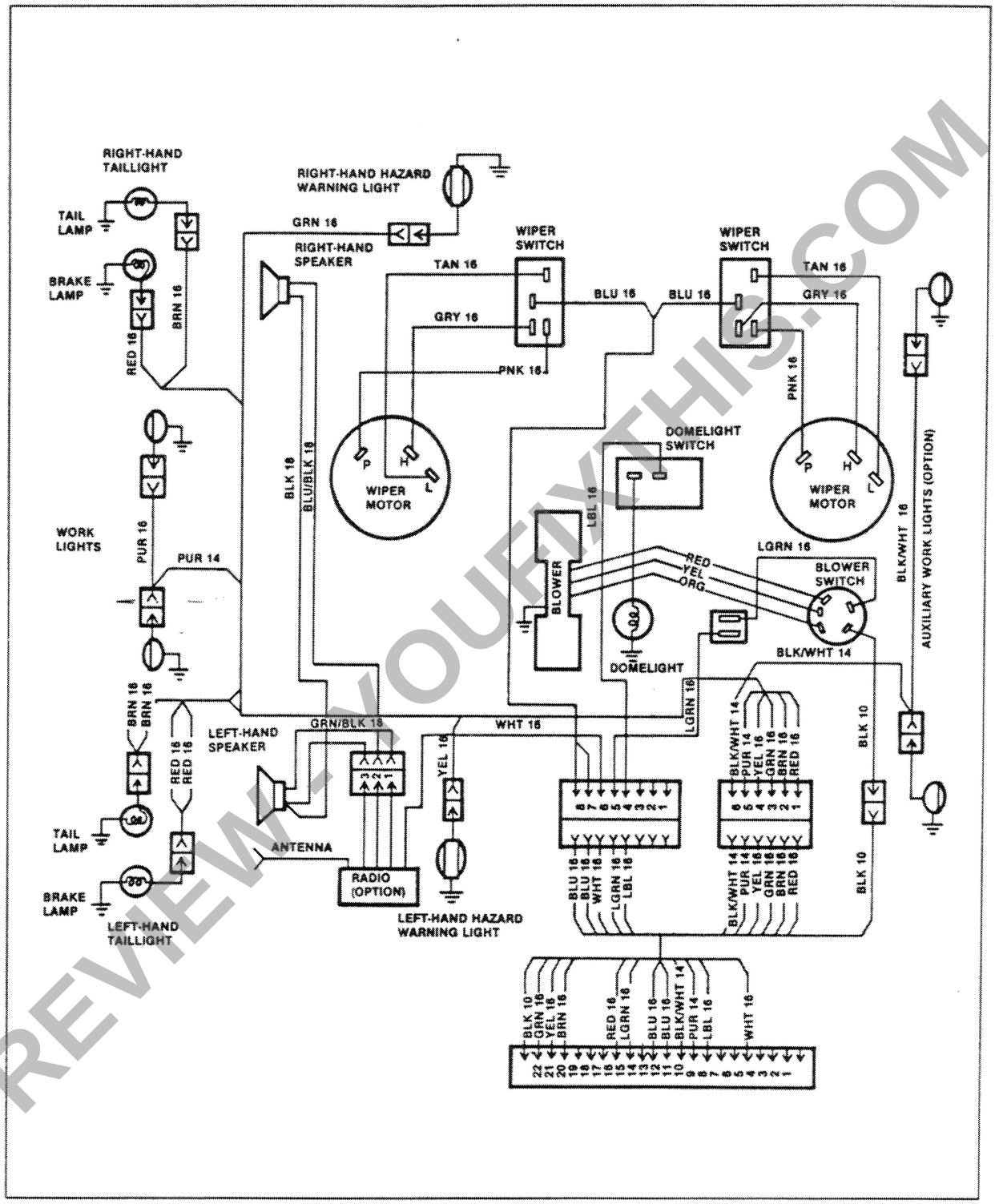
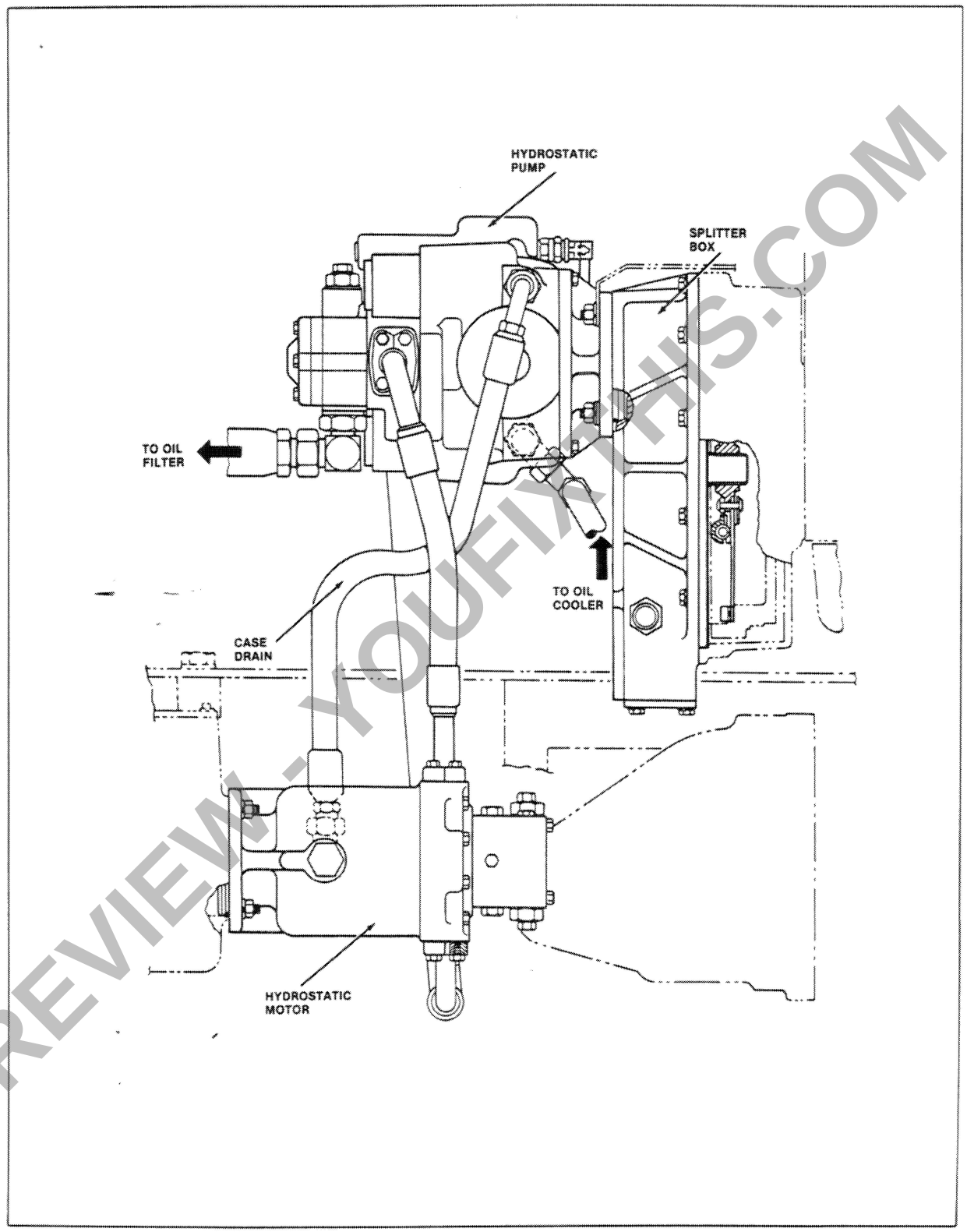


Roof Wiring Schematic

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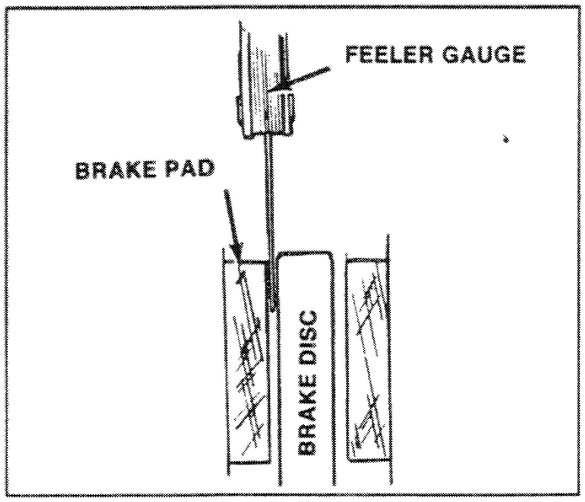
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Hydrostatic System Schematic

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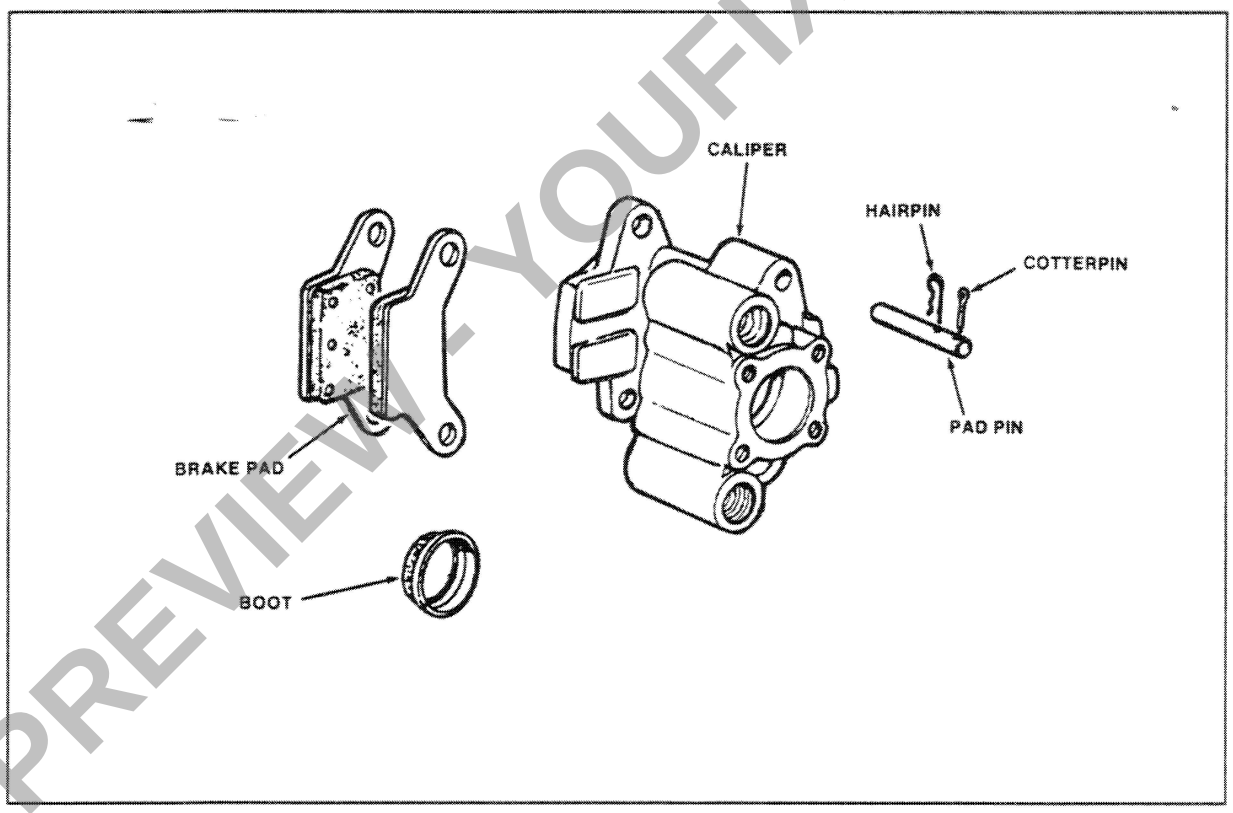


Measuring Gap Between Pads and Disc.

8. Hand pump brake pedal using 2.5 kg (5 lb) pressure several times to seat brake pads against disc.
9. Top up master cylinder reservoir with new brake fluid and install cap.
10. With the brake pads have been replaced and the gap adjusted, check clearance between the brake pads and disc. The gap should be between 0.64 mm (0.025 in.) with the brake released.

IMPORTANT

Ensure the brakes are releasing properly. Do not operate the tractor if the brakes will not release. Consult your dealer.



Brake Pad Replacement

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Bolt Torque

Check all torque settings after the first hour of operation or 8 km (5 miles) and every 200 hours thereafter. Use Table to check torque settings.

NOTE

A torque wrench is necessary to properly tighten bolts. Consult your dealer.

CAPSCREW SIZE	CLASS 9.8 (METRIC)*ARE CLASS 8.8		CLASS 10.9 (METRIC)	
	PLAIN	PLATED	PLAIN	PLATED
M6 × 1.0	10 N·m (7 lbf ft)	10 N·m (7 lbf ft)	15 N·m (10 lbf ft)	10 N·m (7 lbf ft)
M8 × 1.25	30 N·m (20 lbf ft)	20 N·m (15 lbf ft)	35 N·m (25 lbf ft)	25 N·m (18 lbf ft)
M10 × 1.5	55 N·m (40 lbf ft)	40 N·m (30 lbf ft)	70 N·m (50 lbf ft)	55 N·m (40 lbf ft)
M12 × 1.75	100 N·m (75 lbf ft)	75 N·m (55 lbf ft)	125 N·m (95 lbf ft)	95 N·m (70 lbf ft)
M14 × 2.0	155 N·m (115 lbf ft)	120 N·m (90 lbf ft)	200 N·m (150 lbf ft)	150 N·m (105 lbf ft)
M16 × 2.0	*255 N·m (170 lbf ft)	*170 N·m (120 lbf ft)	315 N·m (235 lbf ft)	235 N·m (175 lbf ft)
M20 × 2.5	*440 N·m (330 lbf ft)	*330 N·m (220 lbf ft)	610 N·m (450 lbf ft)	460 N·m (340 lbf ft)
M24 × 3.0	*765 N·m (570 lbf ft)	510 N·m (420 lbf ft)	1055 N·m (780 lbf ft)	790 N·m (580 lbf ft)

CAPSCREW SIZE	GRADE 5 (IMPERIAL)		GRADE 8 (IMPERIAL)	
	PLAIN	PLATED	PLAIN	PLATED
3/8-16	40 N·m (30 lbf ft)	35 N·m (25 lbf ft)	65 N·m (45 lbf ft)	50 N·m (35 lbf ft)
3/8-24	50 N·m (35 lbf ft)	35 N·m (25 lbf ft)	70 N·m (50 lbf ft)	50 N·m (35 lbf ft)
7/16-14	70 N·m (50 lbf ft)	50 N·m (35 lbf ft)	95 N·m (70 lbf ft)	72 N·m (55 lbf ft)
7/16-20	75 N·m (55 lbf ft)	55 N·m (40 lbf ft)	105 N·m (80 lbf ft)	80 N·m (60 lbf ft)
1/2-13	100 N·m (75 lbf ft)	75 N·m (55 lbf ft)	140 N·m (105 lbf ft)	105 N·m (80 lbf ft)
1/2-20	115 N·m (85 lbf ft)	90 N·m (65 lbf ft)	165 N·m (200 lbf ft)	120 N·m (90 lbf ft)
9/16-12	7115 N·m (110 lbf ft)	105 N·m (80 lbf ft)	210 N·m (155 lbf ft)	155 N·m (115 lbf ft)
9/16-18	165 N·m (120 lbf ft)	120 N·m (90 lbf ft)	230 N·m (170 lbf ft)	175 N·m (130 lbf ft)
5/8-11	205 N·m (150 lbf ft)	155 N·m (115 lbf ft)	285 N·m (210 lbf ft)	215 N·m (160 lbf ft)
5/8-18	230 N·m (170 lbf ft)	175 N·m (130 lbf ft)	325 N·m (240 lbf ft)	240 N·m (180 lbf ft)
3/4-10	360 N·m (265 lbf ft)	270 N·m (200 lbf ft)	510 N·m (375 lbf ft)	380 N·m (280 lbf ft)
3/4-16	400 N·m (295 lbf ft)	300 N·m (225 lbf ft)	510 N·m (420 lbf ft)	430 N·m (315 lbf ft)
7/8-9	580 N·m (430 lbf ft)	440 N·m (320 lbf ft)	820 N·m (605 lbf ft)	615 N·m (455 lbf ft)
7/8-14	640 N·m (475 lbf ft)	480 N·m (355 lbf ft)	905 N·m (670 lbf ft)	680 N·m (500 lbf ft)
1-8	875 N·m (645 lbf ft)	655 N·m (485 lbf ft)	1230 N·m (910 lbf ft)	925 N·m (680 lbf ft)
1-14	975 N·m (720 lbf ft)	735 N·m (540 lbf ft)	1380 N·m (1020 lbf ft)	1040 N·m (765 lbf ft)

Recommended Capscrew Torques

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5 Troubleshooting

Engine

	No fuel/lift pump lever UP	Low idle speed	Overloaded engine/tractor	Loose belt	Linkage maladjusted	Improper coolant/oil	Incorrect/dirty fuel	Defective radiator/thermostat	Cold start malfunctioning	Low/defective battery	Fuel filter/lines plugged	Plugged air cleaner	Plugged radiator	Collapsed hose	Defective gauge	Defective/worn water pump	Air in fuel system	Leaking fuel lines	Improper injection pump timing	Worn/defective fuel pump	Worn/plugged/defective injectors	Incorrect valve adjustment	Defective turbocharger	Low compression/worn parts	Faulty fuel shutoff solenoid/wiring
Cranks, doesn't start	•		•				•				•						•		•	•	•				•
Hard to start/won't start			•				•		•	•		•					•		•		•	•			•
Starts then stalls		•	•				•										•			•					
Misfires							•										•	•	•						
Running hot			•	•		•		•					•	•		•									
Running too cold								•						•	•										
Low oil pressure						•									•										
Rough idle for warm engine		•															•		•	•	•				
Surges at idle		•									•						•			•					
Fuel knock			•				•										•		•		•				
Won't reach rated speed			•		•		•								•							•			
Low power			•		•	•	•				•	•					•		•		•	•	•		
Excessive smoke under load								•				•					•		•		•				

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7 SPECIFICATIONS AND SCHEMATICS

AIR CLEANER

Type ..... Dual element dry type with dump valve, air intake restiction gauge

AIR CONDITIONER

Charge ..... 2.5 kg(5 lb 8 oz)
Oil Level ..... 200 ml(7oz)

AXLES

Type ..... Hypoid differential with outboard drop axle final drive
Differential Ratio 4.10:1
Lubrication SAE80W90 GL5
Oil Capacity
- Differential ..... 2.3 L(2.4 qt U.S.)
- Drop Axle ..... 1.7 L(1.8 qt U.S.)

Drop Axle Ratio 3.18:1
Total Ratio 13.04:1

BRAKES

Type ..... 305 mm(12 in.) disc and caliper self-adjusting, driveline mounted
Meets or Exceeds .... ASAE S 365T(SAEJ1041)
Caliper ..... Single Piston, floating hydraulically actuated by pedal
Parkbrake ..... Integral with road brake, self-adjusting, actuated by over center lever

CAB

Type ..... Independant module type with rollover protective structure (ROPS ASAE S383)
Seat Belt ..... SAEJ141, SAE J385

CAPACITIES

Cooling System ..... 22L (22.6 qt U.S.)
Differentials (Each) ..... 2.3L (2.4 qt U.S.)
Drop Axles (Each) ..... 1.7L (1.8 qt U.S.)
Engine Crankcase (With Filter) 9.5L (10 qt U.S.)
Fuel Tanks ..... 148L (39 gal U.S.)
Hydraulic/Hydrostatic System32L (8.5 gal U.S.)
PTO Dropbox (Single Spd.) ..... 2L (2 qt US)
PTO Dropbox (Dual Spd.) ..... 2L (2 qt U.S.)
PTO Clutch/Splitter Box ..... 3.0L (3 qt U.S.)
Transmission ..... 8.7L (9 qt U.S.)
PTO Transfer Case ..... 1.5 L (1.6 qt U.S.)

CLUTCH(PTO)

Type ..... 152mm (6in.) 7 Plate Wet Type with safety start switch

COOLING SYSTEM

Capacity ..... 22L (22.6 qt U.S.)
Radiator .....3 426 cm^3 (1 531 in^2)
Fan ... 500mm (20 in.) dia, 6 Blade suction type belt driven
Pressure Cap ..... 48 kPa(7 PSI)

DIMENSIONS

Wheelbase ..... 2 185mm (86 in.)
Overall Length ..... 4 039mm (159 in.)
Overall Height ..... 2 839mm(112 in.)
Cab Width ..... 1 150mm (44.85 in.)
Ground Clearances (With 16.9x28 R1 Tires)
- Drop Axle Bottom ..... 533mm (21 in.)
- Differential ..... 660mm (26 in.)
- Articulation Pins ..... 622mm (24.5 in.)

CAB END DRAWBAR

Type ..... Swinging clevis of 38 x 76 mm (1.5 x 3 in.) steel, replaceable hardened bushings
Height ..... 415mm (16in.) top main member
Maximum Permissable
Vertical Static Load ..... 907 kg(2000 lb)

ELECTRICAL

Type ..... 12V 85 A Alternator, negative ground
Batteries ..... Two 12 v, maintenance free cranking performance of 630 A
Lamps ..... Two 60W headlamps, Two 60W worklights, Two Taillights
Two amber hazard lights

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3 OPERATION

– CAUTION

DO NOT OPERATE TRACTOR IN A CLOSED BUILDING.

BEFORE STARTING ENGINE ENSURE ALL OPERATING CONTROLS ARE IN NEUTRAL OR OFF AND PARKBRAKE ENGAGED.

OPERATE ALL CONTROLS ONLY FROM OPERATOR'S SEAT. WEAR YOUR SEAT BELT.

STOP ENGINE BEFORE SERVICING TRACTOR.

KEEP ALL SHIELDS IN PLACE.

USE HANDHOLDS AND STEPS WHEN MOUNTING AND DISMOUNTING TRACTOR.

USE ARTICULATION LOCK IN STATIONARY APPLICATIONS AND SERVICING. DO NOT USE WHEN TRACTOR IS MOVING.

ON HIGHWAYS, SIGNAL BEFORE STOPPING, TURNING OR SLOWING DOWN TRACTOR.

USE PROPER SAFETY DEVICES TO WARN OF SLOW MOVING VEHICLE WHEN DRIVING ON PUBLIC ROADS. CHECK WITH LOCAL AUTHORITIES CONCERNING HIGHWAY TRAVEL.



BE ALERT

ENGINE BREAK-IN

The Cummins® engine used in VERSATILE tractors has been run on a dynamometer before installation but not enough to be considered broken in.

1. Do not operate engine at more than 3/4 load for the first 24 hours of operation. Full load should only be held for short intervals during the next 24 hours of operation.
2. Check oil level every 8 to 10 hours for the first 100 hours of operation.
3. Follow recommendations outlined in the Cummins manual supplied with your tractor.

BREAK-IN PERIOD

The first 50 hours of operation are the most critical for ensuring long and dependable tractor life. Do the following:

1. Review tractor pre-delivery checklist with your dealer. Ensure all applicable items on the sheet have been checked.
2. Check all fluid levels and ensure all systems are filled with the right fluids for your operating conditions.
3. Check engine, transmission and hydraulic oil levels hourly during the first 10 hours of operation and all oil levels daily for the first 50 hours of operation.
4. Torque wheel bolts after the first hour of operation and every 50 hours thereafter.
5. Operate engine at 3/4 loads as much as possible.
6. Do not operate engine at idle speed or maximum horsepower for more than 5 minutes at a time.
7. Check frame pivot pins and steering cylinder capscrew torques after the first 10 hours of operation.

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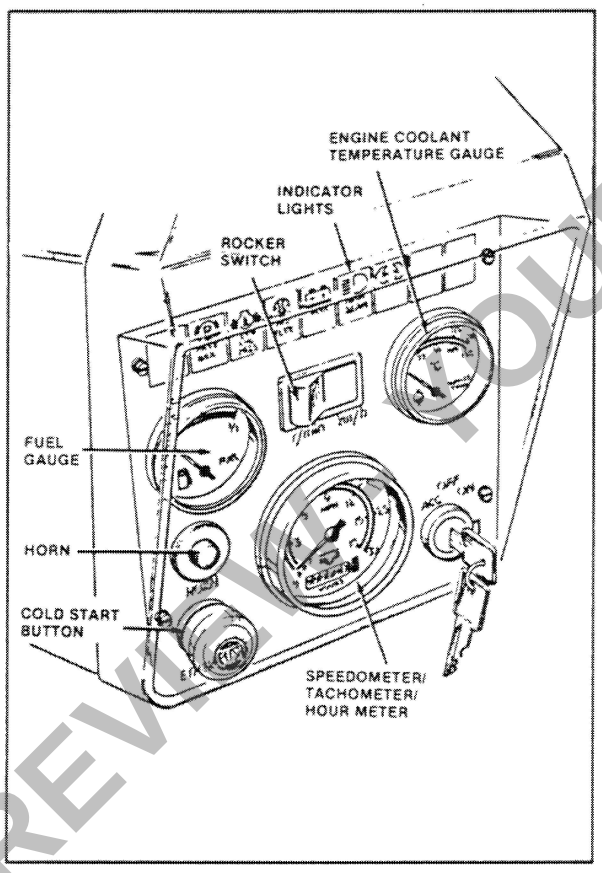
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2 CONTROLS AND INSTRUMENTATION

IMPORTANT

The following section locates, identifies and briefly describes the functions of all cab controls. All operators should familarize themselves with control location and function prior to machine operation. Failure to do so may result in unsafe operation of the machine and possible injury or death to operators and bystanders.

INSTRUMENT PANEL



Instrument Panel

Keyswitch

The keyswitch has four positions.

Accessory:

Electrical accessories can be used when engine is not running. Push key IN and turn key to the left.

Off:

Engine and electrical functions remain OFF.

Run:

Turns the electrical system ON and is normal operating position.

Start:

Cranks engine. Release key to return to Run position.

Indicator Lights

Parkbrake:

Illuminates when parkbrake is ON.

Engine Oil Pressure:

Illuminates when pressure drops below 83 kPa (12 psi).

Air Cleaner:

Illuminates when filter is clogged.

Alternator:

Illuminates when alternator is not charging.

High Beam:

Illuminates when high beam work lamps are ON.

Hazard:

Illuminates when hazard warning lights are ON.

Gauges

Fuel Gauge:

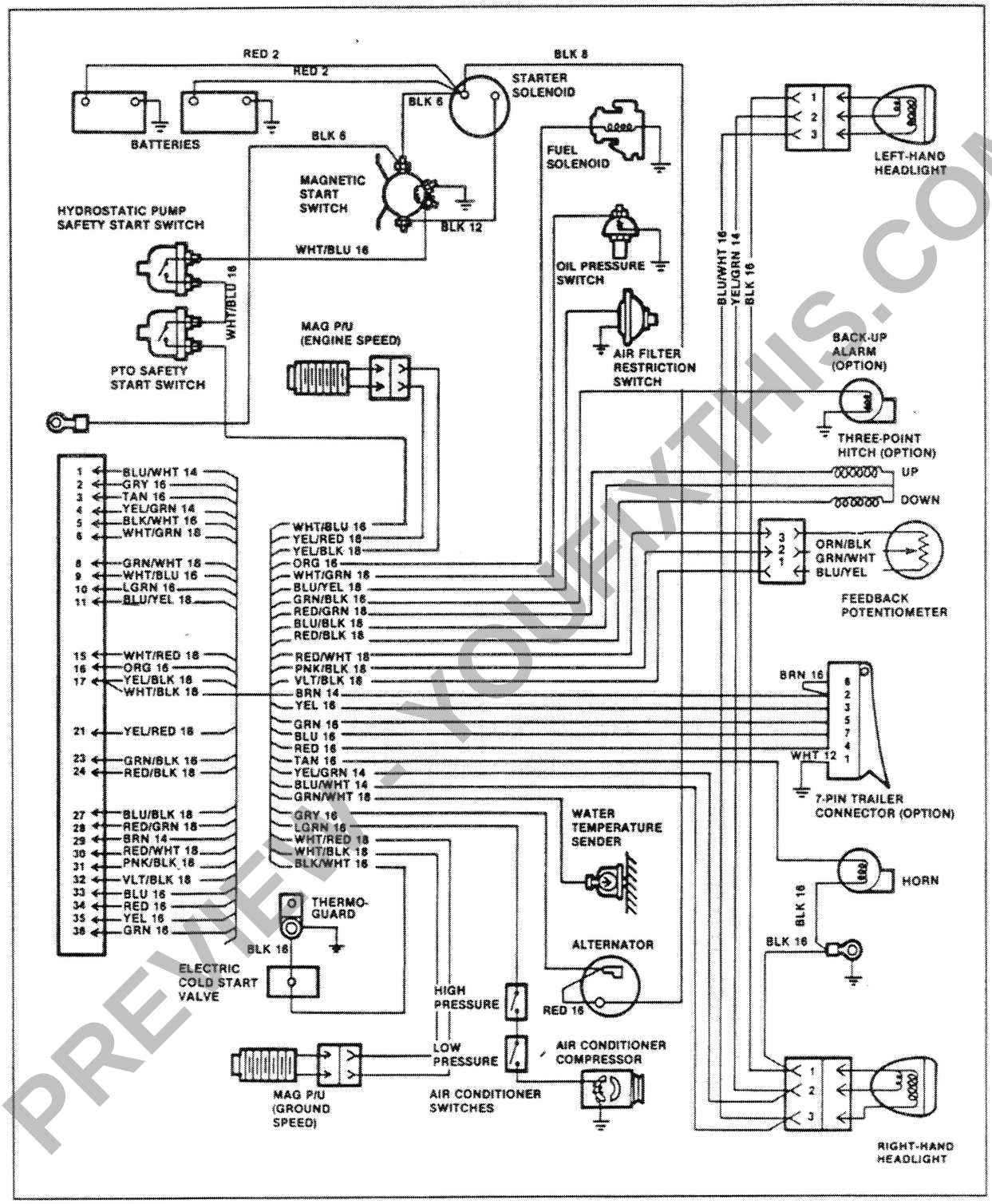
Indicates fuel level.

Engine Coolant Temperature Gauge:

Indicates engine coolant temperature in ° C and ° F. Normal operating temperature is 85°C (185°F).

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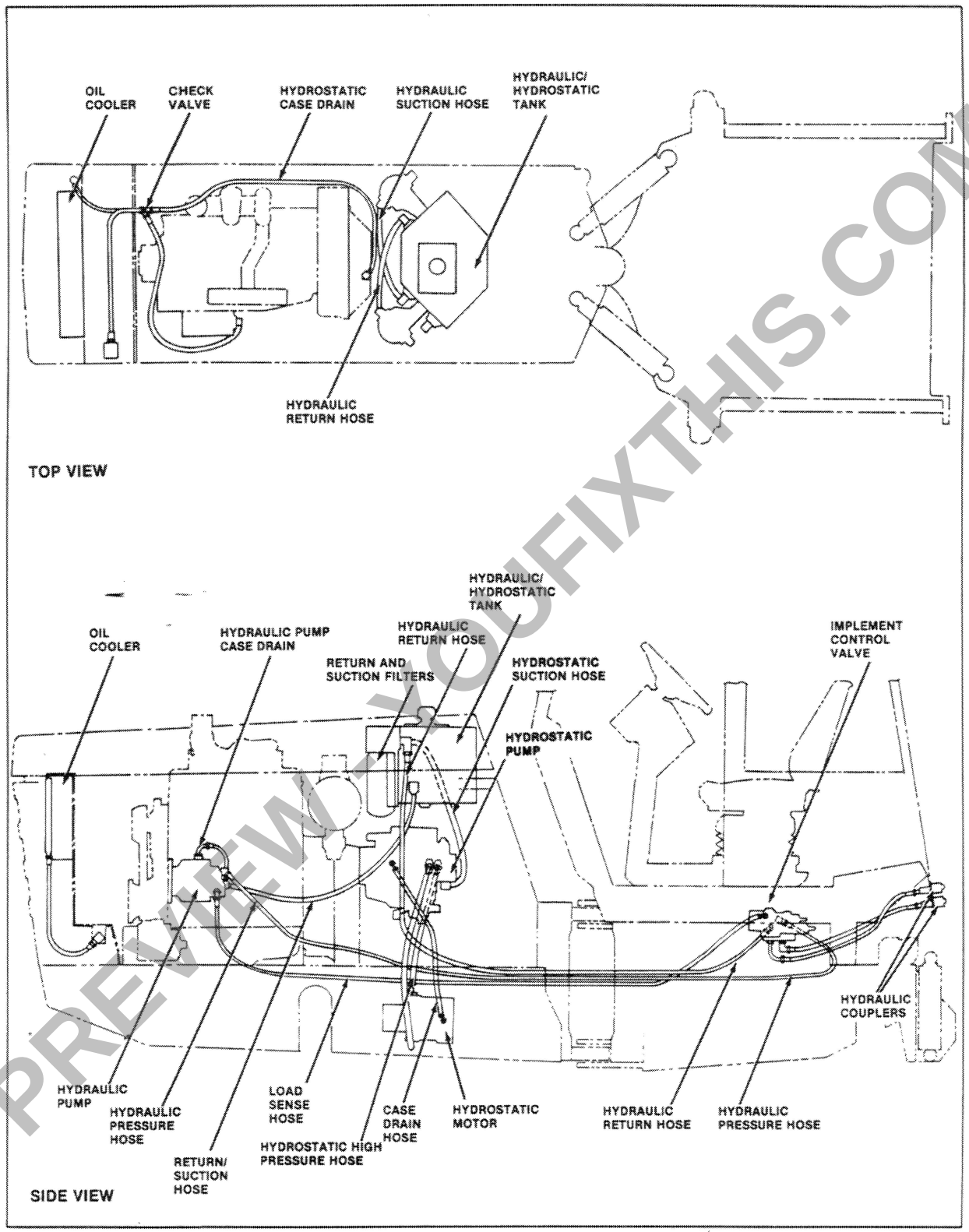
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Engine Wiring Schematic

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Hydraulic System Schematic

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1. Stop tractor, place tranmission in neutral, engage parkbrake and block wheels.
2. Allow engine to cool sufficiently so the oil pan is cool to touch.
3. Drain crankcase.
4. Remove filter with filter wrench and discard.
5. Apply a thin film of oil to the filter sealing ring.
6. Fill new filter with new engine oil.
7. Screw new filter into place and hand tighten until sealing ring contacts filter head. Tighten 1/2 turn by hand only.
8. Install oil pan drain plug and torque to 90 N.m (65 lbf ft).
9. Fill engine with new oil.
10. Remove wire to fuel solenoid located on fuel pump. Wrap wire with electrical tape to prevent shorting to ground.
11. Crank engine for 10 seconds, to establish initial engine oil pressure.

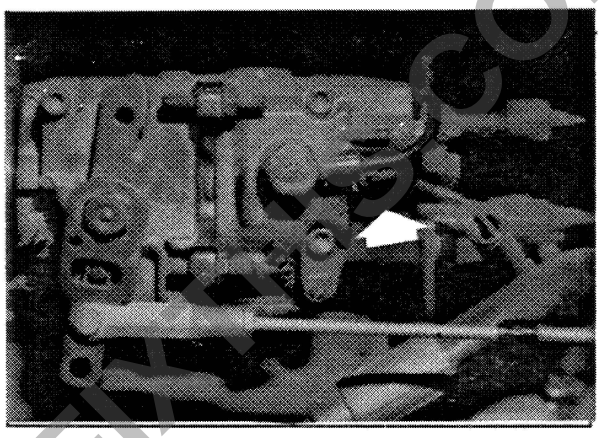
IMPORTANT

Do not crank engine longer than 30 seconds or cranking motor may be damaged. Allow cranking motor to cool for 2 minutes before cranking again.

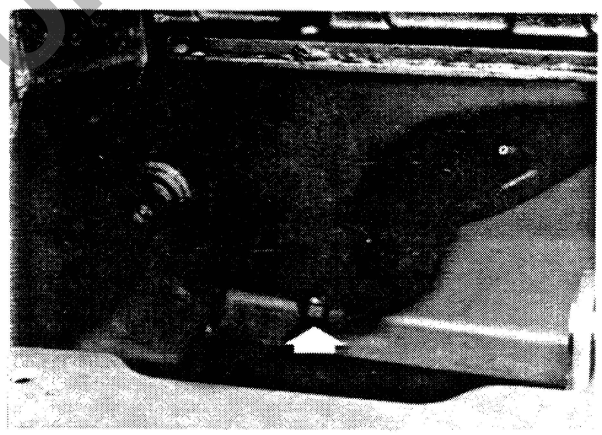
NOTE

Cranking engine (without starting) after changing oil and filter will help prolong engine life by establishing oil circulation in the engine.

12. Reconnect wire to fuel solenoid.
13. Run engine for 10 min. and check for leaks.
14. Shut down engine, allow 15 min. for the oil to drain into the crankcase and check level. Top up if necessary.



Fuel Solenoid



Drain Plug

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ITEM & LOCATION	TORQUE N.M	TORQUE LB.FT
BRAKE DISC MTG	85 - 102	63 - 75
BRAKE CALIPER MTG BOLTS	244 - 271	180 - 200
MAIN DRIVELINE BOLTS	34 - 40	25 - 30
PTO DRIVELINE BOLTS	34 - 40	25 - 30
AXLE DROPBOX MTG BOLTS	595 -625	440 - 460
CAB END AXLE MTG TO FRAME	525 - 535	387 - 395
ENGINE END AXLE MTG TO CRADLE	790	583
A/C COMPRESSOR MTG	42	31
BATTERY CABLE NUTS @ BATTERY	13 - 20	10 - 15
BATTERY CABLE NUTS @ STARTER	7 - 14	5 - 10
HYDRAULIC PUMP SHAFT NUT	122 - 129	90 - 95
REAR ENGINE ISOLATOR MTG BOLTS	440	326
FRONT ENGINE ISOLATOR MTG BOLTS	170	125
PTO BOX DUAL SPEED-OUTPUT SHAFT BOLTS	55	40
PTO BOX DUAL SPEED-CAP CTR LINK	94	69
PTO BOX DUAL SPEED-LWR SHAFT BOLT	136	100
FRAMES ARTIC. & OSCILL. PINS	136 MINIMUM	100 MINIMUM
TRANSMISSION OUTPUT SHAFT NUT	272	201
HYDROSTATIC PUMP CONTROL LEVER	22 - 26	16 - 19
WHEELS - CLAMP BOLTS	210 - 270	156 - 200
WHEELS - MTG NUTS	240 - 265	180 - 200
COOLING FAN MTG	27	20
MAIN DRIVELINE BRG MTG BOLTS	200	147
WELLNUTS-FUEL TANK	6.2 - 6.8	55 - 60 LB.IN

Bolt Torques for Specific Components

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