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Cougar II Tractor

Operators Manual

37-036

Reprinted

CASE IH

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SAFETY PRECAUTIONS

A CAREFUL OPERATOR IS ALWAYS THE BEST INSURANCE AGAINST AN ACCIDENT.

Be sure all control levers are in neutral before attempting to start the engine.

Do not operate tractor from any position except seated in the operator's seat.

Operate tractor at lower speed to insure safety and complete control, especially over rough terrain.

Reduce speed when making a turn, going down hill or applying brakes.

Do not leave engine running while it is unattended.

Shut the engine off before making any adjustments or when servicing tractor.

Do not dismount from tractor when it is in motion.

Do not allow passengers on tractor.

Use the braking power of the engine, always downshift to lower gear before descending a steep grade.

Shift to lower gear before approaching a hill, so it does not become necessary to shift against the hillside with danger of rolling backward while shifting.

Take care when removing radiator pressure cap when radiator is hot. Add to radiator only when engine is stopped and fully cooled.

Refuel in a safe place away from open fire or sparks.

Prevent accidents—use red flags or a safety emblem when transporting tractor.

Never stand near center hinged area while engine is running.

Never by-pass (wire around) safety starting switch.

Machinery should only be operated by responsible adults.

Brakes should be properly adjusted.

Provide a first aid kit. Treat all scratches, cuts, etc. with the proper antiseptic immediately.

Never operate tractor in closed garage or shed.

Start engine with transmission in neutral to avoid vehicle creep before transmission oil warm up.

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SPECIFICATIONS

ENGINE

Engine: Caterpillar - 3306 Series, 638 cubic inch (10.5 liters)
Type: Four-cycle Turbo charged diesel.
Number of cylinders: 6-inline
Bore & stroke: 4.75 in. x 6.0 in. (121 mm x 152 mm)
Rated Horsepower (intermittent): 250 HP (186.65 Kilowatts)
Compression Ratio: 17.5:1
Torque (Max.): 681 Ft-Lbs (92.3 Kilogrammeters) at 1550 RPM
Torque (Operating): 590 Ft-Lbs (80.0 Kilogrammeters) at 2200 RPM
Rated Engine RPM: 2200
Engine Idle: Min 850 RPM
Coolant System: Pressure, liquid-type
Lubrication System: Full pressure with gear-type pump and external cooler. System equipped with full-flow oil filter with bypass.
Air Cleaner: Dry type with dual element and condition indicator.
Mounts: Isolated rubber mounts.

ELECTRICAL SYSTEM

Battery: Two 12 volt
Alternator: 72 amp 12 volt
Lights: 8 working lights, one red tail light on left rear fender and two safety flashers visible from front and rear of unit.

LUBRICATION

Engine: CD oil
Central Sump: IH Hi-Tran, John Deere 303, Texaco 303, or equivalent.
NOTE: Use IH Hi-Tran only if equipped with wet clutch.
Transmission: Lubricated from Central Sump
Drop Box: Lubricated from Central Sump
Axles: (Clark) MIL-L-2105-B SCL
Steiger (Raba) EP-90 MIL-L-2105-B
Hydraulic oils: Hydraulic No. 10, IH Hi-Tran, John Deere 303, Texaco 303 or equivalent

POWER TRAIN

Transmission:
Spicer SST 1010-10 speeds forward and 2 reverse speeds. Rubber monted and oil cooled, rated at 950 Ft.Lbs. (131 kg meters).
Power Divider:
Patented Steiger Swinging power divider, oil cooled, tapered roller bearings with 1:1 ratio.

Axles:
Outboard planetary hubs, spiral bevel ring gear and pinion differential.

Clark	Steiger Raba
Total reduction: 27.750:1	Total reduction: 24.885
Planet ratio: 6.0:1	Planet ratio: 11.982:1
Differential ratio: 4.625:1	Differential ratio: 2.077:1

HYDRAULIC SYSTEM

Pump: Both sections of pump deliver 21 gpm (79.5 liters/min) at 2000 psi (141 Kgs/sq. cm.)
Filtration: Dual 25 micron replaceable cartridge type full flow with bypass.
Relief pressure setting: (implement) 2000 psi, (141 Kgs/sq. cm) (steering) 1800 psi, (126 Kgs/sq.cm).
Valves: 3-spool, 2 with detent and hydraulic centering return. Third has float position.

BRAKES

Main Brakes: Hydraulically operated, disc type with dual caliper.
Parking Brake: Hand cable operated, disc type with one caliper.

CLUTCH

Dana Spicer Heavy-Duty 14" (35.56 cm) ceramic, 6 button, 2 plate, rated at 1690 Ft-Lbs (233.7 Kg/meters), pull-type release.
Wet Clutch - Rockford full flow 12.5 in (31.75 cm) 4 plate, rated at 1080 Ft-Lbs (149.3 Kg.meters).

CAPACITIES

Fuel Tank: 207 gals. (783.6 liters)
Engine Cooling System: 15 gals. (56.8 liters)
Crankcase: 8.00 gals. (30.1 liters)
Central Sump including transmission & dropbox: 15 gals (56.8 liters) Dry clutch. Wet clutch models 20 gals. (77 lts)
Differentials, including wheel ends: 6.75 gals (26 liters)
Hydraulic System: 38 gals. (143.8 liters)

TRANSMISSION & DROP BOX COOLING

Type of system: Thru use of transmission pump, lubricant is pumped thru the oil cooler. Flow is then divided at the transmission and distributed thru the transmission and dropbox, and gravity fed back to the sump.

ROPS CAB

Rops for roll over protection certified 28,000 lbs. per SAE standards J-168 or ASAE S-336 or California State R-370, tinted safety glass, rubber mounted, undercoating in complete cab, cab pressurizer, windshield wiper, mirror, bostrom T-Bar seat with arm rests, and seat belts. 80.0 db (A).

The roll over protected cab has been designed and manufactured to meet the ROPS requirement set forth in SAE and ASAE standards. Modification to the structure or changes in the mounting or mounting hardware will effect compliance with these requirements. In event that the protective cab structure becomes damaged, it should be replaced rather than repaired to assure continued roll-over protection.

If the ROPS cab must ever be removed and replaced make certain that the proper torques are applied to attaching bolts. The eight 1/2 x 1-1/2 Grade 5 bolts, used to hold isolators in place must be torqed to 100 Ft-Lbs (13.56 kilogrammeters). The four, 3/4" x 4" Grade 8 bolts used to attach the cab to the tractor must be torqued to 250 Ft.Lbs. (34.90 Kilogrammeters).

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OPERATING INFORMATION

OPERATING INSTRUCTIONS

Before operating the tractor for the first time, become familiar with its controls and their function. Figures 12,13, 14 and 15 will help you become familiar with the gauges located on the dash panel and other controls in the operators station.

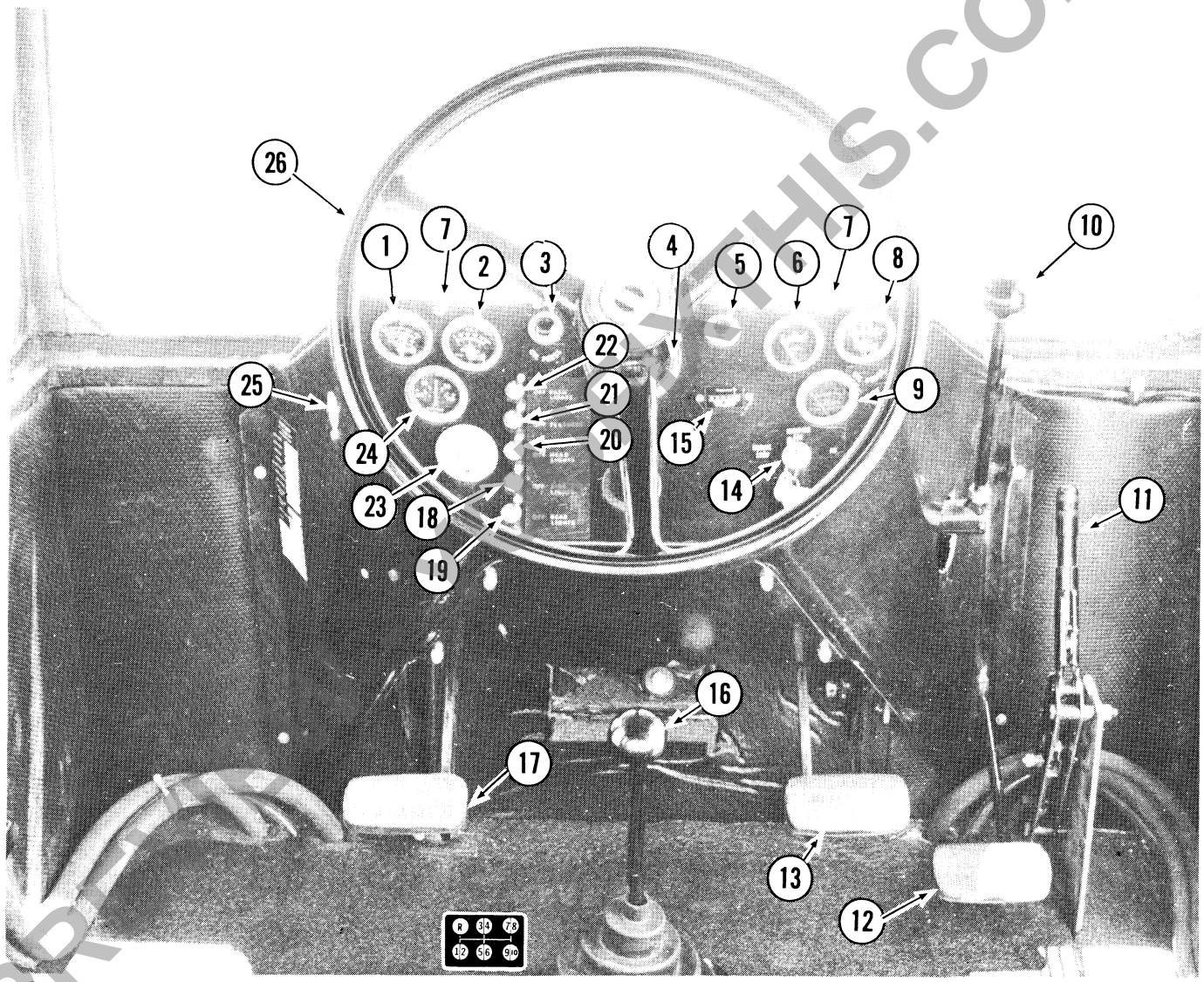


FIGURE 12: Instrument Panel & Controls

1. WATER TEMPERATURE GAUGE:

This gauge indicates if the engine cooling system is operating properly. When the gauge indicates that the engine is overheating, shut the engine off immediately. Locate and correct the cause. Normal operating temperature is 185—210.

2. ENGINE OIL PRESSURE GAUGE:

The oil pressure gauge should register between 50 and 70 PSI at normal operating temperature. If oil pressure is too low, a safety switch will shut-down the engine. Locate and correct cause before resetting safety shut-down and restarting.

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SERVICE GUIDE

The hourmeter is the most reliable method of determining service intervals. The following figures are based on a ten hour day. If operations differ from these figures, base service intervals on actual running time. Keep an accurate record of operating time.

10 hours.....One Day
50 Hours.....One Week
100 hours.....Two Weeks
200 hours.....One Month

		HOURS	During Operation	10 Hours or Daily	100 Hours	500 Hours	1000 Hrs. or once a Yr.
Fuel Filters	Check Fuel Pressure Gauge		■				
Crankcase Oil pressure	Check oil pressure gauge		■				
Water Temperature	Check water temperature gauge		■				
Battery charge rate	Check ammeter reading		■				
Trans. oil pressure	Check gauge & light		■				
Main hinge & pivot link	Lubricate			■			
Hydraulic oil tank	Check oil level			■			
Fan Drive Belt	Check adjustment			■			
Air Filter Cup	Check and Clean			■			
Air Filter pre-cleaner	Check and Clean			■			
Cab air, filter	Check and Clean			■			
Crankcase lube oil	Check oil level			■			
Cooling system	Check coolant level			■			
Wheel lug nuts (first 50 hrs. only)	Clark Axle Torque to 450 Ft. lbs. Raba Axle Torque to 325 Ft-Lbs.			■			
Air Cleaner indicator	Check			■			
Safety shut-off System	Check			■			
Clutch throwout bearing	Lubricate			■			
Power divider box carrier	Lubricate			■			
Battery	Check water level				■		
Brakes	Check fluid level-master cylinder (under hood)				■		
Central Sump	Check oil level				■		
Clutch release shaft	Lubricate				■		
Axle & planetary drive assy.	Check oil level				■		
U-Joints	Lubricate				■		
Slip Yokes	Lubricate				■		
Crankcase lube oil & filters	Drain & refill & replace filters				■		
Fuel Filter	Replace				■		
Fuel Tank	Drain water				■		
Center hinge bolts	Torque to 1200 ft. lbs.					■	
Transmission Filter	Replace					■	
Axle and Planetary drive assy.	Drain and refill					■	
Hydraulic Oil Filter	Replace					■	
Central Sump	Change Oil						■
Hydraulic Oil	Change Oil						■

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WET CLUTCH OPERATION

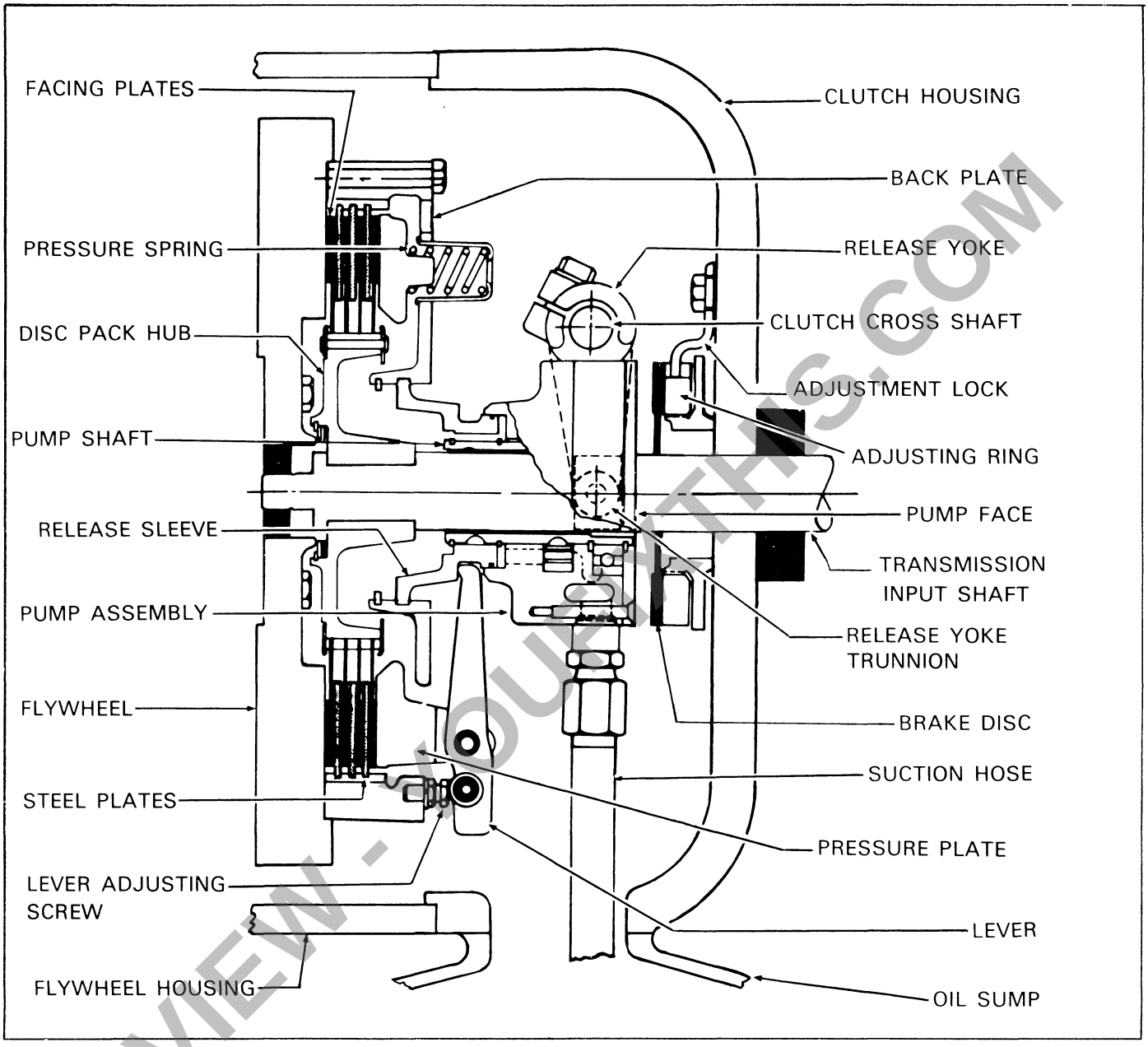


FIG. 45: Clutch Assembly

IMPORTANT: Acquaint yourself thoroughly with the above illustration. The following information frequently refers to parts on the illustration.

DESCRIPTION

The 12.5'' Full Oil Flow Clutch is a heavy duty, spring loaded, pull-type, multiple disc clutch with integral oil pump.

OPERATION

Clutch actuation is accomplished by means of external linkage, mechanically operated, which is connected to the Cross Shaft in the Clutch Housing. The Release Yoke is keyed to the Cross Shaft. When the clutch pedal is depressed the release yoke pivots with the Cross Shaft causing the release yoke trunnions to move the release sleeve and pump assembly toward the transmission. As the release sleeve is moved, the ends of the levers contacting the release sleeve shoulder are also moved toward the transmission. The pressure plate, which is attached to the levers between the release sleeve and lever pivot points, moves towards the transmission. The pressure springs are thereby compressed allowing the steel plates and the facing plates to separate. Thus with the steel plates and facing plates separated, power is no longer transmitted from the engine to the transmission.

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TROUBLESHOOTING

SYMPTOM & CAUSE	CORRECTION
ENGINE FAILS TO START	
No Fuel to Engine	Check for empty fuel tank, plugged fuel tank connections, obstructed or kinked fuel suction lines, or plugged fuel filters.
Shutoff Solenoid Sticking	Solenoid must be energized to shutoff engine. Actuate the control that operates the shutoff solenoid and listen for a clicking sound. If clicking sound is evident and engine will not start, remove the solenoid. Again try to start the engine. If the engine starts, the solenoid is bad. Replace the solenoid.
Fuel Transfer Pump	At cranking speed, the fuel transfer pump should supply fuel to the engine at 10-20 PSI. If fuel pressure is less than 10 PSI, replace the fuel filter. Check for air in fuel system, sticking, binding or defective fuel bypass valve. If pressure is still low, replace the fuel transfer pump.
Slipping Fuel Injection Pump Drive	The fuel injection pump is driven by the accessory drive gear through a tapered sleeve. If this sleeve is not tightened properly, the accessory drive shaft will not rotate. Check this by removing the fuel transfer pump, cranking the engine, and observing through the fuel transfer pump mounting opening to see if the shaft rotates. If the shaft fails to rotate, remove the small cover from the front of the timing gear cover and tighten the accessory drive gear retaining nut. If tightening eleminates the slipping, retime the fuel injection pump to the engine before starting.
Engine Improperly Timed	If the accessory drive shaft rotates during above step, it is possible that the tapered sleeve has slipped. Reset the timing.
MISFIRING	
Defective Fuel Injection Nozzle or Fuel Pump	Run the engine at the speed where the defect is most pronounced. Momentarily loosen the fuel line nut on the injection pump to "cut out" that cylinder. Check each cylinder in this manner. If one is found where loosening makes no difference in irregular operation, the pump and nozzel for only that cylinder need be tested.
Improper Valve Lash	Set to specified clearance.
Low Fuel Supply Pressure	Check fuel supply line for leaks or kinks, air in fuel system, sticking, binding, or defective fuel bypass valve. Replace fuel filter. Check fuel pressure. Fuel transfer pump should supply fuel to engine at the following pressures: Full load—minimum of 25 PSI High idle—minimum of 30 PSI
Broken or Leaking High Pressure Fuel Line	Replace the line.
Air in Fuel System	Find source of air entry and correct. Bleed system.
Bent or Broken Push Rod	Replace push rod.

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