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DX21, DX24 Tractors

Operator's Manual

87300158

CASE IH

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PRECAUTIONARY STATEMENTS

PERSONAL SAFETY

Throughout this manual and on machine decals, you will find precautionary statements ("**DANGER**", "**WARNING**", and "**CAUTION**") followed by specific instructions. These precautions are intended for the personal safety of you and those working with you. Please take the time to read them.

⚠ DANGER ⚠

This word "DANGER" indicates an immediate hazardous situation that, if not avoided, will result in death or serious injury. The color associated with Danger is RED.

⚠ WARNING ⚠

This word "WARNING" indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. The color associated with Warning is ORANGE.

⚠ CAUTION ⚠

This word "CAUTION" indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

FAILURE TO FOLLOW THE "DANGER", "WARNING", AND "CAUTION" INSTRUCTIONS MAY RESULT IN SERIOUS BODILY INJURY OR DEATH.

MACHINE SAFETY

The precautionary statement ("**IMPORTANT**") is followed by specific instructions. This statement is intended for machine safety.

IMPORTANT: *The word "IMPORTANT" is used to inform the reader of something he needs to know to prevent minor machine damage if a certain procedure is not followed.*

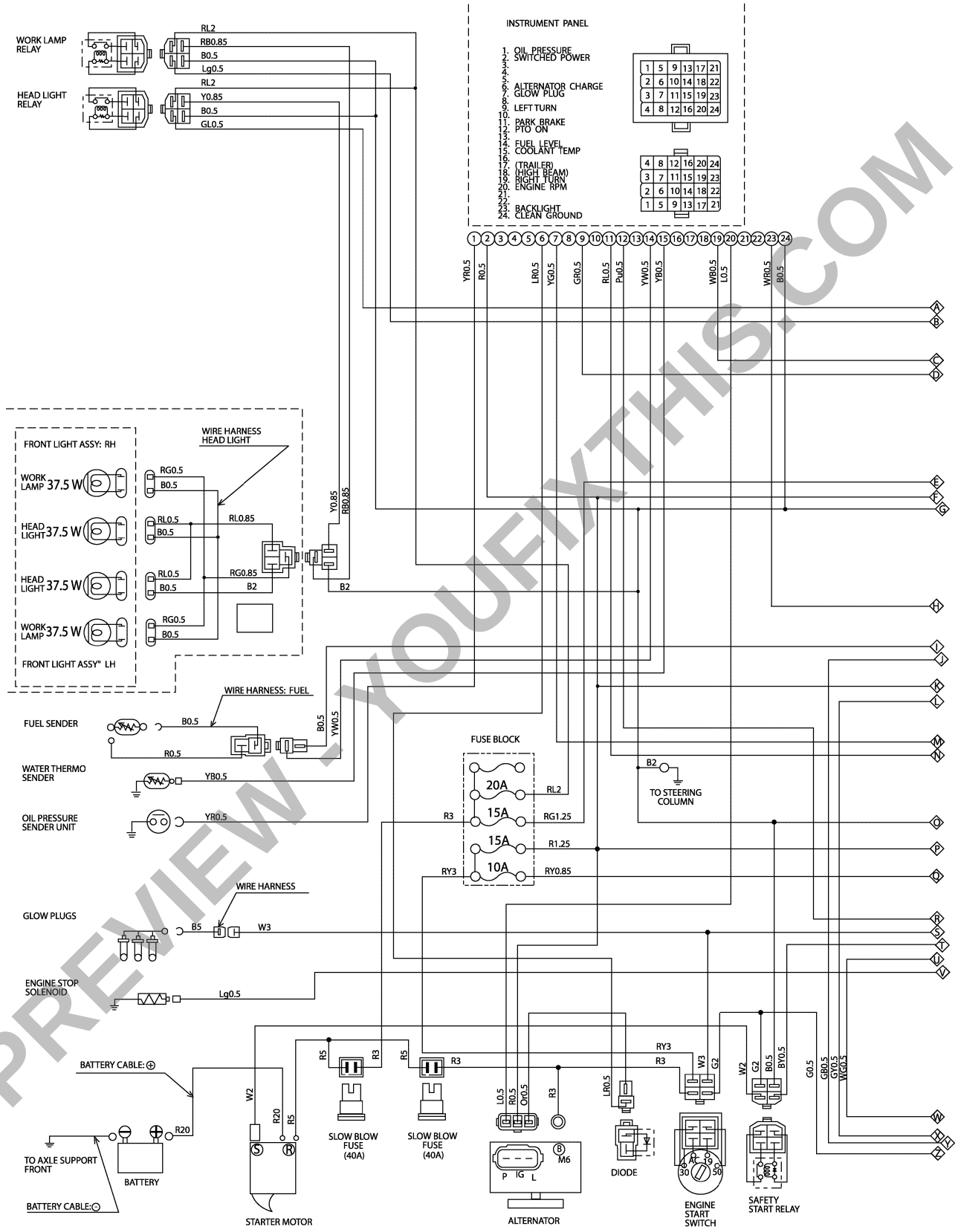
INFORMATION

NOTE: *Instructions used to identify and present supplementary information.*

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ELECTRICAL WIRING DIAGRAM



50040599

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MINIMUM HARDWARE TIGHTENING TORQUES

IN FOOT POUNDS (NEWTON-METERS) FOR NORMAL ASSEMBLY APPLICATIONS

INCH HARDWARE AND LOCKNUTS

NOMINAL SIZE	SAE GRADE 2		SAE GRADE 5		SAE GRADE 8		LOCKNUTS		NOMINAL SIZE
	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	UNPLATED or PLATED SILVER	PLATED W/ZnCr GOLD	GR.B w/GR5 BOLT	GR.C w/GR8 BOLT	
1/4	55* (6.2)	72* (8.1)	86* (9.7)	112* (13)	121* (14)	157* (18)	61* (6.9)	86* (9.8)	1/4
5/16	115* (13)	149* (17)	178* (20)	229* (26)	250* (28)	324* (37)	125* (14)	176* (20)	5/16
3/8	17 (23)	22 (30)	26 (35)	34 (46)	37 (50)	48 (65)	19 (26)	26 (35)	3/8
7/16	27 (37)	35 (47)	42 (57)	54 (73)	59 (80)	77 (104)	30 (41)	42 (57)	7/16
1/2	42 (57)	54 (73)	64 (87)	83 (113)	91 (123)	117 (159)	45 (61)	64 (88)	1/2
9/16	60 (81)	77 (104)	92 (125)	120 (163)	130 (176)	169 (229)	65 (88)	92 (125)	9/16
5/8	83 (112)	107 (145)	128 (174)	165 (224)	180 (244)	233 (316)	90 (122)	127 (172)	5/8
3/4	146 (198)	189 (256)	226 (306)	293 (397)	319 (432)	413 (560)	160 (217)	226 (306)	3/4
7/8	142 (193)	183 (248)	365 (495)	473 (641)	515 (698)	667 (904)	258 (350)	364 (494)	7/8
1	213 (289)	275 (373)	547 (742)	708 (960)	773 (1048)	1000 (1356)	386 (523)	545 (739)	1

NOTE: Torque values shown with * are inch pounds.

IDENTIFICATION
CAP SCREWS AND CARRIAGE BOLTS



SAE GRADE 2 | SAE GRADE 5 | SAE GRADE 8

REGULAR NUTS | SAE GRADE 5 HEX NUTS | SAE GRADE 8 HEX NUTS

LOCKNUTS



GRADE IDENTIFICATION
GRADE A NO NOTCHES
GRADE B ONE CIRCUMFERENTIAL NOTCH
GRADE C TWO CIRCUMFERENTIAL NOTCHES



GRADE IDENTIFICATION
GRADE A NO MARKS
GRADE B THREE MARKS
GRADE C SIX MARKS
MARKS NEED NOT BE LOCATED AT CORNERS



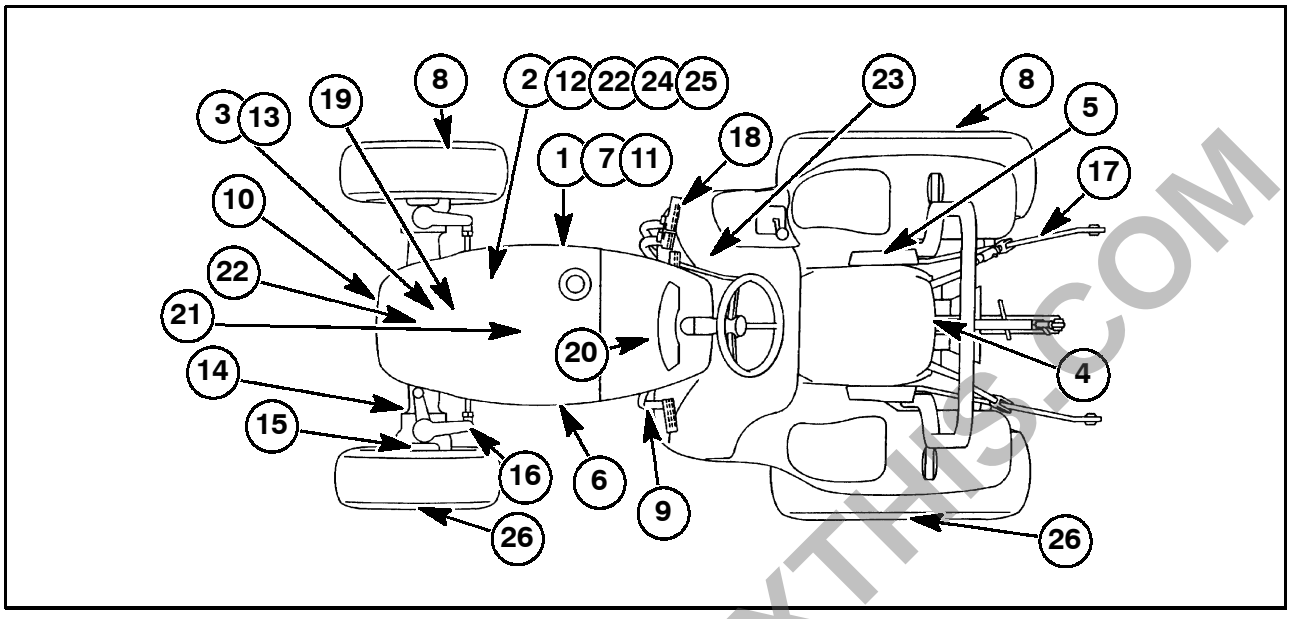
GRADE A NO MARK
GRADE B LETTER B
GRADE C LETTER C

GRADE IDENTIFICATION

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LUBRICATION AND MAINTENANCE CHART
CASE IH DX21/DX24 — FRONT-WHEEL DRIVE



1

NO.	LUBRICATION & MAINTENANCE ITEMS	CHECK	CLEAN	LUBE	CHANGE	ADJUST	SERVICE INTERVALS
1	Engine Oil Level	X					Every 10 Hours or Daily
2	Air Cleaner	X					
3	Radiator Coolant	X					
4	Transmission Oil Level	X					
5	Hydraulic Filter				X		First 50 Hours
6	H.S.T. Filter				X		
1, 7	Engine Oil & Filter				X		
8	Tire Pressure	X					
11	Fuel Filter				X		
26	Wheel Bolt Torque	X					
—	All Fluid Levels	X					
8	Tires	X					Every 50 Hours
9	Clutch Pedal	X		X		X	
10	Battery	X					
11	Fuel Filter	D	R	A	I	N	
12	Power Steering Oil Level	X					
13	Fan Belt	X					
14	Front Axle Oil Level	X					
15	Final Reduction Gear Cases Oil Level	X					
	Lubrication Fittings:						
16	Steering Linkage			X			
17	3-Point Linkage			X			
18	Brake Pedal			X			
19	Power Steering Cylinder			X			
20	Pedal Shaft			X			
21	Drive Cover Shaft			X			
22	Pivot Shaft			X			
23	H.S.T. Pedal Pivot			X			

NO.	LUBRICATION & MAINTENANCE ITEMS	CHECK	CLEAN	LUBE	CHANGE	ADJUST	SERVICE INTERVALS
1, 7	Engine Oil & Filter				X		Every 100 Hours
2	Air Cleaner Element		X				
11	Fuel Filter		X				
8	Brake					X	Every 200 Hours
11	Fuel Filter Element				X		
13	Fan Belt					X	
26	Wheel Bolt Torque	X					
	Steering Free Play	X				X	
4	Transmission Oil				X		Every 300 Hours
5	Hydraulic Filter				X		
6	H.S.T. Filter				X		
14	Front Axle Oil				X		
15	Final Reduction Gear Cases Oil				X		
12	Power Steering Oil				X		Every 600 Hours
24	Fuel Injector	X				X	
25	Valve Clearance	X				X	
2	Air Cleaner Element				X		Seasonal
3	Radiator Coolant				X		
2	Safety Air Filter Element				X		Every 3rd Primary Element Change or Every **1000** Hours, Whichever Comes First

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SECTION 4
SPECIFICATIONS

	Model DX21 Hydrostatic/Gear	Model DX24 Hydrostatic/Gear
ENGINE		
Type	Diesel	Diesel
Engine Gross Horsepower	21.0	24.0
Cylinders	3	3
Bore	77 mm (3.03″)	77 mm (3.03″)
Stroke	72 mm (2.83″)	81 mm (3.19″)
Displacement	1.005 L (61.3 cu. in.)	1.131 L (69.0 cu. in.)
Compression Ratio	23:1	22:5
Firing Order	1-2-3	1-2-3
Low Idle Speed	1100-1200 RPM	1100-1200 RPM
Maximum Speed:		
High Idle	2800-2850 RPM	2800-2850 RPM
Rated	2600 RPM	2600 RPM
Valve Clearance (Cold):		
Intake	0.20 mm (0.008″)	0.20 mm (0.008″)
Exhaust	0.20 mm (0.008″)	0.20 mm (0.008″)
CAPACITIES		
Fuel Tank	20 liters/ 5.3 U.S. gals.	20 liters/ 5.3 U.S. gals.
Cooling System	3.5 liters/ 3.7 U.S. qts.	3.5 liters/ 3.7 U.S. qts.
Engine Crankcase:		
Less Filter	3.0 liters/ 3.2 U.S. qts.	3.0 liters/ 3.2 U.S. qts.
With Filter Change	3.3 liters/ 3.5 U.S. qts.	3.3 liters/ 3.5 U.S. qts.
Rear Axle & Transmission (Includes Hydraulics)	16 liters/ 4.23 U.S. gals.	16 liters/ 4.23 U.S. gals.
Front Axle Final Reduction	0.8 liter/ 0.85 U.S. qt. per side	0.8 liter/ 0.85 U.S. qt. per side
Differential Gear Case	1 liter/ 1.06 U.S. qts.	1 liter/ 1.06 U.S. qts.

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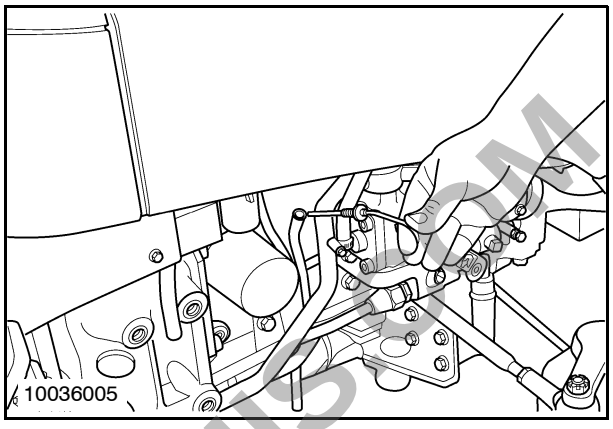
FUEL AND LUBRICANT SERVICE PROCEDURES

ENGINE

Checking the Engine Oil Level

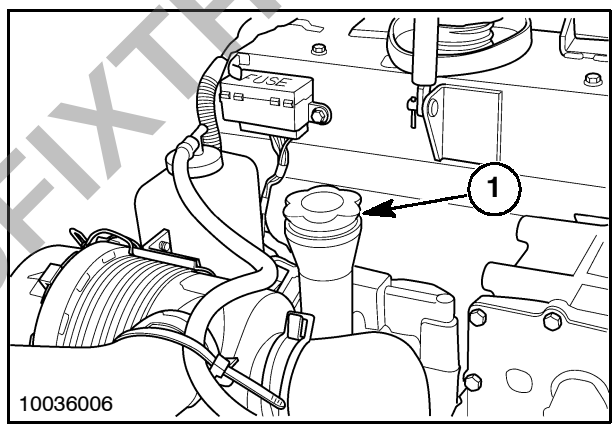
NOTE: *Check the engine oil level daily or after every 10 hours of operation.*

1. After the engine has been stopped for a period of time and with the tractor standing level, check the oil level using the dipstick.



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2. If the oil level is low, remove the filler cap, 1, and add oil through the filler hole. Add enough oil so that the level registers between the two marks on the dipstick. Do not overfill.



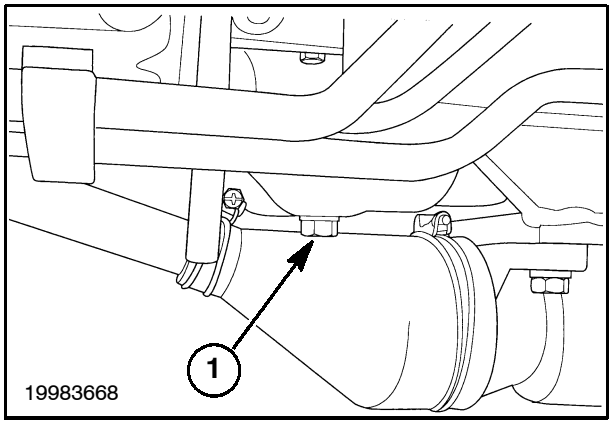
4

Changing the Engine Oil

NOTE: *Change the engine oil and filter after the first 50 hours of operation, then every 100 hours thereafter. If the tractor is operated for extended periods of time at maximum rated power and speed, or under other types of continuous, severe operating conditions, the engine oil and filter should be changed at 70-hour intervals following the initial oil change.*

To change the engine oil:

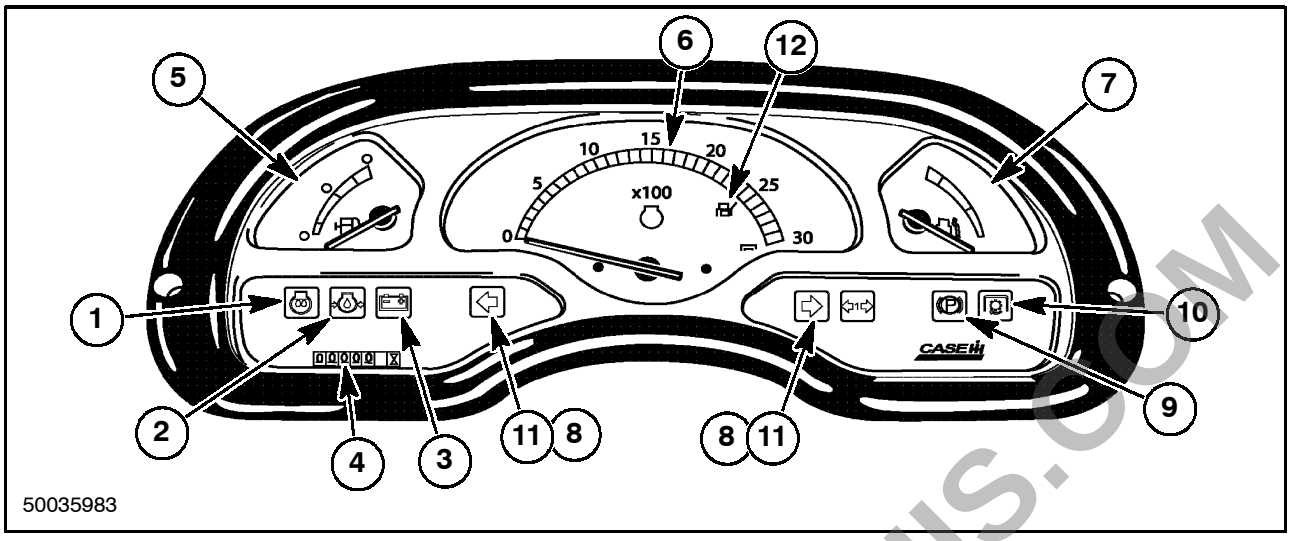
1. Place a suitable container beneath the drain opening to catch the used oil. With the tractor engine off but at normal operating temperature, remove the drain plug, 1. Reinstall the plug after all of the oil has been drained.



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INSTRUMENT PANEL

1. **Cold Starting Indicator Light** – Illuminates when the key switch is turned to the “ACC/RUN” position. It remains lit for approximately four seconds when the key is in position, during which time the glow plugs are heating the precombustion chambers of the cylinder head.
2. **Engine Oil Pressure Warning Light** – Illuminates with the key switch in the “ACC/RUN” position and remains lit for a short period of time after the engine is started. The light indicates oil pressure only, and goes out when sufficient oil pressure is present at the oil sender. If the bulb lights during operation, stop the tractor engine immediately and investigate the cause.
3. **Battery Charge Warning Light** – Illuminates when the key switch is in the “ACC/RUN” position and goes out when the engine is started. If this bulb lights during operation, it indicates that the charging system is not operating normally. As the battery can become fully discharged under these conditions, the problem should be investigated as soon as possible.
4. **Proof Meter** – Records the hours and portions of hours that your tractor has been operated, regardless of engine RPM. Use the proof meter as a guide to determine hourly service and maintenance intervals.
5. **Fuel Gauge** – Indicates the amount of diesel fuel remaining in the tank. The gauge is activated when the key switch is in the “ACC/RUN” position. It will register “empty” with the key switch in the “STOP” position.
6. **Tachometer** – Registers engine RPM (Revolutions Per Minute) The gauge is marked in increments of 100 and will return to zero when the engine is not running.
7. **Temperature Gauge** – Indicates coolant temperature. It is activated when the key switch is turned to the “ACC/RUN” position. The gauge will register “cold” with the key switch in the “STOP” position. If the needle registers in the green range of the gauge, this indicates a normal operating temperature. If the needle moves to the red portion of the gauge, indicating an overheated condition, stop the tractor engine IMMEDIATELY and investigate the cause.
8. **Flasher Warning Hazard Lights** – Operate when the flasher switch is turned on, regardless of the key switch position. Use the flasher warning lights and the SMV placard when traveling on public roads, day or night.
9. **Parking Brake Light** – Illuminates if the parking brake is engaged when the key switch is turned from the “OFF” position.
10. **PTO “On” Indicator** – When either of the PTO positions is engaged, and the key switch is in the “ACC/RUN” or “START” position, this indicator will be illuminated amber.
11. **Flasher Turn Lights** – Operate when the turn signal switch is moved to the right for right turns (the RH arrow will flash) or to the left for left turns (the LH arrow will flash.) The key switch must be in the “ACC/RUN” or “START” position for the turn signals to operate.
12. **PTO Speed Indicator** – Determined by the position of the needle on the tachometer. The tachometer is marked to indicate 540 PTO RPM. If the needle registers above the 540 RPM mark, this indicates a dangerous over speed condition, and the engine RPM should be reduced immediately. (only on HST tractor)

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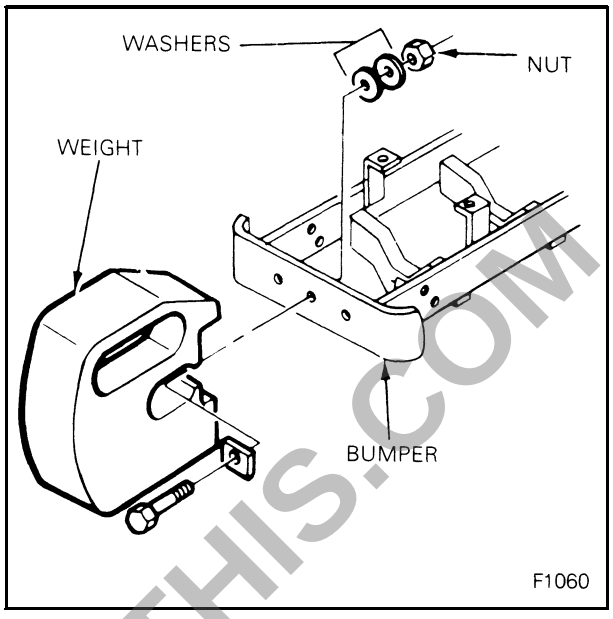
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CAST IRON WEIGHTS (OPTIONAL)

Cast iron weights are available as accessories from your Case IH Dealer. Weights can be mounted on the front end of the tractor and on the rearmost wheels.

Front End Weights

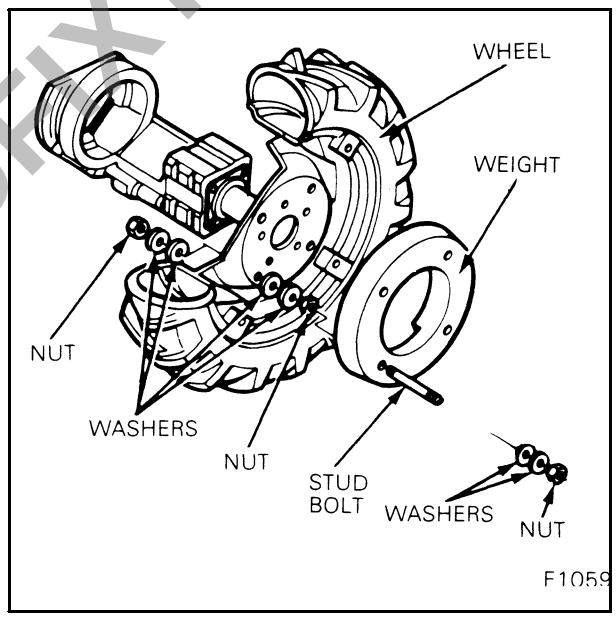
Tire Type	Weight(s)
Agricultural, Turf, & Industrial	Maximum of (3) weights per tractor @ 25.7 kg (57 lbs.) each— 77 kg (171 lbs.) total



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Rear Wheel Weights

Tire Type	Weight(s)
Agricultural	Maximum of (1) weight per wheel @ 45.4 kg (101 lbs.) each— 91 kg (202 lbs.) total
Turf	Not Available
Industrial (R4)	Maximum of (1) weight per wheel @ 45.4 kg (101 lbs.) each— 91 kg (202 lbs.) total



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NOTE: *Rear wheel weights can be used with liquid ballast.*

NOTE: *Hardware to mount weights should be obtained locally. Use a standard 1/2″ cap screw instead of the stud bolts.*

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OPERATION OF THE POWER TAKE-OFF (PTO)

1. Before attaching the PTO, stop the tractor engine.

⚠ WARNING ⚠

To reduce the possibility of personal injury, comply with the following guidelines before attaching or detaching PTO equipment, and before working on or clearing PTO equipment.

- **Depress the clutch pedal completely and move the transmission range lever to the "NEUTRAL" (N) position.**
- **Set the parking brake.**
- **Disengage the PTO using the PTO control lever.**
- **Remove the PTO cap.**
- **Wait until the PTO shaft stops turning.**
- **Attach the mounted or drawn equipment. Make sure the equipment-driven shaft is properly aligned and locked to the tractor PTO drive shaft and that the PTO shield is down in the guarded position.**

2. With the PTO disengaged, start the engine. For mounted equipment, raise and lower the equipment to ensure there are proper clearances.
3. With the transmission in neutral, depress the clutch pedal completely, then engage the rear PTO by moving the PTO control lever forward. To engage the optional mid PTO, move the mid PTO forward.

   IMPORTANT: *The PTO may be damaged if the PTO lever is not moved through its full range.*

4. Check the PTO-driven equipment for proper operation by gradually releasing the clutch pedal and increasing engine RPM.
5. If the equipment is operating properly, depress the clutch pedal and shift to the desired operating gear. Release the pedal gradually to start the PTO and tractor in motion.
6. Control the PTO speed using the throttle. Never operate in an overspeed condition.
7. When making sharp turns with pull-type equipment or with mounted equipment in the fully raised position, disengage the rear PTO using the PTO control lever.
8. When traveling on highways or for any great distance, disconnect the PTO-driven shaft at the tractor PTO shaft.
9. Reinstall the PTO shaft cap when PTO-driven equipment is disconnected from the tractor, or when the PTO is not being used.

⚠ WARNING ⚠

To avoid inadvertent movement of PTO implement, disengage the PTO after each use.

REAR PTO OPERATION (WITHOUT OPERATOR IN SEAT)

To operate the rear PTO, without the operator in the seat the following operations must be performed:

- Transmission range lever in **NEUTRAL** position
- Parking brake in "**ON**" position
- Mid PTO in "**OFF**" position (if equipped)
- Rear PTO in "**ON"** position.

NOTE: *The Mid PTO cannot be operated without an operator present in seat.*

IMPORTANT: *The engine will shut off in approximately two seconds if the operator leaves the seat without first engaging the parking brake and setting the range lever in the "NEUTRAL" position.*

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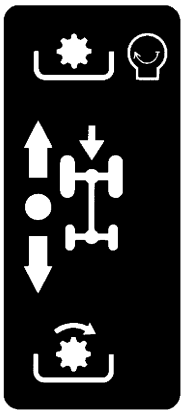
INSTRUCTION DECALS



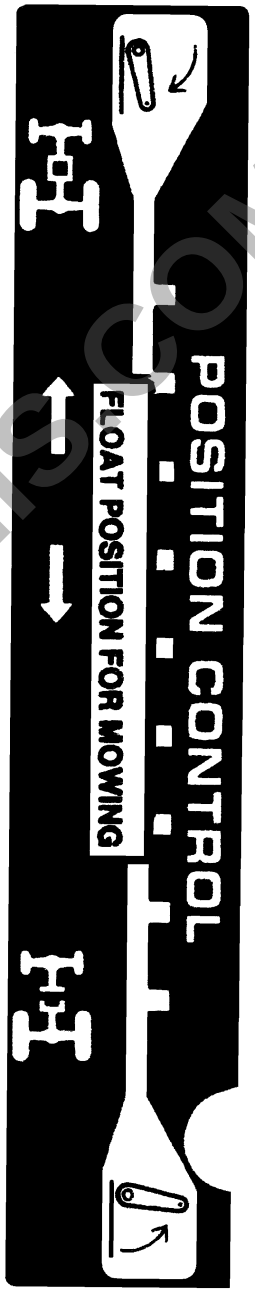
Range Selector Lever – Hydrostatic
PART NO: SBA390173492
LOCATION: Left Control Pod



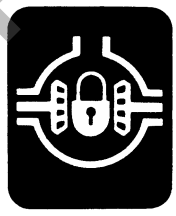
Range Selector Lever – Gear
PART NO: SBA390171892
LOCATION: Left Control Pod



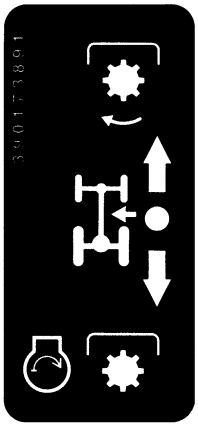
PTO Engagement
PART NO: SBA390174161
LOCATION: Left Control Quadrant



HPL Position Control, FWD Lever
PART NO: SBA390372342
LOCATION: Between HPL and FWD Levers (RH Control Pod)



Differential Lock
PART NO: SBA390198300
LOCATION: On Fender Near Pedal



Mid PTO Control Lever
PART NO: SBA390173891
LOCATION: L.H. Fender – Left of Control

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