COLOR ABBREVIATIONS

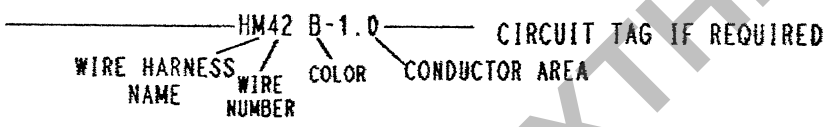
ABBREVIATION	COLOR
R	RED
T	TAN
W	WHITE
Y	YELLOW
B	BLACK
BR	BROWN
G	GREY

ABBREVIATION	COLOR
O	ORANGE
P	PINK
V	VIOLET (PURPLE)
DB	DARK BLUE
LB	LIGHT BLUE
DG	DARK GREEN
LG	LIGHT GREEN

NOTES:
1. FOR ELECTRICAL SYSTEM INSTRUCTIONS SEE ES-A7384

2. DIAGRAM SHOWN WITH VEHICLE PARKED & POWER OFF.

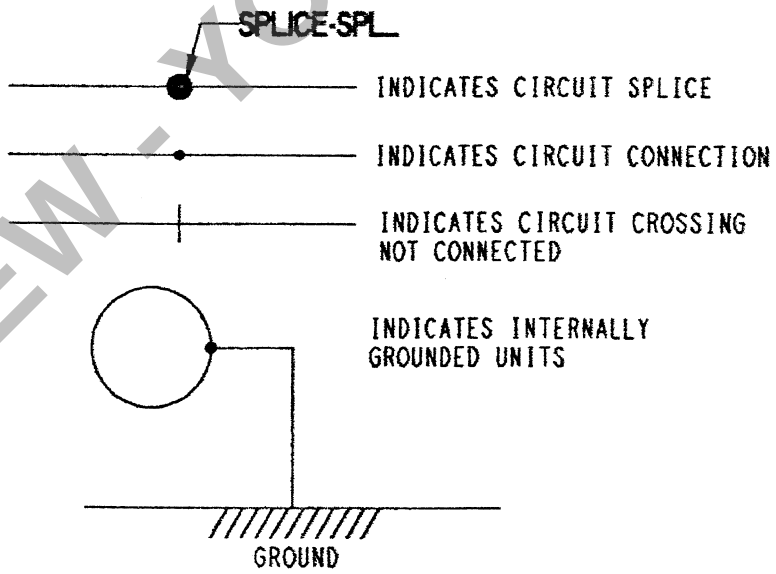
CIRCUIT DIAGRAM LEGENDS



WIRE HARNESS NAME

ABBREVIATION	HARNESS
HM	MAIN
HC	CHASSIS
HR	REAR

ABBREVIATION	HARNESS
HH	HOOD
BC	BATTERY CABLE





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REAR WHEEL WEIGHT INSTALLATION

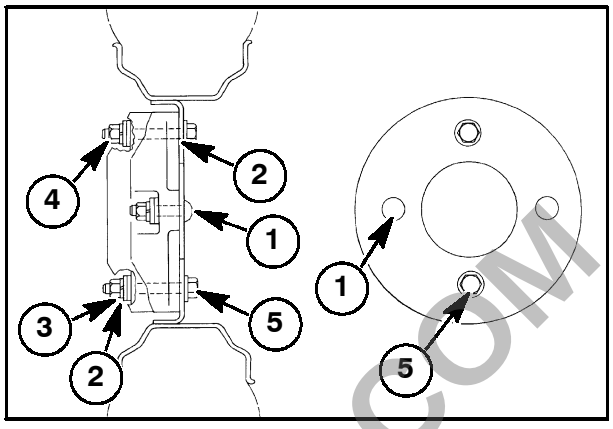
(Ag. Tire)

Hardware needed one weight installed per wheel:

Item	Qty	Description
1	4	5/8″ x 3-1/2″ carriage bolt
2	8	5/8″ flat washer
3	4	5/8″ lock washer
4	4	5/8″ nut

Hardware needed two weights installed per wheel:

Item	Qty	Description
1	2	5/8″ x 3-1/2″ carriage bolt
2	10	5/8″ flat washer
3	4	5/8″ lock washer
4	4	5/8″ nut
5	2	5/8″ x 7″ cap screw



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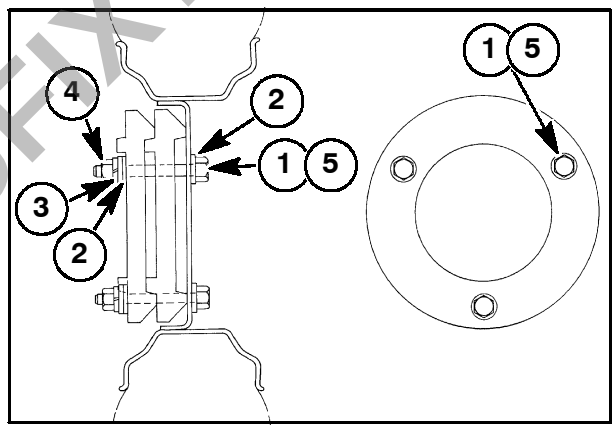
(R4 Tire) (Weight installed with flat side facing outward)

Hardware needed one weight installed per wheel:

Item	Qty	Description
1	3	1/2″ x 4″ cap screw
2	9	1/2″ flat washer
3	3	1/2″ lock washer
4	3	1/2″ nut

Hardware needed two weights installed per wheel:

Item	Qty	Description
2	9	1/2″ flat washer
3	3	1/2″ lock washer
4	3	1/2″ nut
5	3	1/2″ x 6-1/2″ cap screw



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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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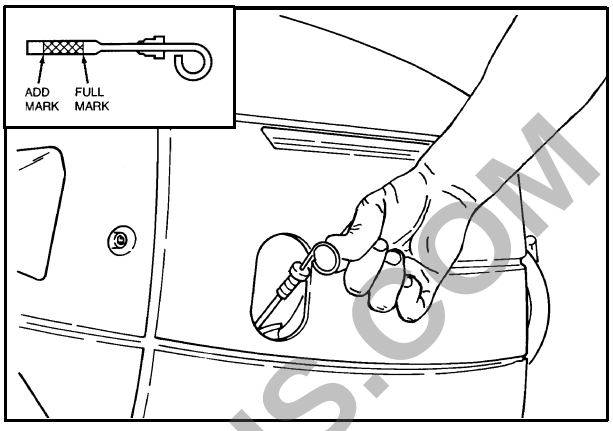
FUEL AND LUBRICANT SERVICE PROCEDURES

ENGINE

Checking the Engine Oil Level

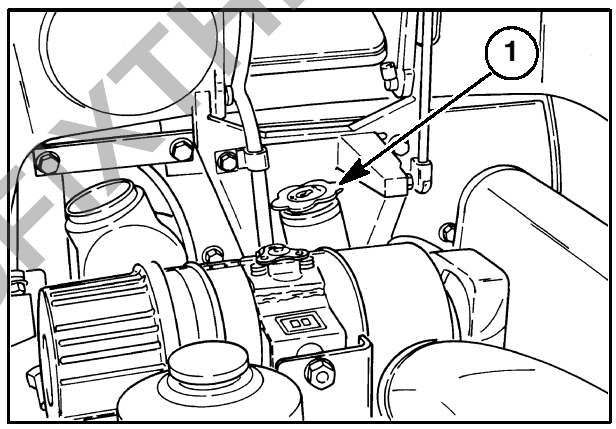
NOTE: *Check the engine oil level daily or after every 10 hours of operation.*

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.



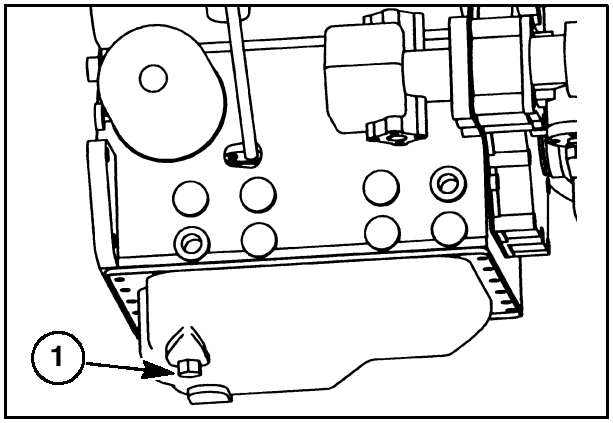
4

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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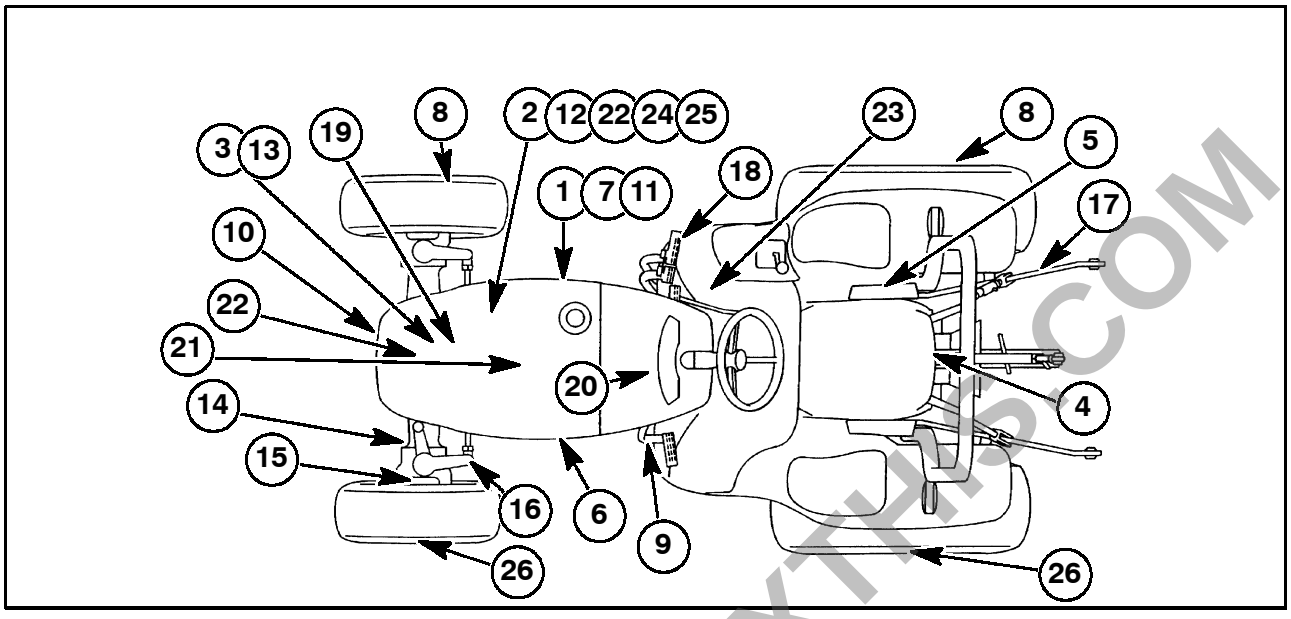
SECTION 4
SPECIFICATIONS

	Model DX25—Hydrostatic	Model DX29—Hydrostatic	Model DX33—Hydrostatic
ENGINE			
Type	Diesel	Diesel	Diesel
Engine Gross Horsepower	18.7 kw (25)	21.6 kw (29)	24.6 kw (33)
Cylinders	3	3	3
Bore	84 mm (3.31″)	84 mm (3.31″)	84 mm (3.31″)
Stroke	80 mm (3.15″)	80 mm (3.15″)	90 mm (3.54″)
Displacement	1.33 L (81.2 cu. in.)	1.33 L (81.2 cu. in.)	1.50 L (91.3 cu. in.)
Compression Ratio	22.7:1	22.7:1	22.2:1
Firing Order	1-2-3	1-2-3	1-2-3
Low Idle Speed	1000 RPM	1000 RPM	1000 RPM
Maximum Speed:			
High Idle	2840 RPM	3040 RPM	3040 RPM
Rated	2600 RPM	2800 RPM	2800 RPM
Valve Clearance (Cold):			
Intake	0.20 mm (0.008″)	0.20 mm (0.008″)	0.20 mm (0.008″)
Exhaust	0.20 mm (0.008″)	0.20 mm (0.008″)	0.20 mm (0.008″)
CAPACITIES			
Fuel Tank	27.6 liters/ 7.3 U.S. gals.	27.6 liters/ 7.3 U.S. gals.	27.6 liters/ 7.3 U.S. gals.
Cooling System	4.0 liters/ 4.2 U.S. qts.	4.0 liters/ 4.2 U.S. qts.	4.0 liters/ 4.2 U.S. qts.
Engine Crankcase:			
With Filter	4.0 liters/ 4.2 U.S. qts.	4.0 liters/ 4.2 U.S. qts.	4.0 liters/ 4.2 U.S. qts.
Rear Axle & Transmission (Includes Hydraulics)	33.3 liters/ 8.8 U.S. gals.	33.3 liters/ 8.8 U.S. gals.	33.3 liters/ 8.8 U.S. gals.
Power Steering	1.6 liters/ 1.7 U.S. qts.	1.6 liters/ 1.7 U.S. qts.	1.6 liters/ 1.7 U.S. qts.
Front Axle Final Reduction	0.8 liters/ 0.85 U.S. qts.	0.8 liters/ 0.85 U.S. qts.	0.8 liters/ 0.85 U.S. qts.
Differential Gear Case	1.4 liters/ 1.5 U.S. qts.	1.4 liters/ 1.5 U.S. qts.	1.4 liters/ 1.5 U.S. qts.

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LUBRICATION AND MAINTENANCE CHART
CASE IH DX25, DX29, DX33 — FRONT-WHEEL DRIVE



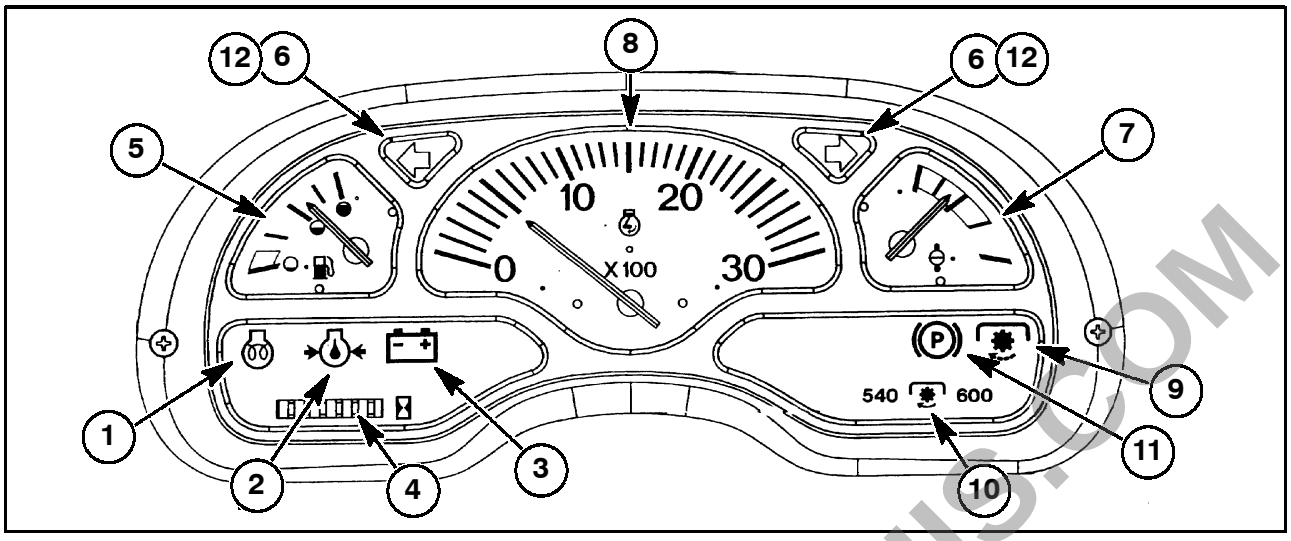
1

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					
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					
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 *Refer to Repair Manual
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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INSTRUMENT PANEL

1. **Cold Starting Indicator Light**—Illuminates when the key switch is turned to the “HEAT” position. It remains lit for approximately four seconds when the key is held in position, during which time the glow plugs are heating the precombustion chambers.
2. **Engine Oil Pressure Warning Light**—Illuminates with the key switch in the “ON” or “HEAT” positions 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 becomes lit during operation, stop the tractor engine immediately and investigate the cause.
3. **Battery Charge Warning Light**—Illuminates when the key switch is in the “ON” or “HEAT” positions and goes out when the engine is started. If this bulb becomes lit 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 “ON” or “HEAT” positions. It will register empty with the key switch in the “STOP” position.
6. **Flasher Warning Lights**—Operate when the flasher switch is turned on, regardless of the key switch position. Use the flasher warning lights and the SMV emblem when traveling on public roads, day or night.
7. **Temperature Gauge**—Indicates coolant temperature. It is activated when the key switch is turned to the “ON” or “HEAT” positions. 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, this indicates an overheated condition. Stop the tractor engine immediately and investigate the cause.
8. **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.
9. **PTO On Indicator**—When either the rear or mid PTO is engaged, the indicator will be illuminated amber with key in the “HEAT,” “START” or “ON” positions.
10. **Rear/Mid PTO Speed**—Indicated by illumination of an green or red light. When the rear PTO is turning at 540 RPM or the mid PTO is turning at 2000 RPM, the green PTO indicator will light. When the rear PTO is turning at 600 RPM or above or the mid PTO is turning above 2000 RPM, the red PTO indicator will illuminate, indicating an over speed and warning the operator of danger.
11. **Parking Brake Light**—Illuminates if the parking brake is engaged when the key switch is turned from the “OFF” position.
12. **Flasher Turn Lights**—Operate when the turn signal switch is moved upwards for right turns the right arrow will flash and moved downwards for left turns the left arrow will flash. The key switch has to be in the “ACC/RUN” or “START” positions.

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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.
- Wait until the PTO shaft stops turning.
- Remove the PTO cap.
- 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
- 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 the parking brake engaged and the range lever in the neutral position.*

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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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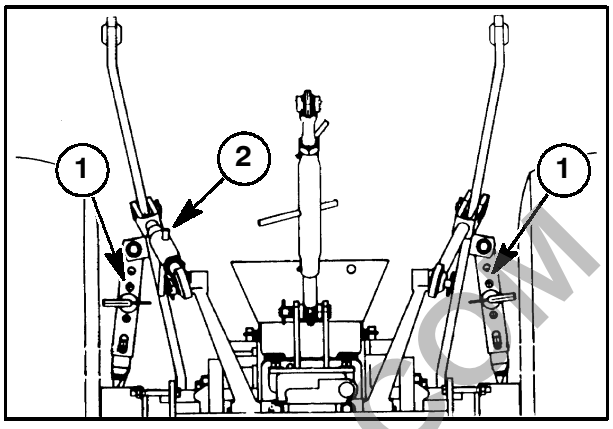
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THREE-POINT LINKAGE

The tractor's three-point linkage is used to attach three-point mounted equipment which is usually PTO operated, such as rotary mowers, tillers, flail mowers, snowblowers, etc. The three linkage points are the two lower lift arms and the top link.

The standard three-point linkage has easy to adjust sway bars, 1, to control lateral movement of the lift arms. The height of the right-hand lift arm and the top link can be adjusted by loosening the jam nut and turning the level crank pin, 2.

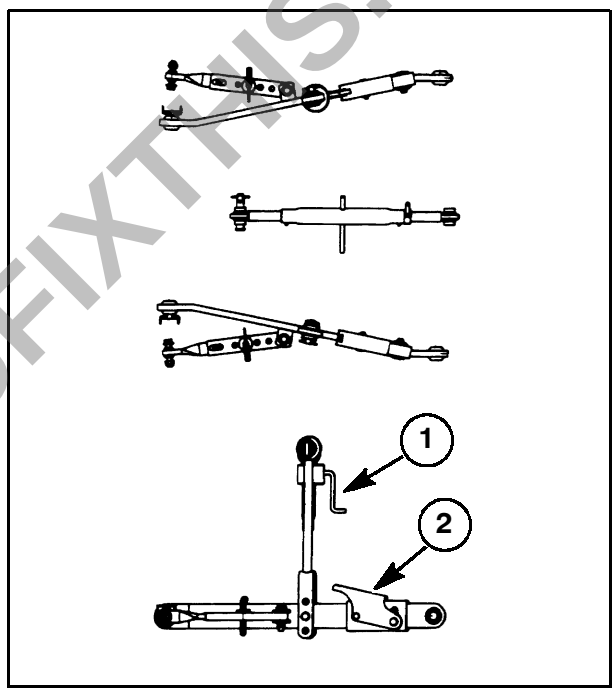


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Deluxe Three-Point Linkage

The deluxe three-point linkage allows three-point mounted equipment to be attached to the tractor with ease.

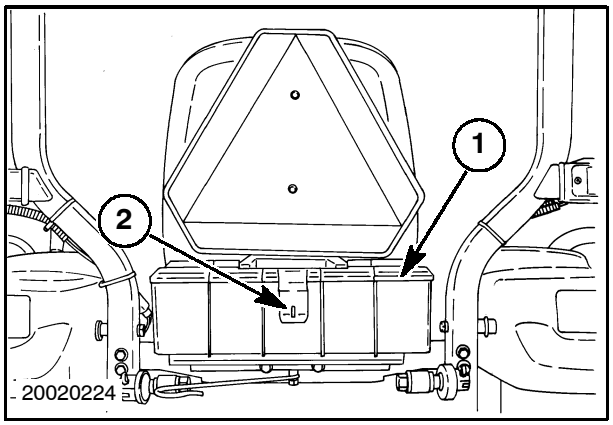
The right-hand lift arm can be adjusted by turning the leveling crank, 1. The flex ends of the lift arms can be adjusted by pushing down on the clamp, 2, and placing the ends in the desired position.



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TOOLBOX

The tool box, 1, is standard equipment and is located behind the seat and between the ROPS uprights. To open the toolbox, undo the latch, 2, and lift lid. Secure latch when lid is closed.



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TIRES

NOTE: *Check tire pressure after every 50 hours of operation or weekly.*

Tire inflation pressure affects the amount of weight a tire can carry. Check the air pressure in your tractor tires, then locate the tires in the “Tire Inflation Pressures” chart found in this manual. If necessary, adjust the tire pressure, being careful not to overinflate or underinflate. Observe the following guidelines:

- Do not inflate a tire above the maximum pressure shown on the tire. If the tire is not marked, do not exceed the maximum pressure shown in the Tire Inflation chart found in this manual.
- Do not reinflate a tire that has been run flat or seriously underinflated until the tire has been inspected for damage by a qualified person.
- When checking tire pressure, inspect the tire for damaged sidewalls and tread cuts. Neglected damage leads to early tire failure.

⚠ WARNING ⚠

Inflating or servicing tires can be dangerous. Trained personnel should service and/or mount tires whenever possible.

If you must inflate or service tires, follow these safety precautions to avoid injury or fatality:

- Make sure the rim is clean and free of rust.
- Lubricate both tire beads and rim flanges with soap solution. Do not use oil or grease.
- Use a clip-on tire chuck with a remote hose and gauge. This allows the operator to stand clear of the tire while inflating.
- NEVER INFLATE TO OVER 2.4 BAR (35 PSI) TO SEAT BEADS. If beads have not been seated by the time pressure reaches 35 PSI, deflate the assembly, reposition the tire on the rim, relubricate both tire bead and rim flanges, and reinflate. Inflation beyond 35 PSI with unseated beads may break the bead or rim with explosive force sufficient enough to cause serious injury.
- After seating the beads, adjust inflation pressure to recommended operating pressure.
- Do not inflate a tire unless the rim is mounted on the tractor or is secured so that it will not move if the tire or rim should suddenly fail.
- Do not weld, braze, otherwise repair, or use a damaged rim.
- Never attempt tire repairs on a public road or highway.
- Use jack stands or other suitable blocking to support the tractor while repairing tires.
- Ensure jack has adequate capacity to lift your tractor.
- Place jack on a firm, level surface.
- Do not place any part of your body beneath the tractor or start the engine while the tractor is on the jack.
- Before adding ballast to the tires, refer to the information in this manual on “Tractor Weighting.”

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