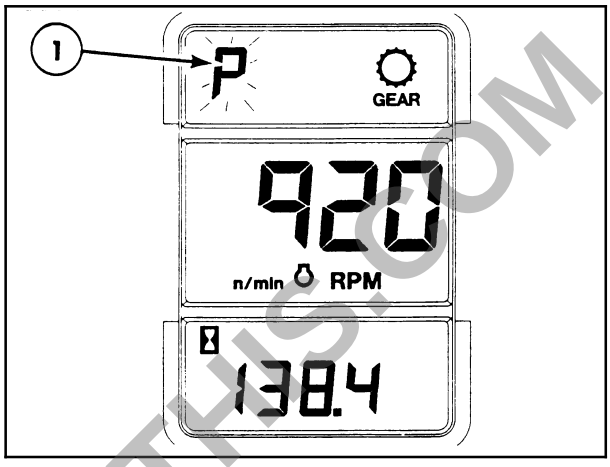
SECTION 4
TROUBLESHOOTING AND FAULT FINDING

TROUBLESHOOTING



1

INTRODUCTION

The following information is intended as a guide to assist in identifying and correcting possible tractor malfunctions and fault conditions.

Information is divided into three headings:

- OPERATOR PROMPTS
- FAULT CODES
- SYSTEM TROUBLESHOOTING

OPERATOR PROMPTS - Figure 1

Operator prompts (1) indicate that an operational procedure has been performed out of sequence. The 'prompts' are meant to advise the operator to take correct action.

The following flashing prompts will be displayed on the Electronic Instrument Cluster (EIC) gear shift display.

PROMPT	CAUSE	CORRECTION
F	Gear shift lever in forward while starting	Return shift lever to neutral
R	Gear shift lever in reverse while starting	Return shift lever to neutral
P	Park brake applied when gear selected	Return shift lever to neutral and release park brake
d	Gear shift lever in downshift when starting	Return shift lever to neutral
U	Gear shift lever in up shift while starting	Return shift lever to neutral

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SECTION 5
SPECIFICATIONS

The specifications on the following pages are given for your information and guidance. For further information concerning the tractor consult your authorised dealer.

GENERAL DIMENSIONS		170 h.p.	190 h.p.	210 h.p.	240 h.p.
Height to the Top of Cab	in	122.4			
	(mm)	(3109)			
Height to the Top of Exhaust	in	124.4			
	(mm)	(3159)			
Minimum Width	in	96.7			
	(mm)	(2456)			
Minimum Ground Clearance					
Drawbar	in	19.7			
	(mm)	(500)			
Front Axle	in	19.95			
	(mm)	(507)			
Track Setting					
Front Axle Minimum	in	60.0			
	(mm)	(1525)			
Front Axle Maximum	in	88			
	(mm)	(2235)			
Rear Axle Minimum	in	60.3			
	(mm)	(1530)			
Rear Axle Maximum	in	107.8	103.9	103.9	103.9
	(mm)	(2738)	(2639)	(2639)	(2639)
Overall Length to End of Lower Links					
Unballasted	in	196.7			
	(mm)	(4997)			
Ballasted					
- Small Weights	in	212.4			
	(mm)	(5396)			
- Large Weights	in	222.0			
	(mm)	(5639)			
To Edge of Rear Tyre	in	207.6			
- Large Weights	(mm)	(5273)			

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LUBRICATION AND MAINTENANCE CHART

Service Interval	Operation No.	Maintenance Requirement	Check	Clean	Lube	Change	Adjust	Drain	Wash	Page No.
When warning lamp lights	1	Engine air cleaner outer element	x							8
Every 10 hours or daily	2	Engine oil level	x				x			11
	3	Engine coolant level	x				x			11
	4	Radiator, oil cooler, condenser and air/air intercooler	x	x						12
	5	Transmission/rear axle/hydraulic oil level	x				x			13
Every 50 hours	6	Fuel filter/water separator	x					x		13
	7	Fuel sedimenter	x	x						14
	8	Cab air filter		x						14
	9	Front and rear wheel nuts	x				x			15
	10	Tyre pressures and condition	x				x			15
	*11/15	FWD standard steer axle grease fittings			x					15/7
	*16/22	FWD supersteer axle grease fittings			x					17/19
	*23	Three point hitch linkage grease fittings			x					19
	*24	Wide swinging drawbar grease fittings			x					20
Every 300 hours	#25	Engine oil and filter				x				20
	26	Fuel sedimenter screen		x						22
	27	FWD axle differential oil level	x				x			22
	28	FWD axle hub oil level	x				x			23
	29	A/C receiver drier sight glass	x							23
	30	Fuel tank						x		24
	31	Battery electrolyte level	x				x			25
	32	Shift quality - Powershift transmission	x							25
	33	Cab air filter							x	26
	34	Cab recirculation filter							x	27
	35	Safety cab mounting bolts	x				x			28
Every 600 hours	36	Engine air cleaner outer filter element				x				29
	37	Engine air inlet connections	x							29
	38	Fuel filter/water separator				x				31
	39	Rocker cover ventilation filter				x				32
	40	Air conditioner drain tubes	x							32
Every 900 hours or annually	41	Transmission/rear axle/hydraulic oil				x				33
	+42	Hydraulic pump inlet screen		x						34
	+43	Transmission oil filter				x				35
	+44	Hydraulic oil filter				x				35
Every 1200 hours or annually	45	Engine air cleaner inner and outer filters				x				36
	46	Engine valve clearance	x				x			37
	47	FWD axle differential oil				x				37
	48	FWD axle hub oil				x				38
	49	Cab air filter				x				38
	50	Coolant filter/conditioner				x				39
	51	Clutch calibration - Powershift transmission					x			40
Every 2400 hours or two years	52	Fuel injectors	x	x			x			43
	53	Engine coolant and filter/conditioner				x				44
General maintenance	54	Parking brake adjustment					x			47
	55	Windscreen washer fluid					x			47
	56	Hood gas struts					x			48
	57	Bleeding the fuel system								48
	58	Fuse replacement								49
	59	Headlight bulb replacement								53
	60	Worklight bulb replacement								53
	61	Turn signal/stop lights/parking light bulb replacement - fender mounted								54
	62	Turn signal bulb replacement - roof mounted								54
	63	Electronic instrument cluster (EIC) bulb replacement								55
	64	Storage preparation								56
	65	Prepare the tractor for use after storage								56

* Grease at 10-hour interval when operating in very wet, muddy or extremely dusty conditions.

Oil change interval will be reduced if fuel has a high sulphur content or if the tractor is operated in extremely cold temperatures.

+ Perform these operations with the oil drained within operation 41.

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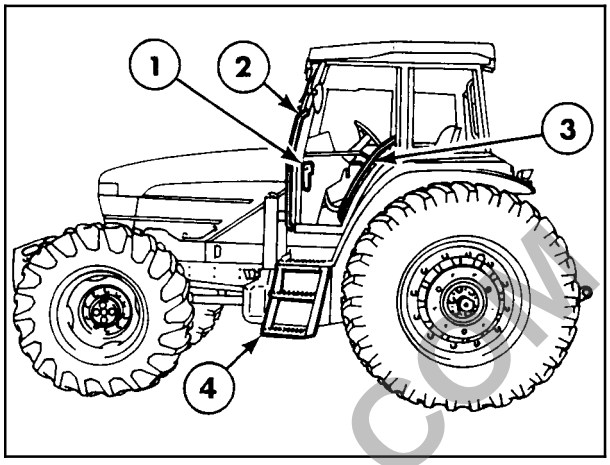
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CAB

INTRODUCTION

The cab has been designed for operator comfort and convenience. Inside, the walls, roof, and floor are insulated to reduce noise to a minimum.

Standard features include two fully glazed doors, fresh air heater/defroster, air-conditioning, tinted glass, interior lights, grab handles, cigar lighter, ashtray, storage box and an air suspension seat.



1

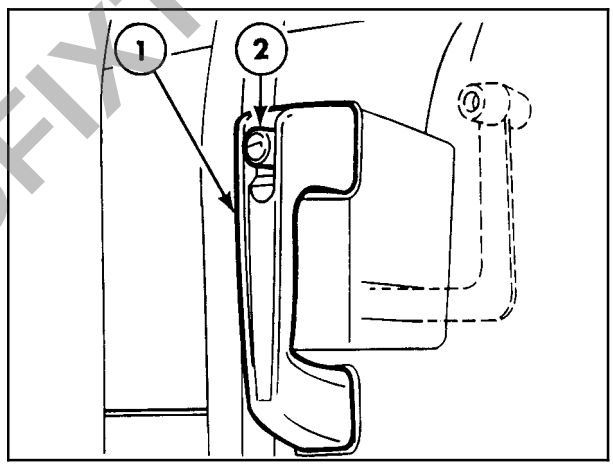
ENTERING THE CAB - Figure 1

The cab may be entered from the right or left side.

To enter the cab, face a door (1) then open it.

Place one foot on the lowest step plate (4) and, using the grab handles (2) and (3) on the 'A' post and inside the door, climb the steps and enter the cab. Close the door, sit in the seat and fasten the seat belt, if fitted.

To exit the cab, release the seat belt, open the door, grasp the grab handles, back out of the cab and descend the steps using the grab handles.

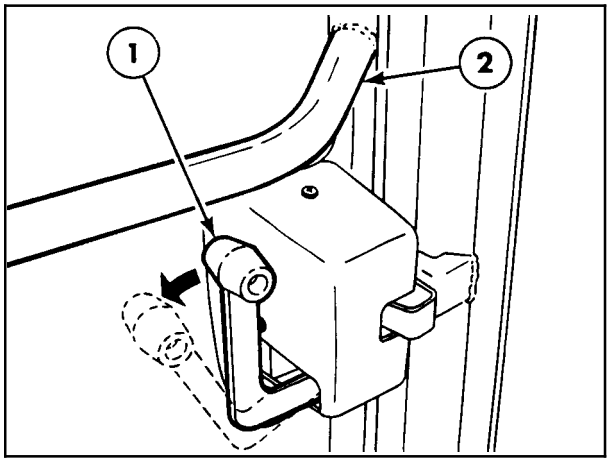


2

EXTERNAL DOOR HANDLE - Figure 2

Each door has an external handle (1) with a push button (2). The door may be locked from the outside using the key provided. Insert the key in the slot in the push button. Rotate the key to lock or unlock the door.

To open a door from the outside, push the button in and pull on the handle.



3

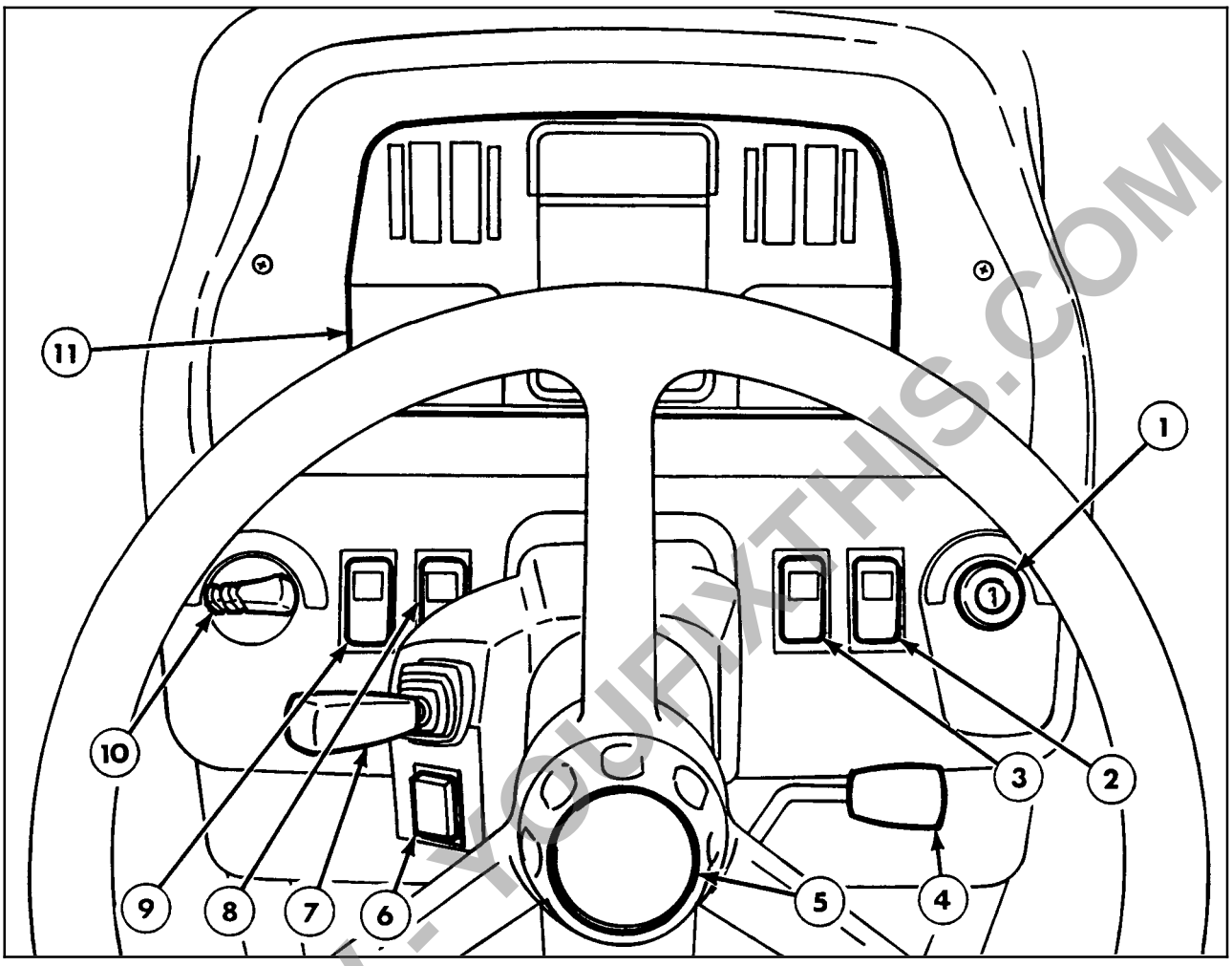
INTERIOR DOOR HANDLE - Figure 3

To open a door from the inside, pull the door handle (1) rearwards then push on the grab handle (2). The doors are rear-hinged and are retained in the fully open position by gas struts.

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INSTRUMENT CONSOLE CONTROLS



15 Instrument Console Controls

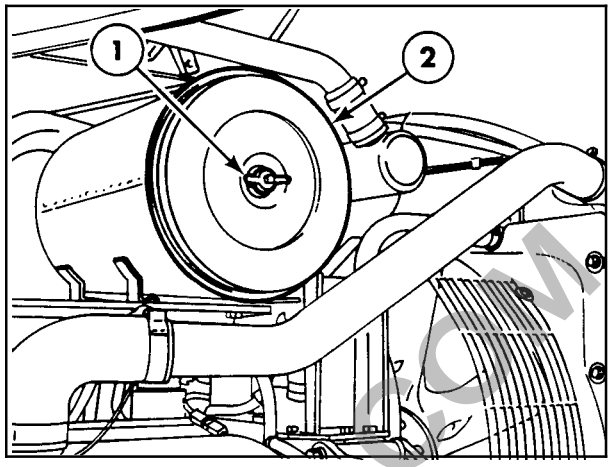
1 Key-start/stop switch (4 position)
2 Engine shutdown override switch
3 Creeper switch (where fitted)
4 Steering column tilt control lever
5 Steering column telescopic adjustment control knob
6 Thermostart switch
7 Multi-function switch - horn, turn signal, high/low beam
8 Roof beacon switch (where fitted)
9 Hazard warning switch
10 Master light switch (4 position)
11 Electronic instrument cluster (E.I.C.)

Each of the numbered items shown in Figure 15 is discussed under the corresponding heading found on the following pages.

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WHEN THE WARNING LAMP GLOWS



10

OPERATION 1

SERVICE ENGINE AIR CLEANER - Figures 10 to 17

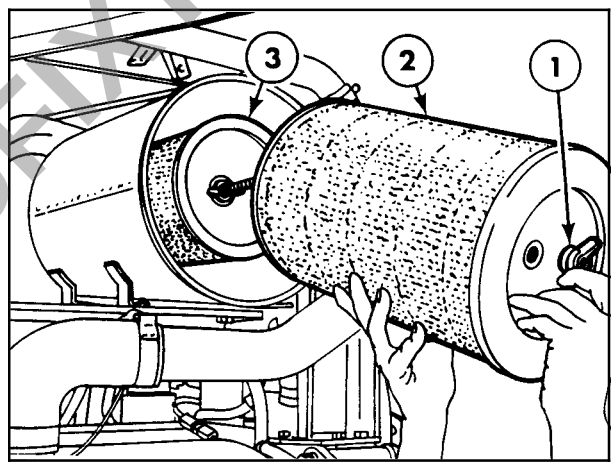
Clean the outer element when the restriction indicator light on the instrument console illuminates. Perform service within one hour of operation after the indicator lights.

IMPORTANT: *Clean the outer element only when the restriction light illuminates. Cleaning the filter too frequently will decrease the service life of the filter.*

To service the filter:

1. Unscrew the wing nut (1) and remove the outer cover (2). The wing nut is attached to the cover. See Figure 10.

2. Unscrew the wing nut (1) and remove the outer filter element (2). See Figure 11.



11

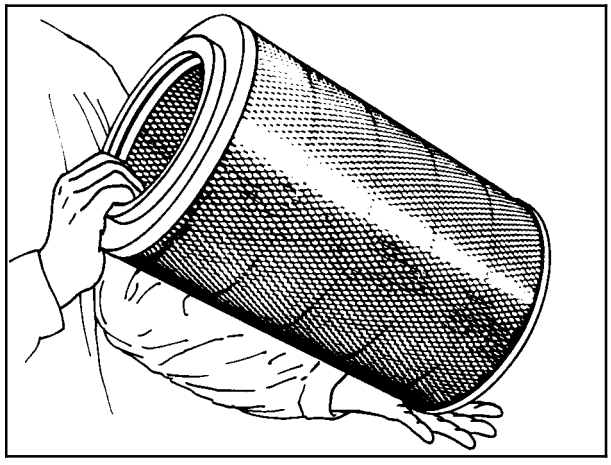
IMPORTANT: *Do not remove or disturb the inner element (3).*

3. Examine the inside of the outer element. If dust is present, the outer element is defective and must be replaced.

4. Clean the outer element using either method A, B, or C, depending on the element's condition

Methods A or B should be used for dry dust.

Method C should be used if the element is sooty, oily or heavily contaminated, or after cleaning the element six times using methods A or B.



12

Method A

Lightly tap the ends of the element against the palm of the hand. See Figure 12.

IMPORTANT: *Do not tap the element against a hard surface as this damages the element.*

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ENGINE

PROBLEM	POSSIBLE CAUSE	CORRECTION
Engine will not start, or is difficult to start	Incorrect starting procedure	Review starting procedures
	Low or no fuel	Check fuel level
	Air in fuel lines	Bleed fuel system
	Incorrect engine oil viscosity	Use correct viscosity oil
	Incorrect fuel for operating temperature	Use correct type fuel for temperature conditions
	Contaminated fuel system	Clean system
	Clogged sedimenter	Clean sedimenter
	Clogged fuel filter	Replace filter element
	Malfunctioning fuel injector(s)	See your authorised dealer
	Malfunctioning fuel solenoid or solenoid relay	See your authorised dealer
Engine runs rough and/or stalls	Clogged sedimenter or fuel filter	Clean sedimenter and replace filter
	Contaminated fuel system	Clean system
	Fuel solenoid not properly adjusted	See your authorised dealer
	Malfunctioning fuel injector(s)	See your authorised dealer
Engine does not develop full power	Engine overloaded	Shift to lower gear or reduce load
	Air cleaner restricted	Service air cleaner
	Clogged sedimenter or fuel filter	Clean sedimenter and replace filter
	Incorrect type of fuel	Use correct fuel
	Engine overheated	See Engine Overheats
	Low engine operating temperature	Check thermostats
	Implement incorrectly adjusted	See implement operator’s manual
	Incorrect valve clearance	Check and adjust

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ENGINE		170 h.p.	190 h.p.	210 h.p.	240 h.p.
Max Power at Rated Speed	Din HP	170	190	210	240
Rated Speed	rev/min.	2100			
Low Idle Speed	rev/min. ± 25	815			
High Idle Speed	rev/min. ± 25	2305			
Aspiration		Turbocharged			
Intercooled		No	No	Yes	Yes
Number of Cylinders		6			
Bore	in	4.4			
	(mm)	(111.8)			
Stroke	in	5.0			
	(mm)	(127)			
Displacement	in^3	456			
	(Litres)	(7.5)			
Compression Ratio		17.5:1			
Firing order		1.5.3.6.2.4			
Valve Tappet Clearance (cold)					
Intake	in	0.014 - 0.018			
	(mm)	(0.36 - 0.46)			
Exhaust	in	0.017 - 0.020			
	(mm)	(0.43 - 0.53)			

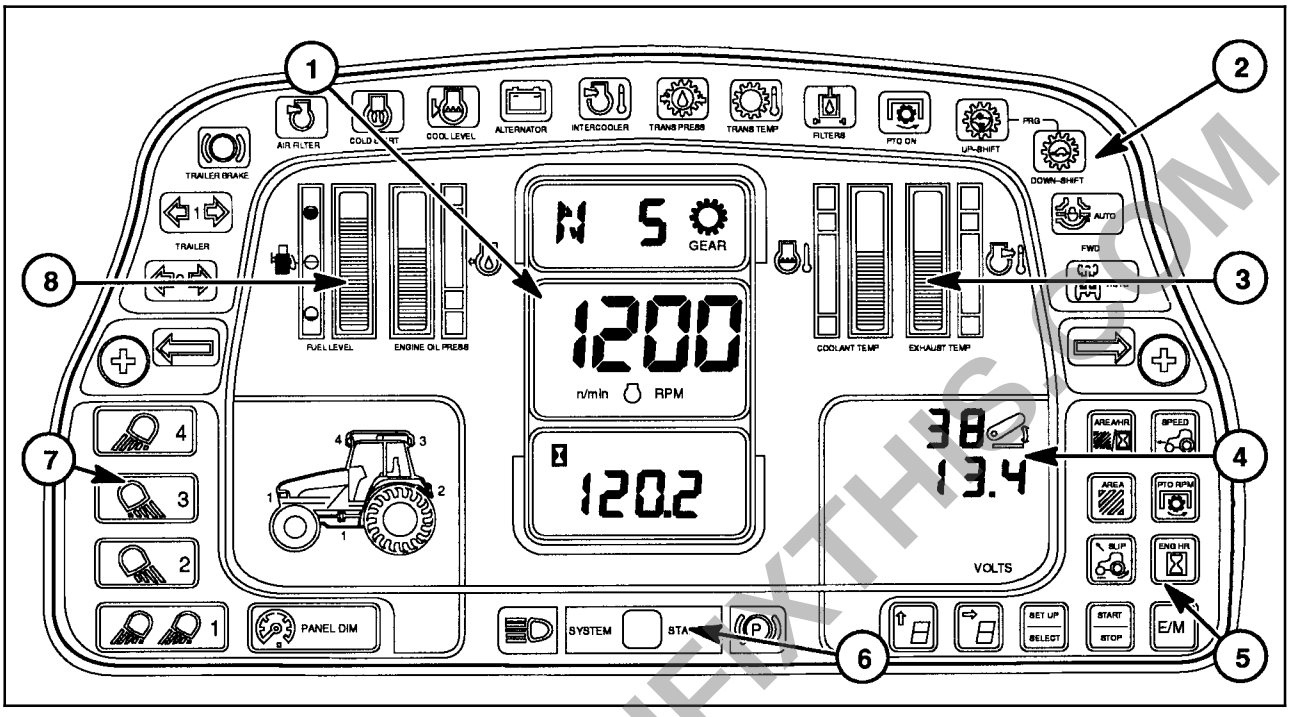
FUEL SYSTEM

Injection Pump Type (In line)		Bosch A 2000	Bosch A 2000	Bosch P 3000	Bosch P 3000
Timing BTDC		24°	21°	16°	16°
Injector Cracking Pressure	lbf/in^2	3500	3500	3700	3700
	(bar)	(241)	(241)	(255)	(255)

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ELECTRONIC INSTRUMENT CLUSTER (EIC)



19 Electronic Instrument Cluster

1 Liquid crystal displays (LCD) (3)
2 Indicator lamps (18)
3 Bargraphs (2)
4 Tractor performance monitor (TPM)
5 Touch sensitive programming switches (11)
6 Indicator lamps (3)
7 Touch sensitive light control switches (5)
8 Bargraphs (2)

INTRODUCTION

The electronic instrument cluster (EIC) is shown in Figure 19, with a typical operating display.

When the key-start switch is turned on, a self-test of all the Liquid Crystal Display (LCD) segments is activated, the audible alarm will sound for approximately one second and all lamps will be illuminated briefly, to confirm that the bulbs are functioning. The LCD background areas are illuminated when the tractor key switch is turned on. A dimmer control is installed.

The EIC is divided into the following areas:

1. The central LCD has transmission gear information at the top. Engine speed appears in the centre display and the lower display shows operating hours, ground speed or PTO speed, as selected.

2. The upper section consists of coloured indicator or warning lamps, which provide operating information or give warning of system malfunction.

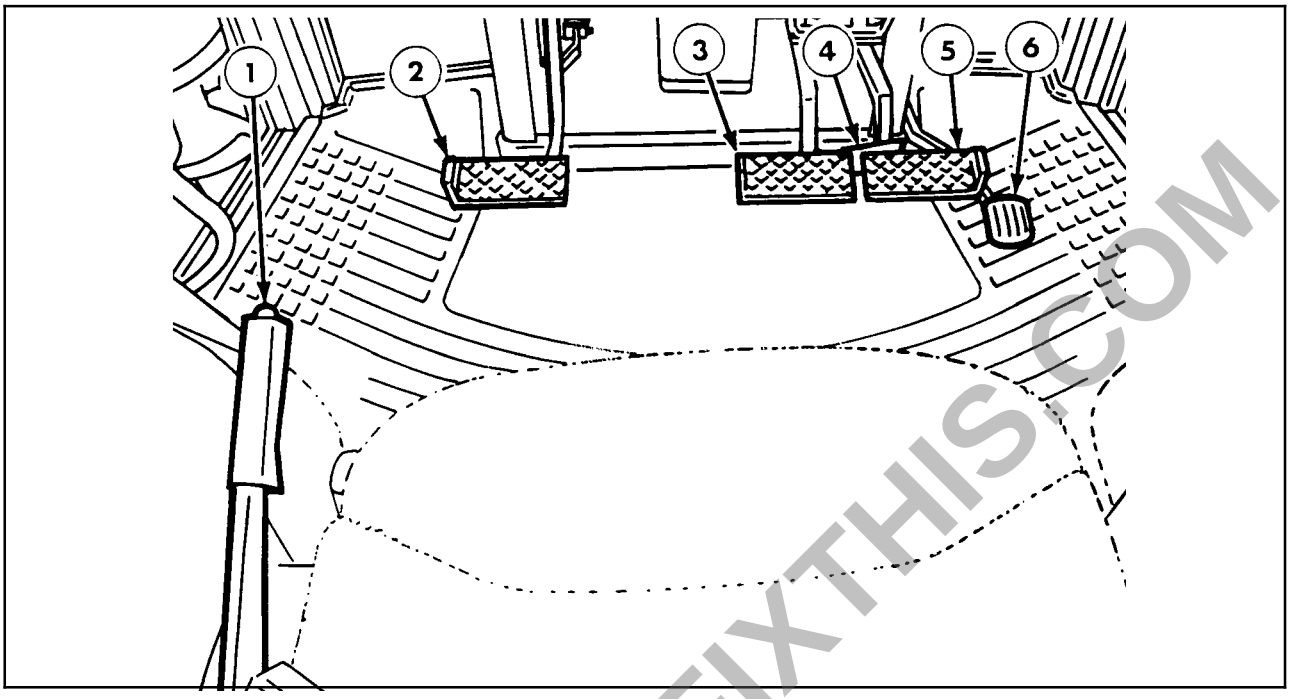
3. Coolant temperature and exhaust temperature are displayed in the right-hand bargraphs.

4. The Tractor Performance Monitor (TPM) is displayed on the right-hand side of the cluster. The TPM provides information on 3-point hitch and other selected system information. Fault code information is also displayed.

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FOOT AND FLOOR- MOUNTED CONTROLS



21 Foot and Floor- mounted Controls

1 Parking brake
2 Inching pedal
3 Left wheel foot brake pedal
4. Brake locking plate
5 Right wheel foot brake pedal
6 Foot throttle

Each of the numbered items shown in Figure 21 is discussed under the corresponding heading below and on the following page.

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PARKING BRAKE - (1) Figure 21

The parking brake uses a conventional lever to operate brake discs located on the differential input shaft. The lever is located to the left of the driver's seat.

See 'Brakes' for details.

NOTE: *To remind the operator to apply the parking brake, 2-minute pulsating audible alarm will sound in unison with a flashing parking brake lamp if the operator leaves the seat without applying the parking brake.*

INCHING PEDAL - (2) Figure 21

The inching pedal is installed in place of the clutch pedal found on tractors with conventional transmissions.

The inching pedal operates like a clutch, for safe, accurate positioning of the tractor when attaching implements or when operating in confined spaces, etc. Depressing the pedal interrupts the power flow from the engine to the rear axle. Slowly releasing the pedal restores the power flow.

See 'Transmission' for details.

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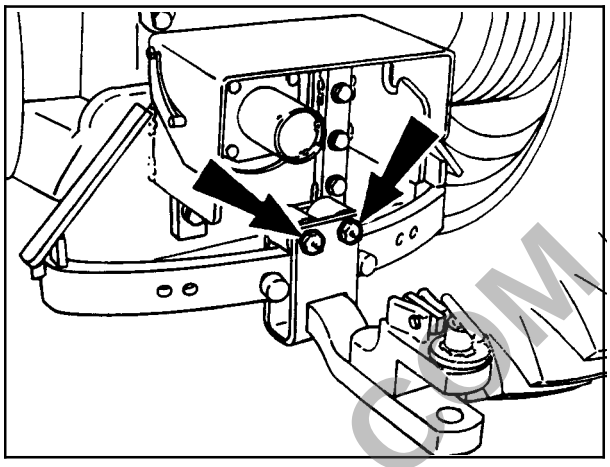
OPERATION 24

LUBRICATE ROLLER DRAWBAR (where fitted) - Figure 39

Lubricate by supplying grease through the fittings.

NOTE: *Lubricate at 10-hour intervals when operating in extremely wet, muddy or very dusty conditions.*

See inside rear cover for the correct grease specification.



39

EVERY 300 HOURS

Complete the preceding operations, plus the following:

OPERATION 25

CHANGE ENGINE OIL AND FILTER - Figures 40 to 43

IMPORTANT: *The sulphur content of diesel fuel affects the engine oil and filter change interval as shown in the following chart:*

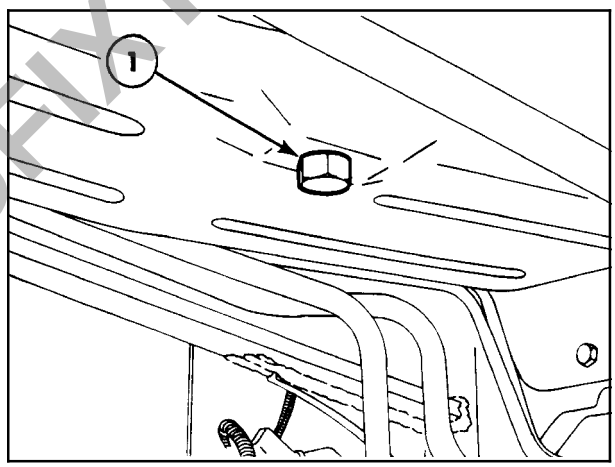
Sulphur Content	Oil Change Interval
Below 0.5%	300 hours
0.5 - 1.0%	150 hours
1.0 - 1.3%	75 hours

The use of fuel with a sulphur content above 1.3% is not recommended.

IMPORTANT: *Cold weather operation affects the oil change interval. When operating in temperatures below -12° C (10° F), change the oil and filter every 150 hours of operation.*

Change the oil and filter after the engine has been run until it is warm. Park tractor on level ground and stop engine. Engage park brake.

WARNING: *Be very careful to avoid contact with hot engine oil. If the engine oil is extremely hot, allow to cool to a moderately warm temperature before proceeding.*



40

To change the oil and filter:

1. Remove the engine oil drain plug (1) and catch the oil in a suitable container. Dispose of oil and filter properly. See Figure 40.
2. Replace the drain plug after oil has drained.
3. Clean the oil filter area.
4. Remove the oil filter (1). See Figure 41.
5. Clean the filter mounting surface (2).
6. Apply a thin film of clean oil on the new oil filter sealing ring (3).

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ENGINE

PROBLEM	POSSIBLE CAUSE	CORRECTION
Excessive fuel consumption	Incorrect type of fuel	Use correct fuel
	Clogged or dirty air cleaner	Service air cleaner
	Engine overloaded	Shift to lower gear or reduce load
	Incorrect valve clearance	Check and adjust
	Implement incorrectly adjusted	See implement operator's manual for proper operation
	Low engine temperature	Check thermostats
	Excessive ballast	Adjust ballast to current load
	Fuel injection nozzles dirty	Have authorised dealer service the injectors

TRANSMISSION

PROBLEM	POSSIBLE CAUSE	CORRECTION
Tractor won't move after starting	Flashing 'F' 'R' 'P' 'U' or 'd' Transmission operation performed out of sequence	Return shift control lever to neutral and release parking brake. See 'Operator Prompts'
Poor inching control when using inching pedal	Transmission clutches out of calibration	Recalibrate transmission clutches F1, F2 and R
Transmission will not operate	Fault code displayed indicating malfunction	See 'Fault Codes ON/OFF' and contact your authorised dealer
Low transmission oil pressure	Low oil supply	Fill system with oil
	Clogged transmission oil filter	Replace filter

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