PUMA 165 / PUMA 180 / PUMA 195 / PUMA 210

PUMA 165
PUMA 180
PUMA 195
PUMA 210
Tractors

Operator's Manual

Print No. 84239782
1st edition
English 07/09

From serial no. Z9BH60001

CASE IH AGRICULTURE

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CONTENTS

Title **Page**

Section 1 – General Information and Safety

To the Owner 1–1
Product Identification 1–3
Ecology and the Environment 1–7
Safety Precautions 1–8
Safety Decals 1–16
International Symbols 1–22
Airborne Noise Emission 1–23

Section 2 – Controls, Instruments and Operation

Cab 2–4
Electrical Power Sockets 2–20
Seats 2–23
Instrument Console 2–29
Analogue/Digital Instruments 2–33
Brake Controls and Operation 2–81
Full Powershift Transmission 2–86
Differential Lock and Four Wheel Drive 2–110
Four Wheel Drive 2–112
Front Axle Suspension 2–114

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SAFETY PRECAUTIONS

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. To help prevent accidents, read and take the following precautions **before** driving, operating or servicing the tractor. Equipment should be operated only by those who are responsible and instructed to do so.

PRECAUTIONARY STATEMENTS

Throughout this Manual you will see text, preceded by the words **NOTE, ATTENTION, IMPORTANT, CAUTION, WARNING** or **DANGER**. Such text has the following significance:

MACHINE SAFETY

NOTE: *This text stresses a correct operating technique or procedure.*

ATTENTION: *This text warns the operator of potential machine damage if a certain procedure is not followed.*

IMPORTANT: *This text informs the reader of something that he needs to know to prevent minor machine damage if a certain procedure is not followed.*

PERSONAL SAFETY

⚠ CAUTION ⚠

The word CAUTION is used where a safe behavioural practice, according to operating and maintenance instructions and common safety practices will protect the operator and others from accident involvement.

⚠ WARNING ⚠

The word WARNING denotes a potential or hidden hazard which could possibly cause serious injury. It is used to warn operators and others to exercise due care and attention to avoid a surprise accident with machinery.

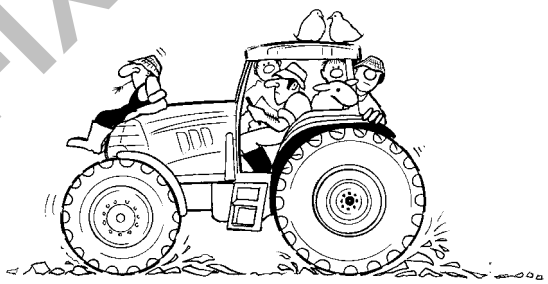
⚠ DANGER ⚠

The word DANGER denotes a forbidden practice in connection with a serious hazard.

Failure to follow the **CAUTION, WARNING** and **DANGER** instructions may result in serious bodily injury or even death.

THE TRACTOR

1. Read the Operator's Manual carefully before using the tractor. Lack of operating knowledge can lead to accidents.
2. Only allow properly trained and qualified persons to operate the tractor.
3. To prevent falls, use the handrails and step plates when getting on and off the tractor. Keep steps and platform clear of mud and debris.
4. Replace all missing, illegible or damaged safety decals.
5. Keep safety decals free of dirt or grime.



6. Do not permit anyone but the operator to ride on the tractor except for driver training or instruction. When used for these purposes an additional seat may be fitted in the cab. Passengers should not be carried on the tractor at any time.
7. Keep children away from the tractor and farm machinery at all times.
8. Do not modify or alter or permit anyone else to modify or alter the tractor or any of its components or any tractor function without first consulting your dealer.
9. Install all guards before starting the engine or operating the tractor.

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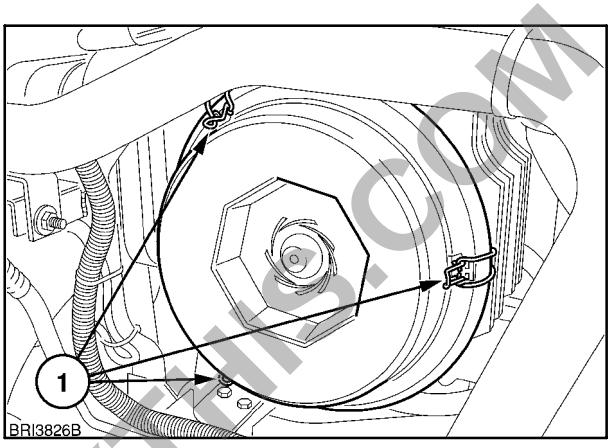
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WHEN THE WARNING SYMBOL APPEARS

OPERATION 1
SERVICE THE ENGINE AIR CLEANER OUTER ELEMENT

Service the outer element when the restriction indicator symbol appears in the Dot Matrix Display or every 600 hours, whichever comes first. If the symbol appears, perform the service within one hour of operation.

IMPORTANT: *Service the outer element only when the restriction indicator symbol appears or at the recommended service intervals. Cleaning the filter too frequently will decrease the service life of the filter.*

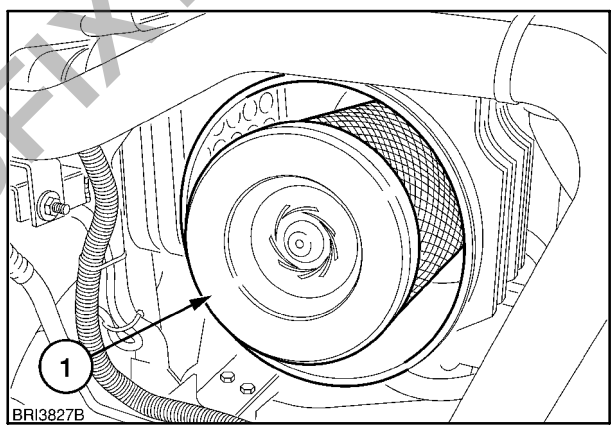


9

The dry air cleaner, which is located under the left-hand side of the hood, consists of an inner and outer paper element contained within an easily accessible housing. See Figure 9.

1. Unlatch the three retaining clips (1) Fig. 9, and lift off the air cleaner assembly cover.

2. Remove the outer element (1) Fig. 10 from the air cleaner assembly by gently twisting the end of the filter clockwise to disengage the seal. Then pull the filter straight out of the housing ,not at an angle, ensuring the inner element remains in place.

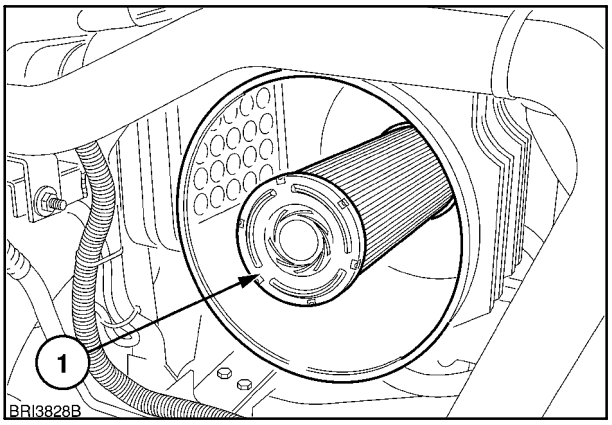


10

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

3. Examine the inside of the outer element. If dust is present, the outer element is defective and must be replaced. The inner element (1) should also be replaced at this time.

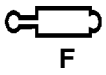
4. Clean the outer element using either method A or B, depending on the element's condition.



11

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FAULT CODES and SYMBOLS

DMD	LAMP	FAULT CODE	AREA of FAULT	ACTION
	-	1---	Electronic hitch control.	The system fault symbols relate to an operational fault in one or more of the tractors main components, either electrical, mechanical or hydraulic. The appearance of a fault symbol may be accompanied by a four or five digit fault code. Consult your authorised dealer. .
	-	2---	Transmission.	
	-	3---	Engine.	
	-	4---	Rear electronic remote valves.	
 F	-	45---	Front electronic remote valves.	
	-	5---	Rear PTO system.	
	-	6---	Front wheel drive.	
	-	7---	Rear differential lock.	
 F	-	8---	Front PTO system.	
	-	9---	Front 3-point hitch.	
	-	10---	Front suspension.	
	-	12---	Electronic park lock	
	-	15---	Turn Assist system.	
	-	16---	Cab auto temperature control	
	-	18---	Armrest controller	

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ENGINE

PROBLEM	POSSIBLE CAUSE	CORRECTION
Engine will not start or is difficult to start	Incorrect starting procedure.	Review starting procedure.
	Low or no fuel.	Check fuel level.
	Air in fuel lines.	Bleed fuel system.
	Low ambient temperature.	Use cold starting aid.
	Contaminated fuel system.	Clean and bleed fuel system.
	Clogged fuel filter(s).	Replace fuel filter element(s).
	Malfunctioning fuel pump or injectors.	See your authorised dealer.
	Malfunctioning fuel solenoid or solenoid relay.	See your authorised dealer.
	Incorrect engine oil viscosity.	Use correct viscosity oil.
	Incorrect fuel for operating temperature.	Use correct type fuel for temperature conditions.
	Slow starter speed.	See slow starter speed in Electrical.
Engine runs roughly and/or stalls	Clogged fuel filter(s).	Replace fuel filter element(s).
	Contaminated fuel system.	Clean and bleed fuel system.
	Fuel solenoid incorrectly adjusted.	See your authorised dealer.
	Fuel cap vent blocked.	Wash cap in clean fuel oil.

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PUMA	165	180	195	210
FLUID CAPACITIES				
Fuel tank (Total, both tanks)	405 litres (106.9 US gals)			
	(**NOTE:** Before using Biodiesel fuels, refer to Section 4)			
Cooling system	22.5 litres (5.9 US gals)			
Engine (including filter)	15 litres (3.96 US gals)			
Transmission/rear axle/hydraulics	82.0 litres (21.6 US gals)			
Front P.T.O.	3.05 litres (3.2 US qts)			
4WD Front hubs (w/o brakes) (quantity for **one** hub only)	2.3 litres (2.4 US qts)			
4WD Front hubs (with brakes) (quantity for **one** hub only)	3.8 litres (4.0 US qts)			
4WD Front axle differential (All axles)	11.0 litres (11.6 US qts)			

Rear Axle/Hydraulics Oil Level when using Remote Hydraulic Equipment

When checking the rear axle oil level, it is good practice to ensure that the oil is up to the full mark on the dipstick with the tractor parked on level ground. However, when connecting auxiliary equipment to the remote control valves it should be remembered that the equipment utilises oil from the rear axle and could seriously lower the oil level. Operating the tractor with a low oil level may result in damage to the rear axle and transmission components. See page 3-136 for further details.

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LUBRICATION AND MAINTENANCE CHART

Service Interval	Operation No.	Maintenance Requirement	Check	Clean	Lube	Change	Adjust	Drain	Page No.
When a warning symbol appears	1	Engine air cleaner outer element	X	X					4-15
	2	Fuel filter water separator	X	X				X	4-17
Every 10 hours or daily	3	Engine coolant level	X				X		4-18
	4	Engine oil level	X				X		4-19
	5	Windscreen washer reservoir fluid level (where fitted)	X				X		4-19
Every 50 hours	6	Radiator, intercooler, oil cooler and air conditioner condenser	X	X					4-20
	7	Cab air filters		X					4-21
	8	All grease fittings			X				4-23
	9	Front and rear wheel nut torque	X				X		4-29
	10	Tyre pressures and condition	X				X		4-30
Every 100 hours	11	Air brake compressor drive belts (where fitted)	X						4-31
Every 300 hours	12	Battery electrolyte level (tropical climates)	X	X			X		4-32
	13	Poly V-belt	X						4-33
	14	Transmission/rear axle/hydraulic oil level	X				X		4-33
	15	Parking brake and electronic park lock (EPL) (where fitted)	X				X		4-35
	16	Front P.T.O. gearbox oil level	X				X		4-36
Every 600 hours	*17	Engine oil and filter				X			4-37
	18	Charge pump oil filters				X			4-39
	19	Engine air cleaner outer element				X			4-40
	20	Engine air intake connections	X						4-40
	21	Pre-filter and secondary fuel filter elements				X			4-42
	22	4WD front axle and hubs oil level	X				X		4-43
	23	Front P.T.O. gearbox oil and filter	X	X		X			4-44
Every 1200 hours or annually	24	Cab air filters	X			X			4-45
	25	Main filter cartridge, charge pump oil filters				X			4-46
	26	Change transmission/rear axle/hydraulic oil				X			4-47
	27	4WD axle differential oil				X			4-48
	28	4WD axle hub oil				X			4-49
	29	Battery electrolyte level (temperate climates)	X	X			X		4-50
Every 1200 hours or two years	30	Engine coolant				X			4-52
	31	Engine air cleaner inner element				X			4-56
	32	Engine valve tappet clearances	X				X		4-57
	33	Engine breather filter				X			4-57
	34	Air brake dryer reservoir				X			4-58

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

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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	
	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)
5/16	115* (13)	149* (17)	178* (20)	229* (26)	250* (28)	324* (37)	125* (14)	176* (20)
3/8	17 (23)	22 (30)	26 (35)	34 (46)	37 (50)	48 (65)	19 (26)	26 (35)
7/16	27 (37)	35 (47)	42 (57)	54 (73)	59 (80)	77 (104)	30 (41)	42 (57)
1/2	42 (57)	54 (73)	64 (87)	83 (113)	91 (123)	117 (159)	45 (61)	64 (88)
9/16	60 (81)	77 (104)	92 (125)	120 (163)	130 (176)	169 (229)	65 (88)	92 (125)
5/8	83 (112)	107 (145)	128 (174)	165 (224)	180 (244)	233 (316)	90 (122)	127 (172)
3/4	146 (198)	189 (256)	226 (306)	293 (397)	319 (432)	413 (560)	160 (217)	226 (305)
7/8	142 (193)	183 (248)	365 (495)	473 (641)	515 (698)	667 (904)	258 (350)	364 (494)
1.0	213 (289)	275 (373)	547 (742)	708 (960)	773 (1048)	1000 (1356)	386 (523)	545 (739)

NOTE: Torque values shown with ***** are inch pounds.

IDENTIFICATION
CAP SCREWS AND CARRIAGE BOLTS



SAE GRADE 2



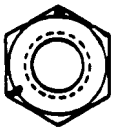
SAE GRADE 5



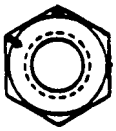
SAE GRADE 8



REGULAR NUTS



SAE GRADE 5 HEX NUTS



SAE GRADE 8 NUTS

LOCKNUTS



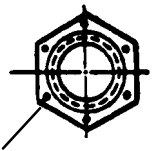
GRADE IDENTIFICATION

GRADE A NO NOTCHES
GRADE B ONE CIRCUMFRETIAL NOTCH
GRADE C TWO CIRCUMFRENTIAL NOTCHES



GRADE IDENTIFICATION

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



GRADE IDENTIFICATION

GRADE A NO MARKS
GRADE B THREE MARKS
GRADE C SIX MARKS

MARKS NEED NOT BE LOCATED AT CORNERS

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SECTION 3

FIELD OPERATIONS

IMPORTANT INFORMATION

BEFORE OPERATING THE TRACTOR

⚠ CAUTION ⚠

Before driving or operating the tractor, study the safety precautions in Section 1 of this Manual.

Read this section carefully for a thorough understanding of operational requirements. Even if you operate other tractors, you should thoroughly read this section of the manual and ensure that you are familiar with the location and function of all the features of the tractor.

Do not start the engine or attempt to drive or operate the tractor until you are fully accustomed with all the controls. It is too late to learn once the tractor is moving. If in doubt about any aspect of operation of the tractor, consult your authorised dealer.

PROGRAMMING TRACTOR FUNCTIONS

Your tractor is equipped with a sophisticated electronic network system which utilises various memory facilities to programme and control many of the tractor functions. The operating memory temporarily stores settings and adjustments made while operating the tractor and these are transferred to the main memory when you key-off (engine stop).

If you key-off and key-on again too quickly as data is being transferred between the operating and main memories, some of the data may be lost or corrupted.

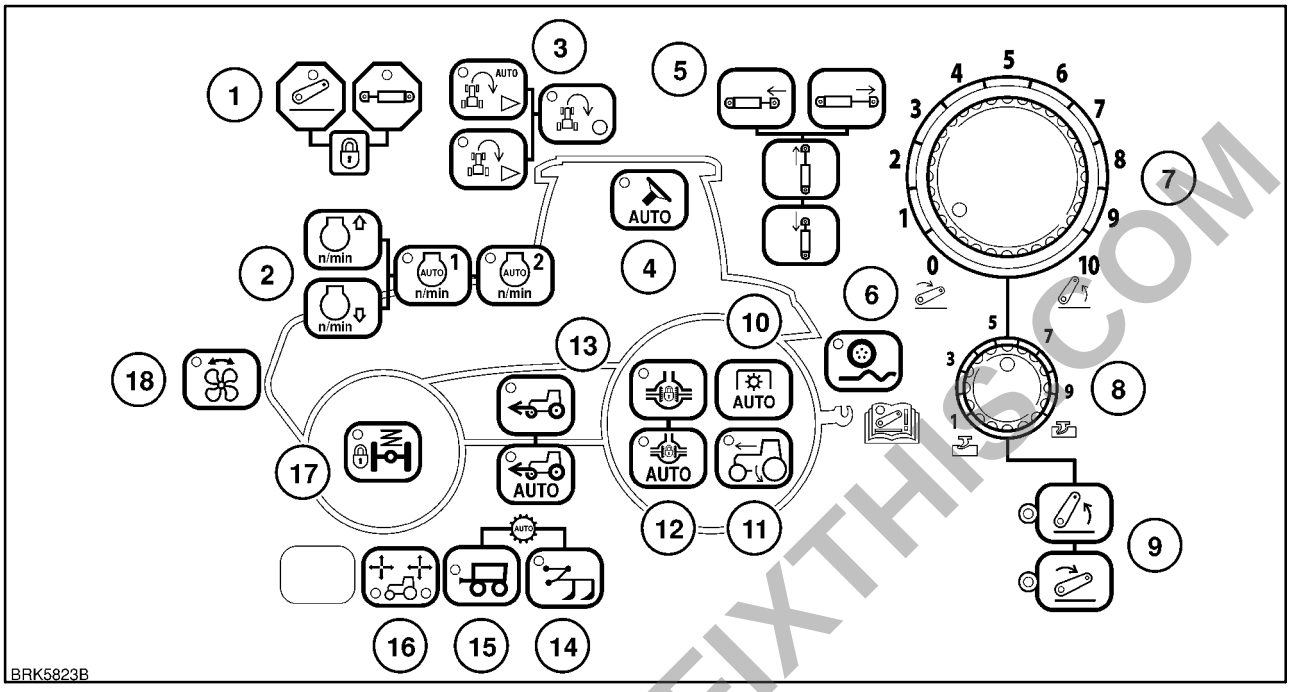
If changes have been made to any memory settings while operating the tractor, pause for five seconds between key-off and key-on to allow sufficient time for data to transfer between the operating memory and the main memory. Once transferred, the new settings will remain unchanged until they are re-programmed.

Subject	Page
Important Information	3-1
Boosting the Tractor Battery	3-8
Starting the Engine	3-9
Stopping the Engine	3-12
Reversible engine fan	3-14
Power Management (PM)	3-15
Constant Engine Speed (CES)	3-18
Headland Management Control (HMC)	3-21
Turn Assist	3-38
Rear Power Take-Off	3-40
Front Power Take-Off and 3-Point Hitch	3-58
Electronic Hitch Control	3-79
Hydraulic Remote Control Valves	3-94
Electro-Hydraulic Remote Control Valves	3-102
Hydraulic Power Beyond Port	3-132
Three-point Hitch	3-138
Quick Hitch	3-144
Linkage Stabilisers	3-146
Drawbars and Towing Attachments	3-152
Trailer Braking Systems	3-167
Front Wheel Track Adjustment	3-174
Steerable Front Fenders	3-178
Rear Wheel Track Adjustment	3-181
Ballasting and Tyres	3-192

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INTUITIVE CONTROL PANEL



1

Your tractor is equipped with a number of electronic controls located on the arm rest unit. A full explanation of individual switch operation can be found in the relevant sections of this manual.

Right-Hand Control Console

1. Electronic remote valves and 3-point hitch lock warning lights
2. Constant Engine Speed settings
3. Auto/Manual HMC record/playback operation
4. Auto Guidance on/off (see Section 6)
5. Hydraulic top link and lift rod controls
6. Ride Control
7. 3-point hitch position control
8. 3-point hitch draft loading control
9. 3-point hitch raise/lower buttons and operating lights
10. Rear Auto PTO control
11. Slip Control
12. Auto/manual rear axle differential lock engagement
13. 4WD Auto or Manual engagement
14. Transmission field auto function
15. Transmission road auto function
16. Front/rear joystick operation select
17. Front axle suspension lock
18. Reversible engine fan control

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THREE-POINT HITCH

NOTE: *Before attaching equipment to the three-point hitch, read the following text, carefully.*

ATTACHING 3-POINT EQUIPMENT

NOTE: *Before attaching equipment, adjust lift rods and select the correct top link hole for the implement and work to be carried out.*

Ensure that the telescopic stabilisers or sway blocks are installed and correctly adjusted. Remove the swinging drawbar, if close-mounted equipment is being attached.

IMPORTANT: *Always select Position Control or set the draft loading control adjustment knob to position 10 when attaching equipment, transporting equipment, when no equipment is attached or at any time when not operating in Draft Loading Control.*

NOTE: *See also 'External Power Lift Control' on page 3-92 for more details.*

Most equipment can be attached to your tractor as follows:

1. Position the tractor so that the lower link hitch points are level with and slightly ahead of the implement hitch pins.

2. Attach the implement to the lower links, as described in 'Flexible Link Ends' on page 3-143 or 'Quick Hitch' on page 3-144.

⚠ CAUTION ⚠

Engage the parking brake before leaving the tractor to make the connections. It is essential to have the engine running to operate the external fender-mounted switches when making lower link connections. If your tractor does not have these switches or when making other connections, stop the engine.

IMPORTANT: *Before transporting or operating equipment, ensure that the flexible link ends (where fitted) are locked in the operating position.*

3. With the engine stopped and parking brake engaged, adjust the top link until the implement mast pin can be inserted through the mast and top link. Ensure sufficient thread remains in the adjuster tube to prevent the threaded ends from pulling out under load.

4. Connect remote equipment, where applicable.

5. After attaching implement and before actual operation check that:
   - No interference occurs with tractor components.
   - The top link does not contact the PTO guard with the implement at its lowest position.

IMPORTANT: *Before operating PTO driven equipment, check to make sure that the PTO driveline will not over-extend so as to become disengaged, bottom out or be at an excessive angle. Ensure that the driveline shield does not contact the PTO guard or drawbar. See 'Attaching P.T.O.-Driven Equipment' on page 3-45.*

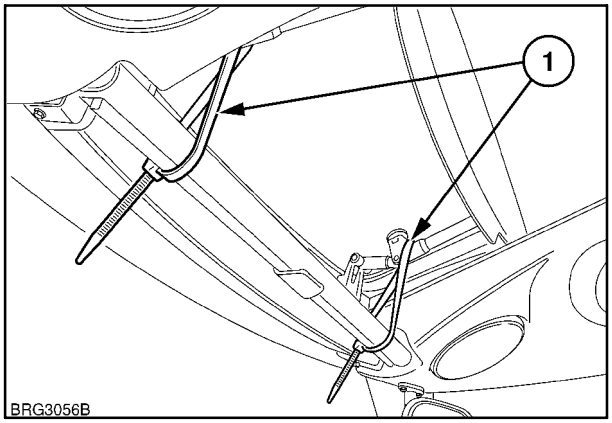
IMPORTANT: *When attaching mounted or semi-mounted equipment to the 3-point hitch or when attaching trailed equipment to the drawbar or hitch, ensure that there is adequate clearance between the implement and the tractor. Semi-mounted or trailed equipment may interfere with the tractor rear tyres. If necessary, adjust steering stops (four wheel drive only), sway blocks or stabilisers.*

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TILTING HIGH VISIBILITY ROOF PANEL

Where road speeds in excess of 50 Km/h (31 MPH) are likely to occur when transporting the tractor, it is advisable to secure the high visibility roof panel with ties to prevent it from opening.



1

Secure **both** handles to the sun-visor support using a flexible strap such as a cable tie (1) as shown in the illustration above. Do not use wire or metal straps as these may damage the paintwork.

TOWING THE TRACTOR

IMPORTANT: *The tractor should only be towed a short distance, such as out of a building. Do not tow on roadways or as a method of transport.*

IMPORTANT: *Where it is necessary to tow the tractor, the shuttle lever* ***must*** *be moved to the* ***neutral position before*** *stopping the engine otherwise damage to transmission components may occur during towing. If the tractor is operating with creeper gears engaged (Full Powershift models), they should be dis-engaged before towing the tractor.*

Where the tractor is equipped with an electronic park lock, this must be released before moving the tractor, see pages 2-82 and 2-83.

Use a strong chain when towing the tractor. Tow the tractor from the rear using only the drawbar, rear tow hitch or the three-point hitch. Tow the tractor from the front using the tow pin in the front weights or front support. Have an operator steer and brake the tractor.

To avoid damaging the transmission or other components that turn but are not lubricated during towing, observe the following:

- Only tow a short distance
- Keep speed below 5 MPH (8 K/mh)
- If possible, run the engine to provide lubrication and power steering.

IMPORTANT: *The brakes on your tractor are hydraulically power assisted. With the engine off, the brakes will still function but with a higher pedal effort.*

⚠ CAUTION ⚠

Do not tow the tractor faster than 5 MPH (8 Km/h). The steering is much slower and steering wheel effort is much greater without the engine running.

⚠ WARNING ⚠

Do not use cables or rope to tow the tractor. If the cable or rope breaks or slips, it may whip with sufficient force to cause serious injury. When using a chain, attach the chain with the hook open side facing up. If the hook slips, it will drop down instead of flying up.

NOTE: *Four wheel drive will be engaged if the engine is not running, regardless of the position of the 4WD activation switch.*

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SECTION 7

SPECIFICATIONS

General Information

The specification figures in this section are provided for your information and guidance. For further information concerning your tractor and equipment, consult your authorised dealer.

Policy is one of continuous improvement and the right to change prices, specification or equipment at any time without notice is reserved.

All data given in this manual is subject to production variations. Dimensions and weight are approximate only. The illustrations do not necessarily show tractors in standard condition or imply that these features are available in all countries. For exact information about any particular tractor, please consult your authorised dealer.

Subject	Page
General Dimensions	7-2
Vehicle Weights	7-6
Lubricant and Fluid Capacities	7-7
Engine	7-8
Fuel System	7-8
Cooling System	7-9
Transmission	7-9
Maximum Operating Angles	7-10
Rear Power Take Off	7-10
Front Power Take Off	7-11
Hydraulic System	7-11
Rear 3-Point Hitch	7-11
Remote Control Valves	7-16
Front 3-Point Hitch	7-16
Front Remote Valves	7-16
Brakes	7-17
Steering	7-17
Electrical Equipment	7-18
Hardware Torque Tables	7-19

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SECTION 9

INDEX

A

Accessories, 6-1
- Auxiliary headlights, 6-4
- Battery isolator switch, 6-5
- Colour display monitor, 6-2
- ISO-Bus socket, 6-2
- Rotating beacon, 6-4

Adjustable air vents, 2-11

Air conditioner control, 2-11

Air-operated trailer brakes, 3-169
- Auxiliary air connector, 3-173
- Brake bias control, 3-173

Airborne noise emission, 1-23

Alarm functions, 2-72

Automatic cab temperature control, 2-13

B

Ballasting and tyres, 3-192
- Ballast charts, 3-198
- Front weights, 3-195
- Liquid tyre ballast, 3-197
- Rear wheel weights, 3-195
- With front axle suspension, 3-192

Bar type rear axle, 3-184
- Track adjustment, 3-185

Biodiesel fuels, 4-3

Brake controls and operation, 2-81
- Electronic park lock, 2-81
- Exhaust brake, 2-84
- Footbrakes, 2-85
- Handbrake, 2-81

C

Cab air filters, 2-15

Cab air recirculation, 2-15

Cab general information, External rear view mirrors, 2-9

Heated front and rear screens, 2-8

Cab introduction, 2-4

Cab pressurisation monitor, 2-16

Cleaning the tractor
- Cleaning the cab interior, 4-80
- Cleaning the exterior, 4-80
- Seat and seat belt, 4-80

Console light, 2-10

Constant Engine Speed (CES), 3-18

Cup holder, 2-19

D

Differential lock operation, 2-110

Drawbars and towing attachments, 3-152
- Automatic pick-up hitch, 3-164
- Rear tow hitch, 3-158
- Safety chain, 3-157
- Swinging drawbars, 3-154

Dual wheels, 3-190

E

Ecology and the environment, 1-7

Electrical power sockets, 2-20
- Beacon power socket, 2-22
- Diagnostic sockets, 2-21

Electro-Hydraulic remote valves, Timed programme operation, 3-114
- Double acting service, 3-115
- Single acting service, 3-116

Electro-hydraulic remote valves, 3-102
- Connecting remote cylinders, 3-126
- Control levers, 3-107
- EHR adjustments, 3-112
- External EHR controls, Safety information, 3-124
- Joystick operation, 3-108
- Operating continuous flow equipment, 3-128
- Operating in motor mode, 3-129
- Relieving system pressure, 3-125
- Setting the flow rate, 3-112, 3-113
- Status display, 3-104
- Timed programme operation, Replaying a timed programme, 3-125
- Transport lock, 3-102
- Transport locks, 3-78
- Visual displays, 3-106

Electronic hitch control, 3-79
- Draft loading control operation, 3-86
- EHC control panel, 3-81
- External 3-point hitch controls, 3-92
- Hitch position display, 3-80

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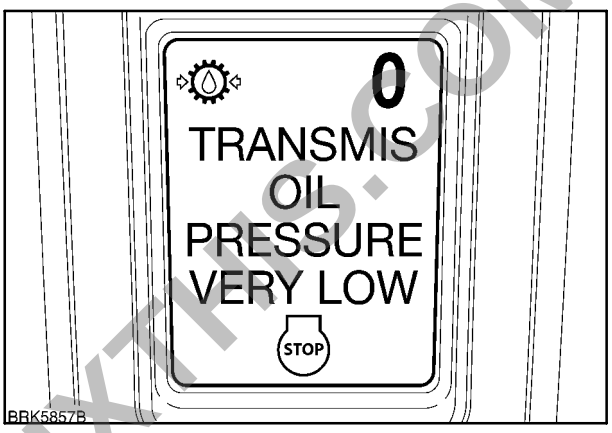
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Automatic Engine Shutdown with Enhanced Keypad

The automatic engine shutdown system provides a further level of protection. The system monitors four key areas that are critical to the safe operation of engine and driveline and, in the unlikely event that one or more of these reaches a critical condition, the engine will be shut down.

- Engine oil pressure falls below safe limits.
- Engine coolant temperature exceeds safe limits.
- Driveline oil pressure falls below safe limits.
- Driveline oil temperature rises above safe limits.

Prior to engine shutdown the red Stop light will start to flash and the critical alarm will sound. In addition, the engine fault warning and malfunction symbols will flash alternately in the lower display. If, after 30 seconds, the operator has not stopped the engine, the automatic shutdown feature will be activated and the engine will be shut down.



11

After the engine has shut down, the red Stop light will remain on but the alarm will cease to sound. Both engine and malfunction symbols will continue to flash alternately.

The automatic engine shutdown function may be programmed by your authorised dealer to operate in one of three modes:

1. No engine shutdown. In this mode the engine is not capable of automatic shutdown.
2. Always engine shutdown. The engine will shutdown at any time if one or more of the monitored conditions reaches a critical level.
3. Stationary engine shutdown. The engine will shutdown only during stationary operations if one or more of the monitored conditions reaches a critical level.

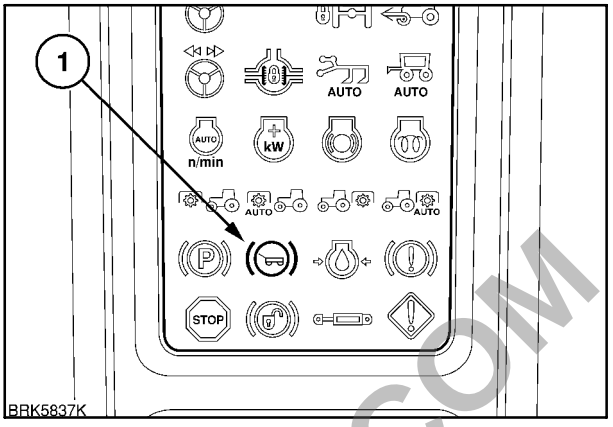
Although the Automatic Engine Shudown linked to the Keypad can be disabled by your dealer, the ECU controlled system will continue to function in the normal way.

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Operation

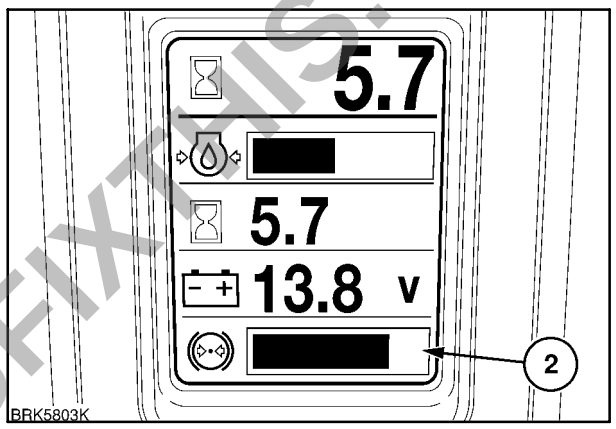
When starting the engine with a trailer connected into the tractor air brake system, chock the wheels and release the parking brake and footbrakes. The warning light (1) Figure 246, will illuminate until air pressure builds up to 4.5 – 5.5 bar.



246

The pressure will continue to rise, as indicated by the air pressure bargraph (2), in the lower display, Figure 247. To select the air pressure bargraph, use the keypad.

The air tank(s) should reach operating pressure within 3 minutes of start-up but may take longer, dependent upon the size of the trailer brake reservoir(s).

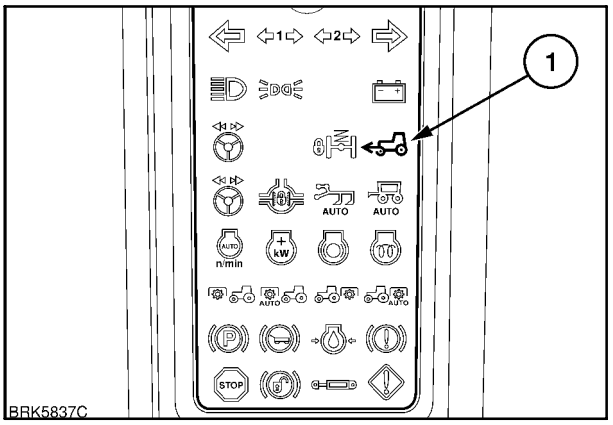


247

Once required pressure has been reached a loud 'pop' will be heard, signifying that the unload valve has opened to allow excess pressure to escape to atmosphere.

IMPORTANT: *Apply the footbrakes several times, ensuring that the pressure, as indicated by the gauge, drops as the brakes are applied and rises again when they are released. Never drive the tractor with the trailer brake warning light on.*

IMPORTANT: *When the footbrakes are applied ,with the parking brake off, ensure that the front wheel drive indicator light (1) Figure 248 illuminates and that all stop lights are functional.*



248

IMPORTANT: *Various types of trailer braking systems are available. Check the trailer manufacturers' instruction manual before making connections to the tractor air brake system.*

Clean the trailer and tractor connectors before coupling up the hose(s). Ensure that connections are secure. Check the trailer brakes regularly to ensure that they are functioning correctly.

⚠ CAUTION ⚠

Do not over use the brakes on steep down hill gradients. Use the same gear going down hill as you would use for going up the same hill.

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