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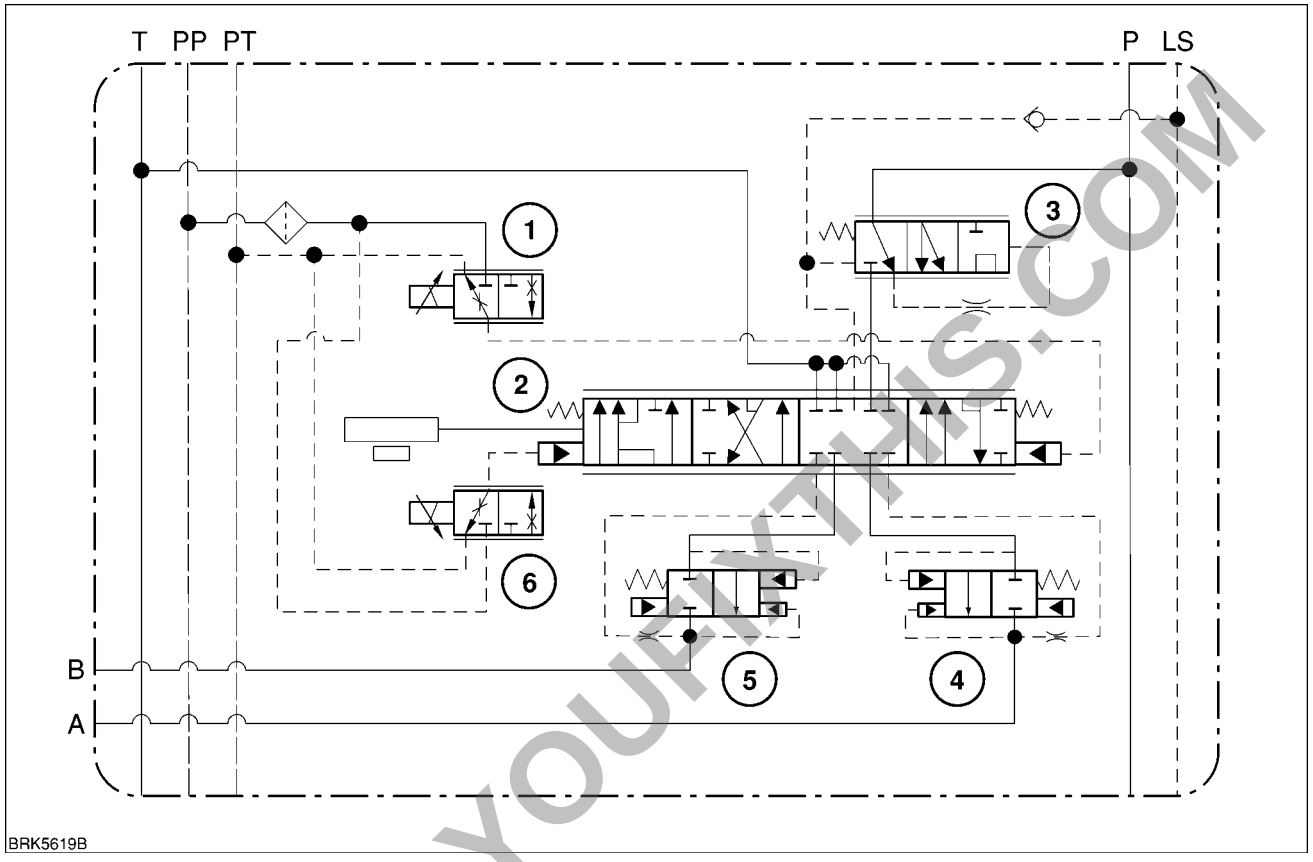
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PRIMARY HYDRAULIC POWER SYSTEM Electro-hydraulic remote valve - Hydraulic schema

PUMA 165 [Z9BH40001 -], PUMA 165 [Z9BH60001 -], PUMA 180 [Z9BH40001 -], PUMA 180 [Z9BH60001 -], PUMA 195 [Z9BH40001 -], PUMA 195 [Z9BH60001 -], PUMA 210 [Z9BH40001 -], PUMA 210 [Z9BH60001 -]



BAIL08CVT142FSA 1

1. Solenoid
2. Main spool
3. Pressure compensating spool
4. Check valve
5. Check valve
6. Solenoid

A Extend port
B Retract port
T Return to tank
PP Pilot pressure line
PT Pilot tank line
P Pressure line
LS Load sense line

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10	2710-3000	COMMAND ARM	2860	A3	C121	EDC CONTROL PANEL 2
10	2710-3000	COMMAND ARM	2930	B16	C240	EDC MOUSE CONNECTOR
10	2710-3000	COMMAND ARM	2990	B17	C623	HAND THROTTLE - COMMAND ARM
11	3010-3300	EDC/HYDRAULICS 1	3020	S21	C176	HYDRAULIC TEMP SWITCH
11	3010-3300	EDC/HYDRAULICS 1	3020	S22	C175	HYDRAULIC BLOCKED FILTER SWITCH
11	3010-3300	EDC/HYDRAULICS 1	3040	S23	C302	HTS RECORD SWITCH
11	3010-3300	EDC/HYDRAULICS 1	3110	B18	C113	FRONT HITCH POT
11	3010-3300	EDC/HYDRAULICS 1	3160	F42 - 10A		FUSE - FRONT SUSPENSION
11	3010-3300	EDC/HYDRAULICS 1	3300	X4	C510	HI-FLOW PUMP CONNECTOR - CIRCUIT 5830
12	3310-3600	EDC/HYDRAULICS 2	3320	S24	C146	LIFT-O-MATIC SWITCH
12	3310-3600	EDC/HYDRAULICS 2	3345	S25	C134	HPL EXTERNAL RIGHT HAND SWITCH
12	3310-3600	EDC/HYDRAULICS 2	3365	S26	C135	HPL EXTERNAL LEFT HAND SWITCH
12	3310-3600	EDC/HYDRAULICS 2	3390	F39 - 10A		FUSE - HPL, SEAT, ARMREST, EDC, EHR LEVERS
12	3310-3600	EDC/HYDRAULICS 2	3490	X5	C549	FRINT HITCH DETECT
12	3310-3600	EDC/HYDRAULICS 2	3510	A19	C631	JOYSTICK CAN
12	3310-3600	EDC/HYDRAULICS 2	3530	H37		JOYSTICK INDICATOR LAMP - FRONT
12	3310-3600	EDC/HYDRAULICS 2	3540	H38		JOYSTICK INDICATOR LAMP - REAR
13	3610-3900	EDC/HYDRAULICS 3	3620	Y23	C334	EXTEND TOP A
13	3610-3900	EDC/HYDRAULICS 3	3635	Y24	C335	RETRACT TOP B
13	3610-3900	EDC/HYDRAULICS 3	3650	Y25	C336	EXTEND SIDE C
13	3610-3900	EDC/HYDRAULICS 3	3665	Y26	C337	RETRACT SIDE D
13	3610-3900	EDC/HYDRAULICS 3	3680	Y27	C338	SAFETY VALVE DUMP - LIFT LINK CIRCUIT
13	3610-3900	EDC/HYDRAULICS 3	3710	B19	C047	LH DRAFT PIN
13	3610-3900	EDC/HYDRAULICS 3	3730	B20	C048	RH DRAFT PIN
13	3610-3900	EDC/HYDRAULICS 3	3770	B21	C052	ROCKSHAFT POTENTIOMETER
13	3610-3900	EDC/HYDRAULICS 3	3820	S27	C173	LOW CHARGE PRESSURE SWITCH S2
13	3610-3900	EDC/HYDRAULICS 3	3840	Y28	C216	TEMPERATURE SWITCH
13	3610-3900	EDC/HYDRAULICS 3	3860	Y29	C217	EDC UP SOLENOID
14	3910-4200	EHR/HYDRAULICS 1	3930	Y30	C283	EHR VALVE CONNECTOR 5
14	3910-4200	EHR/HYDRAULICS 1	3980	Y31	C282	EHR VALVE CONNECTOR 4

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Wiring harness - Electrical schematic frame 03 Engine control system (2)

PUMA 165 Multicontroller, PUMA 180 Multicontroller, PUMA 195 Multicontroller, PUMA 210 Multicontroller

Line range 610-900

Line number	Compo-nent	Connector	Designation
635	B1	**C255**	ENGINE SPEED SENSOR
880	S8	**C009**	VACUUM SWITCH

NOTE: *Supplementary connector* ***C001****,* ***C019****,* ***C020****,* ***C079****,* ***C100****,* ***C101****,* ***C127****,* ***C128****,* ***C353****.*

CABLE COLOUR CODING							
B	Black	R	Red	LG	Light green	K	Pink
N	Brown	O	Orange	U	Blue	W	White
LN	Light brown	Y	Yellow	TQ	Turquoise		
S	Slate	G	Green	P	Purple		

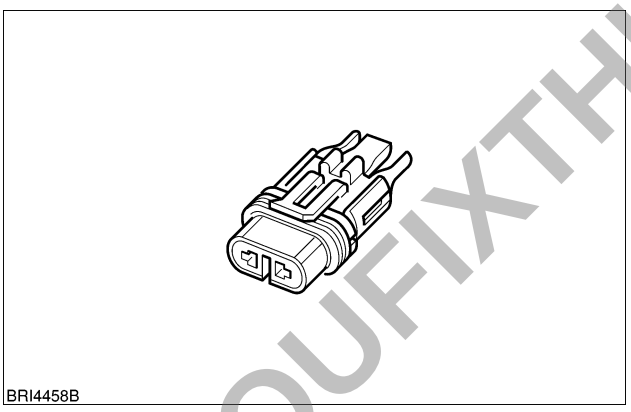
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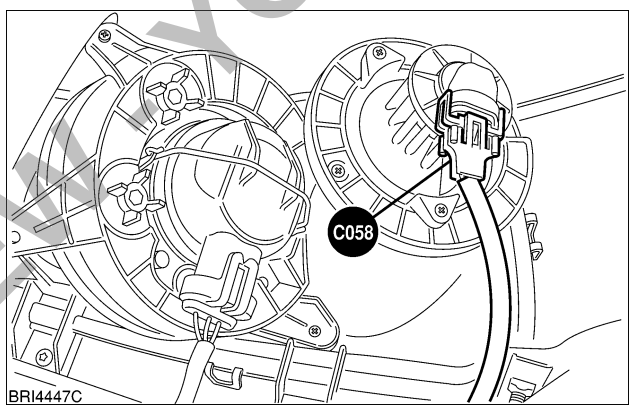
C058 WORK LAMP LEFT-HAND SIDE

PLUG CONNECTION C058 WORK LAMP LEFT-HAND SIDE			
LOCATION	CABLE NUMBER	CIRCUIT	WIRING DIAGRAM
1	1073D (L)	POWER SUPPLY FRONT WORK LAMP	PUMA Standard: **Wiring harness - Electrical schematic frame 29 (A.30.A)** PUMA Multicontroller: **Wiring harness - Electrical schematic frame 29 (A.30.A)**
2	57 (B)	VEHICLE EARTH (ALL)	

NOTE: *The colour coding of the cables is described in* ***Wiring harness - Overview (A.30.A)****.*



BRI4458B-01 13



C058-BRI4447C 14

BONNET

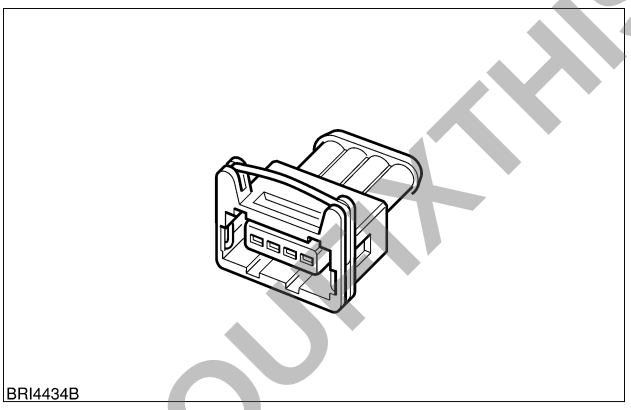
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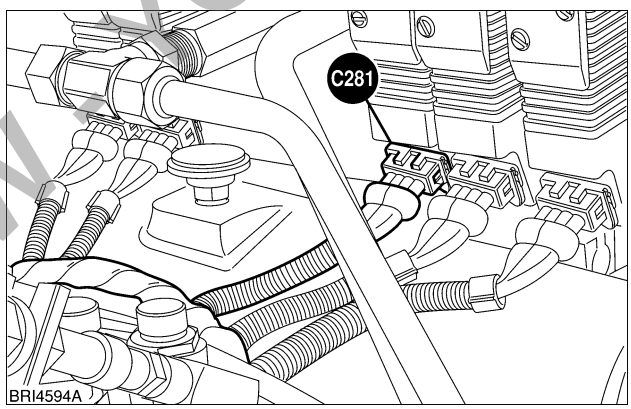
C281 ELECTROHYDR. REMOTE VALVE PLUG CONNECTION 3

PLUG CONNECTION C281 ELECTROHYDR. REMOTE VALVE PLUG CONNECTION 3			
LOCATION	CABLE NUMBER	CIRCUIT	WIRING DIAGRAM
1	5515C (S)	ELECTROHYDR. REMOTE VALVE +12V STARTER SWITCH	PUMA Standard: **Wiring harness - Electrical schematic frame 14 (A.30.A)** PUMA Multicontroller: **Wiring harness - Electrical schematic frame 14 (A.30.A)**
2	5510F (U)	ELECTROHYDR. REMOTE VALVE CAN LOW	
3	5500F (R)	ELECTROHYDR. REMOTE VALVE CAN HIGH	
4	57FF (B)	VEHICLE EARTH (ALL)	

NOTE: *The colour coding of the cables is described in* ***Wiring harness - Overview (A.30.A)****.*



BRI4434B 3



C281-BRI4594A 4

TRACTOR REAR

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C515 CONTROL MODULE

PLUG CONNECTION C515 CONTROL MODULE			
LOCATION	CABLE NUMBER	CIRCUIT	WIRING DIAGRAM
A1	3170 (O)	FAST STEER - ON/OFF	**Wiring harness - Electrical schematic frame 22 (A.30.A)**
A2	3173 (R/G)	FAST STEER - HYDRAULIC VALVE DELIVERY SIDE DRIVING STAGE	
A4	5400 (Y)	CAN H	
A5	5420 (G)	CAN L	
A6	3174 (G/B)	FAST STEER - HYDRAULIC VALVE INLET SIDE DRIVING STAGE	
A7	57C (B)	VEHICLE EARTH (ALL)	
A8	57B (B)	VEHICLE EARTH (ALL)	
B1	3171 (O/R)	FAST STEER - LAMP	
B4	3172 (L)	FAST STEER - STEERING PROXIMITY SWITCH SETTING	
B5	3178 (G/Y)	FAST STEER - POSITION SENSOR SECONDARY POSITIVE	
B6	3179 (N)	FAST STEER - POSITION SENSOR SECONDARY NEGATIVE	
B8	160 (U)	BATTERY POWER SUPPLY FOR ELECTRONICS	
C1	3175 (W)	FAST STEER - POSITION SENSOR PRIMARY POSITIVE	
C2	3176 (B)	FAST STEER - POSITION SENSOR PRIMARY NEGATIVE	
C3	3177 (U)	FAST STEER - POSITION SENSOR SECONDARY COMMON	
C4	3180 (B)	FAST STEER - SAFETY SWITCH	
C8	10D (G)	VOLTAGE SUPPLY SWITCHED VIA STARTER SWITCH	

PLUG CONNECTION C515 - in PUMA Multicontroller CONTROL MODULE			
LOCATION	CABLE NUMBER	CIRCUIT	WIRING DIAGRAM
A1	3170 (O)	FAST STEER - ON/OFF	**Wiring harness - Electrical schematic frame 22 (A.30.A)**
A2	3173 (R)	FAST STEER - HYDRAULIC VALVE DELIVERY SIDE DRIVING STAGE	
A4	5400 (Y)	CAN H	
A5	5420 (G)	CAN L	
A6	3174 (G)	FAST STEER - HYDRAULIC VALVE INLET SIDE DRIVING STAGE	
A7	57C (B)	VEHICLE EARTH (ALL)	
A8	57B (B)	VEHICLE EARTH (ALL)	
B1	3171 (O)	FAST STEER - LAMP	
B4	3172 (L)	FAST STEER - STEERING PROXIMITY SWITCH SETTING	
B5	3178 (G/Y)	FAST STEER - POSITION SENSOR SECONDARY POSITIVE	
B6	3179 (N)	FAST STEER - POSITION SENSOR SECONDARY NEGATIVE	
B8	160 (U)	BATTERY POWER SUPPLY FOR ELECTRONICS	

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Performance Test:

9. The performance test is to determine if the battery has adequate capacity to turn the engine. The voltage reading obtained is used to determine the battery condition. Prior to testing, ensure the electrolyte level is correct and the open circuit voltage is **12.5 V** or more. The battery may be tested on or off the tractor.
   1. Set the current control switch of the battery starter tester (high rate discharge tester) to the 'off' position and the voltage selector switch equal to, or slightly higher than, the rated battery voltage. Connect the tester positive leads to the battery positive terminal and the negative leads to the negative battery terminal.
   2. Turn the current control knob until the ammeter reading is half the CCA rating of the battery and take the voltage reading.
   - If the reading is **9.6 volts** or more after **15 seconds**, the battery has an acceptable output capacity and will readily accept a normal charge.
   - If however the reading is below **9.6 volts**, the battery is considered unsatisfactory for service and should be test charged as described below.

⚠ CAUTION ⚠

Do not leave the high discharge load on the battery for periods longer than 15 seconds.

B003

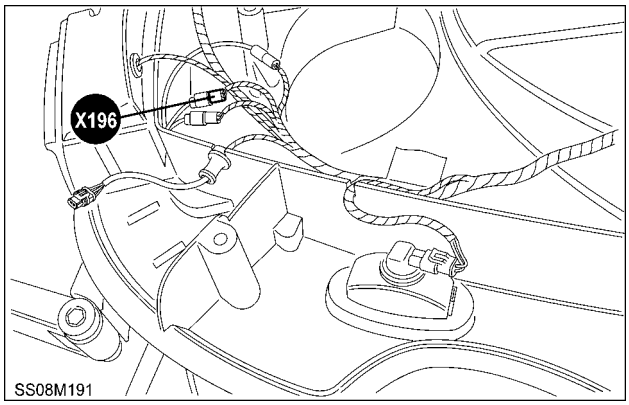
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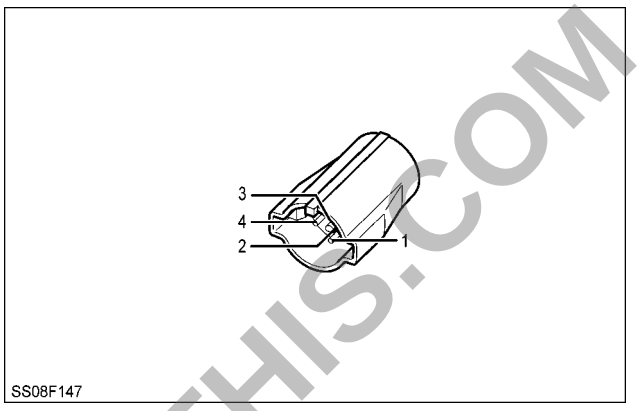
X196 WORKLAMP GRABRAIL LEFT HAND

POS.	WIRE NUMBER	CIRCUIT REFERENCE
2	1097A (R)	FEED FRONT WORKLAMP OUTER
4	57V (B)	EARTH (ALL)

NOTE: *For the wiring color code refer to,* ***Wiring harness - Overview (A.30.A)****.*



SS08M191 13



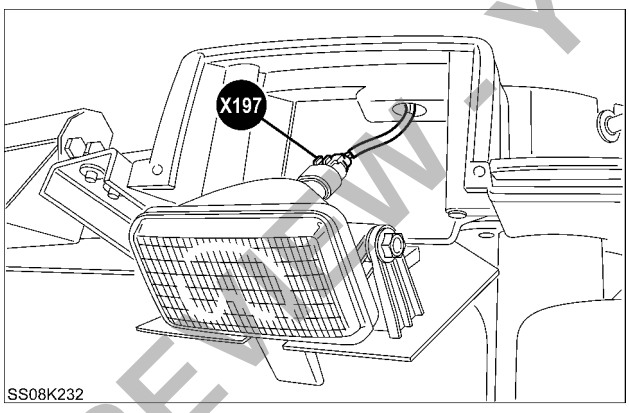
SS08F147 14

FRONT LEFT HAND CAB ROOF

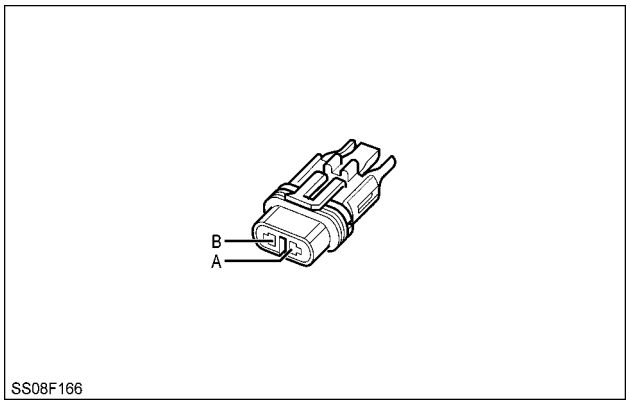
X197 WORKLAMP LEFT HAND FRONT UPPER

POS.	WIRE NUMBER	CIRCUIT REFERENCE
A	1098A (W)	FRONT WORKLAMP RELAY GROUND
B	57AB (B)	EARTH (ALL)

NOTE: *For the wiring color code refer to,* ***Wiring harness - Overview (A.30.A)****.*



SS08K232 15



SS08F166 16

FRONT LEFT HAND CAB ROOF

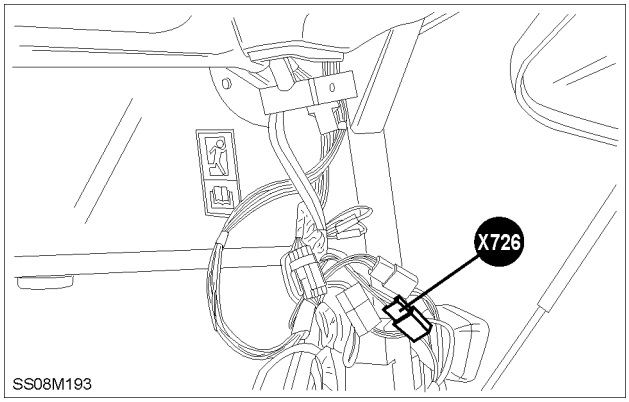
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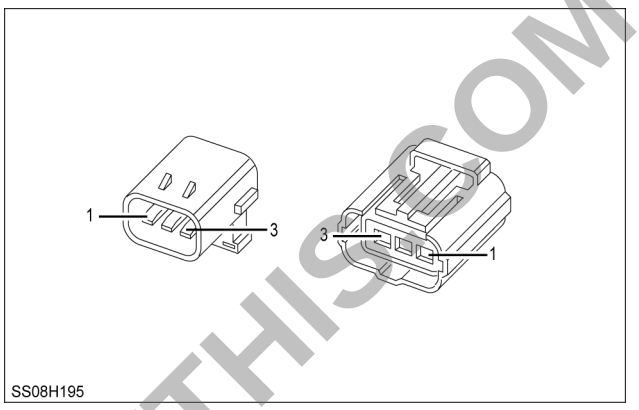
X726 ROOF CONNECTOR POWER

POS.	WIRE NUMBER	CIRCUIT REFERENCE
1	5200AH (N)	EDC VALVE SUPPLY
2	3186 (S)	CERES PPS IN
3	57NA (B)	EARTH (ALL)

NOTE: *For the wiring color code refer to,* ***Wiring harness - Overview (A.30.A)****.*



SS08M193 9



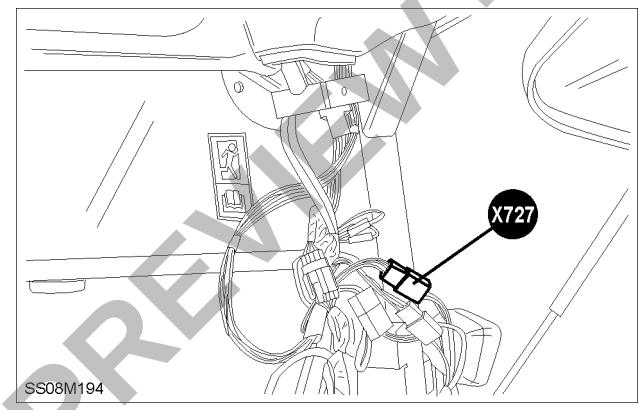
SS08H195 10

BEHIND RIGHT HAND C-PILLAR COVER

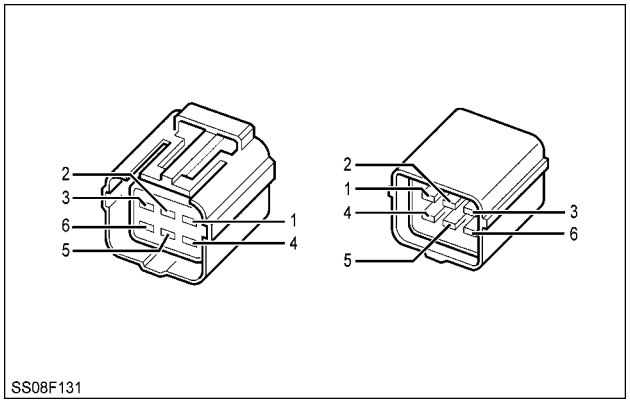
X727 ROOF CONNECTOR DATA 2

POS.	WIRE NUMBER	CIRCUIT REFERENCE
1	5500AB (R)	EHR CAN HIGH
2	5510AB (U)	EHR CAN LOW
5	7640G (TN)	DIAGNOSTIC PLUG RS232 IN
6	7650G (W)	DIAGNOSTIC PLUG RS232 OUT

NOTE: *For the wiring color code refer to,* ***Wiring harness - Overview (A.30.A)****.*



SS08M194 11



SS08F131 12

BEHIND RIGHT HAND C-PILLAR COVER

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Wiring harness - Electrical schematic frame 30 Heated Screen (Supply, Switch & Relay)

PUMA 165 [Z9BH40001 -], PUMA 165 [Z9BH60001 -], PUMA 180 [Z9BH40001 -], PUMA 180 [Z9BH60001 -], PUMA 195 [Z9BH40001 -], PUMA 195 [Z9BH60001 -], PUMA 210 [Z9BH40001 -], PUMA 210 [Z9BH60001 -]

Component	Connector	Description
K044	**X764**	Front Screen Heater Relay
K045	**X764**	Rear Screen Heater Relay
MF7	**X761**	Supply heated windscreen front
MF8	**X761**	Supply heated screen rear
R049	**X800**, **X801**	Front Screen Heater A
R050	**X802**, **X803**	Front Screen Heater B
R051	**X769**	Rear Screen Heater
S071	**X766**	Screen Heater Switch
Z002	**X761**	Maxi Fuseholder
-	**X768**	Main Earth Point to SP376
-	**X770**	Earth Connector to SP375
Additional Connectors: **X683A**, **X767**		

Wire Colour Codes

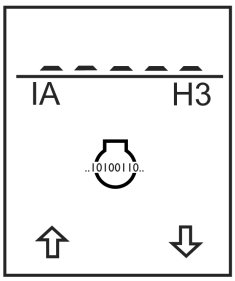
B	Black	S	Slate	G	Green	P	Purple
N	Brown	R	Red	LG	Light Green	K	Pink
LN	Light Brown	O	Orange	U	Blue	W	White
L	Lilac	Y	Yellow	TQ	Turquoise		

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ELECTRONIC ENGINE OPTIONS

Press the Menu button to select the electronic engine sub-system.

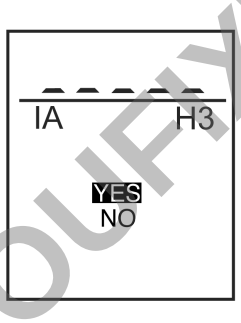


BAIL06CCM172AVB

BAIL06CCM172AVB 8

NOTE: *The default setting is "Yes" with electronic engine.*

Scroll through the available options using the "Up" or "Down" navigation buttons.



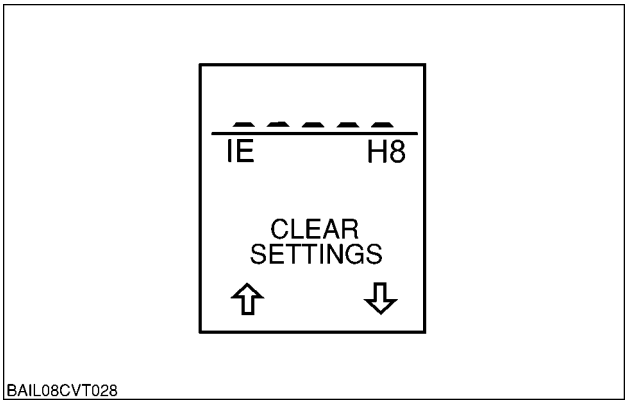
BAIL06CCM177AVB

BAIL06CCM177AVB 9

Press and hold the "Up" or "Down" navigation button to store the selection. A beep sounds to confirm the selection. To use the "HH" menu further, press the Menu button.

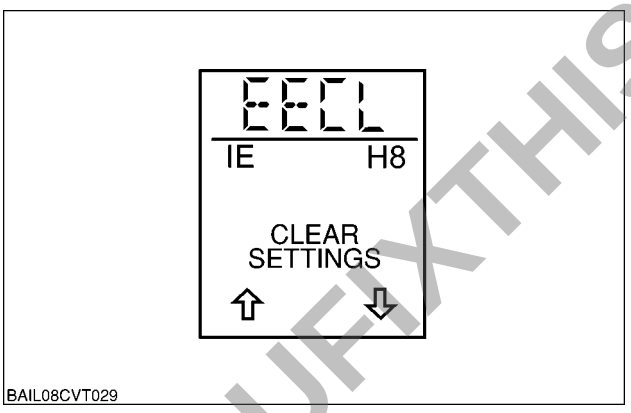
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BAIL08CVT028 22

The top section of the display will display “EECL"



BAIL08CVT029 23

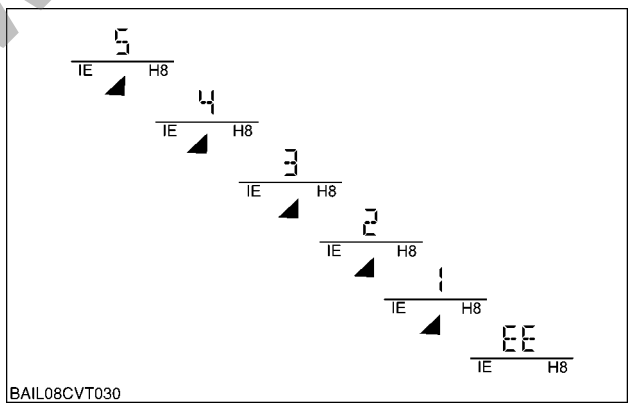
⚠ CAUTION ⚠

H8 will clear all calibrations values and stored error codes.

B006

NOTE: *If the navigation “down" key is released before the countdown finishes, the procedure will be aborted.*

Depress and hold the navigation “down" key to confirm the resetting of the EEPROM.



BAIL08CVT030 24

It is not possible to continuing through the "H" menus after an H8 procedure. The only possible action is to turn the ignition key switch off to allow the reset values to be stored.

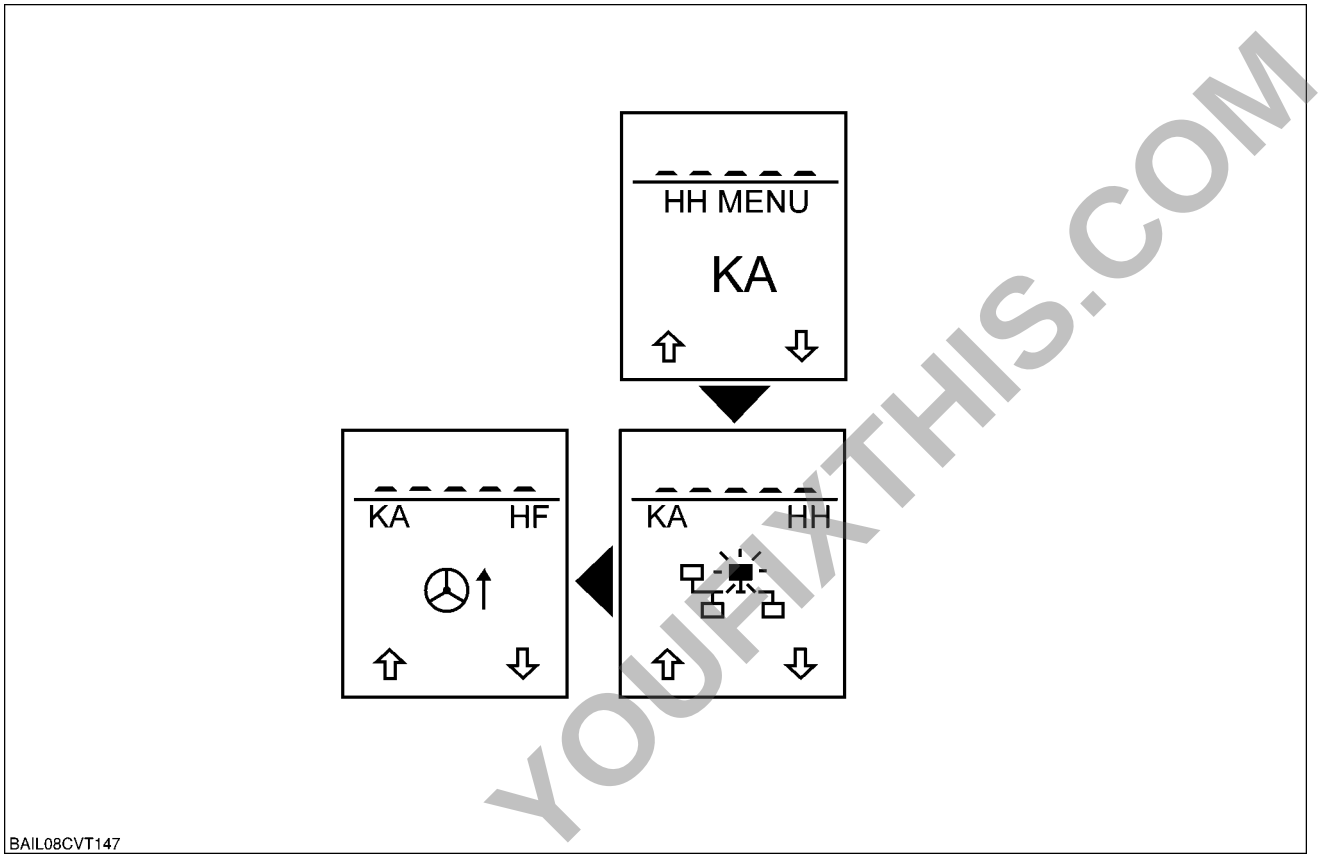
NOTE: *The ’Clear Network Config’ procedure is carried out in the same way as ’Clear Settings’*

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HF - VIEW CONTROLLER HARDWARE INFORMATION

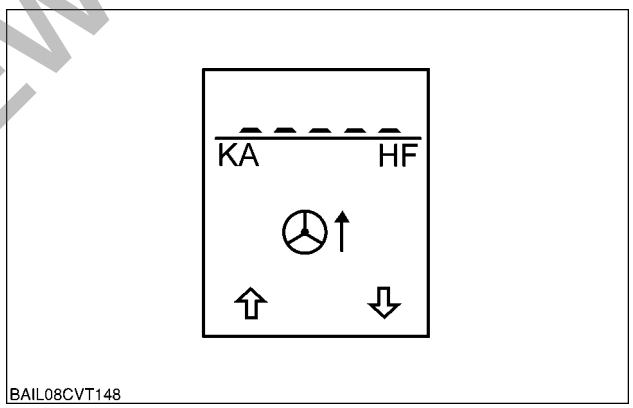
This menu allows the hardware identification, hardware version and serial number to be displayed.
Common to all sub-systems.

HF Menu Screen Select Diagram



BAIL08CVT147 30

Select the HF menu by depressing the "menu" key.



BAIL08CVT148 31

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Front Electronic Hydraulic Remote Valves – Error Codes

Code	Description	Cause	Controller Pin	Information
4500	Front remote no.1 – no control message received	MID EHR1_DIAGNOSTIC CAN message indicates no control messages (Fault code = 0x11)	N/A	EHR valve and connector **X697**, inline harness connector **X304**
4501	Front remote no.1 – control message not plausible	MID EHR1_DIAGNOSTIC CAN message indicates control message is corrupted (Fault code = 0x13)	N/A	EHR valve and connector **X697**, inline harness connector **X304**
4502	Front remote no.1 – EEPROM error	MID EHR1_DIAGNOSTIC CAN message indicates valve EEPROM is corrupted (Fault code = 0x16)	N/A	Driveline oil temperature. EHR valve. **Control module - Configure (A.50.A)**
4503	Front remote no.1 – switched to failsafe	MID EHR1_DIAGNOSTIC CAN message indicates valve is set to fail safe because a setpoint is required (Fault code = 0x17)	N/A	EHR valve. error code 4503. **Control module - Configure (A.50.A)**
4504	Front remote no.1 – under voltage	MID EHR1_DIAGNOSTIC CAN message indicates under voltage (Fault code = 0x21)	N/A	EHR valve. error code 4503. **Control module - Configure (A.50.A)**
4505	Front remote no.1 – over voltage	MID EHR1_DIAGNOSTIC CAN message indicates over voltage (Fault code = 0x22)	N/A	External power supply connected. Charging system. EHR valve. **Control module - Configure (A.50.A)**
4506	Front remote no.1 – spool movement too low	MID EHR1_DIAGNOSTIC CAN message indicates spool movement is too low (Fault code = 0x23)	N/A	Hydraulic pressure. **Hydraulic pump - Pressure test (A.10.A)**, EHR valve **Control module - Configure (A.50.A)**
4507	Front remote no.1 – spool movement too high	MID EHR1_DIAGNOSTIC CAN message indicates spool movement is too high (Fault code = 0x24)	N/A	Hydraulic pressure. **Hydraulic pump - Pressure test (A.10.A)** EHR valve **Control module - Configure (A.50.A)**
4508	Front remote no.1 – float position not reached	MID EHR1_DIAGNOSTIC CAN message indicates float is not reached (Fault code = 0x25)	N/A	Hydraulic pressure. **Hydraulic pump - Pressure test (A.10.A)**, EHR valve **Control module - Configure (A.50.A)**
4509	Front remote no.1 – manually operated	MID EHR1_DIAGNOSTIC CAN message indicates valve is set for manual operation (Fault code = 0x26)	N/A	Controller. EHR lever. calibration. EHR valve. **Control module - Configure (A.50.A)**

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Reference	Description	Controller
4503	Front Remote No.1 Switched To Failsafe	
4503	Front Remote No.1 Switched To Failsafe	
4504	Front Remote No.1 Under Voltage	
4504	Front Remote No.1 Under Voltage	
4505	Front Remote No.1 Over Voltage	
4505	Front Remote No.1 Over Voltage	
4506	Front Remote No.1 Spool Movement Too Low	
4506	Front Remote No.1 Spool Movement Too Low	
4507	Front Remote No.1 Spool Movement Too High	
4507	Front Remote No.1 Spool Movement Too High	
4508	Front Remote No.1 Float Position Not Reached	
4508	Front Remote No.1 Float Position Not Reached	
4509	Front Remote No.1 Manually Operated	
4509	Front Remote No.1 Manually Operated	
4510	Front Remote No.1 Driver Faulty	
4510	Front Remote No.1 Driver Faulty	
4511	Front Remote No.1 Potentiometer Faulty	
4511	Front Remote No.1 Potentiometer Faulty	
4512	Front Remote No.1 Unable To Reach Neutral	
4512	Front Remote No.1 Unable To Reach Neutral	
4513	Front Remote No.1 Spool Not In Neutral At Key On	
4513	Front Remote No.1 Spool Not In Neutral At Key On	
4514	Front Remote No.2 No Control Message Received	
4514	Front Remote No.2 No Control Message Received	
4515	Front Remote no.2 Control Message Not Plausible	
4515	Front Remote no.2 Control Message Not Plausible	
4516	Front Remote No.2 EEPROM Error	
4516	Front Remote No.2 EEPROM Error	
4517	Front Remote No.2 Switched To Failsafe	
4517	Front Remote No.2 Switched To Failsafe	
4518	Front Remote No.2 Under Voltage	
4518	Front Remote No.2 Under Voltage	
4519	Front Remote No.2 Over Voltage	
4519	Front Remote No.2 Over Voltage	
4520	Front Remote No.2 Spool Movement Too Low	

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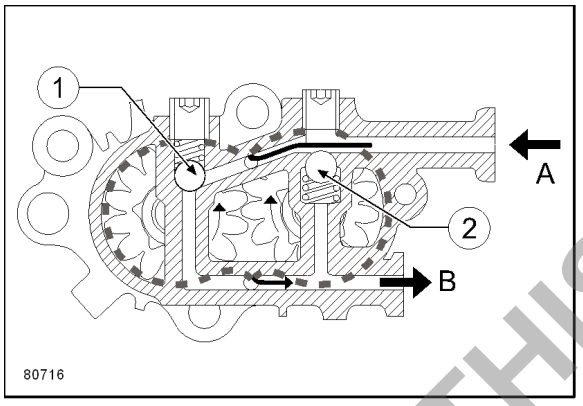
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Fuel injection pump - Dynamic description Fuel Supply Gear Pump.

The gear pump, mounted on the rear of the high-pressure pump, has the function of feeding the pump. It is governed by the shaft of the high-pressure pump.

Normal operating condition (Figure 1)

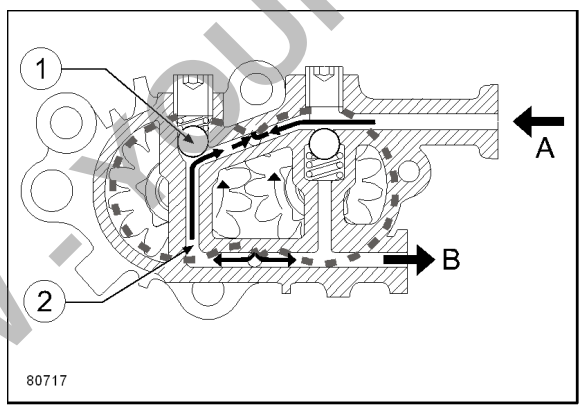
(A) Fuel inlet from the tank, **(B)** fuel outlet to the filter, **(1)** and **(2)**-By-pass valves in closed position.



80716 1

Condition of overpressure at outlet Figure 2)

The by-pass valve **(1)** trips when overpressure is generated at the outlet **(B)**. The pressure, overcoming the elastic resistance of the spring of the valve **(1)**, sets the outlet in communication with the inlet through the duct **(2)**.



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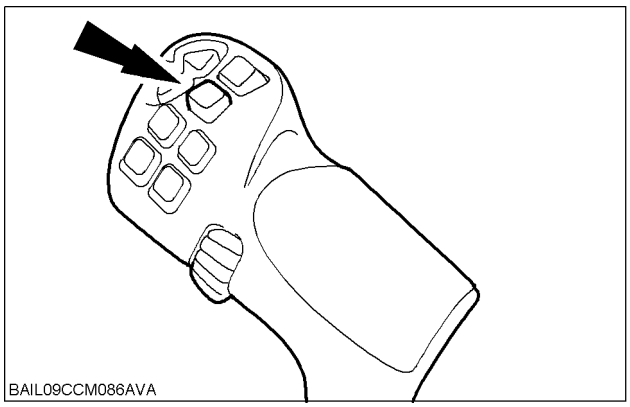
Bleed conditions Figure 3)

The by-pass valve **(2)** trips when, with the engine switched off, you want to fill the feed system through the priming pump. In this situation, the by-pass valve **(1)** stays shut and the by-pass valve **(2)** opens due to the effect of the inlet pressure and the fuel flows out via outlet **(B)** .

NOTE: *The mechanical fuel supply pump cannot be replaced on its own; therefore it must not be removed from the high-pressure pump.*

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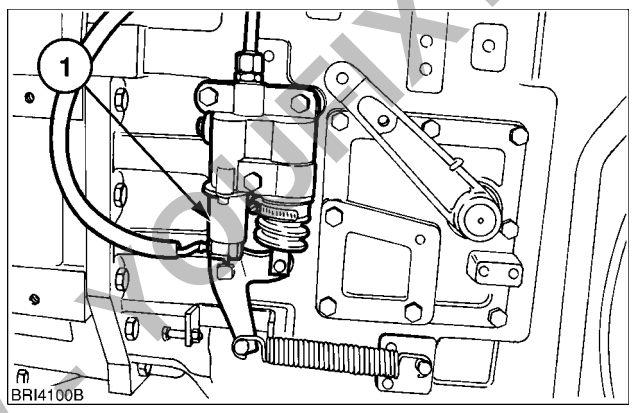


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The symbol for the creeper speeds will appear in the transmission display.

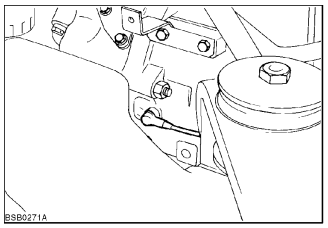
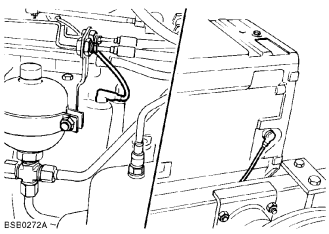
Release the downshift button and the clutch and brake pedals. The appropriate creeper speed can now be selected using the upshift and downshift buttons. To re-engage the standard gear ratios, upshift to 10th creeper speed and depress/hold the clutch and brake pedals. Hold down the transmission upshift button until 1st gear is engaged, the creeper symbol will disappear from the display.

When the creeper is activated the solenoid **(1)** on the left hand side of the tractor is energised allowing low pressure oil to operate the engagement piston and actuate the mechanical linkage. When the solenoid is de-energised the low pressure oil in the piston is open to reservoir and the spring loaded linkage disengages.



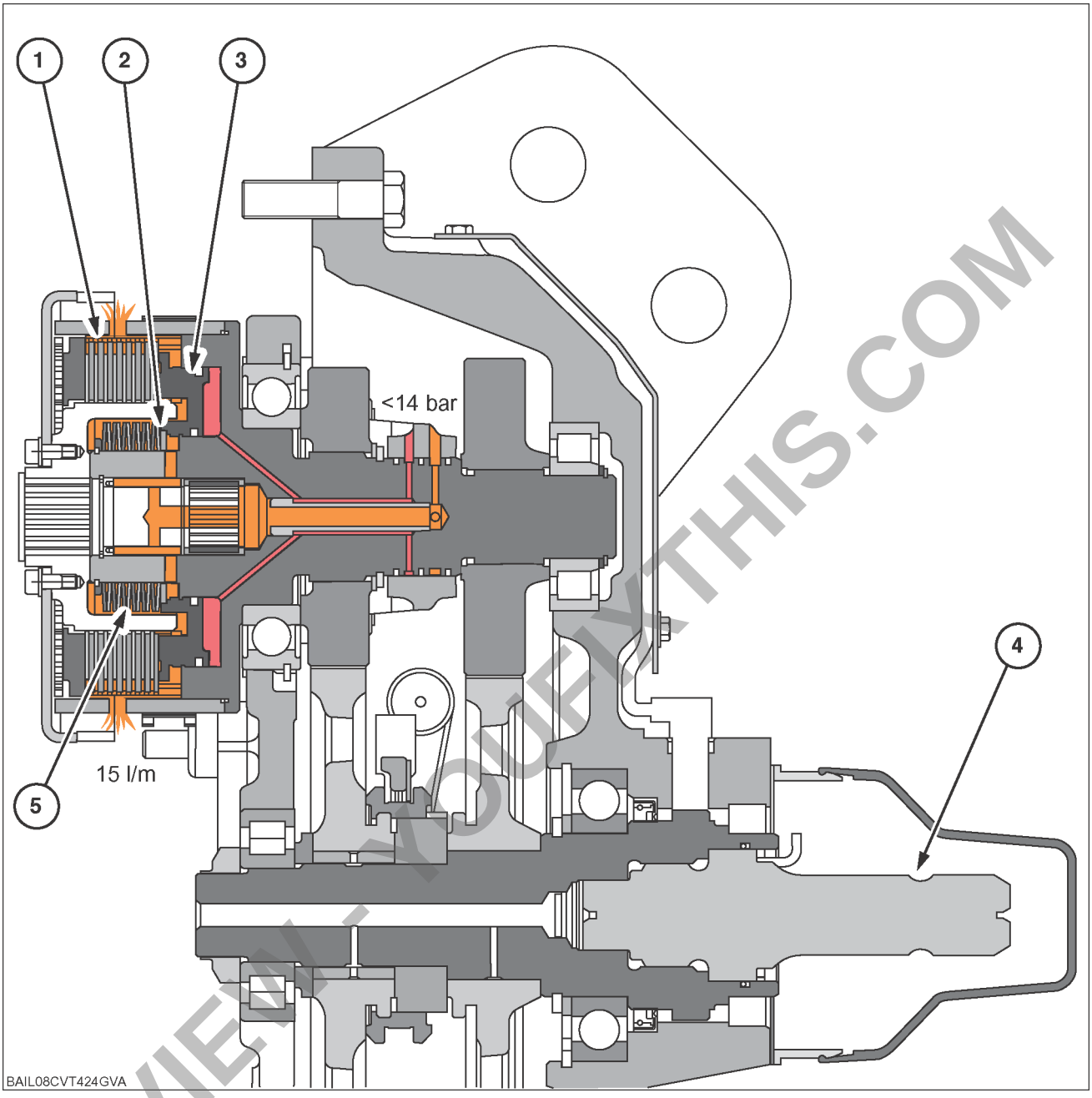
BRI4100B 14

The engagement of the clutches is controlled by inputs from various sensors and switches:-

INPUT SENSORS		
DESCRIPTION	FUNCTION	LOCATION
Engine Torque/RPM Sensor	Measures engine speed and torque by means of flywheel damper spring deflection. Depending on the torque being transmitted will assist in determining when a gear shift will occur	
Transmission Output speed and Mid-speed sensors	Measures transmission output speed and speed of the transmission at the input to the range section. The speeds are compared to assist in determining clutch engagement times	

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PTO CONTROL CLUTCH-INITIAL ENGAGEMENT

Low Pressure Clutch Engagement Oil < **14 bar** (**203.00 psi**)

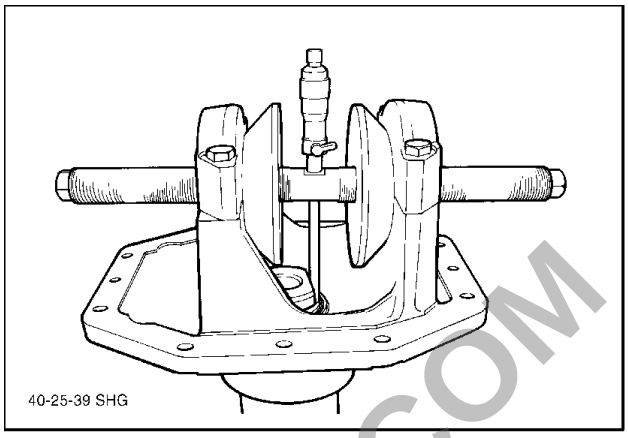
Lubrication Circuit Oil

1 Clutch Plates
2 Washer
3 Piston
4 PTO Output Shaft
5 Belleville Springs

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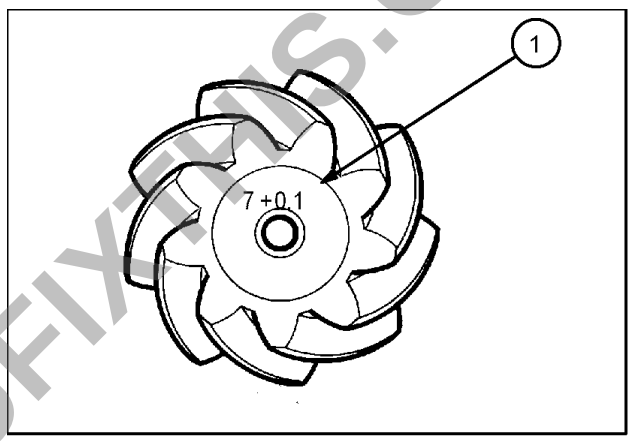
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7. Install Pinion Setting Tool No **380000249** complete with bearing cup and adjusting rings. Tighten bearing caps to **113 Nm** (**83 lbf**).
If Tool No **380000463** as described in pinion bearing shimming procedure is not available the Bearing Clamp Tool No 50048 may be used to clamp the bearings.
Adjust the cones of the tool so that the depth micrometer tip touches the inner race of the bearing and measure the dimension **(H4)**.



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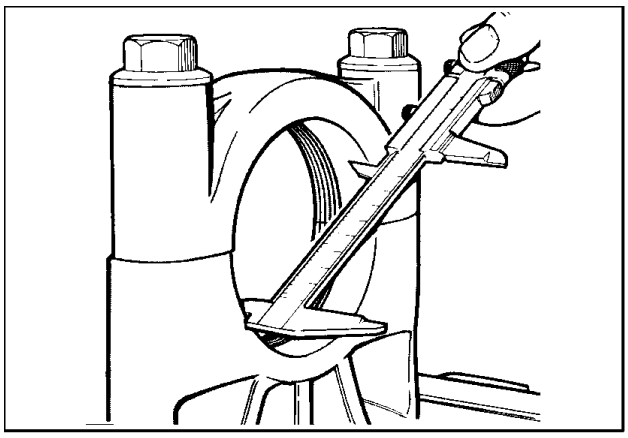
8. Determine the thickness of shims to be installed beneath the pinion gear as follows:
Shim thickness S2 = H4-H3
Where:-
H4 = Dimension measured using pinion micrometer tool
H3 = **122.5 mm +/- C**
122.5 mm is the nominal manufacturing dimension from rear face of pinion gear to conical point of pinion. (Supplied by Manufacturer)
C = Manufacturing correction factor stamped on face of pinion.
Example
H4 = 125.77
C = **+0.1 mm**
H3= 122.5 + 0.1 = **122.6 mm**
S2 = H4-H3 = 125.77 - 122.6
Shim Thickness S2 = **3.17 mm**



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Pinion Shimming using Tool 380000600

9. Install bearing caps (less bearing cup) and tighten to a torque of **113 Nm** (**83 lbf**).
Measure internal dimension of bearing bore and call this dimension ‘A’.



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STEERING Hydraulic - Torque

Steering General		
	Nm	lbf.ft
Steering cylinder tube connections	34	25
Steering Motor to cab frame bolts	73	54
Steering motor hose connections	73	54
Steering pump tube connections	50	37
Steering Wheel Retaining Nut	23.0	17.0
Front Wheel Nut	210.0	155.0
Motor End Cover	23.0	17.0
Cylinder, Rod End Nut (2WD)	280.0	207.0
Cylinder, Tube End Pin Retaining Bolt (4WD)	24.0	17.0
Column to Frame Bolt	23.0	17.0

STEERING Hydraulic - Special tools

DESCRIPTION	Tool Number
Pressure Gauge (**0 - 250 bar** (**0.0 - 3625.0 psi**))	**380000553**
Roto-glyd Seal Installer	**380000281**
Test Hose	**380000545**
Quick release coupler	**380000543**
Hydraulic hose Tee adaptor	**380000570**
Quick release fitting (7/16 UNF male fitting)	**380000492**

STEERING Hydraulic - General specification

Steering Pump	
Maximum pump flow @ rated engine speed	**66.5 l/min**
Maximum pump pressure @ rated engine speed	**190 bar**
Steering type	Dual gereotor - reactive
Steering rams	Balanced
Maximum steering angle (standard and suspended)	**55 °**

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SERVICE BRAKE Pneumatic - Troubleshooting

Problem	Possible Cause	Correction
Instrument cluster light illuminates when system is running.	System pressure below **4.5/3.5 bar**.	Compressor drive belt broken Check system for leaks Relief valve failed, stuck open Compressor fault Reservoir drain tap faulty
	Faulty switch or switch wiring	Disconnect wiring to switch. If light extinguishes replace switch. If light remains illuminated check wiring for short to earth.
Trailer brakes not functioning (system air pressure okay)	Air in braking system	Bleed brakes. Refer to **SERVICE BRAKE Hydraulic - Bleed (D.30.C)**
	Faulty pilot valve	Disconnect supply line to control valve from pilot valve assembly. Operate the brakes, if oil is expelled, pilot valve is okay. If no oil expelled remove and inspect pilot valve.
	Control valve faulty	Repair/replace as required
Delay in trailer brake operation	Dual line solenoid failed closed or permanently energised.	Disconnect wiring to solenoid. If brakes operate normally inspect wiring for short to **+12 v**. If still a delay in operation after wire disconnection replace solenoid assembly. Faulty brake switch
System pressure too high (exceeds 12 bar +/- 2)	Faulty Relief valve	Remove valve clean/replace. refer to **Relief valve - Remove (A.20.A)**

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