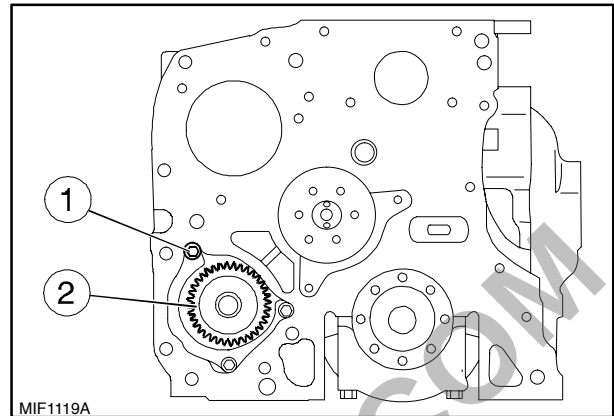


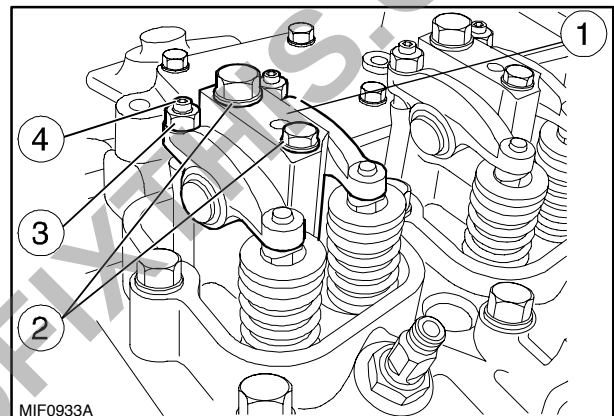
	Page	Date		Page	Date
18 – CLUTCH			Removal–Installation – clutch casing with Dual Command (2 Speed Power Shift)	19 to 27	12–04
Data	2	12–04	Disassembly–Assembly – clutch casing with Dual Command (2 Speed Power Shift)	28 to 36	12–04
Tightening Torques	3	12–04	Dual Command (2 Speed Power Shift) control rod ad- justments	36	12–04
Tools	3	12–04	Removal–Installation – Dual Command (2 Speed Power Shift) solenoid valve	37 to 40	12–04
Cross–sectional views ...	4	12–04	Working pressure test	40	12–04
Fault diagnosis	5	12–04	Disassembly–Assembly – Dual Command (2 Speed Power Shift) control valve	46–47	12–04
Checks and measure- ments – clutch	6–7	12–04			
Adjustments – clutch pedal	8	12–04			
Removal–Installation – clutch	9 to 11	12–04			
Clutch Overhaul	12 to 15	12–04			
Adjustments – clutch disen- gagement levers	16	12–04			
21 – TRANSMISSION					
CHAPTER 1 – Transmission and range gear (12x4)			CHAPTER 4 – Reverser and creeper unit		
Data	2	12–04	Data	2	12–04
Tightening Torques	3	12–04	Tightening torque	3	12–04
Tools	4–5	12–04	Tools	4–5	12–04
Cross–sectional views ...	6–7	12–04	Cross–sectional views ...	6–7	12–04
Description and Operation	8	12–04	Description and Operation	7	12–04
Fault diagnosis	8	12–04	Fault diagnosis	8	12–04
			Replacing clutch casing– reverser and creeper unit .	9 to 13	12–04
CHAPTER 2 – Reverser					
Data	2	12–04	CHAPTER 5 – Power Shuttle transmission with Dual Command (2 Speed Power Shift) function		
Tightening Torques	3	12–04	Data	2–3	12–04
Tools	4	12–04	Tightening torque	4–5	12–04
Cross–sectional views ...	4–5–11–12	12–04	Tools	6–7	12–04
Description and Operation	6	12–04	Cross–sectional views ...	8 to 10	12–04
Fault diagnosis	6	12–04	Description and Operation	11 to 17	12–04
Disassembly–Assembly – clutch casing–reverser ...	7 to 10	12–04	Disassembly–Assembly – clutch casing with power shuttle and Dual Command (2 Speed Power Shift)	18 to 24	12–04
CHAPTER 3 – Dual Command (2 Speed Power Shift)			Disassembly–Assembly – clutch (A)	25 to 30	12–04
Data	2–3	12–04	Disassembly–Assembly – clutch (B)	30	12–04
Tightening Torques	4	12–04			
Tools	5	12–04			
Cross–sectional views ...	6–8–11–12	12–04			
Description and Operation	8 to 15	12–04			
Fault diagnosis	16–17	12–04			

48. Take out the bolts (1) and remove the hydraulic pump drive gear (2).



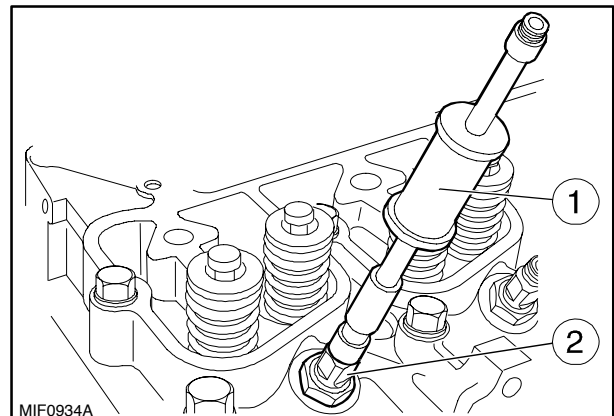
99

49. For each cylinder, remove the rocker arm assembly (1) loosen the adjuster nuts (3), unscrew the adjusters (4) and take out the screws (2).



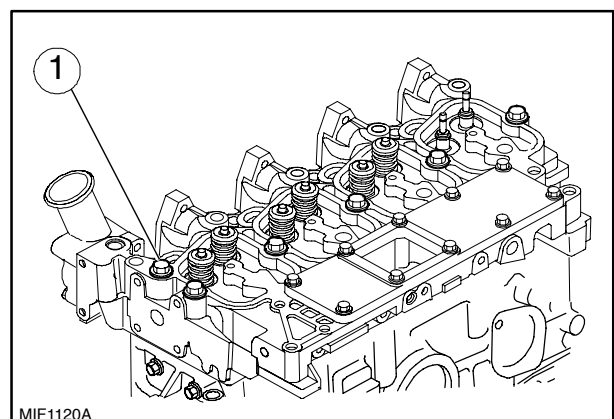
100

50. Extract the injectors (2) with tool **380000671** (1).



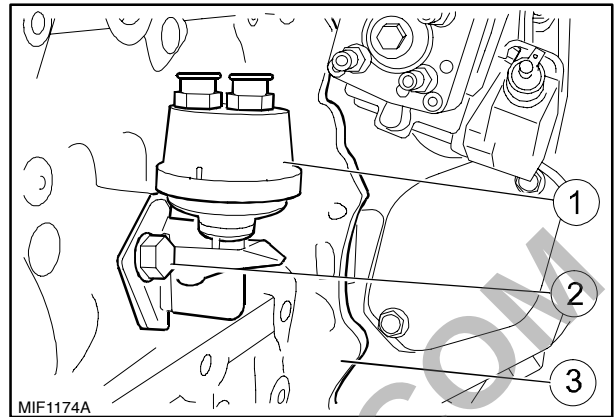
101

51. Take out the screws (1) fixing the head to the crankcase.



102

16. Fit the priming pump (1) on the crankcase (3) and tighten the retaining bolts (2) to the prescribed torque.
17. Remove the tools **380000988** and **380000732** for retaining/rotating the flywheel and place the starter motor in its seat.

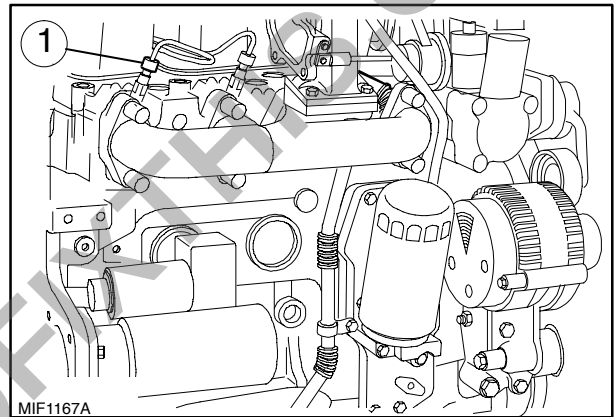


287

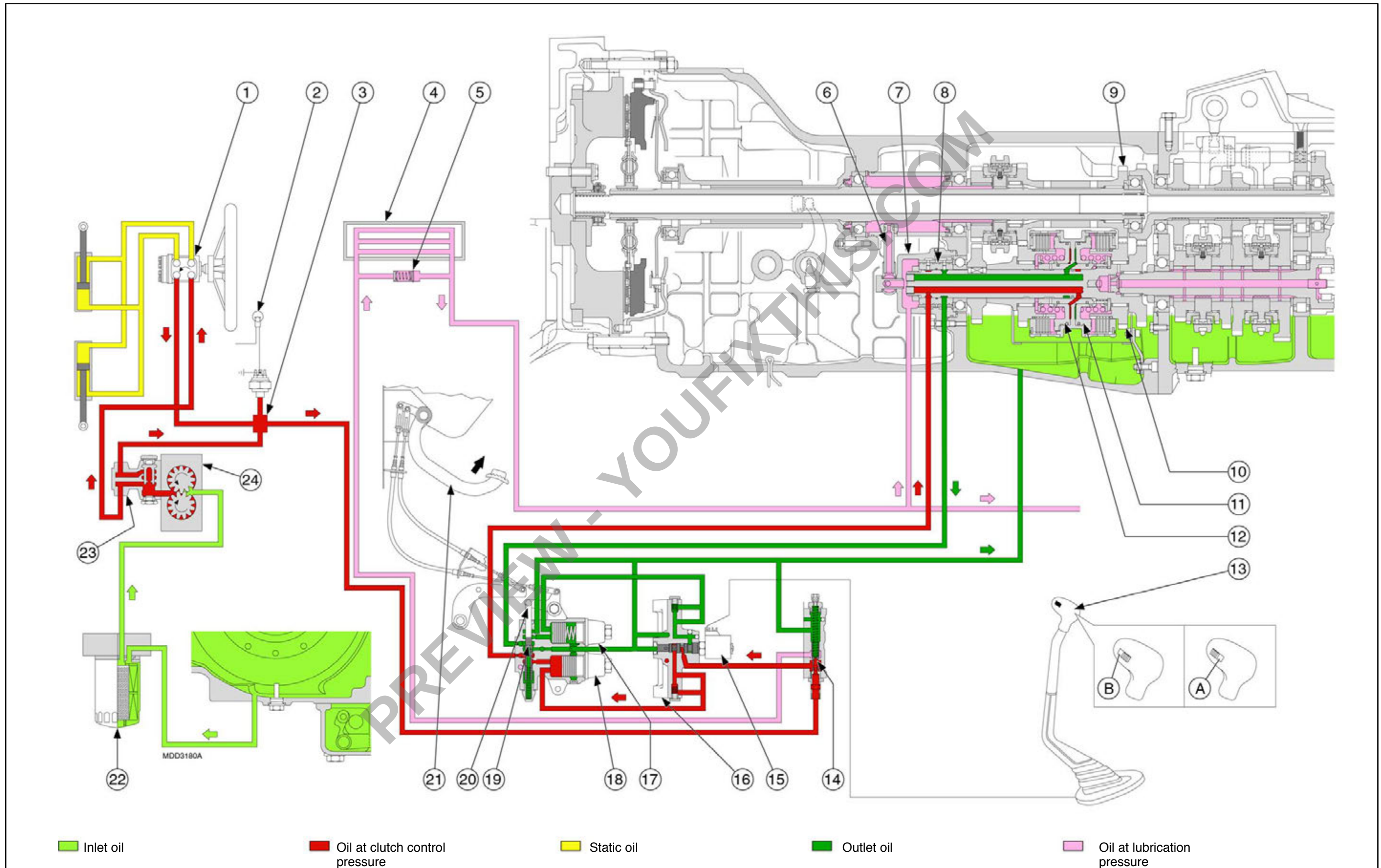
BOSCH INJECTION PUMP

Fuel circuit air bleeding

18. Loosen the injector delivery unions (1), make the engine turn with the starter motor and, after having checked that there are no air bubbles, tighten the unions (1).



288



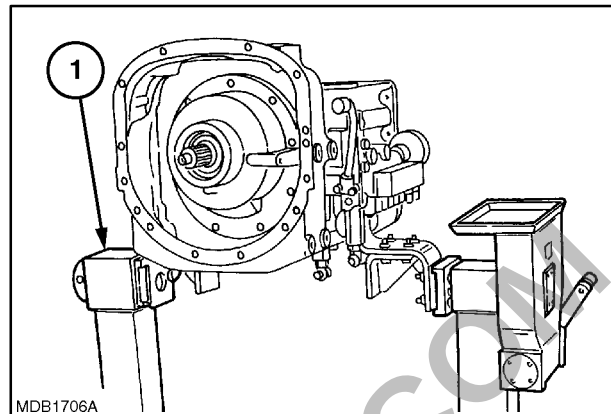
Op. 21 110 88

CLUTCH CASING WITH POWER SHUTTLE AND DUAL COMMAND (2 SPEED POWER SHIFT) UNITS D.A.**CAUTION**

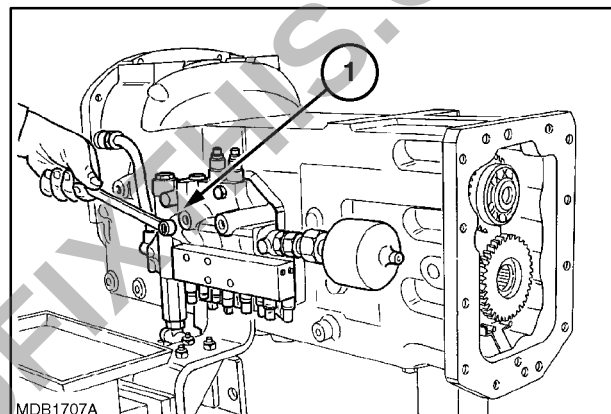
Handle all parts carefully. Do not put your hands or fingers between parts. Wear suitable safety clothing – safety goggles, gloves and shoes.

Proceed as follows.

1. Fix the gearbox –transmission casing to the rotating stand **380000301** (1) using front **380000271** and rear **380000272** brackets.
2. Unscrew the retaining screws and remove the control valve (1).

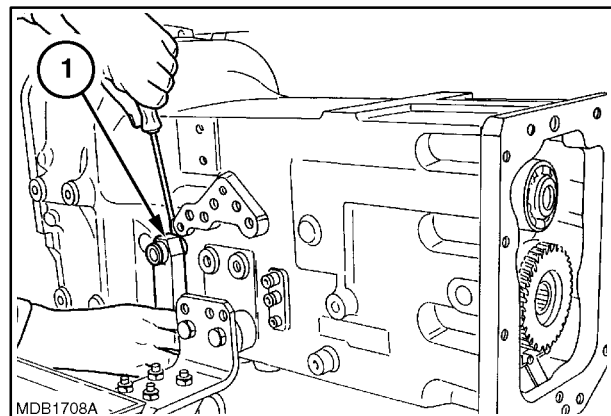


15



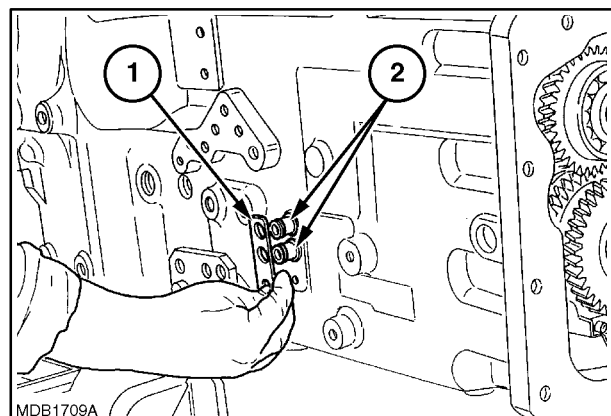
16

3. Extract the oil drainage union (1).

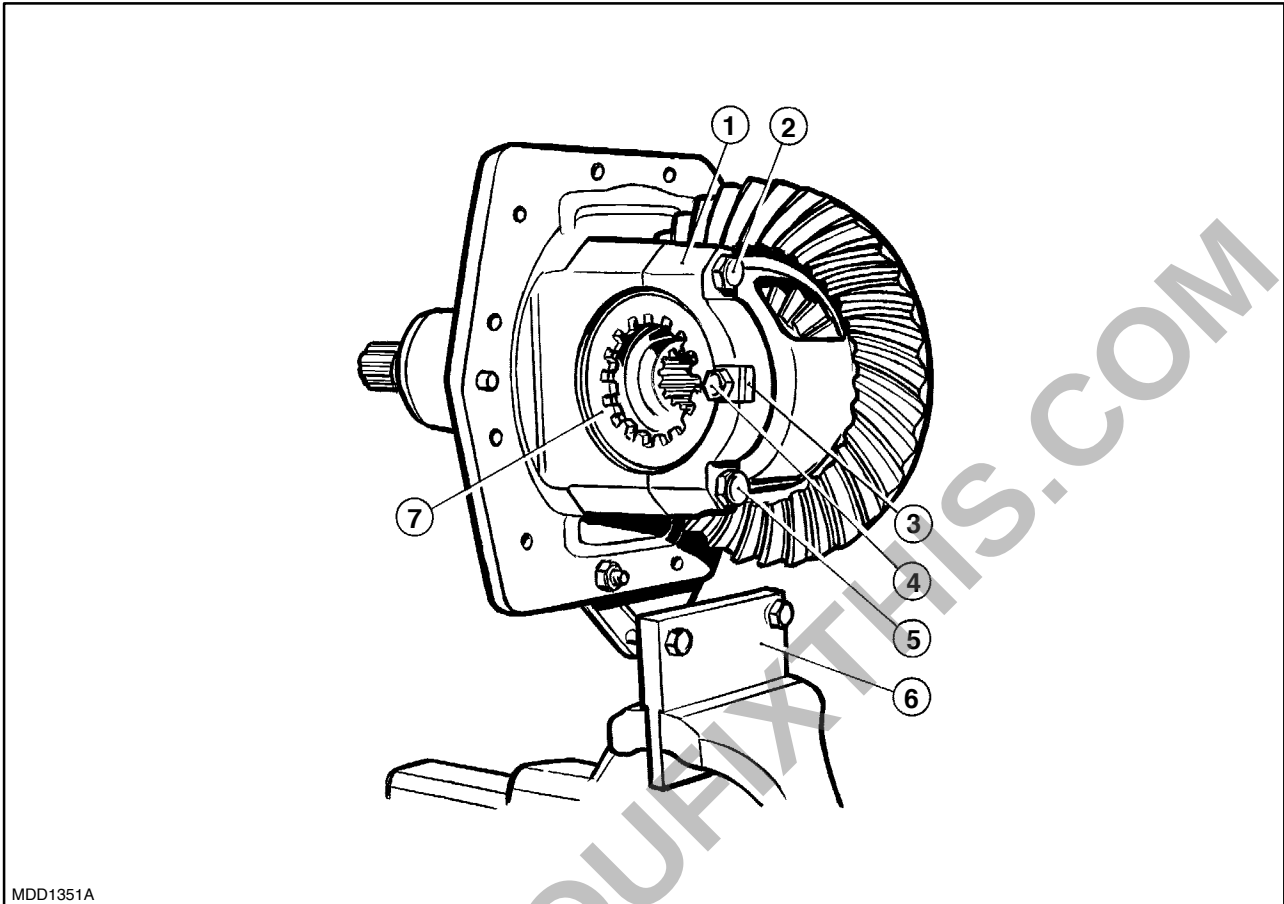


17

4. Unscrew the retaining screw, detach the bracket (1) and remove the control valve/internal manifold connecting lines (2).



18



MDD1351A

57

Front axle differential with LIM – SLIP for TL80A, TL90A and TL100A NORTH AMERICAN version (on request)

Op. 25 102 27

**FRONT AXLE DIFFERENTIAL
WITH LIM-SLIP UNIT****Overhaul****CAUTION**

Handle all parts carefully.

Do not put your hands or fingers between parts. Wear suitable safety clothing – safety goggles, gloves and shoes.

1. Remove the bevel drive-differential casing assembly from the front axle, attach to support **380 000 255** (6), lock in a vice and proceed with disassembly operations as follows.
2. Take out the bolts (4) and the plates (3) retaining the right- and left-hand ring nuts (7).
3. Check that the right- and left-hand caps (1) are clearly marked, so as not to interchange the parts during assembly operations.
4. Remove the right- and left-hand bearing adjustment ring nuts (7) from the crown wheel.
5. Take out the bolts (2) and caps (1) and separate the bevel crown wheel from the bevel pinion support.
6. If necessary, take out the retaining bolts (C1, page 4) and the bevel crown wheel.

ADJUSTING THE BEVEL DRIVE

Adjusting the bevel crown wheel bearings and checking the clearance between the sides of the bevel drive teeth

**CAUTION**

Handle all parts carefully.

Do not put your hands or fingers between parts.

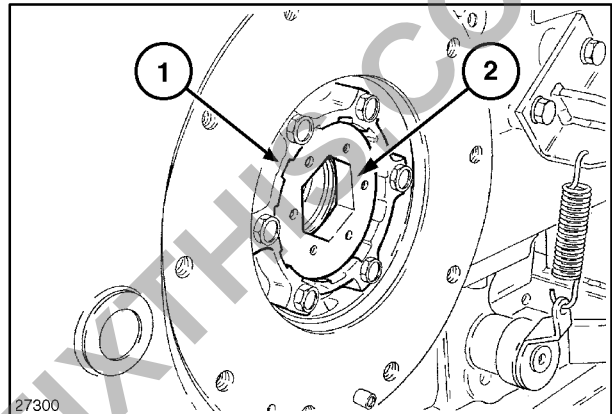
Wear suitable safety clothing – safety goggles, gloves and shoes.

**CAUTION**

Always use appropriate tools to align fixing holes.
NEVER USE FINGERS OR HANDS.

Proceed as follows.

61. With the bevel pinion fitted, insert the differential assembly complete with the bevel crown wheel. Fit the right-hand support (1) on the gearbox-transmission casing and position the ring nut (2) flush to the support.

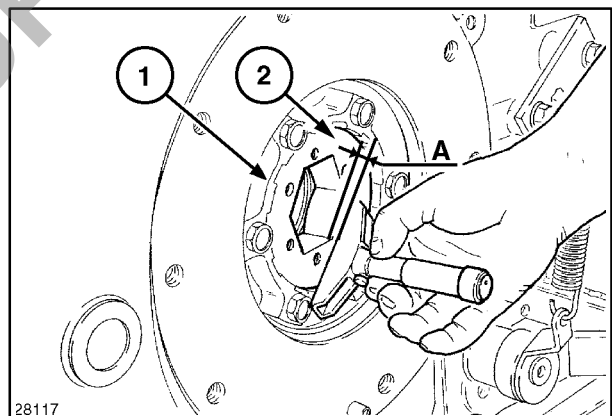


42

62. Assemble the left-hand support and tighten, using wrench **50027** (see fig. 9), the ring nut to a torque of 49 Nm (5 kgm) to settle in the bearings.

63. Unscrew the left-hand ring nut until it is flush with the relative support.

64. Tighten the right-hand ring nut (2) to obtain a distance of $A = 0.2529$ in (6.5 mm) between the external surface of the support (1) and the external surface of the ring nut.



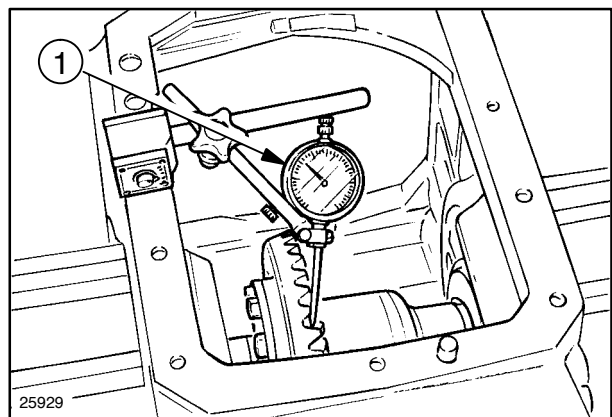
43

65. Bring the left-hand ring nut into contact with the relative bearing and tighten to a torque of 9.8 Nm (1 kgm) to adjust the clearance.

66. Using a 1/100 dial gauge (1), measure the radial clearance on the sides of the bevel drive teeth, under these conditions the clearance is 0.0157 to 0.0236 in. (0.4 to 0.6 mm) (three measurements at 120° and arithmetic mean of the three readings).

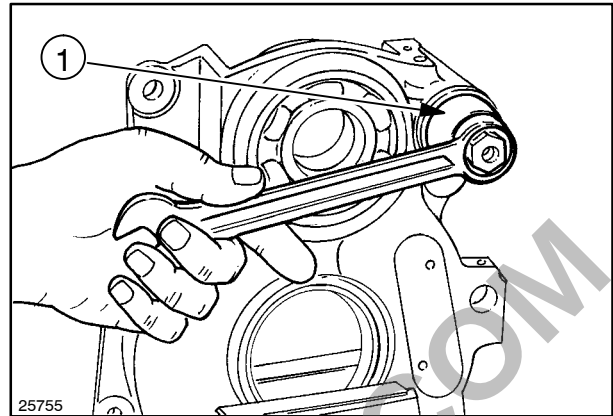
67. Loosen the left-hand ring nut by one turn.

68. Tighten the right-hand ring nut to obtain the correct clearance, according to the following table for radial clearance/axial movement.



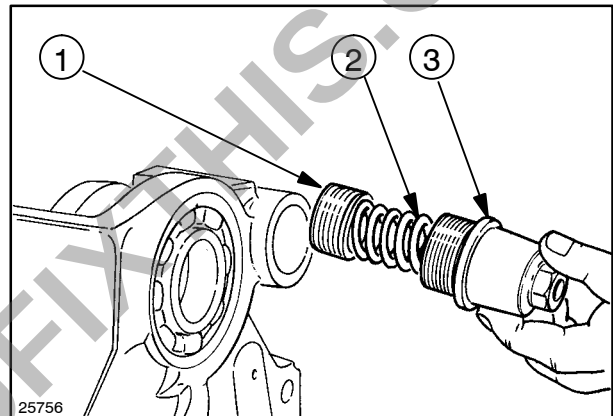
44

16. Remove the accumulator cap (1).



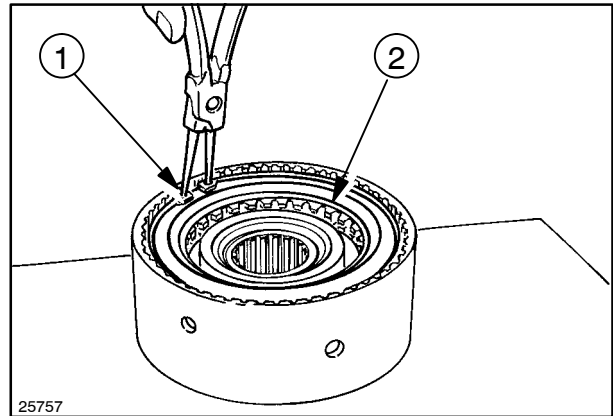
58

17. Remove the accumulator components, i.e.: the piston (1), the spring (2), the cover (3).



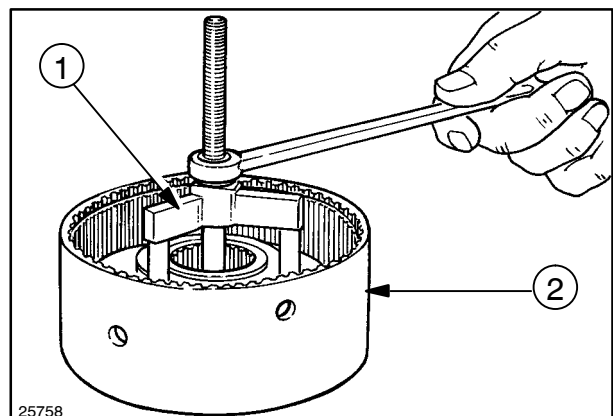
59

18. Remove the snap ring (1) the clutch disks reaction ring (2), and the driving and driven clutch disks.



60

19. Fit spring press tool **380000243** (1) on the disks support (2) as shown in the figure, tighten the tool to compress the internal spring.

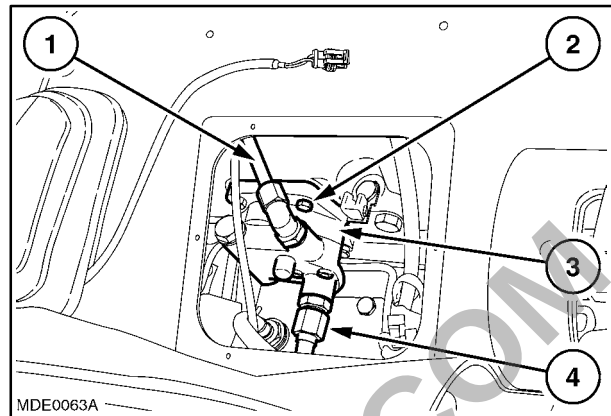


61

6. Disassemble lines (1) and (4) connected to the control valve, unscrew the securing bolts (2) and the control valve (3).

**CAUTION**

Always use appropriate tools to align fixing holes.
NEVER USE FINGERS OR HANDS.



91

7. To refit the control valve to the hydraulic lift body, proceed as follows:

- For the correct orientation of the various parts, refer to the previous illustrations.
- Before reassembling the control valve on the lift body, carefully clean and degrease the mating surfaces, then apply sealing compound [approx. 0.7874 in. (2 mm)] along the marked line shown in the drawing 67.
- Refit the control valve on the hydraulic lift body, tighten the bolts to the torque values listed on page 7.
- Reconnect the hydraulic lines to the control valve.
- Reassemble the cover on the platform and tighten the retaining bolts.
- Reposition the mat on the rear part of the platform.
- Refit the seat and tighten the retaining bolts.
- Reconnect the safety cable.

TIGHTENING TORQUES

PARTS TO BE TIGHTENED	Thread	Tightening torque	
		Nm	kgm
Lift			
Bolts securing front cover to lift	M 8 x 1.25	26	2.7
Cylinder safety valve (C ₆), page 8	M 20 x 1.5	83	8.5
Lift cylinder retaining bolts:			
– front	M 14 x 1.5	157	16
– upper	M 16 x 1.5	260	26.5
Implement hitching device			
Lateral stabiliser strut support retaining bolts	M 16 x 1.5	221	22.5
Pick-up hitch hook support retaining bolts	M 16 x 1.5	221	22.5

TOOLS

**WARNING**

The operations described in this section can only be carried out with the **ESSENTIAL** tools indicated by an **(X)**. To work safely and efficiently and obtain the best results, it is also necessary to use the recommended specific tools listed below and certain other tools, which are to be made according to the drawings included in this manual.

380000224 Hydraulic lift lifting hook.

380000238 Bracket to raise hydraulic lift.

X 380000225 Ring for fitting piston with lift seals.

X 380000262 Punch for fitting lift arm shaft seal.

X 380000230 Wrench for cylinder safety valve setting ring nut.

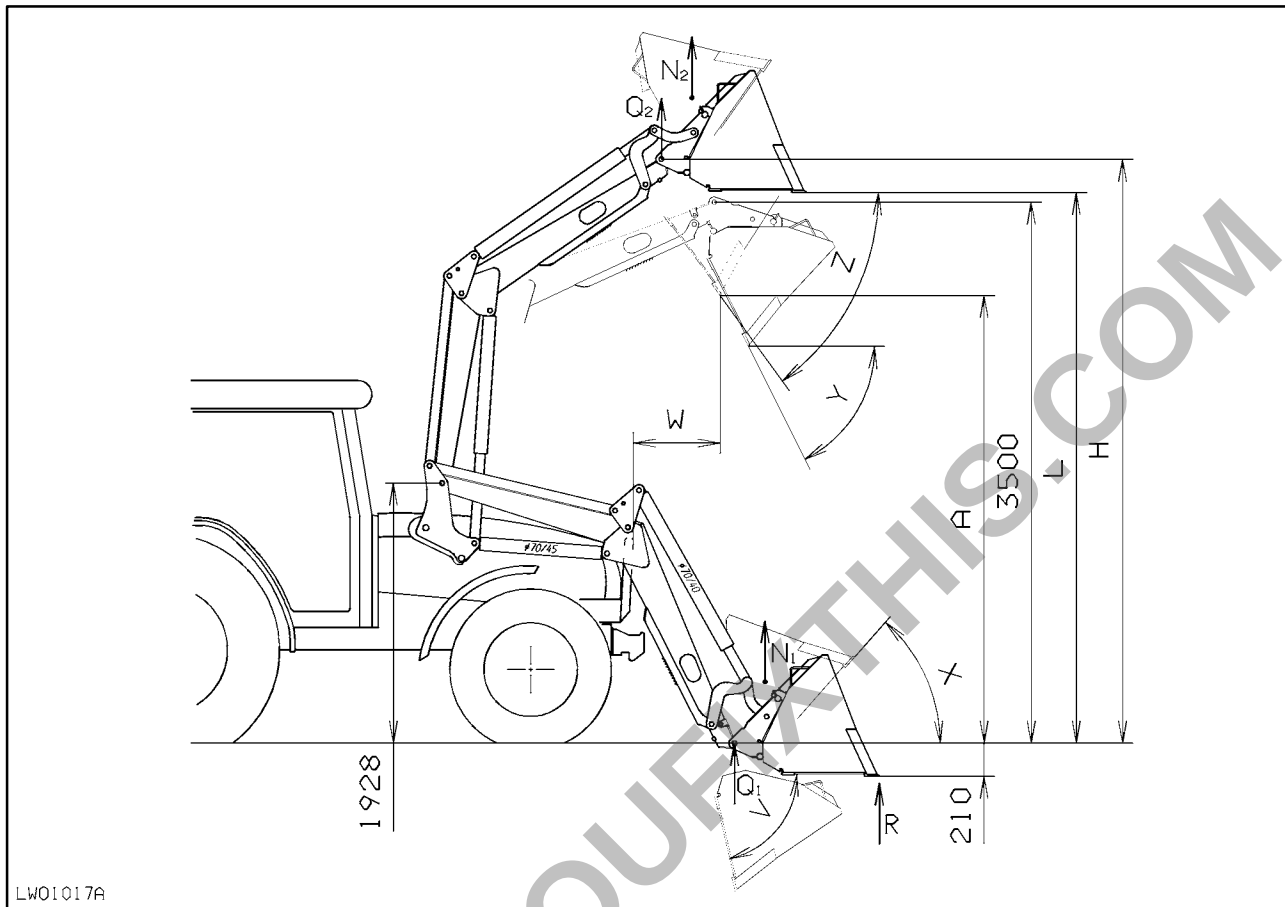
X 380000231 Wrench for lift pressure relief setting ring nut.

X 380000240 Universal pressure control kit.

X 380000215 Hand pump for valve calibration.

X 380000218 Union for cylinder safety valve calibration.

120FLMS

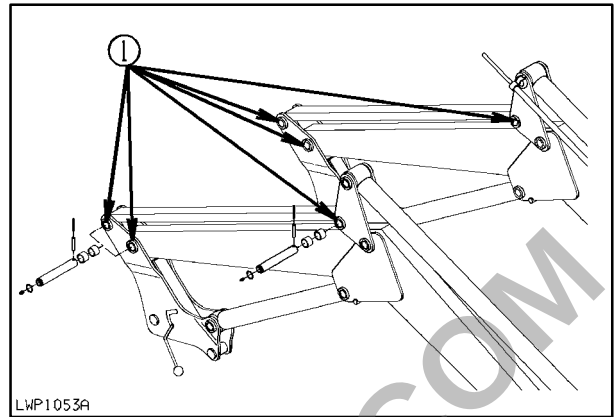


28

HYDRAULIC PUMP: 2682 psi (185 bar) (18.5 MPA) EFFICIENCY: 0.85				MS
Q ₁	Breakout force	At pivot pin, at ground level	lbs. (kg)	5094 (2310)
Q ₂	Lifting capacity	At pivot pin, max lift height	lbs. (kg)	3723 (1688)
N ₁	Load	Centre of gravity of bucket at X = Max	lbs. (kg)	4653 (2110)
N ₂	Load	Less bucket weight – 441 lbs. (200 kg)	lbs. (kg)	3281 (1488)
N ₁	Load	35.43 in. (900 mm) forward of pivot pin	lbs. (kg)	4830 (2190)
N ₂	Load	Less Pallet Fork weight – 264 lbs. (120 kg)	lbs. (kg)	3458 (1568)
R	Tearout force	At ground level	lbs. (kg)	5031 (2281)
H	Max. height of lifting	At attachment pivot pin	in. (mm)	160.7870 (4084)
L	Lift-over height	Bucket level	in. (mm)	152.5193 (3874)
V	Tip angle	With lift arm fully lowered	°	86
Z	Dump angle	At maximum lift height	°	58
Y	Dump angle	At 11.48 ft. (3.5 m) lift height	°	76
X	Roll-back angle	At ground level	°	47
A	Dump height	At "Z"	in. (mm)	125.6690 (3192)
W	Dump height	At "Z"	in. (mm)	30.9054 (785)

REPAIR INSTRUCTIONS**Componenti meccanici**

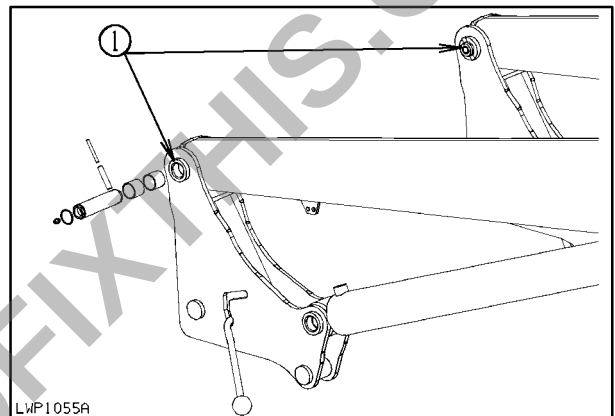
ATTENTION: Fit the pins (1) following the instructions.



120

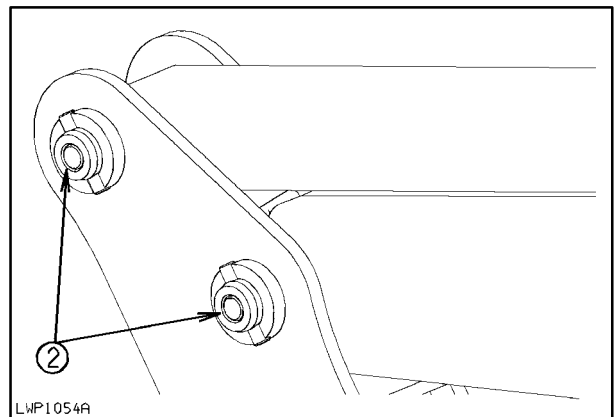
At (high stress) pivot points on the loaders, special high-grade pivot bolts are used.

- MS (1, fig. 120) 6 positions
- NS/HS (1, fig. 121) 2 positions



121

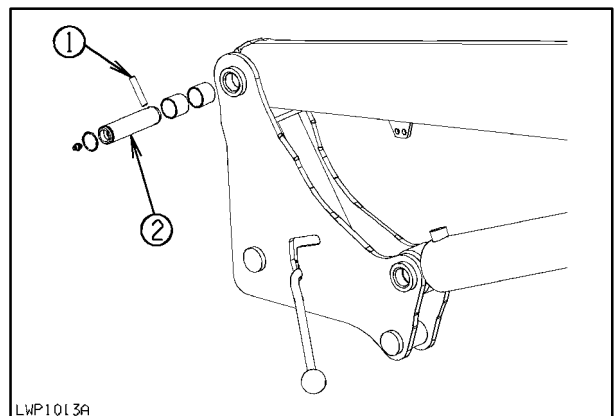
So take care on repairs that these pins are inserted again to the points marked with (1, fig. 120 and 121). The high-grade pins can be recognized by the ring groove mark (2, fig. 122) on the inside end face.



122

Replacing pins

1. Knock out hollow tension pin (1).
2. Knock out pin (2) with a suitable extractor.
3. Carry out assembly in reverse order.



123

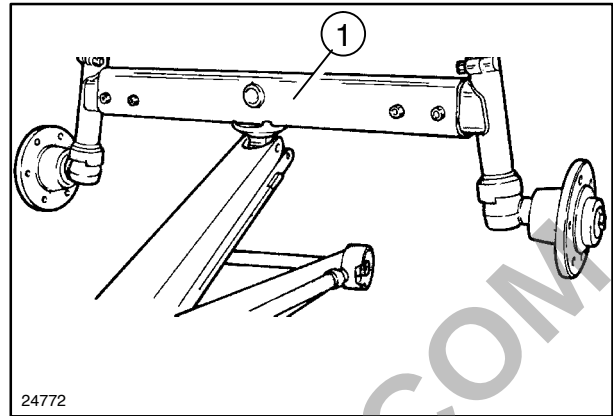
9. Remove the axle assembly (1).

10. To assemble, proceed as follows:

**CAUTION**

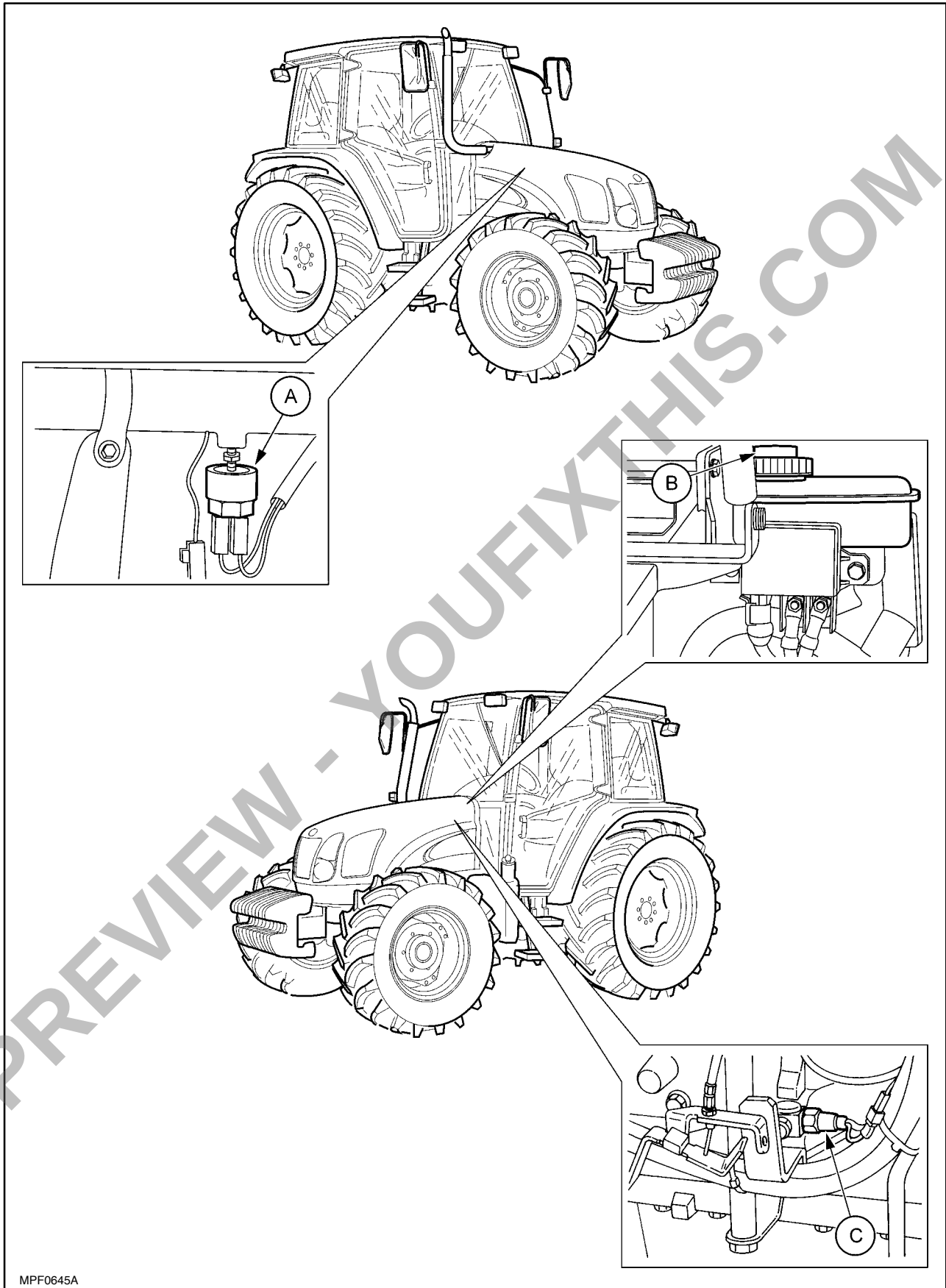
Always use appropriate tools to align fixing holes.
NEVER USE FINGERS OR HANDS.

- Refit the axle assembly on the tractor with the sling and, using a bronze striker, fit the axle articulation pin.
- Fit the axle articulation pin retaining bolt (1).
- Connect the hoses of the power steering cylinder.
- Fit on the front wheels and their retaining bolts.
- Remove the mechanical stand installed beforehand under the engine sump.
- Remove the chocks on the rear wheels.



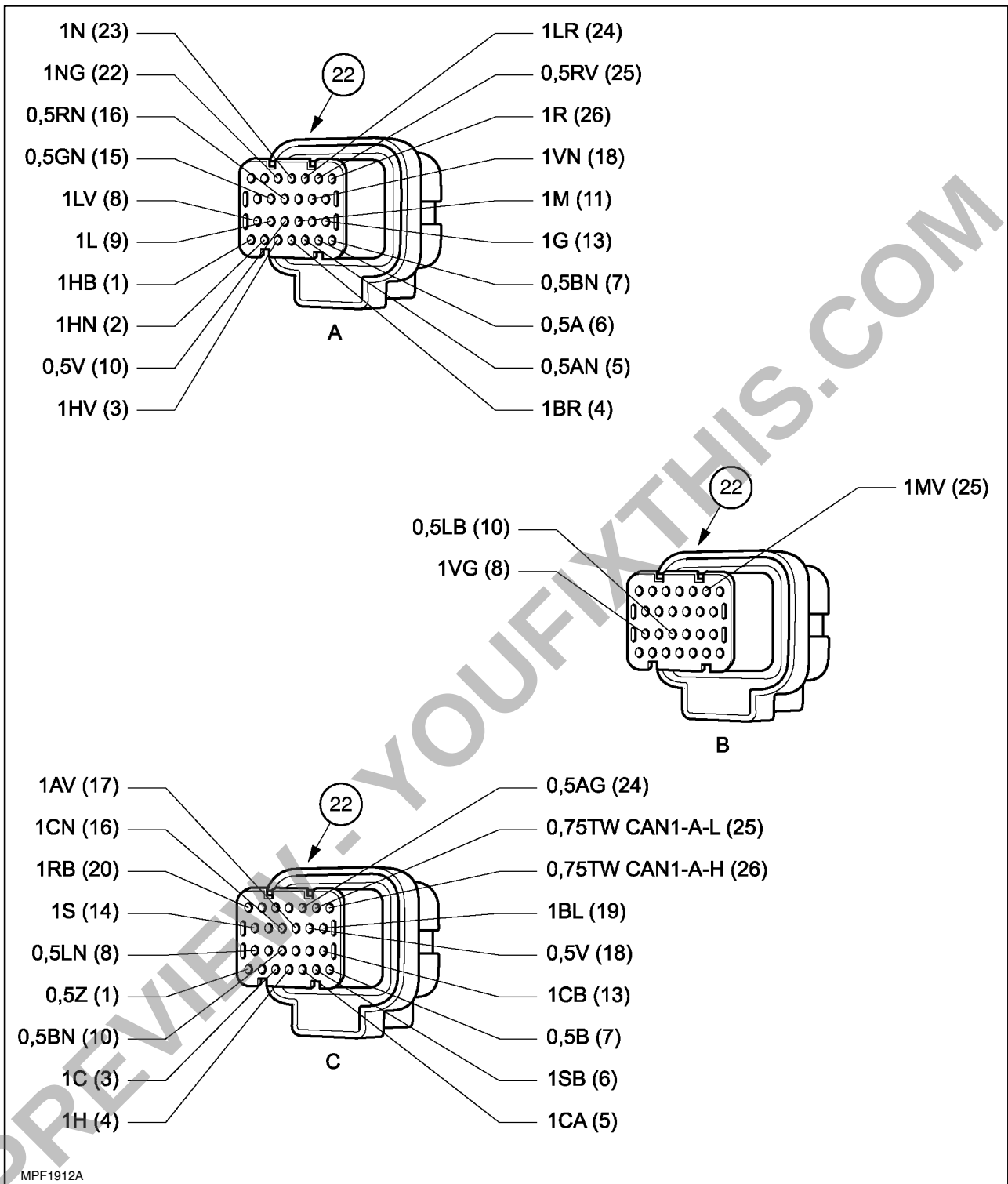
21

TRANSMITTERS, SENSORS AND SWITCHES



ELECTRICAL CIRCUIT COMPONENTS

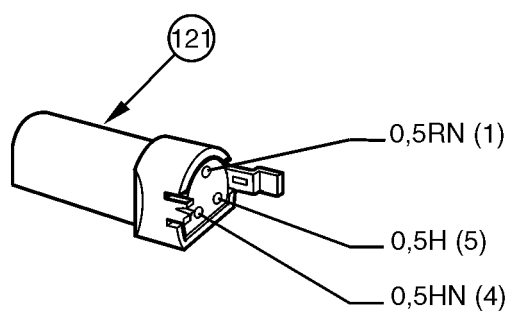
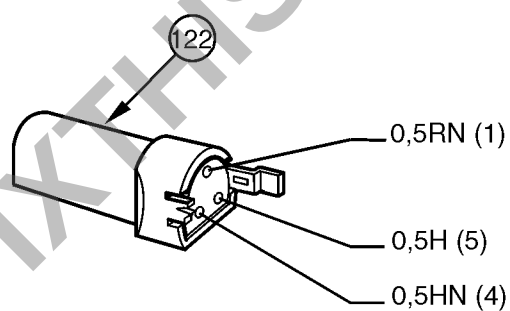
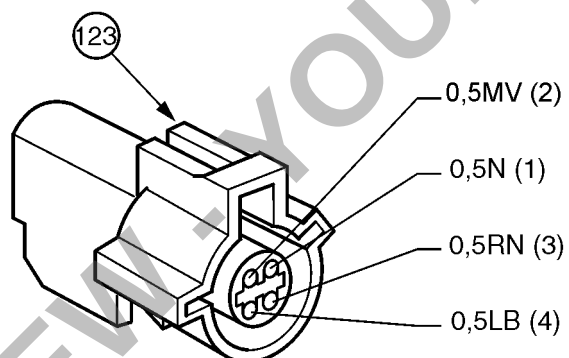
1	Battery
2	Engine coolant temperature sensor
4	Sediment filter sensor
5	Filter/dryer sensor
6	Front LH headlamp
7	Front RH headlamp
8	Horn
9	Air conditioning system compressor
10	Engine cut-out electromagnet
12	Air filter clogged sensor
13	Grid heater
14	Front lights connection
15	Fuses and relay control unit
16	Brake lights switches
17	RH front direction indicator and side light
18	Brake fluid level sensor
19	Dual Command (2 Speed Power Shift) control switch
22	Measuring device (ADIC)
23	Electrohydraulic PTO switch
25	Parking brake switch
26	RH front auxiliary work light
27	Cigar lighter
28	Rear windscreen wiper/washer switch
29	Rotating beacon control switch
31	Radio connections
33	RH speaker
34	Air-conditioner push-button
35	Ventilation and air-conditioning system connection
36	RH rotating beacon power socket
37	Windscreen wiper motor
38	Ventilation and air-conditioning system electric fan switch
39	Connection for auxiliary work light and RH rear extra direction indicator
40	Auxiliary power socket (internal)
41	RH number plate light (North America version)



POWER SHUTTLE CIRCUIT (dashboard side)
(Diagram N/2)

- 15 Fuses and relay control unit
 - F12 + 12V key miscellaneous circuits inside cab.
 - F23 Starter safety circuit
 - I 70A engine start-up relay
- 16 Brake lights switches
- 76 Reverser lever switch for Dual Command (2 Speed Power Shift)
- 86 Gearbox oil indicator lamp pressure switch
- 95 4WD control switch
- 96 Differential lock switch
- 111 Electronic lift connection
- 126 Clutch pedal switch
- 127 Lift status switch
- 129 Clutch pedal sensor
- 130 Power Shuttle lever
- 156 Transmission system connection (51 PIN – GREEN)
- 157 Grille LH front work light
- 169 Transmission control unit (TCM)
- 171 Transmission control unit diagnosis connection
- 178 Synchronized power take-off switch

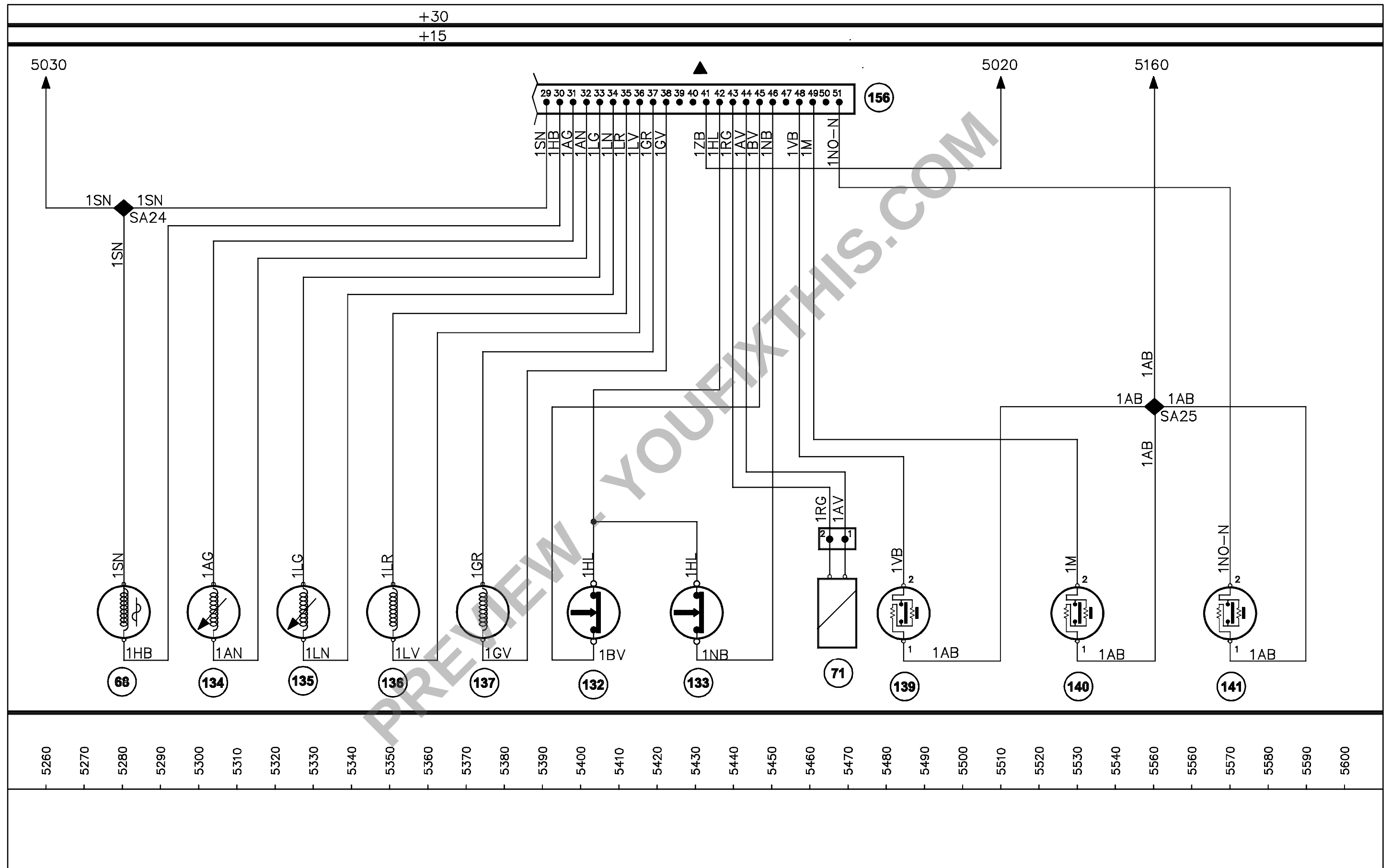
▲ See diagrams O/1 and O/2 – Pages 141 and 147.



MPE0180A

130

2055	Shuttle lever forward switch voltage high
2056	Shuttle lever forward switch voltage low
2057	Shuttle lever reverse switch voltage high
2058	Shuttle lever reverse switch voltage low
2059	Shuttle lever switches disagree
2065	Clutch C solenoid open circuit or short to ground
2066	Clutch D solenoid open circuit or short to ground
2067	Clutch D solenoid short to +12 volts
2068	Clutch C solenoid short to +12 volts
2069	Wheel speed sensor voltage too low
2073	12VF supply voltage is too high
2074	12VF supply voltage is too low
2076	Controller failure
2077	8 volt reference voltage supply too high
2078	8 volt reference voltage supply too low
2081	Clutch A safety pressure switch open circuit or short to ground
2082	Clutch A safety pressure switch short circuit
2083	Clutch B safety pressure switch open circuit or short to ground
2084	Clutch B safety pressure switch short circuit



ERROR CODE 2054 – 5 VOLT REFERENCE VOLTAGE SUPPLY TOO LOW**Cause:**

Short to ground or open circuit on the 5 Volt reference voltage supply to the shuttle lever, clutch pedal potentiometer, gear neutral and range switches.

Effects:

Transmission is critically disabled.

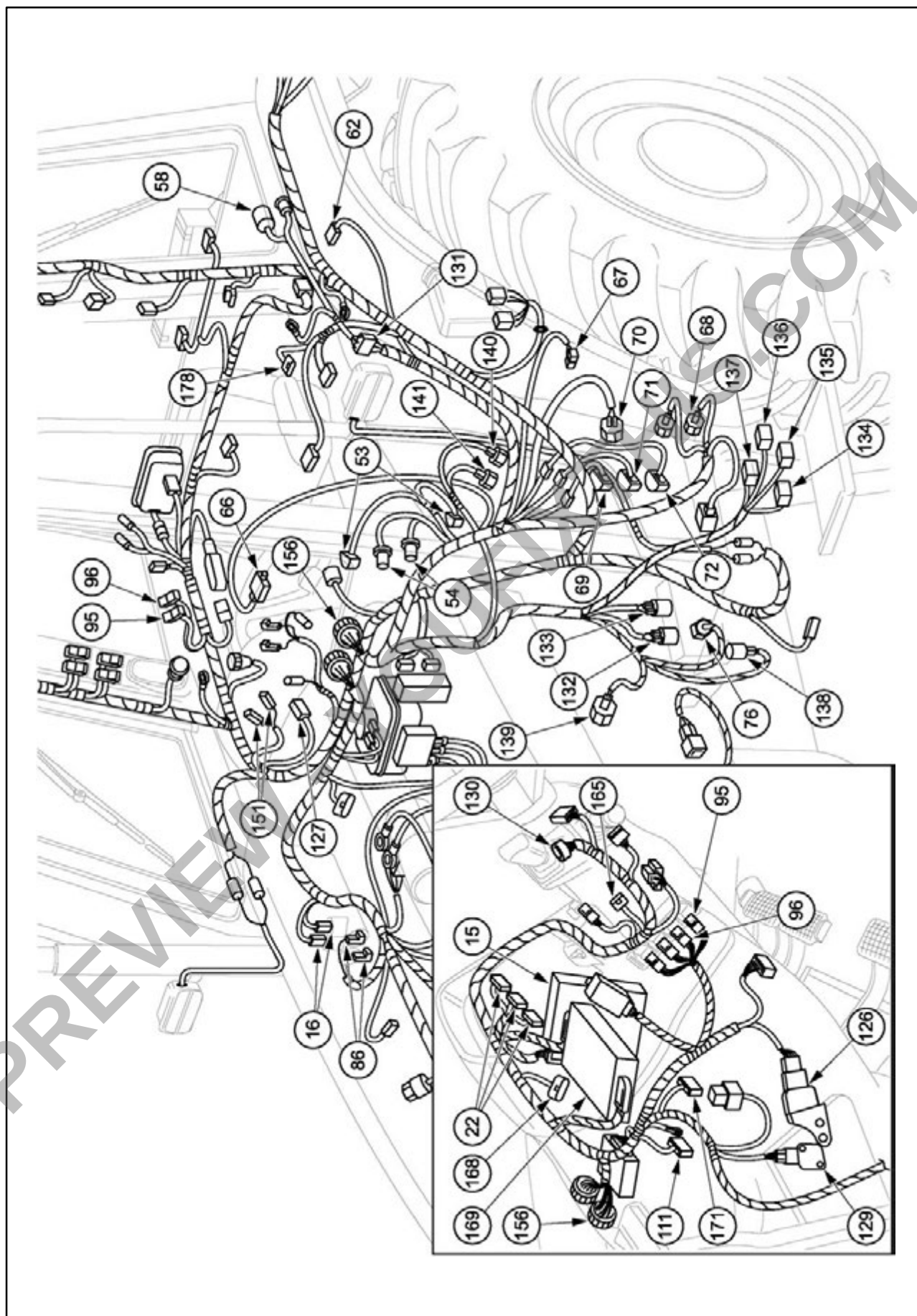
Possible failure modes:

1. Faulty connector
2. Faulty harness
3. Faulty controller

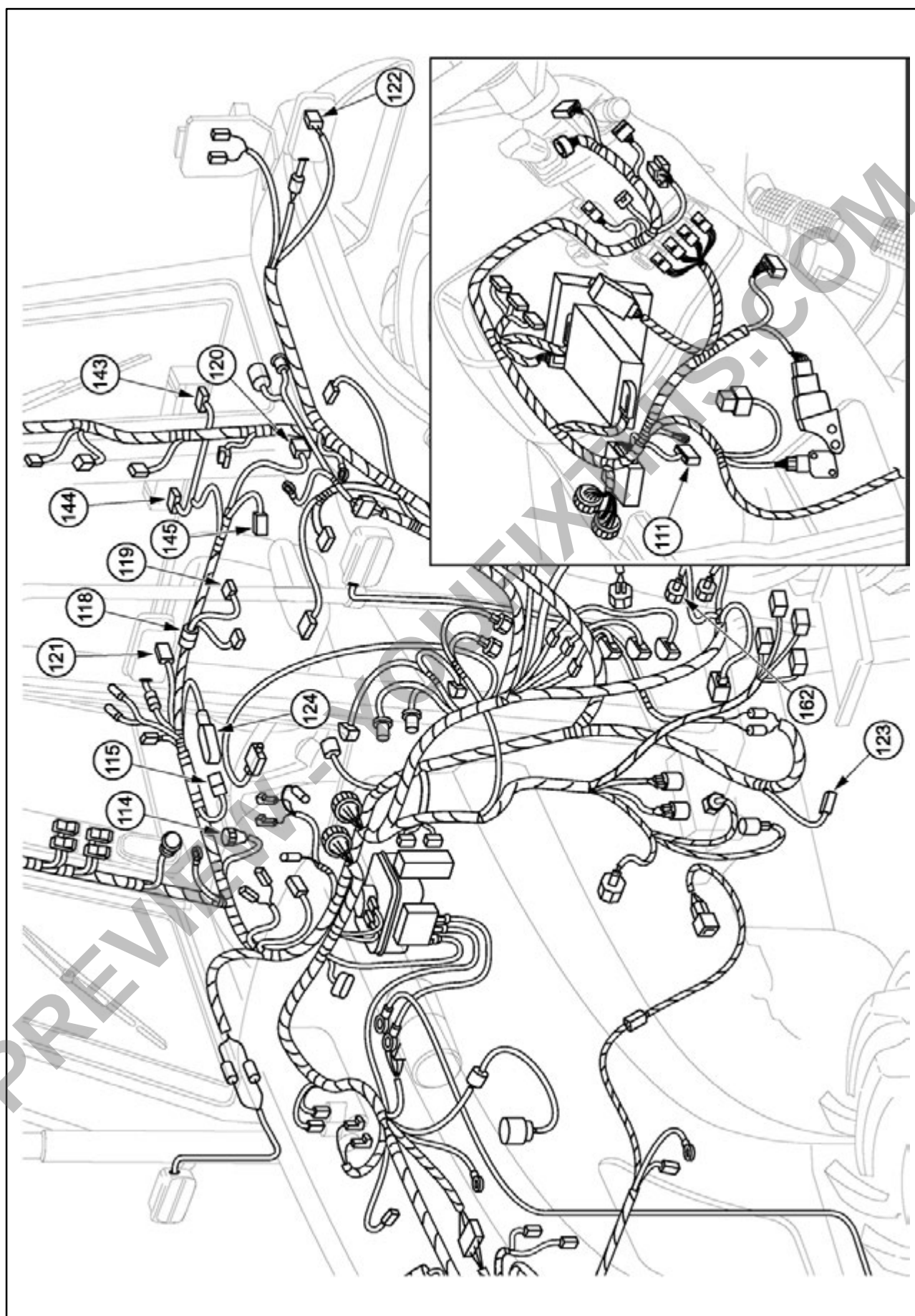
Solution:

NOTE: When the cause of the error code has been rectified, clear the error code and test the system for normal operation.

1. Check the controller connector **C169B_CN2**, inline harness connector **C156**, shuttle lever connector **C130**, clutch pedal potentiometer connector **C129**, gear neutral position switch **C139**, range position switch (R1) connector **C140** and range position switch (R2) connector **C141**.
 - A. Ensure the connectors are connected, not damaged, the pins are in the correct position and that the fit is tight. Repair or replace as required.
 - B. If the connectors are okay, continue to step 2.
2. Check for a short to ground.
 - A. Check between connector **C169B_CN2** pin **30**, wire **0.5 (AB)** and **ground**. If a short to ground is indicated, repair or replace the harness as required.
 - B. If the harness is okay, download the correct level of software. If the fault re-occurs, remove and replace the controller.







SECTION 55 – ELECTRICAL SYSTEM**Chapter 9 – HH MENU AND CALIBRATIONS****CONTENTS**

Section	Description	Page
	HH MENU access	2
	HH MENU of the control panel	4
	HH MENU of the transmission	11
	HH MENU of the advanced keypad	24

PREVIEW ONLY

You're viewing 25 of 1621 pages

The full manual includes:

- All 1621 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

New Holland TL70A, TL80A, TL90A, TL100A Service Manual



Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual