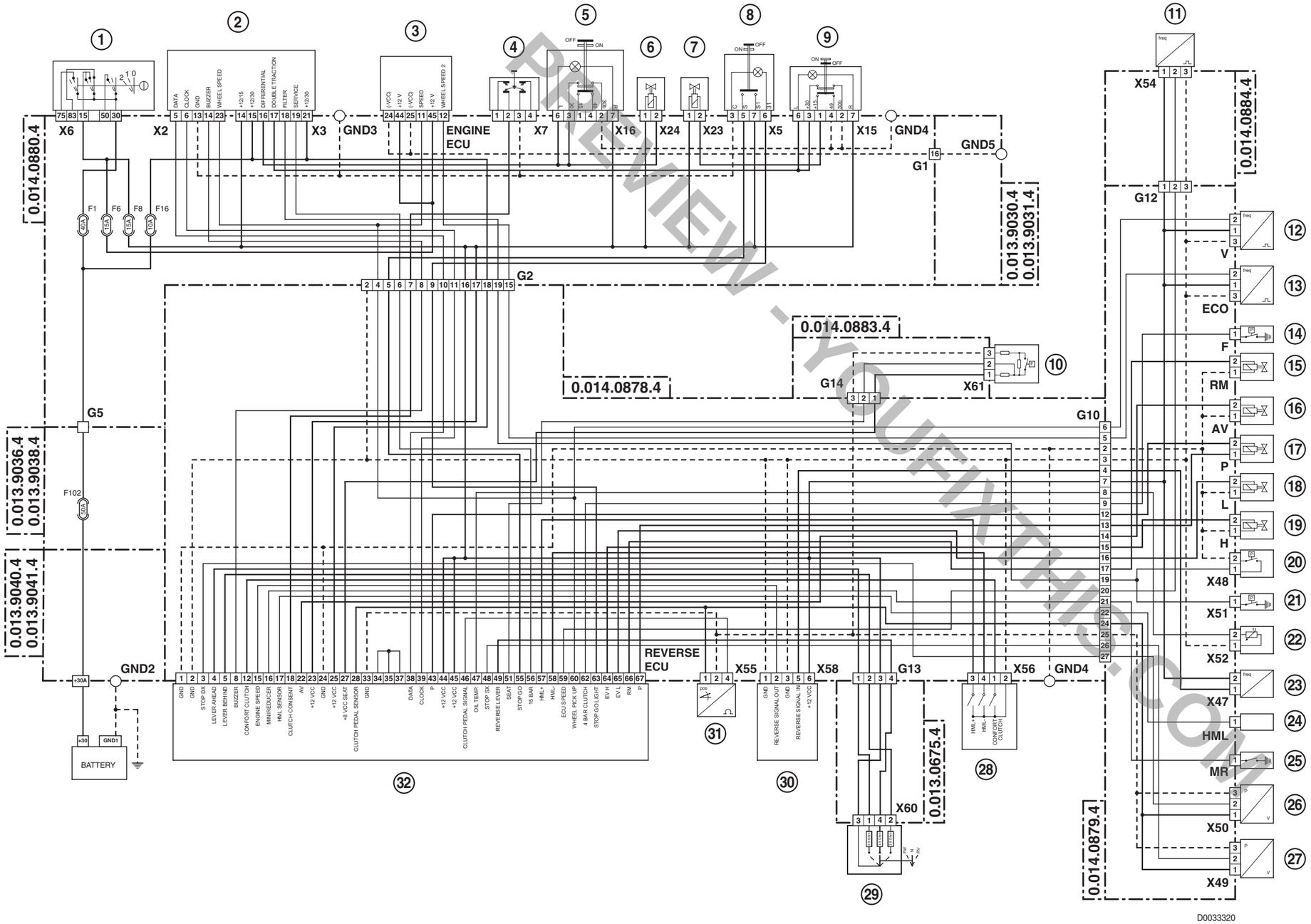
4.31 TRANSMISSION (VERSION WITH ELECTRONIC GOVERNOR)

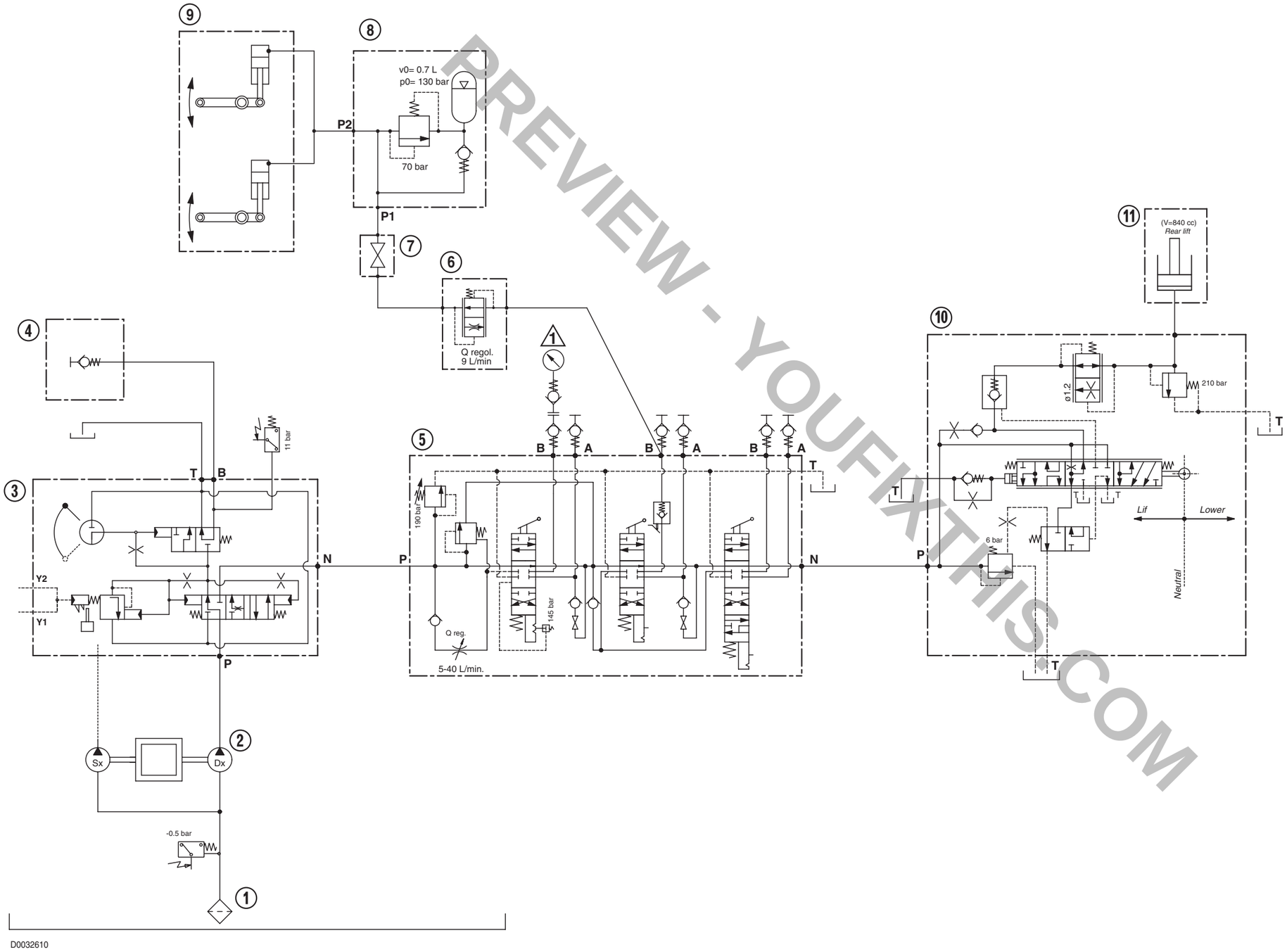


1 Starter switch
2 Instrument panel
3 Engine control unit
4 Clutch pedal switch
5 Differential lock pushbutton
6 Differential lock solenoid valve
7 4WD control solenoid valve
8 Stop-Go pushbutton
9 4WD control pushbutton
10 Operator present sensor
11 Engine speed sensor (for shuttle)
12 Wheel speed sensor 1
13 Wheel speed sensor 2
14 Shuttle oil prerssure switch
15 Reverse drive selection solenoid
16 Forward drive selection solenoid
17 Proportional solenoid valve
18 L speed control solenoid valve
19 H speed control solenoid valve
20 PALL filter clogging sensor
21 Pressure switch - oil filter clogging sensor
22 Oil temperature sensor
23 Shuttle sensor
24 Not utilised
25 Minireduction gear sensor
26 Right brake pressure sensor
27 Left brake presure sensor
28 Gear lever
29 Shuttle lever
30 Shuttle speed signal conversion control unit
31 Clutch pedal position sensor
32 Shuttle control unit

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4.4 HYDRAULIC DIAGRAM (full optional version) (2/2)

LIFT, TRAILER BRAKING AND AUXILIARY SERVICES CONTROL VALVE CIRCUIT



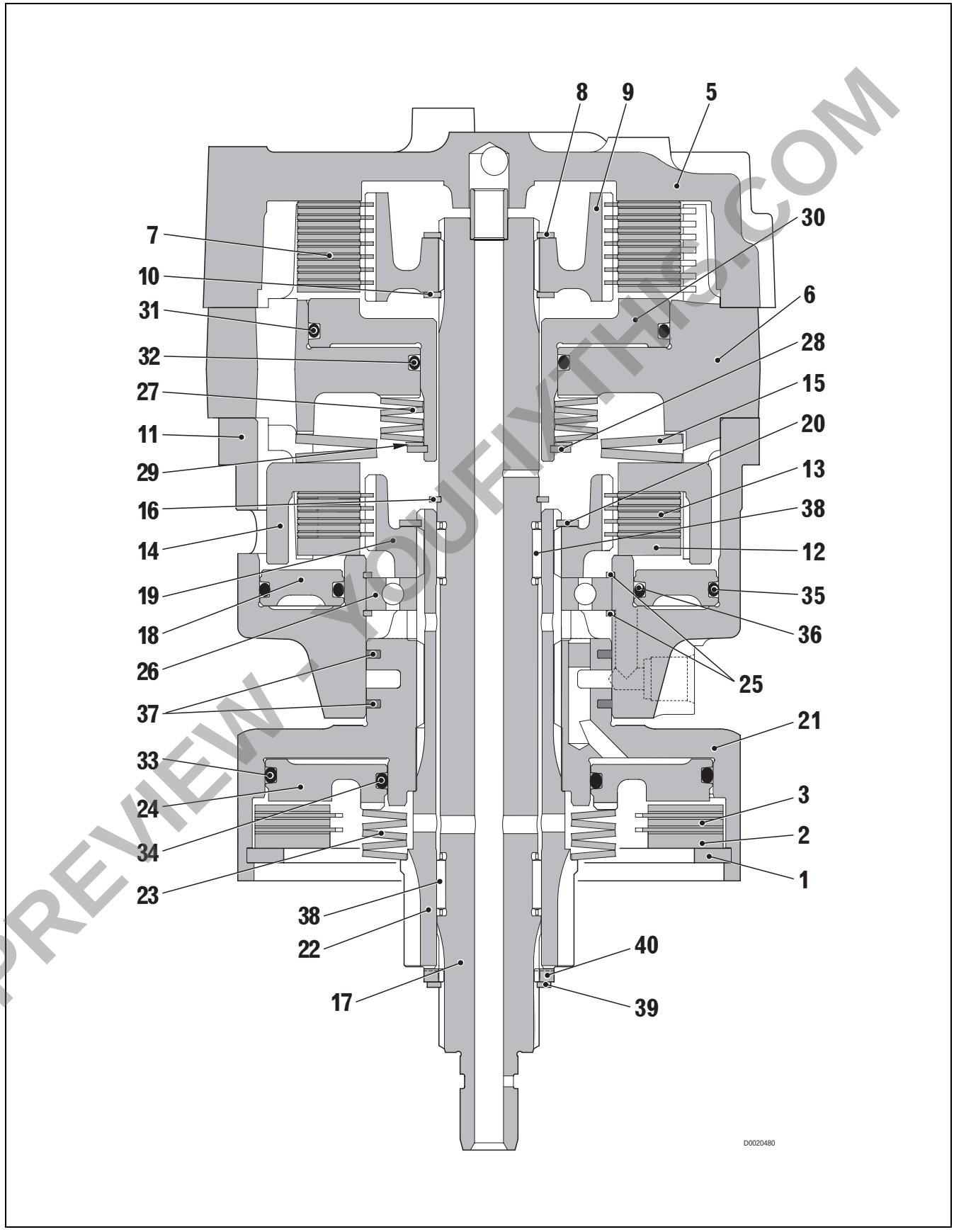
1 - Suction line filter (160 µm)
2 - Hydraulic pump (22.5 cc/rev)
3 - Hydraulic trailer braking valve
4 - Trailer braking coupler
5 - 6-way auxiliary services control valve
6 - Front lift down regulator valve
7 - Cock
8 - Damper valve assembly
9 - Front lift
10 - Lift control valve
11 - Lift control cylinder

⚠1 Pressure coupler - not installed on this machine

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CLUTCHES ASSEMBLY

Disassembly



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TIGHTENING TORQUES

Nm

1. SCREWS AND NUTS

⚠ The tightening torques for certain specific components and special tightening methods are indicated in the relative assembly paragraphs.

★ The tightening torques indicated below refer to screws and nuts assembled without lubrication and, where applicable, with anaerobic threadlocking compound.
The values apply to tightening on steel or cast iron components; for soft materials such as aluminium, copper, plastic, sheet metal or panels, the indicated tightening torques must be reduced by 50%.

SCREW SIZE		SCREW CLASS					
		8.8		10.9		12.9	
		Nm	lb.ft.	Nm	lb.ft.	Nm	lb.ft.
COARSE THREAD	M6x1	8,0 –8,8	5.9 –6.5	11,8 – 13,0	8.7 –9.6	13,8 – 15,2	10.2 –11.2
	M8x1.25	19,4 –21,4	14.3 –15.8	28,5 – 31,5	21.0 – 23.2	33,3 – 36,9	24.5 – 27.2
	M10x1.5	38,4 – 42,4	28.3 – 31.2	56,4 – 62,4	41.6 – 46.0	67,4 – 74,4	49.7 – 54.8
	M12x1.75	66,5 – 73,5	49.0 – 54.2	96,9 – 107	71.4 – 78.9	115 – 128	84.8 – 94.3
	M14x2	106 – 117	78.1 – 86.2	156 – 172	115,0 – 126,8	184 – 204	135.6 – 150.3
	M16x2	164 – 182	120.9 – 134.1	241 – 267	117.6 – 196.8	282 – 312	207.8 – 229.9
	M18x2.5	228 – 252	168.0 – 185.7	334 – 370	246.2 – 272.7	391 – 432	288.2 – 318.4
	M20x2.5	321 – 355	236.6 – 261.6	472 – 522	347.9 – 384.7	553 – 611	407.6 – 450.3
	M22x2.5	441 – 487	325.0 – 358.9	647 – 715	476.8 – 527.0	751 – 830	553.5 – 611.7
	M24x3	553 – 611	407.6 – 450.3	812 – 898	598.4 – 661.8	950 – 1050	700.2 – 773.9
	M27x3	816 – 902	601.4 – 664.8	1198 – 1324	882.9 – 975.8	1419 – 1569	1045.8 – 1156.4
FINE THREAD	M8x1	20,8 – 23,0	15.3 – 17.0	30,6 – 33,8	22.6 – 24.9	35,8 – 39,6	26.4 – 29.2
	M10x1.25	40,6 – 44,8	29.9 – 33.0	59,7 – 65,9	44.0 – 48.6	71,2 – 78,6	52.5 – 57.9
	M12x1.25	72,2 – 79,8	53.2 – 58.8	106 – 118	78.1 – 87.0	126 – 140	92.9 – 103.2
	M12x1.5	69,4 – 76,7	51.1 – 56.5	102 – 112	75.2 – 82.5	121 – 134	89.2 – 98.8
	M14x1.5	114 – 126	84.0 – 92.9	168 – 186	123.8 – 137.1	199 – 220	146.7 – 162.1
	M16x1.5	175 – 194	129 – 143	257 – 285	189.4 – 210.0	301 – 333	221.8 – 245.4
	M18x1.5	256 – 282	188.7 – 207.8	375 – 415	276.4 – 305.9	439 – 485	323.5 – 357.4
	M20x1.5	355 – 393	261.6 – 289.6	523 – 578	385.5 – 426.0	611 – 676	450.3 – 498.2
	M22x1.5	482 – 532	355.2 – 392.1	708 – 782	521.8 – 576.3	821 – 908	605.1 – 669.2
	M24x2	602 – 666	443.7 – 490.8	884 – 978	651.5 – 720.8	1035 – 1143	762.8 – 842.4

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5.1.3 LIST OF ALARMS DISPLAYED ON ART

Display on ART	Code	Alarm description	ECU response	Page
Acc.manuale C.A.	M8	The control unit detects that the hand throttle potentiometer is disconnected.	The engine continues to operate but the hand throttle does not work.	20-67
Acc.manuale C.C.	M8	The control unit detects that the hand throttle potentiometer is short-circuited.	The engine continues to operate but the hand throttle does not work.	20-66
Allarme Generico		The control unit detects a hardware problem.	The engine works, but the lamps and solenoid valves are not controlled.	20-79
Attuatore C.A.	M2	The control unit detects that the actuator is not connected.	The engine fails to start.	20-62
Attuatore C.C.	M2	The control unit detects that the actuator is short-circuited.	The engine is stopped and it can no longer be started.	20-63
Blocco EV HL PTO		Alarm available but not utilized		–
Candeletta C.A.		Alarm available but not utilized		–
Candeletta1 C.A.		The control unit detects that the preheating device supply relay is faulty.	The engine continues to operate but the preheating system does not work.	20-81
Candeletta2 C.A.		Alarm available but not utilized		–
EEPROM guasta	M5	The control unit detects damage to the EEPROM.	The engine continues to operate but with the default settings.	20-79
Err.Configuraz.	M11	The control unit detects that the maximum travel speed parameter does not correspond to the tractor configuration.	The engine continues to work properly, but the top speed is fixed at 1500 rpm.	20-86
EV H C.A.		Alarm available but not utilized		–
EV H C.C.		Alarm available but not utilized		–
EV L C.A.		Alarm available but not utilized		–
EV L C.C.		Alarm available but not utilized		–
EV Pre. C.A.		Alarm available but not utilized		–
EV PTO C.A.		The control unit detects that the rear PTO control valve is disconnected.	The engine continues to run normally but it is not possible to operate the rear PTO.	20-78
EV PTO C.C.		The control unit detects that therear PTO control valve is short-circuited.	The engine continues to run normally but it is not possible to operate the rear PTO.	20-77
Flash guasta		The control unit detects a fault with the Flash memory	The control unit does not activate the systems and it is not possible to start the engine.	20-79
Lampada cin.C.A.		Alarm available but not utilized		–
Lampada M C.A.		Alarm available but not utilized		–

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WHEELS

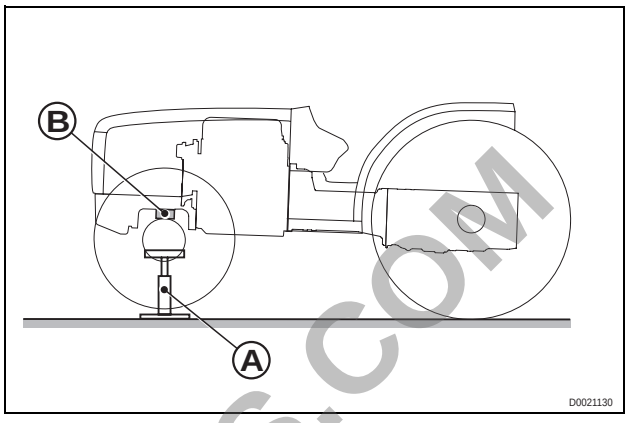
FRONT WHEELS

Removal

Remove the key from the starter switch and apply the parking brake.

1 - Raise the tractor and position two stands *"A"* under the front axle.

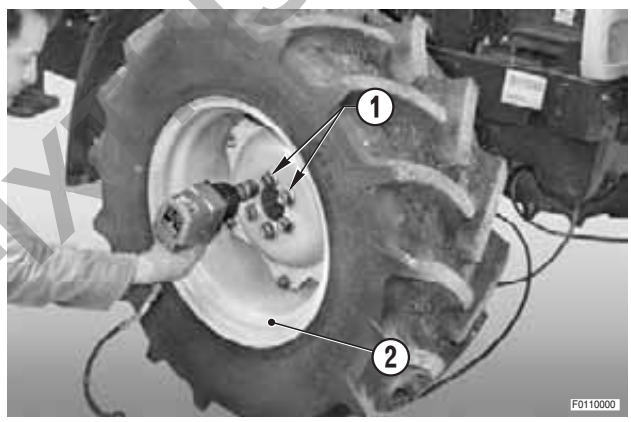
★ Drive safety wedges "*B*" between the axle and the front support.



2 - Remove all the bolts (1) except one for safety.

3 - Remove the wheel (2).

4 - Repeat the above operations for the other wheel.



Refitting

- Refitting is the reverse of removal.

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3.2 PINOUTS AND DESCRIPTIONS OF ELECTRONIC CONTROL UNITS

3.2.1 ENGINE CONTROL UNIT (P/N 2.8519.054.0/50)

ENGINE ECU CONNECTOR			
Pin	*Volts*	*Abbrevia-tion*	*Description*
1			Battery negative
2			Power (-), engine temperature sensor
3			Input, engine temperature signal
4			Not utilised
5			Input, accelerator pedal sensor signal
6			Input, hand throttle sensor signal
7			Not utilised
8			Not utilised
9			Not utilised
10			Input, engine speed pickup
11			Input, wheel rotation sensor 1 signal
12			Input, wheel rotation sensor 2 signal
13			Not utilised
14			Not utilised
15			Not utilised
16			Not utilised
17			Not utilised
18			Not utilised
19			Not utilised
20			Not utilised
21			Not utilised
22			Digital output, engine speed
23	+ 12V		Battery positive
24			Not utilised
25	0V		Battery negative
26			Not utilised
27		TxD	ISO 9141 serial interface (Diagnostics connector)
28	+5V		+5V reference voltage for signal on pins 5 and 6
29		RxD	ISO 9141 serial interface (Diagnostics connector)
30			Not utilised
31			Not utilised
32			Not utilised
33	0V		Power (–), sensors
34			Not utilised
35			Not utilised
36			Not utilised
37			Not utilised
38			Not utilised
39			Not utilised

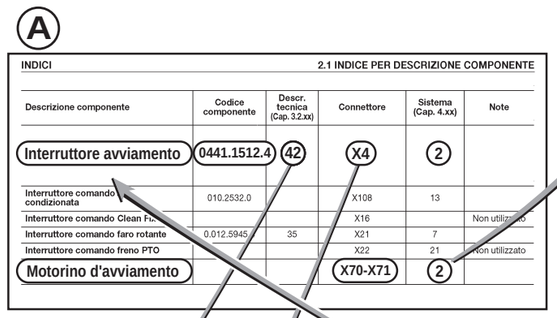
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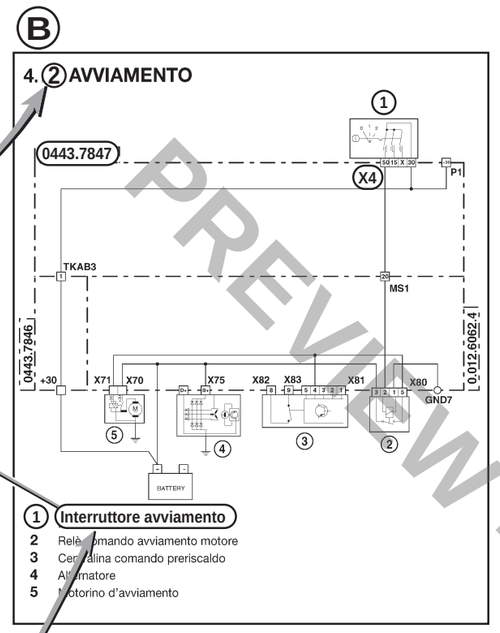
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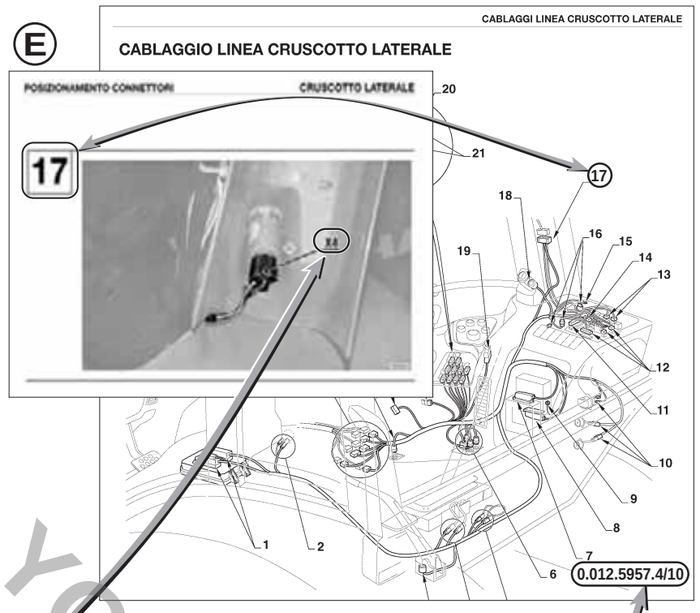
HOW TO CONSULT THE UNIT

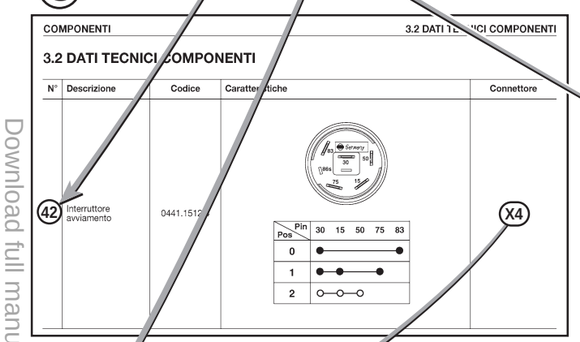
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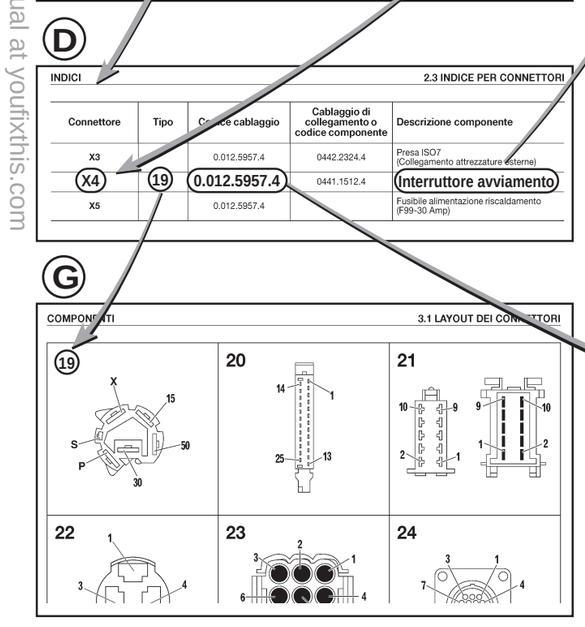
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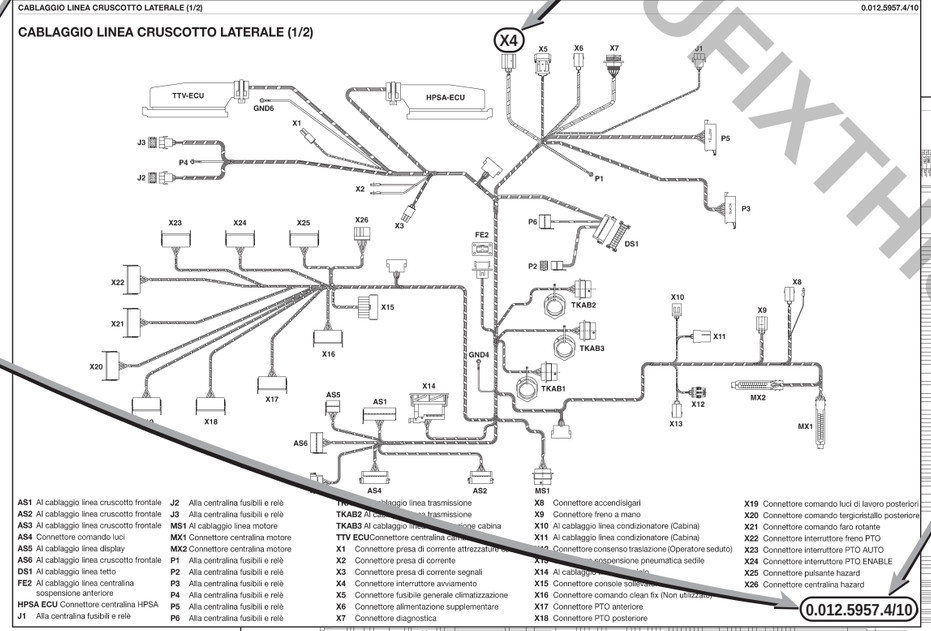












How to consult the table

The quickest way to determine the cause of a malfunction of a component is to check all the components in the system in which the component is incorporated.
In the example given on this page, the fault simulated is a malfunctioning starter motor that fails to start the engine.

1 - Look in paragraph «*2.1. Component description index*» for the starter motor and determine the system in which it is incorporated.
The system is indicated in the column «*System (para. 4.xx)*» and in this case is "*2*" (figure A).

2 - Consult paragraph «*4.2 Starting*» (figure B) where all system components are shown in the electrical diagram; these components are accompanied by numbers that correspond to the key on the same page.

3 - Check all the components in the system, starting, for example, with the switch "*1*".

4 - Look in paragraph «*2.1. Component description index*» (figure A) for "*Starter switch*" and check in the column «*Technical. Descr'n (par 3.2.xx)*» whether there is technical description (in this case it is reported at n° 42 in the paragraph «*3.2 component technical data*») (figure C).
Take note also of the name of the connector to which the component is connected (in this case "*X4*").

Only if the position of the component is not known

5 - Look in paragraph «*2.3 Connector index*» (figure D) for the name of the connector to which the component is connected (in this case "*X4*") and note down the wiring harness in which it is incorporated (in this case "*0.012.5957.4*") and the type of connector (in this case "*19*").

6 - Look for the wiring harness in chapter «*5. Layouts, electrical wiring diagrams, connector positions*» using the index at the beginning of the chapter.

7 - Look for the name of the connector in the photos attached to the electrical diagrams and determine its position on the tractor from the drawing (figure E)
NOTE.
The wiring diagrams (figure F) contain the names and descriptions of the connectors that are used in all the tables of chapter 2.

8 - Using the data contained in the paragraph «*3.2 Component technical data*» (figure C) in position n° *42*, check the operation of the switch.

⚠ If the pinout of the connector is not known, look in paragraph «*3.1 Connector layouts*» (figure G) for the number found in the column "*Type*" of paragraph «*2.3 Connector index*».

4.3.6 NOTES REGARDING THE CLUTCH CALIBRATION PROCEDURE

Calibration of the shuttle clutches should be carried out in the following cases:

a - After renewal of one or both shuttle clutches

b - After renewal of the proportional solenoid valve controlling engagement of the shuttle clutches

c - When, after the clutches have bedded in (in the case of a new or overhauled tractor) or after many years of use, clutch engagement or automatically controlled direction changes (without use of the clutch pedal) are either too sudden or too slow.

There are two possible types of calibration.

- *Automatic calibration*, in which the control unit independently sets the characteristic parameters for clutch engagement
- *Manual calibration*, where the technician can alter the parameter settings and thus obtain a clutch engagement curveto meet personal requirements.

In all cases, manual clutch calibration must only be performed after having first performed the automatic calibration procedure and tested the tractor.

The shuttle clutch calibration procedure (whether manual or automatic) is divided into three stages during which the “optimal” values for shuttle operation are determined automatically or manually.

The difference between the automatic and manual calibration is that during the automatic procedure the duration of the calibration stages is entirely controlled by the control unit and the technician cannot modify the parameters in any way, whereas in manual calibration, the process is entirely controlled by the technician, who can optimise shuttle operation by changing the parameter settings using the ART keypad.

The stages of the calibration procedure are as follows:

- *STAGE 0*:during this stage, the control unit registers the conditions under which the subsequent stages will be performed (e.g., the temperature of the transmission oil).
  In both the calibration procedures the phase start is controlled by the technician by moving the shuttle lever from the neutral position to the forward/reverse gear position (depending on the clutch to be calibrated).
  The end of the procedure occurs automatically after approximately 10-15 seconds, while, in manual mode, it must be interrupted by the Technician by returning the shuttle lever to the neutral position when the values “FillOilTmpK” and “FillOilRPMK” are displayed almost constantly on the ART.

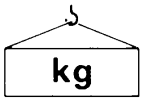
- *STAGE 1*: in this stage, the control unit measures the engagement pressure of the clutch to be calibrated.
  During the automatic procedure, the technician can see the “Prx.Frz.Av” value changing automatically (or the “Prx.Frz.In” value depending on the type of clutch being calibrated), while during manual calibration the Technician can alter these values by pressing the following keys:
  - *A* to increase the engagement pressure of the forward clutch
  - *B* to reduce the engagement pressure of the forward clutch
  - *C* to increase the engagement pressure of the reverse clutch
  - *D* to reduce the engagement pressure of the reverse clutch

  In addition, the technician can perform semi-automatic calibration of the clutch by operating the shuttle lever in the corresponding direction. In this way, the control unit will automatically detect the value of the parameter, which may or may not be equal to that obtained during fully automatic calibration.

  NOTE
  We recommend that the technician engages the clutch being calibrated at least ten times, takes the average between the last 3 or 4 values obtained and enters this value manually.

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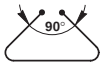
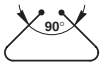
LIFTING INSTRUCTIONS



⚠ Components weighing over 25 kg or of significant size must be supported and removed using suitable lifting equipment with wire rope or polyester slings.
In the paragraphs regarding removal and refitting operations, the weight of the component or assembly to be lifted is indicated with the symbol 

WIRE ROPES - SLINGS

- Use wire ropes or polyester slings of suitable capacity for the parts to be lifted, referring to the following tables:

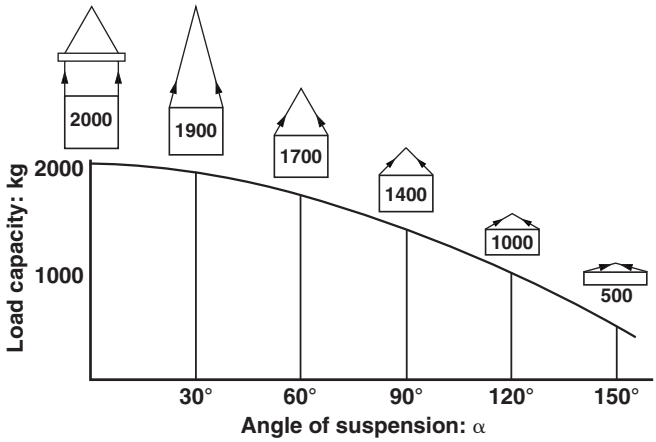
WIRE ROPES (standard twisted «S» or «Z» type)				*POLYESTER SLINGS (eye-and-eye - simple loop)*				
Ø rope mm	Capacity (kg)			Width (mm)	Capacity (kg)			
								
8	650	620	500	25	500	400	860	700
10	1000	1740	1420	50	1000	800	1730	1410
12	1450	2500	2050	62	1250	1000	2160	1760
14	2000	3460	2820	75	1400	1120	2420	1980
16	2600	4500	3670	100	2000	1600	3460	2820
18	3300	5710	4660	150	2500	2000	4330	3530

NOTE. Lifting capacities are calculated with a safety coefficient.

- The lifting hook should be attached to the central part of the rope or sling; if the hook is attached near the ends of the rope/sling, this could cause the load to slip during lifting.
- Never lift a heavy load using a single rope; always use two or more symmetrically arranged ropes.

⚠ Suspension of a load from a single rope could cause the load to start rotating and consequently cause the rope strands to untwist or the load to slip; this could lead to serious injury.

- Never lift a heavy load when the two legs of the ropes form a wide angle.
The permitted load (kg) decreases in inverse proportion to the angle of suspension; the table below indicates how the permitted load varies according to the angle of suspension for two Ø 10 mm ropes each with a load capacity of 1000 kg.



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2 - From the “ENGINE” menu, press “*1*” to bring up the “CONFIGURATION” menu.

```
                    ENGINE
1 CONFIGURATION
2 CALIBRATION
3 MONITOR
                    SELECT_
                    E EXIT
```

3 - From the “CONFIGURATION” menu, press “*1*” to bring up the “ENGINE TYPE” menu.

```
                CONFIGURATION
1 ENGINE TYPE
2 HAND THROT. CAL
3 ACC. PEDAL CAL
4 IDLE SPEED CAL
                    SELECT_
                    E EXIT
```

4 - In the “ENGINE TYPE” menu, press “*0*” to reach the “*EURO 2*” engine screen, then selectthe correct engine for the tractor to be configured according to the following table.

Engine Power	*Description on ART*
66 HP	66 HP (3C-D_IDR)
76 HP	74 HP (4C-BF75)
86 HP	95-84 CV (4C-D100)

```
            ENGINE TYPE
            EURO 1
1 - 55 A/W -- 60 W
2 - 63 A/63 -- W
3 - 67 CV -- A(3C)
4 - 70 CV -- W(4C)
5 - 70 CV -- W(3C)
6 - 75 AV 4C(DO)
7 - 80 CV -- W(GO)
8 - 80 CV -- W(25Y)
9 - 85 CV -- A(GO)
0 - OTHER
                    SELECT_
                    E EXIT
```

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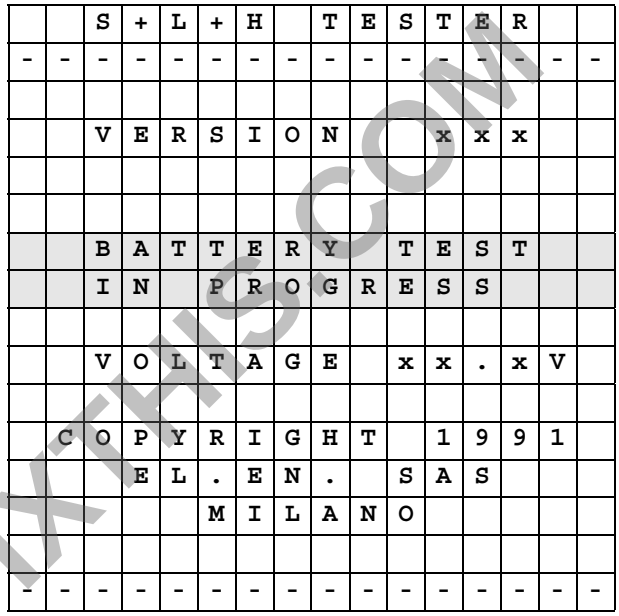
1.1.4 GENERAL NOTES ON CONNECTING AND POWERING UP THE TESTER

To connect the tester to the tractor electronic system proceed as follows :

1 - Stop the engine and remove the key from the starter switch;
2 - connect the ART to a diagnosis socket;
3 - insert the key in the starter switch and turn it to "*I*" (ON).

When the ART powers up, the screen displays an internal test to check the battery charge. If the voltage registers less than 10V, the ART does not have sufficient power to connect to the control units, whereas if the value is higher than 15Vthe instrument could be damaged.

After a few seconds, the tester attempts to connect to the electronic system and displays a page (which may vary depending on the tractor or the socket to which it is connected), from which the technician can choose to connect to a given control unit and test the operation of the components.



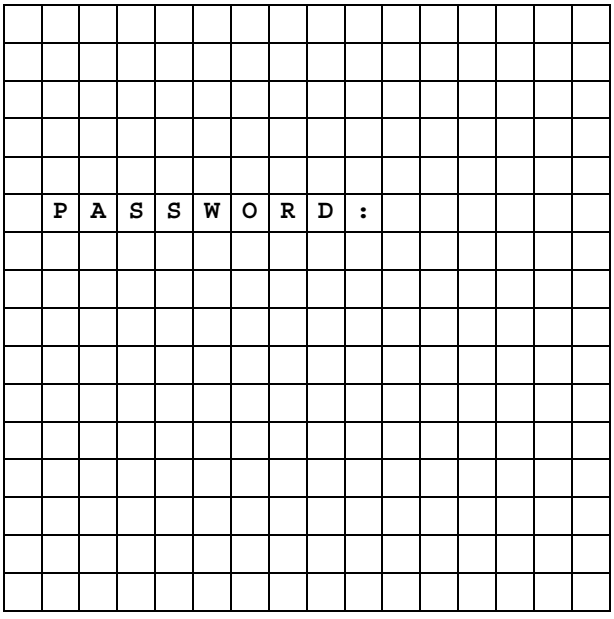
1.1.5 SELECTION OF THE DISPLAY LANGUAGE

The ART is able to display information in a number of different languages (factory setting: ITALIAN).

To change the display language, proceed as follows.

1 - Stop the engine and remove the key from the starter switch
2 - Connect the ART to a diagnosis socket
3 - While holding down key *A* on the keypad, turn the starter key to "*I*" (ON).

4 - Enter the password *1 2 3 F*.

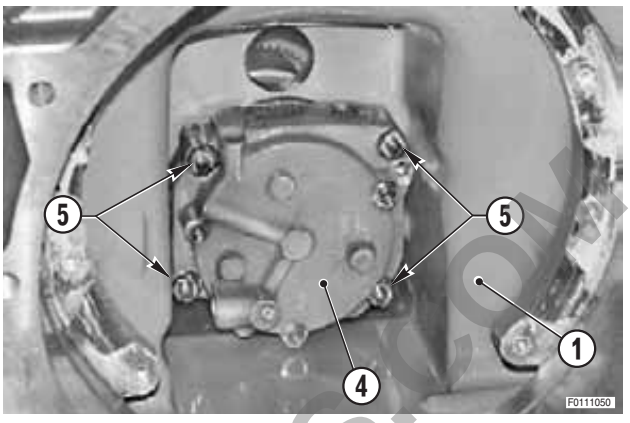


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Checking the reduction unit end float

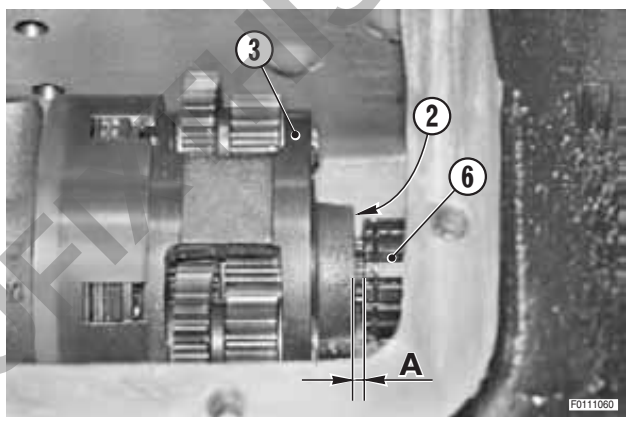
1 - Install temporarily the spacer (2), planet carrier (3) and the HML unit (4) in the clutch housing (1) , and secure them in position with the nuts (5).

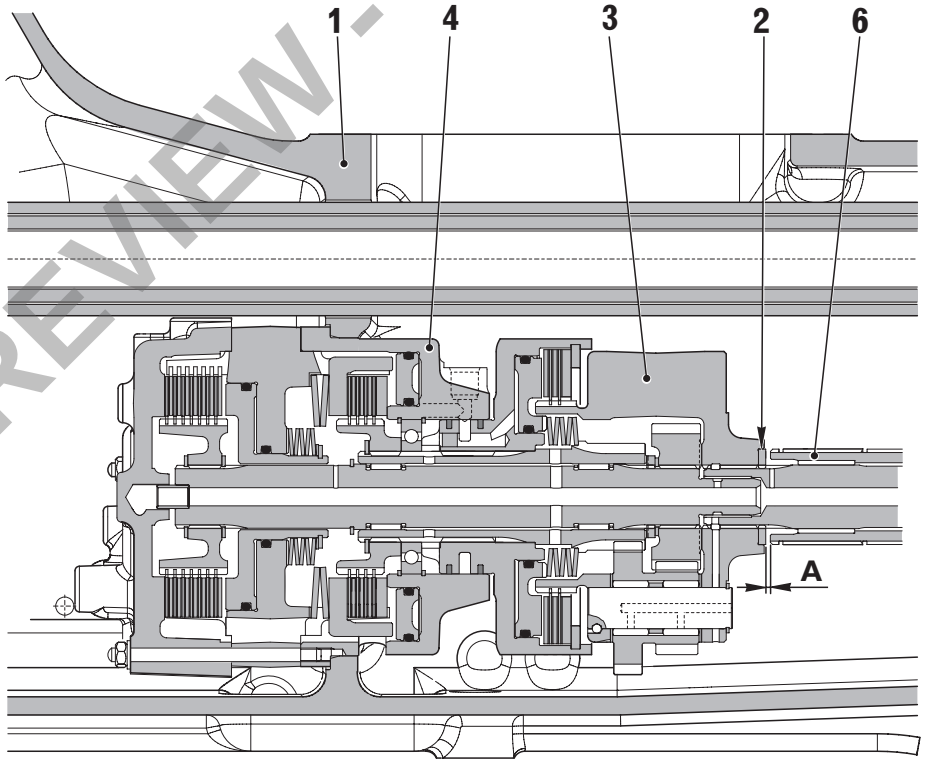


2 - With a feeler gauge, check that the residual clearance "*A*" between the spacer (2) and the secondary shaft (6) is within the specified limits

★ Normal clearance "*A*": 1 to 1.15 mm

3 - If the clearance is not within the specified tolerance limits, adjust it by fitting a different spacer (2).





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SAFETY NOTES

To ensure that machines entrusted to Authorised Service Centres for repair or overhaul continue to function correctly, it is very important that all repair work is carried out in the prescribed manner.

The procedures for checks and repairs indicated in this manual are safe and effective.

Some of the operations described require the use of special tools and equipment; these tools have been specifically designed for the intended purpose and may be ordered directly from the Manufacturers.

DO NOT USE MAKESHIFT TOOLS; not only is there a risk of personal injury, but such tools are rarely suited to the purpose for which they are used.

To prevent injury to operators, the symbols ⚠ and ⚠ are used in this manual to indicate the safety precautions required. The warnings accompanying these symbols must always be adhered to carefully.

In potentially hazardous situations, always give priority to personal safety and take the necessary actions to eliminate the danger.

GENERAL SAFETY RULES

1 - Even if you have a thorough knowledge of the machine as regards its components, operation and controls, always take particular care when carrying out manoeuvres; Remember that the machine you are working on is in need of repair or overhaul and consequently may not always behave as expected.

2 - Before starting work, clean the machine thoroughly to remove all mud, dust and road dirt. Also clean the cab to remove all traces of oil, snow and ice from the access steps and grab rails.

3 - When climbing up to or down from the cab, always ensure you maintain three points of contact at a time (foot or handholds) in order to keep your balance and prevent accidental falls.

4 - Always take special care when carrying out fault diagnosis operations; these operations often require two persons, who must never stand in front of the wheels when the engine is running.

5 - When carrying out checks and repairs, wear close-fitting clothing, safety goggles and protective gloves that are suitable for the task (cleaning, draining fluids, repairs).
When working near moving parts, long hair should be gathered up and secured safely under a cap to prevent the risk of entanglement and severe injury.

6 - Do not allow anyone who is not directly involved in the work to come near the machine; ensure that they remain at a safe distance.

7 - Keep well clear of moving parts; when the engine is running, some moving parts are not easily visible and therefore present a risk of entanglement, even if protected by safety guards.

8 - Ensure that the area is well ventilated before starting the engine in order to avoid the formation of dangerous concentrations of toxic gases; always connect suitable fume extraction equipment to the exhaust pipe.

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SECTION 10

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DORADO 66
DORADO 76
DORADO 86

Power Shuttle

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4.2.3 CALIBRATING THE accelerator pedal

1 - From the “MAIN” menu, press “*1*” to bring up the “ENGINE” menu.

```
                MAIN MENU
1 ENGINE
2 HML
3 PREHEATING
4 ALARMS
5 CALIB.RUOTE
6 WHEELS
7 PTO
          SELECT_
          E   EXIT
```

2 - From the “ENGINE” menu, press “*1*” to bring up the “CONFIGURATION” menu.

```
              ENGINE
1 CONFIGURATION
2 CALIBRATION
3 MONITOR
          SELECT_
          E   EXIT
```

3 - From the “CONFIGURATION” menu, press “*3*” to bring up the “AC. PEDAL CAL” menu.

```
  CONFIGURATION
1 ENGINE TYPE
2 HAND THROT. CA
3 ACC. PEDAL CAL
4 IDLE SPEED CAL
          SELECT_
```

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Sens. INV Aperto

INSTRUMENT PANEL CODE: T34

DESCRIPTION

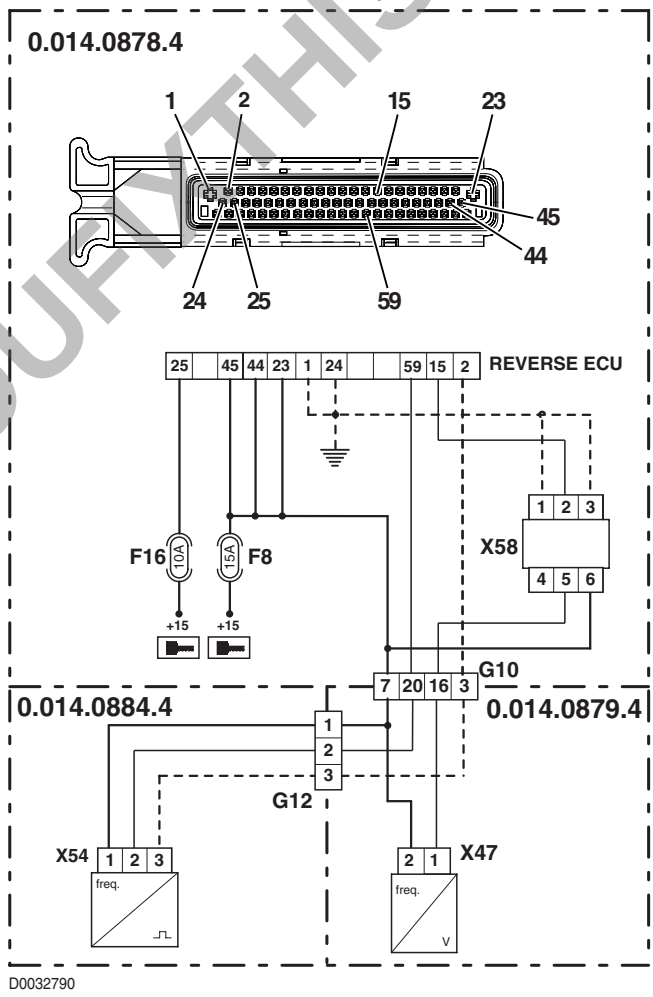
The control unit detects that the shuttle speed sensor is disconnected.

CONTROL UNIT RESPONSE

The system continues to function, but the tractor tends to move in sudden jerks when changing gear or direction

CHECK

- Check that the contacts on the shuttle control unit “REVERSE ECU” connector, “X58” of the shuttle speed signal conversion control unit, and “X47” of the shuttle speed sensor are not oxidized and are firmly secured.
- With the starter key in position “I” (ON), check that the shuttle speed signal conversion control unit is receiving power correctly (approx. 12 V between pin 6 (positive) and pins 1 and 3 (negative) of connector “X58“).
- With the starter key in position “O” (OFF), connect a test meter to pin 2 of connector “X58” and to pin 15 of the “REVERSE ECU” connector and measure the resistance to check for electrical continuity (test meter reading: 0 Ohm).
- With the starter key in position “I” (ON), check that the wheel speed sensor is receiving power correctly (approx. 12 V between pin 2 (positive) of connector “X47” and the the earth on the transmission).
- With the starter key in position “O” (OFF), connect a test meter to pin 1 of connector “X47” and to pin 5 of connector “X58” and measure the resistance to check for electrical continuity (test meter reading: 0 Ohm).
- Check that the shuttle speed sensor is functioning correctly (for details see unit 40).
- Clear all alarms, turn the starter key first to “O” (OFF) and then back to the “I” (ON) position again, and if the alarm is still present, the control unit must be renewed.



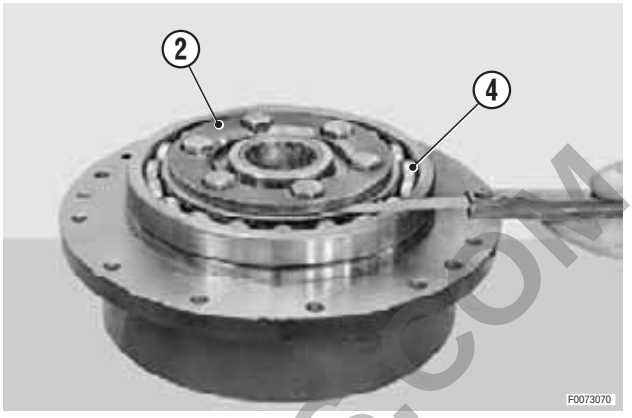
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2 - Measure the clearance "*G*" between the disc (2) and the bearing (4) and calculate the thickness of the new shim pack (3) rounding the value obtained down to the nearest 0.05 mm.

Example:

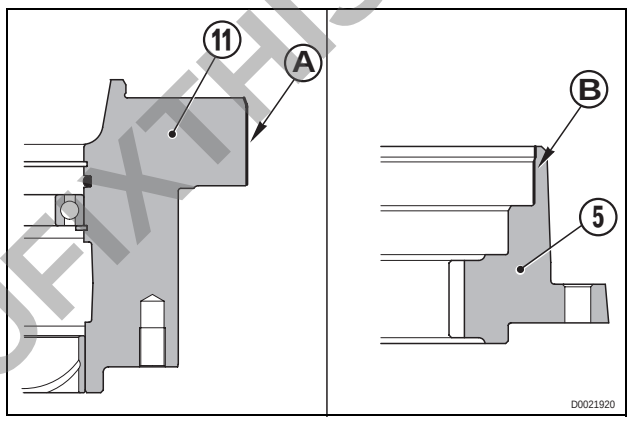
"*G*" - Thickness of installed shims: 1.5 mm
Measured backlash: 0.43 mm
Final shim pack thickness= 1.50–0.43 = 1.07 which rounded down to the nearest 0.05 is 1.05 mm.



⁘ 3

★ Do not install the oil seal at this point.

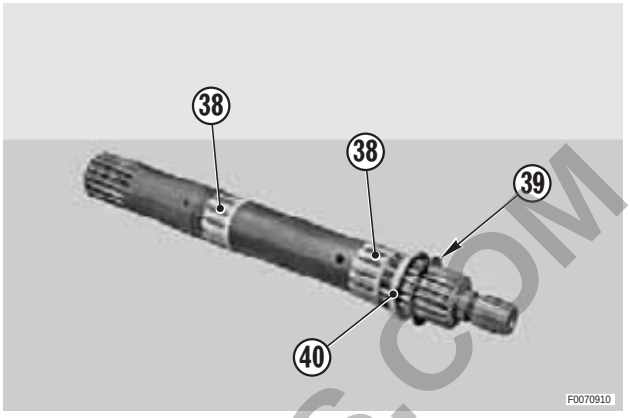
★ Remove the all traces of paint from the faces "*A*" of the planet carrier (11) and the faces "*B*" of the crown wheel (5).



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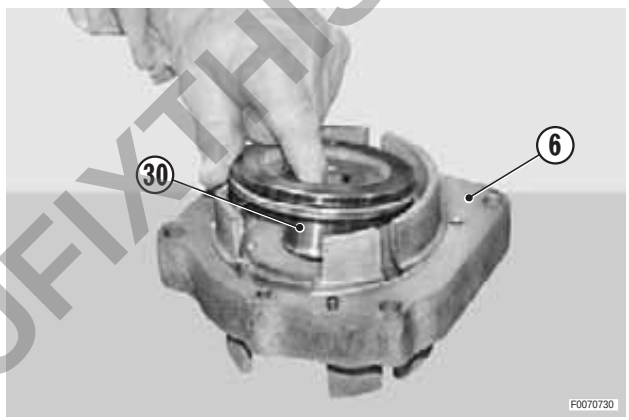
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25 - Remove the roller cages (38), remove the circlip (39) and remove the spacer (40).

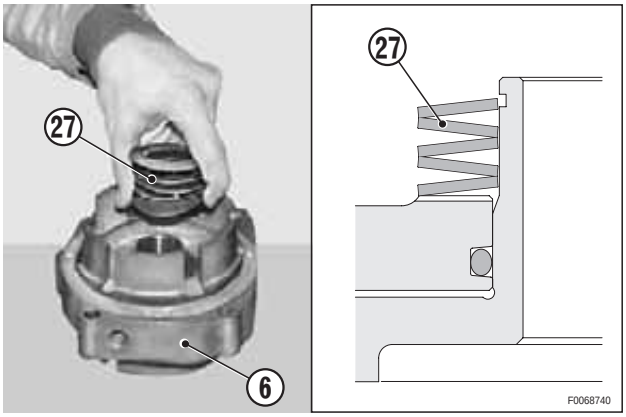


Assembly

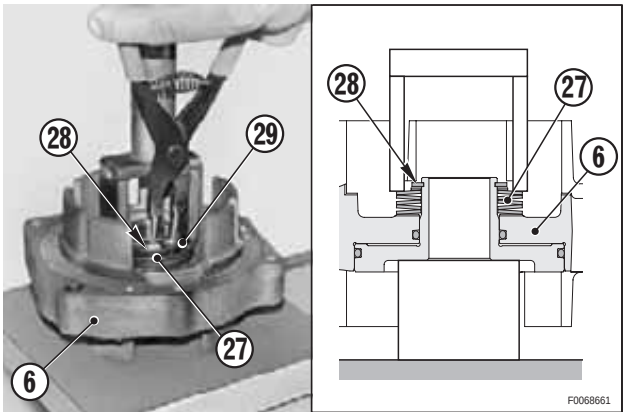
1 - Fit the piston (6) in the “L” range clutch cylinder (30).
★ Lubricate the O-rings with oil.



2 - Position the Belleville springs (27) on the “L” range clutch cylinder (6).
★ Take care to install the Belleville springs (27) the right way round.



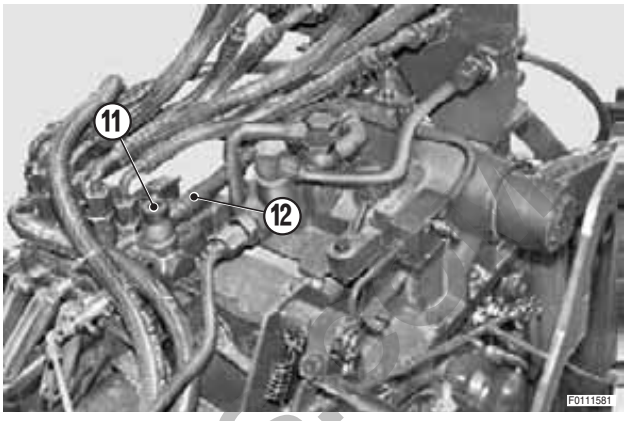
3 - Position the “L” range clutch housing (6) under a press and, using a suitable tool, compress the Belleville springs (27) and fit the shim (29) and circlip (28).



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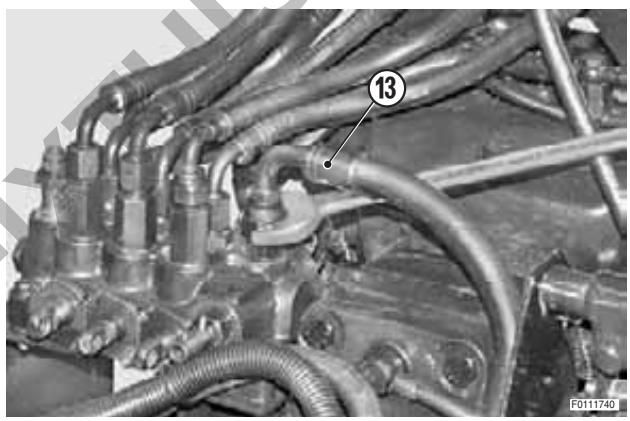
• *For versions with hydraulic trailer braking*

5 - -Remove the union (11) and disconnect the pipe (12).
★ Renew the copper washers on reassembly.



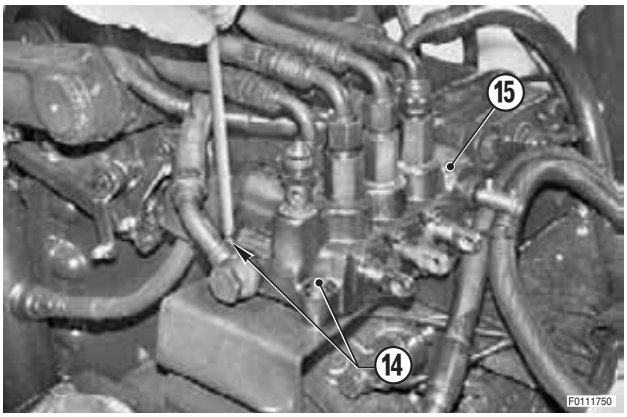
• *For versions without trailer braking*

6 - Disconnect the pipe (13).



• *For all versions*

7 - Remove the three screws (14) and remove the control valve assembly (15).



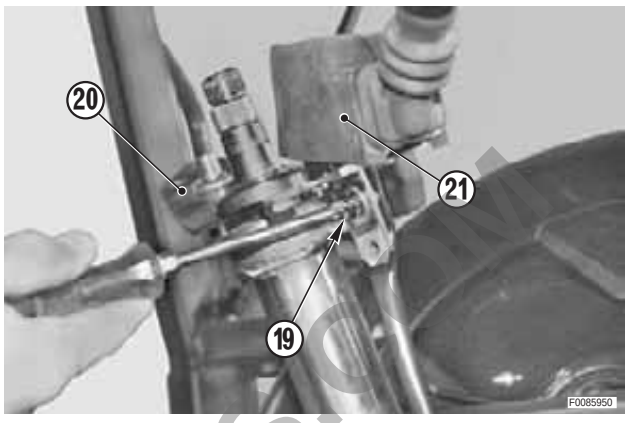
Refitting

• Refitting is the reverse of removal.

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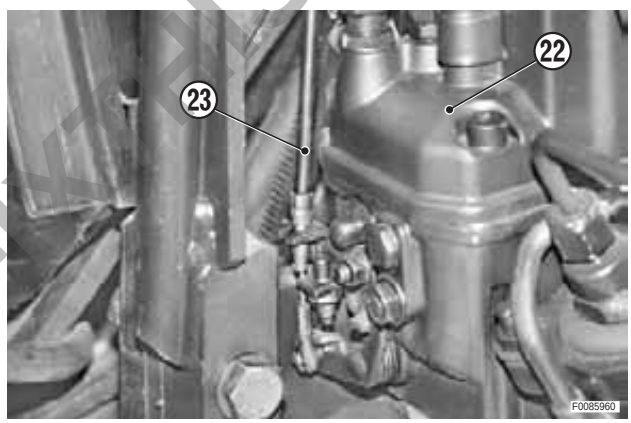
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11 - Remove the two screws (19)and remove the support(20) complete with steering column switch unit (21) and, where present, the shuttle control lever.

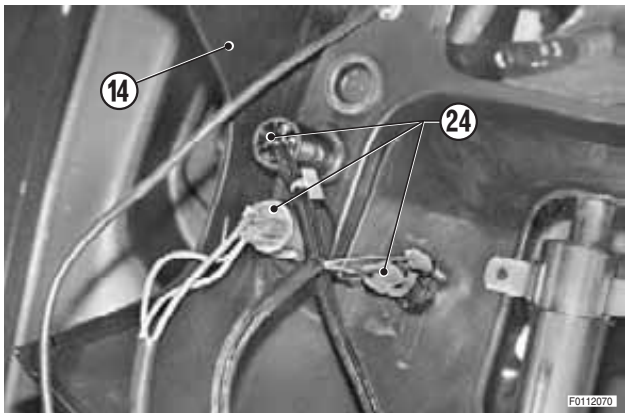


• *Versions with mechanical governor*

12 - Disconnect the engine stop cable (23) from the governor (22).



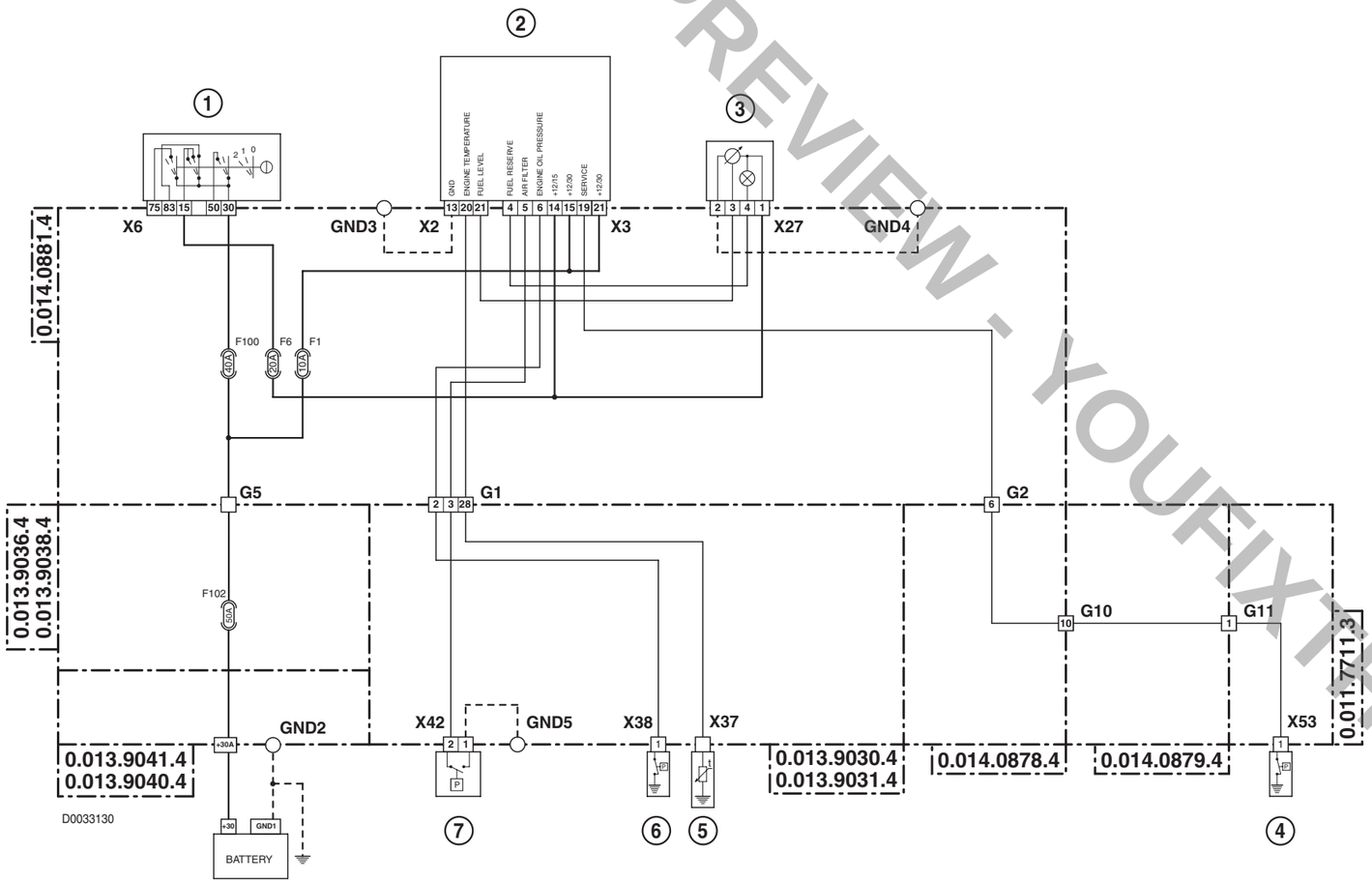
13 - Move the instrument panel (14) away slightly and disconnect the wiring connectors (24).
★ Label the connectors to avoid confusion on refitting.



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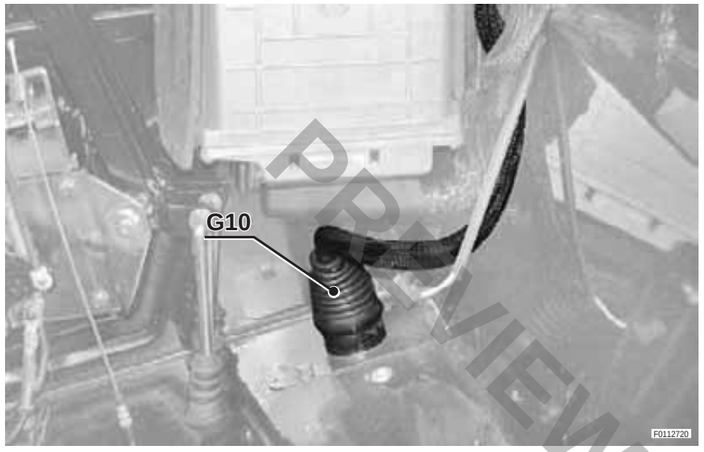
4.12 INSTRUMENT PANEL (VERSION WITH MECHANICAL GOVERNOR)



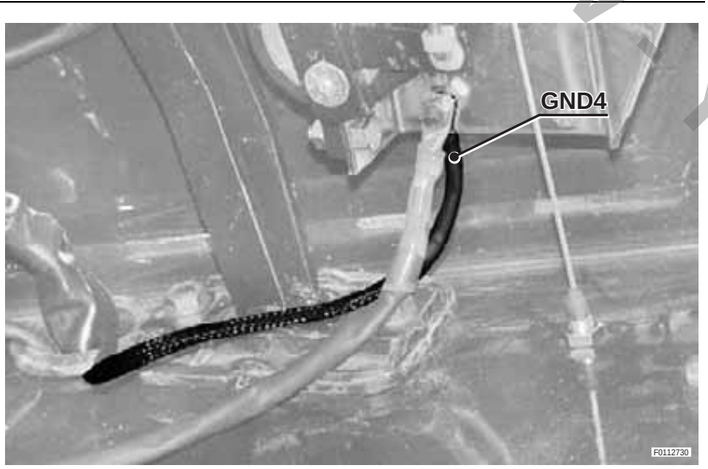
1 Starter switch
2 Instrument panel
3 Fuel level sensor
4 Services circuit alarm pressure switch
5 Engine temperature sensor (for instrument)
6 Engine oil pressure switch
7 Air cleaner clogging sensor

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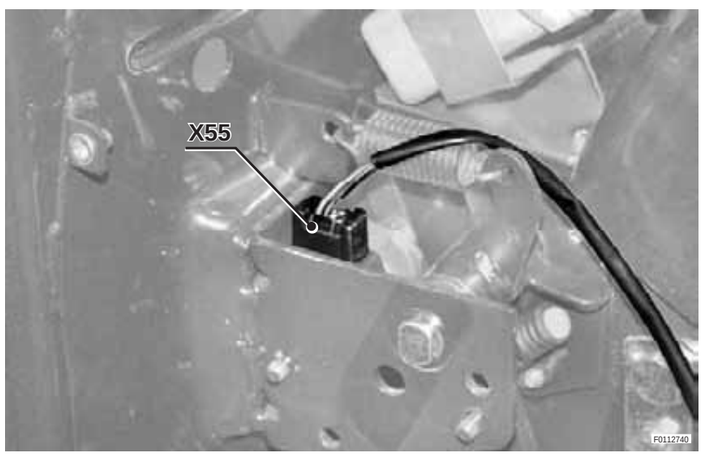
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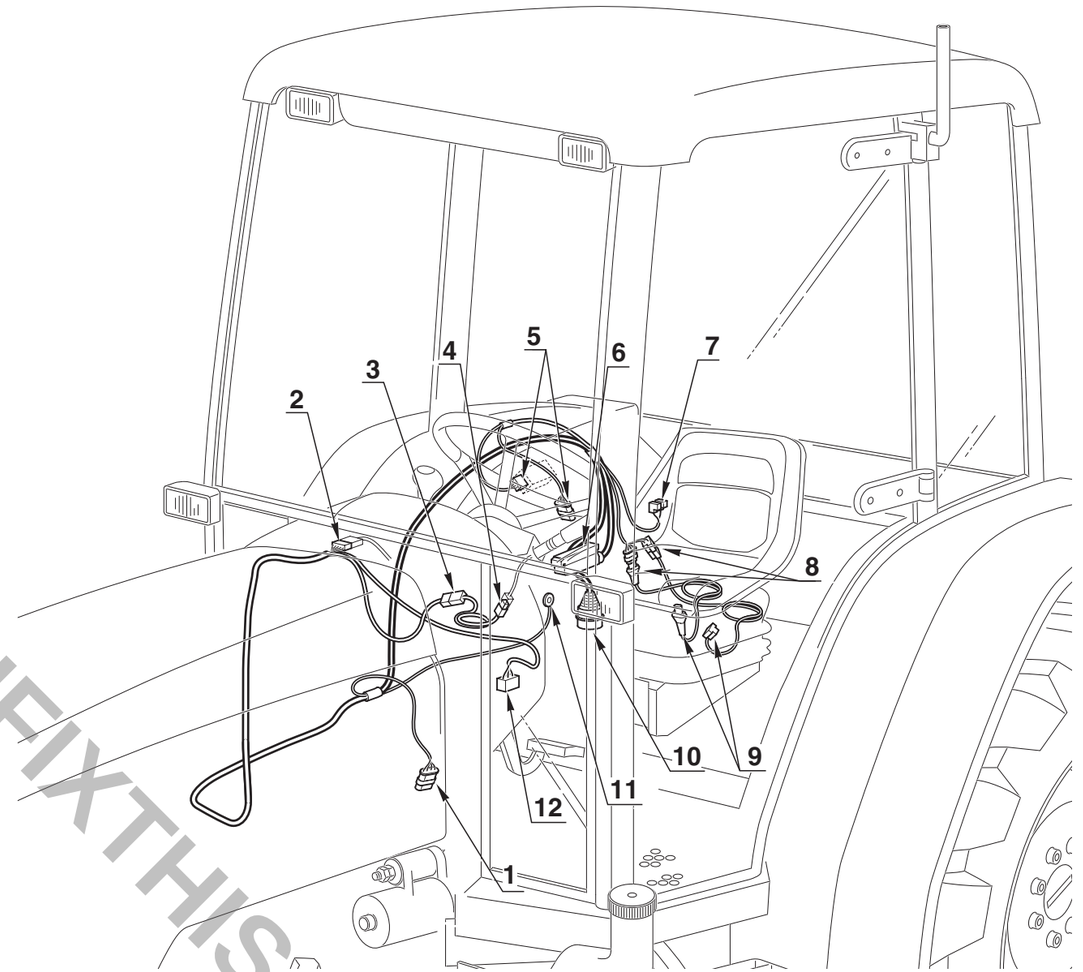
11



12



SHUTTLE WIRING - SHUTTLE LEVER WIRING - PNEUMATIC SEAT WIRING - SEAT WIRING



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