Consumables

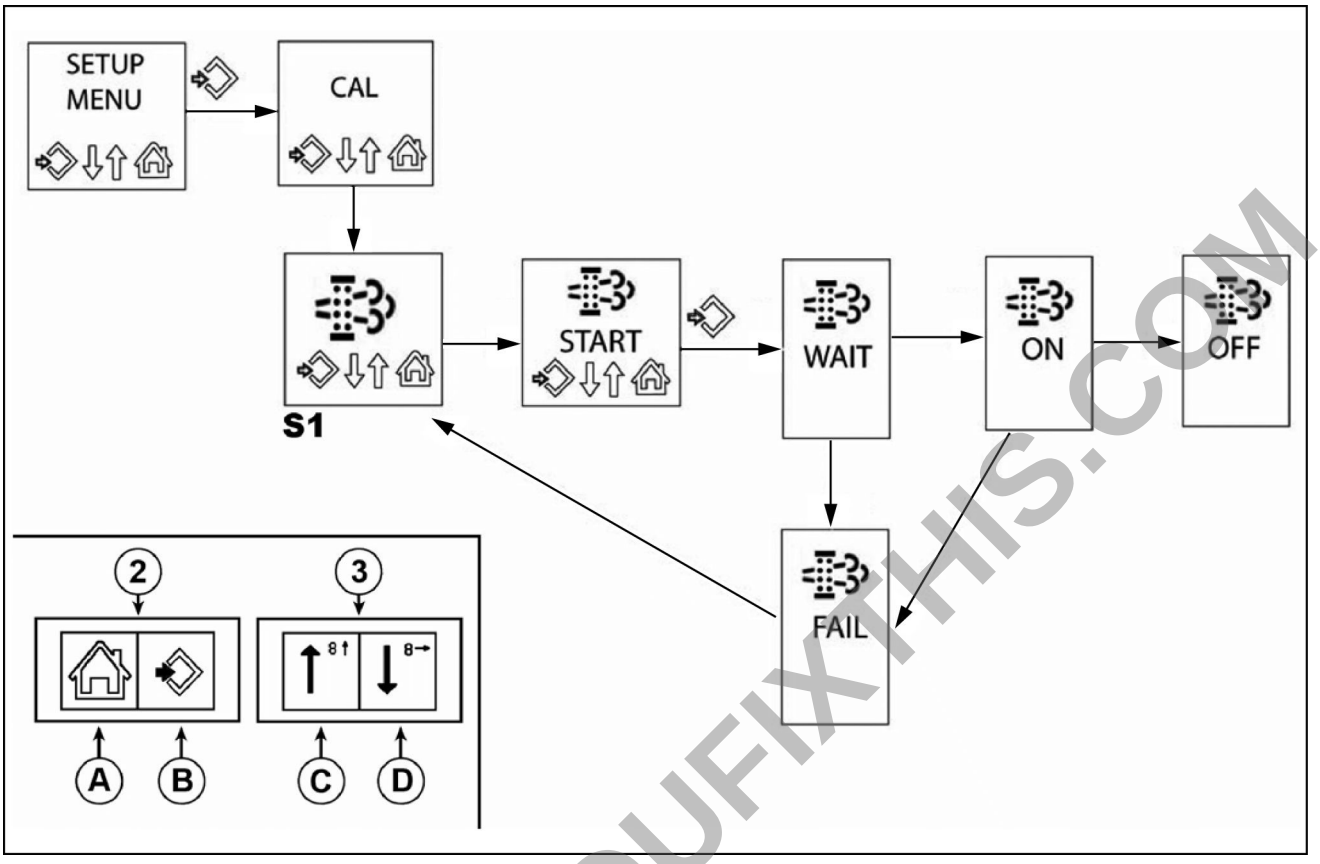
COMPONENT TO BE FILLED OR TOPPED UP	QUANTITY		RECOM-MENDED PRODUCTS	INTERNA-TIONAL SPECI-FICATION
	liters/dm3	US gal		
Cooling system: without cab: with cab:	. 14 16	 3.7 4.2	**CASE IH AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT**	-
Windscreen washer bottle	2	0.53	Water & cleaning liquid	-
Fuel tank.	121	29.06	Decanted and filtered diesel fuel	-
Engine sump:	8.5	2.25	**CASE IH AKCELA UNITEK NO. 1™ SBL CJ-4 SAE 10W-40** or **CASE IH AKCELA UNITEK NO. 1™ SSL CJ-4 SAE 0W-40**	**API CJ-4 ACEA E7 ACEA E9**
Brake control circuit	0.4	0.11	**CASE IH AKCELA LHM FLUID** NH 610 A	**ISO 7308**
Front axle: - axle housing: - final drives (each):	 7.0 1.25	 1.8 0.3	**CASE IH AKCELA NEXPLORE™ FLUID** NH 410B	**API GL-4 ISO 32/46 SAE 10W - 30**
Rear transmission (bevel drive and brakes), gearbox, hydraulic lift and PTO	46	12.15		
Rear final drives (each)	5.3	1.40		
Front wheel hubs	-	-	Grease **CASE IH AKCELA 251H EP MULTI-PURPOSE GREASE**	**NLGI 2**
Grease fittings	-	-		

NOTICE: *Use only heavy-duty, low silicate coolant such as* ***CASE IH AKCELA ACTIFULL™ OT EXTENDED LIFE COOLANT*** *anti-freeze. Automotive antifreeze purchased at local supply store outlets most likely is not low silicate and must not be used in heavy-duty diesel engines. Always have a minimum of 50% ethylene glycol coolant in the cooling system, adjusting the concentration based on ambient temperature, according to coolant label instructions. Use good quality water. Deionized water is ideal for cooling systems and is contained in some prepackaged coolants labeled as pre-mixed with water. If the low silicate ethylene glycol coolant is not pre-charged with supplemental diesel coolant additive/inhibitor, this must be added to the solution to provide protection against corrosion and pitting.*

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Manual regeneration of the diesel particulate filter DPF



ANIL15TRO1990FB 5

To be able to activate the procedure of manual regeneration when required, it is necessary to stop work for the entire duration of the procedure **15 – 20 min** and get into the following conditions:

1. Engine running, machine stationary and hand brake on
2. Hand throttle at minimum position
3. Foot throttle released
4. PTO not engaged
5. Hydraulic system not active

NOTE: *If the conditions described above are changed, throughout the entire process of regeneration, the operation is stopped.*

To activate forced regeneration, proceed as follows:

1. Press the switch **(2)** on the symbol **(B)** for more than three seconds to enter the programming menu The central monitor will show “SETUP MENU”. Release the symbol **(B)**.
2. Press the switch **(3)** on the symbol **(D)** a number of consecutive times until the monitor shows the symbol of the filter **(S1)**.
3. Press the switch **(2)** on the symbol **(B)**.
4. If manual filter regeneration is required, the monitor will automatically display “START” with the symbol of the filter.
5. Press the switch **(2)** on the symbol **(B)** to move on to the message “WAIT” . Filter regeneration now commences. In this phase, if everything proceeds normally, the operator must give no commands and the electronic control unit will automatically display the various phases of the procedure.
6. At the end of regeneration the monitor will show “OFF” with the filter symbol . After two seconds the control unit automatically returns to the initial situation. Press the switch **(2)** on the symbol **(A)** a number of times until you exit the programming menu.

NOTE: *If during manual regeneration the operator modifies the conditions described above, or other conditions connected with the engine are not satisfactory, regeneration is stopped. The stop is signaled to the operator by the*

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Longitudinal section of clutch LUK 11”/11” (NAR market only)

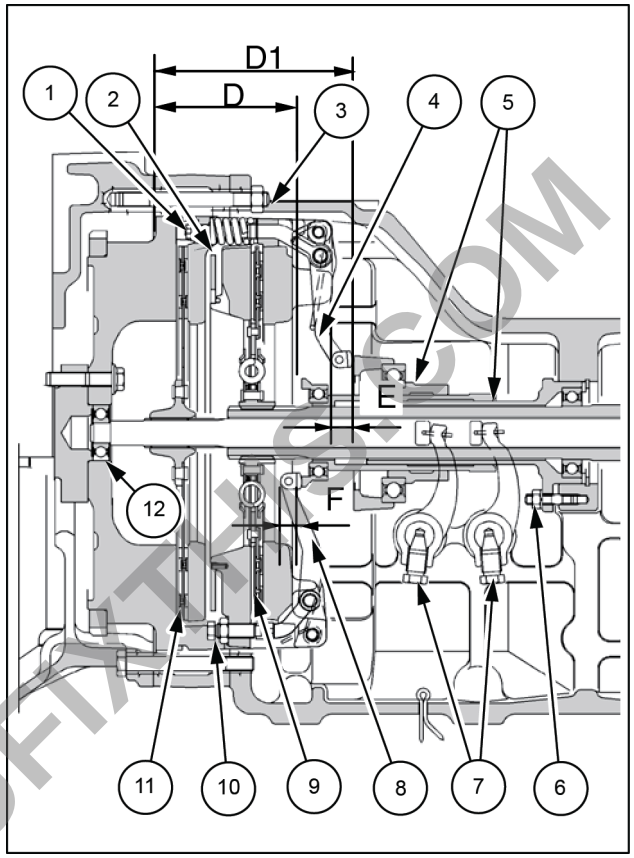
1. Power Take-Off (PTO) clutch release lever adjuster
2. Belleville spring disc
3. Clutch housing/engine retaining nuts and bolts
4. Power Take-Off (PTO) clutch release levers
5. Release sleeves for main and Power Take-Off (PTO) clutch, complete with thrust bearings
6. Nuts for sleeve cover fixing studs
7. Release fork retaining bolt
8. Main clutch release levers
9. Main friction disc
10. Main clutch release lever adjuster
11. Power Take-Off (PTO) friction disc
12. Bearing on flywheel

D. **97 – 99 mm** (**3.82 – 3.90 in**). Nominal distance of release levers **(8)** from clutch contact surface on flywheel

D_1. **138 – 140 mm** (**5.43 – 5.51 in**). Nominal distance of release levers **(4)** from clutch contact surface on flywheel

E. Engagement travel: **17 – 19 mm** (**0.67 – 0.75 in**)

E. Release travel: **8.5 – 11.0 mm** (**0.33 – 0.43 in**)

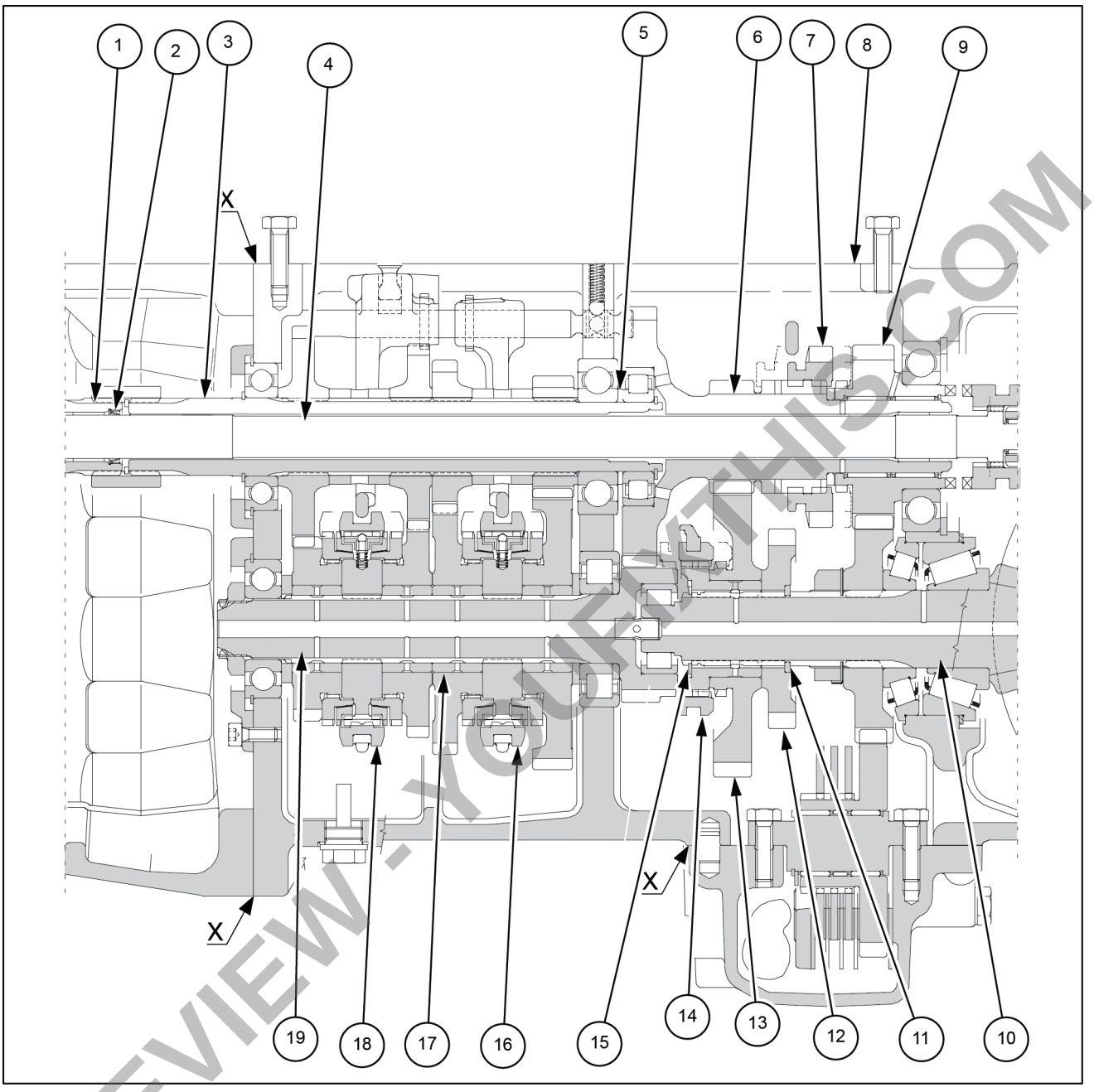


ANIL15TRO1103BB 3

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Mechanical transmission - Sectional view (12 x 4)



ANIL15TRO1310GB 1

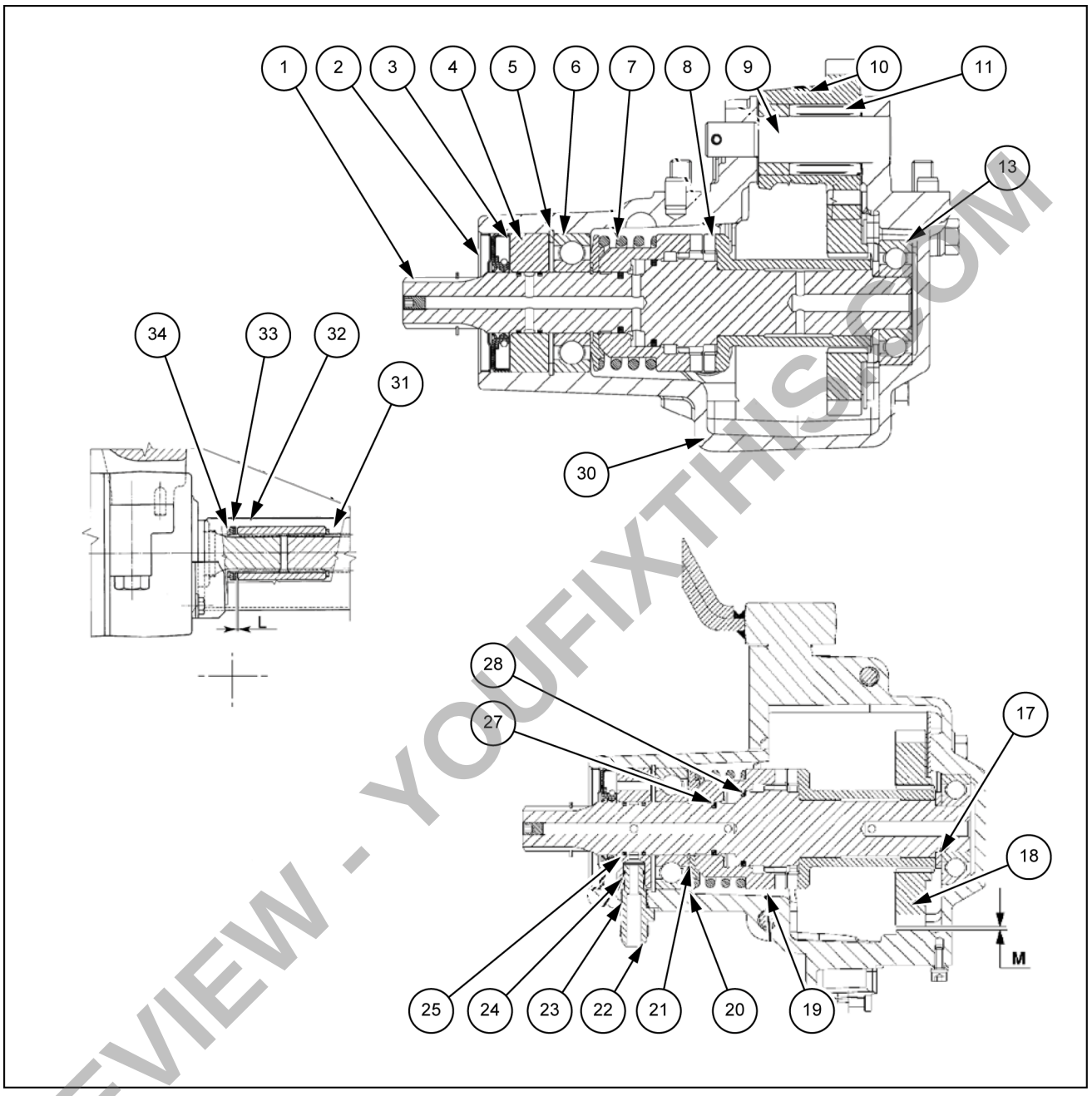
Longitudinal cutaway section through gearbox and range gear.

1. Power Take-Off (PTO) shaft support bushing
2. Seal
3. Gearbox driving shaft
4. PTO shaft
5. Driving shaft adjustment ring
6. Range gear driving shaft
7. Control gear for reverse and middle speeds
8. Upper cover
9. Driving gear for middle speeds
10. Bevel pinion shaft
11. Retaining half-rings
12. Driven gear for reverse speeds
13. Driven gear for low speeds
14. Selector sleeve for high and low speeds
15. Circlip
16. Synchroniser for 1st and 2nd speeds
17. Support bushings for gearbox driven gears
18. Synchroniser for 3rd and 4th speeds
19. Gearbox driven shaft

NOTE: *On assembly apply sealant to surfaces X following the indications given in next page.*

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Gears, shaft, and bearings - Sectional view - Electrohydraulic 4WD



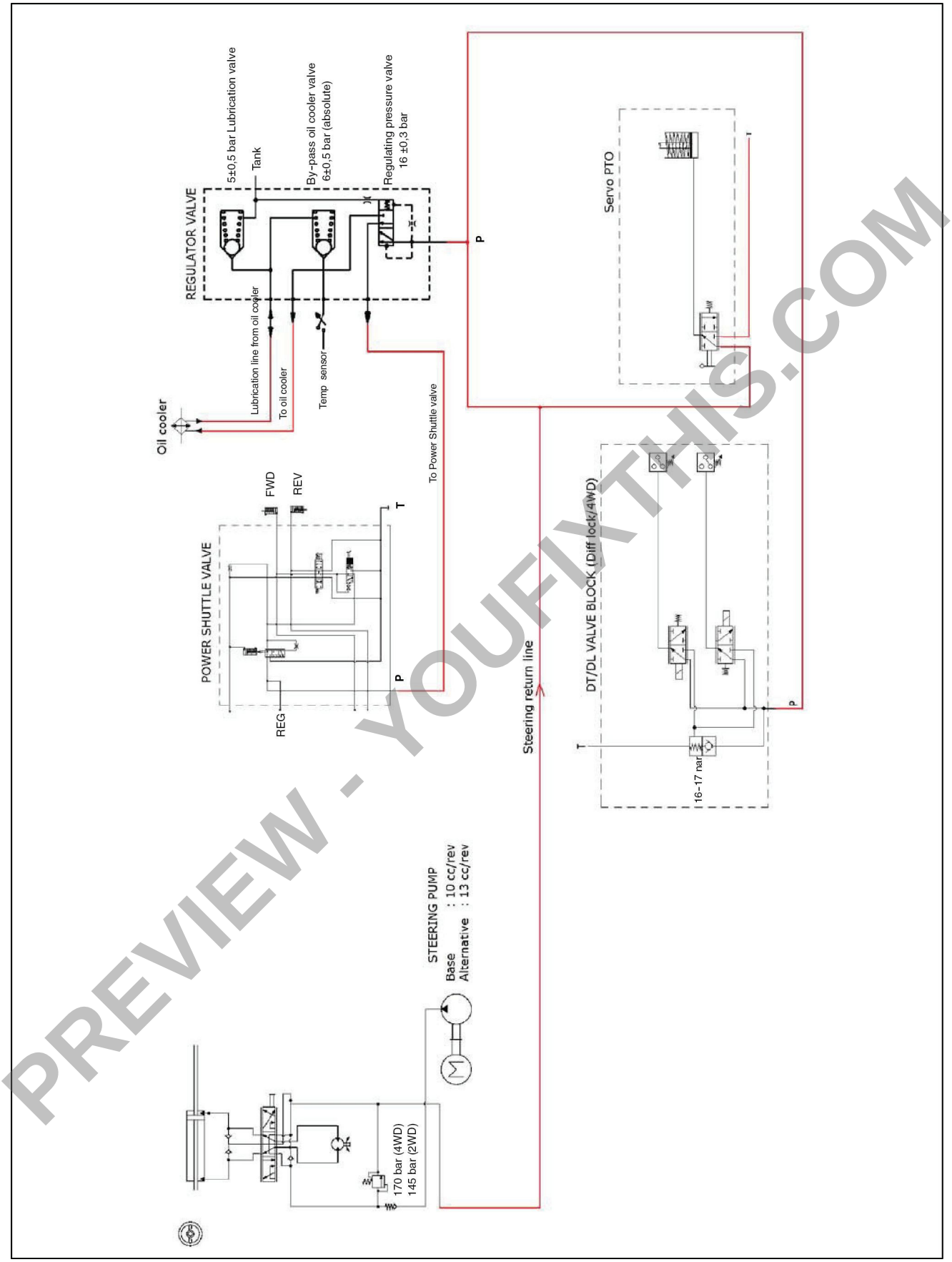
ANIL15TRO1286GB 1

Sectional view of drive gear with electrohydraulic coupling

1. Driving shaft
2. Dust ring
3. Seal
4. Manifold ring
5. Circlip
6. Ball bearing
7. 4WD engagement spring
8. Fixed engagement
9. Intermediate gear journal
10. Idler gear
11. Needle bearing
13. Ball bearing
17. Thrust washer
20. Plate
21. Circlip
22. Control cylinder oil delivery union
23. O-ring
24. O-ring
25. Metal seal rings
27. O-ring
28. O-ring
30. Casing
31. Circlip
32. Front grooved sleeve
33. Clearance adjustment ring **(L)**
34. Circlip

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ANIL15TRO1359HA 3

Power-Shuttle hydraulic circuit

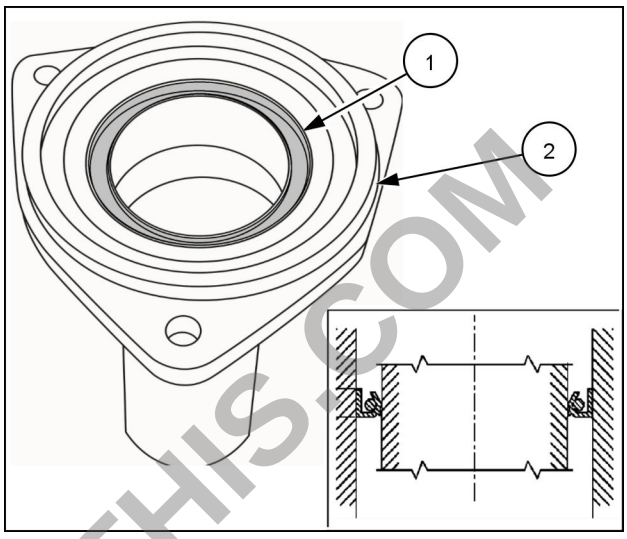
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Gears, shaft, and bearings - Adjust

Assemble of Seal, O-ring and Sleeve for Power Shuttle transmission

1. Insert the seal **(1)** onto the sleeve **(2)** with special tool on page **Gears, shaft, and bearings - Special tools (21.154)**.

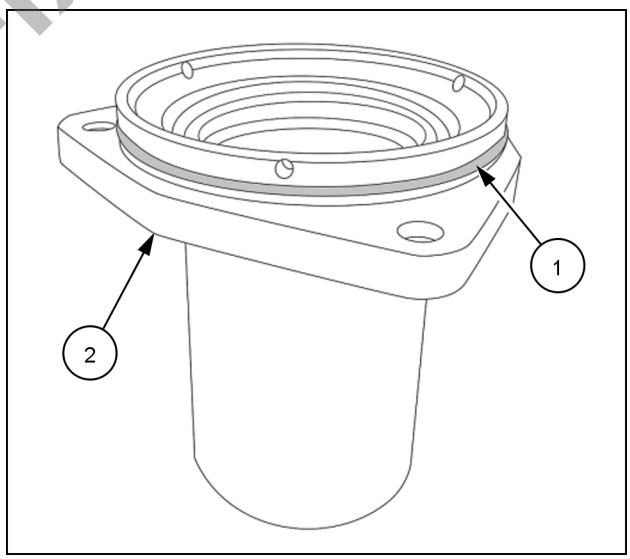


ANIL16TRO1093AA 1

ATTENTION: *The seal has a installation direction. The seal lips must be facing upwards as shown in figure **1**.*

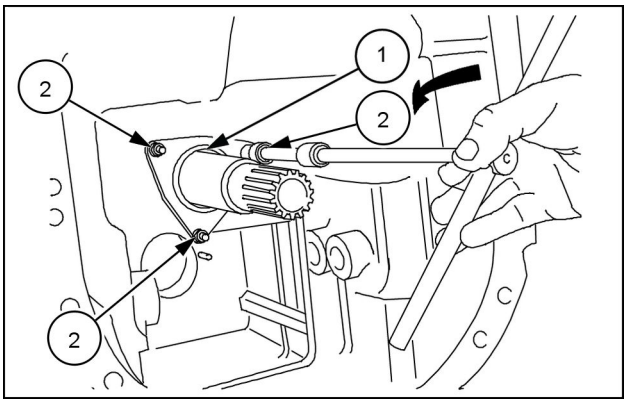
ATTENTION: *Insert the seal carefully to avoid oil leakage.*

2. Insert the o-ring **(1)** to the sleeve **(2)** and lubricate the o-ring with gearbox oil before installing the sleeve to the gearbox housing.



ANIL16TRO1094AA 2

3. Install the sleeve **(1)** to the gearbox housing as shown in the figure **3**.
4. Tighten the bolts **(2)** with **1.8 – 2.0 kgm** (**13.0 – 14.5 ftlbs.**)



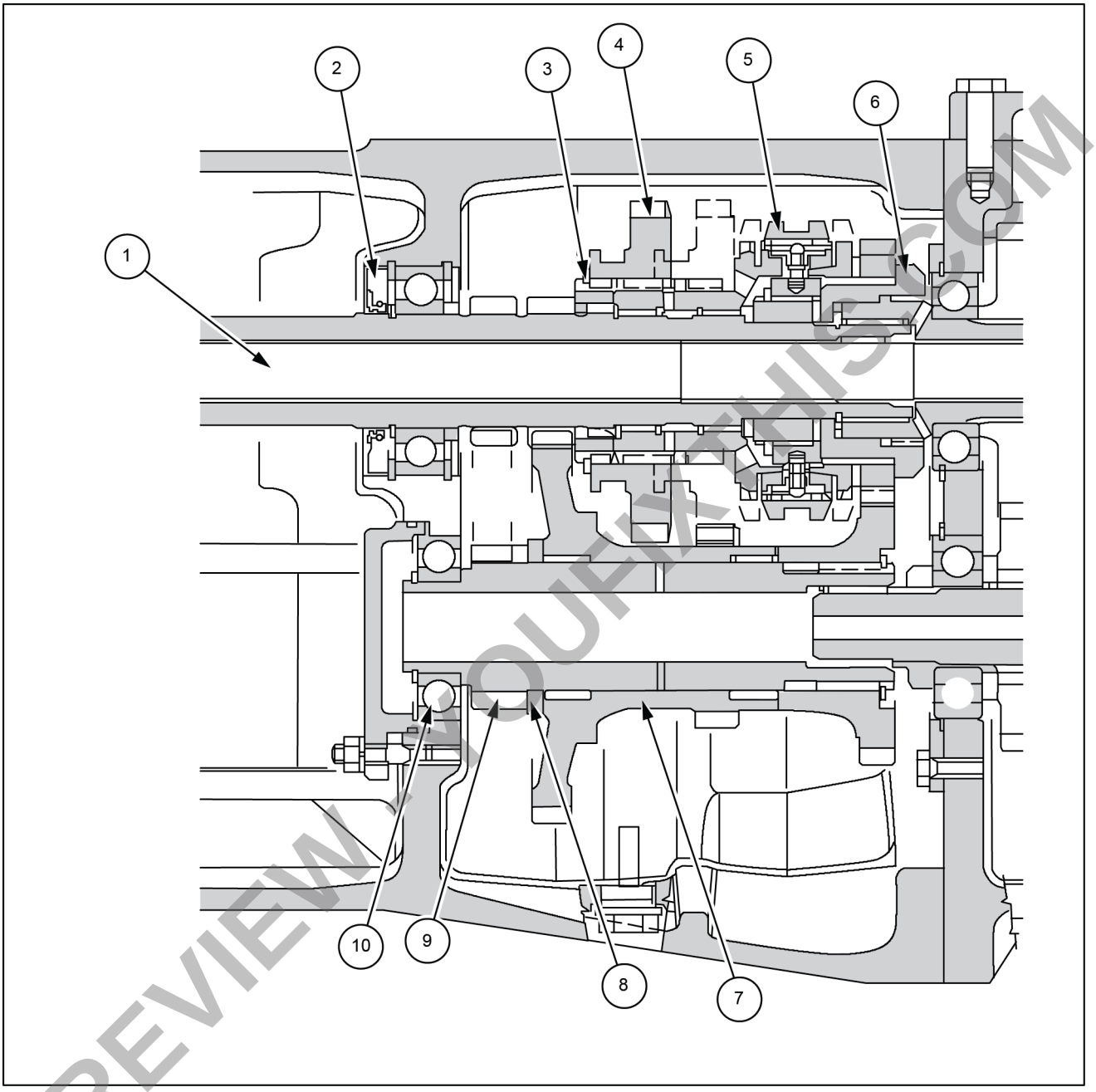
ANIL12TR00775AB 3

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Creeper - Sectional view

Longitudinal section through reverser-creeper unit



ANIL15TRO1336GB 1

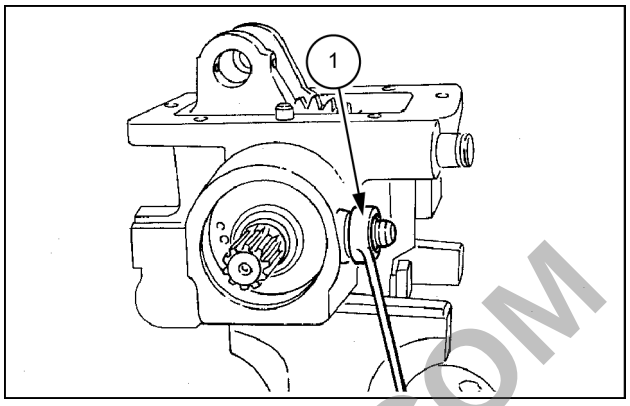
1. Reverser and creeper unit control shaft
2. Seal
3. Circlip
4. Creeper unit control gear
5. Reverser-creeper unit synchroniser
6. Gearbox driving shaft control gear
7. Creeper unit driven gear
8. Thrust washer
9. Reverser driven shaft
10. Seal

NOTE: *On assembly apply sealing compound to the surfaces "X" following the indications given on* ***Mechanical transmission - Sectional view (12 x 4) (21.114)****.*

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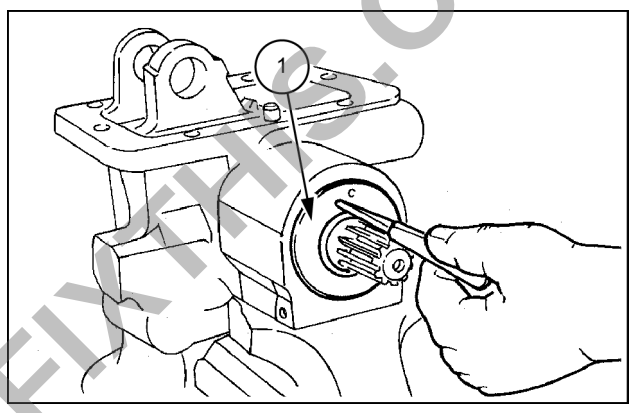
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6. Remove the 4WD drive gear disengagement oil delivery union **(1)**.



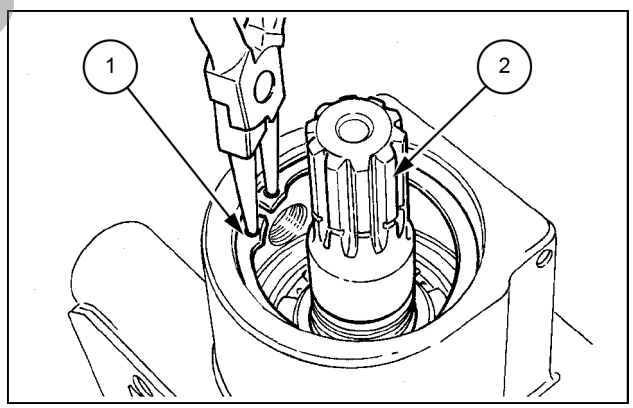
ANIL15TRO1301AB 4

7. Remove the oil delivery manifold ring **(1)** with a suitable punch.



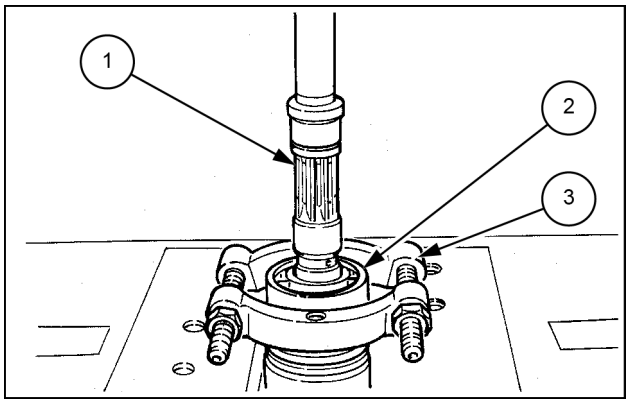
ANIL15TRO1302AB 5

8. Remove the circlip **(1)**. Extract the shaft **(2)**, complete with parts **(6)**, **(7)**, **(19)**, **(20)** and **(21)** (**Gears, shaft, and bearings - Sectional view - Electrohydraulic 4WD (21.140)**), remove the parking brake disks **(12)** and **(14)**, the driven gear **(18)**, fixed coupling **(8)** and thrust washer **(17)**.



ANIL15TRO1303AB 6

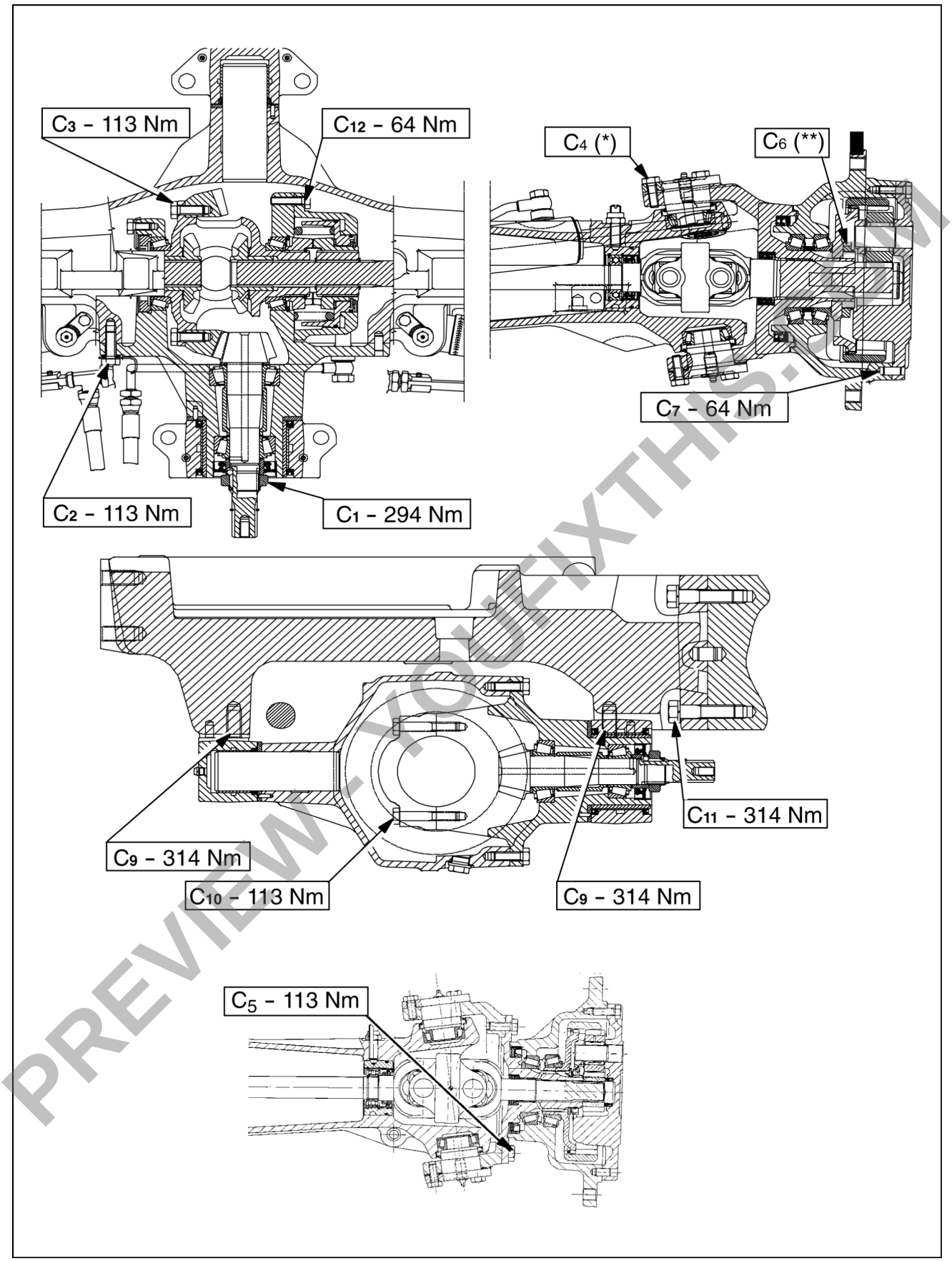
9. Position the driven shaft **(1)**, previously removed in operation **(8)**, in a hydraulic press, securing the bearing **(2)** in the clamps **(3)** as indicated in the drawing. Operate the press and extract the bearing **(2)**.



ANIL15TRO1304AB 7

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(*) See **Powered front axle - Adjust (25.100)** (**) See **Wheel hub - Adjust (25.108)**

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Table 2

Main specifications of final drives

	TD5.85 - TD5.95 - TD5.105 - TD5.115
Type	Pinion type and spur gears
Reduction ratio	11:67=1:6.1 (for TD5.85) 11:68=1:6.2 (for TD5.95) 11:71=1:6.45 for TD5.105 and TD5.115)

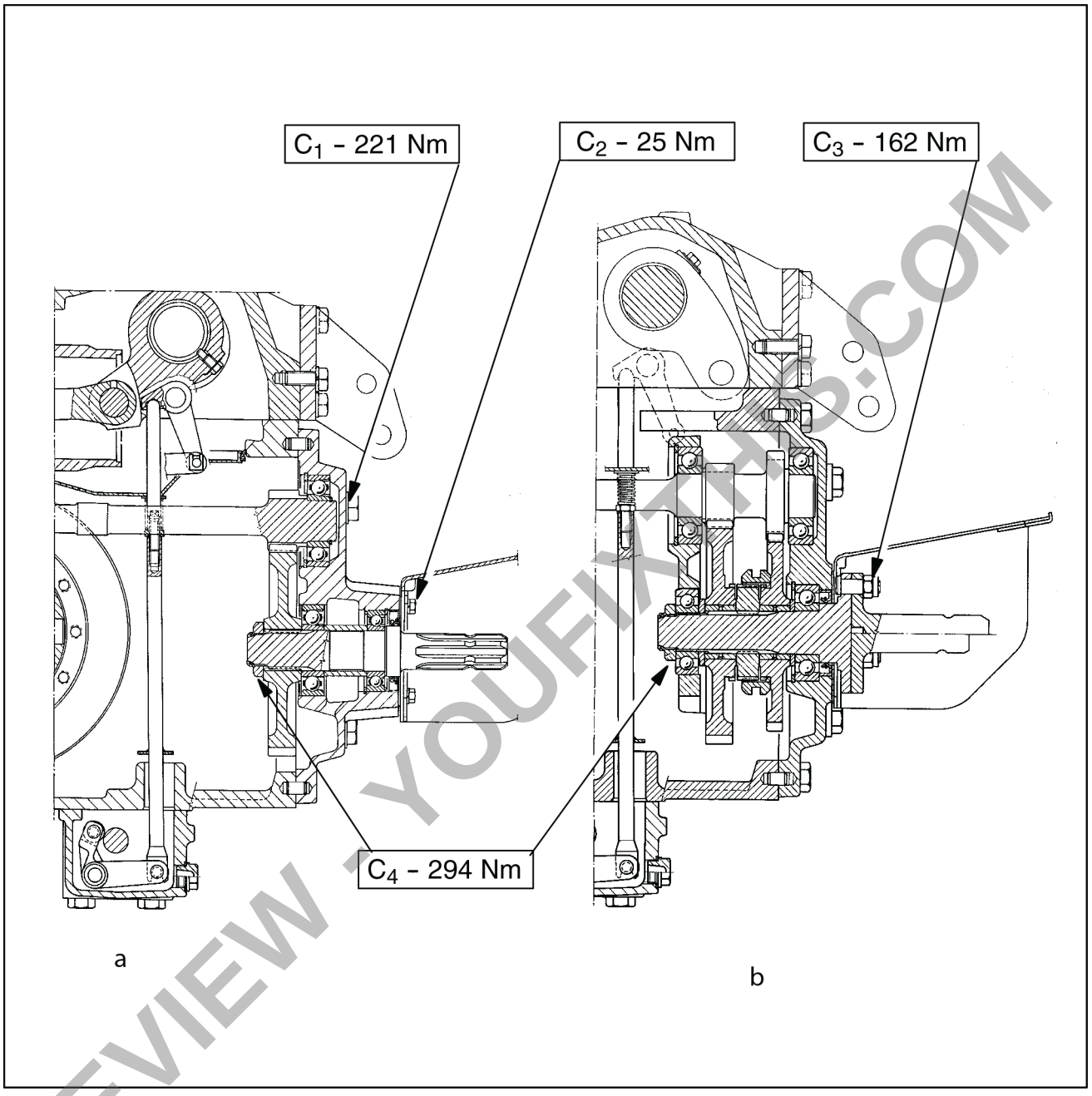
Powered rear axle - Torque

Part to be tightened	Thread	Torque setting
Retaining bolts for rear transmission/gearbox upper cover **(C1)**	**M10 x 1.25**	**59 N·m** (**43 lb ft**)
Bolts for securing lift to rear transmission box **(C2)**	**M12 x 1.25**	**98 N·m** (**72 lb ft**)
Bolts for securing PTO box to transmission/gearbox case **(C3)**	**M16 x 1.5**	**221 N·m** (**163 lb ft**)
Bolts for securing torsion bar to transmission/gearbox case **(C4)**	**M16 x 1.5**	**221 N·m** (**163 lb ft**)
Nuts for stud bolt securing final drive box to transmission/gearbox case **(C5)**	**M12 x 1.25**	**98 N·m** (**72 lb ft**)
Drive wheel hub to disc retaining nuts **(C6)**	**M18 x 1.5**	**255 N·m** (**188 lb ft**)
Drive wheel rim to disc retaining nuts **(C7)**	**M16 x 1.5**	**245 N·m** (**180 lb ft**)
Ring bevel gear retaining bolts **(C8)**	**M12 x 1.25**	**123 N·m** (**90 lb ft**)
Bevel drive-differential support retaining self-locking bolts **(C9)**	**M10 x 1.25**	**59 N·m** (**43 lb ft**)
Final drive casing cover retaining bolts **(C10)**	**M10 x 1.25**	**59 N·m** (**43 lb ft**)
Drive wheel axle retaining nut **(C11)**	**M55 X 1.5** **M60 X 2**	**882 N·m** (**650 lb ft**) **882 N·m** (**650 lb ft**)
Differential lock pedal support retaining bolts	**M10 x 1.25**	**49 N·m** (**36 lb ft**)
Nuts for drive wheel ballast ring retaining bolts	**M14 x 1.5**	**98 N·m** (**72 lb ft**)

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Rear mechanical control - Torque



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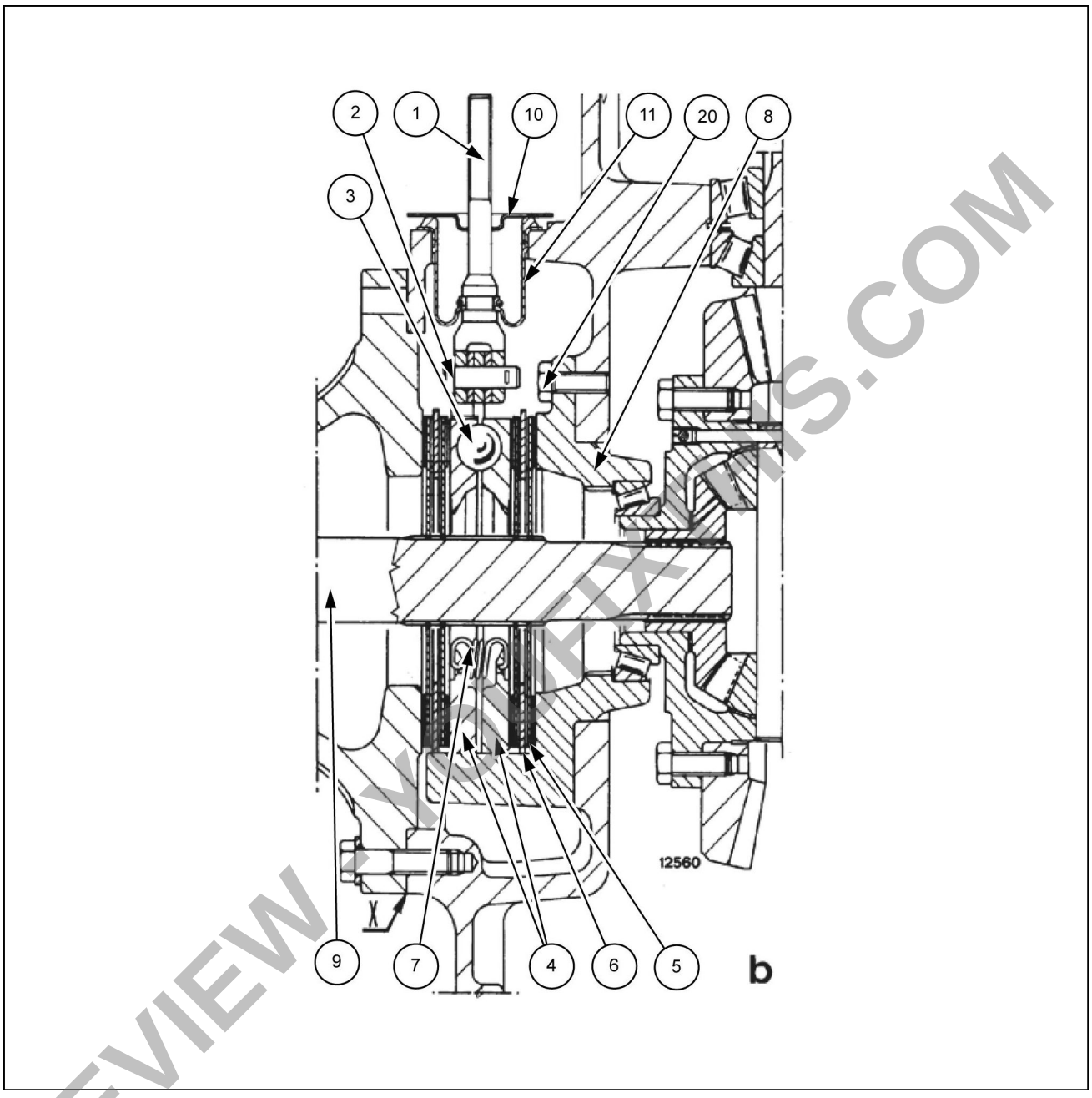
a - Single-speed **540 RPM** PTO
b - 2-speed **540 RPM**/ **750 RPM** PTO

Torque settings

Part to be torqued	Thread	Torque setting
PTO box fixing screws **(C1)** (Fig. **1**)	M16 x 1.5	**221 N·m** (**163 lb ft**)
Power Take-Off (PTO) guard fixing screws **(C2)** (Fig. **1**)	M8 x 1.25	**25 N·m** (**18 lb ft**)
Grooved end piece self-locking nuts (2-speed PTO) **(C3)** (Fig. **1**)	M12 x 1.25	**162 N·m** (**119 lb ft**)
Driven gear shaft locknut: **(C4)** (Fig. **1**) for single- or 2-speed PTO	M32 x 1.5	**294 N·m** (**216 lb ft**)
Bearing support fixing screws (2-and 3-speed PTO) **(C5)** (**Rear mechanical control - Overhaul (31.101)**)	M12 x 1.25	**98 N·m** (**72 lb ft**)

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Hydraulic service brakes - Sectional view



ANIL15TRO1576GB 1

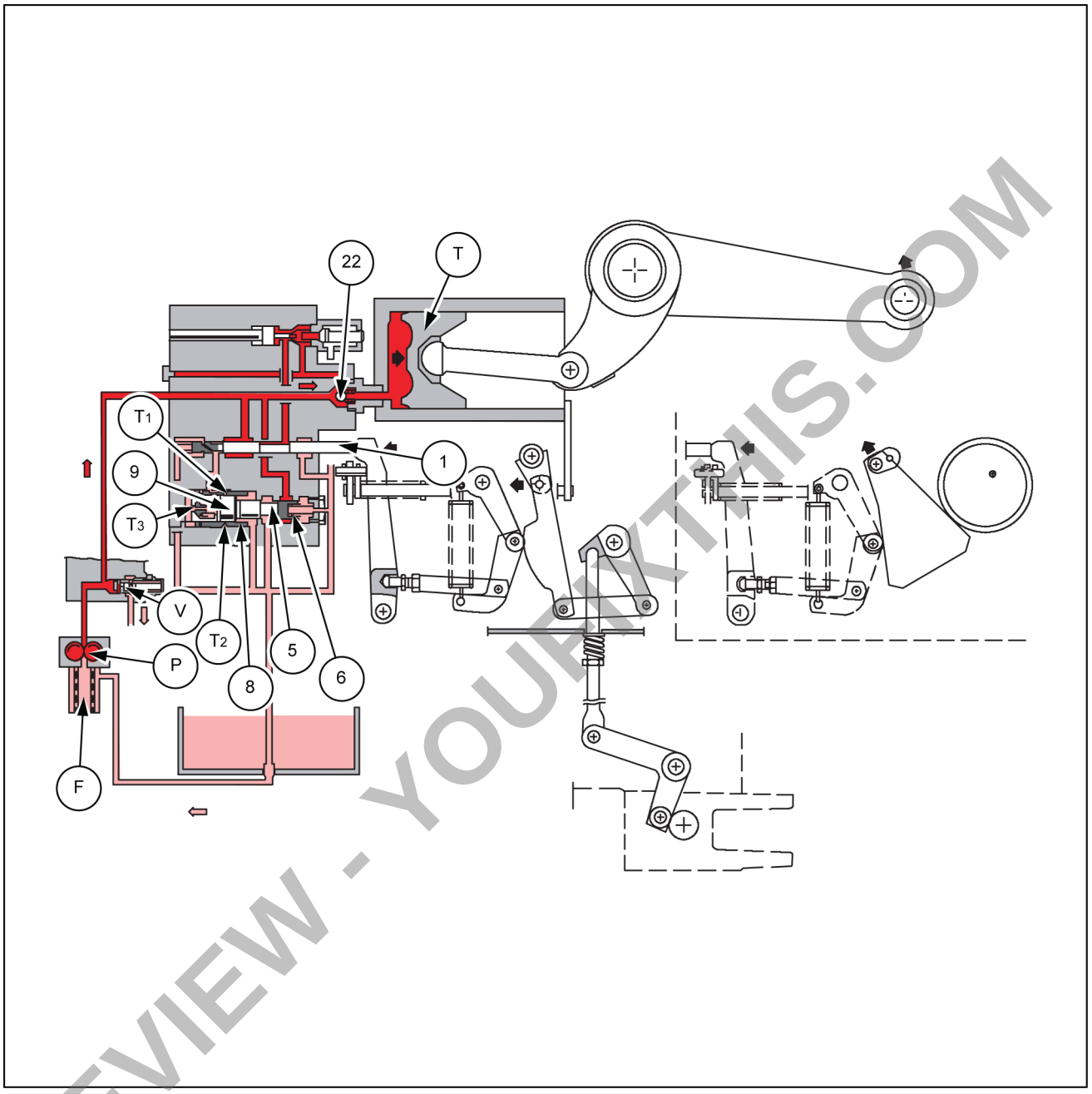
Sectional drawing of service and parking brakes

b. models TD5.85, TD5.95 and TD5,105 and TD5.115
1. Brake link
2. Pin
3. Ball
4. Brake actuator
5. Brake discs
6. Back-up discs
7. Actuator return spring
8. Differential support
9. Axle shaft
10. Boot cover plate
11. Boot
20. Differential support retaining bolt

NOTE: *When mounting apply sealing compound to surfaces "X" as shown on* ***Hydraulic service brakes - Remove (33.202)****.*

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Arm lift phase



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WEBER or ERBER	**200.00 mm** (**7.87 in**)
SIMA	**194.00 mm** (**7.64 in**)

Hydraulic control components - Torque

Part	Thread	Torque setting
Bolt fixing hydrostatic steering to tractor	**0.375 in**–16 **UNC**	**44 N·m** (**32 lb ft**)
Bolt fixing cover to hydrostatic steering housing **(13)** (**Power steering control valve - Component localization (41.200)**)	M8 x 1 M8 x 1*	**34 N·m** (**25 lb ft**) **29 N·m** (**21 lb ft**)
Hydrostatic steering control pump fixing bolt	M6 x 1	**8 N·m** (**5 lb ft**)
Nut for bolt fixing cover to pump housing **(13)** (**Pump - Component localization (41.206)**)	M10 x 1.25	**39 N·m** (**28 lb ft**)
Nut for securing thrust sleeve to pump drive shaft **(14)** (**Pump - Component localization (41.206)**)	**0.4375 in**–20 **UNF**–2B	**28 N·m** (**20 lb ft**)
Nut, power cylinder pivot pin	M18 x 1.5	**294 N·m** (**216 lb ft**)
Nut, power cylinder piston rod to steering arm	M14 x 1.5	**147 N·m** (**108 lb ft**)
Nut, piston to rod WEBER cylinder SIMA cylinder ERBER cylinder	 M16 x 1.5 M16 x 1.5 M16 x 1.5	 **83 N·m** (**61 lb ft**) **98 N·m** (**72 lb ft**) **98 N·m** (**72 lb ft**)
bolt, contol valve support	M16 x 1.5	**147 N·m** (**108 lb ft**)
bolt, LVP safety valve block to body	–	**64 N·m** (**47 lb ft**)

* ORSTA

Hydraulic control components - Special tools

NOTICE: *The operations described in this section must be performed only with the ESSENTIAL equipment marked with "X".*
To operate safely and achieve best results, while saving time and effort, essential equipment must be used in conjunction with the special tools recommended below, and tools which you must make yourself and for which you will find the design in this manual.

List of special tools necessary for the various operations described in this section:

- X **380000307** Hydraulic steering rotor retaining lever
- X **380000223** Steering wheel extractor
- X 380000240 Universal pressure checking kit
- X **380000305** Tool for fitting hydrostatic steering toroidal seal
- **380000306** Plug for fitting hydrostatic steering rotary valve return springs

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Front wheels - Troubleshooting

Problem	Possible Cause	Correction
Abnormal wear of tyres	Incorrect tire pressure	Inflate the tires to the correct pressure, referring to the pressures recommended in the Use and Maintenance handbook, and more especially, to the pressures recommended by the manufacturer of the tires fitted
	Incorrect toe-in of front wheels	Correct the toe-in
Poor stability of tractor	Incorrect tire pressure	Inflate the tires correctly as detailed above

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Air conditioning - General specification

SANDEN SD 7H15 Compressor	
Number of cylinders	7
Total displacement	**155.00 cm³** (**9.46 in³**)
Maximum speed	**5000 RPM**
Weight	**6.50 kg** (**14.33 lb**)
Quantity of lubricating oil	**185.00 cm³** (**11.29 in³**)
Type of lubricating oil (code)	**PAG SP20**

Air conditioning - General specification

Air conditioning system	Gas HFC134a
Quantity of HFC-134a refrigerant	**1.700 kg** (**3.748 lb**)
System delivery side pressure	**19.50 – 22.00 bar** (**282.75 – 319.00 psi**)
System suction side pressure	**1.50 – 2.50 bar** (**21.75 – 36.25 psi**)
Pressure switch setting (high pressure)	**21.00 – 27.00 bar** (**304.50 – 391.50 psi**)
Pressure switch setting (low pressure)	**2.00 – 2.15 bar** (**29.00 – 31.17 psi**)
Temperature of refrigerant fluid at outlet of compressor	**115 – 120 °C** (**239 – 248 °F**)
Temperature of refrigerant fluid at outlet of condenser	**51 – 60 °C** (**124 – 140 °F**)
Temperature of refrigerant fluid at outlet of evaporator	**0 – 15 °C** (**32 – 59 °F**)
Maximum capacity of electric centrifugal fan I, II, III, IV speed	**3060.01 L/min** (**808.37 US gpm**) – **5250.03 L/min** (**1386.91 US gpm**) – **6700.03 L/min** (**1769.96 US gpm**) – **8860.02 L/min** (**2340.57 US gpm**)

Remember that altitude affects pressure, as shown in the table on the right. To obtain the effective pressure in the system, subtract the corresponding correction value from the pressure gauge reading.

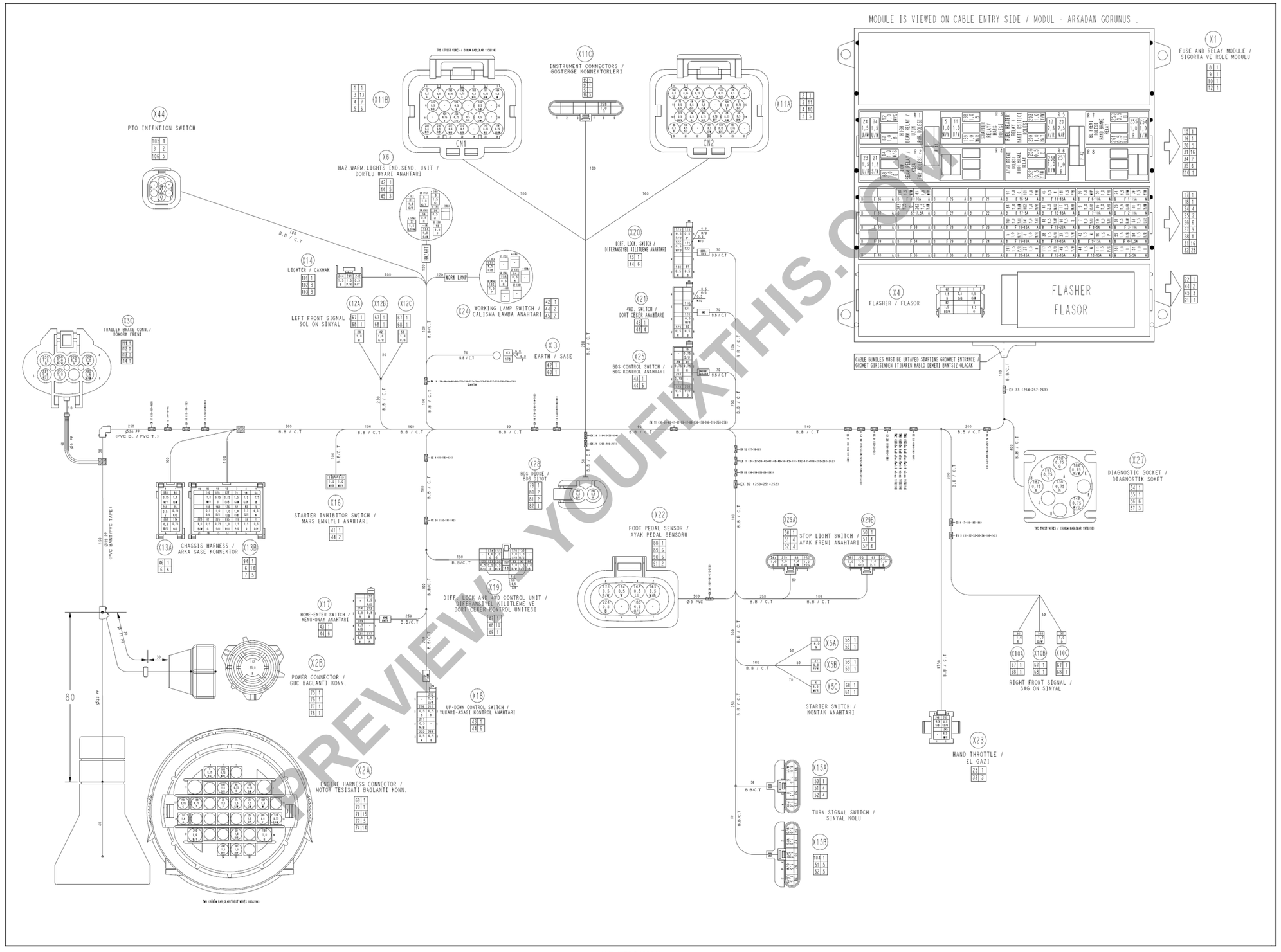
Altitude	Absolute atmospheric pressure	Correction
0	**1.01 bar** (**14.63 psi**)	0
300 m	**0.97 bar** (**14.13 psi**)	**0.03 bar** (**0.50 psi**)
600 m	**0.94 bar** (**13.64 psi**)	**0.07 bar** (**1.00 psi**)
900 m	**0.91 bar** (**13.14 psi**)	**0.10 bar** (**1.49 psi**)
1200 m	**0.87 bar** (**12.64 psi**)	**0.14 bar** (**2.00 psi**)
1500 m	**0.84 bar** (**12.14 psi**)	**0.17 bar** (**2.50 psi**)
1800 m	**0.80 bar** (**11.64 psi**)	**0.21 bar** (**3.00 psi**)
2100 m	**0.78 bar** (**11.25 psi**)	**0.23 bar** (**3.39 psi**)
2400 m	**0.75 bar** (**10.85 psi**)	**0.26 bar** (**3.82 psi**)

Air conditioning - Special tools

Warning
The operations described in this section cannot be carried out without the ESSENTIAL tools marked **(X)** in the following list.
To work in safety and to obtain the best possible results whilst saving both time and energy, we recommend that the other specific tools in the list are also used.

List of specific tools for the various operations in this section	
(X) 294030	Evacuation and charging station
(X) 294048	Recovery and recycling station
294044	Set of flexible hoses for 294030 and 294048
294043	Tool kit for 294030
294042	Receiver-drier for 294048
294036	Gas leak detector with audible leak indication
293826	A thermal tape for expansion valve

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B. If continuity/short test are unsuccessful, locate and repair the damaged section(s) of the wiring harness.

4. Verify proper coolant temperature sensor operation. Disconnect the coolant temperature sensor connector **X-969** and test resistance of coolant temperature sensor using the table of resistance vs temperature below. Approximate the temperature when performing test. coolant temperature sensor failures are typically at the extreme ends of the table or off the table entirely.

Coolant Temperature	Resistance Value
-20 °C (**-4 °F**)	**10.5 kOhm**
0 °C (**32 °F**)	**7500 ohms**
20 °C (**68 °F**)	**4200 ohms**
40 °C (**104 °F**)	**980 ohms**
60 °C (**140 °F**)	**780 ohms**
80 °C (**176 °F**)	**500 ohms**
100 °C (**212 °F**)	**280 ohms**
120 °C (**248 °F**)	**97 ohms**

A. If the resistance measurement does not approximately match the table, Implement does not work properly.

B. If the resistance measurement does approximately match the table, Continue to step **5**monitor.

5. Verify ECU ground and voltage supply. Use the product schematic for a reference, with the key switch OFF disconnect ECU vehicle connector **X-937** from the ECU. Check for **12 volts** with the key switch in the ON position, and continuity at the appropriate pins defined in the test table below.

Type of test	From	A	Expected results
1. Voltage	ECU vehicle connector **X-937** (Pin 1, 3, 5)	Ground (engine block)	(approx.) **12 volts**
2. Continuity.	ECU vehicle connector **X-937** (Pin 2, 4, 6)	Ground (engine block)	about **0 – 0.10 ohms**

A. If the voltages and ground paths are correct and the ECU was re initialized on a prior diagnostic of this type, replace the ECU.

B. If the voltages and ground paths are not correct locate and repair the damaged section(s) of the wiring harness.

6. Visually inspect the relevant harnesses and connectors **X-969** and **X-939** for damage, bent or dislocated pins, corroded terminals or broken wires. Verify that the connectors are fully installed. Flex the harnesses concerned to reveal intermittent breaks or shorts in the wiring. Operate the machine while you monitor the display.

A. Damage is found or other than normal display readings are indicated. then repair the damage discoveorange during the inspection or locate and repair the other than normal display condition and verify that the error has been resolved.

B. If no damage or no other than normal display readings are indicated, then erase the fault code and continue operation.

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Engine starting system - Static description

Description and operation

The starting system installed depends on the type of gearbox fitted on the tractor. All systems consist of an ignition key switch, heavy-duty wiring, a starter motor with solenoid, a start-up relay and a clutch pedal switch. These are the basic circuit components used on versions with mechanical gearbox. More sophisticated systems include other components, which ensure the engine can be started only under the proper conditions.

There are four types of gearbox: with range reduction gear (synchro command), with range reduction gear and inverter (shuttle command). The starting circuit is illustrated in **Engine starting system - Electrical schema (55.201)**.

There are two available types of starter motors: **2.5 kW** (**3 Hp**) or **3.5 kW** (**5 Hp**) rating. They both have four poles, four brushes with integrated solenoid and positive mesh engagement control.

The solenoid consists of two coils connected in parallel. The low resistance pull-in coil is earthed (grounded) via the engine, while the high resistance hold-in coil is earthed (grounded) via the solenoid body.

When the ignition switch is closed, with the clutch pedal depressed and gear in neutral (except in the case of mechanical gearboxes), the coils are energised and the plunger is magnetically drawn inside the solenoid. This movement, transmitted by means of an flexible joint mechanism, makes the driving pinion engage the flywheel ring gear. The moment the pinion touches the ring gear, the plunger closes a series of contacts and powers all four field windings directly from the battery, thus giving full power to the starter motor.

At this stage, one end of the pul-in coil is connected to the positive battery pole through the starter switch, while the other end in connected to the positive pole through the solenoid valve contacts. The pull-in coil is thus bypassed, without absorbing power, and the hold–in coil alone keeps the plunger in position.

The starter motor includes a series of contacts and a two-part solenoid plunger which completely closes the contacts even if the pinion teeth are not perfectly in line with the ring gear. When this happens, a clutch spring compresses the pinion, forcing it to connect completely as soon as the starter motor starts turning.

When the key ignition switch is released, power is taken from both the solenoid and the motor. The solenoid return spring, acting on the flexible joint mechanism, frees the driving pinion from the gear and opens the solenoid valve contacts again.

A roller type clutch is incorporated to the driving pinion group. This prevents the pinion from over speeding if it stays engaged with the flywheel ring gear after the engine has been started.

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Type of test	From:	Refit the retaining clamps of the sheaths of the wheel motor hoses located on the front right and left struts.	Expected results
1. Continuity.	**X-961** pin 1	**X-939** pin 25, wire 403 (OR)	about **0 – 0.10 ohms**
2. Continuity.	**X-961** pin 2	**X-939** pin 55, wire 420 (GY/GN)	about **0 – 0.10 ohms**
3. Continuity.	**X-961** pin 3	**X-939** pin 10, wire 395 (GN/BK)	about **0 – 0.10 ohms**
4. Continuity.	**X-961** pin 4	**X-939** pin 40, wire 412 RD/BK)	about **0 – 0.10 ohms**
5. Short circuit	**X-939** pin 55, wire 420 (S/G)	**X-939** pin 25, wire 403 (OR), pin 10, wire 395 (GN/BK), pin 40, wire 412 (RD/BK)	Open circuit
6. Short circuit	**X-939** pin 25	**X-939** pin 10, wire 395 (GN/BK), pin 40, wire 412 (RD/BK)	Open circuit
7. Short circuit	**X-939** pin 40	**X-939** pin 10, wire 395 (GN/BK)	Open circuit

A. If continuity/shorts test is successful, pass on to point **4**.

B. If continuity/shorts test is unsuccessful, locate and repair the damaged section(s) of the wiring harness.

4. Check for ECU Voltages and Ground Continuity. Use product schematic. Leave the ignition key switch in the OFF position. Remove connector **X-937** from the ECU. Place the ignition key switch ON to check for voltage at the appropriate pins defined in the test table below. Place the ignition key switch OFF to check for continuity at the appropriate pins defined in the test table below. Use the **0.4 mm** (**0.017 in**) diameter test probes from the Tier II (NEF) Diagnostic Repair Kit **380040185** when connecting the DMM to connector **X-937**. Make sure the DMM's test lead resistance is taken into account when making any continuity measurements.

   Important Note:
   Check and verify that the Vehicle Status is correct for each operation. Potential ECU damage could result when removing and replacing main ECU connectors if this is not followed.

Type of test	From	A	Expected results
1. Voltage	**X-937** pin 1 wire 31 (RD/BB), pin 3 wire 30 (RD/YE), pin 5 wire 29 (RD/YE), pin 54 wire 341 (OR)	Ground (engine block)	about **12 volts**
2. Continuity.	**X-937** pin 2 wire 311(BK), pin 4 wire 312 (BK), pin 6 wire 313 (BK)	Ground (engine block)	about **0 – 0.10 ohms**

A. If the voltages and ground paths are correct and the Boost Pressure sensor was not replaced on a prior diagnostic of this type, Implement does not work properly.

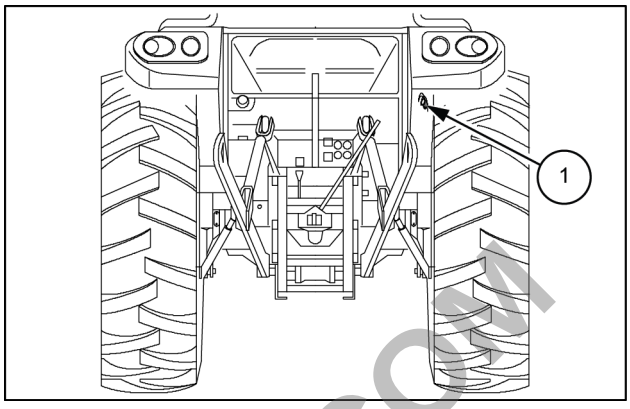
B. If the voltages and ground paths are correct and the Boost Pressure sensor was replaced on a prior diagnostic of this type, re-initialize the ECU as if it was blank (new) and load the appropriate data-set.

C. If the voltages and ground paths are correct and the ECU was re initialized on a prior diagnostic of this type, replace the ECU.

D. If the voltages and ground paths are not correct, refer to schematic and determine root cause of power or continuity problem(s).

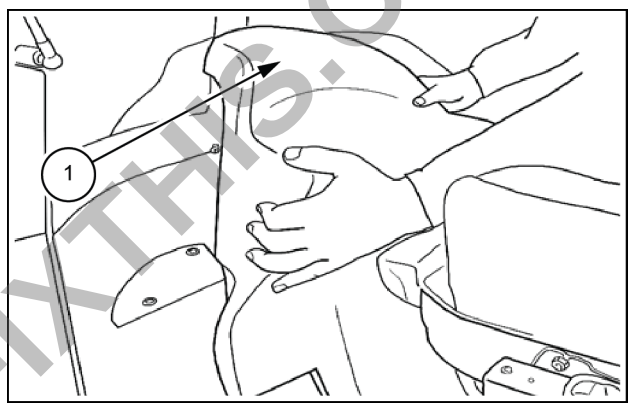
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10. Remove the screws **(1)** from back side of right-hand side fenders.



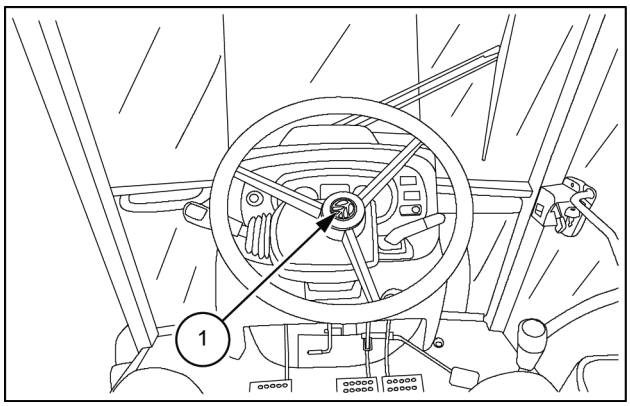
ANIL15TRO1759AB 9

11. Remove the right-hand side panel **(1)**.



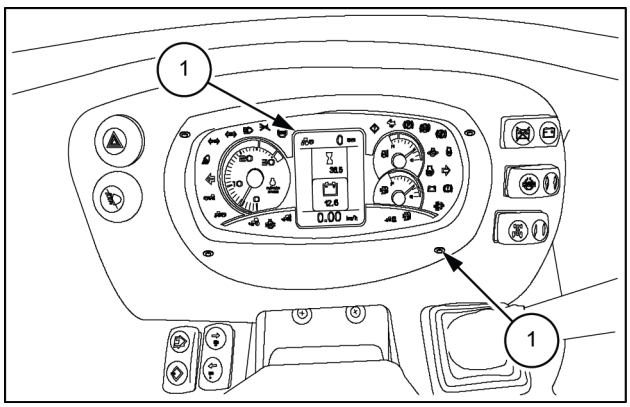
ANIL15TRO1760AB 10

12. Remove the retaining nut **(1)** and take out the steering wheel.



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13. Remove the retaining bolts on the control panel and detach the electrical connector. Remove the tachometer and the control panel **(1)**.
14. Unscrew the retaining screws on guard **(2)** and remove the guard.
15. Remove the screws holding the shuttle lever and remove the shuttle lever.
16. Unscrew the retaining screws on the L and R and bottom side of the instrument console, detach electrical connections and remove the instrument console.



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Pump	
Type	Gear type with oil suction from transmission casing
Location	Flanged on the rear left-hand side of the engine
Construction	Bosch
Model	Rexroth
Operation	By means of the engine gears
Direction of rotation (as seen from drive side)	Left (counter clockwise)
Engine speed to pump speed ratio	1 : 1.080
Maximum speed of pump rotation (with engine at maximum power equivalent to **2500 RPM**)	**2700 RPM**
Nominal flow rate	**19.5400 cm³** (**1.1930 in³**)/turn
Corresponding rated output for new pump	**48000.00 cm³** (**2929.14 in³**)/turn
Corresponding rated output for pump with **300 h** of work	**43000.00 cm³** (**2624.02 in³**)/turn
Bench output at **2500 RPM** and a pressure of **150 bar** (**2175 psi**):	
For new pump	**24800.02 cm³** (**1513.39 in³**)/turn
For pump with **300 h** of work	**22300.01 cm³** (**1360.83 in³**)/turn
Test oil temperature	**55 – 65 °C** (**131 – 149 °F**)
Test oil viscosity	16 CST

Hydraulic systems - Torque

Torque settings

	Thread	Thread
Lift Bolt, lift to rear transmission case **(C1)** (**Hydraulic systems - Sectional view (35.000)**)	M12 x 1.25	**98 N·m** (**72 lb ft**)
Bolt, control valve body to lift **(C3)** (**Hydraulic systems - Disassemble - Rear hydraulic lift (35.000)**)	M8 x 1.25	**26 N·m** (**19 lb ft**)
Bolt, lift arm plates **(C2)** (**Hydraulic systems - Sectional view (35.000)**)	M14 x 1.5	**147 N·m** (**108 lb ft**)
Plug, max. arm raising adjustment **(3)** (**Hydraulic systems - Disassemble - Rear hydraulic lift (35.000)**))	M12 x 1.25	**103 N·m** (**75 lb ft**)
Nut, position control shaft	M10 x 1.25	**59 N·m** (**43 lb ft**)
Nuts for lever quadrant bracket securing stud bolts **(2)** (**Hydraulic systems - Disassemble - Rear hydraulic lift (35.000)**)	M8 x 1.25	**25 N·m** (**18 lb ft**)
Lift cylinder securing bolts	M14 x 1.5 M16 x 1.5	**211 N·m** (**72 lb ft**) **260 N·m** (**191 lb ft**)
Securing bolts for top link attachment bracket	M14 x 1.5	**147 N·m** (**108 lb ft**)
Inner lift arm securing bolts	M10 x 1.25	**61 N·m** (**44 lb ft**)
Bolt, suction connection	M12 x 1.25	**98 N·m** (**72 lb ft**)
Bolt, delivery connection on lift control valve	M10 x 1.25	**59 N·m** (**43 lb ft**)
Bolt, lift pump (**Hydraulic systems - Disassemble (35.000)**)	M6 x 1	**8 N·m** (**5 lb ft**)
Nut, pump cover	M10 x 1.25	**41 N·m** (**30 lb ft**)
Bolt, flexion bar support	M16 x 1.5	**221 N·m** (**163 lb ft**)
Bolt, chain support	M16 x 1.5	**221 N·m** (**163 lb ft**)
Bolt, check link support	M16 x 1.5	**221 N·m** (**163 lb ft**)
Nut, tow bar	M18 x 1.5	**343 N·m** (**252 lb ft**)
Control valves Nut, control valve links	–	**20 N·m** (**14 lb ft**)
Connection, outlet to fit	–	**20 N·m** (**14 lb ft**)
Plug, relief bar spring	–	**20 N·m** (**14 lb ft**)

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3158 - Invalid ECM checksum (the engine dataset does not match the dataset registered for this machine. Register the new dataset if the dataset has just been updated)

Control Module: ECU

Cause:
The code 3158 can appear after downloading software to the Engine Controller and completing the dataset registration, if the engine was not allowed to run for at least five minutes before keying off.
The message to 'register the dataset, if it has been changed', will occasionally appear on the EST after downloading software. If the procedure to register the dataset has been completed, the machine needs to run for five minutes to complete the registration process between machine modules.

Possible failure modes:

1. Engine controller does not have the valid data set installed.
2. The new engine data set has not been registered on the machine.
3. The engine was not allowed to run for at least five minutes after completing a dataset registration before keying off.

Solution:

1. Download the correct engine data set using the electronic service tool (EST) easy engine download tool. After download, register the engine data set for use with the EST configuration screen “Engine data registration.”

   If the code 3158 appears or the message to register the dataset appears on the EST and the registration procedure has already been completed, it should not need to be completed again. Just start the engine and let it run for five minutes.

   Once the machine runs for five minutes, the fault can go 'inactive' or 'non present'. Once this occurs, the fault code can be cleared and should not appear again. If the fault does appear again, run the machine an additional five minutes to ensure the fault does not occur again.

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