Link Product / Engine

Product	Market Product	Engine
T7.290 AutoCommand™ Sidewinder II [ZFEA01001 - ZGEA02931]	North America	F4DFE617M*B001
T7.290 AutoCommand™ Sidewinder II [ZGEA02932 - ZGEA04528]	North America	F4DFE617M*B001
T7.290 AutoCommand™ Sidewinder II [ZGEA04529 -]	North America	F4DFE617M*B001
T7.315 AutoCommand™ Sidewinder II [ZFEA01001 - ZGEA02931]	North America	F4DFE617L*B002
T7.315 AutoCommand™ Sidewinder II [ZGEA02932 - ZGEA04528]	North America	F4DFE617L*B002
T7.315 AutoCommand™ Sidewinder II [ZGEA04529 -]	North America	F4DFE617L*B002

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Engine - Remove

Prior operation:
Separate the front axle and front frame from the engine, see **Front frame - Remove (39.100)**.
Prior operation:
Remove the left-hand fuel tank, see **Fuel tank - Remove (10.216)**.
Prior operation:
Remove the selective catalytic reduction (SRC) muffler, see **Selective Catalytic Reduction (SCR) muffler and catalyst - Remove (10.500)**.
Prior operation:
Remove the engine hood, see **Hood - Remove (90.100)**.

⚠ WARNING

Heavy objects!
Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders.
Failure to comply could result in death or serious injury.

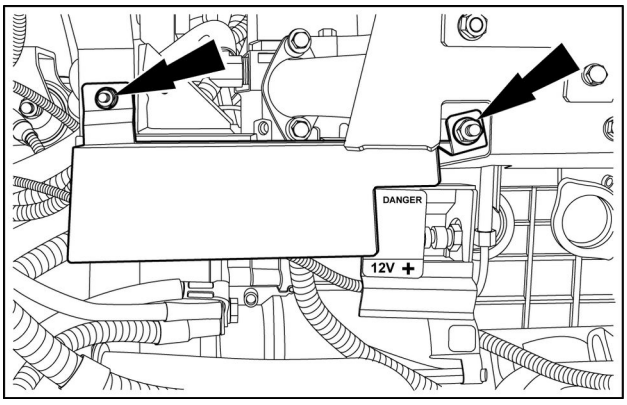
W0398A

⚠ WARNING

Avoid injury!
Handle all parts carefully. Do not place your hands or fingers between parts. Use Personal Protective Equipment (PPE) as indicated in this manual, including protective goggles, gloves, and safety footwear.
Failure to comply could result in death or serious injury.

W0208A

1. Remove the starter motor shield.

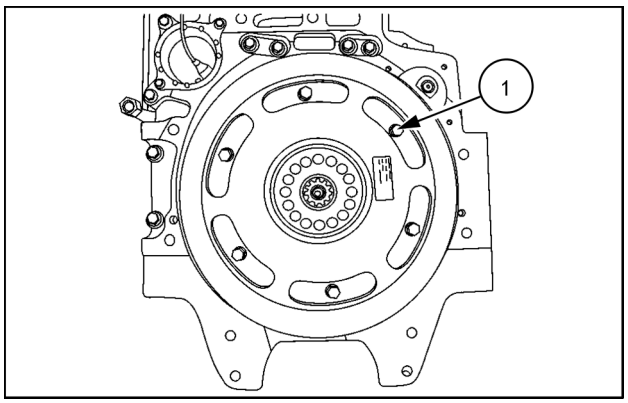


BAIL15TR00891AA 1

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Flywheel damper - Torque



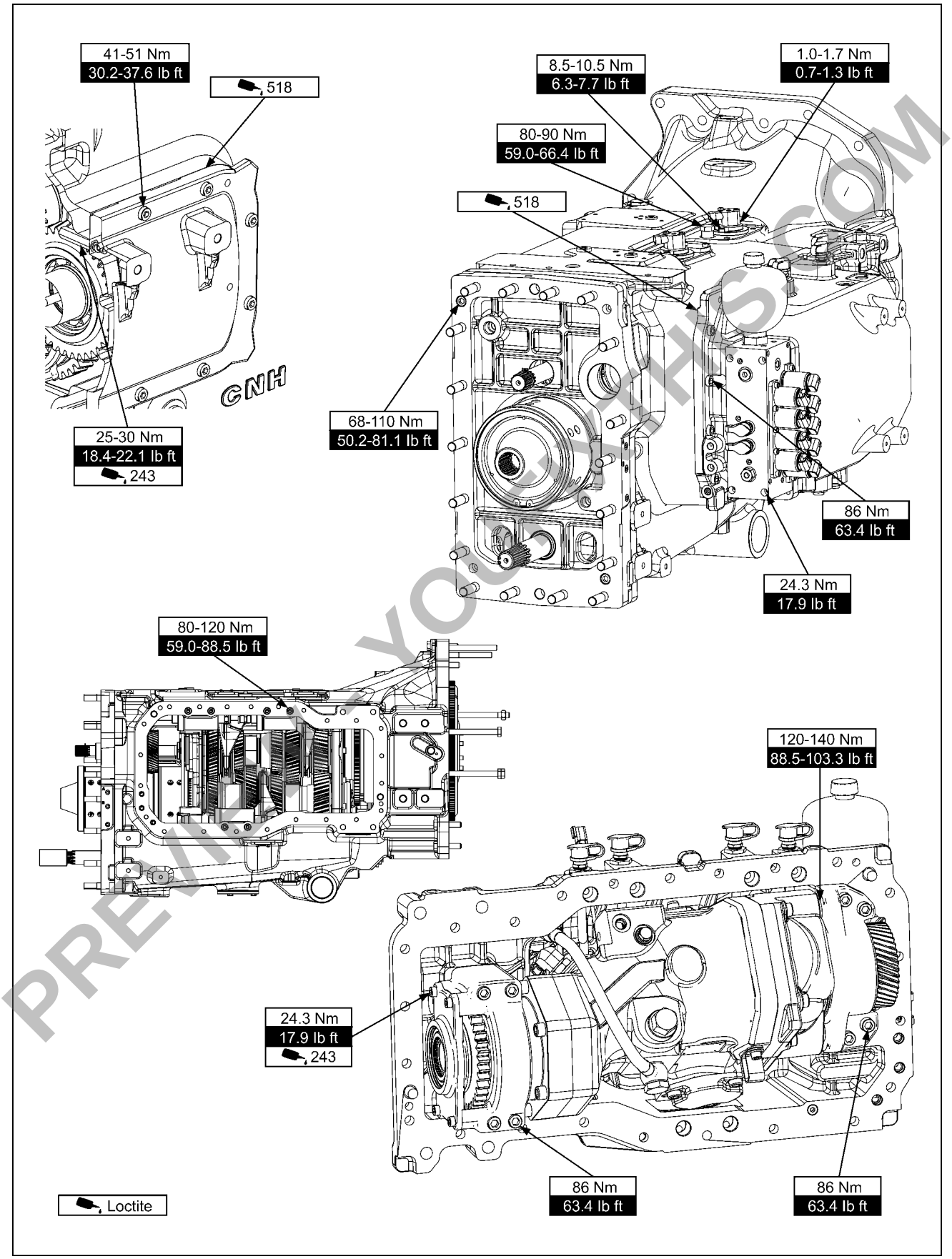
SVIL14TR00014AA 1

Reference	Description	Torque
1	Bolt	**78 Nm** (**58 lb ft**)

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Continuously Variable Transmission (CVT) - Torque - Locking and sealing material

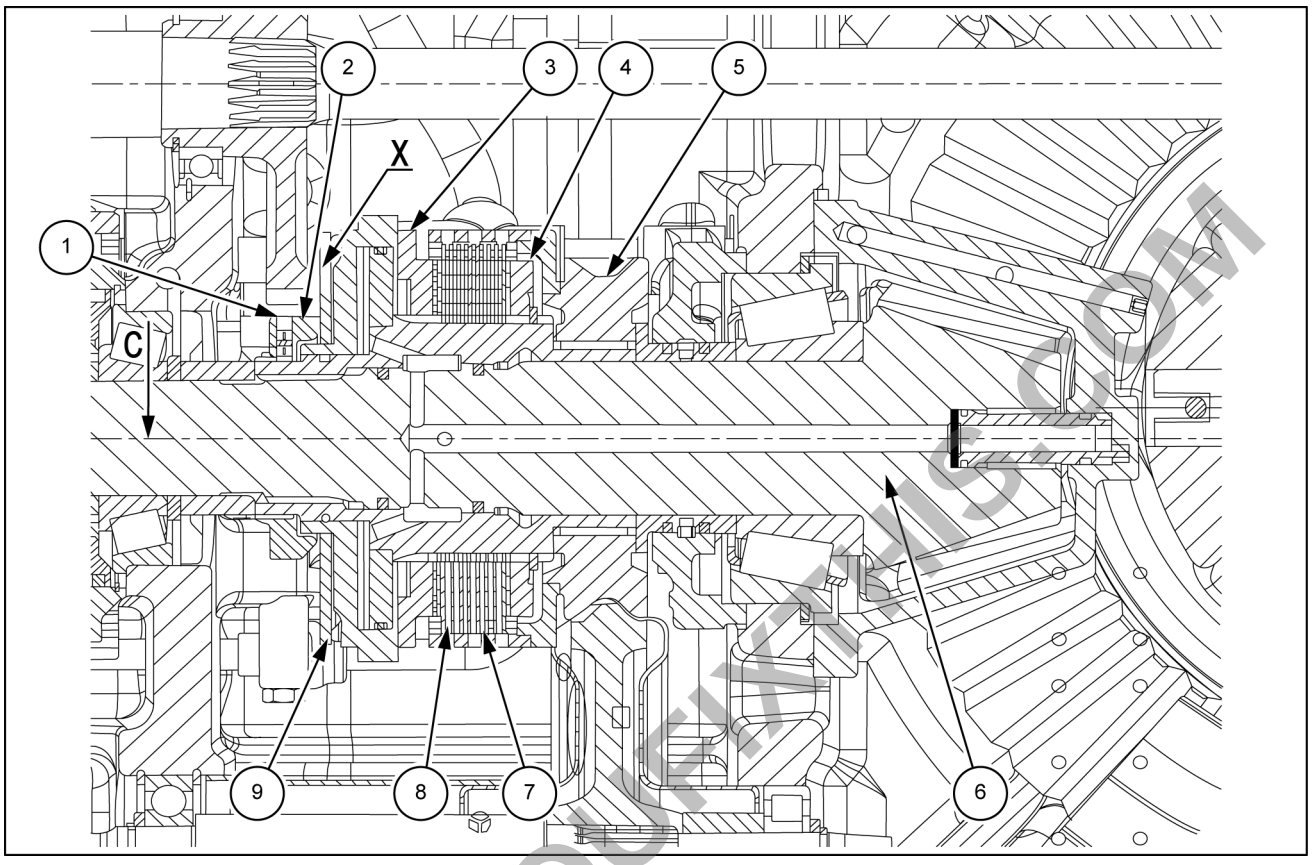


SVIL15TR00187HA 1

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Front-Wheel Drive (FWD) clutch - Sectional view



BAIL15TR01152FB 1

1. Nut retaining screw
2. Serrated nut
3. Clutch plate
4. Clutch reaction plate
5. Drive gear
6. Pinion
7. Clutch plate x 10
8. Clutch drive plate x 9
9. Belleville spring

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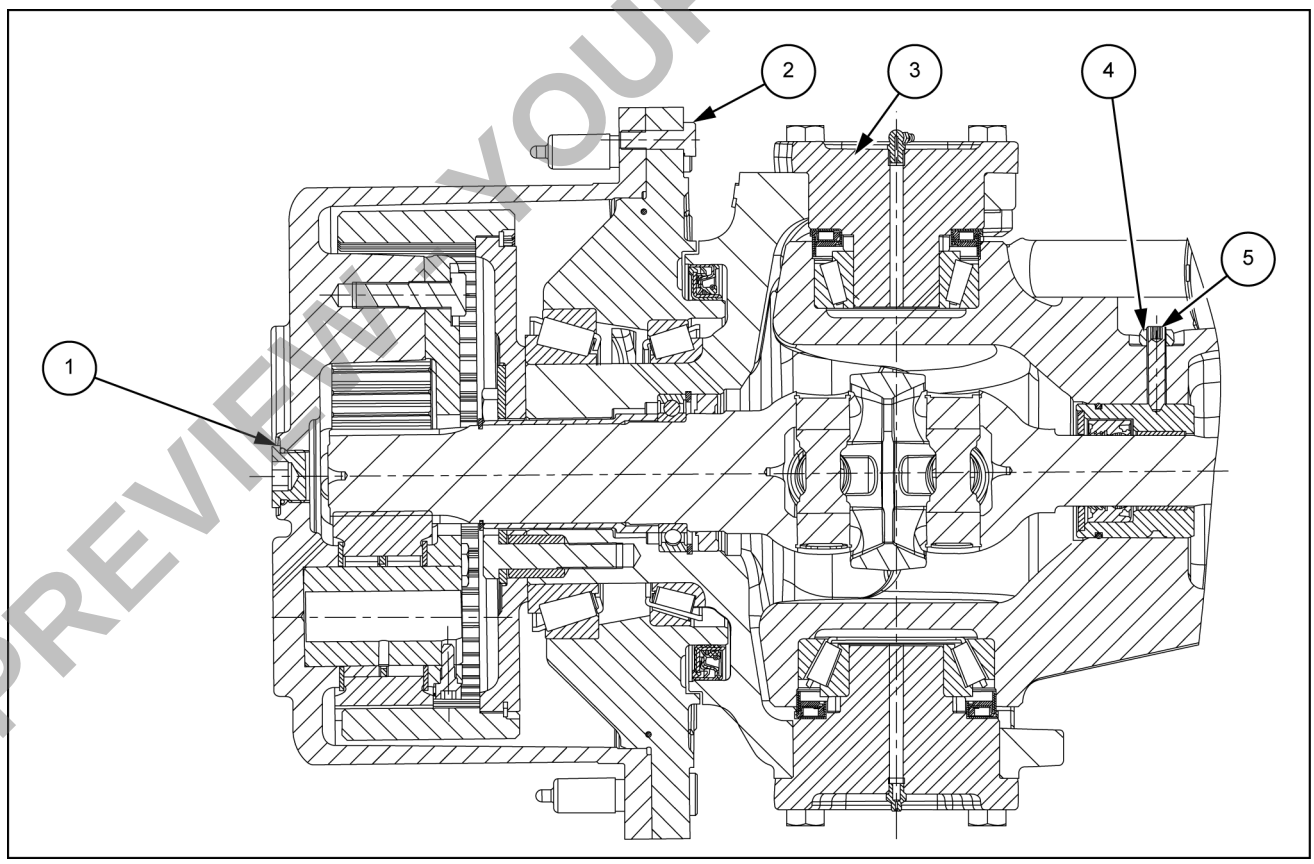
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Four-Wheel Drive (4WD) axle - General specification

Axle Class	4.75
Oscillation	**8±1°** (*)
Maximum axle steering angle	**55°**
Camber angle	**0.5°**
Caster angle	**6°**
Drop box transmission ratio	1.547619
Inter axle ratio	1.32
4WD Suspended turns (lock to lock at 55° steer)	5.32
Type of differential lock	Hydraulic Wet Clutch
Number of plates of the Differential lock	6
Flange to Flange - Class 4.75	**1882.0 mm** (**74.1 in**)
Diameter of studs	M20x1.5
Studs (x 12) Torque	**400.0 N·m** (**295.0 lb ft**)
Turning radius	**7700.0 mm** (**303.1 in**)
Turnaround diameter with Tyre 620/75R30 on 76" Track	**11400.0 mm** (**448.8 in**)

(*) When front axle suspension is fully compressed the front axle oscillation is reduced by **3°**

Four-Wheel Drive (4WD) axle - Torque



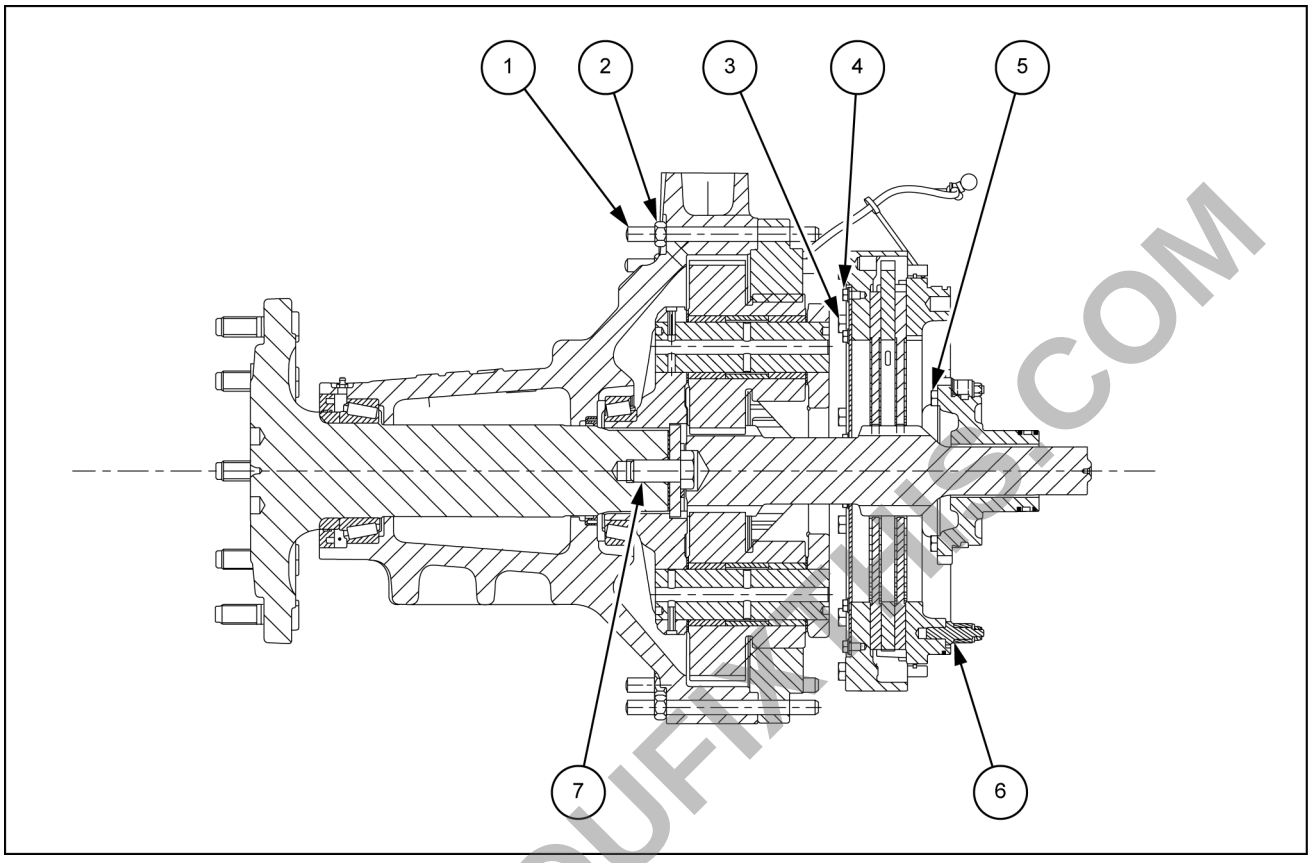
BAIL15TR01923FB 1

4.75 Axle hub and steering knuckle without brakes

1.	Plug	**75.0 – 95.0 N·m** (**55.3 – 70.1 lb ft**)
2.	Bolt	**80.0 – 113.0 N·m** (**59.0 – 83.3 lb ft**)
3.	Grease fitting	**14.0 – 18.0 N·m** (**10.3 – 13.3 lb ft**)

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Powered rear axle - Torque



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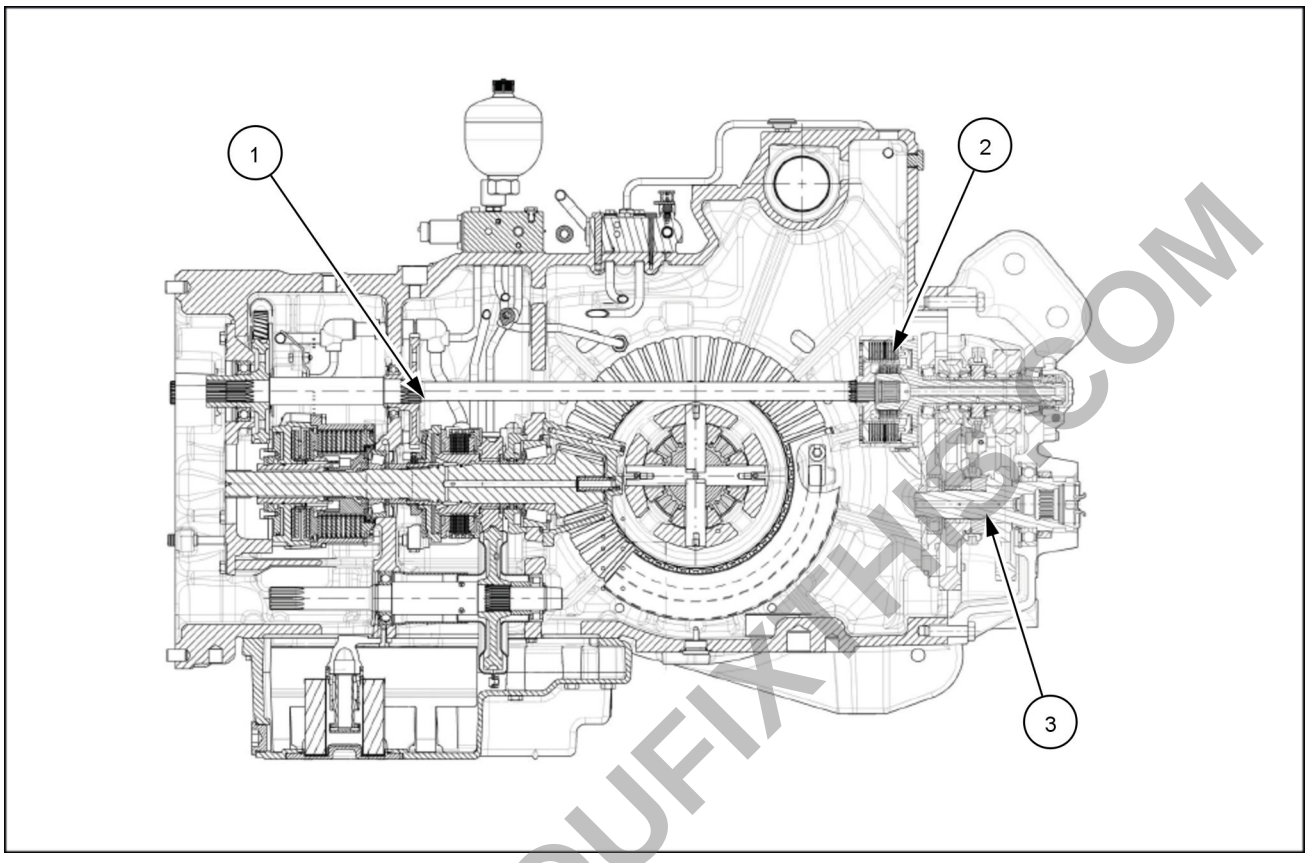
Standard flanged rear axle

1.	Stud	**80.0 – 90.0 N·m** (**59.0 – 66.4 lb ft**)
2.	Nut	**185.0 – 215.0 N·m** (**136.4 – 158.6 lb ft**)
3.	Bolt	**103.0 – 139.0 N·m** (**76.0 – 102.5 lb ft**)
4.	Bolt	**21.0 – 33.0 N·m** (**15.5 – 24.3 lb ft**)
5.	Bolt	**41.0 – 56.0 N·m** (**30.2 – 41.3 lb ft**)
6.	Pin assembly	**110.0 – 140.0 N·m** (**81.1 – 103.3 lb ft**)
7.	Bolt	Apply a pre torque of **230.0 N·m** (**169.6 lb ft**) then loosen to a final torque of **105.0 N·m** (**77.4 lb ft**)

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Rear electro-hydraulic control - Static description



BAIL16TR00001FA 1

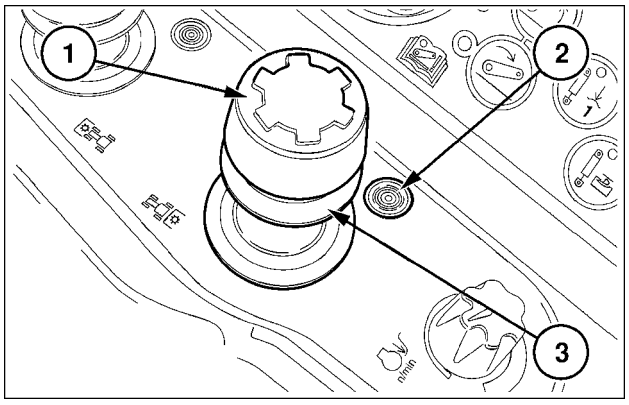
1. PTO Drive Shaft
2. PTO Clutch
3. PTO Output Shaft

DESCRIPTION AND OPERATION

The Power Take-Off (PTO) transfers engine power directly to mounted, semi-mounted or trailed equipment via a splined shaft at the rear of the tractor.

Drive to the PTO is achieved via a splined shaft which runs from the engine flywheel through the transmission upper shafts to the main PTO drive shaft **(1)** and through to the PTO clutch **(2)**, located at the rear of the transmission. When the PTO clutch is engaged drive to the PTO output shaft **(3)** is engaged via the relevant gears.

The PTO is engaged and disengaged by means of a switch **(1)** on the armrest console. Press the knob **(1)**, lift collar **(3)** , then lift the switch upwards to engage PTO drive. The switch will lock in the engaged position and the adjacent warning light **(2)** will illuminate when the PTO is engaged.



BRL6111C 2

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Hydraulic service brakes - Bleed

NOTE: *Air bleeding must be carried out any time the brake hydraulic system has been opened.*

NOTE: *The brake accumulator can have a maximum charge pressure of 850 psi. Check for pressure in the accumulator. Remove the pressure in the accumulator before accumulator line is disconnected. Apply the brakes with the pedal approximately 40 times when the engine is off. Loosen the special fitting for removing air from the brakes and push on the brake pedal. If oil flow does not flow from the special fitting, the accumulator is not charged.*

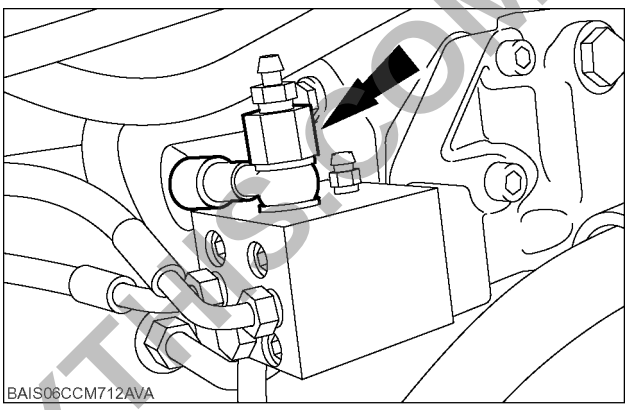
All tractors

1. **⚠ WARNING**

   Pressurized system!
   The brakes will be under pressure, be sure to bleed the brakes with caution.
   Failure to comply could result in death or serious injury.

   W0996A

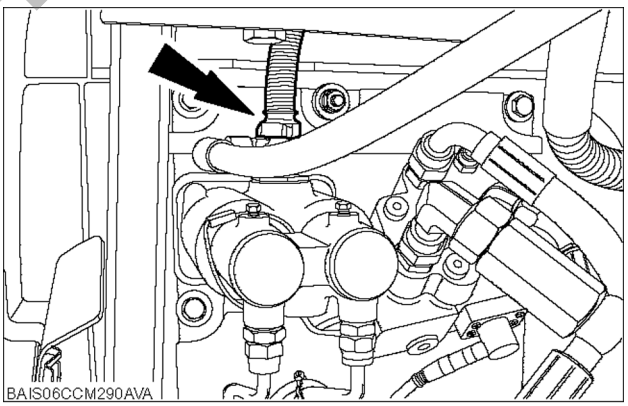
   If fitted, remove and discard the Schrader valve assembly from the logic head.
   The valve is only used for initial filling, removal reduces possible air ingression points.
   Replace the copper washers with bonded seals (part no. 5183780).



BAIS06CCM712AVA 1

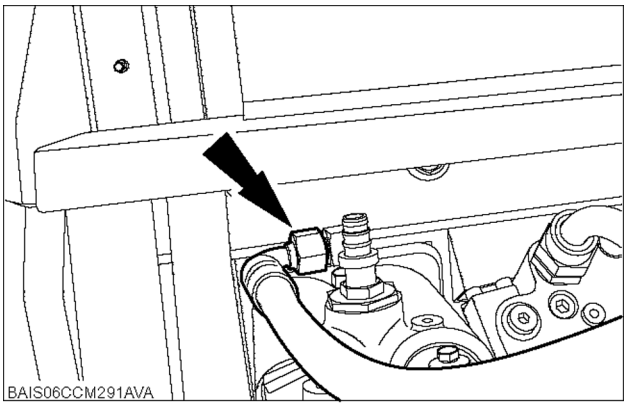
NOTE: *Tractors without pneumatic trailer brakes shown.*

2. Disconnect the master cylinder vent hose.



BAIS06CCM290AVA 2

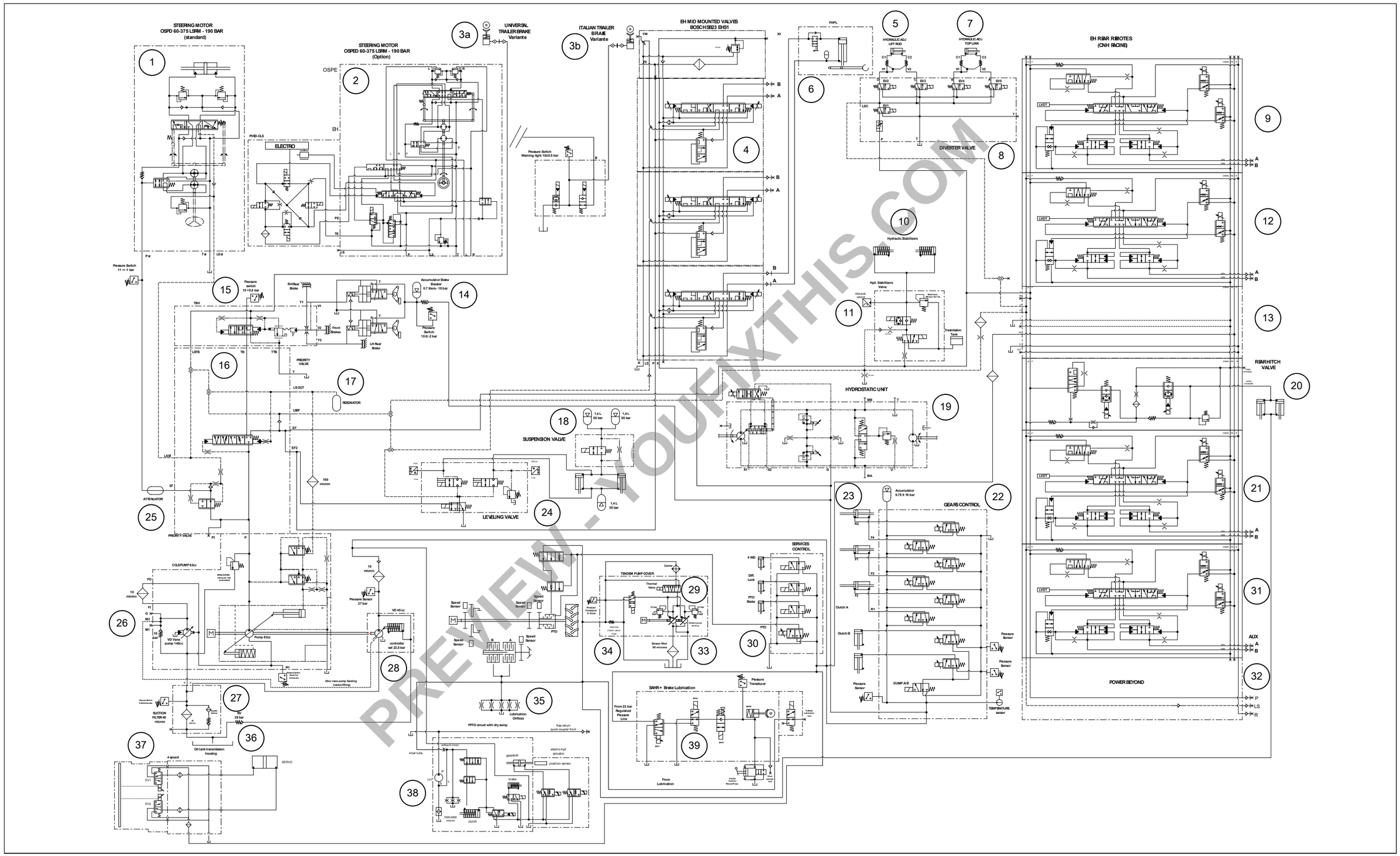
3. Disconnect the master cylinder supply hose and fill with **NEW HOLLAND AMBRA MULTI G 134™ HYDRAULIC TRANSMISSION OIL**.



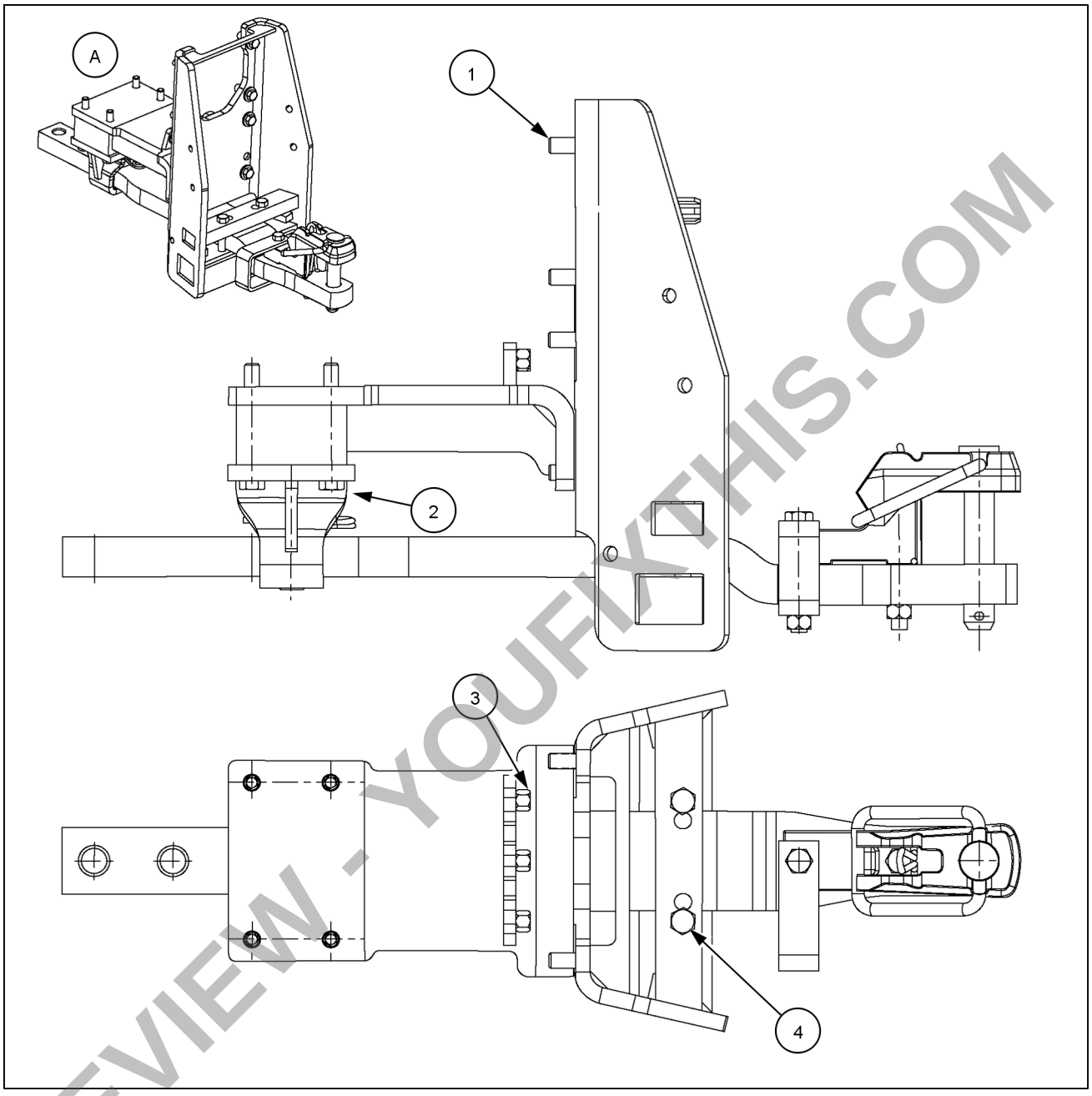
BAIS06CCM291AVA 3

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STEERING MOTOR
OSPD 60-375 LSRM - 190 BAR
(standard)
1
STEERING MOTOR
OSPED 60-375 LSRM - 190 BAR
(Option)
2
OSPE
EH
PVED-CLS
ELECTRO
3a
UNIVERSAL
TRAILER BRAKE
Variante
3b
ITALIAN TRAILER
BRAKE
Variante
Pressure Switch
Warning light 100±0.5 bar
EH MID MOUNTED VALVES
BOSCH 5823 EHS1
4
FHPL
6
5
HYDRAULIC ADJ
LIFT ROD
7
HYDRAULIC ADJ
TOP LINK
DIVERTER VALVE
8
EH REAR REMOTES
(CNH ENGINE)
9
12
13
21
31
LVDT
AUX
POWER BEYOND
REAR HITCH
VALVE
20
10
Hydraulic Stabilizers
11
Hyd. Stabilizers
Valve
Transmission
Tank
HYDROSTATIC UNIT
19
18
SUSPENSION VALVE
1.4 L
50 bar
1.4 L
30 bar
24
LEVELING VALVE
23
Accumulator
0.75 ± 10 bar
22
GEARS CONTROL
Clutch A
Clutch B
DUMP A/B
Pressure
Sensor
TEMPERATURE
sensor
Pressure Switch
11 +/-1 bar
15
Pressure
switch
15 +0.5 bar
RX/Rear
Brake
14
Accumulator Brake
Booster
0.7 liters - 10 bar
Pressure
Switch
15 0/-2 bar
TBV
Front
Brakes
LH Rear
Brake
16
PRIORITY
VALVE
17
RESONATOR
LSIB
TB
TTB
LS OUT
LSEF
EF
EF2
LSSF
ST
ATTENUATOR
100
micron
25
PRIORITY VALVE
P1
P
26
CCLS PUMP 63cc
FD
10
micron
FI
G
M3
M1
M2
VD Vane
pump 145cc
Pump 63cc
10
micron
Pressure Sensor
27 bar
VD 45 cc
controller
set 25,5 bar
28
45cc vane pump feeding
(vanes lifting)
27
SUCTION
FILTER 40
micron
RV
28 bar
Oil tank transmission
housing
36
37
4 speed
EV1
EV2
SERVO
38
4 bar lube
orifice D 2 mm
gearshift
electro-hyd
actuator
position sensor
brake
clutch
1000-2000
micron
35
Lubrication
Orifices
FPTO circuit with dry sump
free return
quick coupler front
SERVICES
CONTROL
4 WD
Diff.
Lock
PTO
Brake
PTO
30
TANDEM PUMP COVER
Cooler
Thermal
Valve
12 bar
Suction pump
27 cc/1 rot
Screen filter
90 microns
29
34
33
Speed
Sensor
Speed
Sensor
Speed
Sensor
Speed
Sensor
PTO
B
A
SAHR + Brake Lubrication
From 23 bar
Regulated
Pressure
Line
Pressure
Transducer
39
From
Lubrication
To Brake
Lubrication
Line
Enable
Gearbox
Manual Pump
Pressure
Transducer
0 to 30 bar
Pressure Switch
Warning light 100±0.5 bar
Vacuum Switch
0.45 bar max
Enable
Starter
Air
Cleaner
Pressure Switch
Reset 0.6 bar
Activate 0.4 bar

Drawbar - Torque



BAIL16TR00368GA 1

Swinging drawbar Cat 3 (heavy duty)

Item	Description	Quantity	Torque
A	Assembly overview	—	—
1	Drawbar frame retaining bolts	8	**650 – 720 N·m** (**479 – 531 lb ft**)
2	Drawbar frame support bracket retaining bolts	4	**380 – 425 N·m** (**280 – 313 lb ft**)
3	Drawbar frame support bracket retaining nuts	3	**179 – 242 N·m** (**132 – 178 lb ft**)
4	Retaining bolts	2	**250 – 275 N·m** (**184 – 203 lb ft**)

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Front frame - Remove

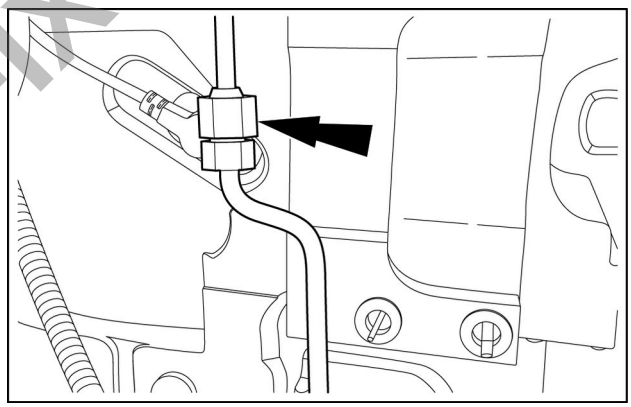
Prior operation:
Remove the fuel tanks, see **Fuel tank - Remove (10.216)**.
Prior operation:
Remove the radiator, see **Radiator - Remove (10.400)**.
Prior operation:
Remove the ballast, see **Front ballast - Remove (39.140)**.
Prior operation:
Remove the front drive shaft, see **Front drive shaft - Remove (23.314)**.

1. **⚠ DANGER**

   Heavy objects!
   Lift and handle all heavy components using lifting equipment with adequate capacity. Always support units or parts with suitable slings or hooks. Make sure the work area is clear of all bystanders.
   Failure to comply will result in death or serious injury.

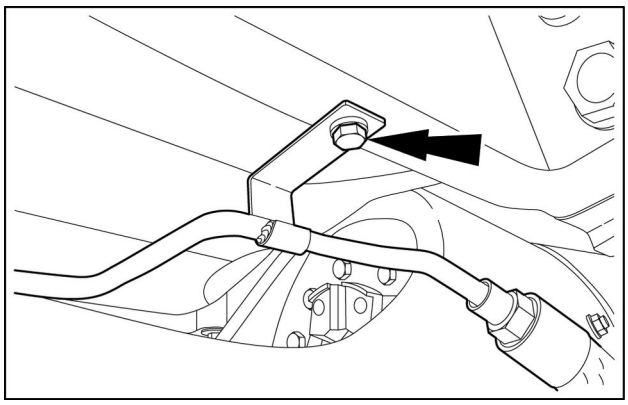
   D0076A

2. Disconnect the front brake line.



BAIL15TR00845AA 1

3. Detach the front brake line.



BAIL15TR00846AA 2

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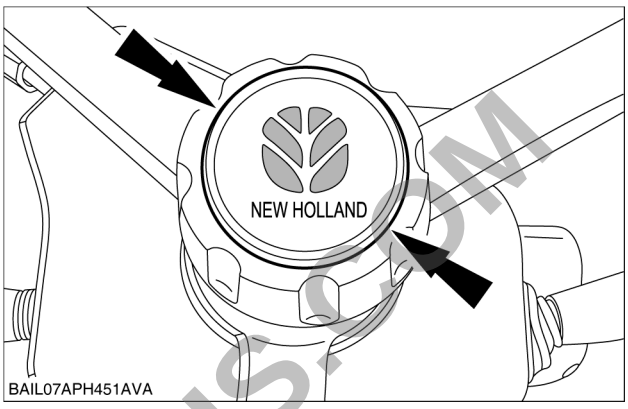
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Power steering wheel - Remove Steering Wheel - Standard

NOTE: *Make sure that the road wheels are in the straight ahead position.*

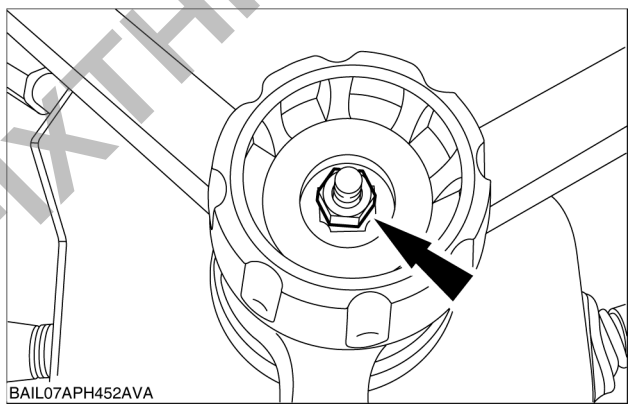
NOTE: *Lock the steering column in the down position.*

1. Remove the steering wheel centre cap.



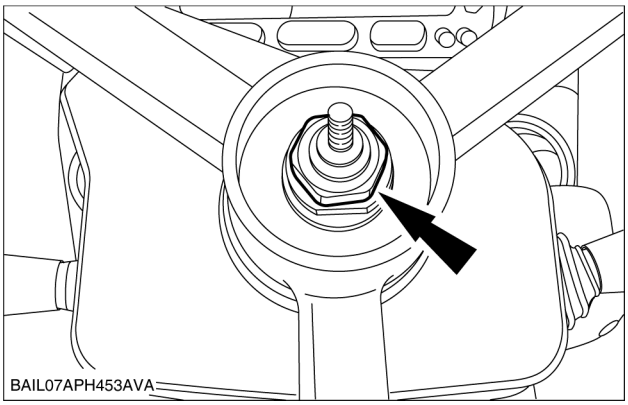
BAIL07APH451AVA 1

2. Remove the steering wheel boss.



BAIL07APH452AVA 2

3. Loosen the steering wheel retaining nut.



BAIL07APH453AVA 3

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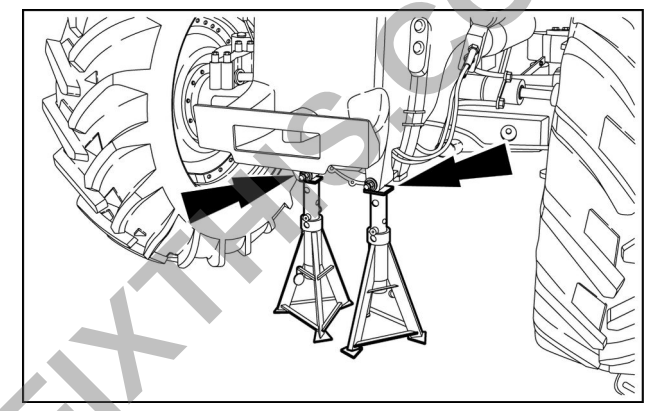
Front wheels - Remove

⚠ WARNING

Heavy parts!
The wheels are very heavy. Handle with care. Make sure that the wheels, when stored, cannot fall over and cause injury.
Failure to comply could result in death or serious injury.

W0403A

1. Raise and support the front of the vehicle.



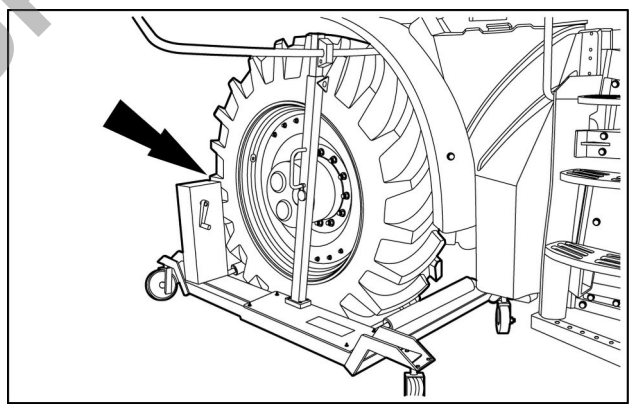
BAIL15TR00719AA 1

2. **⚠ WARNING**

   Crushing hazard!
   The wheels on this vehicle are very heavy. Always use a wheel remover or chain hoists to remove and install the wheels. Use an assistant as required.
   Failure to comply could result in death or serious injury.

   W0149A

   Remove the front wheels.



BAIL15TR01781AA 2

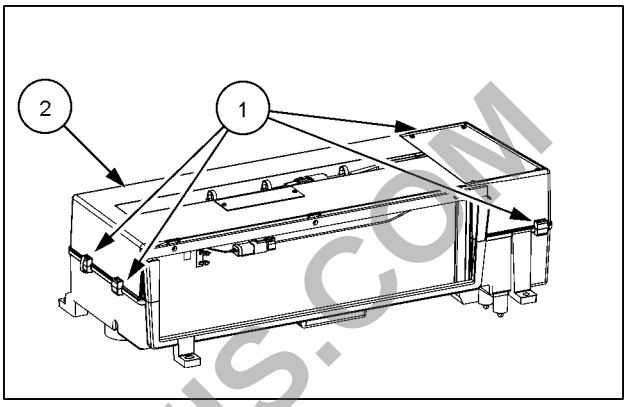
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Heater core - Remove

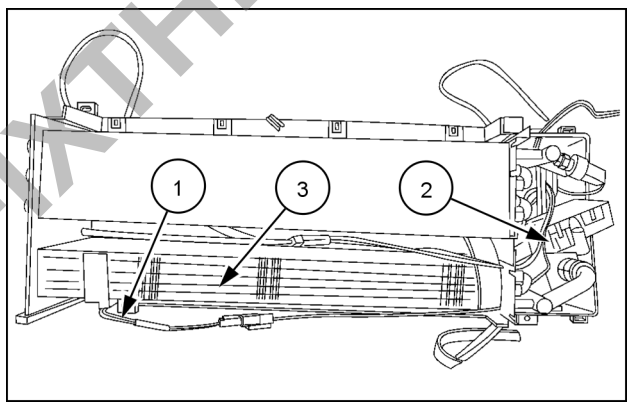
Prior operation:
Heating, Ventilation, and Air-Conditioning (HVAC) unit - Remove (50.100)

1. Remove the retaining clips **(1)** from the housing of the Heating, Ventilation, and Air-conditioning (HVAC) unit.
2. Remove the top cover **(2)** of the housing.



SVIL16TR01328AA 1

3. Remove the air outlet temperature sensor **(1)**.
4. Remove the electric heating valve **(2)**.
5. Remove the heater core **(3)**.



SS15D098 2

Next operation:
Heater core - Install (50.100)

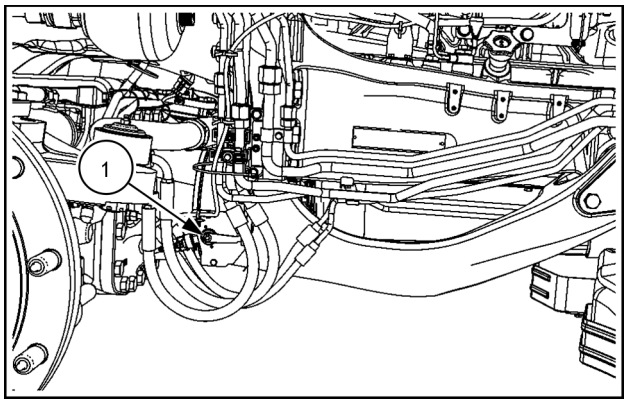
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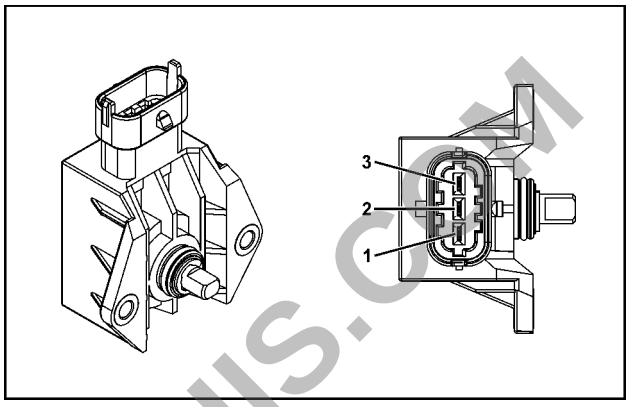
Suspended axle sensor Suspension position sensor - Overview

Suspended front axle – Position sensor (B-011)

The suspended front axle – Position sensor **(1)** is located on the arm on the left-hand side of the front axle.

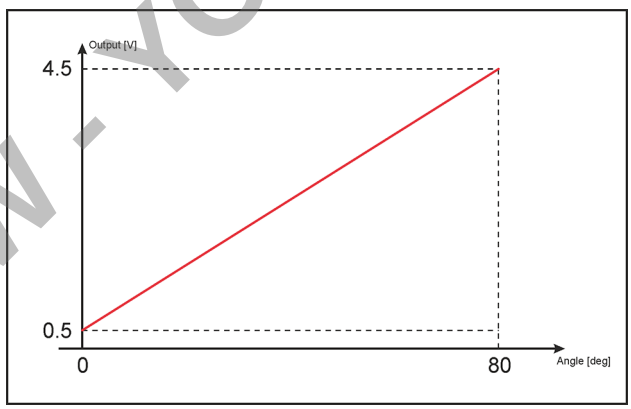


SVIL15TR02838AA 1



SVIL15TR02840AA 2

Specifications	
Type	Hall sensor (turn angle)
PIN 3 (supply)	Earth
PIN 2 (supply)	**5 V**
PIN 1 (output)	**0.5 – 4.5 V**
Electrical travel	**80°**
Mechanical travel	**195° +/- 2**
Reverse polarity protection	Yes
Isolation resistance	> **100 kΩ**



SVIL15TR02839AA 3

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Fuse and relay box - Component localization

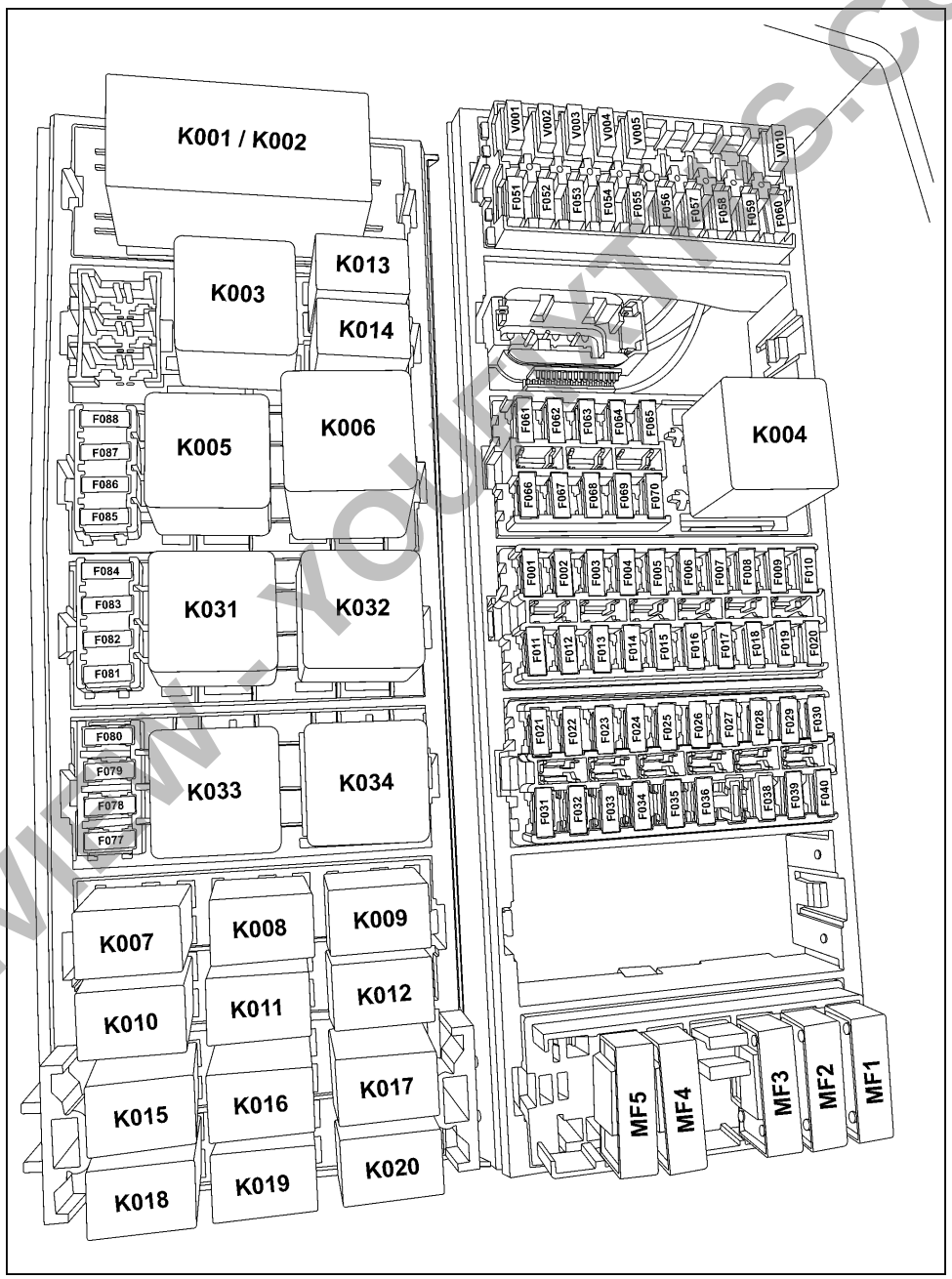
NOTICE: *Do not replace a blown fuse with another of a different rating.*

Fuses and relays inside the cab

The fuse and relay box is located behind a panel at the right-hand side.

To check or change fuses or relays, remove the two bolts securing the panel to the console. In addition to the main fuses there are additional 'Maxi' fuses which are provided to protect the main fuses and electrical circuit.

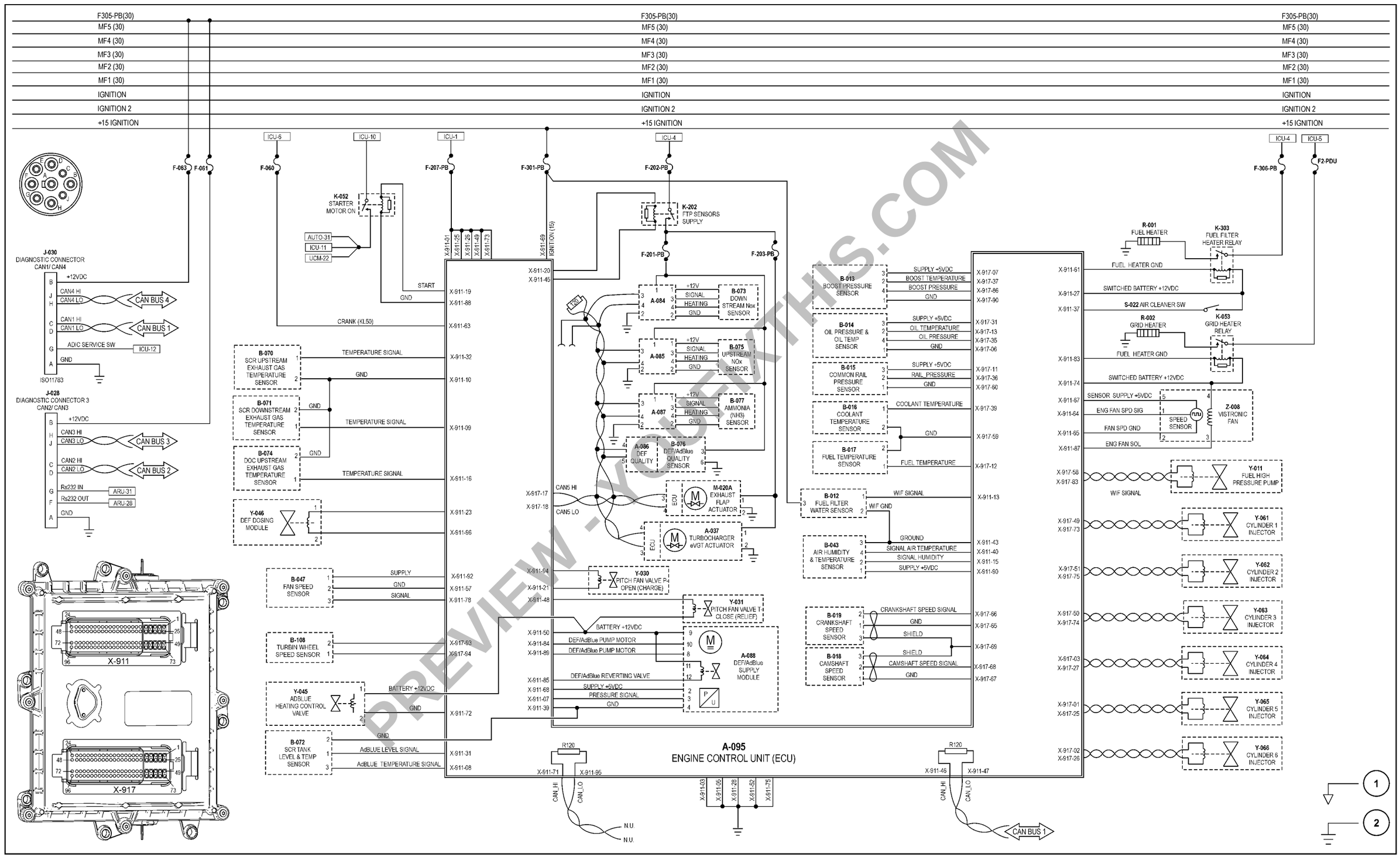
There is provision for 80 fuses although they may not all be fitted, depending on the specification of the tractor. The fuses are numbered and color coded.



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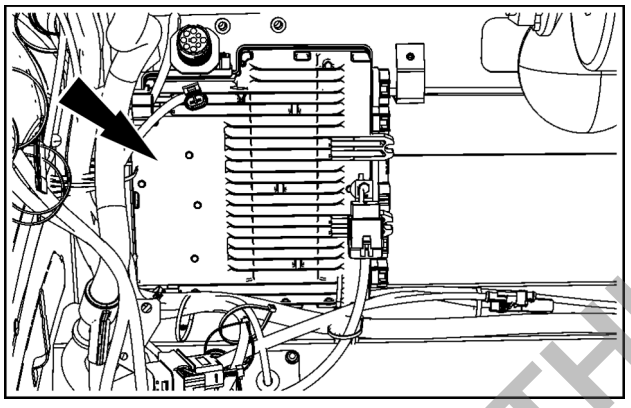
SVIL16TR00804JA 1

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Electronic modules - Overview

The electronic modules are the "black boxes" that provide control on many of the functions of the tractor. These functions may vary according to the options that are fitted on the tractor.

Inside these "black boxes" there is a processor, the "thinking part" of the module. Some of the processors have one or more memories, which may allow the module to store calibration values, the configuration of the vehicle (which optional tools or devices have been installed) and the fault codes.

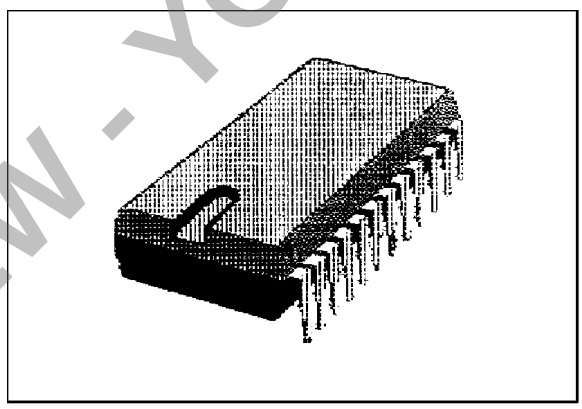


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A processor has a series of pins, which are electrical contacts (see image **2**). There are three main types of pins: for the inputs of the signals, for the outputs and for the processor supply.

The processor, the memories and their contact form the hardware, which is the "physical" part of the module.

The module also needs some software to handle the communication between the processor and the memories and to manage the various signals going into and out of the processor. The software is designed to operate in a different way for every module and is called functional code.



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A serial data link is a kind of communication where data is sent along a single wire. So the information regarding different functions of the same processor are sent to the instrument cluster in different moments.

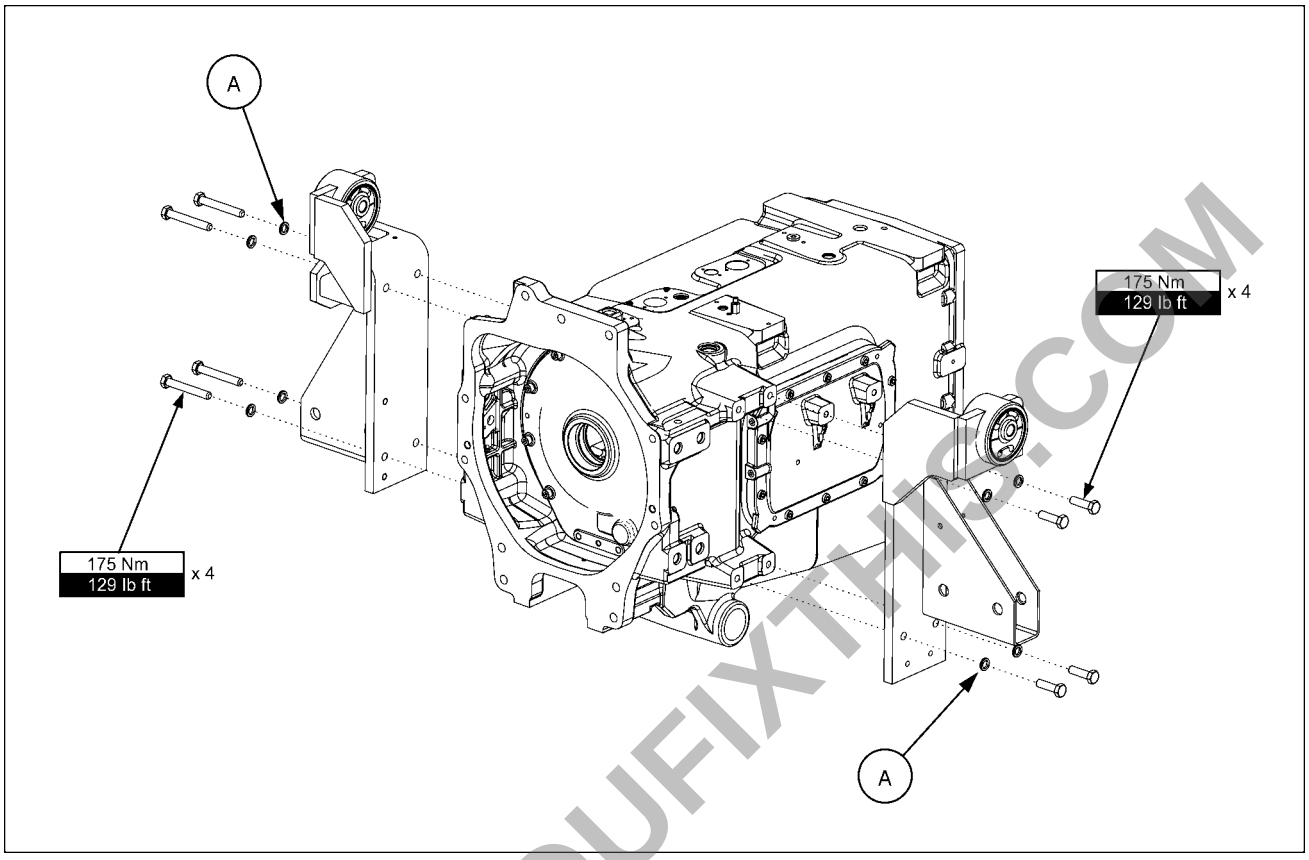
To provide a continuous control on components, the processor continuously scans all the inputs in a time-sharing mode, with a cycle of **10 ms**. This means that all the components controlled by the processor are checked one by one and that every component is checked 100 times per second.

The electronic modules are often blamed as responsible for most of the problems of the modern tractors, while they are the most protected parts of the tractor. In fact, the pins of the module are protected against spikes (high pulses) of current. The signals are filtered by the hardware and the software in input and in output to give the best handling of information.

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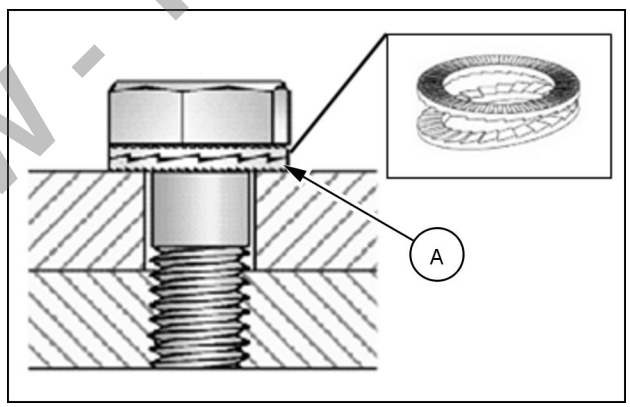
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Cab front mounts - Torque



SVIL16TR00238FB 1

NOTE: *It is only allowed to use self-locking Nord-Lock® washers* ***(A)*** *in conjunction with the bolts of the cab front mounts.*



SBAG14178ZED02 2

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Air-conditioning compressor Magnetic clutch - Assemble

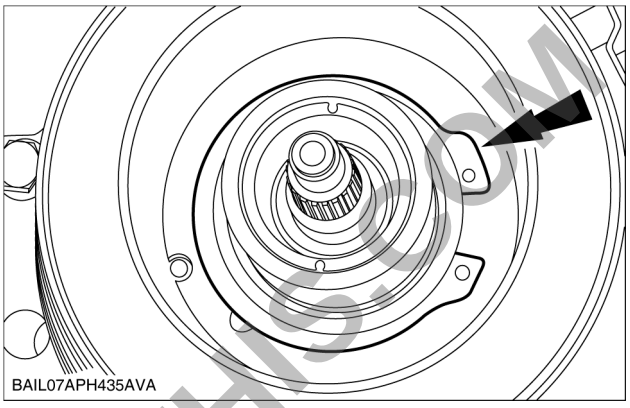
380000333 Air conditioning compressor toolkit

Prior operation:
Air-conditioning compressor Magnetic clutch - Disassemble (50.200)

1. Fit the exciter winding.

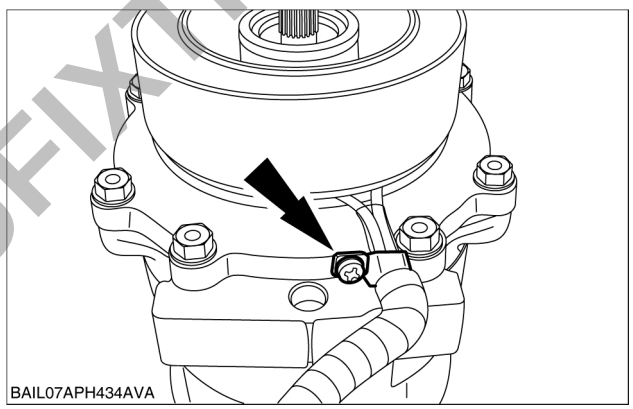
NOTE: *The nose of the exciter winding must be seated in the hole of the compressor housing.*

2. Secure the exciter winding using the circlip.



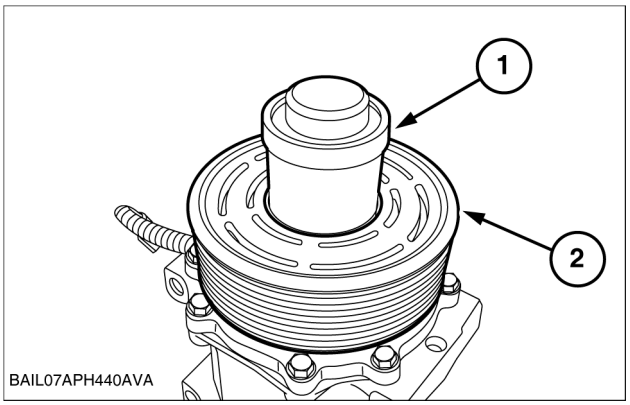
BAIL07APH435AVA 1

3. Fit cable clamp.



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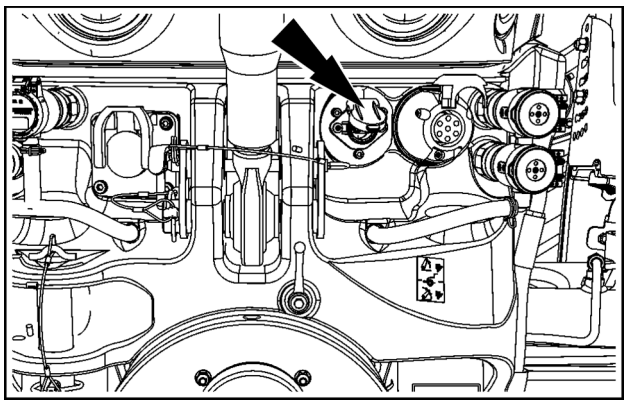
4. Use the special tool **(1)** (211-153/7) to drive the belt pulley bearing and the belt pulley **(2)** onto the hub of the compressor.



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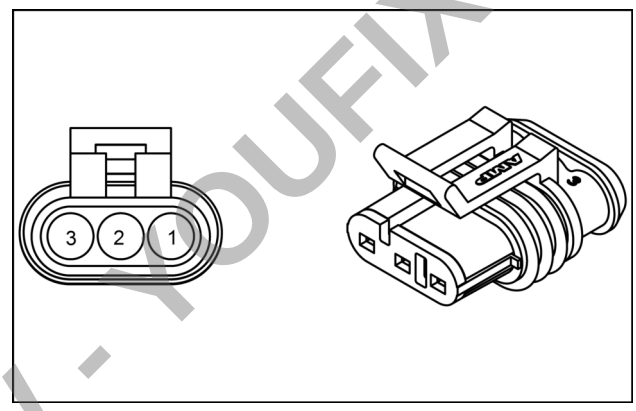


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Front left-hand side of the tractor

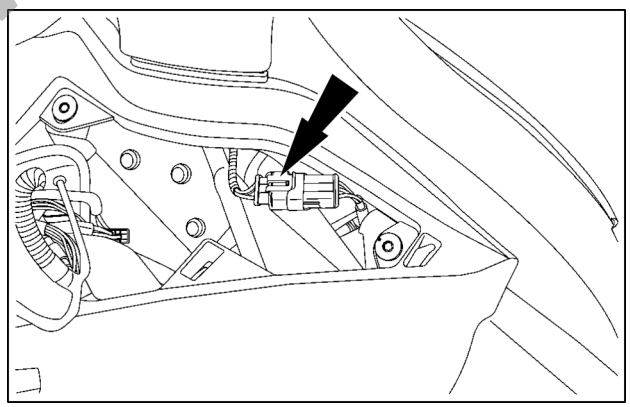
Pin	From	Wire	Description	Color-Size	Frame
1	**X-1030B (Plug) pin 1** PDU-FHPL POWER	FIS-160	+12V UNSW FROM F-048A TO FHPL SOCKET	RD - 6.0	**SHEET 47**
2	**X-230B (Plug) pin 6** FRONT SOCKET - ENGINE	FIS-1010F	+12V IGN FROM F-029 TO FRONT IMP SOCKET	OR - 1.5	
3	**X-451 (Plug) pin 1** CHASSIS GROUND	FIS-057HB	FHPL SOCKET GND	BK - 6.0	**SHEET 18**

X-455A - REV. ALARM H58 (84062580) (Receptacle)



84062580 5

84062580



SVIL16TR00107AA 6

Behind the right-hand side trim

Pin	From	Wire	Description	Color-Size	Frame
1	CM-SP_001A-P-X	CM-001R	+12V UNSW FROM F-062 TO REVERSE ALARM	RD - 1.0	**SHEET 53**
2	CM-SP_057G-P-X	CM-057RX	FROM REVERSE ALARM TO GND	BK - 1.5	
3	**X-953 (Receptacle) pin 2** UCM 2B	CM-1161	REVERSE ALARM LSD	BL - 0.75	

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3262 (DTC 7C22) - Starter relay low side driver circuit short to ground failure

Control Module: ECU

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

Context:
The Engine Control Unit (ECU) **A-095** controls the voltage to the starter control relay **K-052**. The **K-052** controls the voltage to the starter relay **K-051**. The **A-095** monitors the **K-052** low side control circuit for a short to ground condition. If the **A-095** detects a short to ground condition in the **K-052** low side control circuit for a period greater than **90 ms**, this fault will occur.

Cause:
The **A-095** has detected a short to ground condition for a period greater than **90 ms** in the **K-052** control circuit low side.

Possible failure modes:

1. Faulty **K-052** low side control circuit, short to ground condition.
2. Faulty **A-095** software.

Solution:

1. Verify fault is present and active.

   Use the Electronic Service Tool (EST) to check the status of this fault.

   A. If the fault is present and active, continue with **2**.

   B. If the fault is no longer present or in an inactive state, the fault may be intermittent and not currently active. Continue with Step **3**.

2. Check the **K-052** low side control circuit for a short to ground condition.

   Remove the **K-052**.

   Disconnect the **A-095** connector **X-911**.

   The ignition switch must in the OFF position.

   Use a multimeter to perform the following continuity checks:

From	To	Result
X-911 pin 88 wire PDU-1930 (GY)	Chassis ground	There should be no continuity
X-911 pin 88 wire PDU-1930 (GY)	All pins in connector **X-911**	There should be no continuity

   A. If there is continuity, there is a short to ground condition in the **K-052** low side control circuit. Locate and repair the shorted conductor.

   B. If there is no continuity, check the **A-095** for the appropriate software and re-flash if necessary.

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

   A. If you find damage or the display indicates other than normal display readings, then repair the damage discovered during the inspection or locate and repair the other than normal display condition and verify that the fault has been resolved.

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