SERVICE MANUAL

FR450 / FR500 / FR600 / FR700 / FR850

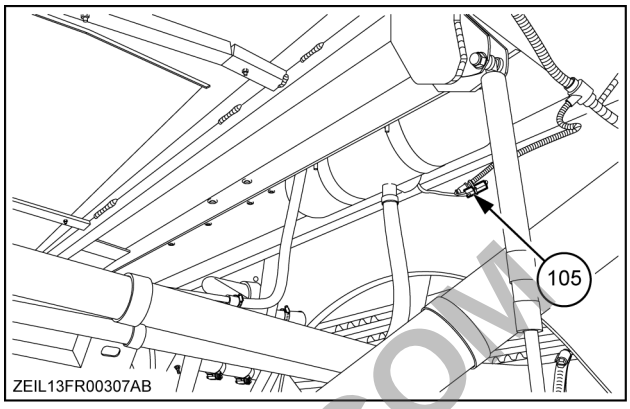
Forage Harvester

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Part number 47812470
English
February 2015
Replaces part number 47688004

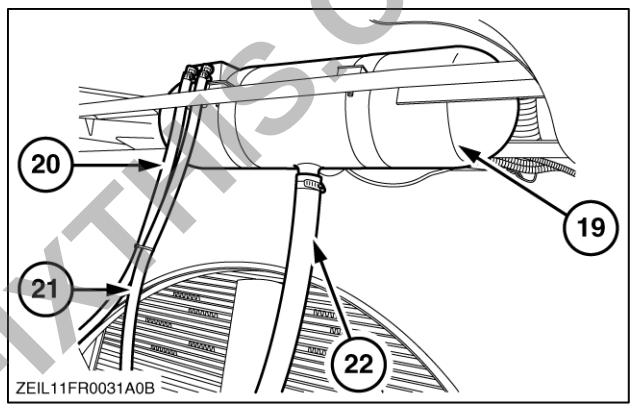
NEW HOLLAND AGRICULTURE

10. Near the coolant tank, disconnect the connectors. Disconnect the coolant level sensor wire **(105)** attached at the top.



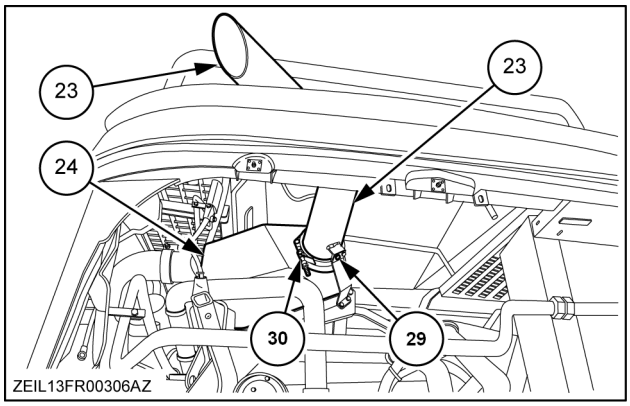
ZEIL13FR00307AB 6

11. Drain the coolant from the cooling system. Refer to the Operator's Manual **Engine cooling system - Replace (10.400)**.
12. Disconnect the hose **(20)**, **(21)** and **(22)** from the coolant tank **(19)**.
13. Remove the coolant tank **(19)**.



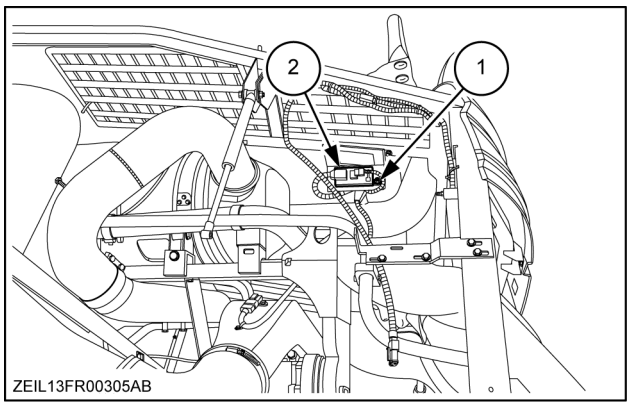
ZEIL11FR0031A0B 7

14. Remove the hardware **(29)**. Loosen the clamp **(30)**.
15. Remove the exhaust tube **(23)** from the muffler **(24)**.



ZEIL13FR00306AZ 8

16. On the left-hand side, remove the hardware **(1)**. Remove the sensor bracket **(2)**.



ZEIL13FR00305AB 9

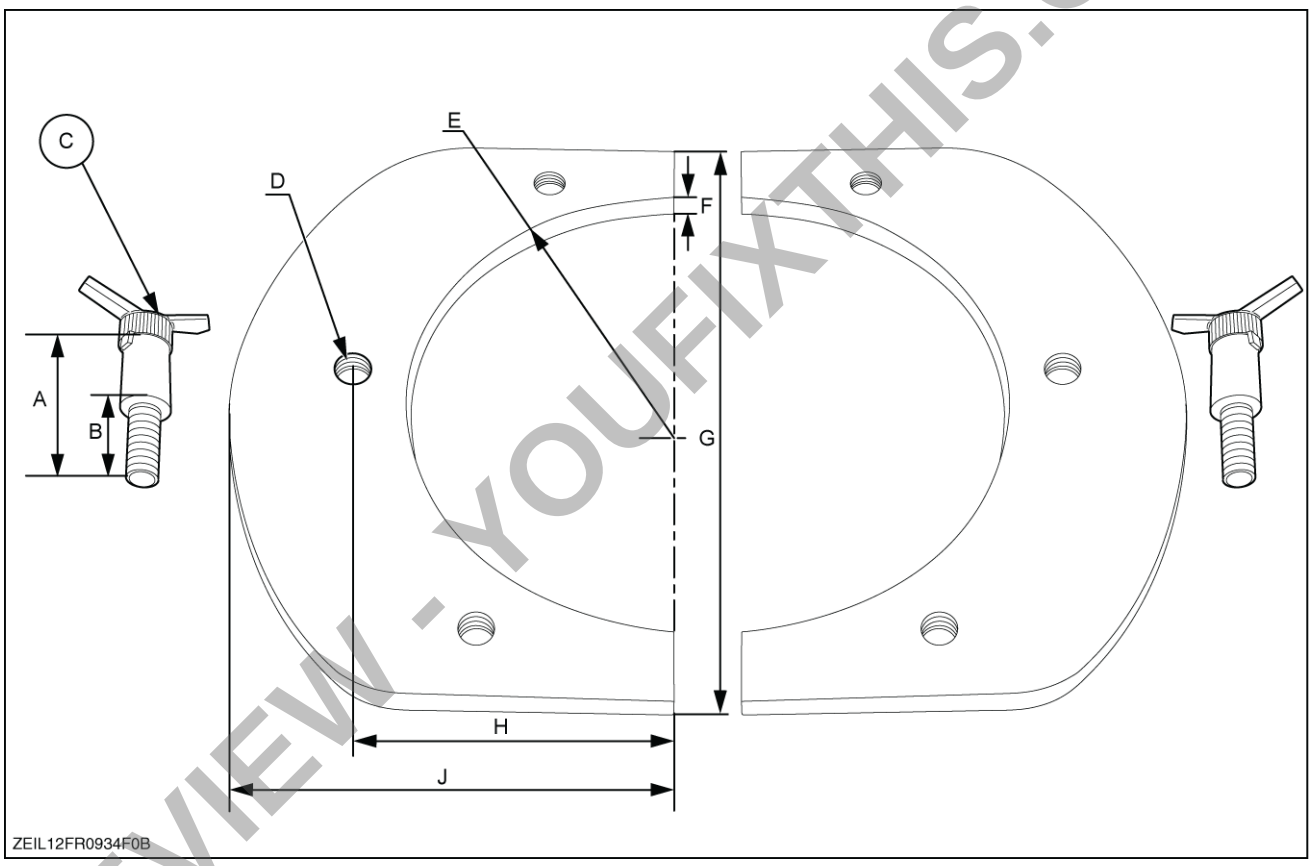
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Main gearbox - Special tools

Special tool S

- A = **56 mm**
- B = **26 mm**
- D = **M12 mm**
- E = **80 mm**
- F = **8 mm**
- G = **200 mm**
- H = **95 mm**
- J = **130 mm**



ZEIL12FR0934F0B 1

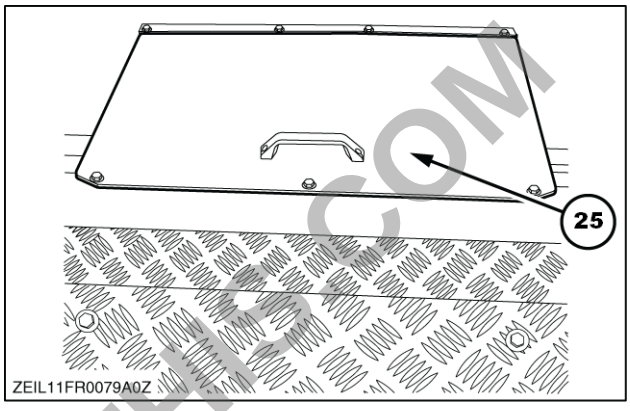
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Gearbox - Remove traction gearbox

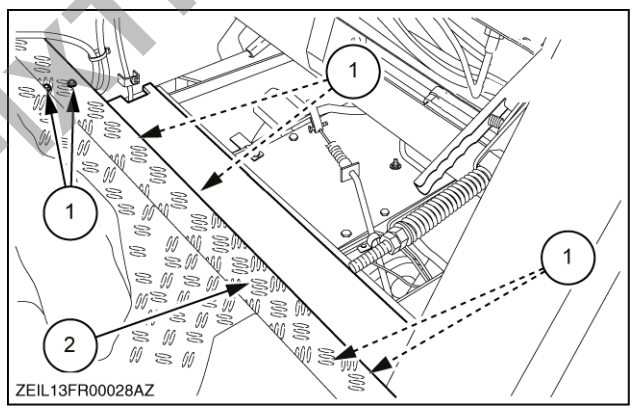
Prior operation:
Drain the traction gearbox oil. Refer to the Operator's Manual, **Gearbox - Replace (21.120)**.
Prior operation:
Remove the left-hand side traction wheel. Refer to **Front wheels - Remove – Traction wheels (44.511)**.

1. In the service area, remove the plate **(25)**.

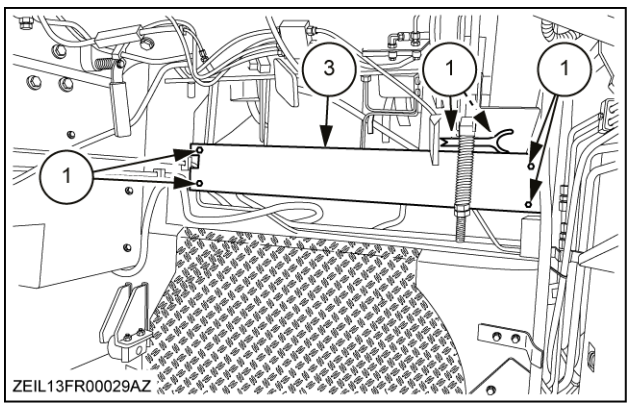


ZEIL11FR0079A0Z 1

2. Remove the hardware **(1)**. Remove the step plate **(2)** and **(3)**.



ZEIL13FR00028AZ 2

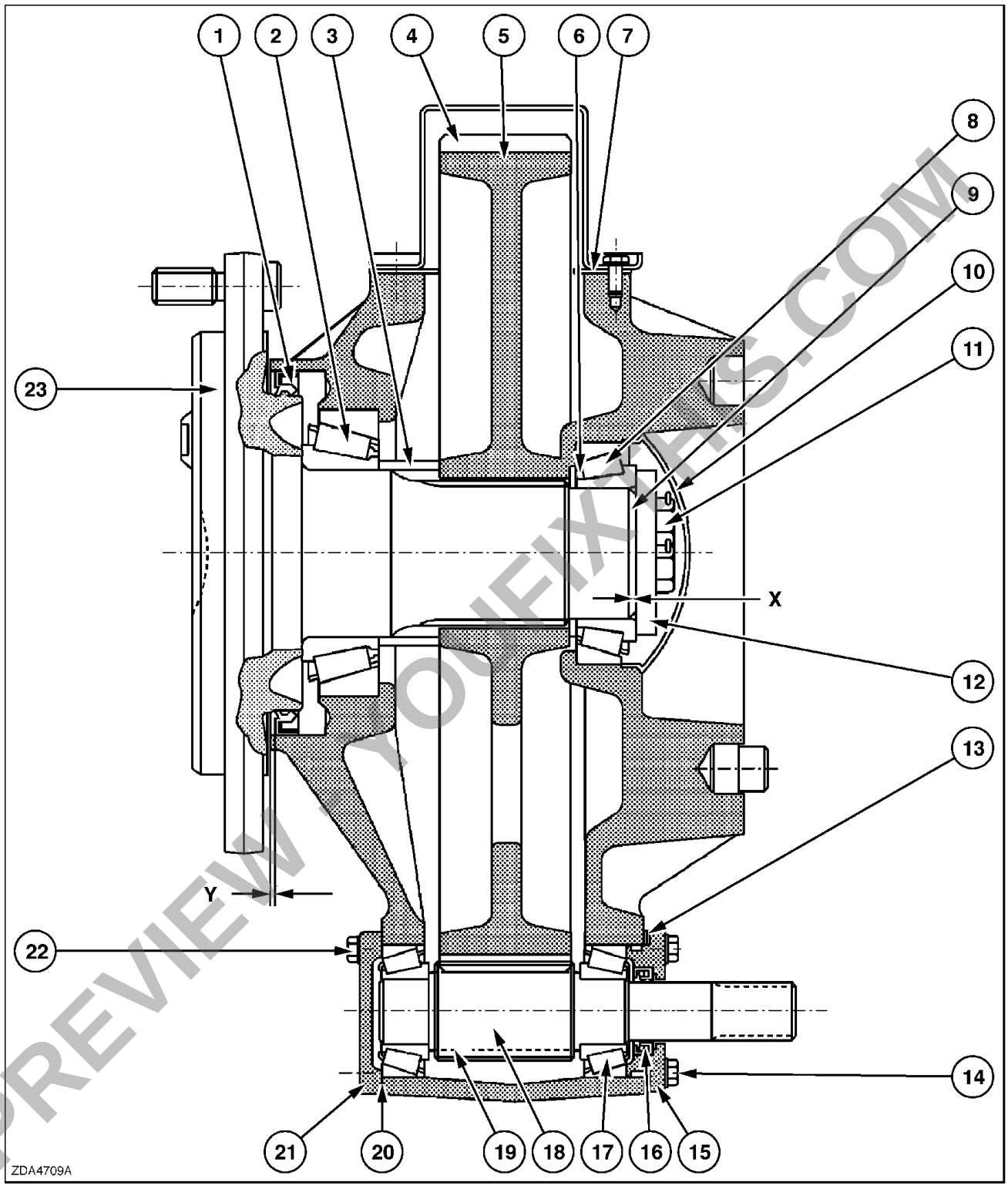


ZEIL13FR00029AZ 3

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Final drive - Sectional view

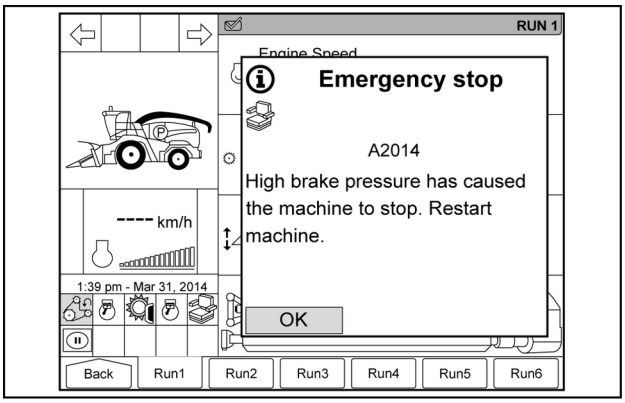


ZDA4709A 1

1 Seal
2 Bearing
3 Spacer
4 gear
5 Cover
6 Spacer
7 Seal
8 Bearing
9 Shimpac
10 Cover
11 Bolts
12 Washer
13 Seal
14 Bolts
15 Cover
16 Seal
17 O--ring
18 Bearing
19 Input shaft
20 Seal
21 End cap
22 Bolts
23 Output shaft

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Emergency stop mode (A2014)



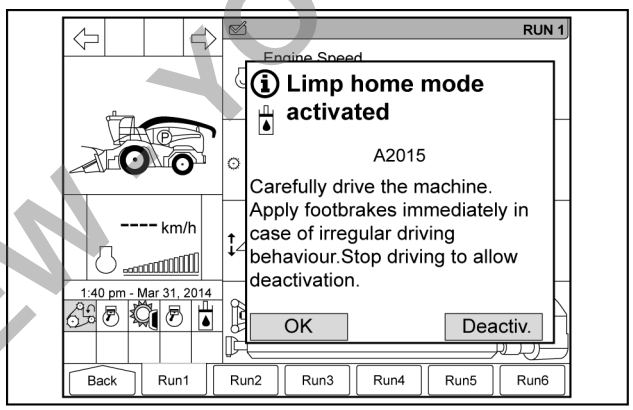
ZEIL14FR00067AA 1

"Emergency stop mode" activation:

- when the foot brake switches are being closed or the machine is driven with the foot brake switches closed for longer than **3 s**
- and the machine is driving faster than **3.0 km/h** (**1.9 mph**)
- and there is no reverse movement of the MFH detected.

An alarm (A2014) will occur on the monitor. At the same time the CCO valve will be deactivated. The hydrostatic pump will go to neutral and the machine will stop. Afterwards, the mode will change, back to "Normal mode".

Limp home mode (A2015)



ZEIL14FR00068AA 2

Each time an emergency stop occurs, the emergency stop counter will increase. If there is no emergency stop within three minutes, the emergency stop counter will decrease. If the emergency stop counter reaches three, "Limp home mode" is activated. An alarm (A2015) will occur on the monitor. At the same time the engine controller will force the engine rpm to low idle. There is no engine rpm control possible. "Limp home mode" can only be deactivated when the machine speed is zero.

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Contents

Brakes and controls - 33

[33.202] Hydraulic service brakes 33.1

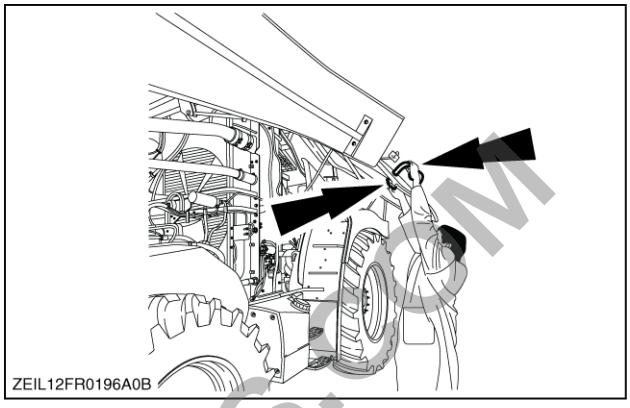
[33.110] Parking brake or parking lock 33.2

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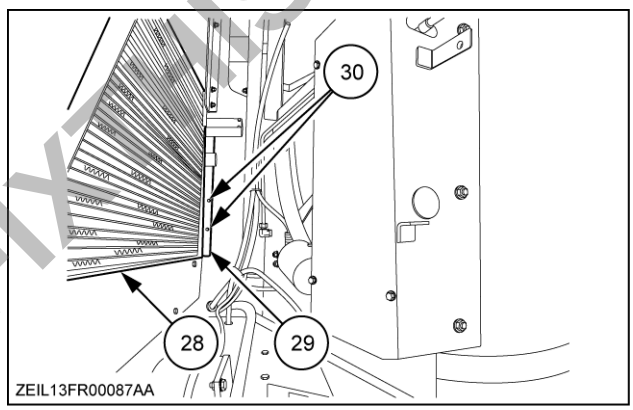
Reservoir, cooler, and filters - Remove Main gearbox oil cooler / hydraulic oil cooler

1. Open the right-hand side shielding.



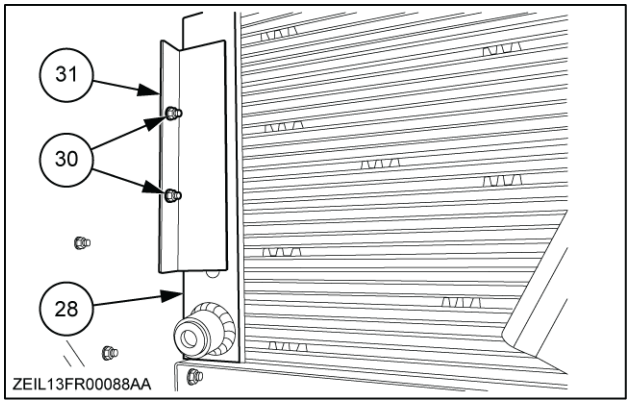
ZEIL12FR0196A0B 1

2. In the service area, on the left-hand side of the main gearbox oil cooler / hydraulic oil cooler **(28)**, remove the bolts **(30)** of the plate **(29)**.
3. Remove the plate **(29)**.



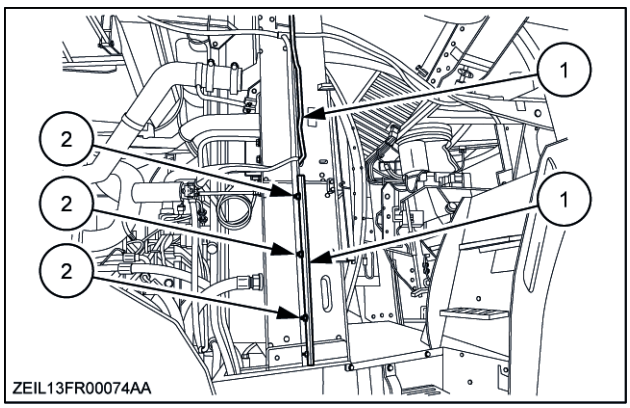
ZEIL13FR00087AA 2

4. On the right-hand side of the main gearbox oil cooler / hydraulic oil cooler **(28)**, remove the bolts **(30)** of the plate **(31)**.
5. Remove the plate **(31)**.



ZEIL13FR00088AA 3

6. At the entrance of the service area, remove the hardware **(2)**.
7. Remove the plate **(1)**.

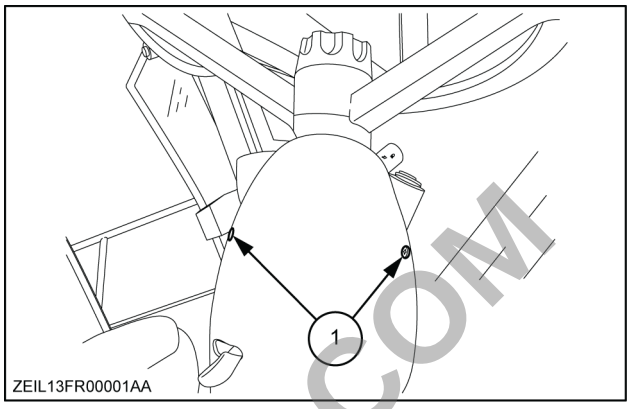


ZEIL13FR00074AA 4

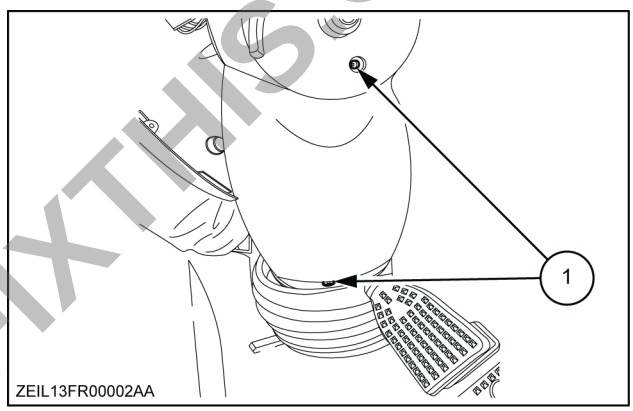
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Column release mechanism - Remove

1. Underneath the steering wheel, remove the four screws **(1)**.

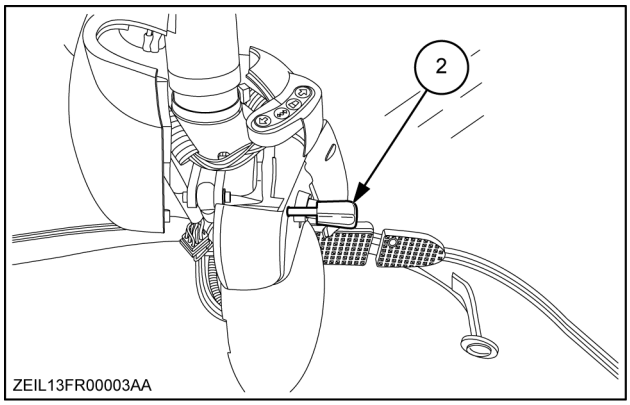


ZEIL13FR00001AA 1



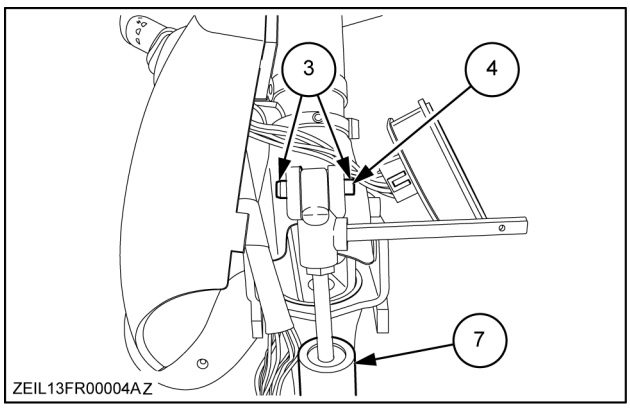
ZEIL13FR00002AA 2

2. Remove the steering column tilt lever knob **(2)** and remove the right-hand side cover fully.



ZEIL13FR00003AA 3

3. Remove the two lock washers **(3)** from the top side of the upper cylinder.
4. Remove the pin **(4)** to disconnect the top side of the upper cylinder from the steering column.



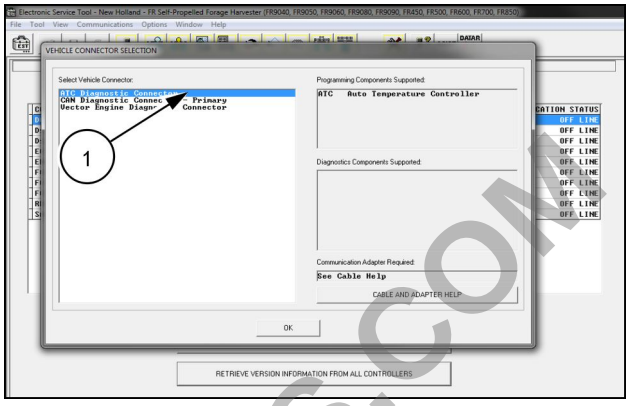
ZEIL13FR00004AZ 4

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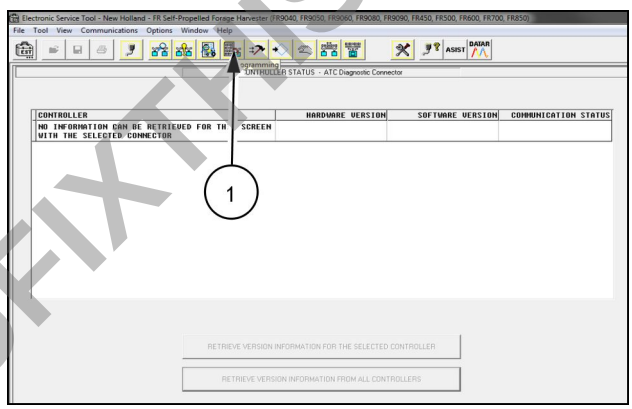
Air conditioning - Program - Automatic Temperature Control (ATC) module.

1. Select “FR Self-Propelled Forage Harvester” from the Electronic Service Tool (EST) equipment list.
2. Select the Automatic Temperature Control (ATC) diagnostic connector **(1)**.
3. Connect the special tool adaptor wiring harness **380002497** to the ATC module.
4. Connect the DPA5 connector to the adaptor wiring harness **380002497**.
5. Connect the power adaptor of the adaptor wiring harness **380002497** to a power supply for programming.



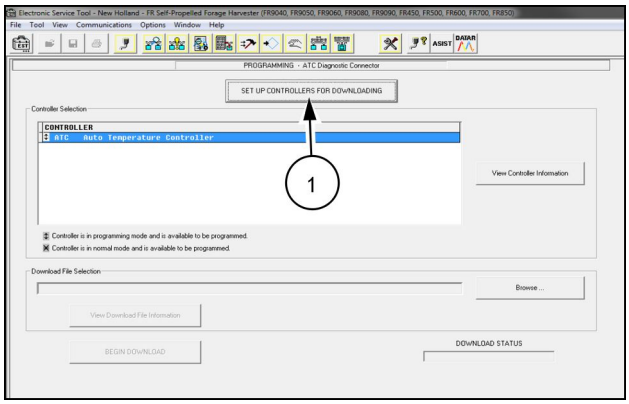
NHPH13FR00050AA 1

6. Click on the programming icon **(1)**.



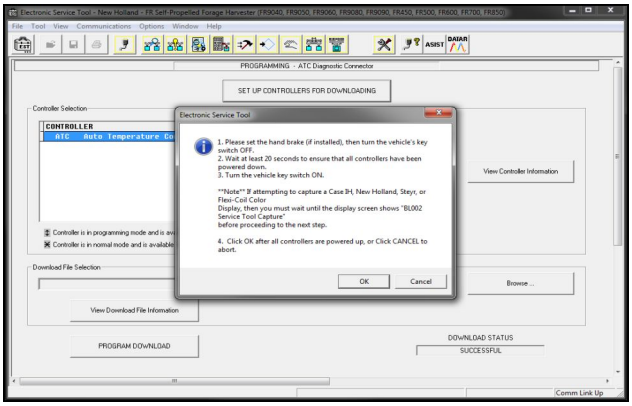
NHPH13FR00051AA 2

7. Highlight the ATC controller.
8. Click “SET UP CONTROLLERS FOR DOWNLOADING” **(1)**.



NHPH13FR00052AA 3

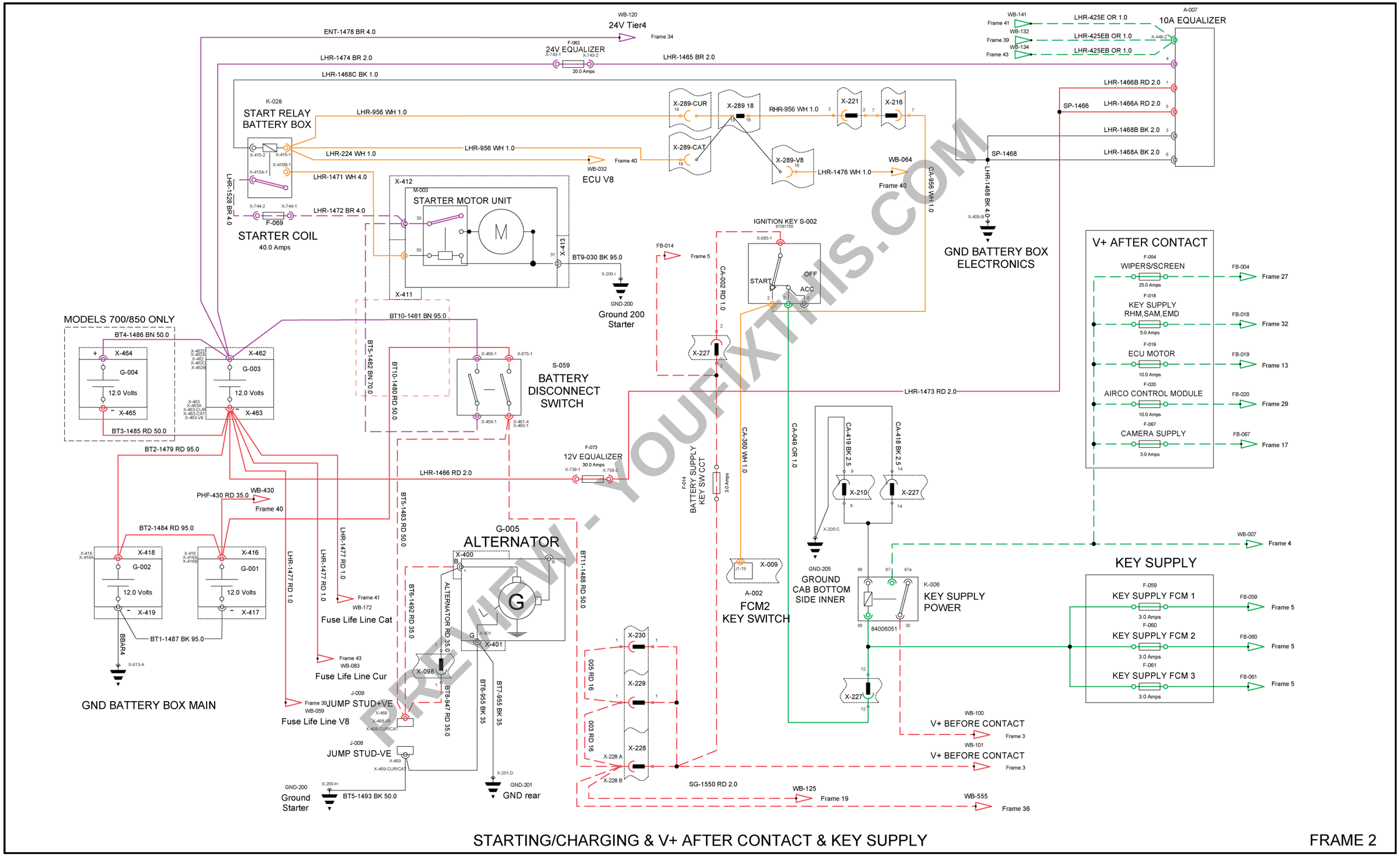
9. Do not click “OK” at this point. Follow the instructions on the screen.



NHPH13FR00053AA 4

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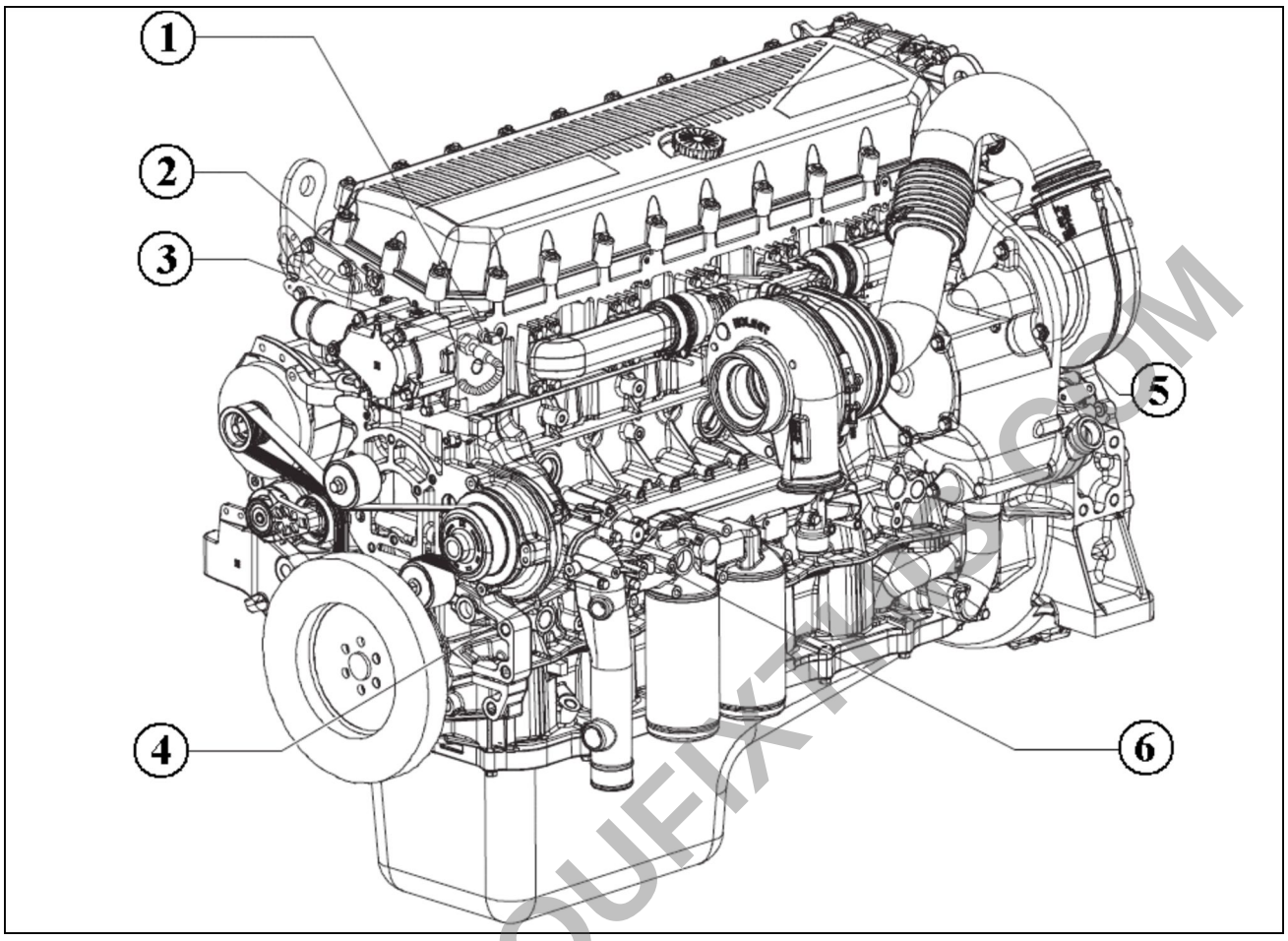


STARTING/CHARGING & V+ AFTER CONTACT & KEY SUPPLY

FRAME 2

NHIL13FR00001HA 1

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ELECCOMP2F3C 2

Left-hand side view of engine.

(1) Coolant temperature for EDC 7 - **(2)** Connector on the cylinder head for injector solenoid valves - **(3)** Coolant temperature sensor - **(4)** Oil temperature/pressure sensor - **(5)** Flywheel speed sensor - **(6)** Low oil pressure sensor.

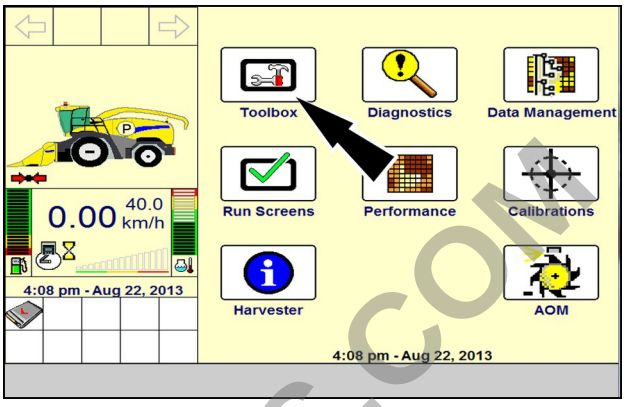
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Modes of operation

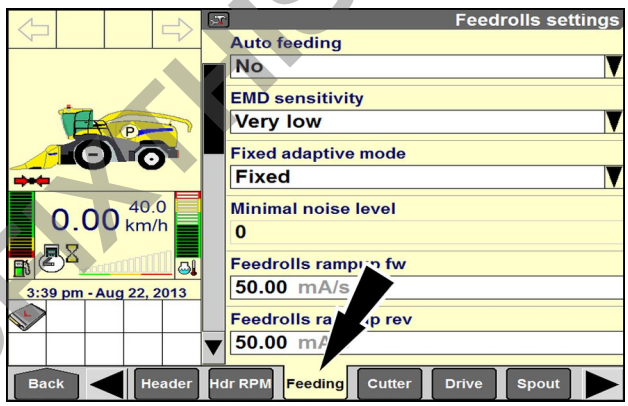
Electronic metal detection can be set in one of two modes. Fixed mode or adaptive mode.

To change the detectors mode of operation, select ‘Tool-box’ on the display monitor.



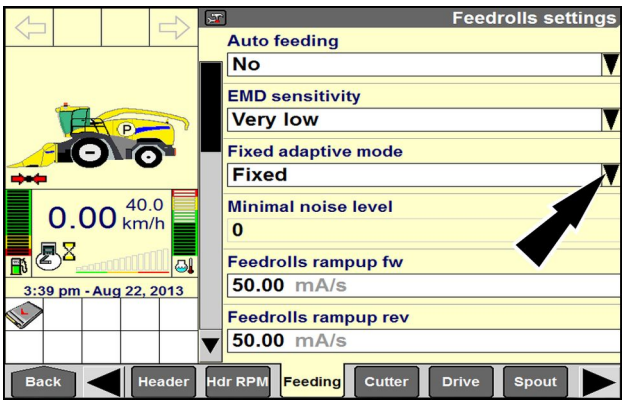
NHIL13FR00068AA 5

Select the ‘Feeding’ tab.



NHIL13FR00066AA 6

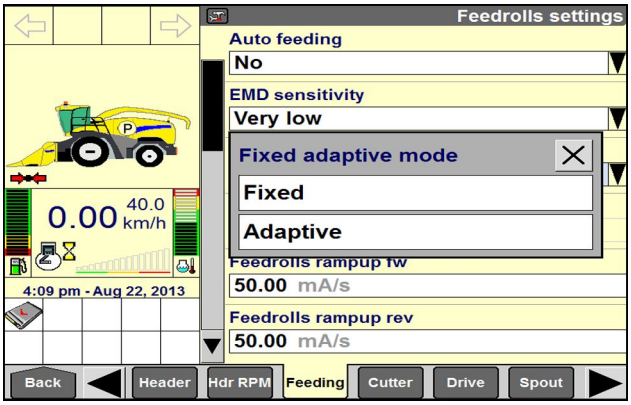
Open the selection menu for Fixed adaptive mode.



NHIL13FR00066AA 7

Select ‘Fixed’ or ‘Adaptive’.

NOTE: *‘Adaptive’ is the preferred setting.*



NHIL13FR00070AA 8

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Electrical systems - 55

FAULT CODES - DTC

FR

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Index

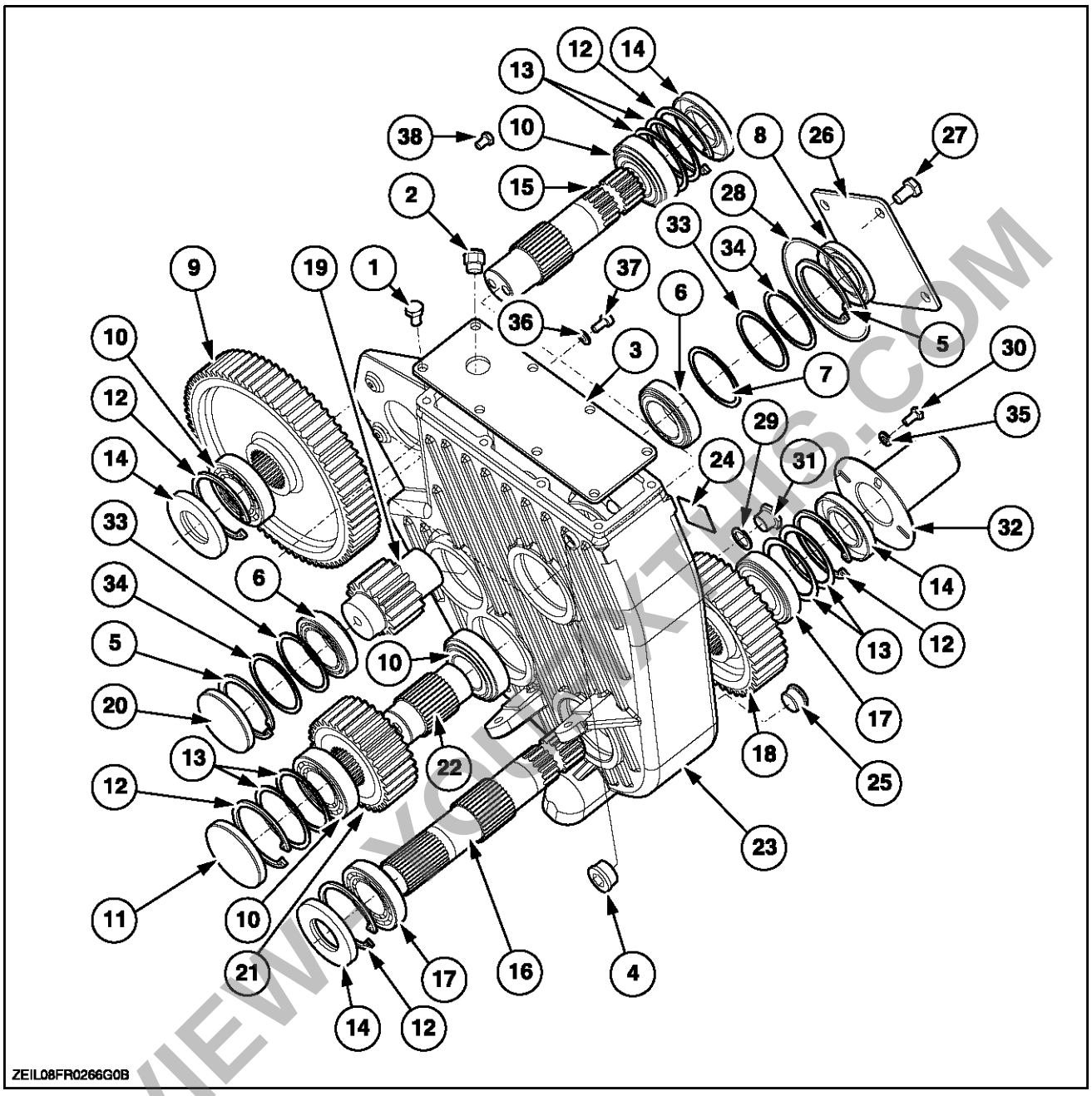
Electrical systems - 55

FAULT CODES - DTC

E0001-03- FCM1 key supply - Shorted to high source 25
E0002-03- FCM1 8V ref - Shorted to high source (*) 26
E0002-04- FCM1 8V ref - Shorted to low source (*) 28
E0003-03- FCM1 5V ref1 - Shorted to high source 29
E0003-04- FCM1 5V ref1 - Shorted to low source 31
E0004-03- FCM1 5V ref2 - Shorted to high source (*) 33
E0004-04- FCM1 5V ref2 - Shorted to low source (*) 34
E0006-04-Key supply switch - Shorted to a low source 36
E0007-04- Header up fender switch - Shorted to low source 37
E0008-04- Hazard switch - Shorted to low source 39
E0009-04- Left turn switch - Shorted to low source 41
E0010-04- Right turn switch - Shorted to low source 43
E0011-04- Header dn fender switch - Shorted to low source 45
E0012-03- Brake fluid level - Shorted to high source 47
E0013-03- Header brake indication - Shorted to high source 49
E0014-03- Header pump pressure - Shorted to high source 50
E0015-03- Feedroll pump pressure - Shorted to high source 52
E0016-03- Foot brake pressure - Shorted to high source 54
E0017-03- Header pressure - Shorted to high source 55
E0017-05- Header pressure - Line disconnected 57
E0018-03- Back feedrolls opening - Shorted to high source 60
E0018-05- Back feedrolls opening - Line disconnected 62
E0019-03-Header type extended - Shorted to high source 65
E0021-03- Chopperbody angle - Shorted to high source 67
E0021-05- Chopperbody angle - Line disconnected 69
E0023-03- Right ground height - Shorted to high source 72
E0023-05- Right ground height - Line disconnected 73
E0024-03- Header type - Shorted to high source 76
E0025-03- Left ground height - Shorted to high source 77
E0025-05- Left ground height - Line disconnected 78
E0026-03- Header lateral tilt - Shorted to high source 81
E0026-05- Header lateral tilt - Line disconnected 83
E0027-03- Header speed - Shorted to high source 86

(*) See content for specific models

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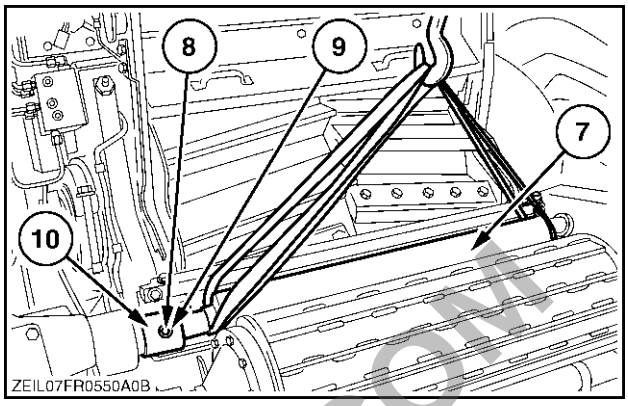


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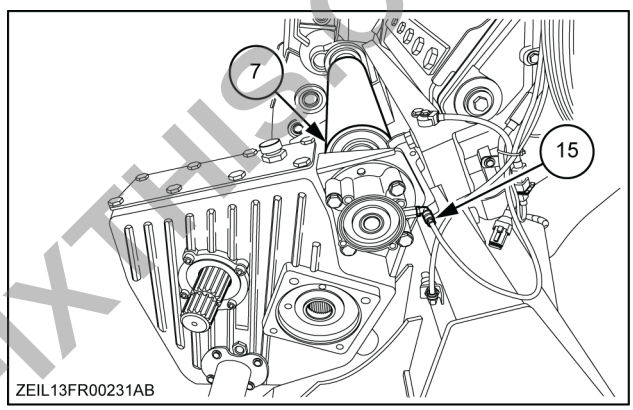
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6. Install a rope on the smooth roll **(7)**, as shown. Use an adequate lifting device. Apply a little tension.
7. Remove the bolt **(8)** and the lock washer **(9)**.
8. Move the sleeve **(10)** towards the smooth roll.



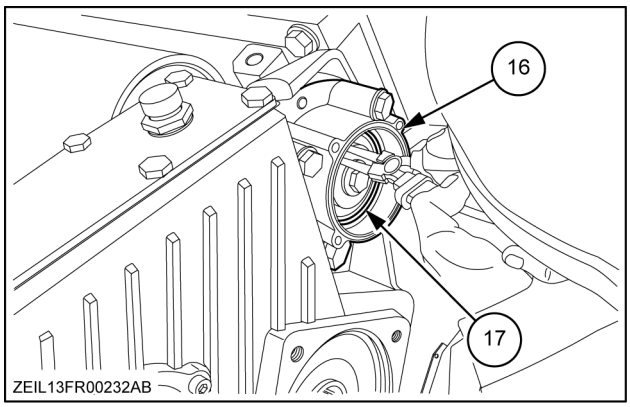
ZEIL07FR0550A0B 4

9. On the left-hand side of the smooth roll **(7)**, disconnect the grease line **(15)**.



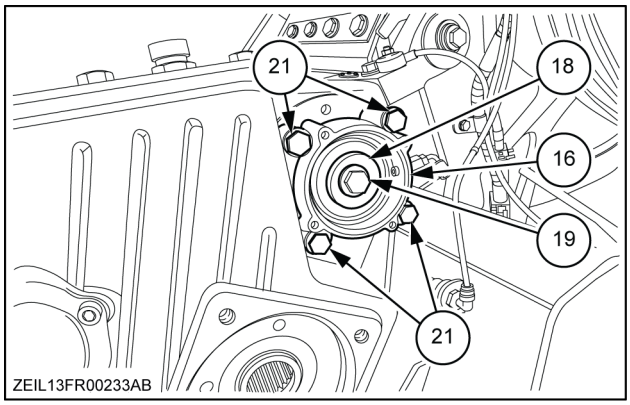
ZEIL13FR00231AB 5

10. Remove the retaining ring **(17)** from the bearing housing **(16)**.



ZEIL13FR00232AB 6

11. Remove the hardware **(19)**. Remove the spacer **(18)**.
12. Remove the hardware **(21)**.



ZEIL13FR00233AB 7

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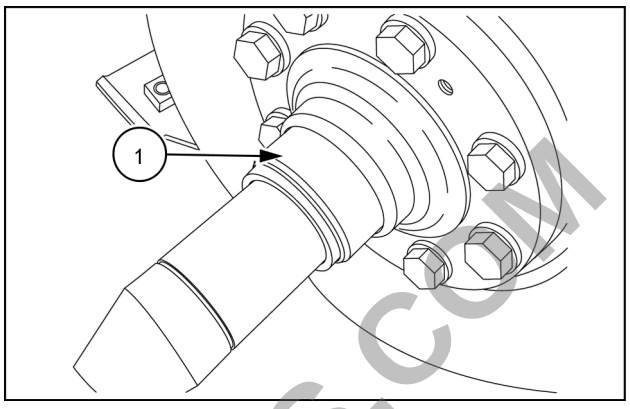
Cutterhead - Install

On both sides:

1. Heat the busing **(1)** for the right side of the cutter head shaft.

NOTICE: *Wear heat resistant gloves when handling heated parts.*

2. Slide the bushing **(1)** onto the shaft.

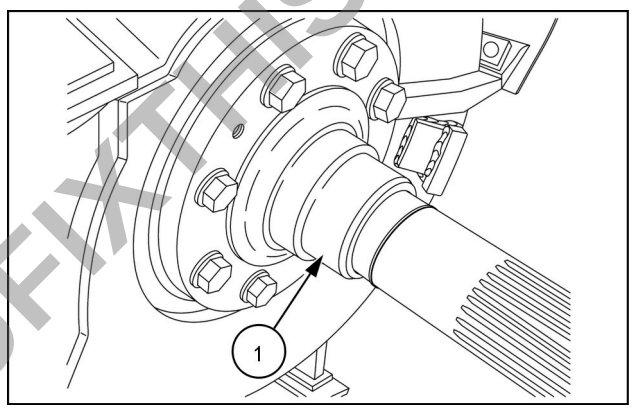


NHIL14FR00512AA 1

3. Heat the busing **(1)** for the left side of the cutter head shaft.

NOTICE: *Wear heat resistant gloves when handling heated parts.*

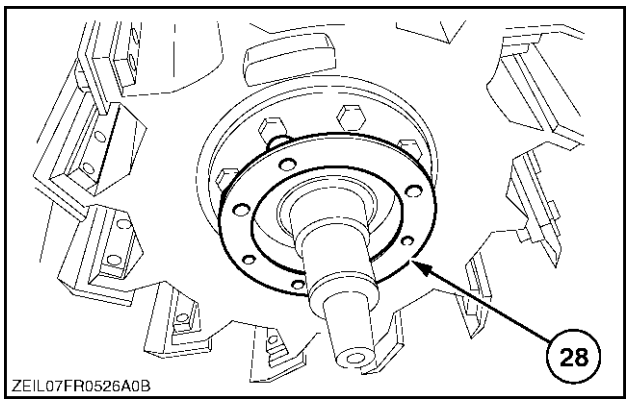
4. Slide the bushing **(1)** onto the shaft.



NHIL14FR00511AA 2

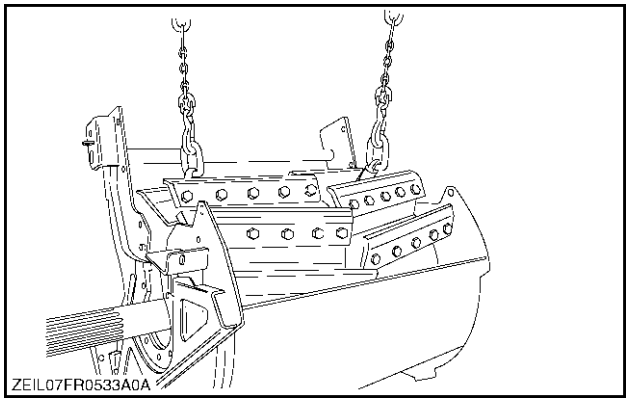
5. Check if the flange **(28)** is installed.

NOTICE: *Be aware of the cutterhead weight of approximately* ***600 kg*** *(****1322 lb****).*
Install the cutterhead into the housing as shown.



ZEIL07FR0526A0B 3

6. Remove two knife bolts and install two eye bolts as shown.
Lift the cutterhead, using an adequate lifting device.



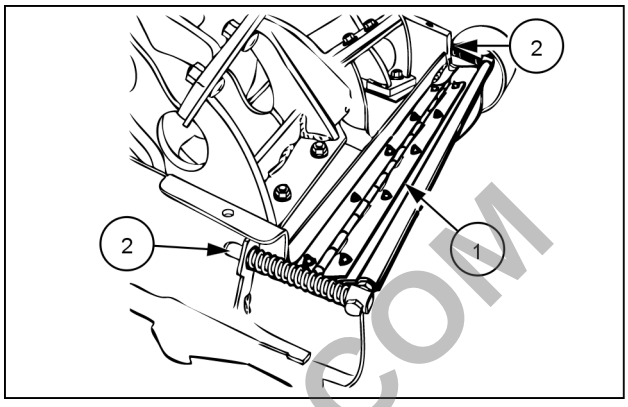
ZEIL07FR0533A0A 4

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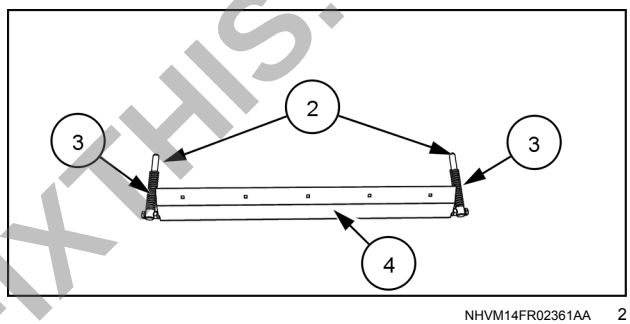
Blower frame - Remove - Sealing plate

1. Remove the bolts from the hinge plate **(1)**.
2. Remove the cotter pins from the pins **(2)** end.



NHPH14FR02359AA 1

3. Remove the sealing plate **(4)** assembly.
4. Remove the two springs **(3)** from the pins **(2)**.



NHVM14FR02361AA 2

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Side shields - Remove side shieldings

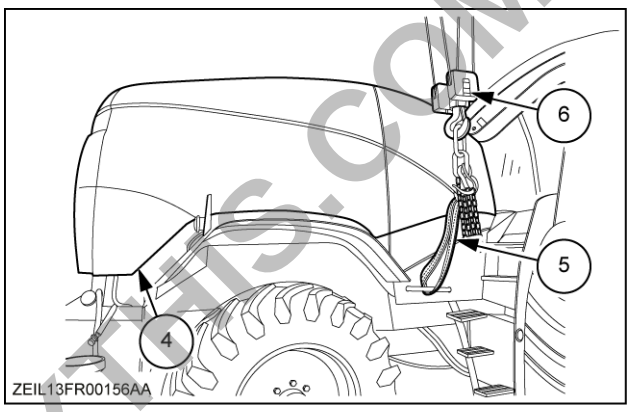
⚠ WARNING

Heavy object!
ALWAYS use a hoist or get assistance to lift the component.
Failure to comply could result in death or serious injury.

W0086A

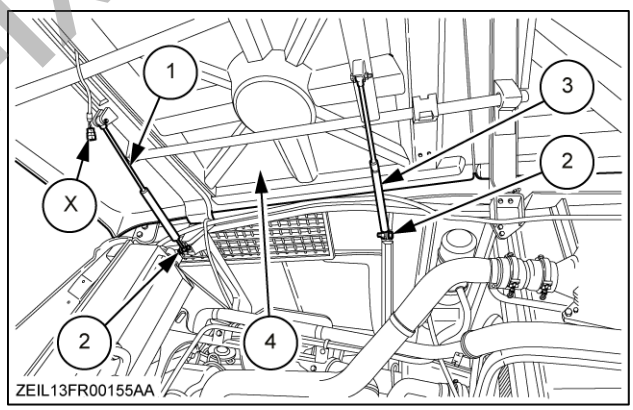
1. On the right-hand side shielding **(4)**, tie a suitable rope **(5)** to the handle. Attach the rope **(5)** to a suitable lifting device **(6)**.
2. Open the side shielding **(4)**.

NOTE: *Inside the side shielding **(4)**, a rope is connected to hold the side shielding **(4)** in a suitable position. Disconnect the rope to ensure the free movement of the side shielding **(4)**.*



ZEIL13FR00156AA 1

3. Disconnect the connector **(X)** and remove the wire harness.
4. Remove the hardware **(2)**. Disconnect the gas strut **(1)** and **(3)** from the side shielding **(4)**.



ZEIL13FR00155AA 2

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SPECIAL TOOL INDEX

Genuine	Reference	PAGE
380000314 [Electronic Gas Leakage Detector (R12 and R134a)]	Air conditioning - Special tools	50.2 / 4
34788 [Refrigerant Recover Station for R134a]	Air conditioning - Special tools	50.2 / 4
380050012 [Sanko/Sanden Compressor Service Tool Kit]	Air conditioning - Special tools	50.2 / 4
380002816 [Flexible Belt Installation Tool]	Air conditioning - Special tools	50.2 / 4
380002822 [Engine Turning Tool]	Air conditioning - Special tools	50.2 / 4
34788 [Refrigerant Recover Station for R134a]	Air conditioning - Special tools	50.2 / 4
380000314 [Electronic Gas Leakage Detector (R12 and R134a)]	Air conditioning - Service instruction	50.2 / 25
380001327 [Electronic Leak Detector]	Air conditioning - Service instruction	50.2 / 25
34788 [Refrigerant Recover Station for R134a]	Air conditioning - Service instruction	50.2 / 26
380000314 [Electronic Gas Leakage Detector (R12 and R134a)]	Air conditioning - Leakage test	50.2 / 34
380002497 [Air Temperature Controller (ATC) Progra mming Cable]	Air conditioning - Program - Automatic Temperature Control	50.2 / 36
380002497 [Air Temperature Controller (ATC) Progra mming Cable]	Air conditioning - Program - Automatic Temperature Control	50.2 / 36
380002497 [Air Temperature Controller (ATC) Progra mming Cable]	Air conditioning - Program - Automatic Temperature Control	50.2 / 36
380050012 [Sanko/Sanden Compressor Service Tool Kit]	Air-conditioning compressor - Level make up - Dipstick Method	50.2 / 43
294070 [Harness Repair Kit (European Issued Kit)]	Electrical system - Special tools 1	55.1 / 3
297448 [Test Probe Kit]	Electrical system - Special tools 1	55.1 / 3
380000352 [Wiring End Cable AMP Pin Crimping Pliers]	Electrical system - Special tools 2	55.1 / 3
80679968 [Pin Removal Tool, Suitable To Remove Pins From Electronic Box Connectors And Sort Likes]	Electrical system - Special tools 2	55.1 / 3
380000354 [Timer Pin Puller]	Electrical system - Special tools 2	55.1 / 3
380000353 [Faston Pin Puller]	Electrical system - Special tools 2	55.1 / 4
380000355 [Amp Pin Removal DIA 1,6]	Electrical system - Special tools 2	55.1 / 4
380000356 [DCS Pin Puller]	Electrical system - Special tools 2	55.1 / 4
84400045 [Deutsch Crimping Pin Pliers]	Electrical system - Special tools 3	55.1 / 5
84400044 [Plastic Pin Removal Tool]	Electrical system - Special tools 3	55.1 / 5
380001162 [Power Steering Test Fitting - 14 mm x 1.5 -6 g]	Electrical system - Special tools 3	55.1 / 5
84074681 [Tool Kit]	Electrical system - Special tools 3	55.1 / 6
84400046 [Pliers]	Electrical system - Special tools 3	55.1 / 6
84400047 [Pliers]	Electrical system - Special tools 4	55.1 / 8

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FR SERIES FORAGE HARVESTER

47840664

ELECTRICAL SCHEMATIC

MY15 - SERIES 5888 AND ABOVE

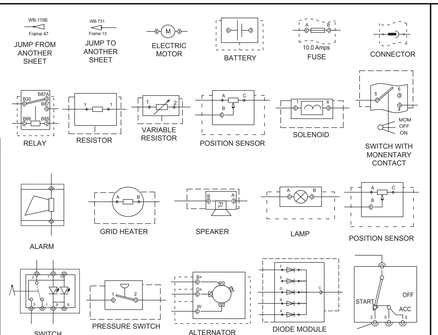
Page 1 of 6

SCHEMATIC SHEET INDEX

Component	Page/Sheet	Component	Page/Sheet
STARTING/CHARGING & V+ AFTER CONTACT & KEY SUPPLY	Page 1, Sheet 2	HEADLAMP FLIP UP BEAM	Page 3, Sheet 25
V+ BEFORE CONTACT	Page 1, Sheet 3	HID & HALOGEN	Page 4, Sheet 26
V+ BEFORE CONTACT & KEY SUPPLY	Page 1, Sheet 4	WASHERS & WIPERS	Page 4, Sheet 27
POWER FCM 1,2, & 3	Page 1, Sheet 5	ACCESSORIES - MISC	Page 4, Sheet 28
FCM 1 POWER CONTROL	Page 1, Sheet 6	HVAC POWER & CONTROL	Page 4, Sheet 29
FCM 1 SIGNALS	Page 1, Sheet 7	HEADERS GROUNDS & AUDIO	Page 4, Sheet 30
FCM 1 & 2 POWER CONTROL	Page 1, Sheet 8	MIRROR ADJUSTMENT	Page 4, Sheet 31
FCM 2 SIGNALS	Page 1, Sheet 9	SPLICE BLOCKS	Page 4, Sheet 32
FCM POWER CONTROL 3	Page 2, Sheet 10	EARTHING GROUNDS	Page 4, Sheet 33
FCM 3 SIGNALS	Page 2, Sheet 11	EMISSIONS DENOX	Page 5, Sheet 34
FCM3 POWER MISCELLANEOUS	Page 2, Sheet 12	CAN SYSTEM & DIAGNOSTIC	Page 5, Sheet 35
HYDRAULIC VALVES	Page 2, Sheet 13	ADDITIONAL REAR TANK/ AIR HORN	Page 5, Sheet 36
RHM POWER	Page 2, Sheet 14	ENGINE	Page 5, Sheet 37
RHM MODULE SIGNALS	Page 2, Sheet 15	MISCELLANEOUS	Page 5, Sheet 38
RHM MODULE SWITCHES	Page 2, Sheet 16	MOTOR CONTROLS (V8 ENGINE)	Page 5, Sheet 39
MDM MODULE	Page 2, Sheet 17	ENGINE CONTROLLER (V8 ENGINE)	Page 5, Sheet 40
SAM MODULE	Page 3, Sheet 18	MOTOR CONTROLS (CATERPILLAR ENGINE)	Page 5, Sheet 41
INTELLIFILL SYSTEM	Page 3, Sheet 19	ENGINE CONTROLLER (CATERPILLAR ENGINE)	Page 6, Sheet 42
INTERIOR LIGHTS	Page 3, Sheet 20	MOTOR CONTROLS (CURSOR ENGINE)	Page 6, Sheet 43
SWITCH	Page 3, Sheet 21	ENGINE CONTROLLER (CURSOR ENGINE)	Page 6, Sheet 44
TAIL / HAZZARD LIGHTING	Page 3, Sheet 22	SPOUT GUIDANCE RHC	Page 6, Sheet 45
BEACON - FLASHERS & BRAKE	Page 3, Sheet 23	SPARE FUSE LOCATION	Page 6, Sheet 46
REAR LIGHTING	Page 3, Sheet 24		

CIRCUIT COLOR INDEX

- 12V UNSWITCHED POWER
- 12V UNSWITCHED POWER - AFTER 12V BATTERY DISCONNECT
- 24V UNSWITCHED POWER
- 24V UNSWITCHED POWER - AFTER 24V BATTERY DISCONNECT
- IGNITION KEY ON
- IGNITION KEY ON - AFTER IGNITION POWER RELAY
- CRANKING



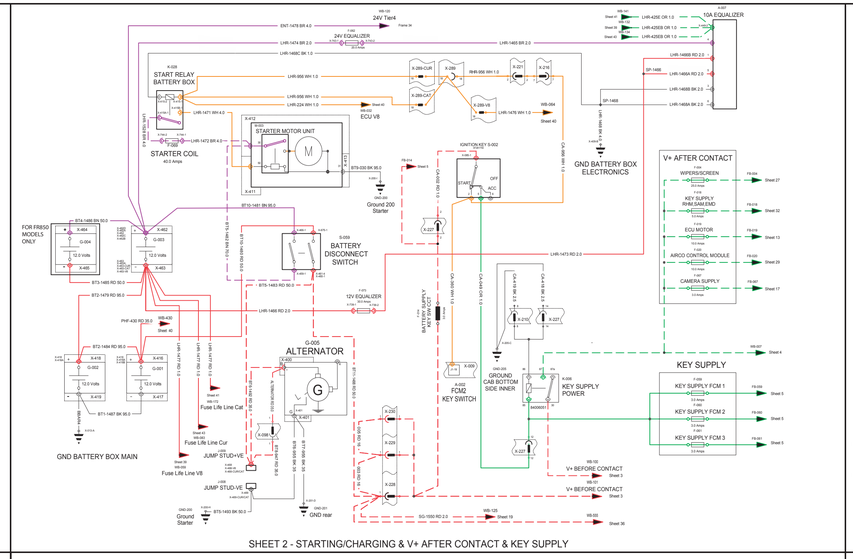
CIRCUIT REFERENCES

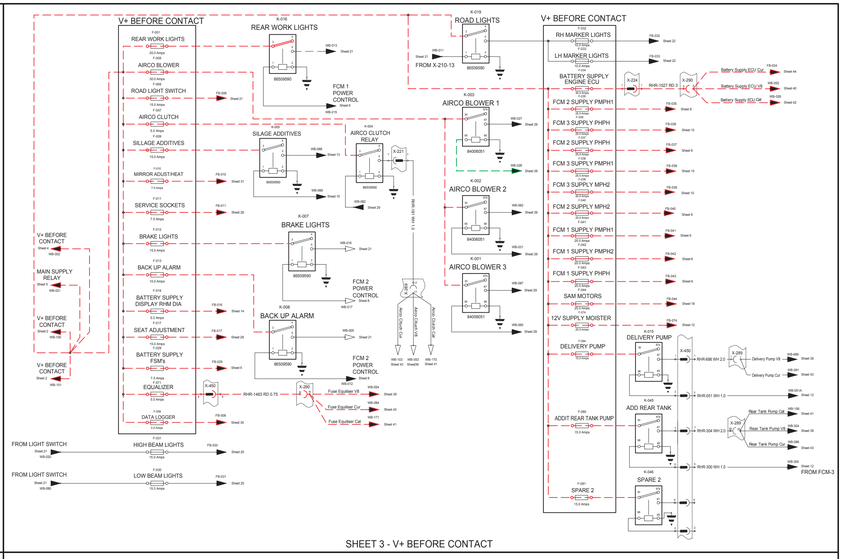
Color	Color Code	Function
Black	BK	Ground, Chassis
Blue	BL	Printed Circuit Ground
White	WH	Increasing Actuation
Gray	GY	Decreasing Actuation
Orange	OR	Power After Ignition
Yellow	YE	Signal Wires
Red	RD	Battery Voltage
Violet	VT	Lighting
Pink	PK	Reference Voltage

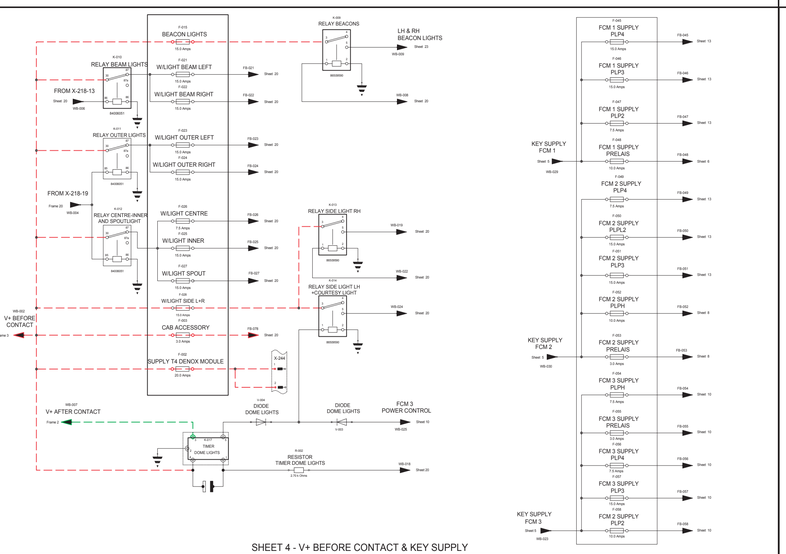
CM-053A OR 1.0
- WIRE GAUGE (SQUARE MM)
- WIRE COLOR
- CIRCUIT NUMBER
- HARNESS CODE

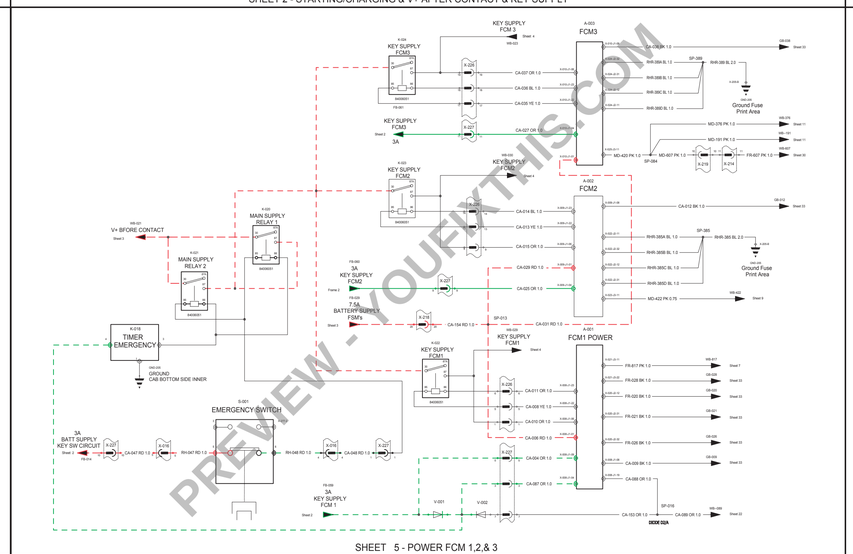
COMPONENT IDENTIFIER LEGEND

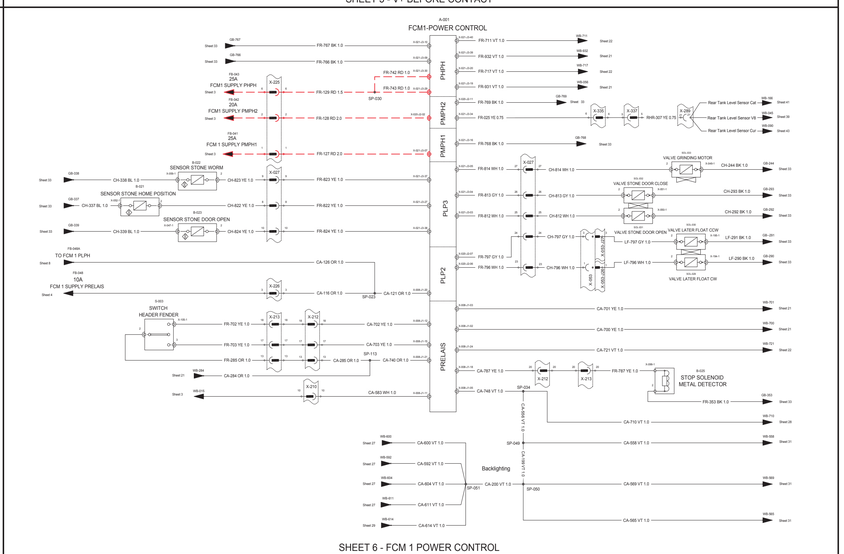
Label Prefix	Component Type
A	Electronics
B	Sensors
D	Diodes
E	Lights
F	Fuses
G	Generators
H	Audio
J	Outlets
K	Relays
M	Motors
Q	Circuit Breakers
R	Resistive
S	Switches
W	Splice Blocks
Y	Solenoids

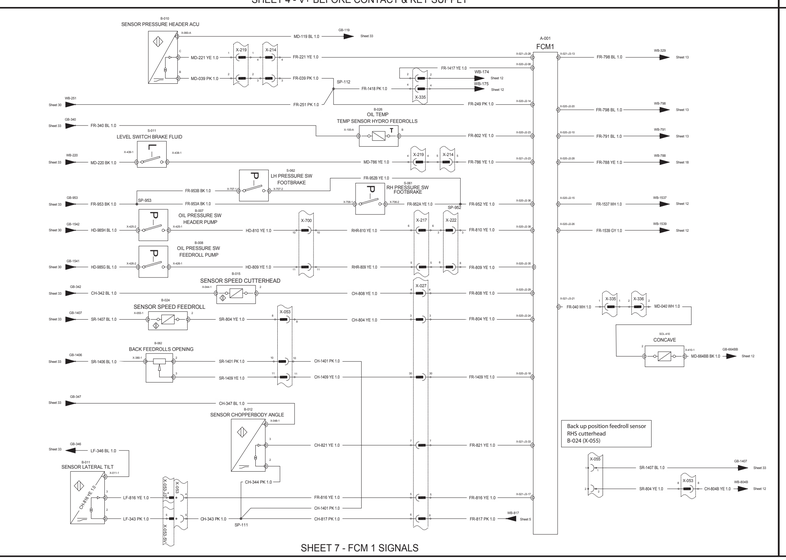


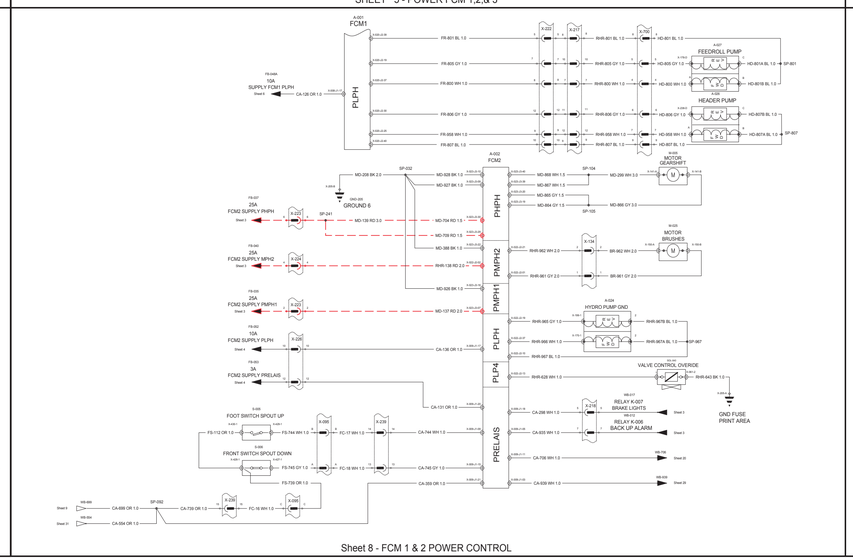


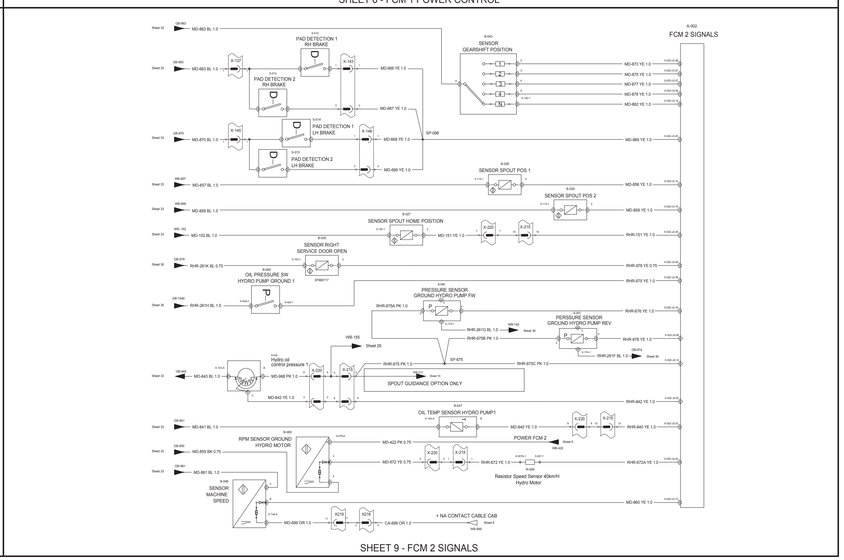












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Contents

INTRODUCTION

Engine 10

[10.001] Engine and crankcase 10.1

[10.218] Fuel injection system 10.2

[10.400] Engine cooling system 10.3

[10.414] Fan and drive 10.4

[10.418] Rotary screen 10.5

Main gearbox and drive 14

[14.100] Main gearbox and drive 14.1

Transmission 21

[21.114] Mechanical transmission 21.1

[21.120] Gearbox 21.2

[21.130] Mechanical transmission external controls 21.3

[21.100] Mechanical transmission lubrication system 21.4

[21.145] Gearbox internal components 21.5

[21.182] Differential 21.6

Four-Wheel Drive (4WD) system 23

[23.101] Mechanical control 23.1

[23.304] Four-Wheel Drive (4WD) gearbox 23.2

Front axle system 25

[25.100] Powered front axle 25.1

[25.102] Front bevel gear set and differential 25.2

[25.310] Final drives 25.3

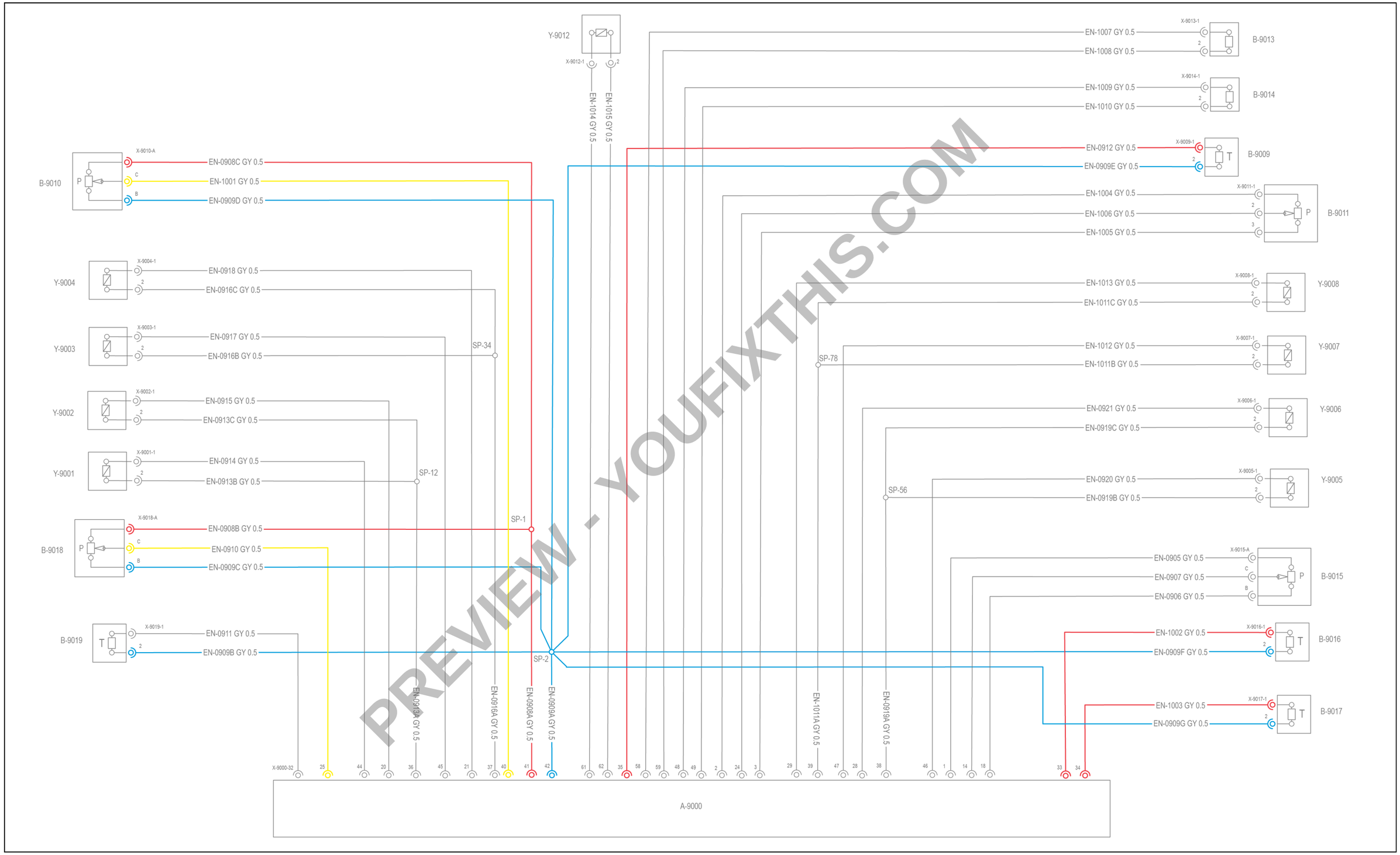
Rear axle system 27

[27.450] Rear-powered steerable axle 27.1

[27.550] Non-powered rear axle 27.2

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NHIL14ENG2527JA 1

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E0542-05- CP back roll speed - Line disconnected

Control Module : FCM3

Context:
The Forage Control Module 3 (FCM3) monitors the operation of the Sensor CP Back Roll Speed B-039 on connector **X-025 pin J3-13**. This input signal varies according to the proximity of the ferrous metal material of the target to the sensor.
The proper voltage for the sensor when blocked by ferrous metal should be between **5.6 - 7.3 V**. The typical value is **6.7 V**.
The proper voltage for the sensor when not blocked by ferrous metal should be between **0.5 - 5.6 V**. The typical value is **3.4 V**.
The proper voltage for the sensor if disconnected should be between **7.3 - 9.0 V**. The typical value is **7.4 V**.

Cause:
FCM3 is sensing a signal level between **7.3 - 9.0 V** in the Sensor CP Back Roll Speed B-039 signal circuit.

Possible failure modes:

1. The Sensor CP Back Roll Speed B-039 has failed internally.
2. The Sensor CP Back Roll Speed B-039 signal or ground circuit wiring is open.
3. The Forage Control Module 3 (FCM3) has failed internally.

Solution:

1. Verify that the fault is present and active. Use the display monitor diagnostic capability to view parameter status, see **Instrument cluster - Detailed view (55.408)**, if necessary, to check voltage level. There should be less than **7.3 V**.

   A. If there is between **7.3 - 9.0 V**, which indicates an open circuit condition. Continue with Step **2**.

   B. If there is less than **7.3 V**, the fault may be intermittent and not currently active. Continue with Step **6**.
2. Determine the fault location. Check the Sensor CP Back Roll Speed B-039 ground circuit. Disconnect the CP Roll Speed (CP) harness from the Sensor CP Back Roll Speed B-039 at connector **X-147**. Use a multimeter to check for continuity from the CP harness side of connector **X-147 pin 1** to chassis ground. There should be continuity.

   A. If there is continuity, leave connector **X-147** disconnected and continue with Step **3**.

   B. If there is no continuity, there is an open circuit condition in the ground circuit between connector **X-147 pin 1** and CP harness splice (SP-095), wire CP-735 blue. Locate and repair the broken conductor.
3. Determine the fault location. Use a multimeter to measure the voltage on the CP harness side from connector **X-147 pin 2** to chassis ground. There should be between **7.0 - 8.0 V**. The typical value is **7.5 V**.

   A. If there is between **7.0 - 8.0 V**, the Sensor CP Back Roll Speed B-039 has failed internally. Replace the sensor.

   B. If there is no voltage, continue with Step **4**.
4. Determine the fault location. Disconnect the CP harness from the Mid Cable (MD) harness at connector **X-039**. Use a multimeter to measure the voltage on the MD harness side from connector **X-039 pin 3** to chassis ground. There should be between **7.0 - 8.0 V**. The typical value is **7.5 V**.

   A. If there is between **7.0 - 8.0 V**, there is an open circuit condition in the CP harness between connector **X-039 pin 3** and connector **X-147 pin 2**, wire CP-912 yellow. Locate and repair the broken conductor.

   B. If there is no voltage, continue with Step **5**.
5. Determine the fault location. Carefully disconnect the MD harness from the FCM3 at connector **X-025**. Use a multimeter to measure the voltage on the control module from connector **X-025 pin J3-13** to chassis ground. There should be between **7.0 - 8.0 V**. The typical value is **7.5 V**.

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