

SERVICE MANUAL

FR450 / FR500 / FR600 / FR700 / FR850
Forage Harvester

Part number 47812460

English
December 2014



Link Product / Engine

Product	Market Product	Engine
FR850 FR850 TIER 2 [5803 -]	Europe	FVAE2884X*B200
FR450 FR450 TIER 4A [5803 -]	Europe	F2CFE613A*A
FR500 FR500 TIER 4A [5803 -]	Europe	F3BFE613E*A
FR600 FR600 TIER 3 [5803 -]	Europe	F3CE0684E*E920

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INTRODUCTION

Basic instructions - How to use and navigate through this Manual

Technical information

This manual has been produced by a new technical information system. This new system is designed to deliver technical information electronically through Web delivery (eTim), DVD and in paper manuals. A coding system called SAP has been developed to link the technical information to other Product Support functions, e.g., Warranty.

Technical information is written to support the maintenance and service of the functions or systems on a customer's machine. When a customer has a concern on his machine it is usually because a function or system on his machine is not working at all, is not working efficiently, or is not responding correctly to his commands. When you refer to the technical information in this manual to resolve that customer's concern, you will find all the information classified using the SAP coding, according to the functions or systems on that machine. Once you have located the technical information for that function or system then you will find all the mechanical, electrical or hydraulic devices, components, assemblies and sub assemblies for that function or system. You will also find all the types of information that have been written for that function or system, the technical data (specifications), the functional data (how it works), the diagnostic data (fault codes and troubleshooting) and the service data (remove, install adjust, etc.).

By integrating SAP coding into technical information, you will be able to search and retrieve just the right piece of technical information you need to resolve that customer's concern on his machine. This is made possible by attaching 3 categories to each piece of technical information during the authoring process.

The first category is the Location, the second category is the Information Type and the third category is the Product:

- LOCATION - is the component or function on the machine, that the piece of technical information is going to describe e.g. Fuel tank.
- INFORMATION TYPE - is the piece of technical information that has been written for a particular component or function on the machine e.g. Capacity would be a type of Technical Data that would describe the amount of fuel held by the Fuel tank.
- PRODUCT - is the model for which the piece of technical information is written.

Every piece of technical information will have those 3 categories attached to it. You will be able to use any combination of those categories to find the right piece of technical information you need to resolve that customer's concern on his machine.

That information could be:

- the description of how to remove the cylinder head
- a table of specifications for a hydraulic pump
- a fault code
- a troubleshooting table
- a special tool

How to use this manual

This manual is divided into Sections. Each Section is then divided into Chapters. Contents pages are included at the beginning of the manual, then inside every Section and inside every Chapter. An alphabetical Index is included at the end of a Chapter. Page number references are included for every piece of technical information listed in the Chapter Contents or Chapter Index.

Each Chapter is divided into four Information types:

- Technical Data (specifications) for all the mechanical, electrical or hydraulic devices, components and, assemblies.
- Functional Data (how it works) for all the mechanical, electrical or hydraulic devices, components and assemblies.
- Diagnostic Data (fault codes, electrical and hydraulic troubleshooting) for all the mechanical, electrical or hydraulic devices, components and assemblies.
- Service Data (remove disassembly, assemble, install) for all the mechanical, electrical or hydraulic devices, components and assemblies.

Sections

Sections are grouped according to the main functions or a systems on the machine. Each Section is identified by a number 00, 35, 55, etc. The amount of Sections included in the manual will depend on the type and function of the machine that the manual is written for. Each Section has a Contents page listed in alphabetic/numeric order. This table illustrates which Sections could be included in a manual for a particular product.

SECTION	PRODUCT				
	Tractors				
	Vehicles with working arms: backhoes, excavators, skid steers, ...				
	Combines, forage harvesters, balers, ...				
	Seeding, planting, floating, spraying equipment, ...				
	Mounted equipment and tools, ...				
00 - Maintenance					
05 - Machine completion and equipment					
10 - Engine					
14 - Main gearbox and drive					
18 - Clutch					
21 - Transmission					
23 - Four wheel drive system					
25 - Front axle system					
27 - Rear axle system					
29 - Hydrostatic drive					
31 - Implement power take-off					
33 - Brakes and controls					
35 - Hydraulic systems					
36 - Pneumatic system					
37 - Hitches, drawbars and implement couplings					
39 - Frames and ballasting					
41 - Steering					
44 - Wheels					
46 - Steering clutches					
48 - Tracks and track suspension					
50 - Cab climate control					
55 - Electrical systems					
56 - Grape harvester shaking					
58 - Attachments/headers					
60 - Product feeding					
61 - Metering system					
62 - Pressing - Bale formation					

INTRODUCTION

63 - Chemical applicators						
64 - Chopping						
66 - Threshing						
68 - Tying/Wrapping/Twisting						
69 - Bale wagons						
70 - Ejection						
71 - Lubrication system						
72 - Separation						
73 - Residue handling						
74 - Cleaning						
75 - Soil preparation/Finishing						
76 - Secondary cleaning / Destemmer						
77 - Seeding						
78 - Spraying						
79 - Planting						
80 - Crop storage / Unloading						
82 - Front loader and bucket						
83 - Telescopic single arm						
84 - Booms, dippers and buckets						
86 - Dozer blade and arm						
88 - Accessories						
89 - Tools						
90 - Platform, cab, bodywork and decals						

Safety rules

Personal safety



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

 DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

 WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

 CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: Notice indicates a situation that, if not avoided, could result in machine or property damage.

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: Note indicates additional information that clarifies steps, procedures, or other information in this manual.

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Safety rules - Ecology and the environment

Soil, air, and water quality is important for all industries and life in general. When legislation does not yet rule the treatment of some of the substances that advanced technology requires, sound judgment should govern the use and disposal of products of a chemical and petrochemical nature.

Familiarize yourself with the relative legislation applicable to your country, and make sure that you understand this legislation. Where no legislation exists, obtain information from suppliers of oils, filters, batteries, fuels, anti-freeze, cleaning agents, etc., with regard to the effect of these substances on man and nature and how to safely store, use, and dispose of these substances.

Helpful hints

- Avoid the use of cans or other inappropriate pressurized fuel delivery systems to fill tanks. Such delivery systems may cause considerable spillage.
- In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of these products contain substances that may be harmful to your health.
- Modern oils contain additives. Do not burn contaminated fuels and or waste oils in ordinary heating systems.
- Avoid spillage when you drain fluids such as used engine coolant mixtures, engine oil, hydraulic fluid, brake fluid, etc. Do not mix drained brake fluids or fuels with lubricants. Store all drained fluids safely until you can dispose of the fluids in a proper way that complies with all local legislation and available resources.
- Do not allow coolant mixtures to get into the soil. Collect and dispose of coolant mixtures properly.
- The air-conditioning system contains gases that should not be released into the atmosphere. Consult an air-conditioning specialist or use a special extractor to recharge the system properly.
- Repair any leaks or defects in the engine cooling system or hydraulic system immediately.
- Do not increase the pressure in a pressurized circuit as this may lead to a component failure.
- Protect hoses during welding. Penetrating weld splatter may burn a hole or weaken hoses, allowing the loss of oils, coolant, etc.

Battery recycling

Batteries and electric accumulators contain several substances that can have a harmful effect on the environment if the batteries are not properly recycled after use. Improper disposal of batteries can contaminate the soil, groundwater, and waterways. NEW HOLLAND strongly recommends that you return all used batteries to a NEW HOLLAND dealer, who will dispose of the used batteries or recycle the used batteries properly. In some countries, this is a legal requirement.



Mandatory battery recycling

NOTE: The following requirements are mandatory in Brazil.

Batteries are made of lead plates and a sulfuric acid solution. Because batteries contain heavy metals such as lead, CONAMA Resolution 401/2008 requires you to return all used batteries to the battery dealer when you replace any batteries. Do not dispose of batteries in your household garbage.

Points of sale are obliged to:

- Accept the return of your used batteries
- Store the returned batteries in a suitable location
- Send the returned batteries to the battery manufacturer for recycling



SERVICE MANUAL

Engine

FR

Engine - Remove

FR450	WE
FR500	WE

⚠ 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

⚠ WARNING

Fall hazard!

Use a sturdy platform when working above ground level.

Failure to comply could result in death or serious injury.

W0926A

⚠ WARNING

Jack stands can slip or fall over. Dropping, tipping, or slipping of machine or its components is possible.

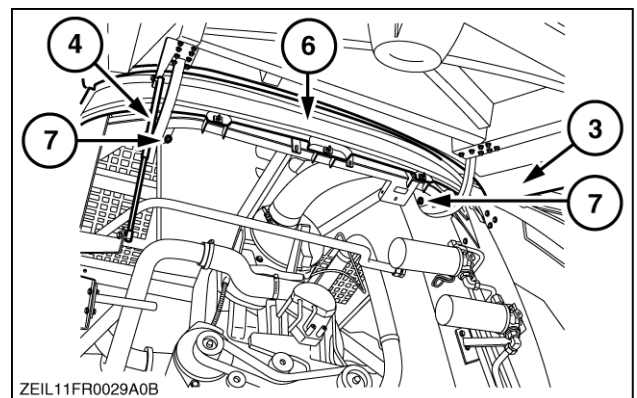
DO NOT work under a vehicle supported by jack stands only. Park machine on a level surface. Block wheels. Support machine with safety stands.

Failure to comply could result in death or serious injury.

W0069A

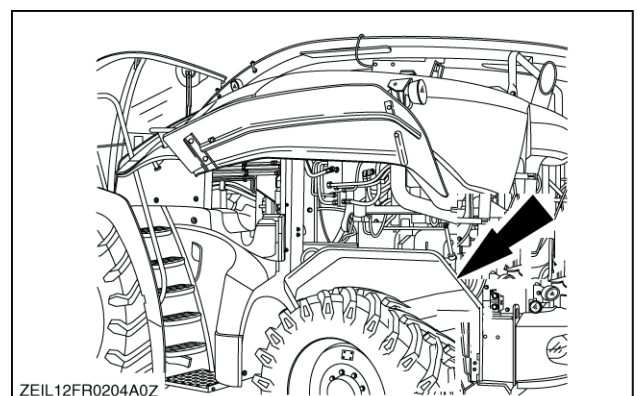
NOTE: The assistance of a second person is required to perform the below operation.

1. Raise the spout to an appropriate height.
2. Remove the left-hand and right-hand side shielding. Refer to **Side shields - Remove side shieldings (90.105)**.
3. Remove the rear shielding (3) as explained below:
 - A. Support the rear shielding (3). Use a suitable lifting device.
 - B. Disconnect the gas strut (4) from the rear shielding (3).
 - C. Remove the plate (6).
 - D. Remove the hardware (7).
 - E. Remove the rear shielding (3).



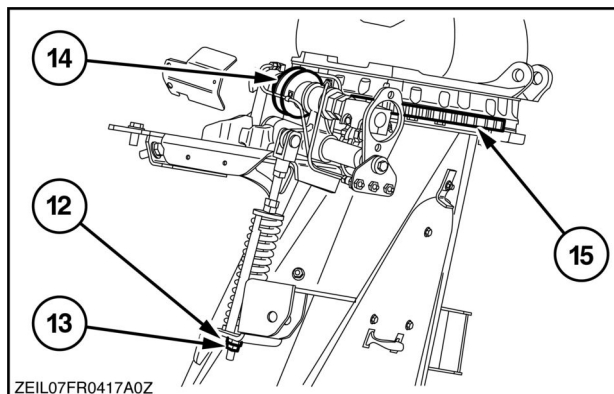
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4. On both sides, remove the indicated plate.



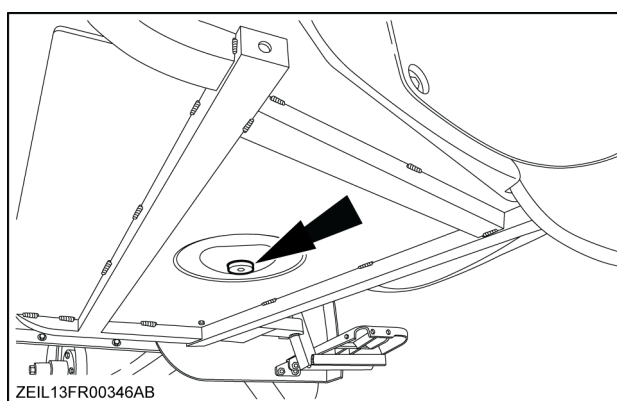
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5. For better access to the components, remove the steering wheels. Refer to **Rear wheel - Remove – Steering wheels (44.520)**.
6. In the service area, loosen the lock nut (13) and the nut (12) until the worm (14) is completely free of the worm wheel (15).
7. Manually move the spout to its extreme left or right position.



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8. On the right-hand side under the machine, remove the indicated plug. Drain the fuel from the fuel tank. Collect the fuel in a clean container.

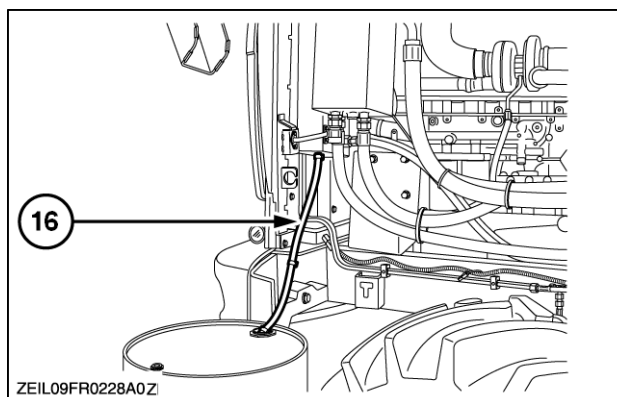


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NOTICE: The following operations require the removal of the hydraulic hoses, tubes and other hydraulic components. Once the hoses, tubes or the ports of the hydraulic components are removed, cover with protective covers to avoid the ingress of dust, contamination and other objects.

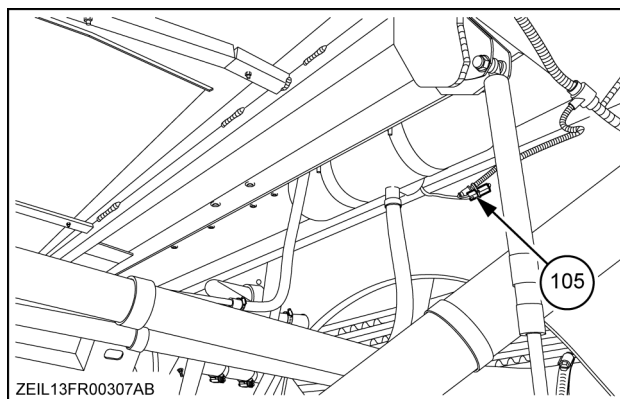
9. Drain the oil from the reservoir through the hose (16). Refer to the Operator's Manual **Oil filter - Replace (29.204)**.

NOTICE: Pay attention to cleanliness, as the hydraulic oil will be reused. Cover the oil container to prevent any ingress of contamination.



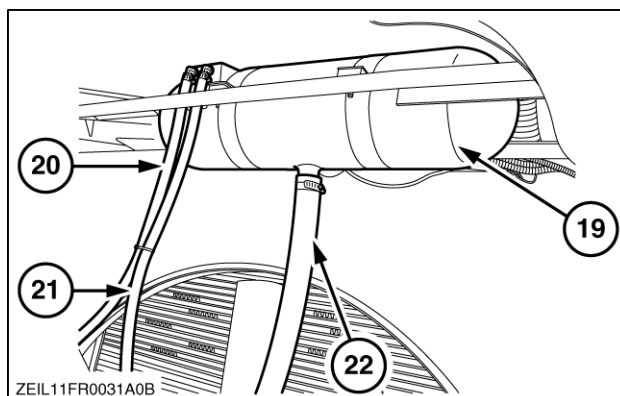
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10. Near the coolant tank, disconnect the connectors. Disconnect the coolant level sensor wire **(105)** attached at the top.



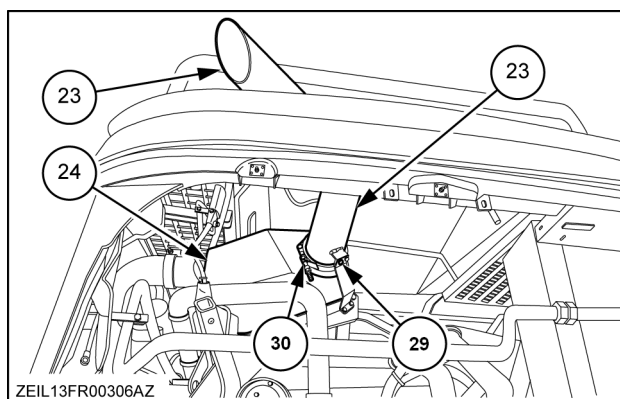
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11. Drain the coolant from the cooling system. Refer to the Operator's Manual **Engine cooling system - Replace (10.400)**.
12. Disconnect the hose **(20)**, **(21)** and **(22)** from the coolant tank **(19)**.
13. Remove the coolant tank **(19)**.



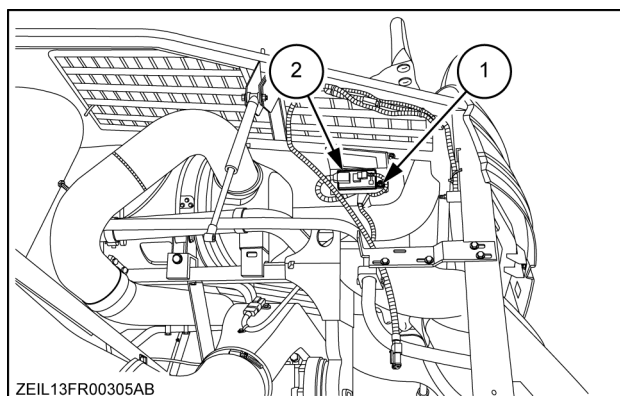
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14. Remove the hardware **(29)**. Loosen the clamp **(30)**.
15. Remove the exhaust tube **(23)** from the muffler **(24)**.



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



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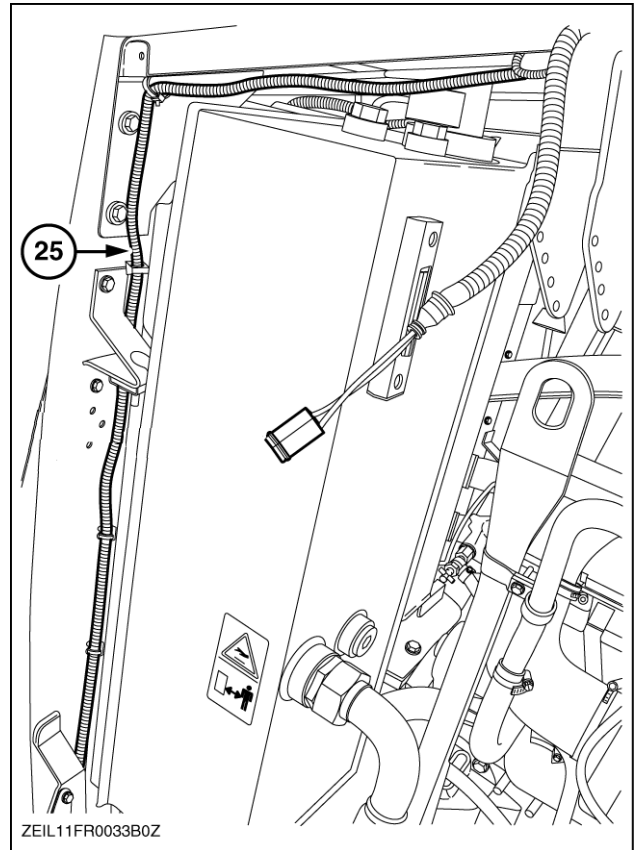
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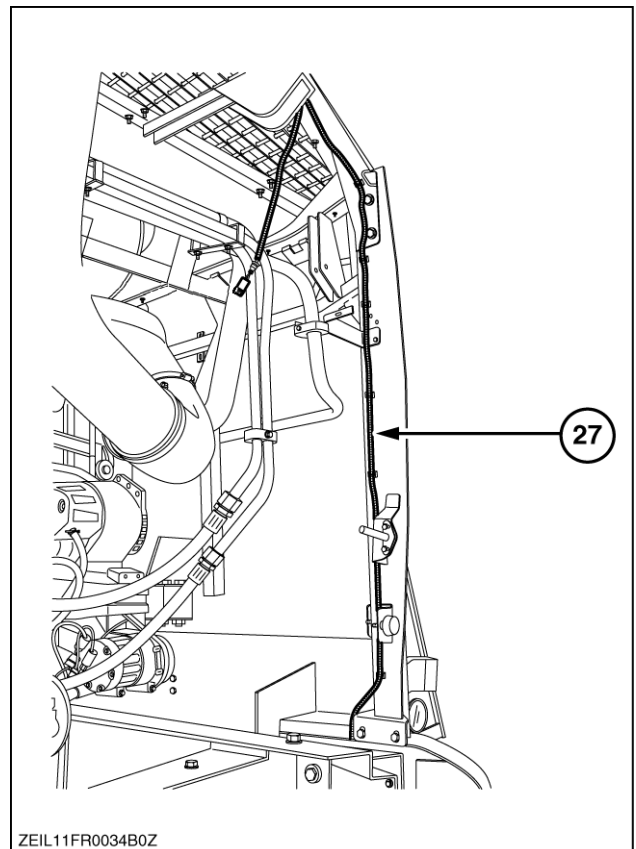
Thank you so much for reading

17. On the right-hand side, remove the wire harness (25) attached at the top and at the rear frame.



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18. On the left-hand side, remove the wire harness (27) attached at the top and the rear frame.



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