

SERVICE MANUAL

FR480 / FR550 / FR650 / FR780 Tier 4B (final)
FR850 Tier 2
Forage Harvester

Part number 47956032
1st edition English
February 2016





SERVICE MANUAL

FR480 Forage Cruiser Cursor 13, TIER 4B
FR550 Forage Cruiser Cursor 13, TIER 4B
FR650 Forage Cruiser Cursor 16, TIER 4B
FR780 Forage Cruiser Cursor 16, TIER 4B
FR850 Forage Cruiser Vector, TIER2

Link Product / Engine

Product	Market Product	Engine
FR480 Forage Cruiser Cursor 13, TIER 4B	North America	F3HFE613H*B007
FR550 Forage Cruiser Cursor 13, TIER 4B	North America	F3H FE613F*B007
FR650 Forage Cruiser Cursor 16, TIER 4B	North America	F3JFE613A*B005
FR780 Forage Cruiser Cursor 16, TIER 4B	North America	F3JFE613B*B006
FR850 Forage Cruiser Vector, TIER2	North America	FVAE2884X*B200

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

Hydrostatic drive	29
[29.100] Transmission and steering hydrostatic control	29.1
[29.218] Pump and motor components.....	29.2
[29.202] Hydrostatic transmission	29.3
Brakes and controls	33
[33.202] Hydraulic service brakes	33.1
[33.110] Parking brake or parking lock	33.2
Hydraulic systems	35
[35.000] Hydraulic systems.....	35.1
[35.102] Pump control valves.....	35.2
[35.106] Variable displacement pump	35.3
[35.204] Remote control valves	35.4
[35.300] Reservoir, cooler, and filters.....	35.5
[35.359] Main control valve.....	35.6
[35.350] Safety and main relief valves	35.7
[35.600] High flow hydraulics	35.8
[35.410] Header or attachment height system	35.9
[35.602] Header or attachment leveling system	35.10
[35.514] Upper feed roll gearbox system.....	35.11
[35.516] Cutterhead drive system	35.12
[35.530] Spout rotation circuit	35.13
[35.532] Spout raising system	35.14
[35.534] Spout deflector system.....	35.15
Steering	41
[41.101] Steering control	41.1
[41.200] Hydraulic control components.....	41.2
[41.206] Pump	41.3
[41.216] Cylinders	41.4

[41.432] Autoguidance steering	41.5
Wheels	44
[44.511] Front wheels.....	44.1
[44.520] Rear wheels	44.2
Cab climate control	50
[50.100] Heating	50.1
[50.200] Air conditioning.....	50.2
Electrical systems	55
[55.000] Electrical system	55.1
[55.100] Harnesses and connectors.....	55.2
[55.015] Engine control system.....	55.3
[55.010] Fuel injection system.....	55.4
[55.014] Engine intake and exhaust system.....	55.5
[55.012] Engine cooling system	55.6
[55.013] Engine oil system	55.7
[55.301] Alternator.....	55.8
[55.512] Cab controls.....	55.9
[55.640] Electronic modules	55.10
[55.610] Ground speed control	55.11
[55.019] Hydrostatic drive control system	55.12
[55.051] Cab Heating, Ventilation, and Air-Conditioning (HVAC) controls.....	55.13
[55.050] Heating, Ventilation, and Air-Conditioning (HVAC) control system.....	55.14
[55.421] Feeding control system	55.15
[55.820] Chopping and cutting control systems	55.16
[55.830] Rotary screen drive and cleaning	55.17
[55.680] Autopilot/Autoguidance	55.18
[55.450] Ejecting control system	55.19
[55.408] Warning indicators, alarms, and instruments	55.20

[55.DTC] FAULT CODES	55.21
Attachments/Headers	58
[58.900] Belt feeding	58.1
Product feeding	60
[60.103] Lower feed rolls	60.1
[60.107] Upper feed rolls	60.2
[60.155] Metal detector	60.3
Chopping	64
[64.100] Cutterhead	64.1
[64.106] Drum	64.2
[64.130] Drum gearbox	64.3
[64.140] Sharpening system	64.4
[64.150] Shearbar	64.5
[64.160] Crop processor	64.6
[64.170] Transition channel/concave and lever	64.7
Ejection	70
[70.120] Blower	70.1
[70.140] Spout	70.2
Platform, cab, bodywork, and decals	90
[90.105] Machine shields and guards	90.1
[90.150] Cab	90.2
[90.151] Cab interior	90.3



INTRODUCTION

Contents

INTRODUCTION

Basic instructions - How to use and navigate through this Manual (*)	3
Foreword - Important notice regarding equipment servicing (*)	10
Note to the Owner (*)	11
Safety rules (*)	12
Safety rules - Ecology and the environment (*)	13
Safety rules (*)	14
Personal safety (*)	17
Basic instructions - Shop and assembly (*)	18
Torque (*)	20
Torque - Standard torque data for hydraulic connections (*)	23
Basic instructions - Chain Wear Tables - Roller Chains (*)	30
Conversion factors (*)	32
General specification - System protection data (*)	33
Product identification (*)	36
Product identification (*)	37

(*) See content for specific models

Basic instructions - How to use and navigate through this Manual

FR480 Forage Cruiser	NA
FR550 Forage Cruiser	NA
FR650 Forage Cruiser	NA
FR780 Forage Cruiser	NA
FR850 Forage Cruiser	NA

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.

	PRODUCT				
	Tractors				
	Vehicles with working arms: backhoes, excavators, skid steers,				
	Combines, forage harvesters, balers,				
	Seeding, planting, floating, spraying equipment,				
	Mounted equipment and tools,				
SECTION					
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						

Section contents

Section	Number	Description
Maintenance	00	
Machine completion and equipment	05	
Engine	10	
Main gearbox and drive	14	
Clutch	18	
Transmission	21	
Four wheel drive system	23	
Front axle system	25	
Rear axle system	27	
Hydrostatic drive	29	
Implement power take-off	31	
Brakes and controls	33	
Hydraulic systems	35	This Section covers the central parts of the hydraulic system. The components that are dedicated to a specific function are listed in the Chapter where all the technical information for that function is included.
Pneumatic system	36	This Section covers the pneumatic system. The components that are dedicated to a specific function are listed in the Chapter where all the technical information for that function is included.
Hitches, drawbars and implement couplings	37	
Frames and ballasting	39	
Steering	41	
Wheels	44	
Steering clutches	46	
Tracks and track suspension	48	
Cab climate control	50	
Electrical systems	55	The Section covers the central parts of the electrical, electronic, and lighting systems. The components that are dedicated to a specific function are listed in the Chapter where all the technical information for that function is included.
Grape harvester shaking	56	
Attachments/headers	58	
Product feeding	60	
Metering system	61	
Pressing - Bale formation	62	
Chemical applicators	63	
Chopping	64	
Threshing	66	
Tying/Wrapping/Twisting	68	
Bale wagons	69	
Ejection	70	
Lubrication system	71	
Separation	72	
Residue handling	73	
Cleaning	74	
Soil preparation/Finishing	75	
Secondary cleaning / Destemmer	76	
Seeding	77	
Spraying	78	
Planting	79	
Crop storage / Unloading	80	
Front loader and bucket	82	

INTRODUCTION

Section	Number	Description
Telescopic single arm	83	
Booms, dippers and buckets	84	
Dozer blade and arm	86	
Accessories	88	
Tools	89	
Platform, cab, bodywork and decals	90	This Section covers all the main functions and systems related to the body of the machine, including the operators cab and the platform.

Chapters

Each Chapter is identified by a number e.g. Hydraulic Systems - Main check valve- 35.359. The first number is identical to the Section number i.e. Chapter 35.359 is inside Section 35, Hydraulic Systems. The second number is representative of the Chapter contained within the Section.

CONTENTS

The Chapter Contents lists all the technical data (specifications), functional data (how it works), service data (remove, install adjust, etc..) and diagnostic data (fault codes and troubleshooting) that have been written in that Chapter for that function or system on the machine.

Contents

HYDRAULIC SYSTEMS - 35
Main control valve - 359

FUNCTIONAL DATA

Main control valve - Sectional view (35.359 - C.10.A.30)

TECHNICAL DATA

Main control valve - General specifications (35.359 - D.40.A.10)

SERVICE

Main control valve - Remove (35.359 - F.10.A.10)

INDEX

The Chapter Index lists in alphabetical order all the types of information (called Information Units) that have been written in that Chapter for that function or system on the machine.

Information units and information search

Each chapter is composed of information units. Each information unit has a page reference within that Chapter. The information units provide a quick and easy way to find just the right piece of technical information you are looking for.

Example information unit Main control valve - Sectional View (35.359)

Information Unit SAP code	35	Hydraulic systems
SAP code classification	359	Main control valve

Page header and footer

The page header will contain the following references:

- Section and Chapter description

The page footer will contain the following references:

- Publication number for that Manual, Section or Chapter.
- Version reference for that publication.
- Publication date
- Section, chapter and page reference e.g.35.359 / 9

Foreword - Important notice regarding equipment servicing

FR480 Forage Cruiser	NA
FR550 Forage Cruiser	NA
FR650 Forage Cruiser	NA
FR780 Forage Cruiser	NA
FR850 Forage Cruiser	NA

All repair and maintenance work listed in this manual must be carried out only by qualified dealership personnel, strictly complying with the instructions given, and using, whenever possible, the special tools.

Anyone who performs repair and maintenance operations without complying with the procedures provided herein shall be responsible for any subsequent damages.

The manufacturer and all the organizations of its distribution chain, including - without limitation - national, regional, or local dealers, reject any responsibility for damages caused by parts and/or components not approved by the manufacturer, including those used for the servicing or repair of the product manufactured or marketed by the manufacturer. In any case, no warranty is given or attributed on the product manufactured or marketed by the manufacturer in case of damages caused by parts and/or components not approved by the manufacturer.

The manufacturer reserves the right to make improvements in design and changes in specifications at any time without notice and without incurring any obligation to install them on units previously sold. Specifications, descriptions, and illustrative material herein are as accurate as known at time of publication but are subject to change without notice.

In case of questions, refer to your NEW HOLLAND Sales and Service Networks.

Note to the Owner

FR480 Forage Cruiser	NA
FR550 Forage Cruiser	NA
FR650 Forage Cruiser	NA
FR780 Forage Cruiser	NA
FR850 Forage Cruiser	NA

Engine repair information:

The engine repair information is not contained within this manual.

For engine repair information, please refer to the respective Service Manual for the engine type used in your vehicle.

Fault Code Resolution (FCR) information:

For FCR information, please refer to the Electronic Service Tool (EST) or to the information given in the paper or electronic version of this manual.

Electronic Service Tool (EST) information:

The EST information and how to handle Control Modules (CM) (e.g.: resetting of the CM, etc.) is not contained within this manual.

For EST information, please refer to the Electronic Service Tool User's Guide.

Safety rules

FR480 Forage Cruiser	NA
FR550 Forage Cruiser	NA
FR650 Forage Cruiser	NA
FR780 Forage Cruiser	NA
FR850 Forage Cruiser	NA


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

FR480 Forage Cruiser	NA
FR550 Forage Cruiser	NA
FR650 Forage Cruiser	NA
FR780 Forage Cruiser	NA
FR850 Forage Cruiser	NA

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

**Thanks very much for your reading,
Want to get more information,
Please click here, Then get the complete
manual**

JustClickHere 

NOTE:

**If there is no response to click on the link above,
please download the PDF document first, and then
click on it.**

**Have any questions please write to me:
admin@servicemanualperfect.com**