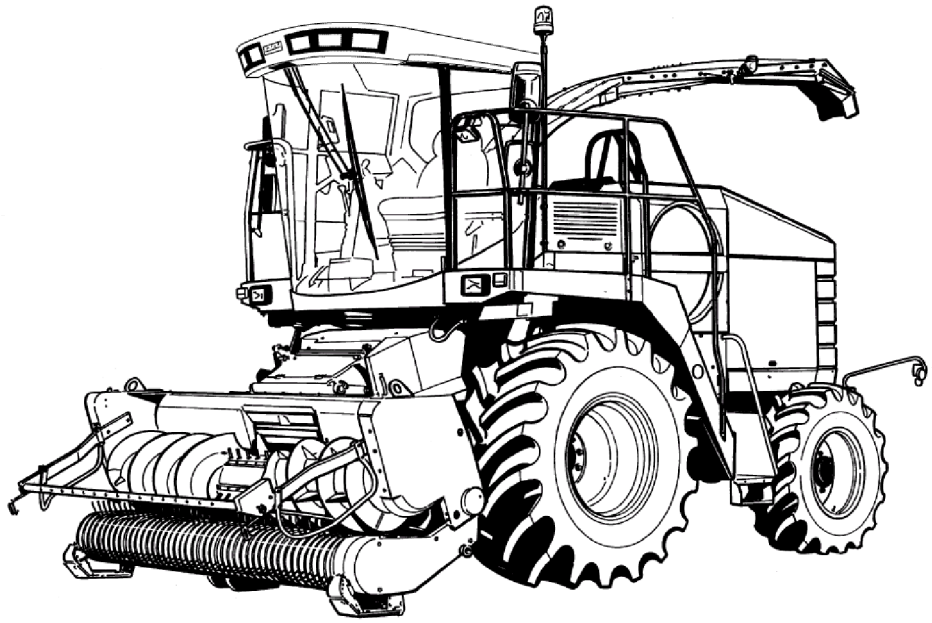
Forage Harvester
CHX320, CHX420, CHX520 and CHX620

Repair Manual

6-71020EN

CASE



CHX320-CHX420-CHX520-CHX620
FORAGE HARVESTERS
REPAIR MANUAL

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GENERAL INFORMATION

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INTRODUCTION

This manual is subdivided in sections marked by two-digit numbers, with independent page numbering within each section. For a quick reference, these sections have the same identification number and the same description of the relevant Flat Time Rate Manual.

The dealt matters and the information can be easily detected by index on the previous pages.

At the bottom of each page there is the manual print number and the relevant publication/up-dating date.

The information of this manual are up-dated at the date of the publication. As Case IH continuously improves its product range, some information could be not up-dated due to modifications of technical or commercial type, as well as for suiting the law regulations of the different countries.
In case of disagreement, refer to Case IH Sales and Service networks.

IMPORTANT INFORMATION

All repair and maintenance works listed in this manual must be carried out only by staff belonging to the Case IH Service network, strictly complying with the instructions given and using, whenever required, the special tools.

Anyone who carries out the above operations without complying with the prescriptions shall be responsible for the 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 due to the anomalous behaviour of parts and/or components not approved by the manufacturer himself, 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 due to an anomalous behaviour of parts and/or components not approved by the Manufacturer.

GENERAL INSTRUCTIONS

Shimming

For each adjustment operation, select adjusting shims and measure individually using a micrometer, then add up the recorded values. Do not rely on measuring the entire shimming set, which may be incorrect, or the rated value indicated on each shim.

Rotating shaft seals

For correct rotating shaft seal installation, proceed as follows:

- before assembly, allow the seal to soak in the oil it will be sealing for at least thirty minutes
- thoroughly clean the shaft and check that the working surface on the shaft is not damaged
- position the sealing lip facing the fluid; with hydrodynamic lips, take into consideration the shaft rotation direction and position the grooves so that they will deviate the fluid towards the inner side of the seal
- coat the sealing lip with a thin layer of lubricant (use oil rather than grease) and fill the gap between the sealing lip and the dust lip on double lip seals with grease
- insert the seal in its seat and press down using a flat punch, do not tap the seal with a hammer or mallet
- whilst inserting the seal, check that it is perpendicular to the seat; once settled, make sure that it makes contact with the thrust element, if required
- to prevent damaging the seal lip on the shaft, position a protective guard during installation operations

O-ring seals

Lubricate the O-RING seals before inserting them in the seats, this will prevent them from overturning and twisting, which would jeopardise sealing efficiency.

Sealing compounds

Apply one of the following sealing compounds on the mating surfaces marked with an X: RTV SILMATE, RHODORSIL CAF 1 or LOCTITE PLASTIC GASKET.
Before applying the sealing compound, prepare the surfaces as follows:

- remove any incrustations using a metal brush;
- thoroughly de-grease the surfaces using one of the following cleaning agents: trichlorethylene, petrol or a water and soda solution.

Bearings

When installing bearings it is advised to:

- heat the bearings to 80 to 90 ^{0}C before fitting on the shafts;
- allow the bearings to cool before installing them from the outside.

Cotter pins

When fitting split cotter pins, ensure that the pin notch is positioned in the direction of the force required to stress the pin.
Spiral cotter pins do not require special positioning.

Protecting the electronic / electrical systems during charging or welding

To avoid damage to the electronic/electrical systems, always observe the following:

1. Never make or break any of the charging circuit connections, including the battery connections, when the engine is running.

2. Never short any of the charging components to ground.

3. Always disconnect the ground cable from the battery before arc welding on the machine or on any attachment attached to the machine.

    - Position the welder ground clamp as close to the welding area as possible.

    - If welding in close proximity to a computer module, then the module should be removed.

    - Never allow welding cables to lay on, near or across any electrical wiring or electronic component while welding is in progress.

IMPORTANT: *If welding must be performed on the unit or the attachment (if it is attached), the battery ground cable must be disconnected from the battery. The electronic monitoring system and charging system will be damaged if this is not done.*

    Remove the battery ground cable. Reconnect the cable when welding is completed.

4. Always disconnect the negative cable from the battery when charging the battery with a battery charger.

⚠ WARNING ⚠

Batteries contain sulfuric acid. In case of contact with skin, flush the affected area with water for five minutes. Seek medical attention immediately. Avoid contact with the skin, eyes or clothing. Wear eye protection when working near batteries.

SPARE PARTS

Only genuine spare parts guarantee the same quality, duration and safety as original parts, as they are the same parts that are assembled during standard production.
Only Case IH genuine spare parts can offer this guarantee.
When ordering spare parts, always provide the following information:

- Machine model (commercial name) and serial number
- part number of the ordered part, which can be found in the ”Microfiches” or the ”Spare Parts Catalogue”, used for order processing

TOOLS

The tools that CASE IH suggests and illustrate in this manual have been:

- specifically researched and designed for use with Case IH machines
- essential for reliable repair operations
- accurately built and rigorously tested so as to offer efficient and long–lasting operation

By using these tools, Repair Personnel will benefit from:

- operating in optimal technical conditions
- obtaining the best results
- saving time and effort
- working in safe conditions

NOTE:

Wear limit values indicated for certain parts should be considered to be recommended, but not binding.
The terms ”front”, ”rear”, ”right-hand” and ”left-hand” (when referred to different parts) are determined from the rear, facing in the direction of travel of the machine during operation.

ABBREVIATIONS

Below some often used abreviations used in this manual:

AKS: Automatic Knife Sharpening

ASBA: Automatic Shear Bar Adjustment

CP: Crop Processor

CPU: Central Processing Unit

EST: Electronic Service Tool

LCD: Liquid Christal Display

MD: Metal Detector

SAFETY REGULATIONS

WARNING AND DANGER SYMBOL

This warning symbol points out important personal safety messages.
Carefully read the following safety regulations and observe advised precautions in order to avoid potential hazards and safeguard your health and safety.
In this manual the symbol is accompanied by the following key-words:

***WARNING** – Warnings concerning unsuitable repair operations that may jeopardise the safety of Repair personnel.*

***DANGER** – Specific warnings concerning potential hazards for operator safety or for other persons directly or indirectly involved.*

ACCIDENT PREVENTION

Most accidents or injuries that occur in workshops are the result of non–observance of simple and fundamental safety regulations. For this reason, IN MOST CASES THESE ACCIDENTS CAN BE AVOIDED by foreseeing possible causes and consequently acting with the necessary caution and care.

Accidents may occur with all types of machine, regardless of how well the machine in question was designed and built.

A careful and judicious service technician is the best guarantee against accidents.

Precise observance of the most basic safety rule is normally sufficient to avoid many serious accident

DANGER

Never carry out any cleaning, lubrication or maintenance operations when the engine is running.

SAFETY RULES

General guidelines

- Carefully follow specified repair and maintenance procedures.
- Do not wear rings, wristwatches, jewellery, unbuttoned or loose articles of clothing such as: ties, torn clothing, scarves, open jackets or shirts with open zips that may remain entangled in moving parts. It is advised to wear approved safety clothing, e.g.: non-slip footwear, gloves, safety goggles, helmets, etc.
- Do not carry out repair operations with someone sitting in the driver's seat, unless the person is a trained technician who is assisting with the operation in question.
- Do not operate the machine or use any of the implements from different positions, other than the driver's seat.
- Do not carry out operations on the machine with the engine running, unless specifically indicated.
- Stop the engine and check that the hydraulic circuits are pressure–free before removing caps, covers, valves, etc.
- All repair and maintenance operations must be carried out using extreme care and attention.
- Service steps and platforms used in the workshop or elsewhere should be built according to standard accident prevention regulations.
- Disconnect the batteries and label all controls to indicate that the machine is being serviced. Any parts that are to be raises must be locked in position.
- Do not check or fill fuel tanks, accumulator batteries, nor use starting liquid when smoking or near naked flames, as these fluids are inflammable.
- Brakes are inoperative when manually released for repair or maintenance purposes. Use blocks or similar devices to control the machine in these conditions.

- The fuel nozzle should always be in contact with the filling aperture. Maintain this position until filling operations are completed in order to avoid possible sparks caused by the accumulation of static electricity.

- Only use specified towing points for towing the machine. Connect parts carefully. Make sure that all pins and/or locks are secured in position before applying traction. Never remain near the towing bars, cables or chains that are operating under load.

- Transport machines that cannot be driven using a trailer or a low-loading platform trolley, if available.

- When loading or unloading the machine from the trailer (or other means of transport), select a flat area capable of sustaining the trailer or truck wheels. Firmly secure the machine to the truck or trailer and lock the wheels in the position used by the carrier.

- Electric heaters, battery-chargers and similar equipment must only be powered by auxiliary power supplies with efficient ground insulation to avoid electrical shock hazards.

- Always use suitable hoisting or lifting devices when raising or moving heavy parts.

- Take extra care if bystanders are present.

- Never pour gasoline or diesel oil into open, wide or low containers.

- Never use gasoline, diesel oil or other inflammable liquids as cleaning agents. Use non-inflammable, non toxic commercially available solvents.

- Wear safety goggles with side guards when cleaning parts with compressed air.

- Reduce the air pressure according to the local regulations in force..

- Do not run the engine in confined spaces without suitable ventilation.

- Do not smoke, use naked flames, or cause sparks in the area when fuel filling or handling highly inflammable liquids.

- Never use naked flames for lighting when working on the machine or checking for leaks.

- All movements must be carried out carefully when working under, on or near the machine. Wear protective equipment: helmets, goggles and special footwear.

- When carrying out checks with the engine running, request the assistance of an operator in the driver's seat. The operator must maintain visual contact with the service technician at all times.

- If operating outside the workshop, position the machine on a flat surface and lock in position. If working on a slope, lock the machine in position. Move to a flat area as soon as is safely possible.

- Damaged or bent chains or cables are unreliable. Do not use them for lifting or towing. Always use suitable protective gloves when handling chains or cables.

- Chains should always be safely secured. Make sure that the hitch-up point is capable of sustaining the load in question. Keep the area near the hitch-up point, chains or cables free of all bystanders.

- Maintenance and repair operations must be carried out in a CLEAN and DRY area. Eliminate any water or oil spillage immediately.

- Do not create piles of oil or grease-soaked rags as they represent a serious fire hazard. Always store rags in a closed metal container.
  Before engaging the machine, make sure that there are no persons within the machine or implement range of action.

- Empty your pockets of all objects that may fall accidentally unobserved into the machine inner compartments.

- In the presence of protruding metal parts, use protective goggles or goggles with side guards, helmets, special footwear and gloves.

- When welding, use protective safety devices: tinted safety goggles, helmets, special overalls, gloves and footwear. All persons present in the area where welding is taking place must wear tinted goggles. NEVER LOOK DIRECTLY AT THE WELDING ARC WITHOUT SUITABLE EYE PROTECTION.

- Metal cables tend to fray with repeated use. Always use suitable protective devices (gloves, goggles, etc.) when handling cables.

- Handle all parts carefully. Do not put your hands or fingers between moving parts. Wear suitable safety clothing – safety goggles, gloves and shoes.

Start-up

- Never run the engine in confined spaces that are not equipped with adequate ventilation for exhaust gas extraction.

- Never place the head, body, limbs, feet, hands or fingers near rotating and moving parts.

Engine

- Always loosen the radiator cap slowly before removing it to allow any remaining pressure in the system to be discharged. Filling up with coolant should only be carried out with the engine stopped or idling (if hot)..

- Never fill up with fuel when the engine is running, especially if hot, in order to prevent the outbreak of fire as a result of fuel spillage.

- Never check or adjust fan belt tension when the engine is running.
  Never adjust the fuel injection pump when the Forage Harvester is moving.

- Never lubricate the Forage Harvester when the engine is running.

Electrical sustem

- If it is necessary to use auxiliary batteries, remember that both ends of the cables must be connected as follows: (+) with (+) and (–) with (–). Avoid short–circuiting the terminals. GAS RELEASED FROM BATTERIES IS HIGHLY INFLAMMABLE. During charging, leave the battery compartment uncovered to improve ventilation. Never check the battery charge using ”jumpers” (metal objects placed on the terminals). Avoid sparks or flames near the battery zone. Do not smoke to prevent explosion hazards.

- Before servicing operations, check for fuel or current leaks.Eliminate any eventual leaks before proceeding with work.

- Never charge batteries in confined spaces.Make sure that there is adequate ventilation in order to prevent accidental explosion hazards as a result of the accumulation of gases released during charging operations.

- Always disconnect the batteries before performing any kind of servicing on the electrical system.

Hydraulic systems

- A liquid leaking from a tiny hole may be almost invisible but, at the same time, be powerful enough to penetrate the skin. Therefore,
  NEVER USE HANDS TO CHECK FOR LEAKS but use a piece of cardboard or wood for this purpose. If any liquid penetrates skin tissue, call for medical aid immediately. Failure to treat this condition with correct medical procedure may result in serious infection or dermatosis.

- In order to check the pressure in the system use suitable instruments.

Wheels and Tyres

- Make sure that the tyres are correctly inflated at the pressure specified by the manufacturer. Periodically check the rims and tyres for damage.
- Stand away from (at the side of) the tyre when checking inflation pressure.
- Do not use parts of recovered wheels as incorrect welding brazing or heating may weaken and eventually cause damage to the wheel.
- Never cut or weld a rim mounted with an inflated tyre.
- To remove the wheels, lock all wheels. After having raised the machine, position supports underneath, according to regulations in force.
- Deflate the tyre before removing any objects that may be jammed in the tyre tread.
- Never inflate tyres using inflammable gases, as this may result in explosions and injury to bystanders.

Removal and Re-fitting

- Lift and handle all heavy parts using suitable hoisting equipment. Make sure that parts are sustained by appropriate hooks and slings. Use the hoisting eyebolts for lifting operations. Extra care should be taken if persons are present near the load to be lifted.
- Handle all parts carefully. Do not put your hands or fingers between parts. Wear suitable safety clothing – safety goggles, gloves and shoes.
- Avoid twisting chains or metal cables. Always wear safety gloves when handling cables or chains.

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