



Maintenance and Use Manual

MOD. FF DITCH CLEANER

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Machine use manual, according to Enclosure V Directive 89/392/EEC and following amendments
– do not destroy – do not modify – integrate only with additional issues – JANUARY 1999

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DITCH CLEANER

The machine that is the subject of this manual complies with:

European Directives		
2006/42/EC		Machine directive
Harmonised standards		
UNI EN 4254-1	2009	Agricultural machinery - Safety - Part 1: General requirements
Technical specifications		
ISO 11684	1995	Tractors, machinery for agriculture and forestry, powered lawn and garden equipment - Safety signs and hazard pictorials - General principles
UNI EN ISO 3767-2	1998	Tractors, machinery for agriculture and forestry, powered lawn and garden equipment - Symbols for operator controls and other displays - Part 2: Symbols for agricultural tractors and machinery

FERRI[®]

1 GENERAL INFORMATION

1.1 This operation and maintenance manual is intended for the professional user. It is mandatory to follow these instructions in order to prevent events which could endanger the operator's and other people's safety, apart from the correct functioning of the machine. In case of doubt, do not experiment, call "FERRI" after-sales service instead, or the specialized "FERRI" dealer.

1.2 *Identifying the machine*

Each machine is fitted with an aluminium identification plate; both the data necessary to identify the model, the serial and part number to order spare parts or after-sales service, are stamped on the plate (see FIG. 1).

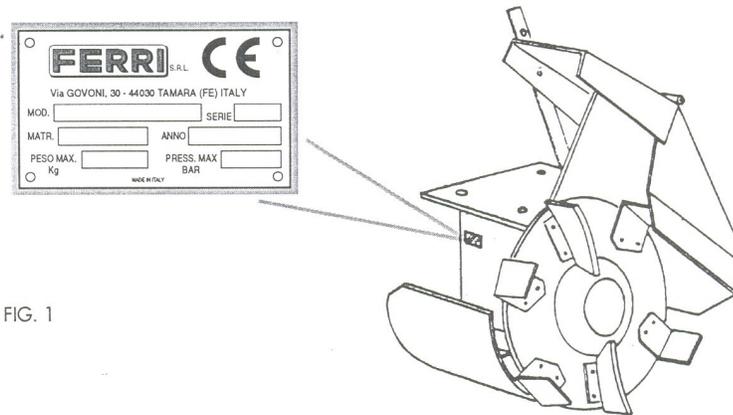


FIG. 1

1.3 It is strongly recommended to use genuine "FERRI" spare parts to avoid altering the technical features of the machine. "FERRI" is not responsible for any damage or injuries to persons or things due to unauthorized modifications.

WARNING:

The FF ditch cleaners are designed and made to dimensions that are suitable for mounting on FERRI arms.

The functionality and reliability of the equipment is therefore subject to observance of the hydraulic and mechanical specifications of the FERRI products.

The installation on machines other than FERRI machines must first be approved by the FERRI Technical Department that will examine the intended installation and supply any eventual advice considered appropriate and issue its relative approval.

2 TECHNICAL FEATURES

2.1 *General description of the machine*

The “Ferri” ditch cleaner, hereinafter defined as “machine”, is to be used exclusively for cleaning ditches infested with reeds, shrubs and debris (proper use).

Any other use is considered improper and the manufacturer disclaims all responsibility for any consequential injuries to person or things or damage to the machine.

“Proper use” also refers to the safety and maintenance rules provided for by the manufacturer.

The machine is fitted to the end of an articulated arm (fitted to a tractor, a triad, an articulated shovel and so on, from now on called “tractor”); width of cut is regulated by a hydraulic ram fixed on the arm.

The machine is supplied with all safety accident prevention requirements.

TECHNICAL NAMES (FIG. 2).

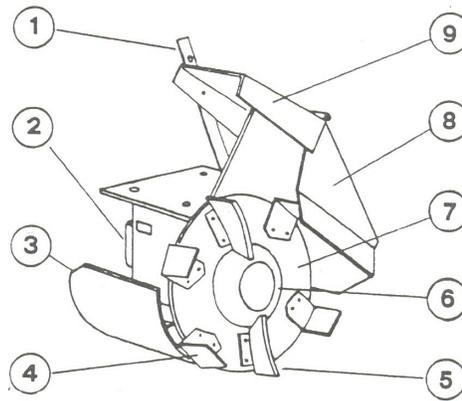
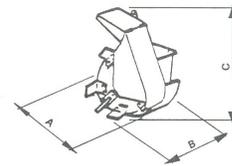


FIG. 2

1 – Adjustment
2 – Hydraulic motor
3 – Adjustable skid
4 – Flail
5 – Paddle

6 - Guard
7 – Rotor
8 - Frame
9- Revolving deflector

2.2 **Technical specifications** (Tab. 1)



TAB. 1

DITCH CLEANER		Mod	FF45	FF60
Max. absorbed power	HP (KW)		45 (33)	55 (40)
Weight	kg (lbs)		90 (198)	140 (308)
Maximum pressure	Bar (psi)		200 (2900)	
Max. rotor speed	rpm		625	
Filtering			30 micron	
Max. oil flow	l/min (gpm)		▲ 75 (20)	● 100 (26)
			● 100 (26)	■ 125 (33)
No. flails	n.		2	4
No. paddles	n.		2	2
Diameter of cut	cm (in)		45 (18)	60 (23)
Height A	cm (in)		49 (19)	65 (25)
Length B	cm (in)		60 (23)	63 (24)
Width C	cm (in)		80 (31)	95 (37)

- ▲ with 125 cm³ hydraulic motor
- with 160 cm³ hydraulic motor
- with 200 cm³ hydraulic motor

For stability reasons, the required weight of the tractor to which the machine is fitted varies according to the arm length, and will have to be as follows:

- up to 3.0 m arm	1400	kg
- up to 4.5 m arm	2100	kg
- up to 6.0 m arm	3000	kg
- up to 8.0 m arm	4500	kg

2.3 **Noise**

The sound level of this machine, as measured at the operator's ear, ranges from 75.1 to 78 dB when the cab is closed, and from 79.7 to 84.1 dB when the rear window is open. The acoustic power level is 103.1 LWA.

When the sound level perceivable at the operator's ear ranges from 85 to 90 dB, the use of ear protectors is recommended.

N.B. – Readings taken with ditch cleaner operating while idle

3 SAFETY RULES



3.1 **General safety rules:**

- It is mandatory to read and follow the instructions for the use and maintenance manual before carrying out any operation or move with the machine. **Reading it during the operation is too late.** Improper use or an incorrect move may seriously damage things and people.
- Both the operator and the maintenance fitter must know the machine well, especially regarding dangers resulting from improper use or incorrect repairs.
- Before starting, checks on tractor and ditch cleaner must be carried out as regards: functionality; road safety; accident prevention rules.
- Even during correct machine use, stones or other objects can be flung for large distances. There should therefore be no one in the range of 50 m. If necessary, cordon off the working area. Be very careful while operating on roads or near buildings
- Use tractors with cabs.
- The condition of flails and of all guards must be checked before beginning the daily work; they must be replaced if damaged or missing.
- During checks or repairs, make sure nobody could start the machine by mistake.
- Never wear loose or fluttering clothes.
- Never carry passengers on the tractor.
- Never work, walk or stand under the lifted arm.
- Never use the arm to raise people or objects.
- Never carry people on the ditch cleaner.
- Never engage the rotor rotation control while the tractor is turned off.
- Never go near to the machine until the flails have come to a complete halt.
- Before starting, check the surrounding area for the likely presence of people and/or animals.
- Before leaving the tractor with the ditch cleaner fitted, proceed as follows:
 - 1 - Inhibit all functions through the machine controls.
 - 2 - Disengage the rotor rotation control and block it.
 - 3 - Apply the hand brake and, if the ground is steeply sloping, block the tractor wheels.
 - 4 - Take the starting key out.
- Immediately replace any safety sign or missing or damaged decal.
- Never underestimate or ignore the safety rules.

3.2 **Safety rules concerning road traffic**

- Disconnect the power takeoff.
- In transport, reduce speed, especially on bumpy roads. The very weight of the machine alters the stability and may render driving difficult and damage the machine itself.
- When driving on public roads, observe all road regulations.
- Never transport the machine with the flails moving, even for short distances.
- Protect the rotor rotation control lever from accidental knocks.
- Lock the arm and the ditch cleaner with the appropriate chain.

3.3 **Safety rules during use**

- Always work with good visibility.
- While operating, be very careful not to come into contact with hard objects, such as drains, drainage shafts, etc. This could cause the flails to break and which would then be flung at an extremely high speed.
- Should iron threads, string, chains or other objects become entangled with the flails, stop immediately in order to avoid causing damage or potentially dangerous situations. Stop the ditch cleaner rotation, turn-off the tractor, and take out the ignition key.

- After having put on safety gloves, repair the rotor by using pliers or shears.
- Do not use the machine when there is strong vibration, as this would cause breakages and serious damage. Find the cause of the vibration and eliminate it.
- Do not operate with the arm in extension if the tractor is on a sloping ground.
- Before beginning operation, ensure that no one is located in the 50 m area of the material flinging range.

3.4 ***Safety rules concerning the hydraulic system***

- Stop immediately in case of oil leaks.

IMPORTANT: do not look for oil leaks with bare hands, but always with the aid of a cloth. Oil under strong pressure may seep into the skin causing serious infections. In this case contact a doctor immediately.

- Periodically check the flexible pipes; if they are worn or damaged they must be replaced with others of the same specification.
- Before working on the hydraulic system, lower the ditch cleaner, exhaust all pressure and stop the tractor.
- Used oils and greases must be stored and disposed according to antipollution rules.

3.5 **Description and location of safety decals** (FIG. 3)

Carefully follow the instructions given on the decals.

- 1 - Warning of danger through lack of knowledge of all the functions of the machine and the resulting risks. Read the use and maintenance manual before operating the machine.
- 2 - Danger sign; it shows the risk of flying stones or other objects and makes it mandatory to keep out of the danger zone.
- 3 - Danger sign of rotating flails. Do not enter into their operating range with hands or feet until the flails have come to a complete halt

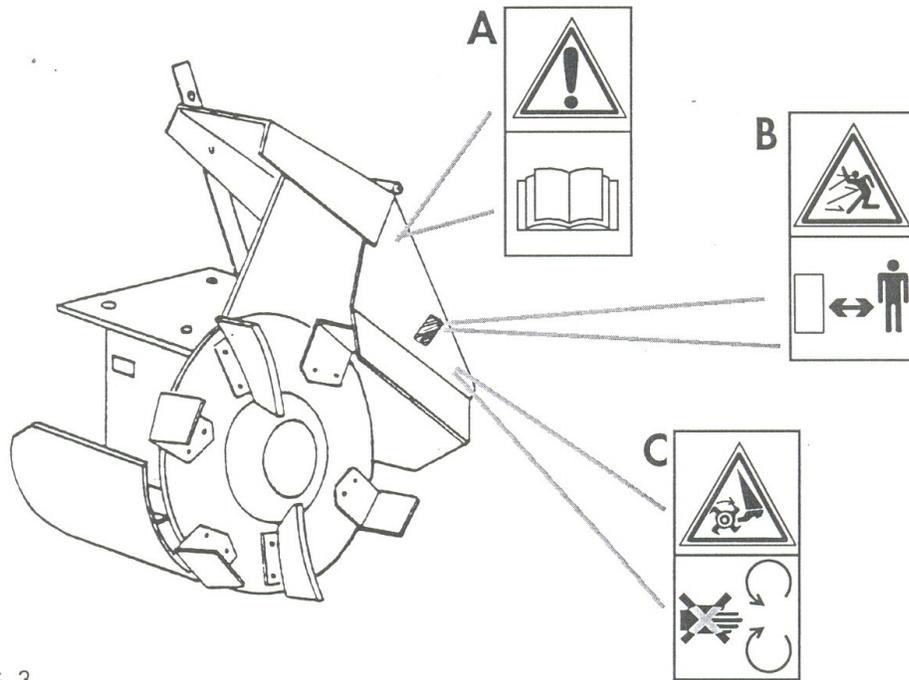
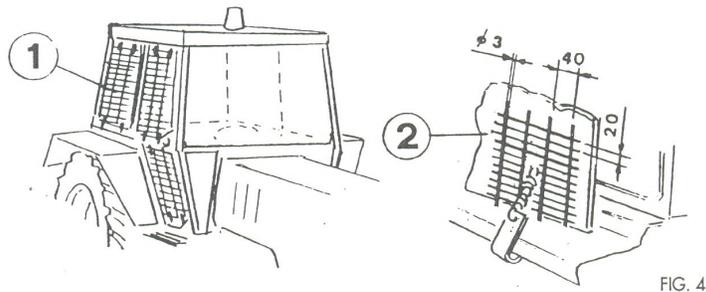


FIG. 3

3.6 **Driver protection**

- For protecting the machine operator from the eventual flinging of stones or other objects, it is compulsory to mount protective gratings (1) on the operating side of the cabin in order to prevent the above mentioned objects from hitting the cabin glass, thus breaking it and causing injuries to the machine operator. (FIG. 4)



- It is recommended to fit 5 mm sheets of polycarbonate (2) between the grills (1) and the glass. They will prevent small fragments from hitting the glass of the cab. (FIG. 4)
- Attach the machine only to tractors with type approved anti-roll over driving cab (ROPS).
- The operator and all personnel must wear a safety helmet and eye protectors as protection against possible flying material.

3.7 **Danger**

- Pay special attention when working under or near electric lines, an electric arc can be released. (FIG. 5)

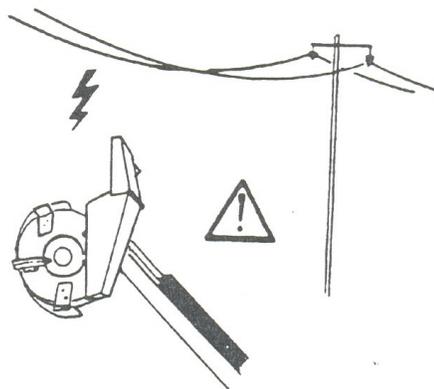


FIG. 5

4 INSTRUCTIONS FOR INSTALLATION AND HANDLING

4.1 *Lifting and unloading*

To handle the ditch cleaner, use a hoist with lifting capability suitable to the weight of the machine (see Technical Features) and with proper chains and type approved hooks to be fixed in the marked points, as shown in FIG. 6.

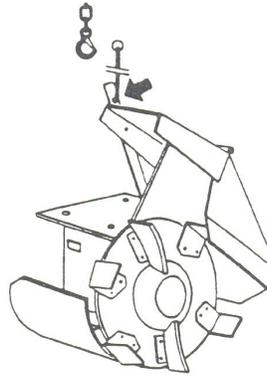


FIG. 6

4.2 *Fitting the ditch cleaner to the arm* (FIG. 7)

- Raise the ditch cleaner with the aid of a lift and place it near the end of the arm.
- Lower the arm (1) so that the tie plates correspond (2)
- Secure the ditch cleaner with the 4 screws M 16 (3)
- Stop the tractor and take the starting key out
- Connect the flexible hydraulic motor delivery and discharge pipes, by matching up the marks of the same colour in order to avoid it rotating in the wrong direction
- On this occasion, check that all guards are fitted and in good condition.

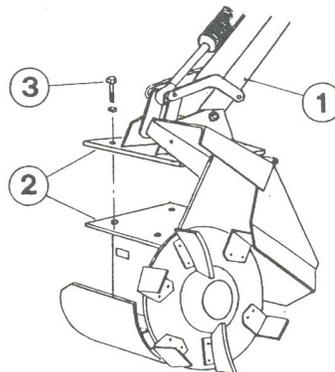


FIG. 7

5 ADJUSTMENT AND SETTING UP

- 5.1 The cutting height can be adjusted by moving skid A (FIG. 8) according to the thickness of the material to be removed and to the depth of removal.

IMPORTANT: Skid A must never be positioned higher than the flails.

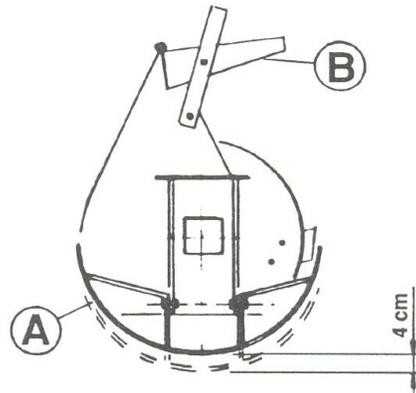


FIG. 8

For safety reasons, never operate without protection B.

- 5.2 The working speed should be chosen according to the type of material to be cut and to the depth of removal.
The ideal running speed of the tractor is between 0,5-1 km per hour inclusive.

6 USE AND OPERATING RULES

6.1 Controls

The ditch cleaner control levers must be fitted in the cab, in a comfortable position for the driver to use. They must be firmly attached.

All control levers must be provided with guards as protection against accidental blows.

6.2 Starting

Before starting:

- Check there is nobody around.
- Check that all guards are in good condition.
- Ensure that the rotor rotation control lever is in neutral position

Start the tractor and let the oil circulate for some minutes before operating any control lever.

- Operate the control levers of the arms, to verify their correct functioning and to get to know them.
- Place the ditch cleaner in a safe position, and slowly move to the working area

6.3 Working mode

- Check that the deflector (B) is in working order
- Engage the rotor rotation control
- Progressively increase the number of tractor revolutions. After a few seconds the ditch cleaner will have established its speed and will be ready to start work.
- Position the ditch cleaner as shown in figure 9 and move forwards at a very low speed (about 0.5 km/h) whilst working.

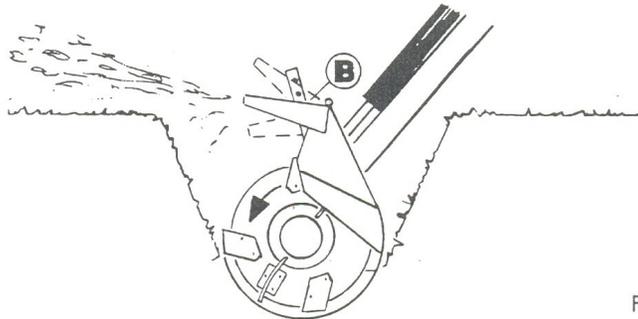


FIG. 9

- Check that the material outlet is adjusted at the correct distance and, if necessary, adjust the deflector B after switching off the tractor and removing the key.
- Avoid moving with the tractor on paths with holes or stones in order to prevent strong oscillations at the end of the arm on which the ditch cleaner is assembled, which cause uneven cutting.

For improved operation of the machine and an optimal result, we recommend carrying out the job when there is about 5 cm of water in the ditch.

Follow the safety regulations quoted in points 3.1 – 3.2 – 3.3 of this manual.

6.4 **Stopping**

Before stopping the tractor:

- Disengage the rotor rotation control.

WARNING: Even when the control has been disengaged, the flails will continue to turn for a few seconds.

- Close the arm and lower the ditch cleaner to the ground
- Stop the tractor, take the starting key out and apply the hand brake; if the ground is sloping, block the tractor wheels.

6.5 **Transport position**

For road transport, it is mandatory to:

- Disengage the rotor rotation control and insert the lever safety block and relative protection against accidental knocks.
- Close the arm. Secure the arm and the ditch cleaner with the appropriate chain, to prevent movement.
- Fit the necessary warning signs (to the tractor, triad, excavator and so on)
- During transport reduce speed especially on bumpy roads. The weight of the ditch cleaner may render driving difficult and damage the machine itself.

7 **MACHINE MAINTENANCE**

- All maintenance, cleaning and repair operations must be carried out with the ditch cleaner control lever disconnected, motor off and starting key out.
- Every 8 hours of operation, regularly:
- Tighten bolts and nuts; pay special attention to the screws fixing the ditch cleaner to the arm (3) FIG. 7 and to those fixing the flails
- Check wear and condition of flails
- Check the safety guards
- Visually check the frame and arms to detect possible damage caused by earlier work

8 TROUBLE SHOOTING CHART

TROUBLES	CAUSES	REMEDIES
Irregular cutting	<ul style="list-style-type: none">• Excessive running speed.• Heavy arm oscillation.	<ul style="list-style-type: none">• Reduce speed.• Look out for subsidence or holes in the road.
Machine noise	<ul style="list-style-type: none">• Loose bolts	<ul style="list-style-type: none">• Tighten bolts
Vibration	<ul style="list-style-type: none">• Broken or worn flails• Worn rotor disk bearings	<ul style="list-style-type: none">• Replace• Have them replaced in authorized workshops
Rotor speed slows down	<ul style="list-style-type: none">• Hydraulic system loses pressure	<ul style="list-style-type: none">• Have pump and hydraulic motor checked in authorized workshop
Hydraulic oil overheating (over 80°C)	<ul style="list-style-type: none">• Hydraulic system needs to be checked	<ul style="list-style-type: none">• Have it checked in authorized workshop

9 REPLACING PARTS

Before carrying out any work, it is mandatory to:

- Put the machine so that the maintenance fitter can work in a correct position
- Stop the tractor and take the starting key out
- Wear working gloves

9.1 *Flail replacement* (FIG. 10)

Unscrew the flail (2) fixing screws (1) and extract them.

Clean the rotor bearing surface (3) for ensuring good coupling.

Mount the new flails and fix them firmly.

WARNING: in order to guarantee rotor balance, also replace the diametrically opposite flail (4).

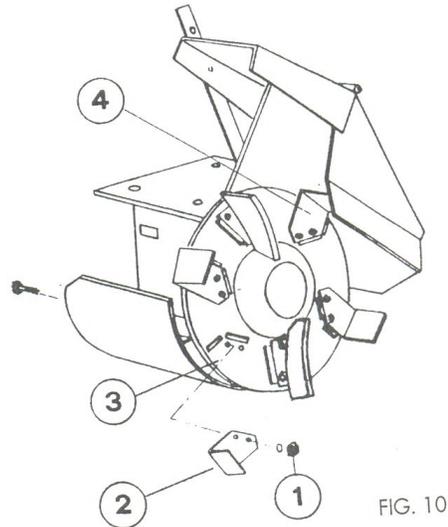


FIG. 10

9.2 *Paddle replacement*

Unscrew the paddle (2) fixing screws (1) and extract them.

Clean the rotor bearing surface (3) for ensuring good coupling.

Mount the new paddles and fix them firmly.

WARNING: in order to guarantee rotor balance, also replace the diametrically opposite flail (4).

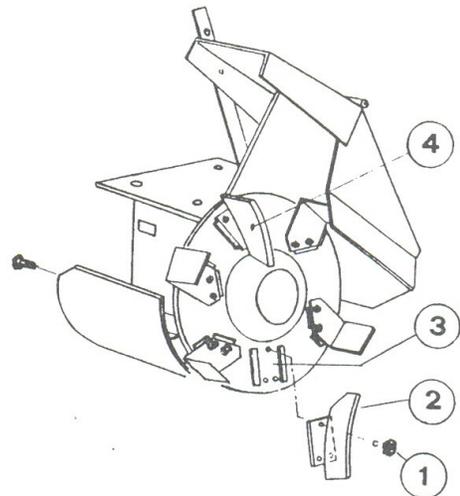


FIG. 11

9.3 ***Pipe replacement***

- Before working on the hydraulic system, exhaust all pressure, working with the motor stopped and using all control levers.
- Pay particular attention to cleanliness as dirt and dust can cause a great deal of damage to the hydraulic system.
- Replace damaged pipes with original spare parts or others of the same type and size, paying particular attention, whilst fixing, not to let them get kinked and to check the position of the pipe during the complete movement of the arm.

IMPORTANT - More complex operations must be done in authorized workshops

10 **SCRAPPING, SEPARATING THE MATERIALS AND ELIMINATION**

If the machine has been put out of commission, the parts that are likely to cause any danger must be rendered harmless.

The materials that make up the machine that must be separated are:

- steel
- mineral oil
- rubber
- plastic

All the above operations and final elimination must always been carried out respecting the relevant legal provisions in force.