

RAIL DRILLING MACHINE



OPERATION AND MAINTENANCE MANUAL

M- e-TFR-03/25



COMPANY WITH CERTIFIED QUALITY CONTROL SYSTEM



OPERATION AND MAINTENANCE MANUAL

Dear Customer,

we would like to take this opportunity to thank you for choosing an FCS srl product. We are pleased to supply you this manual to allow you to obtain optimal use of our product.

We invite you to read carefully the recommendations that follow and provide this manual to the personnel that will deal with the operation and the maintenance of the machine.

FCS srl. Is at your beck and call for all the clarification you will need, both in the initial stage and during the use of the machine.

In case of extraordinary and ordinary repairs, FCS srl provides its personnel to give you all the services and spare parts you will need.

This document contains all the necessary information to start using the machine, according to safety guidelines and for maintenance of the machine.

We suggest to respect the instruction written here, and to store it in an accessible place for future reference.

We suggest to contact FCS srl in case of spare parts, advice in choosing particular equipment and for all future eventualities.

We suggest the machine's owner to fill the lines below as they are essential data to request services and spare parts.

Machine's model:

Machine's serial number:

Engine serial number:

Year of construction:.....

Date of purchase:.....

Manual Code: M-e-TFR-03/25

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Author last revision: FCS

Translated by: FCS

Original drafting of the manual in Italian

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OPERATION AND MAINTENANCE MANUAL

1 PREFACE

1.1 MANUAL'S AIM

This manual is an integral part of the machine and is aimed to give all the necessary information for:

- The raise awareness of the operators for safety issues.
- Machine's handling, packed and unpacked in safety conditions;
- Correct installation of the machine;
- The depth knowledge of its work and of its limits;
- Its correct use in safety conditions;
- To do maintenance request interventions, in a correct and safety way;
- To break up the machine in safety conditions and according to guidelines for workers and environmental protection.

The responsible of the staff department, when this machine will be installed, according to guidelines, having read carefully this manual and have to make the operators and the maintenance personnel read it for the parts that are up to them, to conductors and maintenance personnel in charge, for the parts that interest them.

The time spent doing this will be rewarded by the correct operation of the machine and by its safe use.

This document presumes that, in the establishment in which the machine is designed for, are applied the safety and hygiene of the work guidelines.

The instructions, the pictures and the documents that are in this manual are confidential and must not be reproduced in any way, both in full and in part.

The customer has also the responsibility to be sure that, if this document will be modified by the author, only the update versions are present in the point in which the machine is used.

NOTE: It is forbidden to reproduce or translate in full or in part this manual without the authorization written by FCS srl.

1.2 HOW TO READ THE MANUAL

This manual is divided in chapters, each one is referred to a specific operator (installation personnel, conductor and maintenance personal), for which are be defined the necessary qualifications to operate on the machine in a safe manner.

The sequence of the chapters corresponds to the machine's life time logic.

To ease the immediate understanding of the text, we use terms, abbreviations and pictograms, which meaning is indicated at paragraph 1.6.

The manual has a cover, an index and a series of chapters (sections). In the initial page there are machines and model's identification data, and eventually the serial number, the revision of the manual and a picture/design of the described machine, to ease the reader to identify the machine and its manual.

UNIT OF MEASUREMENT

The unit of measurement are those provided in the International System (IS).

1.3 RETENTION OF THE MANUAL

The manual has to be kept in safe and must be with the machine in each transfer of property that it would have during its life.

The storage of the manual should be carried out with care, with clean hands and without putting it on dirty surface. You must not remove or modify any part. The manual must be filed in an environment without damp and heat and near to the machine. The author, under user's request, can give further copies of the manual.

1.4 MANUAL UPDATE METHOD

The author has the right to modify the project of the machine and improve it without communicating it to customers, and without updating the manual already given to the user.

In addition, in case of modifications in the machine installed, according with the author and that need the modification of one or more chapters of the manual, it will be up to the constructor to send manual's owner the chapters that have to be modified, with its new model of revision.

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The user, according to the indications that are in the upgrade document, has to substitute in all the copies the old chapters, the initial page and the index with those of the new level of revision.

The manufacturer is responsible of the descriptions in the Italian version; some translations couldn't be verified at all, so if there is an inconsistency, you have to make reference to the Italian version and eventually call up our counting house that will do the appropriate modification.

1.5 ADRESSEE

This manual is for the install personnel, the operator and the trained personnel for the machine's maintenance.

EXPOSED PERSON

Every person who is, completely or in part, in a dangerous area.

OPERATOR

The officer that has to install, operate, adjust, clean, repair and move a machine and has to do its maintenance.

TRAINED PERSONNEL – TRAINED OPERATOR

Who had attended a training course, a specialisation course, etc., and are experienced in installation, operation and maintenance and machine's transport.

Addressee's qualification (see paragraph 1.6)

The machine is intended for industrial use, so its use could be entrusted to qualified personnel, in particular:

- Be of age;
- Physically and psychically able to do work that is particularly technical difficult;
- Adequately trained about the use and about machine's maintenance;
- Been judged able by the employer to execute the entrusted task;
- Able to understand and interpret the manual of the operator and the safety guidelines;
- Knowledge of the emergency procedures and their accomplishment;
- Able to put in action the specific type of equipment;
- Are confident with the specific guidelines;
- Have understood the operating procedures defined by the manufacturer of the machine.

1.6 GLOSSARY AND PICTOGRAMS

In this paragraph are listed in non-common terms or with a different from common meaning.

Here follows the abbreviations that are used and the meanings of the pictograms to indicate the qualification of the operator and the machine's status, its use allows to, rapidly and univocally, give necessary information for the correct use of the machine in safety conditions.

GLOSSARY (All. I p. 1.1.1 Dir. 2006/42/CE)

DANGER

A likely source personnel injury or injury to other workers;

DANGER AREA

Every area inside and/or near to a machine where the presence of a person is a risk for safety and health;

EXPOSED PERSON

Every person that is totally or in part in a danger area;

OPERATOR

People entrusted to install, operate, adjust, clean, repair and move the machine and do the maintenance;

RISK

Combination of probability and seriousness of an injury that could arise in a dangerous situation;

SHELTER

Machine's element that is specifically used to guarantee the protection throughout a material crash barrier;

SECURITY DEVICE

Device (different from a shelter) that reduces the risk, alone or associated with a crash barrier;

EXPECTED USE

Machine's use according to information given in the manual;

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INCORRECT USE

A machine's use, different from that given in the manual.

OTHER DEFINITIONS

PERSONEL - MACHINE INTERACTION

Any situation in which the operator interacts with the machine in any operative stage in any moment of its life;

OPERATOR QUALIFICATION

Minimum level of ability that the operator has to have to execute the described operation;

NUMBER OF OPERATORS

Number of operators adequate to execute in an optimal way the described operation and results from a careful analysis made by the author, so a use made by a different number of operators could obstacle the expected result or could endanger personnel involved;

MACHINE'S STATUS

Machine's status involves operation modalities, for example automatic gear, maintained action control (jog), stop, etc., the conditions of Securities present in the machine as protections included, except protections, pressed emergency stop, type of thermal insulation etc.

RESIDUAL RISK:

Risk that remains despite the protective measures built into the machine.

SECURITY COMPONENT PART

Component part:

- Designed for execute a security function;
- Its break down and/or malfunctioning, endanger people (ex: lifting equipment; fixed protector; mobile, adjustable, etc, electronic and electric device, optical pneumatic, hydraulic, that inter a protector, etc.).

PICTOGRAMS

Descriptions anticipated by this symbol have: very important information/prescription, in particularly about safety. The failed respect could carry:

- Safety dangers for operators;
- Loss of contractual warranty;
- Discharge of constructor's duty.

Its functions are to give relevance to particular information as:



DANGER

It refers to dangers dealing with the described activity. When there is "DANGER" we refer to activities that could occur while using the machine and could endanger people.



ATTENTION

It refers to dangers dealing with the described activity. When there is "ATTENTION" we refer to activities that could occur while using the machine and could endanger the machine.



WARNING

We refer to integrations or suggestions for a correct use of the machine and to illustrate basic characteristics.

SECURITY'S PICTOGRAMS

- Pictograms inside a triangle indicate DANGER.
- Pictograms inside a circle impose a PROHIBITION/OBLIGATION.

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Pictograms	Description
	Danger electric tension.
	Arms crushing.
	Hitching on.
	Dragging.
	Generic danger.
	No entry for not authorized personnel.
	Don't remove security devices.
	Don't clean, oil, grease, repair or adjust working parts by hand.
	Don't execute works before remove tension.
	Obligatory protection gloves.
	Obligatory safety footwear.
	Obligatory safety helmet.

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UNIFIED SYMBOLS ON THE MACHINE

Unified symbols that follow indicate danger operation or situations that could occur while using the machine.



If the decals (illustrated above) are not legible, you have to substitute them with new ones.

ATTENTION

This symbol indicates that you have to consult the manual.



This symbol is applied near grip devices used for lifting.



2 GENERAL INFORMATION

2.1 MANUFACTURES IDENTIFICATION DATA

MANUFACTURER:

FCS srl

REGISTERED OFFICE – ADDRESS:

Via Enzo Ferrari, 30 - 45038 Polesella (RO) - Italy

AFTER-SALE/SPARE PARTS' SERVICE

Phone number: **+39 0425 947707 (945)**

Fax: **+39 0425 30132**

E-mail: fcsrail@fcsrail.com

2.2 IDENTIFICATION DATA AND MACHINE'S PLATE

Every machine is identified by a CE plate on which are written, in a permanent way, its data.

While communicating with the manufacturer or with the service department you have always to quote them.

FCS RAILWAY EQUIPMENT ATTREZZATURE FERROVIARIE		FCS srl Via E. Ferrari, 30 - 45038 Polesella (RO) – ITALY Phone: +39 0425 947707 - Fax: +39 0425 30132 www.fcsrail.com fcsrail@fcsrail.com	
Model	<input type="text" value="e-TFR330"/>		
Serial n./Year	<input type="text" value="XXXX-aaaa"/>		
Max. traction force kN [Q]	<input type="text" value="--"/>		
Max. capacity daN [kg]	<input type="text" value="--"/>		
kW <input type="text" value="--"/>	Weight [kg] <input type="text" value="--"/>		

2.3 CE LABEL POSITION ON THE MACHINE



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2.3 DECLARATIONS

The machine is realized according to the main requirements envisaged by the EU directives, that could be applied when put on the market. **ANNEX IV Directive 2006/42/CE** The machine isn't included in the mentioned in ALL.IV of the Directive 2006/42/CE.

 ATTREZZATURE FERROVIARIE	
FCS srl Via E. Ferrari, 30 - 45038 Polesella (RO) - ITALY +39 0425 947707 +39 0425 30132 www.fcsrail.com fcsrail@fcsrail.com	
DECLARATION OF CONFORMITY CE (All. IIA DIR. 2006/42/CE)	
THE MANUFACTURER	
The company FCS srl, located in Via Enzo Ferrari 30, cap 45038, Polesella (RO) Italy	
IT IS HEREBY CERTIFIED THAT THE MACHINE	
Machine Rail drilling machine	Model e-TFR
Serial number.....	Year of manufacture.....
Commercial Name Rail drilling machine	Destination Railway
IS CONFORMABLE TO INSTRUCTIONS	
Directive 2006/42/CE of European Parliament and of the Council of 17 May 2006 for the machines and amendment the directive 95/16/CE.	
Directive 2014/30/UE of European Parliament and of the Council, about the reapproaching of the regulations of the members countries about to electromagnetic compatibility.	
The machine is conformable at legislative decree 81/2008 and next modification of integrations.	
Norme armonizzate applicate: - UNI EN ISO 12100:2010 - UNI EN 894-1 - UNI EN ISO 13977 - UNI EN ISO 13857	
AND AUTHORIZE	
Mr. Fabio Coltro	
Address Via Enzo Ferrari, 30	CAP 45038
City Polesella (RO)	Country Italy
<u>TO KEEP THE TECHNICAL FILE</u>	
Polesella,	Fabio Coltro President
 CAPITALE SOCIALE € 300.000 i.v. CODICE FISCALE N° 00562630295 - PARTITA IVA N° IT00562630295 - REGISTRO IMPRESE DI ROMA N° 00562630295	
	

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2.5 WARRANTY AND TECHNICAL SUPPORT

The materials provided by FCS srl enjoy of a 12-months warranty accrue from put on work, established by the bill given to the client.

Warranty application is regulated by FCS srl's terms of sale and use.

FCS srl reserves to repair or substitute parts we retain defective during warranty period. With the substitution of the retire defective part, FCS srl reserve free from any expenditure made by the Dealer or by the Client of the Dealer as presumed break down, present or future, ex. failed gain, conventional penalty, etc.

Ordinary and extraordinary maintenance have to happen according to manual's instructions. Warranty doesn't cover parts that are prone to normal wear and tear and declension. The equipment not build by FCS srl are prone to their constructor's warranty. The warranty ceases:

- If the Client doesn't obey to the payment contract;
- If the machine is used in a non-conventional way instead of Sign's indications (machine's alteration, manoeuvre errors, overloaded, fuel use, hydraulic oil, improper lubricating or cooling water, non-observance of maintenance's rules also for non-utilization periods, etc.);
- If the failure is due to the installation made by FCS srl's non authorized equipment or if the machine has been modified o repaired without FCS srl's authorization
- If are used non original spare parts or the extraordinary maintenance interventions and/or reparations are not made by FCS srl's non authorized personnel;

For all non-included cases and for all kind of service we recommend to directly call FCS srl by recorded delivery or by fax, in case of phone arrangements.

FCS srl doesn't reserve any responsibility for delays or failed interventions

FCS srl is not responsible for breaks down or malfunctions due to technical interventions done on the machine by non-authorized personnel.

2.6 RESPONSIBILITY

FCS srl is dispensed from any responsibility and obligations about any kind of accident to people and things, that could occur for:

- Failed observance of the instructions written in this manual concerning the conduction, the transport, the use and the maintenance of the machine
- Violent actions or incorrect manoeuvre during the transport, use and maintenance of the machine
- Made modifications to the machine without FCS srl authorization
- Events not related to the normal and proper use of the machine

Anyway, if the user would attribute the accident to a machine's fault, would have to demonstrate that the occurred damage was a main and direct consequence of this "fault".

The responsibility of the formation, education, training and retraining of the personnel that uses the machine described in this manual, is exclusively depend on owner/user of the machine.

ATTENTION



For the maintenance and repairs you have to use only original spare parts. FCS srl declines all the responsibility for damages that could occur for non-fulfilment for what said before.

The machine is guaranteed according to contract stipulated during the sales.

Warranty is null if rules and instructions written in this manual haven't been obeyed.

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3 SAFETY

3.1 GENERAL WARNING

The machine has been designed and made by FCS srl according to design and rules in force of the technique with the use described in this manual.

We observe rules, dispositions, prescriptions, ordinances, guidelines in force for this kind of machine.

The materials used and the equipment's parts, and the production processes, are warranted and quality checked to satisfy the maximum safety and reliability needs.

If you use the machine for the specified aims in this manual, if you use it with the required care, if you execute a careful maintenance and revisions professional made, you can expect high performance, long and continue life of the machine.

Experience allows FCS srl to have, for its products, high safety during the work. Nevertheless, these security conditions during the work can't be completely realized without the help of the operators and their assistant that had to always keep in mind general safety rules, here follows the main ones.

The machine could be used on rails with a maximum banking of 200 mm, and a maximum slope of 4%. If you lean to the ground this machine, it remains bridled avoiding run a way movements or if you use on sloping ground the machine must be used with a safety lanyard to avoid accidental runaway.

3.2 REQUIRED OPERATOR'S TRAINING

Every operator must read entirely with full attention this manual and respect what is written.

The Employer is obliged to verify that the operator owns all the abilities required for the operation of the machine and has carefully reviewed the manual and has to give to machine's user devices for personal protection (gloves, shoes, clothes, etc.) according to rules in force.



The endothermic engine and the parts near it reach high temperatures during the operation of the machine that may cause severe burns. Use extreme care not to come into contact with these parts.

3.3 NOISE

The level of pressure and acoustic power that follows have been done with the machine's engine at the maximum speed.

Level of acoustic pressure continue equivalent thought out LPA in the work place at 85dB (A)

Level of acoustic power continue equivalent thought out LWA in the work place at 94 dB (A).

3.5 ELECTRICAL SAFETY

- Electrical appliance plugs must match the power outlet. Do not modify the plug in any way. Do not connect an adapter to the plug of a grounded electrical appliance. To reduce the risk of electric shock, avoid modifying plugs and always use the appropriate outlets.
- Avoid contact with earthed surfaces, such as pipes, radiators, stoves, and refrigerators. If your body is earthed, the risk of electric shock increases.
- - Do not expose electrical devices to rain or moisture. If water enters the device, the risk of electric shock increases.
- - Do not misuse the power cord. Never use the cord to move, pull, or unplug the electrical appliance. Keep the power cord away from heat, oil, sharp edges, or moving parts. A damaged or tangled cord increases the risk of electric shock.
- - When using the power tool outdoors, use only extension cords designed for outdoor use. Using an outdoor-rated power cord reduces the risk of electric shock.
- - If using an electrical appliance in a humid environment is unavoidable, use a power source protected by a residual current device (RCD). Using a RCD reduces the risk of electric shock.

3.6 EXPECTED USE

The machine has been designed and made by FCS srl for rail grinding and profiling

There must be carefully respected safety prescriptions passed from Railway Administrations for works on rails and near them. You have to start working only after the officials in charge for safety have given their go ahead.

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You have quickly and carefully executed the guidelines conveyed by the Site Manager or the safety responsible. Always leave devices and material in a way that these ones can't collide with other railway vehicles. In case of use in the presence of the third rail, it is essential to make sure that the third rail is isolated otherwise do not work.

3.5 NOT EXPECTED USE



Not observe the prescribed limits is equivalent to an improper use of the machine. If this happens, FCS srl will not assume any liability for accidents to persons or damage to property or the machine itself. Is void the warranty on the machine.

3.6 WORKING SAFELY

FCS srl doesn't answer for accidents, working's anomalies and/or damages during the machine's use, due to user's non observance of laws, prescriptions, dispositions and rules in force.

The use of the machine is allowed only at the trained personnel. Only authorized people can stay near the machine. You have always to stay by safety distances from mobile parts and check that during its work normal safety prescriptions are respected. You always have to assure that advertisement given to other people are understand and executed.

Dangers that couldn't be deleted from safety measures adopted by the constructor couldn't be caused by an incorrect use of the machine or by a failed respect, due to the user, of the rules described in this manual.

3.7 BASIC SAFETY INSTRUCTIONS

BASIC SAFETY INSTRUCTIONS FOR THE USE OF THE MACHINE

1. The operator and all the personnel that interact with the machine must be equipped of specific individual protection's devices (DPI).
2. Machine's movement and use are reserved only for personnel in charge.
3. Before starting the engine, make sure that the throttle of the engine is a little more than the minimum, and that the grindstone is in the fully raised position.
4. Before starting the movement, you have to ensure that in the sphere of activity of the machine there aren't people. If you need, signal the start of the operation.
5. You constantly have to check the working area to identify dangerous situation as an area where means or people pass.
6. Before performing maintenance operations, stop the engine
7. Perform fuelling only with off engine
8. Don't use the machine in a room or close place to avoid inhaling poison gases.
9. Never work without the protection of the grindstone and without the protective cover of the pulleys
10. Gradually lower the grindstone down until it is close to the working area avoiding sharp blows to the cup grindstone
11. After the cup wheel replacement, make the machine idle (without grinding) at working rotation speed for 5 minutes
12. Don't move the machine with on engine.
13. Avoid make the cup grindstone to be close to any material to avoid that this one is thrown
14. Lift the machine with care and only throughout the special prone handles
15. Adequately light the working area



ATTENTION

It is impossible to list all the possible safety rules, so we entrust operator good sense, who, if he works with care and caution, guarantees the best safety against every kind of accident.

3.8 STANDARD ENVIROMENTAL CONDITIONS

The machine in standard configuration is designed to be used in these environmental conditions:

- Work temperature: -10° C + 40° C

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ATTENTION

It is forbidden the use of the machine in standard execution in areas that are different from the listed above.

3.9 PROHIBITED USES

- Using the machine for aims that are different from those it is designed for
- Not correctly or moved and started according to its safety/service rules
- Carelessness and/or absence of maintenance as prescribed or use of non-original spare parts
- Using of the machine out of allowable environmental conditions
- Using the machine with excluded or damaged safety devices
- Using the machine modified in any of its parts without a written FCS srl authorization
- Using of the machine on rails without respect the rules of the railway body owner of the railway
- Using of the machine on rails open to traffic
- Using of the machine on track circuit
- Using the machine in presence of a third rails
- Using the machine in presence of inclination superior or equal to 4%
- Go away from the machine leaving the engine running
- Using the machine under the influence of drugs or alcohol.

3.10 ALLOWED USES

- Using the machine built only with the compatible equipment, in specific working conditions.
- Using the machine only on non-open traffic rails.

3.11 MAINTENANCE

To perform maintenance and repairs, move the machine to a location authorized by the site foreman.

To keep the machine clean, never use flammable or corrosive liquids.

Stop the engine before any repairs, maintenance, or battery charging.

Periodically check the battery condition. In the event of any anomalies or malfunctions, stop the machine and perform repairs with the engine cold.

Comply with standard fire prevention regulations.

Perform the checks and maintenance required by the machine's maintenance schedule, as well as all minor repairs, and check the tightness of bolts periodically.

If lifting the machine, only use the designated handles. The use of suitable tools is essential for maintenance.



ATTENTION

It is impossible to list all the possible safety rules, so we entrust operator good sense, who, with care and caution, guarantees the best safety against every kind of accident.

3.12 RESIDUAL RISK

Dangers that couldn't be deleted from safety measures adopted by the manufacturer couldn't be caused by an incorrect use of the machine or by a failed respect, due to the user, of the rules described in this manual.

The personnel in charge of the machine must be equipped of specific individual protection's devices required by law.



DANGER

During every kind of work pay attention of high voltage line, if you are next to them could cause DEATH.

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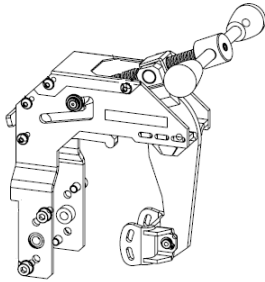
4 MACHINE'S DESCRIPTION

4.1 GENERAL

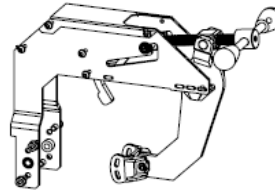
The machine was designed to quickly and precisely drill Vignola and Grooved rails.

The clamp with a quick rail approach system, an ergonomic handle to ensure minimal operator vibration, the fully protected cutter action, and a single pair of flanges for two different rail profiles make this drill unique.

The machine is delivered assembled with the vice suitable for the type of track on which you wish to operate.

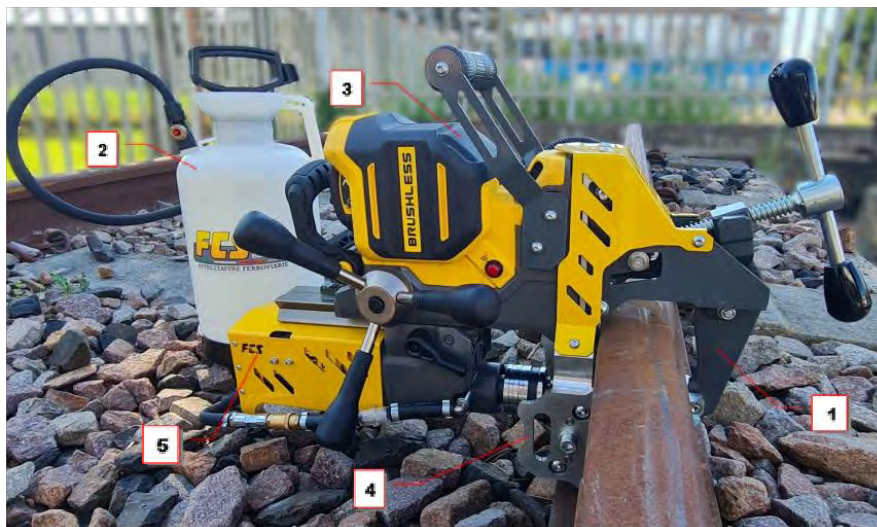


a) Vignola Rail Clamp



b) G-Rail Rail Clamp

4.2 CONTROL AND REGULATION ELEMENTS



1. Anchor clamp
2. Coolant container
3. Rail drilling machine
4. Drilling mask
5. Battery

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4.3 TECHNICAL CHARACTERISTICS

	e-TFR
Width	530 [mm]
Length	400 [mm]
Height	240 [mm]
Max weight	15,5 [daN] [kg]
Electrical voltage	18 [Vdc]
Max. power (with 9Ah battery)	1100 [W]
No-load clockwise rotation speed in low gear	130-420 [rpm]
No-load clockwise rotation speed in high gear	250-810 [rpm]
Spindle type	Weldon 19 mm
Max. drilling diameter with core cutter	50 [mm]
Acoustic power level LWA	94 [dB(A)]
Acoustic pressure level LPA	85 [dB(A)]

5 INSTALLATION

5.1 TRANSPORT AND MOVEMENT

The lifting of the machine can be done only by using highlighted devices' grips that are on the machine (fig. a).

ATTENTION

Lifting operations have to be done with engine off.

It is forbidden to lift the machine hooking it from the handlebar.

We recommend to use expected personal safety devices as: gloves, safety footwear with steel toe and overalls.

During the movement, the machine must be located in a position as in the picture.



DANGER

Bump and crushing danger. During the lifting and moving you have to operate carefully.

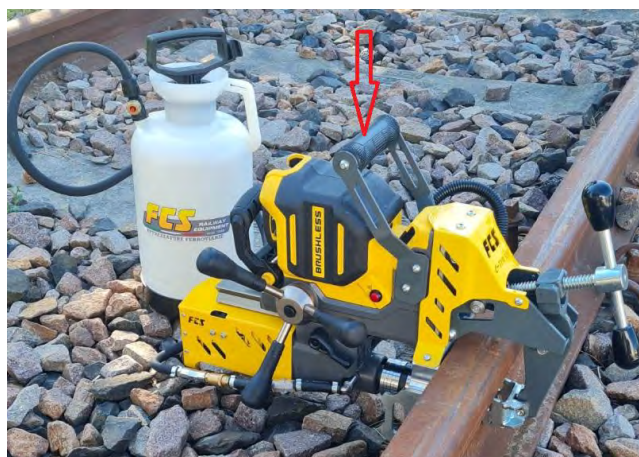


fig. a – lifting handle

OPERATION AND MAINTENANCE MANUAL

5.2 COMMISSIONING

5.2.1 FIRST START

When starting the machine for the first time, perform the following checks:

1. Check that the machine is equipped with:
 - EC Declaration of Conformity
 - Machine's user and maintenance manual
2. General visual inspection of the machine
3. Checking and verifying the presence of identification plates and security labels
4. Checking and verifying the battery charge level
5. Check the condition of the electrical cables (check for abrasions, loose connections, stripped wires or sheathing, etc.)
6. Checking the functionality of emergency and safety devices
7. Checking the efficiency of machine controls and indicators
8. Checking the paintwork
9. Performance of no-load running test under all expected operating conditions



ATTENTION

Before starting the machine, the operator in charge has to read completely this manual



5.2.2 CHECKS AT THE BEGINNING OF EVERY WORKING DAY

Before the start of each working day, one must check:

1. Check the condition of the electrical cables (check for abrasions, loose connections, stripped wires or sheathing, etc.)
2. Check the efficiency of the machine's controls and indicators
3. Checking the paintwork

If one or more of the above points occur, do not use the machine and restore it to an efficient condition. If anomalies are found that can be resolved by the operator, contact FCS srl.

OPERATION AND MAINTENANCE MANUAL

5.3 PROTECTION AND STORING

5.3.1 IN PREPARATION FOR A SHORT INACTIVITY

Position the machine in such a way as to ensure adequate safety

5.3.2 STORING AND PREPARATION FOR A LONG INACTIVITY

As above, also:

If possible, store the machine in a covered, ventilated, dry and dust-free place, otherwise protect the machine with plastic sheeting against the weather

5.3.3 RECLAMATION AFTER A LONG INACTIVITY

Perform a thorough cleaning of the machine

Check the functionality of the emergency and safety devices

Check the efficiency of the machine controls

6 MACHINE'S USE

6.1 USE AND MAINTENANCE OF ELECTRICAL EQUIPMENT

- A- Do not force the apparatus. Use equipment suitable for the work to be done. The equipment works better and safer if used as intended.
- B- Do not use the machine if the switch does not allow it to be switched on or off. Any electrical apparatus that cannot be controlled by the switch is dangerous and must be repaired.
- C- Disconnect the plug from the socket and/or the battery from the power tool, if detachable, before making any adjustments, changing accessories or storing it. These preventive safety measures reduce the risk of accidentally operating the appliance.
- D- Store unused apparatus out of the reach of children and avoid use by persons unfamiliar with the electrical apparatus and these instructions. Electrical equipment is dangerous in the hands of inexperienced persons.
- E- Carry out proper maintenance of electrical equipment. Check for misalignment and jamming of moving parts, breakage of components and any other condition which may affect the functioning of the equipment. If damaged, have the electrical equipment repaired before use. Many accidents are caused by electrical equipment that has not been properly maintained.
- F- Keep cutting tools sharp and clean. Correct maintenance of sharp-edged cutting tools reduces the likelihood of jamming and makes them easier to control.
- G- Use the power tool, accessories, bits etc. in accordance with these instructions and taking into account the operating conditions and the work to be carried out. Using the power tool for other than its intended purpose can lead to dangerous situations.
- H- Keep handles and gripping surfaces dry, clean and free of oil or grease. Slippery handles and gripping surfaces make it impossible to handle and control the tool safely in the event of an accident.

6.2 BATTERY USE AND MAINTENANCE

- A- Charge the device only with the charger specified by the manufacturer. A charger suitable for a certain type of battery may cause a fire hazard if used with a different battery pack.
- B- Electrical equipment must only be used with the battery packs specifically indicated. The use of any other battery pack creates a risk of injury and fire.
- C- If the battery pack is not in use, keep it away from metal objects such as clips, coins, keys, nails, screws or other small metal objects that can cause contact of the terminals. Short-circuiting the battery terminals may cause burns or a fire.

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- D- Under conditions of excessive use, the battery may expel liquid; avoid contact. In case of contact, rinse thoroughly with water. If the liquid comes into contact with the eyes, consult a doctor. The liquid emitted by the battery may cause irritation or burns.
- E- Do not use a damaged or modified battery pack or tool. Damaged or modified batteries could exhibit unpredictable behaviour, with the possibility of causing an explosion or fire.
- F- Do not expose a battery or tool to fire or high temperatures. Exposure to fire or to a temperature exceeding 130 °C may cause an explosion.
- G- Follow all charging instructions and do not charge the battery or tool at a temperature outside the range specified in the instructions. Charging incorrectly or at a temperature outside the specified range may damage the battery pack and increase the risk of fire.
- H- Do not repair damaged batteries. Repair work on batteries must be carried out by the manufacturer or authorised service providers.

6.3 SAFETY INSTRUCTIONS FOR THE CHARGER

- A- DO NOT attempt to charge the battery pack with any charger other than those in this manual. The charger and battery pack are specifically designed to work together.
- B- These battery chargers are not intended for any use other than charging FCS drill batteries. Any other use involves risk of fire, electric shock or electrocution.
- C- Do not expose the charger to rain or snow.
- D- To disconnect the charger from the socket, pull the plug and not the cable. This reduces the risk of damage to both.
- E- Ensure that the cable is placed so that it is not stepped on, tripped over or otherwise damaged or stressed.
- F- Do not use an extension cable unless strictly necessary. The use of unsuitable extension cords may give rise to a risk of fire, electric shock or electrocution.
- G- Do not place any objects on top of the charger and do not place the charger on soft surfaces which could block the ventilation slots and cause excessive internal heat. Keep the charger away from any source of heat. The charger is ventilated with the slots above and below the housing.
- H- Do not work with a charger that has a damaged cable or plug - replace them immediately.
- I- Do not operate the charger if it has taken a heavy blow, been dropped or has been damaged in any other way. Take it to an authorised service centre.
- J- Do not disassemble the charger; when service or repair is required, take it to an authorised service centre. Incorrect assembly carries the risk of electric shock, electrocution or fire.
- K- If the power cable is damaged, it must be replaced immediately by the manufacturer, or its agent or qualified persons to avoid danger.
- L- Disconnect the charger from the socket before any cleaning. This reduces the risk of electric shock. Removing the battery pack does not reduce this risk.
- M- NEVER attempt to connect 2 chargers together.
- N- The charger is designed to work with standard 230V mains electricity. Do not attempt to use it with a different voltage. This does not apply to vehicle chargers.

6.4 CHARGING A BATTERY

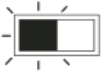




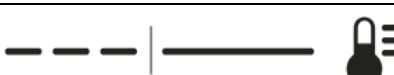
- 1- Connect the charger to a suitable socket before inserting the battery pack.
- 2- Insert the battery pack into the charger, ensuring that it is fully seated in the charger. The red light (charging) flashes repeatedly, indicating that the charging process has begun.
- 3- Completion of charging will be indicated by the red light remaining continuously lit. The battery pack is fully charged and can be used at this time or left in the charger. To remove the battery pack from the charger, press and hold the battery release button on the battery pack.

NOTE: To ensure maximum performance and durability of Li Ion batteries, fully charge the battery pack before using it for the first time

OPERATION AND MAINTENANCE MANUAL

6.5 CHARGER OPERATION

Please refer to the indicators below for the state of charge of the battery pack.

STATE OF CHARGE		
	IN CHARGE	
	FULL CHARGE	
	HOT/COLD PACK DELAY	

The red indicator light will continue to flash, but a yellow indicator light will be lit during this operation. Once the battery has reached a suitable temperature, the yellow indicator light will turn off and the charger will resume the charging procedure.

Compatible chargers will not charge a defective battery pack. The charger will indicate a faulty battery pack and will not illuminate.

NOTE: This may also indicate a problem with the charger. If the charger indicates a problem, take the charger and battery pack to an authorised service centre for testing.

HOT/COLD PACK DELAY: When the charger detects a battery that is too hot or too cold it automatically initiates a hot/cold pack delay, suspending charging until the battery has reached the appropriate temperature. The charger then automatically switches to pack charging mode. This function ensures maximum battery life. A cold battery pack will charge at a slower rate than a warm battery pack. The battery pack will charge at a slower speed throughout the charging cycle and will not return to its maximum charging speed even if the battery pack warms up. The DCB118 charger has an internal fan designed to cool the battery pack. The fan turns on automatically when the battery pack needs to be cooled. Never use the charger if the fan is not working properly or if the ventilation openings are blocked. Do not allow foreign objects to get inside the charger.

6.6 COMPATIBLE BATTERY TYPES

- DeWalt 54V 9Ah XR FLEXVOLT
- DeWalt 18V 5Ah POWER STACK

THE MACHINE IS CAPABLE OF OPERATING AT BOTH 18V AND 54V, THANKS TO AN INTERNAL SYSTEM IN THE XR BATTERY THAT CONNECTS THE CELLS IN PARALLEL OR IN SERIES VIA SLATS



OPERATION AND MAINTENANCE MANUAL

6.7 MACHINE USE

This chapter includes all procedures for starting up the machine and ensuring correct operation. Carefully read and observe all instructions on operation in order to ensure a long machine life.

To start the engine, proceed as follows:

1. Apply the desired cutter in the Weldon 19" shank:



2. Position the drill on the rail with the vice open, once the predetermined drilling point has been found, tighten the clamping lever of the e-TFR drill vice:



3. Connect the 5L canister with the coolant via the male quick coupling of the canister and the female quick coupling of the drill:



4. Select the direction of rotation, in this specific case it is always advisable not to touch the direction of rotation (clockwise) to avoid damage to the cutters, however it is recommended to check before drilling that it is in the correct position:



OPERATION AND MAINTENANCE MANUAL

5. Select the number corresponding to the speed for drilling using the rotary knob underneath the drill:



6. To switch on the e-TFR lift the red power button:



7. To advance the cutter, turn the lever located on the right (standard) side with the three gripping handles, the lever has a quick coupling in the middle so that you can position the lever on both sides (right and left). Be careful when the milling cutter touches the rail, you must not exert too much effort at that point, once the rail has been cut with the milling cutter you can work safely, the reason is explained in point 9:



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8. When working at night, the drill is equipped with an LED light that can be operated by means of the red button, the LED is timed to switch off, after a few seconds of non-use the drill switches off automatically:



9. The drill is also equipped with a sensor, known as an accelerometer, which, in the event of a shock, if the drill no longer cuts well or the vice is not secured, as soon as it senses a movement it will trigger and instantly switch off the drill, thus preventing the drill from breaking and thus ruining the hole.

Now the machine is ready to work.



WARNING

Once the engine has started, do not leave the machine!

6.8 COOLING FLUID

The coolant is contained in a manually pressurised container and is specifically formulated to significantly improve the performance and lifetime of the cutting tool, and improve hole quality and surface finish.

The coolant is introduced into the system via the pressurised coolant dispenser. Connect the coolant container to the machine via the connector and then pressurise the bottle by pumping the pump by operating the top handle. Adjust the flow by adjusting the valve. Usually a quarter turn of the coolant shut-off valve located in the drill is sufficient.

Drilling must be carried out with the aid of the coolant in order to achieve a long service life for the drill. The EMULSOIL coolant is a mixture of cutting oil and water. The oil must be mixed with clean water according to the following dilution table:

Material resistance	% oil to be diluted in water
<900 MPa	5 %
>900 MPa	10 % vol

- Hold the tool feed lever in the rest position so that the tool is kept away from the rail.
- Pressurise the coolant container by pumping the handle 5-10 times.
- With the coolant pressurised and the nozzle connected to the machine via the supply hose, the coolant comes out automatically when the cutting tool makes contact with the rail.
- To ensure that the coolant flows out correctly, operate the feed lever slowly so that the tool and rail come into contact. Adjust the flow by adjusting the coolant shut-off valve.

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7 PREFACE

In order to obtain best performances and to assure all the elements the maximum life, is necessary that use and maintenance's rules are carefully followed by the operators in charge. For this we suggest to Customers, in their interest, to carefully read these notes and to consult the manual every time they need suggestions to avoid eventual drawbacks.

For further clarifications call up our customer care:

- All the maintenance's operations have to be performed with engine shut off.
- Ordinary maintenance includes all the necessary information for the good functioning and preservation of the machine.
- We suggest to let the same operator do maintenance operations, he is familiar with the machine how it works and has to know what is in the manual.
- Some maintenance's interventions to the engine must be researched in the specific manual.
- During the disassembling and re-assembling you always have to use the extractor, keys and suitable equipment to avoid deteriorate parts.
- To unlock parts solidly adherent, use copper's hammer or suitable tools.
- Separate clearly elements of various groups and screw back the nut in part on its pins or studs. Clean the parts with a rag and then clean with de-grease blowing off residuals with compressed air.
- After grinding process or remachining with abrasive bodies, carefully clean the parts or blow them with compressed air assuring the complete aspiration of the abrasive dust.
- During the re-assembling of various parts, assure that they are clean and then carefully lubricate.

Ordinary maintenance's operations indicated on the table that follows must have the same frequency of the machine's working hours indicated on the column at the right, under period.

GUASTO	POSSIBILI CAUSE	RIMEDIO
Il motore non si avvia	– Batteria non connessa	– Connettere i cavi in maniera corretta
	– Batteria scarica	– Controllare lo stato di carica dal display – In caso di batteria scarica mettere a ricaricare tramite l'apposito caricabatterie
	– Pulsante accensione guasto	– Verificare l'integrità del pannello tattile
	– Pulsante accensione non attivo	– Verificare l'avvenuta accensione della batteria tramite il tasto verde posto sul retro
	– Motore guasto	– Se le cause precedenti non sono verificate e c'è la possibilità di un guasto al motore chiedere l'intervento di FCS s.r.l.
Il lubrificante fuoriesce dalle flange accoppiate	– Viti di serraggio allentate	– Controllare il serraggio delle viti
The drill bit does not come out of the chuck when I want to replace it.	– Grani non svitati	– Controllare il serraggio dei grani – Con un martello di gomma colpire agevolmente il mandrino e provare ad estrarre la punta
Il liquido refrigerante non fuoriesce dal mandrino	– Controllare la presenza di liquido nella tanica	– Aggiungere liquido refrigerante
	– Controllare l'apertura del rubinetto del liquido	– Portare in posizione di apertura il rubinetto
Il foro realizzato non risulta essere all'altezza desiderata	– Sul trapano non sono installate le maschere corrette	– Montare le maschere idonee al tipo di rotaia che si vuole forare

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8 FIRE

In case of start of a fire, use a CO2 extinguisher (not supplied) according to guidelines in force.

In case of a machine fire or if the machine is near a fire, give the alarm in the yard and call the fire brigade.

9 BREAKING UP AND DISPOSAL

At the end of the machine's life cycle, remember that the owner is responsible for dismantling and disposing of it in accordance with current regulations.

Remember that whenever you replace any machine component subject to different disposal, you must always refer to current regulations and authorized disposal facilities.

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10 EXPLODED DRAWINGS AND SPARE PARTS

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11 DECLARATION OF CONFORMITY CE



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(All. IIA DIR. 2006/42/CE)

THE MANUFACTURER

The company , located in Via Enzo Ferrari 30, cap 45038, Polesella (RO) Italy

IT IS HEREBY CERTIFIED THAT THE MACHINE

Machine Rail drilling machine	Model e-TFR
Serial number TFR.00000000245	Year of manufacture 2025
Commercial Name Rail drilling machine	
Destination Railway	

IS COMNFORMABLE TO INSTRUCTIONS

Directive 2006/42/CE of European Parliament and of the Council of 17 May 2006 for the machines and amendment the directive 95/16/CE.

Directive 2014/30/UE of European Parliament and of the Council, about the reapproaching of the regulations of the members countries about to electromagnetic compatibility.

The machine is conformable at legislative decree 81/2008 and next modification of integrations.

Harmonised standards applied: - UNI EN ISO 12100:2010
- UNI EN 894-1
- UNI EN ISO 13977
- UNI EN ISO 13857

AND AUTHORIZE

Mr. **Fabio Coltro**
Address **Via Enzo Ferrari, 30**
City **Polesella (RO)**

CAP **45038**
Country **Italy**

TO KEEP THE TECHNICAL FILE

Polesella(RO), 17/09/2025

FCS srl
FABIO COLTRO
Presidente
[Handwritten Signature]



CAPITALE SOCIALE € 300.000 i.v.

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