

**Vertical Core Drill
MH075**

Impact Test Equipment Ltd
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User Guide
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EEC CONFORMITY DECLARATION (FOR EEC COUNTRIES ONLY)
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Chapter 1 GENERAL INFORMATION

1.1 GENERAL FEATURES

- **This manual is addressed** to the carrier, the installer, the user, the maintenance operator, the scrapping operator.
- Please read it carefully because it informs you about the operating of the machine in safety conditions.
- This manual has to be considered a part of the product and concerns only the machine it is delivered with.
- Keep the manual in order during the whole life of the appliance to consult it for any needs.
- In case of sale, the manual and its enclosures should be given together with the machine.
- The manufacturer assumes no liability for any damages caused by a misuse of the machine.
- The manufacturer has the right to modify this technical literature as well as the machines this refers to without any previous notice.
- Messages meaning:

ATTENTION	It shows the procedures that can damage seriously the machine if they are not followed carefully
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DANGER	It shows the procedures that can be dangerous to the operator if they are not followed carefully
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1.2 IDENTIFICATION

MANUFACTURER IDENTIFICATION: See the cover page

MACHINE IDENTIFICATION: See the plate on the machine where the complete identification data and the electrical features are to be found.

1.3 APPLICATIONS

The MH075 petrol driven core-drilling machine have been designed to carry out vertical pavement core sampling where it is difficult to get electrical power. The equipment is made for the aim, which it has been conceived for. Any other uses are not allowed.

ATTENTION	The instructions given in this operating manual are only made for the right use of the appliance. To carry out the test in the right way, the user must refer to the specific standards in force for the test itself.
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1.4 STRUCTURE AND OPERATING OF THE MACHINE

The core-drilling machine is composed by a steel base, where two drive bars, on which the core drilling system slides, are fixed.

The core drilling unit is formed by: a petrol engine (for the correct use and maintenance read original Manufacturer's instructions enclosed to this literature), a shaft for fixing the diamond bits (OPTIONAL) and by a water operated cooling device used to cool down the diamond bits.

The steel base is also equipped with wheels for an easy moving of the unit. Four levelling and stabilizing feet are also present under the base. The unit is completed by a rack system to lift or lower the diamond bit.

Do not hesitate to get in touch with the manufacturer or with the dealer for any further information.

Chapter 2 SAFETY INFORMATION

2.1 GENERAL SAFETY STANDARDS

- **The use, lifting, installation, maintenance and scrapping of the machine are allowed only to qualified staff.** Qualified staffs are composed by people who are authorised by the safety responsible to do any activities due to their experience and acknowledgement of the operating of the machine and of the standards, rules and actions.
The user must be carefully taught about the operating of the machine to avoid any misuse of it and about the safety devices, which the machine could be eventually equipped with. The safety devices will have to be kept always assembled and to be daily checked.
The manufacturers offer training and assume no liability for any damages due to a misuse of the machine by an unskilled staff.
- The manufacturer recommends following carefully the instructions and procedures of the operating manual and the safety standards concerning the safety devices and the general rules of the work environment.
- Verify the accordance of the machine to the standards in force in the State where the machine has to be installed.
- The operating manual must be carefully read by the safety responsible, by the operators and maintenance engineers. It must always be kept near the machine in order to be able to read it any times it will be necessary.
- Any tampering or modifications of the machine (electric, mechanical etc.) that are not allowed by a written agreement of the manufacturer must be considered as not permitted and the manufacturer will not accept to be charged for any damages.
- The removal or the tampering of the safety devices will be an infringement to the EEC Safety Standards. The manufacturer assumes no liability for any damages.
- The machine has to be installed in places safe from fire and explosions.
- We do recommend using only original spare parts and accessories; on the contrary the manufacturer assumes no liability.
- Be careful that any dangerous situations won't happen during the working; stop immediately the machine in the event that it will not work properly and ask the manufacturer or the Authorised Service Staff of the dealer at once.

The manufacturer assumes no liability for any damages to people, things and animals caused by the non-compliance of the above instructions.

2.2 DANGEROUS PARTS AND RESIDUAL RISK

The dangerous place is the space inside and around the machine where the operator could be wounded or damaged.

During some procedures the operator could face some risks of danger.

The risks can be eliminated following carefully the procedures written in this manual and using suitable safety devices.

GENERAL INFO.

- **Before starting the standard use of the equipment, ensure that all the components are in good working conditions check there are no defective or damaged parts. If necessary repair or replace any damaged part.**
- Do not subject the equipment to violent shocks.
- Do not expose the equipment to fire, extreme temperature or weld splatters.
- Avoid corrosive substances to come in touch with the equipment.

DURING THE USE

- In order to grant the max. safety levels for the operator, it is recommended not to touch any moving components during the test execution and always use the proper safety means,
- Do not operate the machine in a close room. The motor produces noxious gas, which are potentially dangerous when breathed.

- During the test execution always pay attention to the possibility of hands, fingers or body squeezing and to the possibility of components fall down (of the diamond bit) which could injure the operator's feet.
- Do not wear large clothes, ties, watches, rings or others, which could entangle into the moving parts of the appliance.

LIFTING

- During the lifting take care that the machine is conveniently held and secured and that it cannot slide.
- Do not stand in a direct line with the application of force. Do not allow people entrance under loads that are no conveniently supported by mechanical means.

During the standard use of the appliance the operator could face following risks:

RISK OR DANGER	FORESEEN SAFETY MEASURE
FINGER, HANDS OR FEET SQUEEZE	REINFORCED GLOVES AND SHOES
EYES, MOUTH, NOSE IRRITATION DUE TO CONTACT WITH CEMENT DUST	GLASSES

The manufacturer assumes no liability for any damages to people and things due to a lack of observance of the instructions and the use of the safety devices. (See laws against the accidents in force)

2.4 NOISE

The indicated levels of noise are not necessarily safety levels for the operator. The exposure levels of the operator are obviously related to the emission levels of the appliance, but other factors influence the exposure levels as the time of exposure, the environment, and other appliances installed near to the appliance etc. The exposure levels permit to value the damages that could be caused by the noise

Acoustical pressure level equivalent Laeq at 1 m. distance	90 dB(A)
Acoustical power emitted by the appliance LWA	90 dB(A)
Standard above data are referred	EN ISO 3746

DANGER	The continuous use of the machine together with other noisy appliances could cause a high level of exposure to the noise. If the daily exposure of the operator is equal or higher than 85 dB(A), Safety Devices as headphone are suggested to be worn. If the daily exposure is equal or higher than 90 dB(A), the use of the Safety Device is compulsory. For further information consult the standards of the country where the machine has been installed.
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Chapter 3 INSTALLATION

DANGER Consult **DANGEROUS PARTS AND RESIDUAL RISKS** before proceeding.

3.1 LIFTING

The operating instructions must be respected during the moving of the appliance and particularly in the following phases:

- The lifting and the storing
- The first installation
- The further installations

The machine is usually packed in a wooden case that allows the easy moving of it. The machine must be moved by a forklift truck suitable for the weight indicated on the plate of the machine.

The moving of the packing with lifting systems must be made with caution and respecting the indications given on the packing itself. When possible, we recommend lifting the machine using belts and robes and avoiding chains.

ATTENTION Pay attention to avoid impacts and turnovers of the packing.

ATTENTION Protect the machine from the atmospheric agents. Water and humidity could oxidise it, damaging it seriously.

3.2 UNPACKING

After removing the package, check that any parts of the machine are not damaged. In case of doubt, **DO NOT USE THE MACHINE** and ask the manufacturer.

DANGER The materials used for the package (plastic, polystyrene, screws, nails, wood etc.) have to be kept far from children. They must be thrown away in a proper collection centre.

ATTENTION Pay attention to avoid impacts and turnovers

ATTENTION Before throwing away the package, pay attention that any accessory, manuals, documents, spare parts are not inside.

3.3 INSTALLATION

The machine has to be placed in an environment suitable for the aim it has been conceived for (laboratory protected by any atmospheric agents). Skilled operator must do the installation.

ALLOWED TEMPERATURE	from + 5°C to + 40°C
ALLOWED HUMIDITY	from 30% to 95%
MAX. O.S.L. HEIGHT	3000 m

GENERAL WARNINGS

- The appliance must be stored in a ventilated room in order to avoid the saturation of noxious gases.
- No authorized people and no dangerous objects must be allowed near the machine.
- The supporting surface must be as smooth and levelled as possible.

Chapter 4 MACHINE FEATURES

4.1 DIMENSIONS AND MASS

	MH075	
LENGTH	852 mm	
WIDTH	585 mm	
HEIGHT	1220,5 mm	
MASS	about 135 kg	
MOTOR POWER	5 Hp	
N° RPM	3000 rpm	
MAX RPM REACHABLE BY THE SHAFT	730 rpm	

Chapter 5 OPERATOR'S INTERFACE

5.1 CONTROLS AND SIGNALS

DESCRIPTION ENCLOSURES A – COMPLETE APPLIANCE

	CONTROLS	DESCRIPTION
A1	BASE	Supporting base on which the columns A4 are fixed
A2	WHEELS	They allow an easy site displacement of the machine.
A3	LEVELLING FEET	Positioned on the basement corners, they allow levelling the machine.
A4	SUPPORTING COLUMNS	They support the drilling group and allow its sliding.
A5	SHAFT	It allows the hooking and the rotation of the diamond bit.
A6	TAP	Thanks to this tap a water spray is directed towards the drilling area to cool the diamond bit, also helping in the material cutting.
A7	HAND WHEEL AND COLUMN	It allows the displacement of the diamond bit towards the surface to be drilled and vice versa. Use a constant pressure when turning it.
A8	PETROL DRIVEN MOTOR	It supplies the necessary power to rotate the diamond bit.

Chapter 6	USE
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DANGER	Consult the Chapter “ DANGEROUS PARTS AND RESIDUAL RISKS ” before proceeding.
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6.1	WARNINGS
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Before starting the normal use of the equipment it is recommended to verify that it is in good working conditions with no defective or damaged parts. If necessary proceed with the required maintenance operations.

Always analyse the features of the materials before testing; try to foresee their behaviour when cut and eventually take all necessary precautions.

6.3	TOOLING UP
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DANGER	The operator must take all necessary safety measures to work in safe conditions. Ensure that the appliance cannot accidentally be started or that none can use the control unit while maintenance operations are being carried out.
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ASSEMBLING THE DIAMOND BIT (see enclosure B)

Here under we describe a standard procedure allowing even to an operator without a wide experience to tool up the machine correctly:

DANGER	During the tooling up, pay attention to the danger represented by components falls.
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- Put the unthreaded flange “D” in the shaft “C”, the conic shaped end should be downwards. Then the expanding ring “E” and last the threaded flange “F” with the conic shaped part upwards so that the ring can expand when the flange is tightened.
- Position the diamond bit “G” so that the expander coupling can be housed in its smooth end, then tighten strongly.
- Ensure that the bit edge is correctly positioned on the end stop of the upper flange. This is important to get a perfect alignment.
- When the diamond bit is correctly positioned, secure it using the special strap wrench (OPTIONAL). It is important to keep the shaft still by using the special spanner supplied with the unit. A correct rotation of the diamond bit grants a long life of the same and also assures perfect performances. Use the strap wrench on the bit part, which is near the expander coupling. This will avoid deformation or crushing to the diamond bit during the blocking/unblocking procedures.
- To disassemble the bit from the motor shaft just repeat the above described procedures backwards. Always use the same tools, strap wrench and spanner.

ATTENTION	Diamond is a very hard material but also extremely fragile; handle with care avoiding shocks and crashes.
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6.3	START UP
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To start up the motor, turn deeply the accelerator hand grip (clockwise). This is positioned on the motor side. Then push priming pump with energy and for three times (see enclosed instruction manual). Take the handle of the rope and pull slowly until you feel a certain resistance. Now pull the rope speedily to overcome the compression, to avoid counter shocks and to start up the motor; if the motor doesn't start up, repeat the last step. Once it's working, decrease the motor rpm by moving gently the accelerator handle counter clockwise, in order to exclude the starter (placed inside the carburettor).

NOTE: If the motor stops due to lack of petrol, add fuel and push the priming pump three times. Usually it isn't necessary to use the prime if the motor is hot, anyway with particularly low temperature this could be required.

6.4	STANDARDS AND EMERGENCY STOP
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To stop the motor, turn completely the accelerator lever counter clock side.

6.5 TEST STARTING

Before beginning the standard use of this machine, check its perfect working conditions by performing at least a complete trial cycle according to the instructions given up to this point.

In case of problems during this test cycle, see Chapter “ **DIAGNOSIS** ”.

If neither the instructions given in this manual are not able to solve the problem, please contact our After Sale Service.

6.12 EXAMPLE OF OPERATING

DANGER

Before starting the procedure described hereunder, carefully read and learn the instructions given in this manual.

Here follows a “standard procedure” allowing even to an operator without a wide experience to carry out a test. The time will increase the operator’s skill in the machine use according to one’s need.

1. Before starting the machine it is necessary to level it by means of the four feet (A3), which are placed on the basement corners. Ensure that the core-drilling machine is well supported by all the four feet without oscillations and close the blocking nuts.
2. Check that the petrol in the tank is sufficient to end the core drilling.
3. Check the oil level in the motor: take off the level rod, clean it with a cloth, put it in again and close. Then remove it to check the level of oil, which should reach FULL. If you find that the oil is not enough, add some but slowly and tighten strongly the level rod before starting the motor.
4. Tool the machine as described in the Chapter “TOOLING UP ” of this manual.
5. Connect the swivel A6 to the water pump by using a common rubber pipe.
6. Start the motor as described in the Chapter “START UP” of this manual.
7. Turn the hand wheel A7 at a constant pressure, so that the diamond bit can work without interruptions. This is important to avoid that the polishing of the diamond surface, which in such a case would loose its cutting power.
8. Open the water swivel so that it can go inside the bit during the drilling. This is useful to cool down and to help the cutting procedure. The water flow has to be able to remove the debris from the cutting area.
9. When you feel strong shocks during the drilling this means that the core is breaking; it is suggested to take the diamond bit out of the hole at once, then stop the motor and remove the piece of core manually. To keep on drilling having a piece of core inside the bit could cause the breaking of the same.
10. At the end of the drilling operation, stop the motor as described in the Chapter “STANDARD AND EMERGENCY STOP” of this manual.
11. If the core is blocked in the bit, disassemble the bit from the shaft and push the core out from the opposite part.
If the core remains in the hole, put a cone by the side so that it moves from the base.

Chapter 7	MAINTENANCE
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DANGER	Consult 2.3 DANGEROUS PARTS AND RESIDUAL RISKS before proceeding.
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DANGER	Skilled operators instructed about the purposes the machine is made for must carry any kind of maintenance operations concerning the components of the machine and of the electric components, even those that may seem very simple.
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DANGER	Only original spare parts are allowed. The Manufacturer assumes no liability in the event that non – original parts are used.
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7.1	ROUTINE MAINTENANCE
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In order to maintain good working of the machine for a long time, clean periodically all the parts and oil the parts that are not painted.

Do not use solvents, which may damage the painting and the parts made of synthetic materials.

At the end of every test check there are no damaged parts, on the contrary address directly to the Manufacturer.

Ensure that all procedures described in the Chapter “**PERIODICAL INSPECTIONS**” are correctly and punctually executed. This care will help preventing failures and dysfunctions.

7.2	PERIODICAL INSPECTIONS
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Ensure that all procedures described in this Chapter are correctly and punctually executed. This care will help preventing failures and dysfunctions.

OPERATION	OIL CHECK
PROCEDURE	Ensure oil is at the right level. If the oil is not enough, add the necessary quantity slowly.
FREQUENCY	EVERY 5 WORKING HOURS

7.3	PERIODICAL OPERATIONS
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Ensure that all procedures described in this Chapter are correctly and punctually executed. This care will help preventing failures and dysfunctions.

OPERATION	OIL REPLACEMENT
PROCEDURE	Follow the procedure as described in the original motor manual, preferring for our machine the oil replacement on the upper side of the motor. Replace the oil with a new one having viscosity SAE 40
PRECAUTIONS	Before turning the motor upside down to drain the oil, ensure the petrol tank is empty, if not leave the motor works until there’s no more fuel inside.
FREQUENCY	50 WORKING HOURS

OPERATION	CLEANING AND GREASING THE SCREW ALLOWING THE DRILLING GROUP DISPLACEMENT
PROCEDURE	Turn the wheel handle A7 and lift up the drilling group as much as possible; use a brush to clean the screw before greasing it.
FREQUENCY	DAILY

For other maintenance operations referred to the motor, consult the enclosed manual.

7.4	SPECIAL MAINTENANCE
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In case of special maintenance operations (repairs, replacement of parts and any other operation not described in this manual) ask directly to the manufacturer.

Chapter 8 | DIAGNOSIS

Some easy to solve and simple problem, which can happen during the working of the appliance, are introduced in this chapter.

ATTENTION

All maintenance, checking, control and repairing operations of each part of the machine or of the electric system, must be carried out by skilled operators instructed about the functions and working procedures of the appliance.

PROBLEM	POSSIBLE CAUSE	CURE
The motor doesn't start	No fuel	Add the necessary petrol to operate the motor.
	Carburettor is dirty	Clean it
	Sparking plug is worn out or encrusted	Replace the damaged plug with new one – same features.
The motor works but the diamond bit doesn't move/turn	Failure to the motor	Contact our After Sale Service.
	Belt is fallen down	Position the belt correctly.
	Belt is broken	Replace it.

Chapter 9 | SCRAPPING

9.1 | SETTING ASIDE

In case of setting aside for a long time it is necessary to disconnect the electric feeding. Execute all the maintenance operations. It's recommended to cover the machine against the dust.

9.2 | SCRAPPING

When the machine is not used anymore, it is recommended:

- Disconnect the feeding cable
- Cover/destroy all the parts which may be dangerous as cutting, projecting or sharpened ones.
- Disassemble the machine and scrap it as per the actual laws.