

PURPOSE

TH 2100 pulley block may be used in arboriculture (sectional tree felling) and lifting loads. Device is designed for lifting and lowering loads. The device is not designed for use as personal fall arresting equipment.

BASIC DEFINITIONS

- WLL - Working Load Limit
- MBS - Minimum Breaking Strength
- SF - Safety Factor

TECHNICAL DATA

Possible use with steel rope	No
Admissible workin rope diameters	Ø 8... Ø 12
Gear ratio of the device	4:1
Conformity with	Machinery Directive 2006/42/EC
WLL (Working Load Limit)	10 kN
MBS (Minimum Breaking Strength)	50 kN
SF (Safety Factor)	5:1
Weight of set (without working rope)	3,33 kg

Cam cleat for working rope locking during lowering

TU 411 Upper rope block

Catch for connecting the end of working rope

working rope (sold separately)

DESIGN

The TH 2100 pulley block set consist of the following elements:

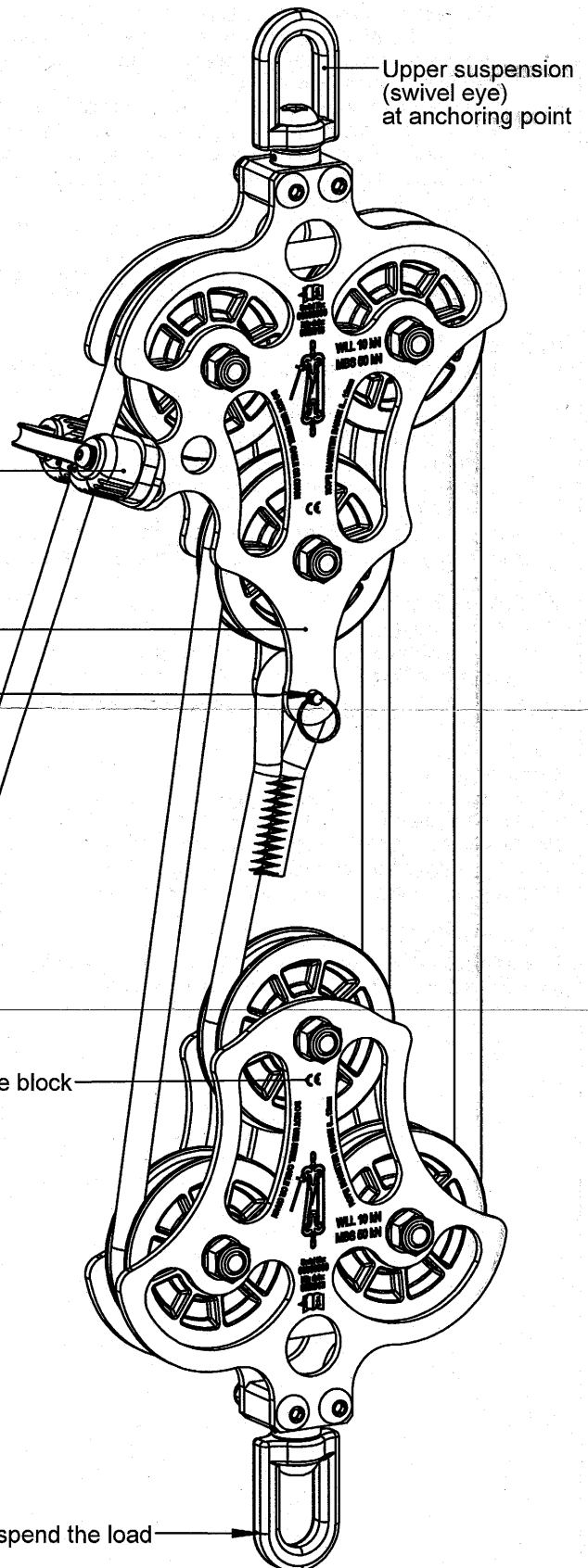
- a) TU 411 - upper rope block with cam cleat for rope locking
- b) TU 412 - lower rope block
- c) working rope (sold separately)

Both (upper and lower) blocks consist of reinforced with fiberglass plastic wheels with ball bearings, connected with stainless steel plates. The axles and connectors (bolts, nuts, washers) are made of galvanized steel. Each block is provided with swivel eye made of aluminium alloy.

Upper rope block TU 411 is additionally equipped with cam cleat for locking working rope position during lowering loads and catch for connecting the end of the working rope.

TU 412 Lower rope block

Lower swivel eye to suspend the load



ESSENTIAL PRINCIPLES OF USE AND GENERAL SAFETY RULES

- The device is designed to use only for lifting loads. This device shall not be used as a rescue or fall arrest device.
- The device is subject of the EU Machinery Directive 89/686/EEC.
- Before each use the device should be examined in accordance with the " Inspection".
- During use the device must be protected against mechanical, chemical and thermal damages.
- Soiled device should be cleaned in accordance with the "Storage and maintenance".
- It is forbidden to make any alterations or additions to the equipment without the manufacturer's prior written consent.
- Any repair shall only be carried out by equipment manufacturer or his certified representative.
- It is forbidden to use combinations of items of equipment in which the function of any one item is affected by or interferes with the function of another.
- There are many hazards that may affect the performance of the equipment and corresponding safety precautions that have to be observed during equipment utilization, especially:- trailing or looping of lanyards or lifelines over sharp edges,- any defects like cutting, abrasion, corrosion, - climatic exposure,- pendulum falls,- extremes of temperature,- chemical reagents,- electrical conductivity.
- This product is designed for use in normal atmospheric conditions (-40°C...+50°C).
- Humid environment and icing may reduce the strength and working load capacity of the device. In case of operation in an aggressive environment please contact the manufacturer or his certified representative.
- The fixed structure element to which the device is fastened must have stable construction and have minimal static strength at least twice the weight of load.
- Check the connections between fixed structure element and winch and the load to avoid accidental disconnection any of the elements.
- Particular care should be taken when working rope is blocking with use of the cam cleat. Do not allow any employees to stand directly under the suspended load.

INSPECTION:

- Inspection is required to keep the proper maintenance of the equipment and ensure the safety of the use, which depends on continuous performance and durability of the device.
 - Before each use it is obligatory to:
 - Inspect all parts of the equipment in respect of any damages (mechanical, chemical and thermal), excessive use, corrosion, abrasion, cutting or incorrect acting.
 - Inspect connection stability to the fixed structure element and compliance of assembled components. During inspection the legibility of the device marking.
 - Inspect connections of the device parts to avoid accidental disconnection any of the elements.
- In case of any damages mentioned above device should be withdrawn from use.

WITHDRAWAL FROM USE

The device must be withdrawn from use immediately when any doubt arise about its condition for safe use and not used again until confirmed in writing by equipment manufacturer or his representative after carried out the detailed inspection. Any repair shall only be carried out by equipment manufacturer or his certified representative.

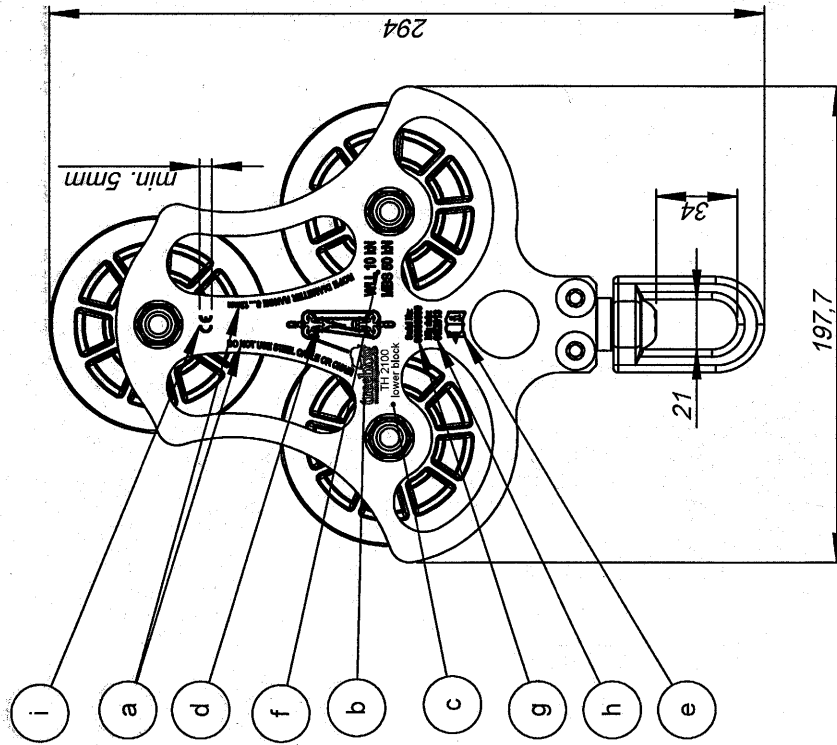
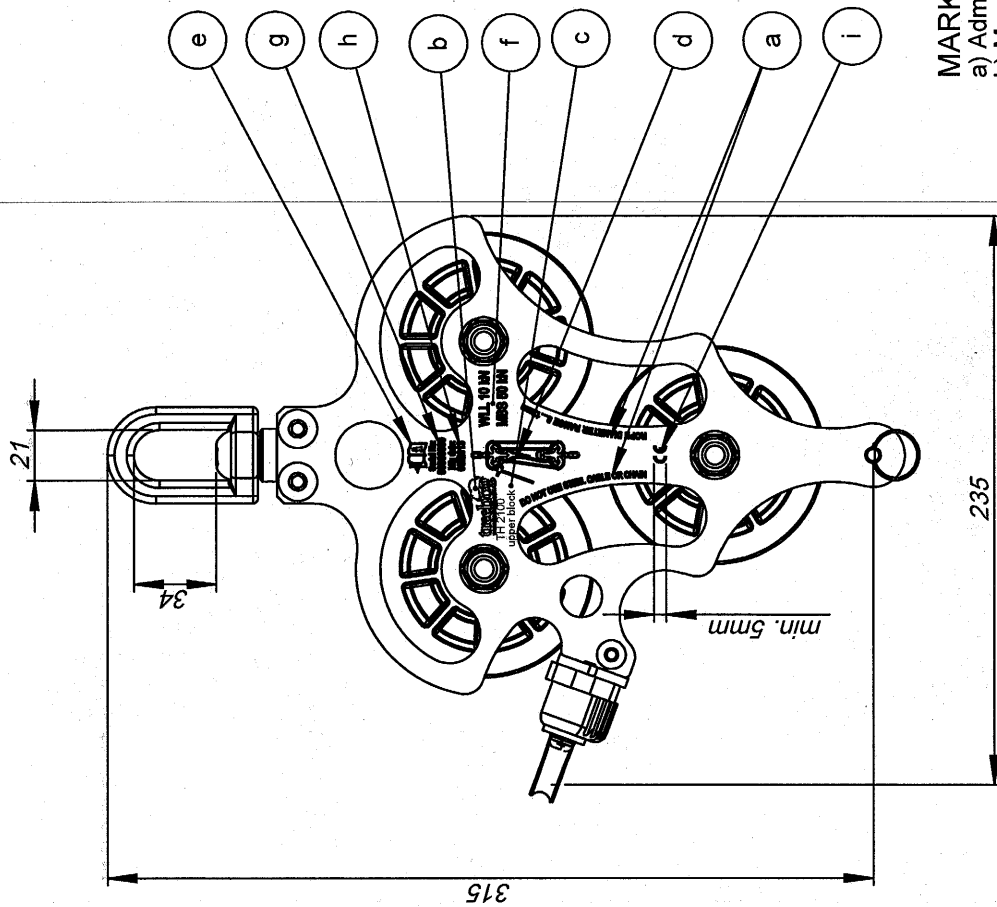
STORAGE AND MAINTENANCE

The device can be cleaned and disinfected without causing adverse effect on the materials in the manufacture of the equipment. For textile products use mild detergents for delicate fabrics, wash by hand or in a machine and rinse in water. Plastic parts can be cleaned only with water. When the equipment becomes wet, either from being in use or when due cleaning, it shall be allowed to dry naturally, and shall be kept away from direct heat. In metallic products some mechanic parts (spring, pin, hinge, etc.) can be regularly slightly lubricated to ensure better operation. the winch should be stored loosely packed, in a well-ventilated place, protected from direct light, ultraviolet degradation, damp environment, sharp edges, extreme temperatures and corrosive or aggressive substances.

TRANSPORTATION

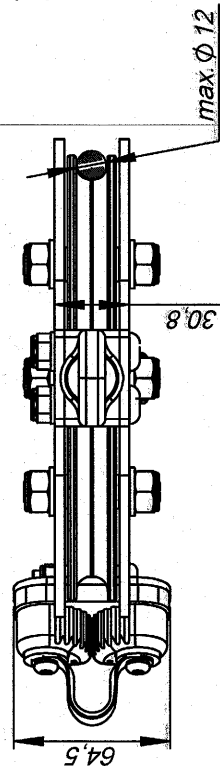
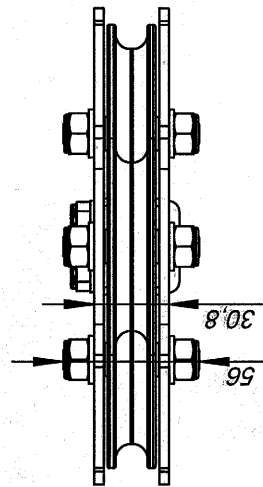
The device must be transported in the package (e.g.: bag made of moisture-proof textile or foil bag or cases made of steel or plastic) to protect it against damage or moisture.

DEVICE DIMENSIONS / MARKING



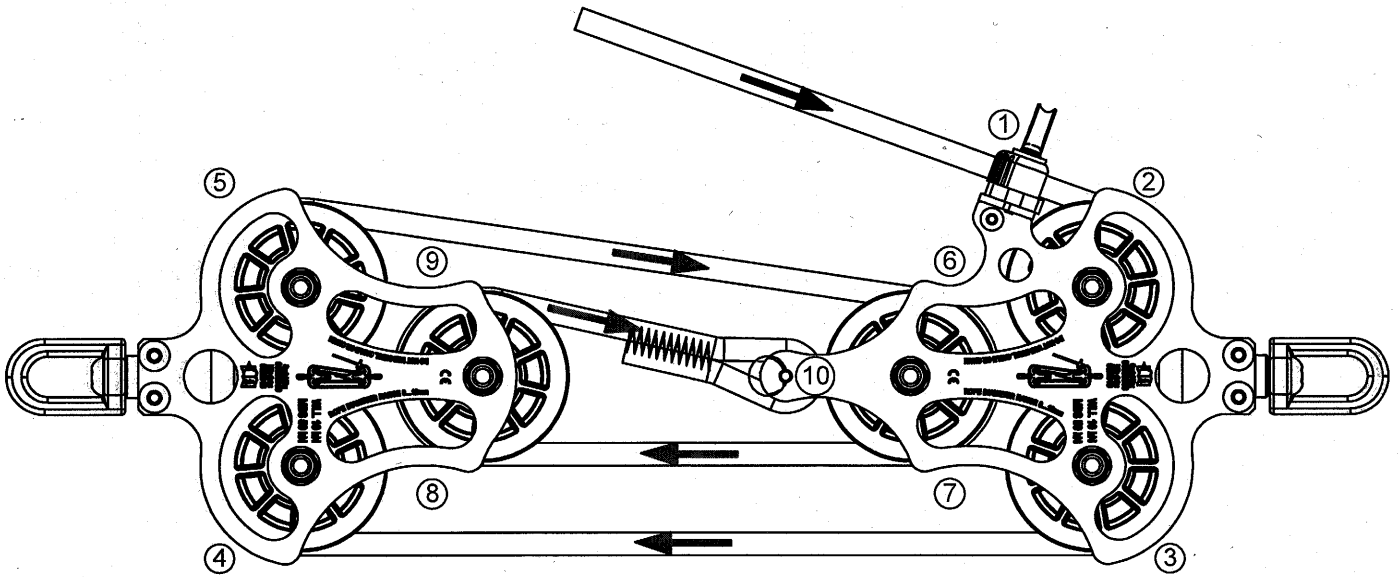
MARKING DESCRIPTION

- a) Admissible workin rope parameterd
- b) Manufacturer's marking
- c) Reference number
- d) Diagram showing workin rope mounting
- e) Caution: read the manual
- f) Working Load Limit / Minimum Breaking Force
- g) Serial number
- h) Month and year of manufacture
- i) CE marking

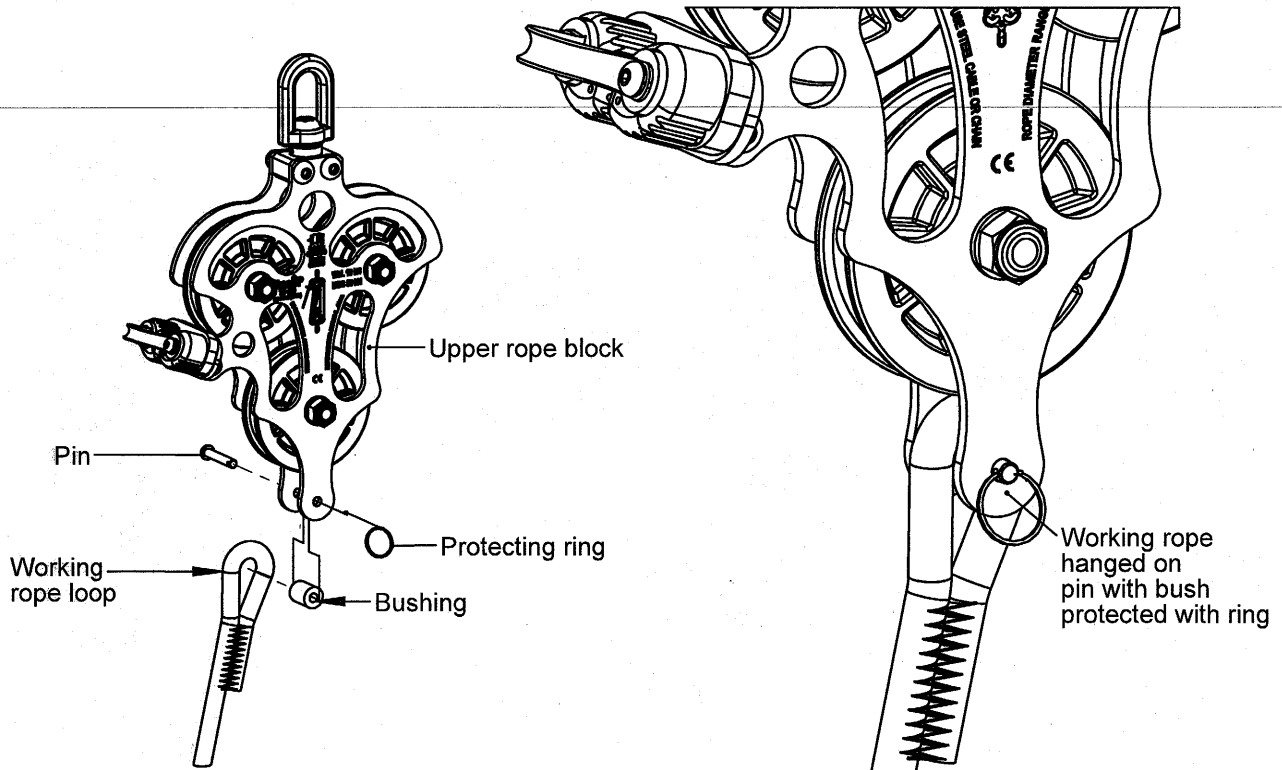


WORKING ROPE INSTALLATION

1. Pull the end of the working rope, provided with a loop, through the rope blocks elements as shown in the drawing (the respective pictogram is also provided on each rope block) according to the sequence of digits.



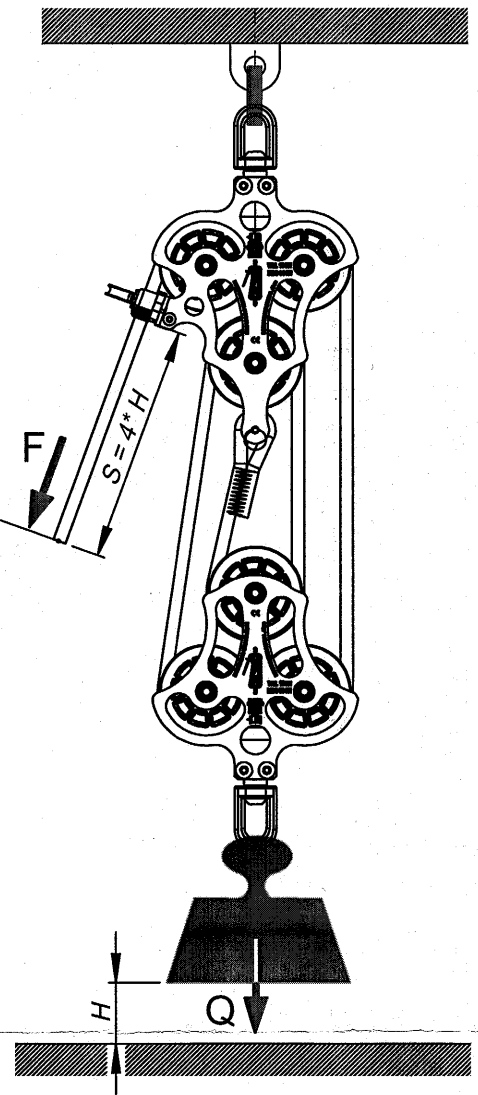
2. Demount the pin protected by a protecting ring and remove the plastic bushing.
3. Place the bushing in the working rope loop.
4. Place the working rope with bushing between the plates of the upper rope block.
5. Drive the pin through the openings in the rope block plates and the opening in the bushing.
6. Secure the pin against accidental removal with the protecting ring.



ADMISSIBLE LOAD

TH 2100 pulley block is designed to lifting and lowering loads of "Q" mass, with gear ratio 1:4, which allows 1/4 reduction of the force "F" required for lifting or lowering the load. This is the ideal case. In reality there are losses resulting i.a. from rigidity of working rope and friction occurring in bearings. The value of ball bearings is $n=0,95$. The Working Load Limit (WLL) for the TH 2100 device is 10kN (~1000kg). The theoretical force required for lifting such load is 2,5kN (~250kg). In order to further reduce the force required for lifting/lowering the load the use of other lifting/lowering equipment (attached to the free working rope end) is allowed.

Possibility of use additional lifting/lowering equipment attached to the free working rope end



REQUIRED WORKING ROPE LENGTH

With the reduction of force required to lift or lower a load, the length of "S" working rope grows fourfold to lift it by height "H". Example: to lift a load to the height $H=3m$, the length of working rope pulled from device should be: $S = 4 * H = 4 * 3m = 12m$. This should be taken into account when selecting the required length of the working rope.

Reference number of TH 2100 working rope:

TH 2100 - 200 - D - L

where:

D - working rope diameter [mm] (between $\varnothing 8$ and $\varnothing 12mm$)

L - working rope length [m]

The length of working rope required to wind around all wheels of the device is 2.3m and is automatically added to the ordered working length of the rope.

Cam cleat blocking working rope

working rope unlocked position

(3b)

(2)

(3a)

(1)

Working rope

20°

45°

Working rope locked position

LIFTING / LOCKING / LOWERING

(1) LIFTING LOADS

During lifting loads working rope moves with respect to the jaw of cam cleat, opening them.

(2) LOCKING THE LOWERING MOTION

When the working rope is let loose (when the inclination to the vertical does not exceed 20° the jaws close on the rope and prevent automatic lowering of the load.

(3a) (3b) LOWERING LOAD

In order to lower the load in a controlled way pull the working rope out of plumb in the direction away from the lowering load by an angle of about 45°. This operation ensures the necessity for the employee to step away from the lowered load to a safe distance, increasing the safety during work with the device.

ATTENTION!

When locking working rope with the use of the cam cleat take particular care and do not allow employees to stay within the area directly under the suspended load.

IDENTITY CARD

IT IS RESPONSIBILITY OF THE USER ORGANISATION TO PROVIDE THE IDENTITY CARD AND TO FILL IN THE DETAILS REQUIRED. THE IDENTITY CARD SHOULD BE FILLED IN ONLY BY COMPETENT PERSON RESPONSIBLE FOR PROTECTIVE EQUIPMENT. THE IDENTITY CARD SHOULD BE FILLED IN BEFORE THE FIRST USE OF THE EQUIPMENT. ANY INFORMATION ABOUT THE EQUIPMENT LIKE: PERIODIC INSPECTIONS, REPAIRS, REASONS OF EQUIPMENT'S WITHDRAWN FROM USE SHALL BE NOTED. THE IDENTITY CARD SHOULD BE STORED DURING A WHOLE PERIOD OF EQUIPMENT UTILIZATION. DO NOT USE THE EQUIPMENT WITHOUT THE IDENTITY CARD.

MODEL AND TYPE OF EQUIPMENT	
REF. NUMBER	
SERIAL NUMBER	
DATE OF MANUFACTURE	
DATE OF PURCHASE	
DATE OF FIRST USE	
USER NAME	

PERIODIC EXAMINATION AND REPAIR HISTORY

	DATE	REASON FOR SERVICING / REPAIR	REPAIRS CARRIED OUT	NAME AND SIGNATURE OF COMPETENT PERSON	DATE OF NEXT EXAMINATION
1					
2					
3					
4					
5					
6					
7					
8					
9					

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