OPERATOR'S SAFETY AND SERVICE MANUAL

CE

F24 Trowel Machine



This manual covers the following serial numbers for each model listed:
F24……1740249-174999



MBW, Inc. 250 Hartford Rd · PO Box 440 Slinger, WI 53086-0440 Phone: (262) 644-5234 Fax: (262) 644-5169 E-mail: mbw@mbw.com Website: www.mbw.com	**MBW (UK) Ltd.** Units 2 & 3 Cochrane Street Bolton BL3 6BN, England Phone: 01204 387784 Fax: 01204 387797	

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MBW, Incorporated (MBW) thanks you for purchasing one of its products and invites you to read this manual.
This manual includes instructions for use, maintenance and spare parts list for the MOSKITO trowel machine.

Inside you will find all the information necessary for correct use of trowel machine purchased; therefore, the user must carefully follow the warnings contained in it and read it in every part to better understand the machine and avoid incurring problems caused by improper use.

According to the accident prevention regulations, the operators must be equipped with all the individual protection devices (P.P.E.) necessary to guarantee their own safety (safety shoes, safety helmet, gloves, ear protectors, etc.).

Please keep the manual in a suitable place to keep it intact.

The contents of this manual may be changed without notice or further obligation in order to include changes and improvements to the units already sent.
It is forbidden any reproduction or translation of any part of this manual without prior written notice and authorization by **MBW.**

No part of this publication may be reproduced, stored in a system or transmitted to third parties in any form or by any means, without prior written authorization by the Manufacturer.

INTRODUCTION





Operation and maintenance manual is an integral part of the machine: it is necessary to keep it intact and in a safe place during the whole life of the same, even in case of transfer to another user.

The MACHINE must be used in accordance with what specified in this manual: it is therefore recommended to read it carefully before operating it, not to mention nothing written and paying particular attention to messages in the boxes.

This manual has been produced with reference to the provisions of the Machinery Directive 2006/42 / EC as amended, with the aim of providing the user with general knowledge of the machine and with information for:

- Proper awareness of SAFETY issues.
- The intended use of the MACHINE, the characteristics of the user and the residual risks.
- The handling, installation, use and maintenance of the machine safely.
- The demolition of the machine and its disposal in safe conditions and in compliance with the regulations in force to protect the health of workers and the environment.

Compliance with the rules and recommendations contained in the manual provide safe and appropriate intervention.

EC DECLARATION OF CONFORMITY

(Directive 2006/42/EC-Annex IIA)
(written in the original language)

Name and address of the manufacturer of the machine:

BARIKELL S.r.l.
Via Razzaboni, 118 41122 Modena (Italy) – Tel. +39 059 31.11.78 – email info@barikell.it

Name and address of the company authorized to the draft of technical file: **SEMPREANORMA S.r.l.**

Via Turrini, 17 40012 Calderara di Reno Bologna (Italy) – Tel:+39 051.75.52.05
in the person of Pasquale Posa

We hereby declare that the machine: Trowel Moskito 60

Serial number:

Year Built: **2018**

Briefly described below:

The troweling machine, equipped with a rotating free wheel, allows the finishing of the edges on concrete floors, resin floors and substrates

it complies with directive 2006/42 / EC, directive 2014/30 / EU (electromagnetic compatibility) and 2014/35 / EU (low voltage) and the legislative provisions that transpose them

It is also compliant with the following harmonised standards:

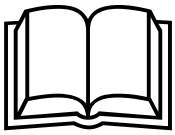
- **UNI EN 12100:2010;**
- **UNI EN ISO 13849-1:2016;**
- **CEI EN 60204-1:2016;**
- **ISO 13105-2:2014.**

Modena,

In witness thereof

Luca Zivieri

(Legal representative Barikell S.r.l.)



CHAPTER **1**

1 GENERAL INFORMATION

1.1 Global aspects about safety

1.2 Safety signs

1.3 Symbols and glossary

1.4 Revision of the manual

1.5 Spare parts order

1.6 General warranty conditions

1.1 *GLOBAL ASPECTS ABOUT SAFETY*



Compliance with the rules and recommendations contained in this publication allows safe use of the machine and appropriate action.

1) The best performance and maximum life of the machine will be obtained from the proper use of the same. It is, therefore, necessary to scrupulously observe the instructions contained in this booklet;
2) Any requests for spare parts must be accompanied by the type of model and serial number reported in the spare parts list or applied on the number plates of the components themselves;
3) The machine installation must be carried out in compliance with the safety regulations in force;
4) Do not remove or tamper with the protections and safety devices, check periodically their effectiveness;
5) Strictly adhere to the warnings recalled on the danger postings (pictograms) and keep the message readable;
6) Operation and maintenance must be performed by qualified personnel, trained and authorized to the tasks foreseen. Intervention procedures and responsibilities of operators must be clearly defined to ensure safe and proper use and maintenance;
7) Before any maintenance or adjustment work, all the power supplies must be disconnected and locked, ensuring that they are not subject to unintentional start-ups;
8) The maintenance of the machine carried out in a manner that does not comply with the instructions provided, with non-original spare parts or without written authorization by the company that performed the maintenance of the used machine or in any case in such a way as to jeopardize its integrity or modify its characteristics, exempts the company itself from any liability concerning the safety of persons and the faulty operation of the machine.

- **The user shall be required to respect warning about periodic maintenance indicated in Chapter 6;**
- **The user shall be required to respect the qualifications of the operating personnel:**

OPERATOR / MAINTENANCE TECHNICIAN: Performs the tasks necessary for the basic operation of the machine: execution of the work cycle, implementation of operator commands, other interventions strictly related to normal production, possible daily cleaning and inspection, execution of ordinary maintenance operations (CFR. CHAP. 6). Strictly operates with safety devices enabled.

MAINTENANCE TECHNICIAN SPECIALIST (RESELLER)



Involved in all the operating conditions and levels of protection. Performs extraordinary interventions that cannot be run by the user (See CHAP. 6 about maintenance).

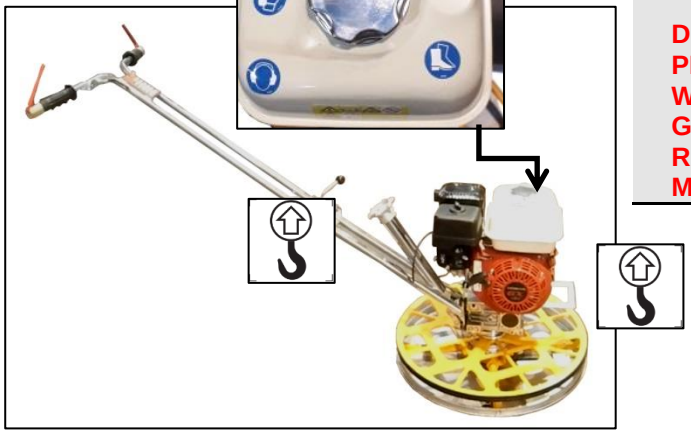
1.2 *SAFETY SIGNS (PICTOGRAMS ON THE MACHINE)*

It is absolutely necessary to recognize the meaning of the indications present on the machine and keep their message readable.

In case of damage replace them immediately. The following safety signs (pictograms) are installed. Residual risks are summarized in Chapter 2 PAR. 2.7.

WARNING SIGN GENERAL "MANUAL READING OBLIGATION"
INDICATION SIGNAL "USE LIFTING HOOK"
INDICATION SIGNAL "FIX THE LOAD TO TRANSPORT MEANS" (if applicable)
WARNING SIGN "DANGER of MOVING PARTS"
WARNING SIGN "DANGER of HIGH TEMPERATURES"
OBLIGATION SIGNAL "OBLIGATION TO USE EAR PROTECTORS"
OBLIGATION SIGNAL "OBLIGATION TO USE SAFETY SHOES"





!WARNING!

DO NOT REMOVE, DAMAGE OR MODIFY THE PICTOGRAMS ON THE MACHINE. BEFORE EACH WORK SHIFT CHECK THEIR PRESENCE AND THE GOOD STATE OF PRESERVATION. IF DAMAGED, REPLACE THEM, PREVENTING THE USE OF THE MACHINE UNTIL REPLACEMENT.

1.3 ***SYMBOLS AND GLOSSARY***

- **DANGER:** a potential source of injury or damage to health;
- **HAZARDOUS AREA:** any area inside and/or near the machine in which the presence of a person constitutes a risk to safety and health of that person;
- **EXPOSED PERSON:** any person wholly or partially in an hazardous area;
- **OPERATOR:** the person or persons given the task of installing, operating, adjusting, cleaning, repairing, moving or performing maintenance on the machinery;
- **RISK:** combination of the probability and severity of an injury or damage to health that can arise in a hazardous situation;
- **INTENDED USE:** the use of the machine in accordance with the information provided in the operating instructions (para. 2.2);
- **REASONABLY FORESEEABLE MISUSE:** the use of the machine in a way other than that indicated in the instructions for use, but which may result from readily predictable human behavior;
- **HUMAN-MACHINE INTERACTION:** any situation in which an operator interacts with the machine in any of the operational phases and at any time of life of the machine itself;
- **OPERATOR QUALIFICATION:** minimum level of competences the operator must possess to perform the operation described;
- **NUMBER of OPERATORS:** number of operators needed to carry out in the best way the operation described and resulting from a careful analysis carried out by 'Manufacturer', whereby the use of a different number of employees might prevent from getting the expected outcome or impair the safety of the personnel involved;

- **MACHINE STATUS,** means:
  the mode of operation: automatic gear, manual operation, shutdown.
  the condition of the safety devices on the machine: guards included, guards excluded, emergency stop pressed, type of sectioning of energy sources, etc .;
- **GUARD:** part of the machinery used specifically to provide protection by a material barrier;
- **SAFE STOP:** stopping condition obtained through security measures that avoid unexpected start of hazardous bodies;
- **RESIDUAL RISK:** risk that it was not possible to eliminate or reduce sufficiently through the design, against which the protections are not (or not totally) effective.
- The manual gives the information of its existence and instructions/warnings to overcome it;
- **SAFETY COMPONENT:** means a component used for ensuring a safety function and whose breakdown or malfunction affects the safety and/or health of exposed persons (eg. lifting device; fixed, mobile, adjustable guard, etc., electrical, electronic, optical, pneumatic, hydraulic, interlocking of a guard, etc.).
- **ABBREVIATIONS:**
- CHAP. = Chapter
- PAR = Paragraph
- P. = Page
- FIG. = Figure
- TAB = Table
- PPE = Personal protective equipment
- CFR = Compare

Symbols are used in this publication with the following meaning:

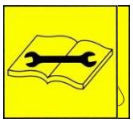
! IMPORTANT: Indicates important technical information which must not be overlooked.

! IMPORTANT

!WARNING: Indicates that it is necessary to adopt appropriate behaviours not to put at risk the health and safety of persons and not to cause economic damage.

! WARNING

Generic warning sign that defines the obligation to read the manual:



1.4 *SPARE PARTS ORDER*

The order of spare parts should clearly report the data needed for their identification and the data shown on the machine identification plate.

For further information we suggest contacting the manufacturer.

Ex.:

- Machine model
- Type
- Serial number
- Year of build
- Description
- Requested quantity
- Method of delivery
- Address, telephone number and name of the applicant

1.5 *REVISION OF THE MANUAL*

We recommend keeping this manual constantly updated, integrating it with the comments received by the maintainer. It is appropriate that any annotations or comments are inserted in a clear way.

Any amendments, additions or modifications must be documented using the form shown on the next page. The update must be performed on all copies.

The 1st revision of release of the manual is validated by the manufacturer who takes note of it and adopts the instructions contained therein.
See the table below.

REVISION n.	DATE	AFFECTED PAGES	SIGNATURE EDITOR INSTRUCTIONS	NOTES	VALIDATION FOR ACKNOWLEDGEMENT OF THE MANUFACTURER
01	10/2018	ALL	*Spin automations*	_	

1.6 ***GENERAL WARRANTY CONDITIONS***

The new machines covered by warranty with regard to the structure and use of suitable materials, subject to the following conditions:

1) Warranty is valid for a period of twelve (12) months.

2) The manufacturer undertakes to repair or replace at its discretion any parts or groups which have proved to be defective.

3) Repaired or replaced parts are covered under the same warranty as the original parts, expiring 12 months after the implementation of the parts themselves.

4) For completion of the work required and for delivery of spare parts the manufacturer reserves adequate time.

5) All transport costs of the parts intended for replacement covered by this warranty will be borne by the purchaser.

6) Repairs and interventions carried out during the warranty period by unauthorized personnel will void any right to warranty.

7) During the warranty period the replaced parts become the property of the manufacturer.

8) For the components not produced by us, the warranty conditions of the original suppliers apply. Any claims will be transferred to the buyer.

9) This warranty is valid and applicable only to the original purchaser. -
The warranty is void if the following situations happen:

a) The original owner transfers ownership of the machine,
b) If any changes have been made to the machine,
c) If parts and accessories not manufactured by us on have been added on the machine.

10) No responsibility is assumed for any damage caused to the floor by malfunctioning or stopping of the trowel machine during the processing phases.

11) The warranty does not include damage deriving from excessive stress, such as, for example, the continuation of the machine's operation after the detection of an anomaly due to improper use or maintenance, the use of inappropriate operating materials as well as the non-observance of the Instructions for Use. The same applies to damages caused by normal wear and tear.

12) The manufacturer assumes no liability arising out of any difficulties related to resale or use abroad of the machine due to the application of provisions of the law relating to the protection of industrial property in force in the country where the machine is sold.

13) With regard to the engine warranty, the conditions of the original suppliers apply.

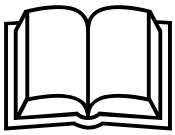
14) Established warranty conditions are binding for all sellers of MBW. Any different agreements will be considered valid only upon confirmation in writing by MBW.

15) Labor and processes necessary for the replacement of defective parts under warranty are charged to the Customer.

IMPORTANT!

Should it be necessary to use the warranty, please provide the following information:

- **Model and serial number of both the machine and the engine**
- **Date of purchase**
- **Detailed description of the problem.**



CHAPTER **2**

2 MACHINE CHARACTERISTICS

2.1 Identification data of the machine
2.2 Intended use
2.3 Use prohibited
2.4 Technical and dimensional features/noise/vibration/non-ionizing radiation
2.5 Layout/operation and maintenance area/operator position
2.6 General description
2.7 Types of power supply
2.8 Safety measures
2.9 Information on residual risks

WARNING

Do not remove, damage or modify the machine identification data present on it. In the event that data become unreadable immediately contact the manufacturer.

2.1 *IDENTIFICATION DATA OF THE MACHINE*

In order to ensure proper identification of the machine, please refer to the serial number stamped on the invoice and the data imprinted on the manufacturer's plate bearing the CE marking symbol attesting to its conformity to the applicable directives.
The plate has the following required content:

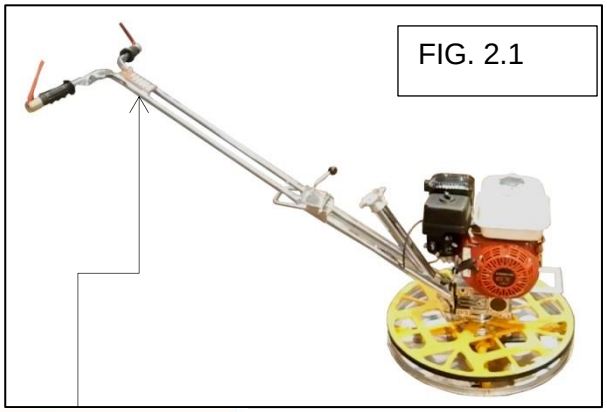


FIG. 2.1



1

- **Manufacturer's name & address (1)**
- **CE marking (2)**
- **Build year (3)**
- **Type designation (4)**
- **Serial number (5)**
- **Engine serial number (6)**
- **Power of the engine (7)**
- **Mass in kg (8)**

2.2 *INTENDED USE*

The trowel machine "Moskito" is meant to perform finishing of edges of concrete floor, resin flooring and/or substrates. To make this process the machine is equipped with a 4 or 6 blades rotor depending on the version, powered by an internal combustion engine. The fuel used is unleaded petrol, which comes from the tank to the carburettor after being filtered. Only one operator is required to operate the machine.
He should be able to move freely and unhindered.
This version of trowel machine (equipped with internal combustion engines) can be used exclusively outdoors and finishing work flush with the wall.
The machine may only be used by professional operators.

2.3 *PROHIBITED USE*

Any use other than as expressly set forth in paragraph (§ 2.2) and implemented in different ways or contrary to what is stated in this publication sets up the possibility of **misuse**.
The manufacturer declines all responsibility resulting from improper use which can cause personal injury and for any malfunction of the system.
THE FOLLOWING PROHIBITED ACTIVITIES CONFIG. MISUSE:

- **USE the MACHINE IN EXPLOSIVE ENVIRONMENT (THE ABOVE FACILITY IS NOT IN COMPLIANCE WITH ATEX 2014/34/EU).**
- **INTEGRATE WITH OTHER SYSTEMS AND/OR EQUIPMENT NOT CONSIDERED BY THE MANUFACTURER IN THE FINAL DESIGN.**
- **CONNECT THE MACHINE TO POWER SOURCE OTHER THAN THOSE SPECIFIED BY THE MANUFACTURER.**
- **USE THE MACHINE FOR A PURPOSE DIFFERENT FROM THAT EXPECTED AND SHOWN IN THIS PUBLICATION.**
- **USE THE MACHINE INDOORS.**
- **USE THE MACHINE NOT FLUSH WITH THE WALL.**
- **INFRINGE THE MAINTENANCE RULES DESCRIBED IN THIS PUBLICATION.**
- **USE THE MACHINE IN AIR CONTAINING SMOKE, DUST, WATER VAPOUR OR SOLVENTS.**

- **USE DIFFERENT EQUIPMENT THAN THOSE EXPRESSLY DESIGNATED BY THE MANUFACTURER.**
- **LET THE MACHINE TO BE OPERATED BY A NUMBER OF OPERATORS DIFFERENT FROM THAT EXPRESSLY PROVIDED BY THE MANUFACTURER (see PAR. 2.5 of this publication) OR DISOBEY THE DIRECTIONS REGARDING OPERATOR POSITIONING.**

2.4 *TECHNICAL AND DIMENSIONAL FEATURES / NOISE / VIBRATION / NON-IONIZING RADIATION*

DESCRIPTION	Measurement Unit	Code 3005	Code 3012	Code 3021	Code 3028
Size:	[mm]	600x1506x1000	600x1506x1000	600x1506x1000	600x1506x1000
Packing size	[mm]	650x910x 800	650x910x 800	650x910x 800	650x910x 800
Operating weight	[kg]	61	62	63	64
Shipping weight	[kg]	78.5	79.5	80.5	81.5
Engine:	-	HondaGX160	Robin EX 17	GX160	Robin EX 17
Installed power:	[w/HP]	4 (5.5)	4.2 (6)	4 (5.5)	4.2 (6)
Starting:	[Type]	Manual	Manual	Manual	Manual
Cooling:	-	Air	Air	Air	Air
Power supply:	-	Gasoline	Unleaded Gasoline	Unleaded Gasoline	Unleaded Gasoline
Gasoline tank capacity:	[Lt]	2.8	3.2	3.2	3.2
Disc diameter	mm	600	600	600	600
Number of blades	Nr	4	4	6	6
Gearbox lubricant	Type	**SYNTHETIC OIL FOR LONG LIFE REDUCERS ISO VG320 GRADING .**	**SYNTHETIC OIL FOR LONG LIFE REDUCERS ISO VG320 GRADING .**	**SYNTHETIC OIL FOR LONG LIFE REDUCERS ISO VG320 GRADING .**	**SYNTHETIC OIL FOR LONG LIFE REDUCERS ISO VG320 GRADING .**
Number of drive shaft revolutions	r/min.	3600	3600	3600	3600

NON-IONIZING RADIATION
The MACHINE <u>does not</u> emit non-ionizing radiation dangerous for the operators.

NOISE AND VIBRATION		
Residual noise values for machine in work		
Sound pressure Level LpA	dbA	79,4
Sound power Level LwA	dbA	95,5
Values of vibration for working machine		
Left handle value- increased exposure	$A_{hv\ sum}[m/s^2]$	< 2,5

2.5 *OPERATOR POSITIONS/LAY-OUT/USE AND MAINTENANCE AREA/*



1st level OPERATOR POSITION

A single operator must work with the machine.
He drives the machine by acting on the handlebar to move it according to the needs of the processing and performs some ordinary maintenance activities.

ATTENTION

Only one operator is required to drive the machine.
Tasks and positions are detailed in para (§) 2.5 of this publication.
Failure to follow the indications above conFIG.s the hypothesis of misuse and releases the manufacturer from any liability arising from misuse/abuse.

During use the operator position is adjacent to the handlebar of the machine.

The operator position is also considered an inspection position from which it is possible to oversee the smooth running of the working cycle.
The first level operator is also responsible for carrying out cleaning operations at the end of use.



2nd level OPERATOR (RETAILER-SPECIALIZED WORKSHOP)
The retailer (expert maintenance technician) performs maintenance and repair tasks provided by the manufacturer (compare Chapter 6 of this publication).
Always intervenes when the machine is stopped and energy cut.

IMPORTANT!

To define use and maintenance you need to about 1.5 m on all sides of the machine (fig 2.3 on next page).

2.6 *GENERAL DESCRIPTION*

The Trowel "Moskito" is dedicated to finishing of the edges on concrete floors, resin floors and substrates. Operation is manual.

The power supply is supplied by a an unleaded gasoline fuelled engine.

FUNCTIONAL GROUPS	
1	CONTROL LEVER (STOP)
2	LEVER AND ACCELERATOR CABLE
3	HANDLE FIXING KNOB
4	AIR FILTER
5	MUFFLER
6	FUEL TANK CAP
7	INTERNAL COMBUSTION ENGINE
8	FINISHING HEADSTOCK
9	STABILIZING CIRCLE
10	ROTATING PULLEY DRIVE
11	BELT FIXING GUARD
12	TROWEL DISC
13	BLADE ANGLE ADJUSTMENT KNOB

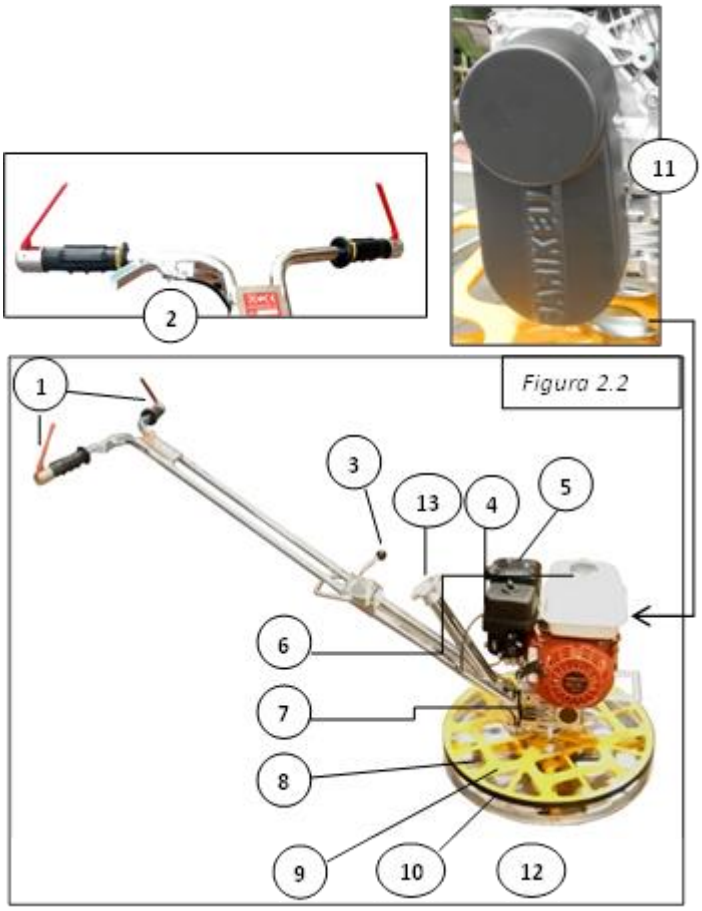


Figura 2.2

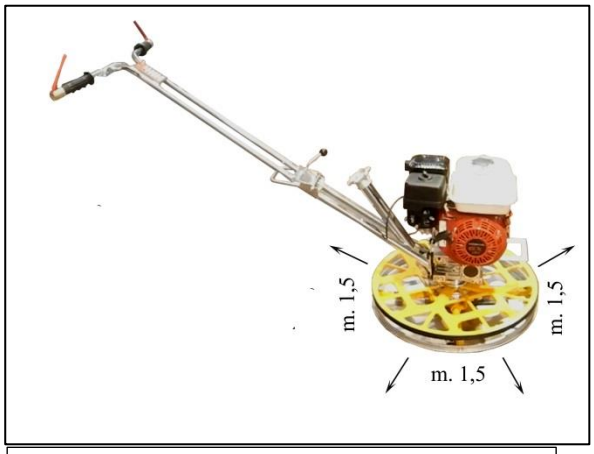


FIG. 2.3 Use and maintenance Area

2.7 *TYPES OF POWER SUPPLY*

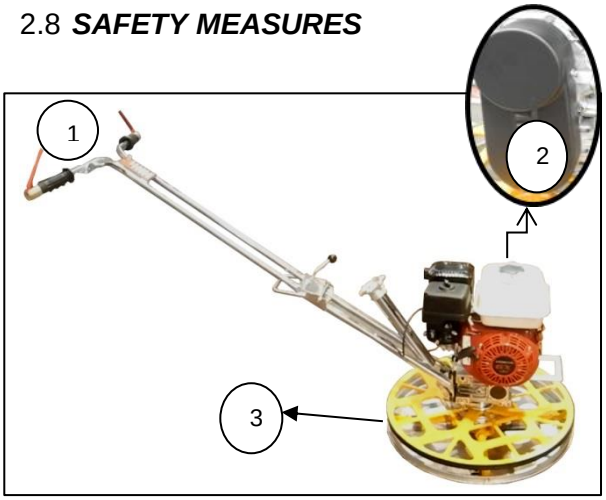
IMPORTANT!

For more detailed information about the characteristics of engine refer to the manual of the component that is an integral part of this publication.

The machine must be powered by following the instructions given by **MBW**.
For safe operation read the following information carefully:

- The device is powered by an air-cooled petrol engine powered by unleaded petrol..
- The engines fitted to the machine can be of different types (see technical characteristics, p. 14).
- The engine is started by pulling.
- The fuel consists of lead-unleaded petrol that from the tank reaches the carburetor after being filtered.
- The rotation motion of the trowel blades is transmitted by the engine to a centrifugal clutch, connected with a trapezoidal belt to the rotor gearbox.

2.8 *SAFETY MEASURES*



The safety measures included are:

1) **Stop levers (maintained action commands)**
2) **Timing belt fixed guard**
3) **Fixed guards of blades segregation. Horizontal distance between handlebar and dangerous bodies equal to 900 mm.**

2.9 *INFORMATION ON RESIDUAL RISKS*

Despite the application, in the design phase, of the precepts contained in the safety requirements (RESS) provided for by current legislation and despite the activity of adopting safety measures, there is a residual risk that cannot be eliminated. Residual risks are appropriately reported through the application of specific **SAFETY SIGNALS** called **PICTOGRAMS** located at the danger zones.
The pictograms have different informative values, namely:

- **WARNING SIGN: BLACK AND YELLOW TRIANGLE**
- **PROHIBITION SIGNS: WHITE AND RED CIRCLE**
- **SIGNS OF OBLIGATION: BLUE AND WHITE**

RESIDUAL RISKS ARE SUMMARIZED IN THE TABLES ON THE FOLLOWING PAGES (from page 17 to page 21).

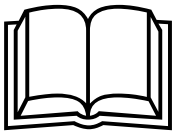
RISKS	Reference Signs			SI	Residual Risks
	Danger	Prohibition	IPD		
MECHANICAL + PNEUMATIC					
Inadequate spaces					It is forbidden to start the machine without connecting the float disc to the vanes as indicated in the user manual. There is a risk of entanglement, prohibited use of loose or fluttering clothing (are banned scarves, scarves, or ties non-adherent clothing). In case you need to replace the disc, you need to use protective gloves as some components (blades), if worn out, could be sharp. In case it is necessary to lift the machine (operation allowed only through the lifting hook supplied), first remove the trowel disk in as it could inadvertently disengage. It is mandatory to use the devices of individual protection required for the employee (safety shoes, gloves, mask). Before starting maintenance activities, carefully read the instructions in the user manual. It is prohibited to circumvent the safety devices implemented on the machine.
Caught, entrapped, dragged				✓	
Crushing of upper limbs				✓	
Crushing of lower limbs				✓	
Shearing				✓	
Abrasions, cuts, punctures and/or perforations				✓	
Collisions, impacts and/or compressions with materials and equipment					
Slip, stumble and fall					
Collisions and/or impacts with transport means in transit					
Falling objects					
Projection of materials				✓	
Injuries deriving from poor lighting of spaces and/or working stations					
Projection of fluids at high pressure					

RISKS	Reference Signs			SI	Residual Risks
	Danger	Prohibition	IPD		
THERMAL					
Presence of heated surfaces, heat and flames				✓	Necessary to wait for the cooling of the engine and muffler surfaces before conducting maintenance activities. Use heat resistant gloves.
Scalds/burns caused by contacts with heated surfaces					
Presence of cold surface					
NOISE					
Localized noise				✓	Obligation to use DPI ear protectors
Background noise					
Injuries caused by interferences in verbal communication					
VIBRATIONS					
Vibrations transmitted to the whole body				✓	Obligation to use anti-vibration gloves. Limit exposure times
Vibrations transmitted to the complex hand-arm					

RISKS	Reference Signs			SI	Residual Risks
	Danger	Prohibition	IPD		
RADIATION					
Ionizing radiation					Not applicable.
Non-ionizing radiation, heat, light					
Laser equipment					
Exposure to Infrared and Ultraviolet Rays					
DIRECT AND INDIRECT ELECTRICAL					
Electrocution caused by direct and indirect contacts					Not applicable.
Electrostatic phenomena					
Electric arcs					
Injuries caused by failures in power supply and/or in the control system					
Exposure to electromagnetic fields					

RISKS	Refrence Signs			SI	Residual Risks
	Danger	Prohibition	IPD		
FIRE AND EXPLOSION					
Fire and explosion				✓	The tank filling operations of petrol must be carried out in well ventilated environment and far from possible sources of heat or flames.
Presence of explosive athmospheres					
PHYSICAL WORKING LOAD					
Manual handling of loads					Not applicable.
Repeated actions of upper limbs					
Incorrect positions and/or excessive physical efforts					

RISKS	Reference Signs			SI	Residual Risks
	Danger	Prohibition	IPD		
CHEMICAL + BIOLOGICAL					
Injuries caused by the presence and use of stored chemical products					The trowel activities must be carried out in environments with adequate ventilation. The use of protective devices is recommended for the protection of the airways.
Splashes					
Ingestion					
Inhalation				✓	
Diseases caused by the presence of fluids, gases, fogs, fumes and powders					
Direct contacts					
Exposure to carcinogenic and mutagenic agents					
Exposure to asbestos					
Deliberated use of biological agents					
Accidental presence of biological agents					
Handling of potentially infected waste					



CHAPTER **3**

3 TRANSPORT AND LIFTING

3.1 Packing and unpacking

3.2 Lifting and handling

3.3 Transport

3.4 Storage

3.5 Check for any damage to the machine

The operation of packing, handling, transport and unpacking must only be carried out by qualified personnel with perfect knowledge of the equipment to be used and safety rules and regulations. The means used for the handling, lifting and transport must be intact and capable of performing the required operations safely, taking into account the size, weight, projections, delicate parts and the center of gravity of the machine. Avoid improper uses and maneuvers, especially avoid maneuvers outside your field of competence and responsibility. Carry out handling and lifting using only the recommended means by harnessing the machines at the points indicated. **Always wear work gloves and safety shoes**. Do not place hands or other body parts under lifted components.

3.1 *PACKING AND UNPACKING*

The Trowel Machine Moskito remains intact at the time of packaging.
It is necessary to perform these operations when packing the machine:

- Fold the handle by means of the special lever (Fig. 3.1, a) and place the blades in a horizontal position using the adjustment knob (Fig. 3.1, b).

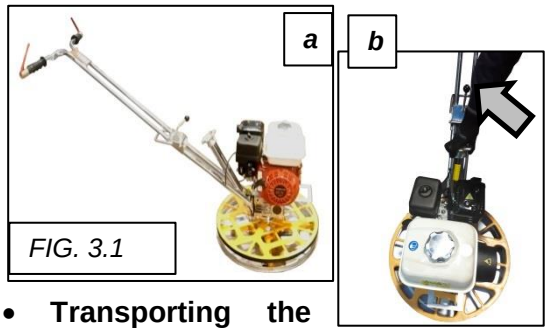


FIG. 3.1

- **Transporting the trowel with inclined blades can damage the lifting blade system.**
- Remember to replace the disc to trowel blades to protect them from any dents before inserting into the packaging following the procedure given in PAR. 6.2.
- **Packing mode varies depending on the country of destination.**

- **<u>United States:</u>** A product for each box (fig 3.2) directly entered into the case.

FIG.3.2



- **<u>Italy:</u>** Packing on wooden pallets with positioning latches, cover with polyurethane films (fig 3.3, a)
- **<u>Other destinations:</u>** Packing of one or more machines together inside a single box (fig 3.3, b) previously placed on wooden pallets with positioning stops.

FIG. 3.3 ***a***



WARNING

Each element of waste must be collected and relocated in special container according to the guidelines for the collection of waste; released into the environment can be a source of pollution and danger.

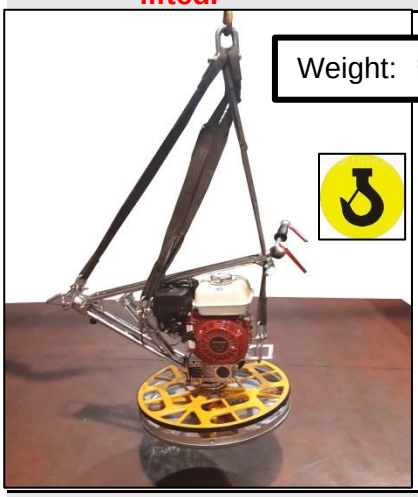
- Lifting of the box containing the packaging must be carried out from below using an organ with a capacity suitable for the load to be lifted (homologated for a mass greater than or equal to that to be lifted).
- **The weight of the packaged product is shown in the table of general technical features on p. 14.**

3.2 *LIFTING AND HANDLING*

The total weight of the machine is **⩽ 52 kg.**
Lifting must be performed from the top.

WARNING

The slinging / transport means must take into account the shape and volume as well as the mass indicated on the plate and / or in the machine data sheet.
Make use of ropes or straps and lifting bodies (crane or forklift truck) with a capacity greater than the one to be lifted.



ATTENTION

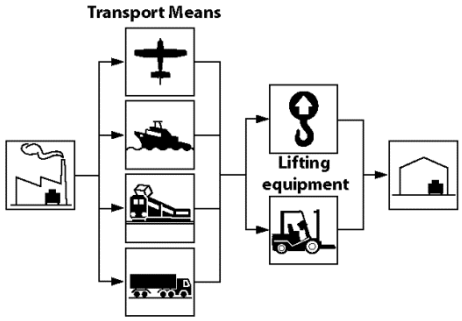
For lifting more than one meter from the ground, remember to remove the trowel disc before carrying out the lifting maneuver

1. Anchor the bands (in number of 2) to the two hooks placed at the two ends of the device in correspondence with the top-down hazard pictograms (fig 3.4)
   Make use of hooks with safety lock which do not allow rope slipping.
2. Use a lifting tool (crane or forklift) connecting the appropriate organs to
3. these bands, putting cords/straps slowly in tension.
4. It is possible to equip the machine with an optional hook for lifting (eyebolt).
5. The lifting body must be approved for lifting, without imbalance, a load having a capacity greater than the total weight of the machine.
6. Lift the machine as close as possible to the ground and avoiding oblique lifting.
7. Carry out movements and maneuvers supported by a person on the ground in charge of the alerts who must keep away from the suspended load.

3.3 *TRANSPORT*

Depending on the country of destination transport can be made with different media. The diagram below represents the most commonly used solutions.
In the case of transport by truck always check that the load does not protrude beyond the outline allowed by the highway code (height 4 m, width 2, 5 m).

FIG 3.5



ATTENTION

In the case of road transport, the load of the vehicles must be arranged in such a way as to prevent the fall or the dispersion of the same, not to diminish the visibility of the driver or to prevent him from the freedom of driving movements, not to mask the lighting devices and the visual signalling, neither the identification plates and signals made with the arm (highway code art.164) and in compliance with the provisions of Directive 2014/17/EU.

3.4 *STORAGE*

ATTENTION

Firmly anchor the load to the means of transport in order to avoid sudden movements.

If the machine is not immediately installed, it should be stored in an environment with the same characteristics as the environment of use, in particular:

- Locate the parts of the machine away from areas subject to humidity or inclement weather;
- Always place between the floor and the components of the machine, wooden boards or otherwise, in order to avoid direct contact with the floor.
- In the event that a storage of more than one month is required, protect the unpainted parts (blades) with anti-oxidant products based on oils and fats.

3.5 *DAMAGE CONTROL*

Upon delivery of the machine, it is advisable that the staff in charge check that it is complete with all its parts and has not suffered any kind of damage.

Any damage must be immediately reported to the supplier.

The gear unit housing is sealed to the assembly; if you notice oil leaks, carefully observe where they come from because there may be leaks from other sources.

If the leaks come from the gear box, contact our technical service or a qualified contractor.

! ATTENTION

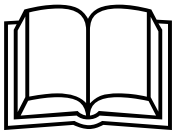


During unloading from the means of transport and placement of the machine, the maneuvering area is only accessible to authorized persons.

Do not allow unauthorized personnel to stand near the machine during the lifting operations.

While performing these activities make use of appropriate PPE (personal protection devices): safety gloves & footwear





CHAPTER **4**

4 MACHINE INSTALLATION

4.1 Installation
4.2 Initial tests
4.3 General safety instructions
4.4 Starting the working cycle
4.5 Trowel drive
4.6 Trowel machine stop
4.7 Restarting the trowel

The installation of the machine and the

ATTENTION

Environmental and operational conditions should not constitute an obstacle to access to the controls of the MACHINE. The location of the machine MUST be equipped with good lighting and must be free of shadows and glare that may create annoying phenomena for the operator. The minimum brightness level of the work area and of the intervention area for the execution of maintenance activities is 300 lux.



Related operations must be carried out only **by qualified personnel.**

- Always wear protective shoes;
- Never put your hands or other body parts under raised components or components that might move due to gravity;
- Do not wear rings, watches, bracelets, or dangling clothing during assembly and/or maintenance operations;
- Do not perform actions outside your field of knowledge and responsibility.

THE SYSTEM IN QUESTION CANNOT OPERATE IN AN EXPLOSIVE ATMOSPHERE.

4.1 *INSTALLATION*

The trowel machine is delivered properly placed into the packaging, with the handle folded upon itself.

After unloading the machine using a forklift from the means of transport and having completed the unloading and unpacking procedures:

- Place the machine on the floor;
- Open the handlebar and fix it in position by acting on the appropriate knob;
- To carry out the handling of the machine in the workplace, it is necessary to use a special lifting device whose capacity must be chosen in relation to the weight of the machine, indicated on page 23;

ATTENTION

It is recommended to NEVER raise the float using the rotating pulley.

- Upon receipt check the trowel machine has arrived intact. Otherwise contact our dealer (see paragraph 3.5).

INITIAL TESTS

The machine has been tested by the manufacturer. Before starting the following checks must be performed:

- Check the oil level in the engine and if necessary top off (check the engine maintenance manual);
- Check the level of fuel in the tank, (whose capacity is shown on page 14) by removing the cap. If necessary, fill the tank with clean petrol, using a funnel and a filter (refer to the engine manual for the correct filling procedure);

WARNING

It is recommended to make sure that there is no water in the gasoline and not to use gasoline mixture or diesel fuel.
Perform this operation in a well-ventilated area away from possible sources of heat or flames.
Make use of specific PPE (airway protection) as indicated in the table of residual risk on page 20 of this publication.

- Check that the degree of inclination of the blades is at least 1 cm in order to have greater control of the trowel at start-up. The machine is equipped with a graduated scale as shown in fig. 4.1 which allows to adjust accurately the degree of inclination of the blades by means of the knob (shown in FIG.);

- Before commanding the start of the trowel machine the operator must make sure that he is in good stability and has a good point of support to avoid sudden movements and possible loss of control of the machine both during the start and during the working phases;





- Check that the stop levers are operational;
- Start the machine by following the instructions in the next paragraph and release both levers at the same time to see if they work.

WARNING

To avoid slippage and loss of control of the trowel when starting the engine, the operator must always have a good foothold and a good grip in order to obtain full control of the machine, avoiding to generate situations of danger that could cause damage and injury to the operator. During the phases of work pay particular attention to possible loss of control of the trowel machine.

4.3 *GENERAL SAFETY INSTRUCTIONS*

Do not carry out repairs or maintenance when the machine is running.

WARNING

Wear can make the blades of the trowel machine sharp enough to generate hazards for the operator. It is necessary to use protective gloves during all phases of maintenance and pay particular attention.
During the working phases keep the limbs at a safe distance from the rotating parts and check that all the guards are present and efficient.

IMPORTANT!

In the case in which the work must be carried out on raised construction sites or on floors with holes and voids larger than 20cm x 20cm, it is necessary to install safety rails or barriers that have a minimum height of 100 cm from the floor to avoid that loss of control of the trowel and generate dangerous situations.

4.4 *STARTING THE WORKING CYCLE*

After performing the preliminary checks on startup described in the previous paragraph (para. 4.3) the machine can be started by following the instructions below:

- Mount the trowel disc on blades following the instructions provided in para. 6.2.3;
- With the trowel disc on the ground, lift the trowel with adequate lifting gear as described in PAR. 3.2 and lay it down on the disc;
- Engage the blades of the machine inside the tabs (2 or 4 depending on model) of the trowel disc;
- Place the engine start switch to ON-1 (FIG.4.2);

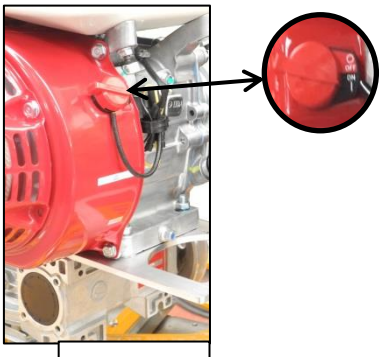
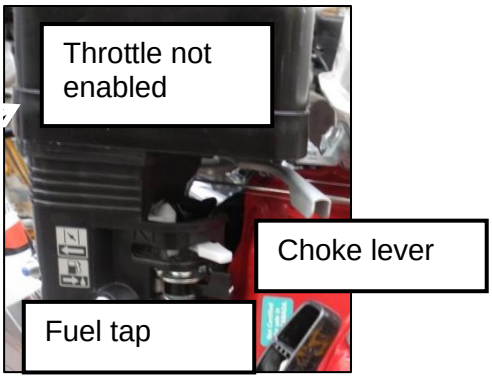


FIG. 4.2

- Close the choke lever (CHOKE);



- Position the throttle (Fig. 4.4) in the idle position (the lever is provided with specific indications for use: (**on and off arrow**, Fig. 4.4);

IMPORTANT!

The only working accelerator lever is the upper one (the lower one on the engine has been disabled during manufacturing).

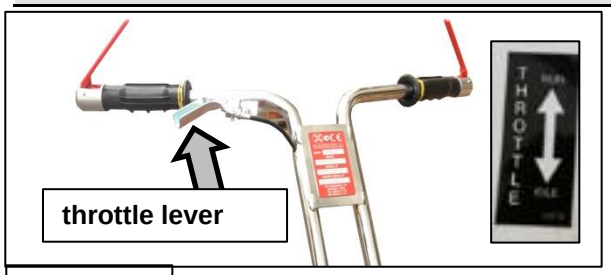
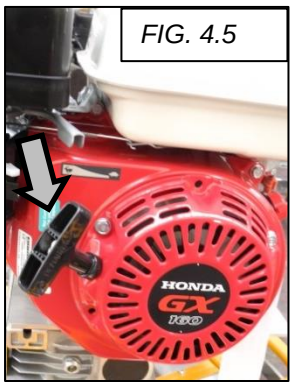


FIG.4.4

- The engine start is damaged:
pull the rewind rope on the engine (Fig. 4.5);

FIG. 4.5



- When the engine has started, open the choke lever, moving it to the right as shown in FIG. 4.3;
- The engine is started at reduced speeds, the clutch has not yet started and the rotor does not rotate yet;
- To avoid damaging frictional slippages that could wear it out, firmly place the accelerator at a speed value of 2500 rpm;
- The trowel work must be carried out keeping the handlebar of the machine firmly and constantly holding down a command with a maintained action (stop lever).

! ATTENTION

In the event of immediate danger to the operator, such us loss of control of the trowel, immediately release the stop levers.

4.5 *TROWEL DRIVE*

To carry out the displacement of the trowel machine it is necessary that the operator acts on the handlebar according to the following procedures:

- Push the handlebar down to make a shift to the right;
- Push the handlebar up to make a shift to the left;
- Push the handlebar forward to make a shift forward;
- Pull the handle back to make one move backward.

The release of the maintained action control (emergency stop, see fig. 4.4), involves an immediate arrest of trowel.

4.6 *TROWEL MACHINE STOP*

To stop the trowel operate as follows:

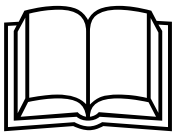
- Release the command with maintained action (stop levers);
- Stop levers are connected to two microswitches which interrupt the current to the spark plugs;
- Close the fuel tap by turning the black lever shown in FIG. 4.3;

IMPORTANT!

Before stopping the machine, intervene on the accelerator and take it to a minimum.

4.7 *RESTARTING THE TROWEL*

To restart the machine it is necessary to repeat the start procedure (see paragraph 4.4).



CHAPTER **5**

5 USE OF THE TROWEL MACHINE

5.1 Surface preparation
5.2 Troweling phase
5.3 Finishing phase

5.1 *SURFACE PREPARATION*

WARNING

Operation of the machine, the user must be aware that moving parts are dangerous; therefore, to avoid damage, it is important to follow the instructions given in this manual.
Carefully read the instructions and warnings reflected in this manual.

We recommend the use of a vibrating mechanical screed or manual screed to level the floor surface. This preliminary operation will give a good compaction to concrete screed and as a result you will get an ideal surface for the troweling and finishing.

TROWELING PHASE

IMPORTANT!

Carefully consider that the trowel machine DOES NOT improve the flatness of a badly levelled floor.

Before starting the troweling operation, make sure that the trowel disc has been correctly mounted on the blades.
The floor will be ready for the first troweling when walking on the same the footprint of the shoe sinks about 2-3mm into the concrete.
During the troweling phase the trowel disc does not have to jump on the surface; this phenomenon could be due to the dirt nested between the blades and the trowel disc.
If necessary, stop the trowel and clean it as indicated in the next paragraph.
The intervals of the trowel passes depend on environmental factors, namely: temperature and weather conditions. On average about 20-30 square metres of surface are troweled in ten minutes.
After each operation, stop the engine.
Never leave the machine stopped with the engine running, especially during the troweling phase when the concrete is still fresh. **Be careful not to work continuously in the same spot when the concrete is still wet, as it may cause damage to the flatness of the floor.**

5.3 *FINISHING PHASE*

After troweling:

- Remove the trowel disc from the blades and clean the blades and the blade holder from the cement deposited during the troweling phase (use PPE);
- Turn the lift-rod knob (detail of Fig. 5.1) clockwise until a tilt of about 1 cm is given to the blades to perform the first pass;

WARNING

Never lift the trowel holding the rotating pulley.
Use a special lifting device to move it.
In case it is necessary to lift it more than cm. 100 from the ground, remove the trowel disc as described in para. 6.2.

- For subsequent smoothing operations continue increasing the inclination of the blades until you obtain the desired finish;
- The time between one pass and the other is determined by the weather conditions (cold or warm season) and the amount of water present in the concrete;

If in some areas the concrete has hardened too quickly it is possible to dampen by spraying a small quantity of water with a masonry brush to obtain the desired degree of finish.

WARNING

In the presence of too much water the trowel tends to skate; it is compulsory to make sure, especially at the time of start, you always have control of the machine.

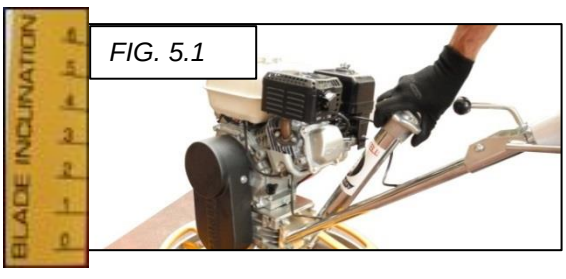
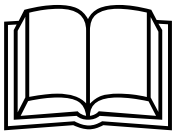


FIG. 5.1



CHAPTER **6**

6 MAINTENANCE AND REPAIRS

6.1 Scheduled maintenance
6.2 Routine and additional maintenance
6.3 Problems and remedies

Therefore during maintenance check carefully

ATTENTION

During the execution of the maintenance tasks you must wear the following PPE: CUT RESISTANT GLOVES AND SAFETY SHOES.

<u>For certain types of activities (supply of lubricant) make use of airway protective equipment as indicated in the residual risks.</u>



Before servicing the machine, make sure you understand the contents of this manual. For questions and information please contact the manufacturer. Maintenance workers must possess the skills required by this manual, as well as mental and physical requirements necessary and sufficient to intervene on the machine. In order to guarantee the functionality and the duration of the same, its periodic maintenance must be carried out constantly, performing the operations always in compliance with the safety prescriptions.

Only the dealer (authorized workshop) can make adjustments and interventions that are not assigned to the operator. It is forbidden to make adjustments and interventions during machine operation. Before performing any maintenance operation, disconnect the machine from power sources:

1. To stop put the accelerator to a minimum, by acting on the throttle lever.
2. Release both stop levers (red ones).
3. Close the fuel tap.
4. Switch the engine to off (position switch to OFF/0).
5. Carry out the maintenance operations with the machine stopped.

1. Thoroughly clean the trowel because due to wear the blades can become sharper.

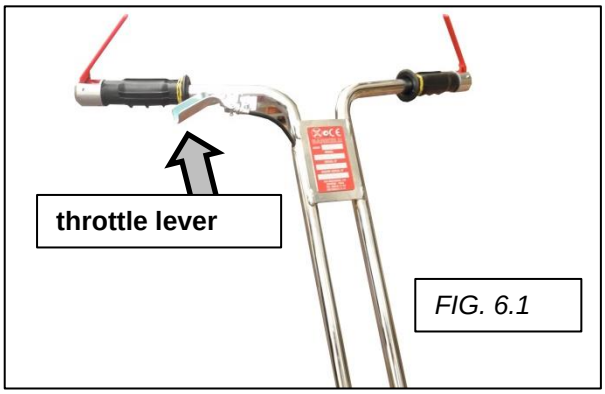


FIG. 6.1

their position and adopt anti-cut gloves.

2. If in doubt about how to perform occasional repairs contact our support department or authorized workshop.
3. At the end of the work perform a thorough cleaning from scraps.
4. At the conclusion of the work after cleaning, replace the trowel disc under the blades to protect them from damage caused by movement of the machine.

WARNING

Some operations of maintenance / replacement of worn components can only be carried out by the manufacturer's technician. They are reported later in this publication.

Please note that failure to comply with the requirements of maintenance sets up the hypothesis of misuse or prohibited use and releases the manufacturer of all responsibility for damage to persons and property.

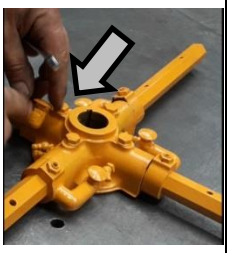
6.1 SCHEDULED MAINTENANCE

Good maintenance requires steady and methodical control of all parts of the machine and adjustment of the checks to its actual use. Periodic inspections are of paramount importance to keep the machine efficient and reduce repairs and the dangers that could result.

<u>It is advisable to have the retailer's technician (AUTHORIZED WORKSHOP) perform an annual general check.</u>

<u>Note:</u> The frequency is taken into account considering the 8-hour working day.

OPERATION NAME	FREQUENCY	APPOINTEE	OPERATING INSTRUCTIONS	MACHINEST ATUS
MECHANICAL PARTS				
Check of the blades bolts status and tightening	Daily		**Check the status of the blade bolts. Perform the tightness daily. If the bolts are worn, replace them. The bolts can be replaced by a wrench of adequate length with the machine on the ground, in a vertical position.**	Machine stopped/ cut energy
Engine air filter cleaning	Daily		**Clean engine air filter, especially when working in dusty conditions; follow the instructions in the engine manual.**	Machine stopped/ cut energy
Check belt wear status and tension degree (check rotor operation)	Weekly		**Follow the procedures in para 6.2.4 in case of breakage or significant wear of the belt to provide for replacement.**	Machine stopped/ cut energy
Spark plug cleaning	Weekly		**If it is necessary to replace them, refer to the engine manual attached to this publication.**  Be careful when removing the spark plug: • Remove the cap • Remove the spark plug • Wait until the engine has cooled and then lay the spark plug removed away from the holder (because it might trigger sparks).	Machine stopped/ cut energy
Check wear of the clutch	Weekly		In the event it is necessary to replace the braking mass, it is mandatory to have the dealer intervention (authorized workshop)	
Visual inspection and possible replacement of the trowel disc	Monthly		**Visually inspect the state of wear of the disc surface. If the disc has undergone an expansion, action is needed to replace it (SEE PAR. 6.2.3).**	Machine stopped/ cut energy

Reducer	If necessary	. In case of non-resolvable breakages or faults requiring the replacement of the component, REFER TO A SPECIALIZED WORKER (AUTHORIZED DEALER).	The gear unit housing is sealed to the assembly; if you notice oil leaks, carefully observe where they come from because there may be leaks from other sources. If the leaks come from the gear box, contact our technical service or a qualified contractor. The gearbox is lubricated for life. The oil should not be topped off. For a possible change of the lubricant due to leaks, use **SYNTHETIC OIL FOR LONG LIFE REDUCERS ISO VG320 GRADING.** **WARNING** **IT IS FORBIDDEN TO REPLACE THE GEAR-BOX. REFER TO THE MANUFACTURER OR THE RETAILER (SPE-CIALIZED MAINTE-NANCE TECHNICIAN).**	Machine stopped/ cut energy
Check of blades wear status and replacement if necessary	Daily		**Follow the procedures in para 6.2.1 for replacement**	Machine stopped/ cut energy
Recording of blades inclination grade	It is advisable to periodically record the degree of inclination of the blades		On the bench, turn the adjusting screw and adjust the angle of the blades. The operation can be carried out with the machine mounted with long wrenches. 	Machine stopped/ cut energy
Unlocking arms of blades and pressure plate	If necessary		**Follow the procedures in para 6.2.2**	Machine stopped/ cut energy
Check gasoline level and supply	Each start	 Check the level of fuel in the tank, (whose capacity is	**ATTENTION** **It is recommended to make sure that there is no water in the gasoline and not to use gasoline mixture**	Machine stopped/ cut energy

		indicated in the technical data) by removing the cap. If necessary fill the tank with clean fuel, using a funnel and a filter.	**or diesel fuel. Perform this operation in a well ventilated area away from possible sources of heat or flames. Make use of specific PPE (mask) as indicated in the table of residual risk on page 20 of this publication** 	
Engine oil level check and possible replacement	Daily		Check manufacturer's instructions present in the manual of the component (attached to this publication)	Machine stopped/ cut energy
Fork replacement	Where needed (in case of breakage, see drawbacks)		This task must be performed exclusively by a qualified operator (**DEALER/SPECIALIST WORKSHOP)**	Machine stopped/ cut energy
SAFETY SYSTEMS				
SAFETY SYSTEMS (BELT GUARD)	Every 6 months			Machine stopped/ cut energy
CHECK PICTOGRAMS INTEGRITY	At the beginning of the shift			Machine stopped/ cut energy
CHECK CONTROL LEVERS INTERVENTION	At the beginning of the shift			Machine in function

6.2 ROUTINE AND ADDITIONAL MAINTENANCE

6.2.1 Blades replacement

Check the state of wear of the blades or if they have been damaged or bent. To replace blades perform the following steps:

- Clean the trowel from any processing residue;
- Remove the attachment bolts (hex head 6x35) of the blades on each arm of the trowel machine (2 for each arm) (FIG. 6.2) by means of a suitable tool and long enough to do this on the ground with assembled machine;

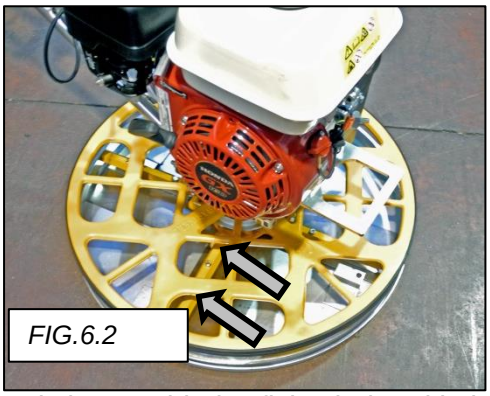


FIG.6.2

- Fit the new blades fixing bolts with their split rings.

IMPORTANT!

For correct operation of the trowel machine, in case of breakage or damage of one or more blades, replace all of them.

6.2.2 Unlocking of blades holding arms and pressure plate

As indicated in para. 6.3 in the event that the tilt control does not work, this drawback may be due to a blockage of the blades-holding arms or of the pressure plate.
Unlocking of blades holding arms and pressure plate and replacement of blades holding arms if necessary.
To unblock the blades and the pressure plate refer to the dealer (authorized workshop).

6.2.3 Trowel disc replacement

The trowel disc is subject to wear which manifests itself through an enlargement of the same.
If, as a result of a visual inspection, this happens, replace the disc.

Proceed as follows:

- Unhook the blades out of the hooking tabs (the tabs on the trowel disc are 2 or 4 depending on the number of blades), slightly raising the machine by leveraging the two hooks as shown in FIG. 6.3;

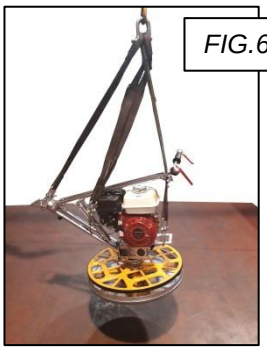


FIG.6.3

- The trowel disc remains on the ground once released from the blades (Fig. 6.3.1-2);



FIG. 6.3.2



FIG. 6.3.1

- Perform disc replacement and reposition the machine on the new disc by moving it from above with adequate lifting body;
- Replace the tabs of the new disc to the blades, proceeding backwards with respect to the coupling maneuver.

ATTENTION

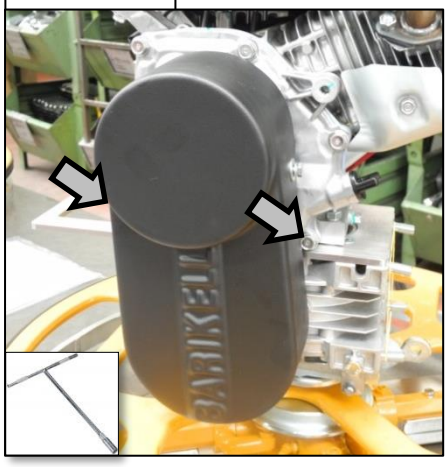
Use an appropriate lifting body to handle the trowel. During the cleaning of the blades and the blade disc to be carried out with the blades fitted, it is compulsory to wear the appropriate PPE (protective gloves with mechanical agents and safety shoes).

6.2.4 Replacing the belt

If, following a visual inspection, it emerges that the belt is worn or broken, replace it operating as follows:

- Wait for the engine to cool;
- Remove the fixed segregation guard of the belt by unscrewing the 2 hexagonal head screws and the 2 washers (Fig. 6.4) by means of a T-wrench;

FIG. 6.4



- Replace the belt as shown like in FIG. 6.5, by turning the pulley and remove the belt (fig. 6.5, b);

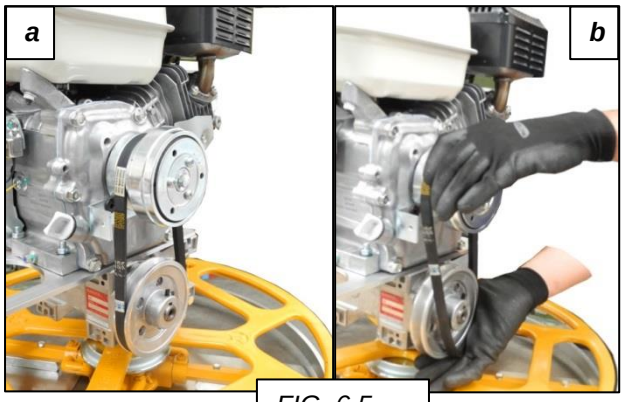


FIG. 6.5

- Fit the new belt by turning the pulley to position it correctly;
- Reassemble the fixed segregation guard of the belt previously disassembled.

6.2.5 Refill of engine oil

If necessary (if the visual check results in a lack of oil), top off the lubricant.
The topping can be performed when the machine is mounted and in upright position.

- Remove the oil filler cap and dipstick and clean (Fig. 6.6 a);
- Reinsert the cap without screw and remove it to check the oil level;
- If the oil level is near or below the minimum detectable on the dipstick, refill with the oil recommended by the manufacturer;
- By means of a funnel-shaped carafe insert the oil in the tank (c);
- Insert the cap/dipstick and close it.



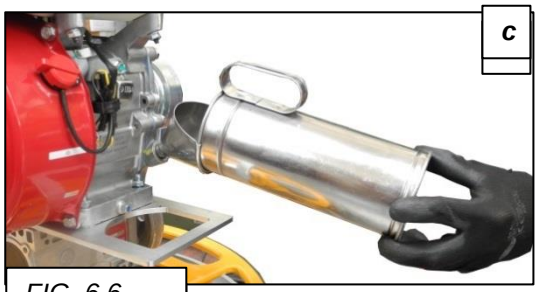


FIG. 6.6

IMPORTANT!

Check the operator's manual for more information about topping off of the engine oil and the type of oil to use.
Wait for the engine to cool before performing the maneuver

6.2.6 Gear motor oil topping off

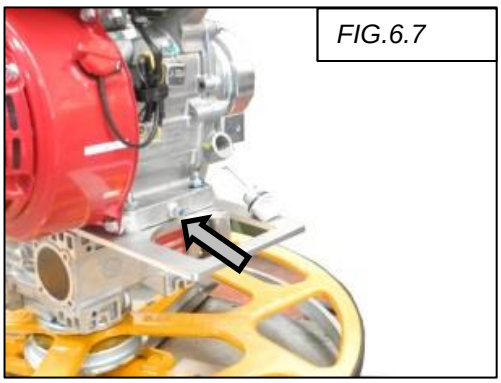


FIG.6.7

The gearbox is lubricated for life, therefore it does not need to be topped off in theory.
If this operation is necessary due to losses, it can be carried out with machine in vertical position.

- When the machine is stopped, wait until the engine has cooled down;
- Insert the lubricant into the cap indicated in FIG. 6.10 using a funnel of suitable size.

IMPORTANT!

TO AVOID DAMAGE TO THE MACHINE STRICTLY USE THE FOLLOWING TYPE OF LUBRICANT:

SYNTHETIC OIL FOR LONG DURATION REDUCERS ISO VG320.

6.2.7 Notes about dismalting

With regard to dismantling activities, there are no environmental or safety problems. If you want to proceed with the dismantling of the various machine parts, you must pay attention to their handling, taking into account the respective masses to be moved. Even in the case of machines used in the workplace it is necessary to dispose of electrical and electronic products contained in them, if any, according to the regulations in force. The current European legislation requires that these kinds of waste are disposed of according to specific procedures.

IMPORTANT



! Do not disperse non-biodegradable products, lubricating oils and related filters (if any) and non-ferrous components (rubber, PVC, etc.) into the environment. Dispose of them in compliance with the laws in force and before proceeding to disposal, consult the retailer in order to check if there are specific programs of collection.

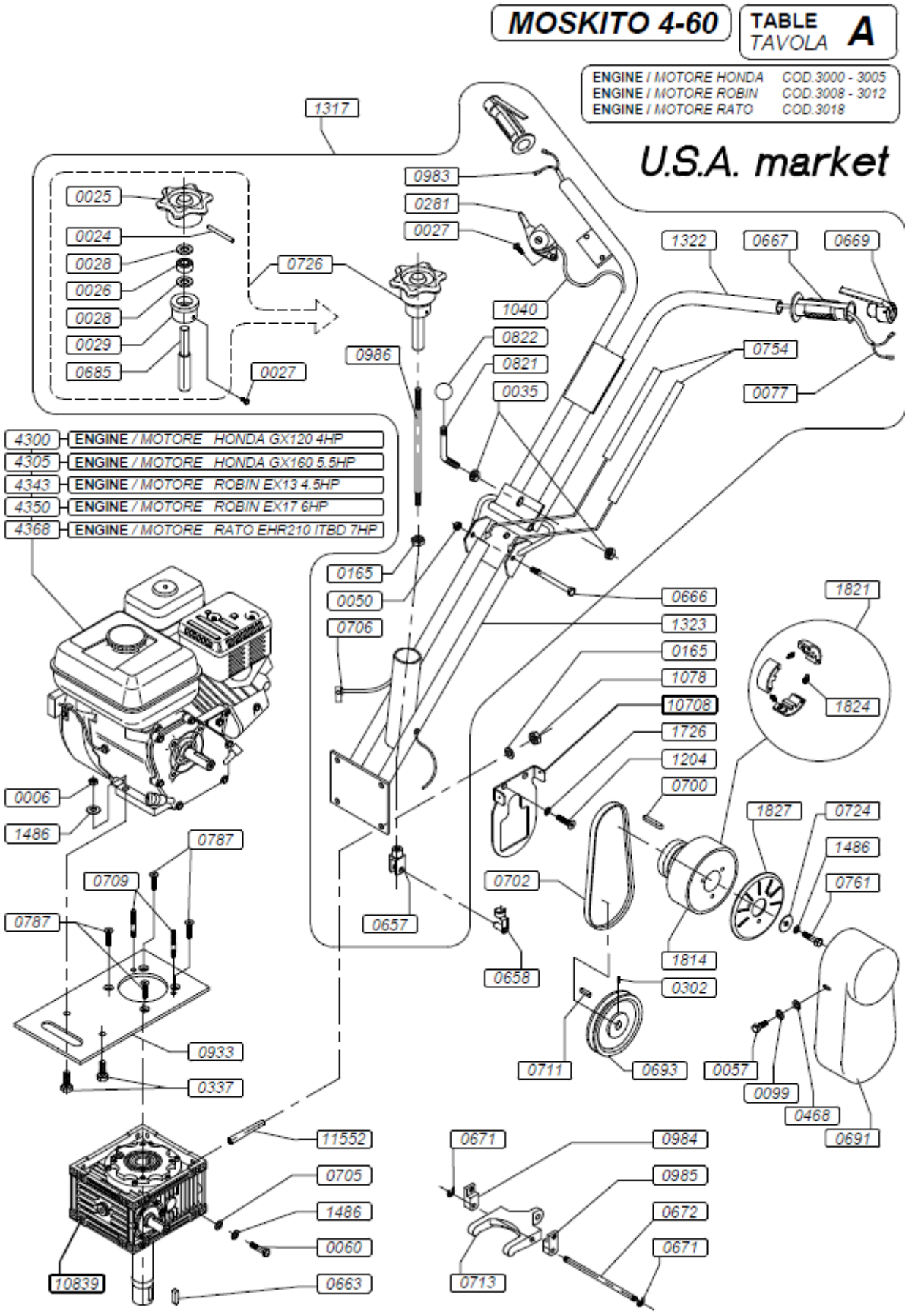
IMPORTANT

! During dismantling, user is required to collect the equipment identification plate to prevent the machine from being re-commissioned without the guards, since the responsibility is NO MORE OF THE MANUFACTURER

6.3 TROUBLESHOOTING

I S S U E S	C A U S E S	R E M E D I E S
The rotor does not turn at desired speed	1. Slow or worn belt 2. Worn clutch	1. Replace belt 2. Replace braking masses (by the dealer and / or specialised workshop)
The trowel machine does not work as desired	1. Excessively worn blades 2. Disc not tight to the trowel body	1. Replace blades 2. Check for dirt or other under the trowel machine body
The trowel leaves circular traces	1. Dirty blades or disc 2. Worn blades or disc	1. Clean 2. Replace the blades or disc
The trowel vibrates	Engine bolts or other parts of the trowel machine too loosen	Check and tighten any loosen bolts
The trowel machine oscillates during operation	1. The blades are not adjusted correctly 2. One or more holding blades arm are bent	1. Set/adjust the blade (page 34) 2. Replace folded arms (intervention by dealer/specialist workshop)
The lift-off command does not work	1. Blades holding arms blocked or locked bell 2. Residues of cement on the moving parts of the cruise 3. Lifting blades knob dirty or blocked 4. Broken fork	1. Unlock the bell or arms (page 36, authorized workshop/dealer 2. Remove cement residues 3. Control lifting blades group 4. Replace fork (dealer/specialist workshop)
Engine does not start	1. No fuel 2. No power to spark plug 3. Open choke 4. Retaining levers inserted 5. No oil in the engine (oil alert)	1. Refuel 2. Check if there is power to spark plug 3. Pull choke. 4. Switch off stop levers 5. Perform oil top off
Leaving the emergency stop lever the trowel doesn't stop	1. Loose or damaged wires 2. Broken microswitch	1. Fasten wires or replace the wires (retailer) 2. Replace the entire stop lever assembly as soon as the microswitch is welded with the resin, by the dealer

6.4 PARTS LIST



COD.	DESCRIZIONE (I)	DESCRIPTION (GB)
0006	DADO M8 UNI 5588 Z.B.	NUT M8 UNI 5588 ZINC PLATED
0024	SPINA ELASTICA 6x60 DIN 1481	UNIVERSAL PIN 6x60 DIN 1481
0025	MANOPOLA ALZAPALE	TOOLHOLDERS KNOB
0026	CUSCINETTO REGGISPINTA AXK1528	BEARING THRUST AXK1528
0027	VITE TCCE 5x10 5931 Z.B.	SCREW TCCE 5x10 5931 ZINC PLATED
0028	RALLA AS 1528	BOLSTER AS 1528
0029	ANELLO PORTACUSC.REGGISPINTA	RING BEARING THRUST
0035	DADO BLOKM10 -985 - Z.B.	SELF-LOCKING NUT M10 985 ZINC P.
0050	DADO BLOKM8 DIN 985 Z.B.	SELF-LOCKING NUT M8 DIN 985 ZINC P.
0057	VITE TE 6x12 5739 Z.B.	SCREW TE 6x12 5739 ZINC PLATED
0060	VITE TE 8x25 - 5739 - Z.B.	SCREW TE 8x25 - 5739 ZINC PLATED
0077	FILO ELETTRICO L=2600	ELECTRIC WIRE L=2600
0099	RONDELLA GROWER D. 6 Z.B.	WASHER D. 6 ZINC PLATED
0165	DADO M10 5589 BASSO - Z.B.	NUT M10 5589 ZINC PLATED
0281	LEVA ACCELERATORE METALLO	METAL ACCELERATOR LEVER
0302	GRANO M6x16 - 5927	DOWEL M6x16 - 5927
0337	VITE TE 8x40 5737 Z.B.	SCREW HEX HEAD 8x40 5737 ZINC P.
0468	RONDELLA 6x18X1,5 Z.B.	WASHER 6x18X1,5 ZINC PLATED
0657	FORCELLA UNI 1676 - DIN 71752	YOKE UNI 1676 - DIN 71752
0658	CLIPS PERFORCELLE M10	CLIPS FOR YOKE M10
0663	CHIAVETTA 6x6X25 6604A	KEY 6x6X25 6604A
0666	VITE TE 8x110 5737 ZINCATA B.	SCREW HEX HEAD 8x110 5737 ZINC P.
0667	MANOPOLA D. 22 APERTA RIF.1MA04005	KNOB D. 22 RIF.1MA04005
0669	DISP.SIC.BENZ.D.18 S/GANCIO (1DS01005)	FUEL SECURITY D.18 (1DS01005)
0671	SEEGER "E" 8 - UNI 7435	SEEGER "E" 8 - UNI 7435
0672	PERNO D.8 L=145 PER FORCELLA Z.B.	PIN D.8 L=145 PER YOKE ZINC PLATED
0685	CILINDRO ALZAPALE MOSKITO Z.B.	LIFTING CYLINDER MOSKITO ZINC P.
0691	CARTER PROTEZ. CINGHIA M60/M75	CASING PROTECTION BELT M60/M75
0693	PULEGGIA ALLUMINIO 112x1A D.19 H7	PULLEY ALLUMINIUM 112x1A D.19 H7
0700	CHIAVETTA 4,7x4,7 L=37	KEY 4,7x4,7 L=37
0702	CINGHIA PIBELT A23	PIBELT A23
0705	RONDELLA PIANA D. 8 Z.B.	WASHER D. 8 ZINC PLATED
0706	MORSETTO PER FILO ACCELERATORE	CLAMP FOR ACCELERATOR WIRE
0709	PRIGIONIERO M8 L=40 Z.B.	STUD M8 L=40 ZINC PLATED
0711	CHIAVETTA 6x6x30 - 6604A	KEY 6x6x30 - 6604A
0713	FORCELLA MOSKITO Z.B.	YOKE MOSKITO ZINC PLATED
0724	RONDELLA 8x24 - ZINCATA BIANCA	WASHER 8x24 - ZINC PLATED
0726	BLOCCO ALZAPALE PER MOSKITO	BLADE LIFTER UNIT MOSKITO
0754	TUBO ARMORVIN HNA 10 RIF. RPQ0191	PIPE ARMORVIN HNA 10 RIF. RPQ0191
0761	VITE TE UNF 5/16x1	SCREW HEX HEAD UNF 5/16x1
0787	VITE VSP 8x20 5933 Z.B.	SCREW VSP 8x20 5933 ZINC PLATED
0821	PERNO BLOC. MANICO M10 L=165 Z.B.	PIN LOCK HANDLE M10 L=165 ZINC P.
0822	POMELLO ASFERA M10	BALL KNOB M10
0933	PIASTRA RID. 4-60/4-75/6-60/6-75	REDUCTION GEAR PLATE 4-60/4-75/6-60/6-75
0983	FILO ELETTRICO L=680 + G.COR	ELECTRIC WIRE L=680

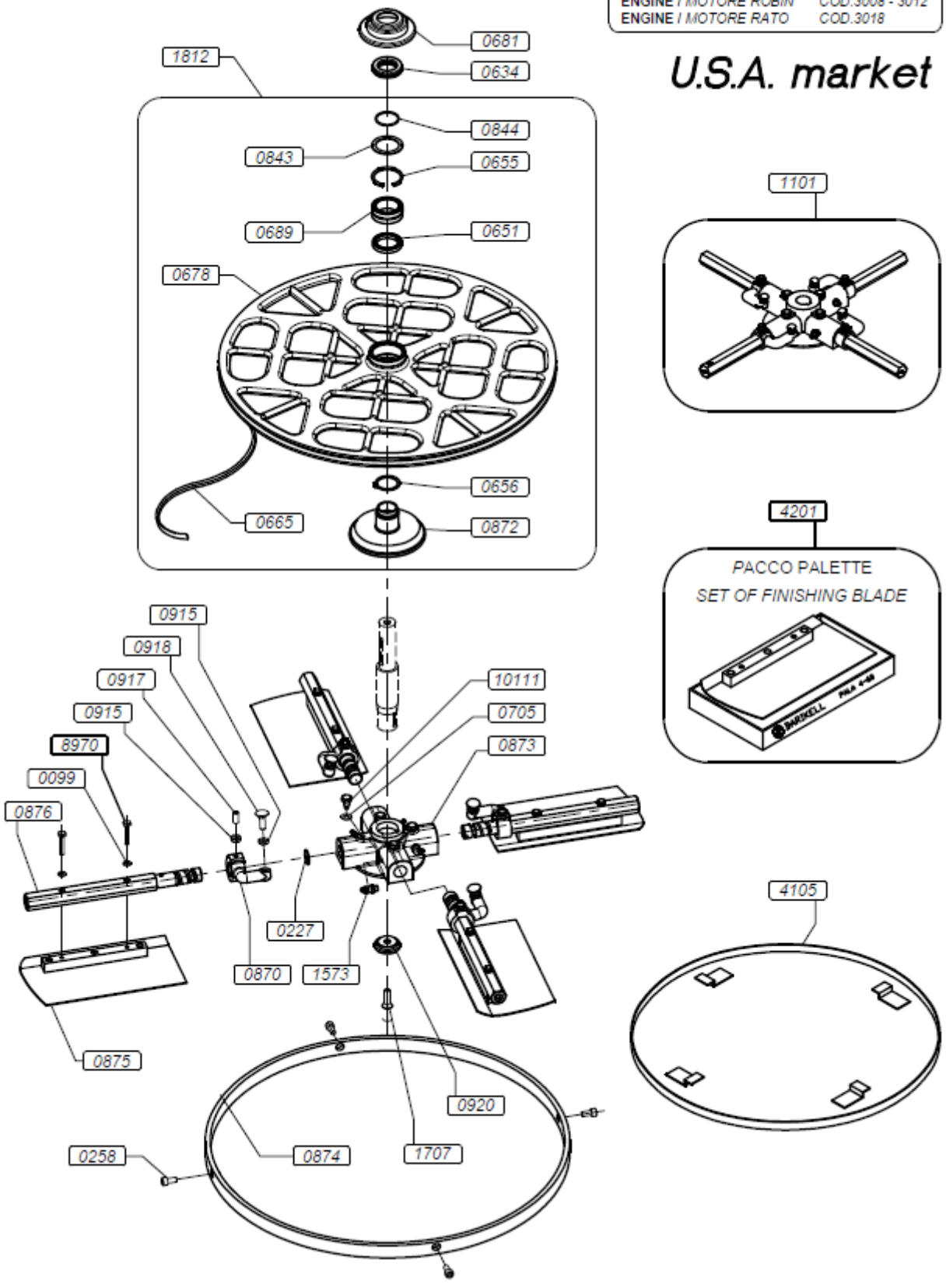
0984	SUPPORTO DX FORCELLA NRV	SUPPORT RIGHT YOKE NRV
0985	SUPPORTO SX FORCELLA NRV	SUPPORT LEFT YOKE NRV
0986	TIRANTE M10 L=300 Z.B. 4-60/75	TIEROD M10 L=300 Z.B. 4-60/75
1040	FILO C/GUAINA 1,5x1900x1800 -	CABLE WITH SHEATH 1,5x1900x1800
10708	STAFFA PER CARTER PROTEZ.4-60 USA	CLAMP CASING 4-60 FOR USA MARKET
1078	RONDELLA ZIGRIN.D10 ZINC.B.	WASHER D10 ZINC PLATED
11552	PRIGIONIERO M10X1.5-1.25 X RID. MOSKITO	STUD M10X1.5-1.25
1204	VITE TSPCE UNF 12.9 5/16 X 5/8	SCREW TSPCE UNF 12.9 5/16 X 5/8
1317	MANICO MOSKITO COMPL.4-60/6-60	COMPLETE HANDLE FOR MOSKITO 4-60/6-60
1322	MANICO SUPERIORE CROM. MOSKITO	UPPER HANDLE CHROME MOSKITO
1323	MANICO INFERIORE CROM. MOSKITO	LOWER HANDLE CHROME MOSKITO
1486	RONDELLA ZIGRINATA D.8 Z.B.	WASHER D.8 ZINC PLATED
1726	RONDELLA D.8 DENTATA CONICA	TAPERED WASHER D.8
1814	FRIZIONE MOSKITO 75 D.19,05 (3./4")	CLUTCH 75 D.19,05 (3./4")
1821	SERIE MASSE FRIZIONE BARIKELL	FLYWEIGHT FOR CLUTCH BARIKELL
1824	MOLLA X FRIZIONE BARIKELL 75	SPRING FOR CLUTCH BARIKELL 75
1827	COPERCHIO FRIZIONE BARIKELL 75	CLUTCH COVER BARIKELL 75
4300	MOT. HONDA 4HP GX120UT2 QX-4 OH	ENGINE HONDA 4HP GX120UT2 QX-4 OH
4305	MOT. HONDA 5,5HP GX160H1 QX-3 OH	ENGINE HONDA 5,5HP GX160H1 QX-3 OH
4343	MOTORE ROBIN/SUBARU EX13 4,5HP	ENGINE ROBIN/SUBARU EX13 4,5HP
4350	MOTORE ROBIN/SUBARU EX17 6HP	ENGINE ROBIN/SUBARU EX17 6HP
10839	RIDUTTORE RT 60 B3 1:20 VITE S.FINE NERO	REDUCTION GEAR RT 60 B3 1:20 WORM SCREW BLACK

MOSKITO 4-60

TABLE *TAVOLA* **B**

ENGINE / *MOTORE HONDA*	*COD.3000 - 3005*
ENGINE / *MOTORE ROBIN*	*COD.3008 - 3012*
ENGINE / *MOTORE RATO*	*COD.3018*

U.S.A. market



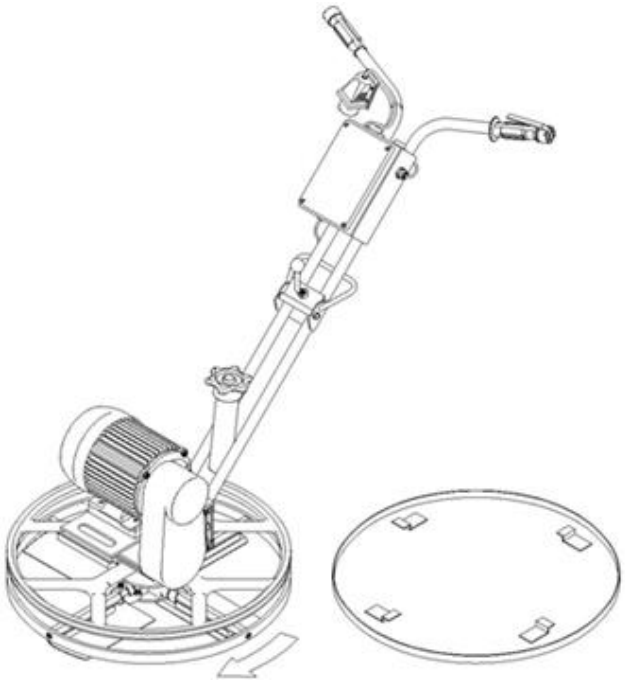
COD.	DESCRIZIONE (I)	DESCRIPTION (GB)
0099	RONDELLA GROWER D. 6 Z.B.	WASHER D. 6 ZINC PLATED
0227	OR D.20 SEZ.1,5 PER CROC.	O-RING D.20 SEZ.1,5
0258	VITE TCCE 8x16 UNI 5931 Z.B. 12.9	SCREW TCCE 8x16 UNI 5931 ZINC PLATED
0634	CUSCIN.ASS. A SFERE 51107 CX	BALL BEARING 51107 CX
0651	CUSCINETTO 61808 2RS	BEARING 61808 2RS
0655	SEEGER "I" TIPO JV - 55	SEEGER "I" TYPE JV - 55
0656	SEEGER RW40 - 7433	SEEGER RW40 - 7433
0665	PROTEZIONE PER DISCO PULEG.D.600	PROTECTION FOR PULLEY DISK Ø600
0678	DISCO PULEGGIA DIAM.600	PULLEY DISC d. 600
0681	PIATTO COPRICUSCINETTO MOSKITO	PLAT BEARING CAP MOSKITO
0689	CUSCINETTO NKI 40/20	BEARING NKI 40/20
0705	RONDELLA PIANA D. 8 Z.B.	WASHER D. 8 ZINC PLATED
0843	COPRICUSCINETTO IN PLASTICA PER MOSKITO	COVER BEARING FOR MOSKITO
0844	OR D.40 SEZ. 2 PER MOSKITO	OR D.40 SEZ. 2 FOR MOSKITO
0870	GOMITO GHISA D20 MOSKITO 60-75	BEND CAST IRON D20 MOSKITO
0872	CAMPANA 4-60/6-60/4-75/6-75	HEAD 4-60/6-60/4-75/6-75
0873	CROCIERA 4-60 / 4-75	SPIDER 4-60 / 4-75
0874	CERCHIO STABILIZZATORE 4-60	STABILIZER PLATE 4-60
0875	FRATTAZZI 4-60	BLADE UNIT 4-60
0876	BRACCIO PORTA PALETTE 4-60	BEND FOR TOOL HOLDER 4-60
0915	DADO M8 5589 BASSO GREZZO	NUT M8 5589 ROUGH
0917	GRANO 8x20 A PUNTA - 5927	DOWEL 8x20 5527
0918	VITE TTDE 8x25 UNI 5731 SENZA	SCREW TTDE 8x25 UNI 5731
0920	RONDELLA FISS.CROCERA MOSKITO	WASHER FIX SPIDER MOSKITO
1101	CROCERA COMPL.4-60 C/INGR.	SPIDER COMPL. 4-60
1573	INGRASSATORE M8X1.25 2802	GREASE FITTING M8X1.25 2802
1707	VITE TSEI 8X30 5933 Z.B. 10.9	SCREW TSEI 8x30 5933 ZINC P.
1812	COMPLESSIVO DISCO PULEGGI Ø600	PULLEY DISC ASSEMBLY D.600
10111	VITE BLOC.BRAC.P.PALE 4-60	SCREW LOCK TOOLHOLDER 4-60
4105	DISCO FRATT.D.600 4 LING.	TROWEL DISC D.600 4 KEY
4201	PACCO PALETTE 4-60 IN POLLICI	TOOL HOLDER PACKAGE MOSKITO 4-60 INCHES
8970	VITE TE UNC 1/4" x 1" 1/2 (TE 6X35)	SCREW HEX HEAD UNC 1/4" x 1" 1/2 ZINC P.

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OPERATOR'S SAFETY AND SERVICE MANUAL

F24 Electric Trowel Machine



This manual covers the following serial numbers for each model listed:
F24……1740814-174999

MBW, Inc.
250 Hartford Rd · PO Box 440
Slinger, WI 53086-0440
Phone: (262) 644-5234
Fax: (262) 644-5169
E-mail: mbw@mbw.com
Website: www.mbw.com

MBW (UK) Ltd.
Units 2 & 3 Cochrane Street
Bolton BL3 6BN, England
Phone: 01204 387784
Fax: 01204 387797

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This handbook contains operating and maintenance instructions of the Moskito Edging Trowel, model CE4-60.
Please keep it in a safe place. You may need to refer to it at a later date.

Follow these instructions carefully in order to become familiar with the trowel and to avoid problems caused by improper use.

To conform to the safety procedures, it is recommended that the operator wears safety devices such as safety shoes, soundproof devices, safety helmet and heavy duty leather working gloves.

The manufacturer reserves the right to change the contents of the handbook to improve the quality of the trowel without notice.

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1. I N T R O D U C T I O N

The machine described in this instruction and maintenance manual is a patented mini trowel provided with a free wheel for floating and finishing concrete, epoxy floors and sub floors.
The trowel is equipped with 4 blades.
The power is transmitted from an electric engine of 220V or 380V through a V-belt to the gearbox.
On request a speed variator can be mounted.

It is recommended not to use the trowel for any other purpose than what it is designed for, unless you have a written authorisation from MBW. In case of disposal of the machine it is necessary to respect the local environmental law.

2. T E C H N I C A L D E T A I L S

DESCRIPTION	**Unit Measure**	**Code 3016**
Overall dimensions	mm	600x1420x900
Operating weight	Kg	57
Disc diameter	mm	600
Number of blades	nr	4
Horsepower	Kw/HP	3.5HP
Starting	Type	Electric
Voltage	Volt	220V
Frequency	Hertz	50
Cooling	Type	Air
Engine speed	RPM	3600
Blade speed	RPM	130
Packing dimensions	mm	650 x 910 x 800
Shipping weight	Kg	64.52

Tests have been undertaken to determine noise and vibration levels and to evaluate the effect on the operator. The results are.

Noise and vibration levels in working conditions		
Average acoustic pressure	dbA	88.8
Average acoustic power	dbA	103.2
Acoustic pressure on operator	dbA	89.1
Value of vibration		
Vibration value on the handle	aw	7.0

3. G E N E R A L I N S T R U C T I O N S

3.1 Power to the trowel

Connection of the trowel must be done as described in the MBW handbook, but MBW is not responsible for the connection. For safety keep the following points in mind:

1. The power to the trowel is supplied by the electrical network at 220v.
2. The motion of the blades rotation of the trowel is given by the engine to a centrifugal clutch.

3.2 Safety precautions for the operator

To avoid slipping and loss of control of the trowel, when starting the engine, the operator must always maintain good footing. Be sure to maintain control at all times, to avoid possible damage or operator injury. On models equipped with a speed variator it is recommended to always keep the speed at minimum position during the starting operation.

Never start any maintenance or repair while the engine is still running. Be sure the power to the engine has been turned off and that the connection cables are unplugged.

Be careful when changing old blades for new. Due to the way the blades wear, the old blades become sharp like razor blades. Always wear heavy duty working gloves during the maintenance operation and pay special attention to the position of the blades.

Keep hands and feet away from rotating parts and make sure all safety protection is in place.

Before every working day check all power cables for damage such as cuts and peeled wires. Keep power cables and plugs away from water.

When finishing concrete above ground level or on floors with holes larger than 50x50cm, barriers should be installed as a protective measure. The barrier should be such that it will stop the trowel from riding over the edge of the slab in case of loss of control.

Make sure that nobody stands near the trowel when operating. To avoid unexpected contact with the rotating parts it is recommended to keep a minimum distance of 4 meters from the operator and the trowel.
Before every working day check the trowel thoroughly, and pay special attention for loose bolts and nuts. Be sure that the deadman switches on the trowel are working correctly.

Never lift the trowel by the rotating ring; use the handle provided on the trowel.

Use the trowel always on a flat level surface.
Do not wear untied clothes, bracelets or other flying objects during the working cycle.
Always wear protective devices such as gloves, safety helmet, safety shoes and others which conform to the safety regulations.
Always operate the trowel in well lighted areas.
When operation of the machine necessitates walking backwards, ensure that there are no obstacles in the walking area.
Do not allow minors or untrained people to operate the trowel and keep them away from the working area.
Store the trowel in a dry place away from rain and other atmospheric influences.

Be careful when running the trowel on areas where water has been applied because the trowel will tend to skate away. Maintain full control at all times.

When working on the floor with a trowel, be sure it is done in a safe way. Make sure there are no obstacles such as manholes or drain ducts on the floor slab, which can block the rotation of the blades.

4. S T A R T I N G T H E T R O W E L

4.1 Assembly

The trowel is delivered in a box completely assembled with the trowel arm folded.
Take the trowel out of the box and place it on a flat level surface to check it.
Contact our dealer in case of damage.
Unfold the handle and fasten the locking knob.
Dispose of the packing in accordance with the standards which are in force in your country.
When moving the trowel from one job site to another use a lifting device, connect hoist hook with hoisting device.

Never lift the trowel by the rotating ring.

4.2 Before starting

Before starting the trowel check the following:
The operator must be in good stability condition and must have a good point of support in order to avoid sudden movements and loss of control of the machine during the starting as well as during the working process.
Check the deadman levers are working properly and to do this the operator must keep tightly and firmly the handle of the trowel, on the contrary the operator could loss the control of the machine causing damages to people or things.
This check must be done on each start.

Never try to change the speed while the engine is stopped. Before stopping the engine <u>always</u> put the lever at the minimum speed.

4.3 Using the trowel

Guiding the trowel on the slab is very simple. Get into operator's position behind the centre of the handle and attain a good footing and start the trowel.

- Push handle down slightly and the trowel will move to the right.
- Lift handle up slightly and the trowel will move to the left.
- Push forward and the trowel will move forward.
- Pull backward and the trowel will move backward.
- Holding the handle in neutral position the trowel will remain stationary.

It is recommended to hold the handle of the trowel firmly during the work.

4.4 Stopping the trowel

Release the two deadman switches to stop the trowel. After the machine is stopped, disconnect the trowel to the electric network. The deadmen levers are connected to 2 micro switches that stop the electricity to the candles.

5. G E N E R A L U S E

5.1 Preparation of concrete surface

Use a mechanical or air vibrating screeding machine to "strike" the concrete surface to level. This will provide good compaction to the slab and produce an ideal surface for finishing. It should be remembered that floating/finishing machines will not repair or correct a poorly screeded slab.

5.2. Floating operation

Before starting the floating operation, be sure the floating disc is correctly mounted underneath the blades. PAY ATTENTION: THE ROTOR TURNS CLOCKWISE.
The slab will be ready to work for the first floating operation when the heel of the shoes leaves a print of 2-3mm on the surface of the slab. During the floating operation the floating disc may not turn on the surface; if so this may be collected cement paste between the blades and the floating disc. If necessary clean the trowel as indicated in the next sections. After the floated slab has set and a footprint is slightly visible, it is ready to start the finishing operation. The timing of all these operations is dependent on weather conditions/ambient air temperature. After each operation the engine should be stopped. Never park the trowel with the engine running, especially during the floating operation when the concrete is relatively soft. The trowel should not run on the soft concrete in same spot, this could cause damage to the finished floor tolerances, producing dips or hollows.

Never lift the trowel by the rotating ring; use the hoist hook or handle provided on the trowel.
Never leave the floating disc attached to the trowel when it is lifting more than 100cm. The floating disc could fall off.

5.3 Finishing operation

After the floating operation the first thing to do is to remove the floating disc from the blades, and clean the blades and attaching blade disc of cement paste collected during the floating operation. Increase the blade pitch up to a maximum of 1 cm for the first finishing operation and then continue to increase the pitch on the following finishing operations. Continue the finishing passes until you obtain the desired floor finish. The time required between each finishing pass is again dependent on the weather conditions and water content of the concrete etc. If some areas of the concrete set / harden too fast you may apply a small amount of water using a hand brush as an aid to achieving the finish.

Be careful when running the trowel on areas where water has been applied because the trowel will tend to skate away. Be sure to maintain full control at all times.

5.4 Machine cleaning

Clean the trowel after it has been used to prevent the collection of hardened cement, which is very difficult to remove. It can be removed with an old paint brush or hand brush. After cleaning it is recommended to coat blades, blade arms and protection ring with stripping oil (do not use flammable oil), this will aid cleaning after the machine is used. Avoid spillage of oil on any rubber parts like V-belts etc.

5.5. Moving the trowel

When transporting the trowel on a truck, always keep the handle folded and the blades flat in order not to damage the blade pitch control system.
Always keep the floating disc underneath the blades, to protect them against damage.

6. M A I N T E N A N C E

Before starting any maintenance or repair be sure that the power to the engine has been turned off and the connection cables unplugged. Make sure the trowel is clean before starting any maintenance. Always wear heavy duty working gloves during the maintenance operation and pay special attention to the position of the blades.
In case of problems contact our technical assistance.

6.1 General maintenance

The trowel does not need any particular maintenance, however it is necessary to keep following instructions in mind:

DAILY CHECKS:

- Check daily the condition of the electric components, paying special attention to the electric cables and plugs.
- Clean the trowel at the end of every working day of cement paste collected while working.
- Check for loose bolts on the blades and tighten if necessary. After daily cleaning is done attach the floating disc to the trowel to protect the blades during transport.
- Check the deadman lever.

CHECKS AFTER 100 HOURS WORKING:

The oil level in the gearbox; on the box there are two plugs; the one on the top measure the oil level. Pay attention if you notice oil in the lower part of the trowel; in case, clean and check where it may come out and make the proper checking. Contact our technical assistance or a qualified technician. If the grease in the gear box has to be changed or filled up use **TEXACO MEROPA 220** or similar type. Never mix mineral oil with synthetic oil.

ANNUAL CHECKS:
The trowel, after the warranty, must affect annual check on all the safety systems and protection, by MBW authorised workshops or dealers.
Otherwise MBW will not be responsible.

6.2 Changing floating disc

After the trowel has been cleaned of any cement paste collected during the work, take out the floating disc from the fastening points.
Before mounting the disc ensure the blades and the floating disc are clean of any cement paste.
Put the floating disc on a flat level surface and be sure the blades are in a horizontal position.
Place the trowel over the disc, so that the finishing blades are pushed in to the two (2) square lugs on the floating disc.

6.3 Changing blades

Check if the blades are bent or worn.
Follow instructions below to change the blades:

- Clean the blades of hardened cement paste collected during the work.
- Remove bolts and lock washers on each trowel arm.
- Mount new blades and check all bolts and washers; replace if necessary and fasten securely.
- Tighten bolts on blades every day.
- If blades show different wear patterns, replace all the blades for better performance of the trowel.

6.4 Changing V-belts

Undertake the following steps to change the V-belts:
- Clean the trowel of any cement paste collected during the work.
- Take the belt guard off by untightening the bolts of each side of the belt guard.
- Replace the V-belts with same size and brand. This is very important, there might be a difference between one brand and another.

Once the power trowel guarantee has expired, the machines should be subjected to a complete check-up once a year. You can address to all our authorized dealers all around the world.
MBW will refuse all responsibility in case of incident whenever the check-ups won't be done.

7. TROUBLESHOOTING AND REPAIR

Before any maintenance or repair be sure the power to the engine is turned off and the connection cables unplugged. It is recommended to effect only the operations described in previous sections. Contact our technical assistance for all other repairs.

TROUBLE SHOOTING	CAUSE	REMEDY
The rotor does not turn as fast as it should	**V-belt slack or worn out**	**Replace V-belt**
Trowel does not work properly	**1) Blades excessively worn** **2) Floating disc not evenly attached to the blades**	**1) Replace blades** **2) Check if there is any hardened cement on spider plate or blades**
Trowel leaves swirls on concrete	**1) Hardened cement paste on blades or disc** **2) Blades or disc worn out or bent**	**1) Clean blades or disc of cement paste** **2) Change blades or disc**
Vibration on the trowel	**Loose bolts or nuts on engine or other parts of the trowel**	**Check for loose bolts or nuts and tighten if necessary**
Trowel jumps on the floor	**1) Trowel arm bent** **2) Blades out of adjustment or bent**	**1) Replace trowel arm** **2) Adjust blades and replace bent blades**
Pitch control does not work	**1) Trowel arm bent** **2) Hardened cement on spider plate** **3) Handle knob dirty or jammed** **4) Yoke arm broken**	**1) Replace bent arm** **2) Clean spider plate of hardened cement** **3) Clean handle knob** **4) Replace yoke arm**
Engine won't start	**1) Plugs defective** **2) No power on line** **3) Fuses burnt out** **4) Deadman switch broken or disconnected wire**	**1) Replace plugs** **2) Check all switches** **3) Replace fuses** **4) Replace deadman switch or connect wire**
Deadman off trowel won't stop	**1) Loose wires** **2) Micro-switch burnt out**	**1) Connect wires** **2) Replace micro-switch**

8. W A R R A N T Y

New machines sold by the Company are covered by warranty with regard to the structure and the use of proper materials under following terms:

1) The warranty is valid for twelve (12) months.
2) The manufacturer undertakes to repair or replace at its discretion those parts or assemblies which it deems to be defective.
3) Parts repaired or replaced are covered by the same warranty as original parts, which expires twelve (12) months after installation.
4) The manufacturer reserves an adequate period of time to carry out the necessary work and for the delivery of the spare parts.
5) Transport costs of replacement parts covered by warranty will be charged to the purchaser.
6) This warranty expires if the product is repaired other than by authorised staff during the warranty period.
7) Replaced parts during the warranty belong to the manufacturer.
8) Any components furnished by the Company but manufactured by others are warranted to the extent of the original manufacturer's warranty to the Company. Any claims will be handed over to the buyer.
9) This guarantee is for the sole benefit of the original buyer. Our responsibility under this guarantee ends in case:
   a) The buyer transfers ownership of the trowel;
   b) Makes any changes in the trowel;
   c) Or adds parts or devices not of our manufacture to the trowel.
10) MBW will not be responsible for damage to floors which might arise from improper use of the machine, or for any other reason that the machine is stopped during the working cycle.
11) This warranty does not cover any damages arising from an excessive stress, for instance when the machine operates after the occurrence of a defect, or from improper use or maintenance, use of improper materials and failure to comply with the instructions for use.
    The same is valid for damage caused by normal wear and tear.
12) The manufacturer shall have no liability for any difficulties arising in re-selling or using broad due to provisions for the protection of patent rights in force in the country where the machine is sold.
13) With regard to engines, the terms of warranty of the original manufacturer are valid.
14) The terms of warranty set forth are binding for all MBW Dealers. Any different agreement will be valid only prior to written confirmation by MBW.

Important to buyer: Always keep this guarantee as a reference and give model number, serial number and/or engine number when writing regarding your trowel. It will greatly facilitate rapid service.

9. M A R K I N G A N D C E R T I F I C A T E

The models described in this instruction and maintenance manual have been checked to conform to the machine directives CEE 89/392 including the successive modifications.
The qualification is issued on the CE-label on the machine and on the declaration of conformity which goes together with this handbook.