



OPERATOR'S AND MAINTENANCE MANUAL BACKHOE

RET- REF

ORIGINAL INSTRUCTIONS



READ THIS MANUAL CAREFULLY BEFORE USE



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0. FOREWORD

1. AIM OF THE INSTRUCTION MANUAL FOR USE AND MAINTENANCE

The operator's and maintenance manual was written by the company **BONATTI CARICATORI S.r.l** in accordance with the requirements of the directive on machines and of its relevant harmonized rules and it is valid for the models REF140 RET140 RET165ML RET185ML RET180 RET200 RET220 RET250

This manual was issued to provide to the user a general knowledge of the backhoe and to enable its use in safety conditions.

- The manual must accompany the backhoe in all its movements. It contains the instructions to carry out without any risk all operations at work and during the rest period.
- The operator must understand this manual properly before carrying out loading activities.
- Untrained operators can cause damages and injuries to persons.
- Directions: rightward and leftward direction is meant with reference to the operator sitting at the control seat of the backhoe.



The competent responsible has the obligation, according to the rules in force, to read carefully the content of this Instruction Manual and to have drivers and maintenance operators read it for the parts of their competence.



CAUTION

- Plates, stickers and notices mentioned in this OPERATOR'S MANUAL must be compulsorily replaced by the user or by the owner of the backhoe before they become illegible upon request to the company **BONATTI CARICATORI S.r.l**
- No responsibility will be assigned to the manufacturer in case of damages due to an untimely replacement.
- If a plate, sticker or notice was partially illegible or even missing, the user is obliged not to use the backhoe up to the application of the plate, sticker or notice.
- Punching mentioned in this manual must not absolutely be altered or made illegible.

2. ADRESSEES

This Instruction Manual is addressed to installers, operators/users and to qualified personnel entitled to the use and maintenance of the backhoe.

The backhoe is intended for agricultural, forestry and gardening use. The use of the backhoe is reserved to qualified figures and skilled technicians in particular who:

- have reached the legal age;
- are physically and psychologically capable of performing activities of particular technical difficulty;
- have been instructed properly to the use and maintenance of the backhoe;
- have been considered by the employer suitable to perform the task entrusted to them;
- are able to understand and interpret the operator's manual and the safety requirements;
- know emergency procedures and their implementation;
- have understood the operating procedures as defined by the manufacturer of the backhoe.

The instructions, the documentation and the drawings contained in this manual are of confidential technical nature and of strict property of the manufacturer and, therefore, except for the purposes to which it was created, any reproduction in whole or in part of the content and/or of the format, must take place subject to the prior approval by the manufacturer.



The term SPECIALIZED/QUALIFIED PERSONNEL refers to personnel that on the basis of training and professional experience has been expressly authorized to carry out the installation, the use and the maintenance of the backhoe.

3. PICTOGRAMS

In this manual three types of safety warning are used: DANGER, CAUTION and IMPORTANT. These warnings point out the relevant risk levels undergone by the personnel engaged in driving the tractor with the applied backhoe.



DANGER

The symbol of danger is used to point out dangerous situations for the personnel. If this signal is ignored, it is possible to incur the danger of serious injuries that in some cases can also cause death.



CAUTION

The symbol caution is used to point out dangerous situations for the integrity and the efficiency of the backhoe and, therefore, they can involve the security and safety of persons, as well.



IMPORTANT

The symbol important is used to draw the attention to important information that the involved personnel must know and keep in mind.

1. GENERAL INFORMATION

1. MANUFACTURER'S IDENTIFICATION DATA

MANUFACTURER	BONATTI CARICARORI SRL
REGISTERED AND ADMINISTRATIVE OFFICE	STRADA PROVINCIALE OVEST N. 36 – 46020 – PEGOPGNAGA - MN
PHONE-NR.	+39 0376 558089
FAX-NR.	+39 0376 559890
E-MAIL	info@bonatticaricatori.it

2. CE MARKING OF THE BACKHOE

Each backhoe is identified by means of a CE plate on which the reference data of the loader are indelibly recorded.

The identification plate is placed on:

- on the left side of the control console of the backhoe for REF140 RET140 RET165ML RET185ML (as in the picture)
- on the front side of the control console of the backhoe for RET180 RET200 RET220 RET250 (as indicated with arrow 1)



The picture below is purely illustrative, the label will have the data concerning the machine purchased



Always quote these references in any communication with the manufacturer or with service centres.

3. DECLARATIONS

The backhoe is produced in accordance with the relevant Community Directives applicable when placing it on the market. A declaration of conformity is issued together with the documentation of the backhoe as per the facsimile here below:



The undersigned BONATTI SILVANO, born in San Benedetto Po on 06/09/1949
resident in PEGOGNAGA (MN) in Strada Provinciale Ovest
Legal Representative of the Company BONATTI CARICATORI s.r.l.
based in PEGOGNAGA (MN) in Strada Provinciale Ovest, 36
manufacturer of the following machine:

Type:

BACKHOE

Trade name:

RET-REF

Serial-Number:

.....

Equipped with the following accessories:

.....

Suitable to the agricultural tractor:

.....

Frame-Number:

.....

DECLARES:

at his sole personal responsibility, that it complies with the requirements of the machines
Directive 2006/42/CE by the European Parliament and Council dated 17/05/2006.

The technical files are kept at the Company Bonatti Caricatori srl with reference to Mrs. Bonatti Giorgia.

Pegognaga, on .. - .. -

The Legal Representative
Bonatti Silvano

PROHIBITION OF PUTTING INTO SERVICE

The backhoe cannot be put into service after undergoing building alterations or addition of other components that do not fall within ordinary or extraordinary maintenance without a new declaration of compliance with the requirements of Directive 2006/42/CE and of applicable CE/UE directives.

Place, date
Pegognaga on .././....

The manufacturer
Bonatti Silvano

4. SAFETY RULES

The backhoe was manufactured in compliance with the Technical Standards listed below.

<u>STANDARD</u>	<u>Title</u>
EN ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN ISO 4413	Oil-hydraulics — General rules and safety requirements for systems and relevant components
EN 16246	Agricultural machines — backhoe — Safety

5. INFORMATION ABOUT TECHNICAL ASSISTANCE

- The backhoe is covered by warranty, as provided for in the general sales conditions.
- If during the period of validity malfunctions or failures of parts of the **backhoe** occur, provided that they fall under the cases indicated in the warranty, the manufacturer, after appropriate checks, will repair or replace the defective parts.
- Interventions for modifications carried out by the user, without the express written consent of the manufacturer, invalidate the warranty and release the manufacturer from all liability for any resulting damage caused by a defective product.
- Interventions for modifications carried out by the user on the safety devices with a degradation of their effectiveness, without the express written consent of the manufacturer, invalidate the warranty and release the manufacturer from all liability for any resulting damage caused by a defective product.
- The use of non-original spare parts or of parts different from the ones explicitly indicated by the manufacturer as "safety devices" invalidate the warranty and release the manufacturer from all liability for any resulting damage caused by a defective product.

We invite our customers to address to our After-Sales Service before effecting the above-mentioned interventions on the backhoe.

Eventual defects clearly and visibly existing at the time of delivery of the product (aesthetic defects on visible parts, breakages, dents, operational defects, missing parts, etc.) must be immediately reported to the company.



The manufacturer is not liable for any defect that is not reported by the customer at the time of delivery.

2. SAFETY

1. GENERAL SAFETY WARNING

The manufacturer has made any possible effort in designing the backhoe to make it as SAFE as possible.

The backhoe is fitted with all protections and safety devices considered necessary and it is accompanied by sufficient information so that it can be used in a safe and correct way.



CAUTION IT IS ESSENTIAL TO OBSERVE THE FOLLOWING INDICATIONS CONCERNING THE USE OF THE AGRICULTURAL TRACTOR EQUIPPED WITH BACKHOE:

- DO NOT TRANSPORT PEOPLE ON BOARD OF THE TRACTOR, EXCEPT FOR THE TRACTORS ADAPTED AND TYPE-APPROVED FOR THE CARRIAGE OF A NUMBER OF PERSONS.
- Study and familiarize with the exit or leaving points of the tractor as an alternative to the usual ones.
- IT IS FORBIDDEN TO GET INTO OR OUT OF THE TRACTOR WHEN IT IS MOVING.
- Make sure that eventual people based in the surroundings are completely outside the range of operation of the tractor before starting it or operating the equipment. Use the horn. Respect all indications given by flags, trucks and signals.
- Let the tractor move at a sufficiently low speed to ensure the highest possibility of control in any event.
- It is always necessary to move slowly on grounds with marked roughness, on the slopes, in proximity to ravines or in obstructed areas as well as on icy
- Before effecting reversing maneuvers with the tractor, fold the backhoe arm completely and rotate it completely sideways to allow a clear vision behind.
- While operating in reverse, always watch in the direction towards which the tractor is moving. Pay attention to the presence of people: if anyone of them enters the maneuvering area, STOP THE TRACTOR.
- Always keep a safe distance to the other vehicles and obstacles to ensure the necessary conditions of visibility.
- Always maintain a clear vision of the whole maneuvering or operating surrounding area.
- The cab windows must always be efficient and clean.
- Pay close attention to soft grounds, in proximity of recently built walls: the filling materials and the weight of the tractor could cause the fall of the wall.
- NEVER USE THE TRACTOR FITTED WITH FRONT COUNTERWEIGHTS IF THEY HAVE BEEN REMOVED.
- Observe the instruments at the beginning and frequently during the operations: if the brakes manometer signals a lower pressure than the minimum operating one, stop the tractor immediately.
- Do not use the terminal tool of the backhoe to lift or carry people.
- Do not use the backhoe as working platform or as scaffold nor for other unorthodox usages.
- Pay attention to the presence of people in the range of operation of the backhoe.
- Whenever it is possible, load the trucks from the driver's side.
- Always examine the operating area looking for eventual risk conditions. Here are some examples: slopes, protruding areas, trees, demolished constructions, fires, high scarps, ravines, cliffs, uneven ground, pits, peaks, crests, digs, heavy traffic, crowded parking and service areas, closed places. If similar conditions exist, proceed with extreme caution.
- Possibly, avoid to move transversely to slopes. Proceed upright-hill (from above to below and vice versa) in case the tractor slips laterally uphill, steer immediately directing the front part downwards.
- While working on slopes, there is no rule that can replace the operator's experience and common sense.
- Keep head, body, limbs, hands, feet away from the boom of the backhoe or from terminal tools in lifted position.
- ALWAYS REMOVE THE IGNITION KEY OF THE TRACTOR BEFORE EFFECTING ANY INTERVENTION ON THE BACKHOE (cleaning, repairs and maintenance).
- ALWAYS REMOVE THE IGNITION KEY OF THE TRACTOR WHEN IT HAS TO BE LEFT IN A PARKING AREA OR AT REST IN ORDER TO AVOID ACCIDENTAL OR UNAUTHORIZED STARTS



IMPORTANT THE MANUFACTURER IS RELIEVED OF ALL RESPONSIBILITIES DERIVING FROM DAMAGES CAUSED BY THE BACKHOE TO PERSONS, THINGS OR ANIMALS IN CASE OF:

- use of the backhoe by not properly trained personnel;
- misuse of the backhoe;
- defects of electrical, hydraulic or pneumatic supply due to the user's negligence;
- incorrect installation;
- lacks of planned maintenance;
- unauthorized modifications or interventions;
- use of non-original or non-specific spare parts for the model;
- total or partial failure to comply with the instructions;
- use contrary to the specific national rules;
- calamities and exceptional occurrences.

2. SPECIAL SAFETY WARNING

The backhoe is destined to the installation on agricultural tractors: before carrying out the installation, make sure that the tractor has sufficient characteristics; read carefully the section "INSTALLATION MODALITIES".



IMPORTANT DO NOT INSTALL THE BACKHOE ON NOT ADAPTED TRACTORS



IMPORTANT OPERATING IN COMPLETE SAFETY REQUIRES A QUALIFIED OPERATOR

A QUALIFIED OPERATOR MUST DO AS FOLLOWS:



IMPORTANT a) UNDERSTAND WRITTEN INSTRUCTIONS, LAWS AND RULES.

- The instructions written by the company BONATTI include the delivery report, the operator's manual and the warning on the backhoe (decals).
- Check the laws and regulations on site. The laws can provide special safety requirements for the employer.



IMPORTANT b) HAVE A REAL TRAINING ON DRIVING MANOEUVRES

- The operator's training must consist in verbal demonstration and instruction. This instruction is provided by the Company BONATTI or, as an alternative, by the installer before the delivery of the backhoe.
- The new operator must start in an area without people around and must use all the control devices until being able to drive the tractor with the backhoe applied to it, by using it in full autonomy and according to the instructions concerning the area of operations. Always wear protective clothing: HELMET, GLOVES AND SAFETY SHOES



CAUTION The backhoe falls within those work equipments for which a specific operator license is required (article 73, paragraph 5 of Legislative Decree nr. 81/2008).



IMPORTANT c) KNOW CONDITIONS OF USE .

- For each material to be handled the operator must know how to avoid the exceeding of the operating nominal capacity of the backhoe with applied tool. For instance, while handling a given loose material by means of a particular terminal tool, the operator must know with certainty if he can fill the tool completely or only partially.
- The operator must know all the forbidden uses of the backhoe and of the areas of operation. For example, he must know the excessive slopes of the scarps and the position of eventual underground pipelines and/or electrical power lines.
- Do not wear low-cut dresses. Always wear safety glasses when carrying out maintenance or repairing the backhoe. In certain operations it is required to wear safety glasses, ear protective devices or kits for special application. Please, address to DEALERS OF SAFETY EQUIPMENTS.

In order to be a **qualified operator** he must not consume drugs or alcoholic drinks that modify his quickness and coordination while working. An operator who makes use of prescribed drugs must have a medical certificate attesting to the capacity to drive or not to drive a tractor with backhoe in complete safety.

3. INTENDED USE

Backhoes model RET and REF for agricultural tractors or for small garden tractors are designed to carry out digging works in farms or maintenance of green areas such as golf courses, woods, parks, gardens.

Backhoes are equipped with proper terminal tools such as bucket with variable length, bucket for ditch cleaning, manure fork with variable length, trapezoidal bucket, all of them exclusively with brand BONATTI CARICATORI S.r.l.

4. CONTRAINDICATIONS TO USE



CAUTION THE BACKHOE MUST NOT BE USED:

- for uses other than the ones established by the manufacturer or not mentioned or different from the ones in this manual;
- in explosive (ATEX unenforceability) or corrosive atmosphere or with high concentration of dusts or oily substances in suspension in the air;
- in atmosphere at risk of fire;
- in corrosive atmosphere;
- in atmosphere with dusts dangerous for the operator's health;
- in closed places;
- with electric bridges and/or mechanical means that exclude utilities/parts of backhoe itself.

5. SAFETY DEVICE

Backhoes are fitted with the following safety devices for on-road circulation:

- mechanic clamp for arm locking (picture 1);
- mechanic clamp for arm rotation locking (picture 2);
- mechanic clamp for stabilizer locking (picture 3)



foto1



foto2



foto3

6. RESIDUAL RISKS

It is necessary to pay attention to the following residual risks that are existing when using the backhoe and that cannot be eliminated.



CAUTION: DANGEROUS MOVEMENTS

No persons other than the operator must stand around the tractor equipped with backhoe. In case of presence of third parties, stop all movements immediately and oblige them to move away.



CAUTION : DEVICES FOR INDIVIDUAL PROTECTION

Before proceeding with maintenance or adjustment operations, the operator must have and from time to time use the devices for individual protection as required by safety regulations and suitable to the type of maintenance to carry out as gloves, glasses, helmet, non-slip shoes, etc.



CAUTION : REMOVE PROTECTION

If protections are removed - for instance to carry out maintenance interventions - do not start the tractor for any reason before all protections are repositioned and fastened correctly.

6.1 SAFETY DISTANCE FROM POWER LINES



DANGER

Always maintain an adequate safety distance when electric lines pass within the operation range of the backhoe. This applies in particular to overhead lines that have not been disconnected by specialists or anyway to lines the conditions of which are not known.

VOLTAGE	MINIMUM DISTANCE (metres)
Up to 1000 V	1
Over 1 KV fino a 110 KV	3
Over 110 KV fino a 220 KV	4
Over 220 KV fino a 380 KV	5



DANGER

Maintain an adequate safety distance from electric lines. Comply with specific national rules. If you do not know the nominal voltage, always maintain a minimum distance of 5 metres.

6.2 SAFETY DISTANCE FROM SCARPS AND DITCHES



PERICOLO

Place the backhoe at an adequate safety distance from scarps or ditches. In case of not propped scarps or ditches, the distance also depends on the type of the ground.

Rule of thumb:

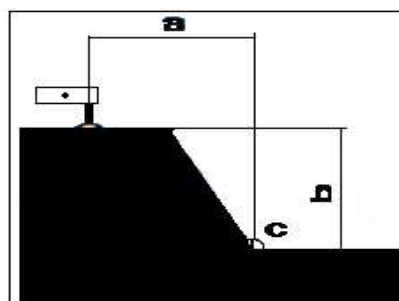
- In case of unstable ground or backfill, the safety distance (A) must be double the depth of the ditch (B).

$$A=2 \times B$$

- In case of compacted and not unstable ground, the safety distance (A) must be the same as the depth of the ditch (B).

$$A=1 \times B$$

The safety distance must be measured from the base of the ditch (C).



7 SIGNALIZATION BACKHOE



3. INSTALLATION

1. TRANSPORT AND HANDLING

The machine can be transported with a normal means of transportation able to bear its weight and dimensions. It is recommended to use always means able to bear the weight and the dimensions of the machine in order to avoid damages to the machine itself and to persons or things in the surrounding area.

As the machine is supplied totally assembled, it has only to be positioned in the place of use.

For the positioning or the resting period of the backhoe it is necessary to follow the instructions here below:

Lift the machine by means of a lift truck equipped with hook, a tackle or a crane by hitching the ring designed for the lifting as in the picture below. Always check the correct balance of the machine weight in order to avoid unexpected movements or falls to the ground.

RING FOR HITCHING



The Manufacturer is not liable for damages caused to persons, animals and things due to the use of lifting systems which are different from the indicated ones.

2. INSTRUCTIONS FOR ASSEMBLING AND DISASSEMBLING OF THE BACKHOE TO THE TRACTOR



CAUTION It is important to conform to the following instructions in order to avoid causing serious damages to things or persons and injuries or death of the operator.

1.1 INSTALLATION OF THE BACKHOE TO THE TRACTOR ON 3-POINT-HITCH

- Make sure that the backhoe is placed on the stabilizers and on the bucket on the ground and on even and stable soil
- Let the tractor approach slowly backwards to the backhoe up to the positioning of the couplings for the 3-point-hitch
- Apply the parking brake
- Turn off the tractor engine
- Get off the tractor
- Position the three-point-hitch on the couplings
- Insert the pins in the couplings and lock them with the corresponding split pins
- Connect the hydraulic pump to the tractor pto
- Close the stabilizers of the backhoe
- The backhoe is ready for use



RIGID BRACKET



HYDRAULIC PUMP

1.2 DISASSEMBLING OF THE BACKHOE FROM THE TRACTOR

- Make sure that the backhoe is placed on the stabilizers and on the bucket on the ground and on even and stable soil
- Apply the parking brake
- Turn off the tractor engine
- Move the lever of the hydraulic controls in its four positions for a number of times to unload the hydraulic pressure
- Get off the tractor
- Disconnect the hydraulic pump from the tractor pto
- Remove the split pins from the pins
- Extract the pins from the couplings
- Get on the tractor
- Release the parking brake
- Start the tractor engine
- Move slowly from the backhoe up to the complete detachment of the same

3. TESTS FREE OF LOAD



IMPORTANT Before effecting operations under load, carry out at least a test free of load in order to verify the absence of anomalies.

4. TESTS UNDER LOAD

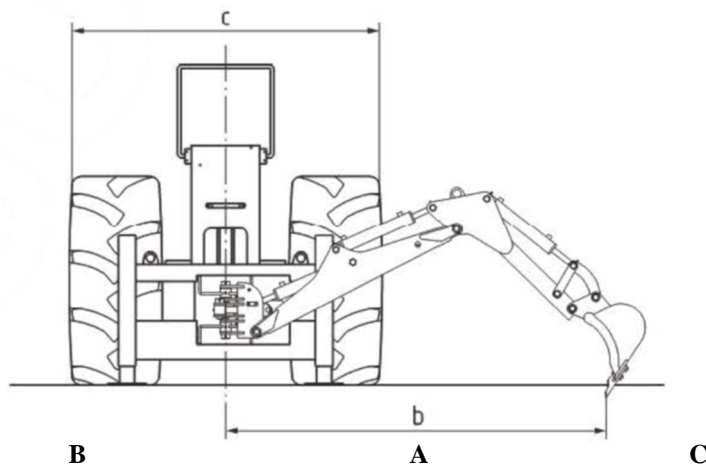


IMPORTANT Carry out at least a test under load in order to verify the absence of anomalies.

5. TRANSVERSE STABILITY



CAUTION Check of the minimum weight (Mt) of the tractor on which the backhoe can be installed to grant transverse stability.



The input data for the check are:

- weight of the backhoe, m, expressed in kilograms (kg);
- width of the tractor, c, expressed in metres (m);
- maximum extension of both backhoe arms, considered in their position of maximum lateral movement, b, expressed in metres (m);
- maximum vertical force in point C that the bucket (or other accessories) can apply on the ground, both upwards (lifting force) and downwards, F, expressed in kilograms (kg).

Considering the vertical force on the ground upwards and, therefore, as reaction on the arm downwards, in comparison to point A it will be:

$$Q > \frac{F \times (b - \frac{c}{2})}{\frac{c}{2}}$$

Considering the vertical force on the ground downwards and, therefore, as reaction on the arm upwards, in comparison to point B it will be:

$$Q > \frac{F \times (b + \frac{c}{2})}{\frac{c}{2}}$$

where Q is the weight [Kg] of the combination tractor + backhoe.

Thus, the minimum weight [kg] of the tractor will have to be:

$$M_t = Q - m$$

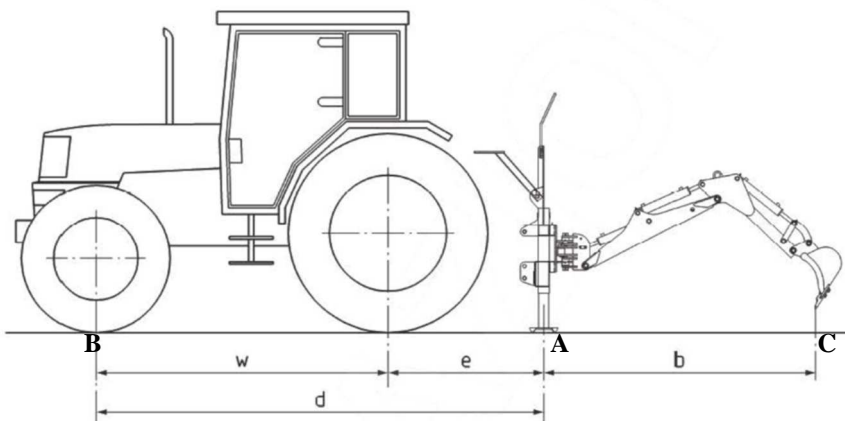


IMPORTANT No liability can be attributed to Bonatti Caricatori S.r.l. due to the non-compliance with the correct M_t value of the tractor on which the backhoe can be installed to grant transverse stability.

6. LONGITUDINAL STABILITY



CAUTION Check of the proper weight of the tractor on which the backhoe can be installed to grant longitudinal stability.



The input data for the check are:

- weight of the backhoe, m , expressed in kilograms (kg);
- weight acting on the front axle of the tractor, M_f , expressed in kilograms (kg);
- weight acting on the rear axle of the tractor, M_r , expressed in kilograms (kg);
- distance between the centre of front wheels and the backhoe stabilizers, d , expressed in metres (m);
- distance between the centre of the rear wheels and the backhoe stabilizers, e , expressed in metres (m);
- wheel base of the tractor, w , expressed in metres (m);
- length of the arms (i.e. maximum extension of both backhoe arms), b , expressed in metres (m);
- maximum vertical force in point C that the bucket (or other accessories) can apply on the ground, both upwards (lifting force) and downwards, F , expressed in kilograms (kg).

Considering the vertical force on the ground upwards and, therefore, as reaction on the arm downwards, in comparison to point A it will be:

$$[(M_f \times d) + (M_r + m) \times e] > F \times b$$

Considering the vertical force on the ground downwards and, therefore, as reaction on the arm upwards, in comparison to point B it will be:

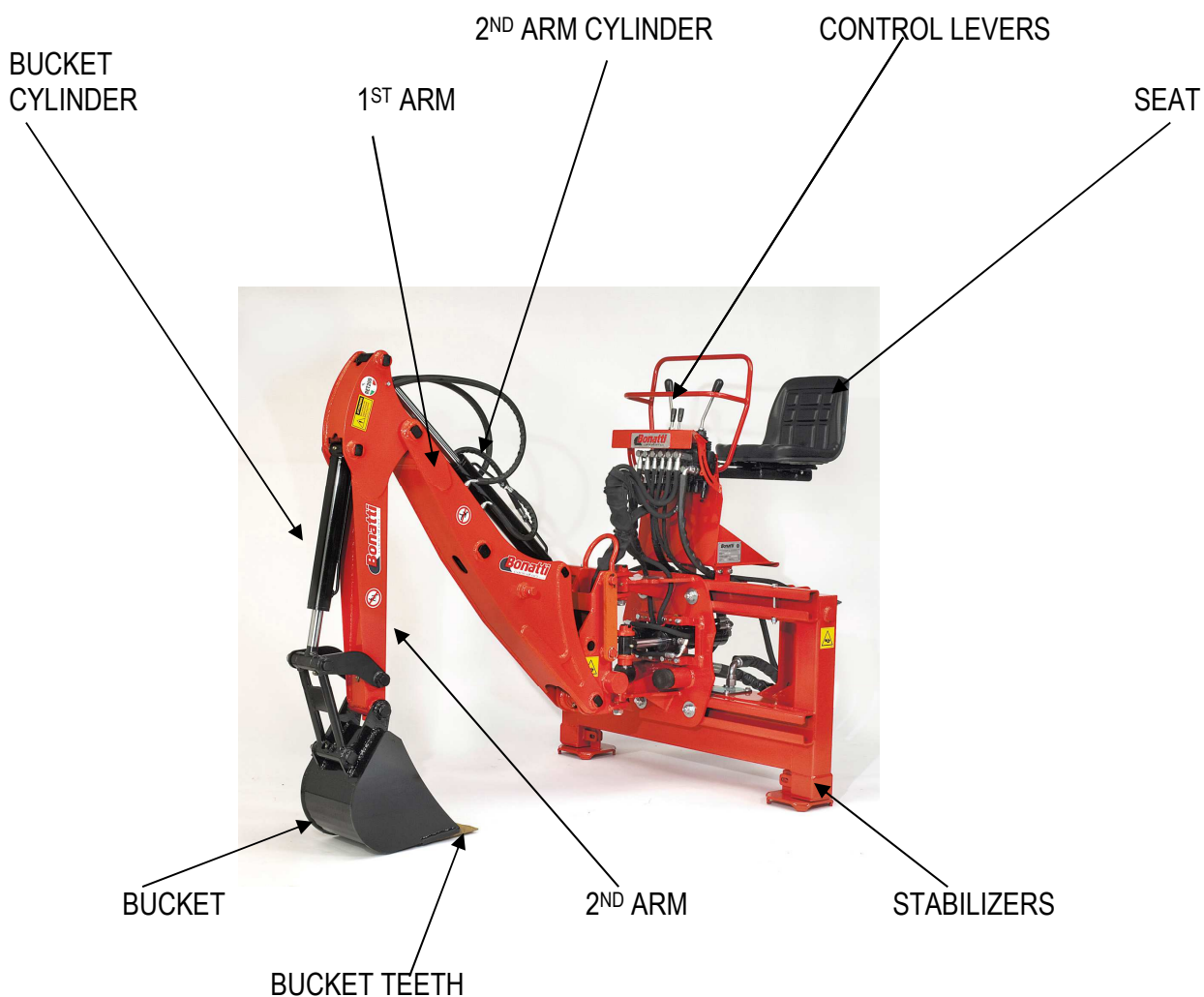
$$[(M_r + m) \times w] > F \times (b + d)$$



IMPORTANT No liability can be attributed to Bonatti Caricatori S.r.l. due to the non-compliance with the correct M_f and M_r values of the tractor on which the backhoe can be installed to grant longitudinal stability.

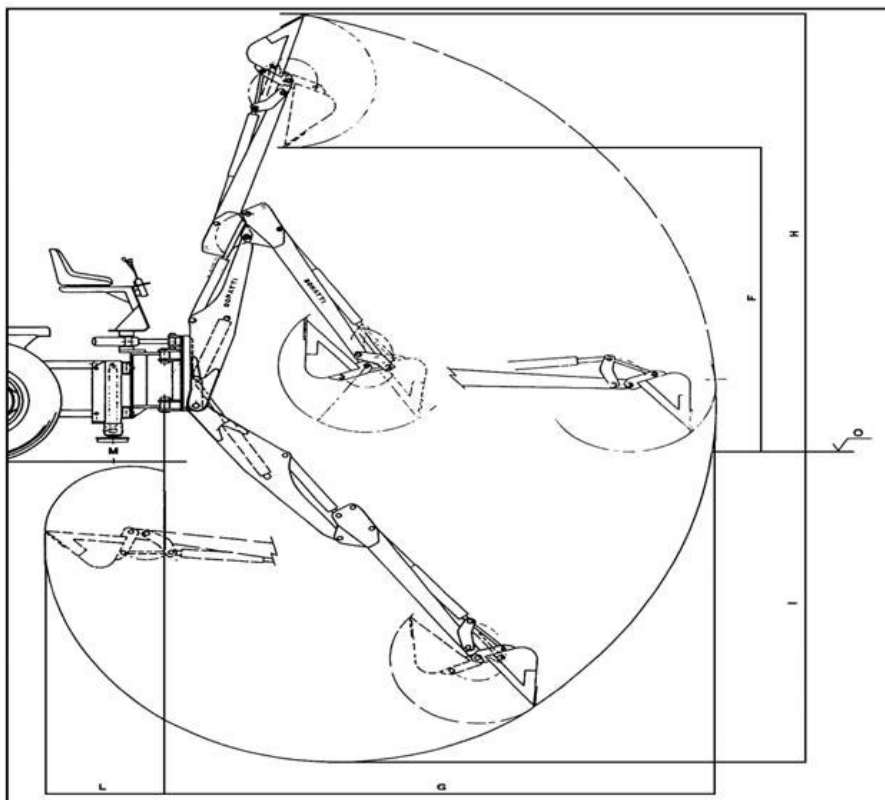
4. DESCRIPTION OF THE BACKHOE

1. NOMENCLATURE OF COMPONENTS



2. TECHNICAL DATA

2.1. DATA OF BACKHOE RET and REF FOR AGRICOL TRACTORS



CAUTION THE BACKHOE MUST BE INSTALLED ON COMMERCIAL TRACTORS HAVING THE FEATURES INDICATED AT ITEM **P TRACTOR POWER Hp** OF THE TABLE HERE BELOW

	Model	REF 140	RET 140 ML	RET 165 ML	RET 185 ML	RET 180	RET 200	RET 220	RET 250
P	Tractor power Hp	10/15	10/15	13/18	17/22	18/25	26/35	33/45	40/55
F	Max. height with closed bucket in mm	1350	1350	1900	2050	1850	2050	2250	2550
G	Max. range in mm	1970	1970	2690	2890	2300	2500	2700	3000
I	Digging depth	1400	1400	1650	1850	1800	2000	2200	2500
M	Distance from closed foot on the ground for circulation in mm	250	250	300	300	300	300	300	300
KG	Backhoe weight with 250 mm bucket	330	345	360	380	420	450	570	600

5. USE OF THE BACKHOE


1. PREPARATION FOR DRIVING


Read the operator's and maintenance manual before operating the backhoe

CAUTION

Use the steps on the equipment base and the handholds to get on or get off the backhoe. Non-slip devices are installed on the steps to supply a slip-resistant surface in all operations of getting on/off the backhoe. Keep the non-slip steps clean and replace them when they are damaged. Non-slip steps as for replacement of the worn ones are to be requested at the company Bonatti Caricatori S.r.l.

Adjust the seat position to operate the backhoe controls comfortably.

 **CAUTION** Before using the tractor with applied backhoe the operator must have been instructed. Untrained operators can cause injuries or death

 **CAUTION** For a correct use of the backhoe it is advisable to grant a good stability to the tractor. Therefore, before putting the backhoe into operation, follow the following instructions:

- Apply the parking brake;
- Support the tractor on the back by means of the stabilizers but keeping the rear wheels in contact with the ground.

2. DAILY OPERATIONS

 **CAUTION** Before starting operations:

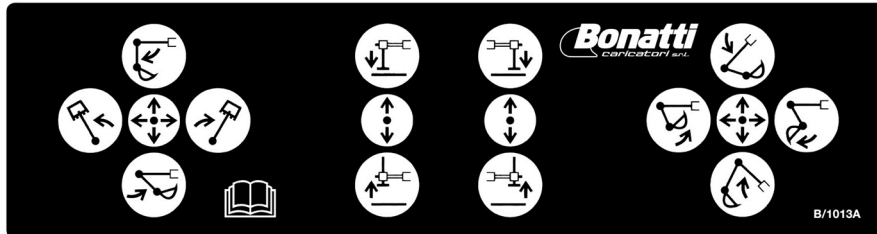
- Check hydraulic oil liquid level of the backhoe
- Check the integrity of the hydraulic hoses;
- General check of hydraulic leaks;
- General check of the conditions of carpentry parts for rust or eventual failures;
- Check the integrity of instruction labels;
- Check the integrity of control indications;
- Check the correct return to zero of control levers;
- Check the presence of locking pins on the fastening frame and on the tool;

3. CONTROL PANEL

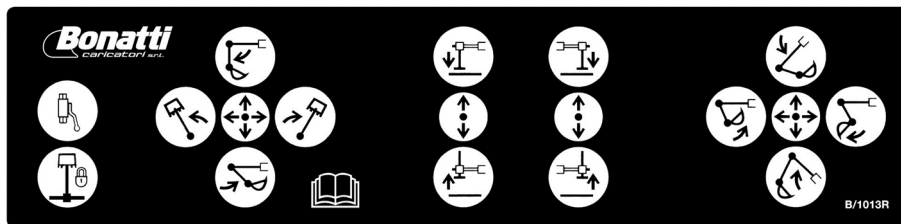


Before starting operations make sure to have the full visibility of the operation area.
In case of night time work, make sure that the lighting is sufficient.
The plates here below are supplied with and they must be applied near the backhoe controls.

3.1 BACKHOE WITH MECHANICAL LOCKING



3.2 BACKHOE WITH HYDRAULIC LOCKING



4. USE OF THE BACKHOE



CAUTION

Before work: signal the operation area with appropriate signs.

During work: always keep under control the operation area and prevent people from approaching.



CAUTION

- a) Never use bucket, forks or other accessory tools designed for the backhoe if they have not been approved by the Company **Bonatti Caricatori S.r.l** for each backhoe model manufactured by it.
- b) The use of accessory tools on backhoe **not approved** by **Bonatti Caricatori S.r.l** relieve the same from any responsibility in case of injury or death.



CAUTION THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY CONSEQUENCES DERIVING FROM THE NON-COMPLIANCE WITH THE ABOVE-MENTIONED POINTS a) b).



DANGER

- Load and unload on a flat ground.
- Do not exceed operational capacity.
- Failure to observe warnings can cause the overturning and roll-over of the tractor and can cause injuries or death.
- Never unload over an obstacle which could get into the operator's cab. The tractor could move forward and cause injuries or death.



CAUTION

When the operator is about to work for the first time with the backhoe, he must become familiar with the use of the bucket. Therefore he will have to gain preliminary experience by following all operations which the tools can carry out in order to develop a certain "sensitivity" to controls and to the reactions resulting from them.

5. DIGGING OPERATION

5.1 PREPARATION FOR DIGGING WORK

- Position the stabilizers firmly on the ground on solid and compact soil;
- Position the bucket on the ground in open position and with spread arm;
- Close the bucket;
- Lift the arm;
- The best results are obtained with 1st arm and 2nd arm angled one another with an angle of about 120°. An improvement in the penetration force can be obtained by combining the movement of the 2nd arm with the movement of the 1st arm.



CAUTION

BEFORE STARTING EACH OPERATION VERIFY THE ABSENCE OF MANHOLES AND PIPES IN THE GROUND WHERE THE OPERATIONS WILL BE EFFECTED



DANGER

DO NOT DIG TOO CLOSE TO THE BACKHOE STABILIZERS



DANGER

DO NOT DIG IN PROXIMITY TO ELECTRIC LINES

5.2 TRANSLATION OF THE BACKHOE WITH HYDRAULIC LOCKING

- Open the tap positioned on the left side of the distributor to activate the release of the locking cylinders (the picture here below indicates the tap);



- Rotate the arm by 90° in the desired direction;
- Place the bucket firmly on the ground;
- By moving the 1st and 2nd arm, drag the backhoe in the desired position;
- Rotate the arm by 90° until it is straight again (parallel to the machine axis);
- Close the tap;
- Lift the 1st arm up to the locking of the cylinders.



CAUTION DO NOT WORK WITH UNLOCKED POSITIONING
VERIFY THAT THE LOCKING JACKS ARE WELL CLOSED

5.3 TRANSLATION FOR RET WITH MECHANIC LOCKING

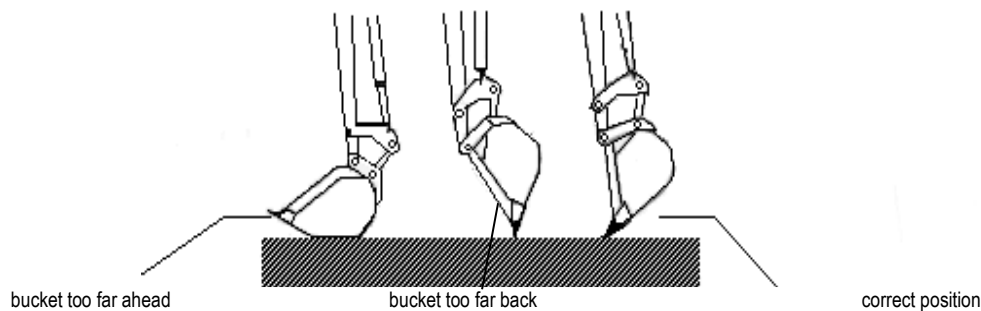
- Loosen the locking bolts fitted on the framework, 2 on the right and 2 on the left by means of the supplied wrench;
- Rotate the arm by 90° in the desired direction;
- Place the bucket firmly on the ground;
- By moving the 1st and 2nd arm, drag the backhoe in the desired position;
- Rotate the arm by 90° until it is straight again (parallel to the machine axis);
- Lock the framework again by means of the bolts before use;

Always keep the feet on the specific supports protected by a foot-stop.
Non-compliance can cause serious injuries.

It is possible to opt for two different digging techniques, with the bucket or with the arm. The best method to be used is quite always determined by the conditions and the typology of the ground.

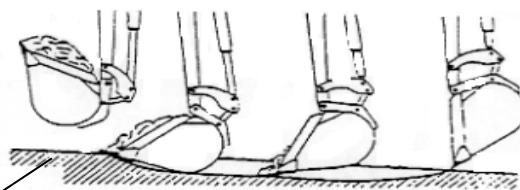
5.4 DIGGING OPERATION WITH BUCKET

Lower the bucket and position it exactly in the point to be dug. Let the bucket penetrate into the soil by acting on the arm control cylinders. With the bucket in the soil bring back simultaneously the penetration arm and the bucket, so that the latter can be full. If the bucket stops, lift the arm slightly by means of the lifting cylinder and continue digging until the bucket is full. Lift the bucket up to the trench top and unload it on the pile of the dug material. With some practice lifting, rotation and unloading are carried out with maneuvering continuity. When loading trucks with high sides, continue bringing back the bucket while lifting it in order to avoid the overturning of its contents.



5.5 DIGGING OPERATION WITH ARM

Lower the bucket into the ground as when digging with the bucket and then bring back the bucket, so that the teeth positioned on the cutting edge lie flat on the ground. By using only the penetration cylinder, bring back the arm by scraping with the bucket along the trench until the bucket is approximately half full. Start to rotate the bucket and, at the same time, bring back the penetration arm until the bucket is completely full. Lift the bucket and rotate the backhoe until the bucket can be unloaded. When working on slopes, unload the dug material on the side up the trench. The bucket with backhoe will be in a more stable position and the filling of the trench will be easier.



DIGGING WITH THE ARM

- Arm positioned completely on the right (driving direction) and completely closed (transversal to the machine): make sure that the license plate remains visible;
- Arm locked by means of the specific mechanic lock (picture 1 safety devices);
- Locked rotation by means of the specific mechanic lock (picture 2 safety devices),
- Locked stabilizers by means of the specific locks (picture 3 safety devices);
- In case of on-road circulation it is compulsory to install the homologated lights bar in the most protruding point of the machine.

6. LOADING OF THE MATERIAL ON TRUCKS

For the loading of the material on trucks, in any case it will be up to the operator to decide which position and which method will result as the most efficient ones for the typology of work to be carried out, also in consideration of his own experience.

7. ON-ROAD CIRCULATION



IMPORTANT On-road circulation is subject to laws and regulations in force in the country where the backhoe is used.

The manufacturer of the backhoe is not responsible for any consequences deriving from the non-observance of the rules of the road.



CAUTION

- Orange rotating light in use;
- Do not circulate on the road with loaded terminal tool;
- Arm positioned completely on the right (driving direction) and completely closed (transversal to the machine): make sure that the license plate remains visible;
- Arm locked by means of the specific mechanic lock (picture 1 safety devices);
- Locked rotation by means of the specific mechanic lock (picture 2 safety devices),
- Locked stabilizers by means of the specific locks (picture 3 safety devices);
- In case of on-road circulation it is compulsory to install the homologated lights bar in the most protruding point of the machine.



THE PICTURE ABOVE INDICATES THE CORRECT POSITION OF THE BACKHOE DURING ON-ROAD CIRCULATION.



CAUTION

The non-use of the locking devices can cause serious damages to things and persons.

8.REST PERIOD OF THE BACKHOE AFTER WORK



CAUTION Soon after getting out, in order to avoid injuries or death, before leaving the operator's seat, lower the booms of the backhoe and place the equipment on the flat on the ground. Stop the tractor engine and engage the parking brake.



CAUTION Always remove the ignition key from the tractor.

9.INSTRUCTIONS FOR ASSEMBLING AND DISASSEMBLING OF TERMINAL TOOLS



CAUTION

- Place slowly the tool to the ground so that it does not overturn after the pins have been extracted;
- Extract the locking pins;
- Extract the two side pins of the tool
- Lift the arm gently until it is removed from the tool



DANGER Use plastic hammers to avoid dangerous slivers. Wear glasses, helmet and gloves.



DANGER

Do not stand in the area of possible fall of the tool: **DANGER OF SQUASHING**

10. TERMINAL ACCESSORIES OF THE BACKHOE

The following accessories can be installed on the backhoe:

- Bucket with variable width
- Bucket for ditch cleaning with variable length
- Trapezoidal bucket for ditch cleaning
- Manure fork with variable width
- PRE-FITTING FOR HAMMER

The accessories supplied by the company Bonatti Caricatori are **C** **€**-marked and have to be requested according to the dimensions of the tractor.

11. ISTRUCTIONS FOR STORAGE



CAUTION In case of prolonged inactivity:

- Wash the tool carefully;
- Lubricate all unpainted parts;
- Lubricate all lubricators;
- Store in a dry location.

6. MAINTENANCE OF THE BACKHOE



CAUTION Regularly drain the hydraulic circuit of the backhoe, change the filters according to the manufacturer's provisions. These are essential operations to be carried out to avoid the wear of all hydraulic parts (pump, distributors, cylinders).



CAUTION Carry out the maintenance operations of the backhoe by detaching it from the tractor

1. MAINTENANCE

1.1 GREASING

ELEMENT		WORKING HOURS
Lubricator		10

2.1 MAINTENANCE

		ORE di LAVORO
Intake oil filter		500
Outlet oil filter		500
Hydraulic oil		500

OIL TANK CAPACITY: 20 l

HYDRAULIC OIL TYPE: ISO VG 46



CAUTION

- Avoid release of the oil to the environment
- Provide all necessary equipment to oil change (minimum capacity of the container: 50l)
- Wear all protective elements
- Position the tractor on even, solid and compact ground;
- Place the arm laterally on the ground;
- Position the stabilizers on the ground;
- Apply the parking brake of the tractor;
- Turn off the engine and remove the key;
- Move the lever of the hydraulic controls in its four positions for a number of times to unload the hydraulic pressure.
- Place the collecting container under the cap positioned down on the left of the tank
- Unscrew the cap by means of the appropriate wrench
- Make sure that the oil has been completely drained
- Replace the cap seal with a new one
- Retighten the cap
- Fill the tank to its maximum level

2. MAIN FAILURES

MAIN FAILURES	CAUSE	REMEDY
Controls do not respond	<ul style="list-style-type: none">- Power take-off is not engaged- Hydraulic pump is damaged- Lack of oil	<ul style="list-style-type: none">- Engage the PTO- Replace the pump- Add oil
The arm and/or the stabilizers move without activation of the controls	Worn cylinder seal	Replace the seal
Overheating	- Dirty filter	-Replace the filter
Leak from the junction	- Loose junction	- Tighten the junction
The backhoe or the tool work in opposite direction to the movement foreseen by control levers	- Hydraulic connection was not effected in a correct way	Check hydraulic connections

7 SERVICE AND SPARE PARTS

7.1 SERVICE

The manufacturer remains always at disposal for any type of information concerning the installation, the use and the maintenance of the backhoe.

It is advisable for the customer to ask questions in clear terms, with references to this manual and to the instructions contained in it.

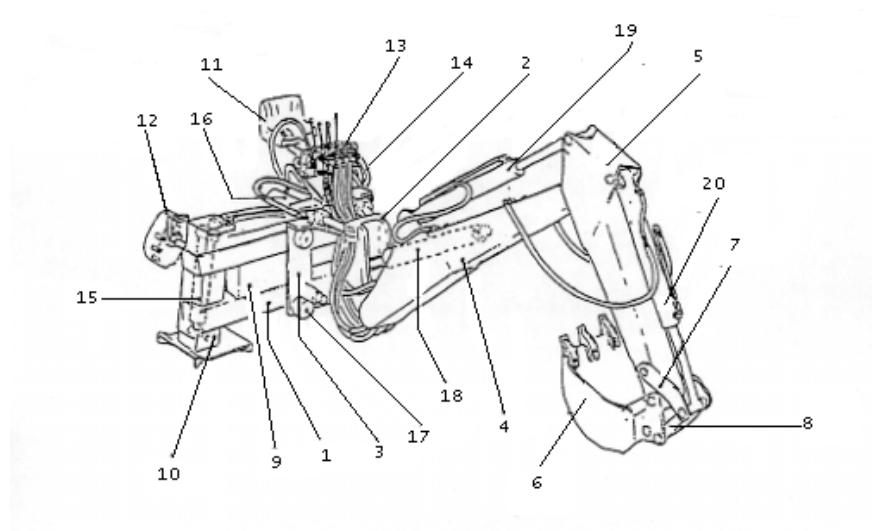
7.2 SPARE PARTS



**ALWAYS USE ORIGINAL SPARE PARTS.
FOR ANY SPARE PART, CONTACT THE MANUFACTURER**

TABLE OF SPARE PARTS - GROUPS OF THE BACKHOE MODEL RET-REF

Request spare parts by making reference to the **MODEL AND SERIAL NUMBER** of your backhoe that you can find stamped in the plate applied to the support.



REF.	PART-NR.	DESCRIPTION	Q.TY
1	R/1017	FRAMEWORK	1
2	R/1018	COLUMN	1
3	R/1019	MOBILE BASE	1
4	R/1020	1ST ARM	1
5	R/1021	2ND ARM	1
6	R/1022	BUCKET	1
7	R/1023	CONNECTING ROD	2
8	R/1024	TIE ROD	1
9	R/1025	HYDRAULIC OIL TANK	1
9	R/1025/A	SUCTION FILTER	1
9	R/1025/B	OUTLET FILTER	1
10	R/1026	STABILIZER	2
11	R/1027	OPERATOR'S SEAT	1
12	R/1028	HYDRAULIC PUMP	1
13	R/1029	HYDRAULIC DISTRIBUTOR	1
14	R/1030	HYDRAULIC HOSES	1
15	R/1031	STABILIZER JACK	1
16	R/1032	ROTATION JACK	2
17	R/1033	LOCKING DEVICE JACK	4
18	R/1034	1ST ARM JACK	1
19	R/1035	2ND ARM JACK	1
20	R/1036	BUCKET JACK	1

BONATTI CARICATORI S.R.L

Sede Legale: Strada Provinciale Ovest n .36
Sede Operativa: Strada Provinciale Ovest n .38
46020 PEGOGNAGA (MN)
Tel. 0376-558089-Fax. 0376-559890
E-Mail: INFO@BONATTICARICATORI.IT- WWW.BONATTICARICATORI.IT
C.F./P.I. 02133730206 - CCIAA-MN-n. 02133730206
N. MECCANOGRAFICO MN02142 R.E.A. MN-n 226961
Capitale Sociale i.v. € 30.000,00