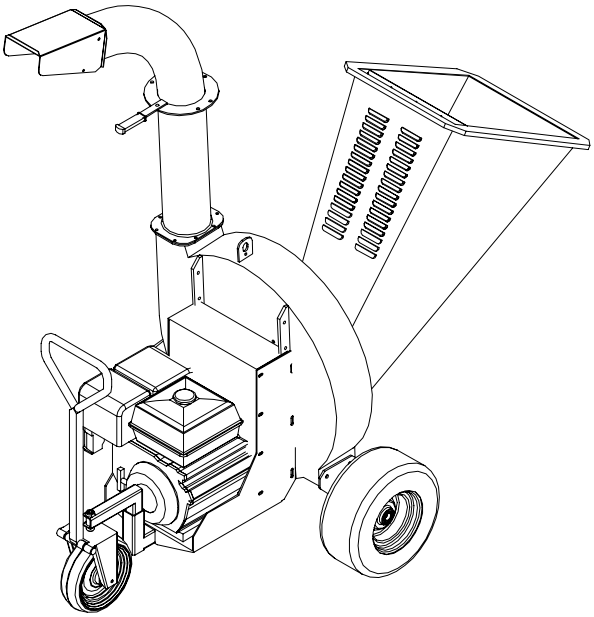
# USE AND MAINTENANCE INSTRUCTION MANUAL

# Bio 190



**BEFORE USING THE MACHINE , READ THE INSTRUCTION MANUAL**

## 1. HOW TO USE AND KEEP THE INSTRUCTION MANUAL

This instruction manual is aimed at the user of the machine , the owner , the maintenance cleaning operator and the repair technician and must always be avaiable for consultation .
The instruction manual shows the user for which the machine was designed and the machine's technical characteristics . It also supplies instructions for transport , cleaning adjustment , use , personnel informations , maintenance , spare parts ordering and residual risk , and warnings with regard to operations that must be carried out with particular care .
The machine is for professional use , so the instruction manual can never be a substitute for suitable user experience .
The manual should be considered a part of the machine and must by kept for future reference until the machine is demolished .
The instruction manual must always be avaiable for consultation and must be kept in a dry , protected place .
In the case of loss or damage the user may request a replacement from the manufacturer , quoting the series reference , type and year of construction which are shown on the plate fixed to the bio-chopper ( section 5 ) .
The manufacturer reserves the right to update production and manual without the obligation to update earlier production and manuals .
The manufacturer is relieved from all responsability in cases of :

- improper use of the bio-chopper ;
- uses not conforming with what is expressly specified in this documentation ;
- serious deficientes in prescribed and recommended maintenance ;
- unauthorised modifications or interferences ;
- use of spare parts that are not original or model specific ;
- total or partial failure to follow the instructions ;
- force majeure ;

## 2. IDENTIFICATION OF MAIN PARTS

1. Hopper with guards
2. Drawbar
3. Petrol engine - electric motor
4. Power take-off for a tractor
5. Wheels
6. Shredder chamber
7. Outlet

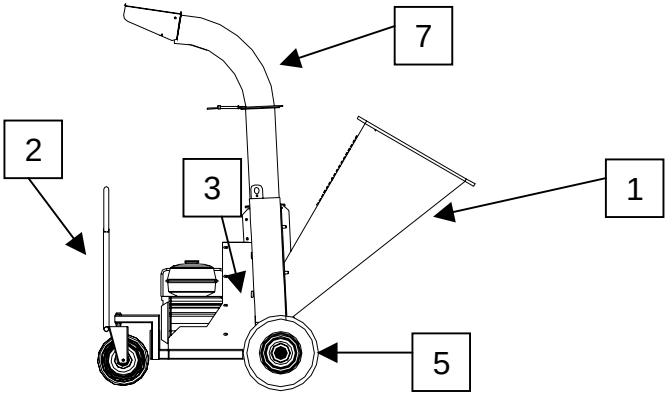



Fig. 1

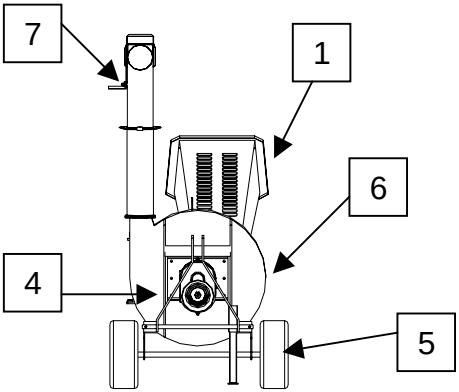



Fig. 2

# 3. CORRECT USE OF THE MACHINE

The machine must be run by one operator only .
The operator must be have read and fully understood the instructions in this manual in order to use the machine correctly .
The operator must be ensure that person or animals do not come whithin the field of action while the machine is running .
The Caravaggi company's Bio 190 bio-chopper has been built to chop vegetables , foliage and natural wood of the dimensions indicated in the relevant section .
It may be used for cutting peat and similar .
It is not suitable for chopping products other than those listed above .
To work with other products , contact the machine manufactures or authorised dealers .
The operator must be aware of all the instructions given in the instruction manual .

# 4. UNPACKING AND PREPARATION

The Bio 190 bio-shredder is delivered partially dismantled. It ca be arranged on pallets to facilitate handling and transport before installation, depending on the versions.
To transport the machine in these conditions it is indispensable to use a transpallet or similar with a load capacity of around 300 kilos .
Avoid :

- hoisting the bio-chopper with ropes or unsuitable hoists ;
- dragging the bio-chopper ;
- bumps or shocks ;
- exposing the machine to rain , frost or any bad weather .

On taking delivery check that the contents correspond with the delivery note . Should damage or deformity due to transport be noted , make an immediate compliant to the carrier and advise the authorised dealer or the manufaturer . In particular , check that :

- there are no dents , signs of bumps or deformations ;
- there are no damp areas or signs tha may lead to suppose that the pack has been exposed to foul weather ;
- there are no signs of tampering ;

After checking that transport has been carried out correctly , proceed to assembling the machine as shown in figures 4 - 5 .

- Activate the front wheel block and tighten the securing screws (Fig. 4).
- Mount the two rear wheels onto the axle and tighten the securing screws (Fig. 4).
- Mount the loading hopper and tighten the hinge screws (Fig. 5).

- Mount the unloading pipes and lock them in position using the screws provided (Fig. 4).

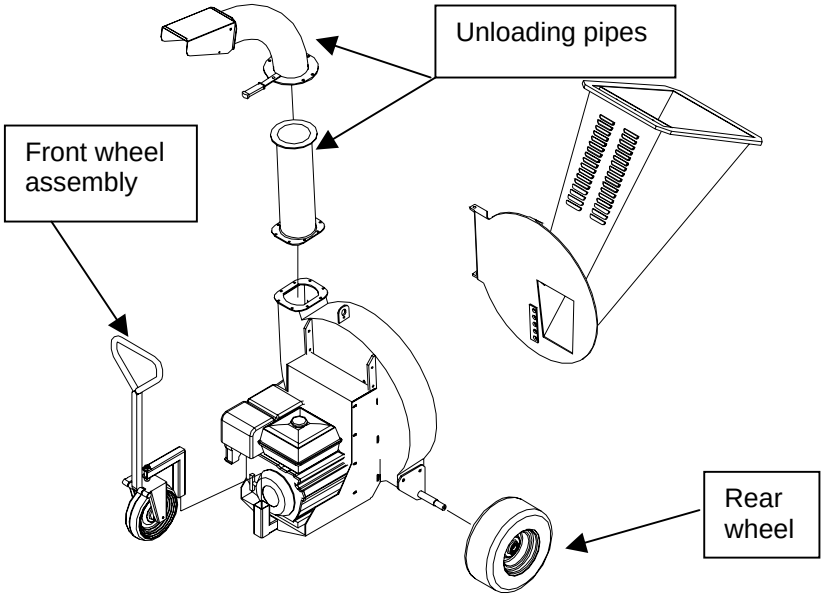



Fig. 4

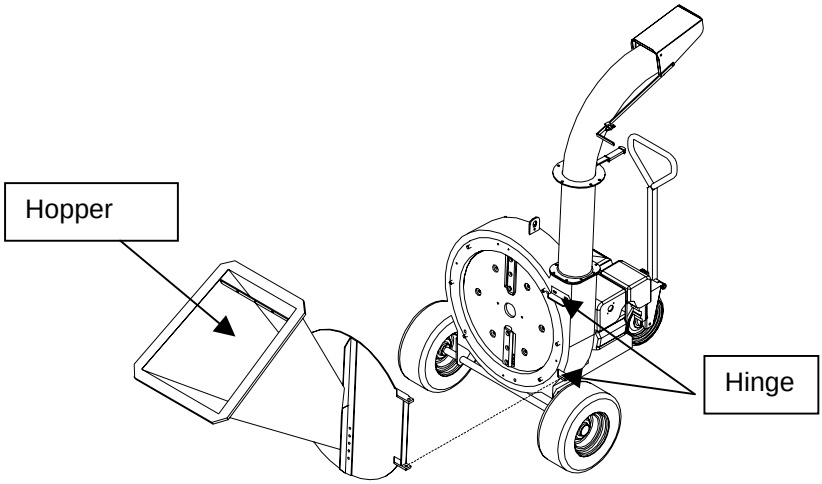



Fig. 5

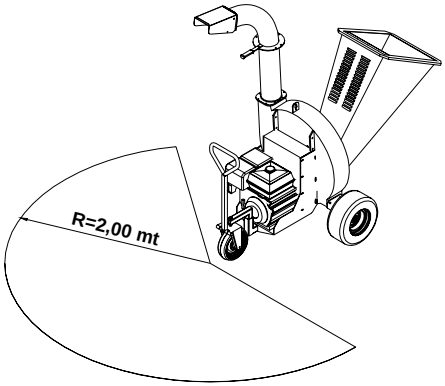
## 5. TECHNICAL CHARACTERISTICS

The EC identification plate is clearly visible on the Bio 190 bio-chopper ( fig. 6 ) .
In all communications with the manufacturer state the serial number on the identification plate .

Fig. 6

| Version | Power HP / kw | Supply | Prod. $m^3$ / h |
|---|---|---|---|
| **BIO 190 B** | **13 / 9** | Petrol | 7/8* |
| **BIO 190 E** | **10 / 7.5** | Electric 380 V | 7/8* |
| **BIO 190 T** | **20 ÷30 / 14.9 ÷22.3** | P.T.O. | 7/8* |
| * data depending on quality of material to be chopped and feeding speed | | | |

### 5.1 Overall dimensions




**Breadth ( mm ) :** 2000

**Lenght ( mm ) :** 1050

**High ( mm ) :** 2000

**Weight ( kg. ) :** ~ 300

**$L_{WA\ MAX}$ ( dB ) :** 104

## 6. SAFETY NORMS

**Training**

- The machine must not be used by under 16's and persons who have not learnt the user instructions .
- The operator is responsible for third parties present in the work area . Keep children and domestic animals at distance when the bio-chopper is in operation .
- This machine may be used only for cutting up natural wood and foliage . It must not be used for other purposes ( e.g. for breaking up bottles and boxes in other materials ) .
- Work only in adequate light .
- When you start up engine check that machine is equipped with the prescribed guards .
- Wear protective gloves and goggles while working .

**Preparation / Operation**

- Before beginning work check that the blades and the cutters are perfectly fixed. If the blades show signs of damage they should be sharpened or replaced .
- Do not use the bio-chopper when it is raining .
- The bio-chopper must be positioned on a flat , solid surface where there is no danger of overturning .
- Switch off the motor, remove the keys from the start panel and remove the sparkplug cap ( the power supply cable for electric motor bio-choppers , or check that the machine is disconnected from the tractor PTO ) in order to :
  - remove foreign bodies from the hoppers ;
  - transport the machine or move it from the workplace ;
  - carry out maintenance or cleaning ;
  - leave the machine unattended .
- The blades continue to turn for a few seconds even after the ignition has been switched off .
- Assemble the blades following the appropriate instructions and use only original spare parts supplied by the manufacturer .
- Never use the chopper with defective guards and protection or without the safety devices correctly fitted .
- Start up the engine with care and following the user instructions . When the engine is functioning it is imperative to prevent anyone from approaching the loading hopper , the discharger and the side hopper .

- If the blades undergo heavy shock and function in an anomalous manner , stop the engine , remove the spark plug hood and request expert advice .

**Caution !** The fuel is highly flammable :

- Keep fuel only in the containers made avaiable for this purpose ;
- Refuel only in the open air . Do not smoke or in any way cause naked flames during refuelling .
- Fill the tank before starting the engine . Never open the fuel cap or add petrol while the engine is running or when it is still hot .
- If petrol should be split , never try to start the engine . Move the machine away from the area involved area and avoid any sources of ignition until the fuel vapours have dispersed ;
- Tighten up the fuel tank cap .

**Maintenance and storage**

- Keep all nuts , bolts and screws perfectly tightened in order to work in safe conditions .
- For safety reasons promptly replace worn or damage parts .
- To protect hands during dismantling and assembly of the blades , wear suitable protective gloves .

**Version with electric motor**

- Regularly check that the power supply cable is in perfect condition . Never repair a damaged cable with insulating tape or thermal clamps .
- For the power supply conductor use only standardised rubber cable of the type 05 RN-F in accordance with DIN 57282 / VDE 0282 .
- Hook-up plugs must be in rubber or rubber covered .

## 7. START - UP

**Caution !** Before starting up the engine / motor check that the bio-chopper is on a stable surface and that there are no animals or unauthorised persons in the work zone .
Read the engine / motor manufacturer's instruction book carefully .

Check that there is oil and fuel in the tank . Fill if necessary .

**Petrol engine version**

- Put the selector at position "I" ( Start ) ( Fig. 8 ) . Grasp the starting knob ( Fig. 10 ) and pull the cord without force until you feel the resistance caused by compression , release the knob and then give a sharp tug to start the engine .
- Before beginning work let the engine idle for about 1 minute then take it to maximum revs ( using accelerator lever ) and proceed with normal use .

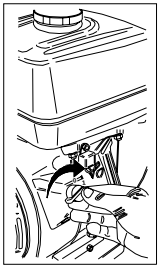


Fig. 8

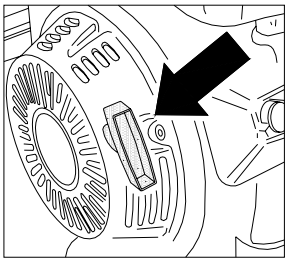


Fig. 9

**Electric motor version**

- Make sure the mains voltage corresponds to the motor rated voltage (check the rating plate on the motor) .
- Check that the power supply cable is conected then press the start / stop button .

**Version with tractor coupling**

- Make sure the cardan shaft connecting the bio-shredder and tractor is in proper working order.
- Before each use, make sure the cardan shaft is in proper working order .
- Check that the bio-chopper is correctly hooked up to the PTO then proceed with starting .

**Functioning**
Having correctly prepared the bio-chopper you can now proceed to working the material to be chopped .

***Upper hopper***
Load trimming and foliage into the upper loading hopper , taking account of avaiable power in function of the model you possess ( fig. 10 ) .

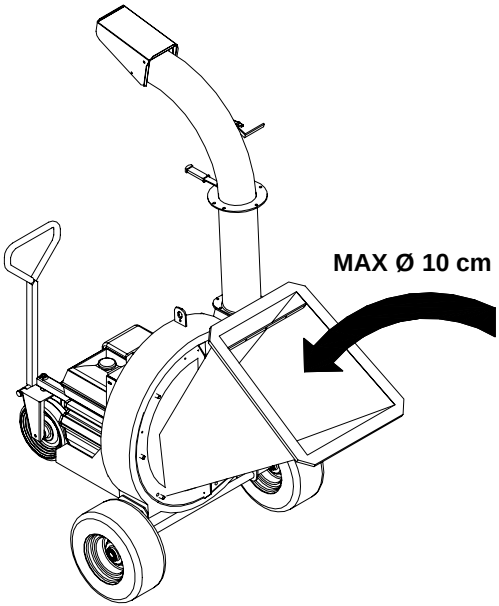



Fig. 10

**Caution !** Take the material to the hopper mouth and let it fall in .

***Never put hands and arms in to push material into the hopper !***

The material that can be worked and chopped in this hopper must not exceed 10 cm diameter .

To avoid the danger of intoxication from fumes , machines with internal combustion engines should never be used in closed environments .

## 8. MAINTENANCE

**Caution !** Before proceeding with any maintenance operation swith off the engine / motor and in any case ensure that there is no possibility of the machine functioning . Suitable gloves are obligatory for all maintenance operations .

## 8.1 Blade replacement

- Unscrew the locking nuts and open the feed hopper.
- Unscrew the securing screws and remove the blades.
- Fit the new blades.
- Tighten the securing screws.
- Close the feed hopper and tighten the locking nuts.

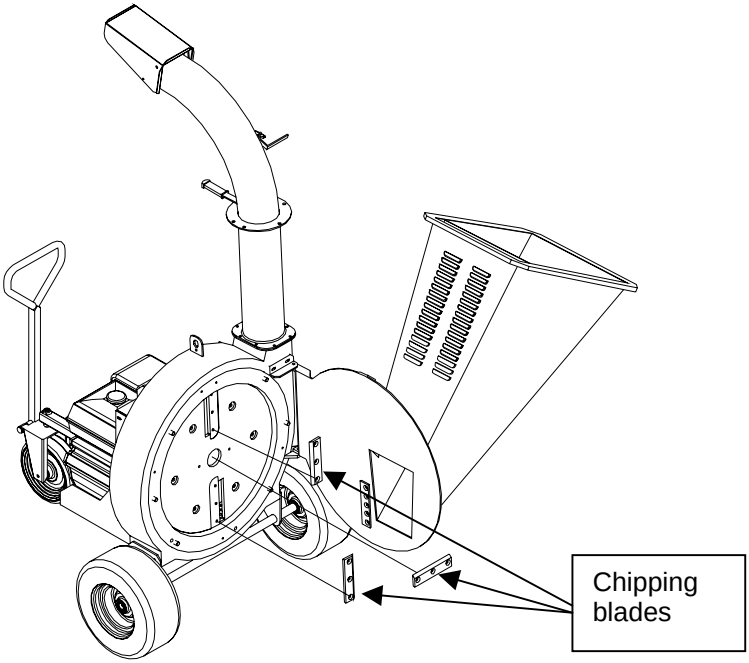



Fig. 11

## 8.2 Counter-blade replacement

- Unscrew the locking nuts and open the feed hopper.
- Unscrew the 5 securing screws and remove the counter-blade.
- Replace the counter-blade with a new one.
- Tighten the securing screws.
- Close the feed hopper and tighten the locking nuts.

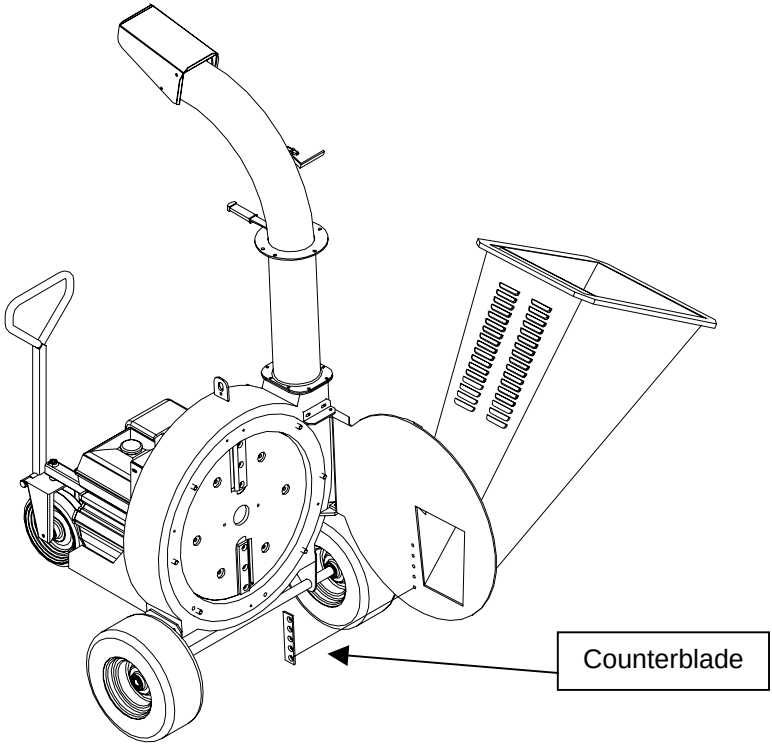



Fig. 12

## 8.3 Knives inversion and replacement

- Unscrew the locking nuts and open the feed hopper.
- Unscrew the 5 securing screws and remove the counter-blade.
- Unscrew the 6 screws and remove the front chipping disc.
- Remove the shaft , taking care to note the position of the spacers separating the breaker bars .
- If necessary replace the breaker bars . Take care to replace the previously removed spacers in the same position on the cutter shaft .
- Pull out the knives and spacer rings, taking care to mark the position of the rings between the knives.
- Remount the front chipping disc and lock the 6 securing screws in position.

**Caution !** Partial replacement of the breaker bars must be carried out respecting the opposite position for balancing .

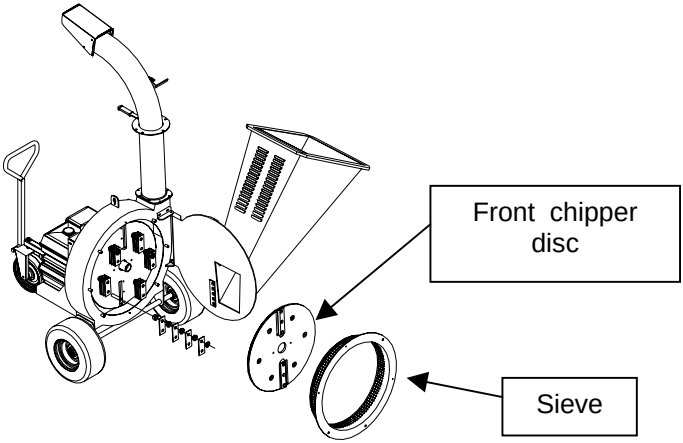



Fig. 13

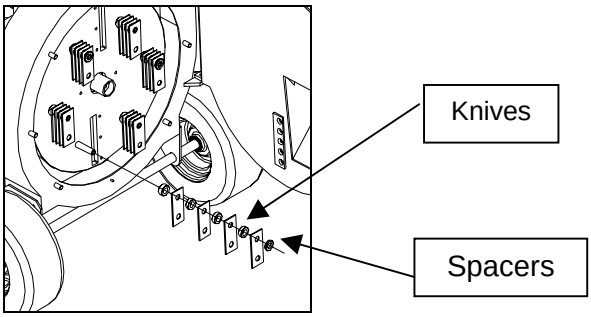



Fig. 14

## 8.4 Breaker bar removal , inversion and replacement

- Unscrew the locking nuts and open the feed hopper.
- Pull the sieve out of the grinding chamber.
- Insert a new sieve in the grinding chamber.
- Close the feed hopper and tighten the locking nuts.

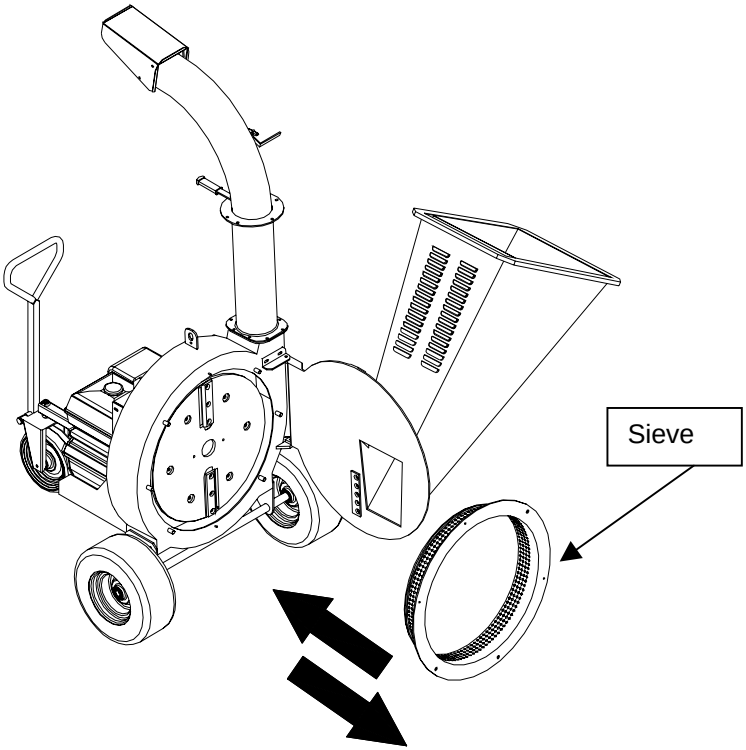



Fig. 15

## 8.5 Routine maintenance

| | Beginning of season | Before each job | End of season |
|---|---|---|---|
| Check engine oil level | | ♦ | |
| Check screws , tightness , casing , hopper , etc . | ♦ | ♦ | |
| Check belt tension and state of wear | ♦ | ♦ | |
| Check wear on cutters | ♦ | | ♦ |
| Check wear on blade | ♦ | | ♦ |
| Check wear on counter-blade | ♦ | | ♦ |
| Check hopper rubber protection | ♦ | ♦ | ♦ |
| Clean machine | | | ♦ |
| Check wear on bearings and transmission shafts | ♦ | | ♦ |

## 9. TROUBLESHOOTING - REMEDIES

| Troubleshooting | Remedies |
|---|---|
| The bio-chopper does not start | Check belt tension and condition , blocked pulleys , PTO or gears .<br>Check cutters , blade , counter-blade and presence of material in the milling chamber .<br>Check state of engine / motor ( consult the instruction manual supplied ) . |
| Difficult start-up or loss of power | Check belt tension and condition , blocked pulleys , PTO or gears .<br>Check state of engine / motor ( consult the instruction manual supplied ) . |
| The bio-chopper loses revs and functions irregularly | Check belt tension and condition , blocked pulleys , PTO or gears .<br>Check cutters , blade , counter-blade and presence of material in the milling chamber .<br>Check the sieve which should be free of blockages.<br>Check state of engine / motor ( consult the instruction manual supplied ) .<br>Examine the material being chopped at the moment of breakdown . |
| Excessive vibration | Check cutters , blade , counter-blade and presence of material in the milling chamber . |
| Drop in quality of output material | Check belt tension and condition , blocked pulleys , PTO or gears .<br>Check state of engine / motor ( consult the instruction manual supplied ) . |
| The hopper rejects the material | Check cutters , blade , counter-blade and presence of material in the milling chamber .<br>Check state of engine / motor ( consult the instruction manual supplied ) .<br>Check state of wear on hopper rubber protection . |

## 10. GUARANTEE

1. The Manufacturer hereby guarantees its BIO - SHREDDERS against breakage caused by faulty materials or workmanship .
2. This warranty is valid for the first owner only for 12 months as from the date of purchase and / or delivery .
3. The Manufacturer is entitled to inspect the Bio - Shredder and any components for which a claim has been made under the guarantee , in order to determine the validity of the claim .
4. This warranty covers replacements free of charge only of components found to be defective due to faulty materials or workmanship under the guarantee period.
5. This warranty does not cover reimbursement for labour , consumables or transport charges for repairs under guarantee .

**THIS WARRANTY DOES NOT APPLY IN THE FOLLOWING CASES**

1. The Manufacturer may in no way held liable for general damage , including damage or injury , loss due to halts in production , loss of earnings , leasing costs or any moral or commercial damage .
2. All claims concerning motors or engines mounted on Bio - Shredder will be handled by the relevant Manufacturers' after - sales service .
3. This warranty does not cover damage caused by misuse , abuse , insufficient maintenance , accident or damage caused during transport .
4. Parts which are subject to war , such as hammers , blades , anvil blades , etc . are not covered under this guarantee .
5. All expenses for setting the machine to work will be charged to the distributor or dealer .
6. This warranty is not valid if the repairs , maintenance or modifications are performed by an unauthorised persons or dealers .
7. The owner is responsible for routine maintenance and settings , which are thus excluded herefrom .
8. The use or fitting or components and accessories that are not original will immediately invalidate this warranty .

**PROCEDURE FOR MAKING CLAIMS UNDER THIS WARRANTY**

If the Bio - Shredder is found to be defective due to faults material or workmanship, you are required to send the Manufacturer a written claim and proceed as follows :

1. The machine must be returned to the Seller or the authorised CARAVAGGI importer .
2. You are required to present the guarantee duly filled in or the bill , if this is not avaiable.
3. The claim will be completed by the Dealer , who will forward it to the Manufacturer .
4. The Manufacturer alone reserves the right to determine whether to accept the claim or otherwise .
5. Any disputes will be put before the Court of Brescia , Italy .

## 11. DECLARATION OF CONFORMITY

CE

The company Caravaggi , hereby declares under its own responsability , that the machine BIO - SHREDDER Type Bio 190 electric , petrol and PTO versions , complies with the Basic Safety and Health Requirements prescribed in EC Directive 98/37, 89/336 and 73/23 and subsequent modifications thereto 89/686 , 91/368 , 93/44 and 93/68.

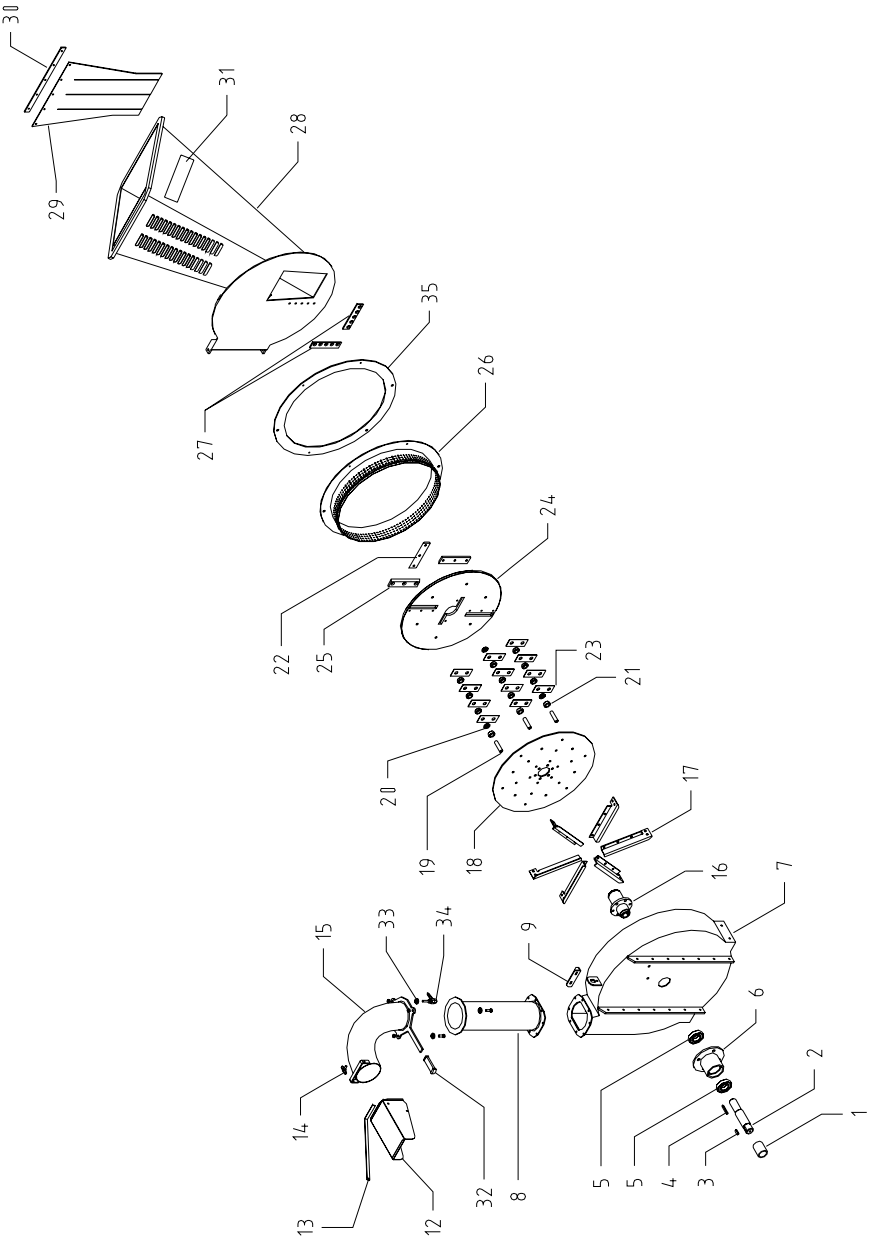
EN 292
EN 294

The Manufacturer

( CARAVAGGI GIAN LORENZO )

Pontoglio , 01 / JAN / 1995

# BIO 190 SPARE PARTS

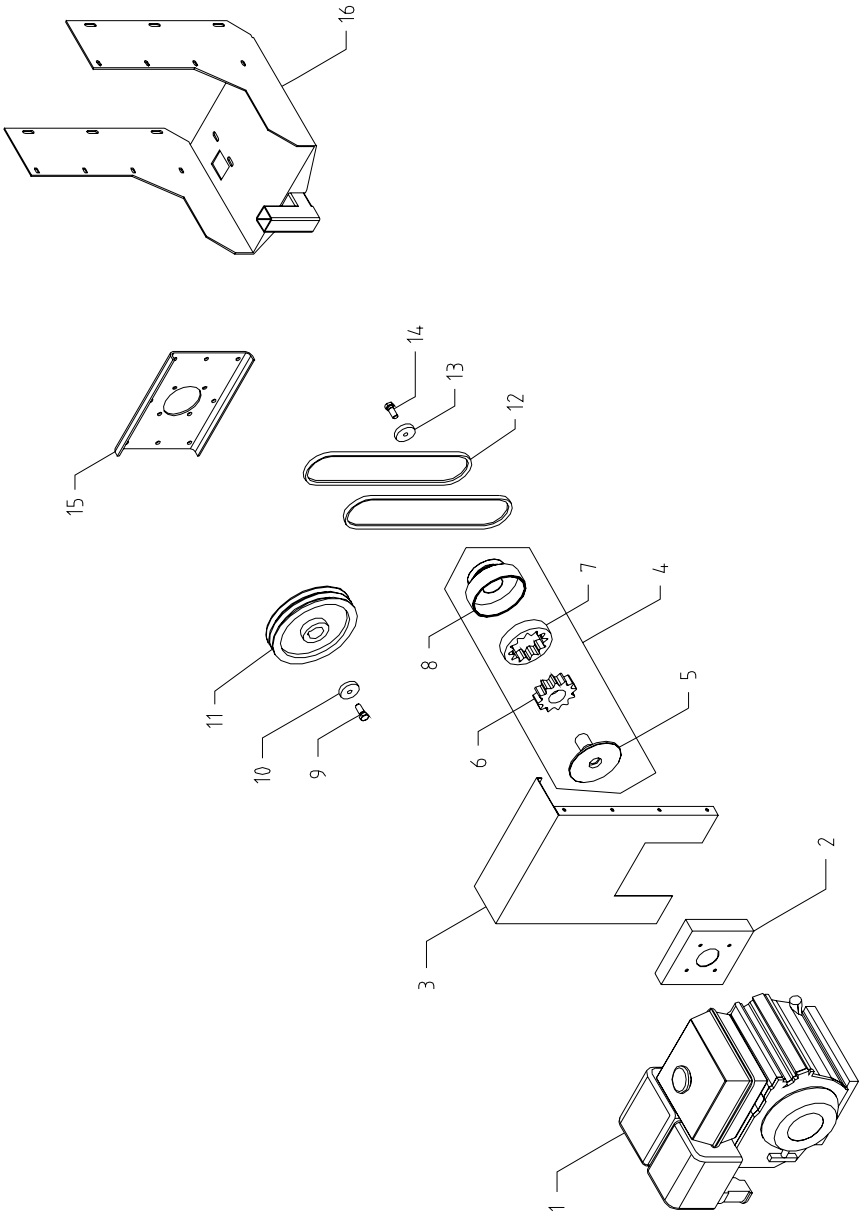


## BIO 190 SPARE PARTS

| Pos. | Description | Q.ty | Code |
|---|---|---|---|
| 1 | Driving shaft spacer | 1 | B19001001 |
| 2 | Driving shaft | 1 | B19001002 |
| 3 | Key 12x6x32 | 1 | B19001003 |
| 4 | Key 10x6x65 | 1 | B19001004 |
| 5 | Bearing 45x85x19 | 2 | B19001005 |
| 6 | Transmission flange | 1 | B19001006 |
| 7 | Housing | 1 | B19001007 |
| 8 | Straight outlet pipe | 1 | B19001008 |
| 9 | Hopper hinge angle | 1 | B19001009 |
| 12 | Cover | 1 | B19001012 |
| 13 | Cover adjusting bar | 1 | B19001013 |
| 14 | Wing nut M 8 | 1 | B19001014 |
| 15 | Elbow | 1 | B19001015 |
| 16 | Hub | 1 | B19001016 |
| 17 | Paddle-wheel | 6 | B19001017 |
| 18 | Rear chipping disk | 1 | B19001018 |
| 19 | Blade holder pin | 6 | B19001019 |
| 20 | Spacer H = 6 | 6 | B19001020 |
| 21 | Spacer H = 12 | 18 | B19001021 |
| 22 | Central welding blade | 1 | B19001022 |
| 23 | Hammer | 24 | B19001023 |
| 24 | Front chipping disk | 1 | B19001024 |
| 25 | Side chipping blade | 2 | B19001025 |
| 26 | Screen | 1 | B19001026 |
| 27 | Counterblade | 2 | B19001027 |
| 28 | Hopper | 1 | B19001028 |
| 29 | Hopper protection rubber | 1 | B19001029 |
| 30 | Rubber fixing plate | 1 | B19001030 |
| 31 | Set of adhesives | 1 | B19001031 |
| 32 | Handle 25x8 | 1 | B19001032 |
| 33 | Spacer | 3 | B19001033 |
| 34 | Spring handle | 1 | B19001034 |
| 35 | Ring* | 1 | B19001035 |

*Optional item

# BIO 190 B SPARE PARTS



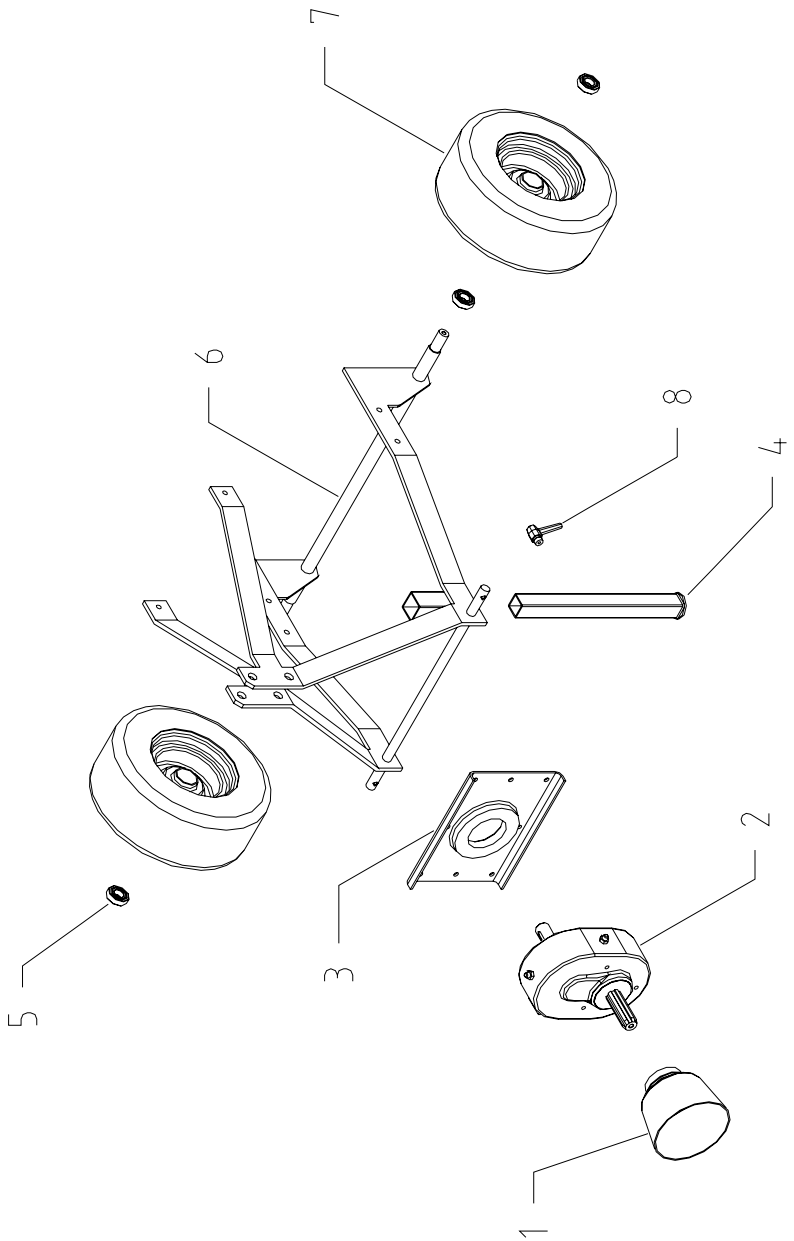
## BIO 190 B SPARE PARTS

| Pos. | Description | Q.ty | Code |
|---|---|---|---|
| 1 | Motor Honda GX 620 | 1 | B19002001 |
| 2 | Safety plate | 1 | B19002002 |
| 3 | Guard | 1 | B19002003 |
| 4 | Centrifuge pulley 2A 138 | 1 | B19002004 |
| 5 | Drum wheel | 1 | B19002005 |
| 6 | Aluminium star | 1 | B19002006 |
| 7 | Rubber ring Ø 138 | 1 | B19002007 |
| 8 | Half-bearing with pulley | 1 | B19002008 |
| 9 | End screw M 14 | 1 | B19002009 |
| 10 | Stop washer | 1 | B19002010 |
| 11 | Pulley SPA 224 | 1 | B19002011 |
| 12 | Belt A-38 | 2 | B19002012 |
| 13 | Stop washer | 1 | B19002013 |
| 14 | Screw UNF | 1 | B19002014 |
| 15 | Motor fixing plate ( B ) | 1 | B19002015 |
| 16 | Motor base | 1 | B19002016 |

## BIO 190 PTO SPARE PARTS

| Pos. | Description | Q.ty | Code |
|---|---|---|---|
| 1 | PTO cover | 1 | B19003001 |
| 2 | Comer reduction gear | 1 | B19003002 |
| 3 | Reduction gear fixing plate | 1 | B19003003 |
| 4 | Leg | 1 | B19003004 |
| 5 | Bearing 6205 | 4 | B19003005 |
| 6 | Framework for PTO version | 1 | B19003006 |
| 7 | Wheel | 2 | B19003007 |
| 8 | Spring handle | 1 | B19003008 |

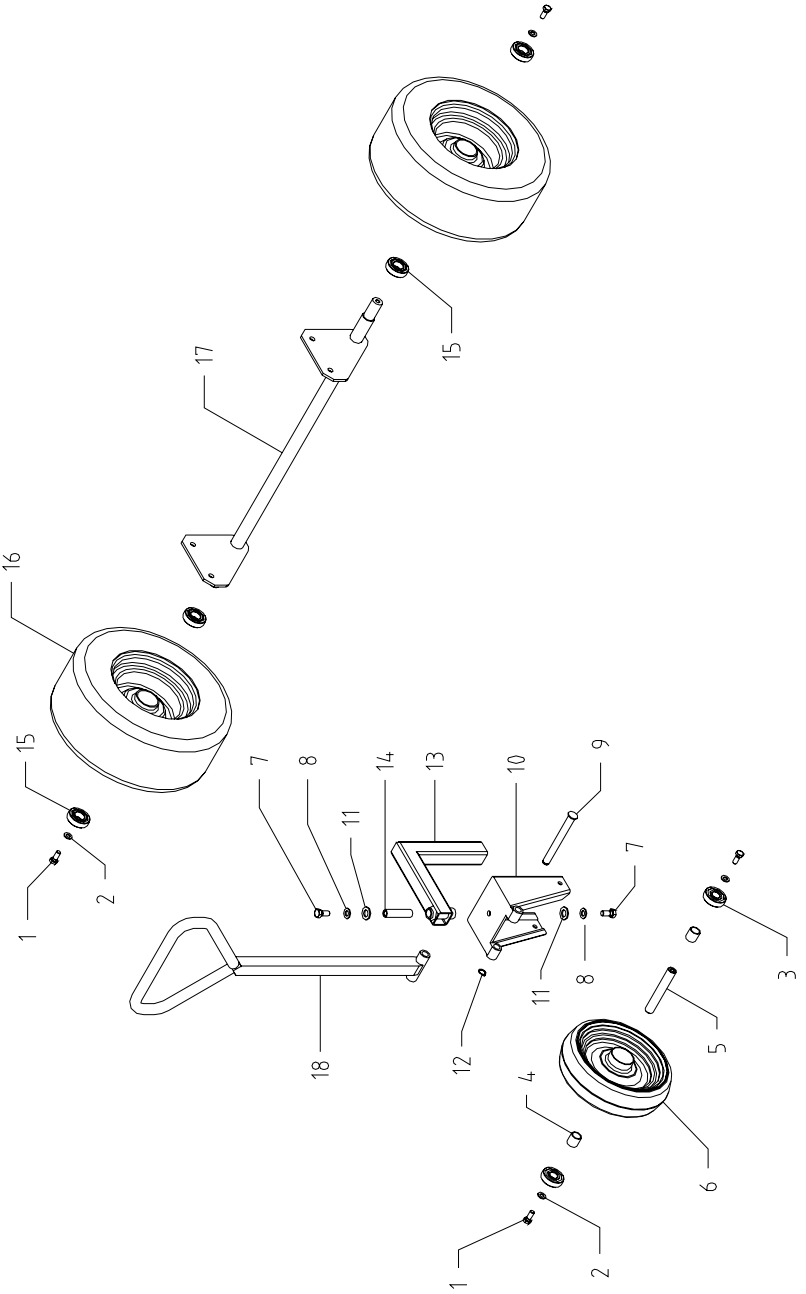
## BIO 190 PTO SPARE PARTS



## BIO 190 SPARE PARTS – 3-WHEEL CARRIAGE

| Pos. | Description | Q.ty | Code |
|---|---|---|---|
| 1 | Hex. screw M 10 | 4 | B19004001 |
| 2 | Washer Ø 10 | 4 | B19004002 |
| 3 | Bearing 6304 | 2 | B19004003 |
| 4 | Front wheel spacer | 2 | B19004004 |
| 5 | Pin Wheel | 1 | B19004005 |
| 6 | Front wheel | 1 | B19004006 |
| 7 | Hex. screw M 12 | 4 | B19004007 |
| 8 | Washer Ø 12 | 4 | B19004008 |
| 9 | Pin Front wheel | 1 | B19004009 |
| 10 | Forcella Front wheel | 1 | B19004010 |
| 11 | Washer Ø 16x3 | 2 | B19004011 |
| 12 | Snap ring | 1 | B19004012 |
| 13 | Tubo porta Front wheel | 1 | B19004013 |
| 14 | Pin per forcella | 1 | B19004014 |
| 15 | Bearing 6205 | 4 | B19004015 |
| 16 | Front wheel | 2 | B19004016 |
| 17 | Axle | 1 | B19004017 |
| 18 | Shaft | 1 | B19004018 |

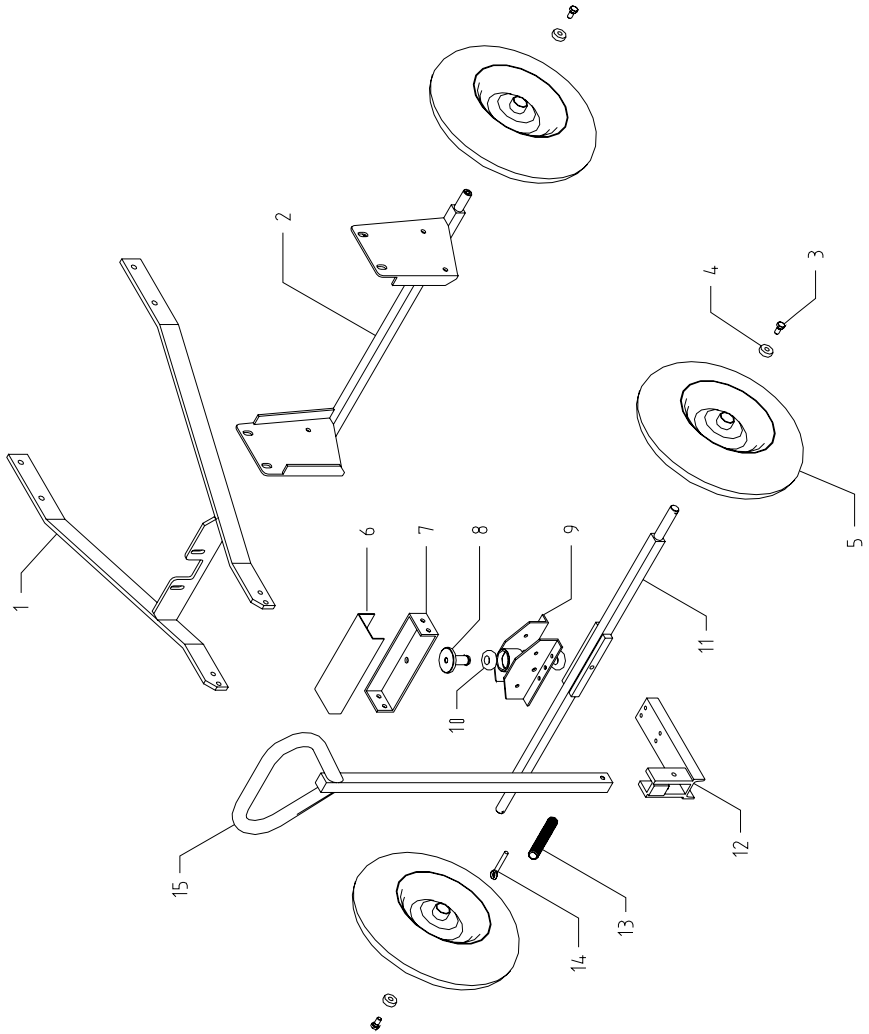
# BIO 190 SPARE PARTS – 3-WHEEL CARRIAGE



## BIO 190 SPARE PARTS – 4-WHEEL CARRIAGE

| Pos. | Description | Q.ty | Code |
|---|---|---|---|
| 1 | Carriage framework | 1 | B19005001 |
| 2 | Rear axle | 1 | B19005002 |
| 3 | Hex. screw M 10x20 | 4 | B19005003 |
| 4 | Washer $\phi$ 10x30 | 4 | B19005004 |
| 5 | Wheel 3.50 - 8 | 4 | B19005005 |
| 6 | Guard | 1 | B19005006 |
| 7 | Fixed support | 1 | B19005007 |
| 8 | Pin | 1 | B19005008 |
| 9 | Articulated support | 1 | B19005009 |
| 10 | Bearing 6004 Z | 2 | B19005010 |
| 11 | Front axle | 1 | B19005011 |
| 12 | Shaft support | 1 | B19005012 |
| 13 | Spring | 1 | B19005013 |
| 14 | Tie rod M 8 | 1 | B19005014 |
| 15 | Shaft | 1 | B19005015 |

# BIO 190 SPARE PARTS – 4-WHEEL CARRIAGE



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