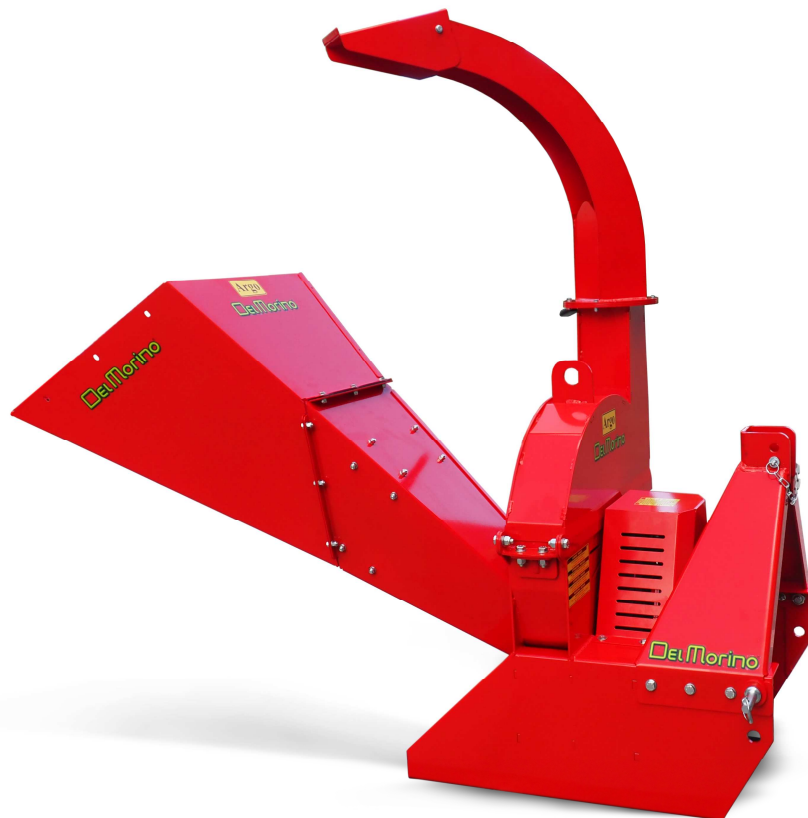




ORIGINAL USE AND MAINTENANCE INSTRUCTIONS

TS4 BIO-SHREDDER



This manual is an integral part of the machine.

This manual is provided with the machine and the user should always have a copy with him. The attachments are integral part of the manual.

Aim of the manual

This manual contains all useful information for a correct and safe use of the machine. Before starting to use this machine, the user should read this manual carefully.

The user's responsibility

The user will be considered responsible for accidents and damages to things and people due to non-respect of the instructions contained in this manual. Therefore, the manufacturer assumes no responsibility in the following cases:

- Using the shredder for the wrong purposes.
- Using the shredder for purposes other than the ones specified in this manual.
- Failing to carry out requested maintenance.
- Modifying the machine without the express authorization of the manufacturer.
- Using not original spare parts.

EC CONFORMITY

The ARGO bio-shredders meet the security and safety requirements contained in the **Machinery Directive 2006/42/CE**.

In order to demonstrate conformity with the above-mentioned directives, the following harmonized standards have been consulted: **UNI EN ISO 12100:2010; 13857:2008; 13683:2011**.

The CE marking shall be affixed on the machine with the name of the model, its year of realization and its serial number. If you need spare parts or maintenance services under guarantee, please always include the machine serial number.

The EC certificate of conformity is always provided with the machine. Keep it in a safe place.



Dichiarazione CE di conformità ai sensi della Direttiva Macchine 2006/42/CE
CE declaration of conformity under the Machinery Directive 2006/42/CE
Déclaration CE de conformité conforme a la Directive Machine 2006/42/CE
Eg konformitätserklärung im Sinne der Eg Vorschrift Maschine 2006/42/CE

DEL MORINO S. R. L.
- Via Caroni di Sotto n. 19 -
- 52033 CAPRESE MICHELANGELO (AREZZO) ITALIA -

Dichiara sotto la propria responsabilità che la macchina "BIOTRITURATORE" è conforme ai requisiti di sicurezza e di tutela della salute di cui alla Direttiva Macchine 2006/42/CE, alla Direttiva Compatibilità Magnetica 2004/108/CE e alla Direttiva Rumore 2000/14/CE come recepita in Italia dal D.Lgs. 262/2002.
Livello di potenza acustica misurato 97,5 dB (A). Livello di potenza acustica garantito 120 dB (A).
Per la verifica delle conformità alla direttiva sopramenzionata sono state consultate le norme armonizzate **UNI EN ISO 12100:2010; 13857:2008; 13683:2011**.

Under Its own responsibility declare that the machine "SHREDDER" complies to the safety and health protection requirement of Machinery Directive 2006/42/CE, to the Electromagnetic Compatibility Directive 2004/108/CE, to the Noise Directive 2000/14/CE as implemented in Italy by D.Lgs. 262/2002.
Measured sound power level 97,5 dB (A). Granted sound power level 120 dB (A).
To verify the conformity to the above mentioned directive, have been consulted the harmonized standards **UNI EN ISO 12100:2010; 13857:2008; 13683:2011**.

Déclarons sous notre responsabilité que la machine "BIO-BROYEUR" est conforme aux prescriptions en matière de sécurité et de santé stipulées dans la Directive Machine 2006/42/CE, dans la Directive sur la Compatibilité Electromagnétique 2004/108/CE, dans la Directive sur le Bruit 2000/14/CE telle que transposée en Italie par D. Lsg. 262/2002.
Niveau de puissance acoustique mesuré 97,5 dB (A). Niveau de puissance acoustique garanti 120 dB (A)
Pour le contrôle des conformités des directive citées ont été consultées les règles unifiées **UNI EN ISO 12100:2010; 13857:2008; 13683:2011**.

Erklärt hiermit in eigener Verantwortung dass der maschine "BIO-SHREDDER" Die Schutzanforderungen und den Gesundheitsschutz, gemäß der 2006/42/CE einhält, und den Richtlinie über die elektromagnetische Verträglichkeit 2004/108/CE, und den Lärmrichtlinie 2000/14/CE wie in Italien umgesetzt durch D. Lsg. 262/2002.
Schalleistungspegel gemessen 97,5 dB (A). Garantierter Schalleistungspegel 120 dB (A)
Für Überprüfung der Konformität der oben genannten Vorschriften wurden Vorschriften konsultiert **UNI EN ISO 12100:2010; 13857:2008; 13683:2011**.

BIOTRITURATORE - BIO-SHREDDER - BIO-BROYEUR - BIO-SHREDDER

TYPE	MODEL				
ARGO					

Matr. n° : _____ Caprese Michelangelo li : _____



Via Caroni di Sotto, 19 - 52033 CAPRESE MICHELANGELO (AR)
Tel. 0583 781028 (R.A.) - Fax 0583 781018
PORTAL SITE: <http://www.del-morino.it>
E-MAIL: info@del-morino.it - service@del-morino.it
Cap. Soc. 400.000 € - IN. MEDIANOVA/RO AR 090284
N° ISCRIZIONE TR.CC.Az. Fisc. e P. IVA: 01041010511
R.L. AREZZO N° REA 81302



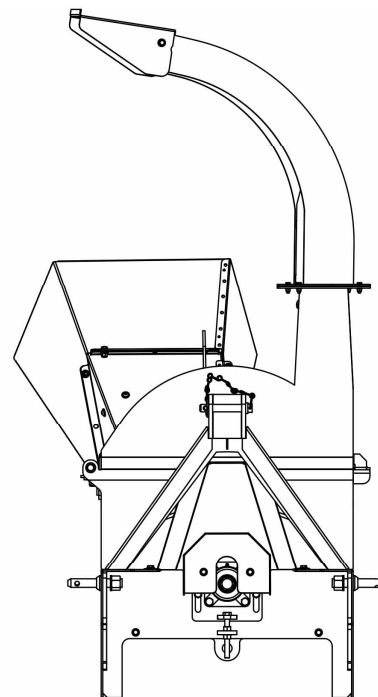
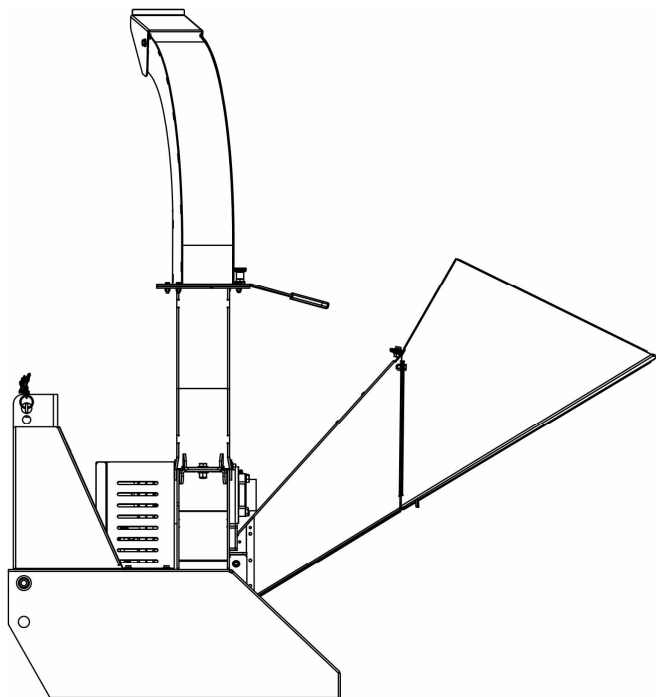
Farm & Garden Equipment

Custode del Fascicolo Tecnico : **Dott. A. Del Morino**, Via Caroni di Sotto 19, 52033 Caprese Michelangelo Arezzo Italy.
Keeper of the technical folder : **Dott. A. Del Morino**, Via Caroni di Sotto 19, 52033 Caprese Michelangelo Arezzo Italy.
Dépositaire du dossier technique : **Dott. A. Del Morino**, Via Caroni di Sotto 19, 52033 Caprese Michelangelo Arezzo Italy.
Verwalter der technischen Unterlagen : **Dott. A. Del Morino**, Via Caroni di Sotto 19, 52033 Caprese Michelangelo Arezzo Italy.



TECHNICAL FEATURES

Model	HP	Max \varnothing of cut		Knives	PTO speed	Peripheral speed of the rotor	Weight	
		cm	Inch				Kg	Lbs
TS4	30-80	10	4	4	540	33	233	514



INSTRUCTIONS FOR USING THE MACHINE

- The machine is designed for shredding plant material, leaves and natural pieces of wood of the dimensions indicated in the technical features. Never introduce the following materials in the shredder: plastics, glass, rocks, or metal.
- Before introducing the material in the charging hopper, make sure it does not contain foreign objects.
- The machine stands on the ground with its own base. It is strongly suggested to set the machine only on flat horizontal and not excessively rigid surfaces to avoid vibrations which might affect the proper functioning of the machine.
- The machine must be operated by only one user.
- Never to leave this machine unattended without removing the key and checking that the engine is shut off.

SECURITY

GENERAL INFORMATION

- This manual is an integral part of the machine. In case of loss, please ask DEL MORINO company for a copy.
- Protections are integral part of the machine: always work with all protections properly mounted.
- Work in the daylight only or at least under appropriate artificial lighting.
- Always wear protection goggles, gloves, and hearing protection.
- Never wear scarves, jewelry or other accessories that could be caught in the machine.
- **Warning:** never use this machine in enclosed and unventilated areas because the engine of the tractor emits substances with high concentration of carbon dioxide.
- **Warning:** Use this machine on flat, horizontal and firm grounds only.
- Before leaving the machine unattended, make sure the PTO of the tractor is disconnected.
- If you notice any anomalies, such as hisses or strange vibrations, please stop the machine immediately.
- Replace the defective parts exclusively with original spare parts.

LOCAL RULES

- Make sure that any person using this machine has read the instructions. Do not let children use it.
- Local rules might prevent people under a certain age from using this machine.

WARNING

- Stopping in front of the charging hopper or in front of the feed chute is forbidden when the machine is used. Danger from materials that might be ejected at high speed.
- Never look directly in the charging hopper while working.
- Always stand on the side if the charging hopper while working.

SAFETY LABELS

In this section, the safety labels of the machine are reproduced and explained.



1

2

3

4

5

6

7

8

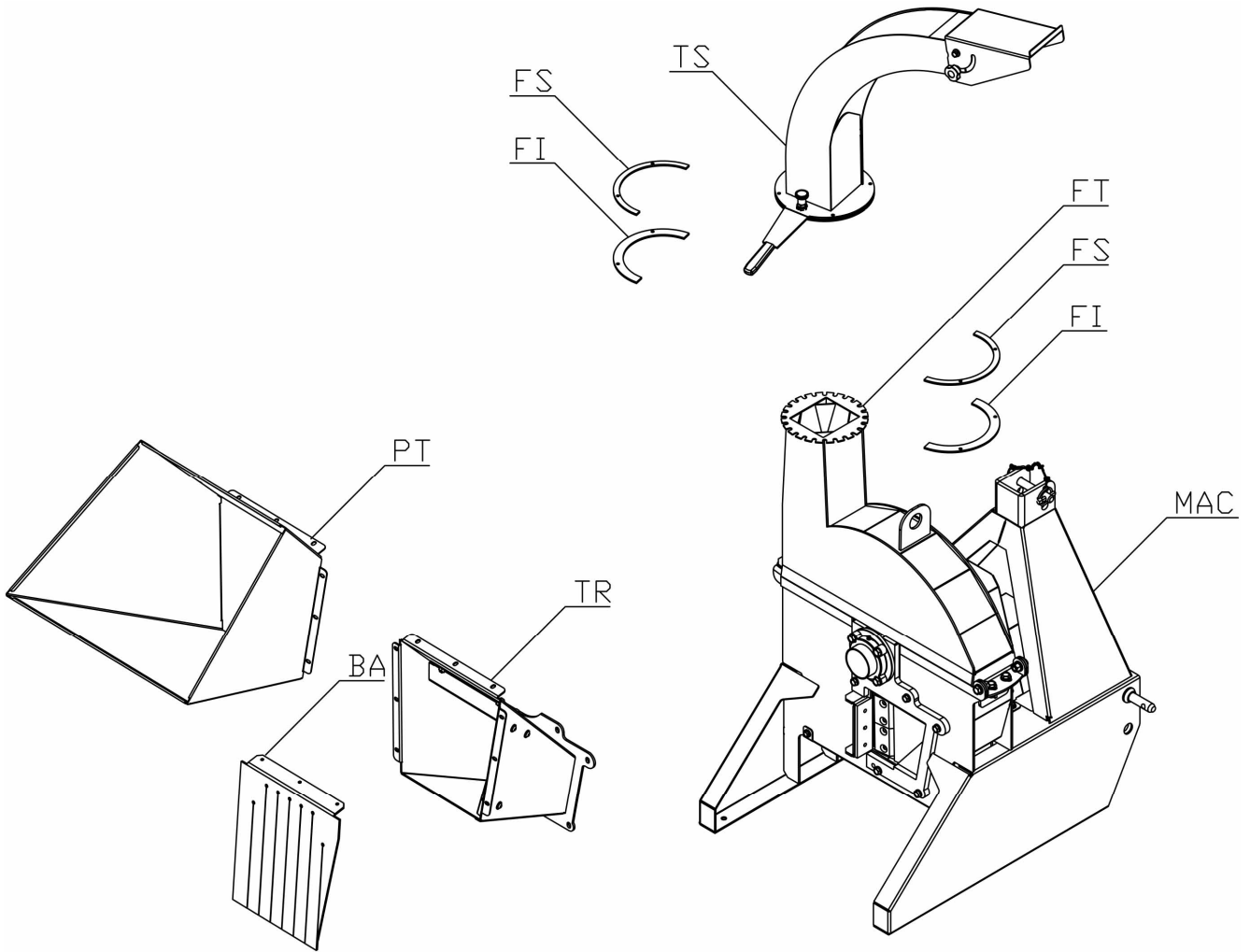
1. While working, always wear suitable protective clothes.
2. While working, always wear gloves.
3. While working, always wear hearing protection.
4. While working, always wear eye protection goggles.
5. While working, always wear safety footwear.
6. Read this manual carefully.
7. Maximum diameter of cutting: 10 centimeters.
8. Warning: do not turn on the machine without the protections properly installed.

Safety labels must be readable.

1. If damaged, labels should be replaced.
2. If parts of the machine with safety labels are replaced, the labels should be replaced as well.

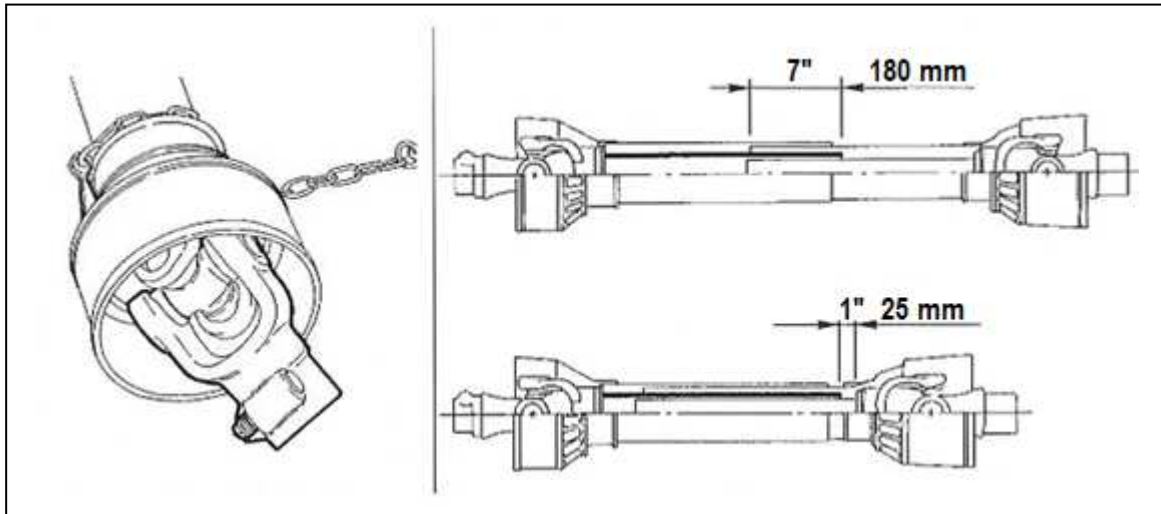
Supply of new safety labels and instructions to apply them.

ASSEMBLY OF A NEW MACHINE



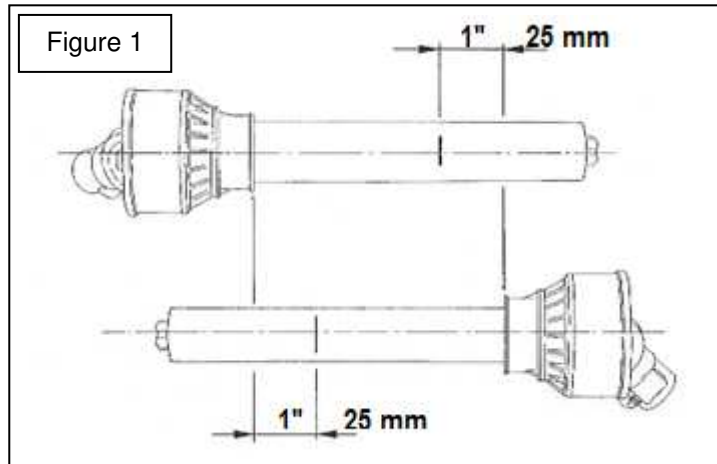
1. Take the machine "MAC", the exhaust pipe "TS" with its coupling flanges "FS" and "FI", the hopper "TR", the extension for the hopper "PT", the hopper protection "BA" and the original use and maintenance instructions out of the box.
2. Mount the hopper "TR" on the flange of the machine body using the five supplied screws.
3. Mount the extension of the Hopper "PT" on the hopper "TR" by interposing the safety strip "BA" and using the nine supplied bolts.
4. Lay the exhaust pipe "TS" on the flange "FT" and keep it in position using the two coupling flanges "FS" and "FI" and the four supplied bolts.

CHECKING THE LENGTH OF THE PTO SHAFT

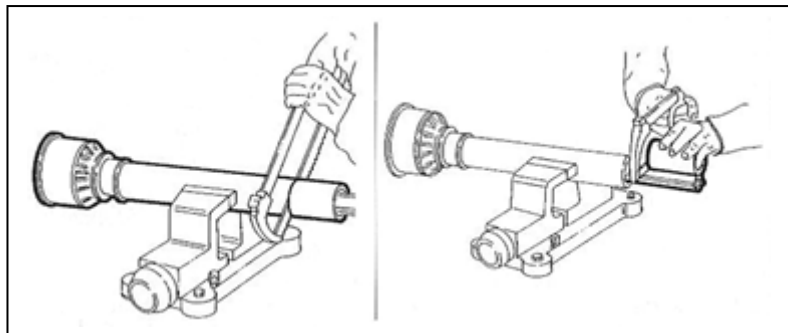


1. After connecting the machine to the third point, check that it is on a flat surface and centered in relation to the tractor by acting on the adjusting devices.
2. Place the PTO shaft between the tractor's and the bio-shredder PTO.
3. Check that the length of the PTO shaft is correct.
4. The length is correct if the minimum coupling length between inner and outer tube is not less than 180 mm in each working position, and if, at the same time, the PTO shaft can still make a stroke of at least 25 mm in the condition of minimum extension.
5. If the minimum coupling length is less than 180 mm, the PTO shaft is short and shall be replaced with another of greater length.
6. When minimally extended, if the remaining stroke is less than 25 mm, the PTO shaft is long, and therefore it is necessary to shorten it.
7. **WARNING:** shortening the PTO shaft is a tricky operation and it must be carried out carefully following the instructions of the next chapter, otherwise you risk to ruin the PTO shaft irreparably.

HOW TO SHORTEN A PTO SHAFT



1. Place the machine as close to the tractor as possible, by acting on the hydraulic lift.
2. In this position, lock the lifter and turn off the engine.
3. Pull the two parts of the PTO shaft out.
4. Insert the female PTO shaft (tube of larger diameter) into the tractor PTO.
5. Insert the male PTO shaft (tube of smaller diameter) into the PTO of the machine.
6. Use a marker to mark the cutting point as shown in Figure 1 while keeping the two parts of the PTO shaft parallel.



1. Cut with a hacksaw the plastic pipe on the previously drawn line on one of the parts of the PTO shaft.
2. Align the piece that has just been cut to the end of the metal pipe and then cut it.
3. Repeat the same operations on the second PTO shaft.
4. Deburr and blunt the ends of the metal pipes with a file.
5. Clean and grease the two metal tubes then thread the two parts one into the other.
6. Fit the PTO shaft between the tractor and the bio-shredder and check the length again.

HOW TO USE THE MACHINE

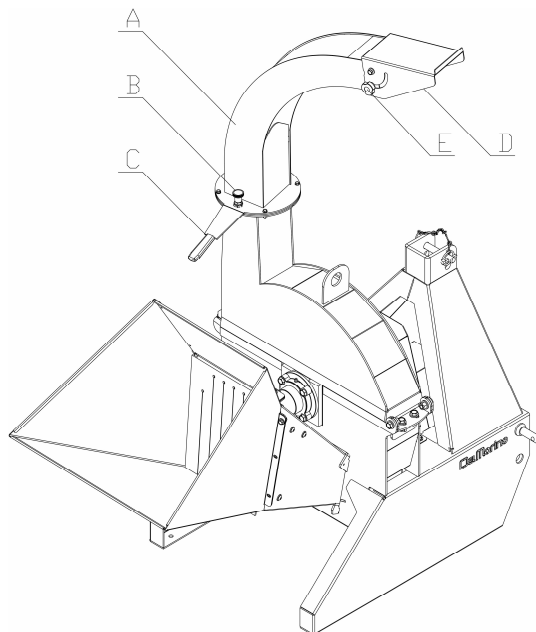
1. **WARNING:** the machine is designed to be used with a tractor with a right-handed PTO 540 RPM.
2. Hook the machine to the hydraulic lift of the tractor.
3. Mount the PTO shaft between the PTO of the tractor and the machine. Make sure that the two chains of the PTO shaft which prevent it from rotating are secured respectively to the tractor and to the machine. Make sure that the protections at the ends of the PTO shaft are present and efficient.
4. Place the machine on solid, flat ground. The machine can not be used in closed rooms that are not properly ventilated.

1. PRELIMINARY CHECKS

1. Check that there are no foreign bodies in the hopper.
2. Check the material to be shredded and remove any foreign bodies beforehand. (Stones, plastic, pieces of cloth, ferrous materials)

2. ADJUSTING THE MACHINE

1. To adjust the inclination of the exhaust deflector "D", unscrew knob "E", move the deflector to the desired position and then screw the knob "E" again.
2. To adjust the discharge direction of the tube "A", lift and keep knob "B" raised, rotate tube "A" to the desired position acting on the lever "C" and then release the knob "B".



3. STARTING THE TRACTOR ENGINE

1. Start the tractor engine, leave it at idle and engage the PTO.
2. Gradually accelerate the engine to the maximum number of revolutions. For proper operation, the machine must be used with the tractor PTO at 540 rpm.

4. SHREDDING

1. Insert the branches to be shredded inside the hopper. The machine will self feed so it is not necessary to push the branches.
2. Do not hold the branches with your hands to avoid injuries and abrasions.

5. END OF WORK

1. Before disengaging the PTO, let the machine idling for a few minutes so that all the material inside is expelled.
2. **WARNING:** after disengaging the PTO, the rotor will rotate by inertia for a few moments. Wait for it to come to a complete halt before performing any other operation.

MAINTENANCE INSTRUCTIONS

Maintenance operations with their deadlines are indicated on form "A".
Failure to respect the deadlines might affect the proper functioning of the machine and may invalidate any warranty claim.

FORM "A" SCHEDULED MAINTENANCE

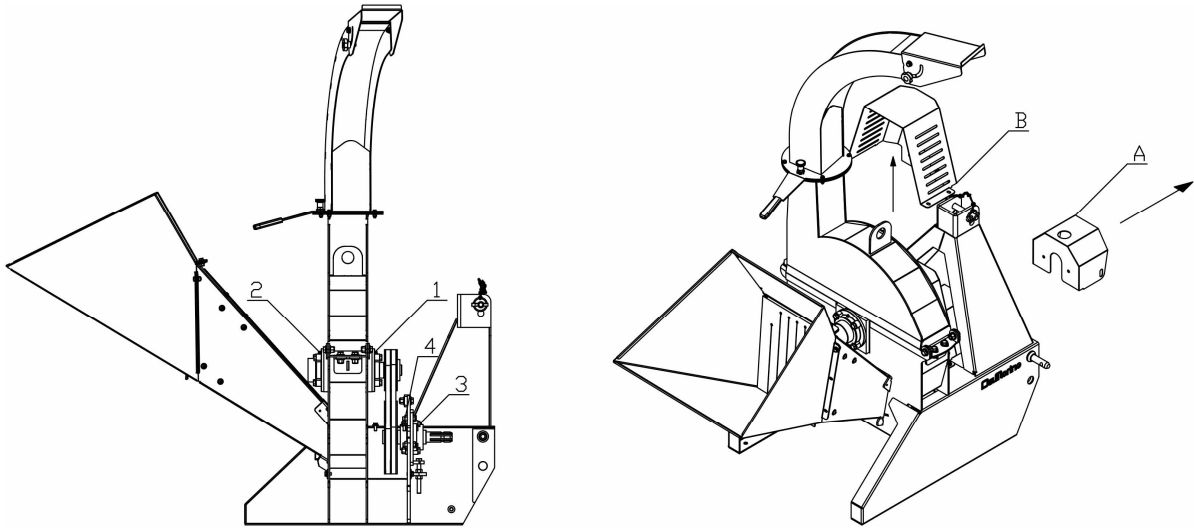
	FIRST START	AFTER 10 H.	EACH 30 H.	AFTER 50H.	EACH 250 H.	END OF SEASON	BEGINNING OF WORK	END OF WORK
MACHINE	Greasing		Greasing			Cleaning Greasing		Cleaning
SCREWS		Tightening	Tightening		Tightening			
KNIFE			Check wear			Check	Check	Check
COUNTER KNIFE			Check wear			Check	Check	Check
BELT		Check tension			Replace			

NOTE:

The transmission belts lengthen and set the first hour of operation of the machine.
To avoid early wear of the belts due to excessive slippage, it is necessary to check the tension of the belts following the instructions in paragraph 6 on Page 17 after the first start.
Before carrying out any maintenance, turn off the engine or disconnect the PTO and make sure that the rotor is completely still.

1. GREASING

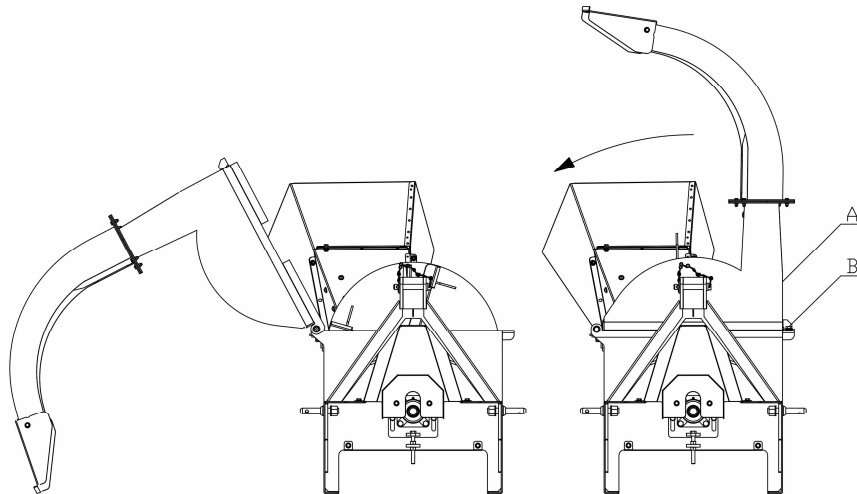
Grease points "1", "2", "3", "4" according to the deadlines in form "A".
The greasing points are equipped with hydraulic type greaser MODEL "A" UNI 7663.
For greasing, use only multifunctional lithium-based grease type NLGI 2.



To access the greasing points "1", "3" and "4" proceed as follows:

1. Remove protection "A" from the belt cover "B" by unscrewing the two fixing screws and then remove the belt cover "B" from the machine after unscrewing the four fixing screws.
2. Grease the four supports then replace belt cover "B" and protection "A".

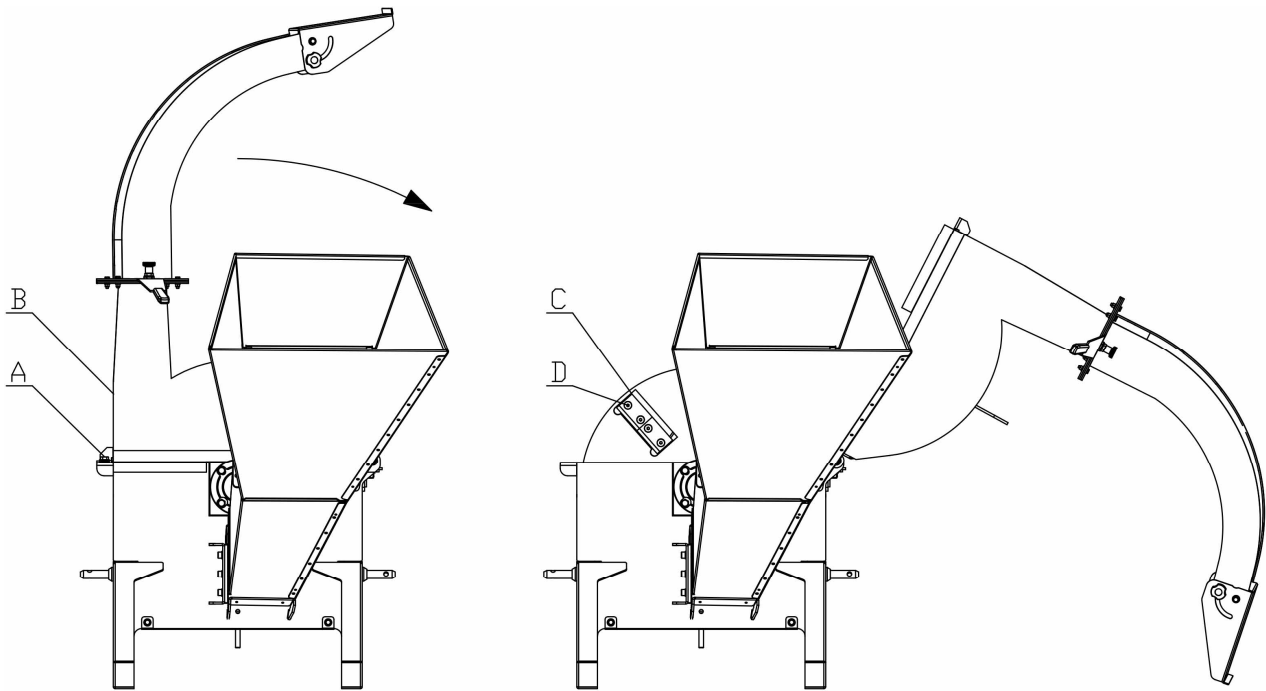
2. INTERNAL CLEANING OF THE MACHINE



If there are chips or foreign bodies inside the machine or the exhaust pipe that prevent it from working properly, proceed as follows:

1. Unscrew bolt "B" and then turn cover "A" in the direction of the arrow.
2. Remove from the inside of the machine and from the inside of the exhaust pipe all chips and any foreign bodies, **BE CAREFUL** not to injure yourself with knives.
3. Put cover "A" back and lock it again with bolt "B".

3. SHARPENING, REVERSING OR REPLACING KNIVES



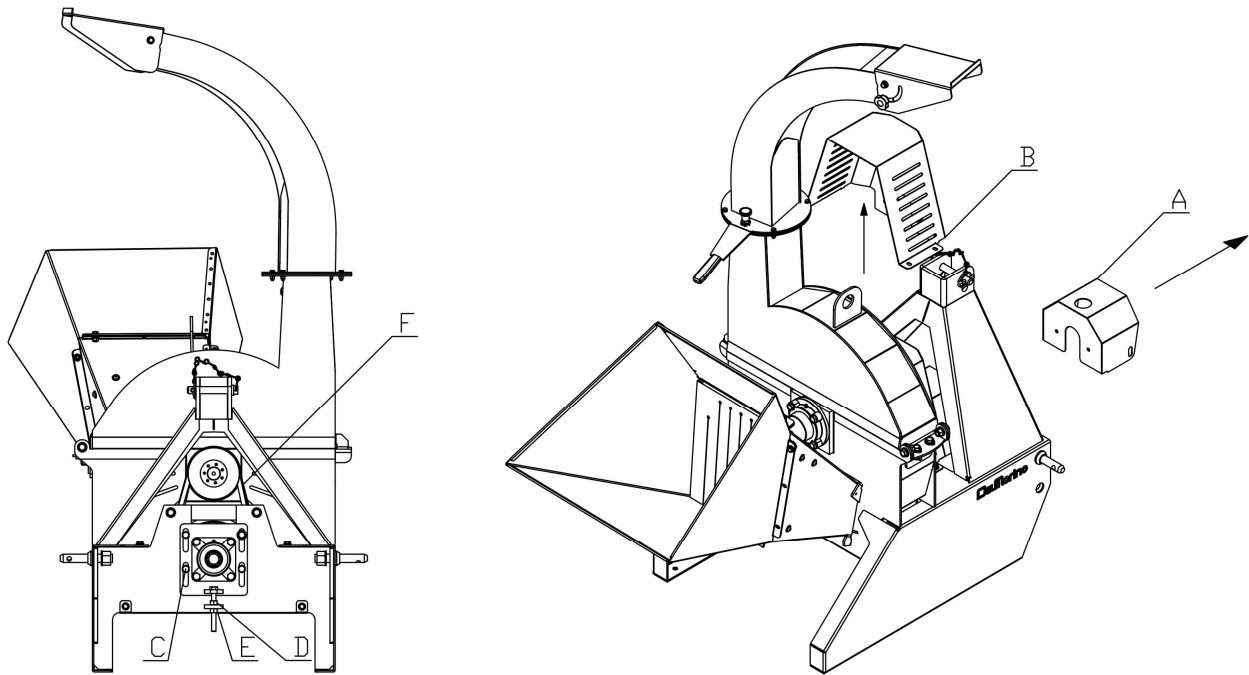
a) To check the state of knife sharpening proceed as follows:

1. Stop the tractor PTO, turn off the engine and wait until the rotor of the machine is completely still
2. Unscrew bolt "A" and then turn cover "B" in the direction of the arrow.
3. Check the status of the four pairs of knives by manually rotating the rotor. If the knives have lost the thread but the cutting edges are in good condition proceed to sharpening them as follows:
4. Clean the hollow in the four screws "D" with a sharp tool.
5. Unscrew the four screws "D" and remove the two knives "C". BE CAREFUL not to drop screws and knives inside the machine.
6. Proceed to sharpening by using machines that guarantee an angle of the cutting edge of 45°.
7. Put knives "C" back and tighten the four screws "D" thoroughly.
8. Repeat step 4 to step 7 for the other three pairs of knives.
9. Put cover "B" back and lock it with the bolt "A".

b) To reverse or replace knives proceed as follows:

1. Stop the tractor PTO, turn off the engine and wait until the rotor of the machine is completely still.
2. Unscrew bolt "A" and then turn cover "B" in the direction of the arrow.
3. Manually rotate the rotor so that the first pair of knives are accessible to the operator.
4. Clean the hollow in the four screws "D" with a sharp tool.
5. Unscrew the four screws "D" and remove the two knives "C". BE CAREFUL not to drop screws and knives inside the machine.
6. Flip the two knives by 180° if the second cutting edge is new or replace them with original spare parts if both cutting edges are worn.
7. Put knives "C" back and tighten the four screws "D" thoroughly.
8. Repeat step 4 to step 7 for the other knives.
9. Put cover "B" back and lock it with the bolt "A".

4. ADJUSTING AND REPLACING TRANSMISSION BELTS



a) To adjust the tension of the transmission belts proceed as follows:

1. Remove protection "A" from the belt cover "B" by unscrewing the two fixing screws and then remove the belt cover "B" from the machine after unscrewing the four fixing screws.
2. Unscrew counter nut "D" and loosen the four screws "C". To tighten the belts, screw nut "E". Unscrew it to loosen them. The tension is correct when pressing with the thumb on the outside of the belts, these give in a few millimeters.
3. Once the adjustment is done, screw the four screws "C" and the counter nut "D", then replace belt cover "B" and protection "A".

b) To replace the drive belts, proceed as follows:

1. Remove protection "A" from the belt cover "B" by unscrewing the two fixing screws and then remove the belt cover "B" from the machine after unscrewing the four fixing screws.
2. Unscrew counter nut "D", loosen four screws "C", then unscrew nut "E"
3. Take the two worn belts "F". Both belts must be replaced to avoid tension problems, then assemble the new belts.
4. Perform operations "2" and "3" of point "A".

DYSFUNCTIONS AND SOLUTIONS

MALFUNCTIONS	CAUSES AND SOLUTIONS
Abnormal vibrations.	<ul style="list-style-type: none"> -Worn knife-check the knife, possibly replace it. - Worn counter knife-check the counter knife, if necessary replace it. - Engulfed machine-clean the grinding chamber.
Decreased output flow.	<ul style="list-style-type: none"> -Worn knife-check the knife, possibly replace it. - Worn counter knife-check the counter knife, if necessary replace it. - Engulfed machine-clean the grinding chamber. - Not stretched or worn belt-check, possibly replace.
Material rejected or accepted with difficulty by the hopper.	<ul style="list-style-type: none"> -Worn knife-check the knife, possibly replace it. - Worn counter knife-check the counter knife, if necessary replace it.

TRANSPORT

When the machine is not used, it can be moved only if the drive unit is disconnected.

<Important>: Proceed at moderate speed avoiding potholes and roughness of the ground.

<Note>: on the road, comply with the street code. Attach road signs on the rear ends of the machine. Comply with any local regulations.

<Operations>: lock the tractor lift bars with the chains and tensioners parallel to them. This prevents the bars from moving sideways.

DEPOSIT

Keep the machine in dry, non-dusty deposits.

INFORMATION CONCERNING THE DEMOLITION OF THE MACHINE



At the end of the machine's life, it has to be demolished only by authorized enterprises in respect of the National rules for the environment protection. It is therefore necessary to ask the local authorities for the demolition procedures. The principal parts of the machine are made of metal, plastic and epoxy paints.

WARRANTY

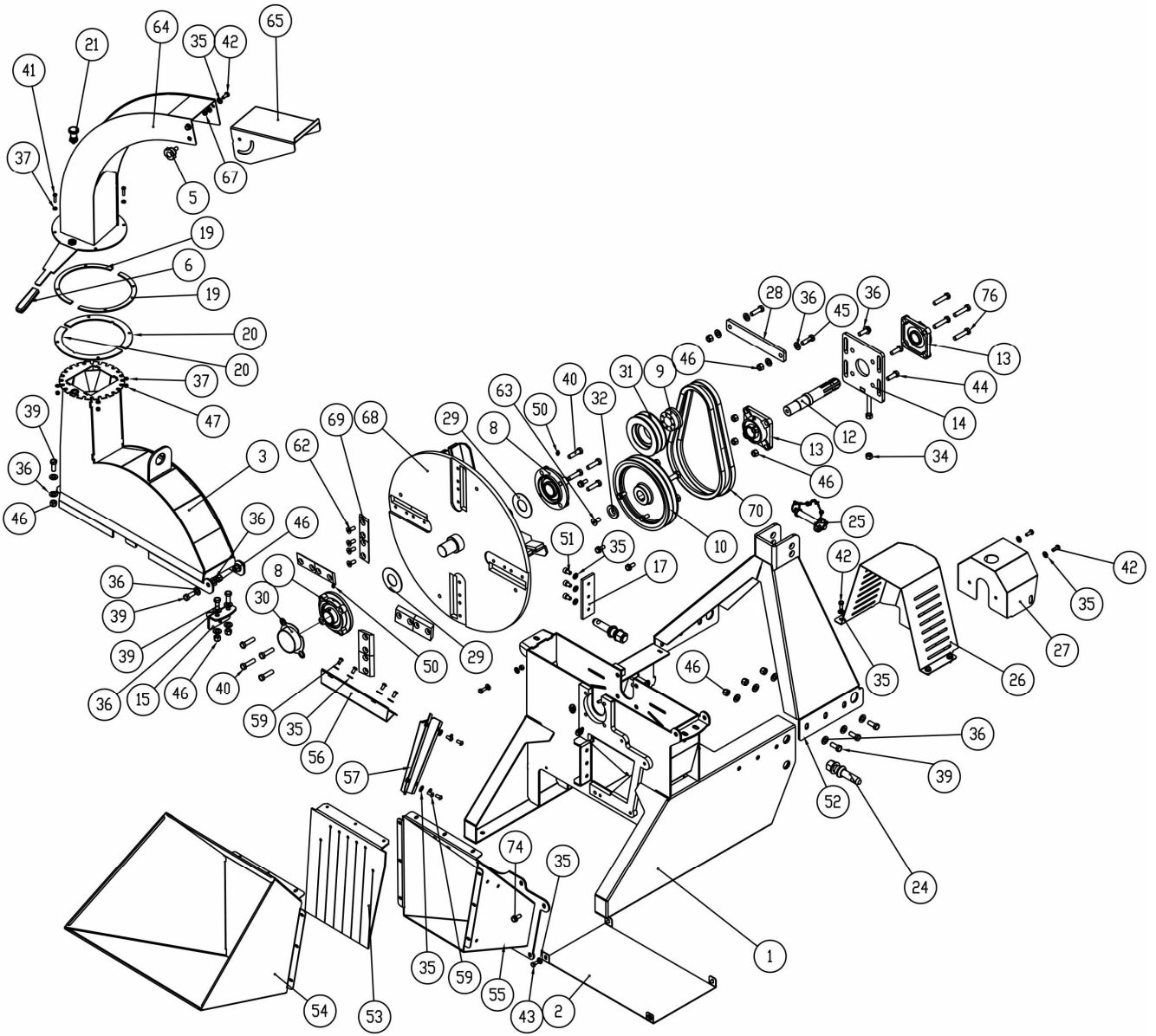
The machine is covered by the manufacturer's warranty for a period of 24 months.

The warranty expires when:

- a) The machine has not undergone regular maintenance.
- b) The machine has been used outside its field of use.
- c) The machine was modified without first obtaining the written permission of the manufacturer.

SPARE PARTS LIST

DRAWINGS



SPARE PARTS LIST

Pos.	Code	Description	UM	Q.ty
1	BTN051VD	BIO-SHREDDER ARGO-PAINTED CASE	NR	1
2	BTN135VD	BIO-SHREDDER ARGO-PAINTED LOWER CARTER	NR	1
3	BTN052VD	BIO-SHREDDER ARGO-PAINTED CASE COVER	NR	1
4				
5	42200005	HANDLE ART. 01THP40E20 M 10X20	NR	1
6	42200013	PLANE HANDLE SMPP 20X6	NR	1
7				
8	42400009	SUPPORT UCFC 208 C/45	NR	2
9	43700039	SHRINK DISC VK 156 D.35X65	NR	1
10	URC167D	PULLEY 250/2B FLIPPER	NR	1
11				
12	BTN502D	BIO-SHREDDER ARGO-GROOVED PTO SHAFT	NR	1
13	42400001	SUPPORT UCF 207	NR	2
14	BTN055VD	BIO-SHREDDER ARGO-PAINTED TIE-ROD	NR	1
15	BTN056VD	BIO-SHREDDER ARGO-PAINTED SHREDDING KNIFE	NR	1
16				
17	BTN501D	BIO-SHREDDER ARGO-HARDENED COUNTER KNIFE	NR	1
18				
19	BTN145VD	BIO-SHREDDER ARGO-EXHAUST PIPE PAINTED SEMI SPACER	NR	2
20	BTN146VD	BIO-SHREDDER ARGO-EXHAUST PIPE LOWER SEMI FLANGE	NR	2
21	42200009	KNOB M8x20	NR	1
22				
23				
24	SRM220D	HITCH PIN I CAT.	NR	2
25	43700012	SPRING PIN WITH CHAIN ART.98108	NR	1
26	BTN058VD	BIO-SHREDDER ARGO-PAINTED CARTER	NR	1
27	BTN057VD	BIO-SHREDDER ARGO-PAINED PROTECTION	NR	1
28	BTN157VD	BIOTRIRURATORE ARGO-PLATE BAR FOR PAINTED TIE-ROD SUPPORT	NR	1
29	ELM257ZD	SCORPION-GALVANIZED SUPPORT PROTECTION	NR	2
30	FRM103VD	LEVANTE-RIGHT SUPPORT PROTECTION	NR	1
31	43700059	CAST-IRON PULLEY BV 130/2-65	NR	1
32	HOL179D	ROTOR LEFT LOCK HOL R-L	NR	1
33	42800039	BELT B39 WITH POLYESTH. STRAND	NR	2
34	40200012	NUT M12 UNI 5588 GALVANISED	NR	2
35	40300002	WASHER ø8 UNI 6592	NR	31
36	40300004	WASHER ø12 UNI 6592	NR	16
37	40300035	WASHER ø6 UNI 6592	NR	8
38				
39	40100014	SCREW UNI 5739 M 12X30 GALVANISED	NR	5
40	40100061	SCREW UNI 5739 M 12X45 GALVANISED	NR	8
41	40100143	SCREW UNI 5739 M 6X25 GALVANISED	NR	4
42	40100077	SCREW UNI 5739 M 8X20 GALVANISED	NR	11
43	40100042	SCREW UNI 5739 M 8X16 GALVANISED	NR	4
44	40100015	SCREW UNI 5739 M 12X35 GALVANISED	NR	4

45	40100023	SCREW UNI 5739 M 12X40 GALVANISED	NR	2
46	40200006	NUT M12 DIN 980 CONELOCK	NR	11
47	40200138	NUT M6 DIN 980 CONELOCK	NR	4
48	40200002	NUT M8 DIN 980 CONELOCK	NR	3
49	40100147	SCREW UNI 5739 M 12X55 GALVANISED	NR	4
50	40600001	GREASER M6	NR	4
51	40100336	SCREW UNI 5931 M 10X16 GALVANISED	NR	3
52	BTN063VD	BIO-SHREDDER ARGO-PAINTED 3-POINT HITCH	NR	1
53	BTN500D	BIO-SHREDDER ARGO-PVC BAFFLE	NR	1
54	BTN053VD	BIO-SHREDDER ARGO-EXTENSION FOR PAINTED HOPPER	NR	1
55	BTN062VD	BIO-SHREDDER ARGO-PAINTED HOPPER	NR	1
56	BTN152VD	BIO-SHREDDER ARGO-PAINTED HOPPER UPPER SECURITY DEVICE	NR	1
57	BTN113VD	BIO-SHREDDER ARGO-PAINTED HOPPER SIDE SECURITY DEVICE	NR	1
58				
59	40100477	SCREW UNI 7380 M 8X16 GALVANISED	NR	8
60				
61				
62	40100526	SCREW UNI 5933 M10X25 TEMPERED	NR	16
63	40100486	SCREW UNI 7380 M 12X25 GALVANISED	NR	2
64	BTN054VD	BIO-SHREDDER ARGO-PAINTED EXHAUST PIPE	NR	1
65	BTN155VD	BIO-SHREDDER ARGO-PAINTED DISCHARGE DEFLECTOR	NR	1
66				
67	40200040	GALVANISED LOCKING NUT M8 DIN 982	NR	2
68	BTN059VD	BIO-SHREDDER ARGO-PAINTED ARGO	NR	1
69	ELM201D	ROTOR KNIFE	NR	8