



# Flail Mower

FL 85/ 95/ 105/ 115/ 125/ 135/ 145/ 165

## Operation Manual



### **IMPORTANT**

**READ THESE INSTRUCTIONS BEFORE INSTALLING  
AND USING THIS IMPLEMENT**

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# SAFETY INFORMATION

## PLEASE NOTE

**Make sure all potential operators of this equipment review this manual and all safety messages contained within.**

### 1.1 Safety First

Read this service manual before using the machine.



**This safety alert symbol indicates important safety messages in this manual. When you see this symbol, carefully read this message that follows and be alert to the possibility of personal injury or death.**

This machine is designed for pulverizing grass and short bramble, and shall be used in the indicated purpose. You take the responsibility if the machine is used in any other purposes.

For safety of personnel and good performance of the machine, you shall check the performance of the machine and the tractor before starting the machine.

All persons and animals shall keep away the machine when you start it.

The operator shall not put on loose clothes during operating the machine.

Do not touch the rotor when the machine rotates.

Keep away from the machine when it moves.

When the tractor and the machine are moving on the road, always keep the machine off.

Before repairing the machine, stop all movable parts and the tractor, keep the key with yourself.

Always keep the machine in a good state, if necessary, repair or change the defective parts.

Don't use the machine to transport personnel.

Don't modify the machine.

Pay attention to the sharp and pointed parts during repairing the machine.

All protective parts shall be guaranteed to be in good state before starting the machine.

Don't leave the tractor when moving the machine; and always take away the key of the tractor with you.

The machine shall be operated in the recommended speed.

Don't stay between the tractor and the machine.

Don't start the machine in a closed place (due to the smoke from the tractor).

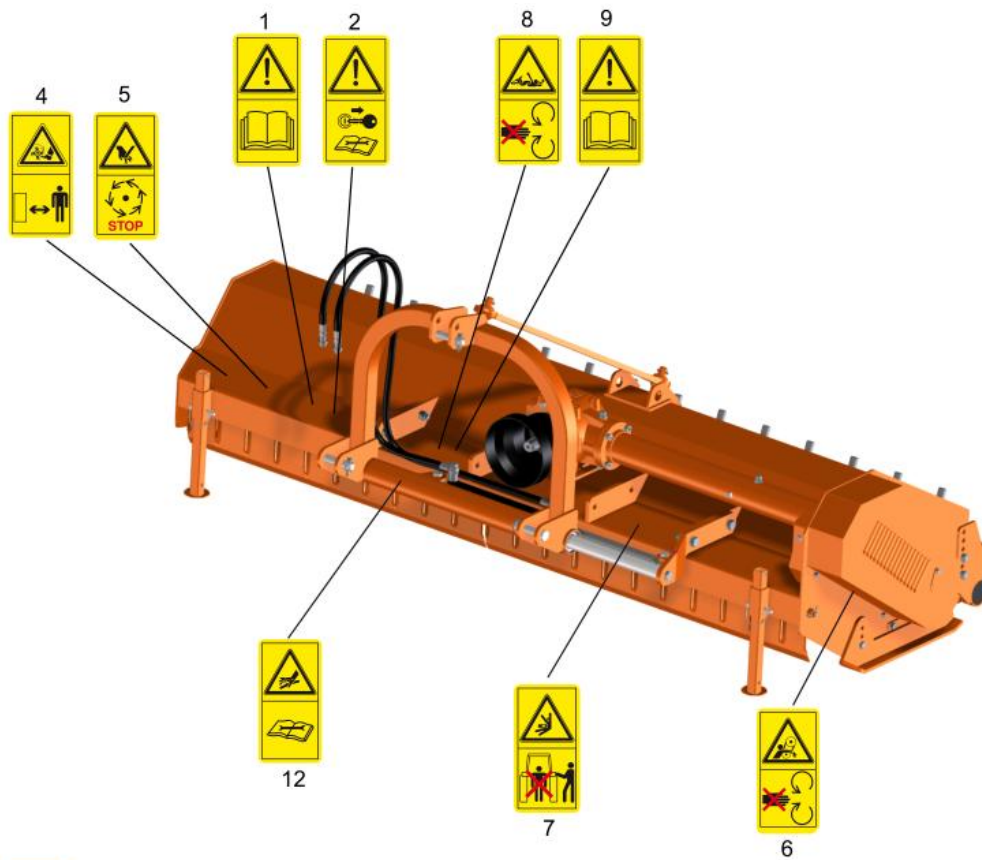
## 1.2 Safety Signs

### 1.2.1 Care of Safety Signs

1. Keep safety signs clean and legible at all times.
2. Replace safety signs that are missing or have become illegible.
3. If a component with a safety sign(s) affixed is replaced with a new part, make sure new safety sign(s) are attached in the same locations as the replaced components.
4. Safety signs are available from your authorized Distributor or Dealer Parts Department or the factory.

### 1.2.2 Safety Signs locations

The types of safety signs and locations on the equipment are shown in the illustrations that follow. Good safety requires that you familiarize yourself with the various safety signs, the type of warning and the area, or particular function related to that area, that requires your **SAFETY AWARENESS**.



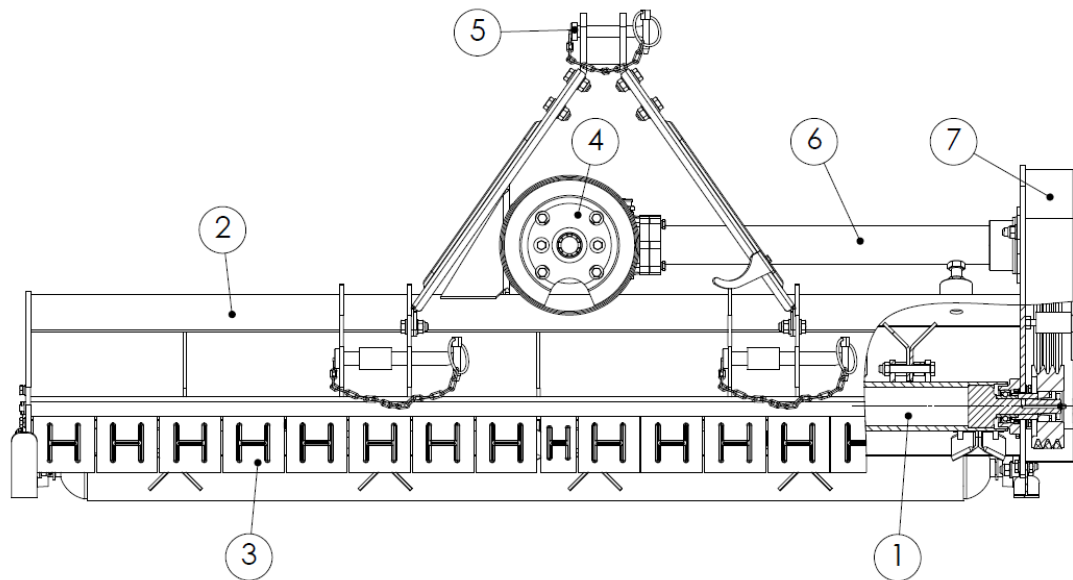
# SPECIFICATIONS

## 2.1 Brief Introduction

COSMO FL Rabbit series Flail mower is designed for pulverizing grass and short bramble, and shall be used in the indicated purpose.

The Flail mower consists of a rotating shaft with many blades attached to it. The blades cut the grass while traveling over the working area. Rotational power to the shaft is provided by the tractor PTO through the gearbox in the center of the machine.

The Flail mower attaches to the 3 point hitch on the tractor.



**Fig. 2.1 Main components of the Flail mower**

1. Rotor
2. Machine frame
3. Combined fender
4. Gearbox assembly
5. 3-pt hitch
6. Transmission shaft
7. Side belts transmission

## 2.2 Specifications and Parameters for Flail Mower

MODEL	FL 85	FL 95	FL 105	FL 115	FL 125
Structure Weight	100kg	115kg	130kg	145kg	160kg
Working Width	829mm	929mm	1029mm	1129mm	1229mm
PTO Turning Speed	540r/min	540r/min	540r/min	540r/min	540r/min
Flail Type	Y Blade/Hammer				
Number of Hammer or Y Blade (x2)	12	14	14	16	20
Tractor HP	14-18hp	16-20hp	20-30hp	20-30hp	25-35hp

MODEL	FL135	FL145	FL165
Structure Weight	175kg	190kg	235kg
Working Width	1329mm	1429mm	1629mm
PTO Turning Speed	540r/min	540r/min	540r/min
Flail Type	Y Blade/Hammer		
Number of Hammer or Y Blade (x2)	24	24	24
Tractor HP	25-35hp	25-35hp	30-40hp

# OPERATION



**CAUTION: Be familiar with the machine before starting. Read this manual carefully to learn how to operate the machine safely and how to set it to provide maximum field efficiency.**

## 3.1 Checking Before Operating



**ATTENTION: Only use universal joint conforming to CE standard and protect them properly.**

Before operating the machine, the following areas should be checked off:

1. Before starting up the machine, check and Lubricate all grease points, all lubricated parts inside the machine.
2. Use only an agricultural tractor of horsepower within limits of the machine specified.
3. Check that the machine is properly attached to the tractor. Be sure retainers are used on the mounting pins.
4. Be sure extra weights are mounted on the front of the tractor.
5. Check the oil level in the gearbox. Add as required.
6. Check that the tractor PTO shaft turns freely and that the machine driving shaft can telescope easily.
7. Check the blades. Be sure they are not damaged or broken and swing freely in their mount. Repair or replace as required.
8. Check and tighten the blade bolts.
9. Check for entangled material in all rotating parts. Remove this material.
10. Install and secure all guards, doors and covers before starting.
11. Before installing the universal joint, the tractor and the machine motor shall be stopped and the key be taken away. The universal joints shall be installed in good state, with proper protective parts.
12. The chain on the protective parts of the universal joint shall be guaranteed in good condition, in case, automatic rotation occurs.

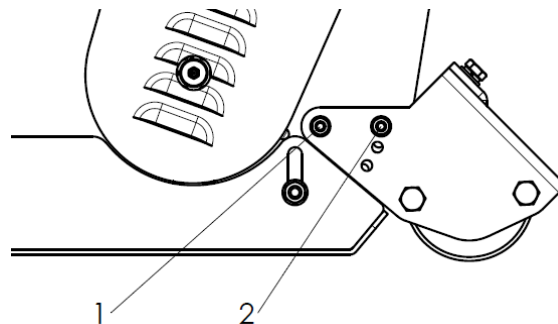
13. All other persons shall leave the ground before connecting the driving power from the tractor. Keep the output of the tractor at 540 RPM.
14. Before cleaning, repairing and lubricating the machine, stop the motor and take away the key with you.
15. When the universal joint is not connected with the tractor, they must be connected again through the frame to protect the joint from damaging.
16. Don't approach the machine when the machine runs.

### 3.2 Adjusting the Height

To get the most out of your flail mower, it should be set within the recommended height.

To save fuel and power and reduce wear and tear, the cutting height must be regulated correctly.

When adjusting the working height, loosen screw (1), remove screw (2) on both sides; The roller height (see following drawing) can be adjusted by aligning the selected hole in the roller support bracket at position 2. The lowest hole is the highest working height; put the screw (2) into the selected hole; tighten screw (1) and screw (2).



### 3.3 Flail Mower Adjustment

1. On a flat piece of ground, attach the Flail Mower to the Tractor using the three point linkage
2. Use a solid adjustable top link
3. Lower the three point linkage to its lowest position
4. With the roller at the rear in contact with the ground, adjust the length of the top link so that the lower edge at the side of the flail mower is parallel with the ground
5. Rotate the blade drum by hand so that a row of blades hang vertically towards the ground.



6. Measure the clearance between the bottom of the extended blades and the ground.
  - Minimum 50mm
  - Note in rough or lumpy paddocks the clearance needs to be increased to ensure that the blades don't impact the ground in operation.
7. Adjust the roller height to increase or decrease the blade clearance as required
8. Go through steps 4 to 7 until the required clearance is achieved.

When the Flail Mower has been set up with the required tolerances : Operate the Flail Mower with tractor in low range and the PTO delivering 540 RPM

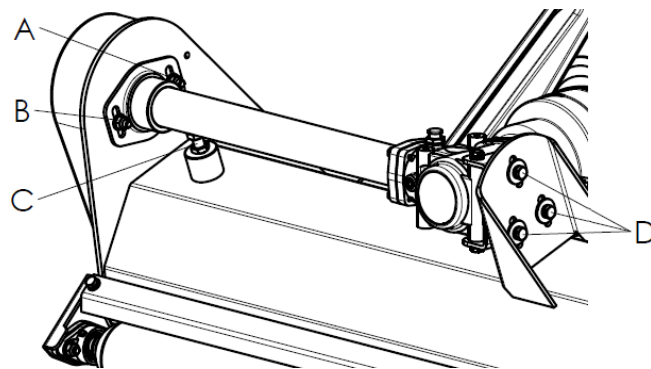
### 3.4 Regulating the Tension of Driving Belt



**ATTENTION: The machine shall always stand still for regulating the tension.**

Remove the driving belt cover.

1. Loosen the Screw A and B that locks the support shaft and loosen the counter nut C.
2. Loosen the screws that lock the gear box on the mounting plate D.



3. Adjust the drive belt tension. The correct belt tension is achieved when the belt can be deflected by the belt thickness about 10mm at the center point between the pulleys.
4. Align the gearbox so the drive shaft is parallel with the body.
5. Use a straight edge to make sure the belt pulleys are in line and running true. If misaligned call your dealer or service agent for technical support.

### 3.5 Starting up

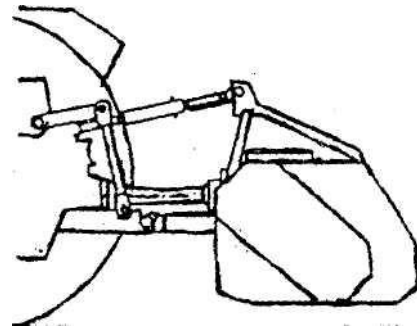
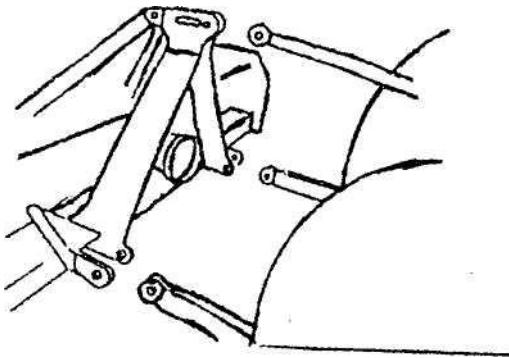
Before starting the machine, control and adjust the following items:

- Tension of trapezoidal driving belt.
- Oil level of gear.
- Point of lubrication
- All bolts, nuts and screws.



**ATTENTION: When transferring the moving state of the machine to the working state, do not stand between the machine and the tractor.**

The machine coupling is equipped with 3 pins so that the machine can be coupled with all tractors with universal coupling with 3 pins. Each telescopic pole on the machine can be adjusted properly according to the type of the tractor. Keep the Flail mower away the tractor with a certain distance. The universal joint shall be tense and the largest distance in the closed state shall be 5/10 cm.



Moving the lifting arm, and putting it between axes, insert the joint pins and fix them with pins. Fix the lifting arm with chain and tensioning device so as to prevent lateral movement of the machine. Connect the universal joint to the PTO shaft of the tractor on the side of the tractor. In any event, it cannot produce a collision in any position. While connecting 3 points, pay attention to that the PTO shaft of the tractor shall be parallel with the ground. It is very important to keep the machine driving axle and the PTO shaft of the tractor in parallel.

The machine shall be lifted from the ground before moving the machine.

# SERVICE AND MAINTENANCE

## 4.1 Service

### 4.1.1 FLUIDS AND LUBRICANTS

#### 1. Grease:

Use multi-purpose lithium based grease.

#### 5. Gear Box Oil:

Use N46 drive & hydraulic dual-purpose oil or equivalent for all operating conditions.

Each Gearbox Capacity: 0.85 liter

#### 3. Storing Lubricants:

Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

### 1.1.2 GREASING

- Use a hand-held grease gun for all greasing.
- Wipe grease nipple with a clean cloth before greasing, to avoid injecting dirt and grit.
- Replace and repair broken nipple immediately.
- If nipples will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace nipple if necessary.

## 4.2 Maintenance



**ATTENTION: All maintenance, repairing, cleaning and lubricating shall be conducted when the tractor and motor are stopped and the key is taken away.**

By following a careful service and maintenance program for your machine, you will enjoy many years of trouble-free operation.

The period recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent maintenance.

### 4.2.1 8 HOURS OR DAILY MAINTENANCE

- Check and screw all nuts and bolts in connection parts.

- Check the blade and fixing parts every day and replace the damaged parts if they are found damaged. Don't install damaged, worn and unbalanced blade. New sleeve shall be used to replace the worn fixing parts on the blade.

**NOTE:**

**The operator shall put on gloves and use suitable tools before changing blade.**

- Check the oil in gearbox. Fill them up to line if it's necessary.
- Press butter in each oil nipple three to five times.
- Clean the implement; take away all grass and mud.



**ATTENTION: Don't forget to disconnect the generator cable and batteries when welding on the machine, while the machine is coupled with the tractor.**

### 4.3 Storage

The machine inside and outside shall be cleaned carefully so as to avoid corrosion.

Don't spray water on the rolling bearing if you clean the machine with high pressure sprayer.

Check and clean the universal joint, driving belt press roller, or replace them if they are not in good state.

Spread oil on all parts required.

Recoat the parts rubbed and damaged for anti corrosion.

Store the machine in a dry, level area. Support the frame with planks if require.

### 4.4 Operation After Storage

Before the machine is started up, check the following items regularly:

Check oil level and add it if not enough.

Check and tighten all screws and nuts;

Check the regulated state of the machine.

Check the blade state.

Check the air hole on the gearbox. If it is blocked, clean or open the hole with compressed air.

Don't spread oil or grease on the driving belts. If there is oil or grease on the belts, wipe the belts, in case the belt sliding and wearing occur.



**ATTENTION: Check the machine every 10 hours. Repair the damaged parts or replace the blade according to the manufacturer's recommendation, to keep the machine balancing.**

Check all tightening parts and replace them if necessary.

Don't remove the protective parts on some points and protect the machine.



**ATTENTION: In the case of vibration, stop the machine and check the blade.**

**If the blade breaks or is damaged, replace it with same type of the blade. If the machine vibrates still, send the machine to the authorized repairer.**

## **ILLUSTRATED PARTS CATALOGUE**

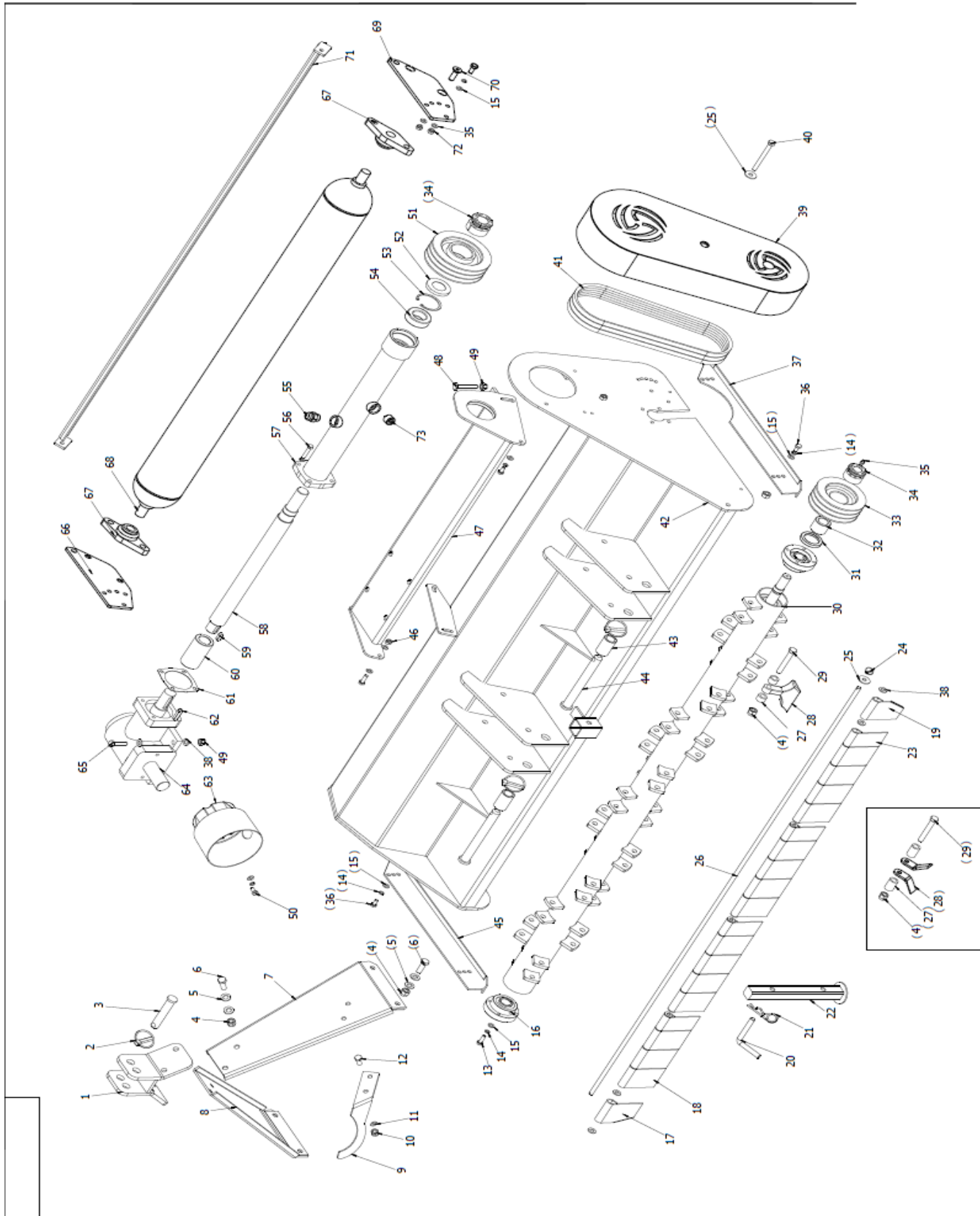
The manual contains a parts list for your machine. It is divided into major sections, which correspond to the groups shown in the Table of Contents and the accompanying illustration.

The first page of each major section lists the contents of that section, each of which consists of exploded views and related tabular listings.

### **When ordering parts**

Always give your dealer the Model of your machine to assist him in ordering and obtaining the correct parts. Use the exploded view and tabular listing of the area of interest to exactly identify the required part.

# 5.1 Flail Mower Assembly



No.	Code	Description	Qty
1	100.00.018	top link bracket weldment	1
2	DIN11023	cotter pin 8*40	1
3	100.00.019	top pin	1
4	GB6184-86	nutM12	28
5	GB97.1-85	washer 12	28
6	GB5783-86	bolt M12*30	8
7	100.00.016	3-point-linkage weldment(L)	1
8	100.00.020	3-point-linkage weldment(R)	1
9	R105.105	Hook	1
10	GB6184-86	NutM6	2
11	GB97.1-85	washer6	4
12	GB5783-86	Bolt M6*25	2
13	GB5783-86	Bolt M8*25	22
14	GB93-87	Spring washer 8	8
15	GB97.1-85	washer 8	22
16	100.00.030	bearing UC205 with seat	2
17	100.00.122A	Fender	1
18	100.00.122	Fender	10
19	100.00.122B	Fender	1
20	100.00.111	cotter pin for stand foot	1
21	GC125.110	small R Pin	1
22	100.00.027	stand foot	1
23	100.00.121	Fender	1
24	DIN11023	cotter pin	2
25	GB96-85	large washer 10	3
26	100.00.123	shaft for fender	1
27	100.00.101A	bushing (Y blade)	1
	100.00.101B	bushing ( hammer)	1
28	R105.102A	Y blade	1
	R105.102B	Hammer	1
29	GB5782-86	Bolt M12*80	1
30	100.00.011 Flail axle weldment	FL85	1
		FL95	1
		FL105	1
		FL115	1
		FL125	1
		FL135	1
		FL145	1
		FL 155	1
		FL 165	1
		FL 175	1



31	R105.025A rear roller weldment	FL85	1
		FL95	1
		FL105	1
		FL115	1
		FL125	1
		FL135	1
		FL145	1
		FL155	1
		FL165	1
		FL175	1
32	100.00.109	bushing	1
33	100.00.110A	small pulley	1
34	JB/T7934Z3	power lock 05type 25*50	2
35	GB1152-89	grease nipple M6	2
36	GB/T 2673	Hexagon socket countersunk head screws M8*25	2
37	100.00.029A	Skid (L)	1
38	GB97.1-85	washer 10	16
39	100.00.021	side belts cover	1
40	GB5782-86	Bolt M10*80	1
41	GB1171-74	Belt A930	3
42	100.00.013A	Mower deck weldment	1
43	100.00.106	bushing	2
44	100.00.014	low pin	2
45	100.00.028A	Skid(R)	1
46	GB6184-86	Nut M8	14
47	100.00.015	Brackets weldment for gearbox	1
48	GB5783-86	Bolt M10*70	1
49	GB6170-86	Nut M10	1
50	GB5783-86	Bolt M8*10	2
51	100.00.116A	Big Pulley	11
52	GB13871-92	oil seal FB30*62*10	1
53	GB/T 893.1	ring 62	1
54	GB/T276-94	bearing 6206-1RS	1
55	GC125.169	breathe bolt	1
56	GB5783-86	Bolt M8*40	4
57	100.030.2 Transmission shaft weldment for	FL85	1
		FL95	
		FL105	
		FL115	
		FL125	1
		FL135	
		FL145	
		FL155	

		FL165	
		FL175	
58	100.030.3	shaft	1
59	GB/T 1096	KeyA 10*30	1
60	100.01.101	Connect bushing	1
61	100.030.1	gasket	1
62	GB/T 1096	Key A 10*45	1
63	100.00.112	PTO shaft guard	1
64	100.01.001	gearbox	1
65	GB5783-86	Bolt M10*35	4
66	R105.104	connection plate for rear roller(L)	1
67	GB7810-87	bearing L204	2
68	R105.025A	rear roller weldment	1
69	R105.103	connection plate for rear roller(R)	1
70	GB2673-86	Hexagon socket countersunk head screws M10*25	4
71	R105.024A	scraper	1
72	GB6184-86	Nut M10	8
73	ZBT 32001.3-87	plug ZG3/8"-19	1



## DECLARATION OF CONFORMITY

2006/42/CE e D.lgs. 17/2010

Manufacturer: COSMO Srl

Address : Via Laghi di Avigliana, 117 12022 BUSCA (CN) ITALY

Description : **Light duty flail mower**

Brand : **RABBIT**

Model : **FL-85/ FL-95/ FL-105/ FL-115/ FL-125/FL-135/FL-145/FL-165**

Regulations:

*2006/42/EC*

*EN 12100:2010*

***Cosmo srl***

**Busca 20-01-2017**

**Cosmo srl Via Laghi di Avigliana, 117 12022 BUSCA (CN) ITALY**

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