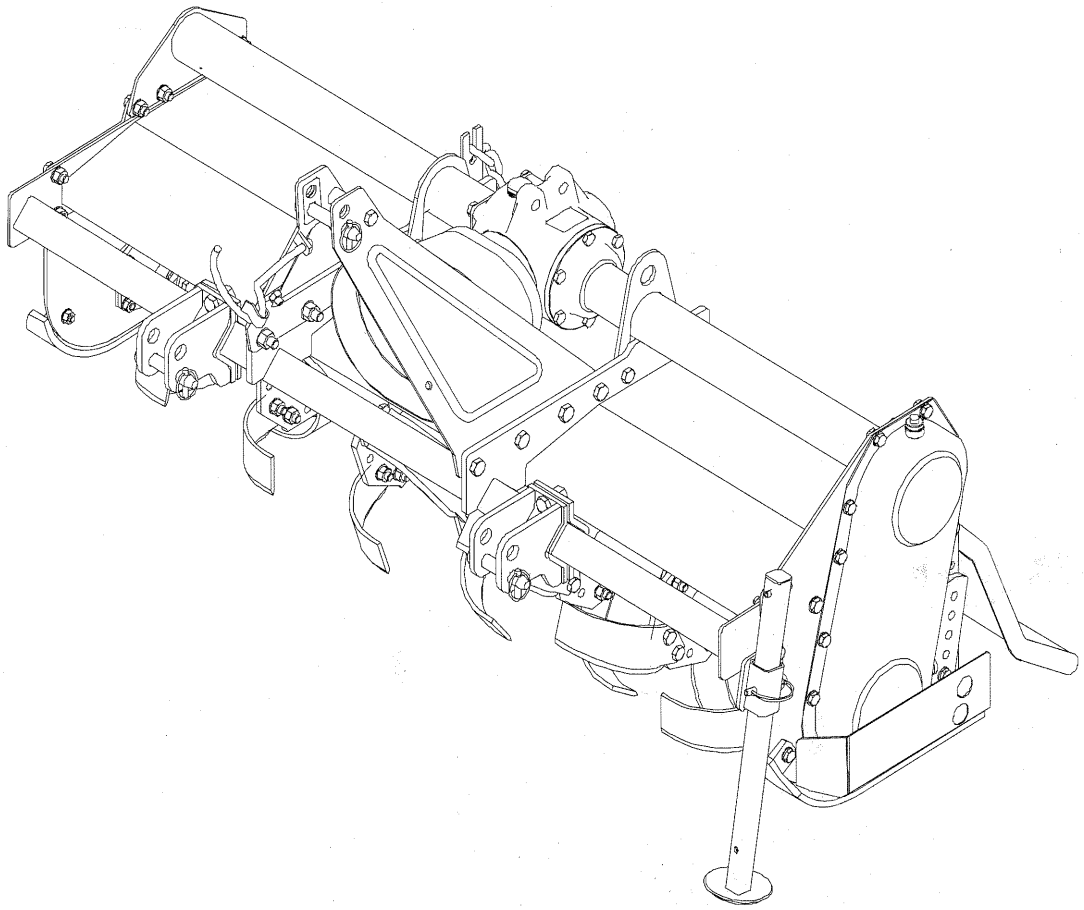
AGRICULTURAL MACHINERY

sitrex® Spa

ASSEMBLY, USE AND MAINTENANCE



ROTARY TILLER RH/2-4-6

0207

index

SECTION 1 GENERAL INTRODUCTION - WARRANTY

1.1 INTRODUCTION

The user of the lawn mower (later referred to as the "machine") is responsible for his own safety as well as that of the people in proximity of it.
It is therefore crucial that the user has detailed information on the use and maintenance of the machine and on how to connect it correctly to a tractor.
This machine can operate only through a Cardan shaft attached to the power takeoff of an agricultural tractor equipped with a lifting unit and 3-point universal linkage. This manual is intended both for the operator and those responsible for maintenance. Essential instructions and procedures to follow during use and maintenance of the machine are conveyed through drawings and text.
The user is responsible for ensuring that the machine is connected to the tractor and is operated in compliance with current legal provisions.
The machine must only be operated and maintained by persons who have read this manual. The manual should always be kept to hand. It is particularly important to read SECTION 3 on general safety instructions.
These instructions must always be heeded.
If you are in any doubt, contact the Assistance Center or your nearest dealer.

1.2 WARRANTEE

On delivery, check that the machine has not been damaged during transport and that all the attachments are present. Claims must be made in writing to the agent within 8 days of receipt.

The manufacturer warrants new machinery at the time of delivery to the original purchaser to be free from defects in material and workmanship if properly set up and operated in accordance with this Operator's Manual.

The manufacturer undertakes to repair or replace free of charge any defective part which should be returned by the purchaser (freight prepaid) and found to be defective by inspection authorized by The manufacturer during the warranty period.

This warranty will be valid for 12 (twelve) months from the delivery of goods to the original purchaser.
In case the customer is not in a position to return the defective part to the manufacturer, the manufacturer cannot be held responsible for any cost due for repair or replacement of any part of the machine, he will only supply the part(s) required for the repair and/or replacement.

The warranty is null and void when it is evident that the machine has been improperly used or repaired or however repaired without authorization.

The manufacturer undertakes no responsibility for any obligation or agreement reached by any employers, agents or dealers, which are not in compliance with the above warranty. The manufacturer cannot be held responsible for the consequent damages. This warranty substitutes any other warranty, express or implied, and any other manufacturer's obligation.

SECTION 2 GUIDE TO THE SIGNS AND SYMBOLS USED IN THIS MANUAL AND THEIR LOCATION ON THE MACHINE

2.1 SIGNS AND SYMBOLS

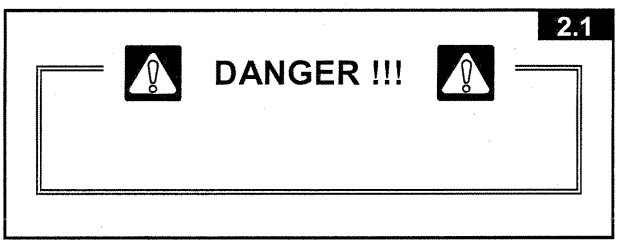
These signs and symbols give information to the operator on how to make the best use of the machine so as to prolong life, avoid damage, optimize work and, above all, to avoid injury to the operator and anyone within range of the machine.

2.2 SIGNS AND SYMBOLS USED IN THIS MANUAL

The following symbols are used in the manual to call the reader's attention to various levels of danger

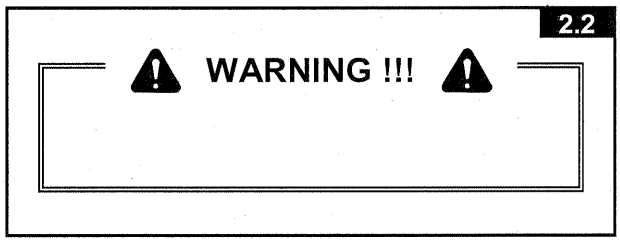
2.2.1 see pict. 2.1

Indicates an impending dangerous situation which, if not avoided, will cause death or severe personal injury.



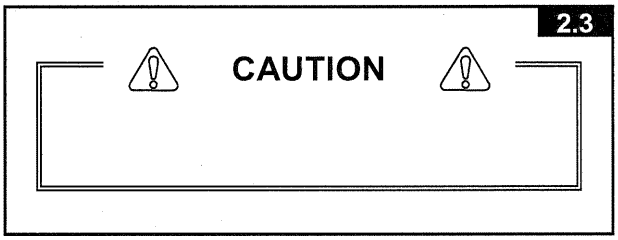
2.2.2 see pict. 2.2

This indicates a potential danger which, if not avoided, could cause serious personal injury. It also indicates danger when removing protective guards.



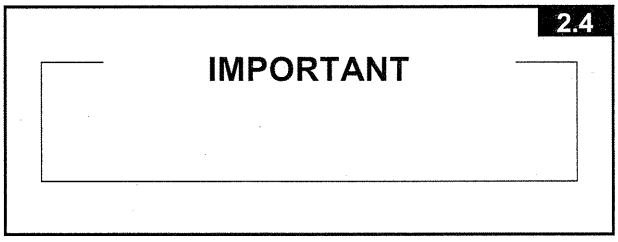
2.2.3 see pict. 2.3

Indicates a potentially dangerous situation which, if not avoided, can provoke less severe or minor injuries.



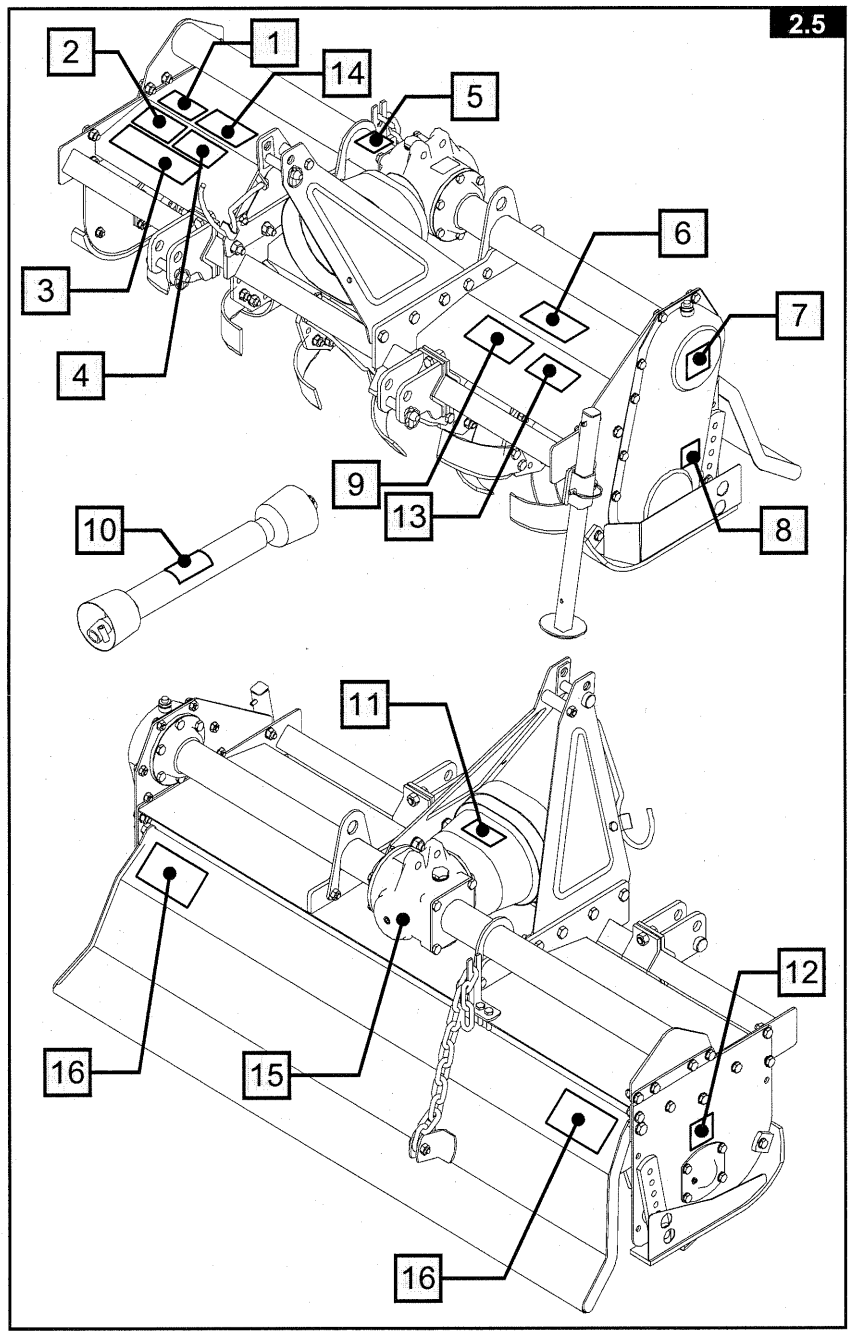
2.2.4 see pict. 2.4

Symbol used to advise the user about procedures able to improve use of the machine and lengthen its life, preventing damage and optimizing the job.



2.3 LOCATION OF SIGNS AND SYMBOLS ON THE MACHINE

Rif.	Description.	Model
1	see pict. 4.1	all models
2	see pict. 2.12	all models
3	model name	all models
4	see pict. 2.13	all models
5	see pict. 2.14	RH4-RH6
6	see pict. 2.9	all models
7	see pict. 2.15	all models
8	see pict. 2.17	all models
9	see pict. 2.6	all models
10	see pict. 2.7 - 2.8	all models
11	see pict. 2.11	all models
12	see pict. 2.16	all models
13	see pict. 2.10	all models
14	see pict. 2.10	offset models
15	see pict. 2.17	RH4-RH6
	see pict. 2.16	RH2
16	see pict. 2.10	all models

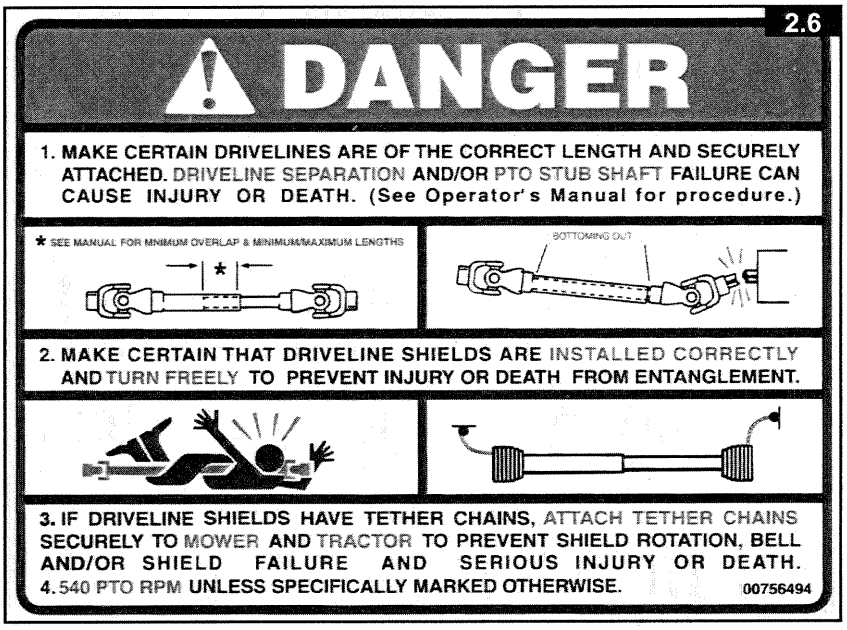


2.4 WARNING AND DANGER SIGNS ON THE MACHINE

2.4.1 see pict. 2.6

Indicates that it is dangerous to touch the Cardan shaft. For all other information regarding the Cardan shaft, see the use-and-maintenance booklet specifically for the Cardan shaft which, together with this manual, makes up the documentation on safety, use and maintenance of the machine.

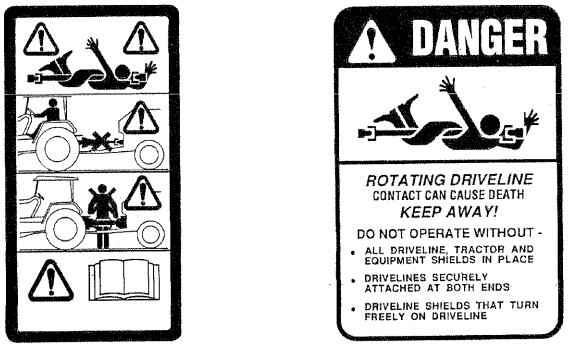
2.6



2.4.2 see pict. 2.7

This label is on the driveline guard and indicates that it is dangerous to touch the driveline when rotating.
Strictly comply with the instructions on the label.

2.7



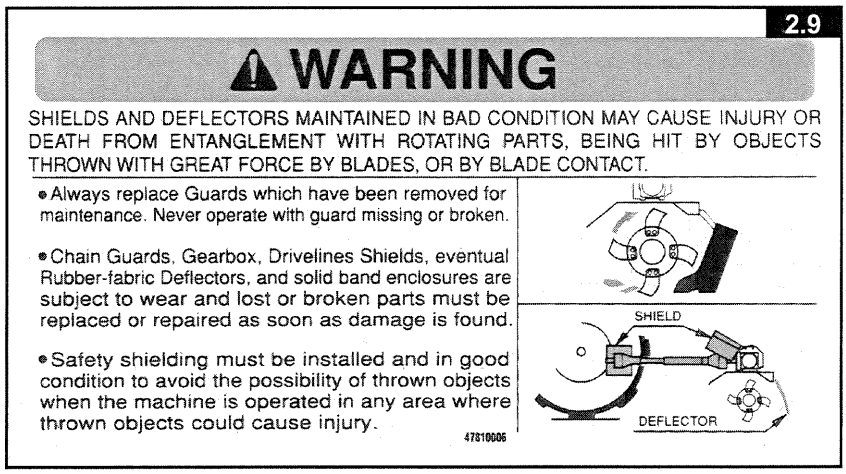
2.4.3 see pict. 2.8

If this label becomes visible the driveline shield is damaged or missing.
Do not operate unless the driveline is correctly protected, since it can catch on parts of the body or clothing and could even cause the user's death.

2.8

2.4.4 see pict. 2.9

2.9



2.4.5 see pict. 2.10

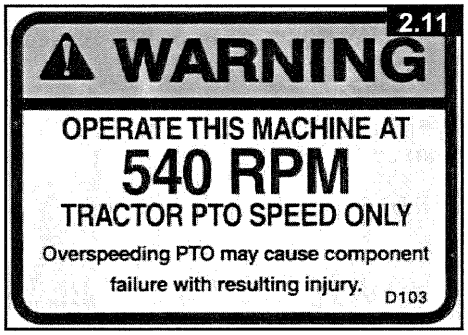
This indicates a point with the risk of cutting one's foot..
Keep at a safe distance.

2.10

2.4.6 see pict. 2.11

Shows the maximum number of revolutions of the power takeoff.

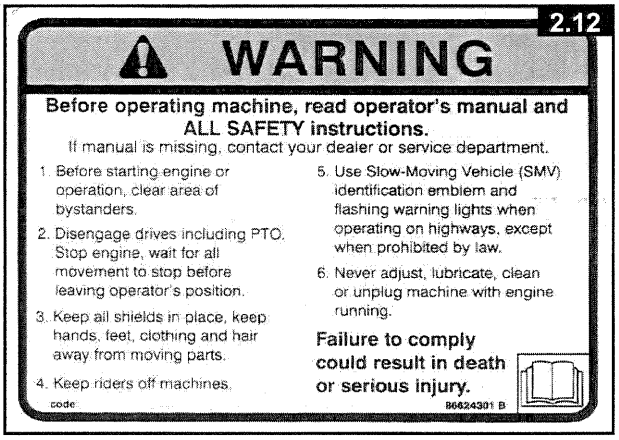
2.11



2.4.7 see pict. 2.12

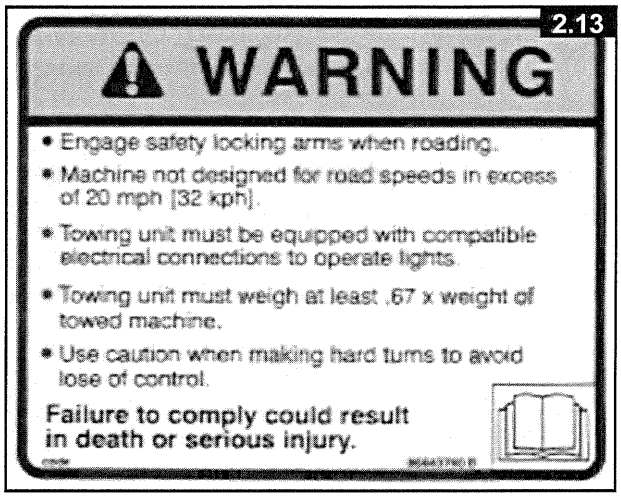
Before operating machine, the following instructions should be heeded.

2.12



2.4.8 see pict. 2.13

After the machine has been attached to the tractor and before transporting it to or from fields or any other workplace, the following instructions should be heeded



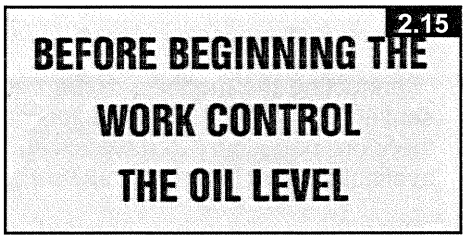
2.5 INDICATION SIGNS ON THE MACHINE

2.5.1 see pict. 2.14

This indicates an input oil point and recommended oil to use.

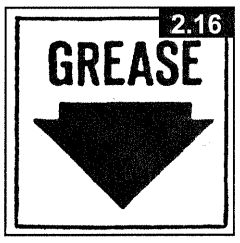
2.5.2 see pict. 2.15

This indicates an input oil point and for recommended oil to use see table 7.6.



2.5.3 see pict. 2.16

Indicates a greasing point.



2.5.4 see pict. 2.17

This indicates an the oil level point.

SECTION 3 GENERAL SUMMARY OF SAFETY AND ACCIDENT - PREVENTION INSTRUCTIONS

3.1 GENERAL SUMMARY OF SAFETY AND ACCIDENT-PREVENTION INSTRUCTIONS

Read all the directions carefully before using the machine. When in doubt, seek advice from the manufacturers.
The manufacturing company declines all responsibility for non-compliance with the following safety and accident-prevention instructions.

1- Pay attention to the danger signs and symbols in this manual and on the machine.

2- Do not touch moving parts.

3- All work on the machine (including adjustments) must always be carried out with the tractor immobilized and the engine switched off.

4- On no account may persons or animals be carried on the machine.

5- Driving the tractor with the machine connected is absolutely forbidden to persons lacking suitable experience, or who are in poor health, or who do not have a suitable driving license.

6- All accident-prevention measures recommended in this manual should be scrupulously observed.

7- Connecting the machine to the tractor creates a different weight distribution on the axles and so it is essential to ensure that the tractor-machine combination is stable in all anticipated working conditions. It is therefore necessary to have exact instructions from the tractor manufacturers. If such instructions are not available, suitable tests should be conducted in safe conditions in order to assess stability.

8- Once the machine is connected, it can only be controlled through a Cardan shaft complete with the required overload protection and guard secured with the appropriate small chains. Be aware of the rotational direction of the Cardan shaft.

9- Before operating the tractor and machine, check that all transport and operational safety devices are complete and working.

10-When driving on public roads, you should comply with the Highway Code regulations for the country concerned.

11-Do not exceed the tractor axle maximum weight and the total mobile weight. Heed transport regulations.

12-Before starting work, familiarize yourself with the control devices and how they work.

13-Wear suitable clothes. Do not wear clothing which is loose or which could become entangled in rotating or moving parts.

14-Connect the machine to a suitably powerful tractor by using an appropriate lifting unit and in accordance with instructions.

15-Take maximum care when connecting and disconnecting the machine to and from the tractor.

16-The machine and any road transport attachments must bear the appropriate signs and symbols and have suitable protection.

17-Never leave the driving seat when the tractor is running.

18-It is extremely important to appreciate that road holding, steering and braking may be significantly affected with the machine attached.

19-When turning corners with the machine attached, be aware of the fact that the centrifugal force will alter

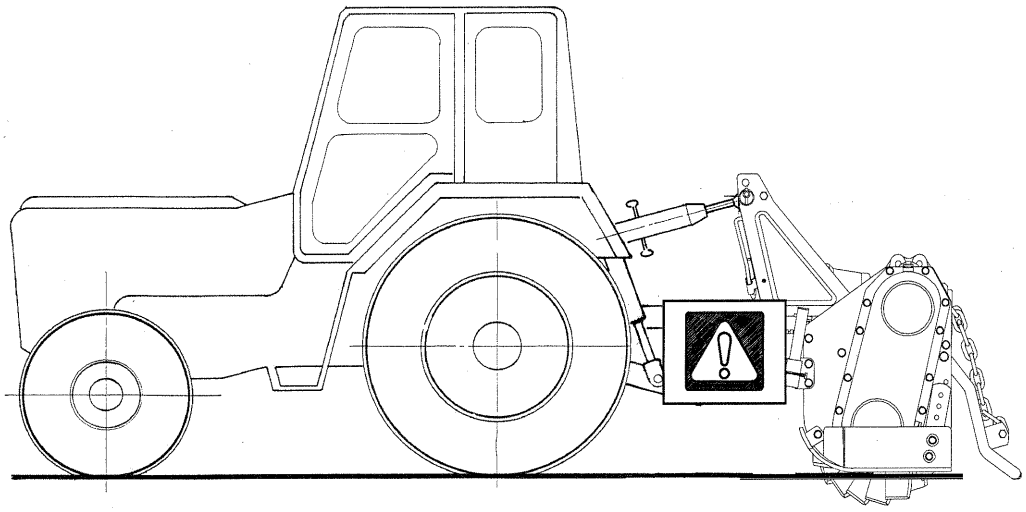
due to the change in the center of gravity.

20- Before engaging the power takeoff check the preset revolution speed. Do not change speed from 540 rpm to 1000 rpm.

21- Under no circumstances should anybody stand near the machine or any moving parts. It is the duty of the operator to ensure that this requirement is respected.

22- Before leaving the tractor, lower the machine with the lifting unit, stop the engine, apply the parking brake and remove the ignition key from the instrument panel.

3.1



23- Under no circumstances should anybody go between the tractor and the machine (see picture 3.1) when the engine is running and the Cardan shaft is engaged, especially without first having applied the parking brake and placed chocks against the wheels.

24- Before connecting or disconnecting the machine to or from the 3-point linkage, put the lifting unit lever into the locked position.

25- The connection pins on the machine must match the connection sockets on the lifting unit.

26- During transport, secure the lateral lifting arms with the appropriate chains and tighteners.

27- When the machine is raised during road transport, put the tractor's hydraulic lifter lever into the locked position.

28- Only use the Cardan shaft provided by the manufacturer and, in case of replacement, substitute it with one having the same characteristics.

29- Regularly check all protection on the Cardan shaft. This should always be in excellent condition and securely fixed.

30- It is important to ensure that the protection on the Cardan shaft is complete.

31- Connection and disconnection of the Cardan shaft must be carried out with the engine switched off.

32- Pay particular attention to the correct connection and safety of the Cardan shaft and the power takeoffs on the machine and the tractor.

33- Prevent the cardan shaft protection from rotating using the chains supplied.

34- Before engaging the power takeoff, make sure that there are no people or animals in the vicinity and that the selected engine speed corresponds to that permitted. Never go above the maximum permitted.

35-Do not engage the power takeoff when the engine is not running.

36-Always disengage the power takeoff when the Cardan shaft is at too wide an angle (it should never be more than 35° see pict. 3.2) and when it is not in use.

37-Only clean and grease the Cardan shaft when the power takeoff is disengaged, the engine is off, the parking brake is applied and the ignition key is removed.

38-On disconnecting the Cardan shaft, replace the protective hood on the power takeoff shaft.

39-Prolonged use of the machine can cause the drive boxes to become hot. To avoid any risk of getting burnt, avoid touching these areas both during use and some time afterwards.

40-Periodically check screws and nuts for tightness and grip. Tighten if necessary.

41-When carrying out maintenance work or replacing the blades, raise the machine and rest on adequate supports.

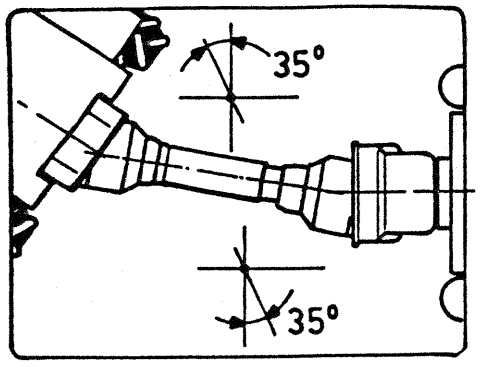
42-Use the quantities of grease and oil advised.

43-Spare parts must meet the requirements as defined by the manufacturer. Use only original spare parts.

44-Safety decals must always be clearly visible. They must be kept clean and replaced if they become too illegible (they can be ordered from the agent if necessary).

45-The instruction booklet must be available for the lifetime of the machine.

3.2



SECTION 4 PRODUCT IDENTIFICATION

4.1 TECHNICAL DATA

MODEL	Working width				Minimum power required			A - A / B - B		PTO speed		MAX		Weight		
					MED.	MAX.		A - A	B - B							
	cm.	inch	cm.	inch.	HP	HP	N.	cm / inch.	cm / inch.	RPM	RPM	cm.	inch.	kg	lbs	
RH2 - 85	85	34	97	38	10-15	25	16	42 - 42 16" 1/2 - 16" 1/2	25 - 60 10 - 24" 1/2	540	254	13	5	137	346	*
RH2 - 105	105	42	117	46	15-18	25	20	52 - 52 20" 1/2 - 20" 1/2	25 - 80 10 - 31" 1/2	540	254	13	5	148	370	*
RH2 - 125	125	50	137	54	18-20	25	24	62 - 62 24" 3/8 - 24" 3/8	25 - 100 10 - 39" 1/2	540	254	13	5	159	395	*

* Standard

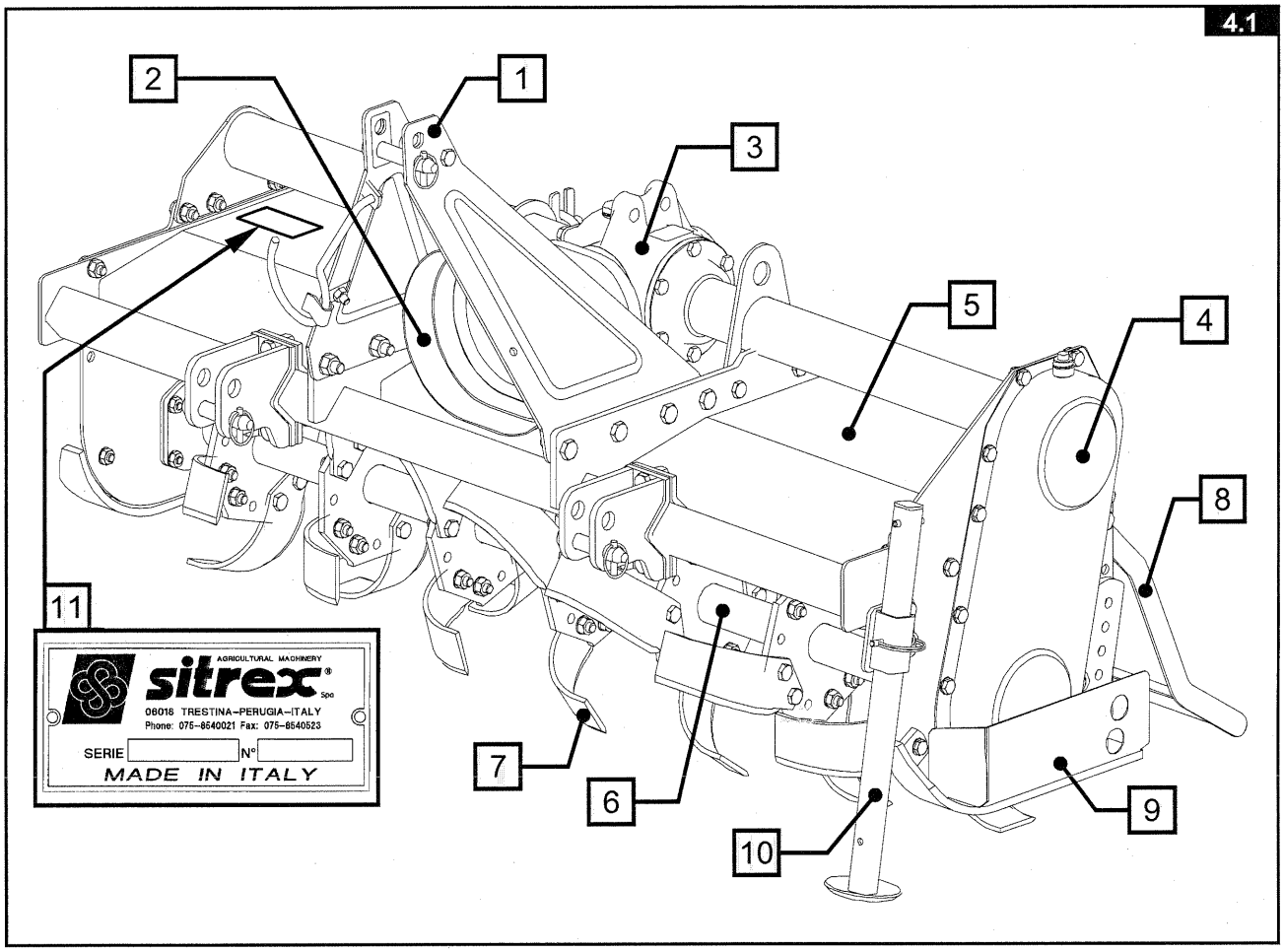
MODEL	Working width				Minimum power required			PTO speed		MAX		Weight			
					MED.	MAX.									
	cm.	inch.	cm.	inch.	HP	HP	N.	RPM	RPM	cm.	inch.	kg	lbs		
RH4 - 105	105	42	117	46	15-22	40	20	540	247	15	6	176	388	*	**
RH4 - 125	125	50	137	54	26-30	40	24	540	247	15	6	188	414	*	**
RH4 - 145	145	58	157	62	34-38	40	28	540	247	15	6	200	441	*	**
RH4 - 165	165	64	177	70	35-40	40	32	540	247	15	6	212	467	*	**

* Standard
** Optional

MODEL	Working width				Minimum power required			PTO speed		MAX		Weight			
					MED.	MAX.									
	cm.	inch.	cm.	inch.	HP	HP	N.	RPM	RPM	cm.	inch.	kg	lbs		
RH6 - 145	145	58	157	62	35-45	60	28	540	232	18	7	260	551	*	**
RH6 - 165	165	66	177	70	45-55	60	32	540	232	18	7	288	613	*	**
RH6 - 185	185	74	197	78	50-60	60	36	540	232	18	7	324	692	*	**

* Standard
** Optional

4.2 MAIN MACHINE PARTS



4.2.1 see pict. 4.1

1 - Three-point linkage used to couple the implement to the tractor.
2 - Pto shaft guard. Prevents the user from coming into contact with the rotating part of the driveline engaged in the pto.
3 - Gearbox. Reduces the rotation speed of the tractor pto.
4 - Drive transmission to the rotor shaft. Drive output from the gear box is transferred to rotor "6" by means of the transmission chain.
5 - Chassis. This is the bearing structure of the implement.
6 - Rotor shaft. The tractor drives the rotor shaft on which the tools are bolted by means of the gear box and transmission chain.
7 - Blades. Soil crushing hoe blades are bolted to the flanges of the rotor shaft. They can be of various type according to the machine version and model.
8- Rear hood. The hood is mobile and is used to contain and level the soil crushed by the blades.
9 - Side skids. When installed, these allow the work depth of the blades to be adjusted. They also act as important side guards.
10 - Parking stand.
11 - Always exactly state the machine model in your possession together with its serial number when contacting dealer as written in identification plate

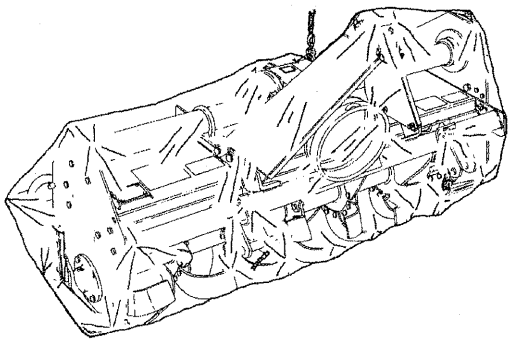
SECTION 5 DELIVERY AND ASSEMBLY

5.1 CHECKING THE MACHINE ON DELIVERY

5.1.1 see pict. 5.1

All parts carefully checked before dispatch or delivery.
On receiving the machine, ensure that it not been damaged during transport. If damage has occurred, con-tact the dealer concerned.
How the machine is lifted will depend on the model and the type of packing. Details are given below. The packing can vary from country to country depending on transport requirements

5.1



⚠ WARNING !!! ⚠

Lift the machine using a forklift truck, crane or other suitable equipment of sufficient capacity after first checking the weight of the configurations (paragraph 4.1).

Check the stability and positioning of the load on the forklift truck forks or crane hook.

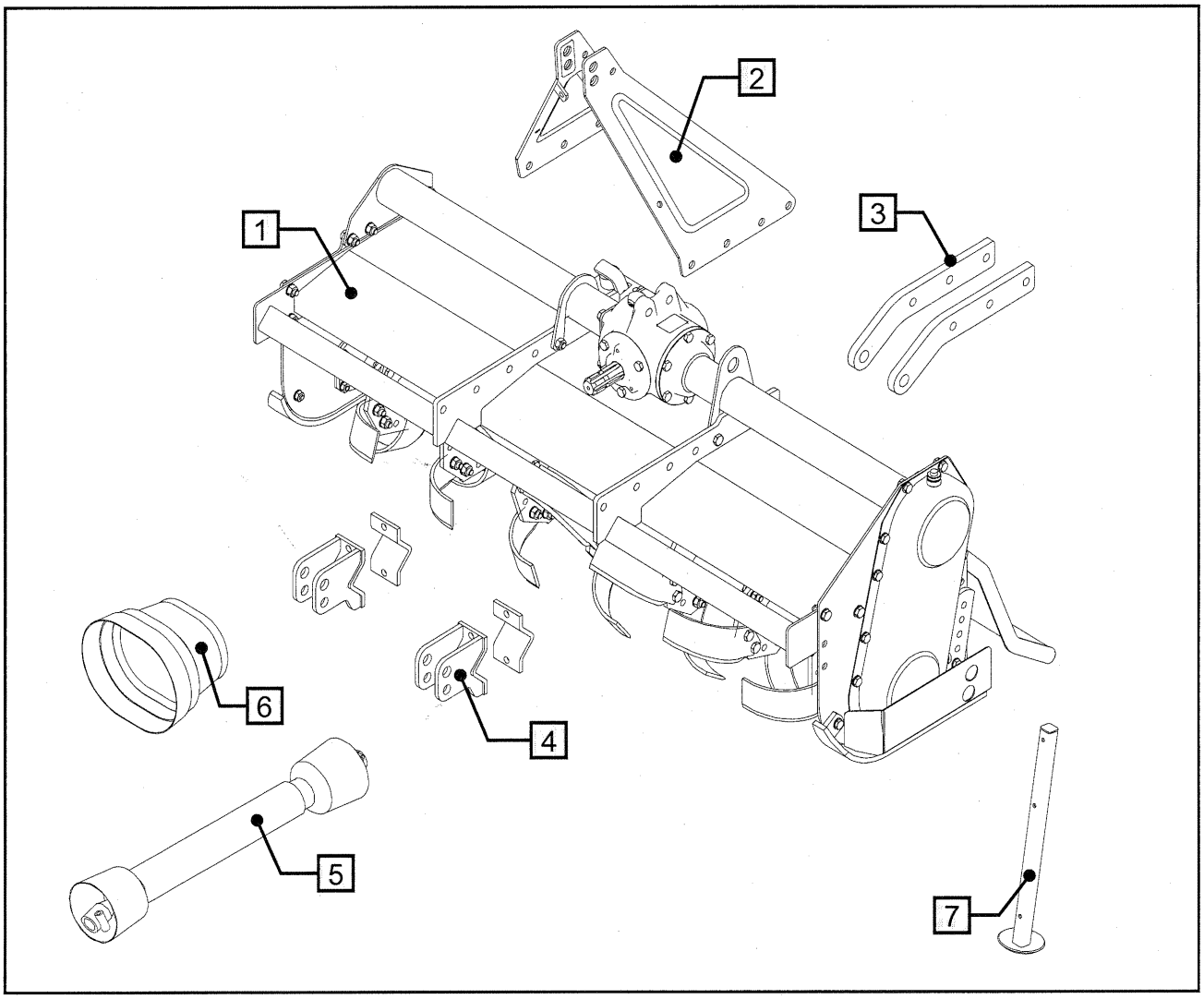
Keep the load as low as possible during movement for maximum stability and to ensure that the operator has maximum visibility.

If a forklift truck is used, ensure that the forks are positioned as wide apart as possible.

NOTE Slightly different packaging from those represented may occasionally be used, depending on the methods of transport or handling.
The packing consists mainly of wood, which should be disposed of according to the laws in force in the country where the machine is used. The plastic film should also be disposed of according to the laws in force in the country where the machine is used.
In the case of further transportation, make sure the machine is well secure on the transport means.

The unpacked machine is composed of the following parts:

ITEM	Description	Q.ty		
		RH2	RH4	RH6
1)	Machine assy	1		
2)	3 point hitch	1 RH – 1 LH		
3)	Lower tractor brackets	2	-	-
4)	Lower tractor brackets	-	2	2
5)	Cardan shaft	1		
6)	Protective cap	1		
8)	Parking stand	1		
9)	Bag of accessories	1		



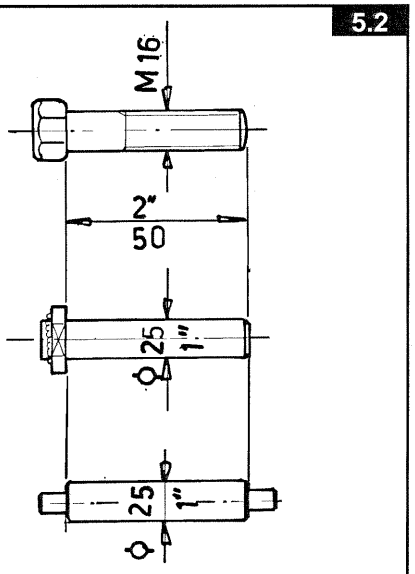
5.2 TECHNICAL NOTES

We will provide a few examples to make it easier to choose which of the various accessories to use for each step of assembly. An approximate equivalent of the metric measurements is given in inches.

5.2.1 PINS AND SCREWS see pict. 5.2

Example: a pin with a 25 mm (1") diameter and a screw with an M 16 (5/8") diameter, both 50 mm (2") long, will be listed as:
D 25 x 50 (D 1" x 2") and M 16 x 50 (D 5/8" x 2").

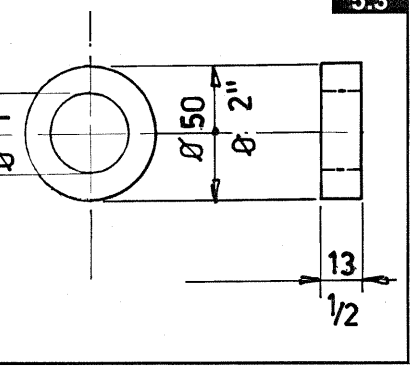
5.2



5.2.2 SHIMS, SPACERS, BUSHINGS AND WASHERS see pict. 5.3

Example: a shim, spacer, bushing or washer with an inside diameter of 25 mm (1"), outside diameter of 50 mm (2") and thickness or length of 13 mm (1/2") will be listed as:
D 25 - 50 x 13 (D 1" - 2" x 1/2").

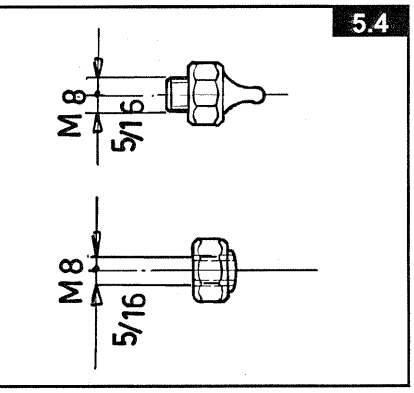
5.3



5.2.3 NUTS, GREASE NIPPLES see pict. 5.4

Example: a nut or grease nipple having a thread of M 8 (5/6") will be listed as:
M 8 (5/16")

5.4



5.3 CONVERSION TABLE METRIC-INCHES

mm	inches	mm	inches	mm	inches	mm	inches
1	1/32	26	1" 1/64	55	2" 5/32	300	11" 51/64
2	5/64	27	1" 1/16	60	2" 23/64	350	13" 49/64
3	7/64	28	1" 3/32	65	2" 35/64	400	15" 47/64
4	5/32	29	1" 9/64	70	2" 3/4	450	17" 45/64
5	3/16	30	1" 11/64	75	2" 15/16	500	19" 43/64
6	15/64	31	1" 7/32	80	3" 9/64	550	21" 41/64
7	17/64	32	1" 1/4	85	3" 11/32	600	23" 39/64
8	5/16	33	1" 19/64	90	3" 17/32	650	25" 37/64
9	11/32	34	1" 21/64	95	3" 47/64	700	27" 35/64
10	25/64	35	1" 3/8	100	3" 59/64	750	29" 33/64
11	27/64	36	1" 13/32	110	4" 21/64	800	31" 31/64
12	15/32	37	1" 29/64	120	4" 23/32	850	33" 29/64
13	1/2	38	1" 31/64	130	5" 7/64	900	35" 27/64
14	35/64	39	1" 17/32	140	5" 1/2	950	37" 25/64
15	37/64	40	1" 9/16	150	5" 57/64	1000	39" 23/64
16	5/8	41	1" 39/64	160	6" 19/64	1050	41" 21/64
17	21/32	42	1" 41/64	170	6" 11/16	1100	43" 19/64
18	45/64	43	1" 11/16	180	7" 5/64	1150	45" 17/64
19	47/64	44	1" 23/32	190	7" 15/32	1200	47" 15/64
20	25/32	45	1" 49/64	200	7" 55/64	1250	49" 13/64
21	13/16	46	1" 51/64	210	8" 17/64	1300	51" 11/64
22	55/64	47	1" 27/32	220	8" 21/32	1350	53" 9/64
23	57/64	48	1" 7/8	230	9" 3/64	1400	55" 7/64
24	15/16	49	1" 59/64	240	9" 7/16	1450	57" 5/64
25	31/32	50	1" 61/64	250	9" 53/64	1500	59" 3/64

5.4 ASSEMBLY SEQUENCE

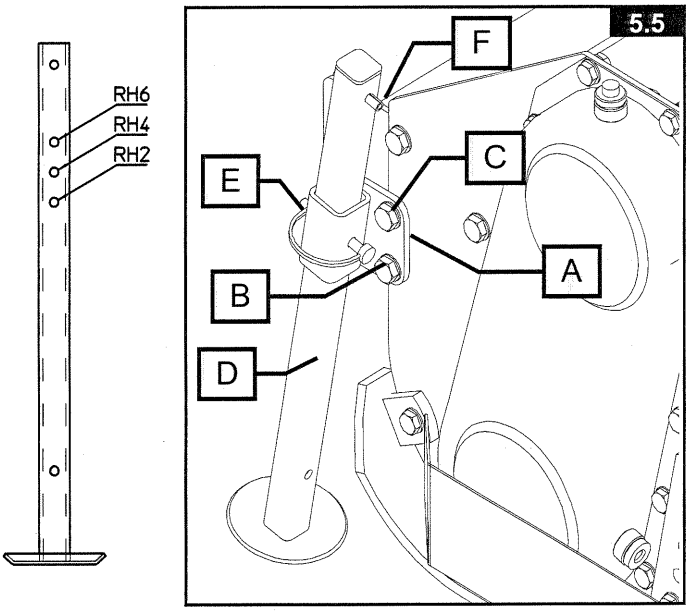
5.4.1 see pict. 5.5

DANGER !!!

The machine is not stable until parking stand is mounted. Be careful in order to avoid the risk of overturning during mounting operation.

Mount parking stand support A with screws B and nuts
Mount parking stand D inside support A and stop with spring pin F.
Use pin E into hole indicated with RH2-RH4-RH6 for each machine model to make parking position.

Item	description	
B	screw M12x25	n° 1
C	screw M12x30	n° 1
E	pin ø8x45	n° 1
F	spring pin ø8x50	n° 1



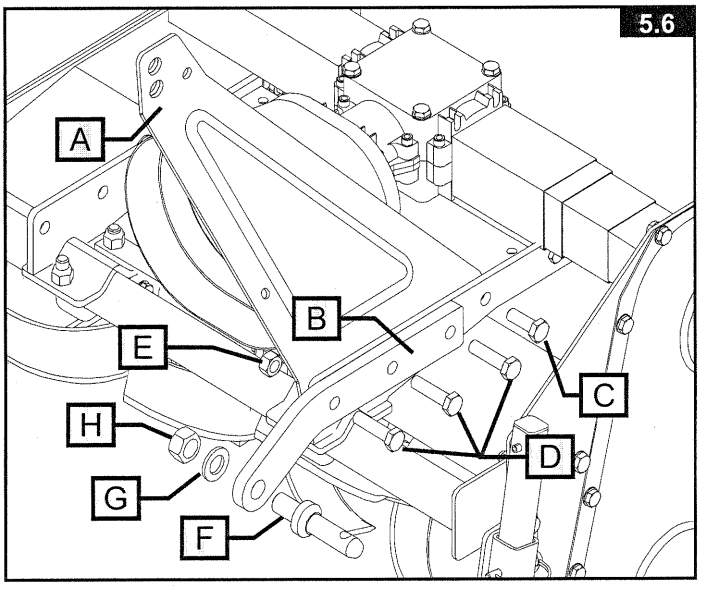
5.5

5.4.2 RH2 model (see pict. 5.6)

CAUTION

Mount 3° point hitch plate A and support B with screws D,C and nuts E.
Do not fully tighten the screws.
Repeat the same operation on the other side
Mount spacer D as indicated in pict. 5.7 with screw and nut C.
Now fully tighten the all screws.

Item	description	RH2
C	screw M14x35	n° 2
D	screw M14x50	n° 6
F	pin ø22x120	n° 2
G	grower ø23	n° 2
H	nut M22x1.5	n° 2



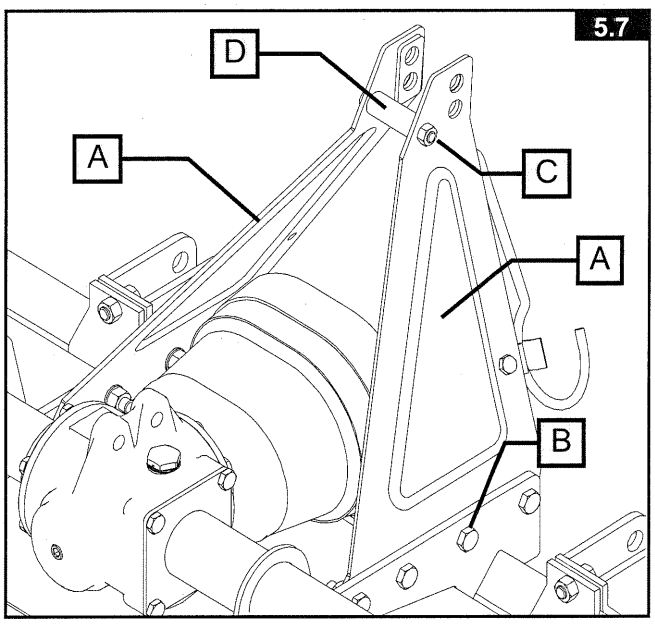
5.6

5.4.3 RH4-RH6 model (see pict. 5.7)

CAUTION

Mount 3° point hitch plates A with screws B and nuts.
Do not fully tighten the screws.
Mount spacer D as indicated with screw and nut C.
Now fully tighten the all screws placed.

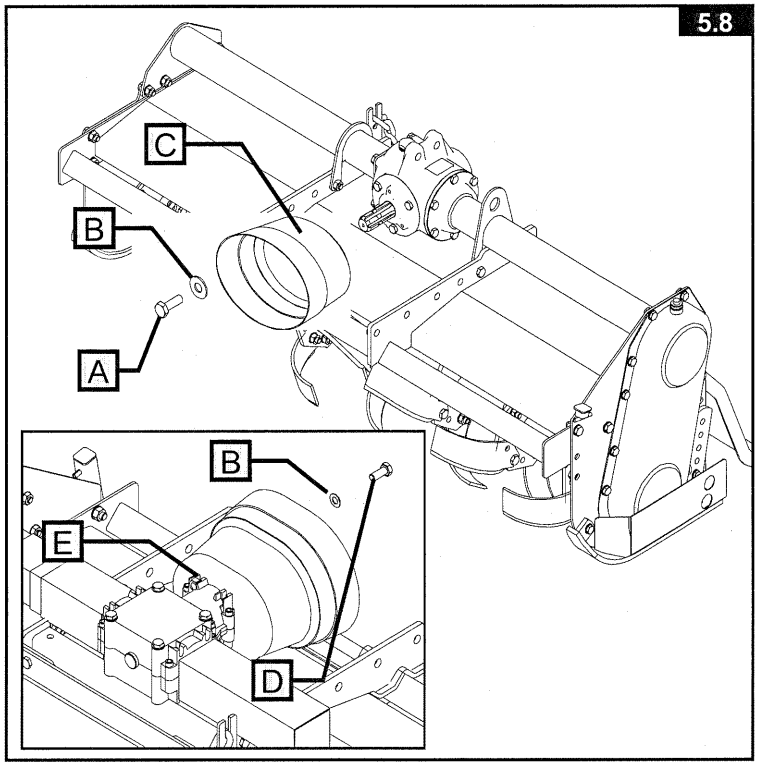
Item	description	RH4	RH6
B	screw M14x35	n° 8	n° 8
C	screw M12x90	n° 1	
	screw M14x95		n° 1
D	bush ø25x65	n° 1	
	bush ø30x65		n° 1



5.4.4 see pict. 5.8

Mount protection hood C with screws A and washer B.
For RH2 model use screws D, washer B and nuts E.

Item	description	RH2	RH4-RH6
A	screw M8x16		n° 3
B	washer ø9	n° 2	n° 3
D	screw M8x25	n° 2	
E	nut M8	n° 2	

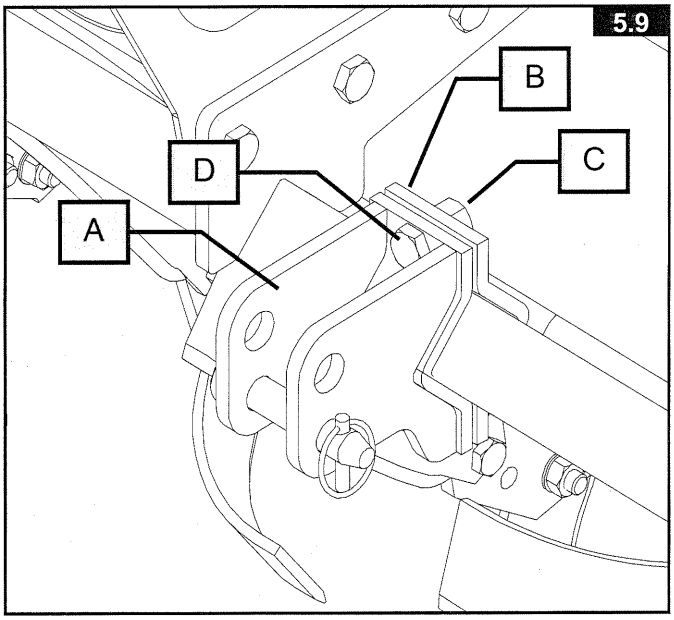


5.4.5 see pict. 5.9

CAUTION

Mount support A with counter-bracket B and fasten with screws D and nuts C.
To position the supports see paragraph 6.7.

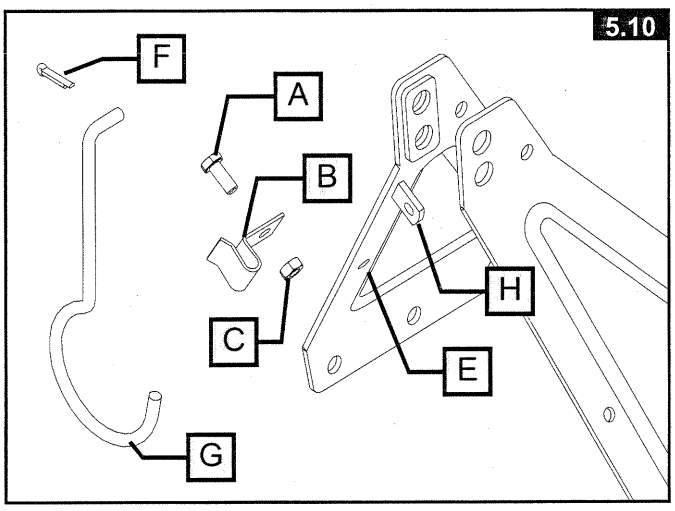
Item	description	RH4	RH6
D	screw M14x35	n° 4	n° 4
C	nut M14	n° 4	n° 4



5.4.6

Mount spring hook B with screws A and nut C into hole E.
Mount spring pin F to cardan hook G and insert the other tip of hook G into hole H and position it as fig. 5.7.

Item	description	
A	screw M10x20	n° 1
C	nut M10	n° 1
F	spring pin ø3.5x18	n° 1



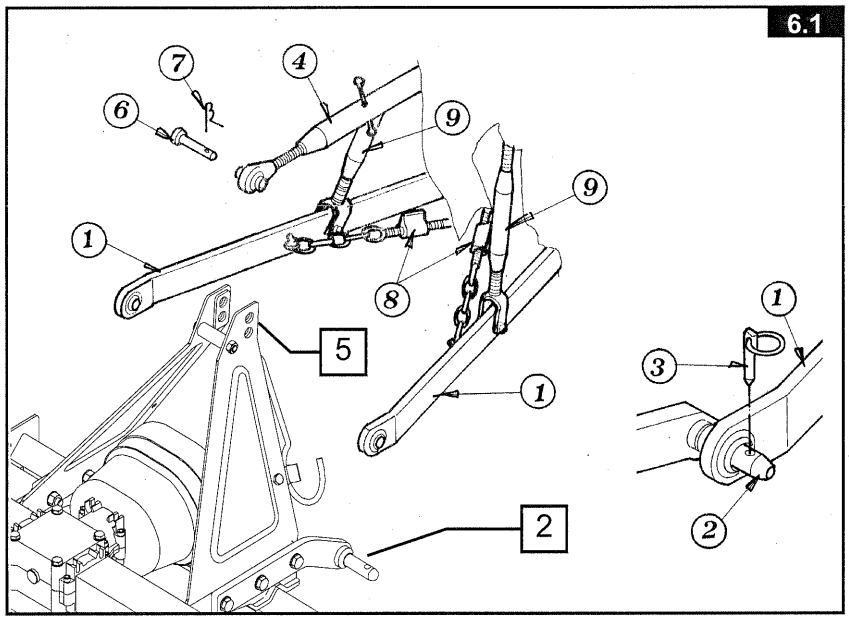
SECTION 6 ADJUSTMENT, PREPARATION AND USE

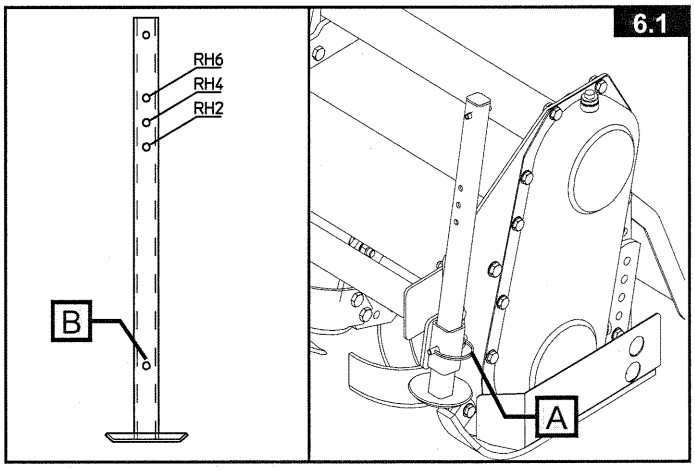
6.1 INTRODUCTION

1) Connection to the tractor is highly dangerous. Take great care and carry out the entire operation in strict compliance with the following instructions.
2) Nobody should go near the area between the tractor and the machine.
3) Check that all warning and danger signs are in place and legible.
4) Check that the tractor is in good running order.
5) Check the engine oil, gearbox oil, brake fluid and cooling water levels as well as the tire pressures.
6) Refer to the tractor operator's manual.

6.2 MOUNTING TO THE TRACTOR (see pict. 6.1)

Bring the tractor close in reverse and check that the transport arms of the tractor 1 are aligned with the pins 2. Turn off the tractor, apply the parking brake and remove the key from the ignition.
Fit the joints at the tips of the arms 1 on to the pins 2 and secure them with the split pins 3.
Connect the tractor's 3-point hitch 4 to the machine's 3-point hitch 5 using pin 6 and split pin 7. Adjust the tie rods 8 so that lateral oscillation of the machine is limited: it is advisable to maintain a lateral oscillation of about 50 mm (2").
By adjusting the arms 9, level the machine with the ground.
Fix the upper rod 4 to the three-point hitch 5 and adjust it until the axle of machine is vertical to the ground.
When the machine is completely attached to the tractor, raise parking stand as indicated in fig.6.1 using pin A into hole B for each machine model.





6.3 CONNECTING THE CARDAN SHAFT

More detailed information may be found in the Cardan shaft manual which, together with this manual, is an essential part of the accident-prevention documentation.

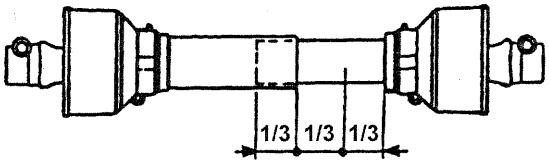
DANGER !!!

It is your responsibility to read and comply with this documentation. If information given in this manual should conflict with that given in the Cardan shaft manual, you should follow the instructions given by the Cardan shaft manufacturer.

Fit the Cardan shaft and check that the shaft is connected correctly both at the tractor end and at the machine end. For more details, see the descriptions on the following pages. If a safety system is provided, this should be fitted to the machine end, not to the tractor end.

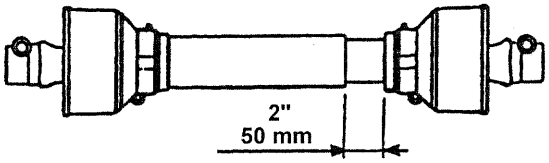
During both transport and use, avoid conditions where the Cardan transmission shaft is extended to the maximum. In all working conditions, the telescopic tubes must overlap by at least 1/3 of their length (see pict.6.2).

6.2



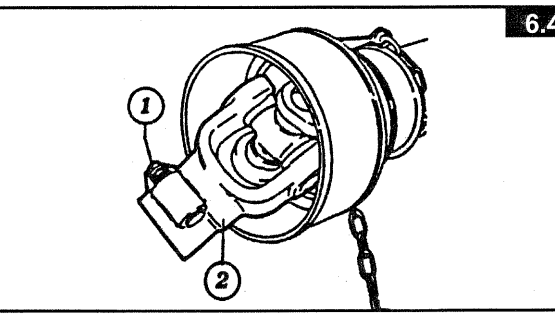
Conversely, when the Cardan shaft is contracted to the maximum, there should still be a gap of approximately 50 mm (2") (see pict. 6.3).

6.3

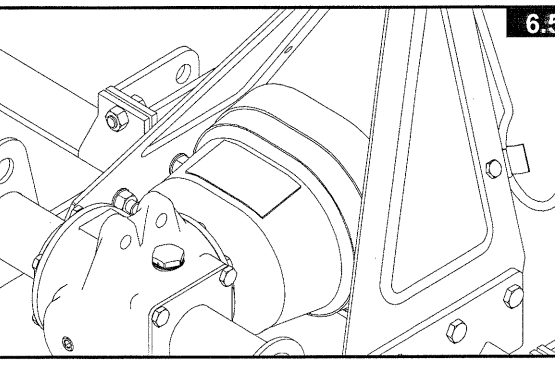


Take particular care when connecting the two Cardan shaft end forks and make sure that they are fully secured. This is achieved by inserting the safety pins and bolts 1 (see pict. 6.4) in the special slots 2 on the power takeoff shafts on both the tractor and machine ends. Use opening on the protective hood (see pict.6.5) to easily fit the shaft end fork with friction disks clutch.
A loose shaft could come apart and cause considerable mechanical damage and serious injury to persons.

6.4



6.5



IMPORTANT

The driveline may be equipped with safety systems able to eliminate the power overload. The machine will therefore be safeguarded from damage even if it encounters excessive resistance during work. The following safety systems can be mounted:

- torque limiter with shear bolt;

- clutch with friction disks;

The user must keep these systems in an efficient condition and ensure that they are always functional. Consult the driveline use and maintenance manual for instructions on how to install and service these safety systems.

6.4 TRANSPORT BY ROAD

After the machine has been attached to the tractor as previously described and before transporting it to or from fields or any other workplace, the following instructions should be heeded:

⚠ CAUTION ⚠

Before setting off with the machine attached to the tractor, check the local road transport regulations. During transport keep the machine fully raised with the power takeoff disengaged and the lifting unit immobilized.

Check that all guards, safety protection and locking split pins are in place, functioning and correctly fitted.

Ensure that nobody leans against, or climbs on to, the machine during transport. The machine is an agricultural machine *NOT designed for transporting persons or goods*. Consult the tractor maintenance and-use manual where necessary. Maintain constant control over the vehicle and ensure that you know how to stop the tractor quickly and switch off the engine.

When on a public road, observe all Highway Code regulations. Drive near the edge of the road and try not to obstruct traffic.

Do not park the tractor and/or the machine where it might obstruct, or be a danger to, any public right of way. Avoid going onto a public road if the tractor or machine is very dirty - you could leave a trail of soil, grass and other matter which could dirty the road and obstruct normal traffic.

6.5 GENERAL INSTRUCTIONS FOR FIELD USE

Before starting work, familiarize yourself with the following general instructions:

⚠ CAUTION ⚠

Before using the machine ensure that all safety precautions are taken.

Check that all safety protection and guards are in place and working.

Inspect the work site in order to familiarize yourself with the terrain.

Do not start the tractor before being properly seated in the driving position.

Do not start the machine if it is damaged (or even if you only suspect it is damaged) and inform your nearest dealer of the problem and ask for assistance.

Do not allow yourself to become distracted when working: give your full attention to the job in hand.

Maintain constant control over the tractor and ensure that you know how to stop quickly and switch off the engine.

Caution when working on inclines. It is better to work from the bottom to the top of an incline (or from the top to the bottom), rather than across an incline where there is a risk of overturning. Check and heed the instructions supplied by the tractor manufacturer, especially those concerning the maximum incline on which it is possible to work.

It is advisable to reduce speed when working and maneuvering on inclines and only to change speed and direction gradually. Do not make sudden stops or starts.

Do not work on wet or slippery grass or terrain, or anywhere where grip is poor. If this is unavoidable, work at a slow speed so as to ensure operator safety.

Always switch off the tractor engine, apply the parking brake and remove the ignition key whenever you have to attend to the machine to make adjustments or to remove grass and other objects which might be entangled in the machine.

Before leaving the tractor, disengage the power takeoff, lower the machine until its wheels are on the ground and put the hydraulic directional control lever into the locked position.

Never go near the rotors until they have completely stopped moving.

Never attempt to make adjustments to the machine while it is running. Always stop the machine before carrying out any such work. Do not oil the machine when it is running or is connected to the power takeoff.

Do not use the control levers as handholds since they can move and do not give a secure grip. Furthermore, any involuntary movement of a control lever can cause unintentional movement of the tractor or machine.

6.6 GENERAL INSTRUCTIONS FOR USE

6.6.1

In addition to the instructions given above, each time you have to make adjustments before and during work, we recommend moving the tractor and machine to a firm, flat open area.
Before getting off the tractor to make adjustments, follow this procedure exactly:

1) Lower the machine until it touches the ground (this is recommended every time the tractor is stopped for any reason).
2) Put the hydraulic directional control lever on the tractor into the locked position.
3) Switch off the engine, leaving the tractor in gear.
4) Apply the parking brake (see pict. 6.11).
5) Remove the ignition key from the instrument panel.

Now prepare the machine for field use as indicated below.

6.6.2 PRELIMINARY CHECK

Before using the machine, check the level of the lubricant in the gearbox and side casing. Top up with oil of the same type if necessary. Also check that the right support of the rotor roller (paragraph 7.1) has been adequately greased. Consult paragraph 7.6 for the required type of lubricant.
Check that the blades of the rotor roller and leveling roller are free from foreign bodies.
Very worn or broken blades must be replaced.
Check that all warning and danger stickers are installed and legible. Replace them if necessary.

⚠ WARNING !!! ⚠

Always be careful to check that the power rating of the tractor used to tow the implement does not exceed the maximum power rating for the model in your possession (consult table 4.1).

Check that the P.T.O. speed conforms with the speed required by the machine.
Compare the values given near the P.T.O. shaft of the machine.

IMPORTANT

Comply with the instructions in given in this paragraph in order to prevent early faults and damages to the implement.

6.6.3 ADJUSTING THE WORK DEPTH (see pict. 6.6)

DANGER !!!

The following procedures must be carried out after the machine tool has been disconnected from the tractor. If interventions must inevitably be carried out while the machine tool is still attached to the tractor, proceed as follows:

- disengage the power takeoff;

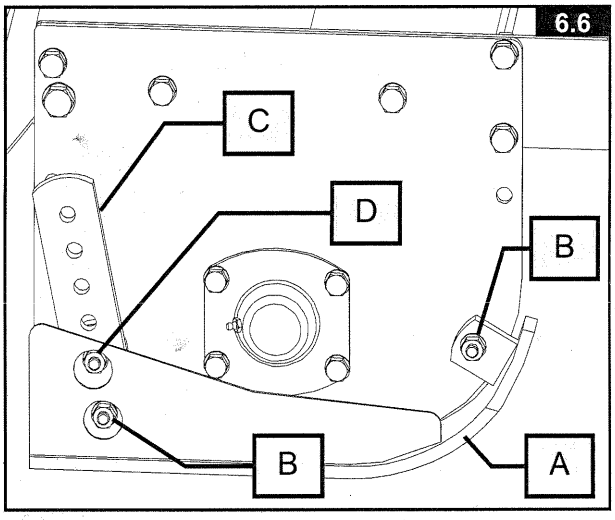
- insert the brake;

- turn off the tractor engine;

- remove the ignition key from the dashboard.

Never near the limbs to the moving knives. Wait until they have completely stopped.

The work depth is established by regulating skids A. Loosen bolts B and remove bolt D, then move along slot C to lower the skids (lower work depth) or to raise them (deeper work depth).
Fully tighten bolts B and D after having adjusted the work depth.



IMPORTANT

Make the same adjustment on both sides to obtain the same work depth. Make sure that the work depth does not exceed the length of the blades when tilling since this would impair the system.

CAUTION

When lifting the machine from the soil, check that the driveline cannot touch any of its parts.

6.6.4 USE OF THE MACHINE

The rotary tiller is used to crumble the soil and to prepare it:

1) for seeding;

2) in order to bury grassy residuals in ploughed soil or soil which has been subjected to a first working process;

3) on compact soil.

The rotary tiller is not generally suitable for work on stony soil. A few small stones are usually tolerated and will create no difficulties.
On the other hand, working on excessively stony soils can damage the knives and the machine itself. Such use will also void the guarantee.

DANGER !!!

Before working with the machine, always check that all the safety shields listed in paragraph 4.2 are installed, correctly mounted and efficient.

Failing this, stop the rotary hoe and replace or repair the damaged shields.

Never continue work until all the shields installed by the manufacturer are efficient.

Contact your nearest after-sales service center if necessary.

Always make sure to check that there are no adults, children or animals in the vicinity before beginning work with the machine.

Always check that the work area is free from any objects that could be hit or broken and thrown up by the knives.

Check that no one enters within the field of action of the machine and always work at a safe distance from roads, built-up areas or places frequented by persons.

Make the height adjustments described in paragraph 6.6.3. Check that all oil supplies are at the correct level and grease all required points.
Always become familiar with machine use before working with the implement.
Make sure that you know how to quickly stop the work operations.
- Lower the lift until the knives are near the ground without touching it.
- Engage the pto.
- Completely lower the tractor lift.

IMPORTANT

Do not allow the machine to drop violently on to the ground. Lower it slowly to allow the knives to gradually cut into the soil.

Violently impact would strongly stress all machine components and could cause serious damages.

During work, the lift must always be fully lowered with the draft control and position devices disengaged so that they are unable to influence the work depth of the machine.

This should only be regulated by means of the devices on the machine itself.

Accelerate the tractor by depressing the accelerator pedal to about half its travel and then engage the pto.
Advance with the tractor, setting the pto to the required rpm rate (usually 540 or 1000 rpm).
The forward speed of the tractor must be chosen according to the type of soil and the degree to which this must be crumbled. Optimum work speeds will be between 1,5 and 2,5 Km/hour (1 to 2 mph).
The maximum forward speed able to guarantee satisfactory work is generally the best. To identify this opti-

mum speed, first select the lowest gear and progressively increase until the correct speed able to produce the most satisfactory result has been identified.
Gear down and do not release the accelerator if the speed is too fast.

IMPORTANT

The slower the machine advances during work, the more the soil will be crumbled.

Always raise the implement from the ground during manoeuvres, round bends and when reversing.

After having worked for a few meters, stop and check whether the desired result is being obtained. Make any adjustments which may be necessary and then continue with the job. The worked soil should always be kept to the driver's right.

DANGER !!!

Whenever adjustments must be carried out on the machine tool, always turn off the tractor, remove the ignition key from the dashboard, and insert the brake.

Never move the limbs near to the spinning blades. Wait for them to stop.

CAUTION

Do not reverse with the machine unless this is strictly necessary. In these cases, disengage the PTO, lift the implement from the soil and make sure that the manoeuvres area is clear.

Never lift the implement more than 250 mm from the ground with the pto engaged or the driveline could break and risk injury to the operator.

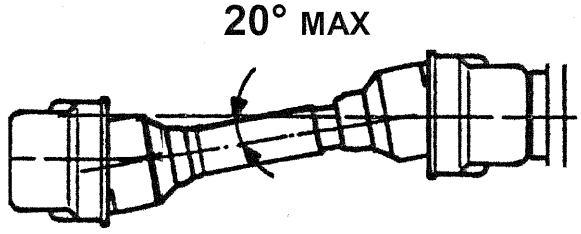
The maximum tilt the driveline can bear with the pto engaged is 20° (see pict.6.7) a greater inclination may cause strong vibrations and/or breaks.

DANGER !!!

It is strictly forbidden to lean on and/or climb on to the machine during the work or transport phases.

The machine is an implement. It is NOT designed to carry persons or property.

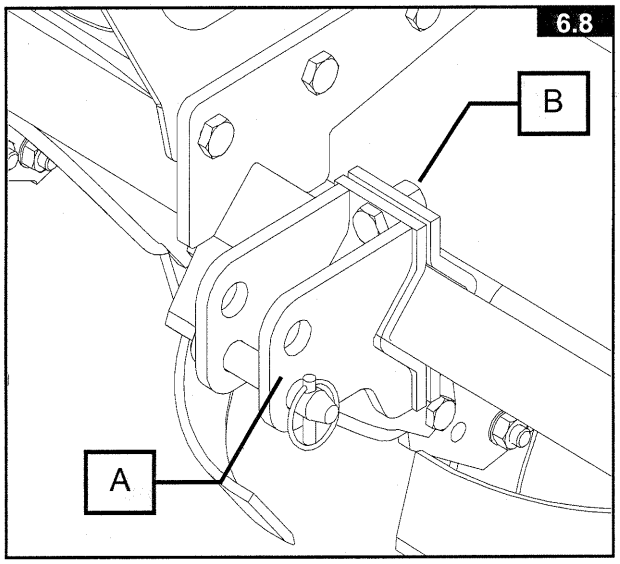
6.7



6.7 SIDE MOVEMENT OF THE ROTARY TILLER

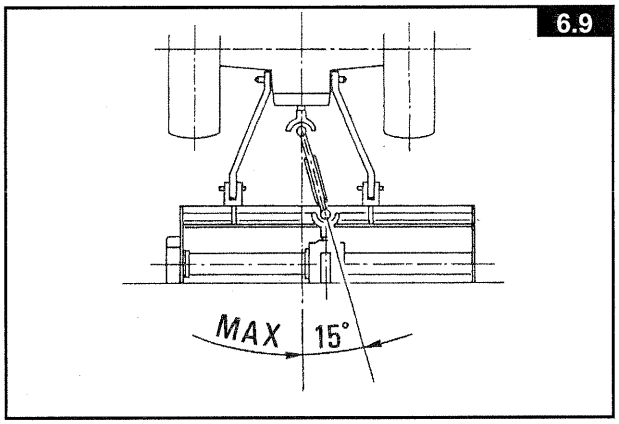
6.7.1 ROTARY HOES WITH MOBILE COUPLINGS (see pict. 6.8)

Make the side movements with the machine uncoupled from the tractor. Make sure that the machine is firmly resting on the ground.
To facilitate the process, certain types of rotary tiller are equipped with mobile couplings so that it can be shifted to the right or left of the tractor.
- Slacken off nuts B of mobile coupling A
- Move mobile couplings A to the desired position and lock them in place by fully tightening nuts B.



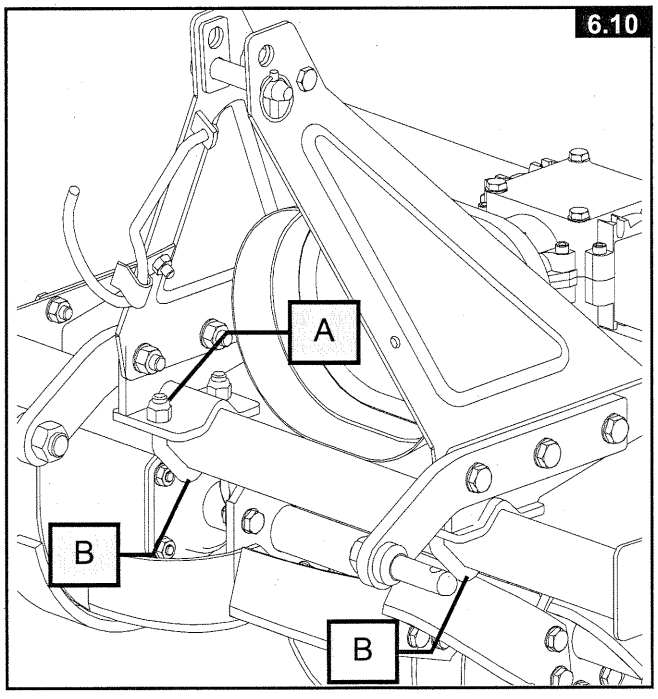
IMPORTANT

After having moved the mobile couplings, make sure that the driveline is not tilted more than 15° (see pict. 6.9).



6.7.2 ROTARY TILLER WITH THREE-POINT LINKAGE AND MANUAL MOVEMENT (see pict. 6.10)

This model of rotary tiller can work shifted from the tractor axis maintaining the driveline meshed with the tractor PTO.
Proceed in the following way to shift the rotary tiller sideways:
- loosen nuts A of forks B without completely unscrewing them.
- Manually push on the three point linkage to shift the unit to the desired position, then fully tighten the nuts A.
Some models have a crank to make the three point linkage easier to move.

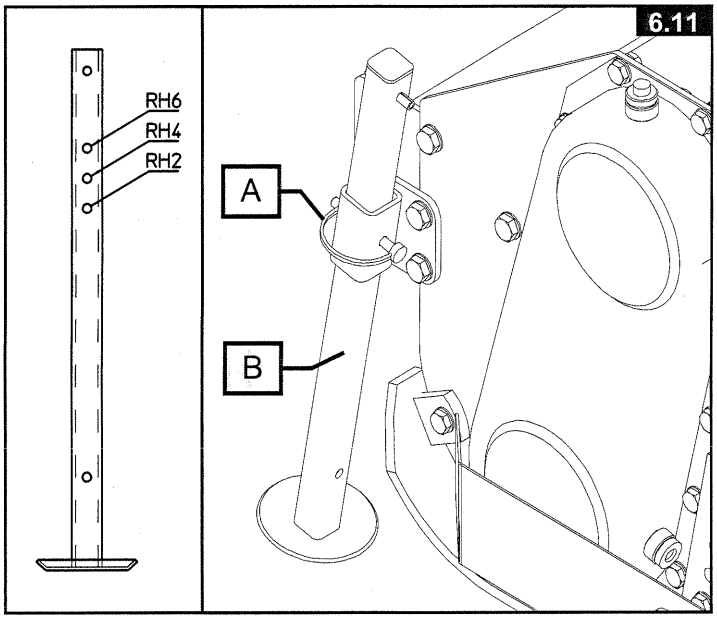


6.8 DEMOUNTING THE IMPLEMENT FROM THE TRACTOR

- Disengage the pto. Set the implement on a flat surface. Stop the tractor and engage the parking brake.
- Rest the machine on the ground.
- Switch off the tractor engine.
- Remove the ignition key from the dashboard.
- Remove the driveline.
- Detach the implement from the tractor by disconnecting the three-point hitch.
- Carry out the operations described in paragraph 6.2 in reverse.
- Use pin A (pin ø8x45) into hole indicated with RH2-RH4-RH6 for each machine model to place the parking stand B.

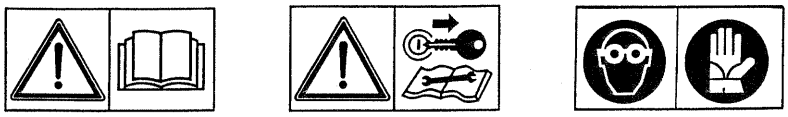
DANGER !!!

The machine is not stable until parking stand is mounted. Be careful in order to avoid the risk of overturning during operation.



SECTION 7 MAINTENANCE

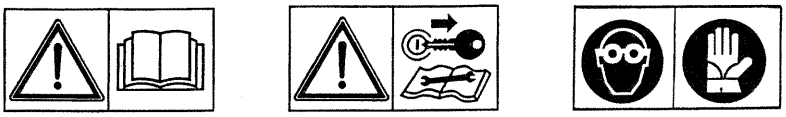
7.1 MAINTENANCE DIRECTIONS



DANGER !!!

All cleaning, lubrication and maintenance operations must be carried out with the machine disconnected from the tractor. In an emergency with the machine still connected to the tractor, switch off the engine, apply the parking brake, disengage the power takeoff and remove the ignition key from the instrument panel.
Regular, correct maintenance and proper operation are the basic prerequisites for the long-term efficiency and safe operation of the machine.
Pay special attention to all instructions given on signs located on the machine.
All maintenance should be carried out in an area having the proper equipment readily available and in good condition. This area must always be kept clean and dry and must, have enough surrounding space to facilitate operations.
Any work must be carried out by trained personnel. Contact the dealer nearest to you.
Respect the warnings and procedures for maintenance and technical assistance given in this manual.
Do not use petrol, solvents or other flammable liquids as deterrents.
Use commercial non-flammable and non-toxic solvents, authorized by competent bodies.
Do not use compressed air or water at high pressure to clean the machine. If this is unavoidable, then wear goggles with side protection and limit the pressure as much as possible. When the work is finished, and with the machine disconnected from the tractor, inspect and check the machine completely.

7.2 REPAIR INSTRUCTIONS



DANGER !!!

Any repair work must be carried out with the machine at rest and disconnected from the tractor.
Do not carry out welding without authorization and instructions from the manufacturers.
Disconnect the machine from the tractor before any welding work in order not to damage the battery.
Always use a protective mask, goggles and gloves when welding, sanding or grinding or when using a hammer or drill.
Always work on the machine out of doors. If you have to operate the machine when connected to the tractor in an enclosed area (for example when testing after repair and/or maintenance), ensure that there is sufficient ventilation so as to prevent noxious exhaust gases accumulating.
In order to acquire the necessary control and to operate in safety, practise various manoeuvres by simulating those required in the workplace with the help of an experienced person.
If you activate the machine while it is raised from the ground, make sure there is nobody standing nearby or in a dangerous position.

7.3 LAYING UP FOR EXTENDED PERIODS

At the end of the season, or when an extended period of inactivity is envisaged, it is advisable to:

a) Clean the machine following instructions and allow it to dry.

b) Check it carefully and replace any damaged or worn parts.

c) Thoroughly tighten all screws and bolts.

d) Grease the machine thoroughly and then cover it completely and lay it up in a dry place.

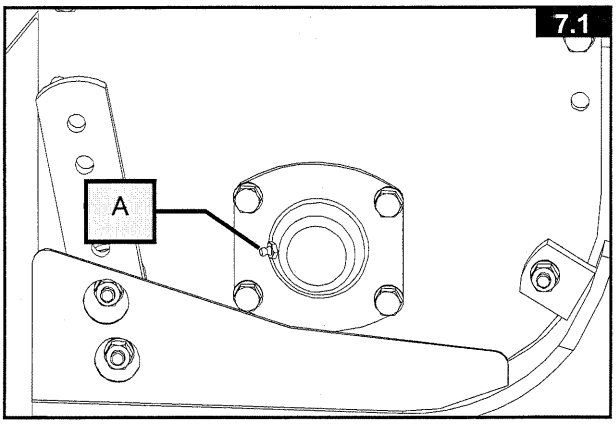
It is to the user's advantage to carry out these operations carefully. In this way, he will have a machine in perfect condition when work is restarted.
On recommencing work, repeat all the proper checks so as to be certain of working in conditions of maximum safety.

7.4 MAINTENANCE AND TESTING

These frequencies may be varied according to the type of work, the weather conditions, the texture and dust content of the soil.
If the machine is used in heavy duty conditions, the maintenance operations must be carried out more frequently.
Thoroughly clean the lubricators before injecting grease. This will prevent impurities from penetrating the various components.
Make sure that the oil used to top up the supply is the same type as that by the manufacturer.

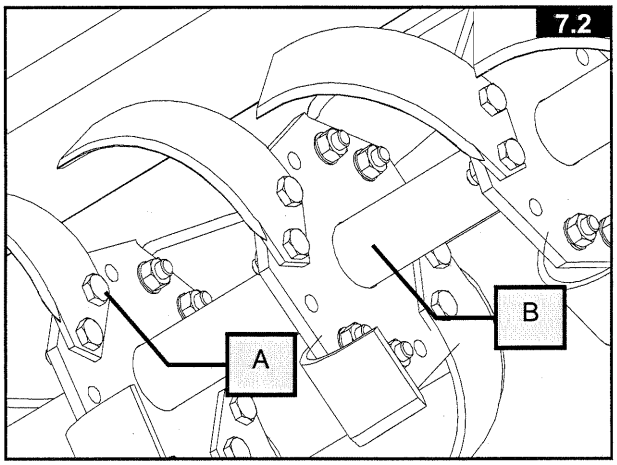
7.4.1 see pict. 7.1 Grease the right support

Grease the right support of the rotor using the grease nipple A (see table 7.6).



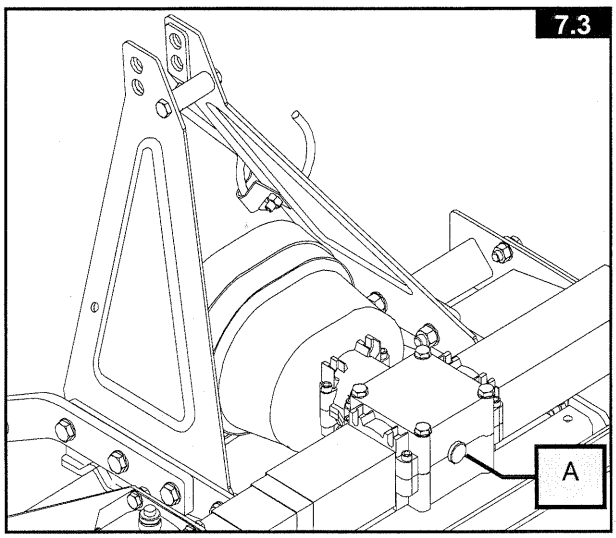
7.4.2 see pict. 7.2 Testing blade rotor

Check that the bolts A that lock the blades to rotor B are well tightened.
Check the knives for wear. Replace them if necessary,
Check that all nuts and bolts are fully tightened, particularly the bolts of the gearbox of the machine.
The tightening torque is 127 Nm (93.5 foot pounds).



7.4.3 see pict. 7.3 (RH2 model)

Put grease into gearbox through plug A.
(see table 7.6).

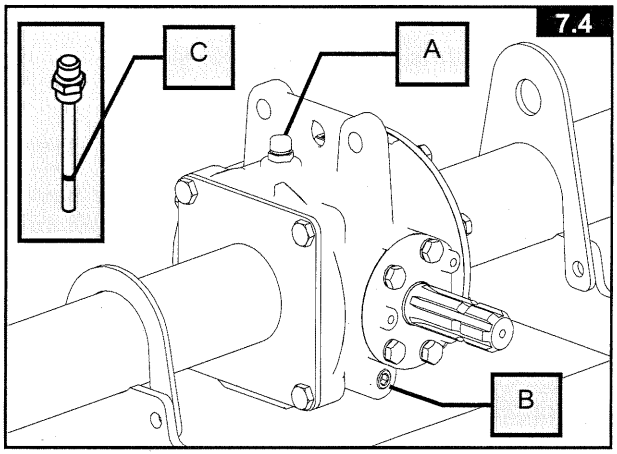


7.4.4 see pict. 7.4 Versions with a dipstick

Check the level of the lubricant in the gearbox through the inspection plug A and top up to the mark C on the rod if necessary (see table 7.6).
The draining oil plug is B.

IMPORTANT

The oil level must be checked with the machine standing on a flat surface and after it has been left at a standstill for at least 10 minutes.

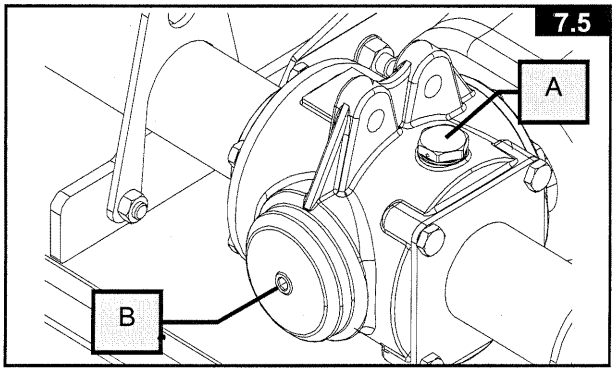


7.4.5 see pict. 7.5 Versions without a dipstick

Check the level of the lubricant in the gearbox through the inspection of the hole of level plug B: the oil must reach the lower edge (see table 7.6).
To drain oil use plug B again.
Demount the rear hood (fig.4.1 item 8) to incline the machine backward and then unscrew plug B to drain oil.

DANGER !!!

Be careful in order to avoid the risk of over-turning



7.4.6 Side transmission oil

Check the level of the oil in the side transmission housing (see table 7.6).
Remove level plug B and check that the oil reaches the lower edge of the plug housing.

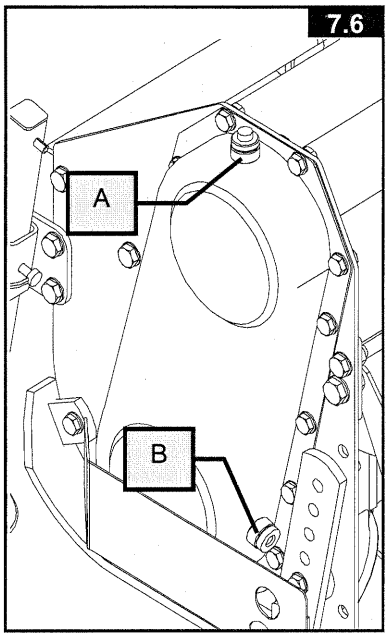
IMPORTANT

The oil level must be checked with the machine standing on a flat surface and after it has been left at a standstill for at least 10 minutes.

If necessary, top up the level through plug A, using oil with the characteristics specified (7.6).
Demount the skid as indicated in fig 6.6 to work easily.
To drain oil use plug B again.
Demount the rear hood (fig.4.1 item 8), then unscrew plug B and to drain oil incline the machine backward.

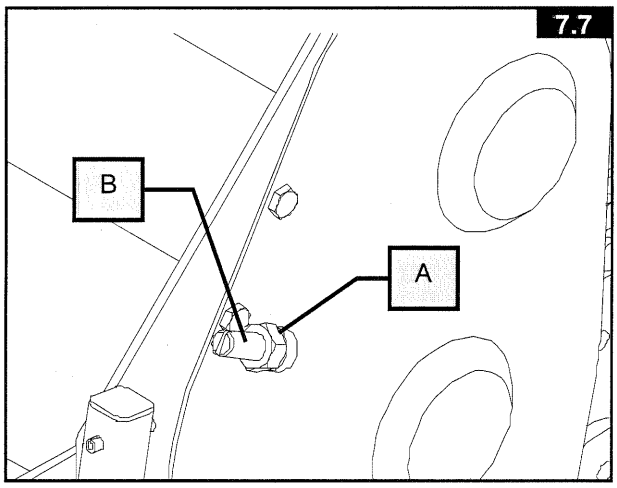
DANGER !!!

Be careful in order to avoid the risk of over-turning



NOTE Since the oil heats, the gearbox may reach a rather high temperature during work and its outer surface may become "hot" to touch.
This is normal and will cause no damage. It is, however, important to always check that the oil is at the correct level and of the indicated type (see table in paragraph 7.6)

see pict. 7.7 Side transmission chain



DANGER !!!

The chain must be tightened only after having turned off the tractor engine, removed the ignition key from the dashboard, inserted the brake and disengaged the power takeoff.

The tension of the side transmission chain will need to be periodically regulated. Proceed in the following way:

1) slacken off check nut B of chain tension idler A a few turns.
2) Tighten idler B by hand as far a possible, meanwhile using the other hand or a foot to turn tool rotor (item 6 fig 4.1).
3) Having obtained the maximum possible tension with the hands alone, unscrew idler B one turn, then keep it in this position by tightening lock nut A.
4) Turn the rotor several times by hand to check that it rotates without encountering excessive resistance. If the rotor jams in a certain point, repeat the chain tensioning procedure from the beginning.

7.4.7 see pict. 7.8 Changing the hoe blades

DANGER !!!

The following operations must be carried out with the machine uncoupled from the tractor.

If interventions must inevitably be carried out while the machine tool is still attached to the tractor, proceed as follows:

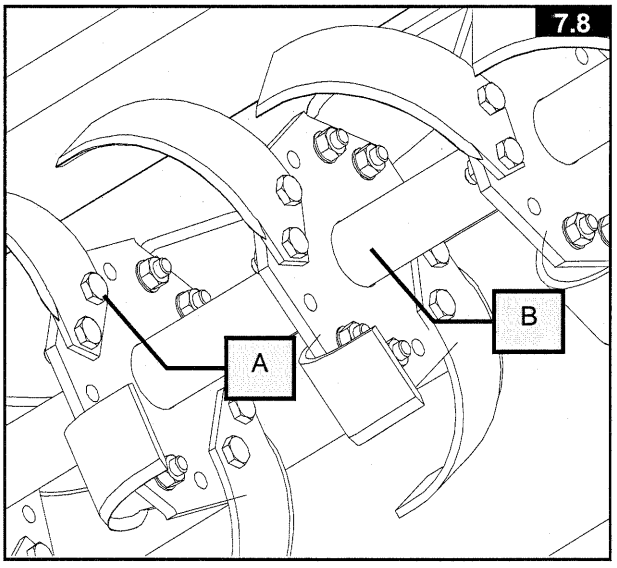
- disengage the power takeoff;

- insert the brake;

- turn off the tractor engine;

- remove the ignition key from the dashboard.

Sufficiently lift the machine so that the operation can be carried out and support it on rigid supports in order to work in safety.



- The hoe blades A f must be replaced if they are damaged, bent, worn, blunt or liable to break during work.
- Remove the damaged hoe blades by unscrewing bolts B and fitting new blades in their place.

Take great care to ensure that the new blades are mounted in the same position as the old ones.
The tightening torque is 127 Nm (93.5 foot pounds).

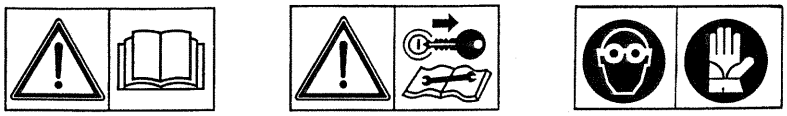
IMPORTANT

The sharp side of the blades must point in the same direction as that in which the rotor turns.

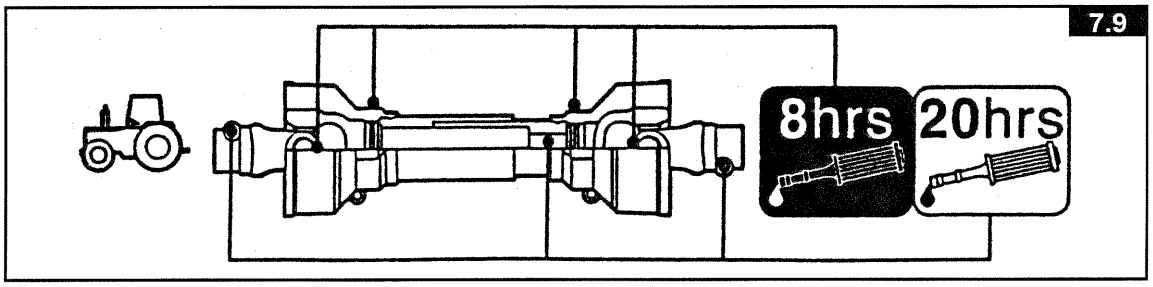
If more than one hoe blade must be replaced, change one blade at a time to prevent possible positioning errors.

The bolts that fix the blades to the rotor flange must be mounted with the head of bolt touching the blade and standing on the opposite side of blade curvature direction; washer and nut on the flange side (see picture).

7.5 CARDAN SHAFT MAINTENANCE



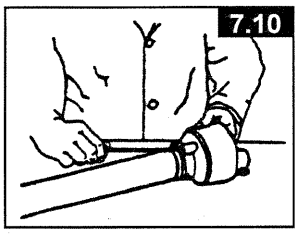
More detailed information may be found in the Cardan shaft manual, which, together with this manual, forms an essential part of the accident-prevention documentation. It is your responsibility to read and comply with this documentation.
If information given in this manual conflicts with that given in the Cardan shaft manual, you should follow the instructions given by the Cardan shaft manufacturer.



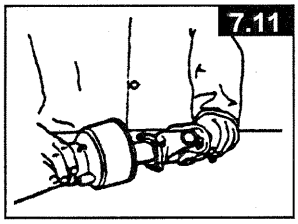
7.5.1 MAINTENANCE OF SLIDING PARTS

DISMANTLING

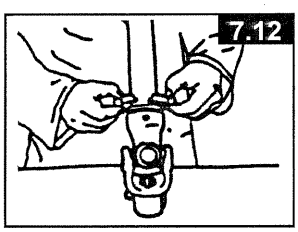
Turn the two eccentric pins on the ferrule until the protective cone comes free.



Withdraw the shaft protective guard.

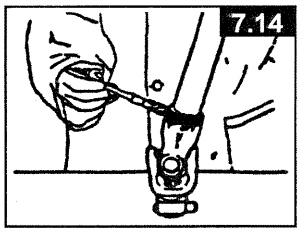


Cheek the condition of the ferrule and all protective parts.

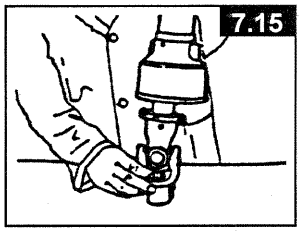


ASSEMBLY

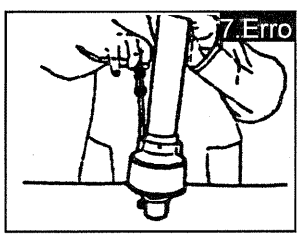
Lubricate the supporting ferrule seating.



Refit the supporting ferrule.



Reattach the protective guard to the Cardan shaft by turning the eccentric pins on the supporting ferrule.



7.6 MAINTENANCE POINTS TABLE

No.	REF.	Description	Operation	Every x hours	Product to use
1	7.4.1	Rotor support	Lubricate	8	Grease*
2	7.4.7	Check blade bolts	well tightening	8	—
3	7.4.3 7.4.4 7.4.5	Gearbox	Top up or change	A	Oil* / Grease*
4	7.4.6	Transmission chain	Check and lubricate	B	Oil*
5	7.5	Cardan shaft	Check and lubricate	C	Grease*
6	—	General checking of bolts, security pins and split pins to be carried out initially after the first 8 hours of use. Subsequently every 50 hours and whenever the machine is laid up for extended periods.			

Note:

A= Change first time after 50 hours. Then every 250 hours. Check oil every 50 hours.

B= Change every 250 hours. Check oil every 50 hours.

C= Each time the Cardan shaft is disconnected and whenever the machine is stopped, we recommended that you clean the power takeoff shaft and replace the protective cover.

* see table below

1 USA gallon = 3.785 litres

Description	Grease Type	Oil Type	Unit	Quantity		
				RH2	RH4	RH6
Transmission chain	--	SAE 85W/140	litres / USA gallons	0.95 / 0.25	0.95 / 0.25	1 / 0.264
Gearbox	--	SAE 80W/90 EP	litres / USA gallons	--	0.7 / 0.185	0.8 / 0.211
Gearbox	NLGI 0 EP	--	kg / lbs	0.5 / 1.1	--	--
Rotor support	NLGI 2	--	kg / lbs	0.1 / 0.22	0.1 / 0.22	0.1 / 0.22

7.7 NOISE AND VIBRATION

Noise affecting the tractor driver (from the machine only) is less than 70 dB.
Vibration from the machine affecting the upper body and limbs of the driver is insignificant and is lower than the values given in Point 3.6.3 of Enclosure 1 of the Machine Directives (89/392/EEC, 91/386/EEC).

7.8 SCRAPPING THE MACHINE

The machine consists mainly of ferrous material which must be disposed of according to the regulations in force in the country concerned.
There is also a small amount of plastic, which must be disposed of according to the regulations in force in the country concerned.
There is a very small amount of residual grease which must be disposed of according to the regulations in force in the country concerned.

SECTION 8 FAULTS: REASONS AND REMEDIES

8.1 TROUBLESHOOTING

FAULT	CAUSE	REMEDY
Noisy machine	Loose parts	Check that all nuts and bolts are fully tightened
	Insufficient oil in the reduction gear and / or side transmission housing	Check the oil level and top up if necessary
	Wrong pto rpm rate	Adjust the pto to the correct rpm rate
	No lubricant in the side support of the rotors	Inject lubricant by means of the relative grease nipple in the grease supports
		Top up the level in the oil lubricated supports by pouring lubricant through the relative plug (see paragraph 7.6)
	Loose drive chain	Tighten the chain
Excessive vibrations and/or machine that jumps over the ground	Wrong pto rpm rate	Adjust the pto to the correct rpm rate
	Foreign bodies jammed between the knives	Remove the foreign bodies and make sure that the blade are in a good condition. Change any damaged blades
	Broken or worn blades	Replace any broken or worn blades (see par. 7.4.7)
	Incorrectly mounted blades or blades with the not sharp part that penetrates into the soil first	Correctly remount the blades
	The rotor is deformed or has been subjected to strong impact	Contact an authorized dealer for repairs
The knives frequently clog	Excessively wet soil	Stop working and wait until the soil dries
	Excessive advancement speed	Lower the speed of the tractor
	Grass too tall to be worked	Cut the grass beforehand
Overheated supports	Grass and/or soil clinging to the ends of the rotor	Clean the rotor and eliminate all foreign bodies
Insufficient work depth	Excessively fast advancement	Lower the speed of the tractor
	Insufficient engine power	Lower the speed of the tractor (gear down)
	Very hard soil	Make repeated runs
	The hoe blades roll across the soil instead of penetrating it	Reduce the tractor speed
The knives are unable to penetrate the soil	Excessively fast advancement	Lower the speed of the tractor
The work depth differs on the two sides of the rotary tiller	The two side skids are regulated in different ways	Adjust the two side skids to the same height
Excessively crumbled soil	Knife speed too height	Increase the forward speed of the tractor
	Shallow work depth	Increase the work depth by means of the skids
Soil insufficiently crumbled	Excessively low knife speed	Reduce the forward speed of the tractor
	Soil too wet	Wait until the soil dries
Rotor roller jammed (does not rotate)	Gearing chain too tight	Loosen the chain
	Foreign body trapped in rotor	Remove the foreign body and check the state of the knives. If the knives are damaged, replace them. Before starting to work again, make sure the rotor has not been damaged in any way. If the rotor is damaged, contact an authorized retailer to have it repaired
gearbox surface during work "hot" to touch	oil level	This is normal and will cause no damage. It is important to always check that the oil is at the correct level and of the indicated type (see table in paragraph 7.6)

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