

# ROTARY TILLER "B" SERIES

Operation, Service & Parts Manual



Carefully read this manual before using the machine

**June 2006** 

No part of this manual shall be reproduced, copied or disseminated by any means, without manufacturer prior authorization in writing.

manufacturer reserves the right to make any necessary changes without giving prior notice, in order to optimize the quality and safety features and does not commit itself to updating this manual every time a change is made.

This booklet provides a thorough and accurate description of the instruction and maintenance activities to be carried out on the tiller you purchased. We congratulate you on your choice and urge you to thoroughly familiarize yourself with and follow the instructions contained in this manual. This will assure you a long, safe and trouble free working life for your tiller.

The Manufacturer shall not assume any responsibility should problems arise as a result of lack of compliance with the instructions and/or operator's negligence.

The manual is divided in chapters and paragraphs and the pages are numbered, thus offering accurate and precise information.

The requested information can be easily found by searching the key words or referring to the index.

Date of Purchase:	
Model Number:	
Serial Number	

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## **GENERAL INFORMATION**

### **GENERAL INFORMATION**

#### **SYMBOLS**

This booklet contains three "safety pictograms" which highlight the relevant danger levels or important information:



It draws the operator's attention to special situations which may jeopardize people's safety.



It draws the attention to situations which unfavorably affect the machine efficiency, but not people's safety.



It is used for general information, when people's safety or the efficiency of the parts are not at risk.

## SAFETY LABELS

#### **SAFETY LABELS**

The safety labels and information on the machine (picture 1, 2 and 3), must be complied with. Failure to comply with these warnings may result in severe injuries or even death. Make sure that the labels are always present and legible; should this not be the case, contact your nearest Gearmore dealer to request replacements

1



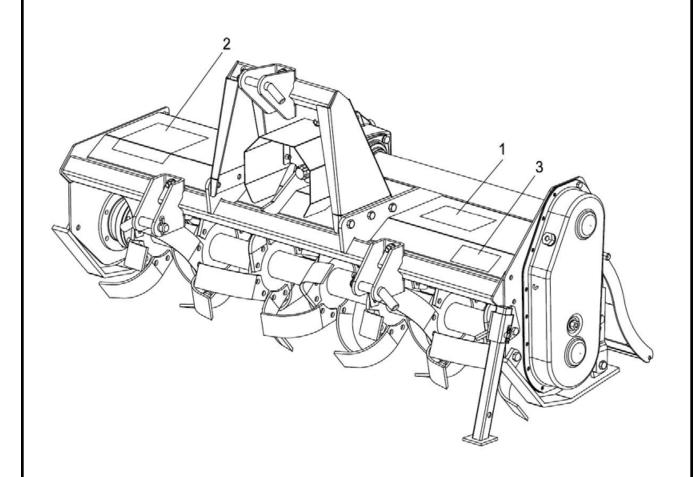
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2



# **TECHNICAL DATA**

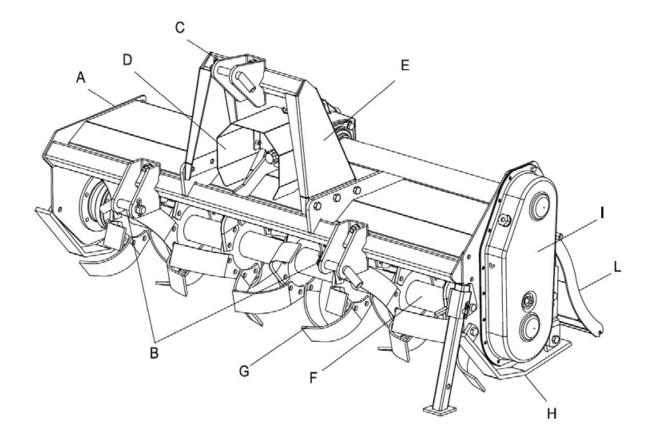


#### **TECHNICAL DATA**

Model	Tilling Width		HP ·		ight rox.)		g Depth ax)	Side	Drive	Blades		des
	cm	Inches		kg	lbs	cm	Inches	Chain	Gear	(Qty)	Blades/ /flange	Shape
	100	39	15-35	130	290	18	7	*		30	6	Curved
D D	120	47	15-35	145	323	18	7	*		36	6	Curved
В	140	55	15-35	175	389	18	7	*		42	6	Curved
	150	59	15-35	185	411	18	7	*		42	6	Curved

## **MAIN PARTS TERMINOLOGY**

#### MAIN PARTS TERMINOLOGY



- A) Main Frame
- B) Lower Hitch Brackets
- C) Top Link Bracket
- D) PTO Guard
- E) Top Mast
- F) Rotor
- G) Tines
- H) Skids
- I) Transmission case
- L) Rear Board



When asking for information or technical service, always specify the machine type and width.

## **INFORMATION**

#### **IDENTIFICATION PLATE**

An identification plate is placed on each tiller and is structured as follows:

Serial number (sample):

MADE IN ITALY

Distributed by
Gearmore, Inc.
Chino, CA

Model B
Serial \*000001\*

#### **RECOMMENDED USE**

The tillers described in this instruction and maintenance manual, have been designed explicitly to till the land. Any other use jeopardizes the operator's safety and the machine integrity.

#### **INAPPROPRIATE USE**

The tillers shall not be used as follows:

- Connected to vehicles which do not have a suitable power or weight.
- Without being properly installed by securing the hitch brackets to all three points of the tractor lift unit.
- Tilling of extremely stony or unsuitable ground.
- In close proximity to person/s when power is engaged.
- Do not stand or step on the equipment when it is being operated or transported.
- Do not operate the machinery while wearing unsuitable (loose fitting) clothing.

#### TORQUE SPECIFICATIONS

For correct hardware tightening on the tiller, we suggest the use of suitable torque wrench and the applicable torque as listed in the table below:

M-THREADED SCREW/BOLTS
Bolt grade

Bolt grade					
Thread	8.8		10.9		
	Nm	Lb-ft	Nm	Lb-ft	
M6	11	8.5	17	12	
M8	28	20	40	30	
M10	55	40	80	60	
M12	95	70	140	105	
M14	150	110	225	165	
M16	240	175	305	225	
M18	330	250	475	350	

## **SAFETY**

#### SAFETY IN THE WORKPLACE

Most of the accidents, which occur while the operator is using the machine or the equipment or carrying out maintenance and repair activities, are caused by the non-compliance with the main safety requirements.

Therefore the potential risks must be fully understood and special attention must be paid to the activity which is being executed.

If potentially dangerous situations are known, accidents can be prevented!

#### **USER'S REQUIREMENTS**

The equipment user must have the following:

**Physical:** good sight, co-ordination and capability to execute all instructions in a safe manner.

**Mental:** the users must understand and follow the prescribed norms, rules and safety measures. They must be careful, pay attention to their own safety and the safety of other people and act properly and in a responsible way.

**Training:** the users must read and understand this manual, its pictures and charts, and the identification and hazard plates. They must be specialized, trained and qualified on any use and maintenance activities.

#### WORK CLOTHING

The following clothing and personal protective equipment must be used when working and executing maintenance and repair activities:

- Overalls or any other comfortable outfit; make sure that they are not too loose since they might be caught by moving parts.



- Protective gloves.
- Goggles or mask to protect the eyes and face.





- Safety helmet.
- Safety shoes.



Make sure that the personal protective equipment is properly stored and complies with the laws in force.

#### **GENERAL SAFETY NORMS**

The features of the area where work is taking place must always be taken into consideration:

Do not stand in the working radius of the operating machinery or any other machine accessories when the equipment is running.

## **PREPARATION**

#### Prepare the work:

- Do not drink alcohol, take drugs, or any other substances which may affect the your ability to use the equipment before or when working.
- Make sure that there is sufficient fuel in the tractor to prevent the machine from stopping during work.
- Do not use the equipment under unsafe conditions, e.g. do not make temporary repairs just to start or keep working; do not work at night if the area is not well illuminated.

#### When working or executing maintenance activities, remember:

- The labels and stickers providing instructions on the use of the equipment or information on dangers must not be removed or hidden, and must be legible.
- Do not remove the safety devices, covers and safety guards, unless maintenance activities are being carried out. If the safety devices must be removed, turn the engine off, remove them correctly and re-install them before turning the tractor on.
- Do not lubricate, clean or adjust moving parts.
- Use the appropriate tools to execute maintenance or adjustment activities on the equipment.
- Do not use damaged or unsuitable tools, e.g. pliers rather than wrenches etc.
- Prior to carrying out activities on hydraulic lines under pressure, or disconnecting their components, make sure that the line is no longer under pressure and that it does not contain any hot fluids.
- Check all the fittings and make sure that they are well connected before supplying pressure to the hydraulic lines.
- Make sure that no tools, clothes or any other materials are left in areas where moving parts are present when the maintenance and repair activities are completed.
- Do not give directions and make signals at the same time during a maneuver.
   Maneuver directions and signals must be given from one person only.
- Do not unexpectedly call an operator, if not necessary. Do not startle the operator, e.g. by throwing objects.
- Pay attention to people in the vicinity of the work area, especially children!
- Make sure that nobody is standing in the working range of the equipment.
- Do not use the equipment to lift people.
- When the equipment is not needed, turn the engine off, leave the vehicle on a flat sur face, with the first gear and the parking brake engaged. Disengage the power take off.
- Do not execute any cleaning, lubrication, repair or adjustments when the engine is running and the equipment is in the raised position.
- Do not work on steep slopes, if the stability of the vehicle can be jeopardized.

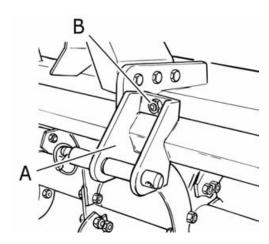
Manufacturer shall not assume any responsibilities if these instructions are not strictly followed.

#### ATTACHMENT TO THE TRACTOR

Carefully read this instruction manual and the manuals of the tractor and PTO shaft manufacturer. All tillers are built to be attached to any tractor equipped with a three point hitch of the correct category and with suitable ball ends.

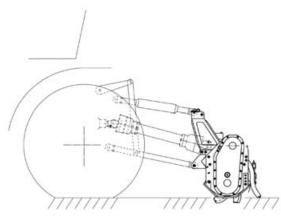
Before attaching the equipment to the tractor, make sure that the ground is smooth and flat and that nobody is standing between the tractor and the tiller; slowly move the tractor towards the tiller by aligning the tractor lower lift arms with the two tiller coupling side pins; turn the engine off and pull the brake.

It is possible to adjust the attachment position releasing the bolts **B.** (picture 1) and modifying the position of the plates **A.** Tighten the bolts after making any adjustment.



picture 1

After adjusting the couplers, connect the lower lift arms by removing the lynch pins from the pins located on the hitch brackets, inserting the lift arm pins through the hitch block and ball ends and secure them by means of the pins which were previously removed.



picture 2

Connect the tractor top link to the top mast by removing the pin located between the two plates, inserting the top link and securing it by means of the pin.

Adjust the top link so that the upper part of the frame is parallel to the ground.

Block all the linking parts by means of the sway chains or arms.

Make sure that the central unit axis (gearbox assembly) is parallel to the ground, thus minimizing the stresses on the power take off and increasing the working life of the equipment.



After executing all the above-mentioned activities, make sure that all the nuts and bolts are tightened.

#### PTO SHAFT CONNECTION

Before installing the PTO shaft make sure that the RPM rating and the direction of rotation match those of the tractor. Carefully read the PTO shaft and tractor instructions.

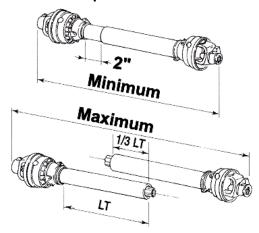
Furthermore, accurately read the instructions of the manufacturer of the PTO shaft and of the tractor.

Before starting any activity, make sure that the guards are installed on the power take off of the tractor and PTO shaft. Make sure that they cover the PTO shaft throughout its length.



When fully extended, the plastic pipes must overlap by at least 1/3 of the length of the pipes (LT). When retracted, the min. acceptable clearance is 2 inches (picture 3).

#### picture 3



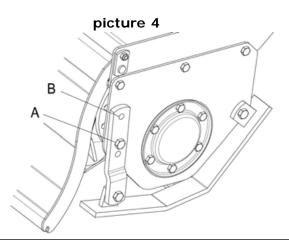
Check that the PTO shaft min. and max. length are within the parameters of the machine-tractor coupling.

Should problems arise, contact your dealer. After the installation, anchor the PTO shield to the tractor and machine using the special chains; make sure that it turns smoothly. If the PTO shaft is equipped with safety devices, e.g. torque limiters or free-wheel devices, install them on the operative machine side. For the use and maintenance of the PTO shaft, please refer to the relevant manual.

#### **WORKING DEPTH ADJUSTMENT**

The working depth of the equipment depends on the position of the lateral skids. If the skids are raised, the working depth increases; if the skids are lowered, the working depth decreases.

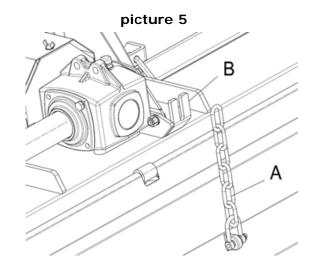
Make sure that the skids are set at the same height on both sides.



To adjust the working depth, loosen and remove nut **A** (picture 4) and adjust the skid height according to the holes **B**. When the adjustment is completed, tighten the screws.

#### LEVELING BOARD ADJUSTMENT

The height of the rear leveling board can be adjusted, making the ground more compact and smooth. Release the chain A from the bracket B (picture 5), and re-engage it according to the desired working height.



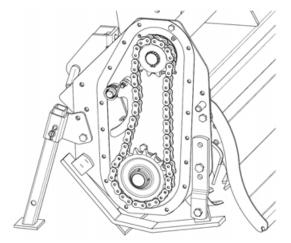


These activities must be carried out with the engine off, the power take off disengaged and the hand brake applied. If needed, lift the equipment and place it on supports, thus preventing any injuries that might be caused by a sudden fall of the equipment.

#### CHAIN ADJUSTER

The B tillers are equipped with a self-loading chain drive system (picture 6). The setting of the system is made during assembly; any adjustments when using the machines, must be carried out by an authorized dealer or work shop.





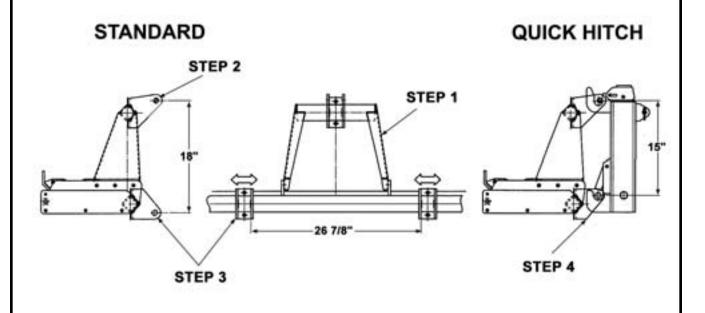
#### START UP

After carrying out these adjustments, the equipment is ready for use. When at the working area, do not start the power take off with the tiller in working position in the ground. Be sure to lift it by a few centimeters using the tractor lift. Start the engine, engage the power take off, lower the equipment to its working position and start.

#### **ASSEMBLING B SERIES 3-POINT HITCH**

- **STEP 1:** Install the top mast to the tiller main frame as shown.
- STEP 2: Install the top link bracket to the top mast with the hole in the highest position as shown.
- STEP 3: Install the bottom link brackets with the holes facing down. This gives you the **standard** A.S.A.E. dimension of 18" if the tractor does not have a quick hitch.
- STEP 4: If the tractor has an A.S.A.E. quick hitch, place the bottom brackets with the holes in the high positions to obtain the correct spacing to tractors with quick hitches.

**NOTE:** It is necessary to order a 3 bushing kit - part number 883303 - to make the tiller A.S.A.E. quick hitch compatible.



## **MAINTENANCE**

#### **ROAD TRANSPORT**

With reference to road transport, follow local traffic regulations.

#### **SHUT DOWN**

The following activities are recommended if the tiller will not be used for a long period of time:

- 1 Clean and dry the equipment.
- 2 Inspect the equipment and replace the damaged or worn parts if necessary.
- 3 Tighten all the screws and nuts.

Lubricate and cover the machine with a tarpaulin and store it in a dry place.

#### **MAINTENANCE**

Maintenance is crucial for the working life and efficiency of any agricultural equipment. If the equipment is properly maintained and operated, a long working life and operator safety are assured.

The maintenance intervals indicated in this booklet are provided as a mere reference and are related to normal working conditions; changes may occur depending on the type of activities, environmental dust, seasonal factors, etc.



- Before injecting lubricating grease into the grease fittings, clean the fittings to prevent mud, dust, or any other foreign matter from contaminating the grease and reducing the lubrication effect.
- When adding or changing the oil, use the same type of oil to prevent mixing oils with different features.
- All maintenance activities must be carried out with the tiller resting horizontally on the ground.
- After using the equipment for a few hours, make sure that all the bolts (especially tine bolts) are tightened; regularly check all the machine guards.

#### **FIRST CHECK**

After 50 working hours, change the oil in the gearbox and make sure that all the screws and bolts are tightened.

#### **EVERY 8 WORKING HOURS**

Grease the PTO shaft crosses.

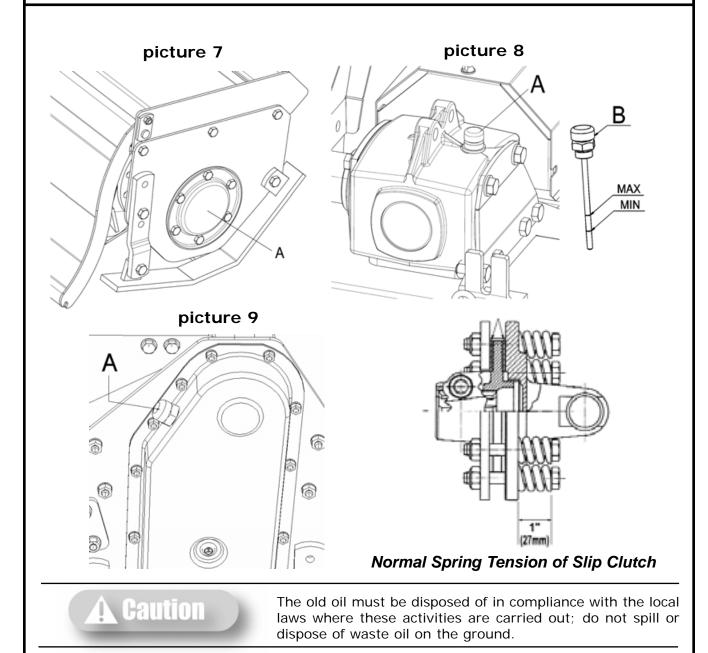
#### **EVERY 50 WORKING HOURS**

- Remove the cover (**A** *pict.* 7, *pg.* 13) and grease the rotor bearing inside.
- Check the oil level in the case/bevel gear pair (**A** *pict.* 8, *pg.* 13) by removing gearbox's upper oil plug (**A** *pict.* 8, *pg.* 13); oil level should be contained between the 2 nicks of MIN & MAX of the dip stick oil plug (**B** *pict.* 8, *pg.* 13). If needed add SAE EP 80W90 oil.
- Check the oil level in the side transmission (A pict. 9, pg. 13). If needed add SAE EP 80W90 oil.
- Make sure that all the screws and bolts, especially on the blades, are tightened.

#### **EVERY 500 WORKING HOURS**

Change the oil of the case/bevel gear pair, side transmission and rotor support; use SAE EP 80W90 oil. Contact the closest dealer for this maintenance activity.

## **MAINTENANCE**





The maintenance activities must be carried out with the engine off, the power take off disengaged, the parking brake engaged, and the equipment placed on the ground.

#### **BLADES REPLACEMENT**

To assure the optimum efficiency of the machine, make sure that the tiller blades are in a good working condition and that their bolts are tightened; replace them if they are broken or bent. The new parts must be installed in the original position.

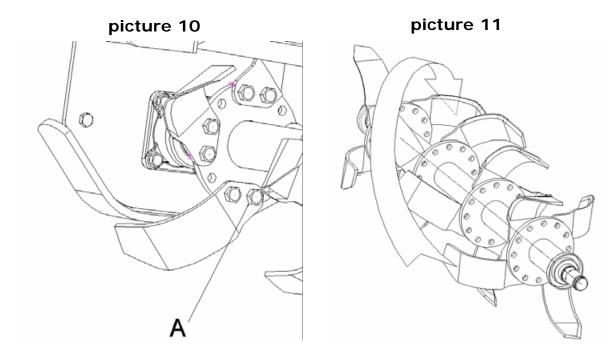
## SPARE PARTS



Before replacing the blades, turn the tractor engine off, pull the parking brake, disengage the power take off, raise the tiller using the tractor lift, and install supports to prevent accidental dropping of the machine.

Pay special attention to the bolts **A** on the blades (*picture 10*): the screw head must be placed on the blade side, with the washer and the nut on the flange side, so that the bolts cannot loosen while the equipment is being used.

When several blades must be replaced, replace one blade at a time, so that the initial helical layout is maintained (*picture 11*).

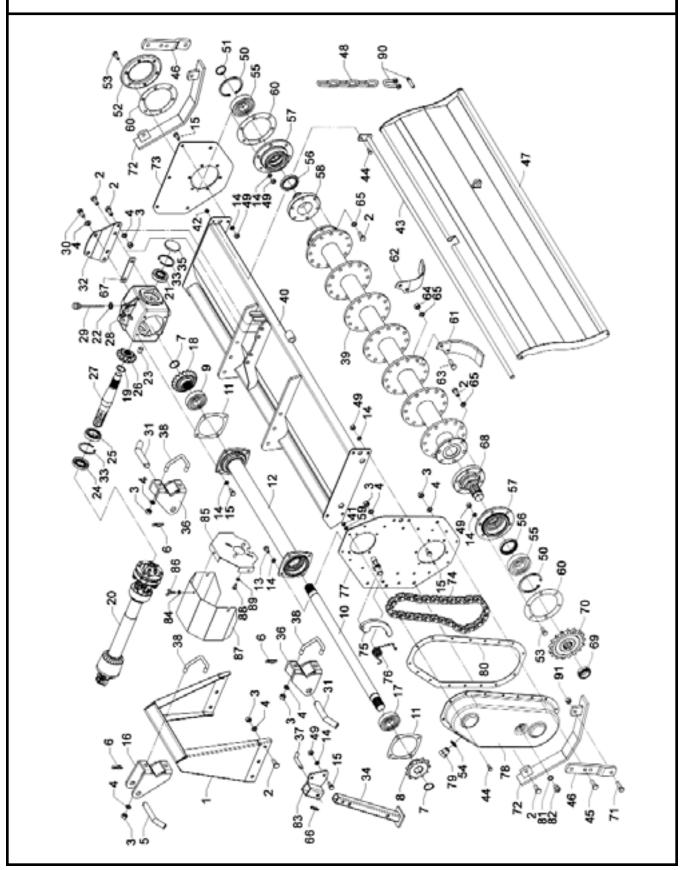


#### **HOW TO ORDER SPARE PARTS**

For spare parts requests please refer to our spare parts catalogue. The spare parts can be ordered from the dealer or service center. The following data must always be specified:

- Equipment model and width.
- Part number of the requested component. If the code number is missing, indicate the reference number in which it is shown and the relevant reference.
- Description of the part and requested quantity.
- Requested type of transport. Should this information not be provided, the dealer or service center shall not be responsible for delays caused by circumstances beyond their control. The addressee shall be responsible for any transport charges.

# "B" TILLER ASSEMBLY



# TILLER ASSEMBLY

1 1 4001330 Top Mast	
1	
2 24 31512030 Bolt UNI 5739 M12 x 30 8.8	
3 18 34100012 Nut UNI 5587 M12	
4 22 34121012 Washer UNI 1751 M12	
5 1 4301589 Pin, Top Hitch (Cat. 1)	
6 3 6351004 Cotter Pin	
7 2 6320035 Circlip External	
8 1 4701359 Gear Z11	
9 1 6307-2RS Bearing	
10 1 4211203 Shaft B100	
10 1 4211205 Shaft B120	
10 1 4211207 Shaft B140	
10 1 4211208 Shaft B150	
11 2 4781265 Gasket	
12 1 4001282 Shaft Support B100	
12 1 4001284 Shaft Support B120	
12 1 4001286 Shaft Support B140	
12 1 4001287 Shaft Support B150	
13 4 31510020 Bolt UNI 5739 M10 x 20 8.8	
14 29 34121010 Washer UNI 1751 M10	
15 13 31510025 Bolt UNI 5739 M10 x 25 8.8	
16 1 4001331 Top Hitch Clevis	
17 1 6307 Bearing	
18 1 17265-01 Bevel Gear Z19	
19 1 6320030 Circlip External DIN471	
20 1 E8223400 Driveline AX4 500/748	
21 1 30305 Bearing	
22 1 6470116 Gasket M16	
23 1 6481600 Drain Plug M16	
24 1 35X62X10 Oil Seal	
25 1 6007 Bearing	
26 1 17265-00 Bevel Pinion Z13	
27 1 4211212 Input Shaft Z6	
28 1 16565-00 Gearbox Housing	
29 1 65316-05 Plug with Level M16	
30 4 31512025 Bolt UNI 5739 M12 x 25 8.8	
31 2 4301590 Pin, Lower Hitch	
32 1 4931230 Gearbox Plate Support	
33 2 6310062 Internal Circlip D562 DIN 472	
34 1 4001234 Parking Stand Leg	
35 1 6100062 Cap 062	

# TILLER ASSEMBLY

REF#	QTY.	PART NO.	DESCRIPTION
36	2	4001278	Lower Hitch Clevis
37	1	4236115	Pin
38	3	4201202	"U" Bolt
39	1	4011237	Rotor B100
39	1	4011239	Rotor B120
39	1	4011241	Rotor B140
39	1	4011242	Rotor B150
40	1	4001303	Frame B100
40	1	4001305	Frame B120
40	1	4001307	Frame B140
40	1	4001308	Frame B150
41	16	34100008	Nut UNI 5587 M8
42	1	34106008	Stop Nut M8 x 1.25 DIN 982 6S
43	1	4002338	Rod B100
43	1	4002340	Rod B120
43	1	4002342	Rod B140
43	1	4002343	Rod B150
44	17	31508020	Bolt UNI 5739 M8 x 20 8.8
45	2	31512035	Bolt UNI 5739 M12 x 35 8.8
46	2	4831202	Skid Support
47	1	4001223	Leveling Board B100
47	1	4001225	Leveling Board B120
47	1	4001227	Leveling Board B140
47	1	4001228	Leveling Board B150
48	1	4508702	Chain
49	21	34100010	Nut UNI 5587 M10
50	2	6310090	Internal Circlip DIN 472
51	1	6320040	Circlip External DIN 471
52	1	4141242	Bearing Cover
53	12	31510030	Bolt UNI 5739 M10 x 30 8.8
54	1	6470118	Gasket
55	2	6308	Bearing
56	2	55X72X10	Oil Seal
57	2	4701202	Rotor Support
58	1	4701203	Hub, Idler Side
59	16	34121008	Washer UNI 1751 M8
60	3	4788744	Gasket
61	As Req'd	4811285	Tine, R.H.
62	As Req'd	4811286	Tine, L.H.
63	As Req'd	31412035	Bolt UNI 5738 M12 x 35 8.8
64	As Req'd	34101012	Nut UNI 5587 M12

# TILLER ASSEMBLY

REF#	QTY.	PART NO.	DESCRIPTION
65	As Req'd	34121012	Washer UNI 1751
66	1	6351003	Hair Pin
67	1	4131217	Gearbox Spacer
68	1	4721201	Hub, Drive Side
69	1	34127035	Locknut M35 GUP Type
70	1	4701221	Driven Sprocket Z17
71	2	31512040	Bolt UNI 5739 M12 x 40 8.8
72	2	4001244	Skid
73	1	4131331	End Plate, Idler Side
74	1	6700025	Chain ASA 80-S Type, 40 Links
75	1	4001275	Chain Adjuster
76	1	4211263	Spring
77	1	4001312	End Plate, Drive Side
78	1	4111200	Chain Cover
79	1	3442022	Plug M22 x 1.5
80	1	4781264	Gasket
81	1	6470114	Gasket M14
82	1	3444014	Level Plug M14 x 1.5
83	1	4001682	Parking Stand Support
84	3	34026008	"Schnorr" Washer M8
85	1	4131295	Support PTO Shield
86	3	33108020	Wing Screw M8 x 20 UNI 5449
87	1	4131294	PTO Shield
88	4	31508016	Bolt UNI 5739 M8 x 16 8.8
89	4	34120008	Washer UNI 6592 M8
90	1	3680010	Hook 08
91	2	34106012	Stop Nut M12 x 1.75 DIN 982 6

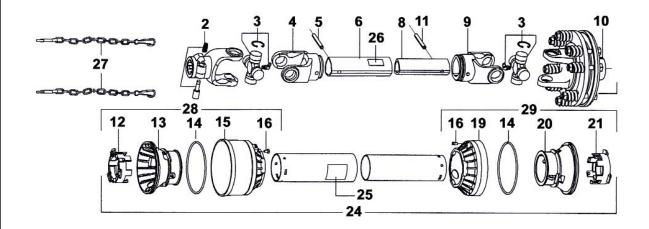
#### **TINE CHART**

MODEL NO.	NUMBER	OF TINES	NUMBER OF
WIODEL NO.	R.H.	L.H.	BOLTS & NUTS
B100	15	15	60
B120	18	18	72
B140	21	21	84
B150	21	21	84

#### **DECAL CHART**

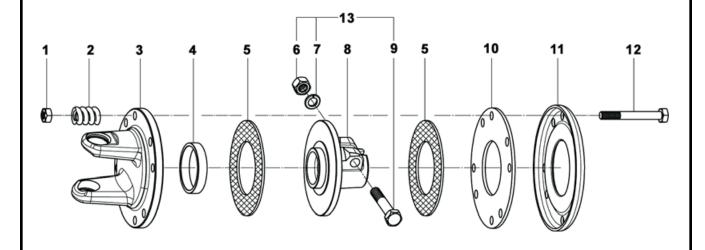
QTY.	PART NO.	DECAL DESCRIPTION
1	4781001	"Danger" (PTO)
1	4781002	"Danger" (avoid injury)
1	4781006	"Warning" (rotating knives)
3	4781350	"Gearmore"
1	4781351	"Series B"

## **DRIVESHAFT ASSEMBLY**



REF#	QTY.	PART NO.	DESCRIPTION
2	1	1581037	Push Pin Kit
3	2	1004020	Cross Assembly
4	1	1704027	Outer Tube Yoke
5	1	6330860	Roll Pin 8 x 60
6	1	1524036	Outer Tube
8	1	1525036	Inner Tube
9	1	1704029	Inner Tube Yoke
10	1	1334030	Clutch 2 Friction Discs
11	1	6330855	Roll Pin 8 x 55 (Inner Tube)
12	1	1784210	Tube Bearing (Outer Tube)
13	1	1784201	Outer Tube Rigid Cone
14	2	1213233	Stiffening Ring
15	1	1784203	Soft Standard Cone
16	2	1784212	Pin For Stop Rotation
19	1	1784207	Soft Extra Short Cone
20	1	1784202	Inner Tube Rigid Cone
21	1	1784211	Tube Bearing (Inner Tube)
24	1	90SE4028	Complete Protection
25	1	1140001	Outer Decal
26	1	1140003	Inner Decal
27	2	1006065	Anti-Rotation Chain
28	1	1784233	Standard Cone Assembly (Tractor End)
29	1	1784247	FDO Cone Assembly (Implement End)

# **SLIP CLUTCH ASSEMBLY**



REF#	QTY.	PART NO.	DESCRIPTION
1	8	6411010	Scrw Nut M10
2	8	1215012	Spring
3	1	1704021	Flange With Yoke
4	1	1704017	Bushing
5	2	1804000	Friction Disc
6	1	6410112	Screw Nut M12
7	1	6412112	Washer
8	1	1704016	Hub 1 3/8" Z6
9	1	6141265	Bolt M12 x 65
10	1	1134008	Inner Disc
11	1	1134007	Pressure Disc
12	8	6001075	Bolt M10 x 75
13	1	6761265	Locking Bolt Kit Replacement

## LIMITED WARRANTY

# GERRMORE INC.

GEARMORE, INC., warrants each new Gearmore product to be free from defects in material and workmanship for a period of twelve (12) months from date of purchase to the original purchaser. This warranty shall not apply to implements or parts that have been subject to misuse, negligence, accident, or that have been altered in any way.

Our obligation shall be limited to repairing or replacement of any part, provided that such part is returned within thirty (30) days from date of failure to Gearmore through the dealer from whom the purchase was made, transportation charges prepaid.

This warranty shall not be interpreted to render us liable for injury or damages of any kind or nature, direct, consequential or contingent, to person or property. This warranty does not extend to loss of crops, loss because of delay in harvesting or any other expenses, for any other reasons.

Gearmore in no way warranties engines, tires, or other trade accessories, since these items are warranted separately by these respective manufacturers.

Gearmore reserves the right to make improvements in design or changes in specification at any time, without incurring any obligations to owners or units previously sold.

GEARMORE, INC. 13477 Benson Ave. Chino, CA 91710

Always refer to and heed machine operating warning decals on machine.

The serial number of this product is stored in our computer database, thus submitting a warranty registration card is not required.