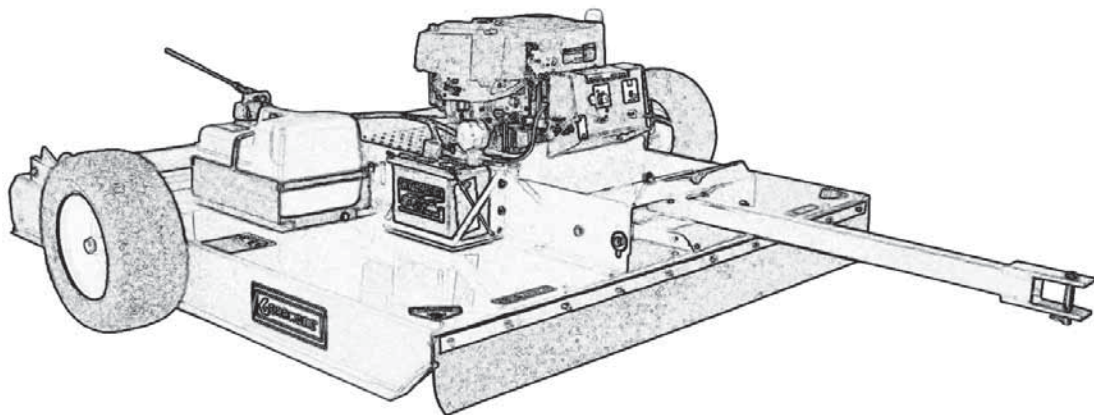


**GEARMORE INC.**

# **ENGINE DRIVEN ROTARY MOWER**



**Operation, Service  
& Parts Manual  
For Models ERM-413, 416, & 617**

April 2009

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# 1 INTRODUCTION

*We would like to thank you for purchasing a Gearmore product and we assure you that you have made a good choice, as now you have a very high quality machine. Please follow all instructions contained in this manual for a long and trustworthy machine life.*

Know your controls. Read this manual and the manual provided with your tractor before operating your equipment. Keep this manual handy for ready reference. Learn how to stop the tractor engine and mower quickly in case of an emergency. DO NOT allow adults without proper instructions or children to operate machinery. Require all operators to read this manual carefully and become acquainted with all adjustments and operating procedures before attempting to operate the equipment. Replacement manuals can be obtained from your selling dealer.



**It is IMPORTANT to read this manual carefully before operating the mower!**

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Please observe all safety information in this manual and safety decals on the equipment.

For service, your authorized dealer has trained mechanics, genuine service parts, and the necessary tools and equipment to handle all of your service needs.

Use only genuine service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the warranty page of this manual.

Throughout this manual, the term **IMPORTANT** is used to indicate that failure to observe procedures can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol, (a triangle with an exclamation mark), to indicate the degree of hazard for items of personal safety.



**This Safety-Alert Symbol indicates a hazard and means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**



**DANGER**

Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.



**WARNING**

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed.



**CAUTION**

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

**IMPORTANT**

Indicates that failure to observe can cause damage to equipment.

**NOTE**

Indicates helpful information.

## 2 PREPARATION CHECKLIST



### **THIS CHECKLIST TO REMAIN IN OWNER'S MANUAL**

**IT IS YOUR RESPONSIBILITY TO COMPLETE THE PROCEDURES LISTED**

**BELOW BEFORE OPERATING THE MOWER**

#### **Preparation Check List**

- 1. Implement is completely assembled.
- 2. Inspect for damage and loose or missing parts
- 3. All decals in place and readable.
- 4. All fittings and drive components are secure.
- 5. Overall condition good.
- 6. Operator has been instructed on the safe and proper use of the implement.
- 7. Lubrication - See *Lubrication & Maintenance* Section

The purpose of this manual is to assist you in operating and maintaining your mower for years of service. Read it carefully. The information and instructions in this manual have been compiled from extensive field experience and engineering data. Some information may be general in nature due to unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.

The illustrations and data used in this manual were current at the time of printing, but because we maintain an ongoing program of product improvement, we reserve the right to make improvements in design or changes in specifications without incurring any obligation to install them on units previously sold. Because of the possibility that some photographs in this manual were taken of prototype models, production models may vary in some detail.

**All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.**

#### **2.1 RETAIL CUSTOMER'S WARRANTY RESPONSIBILITY**

It is the Retail Customer and/or Operator's responsibility to read the Operator's Manual, to operate, lubricate, maintain and store the product in accordance with all instructions and safety procedures. Failure of the operator to read the Operator's Manual is a misuse of this equipment. It is the Retail Customer and/or Operator's responsibility to inspect the product and to have any part(s) repaired or replaced when continued operation would cause damage or excessive wear to other parts or cause a safety hazard. It is the Retail Customer's responsibility to deliver the product to the authorized dealer from whom he purchased it, for service or replacement of defective parts which are covered by warranty. Repairs to be submitted for warranty consideration must be made within thirty (30) days of failure. It is the Retail Customer's responsibility for any cost incurred by the dealer for traveling to or hauling of the product for the purpose of performing a warranty obligation or inspection.

## 3 SAFETY INFORMATION

### 3.1 SAFETY LABELS






#### ATTENTION!

Be sure that the safety labels are readable. Clean them up using a cloth, water and soap. Replace the damaged labels placing them in the right position, as subsequently described.

The safety symbols applied to the machine provide a series of very important information; which needs to be followed to assure your safety.

### 3.2 GENERAL SAFETY RULES

**YOU** are responsible for the **SAFE** operation and maintenance of your mower. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the mower be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. Do not risk injury or death by ignoring good safety practices.

- Mower owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually there after per OSHA (Occupational Safety and Health Administration) regulation 1928.57.
  - The most important safety feature on this equipment is a **SAFE** operator. It is the operator's responsibility to read and understand **ALL** Safety and Operating instructions in the manual and to follow these. Most accidents can be avoided.
  - A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.
  - **DO NOT** modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.
  - **Think SAFETY! Work SAFELY!**
1. Read and understand the Operator's Manual and all safety signs before operating, maintaining or adjusting the mower. 
  2. Mower is capable of throwing debris at high velocity. Keep bystanders **at least 50 feet** away from machine when operating mower.
  3. Eye protection must be used while operating the mower. 
  4. Install and secure all guards before starting.
  5. **DO NOT** allow riders.
  6. Place all controls in neutral, stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop and engine to cool before servicing, adjusting, repairing, or unplugging. 
  7. Do not attempt to disable safety features.
  8. Remove key from mower and vehicle when not in use.
  9. Clear the area of people, especially small children, before starting.
  10. Do not operate or tow mower at speeds higher than 5 miles per hour as damage and sever injury may result.
  11. Review safety related items annually with all personnel who will be operating or maintaining the mower.

## 4 ASSEMBLY

The mowers are shipped on a pallet; standing on end.



**CAUTION!** Carefully remove the mower from the pallet and lower to operating position, using a forklift or overhead hoist. **DO NOT ATTEMPT BY HAND.**

The mowers come completely assembled, except for the gauge wheels.

Bolt the gauge wheels to the pivot tubing to the outside position. This is the normal operating position.

See *Lubrication & Service section* for servicing the mower.

## 5 OPERATING THE MOWER



### **DANGER!**

Do not start mower engine until the mower is securely hitched to the towing vehicle. Accidental unhitching of the mower could cause serious injury.

Make sure the 12 volt battery is fully charged before operating the mower.



### **CAUTION!**

Before operating the mower, place the automatic stop system "black box" between your hip and the vehicle seat. This feature automatically stops the engine for the unlikely event that you fall from the vehicle.



The automatic stop system "black box" also has a manual stop switch to be used if you run into obstructions in the mowing area.

The blade clutch switch must be turned on before the seat switch will operate.



To electric start, turn key to start position to activate the start. When the engine starts release the key.

**Special Note:** When starting any implement with a clutch assembly attached directly to an engine, you will hear a "squealing" noise upon starting the engine. Please do not be concerned as this is a normal sound.

When the engine is warm, adjust the throttle to the desired speed.

It is desirable to operate with the front of the mower lower than the rear. This way it takes less power and does not re-cut the vegetation.

## 6 LUBRICATION & SERVICE



The mowers are shipped less battery. The battery can be purchased by you or your dealer will supply. We recommend Model U1-240-W wet cell, light industrial 12 volt battery.



### **CAUTION!**

Fill oil and gasoline per engine manufacturers recommendations before attempting to start engine.



### **WARNING!**

Do not operate mower with a dead or poorly charged battery as clutch failure could result.

Grease transport wheel often to prevent bearing failure.



Check drive belt often, as it is part of the overload protection.

If the engine stops when starting the mower, you may need to increase the speed of the engine or loosen the idler pressure.

If the blades stop during light cutting, you may need to tighten the belt idler.

Always replace bolts and bushing when replacing blades.



Check engine oil level, add as necessary.



**WARNING!** Check engine fuel level, add as necessary.  
Allow engine to cool before filling.

Inspect blade belt for tightness and wear. Tighten with approximately ¼" of flex.

Check blades for sharpness and damage. If dull, sharpen at a 45° angle on a bench grinder. Make certain blades are balanced before reinstalling. If blades are bent, broken, or worn out, replace with genuine Gearmore replacement parts.

Check blade bolts for tightness. Tighten to 75 foot pounds.

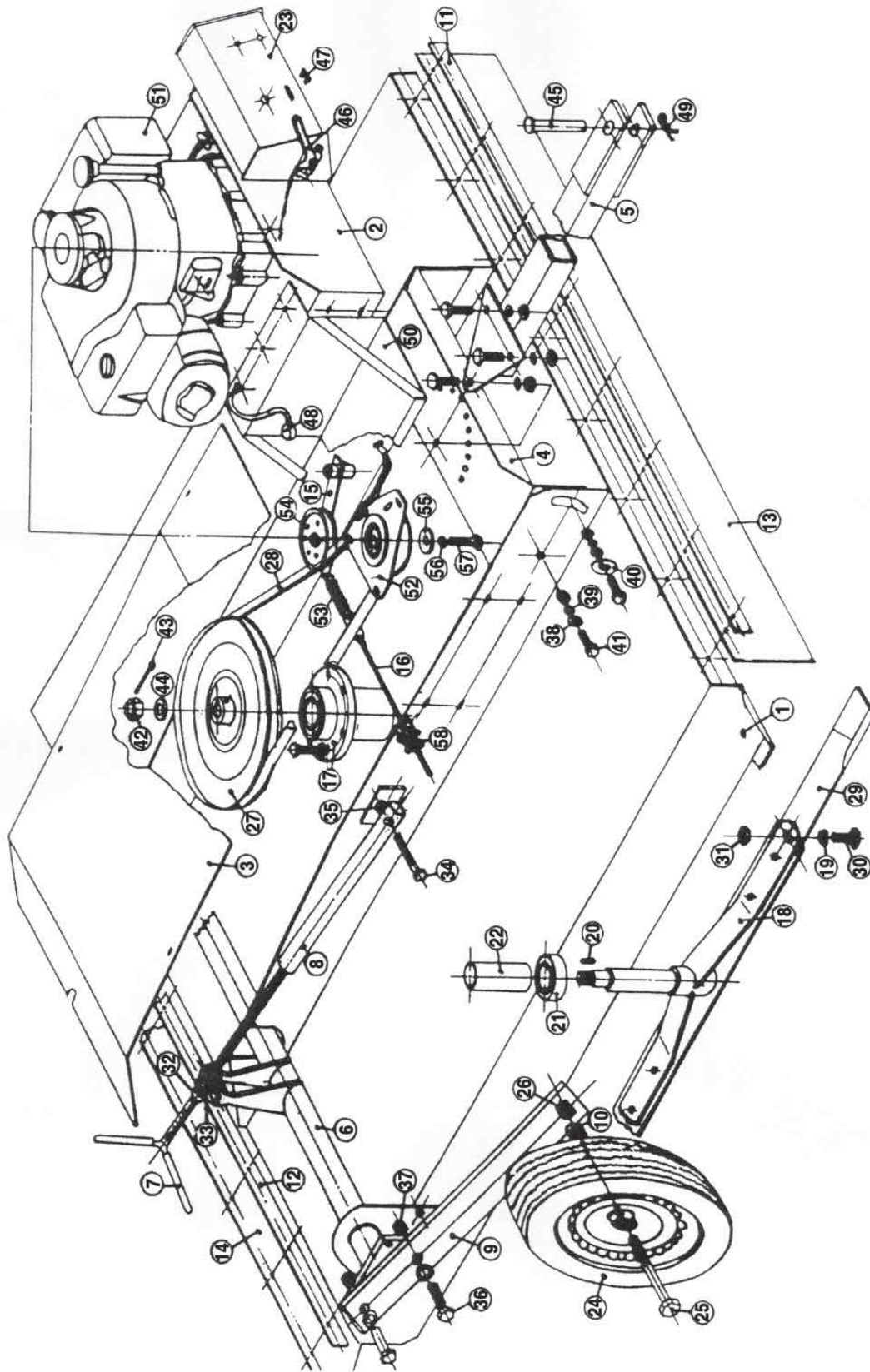
Ensure that all bolts and nuts are tightened.

Check blades for tightness, but yet free swinging.

Make certain all safety shielding is in place.

# 8 PARTS BREAKDOWN 48" & 60" MOWERS

## 8.1 MOWER



## 8 PARTS BREAKDOWN (CONTINUED)

### 8.2 PARTS LIST ERM-413 & ERM-416 (48" Mower)

<u>REF #</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	ERM 481	Deck Assembly
2	ERM 482	Engine Base
3	ERM 483	Drive cover
4	ERM 484	Drawbar Housing
5	ERM 485	Drawbar
6	ERM 486	Transport Tube
7	ERM 487	Lift Screw
8	ERM 488	Lift Nut Tube
9	ERM 489	Wheel Arm
10	ERM 4810	Wheel Spacer
11	ERM 4811	Front Guard Clamp Strip
12	ERM 4812	Rear Guard Clamp Strip
13	ERM 4813	Front Rubber Flap
14	ERM 4814	Rear Rubber Flap
15	ERM 4815	Idler Arm
16	ERM 4816	Idler Tension Bolt
17	ERM 4817	Spindle Housing
18	ERM 4818	Blade Spindle
19	ERM 4819*	Bushing (Kit Only) Order # ERM 4882
20	ERM 4820	Pulley Key
21	ERM 4821	Spindle Bearing
22	ERM 4822	Bearing Spacer
23	ERM 4823	Control Panel
24	ERM 4824	Transport Wheel
25	ERM 4825	3/4 - 10 Axle Bolt
26	ERM 4826	3/4 - 10 Hex Nut
27	ERM 4827	Driven Pulley
28	ERM 4828	Drive Belt (5L 610)
29	ERM 4881	Blade (Kit Only)
30	ERM 4830	Blade Bolt (Kit Only)
31	ERM 4831	Locking Nut (Kit Only)
32	ERM 4832	3/4 - 10 Jam Nut
33	ERM 4833	3/4 Bushing Washers
34	ERM 4834	1/2 - 13 x 3 Gr. 8 Bolt
35	ERM 4835	1/2 - 13 Flange Unit
36	ERM 4836	1/2 - 13 x 1 3/4 Bolt
37	ERM 4837	1/2 - 13 Hex Nut
38	ERM 4838	1/2 Washer
39	ERM 4839	1/2 Lock Washer
40	ERM 4840	1/2 Fender Washer
41	ERM 4841	1/2 - 13 x 1 1/2 Bolt

## 8 PARTS BREAKDOWN (CONTINUED)

<u>REF #</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
42	ERM 4842	7/8 - 9 Castle Nut
43	ERM 4843	3/16 x 2 1/2 Cotter Pin
44	ERM 4844	7/8 Heavy Washer
45	ERM 4845	5/8 x 3 Clevis Pin
46	ERM 4846	Throttle Cable
47	ERM 4847	Fuse
48	ERM 4848	Ground Cable
49	ERM 4849	1/8 Hair Pin
*	ERM 4850	Clutch Switch
*	ERM 4852	Stump Jumper
*	ERM 4854	Fuel Tank & Bracket Assembly
50	EM-5	Battery Box
51	EM-51	Engine (Model Req'd)
52	EM-73	Clutch Assembly
53	EM-67	Idler Spring
54	EM-64	Idler Pulley
55	EM-55	Clutch Washer
56	EM-56	7/16 Lock Washer
57	EM-57	7/16 20 x 2 Grade 8 Bolt
58	EM-58	Star Knob
*	ERM 4881	Blade Kit Part Number
*	ERM 4882	Blade Bolts, Nuts, Bushings Kit

\* *Not Shown*

## 8 PARTS BREAKDOWN (CONTINUED)

### 8.3 PARTS LIST ERM-617 (60" Mower)

<u>REF #</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
1	ERM 601	Deck Assembly
2	ERM 602	Engine Base
3	ERM 603	Drive cover
4	ERM 604	Drawbar Housing
5	ERM 605	Drawbar
6	ERM 606	Transport Tube
7	ERM 607	Lift Screw
8	ERM 608	Lift Nut Tube
9	ERM 609	Wheel Arm
10	ERM 6010	Wheel Spacer
11	ERM 6011	Front Guard Clamp Strip
12	ERM 6012	Rear Guard Clamp Strip
13	ERM 6013	Front Rubber Flap
14	ERM 6014	Rear Rubber Flap
15	ERM 6015	Idler Arm
16	ERM 6016	Idler Tension Bolt
17	ERM 6017	Spindle Housing
18	ERM 6018	Blade Spindle
19	ERM 6019*	Bushing (Kit Only) Order # ERM 6082
20	ERM 6020	Pulley Key
21	ERM 6021	Spindle Bearing
22	ERM 6022	Bearing Spacer
23	ERM 6023	Control Panel
24	ERM 6024	Transport Wheel
25	ERM 6025	3/4 - 10 Axle Bolt
26	ERM 6026	3/4 - 10 Hex Nut
27	ERM 6027	Driven Pulley
28	ERM 6028	Drive Belt (5L 610)
29	ERM 6081	Blade (Kit Only)
30	ERM 6030	Blade Bolt (Kit Only)
31	ERM 6031	Locking Nut (Kit Only)
32	ERM 6032	3/4 - 10 Jam Nut
33	ERM 6033	3/4 Bushing Washers
34	ERM 6034	1/2 - 13 x 3 Gr. 8 Bolt
35	ERM 6035	1/2 - 13 Flange Unit
36	ERM 6036	1/2 - 13 x 1 3/4 Bolt
37	ERM 6037	1/2 - 13 Hex Nut
38	ERM 6038	1/2 Washer
39	ERM 6039	1/2 Lock Washer
40	ERM 6040	1/2 Fender Washer
41	ERM 6041	1/2 - 13 x 1 1/2 Bolt

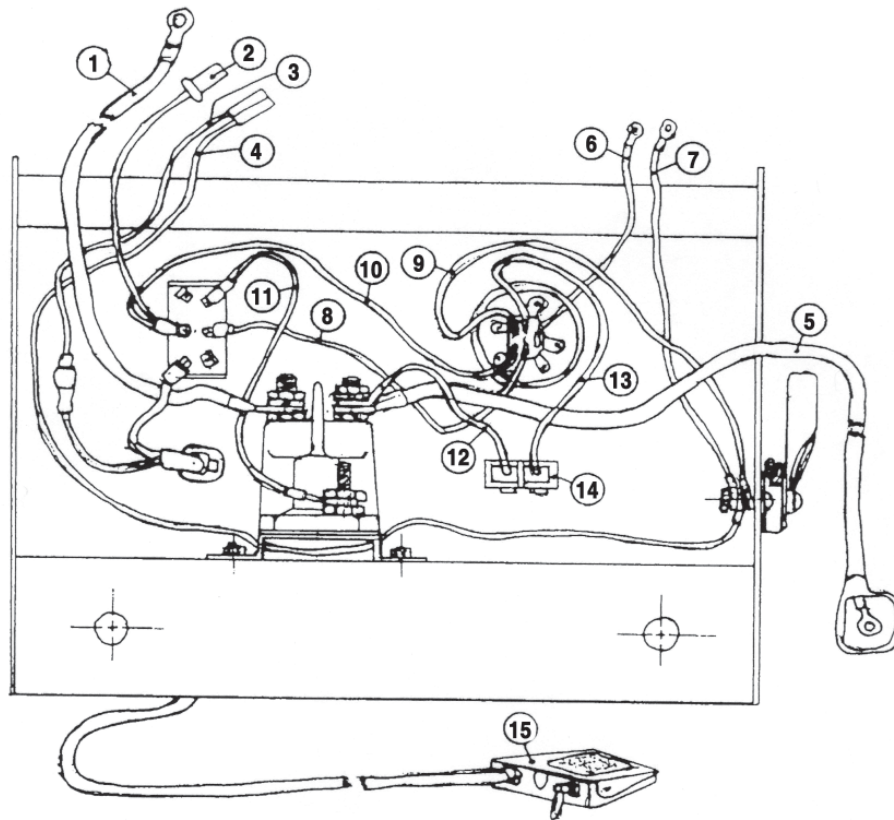
## 8 PARTS BREAKDOWN (CONTINUED)

<u>REF #</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>
42	ERM 6042	7/8 - 9 Castle Nut
43	ERM 6043	3/16 x 2 1/2 Cotter Pin
44	ERM 6044	7/8 Heavy Washer
45	ERM 6045	5/8 x 3 Clevis Pin
46	ERM 6046	Throttle Cable
47	ERM 6047	Fuse
48	ERM 6048	Ground Cable
49	ERM 6049	1/8 Hair Pin
*	ERM 6050	Clutch Switch
*	ERM 6052	Stump Jumper
*	ERM 6054	Fuel Tank & Bracket Assembly
*	ERM 6055	Wires Only For Remote Seat Switch
*	ERM 6056	Switch Only For Remote Seat Switch
*	ERM 6059	Bearing Shield
*	ERM 6081	Blade Kit Part Number
*	ERM 6082	Blade Bolts, Nuts, Bushings
*	ALS-RSS-15	Remote Seat Switch
*	ALS-16	Toggle Switch (6 Prong)
*	ALS-17	Toggle Switch (2 Prong)
50	EM-5	Battery Box
51	EM-51	Engine (Model Req'd)
52	EM-73	Clutch Assembly
53	EM-67	Idler Spring
54	EM-64	Idler Pulley
55	EM-55	Clutch Washer
56	EM-56	7/16 Lock Washer
57	EM-57	7/16 20 x 2 Grade 8 Bolt
58	EM-58	Star Knob

\* *Not Shown*

## 8 PARTS BREAKDOWN (CONTINUED)

### 8.4 WIRING DIAGRAM



<b>REF #</b>	<b>DESCRIPTION</b>
1	Battery Cable To Engine Starter
2	Wire To Engine Alternator
3	To Electric Clutch
4	Clutch Ground Wire
5	+ Battery Cable
6	To Engine
7	Not Used
8	Ignition To Clutch Safety Switch
9	Ignition Switch To Ground
10	Ignition Switch To Clutch Safety
11	Clutch Safety To Solenoid
12	Solenoid To Fuse Holder
13	Fuse Holder To Ignition Switch
14	Fuse Holder
15	Remote Blade Clutch Switch

## 9 TROUBLESHOOTING

TROUBLE	PROBABLE CAUSE	REMEDY
Mower engine stalls continuously	Cuttings not discharging	Tilt mower forward
		Increase mower height
	Towing mower fast	Decrease speed
	Cutting height too low	Increase cutting height
	Mower engine speed too slow	Increase speed
	Engine malfunctioning	Refer to engine owner's manual
Not cutting grass	Loose or broken belt	Tighten / replace
	Clutch malfunctioning	Contact your dealer
	Blade is dull	Sharpen blade
	Blade is upside down	Reverse blade
Excessive belt wear	Pulleys misaligned	Align pulleys
	Incorrect belt tension	Adjust tension
	Excessive debris on deck	Keep clippings cleaned from top of deck
Rapid blade wear	Blades contacting ground	Increase mower height
Uneven cut	Mower not level	Level mower
	Dull blade	Sharpen blade
	Engine not at full RPM	Increase RPM
	Blade upside down	Reverse blade
	Belt slippage	Tighten / replace belt
Scalping	Mower set too low	Increase cutting height



# 10 LIMITED WARRANTY



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 warrants 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.*

### CUSTOMER INFORMATION

**NAME:** \_\_\_\_\_

**PURCHASED FROM:** \_\_\_\_\_

**DATE OF PURCHASE:** \_\_\_\_\_

**MODEL NUMBER:** \_\_\_\_\_

**SERIAL NUMBER:** \_\_\_\_\_