

FINISHING MOWER

Operator's and Parts Manual



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CHAPTER I SAFETY INFORMATION

PLEASE NOTE

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

1.1 Safety First

Read these safety rules attentively and strictly follow suggested precautions to avoid any potential danger and safeguard your health and personal safety.

YOU are responsible for the SAFE operation and maintenance of your Finishing mower. YOU must ensure that you and anyone else who is going to operate, maintain or work around the Finishing mower be familiar with the operating and maintenance procedures and related SAFETY information contained in this manual. This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be adhered to while operating the Finishing mower.

Remember, YOU are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that EVERYONE operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Finishing mower owners must give operating instructions to operators or employees before allowing them to operate the machine.
- 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. All 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 makes himself and bystanders to possible serious injury or death.
- Do not modify the equipment in any way. Unauthorized modification may weaken the function and/or safety and could affect the life of the equipment.
- Think SAFETY! Work SAFELY!

The purpose of this manual is to familiarize the operator with the operation and regular servicing of the machine. Remember that the time spent on maintenance extends the life of your tractor.

The safety information given in this manual does not replace any safety codes, insurance needs, federal, state and local laws. Make sure your machine has the correct equipment required by your local laws and regulations.



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

1.2 General Safety

1. Read the operator's Manual and all safety decal carefully before operating, maintaining, adjusting or unplugging the Finishing mower.
2. Allow no riders on Finishing mower.
3. Operate only at safe distance from bystanders. Clear the area of people, especially small children, before starting.
4. Stop PTO before dismounting tractor.
5. Keep feet and hands from under Finishing mower at all times.
6. Keep all safety shields in place.
7. Do not stay between the tractor and the machine.
8. Do not approach Finishing mower until all motion has stopped.
9. All rotary cutters have the ability to discharge objects at high speeds, which could result in serious injury to bystanders or passers-by, use with extreme caution.
10. Place all controls in neutral, stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
11. Review safety related items annually with all personnel who will operate or maintain the Finishing mowers.
12. Do not operate tractor if you feel unwell or physically unfit, in which case you should stop working.
13. This machine was designed with safety very much in mind. However, there is no real substitute for caution and attention in preventing accidents. Once an accident has happened, it is too late to think about what you should have done.

1.3 Equipment Safety Guidelines

1. Safety of the operator and bystanders is one of the main concerns in designing and developing a machine. However, every year many accidents occur which could have been avoided by a few seconds of thought and a more careful approach to handling equipment. You, the operator, can avoid many accidents section. To avoid personal injury or death, study the following precautions and insist those working with you, or for you, follow them.
2. Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use.
3. Replace any safety decals or instruction decals that is not readable or is missing.
4. Never use alcoholic beverages or drugs that can hinder alertness or coordination while operating this equipment. Consult your doctor about operating this machine while taking prescription medications.
5. Under no circumstances should young children be allowed to work with this equipment. Do not allow persons to operate or assemble this unit until they have read this manual and have developed a thorough understanding of the safety precautions and of how it works.

6. This equipment is dangerous to children and persons unfamiliar with its operation. The operator should be a responsible, properly trained and physically able person familiar with farm machinery and trained in this equipment's. If the elderly are assisting with farm work, their physical limitations need to be recognized and accommodated.
7. Use a tractor equipped with a Roll Over Protective Structure (ROPS). Always wear your seat belt. Serious injury or even death could result from falling off the tractor – particularly during a turnover when the operator could be pinned under the ROPS or the tractor.
8. Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely, is in question – **DON'T TRY IT**.
9. Clear working area of stones, branches or hidden obstacles that might be hooked or snagged, causing injury or damage.
10. Operate only in daylight or good artificial light.
11. Do not modify the equipment in any way. Unauthorized modifications result in serious injury or death and may impair the function and life of the equipment.
12. In addition to the design and configuration of this implement, including Safety Decals and Safety Equipment, hazard control and accident prevention are dependent upon the awareness, concern, personnel involved in the operation, transport, maintenance, and storage of the machine.

1.4 Safety Training

1. Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator or bystander.
2. In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of this equipment.
3. It has been said, "The best safety feature is an informed, careful operator." We ask you to be that kind of an operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. Accidents can be avoided.
4. Working with unfamiliar equipment can lead to careless injuries. Read this manual, and the manual for your tractor, before assembly or operating, to acquaint yourself with the machines. If this machine is used by any person other than yourself, or is loaned or rented, it is the machine owner's responsibility to make certain that the operator, prior to operating:
 - a. Reads and understands the operator's manuals.
 - b. Be instructed in safe and proper use.
5. Know your controls and how to stop tractor, engine, and machine quickly in an emergency. Read this manual and the one provided with your tractor.
6. 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. Train all new personnel and review instructions frequently with existing workers. Be certain only a properly trained and physically able person will operate the machine.

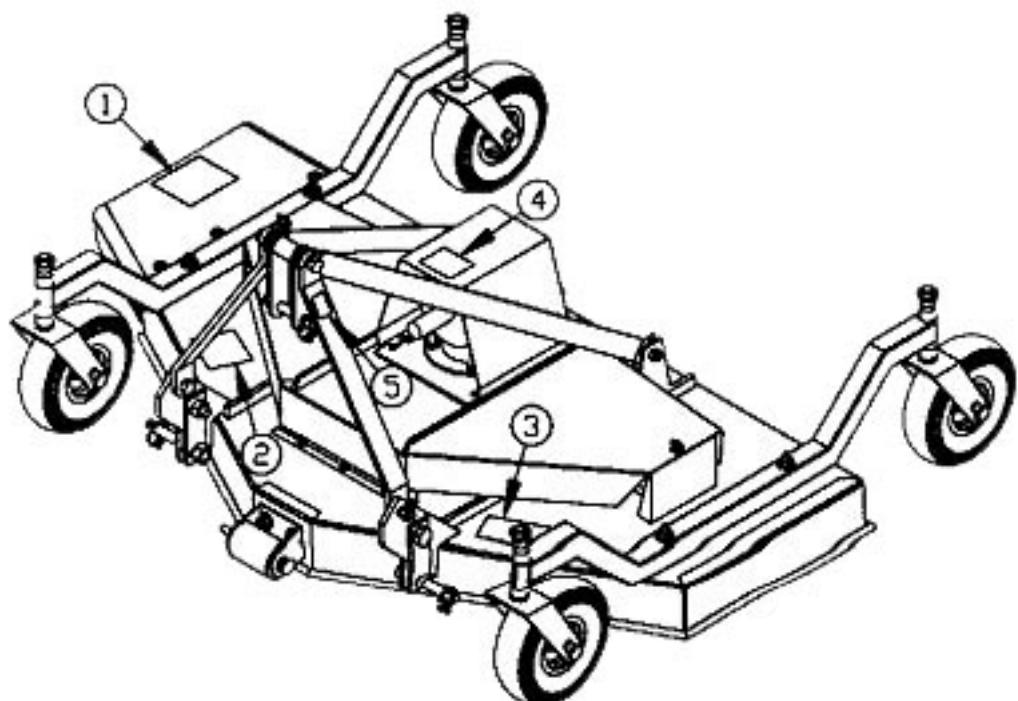
1.5 Safety Decals

Care of Safety Decals

1. Keep safety decals clean and legible at all times.

2. Replace safety decals that are missing or have become illegible.
3. If a component with a safety decal(s) affixed is replaced with a new part, make sure new safety decal(s) are attached in the same locations as the replaced components.
4. Safety decals are available from your authorized Distributor or Dealer Parts Department or the factory.

Safety Decal locations



<p>DANGER</p>  <p>KEEP AWAY - ROTATING BLADES SERIOUS INJURY OR DEATH CAN RESULT FROM THROWN OBJECTS OR BLADE CONTACT.</p> <ul style="list-style-type: none"> - DO NOT STAND ON OR NEAR MACHINE WHEN IN OPERATION. - DO NOT OPERATE WITH DEFLECTORS OR GUARDS REMOVED. - USE SPECIAL CARE WHEN OPERATING IN POPULATED OR CONGESTED AREAS. <p>966704</p>	<p>CAUTION</p> <p>2</p> <ul style="list-style-type: none"> -READ OPERATOR'S MANUAL BEFORE USING. -ONLY TRAINED, COMPETENT PERSONS SHALL OPERATE THIS EQUIPMENT. -KEEP ALL SHIELDS IN PLACE. -KEEP HANDS, FEET, CLOTHING AND HAIR AWAY FROM MOVING PARTS. -STOP ENGINE, SET BRAKE, REMOVE KEY AND WAIT FOR ALL MOVING PARTS TO STOP BEFORE SERVICING, ADJUSTING, REPAIRING AND UNPLUGGING. -REMOVE BYSTANDERS, ESPECIALLY CHILDREN, BEFORE STARTING OR WHILE OPERATING. -BLOCK UP BEFORE WORKING BEHNEATH UNIT. -LOWER THE MOWER WHEN PARKING OR STORING. -REVIEW SAFETY INSTRUCTIONS ANNUALLY. <p>966703</p>
<p>WARNING</p> <p>3</p> <p>YOU MUST NOT OPERATE THIS MACHINE UNLESS:</p> <ol style="list-style-type: none"> 1. YOU ARE TRAINED IN ITS SAFE OPERATION AND 2. YOU KNOW AND FOLLOW MANUFACTURER'S SAFETY AND OPERATING INSTRUCTIONS AS OUTLINED IN THE OPERATOR'S MANUAL. <p>AN UNTRAINED OPERATOR SUBJECTS HIMSELF AND OTHERS TO SERIOUS INJURY OR DEATH.</p> <p>966702</p>	<p>WARNING</p> <p>4</p> <ul style="list-style-type: none"> -ENSURE DRIVELINE SHIELDS ARE IN PLACE AND IN GOOD CONDITION BEFORE OPERATING. -PTO OPERATING SPEED IS 540 RPM. -ALWAYS REMOVE TRACTOR KEY, SET PARK BRAKE AND PLACE MOWER IN LOWEST POSITION WHEN UNATTENDED. -ENSURE ROTATION OF ALL COMPONENTS HAS STOPPED BEFORE SERVICING. <p>966701</p>
<p>CAUTION</p> <p>5</p> <ul style="list-style-type: none"> - DO NOT PERMIT RIDERS. - KEEP SHIELDS IN PLACE. - ENSURE EVERYONE IS CLEAR OF AREA, ESPECIALLY CHILDREN, BEFORE OPERATING. <p>966700</p>	

1.6 Operating Safety

1. Read and understand the Operator's Manual and all safety signs before operating, servicing, adjusting, repairing or unplugging.
2. Do not allow riders.
3. Install and secure all guards and shields before starting or operating.
4. Keep hands, feet, hair and clothing away from moving parts.
5. Place all controls in neutral, stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
6. Place all tractor and machine controls in neutral before starting.
7. Never start or operate machine unless sitting on tractor seat.
8. Clear the area of bystanders, especially small children, before starting
9. Stay away from PTO shaft and machine when engaging PTO. Keep others away.
10. Clean reflectors, SMV and lights before transporting.
11. Use hazard flashers on tractor when transporting.
12. Do not put hands or feet under machine while tractor engine or machine is running.
13. Do not operate Finishing mower in the raised position.
14. Objects can be thrown out from under machine with sufficient force to severely injure people. Stay away from machine when it is running. Keep others away.
15. Always know what you are cutting. Never operate Finishing mower in an area that has hidden obstacles. Remove sticks, stones, wire or other objects from working area before starting.
16. Review safety instructions with all operators annually.

1.7 Storage Safety

1. Store the machine in an area away from human activity.
2. Do not permit children to play on or around the stored machine.
3. Store the machine in a dry, level area. Support the frame with planks if required.

1.8 Maintenance Safety

1. Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.
2. Follow good **shop** practices.
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.
3. Make sure there is plenty of ventilation. Never operate the engine of the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.
4. Before working on this machine, shut off the engine, set the brakes, and remove the ignition key.
5. Never work under equipment unless it is blocked securely.
6. Use personal protection devices such as eye, hand and hearing protectors, when performing any service or maintenance work. Use heavy gloves when handling blades.
7. When replacement parts are necessary for periodic maintenance and servicing, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer will not be responsible for injuries or damages caused by use of unapproved parts and/or accessories.

8. A tire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.
9. Periodically tighten all bolts, nuts and screws and check that all cotter pins are properly installed to ensure unit is in a safe condition.
10. When completing a maintenance or service function, make sure all safety shields and devices are installed before placing machine in service.

CHAPTER II SPECIFICATIONS

2.1 Brief Introduction

FARMRY series Finishing mower is designed to cut a variety of grasses and other ground covers. You take the responsibility if the machine is used in any other purposes.

The finishing mower consists three rotating shafting with three free-swinging steel blades attached to them. The blades cut the grass while traveling over the working area. Rotational power to the shaft is provided by the tractor PTO through the gearbox in the center of the machine.

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

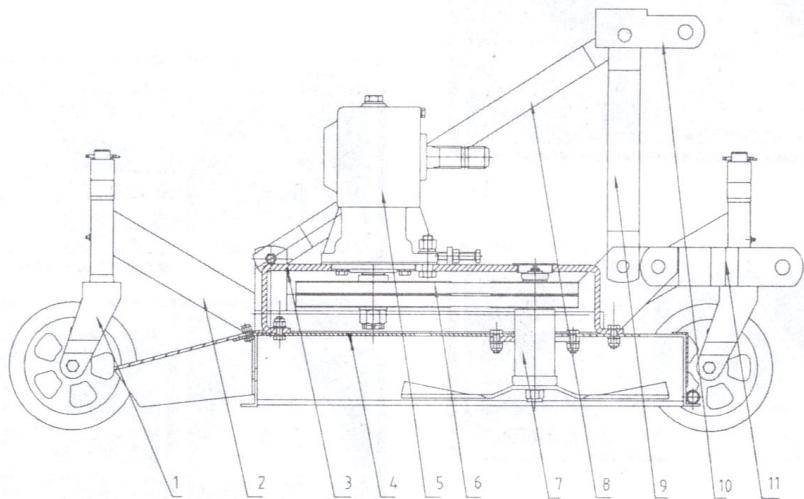


Fig. 2.1 Main components of the Finishing mower

1. Wheel assembly
2. Wheel bracket
3. Gearbox seat
4. Deck
5. Gearbox
6. Belt wheel
7. Blade axle
8. Rear link rod
9. Front link rod
10. Bracket for suspension (Upper)
11. Bracket for suspension (Lower)

2.2 Specifications and Parameters for Finishing Mower

MODEL	FM120	FM150	FM180
DIMENSIONS (L×W×H)	1270×1200×600mm	1570+C241200×1200×600mm	1870×1360×600mm
STRUCTURE WEIGHT	195kg	210kg	230kg
CUTTING WIDTH	1190mm	1490mm	1790mm
WORKING EFFICIENCY	4000-10000 m ³ /h	4500-12000 m ³ /h	5000-15000 m ³ /h
PTO TURNNING SPEED	540r/min	540r/min	540r/min
PTO SPLINE	6×8×800	6×8×800	6×8×1000
POWER REQUIRED	18-25hp	20-30hp	20-35hp

CHAPTER III OPERATION



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

3.1 Machine Components

The Finishing mower consists of one large rotating plate with three free-swinging steel blades attached to it. The blades cut the grass while traveling over the working area. Rotational power to the plate is provided by the tractor PTO through the gearbox in the center of the machine.

Remove the stump deflector plate from the gearbox output shaft to access the blade anchor bolts.

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

3.2 Equipment Matching

To insure the safe and reliable operation of the Finishing mower, it is necessary to use a tractor with the correct specifications. Use the following list as a guide in selecting a tractor to use on the machine.

1. Horsepower:

The power requirements range from 20hp for light cutting in level terrain up to 40 hp in heavy cutting in rough terrain. Use a tractor appropriate for your conditions.

2. Front End Weights:

It is recommended that tractor be equipped with front-end weights to provide extra stability. This is particularly important if using front-wheel assist tractor.

3. 3 Point Hitch:

The Finishing mower is equipped with a category I 3 point hitch. Be sure the tractor 3 point hitch is in the proper configuration.

Install the lift arm stabilizer or shorten the stop chains to place the arms into the non-sway configuration. Refer to the tractor manual for details.

4. Load Sensing Hydraulics:

The operator should set the tractor hydraulic system to provide "float" on the 3 point hitch. Refer to the tractor manual for details.

The float feature will allow the machine to follow the ground contours during operation.

5. PTO Shaft:

The tractor must have a 1 3/8 inch 6 spline 540 RPM PTO shaft to fit the driveline shaft supplied with the machine. Do not use shaft adapters or operate at any other speed.

It is not recommended that a tractor with variable speed PTO's be used on the Finishing mower. Operating at speeds faster than 540 RPM will overload the cutting components and lead to early failures.

3.3 Attaching / Unhooking

The Finishing mower should always be located on a level, dry area that is free of debris and other foreign objects. When attaching the machine to a tractor, follow this procedure:

1. Be sure that balance weights are added on the front of the tractor.
2. Attach the PTO driveline to the Finishing mower.
3. While backing up, align the lift arm balls with the mounting pins on the Finishing mower.

Note:

It may be necessary to add weight to the 3 point hitch to lower the lift arms.

4. Stop tractor, set park brake, remove ignition key and wait for all moving parts to stop before dismounting.
5. Align the left lower link arm with the mounting pin.
6. Slide the ball over the pin and install the retainer.
7. Use the screw jack on the right lift arm to align the ball with the pin.
8. Slide the ball over the mounting pin and install the retainer.
9. Level the frame and lift arms using the screw jack.
10. Attach the PTO driveline.
 - a. Check that the driveline telescopes easily and that the shield rotates freely.

Important:

Be sure that the driveline does not bottom out when going through its working angles.

- b. Attach the driveline to the tractor by retracting the locking pin, slide the yoke over the shaft and push on the yoke until the lock pin clicks into position. Pull on the yoke to be sure it is locked in position.
11. Remove retainer and pin from the mast.
12. Align top link using the turnbuckle.
13. Insert pin and install retainer.
14. Set the mast using the turnbuckle to place the mounting pin at the front of its slot.
15. Use the 3 point hitch to raise the machine.
16. Reverse the above procedure when unhooking from the tractor.



Caution: Lift Finishing mower, then put tractor's PTO shaft on low speed and rotate the cutter shaft for some minutes. Operate only at running well.

3.4 Field Operation

This Finishing mower is designed with the inherent flexibility of operating well in almost any kind of grass and terrain conditions. However the operator has the responsibility of being familiar with all operating and safety procedures and following them.

1. Level the frame:
 - a. Use the screw jack on the right lift arm to level the frame from side-to-side.
 - b. Use the turnbuckle on the top link to place the pin at the front of its slot. This will allow the machine to follow the contour of the ground.

- c. Set the 3 point hitch so deck is 25 to 50 mm higher at the rear of the deck than the front.
2. Height:
Use the turnbuckles on the trailing wheel frame to set the height of the deck. Adjust them evenly.
3. 3 Point Hitch
Place the 3 point into its "float" operating mode to allow the machine and the hitch to move up and down.
4. Align the unit with the working area.
5. Starting machine:
a. Run the engine at low idle.
b. Slowly engage the PTO control to start the machine.
c. Slowly bring the engine to the rated PTO speed. Never exceed rated speed.
d. Lower the machine to the ground and proceed down the field.
6. Stopping machine:
a. Slowly decrease engine speed to low idle.

	DANGER: Never operate Finishing mower in the raised position.
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- b. Disengage PTO clutch slowly.

	WARNING: Place all controls in neutral, lower machine, stop engine, set park, remove ignition key and wait for all moving parts to stop before dismounting.
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7. Ground speed:
Travel speed can vary between 3 and 8 mph (5 and 13 kph) depending on the grass and terrain conditions. It is the responsibility of the operator to note the condition of the job being done and set the speed to obtain a quality cutting job and maintain control of the machine.

The speed can be increased if a good job is being done.

Decrease speed if you are producing a ragged cut or leaving patches uncut.

8. Operating hints:
a. Although it is best to cut when it is dry, the Finishing mower works well in wet conditions as well. However, the operator will have to travel slower to do the same quality cutting. It will also be necessary to clean the machine more frequently to prevent caking and clogging of the blade area.
b. Set the upper link at the front of its slot when level to prevent the driveline from hitting the deck when lifting.
c. The Finishing mower should always be operated at the rated speed of 540 RPM. The cutting action is generated by the speed of the blade tip. When the speed drops below a certain rate (slowing of the input speed or RPM), the blades start to tear the material rather than cut it and will give a "ragged" looking cut.

- d. Vary ground speed by changing gears in the tractor transmission rather than changing the throttle setting. Forward travel speeds can range from 3 to 8 mph (5 to 13 km/h) or more depending on the type of terrain, grass or crop cover length, moisture level and power available.
- e. If the crop or grass is tall, cut it twice to obtain the best results. This allows the unit to cut less material on each pass.
- f. When cutting a new area for the first time, always set the mower to cut high to clear unknown obstructions. If none are found, the cutter can be run lower for the second pass.
- g. Never cut grass shorter than recommended for your weather conditions. Short grass is less able to withstand hot and dry condition. It is better for it to be cut often at a longer length than to cut it too short.
- h. The blades will need sharpening when you see that the grass has not been cut evenly or it looks like the grass has been ripped off.
- i. The dished shape of rotating plate under the deck acts as a "stump jumper". The concave shape allows the machine to go over stumps, rocks and other obstacles while operating.
- j. Always reduce ground speed when cutting around obstructions or in close quarters.
- k. The Finishing mower should always be operated with its trailing wheel riding on the ground and not normally lifted for turns or corners unless the ground is very rough or rutted. If lifted, it should be dropped back on the ground as soon as the maneuvering or rough terrain is past.
- l. The Finishing mower has two blades under its frame that are turning at a high rate of speed. With this speed, the blades can pick up objects on the ground and expel them out from under the frame or out the discharge areas.

	WARNING: The rotating blades can pick up objects and expel them at a high rate of speed. These projectiles can be a hazard to the people and property. Never operate Finishing mower when there are bystanders, especially children around. Use extra care when operating in populated or congested areas.
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3.5 Transporting

When transporting the machine, review and follow these instructions:

1. Be sure that the machine is securely attached to the tractor and all retainer pins are installed.
2. Be sure you have installed extra weights on the front of the tractor.
3. Clean the SMW emblem, lights and reflectors and be sure they are working.
4. Be sure you are in compliance with all applicable lighting and marking regulations when transporting.
5. Be sure your machine can clearly be seen by overtaking and oncoming traffic.
6. Do not allow riders.
7. Always use hazard flashers on the tractor when transporting.
8. Use pilot vehicles front and rear when transporting during times of limited visibility.

3.6 STORGE

After the season's use, the machine should be thoroughly inspected and prepared for storage. Repair or replace any worn or damaged components to prevent any unnecessary down time at the start of next season. To insure a long, trouble free life, this procedure should be followed when preparing the unit for storage:

1. Thoroughly wash the machine using a pressure washer to remove all dirt, mud, debris and residue.
2. Inspect the blades and rotor for damage or entangled material. Repair or replace damaged parts. Remove all entangled material.
3. Lubricate all grease fittings. Make sure that all grease cavities have been filled with grease to remove any water residue from the inside.
4. Remove the end of the PTO shaft and store inside.
5. Touch up all paint nicks and scratches to prevent rusting.
6. Move to storage area.
7. Select an area that is dry, level and free of debris.
8. Unhook from tractor (see Section 3.6).
9. If the machine cannot be placed inside, cover with a waterproof tarpaulin and tie securely in place.
10. Store the machine in an area away from human activity. Do not allow children to play on or around the stored machine.

CHAPTER IV SERVICE AND MAINTENANCE

4.1 Service

4.1.1 FLUIDS AND LUBRICANTS

1. Grease:
Use multi-purpose lithium based grease.
2. Gear Box Oil:
Use N46 drive & hydraulic dual-purpose oil or equivalent for all operating conditions.
Each Gear box Capacity: 0.85 liter
3. Storing Lubricants:
Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

4.1.2 GREASING

Use the Maintenance Checklist provided to keep a record of all scheduled maintenance.

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

4.1.3 SERVICING INTERVALS

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

8 Hours or Daily

1. Lubricate PTO driveline (2 locations).
2. Pull PTO driveline apart. Grease the telescoping components.
3. Lubricate castor shaft.
4. Lubricate tail wheel.

40 Hours or Weekly

Check gear box oil levels. Add as required.

Annually

1. Wash machine.
2. Disassemble PTO driveline. Clear and lubricate PTO components and driveline guard.

4.1.4 SERVICE RECORD

See Lubrication and Maintenance sections for details of service. Copy this page to continue record.

8 Hours or Daily											
Lubricate PTO Driveline											
Lubricate											
Lubricate											
Lubricate											
40 Hours or Weekly											
Check Gear Box Oil Level											
Annually											
Clean Machine											
Lubricate and Clean PTO Driveline Guard											

4.2 Maintenance

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

4.2.1 BLADE REPLACEMENT

A blade may become bent, chipped or broken when using and have to be replaced.

When replacing a blade, follow this procedure:

1. Raise the machine above the ground to provide access to the blades.
2. Stop engine, set park brake, remove ignition key and wait for all moving parts to stop before dismounting.
3. Support the machine with large blocks or safety stands.
4. Remove the nut through the access hole.
5. Push or tap the blade pin down.
6. Remove the old blade and replace with a new one
7. Tap or drive the blade bolt back into position.
8. Tighten the mounting bolt to its specified torque.

4.2.2 DRIVELINE MAINTENANCE

The PTO driveline is designed to telescope to allow for dimensional changes as the machine goes through its operating range. A tubular guard encloses the driving components and is designed to turn relative to the driving components. The driveline should telescope easily and the guard turn freely on the shaft at all times. Annual disassembly, cleaning and lubrication is recommended to insure that all components function as intended. To maintain the driveline, follow this procedure:

1. Remove the driveline from the machine.
2. Pull driveline apart.

3. Use a screwdriver to pry the tabs out of the sleeves on each end. There are 3 tabs per guard.
4. Pull the shaft out of the plastic tubular guard.
5. Use a solvent to clean the male and female portions of the telescoping ends.
6. Apply a light coat of grease to each end.
7. Use a solve to wash the grooves on each end where the tabs are located. Clean each tab also.
8. Apply a light coat of grease to each groove.
9. Insert the shaft into its respective guard and align the slots with the groove.
10. Insert the tabs through the slots and seat in the groove.
11. Check that each guard turns freely on the shaft.
12. Assemble the driveline.
13. Check that the driveline telescopes easily.
14. Replace any components that are damaged or worn.
15. Install the driveline on the machine.

4.2.3 GEARBOX MAINTAINCE

The heavy duty gearbox used on the Finishing mower will give many years of trouble-free service with minimal maintenance requirements. Maintain the gearbox by following this procedure:

1. Oil level:
 - a. Remove the level plug from the front of the gearbox.
 - b. The oil should just fill a few of the threads.
 - c. Add through the fill plug if required.

IMPORTANT: Check the oil level only when the unit is cold and the machine is on the level.

2. Repair:

When the gearbox noise level builds-up, it will be necessary to replace worn components or the entire gearbox depending on the condition.

The following items must be noted:

- a. Bottom bearing cap bolt torque 85 to 95 ft-lbs.
- b. Top bearing cap bolt torque 40 to 50 ft-lbs.
- c. Gear backlash 0.006 to 0.018 inches at 2-13/16 inches from input shaft centerline.
- d. Gearbox output shaft bearing pre-load should result in 3/16 in-lbs. Turning torque. Vary the number and thickness of shims when assembling to change the bearing pre-load.

CHAPTER V TROUBLE SHOOTING

This Finishing mower is designed to cut grass or other plants. It is a simple and reliable system that requires minimal maintenance.

In the following section, we have listed many of the problems, causes and solutions to the problems that you may encounter.

Problem & Possible Cause	Solution
1. Cutter doesn't turn PTO shaft slips	Repair tractor PTO clutch
2. Poor cutting job Traveling too fast. Blades dull. Grooves in grass. Scalping. Grass being left.	Slow down. Sharpen blades. Bent blade. Straighten or replace blade. Machine too low. Raise machine. Traveling too fast. Slow down. Top link too short. Extend top link.
3. Gearbox seal leaking Grease overheating.	Drill 3/16" hole in level plug and insert cotterpin. Hole will act as a breather and prevent pressurizing.
4. Noisy gearbox Poor gear mesh.	Remove input shaft and gear. Replace worn parts. Reassemble and use shims to give a gear backlash of 0.006-0.018 inches measured at 2 13/16" from shaft centerline.
5. Clutch slips Overloaders. Clutch. Clutch worn out.	Slow travel speed. Tighten springs on clutch plates. Replace clutch components or assembly as required.
6. Vibration Out of balance.	Check for bent, damaged or broken blades. Repair or replace as required

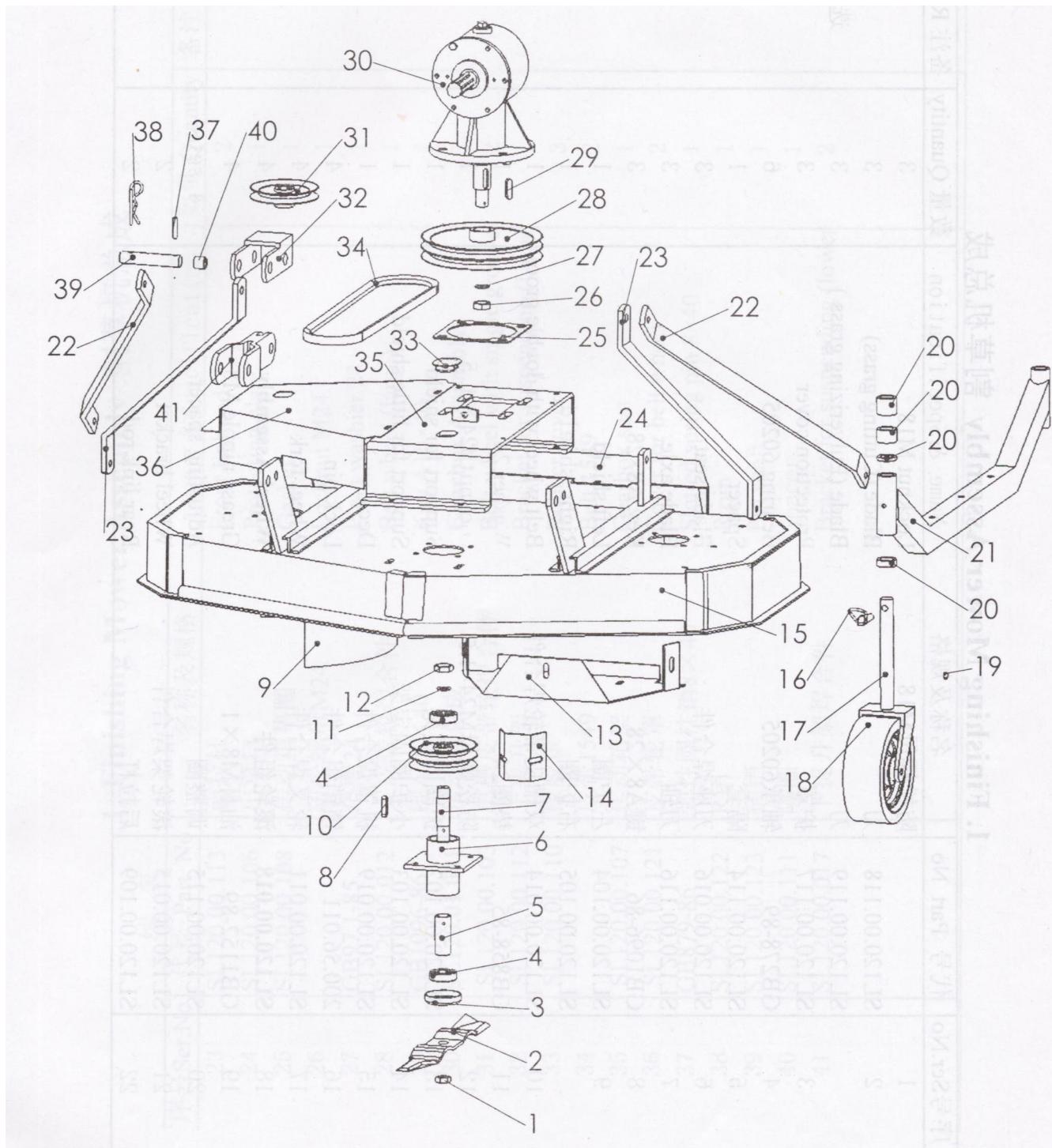
CHAPTER VI ASSEMBLY

The machine is shipped from the factory in a partially disassembled form that allows for easy and convenient shipping.

When preparing for the customer, follow this procedure:

1. Place the machine to the ground slow. Remove the mounting frame, pins and driveline from the frame and lay to the side.
2. Install and secure the wheel anchor assembly to the rear crossbar. Tighten clamping bolts to their specified torque.
3. Install the PTO driveline
 - a. Remove the bolts from the input yoke.
 - b. Attach driveline to yoke.
 - c. Tighten mounting bolts to their specified torque.
4. Attach 3 point hitch A frame to the front of the machine. Be sure to position 3 point mounting pin to the front.
5. Add a quart of the specified oil to the gearbox. Tighten fill plug.
6. The machine is now ready to attach to your tractor.

Finishing Mower Assembly



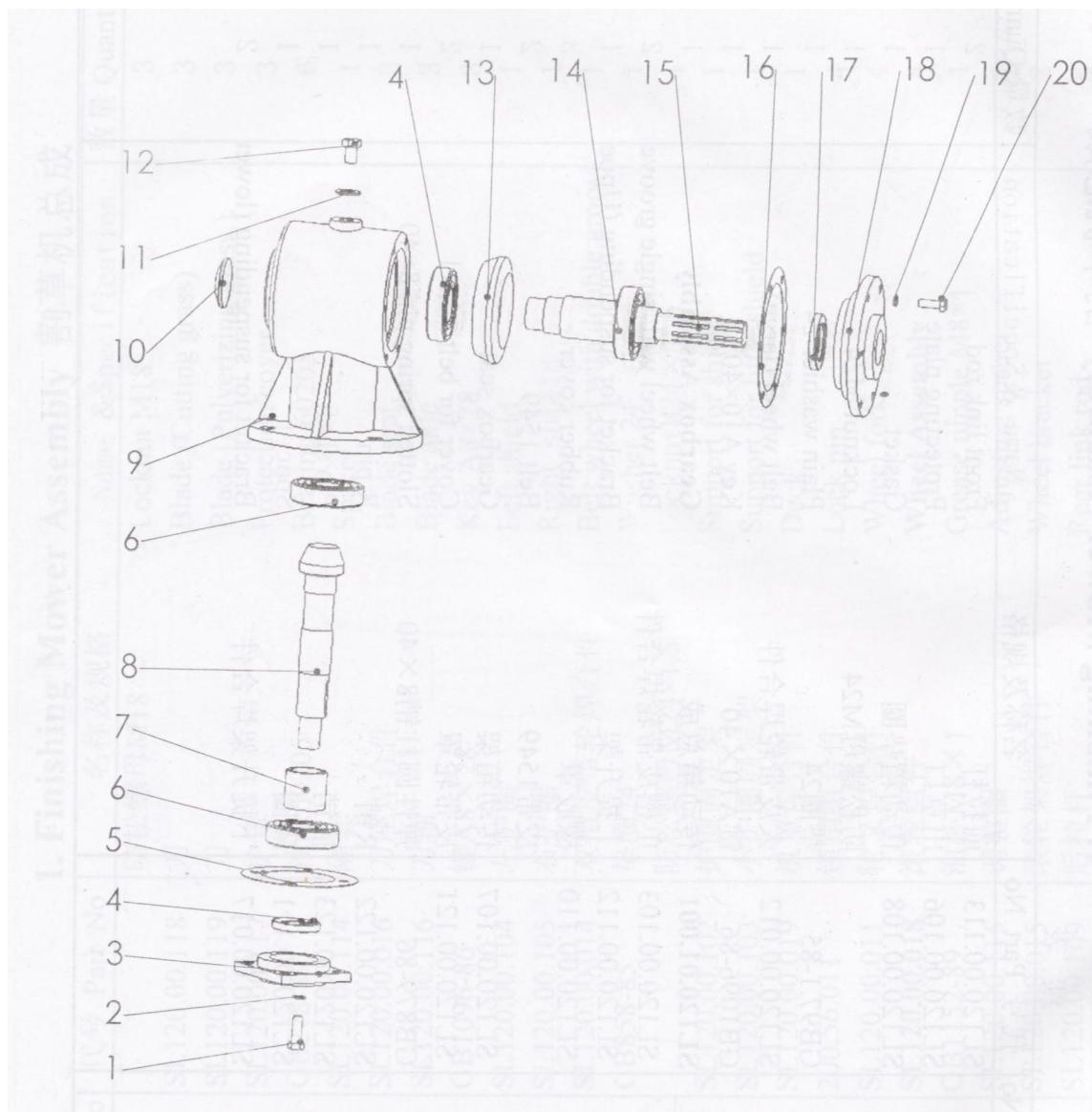
Finishing Mower

序号 Ser.No	代号 Part No	名称及规格	Name & Specification	数量 Quantity
1		防松螺母 M18	Locknut M18	1
2	SL120.00.118	刀	Blade	3
3	SL120.00.117	护罩	Protection cover	1
4	GB278-89	轴承 60205	Bearing 60205	2
5	SL120.00.114	隔套	Sleeve	1
6	SL120.00.016	刀座焊合件	Blade seat	3
7	SL120.00.116	刀轴	Blade axle	3
8	GB1096-86	键 A8×28	Key A8×28	1
9	SL120.00.104	左护圈	Left shield	1
	SL120.00.105	右护圈	Right shield	1
10	SL120.00.014	双槽皮带轮焊合件	Belt wheel with double groove	1
11	GB858-85	垫圈 24	Washer 24	1
12		防松螺母 M24×1.5	Locknut M24×1.5	1
13	SL120.00.102	护圈固定架	Support for shield	1
14	SL120.00.103	小护圈固定架	Support for little shield	1
15	SL120.00.019	机罩焊合件	Deck	1
16	200.56.011	锁销组合件	Lock pin	4
17	SL120.00.011	轮叉焊合件	Wheel fork	4
18	SL120.00.018	滚轮组件	Wheel Assembly	4
19	GB1152-89	油杯 M8×1	Grease nipple M8×1	4
20	SL120.00.115	调整圈	Adjusting ring	4
21	SL120.00.015	滚轮架焊合件	Wheel bracket	2
22	SL120.00.109	后拉杆	Rear link rod	2

续 表

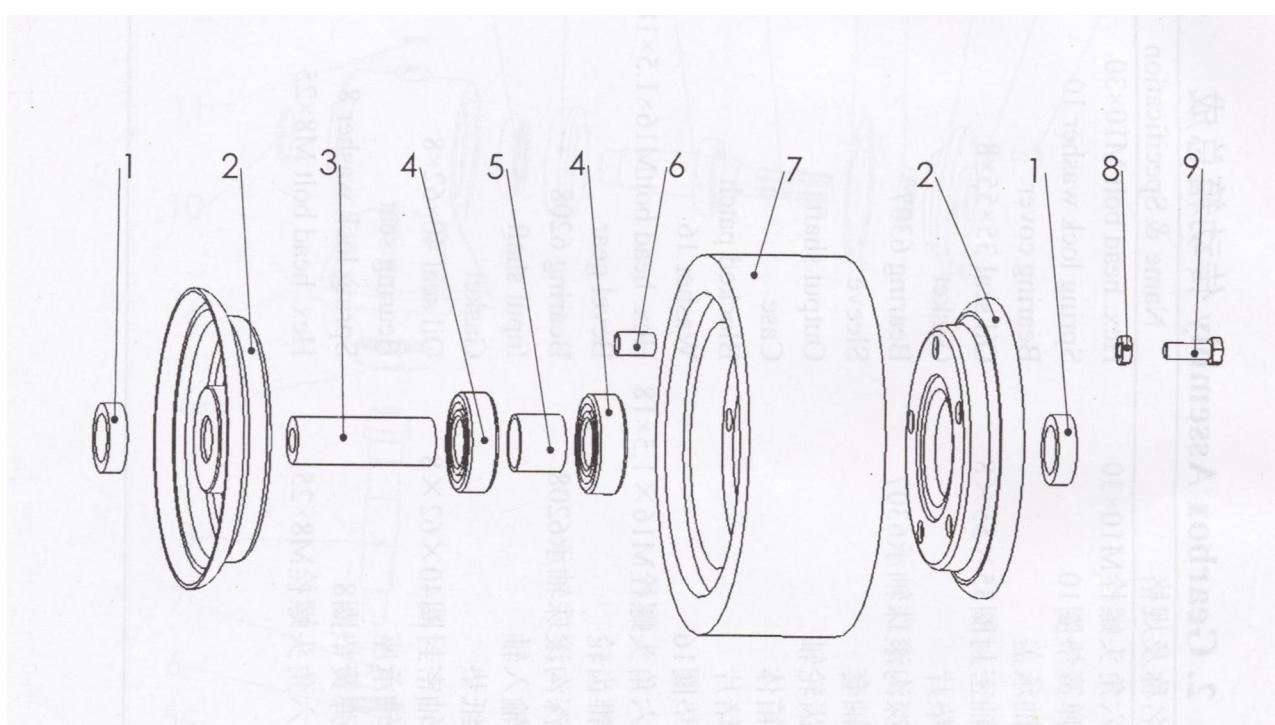
序号 Ser.No	代号 Part No	名称及规格	Name & Specification	数量 Quantity
23	SL120.00.113	前拉杆	Front link rod	2
24	SL120.00.106	出草口		1
25	SL120.00.108	传动箱垫圈	Gasket	1
26		防松螺母 M24	Locknut M24	1
27	GB97.1-85	垫圈 24	Plain washier 24	1
28	SL120.00.012	大皮带轮焊合件	Belt wheel (large)	1
29	GB1096-86	键 A10×40	Key A10×40	1
30	SL120.01.001	传动箱总成	Gearbox assembly	1
31	SL120.00.103	单槽皮带轮焊合件	Belt wheel with single groove	2
32	SL120.00.112	上提升架	Bracket for suspending (Up)	1
33	SL120.00.110	橡胶罩	Rubber cover	3
34		皮带 1549	Belt 1549	2
35	SL120.00.107	传动箱架	Gearbox seat	1
36	SL120.00.121	皮带轮罩	Cover for belt wheel	2
37	GB879-86	弹性圆柱销 8×40		1
38	SL120.00.122	R 销	R pin	1
39	SL120.00.123	插销		1
40	SL120.00.111	隔圈	Sleeve	1
41	SL120.00.017	下提升架焊合件	Bracket for suspending (lower)	2

Gearbox Assembly



序号 Ser.No	代号 Part No	名称及规格 Name & Specification	数量 Quantity
1	GB5783-86	六角头螺栓 M10×30	4
2	GB93-87	弹簧垫圈 10	4
3	SL120.01.102	轴承盖	1
4	GB9877.1-88	轴密封圈 35×55×8	4
5	SL140-116	垫片	1
6	GB/T 276-94	深沟滚珠轴承 6307	3
7	SL140-118	轴套	1
8	SL120.01.101	齿轮轴	1
9	SL120.01.104	箱体	1
10	SL140-121	堵片	1
11	12.37.146	垫圈 16	1
12	GB5786-86	六角头螺栓 M16×1.5×18	1
13	GB/T 276-94	深沟滚珠轴承 6208	1
14	SL120.01.103	锥齿轮	1
15	SL140-122	输入轴	1
16	SL140-124	纸垫	1
17	GB9877.1-88	轴密封圈 40×62×8	2
18	SL140-123	轴承座	1
19	GB93-87	弹簧垫圈 8	6
20	GB5783-86	六角头螺栓 M8×25	6

Wheel Assembly



Finishing Mower

序号 Ser.No	代号 Part No	名称及规格	Name & Specification	数量 Quantity
1	SL120.00.018a-5	尼龙套	Nylon sleeve	2
2	SL120.00.018a-2	钢圈	Steel rim	2
3	SL120.00.018a-6	套管	Axle	1
4	GB279-88	深沟滚珠轴承 60205	Bearing	2
5	SL120.00.018a-4	隔套	Sleeve	1
6	SL120.00.018a-3	衬套	Bush	5
7	SL120.00.018a-1	橡胶轮	Rubber tyre	1
8	GB6170-86	螺母 M8	Hex. nut M8	5
9	GB5783-86	螺栓 M8×25	Hex. head bolt M8×25	5

CHAPTER VII ILLUSTRATED PARTS CATALOGUE

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

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

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