Earthquake®
POWERED CHORE EQUIPMENT

Operator's Manual
Original Operating Instructions

VERSA Compact Tiller and Cultivator

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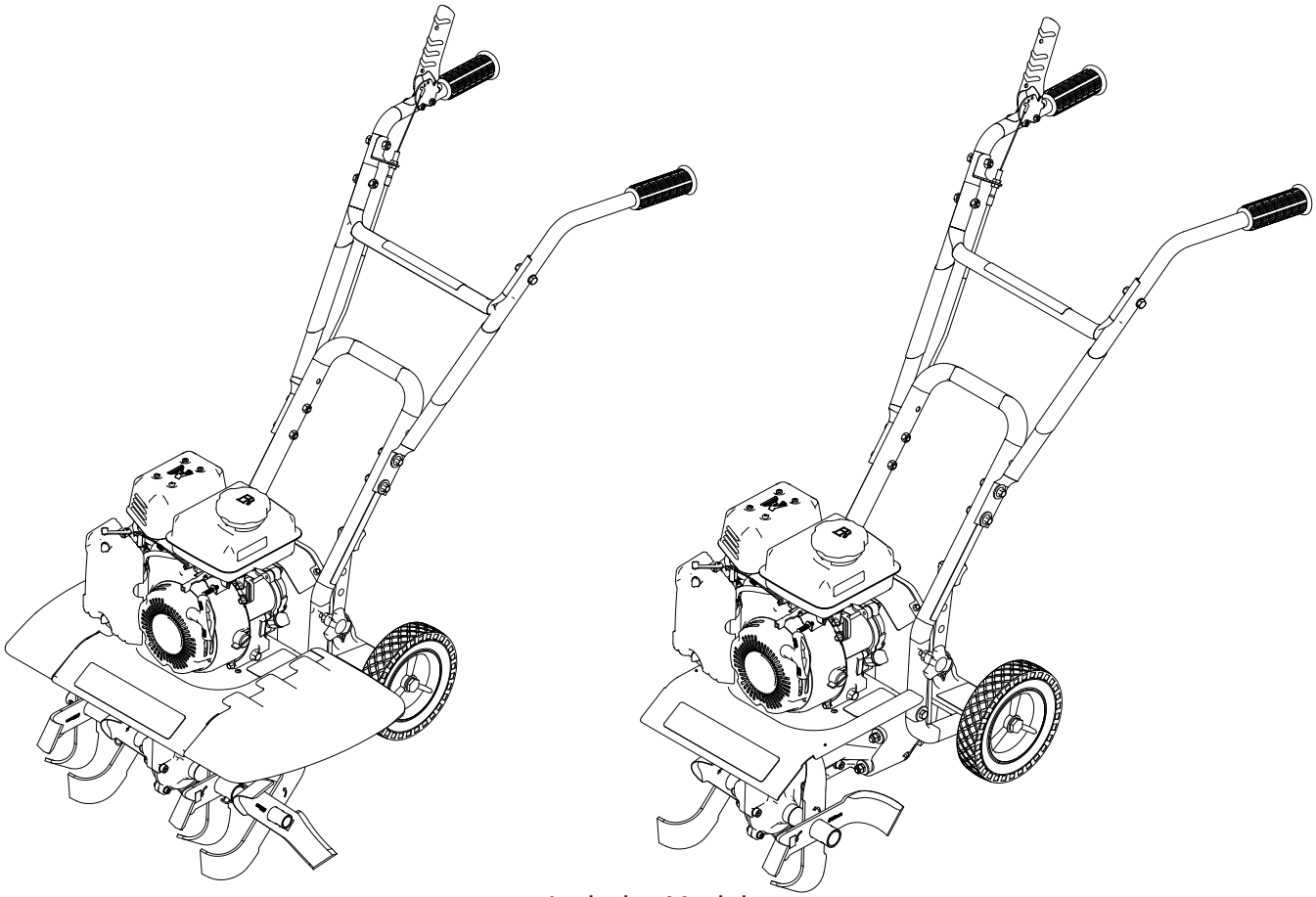

Includes Models:

20015*

22662

25780*

*Model shown

P/N: 24812
ECN: 11424
REV2: 12/01/16
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Get parts online at
www.GetEarthquake.com

INTRODUCTION

Thank you for purchasing the VERSA Compact Tiller/Cultivator from Earthquake®. We have worked to ensure that this tiller meets the highest standards for usability and durability. With proper care, your tiller will provide many years of service.

Please read this entire manual before installation and use. Earthquake® reserves the right to change, alter or improve the product and this document at any time without prior notice.

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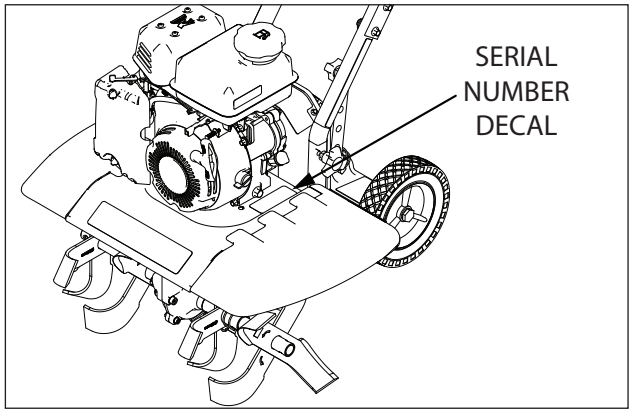
Registration and Service

Record the product model number and serial number in the space provided for easy reference when ordering parts or requesting technical support. Excluding emissions-related warranty items, the warranty is valid only if the completed registration is received by Ardisam within 30 days of purchase. **(SEE WARRANTY SECTION FOR MORE INFORMATION)** You can register your warranty online by visiting www.getearthquake.com, or by mailing it to: Ardisam, 1160 8th Avenue, Cumberland, WI 54829. You may also call our Customer Service department at (800) 345-6007 Mondays through Fridays from 8 a.m. to 5 p.m. CST.



OWNERSHIP RECORDS		
Owner's Name:		
Owner's Address:		
City:	State/Province:	Zip Code/Postal Code:
Model Number:	Serial Number:	
Date of Purchase:		
Notes:		

Read and keep this manual for future reference. This manual contains important information on SAFETY, ASSEMBLY, OPERATION, AND MAINTENANCE. The owner must be certain that all the product information is included with the unit. This information includes the MANUAL, the REPLACEMENT PARTS and the WARRANTIES. This information must be included to make sure state laws and other laws are followed. All persons to whom rent/loan this unit must have access to and understand this information. This manual should remain with the product even if it is resold.

WARNINGS AND SAFETY PRECAUTIONS

Owner's Responsibility

Accurate assembly and safe and effective use of the machine is the owner's responsibility.

- Read and follow all safety instructions.
- Carefully follow all assembly instructions.
- Maintain the machine according to directions and schedule included in this Earthquake® operator's manual.
- Ensure that anyone who uses the machine is familiar with all controls and safety precautions.

Special Messages

Your manual contains special messages to bring attention to potential safety concerns, machine damage as well as helpful operating and servicing information. Please read all the information carefully to avoid injury and machine damage.

NOTE: General information is given throughout the manual that may help the operator in the operation or service of the machine.

THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH IF NOT FOLLOWED COULD ENDANGER YOUR PERSONAL SAFETY. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO OPERATE THIS EQUIPMENT.

Before Operating Equipment:

Please read this section carefully. Read entire operating and maintenance instructions for this product. Failure to follow instructions could result in serious injury or death. Operate the machine according to the safety instructions outlined here and inserted throughout the text. Anyone who uses this machine must read the instructions and be familiar with the controls.

Intended Use / Foreseeable Misuse

IMPORTANT: This is a motorized rotary tiller that works the soil by means of rotating tines. It is pedestrian-controlled, but not self-propelled, with a gasoline-fueled internal combustion engine to power the tines. It shall not be used for any other purpose.

DANGER

NOTICE

***NOTICE* INDICATES YOUR EQUIPMENT CAN BE DAMAGED IF THE SAFETY INSTRUCTIONS THAT FOLLOW THIS SIGNAL WORD ARE NOT OBEYED.**

CAUTION

CAUTION INDICATES A HAZARD WHICH, IF NOT AVOIDED, COULD RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE.

WARNING

WARNING INDICATED A HAZARD WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY AND/OR PROPERTY DAMAGE.

DANGER

DANGER INDICATES A HAZARD WHICH, IF NOT AVOIDED, CERTAINLY WILL RESULT IN DEATH OR SERIOUS INJURY AND/OR PROPERTY DAMAGE.

IMPORTANT

***IMPORTANT* INDICATES HELPFUL INFORMATION FOR PROPER ASSEMBLY, OPERATION, OR MAINTENANCE OF YOUR EQUIPMENT.**

WARNING

CALIFORNIA PROPOSITION 65 WARNING

ENGINE EXHAUST FROM THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR OTHER REPRODUCTIVE HARM.

WARNING

YOU MUST READ, UNDERSTAND AND COMPLY WITH ALL SAFETY AND OPERATING INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO SETUP AND OPERATE YOUR MACHINE.

FAILURE TO COMPLY WITH ALL SAFETY AND OPERATING INSTRUCTIONS CAN RESULT IN LOSS OF MACHINE CONTROL, SERIOUS PERSONAL INJURY TO YOU AND/OR BYSTANDERS, AND RISK OF EQUIPMENT AND PROPERTY DAMAGE. THE TRIANGLE IN THE TEXT SIGNIFIES IMPORTANT CAUTIONS OR WARNINGS WHICH MUST BE FOLLOWED.

GENERAL SAFETY RULES

- Read, understand, and follow all instructions on the machine and in the manual(s). Be thoroughly familiar with the controls and the proper use of the machine before starting.
- Use this equipment for its intended purpose only.
- Familiarize yourself with all of the safety and operating decals on this equipment and on any of its attachments or accessories.
- Do not put hands or feet near or under rotating parts.
- Only allow responsible individuals who are familiar with the instructions to operate the machine. Do not allow children to operate this machine. Do not allow adults to operate the machine without proper instruction.
- Thoroughly inspect the area where the machine is to be used and remove all foreign objects. Your equipment can propel small objects at high speed causing personal injury or property damage. Stay away from breakable objects, such as house windows, automobiles, greenhouses, etc.
- Wear appropriate clothing such as a long-sleeved shirt or jacket. Also wear long trousers or slacks. Do not wear shorts. Never wear sandals, sneakers or open shoes, and never operate the machine with bare feet.
- Do not wear loose clothing or jewelry. They can get caught in moving parts. Always keep hands, feet, hair and loose clothing away from any moving parts on engine and machine.
- Always wear safety goggles or safety glasses with side shields when operating the machine to protect your eyes from foreign objects which can be thrown from the unit. Always wear a protective hearing device.
- Always wear work gloves and sturdy footwear. Wear footwear that will improve footing on slippery surfaces. Leather work shoes or short boots work well for most people. These will protect the operator's ankles and shins from small sticks, splinters, and other debris.
- It is advisable to wear protective headgear to prevent the possibility of being struck by small flying particles, or being struck by low hanging branches, twigs, or other objects which may be unnoticed by the operator.
- Do not operate the machine without proper guards or other safety protective devices in place.
- See manufacturer's instructions for proper operation and installation of accessories. Only use accessories approved by the manufacturer.
- Operate only in daylight or good artificial light.
- Do not operate product when fatigued or under the influence of alcohol, drugs or other medication which can cause drowsiness or affect your ability to operate this machine safely.
- Never operate machine in wet grass. Always be sure of your footing; keep a firm hold on the handle and walk; never run.
- Watch for traffic when operating machine near, or when crossing roads.
- If the equipment should start to vibrate abnormally, stop the engine (motor), flip the ON/OFF switch to the **OFF** position. Check immediately for cause. Vibration is generally a warning of trouble. If the noise or vibrations of the machine increase, stop immediately and perform an inspection.
- Never leave the machine unattended when the engine is running. Flip the ON/OFF switch to the **OFF** position.
- Regularly inspect the machine. Make sure parts are not bent, damaged or loose.
- Temperature of muffler and nearby areas may exceed 150° F (65° C). Allow muffler and engine areas to cool before touching. Never pick up or carry the machine while the engine is running.
- Prolonged exposure to noise and vibration from gasoline engine-powered equipment should be avoided. Take intermittent breaks and/or wear ear protection from engine noise as well as heavy work gloves to reduce vibration in the hands.
- Keep all screws, nuts and bolts tight.
- Do not transport the machine from one place to another with the engine running.
- When moving the packaged machine, always do so with a partner.
- Check local regulations for age restrictions on use of this machine.

Product-Specific Safety Rules

- Do not till above underground utilities, including water lines, gas lines, electric cables, or pipes. Do not operate the machine on terrain/soil with large rocks and foreign objects which can damage the equipment.
- After striking a foreign object, stop the engine. Flip the ON/OFF switch to the **OFF** position. Inspect the machine for damage. If damaged, repair before starting and operating the machine.
- The tines of the tiller should not rotate when the drive control lever is released into the neutral position. If it does rotate when in neutral, contact Earthquake® Customer Service for instruction.
- If an object becomes lodged in the tines, flip the ON/OFF switch to the **OFF** position, allow to cool before attempting to remove the foreign object.
- Pulleys and belts should be kept free of oil or other moisture for efficient operation.
- Disengage all clutches and leave control lever in the neutral position before starting the engine.

⚠ WARNING

ENGINES GIVE OFF CARBON MONOXIDE, AN ODORLESS, COLORLESS, POISONOUS GAS. CARBON MONOXIDE MAY BE PRESENT EVEN IF YOU DO NOT SMELL OR SEE ANY ENGINE EXHAUST. BREATHING CARBON MONOXIDE CAN CAUSE NAUSEA, FAINTING OR DEATH, IN ADDITION TO DROWSINESS, DIZZINESS AND CONFUSION.

IF YOU EXPERIENCE ANY OF THESE SYMPTOMS, SEEK FRESH AIR AND MEDICAL ATTENTION IMMEDIATELY.

ENGINE SAFETY PRECAUTIONS

If your product comes with a separate engine manual, be sure to read and follow all safety and warning precautions outlined there, in addition to any in this manual.

Preventing Carbon Monoxide Poisoning

- Always start and run engine outdoors. Do not start or run engine in an enclosed area, even if doors or windows are open.
- Never try to ventilate engine exhaust indoors. Carbon monoxide can reach dangerous levels very quickly.
- Never run engine outdoors where exhaust fumes may be pulled into a building.
- Never run engine outdoors in a poorly ventilated area where the exhaust fumes may be trapped and not easily taken away. (Examples include: in a large hole or areas where hills surround your working area.)
- Never run engine in an enclosed or partially enclosed area. (Examples include: buildings that are enclosed on one or more sides, under tents, car ports or basements.)
- Always run the engine with the exhaust and muffler pointed in the direction away from the operator.
- Never point the exhaust muffler towards anyone. People should always be many feet away from the operation of the engine and its attachments.
- Do not change the engine governor settings or over-speed the engine.

Gasoline Fires and Handling Fuel Safely

Use extra care in handling gasoline and other fuels. They are flammable and vapors are explosive.

- When storing extra fuel be sure that it is in an appropriate container and away from any fire hazards.
- Prevent fire and explosion caused by static electric discharge. Use only nonmetal, portable fuel containers approved by the Underwriter's Laboratory (U.L.) or the American Society for Testing & Materials (ASTM).
- Never remove the fuel cap or add fuel with the engine running. Stop engine and allow to cool before filling.
- Do not smoke.
- Never drain fuel from engine in an enclosed area.

⚠ WARNING

HOT GASES ARE A NORMAL BY-PRODUCT OF A FUNCTIONING INTERNAL COMBUSTION ENGINE. FOLLOW ALL SAFETY INSTRUCTIONS TO PREVENT BURNS AND FIRES.

DO NOT ALTER/MODIFY ENGINE:

- **NEVER ALTER OR MODIFY THE ENGINE FROM THE FACTORY. SERIOUS INJURY OR DEATH MAY OCCUR IF ENGINE IS MODIFIED OR ALTERED.**
- **WHEN WORKING ON OR REPLACING PARTS FOR THE ENGINE OR PRODUCT, YOU MUST ALWAYS PUT THE ON/OFF SWITCH TO THE OFF POSITION.**

- Always fill fuel tank outside in a well ventilated area. Never fill your fuel tank with fuel indoors. (Examples include: basement, garage, barn, shed, house, porch, etc.) Never fill tank near appliances with pilot lights, heaters, or other ignition sources. If the fuel has to be drained, this should be done outdoors. The drained fuel should be stored in a container specifically designed for fuel storage or it should be disposed of carefully.
- Always wipe up excess (spilled) fuel from engine before starting. Clean up spilled fuel immediately. If fuel is spilled, do not start the engine but move product and fuel container from area. Clean up spilled fuel and allow to evaporate and dry after wiping and before starting.
- Allow fuel fumes/vapors to escape from the area before starting engine.
- Test the fuel cap for proper installation before starting and using engine.
- Always run the engine with fuel cap properly installed on the engine.
- Never smoke while refilling engine fuel tank.
- Do not store engine with fuel in fuel tank indoors. Fuel and fuel vapors are highly explosive.

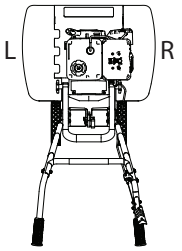
Preparation

- Dress appropriately when operating the tiller. Always wear sturdy footwear. Never wear sandals, sneakers or open shoes, and never operate the tiller with bare feet. Do not wear loose clothing that might get caught in moving parts.
- Carefully inspect the area to be tilled and remove all foreign objects. Do not till above underground water lines, gas lines, electric cables, or pipes. Do not operate the tiller in soil with large rocks and foreign objects which can damage the equipment.
- Disengage all clutches and leave control lever in the neutral position before starting the engine.

- Handle fuel with care; it is highly flammable.
  a. Use an approved fuel container.
  b. Never add fuel to a running engine or hot engine.
  c. Fill fuel tank outdoors with extreme care. Never fill fuel tank indoors.
  d. Replace gasoline cap securely and clean up spilled fuel before restarting.

NOTICE

THE RIGHT AND LEFT SIDES OF YOUR ROTOTILLER ARE DETERMINED FROM THE OPERATING POSITION AS YOU FACE THE DIRECTION OF FORWARD TRAVEL.



ENGINE IS SHIPPED FROM FACTORY WITHOUT OIL. YOU MUST ADD ENGINE OIL BEFORE STARTING ENGINE.

OPERATION

- Do not operate tiller under the influence of alcohol or drugs.
- Never operate tiller without guards, covers, and hoods in place.
- Keep hands, feet, and clothing away from rotating parts. Keep clear of tiller tines at all times.
- Tines rotate when tiller is engaged; tines rotate when the drive safety control lever is pulled down. Releasing the drive safety control lever to neutral stops the tines.
- Use extreme caution when operating on or crossing gravel drives, walks, or roads. Stay alert for hidden hazards or traffic.
- After striking a foreign object, stop the engine, remove the wire from the spark plug, thoroughly inspect the tiller for any damage, and repair the damage before restarting and operating the tiller.
- If vegetation clogs the tines, stop the engine and disconnect the spark plug wire before removing vegetation by hand.
- If the unit should start to vibrate abnormally, stop the engine and check immediately for the cause. Vibration is generally a warning of trouble.
- Do not run the engine indoors; exhaust fumes are deadly.
- Do not overload the machine capacity by attempting to till too deep at too fast of a rate.
- Never operate the tiller without good visibility or light.
- Be careful when tilling in hard ground. The tines may catch in the ground and propel the tiller forward. If this occurs, let go of the handle bars and do not restrain the machine.
- Take all possible precautions when leaving the machine unattended. Disengage control lever, stop the engine, wait for all moving parts to stop, and make certain guards and shields are in place.
- When leaving the operating position for any reason:
  - shut off the engine.
  - wait for all moving parts to stop.

MAINTENANCE AND STORAGE

- Keep machine, attachments and accessories in safe working condition.
- Check shear bolts, engine mounting bolts and other bolts at frequent intervals for proper tightness to be sure the equipment is in safe working condition.
- To prevent accidental starting, always disconnect and secure the spark plug wire from the spark plug before performing tiller maintenance.
- Never run the engine indoors. Exhaust fumes are deadly.
- Always allow muffler to cool before filling the fuel tank.
- Never store equipment with gasoline in the tank inside a closed building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any building.
- Always refer to the operator's guide instructions for important details if the tiller is to be stored for an extended period.

SAFETY DECALS

This rototiller unit has been designed and manufactured to provide you with the safety and reliability you would expect from an industry leader in outdoor power equipment manufacturing.

Although reading this manual and the safety instructions it contains will provide you with the necessary basic knowledge to operate this equipment safely and effectively, we have placed several safety labels on the tiller to remind you of this important information while you are operating the unit.

These important safety labels are shown on the next page to help familiarize you with the location and content of the safety messages you will see as you perform normal tilling operations. Please review these decals now, and if you have any questions regarding its meaning or how to comply with these instructions, reread the complete safety instruction text in this manual. For additional questions call Earthquake®Customer Service.

Part No. 15698
CLUTCH ENGAGE
Handlebar Decal

When starting engine, place free hand here.
Pour démarrer le moteur, placer le main libre ici. 17918

Part No. 17918
PLACE FREE HAND HERE
Engine Recoil Decal

⚠ WARNING

Avoid Serious Injury.
Read operator's manual(s). Know the location and function of all controls. Keep all shields and guards in place and working while running. Never operate tiller when children are around. Dress appropriately and wear sturdy footwear. Carefully inspect area to be tilled. Remove large rocks and other foreign objects. Do not till above underground electric, water, gas, or other utility lines and pipes. Stop the engine and disconnect the spark plug wire before removing debris or servicing unit. When leaving the operating position for any reason, shut off the engine and wait for all moving parts to stop. Failure to follow instructions could result in serious bodily injury.
20436

Part No. 20436
OPERATION WARNING PICTORIALS
Drag Stake Mount Decal

⚠ AVERTISSEMENT

Danger de blessure grave.
Lire le(s) manuel(s) de l'utilisateur. Connaître l'emplacement et la fonction de toutes les commandes. Maintenir tous les écrans et carters de protection en place et en état de marche durant l'utilisation. Ne jamais faire fonctionner la motobêche en présence d'enfants. S'habiller comme il se doit et porter des chaussures solides. Contrôler avec soin la surface à labourer. Enlever les grosses pierres et autres objets étrangers. Ne pas labourer au-dessus de lignes et conduites souterraines d'électricité, d'eau, de gaz et autres. Arrêter le moteur et débrancher le câble de bougie avant de retirer des débris ou d'intervenir sur la machine. Avant de quitter la position de conduite, quelle qu'en soit la raison, couper le moteur et attendre l'arrêt complet de toutes les pièces en mouvement. Toute infraction aux instructions peut entraîner des blessures corporelles graves.
23220

Part No. 23220
OPERATION WARNING FRENCH
Drag Stake Mount Decal

Avoid Injury From Rotating Tines.
Keep hands, feet and clothing away. Moving parts can crush and cut. Tines rotate when tiller is engaged and when drive control lever is pulled back. Releasing the drive control lever to neutral stops the tines.
Danger de blessure par les fraises en rotation.
Tenir les mains, les pieds et les vêtements à l'écart. Les pièces en mouvement peuvent écraser et couper. Les fraises tournent lorsque la motobêche est embrayée et que le levier de commande de traction est tiré vers l'arrière. Les fraises s'arrêtent si le levier de commande de traction est relâché et revient en position neutre.

⚠ WARNING
AVERTISSEMENT

Dangerous Moving Parts.
Do not start engine unless belt cover is properly attached. Keep hands, feet and clothing away from moving belts and pulleys. Failure to comply could result in crushed, cut or severed body parts. See operator's manual for full safety instructions.
Pièces en mouvement dangereuses.
Ne pas démarrer le moteur si le protège-courroie n'est pas correctement attaché. Tenir les mains, les pieds et les vêtements à l'écart des courroies et poulies en mouvement. Le non-respect de cette consigne peut entraîner l'écrasement, la coupure, voire le sectionnement de parties du corps. Voir les instructions de sécurité complètes dans le manuel de l'utilisateur.

⚠ WARNING
AVERTISSEMENT
20437

Part No. 20437
TINES & BELT WARNING
Pulley Box Decal

HAZARD SYMBOLS AND MEANINGS

A: Warning!

B: Avoid Injury From Rotating Tines.

C: Read Owner's Manual Before Operating Machine.

D: Remove Objects that Could Be Thrown By This Machine.

E: Dangerous Moving Parts.

F: Be Aware of Moving and Rotating Parts.

G: Wear Ear and Eye Protection At All Times.

H: Do Not Service or Adjust Moving Parts Unless Engine is Stopped and Spark Plug Wire is Disconnected.

I: Dress Appropriately And Wear Sturdy Footwear.

J: Toxic Fumes—Do Not Operate in Unventilated Areas.

K: Hot Surfaces.

L: Fire Hazards.

M. Do Not Use In Thunderstorms--For severe weather, stop operation of this machine and seek shelter.

N. Team Lift--For your safety, always have at least two people when lifting this machine.

O. Do Not Till Above Underground Utility Lines And Pipes.

P. Do Not Operate When Children Or Others Are Around.

FEATURES

The advantage of the Earthquake® VERSA Compact Tiller/Cultivator, over other tillers, is its low center of gravity and the ability to switch between tiller and cultivator in seconds with no tools! To convert your full width tiller to a narrow cultivator, just pull the lock pins to remove the outer tines. Then simply remove the hand knob bolts and pivot the handlebar back to remove the slide-on side shields. Refasten the handlebar to the pulley box to the desired height with the hand knob bolts and you're ready to cultivate between narrow garden rows (see detailed illustrated instructions on page 16). This tiller has been engineered to the highest standards by tilling experts who sought a light-weight, compact, and easily maneuverable tiller that can be used all season long.

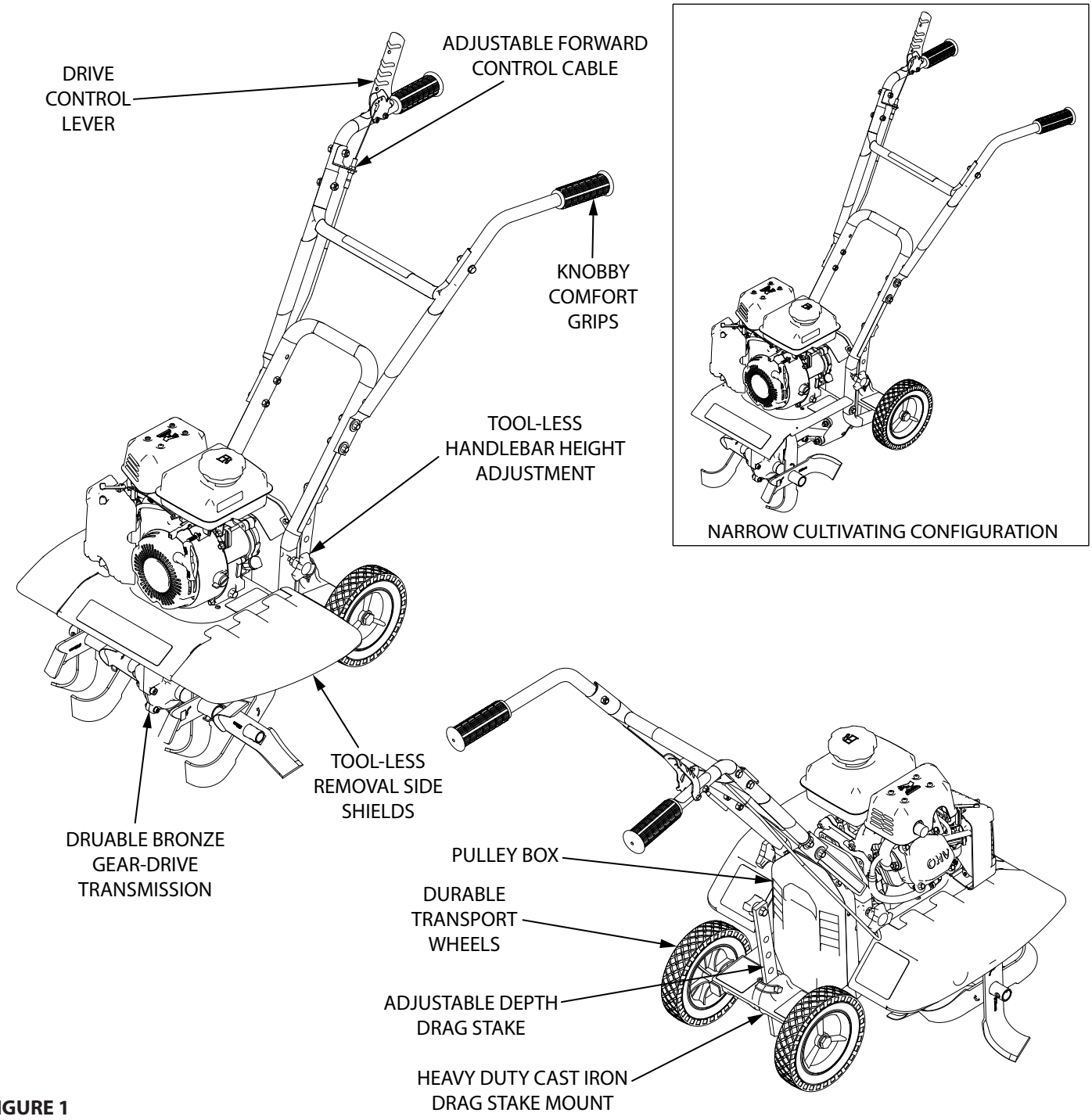
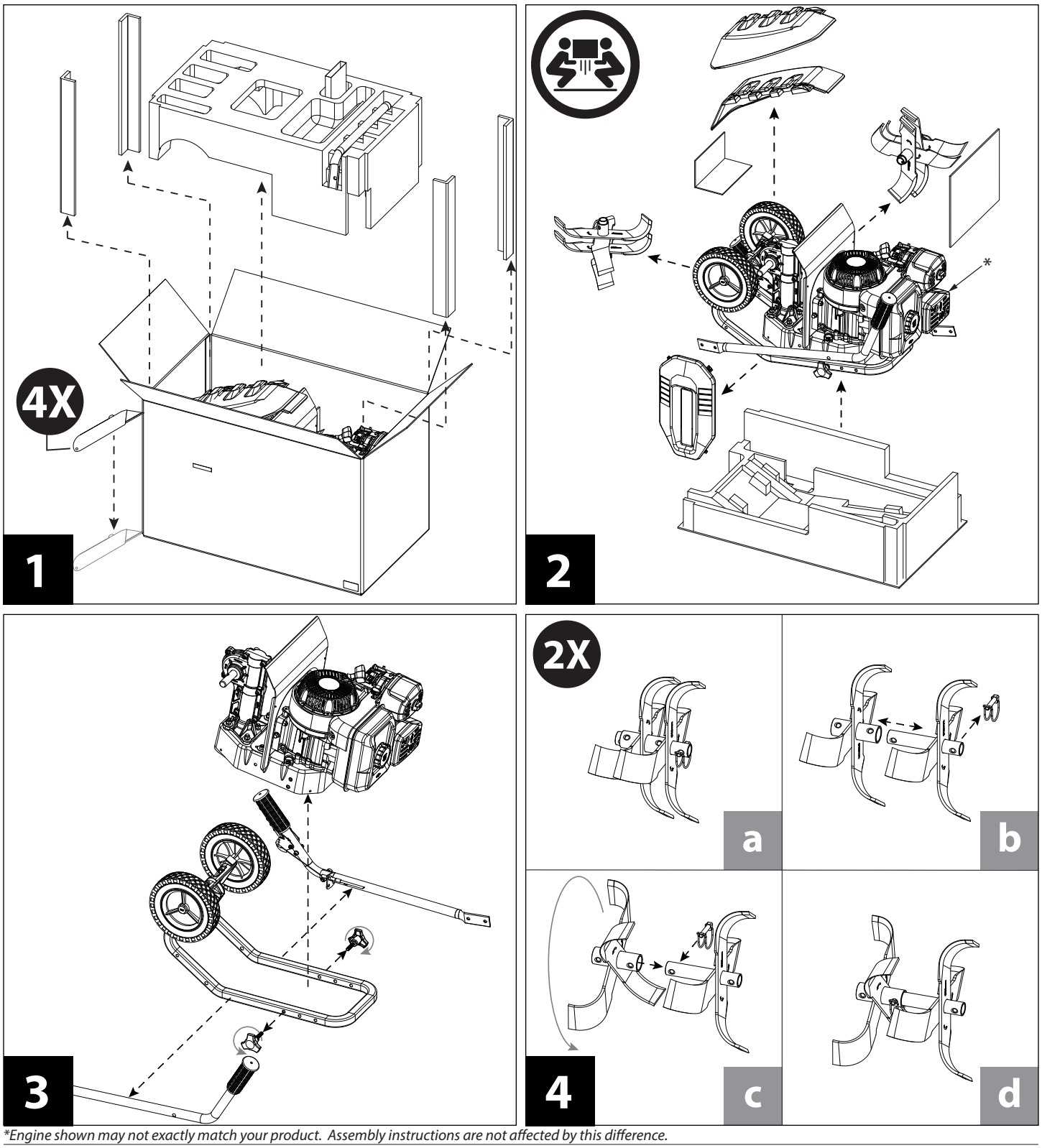


FIGURE 1

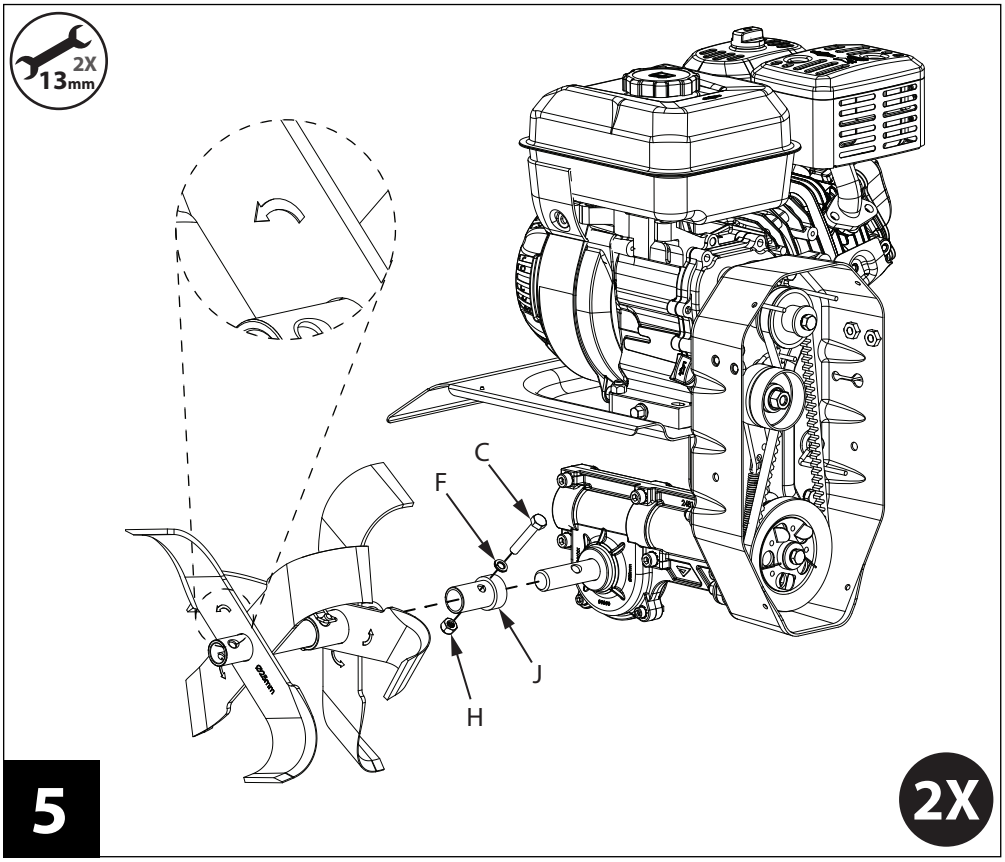
UNPACKING AND ASSEMBLY: MODELS 20015, 22662

Written instructions begin on page 14. *(Instructions for model 25780 begin on page 15)*

Scan QR Code for video assembly instructions and product information.



**Engine shown may not exactly match your product. Assembly instructions are not affected by this difference.*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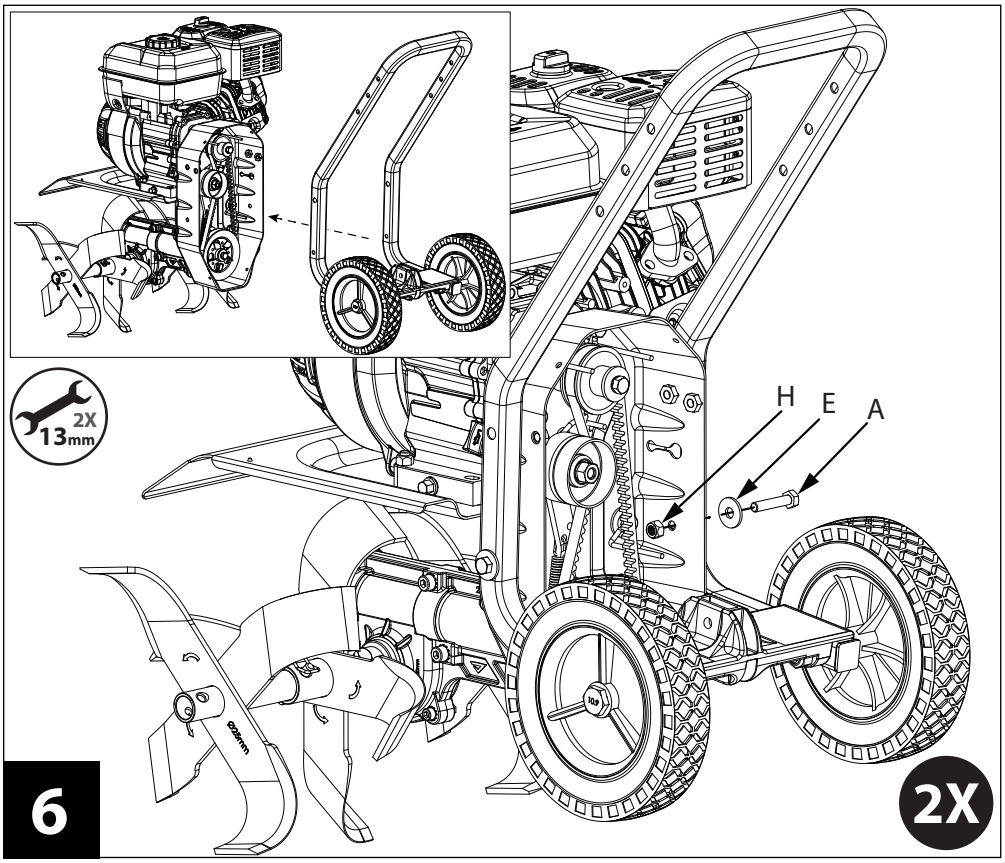
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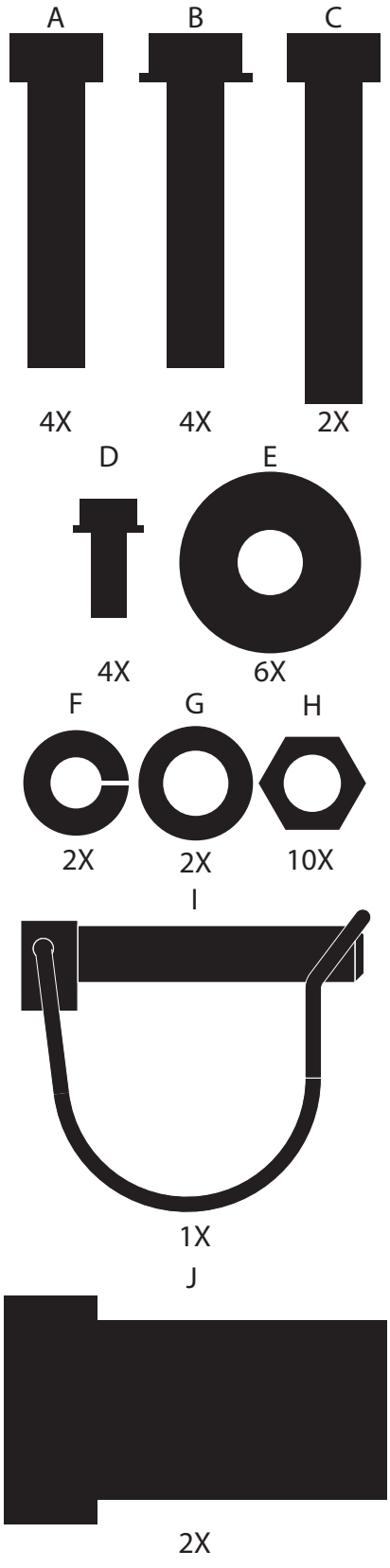
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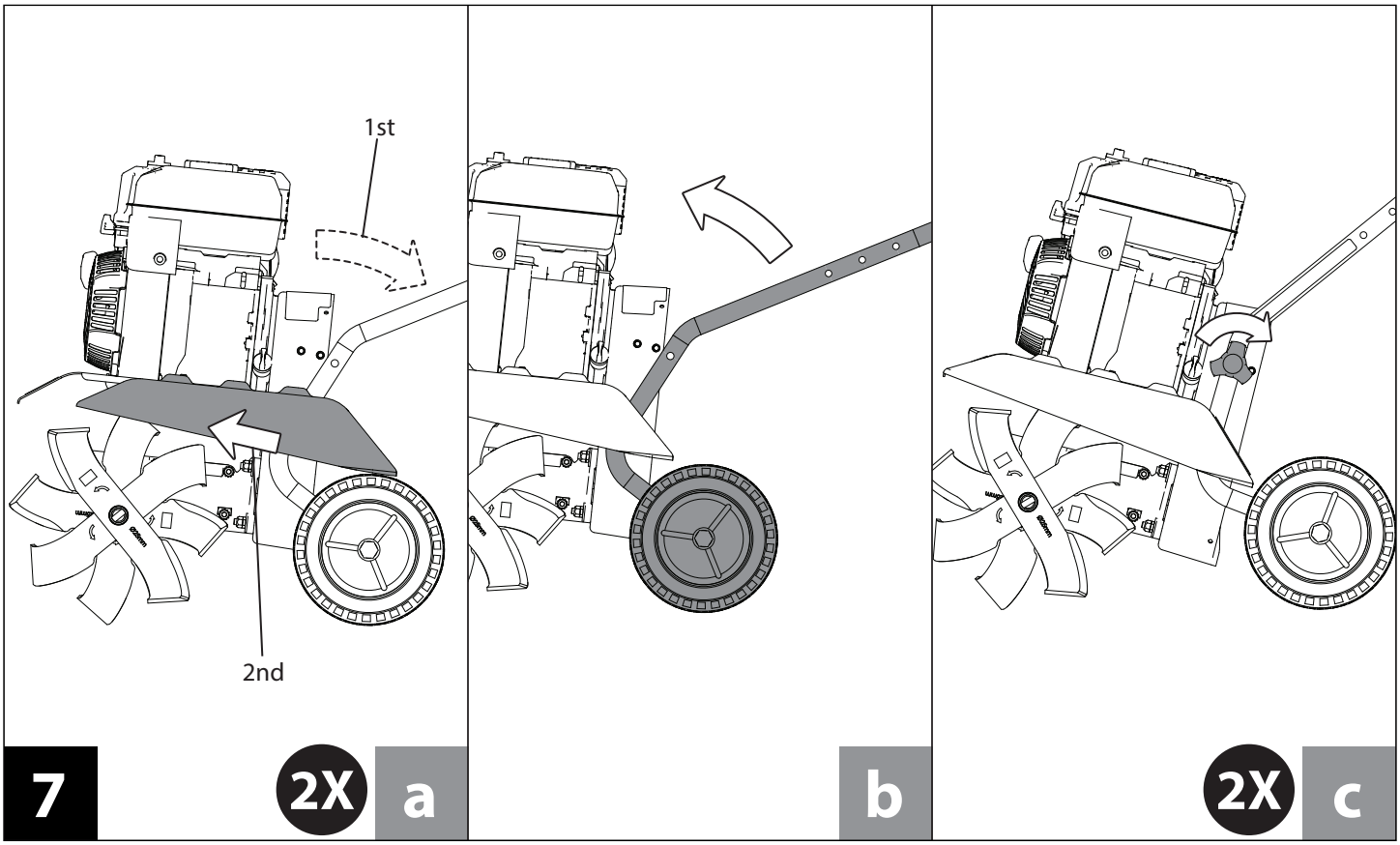
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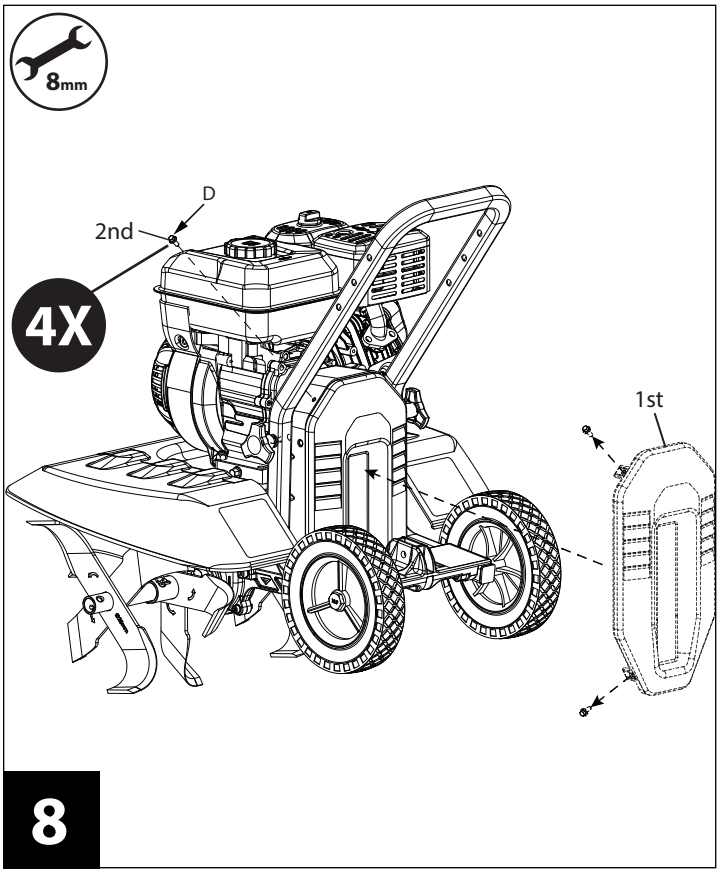
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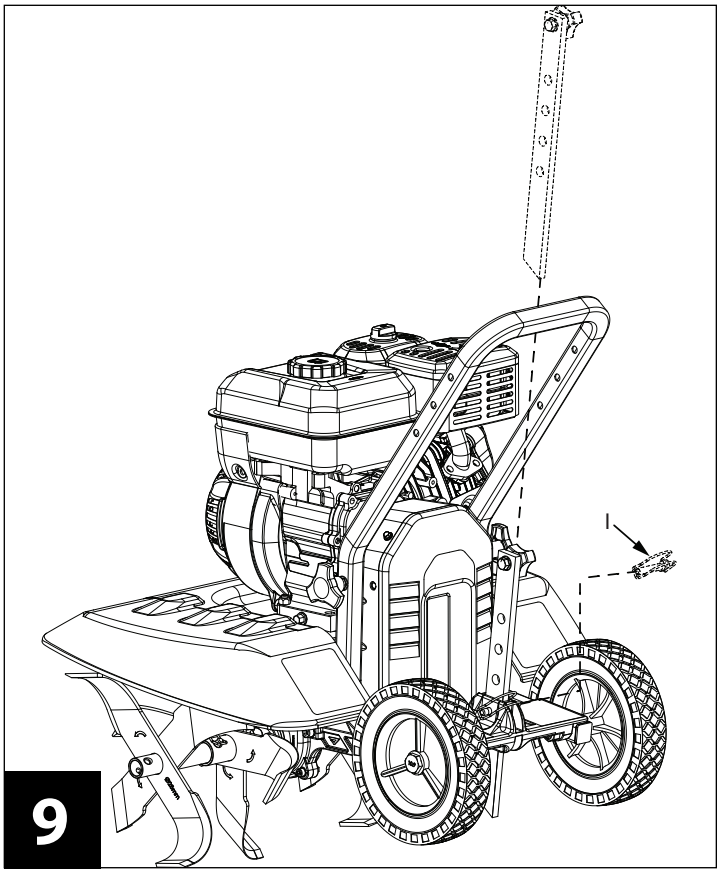
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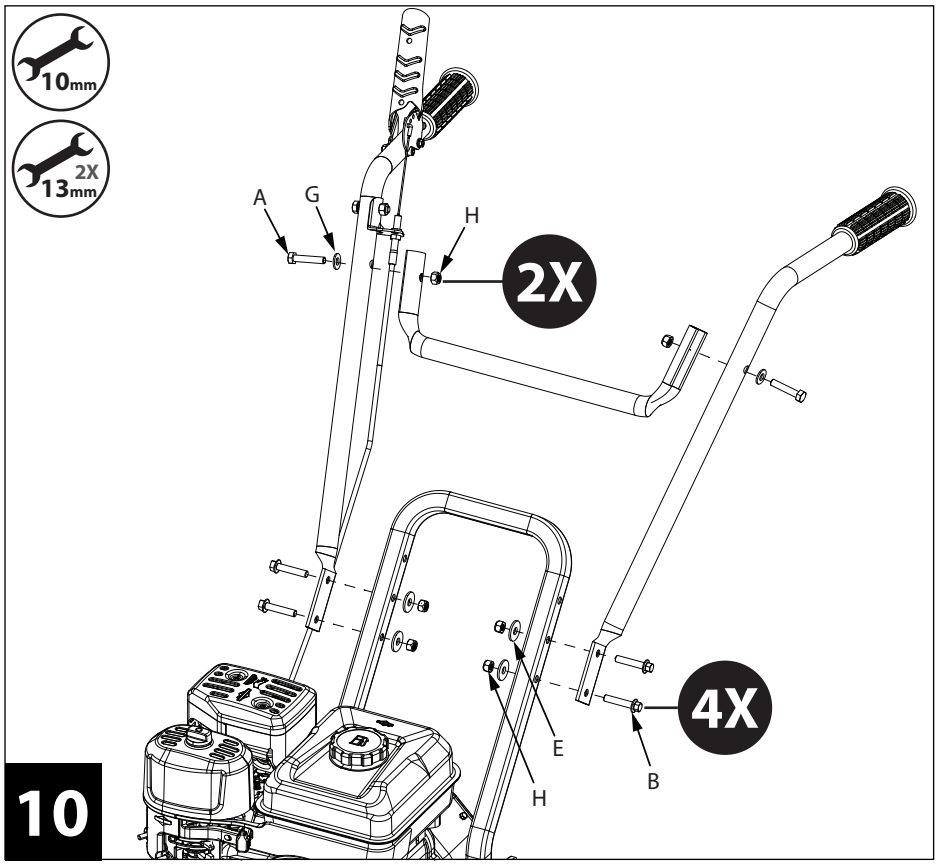
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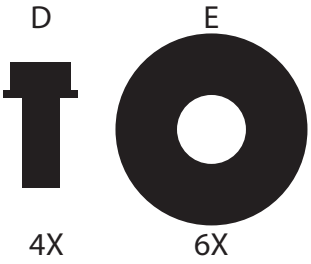
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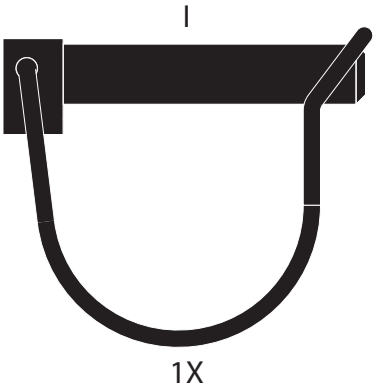
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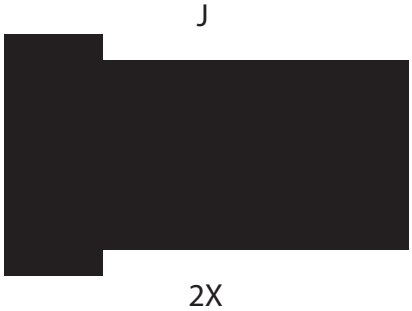
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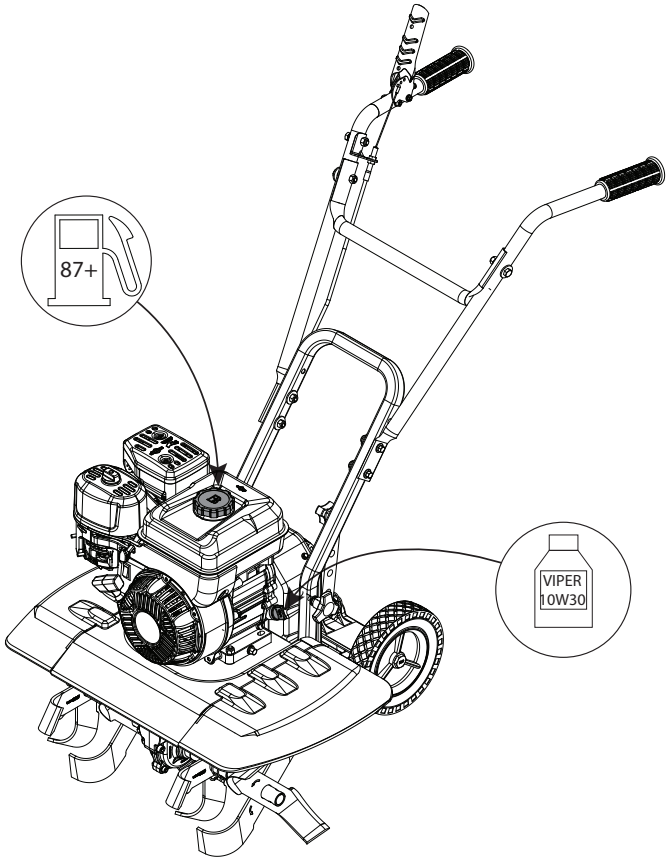
87+
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10W30

UNPACKING AND ASSEMBLY: MODELS 20015, 22662 (CONTINUED)

Carton Contents

- Tiller Assembly
- Hardware Parts Bag:
  - A - 4X - M8 x 40 mm Hex Bolt
  - B - 4X - M8 x 40 mm Hex Flange Bolt
  - C - 2X - M8 x 45 mm Hex Bolt
  - E - 6X - M8 x 25 mm Flat Washer
  - F - 2X - M8 x 15 mm Spring Lock Washer
  - G - 2X - M8 x 16 mm Flat Washer
  - H - 10X - M8 Nylock Nut
  - I - 1X - Lock Pin
  - J - 2X - Tine Shaft Sleeve
- Manual Parts Bag
- Left, Right, and Middle Handlebars
- Left and Right Side Shields
- Left and Right Tine Sets
- Pulley Box Cover
  - D - 4X - M5 x 25 mm Hex Flange Bolt
- Drag Stake
- Bottle of 4-cycle Engine Oil
- Foam Protection, Corner Supports and Packaging Materials

ASSEMBLY STEPS

1. Open top of carton and remove top foam piece containing middle handlebar, hardware parts bag, bottle of engine oil, as well as the four corner supports. Carefully cut the four corners of the carton with a box cutter. Do not attempt to lift tiller assembly out of box.
2. Carefully remove tiller assembly, tine sets, side shields, pulley box cover, and remaining packaging materials from lower foam.
3. Remove hand knob bolts from both sides of tiller. Separate lower handlebar assembly from pulley box and cut zip ties to remove handlebars.
4. Remove lock pin from one tine set. Slide outer tine and rotate to align with the second hole position of inner tine, then secure with lock pin. Repeat for other tine set.

   NOTE: Ensure the lock pins and tines are correctly installed. Lock pins must be installed so that the pin enters the hole in the tine from the front of the tiller, and so the wire bale hinges over the top of the tine pipe and latches to the protruding pin on the back side of the tine. Tines can inadvertently detach during tilling if lock pins are not installed correctly! **SEE FIGURES 2-3**
5. Check that arrows are pointing in the direction of forward rotation and slide left tine set over tine shaft sleeve, align mounting holes with the left tine shaft, and secure with the M8 x 45 mm Hex Bolt, M8 x 15 mm Spring Lock Washer, and M8 Nylock Nut. Tighten with two 13mm wrenches. Repeat for right tine set on right tine shaft.

NOTICE

HANDLE ROTOTILLER WITH CARE. DO NOT DAMAGE FORWARD CABLE WHEN TRANSPORTING OR OPERATING.

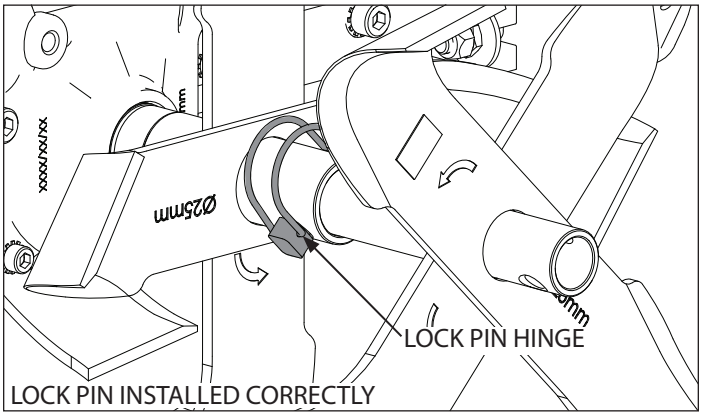


FIGURE 2

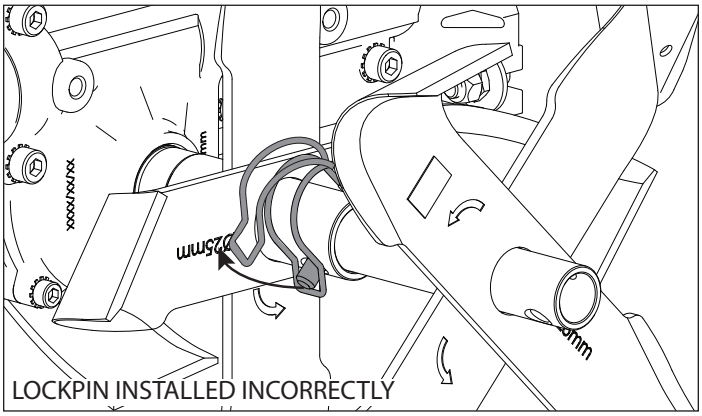


FIGURE 3

Tines can be configured for multiple tilling situations. **SEE FIGURE 4**

a. Wide Tilling - Install according to Assembly Step 5

b. Narrow Tilling - Remove outer tines and lock pins and install on opposite tine shaft with the directional arrows pointing in the direction of forward rotation.

c. Narrow Cultivating - Remove outer tines and lock pins.

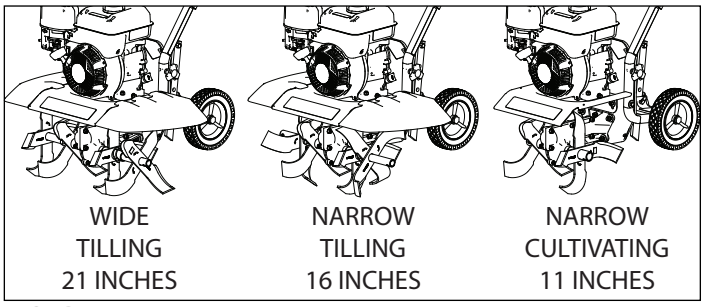


FIGURE 4

6. Align lower handlebar assembly mount holes with lower mount holes on pulley box. Place one M8 x 25 mm Flat Washer on one M8 x 40 mm Hex Bolt and insert through lower mount hole of lower handlebar assembly and pulley box. Place one M8 Nylock Nut on bolt and tighten with two 13mm wrenches. Repeat for other side.
7. Rotate lower handlebar assembly away from engine to provide adequate clearance to install side tine shields Slide left and right side shields onto center tine shield. Align side shield grooves with center tine shield and push until an audible click is heard and/or felt. This indicates that the tine shield has engaged with the shield lock and is secured all the way on. Rotate lower handlebar assembly up towards engine and insert hand knob bolts through upper mount holes and tighten. *Hand knob bolts can be inserted into one of two sets of holes depending on desired handlebar height.*
8. Remove four M5 x 12 mm Hex Flange Bolts from pulley box cover. Place pulley box cover onto pulley box and secure with the four M5 x 12 mm Hex Flange Bolts using an 8mm wrench.
9. Slide drag stake through drag stake mount and secure with lockpin at the desired depth.
10. Align right handlebar mount holes with lower handlebar assembly mount holes at one of two height positions. Secure right handlebar with two M8 x 40 mm Hex Flange Bolts, two M8 x 25 mm Flat Washers, and Two M8 Nylock Nuts and hand tighten. Repeat for left handlebar. Align middle handlebar with mount holes of right and left handlebars. Secure middle handlebar with two M8 x 40 mm Hex Bolts, two M8 x 16 mm Flat Washers, and two M8 Nylock Nuts. Tighten all handlebar hardware with a combination of 10mm and 13mm wrenches. Use two zip ties to secure the forward cable. (optional).

Fill Engine Crankcase

1. Add oil according to engine manual. **DO NOT OVERFILL.** Use a clean, high quality detergent oil. Use no special additives with recommended oils. **DO NOT MIX OIL WITH GASOLINE.** Oil level must be full. Check the oil level by removing oil fill plug. Oil level should be up to the bottom of the fill plug opening.
2. Always check oil level before starting engine. Refer to engine manual for capacity and type of oil to use.

Fill Fuel Tank

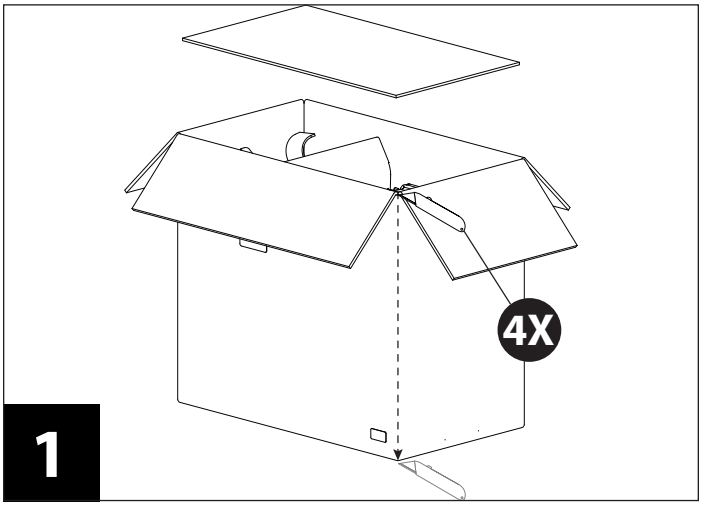
1. Add gasoline according to engine manual. **DO NOT OVERFILL.** Use 87+ octane unleaded ethanol-free gasoline. If an ethanol blend must be used, use ethanol fuel stabilizer. **DO NOT MIX OIL WITH GASOLINE.**
2. Always check gasoline level before starting engine. Refer to engine manual for capacity and type of gasoline to use.

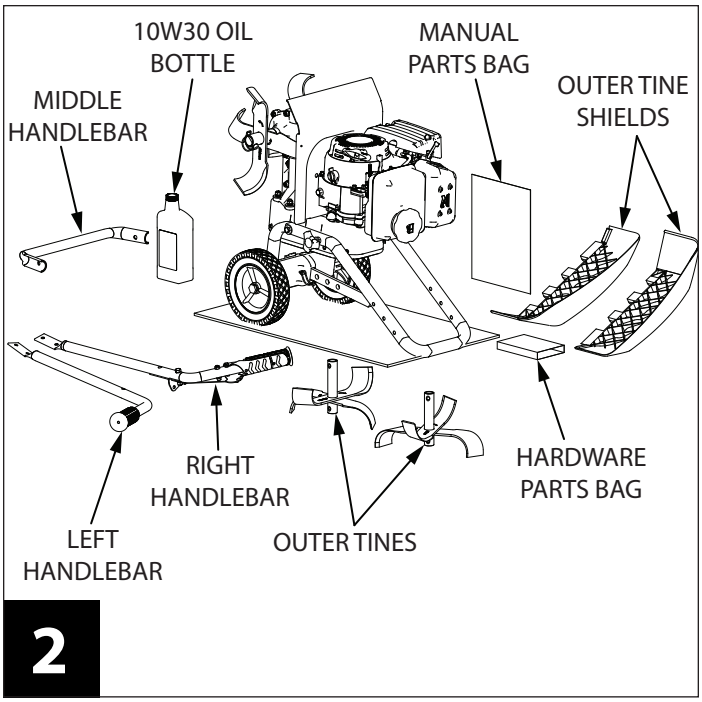
NOTICE

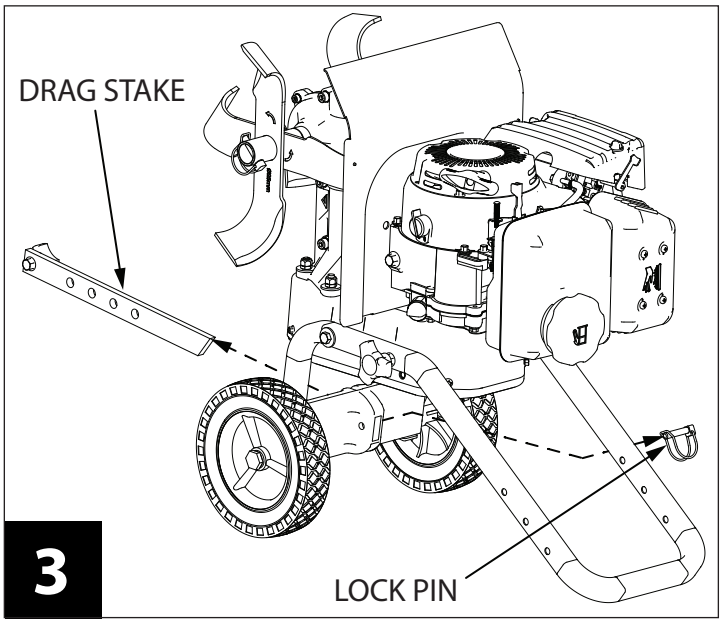
ENGINE IS SHIPPED FROM FACTORY WITHOUT OIL. YOU MUST ADD ENGINE OIL BEFORE STARTING ENGINE.

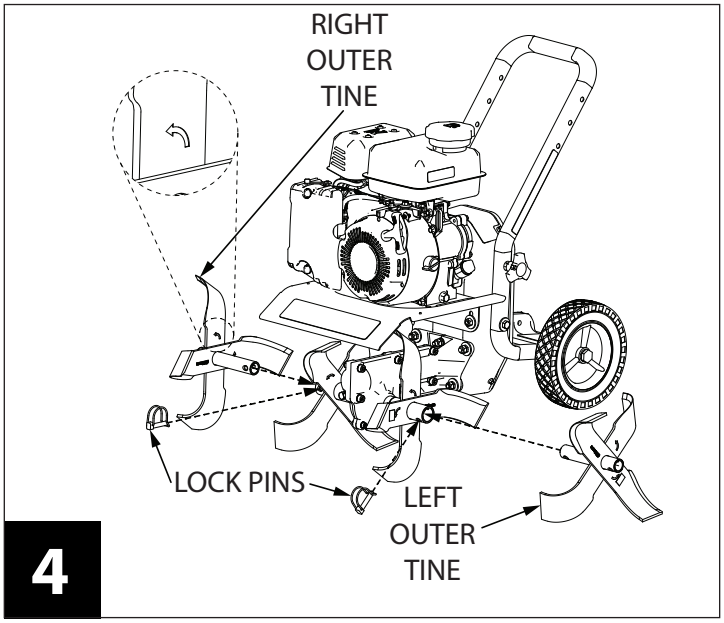
UNPACKING AND ASSEMBLY: MODEL 25780

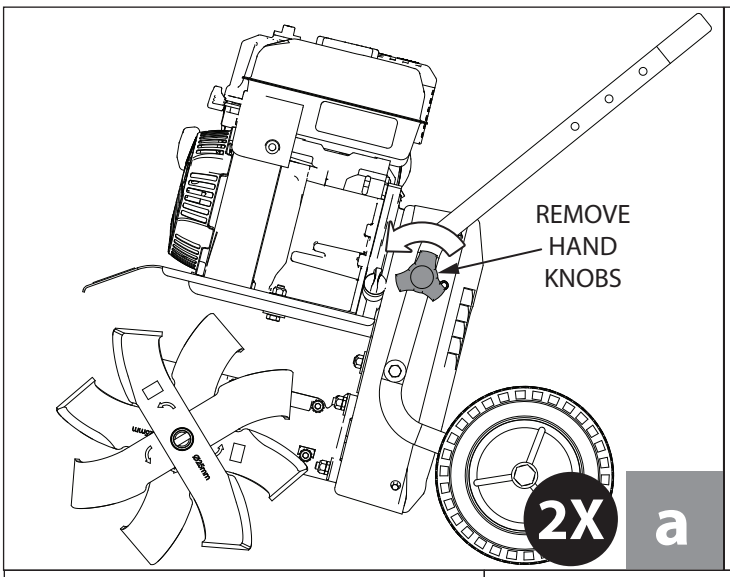
Written instructions begin on page 18.
Scan QR Code for video assembly instructions and product information.

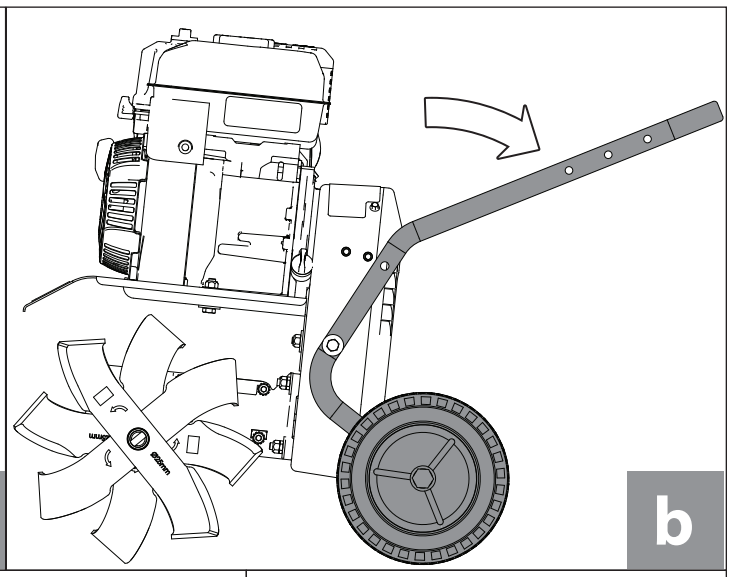


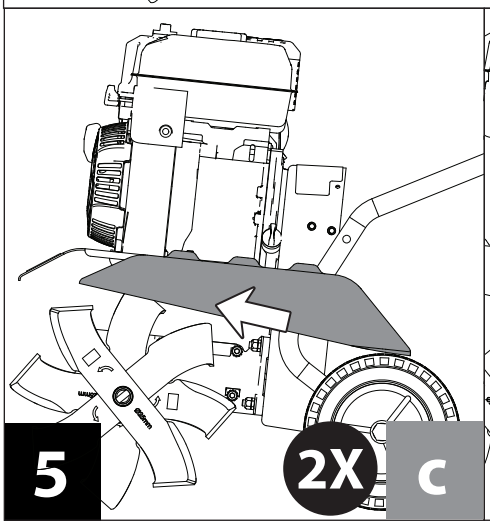


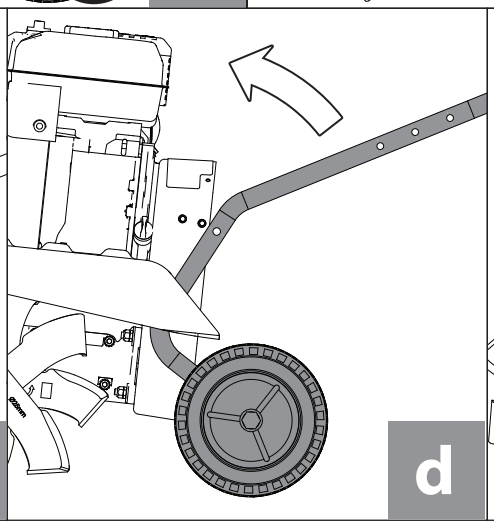


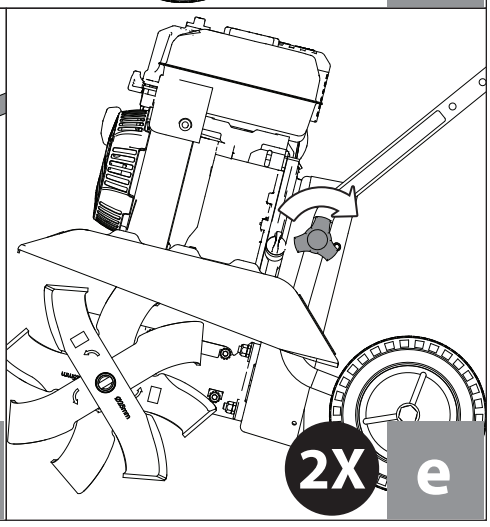




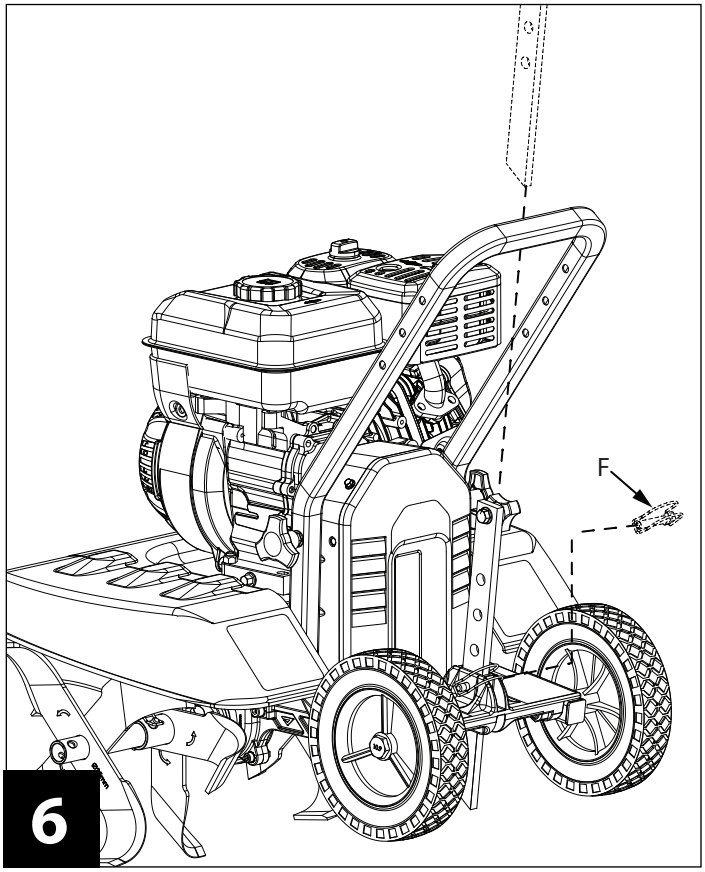








**Engine shown may not exactly match your product. Assembly instructions are not affected by this difference.*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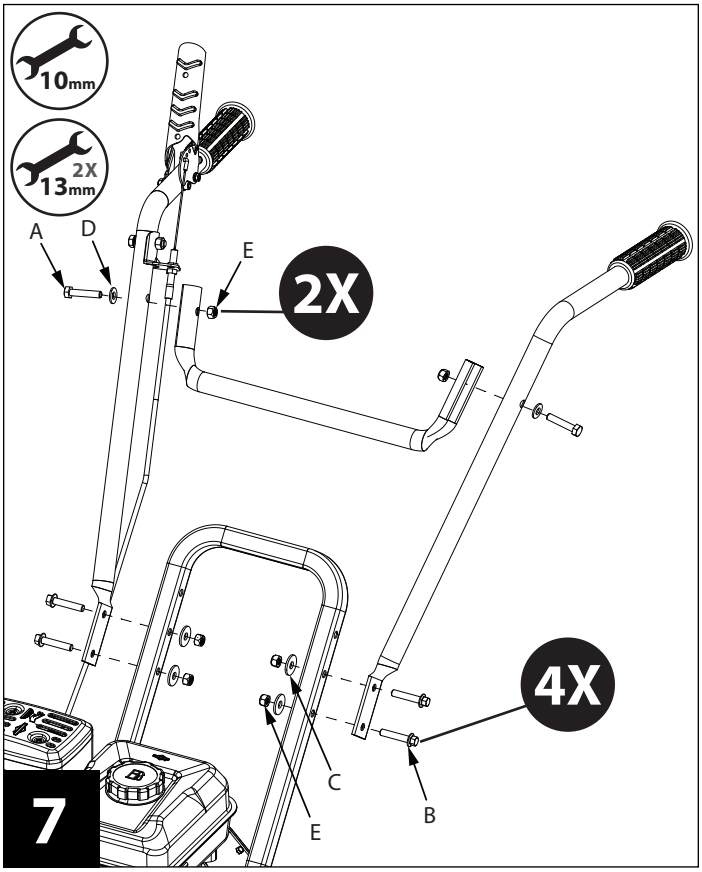
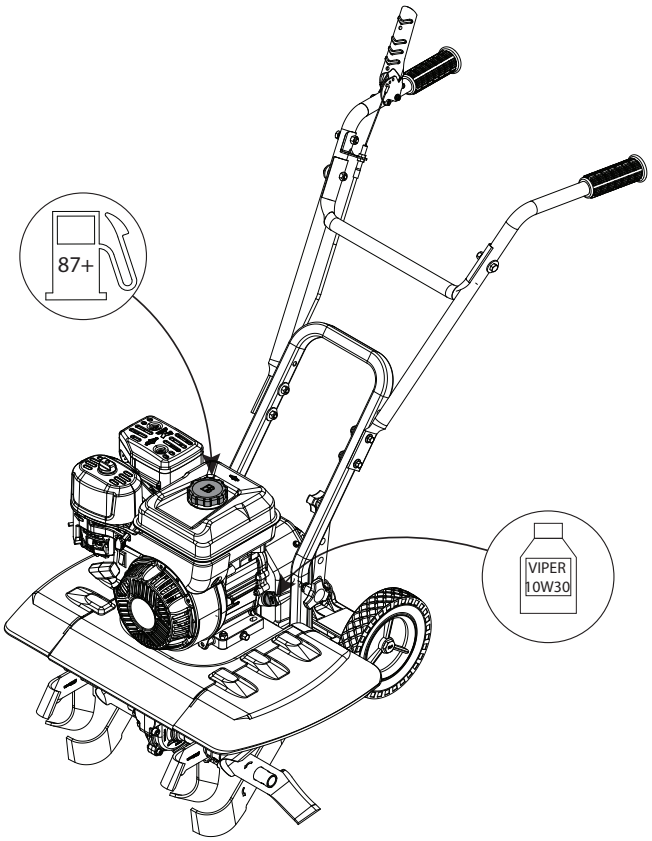

10mm
2X
13mm
A
D
E
2X
4X
C
E
B
7


87+
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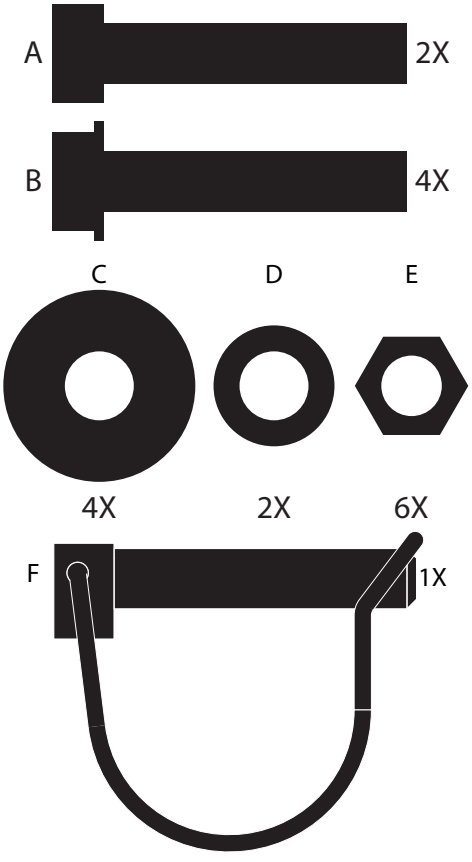

A
2X
B
4X
C
D
E
4X
2X
6X
F
1X

UNPACKING AND ASSEMBLY: MODEL 25780
(CONTINUED)

Carton Contents

- Tiller Assembly
- Hardware Parts Bag:
  - A - 2X - M8 x 40 mm Hex Bolt
  - B - 4X - M8 x 40 mm Hex Flange Bolt
  - C - 4X - M8 x 25 mm Flat Washer
  - D - 2X - M8 x 16 mm Flat Washer
  - E - 6X - M8 Nylock Nut
  - F - 1X - Lock Pin
- Manual Parts Bag
- Left, Right, and Middle Handlebars
- Left and Right Side Shields
- Left and Right Outer Tines
- Bottle of 4-cycle Engine Oil
- Packaging Materials

ASSEMBLY STEPS

1. Open top of carton and remove top cardboard piece. Carefully cut the corners of the carton with a box cutter. Do not attempt to lift tiller assembly out of box.
2. Carefully remove handlebars, outer tines, side shields, parts bags, bottle of oil, and remaining packaging materials from underneath and around the tiller assembly.
3. Remove drag stake from tiller assembly by removing the lock pin and setting both aside.
4. Remove lock pin from one inner tine. Check that arrows on tines are pointed in the direction of forward rotation and slide outer tine so that it aligns with the second hole position of inner tine. Secure with the lock pin. Repeat for other outer tine.

   NOTE: Ensure the lock pins and tines are correctly installed. Lock pins must be installed so that the pin enters the hole in the tine from the front of the tiller, and so the wire bale hinges over the top of the tine pipe and latches to the protruding pin on the back side of the tine. Tines can inadvertently detach during tilling if lock pins are not installed correctly! **SEE FIGURES 5-6**

   Tines can be configured for multiple tilling situations. **SEE FIGURE 7**

   a. Wide Tilling - Install according to Assembly Step 4

   b. Narrow Tilling - Remove outer tines and lock pins and install on opposite tine shaft with the directional arrows pointing in the direction of forward rotation.

   c. Narrow Cultivating - Remove outer tines and lock pins.
5. Tine side shield installation.

   a. Remove hand knob bolts from lower handlebar assembly.

NOTICE

HANDLE ROTOTILLER WITH CARE. DO NOT DAMAGE FORWARD CABLE WHEN TRANSPORTING OR OPERATING.

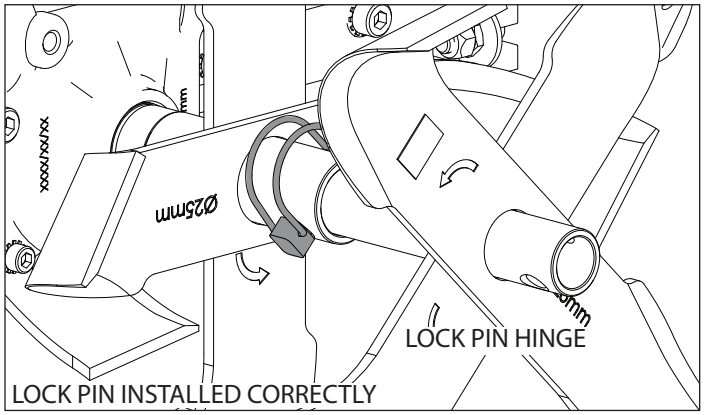


FIGURE 5

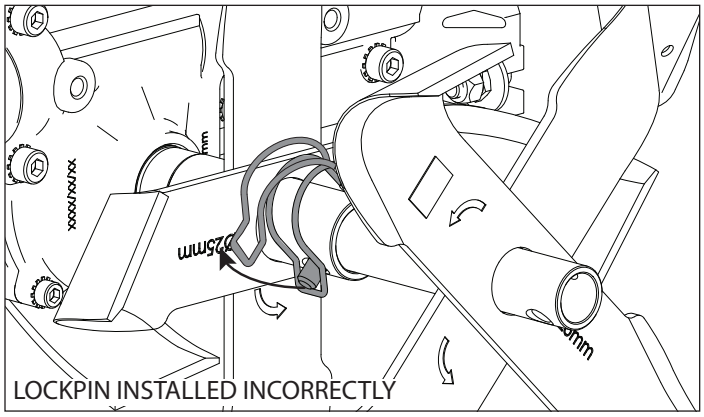


FIGURE 6

   b. Rotate lower handlebar assembly away from engine to provide adequate clearance to install side tine shields.

   c. Slide left and right side shields onto center tine shield. Align side shield grooves with center tine shield and push until an audible click is heard and/or felt. This indicates that the tine shield has engaged with the shield lock and is secured all the way on.

   d. Rotate lower handlebar assembly up towards engine.

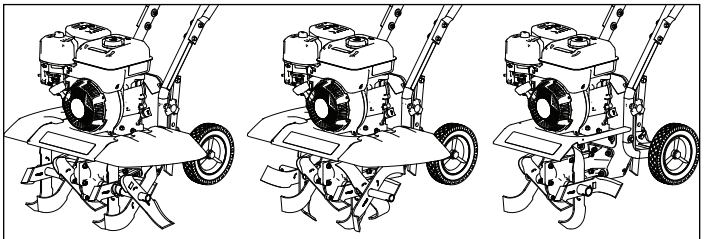


FIGURE 7

e. Insert hand knob bolts through upper mount holes and tighten. *Hand knob bolts can be inserted into one of two sets of holes depending on desired handlebar height.*

6. Slide drag stake through drag stake mount and secure with lockpin at the desired depth.
7. Align right handlebar mount holes with lower handlebar assembly mount holes at one of two height positions. Secure right handlebar with two M8 x 40 mm Hex Flange Bolts, two M8 x 25 mm Flat Washers, and Two M8 Nylock Nuts and hand tighten. Repeat for left handlebar. Align middle handlebar with mount holes of right and left handlebars. Secure middle handlebar with two M8 x 40 mm Hex Bolts, two M8 x 16 mm Flat Washers, and two M8 Nylock Nuts. Tighten all handlebar hardware with a combination of 10mm and 13mm wrenches. Use two zip ties to secure the forward cable. (optional).

NOTICE

ENGINE IS SHIPPED FROM FACTORY WITHOUT OIL. YOU MUST ADD ENGINE OIL BEFORE STARTING ENGINE.

Fill Engine Crankcase

1. Add oil according to engine manual. **DO NOT OVERFILL.** Use a clean, high quality detergent oil. Use no special additives with recommended oils. **DO NOT MIX OIL WITH GASOLINE.** Oil level must be full. Check the oil level by removing oil fill plug. Oil level should be up to the bottom of the fill plug opening.
2. Always check oil level before starting engine. Refer to engine manual for capacity and type of oil to use.

Fill Fuel Tank

1. Add gasoline according to engine manual. **DO NOT OVERFILL.** Use 87+ octane unleaded ethanol-free gasoline. If an ethanol blend must be used, use ethanol fuel stabilizer. **DO NOT MIX OIL WITH GASOLINE.**
2. Always check gasoline level before starting engine. Refer to engine manual for capacity and type of gasoline to use.

OPERATION

CONTROLS

Drive Safety Control Lever
Pulling down on drive safety control lever engages the tines. Releasing the drive safety control lever to a neutral position disengages the tines.

Belt Tension Adjustment
Proper belt tension is critical to good performance. After 1/2 hour of operation, all cables may have to be adjusted due to initial stretch. Thereafter, check tension after every 10 hours of operation. Proper tension is achieved when the beehive spring extends 1/8" - 1/4" when drive lever is engaged.

⚠ WARNING

THIS INFORMATION IS PROVIDED HERE ONLY TO INTRODUCE THE CONTROLS. DO NOT START THE ENGINE AT THIS TIME. PLEASE READ THIS SECTION AND ALL OPERATING AND SAFETY INSTRUCTIONS BEFORE STARTING YOUR TILLER.

- **AS A SAFETY PRECAUTION, THE DRIVE SAFETY CONTROL LEVER WILL NOT LOCK IN THE FORWARD POSITION.**
- **TO STOP THE TINES AT ANY TIME, RELEASE THE DRIVE SAFETY CONTROL LEVER.**
- **PROTECTIVE FOOTWEAR MUST BE WORN WHILE OPERATING THIS PRODUCT.**
- **ENGINE SHOULD BE OFF BEFORE ADJUSTING ANY CONTROLS.**
- **DO NOT ADJUST TILLING DEPTH UNLESS DRIVE SAFETY CONTROL LEVER IS RELEASED TO THE NEUTRAL POSITION.**

To increase belt tension do as follows:

1. Loosen upper jam nut. **SEE FIGURE 8**
2. Tighten the lower jam nut in 1/8" increments, making sure not to over adjust the tension.
3. Check adjustment by measuring the beehive spring extension when drive lever is engaged. (Proper spring extension is 1/8" - 1/4") **SEE FIGURE 8**

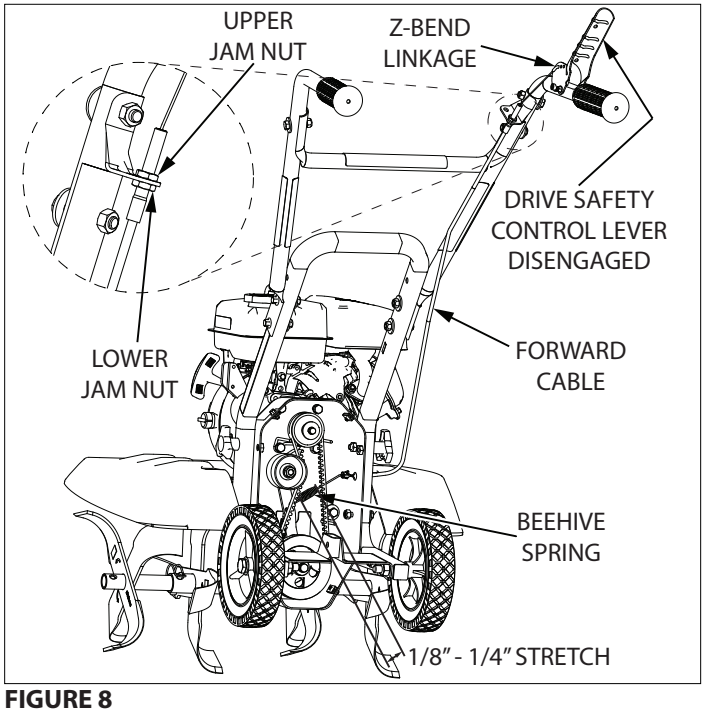


FIGURE 8

4. When proper adjustment is achieved, tighten upper jam nut.

NOTE: This procedure can be repeated until conduit adjustment bolts are fully adjusted. The Z-bend linkage can also be adjusted by inserting in the additional linkage holes on the drive control lever. If no more adjustment can be made, belt may need to be replaced.

Drag Stake
Tilling depth is controlled by the height of the drag stake. **SEE FIGURE 9**

To adjust tilling depth do as follows:

1. Remove lock pin.
2. Raise the drag stake to position tines at chosen tilling depth. Lowering the drag stake will allow for deeper tilling.
3. Align hole in drag stake with hole in drag stake mount and replace lock pin.

NOTE: Raise drag stake all the way when transporting tiller. Lower the drag stake all the way to maintain control of the tiller in harder soil conditions.

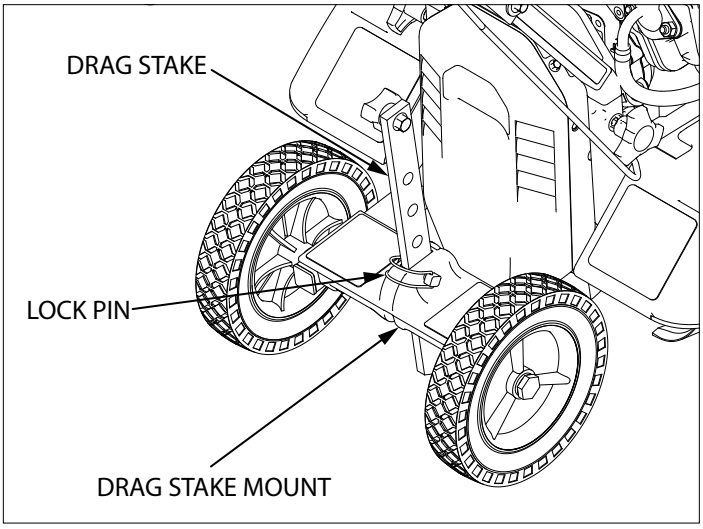


FIGURE 9

Height Adjustments
Handlebar height can be adjusted in two ways to accommodate a total of four possible user heights. **SEE FIGURE 10**
To adjust height at handlebars do as follows

1. Remove left and right handlebar mount hardware.
2. Align handlebar at desired height and attach hardware.

To adjust height at pulley box do as follows

1. Remove hand knob bolts from box and rotate handlebars to desired height then reattach hand knob bolts.

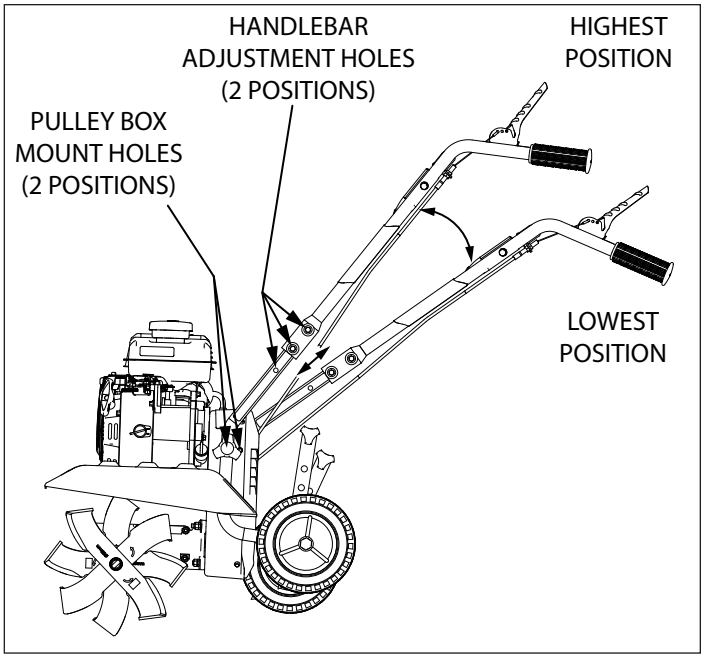


FIGURE 10

PRE-START INSPECTION

1. Make sure all safety guards are in place and all nuts and bolts are secure.
2. Check oil level in engine crankcase. See your engine manual for procedure and specifications.
3. Inspect air cleaner for cleanliness. See your engine manual for procedure.
4. Check the fuel supply. Fill the fuel tank no closer than 1 inch from top of tank to provide space for expansion. See your engine manual for fuel recommendations.
5. Be sure spark plug wire is attached and spark plug is tightened securely.
6. Check drag stake position.
7. Examine underneath and around engine for signs of oil or fuel leaks.
8. Inspect fuel hoses for tightness and fuel seepage.
9. Look for signs of engine damage.
10. Remove excessive debris from muffler area and recoil starter.

START-UP
The controls required to start and run the rototiller are located on the engine.

Models 20015, 22662, 25780:
The throttle speed control is located above the pull-start recoil and is indicated by a rabbit for **FAST** and a turtle for **SLOW**.

Models 20015, 25780:
The choke lever is located above the air cleaner cover. The ON/

⚠ DANGER

DO NOT START YOUR TILLER UNTIL YOU HAVE READ AND UNDERSTAND THIS MANUAL AND THE SECTIONS IN THIS MANUAL COVERING SAFETY AND OPERATION.

ALWAYS PERFORM THE PRE-START INSPECTION CHECKLIST BEFORE STARTING THE ENGINE.

PRACTICE OPERATING THE CONTROLS AND TILLER WITH TINES OUT OF GROUND BEFORE BEGINNING TO TILL. IT IS IMPORTANT THAT YOU KNOW HOW TO USE THE TILLER PROPERLY: KEEP CONTROL AT ALL TIMES, STOP THE TINE FROM TURNING, AND STOP THE ENGINE IF NECESSARY. IF YOU DO NOT KNOW HOW TO DO THESE THINGS, READ THE CONTROLS AND SAFETY SECTIONS BEFORE PROCEEDING.

ALWAYS MAINTAIN CONTROL OF YOUR TILLER. ONLY OPERATE TILLER IN SOIL CONDITIONS THAT ARE CONDUCIVE TO MAINTAINING CONTROL OF THE TILLER. DO NOT OPERATE TILLER IN CONDITIONS THAT CONTAIN ROCKS, FOREIGN OBJECTS, OR ANY OTHER MATERIAL THAT IS NOT SOIL. IF YOUR TILLER BUMPS, JERKS, OR LURCHES, LET GO OF THE HANDLEBARS AND THE DRIVE CONTROL LEVER IMMEDIATELY SO THAT THE TINES STOP TURNING.

CAUTION MUST BE TAKEN WHEN SELECTING TILLING DEPTH. LOSS OF CONTROL COULD RESULT IF YOU ATTEMPT TO TILL IN CERTAIN SOIL CONDITIONS WITH THE DRAG STAKE SET IN TOO HIGH OF A POSITION.

STOP THE ENGINE AND REMOVE SPARK PLUG WIRE BEFORE REMOVING MATERIAL FROM THE TINES BY HAND OR ANY OTHER METHOD.

ENGINE AND SURROUNDING PARTS BECOME EXTREMELY HOT DURING NORMAL OPERATION. TEMPERATURE OF MUFFLER AND NEARBY AREAS MAY EXCEED 150°F (66°C). AVOID THESE AREAS. ALLOW ENGINE TO COOL COMPLETELY BEFORE TOUCHING THESE HOT SURFACES. THESE AREAS WILL CAUSE SERIOUS BURN INJURIES IF TOUCHED BEFORE THE ENGINE HAS COOLED.

ALWAYS KEEP HANDS AND FEET CLEAR OF ROTATING MACHINE PARTS.

OFF switch is located on the side of the blower housing closest to the recoil pull handle.

Model 22662:
The choke lever is located below the air cleaner cover. The ON/OFF switch is located on the front left side of the blower housing.

⚠ CAUTION

DO NOT USE CHOKE CONTROL TO STOP ENGINE. BACKFIRE OR ENGINE DAMAGE MAY OCCUR!

TO STOP THE ENGINE AT ANY TIME, MOVE THROTTLE CONTROL TO THE OFF OR STOP POSITION, OR TURN THE ON/OFF SWITCH TO OFF.

ALWAYS RELEASE DRIVE SAFETY CONTROL LEVER TO NEUTRAL POSITION BEFORE ADJUSTING THE DEPTH OF THE DRAG STAKE.

ENGINE IS SHIPPED FROM FACTORY WITHOUT OIL. YOU MUST ADD ENGINE OIL BEFORE STARTING ENGINE.

Additional engine operation and related precautions and procedures can be found in the engine manufacturer's manual that accompanies each tiller.

COLD STARTS

1. Turn the ON/OFF switch to the **ON** position.
2. Move choke lever to **FULL CHOKE** position.
3. Move throttle lever to half way between the **SLOW** position and the **FAST** position.
4. Pull starting rope out slowly one time and allow to return normally.
5. Pull starting rope out rapidly, and allow rope to return normally. Repeat until engine starts.
6. When engine starts, gradually move choke lever to run position and increase throttle speed to the **FAST** position for tilling.

Restarting A Warm Engine
Restarting an engine that is already warm from previous running does not normally require use of the choke.

1. Turn the ON/OFF switch to the **ON** position.
2. Move throttle lever to half way between **SLOW** and **FAST**.
3. Pull starting rope out rapidly until engine starts. Allow rope to return normally. Repeat until engine starts.
4. Adjust throttle speed to the **FAST** position for tilling.

Operating Speed
For normal tilling, set the throttle lever to **FAST**.

Shutting Down
To stop the engine at any time, turn the ON/OFF switch to the **OFF** position. To stop tines at any time, release the drive safety control lever to the neutral position.

Tilling

1. Adjust the drag stake to desired tilling depth.

NOTE: Raise drag stake up one hole at a time, testing tiller

operation after each raise. Raising drag stake too high can result in loss of control of tiller!

2. Move the throttle control to **FAST**.
3. Place the tiller in motion by pushing down on the drive safety control lever. This will engage the tines.

MAINTENANCE AND STORAGE

Your rototiller has been designed and produced by the industry's leading manufacturer of outdoor power equipment to provide you with years of reliable operation.

Please read the maintenance schedule in this manual for the tiller, and the maintenance schedule and recommendations in the accompanying engine manual. Observe these recommendations to extend the life of your product.

Good maintenance is essential for safe, economical, and trouble-free operation. Keeping your tiller in top running condition will prolong its life, and help you obtain optimum performance. It will also help reduce air pollution. To help you properly care for your engine, the following pages include a maintenance schedule, routine inspection procedures, and simple maintenance procedures using basic hand tools. Other service tasks that are more difficult, or require special tools, are best handled by professionals and are normally performed by a technician or other qualified mechanic.

Maintenance, replacement or repair of the emissions control devices and systems may be performed by any non-road engine repair establishment or individuals. However, items must be serviced by an authorized dealer to obtain "no charge" emissions control warranty service.

The maintenance schedule applies to normal operating conditions. If you operate your tiller under unusual conditions, such as sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, consult your servicing dealer for recommendations applicable to your individual needs and use.

Servicing The Rototiller

The following information will help you make the necessary checks and perform the procedures required to follow the normal care recommendations made for your rototiller unit. If you prefer, your local authorized dealer can make these checks and perform the required procedures for you.

BELT MAINTENANCE

Check Belt Tension as follows:

Belt tension may decrease over time. It may need to be adjusted within the first half hour of operation, and should be checked after every ten hours of operation. Proper adjustment will assure long belt life. Too much or too little belt tension will cause premature belt failure.

An indication that the belt may need to be adjusted can be heard as a continuous squealing sound when the engagement lever is compressed, or the belt slips and tines won't turn (see page 19).

MAINTENANCE SCHEDULE

Maintenance Operation	Page	Before Each Use	10 hours	50 hours
Check belt tension	22		X	
Change drive belt	22-23			X
Engine maintenance	24,**EM**	X	X	X
Check or fill engine crankcase	24,**EM**	X	X	1
Clean tine axle shaft & lubricate parts	24		2	

EM = See engine manual

1 Change oil after first 5-8 hours of use, then after every 50 hours. Change oil every 25 hours when operating under heavy load or in high temperatures.

2 Clean tine axle shaft and lubricate each season or every 10 hours, whichever comes first.

NOTE: A short buzzing noise can be heard when engagement lever is released. This is normal, caused by the teeth of the cog belt catching the wire guide, stopping the rotation of the belt. This does not require the belt tension to be adjusted.

To check and adjust the forward belt tension:

1. Turn off engine. Engine must be cool.
2. Remove spark plug wire from spark plug and secure.
3. Remove pulley box cover by removing four cover bolts. **SEE FIGURE 11**
4. With drive safety control lever in the neutral position, measure length of spring when in its relaxed state.
5. Pull down on drive safety control lever and measure length of spring when extended. Ideal length would be 1/8" - 1/4" longer. **SEE FIGURE 12**
6. Replace pulley box cover.

Change Drive Belt as follows:

1. Turn off engine. Engine must be cool.
2. Remove spark plug wire from spark plug and secure.
3. Remove pulley box cover by removing four bolts. **SEE FIGURE 11**
4. Remove the belt from the engine pulley as follows:
   a. Gently pull the engine recoil rope to rotate the pulley.
   b. With the pulley turning, force the belt out of the groove and slide the belt free of the engine pulley.
   c. Pull the belt down and out of the way.

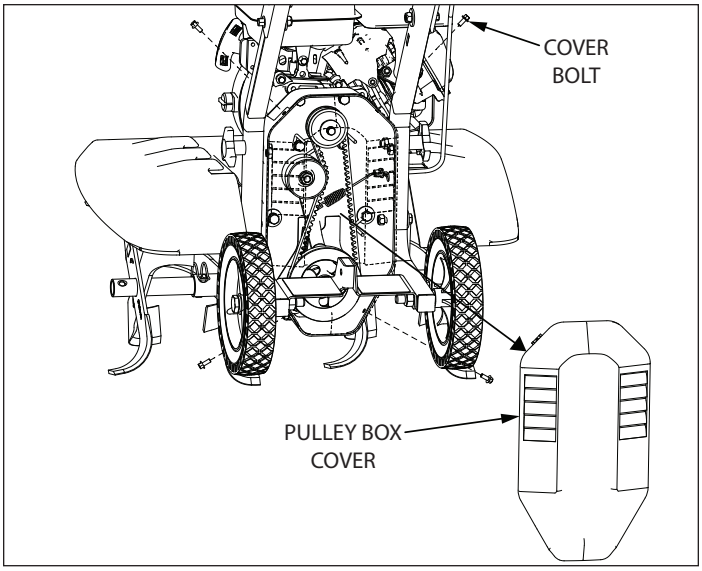


FIGURE 11

d. Push the belt down and away from the transmission pulley to remove.

5. Install new belt as follows:
   a. Place belt in transmission pulley groove.
   b. Gently pull the engine recoil rope to rotate the pulley while forcing the belt into the groove.
6. Replace pulley box cover.
7. Recheck belt tension and adjust if necessary
8. Attach spark plug wire.

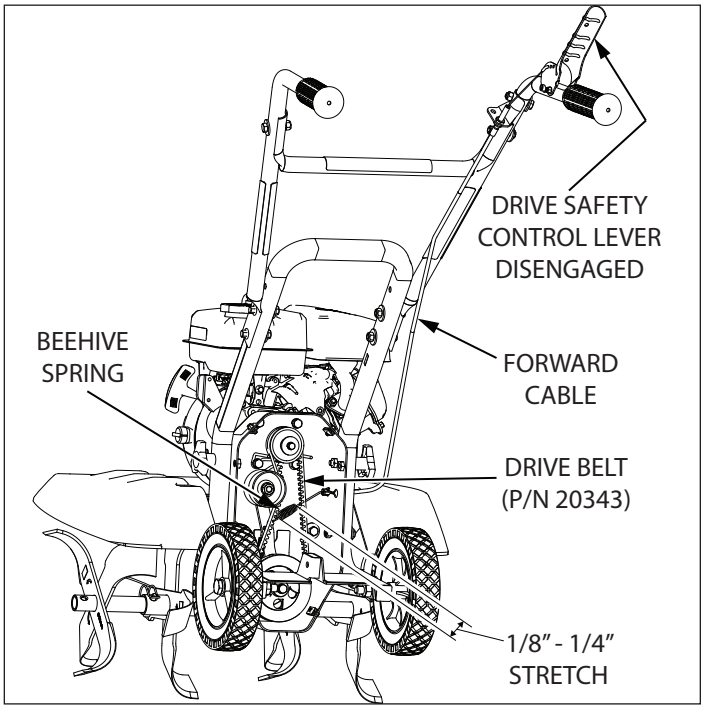
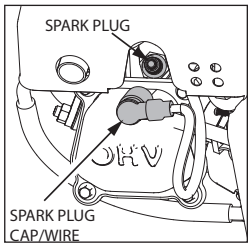


FIGURE 12

⚠ WARNING

TO PREVENT ACCIDENTAL STARTING:



ENGINE MUST BE TURNED OFF AND COOL, AND SPARK PLUG CAP/WIRE MUST BE REMOVED AND SECURED FROM SPARK PLUG BEFORE CHECKING AND ADJUSTING ENGINE OR EQUIPMENT.

NOTICE

CHECK FORWARD BELT TENSION REGULARLY. TOO MUCH OR TOOL LITTLE TENSION WILL CAUSE PREMATURE BELT FAILURE.

DO NOT USE CHOKE CONTROL TO STOP ENGINE. BACKFIRE OR ENGINE DAMAGE MAY OCCUR!

TO STOP THE ENGINE AT ANY TIME, MOVE THROTTLE CONTROL TO THE OF OR STOP POSITION, OR SET THE ON/OFF SWITCH TO OFF.

NEVER RUN ENGINE WITHOUT COMPLETE AIR CLEANER INSTALLED ON ENGINE. ENGINE CAN OVERHEAT AND BECOME DAMAGED IF DEBRIS BLOCKS THE COOLING SYSTEM OR ROTATING SCREEN.

⚠ DANGER

DO NOT STORE TILLER IN AN UNVENTILATED AREA WHERE FUEL FUMES MAY REACH FLAME, SPARKS, PILOT LIGHTS, OR AN IGNITED OBJECT. DRAIN FUEL OUTDOORS AWAY FROM ANY IGNITION SOURCES. USE ONLY APPROVED FUEL CONTAINERS.

ENGINE AND SURROUNDING PARTS BECOME EXTREMELY HOT DURING NORMAL OPERATION.

TEMPERATURE OF MUFFLER AND NEARBY AREAS MAY EXCEED 150°F (66°C). AVOID THESE AREAS. ALLOW ENGINE TO COOL COMPLETELY BEFORE TOUCHING THESE HOT SURFACES. THESE AREAS WILL CAUSE SERIOUS BURN INJURIES IF TOUCHED BEFORE THE ENGINE HAS COOLED.

ALWAYS KEEP HANDS AND FEET CLEAR OF ROTATING MACHINE PARTS.

ENGINE MAINTENANCE

Refer to the engine manual included in your parts packet for information on engine maintenance. Your engine manual provides information and a maintenance schedule for performing the following tasks:

1. Check oil level before each use or after every 8 hours of operation.
2. Change oil after first 5-8 hours of operation. Change oil while engine is warm. Refill with new oil of recommended grade.
4. Check spark plug seasonally or every 100 hours of operation.
5. Service air cleaner.
6. Keep engine and parts clean.
7. Check engine and equipment often for loose nuts and bolts, keep these items tightened.

CHECK OR FILL ENGINE CRANKCASE

1. To change the oil, first remove the left side shield from the tiller. Then lock drag stake into deepest position and gently tip tiller to the left, resting it in a tilted position on its left outer tine, wheel, and drag stake. Remove oil fill plug with the tiller resting in the tilted position until all of the oil has been drained into an appropriate receptacle. **SEE FIGURE 13.** Wipe up any spilled oil residue and dispose of oil properly according to local laws and/or ordinances.
2. Return tiller back to its upright level position and add oil according to engine manual. **Do not overfill.** Use a clean, high quality detergent oil. Use no special additives with recommended oils. **Do not mix oil with gasoline.** Oil level must be full. Check the oil level by removing oil fill plug. Oil level should be up to the bottom of the fill plug opening on most engines.
3. Always check oil level before starting engine. Refer to engine manual for capacity and type of oil to use.

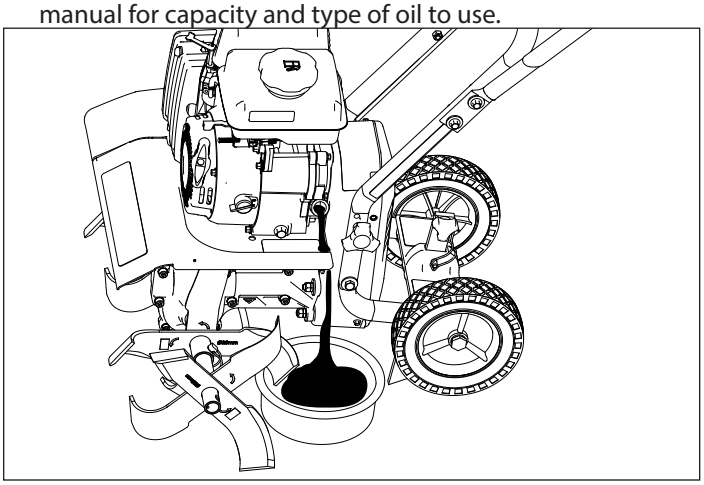


FIGURE 13

CLEAN TINE AXLE SHAFT

1. Turn off engine. Engine must be cool.

⚠ WARNING

PRACTICE SAFETY AT ALL TIMES. ENGINE MUST BE TURNED OFF AND ALLOWED TO COOL, AND SPARK PLUG WIRE MUST BE DISCONNECTED AND SECURED BEFORE ATTEMPTING ANY MAINTENANCE OR REPAIR.

FAILURE TO COMPLY WITH THIS SAFETY REQUIREMENT CAN RESULT IN SERIOUS PERSONAL INJURY TO YOU OR BYSTANDERS.

2. Remove spark plug wire and secure from spark plug.
3. Remove all vegetation, string, wire, and other material that may have accumulated on the axle between the inside set of tines and the seal on the transmission housing.
4. Replace spark plug wire.

LUBRICATION

Proper lubrication of moving mechanical parts is critical for proper care and maintenance. Oil the moving parts using a 30 weight oil.

STORAGE

PREPARE FOR STORAGE

Follow the steps below to prepare your tiller for storage. Read your engine manual for detailed instructions on preparing the engine for storage.

1. Protect tines and tine shafts from rust:
   - Coat the tine shaft lightly with axle grease.
2. Drain fuel system completely following engine manufacturer's instructions or add fuel stabilizer to prevent fuel from gumming up during extended storage period.
3. While engine is still warm, drain the oil from the engine. Refill with fresh oil of the recommended grade.
4. Clean external surfaces, engine and cooling fan.
5. Remove spark plug, pour one ounce of SAE 30 oil into spark plug hole.
6. Plug hole and pull starter cord slowly to distribute oil evenly in cylinder head area.
7. Reinstall spark plug.
8. Transport unit to a suitable storage location. If you have chosen to use a fuel stabilizer and have not drained the fuel system, follow all safety instructions and storage precautions in this manual to prevent the possibility of fire from the ignition of gasoline fumes. Remember, gasoline fumes can travel to distant sources of ignition and ignite, causing risk of explosion and fire.
9. If there is any possibility of unauthorized use or tampering, remove the spark plug and store it in a safe place before storing the rototiller unit. Be sure to plug the spark plug hole to prevent foreign material from entering.

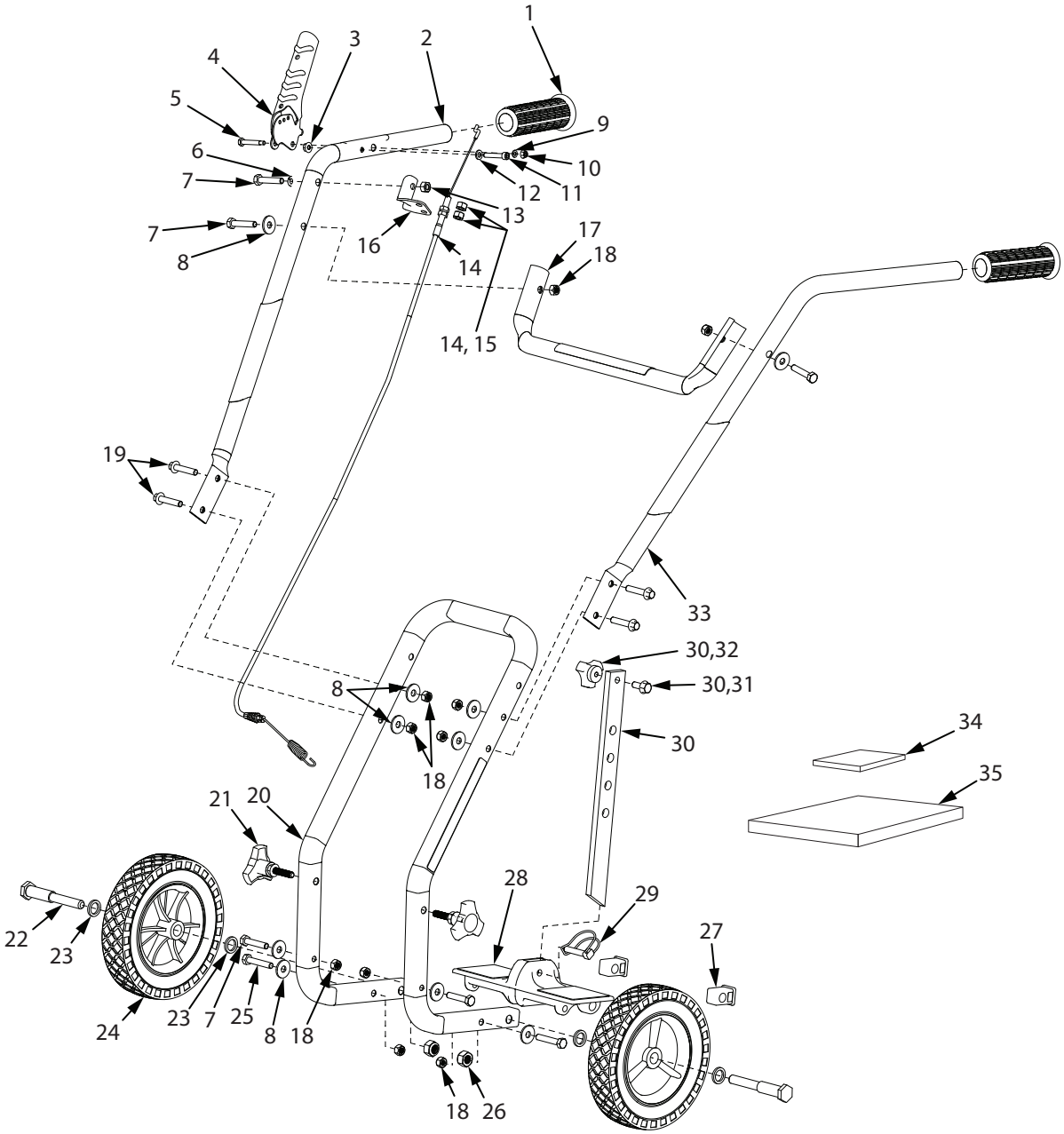
TROUBLESHOOTING AND REPAIR

Troubleshooting Guide
While normal care and routine maintenance will extend the life of your rototiller, prolonged or constant use may eventually require that service be performed to allow it to continue operating properly. The troubleshooting guide below lists the most common problems, causes and remedies.

PROBLEM	REMEDY/ACTION
Engine will not start	• Add gas to gas tank • Connect spark plug wire to spark plug • ON/OFF switch must be turned **ON** and engine choked for a cold start
Engine runs rough, floods during operation	• Clean or replace air cleaner
Engine is hard to start	• Drain old fuel and replace with fresh. Use gas stabilizer at end of season • Make sure spark plug wire is securely attached to spark plug • Drive safety control lever must be released to neutral to start the engine
Engine misses or lacks power	• Raise the drag stake for shallower tilling • Clean or replace air cleaner • Improper carburetor adjustment, take to authorized engine service center • Replace spark plug and adjust gap • Drain and refill gas tank with fresh gasoline
Tiller moves forward during starting	• Drive safety control lever must be released to neutral to start the engine • Check belt tension
Tiller is difficult to control when tilling (Machine jumps or lurches forward)	• Lower engine speed in hard ground • Lower the drag stake for greater resistance and control of the tiller
Belts squeal in forward operation	• Adjust belt tension with engagement cable • Replace drive belt
Constant buzzing sound is heard while drive safety control lever is compressed	• Properly space wire guide from idler pulley to clear belt when engaged • Adjust engagement cable ***NOTE: If drive safety control lever is fully compressed, wire guide is properly adjusted, and cable has reached full adjustment and buzzing persists, the belt may be stretched and needs to be replaced. ******
Excessive heat build up in transmission/tine area during tilling	• Remove vegetation • Check transmission lubrication and fill if needed

** Please contact 800-345-6007 for service parts*

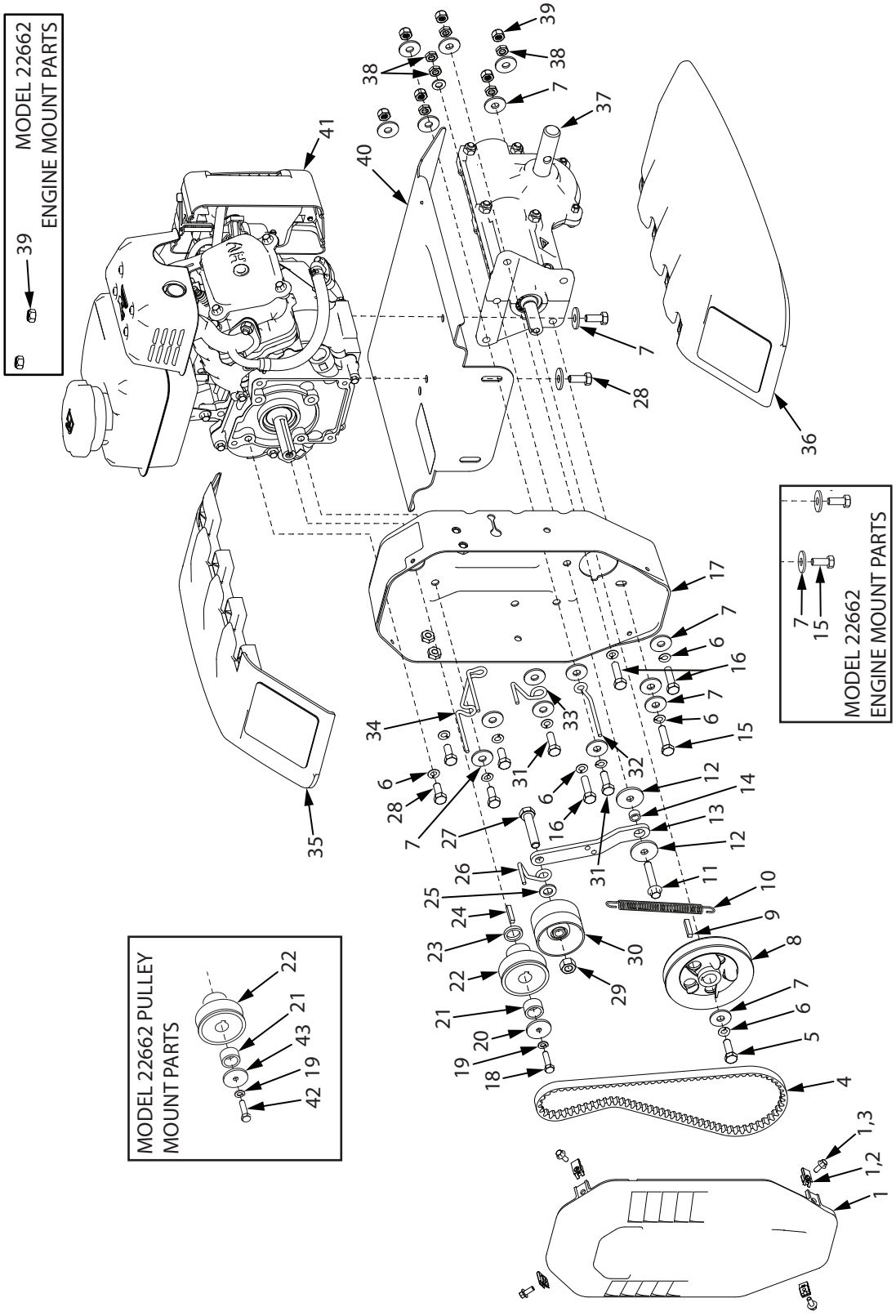
ILLUSTRATED PARTS BREAKDOWN
Handle Bar Assembly



ITEM #	PART #	DESCRIPTION	QTY
1	13833	GRIP 1 IN KNOB TEXTURED	2
2	23548	HANDLEBAR RIGHT	1
3	13599	NUT M6 X 1.0 NYLOCK FLANGE	1
4	23540	LEVER CLUTCH FORWARD	1
5	13159	BOLT M5 X 0.8 X 7 SHOULDER	1
6	W1200114	WASHER M8 SPRING LOCK	1
7	12770	BOLT M8 X 1.25 X 40 HEX HEAD	5
8	3245	WASHER M8 X 24 X 2 FLAT	10
9	3308	WASHER M5 X 10 X 1.0 FLAT	1
10	3248	NUT M5 X 0.8 NYLOCK FLANGE	1
11	20347	BOLT M6 X 1.0 X 35 SOCKET HEAD	1
12	W1200117	WASHER M6 X 13 X 1.75 FLAT	1
13	13508	BAR NUT M8 X 1.25	1
14	20054	CABLE DRIVE CONTROL	1
15	4620	JAM NUT M8 X 1.25	2
16	23563	BRACKET CABLE MOUNT	1
17	20052	HANDLEBAR MIDDLE	1
18	400023	NUT M8 X 1.25 NYLOCK	10
19	19922	BOLT M8 X 1.25 X 40 HEX FLANGE	4
20	20053	FRAME HANDLEBAR MOUNT	1
21	20057	BOLT M8 THREE STAR KNOB	2
22	25985	BOLT M12 X 1.75 X 104 SHOULDER	2
23	10517	WASHER 16 X 25 X 2.5 MM FLAT	4
24	15856	WHEEL 8 X 5/8 IN GREY	2
25	18098	BOLT M8 X 1.25 X 45 HEX HEAD	2
26	17987	NUT M12 X 1.75 NYLOCK	2
27	20056	PLUG SQUARE TUBE END NYLON	2
28	24814	DRAG STAKE MOUNT CASTING	1
29	18039	LOCK PIN 8 X 40 MM	1
30	18131	DRAG STAKE ASSEMBLY	1
31	W1265V0904	BOLT M8 X 1.25 X 20 HEX HEAD	1
32	13601	NUT M8 X 1.25 THREE STAR KNOB	1
33	20050	HANDLEBAR LEFT	1
34*	20413	HARDWARE PARTS BAG 20015, 22662	1
34**	25783	HARDWARE PARTS BAG 25780	1
35***	25785	MANUAL PARTS BAG 20015, 25780	1
35****	24848	MANUAL PARTS BAG 22662	1

* Models 20015, 22662 only
** Model 25780 only
*** Models 20015, 25780 only
**** Model 22662 only

ILLUSTRATED PARTS BREAKDOWN
Chassis Assembly

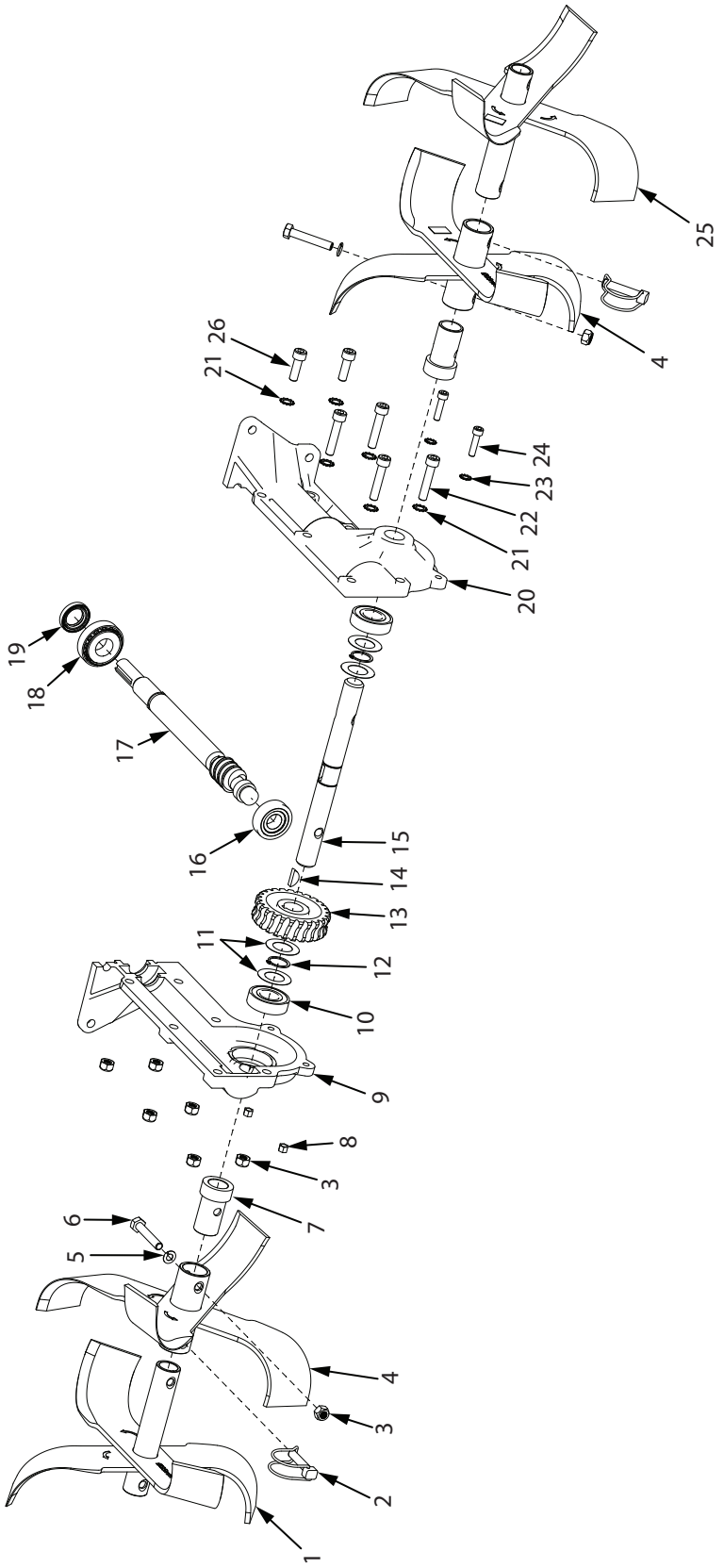


ITEM #	PART #	DESCRIPTION	QTY
1	23552	PULLEY BOX COVER & HARDWARE	1
2	23873	CAGE NUT M5 X 0.8	4
3	400018	BOLT M5 X 0.8 X 12 HEX FLANGE	4
4	20343	BELT 12 X 728 TYPE 4L TOOTH	1
5	13826	BOLT M8 X 1.25 X 25 HEX HEAD	1
6	21640	WASHER M8 SPRING LOCK	11
7	3245	WASHER M8 X 24 X 2 FLAT	18
8	20067	PULLEY TRANSMISSION FLUTED	1
9	21819	KEY 5 X 25 MM SQUARE	1
10	23506	EXTENSION SPRING 120.4 X 1.65	1
11	3247	BOLT M8 X 1.25 X 45 HEX FLANGE	1
12	23982	WASHER 8.5 X 32.5 X 3 MM FLAT	2
13	20060	FORWARD IDLER ARM STEEL	1
14	23981	BUSHING 8 X 12.5 X 7 MM STEEL	1
15	20816	BOLT M8 X 1.25 X 35 HEX HEAD	1 3*
16	17983	BOLT M8 X 1.25 X 30 HEX HEAD	3
17	25814	PULLEY BOX STEEL	1
18	23511	BOLT M6 X 1.0 X 25 HEX HEAD	1
19	W1200116	WASHER M6 SPRING LOCK	1
20	20344	WASHER M6 X 29.5 X 3 FLAT	1
21	20244	BUSHING 16 X 12 X 22 MM STEEL	1
22	18022	PULLEY ENGINE SINGLE GROOVE	1
23	20246	BUSHING 16 X 4 X 22 MM STEEL	1
24	23512	KEY 4.8 X 25 MM SQUARE	1
25	2431	WASHER M10 X 20 X 2 FLAT	1
26	22563	WIRE BELT CATCH SINGLE LOOP	1

ITEM #	PART #	DESCRIPTION	QTY
27	20145	BOLT M10 X 1.5 X 50 HEX HEAD	1
28	W1265V0904	BOLT M8 X 1.25 X 20 HEX HEAD	4* 6
29	3235	NUT M10 X 1.5 TOPLOCK	1
30	13364	IDLER PULLEY	1
31	24169	BOLT M8 X 1.25 X 25 HEX HEAD	2
32	20345	WIRE BELT GUIDE RIGHT	1
33	25038	WIRE BELT GUIDE LEFT	1
34	20059	WIRE BELT GUIDE DOUBLE LOOP	1
35	26339	TUFFLEX TINE SHIELD LEFT	1
36	26340	TUFFLEX TINE SHIELD RIGHT	1
37	24815	TRANSMISSION 12.5:1 WEBBED	1
38	4620	JAM NUT M8 X 1.25	6
39	400023	NUT M8 X 1.25 NYLOCK	6 8*
40	20061	CENTER TINE SHIELD STEEL	1
41**	24811	ENGINE 99CC VIPER	1
MODEL 22662 PARTS			
41**	---	ENGINE 127CC BRIGGS & STRATTON	1
42	25746	BOLT 1/4 X 28 X 3/4 IN HEX HEAD	1
43	24955	WASHER 7.5 X 29.5 X 3 MM FLAT	1

** Item quantity for Model 22662*
*** See engine manual for engine parts explosion or directions for accessing service parts.*

ILLUSTRATED PARTS BREAKDOWN
Transmission Assembly



ITEM #	PART #	DESCRIPTION	QTY
1	13905	TINE SET OUTER RIGHT	1
2	18039	LOCK PIN 8 X 40 MM	2
3	400023	NUT M8 X 1.25 NYLOCK	8
4	13903	TINE SET INNER	2
5	21640	WASHER M8 SPRING LOCK	2
6	25879	BOLT M8 X 1.25 X 45 HEX HEAD	2
7	20066	SLEEVE TINE SHAFT STEEL	2
8	W1265V0913	NUT M6 X 1.0 NYLOCK	2
9*	---	TRANSMISSION CASTING RIGHT	1
10	3309	BEARING 6004 2RS	2
11	21814	SPACER BEARING	4
12	21816	RETAINING RING 3AM1-20	2
13	20065	GEAR 25 TOOTH BRONZE	1
14	21817	KEY 5 X 7.5 X 19 MM WOODRUFF	1
15	20423	TINE SHAFT 209 MM	1
16	331021	BEARING TAPERED 30203	1
17	24900	DRIVE SHAFT WORM GROOVED	1
18	3220	BEARING 30204	1
19	331042	SEAL 20 X 32 X 6 MM	1
20*	---	TRANSMISSION CASTING LEFT	1
21	21810	WASHER M8 EXTERNAL TOOTH	6
22	21808	BOLT M8 X 1.25 X 40 SOCKET HEAD	4
23	21818	WASHER M6 EXTERNAL TOOTH	2
24	13222	BOLT M6 X 1.0 X 25 SOCKET HEAD	2
25	13904	TINE SET OUTER LEFT	1
26	400022	BOLT M8 X 1.25 X 25 SOCKET HEAD	2

** Right and left castings sold as complete transmission 24815 assembly only*

ARDISAM™

WARRANTY TERMS AND CONDITIONS

PRODUCT WARRANTY: 5-YEAR LIMITED WARRANTY – 10/01/2014

Ardisam, Inc. (Ardisam), a manufacturing company, warrants this product to be free from defects in the material or workmanship for a period of five years from the date of purchase. If there is insufficient evidence of the purchase date, the effective date of this warranty will begin on the tiller's date of manufacture. During the five-year warranty of this product, Ardisam will furnish, at their discretion, parts and labor to correct any defect caused by faulty material or workmanship. In no event shall recovery of any kind be greater than the amount of the purchase price of the product sold. Ardisam reserves the right to inspect any incoming units returned under warranty to determine if the warranty applies before performing any warranty related work (including parts and components). Any unit used in a commercial application, or producing income is covered for a period of 90 days after purchase. This warranty applies to the original owner with a proof of purchase and is not transferable. For the warranty to be valid, the product must be registered online, or the warranty card must be filled out and received by Ardisam, within 30 days of purchase. This warranty excludes tines due to normal wear, wear items such as belts, wheels, tires, and cables, routine maintenance items such as filter elements, o-rings, seals, lubricants, and tune-ups, accessory parts such as hiller furrowers, edger kits, and dethatcher kits, running the tiller dry (without oil), or below minimum oil levels, using the tiller for a purpose other than that for which it was designed and manufactured, using the tiller in violation of local codes, ordinances and good trade practices. *These warranties apply only to products which have not been subjected to negligent use, abuse, misuse, overload, improper installation, alteration, accident, acts of God (or other events beyond Ardisam's control), vandalism, unauthorized parts, failure to use proper fuel and oil, or if repairs have been performed at a non-authorized service facility. These warranties shall not cover damage from normal wear and tear, normal maintenance parts and services, lightning; nor improper installation, operation, storage, or maintenance; nor operating the equipment above recommended maximums as stated in this manual and the accompanying engine manual. These warranties supersede all other warranties either expressed or implied and all other obligations or liabilities on the part of Ardisam. Ardisam, does not assume, and does not authorize any other person to assume for Ardisam, any liability in connection with the sale of Ardisam products. ***To be at "No Charge," warranty work must be sent directly to and performed by Ardisam or an Ardisam Authorized Warranty Service Facility.*** To obtain warranty service and/or replacement instructions, contact the Ardisam Customer Service Department at 800-345-6007. If you choose to ship your product to Ardisam for warranty repair, you must first have prior approval from Ardisam by calling the Ardisam Customer Service Department for a return material authorization number (RMA#). Under these circumstances, all items must be shipped prepaid. Ardisam will at no charge, repair or replace, at the discretion of Ardisam, any defective part which falls under the conditions stated above. Ardisam retains the right to change models, specifications and price without notice. Ardisam shall not be obligated to ship any repair or replacement product to any location outside of the United States of America or Canada. Some states and countries do not allow the limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state and country to country.

SEE ENGINE MANUAL FOR ENGINE WARRANTY

P/N: 21192
REV1: 100114
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NOTES

NOTES

NOTES

Earthquake®

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E-mail: info@ardisam.com

All weights, specifications and features are approximate and are subject to change without notice. Due to continuous product improvements, product images may not be exact. Items used for props not included. Some assembly may be required.