

DR[®] 2-CYCLE TILLER CULTIVATOR SAFETY & OPERATING INSTRUCTIONS



Model:
PILOT 2C

Serial No. _____

Order No. _____

DR Power Equipment
Toll-free phone: 1-800-DR-OWNER (376-9637)
Website: www.DRpower.com

WARNING

Read and understand this manual and all instructions before operating the DR 2-CYCLE TILLER CULTIVATOR.

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Conventions used in this manual

WARNING

This indicates a hazardous situation, which, if not avoided, *could* result in death or serious injury.

CAUTION

This indicates a hazardous situation, which, if not avoided, *could* result in minor or moderate injury.

NOTICE

This information is important in the proper use of your machine. Failure to follow this instruction could result in damage to your machine or property.

We have done our utmost to ensure that your DR 2-CYCLE TILLER CULTIVATOR will be one of the most trouble-free and satisfying pieces of equipment you have ever owned. Please let us know of any questions you may have. We want to answer them as quickly as possible. When you do call, please have your order number, or serial number handy. For technical assistance, please visit our website at www.DRpower.com or call Toll-Free 1-800-DR-OWNER (376-9637) and one of our Technical Support Representatives will be happy to help you. We also hope to hear from you on how much you like your new helper.

If you are ever unsure about an action you are about to take, don't do it, visit our website at www.DRpower.com for help or information.

DR Power Equipment reserves the right to discontinue, change, and improve its products at any time without notice or obligation to the purchaser. The descriptions and specifications contained in this manual were in effect at printing. Equipment described within this manual may be optional. Some illustrations may not be applicable to your machine.

California Proposition 65

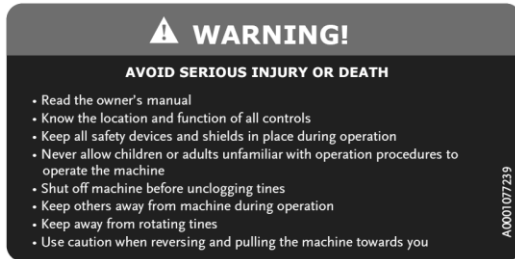
WARNING

CANCER AND REPRODUCTIVE HARM - www.P65Warnings.ca.gov.

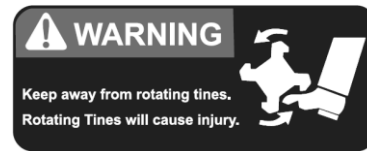
Chapter 1: Important Safety Considerations

We want you to enjoy years of safe and productive use from your DR 2-CYCLE TILLER CULTIVATOR. We do not want you injured, so please take a few moments to read the following instructions for safely operating your new Tiller/Cultivator.

Your DR 2-CYCLE TILLER CULTIVATOR carries prominent safety labels (shown below) to remind you of important information while you are operating the machine. Take a moment to study these labels before you operate the machine. Please, immediately replace labels if they should become unreadable due to fading, or otherwise damaged during use of your DR 2-CYCLE TILLER CULTIVATOR.



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Protecting Yourself and Those around You

Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the Tiller/Cultivator and the activity of tilling. Never assume that children will remain where you last saw them.

⚠ WARNING

This tilling machine, can cut, and sever parts of your body if they become in contact with the moving Tines. Always take the following precautions when operating the DR 2-CYCLE TILLER CULTIVATOR:

- Only allow responsible individuals who have a thorough understanding of these instructions to operate the Tiller/Cultivator. Never allow children to operate the machine.
 - Always wear protective goggles or safety glasses with side shields while tilling to protect your eyes from possible foreign objects thrown from the machine.
 - Wear shoes with non-slip treads when using this machine. If you have safety shoes, we recommend wearing them. Do not use the machine while barefoot or wearing sandals with exposed toes or heels.
 - Avoid wearing loose clothing or jewelry, which can catch on the machine's moving parts.
 - We recommend wearing long pants and gloves while using this machine. Be sure the gloves fit properly and do not have loose cuffs or drawstrings.
 - Never place your hands, feet, or any part of your body near the Tines when starting the Engine or while the DR 2-CYCLE TILLER CULTIVATOR's Engine is running.
 - Keep children, other bystanders, and pets away from your work area at all times. Stop the Engine when another person or pet approaches.
 - Before and while pulling the machine backwards, look behind and down for small children and for secure footing.
 - We recommend the use of ear protectors or earplugs rated for at least 20 dba to protect your hearing.
-

Operating the Tiller/Cultivator Safely

WARNING

- Clear the work area of objects that might jam or wrap around the Tines such as glass, large sticks, stones, metal objects, wire, rope, and string-like materials. Use on these objects could damage the DR 2-CYCLE TILLER CULTIVATOR and/or cause injury.
 - Do not touch the muffler and Engine when the machine is in use as they become very hot and can cause severe burns.
 - The Engine should always be off before adjusting the Wheel Height or Drag Stake.
 - Never, under any conditions, remove, bend, cut, fit, weld, or otherwise alter standard parts on the DR 2-CYCLE TILLER CULTIVATOR. This includes all shields and guards. Modifications to your machine could cause personal injuries and property damage and will void your warranty.
 - Do not operate the machine when under the influence of alcohol, drugs, or medication.
 - Use the DR 2-CYCLE TILLER CULTIVATOR only in daylight.
 - Do not hurry or take things for granted when using the DR 2-CYCLE TILLER CULTIVATOR. When in doubt about the machine or your surroundings, stop the machine and take time to look things over.
 - Do not use this machine around large roots and surface rocks that you cannot remove prior to use.
 - Do not use this machine around underground pipes and wiring.
 - Prior to removing material from the Tines by hand, stop the Engine and remove the Spark Plug wire.
-

Safety with Gasoline-Powered Machines

WARNING

Gasoline is a highly flammable liquid. Gasoline also gives off flammable vapor that is easy to ignite and cause a fire or explosion. Never overlook the hazards of gasoline and always follow these precautions:

- Never run the DR 2-CYCLE TILLER CULTIVATOR Engine in an enclosed area or without proper ventilation as the exhaust from the Engine contains carbon monoxide, this is an odorless, tasteless, and deadly poisonous gas.
 - Store all fuel and oil in containers specifically designed and approved for this purpose and keep away from heat, open flame, and out of the reach of children.
 - Mix the oil and gasoline outdoors and then fill the Fuel Tank outdoors with the Engine off; allowing the Engine to cool completely. Do not handle gasoline if you or anyone nearby is smoking, or if you are near anything that could cause it to ignite or explode. Replace the Fuel Tank and Fuel Container Caps securely.
 - If you spill gasoline, do not attempt to start the Engine. Move the machine away from the area of the spill and avoid creating any source of ignition until the gas vapors have dissipated. Wipe up any spilled fuel to prevent a fire hazard and properly dispose of the waste.
 - Allow the DR 2-CYCLE TILLER CULTIVATOR Engine to cool completely before storing in any enclosure. Never store the machine with fuel in the tank or with fuel in a container near an open flame or spark such as a water heater.
 - Never make adjustments or repairs with the Engine running. Before making an adjustment or repair, shut off the DR 2-CYCLE TILLER CULTIVATOR Engine, wait five (5) minutes to cool, then disconnect the spark plug wire and keep the wire away from the spark plug to prevent accidental starting.
 - Never check for an ignition spark with the Spark Plug or Spark Plug wire removed. Always use an approved spark tester.
 - To reduce fire hazard and keep the Engine from overheating, keep the Engine and Muffler area free of debris or any other combustible material.
 - Never operate the Engine without the Muffler. Inspect the Muffler periodically and replace if necessary.
 - Never operate the Engine with the Air Filter or Cover over the Carburetor air intake removed, except for adjustment. Removal of such parts could create a fire hazard. Do not use flammable solutions to clean Air Filter.
 - Always check Fuel Lines and fittings frequently for cracks or leaks, replace if necessary.
 - Replace rubber Fuel Lines and Grommets when worn or damaged, but do not use over five (5) years.
-

General Safety Rules

CAUTION

Safe operation of the DR 2-CYCLE TILLER CULTIVATOR is necessary to prevent or minimize the risk of minor or moderate injury. Unsafe operation can create a number of hazards for you. Always take the following precautions when operating this machine:

- The DR 2-CYCLE TILLER CULTIVATOR is a powerful tool and not a plaything. When using this machine, exercise extreme caution at all times. The design of this machine is to till soil. Do not use it for any other purpose.
- Do not cultivate 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.
- The tines of the cultivator should not rotate when the engine is idling. If it does rotate when engine is idling, contact DR Power Equipment for instructions.
- The operator or user of the DR 2-CYCLE TILLER CULTIVATOR is responsible for accidents or hazards occurring to other people, their property, and themselves.
- In an emergency, to quickly stop the machine, simply release the Throttle Lever and shut off the Engine.
- Do not transport the DR 2-CYCLE TILLER CULTIVATOR from one place to another with the Engine running.
- If the machine should make an unusual noise or vibration during use, shut off the DR 2-CYCLE TILLER CULTIVATOR Engine. Vibration is generally a warning of trouble. Wait five (5) minutes for the DR 2-CYCLE TILLER CULTIVATOR Engine to cool, disconnect the Spark Plug wire and then inspect the machine for clogging, damaged Tines, or loose Engine mounting bolts. Clear any obstructions and repair and/or replace damaged parts.
- Always keep the machine in good safe operating condition. Always make certain nuts and bolts are tight and always use the supplied self-locking hardware. Do not use substitute hardware.
- Always shut off the DR 2-CYCLE TILLER CULTIVATOR Engine, wait five minutes to cool, and disconnect the spark plug wire before attempting to clear any obstructions.
- If the DR 2-CYCLE TILLER CULTIVATOR Engine should stall, raise the Tines out of the soil by pushing down on the Handlebars. Never squeeze the Throttle Lever when the Tines are already in the ground.
- Never leave the DR 2-CYCLE TILLER CULTIVATOR unattended with the Engine running.

A Note to All Users

No list of Warnings and Cautions can be all-inclusive. If situations occur not covered by this manual, the operator must apply common sense and operate the DR 2-CYCLE TILLER CULTIVATOR in a safe manner. Visit our website at www.DRpower.com or call 1-800-DR-OWNER (376-9637) for assistance.

Under California law, and the laws of some other states, you are not permitted to operate an internal combustion Engine using hydrocarbon fuels without an Engine Spark Arrester. This also applies to operation on US Forest Lands. We provide all DR 2-CYCLE TILLER CULTIVATORS shipped to California and Washington State with Spark Arresters. Failure of the owner/operator to maintain this equipment in compliance with state regulations is a misdemeanor under California law and may be in violation of other state and/or Federal regulations. Contact your local Fire Marshal, Forest Service, State Park Association, or the appropriate State organization for specific information in your area.

Chapter 2: Setting up your DR 2-CYCLE TILLER CULTIVATOR

This chapter outlines a few simple steps you will need to follow to set up your new machine before you use it. It may be helpful to familiarize yourself with the controls and features on your new machine by reviewing Figure 1 on the following page before beginning the steps outlined in this chapter. For technical assistance, please visit our website at www.DRpower.com and one of our Technical Support Representatives will be happy to help you.

DR 2-CYCLE TILLER CULTIVATOR Specification Sheet

Engine	Single Cylinder, 2-Cycle, Air Cooled
Engine Speed	9000 rpm
Displacement	43cc
Bore/Stroke	40/34 (mm)
Power Output	1.34 HP
Max Torque Output	1.18 ft.lbs
Fuel Tank Capacity	28.7 oz (850 ml)
Fuel Type	Gas/Oil Mixture
Gas/Oil Mix Ratio	50:1 (2.6 ounces Oil per 1 gallon gas)
Gas Type	Minimum 87 Octane with Low Ethanol Content
Oil Type	2-Cycle Engine Oil
Spark Plug	LD L6
Spark Plug Gap	.021" (.53mm)
Transmission Gear Ratio	32:1
Tilling Width	11" (27.9cm)
Tilling Depth	0-8" (0-20.3cm)
Tine Speed	288 RPM max
Wheel Size	7.0" diameter x 1.375" wide (17.8 cm x 3.5 cm)
Machine Weight	29 lbs. (13.2kg)
Machine Dimensions	36" x 18.5" x 39". (91.4cm x 47cm x 99.1cm)

DR 2-CYCLE TILLER CULTIVATOR Controls and Features

Note: The model shown in Figure 1 may look slightly different than your machine.

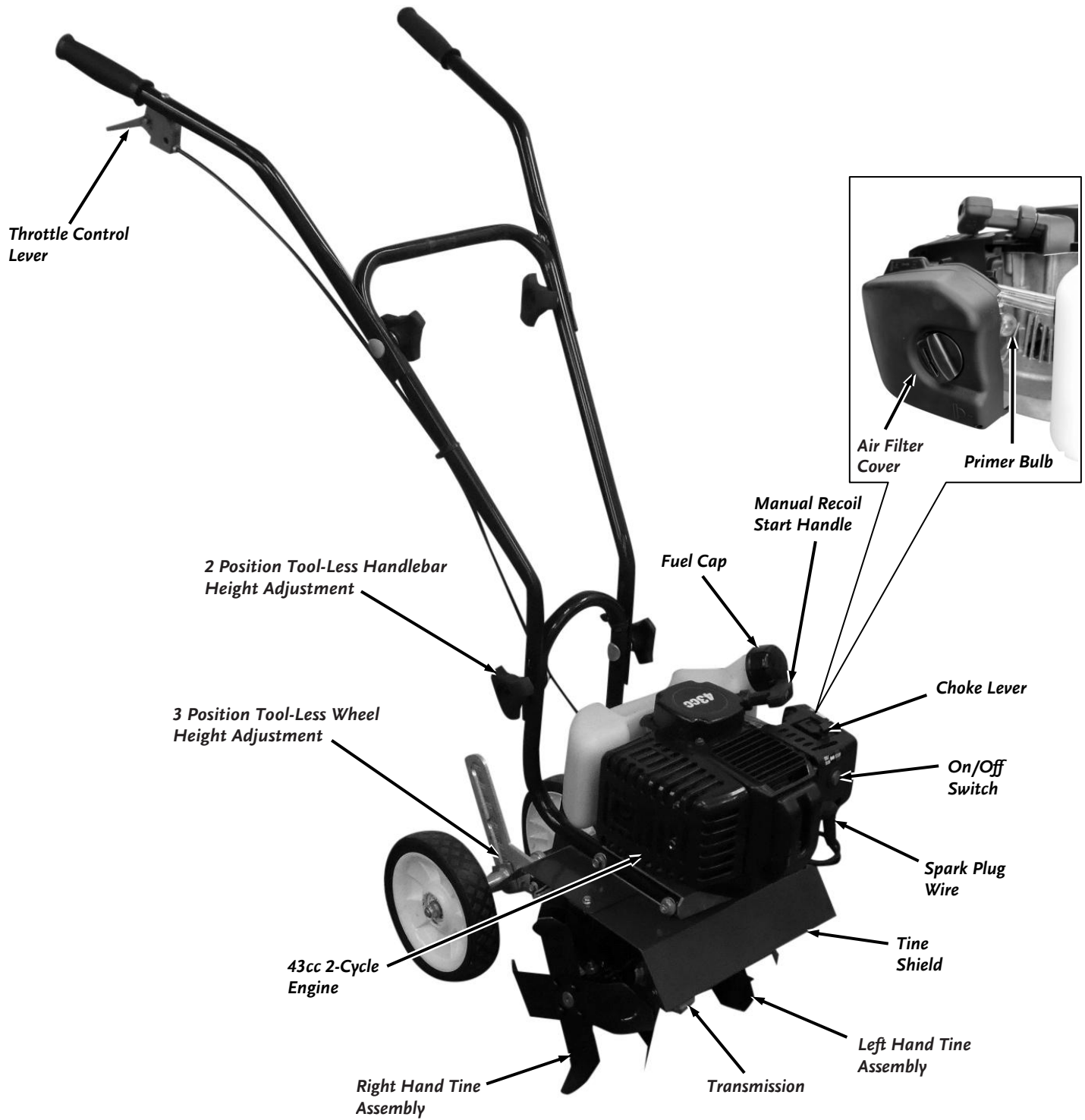


Figure 1

Assembling the Machine

CAUTION

Stabilize the shipping carton on a flat ground surface before attempting to unpack and assemble the machine. Do not place the machine on a bench or table where it can fall and cause personal injury or damage the machine.

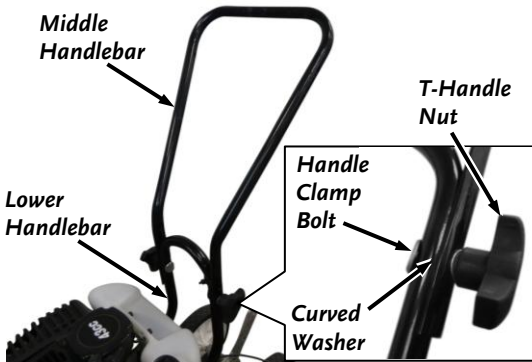


Figure 2

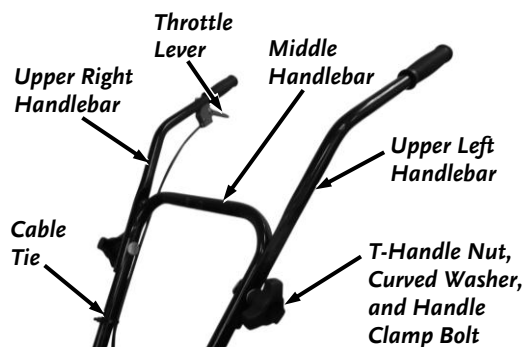


Figure 3

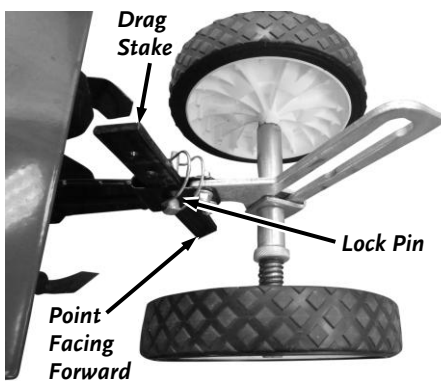


Figure 4

Parts Supplied in Shipping Carton:

- DR 2-CYCLE TILLER CULTIVATOR
- Upper Left Handlebar
- Upper Right Handlebar
- Middle Handlebar
- Safety & Operating Instructions Manual
- Engine Manual
- Hardware Bag:
 - (4) T-Handle Nut
 - (4) Curved Washer
 - (4) Handle Clamp Bolt
 - (1) Cable Tie

Note: Use care with the Upper Right Handlebar so as not to kink the Throttle Cable; it is pre-attached to the Engine.

1. Place unit upright with the Tines and Wheels on level surface. Set Wheels to lowest position.
2. Assemble the Middle Handlebar to the Lower Handlebar (already attached to the machine) using two T-Handle Nuts, two Handle Clamp Bolts and two Curved Washers (**Figure 2**). The Middle handlebar can be installed in high or low position.

Note: You can install the Middle Handlebar in either of two positions, one high, and one low. DO NOT over tighten the T-Handle Nuts.

3. Attach the Upper Right (with Throttle Lever) and Left Handlebars to the Middle Handlebar using the remaining two T-Handle Nuts, two Handle Clamp Bolts, and two Curved Washers (**Figure 3**). DO NOT over tighten the T-Handle Nuts.
4. Secure the Throttle Cable to the Upper Right Handlebar with a Cable Tie.
5. The Drag Stake shipped with its pointed end facing upwards. Remove the Lock Pin, turn the Drag Stake around and direct the point in the downward position facing towards the Tines, and then reinsert the Lock Pin (**Figure 4**).
6. Do not discard your packaging material until you are fully satisfied with your new DR 2-CYCLE TILLER CULTIVATOR.

Adding the Gasoline/Oil Mixture

NOTICE

- To operate the Engine you must use 2-cycle Engine oil with unleaded regular gasoline mixed with a 50:1 ratio. Never use straight gasoline, as this will result in damage to the Engine.
- Never mix the gasoline and oil directly in the Engine Fuel Tank. Always use only nonmetal, portable fuel containers approved by UL or ASTM.

Fuel Mixture		
GAS	OIL	RATIO
1 Gallon	2.6 Ounces	50:1
2 Gallons	5.1 Ounces	50:1
5 Gallons	13 Ounces	50:1

1. Outside in a well ventilated area; add the recommended amount of 2-cycle oil to the approved container for the amount of fuel you are mixing.
2. Add unleaded gasoline with minimum 87 octane to the fuel container to approximately 1/4 full.
3. Screw the container cap on tight and gently shake the container to mix the fuel and oil.
4. Unscrew the container cap slowly and add the remainder of the fuel you are mixing.
5. Replace the cap and
6. Wipe up any spilled fuel.

Filling the Fuel Tank

! WARNING

Always fill the Fuel Tank outdoors or in a well-ventilated area, away from sparks, open flames, pilot lights, heat, and other ignition sources.

Note: Only use fuel that is a 50:1 mixture of Gas and 2-Cycle mixing Oil.

1. Clean any debris from the area around the Fuel Tank Cap and remove it slowly, placing the Cap on a clean dry surface (**Figure 5**).
2. Carefully fill the Fuel Tank to avoid spilling, to approximately 1" below the bottom of the Fill Neck to allow for fuel expansion. Be careful not to overfill. Reinstall the Fuel Tank Cap.
3. Wipe off any spilled fuel before starting the Engine.

Note: To refill the Fuel Tank, turn the Engine OFF, and let the Engine cool at least two minutes before removing the Fuel Tank Cap.



Figure 5

Chapter 3: Operating Your DR 2-CYCLE TILLER CULTIVATOR

This chapter covers the procedures for starting and stopping your new DR 2-CYCLE TILLER CULTIVATOR and discusses basic operation features.



Figure 6

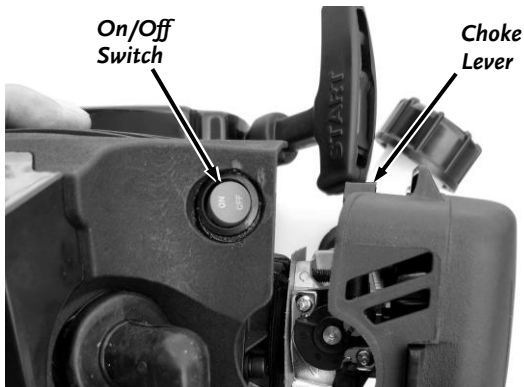


Figure 7



Figure 8

NOTICE

- Remove all long vegetation from the site. Long vegetation will wrap around the Tines and cause poor performance. Remove any built up debris from the Tines.
- Remove any debris from the Air Cleaner Holes and around the Fuel Tank Cap for proper airflow.

Before Starting the Engine

Cold Engine Start:

1. Push the Primer Bulb in and then release until it returns to its original position (**Figure 6**). Repeat this process 6 times or until the Primer Hose is full of fuel.
2. Move the Choke Lever all the way to the CHOKE position and make sure the On/Off Switch is in the ON position (**Figure 7**).

CAUTION

- Make sure the machine is in a stable position before pulling the starter rope.
 - The starter rope can cause an unanticipated jerk (kick back) towards the Engine. Please follow these instructions to avoid injury.
3. Standing between the Handlebars, push down on the Handlebar lifting the Tines off the ground (**Figure 8**). Grasp the Recoil Starter Handle with your left hand and slowly pull until you feel resistance, then pull the cord with a smooth accelerating motion to start the Engine. Do not let the Starter Handle snap back against the Engine. One or two pulls usually starts the DR 2-CYCLE TILLER CULTIVATOR.

Note: If the Engine fails to start after 5-6 pulls, push the Primer Bulb 1 more time and pull the Starter Rope again.

4. After the Engine starts, release the Throttle Lever and move your left hand to the Handlebar position for stability. Slowly push the Choke Lever to the half choke position with your right hand until the Engine starts to run smoother and then all the way to the RUN position.
5. Squeeze the Throttle to the desired speed. For the best Engine performance, do not hold the engine at full throttle while the tines are not making contact with your working area. Running the engine at maximum throttle without and load applied may cause engine damage.

Warm Engine Start:

1. Make sure the On/Off Switch is in the ON position (**Figure 7**).
2. Repeat steps 3 through 5 with the Choke in the RUN position.

Stopping the Engine

NOTICE

Never stop the Engine by moving the Choke Lever to the CHOKE position. This could cause an Engine backfire resulting in Engine damage.

Release the Throttle Lever and turn the On/Off Switch to the OFF position (Figure 9).

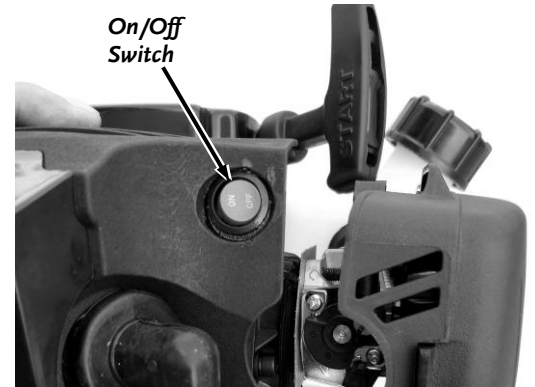


Figure 9

Operating Procedures

NOTICE

- The Tines Drive Clutch will transfer maximum power after about two hours of normal operation. During this break-in period, Clutch slippage may occur and is normal.
- The Tines should not rotate when the Engine is idling; if they do, contact us at www.DRpower.com for instructions.
- Use the DR 2-CYCLE TILLER CULTIVATOR without placing excessive body weight on the machine. The unit operates most efficiently with the weight of the machine itself.
- Use common sense when using the machine. Learn to recognize the change in sounds when it is overloaded. Turn off the Engine immediately if the machine becomes jammed to prevent damage to the drive system.

- Cultivate without placing excessive body weight on the machine. The cultivator operated most efficiently under its own weight.
- Allow the machine to till soil clawing its way forward. Depending on the soil type and moisture conditions, the slower the cultivator moves across the working area, the deeper the tines will penetrate.
- Make multiple passes over working area to cultivate soil effectively.

Note: This cultivator is designed to till predominately loose soil. Attempting to break hard pack soil may damage tines.

Note: The 43cc 2-cycle engine is only designed to be run under the load of tiller. Holding the engine at full throttle continuously while the machine is not in use may cause permanent engine damage.

1. Ensure the Drag Stake and Wheel height is set to the desired position.
2. Start the machine as described in the previous section.
3. Lift Tines off the ground and operate the Throttle Lever to full speed.
4. Slowly lower the Tines into the soil as you begin walking forward to till soil.

Note: Holding back on the Handlebar will slow the forward movement to till material more thoroughly.

5. Release the Throttle Lever when you want to stop the Tiller.
6. Shut the Engine off before leaving the Tiller.

Handling and Transporting

! WARNING

- Never lift the machine while the Engine is running.
- If you must use an enclosed vehicle for transportation, remove the fuel into an approved container; never siphon fuel by mouth.

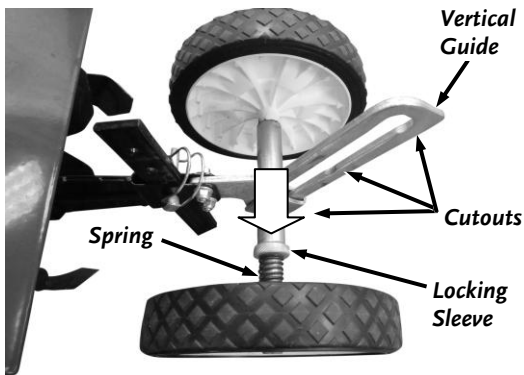


Figure 10

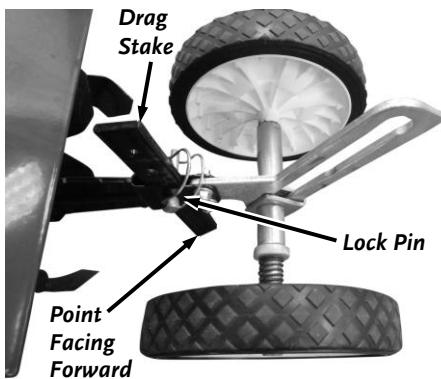


Figure 11

Adjusting the Wheels and Drag Stake

Adjusting the Wheels

You can adjust the Wheels on the DR 2-CYCLE TILLER CULTIVATOR to one of three positions (**Figure 10**). Use the lowest Wheel position for transporting the machine across a smooth level surface while the Engine is not running. Use the two higher positions for tilling in soil and to help stabilize the unit when tilling at different depths.

1. Pull the Locking Sleeve toward the Spring until it releases from one of the three cutouts in the Vertical Guide.
2. Slide the Wheel Set up or down to the desired position, and then release the Locking Sleeve until it locks into one of the three cutouts in the Vertical Guide.

Adjusting the Drag Stake

The Drag Stake is used to help regulate tilling depth and control the machine from lurching forward during operation (**Figure 11**). Set the Drag Stake in its lowest position of three to provide the greatest resistance to forward motion allowing for deeper tilling.

1. Pull the Lock Pin out of the Drag Stake Mounting Hole.
2. Position the Drag Stake to the desired depth and reinsert the Lock Pin.

Chapter 4: Maintaining the DR 2-CYCLE TILLER CULTIVATOR

This chapter covers regular maintenance procedures that will ensure the best performance and long life of your DR 2-CYCLE TILLER CULTIVATOR.

WARNING

Prior to performing any maintenance, you must first shut off the Engine; wait five minutes to allow parts to cool and disconnect the Spark Plug wire, keeping it away from the Spark Plug.

Regular Maintenance Checklist

Note: Consider that the service intervals shown are the maximum under normal operating conditions. Increase frequencies under extremely dirty or dusty conditions.

Procedure	Before Each Use	Every 35 Hours
Check the Engine mixed Fuel Level	▲	
Clean the Tines and Tine Shield*	After each use	
Check the general condition of the machine, e.g. nuts, bolts, welds, etc.	▲	
Clean Engine Exterior & Cooling Fins	▲	
Clean Air Filter	▲	
Check Tines for Wear		▲
Replace Air Filter		▲
Replace Spark Plug		▲

* Cover the Engine Muffler, Carburetor, and Air Filter before using a hose to clean the Tines and Tine Shield.

Lubrication

The Tines Drive Transmission Case has grease installed at the factory. We recommend that once a year to have the Transmission opened by a qualified service professional and the grease level checked. Add a molybdenum type grease only if the level of the grease is below the top of the gears. DO NOT OVERFILL.

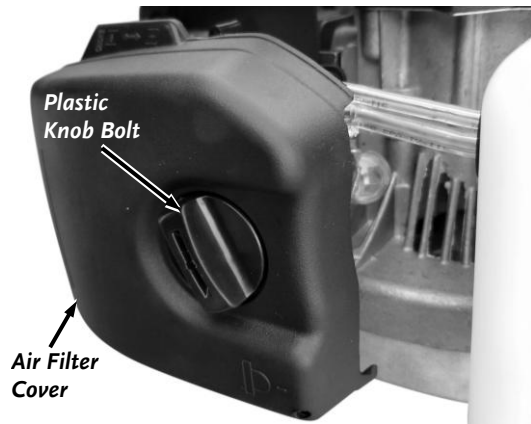


Figure 12

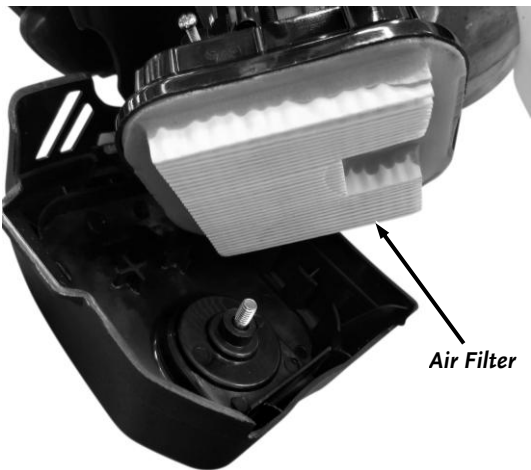


Figure 13

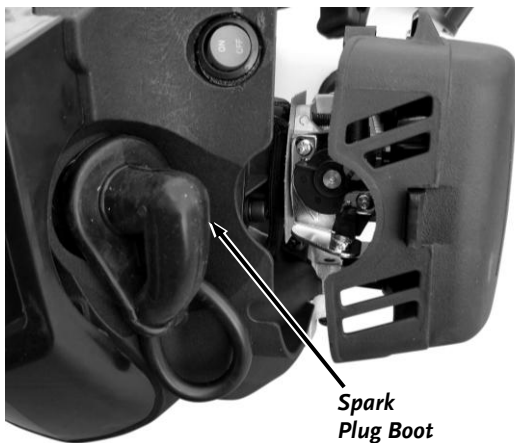


Figure 14

Replacing the Air Filter

Supplies Recommended:

- Clean Cloth
1. Unscrew the Plastic Knob Bolt that secures the Filter Cover and remove the Cover (**Figure 12**).
 2. Remove the Air Filter Element from the Filter Housing (**Figure 13**). If the Filter is dirty, replace with a new one.
 3. Wipe out any dirt from inside the Air Filter Housing using a clean Rag.
 4. Clean any debris buildup from the openings in the Air Filter Cover.
 5. Align the new Air Filter with the hole opening positioned on the right side.
 6. Replace the Air Filter Cover and secure with the Plastic Knob Bolt.

Spark Plug Service

Tools Recommended:

- Feeler Gauges
- Wire Brush
- Spark Plug Wrench

Spark plug gap must be correct for efficient operation. Proceed as follows to service the spark plug:

1. Clean area around spark plug Boot (**Figure 14**).
2. Pull the Spark Plug Wire from the Spark Plug.
3. Use a Spark Plug Wrench to remove the Spark Plug.
4. Clean the electrodes with a metal brush to remove any build up.
5. Measure spark plug clearance with a feeler gauge. The clearance should be 0.02 in. (.53 mm). If adjustment is necessary, bend the side electrode carefully with the Feeler Gauge tool.
6. Replace spark plug with a new one if electrodes are pitted, burned or porcelain is cracked. Use only a NGK CMR6A or equivalent.
7. Install Spark Plug and Wire.

Replacing Wheels

Tools Recommended:

- Two 14mm Wrenches
1. Hold the Axle Bolt securing the left side Wheel using a 14mm Wrench and remove the Locknut and Washer on the right side using a 14mm Wrench (**Figure 15**).
 2. Tilt the machine to the left side to remove the right side Wheel. Tilt the machine to the right side to remove the Axle Bolt, Washer, and left side Wheel.

Note: Ensure the Spring and Washer are in position on the Wheel Shaft when installing the left side Wheel and Axle Bolt. The Washer must be positioned between the Spring and Wheel. On page 18, see explode drawing items 47 and 48 for reference to position the Spring and Washer correctly.

3. Install the new Wheels in the reverse order and tighten the Axle Bolt and Locknut.

Tine Remove and Replace

Tools and Supplies Recommended:

- Two 13mm Wrenches

Note: For ease of disassembly and assembly, block up the machine so that the Tines are off the ground.

Tine Removal:

1. Remove the Bolt and Locknut that secures the right side Tine Assembly to the Shaft using two 13mm Wrenches (**Figure 16**).
2. Remove the Bolt and Locknut that secures the left side Tine Assembly to the Shaft using two 13mm Wrenches.
3. Slide the Tine Assemblies off the Shaft.

Tine Installation:

1. Install the left side Tine Assembly onto the Shaft with the squared edge facing forward the angled Tine edge facing back (**Figure 17**).
2. Align the holes of the left side Tine Assembly with the Shafts and secure it with the Bolt and Locknut using two 12mm Wrenches.
3. Install the right side Tine Assembly onto the Shaft with the squared Tine edge facing forward the angled Tine edge facing back.
4. Align the holes of the right side Tine Assembly with the Shafts and secure it with the Bolt and Locknut using two 12mm Wrenches.

Note: It is important the Tine Assemblies are installed on the correct right and left sides to work properly. The square Tine edges face forward and the angled Tine edges face back.

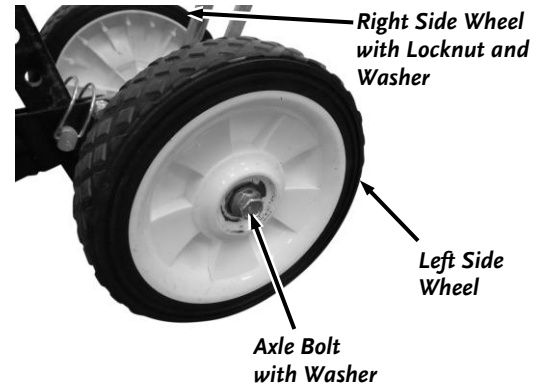


Figure 15

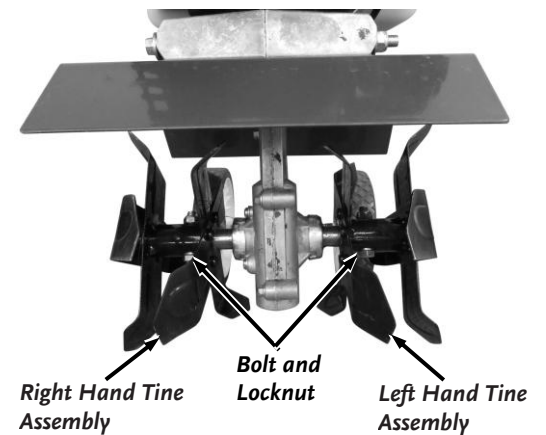


Figure 16

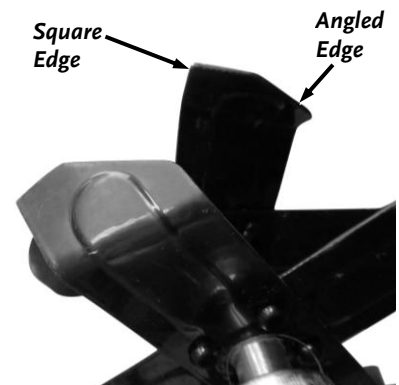


Figure 17

Chapter 5: Troubleshooting

Most problems are easy to fix. Consult the Troubleshooting Table for common problems and their solutions. If you continue to experience problems, visit our website at www.DRpower.com or call: 1-800-DR-OWNER (376-9637) for support.

WARNING

Prior to performing any maintenance, you must first shut off the Engine; wait five minutes to allow parts to cool and disconnect the Spark Plug wire, keeping it away from the Spark Plug.

Troubleshooting Table

SYMPTOM	POSSIBLE CAUSE
<i>Recoil will not pull out or is difficult to pull.</i>	⇒ The Recoil may be broken or jammed. Visit our website at www.DRpower.com for assistance.
<i>The Engine will not start.</i>	<ul style="list-style-type: none"> ⇒ Check that the Spark Plug Wire is attached. ⇒ Check the fuel mixture level. ⇒ The fuel line hose is not positioned in the bottom of the Fuel Tank. Push the fuel line down into the fuel in the Fuel Tank. ⇒ The fuel mixture may be old; change it if necessary. Use a fuel stabilizer if you keep fuel longer than one month. ⇒ Check the Throttle and Choke settings. ⇒ The Spark Plug may be dirty or cracked; change it if necessary. ⇒ The Air Filter may be dirty; clean or replace. ⇒ If your Engine still won't start, visit our website at www.DRpower.com for assistance.
<i>The Engine lacks power or is not running smoothly.</i>	<ul style="list-style-type: none"> ⇒ Make sure that you run the Engine at full Throttle. ⇒ The Air Filter may be dirty; clean or replace. ⇒ The Spark Plug may be dirty or cracked; change it if necessary. ⇒ The fuel mixture may be old; change it if necessary. Use a fuel stabilizer if you keep fuel longer than one month. ⇒ The Choke may be partially in the CHOKE position, place in the RUN position. ⇒ The Fuel Filter in the Fuel Tank may be clogged; clean or replace the filter. ⇒ If your Engine still lacks power, visit our website at www.DRpower.com for assistance.
<i>Engine smokes.</i>	<ul style="list-style-type: none"> ⇒ You may have the wrong gas/oil mixture. ⇒ The Air Filter may be dirty; clean or replace. ⇒ Clean the Engine cooling fins and the carburetor housing if they are dirty. ⇒ If the Engine still smokes, visit our website at www.DRpower.com for assistance.
<i>The Engine runs well but the Tines won't move.</i>	<ul style="list-style-type: none"> ⇒ The Tine Drive Clutch may be faulty, visit our website at www.DRpower.com for assistance. ⇒ Shear Bolt broken or missing; replace as needed
<i>The Tines turn when the Engine is idling.</i>	<ul style="list-style-type: none"> ⇒ Engine idle speed is too high, visit our website at www.DRpower.com for assistance. ⇒ Broken Tine Drive Clutch Spring, replace the Spring.
<i>The Engine runs well but labors when tilling.</i>	<ul style="list-style-type: none"> ⇒ Operator is being too aggressive; raise the Tines by pushing down on the Handlebars. ⇒ Be sure to run the Engine at full Throttle.
<i>Excessive bounce and difficult handling.</i>	<ul style="list-style-type: none"> ⇒ The area you are tilling may be too dry and hard. Moisten the ground or wait for conditions that are more favorable. ⇒ Be sure to run the Engine at full Throttle. ⇒ If your DR 2-CYCLE TILLER CULTIVATOR still bounces, visit our website at www.DRpower.com for assistance.
<i>The tilled soil balls up or clumps.</i>	⇒ The ground that you are trying to till is too moist.

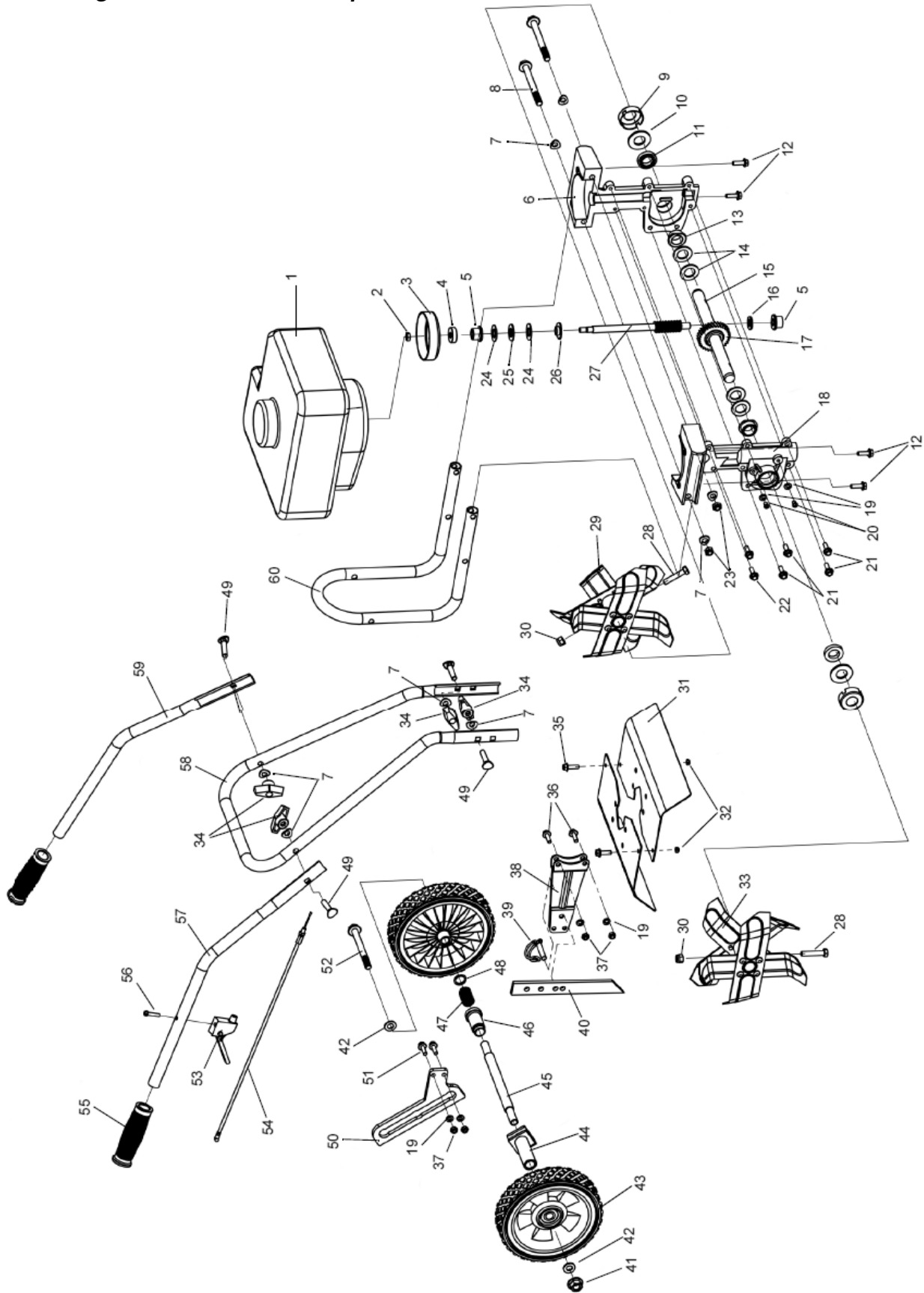
Chapter 6: Parts Lists and Schematic Diagrams

Parts List - Cultivator Assembly

Note: Part numbers listed are available through DR Power Equipment.

<u>Ref#</u>	<u>Part#</u>	<u>Description</u>	<u>Ref#</u>	<u>Part#</u>	<u>Description</u>
1	A0000938179	Engine, DR 43cc	32	A0000967111	Nut, Lock M5
2	A0000967062	Nut, M10 Jam	33	A0000967161	Tine, Right
3	A0000967067	Clutch, Plate	34	A0000967162	Knob, Handlebar Adjustment
4	A0000967135	Bearing, 6200 – 2RS	35	A0000967113	Hex Bolt, M5 X 10 Flanged
5	A0000967136	Bushing, Worm Shaft	36	A0000967114	Hex Bolt, M6 X 25 Flanged
6	A0000967137	Transmission Case, Left	37	A0000967112	Nut, M6 Lock
7	A0000967139	Washer, M8 Curved	38	A0000967163	Bracket, Drag Stake
8	A0000967070	Hex Bolt, M8 X 155 Flanged	39	A0000967116	Lock Pin, Drag Stake
9	A0000967144	Cover, Oil Seal	40	A0000967165	Drag Stake
10	A0000967145	Seal, Dust	41	A0001055475	Nut, M10 X 1.5 Lock Flanged
11	A0000967147	Seal, Oil	42	A0000938011	Washer, Flat M10
12	A0000967071	Hex Bolt, M6 X 40 Flanged	43	A0000967166	Wheel
13	A0000967149	Bushing, Worm Gear	44	A0000967167	Support, Wheel Bracket
14	A0000967150	Washer, Worm Gear	45	A0000967168	Shaft, Wheel
15	A0000967151	Shaft, Tine	46	A0000967169	Adjustment Lock, Wheel
16	A0000967152	Washer, Worm Shaft Top	47	A0000967170	Spring, Wheel Adjustment Lock
17	A0000967153	Gear, Worm	48	A0000967172	Washer, Wheel Shaft
18	A0000967154	Transmission Case, Right	49	A0000967129	Bolt, M8 X 38 C Head
19	A0000940904	Washer, M6 Flat	50	A0000967173	Bracket, Wheel Adjustment
20	A0000967079	Pan Head Screw, M6 X 1.0 X 10	51	A0000967131	Hex Bolt, M6 X 20 Flanged
21	A0000967085	Hex Bolt, M6 X 18 Flanged	52	A0000967133	Hex Bolt, M10 X 1.5 X 220 Flanged
22	A0000967086	Hex Bolt, M6 X 22 Flanged	53	A0001077350	Throttle Control
23	A0000967087	Nut, M8 Lock	54	A0000967175	Cable, Throttle
24	A0000967155	Washer, Worm Shaft Bottom	55	A0000967176	Grip, Handlebar
25	A0000967156	Bearing, Thrust	56	A0000967134	Screw, M5 X 25 Countersunk
26	A0000967157	Reducer, Thrust Bearing	57	A0000967177	Handlebar, Right
27	A0000967158	Shaft, Worm	58	A0000967178	Handlebar, Middle
28	A0000967106	Hex Bolt, M8 X 40	59	A0000967179	Handlebar, Left
29	A0000967159	Tine, Left	60	A0000967180	Handlebar, Lower
30	A0000967107	Nut, M8 Metal Lock			
31	A0001077337	Shield, Tine			

Schematic Diagram - Cultivator Assembly



DR[®] 2-CYCLE TILLER CULTIVATOR



2-Year Limited Warranty

Terms and Conditions

The DR[®] 2-CYCLE TILLER CULTIVATOR is warranted for two (2) years against defects in materials or workmanship when put to ordinary and normal consumer use; ninety (90) days for any other use.

For the purposes of all the above warranties, “ordinary and normal consumer use” refers to non-commercial residential use and does not include misuse, accidents or damage due to inadequate maintenance.

DR Power Equipment certifies that the DR[®] 2-CYCLE TILLER CULTIVATOR is fit for ordinary purposes for which a product of this type is used. DR Power Equipment however, limits the implied warranties of merchantability and fitness in duration to a period of two (2) years in consumer use, ninety (90) days for any other use.

The 2-Year Limited Warranty on the DR[®] 2-CYCLE TILLER CULTIVATOR starts on the date the machine ships from our factory. The 2-Year Limited Warranty is applicable only to the original owner.

The warranty holder is responsible for the performance of the required maintenance as defined by the manufacturer's owner's manuals. The warranty holder is responsible for replacement of normally wearing parts such as the Tines, Tine Hardware, Throttle Lever, Spark Plug, Air Filter, and Wheels. Attachments and accessories to the machine are not covered by this warranty.

During the warranty period, the warranty holder is responsible for the machine transportation charges, if required. During the warranty period, warranty parts will be shipped by standard method at no charge to the warranty holder. Expedited shipping of warranty parts is the responsibility of the warranty holder.

SOME STATES DO NOT ALLOW LIMITATIONS ON THE LENGTH OF IMPLIED WARRANTIES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

DR Power Equipment shall not be liable under any circumstances for any **incidental or consequential damages or expenses** of any kind, including, but not limited to, cost of equipment rentals, loss of profit, or cost of hiring services to perform tasks normally performed by the DR[®] 2-CYCLE TILLER CULTIVATOR.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU ALSO HAVE OTHER RIGHTS, WHICH VARY FROM STATE TO STATE.

Daily Checklist for the DR 2-CYCLE TILLER CULTIVATOR

To help maintain your DR 2-CYCLE TILLER CULTIVATOR for optimum performance, we recommend you follow this checklist each time you use your machine.

WARNING

Prior to performing any maintenance, you must first shut off the Engine; wait five (5) minutes to allow parts to cool and disconnect the Spark Plug wire, keeping it away from the Spark Plug.

- [] FUEL: Fill the Fuel Tank with a fresh unleaded gasoline/2-cycle oil mixture. See page 10.
- [] ENGINE: It is very important to keep the Engine clean. Remove dirt and other debris from the Engine Cooling Fins. A dirty Engine retains heat and can cause damage to internal Engine components.
- [] HARDWARE: Check all nuts and bolts to be sure that the components are secure.
- [] FRAME: Check all welds to be sure that the Frame is intact and secure.
- [] TINES: Make sure that the Tine Assemblies and Tine Shield are free of accumulated debris.
- [] ENGINE AIR FILTER: Clean engine air filter before each use to ensure optimal engine performance.

End of Season and Storage

WARNING

Prior to performing any maintenance, you must first shut off the Engine; wait five minutes to allow parts to cool and disconnect the Spark Plug wire, keeping it away from the Spark Plug.

- If your DR 2-CYCLE TILLER CULTIVATOR will not be operated for more than 30 days, we recommend using a fuel stabilizer. This will prevent sediment from gumming up the carburetor. If there is dirt or moisture in the fuel or tank, remove it by draining the tank. Completely fill the tank with a fresh fuel mixture and add the appropriate amount of stabilizer or fuel additive. Run the Engine for a short time to allow the additive to circulate?
- Remove the Spark Plug and pour about 1 ounce of motor oil into the cylinder hole. Replace the Plug and pull the Recoil Starter Rope until you feel strong resistance. This will coat the Piston and Cylinder Wall to prevent moisture buildup.
- Clean or replace the Engine Air Filter.
- Clean dirt and debris from the Engine Cylinder Head Cooling Fins, Debris Screen, and Muffler.
- Clean out residual debris from the under the Tines Hood and Tine Assemblies.
- Touchup all rusted or chipped paint surfaces. Sand them lightly before painting.
- Be sure all Nuts, Bolts, and Screws are securely fastened.
- Inspect moving parts for damage and wear; replace if necessary.
- If possible, store your DR 2-CYCLE TILLER CULTIVATOR inside, but not near an open flame or spark such as found in a water heater.
- After the DR 2-CYCLE TILLER CULTIVATOR has cooled, cover the machine with a suitable protective cover that does not retain moisture. Do not use plastic as this material cannot breathe; it also allows condensation to form, which will cause your machine to rust.



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