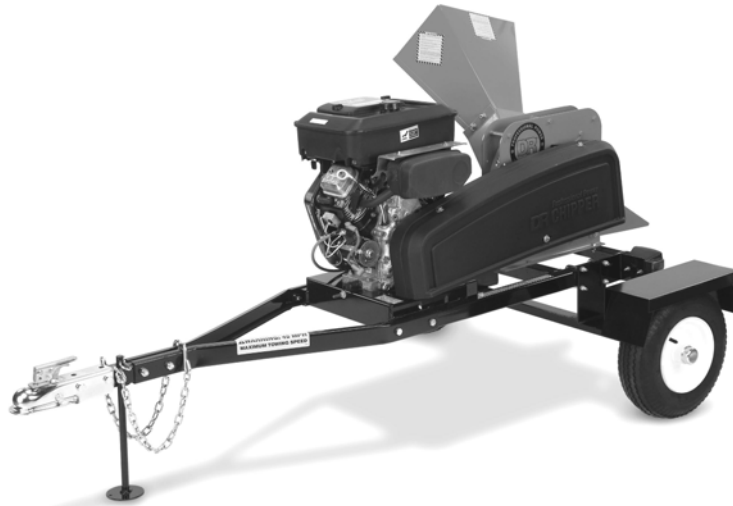


DR[®] ROAD-TOWABLE CHIPPER



SAFETY & OPERATING INSTRUCTIONS

Models: 18 HP, Road-Towable, Bottom Discharge
19 HP, Road-Towable, Top Discharge



18 HP, Road-Towable, Bottom Discharge



19 HP, Road-Towable, Top Discharge

! WARNING!

READ AND UNDERSTAND THIS MANUAL AND ALL INSTRUCTIONS BEFORE OPERATING THIS WOOD CHIPPER.

THANK YOU!

And congratulations on your purchase of a new DR ROAD-TOWABLE CHIPPER!

We have done our utmost to ensure that your DR ROAD-TOWABLE CHIPPER 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 or correct them as quickly as possible. When you do call, please have your serial number and/or order number handy. **For technical assistance, please 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.

In addition, please tell your friends about your new DR ROAD-TOWABLE CHIPPER! Having owners spread the word about our products and our way of doing business is the best advertising we can have, and the best way to help us provide even better service in the years to come.

Thanks once again!



for all of us at
COUNTRY HOME PRODUCTS, INC.®

SALES MANAGER

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DR® Power Equipment
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CHAPTER 1

INTRODUCING THE DR ROAD-TOWABLE CHIPPER

This manual will help you set up and safely operate your new DR ROAD-TOWABLE CHIPPER. Careful adherence to the safety and operating instructions in this manual will ensure many years of productive use.

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 serial number and/or order number handy. **For technical assistance, please call Toll-Free 1-800-DR-OWNER (376-9637) and one of our Technical Support Representatives will be happy to help you.**

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 CHIPPER OR PROPERTY.

Tip: This is a helpful hint to guide you in getting the most out of your DR ROAD-TOWABLE CHIPPER.

Tools Needed: This indicates you will need a special tool to perform a maintenance function on your Chipper.

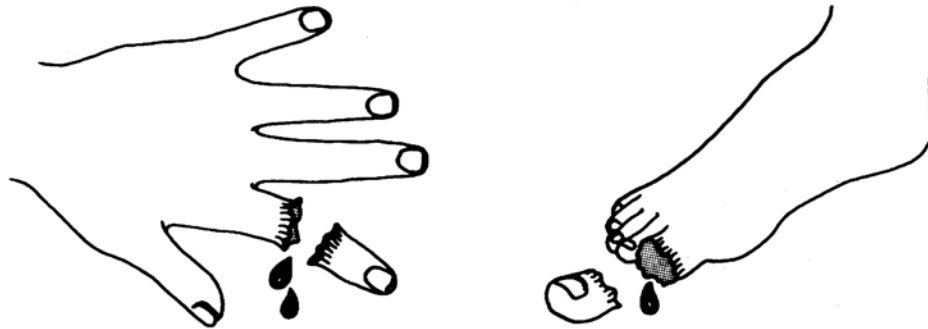
NOTE: *This information may be helpful to you.*

If you are ever unsure about an action you are about to take, don't do it, contact Country Home Products' toll-free support at 1-800-DR-OWNER (376-9637) for help or information.

GENERAL SAFETY RULES

WARNING!

- READ THIS SAFETY & OPERATING MANUAL BEFORE YOU USE THE DR ROAD-TOWABLE CHIPPER. BECOME FAMILIAR WITH THE OPERATION AND SERVICE RECOMMENDATIONS TO ENSURE THE BEST PERFORMANCE FROM YOUR MACHINE.
- THOROUGHLY INSPECT THE AREA IN WHICH YOU WILL BE WORKING AND REMOVE ALL FOREIGN OBJECTS. LOOK FOR ROPE, WIRE, ETC., AND REMOVE THESE OBJECTS BEFORE CHIPPING. INSERTING THESE OBJECTS INTO THE CHIPPER HOPPER COULD DAMAGE THE MACHINE AND/OR CAUSE INJURY.
- THIS IS A HIGH-POWERED MACHINE, WITH MOVING PARTS OPERATING WITH HIGH ENERGY AT HIGH SPEEDS. YOU MUST USE PROPER CLOTHING AND SAFETY GEAR WHEN OPERATING THIS MACHINE TO PREVENT OR MINIMIZE THE RISK OF SEVERE INJURY. THIS MACHINE CAN CRUSH, GRIND, CUT, AND SEVER PARTS OF YOUR BODY IF THEY ENTER THE INLET OR DISCHARGE AREA OF YOUR CHIPPER.



Labels

Your DR ROAD-TOWABLE CHIPPER carries prominent labels as reminders for its proper and safe use. Shown below are copies of all the labels that appear on the equipment. Take a moment to study them and make a note of their location on your machine as you assemble and *before* you operate the unit. Replace damaged or missing safety and information labels immediately.



Make sure to read and observe all Cautions before operating the DR CHIPPER. (#080-0967)

WARNING

BEFORE REMOVING DISCHARGE CHUTE FOR ANY REASON

1. STOP THE ENGINE.
2. MAKE SURE THE CHIPPER DISK HAS COME TO A COMPLETE STOP.
3. REMOVE BOTH SPARK PLUG WIRES AND KEEP AWAY FROM SPARK PLUGS.
4. DISCONNECT BATTERY AT NEGATIVE TERMINAL.

SEVERE INJURY WILL RESULT IF YOU DO NOT FOLLOW THESE SAFETY RULES

091-0378

Before removing the Discharge Chute on the 19 HP Top Discharge model, ALWAYS turn OFF the engine, wait five (5) minutes to make certain the flywheel and all moving parts have come to a complete stop and cool and then disconnect the spark plug wires. (#091-0378)



ALWAYS turn OFF the engine, wait five (5) minutes to make certain the flywheel and all moving parts have come to a complete stop and cool and then disconnect the spark plug wires before opening this access panel. (#080-0970)



To avoid injury, keep your hands and feet out of the Inlet and Discharge Chutes. (#091-0055)



To avoid injury, never remove the protective cover while the flywheel is turning. (#091-0059)



To avoid injury, keep your hands and feet out of the Inlet Chute. (#091-0088)



This label reminds you about the importance of reading and understanding the *Safety & Operating Instructions* manual and of paying attention to the safety warnings. (#091-0380)

WARNING

BE AWARE OF YOUR SURROUNDINGS. ALWAYS WEAR SAFETY GLASSES OR GOGGLES TO PROTECT EYES FROM OBJECTS THAT BE THROWN FROM THE MACHINE. KEEP THE AREA OF OPERATION AND DISCHARGE CLEAR OF PEOPLE AND ANIMALS. KEEP CLEAR OF THE DISCHARGE OPENING AT ALL TIMES. KNOW WHERE YOUR DISCHARGE CHUTE AND DEFLECTOR ARE POINTING. NEVER FEED MATERIAL INTO THE CHIPPER IF PEOPLE, ANIMALS, BUILDINGS, GLASS OR ANYTHING ELSE IS IN THE WAY OR WILL OBSTRUCT CLEAR DISCHARGE. WIND WILL CHANGE THE DIRECTION OF DISCHARGE SO BE AWARE OF THIS AS WELL.

091-0379

ALWAYS wear eye protection and know where the Discharge Chute and Deflector are pointing. Be aware of your surroundings. (#091-0379)



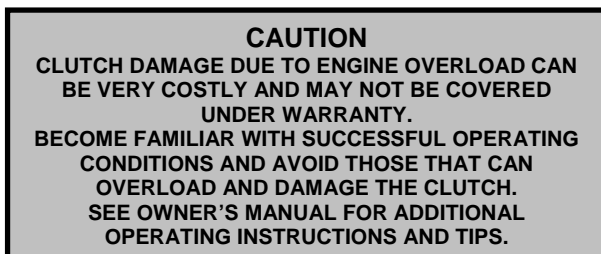
To avoid injury, keep your hands and feet out of the Inlet and Discharge Chutes. (#091-0057)



This label warns you of a hot surface, DO NOT touch. (#091-0384)



NEVER operate the Chipper without the Discharge Chute properly secured in place. (#091-0444)



Always use care when loading the DR CHIPPER. Overloading will cause damage to the Clutch and will not be covered under the warranty. (#913-0265)

CALL TOLL FREE 1-800-DR-OWNER

5



ALWAYS turn OFF the engine, wait five (5) minutes to make certain the flywheel and all moving parts have come to a complete stop and cool, and then disconnect the spark plug wires before servicing the machine. (#091-0381)

WARNING: Check Oil Before Starting Engine

Always check the engine oil before starting the DR CHIPPER. (#091-0256)

WARNING: 45 MPH MAXIMUM TOWING SPEED

This DR CHIPPER is road-towable at a maximum safe speed of 45 MPH; DO NOT exceed. (#091-0093)

MADE IN U.S.A.

The DR ROAD-TOWABLE CHIPPER is made in the U.S.A. (#091-0062)



The DR 19 HP, Top Discharge, ROAD-TOWABLE CHIPPER Control Panel Label. (#211721)

Protecting Yourself and Those Around You

WARNING!

THIS IS A HIGH-POWERED MACHINE, WITH MOVING PARTS OPERATING WITH HIGH ENERGY AT HIGH SPEEDS. THE MACHINE MUST BE OPERATED SAFELY. UNSAFE OPERATION CAN CREATE A NUMBER OF HAZARDS FOR YOU, AS WELL AS ANYONE ELSE IN THE NEARBY AREA. ALWAYS TAKE THE FOLLOWING PRECAUTIONS WHEN USING THIS MACHINE:

- ALWAYS WEAR PROTECTIVE GOGGLES OR SAFETY GLASSES WITH SIDE SHIELDS WHILE CHIPPING TO PROTECT YOUR EYES FROM POSSIBLE THROWN DEBRIS.
- AVOID WEARING LOOSE CLOTHING OR JEWELRY, WHICH CAN CATCH ON MOVING PARTS OR THE MATERIAL FED INTO THE CHIPPER HOPPER.
- WE RECOMMEND WEARING GLOVES WHILE CHIPPING. BE SURE YOUR GLOVES FIT PROPERLY AND DO NOT HAVE LOOSE CUFFS OR DRAWSTRINGS.
- WEAR SHOES WITH NON-SLIP TREADS WHEN USING YOUR CHIPPER. IF YOU HAVE SAFETY SHOES, WE RECOMMEND WEARING THEM. DO NOT USE THE MACHINE WHILE BAREFOOT OR WEARING OPEN SANDALS.
- WEAR LONG PANTS WHILE OPERATING THE DR ROAD-TOWABLE CHIPPER.
- USE EAR PROTECTORS OR EAR PLUGS RATED FOR AT LEAST 20 DBA TO PROTECT YOUR HEARING.
- NEVER ALLOW PEOPLE WHO ARE UNFAMILIAR WITH THESE INSTRUCTIONS TO USE THE CHIPPER. ALLOW ONLY RESPONSIBLE INDIVIDUALS WHO ARE FAMILIAR WITH THESE RULES OF SAFE OPERATION TO USE YOUR MACHINE.
- NEVER PLACE YOUR HANDS, FEET, OR ANY PART OF YOUR BODY IN THE CHIPPER HOPPER, DISCHARGE OPENING, OR NEAR OR UNDER ANY MOVING PART WHILE THE MACHINE IS RUNNING. KEEP AREA OF DISCHARGE CLEAR OF PEOPLE, ANIMALS, BUILDINGS, GLASS, OR ANYTHING ELSE THAT WILL OBSTRUCT CLEAR DISCHARGE, CAUSE INJURY, OR DAMAGE. WIND CAN ALSO CHANGE DISCHARGE DIRECTION, SO BE AWARE. IF IT BECOMES NECESSARY TO PUSH MATERIAL INTO THE CHIPPER HOPPER, USE A SMALL DIAMETER STICK, NOT WITH YOUR HANDS.
- KEEP BYSTANDERS AWAY FROM YOUR WORK AREA AT ALL TIMES. WOOD CHIPS EXIT THE CHIPPER AT GREAT SPEEDS. TO BE SAFE, DO NOT OPERATE THE MACHINE NEAR SMALL CHILDREN OR PETS, AND NEVER ALLOW CHILDREN TO OPERATE THE CHIPPER. STOP THE ENGINE WHEN ANOTHER PERSON OR PET APPROACHES.
- NEVER USE THE MACHINE WITH THE CHIPPER HOPPER OR DISCHARGE CHUTE REMOVED.
- DO NOT OPERATE THE ENGINE WITH THE AIR CLEANER 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 OPERATE THE MACHINE FROM THE OPERATOR ZONE (SEE *FIGURE 9* ON PAGE 24). NEVER PASS OR STAND ON THE DISCHARGE SIDE OF THE MACHINE WHEN THE ENGINE IS RUNNING OR THE FLYWHEEL IS TURNING.
- NEVER TRY TO PICK UP, MOVE, OR TRANSPORT THE MACHINE WHILE THE ENGINE IS RUNNING OR THE FLYWHEEL IS TURNING.
- THE MUFFLER AND ENGINE BECOME VERY HOT AND CAN CAUSE A SEVERE BURN; DO NOT TOUCH.
- CLEAR THE AREA OF OBJECTS SUCH AS WIRE AND ROPE ETC. INSERTING THESE OBJECTS INTO THE CHIPPER HOPPER COULD DAMAGE THE FLYWHEEL AND/OR CAUSE INJURY.
- NEVER, UNDER ANY CONDITIONS, REMOVE, BEND, CUT, FIT, WELD, OR OTHERWISE ALTER STANDARD PARTS ON THE DR ROAD-TOWABLE CHIPPER. THIS INCLUDES ALL SHIELDS AND GUARDS. MODIFICATIONS TO YOUR MACHINE COULD CAUSE PERSONAL INJURIES AND PROPERTY DAMAGE AND WILL VOID YOUR WARRANTY.

Safety for Children and Pets

WARNING!

TRAGIC ACCIDENTS CAN OCCUR IF THE OPERATOR IS NOT ALERT TO THE PRESENCE OF CHILDREN AND PETS. CHILDREN ARE OFTEN ATTRACTED TO THE MACHINE AND THE CHIPPING ACTIVITY. *NEVER* ASSUME THAT CHILDREN WILL REMAIN WHERE YOU LAST SAW THEM. ALWAYS FOLLOW THESE PRECAUTIONS:

- KEEP CHILDREN AND PETS OUT OF THE WORKING AREA AND UNDER THE WATCHFUL CARE OF A RESPONSIBLE ADULT.
 - BE ALERT AND TURN THE MACHINE OFF IF CHILDREN OR PETS ENTER THE WORK AREA.
 - NEVER ALLOW CHILDREN TO OPERATE THE DR ROAD-TOWABLE CHIPPER.
-

Safety with Gasoline - Powered Engines

WARNING!

GASOLINE IS A HIGHLY FLAMMABLE LIQUID. GASOLINE ALSO GIVES OFF FLAMMABLE VAPOR THAT CAN BE EASILY IGNITED AND CAUSE A FIRE OR EXPLOSION. NEVER OVERLOOK THE HAZARDS OF GASOLINE. ALWAYS FOLLOW THESE PRECAUTIONS:

- NEVER RUN THE ENGINE IN AN ENCLOSED AREA OR WITHOUT PROPER VENTILATION AS THE EXHAUST FROM THE ENGINE CONTAINS CARBON MONOXIDE, WHICH 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 AND OPEN FLAME, AND OUT OF THE REACH OF CHILDREN.
 - FILL THE GASOLINE TANK OUTDOORS WITH THE ENGINE OFF AND ALLOW THE ENGINE TO COOL COMPLETELY. DON'T HANDLE GASOLINE IF YOU OR ANYONE NEARBY IS SMOKING, OR IF YOU'RE NEAR ANYTHING THAT COULD CAUSE IT TO IGNITE OR EXPLODE. REINSTALL 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 ENGINE TO COOL COMPLETELY BEFORE STORING IN ANY ENCLOSURE. NEVER STORE THE MACHINE WITH GAS IN THE TANK OR A FUEL CONTAINER, NEAR AN OPEN FLAME OR SPARK SUCH AS A WATER HEATER, SPACE HEATER, CLOTHES DRYER OR FURNACE.
 - NEVER MAKE ADJUSTMENTS OR REPAIRS WITH THE ENGINE RUNNING OR FLYWHEEL TURNING. STOP THE ENGINE, WAIT FIVE (5) MINUTES TO MAKE CERTAIN THE FLYWHEEL AND ALL MOVING PARTS HAVE COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS TO PREVENT ACCIDENTAL STARTING.
 - DO NOT TAMPER WITH THE ENGINE'S GOVERNOR SETTING. THE GOVERNOR CONTROLS THE MAXIMUM SAFE OPERATION SPEED AND PROTECTS THE ENGINE. OVER-SPEEDING THE ENGINE IS DANGEROUS AND WILL CAUSE DAMAGE TO THE ENGINE AND TO THE OTHER MOVING PARTS OF THE MACHINE. IF REQUIRED, SEE YOUR AUTHORIZED DEALER FOR ENGINE GOVERNOR ADJUSTMENTS.
-

Towing Safety

CAUTION!

- BEFORE TOWING, BE CERTAIN THE DR ROAD-TOWABLE CHIPPER IS CORRECTLY AND SECURELY ATTACHED TO THE TOWING VEHICLE AND THE SAFETY CHAINS ARE IN PLACE. LEAVE SLACK IN THE CHAINS TO ALLOW FOR TURNING.
- NEVER ALLOW ANYONE TO RIDE ON THE DR ROAD-TOWABLE CHIPPER.
- NEVER TRANSPORT ANYTHING ON THE MACHINE.
- OBEY LOCAL, STATE, AND FEDERAL REGULATIONS WHEN YOU TOW THE CHIPPER ON PUBLIC ROADS AND HIGHWAYS.

NOTE: Some states may require the machine to be registered with the State Department of Motor Vehicles.

- ALLOW FOR ADDED LENGTH IN DRIVING SITUATIONS, E.G., WHEN TURNING, PARKING, AND CROSSING INTERSECTIONS.
 - ADJUST YOUR TOWING SPEED FOR TERRAIN AND CONDITIONS. DO NOT EXCEED 45 MPH WHILE TOWING THE CHIPPER.
 - TOWING THE MACHINE CAN AFFECT HANDLING OF THE TOW VEHICLE:
 - THE CHIPPER MIGHT TRACK AT AN ANGLE TO THE TOW VEHICLE.
 - THE MACHINE CAN TURN TIGHTER THAN THE TOW VEHICLE.
 - NEVER BACK UP THE TOW VEHICLE WITH THE CHIPPER ATTACHED. THE MACHINE CAN JACKKNIFE, CAUSING DAMAGE TO ITSELF AND/OR THE TOW VEHICLE.
 - LONG DISTANCE TOWING IS NOT RECOMMENDED. THE DR ROAD-TOWABLE CHIPPER DOES NOT HAVE SPRINGS TO ABSORB ROAD SHOCK AND WILL TEND TO BOUNCE ON ROUGH ROADS. EXTENDED TOWING CAN CAUSE UNNECESSARY WEAR.
-

General Safety

WARNING!

THE CHIPPER MUST BE OPERATED SAFELY TO PREVENT OR MINIMIZE THE RISK OF *DEATH OR SERIOUS INJURY*. UNSAFE OPERATION CAN CREATE A NUMBER OF HAZARDS FOR YOU. ALWAYS TAKE THE FOLLOWING PRECAUTIONS WHEN OPERATING THIS CHIPPER:

- KEEP IN MIND THAT THE OPERATOR OR USER IS RESPONSIBLE FOR ACCIDENTS OR HAZARDS OCCURRING TO OTHER PEOPLE, THEIR PROPERTY, AND THEMSELVES.
- YOUR DR ROAD-TOWABLE CHIPPER IS A POWERFUL TOOL, NOT A PLAYTHING. EXERCISE EXTREME CAUTION AT ALL TIMES. YOUR MACHINE HAS BEEN DESIGNED TO CHIP WOOD. DO NOT USE IT FOR ANY OTHER PURPOSE.
- KNOW HOW TO STOP THE CHIPPER QUICKLY; SEE PAGE 26.
- OPERATE THIS MACHINE ON A LEVEL SURFACE ONLY. NEVER OPERATE YOUR UNIT ON A SLIPPERY, WET, MUDDY, OR ICY SURFACE. EXERCISE CAUTION TO AVOID SLIPPING OR FALLING.
- KEEP YOUR FACE AND BODY BACK FROM THE CHIPPER HOPPER TO AVOID ACCIDENTAL BOUNCE BACK OF ANY MATERIAL.
- WHEN FEEDING MATERIAL INTO THE CHIPPER HOPPER, BE EXTREMELY CAREFUL THAT PIECES OF METAL, ROCKS, OR OTHER FOREIGN OBJECTS ARE NOT INCLUDED. PERSONAL INJURY OR DAMAGE TO THE MACHINE COULD RESULT.
- NEVER ALLOW AN ACCUMULATION OF PROCESSED MATERIAL TO BUILD UP IN THE DISCHARGE AREA AS THIS WILL PREVENT PROPER DISCHARGE AND CAN RESULT IN KICKBACK FROM THE CHIPPER HOPPER.
- WHENEVER YOU LEAVE THE OPERATING POSITION OR IF YOU HAVE TO REMOVE PROCESSED MATERIAL, LEAVES, OR DEBRIS FROM THE MACHINE, ALWAYS SHUT OFF THE ENGINE AND WAIT FIVE (5) MINUTES TO MAKE CERTAIN THE FLYWHEEL AND ALL MOVING PARTS HAVE COME TO A COMPLETE STOP AND COOL. REMOVE THE KEY, IF SO EQUIPPED, AND DISCONNECT THE SPARK PLUG WIRES AND KEEP THE WIRES AWAY FROM THE SPARK PLUGS TO PREVENT ACCIDENTAL STARTING BEFORE ADJUSTING THE MACHINE.
- ALWAYS STOP THE ENGINE WHEN MOVING THE DR ROAD-TOWABLE CHIPPER.
- KEEP COMBUSTIBLE SUBSTANCES AWAY FROM THE ENGINE WHEN IT IS HOT.
- NEVER COVER THE MACHINE WHILE THE MUFFLER IS STILL HOT.
- SEE MANUFACTURER'S INSTRUCTIONS FOR PROPER OPERATION AND INSTALLATION OF ACCESSORIES. ONLY USE ACCESSORIES APPROVED BY COUNTRY HOME PRODUCTS, INC.
- IF THE CUTTING MECHANISM STRIKES A FOREIGN OBJECT OR IF YOUR MACHINE SHOULD START MAKING AN UNUSUAL NOISE OR VIBRATION, STOP THE ENGINE AND WAIT FIVE (5) MINUTES FOR ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. VIBRATION IS GENERALLY A WARNING OF TROUBLE. DISCONNECT THE SPARK PLUG WIRES AND INSPECT FOR CLOGGING OR DAMAGE. CLEAN AND REPAIR AND/OR REPLACE DAMAGED PARTS.
- NEVER TAMPER WITH SAFETY DEVICES. CHECK THEIR PROPER OPERATION REGULARLY.
- STAY ALERT FOR HIDDEN HAZARDS OR TRAFFIC. NEVER CARRY PASSENGERS ON YOUR MACHINE.

! WARNING!

- NEVER OVERLOAD OR ATTEMPT TO CHIP MATERIAL BEYOND THE MANUFACTURER'S RECOMMENDATION; SEE PAGE 27. PERSONAL INJURY OR DAMAGE TO THE MACHINE COULD RESULT.
 - WHILE USING THE DR ROAD-TOWABLE CHIPPER, DON'T HURRY OR TAKE THINGS FOR GRANTED. WHEN IN DOUBT ABOUT THE EQUIPMENT OR YOUR SURROUNDINGS, STOP THE MACHINE AND TAKE THE TIME TO LOOK THINGS OVER.
 - NEVER OPERATE THE MACHINE WHEN UNDER THE INFLUENCE OF ALCOHOL, DRUGS, OR MEDICATION.
 - USE THE MACHINE ONLY IN DAYLIGHT.
 - KEEP ALL NUTS AND BOLTS TIGHT AND KEEP THE EQUIPMENT IN GOOD OPERATING CONDITION.
 - NO LIST OF WARNINGS AND CAUTIONS CAN BE ALL-INCLUSIVE. IF SITUATIONS OCCUR THAT ARE NOT COVERED BY THIS MANUAL, THE OPERATOR MUST APPLY COMMON SENSE AND OPERATE THIS CHIPPER IN A SAFE MANNER. CALL 1 (800) DR-OWNER (376-9637) FOR ASSISTANCE.
-

A Note to All Users

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. All DR ROAD-TOWABLE CHIPPERS shipped to California and Washington State are provided 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 or forest service for specific information in your area.

Additional Information and Potential Changes

Country Home Products, Inc. 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.

CHAPTER 3

SETTING UP YOUR DR ROAD-TOWABLE CHIPPER

This chapter outlines unpacking and a few simple steps you will need to follow to set up your new machine before you use it. **If you have any questions at all, please feel free to contact our Customer Service Representatives at our toll free number: 1-800-DR-OWNER (376-9637).**

Unpacking the DR ROAD-TOWABLE CHIPPER

NOTE: Unpacking the DR ROAD-TOWABLE CHIPPER is a two-person job. We recommend you have an extra set of hands available before you begin as the 18 HP model weighs 385 lbs. and the 19 HP model weighs 470 lbs.

Tools and Supplies Needed:

- Gloves
- Metal Shears (Side Cutters)
- Eye Protection
- Pry Bar
- Hammer

Parts supplied on Skid:

- (1) DR ROAD-TOWABLE CHIPPER
- (1) Discharge Chute (19 HP Top Discharge model)
- (2) Hitch Arms
- (1) Hitch Assembly
- Parts Box containing:
 - (1) Chipper Hopper
 - (1) Swivel Top (19 HP Top Discharge model)
 - (1) Deflector (19 HP Top Discharge model)
 - (1) Stand Assembly
 - (1) Safety Glasses
 - (1) *Safety & Operation Instructions Manual*
 - (1) Engine Owner's Manual
 - (1) Wire Harness
 - (10) Cable Ties
 - (1) Knife Gap Gauge
 - (1) Plastic Bag containing the following miscellaneous mounting hardware:

19 HP, Top Discharge Model	18 HP, Bottom Discharge Model
(7) 5/16" - 18 x 3/4" Carriage Bolt	(4) 5/16" - 18 x 3/4" Carriage Bolt
(8) 5/16" - 18, Lock Nut, Nylon	(4) 5/16" - 18, Lock Nut, Nylon
(4) 5/16" USS Flat Washer	(4) 5/16" USS Flat Washer
(2) 1/2"- 13 x 3" Bolt	(2) 1/2"- 13 x 3" Bolt
(4) 1/2"- 13 x 1-1/4" Bolt	(4) 1/2"- 13 x 1-1/4" Bolt
(2) 1/2"- 13 Lock Nut	(2) 1/2"- 13 Lock Nut
(1) 3/16" Hairspring Cotter Pin	(1) 3/16" Hairspring Cotter Pin
(2) Hitch Arm Mount Plates	(2) Hitch Arm Mount Plates
(2) Engine Key	(2) Engine Key
(2) 5/16" - 18 x 3/4" Bolt	
(3) 3/8" USS Flat Washer	
(1) Locking Knob	

! WARNING!

- WEAR EYE PROTECTION WHEN CUTTING THE BANDING. THE BANDING MAY HAVE A LOT OF TENSION ON IT AND MAY SNAP AND CUT YOU. ALWAYS STAND TO ONE SIDE WHEN CUTTING THE BAND.
- STABILIZE THE SHIPPING CONTAINER ON CLEAN FLAT TERRAIN BEFORE ATTEMPTING TO UNPACK AND ASSEMBLE THE MACHINE.

1. Pry off the crate and cut any bands holding the machine to the pallet.
Be careful when cutting the banding.
2. Remove the Hitch Arms and Hitch Assembly, Discharge Chute (19 HP Top Discharge model) and the Parts Box from the shipping container.
3. With the help of another person, carefully roll the DR ROAD-TOWABLE CHIPPER from the shipping pallet, resting it on the front frame support.
4. Compare the contents of the shipping carton and the Part Box with the Parts Supplied list on the previous page. **If any of the parts are missing, contact 1-800-DR-OWNER (376-9637).** Do not discard the pallet until you are fully satisfied with your new DR ROAD-TOWABLE CHIPPER.

Attaching the Chipper Hopper

Tool Needed:

- (2) 1/2" Wrench or Socket

Tip: Insert a towel or large rag into the opening to keep the Bolts from falling into the Chipper.

1. Attach the Chipper Hopper to the machine using four (4) 5/16"-18 x 3/4" Carriage Bolts, four (4) 5/16" Flat Washers and four (4) 5/16"-18 Nylon Lock Nuts.

NOTE: Be sure to insert the bolts from the inside of the Chipper Hopper so that the threads are sticking out (**Figure 1**).

2. Install a Flat Washer, then a Lock Nut on each bolt. Initially install the Bolts and Nuts finger tight and then tighten the Nuts one (1) turn using two (2) 1/2" wrenches (**Figure 1**). Check to see that the Hopper is centered on the Inlet Chute and then tighten the Nuts securely.
3. If you used a towel or rag in the Chipper opening, remove it now.

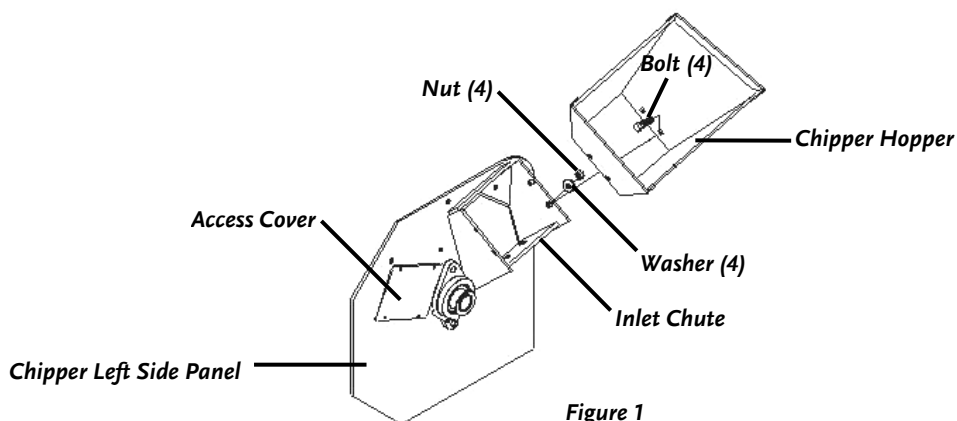


Figure 1

Attaching the Hitch Arms and Hitch Assembly

Tool Needed:

- (2) 3/4" Wrench or Socket
1. Attach the two (2) Hitch Arms to the Trailer Frame using the two (2) Hitch Arm Mounting Plates and four (4) 1/2"-13 x 1-1/4" Bolts (**Figure 2**). DO NOT tighten the bolts at this time.
 2. Attach the Trailer Hitch Assembly to the Hitch Arms with two (2) 1/2"- 13 x 3" Bolts and two (2) 1/2"- 13 Lock Nuts (**Figure 2**). Tighten all of the hardware.
 3. Slide the Trailer Stand up through the holes in the Hitch Assembly and secure with the Hairspring Cotter Pin (**Figure 2**).

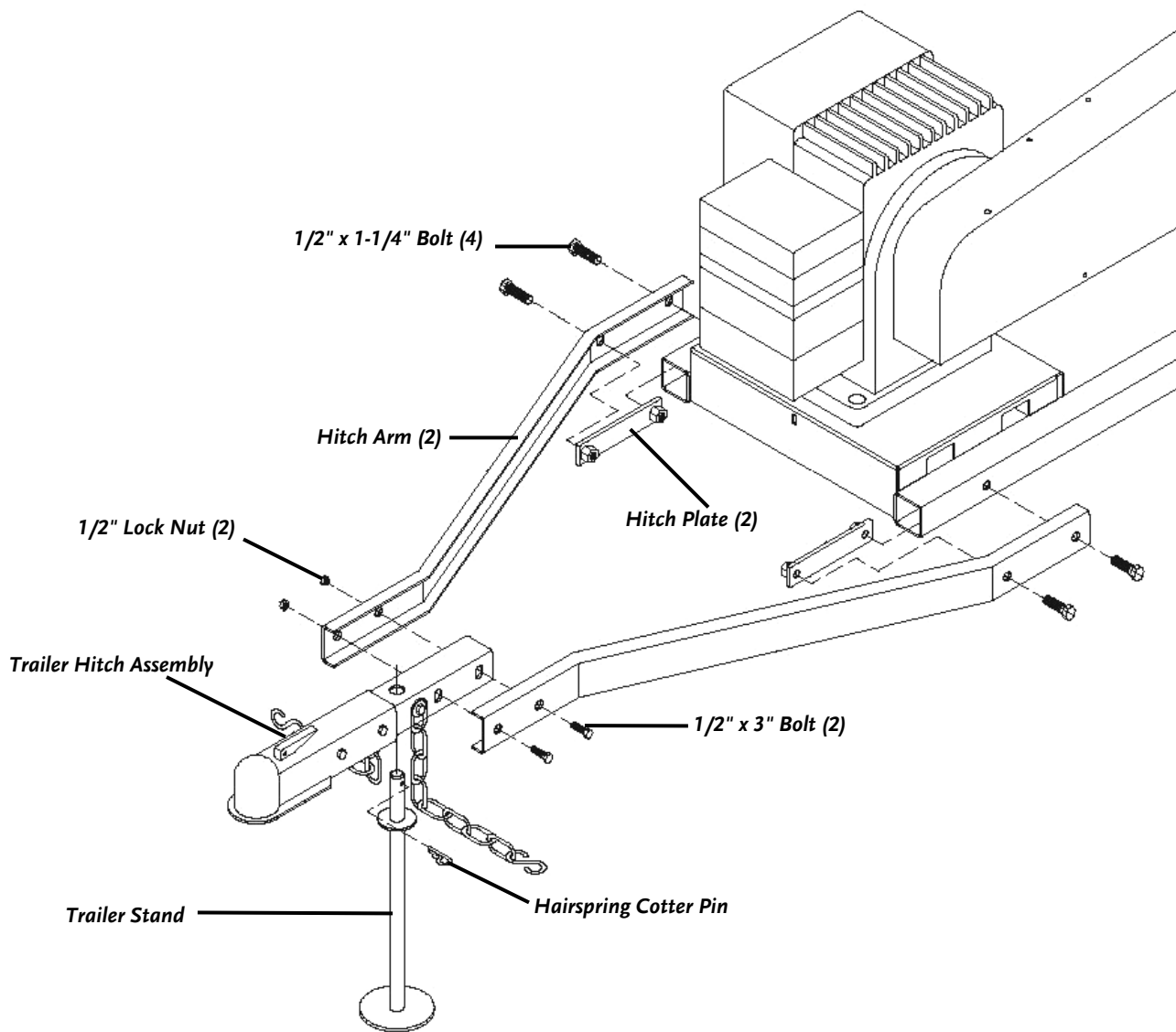


Figure 2

Attaching the Discharge Chute (19 HP Top Discharge model)

Tool Needed:

- (2) 1/2" Wrench or Socket

1. Loosen the two (2) 5/16"-18 x 4" Bolts on the Chipper Rear Side Panel (**Figure 3**) just enough so that the top L-shaped notches in the Mounting Plates on the Discharge Chute will slide onto the Bolt. You may have to slightly tap the Nut side of the Bolt to center it before the Discharge Chute can easily slide into place.
2. After the top L-shaped notches are in place on the Bolt, pivot the Discharge Chute down so that the lower slots slide over the lower Bolt as shown in **Figure 3**.
3. Once the Discharge Chute is in place on the Bolts, securely tighten the two (2) Lock Nuts.

NOTE: Check that the Safety Interlock Switch button is depressed by the Mounting Bracket on the Discharge Chute. If the button is not properly depressed, the engine will not start.

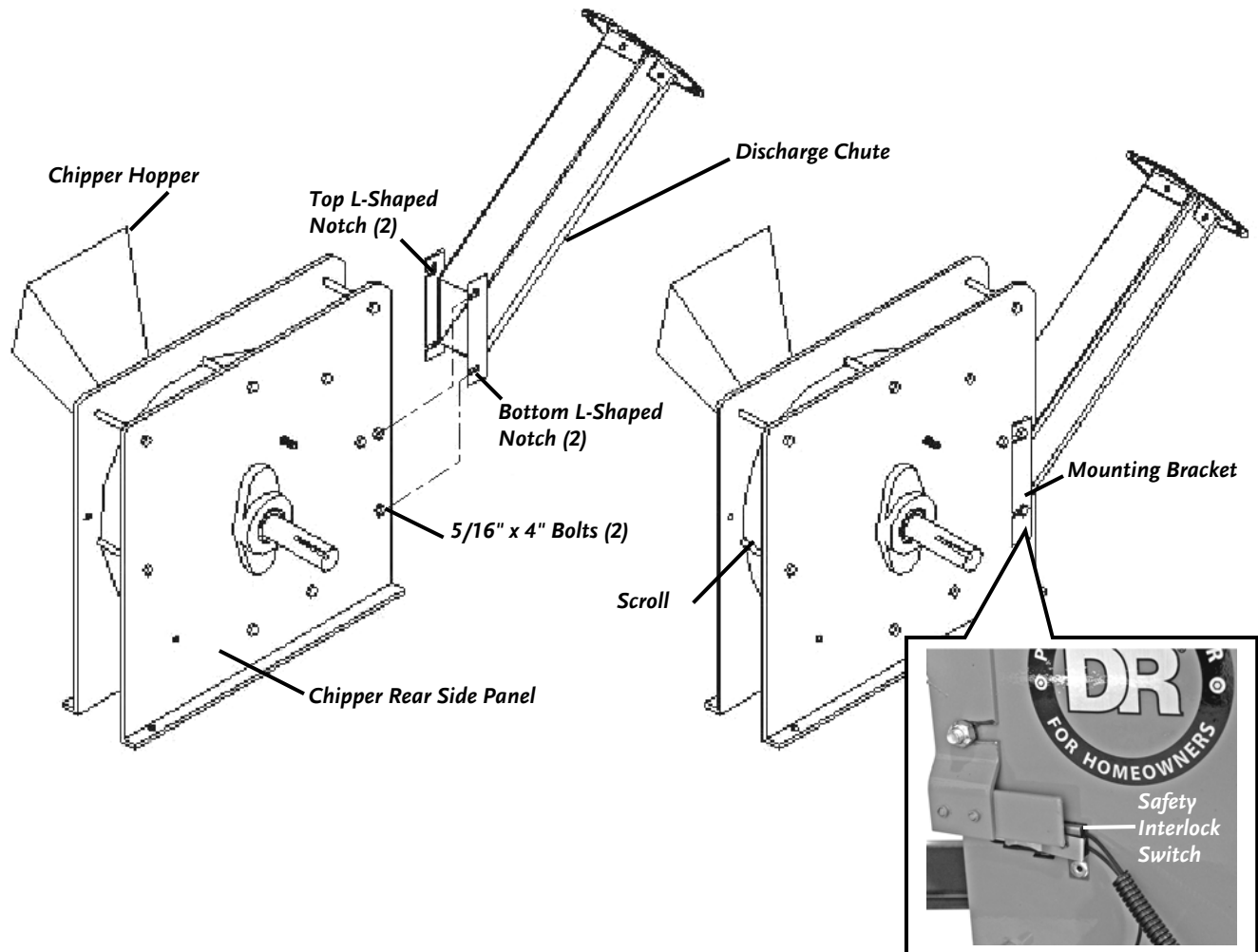


Figure 3

Safety Interlock Switch located on opposite side.

Attaching the Swivel Top and Deflector (19 HP Top Discharge model)

Tool Needed:

- (2) 1/2" Wrench or Socket
1. Hold the Swivel Top (**Figure 4**) in place on the Discharge Chute and insert two (2) of the 5/16"-18 x 3/4" Carriage Bolts through two (2) 3/8" Flat Washers and then through both the top two (2) slots of the Swivel Base on the Discharge Chute, and the top two (2) holes on the Swivel Top. Securely tighten with two (2) 5/16"-18 Lock Nuts.
 2. Insert a 5/16"-18 X 3/4" Carriage Bolt through a 3/8" Flat Washer and then through the lower slot, and hole of the Swivel Top and secure with the Locking Knob (**Figure 4**).

NOTE: To change the side-to-side direction of the material flow from Discharge Chute, simply loosen the Locking Knob and rotate to the desired direction. NEVER perform this adjustment with the engine running or the flywheel turning. ALWAYS disconnect the spark plug wires.

3. Hold the Deflector in place on the Swivel Top and insert two (2) of the 5/16"-18 x 3/4" Bolts, from the inside out, through Swivel Top, and then through the Deflector (**Figure 4**).
4. Securely tighten the Deflector with two (2) 5/16"-18 Lock Nuts.

! WARNING!

ALWAYS SHUT OFF THE ENGINE AND WAIT FIVE (5) MINUTES TO MAKE CERTAIN THE FLYWHEEL AND ALL MOVING PARTS HAVE COME TO A COMPLETE STOP AND COOL. REMOVE THE KEY, IF SO EQUIPPED, AND DISCONNECT THE SPARK PLUG WIRES AND KEEP THE WIRES AWAY FROM THE SPARK PLUGS TO PREVENT ACCIDENTAL STARTING BEFORE ADJUSTING THE MACHINE.

NOTE: To change the height direction of the material flow from Discharge Chute, disconnect the spark plug wires, then loosen the two (2) 5-16"-18 Bolts and adjust the Deflector up or down to the desired height. NEVER perform this adjustment with the engine running or the flywheel turning.

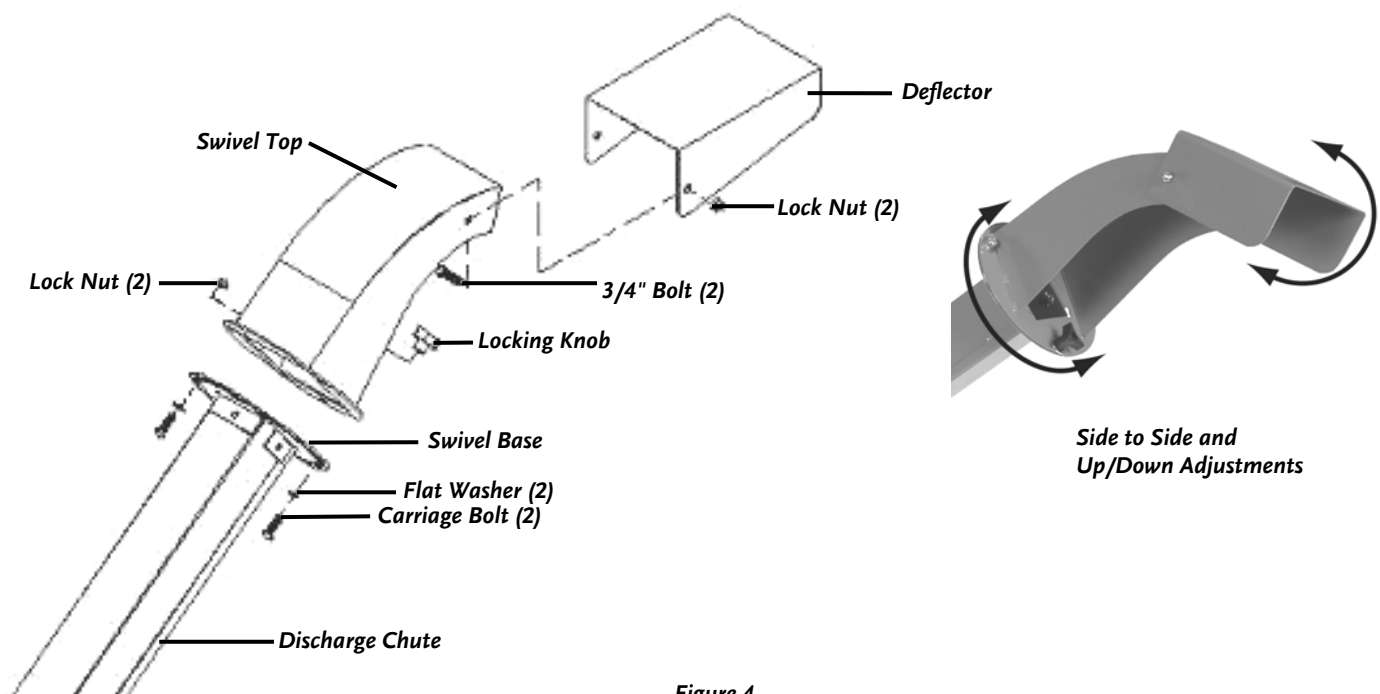


Figure 4

Attaching the Wire Harness

The wire harness supplied must be installed on the trailer of your new DR ROAD-TOWABLE CHIPPER before you can transport the machine on public roadways. Identify the "Road Side" and "Curb Side" of the trailer from **Figure 5** below.

NOTE: There is an Access Hole in each Tail Light Mounting Bracket so the Wire Harness can be attached to each light. The Yellow/Brown wire in the Harness is for the Road Side light and Green/Brown wire is for the Curb Side light. The White wire is for the Ground.

Tools and Supplies Needed:

- Wire Stripper
- (8) Cable Ties (provided)
- (2) 3/4" Wrench or Socket
- Electrical tape

1. Strip 1/2" of insulation from the ends of the Yellow/Brown and Green/Brown wires.
2. Thread the Yellow/Brown wires through the Access Hole in the Road Side Tail Light Mounting Bracket.
3. Push the Yellow wire into the top left hole in the back of the light socket and push the Brown wire into the top right hole.

NOTE: The wires will be connected and retained in the light socket holes by spring-loaded connections.

4. Thread the Green/Brown wires through the Access Hole in the Curb Side Tail Light Mounting Bracket.
5. Push the Green wire into the top left hole in the back of the light socket and push the Brown wire into the top right hole.
6. Once the wires are correctly attached in the light sockets, secure the Harness to the Trailer Frame using the cable ties (**Figure 5**) as follows:
 - Attach the Curb Side wires to the Frame at points 1, 2, and 3 (**Figure 5**).
 - Attach the Road Side wires to the Frame at point 4 (**Figure 5**).
 - Attach both Curb and Road Side wires to the Frame at points 5, 6, 7, and 8 (**Figure 5**).
7. Strip 1" of insulation from the end of the White (Ground) wire.
8. Loosen a Trailer Hitch Bolt, wrap the Ground wire around the Bolt, and then re-tighten.

NOTE: We recommend that you wrap the Harness wires together with electrical tape about every twelve (12) inches starting at tie point 5 (**Figure 5**) and going toward the hitch.

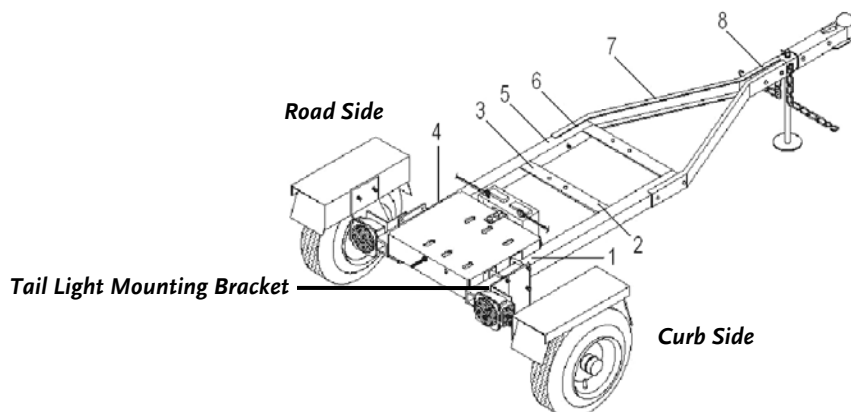


Figure 5

CALL TOLL FREE 1-800-DR-OWNER

19

Connecting the Battery Cable

We ship all DR ROAD-TOWABLE CHIPPERS with the negative terminal battery cable disconnected. This prevents the battery from discharging during shipment. Before using your DR ROAD-TOWABLE CHIPPER, you must connect the battery cable.

Tool Needed:

- (2) 5/16" Wrenches or Sockets

Connect the negative cable to the negative terminal on the battery (**Figure 6**).

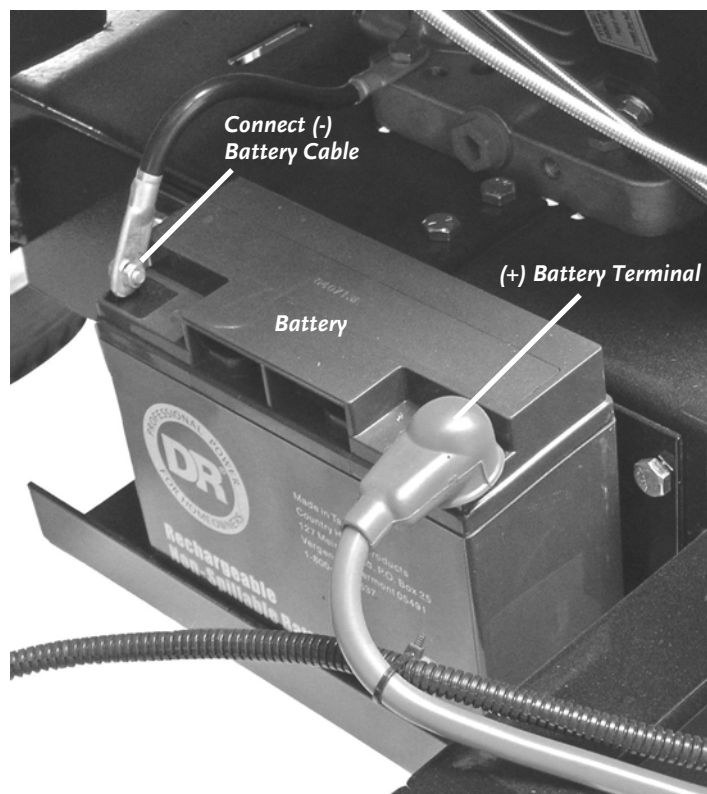


Figure 6

Adding Engine Oil and Gasoline

NOTICE!

- **YOU MUST ADD OIL BEFORE STARTING THE ENGINE. THIS MACHINE IS SHIPPED WITHOUT OIL. TRACES OF OIL MAY BE IN THE RESERVOIR FROM FACTORY TESTING, BUT YOU MUST ADD OIL BEFORE STARTING THE ENGINE. FILL THE RESERVOIR SLOWLY CHECKING THE DIPSTICK FREQUENTLY TO AVOID OVERFILLING.**
- **TO GET AN ACCURATE READING WHEN CHECKING THE OIL LEVEL:**
 - ⇒ THE MACHINE SHOULD BE ON A LEVEL SURFACE.
 - ⇒ THE DIPSTICK SHOULD BE SCREWED DOWN ON BRIGGS & STRATTON ENGINES.

Capacities	
Briggs & Stratton 18.0 HP Vanguard OHV Engine	SAE 30 Oil - 48 oz. (1.42 L)
Kawasaki 19.0 HP Engine	SAE 30 Oil - 60 oz. (1.78 L)
Briggs & Stratton Gasoline Tank - 18 HP	Unleaded gasoline, 9 US quarts (8.52 L)
Kawasaki Gasoline Tank - 19 HP	Unleaded gasoline, 10 US quarts (9.46 L)

Tip: To avoid confusion, we recommend leaving the caps on the gas and oil fills until you are ready to pour either gasoline or oil into the correct fill.

NOTE: Use SAE 30 high detergent oil classified "For Service SF, SG, SH, SJ" or higher. Do not use special additives. Other types of oil could cause problems operating your machine. Please refer to your Engine Owner's Manual for detailed oil information.

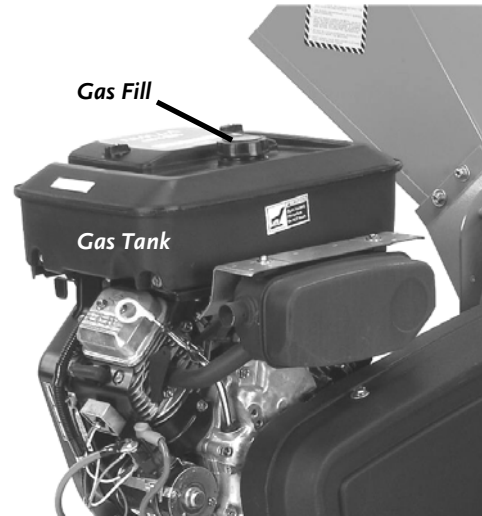
1. Place the machine on a level surface and initially add 1/2 of the SAE 30 high detergent oil recommended by the engine manufacturer and wait one minute for the oil to settle (**Figure 7** on page 22).
2. Check the dipstick and continue adding a few ounces of oil at a time, rechecking the dipstick until the oil reaches the fill mark. Be careful not to overfill.

WARNING!

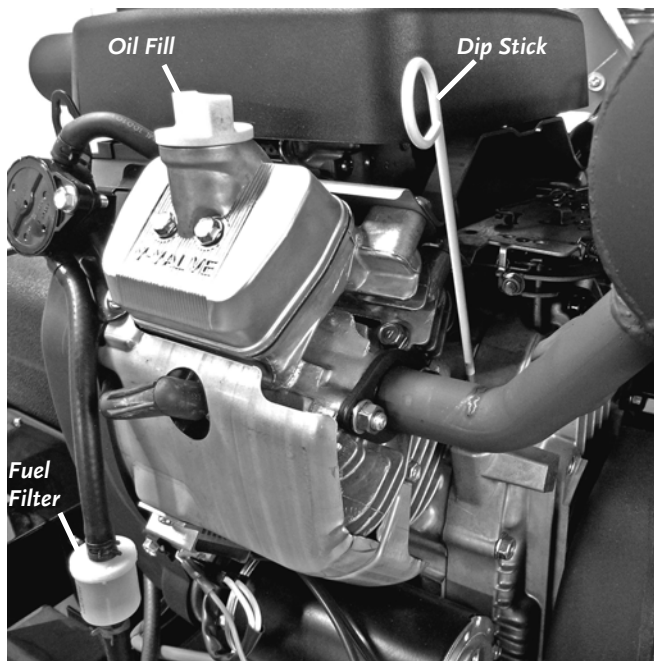
FILL GAS TANK OUTDOORS OR IN A WELL-VENTILATED AREA, AWAY FROM SPARKS, OPEN FLAMES, PILOT LIGHTS, HEAT AND OTHER IGNITION SOURCES.

3. Fill the gas tank with fresh, unleaded gas (with a minimum of 85 Octane) to approximately 1" to 1-1/2" below the top of the fill neck to allow for fuel expansion. Be careful not to overfill and reinstall the cap before starting the engine. See your Engine Owner's Manual for more information.

NOTE: To refill the gas tank, turn the engine OFF and let the engine cool at least two (2) minutes before removing the gas fill cap.



Briggs and Stratton 18 HP Engine



Kawasaki 19 HP Engine

Figure 7

Check the Tire Pressure

There should be 60 psi in each tire.

OPERATING YOUR DR ROAD-TOWABLE CHIPPER

This chapter covers the procedures for starting and stopping your new DR ROAD-TOWABLE CHIPPER and discusses basic operation features.

! WARNING!

- THIS CHIPPER IS DESIGNED FOR CHIPPING WOOD. NEVER USE THIS MACHINE FOR ANY OTHER PURPOSE AS IT COULD CAUSE SERIOUS INJURY.
- CONTACT WITH INTERNAL ROTATING PARTS WILL CAUSE SERIOUS PERSONAL INJURY. NEVER PUT HANDS, FACE, FEET, OR CLOTHING INTO CHIPPER HOPPER OR DISCHARGE OPENING OR NEAR THE DISCHARGE AREA AT ANY TIME.
- BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS. USE ONLY A WOODEN STICK TO CLEAR JAMMED MATERIAL AFTER ALL MOVING PARTS HAVE STOPPED COMPLETELY.

Before Starting the Engine

1. Check the oil level every time you use the DR ROAD-TOWABLE CHIPPER.
2. Check the gas level.
3. Turn the Gas Shut-Off valve to the OPEN position (*Figure 8*).
4. Remove any debris buildup from the machine.

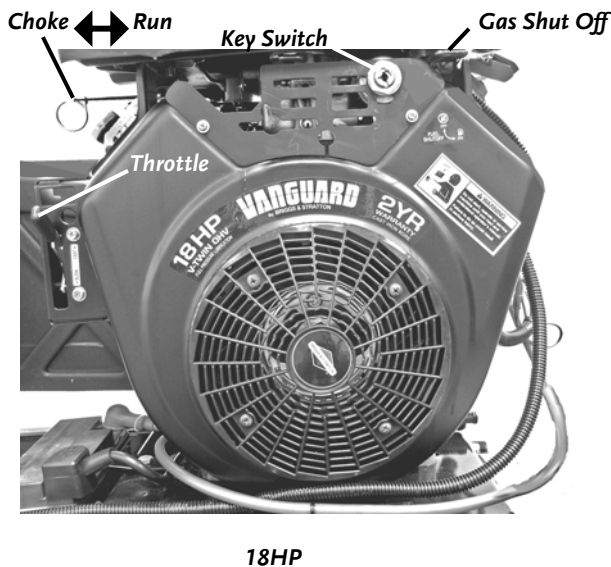


Figure 8

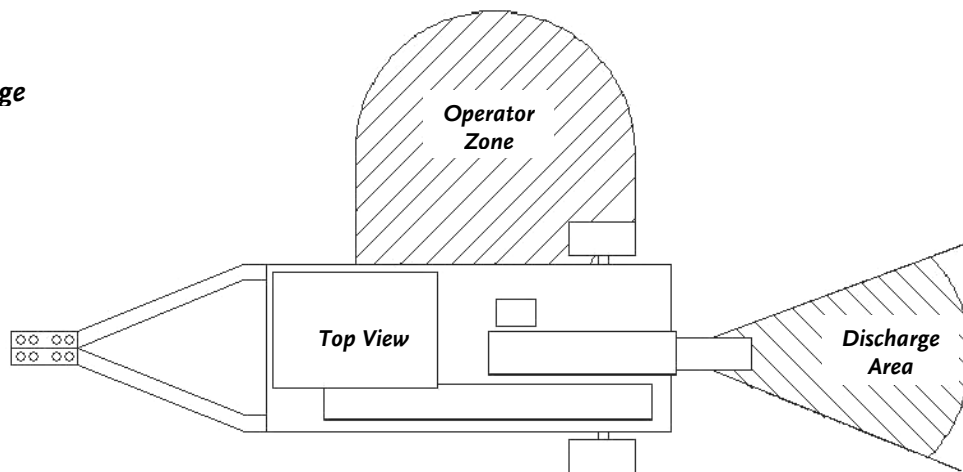
Operation Notes

- Visually check the Chipper Knife for damage each time you use the machine.

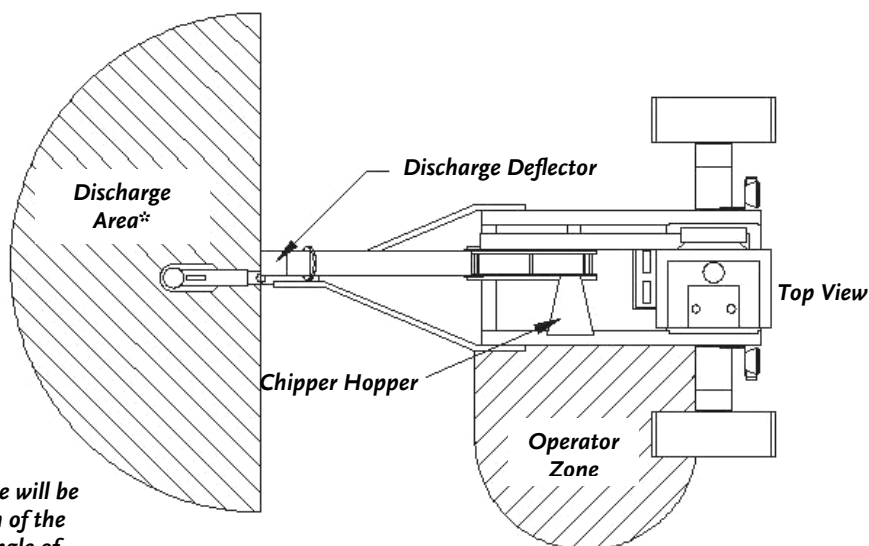
NOTE: Check for shaft movement while starting the engine. If the shaft does not turn, clean out the Chipper as instructed on page 28.

- At engine start-up, the engine of your DR CHIPPER operates under no load until approximately 1200-1400 RPM, at which speed the Centrifugal Clutch engages and begins driving the Rotor Assembly.
- Proper Rotor speed is 2400-RPM +/- 200 RPM.
- When viewed from the Chipper Hopper side, the Flywheel turns in a clockwise direction.
- Only operate the DR ROAD-TOWABLE CHIPPER from the Operator Zone shown in **Figure 9**.
- Keep proper balance and footing while operating the DR ROAD-TOWABLE CHIPPER.
- ALWAYS stop the engine when leaving the Operating Zone (**Figure 9**) or when moving the machine.

18 HP Bottom Discharge



19 HP Top Discharge



***The exact area of discharge will be determined by the direction of the Discharge Chute and the angle of the Deflector.**

Figure 9

Processing Material

WARNING!

- ALWAYS WEAR PROTECTIVE GOGGLES OR SAFETY GLASSES WITH SIDE SHIELDS WHILE CHIPPING TO PROTECT YOUR EYES FROM POSSIBLE THROWN DEBRIS.
 - AVOID WEARING LOOSE CLOTHING OR JEWELRY, WHICH MIGHT CATCH ON MOVING PARTS OR THE MATERIAL FED INTO THE CHIPPER HOPPER.
 - WE RECOMMEND WEARING GLOVES WHILE CHIPPING. BE SURE YOUR GLOVES FIT PROPERLY AND DO NOT HAVE LOOSE CUFFS OR DRAWSTRINGS.
 - WEAR SHOES WITH NON-SLIP TREADS WHEN USING YOUR CHIPPER. IF YOU HAVE SAFETY SHOES, WE RECOMMEND WEARING THEM. DO NOT USE THE MACHINE WHILE BAREFOOT OR WEARING OPEN SANDALS.
 - WEAR LONG PANTS WHILE OPERATING THE DR ROAD-TOWABLE CHIPPER.
 - USE EAR PROTECTORS OR EAR PLUGS RATED FOR AT LEAST 20 DBA TO PROTECT YOUR HEARING.
-

- Your DR ROAD-TOWABLE CHIPPER can process dry or green material.
- Green material will process quicker and easier than dry material.
- Soft wood processes easier than hard wood.
- Your operator experience will teach you how different materials chip and how fast you can process different materials.
- When chipping branches, sometimes a tail will remain at the end of a branch. To avoid this, rotate the branch while feeding it into the Chipper Hopper.
- Rotating the branch as you feed it into the machine will improve chipping performance.
- It is best to trim off any side twigs from the main branch that you are chipping.
- Use caution with small diameter green saplings and branches less than 2" in diameter. Chip these grouped or bundled together to provide support for each other. If the material is 2" or larger, feed only one at a time into the Chipper Hopper.
- Make sure the DR ROAD-TOWABLE CHIPPER finishes processing material in the Hopper before shutting the engine off.

NOTICE!

USE COMMON SENSE WHEN USING THE MACHINE. LEARN TO RECOGNIZE THE CHANGE IN SOUNDS WHEN OVERLOADED. TURN OFF THE ENGINE IMMEDIATELY IF THE MACHINE BECOMES JAMMED TO PREVENT DAMAGE TO THE DRIVE SYSTEM.

Electric-Starting

1. Pull the Choke control (**Figure 8** on page 23) out to the CHOKE position (leave in the RUN position if the engine is already warm).
2. Move the Throttle to the FAST or RUN position (**Figure 8** on page 23).
3. Turn the Key Switch to ON (**Figure 8** on page 23) then to the START position until the engine starts, then release. The key will snap back to the RUN position and the engine will continue to run.
4. As the engine warms up, slowly adjust the Choke to the Run position. Wait until the engine runs smoothly before each Choke adjustment. For maximum performance, operate the engine with the Throttle in the FAST or RUN position with the CHOKE pushed in to the RUN position.

Stopping the Engine

1. Move the Throttle control lever all the way to the SLOW or IDLE position and turn the Key to OFF.
2. Remove the Key for safety. The Key has a pressure lock that prevents it from vibrating loose during operation. To remove the Key, push it in and then quickly and firmly pull it out. If the Key becomes difficult to remove, spray FLUID FILM[®] or a similar non-conductive lubricant into the keyhole.

NOTE: Close the fuel Shut-Off Valve when transporting or storing the DR ROAD-TOWABLE CHIPPER.

NOTICE!

NEVER STOP THE ENGINE BY MOVING THE CHOKE LEVER TO THE CHOKE POSITION. THIS COULD CAUSE AN ENGINE BACKFIRE RESULTING IN ENGINE DAMAGE.

Using the Chipper Hopper

The Chipper Hopper is mounted on the side of the machine and is designed to chip wood only. The revolving Chipper Knife mounted on a flywheel turns branches fed into the hopper into "chips". The Chipper can chip branches and vines ranging in size up to 4-1/2" in diameter. Cut your materials into manageable lengths before feeding them into the Chipper Hopper.

WARNING!

THE CHIPPER HOPPER MUST BE SECURELY BOLTED TO THE SIDE OF YOUR DR ROAD-TOWABLE CHIPPER BEFORE USING THE MACHINE!

- Do not force material into the Chipper. If the machine does not chip well, the Chipper Knife may need to be sharpened or replaced, or the gap between the Knife and the Wear Plate needs adjusting. See page 40.
- Extremely hard knots will not process very well. Short stubs that have not self-fed through the Chipper can be pushed through with the next branch to be chipped.

NOTICE!

NEVER THROW REMAINING STUBS OR KNOTS INTO THE CHIPPER HOPPER; DAMAGE WILL RESULT.

- Cut the material to be chipped into manageable lengths of no more than five or six feet long before chipping them.
- Overloading the Chipper Hopper will cause the rotor speed to decrease. If you hear the engine RPM decreasing, stop feeding material into the Chipper Hopper until the engine has returned to full speed.

NOTICE!

IF YOU JAM THE MACHINE AND DO NOT STOP THE ENGINE, IT CAN DAMAGE THE MACHINE. THIS DAMAGE CAN BE COSTLY AND MAY NOT BE COVERED UNDER WARRANTY. FOR THIS REASON, IT IS IMPORTANT THAT YOU IMMEDIATELY STOP THE ENGINE IF THE MACHINE BECOMES JAMMED, WAIT FIVE (5) MINUTES TO MAKE CERTAIN THE FLYWHEEL, AND ALL MOVING PARTS HAVE COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS TO PREVENT ACCIDENTAL STARTING.

- NEVER allow processed material to build up within 3" of the discharge chute opening. Move the DR ROAD-TOWABLE CHIPPER or the pile as needed. Failure to do so could result in unnecessary jamming of the machine.
- To move a pile of processed material, use a spade, rake, or long handle tool. NEVER use your hands or feet!

To Free a Jammed Flywheel

! WARNING!

BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS.

Tool Needed:

(2) 1/2" Wrench or Socket

Disassemble:

1. Disconnect the battery at the negative terminal (**Figure 6** on page 20).
2. Remove any material left in the Chipper Hopper and then remove the Deflector (Bottom Discharge model) by removing the two (2) 5/16" x 4" Bolts (**Figure 10**). For the Top Discharge model, remove the Discharge Chute (**Figure 3** on page 17) by just loosening the two (2) 5/16" x 4" Bolts.

! NOTICE!

NEVER PRY AGAINST THE SCROLL WHEN REMOVING THE DEFLECTOR OR DISCHARGE CHUTE, OR AT ANY OTHER TIME. THIS WILL CAUSE DAMAGE TO THE MACHINE.

3. Check to see if the Deflector or Discharge opening is clogged. If it is, clear it with a branch.
4. With a wooden stick, loosen and remove any material left in the Chipping Chamber.

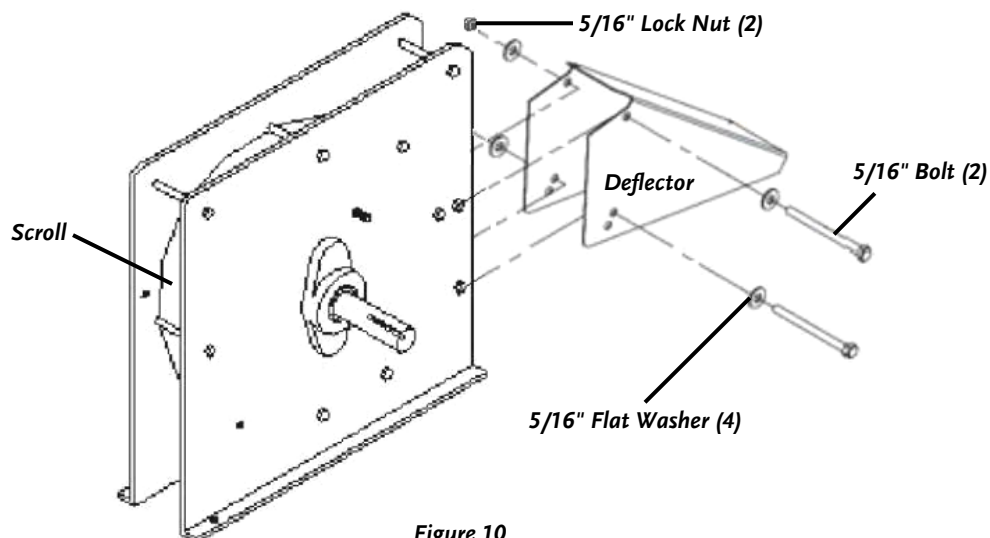


Figure 10

Reassemble

Bottom Discharge model:

1. Hold the Deflector (**Figure 10** on page 28) in place at the Discharge opening of the Chipper.
2. Place a 5/16" Flat Washer on a 5/16"-18 x 4" Bolt and then slide the Bolt through both the top two (2) holes of the Chipper body and the Deflector.

NOTE: Be certain that the Bolt attaching the Deflector to the Chipper passes through the pipe (tube) welded to the Scroll (**Figure 10** on page 28).

3. Add a 5/16" Flat Washer to the end of the Bolt followed by a 5/16"-18 Lock Nut. Do not tighten at this time.
4. Repeat Steps 2 and 3 for the lower Deflector attachment Bolt.
5. Pull up on the end of the Deflector and tighten the two (2) Lock Nuts.
6. Reconnect the battery negative terminal cable, the spark plug wires and start the Chipper engine; allowing the material in the Chipping Chamber to discharge.
7. If the Chipping Chamber does not clear and the flywheel is still jammed, repeat above process.
8. Be certain the Chipping Chamber is clear before trying to process more material into the Chipper Hopper.

Top Discharge model:

1. Follow the installation instructions on page 17.
2. Reconnect the battery negative terminal cable, the spark plug wires and start the Chipper engine; allowing the material in the Chipping Chamber to discharge.
3. If the Chipping Chamber doesn't clear and the flywheel is still jammed, repeat above process.
4. Be certain the Chipping Chamber is clear before trying to process more material into the Chipper Hopper.

CHAPTER 5

MAINTAINING THE DR ROAD-TOWABLE CHIPPER

This chapter covers regular maintenance procedures that will ensure the best performance and long life of your DR ROAD-TOWABLE CHIPPER. For engine maintenance, please refer to the Engine Owner's Manual that came with your machine. Service intervals listed in the checklist below supercede those listed in the Engine Owner's Manual.

WARNING!

BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS.

Regular Maintenance Check List

NOTE: Service intervals shown are considered maximum under normal operating conditions. Increase frequencies under extremely dirty or dusty conditions.

Procedure	Before Each Use	Every 8-10 Hours	Every 40 Hours	Every 100 Hours
Check Engine Oil Level	▲			
Check General Equipment Condition	▲			
Check that the Shaft turns freely, see page 28	▲			
Inspect Knife for damage	▲			
Check Knife and Wear Plate for Sharpness		▲		
Check Knife and Wear Plate Attach Screws		▲		
Check Side Bearing Collar Set Screws		▲		
Check Knife to Wear Plate Gap		▲		
Lubricate Side Bearings		▲		
Check Belt Tension and Condition	1 st time 1 hour	▲		
Clean Engine Exterior and Cooling Fins		▲		
Check the Battery Voltage		▲		
Check the Tire Pressure			▲	
Change Engine Oil and Filter*	1 st time 5 hours		▲	
Replace Drive Belt				▲
Replace Spark Plugs				▲
Replace Air Filter and Precleaner				▲

* The engine on your DR ROAD-TOWABLE CHIPPER may not have a Precleaner or Oil Filter.

Grease Fittings

Your DR ROAD-TOWABLE CHIPPER was greased at the Factory. The operator needs to lubricate the Chipper Side and Drive Side Bearings periodically.

! WARNING!

BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS.

Supplies Needed:

- Flexible hose grease gun
- Lithium grease
- Clean cloth
- 5/32" Allen Wrench
- Loctite® 243 (if needed)

1. Wipe all dirt, etc., from the grease fittings with a clean cloth (**Figure 11**).
2. Apply no more than three (3) pumps of quality general-purpose lithium grease with a hand-pumped grease gun to each grease fitting, one (1) on the Chipper Side Bearing and one (1) on the Drive Side Bearing.

! NOTICE!

OVER LUBRICATION CAN ALSO DAMAGE THE BEARINGS.

3. After greasing, check the Side Bearing Collar Set Screws for tightness with a 5/32" Allen Wrench. If they are loose, reset them with Loctite® 243, obtainable at any hardware store.

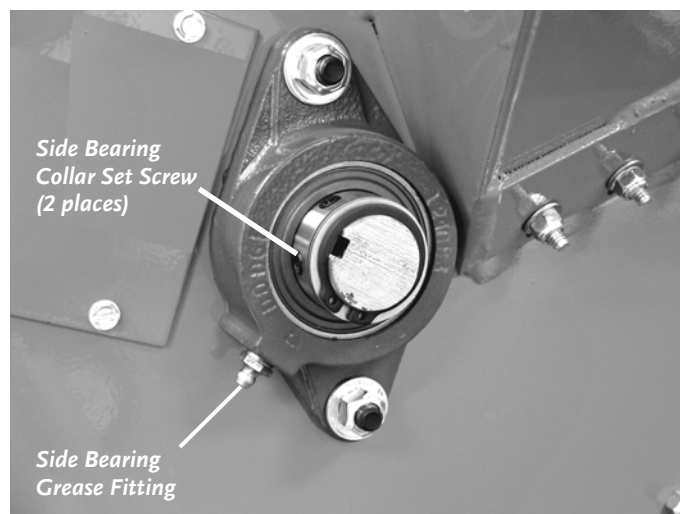


Figure 11

Removing and Replacing the Engine Oil and Filter

WARNING!

BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS.

Tools and Supplies Needed:

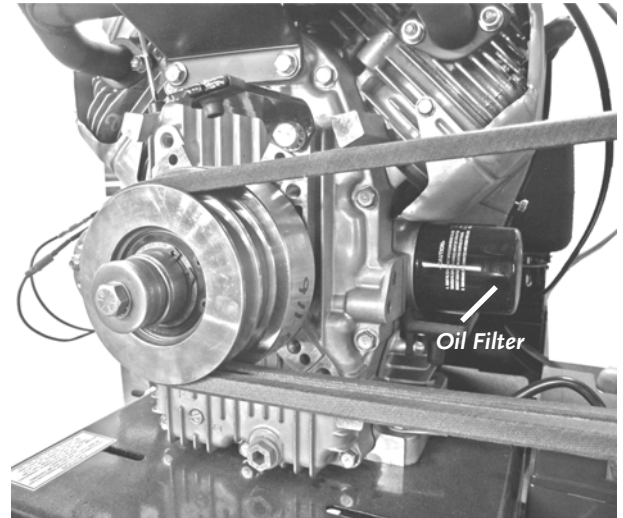
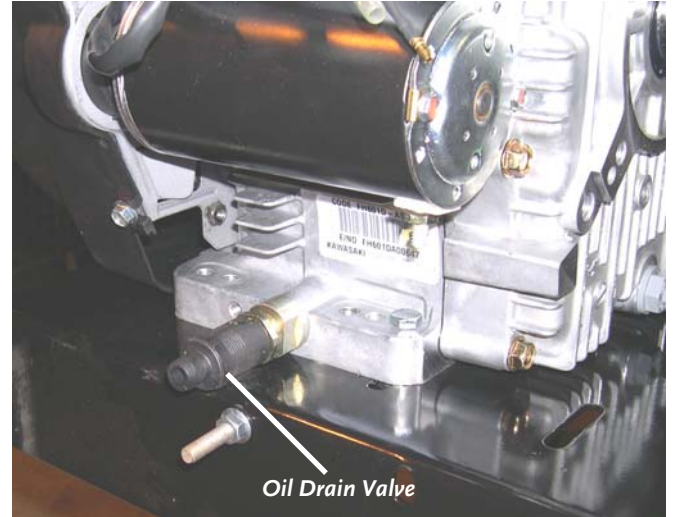
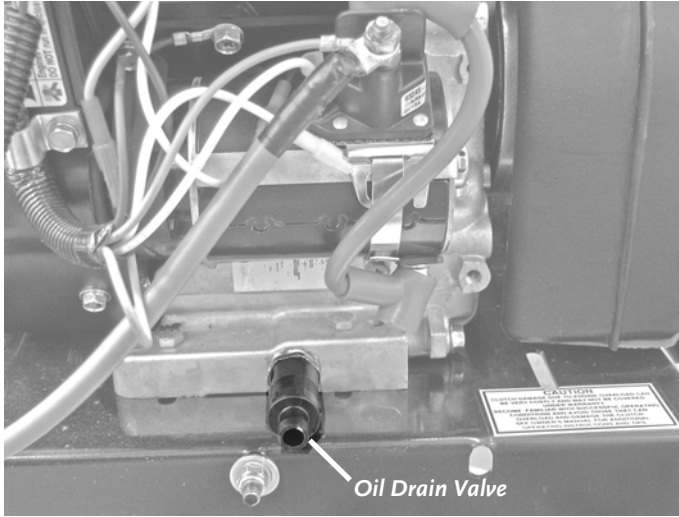
- SAE 30 HD (see page 21)
- Oil Filter Wrench (obtainable from a local auto parts or hardware store)
- 1/2" Wrench (19HP Belt Guard Bolts)
- Suitable container for used oil
- Rags

NOTE 1: The engine is equipped with a Drain Valve for ease in changing the oil (**Figure 12** on page 34).

NOTE 2: Drain the oil when the engine is warm. Warm oil drains quickly and completely.

1. Remove the Belt Guard (19HP engine) using a 1/2" wrench.
2. Position a suitable oil receptacle under the engine oil Drain Valve (located on the trailer hitch side of the engine) and remove the engine oil Fill Cap (**Figure 7**, page 22).
3. Open the engine oil Drain Valve by pushing it in and turning counterclockwise (**Figure 12** on page 34). Allow the used oil to drain completely, and then close the Drain Valve.
4. Using an Oil Filter Wrench, or grasping the oil filter firmly with your hand, unscrew the oil filter counterclockwise from the engine (**Figure 12** on page 34). **BE SURE THAT THE OLD FILTER GASKET COMES OFF WITH THE FILTER.**
5. Wipe the mounting base for the oil filter with a clean cloth.
6. Apply a thin coat of clean motor oil to the new oil filter gasket. **DO NOT USE GREASE.**
7. Line up the threads carefully to avoid cross threading and screw the new filter on until the filter gasket contacts the base, then tighten the oil filter 3/4 to 1 turn. **DO NOT OVER TIGHTEN.**
8. Replace the engine oil using SAE 30 HD oil. See page 21.
9. Reattach the spark plug wires and the negative battery terminal cable.
10. Start the engine and check for oil leaks around the filter base. Correct any oil leaks by simply tightening the oil filter 1/8 of a turn at a time.

NOTE: If you are not reusing the oil, be sure to use environmentally safe disposal procedures in the disposing of the used oil.



Briggs and Stratton 18 HP Engine

Kawasaki 19 HP Engine

Figure 12

Adjusting or Removing and Replacing the Drive Belts

! WARNING!

BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS.

! NOTICE!

USE ONLY DR BELTS ON YOUR MACHINE. THE BELTS HAVE BEEN THOROUGHLY TESTED AND PROVEN FOR MANY HOURS OF USE.

The belts on your DR ROAD-TOWABLE CHIPPER should deflect $3/8$ " under approximately three (3) pounds of pressure as shown in **Figure 13**; if they do not, adjust per the following directions.

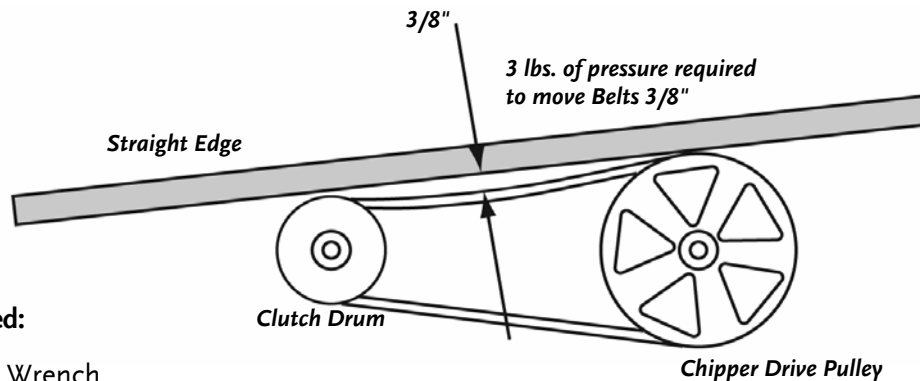


Figure 13

Tools Needed:

- (2) 1/2" Wrench
- 7/16" Wrench (if necessary)

1. Remove the Belt Guard by removing the retaining Bolts using a 1/2" Wrench.
2. Loosen the four (4) Engine Bolts (2 in the Front and 2 in the Rear) using two (2) 1/2" Wrenches, one (1) on the Bolt and one (1) on the Nut underneath (**Figure 14** on page 36).
3. Tighten or loosen the nut on the Belt Tensioner (**Figure 14** on page 36) using a 1/2" Wrench until you have the correct tension as shown in **Figure 13**.
4. Retighten the four (4) Engine Bolts.
5. Check the alignment of the Clutch with the Drive Pulley by placing a straightedge across both faces as shown in **Figure 15** on page 36. If adjustment is necessary, correct the alignment as follows:
 - a) Loosen the Drive Pulley Hub Bolt with a 7/16" Wrench (**Figure 16** on page 37).
 - b) Remove the three (3) Hub Retaining Bolts using a 7/16" Wrench (**Figure 16** on page 37).
 - c) Reinstall the three (3) Bolts in the unused Threaded Holes (**Figure 16** on page 37) adjacent to the three (3) Hub Retaining Bolt holes.
 - d) Slowly tighten the Bolts evenly and alternately (1/4 to 1/2 turn) starting with the Bolt farthest from the Bushing Saw Slot (this acts as a Hub puller) until the Bushing releases from the Rotor Shaft (**Figure 16** on page 37).

- e) Using a straightedge, align the Clutch and Drive Pulley as shown in **Figure 15** by moving the Drive Pulley in or out on the Rotor Shaft (**Figure 16** on page 37). **Do not make the adjustment by moving the Clutch on the Engine Shaft.**
 - f) Remove the three (3) Bolts and reinsert them into the original Retaining Bolt holes.
- NOTE:** Prior to retightening the Hub Retaining Bolts, move the Drive Pulley out approximately 1/8" from the straightedge to allow for compression of the Hub Bushing during the tightening process.
- g) Slowly tighten the Hub Retaining Bolts evenly and alternately (1/4 to 1/2 turn) starting with the Bolt farthest from the Bushing Saw Slot.
 - h) Recheck the alignment after tightening the Bolts, and then retighten the Drive Pulley Hub Bolt.
6. Reinstall the Belt Guard.

NOTE: Check and re-tighten the Drive Belts, if necessary, after an initial break-in period of one (1) hour.

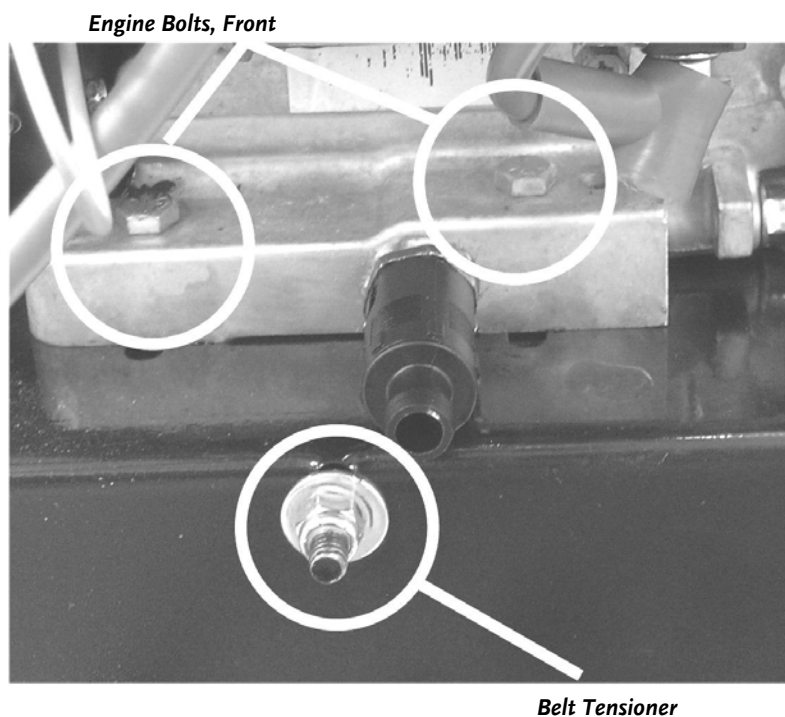


Figure 14

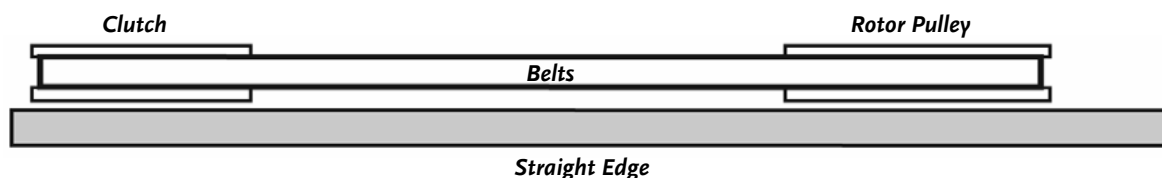


Figure 15

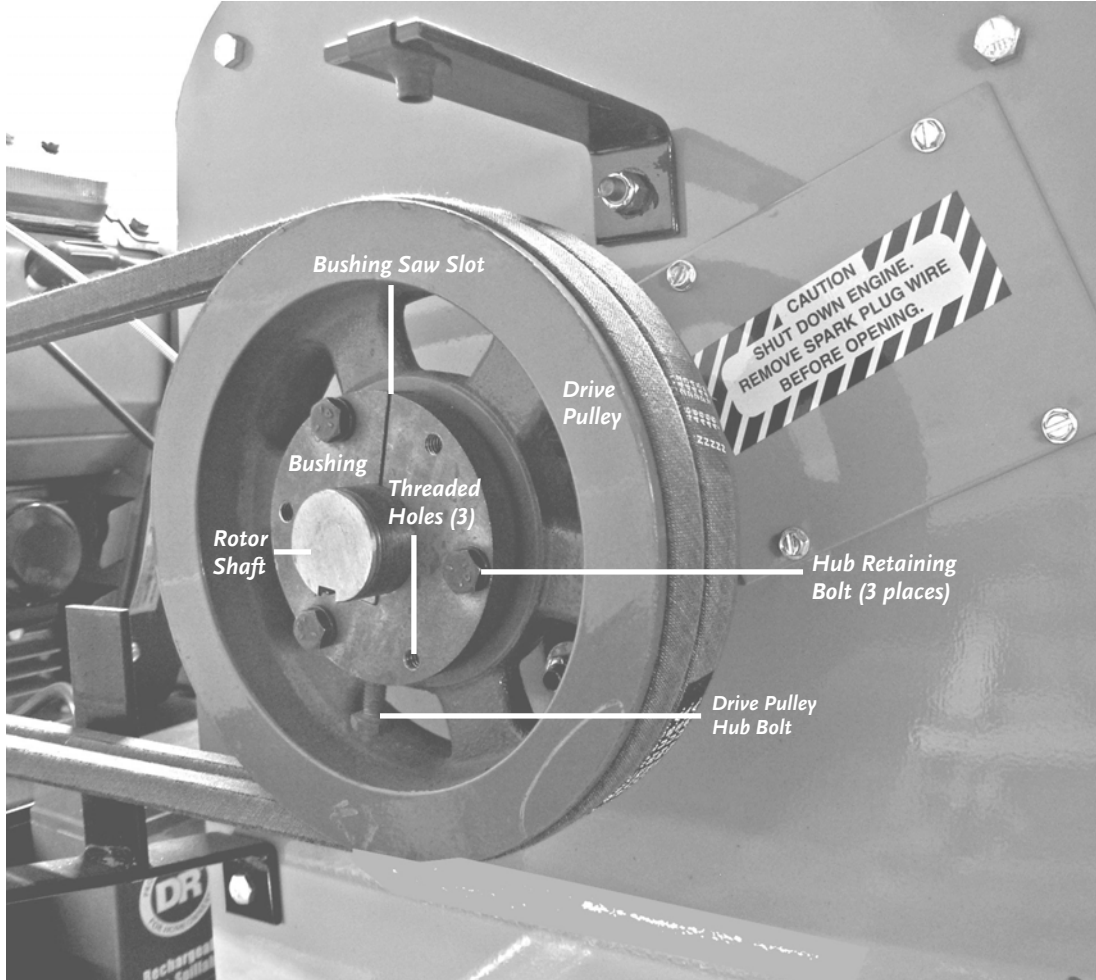


Figure 16

Removing and Replacing the Chipper Knife

! NOTICE!

ROUTINELY CHECK THE CHIPPER KNIFE FOR SHARPNESS. USING A DULL KNIFE WILL DECREASE PERFORMANCE AND CAUSE EXCESSIVE VIBRATION THAT WILL CAUSE DAMAGE TO THE DR ROAD-TOWABLE CHIPPER ENGINE.

! WARNING!

BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS.

Knife Sharpening

- You should never attempt to sharpen the Chipper Knife freehand.
- It is extremely important to consistently maintain the 45-degree angle for proper performance.
- Excessive heat generated during the sharpening process will damage Knives and weaken the metal. Be sure not to overheat the Knife during sharpening because it will shorten the life of the Knife.
- Take the Chipper Knife to a machine shop for proper sharpening.
- How many times a Knife can be sharpened is determined by how much material needs to be taken off to sharpen or to compensate for dents or gouges.
- A new Chipper Knife has $5/16$ " measurement between the short side bevel edge and the Knife mounting holes. See **Figure 17**.

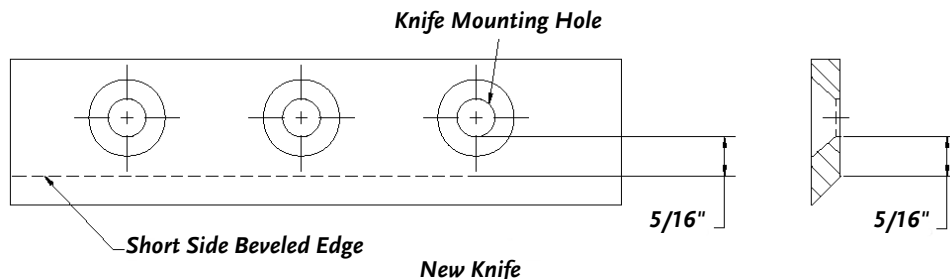


Figure 17

- The knife should never be sharpened to the extent that more than $3/32$ " is taken off this measurement.
- Once this measurement is below $7/32$ " (see **Figure 18**), or if you are unable to remove dents or gouges with these guidelines, replace the Knife.

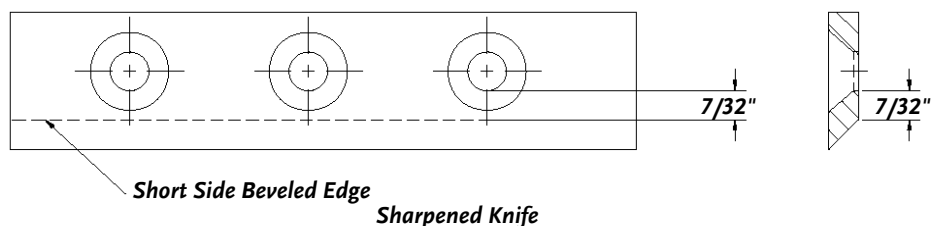


Figure 18

Tools Needed:

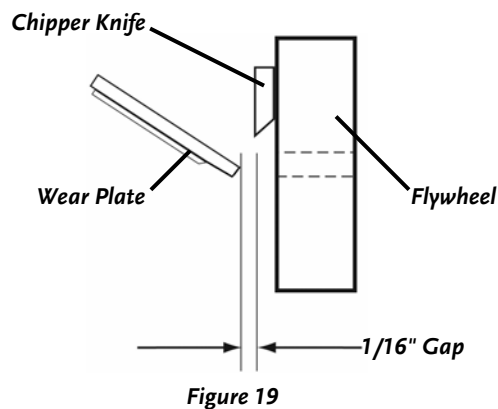
- 5/16" Wrench
 - 3/16" Allen wrench
 - 1/2" socket and ratchet
1. Using a 5/16" Wrench, remove both Access Covers (Chipper and Drive Side) from the Chipper Box (*Figure 1* on page 15).
 2. Rotate the Chipper Disk using a stick until the three (3) countersunk Allen Screws and Lock Nuts attaching the Knife to the Flywheel are visible through the Access Openings.
 3. Clean out the heads of the Allen Screws with an awl or sharp tool.
 4. Insert a 3/16" Allen wrench into the head of a screw.
 5. While holding the Allen wrench, remove the Lock Nut using a 1/2" socket.
 6. Repeat Steps 4 and 5 for the remaining two (2) Allen screws.
 7. Remove the dull or damaged Knife and visually inspect the Chipper Disk Slot and Knife mounting area and be sure they are clean and that the replacement Knife will be able to mount flush against the Chipper Disk.
 8. Install a new or sharpened Knife and finger tighten the Allen screws and Lock Nuts (new hardware is supplied with a new Knife) to hold the Knife to the Chipper Disk.
 9. Using a 3/16" Allen wrench and 1/2" socket, tighten the center Screw and Nut, then tighten the outer Screw and Nut, and finally tighten the inner Screw and Nut.
 11. Double-check all three (3) screws for tightness one more time.
 12. Check the gap between the Knife and Wear Plate. See "Adjusting the Knife to Wear Plate Gap" on page 40.

Adjusting the Knife to Wear Plate Gap

When you replace the Knife, check and set the clearance between the Knife and Wear Plate. Set this clearance or gap to 1/16" (**Figure 19**). If the gap between the Wear Plate and the Knife is not set correctly, you will have excessive vibration when chipping and the Knife will seem to be dull. The Wear Plate should have a square edge and be free of dents or gouges. The Wear Plate can be hand sharpened. Be careful not to overheat it during the sharpening process. This will change the characteristics of the steel and you will then have to replace the Wear Plate.

! WARNING!

BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS.



Tools Needed:

- 5/16" wrench or socket
- 7/16" wrench or socket
- Gap Gauge (provided)

1. To prevent accidental Starter engagement, disconnect the battery at the negative terminal.
2. To adjust the Wear Plate Gap, loosen the three (3) 1/4" Nuts and Bolts while holding the Wear Plate in place. Now you can slide the Wear Plate up or down (in or out) to achieve the correct gap setting.
3. Take the Gap Gauge and slide it between the Knife and Wear Plate. If the gap is set correctly, the Gap Gauge will lightly touch both the Knife and Wear Plate. If the gap is too small, you will not be able to get the Gauge between the Knife and Wear Plate. If the gap is too large, there will be excess room between Gap Gauge, Knife, and Wear Plate.
4. Tighten the Nuts and Bolts when the Wear Plate is in the correct position (**Figure 19**).

! NOTICE!

- AFTER ANY KNIFE OR WEAR PLATE MAINTENANCE OR ADJUSTMENT, ROTATE THE CHIPPER DISK BY USING A WOODEN STICK AND WATCH AND LISTEN CAREFULLY FOR ANY UNUSUAL NOISES, CLICKING OR VIBRATION. IF ANY OF THESE IS DETECTED, INSPECT THE MACHINE FOR DAMAGE, OR ANY LOOSE PARTS. REPAIR OR REPLACE ANY DAMAGED PARTS AND TIGHTEN ANY LOOSE PARTS BEFORE STARTING THE DR ROAD-TOWABLE CHIPPER.
- IF AT ANY TIME IT BECOMES NECESSARY TO DISASSEMBLE THE CHIPPER FOR REPAIRS, THE CHIPPER DISK MUST BE RE-INSTALLED IN EXACTLY THE SAME POSITION ON THE ROTOR SHAFT.

5. Re-connect the negative battery terminal wire and the spark plug wires.

Removing and Replacing the Clutch

WARNING!

BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS.

The design of the Clutch on your machine is for rugged, dependable service, however, it is important to understand the limitations of a Clutch. The Clutch design is to provide load free starting of the Engine, and slippage under excessive overloading of the driven application. These features help protect the Engine from damages such as broken crankshafts and starters. The Shoes and Springs on the Clutch are normal wear items. If you notice decreased performance of the Clutch, check and replace them if necessary.

The Clutch obtains its power from the Engine RPM. The lower the engagement speed, and the higher the maintained Engine speed, the more torque the Clutch can transfer to the driven unit. **NEVER operate the DR ROAD-TOWABLE CHIPPER Engine at less than full RPM.**

***NOTE:** At engine start-up, the engine of your chipper operates under no load until approximately 1000-1200 RPM for both the 18 and 19 HP models, at which speed the centrifugal clutch engages and begins driving the rotor. Proper rotor speed is 2400-RPM +/- 200 RPM.*

NOTICE!

- **DO NOT TAMPER WITH THE ENGINE'S GOVERNOR SETTING. THE GOVERNOR CONTROLS THE MAXIMUM SAFE OPERATION SPEED AND PROTECTS THE ENGINE. OVER-SPEEDING THE ENGINE IS DANGEROUS AND WILL CAUSE DAMAGE TO THE ENGINE AND TO THE OTHER MOVING PARTS OF THE MACHINE. SEE YOUR AUTHORIZED DEALER FOR ANY ENGINE GOVERNOR ADJUSTMENTS.**
 - **BECOME FAMILIAR WITH SUCCESSFUL OPERATING CONDITIONS AND AVOID THOSE THAT CAN OVERLOAD AND DAMAGE THE MACHINE.**
 - **DO NOT OVERLOAD OR ATTEMPT TO CHIP MATERIAL BEYOND MANUFACTURERS RECOMMENDATION. PERSONAL INJURY OR DAMAGE TO THE MACHINE COULD RESULT. LEARN TO RECOGNIZE THE SOUND OF THE MACHINE DURING AN OVERLOAD CONDITION. ONLY YOUR OPERATOR EXPERIENCE WILL TELL YOU HOW FAST YOU CAN SUCCESSFULLY FEED MATERIAL INTO THE MACHINE.**
 - **IF OVERLOADING, OR ANY OTHER CAUSE JAMS THE MACHINE, STOP THE MACHINE IMMEDIATELY. IF YOU JAM THE MACHINE AND DO NOT STOP THE ENGINE, IT CAN BURN THE DRIVE BELT AND/OR RUIN THE CLUTCH. CLUTCH DAMAGE CAN BE COSTLY AND IT MAY NOT BE COVERED UNDER WARRANTY. FOR THIS REASON, IT IS IMPORTANT THAT YOU IMMEDIATELY SHUT OFF THE MACHINE IF IT BECOMES JAMMED.**
 - **THE CENTRIFUGAL CLUTCH ON THIS MACHINE IS PERMANENTLY LUBRICATED AND DOES NOT REQUIRE OIL OR GREASE. IF, AFTER LONG PERIODS OF USE, THE DRUM WOBBLER EXCESSIVELY, REPLACE THE DRUM ASSEMBLY. ALWAYS REPLACE SHOES AND SPRINGS IN SETS. WHENEVER SHOES ARE CHANGED, REPLACE ALL SPRINGS.**
-

Installing a New Clutch Assembly

If you have problems with the Clutch, we recommend replacing your Clutch as a complete assembly.

Tools and Supplies Needed:

- (2) 1/2" Wrench
 - 9/16" Socket with Extension (18 HP)
 - 5/8" Socket with Extension (19 HP)
 - Anti-seize compound
1. Remove the Belt Guard and loosen the Engine Bolts as outlined in Steps 1 and 2 on page 35.
 2. After you have loosened the Engine Bolts, remove the Drive Belts and set them aside.
 3. Remove the Clutch from the engine crankshaft by removing the Clutch Bolt, Washer, and Spacer (Clutch Bolt and Washer for the 19 HP, the Spacer remains on the shaft) and then slide the Clutch Assembly from the crankshaft.
 4. Remove the Key from the keyway in the engine crankshaft and set it aside.
 5. Clean the engine crankshaft and remove any burrs, then apply anti-seize compound to the crankshaft.
 6. Install the Key in the keyway of the new Clutch hub, align the Key with the slot in the engine crankshaft, and then slide the new Clutch Assembly onto the crankshaft followed by the Spacer, Washer, and Clutch Bolt (Washer and Bolt for the 19 HP). Tighten the Bolt securely.
 7. Reinstall the Drive Belts and set the Drive Belt tension and alignment per Steps 3 through 5 on page 35.
 8. Reinstall the Belt Guard.

Clutch Removal, Disassembly, and Re-Assembly

If it is necessary to disassemble your Clutch, follow these steps.

Tools and Supplies Needed:

- 9/16" Socket with Extension (18 HP)
- 5/8" Socket with Extension (19 HP)
- Pliers, Retainer Ring
- Pliers (wrap the gripping surface in tape to avoid scratching the spring surface)
- Anti-seize compound

1. Perform steps 1 through 4 on the previous page to remove the Clutch.
2. Remove the Retainer Ring and Flat Washer and slide the Hub out of the Drum Assembly (**Figure 20**).
3. Unhook one Spring from its Shoe (**Figure 20**).

NOTE: Use tape wrapped pliers to avoid nicking the Spring.

4. Carefully note the position of Shoes and remove Shoes from the Hub (**Figure 20**).
5. Position the new Shoes correctly on the Hub, noting how the old ones were removed.
6. Place one end of each Spring over a Shoe pin, stretch the Spring just enough to clear pin on the other Shoe. Use tape wrapped pliers to avoid nicking the Spring. Avoid over stretching that may damage the Spring. Repeat for all Shoes.
7. Reassemble the Drum to the Hub, reinstall the Washer on Hub Shaft and secure in place with the Retainer Ring (**Figure 20**).
8. Clean the engine crankshaft and remove any burrs, then apply anti-seize compound to the crankshaft.
9. Install the Key in the keyway of the Clutch hub, align the Key with the slot in the engine crankshaft, and then slide the rebuilt Clutch Assembly onto the crankshaft followed by the Spacer, Washer, and Clutch Bolt (Washer and Bolt for the 19 HP). Tighten the Bolt securely.
10. Reinstall the Drive Belts and set the Drive Belt tension and alignment per Steps 3 through 5 on page 35.
11. Reinstall the Belt Guard.

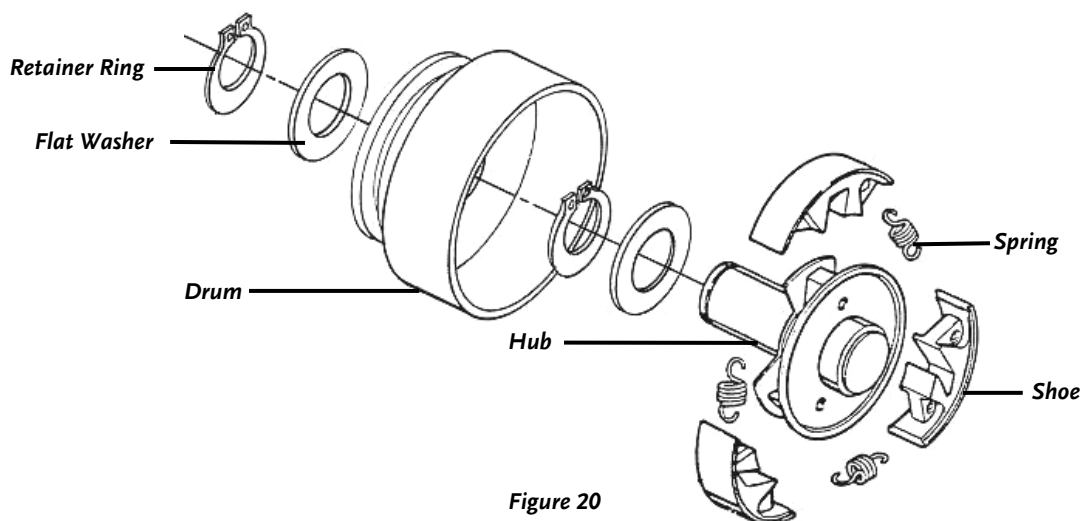


Figure 20

Battery Care

Proper care can extend the life of a battery. Follow these recommendations to ensure your battery's best performance and long life:

- Do not allow the battery charge to get too low. If the machine is not used, charge the battery every 4 – 6 weeks. Operate the engine for at least 45 minutes to maintain proper battery charge.
- Store an unused battery in a dry area that does not freeze.
- Do not charge an already charged battery. In theory, you cannot overcharge our battery with a trickle charger; however, when a battery is fully charged and the charger is still on, it generates heat that could be harmful to the battery. A fully charged battery will read 12V-13.2V with a voltmeter.
- Do not continue to crank your engine when the battery charge is low.

Charging the Battery

Operate the engine for at least 45 minutes to maintain proper battery charge. If the battery loses its charge, you will need to use a trickle charger (like the DR Battery Charger) to recharge it. The charger should have an output of 12 volts at no more than 2 amps.

- At 1 amp, the battery may need to be charged for as long as 48 hours.
- At 2 amps, the battery may need to be charged for as long as 24 hours.

To connect a battery charger to your DR ROAD-TOWABLE CHIPPER, follow the steps listed below.

1. Detach the two battery cables going to the battery on your machine.
2. Attach the black (-) battery charger wire to the battery negative (-) terminal, and attach the red (+) battery charger wire to the battery positive (+) terminal.
3. Plug the battery charger into an outlet.

NOTICE!

WHEN YOU ARE FINISHED CHARGING THE BATTERY, DISCONNECT THE CHARGER FROM THE OUTLET FIRST, THEN DISCONNECT THE BATTERY CHARGER WIRES FROM THE BATTERY. IF YOU LEAVE THE BATTERY CHARGER WIRES CONNECTED TO THE BATTERY, THE BATTERY WILL DISCHARGE ITSELF BACK INTO THE CHARGER.

End of Season and Storage

WARNING!

- **BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS.**
 - **NEVER STORE THE DR ROAD-TOWABLE CHIPPER WITH FUEL IN THE FUEL TANK INSIDE A BUILDING WHERE IGNITION SOURCES ARE PRESENT, SUCH AS HOT WATER AND SPACE HEATERS, CLOTHES DRYERS AND THE LIKE. IF YOU ARE GOING TO DRAIN THE FUEL TANK, DO THIS OUTDOORS. ALLOW THE ENGINE TO COOL BEFORE STORING IN ANY ENCLOSURE.**
 - **WHEN NOT IN USE, YOUR DR ROAD-TOWABLE CHIPPER SHOULD BE STORED OUT OF THE REACH OF CHILDREN.**
-

NOTE: Please refer to the Engine Owner's Manual for engine-specific procedures.

- Change the oil (and oil filter, if applicable).
- Remove the spark plugs and pour about 1 ounce of motor oil into each cylinder hole. Reinstall the plugs and engage the electric starter for a few seconds. This will coat the pistons and seat the valves to prevent moisture buildup.
- Clean or replace the air filter(s).
- Lubricate all grease fittings. See page 32.
- Clean any dirt and debris from the cylinder head cooling fins, blower housing, debris screen and muffler area of the engine.
- If your engine has a fuel filter, replace it.
- If your DR ROAD-TOWABLE CHIPPER will be idle for more than 30 days, we recommend using a gas stabilizer. This will prevent sediment from gumming up the carburetor. If there is dirt or moisture in the gas or tank, remove it by draining the tank. Completely fill the tank with fresh, unleaded gas and add the appropriate amount of stabilizer or gasoline additive. Run the engine for a short time to allow the additive to circulate. Close the fuel Shut-Off Valve to prevent carburetor overflow and leakage.
- Check the Drive Belts for wear.
- Check the Chipper Knife and Wear Plate for nicks and wear.
- Remove the battery or store your DR ROAD-TOWABLE CHIPPER in a dry environment where the temperature is between -10°F (-23°C) and $+85^{\circ}\text{F}$ ($+23^{\circ}\text{C}$). Make sure the storage temperatures will never be outside these limits.

TROUBLESHOOTING

Most problems are easy to fix. Consult the Troubleshooting Table below for common problems and their solutions. If you continue to experience problems, call Country Home Products, Inc. for support.

Troubleshooting Table



BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS.

SYMPTOM	POSSIBLE CAUSE
<p><i>The engine won't start using electric-start.</i></p> <p><i>(Please refer to the Engine Owner's manual for engine-specific procedures.)</i></p>	<ul style="list-style-type: none"> ⇒ Is the Fuel Shut-Off valve in the ON position? ⇒ Are the spark plug wires attached? ⇒ Have you checked all the items under the section called Electric Starting on page 26? ⇒ There is a fuse in the wiring harness (19HP). Check the fuse and replace if needed. ⇒ Check the wire connections—especially the ground connection, the large black wire coming from the battery, where it connects to the engine. ⇒ Check the wire connections to the solenoid. Disconnect the black battery ground wire first to avoid sparks. Check to be sure that all of the connections are clean and tight. Reconnect the battery ground wire. ⇒ Check the ground connection on the solenoid where it's bolted to the frame. Using a wrench or socket, tighten the bolts to ensure a good connection to the frame. ⇒ Is your battery charged? Check the voltage yourself or at a gas station. If it's low, charge it with a 12-volt, 1 to 2 Amp trickle charger. If you don't use your Chipper for at least 45 minutes at a time, the battery may need to be periodically charged. See the Battery Care section on page 44. ⇒ If your battery is charged and your DR ROAD-TOWABLE CHIPPER still won't start, call 1(800) DR-OWNER (376-9637) for assistance.

! WARNING!

BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS.

SYMPTOM	POSSIBLE CAUSE
<p><i>The engine lacks power or is not running smoothly.</i></p> <p><i>(Please refer to the Engine Owner's Manual for engine-specific procedures.)</i></p>	<p>⇒ Check the Throttle Lever travel and adjustment. Is the Throttle Lever in the Run position?</p> <p>⇒ Is the Choke lever pushed all the way IN to the RUN position? See page 26.</p> <p>⇒ Is the air filter clean? If it's dirty, change it following the procedure in the Engine Owner's Manual.</p> <p>⇒ Are the spark plugs clean? If they are fouled or cracked, change them. If they are oily, leave them out, hold a rag over the spark plug holes and engage the electric starter for a few seconds to blow out any oil in the cylinders, then wipe off the spark plugs and reinsert them.</p> <p>⇒ Are you using fresh, clean unleaded gas? If it's old, change it. Use a fuel stabilizer if you keep gas longer than two weeks or so.</p> <p>⇒ Does your engine have the right amount of clean oil? If it's dirty, change it following the procedure on page 33.</p> <p>⇒ If your engine still lacks power, call 1(800) DR-OWNER (376-9637) for assistance.</p>
<p><i>Engine smokes.</i></p>	<p>⇒ Check the oil level and adjust as needed.</p> <p>⇒ You may be operating the machine on too great an incline. The machine should be level.</p> <p>⇒ Check the air filter and clean or replace if needed.</p> <p>⇒ You may be using the wrong oil - too light for the temperature. Refer to your Engine Owner's Manual for detailed information.</p> <p>⇒ Clean the engine cooling fins and the carburetor housing if they're dirty.</p> <p>⇒ If the engine still smokes, call 1(800) DR-OWNER (376-9637) for assistance.</p>
<p><i>Chipping action seems too slow or flywheel stalling.</i></p>	<p>⇒ The engine speed is too slow causing the belt to slip. Run the engine at full throttle.</p> <p>⇒ Check for loose or damaged Drive Belts; tighten or replace. See page 35.</p> <p>⇒ Check for a dull or damaged Knife; sharpen or replace the Knife. See page 38.</p>
<p><i>The belt frays or rolls over the pulley.</i></p>	<p>⇒ The rotor Drive Pulley groove may be nicked. Check the Drive Belts for wear and hard spots. File off any nicks on the pulley.</p> <p>⇒ The Drive Belts may be stretched; replace them. See page 35.</p>
<p><i>- Clutch overheats.</i></p> <p><i>- Belt burns.</i></p> <p><i>- Flywheel won't turn.</i></p>	<p>⇒ Immediately stop the engine and disconnect the spark plug wires.</p> <p>⇒ Turn the flywheel with a wooden stick to be sure it turns freely.</p> <p>⇒ Check the Drive Belt tension. See page 35.</p> <p>⇒ Remove any built-up debris from the Chipper Hopper Inlet and Discharge Chute.</p>

! WARNING!

BEFORE PERFORMING ANY MAINTENANCE PROCEDURE OR INSPECTION, STOP THE ENGINE, WAIT FIVE (5) MINUTES TO ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP AND COOL. DISCONNECT THE SPARK PLUG WIRES, KEEPING THEM AWAY FROM THE SPARK PLUGS.

SYMPTOM	POSSIBLE CAUSE
<i>The machine has excessive vibration.</i>	<p>⇒ Check for a dull or damaged Knife; sharpen or replace the Knife. See page 38.</p> <p>⇒ The Knife may not be properly seated on the flywheel. Loosen the Knife mounting screws, reset the Knife and tighten the screws. Also, check the Wear Plate Gap. See page 40.</p> <p>⇒ If the machine still exhibits excessive vibration, call 1(800) DR-OWNER (376-9637) for assistance.</p>
<i>When chipping, the log seems to vibrate excessively and “hammers” my hands.</i>	<p>⇒ The Knife is dull; sharpen or replace it. See page 38.</p> <p>⇒ The gap between the Knife and Wear Plate is too great; adjust the Gap. See page 40.</p>
<i>Chipper Knife is hitting the Wear Plate.</i>	<p>⇒ The gap between the Knife and the Wear Plate is set incorrectly; adjust the Wear Plate Gap. See page 40.</p>
<i>Engine runs but the flywheel doesn't rotate.</i>	<p>⇒ The inner Shoes of the Clutch are worn and/or the Clutch Shoe Retaining Springs are weak or broken. Replace worn or broken Clutch parts. See page 41.</p> <p>⇒ Loose Drive Belt; adjust the Drive Belt tension. See page 35.</p> <p>⇒ Remove any built-up debris from the Chipper Hopper Inlet and Discharge Chute.</p>
<i>The machine's wheels track left or right while being towed.</i>	<p>⇒ Check the tire pressure. There should be 60 psi in each tire.</p>

CHAPTER 7

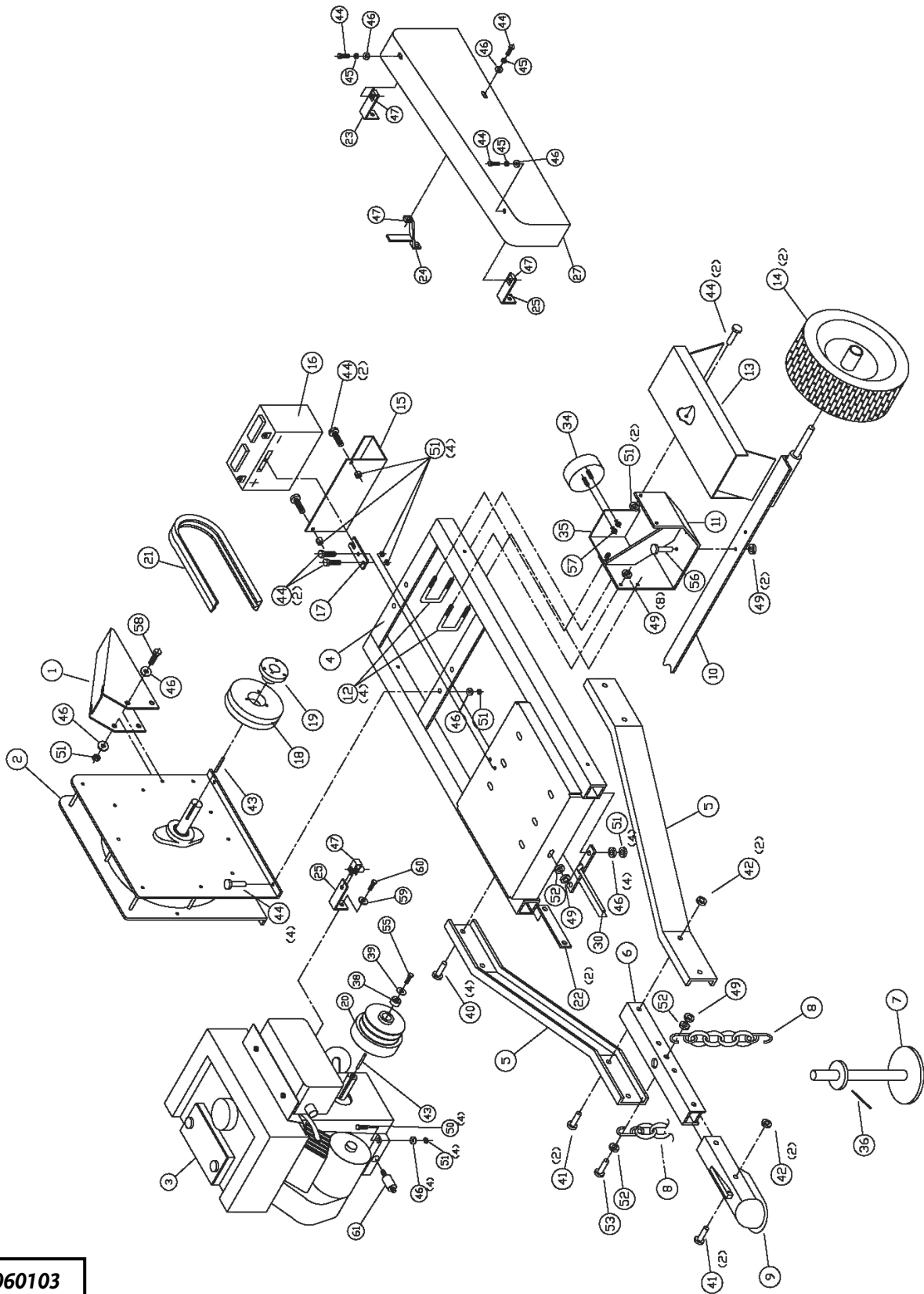
PARTS LISTS, SCHEMATIC DIAGRAMS AND WARRANTY

Parts List - DR ROAD-TOWABLE CHIPPER Assembly - 18 HP, Bottom Discharge

NOTE: Part numbers listed are available through Country Home Products, Inc.

<u>Ref#</u>	<u>Part#</u>	<u>Description</u>	<u>Ref#</u>	<u>Part#</u>	<u>Description</u>
01	148430	Deflector	34	155990	Stop Light, Road Side
02	182351	Chipper, Basic Machine	35	154890	Bracket, Mounting, Tail Light
03	167900	Engine, 18 HP, B&S, E/S	36	145850	Hair Spring, Cotter, 3/16"
04	168030	Frame	37	Deleted	
05	143181	Hitch Arm	38	162070	Spacer, Clutch
06	143100	Hitch Tube	39	162080	Washer, Clutch
07	142761	Stand	40	142420	Bolt, 1/2" - 13 x 1-1/4" HHCS
08	148910	Safety Chain	41	142410	Bolt, 1/2" - 13 x 3" HHCS
09	161010	Trailer Hitch	42	142400	Nut, Lock, 1/2" - 13
10	201660	Axle	43	144440	Key, 1/4" x 1/4" x 2"
11	167930	Axle Bracket	44	146050	Bolt, 5/16" - 18 x 1" HHCS
12	200321	U - Bolt, 3/8" - 16 x 3"	45	155110	Washer, Lock, 5/16", Split
13	154170	Fender	46	145510	Washer, Flat, 5/16" USS
14	149190	Wheel and Tire	47	185890	J - Nut, 5/16" - 18
15	167960	Battery Box	48	Deleted	
16	104831	Battery	49	154480	Nut, Nylon Lock, 3/8" - 16
17	167990	Battery Hold Down	50	145170	Bolt, 5/16" - 18 x 2" HHCS
18	148530	Pulley	51	143130	Nut, Nylon Lock, 5/16" - 18
19	148540	Taper Lock Bushing	52	145160	Washer, Flat, 3/8", USS
20	140630	Clutch	53	153890	Bolt, 3/8" - 16 x 3-1/2" HHCS
21	140701	Belt, 5H680	54	Deleted	
22	142390	Plate, Mounting, Hitch Arms	55	167910	Bolt, 3/8" - 24 x 1-1/2" HHCS
23	185280	Bracket, Mounting, "L", Belt Guard	56	154490	Bolt, 3/8" - 16 x 1-1/4" HHCS
24	185270	Bracket, Mounting, "Z", Belt Guard	57	184561	Nut, Lock, 1/4" - 20
25	185260	Bracket, Mounting, "L", Belt Guard	58	155390	Bolt, 5/16" - 18 x 4" HHCS
26	Deleted		59	156060	Washer, Lock, 7/16"
27	166400	Belt Guard	60	090-0672	Bolt, 7/16" - 14 x 3/4" HHCS
28	Deleted		61	194251	Valve, Oil Drain
29	Deleted		<u>Not Illustrated</u>		
30	185840	Tensioner, Engine Belt	178140	Stop Light, Curb Side	
31	Deleted		168120	Battery Cable, Positive	
32	Deleted		168010	Battery Cable, Negative	
33	Deleted		149050	Wire Harness	
50	DR® 18 and 19 HP ROAD-TOWABLE CHIPPER				

Schematic - DR ROAD-TOWABLE CHIPPER Assembly - 18 HP, Bottom Discharge



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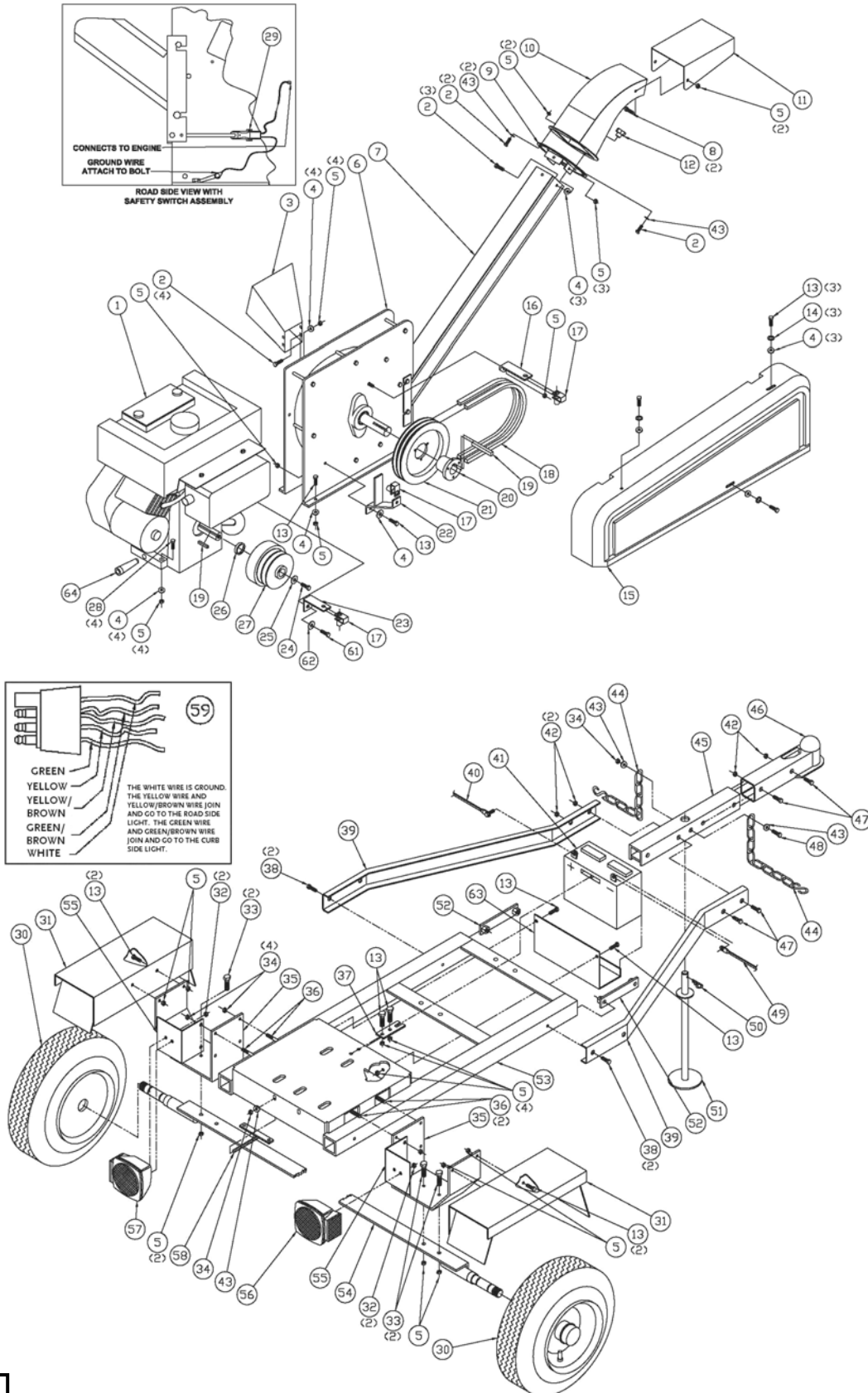
Parts List - DR ROAD-TOWABLE CHIPPER Assembly - 19 HP, Top Discharge

NOTE: Part numbers listed are available through Country Home Products, Inc.

Ref#	Part#	Description	Ref#	Part#	Description
01	030-0463	Engine, 19 HP, Kawasaki, E/S	37	167990	Battery Hold Down
02	14529	Bolt, Carriage, 5/16" - 18 x 3/4"	38	142420	Bolt, 1/2" - 13 x 1-1/4" HHCS
03	19905	Chipper Hopper (Kit)	39	143180	Hitch Arm
04	14515	Washer, Flat, 5/16" USS	40	168120	Battery Cable, Positive
05	14313	Nut, Nylon Lock, 5/16" - 18	41	104831	Battery
06	16771	Chipper, Basic Machine	42	142400	Nut, Lock, 1/2" - 13
07	16808	Discharge Chute Assembly	43	145160	Washer, Flat, 3/8", USS
08	16679	Bolt, 5/16" - 18 x 3/4" HHCS	44	148910	Safety Chain
09	16809	Swivel Base	45	143100	Hitch Tube
10	16810	Swivel Top	46	161010	Trailer Hitch
11	16778	Deflector	47	142410	Bolt, 1/2" - 13 x 3" HHCS
12	16758	Knob, Locking	48	153890	Bolt, 3/8" - 16 x 3-1/2" HHCS
13	14605	Bolt, 5/16" - 18 x 1" HHCS	49	168010	Battery Cable, Negative
14	155001	Washer, Lock, 5/16", Split	50	145850	Hair Spring, Cotter, 3/16"
15	166400	Belt Guard	51	142761	Stand
16	185280	Bracket, Mounting, "L"	52	142390	Plate, Mounting, Hitch Arms
17	185890	J - Nut, 5/16" - 18	53	168031	Frame
18	140701	Belt	54	201660	Axle
19	144440	Key, 1/4" x 1/4" x 2"	55	154890	Bracket, Mounting, Tail Light
20	148540	Taper Lock Bushing	56	178140	Stop Light, Curb Side
21	148530	Pulley, 2-Groove	57	155990	Stop Light, Road Side
22	185270	Bracket, Mounting, "Z", Belt Guard	58	159231	Tensioner, Engine Belt
23	185260	Bracket, Mounting, "L", Belt Guard	59	149050	Wire Harness
24	090-0153	Bolt, 7/16" - 20 x 1-1/4" HHCS, GR 8	60	Deleted	
25	162080	Washer, Clutch	61	090-0672	Bolt, 7/16" - 14 x 3/4" HHCS
26	162071	Spacer, Clutch	62	156060	Washer, Lock, 7/16"
27	140631	Clutch	63	167960	Battery Box
28	145170	Bolt, 5/16" - 18 x 2" HHCS	64	194251	Valve, Drain, Oil
29	207990	Switch, Safety			
30	149019	Wheel and Tire			
31	154170	Fender			
32	184561	Nut, Lock, 1/4" - 20			
33	154490	Bolt, 3/8" - 16 x 1-1/4" HHCS			
34	154480	Nut, Nylon Lock, 3/8" - 16			
35	167930	Bracket, Axle			
36	200321	U - Bolt, 3/8" - 16 x 3"			

52 **DR**® 18 and 19 HP ROAD-TOWABLE CHIPPER

Schematic - DR ROAD-TOWABLE CHIPPER Assembly - 19 HP, Top Discharge



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Parts List - 19 HP Control Panel Assembly

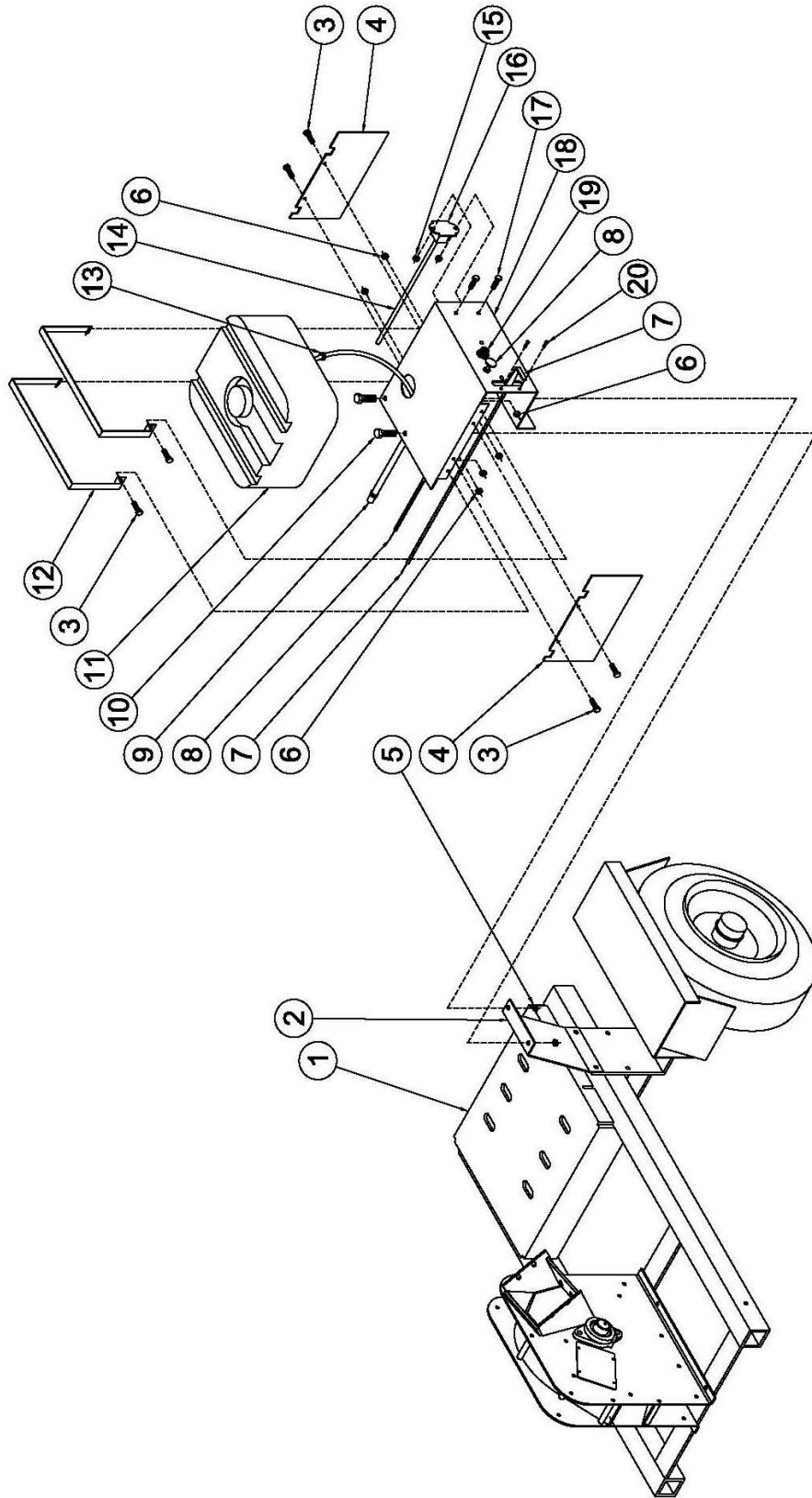
NOTE: Part numbers listed are available through Country Home Products, Inc.

Ref#	Part#	Description
01	913-0446	Frame
02	913-0432	Support, Tank
03	202131	Screw, 10 - 24 x 3/4"
04	913-0433	Cover, End
05	143130	Nut, Nylon Lock, 5/16" - 18
06	202121	Nut, Nylon Lock, 10 - 24
07	112111	Cable, Throttle
08	030-0467	Cable, Choke
09	913-0453	Hose, Fuel
10	166790	Bolt, 5/16" - 18 x 3/4" HHCS
11	150291	Fuel Tank Assembly
12	150531	Strap, Tank
13	030-0469	Clamp, Hose
14	030-0473	Cable, Starter
15	143400	Nut, Nylon Lock, 1/4" - 20
16	030-0470	Solenoid
17	090-0012	Bolt, 1/4" - 20 x 3/4" HHCS
18	913-0431	Base, Tank
19	030-0471	Switch, Ignition
20	155120	Screw, 10 - 32 x 3/8"

Not Illustrated

030-0472 Wire Harness

Schematic - 19 HP Control Panel Assembly



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Parts List - Basic Machine Assembly - 18 and 19 HP

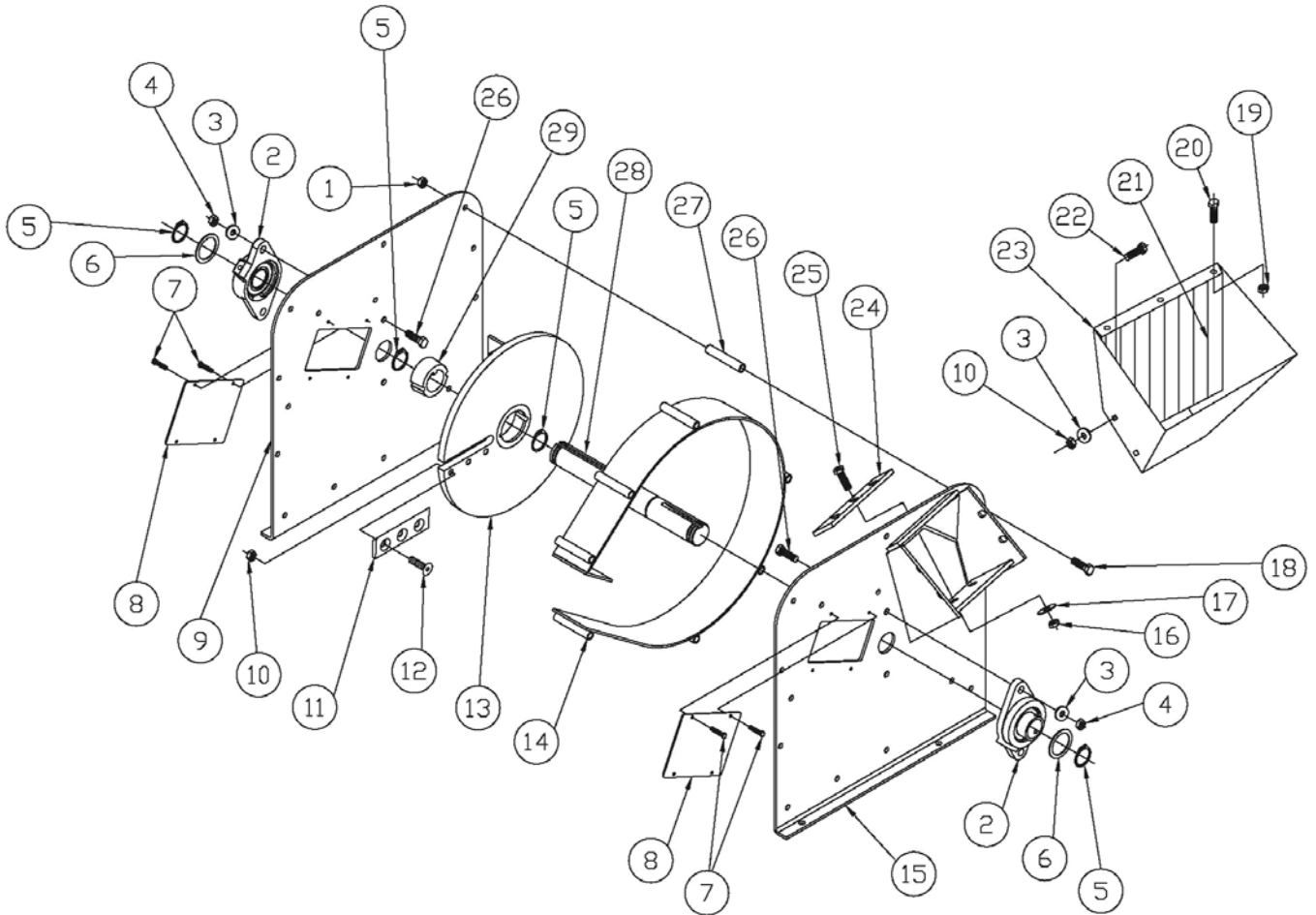
NOTE: Part numbers listed are available through Country Home Products, Inc.

Ref#	Part#	Description
01	18613	Nut, Lock, 5/16" - 18
02	18605	Bearing, Side
03	14515	Washer, Flat, 5/16" USS
04	090-0049	Nut, Lock, 3/8"-16
05	18301	Retaining Ring
06	20390	Shim
07	15512	Screw, Self-Tapping, 10-32 x 3/8"
08	16798	Cover, Access
09	16149	Plate, Drive Side
10	14313	Nut, Lock, Nylon, 5/16" - 18
11	16762	Knife (Kit)
12	15905	Screw, 5/16" - 18 x 1-1/2", FSHCS
13	20627	Flywheel/Chipper Disk - Complete (18HP)
	16656	Flywheel/Chipper Disk - Complete (19HP)
14	16665	Scroll, 18 HP (Bottom Discharge)
	16804	Scroll, 19 HP (Top Discharge)
15	16814	Plate, Chipper Side
16	14340	Nut, Lock, Nylon, 1/4" - 20
17	14339	Washer, Flat, 1/4" SAE
18	15539	Bolt, 5/16" - 18 x 4" HHCS
19	20212	Nut, Lock, Nylon, 10 - 24
20	20213	Screw, 10-24 x 3/4", PHMS
21	20015	Shield, Blow Back
22	14529	Bolt, Carriage, 5/16" - 18 x 3/4"
23	19905	Chipper Hopper (Kit)
24	18265	Wear Plate,
25	19566	Bolt, Carriage, 1/4" - 20 x 1"
26	15449	Bolt, 3/8" - 16 x 1-1/4" HHCS
27	18313	Tube, Scroll
28	16706	Shaft, Flywheel
29	14074	Taper Lock Bushing, Flywheel

Not Illustrated

200140 Strip, Mounting, Blow Back Shield

Schematic - Basic Machine Assembly - 18 and 19 HP



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Notes

DR[®] ROAD-TOWABLE CHIPPER



2-Year Limited Warranty Terms and Conditions

The DR[®] ROAD-TOWABLE CHIPPER 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. The engine manufacturer warrants the engine separately.

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.

Country Home Products, Inc. (home of DR[®] Power Equipment) certifies that the DR[®] ROAD-TOWABLE CHIPPER is fit for ordinary purposes for which a product of this type is used. Country Home Products, Inc. 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[®] ROAD-TOWABLE CHIPPER 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 manuals. The warranty holder is responsible for replacement of normally wearing parts such as the drive belt, knife, wear plate, bearings, flex guards, and battery. 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.

Country Home Products, Inc. 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[®] ROAD-TOWABLE CHIPPER.

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

Customer Service Hotline

Country Home Products, Inc.'s objective is to have 100% satisfied customers. For that reason, we operate a 6-day-a-week Technical Service Department for our Owners. You can access a Representative by dialing our **TOLL-FREE Hotline at 1-800-DR-OWNER (376-9637)**. The sole job of our well-trained and friendly folks is to ensure that you get any help you need in a timely fashion. They are there to answer all your questions including: (1) inquiries on any of the above warranties, (2) inquiries about replacement parts, or (3) your questions regarding service, maintenance and operation.

Our Customer Service Representatives will also be happy to answer any of your questions regarding the separate warranties on all engines. However, to obtain service, repair or replacement of any engine within the period covered by the manufacturer's limited warranty, follow the instructions and warranty information specifically pertaining to those items provided by their separate manufacturers.

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

Daily Checklist for the DR ROAD-TOWABLE CHIPPER

To help maintain your DR ROAD-TOWABLE CHIPPER for optimum performance, we recommend you follow this checklist each time you use your machine.

- [] OIL: With the machine on a level surface, check the engine oil level with the dipstick and add more if necessary (only add oil to the level indicated on the dipstick - DO NOT OVERFILL). Use SAE 30 high detergent motor oil.
- [] GAS: Fill the gas tank with clean, fresh, unleaded gasoline.
- [] ENGINE AIR COOLING SYSTEM: It is very important to keep the engine clean of debris. Remove grass and other built-up materials from the air intake screen before, during and after you chip. Regularly remove debris from the blower housing and cooling fins. A dirty engine retains heat and can cause damage to the internal engine parts.
- [] CHIPPER HOPPER: Inspect the Chipper Hopper for accumulated debris.
- [] KNIFE: Inspect the Chipper Knife for tightness, nicks and wear.
- [] BELT: Check the condition of the Drive Belts for nicks and cuts.
- [] GENERAL CONDITION: Check the general condition of the machine, e.g.; nuts, bolts, welds etc.



COUNTRY HOME PRODUCTS, Inc.

MEIGS ROAD, P.O. BOX 25, VERGENNES, VERMONT 05491

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