

Name: \_\_\_\_\_

# **Project 1.2.5 Let's Get Technical**

## **By Joshua Peters**

Tool Name - Weed Whacker



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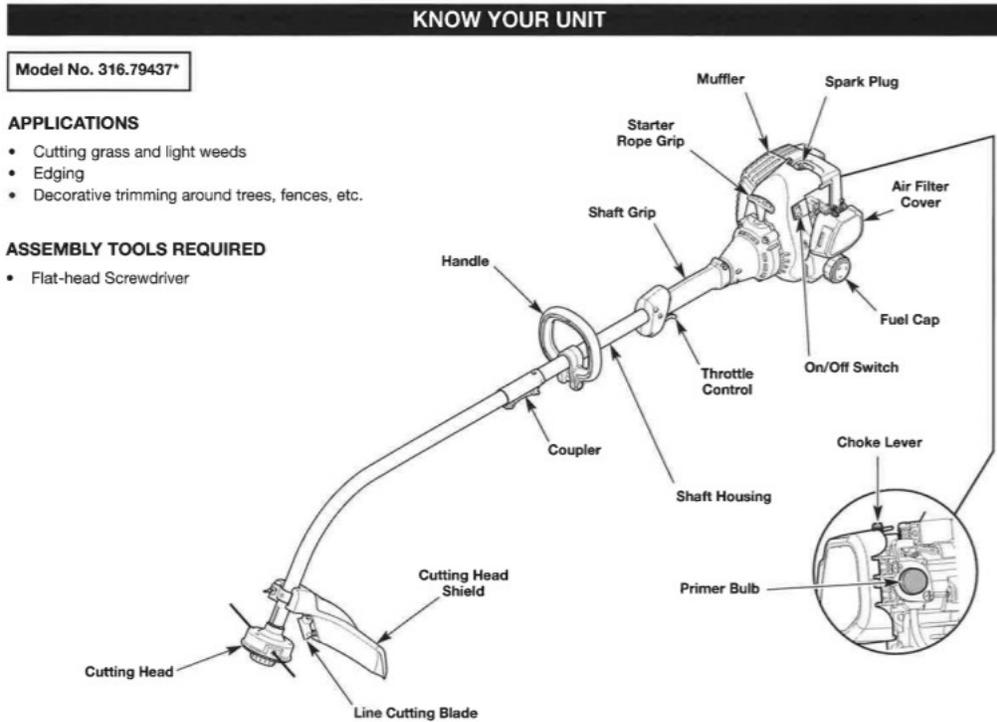
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# Purpose of Tool



The purpose of this tool is to eliminate weeds, tall grasses, and other vegetation through the use of spinning cables. It can be used for edging, trimming gardens, and general lawn care needs.

## Project 1.2.5 PPE Template

Table includes PPE (Personal Protective Equipment) needed for safe operation of the Craftsman weedwhacker. Name of the PPE and its purpose in Table 1.

**Table 1. PPE Requirements**

<b>Tool</b>	<b>PPE</b>	<b>Purpose</b>
<b>Weed Whacker</b>	Eye Protection (Safety Glasses)	To shield the eyes from flying debris.
	Close Toed Shoes	To shield feet from spinning cables used to cut weeds and debris
	Ear Protection (Plugs or Muffs)	To block harmful noise made by machine from negatively impacting hearing
	Long pants	To protects legs from flying debris
	Gloves	To protect hands from debris (do not touch point of attachment while wearing gloves due to spinning apparatus.)

## Tool Operation Template

Record the information for each step of the tool operation process.

**Name of the Tool:** \_\_\_\_\_

### PPE Requirements

1. Eye protection to shield eyes from flying debris. Safety goggles ANSI/ISEA Z87.1 rated
2. Ear protection to protect from harmful noise
3. Close toed shoes to shield feet from debris and point of operation
4. Long pants to shield legs from debris
5. Gloves (except when dealing with point of operation) to shield hands from debris

### Clothing and Grooming Requirements

Have long hair tied back, long pants and gloves should be worn at all times. Gloves should be taken off when dealing with spinning point of operation for any troubleshooting or re-stringing.

### Environment

This is a tool designed to be used in the yard or in an outdoor space. Tool should not be operated in an area that is closed off and not properly ventilated.

### Tool Attachments

Spinning head – spins cables to cut grass. There are no other attachments for this tool.

<b>Material</b>
Grass, weeds, other small vegetation
<b>Fastening</b>
Not required. Plant material is fastened to the ground.

## **Settings**

Tool has only one setting, but speed can be controlled through a trigger mechanism.

## **Power Supply**

1. Be sure that gas tank is full.
2. Look for loose wires, or leaks.
3. If present, do not operate the tool.

## **Personal Positioning**

User should be standing with point of operation out in front of them. Others should be clear of the path and not standing to the sides, as debris will be flying from point of operation in a wide radius.

## **Use**

1. To start machine, place it on the ground.
2. Then trigger must be depressed, cord pulled 5x, then the choke lever is moved to position 2.
3. Once in position 2, the cord must be pulled 3-5x again.
4. Once engine starts, choke lever is moved to position 3, and the engine should be given another 60 seconds to warm up.

## **Shutting Down**

To shut down the machine the off switch should be pressed. When turning off the machine, have the machine sitting on the ground.

## **Storage**

For storage, unit must be turned off. Make sure the engine is cool and it is stored in a clean, cool, dry place. The machine should be cleaned of all debris as well. It is also a good idea to inspect machine for an leaking or damage by checking both the motor, and the points of operation.

# CASE

## Tool Safety Checklist

**Tool Name:** \_\_\_\_\_ **Weed Whacker** \_\_\_\_\_

**Non-Mechanical Hazards**

Is there a potential noise hazard?	<input checked="" type="checkbox"/> <b>Yes</b>	<input type="checkbox"/> <b>No</b>	If yes, what PPE is needed? Ear Muffs
Is there potential hazard of harmful substances produced using the machine?	<input checked="" type="checkbox"/> <b>Yes</b>	<input type="checkbox"/> <b>No</b>	If yes, what PPE is needed? Safety Glasses

Power Source - 40:1 Gas: Oil Mixture			Power Transmission			Point of Operation		
<i>Insert Photo</i>	Yes	No	<i>Insert Photo</i>	Yes	No	<i>Insert Photo</i>	Yes	No
Are there loose conduit or fittings?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Are there any unguarded gears, sprockets, pulleys, or flywheels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is there a point of operation safeguard for the machine?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is machine properly grounded?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Are any exposed belts or chain drives?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Does it keep operator's hand, fingers, and body out of danger?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is power supply correctly fused and protected?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Are starting and stopping controls within reach of operator?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Have safeguards been tampered with or removed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Place a check by any motions or actions that are potential hazards for each component. Record the PPE that should be worn and the type of guard in place to prevent injury from that action or motion.

Action or Motion	Power Transmission		Point of Operation		
	<input type="checkbox"/>	Recommended PPE	Type of Guard in Place	Recommended PPE	Type of Guard in Place
Rotating	<input checked="" type="checkbox"/>	Safety Goggles, Pants, closed-toed shoes, gloves	Cover	<input checked="" type="checkbox"/>	Safety Goggles, Pants, closed-toed shoes Shield for debris (incomplete)
In-Running Nip	<input type="checkbox"/>			<input type="checkbox"/>	

Points						
Reciprocating	<input type="checkbox"/>			<input type="checkbox"/>		
Transversing	<input type="checkbox"/>			<input type="checkbox"/>		
Cutting	<input type="checkbox"/>			<input checked="" type="checkbox"/>	Safety Goggles, Pants, closed-toed shoes	Shield for debris (incomplete)
Punching	<input type="checkbox"/>			<input type="checkbox"/>		
Shearing	<input type="checkbox"/>			<input type="checkbox"/>		
Bending	<input type="checkbox"/>			<input type="checkbox"/>		

What are the recommended changes to the components before using the tool? None

What hazards should the operator be aware of before using the tool? Spinning cables for cutting vegetation. Operator should stand behind equipment and use caution whilst operating. PPE should be worn at all times.

## Materials and Fluids

### Wood Materials:

None

### Metal Materials:

Engine, handle, spindle for cables, and fasteners for handle and shield are metal.

### Plastic Materials:

Cover for engine, fuel tank, choke handle, primer bulb, housing for cables, shield for spinning blades, and trigger are all made of plastic.

### Fluids:

Gasoline and oil

\*Materials shaped by this tool are vegetation. Can be used for decorative usage or to clean up lawn appearance.

## Cutting Attachments and Fasteners

## Spinning Head

The only attachment for this particular tool is a spinning head, which is used to cut down light vegetation such as grass, weeds, and other small plants.

## Simple Machines and

## Energy

### **Energy**

Potential Energy – the fuel is potential chemical energy that, through combustion, is used to drive the shaft and wheel at the end of the mechanism.

Kinetic Energy – Once potential energy has been converted to kinetic, the driveshaft rotates, which in turn spins the head at the end, and they cables rotate to cut the grass.

### **Simple Machines**

Wheel and Axle – The mechanism that drives the spinning head from the motor, to cut the grass is a wheel and axle. As the axle rotates, so

does the wheel at the end, causing the cables to whip around at tremendous speed and cut the vegetation.

## Maintenance and Troubleshooting

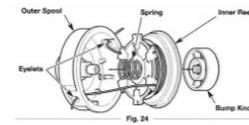
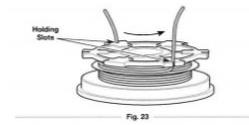
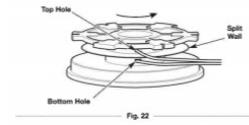
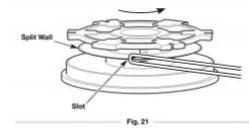
### **Maintenance Schedule**

Every use - Be sure to clean weedwhacker of any grass and debris. If storing, drain fuel.

10-hour maintenance - Clean and oil air-filter, check if needs replaced.

25-hour maintenance - Check the condition of the spark plug

As needed: Replace the cables based of images below.



Troubleshooting:

## TROUBLESHOOTING

PROBLEM	SOLUTION
<b>THE ENGINE WILL NOT START</b>	
The fuel tank is empty	Fill the fuel tank with properly-mixed fuel
The primer bulb was not pressed enough	Press the primer bulb 10 times or until fuel is visible
The engine is flooded	Move the choke lever to Position 3, squeeze the throttle control and pull the starter rope until the engine starts
The fuel is old (over 30 days) and/or improperly mixed	Drain the fuel tank and add fresh, properly-mixed fuel
The spark plug is fouled	Replace the spark plug
<b>THE ENGINE WILL NOT IDLE</b>	
The air filter is dirty	Clean or replace the air filter
The fuel is old (over 30 days) and/or improperly mixed	Drain the fuel tank and add fresh, properly-mixed fuel
The idle speed is incorrect	Adjust the idle speed
<b>THE ENGINE WILL NOT ACCELERATE</b>	
The fuel is old (over 30 days) and/or improperly mixed	Drain the fuel tank and add fresh, properly-mixed fuel
The cutting head is bound with grass	Stop the engine and clean the cutting head
The air filter is dirty	Clean or replace the air filter
<b>THE ENGINE LACKS POWER OR STALLS</b>	
The fuel is old (over 30 days) and/or improperly mixed	Drain the fuel tank and add fresh, properly-mixed fuel
The air filter is dirty	Clean or replace the air filter
The spark plug is fouled	Replace the spark plug
<b>THE CUTTING HEAD WILL NOT ADVANCE LINE</b>	
The cutting head is bound with grass	Stop the engine and clean the cutting head
The cutting head is out of line	Refill the cutting head with new line
The inner reel is bound up	Rewind the line
The cutting head is dirty	Clean the inner reel and outer spool
The line is welded	Open the cutting head and remove the welded section
The line is twisted	Rewind the line
Not enough line is extended	Stop the unit, push the bump knob and pull the line until 4 inches (102 mm) is outside of the cutting head
<b>THE CUTTING LINE ADVANCES UNCONTROLLABLY</b>	
There is oil, cleaner or lubricant in the cutting head	Clean and thoroughly dry the cutting head

## References

Owner's Manual. (n.d.). Retrieved from

<https://www.sears.com/craftsman-25cc-2-cycle-straight-shaft-weedwacker-gas/p-07179447000P?plpSellerId=Sears&prdNo=1&blockNo=1&blockType=G>