WOOD CHIPPER

Model No: 601C

USER MANUAL



Please read these instructions carefully prior to use and keep for future reference

FOR DOMESTIC OUTDOOR USE ONLY

This manual is used for multiple models of wood chippers. Parts and features may appear different or be missing from your model.

Chipper/Shredder Specifications

Max Chipping Capacity	70 - 89mm * *(See below)*
Chipper Fineness	Granulated Detrital
Functions	Shredding leaves, benches, straw, farming feed
Max Blade Speed	2400r/min
Engine Type	OHV 4-Stroke
Fuel Volume	6.5L
Oil Volume	1.1L
Starting System	Recoil & Electrical Start
Fuel Type	93# Clean Unleaded Petrol

NOTE:

1. Maximum chipping capacity noted above is derived from testing the unit with 90% of moisture content of bamboo and 80% of moisture content of paulownia. Due to the variety of available raw materials which may materially differ in hardness, tenacity and moisture content, the actual maximum chipping capacity may be different from the above data. Consequently, the recommended maximum chipping capacity is 70MM. Using this product with materials exceeding the 70mm capacity may damage the product and void warranty.
2. Above maximum blade speed is tested under the condition that the engine maximum output speed is 3600 rpm.

WARNING SYMBOLS AND DEFINITIONS	
⚠	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages which include this symbol to avoid possible injury or death.
⚠ DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
AWARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
A CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE CAUTION	Addresses practices not related to personal injury.

Symbol Definitions

Symbol	property or Statement
RpM	Revolutions Per Minute
Hp	Horsepower
	WARNING marking concerning Risk of Eye Injury. Wear ANSI-approved safety goggles with side shields.
	Read the manual before set-up and/or use.
	WARNING marking concerning Risk of Hearing Loss. Wear hearing protection.

Symbol	property or Statement
	WARNING marking concerning Risk of Respiratory Injury. Operate engine OUTSIDE and far away from windows, doors, and vents.
	WARNING marking concerning Risk of Fire while handling fuel. Do not smoke while handling fuel.
	WARNING marking concerning Risk of Fire. Do not refuel while operating. Keep flammable objects away from engine.

IMPORTANT SAFETYINSTRUCTIONS



WARNING! Read all instructions.
Failure to follow all instructions listed may result in fire, serious injury and/or DEATH.
The warnings and precautions discussed in this manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be exercised by the operator.

SAVE THESE INSTRUCTIONS

Set up precautions

1. Petrol fuel and fumes are flammable, and potentially explosive. Use proper fuel storage and handling procedures. Do not store fuel or other flammable materials nearby.
2. Have multiple ABC class fire extinguishers nearby.
3. Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.
4. Set up and use only on a flat, level, well-ventilated surface.
5. Wear ANSI-approved safety goggles, heavy-duty work gloves, and dust mask/respirator during setup.
6. Use only lubricants and fuel recommended in the Specifications chart of this manual.

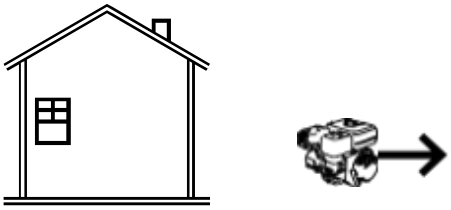
Operating precautions

1. 

CARBON MONOXIDEHAZARD
Using an engine indoors
CAN KILL YOU IN MINUTES.
Engine exhaust contains carbon monoxide. This is a poison you cannot see or smell.



NEVER use inside a home or garage, EVEN IF doors and windows are open.



Only use **OUTSIDE** and far away from windows, doors, and vents.

2. Keep children away from the equipment, especially while it is operating.
3. Locate the Chipper/ Shredder on a flat, level, sturdy surface capable of supporting the weight of the Chipper/Shredder and any additional tools and equipment.
4. Be extremely cautious of the rotating Blades in the Chipper/Shredder. Never allow your hands, fingers, or any other part of your body to enter the Chipper Chute or Hopper.
5. Never place your hands, fingers, feet, or any other part of your body close to the Discharge Opening while the Chipper/Shredder is in operation.
6. Do not look into the Hopper, Chipper Chute or Discharge Opening when the machine is running.
7. Do not allow metal, stone, glass, or other foreign objects to be fed into the Chipper/Shredder. Use a stick to push the tree limbs, leaves, etc. into the feed Hopper.
8. Do not attempt to use the machine on a slope or slick surface.
9. Feed material slowly into the machine.
10. If the machine becomes clogged, immediately turn the Engine off. Wait until the Chipper/Shredder comes to a complete stop. Unplug the Spark Plug Wire from the Spark Plug then clear the machine of the clogged material.
11. Keep all spectators at least six feet from the Engine during operation.
12. Fire Hazard! Do not fill fuel tank while engine is running. Do not operate if petrol has been spilled. Clean spilled petrol before starting engine. Do not operate near pilot light or open flame.
13. Do not touch engine during use. Let engine cool down after use.
14. Never store fuel or other flammable materials near the engine.
15. Only use a suitable means of transport and lifting devices with sufficient weight bearing capacity when transporting the equipment.
16. Secure the equipment on transport vehicles to prevent it from rolling, slipping, and tilting.
17. Industrial applications must follow OH&S requirements .
18. Do not leave the equipment unattended when it is running. Turn off the equipment (and remove safety keys, if available) before leaving the work area.
19. The equipment can produce high noise levels. Prolonged exposure to noise levels above 85 dBA is hazardous to hearing.

    Wear ear protection when operating the equipment or when working nearby while it is operating.
20. Wear ANSI-approved safety glasses and hearing protection during use.
21. People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to a heart pacemaker could cause pacemaker interference or pace maker failure.

    Caution is necessary when near the engine's magneto or recoil starter.
22. Use only accessories that are recommended by Kmate Pty Ltd for your model.
    Accessories that may be suitable for one piece of equipment may become hazardous when used on another piece of equipment.
23. Do not operate in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Petrol-powered engines may ignite the dust or fumes.
24. Stay alert, watch what you are doing and use common sense when operating this piece of equipment. Do not use while tired or under the influence of drugs, alcohol or medication.
25. Do not overreach. Keep proper footing and balance at all times. This enables better control of the equipment in unexpected situations.

26 . Use this equipment with both hands only. Using equipment with only one hand can easily result in loss of control.

27 . Dress properly. Do not wear loose clothing or jewelry. Keep hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.

28. Parts , especially exhaust system components, get very hot during use. Stay clear of hot parts.

29. Do not cover the equipment during operation.

30 . Keep the equipment, engine, and surrounding area clean at all times.

31 . Do not smoke, or allow sparks, flames, or other sources of ignition around the equipment, especially when refueling.

32 . Use the equipment, accessories, etc. , in accordance with these instructions and in the manner intended for the particular type of equipment, taking into account the working conditions and the work to be performed.

Use of the equipment for operations different from those intended could result in a hazardous situation .

35 . Do not operate the equipment with known leaks in the engine's fuel system .

36 . When spills of fuel or oil occur, they must be cleaned up immediately. Dispose of fluids and cleaning materials as per any local, state, or federal codes and regulations. Store oil rags in a bottom-ventilated , covered , metal container.

37. Keep hands and feet away from moving parts. Do not reach over or across equipment while operating.

38. Before use, check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the equipment's operation.

If damaged, have the equipment serviced before using. Many accidents are caused by poorly maintained equipment.

39. Use the correct equipment for the application. Do not modify, disassemble or repair the equipment without authorisation from Kmate Pty Ltd and do not use the equipment for a purpose for which it is not intended as it will void warranty

Service precautions

1. Before service, maintenance, or cleaning:

a . Turn the engine switch to its " OFF" position.

b. Allow the engine to completely cool.

c . Then, remove the spark plug cap from the spark plug.

2 . Keep all safety guards in place and in proper working order. Safety guards include muffler, air cleaner, mechanical guards, and heat shields , among other guards.

3 . Do not alter or adjust any part of the equipment or its engine that is sealed by the manufacturer or distributor. Only a qualified service technician may adjust parts that may increase or decrease governed engine speed.

4. Wear ANSI-approved safety goggles , heavy-duty work gloves,and dust mask/respirator during service.

5. Maintain labels and nameplates on the equipment.

These carry important information. If unreadable or missing, contact Kmate Pty Ltd for a replacement.

6. Have the equipment serviced by a qualified repair person using only identical replacement parts.

This will ensure that the safety of the equipment is maintained. Do not attempt any service or maintenance procedures not explained in this manual or any procedures that you are uncertain about your ability to perform safely or correctly.

7. Store equipment out of reach of children.

8. Follow scheduled engine and equipment maintenance.

Refueling:

1 . Do not refill the fuel tank while the engine is running or hot.

2 . Do not smoke, or allow sparks, flames, or other sources of ignition around the equipment, especially when refueling.

3. Do not fill fuel tank to the top.
Leave a little room for the fuel to expand as needed.

TO PREVENT FUEL LEAKAGE AND FIRE HAZARD, do not fill fuel above the bottom of fuel strainer.

4 . Refuel in a well-ventilated area only.

5. Wipe up any spilled fuel and allow excess to evaporate before starting engine.

To prevent FIRE, do not start the engine while the smell of fuel hangs in the air.

SAVE THESE INSTRUCTIONS.

Set Up

Read the ENTIRE IMPORTANT SAFETY INFORMATION section at the beginning of this manual including all text under subheadings therein before setting up or using this product.

A WARNING

TO PREVENT SERIOUS INJURY: Operate only with proper spark arrestor installed.

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements and use of this product during relevant fire rated seasons.

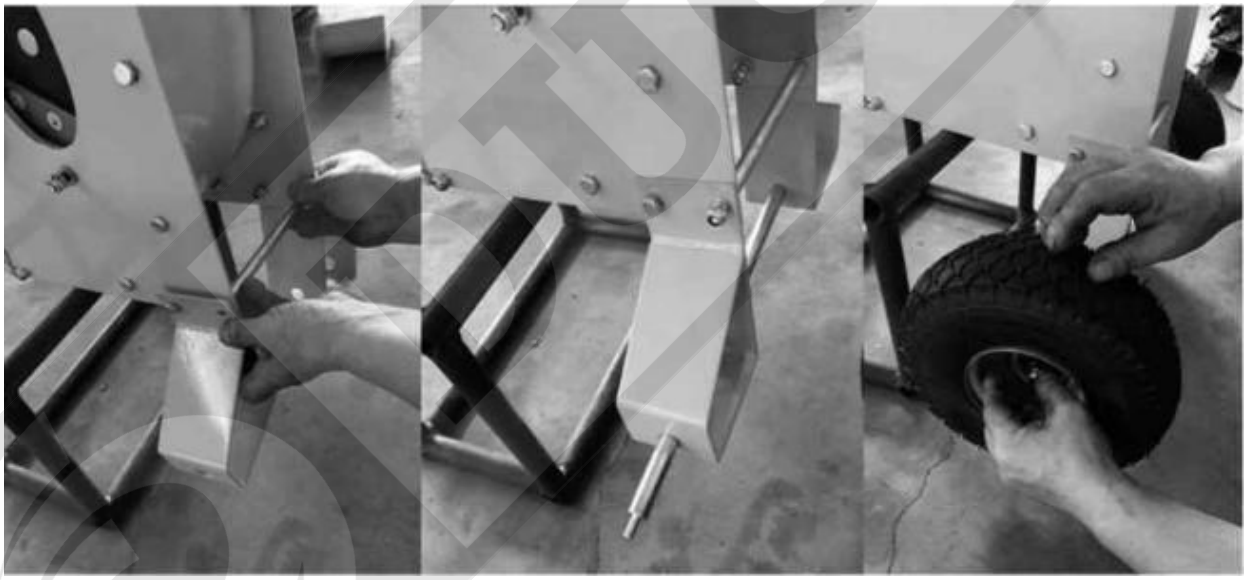
TO PREVENT SERIOUS INJURY FROM ACCIDENTAL STARTING: Turn the power switch on the equipment to its "OFF" position, wait for the engine to cool, and unplug the spark plug wire(s) before assembling or making any adjustments to the equipment.

At high altitudes, the engine's carburetor, governor (if so equipped), and any other parts that control the fuel-air ratio will need to be adjusted by a qualified mechanic to allow efficient high-altitude use and to prevent damage to the engine and any other devices used with this product.

Note: For additional information regarding the parts listed in the following pages, refer to the Assembly Diagrams near the end of this manual.

Assembly

Step 1. -Wheel axle and wheels.



Step 2. - Support feet and outlet hopper cover.

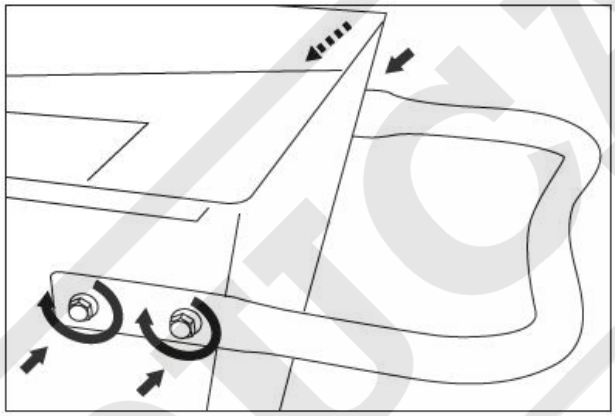


Step 3. -Side feed hopper





Step 4. -Attached transport handle.



Step 5. - Attached the Battery support and Battery.



Warning:Before start the wood chipper, please check the battery negative and positive line is on the correct position.

High Altitude Operation Above 3000 feet

⚠WARNING! TO PREVENT SERIOUS INJURY FROM FIRE:
Follow operation instructions in a well-ventilated area away from ignition sources.
If the engine is hot from use, shut the engine off and wait for it to cool before proceeding. Do not smoke near unit.
NOTICE: Warranty void if necessary adjustments are not made for high altitude use.

At high altitudes, the engine's carburetor, governor (if so equipped), and any other parts that control the fuel-air ratio will need to be adjusted by a qualified mechanic to allow efficient high-altitude use and to prevent damage to the engine and any other devices used with this product. The fuel system on this engine may be influenced by operation at higher altitudes. Proper operation can be ensured by installing an altitude kit at altitudes higher than 3000 ft. above sea level. At elevations above 8000 ft the engine may experience decreased performance, even with the proper main jet. Operating this engine without the proper altitude kit installed may increase the engine's emissions and decrease fuel economy and performance .The kit should be installed by a qualified mechanic.

1. Turn off theengine.
2. Close the fuel valve.
3. Place a bowl under the fuel cup to catch any spilled fuel.

CAUTION!Carburetor bowl may have gas in it which will leak upon removing the bolt.

4. Unthread the bolt holding the fuel cup.
5. Remove the bolt, Bolt Seal, fuel cup, Fuel Cup Seal and Main Jet from the body of the carburetor assembly. A carburetor screwdriver (not included) is needed to remove and install the Main Jet.

Note: The mixing tube is held in place by the Main Jet and might fall out when it is removed.
If it falls out, replace it in the same orientation before replacing the Main Jet.

6. Replace the Main Jet with the replacement Main Jet needed for your altitude range (part 1a or2a) .

Note: The Fuel Cup Seal and Bolt Seal may be damaged during removal and should be replaced with the new ones from the kit.

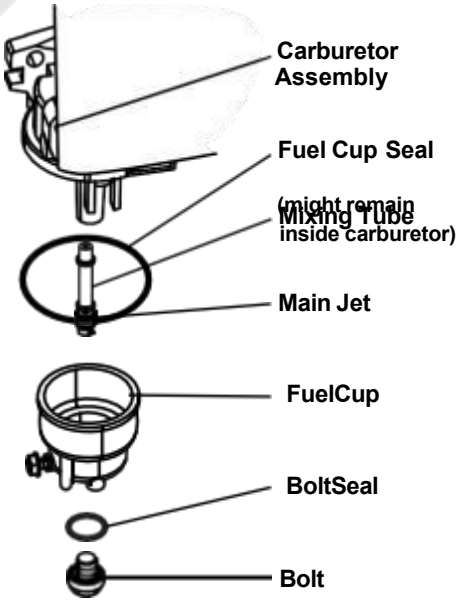
7. Replace the Fuel Cup Seal (4a) , fuel cup, Bolt Seal (3a) , and bolt. Tighten in place. **NOTICE:**Do not cross thread bolt when tightening.

Finger tighten first and then use a wrench to make sure the bolt is properly threaded.

8. Wipe up any spilled fuel and allow excess to evaporate before starting engine. To prevent FIRE, do not start the engine while the smell of fuel hangs in the air.

High Altitude Kit parts List - A (Optional)

part	Description	Qty
1a	Main Jet 3000-6000 ft.	1
2a	Main Jet 6000-8000 ft.	1
3a	Bolt Seal	1
4a	Fuel Cup Seal	1



Read the <u>ENTIRE</u> IMPORTANT SAFETY INFORMATION section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

Pre-Start Checks

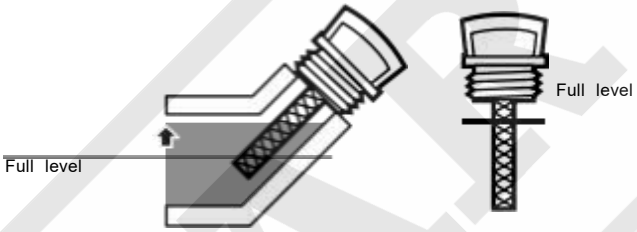
Inspect engine and equipment looking for damaged, loose, and missing parts before setting up and starting the chipper. If any problems are found, do not use equipment until fixed properly by an authorised technician.

<u>Checking and Filling Engine Oil</u>

<u>NOTICE:</u> Product will be damaged and Your Warranty will be VOID if the engine's crankcase is not properly filled with oil before each use. Before each use, check the oil level.

Engine **will not start with low or no engineoil.**

1. Make sure the engine is stopped and is level.
2. Close the Fuel Valve.
3. Clean the top of the Dipstick and the area aroundit. Remove the Dipstick by turning it counterclockwise, and wipe it off with a clean, lint free rag.



4. Reinsert the Dipstick without threading it in and remove it to check the oil level. The oil level should be up to the full level as shown above.
5. If the oil level is at or below the low mark add the appropriate type of oil until the oil level is at the proper level. SAE 10W-30 oil is recommended for general use. (The SAE Viscosity Grade chart on page 15 in the Maintenance section shows other viscosities to use in different average temperatures.)
6. Thread the dipstick back in clockwise.

<u>NOTICE:</u> Do not run the engine with too little oil. Engine will shut off if engine oil level is too low and may damage product and void warranty.

Checking and Filling Fuel



⚠WARNING! TO PREVENT SERIOUS INJURY FROM FIRE:
Fill the fuel tank in a well-ventilated area away from ignition sources. If the engine is hot from use, shut the engine off and wait for it to cool before adding fuel. Do not smoke.

1. Clean the Fuel Cap and the area around it.
2. Unscrew and remove the Fuel Cap.
3. Remove the Strainer and remove any dirt and debris. Then replace the Strainer.

Note: Do not use petrol containing more than 10% ethanol (E10). Do not use E85 ethanol. Add fuel stabilizer to the petrol or the product may sustain damage and VOID Warranty.

Note: Do not use petrol that has been stored in a metal fuel container or a dirty fuel container. It can cause particles to enter the carburetor, affecting engine performance and/or causing damage.

4. If needed, fill the Fuel Tank to about 1 inch under the fill neck of the Fuel Tank with 87 octane or higher unleaded petrol that has been treated with a fuel stabilizer additive. Follow fuel stabilizer manufacturer's recommendations for use.
5. Then replace the Fuel Cap.
6. Wipe up any spilled fuel and allow excess to evaporate before starting engine.
   To prevent FIRE, do not start the engine while the smell of fuel hangs in the air.

Starting the Engine

Before Starting the Engine



Before starting the engine:

a. Inspect the equipment and engine.

b. Fill the engine with the proper amount and type of both stabilizer-treated unleaded petrol and oil.

c. Clean debris from discharge area—engine will not start if discharge area is jammed.

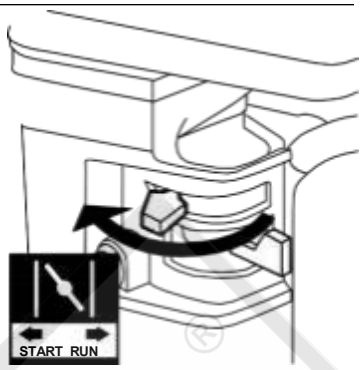
d. Engage the Wheel Locks on both wheels to prevent Chipper/Shredder movement during use.

Manual Start & Electrical Start

1. To start a cold engine, move the Choke to the CHOKE position.

To restart a warm engine, leave the Choke in the RUN position.

1



2. Open the Fuel

2



3. Slide the Throttle or Speed Control Lever to 1/3 away from the SLOW position (the "turtle").

Note: Some models have a Speed Control Lever located elsewhere on the prod which functions the same as the Throttle. Use the Speed Control Lever in place of the Throttle when the model is so equipped.

3



4. Turn the key to ON position.

4



Note: If engine does not start, check engine oil level.

Engine will not start with low or no engine oil.

5. Grip the Starter Handle of the Engine loosely and pull it slowly several times to allow the petrol to flow into the Engine's carburetor. Then pull the Starter Handle gently until resistance is felt. Allow Cable to retract fully and then pull it quickly. Repeat until the engine starts.

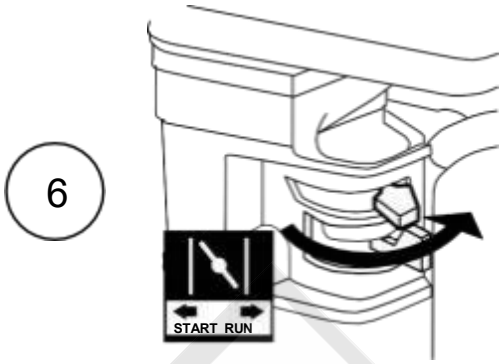
5



Note: Do not let the Starter Handle snap back against the engine.

Hold it as it recoils so it doesn't hit the engine.

6. Allow the Engine to run for several seconds.
Then, if the Choke lever is in the CHOKE position,
move the Choke Lever very slowly to its RUN position.



Note: Moving the Choke Lever too fast could stall the engine.

IMPORTANT: Allow the engine to run at no load for five minutes after each start-up so that the engine can stabilize.

7. Adjust the Throttle as needed.

Break-in period:

a. Breaking-in the engine will help to ensure proper equipment and engine operation.

b. The operational **break-in period will last about 3 hours of use**. During this period:

- **Do not apply a heavy load to the equipment during the break-in period**.
- **Do not operate the engine at its maximum speed during the break-in period.**

c. The maintenance break-in period will last about 20 hours of use.

- **Change the engine oil after 20 hours of first use**

Under normal operating conditions subsequent maintenance follows the schedule explained in the MAINTENANCE section.

Chipping and Shredding

1. Chipping Branches

A. Stand to the side of the Hopper, ensuring you have a stable stance and firm footing.

B. When placing long branches into the side hopper, remove twigs and smaller branches so that you are feeding a thin, straight piece into the machine.

C. Place branches “thick-end-first”. Allow the machine’s blades to take the branch from you. You will feel the blades pull the branch from you. (see the picture)



D. When finished chipping, turn OFF the machine, allow all moving parts to come to a complete stop, and disconnect the spark plug wire before moving the machine, empty the bag, unclogging the inlets or outlets, filling the gas tank, or performing maintenance and repairs.

Chipping Tips:

- DO NOT feed material in excess of the diameter indicated on the side hopper cover into the side hopper. Large branches will cause the motor to stall.
- Chipping wood when it is green is easier on the machine. The blades will stay sharper longer.
- The chipper will work best if the blades are sharp. Rotate, sharpen, or replace the blades as soon as chipper performance begins to deteriorate.

2. Shredding Branches, Twigs & Leaves

A. Gather the brush, twigs or leaves and slowly place them into the Feed Hopper. DO NOT try to stuff too much material in at one time or the machine will jam.
B. Do not attempt to force the materials in. The machine is designed to quickly and safely take the branches from you.
C. If necessary, use a thick branch to push materials into the Feed Hopper, as seen in following picture. Do not place your hands in the Feed Hopper or Discharge Chute.



D. Turn OFF the machine, allow all moving parts to completely stop, and disconnected the spark plug wire before moving the machine, emptying the bag, unclogging the inlets and outlets, filling the gas tank, or performing maintenance and repairs.

Shredding Tips:

- Feed material into the chipper/shredder slowly, if the motor begins to bog down, you are feeding too fast.
- Roots and dirty material will dull or damage the blades.
- Remove the chips often. Allowing the chips to pile up to the outlet will cause the outlet to clog.
- Avoid shredding wet leaves or brush to reduce clogging. If you must shred wet material, alternate wet and dry material.
- For the Feed Hopper, the Max. Branch Diameter is 10mm, please take care.

Note: When you are not actively shredding or chipping, move the Throttle lever to the lowest possible setting. If you are moving away from the machine, and the machine is to became unsupervised, the machine must be switched off.

Stopping the Engine



1. To stop the engine in an emergency, turn the Key to OFF position.

2. Under normal conditions, use the following procedure:
   a. Slide the Throttle or Speed Control Lever to SLOW (the "turtle"). b. Turn the Engine Switch off.
   c. Close the Fuel Valve.



Cleaning and Storing

1. After every use and before storing, clean debris out of machine:

a. Remove spark plug cap from spark plug.

b. Allow engine to cool completely.

c. Remove the Feed Hopper and Discharge Chute.

d. Clear all debris out of the Main Housing and discharge chute.

e. Replace the Feed Hopper/Discharge Chute and secure in place using the Washers and Lock Nuts.

2. Store the Chipper/Shredder in a dry indoor location that does not allow access by children.

WARNING

TO PREVENT SERIOUS INJURY FROM ACCIDENTAL STARTING:

Turn the power Switch of the equipment to its "OFF" position, wait for the engine to cool, and disconnect the spark plug cap before performing any inspection, maintenance, or cleaning procedures.

TO PREVENT SERIOUS INJURY FROM EQUIPMENT FAILURE:

Do not use damaged equipment. If abnormal noise, vibration, or excess smoking occurs, have the problem corrected by an authorised technician before further use.

Follow all service instructions in this manual. The engine may fail critically if not serviced properly.



Many maintenance procedures, including any not detailed in this manual, will need to be performed by a qualified technician for safety. If you have any doubts about your ability to safely service the equipment or engine, have a qualified technician service the equipment instead.

Cleaning, Maintenance, and Lubrication Schedule

Note: This maintenance schedule is intended solely as a general guide. If performance decreases or if equipment operates unusually, check systems immediately. The maintenance needs of each piece of equipment will differ depending on factors such as duty cycle, temperature, air quality, fuel quality, and other factors.

Note: The following procedures are in addition to the regular checks and maintenance explained as part of the regular operation of the engine and equipment.

Procedure	Before Each Use	After Each Use	Every 5 hr. of use	Monthly or every 20 hr. of use	Every 25 hr. of use or as needed	Every 3 mo.or 50 hr. of use	Every 6 mo.or 100 hr. of use	Yearly or every 300 hr. of use	Every 2 Years
Brush off outside of engine	✓			✓		✓	✓	✓	✓
Check engine oil level	✓			✓		✓	✓	✓	✓
Clean debris from chipper/shredder		✓		✓		✓	✓	✓	✓
Check for loose hardware			✓				✓	✓	
Change engine oil				✓			✓	✓	✓
Inspect/replace chipping blades					✓**				
Check air cleaner						✓	✓	✓	✓
Clean air filter						✓*	✓	✓	✓
Check sediment cup							✓	✓	✓
Check and clean spark plug							✓	✓	✓
Inspect chipper chute, hopper, and discharge port							✓	✓	
Clean debris from impeller cooling fins							✓**		
1. Check/adjust idle speed 2. Check/adjust valve clearance 3. Clean fuel tank, strainer and carburetor 4. Clean carbon build-up from combustion chamber								✓**	✓**
Replace fuel line if necessary									✓**

*Service more frequently when used in dusty areas.

**These items should be serviced by a qualified technician.

Checking and Filling Fuel



⚠WARNING! TO PREVENT SERIOUS INJURY FROM FIRE:
Fill the fuel tank in a well-ventilated area away from ignition sources. If the engine is hot from use, shut the engine off and wait for it to cool before adding fuel. Do not smoke.

1. Clean the Fuel Cap and the area around it.
2. Unscrew and remove the Fuel Cap.
3. Remove the Strainer and remove any dirt and debris. Then replace the Strainer.

Note: Do not use petrol containing more than 10% ethanol (E10). Do not use E85 ethanol. Add fuel stabilizer to the petrol or the Warranty is VOID.

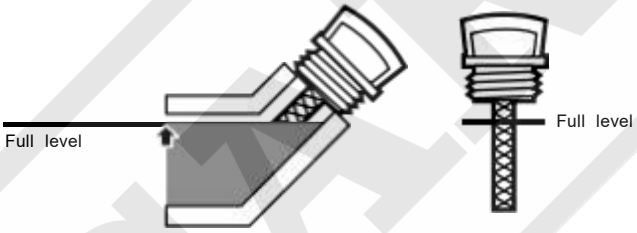
Note: Do not use petrol that has been stored in a metal fuel container or a dirty fuel container. It can cause particles to enter the carburetor, affecting engine performance and/or causing damage.

4. If needed, fill the Fuel Tank to about 1 inch under the fill neck of the Fuel Tank with 87 octane or higher unleaded petrol that has been treated with a fuel stabilizer additive. Follow fuel stabilizer manufacturer's recommendations for use.
5. Then replace the Fuel Cap.
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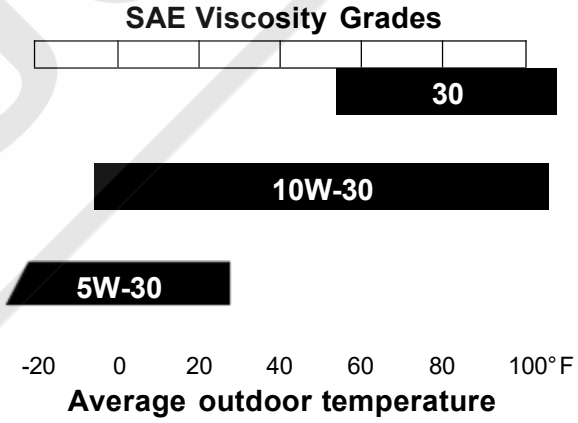
Engine Oil Change

⚠ **CAUTION!**Oil is very hot during operation and can cause burns. Wait for engine to cool before changing oil.

1. Make sure the engine is stopped and is level.
2. Close the Fuel Valve.
3. Place a drain pan (not included) underneath the crankcase's drain plug.
4. Remove the drain plug and, if possible, tilt the crankcase slightly to help drain the oil out. Recycle used oil.
5. Replace the drain plug and tighten it.
6. Clean the top of the Dipstick and the area around it. Remove the Dipstick by turning it counterclockwise, and wipe it off with a clean, lint free rag.



7. Add the appropriate type of oil until the oil level is at the full level. SAE 10W-30 oil is recommended for general use.
   The SAE Viscosity Grade chart shows other viscosities to use in different average temperatures.

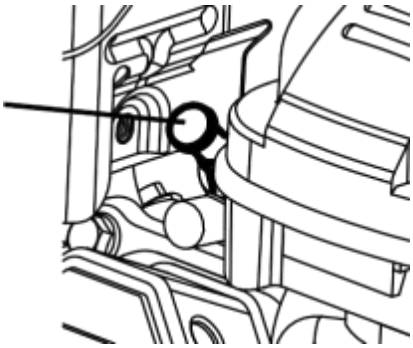


8. Thread the dipstick back in clockwise.

NOTICE: Do not run the engine with too little oil. Engine will not start with low or no engine oil and may damage the engine

Spark plug Maintenance

Spark plug Cap



1. Disconnect spark plug cap from end of plug. Clean out debris from around spark plug.
2. Using a spark plug wrench, remove the spark plug.
3. Inspect the spark plug:
   If the electrode is oily, clean it using a clean, dry rag. If the electrode has deposits on it, polish it using emery paper. If the white insulator is cracked or chipped, the spark plug needs to be replaced.

Recommended Spark plugs	
NGK®	BP-6ES
NHSP® / TORCH®	F6TC

NOTICE: Using an incorrect spark plug may damage the engine.

4. When installing a new spark plug, adjust the plug's gap to the specification on the Specifications chart. Do not pry against the electrode, the spark plug can be damaged.
5. Install the new spark plug or the cleaned spark plug into the engine.
   - **Gasket-style**:
     Finger-tighten until the gasket contacts the cylinder head,
     then tighten about 1/2-2/3 turn more.
   - **Non-gasket-style**:
     Finger-tighten until the plug contacts the cylinder head,
     then tighten about 1/ 16 turn more. **NOTICE:** Tighten the spark plug properly. **If loose**, the spark plug will cause the engine to overheat.
     If overtightened, the threads in the engine block will be damaged.
6. Apply dielectric spark plug boot protector (not included) to the end of the spark plug and reattach the wire securely.

Air Filter Maintenance

1. Remove the Air Cleaner Cover and the air filter(s) and check for dirt. Clean as described below.
2. **Cleaning:**
   - For paper filters:
     To prevent injury from dust and debris, wear Australian safety standard approved safety goggles and dust mask/respirator, and heavy-duty work gloves. In a well-ventilated area away from bystanders, use pressurized air to blow dust out of the filter. If this does not get the filter clean, replace it.
   - For foam filters:
     Wash the filter in warm water and mild detergent several times. Rinse. Squeeze out excess water and allow it to dry completely. Soak the filter in lightweight oil briefly, then squeeze out the excess oil.
3. Install the cleaned filter(s). Secure the Air Cleaner Cover before use.

Chipper Blade Inspection

Sharpen or replace the blades as soon as the chipping performance begins to deteriorate, or if you notice gaps, chips or cracks.

To preform this procedure:

1. Turn off the machine, allow all moving parts to come to a complete stop, and disconnect the spark plug wire!
2. Remove the side cover plate (83) to expose the blades (18). (The side cover plate is inserted to upper, so just pull down.)



3. Remove one blade, rotate the impeller, and remove the second blade.
4. Have the original blades professionally sharpened, or order a replacement set, then re-install the blades.
5. Replace the side cover plate and re-attached the spark plug wire.

Belt Inspection

Replace or tighten the V-belt you notice the motor running and the chipper blades are not spinning.

1. Turn off the machine, allow all moving parts to come to a complete stop, and disconnect the spark plug wire!

2. Remove the V-belt cover (28), roll the belt (55) off from the pulleys and install the new belt.
3. Replace the V-belt cover and re-attached the spark plug wire.

Long-Term Storage

When the equipment is to remain idle for longer than 20 days, prepare the engine for storage as follows:

1. **CLEANING**:

   Wait for engine to cool, then clean engine with dry cloth. **NOTICE: Do not clean using water.** The water will gradually enter the engine and cause rust damage. Apply a thin coat of rust preventive oil to all metal parts.

2. **FUEL:**

   To protect the fuel tank during storage, fill the tank with petrol that has been treated with a fuel stabilizer additive. Follow fuel stabilizer manufacturer's recommendations for use.



⚠WARNING! TO PREVENT SERIOUS INJURY FROM FIRE:
Fill tank in a well-ventilated area away from ignition sources. If the engine is hot from use, shut the engine off and wait for it to cool before adding fuel. Do not smoke.

3. **LUBRICATION:**

   a. Change engine oil.

   b. Clean out area around spark plug. Remove spark plug and pour one tablespoon of engine oil into cylinder through spark plug hole.

   c. Replace spark plug, but leave spark plug cap disconnected.

   d. Pull Starter Handle to distribute oil in cylinder. Stop after one or two revolutions when you feel the piston start the compression stroke (when you start to feel resistance).

4. **STORAGE AREA:**

Cover and store in a dry, level, well-ventilated area out of reach of children. Storage area should also be away from ignition sources, such as water heaters, clothes dryers, and furnaces.
NOTICE: During extended storage periods the Engine must be started every 3 months and allowed to run for 15–20minutes or the Warranty is VOID.

5. **AFTER STORAGE:**

Before starting the engine after storage, keep in mind that untreated petrol will deteriorate quickly. Drain the fuel tank and change to fresh fuel if untreated petrol has been sitting for a month, if treated petrol has been sitting beyond the fuel stabilizer's recommended time period, or if the engine does not start.

Troubleshooting

Problem	Possible Causes	Probable Solutions
Engine will not start	FUEL RELATED: 1. No fuel in tank or fuel valve closed. 2. Choke not in START position, cold engine. 3. Petrol with more than 10% ethanol used. (E15, E20, E85,etc.) 4. Low quality or deteriorated, old petrol. 5. Carburetor not primed. 6. Dirty fuel passage ways. 7. Carburetor needle stuck. Fuel can be smelled in the air. 8. Too much fuel in chamber. This can be caused by the carburetor needle sticking. 9. Clogged Fuel Filter.	FUEL RELATED: 1. Fill fuel tank with fresh 87+ octane stabilizer-treated unleaded petrol and open fuel valve. **Do not use petrol with more than 10% ethanol (E15, E20, E85, etc.).** 2. Move Choke to START position. 3. Clean out ethanol rich petrol from fuel system. Replace components damaged by ethanol. Use fresh 87+ octane stabilizer-treated unleaded petrol only. **Do not use petrol with more than 10% ethanol (E15, E20, E85, etc.).** 4. Use fresh 87+ octane stabilizer-treated unleaded petrol. **Do not use petrol with more than 10% ethanol (E15, E20, E85,etc.).** 5. Pull on Starter Handle to prime. 6. Clean out passageways using fuel additive. Heavy deposits may require further cleaning. 7. **Gently** tap side of carburetor float chamber with screw driver handle. 8. Turn Choke to RUN position. Remove spark plug and pull the start handle several times to air out the chamber.Reinstall spark plug and set Choke to START position. 9. Replace Fuel Filter.
	IGNITION (SPARK) RELATED: 1. Spark plug cap not connected securely. 2. Spark plug electrode wet or dirty. 3. Incorrect spark plug gap. 4. Spark plug cap broken. 5. Incorrect spark timing or faulty ignition system.	IGNITION (SPARK) RELATED: 1. Connect spark plug cap properly. 2. Clean spark plug. 3. Correct spark plug gap. 4. Replace spark plug cap. 5. Have qualified technician diagnose/ repair ignition system.
	COMPRESSION RELATED: 1. Cylinder not lubricated. Problem after long storage periods. 2. Loose or broken spark plug. (Hissing noise will occur when trying to start.) 3. Loose cylinder head or damaged head gasket. (Hissing noise will occur when trying to start.) 4. Engine valves or tappets misadjusted or stuck.	COMPRESSION RELATED: 1. Pour tablespoon of oil into spark plug hole. Crank engine a few times and try to start again. 2. Tighten spark plug. If that does not work, replace spark plug. If problem persists, may have head gasket problem, see #3. 3. Tighten head. If that does not remedy problem, replace head gasket. 4. Have qualified technician adjust/ repair valves and tappets.
	ENGINE OIL RELATED: 1. Low engineoil. 2. Engine mounted on slope, triggering low oil shut down.	ENGINE OIL RELATED: 1. Fill engine oil to proper level. Check engine oil before EVERY use. 2. Operate engine on level surface. Check engine oil level.

Follow all safety precautions whenever diagnosing or servicing the equipment or engine.
Failure to do so may cause injury and damage the product which will void warranty.

Problem	Possible Causes	Probable Solutions
Engine misfires	1. Spark plug cap loose. 2. Incorrect spark plug gap or damaged spark plug. 3. Defective spark plug cap. 4. Old or low quality petrol. 5. Incorrect compression.	1. Check cap and wire connections. 2. Re-gap or replace spark plug. 3. Replace spark plug cap. 4. Use only fresh 87+ octane stabilizer-treated unleaded petrol. **Do not use petrol with more than 10% ethanol (E15, E20, E85, etc.).** 5. Diagnose and repair compression. (Use **Engine will not start: COMPRESSION RELATED** section.)
Engine stops suddenly	1. Fuel tank empty or full of impure or low quality petrol. 2. Low oil shut down. 3. Defective fuel tank cap creating vacuum, preventing proper fuel flow. 4. Faulty magneto. 5. Disconnected or improperly connected spark plug cap.	1. Fill fuel tank with fresh 87+ octane stabilizer-treated unleaded petrol. **Do not use petrol with more than 10% ethanol (E15, E20, E85, etc.).** 2. Fill engine oil to properlevel. Check engine oil before EVERY use. 3. Test/replace fuel tank cap. 4. Have qualified technician service magneto. 5. Secure spark plug cap.
Engine stops when under heavy load	1. Dirty air filter 2. Engine running cold.	1. Clean element. 2. Allow engine to warm upprior to operating equipment.
Engine knocks	1. Old or low quality petrol. 2. Engine over loaded. 3. Incorrect spark timing, deposit buildup, worn engine, or other mechanical problems.	1. Fill fuel tank with fresh 87+ octane stabilizer-treated unleaded petrol. **Do not use petrol with more than 10% ethanol (E15, E20, E85, etc.).** 2. Do not exceed equipment's load rating. 3. Have qualified technician diagnose and service engine.
Engine backfires After sudden impact, engine will run , but equipment will not operate	1. Impure or low quality petrol. 2. Engine too cold. 3. Intake valve stuck or overheated engine. 4. Incorrect timing. Shaft key or other shear pin broken by impact to disconnect engine and limit damage.	1. Fill fuel tank with fresh 87+ octane stabilizer-treated unleaded petrol. **Do not use petrol with more than 10% ethanol (E15, E20, E85, etc.).** 2. Use cold weather fuel and oil additives to prevent backfiring. 3. Have qualified technician diagnose and service engine. 4. Check engine timing. Have qualified technician check and replace broken shaft key or other shear pins.

Follow all safety precautions whenever diagnosing or servicing the equipment or engine. Failure to do so may cause injury and damage the product which will void warranty.

problem	possible Causes	probable Solutions
Chipping action slow, or engine stalling	1. Branch diameter too thick. 2. Throttle set too low.	1. Do not process branches which are bigger than recommended. 2. Adjust throttle to increase engine speed.
Branch vibrates and moves excessively when chipping	1. Branches are too hard and/or dried out. 2. Chipping blades are dull or damaged.	1. Material is not suitable for chipping. 2. Have qualified/authorised technician service Chipper/Shredder.
Engine runs but no material is processed	1. Chipper/Shredder is jammed. 2. Throttle set too low.	1. Clear all debris out of the Main Housing and discharge port. 2. Adjust throttle to increase Engine speed.
Unusual noise and/or vibration during use	1. Rotor Assembly area clogged with material. 1. Blades loose, damaged,or obstructed by debris. 2. Belt creep	1. Stop adding material to Hopper/ Chipper Chute–allow Chipper/Shredder to clear itself before continuing. 2. Have qualified technician service for the blades for Chipper/Shredder. 3. Open the belt cover, check and replace the belts

Follow all safety precautions whenever diagnosing or servicing the equipment or engine. Failure to do so may cause injury and damage the product which will void warranty.

Parts List

Part	Description	Qty.
1	Left Panel	1
2	Right panel	1
3	Crushing chamber plate	1
4	Discharging board	1
5	Front feet	1
6	Support Leg	2
7	Hopper baffle	1
8	Cutter plate assembly	1
9	Bearing seat	2
10	Bearing cover	1
11	Feed hopper rubber pad	1
12	Right sleeve	1
13	Left sleeve	1
14	Bearing 2205	2
15	Right spacer ring	1
16	Left spacer ring	1
17	Rubber pad	2
18	Blade	2
19	Big Pulley	1
20	Wheel axle	1
21	Handle	1
22	Wheels	2
23	Engine base panel	1
24	Engine (420cc Ducar Electrical Start)	1
25	Belt cover side plate	1
26	Feed hopper	1
27	Small Pulley	1
28	Belt Cover	1
29	Discharge sieve	1
30	Feeding shaft	4
31	Support tube2	2
32	Supporting rod	1
33	Side hopper rubber pad	1
34	Side hopper cover	1
35	Triangular blade	10
36	Rectangle blade	10
37	Short sleeve	4
38	Long sleeve	16
39	Middle sleeve	4
40	Elastic cylindrical pin	4
41	Flat key	1
42	Side hopper	1
43	Core pulling rivets	6
44	Lock nut	60
45	Spring washer	33
46	Flat washer	4
47	Side plate down spacer sleeve	2
48	Side plate up spacer sleeve	2

Part	Description	Qty.
49	Bearing shim	2
50	Small belt wheel shaft sleeve	1
51	Small belt wheel spacer	1
52	Flat Washer	1
53	Support tube 1	1
54	Bolt (for engine)	1
55	Belt	1
56	Flat Washer	1
57	Spring washer	4
58	Rubber pad	4
59	Split pin	1
60	Outer hexagon bolt	16
61	Flat Washer	47
62	Outer hexagon bolt	4
63	Outer hexagon bolt	2
64	Lock nut	4
65	Outer hexagon bolt	1
66	Flat Washer	4
67	Blind Rivet	2
68	Flat Washer	13
69	Spring washer	2
70	Hexagonal Countersunk Head Screw	6
71	Splash plate power base board	2
72	Cup head square neck bolts	2
73	Outer hexagon bolt	3
74	Cotter Pin	2
75	Support Tube	1
76	Outer hexagon bolt	12
77	Outer hexagon bolt	20
78	Outer hexagon bolt	6
79	Hopper Baffle	1
80	Cross recessed pan head screw	3
81	Flame-out line	1
82	Hook	2
83	Blade frame review cover assembly	1
84	Shaft Ring	2
85	Force Switch	1
86	Switch box	1
87	Flat Washer	4
88	Screw	2
89	Protection grill	1
90	Battery Support	1
91	Battery	1
92	Battery Cover	1
93	Outer hexagon bolt	2
94	Lock nut	2
95	Battery Cable (Positive/Negative)	2

Warranty and Contact Details

Kmate Pty Ltd provides a 12 month warranty for this product when used for domestic purposes. This product is not intended for commercial use and any such use will void all warranty.

The benefits of this warranty are provided in addition to other rights and remedies you may have under a law in relation to the goods and services to which this warranty relates. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law.

You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Before making a claim under warranty, please refer to your user/installation manual to ensure that you have followed correct operating procedures of your product, and refer to the trouble shooting section (if such exists) to assist solving any problems.

The warranty period begins from the day of purchase.

Your proof of purchase must be produced before assistance will be provided.

Where the Product is replaced pursuant to this Warranty, the replacement Product will be subject to the warranty terms and warranty commencement date of the original product.

This warranty is only valid if the product is operated, maintained and serviced in accordance with the manufacturer's instructions.

Damage to property including but not limited to any surface, clothing, cars, fences, flooring, vehicles either directly or indirectly are excluded from warranty as well as any losses or expenses incurred by you in relation to the product or making a claim under this warranty including without limitation any costs associated with installation, reinstallation or transporting the product.

Filters, spark plugs, ropes and other connecting and consumable items or similar perishable parts are not covered under this warranty.

A claim may be refused if the defective claim has arisen for reasons other than a manufacturers fault or defective parts or workmanship. Circumstances in which a warranty claim may be declined include, but are not limited to the following:

- Normal wear and tear;
- Misuse or abuse, including failure to properly maintain or service;
- Unauthorised repairs, modifications, disassembly and lack of servicing or use of incorrect petrol, oil or spark plugs;
- Damages caused by improper or incorrect installation, force-majeure, electrical surges, lightning, power grid
- fluctuations, water or by connection to alternative power supply sources (such as solar inverters etc), are not eligible for warranty repair;
- Insect or vermin infestation;
- Failure to clean or improper cleaning and/or operation of the product;
- If the product is modified without authorisation from Kmate Pty Ltd in writing;
- If you are unable to supply a certificate of compliance for installation of any type as required by State & Territory Laws.

Warranty Contact: Kmate Pty Ltd
Po Box 133, Braeside Vic 3195
warranty@ducar.com.au - 03 9790 0055

You can download the latest version of this manual at:
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