



POWERHORSE[®]

208CC ENGINE

OWNER'S MANUAL



WARNING:

Read carefully and understand all ASSEMBLY AND OPERATION INSTRUCTIONS before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

Item# 45749

Thank you very much for choosing a Powerhorse product! For future reference, please complete the owner's record below:

Model: _____ Purchase Date: _____

Save the receipt, warranty and these instructions. It is important that you read the entire manual to become familiar with this product before you begin using it.

This Engine is designed for certain applications only. The distributor cannot be responsible for issues arising from modification. We strongly recommend this Engine not be modified and/or used for any application other than that for which it was designed. If you have any questions relative to a particular application, DO NOT use the Engine until you have first contacted the distributor to determine if it can or should be performed on the product.

For technical questions please call 1-800-222-5381.

Engine Specifications

Model	170N
Displacement	208CC
Bore	2.76in.(70mm)
Stroke	2.12in.(54mm)
Oil Capacity	0.16gal.(0.6L)
Net Weight	34.71lb.(15.5kg)

Safety References

The safety alert symbol  is used to identify safety information about hazards that can result in personal injury. A signal word (DANGER, WARNING, or CAUTION) is used with the alert symbol to indicate the likelihood and the potential severity of injury. In addition, a hazard symbol may be used to represent the type of hazard.

-  **DANGER** indicates a hazard which, if not avoided, will result in death or serious injury.
-  **WARNING** indicates a hazard which, if not avoided, could result in death or serious injury.
-  **CAUTION** indicates a hazard which, if not avoided, might result in minor or moderate injury.
-  **CAUTION** when used without the alert symbol, indicates a situation that could result in damage to the engine.
-   This manual contains safety information to make you aware of the hazards and risks associated with engines, and how to avoid them. Because we do not necessarily know what equipment this engine will power, it is important that you read and understand these instructions and the instructions for the equipment this engine powers.

SYMBOLS ASSOCIATED WITH THIS ENGINE:

	Fire		Read Manual
	Explosion		Oil
	Kickback		Fuel
	Hot Surface		Fuel Shutoff
	Toxic Fumes		Hazardous Chemical
	Moving Parts		Choke
	Shock		Stop
	Slow		Fast

 **WARNING**

We do not approve or authorize the use of these engines on 3-wheel All Terrain Vehicles (ATVs), motor bikes, fun/recreational go-karts, aircraft products or vehicles intended for use in competitive events. Use of these engines in such applications could result in property damage, serious injury (including paralysis), or even death.

 **WARNING**

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

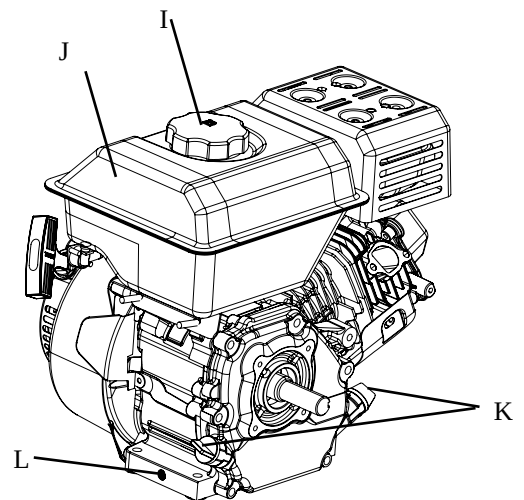
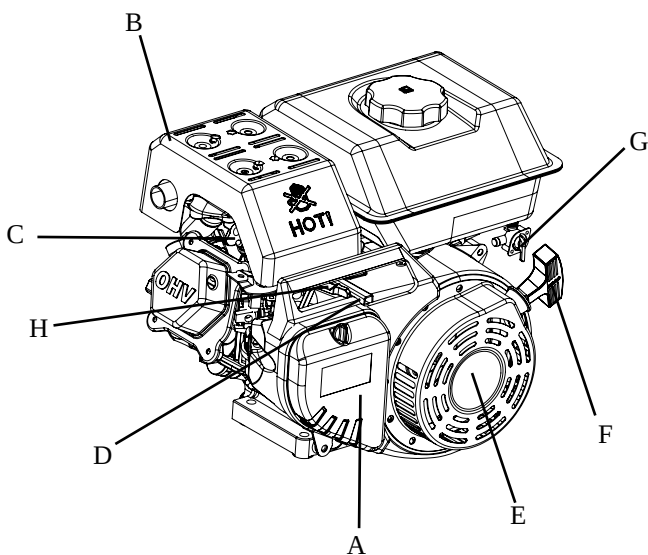
CAUTION

This engine is shipped from us without oil. If you start the engine without oil, the engine will be damaged beyond repair and will not be covered under warranty.

Features and Controls

Compare the illustration with your engine to familiarize yourself with the location of various features and controls.

- A Air cleaner
- B Muffler
- C Spark plug
- D Throttle lever
- E Recoil starter
- F Starting handle
- G Fuel shutoff
- H Choke lever
- I Fuel filler cap
- J Fuel tank
- K Engine identification Dipstick
- L Drain plug



Safety

CAUTION

This engine is shipped from us without oil. If you start the engine without oil, the engine will be damaged beyond repair and will not be covered under warranty.



WARNING

Gasoline and its vapors are extremely flammable and explosive. Fire or explosion can cause severe burns or death.

WHEN ADDING FUEL

- Turn engine OFF and let engine cool at least 2 minutes before removing gas cap.
- Fill fuel tank outdoors or in well-ventilated area.
- Do not overfill fuel tank.
- Keep gasoline away from sparks, open flames, pilot lights, heat, and other ignition sources.
- Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.

WHEN STARTING ENGINE

- Make sure spark plug, muffler, fuel cap and air cleaner are in place.
- Do not crank engine with spark plug removed.
- If fuel spills, wait until it evaporates before starting engine.
- If engine floods, set choke to OPEN/RUN position, place throttle in FAST and crank until engine starts.

WHEN OPERATING EQUIPMENT

- Do not choke carburetor to stop engine.

WHEN TRANSPORTING EQUIPMENT

- Transport with fuel tank EMPTY.

WHEN STORING GASOLINE OR EQUIPMENT WITH FUEL IN TANK

- Store away from furnaces, stoves, water heaters or other appliances that have pilot light or other ignition source because they can ignite gasoline vapors.



WARNING

Starting engine creates sparking. Sparking can ignite nearby flammable gases. Explosion and fire could result.

- If there is natural or LP gas leakage in area, do not start engine.
- Do not use pressurized starting fluids because vapors are flammable.



WARNING



Rapid retraction of starter cord (kickback) will pull hand and arm toward engine faster than you can let go. Broken bones, fractures, bruises or sprains could result.

- When starting engine, pull cord slowly until resistance is felt, then pull rapidly.
- Direct coupled equipment components such as, but not limited to, blades, impellers, pulleys, sprockets, etc., must be securely attached.



WARNING



Rotating parts can contact or entangle hands, feet, hair, clothing, or accessories. Traumatic amputation or severe laceration can result.

- Operate equipment with guards in place. Keep hands and feet away from rotating parts.
- Tie up long hair and remove jewelry.
- Do not wear loose-fitting clothing, dangling drawstrings or items that could become caught.



WARNING



Engines give off carbon monoxide, an odorless, colorless, poison gas. Breathing carbon monoxide can cause nausea, fainting or death.

- Start and run engine outdoors.
- Do not start or run engine in enclosed area, even if doors or windows are open.



WARNING



Running engines produce heat. Engine parts, especially muffler, become extremely hot. Severe thermal burns can occur on contact. Combustible debris, such as leaves, grass, brush, etc. can catch fire.

- Allow muffler, engine cylinder and fins to cool before touching.
- Remove accumulated debris from muffler area and cylinder area.
- Install and maintain in working order a spark arrester before using equipment on forest-covered, grass-covered, brush-covered unimproved land. The state of California requires this. Other states may have similar laws. Federal laws apply on federal land.

How to Start the Engine



WARNING



Gasoline and its vapors are extremely flammable and explosive.



Fire or explosion can cause severe burns or death.

When Starting Engine

- Ensure that spark plug, muffler, fuel cap and air cleaner are in place and secured.
- Do not crank engine with spark plug removed.
- If engine floods, set choke to open/run position, move throttle to fast position and crank until engine starts.



WARNING



Engines give off carbon monoxide, an odorless colorless, poison gas. Breathing carbon monoxide can cause nausea, fainting or death.

- Start and run engine outdoors.
- Do not start or run engine in enclosed area, even if doors or windows are open.



WARNING



Unintentional sparking can result in fire or electric shock.



Unintentional start-up can result in entanglement, traumatic amputation, or laceration.



Fire hazard

1. Check the oil level. See the **How to Check/Add Oil** section.
2. Move the fuel shutoff (I) to the ON position.
3. Move the choke lever (J) the choke  position.
Note: Choke is usually unnecessary when restarting a warm engine.
4. Move Throttle lever (D) away from MIN. position, about 1/3 of way toward MAX. position.
5. Turn the Engine switch (F) to the ON position.
6. **Recoil Start:** Firmly hold the starting handle (H). Pull the starter cord handle slowly until resistance is felt, the pull rapidly.



WARNING: Rapid retraction of the starter cord (kickback) will pull your hand and arm toward the engine faster than you can let go. Broken bones, fractures, bruises or sprains could result. When starting engine, pull the starter cord slowly until resistance is felt and then pull rapidly to avoid kickback.

How to Stop the Engine



WARNING



Gasoline and its vapors are extremely flammable and explosive.



Fire or explosion can cause severe burns or death.

1. Move Throttle lever (D) to MIN. position. Turn
2. Engine switch (F) to the OFF position.
3. Turn Fuel shutoff (I) to the OFF position.

Troubleshooting

If Engine will not start

Out of fuel

.If engine is cold, ensure choke lever is set correctly. .

Add fuel

Engine flooded

. Set choke lever to open/run position

Dirty or faulty spark plug/engine fails to product spark

Remove spark plug and clean it. Check the spacing on the electrode and set the gap to the .correct dimension.

See Maintenance Section. If plug is damaged, replace with a new spark plug.

. Ensure the spark plug is installed and wire is connected.



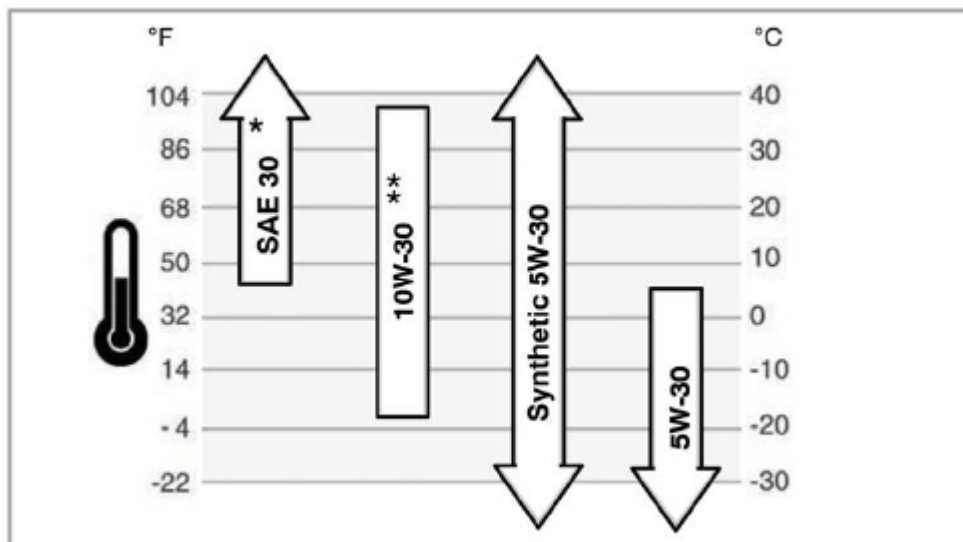
Warning:

. Do not crank engine with spark plug removed.

Oil

Oil Recommendations

- . We recommend the use of suitable oils for best performance. Other high-quality detergent oils are acceptable if classified for service SF, SG, SH, SJ or higher.
- . Do not use special additives.
- . Outdoor temperatures determine the proper oil viscosity for the engine. Use the chart to select the best viscosity for the outdoor temperature range expected.



Note: Below 40°F (4°C) the use of SAE 30 will result in hard starting .

Above 80°F (27°C) the use of 10W-30 may cause increased oil consumption. Check oil level more frequently.

Before adding or checking the oil

- . Place engine on a level surface.
- . Clean the oil fill area of any debris.

How to Check/Add Oil

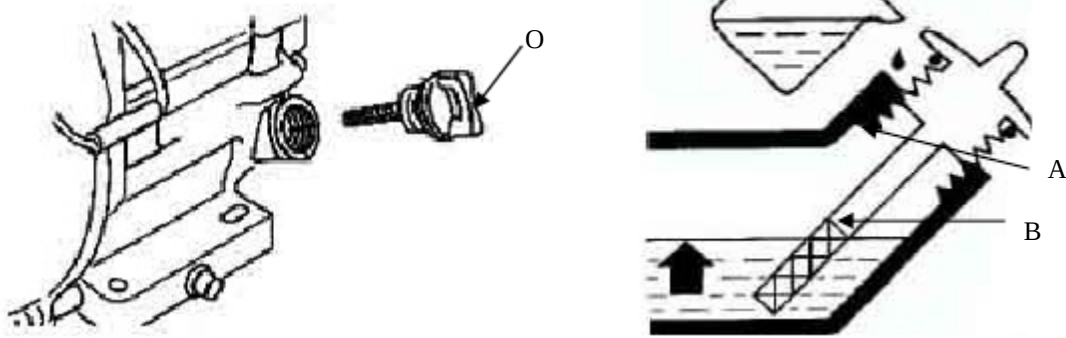


Figure 1

1. Remove the dipstick (O) and swipe with a clean cloth (Figure 1).
2. Insert the dipstick into the filler neck without screwing it in.
3. Remove the dipstick and check the oil level. Make sure the oil is at the FULL mark (B) on the dipstick.
4. To add oil, pour the oil slowly into the engine oil fill (A). Do not overfill. After adding oil, wait one minute and then recheck the oil level.
4. Replace and tighten the dipstick.

Fuel Recommendations

Fuel must meet these requirements:

Clean, fresh, unleaded gasoline.

- A minimum of 87 octane/87 AKI (91 RON). High altitude use, see below.
- Gasoline with up to 10% ethanol (gasohol) or up to 15% MTBE (methyl tertiary butyl ether) is acceptable.

Caution

Do not use unapproved Gasoline, such as E85. Do not mix oil in gasoline or modify the engine to run on alternate fuels.

This will damage the engine components and void the engine warranty.

To protect the fuel system from gum formation, mix a fuel stabilizer into the fuel. See Storage. All fuel is not the same. This engine is certified to operate on gasoline. The emissions control system for this engine is EM (Engine Modifications).

High Altitude

At altitudes over 5,000 feet (1524 meters), a minimum 85 octane/85 AKI (89 RON) gasoline is acceptable. To remain emissions compliant, high altitude adjustment is required. Operation without this adjustment will cause decreased performance, increased fuel consumption, and increased emissions. See an authorized service center for high altitude adjustment information.

Operation of the engine at altitudes below 2,500 feet (762 meters) with the high altitude kit is not recommended.

How to Add Fuel



WARNING



Gasoline and its vapors are extremely flammable and explosive.



Fire or explosion can cause severe burns or death.

When Adding Fuel

- Turn engine off and let engine cool at least 2 minutes before removing the fuel cap.
- Fill fuel tank outdoors or in well-ventilated area.
- Do not overfill fuel tank. Fill tank to approximately 1.5 inches (38 mm) below top of neck to allow for fuel expansion.

· Keep gasoline away from sparks, open flames, pilot lights, heat, and other ignition sources. Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary. If fuel spills, wait until it evaporates before starting engine.

1. Clean the fuel cap area of dirt and debris. Remove the fuel cap.
2. Fill the fuel tank with gasoline. To allow for expansion of the gasoline, do not fill above the bottom of the fuel tank neck.
3. Reinstall the fuel cap.

Maintenance

Use only original equipment replacement parts. Other parts may not perform as well, may damage the unit, and may result in injury. In addition, use of other parts may void your warranty. We recommend that you use an authorized service center for all maintenance and service of the engine and engine parts.

CAUTION: All the components used to build this engine must remain in place for proper operation.



WARNING



Unintentional sparking can result in fire or electric shock.



Unintentional start-up can result in entanglement, traumatic amputation, or laceration.



Fire hazard

Before performing adjustments or repairs: · Disconnect the spark plug wire and

keep it away from the spark plug.

- Use only correct tools.
- Do not tamper with governor spring, links or other parts to increase engine speed.
- Replacement parts must be the same and installed in the same position as the original parts.
- Do not strike the flywheel with a hammer or hard object because the flywheel may later shatter during operation.

When testing for spark:

- Use approved spark plug tester.

Maintenance Chart

First 5 Hours

Change oil

Every 8 Hours Daily

Check engine oil level

Every 50 Hours or Annually

Change engine oil

Check muffler and muffler guard and spark Arrester (If applicable)

Annually

Replace spark plug

Check valve clearance

Carburetor Adjustment

Never make adjustments to the carburetor. The carburetor was set at the factory to operate efficiently under most conditions. However, if adjustments are required, see our Authorized Dealer for service.

CAUTION: The manufacturer of the equipment on which this engine is installed specifies the top speed at which the engine will be operated. Do not exceed this speed.

How to Replace the Spark Plug



Check the gap (A) with a wire gauge (B). If necessary, reset the gap. Install and tighten the spark plug to the recommended torque. For gap setting or torque, see the Specifications section.

Note: In some areas, local law requires using a resistor spark plug to suppress ignition signals. If this engine was originally equipped with a resistor spark plug, use the same type for replacement.

Inspect Muffler and Spark Arrester



WARNING



Running engines produce heat. Engine parts, especially muffler, become extremely hot.



Severe thermal burns can occur on contact.

Combustible debris, such as leaves, grass, brush, etc. can catch fire.

· Allow muffler, engine cylinder and fins to cool before touching.

· Remove accumulated debris from muffler area and cylinder area.

WARNING: Replacement parts must be the same and installed in the same position as the original parts or fire could result.

How to Service the Air Filter (see figure 3)

1. Remove the air cleaner outside cover (A). Be careful to prevent dirt and debris from falling into the air cleaner assembly.
2. Separate the Air Filter (A) from the Air Filter Housing (B).
3. Inspect the air filter. Clean dirty air filter with warm water and mild soap. Allow air filter to dry thoroughly before re-installation
4. Install the air filter assembly onto the carburetor and secure with screw.

Note: Do not use pressurized air or solvents to clean the filter. Pressurized air can damage the filter and solvents will dissolve the filter.

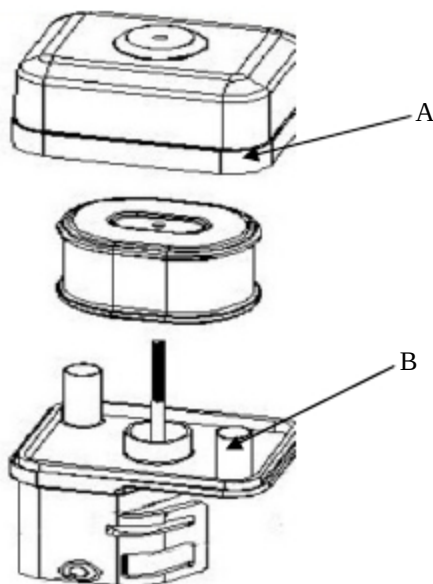


Figure 3

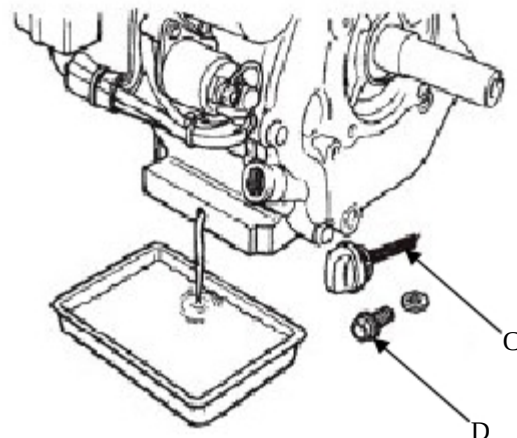


Figure 4

How to Remove Oil

Caution: Used oil is a hazardous waste product and must be disposed of properly. Do not discard with household waste. Check with your local authorities, service center, or dealer for safe disposal/recycling facilities.

Removing Oil

The oil must be drained from the Oil Drain Plug (See figure 4)

1. Remove the dipstick (C)
2. Place an approved container below the oil drain plug.
3. Remove the Oil drain plug (D) and allow oil to drain into the approved container. Install
4. Oil drain plug (D) and wrench tighten.



WARNING: When you drain the oil from the oil drain plug, the fuel tank must be empty or fuel can leak out and result in fire or explosion. To empty the fuel tank, run engine until it stops from lack of fuel.

How to Service the Fuse-see figure 6 (if applicable)



WARNING: Never use a fuse with a rating greater than the one originally equipped with the engine. Serious damage to the electrical system or a fire could result.

1. Remove the 6x12mm screw from the rear cover of the engine switch box.
2. Remove the fuse cover, then pull out and inspect the fuse.
3. Reinstall the rear cover. Install the 6x12mm screw and tighten.

How to Service the Battery -see figure 7 (if applicable)



WARNING: Be careful not to connect the battery in reverse polarity, as this will short circuit the battery charging system.

Note: Use a 12-volt battery with an ampere-hour rating of at least 18 Ah.

1. Connect the positive (+) cable to the starter solenoid terminal.
2. Connect the negative (-) cable to an engine mounting bolt or other good engine ground connection.
3. Connect the positive (+) cable to the positive (+) terminal.
4. Connect the negative (-) cable to the negative (-) terminal.

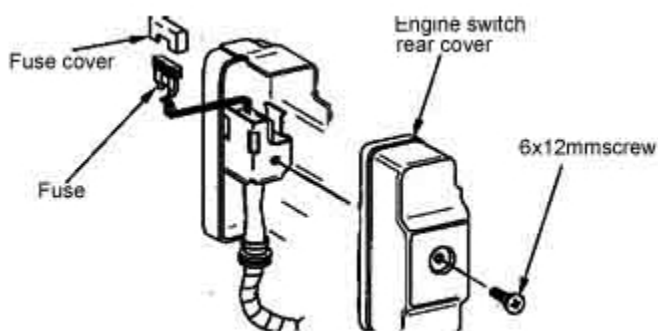


figure6

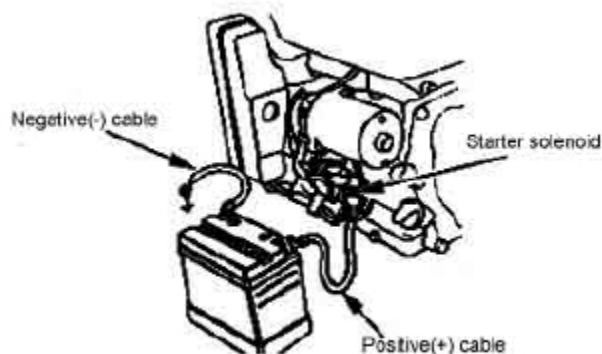


figure 7

Storage



WARNING:

When storing fuel or equipment with fuel in tank:

- Store away from furnaces, stoves, water heaters, or other appliances that have a pilot light or other ignition source because they can ignite vapors.

When Transporting Equipment:

- Transport with fuel tank EMPTY or with fuel shut-off valve OFF.

The following precautions should be taken if storing your engine for a period exceeding 30 days, or for seasonal storage.

- While engine is still warm, change oil.
 - Clean engine of surface debris, chaff or grass.
 - Drain all fuel from fuel tank into proper receptacle for storage.
 - Remove spark plug. Place 1 teaspoon or 5 ml. of oil into spark plug hole.
 - Pull starter rope slowly 8-10 times to properly coat the cylinder bore and piston for storage.
- Replace spark plug and tighten. Any residual oil may burn off in subsequent starts. This may result in white smoke emission from muffler.

Note: Storing or transporting with the spark plug down will result in hard starting and/or engine smoking.

- Store in a clean dry area.
- When removing unit from storage, only use fresh gasoline. Perform operation checks (see maintenance schedule) before starting engine.

** Engine power will decrease 3.5% for each 1,000 feet (300 meters) above sea level and 1% for each 10°F (5.6°C) above 77°F (25°C). The engine will operate satisfactorily at an angle up to 15°. Refer to the equipment operator's manual for safe allowable operating limits on slopes.

We recommend that you see an authorized service center for all maintenance and service of the engine and engine parts. Use only our genuine parts.



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U.S EPA AND CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board, The United States Environmental Protection Agency(US EPA) and Northern Tool and Equipment Company Inc. , are pleased to explain the emission control system warranty on your 2015/2016 and later model year small off-road engine. In the United States and California new small off-road engines must be designed built and equipped to meet the State's stringent anti smog standards. Northern Tool and Equipment Company Inc. must warrant the emission control system on your small off-road engine for the periods of time listed below provided there has been no abuse neglect or improper maintenance of your small off-road engine.

Your emission control system may include parts such as the carburetor or fuel injection system, the ignition system, and catalytic converter. Also included may be hoses, belts, connectors and other emission related assemblies.

Where a warrantable condition exists, Northern Tool and Equipment Company Inc. will repair your small off-road engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE

As the small off-road engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Northern Tool and Equipment Company Inc. recommends that you retain all receipts covering maintenance on your small off-road engine, but Northern Tool and Equipment Company Inc. cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the small off-road engine owner, you should however be aware that Northern Tool and Equipment Company Inc. may deny you warranty coverage if your small off-road engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your small off-road engine to a Northern Tool and Equipment Company Inc. distribution center as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, contact Northern Tool and Equipment Company Inc. authorized warranty service facility:



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Tell: 1-866-443-2576

Email: Customercare@northerntool.com

Brand: Powerhorse

Address or Website : www.northerntool.com

This telephone number is only for the engines which the company name Northern Tool and Equipment Company Inc. on the emission label.

Defects warranty requirements:

- (a) The warranty period begins on the date the engine or equipment is delivered to an ultimate purchaser.
- (b) General Emissions Warranty Coverage. Northern Tool and Equipment Company Inc. warrants to the ultimate purchaser and each subsequent owner that the engine or equipment is:
 - (1) Designed, built, and equipped so as to conform with all applicable regulations adopted by US EPA & Air Resources Board; And
 - (2) Free from defects in materials and workmanship that causes the failure of a warranted part for a period of two years.
- (c) The warranty on emissions-related parts will be interpreted as below:
 - (1) Any warranted part that is not scheduled for replacement as required maintenance in the written instructions required by subsection (d) must be warranted for the warranty period defined in Subsection(b)(2). If any such part fails during the period of warranty coverage, it must be repaired or replaced by Northern Tool and Equipment Company Inc. according to Subsection (4) below. Any such part repaired or replaced under the warranty must be warranted for the remaining warranty period.
 - (2) Any warranted part that is scheduled only for regular inspection in the written instructions required by subsection(d) must be warranted for the warranty period defined in Subsection(b)(2). A statement in such written instructions to the effect of "repair or replace as necessary" will not reduce the period of warranty coverage. Any such part repaired or replaced under warranty must be warranted for the remaining warranty period.
 - (3) Any warranted part that is scheduled for replacement as required maintenance in the written instructions required by subsection (d) must be warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part must be repaired or replaced by Northern Tool and Equipment Company Inc. according to Subsection (4) below. Any such part repaired or replaced under warranty must be warranted for the remainder of the period prior to the first scheduled replacement point for the part.



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- (4) Repair or replacement of any warranted part under the warranty must be performed at no charge to the owner at a warranty station.
- (5) Notwithstanding the provisions of Subsection (4) above, warranty services or repairs must be provided at all Northern Tool and Equipment Company Inc. distribution centers that are franchised to service the subject engines.
- (6) The owner must not be charged for diagnostic labor that leads to the determination that a warranted part is in fact defective provided that such diagnostic work is performed at a warranty station.
- (7) Northern Tool and Equipment Company Inc. is liable for damages to other engine components proximately caused by a failure under warranty of any warranted part.
- (8) Throughout the emissions warranty period defined in Subsection (b)(2), Northern Tool and Equipment Company Inc. must maintain a supply of warranted parts sufficient to meet the expected demand for such parts.
- (9) Any replacement part may be used in the performance of any warranty maintenance or repairs and must be provided without charge to the owner such use will not reduce the warranty obligations of Northern Tool and Equipment Company Inc.
- (10) Add-on or modified parts that are not exempted by the Air Resources Board may not be used. The use of any non-exempted add-on or modified parts will be grounds for disallowing a warranty claim. Northern Tool and Equipment Company Inc. will not be liable to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.
- (11) Northern Tool and Equipment Company Inc. issuing the warranty shall provide any documents that describe that manufacturer's warranty procedures or policies within five working days of request by the US EPA & Air Resources Board.

Emission Warranty Parts List.

- (1) Fuel Metering System
 - (i) Carburetor and internal parts (and/or pressure regulator or fuel injection system).
 - (ii) Air/fuel ratio feedback and control system.
 - (iii) Cold start enrichment system.
 - (iv) Fuel tank.
- (2) Air induction system
 - (i) Controlled hot air intake system.



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- (ii) Intake manifolds.
- (iii) Air filter.
- (3) Ignition System
 - (i) Spark Plugs.
 - (ii) Magneto or electronic ignition system.
 - (iii) Spark advance/retard system.
- (4) Exhaust Gas Recirculation (EGR) System
 - (i) EGR valve body, and carburetor spacer if applicable.
 - (ii) EGR rate feedback and control system.
- (5) Air Injection System
 - (i) Air pump or pulse valve.
 - (ii) Valves affecting distribution of flow.
 - (iii) Distribution manifold.
- (6) Catalyst or Thermal Reactor System
 - (i) Catalytic converter.
 - (ii) Thermal reactor.
 - (iii) Exhaust manifold.
- (7) Particulate Controls
 - (i) Traps, filters, precipitators, and any other device used to capture particulate emissions.
- (8) Miscellaneous Items Used in Above Systems
 - (i) Electronic controls
 - (ii) Vacuum, temperature, and time sensitive valves and switches.
 - (iii) Hoses, belts, connectors, and assemblies.

Northern Tool and Equipment Company Inc. will furnish with each new engine written instructions for the maintenance and use of the engine by the owner.

Limited Warranty

The distributor shall warranty any piece of equipment manufactured, or parts of equipment manufactured, to be free from defects in material or workmanship for a period of 2 years for noncommercial/nonrental use and a period of 90 days for commercial/rental use from the date of purchase by user.

This warranty applies to the original purchaser of the equipment and is non transferable.

Verification of purchase is the responsibility of the buyer. Parts will be replaced or repaired at no charge, except when the equipment has failed due to lack of proper maintenance. Any misuse, abuse, alteration or improper installation or operation will void warranty. Determining whether a part is to be replaced or repaired is the sole decision of the Distributor.



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Distributed by
Northern Tool + Equipment Co., Inc.
Burnsville, Minnesota 55306
NorthernTool.com
Made in China