



XP23HPE HORIZONTAL SHAFT ENGINE

User Manual

REV: XP23HPE_rev12272019

This manual provides information regarding the operation and maintenance of these products. We have made every effort to ensure the accuracy of the information in this manual. We reserve the right to change this product at any time without prior notice.

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844-DUROMAX



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INTRODUCTION

DuroMax has cemented its reputation as one of the markets leading power equipment companies who are headquartered in the US. All of our products are manufactured to the strictest guidelines and go through countless testing in all phases of production.

Evolving our strong engine line, DuroMax has complemented its offerings to include Pressure Washers, Water Pumps, Engines and now offering V-Twin engines. Reliability is the highest standard we hold ourselves to, whether its powering a heater during a winter storm that knocks out power, dewatering a flooded property, or washing away a deck for the summer season



Notice Regarding Emissions

Engines that are certified to comply with U.S. EPA emission regulations for SORE (Small off Road Equipment), are certified to operate on regular unleaded gasoline, and may include the following emission control systems: (EM) Engine Modifications and (TWC) Three-Way Catalyst (if so equipped).

GENERAL SAFETY PROCEDURES



SAFETY ALERT SYMBOL

The safety alert symbol is used with one of the safety words (**DANGER**, **CAUTION**, or **WARNING**) to alert you of hazards. Please pay attention to these hazard notices both in this manual and on the Engine.

Please familiarize yourself with the following safety symbols and words:

- **DANGER:** Indicates a hazard that will result in serious injury or death if instructions are not followed.
- **WARNING:** Indicates a strong possibility of causing serious injury or death if instructions are not followed.
- **CAUTION:** Indicates a possibility of personal injury or equipment damage if instructions are not followed.



DANGER: This Engine produces poisonous carbon monoxide gas when running. This gas is both odorless and colorless. Even if you do not see or smell gas, carbon monoxide may still be present. Breathing this poison can lead to headaches, dizziness, drowsiness, and eventually death.

- Use outdoors **ONLY** in non-confined areas.
- Keep several feet of clearance on all sides to allow proper ventilation of the Engine.



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



WARNING: This Engine produces heat when running. Temperatures near exhaust can exceed 150°F (65°C).

- Do not touch hot surfaces. Pay attention to warning labels on the Engine denoting hot parts of the machine.
- Allow Engine to cool several minutes after use before touching engine or areas which heat during use.

GENERAL SAFETY PROCEDURES



WARNING: This Engine may emit highly flammable and explosive gasoline vapors, which can cause severe burns or even death. A nearby open flame can lead to an explosion even if not directly in contact with gas.

- Do not operate near an open flame.
- Do not smoke near Engine.
- Always operate on a firm, level surface.
- Always turn Engine off before refueling.
- Allow Engine to cool for at least 2 minutes before removing fuel cap. Loosen cap slowly to relieve pressure in tank.
- Do not overfill gas tank. Gas may expand during operation. Do not fill to the top of the tank.
- Always check for spilled gas before operating.
- Empty the gasoline tank before storing or transporting the Engine.
- Before transporting, turn fuel valve to the off position and disconnect the spark plug.

PACKAGE CONTENTS

Your Engine comes with the items listed below. Please check to see that all of the following items are included with your Engine.



Spark Plug Wrench

Used in spark plug maintenance, inspection, and installation.



Oil Funnel

Used to add oil to the Engine without messy spills.



Engine Keys

Used to start the Engine.

- Note: Actual tools may differ in appearance or design from image shown.



ENGINE SETUP

Proper setup of your Engine will get you going as soon as possible while making sure you and your equipment are safe and cared for.

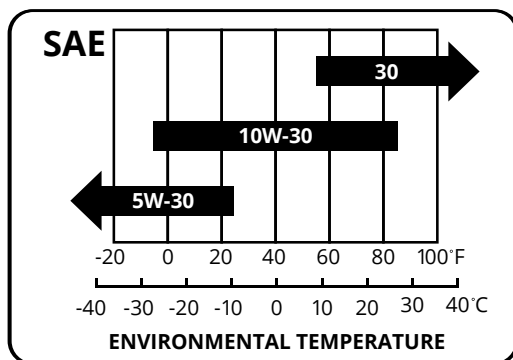
ENGINE SETUP

Adding Oil

The Engine requires engine oil to operate properly. The Engine, when new from the package contains no oil in the crankcase*. You must add the proper amount of oil before operating the Engine for the first time. This amount is equal to the oil capacity of the engine crankcase:

Model Number	XP23HPE
Engine Oil Capacity	54 fl. oz (1.6L)

WARNING: Do not apply engine oils with additives or 2-stroke gasoline engine oils. They don't have enough lubrication, and may shorten the engine's service life.



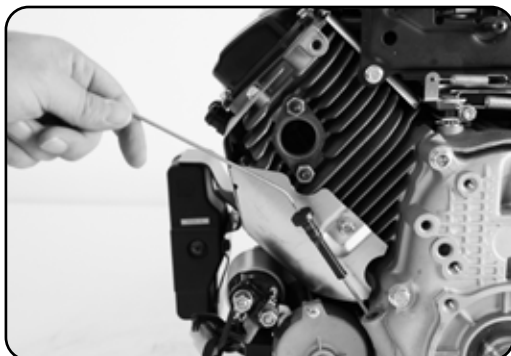
Engine oil recommended: SAE 10W-30. Viscosity varies with regions and temperatures. Choose your oil viscosity using the chart to the left.

* A small amount of oil from factory testing may be present on arrival.



1. Add oil

- Make sure the Engine is on a level surface.
- Unscrew the oil filler cap from the engine .
- Using a funnel, add the appropriate amount of oil into the crankcase. You can check the oil level of the Engine with the dipstick located below the oil filler cap. Simply pull the dipstick out and the indicated oil level is on the end of the stick.
- Replace oil filler cap.



WARNING: DO NOT overfill the crankcase. This may damage the motor and shorten overall life of your Engine.





MAINTENANCE AND CARE

Proper maintenance and storage of your Engine is essential to ensure trouble free use of your Engine when you need it.

By following the maintenance and care requirements, you can keep your Engine running smooth and efficient for years to come.

MAINTENANCE AND CARE

Proper routine maintenance of your Engine is essential for safe, economical, and trouble-free operation. It will also help reduce air pollution.



WARNING: Improper maintenance, or failure to correct a problem before operation, can cause a malfunction in which you can be seriously injured or killed. Always follow the inspection and maintenance recommendations and schedules in this instruction manual.

- Make sure the engine is off before you begin any maintenance or repairs.
- Let the engine and exhaust system cool before touching.
- To reduce the possibility of fire or explosion, be careful when working around gasoline. Use only a nonflammable solvent, not gasoline, to clean parts. Keep cigarettes, sparks, and flames away from all fuel related parts.

Maintenance Schedule

Remember that this schedule is based on the assumption that your machine will be used for its designed purpose. Sustained high-load, high temperature operation, or use in unusually wet or dusty conditions, will require more frequent service.

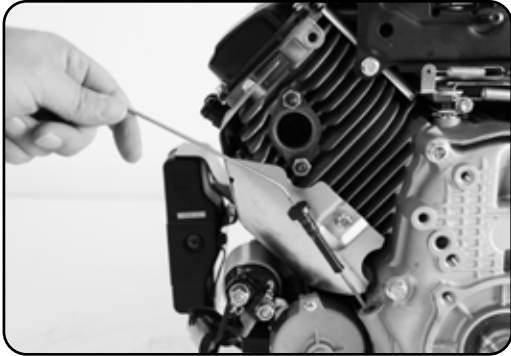
SERVICE		REGULAR SERVICE PERIOD				
		BEFORE EACH USE	EVERY MO. OR 20 HRS	EVERY 3 MO. OR 50 HRS	EVERY 6 MO. OR 100 HRS	EVERY 12 MO. OR 300 HRS
ENGINE OIL	CHECK					
	CHANGE					
AIR CLEANER	CHECK					
	CHANGE					
SPARK PLUG	CLEAN-ADJUST					
	REPLACE					
SPARK ARRESTOR	CLEAN					
IDLE SPEED	CHECK / ADJUST					
VALVE CLEARANCE	CHECK-ADJUST					
COMBUSTION CHAMBER	CLEAN	500 HOURS				
FUEL TANK / FILTER	CLEAN					
FUEL TUBE	CHECK	EVERY 24 MO. (REPLACE IF NECESSARY)				
TO BE PERFORMED AT EVERY MONTH INDICATED OR HOUR INTERVAL WHICH EVER COMES FIRST						

MAINTENANCE LOG

Date	Engine Hours	Maintenance Performed

MAINTENANCE AND CARE (CONTINUED)

Checking the oil



1. Check the oil

The Engine is equipped with an automatic shutoff to protect it from damage due to low oil. Nonetheless, you should check the oil level of the engine before each use to ensure that the engine crankcase has a sufficient amount.

To check the oil level:

- a. Make sure the Engine is on a level surface.
- b. Remove dipstick.
- c. With a dry cloth, wipe the oil off of the stick.
- d. Insert the dipstick completely back into its hole in the engine case. the pull it out again. There should now be oil on the stick. If there is no oil on the stick, or oil only at the very end of the stick, you should add oil until the engine crankcase is filled (see "Adding Oil" portion of the "Maintenance" section).
- e. Be sure to replace the dipstick when finished checking oil.

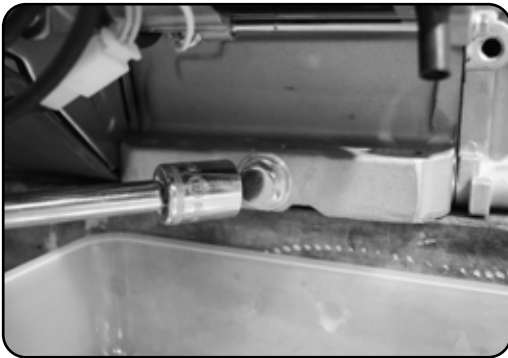


NOTE: The oil capacity for your Engine can be found in the "Specifications" section of this manual.

Changing the oil

Worn out or dirty oil does not cool the Engine properly and can lead to catastrophic engine damage.

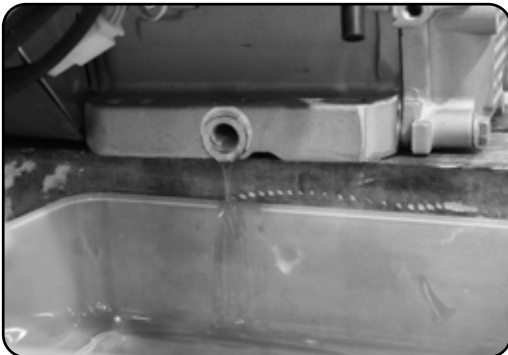
In addition to regular oil changes, it is necessary to drain the oil from the crankcase if it has become contaminated with water or dirt.



1. Remove drain plug

Using a 10 mm hex wrench, unscrew the oil drain plug, which is located on the crankcase underneath the oil filler/dipstick cap.

Allow all the oil to drain from the Engine.



2. Drain oil

Drain oil into an approved oil disposal container. Contact your local auto parts store for information on oil disposal.



3. Replace drain plug

Replace the oil drain plug and tighten with a 10 mm hex wrench.

MAINTENANCE AND CARE (CONTINUED)

Cleaning the air filter

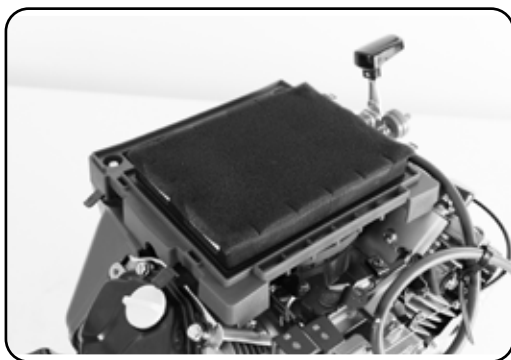
Routine maintenance of the air cleaner helps maintain proper airflow to the carburetor. Check that the air cleaner is free of excessive dirt after every use.

Note: Improper maintenance may cause less air to enter the engine or dirty air to enter the engine causing overheating and engine wear.



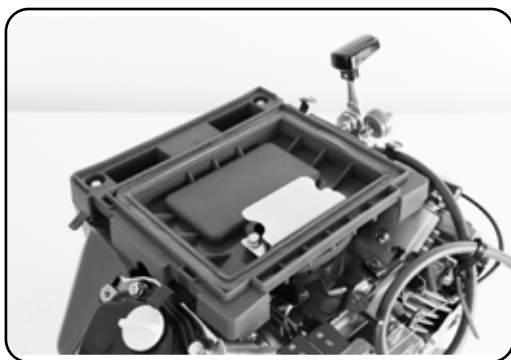
1. Unclip filter cover

Unhinge the four clasps of the air filter cover. There are two clips on each side of the cover.



2. Remove filter cover

Remove the plastic air filter cover by sliding it out underneath the Engine's frame.



3. Remove filter

Remove the filter from on top of the engine. This filter is paper and is not reusable. Please call 1-844-DUROMAX to order a replacement filter for your Engine.



4. Replace new filter

Insert the filter, paper side down into the air filter compartment on top of the engine.



5. Replace filter cover

Slide the filter cover back in place between the frame and the engine.



6. Secure filter cover

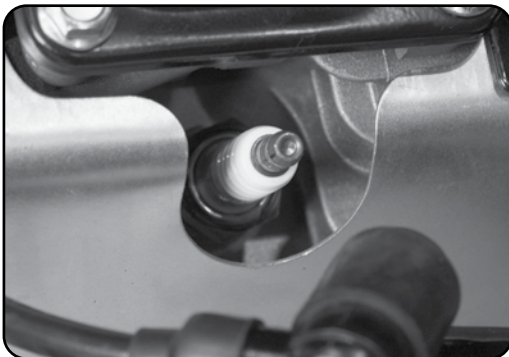
Fasten the filter cover to the engine with the clips found on each side of the cover.

MAINTENANCE AND CARE (CONTINUED)

Spark Plug Maintenance

The spark plug is important for proper engine operation. A good spark plug should be intact, free of deposits, and properly gapped. The V-Twin engine in this Engine has two spark plugs, one on each side. Both plugs are located just underneath the OHV covers.

Improper maintenance may cause reduced fuel economy, misfires, trouble starting, or damage to the spark plug threads.



1. Remove spark plug cap

Pull on the spark plug cap to remove it.



2. Remove spark plug

Unscrew the spark plug from the Engine using the spark plug wrench included with this product.



3. Inspect spark plug

Visually inspect the spark plug. If it is cracked or chipped, discard and replace with a new spark plug. We recommend using a F6RTC spark plug such as NGK BPR5ES.



4. Measure plug gap

Measure the plug gap with a gauge. The gap should be 0.7-0.8 mm (0.028-0.031 in).



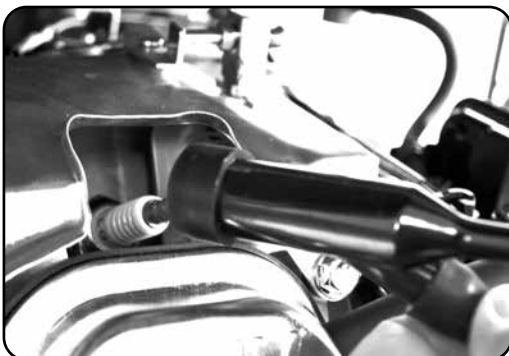
5. Clean and re-gap

If you are re-using the spark plug, use a wire brush to clean any dirt from around the spark plug base and then re-gap the spark plug.



6. Replace spark plug

Screw the spark plug back into its place on the Engine using the spark plug wrench.



7. Replace spark plug cap

Replace the spark plug cap.

MAINTENANCE AND CARE (CONTINUED)

Storage and Transportation



CAUTION: Never place any type of storage cover on the Engine while it is still hot.

When transporting your Engine:

- Empty the gas tank
- Disconnect the spark plug.
- Do not obstruct any ventilation openings & keep the Engine in a cool dry area.

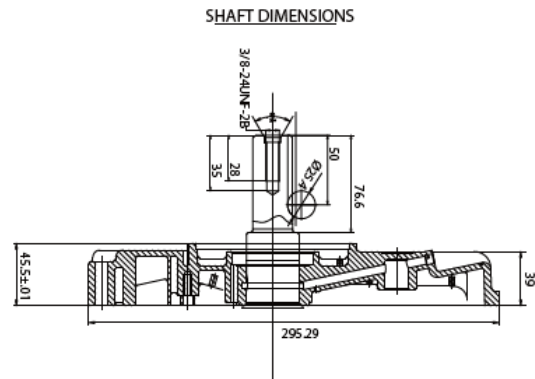
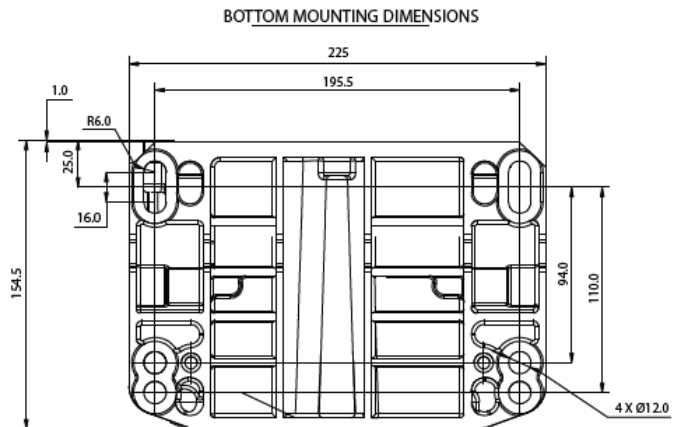
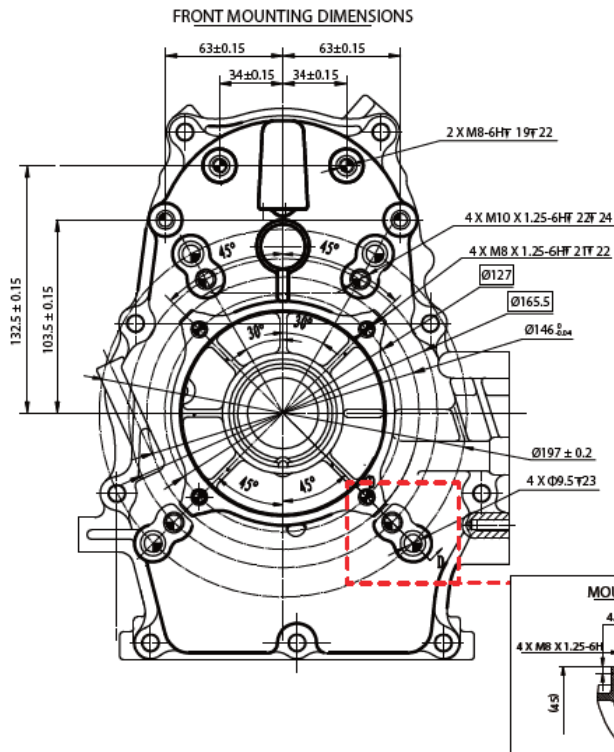
Storage Period	Storage Preparation
If you plan on starting the same day.	<ol style="list-style-type: none">1. Turn off the key.2. Store.
If you plan on starting the unit again within 30 days.	<ol style="list-style-type: none">1. Turn off the fuel valve.2. Allow the unit to stall out.3. Turn off the key.4. Add fuel stabilizer to the gas remaining in the tank.5. Store.
If you do not plan to start the unit for longer than 30 days.	<ol style="list-style-type: none">1. Turn off the fuel valve.2. Allow the unit to stall out.3. Turn off the key.4. Oil the cylinder<ol style="list-style-type: none">a. Remove the spark plug.b. Put 2 tbsp. of 10w30 motor oil directly into the spark plug holec. Pull the recoil start one time.d. Replace the plug.5. Remove the battery and place on tender indoors.

SPECIFICATIONS

Displacement	713cc
Dimensions	19.3"x21.0"x18.3" (490x535x465mm)
Dry Weight	103.6 lbs (47kg)
Maximum Torque	31.72 ft-lbs (45 N.m.)@ 2500RPM
Maximum RPM	4000 RPM
Compression Ratio	8.5:1
Bore X Stroke	80mm x 71 mm
Fuel Type	87+ Octane Gasoline
Engine Oil Capacity	1.58 qt (1.5 L)
Bearing Type	Stainless Steel Needle Bearing
PTO Shaft Diameter	1" (25.4mm)
PTO Shaft Length	3.01" (76.6mm)
PTO Shaft Height	5.29" (133.5mm)
PTO Shaft Keyway	1/4" x 2" (6.3mm x 50mm)
Shaft End Tapped	3/8" 24UNF-2B
Shaft Rotation	Counter Clockwise

Torque Values		
	Thread Dia. (mm)	Torque Value (Nm)
Crankcase cover bolt	M8x50	26~30
Cylinder head bolt	M10x80	45~50
Cylinder head cover bolt	M6x12	8~12
Spark Plug	M14x1.25	20~30
Connecting rod bolt	M7x35	13~15
Rocker arm pivot bolt	M8x15	22~26
Rocker arm pivot adjusting nut	M6x0.5x8	8~12
Oil Filter	3/4-16UNF-2B	23~26
Oil Drain Bolt	M14x1.5x12	30~40
Fan Cover Bolt	M8x16	20~30
Flywheel nut	M20x1.5	150~180
Fuel tank nut/bolt	M6x25	8~12
Air cleaner elbow nut	M6x25	7~11
Muffler nut	M8	
Exhaust pipe nut	M10	
Recoil starter center screw	M6	
Starter Motor Terminal Nut	M6	

STANDARD TORQUE VALUES	Thread Dia. (mm)	Torque Value (Nm)
Screw	4 mm	2.53
	5 mm	5.9
	6 mm	9.8
Bolt and nut	4 mm	2.8 (8.8 grades)
	5 mm	5.6 (8.8 grades)
	6 mm	9-12 (8.8 grades)
	7 mm	15.7 (8.8 grades)
	8 mm	22-29 (8.8 grades)
	10 mm	44-58 (8.8 grades)
Flange bolt and nut	12 mm	76-102 (8.8 grades)
	5 mm	5.6 (8.8 grades)
	6 mm	9-12 (8.8 grades)
	8 mm	22-29 (8.8 grades)
SH (Small head) flange bolt	10 mm	44-58 (8.8 grades)
CT (Cutting threads) flange bolt (Retightening)	6 mm	9-12 (8.8 grades)
	5 mm	5.6 (8.8 grades)
	6 mm	9-12 (8.8 grades)



Note: Dimensions are listed in millimeters.



WARRANTY

This section of the manual is to help you understand your warranty.

WARRANTY

3-year Warranty

All DuroMax/DuroStar Power Equipment warrant the original purchasers to a 3-year Parts Warranty (Residential Use ONLY: Unusually heavy or commercial use is covered for a period of 1-year) in the event of failure due to defects in electrical or mechanical components. Freight on any items submitted for replacement or repair under the Warranty are the responsibility of the equipment owner. This warranty is non-transferable and only valid to the original purchaser.

Warranty Exclusions

The DuroMax/DuroStar Power Equipment warranty does not cover repairs or returns when the fault is: Normal Wear and Tear, Installation Use or Maintenance Services, Cosmetic defects, Accessories, Failures due to acts of God or Natural Disasters, or problems related to/from aftermarket or non-OEM parts.

Warranty Limitations

DuroMax/DuroStar Power Equipment does not claim or hold any obligation to loss of time, freight charges, use of product, or any incidental damages from the use of this product. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED.

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 DuroMax Power Equipment, are pleased to explain the emission control system warranty on your 2020-2021 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. DuroMax Power Equipment 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 a catalytic converter. Also included may be hoses, belts, connectors, and other emission-related assemblies.

Where a warrantable condition exists, DuroMax Power Equipment 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. DuroMax Power Equipment recommends that you retain all receipts covering maintenance on your small off-road engine, but DuroMax Power

Equipment 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 DuroMax Power Equipment 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 DuroMax Power Equipment 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 DuroMax Power Equipment authorized warranty service facility:

TEL: 1-844-387-6629

WEBSITE: www.duromaxpower.com

ADDRESS: 5800 Ontario Mills Pkwy, Ontario CA 91764

This telephone number is only for the engines which the company name "DuroMax Power Equipment" 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. DuroMax Power Equipment 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 DuroMax Power Equipment 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

WARRANTY (CONTINUED)

“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 DuroMax Power Equipment 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.

(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 DuroMax Power Equipment 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) DuroMax Power Equipment 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), DuroMax Power Equipment 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 DuroMax Power Equipment

(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. DuroMax Power Equipment will not be liable to warrant failures of warranted parts caused by the use of a non-exempted add-on or modified part.

(11) DuroMax Power Equipment issuing the warranty shall provide any documents that describe that manufacturer’s warranty procedures or policies within five working days of a 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.
 - (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 the 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.

DuroMax Power Equipment will furnish with each new engine written instructions for the maintenance and use of the engine by the owner.

CUSTOMER SERVICE

Duromax Power Equipment is committed to ensuring that our products perform when they need to. Our Engines are your lifeline in the event of an emergency. Should you have any problems, please contact our customer service department:

DUROMAX POWER EQUIPMENT
5800 Ontario Mills Parkway
Ontario, CA 91764

Customer Service: 844-DUROMAX
Customer Service Hours: 8-5pm PST

Website: www.duromaxpower.com
Email: customer_service@duromaxpower.com







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