110138 CRX680

Operator's Manual



FOR QUESTIONS AND CONCERNS, CONTACT US AT

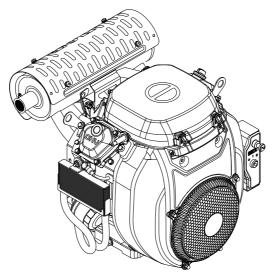


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CRX680 GASOLINE ENGINE OPERATOR'S MANUAL

If your engine is not working properly or if there are parts missing or broken, please DO NOT RETURN IT TO THE PLACE OF PURCHASE. Contact our Customer Service Department at 1-877-362-4271 or cservice@fna-group.com



Read this manual carefully before operation. This manual includes important guidance for safety operation.

This Manual contains important safety information and instructions for operating this engine. PLEASE READ THIS MANUAL CAREFULLY. Failure to do so could result in property damage and/or personal INJURY/DEATH.

Provide this manual to any operator of this engine. This manual should be considered as a permanent part of your engine and should remain with it when you sell it.

The pictures and figures in the manual shall be only for reference and perhaps there will be difference between pictures & figures and physical products.

All information in this publication is based on the latest product information available at the time of printing. We reserve the right to change, alter and/or improve the product and this document at any time without notice and without incurring any obligation.

Write down the engine's serial number and purchase information. Keep this manual and the receipt for future reference.

Model:
Serial number:
Date of purchase:

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I. Operator safety

1.Safety rules



Pay attention to this safety alert symbol. Obey all safety messages that follow this symbol to avoid possible property damage, INJURY or DEATH

Each safety message is preceded by a safety alert symbol and one of three words, DANGER, WARNING, or CAUTION.

△ DANGER

Indicates a hazardous situation which, if not strictly complied with, will result in substantial property damage, serious injury or DEATH.

△ WARNING

Indicates a hazardous situation which, if not strictly complied with, may result in property damage, serious injury or DEATH.

∧ CAUTION

Indicates a hazardous situation which, if not strictly complied with, could result in property damage or injury.



△ WARNING

READ THIS MANUAL COMPLETELY BEFORE OPERATING.

DO NOT operate this engine until you have read ALL safety, operation, and maintenance Instructions listed in this manual.

Failure to follow the instructions may result in property damage, INJURY 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 supplied by the operator.

△ WARNING

Do not modify the engine and do not use the engine for a purpose for which it is not intended.

△ WARNING

Before each use, check for loose or damaged parts, signs of oil or fuel leaks, and any other condition that may affect proper operation. Repair or replace all damaged or defective parts immediately.

Locate all operating controls and safety labels.

Keep all safety guards in place and in proper working order at all times.

DO NOT allow any material to block the cooling slots.

DO NOT allow children or untrained persons to operate the engine.

DO NOT run the engine unattended. Turn off the Engine before leaving the area.



△ WARNING

FIRE

Operation of this engine may create sparks that can start fires around dry vegetation.

This engine is equipped with a spark arresting muffler. If the engine will be used around flammable materials or on land covered with materials such as agricultural crops, forest, brush, grass or other similar items, then a USDA Forest Service spark arrester must be installed

In some area, a spark arrester is required by law. Please contact local fire agencies for laws or regulations relating to fire prevention requirements.

△ WARNING

Read the instructions provided with the equipment that powered by this engine for any additional safety rules that should be observed in conjunction with engine startup, shutdown, operation, or protective apparel that may be needed to operate the equipment.



△ WARNING

HOT SURFACE

Running engines produce heat. Severe burns can occur on contact.

DO NOT touch hot surfaces while operating or just after stopping the engine. Avoid contact with hot exhaust gases.

Maintain at least three feet of clearance on all sides to ensure adequate cooling.

Combustible material can catch fire on contact. Maintain at least five feet of clearance from combustible materials.

⚠ WARNING

Do not tamper with the engine governed speed.

High operating speeds are dangerous and increase the risk of personal injury or damage to the equipment.

Operating at low speeds with heavy load may shorten the engine's life.



FIRE OR EXPLOSION

Gasoline is highly flammable and extremely explosive.

Fire or explosion can cause severe burns or death.

Keep flammable items away while handling gasoline.

Fill fuel tank outdoors and in a well-ventilated area with the engine stopped.

Always wipe off spilled fuel and wait until the fuel has dried before starting the engine.

DO NOT operate the engine with known leaks in the fuel system.

Use proper fuel storage and handling procedures. DO NOT store fuel or other flammable materials nearby.

Empty the fuel tank before storing or transporting this engine.

Keep fire extinguisher handy and be prepared if a fire starts.



MOVING PARTS

Moving parts can cause severe injury. Keep hands and feet away.

DO NOT operate engine with covers, shrouds, or guards removed.

DO NOT wear loose-fitting clothing, dangling drawstrings or items that could become caught. Tie up long hair and remove jewelry.

NEVER place fingers, hands, or body near the engine when it is running.



△DANGER

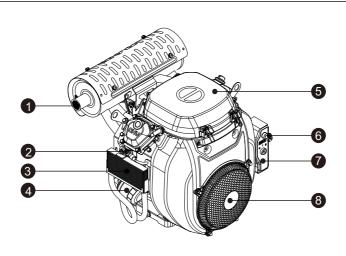
TOXIC FUMES

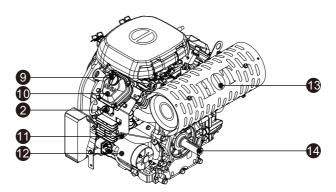
The exhaust of the engine contains carbon monoxide, an odorless, colorless, poison gas. Using engine indoors CAN KILL YOU!

NEVER use inside any building or any kind of enclosure, EVEN IF doors and windows are open.

Place the engine in a well-ventilated area and carefully consider wind and air currents when positioning the engine.

II. Features and Controls





- 1 Exhaust port / Spark Arrester
- 2 Spark plug
- 3 Oil cooler
- 4 Oil filter
- **5** Air filter cover
- 6 Choke lever
- Control box / Key start / Choke lever

- 8 Static screen
- 9 Oil fill cap
- 10 Cylinder head cover
- 11 Dipstick
- 12 Starting motor
- 13 Muffler with spark arrester
- 14 Crankshaft

III. Operating

1. Operating checklist

1

Operating Location

Only use OUTSIDE and place the engine in a well-ventilated area and carefully consider wind and air currents.

Place the engine on level surface before any operation.

Allow two feet clearance on all side of the engine while operating it outdoors.



⚠DANGER

TOXIC FUMES

The exhaust of the engine contains carbon monoxide, an odorless, colorless, poison gas. Using engine indoors CAN KILL YOU!

NEVER use inside any building or any kind of enclosure, EVEN IF doors and windows are open.

High altitude

This engine may require a high altitude carburetor kit to ensure correct operation at high altitudes. Consult your local dealer for high altitude kit information if you always operate your engine at altitudes above 5,000 feet (1,500 meters).

⚠ CAUTION

Even with carburetor modification, engine horsepower will decrease about 3.5% for each 1,000 feet (300 meters) increase in altitude. The effect of altitude on horsepower will be greater than this if no carburetor modification is made.

⚠ CAUTION

Operation the engine at altitude below 5,000 feet (1,500 meters) with modified carburetor may cause the engine to overheat and result in serious engine damage.

2

Operating Condition

Check for loose or damaged parts, signs of oil or fuel leaks, and any other condition that may affect proper operation. Repair or replace all damaged or defective parts immediately.

△ WARNING

Failing to correct problem(s) before operation could result in property damage, serious injury or DEATH.

Remove any excessive dirt or debris, especially around the muffler and static guard.

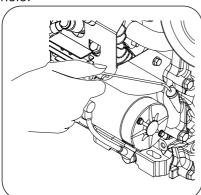
Refer to operating instructions of equipment that this engine powers. Do not operate this engine exceeding maximum angle of operation; see specification table. Engine damage could result from insufficient lubrication.

3

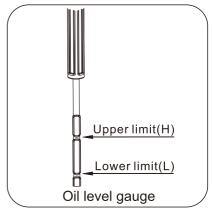
Engine oil

Place the engine on a level surface with engine stopped. Remove the dipstick and wipe it clean.

Insert the dipstick in the dipstick hole.



Remove the dipstick again and check oil level. Level should be at top of indicator on dipstick.



Fill to the upper limit (marked with "H") of the dipstick with the recommended oil if the oil level is low.

Re-insert the dipstick into the dipstick hole.

Refer to **add oil** instruction in **MAINTENANCE** section for more information.

Oil capacity (rated): See parameter.

△ WARNING

This engine is not filled with oil at the factory. Any attempt to crank or start the engine before it has been properly filled with the recommended type and amount of oil may result in engine damage and void your warranty.

⚠ WARNING

Oil is a major factor affecting performance and service life. Use SAE 10W-30 API SG or newer automotive detergent oil as recommended in the MAINTENANCE section of this manual.

△ CAUTION

Only run the engine on a level surface. The engine is equipped with a low oil level sensor. The unit will shut off in the situation where the oil falls below the proper crankcase sump level. To avoid unexpected shutdown, fill the oil to the upper limit and check the oil level before each usage.

4 Engine fuel

With the engine stopped, check the fuel level gauge. Refill the fuel tank (not supplied) if necessary.

△ CAUTION

Pressure can build up in the fuel tank. Allow the engine to cool for at least two minutes before removing fuel cap.

Loosen the fuel cap slowly to relieve any pressure in the tank

Use clean, fresh, regular unleaded gasoline.

DO NOT mix oil with gasoline.

Be sure not to fill above the upper limit mark. Always allow room for fuel expansion.

NEVER use engine or carburetor cleaner products in the fuel tank or permanent damage may occur.

It is important to prevent gum deposits from forming in essential fuel system parts, such as the carburetor, fuel filter, fuel hose or tank during storage. Also, experience indicates that alcohol—blended fuels (called gasohol, ethanol or methanol) can attract moisture, which leads to separation and formation of acids during storage.

Acidic fuel can damage the fuel system of an engine while in storage. Be sure to review the instructions given in "Storage" chapter.



FIRE OR EXPLOSION

Gasoline is highly flammable and extremely explosive.

Fire or explosion can cause severe burns or death.

Keep flammable items away while handling gasoline.

Fill fuel tank outdoors and in a well-ventilated area with the engine stopped.

Always wipe off spilled fuel and wait until the fuel has dried before starting the engine.

DO NOT operate the engine with known leaks in the fuel system.

Use proper fuel storage and handling procedures. DO NOT store fuel or other flammable materials nearby.

Empty the fuel tank before storing or transporting this engine.

Keep fire extinguisher handy and be prepared if a fire starts.

Gasoline/Alcohol Blends: up to 10% alcohol, 90% unleaded gasoline by volume is approved as a fuel. Other gasoline/alcohol blends are not approved. Effects of old, stale or contaminated fuel are not warrantable.

⚠ CAUTION

To minimize gum deposits in your fuel system and to insure easy starting, do not use gasoline left over from the previous season.

5

Equipment check

Check the equipment powered by this engine. Review the instructions provided by the equipment manufacturer for any precautions and procedures that should be followed before start the engine.

△ WARNING

This engine is designed and manufactured for specific applications. Do not attempt to modify the equipment or use it for any application for which it was not designed. If you have questions about specific application, ask your local dealer.

2. Starting the engine



Perform operating checklist.

Turn the choke to the "CLOSED" position.

Move the throttle to the "FAST" position (if equipped). Turn the fuel valve to "ON" or "OPEN" (if equipped).

3

Turn the key past the "ON" position to the "START" position. After the engine has started release the key allowing it to return the "ON" position.

If the starter does not start the engine, do not continue to crank the engine as damage to the starter may occur.

⚠ WARNING

Do not try to continuously crank the engine for more than five seconds at one time. If the engine fails to start, allow the starter to cool one minute before trying to restart the engine. Continuously trying to start the engine will damage the starter.

△ CAUTION

If the engine fails to start after three attempts, verify that the engine is on a level surface and the oil level is maintained at the proper level. Check to verify the fuel valve is open, (if equipped).

The engine is equipped with a low oil sensor; a low oil level will prevent the engine from starting.

Routinely inspect the oil level before each usage of the engine.

If the engine will not start, allow it to stop rotating before attempting to restart the engine. Should you try to start the engine while the flywheel is still rotating may cause damage to the starter pinion. 4

Once the engine starts, move the choke to the "OPEN" position. If the engine does not run smoothly, move the choke midway between the "OPEN" and "CLOSED" positions. As the engine warms, slowly move the choke to the fully "OPEN" position.

△ CAUTION

Turn the choke to the "CLOSED" position. The starting position of the choke will vary depending on the engine temperature. If starting a cold engine, move the choke toward the "CLOSED" position. If starting a warm engine, move the choke toward the "OPEN" position.

Setting the engine speed



Use the throttle lever (if equipped) to adjust the engine speed to the requirement of your application.



If you have any questions about using this engine for a specific application, please review the product operators manual and/or contact your local authorized dealer for assistance

3. Stopping the Engine



If you need to stop the engine in an emergency, simply turn the key to "OFF". For a normal shutdown, first move the throttle to "SLOW" (if equipped). Allow the engine speed to slow then turn the key to "OFF". If your fuel system is equipped with a valve, turn it to "OFF" or "CLOSED".

2

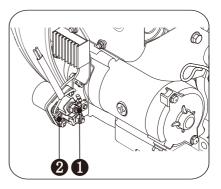
If the engine has any abnormal noise, severe vibrations, hunting, popping or any other abnormal condition while running, turn the key to "OFF" before troubleshooting.

4. Terminal application

The engine starter requires the electrical system to be started or powered by a 12-volt (V) battery with a minimum capacity of 21 ampere-hours (Ah). The positive (+) lead from the battery connects to the positive terminal on the starter relay. Connect the negative (-) lead from the battery to an engine mounting bolt, the conductive frame supporting the engine or any other engine grounding point.

⚠ CAUTION

DO NOT connect the negative (-) battery lead to the oil filter mounting base or any part of the fuel system.



- Positive terminal
- 2 Relay connector

5. After each use

If the engine will not be used for a period of two months or more, drain the fuel system into an approved container. Store the engine in a cool, dry location.

IV. Maintenance

It is the owner's/operator's responsibility to complete all scheduled maintenance in a timely manner. Correct any issue before operating the engine. Always follow the inspection and maintenance recommendations and schedules in this manual.



Accidental starts can cause severe injury or death. Before servicing, disconnect the negative (-) battery lead and disconnect both spark plug leads.

Before servicing, disconnect the negative (-) battery lead and disconnect both spark plug leads. Allow the engine to cool if hot.

△ WARNING

Improper maintenance or failure to correct a problem before operation can cause a malfunction and result in property damage, serious injury or DEATH.

Improper maintenance will void your warranty.

1. Maintenance schedule

Follow the service intervals indicated in the chart below. Service your engine more frequently when operating in adverse conditions.

Contact your local service dealer for your engine or engine maintenance needs.

		Each time before use	The first month or 10 hours ^{Note2}	Every three months or 50 hours ^{Note2}	Every 6 months or 100 hours ^{Note2}	Every year or 300 hours ^{Note2}
Engine oil	Inspection	√				
Engine oil	Replacement		√		√	
Air filter	Inspection	√				
Air iiitei	Cleaning			√ Note3		
Spark plug	Inspection and adjustment				√	
	Replacement					~
Spark arrester Note1	Cleaning				√	
Idle speed	Inspection and adjustment					√ Note4
Valve clearance	Inspection and adjustment					√ Note4
Carbon canister Note1	Inspection	Every two years ^{Note4}				
Low permeability oil tube Note1	Inspection	Every two years ^{Note4}				
Oil tube	Inspection	Every two years ^{Note4}				

Note 1: Applicable types.

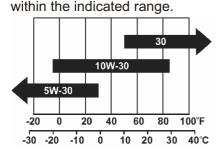
Note 2: Before each season, then follow the prescribed service interval.

Note 3: Service more frequently when operating the engine under severe, dusty and/or dirty conditions.

Note 4: To be performed by knowledgeable, experienced owners or the authorized dealer.

2. General maintenance Engine oil

SAE 10W-30 API SG or newer automotive detergent oil is recommended for general, all-temperature use. Other viscosities shown in the chart may be used when the average temperature in your area is

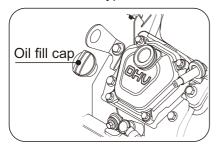


AMBIENT TEMPERATURE

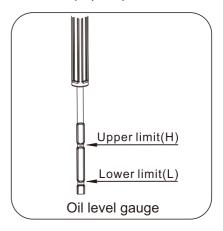
Oil capacity (rated): See parameter.

Add oil

- 1.Place the engine on a level surface.
- 2. Remove the oil fill cap. Fill using oil of the proper recommended type.



3.Remove the dipstick and check the oil filling volume which should be at the upper limit of the scale (H point).



4. Completely insert the dipstick into the dipstick hole during inspection.

Change oil

⚠ CAUTION

Change oil when the engine is warm from operation.

To change the oil, it is recommended to allow the engine to run for a few minutes to warm the oil. This will ensure the used oil will drain the engine completely.

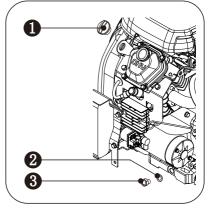
- 1. Place an appropriate container below the oil drain bolt. Remove the oil filler cap. Next, using a wrench, loosen the drain bolt counterclockwise. Once loose, fully unthread the bolt with your fingers removing it and the bolt gasket.
- 2. When the oil is completely drained, install a new gasket on the drain bolt and re-tighten the drain bolt.
- 3. Ensuring the engine is on a level surface, use the recommended grade of oil to fill the engine to the upper limit of the dipstick. Do not overfill.
- 4. Return and tighten the oil fill cap.

△ WARNING

The engine is not filled with oil at the factory. Any operation before it has been properly filled with the recommended type and amount of oil may result in engine damage and void your warranty.

Promptly clean up any spilled oil on the engine or the surrounding area. Clean your hands with soap and warm water.

Only dispose of the waste oil at a local waste oil recycler.



- Oil fill cap
- 2 Drain bolt gasket
- 3 Drain bolt

Replacing the oil filter

Drain the oil, and then re-tighten the drain bolt.

- 1. Using an oil filter removal wrench, loosen the filter and remove. Pour the oil contained in the filter into the pan of waste oil.
- 2. Clean any waste oil or debris from the oil filter port. Using fresh oil, lubricate the seal on the new oil filter.
- 3. Tighten the filter by hand or as per the filter instructions.
- 4. Ensuring the engine is on a level surface, use the recommended grade of oil to fill the engine to the upper limit of the dipstick. Do not overfill.

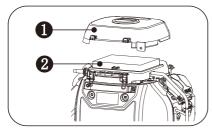
- 5.Start the engine and check for oil leaks.
- 6.Stop the engine, and then remove the dipstick and check whether the oil level is within the specified range. If the oil level is too low, it is required to refill the oil to the predetermined scale.

△ CAUTION

The air filter element and filter container may contain Polycyclic Aromatic Hydrocarbons (PAHs). Some PAHs may cause cancer. To avoid exposure to PAHs, wear gloves when performing air filter maintenance.

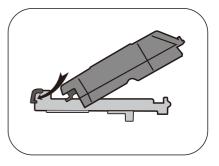
Air filter

- 1. Clean area around the air filter.
- 2. Unhook retaining clips and remove cover.
- 3. Remove the paper filter element from the cover.

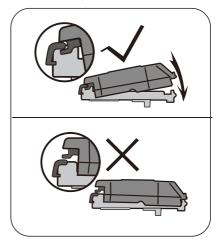


- Air filter cover
- 2 Paper filter
- 4. Check condition of rubber seal and replace if necessary.

- 5. Paper filter element: Brush way any debris thoroughly before reinstalling the filter. Replace the element if it is heavily soiled.
- 6. Install the paper filter element into the cover.
- 7. Reinstall air filter cover: a. Lean the cover against the base as illustrated below. Push the cover forward until the tabs slip into the mating slots.



b. Press the cover and secure the retaining clips.



△ CAUTION

The air cleaner is a critical emission related component and should not be altered or modified in any way.

Operating the engine with loose or damaged air cleaner components could cause engine wear and failure, and invalidate your warranty.

Paper element cannot be blown out with compressed air.

⚠ WARNING

Do not run the engine when the paper element is not installed; otherwise, this may cause damage to the engine.

△ DANGER

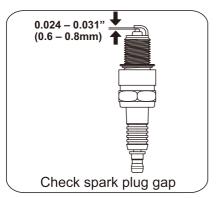
Never use gasoline or a flammable solvent to clean the filter housing. Use of any flammable agent may cause an explosion.

Spark plug

- 1.Recommended spark plug: F6RTC.
- 2. Use of a non-recommended spark plug style may cause damage to the engine.
- 3. Remove the dirt from the spark plug cap and bottom.
- 4.Remove the spark plug cap.
- 5. Use a spark plug wrench or socket of the proper size to loosen the spark plugs for removal or reinstall.
- 6. Inspect the spark plug and the spark plug washer. Replace the plug if it or the washer are damaged.
- 7. Check spark plug gap. Carefully bend side electrode to adjust the gap if necessary.

Spark plug gap:

0.024 - 0.031" (0.6 – 0.8mm)



- 8. Carefully thread the plug into the engine **by hand.**
- 9. After the spark plug is seated, use spark plug wrench to tighten the plug.

Spark Plug tighten Torque: 15-18 ft. lb. (20 – 25 N.m)

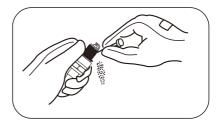
10.Attach the spark plug wire to the plug.

△ WARNING

Only use recommended spark plug or equivalent. DO NOT use spark plugs that have improper heat range.

The spark plugs must be tightened to the proper torque. Loose spark plug(s) will cause compression leaks leading to hard starting and decreased engine power.

To ensure proper operation of the engine, the spark plug gap must be maintained and be free of deposits. Clean the spark plug according to the steps shown below.



- a) Remove the spark plug
- b) Slight amount of buildup on the electrodes can be cleaned with a wire brush. Replace the plug if heavily soiled. Spark plug(s) that look wet, oily or have extreme electrode wear indicate the engine needs to be serviced by a trained small engine technician.

Spark Arrester

(Applicable types)

- 1.Allow the engine to cool completely before servicing the spark arrester.
- 2.Remove the two screws holding the cover plate which retains the end of the spark arrester to the muffler.
- 3.Remove the spark arrester screen.
- 4. Carefully remove the carbon deposits from the spark arrester screen with a wire brush.

V. Trouble analysis and trouble-shooting

Phenomenon	Problems	Solutions
	Engine switch is off.	Turn engine switch to the ON position.
	There is no fuel	Fill tank per instructions in this manual.
	Inadequate engine oil.	Check oil level. This engine is equipped with a low oil sensor. The engine cannot be started unless the oil level is above the prescribed lower limit.
Engine Cannot be started	There is no ignition	Using an external spark tester, assure that both cylinders have proper spark. If the spark is weak or missing from one or both cylinders, contact your local authorized service dealer.

If your engine is not working properly or if there are parts missing or broken, please DO NOT RETURN IT TO THE PLACE OF PURCHASE. Contact our Customer Service Department at 1-877-362-4271 or cservice@fna-group.com.

VI. Storage and transportation

Storage

DO NOT mix oil with gasoline. The engine should be started at least once every 2 weeks and allowed to run for at least 20 minutes. Follow the instructions below for longer term storage if the engine were out of service for 2 months or more.



Fire or explosion

Gasoline is highly flammable and extremely explosive. Empty the fuel tank and shut off fuel valve before storing or transporting this engine.

- Allow a hot engine to cool.
- 2. Change the oil while the engine is warm.
- 3. Drain all fuel completely from the fuel tank, fuel hose and carburetor.
- 4. Remove both spark plugs and pour 1oz. of engine oil into the cylinders. Reinstall the spark plugs but do not connect the spark leads. Turn the engine over for one second by rotating the key to "START". Connect the spark leads.

- 5. Disconnect the negative (-) battery lead. Wipe the engine of any dirt and debris.
- 6. Store the unit in a clean, dry area out of direct sunlight.

Transportation

To prevent fuel spillage when transporting or during temporary storage, the engine should be secured upright in its normal operating position, with the engine switch OFF. Turn the fuel valve to "OFF" or

"Closed" (if equipped).

⚠ WARNING

When transporting:

Do not over fill the tank. Avoid a place exposed to direct sunlight when putting the engine on a vehicle. If the engine is left in an enclosed vehicle for many hours, high temperature inside the vehicle could cause fuel to vaporize resulting in a possible explosion.

Do not drive on a rough road for an extended period with the engine on board. If you must transport the engine on a rough road, drain the fuel from the engine beforehand.

∧ CAUTION

Take care not to drop or strike the engine when transporting. Do not place heavy objects on the engine.

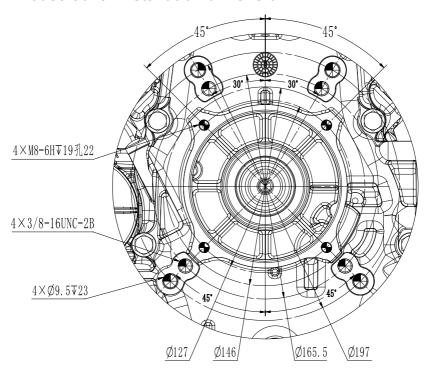
VII. Specification

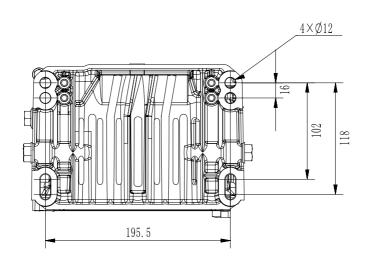
1. Specification Parameter Table

Category	Item		CRX680	
	Туре		Overhead valve	
	Number of air cylinders		2	
	Piston diameter ((mm)	78	
	Piston stroke(mm)		71	
	Total displacement(cm ³)		679	
	Compression ratio		8.5:1	
Main	Rated power (kW) net		CI 14.5/3600 per SAE J1349 Net Power	
structure parameters	Direction of rotation		Counterclockwise (While viewing the PTO)	
	Ignition advance angle(°)		25°±2°	
	Valve clearance	Intake valve clearance	0.004 - 0.006" (0.10 - 0.15mm)	
		Exhaust valve clearance	0.006 – 0.008" (0.15 – 0.20mm)	
		g gap	0.024 - 0.031" (0.6 - 0.8mm)	
	Oil		SAE 10W-30 API SG or newer	
Fuel and oil	Fuel		Regular gas	
	Fuel capacity(L)		1	
	Oil capacity(L)		1.5	
Dimension and mass	Dimension (Length×Width× Height)		19.49 x 21.14 x 18.23" (495 x 537 x 463mm)	
	Net mass		106.9lbs (48.5kg)	

Note: Engine data may be updated at any time without notice or obligation. Please contact your local authorized dealer for engine information.

2.Case cover installation dimension





3. Engine circuit diagram

CRX680 electrical schematic

