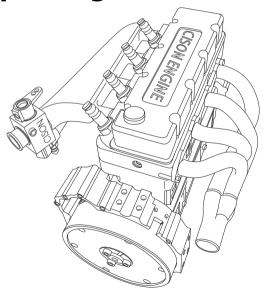
CISON

L4-175 OHV Engine Model Operating Manual



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Thank you for choosing the CISON brand.

In early 2022, we introduced the FL4-175 F-head L4 gasoline engine. This time, we bring you its evolved version - the L4-175 OHV L4 gasoline engine. Compared to the previous L4 model, this L4 engine maintains its unique micro-compact exterior design and nearly identical displacement. However, the appearance has been enhanced with red sporty elements. Structurally, the crankshaft has been reinforced, and the carburetor adopts a biomimetic design. The valve train mechanism has been redesigned to OHV type. Compared to the F-head design, this engine will deliver better power output performance, making it more compatible with RC off-road trucks, trailers, etc., and effectively providing higher torque output. It comes with standard electric start, water-cooling system, and independent Jubrication system.

The new L4-175 OHV L4 gasoline engine will also be available in two versions: KIT version and assembled version. The engine does not include spark plugs, ignition, and water-cooling components. Please bring your own or purchase separately.

The engine does not include the base, CDI ignition, spark plugs, oil filter, water-cooling components, etc. Please use the machine as per the instructions to avoid improper operation that could damage the machine. If you have any questions, please feel free to contact us.

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About Your Engine

Remember that your engine is not a "toy", but a high-efficiency internal combustion engine. The output power may cause harm or other effects. Do not change or disassemble it. As a professional user, please make sure the engine runs safely and carefully. If your CISON engine is acquired by another person in the future, we respectfully request that these instructions be passed on to its new owner.

The advice that follows is for all production engines. Incorrect operation or ignoring safety can lead to engine damage or danger.

Warning: These events might involve serious (in extreme circumstances, even fatal) injury.

Model engine fuel is poisonous. Do not allow it to come into contact with your eyes or mouth. Always store it in a clearly marked container and out of reach of children.

Model engine fuel is also highly flammable. Keep it away from open flames, excessive heat, sources of sparks, or anything else that might ignite it. Do not smoke or allow anyone else to smoke near it.

Never operate your engine in an enclosed space. Model engines, like automobile engines, produce deadly carbon monoxide. Run your engine only in an open area.

Model engines generate considerable heat. Do not touch any part of your engine until it has cooled. Contact with the muffler, cylinder head, or exhaust header pipe, in particular, may result in a serious hurn

Attention:

This engine is designed for scientific experiments, model demonstration and vehicle model driving. Do not attempt to use it for any other purpose.

Mount the engine securely in your model, following the manufacturer's recommendations, using appropriate screws and locknuts.

When starting, some noise will occur. To mitigate this, you can either purchase a matching muffler exhaust pipe from us, or place the engine away from any inhabited areas as the noise of operation may disturb others.

Safety glasses are strongly recommended. Please note that the electric plug or battery wire should not come into contact with the rotating parts. Also, ensure that the connection of the throttle rocker arm is secure.

To ensure safety, keep all spectators, particularly children, at least 3 meters away from the engine when starting it.

To stop the engine, completely shut off the throttle. In an emergency, you can clamp the fuel line in front of the carburetor to cut off the fuel supply. Do not attempt to remove the flywheel or start the synchronous pulley.

Product Introduction

Basic Parameters

Brand: CISON

Engine Type: Gasoline Internal

Combustion Engine

Valve Mechanism Type: OHV

Model: L4175-OHV Material: Metal

Color: As shown in the picture

Overall Dimensions: 135*102.4*105mm

Cylinder Bore: 16.7mm Stroke: 19.5mm Weight: 1.3kg

Product Configuration: KIT Disassembled

Version / Assembled Version

Displacement: 17.5CC

Cylinder Arrangement: Inline
Four-Cylinder

Stroke Type: Four-Stroke Speed Range: 1500-8000 rpm

Power: $\approx 2.5 ps$

Cooling Method: Water Cooling **Starting Method:** Electric Start

Ignition Method: CISON L4 Engine-Specific CDI Igniter (not included)

Spark Plug Type: 1/4-32 Thread ME8 Type

Spark Plug (not included)

Lubrication Method: Independent

Lubrication System

Fuel Type: 92 Octane and Above Gasoline Oil Type: 2T Oil, Recommended 10W50 Oil

Starting Power Source: 6-14V,

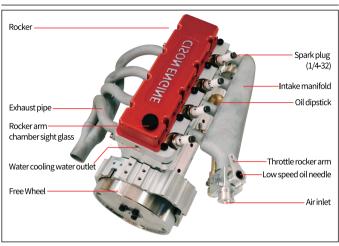
Recommended 12V Lithium Battery (not

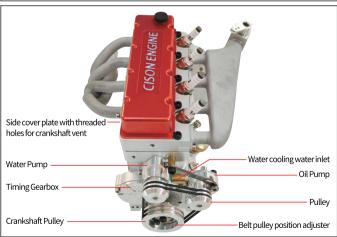
included)

Applicable Age: 14+ Packaging: Wooden Box Package Contents: Engine Parts *1 Set.

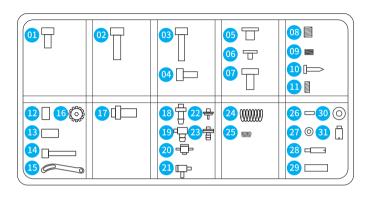
Instruction Manual *1 Booklet.

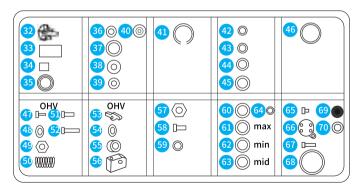
Structure and Components

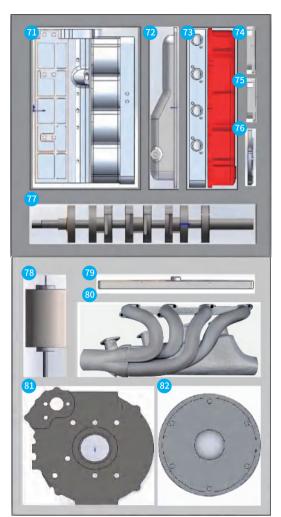




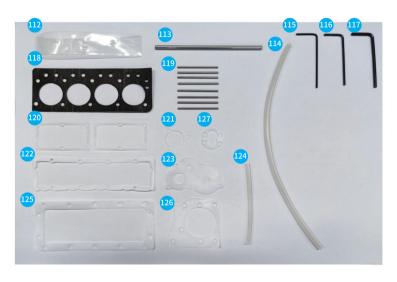
Parts Distribution Diagram





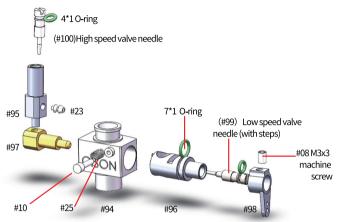




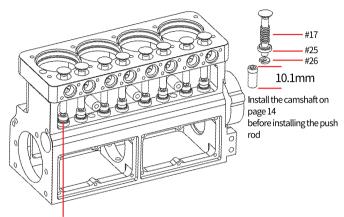


Assembly Steps

Carburetor installation



Installation steps for flat engine, skipping OHV version



Add lubricating oil and check smoothness

The length of the control push rod is approximately 10.1mm, which may result in poor sealing. If the push rod in your hand exceeds 10.1, you can try:

- Grind the top screw or replace it with a thinner flat head screw (using anaerobic adhesive to prevent loosening during operation) and adjust it to around 10.1mm
- Contact us to provide you with flat head screws (it is recommended to polish the length yourself, which is also the fun of building your own engine)

Product assembly steps



Take out the cylinder liner It can be taken out directly, yes From the bottom with non-metallic materials Tap it out gently



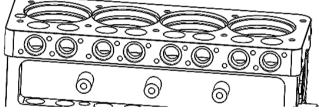
#50(Install 3 sealing rings per cylinder)



- 1. Please clean the cylinder again Inside the sleeve to prevent dust from scratching the piston
- 2. Install the cylinder liner back Note: the appearance should be moistened The oil can make it smoother, Be careful that the cylinder liner catches the sealing ring, causing damage to the sealing ring



If there are gaskets on the cylinder liner, only one gasket needs to be placed, as excessive placement may lead to poor sealing. If there are no gaskets present, it means that no gaskets need to be installed



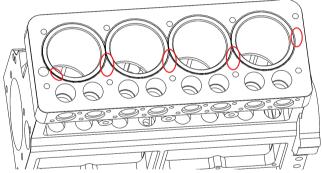
Flat head engine steps

This step can be operated in the last step!!!

Note: Because the cylinder liners are very compact, if you are a flat engine version, you need to apply cylinder gasket sealant to the red circle. Because there will be chamfers during CNC machining, air will leak from the chamfers.

Kind reminder: Please pay attention to whether there is too much or too little sealant. Excessive sealant may enter the cylinder and affect valve sealing, while insufficient sealant can cause air to leak from the chamfer.

After installation, please wait for more than 6 hours and wait for the sealant to solidify before attempting to start, otherwise it may break the seal.



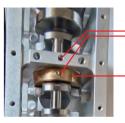
Please apply sealant to the gaps



#109 (Set screw moved to Keyway position, fixed Timing gear)

#63

#37(0.1mm/Adjust the gasket and add it according to the specific situation. For example, there is a gap between the front and rear when installing the crankshaft)



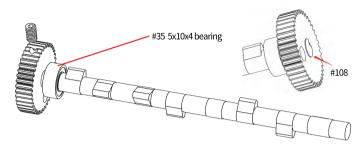
Alignment between two locating holes

Crankshaft support

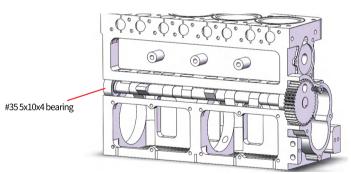


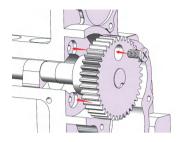
The two m3 on the side are forbidden to be installed

#65 (M3X4) Note: after installation, the crankshaft should rotate smoothly. If not, please continue to check whether the screw completely blocks the copper sleeve, resulting in no clearance



Firstly, place the 5x10 bearing into the keyway end of the camshaft, and then place the largest gear into the camshaft. Align the keyway of the camshaft with the M3 screw on the gear and lock it tightly (it is recommended to use anaerobic adhesive to loosen it) Attention: The gear needs to protrude about $0.5 \, \text{mm}$ from the camshaft to prevent the gear cover from not being installed properly

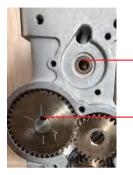




Install the m2 cross head screw as shown in the picture to lock the bearing and prevent it from falling off



#31 (243 anaerobic adhesive fixation. When installing the inert gear, please add a 4x8x0.2 gasket first)



#34 (271/243 Anaerobic adhesive fixation)

#26(Note: screws have been used instead of keyway pins to facilitate disassembly)

Please add anaerobic adhesive to the screws and place them loose

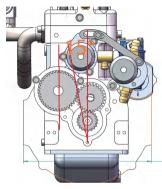


-34(M3顶丝使用243厌氧胶)



Note: after installation, ensure that the crankshaft is selected smoothly, otherwise, please continue to check

Camshaft position



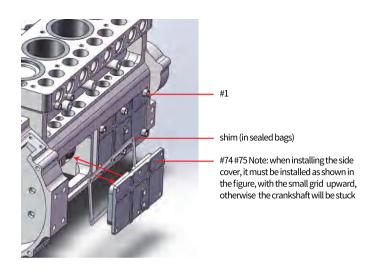
Step:

- 1. First, make the keyway on the camshaft vertically upward, that is, the intake valve of the first cylinder is ready to open (cylinder 1 is close to the water pump)
- 2. Turn the crankshaft to the top deadcenter of the first cylinder (the gearkeyway is vertically upward), and thenturn the crankshaft counterclockwise for about 15° (counterclockwise when viewed from the gear face)
- 3. Install the inert gear





No.: 70 (2 gaskets. Specification: inner hole 8mm, thickness: 0.1mm)



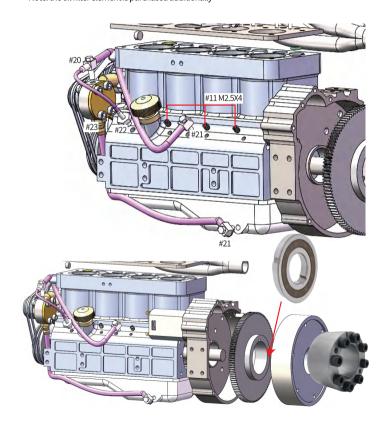


Note: the bearing is divided into positive and negative, and the model mark corresponds to the gear small boss

26 (243和271 anaerobic Glue)

Use M2.5 screws in the red circle of part No. 9 (M2.5), Note that the screw is used to plug and adjust the oil volume to ensure that each oil outlet hole basically has the same oil volume. Test and regulate the flow before operation,

Note: the oil filter element is purchased additionally





Note: please install the pinion before the big gear

The starting motor screw shall be put in before installing 41 (screw No.: 1)

14(SeeNotes)

40 (Before installation, please find the gasket with thickness of 0.2 in inner hole 3 in grid 51 and put it in)

26(Pin)



The tension sleeve and flywheel shall be kept flat as far as possible

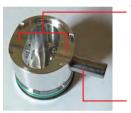


Slowly tighten the three screws in turn. Note: it is forbidden to tighten one of the screws at a time, otherwise the flywheel may not be locked or the tensioning sleeve may be damaged

Note: rotate the flywheel clockwise after installation, which should be very smooth with the reduction gear. Otherwise, readjust the gear clearance.



Scheme 1 (recommended): two cast iron piston rings, and the ring mouth is staggered by 180 $^\circ$



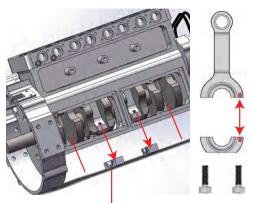
Add a small amount of 680/272 high-strength anaerobic adhesive to fix the piston pin to prevent movement during operation. Attention: Do not leave anaerobic adhesive residue on the piston, and install the connecting rod in a timely manner to prevent the adhesive from solidifying and becoming immovable

#29



Please add lubricating oil to the piston surface and connecting rod rotation position before installation

High strength Fe Al Cu alloy



Please install in the marked order

#36

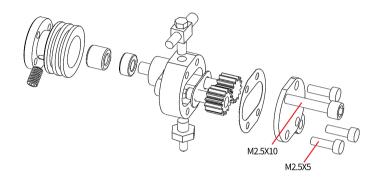
Attention
The original pairing shall be maintained during disassembly and shall not be confused. The concave point at the arrow shall also be kept corresponding during installation.

Note: the oil pump base has an installation direction



#3

#14、#16



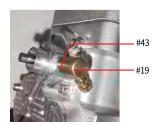




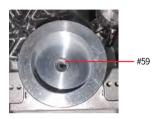


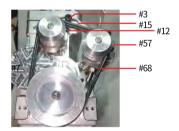
#1

The pulley is fixed with high-strength 271 anaerobic adhesive. Fix the pulley note: the pulley groove should be flat with the crankshaft pulley



Note: water pump and oil pump pulley shall be adjusted before fixing with 271 anaerobic adhesive







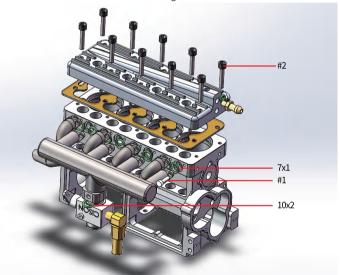
The sensor magnet mounting hole (the magnet is in the CDI package) and the mounting magnet must be flat



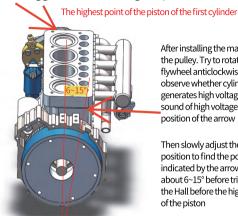
After you receive the CDI igniter, there is a very small magnet in the package. Please note that there are colors on one side of the magnet, and those with colors are installed outward, as shown in the figure

Just install a magnet in any mounting hole. It needs to be pressed in with a tool magnet. Or use a drill to enlarge the hole diameter, and then use glue to stick it Note: the magnet shall not protrude from the plane, otherwise it may touch the hall sensor

Flat head engine



CDI trigger time and magnet position

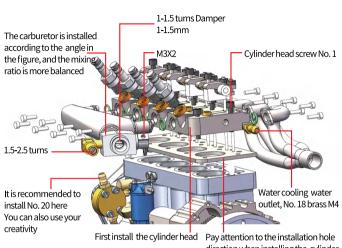


After installing the magnet, lock the pulley. Try to rotate the flywheel anticlockwise and observe whether cylinder 1 generates high voltage or has a sound of high voltage at the position of the arrow

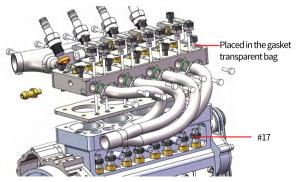
Then slowly adjust the pulley position to find the position indicated by the arrow, which is about 6~15° before triggering the Hall before the highest point of the piston

If you still don't understand, you can subscribe to our video account and leave us a message Subscribe to our YouTube: https://www.youtube.com/c/CISONENGINE

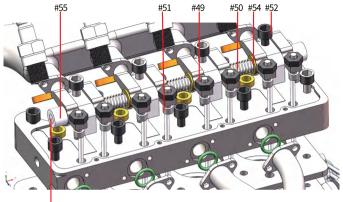
The following is the OHV version



Pay attention to the installation hole direction when installing the cylinder gasket



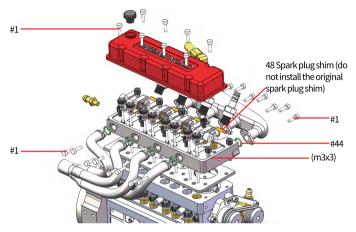
First, install the tappets and push rods. Put a little lubricating oil



Placed in the gaskettransparent bag

Install the rocker arm assembly in the order and direction shown in the picture

Generally, 61 and 61 are matched, and the top thread of the nut protrudes about 0.5-1mm. Note that too much protrusion will lead to excessive valve clearance and jamming of the rocker arm cover. After installing the rocker arm assembly to the cylinder head, check the valve clearance with a feeler gauge again (0.05~0.1mm)



In this step, install the rocker arm assembly and adjust the valve clearance. Then install the intake pipe, exhaust pipe, carburetor and spark plug. Then rotate the flywheel to observe the cylinder pressure

Wait for the machine to run for several minutes before rechecking and adjusting the valve clearance. Then you can install the rocker arm cover. Pay attention to the direction of the rocker arm cover gasket

Preparations for Engine Start

Checking Product Integrity

For safety reasons, it is strongly recommended not to dismantle the engine or attempt to start the mechanism. If you encounter any starting issues, please contact your local dealer or CISON's technical personnel for assistance. If you need to send the engine back to the factory for testing, CISON will provide high-quality after-sales service. However, any problems arising from unauthorized disassembly will result in your assumption of corresponding responsibilities and expenses.

Pre-Startup:

- 1. Please check if the CDI is receiving power, turn on the switch, and then rotate the flywheel to observe if there is a high-voltage spark at the top of the spark plug. If there is no high-voltage spark:
- a) Check if the power supply is connected.
- b) Check if the voltage is normal.c) Check if the Hall sensor is damage
- c) Check if the Hall sensor is damaged, etc.
- Open the carburetor throttle to the maximum, then cover the air intake with your hand. Rotate the flywheel 3-5 turns or more to allow fuel to advance into the cylinder. Afterward, start the engine.
- 3. The fuel used for factory testing may differ from yours, so carburetor needle settings might vary slightly. If unable to start, adjust the main needle to 1.0 turn, and the auxiliary needle to protrude from the plane by about 0.5mm (note that adjustments should generally not be made

arbitrarily). Then, attempt to start, but it might not be precise due to factors like ambient temperature and fuel tank height. Operate based on your experience.

Fuel:

The engine of this model is designed to use gasoline. Please add pure gasoline with an octane rating of 95% or higher. This model is equipped with an independent lubricating oil pump, so there is no need to mix oil with gasoline.

Fuel Tank:

It is recommended to use the original small fuel tank to enhance the aesthetics and harmony of your model. Of course, we can also separately sell some other types of fuel tanks.

Fuel Line:

Please use Tygon-type tubing and avoid using silicone, as it is not suitable for gasoline-based fuels. The included fuel line can easily be connected to the carburetor's fuel inlet using a pair of small needle-nose pliers.

Needles:

Rotate the main needle 1.0 turn and set the auxiliary needle about 0.5mm higher than the plane. Needles are pre-set before factory delivery, but slight adjustments might be necessary due to differences in fuel type/humidity/elevation. Turning the needle clockwise adjusts the mixture to lean, while turning it counterclockwise enriches the fuel mixture.

Idle Speed:

Prepare Tools and Materials

Idle speed can be adjusted by rotating a small hex screw. Turning the screw clockwise increases idle speed, and turning it counterclockwise decreases it by closing the throttle cylinder opening.

Starting Tool:

Use the starter shaft in a cordless drill to start the engine model. The drill bit needs to rotate counterclockwise. Note that for a 45-degree V-type angle engine, observing noticeable "characteristic" vibrations is normal.

Spark Plugs:

This engine uses 1/4-32 thread ME8 type spark plugs, a set of 4.

Ignition connection:

The Hall-type ignition system provides power to the spark plugs. Please purchase the four-in-one CDI ignition specifically for the CISON four-cylinder engine. Connect the spark plug wires to each spark plug. Before connecting, ensure that each spark plug can discharge properly.

Prepare the following items:

- (1) Specialized CDI ignition.
- (2) 3S T-plug lithium battery.
- (3) Spark plugs * 4.
- (4) 0-15w engine oil.
- (5) Water-cooling radiator and hoses. (6) Fuel tank and fuel lines.
- (7) Radiator water outlet
- (8) Screwdriver and other tools
- (1.3mm/1.5mm/2mm).

Wiring Diagram



If there is no series resistance between the high voltage wire and the spark plug of CDI, the noise that interferes with the sensor may be generated, causing four high voltage wiras to generate eparks at the same time, But this will not affect the operastion. But I suggest you connect the resistance we provide in series between the end of the high-voltage wire and the spark plug

Engine Operation Instructions

Engine Start/Run/Stop

Engine Debugging

- (1) According to the wiring diagram, connect the CDI and spark plug wires to ensure that the spark plugs can discharge properly. Install the water cooling system and add 30ml of oil to the engine oil tank. Start the motor and connect the CDI to the 3S lithium battery.
- (2) Add gasoline to the fuel tank. Set the main needle of the carburetor to 1.3-1.5 turns, the idle needle to 0.8 turns, and the throttle valve to about 1.5mm. After confirming the ignition angle, ensure that the fuel is completely atomized and enters the cylinder, and make sure there is no air in the fuel system.
- (3) Turn on the power switch. After the engine is fully started, you can disconnect the power to the starting motor. At this point, you can adjust the engine speed by adjusting the throttle lever.

We recommend keeping the engine speed relatively low during the initial runs to allow proper lubrication and shorten the break-in period. The engine surface and exhaust components will indeed become hot, so avoid direct contact with the cylinder and exhaust pipe while the engine is running.

Rich Mixture:

When the engine is producing excessive black smoke or experiencing slow acceleration, it indicates that there is too much oil in the engine. Rotate the main needle clockwise in 10-degree increments to gradually decrease the main needle setting. Do this until the engine exhaust sound becomes soft and powerful, the exhaust pipe emits a slight amount of smoke, and lubricated fuel is sprayed out.

Lean Mixture:

If the engine produces a sharp metallic sound, like dry friction between metal surfaces, the temperature rises rapidly, and the engine stops immediately after accelerating, it indicates that there is insufficient oil in the engine. Rotate the main needle counterclockwise in 10-degree increments to gradually decrease the main needle setting. Do this until the engine exhaust sound becomes soft and powerful, the exhaust pipe emits a slight amount of smoke, and lubricating oil is sprayed out.

Carburetor Not Supplying Fuel: This could be due to the needle valve being fully closed or blocked.

Carburetor Spraying Fuel: Incorrect valve timing, valve leakage, or valve clearance too small (correct clearance is 0.1mm).

Compression Without Starting: Faulty CDI ignition, sensor damage, power failure

Excessive Idle Speed: Incorrect carburetor tuning, imbalance in the operation of left and right cylinders, insufficient cylinder pressure, incorrect valve timing.

Sudden Starting Without Compression: It's likely that the valve structure is misaligned or foreign objects are affecting the valves.

Engine Overheating: Ensure proper cooling measures are in place, check whether thinner gaskets were used to increase compression ratio, and verify if lubricating oil was added to the fuel.

Achieving Extremely Low Idle Speed: Replace the flywheel with a larger one, lower the compression ratio.

Safety Precautions:

- (1) If the engine fails to start despite normal ignition and cylinder compression, you may need to adjust the carburetor needle.
- (2) After tightening the main needle on the carburetor, loosen it by 1/4 turn, then start the flywheel to ensure a proper mixture ratio of gasoline and air.
- (3) When the engine stops running, make sure to turn off the power switch.
- (4) Do not attempt to start the engine if it has ingested water. Remove the spark plug, close the needle valve, press the start button to discharge excess fuel (use a cloth to cover the plug hole to prevent fuel splashing onto you). Forcing a start without removing excess fuel might cause irreversible damage to the starting system and result in stress and deformation to connecting rods and crankshafts.
- (5) In case of any discrepancies between the three-dimensional images in the manual and the actual product, follow the physical product.
- (6) Keep the manual in a safe place for reference. If you intend to transfer the engine model to someone else, make sure to provide them with the manual as well.

Care and Maintenance

Maintenance Method

This is a high-precision machine that requires regular cleaning. Due to the impact of the environment and fuel during use, engine components can experience wear and corrosion. You can perform basic cleaning and maintenance to keep it in good condition.

To maintain the carburetor in good condition, it's important to clean it carefully and remove any dirt and grease from the intake port.

If you're using an air filter, make sure it's clean and not obstructed.

If the air filter has been in use for more than an hour, replace it promptly to ensure proper operation. When removing a contaminated air filter element, be cautious not to introduce debris into the carburetor.

Do not dismantle the timing gear; clean it with alcohol as a non-corrosive agent. Spark plugs are consumables, so treat them accordingly. Prolonged use won't ensure optimal engine performance, but careful usage can extend their lifespan. Use appropriate tools when disassembling the engine.

Use an appropriate amount of 95-octane gasoline.

When making adjustments, avoid excessively tilting the engine and do not connect the battery.

If the spark plug is burned or no longer provides optimal performance, replace it, especially if:

- a. The insulator surface becomes rough and white
- b. The insulator is cracked or deformed.
- c. External materials adhere to the filament or plug corrosion occurs.
- d. Engine power decreases during idle.
- e. Engine power diminishes after starting.

At the end of each operation, empty the fuel tank, provide power to the spark plug, and attempt to restart the engine to burn any remaining fuel in the tank. Repeat this process until the fuel in the engine is depleted.

Inject anti-corrosion oil, briefly start the engine to distribute oil onto working parts. Do not inject this oil into the nozzle of the lubricator, as it could cause O-rings in the carburetor to deteriorate. Add solid lubricant to the camshaft and valve rocker arms to ensure sufficient lubrication for the camshaft during each operation.

Note!

These maintenance procedures should be performed regularly. Over time, there's a risk of corrosion or difficulty in starting the engine. If you need assistance, please contact us.

Storage Method

When the engine is not in use, it should be stored properly.

Short-Term Storage (1-3 months): Start by cleaning the engine surface, blow-drying it with compressed air, and evenly applying rust preventative oil to metal surfaces using a brush. Apply rust prevention to the surface of the drive wheel as well. Next, disconnect the power and switch wires, clean the connector terminals, loosen the drive belt, seal all exposed pipes, intake and exhaust pipes, and air filters with moisture-resistant paper. Cover the engine with plastic/acrylic covers and store it in a dry room.

Long-Term Storage (over 3 months):
Before storing, start the engine at idle and
run for 1 to 1.5 minutes before stopping.
Drain the engine's lubricating oil without
draining the coolant while the engine is
still warm. Then perform "Surface
Cleaning," but in contrast to short-term
storage, place an (oil-free, unused) sticker
on the engine to indicate that it shouldn't
be disturbed.

After Unpacking for Use:
First, remove the engine cover, connect
the pipes, draw fuel from the system to
prepare for the next start-up. Then
connect the power, tighten the drive belt,
add clean engine oil, check the oil and
coolant, use a tool to rotate the
flywheel/crankshaft for 3-5 turns, ensuring
there is no stalling. Now, you're ready to
wake up the engine. If the storage time
exceeds 2 years, you'll need to replace the
coolant and clean the cooling system.

Replacing Parts

After prolonged usage, friction between engine components can lead to wear and increased clearances. Replacing relevant parts can help enhance the engine's performance.

During usage, if you encounter issues like difficult starting, reduced power, unstable idle, or other problems, it's recommended to share your experiences and report any engine performance issues to your local dealer or CISON. We are committed to providing you with excellent service.

For part replacements, we offer professional equipment and skilled teams. Without proper tools, please refrain from attempting to dismantle the engine, as this could result in uncontrollable damage.

Troubleshooting

Diagnostic Troubleshooting Steps:

- Starter and Engine Won't Turn:
 First, check the battery's charge level
 and wire connections. If the battery is fine,
 inspect the starter circuit, fuses, and
 ignition switch.
- 2. Set the throttle to a mid-open position and try starting the engine. If the engine starts, the issue might be with the idle control valve or its circuit, or there could be an intake manifold air leak. If the throttle is mid-open and the engine still doesn't start, proceed to the next step.
- 3. Perform a visual inspection. Check for any air leaks in the intake manifold. Inspect the pipes and their connections for integrity. Check for leaks in the crankcase ventilation system.
- 4. Check High-Voltage Spark: If the high-voltage spark is abnormal, inspect the high-tension wires, ignition sensor, distributor, and electronic ignition module

Remember that proper diagnosis and troubleshooting often require technical expertise and specialized tools. If you encounter persistent issues, it's advisable to consult a professional mechanic or service center to ensure accurate diagnosis and safe repairs.

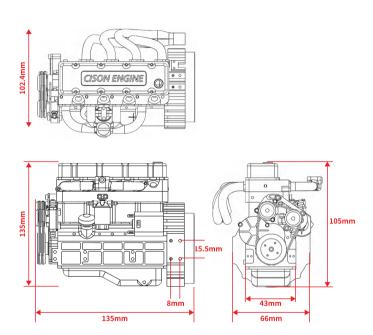
Safety Information

Prohibited Operations:

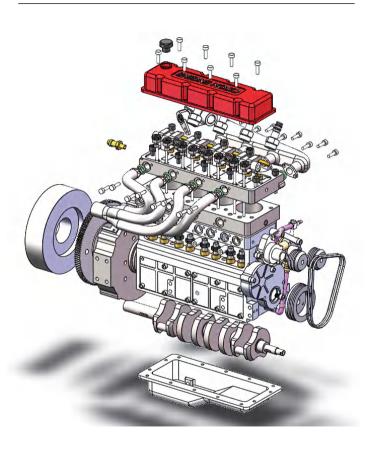
- 1. This machine is intended for operation by adults aged 18 and above only.
- This machine uses pure gasoline as fuel and operates at high speeds, posing certain risks.Please strictly follow the instructions provided.
- 3. Do not add any fuel other than 95 or 98 octane gasoline. The fuel must be clean and kept away from sources of ignition. Impurities in the fuel can clog the carburetor passages and reduce engine performance.
- 4. While the machine is running, do not place your hands or any other objects near the engine pulleys and flywheel to prevent potential bodily harm and increase the risk of damaging the machine.
- 5. If the machine is not operating properly, do not attempt to forcefully start it. Immediately inspect the machine or contact customer support. Forcing a start can also increase the risk of damaging the machine.
- 6. The machine generates noise and exhaust emissions during operation, so it's recommended to operate it in open outdoor spaces whenever possible.
- 7. Regularly maintain the machine by changing the oil, cleaning the passages, and inspecting worn components. This will significantly extend its operational lifespan.

Engine Views

Three Views



Exploded View



BOM List

Order	rder Name		
01	Screws (M2x5)	53	
02	Screws (M2.5x14)	10	
03	Screws (M2.5x5)	2	
04	Screws (M2.5x10)	7	
05	Screws (M3x5)	7	
06	Flat Head Screws (M2x4)	2	
07	Locking Screws for Large Pulley (M2.5x7)	1	
08	Top Screws (M3x3)	3	
09	Top Screws (M2.5x3)	3	
10	Carburetor Throttle Adjustment Screw (M2x10)	1	
11	Top Screws (M3x2)	3	
12	Oil Pump Mounting Fixed Brass Sleeve	1	
13	Oil Pump Bearing Brass Sleeve	1	
14	Oil Pump Main Gear	1	
15	Oil Pump Fixed Bracket	1	
16	Oil Pump Idle Gear	1	
17	Plunger	8	
18	Green O-Ring Match (M4 Outlet)	1	
19	M4 Inlet	1	
20	M3 Three-Way Tower	1	
21	M3 Right-Angle Tower	2	
22	First Hole for Oil Passage (M3 Inner Hole 1mm Tower)	1	
23	M3 Tower	2	
24	Soft Spring	1	
25	Soft Spring	1	
26	Positioning Pin 2x5mm	4	
27	Corresponding 3mm Positioning Pin	1	
28	Starter Motor Reduction Gear Positioning	1	
29	4mm Piston Pin	4	
30	Corresponding 4mm Positioning Pin	1	
31	Timing Gear Idle Gear Fixation (M4 Positioning Pin)	1	
32	Impeller	1	
33	Water Pump Brass Sleeve	1	
34	Water Pump Cylinder Body Brass Sleeve	1	
35	Camshaft Bearings (2 bearings)	2	
36	Water Pump Seal + Engine Oil Pump Seal	2	
37	Crankshaft Bearing Shims	3	

Order	der Name			
38	Crankshaft Front Oil Seal (Small)			
39	Crankshaft Rear Oil Seal	2		
40	Starter Reduction Gear			
41	Piston Rings	8		
42	4x1 Sealing Ring	2		
43	5x1 Sealing Ring	2		
44	7x1 Sealing Ring	9		
45	10x2 Sealing Ring	1		
46	Water Channel Sealing Ring	13		
47	Valve Cover Screws (M2x5)	10		
48	Spark Plug Gasket	4		
49	M2.5	8		
50	Rocker Arm Spring	3		
51	M2.5x7	8		
52	M2.5x14	4		
53	Rocker Arm	8		
54	Rocker Arm Gasket	6		
55	Locking Rings at Both Ends of Rocker Arm	2		
56	Rocker Arm Bracket	4		
57	Engine Oil Pump Bracket Nut	1		
58	Crankshaft Middle Support Screw	1		
59	Locking Washer	1		
60	Injector Nozzle Gasket	1		
61	Camshaft Gear Gasket	2		
62	Camshaft Gear Gasket	2		
63	Crankshaft Gear Gasket	2		
64	Carburetor Main Needle Sleeve Gasket			
65	M3 Screws	4		
66	Engine Oil Pump Base			
67	Spare M2.5 Screws	1		
68	Water Pump Belt	2		
69	OHV Valve Cover Plug	1		
70	Spacer Between One-Way Bearings	2		
71	Cylinder Block + 4 Cylinder Sleeves	1		
72	Oil Pan	1		
73	Valve Cover + OHV Cylinder Head			
74	Crankcase Bottom Side Cover			
75	Crankcase Bottom Side Cover			
76	Timing Gear Case Cover	1		
77	Crankshaft	1		

Order	Name	Quantity	
78	Starter Motor	1	
79	Crankcase Plunger Cover	1	
80	Exhaust Pipe + Intake Pipe	1	
81	Flywheel Housing	1	
82	Flywheel + Starter Large Gear	1	
83	Piston	1	
84	Piston	1	
85	Piston	1	
86	Piston	1	
87	Water Pump	1	
88	Oil Pump and Gasket Dowel Pin	1	
89	Small Pulley	1	
90	Bearing	1	
91	Tensioning Sleeve	1	
92	One-Way Bearing	1	
93	Large Pulley	1	
94	Carburetor Main	1	
95	Carburetor Main Needle	1	
96	Carburetor Throttle Valve	1	
97	Carburetor Nozzle	1	
98	Carburetor Rocker Arm	1	
99	Carburetor High and Low-Speed Needles	1	
100	Carburetor High and Low-Speed Needles	1	
101	Small Pulley	1	
102	Connecting Rod	1	
103	Connecting Rod	1	
104	Connecting Rod	1	
105	Connecting Rod	1	
106	Bearing Cap	1	
107	Timing Large Gear	1	
108	Timing Idle Gear	1	
109	Timing Crankshaft Gear	1	
110	Camshaft	1	
111	Oil Dipstick	1	
112	Plunger Cover Gasket	1	
113	Rocker Arm Fixing Rod	1	
114	Oil Pan Silicone Hose	1	
115	Small Hex Wrench	1	
116	Medium Hex Wrench	1	
117	Large Hex Wrench	1	

Order	Name	Quantity	
118	Cylinder Head Gasket	1	
119	Push Rod	8	
120	Crankcase Side Cover Gasket	2	
121	Water Pump Gasket	1	
122	Valve Cover Gasket	1	
123	Gasket	1	
124	Oil Pump Oil Passage Silicone Hose	1	
125	Oil Pan Gasket	1	
126	Flywheel Housing Gasket	1	
127	Engine Oil Pump Gasket	1	
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After-sale service

Thank you for choosing our company's product. We will provide you with satisfactory after-sales technical support.

We recommend that you carefully read the assembly instructions, operation manual, relevant precautions, etc. before making the model, which we believe will be very helpful for you. If you need technical support, you can contact our store staff.

1.After-sales service standards

Due to differences in photography techniques and computer color deviation, the color of the actual product should prevail over the images.

Due to the continuous improvement and upgrading of product performance by manufacturers, product parameters and structures may be changed without prior notice. Please refer to the actual product.

Before the kit is shipped, a special person from our company will do a detailed inspection and test each item to ensure that it functions properly. When the delivery company delivers the goods, please be sure to check the integrity of the goods in detail in person. If any damage to the goods is found during the transportation process, the logistics company should provide relevant evidence or reject them on the spot, and send relevant photos to our company's customer service email within 24 hours. Otherwise, the related losses and responsibilities shall be borne by the buyer. If the model has other problems, you should also contact our company within 7 days.

Before using the model product, you must carefully read the product operation manual and comply with the manufacturer's instructions for use, maintenance, and care. Our company does not assume any responsibility for losses or injuries caused by improper use of the product, such as water ingress, fire, disassembly, modification, etc., nor does it assume responsibility for product damage caused by intentional or unintentional destruction, drops, or impacts.

Model products are definitely fragile, especially for beginners who are more likely to damage them (perhaps due to unfamiliarity with the parts). We ensure that every part is tested before being sent out. Therefore, the company does not provide any refund or compensation services for parts damaged in a short period of time, unless they are unused and absolutely new, and provide corresponding evidence verified by our staff. In this case, the entire set can be sent back to the manufacturer for repair, and the shipping fee will be borne by us. For other repair processing, the shipping fee will be borne by the buyer.

If the customer raises the issue that the product cannot meet the product description function within three days after receiving the goods, and it is proven true by a government-recognized third-party organization (or recognized by our company), our

company will provide free maintenance or replacement of parts. Customers cannot request a return or exchange due to personal perception of product performance differences (such as novice cannot operate), material manufacturing differences, and other differences.

When non-company product quality issues cause product damage and require repair, our company can provide repair services, but parts and labor costs will be charged. The transportation and postage fees incurred during the repair will be borne by the customer.

Model products must be used under the conditions or requirements allowed and regulated by the local government. Our company does not assume any liability for compensation for losses or injuries caused by improper use of the product or accessories by the user or third parties.

For some common sense and precautions when using model products, please refer to the product manual.

The final interpretation right belongs to our company.

2.User Feedback and Support

Dear buyer, we promise to provide you with high-quality and reliable services for the products you purchased and provide you with any necessary assistance. During the actual use of the product, if you encounter technical or usage problems, we have a professional technical team to answer your questions online for free, and you can also consult and request various parts and full set services from the

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