

Gas Powered Impact Wrench

910207

Operating Manual



Gas Powered Impact Wrench

910207

Record of Changes

Rev No.	Date	Description of Changes
Rev 1	5.2022	Initial release
Rev 1.1	10.2023	Update Technical Support & Service information

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Section 1: Overview and Safety

Gas Powered 1-inch Impact Wrench Overview

Racine Railroad Products designs and manufactures equipment primarily for the repair and new construction of rail and railroad tie track maintenance.

Our product line focuses on rail fastening application/removal/adjustment equipment, other tie material (OTM) reclamation, wood and concrete railway tie repair, and tie plate handling/distribution.



Ergonomic

The 1" square drive Gas Impact Wrench is well balanced for either horizontal or vertical use. The roll bar doubles as handholds with vibration dampening rubber grips. The large front handle easily accommodates gloved hands.

Unique Design

The Impact Wrench engine incorporates a unique design for maximum performance as opposed to the competition's chain saw engine.

Versatile

Can be used to drill lag screw holes for tie plate applications with optional auger adapter.

Durable

Roll Bar protects engine components and fuel tank. Throttle trigger and shut off switch are fully enclosed inside roll bar for further protection.

Lightweight and Powerful

Weighing 43 lbs, the powerful 46.5cc engine with variable throttle control produces a torque fastening up to 1255 Ft-Lbs.

The 1-inch Impact Wrench has a self-contained heavy duty and high power two-cycle engine

Note: Information in this document is subject to change without notice.

Warranty Terms and Conditions

Warranty Period

Each new machine and new parts of our manufacture are warranted against defects in material and workmanship for one year from the date of shipment from our factory.

When contacting customer service for factory parts, service or warranty support please provide the:

- Racine Railroad Products Model
- Serial Number
- Any locally assigned identification

Vendor Parts Warranty Period

Other equipment and parts used, but not manufactured by Racine Railroad Products, Inc., are covered directly by the manufacturer's warranty for their products.

Warranty Parts and Service

We will repair or replace, without charge, F.O.B. factory, Racine, Wisconsin, USA, any part Racine Railroad Products manufactures which is proven to be defective during the warranty period.

Material claimed defective must be returned, if requested, to the factory within 30 days from the date of the claim for replacement. Ordinary wear and tear, abuse, misuse, and neglect are not covered by this warranty. Depending upon the circumstances, we may provide technical assistance and/or technical service support, without charge, to assist in the correction of warranty related problems.

Non-Warranty Parts and Service

Material damaged through normal wear and tear, abuse, misuse and/or neglect are not covered by our warranty and should be ordered directly from our Customer Service.

Note: Parts for models that are no longer in production may not be available.

Non-Warranty Parts Orders

When placing a parts order please provide the following information:

- Company Name and Billing Address
- Purchase Order Number and Issuing Authority
- Shipping Address
- Special Handling Instructions
- Contact Phone Number
- Machine Model and Serial Number
- Part Numbers and Quantities Being Ordered

Note: *Please use Racine Railroad Products part numbers when ordering parts.* Racine Railroad Products part numbers are shown in the parts lists and drawings of this manual and have only six (6) numbers.

Any part number with other than six numbers (e.g., contains alpha-numeric characters) is a Vendor Part Number and **not** a Racine Railroad Products part number

Safety Information

For safe installation and operation of this equipment, carefully read and understand the contents of this manual. Improper operation, handling, or maintenance can result in equipment damage and personal injury.

Only trained and authorized personnel should be allowed to operate this machine. In addition, all personnel at the worksite (gang) should be aware of the safety concerns and their individual responsibilities prior to working this machine.

Please read and comply with all the safety precautions in this manual **before** operating this machine. Your safety is at risk.

Safety Terms

**DANGER**

DANGER indicates a hazardous operating procedure, practice, or condition. If the hazardous situation is not avoided death or serious injury will occur.

**WARNING**

WARNING indicates a hazardous operating procedure, practice, or condition. If the hazardous situation is not avoided death or serious injury could occur.

**CAUTION**

CAUTION indicates a potentially hazardous operating procedure, practice, or condition. If the hazardous situation is not moderate or minor injury could occur.

Note: Indicates an essential operating procedure, practice, or condition. No personal injury is possible.

Machine Use and Safety Precautions

**WARNING**

Failure to follow safety precautions when operating this equipment can result in serious injury or death to the operator or other persons in the area.

Observe the following precautions whenever you are operating, working on or near this equipment.

Operator Safety

Do not use this machine for other than its intended purpose.

Always wear appropriate personal protective clothing when operating this equipment: e.g., Orange safety vest, hard hat, safety glasses with side shields, hearing protection, steel-toed safety boots, leather gloves, dust respirator, etc.

Always lift heavy objects with the knees and legs, not the arms and back.

Always keep hands, arms, feet, head, clothing, etc., out of the operating area and away from all rotating or moving components when operating, working on or near this machine.

Always operate the engine only in a well-ventilated area and make sure that the air filters, air filter covers, and muffler are in good condition.

Do not wear loose clothing, jewelry, radio belts, etc., when operating, working on or near this equipment. They can be caught in moving parts and may result in severe injury.

Inspect safety decals and replace when they become unreadable or are damaged.

Always comply with all instructions provided on any decals or placards installed on the machine and with any relevant amplifying information provided in this manual or other general operating procedures.

Always keep the machine clean and free of debris. Operate the machine in a safe and responsible manner. Exercise caution when fueling, working on or near rotating or moving components, hot components, and fuel systems. Be aware of potential fire hazards and prevent sparks, exhaust, etc., from starting fires on the machine and/or work area.

Always shut off the engine. Make sure that all controls are in a safe position and install all appropriate locking and safety devices before doing any of the following:

- Lubricating
- Adjusting
- Installing Tooling
- Making Repairs
- Performing Service

Do not grab or hold the unit by the rotating anvil.

Hold the handles firmly with both hands and make sure to stand on a firm base or ground.

Do not touch the spark plug or the high voltage cord during operation as it may cause electric shock.

To avoid burn do not touch places like the engine, muffler, or exhaust when it will get very hot during in use and eve after the engine stops. It takes time to cool down.

If the fuel is leaking during operation, stop the engine immediately, and repair. It may cause the fire.

When operating for a long period of time, take a break time to time to avoid possible white finger disease which is caused by vibration.



Antivibration systems do not guarantee that you will not sustain white finger disease or carpal tunnel syndrome.

Therefore, continual, and regular users should monitor closely the condition of their hands and fingers. If any of the above symptoms appear, seek medical advice immediately.

Tool Safety

Always comply with all Lock Out / Tag Out Procedures and other safety procedures established for the local work environment.

Do not make any modifications without authorization or written approval from Racine Railroad Products. Replace all Racine Railroad Products and OEM parts with genuine Racine Railroad Products and OEM parts. Using non-OEM parts may compromise the safety of the machine.

Always make sure that all guards, covers, belts, and operating components are in good working order and that all controls are in the appropriate position before starting the engine.

Always inspect the entire tool before each use. Replace damage parts. Check for fuel leaks and make sure all fasteners are in place and securely fastened.

Replace parts that are cracked, chipped, or damaged in any way before using the tool.

Use only accessories recommended by Racine Railroad Products for this tool.

Use only genuine replacement parts as recommended by the manufacturer.

Fuel Safety

Petrol is highly flammable and must be handled and stored carefully. Use a container approved for fuel for storing petrol and/or fuel/oil mixture.

Use an approved container for fuel.

Do not smoke or allow smoking near fuel or the tool or while using the tool.

When filling up with fuel, stop the engine and make sure the engine is cool and choose places where there are no flammables and there is well ventilation.

Never open the fuel tank cap immediately after stopping the engine.

When removing the fuel tank cap, gasoline may blow out, so loosen it carefully.

Do not overfill the fuel tank. Stop filling 10mm from the top of the tank.

Tighten the fuel cap securely after refueling.

Mix and pour fuel outdoors and where there is no sparks or flames.

Wipe up all fuel spills before starting the engine.

Move at least 3-feet / 3-meters away from the fueling site before starting the engine.

Drain the tank and run the engine dry before storing the machine. It is recommended that the fuel be emptied after each use. If fuel is left in the tank, store the tool so fuel will not leak.

Store tool fuel in area where fuel vapors cannot reach sparks or open flames from water heaters, electric motors or switches, furnaces, etc.

Transport and Storage

Carry the tool by hand with the engine stopped and the muffler away from your body.

Allow the engine to cool, empty the fuel tank, and secure the tool before storing or transporting in a vehicle.

Store the tool out of the reach of children.

Clean the unit carefully and store it in a dry place.

Make sure engine switch is off when transporting or storing.

Section 2: Specifications and Installation

Specifications

Impact Wrench

Square drive section	1-inch [25.4 mm]
Tightening torque.....	Full throttle: 1250 lbf·ft [1700 Nm]
Half throttle	661 lbf·ft [900 Nm]
Tip rotation speed	1200 m-1
Ability bolt diameter	1.25 in [32 mm]
Weight.....	Without damper: 43.6 lbs [19.8kg] With damper: 47.6 lbs [21.6 kg]
Dimensions	L 2.75 in x H 13 in x W 15.3 in

Engine

Engine model.....	CER420
Type	2 -stroke, air-cooled
Engine exhaust amount.....	2.5 cubic inches [41.5 cm ³]
Idling speed	2500-3000 m-1
Maximum engine output (ISO8893).....	2 HP [1.57 kw]
Guaranteed engine output (ISO8893)	2 HP [1.54 kw]
Fuel tank capacity.....	1.06 qts [1000 cm ³]
Carburetor type.....	Diaphragm

Spark Plug

Type.....	BPM8Y
Electrode gap	0.024-0.028 in [0.6-0.7 mm]

Accessories

Hex wrench.....	4mm 5mm 6mm
Spanner	10-13 mm

Fuel

	Two-Stroke Oil	
	50:1	25:1
	ISO-L-EGC/EGD, JASO class FC/FD, or Equivalent Two-Stroke Oil	ISO-L-EGB, JASO class FB, or Equivalent Two-Stroke Oil
1 liter	20mL	40mL
2 liters	40mL	80mL
3 liters	100mL	200mL

Do not mix gasoline in the tank. Prepare gasoline mixed in the correct ratio in advance and refuel.

- Put a mark on the container so that it can be identified as mixed gasoline.
- Make sure the gasoline is evenly mixed before refueling and do not spill.

Sound

Sound Level	L_{PA}	[dB]	104.8
	L_{WA}	[dB]	115.8
Vibrations Level	Without damper	[m/s ²]	18.7
	With damper	[m/s ²]	14.7

- Vibration value ahv = 3-axis composite value of frequency correction vibration acceleration execution value

Vibration measurement standards: JIS B 7761-1, JIS B 7761-3, JIS B 7762-7

$$A(8) = ahv \times \sqrt{\frac{T}{8}} \text{ (m/s}^2\text{)}$$

Day vibration exposure
 T = Exposure time per day (actual usage time per day)

Noise measurement standards ISO15744

Installation

Unpacking Instructions

Upon receiving your impact wrench, promptly remove it from the shipping container. Always keep top side of container up. Inspect unit for damage which may have incurred during shipping and report it to carrier for claim.

Be sure to read this instruction manual and do not operate the product or change the accessory until you fully understand it.

Please keep the instruction manual in a safe location as not to lose it. If lost, please order a new one.

This product is a tool designed and developed for the purpose of the tightening and loosening bolts and nuts using the engine as a power source.

Tool Preparations

The impact wrench requires some assembly before use.

After unpacking, install the supplied accessories.



WARNING

Never stick foreign objects, fingers, or other extremities into moving mechanism. Failure to follow these instructions may lead to severe personal injury or tool damage.

Section 2: Tool Operation

Fuel

Recommended Fuel Type

Use clean, unleaded petrol with an octane rating of 85 or higher. Use of unleaded petrol results in fewer combustion chamber deposits and longer spark plug life. Use of premium grade fuel is not necessary or recommended.

Important: Never use gasohol or alcohol blended fuels in this engine.

Exhaust Gas

This product generates exhaust gas when used. The exhaust gas contains toxic components and is extremely dangerous. Do not use in poorly ventilated environment.

Recommended Oil

Use 2 cycle engine oil for mixed gasoline.

Do not use water-cooled outboard motor 2-stroke oil. This type does not include air-cooled 2-stroke additives for the engine, and it may damage the engine.

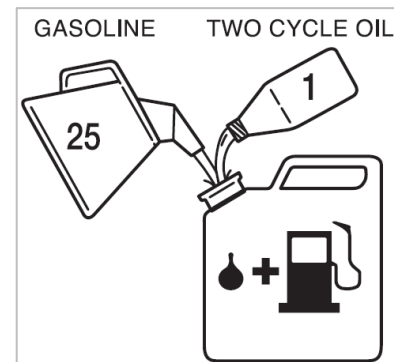
Do not use automobile motor oil. This type does not include air-cooled 2-stroke additives for the engine, and it may damage the engine.

Blended Gasoline

The engine has a two-cycle design.

Engine internal moving parts (crankshaft bearings, piston bearing, piston, cylinder wall contact portion, etc.) need 2 cycle engine oil for lubrication.

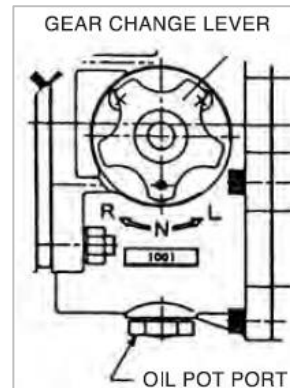
Improper mixing ratio can damage the engine.



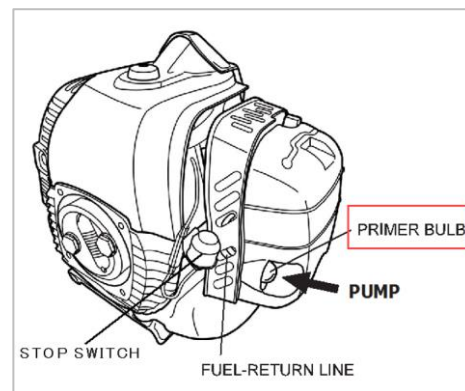
Engine Start Up

Avoid Unexpected Starting

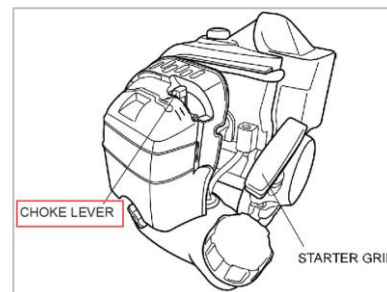
- When starting the engine, make sure that the throttle lever is in the stop position. When carrying, do not put your hand on the throttle lever.
1. Place the tool on a firm stand or solid floor.
 2. Set the gear change lever to neutral (N) position.



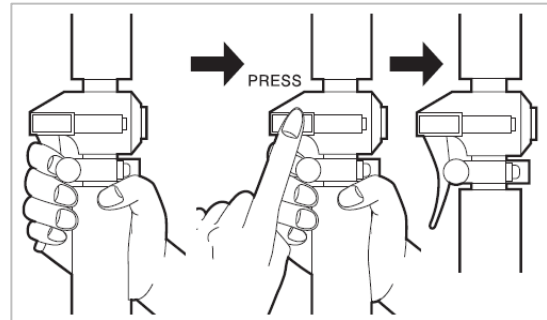
3. Press the priming pump several times to send fuel to the carburetor and make sure that the fuel is no longer foamy.



4. Set Choke lever position to "1/2".



5. Pull the start lever and press the lock button.
By pressing the lock button, throttle is locked at half position.
To unlock it, pull the lever again.
6. Pull the starter handle and start the engine.
* Do not pull the starter rope completely when pulling the starter handle. The rope may break and cause a malfunction.



7. When the engine starts, return the choke lever to the [I] position.
If the engine stops, start it again.
8. If the engine does not start in Step 7, restart from Step 4.
9. When the engine starts, return the throttle lever, and let the engine idle for a few minutes to warm up.

WARNING

Once starting the engine, do not leave tool alone. Always hold handle tightly so that tool will not move around on the stand or floor

Before and during operation, always take a firm stance and keep safety position from slipping or falling.

Operation

When increasing the engine speed, operate the throttle slowly. If operating too fast may cause to unexpected accidents.

CAUTION

Once starting the engine, do not leave tool alone. Always hold handle tightly so that tool will not move around on the stand or floor

Before and during operation, always take a firm stance and keep safety position from slipping or falling.

- Do not touch the spark plug cable and the spark plug cap during the engine operation. There is risk of electric shock.
- Do not touch rotating parts. It is very dangerous and may cause injury.
- Do not run idle with the accessory tool attached.
- Check the direction of rotation before starting the product.
- Be sure to stop the engine when stopped or when changing the tools and parts.
- Do not touch the tools and screws during operation because they are hot due to friction.
- Engine and other parts become hot. Do not touch anything other than the handle or the operation unit.
- If an abnormal occurs, stop the engine immediately and stop the work.

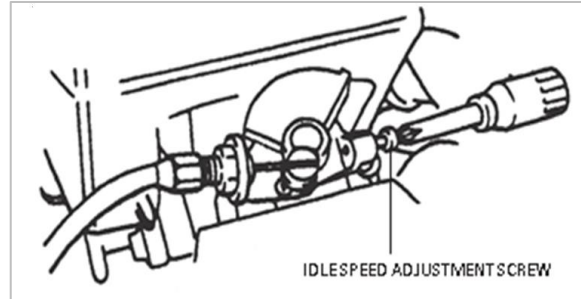
Adjusting Idling Speed

Note: The carburetor of the engine of this product cannot be adjusted. Only idle speed can be adjusted.

The rotation speed is about 2500-3000 rpm when idling

To adjust the idling speed, slowly turn the adjusting screw while idling.

- To speed up idling, turn the adjustment screw clockwise.
- To speed down, turn the adjustment screw counter-clockwise.
- Adjust should be made when the engine is running.
- Be careful not to touch the moving parts.
- Please remove the tip tool etc.
- Keep people away during the adjustment.



Switching Rotation Direction

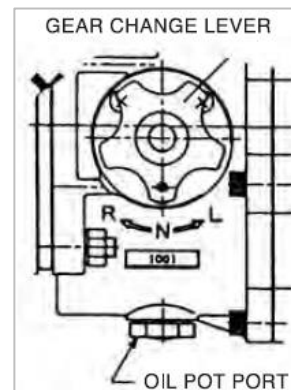
Set the Gear Change Lever to **R** to rotate **clockwise**.

Set to **L** to rotate **counter-clockwise**.

- When the gear change knob is hard to turn when the engine *is working*, pull the trigger a little to unlock.
- When the gear change knob is hard to turn when the engine *is not working*, turn the anvil a little to unlock.

Always release the throttle lever to allow for a slow engine for idling.

Do not change the gear with the engine is accelerating.



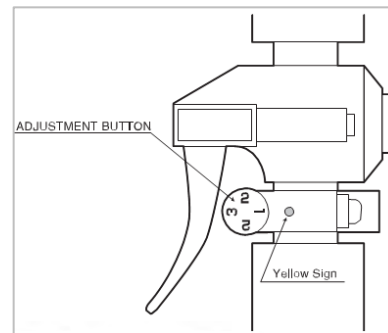
Torque Adjustment

The impact wrench has full throttle mode and half throttle mode by pushing the adjustment button.

Make fine adjustments using the adjustment switch during half throttle.

[1] is maximum

[3] is minimum.



Socket Installation

There is a pin hole at the end of the anvil (drive).

This have to be aligned with the pin hole of the socket and secured with the pin and O-ring.

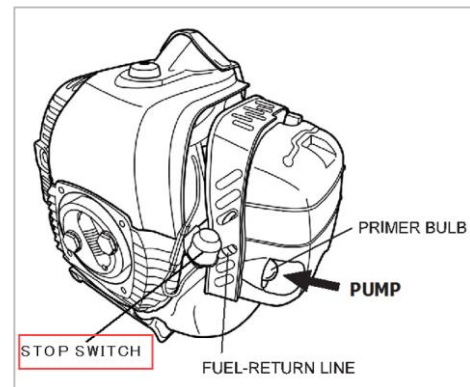


CAUTION

Personal Injury. If the socket is not securely installed, the socket may come off and pop out, causing injury. Never run idle with a socket.

Stopping the Engine

1. Release the throttle lever to decrease engine speed.
2. Push the stop switch to stop the engine.
3. Place the tool on a firm stand or solid floor and turn the lever to the N (neutral) position.



Section 3: Troubleshooting & Maintenance

Problem	Possible Cause	Remedy
Engine does not start.	Fuel System	
	Empty fuel or shortage.	Fill up fuel at mixture ratio 25 gasoline: 1 two-cycle oil.
	Wet spark plugs due to too much intake of fuel.	<ol style="list-style-type: none"> 1. Remove spark plug. 2. Exhaust exceeded fuel by pulling recoil starter handle 5-6 times. 3. Install spark plug. 4. Turn choke lever to open position and pull recoil starter handle.
	Bent or disconnection of fuel pipe.	Repair.
	Insufficient pressing of priming pump	Press priming pump for several and send the fuel.
	Electrical System	
	Ignition stop switch in stop position.	Turn to the ON position.
	No spark.	<ol style="list-style-type: none"> 1. Bad connection/ignition coil. 2. Incorrect air gap/ignition coil. 3. Bad ignition coil.
	Short circuit of stop switch lead wire.	Repair or replace.
	Dirty plug.	Clean up or replace.
	Wider spark plug gap.	Adjust correct gap to 0.6 mm.
	Poor connection of high voltage cord in ignition with spark plug.	Correct connection.
	Bad ignition coil.	Replace.
Engine stalls soon after starting or stops.	Fuel System	
	Shortage of fuel	Fill up fuel at correct mixture ratio 25 gasoline: 1 two-cycle oil.
	Choke lever in closed position	Turn to open position.
	Air goes through to fuel system	Check if cracks are found on pipe or connector and pipe is securely fixed
	Poor function of carburetor.	Air leak from carburetor. Incorrect carburetor adjustment. Bad diaphragm in carburetor. Incorrect carburetor valve hinge height adjustment.
	Electrical System	
	Bad spark plug.	Replace.
Bad ignition coil.	Replace.	

Problem	Possible Cause	Remedy
Engine Overheats.	Bad mixture ratio fuel.	Fill up fuel at correct mixture ratio 25 gasoline: 1 two-cycle oil.
	Wrong selection of spark plug	Replace. Use recommended parts only.
	Clogged cylinder with dirt.	Clean up.
	Clogged cooling duct with dirt.	Clean up.
Anvil does not rotate.	Gear change lever in neutral position.	Turn to R clockwise direction. Or Turn to L counter- clockwise direction
	Worn out of drum shoe on clutch arm,	Replace.
Output power reduced.	Dirty air cleaner element.	Clean up.
	Carbon deposits in muffler, exhaust port on cylinder.	Clean up.
	Poor cylinder pressure due to worn out of piston, piston ring, cylinder.	Replace.
	Worn out anvil.	Replace.
	Worn out clutch.	Replace.
	Worn out cam plate.	Replace
	Worn out hammer.	Replace.
	Broken of return spring.	Replace.
	Carbon stuck on spark arrester.	Remove carbon on spark arrester.

Maintenance

It is highly recommended to practice regular check-ups and maintenance in accordance with the usage frequency to keep your tool in better condition and reduces total running costs.

Maintenance should be performed only by those who have read and understood the instruction manual for this product. For repairing, contact your dealer.

	Maintenance	Daily	Every 25 hours	Every 50 hours	Every 100 hours
	Check and replenish fuel	●			
	Check for fuel leakage	●			
	Check bolts, nuts, and screws for tightness or missing	●			
	Tighten bolts and nuts			●	
■	Clean air filter element	●			
	Clean spark plug and adjust electrode gap		●		
■	Remove dust and dirt from cylinder fins		●		
●	Remove carbon deposits in exhaust port			●	
●	Clean spark arrester		●		
	Replace fuel filter				●
●	Remove carbon deposits on piston head and combustion chamber				●
●	Remove carbon deposits in transfer ports				●
	Replece fuel tube, fuel tank cap gasket	It is recommended to replace every 3 years			

●: Service to be performed by an authorized engine dealer.

■: Service more frequently under dusty conditions.

NOTE:

The service intervals indicated are to be used as a guide.

Service to be performed more frequently as necessary depending on operating condition.

Daily Check-Up

- Check that all nuts and screws are securely tightened.
- Check fuel level. Fill up with fresh fuel. Wipe up spills.
- Check the oil level of gear box through window.

Oil level should be center of window. If it is lower. add oil.

Weekly Maintenance

- Check the starter, especially the cord and return spring.
- Clean the exterior of the spark plug.
- Remove spark plug and check the electrode gap. Adjust it to 0.6 mm or change the spark plug.
- Clean the cooling fins on the cylinder.
- Check that the air intake at the starter is not clogged.
- Clean the air filter.

Monthly Maintenance

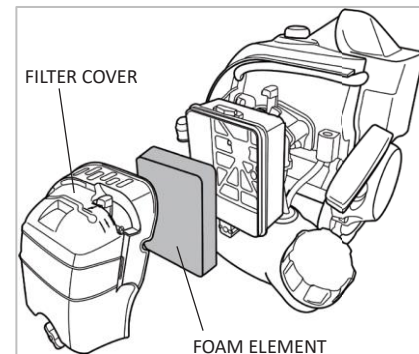
- Rinse the fuel tank with gasoline.
- Clean the exterior of the carburetor and the space around it.
- Clean the fan and the space around it.

Cleaning the Air Filter

Clean every 100 hours and more often if used in a dusty working environment.

When the air filter gets dirty and closed with dust, it can cause various issues:

- Starting problems.
 - Engine power reduction.
 - Unnecessary wear on the engine parts.
 - Abnormal fuel consumption.
1. Remove the filter cover and the foam element.
 2. Rinse with warm soapy water. Dry the filter completely before use.
 3. Apply a thin coat of SAE30 motor oil to the filter and remove any excess oil.
 4. Reassemble the filter cover and the foam element.



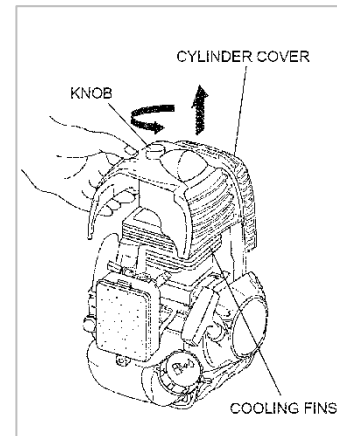
Cylinder Cooling Fins

The cylinder cooling fins should be cleaned after every 25 hours of operation or once a week, whichever comes first.

Air must flow freely around and through the cylinder cooling fins to prevent engine overheating. Leaves, grass, dirt, and debris buildup on the fins will increase the operating temperature of the engine, which can reduce engine performance and shorten engine life.

Cooling Fin Cleaning

1. With the engine at room temperature, loosen the knob and remove the air filter cover.
2. Remove the two socket head screws and remove the rear cover.
It can be easily removed by pushing the rib up (see image).
3. Loosen the knob and lift off the cylinder cover.
4. Clean all dirt and debris from the cooling fins and from around the cylinder base.
5. Make sure to clean the cooling air intake area below the crankcase and above the fuel tank. This area must be free of debris and obstruction for the engine to cool properly.
6. Reinstall the cylinder cover and the air filter cover.
7. Reinstall the rear cover. Press the outside of the rib to attach it to the top cover, then tighten the screws.

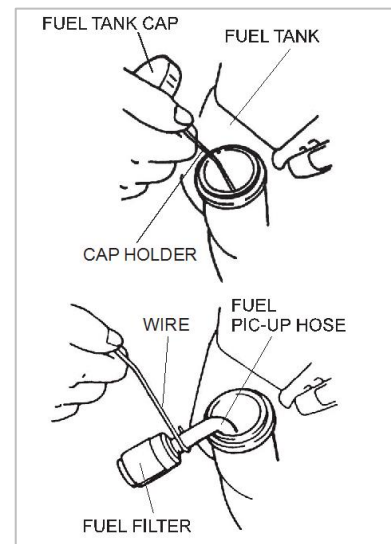


Fuel Filter Maintenance

The fuel filter must be replaced every 100 hours of operation.

The fuel filter is attached to the end of the pickup hose in the fuel tank.

1. Make sure the engine is not running.
2. Make sure the fuel tank is empty.
3. Loosen the fuel tank cap and remove it.
4. Using a wire hook, carefully pull out the fuel filter from the fuel tank.
5. Grab the fuel hose and remove the filter.
Be careful not to disconnect the fuel hose at that time
6. Replace the fuel filter while holding the fuel hose.
7. Carefully return the new fuel filter to the fuel tank.
8. Before refueling, check that the fuel filter is not trapped in the corner of the fuel tank and that the hose is not twisted or broken.

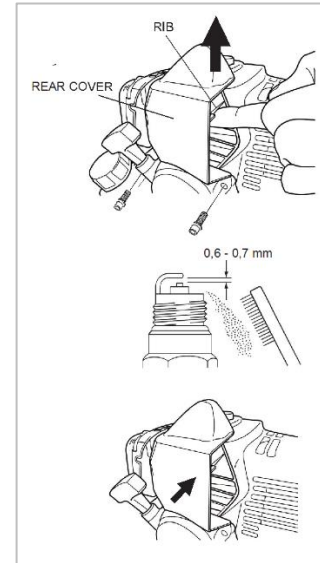


Spark Plug Maintenance

It is necessary to remove the spark plug from the engine and check it every 25 hours.

Replace the spark plug every 100 hours of operation.

1. Cool down the engine and remove the socket head screws.
2. Remove the rear cover by lifting up by the rib.
3. Twist the connecting cord boot of the spark plug back and forth several times to loosen the boot and pull it out from spark plug.
4. Remove the spark plug with the correct tool.
5. Clean the electrodes with a brush.
6. Adjust the electrode gap to 0.6mm-0.7mm.
7. Replace Spark plug when it is dirty, damaged, or worn out.
8. Be careful not to overtighten the spark plug during installation. (Tightening torque is 10.7Nm-16.6Nm.)
9. Reassemble the rear cover and tighten the screw.



Spark Arrester Maintenance



Personal Injury. Muffler surface, tail pipe and adjustable tail pipe becomes hot when impact wrench is in operation and remains hot for some time after the engine is shut off.

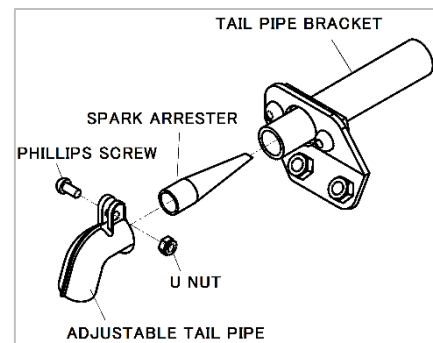
Contact with hot muffler surface, tail pipe and adjustable tail pipe could cause a burn.

Make sure the muffler, tail pipe and adjustable tail pipe is cool before inspecting and cleaning the spark arrester.

The spark arrester should be inspected and cleaned after every 25 hours of operation.

Replace the screen if it cannot be thoroughly cleaned or if it is damaged.

1. Loosen the Phillips screw (M4 x 8) and pull the adjustable tail pipe to remove it.
2. Pull out the spark arrester from the tail pipe bracket.
3. Clean spark arrester with a non-flammable solvent and a hard brush.
Be careful not to deform the spark arrester when removing or cleaning.
4. Insert the cleaned and dry spark arrester into the tail pipe bracket.
5. Insert the adjustable tail pipe into the tail pipe bracket with the spark arrester inside.
6. Adjust the angle of the inserted adjustable tail pipe and tighten the Phillips screw (M4 x 8) with the U nut to secure it.



Product Inspection Range

When performing the inspection, make sure the engine is stopped and empty. The durability of parts differs depending on the frequency of use.

When the impact or rotation sound is abnormal (the impact rhythm is different, the work efficiency is reduced, the vibration is large, etc.) request inspection and repair.

Anvil (Drive at the Tip)

Wear out: Reduce performance and efficiency. Recommend early replacement.

Cracks. There is a risk of breakage. Stop using and request a repair.

Bolts

Make sure all the bolts are tightened.

Impact Mechanism

When the contact places of **the anvil and hammer** become worn-out and dull by percussion, the tool will have reduced power. This will cause a longer percussion than normal condition, causing early damage and broken parts.

1. Empty all oil in the gear box and completely remove the hammer housing.
2. Check the degree of wear on the anvil and hammer at least once every month.
3. Apply grease around the contact areas.

Fuel Pipe

Check that the fuel pipe is not twisted or broken. If broken, replace immediately.

Leakage of Fuel or Oil

Engine: If fuel leakage is confirmed, it may cause an accident or malfunction. Stop using immediately, check the engine, and request repair if necessary.

Main unit: If an oil leak is confirmed, it may cause an accident or breakdown. Stop using immediately, check the unit, and request repair if necessary.

Socket

Wear out of square part: It may cause performance degradation and fall off from the anvil.

Worn pinholes: Cannot be fixed and may fall off the anvil.

Cracks: There is a risk of breakage and scattering. Stop using and replace with a new one.

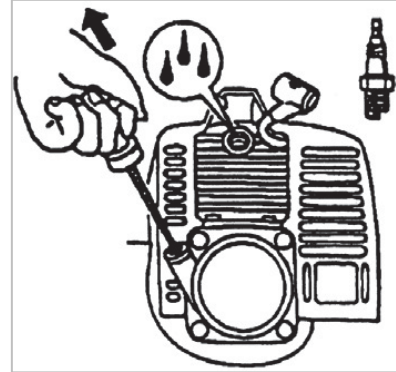
Throttle Lever

When pulling the throttle lever, check that there is no abnormality in pulling or returning.

Storage

Damaged parts should be repaired before storage.

1. Clean each part and apply two cycle oil on the metal part to prevent from corrosion.
2. If storing over three weeks:
 - Drain the fuel from the fuel tank.
 - Run the engine without load until the engine stops and exhaust all the remaining fuel in the carburetor.
3. Remove the spark plug and pour two-cycle oil into the cylinder and pull recoil starter handle several times to spread the oil.
4. Slowly pull the starter to move the piston to the top of the cylinder.
5. Reinstall the spark plug.
6. Keep the tool out of dust, humidity, and temperatures below 0° C / 32° F.
7. Store tool out of the reach of children.
8. Keep fuel in safety container in the cool room or place with no flammable.
Do not use stale fuel. It causes engine troubles.



Section 4: Parts and Service Support

Technical Support & Service

Telephone and web-based technical support is available for current production models through our Customer Service Department. Service Manuals and limited technical support may be available for models that are no longer in production.

Telephone and E-mail Technical Support

Telephone and e-mail technical support is available on normal U.S. business days from 8:00 AM to 5:00 PM U.S. Central Time Zone (GMT +6 (+5 Daylight Savings Time)).

Phone: (262) 637-9681

Email: custserv@racinerailroad.com

Racine Railroad Products
1955 Norwood Court
Mount Pleasant, WI 53403

Non-Warranty Technical Support

Depending upon the circumstances and availability of technical service personnel, we may provide technical assistance and/or field service support, *at the customer's expense*, to assist in the correction of non-warranty related problems. Contact our Customer Service Department to coordinate Non-Warranty Technical or Field Service Support.

Warranty Support Technical Support

Depending upon the circumstances and availability of technical service personnel, we may provide technical assistance and/or field service support, *at no charge to the customer*, to assist in the correction of warranty related problems. Contact our Customer Service Department to coordinate Warranty Technical or Field Service Support.

Warranty Parts Claims

Material claimed to be defective must be returned to our factory for evaluation. Defective materials will be replaced, or your account will be credited if replacement materials have already been purchased. Please contact our Customer Service Department at the address provided below if you have any questions or problems.

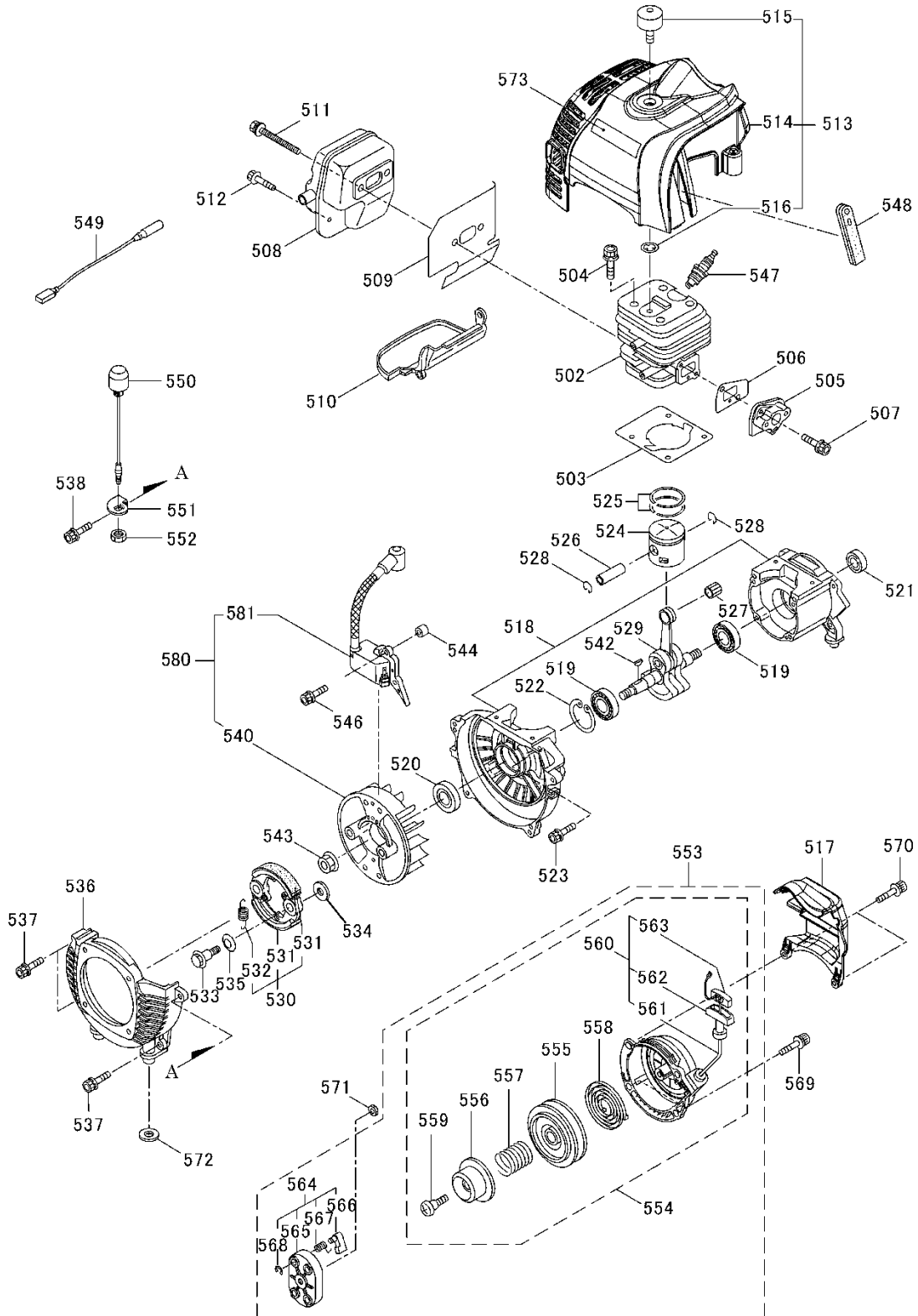
Warranty Service Support

Depending upon the circumstances and availability of technical service personnel, we may provide technical assistance and/or field service support, at no charge to the customer, to assist in the correction of warranty related problems. Contact our Customer Service Department at the address provided above to coordinate Warranty Service Support.

Service Parts

NO.	QTY	DESCRIPTION	PART NO.
1	REF	CARBURETOR	476269
2	REF	COVER, CLEANER	476267
3	REF	ELEMENT, AIR	476261
4	REF	MAGNET	476268
5	REF	PLUG, SPARK	476263
6	REF	SCREEN	476265
7	REF	STARTER, RECOIL	476264

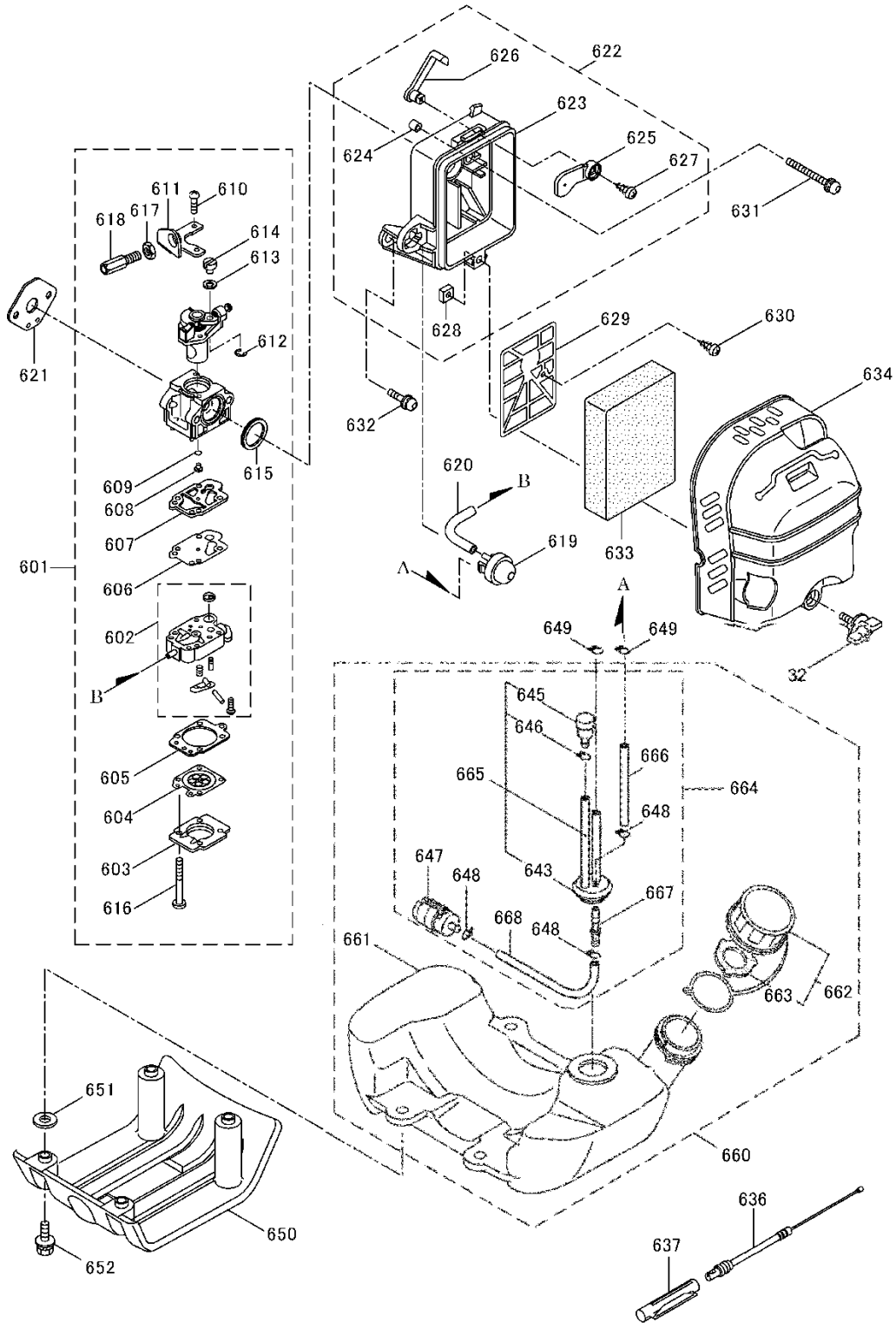
Engine Exploded View 1



Call Out No.	Description	QTY
502	Cylinder	1
503	Gasket	1
504	Hexagon socket head bolt, M5 × 25	4
505	Insulator	1
506	Gasket	1
507	Hexagon socket head bolt, M5 × 25WSW	2
508	Muffler	1
509	Gasket	1
510	undercover	1
511	Hexagon socket head bolt, M5 × 60	2
512	Hexagon socket head bolt, M5 × 12W-12	1
517	Rear cover	1
518	Crankcase	1
519	Bearing, 6202 C3	2
520	Oil seal	1
521	Oil seal	1
522	C-type retaining ring, 35 for holes	1
523	Hexagon socket head bolt, M5 × 30	4
524	Piston	1
525	Piston ring	2
526	Piston pin, 7.5 × 11 × 33.5	1
527	Needle Bearing	1
528	Circlip	2
529	Shaft complete (crankshaft)	1
530	Clutch assembly	1
533	Clutch bolt, M8 × 1.25	2
534	Plain washer, 8 × 22 × T1.2	2
535	Wave washer	2
536	Fan cover	1
537	Hexagon socket head bolt, M5 × 20WSW	3
538	Hexagon socket head bolt, M5 × 25WSW	1
542	3 × 10	1
543	Nuts with countersunk washers, M10×17×t8	1
544	Spacer	2

Call Out No.	RRP Part #	Description	QTY
545		Clamp, M4	1
546		Hexagon socket head bolt, M4 × 25WSW	2
547	476263	Spark plug	1
548		Grommet	1
549		Lead	1
550		Stop switch assembly	1
551		Stay	1
552		Small hexagon nut, M8 × 1	1
553	476264	Recoil starter assembly	1
569		Hexagon socket head bolt, M5 × 18WSW	2
570		Hexagon socket head bolt, M5 × 25L	2
571		Nut (Hex low nut), M8	1
572		Packing, 17×8×2	4
573		Label	1
580	476268	Magnet assembly	1

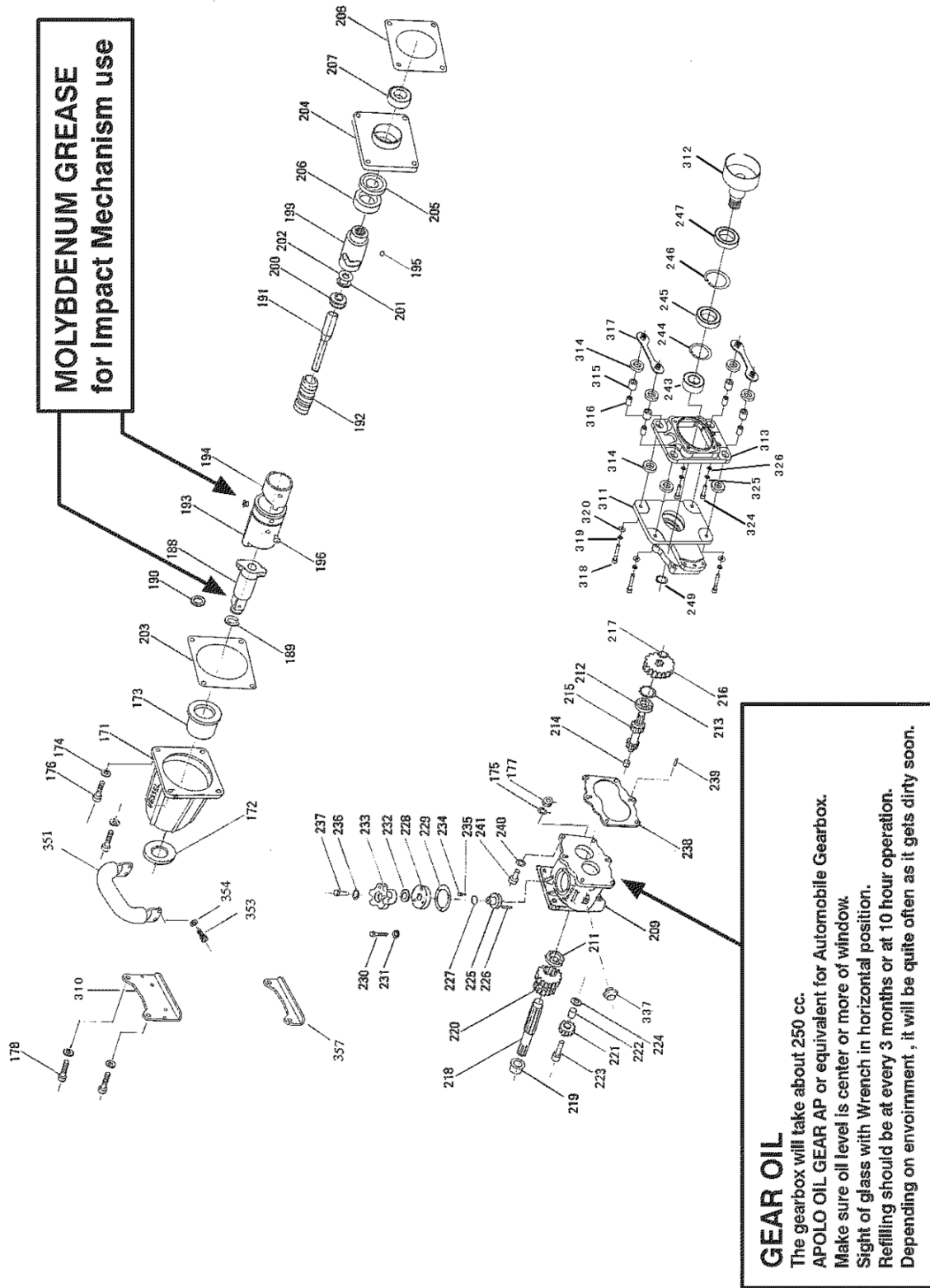
Engine Exploded View 2



Call Out No.	RRP Part #	Description	QTY
601	476269	Carburetor assembly	1
619		Pump	1
620		Pipe	1
621		Gasket	1
622		Case assembly	1
		Case body	1
		Sleeve	3
		Valve	1
		Lever	1
		Screw	1
		Square nut	1
629	476265	Screen	1
630		Screw, M3.5 × 8	1
631		Hex Socket Button Bolt, M5 × 50WSW	2
632		Hex Socket Button Bolt, M5 × 16WSW	1
633	476261	Element	1
634	476267	Cleaner cover	1
635		Knob	1
636		Wire complete	1
637		Connector case	1
643		Grommet	1
645		Breather assembly	1
646		Clip	1
647		Filter assembly	1
648		Clip	3
649		Clip	2
650		Stand	1
651		Packing, 17 × 8 × 2	4
652		Hex Socket Button Bolt, M5 × 20WSW	4
660		Fuel tank assembly	1
		Fuel tank	1
		Fuel tank cap assembly	1
		Packing	1
		Fuel pipe Pick-up assembly	1
		Fuel pipe assembly	1

Call Out No.	RRP Part #	Description	QTY
666		Pipe A	1
667		Joint	1
668		Pipe	1

Impact Exploded View

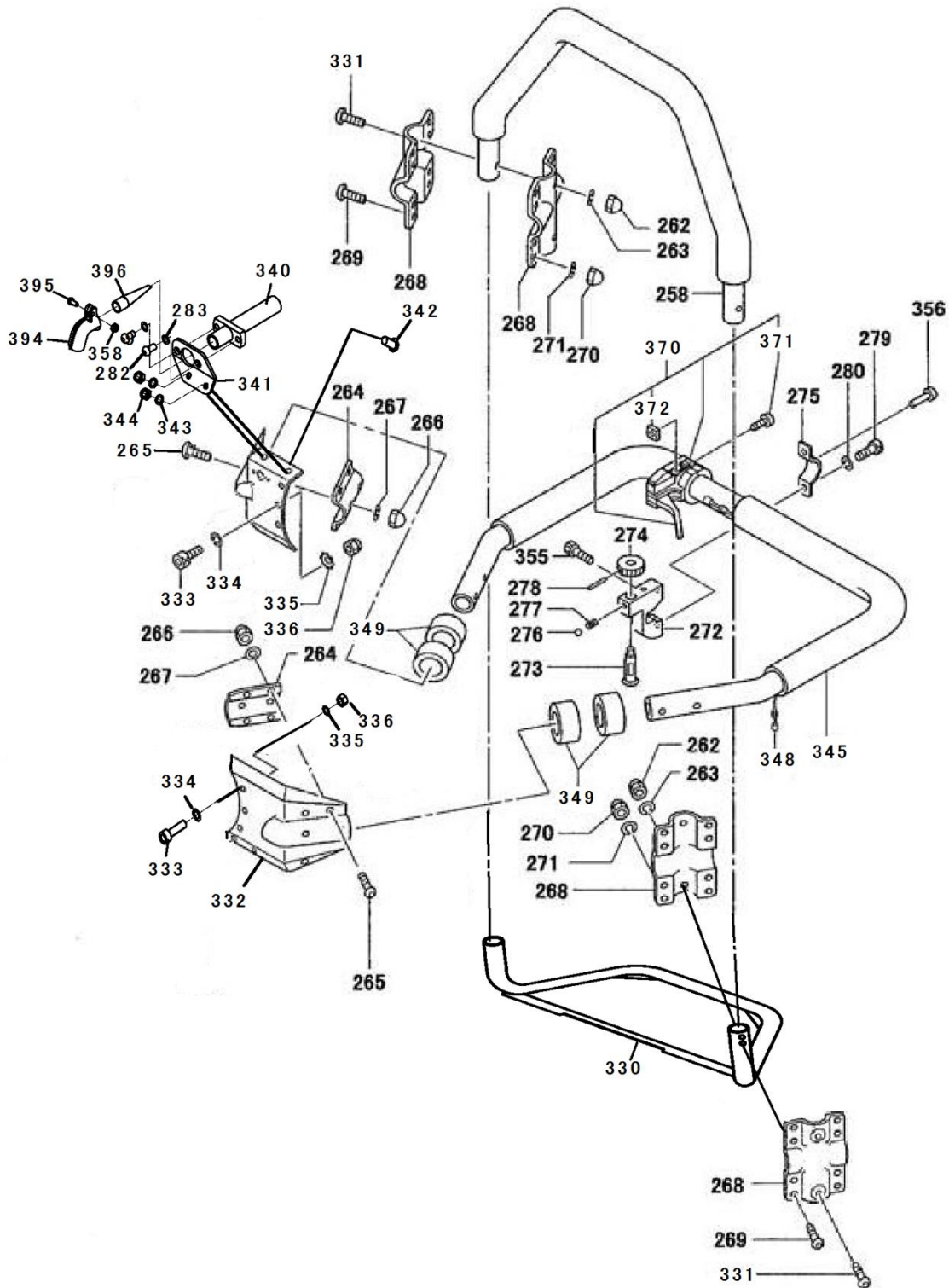


Call Out No.	Description	QTY
171	Hammer case	1
	Oil seal, VB type 35 × 50 × 5	1
	Hammer case press-fit bush,	1
174	Serrated spring washers with knurls, 2H-M8	4
175	Spring washer, M8	3
176	Hexagon socket head bolt, M8 × 45	3
177	U-nut, M8 U-unit	3
178	Hexagon socket head bolt, M8 × 50	1
188	Retainer ring anvil complete	1
	Retainer Ring	1
	Retainer ring O-ring, P18	1
191	Central shaft	1
192	Return spring	1
193	Hammer complete	1
	Cam plate	1
195	Wrecking ball, φ 13/32	2
196	Steel plug	4
199	Clutch	1
200	Thrust bearing, NSK 51104 (steel cage)	1
201	Spacer	1
202	Thrust	1
203	Hammer case packing	1
204	Ring flange complete	1
	Oil seal, SC type 30 × 52 × 7	1
	Bearing, 6007VV	1
	Bearing, 6006	1
208	Ring flange packing	1
209	Gear case complete	1
	Bearing, 16004 (NSK)	1
212	Bearing, 16003 (NSK)	1
213	Round R type retaining ring, IRTW-35	1
214	Selector shaft bush	1

Call Out No.	Description	QTY
215	Selector shaft	1
216	Gear	1
217	C type snap ring for shaft, STW-16	1
218	Bearing shaft complete	1
	Bearing shaft bush	1
220	Gear cluster	1
221	Planet Gear Complete	1
	Planet gear bush	1
223	Planet pivot	1
2 24	Planet spacer	1
225	Gear selector complete	1
	Spiral pin, Fai 5 × 26 (Orbis powerful type)	1
227	O-ring, N14	1
228	Gear flange	1
229	Gear flange packing	1
230	Hexagon socket head bolt, M5 × 10	3
231	Serrated spring washers with knurls, 2L-M5	3
232	Wave washer, WW-16	1
233	Gear change knob	1
234	Gear selector stop spring, S3.8 × 7 × 0.6 × 6	1
235	Gear selector stop ball, φ4 steel ball	1
236	Spring washer, M6	1
237	Hexagon socket head bolt, M6 × 20	1
238	Gear case packing	1
239	Positioning pin, Needle roller φ4 × 13.8	2
240	Serrated spring washers with knurls, 2H-M6	6
241	M6 × 25	6
249	C type snap ring for shaft, STW-25	1
310	Footrest	1
311	Clutch support flange complete	1
	Bearing, 16005	1
	Round R type retaining ring, IRTW-47	1

Call Out No.	Description	QTY
	Bearing, 6907	1
	Round R type retaining ring, IRTW-55	1
	Oil seal, SC type 35 × 55 × 8	1
312	Clutch ring	1
313	Engine support flange	1
314	Damper rubber	8
315	Urethane color	4
316	Color	4
317	Damper rubber receiver	2
318	Hexagon socket head cap screw (half screw), M6 × 35	4
319	Spring washer, M6	4
320	Flat washer, M6	4
324	Hexagon socket head bolt, M6 × 22	4
325	Spring washer, M6	4
326	Serrated spring washers with knurls, M6	4
	Oil pot port, PF3 / 8 -19(steel)	1
351	Anti-vibration D handle, (With rubber)	1
353	Hex Socket Button Bolt, M6 × 16	4
354	Serrated spring washers with knurls, 2H-M6	4
357	15mm	1

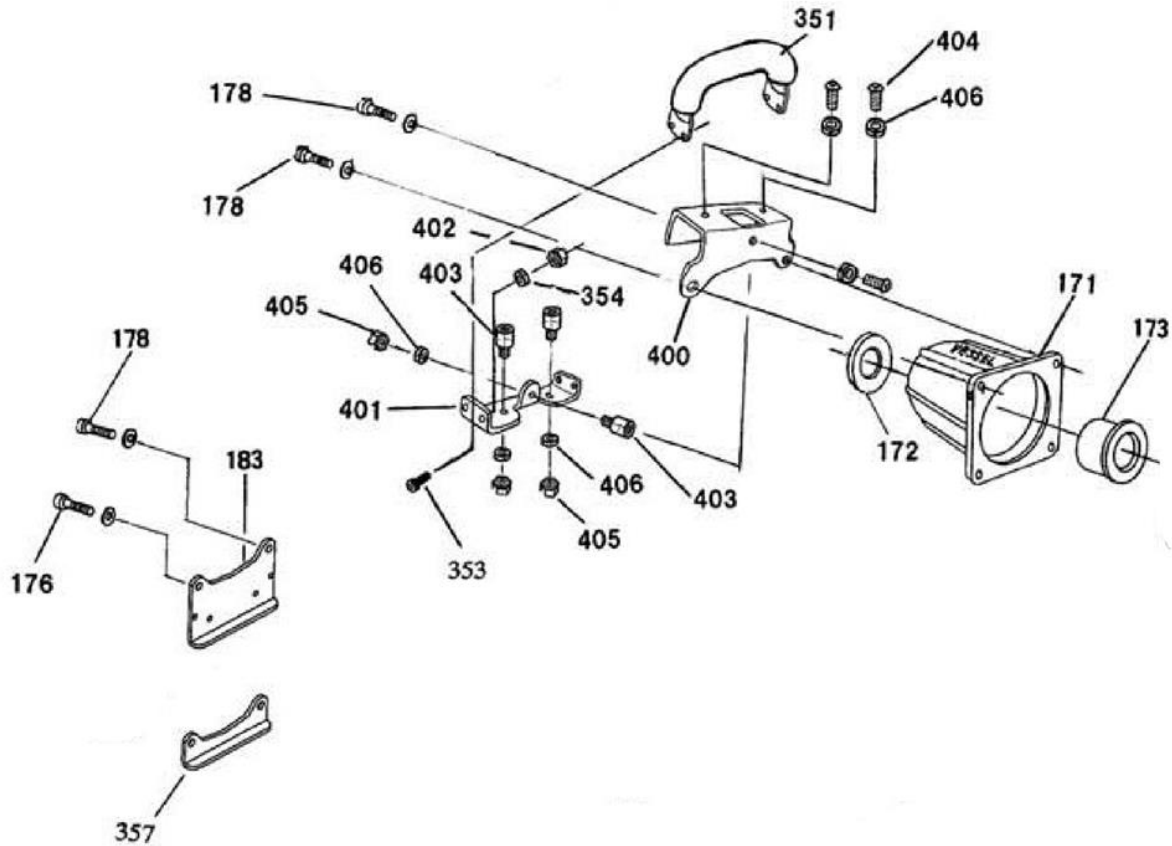
Handle Section Exploded View



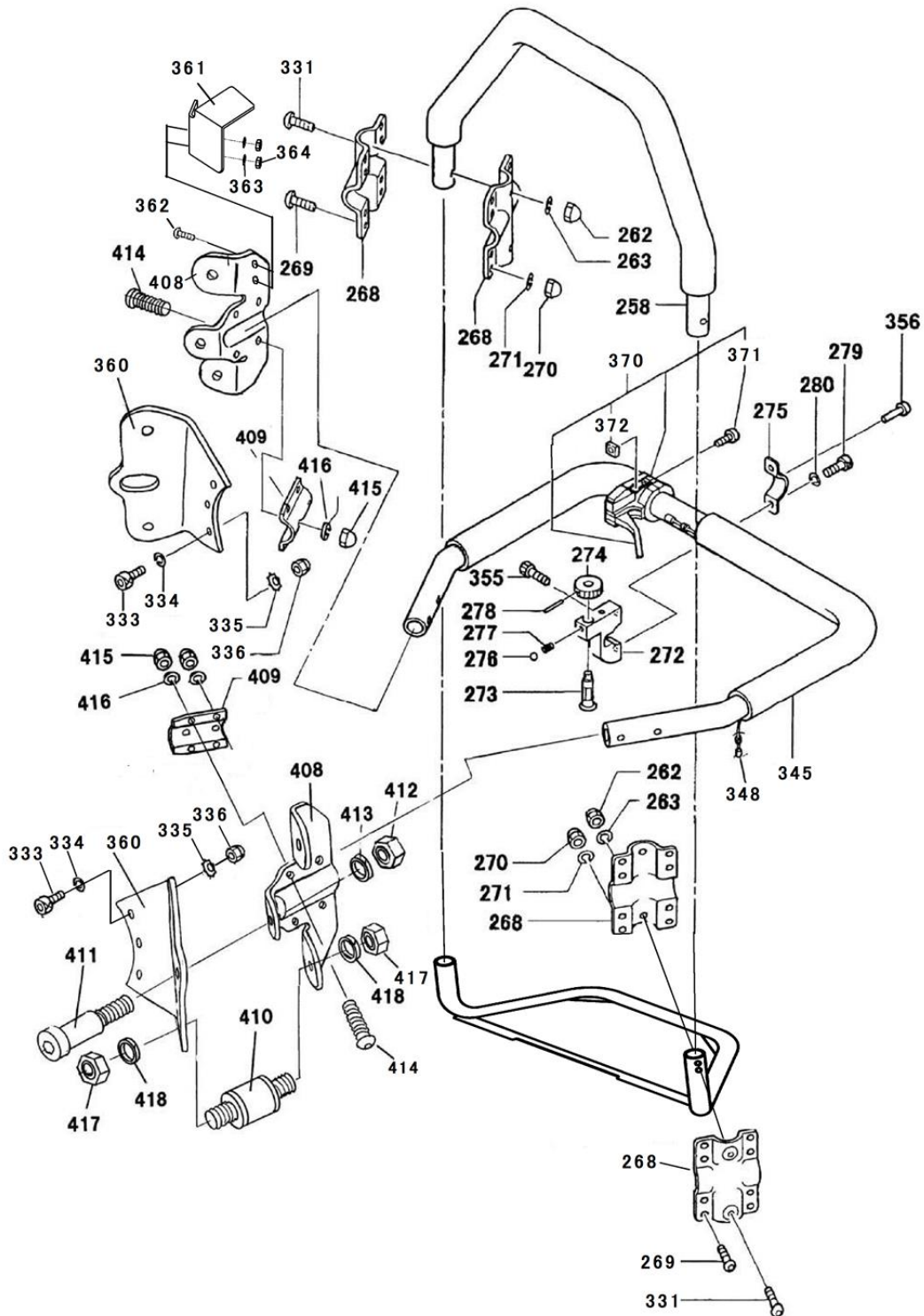
Call Out No.	Description	QTY
258	Vibration-proof auxiliary handle, (With rubber)	1
262	Hex U nut, M5 U-nut	4
263	Spring washer, M5	4
264	Plate for Handle	2
265	Hex Socket Button Bolt, M5 × 16	8
266	Hex U nut, M5 U-unit	8
267	Spring washer, M5	8
268	Auxiliary handle bracket	4
269	Hex Socket Button Bolt, M5 × 14	16
270	Hex U nut, M5 U-unit	16
271	Spring washer, M5	16
272	Adjust base complete	1
	Adjust valve	1
	Adjust button	1
	Adjust bracket	1
	Adjusting stop ball, Fai 4 steel balls	1
	Adjusting stop spring, S3.8 × 0.6	1
	Adjustment button fixing pin, SP2.5 × 16	1
279	Hex Socket Button Bolt, M5 × 12	2
280	Spring washer, M5	2
282	Hex Socket Button Bolt, M6 × 12	2
283	Serrated spring washers with knurls, 2H-M6	2
330	Protection pipe complete, (Weld protective cover)	1
331	Hex Socket Button Bolt, M5 × 30	4
332	Handle bracket	2
333	Hexagon socket head bolt, M6 × 22	6
334	Spring washer, M6	6
335	Serrated spring washers with knurls, 2H-M6	6
336	Hex U nut, M6 U-unit	6
340	Tail pipe bracket	1
341	Tail pipe base	1
342	Hex Socket Button Bolt, M6 × 12	2
343	Spring washer, M6	2
344	Hexagon nut, M6 U set	2
345	Main handle	1
348	Throttle wire HD	1

Call Out No.	Description	QTY
349	Handle damper rubber	4
355	Hexagon socket head bolt, M5 × 14	2
356	Rivet	1
358	U nut, M4	1
370	Throttle lever assembly	1
371	Phillips bolt, M5 × 20	2
372	Nut, M5	2
394	Adjustable tail pipe	1
395	Phillips screw, M4 × 8	1
396	Spark Arrester	1

Damper Unit Exploded View 1



Damper Unit Exploded View 2



Call Out No.	Description	QTY
360	Anti-vibration handle base	2
361	Exhaust cover	1
362	Hex Socket Button Bolt, M5 × 14	2
363	Serrated spring washers with knurls, M5	2
364	Hex U nut, M5	2
400	Anti-vibration D handle receiver	1
401	Anti-vibration D handle base	1
402	Hex U nut, M6	4
403	Anti-vibration rubber, VK25CR (Bolts 12)	3
404	Hex socket button bolt, M6 × 12	3
405	Hex U nut, M6	3
406	Spring washer, M6	6
408	Anti-vibration handle bracket	2
409	Anti-vibration handle receiver	2
410	Anti-vibration rubber, VK35CR (35H hardness 45 bolt length 15)	4
411	Hex socket shoulder bolt, $\phi 12 \times 16$ M10	2
412	Hex U nut, M10	2
413	Spring washer, M10	2
414	Hex socket button bolt, M6 × 16	8
415	Hex U nut, M6	8
416	Spring washer, M6	8
417	Hex U nut, M8	8
418	Spring washer, M8	8

Section 6: Warranty Terms and Conditions

Warranty Period

Each new machine and new parts of our manufacture are warranted against defects in material and workmanship for one year from the date of shipment from our factory.

When contacting customer service for factory parts, service or warranty support please provide the:

- Racine Railroad Products Model
- Serial Number
- Any locally assigned identification

Vendor Parts Warranty Period

Other equipment and parts used, but not manufactured by Racine Railroad Products, Inc., are covered directly by the manufacturer's warranty for their products.

Warranty Parts and Service

We will repair or replace, without charge, F.O.B. factory, Racine, Wisconsin, USA, any part Racine Railroad Products manufactures which is proven to be defective during the warranty period.

Material claimed defective must be returned, if requested, to the factory within 30 days from the date of the claim for replacement. Ordinary wear and tear, abuse, misuse, and neglect are not covered by this warranty. Depending upon the circumstances, we may provide technical assistance and/or technical service support, without charge, to assist in the correction of warranty related problems.

Non-Warranty Parts and Service

Material damaged through normal wear and tear, abuse, misuse and/or neglect are not covered by our warranty and should be ordered directly from Customer Service.

Note: Parts for models that are no longer in production may not be available.

Non-Warranty Parts Orders

When placing a parts order please provide the following information:

- Company Name and Billing Address
- Purchase Order Number and Issuing Authority
- Shipping Address
- Special Handling Instructions
- Contact Phone Number
- Machine Model and Serial Number
- Part Numbers and Quantities Being Ordered

Note: *Please use Racine Railroad Products part numbers when ordering parts.* Racine Railroad Products part numbers are shown in the parts lists and drawings of this manual and have only six (6) numbers.

Any part number with other than six numbers (e.g., contains alpha-numeric characters) is a Vendor Part Number and **not** a Racine Railroad Products part number