

OPERATION AND PARTS MANUAL



Mikasa **SERIES**
MODEL MTX60HD
TAMPING RAMMER
(HONDA GX100UKRBF GASOLINE ENGINE)

Revision #0 (07/31/12)

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THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.



CALIFORNIA — Proposition 65 Warning

Gasoline engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

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MTX60HD Rammer

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NOTICE

Specifications and part numbers are subject to change without notice.

PARTS ORDERING PROCEDURES

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January 1st, 2006

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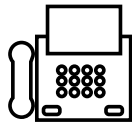
If you have an MQ Account, to obtain a Username and Password, E-mail us at: parts@multiquip.com.

To obtain an MQ Account, contact your District Sales Manager for more information.

Goto www.multiquip.com and click on **Order Parts** to log in and save!

Use the **internet** and qualify for a **5% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Fax (Dealers Only):

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Order via Phone: Domestic (US) Dealers Call:
1-800-427-1244

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Contact your local Multiquip Dealer for parts or call 800-427-1244 for help in locating a dealer near you.



International Customers should contact their local Multiquip Representatives for Parts Ordering information.

When ordering parts, please supply:

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|---|--|
| <input type="checkbox"/> Dealer Account Number | <input type="checkbox"/> Specify Preferred Method of Shipment: |
| <input type="checkbox"/> Dealer Name and Address | <input checked="" type="checkbox"/> UPS/Fed Ex <input checked="" type="checkbox"/> DHL |
| <input type="checkbox"/> Shipping Address (if different than billing address) | <input type="checkbox"/> Priority One <input checked="" type="checkbox"/> Truck |
| <input type="checkbox"/> Return Fax Number | <input type="checkbox"/> Ground |
| <input type="checkbox"/> Applicable Model Number | <input type="checkbox"/> Next Day |
| <input type="checkbox"/> Quantity, Part Number and Description of Each Part | <input type="checkbox"/> Second/Third Day |

NOTICE

All orders are treated as *Standard Orders* and will ship the same day if received prior to 3PM PST.

WE ACCEPT ALL MAJOR CREDIT CARDS!



SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.



SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.

SAFETY SYMBOLS

! DANGER

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

! WARNING

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.







! CAUTION

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

NOTICE

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Respiratory hazards
	Accidental starting hazards
	Eye and hearing hazards


SAFETY INFORMATION

GENERAL SAFETY

CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication. 
- **NEVER** operate this equipment under the influence of drugs or alcohol.



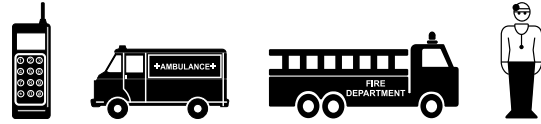
- **ALWAYS** check the equipment for loosened threads or bolts before starting.
- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest fire extinguisher.
- **ALWAYS** know the location of the nearest first aid kit.



- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor** and **fire department**. This information will be invaluable in the case of an emergency.



RAMMER SAFETY

DANGER

- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.



WARNING

- **NEVER** disconnect any **emergency or safety devices**. These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.
- **DO NOT** use this machine on ground that is harder than the machine can handle, or for driving pilings or tamping rock beds. Furthermore, use of the machine on sloping ground, such as the side of an embankment, may make the machine unstable and can cause an accident. It can also result in premature machine wear due to uneven loads on the machine.

Use the machine with confidence for tamping earth and sand, soil, gravel, and asphalt. **DO NOT** use the machine for other types of jobs.

CAUTION

- **NEVER** lubricate components or attempt service on a running machine.

NOTICE

- **ALWAYS** keep the machine in proper running condition.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.

SAFETY INFORMATION

ENGINE SAFETY

DANGER

- The engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.
- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



WARNING

- **DO NOT** place hands or fingers inside engine compartment when engine is running.
- **NEVER** operate the engine with heat shields or guards removed.
- **DO NOT** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the oil tank and severely scald any persons in the general area of the rammer.



CAUTION

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing equipment.



NOTICE

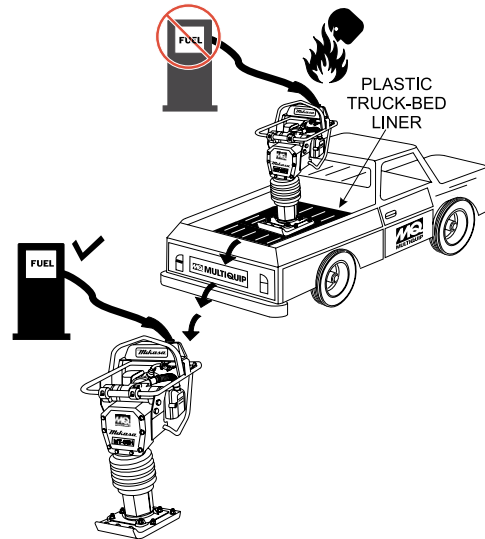
- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.



FUEL SAFETY

DANGER

- **DO NOT** add fuel to equipment if it is placed inside truck bed with plastic liner. Possibility exists of explosion or fire due to static electricity.



- **DO NOT** start the engine near spilled fuel or combustible fluids. Fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with **flammable** liquids.
- **DO NOT** fill the fuel tank while the engine is running or hot.
- **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system.
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.



TRANSPORTING SAFETY

CAUTION


- NEVER allow any person or animal to stand underneath the equipment while lifting.

NOTICE

- Before lifting, make sure that the equipment parts (hook and vibration insulator) are not damaged and screws are not loose or missing.
- Always make sure crane or lifting device has been properly secured to the lifting bail (hook) of the equipment.
- **ALWAYS** shutdown engine before transporting.
- **NEVER** lift the equipment while the engine is running.
- Tighten fuel tank cap securely and close fuel cock to prevent fuel from spilling.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- Use one point suspension hook and lift straight upwards.
- **DO NOT** lift machine to unnecessary heights.
- **ALWAYS** tie down equipment during transport by securing the equipment with rope.
- Never allow any person or animal to stand underneath the equipment while lifting.

ENVIRONMENTAL SAFETY

NOTICE

- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used motor oil, fuel and fuel filters. 
- **DO NOT** use food or plastic containers to dispose of hazardous waste.
- **DO NOT** pour waste, oil or fuel directly onto the ground, down a drain or into any water source.

SPECIFICATIONS

Table 1. Rammer Specifications

Overall Height	38.8 in. (985 mm)
Overall Width	13.8 in. (350 mm)
Over Length	28.1 in. (713 mm)
Shoe Size (W x L)	10.4 x 13.4 in. (265 x 340 mm)
Fuel Tank Capacity	2.7 qt. (2.5 liters)
Lubrication Oil Capacity	0.69 qt. (0.65 liter)
No. of Impacts Per Second	644-695 (10.7 - 11.6 Hz)
Impact Force	3,060 lbf (13.6 kN)
Impact Plate Stroke	2 - 3.2 in. (50 - 80 mm)
Operating Weight	141 lbs. (64 kg)
Measured Sound Power Level	103 dB
Guaranteed Sound Power Level	107 dB
Max. Sound Pressure Level	92 dB

Table 2. Engine Specifications

Model	Honda GX100UKRBF Engine
Type	Air-Cooled 4 Stroke, Overhead camshaft, single cylinder gasoline engine
Piston Displacement	6.0 cu.in. (98 cc)
Max. Output	3.0 hp/3,600 rpm (2.2 KW)
Max. Governed Speed, No Load	3,800 - 4,100 rpm
Cooling System	Air-Cooled
Engine Oil Capacity	0.3 qt. (0.28 liters)
Fuel	Unleaded gasoline
Lubricant for Engine	Automobile Oil; Class SE or higher
Starting System	Recoil Starter
Spark Plug Type	NGK CR5HSB

GENERAL INFORMATION

The Multiquip MTX60HD tamping rammer is a powerful compacting tool capable of applying a tremendous force in consecutive impacts to a soil surface. Its applications include soil compacting for road, embankments and reservoirs as well as backfilling for gas pipelines, water pipelines and cable installation work.

The impact force of the MTX60HD levels and uniformly compacts voids between soil particles to increase dry density.

Circular motion is converted to create impact force. The MTX60HD tamping rammer develops a powerful compacting force at the foot of the rammer. To maintain optimum performance, proper operation and service are essential.

The MTX60HD is equipped with an air cooled, four-cycle gasoline engine. Transmission of the power takes place by increasing the engine speed to engage the centrifugal clutch.

The MTX60HD uses an oil bath lubrication system. Always check the oil level through the oil level sight glass at the rear of the tamper foot.

Before starting the MTX60HD Tamping Rammer identify and understand the function of the controls.

CAUTION



Before starting operation check the lifting handle to:

1. Make sure that there is no damage on the bolts.
2. Make sure that there is no crack or breakage on handle.
3. Make sure that there is no fissure on the surface. If there is any abnormality or damage, replace with new one.

For operation:

This handle is to be used to lift up the shoe part of the machine with the body laid down on the ground or truck bed.

1. Use proper lifting techniques to avoid back injury. This handle is for manual lifting only.
2. Do not use this handle as a rammer lift point. Use the lifting point on the top of the machine.
3. Do not move the rammer with the lifting handle and the front rollers more than 16 feet (5 meters).

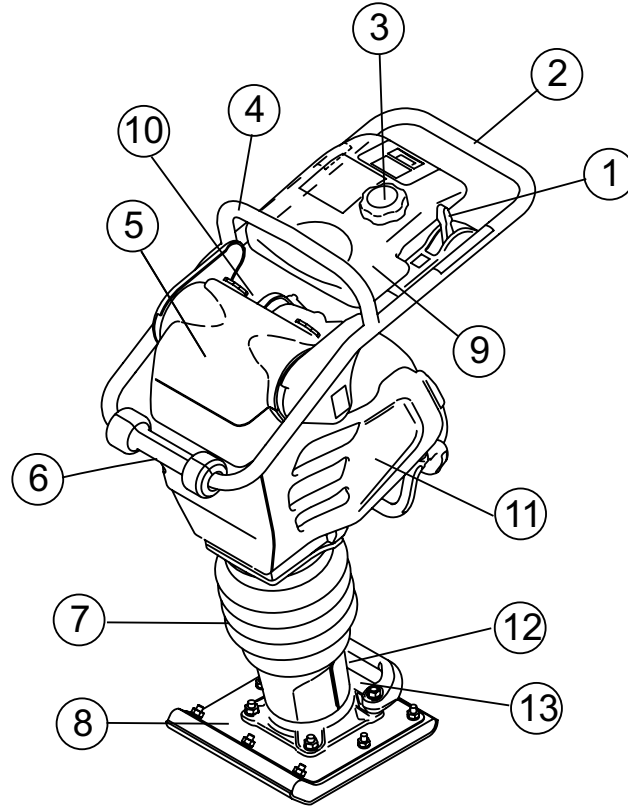


Figure 1. MTX60HD Rammer

Figure 1 shows the location of the controls and components for the MTX60HD Tamping Rammer. The functions of each control is described below:

1. **Combination (Throttle) Lever** — Used to adjust engine speed (rpm). Move lever forward (**SLOW**) to reduce engine speed, move lever back toward operator (**FAST**) to increase speed. Always operate the rammer at full speed (rpm).
2. **Handle** — To operate rammer, **GRIP** handle assembly firmly on both sides.
3. **Fuel Tank Cap** — Remove this cap to add unleaded gasoline to the fuel tank. Make sure cap is tightened securely. **DO NOT** over fill.
4. **Hook** — Used to lift rammer for transporting.
5. **Air Cleaner Cover** — Protects the air cleaner which prevents dirt and other debris from entering the engine.
6. **Roller** — Allows rammer to be moved around easily by rolling the unit.
7. **Bellows** — Reservoir for oil bath.
8. **Foot** — Laminated wood with tempered steel plate for superior shock absorption.
9. **Fuel Tank** — Holds the fuel for the unit (up to 3.2 quarts).
10. **Muffler** — Reduces the noise of the engine when running.
11. **Engine** — This unit uses a Honda GX100UKRBF gasoline engine.
12. **Oil Gauge (Sight Glass)** — Indicates the level of oil in the oil bath reservoir.
13. **Drain Valve** — Open this valve to remove oil from the bellows.

WARNING



Adding fuel to the tank should be accomplished only when the engine is stopped and has had an opportunity to cool down. In the event of a fuel spill, **DO NOT** attempt to start the engine until the fuel residue has been completely wiped up, and the area surrounding the engine is dry.

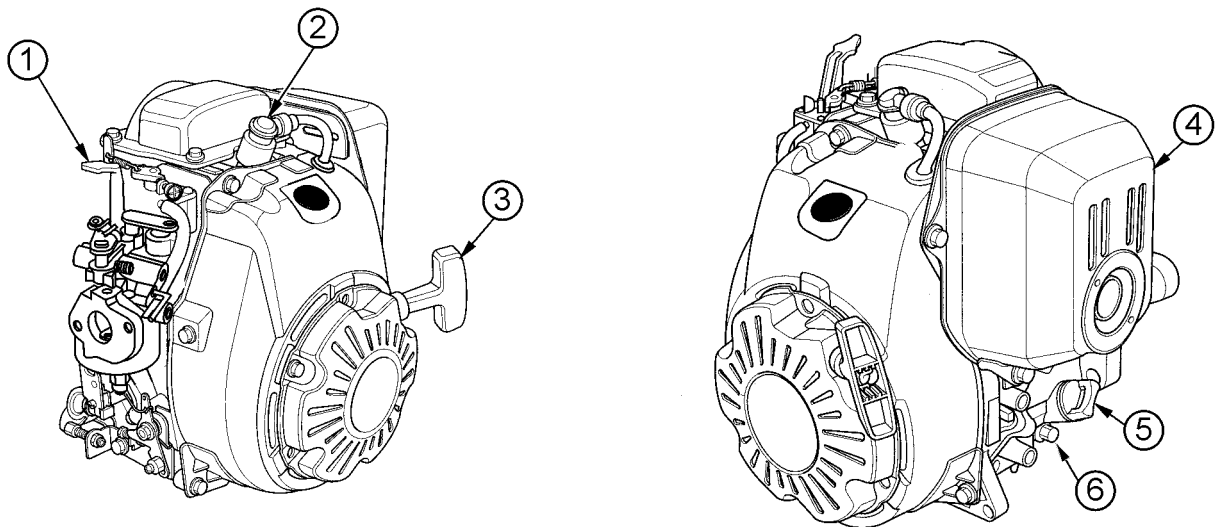


Figure 2. Honda GX100 Engine

The engine (Figure 2) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the engine manufacturer's manual for detailed operation and service information.

1. **Choke Lever** — Normally used in starting the engine in cold weather conditions. In cold weather, turn the choke lever to the fully closed position. In warm weather, set the choke lever halfway or completely open.
2. **Spark Plug** — Provides spark to the ignition system. Set spark plug gap to 0.024 - 0.028 inch (0.6 - 0.7 mm). Clean spark plug once a week.
3. **Recoil Starter (pull rope)** — Manual-starting method. Pull the starter grip until resistance is felt, then pull briskly and smoothly.

NOTICE

Operating the engine without an air filter, with a damaged air filter, or a filter in need of replacement will allow dirt to enter the engine, causing rapid engine wear.

4. **Muffler** — Used to reduce noise and emissions.
5. **Dipstick/Oil Filler Cap** — Remove this cap to determine if the engine oil is low. Add oil through this filler port as recommended in Table 3.
6. **Oil Drain Plug** — Remove this plug to remove oil from the engine's crankcase.

WARNING



Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operating. **NEVER** operate the engine with the muffler removed.

It is extremely important that this section be read carefully before attempting to operate the rammer. **DO NOT** use your rammer until this section is thoroughly understood.

CRANKCASE AND SPRING CYLINDER OIL BATH

This unit uses an oil bath lubrication system. Perform the following:

1. Check the oil level through the oil level sight glass (Figure 3) at the rear of the tamper foot.

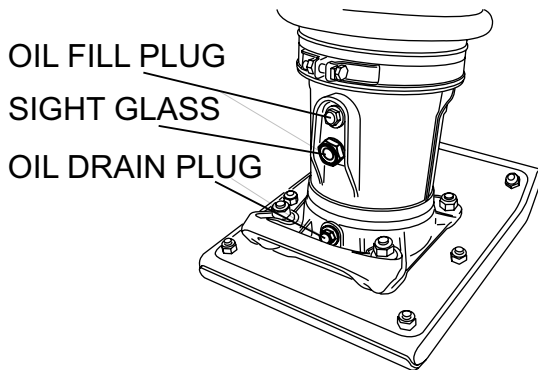


Figure 3. Foot Housing Sight Glass

NOTICE

The oil level should be kept at the half way point of the sight glass.

2. If oil is not visible, add 10W-30 SE, SF or higher grade motor oil into the oil fill plug opening (Figure 3). The bath contains approximately 0.69 qt. (0.65 liter)

ENGINE

1. Fill the fuel tank (Figure 4) with unleaded gasoline. At the same time, check the engine oil and make it a habit to replenish it often (Figure 5).

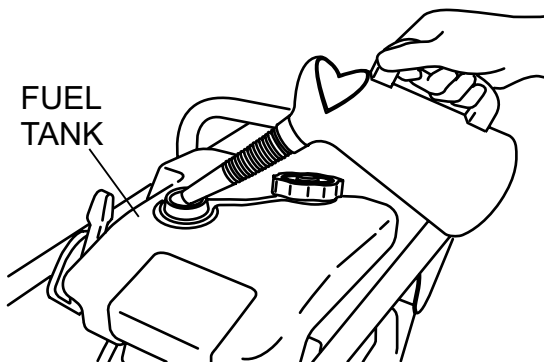


Figure 4. Fuel Tank

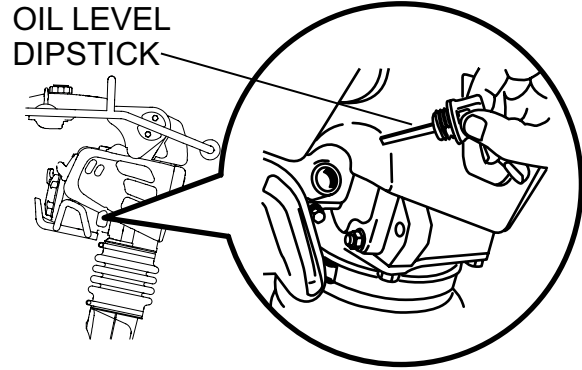


Figure 5. Engine Oil Dipstick

2. Low levels of oil may result in engine seizure due to high levels of consumption during operation.
3. Check the engine oil level and if the engine oil level is low, it should be refilled. Use the proper motor oil as suggested in the Table 3 below.

Table 3. Motor Oil Grade

Season or Temperature	Grade of motor oil (higher than MS class)
Spring, Summer or Autumn +120° F to +15° F	SAE 30
Winter +40° F to +15° F	SAE 30
Below +15° F	SAE 10W-30

GENERAL INSPECTION

1. Check all nuts, bolts fasteners for tightness. Retighten as necessary.
2. Clean any dirt from the recoil starter and foot pedestal. Wipe the entire unit clean before operating.
3. Replace any missing or damaged Safety Operation decals.
4. Adjust height of handle. Adjust handle by loosening nuts and moving handle to suit operation. Retighten nuts.

CAUTION

Failure to understand the operation of the Tamping Rammer could result in severe damage to the unit or personal injury.

INITIAL STARTUP

When starting the MTX60HD Tamping Rammer perform the following:

1. Slide the throttle lever from the stop to the idle position (👉) (Figure 6). This opens the fuel cock and the engine electrical circuit is turned on automatically.

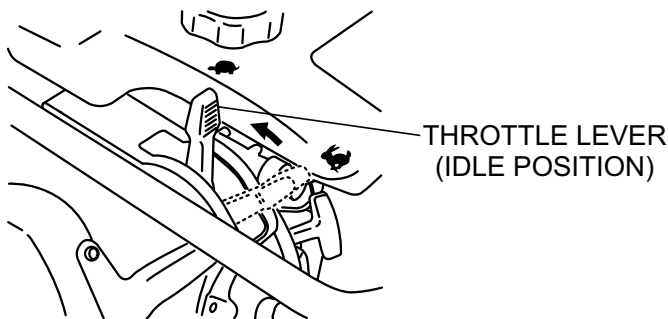


Figure 6. Throttle Lever (Idle Position)

2. Carburetor Purge System: Push the purge bulb 4 times or until you see fuel in the bulb (Figure 7).

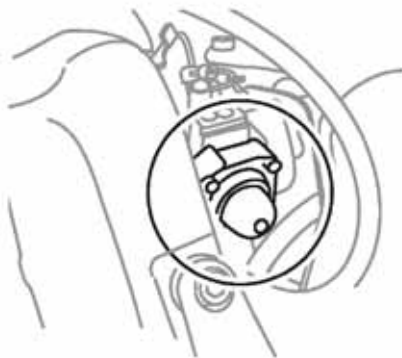


Figure 7. Purge Bulb

NOTICE

Pumping the purge bulb removes air from the fuel system. It does not pump fuel into the carburetor.

3. Place the choke lever to the closed position. When the weather is cold, close the choke all the way. When it is hot, or if the engine is hot, open the choke a little or leave it fully open.

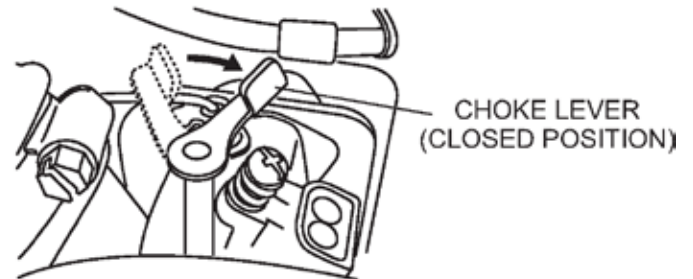


Figure 8. Choke Lever

4. Grip the starter rope handle (Figure 9) and pull it until you feel a slight resistance. Then pull sharply and quickly. Return the handle to the starter case before releasing.

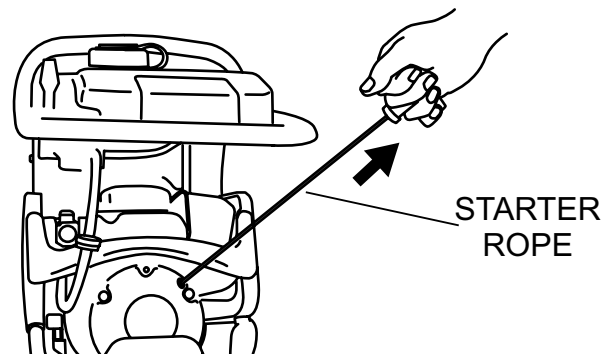


Figure 9. Recoil Starter

5. If engine fails to start, move the choke lever (Figure 8) to the half open position to avoid flooding.
6. Repeat steps 1 thru 5.
7. If the engine does not start after repeated attempts, check the spark plug for excess fuel. Clean and replace the spark plug as needed.

OPERATION

1. To start the rammer tamping action, move the throttle lever (Figure 10) **quickly** from **IDLE** to the **START** (🔌) position. **DO NOT** move the throttle lever slowly as this may cause damage to the clutch or spring.

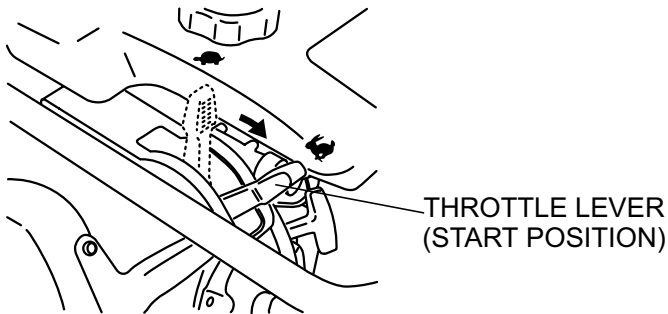


Figure 10. Throttle Lever (Start Position)

⚠ CAUTION

Make sure that the throttle lever is moved to the **FULL START** position. Operating the rammer at less than full speed can result in damage to the clutch springs or foot.

2. The MTX60HD tamping rammer is designed to run at 3,800 to 4,100 rpm. At optimum rpm the foot hits at the rate between 644-695 impacts per minute. Increasing throttle speed past factory set rpm does not increase impacts and may damage unit. The MTX60HD is designed to advance while tamping. For faster advance, pull back slightly on the handle so that rear of foot contacts soil first.
3. To stop the tamping action, move throttle lever quickly from **START** to **IDLE** position (Figure 6).

STOPPING THE ENGINE

1. Move throttle lever quickly from the **START** to **IDLE** position (Figure 6) and run the engine for three minutes at low speed. After the engine **cools**, move the throttle lever to the **STOP** position (Figure 11). The engine will stop and the fuel cock is automatically closed.

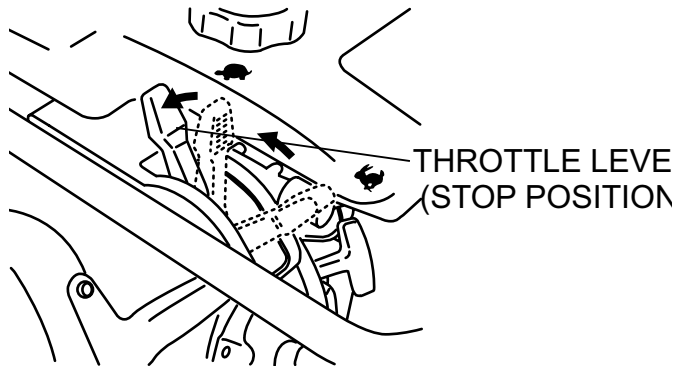


Figure 11. Throttle Lever (Stop Position)

2. If the engine does not stop due to a problem with the switch or the like, move the machine to a safe location and hold the throttle lever in the stop position. Let the machine run on idle and the machine will stop after a few minutes.

MAINTENANCE

DAILY

- Thoroughly remove dirt and oil from the engine and control area.
- Clean or replace the air cleaner elements as necessary. Check and retighten all fasteners as necessary.
- Check the spring box and bellows for oil leaks. Repair or replace as needed.

EVERY 50 HOURS

- Inspect in-line fuel filter (Part Number 16910Z4ES21, Figure 12) and replace if necessary.



Figure 12. In-Line Fuel Filter

- Remove and clean the spark plug, then adjust the spark gap to 0.024~0.028 inch (0.6~0.7 mm).

EVERY 80 TO 100 HOURS

- Remove the air cleaner cover. Loosen and remove the 2 screws that hold the cover to the air cleaner assembly. If the primary element (Figure 13) is dirty, wash it with gasoline or kerosene. Then dip it in engine oil (SAE10W-30) and wring the element so that 25 to 30 cc of engine oil remains on the element.

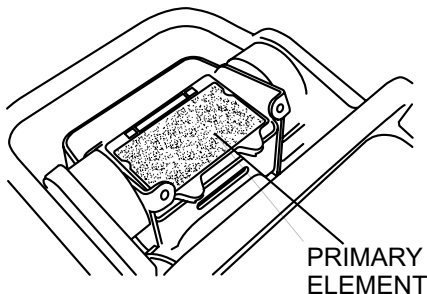


Figure 13. Air Cleaner Primary Element

EVERY 200 HOURS

- Remove the oil drain plug on foot housing (Figure 14) and drain the oil. Refill with approximately 0.69 qt. (0.65

liter) of 10W-30 SE, SF or higher grade motor oil. Oil should be midway in sight glass. Break in oil should be changed after first 50 hours.

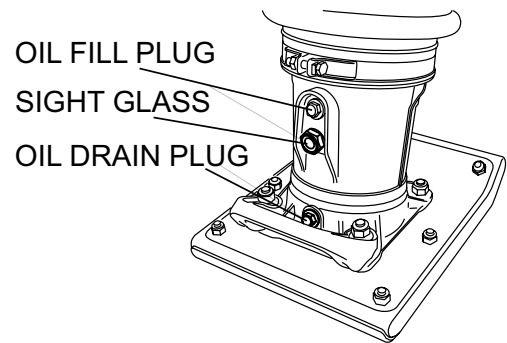


Figure 14. Oil Drain Plug

EVERY 6 MONTHS

- Clean the inside of the fuel tank with solvent.
- Inspect and clean fuel strainer (Figure 15). Replace strainer if necessary.

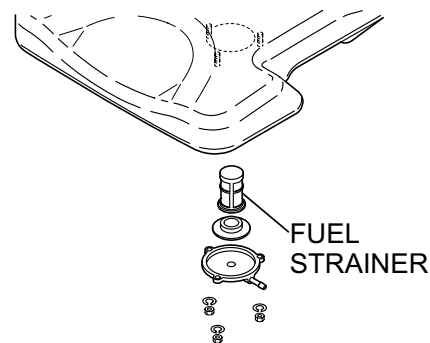


Figure 15. Fuel Strainer

EVERY 2 YEARS

- Replace the fuel line every 2 years even if there is no visible damage.

LONG TERM STORAGE

- Slide the throttle lever to the **STOP** position.
- Drain any fuel including in the fuel hose.
- Replace lubrication oil and apply grease to lubrication points.
- Cover the air intake on the air cleaner and the exhaust outlet on the muffler.
- Store unit indoors covered with plastic sheet in moisture free and dust free location out of direct sunlight.

TROUBLESHOOTING

Troubleshooting (Engine)		
Symptom	Possible Problem	Solution
Difficult to start, fuel is available, but no spark at spark plug.	Combo lever in incorrect position?	Make sure combo lever is in start position.
	Spark plug bridging?	Check gap, insulation or replace spark plug.
	Carbon deposit on spark plug?	Clean or replace spark plug.
	Short circuit due to deficient spark plug insulation?	Check spark plug insulation, replace if worn.
	Improper spark plug gap?	Set to proper gap.
	Fuel reaching carburetor?	Check fuel line.
	Water in fuel tank?	Flush or replace fuel tank.
	Fuel filter clogged?	Replace fuel filter.
	Stuck carburetor?	Check float mechanism.
	Spark plug is red?	Check transistor ignition unit.
	Spark plug is bluish white?	If insufficient compression, repair or replace engine. If injected air leaking, correct leak. If carburetor jets clogged, clean carburetor.
	No spark present at tip of spark plug?	Check transistor ignition unit is broken, and replace defective unit. Check if voltage cord cracked or broken and replace. Check if spark plug if fouled and replace.
No oil?	Add oil as required.	
Difficult to start, fuel is available, and spark is present at the spark plug.	ON/OFF switch is shorted?	Check switch wiring, replace switch.
	Ignition coil defective?	Replace ignition coil.
	Improper spark gap, points dirty?	Set correct spark gap and clean points.
	Condenser insulation worn or short circuiting?	Replace condenser.
	Spark plug wire broken or short circuiting?	Replace defective spark plug wiring.
Difficult to start, fuel is available, spark is present and compression is normal.	Wrong fuel type?	Flush fuel system, replace with correct type of fuel.
	Water or dust in fuel system?	Flush fuel system.
	Air cleaner dirty?	Clean or replace air cleaner.
	Choke open?	Close choke.
Difficult to start, fuel is available, spark is present and compression is low.	Suction/exhaust valve stuck or protruded?	Reseat valves.
	Piston ring and/or cylinder worn?	Replace piston rings and/or piston.
	Cylinder head and/or spark plug not tightened properly?	Torque cylinder head bolts and spark plug.
	Head gasket and/or spark plug gasket damaged?	Replace head and spark plug gaskets.
No fuel present at carburetor.	No fuel in fuel tank?	Fill with correct type of fuel.
	Fuel cock does not open properly?	Apply lubricant to loosen fuel cock lever, replace if necessary.
	Fuel filter/lines clogged?	Replace fuel filter.
	Fuel tank cap breather hole clogged?	Clean or replace fuel tank cap.
	Air in fuel line?	Bleed fuel line.

TROUBLESHOOTING

Troubleshooting (Engine) - continued		
Symptom	Possible Problem	Solution
Weak in power, compression is proper and does not misfire.	Air cleaner dirty?	Clean or replace air cleaner.
	Improper level in carburetor?	Check float adjustment, rebuild carburetor.
	Defective spark plug?	Clean or replace spark plug.
	Improper spark plug?	Set to proper gap.
Weak in power, compression is proper but misfires.	Water in fuel system?	Flush fuel system and replace with correct type of fuel.
	Dirty spark plug?	Clean or replace spark plug.
	Ignition coil defective?	Replace ignition coil.
Engine overheats.	Spark plug heat value incorrect?	Replace with correct type of spark plug.
	Wrong type of fuel?	Replace with correct type of fuel.
	Cooling fins dirty?	Clean cooling fins.
	Intake air restricted?	Clear intake of dirt and debris. Replace air cleaner elements as necessary.
	Oil level too low or too high?	Adjust oil to proper level.
Rotational speed fluctuates.	Governor adjusted incorrectly?	Adjust governor.
	Governor spring defective?	Replace governor spring.
	Fuel flow restricted?	Check entire fuel system for leaks or clogs.
Recoil starter malfunctions. (if applicable)	Recoil mechanism clogged with dust and dirt?	Clean recoil assembly with soap and water.
	Spiral spring loose?	Replace spiral spring.
Starter malfunctions.	Loose, damaged wiring?	Ensure tight, clean connections on battery and starter.
	Battery insufficiently charged?	Recharge or replace battery.
	Starter damaged or internally shorted?	Replace starter.
Burns too much fuel.	Over-accumulation of exhaust products?	Check and clean valves. Check muffler and replace if necessary.
	Wrong spark plug?	Replace spark plug with manufacturer's suggested type.
Exhaust color is continuously "white".	Lubricating oil is wrong viscosity?	Replace lubricating oil with correct viscosity.
	Worn rings?	Replace rings.
Exhaust color is continuously "black".	Air cleaner clogged?	Clean or replace air cleaner.
	Choke valve set to incorrect position?	Adjust choke valve to correct position.
	Carburetor defective, seal on carburetor broken?	Replace carburetor or seal.
	Poor carburetor adjustment, engine runs too rich?	Adjust carburetor.
Will not start, no power with key "ON". (if applicable)	ON/OFF device not activated ON?	Turn on ON/OFF device.
	Battery disconnected or discharged?	Check cable connections. Charge or replace battery
	Ignition switch/wiring defective?	Replace ignition switch. Check wiring.

TROUBLESHOOTING

Troubleshooting (Rammer)		
Symptom	Possible Problem	Solution
Engine runs but rammer jumps erratically or not at all.	Operating speed of throttle lever is incorrectly set?	Set throttle lever to correct position.
	Oil in excess?	Drain excess oil. Bring to correct level.
	Clutch slips?	Replace or adjust clutch.
	Spring Failure?	Replace spiral spring.
	Speed of engine improper?	Adjust engine speed to correct operating RPM setting.
	Soil over-compacted?	Shut down machine and test soil.

EXPLANATION OF CODE IN REMARKS COLUMN

The following section explains the different symbols and remarks used in the Parts section of this manual. Use the help numbers found on the back page of the manual if there are any questions.

NOTICE

The contents and part numbers listed in the parts section are subject to change **without notice**. Multiquip does not guarantee the availability of the parts listed.

SAMPLE PARTS LIST

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	12345	BOLT	1	INCLUDES ITEMS W/%
2%		WASHER, 1/4 IN.		NOT SOLD SEPARATELY
2%	12347	WASHER, 3/8 IN. ...	1	MQ-45T ONLY
3	12348	HOSE	A/R	MAKE LOCALLY
4	12349	BEARING	1	S/N 2345B AND ABOVE

NO. Column

Unique Symbols — All items with same unique symbol

(@, #, +, %, or >) in the number column belong to the same assembly or kit, which is indicated by a note in the “Remarks” column.

Duplicate Item Numbers — Duplicate numbers indicate multiple part numbers, which are in effect for the same general item, such as different size saw blade guards in use or a part that has been updated on newer versions of the same machine.

NOTICE

When ordering a part that has more than one item number listed, check the remarks column for help in determining the proper part to order.

PART NO. Column

Numbers Used — Part numbers can be indicated by a number, a blank entry, or TBD.

TBD (To Be Determined) is generally used to show a part that has not been assigned a formal part number at the time of publication.

A blank entry generally indicates that the item is not sold separately or is not sold by Multiquip. Other entries will be clarified in the “Remarks” Column.

QTY. Column

Numbers Used — Item quantity can be indicated by a number, a blank entry, or A/R.

A/R (As Required) is generally used for hoses or other parts that are sold in bulk and cut to length.

A blank entry generally indicates that the item is not sold separately. Other entries will be clarified in the “Remarks” Column.

REMARKS Column

Some of the most common notes found in the “Remarks” Column are listed below. Other additional notes needed to describe the item can also be shown.

Assembly/Kit — All items on the parts list with the same unique symbol will be included when this item is purchased.

Indicated by:

“INCLUDES ITEMS W/(unique symbol)”

Serial Number Break — Used to list an effective serial number range where a particular part is used.

Indicated by:

“S/N XXXXX AND BELOW”

“S/N XXXX AND ABOVE”

“S/N XXXX TO S/N XXX”

Specific Model Number Use — Indicates that the part is used only with the specific model number or model number variant listed. It can also be used to show a part is NOT used on a specific model or model number variant.

Indicated by:

“XXXXX ONLY”

“NOT USED ON XXXX”

“Make/Obtain Locally” — Indicates that the part can be purchased at any hardware shop or made out of available items. Examples include battery cables, shims, and certain washers and nuts.

“Not Sold Separately” — Indicates that an item cannot be purchased as a separate item and is either part of an assembly/kit that can be purchased, or is not available for sale through Multiquip.

SUGGESTED SPARE PARTS

MTX60HD TAMPING RAMMER WITH HONDA GX100UKRBF ENGINE

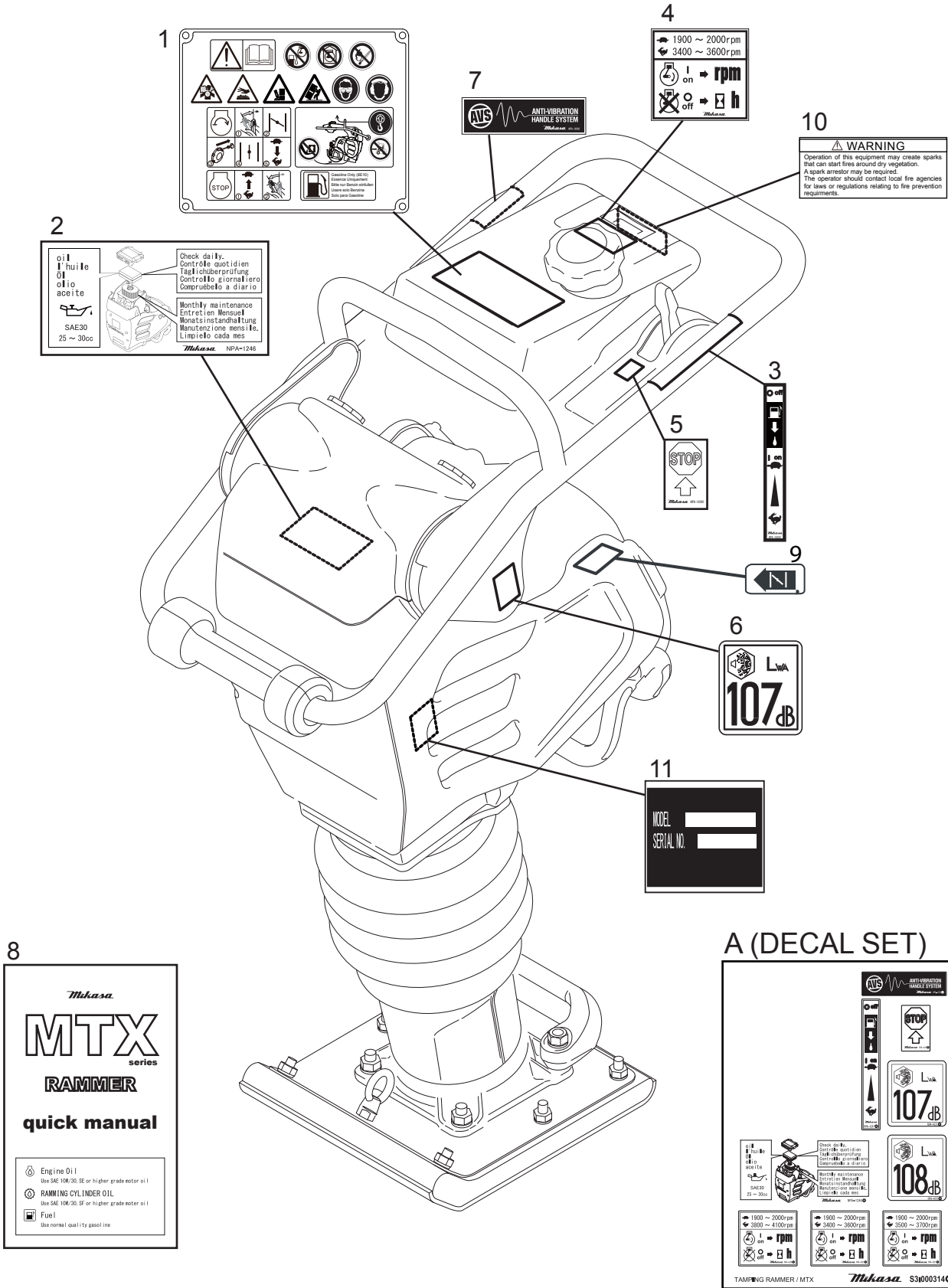
1 to 3 units

Qty.	P/N	Description
1.....	956100062.....	THROTTLE WIRE
3.....	366010070.....	PRIMARY ELEMENT, AIR CLEANER
3.....	366010080.....	SECONDARY ELEMENT, AIR CLEANER
1.....	366350460.....	CAP ASSY., FUEL TANK
2.....	16910Z4ES21.....	FILTER, IN-LINE FUEL
3.....	9805655777.....	SPARK PLUG
1.....	954406010.....	STRAINER, FUEL TANK
1.....	28462Z0DV03.....	ROPE, RECOIL STARTER
1.....	956200110.....	COMBINATION LEVER
1.....	366900170.....	CUP AND PACKING SET
1.....	366348550.....	CLUTCH ASSY

NOTICE

Part numbers on this Suggested Spare Parts list may supersede/replace the part numbers shown in the following parts lists.

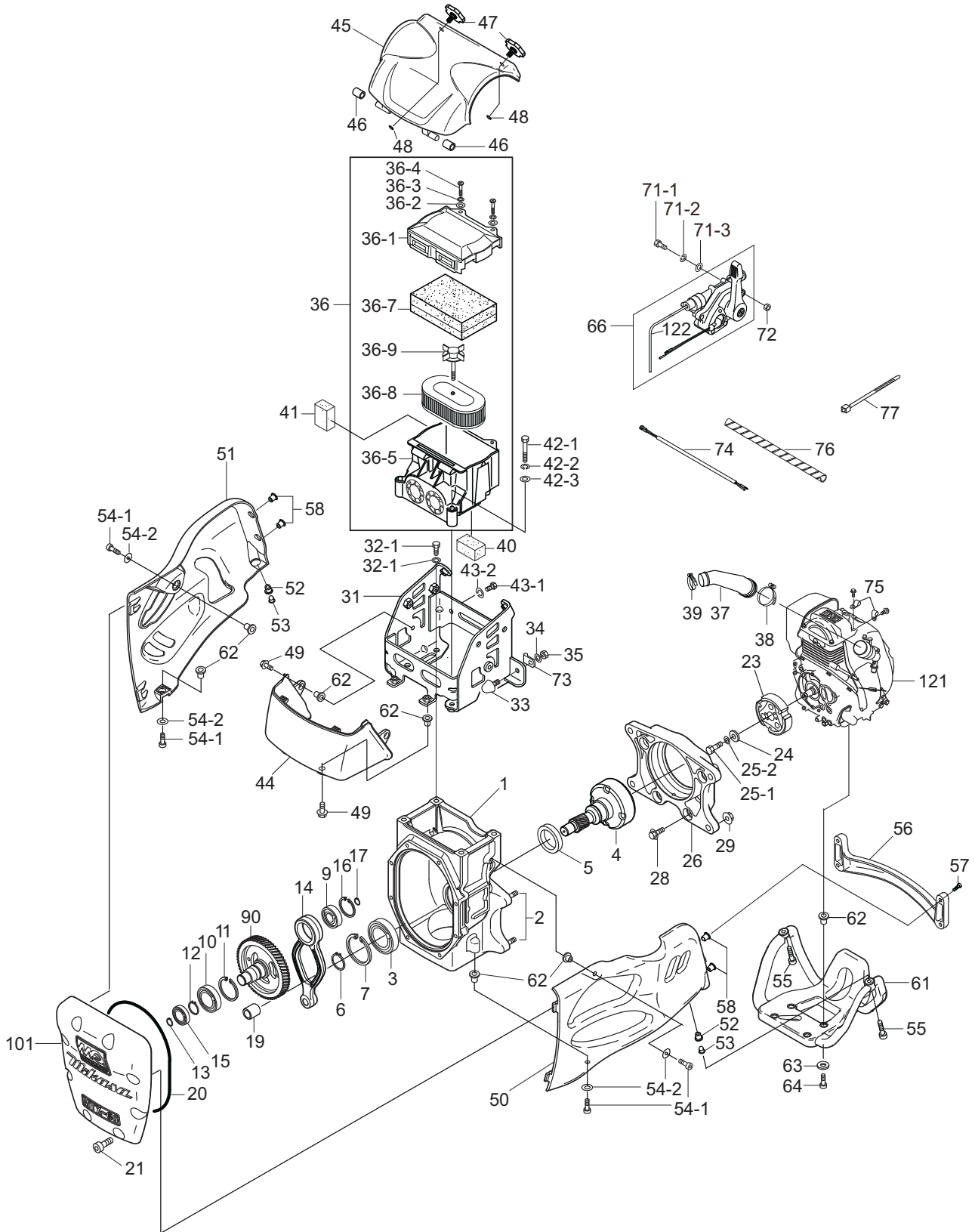
NAMEPLATES AND DECALS



NAMEPLATES AND DECALS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	920215440	OPERATION DECAL	1	
2#		DECAL, AIR CLEANER	1	
3#		DECAL, LEVER OPERATION	1	
4#		DECAL, MAX SPEED DECAL 4100	1	
5#		DECAL, MACHINE STOP	1	
6#		DECAL, EC NOISE REQ. Lwa 107dB	1	
7#		DECAL, ANTI-VIB HANDLE	1	
8	920212540	QUICK MANUAL	1	
9	0732004430	DECAL, CHOKE OPERATION	1	
10	920214100	DECAL, E/G FIRE WARNING	1	
11		SERIAL PLATE NO.....	1.....	CONTACT MQ PARTS DEPT. W/ SERIAL NO.
A	920900040	DECAL SET	1.....	INCLUDES ITEMS W/ #

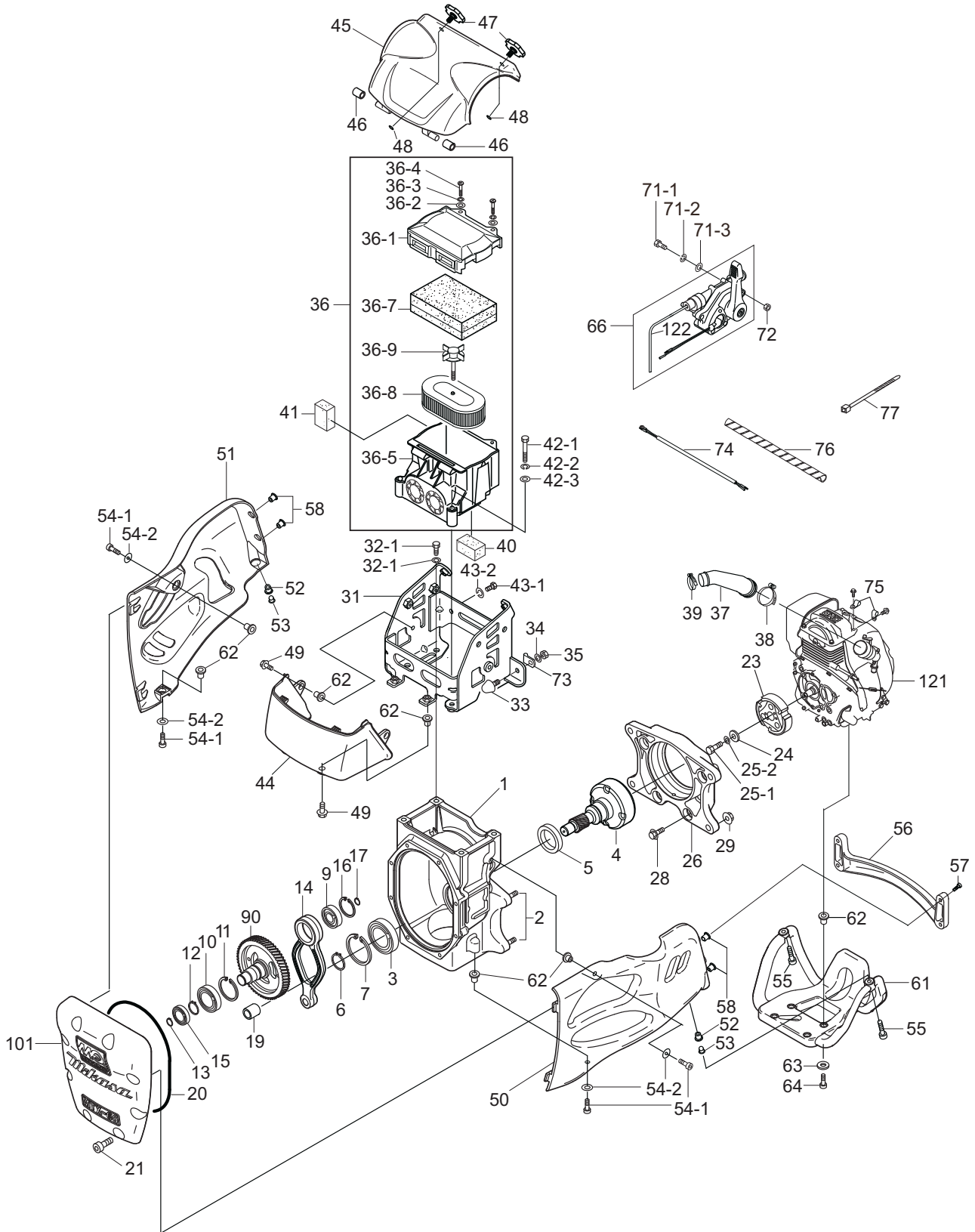
CRANKCASE AND ENGINE ASSY



CRANKCASE AND ENGINE ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	368910010	CRANKCASE CP	1	INCLUDES ITEM W/ *
2*	009120204	STUD BOLT 10X50X21T/21S	4	
3	041006007	BEARING 6007Z	1	
4	368347410	DRUM, PINION	1	
5	060404010	OIL SEAL TC-40528	1	
6	080200350	STOP RING S-35	1	
7	080100620	STOP RING R-62	1	
9	042506203	BEARING 6203	1	
10	040006305	BEARING 6305	1	
11	080100620	STOP RING R62	1	
12	080200170	STOP RING S-17	1	
13	JISB2804C25	SNAP RING 25MM	1	
14	368347250	CONNECTING ROD	1	
15	040006304	BEARING 6304	1	
16	080100520	STOP RING R-52	1	
17	080200200	STOP RING S-20	1	
19	047940060	NEEDLE BEARING FJ-1816	1	
20	050710100	O- RING AS568- 267	1	
21	014208025	SOCKET HEAD BOLT 8X25 T	8	
23	366348550	CLUTCH ASSY.	1	
24	952401450	WASHER 8.5X22X3	1	
25-1	011208025	BOLT 8X25 T	1	
25-2	030208200	WASHER, LOCK M8	1	
26	368217640	ENGINE FLANGE	1	
28	001710840	SOCKET HEAD BOLT 8X40 T	4	
29	022611010	FLANGE NUT M10 H	4	
31	368347490	SHOCK ABSORBER BRACKET 60	1	
32-1	012010030	BOLT 10X30 H	4	
32-2	030210250	WASHER, LOCK M10	4	
33	939010270	STOPPER RUBBER (70)	1	
34	030208200	WASHER, LOCK M8	1	
35	020108060	NUT M8	1	
36	366900010	AIR CLEANER ASSY.	1	INCLUDES ITEMS W/ #
36-1#	366010010	AIR CLEANER COVER	1	
36-2#	366010020	WASHER, FLAT M6 (6.5X18X1.5)	2	
36-3#	030206150	WASHER, LOCK M6	2	
36-4#	366010040	COIN BOLT M6	2	
36-5#	366010050	AIR CLEANER BASE CP	1	
36-7#	366010070	PRIMARY ELEMENT CP	1	
36-8#	366010080	SECONDARY ELEMENT	1	
36-9#	362030040	GRIP BPLT CP	1	
37	366345470	INTAKE PIPE	1	
38	954407681	CYCLONE CLAMP (CY- 1) 45	1	
39	954407682	CYCLONE CLAMP (CY- 1) 38	1	
40	366460160	UNDER SEALING FORM	1	

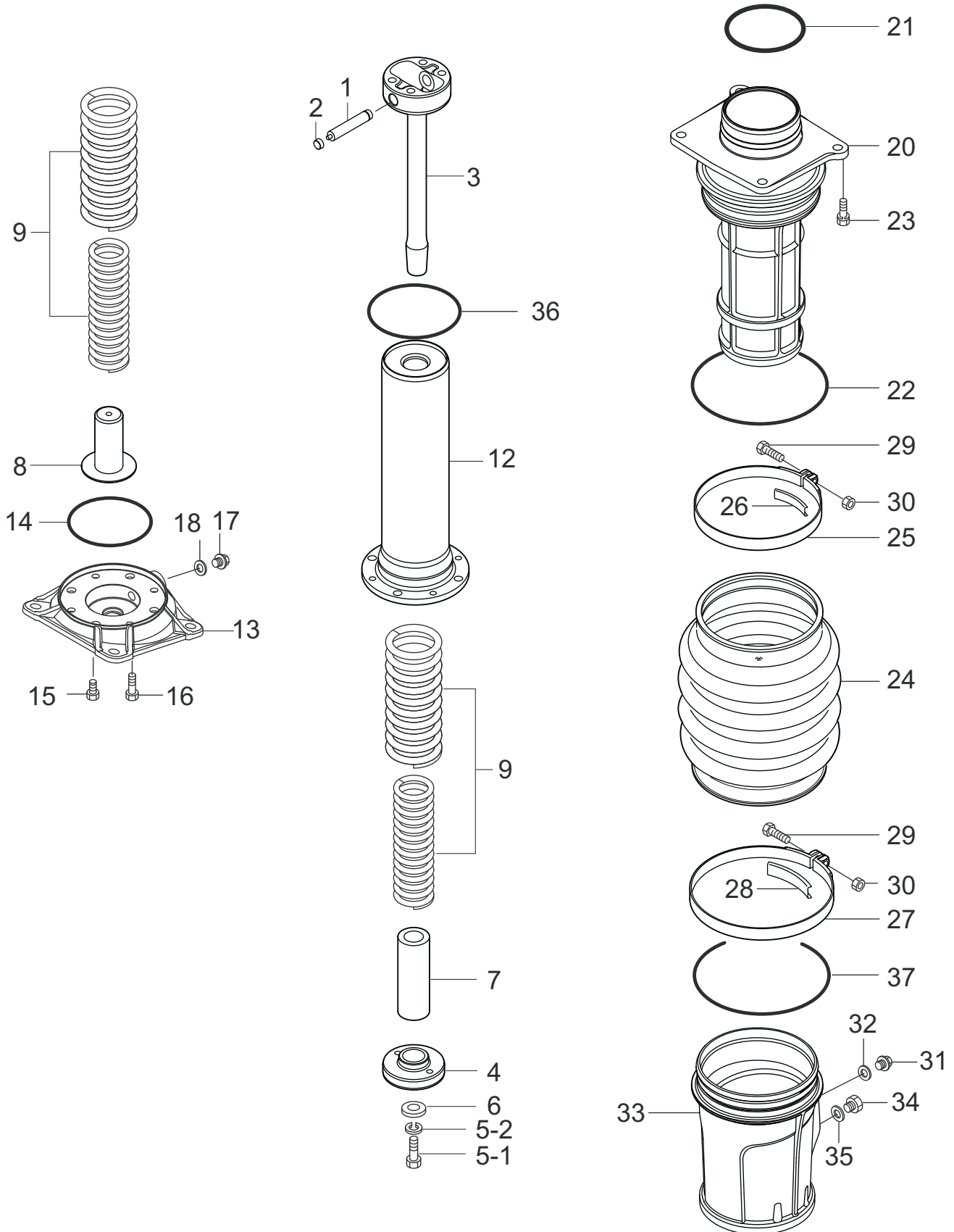
CRANKCASE AND ENGINE ASSY



CRANKCASE AND ENGINE ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
41	366460150	SIDE SEALING FORM	1	
42-1	001220851	BOLT 8X55 T	2	
42-2	030208200	WASHER, LOCK M8	2	
42-3	014208020	WASHER, FLAT M8	2	
43-1	011008015	BOLT 8X15 H	2	
43-2	030208200	WASHER, LOCK M8	2	
44	368217760	BOTTOM CLEANER COVER 60	1	
45	368217750	TOP CLEANER COVER 60	1	
46	366460140	RUBBER BUSH 10X16X17	2	
47	366345980	CLEANER COVER KNOB	2	
48	050200060	O-RING P6	2	
49	009110040	FLANGE BOLT 8X20	4	
50	368119470	LINK GUARD	1	
51	368119480	MUFFLER GUARD	1	
52	022910260	WELL NUT M8	2	
53	366460170	FLANGE COLLAR 8	2	
54-1	014208020	SOCKET HEAD BOLT 8X20 T	4	
54-2	033910220	WASHER, FLAT M8	4	
55	009110038	SOCKET HEAD BOLT 8X30 ZN	2	
56	368217770	CROSS BAR	1	
57	009110039	SOCKET HEAD BOLT 6X25 ZN	4	
58	022910250	WELL NUT M6	4	
61	368119490	ENGINE GUARD	1	
62	366461050	COLLAR/GUARD	12	
63	033910220	WASHER 8.4X15.5X1.6	4	
64	009110038	SOCKET HEAD BOLT 8X30 ZN	4	
66	956200110	LEVER ASSY. W/T. WIRE	1	INCLUDES ITEMS W/@
71-1	011206020	BOLT 6X20 T	2	
71-2	030206150	WASHER, LOCK M6	2	
71-3	031106100	WASHER, FLAT M6	2	
72	020106050	NUT M6	2	
73	959006120	CLIP (TCP2-10509B)	1	
74	368461280	WIRE HARNESS	1	
75	2067550101	CLAMP COMPL	2	
76	959021814	SPIRAL TUBE KEP6 / L=200	1	
77	454010020	CLAMP TC-100	3	
90	368347270	CRANK GEAR	1	
101	368010010	FRONT COVER	1	
121	912210014	ENGINE ASSY., GX100UKRBF	1	
122@	956100062	THROTTLE WIRE	1	

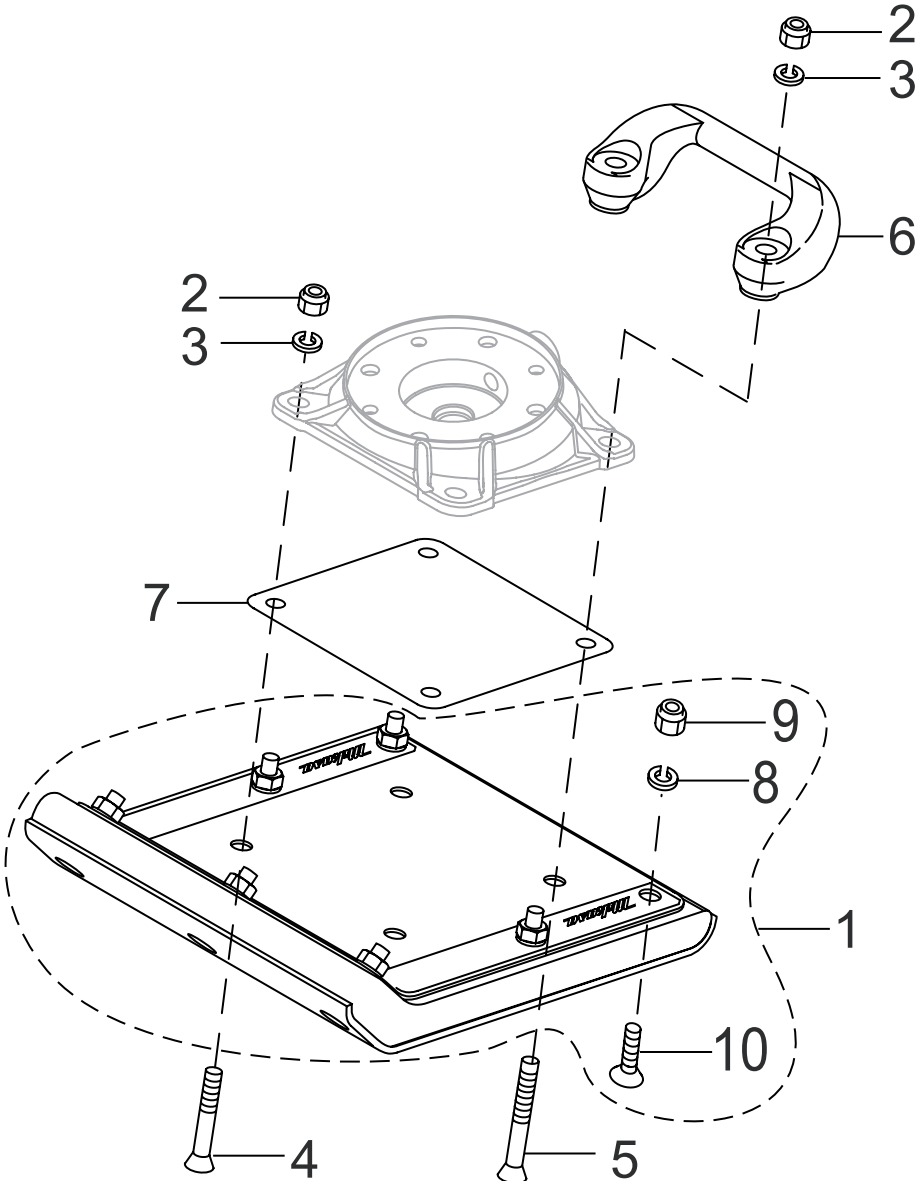
GUIDE CYLINDER ASSY



GUIDE CYLINDER ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	368461210	PISTON PIN	1	
2	368459920	PISTON PIN PLUG	2	
3	368347290	PISTON ROD	1	
4	368461160	PISTON END	1	
5-1	012012030	BOLT 12X30 T	1	
5-2	030212300	WASHER, LOCK M12	1	
6	952404790	WASHER 13306	1	
7	368461260	LOWER STOPPER	1	
8	368461200	BOTTOM STOPPER	1	
9	368461270	MAIN SPRING	2	
12	368347281	SPRING CYLINDER	1	REPLACES P/N 368347280
13	368217710	FOOT PLATE	1	
14	050100800	O-RING G-80	1	
15	014210020	SOCKET HEAD BOLT 15X20 T	4	
16	001520835	SOCKET HEAD BOLT 8X25 T	4	
17	953405270	PLUG 1/4X14 13L	1	
18	953405260	PACKING 1/4 (CU)	1	
20	368217720	CYLINDER GUIDE	1	
21	050100850	O-RING G-85	1	
22	050101150	O-RING G-115	1	
23	012710035	BOLT 10X35 H, SW4	4	
24	368346180	ORANGE BELLOWS	1	
25	368347520	BELLOWS CLAMP 131D	1	
26	368461400	BAND GUIDE 131D	1	
27	368347530	BELLOWS CLAMP 149D	1	
28	368461410	BAND GUIDE 149D	1	
29	011008040	BOLT 8X40 T	2	
30	020108060	NUT M8	2	
31	953405270	PLUG 1/4X14 13L	1	
32	953405260	PACKING 1/4 (CU)	1	
33	368118970	PROTECTION SLEEVE	1	
34	366460300	OIL GAUGE ASSY.	1	
35	953404670	COPPER PACKING 17X25.5X1	1	
36	050200800	O-RING P-80	1	
37	050101300	O-RING G-130	1	

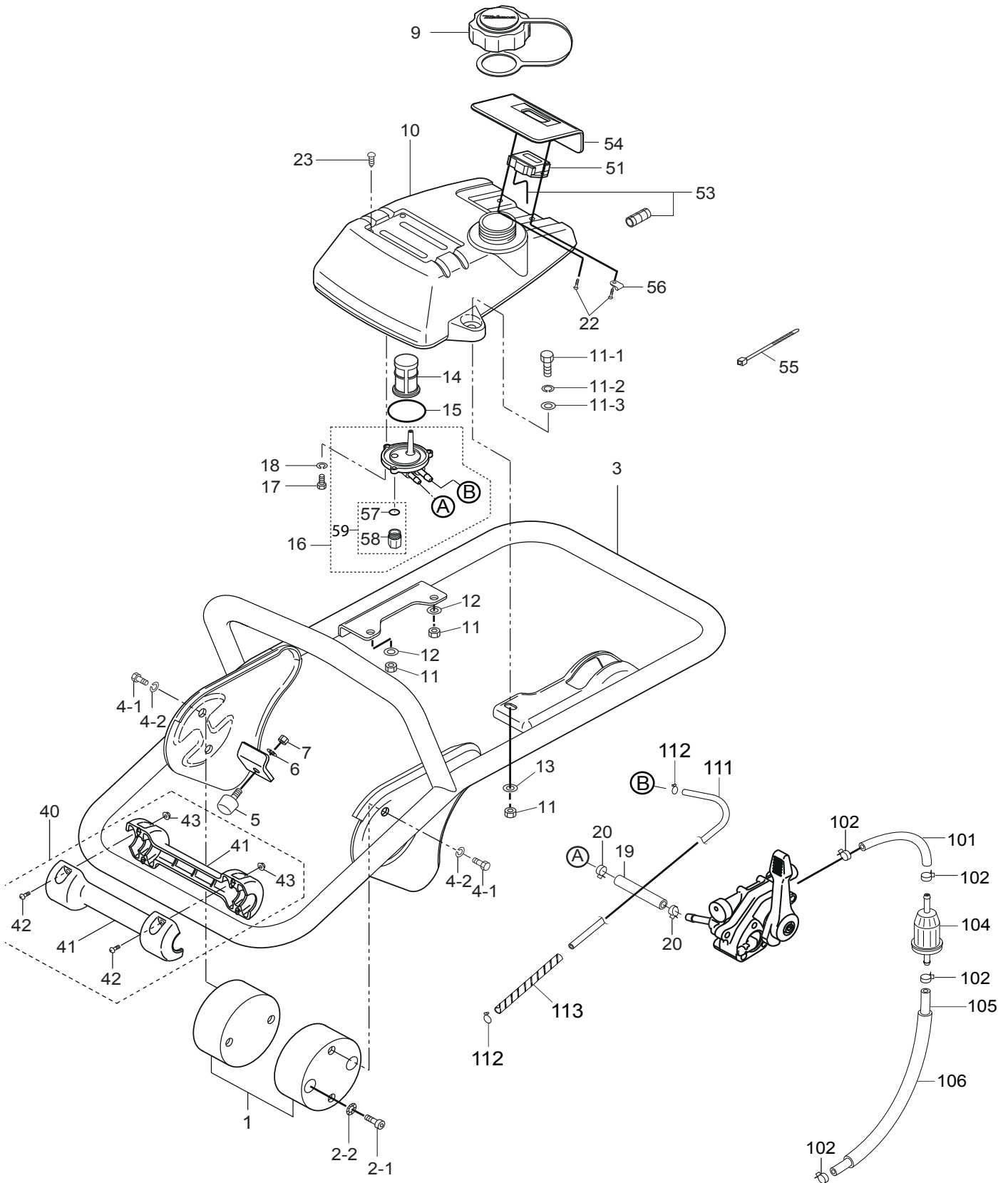
FOOT ASSY



FOOT ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	362910150	FOOT ASSY. 265W M4B	1.....	INCLUDES ITEMS W/ #
2	022711214	NYLON NUT M12	4	
3	030212300	WASHER, LOCK M12	4	
4	009110034	BOLT, SQUARE NECK 12X65	2	
5	009110035	BOLT, SQUARE NECK 12X95	2	
6	363343390	HANDLE LIFT	1	
7	368347460	FOOT COVER	1	
8#	030210250	WASHER, LOCK M10	7	
9#	022711012	NYLON NUT M10	7	
10#	009110036	BOLT, SQUARE NECK 10X55	7	

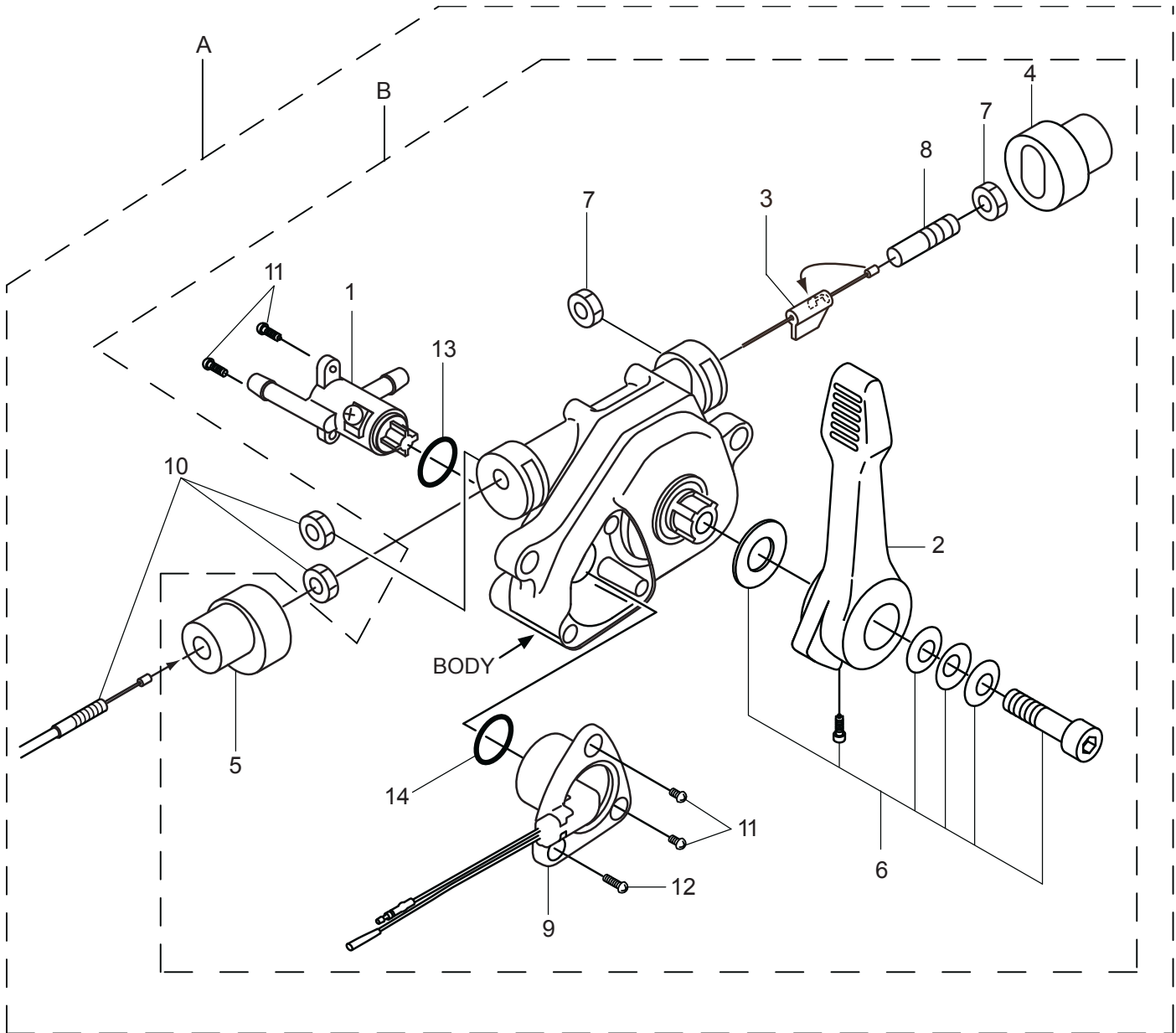
FUEL TANK AND HANDLE ASSY



FUEL TANK AND HANDLE ASSY

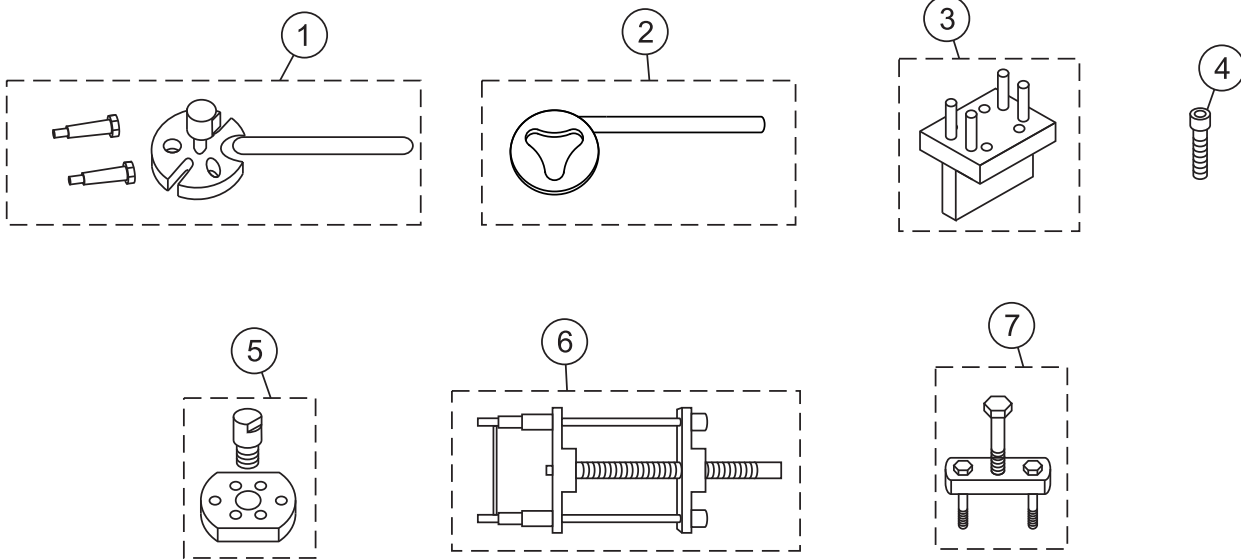
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	368347630	SHOCK ABSORBER	2	
2-1	014210020	SOCKET HEAD BOLT 10X20 T	4	
2-2	033121009	TOOTHED LOCK WASHER B M10	4	
3	368119572	HANDLE	1	
4-1	001211020	BOLT 10X20 H	4	
4-2	030210250	WASHER, LOCK M10	4	
5	939010270	STOPPER RUBBER (70)	1	
6	030208200	WASHER, LOCK M8	1	
7	020108060	NUT M8	1	
9	366350460	CAP ASSY., FUEL TANK	1	
10	366120250	FUEL TANK/MTX70	1	
11	022710809	NYLON NUT M8	3	
11-1	011208025	BOLT 8X25 H	3	
11-2	030208200	WASHER, LOCK M8	3	
11-3	0401450080	WASHER, FLAT M8	3	
12	952401450	WASHER, 8.5X22X3	2	
13	0401450080	WASHER, FLAT M8	1	
14	954406010	STRAINER #110	1	
15	050250420	O-RING P42	1	
16	366350110	HOLDER, FILTER	1	INCLUDES ITEMS W/ \$
17	001200515	BOLT 5X15 H	3	
18	030205130	WASHER, LOCK M5	3	
19	959328406	FUEL HOSE L=90	1	
20	954406420	HOSE BAND 10.5	2	
22	009110037	TAPPING SCREW 5X20	2	
23	094010053	PAN HEAD SCREW 4X8	4	
40	366910030	ROLLER ASSY. W/SCREW	1	INCLUDES ITEMS W/#
41 #	366217170	ROLLER	2	
42#	0017105020	SCREW 5X20	4	
43#	022610505	FLANGE NUT M5 H	4	
51	955010311	TACH/HOUR METER	1	
53	955010305	CURL CORD TP22	1	
54	366345620	FINISHER, METER	1	
55	454010020	CLAMP TC100	5	
56	954010270	CLIP AB-3N	1	
57&\$	366464260	CUP, HOLDER FILTER	1	
58&\$	366464270	PACKING, HOLDER FILTER	1	
59\$	366900170	CUP AND PACKING SET	1	INCLUDES ITEMS W/&
101	959328402	FUEL HOSE 5.5X8.5X170	1	
102	0561080020	CLAMP, HOSE	4	
104	16910Z4ES21	FILTER, IN-LINE FUEL	1	
105	959328403	FUEL HOSE 5.5X8.5X260	1	
106	954407720	TUBE, VINYL L180	1	
111%	959028301	RETURN HOSE 3X6X600	1	
112%	954408170	HOSE CLIP	2	
113%	959021814	SPIRAL TUBE 6D-200L	1	

COMBINATION LEVER ASSY



COMBINATION LEVER ASSY

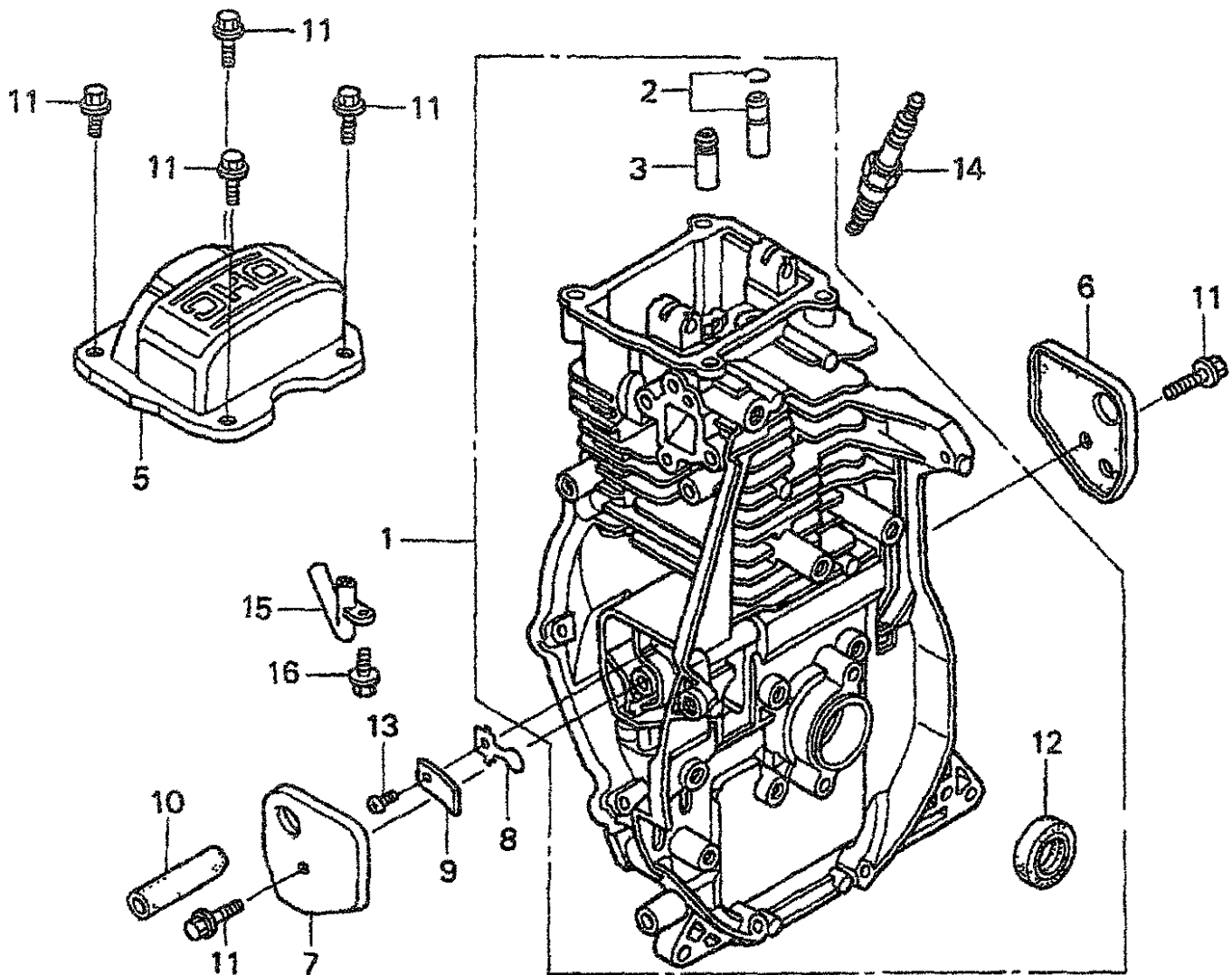
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
A	366900032	COMB. LEVER W/ THROTTLE WIRE.....	1.....	INCLUDES ITEMS W/@
B	956200110	COMB. LEVER W/OUT THROTTLE WIRE.....	1.....	INCLUDES ITEMS W/ #
1@#	366349430	FUEL COCK	1	
2@#	366010310	LEVER	1	
3@#	366010190	SLIDER	1	
4@#	366010200	END CAP	1	
5@#	366010210	WIRE CAP	1	
6@#	366010220	BOLT AND WASHER SET	1	
7@#	020408050	NUT M8, H=5	2	
8@#	959407650	SOCKET HEAD SCREW/TH.WIRE	1	
9@#	366010320	STOP SWITCH	1	
10@	956100062	THROTTLE WIRE	1	
11@#	094010051	TAPPING SCREW B1 4X12	4	
12@#	094010052	TAPPING SCREW B1 4X30	1	
13@#	050200150	O-RING, P15	1	
14@#	050200110	O-RING, P11	1	



TOOLS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	981010400	CLUTCH PULLER A	1	
2	983010060	CLUTCH MOUNTER	1	
3	983910090	PISTON ROD HOLDER	1	
4	009110044	SOCKET HEAD BOLT 8X50 (FULL THREAD)		
		CRANK GEAR REMOVER	2	
5	983910021	CLUTCH PULLER B	1	
6	983010042	SPRING CYLINDER REMOVER	1	
7	983910010	PISTON END REMOVER	1	

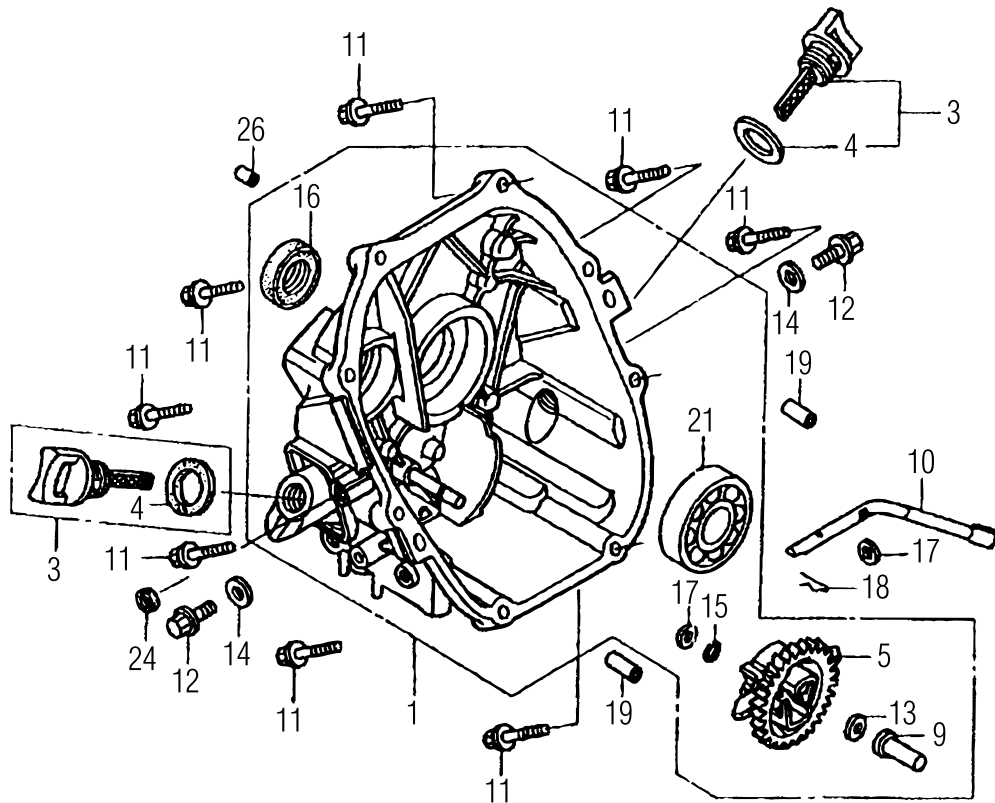
HONDA GX100UKRBF ENGINE — CYLINDER BARREL ASSY.



HONDA GX100UKRBF ENGINE — CYLINDER BARREL ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	12000Z0DV00	BARREL ASSY., CYLINDER	1.....	INCLUDES ITEMS W/@
2@	12201Z0D305	GUIDE ASSY., EX VALVE (O.S.)	1	
3@	12204Z0D305	GUIDE, INLET VALVE (O.S)	1	
5	12311Z0D000	COVER, HEAD T	1	
6	12355Z0D000	COVER COMP A, BREATHER	1	
7	12365Z0D000	COVER COMP B, BREATHER	1	
8	15571Z0DV71	VALVE, OIL OUTLET	1	
9	15572ZM7000	PLATE, STOPPER	1	
10	15721Z0DV70	TUBE, BREATHER	1	
11	90014952000	VOLT, FLANGE 6X14 (CT200)	6	
12@	91202KJ9003	OIL SEAL 20X32X6	1	
13	93500030050A	SCREW 3X5	1	
14	9805655777	PLUG, SPARK (U16FSR-UB)	1	
15	15171Z0DV00	PIPE, BREATHER	1	
16	90008ZM7000	BOLT 4X10	1	

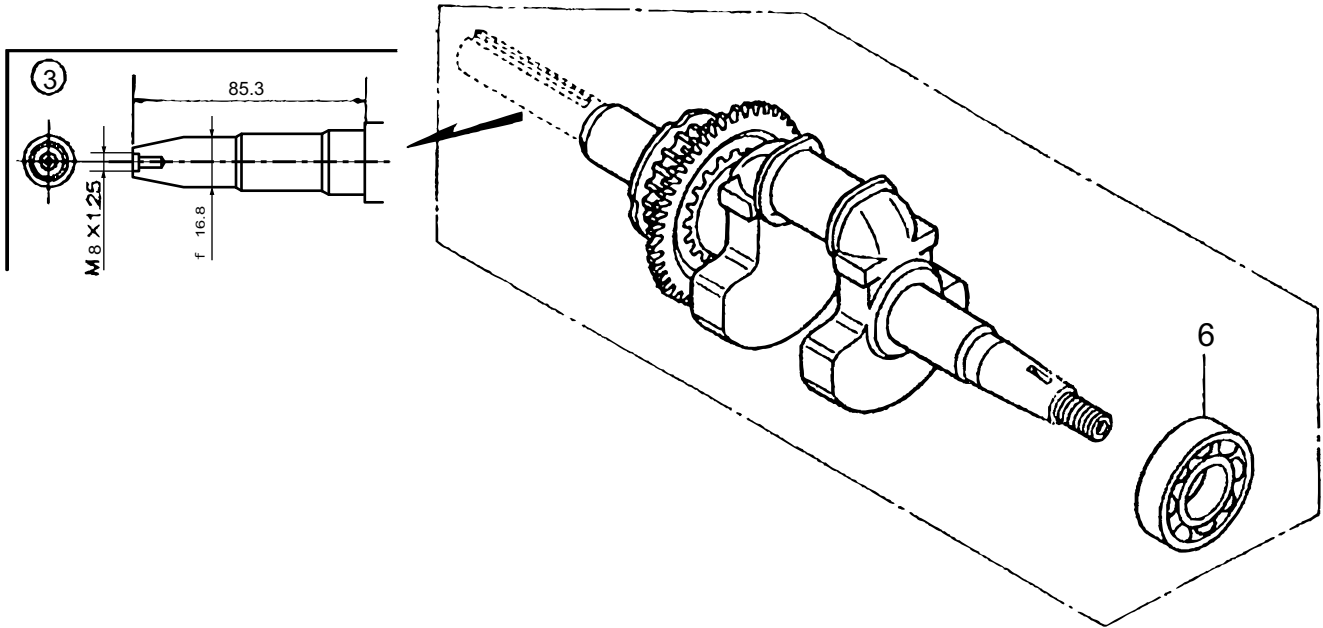
HONDA GX100UKRBF ENGINE — CRANKCASE COVER ASSY.



HONDA GX100UKRBF ENGINE — CRANKCASE COVER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	11300Z0D409	COVER ASSY., CRANK CASE	1.....	INCLUDES ITEMS W/@
3	15600ZM7003	OIL FILLER CAP ASSY	2.....	INCLUDES ITEMS W/#
4#	15625ZE1003	PACKING, OIL FILLER CAP	2	
5@	16510ZL8000	GOVERNOR ASSY.	1	
9@	16531ZE1000	SLIDER, GOVERNOR	1	
10	16541Z0D000	SHAFT, GOVERNOR ARM	1	
11	90121952000	FLANGE BOLT 6x25	8	
12	90131ZE1000	BOLT, DRAIN PLUG	1	
13@	90451ZE1000	THRUST WASHER 6 MM	1	
14	90601ZE1000	WASHER, DRAIN PLUG	1	
15@	90602ZE1000	CLIP, GOVERNOR HOLDER	1	
16@	91202KJ9003	OIL SEAL 20x32x6	1	
17@	9410106800	PLAIN WASHER 6 MM	2	
18	9425108000	LOCK PIN	1	
19	9430108200	KNOCK PIN	2	
21@	91001Z0DV01	BEARING, RADIAL BALL 6204	1	
24	91231891003	OIL SEAL 6x11x4	1	

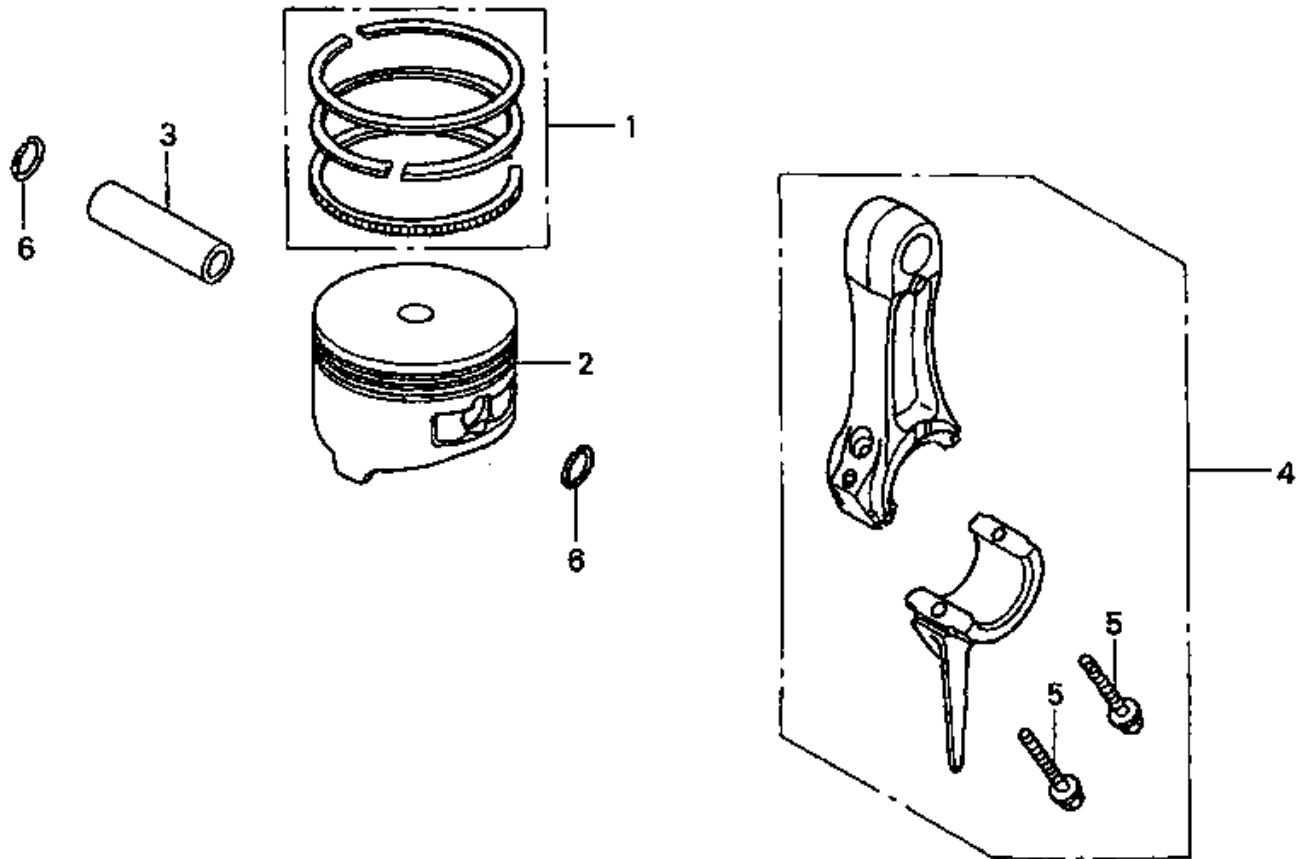
HONDA GX100UKRBF ENGINE — CRANKSHAFT ASSY.



HONDA GX100UKRBF ENGINE — CRANKSHAFT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
3	13310Z0DV70	CRANK SHAFT COMP	1.....	INCLUDES ITEM W/@
6@	91001Z0DV01	BEARING, RADIAL BALL	2	

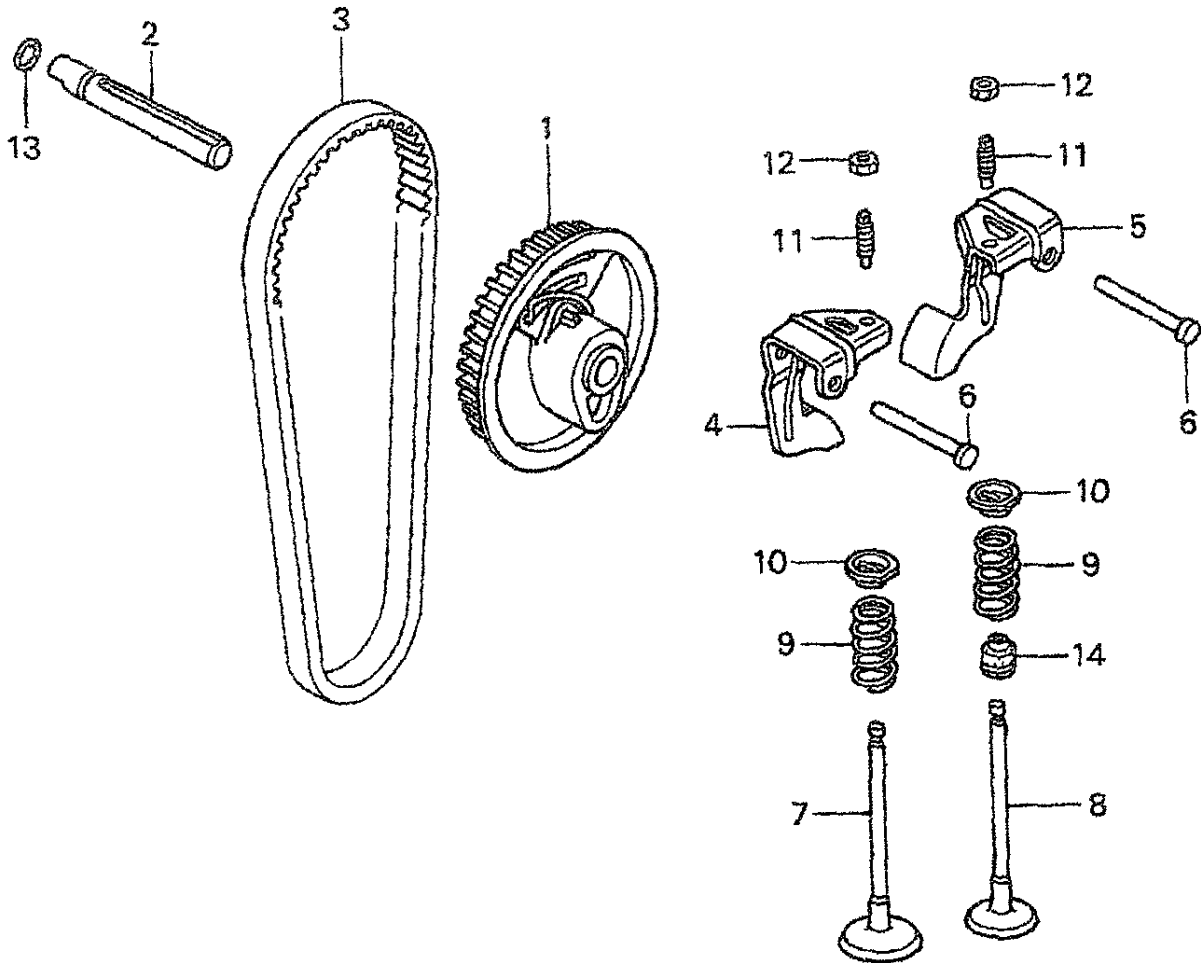
HONDA GX100UKRBF ENGINE — PISTON/ CONN. ROD ASSY.



HONDA GX100UKRBF ENGINE — PISTON/ CONN. ROD ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	13010Z0D003	RING SET, PISTON	1	
2	13101Z0D000	PISTON	1	
3	13111ZE0000	PISTON PIN	1	
4	13200Z0D000	CONNECTING ROD ASSY.	1.....	INCLUDES ITEM W/@
4	13200Z0D305	CONNECTING ROD ASSY., UNDERSIZE	1.....	INCLUDES ITEM W/@
5@	90001ZM7000	CONNECTING ROD BOLT	2	
6	90551ZE0000	CLIP, PISTON PIN 13MM	2	

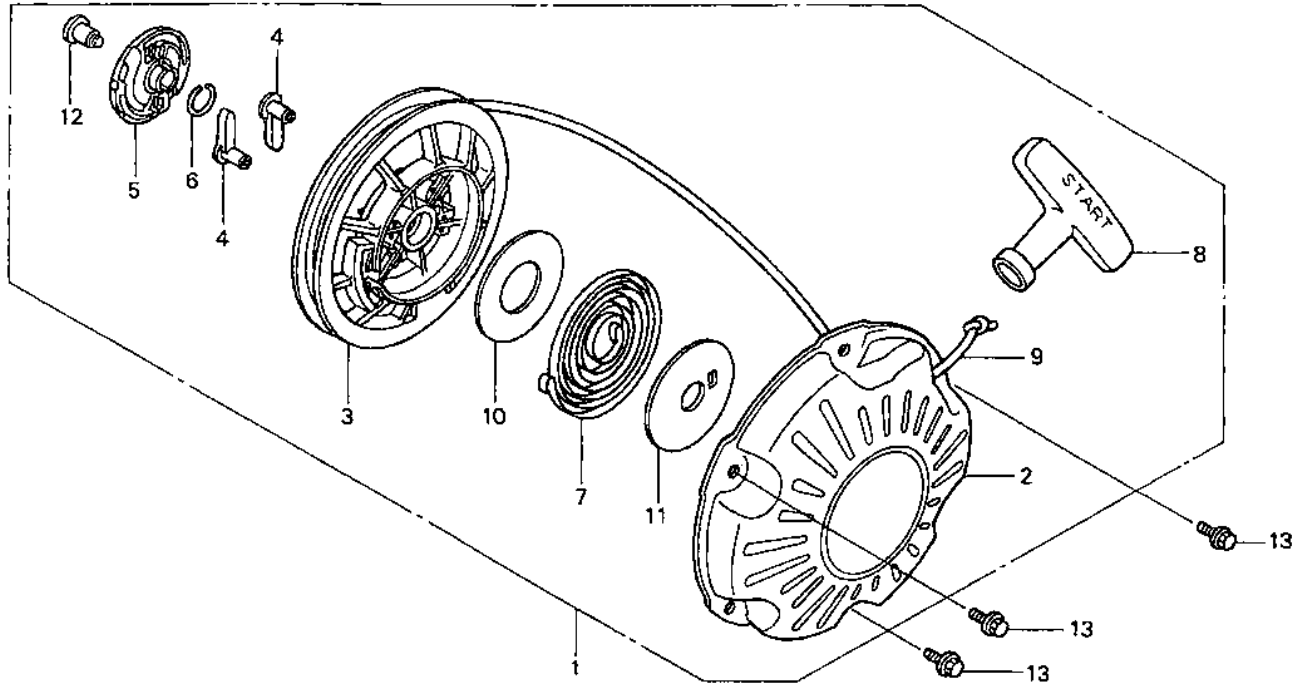
HONDA GX100UKRBF ENGINE — CAMSHAFT ASSY.



HONDA GX100UKRBF ENGINE — CAMSHAFT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	14320Z0D010	PULLEY, COMP., CAMSHAFT	1	
2	14324Z0D000	SHAFT, CAM PULLEY	1	
3	14400Z0D003	TIMING BELT (61YU7 G-200)	1	
4	14431Z0D000	ROCKER ARM, INTAKE VALVE	1	
5	14441Z0D000	ROCKER ARM, EXHAUST VALVE	1	
6	14461ZL8000	SHAFT, ROCKER ARM	2	
7	14711Z0D000	INLET VALVE	1	
8	14721Z0D000	EXHAUST VALVE	1	
9	14751Z0D000	SPRING, VALVE	2	
10	14771ZM3010	RETAINER, VALVE SPRING	2	
11	90012333000	SCREW, TAPPET ADJUSTING	2	
12	90206001000	NUT, TAPPET ADJUSTING	2	
13	91301ZM0V31	O-RING 6.8X1.9	1	
14	12209KT7013	SEAL, VALVE STEM	1	

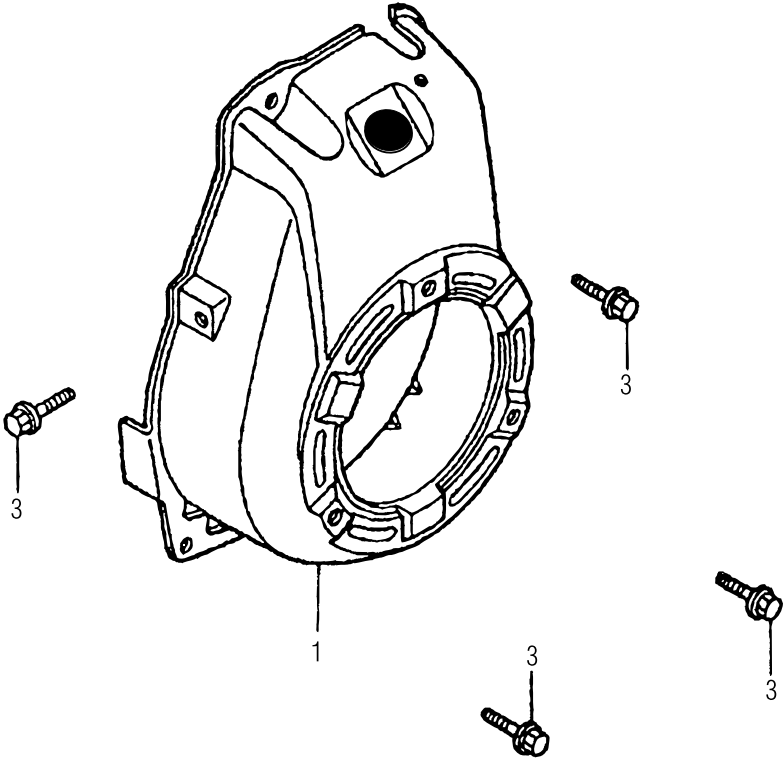
HONDA GX100UKRBF ENGINE — RECOIL STARTER ASSY.



HONDA GX100UKRBF ENGINE — RECOIL STARTER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	28400Z0DV04ZA	RECOIL STARTER ASSY	1.....	INCLUDES ITEMS W/@
2@	28410Z0DV02ZA	CASE COMP, RECOIL @5-3-5	1	
3@	28421Z0DV02	REEL, RECOIL STARTER	1	
4@	28422ZG0W02	RATCHET, STARTER	1	
5@	28433ZG0W02	GUIDE, RATCHET	1	
6@	28441ZW6003	SPRING, FRICTION	1	
7@	28442ZH8003	SPRING, RECOIL STARTER	1	
8@	28461ZH8013	STARTER KNOB	1	
9@	28462Z0DV03	ROPE, RECOIL STARTER	1	
10@	28467Z0DV02	PLATE, SIDE	1	
11@	28468Z0DV02	PLATE, SLIDE	1	
12@	90003ZH8003	SET SCREW	1	
13	957010600800	BOLT, FLANGE 6X8	3	

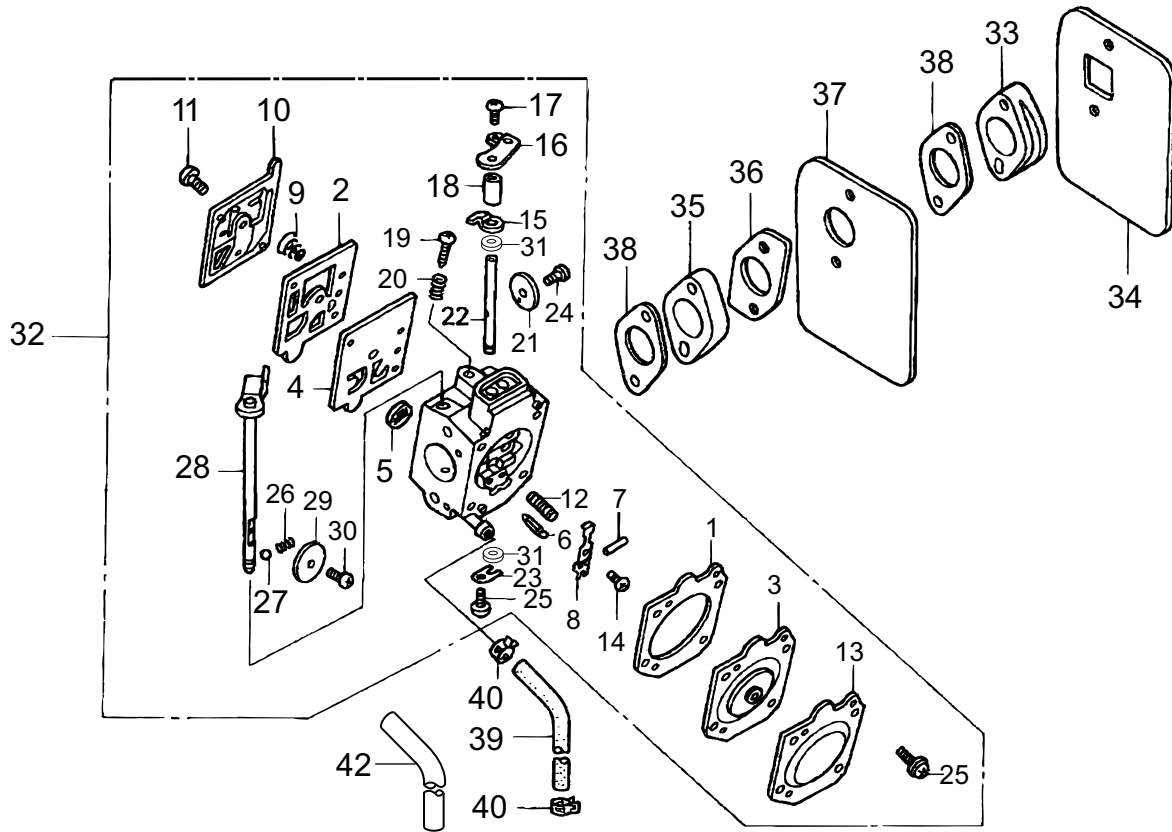
HONDA GX100UKRBF ENGINE — FAN COVER ASSY.



HONDA GX100UKRBF ENGINE — FAN COVER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	19610Z4ES30ZA	FAN COVER CP	1	
3	90014952000	BOLT, FLANGE 6X14 (CT200)	4	

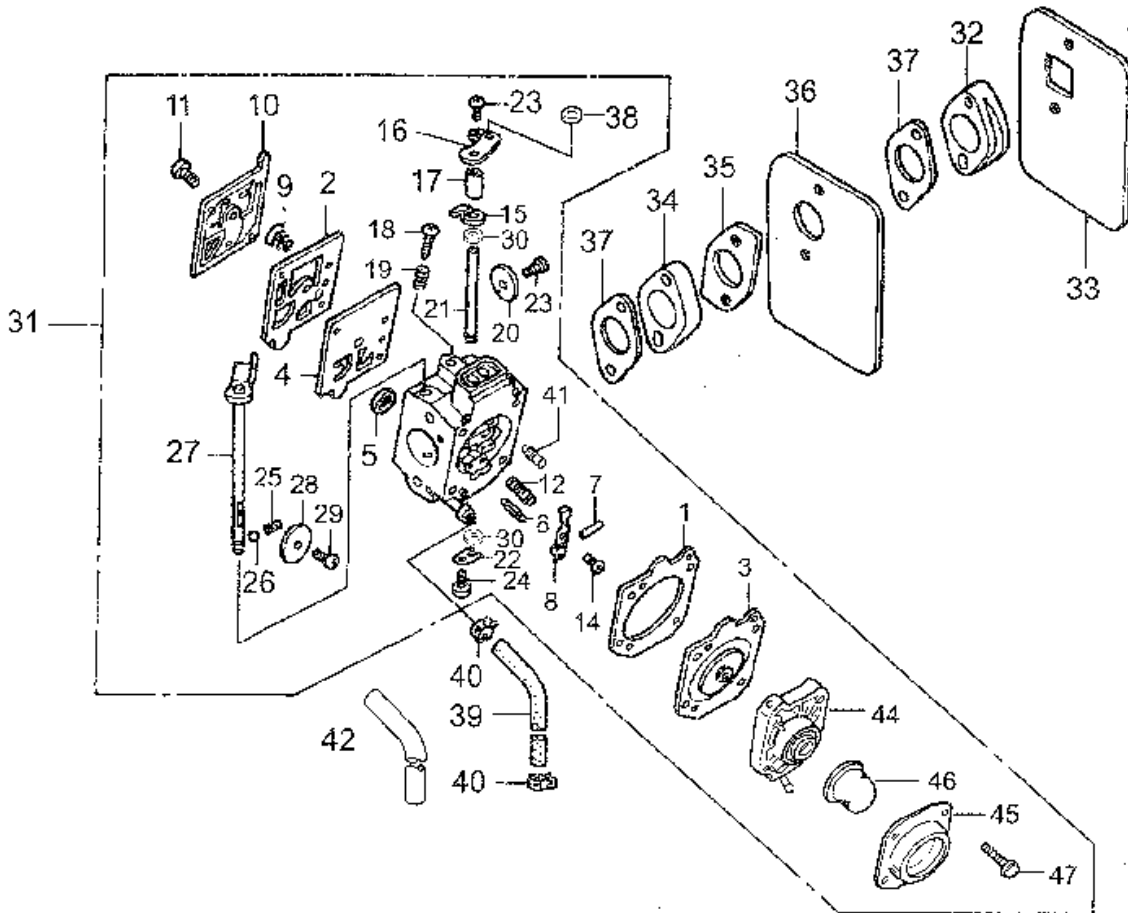
HONDA GX100UKRBF ENGINE — CARBURETOR ASSY. (SN T-3423 & BELOW)



HONDA GX100UKRBF ENGINE — CARBURETOR ASSY. (SN T-3423 & BELOW)

NO.	PART NO.	PART NAME	QTY.	REMARKS
1@	16010Z0DV02	GASKET, METALING DIAPHRAGM	1	
2@	16011Z0DV02	GASKET, PUMP	1	
3@	16013Z0DV02	DIAPHRAGM ASSY., METALING	1	
4@	16014Z0DV02	DIAPHRAGM, PUMP	1	
5@	16018ZM3004	SCREEN, INLET	1	
6@	16019ZM3004	VALVE, INLET NEEDLE	1	
7@	16022ZM3014	PIN, METALING LEVER	1	
8@	16023Z0DV02	LEVER, METALING	1	
9@	16030ZM3004	SPRING, PUMP	1	
10@	16040Z0DV02	COVER, PUMP	1	
11@	16041Z0DV02	SCREW	1	
12@	16042Z4EV92	SPRING	1	
13@	16043Z0DV02	COVER, METALING DIAPHRAGM	1	
14@	16044Z0DV02	SCREW	1	
15@	16045Z0DV02	STOPPER, THROTTLE LEVER	1	
16@	16046Z0DV73	LEVER, THROTTLE	1	
17@	16054Z0DV02	SCREW, VALVE	1	
18@	16048Z0DV02	SPACER, THROTTLE LEVER	1	
19@	16049Z4ES12	SCREW, IDLE ADJUSTING	1	
20@	16050Z0DV02	SPRING	1	
21@	16051Z0DV02	VALVE, THROTTLE	1	
22@	16052Z0DV02	SHAFT, THROTTLE	1	
23@	16053Z0DV02	CLIP, THROTTLE SHAFT	1	
24@	16054Z0DV02	SCREW, VALVE	1	
25@	16055Z0DV02	SCREW ASSY.	5	
26@	16056Z0DV02	SPRING	1	
27@	16057Z0DV02	BALL	1	
28@	16058Z0DV72	SHAFT ASSY., CHOKE	1	
29@	16059Z0DV03	VALVE, CHOKE	1	
30@	16060Z0DV02	SCREW	1	
31@	16061Z0DV02	SEAL, DUST	2	
32	16100Z4ES15	CARBURETOR, ASSY., (HAD 201C)	1.....	INCLUDES ITEMS W/ @
33	16211Z0DV00	INSULATOR, CARBURETOR	1	
34	16212Z0DV00	PACKING, INSULATOR	1	
35	16213Z4ES10	INSULATOR B, CARBURETOR	1	
36	16214Z0DV01	PACKING B, INSULATOR	1	
37	16215Z0DV00	PLATE, INSULATOR	1	
38	16221Z0DV00	PACKING, CARBURETOR	2	
39	950014500350M	HOSE, FUEL 4.5X270	1	
40	H950024085008	CLAMP, TUBE	2	
42	950033600110M	TUBE, VINYL 11X13X1M	1	
43	16552896650	COLLAR, LEVER	1	

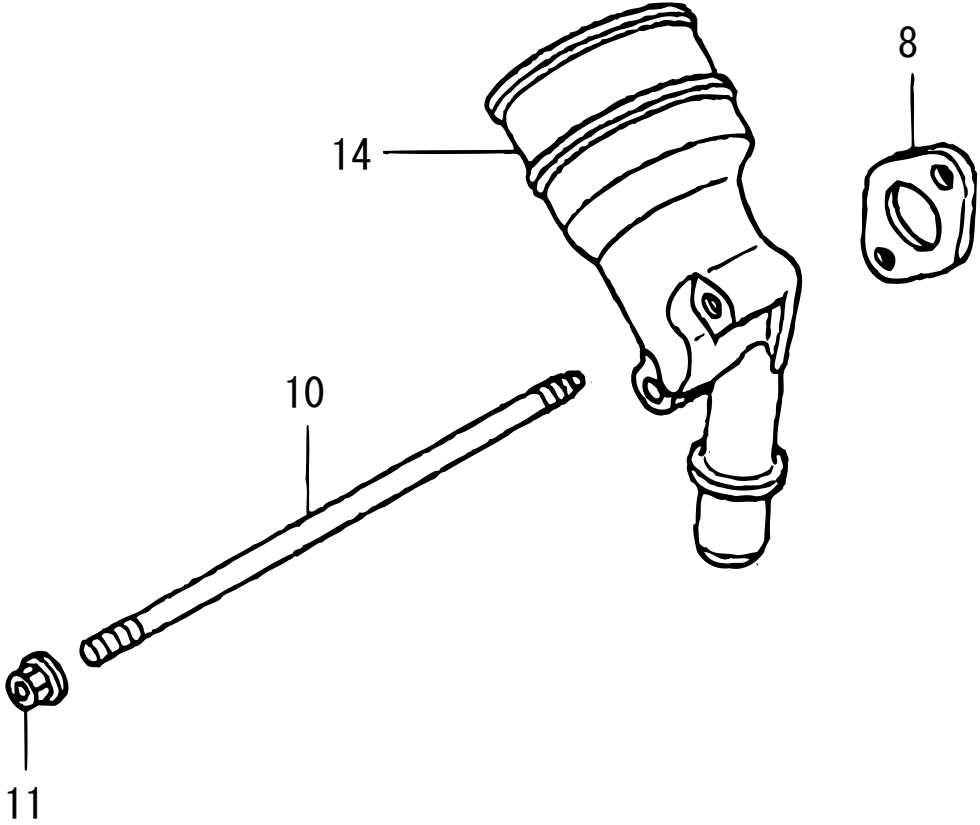
HONDA GX100UKRBF ENGINE — CARBURETOR ASSY. (SN T-3424 & ABOVE)



HONDA GX100UKRBF ENGINE — CARBURETOR ASSY. (S/N T-3424 & ABOVE)

NO.	PART NO.	PART NAME	QTY.	REMARKS
1@	16010Z0DV02	GASKET, METERING DIAPHRAGM	1	
2@	16011Z0DV02	GASKET, PUMP	1	
3@	16013Z4ES32	DIAPHRAGM ASSY., METERING	1	
4@	16014Z0DV02	DIAPHRAGM, PUMP	1	
5@	16018ZM3004	SCREEN, INLET	1	
6@	16019ZM3004	VALVE, INLET NEEDLE	1	
7@	16022ZM3014	PIN, METERING LEVER	1	
8@	16023Z0DV02	LEVER, METERING	1	
9@	16030ZM3004	SPRING, PUMP	1	
10@	16040Z4E802	COVER, PUMP	1	
11@	16041Z0DV02	SCREW	1	
12@	16042Z0DV02	SPRING	1	
14@	16044Z4E802	SCREW	1	
15@	16045Z0DV02	STOP, THROTTLE	1	
16@	16046Z0DV73	LEVER, THROTTLE	1	
17@	16048Z0DV02	SPACER, THROTTLE LEVER	1	
18@	16049Z4ES12	SCREW, IDLE ADJUSTING	1	
19@	16050Z0DV02	SPRING	1	
20@	16051Z0DV02	VALVE, THROTTLE	1	
21@	16052Z0DV02	SHAFT, THROTTLE	1	
22@	16053Z0DV02	CLIP, THROTTLE SHAFT	1	
23@	16054Z0DV02	SCREW, VALVE	2	
24@	16055Z0DV02	SCREW ASSY.	1	
25@	16056Z0DV02	SPRING	1	
26@	16057Z0DV02	BALL	1	
27@	16058Z0DV02	SHAFT, ASSY., CHOKE	1	
28@	16059Z0DV03	VALVE, CHOKE	1	
29@	16060Z0DV02	SCREW	1	
30@	16061Z0DV02	SEAL, DUST	2	
31	16100Z4ES43	CARBURETOR ASSY. (W/PRIMER)	1	INCLUDES ITEMS W/@
32	16211Z0DV01	INSULATOR, CARBURETOR	1	
33	16212Z0DV00	PACKING, INSULATOR	1	
34	16213Z4ES10	INSULATOR B, CARBURETOR	1	
35	16214Z0DV00	PACKING B, INSULATOR	1	
36	16215Z0DV00	PLATE, INSULATOR	1	
37	16221Z0DV00	PACKING, CARBURETOR	2	
38@	16552896650	COLLAR, LEVER	1	
39	34479	HOSE, FUEL 4.5X1M	1	
40	H950024085008	CLAMP, TUBE	2	
41@	99101Z0D0480	JET (#48)	1	OVER 7000
41@	99101Z0D0500	JET (#50)	1	5000-7000
41@	99101Z0D0520	JET (#52)	1	STANDARD
42	950033600110M	TUBE, VINYL 11X13X1M	1	
44@	16017Z4ES32	BODY ASSY., AIRPURGE	1	
45@	16026Z4ES32	COVER, PRIMER PUMP	1	
46@	16032Z4ES32	PUMP, PRIMER	1	
47@	16055Z4ES32	SCREW ASSY.	4	

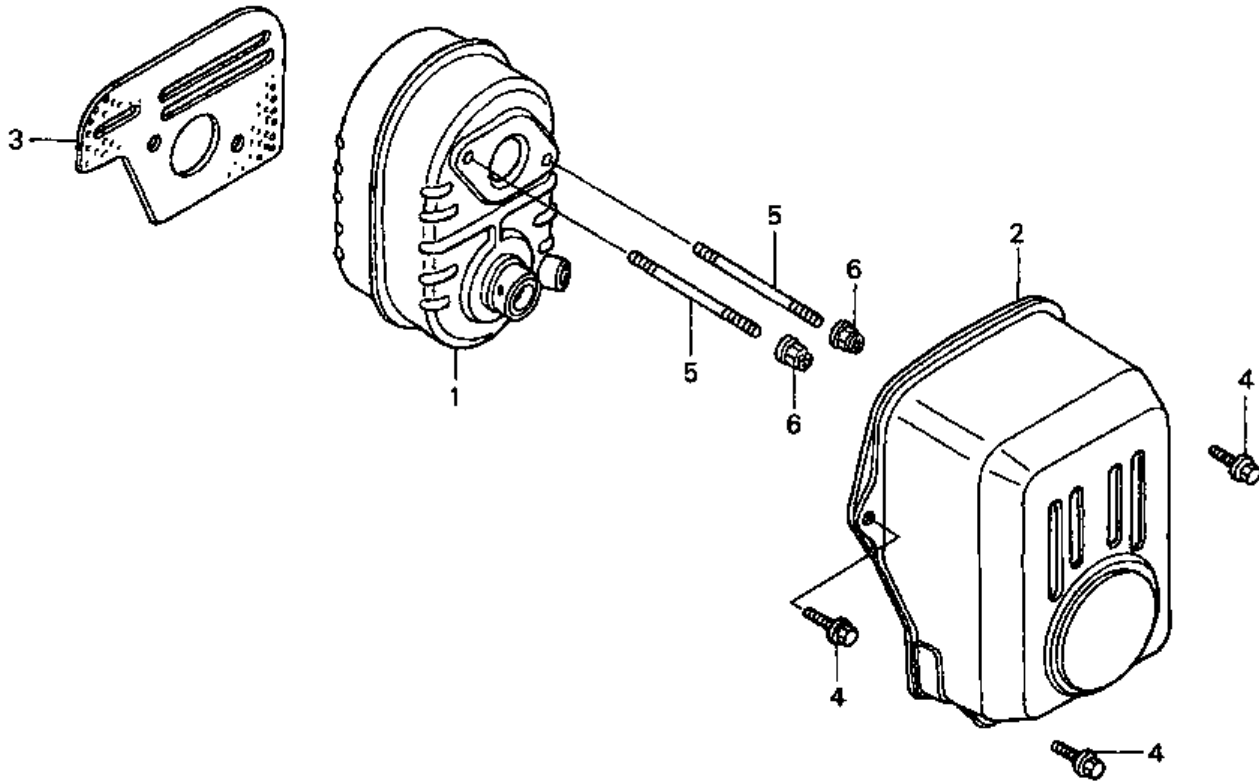
HONDA GX100UKRBF ENGINE — AIR CLEANER ASSY.



HONDA GX100UKRBF ENGINE — AIR CLEANER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
8	17228Z0DV21	PACKING, AIR CLEANER	1	
10	90042Z4ES30	STUD BOLT 5X95	2	
11	9405005000	FLANGE NUT 5MM	2	
14	17410Z4ES31	ELBOW, AIR CLEANER	1	

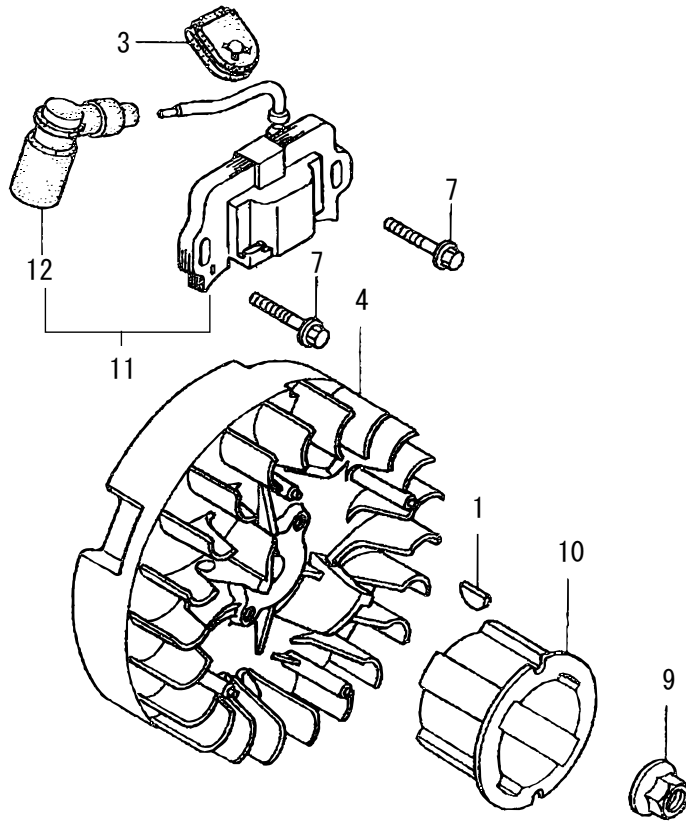
HONDA GX100UKRBF ENGINE — MUFFLER ASSY.



HONDA GX100UKRBF ENGINE — MUFFLER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	18310Z0DV20	MUFFLER COMP.	1	
2	18321Z0DV22	MUFFLER PROTECTOR	1	
3	18381Z0D000	GASKET, MUFFLER	1	
4	90014952000	BOLT, FLANGE 6X14 (CT200)	3	
5	90048Z0DV00	STUD BOLT 6X78	2	
6	90343ZE6000	NUT, SELF-LOCK 6MM	2	

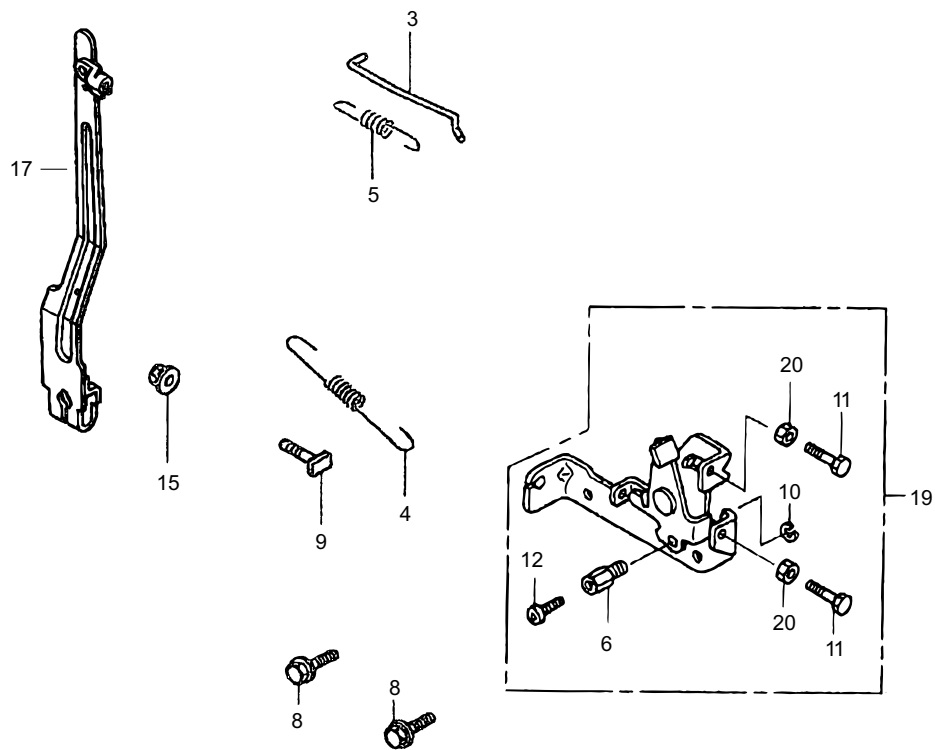
HONDA GX100UKRBF ENGINE — FLYWHEEL IGNITION ASSY.



HONDA GX100UKRBF ENGINE — FLYWHEEL IGNITION ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	13331ZM7000	WOODRUFF KEY 25X18	1	
3	30564ZA5000	GROMMET, CORD	1	
4	131110Z0D003	FLYWHEEL COMP	1	
7	90022888010	FLANGE BOLT 6X20	2	
9	9405012000	FLANGE NUT M12	1	
10	28451Z0DV03	STARTER PULLEY	1	
11	30500Z0DV02	IGNITION COIL ASSY	1.....	INCLUDES ITEMS W/@
12@	30700Z0DV01	TERMINAL ASSY	1	

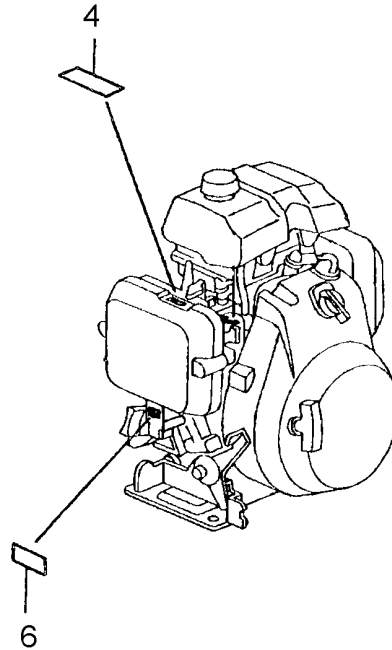
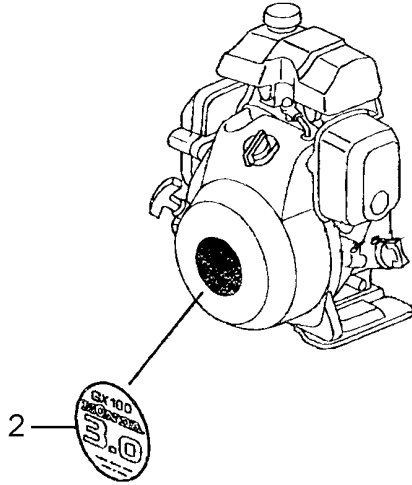
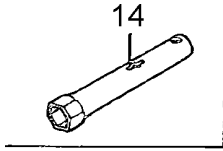
HONDA GX100UKRBF ENGINE — CONTROL ASSY.



HONDA GX100UKRBF ENGINE — CONTROL ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
3	16555Z0DV00	GOVERNOR ROD	1	
4	16561Z0DV00	GOVERNOR SPRING	1	
5	16562Z4ES10	SPRING, THROTTLE RETURN	1	
6@	16594883010	HOLDER, WIRE	1	
8	90014952000	BOLT, FLANGE 6X14 (CT200)	2	
9	90015ZE5010	BOLT, GOVERNOR ARM	1	
10@	90605230000	CIR CLIP	1	
11@	92301050220A	BOLT 5X20	1	
12@	0043504060	SCREW 4X6	1	
15	9405006000	FLANGE NUT 6MM	1	
17	16550Z0DV01	GOVERNOR ARM	1	
19	16500Z4ES30	CONTROL ASSY	1.....	INCLUDES ITEMS W/@
20@	9400105000	NUT M5	2	

HONDA GX100UKRBF ENGINE — LABELS ASSY.



HONDA GX100UKRBF ENGINE — LABELS ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
2	87521Z0DV02	LABEL, TRADE MARK	1	
4	87528Z0D000	MARK, CHOKE	1	
6	87601Z4ES30	MARK, TYPE (KRBF)	1	
14	89216130690	WRENCH, SPARK PLUG	1	

TERMS AND CONDITIONS OF SALE — PARTS

PAYMENT TERMS

Terms of payment for parts are net 30 days.

FREIGHT POLICY

All parts orders will be shipped collect or prepaid with the charges added to the invoice. All shipments are F.O.B. point of origin. Multiquip's responsibility ceases when a signed manifest has been obtained from the carrier, and any claim for shortage or damage must be settled between the consignee and the carrier.

MINIMUM ORDER

The minimum charge for orders from Multiquip is \$15.00 net. Customers will be asked for instructions regarding handling of orders not meeting this requirement.

RETURNED GOODS POLICY

Return shipments will be accepted and credit will be allowed, subject to the following provisions:

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
 - a. The parts numbers and descriptions must match the current parts price list.
 - b. The list must be typed or computer generated.
 - c. The list must state the reason(s) for the return.
 - d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
 - e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.

5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Multiquip part numbers clearly marked.
6. The following items are not returnable:
 - a. Obsolete parts. (If an item is in the price book and shows as being replaced by another item, it is obsolete.)
 - b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
 - c. Any line item with an extended dealer net price of less than \$5.00.
 - d. Special order items.
 - e. Electrical components.
 - f. Paint, chemicals, and lubricants.
 - g. Decals and paper products.
 - h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for five working days from notification, pending instructions. If a reply is not received within five days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted, for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

PRICING AND REBATES

Prices are subject to change without prior notice. Price changes are effective on a specific date and all orders received on or after that date will be billed at the revised price. Rebates for price declines and added charges for price increases will not be made for stock on hand at the time of any price change.

Multiquip reserves the right to quote and sell direct to Government agencies, and to Original Equipment Manufacturer accounts who use our products as integral parts of their own products.

SPECIAL EXPEDITING SERVICE

A \$35.00 surcharge will be added to the invoice for special handling including bus shipments, insured parcel post or in cases where Multiquip must personally deliver the parts to the carrier.

LIMITATIONS OF SELLER'S LIABILITY

Multiquip shall not be liable hereunder for damages in excess of the purchase price of the item with respect to which damages are claimed, and in no event shall Multiquip be liable for loss of profit or good will or for any other special, consequential or incidental damages.

LIMITATION OF WARRANTIES

No warranties, express or implied, are made in connection with the sale of parts or trade accessories nor as to any engine not manufactured by Multiquip. Such warranties made in connection with the sale of new, complete units are made exclusively by a statement of warranty packaged with such units, and Multiquip neither assumes nor authorizes any person to assume for it any other obligation or liability whatever in connection with the sale of its products. Apart from such written statement of warranty, there are no warranties, express, implied or statutory, which extend beyond the description of the products on the face hereof.

Effective: February 22, 2006

OPERATION AND PARTS MANUAL

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL
NUMBER ON-HAND WHEN CALLING

UNITED STATES

Multiquip Corporate Office

18910 Wilmington Ave. Tel. (800) 421-1244
Carson, CA 90746 Fax (310) 537-3927
Contact: mq@multiquip.com

Service Department

800-421-1244 Fax: 310-537-4259
310-537-3700

Technical Assistance

800-478-1244 Fax: 310-943-2238

MQ Parts Department

800-427-1244 Fax: 800-672-7877
310-537-3700 Fax: 310-637-3284

Warranty Department

800-421-1244 Fax: 310-943-2249
310-537-3700

MEXICO

MQ Cipsa

Carr. Fed. Mexico-Puebla KM 126.5 Tel: (52) 222-225-9900
Momoxpan, Cholula, Puebla 72760 Mexico Fax: (52) 222-285-0420
Contact: pmastretta@cipsa.com.mx

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Multiquip

4110 Industriel Boul. Tel: (450) 625-2244
Laval, Quebec, Canada H7L 6V3 Tel: (877) 963-4411
Contact: jmartin@multiquip.com Fax: (450) 625-8664

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Unit 2, Northpoint Industrial Estate, Tel: 0161 339 2223
Globe Lane, Fax: 0161 339 3226
Dukinfield, Cheshire SK16 4UJ
Contact: sales@multiquip.co.uk

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This manual MUST accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

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OPERATION AND PARTS MANUAL



Mikasa **SERIES**
MODEL MTX60SD
TAMPING RAMMER
(ROBIN ER120D45000 GASOLINE ENGINE)

Revision #0 (12/06/12)

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CALIFORNIA — Proposition 65 Warning

Gasoline engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

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NOTICE

Specifications and part numbers are subject to change without notice.

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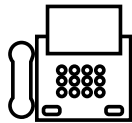
If you have an MQ Account, to obtain a Username and Password, E-mail us at: parts@multiquip.com.

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| <input type="checkbox"/> Applicable Model Number | <input type="checkbox"/> Next Day |
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NOTICE

All orders are treated as *Standard Orders* and will ship the same day if received prior to 3PM PST.

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SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.



SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.

SAFETY SYMBOLS

! DANGER

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

! WARNING

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.







! CAUTION

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

NOTICE

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Respiratory hazards
	Accidental starting hazards
	Eye and hearing hazards


SAFETY INFORMATION

GENERAL SAFETY

CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication. 
- **NEVER** operate this equipment under the influence of drugs or alcohol.



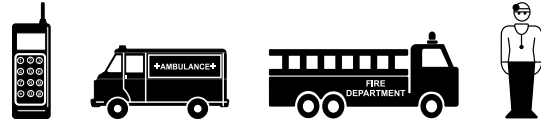
- **ALWAYS** check the equipment for loosened threads or bolts before starting.
- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest fire extinguisher.
- **ALWAYS** know the location of the nearest first aid kit.



- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor** and **fire department**. This information will be invaluable in the case of an emergency.



RAMMER SAFETY

DANGER

- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.



WARNING

- **NEVER** disconnect any **emergency or safety devices**. These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.
- **DO NOT** use this machine on ground that is harder than the machine can handle, or for driving pilings or tamping rock beds. Furthermore, use of the machine on sloping ground, such as the side of an embankment, may make the machine unstable and can cause an accident. It can also result in premature machine wear due to uneven loads on the machine.

Use the machine with confidence for tamping earth and sand, soil, gravel, and asphalt. **DO NOT** use the machine for other types of jobs.

CAUTION

- **NEVER** lubricate components or attempt service on a running machine.

NOTICE

- **ALWAYS** keep the machine in proper running condition.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.

SAFETY INFORMATION

ENGINE SAFETY

DANGER

- The engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.
- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



WARNING

- **DO NOT** place hands or fingers inside engine compartment when engine is running.
- **NEVER** operate the engine with heat shields or guards removed.
- **DO NOT** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the oil tank and severely scald any persons in the general area of the rammer.



CAUTION

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing equipment.



NOTICE

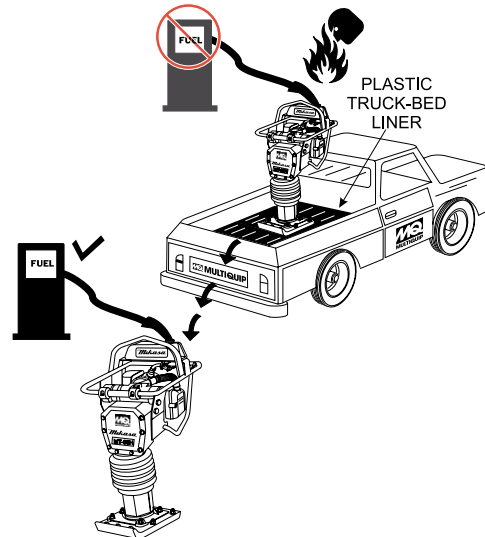
- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.



FUEL SAFETY

DANGER

- **DO NOT** add fuel to equipment if it is placed inside truck bed with plastic liner. Possibility exists of explosion or fire due to static electricity.



- **DO NOT** start the engine near spilled fuel or combustible fluids. Fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with flammable liquids.
- **DO NOT** fill the fuel tank while the engine is running or hot.
- **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system.
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.



TRANSPORTING SAFETY

CAUTION


- NEVER allow any person or animal to stand underneath the equipment while lifting.

NOTICE

- Before lifting, make sure that the equipment parts (hook and vibration insulator) are not damaged and screws are not loose or missing.
- Always make sure crane or lifting device has been properly secured to the lifting bail (hook) of the equipment.
- **ALWAYS** shutdown engine before transporting.
- **NEVER** lift the equipment while the engine is running.
- Tighten fuel tank cap securely and close fuel cock to prevent fuel from spilling.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- Use one point suspension hook and lift straight upwards.
- **DO NOT** lift machine to unnecessary heights.
- **ALWAYS** tie down equipment during transport by securing the equipment with rope.
- Never allow any person or animal to stand underneath the equipment while lifting.

ENVIRONMENTAL SAFETY

NOTICE

- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used motor oil, fuel and fuel filters. 
- **DO NOT** use food or plastic containers to dispose of hazardous waste.
- **DO NOT** pour waste, oil or fuel directly onto the ground, down a drain or into any water source.

SPECIFICATIONS

Table 1. Rammer Specifications	
Overall Height	40.4 in. (1025 mm)
Overall Width	13.8 in. (350 mm)
Over Length	28.1 in. (713 mm)
Shoe Size (W x L)	10.4 x 13.4 in. (265 x 340 mm)
Fuel Tank Capacity	2.7 qt. (2.5 liters)
Lubrication Oil Capacity	0.69 qt. (0.65 liter)
No. of Blows	644 - 695 vpm (10.7 - 11.6 Hz)
Impact Force	3,060 lbf (13.6 kN)
Impact Plate Stroke	2 - 3.2 in. (50 - 80 mm)
Operating Weight	141 lbs. (64 kg)
Measured Sound Power Level	103 dB
Guaranteed Sound Power Level	107 dB
Max. Sound Pressure Level	92 dB

Table 2. Engine Specifications	
Model	Robin ER120D45000 Engine
Type	Air-Cooled 4 Stroke, Overhead camshaft, single cylinder gasoline engine
Piston Displacement	7.4 cu.in. (121 cc)
Max. Output	3.5 hp/3,600 rpm (2.6 KW)
Max. Governed Speed, No Load	3,800 - 4,100 rpm
Cooling System	Air-Cooled
Engine Oil Capacity	0.4 qt. (0.35 liters)
Fuel	Unleaded gasoline
Lubricant for Engine	Automobile Oil; Class SE or higher
Starting System	Recoil Starter
Spark Plug Type	NGK CR5HSB

GENERAL INFORMATION

The Multiquip MTX60SD tamping rammer is a powerful compacting tool capable of applying a tremendous force in consecutive impacts to a soil surface. Its applications include soil compacting for road, embankments and reservoirs as well as backfilling for gas pipelines, water pipelines and cable installation work.

The impact force of the MTX60SD levels and uniformly compacts voids between soil particles to increase dry density.

Circular motion is converted to create impact force. The MTX60SD tamping rammer develops a powerful compacting force at the foot of the rammer. To maintain optimum performance, proper operation and service are essential.

The MTX60SD is equipped with an air cooled, four-cycle gasoline engine. Transmission of the power takes place by increasing the engine speed to engage the centrifugal clutch.

The MTX60SD uses an oil bath lubrication system. Always check the oil level through the oil level sight glass at the rear of the tamper foot.

Before starting the MTX60SD Tamping Rammer identify and understand the function of the controls.

CAUTION



Before starting operation check the lifting handle to:

1. Make sure that there is no damage on the bolts.
2. Make sure that there is no crack or breakage on handle.
3. Make sure that there is no fissure on the surface. If there is any abnormality or damage, replace with new one.

For operation:

This handle is to be used to lift up the shoe part of the machine with the body laid down on the ground or truck bed.

1. Use proper lifting techniques to avoid back injury. This handle is for manual lifting only.
2. Do not use this handle as a rammer lift point. Use the lifting point on the top of the machine.
3. Do not move the rammer with the lifting handle and the front rollers more than 16 feet (5 meters).

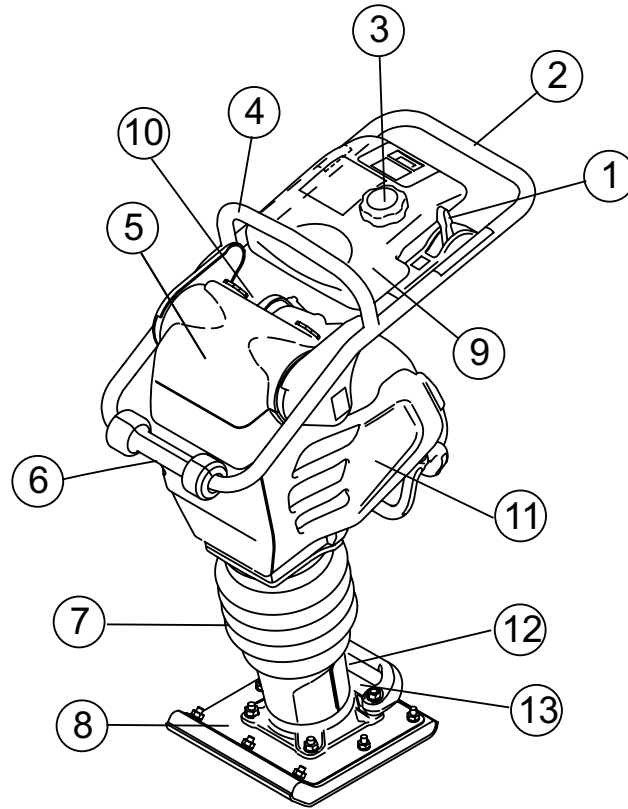


Figure 1. MTX60SD Rammer

Figure 1 shows the location of the controls and components for the MTX60SD Tamping Rammer. The functions of each control is described below:

1. **Combination (Throttle) Lever** — Used to adjust engine speed (rpm). Move lever forward (**SLOW**) to reduce engine speed, move lever back toward operator (**FAST**) to increase speed. Always operate the rammer at full speed (rpm).
2. **Handle** — To operate rammer, **GRIP** handle assembly firmly on both sides.
3. **Fuel Tank Cap** — Remove this cap to add unleaded gasoline to the fuel tank. Make sure cap is tightened securely. **DO NOT** over fill.
4. **Hook** — Used to lift rammer for transporting.
5. **Air Cleaner Cover** — Protects the air cleaner which prevents dirt and other debris from entering the engine.
6. **Roller** — Allows rammer to be moved around easily by rolling the unit.
7. **Bellows** — Reservoir for oil bath.
8. **Foot** — Laminated wood with tempered steel plate for superior shock absorption.
9. **Fuel Tank** — Holds the fuel for the unit (up to 2.7 quarts).
10. **Muffler** — Reduces the noise of the engine when running.
11. **Engine** — This unit uses a Robin ER120D45000 gasoline engine.
12. **Oil Gauge (Sight Glass)** — Indicates the level of oil in the oil bath reservoir.
13. **Drain Valve** — Open this valve to remove oil from the bellows.

WARNING



Adding fuel to the tank should be accomplished only when the engine is stopped and has had an opportunity to cool down. In the event of a fuel spill, **DO NOT** attempt to start the engine until the fuel residue has been completely wiped up, and the area surrounding the engine is dry.

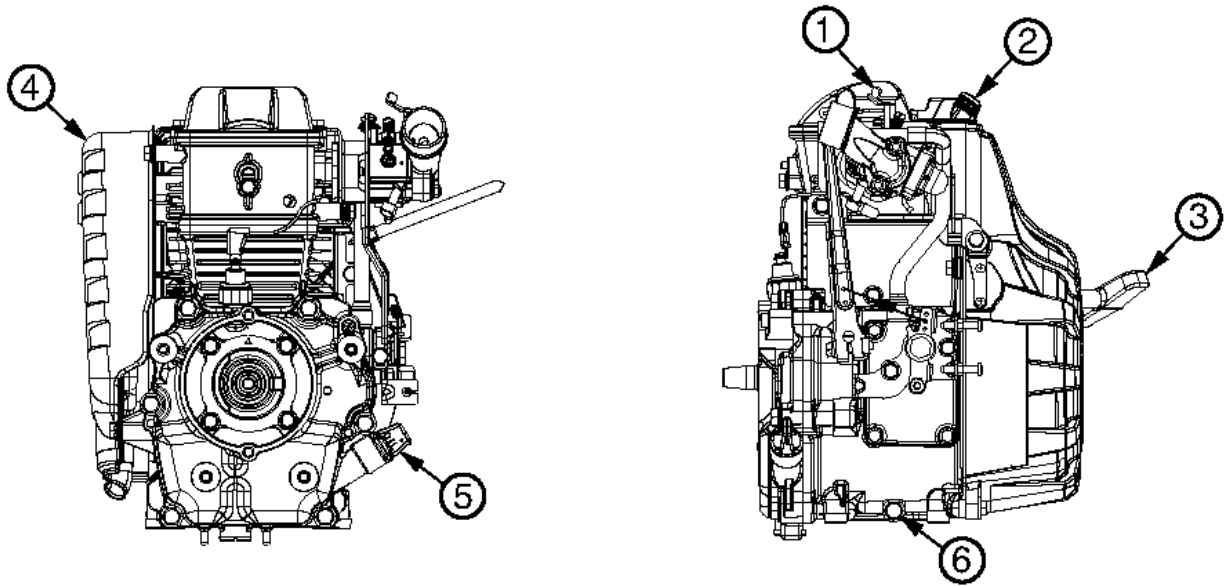


Figure 2. Robin ER120D45000 Engine

The engine (Figure 2) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the engine manufacturer's manual for detailed operation and service information.

1. **Choke Lever** — Normally used in starting the engine in cold weather conditions. In cold weather, turn the choke lever to the fully closed position. In warm weather, set the choke lever halfway or completely open.
2. **Spark Plug** — Provides spark to the ignition system. Set spark plug gap to 0.024 - 0.028 inch (0.6 - 0.7 mm). Clean spark plug once a week.
3. **Recoil Starter (pull rope)** — Manual-starting method. Pull the starter grip until resistance is felt, then pull briskly and smoothly.

NOTICE

Operating the engine without an air filter, with a damaged air filter, or a filter in need of replacement will allow dirt to enter the engine, causing rapid engine wear.

4. **Muffler** — Used to reduce noise and emissions.

5. **Dipstick/Oil Filler Cap** — Remove this cap to determine if the engine oil is low. Add oil through this filler port as recommended in Table 3.
6. **Oil Drain Plug** — Remove this plug to remove oil from the engine's crankcase.

WARNING



Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operating. **NEVER** operate the engine with the muffler removed.

It is extremely important that this section be read carefully before attempting to operate the rammer. **DO NOT** use your rammer until this section is thoroughly understood.

CRANKCASE AND SPRING CYLINDER OIL BATH

This unit uses an oil bath lubrication system. Perform the following:

1. Check the oil level through the oil level sight glass (Figure 3) at the rear of the tamper foot.

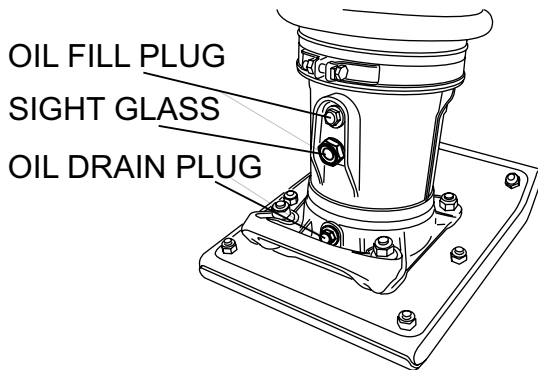


Figure 3. Foot Housing Sight Glass

NOTICE

The oil level should be kept at the half way point of the sight glass.

2. If oil is not visible, add 10W-30 SE, SF or higher grade motor oil into the oil fill plug opening (Figure 3). The bath contains approximately 1.7 pints (820 cc.)

ENGINE

1. Fill the fuel tank (Figure 4) with unleaded gasoline. At the same time, check the engine oil and make it a habit to replenish it often (Figure 5).

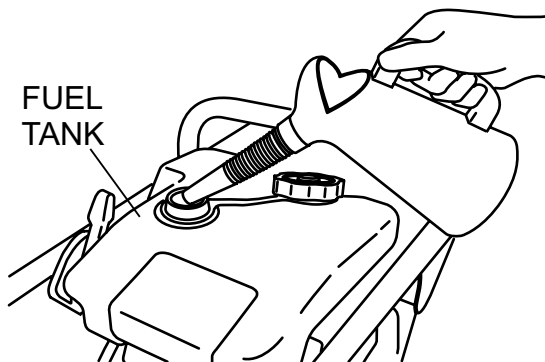


Figure 4. Fuel Tank

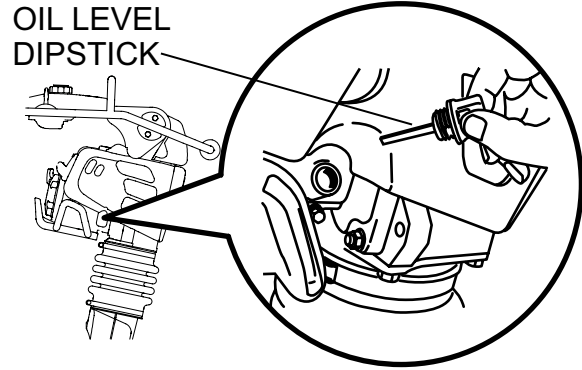


Figure 5. Engine Oil Dipstick

2. Low levels of oil may result in engine seizure due to high levels of consumption during operation.
3. Check the engine oil level and if the engine oil level is low, it should be refilled. Use the proper motor oil as suggested in the Table 3 below.

Table 3. Motor Oil Grade

Season or Temperature	Grade of motor oil (higher than MS class)
Spring, Summer or Autumn +120° F to +15° F	SAE 30
Winter +40° F to +15° F	SAE 30
Below +15° F	SAE 10W-30

GENERAL INSPECTION

1. Check all nuts, bolts fasteners for tightness. Retighten as necessary.
2. Clean any dirt from the recoil starter and foot pedestal. Wipe the entire unit clean before operating.
3. Replace any missing or damaged Safety Operation decals.
4. Adjust height of handle. Adjust handle by loosening nuts and moving handle to suit operation. Retighten nuts.

CAUTION

Failure to understand the operation of the Tamping Rammer could result in severe damage to the unit or personal injury.

INITIAL STARTUP

When starting the MTX60SD Tamping Rammer perform the following:

1. Slide the throttle lever from the stop to the idle position (👉) (Figure 6). This opens the fuel cock and the engine electrical circuit is turned on automatically.

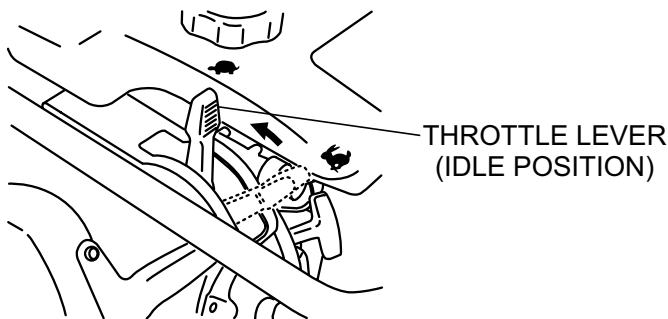


Figure 6. Throttle Lever (Idle Position)

2. Carburetor Purge System: Push the purge bulb four times or until you see fuel in the bulb (Figure 7).

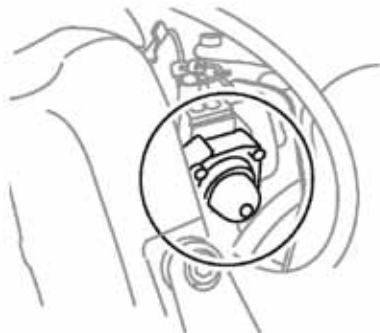


Figure 7. Purge Bulb

NOTICE

Pumping the purge bulb removes air from the fuel system. It does not pump fuel into the carburetor.

3. Place the choke lever to the closed position. When the weather is cold, close the choke all the way. When it is hot, or if the engine is hot, open the choke a little or leave it fully open.

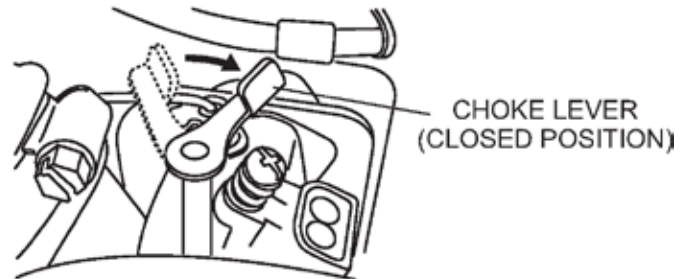


Figure 8. Choke Lever

4. Grip the starter rope handle (Figure 9) and pull it until you feel a slight resistance. Then pull sharply and quickly. Return the handle to the starter case before releasing.

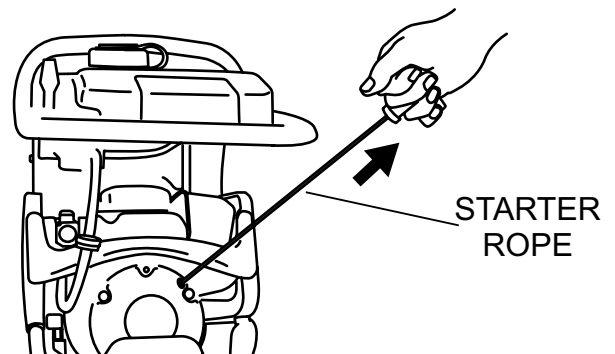


Figure 9. Recoil Starter

5. If engine fails to start, move the choke lever (Figure 8) to the half open position to avoid flooding.
6. Repeat steps 1 thru 5.
7. If the engine does not start after repeated attempts, check the spark plug for excess fuel. Clean and replace the spark plug as needed.

OPERATION

1. To start the rammer tamping action, move the throttle lever (Figure 10) **quickly** from **IDLE** to the **START** (👉) position. **DO NOT** move the throttle lever slowly as this may cause damage to the clutch or spring.

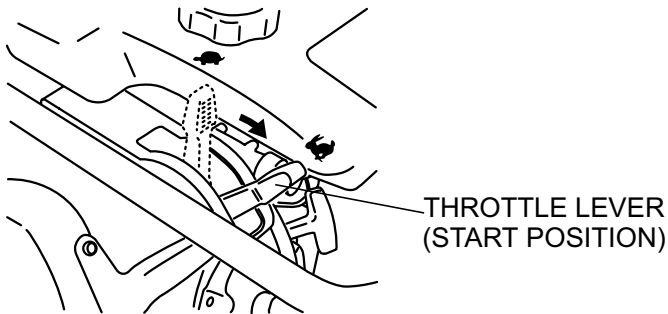


Figure 10. Throttle Lever (Start Position)

⚠ CAUTION

Make sure that the throttle lever is moved to the **FULL START** position. Operating the rammer at less than full speed can result in damage to the clutch springs or foot.

2. The MTX60SD tamping rammer is designed to run at 3,800 to 4,100 rpm. At optimum rpm the foot hits at the rate between 590 - 695 impacts per minute. Increasing throttle speed past factory set rpm does not increase impacts and may damage unit. The MTX60SD is designed to advance while tamping. For faster advance, pull back slightly on the handle so that rear of foot contacts soil first.
3. To stop the tamping action, move throttle lever quickly from **START** to **IDLE** position (Figure 6).

STOPPING THE ENGINE

1. Move throttle lever quickly from the **START** to **IDLE** position (Figure 6) and run the engine for three minutes at low speed. After the engine **cools**, move the throttle lever to the **STOP** position (Figure 11). The engine will stop and the fuel cock is automatically closed.

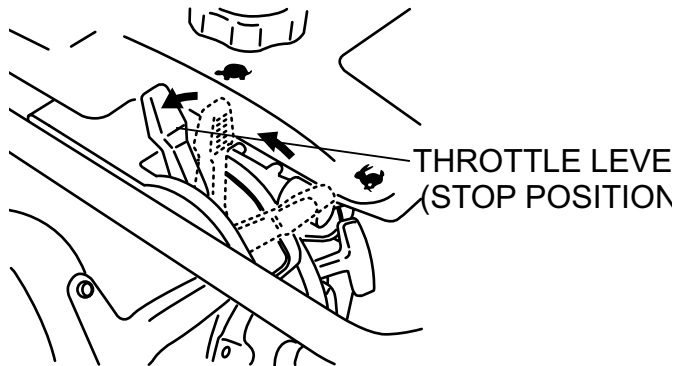


Figure 11. Throttle Lever (Stop Position)

2. If the engine does not stop due to a problem with the switch or the like, move the machine to a safe location and hold the throttle lever in the stop position. Let the machine run on idle and the machine will stop after a few minutes.

MAINTENANCE

DAILY

- Thoroughly remove dirt and oil from the engine and control area.
- Clean or replace the air cleaner elements as necessary. Check and retighten all fasteners as necessary.
- Check the spring box and bellows for oil leaks. Repair or replace as needed.

EVERY 50 HOURS

- Inspect in-line fuel filter (Part Number 26365012A3, Figure 12) and replace if necessary.



Figure 12. In-Line Fuel Filter

- Remove and clean the spark plug, then adjust the spark gap to 0.024~0.028 inch (0.6~0.7 mm).

EVERY 80 TO 100 HOURS

- Remove the air cleaner cover. Loosen and remove the 2 screws that hold the cover to the air cleaner assembly. If the primary element (Figure 13) is dirty, wash it with gasoline or kerosene. Then dip it in engine oil (SAE10W-30) and wring the element so that 25 to 30 cc of engine oil remains on the element.

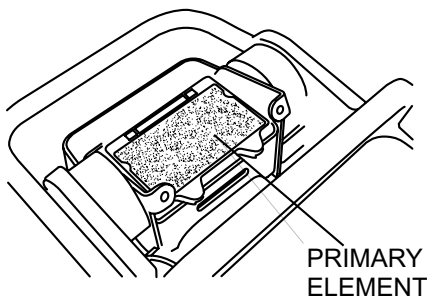


Figure 13. Air Cleaner Primary Element

EVERY 200 HOURS

- Remove the oil drain plug on foot housing (Figure 14) and drain the oil. Refill with approximately 1.7 pint (800 cc)

of 10W-30 SE, SF or higher grade motor oil. Oil should be midway in sight glass. Break in oil should be changed after first 50 hours.

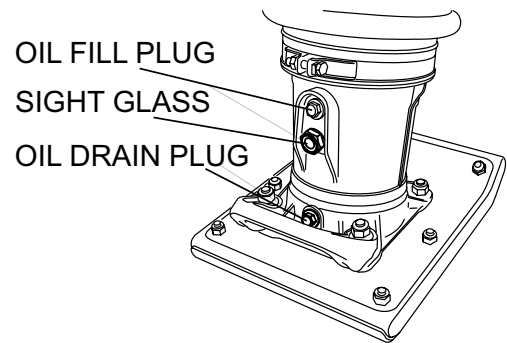


Figure 14. Oil Drain Plug

EVERY 6 MONTHS

- Clean the inside of the fuel tank with solvent.
- Inspect and clean fuel strainer (Figure 15). Replace strainer if necessary.

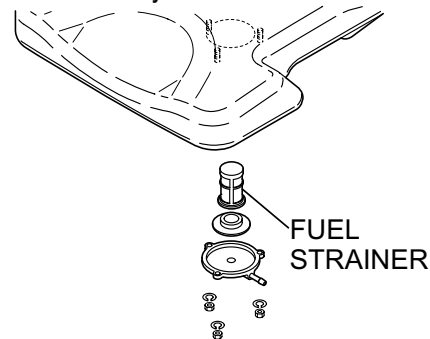


Figure 15. Fuel Strainer

EVERY 2 YEARS

- Replace the fuel line every 2 years even if there is no visible damage.

LONG TERM STORAGE

- Slide the throttle lever to the **STOP** position.
- Drain any fuel including in the fuel hose.
- Replace lubrication oil and apply grease to lubrication points.
- Cover the air intake on the air cleaner and the exhaust outlet on the muffler.
- Store unit indoors covered with plastic sheet in moisture free and dust free location out of direct sunlight.

TROUBLESHOOTING

Troubleshooting (Engine)		
Symptom	Possible Problem	Solution
Difficult to start, fuel is available, but no spark at spark plug.	Combo lever in incorrect position?	Make sure combo lever is in start position.
	Spark plug bridging?	Check gap, insulation or replace spark plug.
	Carbon deposit on spark plug?	Clean or replace spark plug.
	Short circuit due to deficient spark plug insulation?	Check spark plug insulation, replace if worn.
	Improper spark plug gap?	Set to proper gap.
	Fuel reaching carburetor?	Check fuel line.
	Water in fuel tank?	Flush or replace fuel tank.
	Fuel filter clogged?	Replace fuel filter.
	Stuck carburetor?	Check float mechanism.
	Spark plug is red?	Check transistor ignition unit.
	Spark plug is bluish white?	If insufficient compression, repair or replace engine. If injected air leaking, correct leak. If carburetor jets clogged, clean carburetor.
	No spark present at tip of spark plug?	Check transistor ignition unit is broken, and replace defective unit. Check if voltage cord cracked or broken and replace. Check if spark plug if fouled and replace.
No oil?	Add oil as required.	
Difficult to start, fuel is available, and spark is present at the spark plug.	ON/OFF switch is shorted?	Check switch wiring, replace switch.
	Ignition coil defective?	Replace ignition coil.
	Improper spark gap, points dirty?	Set correct spark gap and clean points.
	Condenser insulation worn or short circuiting?	Replace condenser.
	Spark plug wire broken or short circuiting?	Replace defective spark plug wiring.
Difficult to start, fuel is available, spark is present and compression is normal.	Wrong fuel type?	Flush fuel system, replace with correct type of fuel.
	Water or dust in fuel system?	Flush fuel system.
	Air cleaner dirty?	Clean or replace air cleaner.
	Choke open?	Close choke.
Difficult to start, fuel is available, spark is present and compression is low.	Suction/exhaust valve stuck or protruded?	Reseat valves.
	Piston ring and/or cylinder worn?	Replace piston rings and/or piston.
	Cylinder head and/or spark plug not tightened properly?	Torque cylinder head bolts and spark plug.
	Head gasket and/or spark plug gasket damaged?	Replace head and spark plug gaskets.
No fuel present at carburetor.	No fuel in fuel tank?	Fill with correct type of fuel.
	Fuel cock does not open properly?	Apply lubricant to loosen fuel cock lever, replace if necessary.
	Fuel filter/lines clogged?	Replace fuel filter.
	Fuel tank cap breather hole clogged?	Clean or replace fuel tank cap.
	Air in fuel line?	Bleed fuel line.

TROUBLESHOOTING

Troubleshooting (Engine) - continued		
Symptom	Possible Problem	Solution
Weak in power, compression is proper and does not misfire.	Air cleaner dirty?	Clean or replace air cleaner.
	Improper level in carburetor?	Check float adjustment, rebuild carburetor.
	Defective spark plug?	Clean or replace spark plug.
	Improper spark plug?	Set to proper gap.
Weak in power, compression is proper but misfires.	Water in fuel system?	Flush fuel system and replace with correct type of fuel.
	Dirty spark plug?	Clean or replace spark plug.
	Ignition coil defective?	Replace ignition coil.
Engine overheats.	Spark plug heat value incorrect?	Replace with correct type of spark plug.
	Wrong type of fuel?	Replace with correct type of fuel.
	Cooling fins dirty?	Clean cooling fins.
	Intake air restricted?	Clear intake of dirt and debris. Replace air cleaner elements as necessary.
	Oil level too low or too high?	Adjust oil to proper level.
Rotational speed fluctuates.	Governor adjusted incorrectly?	Adjust governor.
	Governor spring defective?	Replace governor spring.
	Fuel flow restricted?	Check entire fuel system for leaks or clogs.
Recoil starter malfunctions. (if applicable)	Recoil mechanism clogged with dust and dirt?	Clean recoil assembly with soap and water.
	Spiral spring loose?	Replace spiral spring.
Starter malfunctions.	Loose, damaged wiring?	Ensure tight, clean connections on battery and starter.
	Battery insufficiently charged?	Recharge or replace battery.
	Starter damaged or internally shorted?	Replace starter.
Burns too much fuel.	Over-accumulation of exhaust products?	Check and clean valves. Check muffler and replace if necessary.
	Wrong spark plug?	Replace spark plug with manufacturer's suggested type.
Exhaust color is continuously "white".	Lubricating oil is wrong viscosity?	Replace lubricating oil with correct viscosity.
	Worn rings?	Replace rings.
Exhaust color is continuously "black".	Air cleaner clogged?	Clean or replace air cleaner.
	Choke valve set to incorrect position?	Adjust choke valve to correct position.
	Carburetor defective, seal on carburetor broken?	Replace carburetor or seal.
	Poor carburetor adjustment, engine runs too rich?	Adjust carburetor.
Will not start, no power with key "ON". (if applicable)	ON/OFF device not activated ON?	Turn on ON/OFF device.
	Battery disconnected or discharged?	Check cable connections. Charge or replace battery
	Ignition switch/wiring defective?	Replace ignition switch. Check wiring.

TROUBLESHOOTING

Troubleshooting (Rammer)		
Symptom	Possible Problem	Solution
Engine runs but rammer jumps erratically or not at all.	Operating speed of throttle lever is incorrectly set?	Set throttle lever to correct position.
	Oil in excess?	Drain excess oil. Bring to correct level.
	Clutch slips?	Replace or adjust clutch.
	Spring Failure?	Replace spiral spring.
	Speed of engine improper?	Adjust engine speed to correct operating RPM setting.
	Soil over-compacted?	Shut down machine and test soil.

EXPLANATION OF CODE IN REMARKS COLUMN

The following section explains the different symbols and remarks used in the Parts section of this manual. Use the help numbers found on the back page of the manual if there are any questions.

NOTICE

The contents and part numbers listed in the parts section are subject to change **without notice**. Multiquip does not guarantee the availability of the parts listed.

SAMPLE PARTS LIST

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	12345	BOLT	1	INCLUDES ITEMS W/%
2%		WASHER, 1/4 IN.		NOT SOLD SEPARATELY
2%	12347	WASHER, 3/8 IN. ...	1	MQ-45T ONLY
3	12348	HOSE	A/R	MAKE LOCALLY
4	12349	BEARING	1	S/N 2345B AND ABOVE

NO. Column

Unique Symbols — All items with same unique symbol

(@, #, +, %, or >) in the number column belong to the same assembly or kit, which is indicated by a note in the “Remarks” column.

Duplicate Item Numbers — Duplicate numbers indicate multiple part numbers, which are in effect for the same general item, such as different size saw blade guards in use or a part that has been updated on newer versions of the same machine.

NOTICE

When ordering a part that has more than one item number listed, check the remarks column for help in determining the proper part to order.

PART NO. Column

Numbers Used — Part numbers can be indicated by a number, a blank entry, or TBD.

TBD (To Be Determined) is generally used to show a part that has not been assigned a formal part number at the time of publication.

A blank entry generally indicates that the item is not sold separately or is not sold by Multiquip. Other entries will be clarified in the “Remarks” Column.

QTY. Column

Numbers Used — Item quantity can be indicated by a number, a blank entry, or A/R.

A/R (As Required) is generally used for hoses or other parts that are sold in bulk and cut to length.

A blank entry generally indicates that the item is not sold separately. Other entries will be clarified in the “Remarks” Column.

REMARKS Column

Some of the most common notes found in the “Remarks” Column are listed below. Other additional notes needed to describe the item can also be shown.

Assembly/Kit — All items on the parts list with the same unique symbol will be included when this item is purchased.

Indicated by:

“INCLUDES ITEMS W/(unique symbol)”

Serial Number Break — Used to list an effective serial number range where a particular part is used.

Indicated by:

“S/N XXXXX AND BELOW”

“S/N XXXX AND ABOVE”

“S/N XXXX TO S/N XXX”

Specific Model Number Use — Indicates that the part is used only with the specific model number or model number variant listed. It can also be used to show a part is NOT used on a specific model or model number variant.

Indicated by:

“XXXXX ONLY”

“NOT USED ON XXXX”

“Make/Obtain Locally” — Indicates that the part can be purchased at any hardware shop or made out of available items. Examples include battery cables, shims, and certain washers and nuts.

“Not Sold Separately” — Indicates that an item cannot be purchased as a separate item and is either part of an assembly/kit that can be purchased, or is not available for sale through Multiquip.

SUGGESTED SPARE PARTS

MTX60SD TAMPING RAMMER WITH ROBIN ER120D4500 ENGINE

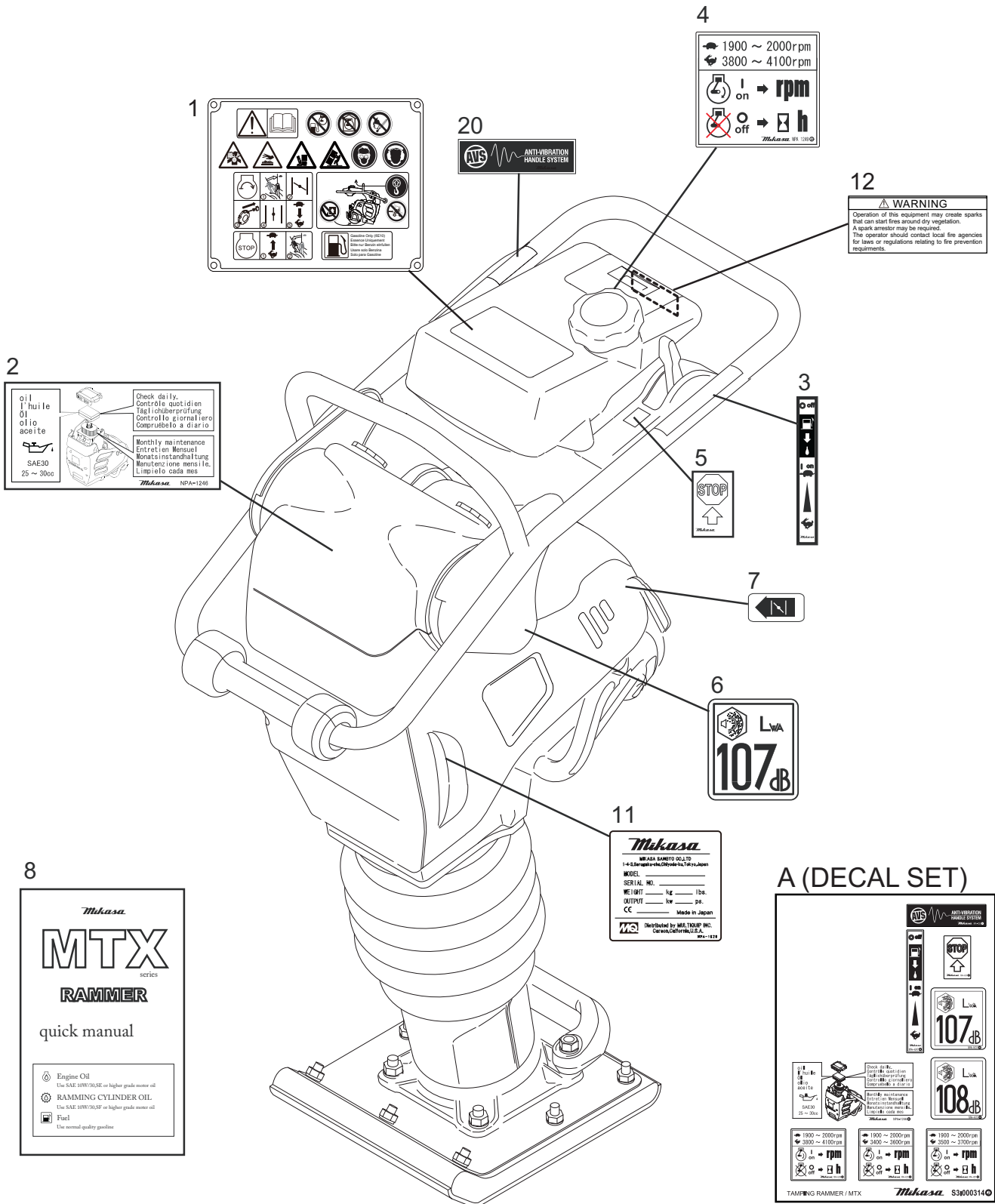
1 to 3 units

Qty.	P/N	Description
1.....	956100062.....	THROTTLE WIRE
3.....	366010070.....	PRIMARY ELEMENT, AIR CLEANER
3.....	366010080.....	SECONDARY ELEMENT, AIR CLEANER
1.....	366350460.....	CAP, FUEL TANK WITH STRAP
2.....	26365012A3.....	FILTER, IN-LINE FUEL
3.....	0650140860.....	SPARK PLUG
1.....	954406010.....	STRAINER, #110 FUEL TANK
1.....	21E5011008.....	ROPE, RECOIL STARTER
1.....	956200110.....	COMBINATION LEVER
1.....	366900170.....	CUP AND PACKING SET
1.....	366348550.....	CLUTCH ASSY.

NOTICE

Part numbers on this Suggested Spare Parts list may supersede/replace the part numbers shown in the following parts lists.

NAMEPLATES AND DECALS



2

oil
l'huile
öl
olio
aceite

Check daily.
Contrôle quotidien
Täglicherprüfung
Controllo giornaliero
Compruébalo a diario

Monthly maintenance
Entretien Mensuel
Monatsinsstandhaltung
Manutenzione mensile
Limpeza mensal

SAE30
25 ~ 30°C

Mikasa NPA-1246

4

1900 ~ 2000rpm
3800 ~ 4100rpm

rpm
h

Mikasa 09 1210

12

WARNING

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

11

Mikasa

MIKASA KAWAYO OIL LTD
1-4-1, Higashi-cho, Ohta-ku, Tokyo, Japan

MODEL: _____
SERIAL NO.: _____
WEIGHT: _____ kg _____ lbs
OUTPUT: _____ kw _____ ps
CC _____

Made in Japan

Distributed by: MSA, 1203P MC, Corona, Columbus, ILLA, INC.

MS-1129

8

Mikasa

MTX
series

RAMMER

quick manual

Engine Oil
Use SAE 10W/30SE or higher grade motor oil

RAMMING CYLINDER OIL
Use SAE 10W/30SF or higher grade motor oil

Fuel
Use normal quality gasoline

A (DECAL SET)

AVS ANTI-VIBRATION HANDLE SYSTEM

STOP

LWA 107dB

LWA 108dB

1900 ~ 2000rpm
3800 ~ 4100rpm

rpm
h

1900 ~ 2000rpm
3800 ~ 3700rpm

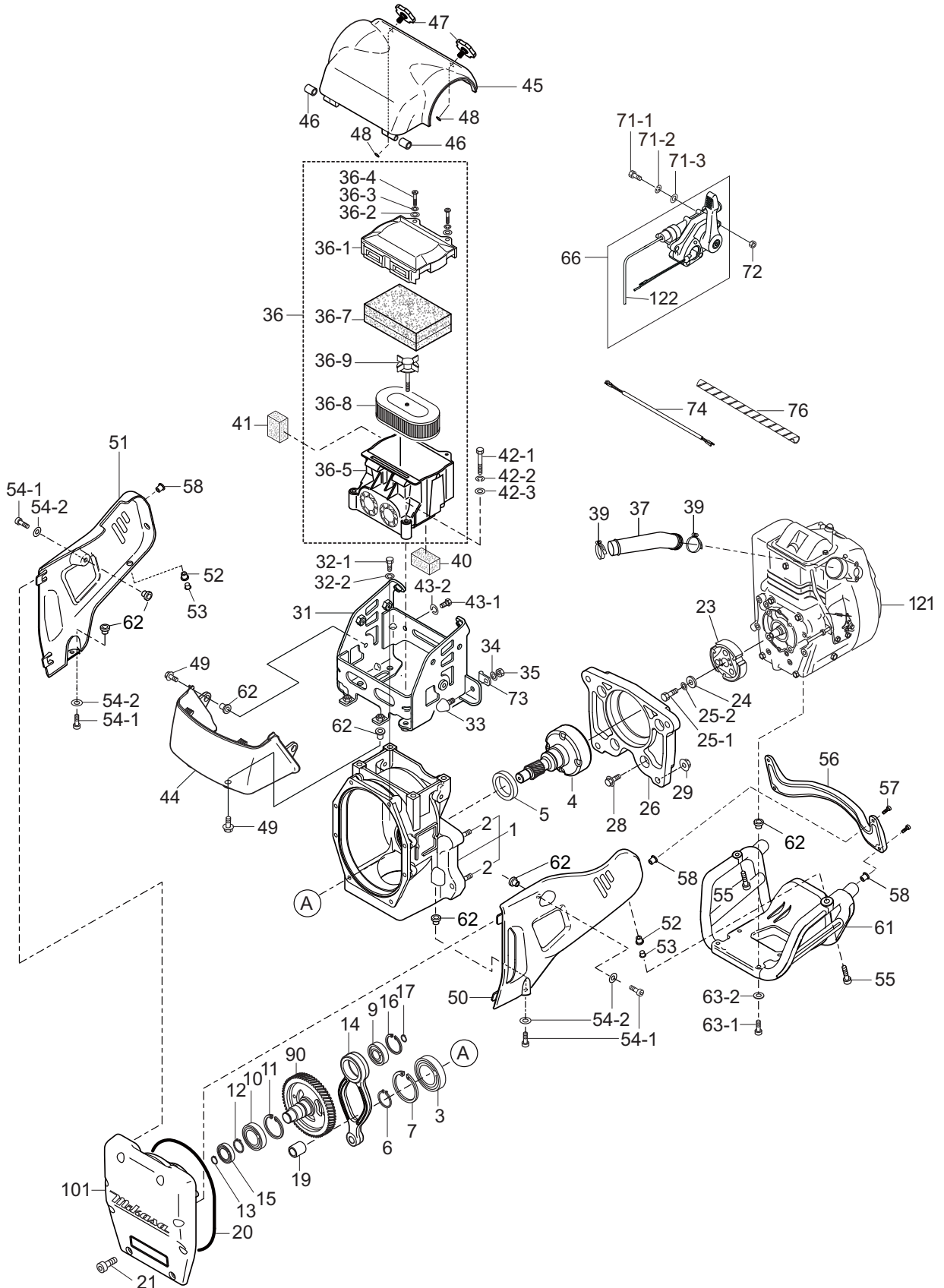
rpm
h

Mikasa S340003140

NAMEPLATES AND DECALS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
A	920900040	DECAL, SET	1.....	INCLUDES ITEMS W/#
1	920215440	OPERATION DECAL	1	
2#		AIR CLEANER DECAL	1.....	NPA-1246
3#		LEVER OPERATION DECAL	1	
4#		MAX SPEED DECAL 4100	1	
5#		MACHINE STOP DECAL	1	
6#		EC NOISE REQ. DECAL LWA107	1	
7	920212840	CHOKE OPERATION DECAL	1	
8	920212540	QUICK MANUAL	1	
11		SERIAL PLATE NO.	1.....	CONTACT MQ PARTS DEPT
12	920214100	E/G FIRE WARNING. DECAL	1	
20#		ANTI-VIB. HANDLE DECAL	1	

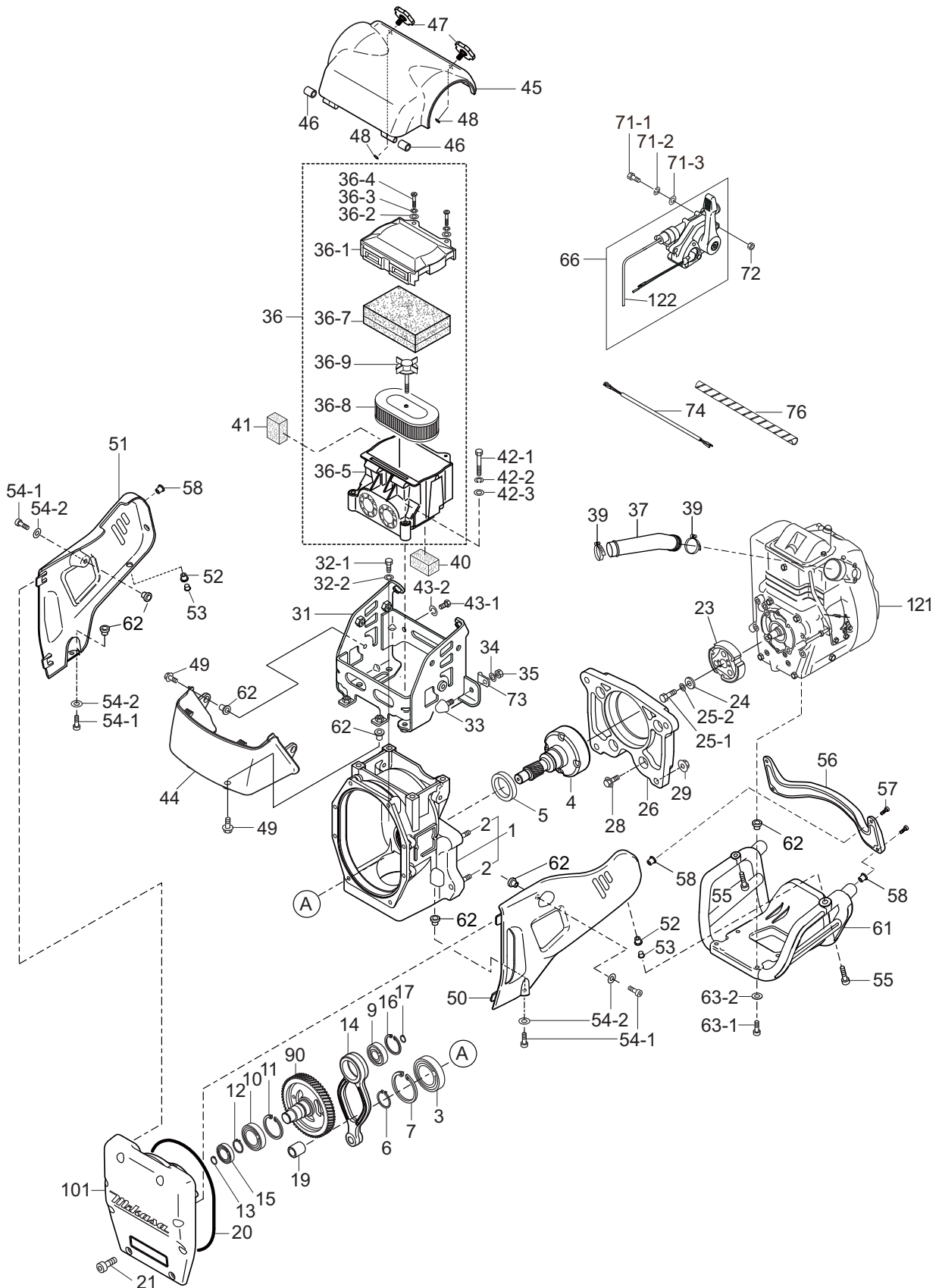
CRANKCASE AND ENGINE ASSY



CRANKCASE AND ENGINE ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	368119170	CRANKCASE CP.....	1.....	INCLUDES ITEM W/ *
2*	009120204	STUD BOLT 10X50X21T/21S	4	
3	041006007	BEARING 6007Z	1	
4	368347410	PINION DRUM	1	
5	060404010	OIL SEAL TC - 40528	1	
6	080200350	STOP RING S-35	1	
7	080100620	STOP RING R-62	1	
9	040006203	BEARING 6203	1	
10	040006305	BEARING 6305	1	
11	080100620	STOP RING R62	1	
12	080200170	STOP RING S-17	1	
13	080200250	STOP RING S-25	1	
14	368347250	CONNECTING ROD	1	
15	040006304	BEARING 6304	1	
16	080100520	STOP RING R- 52	1	
17	080200200	STOP RING S- 20	1	
19	047940060	NEEDLE BEARING FJ-1816	1	
20	050710100	O-RING AS568- 262	1	
21	009110025	SOCKET HEAD BOLT 8X25 ZN	8	
23	366348550	CLUTCH ASSY.	1	
24	952401450	WASHER 8.5X22X3	1	
25-1	001220825	BOLT 8X25 T	1	
25-2	030208200	WASHER, LOCK M8	1	
26	368217640	ENGINE FLANGE	1	
28	001710840	FLANGE BOLT 8X40 T	4	
29	022611010	FLANGE NUT M10 H	4	
31	368347490	SHOCK ABSORBER BRACKET 60	1	
32-1	001221030	BOLT 10X30 H	4	
32-2	030210250	WASHER, LOCK M10	4	
33	939010270	STOPPER RUBBER (70)	1	
34	030208200	WASHER, LOCK M8	1	
35	020308060	NUT M8	1	
36	366118640	AIR CLEANER ASSY.....	1.....	INCLUDES ITEMS W/ #
36-1#	366010010	AIR CLEANER COVER	1	
36-2#	366010020	WASHER, FLAT M6 (6.5X18X1.5)	2	
36-3#	030206150	WASHER, LOCK M6	2	
36-4#	366010040	COIN BOLT M6	2	
36-5#	366010050	AIR CLEANER BASE CP	1	
36-7#	366010070	PRIMARY ELEMENT CP	1	
36-8#	366010080	SECONDARY ELEMENT	1	
36-9#	362030040	GRIP BPLT CP	1	
37	366350540	INTAKE PIPE	1	
39	954407682	CYCLONE CLAMP (CY-1) 38	2	
40	366460160	UNDER SEALING FORM	1	

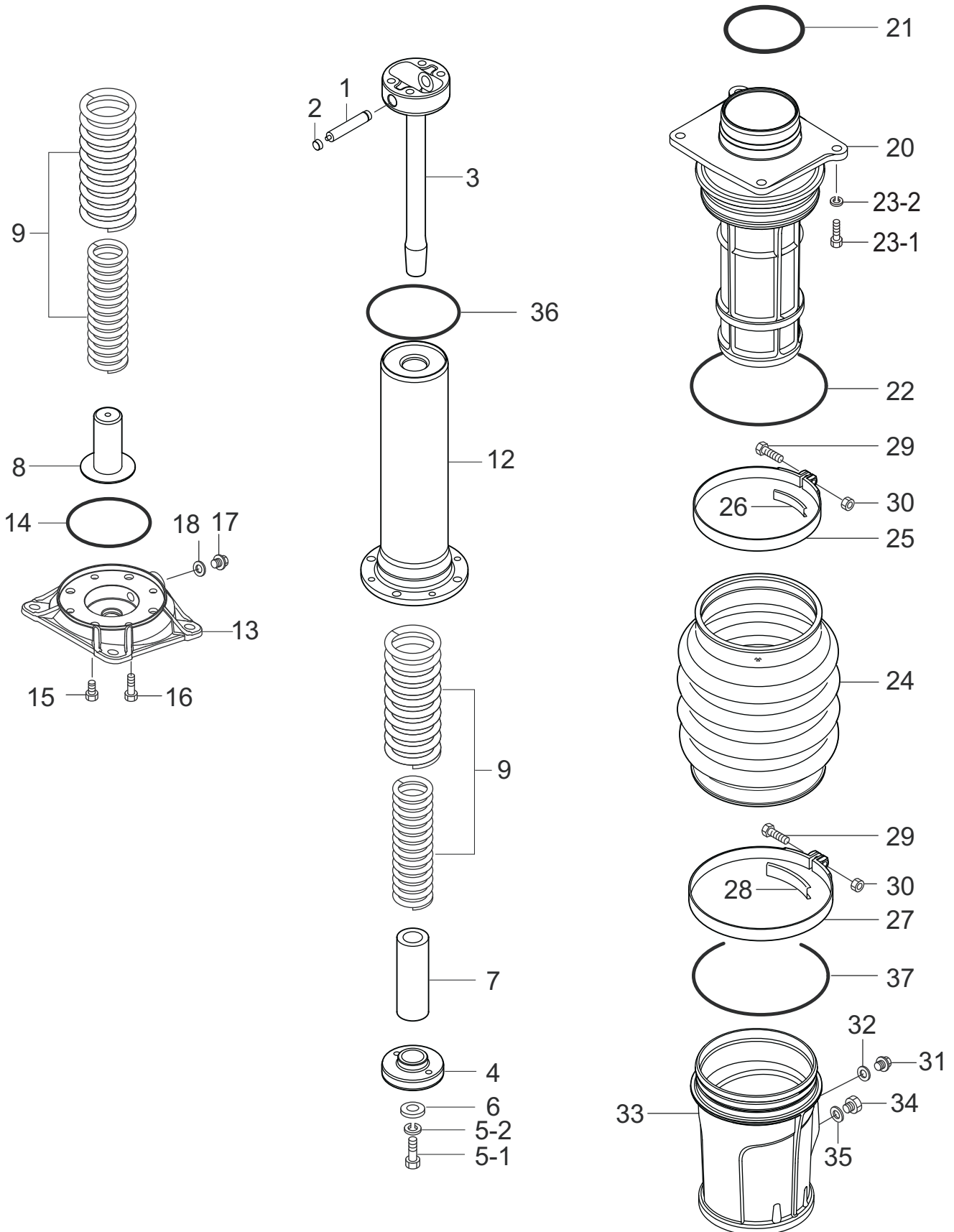
CRANKCASE AND ENGINE ASSY



CRANKCASE AND ENGINE ASSY

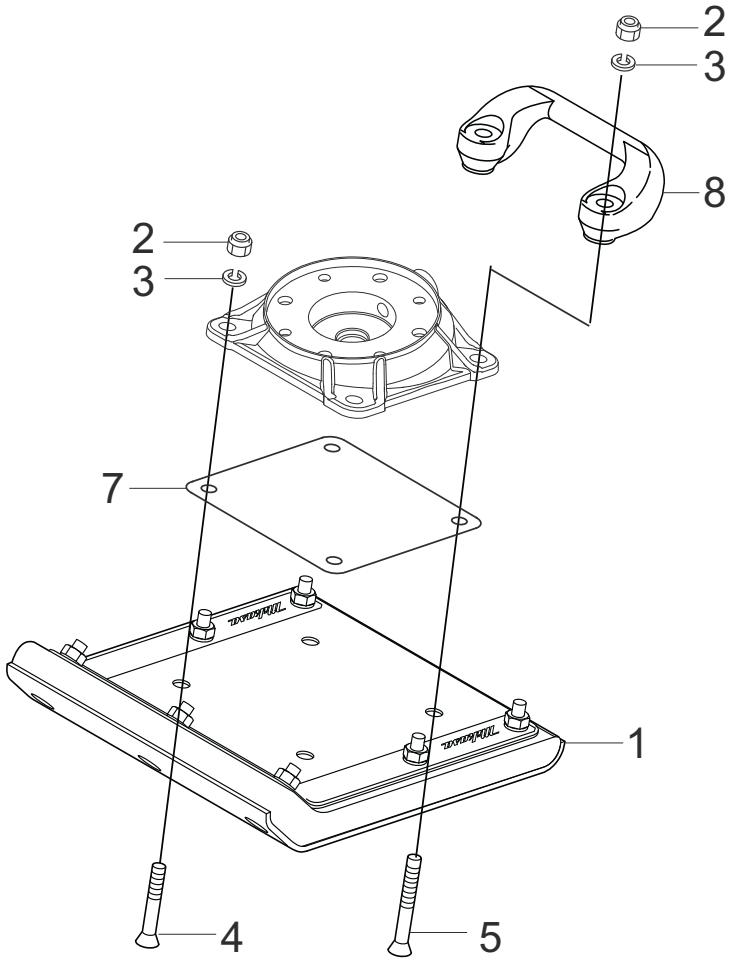
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
41	366460150	SIDE SEALING FORM	1	
42-1	001220851	BOLT 8X55 T	2	
42-2	030208200	WASHER, LOCK M8	2	
42-3	031108160	WASHER, FLAT M8	2	
43-1	001210815	BOLT 8X15 H	2	
43-2	030208200	WASHER, LOCK M8	2	
44	368217760	BOTTOM CLEANER COVER 60	1	
45	368217750	TOP CLEANER COVER 60	1	
46	366460140	RUBBER BUSH 10X16X17	2	
47	366345980	CLEANER COVER KNOB	2	
48	050200060	O-RING P6	2	
49	009110040	FLANGE BOLT 8X20	4	
50	368120510	LINK GUARD	1	
51	368120520	MUFFLER GUARD	1	
52	022910260	WELL NUT M8	2	
53	366460170	FLANGE COLLAR 8	2	
54-1	009110024	SOCKET HEAD BOLT 8X20 ZN	4	
54-2	033910220	WASHER 8.4X15.5X1.6	4	
55	009110038	SOCKET HEAD BOLT 8X30 ZN	2	
56	368217770	EX BAR	1	
57	009110039	SOCKET HEAD BOLT 6X25 ZN	4	
58	022910250	WELL NUT M6	4	
61	366120430	ENGINE GUARD	1	
62	366461050	COLLAR/GUARD	12	
63-1	009110025	SOCKET HEAD BOLT 8X25 ZN	4	
63-2	033910220	WASHER 8.4X15.5X1.6	4	
66	956200110	LEVER ASSY. W/OUT T. WIRE	1	INCLUDES ITEMS W/ \$
71-1	001220620	BOLT 6X20T	2	
71-2	030206150	WASHER, LOCK M6	2	
71-3	031106100	WASHER, FLAT M6	2	
72	020306050	NUT M6	2	
73	959006120	CLIP (TCP2 - 10509B)	1	
74	367460120	WIRE HARNESS	1	
76	959021814	SPIRAL TUBE KEP6/L=200	1	
90	368347270	CRANK GEAR	1	
101	368010010	FRONT COVER	1	
121	911231201	ENGINE, ER120D45000	1	
122\$	956100062	THROTTLE WIRE	1	

GUIDE CYLINDER ASSY



GUIDE CYLINDER ASSY

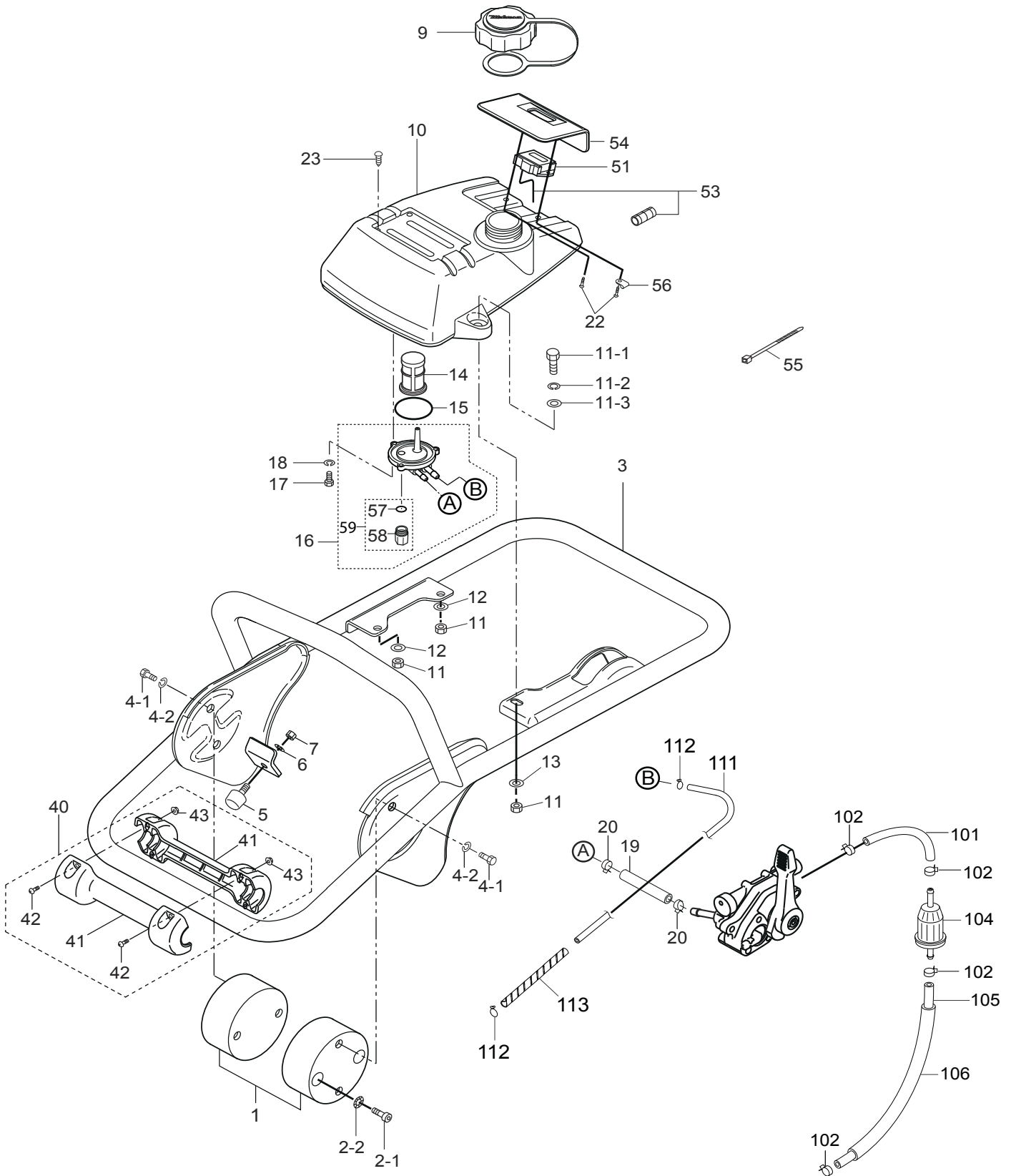
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	368461210	PISTON PIN	1	
2	368459920	PISTON PIN PLUG	2	
3	368347290	PISTON ROD	1	
4	368461160	PISTON END	1	
5-1	001121230	BOLT 12X30 T, P1.5	1	
5-2	030212300	WASHER, LOCK M12	1	
6	952404790	WASHER 13306	1	
7	368461260	LOWER STOPPER	1	
8	368461200	BOTTOM STOPPER	1	
9	368461270	MAIN SPRING	2	
12	368347281	SPRING CYLINDER.....	1	REPLACES P/N 368347280
13	368217710	FOOT PLATE	1	
14	050100800	O-RING G-80	1	
15	001521020	SOCKET HEAD BOLT 10X20 T	4	
16	001520835	SOCKET HEAD BOLT 8X35 T	4	
17	953405270	PLUG 1/4X14 13L	1	
18	953405260	PACKING 1/4 (CU)	1	
20	368217720	CYLINDER GUIDE	1	
21	050100850	O-RING G-85	1	
22	050101150	O- RING G-115	1	
23-1	001221035	BOLT 10X35 H	4	
23-2	030210250	WASHER, LOCK M8	4	
24	368346180	ORANGE BELLOWS	1	
25	368347520	BELLOWS CLAMP131D	1	
26	368461400	BAND GUIDE 131D	1	
27	368347530	BELLOWS CLAMP 149D	1	
28	368461410	BAND GUIDE 149D	1	
29	001220840	BOLT 8X40 T	2	
30	020308060	NUT M8	2	
31	953405270	PLUG 1/4X14 13L	1	
32	953405260	PACKING 1/4 (CU)	1	
33	368118970	PROTECTION SLEEVE	1	
34	366460300	OIL GAUGE ASSY.	1	
35	953404670	COPPER PACKING 17X25.5X1	1	
36	050200800	O-RING P-80	1	
37	050101300	O-RING G-130	1	



FOOT ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	362910150	FOOT ASSY. 265W M4B	1	
2	022711214	NYLON NUT M12	4	
3.	030212300	WASHER, LOCK M12	4	
4.	009110034	SQUARE NECK BOLT 12X65	2	
5.	009110035	SQUARE NECK BOLT 12X95	2	
7.	368347460	FOOT COVER	1	
8.	363343390	HANDLEBAR GRIP (FOOT)	1	

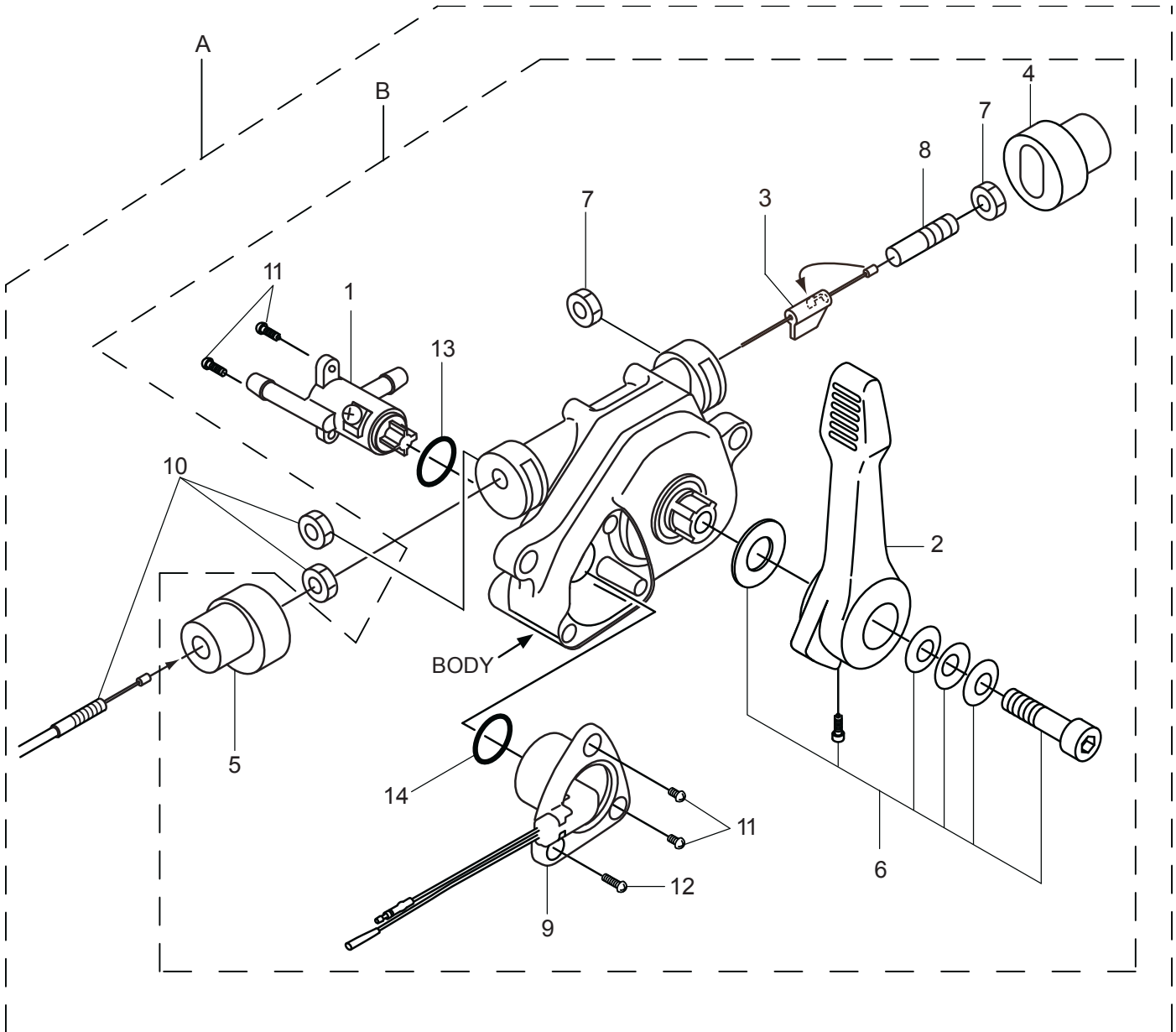
FUEL TANK AND HANDLE ASSY



FUEL TANK AND HANDLE ASSY

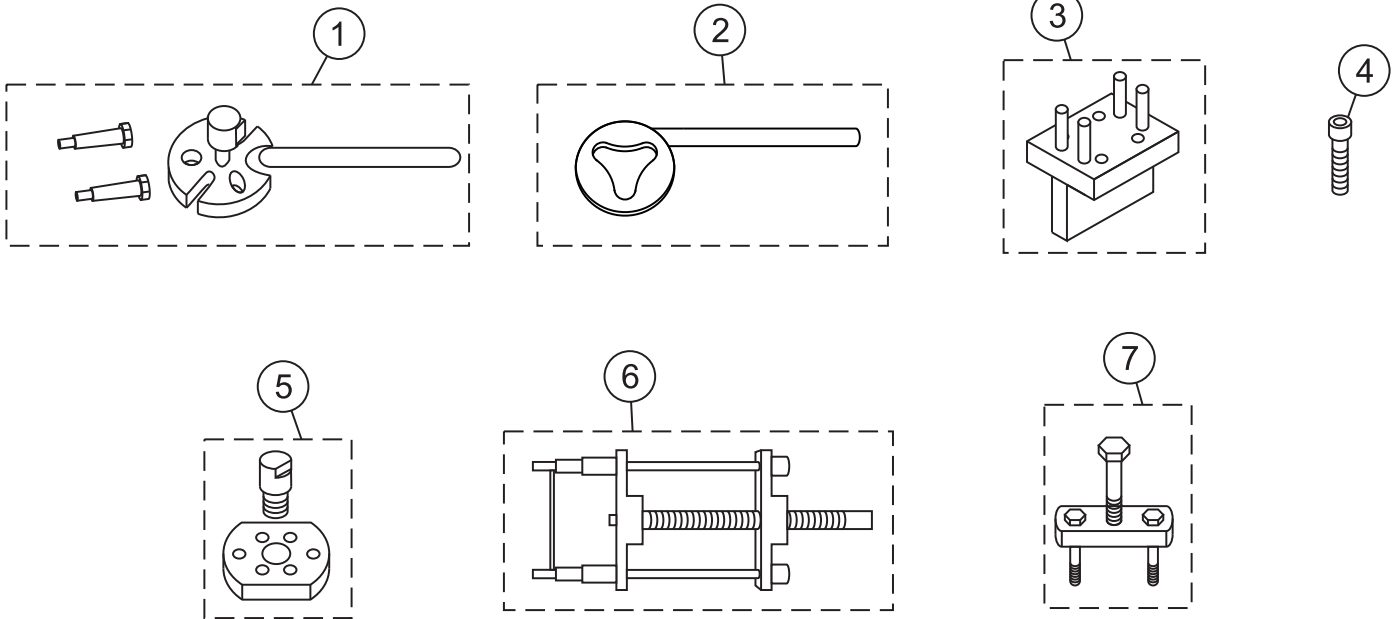
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	368347630	SHOCK ABSORBER W/PIN	2	
2-1	001521020	SOCKET HEAD BOLT 10X20T	4	
2-2	033121009	TOOTHED LOCK WASHER B M10	4	
3	368119570	HANDLE	1	
4-1	001211020	BOLT 10X20 H	4	
4-2	030210250	WASHER, LOCK M10	4	
5	939010270	STOPPER RUBBER (70)	1	
6	030208200	WASHER, LOCK M8	1	
7	020308060	NUT M8	1	
9	366350460	CAP ASSY., FUEL TANK	1	
10	366120250	FUEL TANK/MTX70	1	
11	022710809	NYLON NUT M8	3	
11-1	001200825	BOLT 8X25 H	3	
11-2	030208200	WASHER, LOCK M8	3	
11-3	031108160	WASHER, FLAT M8	3	
12	952401450	WASHER 8.5X22X3	2	
13	031108160	WASHER, FLAT M8	1	
14	954406010	STRAINER #110	1	
15	050250420	O-RING P42	1	
16	366350580	HOLDER, FILTER.....	1	INCLUDES ITEMS W/\$
17	001200515	BOLT 5X15 H	3	
18	030205130	WASHER, LOCK M5	3	
19	959328406	FUEL HOSE L=90	1	
20	954406420	HOSE BAND 10.5	2	
22	009110037	TAPPING SCREW 5X20	2	
23	094010053	PAN HEAD SCREW 4X8	4	
40	366910030	ROLLER ASSY. W/SCREW	1	INCLUDES ITEMS W/#
41#	366217170	ROLLER	2	
42#	091005020	SCREW 5X20	4	
43#	022610505	FLANGE NUT M5 H	4	
51	980010330	TP22 TACHO/HOUR METER	1	
53	955010305	CURL CORD TP22	1	
54	366345620	FINISHER, METER	1	
55	454010020	CLAMP TC100	5	
56	954010270	CLIP AB-3N	1	
57\$&	366464260	CUP, HOLDER FILTER	1	
58\$&	366464270	PACKING, HOLDER FILTER	1	
59\$	366900170	CUP AND PACKING SET.....	1	INCLUDES ITEMS W/ &
101	959328402	FUEL HOSE 5.5 X 8.5 X 170	1	
102	0561080020	HOSE BAND	4	
104	26365012A3	FILTER, IN-LINE FUEL	1	
105	959328403	FUEL HOSE 5.5X8.5X260	1	
106	959407720	TUBE, VINYL L180	1	
111%	959028301	RETURN HOSE 3X6X600	1	
112%	954408170	HOSE CLIP	2	
113%	959021814	SPIRAL TUBE 6D-200L	1	

COMBINATION LEVER ASSY



COMBINATION LEVER ASSY

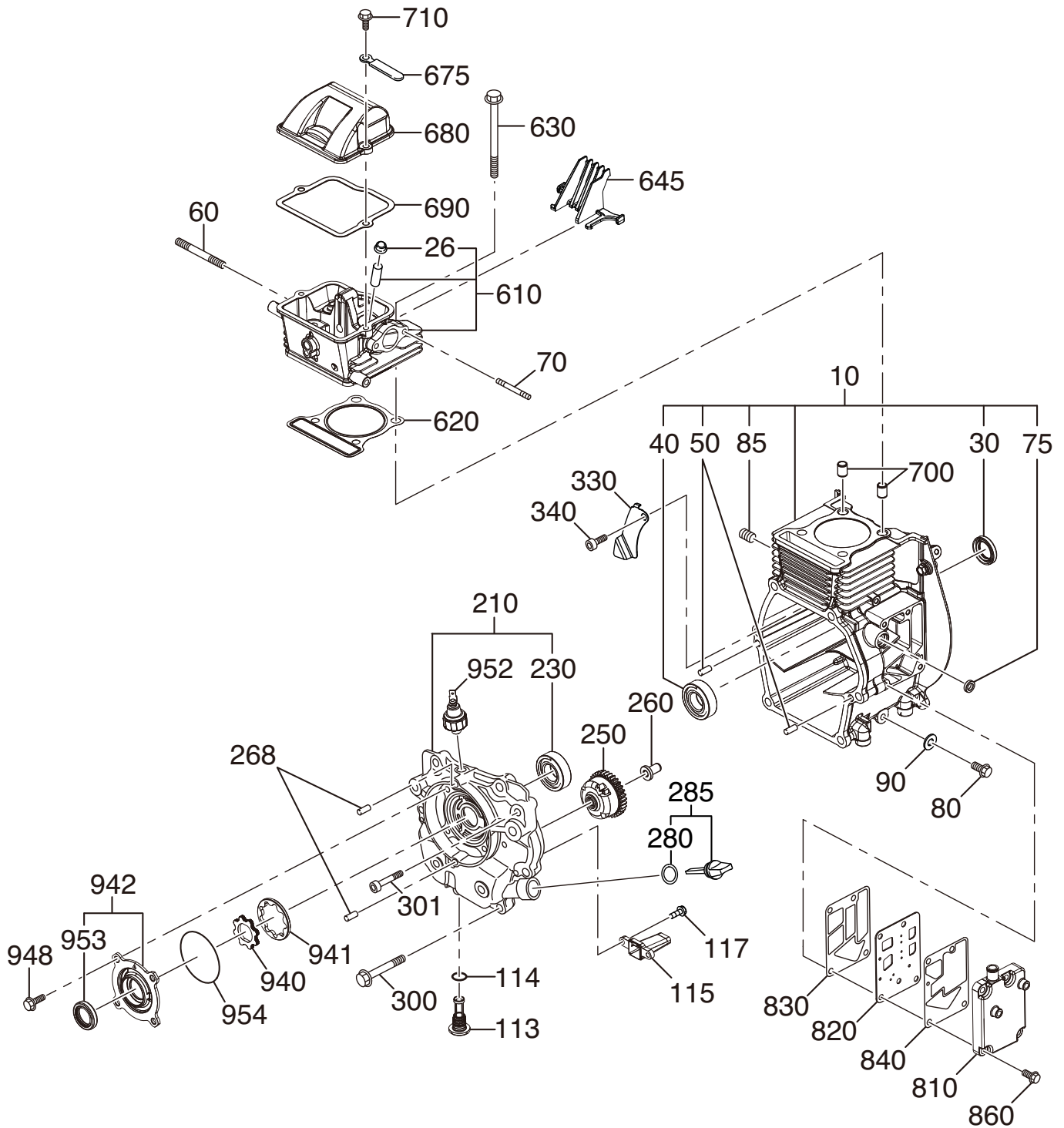
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
A	366900032	COMB. LEVER W/ THROTTLE WIRE.....	1.....	INCLUDES ITEMS W/ \$
B	956200110	COMB. LEVER W/OUT THROTTLE WIRE	1.....	INCLUDES ITEMS W/ #
1\$#	366349430	FUEL COCK	1	
2\$#	366010310	LEVER	1	
3\$#	366010190	SLIDER	1	
4\$#	366010200	END CAP	1	
5\$#	366010210	WIRE CAP	1	
6\$#	366010220	BOLT AND WASHER SET	1	
7\$#	020408050	NUT M8, H=5	2	
8\$#	959407650	SOCKET HEAD SCREW/TH.WIRE	1	
9\$#	366010320	STOP SWITCH	1	
10\$	956100062	THROTTLE WIRE	1	
11\$#	094010051	TAPPING SCREW B1 4X12	4	
12\$#	094010052	TAPPING SCREW B1 4X30	1	
13\$#	050200150	O-RING, P15	1	
14\$#	050200110	O-RING, P11	1	



TOOLS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	981010400	CLUTCH PULLER A	1	
2	983010060	CLUTCH MOUNTER	1	
3	983910090	PISTON ROD HOLDER	1	
4	009110044	SCK. HD. BOLT 8X50 (FULL THREAD).....	2.....	CRANK GEAR REMOVER
5	983910020	CLUTCH PULLER B	1	
6	983010040	SPRING CYLINDER REMOVER	1	
7	983910010	PISTON END REMOVER	1	

ROBIN ER120D45000 ENGINE — CRANKCASE ASSY.

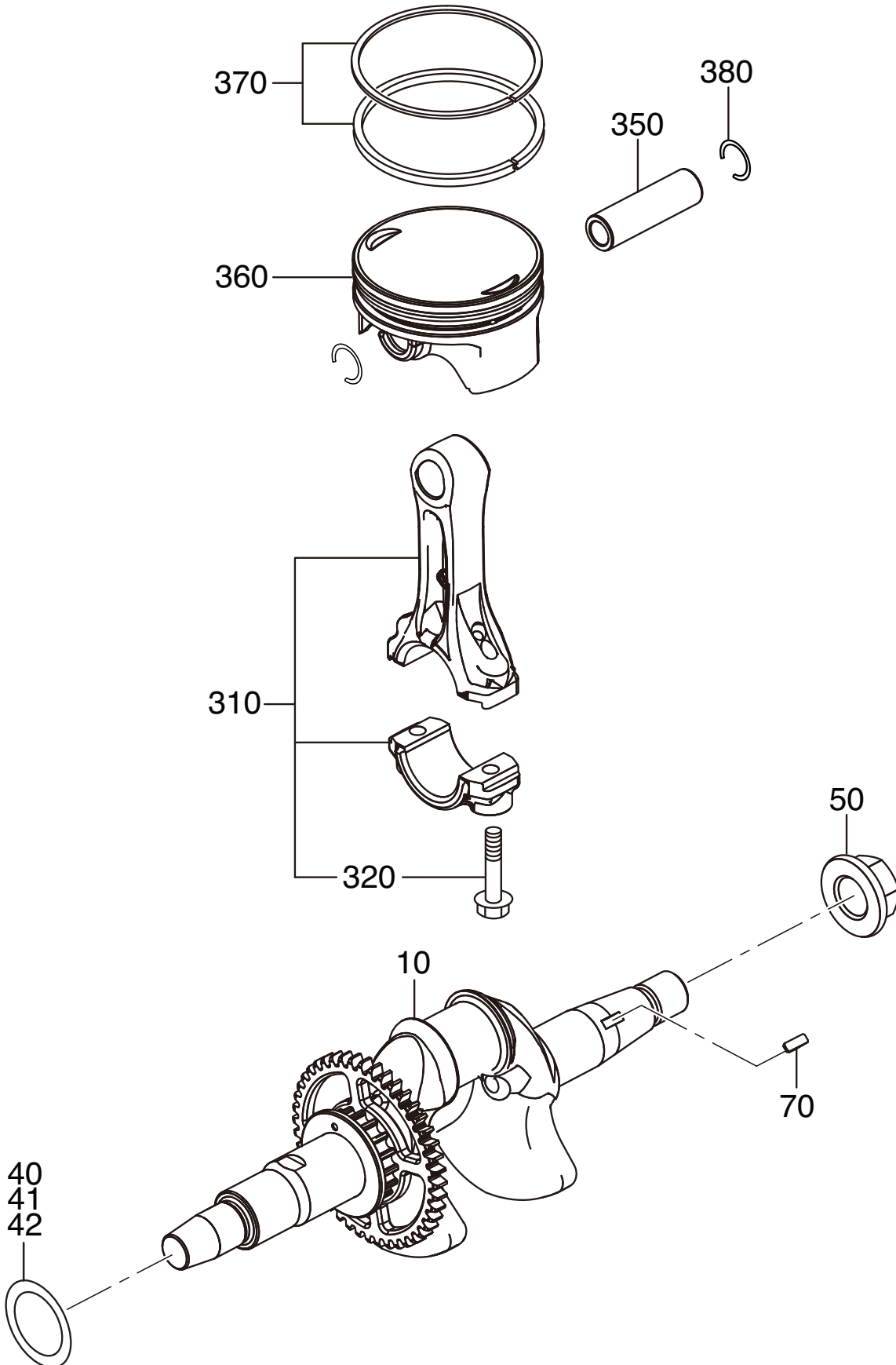


960 — GASKET SET

ROBIN ER120D45000 ENGINE — CRANKCASE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E10101M1	CRANKCASE CP	1.....	INCLUDES ITEMS W/#
26@	20F1601001	STEM SEAL	1	
30#	0440200070	OIL SEAL	1	
40#	X600200200	BALL BEARING	1	
50#	20F0060023	DOWEL PIN	2	
60	X105080550	STUD	2	
70	X105060470	STUD	2	
75#	X440080010	OIL SEAL	1	
80	0110080150	FLANGE BOLT	1	
85#	0403140010	PLUG	1	
90	X211080050	GASKET(ALUMINIUM)	1	
113	21E65001H2	PLUG	1	
114	0240110020	O-RING	1	
115	21E64201J3	SUCTION PIPE	1	
117	X110050030	FLANGE BOLT	2	
210	21E11001L1	MAIN BEARING COVER CP	1.....	INCLUDES ITEMSW/\$
230\$	X600220030	BALL BEARING	1	
250	21E45001J1	GOVERNOR GEAR CP	1	
260	21E41901H3	GOVERNOR SLEEVE	1	
268	20F0060023	DOWEL PIN	2	
280	X213160030	GASKET	1	
285	21E63601H1	OIL GAUGE CP	1	
300	0110080160	FLANGE BOLT	6	
301	X119060110	BOLT (SOCKET HEAD)	1	
330	21E17001H3	OIL SHELTER PLATE	1	
340	0011305100	BOLT AND WASHER ASSY	1	
610	21E13001L0	CYLINDER HEAD ASSY	1.....	INCLUDES ITEMS W/@
620	21E1500113	GASKET(HEAD)	1	
630	X110080460	FLANGE BOLT	4	
645	21E18001H3	GUIDE (S.PLUG)	1	
680	21E15501H3	ROCKER COVER	1	
690	21E1600101	GASKET CP (R.COVER)	1	
700	20F1501103	PIPE KNOCK	2	
710	X110060610	FLANGE BOLT	2	
810	21E14301H3	BREATHER COVER	1	
820	21E14401H1	BREATHER PLATE CP	1	
830	21E16002H3	GASKET (B.PLATE)	1	
840	21E16003H3	GASKET (B.COVER)	1	
860	0110060230	FLANGE BOLT	4	
940	21E63901H3	INNER ROTOR	1	
941	21E63902H3	OUTER ROTOR	1	
942	21E64001L1	OIL PUMP COVER CP	1.....	INCLUDES ITEMS W/%
948	0110060440	FLANGE BOLT	4	
952	21E76301H1	SWITCH OIL PRESSURE	1	
953%	0440200070	OIL SEAL	1	
954	0240590020	O-RING	1	
960	21E9900117	GASKET SET	1	

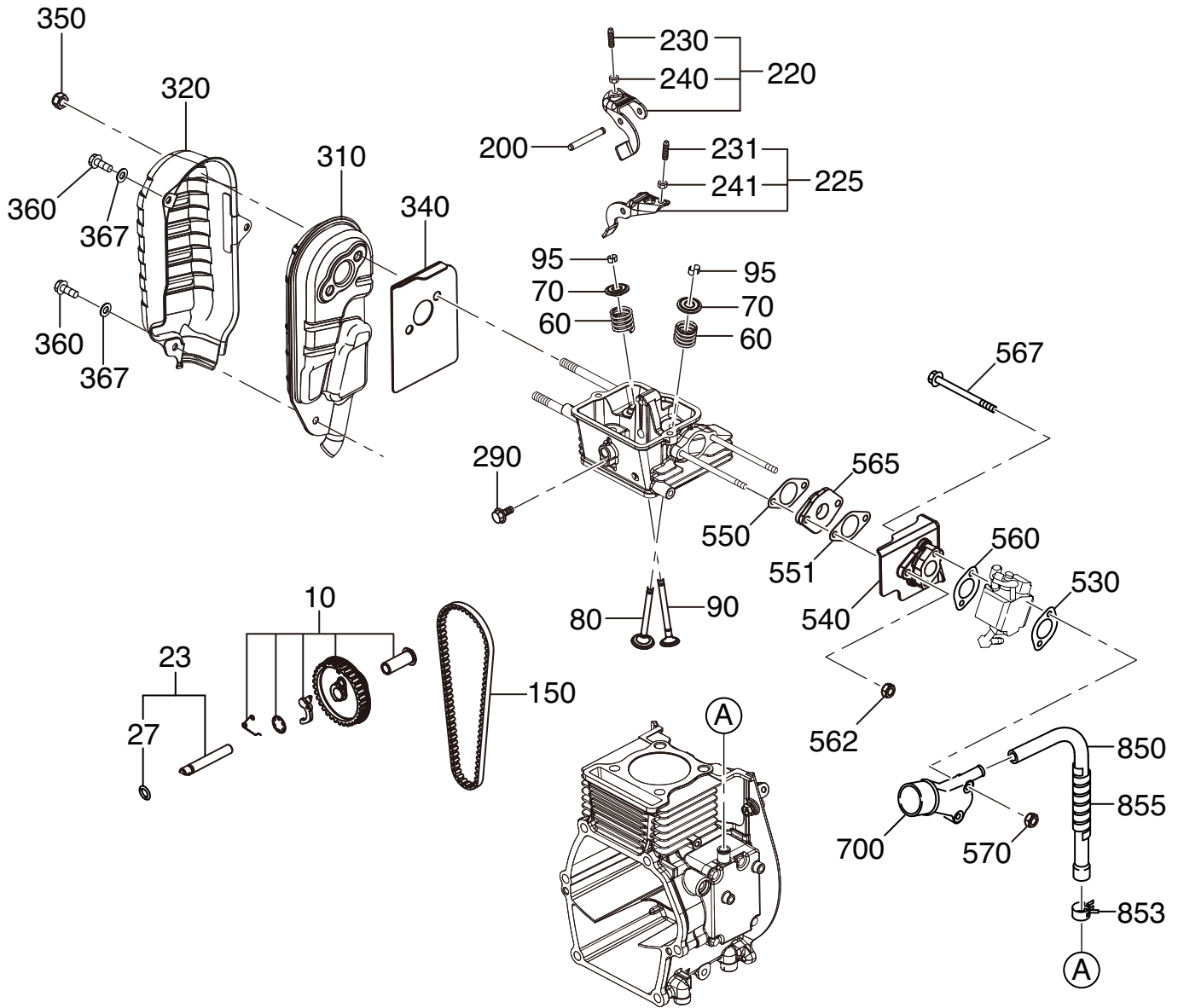
ROBIN ER120D45000 ENGINE — CRANKSHAFT, PISTON ASSY.



ROBIN ER120D45000 ENGINE — CRANKSHAFT, PISTON ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E20201K1	CRANKSHAFT CP	1	
40	X230220100	SPACER	1	
41	X230220110	SPACER	1	
42	X230220120	SPACER	1	
50	0180140020	FLANGE NUT	1	
70	0053203101	WOODRUFF KEY	1	
310	21E22501J0	CONNECTING ROD ASSY	1.....	INCLUDES ITEMS W/ #
320#	20F2300103	CONNECTING ROD BOLT	2	
350	21E23301H3	PISTON PIN	1	
360	21E23401H3	PISTON STD	1	
360	21E23403H3	PISTON O.S. 0.25	1	
360	21E23404H3	PISTON O.S. 0.50	1	
370	21E23501H7	PISTON RING SET, STD	1	
370	21E23502H7	PISTON RING SET, 0.25 O.S	1	
370	21E23503H7	PISTON RING SET, 0.50 O.S.	1	
380	21E2500103	CLIP	2	

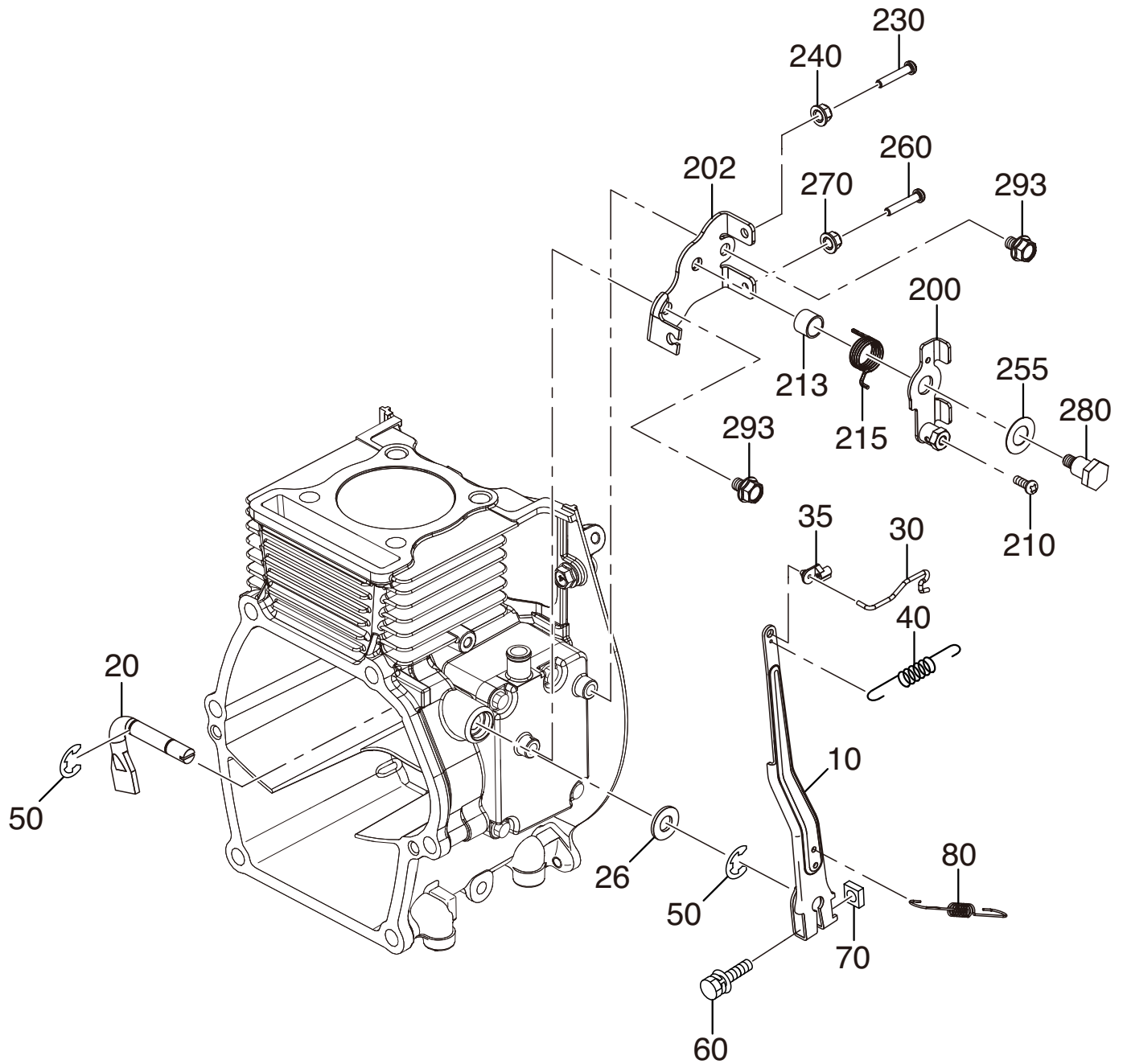
ROBIN ER120D45000 ENGINE — INTAKE, EXHAUST ASSY.



ROBIN ER120D45000 ENGINE — INTAKE, EXHAUST ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E31601L1	CAM PULLEYCP	1	
23	21E35101H1	PIN (CAM PULLEY) CP	1	INCLUDES ITEMS W/ #
27#	0240060010	O-RING	1	
60	2793360103	VALVE SPRING	2	
70	2693370103	SPRING RETAINER	2	
80	27633401H3	INTAKE VALVE	1	
90	27633501H3	EXHAUST VALVE	1	
95	20F10KA031	COLLET VALVE	4	
150	21E3560103	TIMING BELT	1	
200	2773500403	PIN (ROCKER)	1	
220	21E36101H0	ROCKER ARM INTAKE ASSY	1	INCLUDES ITEMS W/ \$
225	21E36102H0	ROCKER ARM EXHAUST ASSY	1	INCLUDES ITEMS W/ @
230\$	20A0140100	ADJUST SCREW	1	
231@	20A0140100	ADJUST SCREW	1	
240\$	20A0180100	NUT	1	
241@	20A0180100	NUT	1	
290	20F0060010	FLANGE BOLT	1	
310	21E30101K2	MUFFLER UN	1	
320	21E34201L2	MUFFLER COVER UN	1	
360	X130060330	BOLT AND WASHER ASSY	2	
367	0200060120	WASHER	2	
340	21E35201H3	GASKET (MUFFLER)	1	
350	0176080020	SELF LOCK NUT	2	
530	1066500203	GASKET (CARB.)	1	
540	21E32902J3	INSULATOR 2	1	
550	2823590103	GASKET (INSULATOR)	1	
551	21E35001H3	GASKET (INSULATOR)	1	
560	21E35002H3	GASKET (CARB)	1	
562	20F6060020	SELF LOCK NUT	2	
565	21E32901H3	INSULATOR 1	1	
567	0100050110	BOLT	2	
570	0176050010	SELF LOCK NUT	2	
700	21E33001H3	INTAKE PIPE (D)	1	
850	21E16103H3	RUBBER PIPE	1	
853	0561130010	HOSE CLAMP	1	
855	21E19001H3	SPIRAL TUBE	1	

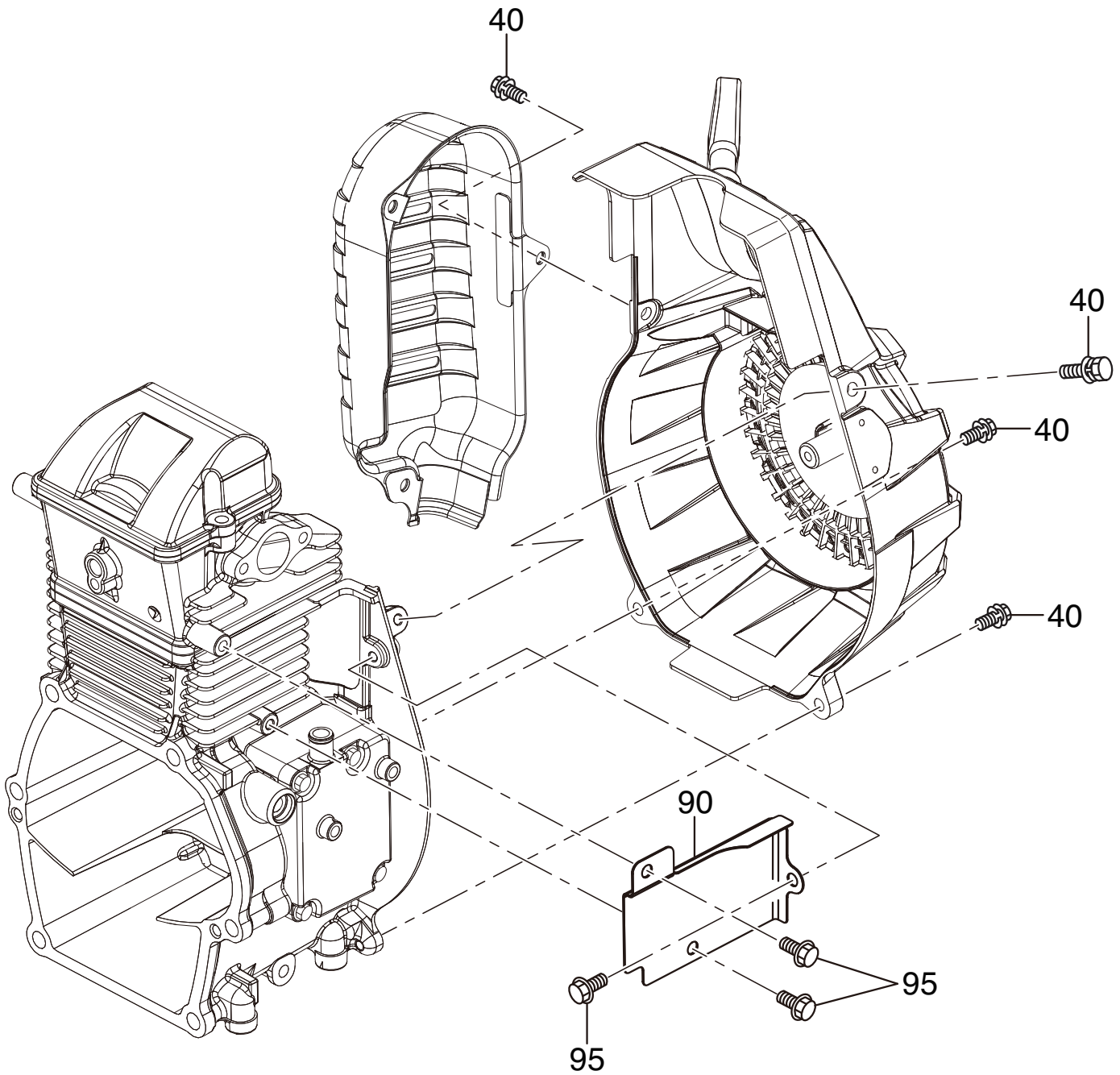
ROBIN ER120D45000 ENGINE — GOVERNOR, OPERATION ASSY.



ROBIN ER120D45000 ENGINE — GOVERNOR, OPERATION ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E42301H3	GOVERNOR LEVER	1	
20	21E42201J3	GOVERNOR SHAFT	1	
26	20F1108000	WASHER	1	
30	21E42701J1	GOVERNOR ROD CP	1	
35	2844560103	LINKAGE BUSHING	1	
40	21E4280103	ROD SPRING	1	
50	0031306000	CLIP	2	
60	20F1406300	BOLT AND WASHER ASSY	1	
70	0186060020	NUT	1	
80	21E4250113	GOVERNOR SPRING	1	
200	21E43301J0	SPEED CONT. LEVER ASSY	1	
202	21E46002J1	BASE PLATE CP	1	
210	0043104140	SCREW, PANHEAD	1	
213	0230100040	SPACER	1	
215	2264500313	RETURN SPRING	1	
230	X140050110	SCREW	1	
240	0021705000	NUT	1	
255	0217100020	FRICTION WASHER	1	
260	X140050110	SCREW	1	
270	0021705000	NUT	1	
280	2264310301	LINK PIVOT CP	1	
293	20F0060010	FLANGE BOLT	2	

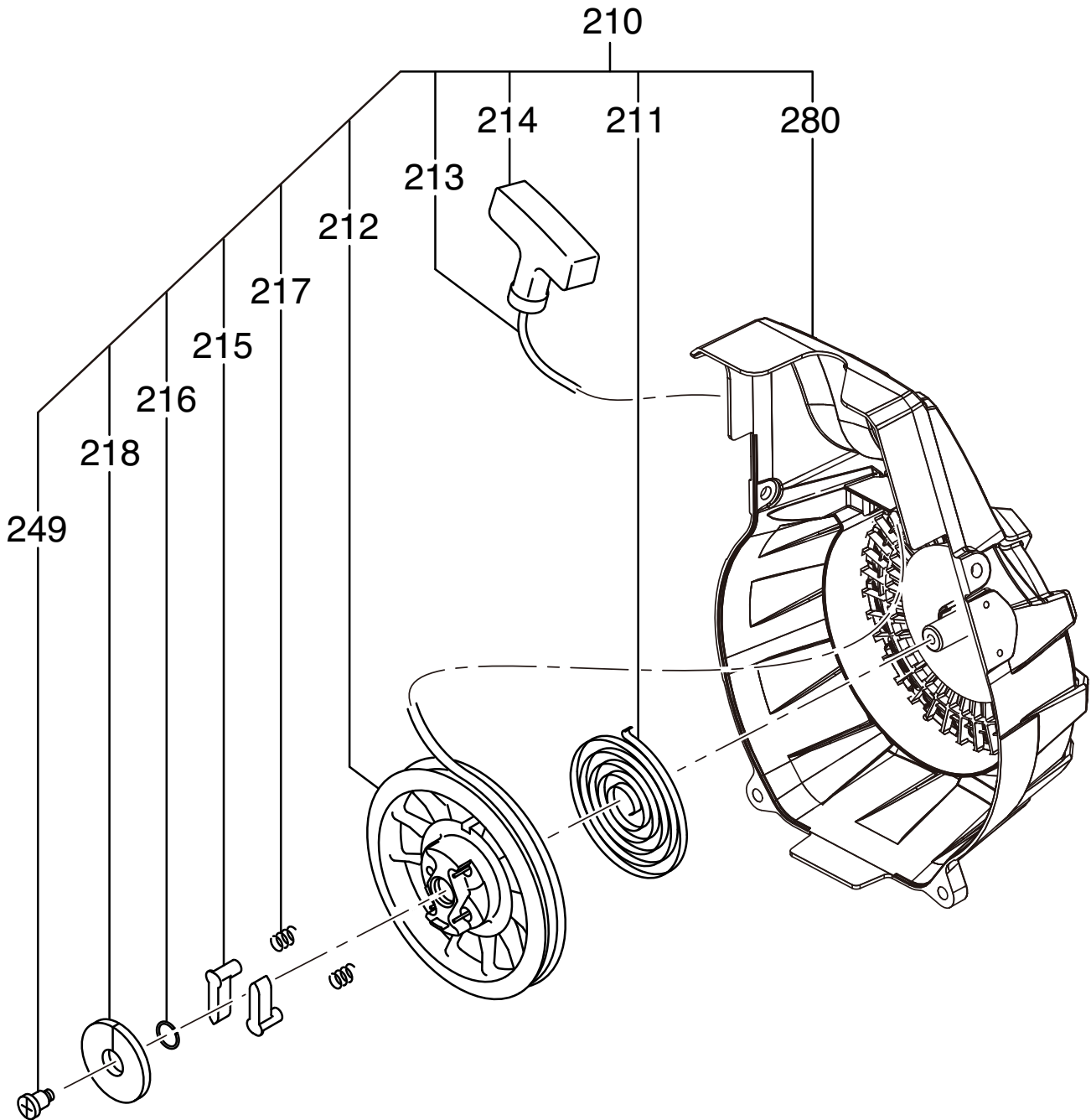
ROBIN ER120D45000 ENGINE — COOLING ASSY.



ROBIN ER120D45000 ENGINE — COOLING ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
40	X130060340	BOLT AND WASHER ASSY	4	
90	21E52601H3	CYLINDER BAFFLE	1	
95	20F0060010	FLANGE BOLT	3	

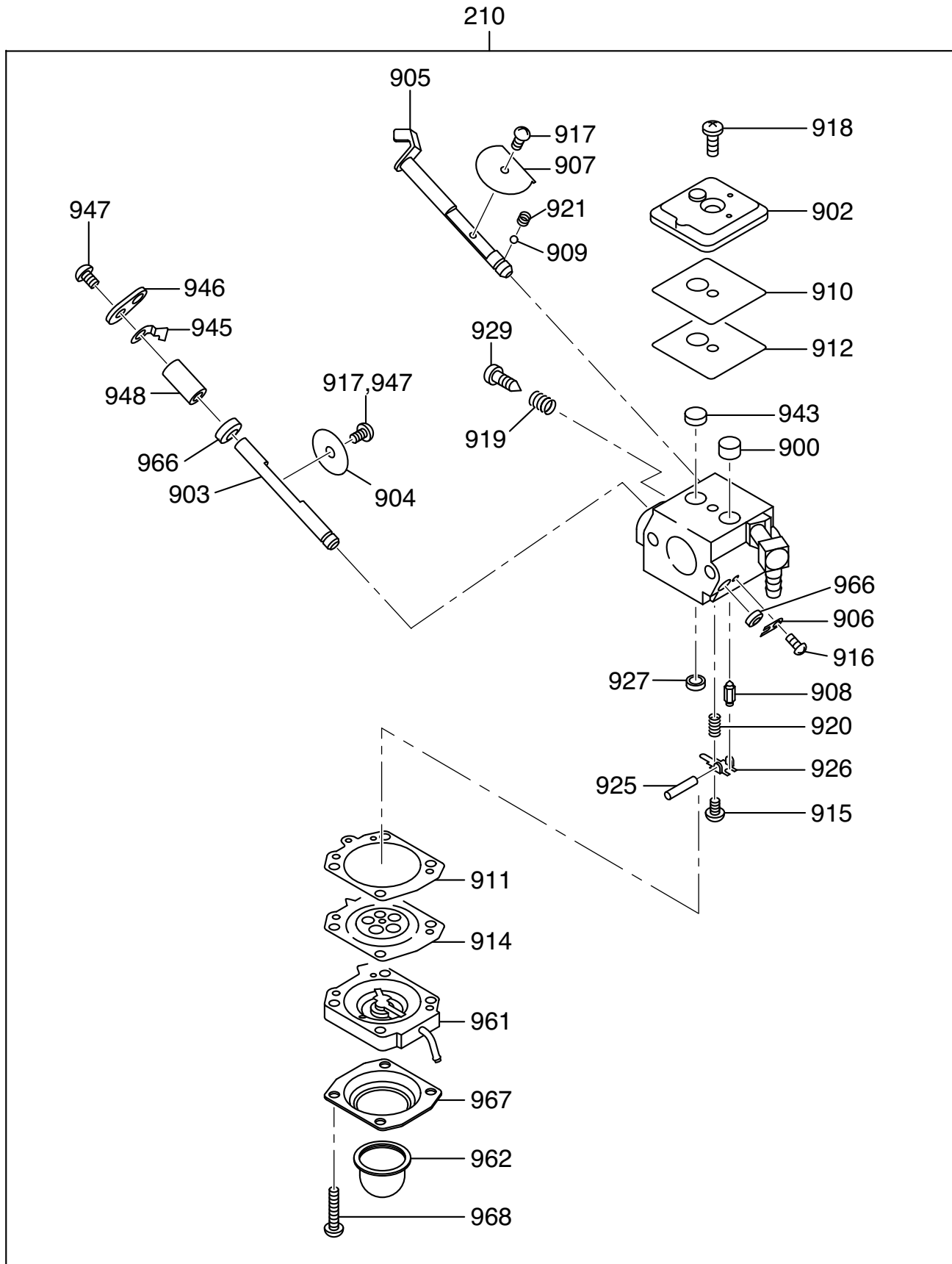
ROBIN ER120D45000 ENGINE — STARTING ASSY.



ROBIN ER120D45000 ENGINE — STARTING ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
210	21E50201L0	RECOIL STARTER ASSY	1.....	INCLUDES ITEMS W/ #
211#	20F5011508	SPIRAL SPRING	1	
212#	21ES022008	REEL	1	
213#	21E5011008	STARTER ROPE	1	
214#	20F5010018	STARTER KNOB	1	
215#	20F5022508	RATCHET	2	
216#	2745013108	FRICTION SPRING	1	
217#	2275013508	RETURN SPRING	2	
218#	21E5026008	RATCHET GUIDE	1	
249#	20B5010108	SET SCREW	1	
280#	21E5015018	STARTER CASE CP	1	

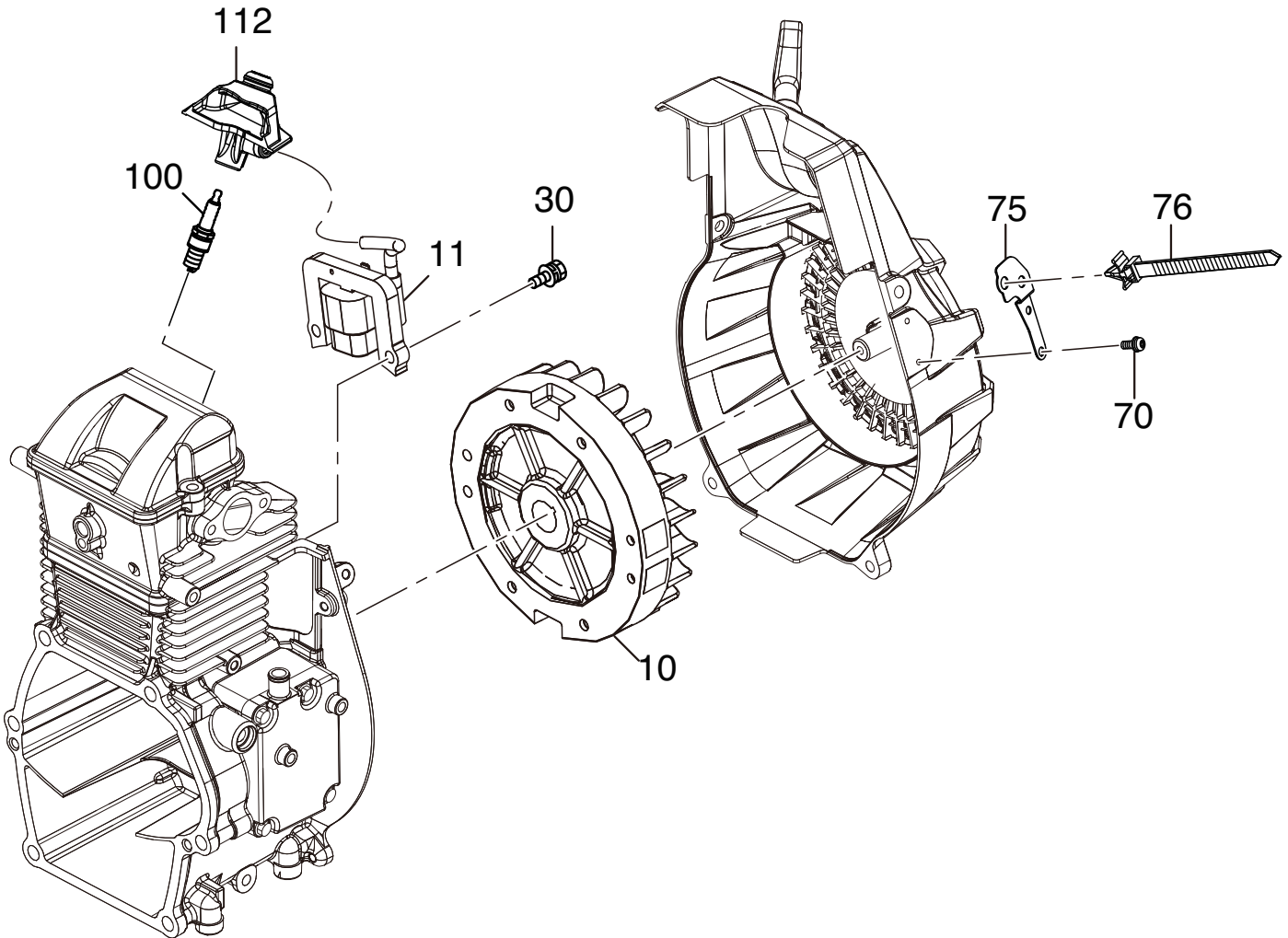
ROBIN ER120D45000 ENGINE — FUEL LUBRICANT ASSY.



ROBIN ER120D45000 ENGINE — FUEL LUBRICANT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
210	21E6240100	CARBURETOR ASSY	1.....	INCLUDES ITEMS W/#
900#	5016004010	SCREEN INLET	1	
902#	2526261308	COVER PUMP	1	
903#	2526261208	SHAFT THROTTLE	1	
904#	1616233508	VALVE THROTTLE	1	
905#	2846260308	SHAFT ASSY CHOKE	1	
906#	5106045040	CLIP THROTTLE SHAFT	1	
907#	2846260408	VALVE CHOKE	1	
908#	1616255208	VALVE, INLET NEEDLE	1	
909#	1476258408	BALL	1	
910#	1616238008	GASKET, PUMP	1	
911#	2526261808	GASKET, METERING DIA.	1	
912#	2526261008	DIAPHRAGM PUMP	1	
914#	2526261708	DIAPHRAGM ASSY,METERING	1	
915#	2526261908	SCREW	1	
916#	1066257608	SCREW ASSY	1	
917#	1476257308	SCREW VALVE	1	
918#	2846260008	SCREW	1	
919#	1616245408	SPRING	1	
920#	1616245108	SPRING, METERING LEVER	1	
921#	1476258308	SPRING CHOKE	1	
925#	1616236808	PIN, METERING LEVER	1	
926#	1616236908	LEVER, METERING	1	
927#	1476257508	PLUG WELCH	1	
929#	1616238508	SCREW, IDLE ADJ.	1	
943#	2526261108	SPRING PUMP	1	
945#	1616255108	STOP THROTTLE	1	
946#	2526260308	LEVER THROTTLE	1	
947#	1616255308	SCREW	2	
948#	2526260208	SPACER THROTTLE LEVER	1	
961#	2526261408	BODY ASSY AIR PURGE	1	
962#	2526261508	PUMP PRIMER	1	
966#	1476258608	SEAL	2	
967#	2526261608	COVER PRIMER PUMP	1	
968#	2526262008	SCREW ASSY	4	

ROBIN ER120D45000 ENGINE — ELECTRIC DEVICE ASSY.



ROBIN ER120D45000 ENGINE — ELECTRIC DEVICE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E79230J1	FLY WHEEL CP	1	
11	21E79430J1	IGNITION COIL CP	1	
30	20F1406250	BOLT AND WASHER ASSY	2	
70	X131040130	SCREW AND WASHER ASSY	2	
75	21E76501H3	PLATE	1	
76	0563000100	WIRE BAND	1	
100	0650140860	SPARK PLUG	1	
112	21E75001J3	SPARK PLUG RUBBER CAP	1	

TERMS AND CONDITIONS OF SALE — PARTS

PAYMENT TERMS

Terms of payment for parts are net 30 days.

FREIGHT POLICY

All parts orders will be shipped collect or prepaid with the charges added to the invoice. All shipments are F.O.B. point of origin. Multiquip's responsibility ceases when a signed manifest has been obtained from the carrier, and any claim for shortage or damage must be settled between the consignee and the carrier.

MINIMUM ORDER

The minimum charge for orders from Multiquip is \$15.00 net. Customers will be asked for instructions regarding handling of orders not meeting this requirement.

RETURNED GOODS POLICY

Return shipments will be accepted and credit will be allowed, subject to the following provisions:

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
 - a. The parts numbers and descriptions must match the current parts price list.
 - b. The list must be typed or computer generated.
 - c. The list must state the reason(s) for the return.
 - d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
 - e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.

5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Multiquip part numbers clearly marked.
6. The following items are not returnable:
 - a. Obsolete parts. (If an item is in the price book and shows as being replaced by another item, it is obsolete.)
 - b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
 - c. Any line item with an extended dealer net price of less than \$5.00.
 - d. Special order items.
 - e. Electrical components.
 - f. Paint, chemicals, and lubricants.
 - g. Decals and paper products.
 - h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for five working days from notification, pending instructions. If a reply is not received within five days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted, for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

PRICING AND REBATES

Prices are subject to change without prior notice. Price changes are effective on a specific date and all orders received on or after that date will be billed at the revised price. Rebates for price declines and added charges for price increases will not be made for stock on hand at the time of any price change.

Multiquip reserves the right to quote and sell direct to Government agencies, and to Original Equipment Manufacturer accounts who use our products as integral parts of their own products.

SPECIAL EXPEDITING SERVICE

A \$35.00 surcharge will be added to the invoice for special handling including bus shipments, insured parcel post or in cases where Multiquip must personally deliver the parts to the carrier.

LIMITATIONS OF SELLER'S LIABILITY

Multiquip shall not be liable hereunder for damages in excess of the purchase price of the item with respect to which damages are claimed, and in no event shall Multiquip be liable for loss of profit or good will or for any other special, consequential or incidental damages.

LIMITATION OF WARRANTIES

No warranties, express or implied, are made in connection with the sale of parts or trade accessories nor as to any engine not manufactured by Multiquip. Such warranties made in connection with the sale of new, complete units are made exclusively by a statement of warranty packaged with such units, and Multiquip neither assumes nor authorizes any person to assume for it any other obligation or liability whatever in connection with the sale of its products. Apart from such written statement of warranty, there are no warranties, express, implied or statutory, which extend beyond the description of the products on the face hereof.

Effective: February 22, 2006

OPERATION AND PARTS MANUAL

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL
NUMBER ON-HAND WHEN CALLING

UNITED STATES

Multiquip Corporate Office

18910 Wilmington Ave.
Carson, CA 90746
Contact: mq@multiquip.com

Tel. (800) 421-1244
Fax (310) 537-3927

MQ Parts Department

800-427-1244
310-537-3700

Fax: 800-672-7877
Fax: 310-637-3284

Service Department

800-421-1244
310-537-3700

Fax: 310-537-4259

Warranty Department

800-421-1244
310-537-3700

Fax: 310-943-2249

Technical Assistance

800-478-1244

Fax: 310-943-2238

MEXICO

MQ Cipsa

Carr. Fed. Mexico-Puebla KM 126.5
Momoxpan, Cholula, Puebla 72760 Mexico
Contact: pmastretta@cipsa.com.mx

Tel: (52) 222-225-9900
Fax: (52) 222-285-0420

UNITED KINGDOM

Multiquip (UK) Limited Head Office

Unit 2, Northpoint Industrial Estate,
Globe Lane,
Dukinfield, Cheshire SK16 4UJ
Contact: sales@multiquip.co.uk

Tel: 0161 339 2223
Fax: 0161 339 3226

CANADA

Multiquip

4110 Industriel Boul.
Laval, Quebec, Canada H7L 6V3
Contact: jmartin@multiquip.com

Tel: (450) 625-2244
Tel: (877) 963-4411
Fax: (450) 625-8664

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This manual MUST accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

The information and specifications included in this publication were in effect at the time of approval for printing. Illustrations, descriptions, references and technical data contained in this manual are for guidance only and may not be considered as binding. Multiquip Inc. reserves the right to discontinue or change specifications, design or the information published in this publication at any time without notice and without incurring any obligations.

Your Local Dealer is:



OPERATION AND PARTS MANUAL



Mikasa **SERIES**
MODEL MTX70HD
TAMPING RAMMER
(HONDA GX100UKRBF GASOLINE ENGINE)

Revision #0 (07/20/12)

To find the latest revision of this
publication, visit our website at:
www.multiquip.com



THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.



CALIFORNIA — Proposition 65 Warning

Gasoline engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

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Honda GX100UKRBF Engine

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NOTICE

Specifications and part numbers are subject to change without notice.

PARTS ORDERING PROCEDURES

Ordering parts has never been easier! Choose from three easy options:

Effective:
January 1st, 2006

www.multiquip.com



Order via Internet (Dealers Only):

Order parts on-line using Multiquip's SmartEquip website!

- View Parts Diagrams
- Order Parts
- Print Specification Information



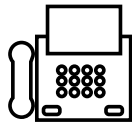
If you have an MQ Account, to obtain a Username and Password, E-mail us at: parts@multiquip.com.

To obtain an MQ Account, contact your District Sales Manager for more information.

Goto www.multiquip.com and click on **Order Parts** to log in and save!

Use the **internet** and qualify for a **5% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Fax (Dealers Only):

All customers are welcome to order parts via Fax.

Domestic (US) Customers dial:
1-800-6-PARTS-7 (800-672-7877)

Fax your order in and qualify for a **2% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Phone: Domestic (US) Dealers Call:
1-800-427-1244

Non-Dealer Customers:

Contact your local Multiquip Dealer for parts or call 800-427-1244 for help in locating a dealer near you.



International Customers should contact their local Multiquip Representatives for Parts Ordering information.

When ordering parts, please supply:

- | | |
|---|--|
| <input type="checkbox"/> Dealer Account Number | <input type="checkbox"/> Specify Preferred Method of Shipment: |
| <input type="checkbox"/> Dealer Name and Address | <input checked="" type="checkbox"/> UPS/Fed Ex <input checked="" type="checkbox"/> DHL |
| <input type="checkbox"/> Shipping Address (if different than billing address) | <input type="checkbox"/> Priority One <input checked="" type="checkbox"/> Truck |
| <input type="checkbox"/> Return Fax Number | <input type="checkbox"/> Ground |
| <input type="checkbox"/> Applicable Model Number | <input type="checkbox"/> Next Day |
| <input type="checkbox"/> Quantity, Part Number and Description of Each Part | <input type="checkbox"/> Second/Third Day |

NOTICE

All orders are treated as *Standard Orders* and will ship the same day if received prior to 3PM PST.

WE ACCEPT ALL MAJOR CREDIT CARDS!



SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.



SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.

SAFETY SYMBOLS

! DANGER

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

! WARNING

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.







! CAUTION

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

NOTICE

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Respiratory hazards
	Accidental starting hazards
	Eye and hearing hazards


SAFETY INFORMATION

GENERAL SAFETY

CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication. 
- **NEVER** operate this equipment under the influence of drugs or alcohol.



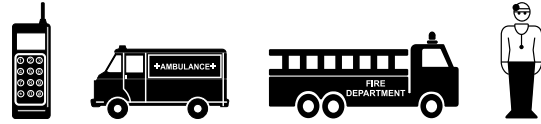
- **ALWAYS** check the equipment for loosened threads or bolts before starting.
- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest fire extinguisher.
- **ALWAYS** know the location of the nearest first aid kit.



- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor** and **fire department**. This information will be invaluable in the case of an emergency.



RAMMER SAFETY

DANGER

- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.



WARNING

- **NEVER** disconnect any **emergency or safety devices**. These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.
- **DO NOT** use this machine on ground that is harder than the machine can handle, or for driving pilings or tamping rock beds. Furthermore, use of the machine on sloping ground, such as the side of an embankment, may make the machine unstable and can cause an accident. It can also result in premature machine wear due to uneven loads on the machine.

Use the machine with confidence for tamping earth and sand, soil, gravel, and asphalt. **DO NOT** use the machine for other types of jobs.

CAUTION

- **NEVER** lubricate components or attempt service on a running machine.

NOTICE

- **ALWAYS** keep the machine in proper running condition.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.

SAFETY INFORMATION

ENGINE SAFETY

DANGER

- The engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.
- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



WARNING

- **DO NOT** place hands or fingers inside engine compartment when engine is running.
- **NEVER** operate the engine with heat shields or guards removed.
- **DO NOT** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the oil tank and severely scald any persons in the general area of the rammer.



CAUTION

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing equipment.



NOTICE

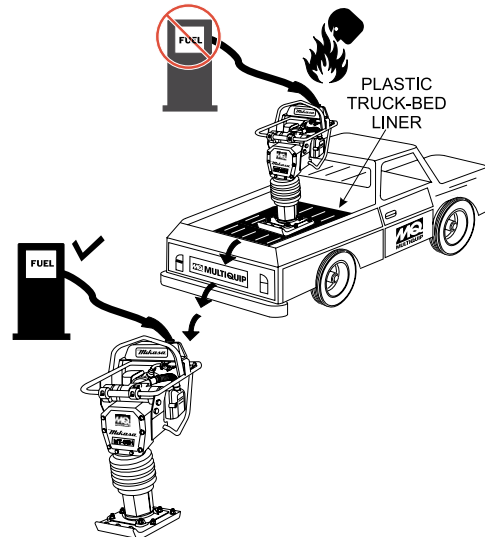
- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.



FUEL SAFETY

DANGER

- **DO NOT** add fuel to equipment if it is placed inside truck bed with plastic liner. Possibility exists of explosion or fire due to static electricity.



- **DO NOT** start the engine near spilled fuel or combustible fluids. Fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with **flammable** liquids.
- **DO NOT** fill the fuel tank while the engine is running or hot.
- **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system.
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.



TRANSPORTING SAFETY

CAUTION


- NEVER allow any person or animal to stand underneath the equipment while lifting.

NOTICE

- Before lifting, make sure that the equipment parts (hook and vibration insulator) are not damaged and screws are not loose or missing.
- Always make sure crane or lifting device has been properly secured to the lifting bail (hook) of the equipment.
- **ALWAYS** shutdown engine before transporting.
- **NEVER** lift the equipment while the engine is running.
- Tighten fuel tank cap securely and close fuel cock to prevent fuel from spilling.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- Use one point suspension hook and lift straight upwards.
- **DO NOT** lift machine to unnecessary heights.
- **ALWAYS** tie down equipment during transport by securing the equipment with rope.
- Never allow any person or animal to stand underneath the equipment while lifting.

ENVIRONMENTAL SAFETY

NOTICE

- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used motor oil, fuel and fuel filters. 
- **DO NOT** use food or plastic containers to dispose of hazardous waste.
- **DO NOT** pour waste, oil or fuel directly onto the ground, down a drain or into any water source.

SPECIFICATIONS

Table 1. Rammer Specifications	
Overall Height	39.37 in. (1000 mm)
Overall Width	13.78 in. (350 mm)
Over Length	31.02 in. (788 mm)
Shoe Size (W x L)	13.4 x 11.2 in. (340 x 285 mm)
Fuel Tank Capacity	2.7 qt. (2.5 liters)
Lubrication Oil Capacity	0.8 qt. (0.75 liter)
No. of Impacts Per Second	10.7 - 11.5
Impact Force	2,855 lbf (12.7 kN)
Impact Plate Stroke	2 - 3.15 in. (50 - 80 mm)
Operating Weight	165.34 lbs. (74 kg)
Measured Sound Power Level	104 dB
Guaranteed Sound Power Level	107 dB
Max. Sound Pressure Level	94 dB

Table 2. Engine Specifications	
Model	Honda GX100UKRBF Engine
Type	Air-Cooled 4 Stroke, Overhead camshaft, single cylinder gasoline engine
Piston Displacement	6.0 cu.in. (98 cc)
Max. Output	3.0 hp/3,600 rpm (2.2 KW)
Max. Governed Speed, No Load	3,800 - 4,100 rpm
Cooling System	Air-Cooled
Engine Oil Capacity	0.3 qt. (0.28 liters)
Fuel	Unleaded gasoline
Lubricant for Engine	Automobile Oil; Class SE or higher
Starting System	Recoil Starter
Spark Plug Type	NGK CR5HSB

GENERAL INFORMATION

The Multiquip MTX70HD tamping rammer is a powerful compacting tool capable of applying a tremendous force in consecutive impacts to a soil surface. Its applications include soil compacting for road, embankments and reservoirs as well as backfilling for gas pipelines, water pipelines and cable installation work.

The impact force of the MTX70HD levels and uniformly compacts voids between soil particles to increase dry density.

Circular motion is converted to create impact force. The MTX70HD tamping rammer develops a powerful compacting force at the foot of the rammer. To maintain optimum performance, proper operation and service are essential.

The MTX70HD is equipped with an air cooled, four-cycle gasoline engine. Transmission of the power takes place by increasing the engine speed to engage the centrifugal clutch.

The MTX70HD uses an oil bath lubrication system. Always check the oil level through the oil level sight glass at the rear of the tamper foot.

Before starting the MTX70HD Tamping Rammer identify and understand the function of the controls.

CAUTION



Before starting operation check the lifting handle to:

1. Make sure that there is no damage on the bolts.
2. Make sure that there is no crack or breakage on handle.
3. Make sure that there is no fissure on the surface. If there is any abnormality or damage, replace with new one.

For operation:

This handle is to be used to lift up the shoe part of the machine with the body laid down on the ground or truck bed.

1. Use proper lifting techniques to avoid back injury. This handle is for manual lifting only.
2. Do not use this handle as a rammer lift point. Use the lifting point on the top of the machine.
3. Do not move the rammer with the lifting handle and the front rollers more than 16 feet (5 meters).

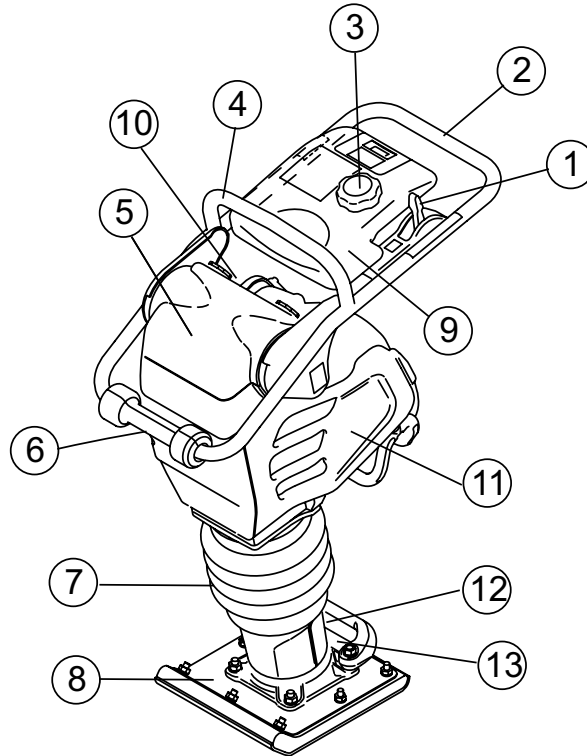


Figure 1. MTX70HD Rammer

Figure 1 shows the location of the controls and components for the MTX70HD Tamping Rammer. The functions of each control is described below:

1. **Combination (Throttle) Lever** — Used to adjust engine speed (rpm). Move lever forward (**SLOW**) to reduce engine speed, move lever back toward operator (**FAST**) to increase speed. Always operate the rammer at full speed (rpm).
2. **Handle** — To operate rammer, **GRIP** handle assembly firmly on both sides.
3. **Fuel Tank Cap** — Remove this cap to add unleaded gasoline to the fuel tank. Make sure cap is tightened securely. **DO NOT** over fill.
4. **Hook** — Used to lift rammer for transporting.
5. **Air Cleaner Cover** — Protects the air cleaner which prevents dirt and other debris from entering the engine.
6. **Roller** — Allows rammer to be moved around easily by rolling the unit.
7. **Bellows** — Reservoir for oil bath.
8. **Foot** — Laminated wood with tempered steel plate for superior shock absorption.
9. **Fuel Tank** — Holds the fuel for the unit (up to 3.2 quarts).
10. **Muffler** — Reduces the noise of the engine when running.
11. **Engine** — This unit uses a Honda GX100UKRBF gasoline engine.
12. **Oil Gauge (Sight Glass)** — Indicates the level of oil in the oil bath reservoir.
13. **Drain Valve** — Open this valve to remove oil from the bellows.

WARNING



Adding fuel to the tank should be accomplished only when the engine is stopped and has had an opportunity to cool down. In the event of a fuel spill, **DO NOT** attempt to start the engine until the fuel residue has been completely wiped up, and the area surrounding the engine is dry.

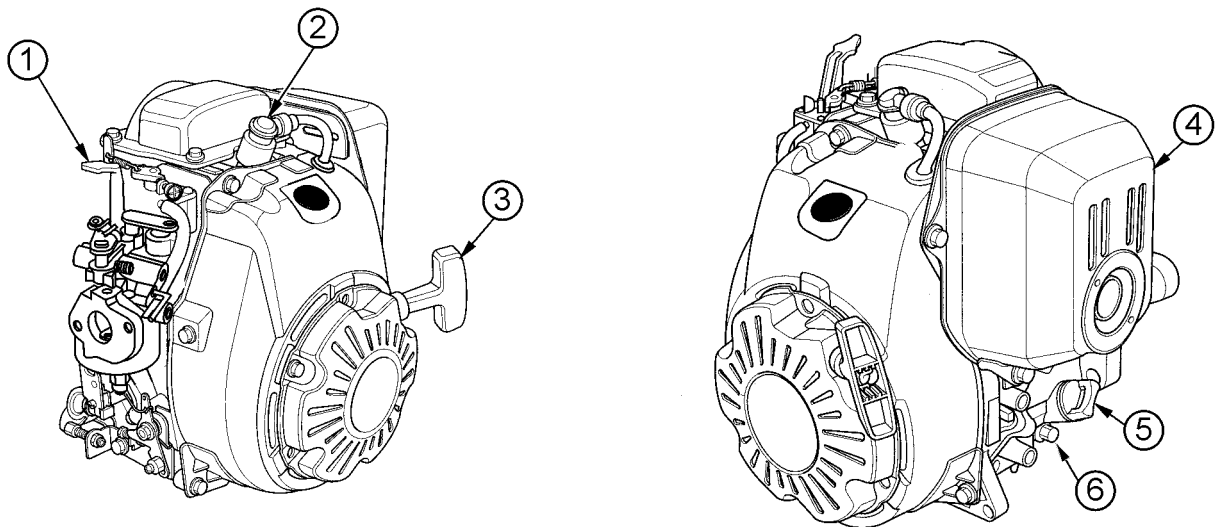


Figure 2. Honda GX100 Engine

The engine (Figure 2) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the engine manufacturer's manual for detailed operation and service information.

1. **Choke Lever** — Normally used in starting the engine in cold weather conditions. In cold weather, turn the choke lever to the fully closed position. In warm weather, set the choke lever halfway or completely open.
2. **Spark Plug** — Provides spark to the ignition system. Set spark plug gap to 0.024 - 0.028 inch (0.6 - 0.7 mm). Clean spark plug once a week.
3. **Recoil Starter (pull rope)** — Manual-starting method. Pull the starter grip until resistance is felt, then pull briskly and smoothly.

NOTICE

Operating the engine without an air filter, with a damaged air filter, or a filter in need of replacement will allow dirt to enter the engine, causing rapid engine wear.

4. **Muffler** — Used to reduce noise and emissions.
5. **Dipstick/Oil Filler Cap** — Remove this cap to determine if the engine oil is low. Add oil through this filler port as recommended in Table 3.
6. **Oil Drain Plug** — Remove this plug to remove oil from the engine's crankcase.

WARNING



Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operating. **NEVER** operate the engine with the muffler removed.

It is extremely important that this section be read carefully before attempting to operate the rammer. **DO NOT** use your rammer until this section is thoroughly understood.

CRANKCASE AND SPRING CYLINDER OIL BATH

This unit uses an oil bath lubrication system. Perform the following:

1. Check the oil level through the oil level sight glass (Figure 3) at the rear of the tamper foot.

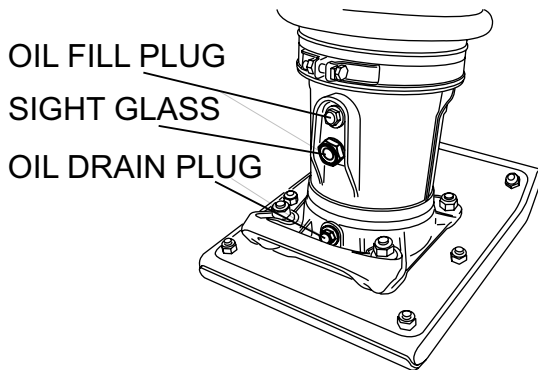


Figure 3. Foot Housing Sight Glass

NOTICE

The oil level should be kept at the half way point of the sight glass.

2. If oil is not visible, add 10W-30 SE, SF or higher grade motor oil into the oil fill plug opening (Figure 3). The bath contains approximately 1.7 pints (800 cc.)

ENGINE

1. Fill the fuel tank (Figure 4) with unleaded gasoline. At the same time, check the engine oil and make it a habit to replenish it often (Figure 5).

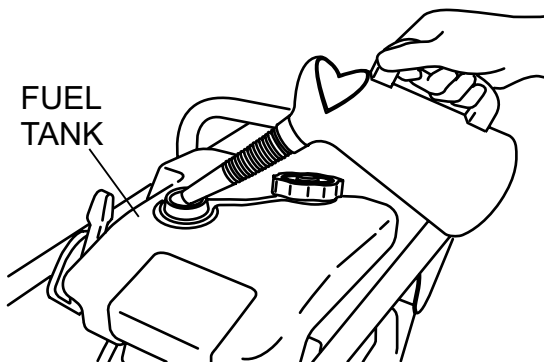


Figure 4. Fuel Tank

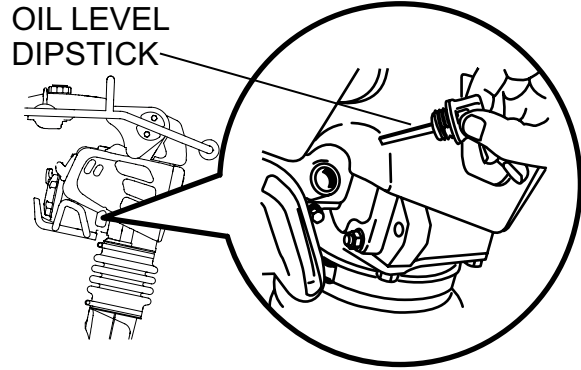


Figure 5. Engine Oil Dipstick

2. Low levels of oil may result in engine seizure due to high levels of consumption during operation.
3. Check the engine oil level and if the engine oil level is low, it should be refilled. Use the proper motor oil as suggested in the Table 3 below.

Table 3. Motor Oil Grade

Season or Temperature	Grade of motor oil (higher than MS class)
Spring, Summer or Autumn +120° F to +15° F	SAE 30
Winter +40° F to +15° F	SAE 30
Below +15° F	SAE 10W-30

GENERAL INSPECTION

1. Check all nuts, bolts fasteners for tightness. Retighten as necessary.
2. Clean any dirt from the recoil starter and foot pedestal. Wipe the entire unit clean before operating.
3. Replace any missing or damaged Safety Operation decals.
4. Adjust height of handle. Adjust handle by loosening nuts and moving handle to suit operation. Retighten nuts.

CAUTION

Failure to understand the operation of the Tamping Rammer could result in severe damage to the unit or personal injury.

INITIAL STARTUP

When starting the MTX70HD Tamping Rammer perform the following:

1. Slide the throttle lever from the stop to the idle position (👉) (Figure 6). This opens the fuel cock and the engine electrical circuit is turned on automatically.

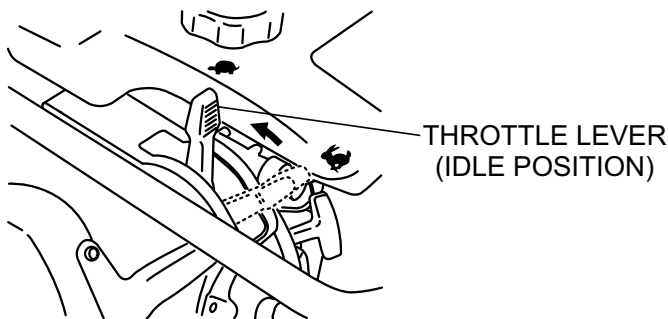


Figure 6. Throttle Lever (Idle Position)

2. Carburetor Purge System: Push the purge bulb four times or until you see fuel in the bulb (Figure 7).

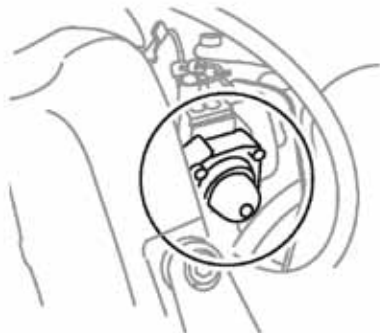


Figure 7. Purge Bulb

NOTICE

Pumping the purge bulb removes air from the fuel system. It does not pump fuel into the carburetor.

3. Place the choke lever to the closed position. When the weather is cold, close the choke all the way. When it is hot, or if the engine is hot, open the choke a little or leave it fully open.

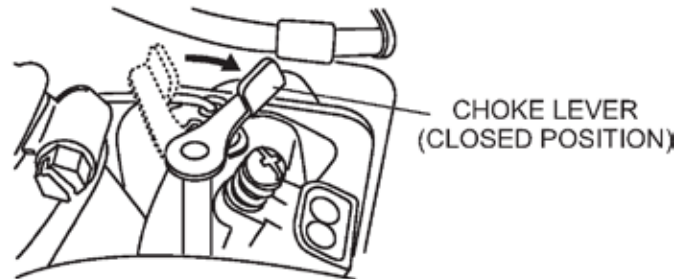


Figure 8. Choke Lever

4. Grip the starter rope handle (Figure 9) and pull it until you feel a slight resistance. Then pull sharply and quickly. Return the handle to the starter case before releasing.

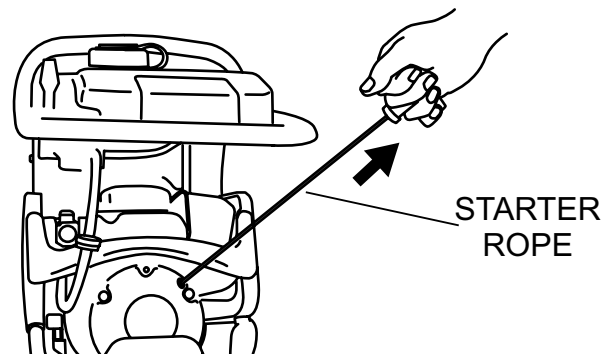


Figure 9. Recoil Starter

5. If engine fails to start, move the choke lever (Figure 8) to the half open position to avoid flooding.
6. Repeat steps 1 thru 5.
7. If the engine does not start after repeated attempts, check the spark plug for excess fuel. Clean and replace the spark plug as needed.

OPERATION

1. To start the rammer tamping action, move the throttle lever (Figure 10) **quickly** from **IDLE** to the **START** (👉) position. **DO NOT** move the throttle lever slowly as this may cause damage to the clutch or spring.

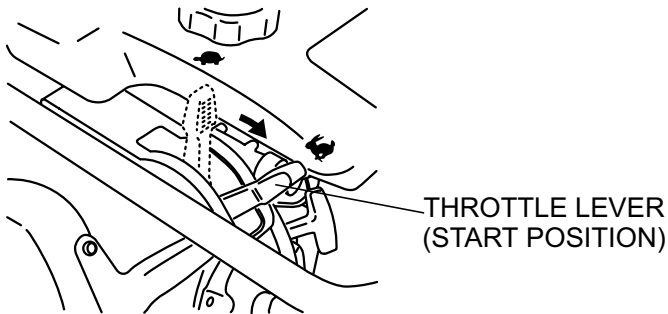


Figure 10. Throttle Lever (Start Position)

⚠ CAUTION

Make sure that the throttle lever is moved to the **FULL START** position. Operating the rammer at less than full speed can result in damage to the clutch springs or foot.

2. The MTX70HD tamping rammer is designed to run at 3,800 to 4,100 rpm. At optimum rpm the foot hits at the rate between 590 - 695 impacts per minute. Increasing throttle speed past factory set rpm does not increase impacts and may damage unit. The MTX70HD is designed to advance while tamping. For faster advance, pull back slightly on the handle so that rear of foot contacts soil first.
3. To stop the tamping action, move throttle lever quickly from **START** to **IDLE** position (Figure 6).

STOPPING THE ENGINE

1. Move throttle lever quickly from the **START** to **IDLE** position (Figure 6) and run the engine for three minutes at low speed. After the engine **cools**, move the throttle lever to the **STOP** position (Figure 11). The engine will stop and the fuel cock is automatically closed.

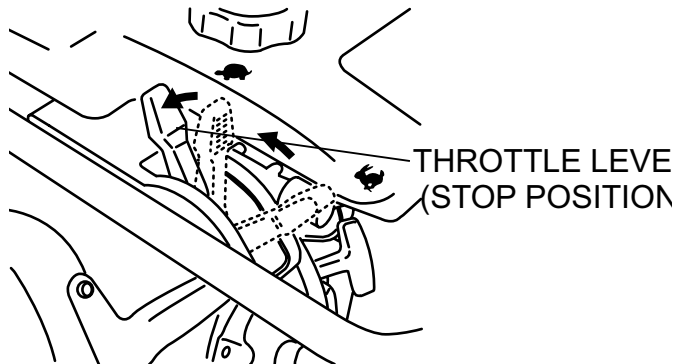


Figure 11. Throttle Lever (Stop Position)

2. If the engine does not stop due to a problem with the switch or the like, move the machine to a safe location and hold the throttle lever in the stop position. Let the machine run on idle and the machine will stop after a few minutes.

MAINTENANCE

DAILY

- Thoroughly remove dirt and oil from the engine and control area.
- Clean or replace the air cleaner elements as necessary. Check and retighten all fasteners as necessary.
- Check the spring box and bellows for oil leaks. Repair or replace as needed.

EVERY 50 HOURS

- Inspect in-line fuel filter (Part Number 16910Z4ES21, Figure 12) and replace if necessary.

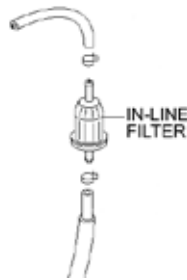


Figure 12. In-Line Fuel Filter

- Remove and clean the spark plug, then adjust the spark gap to 0.024~0.028 inch (0.6~0.7 mm).

EVERY 80 TO 100 HOURS

- Remove the air cleaner cover. Loosen and remove the 2 screws that hold the cover to the air cleaner assembly. If the primary element (Figure 13) is dirty, wash it with gasoline or kerosene. Then dip it in engine oil (SAE10W-30) and wring the element so that 25 to 30 cc of engine oil remains on the element.

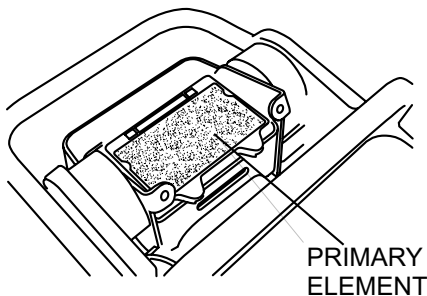


Figure 13. Air Cleaner Primary Element

EVERY 200 HOURS

- Remove the oil drain plug on foot housing (Figure 14) and drain the oil. Refill with approximately 1.7 pint (800 cc) of

10W-30 SE, SF or higher grade motor oil. Oil should be midway in sight glass. Break-in oil should be changed after first 50 hours.

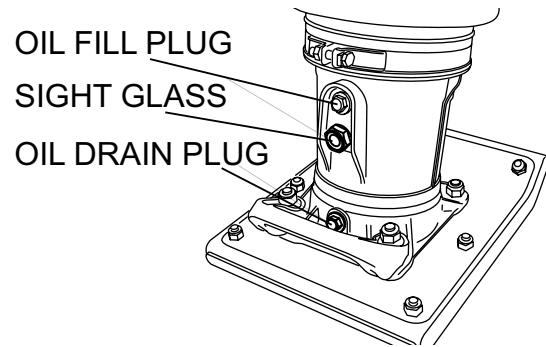


Figure 14. Oil Drain Plug

EVERY 6 MONTHS

- Clean the inside of the fuel tank with solvent.
- Inspect and clean fuel strainer (Figure 15). Replace strainer if necessary.

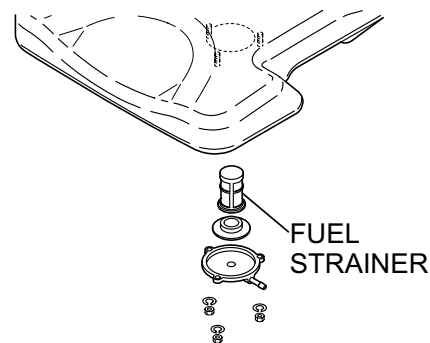


Figure 15. Fuel Strainer

EVERY 2 YEARS

- Replace the fuel line every 2 years even if there is no visible damage.

LONG TERM STORAGE

- Slide the throttle lever to the **STOP** position.
- Drain any fuel including in the fuel hose.
- Replace lubrication oil and apply grease to lubrication points.
- Cover the air intake on the air cleaner and the exhaust outlet on the muffler.
- Store unit indoors covered with plastic sheet in moisture free and dust free location out of direct sunlight.

TROUBLESHOOTING

Troubleshooting (Engine)		
Symptom	Possible Problem	Solution
Difficult to start, fuel is available, but no spark at spark plug.	Combo lever in incorrect position?	Make sure combo lever is in start position.
	Spark plug bridging?	Check gap, insulation or replace spark plug.
	Carbon deposit on spark plug?	Clean or replace spark plug.
	Short circuit due to deficient spark plug insulation?	Check spark plug insulation, replace if worn.
	Improper spark plug gap?	Set to proper gap.
	Fuel reaching carburetor?	Check fuel line.
	Water in fuel tank?	Flush or replace fuel tank.
	Fuel filter clogged?	Replace fuel filter.
	Stuck carburetor?	Check float mechanism.
	Spark plug is red?	Check transistor ignition unit.
	Spark plug is bluish white?	If insufficient compression, repair or replace engine. If injected air leaking, correct leak. If carburetor jets clogged, clean carburetor.
	No spark present at tip of spark plug?	Check transistor ignition unit is broken, and replace defective unit. Check if voltage cord cracked or broken and replace. Check if spark plug if fouled and replace.
No oil?	Add oil as required.	
Difficult to start, fuel is available, and spark is present at the spark plug.	ON/OFF switch is shorted?	Check switch wiring, replace switch.
	Ignition coil defective?	Replace ignition coil.
	Improper spark gap, points dirty?	Set correct spark gap and clean points.
	Condenser insulation worn or short circuiting?	Replace condenser.
	Spark plug wire broken or short circuiting?	Replace defective spark plug wiring.
Difficult to start, fuel is available, spark is present and compression is normal.	Wrong fuel type?	Flush fuel system, replace with correct type of fuel.
	Water or dust in fuel system?	Flush fuel system.
	Air cleaner dirty?	Clean or replace air cleaner.
	Choke open?	Close choke.
Difficult to start, fuel is available, spark is present and compression is low.	Suction/exhaust valve stuck or protruded?	Reseat valves.
	Piston ring and/or cylinder worn?	Replace piston rings and/or piston.
	Cylinder head and/or spark plug not tightened properly?	Torque cylinder head bolts and spark plug.
	Head gasket and/or spark plug gasket damaged?	Replace head and spark plug gaskets.
No fuel present at carburetor.	No fuel in fuel tank?	Fill with correct type of fuel.
	Fuel cock does not open properly?	Apply lubricant to loosen fuel cock lever, replace if necessary.
	Fuel filter/lines clogged?	Replace fuel filter.
	Fuel tank cap breather hole clogged?	Clean or replace fuel tank cap.
	Air in fuel line?	Bleed fuel line.

TROUBLESHOOTING

Troubleshooting (Engine) - continued		
Symptom	Possible Problem	Solution
Weak in power, compression is proper and does not misfire.	Air cleaner dirty?	Clean or replace air cleaner.
	Improper level in carburetor?	Check float adjustment, rebuild carburetor.
	Defective spark plug?	Clean or replace spark plug.
	Improper spark plug?	Set to proper gap.
Weak in power, compression is proper but misfires.	Water in fuel system?	Flush fuel system and replace with correct type of fuel.
	Dirty spark plug?	Clean or replace spark plug.
	Ignition coil defective?	Replace ignition coil.
Engine overheats.	Spark plug heat value incorrect?	Replace with correct type of spark plug.
	Wrong type of fuel?	Replace with correct type of fuel.
	Cooling fins dirty?	Clean cooling fins.
	Intake air restricted?	Clear intake of dirt and debris. Replace air cleaner elements as necessary.
	Oil level too low or too high?	Adjust oil to proper level.
Rotational speed fluctuates.	Governor adjusted incorrectly?	Adjust governor.
	Governor spring defective?	Replace governor spring.
	Fuel flow restricted?	Check entire fuel system for leaks or clogs.
Recoil starter malfunctions. (if applicable)	Recoil mechanism clogged with dust and dirt?	Clean recoil assembly with soap and water.
	Spiral spring loose?	Replace spiral spring.
Starter malfunctions.	Loose, damaged wiring?	Ensure tight, clean connections on battery and starter.
	Battery insufficiently charged?	Recharge or replace battery.
	Starter damaged or internally shorted?	Replace starter.
Burns too much fuel.	Over-accumulation of exhaust products?	Check and clean valves. Check muffler and replace if necessary.
	Wrong spark plug?	Replace spark plug with manufacturer's suggested type.
Exhaust color is continuously "white".	Lubricating oil is wrong viscosity?	Replace lubricating oil with correct viscosity.
	Worn rings?	Replace rings.
Exhaust color is continuously "black".	Air cleaner clogged?	Clean or replace air cleaner.
	Choke valve set to incorrect position?	Adjust choke valve to correct position.
	Carburetor defective, seal on carburetor broken?	Replace carburetor or seal.
	Poor carburetor adjustment, engine runs too rich?	Adjust carburetor.
Will not start, no power with key "ON". (if applicable)	ON/OFF device not activated ON?	Turn on ON/OFF device.
	Battery disconnected or discharged?	Check cable connections. Charge or replace battery
	Ignition switch/wiring defective?	Replace ignition switch. Check wiring.

TROUBLESHOOTING

Troubleshooting (Rammer)		
Symptom	Possible Problem	Solution
Engine runs but rammer jumps erratically or not at all.	Operating speed of throttle lever is incorrectly set?	Set throttle lever to correct position.
	Oil in excess?	Drain excess oil. Bring to correct level.
	Clutch slips?	Replace or adjust clutch.
	Spring Failure?	Replace spiral spring.
	Speed of engine improper?	Adjust engine speed to correct operating RPM setting.
	Soil over-compacted?	Shut down machine and test soil.

EXPLANATION OF CODE IN REMARKS COLUMN

The following section explains the different symbols and remarks used in the Parts section of this manual. Use the help numbers found on the back page of the manual if there are any questions.

NOTICE

The contents and part numbers listed in the parts section are subject to change **without notice**. Multiquip does not guarantee the availability of the parts listed.

SAMPLE PARTS LIST

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	12345	BOLT	1	INCLUDES ITEMS W/%
2%		WASHER, 1/4 IN.		NOT SOLD SEPARATELY
2%	12347	WASHER, 3/8 IN. ...	1	MQ-45T ONLY
3	12348	HOSE	A/R	MAKE LOCALLY
4	12349	BEARING	1	S/N 2345B AND ABOVE

NO. Column

Unique Symbols — All items with same unique symbol

(@, #, +, %, or >) in the number column belong to the same assembly or kit, which is indicated by a note in the “Remarks” column.

Duplicate Item Numbers — Duplicate numbers indicate multiple part numbers, which are in effect for the same general item, such as different size saw blade guards in use or a part that has been updated on newer versions of the same machine.

NOTICE

When ordering a part that has more than one item number listed, check the remarks column for help in determining the proper part to order.

PART NO. Column

Numbers Used — Part numbers can be indicated by a number, a blank entry, or TBD.

TBD (To Be Determined) is generally used to show a part that has not been assigned a formal part number at the time of publication.

A blank entry generally indicates that the item is not sold separately or is not sold by Multiquip. Other entries will be clarified in the “Remarks” Column.

QTY. Column

Numbers Used — Item quantity can be indicated by a number, a blank entry, or A/R.

A/R (As Required) is generally used for hoses or other parts that are sold in bulk and cut to length.

A blank entry generally indicates that the item is not sold separately. Other entries will be clarified in the “Remarks” Column.

REMARKS Column

Some of the most common notes found in the “Remarks” Column are listed below. Other additional notes needed to describe the item can also be shown.

Assembly/Kit — All items on the parts list with the same unique symbol will be included when this item is purchased.

Indicated by:
 “INCLUDES ITEMS W/(unique symbol)”

Serial Number Break — Used to list an effective serial number range where a particular part is used.

Indicated by:
 “S/N XXXXX AND BELOW”
 “S/N XXXX AND ABOVE”
 “S/N XXXX TO S/N XXX”

Specific Model Number Use — Indicates that the part is used only with the specific model number or model number variant listed. It can also be used to show a part is NOT used on a specific model or model number variant.

Indicated by:
 “XXXXX ONLY”
 “NOT USED ON XXXX”

“Make/Obtain Locally” — Indicates that the part can be purchased at any hardware shop or made out of available items. Examples include battery cables, shims, and certain washers and nuts.

“Not Sold Separately” — Indicates that an item cannot be purchased as a separate item and is either part of an assembly/kit that can be purchased, or is not available for sale through Multiquip.

SUGGESTED SPARE PARTS

MTX70HD TAMPING RAMMER WITH HONDA GX100UKRBF ENGINE

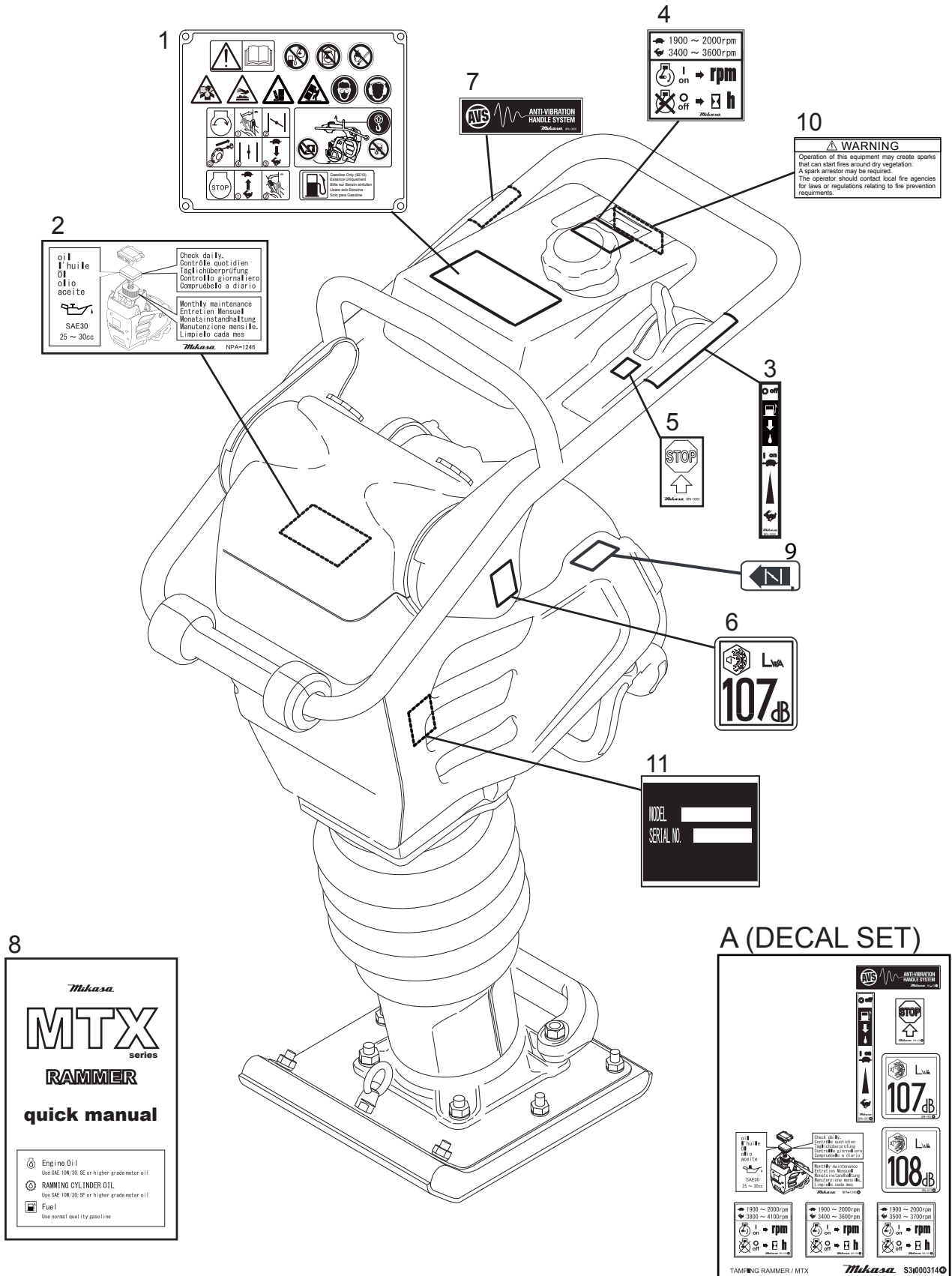
1 to 3 units

Qty.	P/N	Description
1.....	956100062.....	THROTTLE WIRE
3.....	366010070.....	PRIMARY ELEMENT, AIR CLEANER
3.....	366010080.....	SECONDARY ELEMENT, AIR CLEANER
1.....	366350460.....	CAP ASSY., FUEL TANK
2.....	16910Z4ES21.....	FILTER, IN-LINE FUEL
3.....	9805655777.....	SPARK PLUG
1.....	954406010.....	STRAINER, FUEL TANK
1.....	28462Z0DV03.....	ROPE, RECOIL STARTER
1.....	956200110.....	COMBINATION LEVER
1.....	366900170.....	CUP AND PACKING SET
1.....	366348550.....	CLUTCH ASSY

NOTICE

Part numbers on this Suggested Spare Parts list may supersede/replace the part numbers shown in the following parts lists.

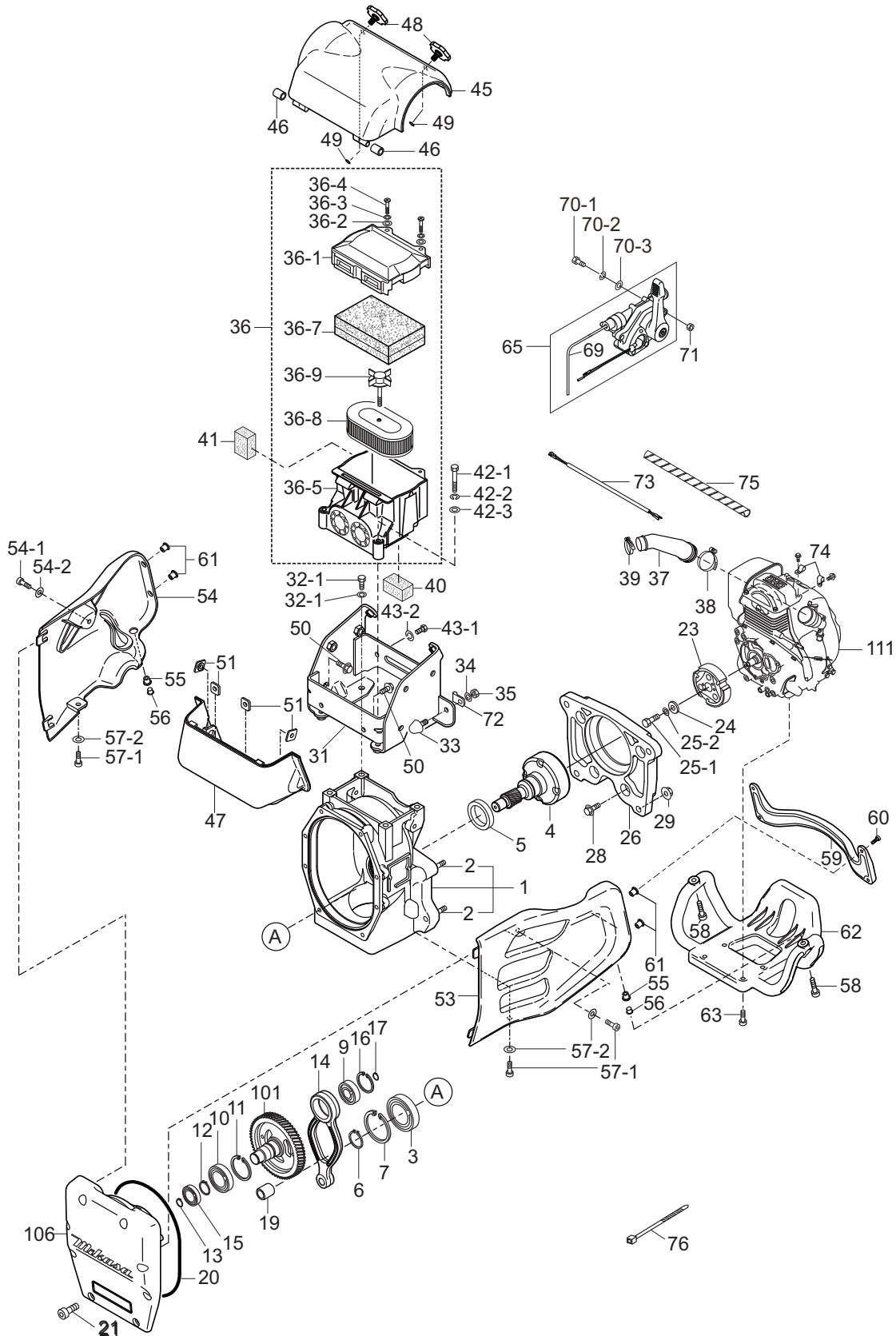
NAMEPLATES AND DECALS



NAMEPLATES AND DECALS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	920215440	OPERATION DECAL	1	
2#		DECAL, AIR CLEANER	1	
3#		DECAL, LEVER OPERATION	1	
4#		DECAL, MAX SPEED DECAL 4100	1	
5#		DECAL, MACHINE STOP	1	
6#		DECAL, EC NOISE REQ. Lwa 107dB	1	
7#		DECAL, ANTI-VIB HANDLE	1	
8	920212540	QUICK MANUAL	1	
9	0732004430	DECAL, CHOKE OPERATION	1	
10	920214100	DECAL, E/G FIRE WARNING	1	
11		SERIAL PLATE NO.....	1.....	CONTACT MQ PARTS DEPT. W/ SERIAL NO.
A	920900040	DECAL SET	1.....	INCLUDES ITEMS W/ #

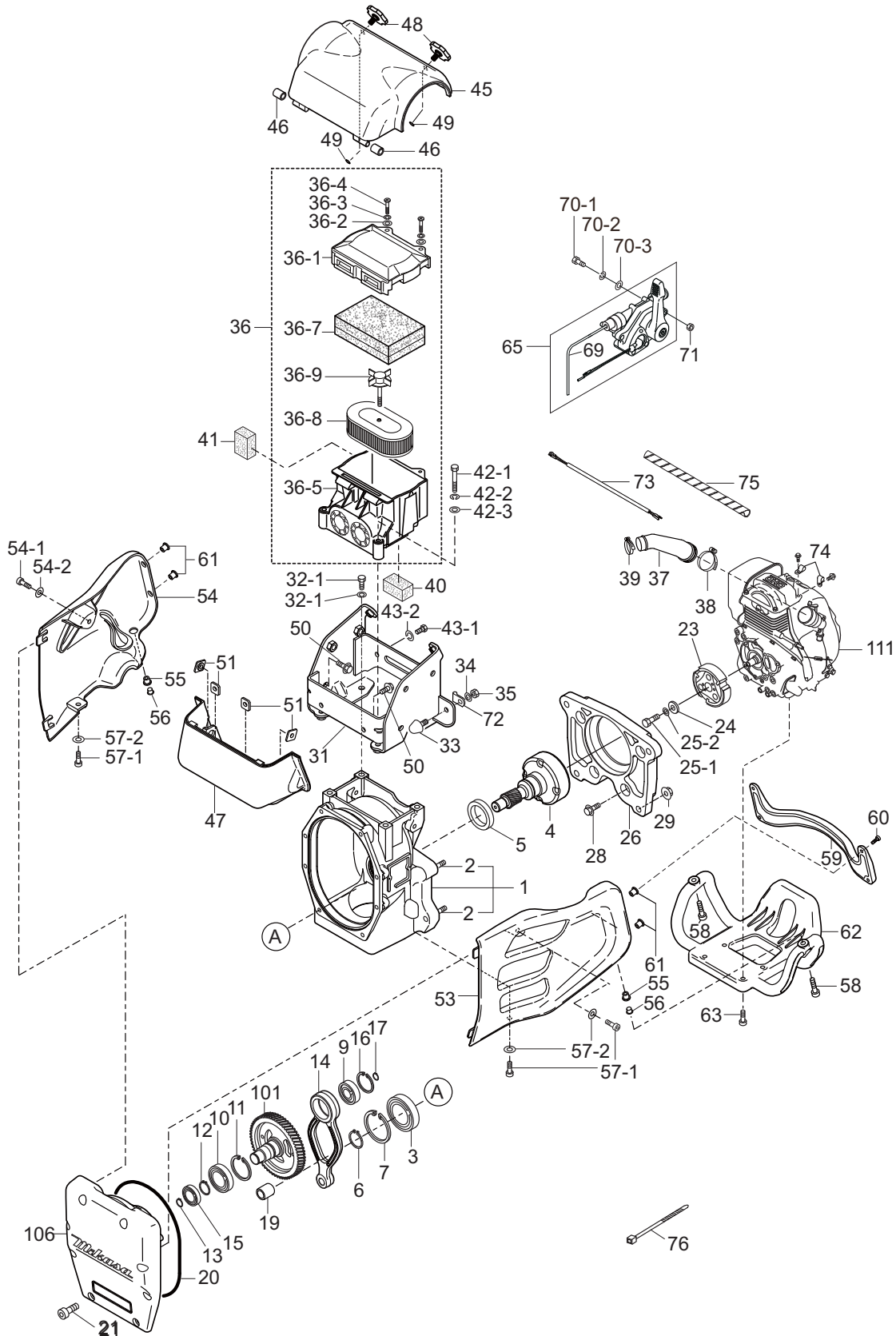
CRANKCASE AND ENGINE ASSY



CRANKCASE AND ENGINE ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	366910010	CRANKCASE	1.....	INCLUDES ITEMS W/\$
2\$	009120204	STUD BOLT 10 X 30	4	
3	041006007	BEARING 6007Z	1	
4	366345170	DRUM, PINION	1	
5	060404010	OIL SEAL TC-40528	1	
6	080200350	STOP RING S-35	1	
7	080100620	STOP RING R-62	1	
9	040006207	BEARING 6207	1	
10	040006305	BEARING 6305	1	
11	080100720	STOP RING R-72	1	
12	080200350	STOP RING S-35	1	
13	080200250	STOP RING S-25	1	
14	366345230	CONNECTING ROD	1	
15	040006304	BEARING 6304	1	
16	080100520	STOP RING R-52	1	
17	080200200	STOP RING S-20	1	
19	047940060	NEEDLE BEARING FJ-1816	1	
20	050710080	O-RING	1	
21	001520825	SOCKET HEAD BOLT 8X25 T	8	
23	366348550	CLUTCH ASSY	1	
24	952401450	WASHER, 5X22X3	1	
25-1	001220825	BOLT 8X25 T	1	
25-2	030208200	WASHER, LOCK M8	1	
26	366217180	FLANGE, ENGINE	1	
28	001710830	FLANGE BOLT 8X30	4	
29	022611010	FLANGE NUT M10	4	
31	366346280	BRACKET, SHOCK ABSORBER	1	
32-1	001221030	BOLT 10X30	4	
32-2	030210250	WASHER, LOCK M10	4	
33	939010270	STOPPER RUBBER (70)	1	
34	030208200	WASHER, LOCK M8	1	
35	020308060	NUT M8	1	
36	366900010	CRANKCASE CP	1.....	INCLUDES ITEMS W/#
36-1#	366010010	AIR CLEANER COVER CP	1	
36-2#	366010020	WASHER, FLAT M6	2	
36-3#	030206150	WASHER, LOCK M6	2	
36-4#	366010040	COIN BOLT M6	2	
36-5#	366010050	BASE CP, AIR CLEANER	1	
36-7#	366010070	PRIMARY ELEMENT CP	1	
36-8#	366010080	SECONDARY ELEMENT	1	
36-9#	362030040	GRIP BELT CP	1	
37	366345470	PIPE, INTAKE	1	
38	954407681	CYCLONE CLAMP (CY-1) 45	1	
39	954407682	CYCLONE CLAMP (CY-1) 38	1	
40	366460160	SEALING FORM, UNDER	1	
41	366460150	SEALING FORM, SIDE	1	

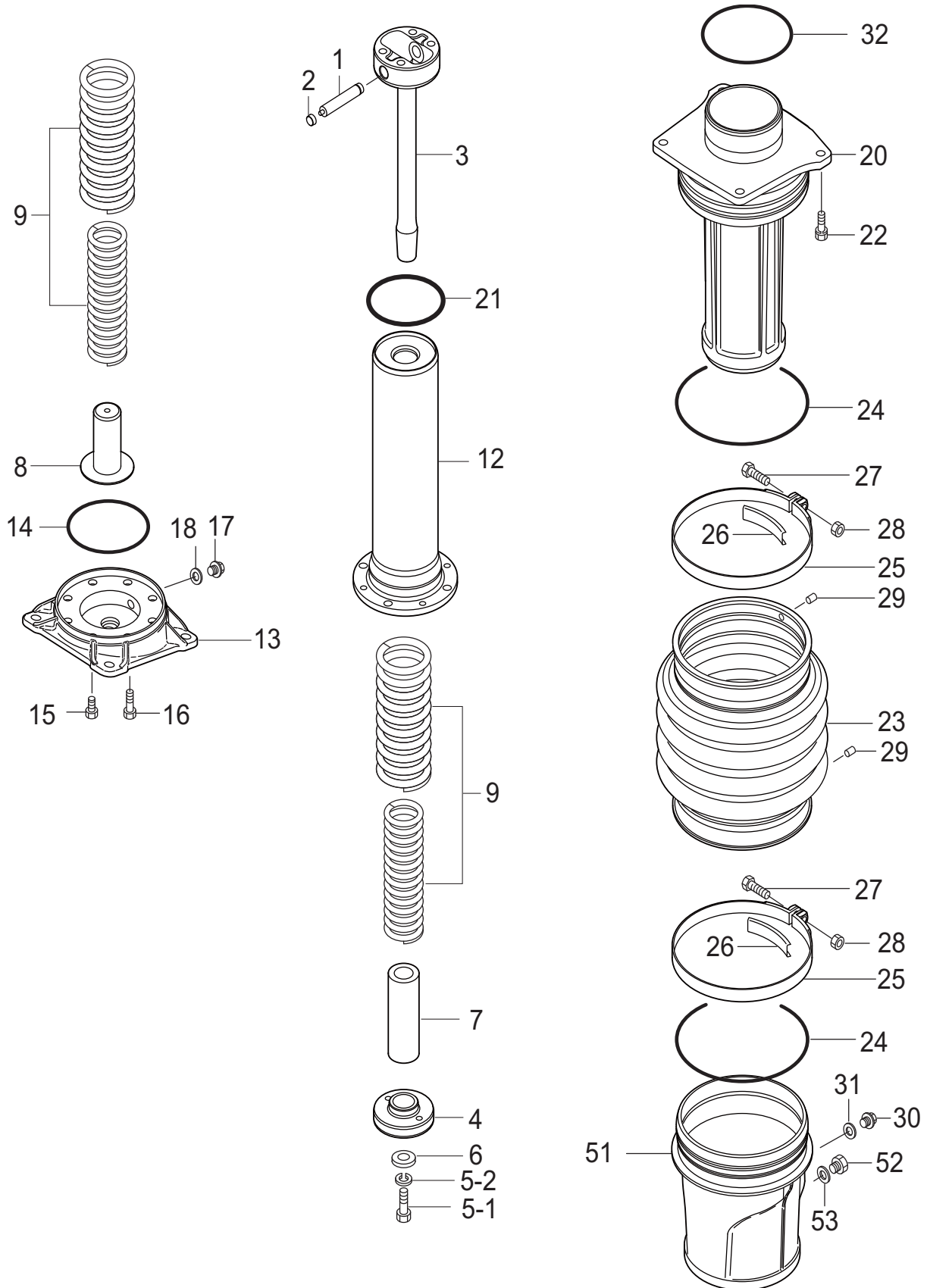
CRANKCASE AND ENGINE ASSY



CRANKCASE AND ENGINE ASSY

NO.	PART NO.	PART NAME	QTY.	REMARKS
42-1	001220851	BOLT 8X55 T	2	
42-2	030208200	WASHER, LOCK M8	2	
42-3	031108160	WASHER, FLAT M8	2	
43-1	001210815	BOLT 8X15	2	
43-2	030208200	WASHER, LOCK M8	2	
45	366217340	COVER, CLEANER(UPPER)	1	
46	366460140	RUBBER BUSH 10X16X17	2	
47	366217350	COVER, CLEANER (LOWER)	1	
48	366345980	KNOB, CLEANER COVER	2	
49	050200060	O-RING P6	2	
50	009110040	FLANGE BOLT 8X20	4	
51	959407670	SQUARE NUT M8	4	
53	366118893	GUARD, LINK	1	
54	366118903	GUARD, MUFFLER	1	
55	022910260	WELL NUT, M8	2	
56	366460170	FLANGE COLLAR 8	2	
57-1	001520820	SOCKET HEAD BOLT 8X20 T	4	
57-2	033910220	WASHER, FLAT M8	4	
58	009110038	SOCKET HEAD BOLT 8X30 ZN	2	
59	368217770	EX BAR	1	
60	009110039	SOCKET HEAD BOLT 6X25 ZN	4	
61	022910250	WELL NUT M6	4	
62	366118913	GUARD, ENGINE	1	
63	009110038	SOCKET HEAD BOLT 8X30 ZN	4	
65	356200100	COMBINATION LEVER ASSY W/ WIRE	1	INCLUDES ITEMS W/@
69@	956100062	THROTTLE WIRE	1	
70-1	001220620	BOLT 6X20T	2	
70-2	030206150	WASHER, LOCK M6	2	
70-3	031106100	WASHER, FLAT M6	2	
71	020306050	NUT M6	2	
72	959006120	CLIP (TCP2-10509B)	1	
73	366460110	WIRE HARNESS	1	
74	2067550101	CLAMP	2	
75	959021814	SPIRAL TUBE KEP6/L=500	1	
76	454010020	CLAMP, TC-100	3	
101	366345190	CRANK GEAR	1	
106	366010111	FRONT COVER	1	
111	912210014	ENGINE ASSY, GX100UKRBF	1	

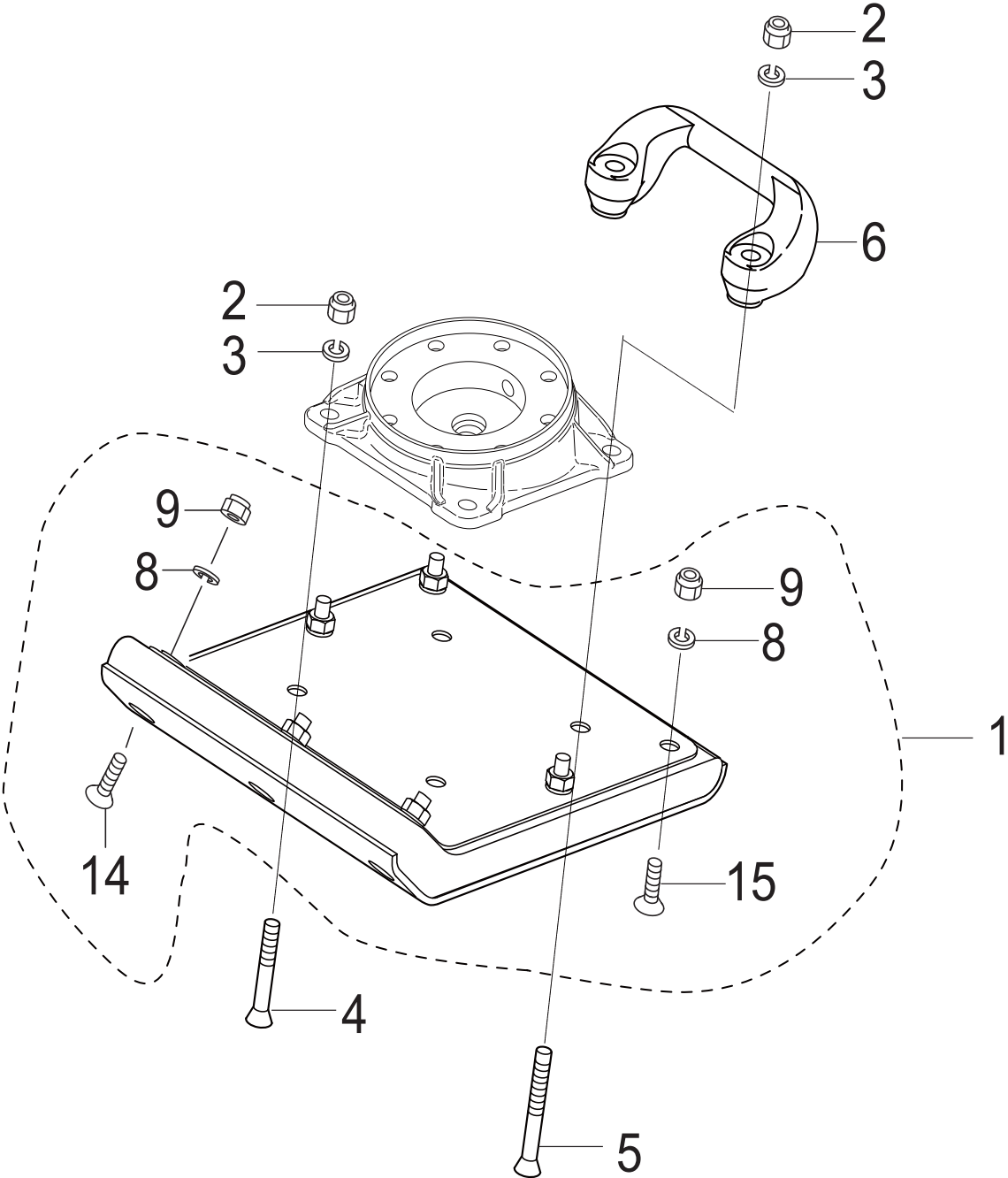
GUIDE CYLINDER ASSY



GUIDE CYLINDER ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	366460100	PISTON PIN	1	
2	366459910	PLUG, PISTON PIN	2	
3	366346000	PISTON ROD	1	
4	371459690	PISTON END	1	
5-1	001221230	BOLT 12X30 T	1	
5-2	030212300	WASHER, LOCK M12	1	
6	952404790	WASHER 13306	1	
7	355447260	STOPPER, LOWER	1	
8	366459900	STOPPER, BOTTOM	1	
9	366459730	MAIN SPRING	2	
12	366345990	SPRING CYLINDER	1	
13	366217210	FOOT PLATE 12	1	
14	050100900	O-RING G-90	1	
15	001521020	SOCKET HEAD BOLT 10X20 T	4	
16	001521040	SOCKET HEAD BOLT 10X40 T	4	
17	953405270	PLUG 1/4X14 13L	1	
18	953405260	PACKING 1/4 (CU)	1	
20	366217440	GUIDE CYLINDER	1	
21	050710070	O-RING AS568-344	1	
22	002211035	BOLT 10X35 H, SW	4	
23	354010010	BELLOWS, ORANGE	1	
24	050931500	O-RING JAS03150	2	
25	354336352	BELLOWS CLAMP(1.6T)171 D	2	
26	354442340	BAND GUIDE, BELLOWS	2	
27	001220840	BOLT 8X40 T	2	
28	020308060	NUT M8	2	
29	354446170	PIN 6D-8.5L	2	
30	953405270	PLUG 1/4X14 13L	1	
31	953405260	PACKING 1/4 (CU)	1	
32	050200950	O-RING P-95	1	
51	366118590	PROTECTION SLEEVE	1	
52	366460300	OIL GAUGE ASSY.	1	
53	953404670	COPPER PACKING 17X25.5X1	1	

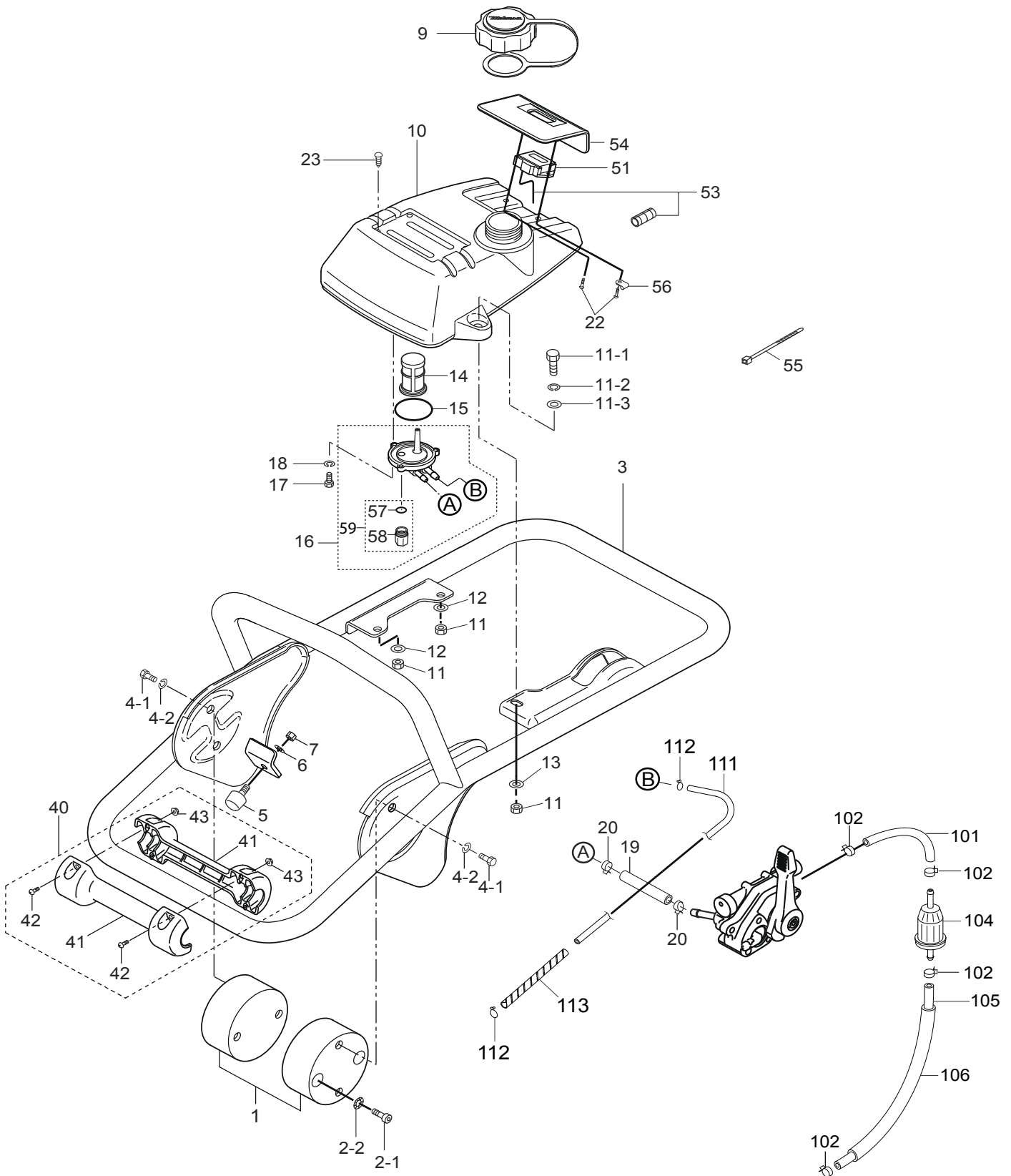
FOOT ASSY



FOOT ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	8511S	FOOT ASSY 285	1.....	INCLUDES ITEMS W/ #
2	0227-11214	NYLON NUT M12	4	
3	030212300	WASHER, LOCK M12	4	
4	009110034	BOLT, SQUARE NECK 12X65	2	
5	009110035	BOLT, SQUARE NECK 12X95	2	
6	363343390	GRIP HANDLEBAR	1	
8#	030210250	WASHER, LOCK M10	7	
9#	022711012	NYLON NUT M10	7	
14#	009110036	BOLT, SQUARE NECK 10X55	3	
15#	009110033	BOLT, SQUARE NECK 10X50	4	

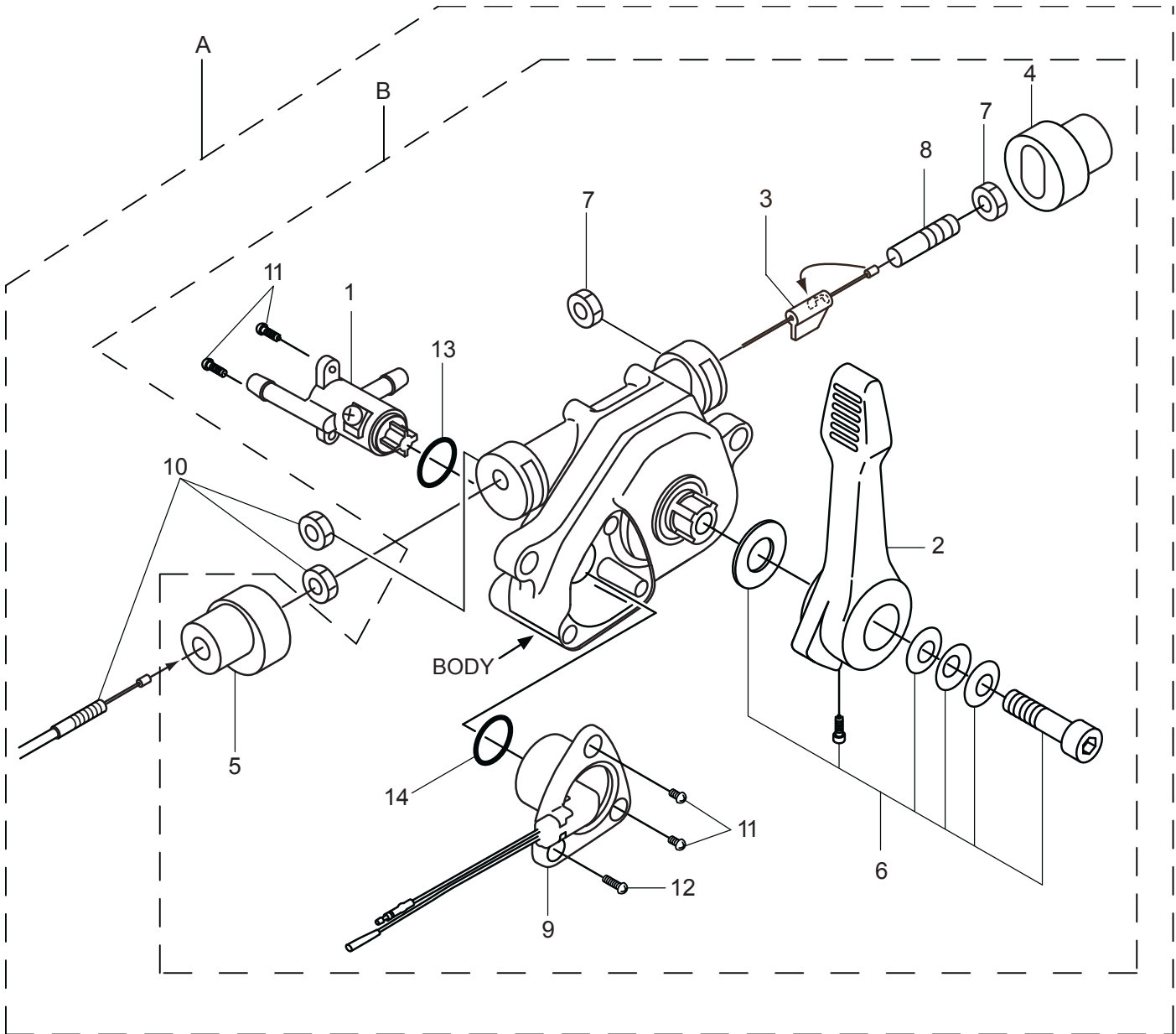
FUEL TANK AND HANDLE ASSY



FUEL TANK AND HANDLE ASSY

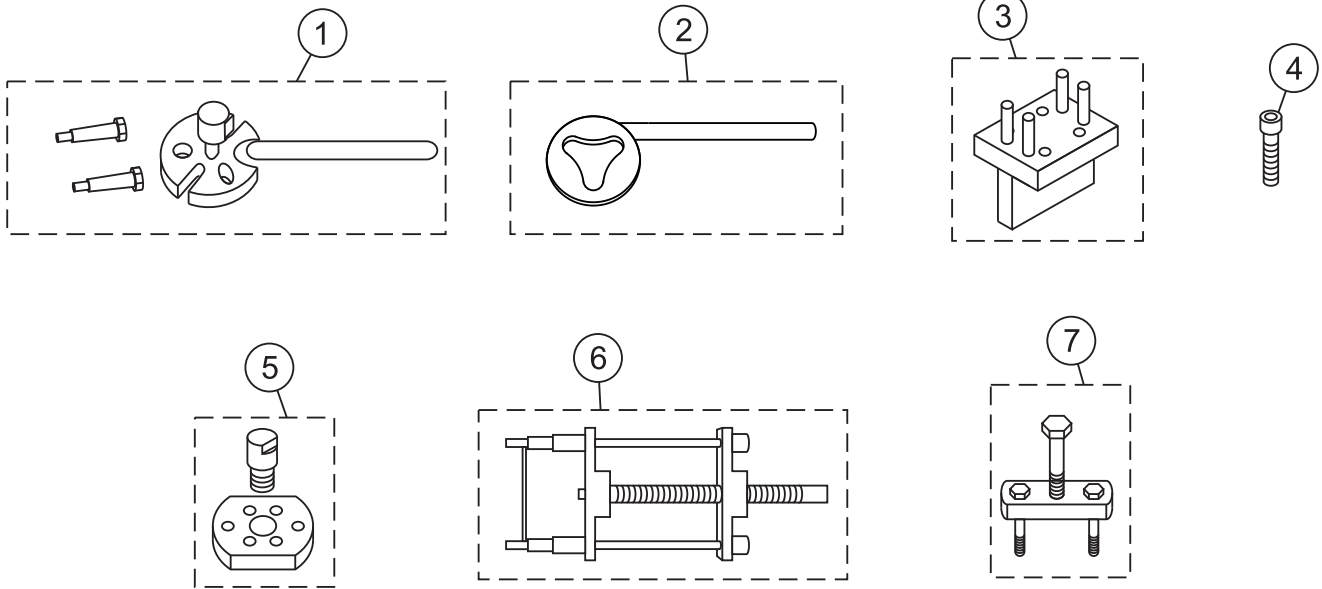
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	366346270	SHOCK ABSORBER W/PIN	2	
2-1	001521020	SOCKET HEAD BOLT 10 X 20 T	4	
2-2	033121009	TOOTHED LOCK WASHER B M10	4	
3	366119042	HANDLE/MTX	1	
4-1	001211020	BOLT 10 X 20 H	4	
4-2	030210250	WASHER, LOCK M10	4	
5	939010270	STOPPER RUBBER (70)	1	
6	030208200	WASHER, LOCK M8	1	
7	020308060	NUT M8	1	
9	366350460	CAP ASSY, FUEL TANK	1	
10	366120250	FUEL TANK/MTX70	1	
11	022710809	NYLON NUT M8	3	
11-1	001210825	BOLT 8X25 H	3	
11-2	030208200	WASHER, LOCK M8	3	
11-3	031108160	WASHER, FLAT M8	3	
12	952401450	WASHER 8.5 X 22 X 3	2	
13	031108160	WASHER FLAT M8	1	
14	954406010	STRAINER #110	1	
15	050250420	O-RING P42	1	
16	366350580	HOLDER, FILTER	1	INCLUDES ITEMS W/ \$
17	001200515	BOLT 5X15 H	3	
18	030205130	WASHER, LOCK M5	3	
19	959328406	FUEL HOSE L=90	1	
20	954406420	HOSE BAND 10.5	2	
22	009110037	TAPPING SCREW 5 X 20	2	
23	094010053	PANHEAD SCREW 4X8	4	
40	366910030	ROLLER ASSY W/ SCREW	1	INCLUDES ITEMS W/ #
41#	366217170	ROLLER	2	
42#	091005020	SCREW 5 X 20	4	
43#	022610505	FLANGE NUT M5 H	4	
51	955010311	TP22 TACHO/HOUR METER	1	
53	955010305	CURL CORD TP22	1	
54	366345620	FINISHER,METER	1	
55	454010020	CLAMP TC100	5	
56	954010270	CLIP AB-3N	1	
57&\$	366464260	CUP, HOLDER FILTER	1	
58&\$	366464270	PACKING, HOLDER FILTER	1	
59\$	366900170	CUP AND PACKING SET	1	INCLUDES ITEMS W/&
101	959328402	FUEL HOSE 5.5X8.5X170	1	
102	0561080020	HOSE BAND	4	
104	16910Z4ES21	FILTER, IN LINE FUEL	1	
105	959328403	FUEL HOSE 5.5X8.5X260	1	
106	954407720	TUBE, VINYL L180	1	
111%	959028301	RETURN HOSE 3X6X600	1	
112%	954408170	HOSE CLIP	2	
113%	959021814	SPIRAL TUBE 6D-200L	1	

COMBINATION LEVER ASSY



COMBINATION LEVER ASSY

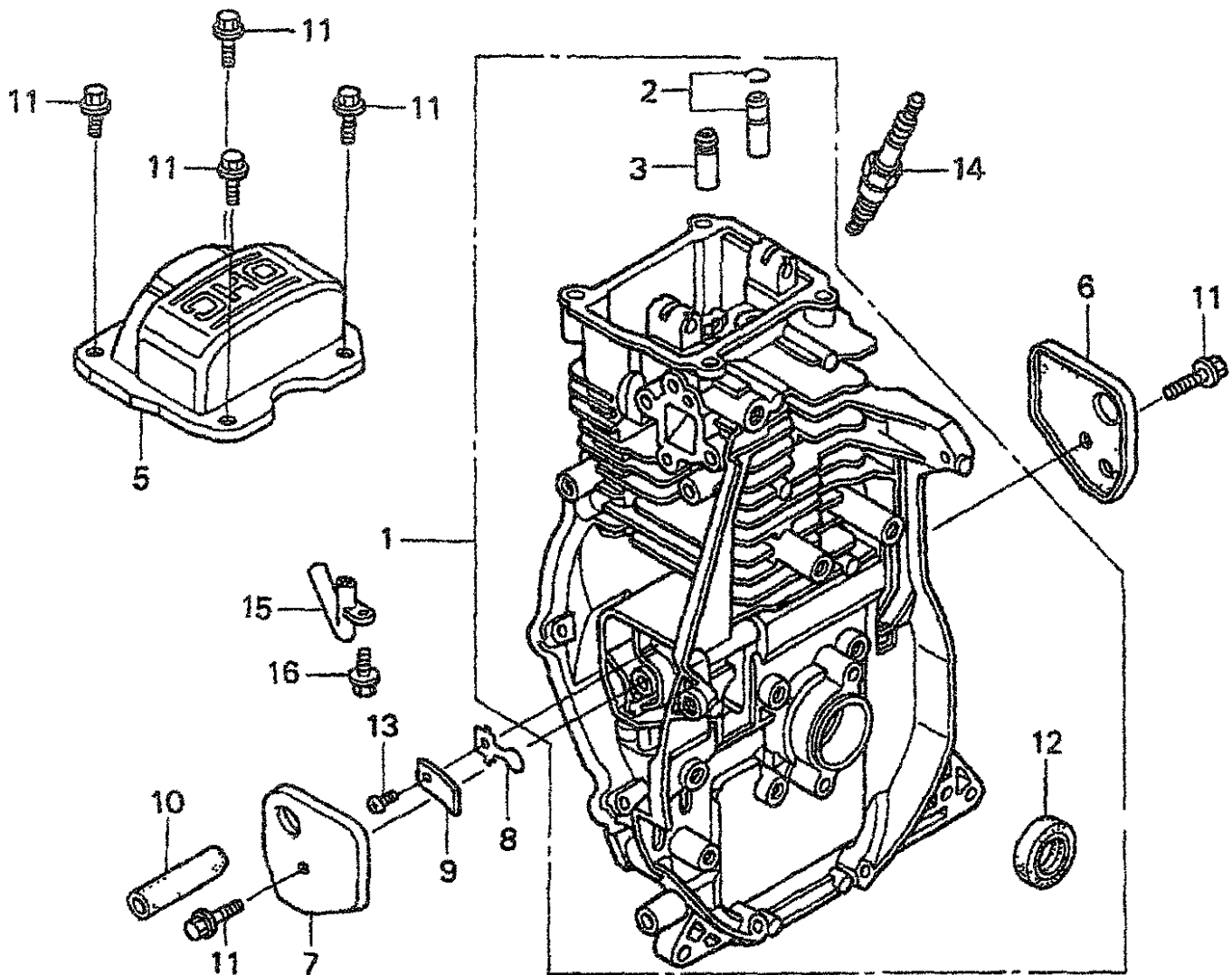
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
A	366900032	COMB. LEVER W/ THROTTLE WIRE.....	1.....	INCLUDES ITEMS W/@
B	956200110	COMB. LEVER W/OUT THROTTLE WIRE.....	1.....	INCLUDES ITEMS W/ #
1@#	366349430	FUEL COCK	1	
2@#	366010310	LEVER	1	
3@#	366010190	SLIDER	1	
4@#	366010200	END CAP	1	
5@#	366010210	WIRE CAP	1	
6@#	366010220	BOLT AND WASHER SET	1	
7@#	020408050	NUT M8, H=5	2	
8@#	959407650	SOCKET HEAD SCREW/TH.WIRE	1	
9@#	366010320	STOP SWITCH	1	
10@	956100062	THROTTLE WIRE	1	
11@#	094010051	TAPPING SCREW B1 4X12	4	
12@#	094010052	TAPPING SCREW B1 4X30	1	
13@#	050200150	O-RING, P15	1	
14@#	050200110	O-RING, P11	1	



TOOLS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	981010400	CLUTCH PULLER A	1	
2	983010060	CLUTCH MOUNTER	1	
3	983910030	PISTON ROD HOLDER	1	
4	009110044	SOCKET HEAD BOLT 8X50 (FULL THREAD)		
		CRANK GEAR REMOVER	2	
5	983910021	CLUTCH PULLER B	1	
6	983010042	SPRING CYLINDER REMOVER	1	
7	983910010	PISTON END REMOVER	1	

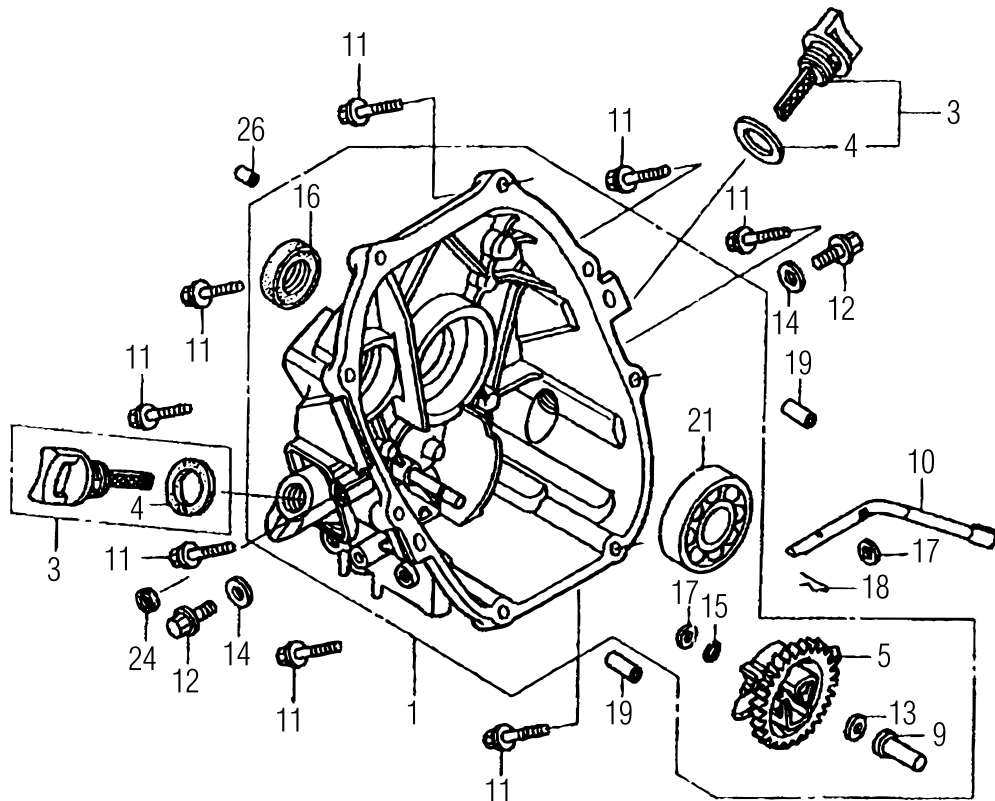
HONDA GX100UKRBF ENGINE — CYLINDER BARREL ASSY.



HONDA GX100UKRBF ENGINE — CYLINDER BARREL ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	12000Z0DV00	BARREL ASSY., CYLINDER	1.....	INCLUDES ITEMS W/@
2@	12201Z0D305	GUIDE ASSY., EX VALVE (O.S.)	1	
3@	12204Z0D305	GUIDE, INLET VALVE (O.S)	1	
5	12311Z0D000	COVER, HEAD T	1	
6	12355Z0D000	COVER COMP A, BREATHER	1	
7	12365Z0D000	COVER COMP B, BREATHER	1	
8	15571Z0DV71	VALVE, OIL OUTLET	1	
9	15572ZM7000	PLATE, STOPPER	1	
10	15721Z0DV70	TUBE, BREATHER	1	
11	90014952000	VOLT, FLANGE 6X14 (CT200)	6	
12@	91202KJ9003	OIL SEAL 20X32X6	1	
13	93500030050A	SCREW 3X5	1	
14	9805655777	PLUG, SPARK (U16FSR-UB)	1	
15	15171Z0DV00	PIPE, BREATHER	1	
16	90008ZM7000	BOLT 4X10	1	

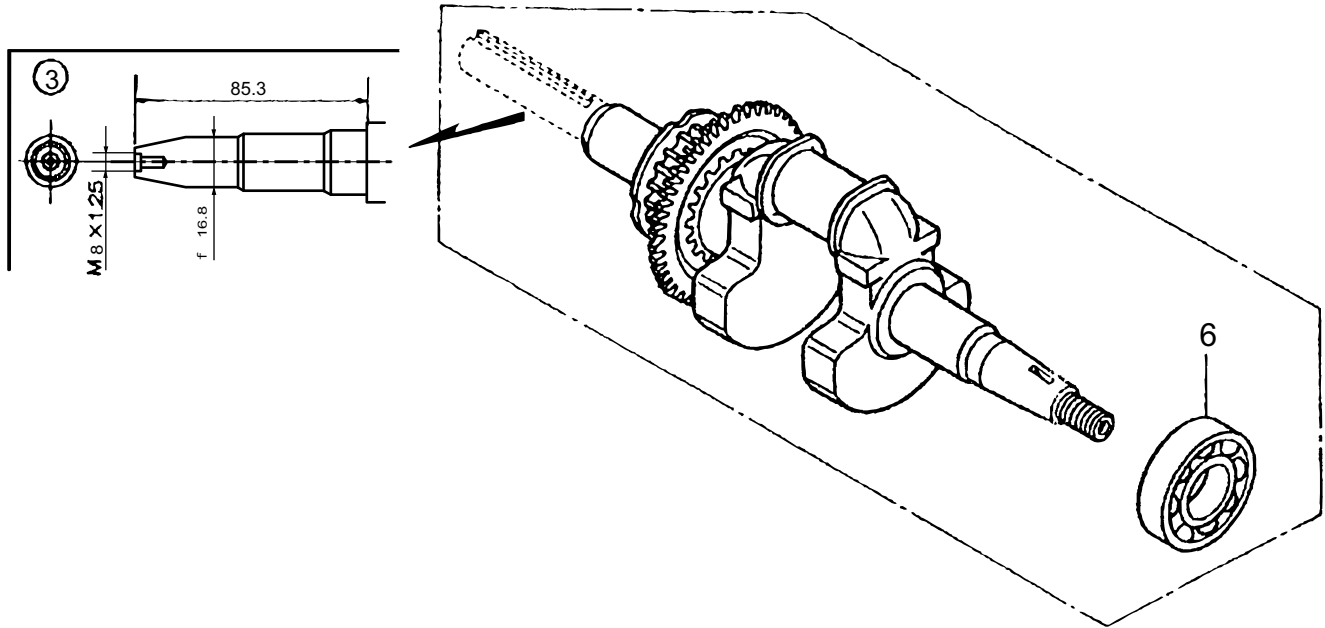
HONDA GX100UKRBF ENGINE — CRANKCASE COVER ASSY.



HONDA GX100UKRBF ENGINE — CRANKCASE COVER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	11300Z0D409	COVER ASSY., CRANK CASE	1.....	INCLUDES ITEMS W/@
3	15600ZM7003	OIL FILLER CAP ASSY	2.....	INCLUDES ITEMS W/#
4#	15625ZE1003	PACKING, OIL FILLER CAP	2	
5@	16510ZL8000	GOVERNOR ASSY.	1	
9@	16531ZE1000	SLIDER, GOVERNOR	1	
10	16541Z0D000	SHAFT, GOVERNOR ARM	1	
11	90121952000	FLANGE BOLT 6x25	8	
12	90131ZE1000	BOLT, DRAIN PLUG	1	
13@	90451ZE1000	THRUST WASHER 6 MM	1	
14	90601ZE1000	WASHER, DRAIN PLUG	1	
15@	90602ZE1000	CLIP, GOVERNOR HOLDER	1	
16@	91202KJ9003	OIL SEAL 20x32x6	1	
17@	9410106800	PLAIN WASHER 6 MM	2	
18	9425108000	LOCK PIN	1	
19	9430108200	KNOCK PIN	2	
21@	91001Z0DV01	BEARING, RADIAL BALL 6204	1	
24	91231891003	OIL SEAL 6x11x4	1	

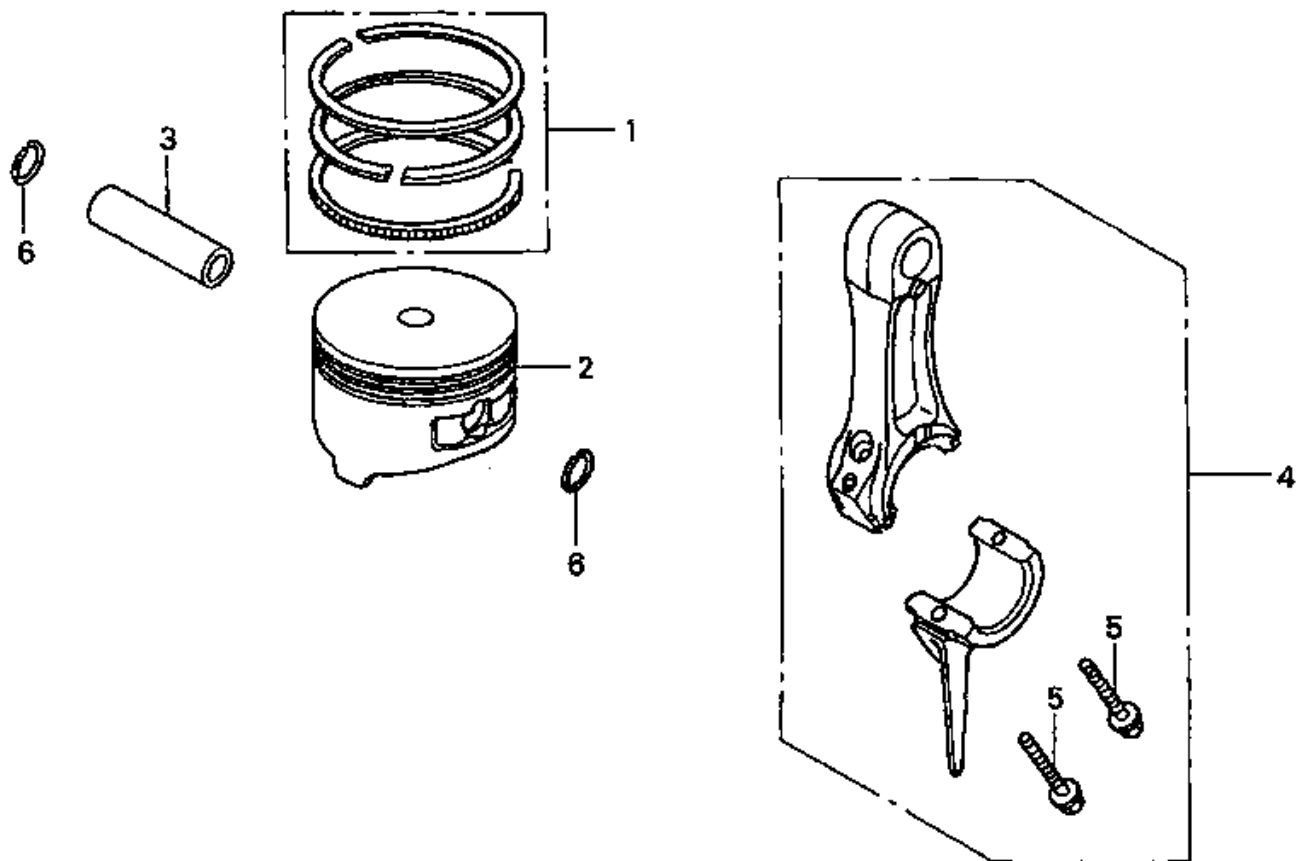
HONDA GX100UKRBF ENGINE — CRANKSHAFT ASSY.



HONDA GX100UKRBF ENGINE — CRANKSHAFT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
3	13310Z0DV70	CRANK SHAFT COMP	1.....	INCLUDES ITEM W/@
6@	91001Z0DV01	BEARING, RADIAL BALL	2	

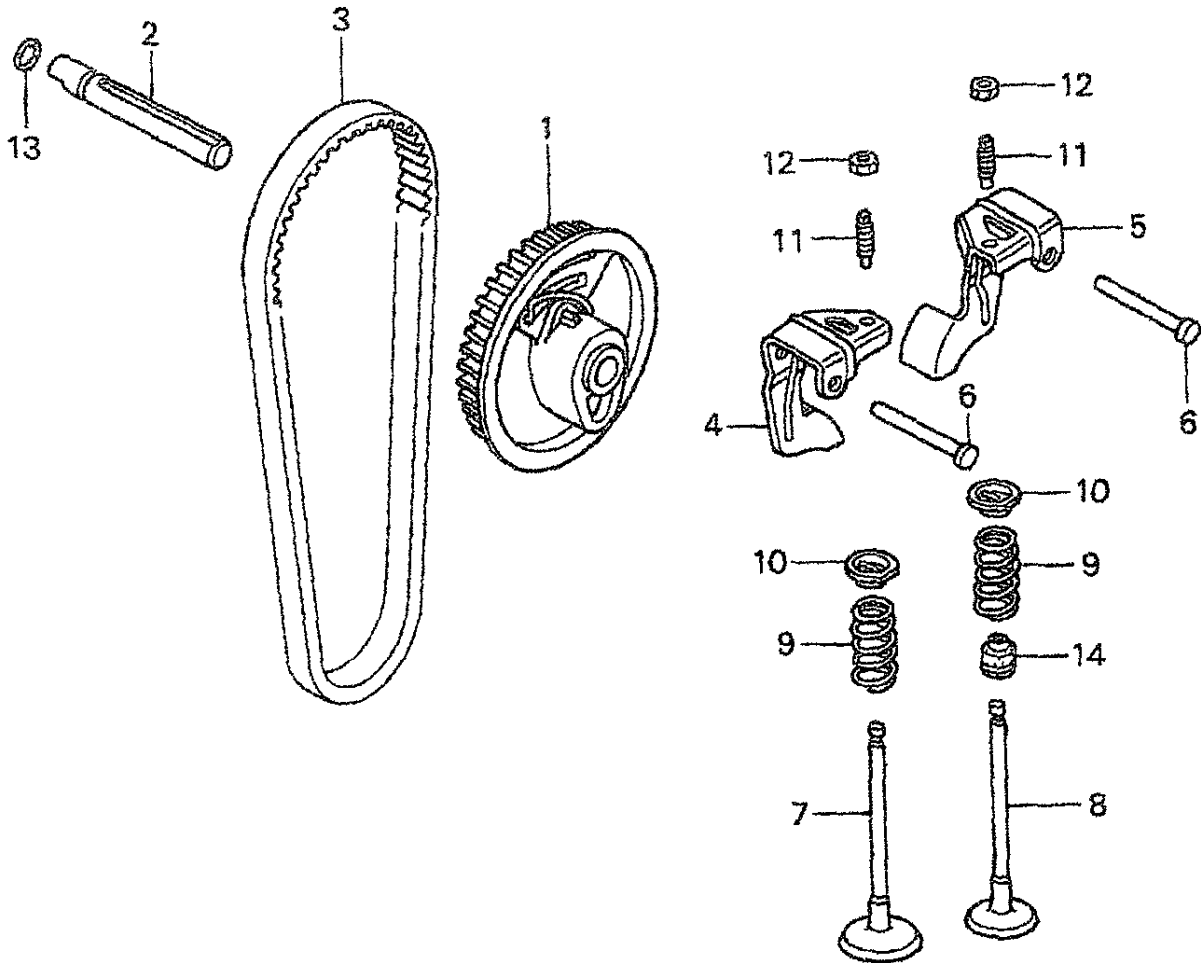
HONDA GX100UKRBF ENGINE — PISTON/ CONN. ROD ASSY.



HONDA GX100UKRBF ENGINE — PISTON/ CONN. ROD ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	13010Z0D003	RING SET, PISTON	1	
2	13101Z0D000	PISTON	1	
3	13111ZE0000	PISTON PIN	1	
4	13200Z0D000	CONNECTING ROD ASSY.	1.....	INCLUDES ITEM W/@
4	13200Z0D305	CONNECTING ROD ASSY., UNDERSIZE	1.....	INCLUDES ITEM W/@
5@	90001ZM7000	CONNECTING ROD BOLT	2	
6	90551ZE0000	CLIP, PISTON PIN 13MM	2	

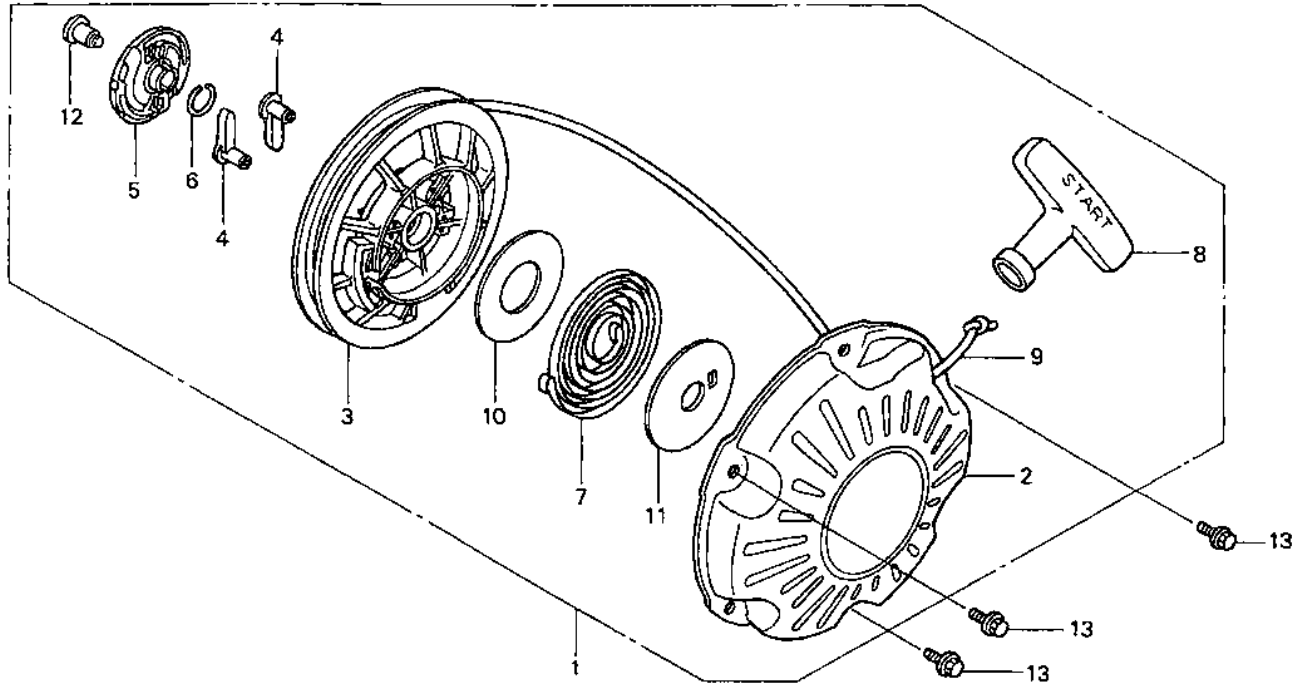
HONDA GX100UKRBF ENGINE — CAMSHAFT ASSY.



HONDA GX100UKRBF ENGINE — CAMSHAFT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	14320Z0D010	PULLEY, COMP., CAMSHAFT	1	
2	14324Z0D000	SHAFT, CAM PULLEY	1	
3	14400Z0D003	TIMING BELT (61YU7 G-200)	1	
4	14431Z0D000	ROCKER ARM, INTAKE VALVE	1	
5	14441Z0D000	ROCKER ARM, EXHAUST VALVE	1	
6	14461ZL8000	SHAFT, ROCKER ARM	2	
7	14711Z0D000	INLET VALVE	1	
8	14721Z0D000	EXHAUST VALVE	1	
9	14751Z0D000	SPRING, VALVE	2	
10	14771ZM3010	RETAINER, VALVE SPRING	2	
11	90012333000	SCREW, TAPPET ADJUSTING	2	
12	90206001000	NUT, TAPPET ADJUSTING	2	
13	91301ZM0V31	O-RING 6.8X1.9	1	
14	12209KT7013	SEAL, VALVE STEM	1	

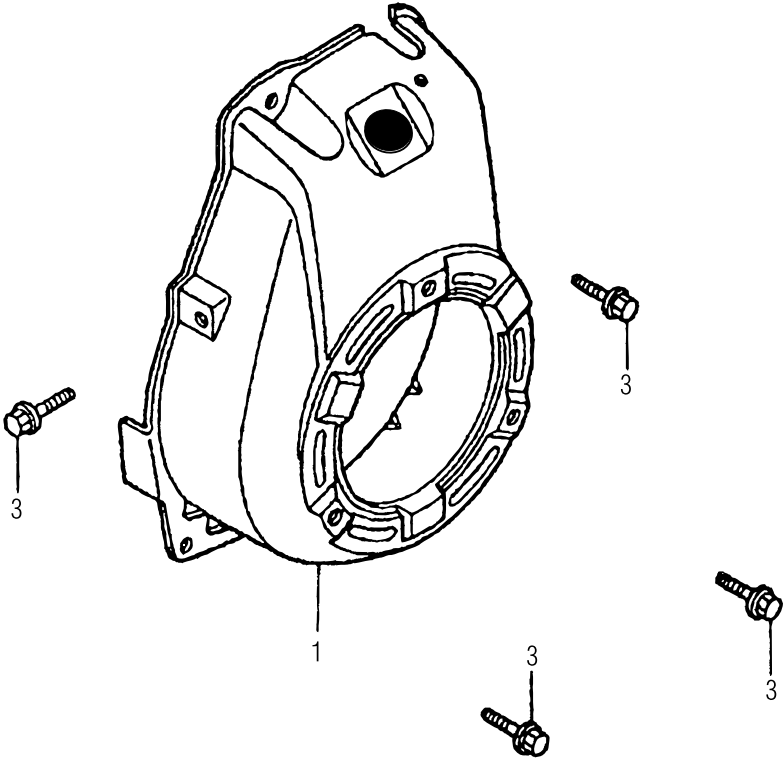
HONDA GX100UKRBF ENGINE — RECOIL STARTER ASSY.



HONDA GX100UKRBF ENGINE — RECOIL STARTER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	28400Z0DV04ZA	RECOIL STARTER ASSY	1.....	INCLUDES ITEMS W/@
2@	28410Z0DV02ZA	CASE COMP, RECOIL @5-3-5	1	
3@	28421Z0DV02	REEL, RECOIL STARTER	1	
4@	28422ZG0W02	RATCHET, STARTER	1	
5@	28433ZG0W02	GUIDE, RATCHET	1	
6@	28441ZW6003	SPRING, FRICTION	1	
7@	28442ZH8003	SPRING, RECOIL STARTER	1	
8@	28461ZH8013	STARTER KNOB	1	
9@	28462Z0DV03	ROPE, RECOIL STARTER	1	
10@	28467Z0DV02	PLATE, SIDE	1	
11@	28468Z0DV02	PLATE, SLIDE	1	
12@	90003ZH8003	SET SCREW	1	
13	957010600800	BOLT, FLANGE 6X8	3	

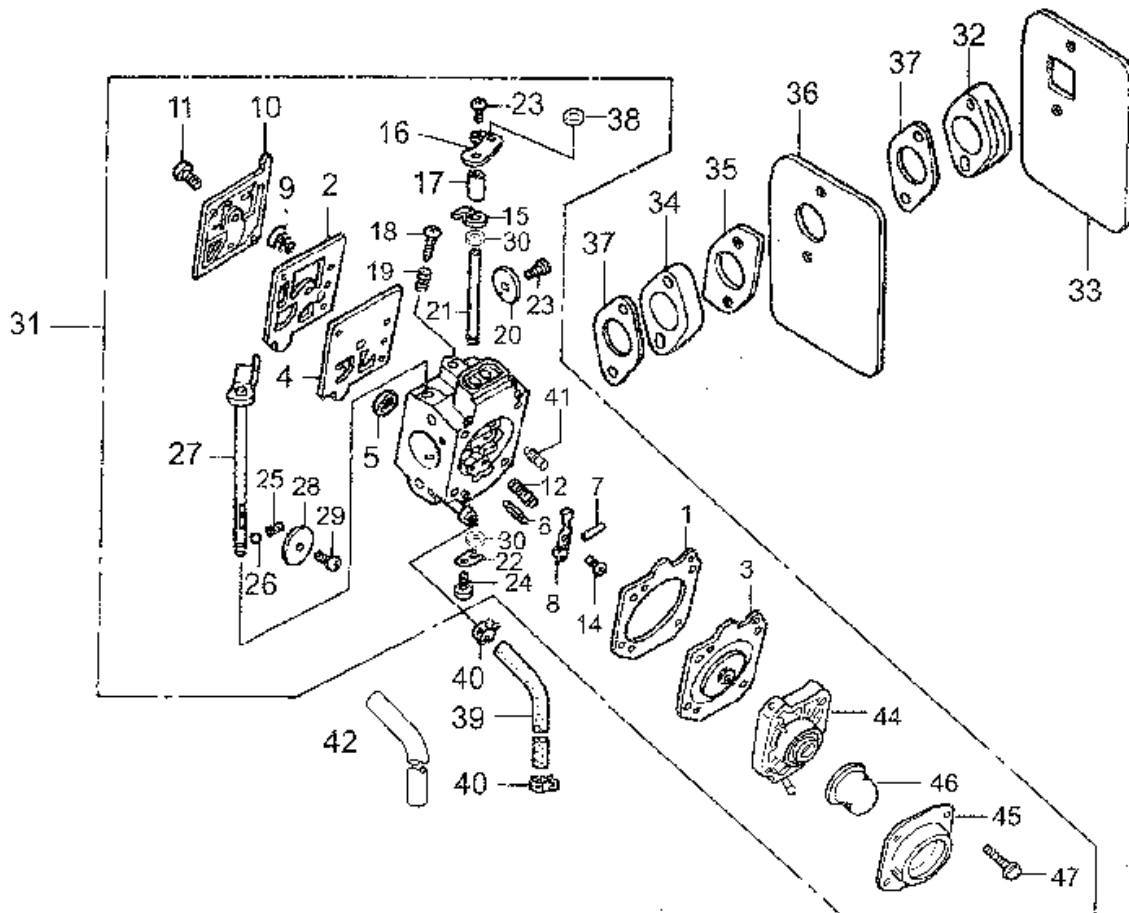
HONDA GX100UKRBF ENGINE — FAN COVER ASSY.



HONDA GX100UKRBF ENGINE — FAN COVER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	19610Z4ES30ZA	FAN COVER CP	1	
3	90014952000	BOLT, FLANGE 6X14 (CT200)	4	

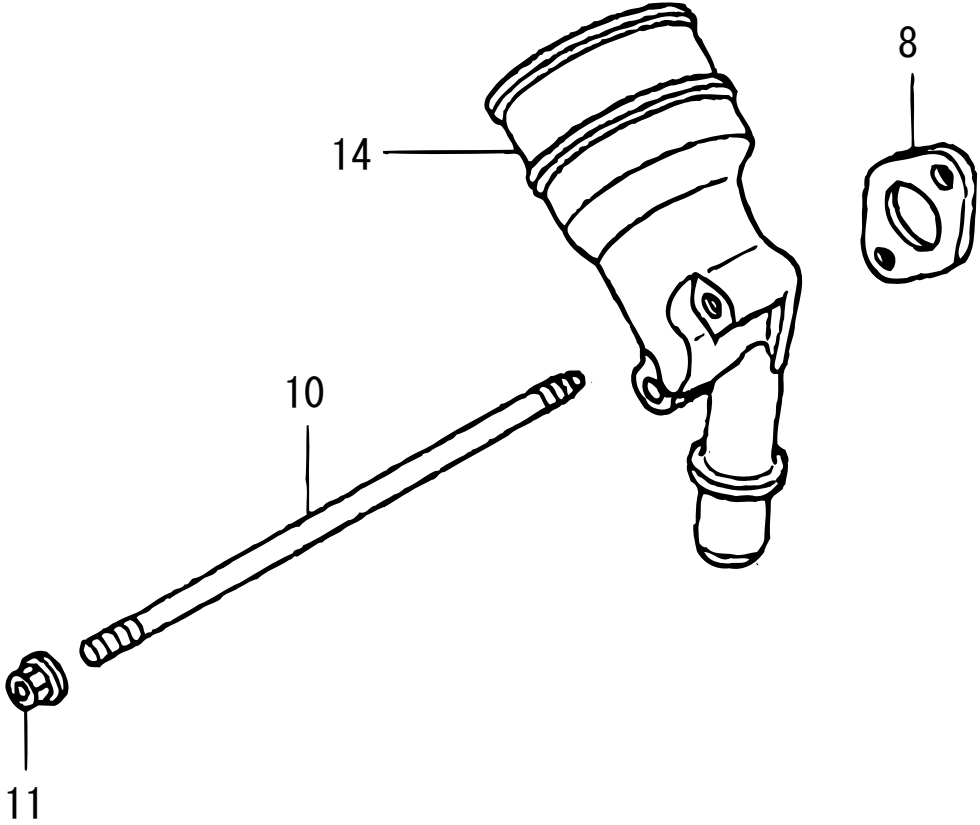
HONDA GX100UKRBF ENGINE — CARBURETOR ASSY.



HONDA GX100UKRBF ENGINE — CARBURETOR ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1@	16010Z0DV02	GASKET, METERING DIAPHRAGM	1	
2@	16011Z0DV02	GASKET, PUMP	1	
3@	16013Z4ES32	DIAPHRAGM ASSY., METERING	1	
4@	16014Z0DV02	DIAPHRAGM, PUMP	1	
5@	16018ZM3004	SCREEN, INLET	1	
6@	16019ZM3004	VALVE, INLET NEEDLE	1	
7@	16022ZM3014	PIN, METERING LEVER	1	
8@	16023Z0DV02	LEVER, METERING	1	
9@	16030ZM3004	SPRING, PUMP	1	
10@	16040Z4E802	COVER, PUMP	1	
11@	16041Z0DV02	SCREW	1	
12@	16042Z0DV02	SPRING	1	
14@	16044Z4E802	SCREW	1	
15@	16045Z0DV02	STOP, THROTTLE	1	
16@	16046Z0DV73	LEVER, THROTTLE	1	
17@	16048Z0DV02	SPACER, THROTTLE LEVER	1	
18@	16049Z4ES12	SCREW, IDLE ADJUSTING	1	
19@	16050Z0DV02	SPRING	1	
20@	16051Z0DV02	VALVE, THROTTLE	1	
21@	16052Z0DV02	SHAFT, THROTTLE	1	
22@	16053Z0DV02	CLIP, THROTTLE SHAFT	1	
23@	16054Z0DV02	SCREW, VALVE	2	
24@	16055Z0DV02	SCREW ASSY.	1	
25@	16056Z0DV02	SPRING	1	
26@	16057Z0DV02	BALL	1	
27@	16058Z0DV02	SHAFT, ASSY., CHOKE	1	
28@	16059Z0DV03	VALVE, CHOKE	1	
29@	16060Z0DV02	SCREW	1	
30@	16061Z0DV02	SEAL, DUST	2	
31	16100Z4ES43	CARBURETOR ASSY. (W/ PRIMER)	1	INCLUDES ITEMS W/@
32	16211Z0DV01	INSULATOR, CARBURETOR	1	
33	16212Z0DV00	PACKING, INSULATOR	1	
34	16213Z4ES10	INSULATOR B, CARBURETOR	1	
35	16214Z0DV00	PACKING B, INSULATOR	1	
36	16215Z0DV00	PLATE, INSULATOR	1	
37	16221Z0DV00	PACKING, CARBURETOR	2	
38@	16552896650	COLLAR, LEVER	1	
39	34479	HOSE, FUEL 4.5X1M	1	
40	H950024085008	CLAMP, TUBE	2	
41@	99101Z0D0480	JET (#48)	1	OVER 7000
41@	99101Z0D0500	JET (#50)	1	5000-7000
41@	99101Z0D0520	JET (#52)	1	STANDARD
42	950033600110M	TUBE, VINYL 11X13X1M	1	
44@	16017Z4ES32	BODY ASSY., AIRPURGE	1	
45@	16026Z4ES32	COVER, PRIMER PUMP	1	
46@	16032Z4ES32	PUMP, PRIMER	1	
47@	16055Z4ES32	SCREW ASSY.	4	

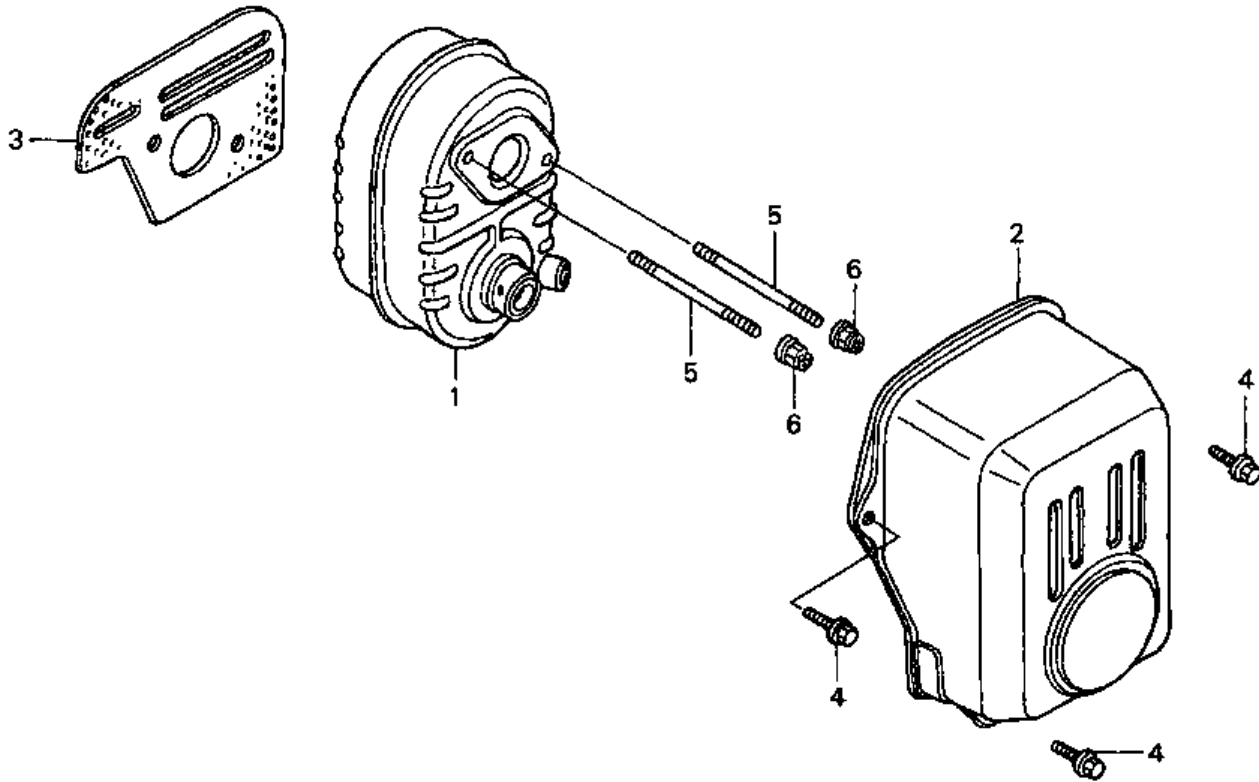
HONDA GX100UKRBF ENGINE — AIR CLEANER ASSY.



HONDA GX100UKRBF ENGINE — AIR CLEANER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
8	17228Z0DV21	PACKING, AIR CLEANER	1	
10	90042Z4ES30	STUD BOLT 5X95	2	
11	9405005000	FLANGE NUT 5MM	2	
14	17410Z4ES31	ELBOW, AIR CLEANER	1	

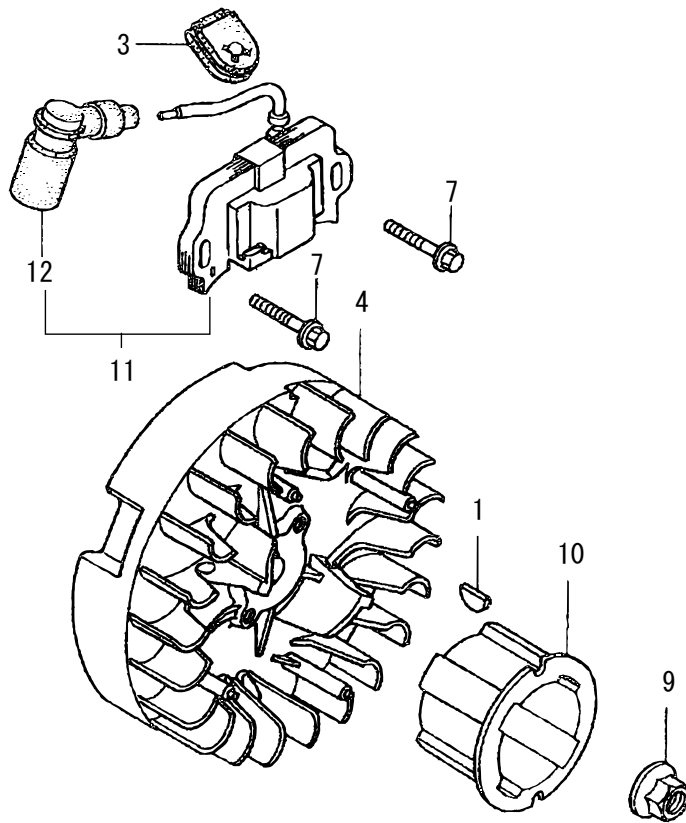
HONDA GX100UKRBF ENGINE — MUFFLER ASSY.



HONDA GX100UKRBF ENGINE — MUFFLER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	18310Z0DV20	MUFFLER COMP.	1	
2	18321Z0DV22	MUFFLER PROTECTOR	1	
3	18381Z0D000	GASKET, MUFFLER	1	
4	90014952000	BOLT, FLANGE 6X14 (CT200)	3	
5	90048Z0DV00	STUD BOLT 6X78	2	
6	90343ZE6000	NUT, SELF-LOCK 6MM	2	

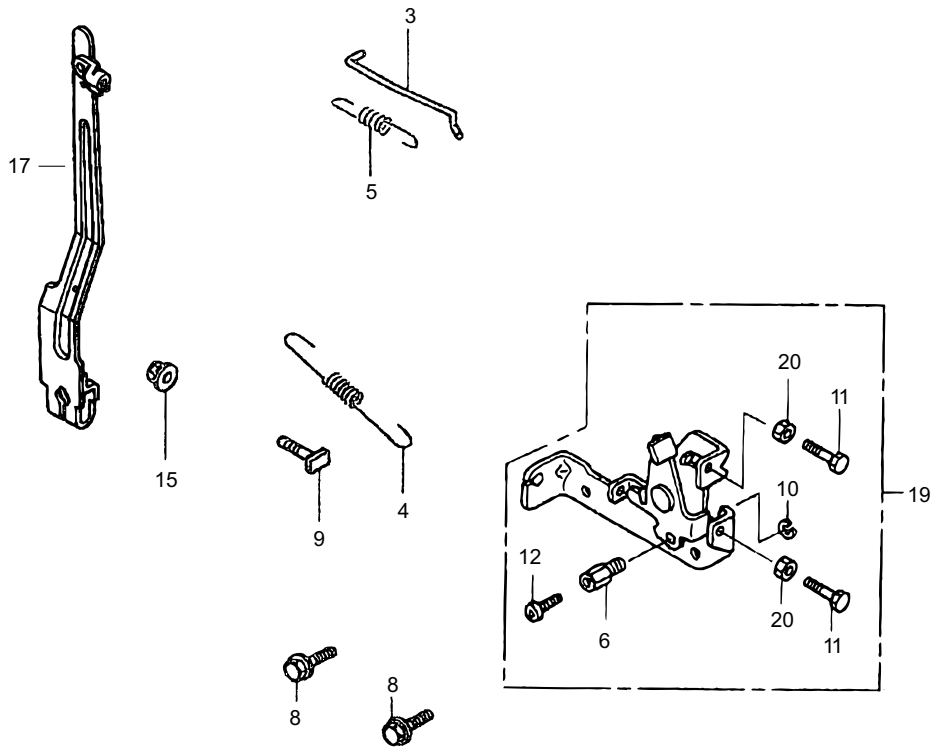
HONDA GX100UKRBF ENGINE — FLYWHEEL IGNITION ASSY.



HONDA GX100UKRBF ENGINE — FLYWHEEL IGNITION ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	13331ZM7000	WOODRUFF KEY 25X18	1	
3	30564ZA5000	GROMMET, CORD	1	
4	131110Z0D003	FLYWHEEL COMP	1	
7	90022888010	FLANGE BOLT 6X20	2	
9	9405012000	FLANGE NUT M12	1	
10	28451Z0DV03	STARTER PULLEY	1	
11	30500Z0DV02	IGNITION COIL ASSY	1.....	INCLUDES ITEMS W/@
12@	30700Z0DV01	TERMINAL ASSY	1	

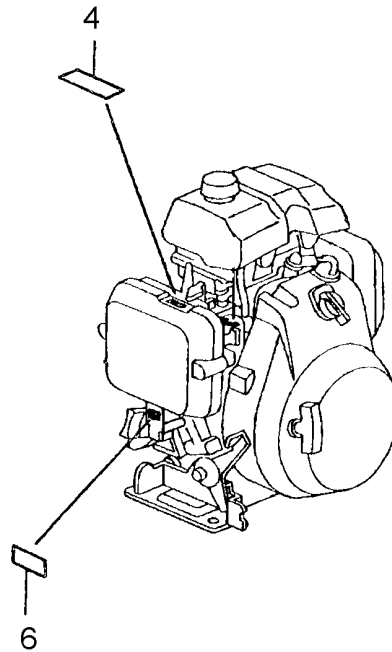
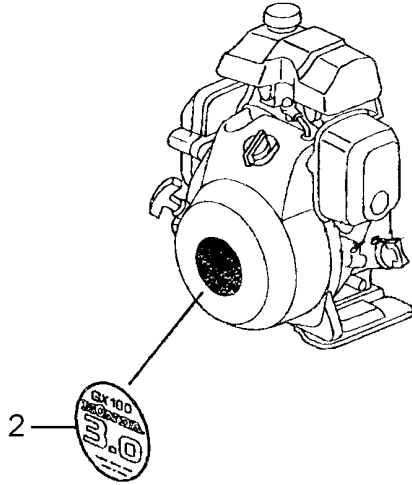
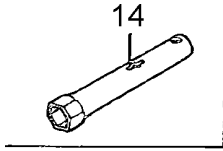
HONDA GX100UKRBF ENGINE — CONTROL ASSY.



HONDA GX100UKRBF ENGINE — CONTROL ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
3	16555Z0DV00	GOVERNOR ROD	1	
4	16561Z0DV00	GOVERNOR SPRING	1	
5	16562Z4ES10	SPRING, THROTTLE RETURN	1	
6@	16594883010	HOLDER, WIRE	1	
8	90014952000	BOLT, FLANGE 6X14 (CT200)	2	
9	90015ZE5010	BOLT, GOVERNOR ARM	1	
10@	90605230000	CIR CLIP	1	
11@	92301050220A	BOLT 5X20	1	
12@	0043504060	SCREW 4X6	1	
15	9405006000	FLANGE NUT 6MM	1	
17	16550Z0DV01	GOVERNOR ARM	1	
19	16500Z4ES30	CONTROL ASSY	1.....	INCLUDES ITEMS W/@
20@	9400105000	NUT M5	2	

HONDA GX100UKRBF ENGINE — LABELS ASSY.



HONDA GX100UKRBF ENGINE — LABELS ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
2	87521Z0DV02	LABEL, TRADE MARK	1	
4	87528Z0D000	MARK, CHOKE	1	
6	87601Z4ES30	MARK, TYPE (KRBF)	1	
14	89216130690	WRENCH, SPARK PLUG	1	

TERMS AND CONDITIONS OF SALE — PARTS

PAYMENT TERMS

Terms of payment for parts are net 30 days.

FREIGHT POLICY

All parts orders will be shipped collect or prepaid with the charges added to the invoice. All shipments are F.O.B. point of origin. Multiquip's responsibility ceases when a signed manifest has been obtained from the carrier, and any claim for shortage or damage must be settled between the consignee and the carrier.

MINIMUM ORDER

The minimum charge for orders from Multiquip is \$15.00 net. Customers will be asked for instructions regarding handling of orders not meeting this requirement.

RETURNED GOODS POLICY

Return shipments will be accepted and credit will be allowed, subject to the following provisions:

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
 - a. The parts numbers and descriptions must match the current parts price list.
 - b. The list must be typed or computer generated.
 - c. The list must state the reason(s) for the return.
 - d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
 - e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.

5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Multiquip part numbers clearly marked.
6. The following items are not returnable:
 - a. Obsolete parts. (If an item is in the price book and shows as being replaced by another item, it is obsolete.)
 - b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
 - c. Any line item with an extended dealer net price of less than \$5.00.
 - d. Special order items.
 - e. Electrical components.
 - f. Paint, chemicals, and lubricants.
 - g. Decals and paper products.
 - h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for five working days from notification, pending instructions. If a reply is not received within five days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted, for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

PRICING AND REBATES

Prices are subject to change without prior notice. Price changes are effective on a specific date and all orders received on or after that date will be billed at the revised price. Rebates for price declines and added charges for price increases will not be made for stock on hand at the time of any price change.

Multiquip reserves the right to quote and sell direct to Government agencies, and to Original Equipment Manufacturer accounts who use our products as integral parts of their own products.

SPECIAL EXPEDITING SERVICE

A \$35.00 surcharge will be added to the invoice for special handling including bus shipments, insured parcel post or in cases where Multiquip must personally deliver the parts to the carrier.

LIMITATIONS OF SELLER'S LIABILITY

Multiquip shall not be liable hereunder for damages in excess of the purchase price of the item with respect to which damages are claimed, and in no event shall Multiquip be liable for loss of profit or good will or for any other special, consequential or incidental damages.

LIMITATION OF WARRANTIES

No warranties, express or implied, are made in connection with the sale of parts or trade accessories nor as to any engine not manufactured by Multiquip. Such warranties made in connection with the sale of new, complete units are made exclusively by a statement of warranty packaged with such units, and Multiquip neither assumes nor authorizes any person to assume for it any other obligation or liability whatever in connection with the sale of its products. Apart from such written statement of warranty, there are no warranties, express, implied or statutory, which extend beyond the description of the products on the face hereof.

Effective: February 22, 2006

OPERATION AND PARTS MANUAL

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL
NUMBER ON-HAND WHEN CALLING

UNITED STATES

Multiquip Corporate Office

18910 Wilmington Ave.
Carson, CA 90746
Contact: mq@multiquip.com

Tel. (800) 421-1244
Fax (310) 537-3927

MQ Parts Department

800-427-1244
310-537-3700

Fax: 800-672-7877
Fax: 310-637-3284

Service Department

800-421-1244
310-537-3700

Fax: 310-537-4259

Warranty Department

800-421-1244
310-537-3700

Fax: 310-943-2249

Technical Assistance

800-478-1244

Fax: 310-943-2238

MEXICO

MQ Cipsa

Carr. Fed. Mexico-Puebla KM 126.5
Momoxpan, Cholula, Puebla 72760 Mexico
Contact: pmastretta@cipsa.com.mx

Tel: (52) 222-225-9900
Fax: (52) 222-285-0420

UNITED KINGDOM

Multiquip (UK) Limited Head Office

Unit 2, Northpoint Industrial Estate,
Globe Lane,
Dukinfield, Cheshire SK16 4UJ
Contact: sales@multiquip.co.uk

Tel: 0161 339 2223
Fax: 0161 339 3226

CANADA

Multiquip

4110 Industriel Boul.
Laval, Quebec, Canada H7L 6V3
Contact: jmartin@multiquip.com

Tel: (450) 625-2244
Tel: (877) 963-4411
Fax: (450) 625-8664

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This manual MUST accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

The information and specifications included in this publication were in effect at the time of approval for printing. Illustrations, descriptions, references and technical data contained in this manual are for guidance only and may not be considered as binding. Multiquip Inc. reserves the right to discontinue or change specifications, design or the information published in this publication at any time without notice and without incurring any obligations.

Your Local Dealer is:



OPERATION AND PARTS MANUAL



Mikasa **SERIES**
MODEL MTX70SD
TAMPING RAMMER
(ROBIN ER120D45000 GASOLINE ENGINE)

Revision #1 (07/20/12)

To find the latest revision of this
publication, visit our website at:
www.multiquip.com



THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.



CALIFORNIA — Proposition 65 Warning

Gasoline engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

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ROBIN ER120D45000 ENGINE

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NOTICE

Specifications and part numbers are subject to change without notice.

PARTS ORDERING PROCEDURES

Ordering parts has never been easier! Choose from three easy options:

Effective:
January 1st, 2006

www.multiquip.com



Order via Internet (Dealers Only):

Order parts on-line using Multiquip's SmartEquip website!

- View Parts Diagrams
- Order Parts
- Print Specification Information



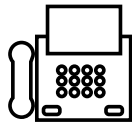
If you have an MQ Account, to obtain a Username and Password, E-mail us at: parts@multiquip.com.

To obtain an MQ Account, contact your District Sales Manager for more information.

Goto www.multiquip.com and click on **Order Parts** to log in and save!

Use the **internet** and qualify for a **5% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Fax (Dealers Only):

All customers are welcome to order parts via Fax.

Domestic (US) Customers dial:
1-800-6-PARTS-7 (800-672-7877)

Fax your order in and qualify for a **2% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Phone: Domestic (US) Dealers Call:
1-800-427-1244

Non-Dealer Customers:

Contact your local Multiquip Dealer for parts or call 800-427-1244 for help in locating a dealer near you.



International Customers should contact their local Multiquip Representatives for Parts Ordering information.

When ordering parts, please supply:

- | | |
|---|--|
| <input type="checkbox"/> Dealer Account Number | <input type="checkbox"/> Specify Preferred Method of Shipment: |
| <input type="checkbox"/> Dealer Name and Address | <input checked="" type="checkbox"/> UPS/Fed Ex <input checked="" type="checkbox"/> DHL |
| <input type="checkbox"/> Shipping Address (if different than billing address) | <input type="checkbox"/> Priority One <input checked="" type="checkbox"/> Truck |
| <input type="checkbox"/> Return Fax Number | <input type="checkbox"/> Ground |
| <input type="checkbox"/> Applicable Model Number | <input type="checkbox"/> Next Day |
| <input type="checkbox"/> Quantity, Part Number and Description of Each Part | <input type="checkbox"/> Second/Third Day |

NOTICE

All orders are treated as *Standard Orders* and will ship the same day if received prior to 3PM PST.

WE ACCEPT ALL MAJOR CREDIT CARDS!



SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.



SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.

SAFETY SYMBOLS

! DANGER

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

! WARNING

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.







! CAUTION

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

NOTICE

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Respiratory hazards
	Accidental starting hazards
	Eye and hearing hazards

SAFETY INFORMATION

GENERAL SAFETY

CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication.



- **NEVER** operate this equipment under the influence of drugs or alcohol.



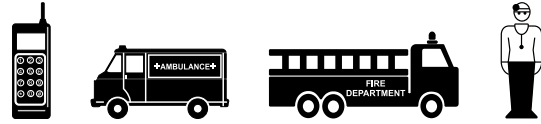
- **ALWAYS** check the equipment for loosened threads or bolts before starting.
- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest fire extinguisher.
- **ALWAYS** know the location of the nearest first aid kit.



- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor** and **fire department**. This information will be invaluable in the case of an emergency.



RAMMER SAFETY

DANGER

- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.



WARNING

- **NEVER** disconnect any **emergency or safety devices**. These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.
- **DO NOT** use this machine on ground that is harder than the machine can handle, or for driving pilings or tamping rock beds. Furthermore, use of the machine on sloping ground, such as the side of an embankment, may make the machine unstable and can cause an accident. It can also result in premature machine wear due to uneven loads on the machine.

Use the machine with confidence for tamping earth and sand, soil, gravel, and asphalt. **DO NOT** use the machine for other types of jobs.

CAUTION

- **NEVER** lubricate components or attempt service on a running machine.

NOTICE

- **ALWAYS** keep the machine in proper running condition.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.

SAFETY INFORMATION

ENGINE SAFETY

DANGER

- The engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.
- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



WARNING

- **DO NOT** place hands or fingers inside engine compartment when engine is running.
- **NEVER** operate the engine with heat shields or guards removed.
- **DO NOT** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the oil tank and severely scald any persons in the general area of the rammer.



CAUTION

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing equipment.



NOTICE

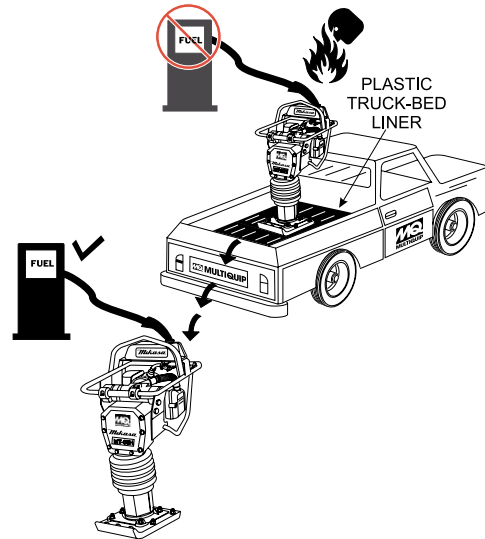
- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.



FUEL SAFETY

DANGER

- **DO NOT** add fuel to equipment if it is placed inside truck bed with plastic liner. Possibility exists of explosion or fire due to static electricity.



- **DO NOT** start the engine near spilled fuel or combustible fluids. Fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with **flammable** liquids.
- **DO NOT** fill the fuel tank while the engine is running or hot.
- **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system.
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.



TRANSPORTING SAFETY

CAUTION


- NEVER allow any person or animal to stand underneath the equipment while lifting.

NOTICE

- Before lifting, make sure that the equipment parts (hook and vibration insulator) are not damaged and screws are not loose or missing.
- Always make sure crane or lifting device has been properly secured to the lifting bail (hook) of the equipment.
- **ALWAYS** shutdown engine before transporting.
- **NEVER** lift the equipment while the engine is running.
- Tighten fuel tank cap securely and close fuel cock to prevent fuel from spilling.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- Use one point suspension hook and lift straight upwards.
- **DO NOT** lift machine to unnecessary heights.
- **ALWAYS** tie down equipment during transport by securing the equipment with rope.
- Never allow any person or animal to stand underneath the equipment while lifting.

ENVIRONMENTAL SAFETY

NOTICE

- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used motor oil, fuel and fuel filters. 
- **DO NOT** use food or plastic containers to dispose of hazardous waste.
- **DO NOT** pour waste, oil or fuel directly onto the ground, down a drain or into any water source.

SPECIFICATIONS

Table 1. Rammer Specifications

Overall Height	39.37 in. (1000 mm)
Overall Width	13.89 in. (353 mm)
Over Length	30.78 in. (782 mm)
Shoe Size (W x L)	13.4 x 11.2 in. (340 x 285 mm)
Fuel Tank Capacity	2.7 qt. (2.5 liters)
Lubrication Oil Capacity	0.9 qt. (0.82 liter)
No. of Impacts Per Second	10.7 - 11.3
Impact Force	2,855 lbf (12.7 kN)
Impact Plate Stroke	2 - 3.15 in. (50 - 80 mm)
Operating Weight	165.34 lbs. (74 kg)
Measured Sound Power Level	104 dB
Guaranteed Sound Power Level	107 dB
Max. Sound Pressure Level	94 dB

Table 2. Engine Specifications

Model	Robin ER120D45000 Engine
Type	Air-Cooled 4 Stroke, Overhead camshaft, single cylinder gasoline engine
Piston Displacement	6.0 cu.in. (98 cc)
Max. Output	3.0 hp/3,600 rpm (2.2 KW)
Max. Governed Speed, No Load	3,800 - 4,100 rpm
Cooling System	Air-Cooled
Engine Oil Capacity	0.3 qt. (0.28 liters)
Fuel	Unleaded gasoline
Lubricant for Engine	Automobile Oil; Class SE or higher
Starting System	Recoil Starter
Spark Plug Type	NGK CR5HSB

GENERAL INFORMATION

The Multiquip MTX70SD tamping rammer is a powerful compacting tool capable of applying a tremendous force in consecutive impacts to a soil surface. Its applications include soil compacting for road, embankments and reservoirs as well as backfilling for gas pipelines, water pipelines and cable installation work.

The impact force of the MTX70SD levels and uniformly compacts voids between soil particles to increase dry density.

Circular motion is converted to create impact force. The MTX70SD tamping rammer develops a powerful compacting force at the foot of the rammer. To maintain optimum performance, proper operation and service are essential.

The MTX70SD is equipped with an air cooled, four-cycle gasoline engine. Transmission of the power takes place by increasing the engine speed to engage the centrifugal clutch.

The MTX70SD uses an oil bath lubrication system. Always check the oil level through the oil level sight glass at the rear of the tamper foot.

Before starting the MTX70SD Tamping Rammer identify and understand the function of the controls.

CAUTION



Before starting operation check the lifting handle to:

1. Make sure that there is no damage on the bolts.
2. Make sure that there is no crack or breakage on handle.
3. Make sure that there is no fissure on the surface. If there is any abnormality or damage, replace with new one.

For operation:

This handle is to be used to lift up the shoe part of the machine with the body laid down on the ground or truck bed.

1. Use proper lifting techniques to avoid back injury. This handle is for manual lifting only.
2. Do not use this handle as a rammer lift point. Use the lifting point on the top of the machine.
3. Do not move the rammer with the lifting handle and the front rollers more than 16 feet (5 meters).

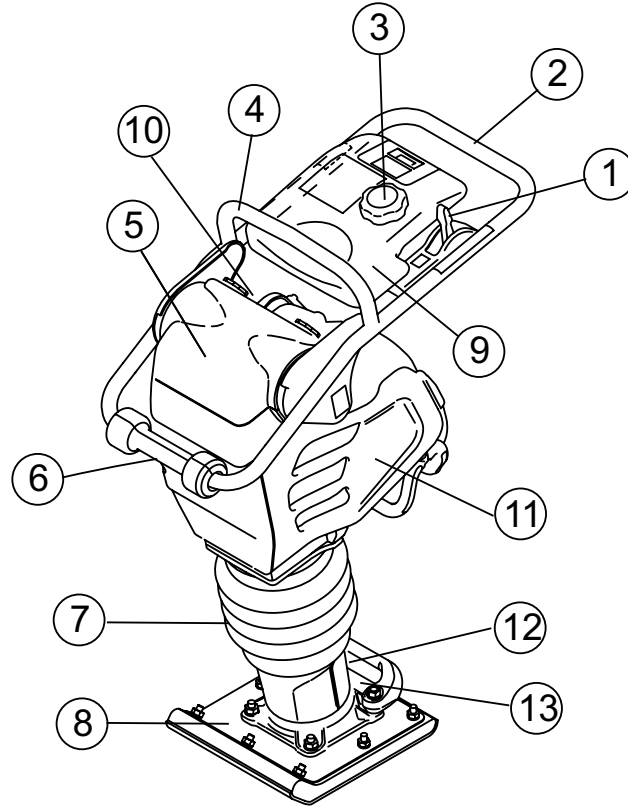


Figure 1. MTX70SD Rammer

Figure 1 shows the location of the controls and components for the MTX70SD Tamping Rammer. The functions of each control is described below:

1. **Combination (Throttle) Lever** — Used to adjust engine speed (rpm). Move lever forward (**SLOW**) to reduce engine speed, move lever back toward operator (**FAST**) to increase speed. Always operate the rammer at full speed (rpm).
2. **Handle** — To operate rammer, **GRIP** handle assembly firmly on both sides.
3. **Fuel Tank Cap** — Remove this cap to add unleaded gasoline to the fuel tank. Make sure cap is tightened securely. **DO NOT** over fill.
4. **Hook** — Used to lift rammer for transporting.
5. **Air Cleaner Cover** — Protects the air cleaner which prevents dirt and other debris from entering the engine.
6. **Roller** — Allows rammer to be moved around easily by rolling the unit.
7. **Bellows** — Reservoir for oil bath.
8. **Foot** — Laminated wood with tempered steel plate for superior shock absorption.
9. **Fuel Tank** — Holds the fuel for the unit (up to 2.7 quarts).
10. **Muffler** — Reduces the noise of the engine when running.
11. **Engine** — This unit uses a Robin ER120D45000 gasoline engine.
12. **Oil Gauge (Sight Glass)** — Indicates the level of oil in the oil bath reservoir.
13. **Drain Valve** — Open this valve to remove oil from the bellows.

WARNING



Adding fuel to the tank should be accomplished only when the engine is stopped and has had an opportunity to cool down. In the event of a fuel spill, **DO NOT** attempt to start the engine until the fuel residue has been completely wiped up, and the area surrounding the engine is dry.

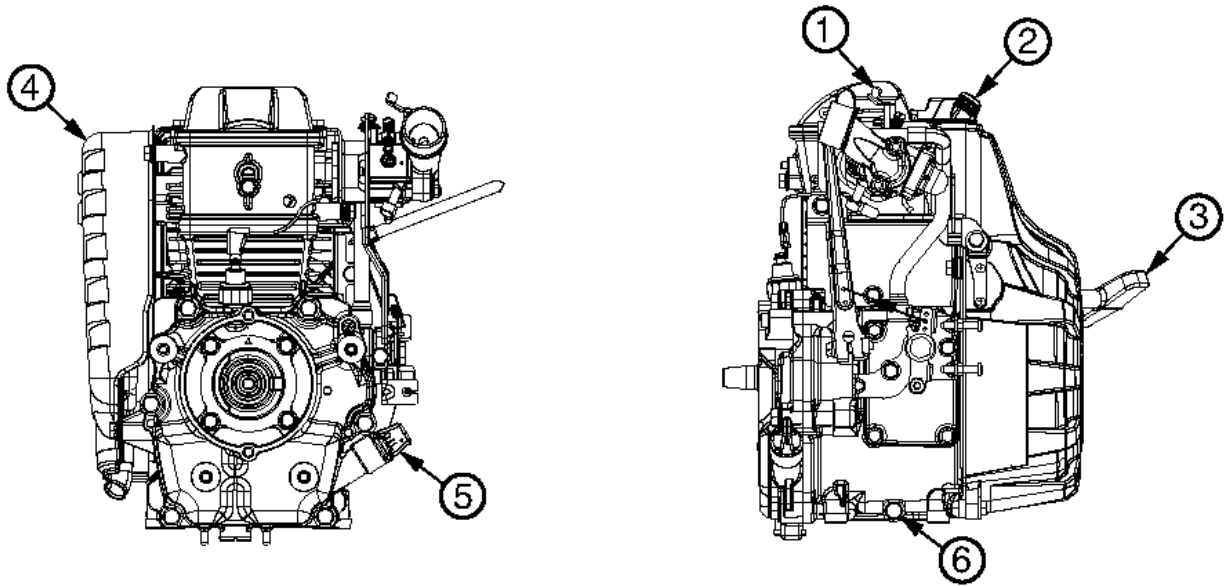


Figure 2. Robin ER120D45000 Engine

The engine (Figure 2) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the engine manufacturer's manual for detailed operation and service information.

1. **Choke Lever** — Normally used in starting the engine in cold weather conditions. In cold weather, turn the choke lever to the fully closed position. In warm weather, set the choke lever halfway or completely open.
2. **Spark Plug** — Provides spark to the ignition system. Set spark plug gap to 0.024 - 0.028 inch (0.6 - 0.7 mm). Clean spark plug once a week.
3. **Recoil Starter (pull rope)** — Manual-starting method. Pull the starter grip until resistance is felt, then pull briskly and smoothly.

NOTICE

Operating the engine without an air filter, with a damaged air filter, or a filter in need of replacement will allow dirt to enter the engine, causing rapid engine wear.

4. **Muffler** — Used to reduce noise and emissions.

5. **Dipstick/Oil Filler Cap** — Remove this cap to determine if the engine oil is low. Add oil through this filler port as recommended in Table 3.
6. **Oil Drain Plug** — Remove this plug to remove oil from the engine's crankcase.

WARNING



Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operating. **NEVER** operate the engine with the muffler removed.

It is extremely important that this section be read carefully before attempting to operate the rammer. **DO NOT** use your rammer until this section is thoroughly understood.

CRANKCASE AND SPRING CYLINDER OIL BATH

This unit uses an oil bath lubrication system. Perform the following:

1. Check the oil level through the oil level sight glass (Figure 3) at the rear of the tamper foot.

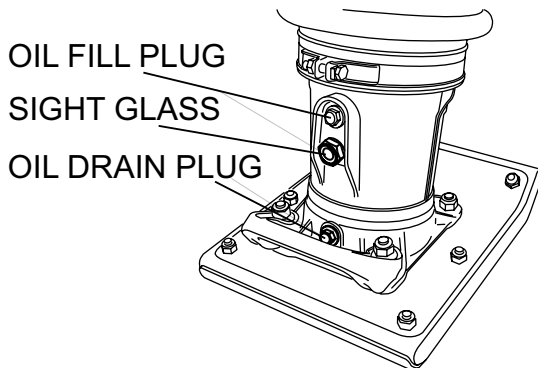


Figure 3. Foot Housing Sight Glass

NOTICE

The oil level should be kept at the half way point of the sight glass.

2. If oil is not visible, add 10W-30 SE, SF or higher grade motor oil into the oil fill plug opening (Figure 3). The bath contains approximately 1.7 pints (820 cc.)

ENGINE

1. Fill the fuel tank (Figure 4) with unleaded gasoline. At the same time, check the engine oil and make it a habit to replenish it often (Figure 5).

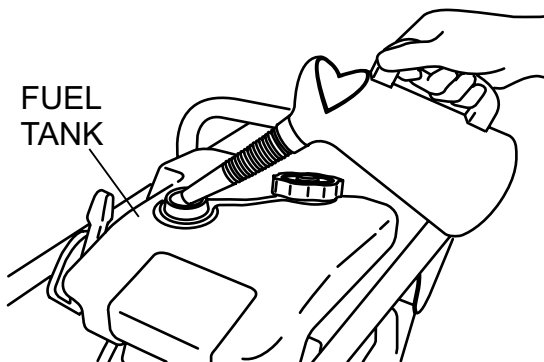


Figure 4. Fuel Tank

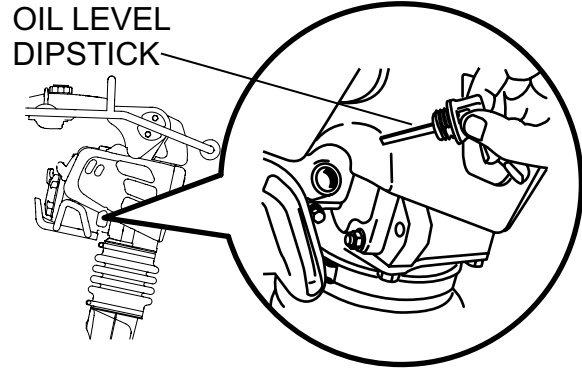


Figure 5. Engine Oil Dipstick

2. Low levels of oil may result in engine seizure due to high levels of consumption during operation.
3. Check the engine oil level and if the engine oil level is low, it should be refilled. Use the proper motor oil as suggested in the Table 3 below.

Table 3. Motor Oil Grade

Season or Temperature	Grade of motor oil (higher than MS class)
Spring, Summer or Autumn +120° F to +15° F	SAE 30
Winter +40° F to +15° F	SAE 30
Below +15° F	SAE 10W-30

GENERAL INSPECTION

1. Check all nuts, bolts fasteners for tightness. Retighten as necessary.
2. Clean any dirt from the recoil starter and foot pedestal. Wipe the entire unit clean before operating.
3. Replace any missing or damaged Safety Operation decals.
4. Adjust height of handle. Adjust handle by loosening nuts and moving handle to suit operation. Retighten nuts.

CAUTION

Failure to understand the operation of the Tamping Rammer could result in severe damage to the unit or personal injury.

INITIAL STARTUP

When starting the MTX70SD Tamping Rammer perform the following:

1. Slide the throttle lever from the stop to the idle position (👉) (Figure 6). This opens the fuel cock and the engine electrical circuit is turned on automatically.

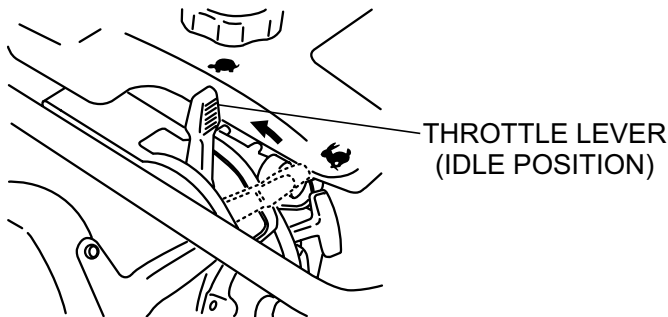


Figure 6. Throttle Lever (Idle Position)

2. Carburetor Purge System: Push the purge bulb four times or until you see fuel in the bulb (Figure 7).

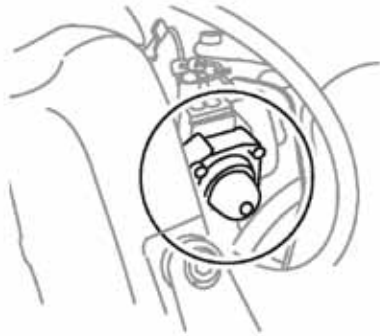


Figure 7. Purge Bulb

NOTICE

Pumping the purge bulb removes air from the fuel system. It does not pump fuel into the carburetor.

3. Place the choke lever to the closed position. When the weather is cold, close the choke all the way. When it is hot, or if the engine is hot, open the choke a little or leave it fully open.

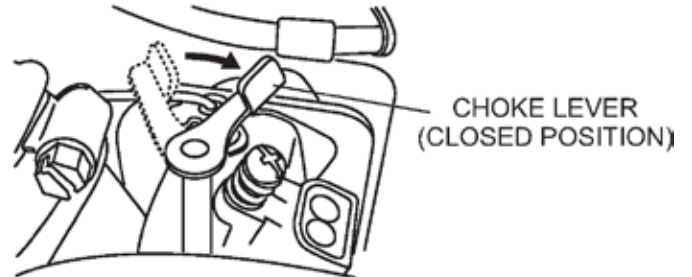


Figure 8. Choke Lever

4. Grip the starter rope handle (Figure 9) and pull it until you feel a slight resistance. Then pull sharply and quickly. Return the handle to the starter case before releasing.

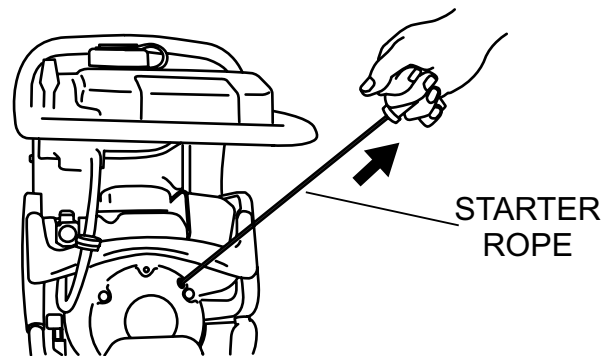


Figure 9. Recoil Starter

5. If engine fails to start, move the choke lever (Figure 8) to the half open position to avoid flooding.
6. Repeat steps 1 thru 5.
7. If the engine does not start after repeated attempts, check the spark plug for excess fuel. Clean and replace the spark plug as needed.

OPERATION

1. To start the rammer tamping action, move the throttle lever (Figure 10) **quickly** from **IDLE** to the **START** (🔌) position. **DO NOT** move the throttle lever slowly as this may cause damage to the clutch or spring.

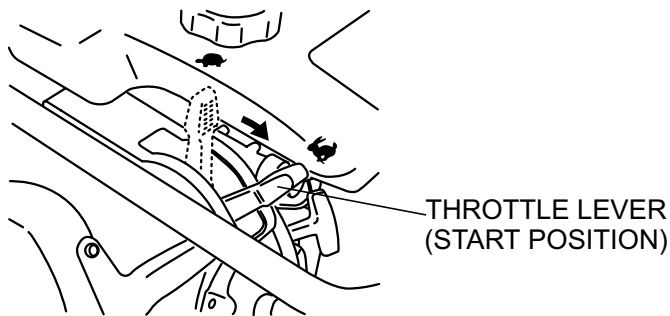


Figure 10. Throttle Lever (Start Position)

⚠ CAUTION

Make sure that the throttle lever is moved to the **FULL START** position. Operating the rammer at less than full speed can result in damage to the clutch springs or foot.

2. The MTX70SD tamping rammer is designed to run at 3,800 to 4,100 rpm. At optimum rpm the foot hits at the rate between 590 - 695 impacts per minute. Increasing throttle speed past factory set rpm does not increase impacts and may damage unit. The MTX70SD is designed to advance while tamping. For faster advance, pull back slightly on the handle so that rear of foot contacts soil first.
3. To stop the tamping action, move throttle lever quickly from **START** to **IDLE** position (Figure 6).

STOPPING THE ENGINE

1. Move throttle lever quickly from the **START** to **IDLE** position (Figure 6) and run the engine for three minutes at low speed. After the engine **cools**, move the throttle lever to the **STOP** position (Figure 11). The engine will stop and the fuel cock is automatically closed.

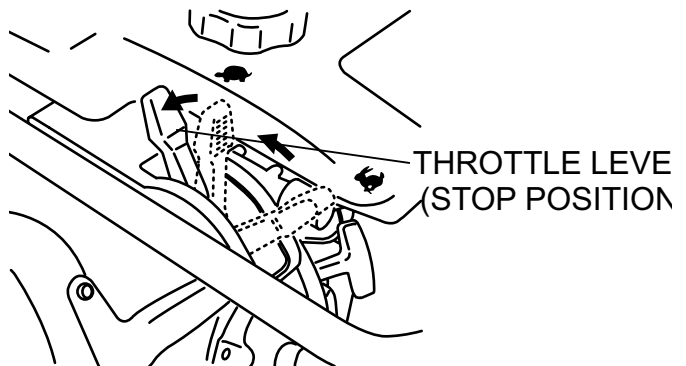


Figure 11. Throttle Lever (Stop Position)

2. If the engine does not stop due to a problem with the switch or the like, move the machine to a safe location and hold the throttle lever in the stop position. Let the machine run on idle and the machine will stop after a few minutes.

MAINTENANCE

DAILY

- Thoroughly remove dirt and oil from the engine and control area.
- Clean or replace the air cleaner elements as necessary. Check and retighten all fasteners as necessary.
- Check the spring box and bellows for oil leaks. Repair or replace as needed.

EVERY 50 HOURS

- Inspect in-line fuel filter (Part Number 26365012A3, Figure 12) and replace if necessary.



Figure 12. In-Line Fuel Filter

- Remove and clean the spark plug, then adjust the spark gap to 0.024~0.028 inch (0.6~0.7 mm).

EVERY 80 TO 100 HOURS

- Remove the air cleaner cover. Loosen and remove the 2 screws that hold the cover to the air cleaner assembly. If the primary element (Figure 13) is dirty, wash it with gasoline or kerosene. Then dip it in engine oil (SAE10W-30) and wring the element so that 25 to 30 cc of engine oil remains on the element.

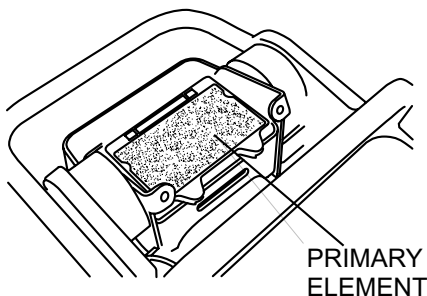


Figure 13. Air Cleaner Primary Element

EVERY 200 HOURS

- Remove the oil drain plug on foot housing (Figure 14) and drain the oil. Refill with approximately 1.7 pint (800 cc)

of 10W-30 SE, SF or higher grade motor oil. Oil should be midway in sight glass. Break in oil should be changed after first 50 hours.

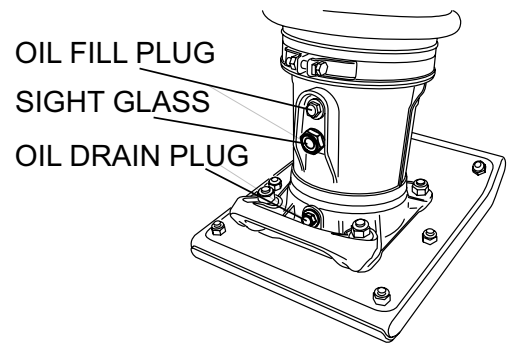


Figure 14. Oil Drain Plug

EVERY 6 MONTHS

- Clean the inside of the fuel tank with solvent.
- Inspect and clean fuel strainer (Figure 15). Replace strainer if necessary.

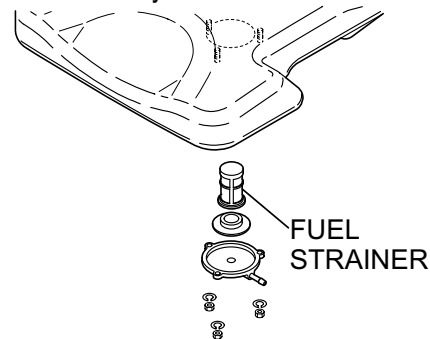


Figure 15. Fuel Strainer

EVERY 2 YEARS

- Replace the fuel line every 2 years even if there is no visible damage.

LONG TERM STORAGE

- Slide the throttle lever to the **STOP** position.
- Drain any fuel including in the fuel hose.
- Replace lubrication oil and apply grease to lubrication points.
- Cover the air intake on the air cleaner and the exhaust outlet on the muffler.
- Store unit indoors covered with plastic sheet in moisture free and dust free location out of direct sunlight.

TROUBLESHOOTING

Troubleshooting (Engine)		
Symptom	Possible Problem	Solution
Difficult to start, fuel is available, but no spark at spark plug.	Combo lever in incorrect position?	Make sure combo lever is in start position.
	Spark plug bridging?	Check gap, insulation or replace spark plug.
	Carbon deposit on spark plug?	Clean or replace spark plug.
	Short circuit due to deficient spark plug insulation?	Check spark plug insulation, replace if worn.
	Improper spark plug gap?	Set to proper gap.
	Fuel reaching carburetor?	Check fuel line.
	Water in fuel tank?	Flush or replace fuel tank.
	Fuel filter clogged?	Replace fuel filter.
	Stuck carburetor?	Check float mechanism.
	Spark plug is red?	Check transistor ignition unit.
	Spark plug is bluish white?	If insufficient compression, repair or replace engine. If injected air leaking, correct leak. If carburetor jets clogged, clean carburetor.
	No spark present at tip of spark plug?	Check transistor ignition unit is broken, and replace defective unit. Check if voltage cord cracked or broken and replace. Check if spark plug if fouled and replace.
No oil?	Add oil as required.	
Difficult to start, fuel is available, and spark is present at the spark plug.	ON/OFF switch is shorted?	Check switch wiring, replace switch.
	Ignition coil defective?	Replace ignition coil.
	Improper spark gap, points dirty?	Set correct spark gap and clean points.
	Condenser insulation worn or short circuiting?	Replace condenser.
	Spark plug wire broken or short circuiting?	Replace defective spark plug wiring.
Difficult to start, fuel is available, spark is present and compression is normal.	Wrong fuel type?	Flush fuel system, replace with correct type of fuel.
	Water or dust in fuel system?	Flush fuel system.
	Air cleaner dirty?	Clean or replace air cleaner.
	Choke open?	Close choke.
Difficult to start, fuel is available, spark is present and compression is low.	Suction/exhaust valve stuck or protruded?	Reseat valves.
	Piston ring and/or cylinder worn?	Replace piston rings and/or piston.
	Cylinder head and/or spark plug not tightened properly?	Torque cylinder head bolts and spark plug.
	Head gasket and/or spark plug gasket damaged?	Replace head and spark plug gaskets.
No fuel present at carburetor.	No fuel in fuel tank?	Fill with correct type of fuel.
	Fuel cock does not open properly?	Apply lubricant to loosen fuel cock lever, replace if necessary.
	Fuel filter/lines clogged?	Replace fuel filter.
	Fuel tank cap breather hole clogged?	Clean or replace fuel tank cap.
	Air in fuel line?	Bleed fuel line.

TROUBLESHOOTING

Troubleshooting (Engine) - continued		
Symptom	Possible Problem	Solution
Weak in power, compression is proper and does not misfire.	Air cleaner dirty?	Clean or replace air cleaner.
	Improper level in carburetor?	Check float adjustment, rebuild carburetor.
	Defective spark plug?	Clean or replace spark plug.
	Improper spark plug?	Set to proper gap.
Weak in power, compression is proper but misfires.	Water in fuel system?	Flush fuel system and replace with correct type of fuel.
	Dirty spark plug?	Clean or replace spark plug.
	Ignition coil defective?	Replace ignition coil.
Engine overheats.	Spark plug heat value incorrect?	Replace with correct type of spark plug.
	Wrong type of fuel?	Replace with correct type of fuel.
	Cooling fins dirty?	Clean cooling fins.
	Intake air restricted?	Clear intake of dirt and debris. Replace air cleaner elements as necessary.
	Oil level too low or too high?	Adjust oil to proper level.
Rotational speed fluctuates.	Governor adjusted incorrectly?	Adjust governor.
	Governor spring defective?	Replace governor spring.
	Fuel flow restricted?	Check entire fuel system for leaks or clogs.
Recoil starter malfunctions. (if applicable)	Recoil mechanism clogged with dust and dirt?	Clean recoil assembly with soap and water.
	Spiral spring loose?	Replace spiral spring.
Starter malfunctions.	Loose, damaged wiring?	Ensure tight, clean connections on battery and starter.
	Battery insufficiently charged?	Recharge or replace battery.
	Starter damaged or internally shorted?	Replace starter.
Burns too much fuel.	Over-accumulation of exhaust products?	Check and clean valves. Check muffler and replace if necessary.
	Wrong spark plug?	Replace spark plug with manufacturer's suggested type.
Exhaust color is continuously "white".	Lubricating oil is wrong viscosity?	Replace lubricating oil with correct viscosity.
	Worn rings?	Replace rings.
Exhaust color is continuously "black".	Air cleaner clogged?	Clean or replace air cleaner.
	Choke valve set to incorrect position?	Adjust choke valve to correct position.
	Carburetor defective, seal on carburetor broken?	Replace carburetor or seal.
	Poor carburetor adjustment, engine runs too rich?	Adjust carburetor.
Will not start, no power with key "ON". (if applicable)	ON/OFF device not activated ON?	Turn on ON/OFF device.
	Battery disconnected or discharged?	Check cable connections. Charge or replace battery
	Ignition switch/wiring defective?	Replace ignition switch. Check wiring.

TROUBLESHOOTING

Troubleshooting (Rammer)		
Symptom	Possible Problem	Solution
Engine runs but rammer jumps erratically or not at all.	Operating speed of throttle lever is incorrectly set?	Set throttle lever to correct position.
	Oil in excess?	Drain excess oil. Bring to correct level.
	Clutch slips?	Replace or adjust clutch.
	Spring Failure?	Replace spiral spring.
	Speed of engine improper?	Adjust engine speed to correct operating RPM setting.
	Soil over-compacted?	Shut down machine and test soil.

EXPLANATION OF CODE IN REMARKS COLUMN

The following section explains the different symbols and remarks used in the Parts section of this manual. Use the help numbers found on the back page of the manual if there are any questions.

NOTICE

The contents and part numbers listed in the parts section are subject to change **without notice**. Multiquip does not guarantee the availability of the parts listed.

SAMPLE PARTS LIST

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	12345	BOLT	1	INCLUDES ITEMS W/%
2%		WASHER, 1/4 IN.		NOT SOLD SEPARATELY
2%	12347	WASHER, 3/8 IN. ...	1	MQ-45T ONLY
3	12348	HOSE	A/R	MAKE LOCALLY
4	12349	BEARING	1	S/N 2345B AND ABOVE

NO. Column

Unique Symbols — All items with same unique symbol

(@, #, +, %, or >) in the number column belong to the same assembly or kit, which is indicated by a note in the “Remarks” column.

Duplicate Item Numbers — Duplicate numbers indicate multiple part numbers, which are in effect for the same general item, such as different size saw blade guards in use or a part that has been updated on newer versions of the same machine.

NOTICE

When ordering a part that has more than one item number listed, check the remarks column for help in determining the proper part to order.

PART NO. Column

Numbers Used — Part numbers can be indicated by a number, a blank entry, or TBD.

TBD (To Be Determined) is generally used to show a part that has not been assigned a formal part number at the time of publication.

A blank entry generally indicates that the item is not sold separately or is not sold by Multiquip. Other entries will be clarified in the “Remarks” Column.

QTY. Column

Numbers Used — Item quantity can be indicated by a number, a blank entry, or A/R.

A/R (As Required) is generally used for hoses or other parts that are sold in bulk and cut to length.

A blank entry generally indicates that the item is not sold separately. Other entries will be clarified in the “Remarks” Column.

REMARKS Column

Some of the most common notes found in the “Remarks” Column are listed below. Other additional notes needed to describe the item can also be shown.

Assembly/Kit — All items on the parts list with the same unique symbol will be included when this item is purchased.

Indicated by:

“INCLUDES ITEMS W/(unique symbol)”

Serial Number Break — Used to list an effective serial number range where a particular part is used.

Indicated by:

“S/N XXXXX AND BELOW”

“S/N XXXX AND ABOVE”

“S/N XXXX TO S/N XXX”

Specific Model Number Use — Indicates that the part is used only with the specific model number or model number variant listed. It can also be used to show a part is NOT used on a specific model or model number variant.

Indicated by:

“XXXXX ONLY”

“NOT USED ON XXXX”

“Make/Obtain Locally” — Indicates that the part can be purchased at any hardware shop or made out of available items. Examples include battery cables, shims, and certain washers and nuts.

“Not Sold Separately” — Indicates that an item cannot be purchased as a separate item and is either part of an assembly/kit that can be purchased, or is not available for sale through Multiquip.

SUGGESTED SPARE PARTS

MTX70SD TAMPING RAMMER WITH ROBIN ER120D4500 ENGINE

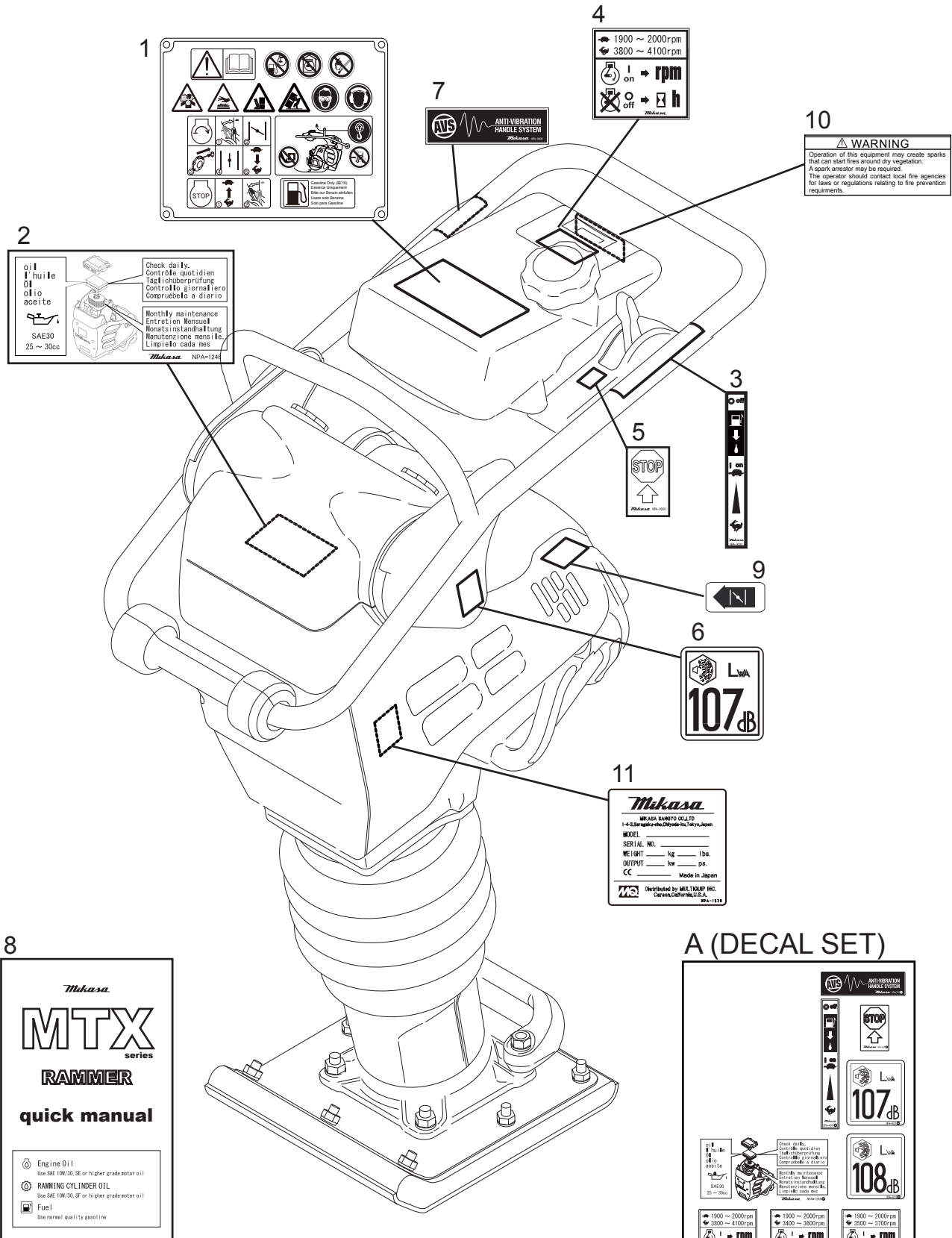
1 to 3 units

Qty.	P/N	Description
1.....	956100062.....	THROTTLE WIRE
3.....	366010070.....	PRIMARY ELEMENT, AIR CLEANER
3.....	366010080.....	SECONDARY ELEMENT, AIR CLEANER
1.....	366350460.....	CAP, FUEL TANK WITH STRAP
2.....	26365012A3.....	FILTER, IN-LINE FUEL
3.....	0650140860.....	SPARK PLUG
1.....	954406010.....	STRAINER, #110 FUEL TANK
1.....	21E5011008.....	ROPE, RECOIL STARTER
1.....	956200110.....	COMBINATION LEVER
1.....	366900170.....	CUP AND PACKING SET
1.....	366348550.....	CLUTCH ASSY.

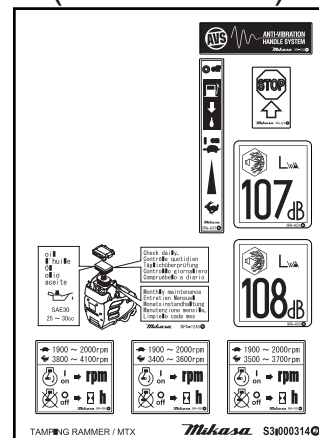
NOTICE

Part numbers on this Suggested Spare Parts list may supersede/replace the part numbers shown in the following parts lists.

NAMEPLATES AND DECALS



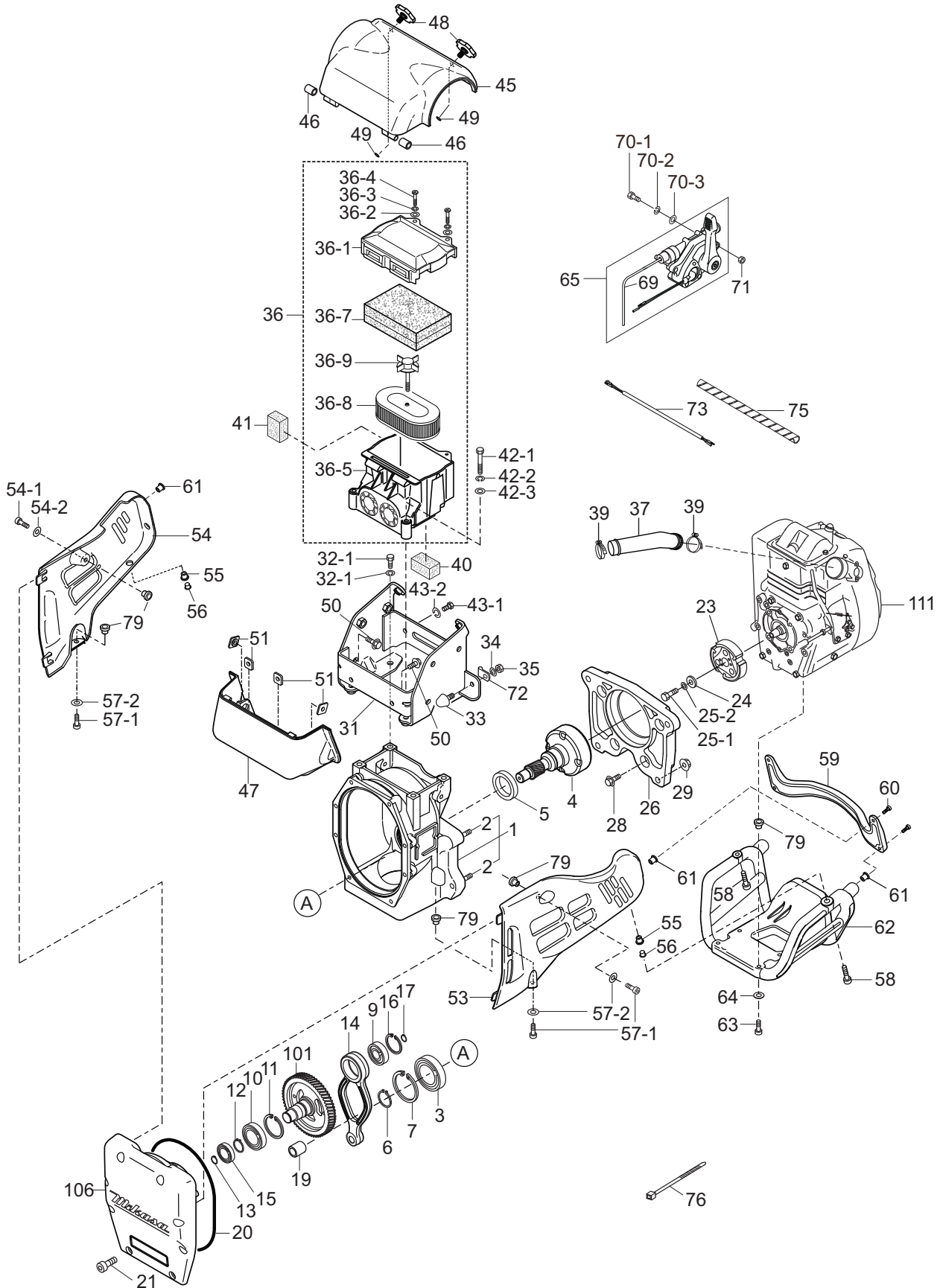
A (DECAL SET)



NAMEPLATES AND DECALS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	920215440	DECAL: OPERATION	1	
2#		DECAL: AIR CLEANER	1	
3#		DECAL: LEVER OPERATION	1	
4#		DECAL: MAX SPEED	1	
5#		DECAL: MACHINE STOP	1	
6#		DECAL: EC NOISE REQ Lwa 107 dB	1	
7#		DECAL: ANTI-VIB HANDLE	1	
8	920212540	QUICK MANUAL	1	
9	0732004430	DECAL: CHOKE OPERATION	1	
10	920214100	DECAL: E/G FIRE WARNING	1	
11		DECAL: NAMEPLATE	1.....	CONTACT MQ PARTS DEPT. W/ SERIAL NO.
A	920900040	DECAL SET	1.....	INCLUDES ITEMS W/ #

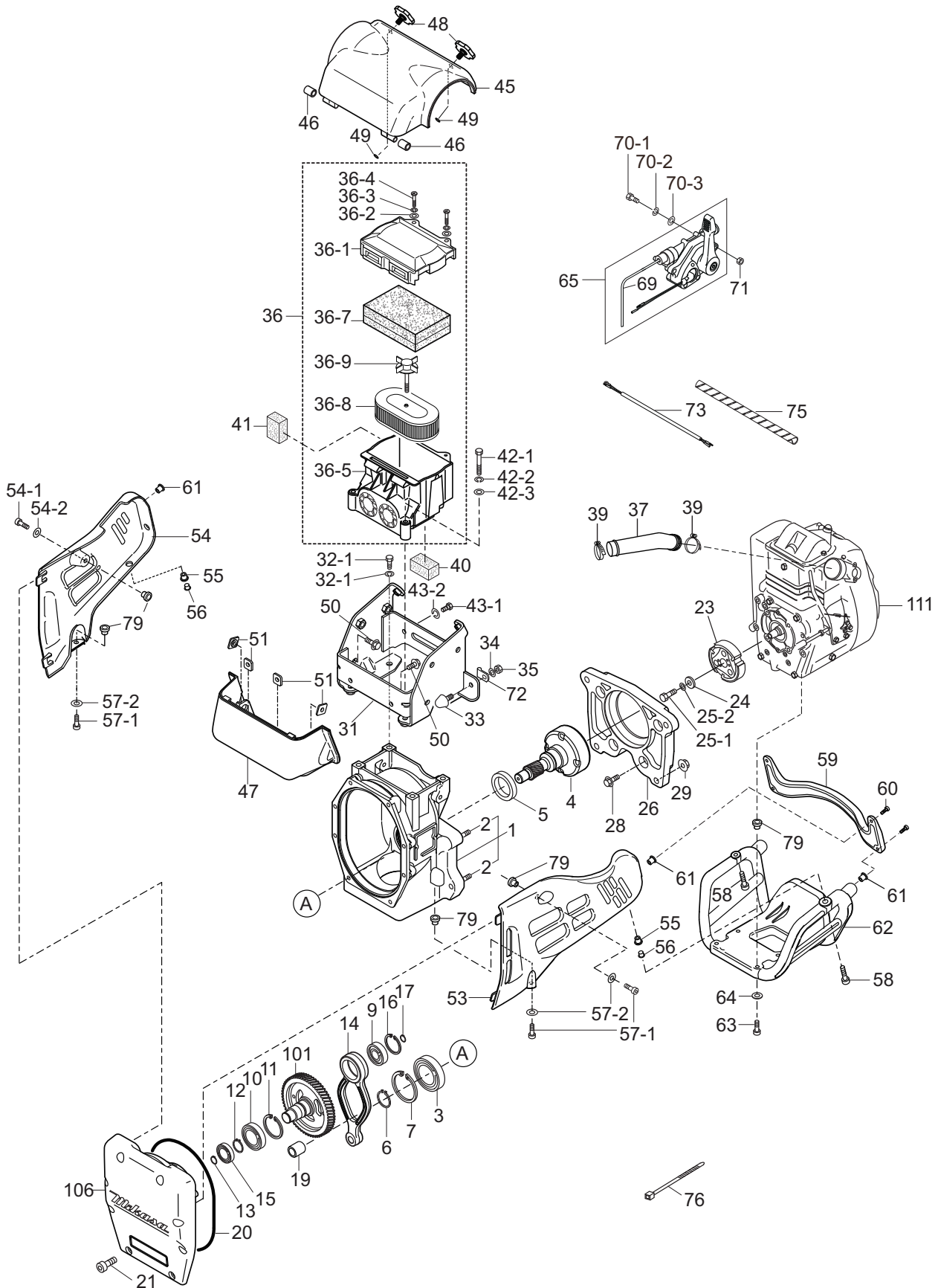
CRANKCASE AND ENGINE ASSY



CRANKCASE AND ENGINE ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	366910010	CRANKCASE	1.....	INCLUDES ITEMS W/ \$
2\$	009120204	STUD BOLT 10 X 30	4	
3	041006007	BEARING 6007Z	1	
4	366345170	DRUM, PINION	1	
5	060404010	OIL SEAL TC-40528	1	
6	080200350	STOP RING S-35	1	
7	080100620	STOP RING R-62	1	
9	040006207	BEARING 6207	1	
10	040006305	BEARING 6305	1	
11	080100720	STOP RING R-72	1	
12	080200350	STOP RING S-35	1	
13	JISB2804C	STOP RING S-25	1	
14	366345230	CONNECTING ROD	1	
15	040006304	BEARING 6304	1	
16	080100520	STOP RING R-52	1	
17	080200200	STOP RING S-20	1	
19	047940060	NEEDLE BEARING FJ-1816	1	
20	050710080	O-RING	1	
21	014208025	SOCKET HEAD BOLT 8X25 T	8	
23	366348550	CLUTCH ASSY	1	
24	952401450	WASHER, 5X22X3	1	
25-1	011208025	BOLT 8X25 T	1	
25-2	030208200	WASHER, LOCK M8	1	
26	366217180	FLANGE, ENGINE	1	
28	001710830	FLANGE BOLT 8X30	4	
29	022611010	FLANGE NUT M10	4	
31	366346280	BRACKET, SHOCK ABSORBER	1	
32-1	012010030	BOLT 10X30	4	
32-2	030210250	WASHER, LOCK M10	4	
33	939010270	STOPPER RUBBER (70)	1	
34	030208200	WASHER, LOCK M8	1	
35	020108060	NUT M8	1	
36	366900010	AIR CLEANER CP	1.....	INCLUDES ITEMS W/ #
36-1#	366010010	AIR CLEANER COVER CP	1	
36-2#	366010020	WASHER, FLAT M6	2	
36-3#	366010030	WASHER, LOCK M6	2	
36-4#	366010040	COIN BOLT M6	2	
36-5#	366010050	BASE CP, AIR CLEANER	1	
36-7#	366010070	PRIMARY ELEMENT CP	1	
36-8#	366010080	SECONDARY ELEMENT	1	
36-9#	362030040	GRIP BOLT CP, AIR CLEANER	1	
37	366350540	PIPE, INTAKE	1	
39	954407682	CYCLONE CLAMP (CY-1) 38	2	
40	366460160	SEALING FORM, UNDER	1	
41	366460150	SEALING FORM, SIDE	1	

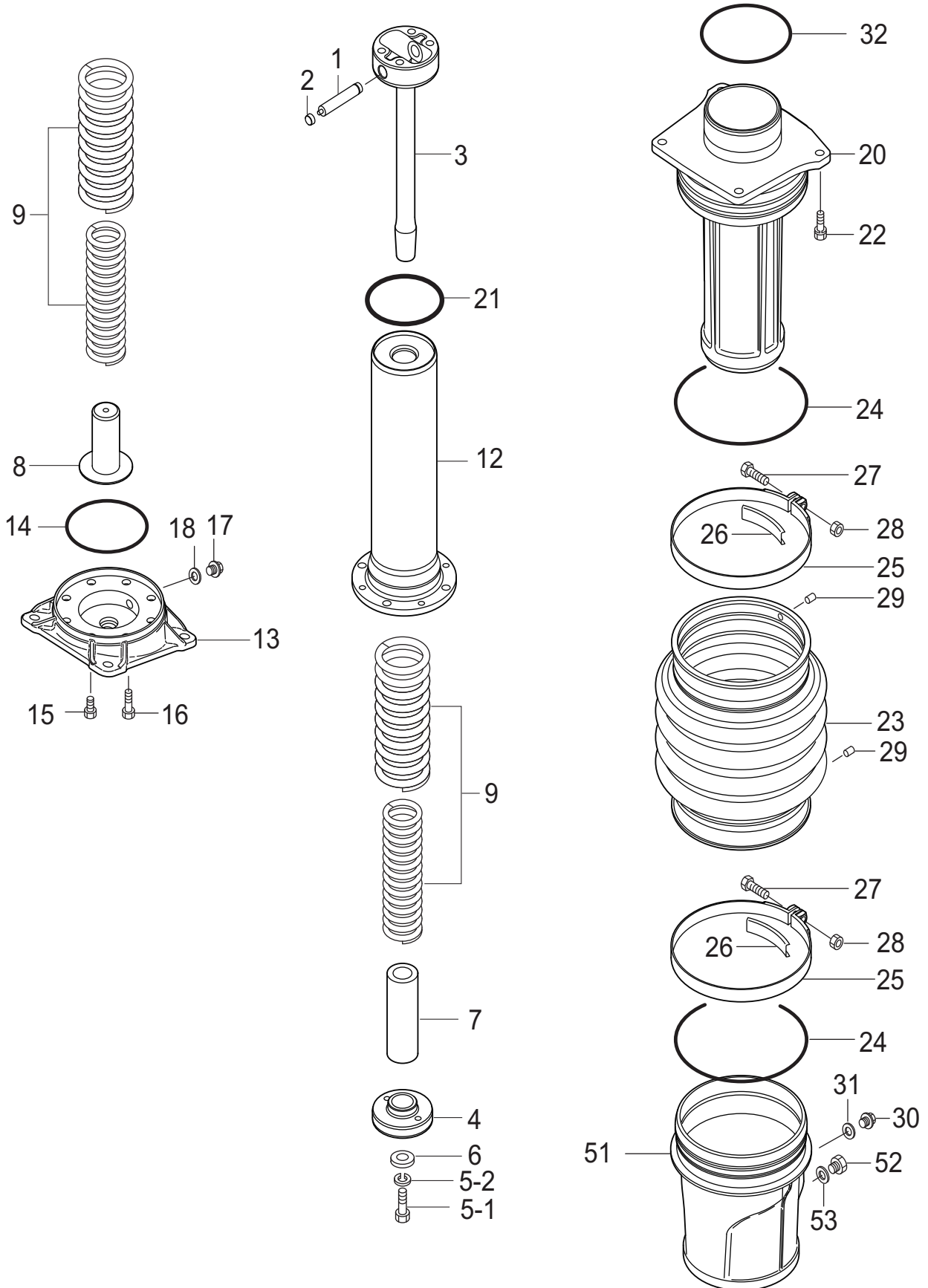
CRANKCASE AND ENGINE ASSY



CRANKCASE AND ENGINE ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
42-1	001220851	BOLT 8X55 T	2	
42-2	030208200	WASHER, LOCK M8	2	
42-3	0401450080	WASHER, FLAT M8	2	
43-1	011008015	BOLT 8X15	2	
43-2	030208200	WASHER, LOCK M8	2	
45	366217340	COVER, CLEANER(UPPER)	1	
46	366460140	RUBBER BUSH 10X16X17	2	
47	366217350	COVER, CLEANER (LOWER)	1	
48	366345980	KNOB, CLEANER COVER	2	
49	050200060	O-RING P6	2	
50	009110040	FLANGE BOLT 8X20	4	
51	959407670	SQUARE NUT M8	4	
53	366120410	GUARD, LINK	1	
54	366120420	GUARD, MUFFLER	1	
55	022910260	WELL NUT, M8	2	
56	366460170	FLANGE COLLAR 8	2	
57-1	014208020	SOCKET HEAD BOLT 8X20 T	4	
57-2	033910220	WASHER, FLAT M8	4	
58	009110038	SOCKET HEAD BOLT 8X30 ZN	2	
59	368217770	CROSS BAR	1	
60	009110039	SOCKET HEAD BOLT 6X25 ZN	4	
61	022910250	WELL NUT M6	4	
62	366120430	GUARD, ENGINE	1	
63	009110038	SOCKET HEAD BOLT 8X30 ZN	4	
64	033910220	WASHER 8.4X15.5X1.6	4	
65	366900032	COMBINATION LEVER ASSY W/ WIRE	1	INCLUDES ITEM W/@
69@	956100062	THROTTLE WIRE	1	
70-1	001220620	BOLT 6X20T	2	
70-2	030206150	WASHER, LOCK M6	2	
70-3	031106100	WASHER, FLAT M6	2	
71	020106050	NUT M6	2	
72	959006120	CLIP (TCP2-10509B)	1	
73	367460120	WIRE HARNESS	1	
75	959021810	SPIRAL TUBE KEP6/L=500	1	
76	454010020	CLAMP, TC-100	3	
79	366461050	COLLAR, GUARD	8	
101	366345190	CRANK GEAR	1	
106	366010111	FRONT COVER	1	
111	911231201	ENGINE, ER120D45000	1	

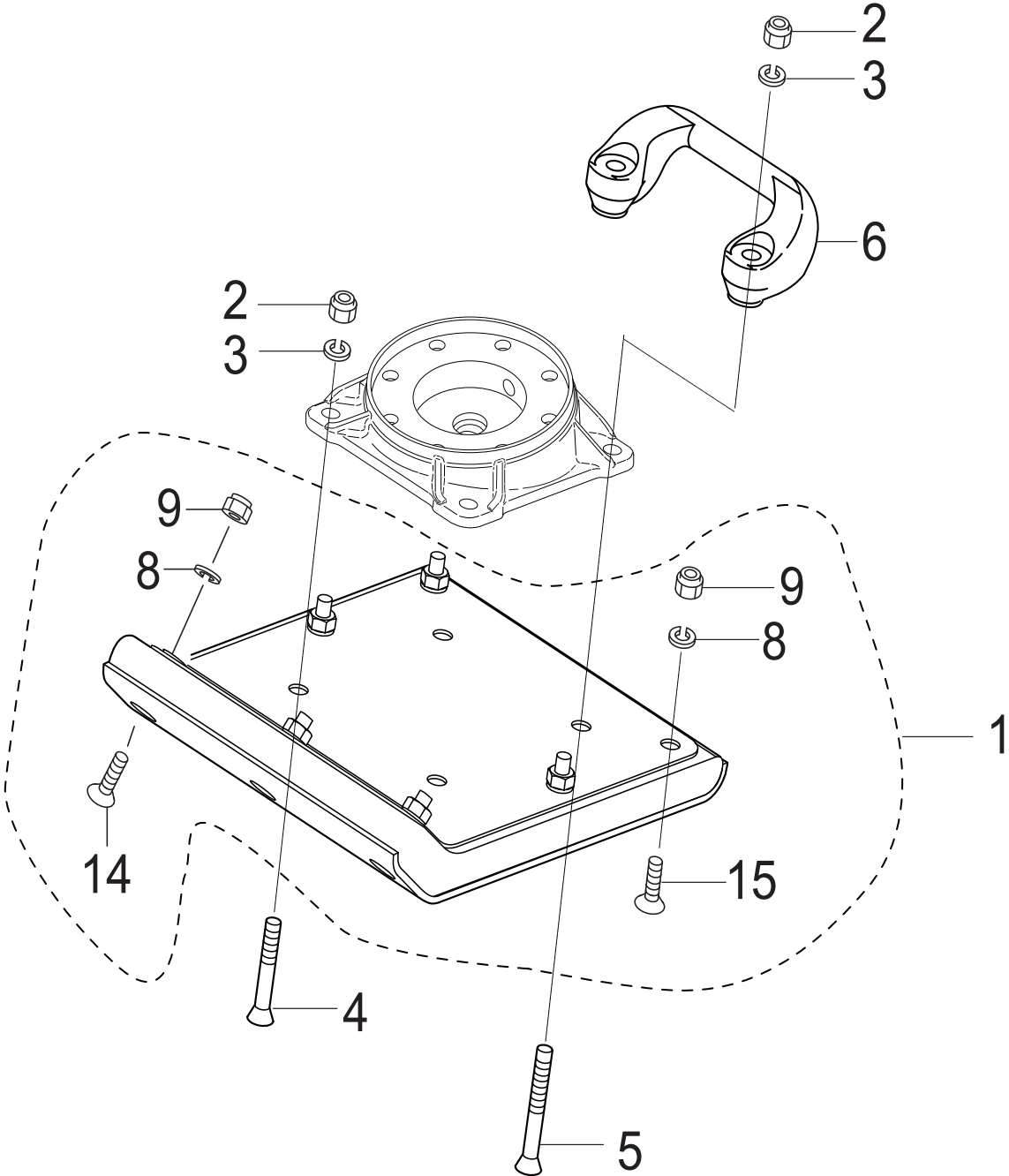
GUIDE CYLINDER ASSY



GUIDE CYLINDER ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	366460100	PISTON PIN	1	
2	366459910	PLUG, PISTON PINO	2	
3	366346000	PISTON ROD	1	
4	371459690	PISTON END	1	
5-1	001121230•	BOLT 12X30 T P1.5	1	
5-2	030212300	WASHER, LOCK M12	1	
6	952404790	WASHER 13306	1	
7	355447260	STOPPER, LOWER	1	
8	366459900	STOPPER, BOTTOM	1	
9	366459730	MAIN SPRING	2	
12	366345990	SPRING CYLINDER	1	
13	366217210	FOOT PLATE 12	1	
14	050100900	O-RING G-90	1	
15	001521020	SOCKET HEAD BOLT 10X20 T	4	
16	001521040	SOCKET HEAD BOLT 10X40 T	4	
17	953405270	PLUG 1/4X14 13L	1	
18	953405260	PACKING 1/4 (CU)	1	
20	366217440	GUIDE CYLINDER	1	
21	050710070	O-RING AS568-344	1	
22	002211035	BOLT 10X35 H, SW	4	
23	354010010	BELLOWS, ORANGE	1	
24	050931500	O-RING JAS03150	2	
25	354336352	BELLOWS CLAMP(1.6T)171 D	2	
26	354442340	BAND GUIDE, BELLOWS	2	
27	001220840	BOLT 8X40 T	2	
28	020308060	NUT M8	2	
29	354446170	PIN 6D-8.5L	2	
30	953405270	PLUG 1/4X14 13L	1	
31	953405260	PACKING 1/4 (CU)	1	
32	050200950	O-RING P-95	1	
51	366118590	PROTECTION SLEEVE	1	
52	366460300	OIL GAUGE ASSY	1	
53	953404670	COPPER PACKING 17X25.5X1	1	

FOOT ASSY



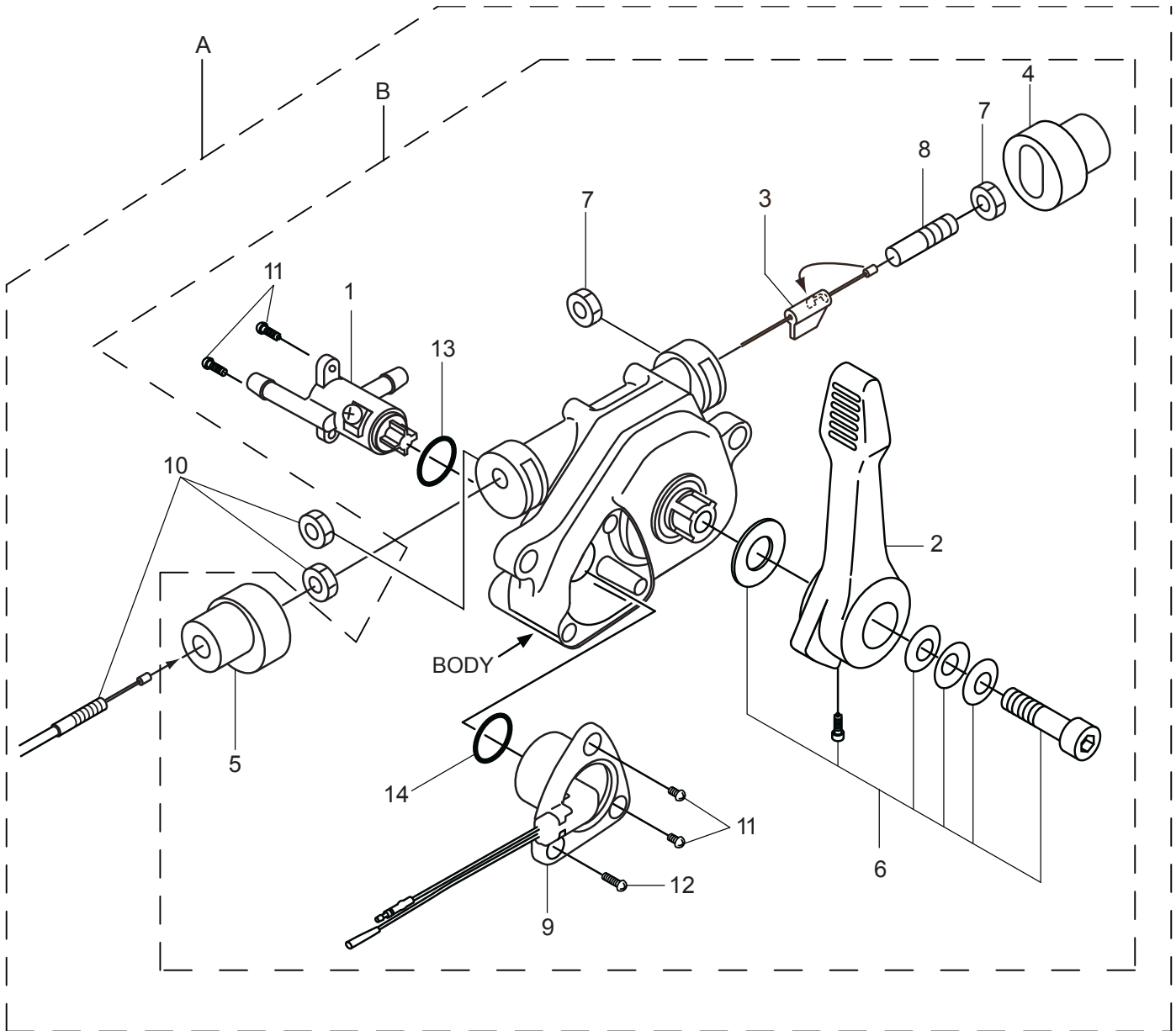
FOOT ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	8511S	FOOT ASSY 285	1.....	INCLUDES ITEMS W/ #
2	0227-11214	NYLON NUT M12	4	
3	030212300	WASHER, LOCK M12	4	
4	009110034	BOLT, SQUARE NECK 12X65	2	
5	009110035	BOLT, SQUARE NECK 12X95	2	
6	363343390	GRIP HANDLEBAR	1	
8#	030210250	WASHER, LOCK M10	7	
9#	022711012	NYLON NUT M10	7	
14#	009110036	BOLT, SQUARE NECK 10X55	3	
15#	009110033	BOLT, SQUARE NECK 10X50	4	

FUEL TANK AND HANDLE ASSY

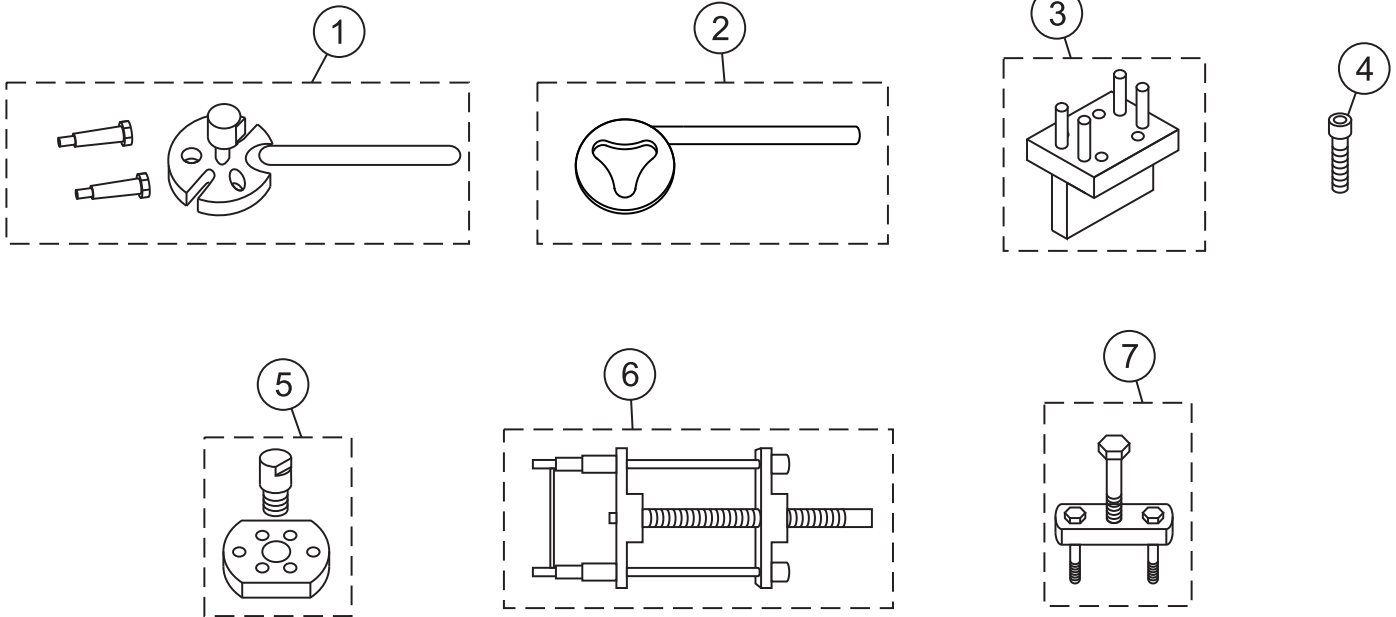
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	366346270	SHOCK ABSORBER W/ PIN	2	
2-1	014210020	SOCKET HEAD BOLT 10 X 20 T	2	
2-2	033121009	TOOTHED LOCK WASHER B M10	4	
3	366119042	HANDLE/MTX	4	
4-1	001211020	BOLT 10 X 20 H	1	
4-2	030210250	WASHER, LOCK M10	4	
5	939010270	STOPPER RUBBER (70)	4	
6	030208200	WASHER, LOCK (70)	1	
7	020108060	NUT M8	1	
9	366350460	CAP ASSY, FUEL TANK	1	
10	366120250	FUEL TANK	1	
11	022710809	NYLON NUT M8	1	
11-1	011208025	BOLT 8X25 H	3	
11-2	030208200	WASHER, LOCK M8	3	
11-3	0401450080	WASHER, FLAT M8	3	
12	952401450	WASHER, 8.5 X 22 X 3	3	
13	0401450080	WASHER, FLAT M8	2	
14	954406010	STRAINER #110	1	
15	050251420	O-RING P42	1	
16	366350580	HOLDER, FILTER.....	1	INCLUDES ITEMS W/ \$
17	001200515	BOLT 5X15 H	1	
18	030205130	WASHER, LOCK M5	3	
19	959328406	FUEL HOSE L=90	3	
20	954406420	HOSE BAND 10.5	1	
22	009110037	TAPPING SCREW 5 X 20	2	
23	094010053	PANHEAD SCREW 4 X 8	2	
40	366910030	ROLLER ASSY W/ SCREW.....	4	INCLUDES ITEMS W/ #
41#	366217170	ROLLER	1	
42#	0017105020	SCREW 5 X 20	2	
43#	022610505	FLANGE NUT M5 H	4	
51	955010311	TACHO/HOUR METER	4	
53	955010305	CURL CORD TP22	1	
54	366345620	FINISHER, METER	1	
55	454010020	CLAMP TC100	1	
56	954010270	CLIP AB-3N	5	
57&\$	366464260	CUP, HOLDER FILTER	1	
58&\$	366464270	PACKING, HOLDER FILTER	1	
59\$	366900170	CUP AND PACKING SET.....	1	INCLUDES ITEMS W/ &
101	959328402	FUEL HOSE 5.5 X 8.5 X 170	1	
102	0561080020	HOSE BAND	1	
104	26365012A3	IN-LINE FILTER, FUEL	4	
105	959328403	FUEL HOSE 5.5 X 8.5 X 260	1	
106	954407720	TUBE, VINYL L180	1	
111%	959028301	RETURN HOSE 3 X 6 X 600	1	
112%	954408170	HOSE CLIP	1	
113%	959021814	SPIRAL TUBE 6D-200L	2	

COMBINATION LEVER ASSY



COMBINATION LEVER ASSY

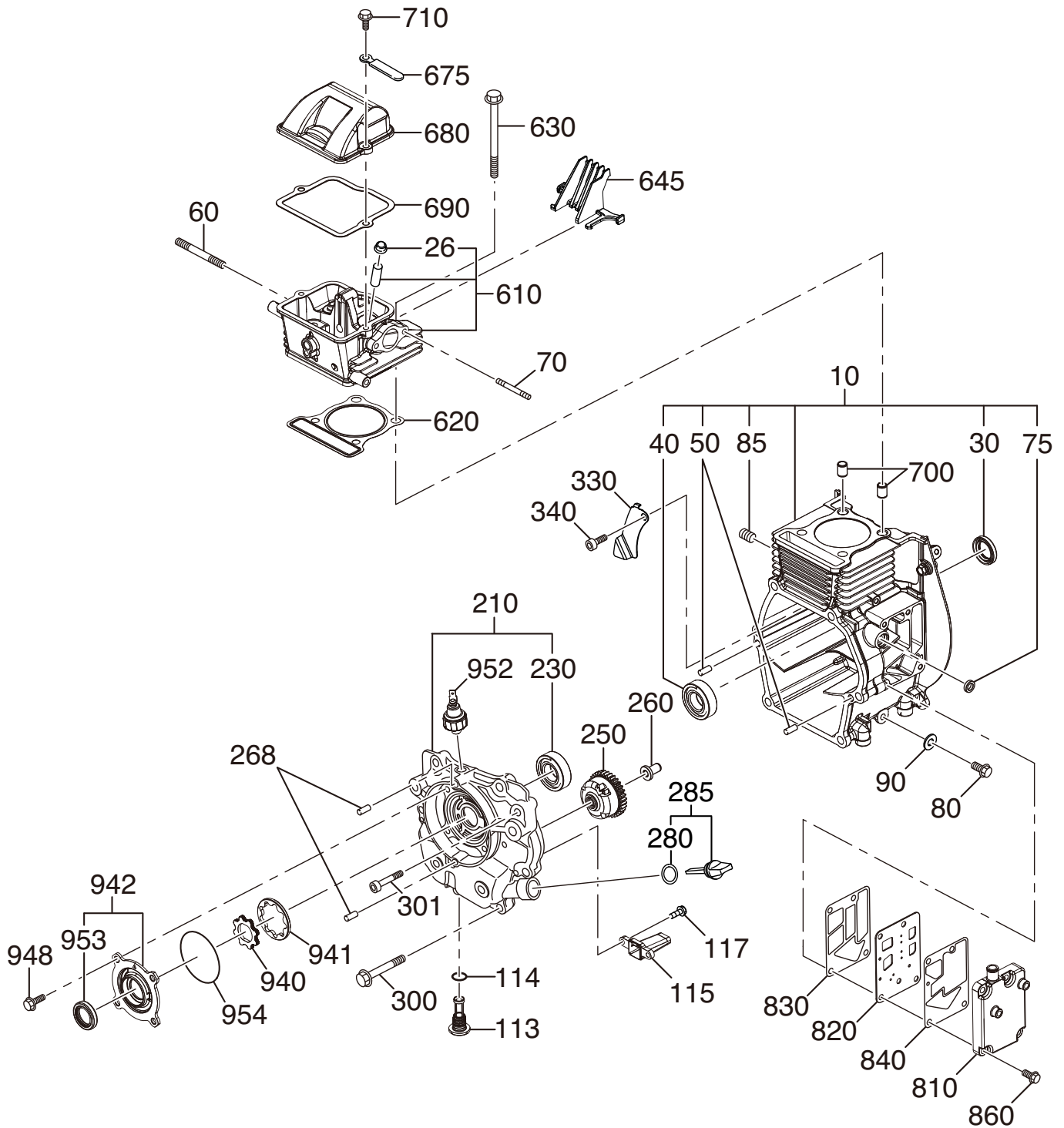
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
A	366900032	COMB. LEVER W/ THROTTLE WIRE.....	1.....	INCLUDES ITEMS W/@
B	956200110	COMB. LEVER W/OUT THROTTLE WIRE.....	1.....	INCLUDES ITEMS W/#
1@#	366349430	FUEL COCK	1	
2@#	366010310	LEVER	1	
3@#	366010190	SLIDER	1	
4@#	366010200	END CAP	1	
5@#	366010210	WIRE CAP	1	
6@#	366010220	BOLT AND WASHER SET	1	
7@#	020408050	NUT M8, H=5	2	
8@#	959407650	SOCKET HEAD SCREW/THROTTLE WIRE	1	
9@#	366010320	STOP SWITCH	1	
10@	956100062	THROTTLE WIRE	1	
11@#	094010051	TAPPING SCREW B1 4X12	4	
12@#	094010052	TAPPING SCREW B1 4X30	1	
13@#	050200150	O-RING, P15	1	
14@#	050200110	O-RING, P11	1	



TOOLS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	981010400	CLUTCH PULLER A	1	
2	983010060	CLUTCH MOUNTER	1	
3	983910030	PISTON ROD HOLDER	1	
4	009110044	SOCKET HEAD BOLT 8X50 (FULL THREAD)		
		CRANK GEAR REMOVER	2	
5	983910021	CLUTCH PULLER B	1	
6	983010042	SPRING CYLINDER REMOVER	1	
7	983910010	PISTON END REMOVER	1	

ROBIN ER120D45000 ENGINE — CRANKCASE ASSY.

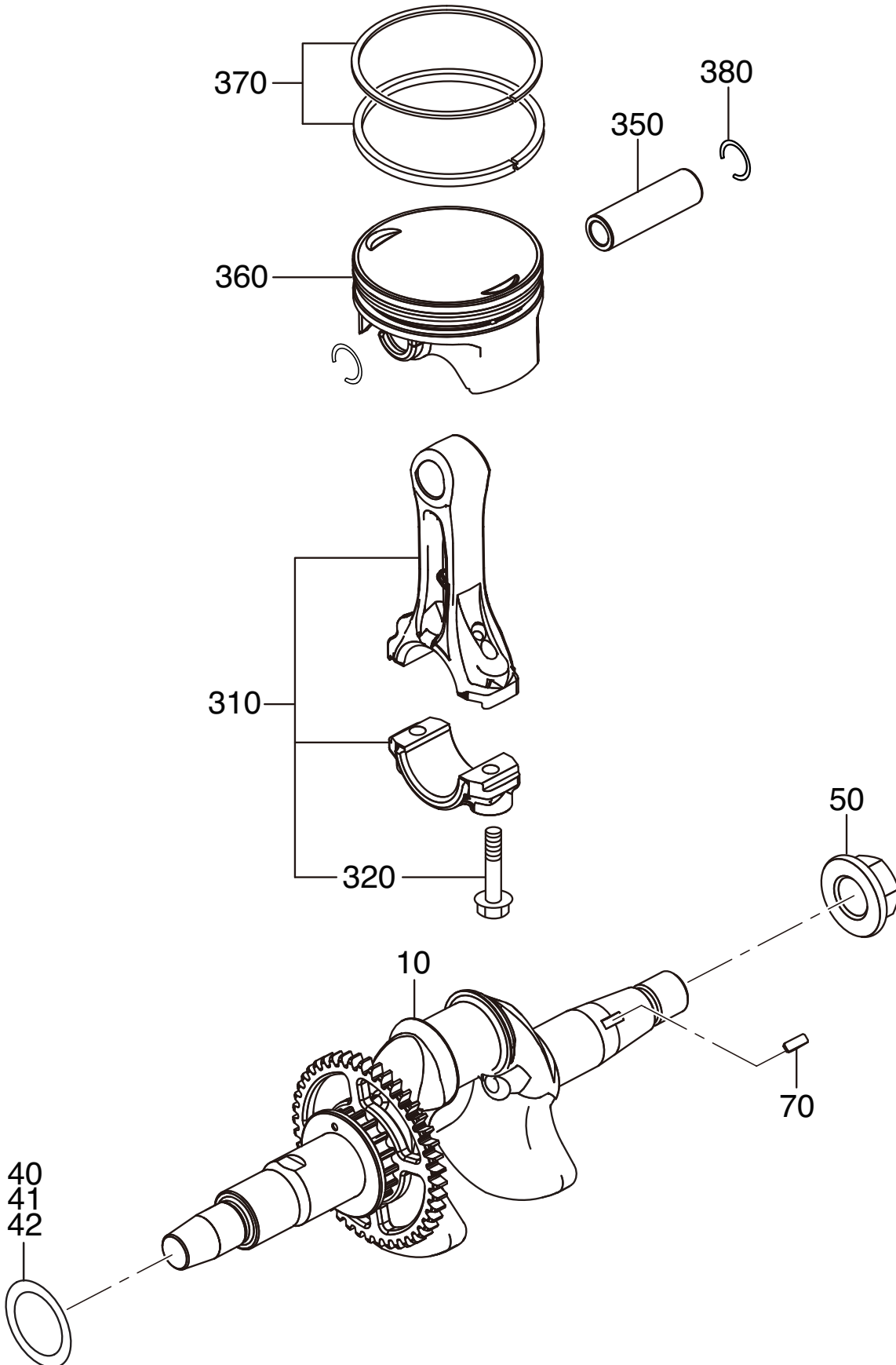


960 — GASKET SET

ROBIN ER120D45000 ENGINE — CRANKCASE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E10101M1	CRANKCASE CP	1.....	INCLUDES ITEMS W/#
26@	20F1601001	STEM SEAL	1	
30#	0440200070	OIL SEAL	1	
40#	X600200200	BALL BEARING	1	
50#	20F0060023	DOWEL PIN	2	
60	X105080550	STUD	2	
70	X105060470	STUD	2	
75#	X440080010	OIL SEAL	1	
80	0110080150	FLANGE BOLT	1	
85#	0403140010	PLUG	1	
90	X211080050	GASKET(ALUMINIUM)	1	
113	21E65001H2	PLUG	1	
114	0240110020	O-RING	1	
115	21E64201J3	SUCTION PIPE	1	
117	X110050030	FLANGE BOLT	2	
210	21E11001L1	MAIN BEARING COVER CP	1.....	INCLUDES ITEMSW/\$
230\$	X600220030	BALL BEARING	1	
250	21E45001J1	GOVERNOR GEAR CP	1	
260	21E41901H3	GOVERNOR SLEEVE	1	
268	20F0060023	DOWEL PIN	2	
280	X213160030	GASKET	1	
285	21E63601H1	OIL GAUGE CP	1	
300	0110080160	FLANGE BOLT	6	
301	X119060110	BOLT (SOCKET HEAD)	1	
330	21E17001H3	OIL SHELTER PLATE	1	
340	0011305100	BOLT AND WASHER ASSY	1	
610	21E13001L0	CYLINDER HEAD ASSY	1.....	INCLUDES ITEMS W/@
620	21E1500113	GASKET(HEAD)	1	
630	X110080460	FLANGE BOLT	4	
645	21E18001H3	GUIDE (S.PLUG)	1	
680	21E15501H3	ROCKER COVER	1	
690	21E1600101	GASKET CP (R.COVER)	1	
700	20F1501103	PIPE KNOCK	2	
710	X110060610	FLANGE BOLT	2	
810	21E14301H3	BREATHER COVER	1	
820	21E14401H1	BREATHER PLATE CP	1	
830	21E16002H3	GASKET (B.PLATE)	1	
840	21E16003H3	GASKET (B.COVER)	1	
860	0110060230	FLANGE BOLT	4	
940	21E63901H3	INNER ROTOR	1	
941	21E63902H3	OUTER ROTOR	1	
942	21E64001L1	OIL PUMP COVER CP	1.....	INCLUDES ITEMS W/%
948	0110060440	FLANGE BOLT	4	
952	21E76301H1	SWITCH OIL PRESSURE	1	
953%	0440200070	OIL SEAL	1	
954	0240590020	O-RING	1	
960	21E9900117	GASKET SET	1	

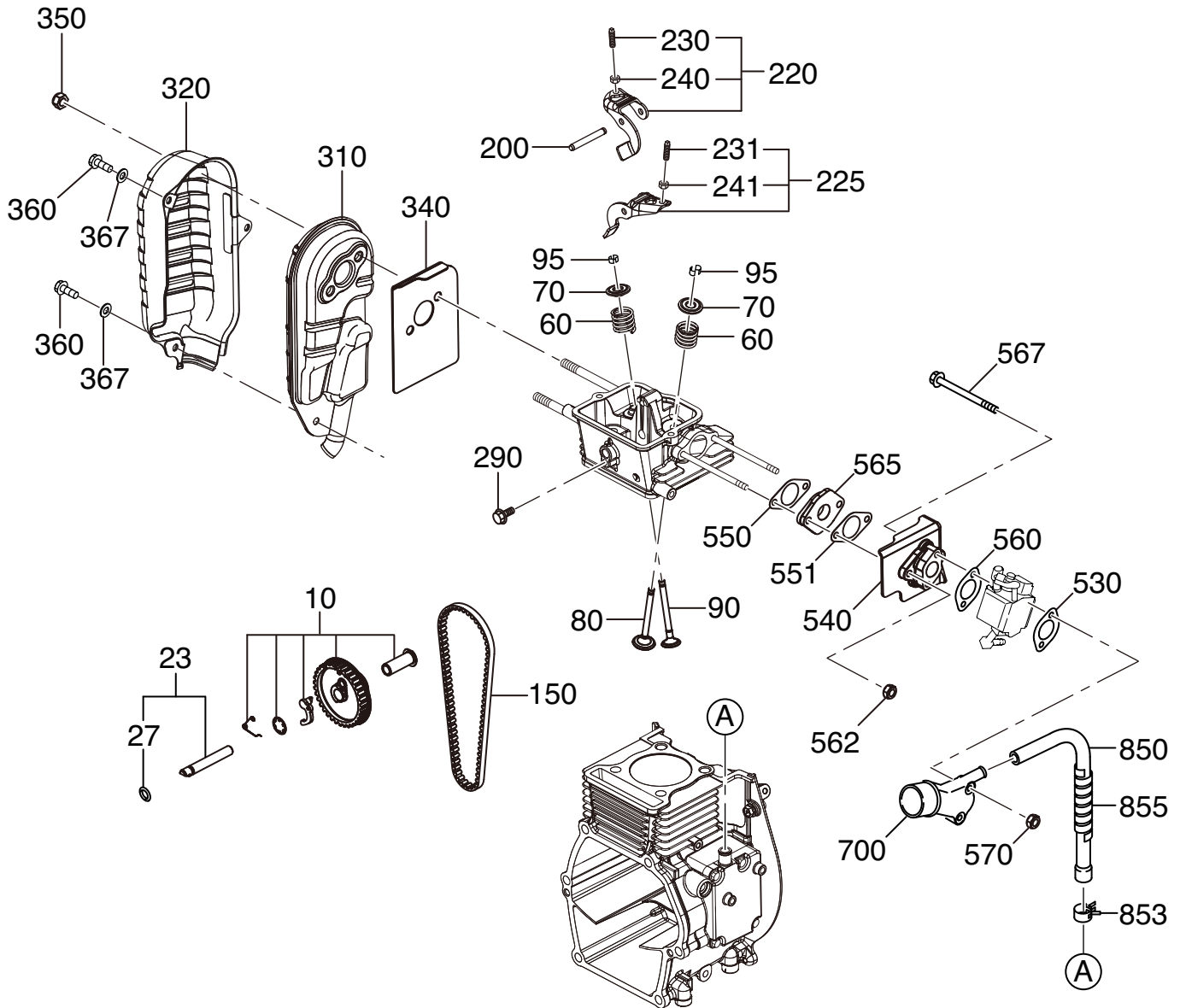
ROBIN ER120D45000 ENGINE — CRANKSHAFT, PISTON ASSY.



ROBIN ER120D45000 ENGINE — CRANKSHAFT, PISTON ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E20201K1	CRANKSHAFT CP	1	
40	X230220100	SPACER	1	
41	X230220110	SPACER	1	
42	X230220120	SPACER	1	
50	0180140020	FLANGE NUT	1	
70	0053203101	WOODRUFF KEY	1	
310	21E22501J0	CONNECTING ROD ASSY	1.....	INCLUDES ITEMS W/ #
320#	20F2300103	CONNECTING ROD BOLT	2	
350	21E23301H3	PISTON PIN	1	
360	21E23401H3	PISTON STD	1	
360	21E23403H3	PISTON O.S. 0.25	1	
360	21E23404H3	PISTON O.S. 0.50	1	
370	21E23501H7	PISTON RING SET, STD	1	
370	21E23502H7	PISTON RING SET, 0.25 O.S	1	
370	21E23503H7	PISTON RING SET, 0.50 O.S.	1	
380	21E2500103	CLIP	2	

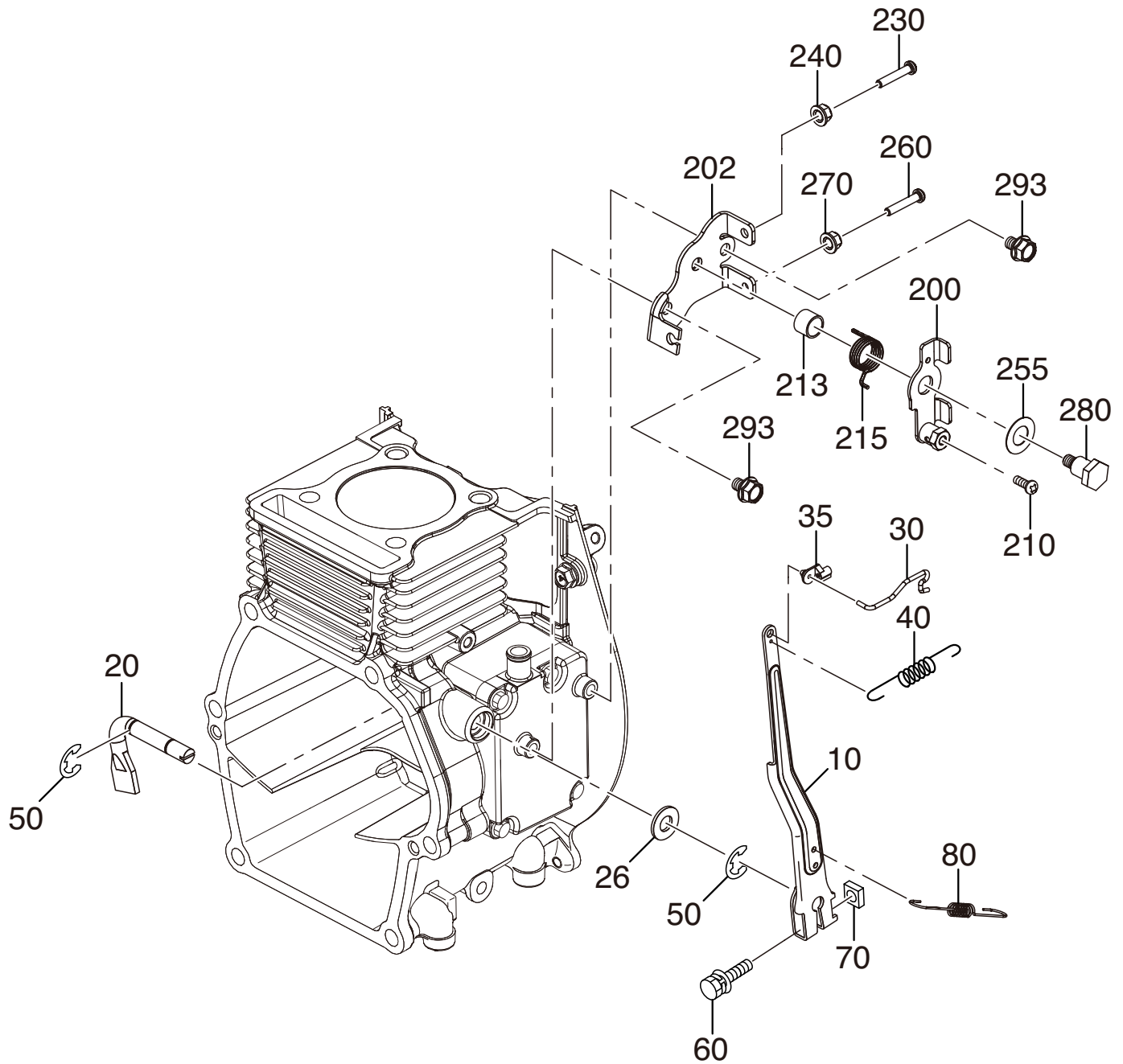
ROBIN ER120D45000 ENGINE — INTAKE, EXHAUST ASSY.



ROBIN ER120D45000 ENGINE — INTAKE, EXHAUST ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E31601L1	CAM PULLEYCP	1	
23	21E35101H1	PIN (CAM PULLEY) CP	1	INCLUDES ITEMS W/ #
27#	0240060010	O-RING	1	
60	2793360103	VALVE SPRING	2	
70	2693370103	SPRING RETAINER	2	
80	27633401H3	INTAKE VALVE	1	
90	27633501H3	EXHAUST VALVE	1	
95	20F10KA031	COLLET VALVE	4	
150	21E3560103	TIMING BELT	1	
200	2773500403	PIN (ROCKER)	1	
220	21E36101H0	ROCKER ARM INTAKE ASSY	1	INCLUDES ITEMS W/ \$
225	21E36102H0	ROCKER ARM EXHAUST ASSY	1	INCLUDES ITEMS W/ @
230\$	20A0140100	ADJUST SCREW	1	
231@	20A0140100	ADJUST SCREW	1	
240\$	20A0180100	NUT	1	
241@	20A0180100	NUT	1	
290	20F0060010	FLANGE BOLT	1	
310	21E30101K2	MUFFLER UN	1	
320	21E34201L2	MUFFLER COVER UN	1	
360	X130060330	BOLT AND WASHER ASSY	2	
367	0200060120	WASHER	2	
340	21E35201H3	GASKET (MUFFLER)	1	
350	0176080020	SELF LOCK NUT	2	
530	1066500203	GASKET (CARB.)	1	
540	21E32902J3	INSULATOR 2	1	
550	2823590103	GASKET (INSULATOR)	1	
551	21E35001H3	GASKET (INSULATOR)	1	
560	21E35002H3	GASKET (CARB)	1	
562	20F6060020	SELF LOCK NUT	2	
565	21E32901H3	INSULATOR 1	1	
567	0100050110	BOLT	2	
570	0176050010	SELF LOCK NUT	2	
700	21E33001H3	INTAKE PIPE (D)	1	
850	21E16103H3	RUBBER PIPE	1	
853	0561130010	HOSE CLAMP	1	
855	21E19001H3	SPIRAL TUBE	1	

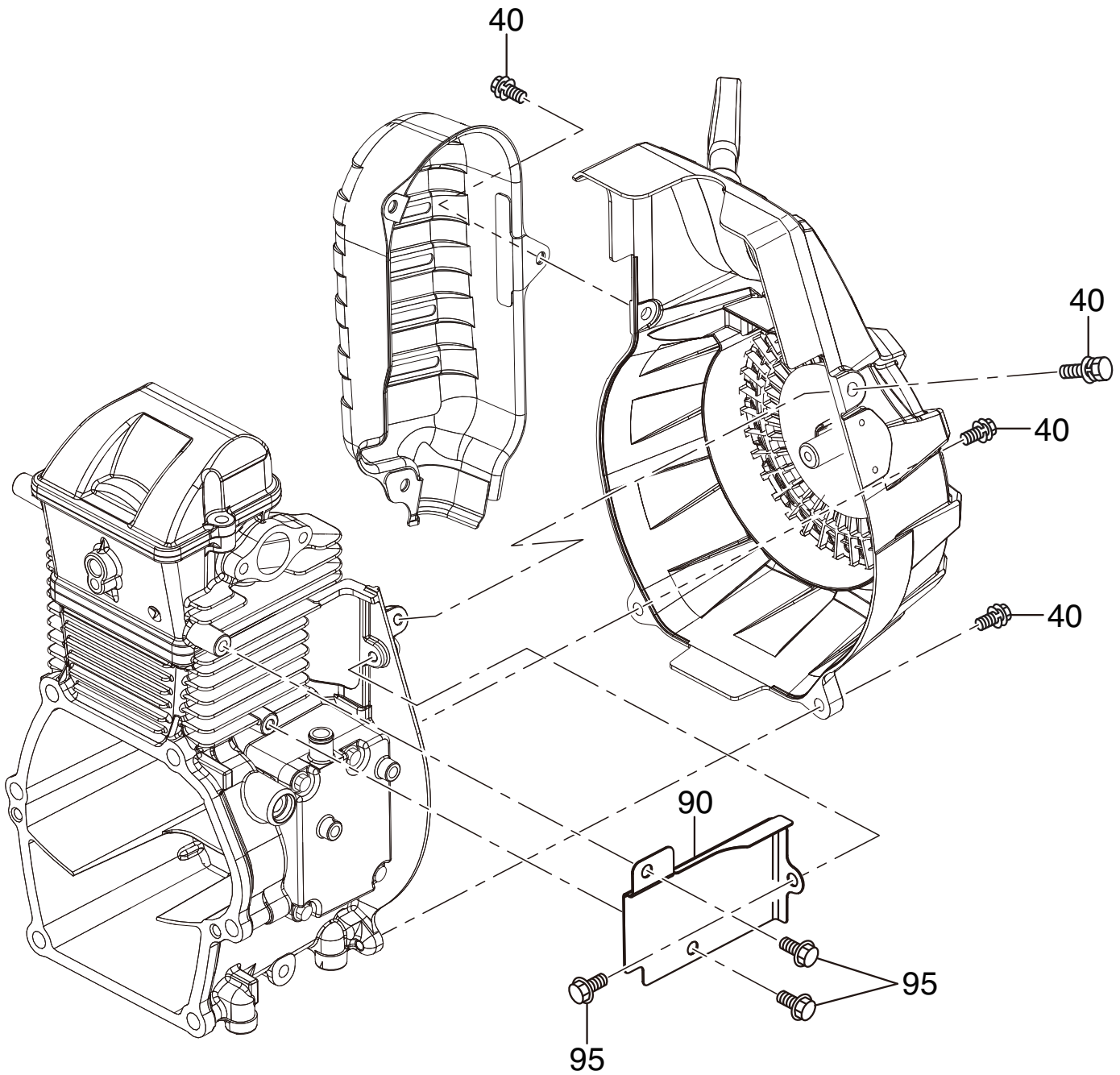
ROBIN ER120D45000 ENGINE — GOVERNOR, OPERATION ASSY.



ROBIN ER120D45000 ENGINE — GOVERNOR, OPERATION ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E42301H3	GOVERNOR LEVER	1	
20	21E42201J3	GOVERNOR SHAFT	1	
26	20F1108000	WASHER	1	
30	21E42701J1	GOVERNOR ROD CP	1	
35	2844560103	LINKAGE BUSHING	1	
40	21E4280103	ROD SPRING	1	
50	0031306000	CLIP	2	
60	20F1406300	BOLT AND WASHER ASSY	1	
70	0186060020	NUT	1	
80	21E4250113	GOVERNOR SPRING	1	
200	21E43301J0	SPEED CONT. LEVER ASSY	1	
202	21E46002J1	BASE PLATE CP	1	
210	0043104140	SCREW, PANHEAD	1	
213	0230100040	SPACER	1	
215	2264500313	RETURN SPRING	1	
230	X140050110	SCREW	1	
240	0021705000	NUT	1	
255	0217100020	FRICTION WASHER	1	
260	X140050110	SCREW	1	
270	0021705000	NUT	1	
280	2264310301	LINK PIVOT CP	1	
293	20F0060010	FLANGE BOLT	2	

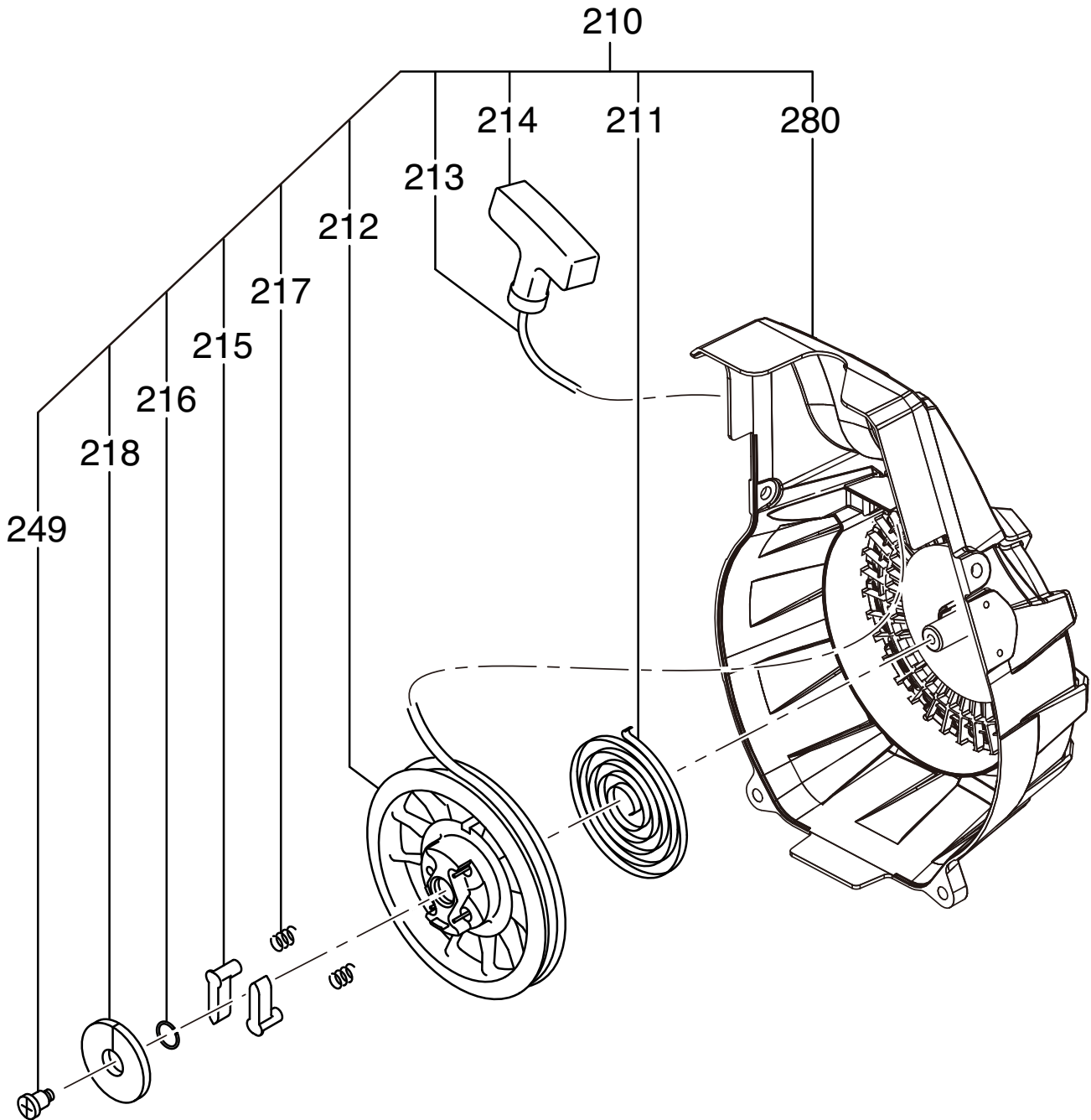
ROBIN ER120D45000 ENGINE — COOLING ASSY.



ROBIN ER120D45000 ENGINE — COOLING ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
40	X130060340	BOLT AND WASHER ASSY	4	
90	21E52601H3	CYLINDER BAFFLE	1	
95	20F0060010	FLANGE BOLT	3	

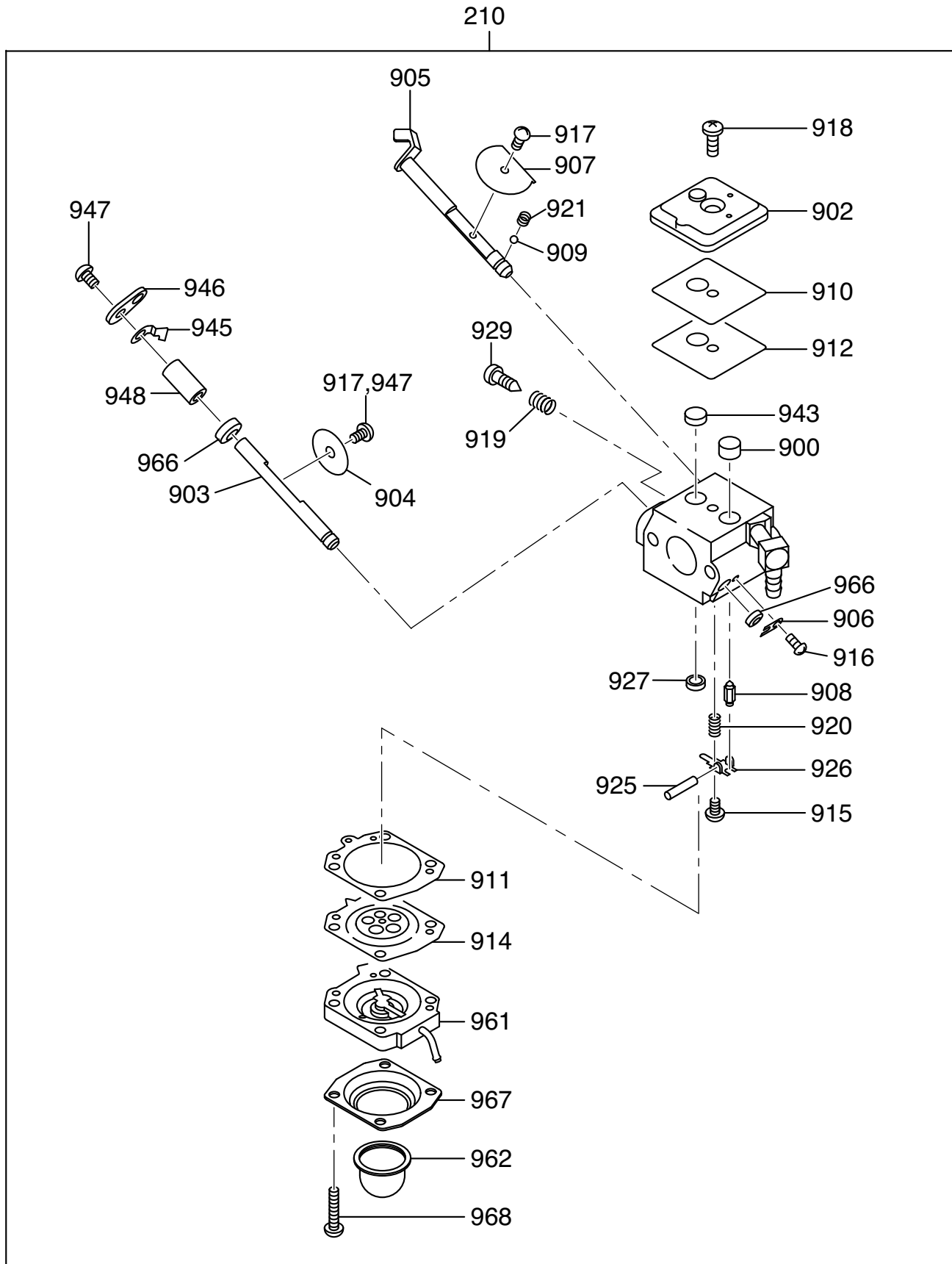
ROBIN ER120D45000 ENGINE — STARTING ASSY.



ROBIN ER120D45000 ENGINE — STARTING ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
210	21E50201L0	RECOIL STARTER ASSY	1.....	INCLUDES ITEMS W/ #
211#	20F5011508	SPIRAL SPRING	1	
212#	21ES022008	REEL	1	
213#	21E5011008	STARTER ROPE	1	
214#	20F5010018	STARTER KNOB	1	
215#	20F5022508	RATCHET	2	
216#	2745013108	FRICTION SPRING	1	
217#	2275013508	RETURN SPRING	2	
218#	21E5026008	RATCHET GUIDE	1	
249#	20B5010108	SET SCREW	1	
280#	21E5015018	STARTER CASE CP	1	

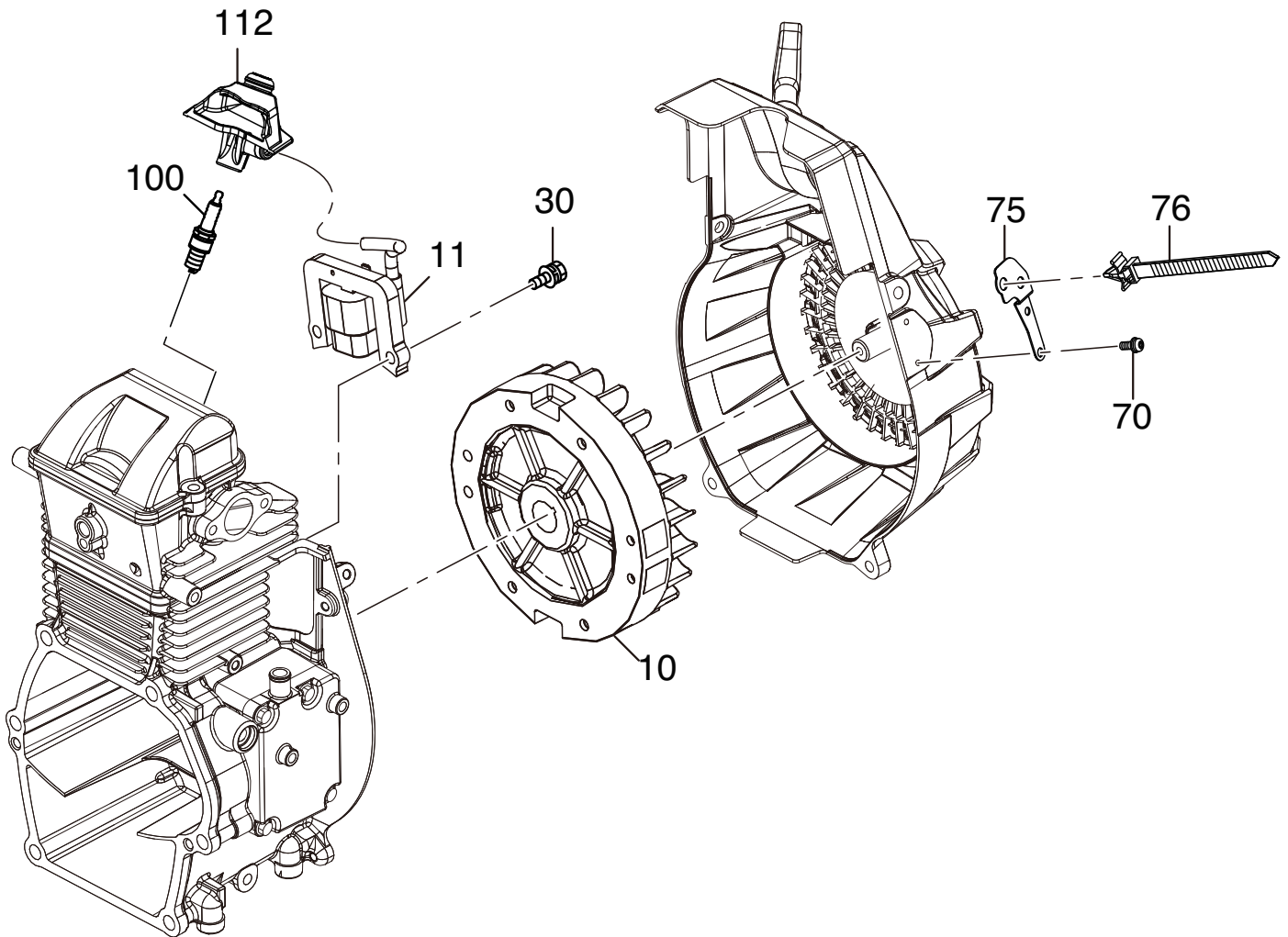
ROBIN ER120D45000 ENGINE — FUEL LUBRICANT ASSY.



ROBIN ER120D45000 ENGINE — FUEL LUBRICANT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
210	21E6240100	CARBURETOR ASSY	1.....	INCLUDES ITEMS W/#
900#	5016004010	SCREEN INLET	1	
902#	2526261308	COVER PUMP	1	
903#	2526261208	SHAFT THROTTLE	1	
904#	1616233508	VALVE THROTTLE	1	
905#	2846260308	SHAFT ASSY CHOKE	1	
906#	5106045040	CLIP THROTTLE SHAFT	1	
907#	2846260408	VALVE CHOKE	1	
908#	1616255208	VALVE, INLET NEEDLE	1	
909#	1476258408	BALL	1	
910#	1616238008	GASKET, PUMP	1	
911#	2526261808	GASKET, METERING DIA.	1	
912#	2526261008	DIAPHRAGM PUMP	1	
914#	2526261708	DIAPHRAGM ASSY,METERING	1	
915#	2526261908	SCREW	1	
916#	1066257608	SCREW ASSY	1	
917#	1476257308	SCREW VALVE	1	
918#	2846260008	SCREW	1	
919#	1616245408	SPRING	1	
920#	1616245108	SPRING, METERING LEVER	1	
921#	1476258308	SPRING CHOKE	1	
925#	1616236808	PIN, METERING LEVER	1	
926#	1616236908	LEVER, METERING	1	
927#	1476257508	PLUG WELCH	1	
929#	1616238508	SCREW, IDLE ADJ.	1	
943#	2526261108	SPRING PUMP	1	
945#	1616255108	STOP THROTTLE	1	
946#	2526260308	LEVER THROTTLE	1	
947#	1616255308	SCREW	2	
948#	2526260208	SPACER THROTTLE LEVER	1	
961#	2526261408	BODY ASSY AIR PURGE	1	
962#	2526261508	PUMP PRIMER	1	
966#	1476258608	SEAL	2	
967#	2526261608	COVER PRIMER PUMP	1	
968#	2526262008	SCREW ASSY	4	

ROBIN ER120D45000 ENGINE — ELECTRIC DEVICE ASSY.



ROBIN ER120D45000 ENGINE — ELECTRIC DEVICE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E79230J1	FLY WHEEL CP	1	
11	21E79430J1	IGNITION COIL CP	1	
30	20F1406250	BOLT AND WASHER ASSY	2	
70	X131040130	SCREW AND WASHER ASSY	2	
75	21E76501H3	PLATE	1	
76	0563000100	WIRE BAND	1	
100	0650140860	SPARK PLUG	1	
112	21E75001J3	SPARK PLUG RUBBER CAP	1	

TERMS AND CONDITIONS OF SALE — PARTS

PAYMENT TERMS

Terms of payment for parts are net 30 days.

FREIGHT POLICY

All parts orders will be shipped collect or prepaid with the charges added to the invoice. All shipments are F.O.B. point of origin. Multiquip's responsibility ceases when a signed manifest has been obtained from the carrier, and any claim for shortage or damage must be settled between the consignee and the carrier.

MINIMUM ORDER

The minimum charge for orders from Multiquip is \$15.00 net. Customers will be asked for instructions regarding handling of orders not meeting this requirement.

RETURNED GOODS POLICY

Return shipments will be accepted and credit will be allowed, subject to the following provisions:

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
 - a. The parts numbers and descriptions must match the current parts price list.
 - b. The list must be typed or computer generated.
 - c. The list must state the reason(s) for the return.
 - d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
 - e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.

5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Multiquip part numbers clearly marked.
6. The following items are not returnable:
 - a. Obsolete parts. (If an item is in the price book and shows as being replaced by another item, it is obsolete.)
 - b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
 - c. Any line item with an extended dealer net price of less than \$5.00.
 - d. Special order items.
 - e. Electrical components.
 - f. Paint, chemicals, and lubricants.
 - g. Decals and paper products.
 - h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for five working days from notification, pending instructions. If a reply is not received within five days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted, for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

PRICING AND REBATES

Prices are subject to change without prior notice. Price changes are effective on a specific date and all orders received on or after that date will be billed at the revised price. Rebates for price declines and added charges for price increases will not be made for stock on hand at the time of any price change.

Multiquip reserves the right to quote and sell direct to Government agencies, and to Original Equipment Manufacturer accounts who use our products as integral parts of their own products.

SPECIAL EXPEDITING SERVICE

A \$35.00 surcharge will be added to the invoice for special handling including bus shipments, insured parcel post or in cases where Multiquip must personally deliver the parts to the carrier.

LIMITATIONS OF SELLER'S LIABILITY

Multiquip shall not be liable hereunder for damages in excess of the purchase price of the item with respect to which damages are claimed, and in no event shall Multiquip be liable for loss of profit or good will or for any other special, consequential or incidental damages.

LIMITATION OF WARRANTIES

No warranties, express or implied, are made in connection with the sale of parts or trade accessories nor as to any engine not manufactured by Multiquip. Such warranties made in connection with the sale of new, complete units are made exclusively by a statement of warranty packaged with such units, and Multiquip neither assumes nor authorizes any person to assume for it any other obligation or liability whatever in connection with the sale of its products. Apart from such written statement of warranty, there are no warranties, express, implied or statutory, which extend beyond the description of the products on the face hereof.

Effective: February 22, 2006

OPERATION AND PARTS MANUAL

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL
NUMBER ON-HAND WHEN CALLING

UNITED STATES

Multiquip Corporate Office

18910 Wilmington Ave.
Carson, CA 90746
Contact: mq@multiquip.com

Tel. (800) 421-1244
Fax (310) 537-3927

MQ Parts Department

800-427-1244
310-537-3700

Fax: 800-672-7877
Fax: 310-637-3284

Service Department

800-421-1244
310-537-3700

Fax: 310-537-4259

Warranty Department

800-421-1244
310-537-3700

Fax: 310-943-2249

Technical Assistance

800-478-1244

Fax: 310-943-2238

MEXICO

MQ Cipsa

Carr. Fed. Mexico-Puebla KM 126.5
Momoxpan, Cholula, Puebla 72760 Mexico
Contact: pmastretta@cipsa.com.mx

Tel: (52) 222-225-9900
Fax: (52) 222-285-0420

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Dukinfield, Cheshire SK16 4UJ
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Tel: 0161 339 2223
Fax: 0161 339 3226

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Tel: (450) 625-2244
Tel: (877) 963-4411
Fax: (450) 625-8664

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This manual MUST accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

The information and specifications included in this publication were in effect at the time of approval for printing. Illustrations, descriptions, references and technical data contained in this manual are for guidance only and may not be considered as binding. Multiquip Inc. reserves the right to discontinue or change specifications, design or the information published in this publication at any time without notice and without incurring any obligations.

Your Local Dealer is:



OPERATION AND PARTS MANUAL



Mikasa **SERIES**
MODEL MTX80SD
TAMPING RAMMER
(ROBIN ER120D45000 GASOLINE ENGINE)

Revision #0 (07/20/12)

To find the latest revision of this
publication, visit our website at:
www.multiquip.com



THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.



 WARNING 
CALIFORNIA — Proposition 65 Warning
Gasoline engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

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NOTICE

Specifications and part numbers are subject to change without notice.

PARTS ORDERING PROCEDURES

Ordering parts has never been easier! Choose from three easy options:

Effective:
January 1st, 2006

www.multiquip.com



Order via Internet (Dealers Only):

Order parts on-line using Multiquip's SmartEquip website!

- View Parts Diagrams
- Order Parts
- Print Specification Information



If you have an MQ Account, to obtain a Username and Password, E-mail us at: parts@multiquip.com.

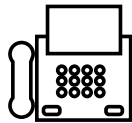
To obtain an MQ Account, contact your District Sales Manager for more information.

Goto www.multiquip.com and click on

Order Parts to log in and save!

Use the **internet** and qualify for a **5% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Fax (Dealers Only):

All customers are welcome to order parts via Fax.

Domestic (US) Customers dial:
1-800-6-PARTS-7 (800-672-7877)

Fax your order in and qualify for a **2% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Phone: Domestic (US) Dealers Call:
1-800-427-1244

Non-Dealer Customers:

Contact your local Multiquip Dealer for parts or call 800-427-1244 for help in locating a dealer near you.



International Customers should contact their local Multiquip Representatives for Parts Ordering information.

When ordering parts, please supply:

- | | |
|---|--|
| <input type="checkbox"/> Dealer Account Number | <input type="checkbox"/> Specify Preferred Method of Shipment: |
| <input type="checkbox"/> Dealer Name and Address | <input checked="" type="checkbox"/> UPS/Fed Ex <input checked="" type="checkbox"/> DHL |
| <input type="checkbox"/> Shipping Address (if different than billing address) | <input type="checkbox"/> Priority One <input checked="" type="checkbox"/> Truck |
| <input type="checkbox"/> Return Fax Number | <input type="checkbox"/> Ground |
| <input type="checkbox"/> Applicable Model Number | <input type="checkbox"/> Next Day |
| <input type="checkbox"/> Quantity, Part Number and Description of Each Part | <input type="checkbox"/> Second/Third Day |

NOTICE

All orders are treated as *Standard Orders* and will ship the same day if received prior to 3PM PST.

WE ACCEPT ALL MAJOR CREDIT CARDS!



SAFETY INFORMATION

Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.



SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.

SAFETY SYMBOLS

! DANGER

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

! WARNING

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.

! CAUTION

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

NOTICE

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Respiratory hazards
	Accidental starting hazards
	Eye and hearing hazards


SAFETY INFORMATION

GENERAL SAFETY

CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication. 
- **NEVER** operate this equipment under the influence of drugs or alcohol.



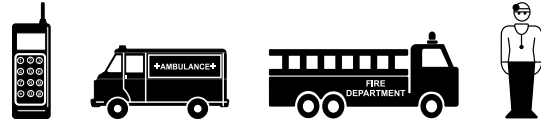
- **ALWAYS** check the equipment for loosened threads or bolts before starting.
- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest fire extinguisher.
- **ALWAYS** know the location of the nearest first aid kit.



- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor** and **fire department**. This information will be invaluable in the case of an emergency.



RAMMER SAFETY

DANGER

- **NEVER** operate the equipment in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe **bodily harm or even death**.



WARNING

- **NEVER** disconnect any **emergency or safety devices**. These devices are intended for operator safety. Disconnection of these devices can cause severe injury, bodily harm or even death. Disconnection of any of these devices will void all warranties.
- **DO NOT** use this machine on ground that is harder than the machine can handle, or for driving pilings or tamping rock beds. Furthermore, use of the machine on sloping ground, such as the side of an embankment, may make the machine unstable and can cause an accident. It can also result in premature machine wear due to uneven loads on the machine.

Use the machine with confidence for tamping earth and sand, soil, gravel, and asphalt. **DO NOT** use the machine for other types of jobs.

CAUTION

- **NEVER** lubricate components or attempt service on a running machine.

NOTICE

- **ALWAYS** keep the machine in proper running condition.
- Fix damage to machine and replace any broken parts immediately.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.

SAFETY INFORMATION

ENGINE SAFETY

DANGER

- The engine fuel exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.
- The engine of this equipment requires an adequate free flow of cooling air. **NEVER** operate this equipment in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause injury to people and property and serious damage to the equipment or engine.



WARNING

- **DO NOT** place hands or fingers inside engine compartment when engine is running.
- **NEVER** operate the engine with heat shields or guards removed.
- **DO NOT** remove the engine oil drain plug while the engine is hot. Hot oil will gush out of the oil tank and severely scald any persons in the general area of the rammer.



CAUTION

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing equipment.



NOTICE

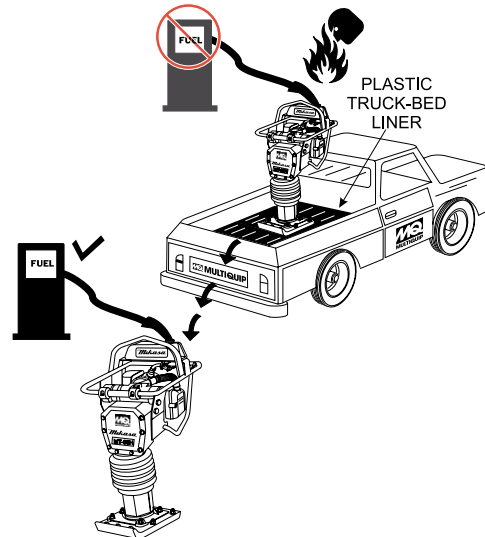
- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.



FUEL SAFETY

DANGER

- **DO NOT** add fuel to equipment if it is placed inside truck bed with plastic liner. Possibility exists of explosion or fire due to static electricity.



- **DO NOT** start the engine near spilled fuel or combustible fluids. Fuel is extremely flammable and its vapors can cause an explosion if ignited.
- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with **flammable** liquids.
- **DO NOT** fill the fuel tank while the engine is running or hot.
- **DO NOT** overfill tank, since spilled fuel could ignite if it comes into contact with hot engine parts or sparks from the ignition system.
- Store fuel in appropriate containers, in well-ventilated areas and away from sparks and flames.
- **NEVER** use fuel as a cleaning agent.
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.



TRANSPORTING SAFETY

CAUTION


- NEVER allow any person or animal to stand underneath the equipment while lifting.

NOTICE

- Before lifting, make sure that the equipment parts (hook and vibration insulator) are not damaged and screws are not loose or missing.
- Always make sure crane or lifting device has been properly secured to the lifting bail (hook) of the equipment.
- **ALWAYS** shutdown engine before transporting.
- **NEVER** lift the equipment while the engine is running.
- Tighten fuel tank cap securely and close fuel cock to prevent fuel from spilling.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- Use one point suspension hook and lift straight upwards.
- **DO NOT** lift machine to unnecessary heights.
- **ALWAYS** tie down equipment during transport by securing the equipment with rope.
- Never allow any person or animal to stand underneath the equipment while lifting.

ENVIRONMENTAL SAFETY

NOTICE

- Dispose of hazardous waste properly. Examples of potentially hazardous waste are used motor oil, fuel and fuel filters. 
- **DO NOT** use food or plastic containers to dispose of hazardous waste.
- **DO NOT** pour waste, oil or fuel directly onto the ground, down a drain or into any water source.

SPECIFICATIONS

Table 1. Rammer Specifications

Overall Height	39.37 in. (1000 mm)
Overall Width	13.89 in. (353 mm)
Over Length	30.78 in. (782 mm)
Shoe Size (W x L)	13.4 x 11.2 in. (340 x 285 mm)
Fuel Tank Capacity	2.7 qt. (2.5 liters)
Lubrication Oil Capacity	0.9 qt. (0.82 liter)
No. of Impacts Per Second	10.7 - 11.3
Impact Force	3,713 lbf (16.5 kN)
Impact Plate Stroke	2 - 3.15 in. (50 - 80 mm)
Operating Weight	181 lbs. (82 kg)
Measured Sound Power Level	105 dB
Guaranteed Sound Power Level	107 dB
Max. Sound Pressure Level	95 dB

Table 2. Engine Specifications

Model	Robin ER120D45000 Engine
Type	Air-Cooled 4 Stroke, Overhead camshaft, single cylinder gasoline engine
Piston Displacement	7.4 cu.in. (121 cc)
Max. Output	3.5 hp/3,600 rpm (2.6 KW)
Cooling System	Air-Cooled
Engine Oil Capacity	0.4 qt. (0.35 liters)
Fuel	Unleaded gasoline
Lubricant for Engine	Automobile Oil; Class SE or higher
Starting System	Recoil Starter
Spark Plug Type	NGK CR5HSB

GENERAL INFORMATION

The Multiquip MTX80SD tamping rammer is a powerful compacting tool capable of applying a tremendous force in consecutive impacts to a soil surface. Its applications include soil compacting for road, embankments and reservoirs as well as backfilling for gas pipelines, water pipelines and cable installation work.

The impact force of the MTX80SD levels and uniformly compacts voids between soil particles to increase dry density.

Circular motion is converted to create impact force. The MTX80SD tamping rammer develops a powerful compacting force at the foot of the rammer. To maintain optimum performance, proper operation and service are essential.

The MTX80SD is equipped with an air cooled, four-cycle gasoline engine. Transmission of the power takes place by increasing the engine speed to engage the centrifugal clutch.

The MTX80SD uses an oil bath lubrication system. Always check the oil level through the oil level sight glass at the rear of the tamper foot.

Before starting the MTX80SD Tamping Rammer identify and understand the function of the controls.

CAUTION



Before starting operation check the lifting handle to:

1. Make sure that there is no damage on the bolts.
2. Make sure that there is no crack or breakage on handle.
3. Make sure that there is no fissure on the surface. If there is any abnormality or damage, replace with new one.

For operation:

This handle is to be used to lift up the shoe part of the machine with the body laid down on the ground or truck bed.

1. Use proper lifting techniques to avoid back injury. This handle is for manual lifting only.
2. Do not use this handle as a rammer lift point. Use the lifting point on the top of the machine.
3. Do not move the rammer with the lifting handle and the front rollers more than 16 feet (5 meters).

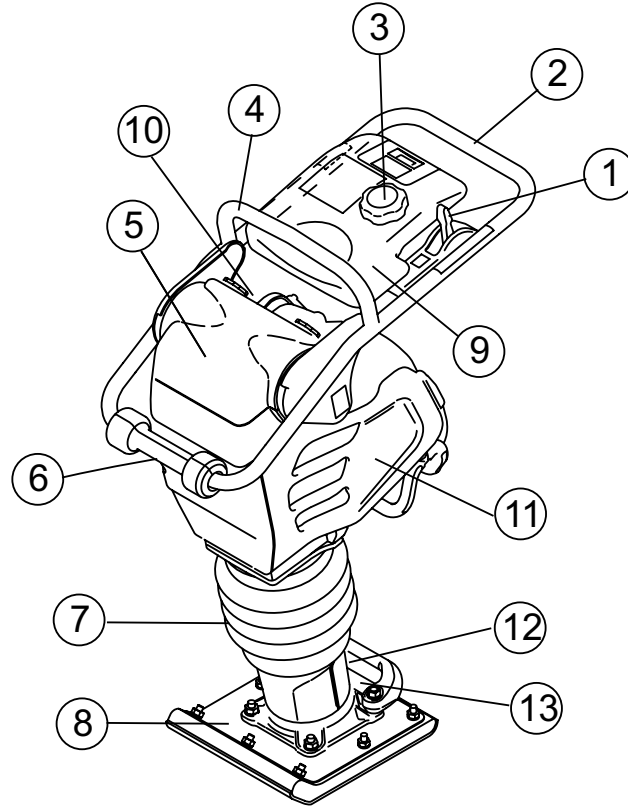


Figure 1. MTX80SD Rammer

Figure 1 shows the location of the controls and components for the MTX80SD Tamping Rammer. The functions of each control is described below:

1. **Combination (Throttle) Lever** — Used to adjust engine speed (rpm). Move lever forward (**SLOW**) to reduce engine speed, move lever back toward operator (**FAST**) to increase speed. Always operate the rammer at full speed (rpm).
2. **Handle** — To operate rammer, **GRIP** handle assembly firmly on both sides.
3. **Fuel Tank Cap** — Remove this cap to add unleaded gasoline to the fuel tank. Make sure cap is tightened securely. **DO NOT** over fill.
4. **Hook** — Used to lift rammer for transporting.
5. **Air Cleaner Cover** — Protects the air cleaner which prevents dirt and other debris from entering the engine.
6. **Roller** — Allows rammer to be moved around easily by rolling the unit.
7. **Bellows** — Reservoir for oil bath.
8. **Foot** — Laminated wood with tempered steel plate for superior shock absorption.
9. **Fuel Tank** — Holds the fuel for the unit (up to 2.7 quarts).
10. **Muffler** — Reduces the noise of the engine when running.
11. **Engine** — This unit uses a Robin ER120D45000 gasoline engine.
12. **Oil Gauge (Sight Glass)** — Indicates the level of oil in the oil bath reservoir.
13. **Drain Valve** — Open this valve to remove oil from the bellows.

WARNING



Adding fuel to the tank should be accomplished only when the engine is stopped and has had an opportunity to cool down. In the event of a fuel spill, **DO NOT** attempt to start the engine until the fuel residue has been completely wiped up, and the area surrounding the engine is dry.

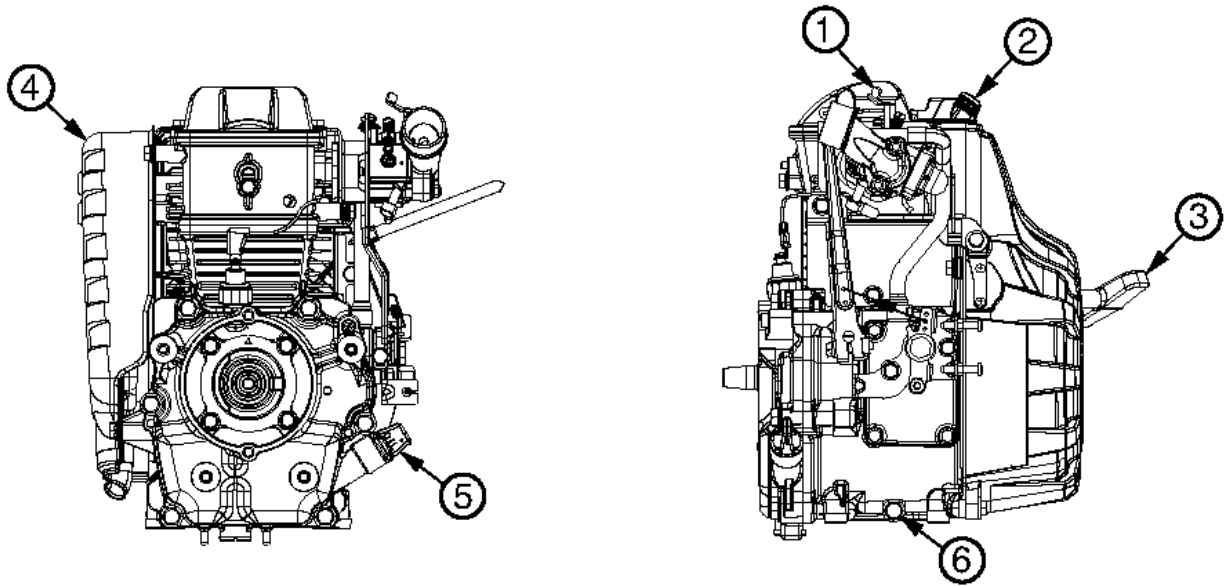


Figure 2. Robin ER120D45000 Engine

The engine (Figure 2) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the engine manufacturer's manual for detailed operation and service information.

1. **Choke Lever** — Normally used in starting the engine in cold weather conditions. In cold weather, turn the choke lever to the fully closed position. In warm weather, set the choke lever halfway or completely open.
2. **Spark Plug** — Provides spark to the ignition system. Set spark plug gap to 0.024 - 0.028 inch (0.6 - 0.7 mm). Clean spark plug once a week.
3. **Recoil Starter (pull rope)** — Manual-starting method. Pull the starter grip until resistance is felt, then pull briskly and smoothly.

NOTICE

Operating the engine without an air filter, with a damaged air filter, or a filter in need of replacement will allow dirt to enter the engine, causing rapid engine wear.

4. **Muffler** — Used to reduce noise and emissions.

5. **Dipstick/Oil Filler Cap** — Remove this cap to determine if the engine oil is low. Add oil through this filler port as recommended in Table 3.
6. **Oil Drain Plug** — Remove this plug to remove oil from the engine's crankcase.

WARNING



Engine components can generate extreme heat. To prevent burns, **DO NOT** touch these areas while the engine is running or immediately after operating. **NEVER** operate the engine with the muffler removed.

It is extremely important that this section be read carefully before attempting to operate the rammer. **DO NOT** use your rammer until this section is thoroughly understood.

CRANKCASE AND SPRING CYLINDER OIL BATH

This unit uses an oil bath lubrication system. Perform the following:

1. Check the oil level through the oil level sight glass (Figure 3) at the rear of the tamper foot.

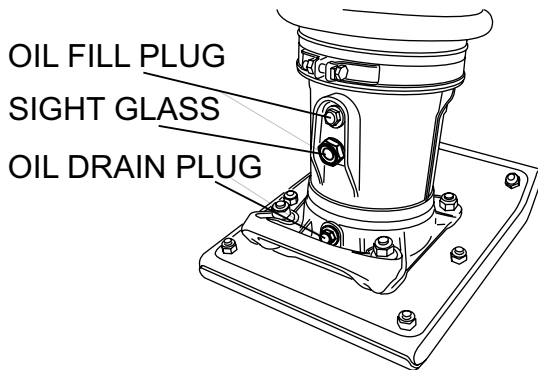


Figure 3. Foot Housing Sight Glass

NOTICE

The oil level should be kept at the half way point of the sight glass.

2. If oil is not visible, add 10W-30 SE, SF or higher grade motor oil into the oil fill plug opening (Figure 3). The bath contains approximately 1.7 pints (800 cc.)

ENGINE

1. Fill the fuel tank (Figure 4) with unleaded gasoline. At the same time, check the engine oil and make it a habit to replenish it often (Figure 5).

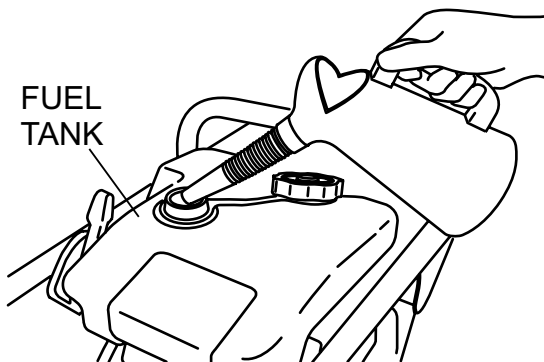


Figure 4. Fuel Tank

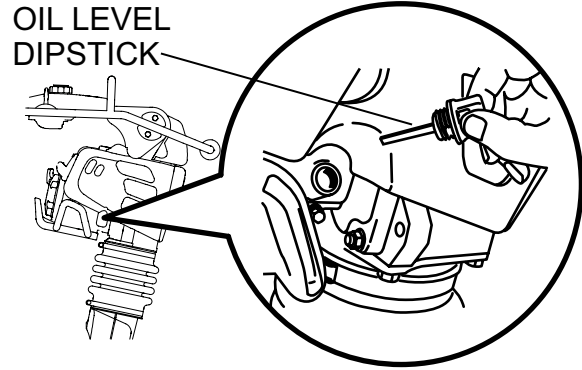


Figure 5. Engine Oil Dipstick

2. Low levels of oil may result in engine seizure due to high levels of consumption during operation.
3. Check the engine oil level and if the engine oil level is low, it should be refilled. Use the proper motor oil as suggested in the Table 3 below.

Table 3. Motor Oil Grade

Season or Temperature	Grade of motor oil (higher than MS class)
Spring, Summer or Autumn +120° F to +15° F	SAE 30
Winter +40° F to +15° F	SAE 30
Below +15° F	SAE 10W-30

GENERAL INSPECTION

1. Check all nuts, bolts fasteners for tightness. Retighten as necessary.
2. Clean any dirt from the recoil starter and foot pedestal. Wipe the entire unit clean before operating.
3. Replace any missing or damaged Safety Operation decals.
4. Adjust height of handle. Adjust handle by loosening nuts and moving handle to suit operation. Retighten nuts.

CAUTION

Failure to understand the operation of the Tamping Rammer could result in severe damage to the unit or personal injury.

INITIAL STARTUP

When starting the MTX80SD Tamping Rammer perform the following:

1. Slide the throttle lever from the stop to the idle position (👉) (Figure 6). This opens the fuel cock and the engine electrical circuit is turned on automatically.

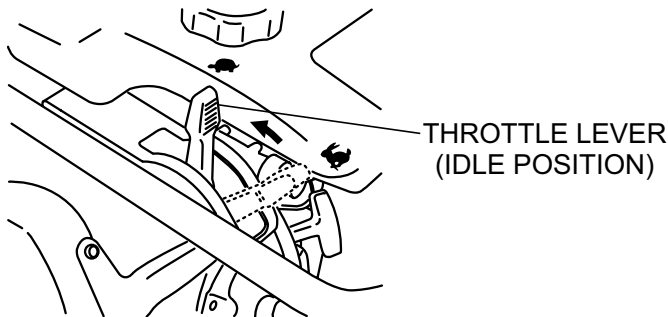


Figure 6. Throttle Lever (Idle Position)

2. Carburetor Purge System: Push the purge bulb four times or until you see fuel in the bulb (Figure 7).

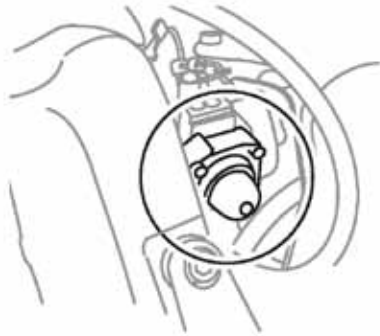


Figure 7. Purge Bulb

NOTICE

Pumping the purge bulb removes air from the fuel system. It does not pump fuel into the carburetor

3. Place the choke lever to the closed position. When the weather is cold, close the choke all the way. When it is hot, or if the engine is hot, open the choke a little or leave it fully open.

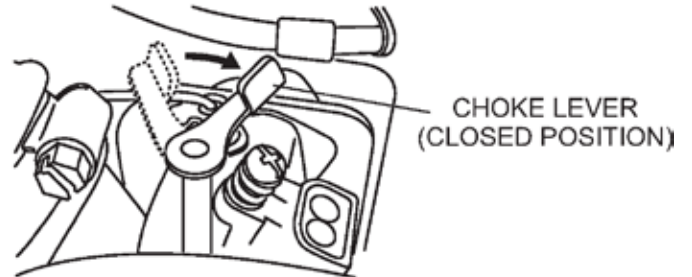


Figure 8. Choke Lever

4. Grip the starter rope handle (Figure 9) and pull it until you feel a slight resistance. Then pull sharply and quickly. Return the handle to the starter case before releasing.

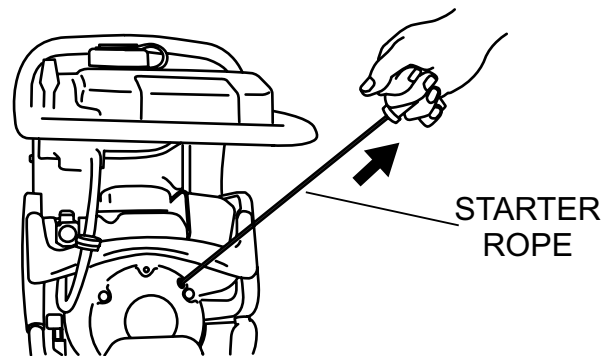


Figure 9. Recoil Starter

5. If engine fails to start, move the choke lever (Figure 8) to the half open position to avoid flooding.
6. Repeat steps 1 thru 5.
7. If the engine does not start after repeated attempts, check the spark plug for excess fuel. Clean and replace the spark plug as needed.

OPERATION

1. To start the rammer tamping action, move the throttle lever (Figure 10) **quickly** from **IDLE** to the **START** (🔌) position. **DO NOT** move the throttle lever slowly as this may cause damage to the clutch or spring.

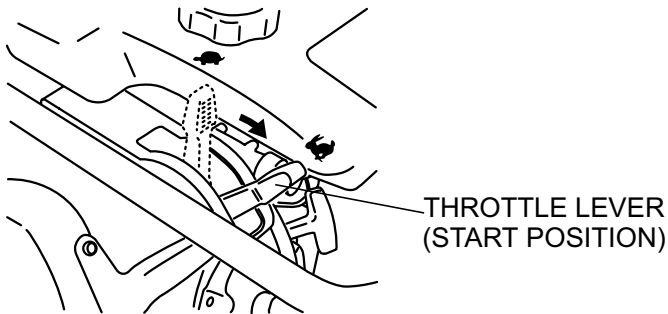


Figure 10. Throttle Lever (Start Position)

⚠ CAUTION

Make sure that the throttle lever is moved to the **FULL START** position. Operating the rammer at less than full speed can result in damage to the clutch springs or foot.

2. The MTX80SD tamping rammer is designed to run at 3,800 to 4,100 rpm. At optimum rpm the foot hits at the rate between 590 - 695 impacts per minute. Increasing throttle speed past factory set rpm does not increase impacts and may damage unit. The MTX80SD is designed to advance while tamping. For faster advance, pull back slightly on the handle so that rear of foot contacts soil first.
3. To stop the tamping action, move throttle lever quickly from **START** to **IDLE** position (Figure 6).

STOPPING THE ENGINE

1. Move throttle lever quickly from the **START** to **IDLE** position (Figure 6) and run the engine for three minutes at low speed. After the engine **cools**, move the throttle lever to the **STOP** position (Figure 11). The engine will stop and the fuel cock is automatically closed.

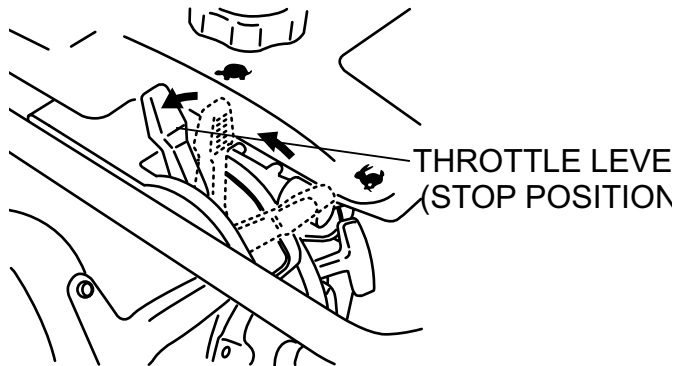


Figure 11. Throttle Lever (Stop Position)

2. If the engine does not stop due to a problem with the switch or the like, move the machine to a safe location and hold the throttle lever in the stop position. Let the machine run on idle and the machine will stop after a few minutes.

MAINTENANCE

DAILY

- Thoroughly remove dirt and oil from the engine and control area.
- Clean or replace the air cleaner elements as necessary. Check and retighten all fasteners as necessary.
- Check the spring box and bellows for oil leaks. Repair or replace as needed.

EVERY 50 HOURS

- Inspect in-line fuel filter (Part Number 26365012A3, Figure 12) and replace if necessary.



Figure 12. In-Line Fuel Filter

- Remove and clean the spark plug, then adjust the spark gap to 0.024~0.028 inch (0.6~0.7 mm).

EVERY 80 TO 100 HOURS

- Remove the air cleaner cover. Loosen and remove the 2 screws that hold the cover to the air cleaner assembly. If the primary element (Figure 13) is dirty, wash it with gasoline or kerosene. Then dip it in engine oil (SAE10W-30) and wring the element so that 25 to 30 cc of engine oil remains on the element.

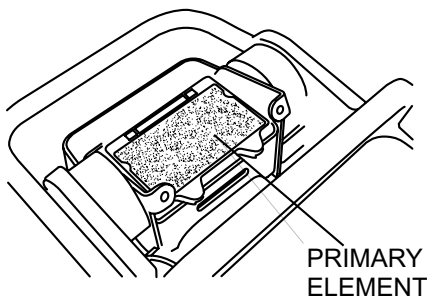


Figure 13. Air Cleaner Primary Element

EVERY 200 HOURS

- Remove the oil drain plug on foot housing (Figure 14) and drain the oil. Refill with approximately 1.7 pint (800 cc)

of 10W-30 SE, SF or higher grade motor oil. Oil should be midway in sight glass. Break in oil should be changed after first 50 hours.

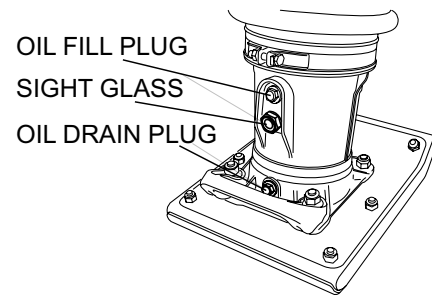


Figure 14. Oil Drain Plug

EVERY 6 MONTHS

- Clean the inside of the fuel tank with solvent.
- Inspect and clean fuel strainer (Figure 15). Replace strainer if necessary.

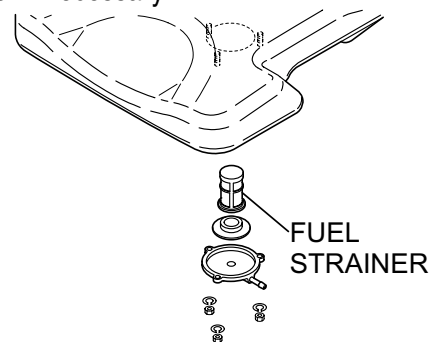


Figure 15. Fuel Strainer

EVERY 2 YEARS

- Replace the fuel line every 2 years even if there is no visible damage.

LONG TERM STORAGE

- Slide the throttle lever to the **STOP** position.
- Drain any fuel including in the fuel hose.
- Replace lubrication oil and apply grease to lubrication points.
- Cover the air intake on the air cleaner and the exhaust outlet on the muffler.
- Store unit indoors covered with plastic sheet in moisture free and dust free location out of direct sunlight.

TROUBLESHOOTING

Troubleshooting (Engine)		
Symptom	Possible Problem	Solution
Difficult to start, fuel is available, but no spark at spark plug.	Combo lever in incorrect position?	Make sure combo lever is in start position.
	Spark plug bridging?	Check gap, insulation or replace spark plug.
	Carbon deposit on spark plug?	Clean or replace spark plug.
	Short circuit due to deficient spark plug insulation?	Check spark plug insulation, replace if worn.
	Improper spark plug gap?	Set to proper gap.
	Fuel reaching carburetor?	Check fuel line.
	Water in fuel tank?	Flush or replace fuel tank.
	Fuel filter clogged?	Replace fuel filter.
	Stuck carburetor?	Check float mechanism.
	Spark plug is red?	Check transistor ignition unit.
	Spark plug is bluish white?	If insufficient compression, repair or replace engine. If injected air leaking, correct leak. If carburetor jets clogged, clean carburetor.
	No spark present at tip of spark plug?	Check transistor ignition unit is broken, and replace defective unit. Check if voltage cord cracked or broken and replace. Check if spark plug if fouled and replace.
No oil?	Add oil as required.	
Difficult to start, fuel is available, and spark is present at the spark plug.	ON/OFF switch is shorted?	Check switch wiring, replace switch.
	Ignition coil defective?	Replace ignition coil.
	Improper spark gap, points dirty?	Set correct spark gap and clean points.
	Condenser insulation worn or short circuiting?	Replace condenser.
	Spark plug wire broken or short circuiting?	Replace defective spark plug wiring.
Difficult to start, fuel is available, spark is present and compression is normal.	Wrong fuel type?	Flush fuel system, replace with correct type of fuel.
	Water or dust in fuel system?	Flush fuel system.
	Air cleaner dirty?	Clean or replace air cleaner.
	Choke open?	Close choke.
Difficult to start, fuel is available, spark is present and compression is low.	Suction/exhaust valve stuck or protruded?	Reseat valves.
	Piston ring and/or cylinder worn?	Replace piston rings and/or piston.
	Cylinder head and/or spark plug not tightened properly?	Torque cylinder head bolts and spark plug.
	Head gasket and/or spark plug gasket damaged?	Replace head and spark plug gaskets.
No fuel present at carburetor.	No fuel in fuel tank?	Fill with correct type of fuel.
	Fuel cock does not open properly?	Apply lubricant to loosen fuel cock lever, replace if necessary.
	Fuel filter/lines clogged?	Replace fuel filter.
	Fuel tank cap breather hole clogged?	Clean or replace fuel tank cap.
	Air in fuel line?	Bleed fuel line.

TROUBLESHOOTING

Troubleshooting (Engine) - continued		
Symptom	Possible Problem	Solution
Weak in power, compression is proper and does not misfire.	Air cleaner dirty?	Clean or replace air cleaner.
	Improper level in carburetor?	Check float adjustment, rebuild carburetor.
	Defective spark plug?	Clean or replace spark plug.
	Improper spark plug?	Set to proper gap.
Weak in power, compression is proper but misfires.	Water in fuel system?	Flush fuel system and replace with correct type of fuel.
	Dirty spark plug?	Clean or replace spark plug.
	Ignition coil defective?	Replace ignition coil.
Engine overheats.	Spark plug heat value incorrect?	Replace with correct type of spark plug.
	Wrong type of fuel?	Replace with correct type of fuel.
	Cooling fins dirty?	Clean cooling fins.
	Intake air restricted?	Clear intake of dirt and debris. Replace air cleaner elements as necessary.
	Oil level too low or too high?	Adjust oil to proper level.
Rotational speed fluctuates.	Governor adjusted incorrectly?	Adjust governor.
	Governor spring defective?	Replace governor spring.
	Fuel flow restricted?	Check entire fuel system for leaks or clogs.
Recoil starter malfunctions. (if applicable)	Recoil mechanism clogged with dust and dirt?	Clean recoil assembly with soap and water.
	Spiral spring loose?	Replace spiral spring.
Starter malfunctions.	Loose, damaged wiring?	Ensure tight, clean connections on battery and starter.
	Battery insufficiently charged?	Recharge or replace battery.
	Starter damaged or internally shorted?	Replace starter.
Burns too much fuel.	Over-accumulation of exhaust products?	Check and clean valves. Check muffler and replace if necessary.
	Wrong spark plug?	Replace spark plug with manufacturer's suggested type.
Exhaust color is continuously "white".	Lubricating oil is wrong viscosity?	Replace lubricating oil with correct viscosity.
	Worn rings?	Replace rings.
Exhaust color is continuously "black".	Air cleaner clogged?	Clean or replace air cleaner.
	Choke valve set to incorrect position?	Adjust choke valve to correct position.
	Carburetor defective, seal on carburetor broken?	Replace carburetor or seal.
	Poor carburetor adjustment, engine runs too rich?	Adjust carburetor.
Will not start, no power with key "ON". (if applicable)	ON/OFF device not activated ON?	Turn on ON/OFF device.
	Battery disconnected or discharged?	Check cable connections. Charge or replace battery
	Ignition switch/wiring defective?	Replace ignition switch. Check wiring.

TROUBLESHOOTING

Troubleshooting (Rammer)		
Symptom	Possible Problem	Solution
Engine runs but rammer jumps erratically or not at all.	Operating speed of throttle lever is incorrectly set?	Set throttle lever to correct position.
	Oil in excess?	Drain excess oil. Bring to correct level.
	Clutch slips?	Replace or adjust clutch.
	Spring Failure?	Replace spiral spring.
	Speed of engine improper?	Adjust engine speed to correct operating RPM setting.
	Soil over-compacted?	Shut down machine and test soil.

EXPLANATION OF CODE IN REMARKS COLUMN

The following section explains the different symbols and remarks used in the Parts section of this manual. Use the help numbers found on the back page of the manual if there are any questions.

NOTICE

The contents and part numbers listed in the parts section are subject to change **without notice**. Multiquip does not guarantee the availability of the parts listed.

SAMPLE PARTS LIST

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	12345	BOLT	1	INCLUDES ITEMS W/%
2%		WASHER, 1/4 IN.		NOT SOLD SEPARATELY
2%	12347	WASHER, 3/8 IN. ...	1	MQ-45T ONLY
3	12348	HOSE	A/R	MAKE LOCALLY
4	12349	BEARING	1	S/N 2345B AND ABOVE

NO. Column

Unique Symbols — All items with same unique symbol

(@, #, +, %, or >) in the number column belong to the same assembly or kit, which is indicated by a note in the “Remarks” column.

Duplicate Item Numbers — Duplicate numbers indicate multiple part numbers, which are in effect for the same general item, such as different size saw blade guards in use or a part that has been updated on newer versions of the same machine.

NOTICE

When ordering a part that has more than one item number listed, check the remarks column for help in determining the proper part to order.

PART NO. Column

Numbers Used — Part numbers can be indicated by a number, a blank entry, or TBD.

TBD (To Be Determined) is generally used to show a part that has not been assigned a formal part number at the time of publication.

A blank entry generally indicates that the item is not sold separately or is not sold by Multiquip. Other entries will be clarified in the “Remarks” Column.

QTY. Column

Numbers Used — Item quantity can be indicated by a number, a blank entry, or A/R.

A/R (As Required) is generally used for hoses or other parts that are sold in bulk and cut to length.

A blank entry generally indicates that the item is not sold separately. Other entries will be clarified in the “Remarks” Column.

REMARKS Column

Some of the most common notes found in the “Remarks” Column are listed below. Other additional notes needed to describe the item can also be shown.

Assembly/Kit — All items on the parts list with the same unique symbol will be included when this item is purchased.

Indicated by:
 “INCLUDES ITEMS W/(unique symbol)”

Serial Number Break — Used to list an effective serial number range where a particular part is used.

Indicated by:
 “S/N XXXXX AND BELOW”
 “S/N XXXX AND ABOVE”
 “S/N XXXX TO S/N XXX”

Specific Model Number Use — Indicates that the part is used only with the specific model number or model number variant listed. It can also be used to show a part is NOT used on a specific model or model number variant.

Indicated by:
 “XXXXX ONLY”
 “NOT USED ON XXXX”

“Make/Obtain Locally” — Indicates that the part can be purchased at any hardware shop or made out of available items. Examples include battery cables, shims, and certain washers and nuts.

“Not Sold Separately” — Indicates that an item cannot be purchased as a separate item and is either part of an assembly/kit that can be purchased, or is not available for sale through Multiquip.

SUGGESTED SPARE PARTS

MTX80SD TAMPING RAMMER WITH ROBIN ER120D4500 ENGINE

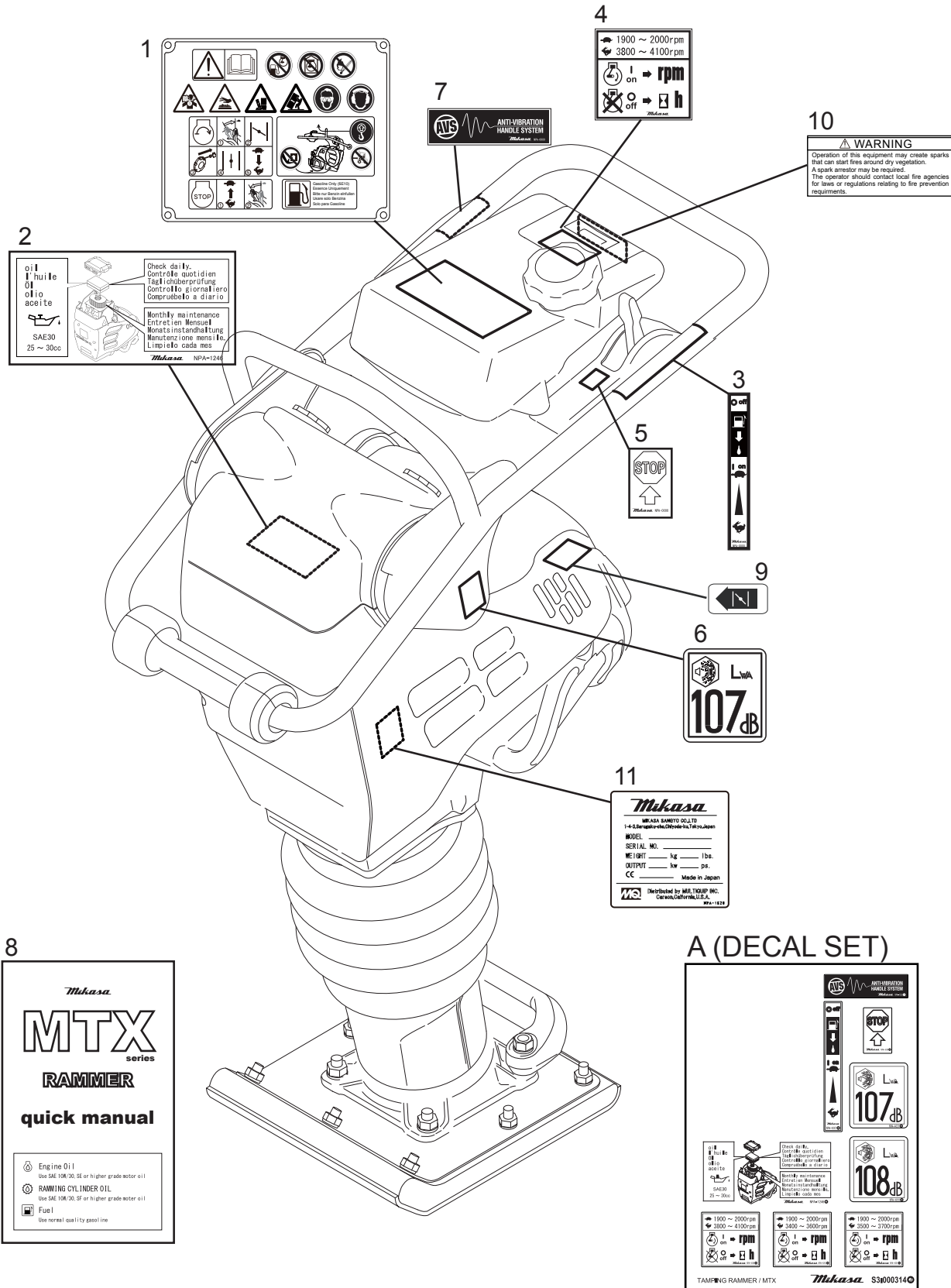
1 to 3 units

Qty.	P/N	Description
1.....	956100062.....	THROTTLE WIRE
3.....	366010070.....	PRIMARY ELEMENT, AIR CLEANER
3.....	366010080.....	SECONDARY ELEMENT, AIR CLEANER
1.....	366350460.....	CAP, FUEL TANK WITH STRAP
2.....	26365012A3.....	FILTER, IN-LINE FUEL
3.....	0650140860.....	SPARK PLUG
1.....	954406010.....	STRAINER, #110 FUEL TANK
1.....	21E5011008.....	ROPE, RECOIL STARTER
1.....	956200110.....	COMBINATION LEVER
1.....	366900170.....	CUP AND PACKING SET
1.....	366348550.....	CLUTCH ASSY.

NOTICE

Part numbers on this Suggested Spare Parts list may supersede/replace the part numbers shown in the following parts lists.

NAMEPLATES AND DECALS



1

2

oil
huile
öl
olio
aceite

Check daily.
Contrôle quotidien
Tägliche Überprüfung
Controllo giornaliero
Compruebo a diario

Monthly maintenance
Entretien Mensuel
Monats- und wöchentliche
Manutenzione mensile
Limpieza cada mes

Mikasa NPA-1246

7

4

1900 ~ 2000rpm
3800 ~ 4100rpm

on → rpm
off → h

10

WARNING

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

3

5

STOP

6

107dB

11

Mikasa

MIKASA SANFOTO GOLF TO
1-4-1 Sanfuto-cho, Chiyoda-ku, Tokyo, Japan

MODEL _____

SERIAL NO. _____

WEIGHT _____ kg _____ lbs

OUTPUT _____ hp _____ ps

CE _____ Made in Japan

Authorized by M&L TOQUI INC.
10000, Dallas, TX, U.S.A. NPA-1246

8

Mikasa

MTX
series

RAMMER

quick manual

Engine Oil
Use SAE 100, 30, SE or higher grade motor oil

RAMMING CYLINDER OIL
Use SAE 100, 30, SF or higher grade motor oil

Fuel
Use normal quality gasoline

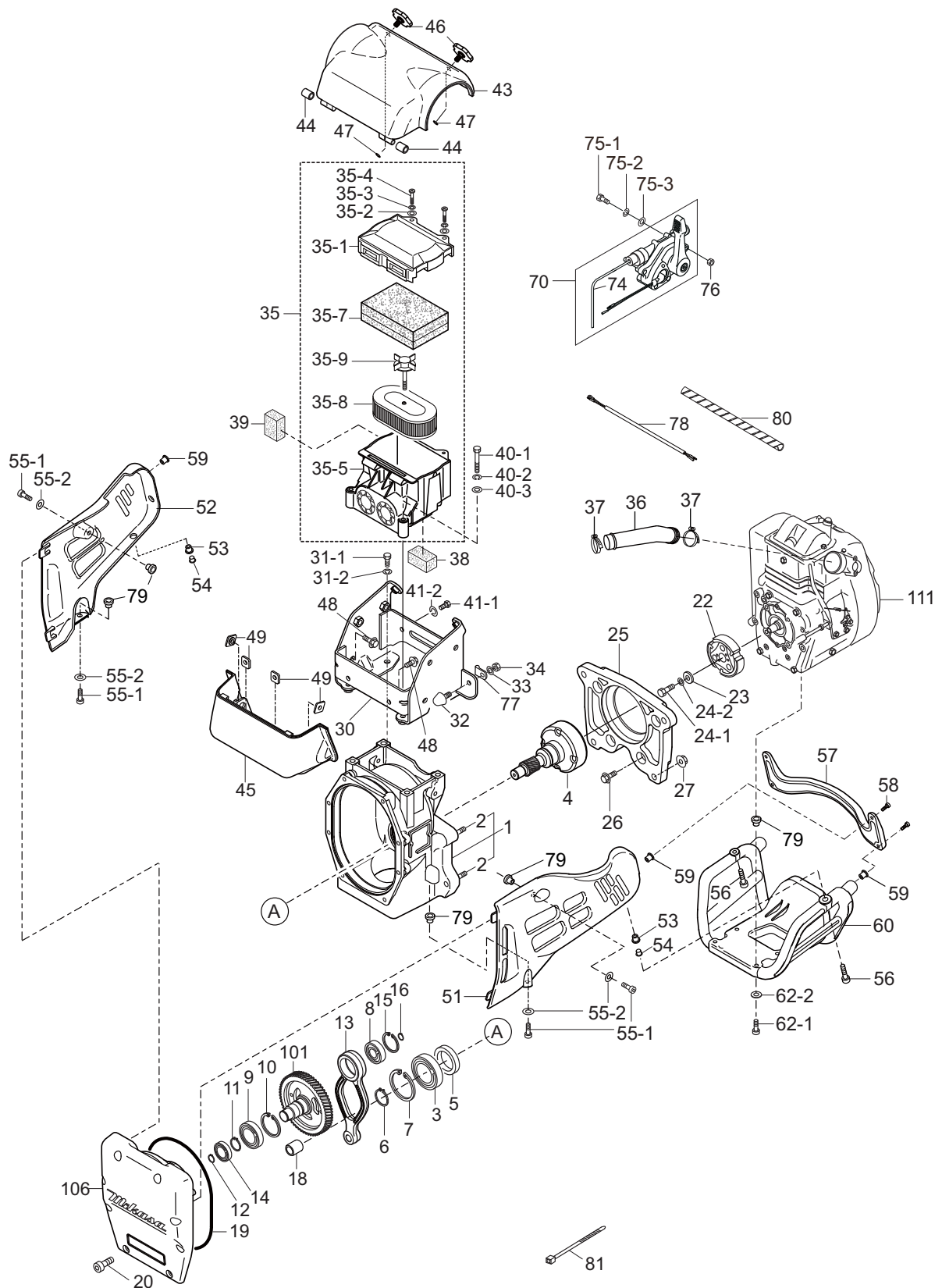
A (DECAL SET)

TAMPING RAMMER / MTX Mikasa S3000314 ©

NAMEPLATES AND DECALS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	920215440	DECAL: OPERATION	1	
2#		DECAL: AIR CLEANER	1	
3#		DECAL: LEVER OPERATION	1	
4#		DECAL: MAX SPEED	1	
5#		DECAL: MACHINE STOP	1	
6#		DECAL: EC NOISE REQ Lwa 107 dB	1	
7#		DECAL: ANTI-VIB HANDLE	1	
8	920212540	QUICK MANUAL	1	
9	0732004430	DECAL: CHOKE OPERATION	1	
10	920214100	DECAL: E/G FIRE WARNING	1	
11		DECAL: NAMEPLATE	1.....	CONTACT MQ PARTS DEPT. W/ SERIAL NO.
A	920900040	DECAL SET	1.....	INCLUDES ITEMS W/ #

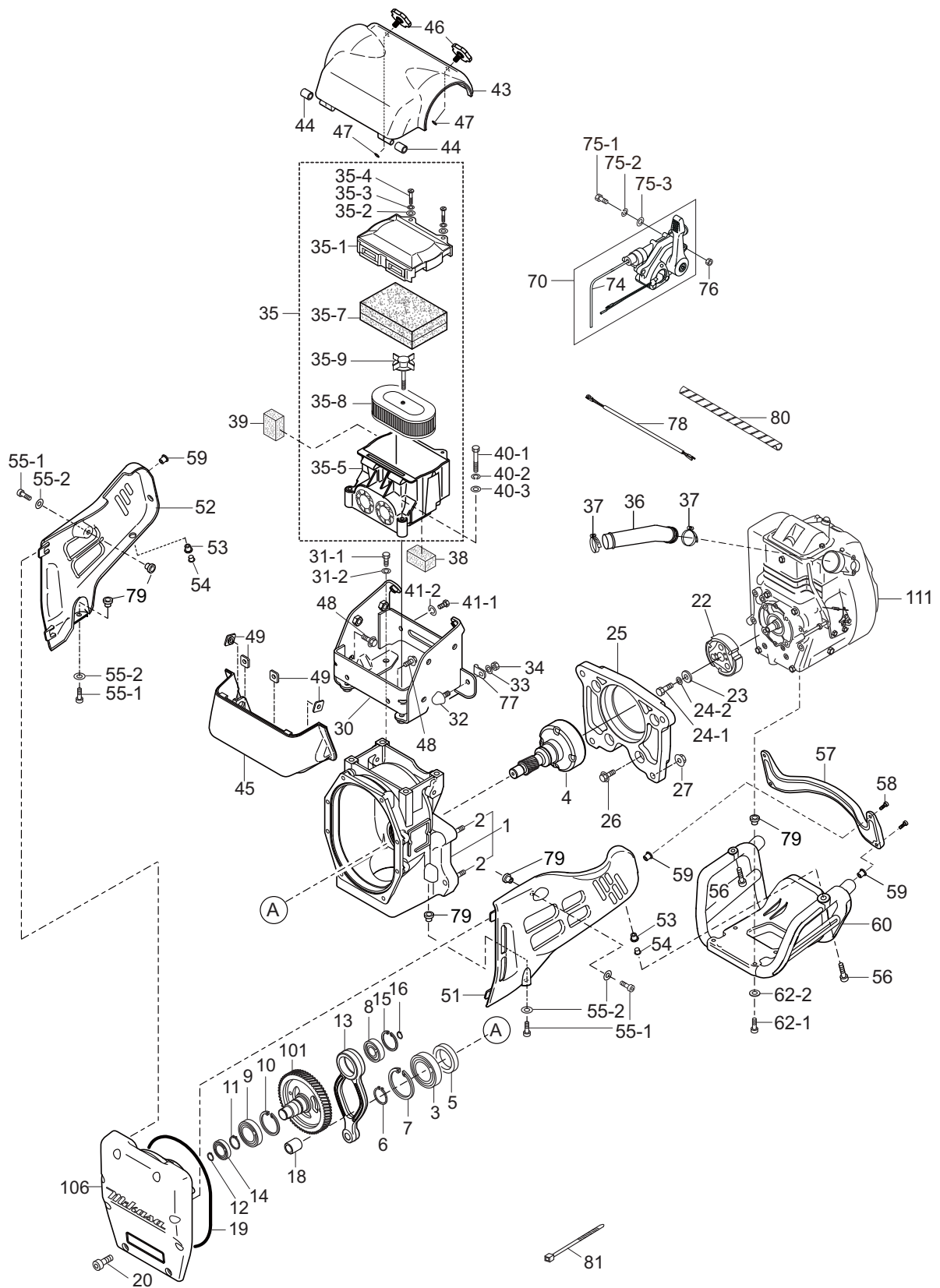
CRANKCASE AND ENGINE ASSY



CRANKCASE AND ENGINE ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	366910010	CRANKCASE	1.....	INCLUDES ITEMS W/\$
2\$	009120204	STUD BOLT 10 X 30	2	
3	041006007	BEARING 6007Z	1	
4	366345170	PINION, DRUM	1	
5	060404010	OIL SEAL TC-40528	1	
6	080200350	STOP RING S-35	1	
7	080100620	STOP RING R-62	1	
8	040006207	BEARING 6207	1	
9	040006305	BEARING 6305	1	
10	080100720	STOP RING R-72	1	
11	080200350	STOP RING S-35	1	
12	JISB2804C	STOP RING S-25	1	
13	366345230	CONNECTING ROD	1	
14	040006304	BEARING 6304	1	
15	080100520	STOP RING R-52	1	
16	080200200	STOP RING S-20	1	
18	047940060	NEEDLE BEARING FJ-1816	1	
19	050710080	O-RING AS568-267	1	
20	009110025	SOCKET HEAD BOLT 8X25 ZN	8	
22	366348550	CLUTCH ASSY.	1	
23	952401450	WASHER 8.5X22X3	1	
24-1	001220825	BOLT 8X25 T	1	
24-2	030208200	WASHER, LOCK M8	1	
25	366217180	FLANGE, ENGINE	1	
26	001710830	FLANGE BOLT 8X30	4	
27	022611010	FLANGE NUT M10 H	4	
30	366346280	BRACKET, SHOCK ABSORBER	1	
31-1	012010030	BOLT 10X30 H	4	
31-2	030210250	WASHER, LOCK M10	4	
32	939010270	STOPPER RUBBER (70)	1	
33	030208200	WASHER, LOCK M8	1	
34	020108060	NUT M8	1	
35	366900010	AIR CLEANER ASSY.....	1.....	INCLUDES ITEMS W/#
35-1#	366010010	AIR CLEANER COVER	1	
35-2#	366010020	WASHER, FLAT M6	2	
35-3#	366010030	WASHER, LOCK M6	2	
35-4#	366010040	COIN BOLT M6	2	
35-5#	366010050	BASE CP, AIR CLEANER	1	
35-7#	366010070	PRIMARY ELEMENT CP	1	
35-8#	366010080	SECONDARY ELEMENT	1	
35-9#	362030040	GRIP BOLT CP, AIR CLEANER	1	
36	366350540	PIPE, INTAKE	1	
37	954407682	CYCLONE CLAMP (CY-1) 38	2	
38	366460160	SEALING FORM, UNDER	1	
39	366460150	SEALING FORM, SIDE	1	

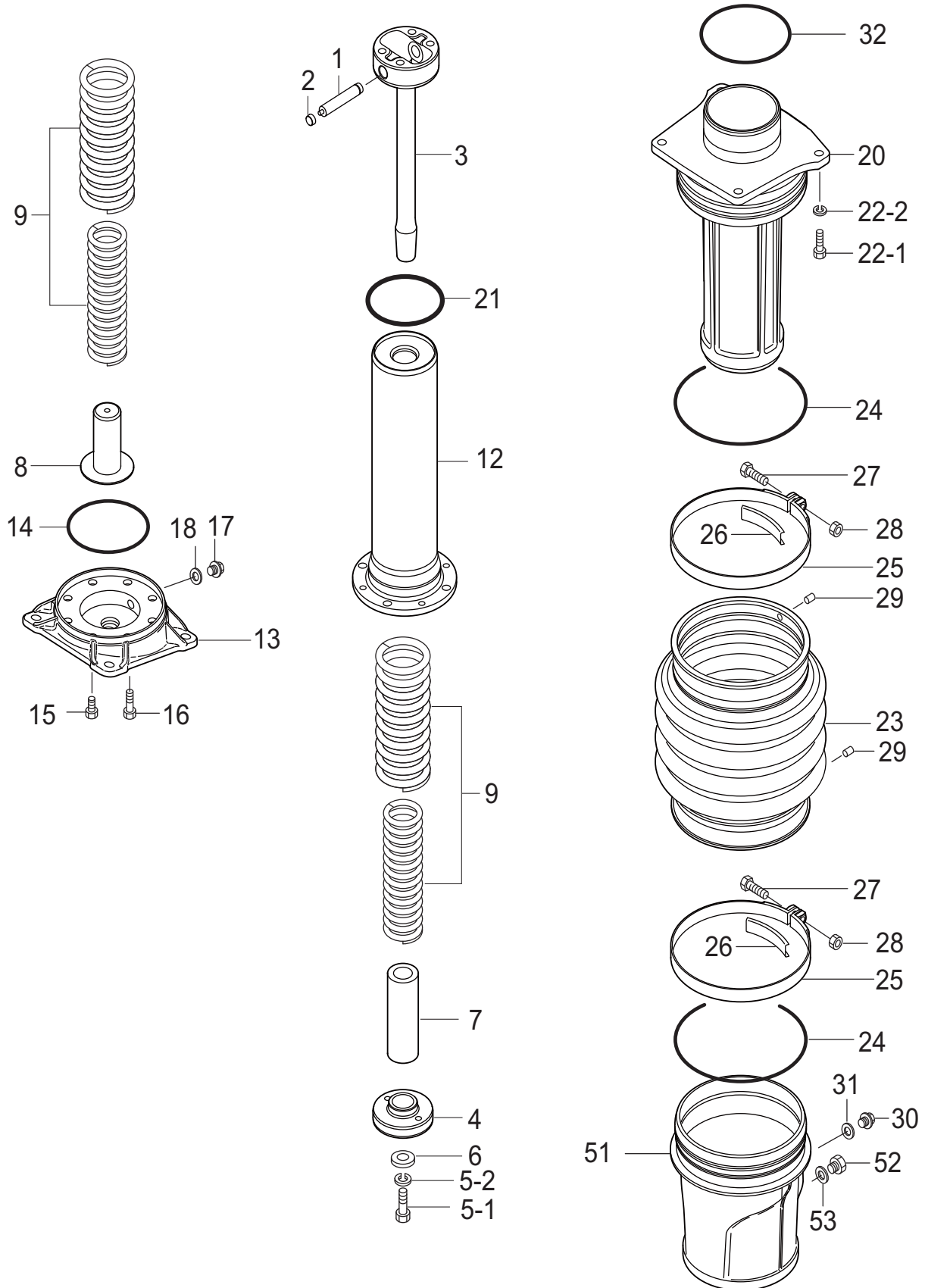
CRANKCASE AND ENGINE ASSY



CRANKCASE AND ENGINE ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
40-1	001220851	BOLT 8X55 T	2	
40-2	030208200	WASHER, LOCK M8	2	
40-3	0401450080	WASHER, FLAT M8	2	
41-1	011008015	BOLT 8X15 H	2	
41-2	030208200	WASHER, LOCK M8	2	
43	366217340	COVER, CLEANER ASSY. (UPPER)	1	
44	366460140	RUBBER BUSH (10X16X17)	2	
45	366217350	COVER, CLEANER ASSY. (UNDER)	1	
46	366345980	KNOB, CLEANER COVER	2	
47	050200060	O-RING P6	2	
48	009110040	FLANGE BOLT 8X20	4	
49	959407670	SQUARE NUT M8	4	
51	366120410	GUARD, LINK	1	
52	366120420	GUARD, MUFFLER	1	
53	022910260	WELL NUT M8	2	
54	366460170	FLANGE COLLAR 8	2	
55-1	009110024	SOCKET HEAD BOLT 8X20 ZN	4	
55-2	0401450080	WASHER, FLAT M8	4	
56	009110038	SOCKET HEAD BOLT 8X30 ZN	2	
57	368217770	CROSS BAR	1	
58	009110039	SOCKET HEAD BOLT 6X25 ZN	4	
59	022910250	WELL NUT M6	4	
60	366120430	GUARD, ENGINE	1	
62-1	009110025	SOCKET HEAD BOLT 8X25ZN	4	
62-2	0401450080	WASHER FLAT M8	4	
70	366900042	COMBINATION LEVER ASSY. W/WIRE.....	1	INCLUDES ITEMS W/@
74@	956100062	THROTTLE WIRE	1	
75-1	001220620	BOLT 6X20 T	2	
75-2	030206150	WASHER, LOCK M6	2	
75-3	031106100	WASHER, FLAT M6	2	
76	020106050	NUT M6	2	
77	959006120	CLIP (TCP2-10509B)	1	
78	367460120	WIRE HARNESS	1	
79	366461050	COLLAR, GUARD	8	
80	959021814	SPIRAL TUBE KEP6/L=200	1	
101	366345190	CRANK GEAR	1	
106	366010121	FRONT COVER	1	
111	911231201	ENGINE ASSY., ER120D45000	1	

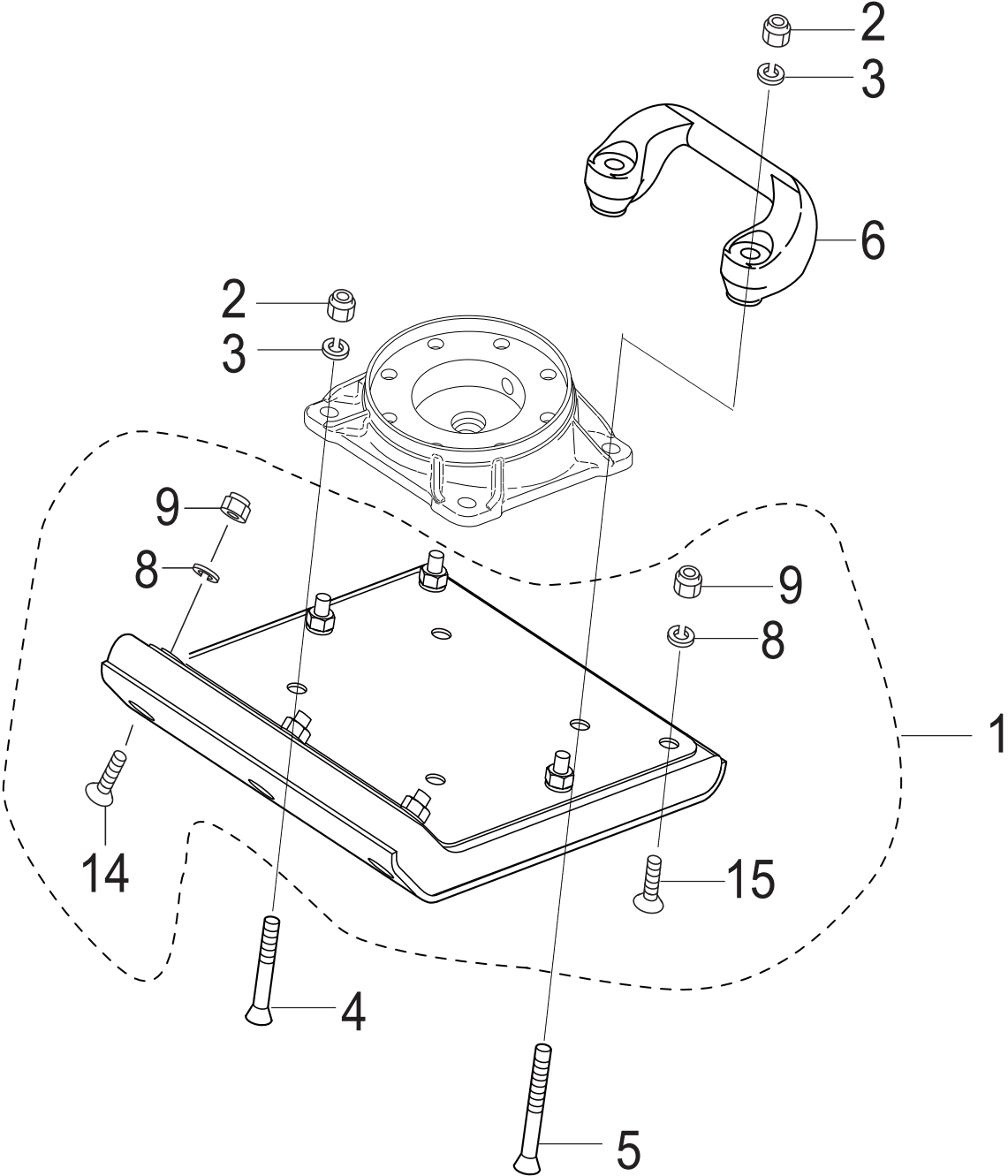
GUIDE CYLINDER ASSY



GUIDE CYLINDER ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	366460100	PISTON PIN	1	
2	366459910	PLUG, PISTON PIN	2	
3	366346000	PISTON ROD	1	
4	371459690	PISTON END	1	
5-1	001121230	BOLT 12X30 T P1.5	1	
5-2	030212300	WASHER, LOCK M12	1	
6	952404790	WASHER 13306	1	
7	355447260	STOPPER, LOWER	1	
8	366459900	STOPPER, BOTTOM	1	
9	366459730	MAIN SPRING	2	
12	366345990	SPRING CYLINDER	1	
13	366217210	FOOT PLATE 12	1	
14	050100900	O-RING G-90	1	
15	001521020	SOCKET HEAD BOLT 10X20 T	4	
16	001521040	SOCKET HEAD BOLT 10X40 T	4	
17	953405270	PLUG 1/4X14 13L	1	
18	953405260	PACKING 1/4 (CU)	1	
20	367217450	GUIDE CYLINDER	1	
21	050710070	O-RING AS568-344	1	
22-1	0105051045	BOLT 10X45 H	4	
22-2	030210250	WASHER, LOCK M10	4	
23	354010010	BELLOWS, ORANGE	1	
24	050931500	O-RING JASO3150	2	
25	354336352	BELLOWS CLAMP (1.6T) 171D	2	
26	354442340	BAND GUIDE, BELLOWS	2	
27	001220840	BOLT 8X40 T	2	
28	020308060	NUT M8	2	
29	354446170	PIN 6D-8.5L	2	
30	953405270	PLUG 1/4X14 13L	1	
31	953405260	PACKING 1/4 (CU)	1	
32	050200950	O-RING P-95	1	
51	366118590	PROTECTION SLEEVE	1	
52	366460300	OIL GAUGE ASSY.	1	
53	953404670	COPPER PACKING 17X25.5X1	1	

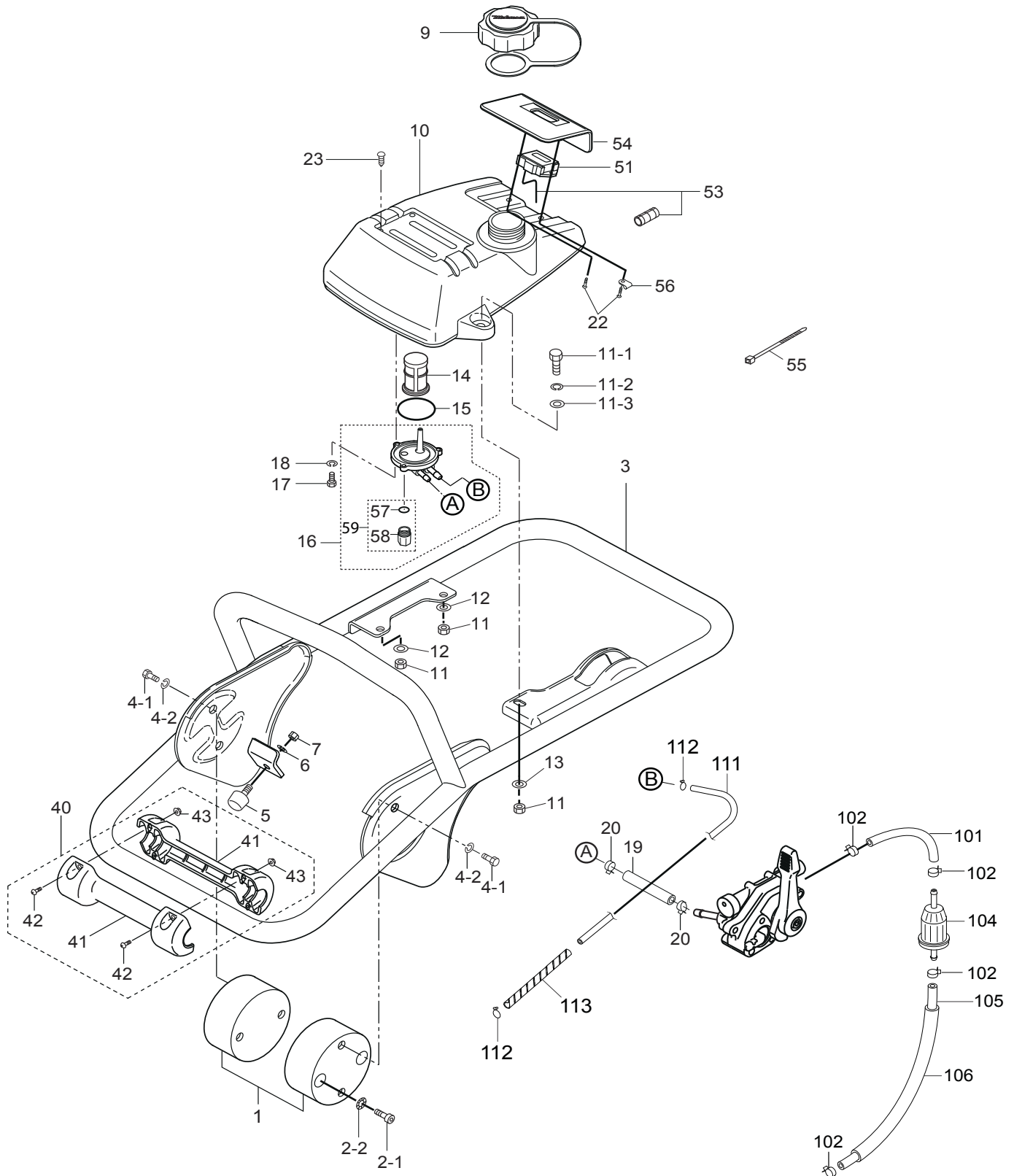
FOOT ASSY



FOOT ASSY

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	8511S	FOOT ASSY 285	1.....	INCLUDES ITEMS W/ #
2	0227-11214	NYLON NUT M12	4	
3	030212300	WASHER, LOCK M12	4	
4	009110034	BOLT, SQUARE NECK 12X65	2	
5	009110035	BOLT, SQUARE NECK 12X95	2	
6	363343390	GRIP HANDLEBAR	1	
8#	030210250	WASHER, LOCK M10	7	
9#	022711012	NYLON NUT M10	7	
14#	009110036	BOLT, SQUARE NECK 10X55	3	
15#	009110033	BOLT, SQUARE NECK 10X50	4	

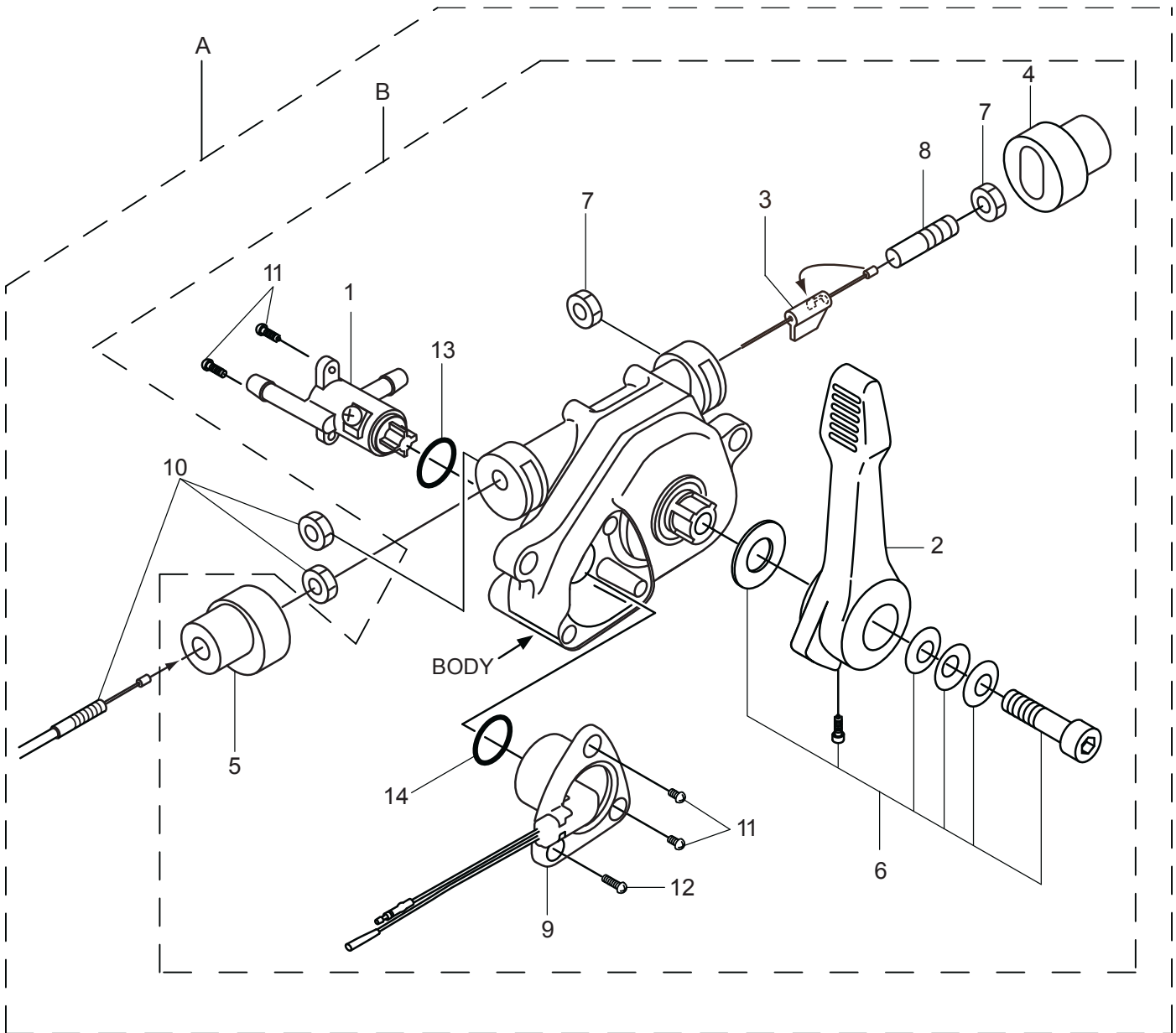
FUEL TANK AND HANDLE ASSY



FUEL TANK AND HANDLE ASSY

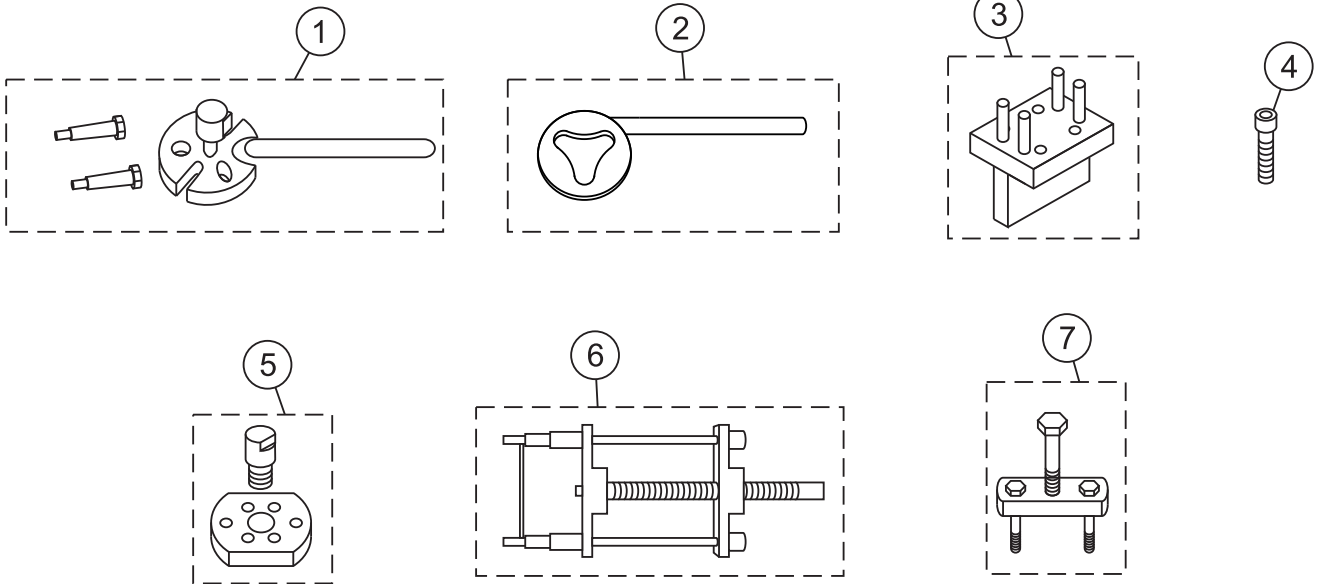
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	366346270	SHOCK ABSORBER W/PIN	2	
2-1	014210020	SOCKET HEAD BOLT 10 X 20 T	4	
2-2	033121009	TOOTHED LOCK WASHER B M10	4	
3	367119052	HANDLE	1	
4-1	001211020	BOLT 10X20 H	4	
4-2	030210250	WASHER, LOCK M10	4	
5	939010270	STOPPER RUBBER (70)	1	
6	030208200	WASHER, LOCK M8	1	
7	020108060	NUT M8	1	
9	366350460	CAP ASSY., FUEL TANK	1	
10	366120250	FUEL TANK/MTX70	1	
11	022710809	NYLON NUT M8	3	
11-1	011208025	BOLT 8X25 H	3	
11-2	030208200	WASHER, LOCK M8	3	
11-3	0401450080	WASHER, FLAT M8	3	
12	952401450	WASHER, 8.5X22X3	2	
13	0401450080	WASHER, FLAT M8	1	
14	954406010	STRAINER #508	1	
15	050250420	PACKING, FUEL TANK	1	
16	366350580	HOLDER, FILTER.....	1	INCLUDES ITEMS W/ \$
17	001200515	BOLT 5X15 H	3	
18	030205130	WASHER, LOCK M5	3	
19	959328406	FUEL HOSE L=90	1	
20	0561080020	HOSE CLAMP	2	
22	009110037	TAPPING SCREW 5X20	2	
23	094010053	PAN HEAD SCREW 4X8	4	
41	366217170	ROLLER	2	
42	0017105020	SCREW 5X20	4	
43	022610505	FLANGE NUT M5 H	4	
44#	366464260	CUP, HOLDER FILTER	1	
45#	366464270	PACKING, HOLDER FILTER	1	
51	955010311	TP22 TACHO/HOUR METER	1	
53	980010400	CURL CORD	1	
54	366345620	FINISHER, METER	1	
55	454010020	CLAMP TC100	5	
56	954010270	CLIP AB-3N	1	
57&\$	366464260	CUP, HOLDER FILTER	1	
58&\$	366464270	PACKING, HOLDER FILTER	1	
59\$	366900170	CUP AND PACKING SET	1	INCLUDES ITEMS W/ &
101	959328402	FUEL HOSE 5.5X8.5X170	1	
102	0561080020	HOSE BAND	4	
104	26365012A3	FILTER, IN-LINE FUEL	1	
105	959328403	FUEL HOSE 5.5X8.5X260	1	
106	954407720	TUBE, VINYL L180	1	
107	959021824	SPIRAL TUBE D=6, L=200	1	
111	959028301	RETURN HOSE 3X6X600	1	
112	954408170	HOSE CLIP 5	2	
113	959021814	SPIRAL TUBE 6D-200L	1	

COMBINATION LEVER ASSY



COMBINATION LEVER ASSY

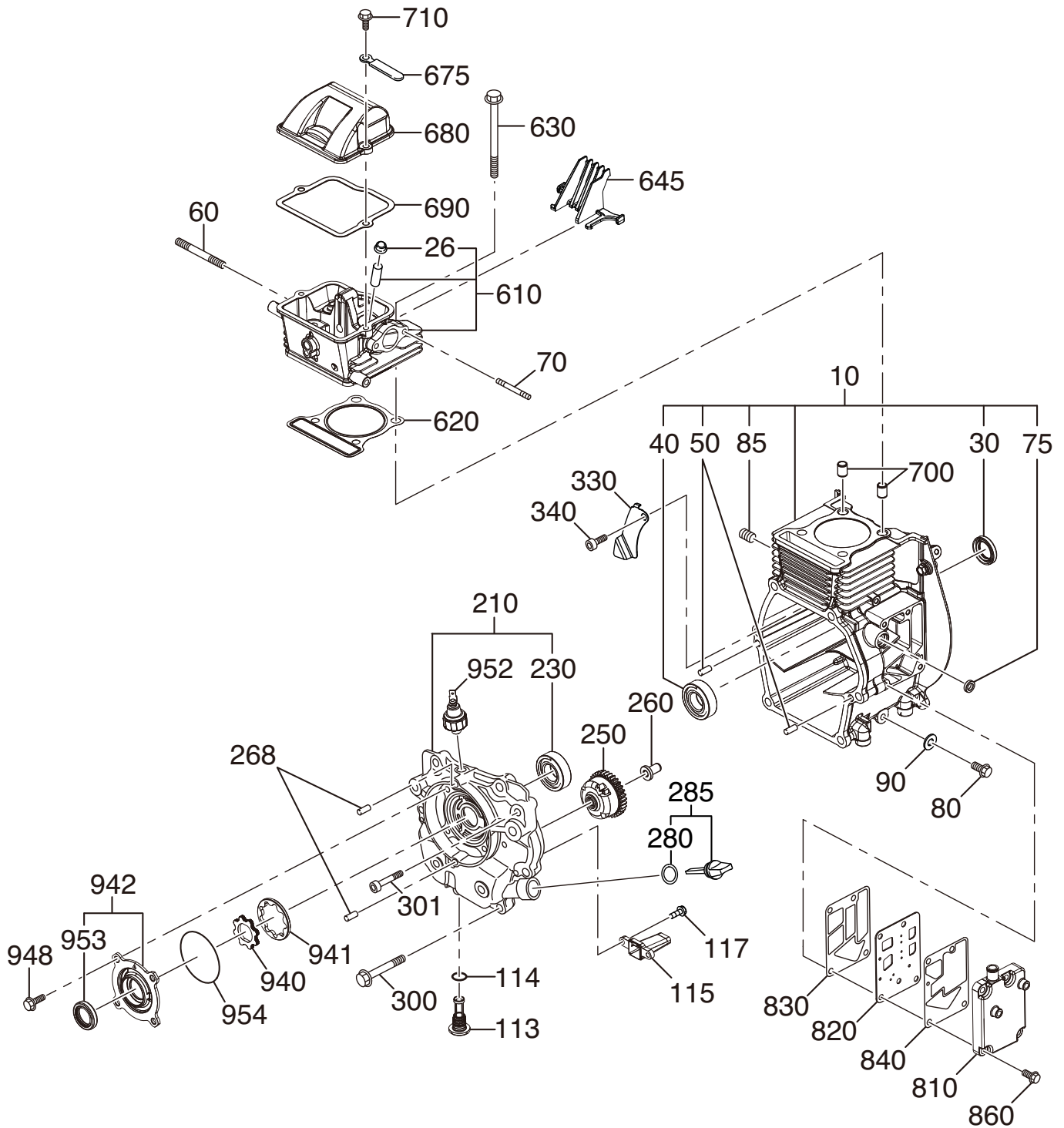
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
A	366900032	COMB. LEVER W/ THROTTLE WIRE.....	1.....	INCLUDES ITEMS W/@
B	956200110	COMB. LEVER W/OUT THROTTLE WIRE.....	1.....	INCLUDES ITEMS W/#
1@#	366349430	FUEL COCK	1	
2@#	366010310	LEVER	1	
3@#	366010190	SLIDER	1	
4@#	366010200	END CAP	1	
5@#	366010210	WIRE CAP	1	
6@#	366010220	BOLT AND WASHER SET	1	
7@#	020408050	NUT M8, H=5	2	
8@#	959407650	SOCKET HEAD SCREW/THROTTLE WIRE	1	
9@#	366010320	STOP SWITCH	1	
10@	956100062	THROTTLE WIRE	1	
11@#	094010051	TAPPING SCREW B1 4X12	4	
12@#	094010052	TAPPING SCREW B1 4X30	1	
13@#	050200150	O-RING, P15	1	
14@#	050200110	O-RING, P11	1	



TOOLS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	981010400	CLUTCH PULLER A	1	
2	983010060	CLUTCH MOUNTER	1	
3	983910030	PISTON ROD HOLDER	1	
4	009110044	SOCKET HEAD BOLT 8X50 (FULL THREAD)		
		CRANK GEAR REMOVER	2	
5	983910021	CLUTCH PULLER B	1	
6	983010042	SPRING CYLINDER REMOVER	1	
7	983910010	PISTON END REMOVER	1	

ROBIN ER120D45000 ENGINE — CRANKCASE ASSY.

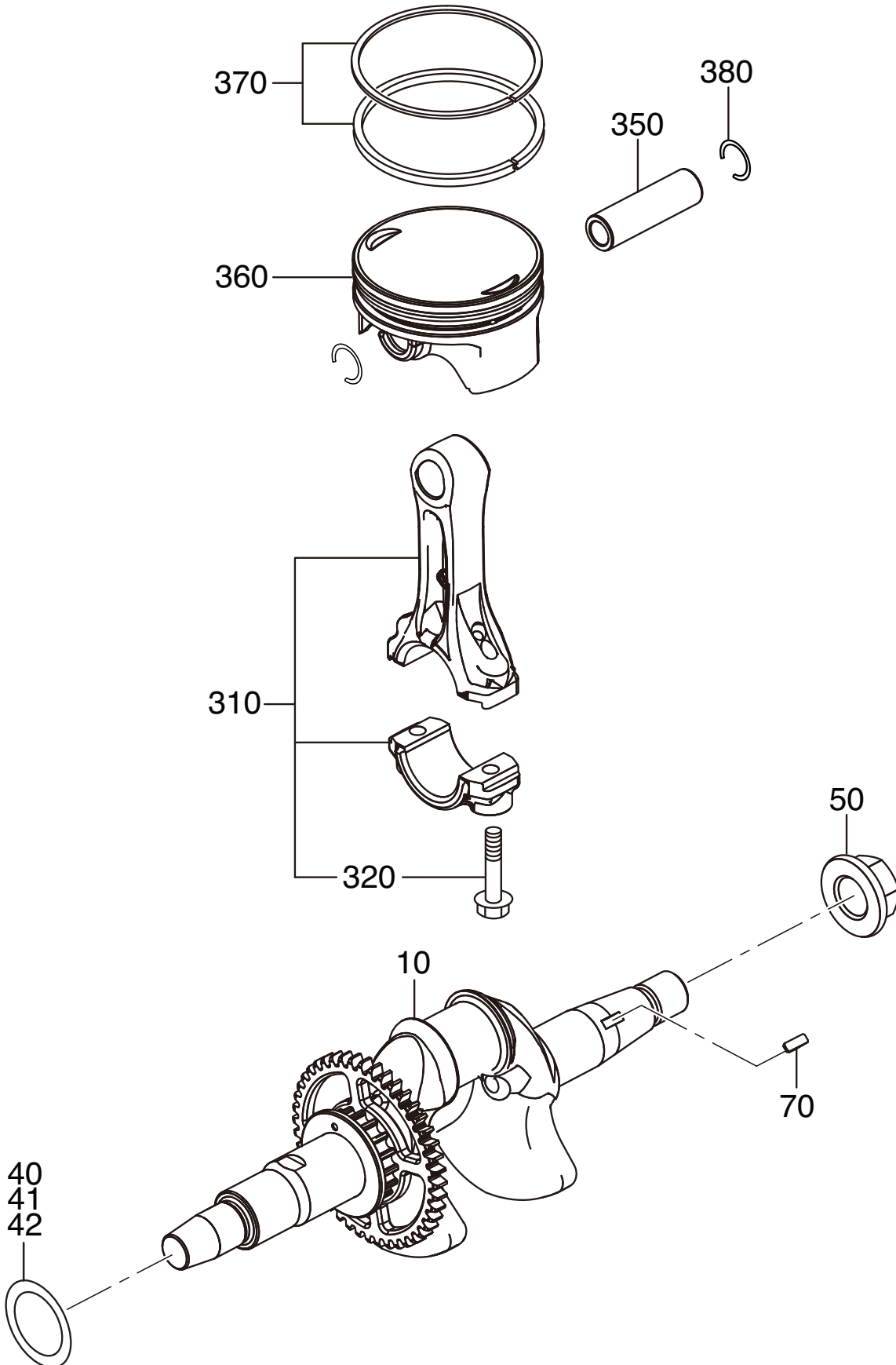


960 — GASKET SET

ROBIN ER120D45000 ENGINE — CRANKCASE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E10101M1	CRANKCASE CP	1.....	INCLUDES ITEMS W/#
26@	20F1601001	STEM SEAL	1	
30#	0440200070	OIL SEAL	1	
40#	X600200200	BALL BEARING	1	
50#	20F0060023	DOWEL PIN	2	
60	X105080550	STUD	2	
70	X105060470	STUD	2	
75#	X440080010	OIL SEAL	1	
80	0110080150	FLANGE BOLT	1	
85#	0403140010	PLUG	1	
90	X211080050	GASKET(ALUMINIUM)	1	
113	21E65001H2	PLUG	1	
114	0240110020	O-RING	1	
115	21E64201J3	SUCTION PIPE	1	
117	X110050030	FLANGE BOLT	2	
210	21E11001L1	MAIN BEARING COVER CP	1.....	INCLUDES ITEMSW/\$
230\$	X600220030	BALL BEARING	1	
250	21E45001J1	GOVERNOR GEAR CP	1	
260	21E41901H3	GOVERNOR SLEEVE	1	
268	20F0060023	DOWEL PIN	2	
280	X213160030	GASKET	1	
285	21E63601H1	OIL GAUGE CP	1	
300	0110080160	FLANGE BOLT	6	
301	X119060110	BOLT (SOCKET HEAD)	1	
330	21E17001H3	OIL SHELTER PLATE	1	
340	0011305100	BOLT AND WASHER ASSY	1	
610	21E13001L0	CYLINDER HEAD ASSY	1.....	INCLUDES ITEMS W/@
620	21E1500113	GASKET(HEAD)	1	
630	X110080460	FLANGE BOLT	4	
645	21E18001H3	GUIDE (S.PLUG)	1	
680	21E15501H3	ROCKER COVER	1	
690	21E1600101	GASKET CP (R.COVER)	1	
700	20F1501103	PIPE KNOCK	2	
710	X110060610	FLANGE BOLT	2	
810	21E14301H3	BREATHER COVER	1	
820	21E14401H1	BREATHER PLATE CP	1	
830	21E16002H3	GASKET (B.PLATE)	1	
840	21E16003H3	GASKET (B.COVER)	1	
860	0110060230	FLANGE BOLT	4	
940	21E63901H3	INNER ROTOR	1	
941	21E63902H3	OUTER ROTOR	1	
942	21E64001L1	OIL PUMP COVER CP	1.....	INCLUDES ITEMS W/%
948	0110060440	FLANGE BOLT	4	
952	21E76301H1	SWITCH OIL PRESSURE	1	
953%	0440200070	OIL SEAL	1	
954	0240590020	O-RING	1	
960	21E9900117	GASKET SET	1	

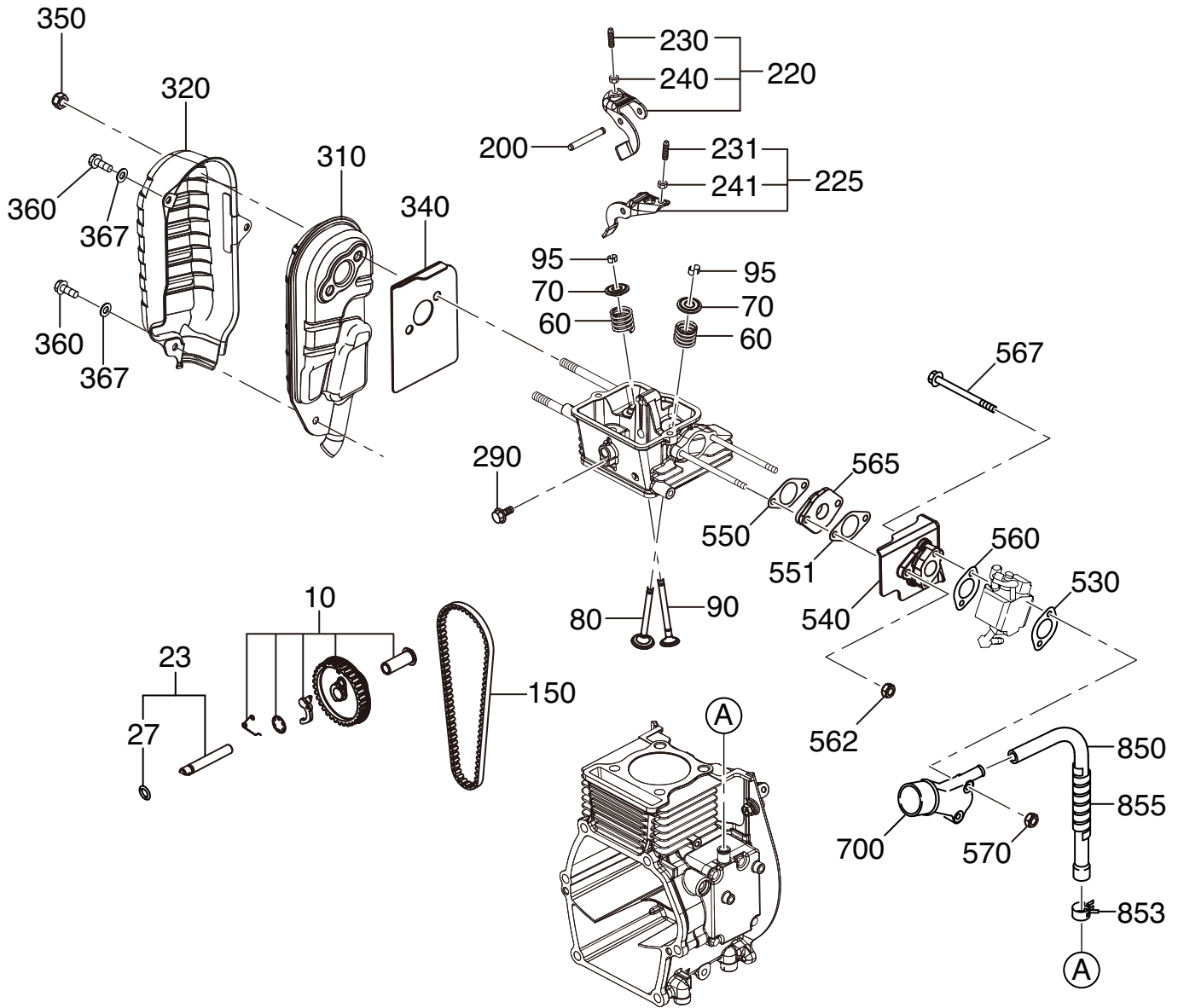
ROBIN ER120D45000 ENGINE — CRANKSHAFT, PISTON ASSY.



ROBIN ER120D45000 ENGINE — CRANKSHAFT, PISTON ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E20201K1	CRANKSHAFT CP	1	
40	X230220100	SPACER	1	
41	X230220110	SPACER	1	
42	X230220120	SPACER	1	
50	0180140020	FLANGE NUT	1	
70	0053203101	WOODRUFF KEY	1	
310	21E22501J0	CONNECTING ROD ASSY	1.....	INCLUDES ITEMS W/ #
320#	20F2300103	CONNECTING ROD BOLT	2	
350	21E23301H3	PISTON PIN	1	
360	21E23401H3	PISTON STD	1	
360	21E23403H3	PISTON O.S. 0.25	1	
360	21E23404H3	PISTON O.S. 0.50	1	
370	21E23501H7	PISTON RING SET, STD	1	
370	21E23502H7	PISTON RING SET, 0.25 O.S	1	
370	21E23503H7	PISTON RING SET, 0.50 O.S.	1	
380	21E2500103	CLIP	2	

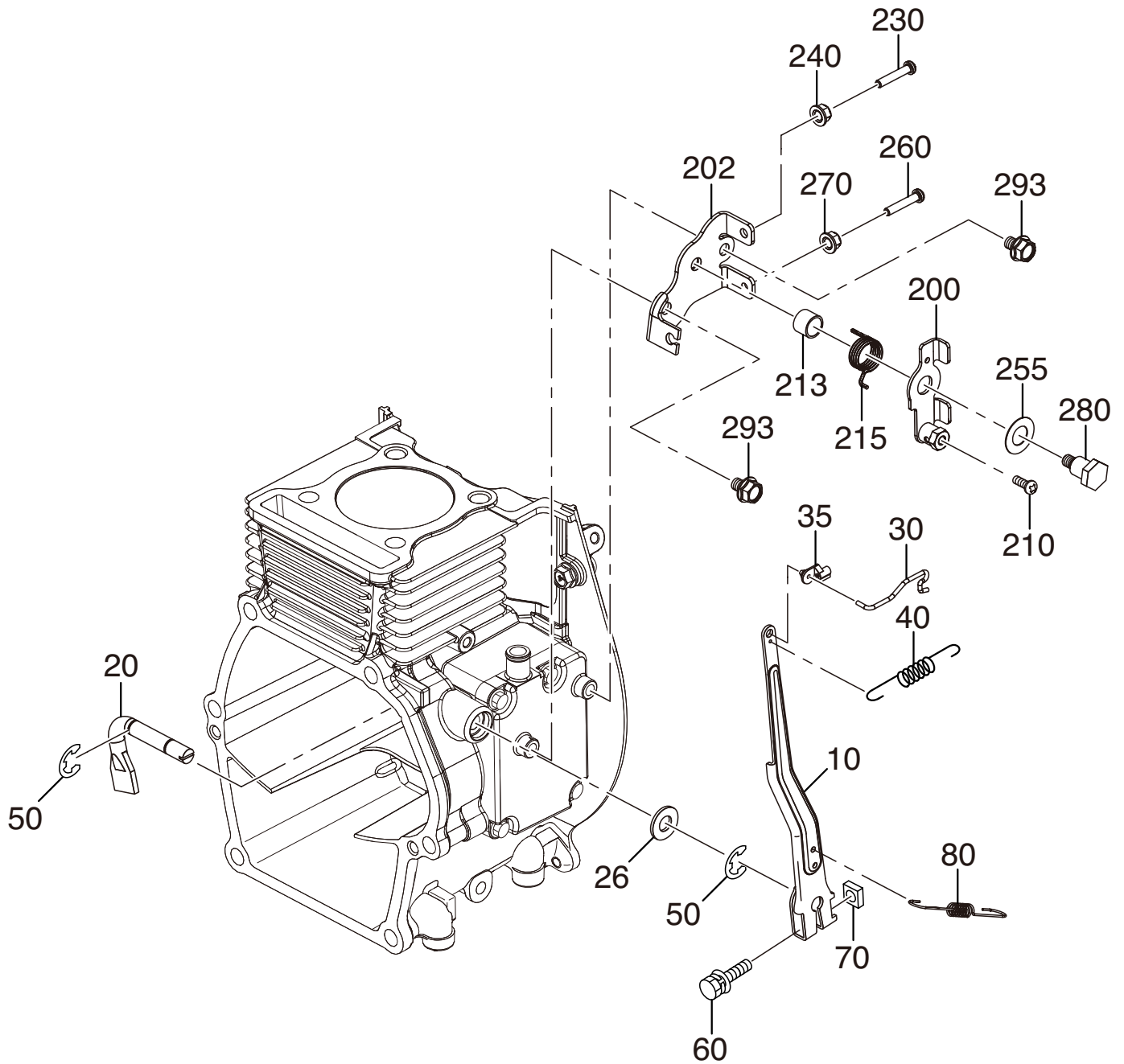
ROBIN ER120D45000 ENGINE — INTAKE, EXHAUST ASSY.



ROBIN ER120D45000 ENGINE — INTAKE, EXHAUST ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E31601L1	CAM PULLEYCP	1	
23	21E35101H1	PIN (CAM PULLEY) CP	1	INCLUDES ITEMS W/ #
27#	0240060010	O-RING	1	
60	2793360103	VALVE SPRING	2	
70	2693370103	SPRING RETAINER	2	
80	27633401H3	INTAKE VALVE	1	
90	27633501H3	EXHAUST VALVE	1	
95	20F10KA031	COLLET VALVE	4	
150	21E3560103	TIMING BELT	1	
200	2773500403	PIN (ROCKER)	1	
220	21E36101H0	ROCKER ARM INTAKE ASSY	1	INCLUDES ITEMS W/ \$
225	21E36102H0	ROCKER ARM EXHAUST ASSY	1	INCLUDES ITEMS W/ @
230\$	20A0140100	ADJUST SCREW	1	
231@	20A0140100	ADJUST SCREW	1	
240\$	20A0180100	NUT	1	
241@	20A0180100	NUT	1	
290	20F0060010	FLANGE BOLT	1	
310	21E30101K2	MUFFLER UN	1	
320	21E34201L2	MUFFLER COVER UN	1	
360	X130060330	BOLT AND WASHER ASSY	2	
367	0200060120	WASHER	2	
340	21E35201H3	GASKET (MUFFLER)	1	
350	0176080020	SELF LOCK NUT	2	
530	1066500203	GASKET (CARB.)	1	
540	21E32902J3	INSULATOR 2	1	
550	2823590103	GASKET (INSULATOR)	1	
551	21E35001H3	GASKET (INSULATOR)	1	
560	21E35002H3	GASKET (CARB)	1	
562	20F6060020	SELF LOCK NUT	2	
565	21E32901H3	INSULATOR 1	1	
567	0100050110	BOLT	2	
570	0176050010	SELF LOCK NUT	2	
700	21E33001H3	INTAKE PIPE (D)	1	
850	21E16103H3	RUBBER PIPE	1	
853	0561130010	HOSE CLAMP	1	
855	21E19001H3	SPIRAL TUBE	1	

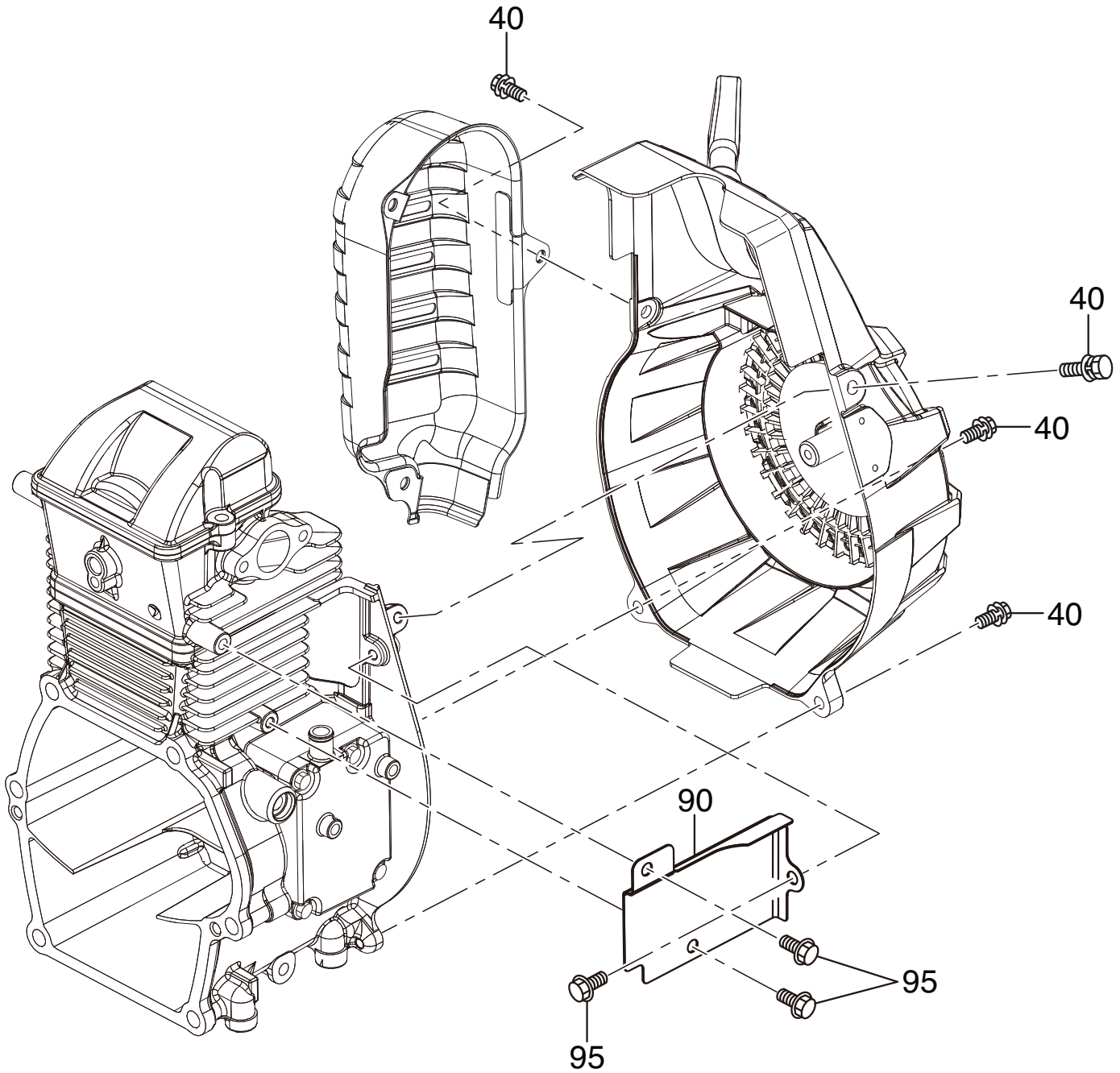
ROBIN ER120D45000 ENGINE — GOVERNOR, OPERATION ASSY.



ROBIN ER120D45000 ENGINE — GOVERNOR, OPERATION ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E42301H3	GOVERNOR LEVER	1	
20	21E42201J3	GOVERNOR SHAFT	1	
26	20F1108000	WASHER	1	
30	21E42701J1	GOVERNOR ROD CP	1	
35	2844560103	LINKAGE BUSHING	1	
40	21E4280103	ROD SPRING	1	
50	0031306000	CLIP	2	
60	20F1406300	BOLT AND WASHER ASSY	1	
70	0186060020	NUT	1	
80	21E4250113	GOVERNOR SPRING	1	
200	21E43301J0	SPEED CONT. LEVER ASSY	1	
202	21E46002J1	BASE PLATE CP	1	
210	0043104140	SCREW, PANHEAD	1	
213	0230100040	SPACER	1	
215	2264500313	RETURN SPRING	1	
230	X140050110	SCREW	1	
240	0021705000	NUT	1	
255	0217100020	FRICTION WASHER	1	
260	X140050110	SCREW	1	
270	0021705000	NUT	1	
280	2264310301	LINK PIVOT CP	1	
293	20F0060010	FLANGE BOLT	2	

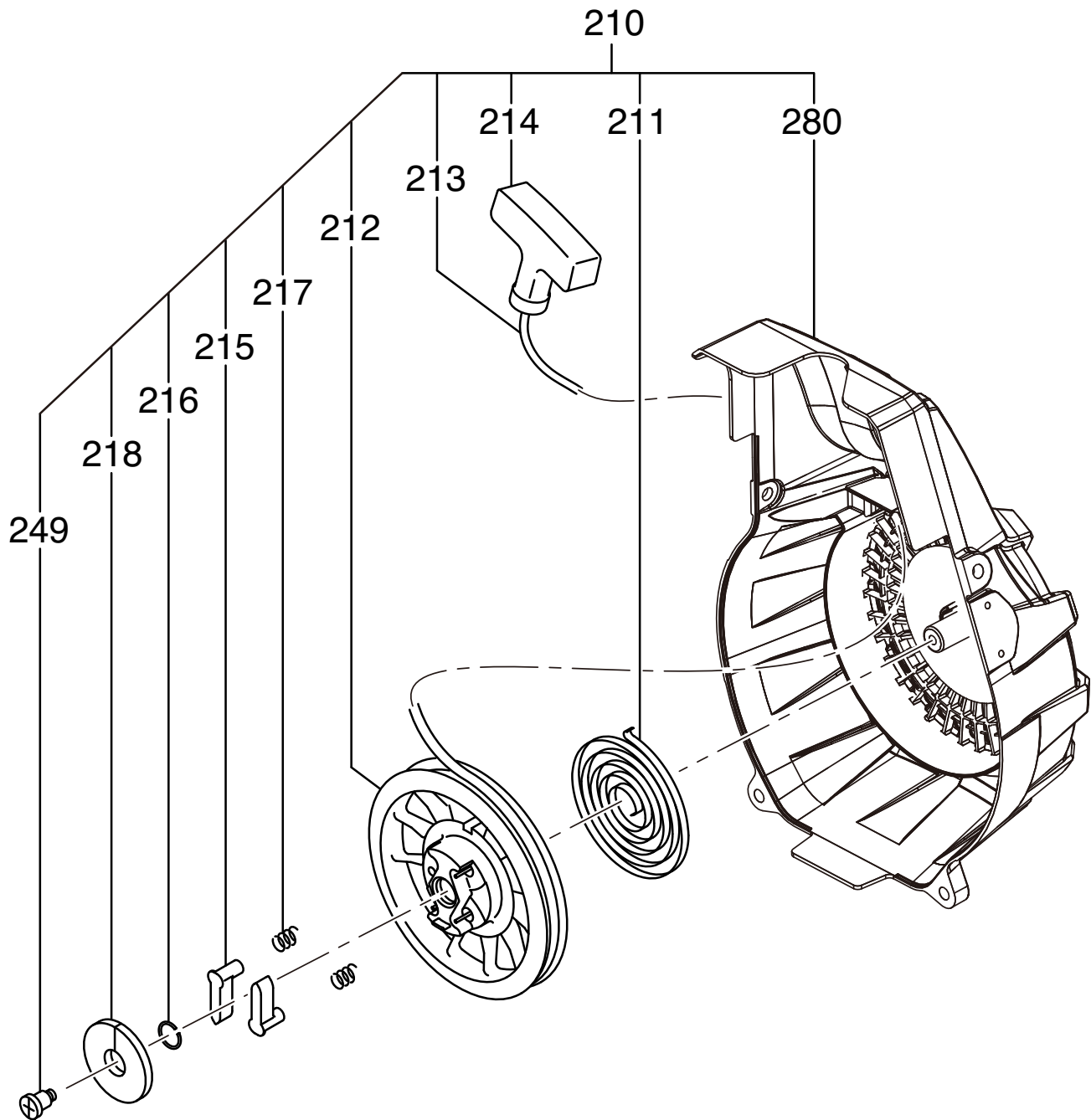
ROBIN ER120D45000 ENGINE — COOLING ASSY.



ROBIN ER120D45000 ENGINE — COOLING ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
40	X130060340	BOLT AND WASHER ASSY	4	
90	21E52601H3	CYLINDER BAFFLE	1	
95	20F0060010	FLANGE BOLT	3	

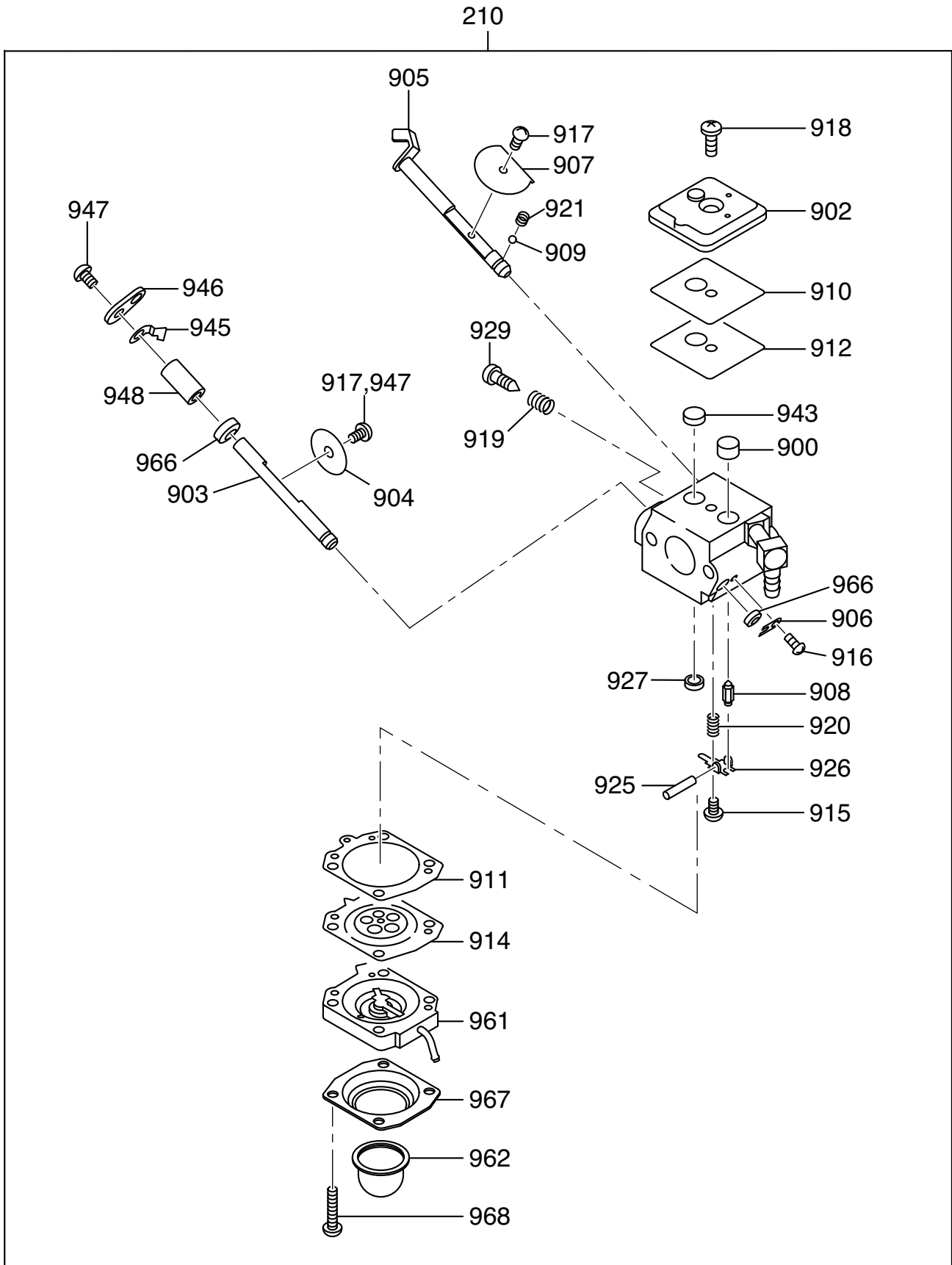
ROBIN ER120D45000 ENGINE — STARTING ASSY.



ROBIN ER120D45000 ENGINE — STARTING ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
210	21E50201L0	RECOIL STARTER ASSY	1.....	INCLUDES ITEMS W/ #
211#	20F5011508	SPIRAL SPRING	1	
212#	21ES022008	REEL	1	
213#	21E5011008	STARTER ROPE	1	
214#	20F5010018	STARTER KNOB	1	
215#	20F5022508	RATCHET	2	
216#	2745013108	FRICTION SPRING	1	
217#	2275013508	RETURN SPRING	2	
218#	21E5026008	RATCHET GUIDE	1	
249#	20B5010108	SET SCREW	1	
280#	21E5015018	STARTER CASE CP	1	

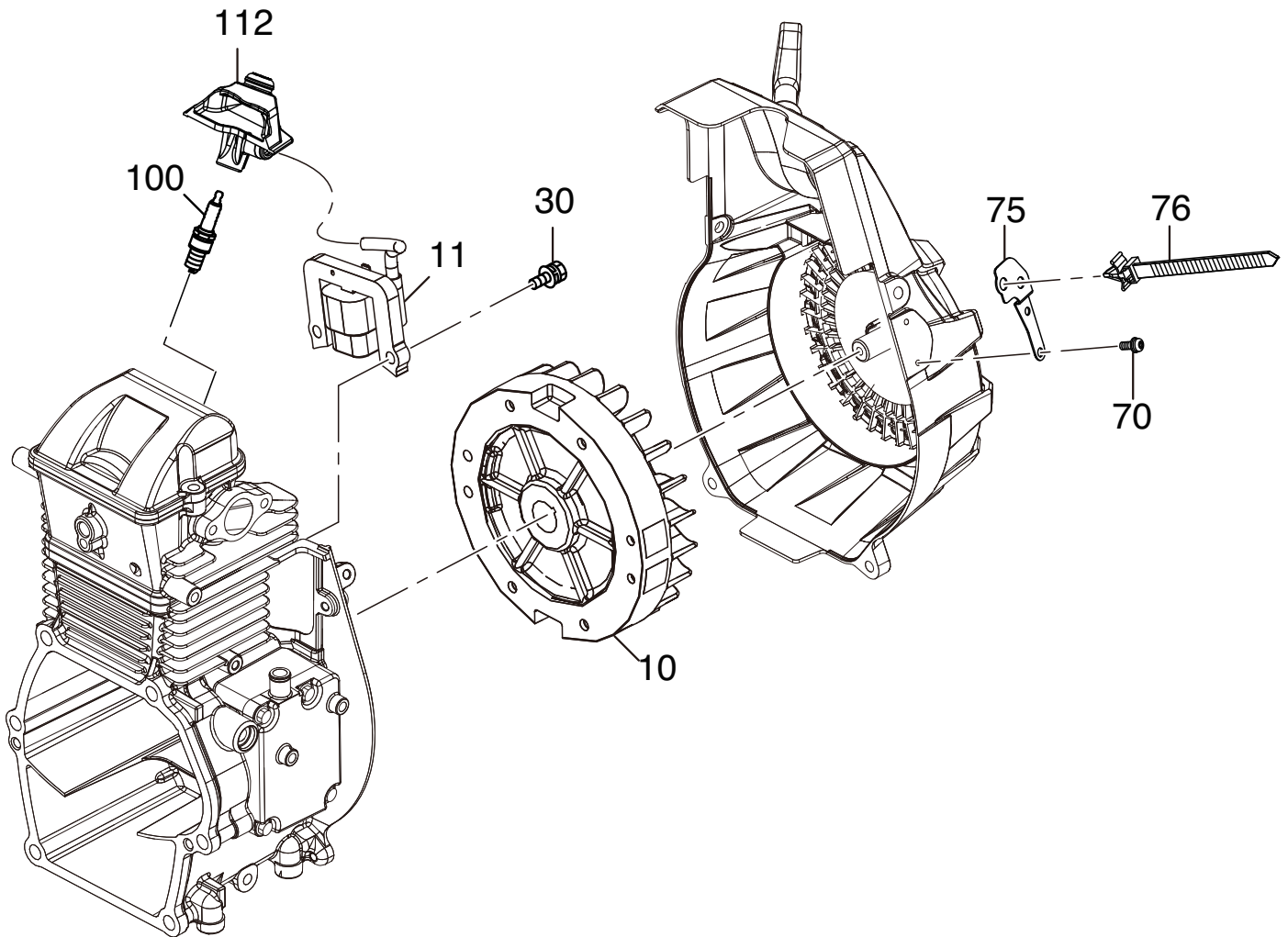
ROBIN ER120D45000 ENGINE — FUEL LUBRICANT ASSY.



ROBIN ER120D45000 ENGINE — FUEL LUBRICANT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
210	21E6240100	CARBURETOR ASSY	1.....	INCLUDES ITEMS W/#
900#	5016004010	SCREEN INLET	1	
902#	2526261308	COVER PUMP	1	
903#	2526261208	SHAFT THROTTLE	1	
904#	1616233508	VALVE THROTTLE	1	
905#	2846260308	SHAFT ASSY CHOKE	1	
906#	5106045040	CLIP THROTTLE SHAFT	1	
907#	2846260408	VALVE CHOKE	1	
908#	1616255208	VALVE, INLET NEEDLE	1	
909#	1476258408	BALL	1	
910#	1616238008	GASKET, PUMP	1	
911#	2526261808	GASKET, METERING DIA.	1	
912#	2526261008	DIAPHRAGM PUMP	1	
914#	2526261708	DIAPHRAGM ASSY,METERING	1	
915#	2526261908	SCREW	1	
916#	1066257608	SCREW ASSY	1	
917#	1476257308	SCREW VALVE	1	
918#	2846260008	SCREW	1	
919#	1616245408	SPRING	1	
920#	1616245108	SPRING, METERING LEVER	1	
921#	1476258308	SPRING CHOKE	1	
925#	1616236808	PIN, METERING LEVER	1	
926#	1616236908	LEVER, METERING	1	
927#	1476257508	PLUG WELCH	1	
929#	1616238508	SCREW, IDLE ADJ.	1	
943#	2526261108	SPRING PUMP	1	
945#	1616255108	STOP THROTTLE	1	
946#	2526260308	LEVER THROTTLE	1	
947#	1616255308	SCREW	2	
948#	2526260208	SPACER THROTTLE LEVER	1	
961#	2526261408	BODY ASSY AIR PURGE	1	
962#	2526261508	PUMP PRIMER	1	
966#	1476258608	SEAL	2	
967#	2526261608	COVER PRIMER PUMP	1	
968#	2526262008	SCREW ASSY	4	

ROBIN ER120D45000 ENGINE — ELECTRIC DEVICE ASSY.



ROBIN ER120D45000 ENGINE — ELECTRIC DEVICE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	21E79230J1	FLY WHEEL CP	1	
11	21E79430J1	IGNITION COIL CP	1	
30	20F1406250	BOLT AND WASHER ASSY	2	
70	X131040130	SCREW AND WASHER ASSY	2	
75	21E76501H3	PLATE	1	
76	0563000100	WIRE BAND	1	
100	0650140860	SPARK PLUG	1	
112	21E75001J3	SPARK PLUG RUBBER CAP	1	

TERMS AND CONDITIONS OF SALE — PARTS

PAYMENT TERMS

Terms of payment for parts are net 30 days.

FREIGHT POLICY

All parts orders will be shipped collect or prepaid with the charges added to the invoice. All shipments are F.O.B. point of origin. Multiquip's responsibility ceases when a signed manifest has been obtained from the carrier, and any claim for shortage or damage must be settled between the consignee and the carrier.

MINIMUM ORDER

The minimum charge for orders from Multiquip is \$15.00 net. Customers will be asked for instructions regarding handling of orders not meeting this requirement.

RETURNED GOODS POLICY

Return shipments will be accepted and credit will be allowed, subject to the following provisions:

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
 - a. The parts numbers and descriptions must match the current parts price list.
 - b. The list must be typed or computer generated.
 - c. The list must state the reason(s) for the return.
 - d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
 - e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.

5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Multiquip part numbers clearly marked.
6. The following items are not returnable:
 - a. Obsolete parts. (If an item is in the price book and shows as being replaced by another item, it is obsolete.)
 - b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
 - c. Any line item with an extended dealer net price of less than \$5.00.
 - d. Special order items.
 - e. Electrical components.
 - f. Paint, chemicals, and lubricants.
 - g. Decals and paper products.
 - h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for five working days from notification, pending instructions. If a reply is not received within five days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted, for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

PRICING AND REBATES

Prices are subject to change without prior notice. Price changes are effective on a specific date and all orders received on or after that date will be billed at the revised price. Rebates for price declines and added charges for price increases will not be made for stock on hand at the time of any price change.

Multiquip reserves the right to quote and sell direct to Government agencies, and to Original Equipment Manufacturer accounts who use our products as integral parts of their own products.

SPECIAL EXPEDITING SERVICE

A \$35.00 surcharge will be added to the invoice for special handling including bus shipments, insured parcel post or in cases where Multiquip must personally deliver the parts to the carrier.

LIMITATIONS OF SELLER'S LIABILITY

Multiquip shall not be liable hereunder for damages in excess of the purchase price of the item with respect to which damages are claimed, and in no event shall Multiquip be liable for loss of profit or good will or for any other special, consequential or incidental damages.

LIMITATION OF WARRANTIES

No warranties, express or implied, are made in connection with the sale of parts or trade accessories nor as to any engine not manufactured by Multiquip. Such warranties made in connection with the sale of new, complete units are made exclusively by a statement of warranty packaged with such units, and Multiquip neither assumes nor authorizes any person to assume for it any other obligation or liability whatever in connection with the sale of its products. Apart from such written statement of warranty, there are no warranties, express, implied or statutory, which extend beyond the description of the products on the face hereof.

Effective: February 22, 2006

OPERATION AND PARTS MANUAL

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL
NUMBER ON-HAND WHEN CALLING

UNITED STATES

Multiquip Corporate Office

18910 Wilmington Ave.
Carson, CA 90746
Contact: mq@multiquip.com

Tel. (800) 421-1244
Fax (310) 537-3927

Service Department

800-421-1244
310-537-3700

Fax: 310-537-4259

Technical Assistance

800-478-1244

Fax: 310-943-2238

MQ Parts Department

800-427-1244
310-537-3700

Fax: 800-672-7877
Fax: 310-637-3284

Warranty Department

800-421-1244
310-537-3700

Fax: 310-943-2249

MEXICO

MQ Cipsa

Carr. Fed. Mexico-Puebla KM 126.5
Momoxpan, Cholula, Puebla 72760 Mexico
Contact: pmastretta@cipsa.com.mx

Tel: (52) 222-225-9900
Fax: (52) 222-285-0420

CANADA

Multiquip

4110 Industriel Boul.
Laval, Quebec, Canada H7L 6V3
Contact: jmartin@multiquip.com

Tel: (450) 625-2244
Tel: (877) 963-4411
Fax: (450) 625-8664

UNITED KINGDOM

Multiquip (UK) Limited Head Office

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Dukinfield, Cheshire SK16 4UJ
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This manual MUST accompany the equipment at all times. This manual is considered a permanent part of the equipment and should remain with the unit if resold.

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