

OPERATION & PARTS MANUAL



Mikasa SERIES
MODEL MVC-90L
ONE-WAY PLATE COMPACTOR
(ROBIN GASOLINE ENGINE)

Revision #1 (11/01/05)

**THIS MANUAL MUST ACCOMPANY
THE EQUIPMENT AT ALL TIMES.**

**MULTIQUIP MVC-90L
PLATE COMPACTOR**

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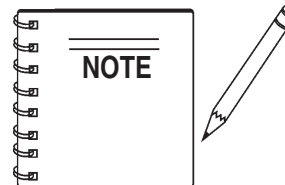
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Specifications and part numbers are subject to change without notice.

MVC-90L PLATE COMPACTOR — SPECIFICATIONS

TABLE 1. COMPACTOR SPECIFICATIONS

Model	MVC-90L
Centrifugal Force	3,350 lbs. (1,520 kg)
Vibration Frequency	5,800 vpm
Maximum Forward Speed	82 ft/min (25 m/min)
Plate Size (L x W)	22 x 19.6 in (560 x 500 mm)
Operating Weight	197 lbs. (89 kg)
Maximum Area of Compaction	8,036 sq. ft/hr (746 sq. m/hr)
HP Rating	6.0 BHP (4.6 KW)
Water Tank Capacity	5.6 qts. (5.3 liters)

Table 2. ENGINE SPECIFICATIONS

Engine	Model	ROBIN EH172YD4230
	Type	Air-cooled 4-cycle, Single Cylinder, Horizontal Shaft, Overhead Valve, Gasoline Engine
	Displacement	172 cc (10.5 cu-in)
	Max Output	6.0 H.P. (4.5 KW)/4,000 R.P.M.
	Continuous Output	4.0 H.P.(3.0 KW)/3,600 R.P.M.
	Fuel Tank Capacity	Approx. .95 U.S. gallons (3.6 liters)
	Fuel	Unleaded Automobile Gasoline
	Lube Oil Capacity	.69 qts. (0.65 liters)
Dimension (L x W x H)	12.64 x 13.98 x 14.96 in. (321 x 355 x 380 mm)	
Dry Net Weight	34.1 lbs. (15.5 Kg.)	

MVC-90L PLATE COMPACTOR — DIMENSIONS

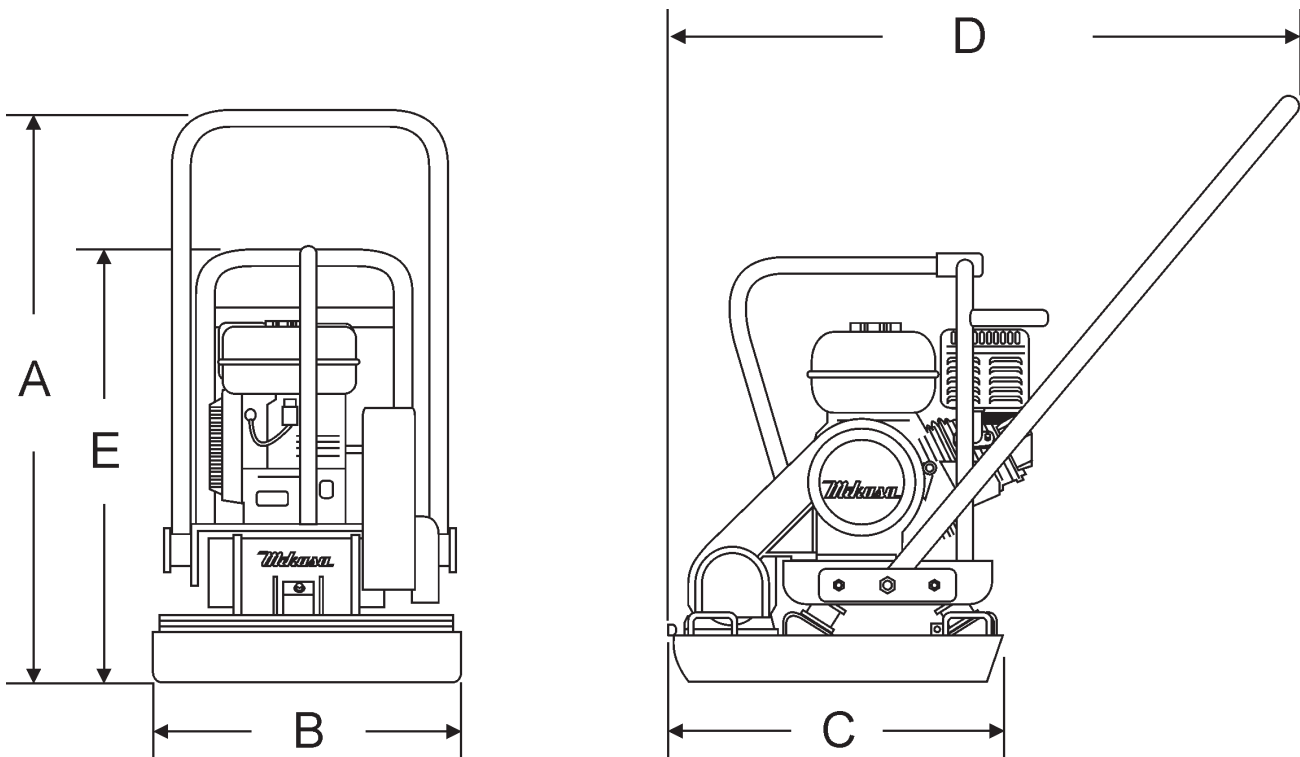


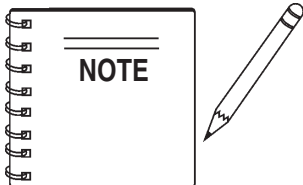
Figure 1. MVC-90L Plate Compactor Dimensions

TABLE 3. DIMENSIONS		
Reference Letter	Description	Dimensions in. (mm)
A	Height (Handle Deployed)	34 in. (863.6 mm.)
B	Overall Width	21 in. (533 mm.)
C	Length (Plate only)	23 in. (584 mm.)
D	Length (Handle Deployed)	48 in. (1,219 mm.)
E	Height (Handle Detached)	31 in. (787 mm.)

MVC-90L PLATE COMPACTOR — SAFETY MESSAGE ALERT SYMBOLS

FOR YOUR SAFETY AND THE SAFETY OF OTHERS!

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.



This Owner's Manual has been developed to provide complete instructions for the safe and efficient operation of the Multiquip MVC-90L Plate Compactor. Refer to the engine

manufacturer's instructions for data relative to its safe operation.

Before using this plate compactor, ensure that the operating individual has read and understands all instructions in this manual.

SAFETY MESSAGE ALERT SYMBOLS

The three (3) 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 three words: **DANGER**, **WARNING**, or **CAUTION**.

DANGER

You **WILL** be **KILLED** or **SERIOUSLY** injured if you **DO NOT** follow directions.

WARNING

You **CAN** be **KILLED** or **SERIOUSLY** injured if you **DO NOT** follow directions.

CAUTION

You **CAN** be **INJURED** if you **DO NOT** follow directions.

Potential hazards associated with the operation of an **MVC-90L Plate Compactor** will be referenced with Hazard Symbols which appear throughout this manual, and will be referenced in conjunction with Safety Message Alert Symbols.

HAZARD SYMBOLS

WARNING - Lethal Exhaust Gasses

Engine exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled. **NEVER** operate this equipment in a confined area or enclosed structure that does not provide ample free flow air.



WARNING - Explosive Fuel

Gasoline is extremely flammable, and its vapors can cause an explosion if ignited. **DO NOT** start the engine near spilled fuel or combustible fluids.



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 approved containers, in well-ventilated areas and away from sparks and flames.

WARNING - Burn Hazards

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



CAUTION - Respiratory Hazard

ALWAYS wear approved **respiratory** protection when required.



MVC-90L PLATE COMPACTOR — SAFETY MESSAGE ALERT SYMBOLS

⚠ CAUTION - Rotating Parts

NEVER operate equipment with covers, or guards removed. Keep fingers, hands, hair and clothing away from all moving parts to prevent injury.



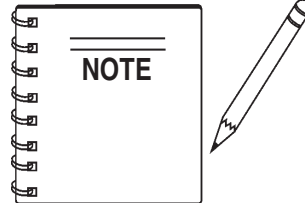
⚠ CAUTION - Accidental Starting

ALWAYS place the power source, circuit breakers or **ON/OFF** switch in the **OFF** position, when the generator is not in use, unless connected to transfer switch.



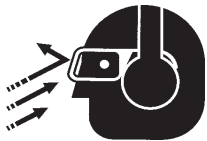
⚠ CAUTION - Equipment Damage Messages

Other important messages are provided throughout this manual to help prevent damage to your light tower, other property, or the surrounding environment.

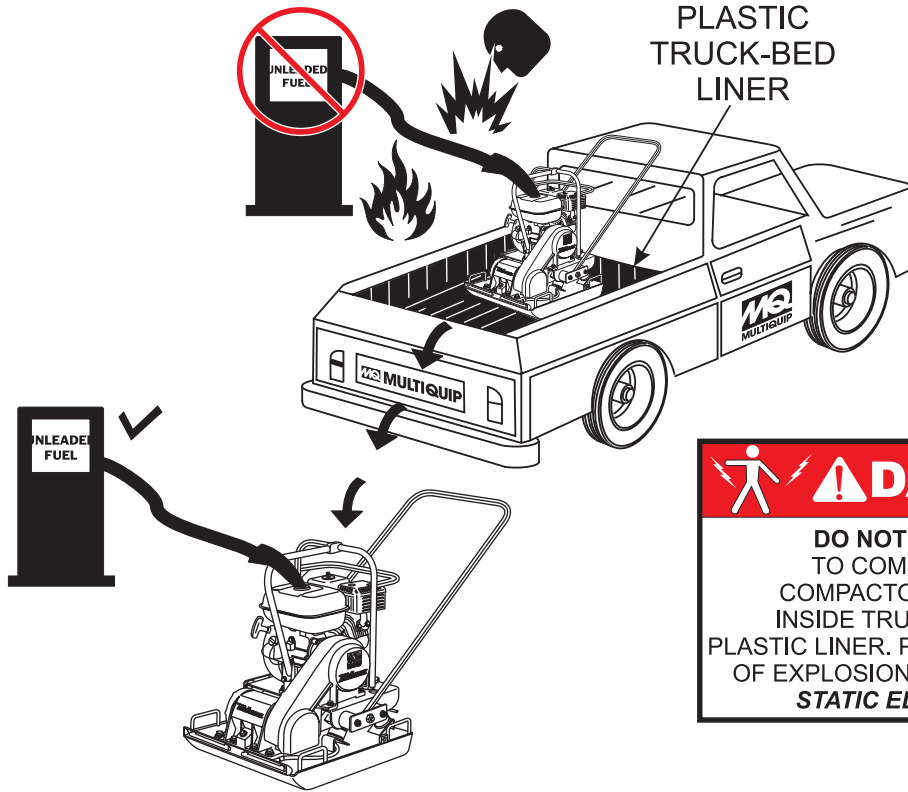


This reversible plate compactor, other property, or the surrounding environment could be damaged if you do not follow instructions.

⚠ CAUTION - Sight and Hearing Hazards



ALWAYS wear approved eye and hearing protection.



⚠ DANGER

DO NOT ADD FUEL TO COMPACTOR IF COMPACTOR IS PLACED INSIDE TRUCK-BED WITH PLASTIC LINER. POSSIBILITY EXISTS OF EXPLOSION OR FIRE DUE TO *STATIC ELECTRICITY*.

MVC-90L PLATE COMPACTOR — RULES FOR SAFE OPERATION

WARNING - Read This Manual

Failure to follow instructions in this manual may lead to **Serious Injury** or even **Death**. This equipment is to be operated by trained and qualified personnel only! This equipment is for industrial use only.

The following safety guidelines should always be used when operating the Mikasa MVC-90L Plate Compactor:

Safety:

- **DO NOT** operate or service this equipment before reading this entire manual.
- This equipment should not be operated by persons under 18 years of age.
- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, steel-toed boots and other protective devices required by the job.



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

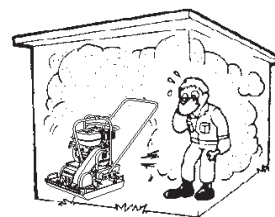


- **NEVER** use accessories or attachments, which are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- **ALWAYS** check all the bolts on the light tower for tightness.
- **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.

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing engine or generator.
- **High Temperatures** – Allow the engine to cool before adding fuel or performing service and maintenance functions. Contact with *hot* components can cause serious burns.



- The engine of this reversible plate compactor requires an adequate free flow of cooling air. **NEVER** operate the reversible plate compactor in any enclosed or narrow area where free flow of the air is restricted. If the air flow is restricted it will cause serious damage to the reversible plate compactor or engine and may cause injury to people and property. Remember the vibration roller's engine gives off **DEADLY** gases.



- **ALWAYS** refuel in a well-ventilated area, away from sparks and open flames.
- **ALWAYS** use extreme caution when working with **flammable** liquids. When refueling, **stop the engine** and allow it to cool. **DO NOT smoke** around or near the machine. Fire or explosion could result from fuel vapors, or if fuel is spilled on a hot engine.
- **NEVER** operate the reversible plate compactor in an explosive atmosphere or near combustible materials. An explosion or fire could result causing severe *bodily harm or even death*.
- Topping-off to filler port is dangerous, as it tends to spill fuel.
- **ALWAYS** store the reversible plate compactor in a clean, dry location out of the reach of children.
- **NEVER** run engine without air cleaner. Severe engine damage may occur.
- **NEVER** leave the reversible plate compactor unattended, turn off engine.
- **CAUTION** must always be observed while servicing this reversible plate compactor. Rotating parts can cause injury if contacted.
- **DO NOT** leave reversible plate compactor with engine running.



MVC-90L PLATE COMPACTOR — RULES FOR SAFE OPERATION

Loading and Unloading (Crane):

- Before lifting, make sure that machine parts (hook and vibration insulator) are not damaged and screws are not loosened or lost.
- Always make sure crane or lifting device has been properly secured to the hook of guard frame on compactor.
- **NEVER** lift the machine while the engine is running.
- Use adequate lifting cable (wire or rope) of sufficient strength.
- Use one point suspension hook and lift straight upwards.
- **NEVER** allow any person or animal to stand underneath the machine while lifting.
- Try not to lift machine to unnecessary heights.

Transporting

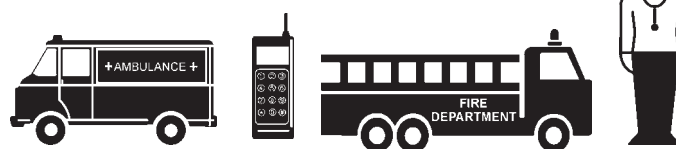
- **ALWAYS** shutdown engine before transporting.
- Tighten fuel tank cap securely and close fuel cock to prevent fuel from spilling.
- Drain fuel when transporting compactor over long distances or bad roads.
- **ALWAYS** tie down the compactor during transportation by securing the compactor's guard frame with rope.

Maintenance Safety:

- **NEVER** lubricate components or attempt service on a running machine.
- **ALWAYS** allow the machine a proper amount of time to cool before servicing.
- Keep the machinery in proper running condition.
- Fix damage to the machine immediately and always replace broken parts.
- 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.

Emergencies:

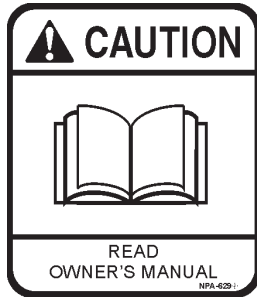
- **ALWAYS** know the location of the nearest **fire extinguisher**.
- **ALWAYS** know the location of the nearest **first aid kit**.
- In emergencies **always** know the location of the nearest phone or **keep a phone on the job site**. Also know the phone numbers of the nearest **ambulance, doctor**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



MVC-90L PLATE COMPACTOR — OPERATION AND SAFETY DECALS

Machine Safety Decals

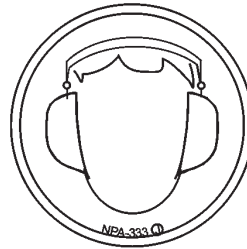
The MVC-90L Plate Compactor is equipped with a number of safety decals. These decals are provided for operator safety and maintenance information. The illustration below shows these decals as they appear on the machine. Should any of these decals become unreadable, replacements can be obtained from your dealer.



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P/N: 920206280



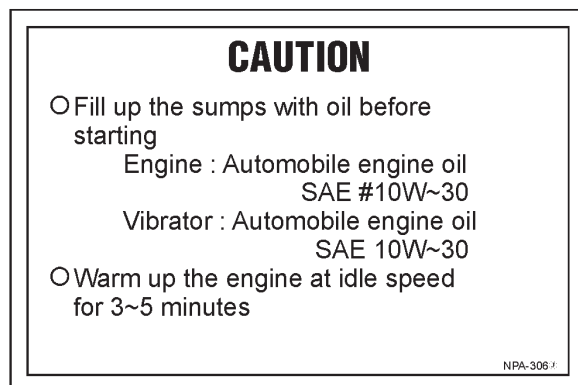
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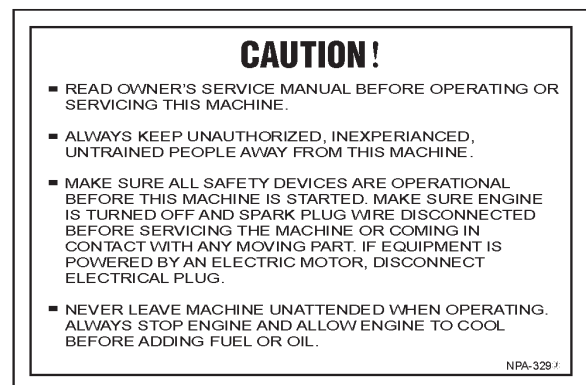
CONTACT
PARTS DEPT.



P/N: 920200320



P/N: 920203060



P/N: 920203290

Figure 2. Operation and Safety Decals

MVC-90L PLATE COMPACTOR — GENERAL INFORMATION

Definition of Plate Compactor

The Mikasa MVC-90L is a walk behind, plate compactor designed for the compaction of sand, mixed soils and asphalt. This plate compactor is a powerful compacting tool capable of applying a tremendous force in consecutive high frequency vibrations to a soil surface. Its applications include compacting for road, embankments and reservoirs as well as backfilling for gas pipelines, water pipelines and cable installation work.

The MVC-90L has a heavy-duty steel base plate with closed design. It is ribbed for extra strength. The tubular steel roll bar cage protects engine components and provides a lifting point.

The MVC-90L also has a reversible, shock-mounted handle.

Vibratory Plate

The vibratory plate of the compactor produce low amplitude high frequency vibrations, designed to compact granular soils and asphalt.

The resulting vibrations cause forward motion. The engine and handle are vibration isolated from the vibrating plate.

The double-V belt drive assures less downtime and superior drive characteristics. Unit can still operate if one belt breaks.

Water Tank

The compactor has a built-in water tank which helps prevent damage and adds to long life. Brass water valve eliminates rust and corrosion problems.

Frequency/Speed

The compactor's vibrating plate has a frequency range between 5,800 vpm (vibrations per minute). The forward and reverse travel speed of the compactor is approximately 82 ft./minute (25 meters/minute).

Engine

The Mikasa MVC-90L Plate Compactor is equipped with a Robin EH172YD4230 gasoline engine. The engine drives an eccentric weight at a high speed to develop a compaction force.

Controls

Before starting the MVC-90L Plate Compactor identify and understand the function of the controls and components.

MVC-90L PLATE COMPACTOR — COMPONENTS (PLATE COMPACTOR)

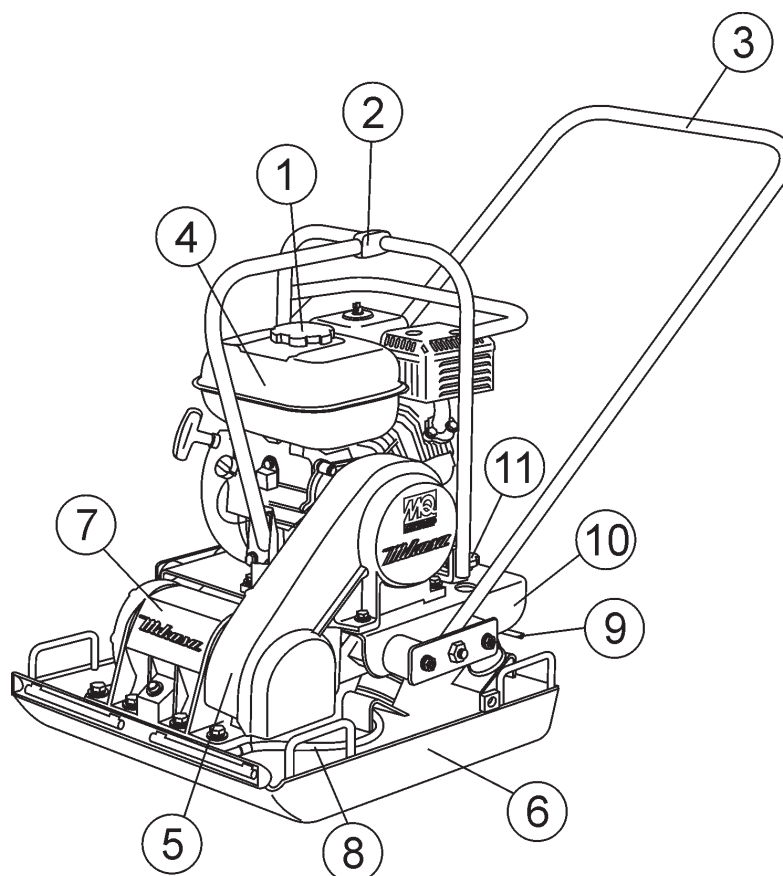


Figure 3. MVC-90L Plate Compactor Components

Figure 3 shows the location of the components and general maintenance parts. The function of each component is described below:

1. **Fuel Tank Cap** – Remove this cap to add fuel.
2. **Lifting Bale** – When lifting of the compactor is required either by forklift, crane etc., tie rope or chain around this lifting point.
3. **Handle Bar** – When operating the compactor use this handle bar to maneuver the compactor.
4. **Engine** – This plate compactor uses a Robin EH172DYD4230 engine. Refer to the Robin owner's manual for engine information and related topics.
5. **Belt Cover** – Remove this cover to gain access to the V-belts. **NEVER** run the compactor without the V-belt cover. If the V-belt cover is not installed, the possibility exist that your hand may get caught between the V-belt and clutch, thus causing serious injury and bodily harm.
6. **Vibrating Plate** – A flat, open plate made of durable cast iron construction used in the compacting of soil.
7. **Vibration Case** – Encloses the eccentric, gears and counter weights.
8. **Water Tube (Sprinkler)** – Supplies water to the soil via a splash plate.
9. **Water Shut-Off Valve** – Turn this valve downward to let water flow from the water tank to the water tube.
10. **Water Tank** – Holds 5.6 quarts of water, built-in.
11. **Water Tank Cap** – Remove this cap to add water to the water tank.

MVC-90L PLATE COMPACTOR — COMPONENTS (ROBIN EH172YD4230 ENGINE)

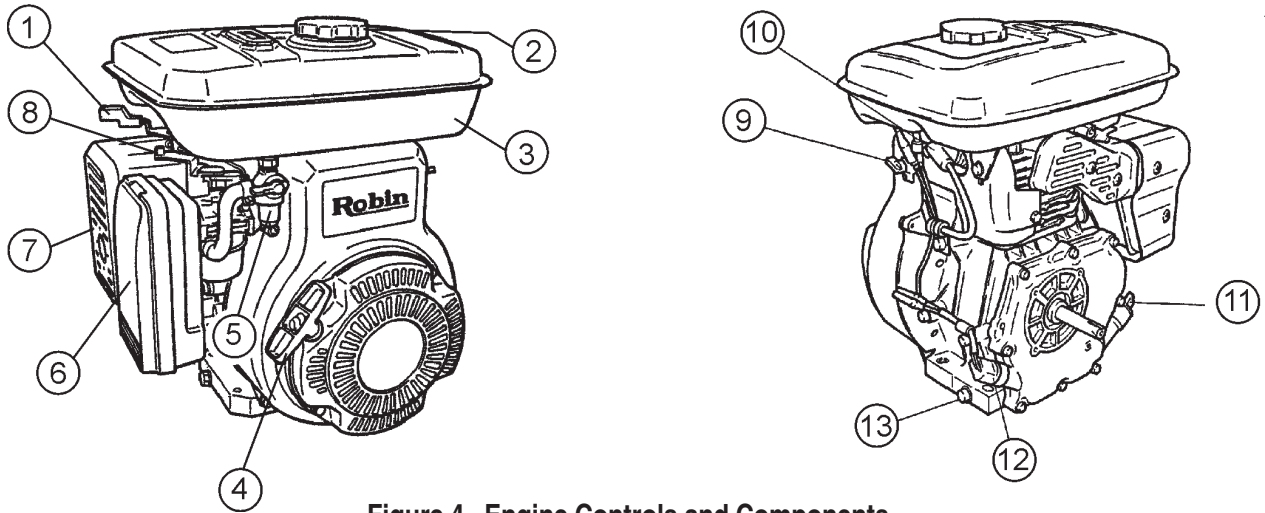


Figure 4. Engine Controls and Components

INITIAL SERVICING

The engine (Figure 3) must be checked for proper lubrication and filled with fuel prior to operation. Refer to the manufacturer's engine manual for instructions & details of operation and servicing. The engine shown above is a **ROBIN** engine, operation for other types of engines may vary somewhat.

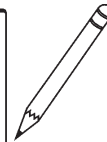
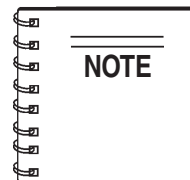
1. **Throttle Lever** – Used to adjust engine RPM speed (lever advanced forward **SLOW**, lever back toward operator **FAST**).
2. **Fuel Filler Cap** – Remove this cap to add unleaded gasoline to the fuel tank. Make sure cap is tightened securely. **DO NOT** over fill.

CAUTION - Fueling The Engine

Adding fuel to the tank should be done 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.



3. **Fuel Tank** – Holds unleaded gasoline. For additional information refer to engine owner's manual.
4. **Recoil Starter (pull rope)** – Manual-starting method. Pull the starter grip until resistance is felt, then pull briskly and smoothly.
5. **Fuel Valve Lever** – **OPEN** to let fuel flow, **CLOSE** to stop the flow of fuel.
6. **Air Cleaner** – Prevents dirt and other debris from entering the fuel system. Remove wing-nut on top of air filter canister to gain access to filter element.



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.

7. **Muffler** – Used to reduce noise and emissions.

CAUTION - Burn Hazard

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.



8. **Choke Lever** – Used in the starting of a cold engine, or in cold weather conditions. The choke enriches the fuel mixture.
9. **Engine ON/OFF Switch** – ON position permits engine starting, OFF position stops engine operations.
10. **Spark Plug** – Provides spark to the ignition system. Set spark plug gap to 0.6 - 0.7 mm (0.028 - 0.031 inch) Clean spark plug once a week.
11. **Oil Dipstick / Filler Port** – Remove to determine the amount oil in engine crankcase. Add oil through this filler port.
12. **Oil Sensor** – In the event of low oil, this sensor will automatically shut-down the engine.
13. **Oil Drain Plug** – Remove to drain crankcase oil.

MVC-90L PLATE COMPACTOR — INSPECTION

Before Starting:

⚠ CAUTION - General Safety Precautions

NEVER operate the compactor in a confined area or enclosed area structure that does not provide ample **free flow of air**.



ALWAYS wear approved eye and hearing protection before operating the compactor.

1. Read safety instructions at the beginning of manual.
2. Remove dirt and dust, particularly in the engine cooling air inlet, carburetor and air cleaner.
3. Check the air filter for dirt and dust. If air filter is dirty, clean or replace the air filter with a new one as required.
4. Check carburetor for external dirt and dust. Clean with dry compressed air.
5. Check fastening nuts and bolts for tightness.



Engine Oil Check

1. To check the engine oil level, place the plate compactor on secure level ground with the engine stopped.
2. Remove the filler cap/dipstick from the engine oil filler hole (Figure 5) and wipe it clean.

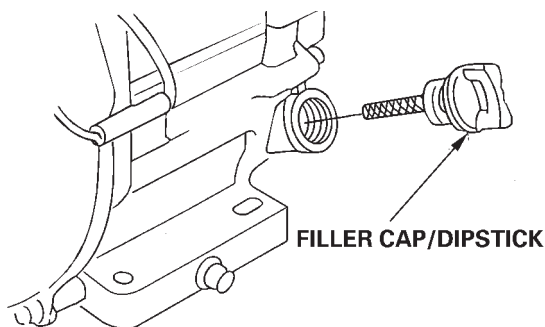


Figure 5. Engine Oil Dipstick

3. Insert and remove the dipstick without screwing it into the filler neck. Check the oil level shown on the dipstick.
4. If the oil level is low (Figure 6), fill to the edge of the oil filler hole with the recommended oil type (Table 4). Maximum oil capacity is 400 cc.

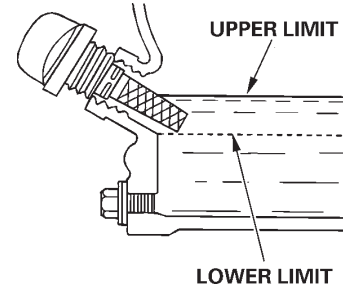
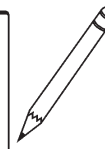
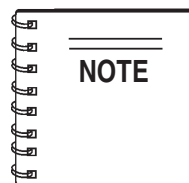


Figure 6. Engine Oil Dipstick



The Oil Alert system will automatically stop the engine before the engine falls below safe limits. Always be sure to check the engine oil level prior to starting the engine.

Table 4. Oil Type

Season	Temperature	Oil Type
Summer	25°C or Higher	SAE 10W-30
Spring/Fall	25°C~10°C	SAE 10W-30/20
Winter	0°C or Lower	SAE 10W-10

Fuel Check:

1. Remove the gasoline cap located on top of fuel tank.
2. Visually inspect to see if the fuel level is low. If fuel is low, replenish with unleaded fuel.
3. When refueling, be sure to use a strainer for filtration. **DO NOT** top-off fuel. Wipe up any spilled fuel **immediately!**

⚠ WARNING - Explosive Fuel

Gasoline is extremely flammable, and its vapors can cause an explosion if ignited. **DO NOT** start the engine near spilled fuel or combustible fluids. **DO NOT** smoke while refueling. **DO NOT** attempt to refuel the pump if the engine is **hot!** or **running**.



MVC-90L PLATE COMPACTOR — START-UP PROCEDURE

This section is intended to assist the operator with the **initial start-up** of the compactor. It is extremely important that this section be read carefully before attempting to use the compactor in the field.

Starting the Engine

1. Place the engine **fuel valve lever** (Figure 7) to the **OPEN** position.

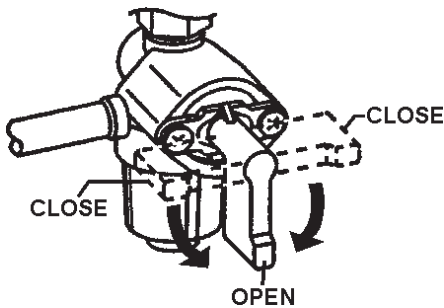


Figure 7. Fuel Valve Lever (Open)

2. Move the **throttle lever** (Figure 8) away from the slow position, about 1/3 of the way toward the fast position.

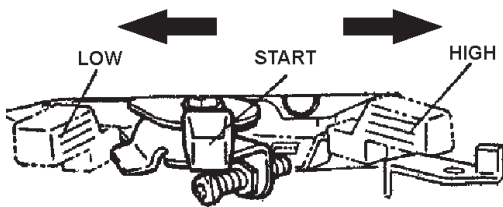


Figure 8. Throttle Lever (Start)

3. Place the **choke lever** (Figure 9) in the **OPEN** position if starting a **cold** engine.

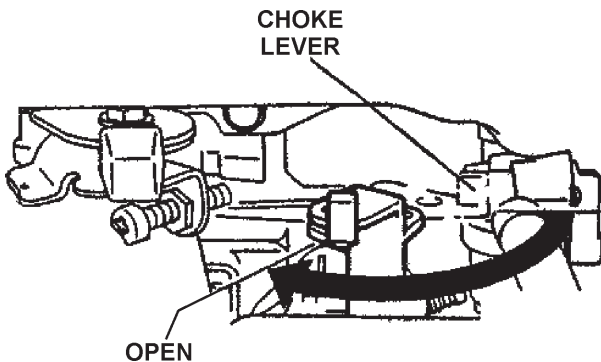


Figure 9. Choke Lever (Open)

4. Place the **choke lever** (Figure 10) in the **CLOSED** position if starting a **warm engine** or the **temperature is warm**.

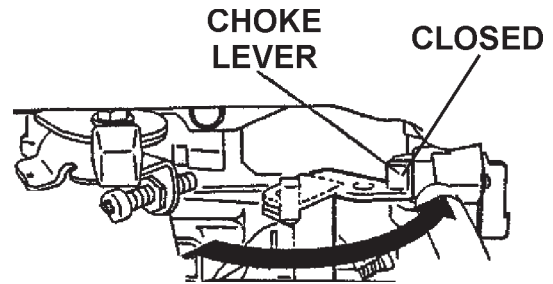


Figure 10. Choke Lever (Closed)

5. Place the **engine ON/OFF switch** (Figure 11) in the **ON** position.

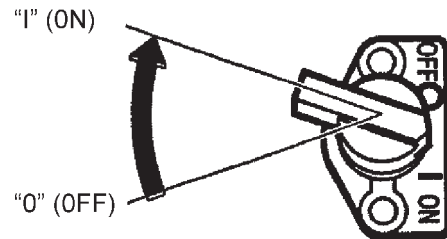


Figure 11. Engine ON/OFF Switch (ON)

6. Grasp the **starter grip** (Figure 12) and slowly pull it out. The resistance becomes the hardest at a certain position, corresponding to the compression point. Pull the starter grip briskly and smoothly for starting.

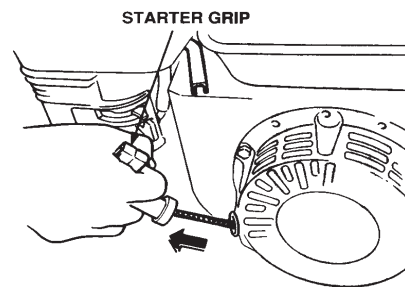


Figure 12. Starter Grip

CAUTION - Using the Recoil Starter Rope

DO NOT pull the starter rope all the way to the end.

DO NOT release the starter rope after pulling. Allow it to rewind as soon as possible.

MVC-90L PLATE COMPACTOR — STARTUP/SHUT-DOWN PROCEDURES

- If the engine has started, slowly return the choke lever (Figure 13) to the **CLOSED** position. If the engine has not started repeat steps 1 through 6.

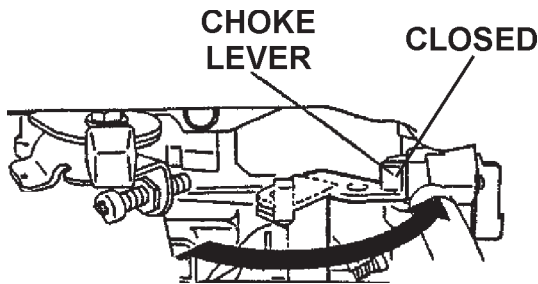


Figure 13. Choke Lever (Closed)

- Before the pump is placed into operation, run the engine for several minutes with the throttle lever in the **LOW** position. Check for fuel leaks, and noises that would be associated with loose components.
- To begin pumping, place the throttle lever (Figure 14) in the **HIGH** speed position.

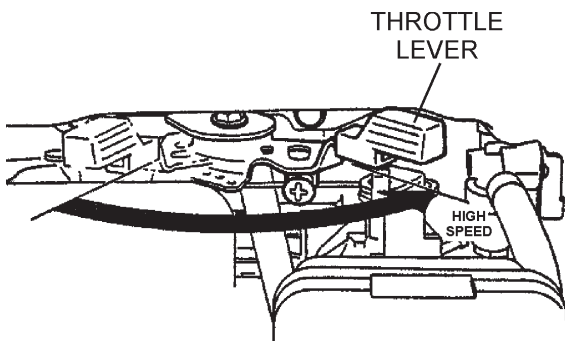


Figure 14. Throttle Lever (High Speed)

Normal Shutdown

- Move the throttle lever to the **IDLE** position (Figure 15) and run the engine for three minutes at idle speed.

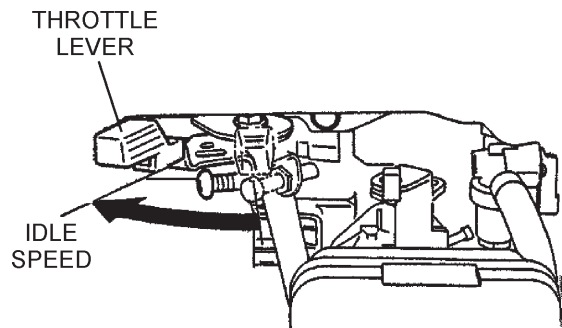


Figure 15. Throttle Lever (Idle)

CAUTION - Stopping the Engine while Working

NEVER stop the engine suddenly while working at high speeds. This can damage your engine.

- After the engine **cools**, turn the **engine ON/OFF switch** to the **OFF** position (Figure 16).

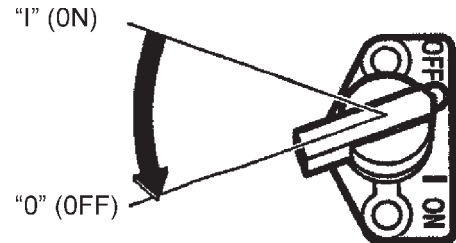


Figure 16. Engine ON/OFF Switch (OFF)

- Place the **fuel shut-off lever** (Figure 17) in the **OFF** position.

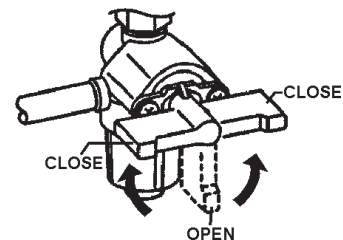


Figure 17. Fuel Valve Lever (OFF)

Emergency Shutdown

- Move the throttle lever quickly to the **IDLE** position, and place the **engine ON/OFF switch** in the **OFF** position.

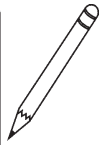
MVC-90L PLATE COMPACTOR — OPERATION

Operation

CAUTION - General Operation Safety

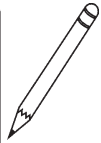
Make sure to follow all safety rules referenced in the safety section of this manual before operating compactor. Keep work area clear of debris and other objects that could cause damage to the compactor or bodily injury.

1. Once the engine has started, move the engine throttle lever quickly to the **FAST** position. With the throttle lever in the fast position, the engine speed should be around 2,300 RPM, which engages the centrifugal clutch.



Always move the throttle lever quickly without hesitation. Increasing the engine speed slowly causes the clutch to slip and can damage your clutch.

2. Firmly gasp the compactor's handle bar with both hands as the compactor begins moving forward.
3. Slowly walk behind the compactor and be on the lookout for any large objects or foreign matter that might cause damage to the compactor or bodily injury.



Whenever the compactor's vibration becomes weak or lost during normal operation regardless of operation hours, check the V-belt and clutch immediately.

Operating the Compactor on High Moisture Content Soil

Compactor traveling speed may drop on soils which contain clay, or other types of soil. Soil with high moisture content can cause the compaction plate to "stick" to the ground (not lifting up off the ground very fast or high).

To rectify this problem, consider the following:

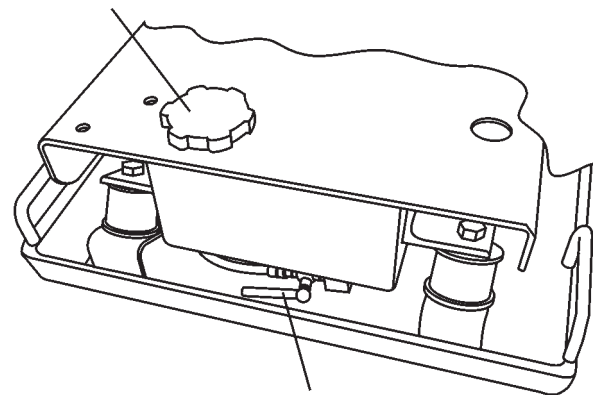
- Check the bottom plate to see if clay or equivalent material has been lodge in the plate mechanism. If so, wash with water and remove.
- Remember the compactor does not work as efficiently on clay or soils that have a high moisture content level.
- If the soil has a high moisture level, dry soil to appropriate moisture content level or carry out compaction twice.

Using the Compactor Sprinkler System

The MVC-90L is equipped with a watering system that can be used to wet the ground during compaction to keep dust levels down.

To operate the watering system, turn the water cock handle to open the valve (Figure 18) and start the water flow. With the compactor at full speed and the water cock fully open, the water system will provide approximately 20 minutes of sprinkling.

WATER TANK CAP



WATER COCK

Figure 18. Water System

MVC-90L PLATE COMPACTOR — MAINTENANCE

Maintenance

CAUTION - General Maintenance Safety

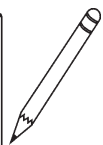
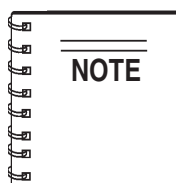
Inspection and other services should **always** be carried out on hard and level ground with the engine shutdown.

Inspection and Maintenance Service Tables.

To make sure your plate compactor is always in good working condition before using, carry out the maintenance inspection in accordance with Tables 5 through 7.

Daily Service

- Check for leakage of fuel or oil.
- Remove soil and clean the bottom of compaction plate.
- Check engine oil.
- Check for loose screws including tightness. See Table 5 below (tightening torque), for retightening:



These inspection intervals are for operation under normal conditions. Adjust your inspection intervals based on the number hours plate compactor is in use, and particular working conditions.

TABLE 5. TIGHTENING TORQUE
(in. kg/cm) Diameter

Material	6mm	8mm	10mm	12mm	14mm	16mm	18mm	20mm
4T	70	150	300	500	750	1,100	1,400	2,000
6-8T	100	250	500	800	1,300	2,000	2,700	3,800
11T	150	400	800	1,200	2,000	2,900	4,200	5,600
*	100 (6mm)		300 ~ 350 (8mm)			650 ~ 700 (10mm)		

* (In case counter-part is of aluminum)

Material and quality of material is marked on each bolt, and screw.

Note: Threads in use with this machine are all right handed

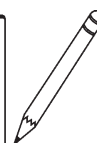
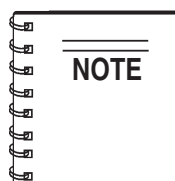
TABLE 6. ENGINE INSPECTION

(For details, see separate Engine Manual)

Check Item	Hours of Operation
Fuel or Oil Leakage	Every 8 Hours (Daily)
Fastening Threads Tightness	Every 8 Hours (Daily)
Check/Replenish Engine Oil	Every 8 Hours (Daily)
Replace Engine Oil	First 20 hours, then every 100 hours
Check/Clean the Air Cleaner	Every 50 hours

TABLE 7. MVC-90H MACHINE INSPECTION

ITEM	HOURS OF OPERATION	REMARKS
Damaged Parts	Every 8 hours	Check Before Daily Operation
Loose or Lost Screws	Every 8 hours	Check Before Daily Operation
Function of Controlling System Part	Every 8 hours	Check Before Daily Operation
Vibrator Oil Check	Every 100 hours	See Page 21
Vibrator Oil Replacement	Every 300 hours	
V-belt & Clutch Check	Every 200 hours	See Page 22



Fuel piping and connections should be replaced every 2 years.

MVC-90L PLATE COMPACTOR — MAINTENANCE

Engine Oil Replacement:

1. Replace engine oil, in first 20 hours of operation and every 100 hours afterwards.
2. Oil may be drained more easily when it is warm after operation (For more details, see separate engine Owner's Manual).
3. When changing the engine oil, then old oil can be drained by removing the oil filler cap, and un-screwing the engine oil drain plug located at the base of the engine (Figure 19).
4. Remember to refill engine crankcase with the recommended type of oil as listed in Table 4.

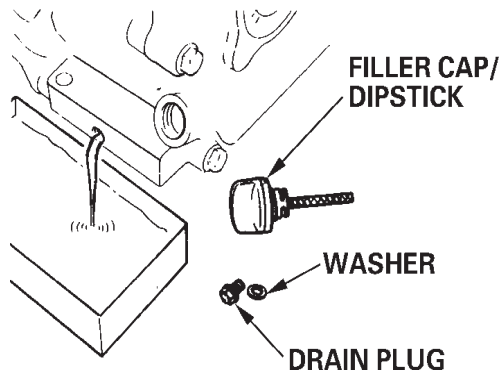


Figure 19. Engine Oil Plug

Engine Air Cleaner

1. Remove the air cleaner cover and foam filter element as shown in Figure 20.
2. Wash the foam filter element in kerosene or diesel fuel. Then saturate it in a mixture of 3 parts kerosene or diesel fuel and 1 part engine oil. Completely squeeze the element to remove the mixture and re-install it back into the air cleaner.

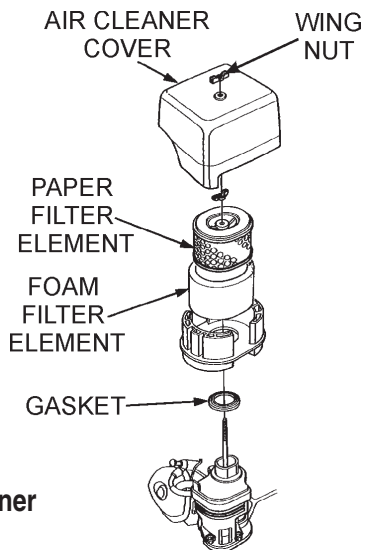


Figure 20. Air Cleaner

Vibrator Oil Check

1. Place the plate compactor horizontally on a flat surface. Make sure the compactor is level when checking the oil in the vibrator assembly.
2. Check vibrator oil level by removing the plug (vibrator oil gauge) as shown in Figure 21. The oil level should be up to the oil plug. The vibrator holds 140 cc (approximately 1 pint).

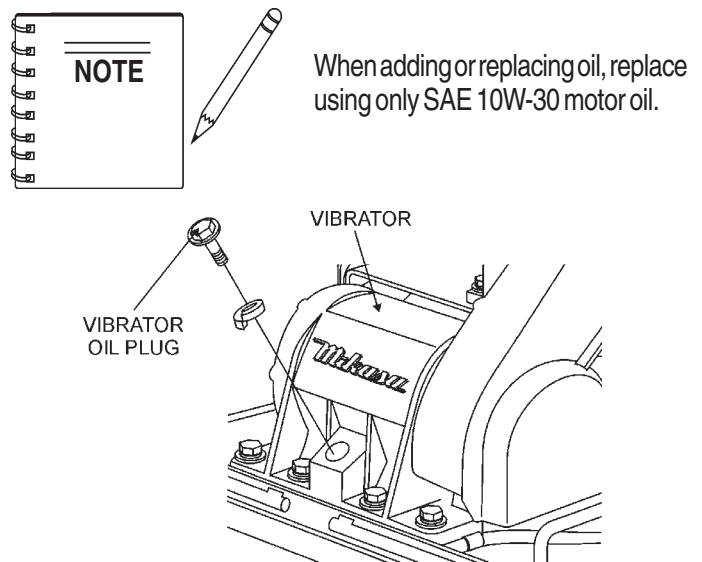
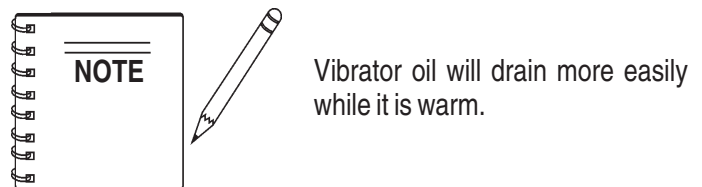


Figure 21. Vibrator Oil Plug

Changing Vibrator Oil

1. When changing the vibrator oil, remove the drain plug located at the bottom of the vibrator (Figure 21),
2. Tip the compactor to drain the oil.



MVC-90L PLATE COMPACTOR — MAINTENANCE

V-Belt Check

CAUTION - Checking and Replacing the V-Belt

NEVER attempt to check the V-belt with the engine running. Severe injury can occur if your hand gets caught between the V-belt and the clutch. Always use safety gloves.



1. To check the V-belt tension, remove the three bolts that secure the belt cover to the frame as shown in Figure 22.

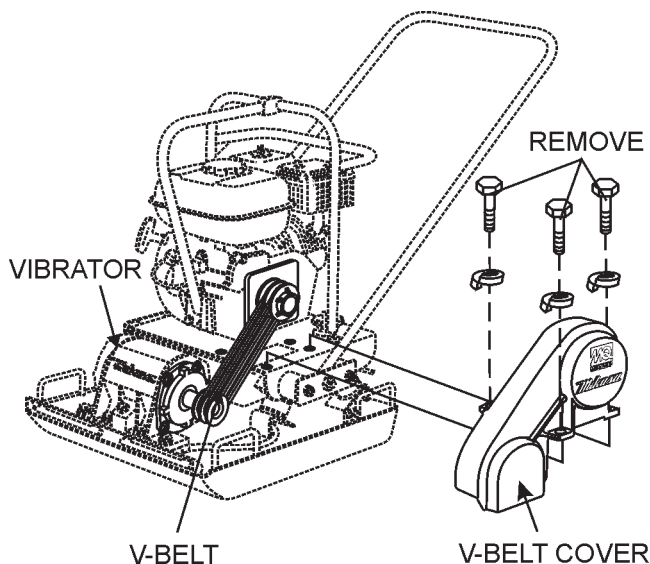


Figure 22. V-Belt Cover Removal

2. The V-belt tension is proper if the V-belt bends 10 to 15 mm (Figure 23) when depressed with finger at midway between the clutch and vibration pulley shafts.

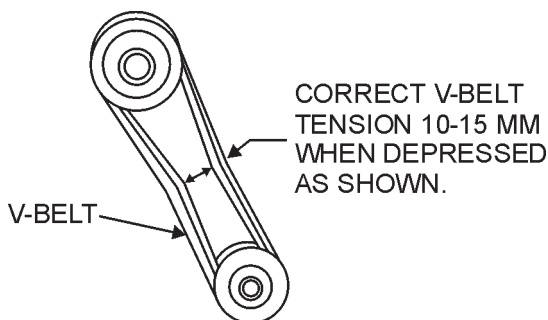


Figure 23. V-Belt Tension

3. A loose V-belt will decrease the power transmission output, causing reduced compaction and premature wear of the belt.
4. If the V-belt becomes worn or loose, replace it.

Replacing the V-belt

1. Remove the belt cover.
2. Place an offset wrench (13 mm) or the like on the vibrator pulley (lower) fastening bolt.
3. Using a waste cloth or the like, pull the V-belt back strongly at midway of the belt on the left side and rotate the offset wrench clockwise so that the V-belt will come off.
4. Check the clutch and replace as necessary, following the procedures listed in **Checking the Clutch**.
5. Place the V-belt on the lower vibrator pulley. Push the V-belt to the left side of the upper clutch and rotate the offset wrench clockwise so that the V-belt moves onto the pulley.

Checking the Clutch

1. With belt cover removed, visually check outer drum of the clutch for seizure and "V" groove for wear or damage.
2. Clean the "V" groove as necessary.
3. Check the clutch lining and shoe for signs of wear. If the shoe is worn, replace the clutch to prevent deficient power transmission and slippage.

Replacing the Clutch

1. Remove V-belt.
2. Remove bolt at engine power output by tapping an engaged wrench (e.g. tapping with hammer) and rotate the bolt counterclockwise.
3. Remove clutch with a pulley extractor.
4. To install a new clutch, reverse steps 1-3.

MVC-90L PLATE COMPACTOR — PREPARATION FOR LONG-TERM STORAGE

Pump Storage

For storage of the pump for over 30 days, the following is required:

- Drain the fuel tank completely.
- Run the engine until the fuel in the injection system is completely consumed.
- Completely drain the oil from the engine crankcase and follow procedures described in the engine Owner's Manual for engine storage.
- Completely drain the compactor's hydraulic oil from the vibrating case.
- Clean entire plate compactor, especially the bottom plate removing all dirt and foreign matter.
- Cover plate compactor and engine with plastic covering or equivalent and store in a clean, dry place.

MVC-90L PLATE COMPACTOR — TROUBLESHOOTING (ENGINE)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, please take a remedial action following the diagnosis based on the Engine Troubleshooting (Table 8) information shown below and on the following page. If the problem cannot be remedied, please leave the unit just as it is and consult our company's business office or service plant.

TABLE 8. ENGINE TROUBLESHOOTING		
SYMPTOM	POSSIBLE CAUSE	SOLUTION
Difficult to start, "fuel is available, but no SPARK at spark plug".	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.
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, and replace with correct type of fuel.
	Water or dust in fuel system?	Flush fuel system.
	Air cleaner dirty?	Clean or replace air cleaner.
Difficult to start, "fuel is available, spark is present and compression is low"	Suction/exhaust valve stuck or protruded?	Re-seat 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.	Fuel not available 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 clogged?	Replace fuel filter.
	Fuel tank cap breather hole clogged?	Clean or replace fuel tank cap.
	Air in fuel line?	Bleed fuel line.

MVC-90L PLATE COMPACTOR — TROUBLESHOOTING (ENGINE)

TABLE 8. ENGINE TROUBLESHOOTING (CONTINUED)

SYMPTOM	POSSIBLE CAUSE	SOLUTION
"Weak in power" compression is proper and does not misfire.	Air cleaner not clean?	Clean or replace air cleaner
	Improper level in carburetor?	Check float adjustment, re-build carburetor.
	Defective Spark plug?	Clean or replace spark plug.
	Defective Spark plug?	
"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 improper?	Replace with correct type of spark plug.
	Correct type of fuel?	Replace with correct type of fuel
	Cooling fins dirty?	Clean cooling fins.
Rotational speed fluctuates.	Governor adjusted correctly?	Adjust governor.
	Governor spring defective?	Replace governor spring.
	Fuel flow restricted?	Check entire fuel system for leaks or clogs.
Recoil starter malfunction.	Recoil mechanism clogged with dust and dirt?	Clean recoil assembly with soap and water.
	Spiral spring loose?	Replace spiral spring.

MVC-90L PLATE COMPACTOR — TROUBLESHOOTING (PLATE COMPACTOR)

Practically all breakdowns can be prevented by proper handling and maintenance inspections, but in the event of a breakdown, please take a remedial action following the diagnosis based on the Plate Compactor Troubleshooting (Table 9) information shown below and on the following page. If the problem cannot be remedied, please leave the unit just as it is and consult our company's business office or service plant.

TABLE 9. PLATE COMPACTOR TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE	SOLUTION
Travel speed too low, and vibration is weak.	Engine speed too low?	Set engine speed to correct RPM.
	Clutch slips?	Check or replace clutch.
	V-belt slips?	Adjust or replace V-belt.
	Excessive oil in vibrator?	Drain excess oil and fill to proper level.
	Malfunction in vibrator housing?	Check eccentric, gears and counter weights.
Does not travel forward.	V-belt slips?	Replace V-belt.
	Clutch slips?	Check clutch springs and shoes.
	Vibrator locked?	Check vibrator housing (eccentric, gears and counterweights)

MVC-90L — EXPLANATION OF PARTS SECTION REMARKS

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.

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.

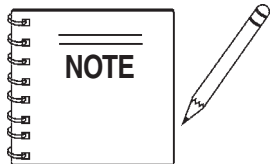
Sample Parts List:

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 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.



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 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.

MVC-90L PLATE COMPACTOR — SUGGESTED SPARE PARTS

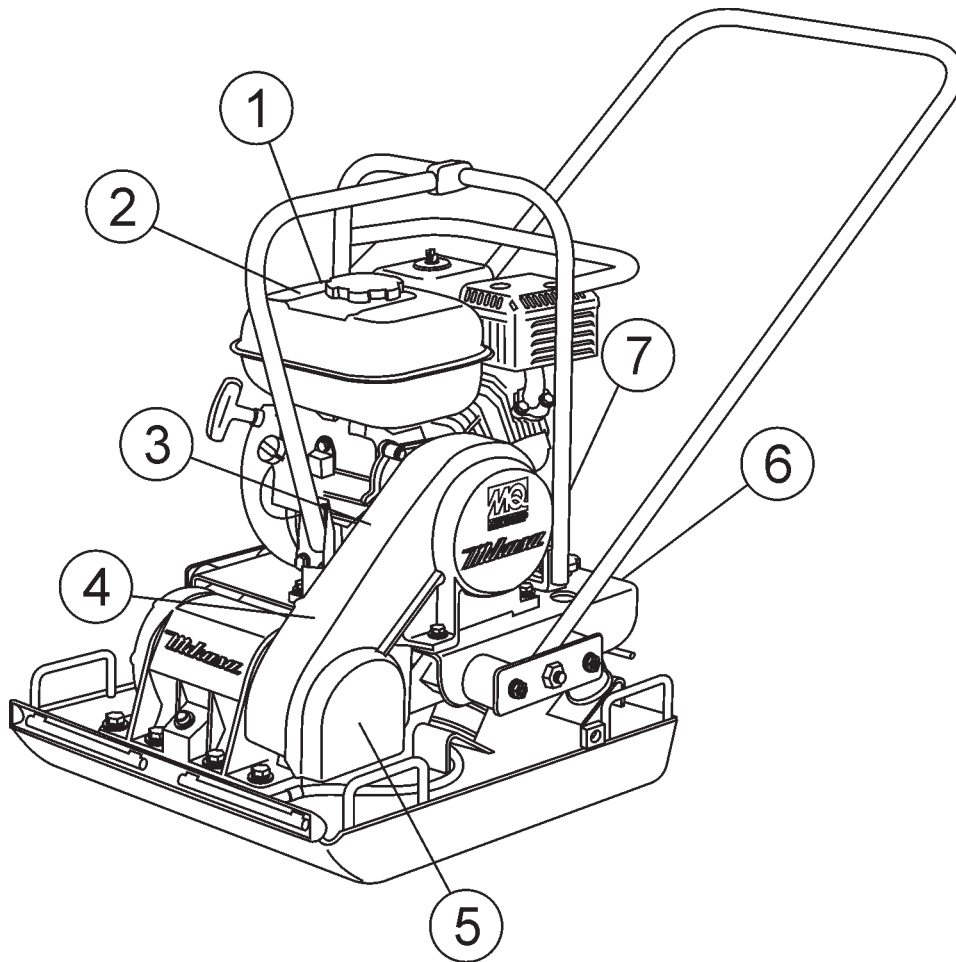
MVC-90L 1 TO 3 UNITS

W/ ROBIN EH172YD4230 ENGINE

<u>QTY.</u>	<u>P/N</u>	<u>DESCRIPTION</u>
4	070100340	V-BELT, A33
1	0430430015	CAP, WATER TANK
3	0650149670	SPARK PLUG
1	2695011008	ROPE, RECOIL STARTER
3	2273261007	ELEMENT, AIR CLEANER
1	0430430060	CAP, FUEL TANK
1	0641360010	FILTER, FUEL TANK
1	0642004220	FILTER, FUEL STRAINER ASSY
4	930405011	SHOCK ABSORBER
2	402313120	THROTTLE WIRE

MVC-90L PLATE COMPACTOR — NAME PLATE AND DECALS

NAME PLATE AND DECALS



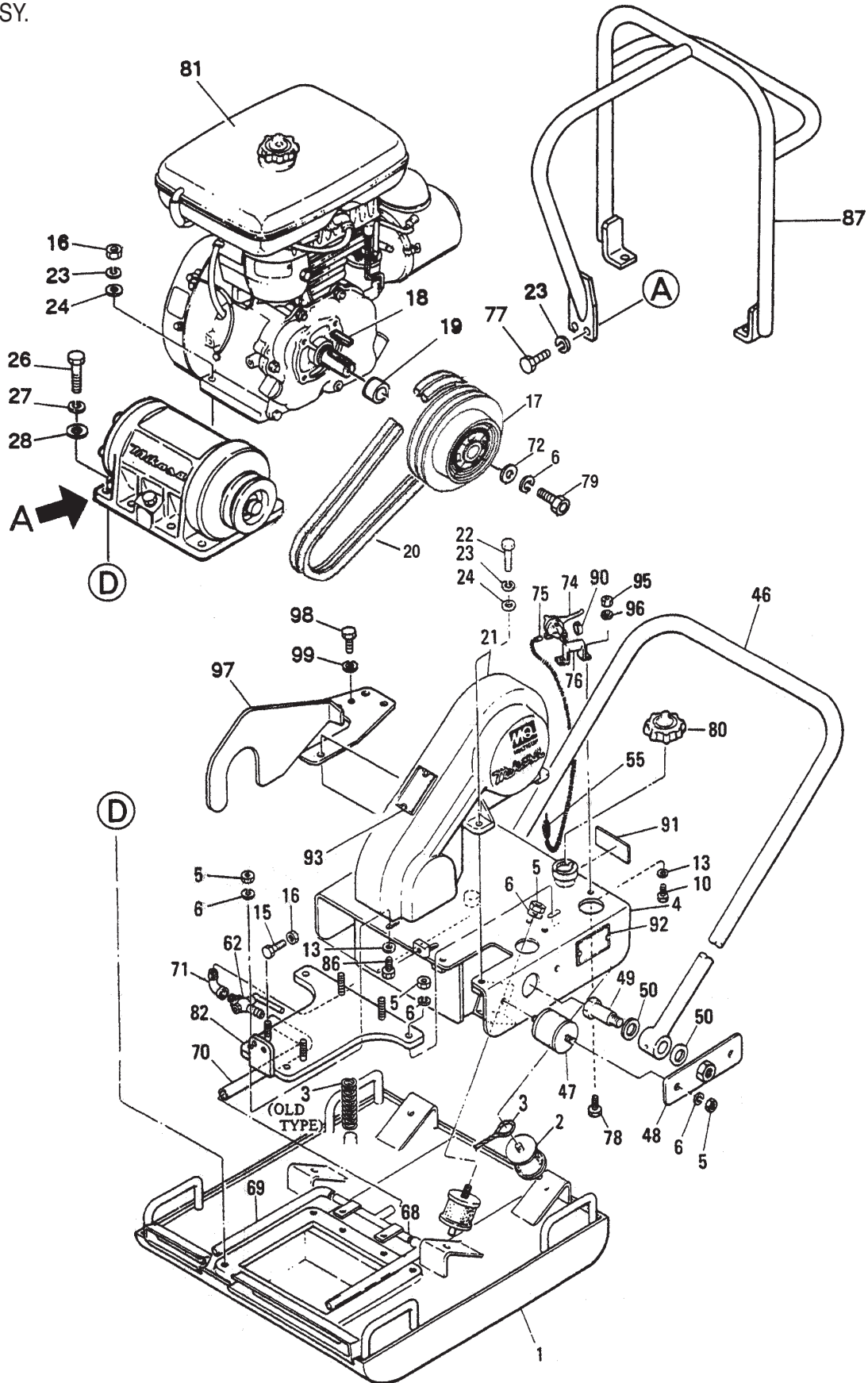
MVC-90L PLATE COMPACTOR — NAME PLATE AND DECALS

BODY ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	920206290	DECAL, READ OPERATORS MANUAL	1	NPA-629
2	920203330	DECAL, HEARING PROTECTION	1	NPA-333
3	920203060	DECAL, OIL CAUTION	1	NPA-306
4	920206280	DECAL, DANGER PINCH POINT	1	NPA-628
5	920203290	DECAL, CAUTION OPERATING INSTRUCTIONS	1	NPA-329
6	920200320	DECAL, WATER TANK	1	NPA-320
7		NAME PLATE	1	CONTACT PARTS DEPT.

MVC-90L PLATE COMPACTOR — BODY ASSY.

BODY ASSY.



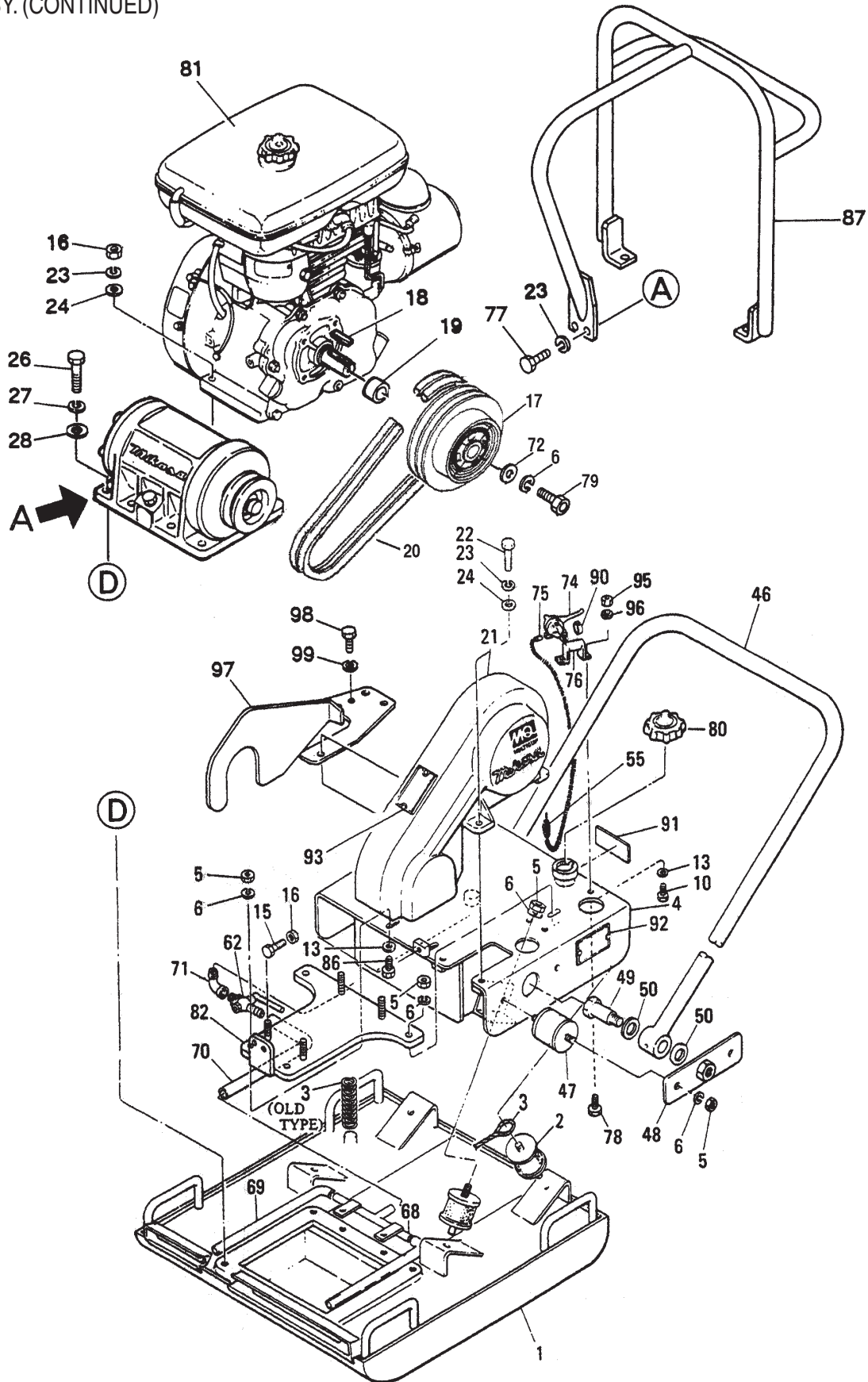
MVC-90L PLATE COMPACTOR — BODY ASSY.

BODY ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	402100430	VIBRATING PLATE	1	
2	930405011	SHOCK ABSORBER	4	
3	959404350	EARTH WIRE	1	
4	402010010	BASE	1	
5	020310080	NUT M10	12	
6	030210250	SW M10	12	
10	012010030	BOLT 10 X 30	2	
13	031110160	PW M10	4	
15	011008035	BOLT 8 X 35	1	
16	020308060	NUT M8	2	
17	402326850	CLUTCH ASSY	1	
18	408412320	KEY 4.78 X 4.78 X 20	1	
19	402420740	SPACER, CLUTCH 19.05 X 27 X 5	1	
20	070100340	V- BELT A33	2	
21	402114100	BELT COVER	1	
22	001200830	BOLT 8 X 30	4	
23	030208200	SW M8	11	
24	031108160	PW M8	8	
26	012112035	BOLT 12X35 H	9	
27	030212300	SW M12	9	
28	031112230	PW M12	7	
46	402010080	HANDLE	1	
47	930305020	SHOCK ABSORBER	4	
48	402010020	PLATE, HANDLE SETTING	2	
49	402402430	BOLT, HANDLE SETTING	2	
50	952402281	WASHER 21363	4	
55	402010110	RETURN SPRING	1	

MVC-90L PLATE COMPACTOR — BODY ASSY. (CONTINUED)

BODY ASSY. (CONTINUED)



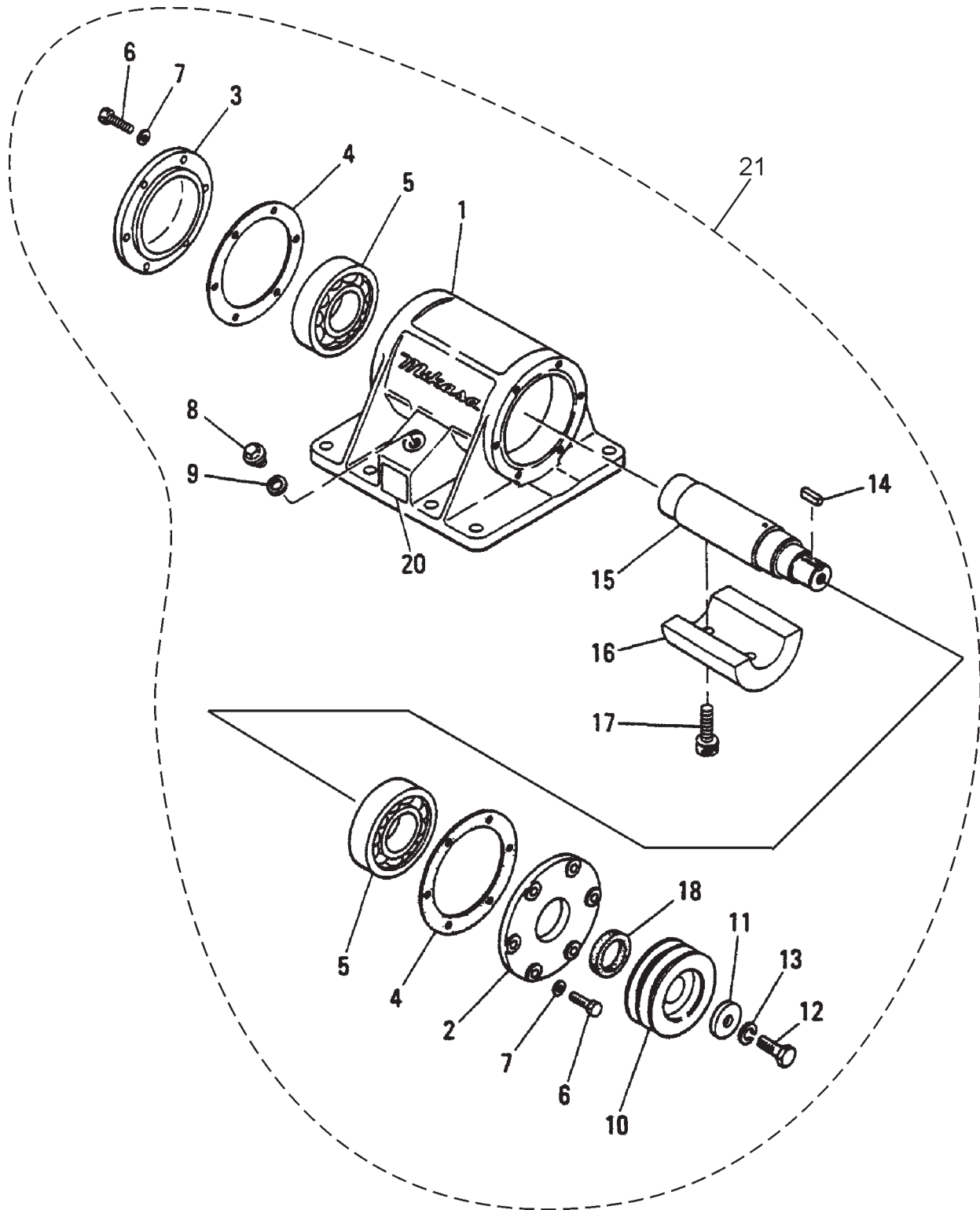
MVC-90L PLATE COMPACTOR — BODY ASSY. (CONTINUED)

BODY ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
62	954402131	COCK PT1/4	1	
68	402010040	T- JOINT	1	
69	402010050	VINYL PIPE A, 10 X 13 X 380	2	
70	402010060	VINYL PIPE B, 10 X 13 X 350	1	
71	954401600	ELBOW 1/4	1	
72	952401660	WASHER 103045	1	
74	956300060	THROTTLE LEVER ASSY	1	
75	402313120	THROTTLE WIRE S110-250	1	
76	501310130	LEVER HOLDER	1	
77	011008020	BOLT 8X20	2	
78	011008025	BOLT 8X25	2	
79	401010250	SOCKET HEAD BOLT 3/8 -24 X 38	1	
80	0430430015	CAP, WATER TANK	1	
81	911211702	ENGINE AY EH172YD4230	1	
82	402207080	ENGINE BASE	1	
86	012010035	BOLT 10 X 30	2	
87	402206900	GUARD	1	
90	959403750	RUBBER, SLIP STOP	1	
91	920200320	DECAL, WATER TANK	1	
92	920200390	PLATE, S. NO./MVC-90L/MQ	1	
93	920200650	DECAL, CAUTION	1	
95	020108060	NUT, M8	2	
96	030208200	SW, M8	2	
97	402213820	PLATE, BACK	1	
98	001220610	BOLT 6 X 10	1	
99	030206150	SW M6	2	

MVC-90L PLATE COMPACTOR — VIBRATOR ASSY.

VIBRATOR ASSY.



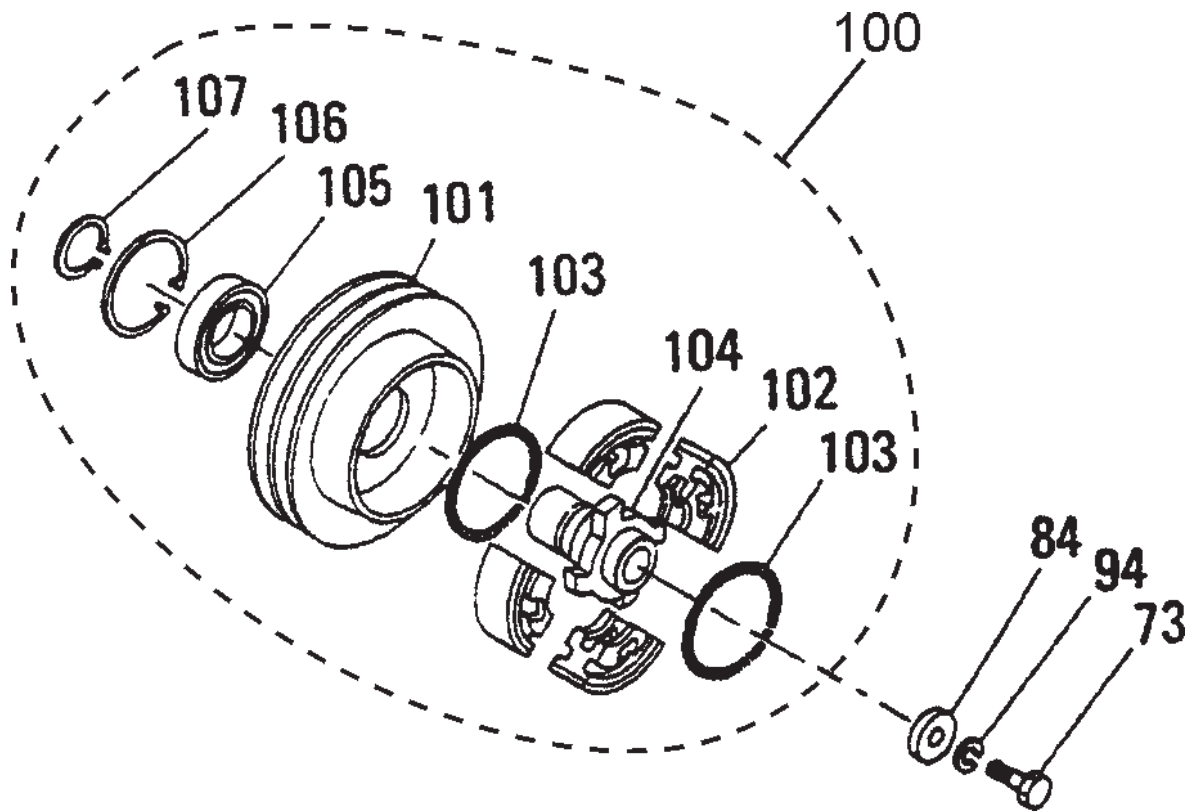
MVC-90L PLATE COMPACTOR — VIBRATOR ASSY.

VIBRATOR ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1*	408010050	VIBRATING CASE	1	
2*	401301260	CASE, COVER A	1	
3*	401601270	CASE, COVER B	1	
4*	401010190	PACKING	2	
5*	040406309	BEARING 6309C4	2	
6*	001220825	BOLT 8 X 25	12	
7*	030208200	SW M8	12	
8*	953400270	PLUG, 1/4 X 14 10L	1	
9*	953405260	PACKING 1/4 (CU)	1	
10*	401010210	PULLEY, VIBRATOR	1	
11*	401010220	WASHER 13406	1	
12*	001211235	BOLT 12 X 35	1	
13*	030212300	SW M12	1	
14*	951010090	KEY 7 X 7 X 23	1	
15*	401010200	ROTARY SHAFT	1	
16*	401010240	ECCENTRIC ROTATOR	1	
17*	001521230	SOCKET HEAD BOLT 12 X 30	2	
18*	060403060	OIL SEAL TC-35488	1	
20*	920101190	DECAL, MOTOR OIL	1	
21	402910010	VIBRATOR ASSY	1	INCLUDES ITEMS W/ *

MVC-90L PLATE COMPACTOR — CLUTCH ASSY. (OLD TYPE)

CLUTCH ASSY. (OLD TYPE)



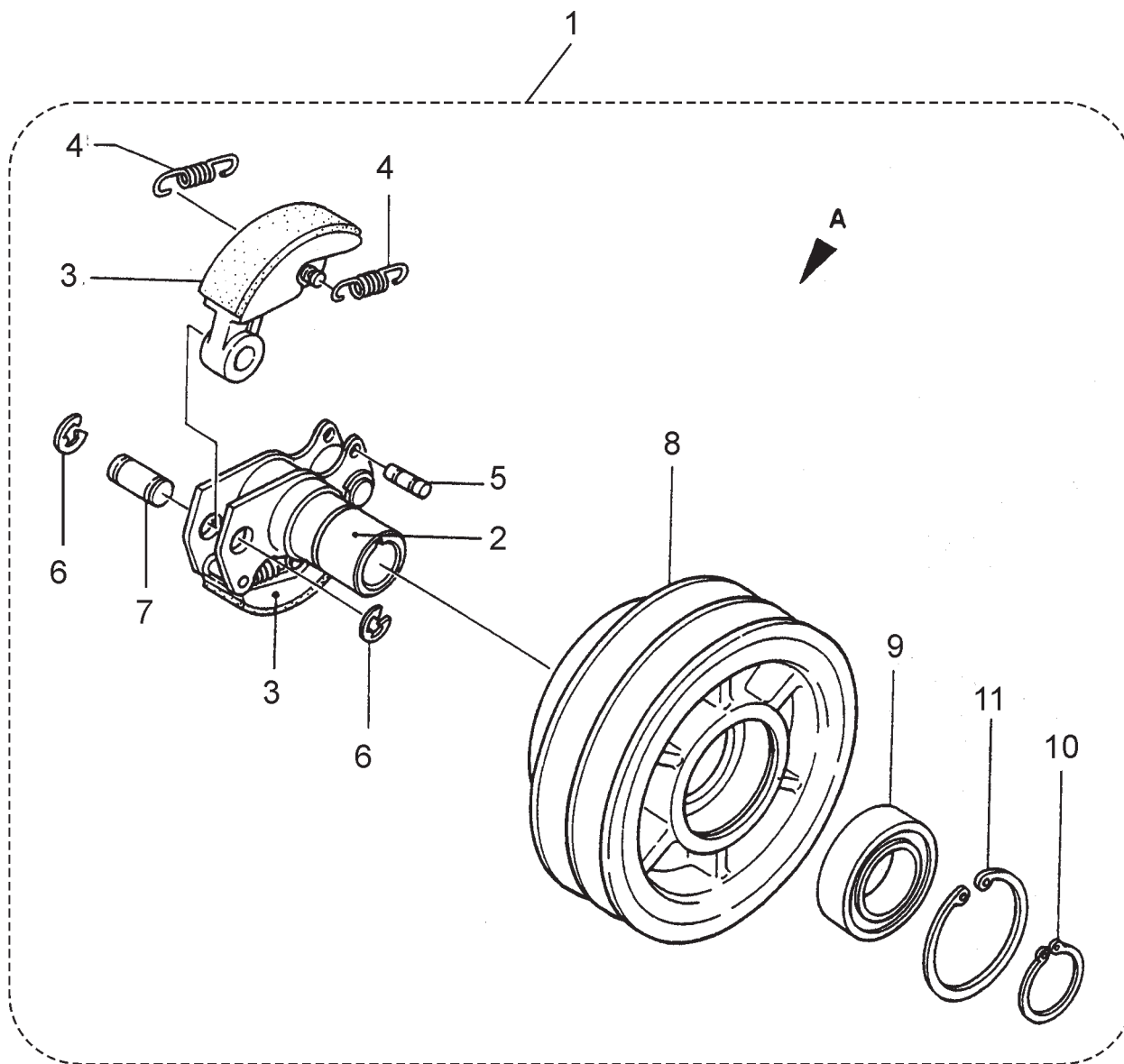
MVC-90L PLATE COMPACTOR — CLUTCH ASSY. (OLD TYPE)

CLUTCH ASSY. (OLD TYPE)

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
73	402010150	BOLT, 5/16-24 UNF-35MM	1	
84	952403630	WASHER 9X30X3	1	
94	030208200	SW M8	1	
100		CLUTCH ASSY.	1	MUST USE NEW CLUTCH ASSY.
101		PULLEY DRUM A2- 143.....	1	MUST USE NEW CLUTCH ASSY.
102	941020010	CLUTCH SHOE T90	4	
103	941030010	CLUTCH SPRING/1.2X6.5X155	2	
104		CLUTCH SHAFT S19.05DL- 65	1	MUST USE NEW CLUTCH ASSY.
105	046006006	BEARING 6006DDU	1	
106	080600550	STOP RING AR- 55	1	
107	080200300	STOP RING S- 30	1	

MVC-90L PLATE COMPACTOR — CLUTCH ASSY. (NEW TYPE)

CLUTCH ASSY. (NEW TYPE)



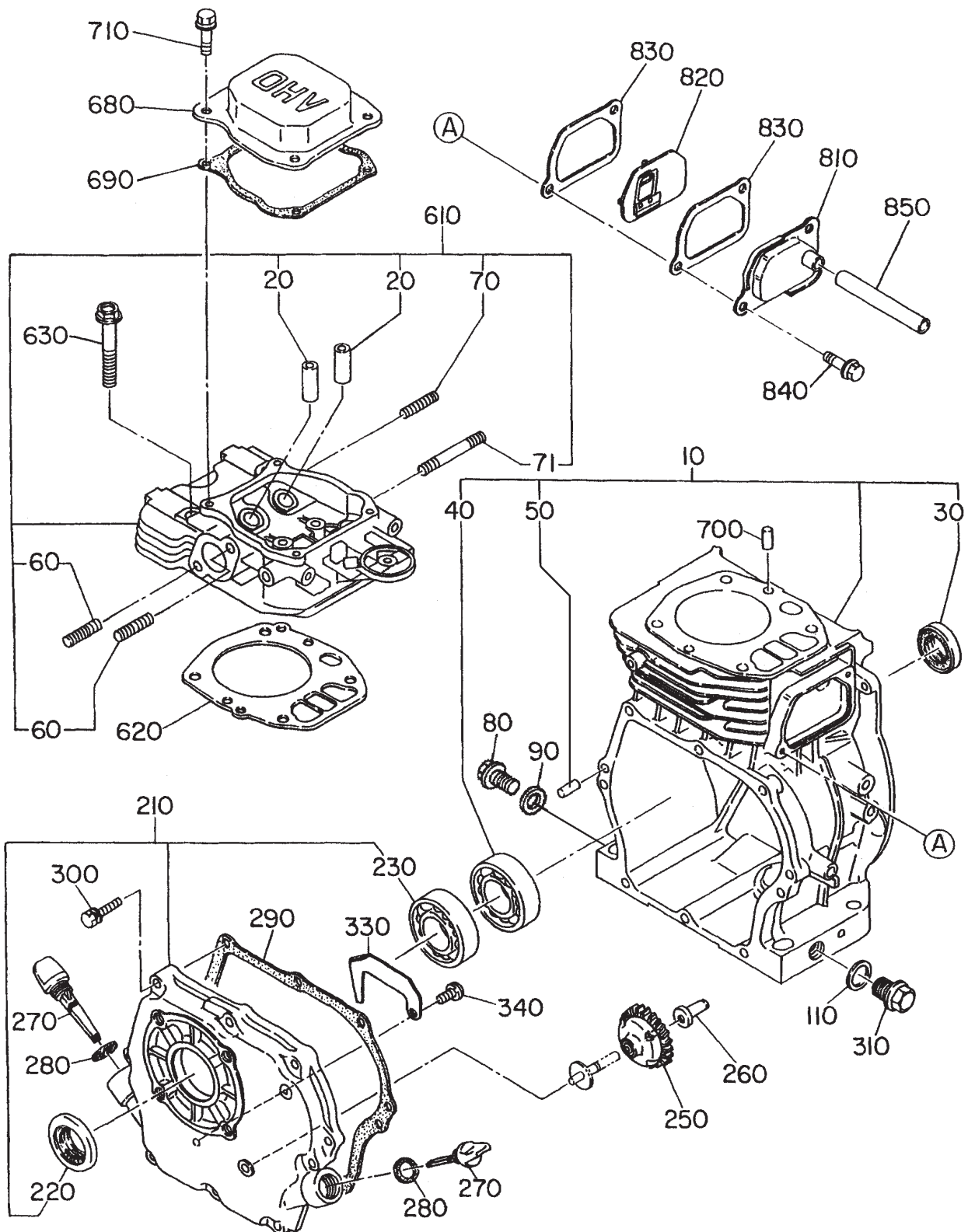
MVC-90L PLATE COMPACTOR — CLUTCH ASSY. (NEW TYPE)

CLUTCH ASSY. (NEW TYPE)

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	402326850	CLUTCH ASSY., A2-143-19	1	INCLUDES ITEMS W/*
2*	943040050	CLUTCH SHAFT D;19.05/20W	1	
3*	943020030	CLUTCH SHOE	2	
4*	943030030	CLUTCH SPRING	4	
5*	943050080	SPRING PIN (A), CLUTCH	2	
6*	080300130	STOP RING E-13	4	
7*	943050070	ARM PIN, CLUTCH	2	
8*	943010030	PULLEY DRUM /D;143	1	
9*	046006006	BEARING 6006DDU2	1	
10*	080200300	STOP RING S-30	1	
11*	080100550	STOP RING R-55	1	

ROBIN EH172YD4230 ENGINE — CRANKCASE GROUP ASSY.

CRANKCASE GROUP ASSY.



ROBIN EH172YD4230 ENGINE — CRANKCASE GROUP ASSY.

CRANKCASE GROUP ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2691010101	CRANKCASE CP	1	INCLUDES ITEMS W/#
20*	2371420203	VALVE GUIDE	2	OVERSIZE
30#	0440250010	OIL SEAL	1	
40#	0600250010	BALL BEARING	1	6205C3
50#	0310060020	DOWEL PIN	2	
60*	0105080290	STUD	2	
70*	0105060131	STUD	1	
71*	0013906600	STUD	1	
80	0401140030	PLUG	1	
90	0211140020	GASKET	1	
100	0502100010	UNION	1	
110	0218140010	SEAL WASHER	1	
210	2531101401	MAIN BEARING COVER CP	1	INCLUDES ITEMS W/%
220%	0440250020	OIL SEAL	1	
230%	0600250010	BALL BEARING	1	6205C3
250	2274500301	GOVERNOR GEAR CP	1	
260	2054190103	GOVERNOR SLEEVE	1	
270	2696360103	OIL GAUGE	2	
280	0213160020	GASKET	2	
290	2531600203	GASKET, BEARING COVER	1	
300	0130060040	BOLT AND WASHER AY	8	
310	0401100011	PLUG	1	
320	0218100010	WASHER, SEAL	1	
330	2531750203	SHELTER PLATE	1	
340	0043505100	SCREW AND WASHER AY	1	
610	2691300101	CYLINDER HEAD CP	1	INCLUDES ITEMS W/*
620	2531500123	GASKET, HEAD	1	
630	0110080100	FLANGE BOLT	4	
680	2531550103	ROCKER COVER	1	
690	2691600403	GASKET, ROCKER COVER	1	
700	0310060020	DOWEL PIN	2	
710	0110060020	FLANGE BOLT	4	
810	2531430111	BREATHER COVER CP	1	
820	2531440111	BREATHER PLATE CP	1	
830	2531600633	GASKET, BREATHER COVER	2	
840	0110060030	FLANGE BOLT	2	
850	0851080220	RUBBER PIPE	1	
960	2539900107	GASKET SET	1	

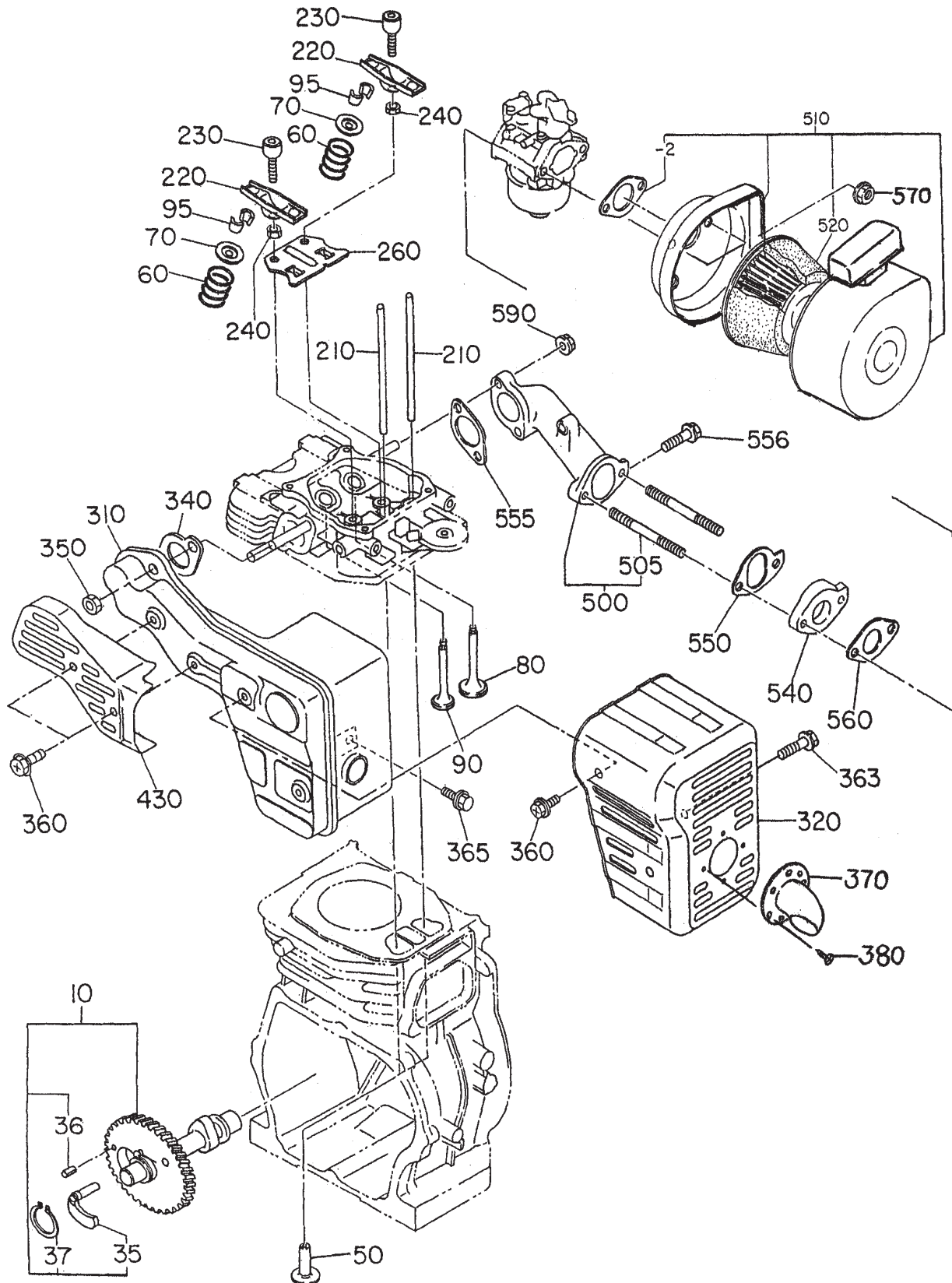
ROBIN EH172YD4230 ENGINE — CRANKSHAFT ASSY.

CRANKSHAFT ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2532090101	CRANKSHAFT CP	1	
40	0230250110	SPACER T=0.6	1	SELECT ONE SPACER ONLY
40	0230250120	SPACER T=0.8	1	SELECT ONE SPACER ONLY
40	0230250130	SPACER T=1.0	1	SELECT ONE SPACER ONLY
50	0221814000	NUT	1	
60	0032014000	SPRING WASHER	1	
70	0323030010	WOODRUFF KEY	1	
310	2532250120	CONNECTING ROD ASSY.....	1	INCLUDES ITEMS W/*
320*	2512300103	CONNECTING ROD BOLT	2	
350	2692330103	PISTON PIN	1	
360	2692340103	PISTON	1	STANDARD
360	2692340203	PISTON	1	OVERSIZE 0.25 MM
360	2692340303	PISTON	1	OVERSIZE 0.50 MM
370	2532350117	PISTON RING SET	1	STANDARD
370	2532350217	PISTON RING SET	1	OVERSIZE 0.25 MM
370	2532350317	PISTON RING SET	1	OVERSIZE 0.50 MM
380	0565160010	CLIP	2	

ROBIN EH172YD4230 ENGINE — INTAKE AND EXHAUST GROUP ASSY.

INTAKE AND EXHAUST GROUP ASSY.



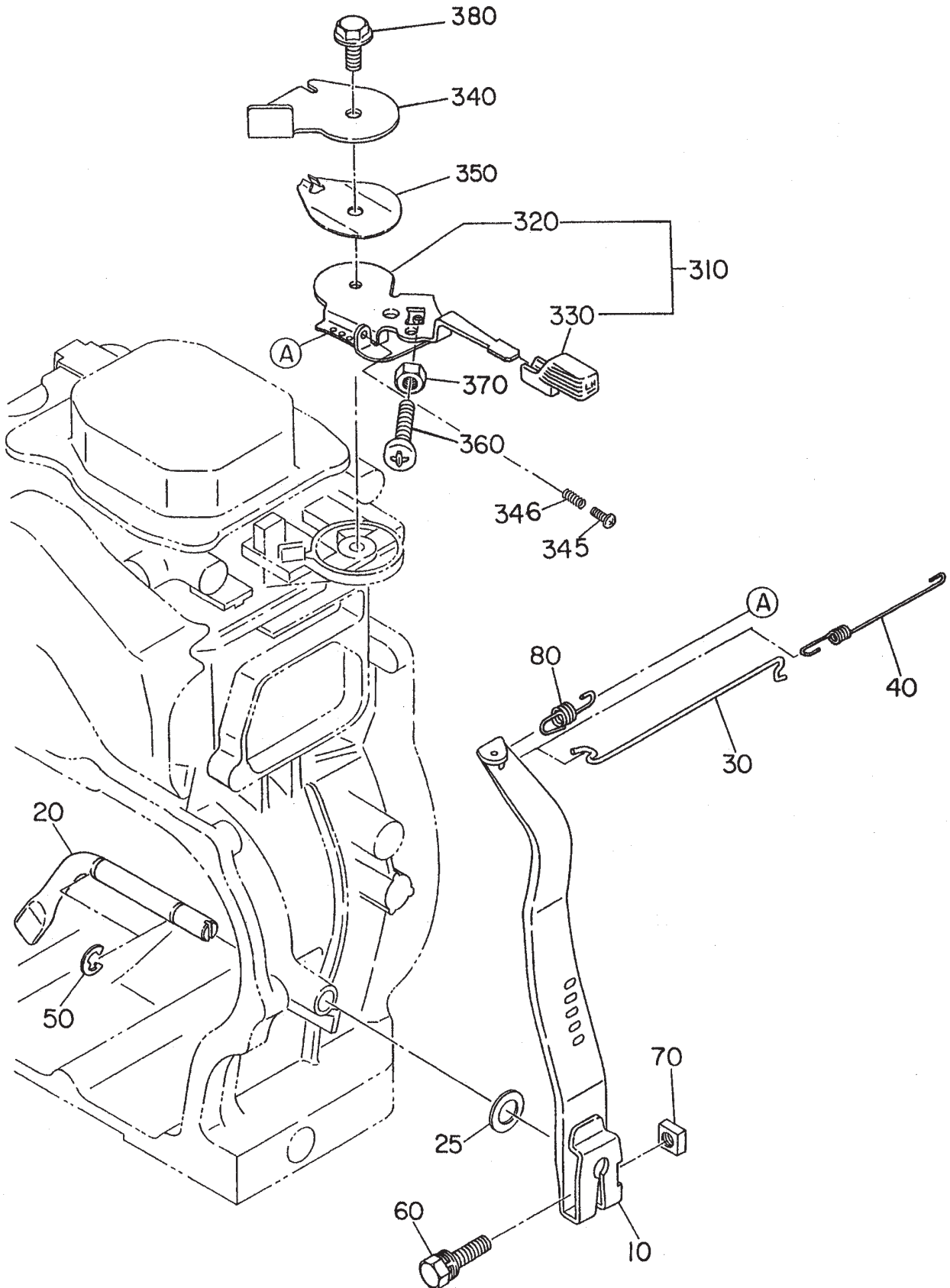
ROBIN EH172YD4230 ENGINE — INTAKE AND EXHAUST GROUP ASSY.

INTAKE AND EXHAUST GROUP ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2533170111	CAMSHAFT CP	1	INCLUDES ITEMS W/*
35*	2273640103	RELEASE LEVER	1	
36*	0051904100	SPRING PIN	1	
37*	0031522000	SNAP RING	1	
50	2393330113	TAPPET	2	
60	2533360103	VALVE SPRING	2	
70	13209KA040	SPRING RETAINER	2	
80	2693340103	INTAKE VALVE	1	
90	2693350103	EXHAUST VALVE	1	
95	13210KA031	COLLET VALVE	4	
210	2693530103	PUSH ROD	2	
220	26136001A3	ROCKER ARM	2	
230	2693580103	BOLT, PIVOT	2	
240	0170060090	NUT	2	
260	2693650103	GUIDE PLATE	1	
310	2693010101	MUFFLER CP	1	
320	2533420111	MUFFLER COVER	1	
340	2533520103	GASKET, MUFFLER	1	
350	0170080030	NUT	2	
360	0152006090	TAPPING BOLT	4	
363	0152060100	TAPPING BOLT	1	
365	0110060020	FLANGE BOLT	1	
370	2363700101	DEFLECTOR, CP	1	
380	0150040050	TAPPING SCREW	2	
430	2693480103	EXHAUST PIPE COVER	1	
500	2533300101	INTAKE PIPE CP	1	INCLUDES ITEM W/ \$
505\$	0105060230	STUD	2	
510	2533261600	AIR CLEANER ASSY.	1	INCLUDES ITEMS W/#
510-2#	2363263008	PACKING	1	
520#	2273261007	ELEMENT SET	1	
540	2533290103	INSULATOR	1	
550	2533590103	GASKET 3, INSULATOR	1	
555	2273590103	GASKET INSULATOR	1	
556	0110060130	FLANGE BOLT	1	
560	2373590303	GASKET 2, INSULATOR	1	
570	2263921200	NUT AND WASHER ASSY.	2	
590	0023806000	FLANGE NUT	2	

ROBIN EH172YD4230 ENGINE — GOVERNOR ASSY.

GOVERNOR ASSY.



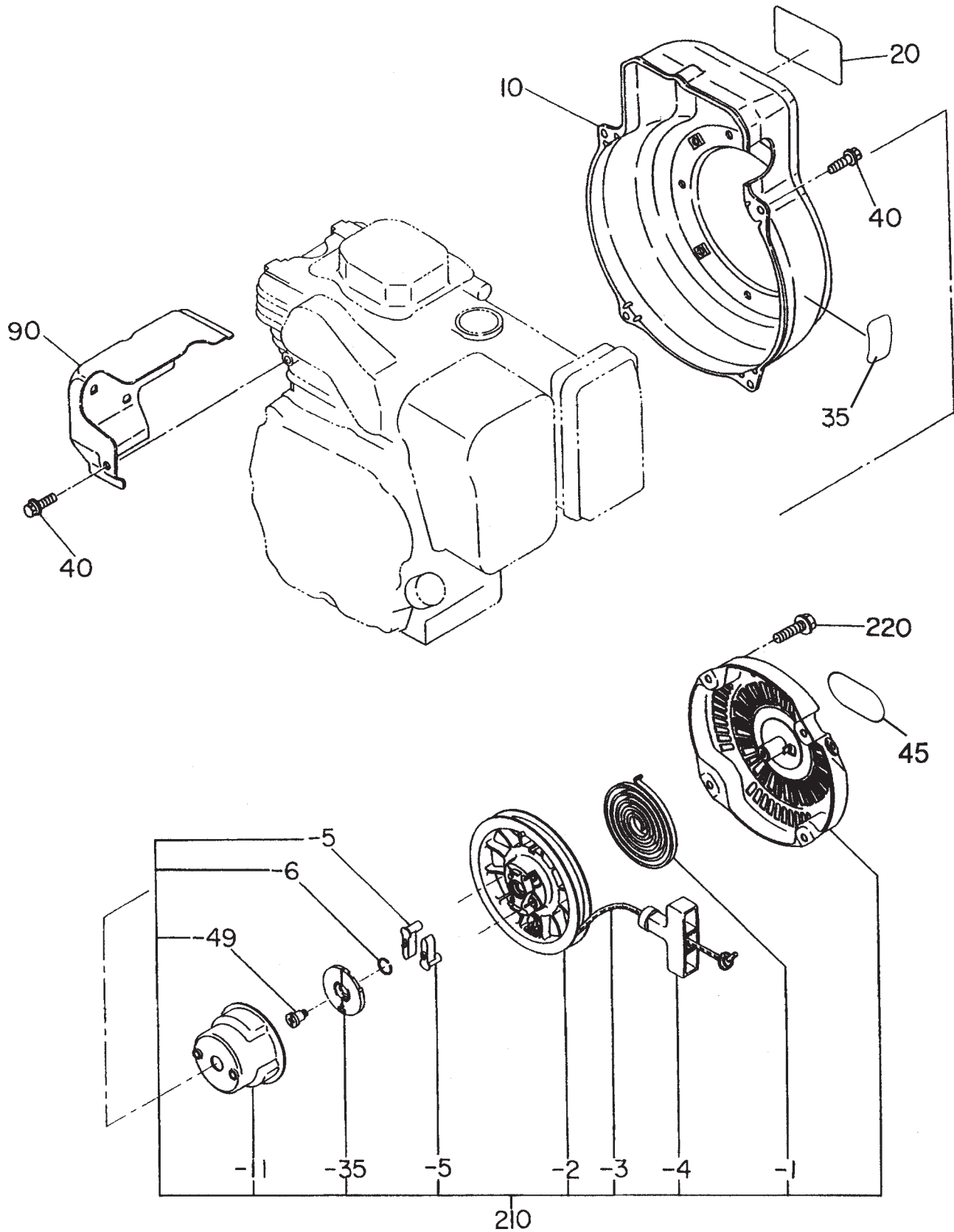
ROBIN EH172YD4230 ENGINE — GOVERNOR ASSY.

GOVERNOR ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2534230123	GOVERNOR LEVER	1	
20	2274220103	GOVERNOR SHAFT	1	
25	0031108000	WASHER	1	
30	2534270101	GOVERNOR ROD CP.	1	
40	2534280103	ROD SPRING	1	
50	0031306000	CLIP	2	
60	0011406300	BOLT AND WASHER ASSY.	1	
70	0186060020	NUT	1	
80	2534250123	GOVERNOR SPRING	1	
310	2694330100	SPEED CONTROL ASSY.	1	INCLUDES ITEMS W/*
320*	2694330101	SPEED CONTROL CP	1	
330*	2274360103	KNOB	1	
340	2694350103	STOP PLATE	1	
345	0043104300	SCREW, PANHEAD	1	
346	2694550303	IDLE SET SPRING	1	
350	2274500203	SPRING WASHER	1	
360	0043106300	SCREW	1	
370	0022706000	NUT	1	
380	0110060030	FLANGE BOLT	1	

ROBIN EH172YD4230 ENGINE — COOLING AND STARTING ASSY.

COOLING AND STARTING GROUP ASSY.



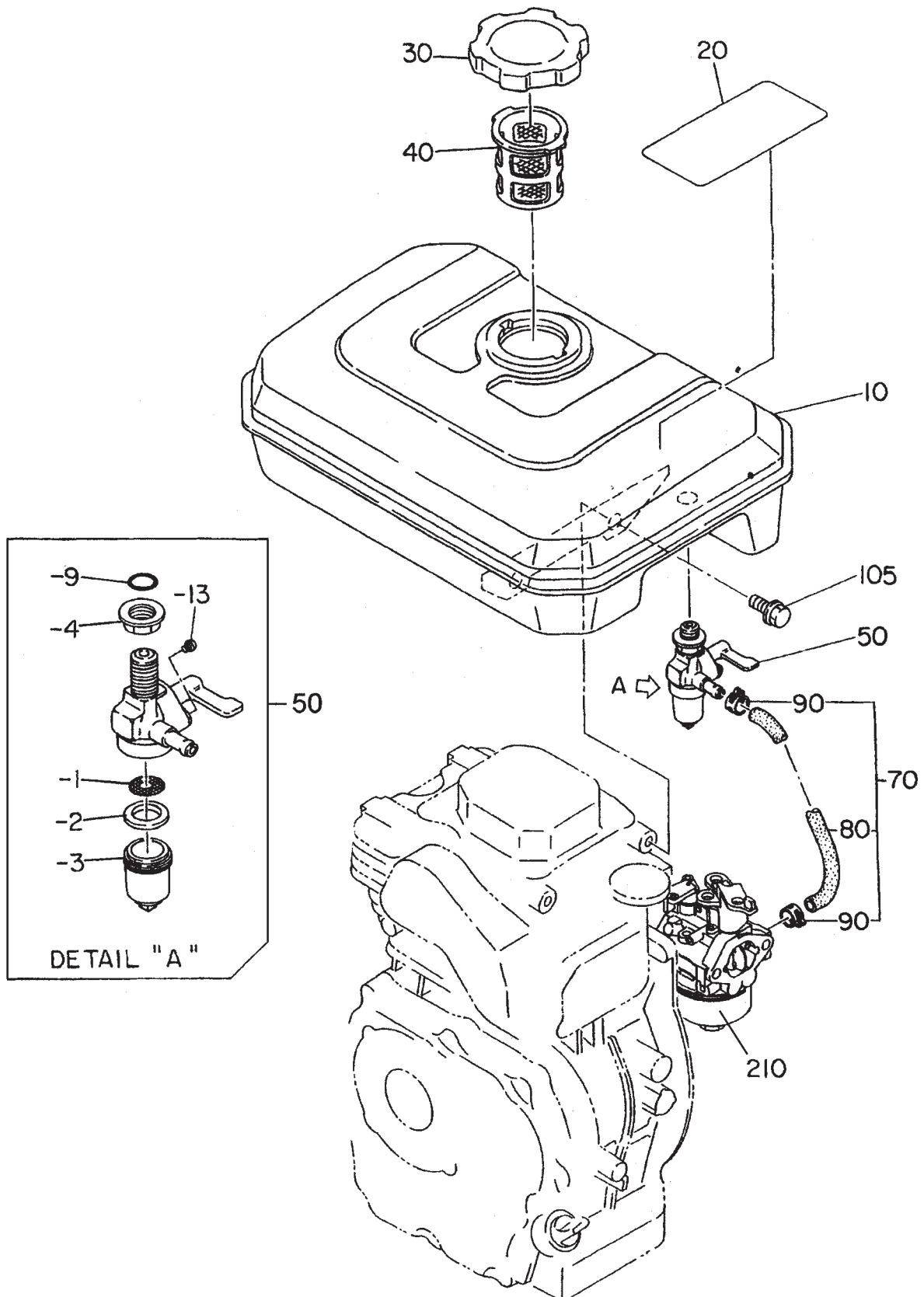
ROBIN EH172YD4230 ENGINE — COOLING AND STARTING ASSY.

COOLING AND STARTING GROUP ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2535125001	BLOWER HOUSING, BLACK	1	
20	2699170303	LABEL, TRADE MARK	1	
35	2699186003	LABEL, ENGINE NAME	1	
40	0110060020	FLANGE BOLT	5	
45	0732004950	LABEL, RECOIL OHV	1	
90	2535270103	HEAD COVER	1	
210	2695020100	RECOIL STARTER ASSY.	1	INCLUDE W/*
210-1*	2705011508	SPIRAL SPRING	1	
210-2*	2695012008	REEL	1	
210-3*	2695011008	STARTER ROPE	1	
210-4*	2615010008	STARTER KNOB	1	
210-5*	2705012508	RATCHET	2	
210-6*	2275013108	FRICTION SPRING	1	
210-11*	2695014508	STARTER PULLEY	1	
210-35*	2705026108	RATCHET GUIDE	1	
210-49*	2275015208	SET SCREW	1	
220	0110060010	FLANGE BOLT	4	

ROBIN EH172YD4230 ENGINE — FUEL GROUP ASSY.

FUEL GROUP ASSY.



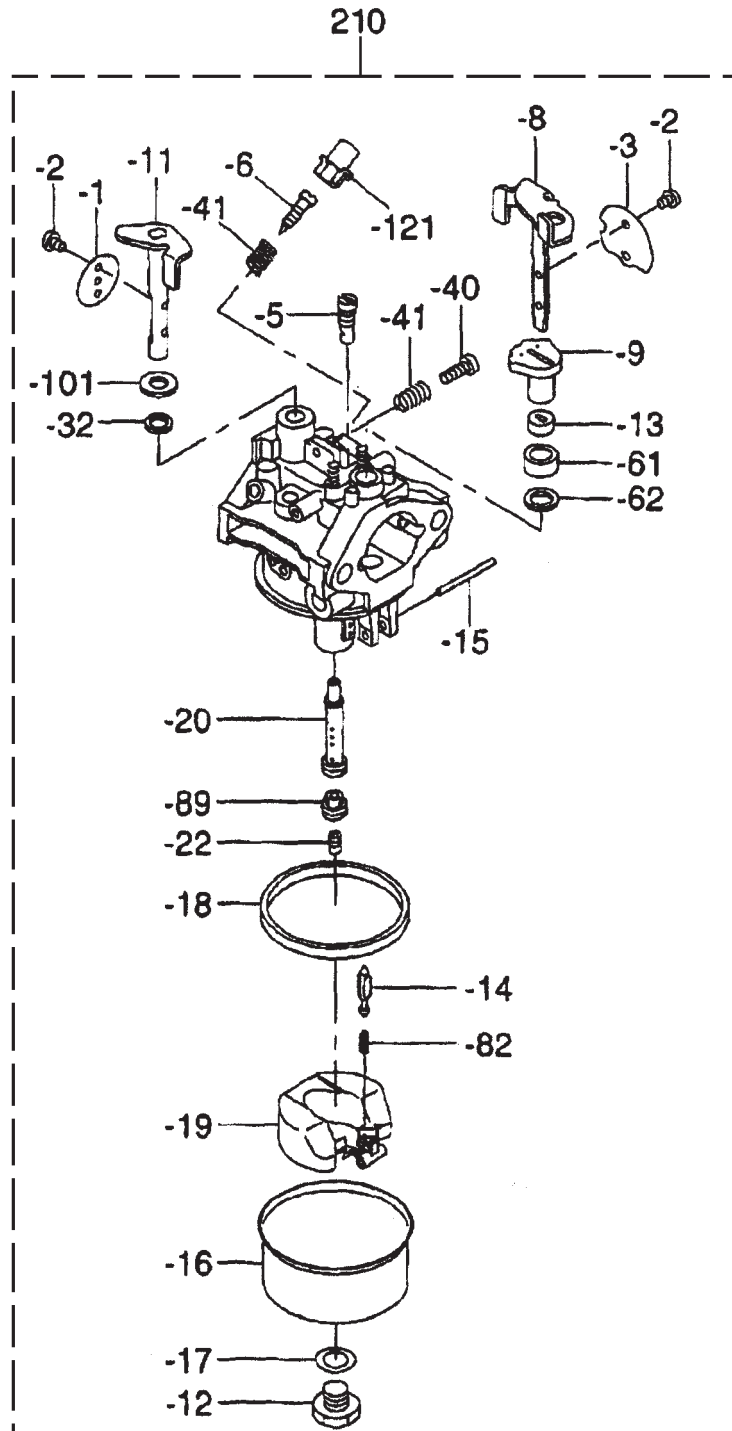
ROBIN EH172YD4230 ENGINE — FUEL GROUP ASSY.

FUEL GROUP ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2536012101	FUEL TANK CP.	1	BLACK
20	0732003900	LABEL, CAUTION	1	
30	0430430060	FUEL TANK CAP CP	1	
40	0641360010	FUEL, FILTER	1	
50	0642008400	FUEL, STRAINER ASSY.	1	INCLUDES ITEMS W/*
50-1*	0642004220	FILTER	1	
50-2*	0642006410	PACKING	1	
50-3*	0642007810	CUP	1	
50-4*	0642008410	NUT	1	
50-9*	0642008420	O-RING	1	
50-13*	0642004790	SCREW, PANHEAD	2	
70	2696260101	FUEL PIPE CP	1	INCLUDES ITEMS W/#
80#	2696800103	RUBBER PIPE	1	
90#	0561110020	HOSE CLAMP	2	
105	0110060030	FLANGE BOLT	4	
210	2536245610	CARBURETOR ASSY.	1	

ROBIN EH172YD4230 ENGINE — CARBURETOR ASSY.

CARBURETOR ASSY.



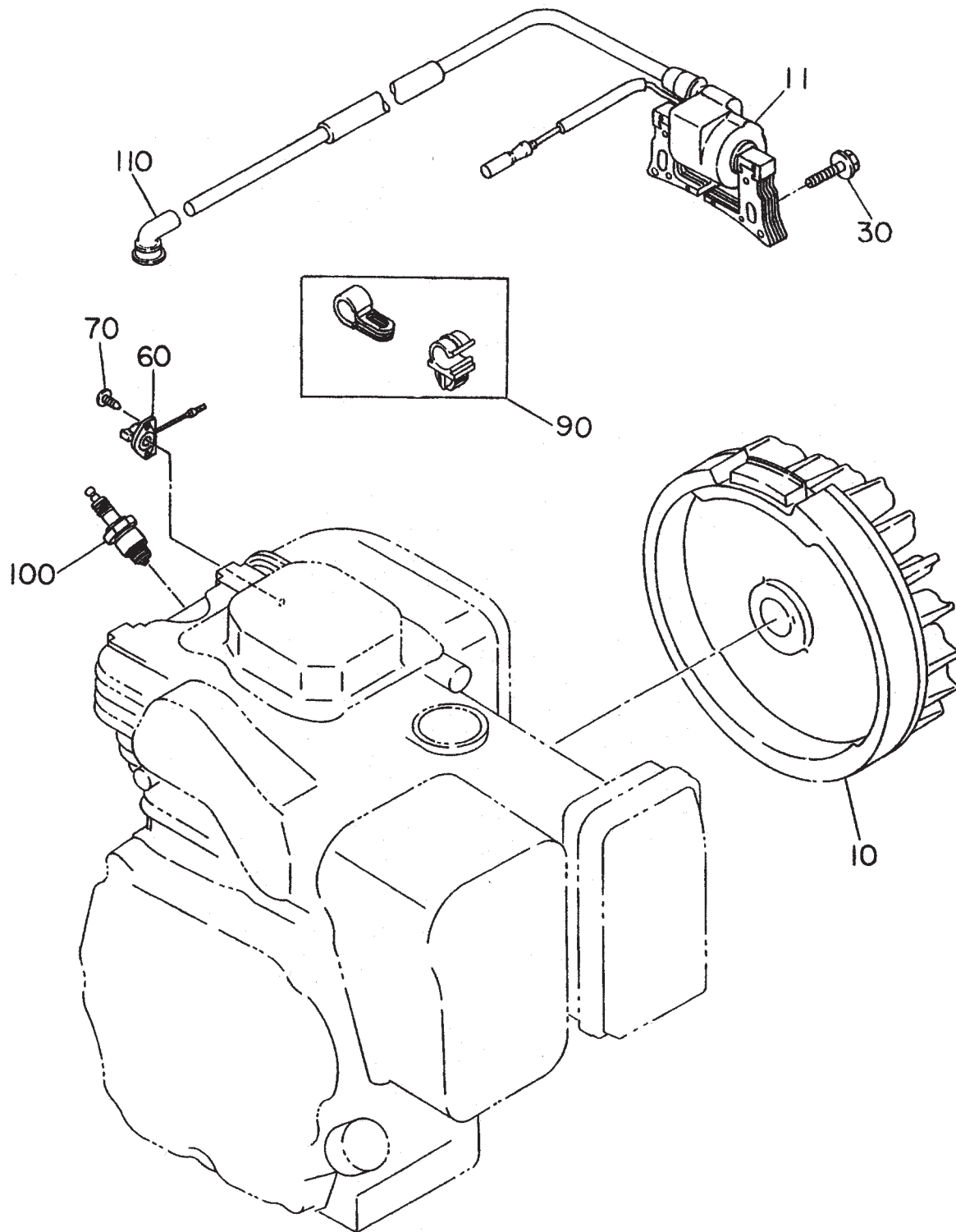
ROBIN EH172YD4230 ENGINE — CARBURETOR ASSY.

CARBURETOR ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
210	2536245610	CARBURETOR ASSY.	1	INCLUDES ITEMS W/*
210-1*	2206253608	THROTTLE VALVE	1	
210-2*	2376245108	SCREW	4	
210-3*	2366252808	CHOKE VALVE	1	
210-5*	2536242008	PILOT JET	1	
210-6*	2466243608	ADJUSTER	1	
210-8*	2366252008	CHOKE LEVER	1	
210-9*	2396256008	RING	1	
210-11*	2366260008	THROTTLE SHAFT	1	
210-12*	2366245108	BOLT	1	
210-13*	2266255008	RING	1	
210-14*	1616235208	NEEDLE	1	
210-15*	2366251008	PIN	1	
210-16*	2366255108	FLOAT CHAMBER BODY ASSY.	1	
210-17*	2366245008	PACKING	1	
210-18*	2366254008	PACKING,CHAMBER	1	
210-19*	2366250508	FLOAT	1	
210-20*	2386244008	MAIN NOZZLE	1	
210-22*	2536240208	MAIN JET	1	
210-32*	1066239208	SEAL	1	
210-40*	2466243508	ADJUST SCREW	1	
210-41*	2096244508	SPRING	2	
210-61*	2476255008	CAP, CHOKE	1	
210-62*	2366268008	SEAL	1	
210-82*	2366244508	SPRING	1	
210-89*	2356242508	GUIDE HOLDER	1	
210-101*	2366263108	RING	1	
210-121*	2466255108	CAP	1	

ROBIN EH172YD4230 ENGINE — ELECTRIC DEVICE GROUP ASSY. (RECOIL START)

ELECTRIC DEVICE GROUP ASSY. (RECOIL START)



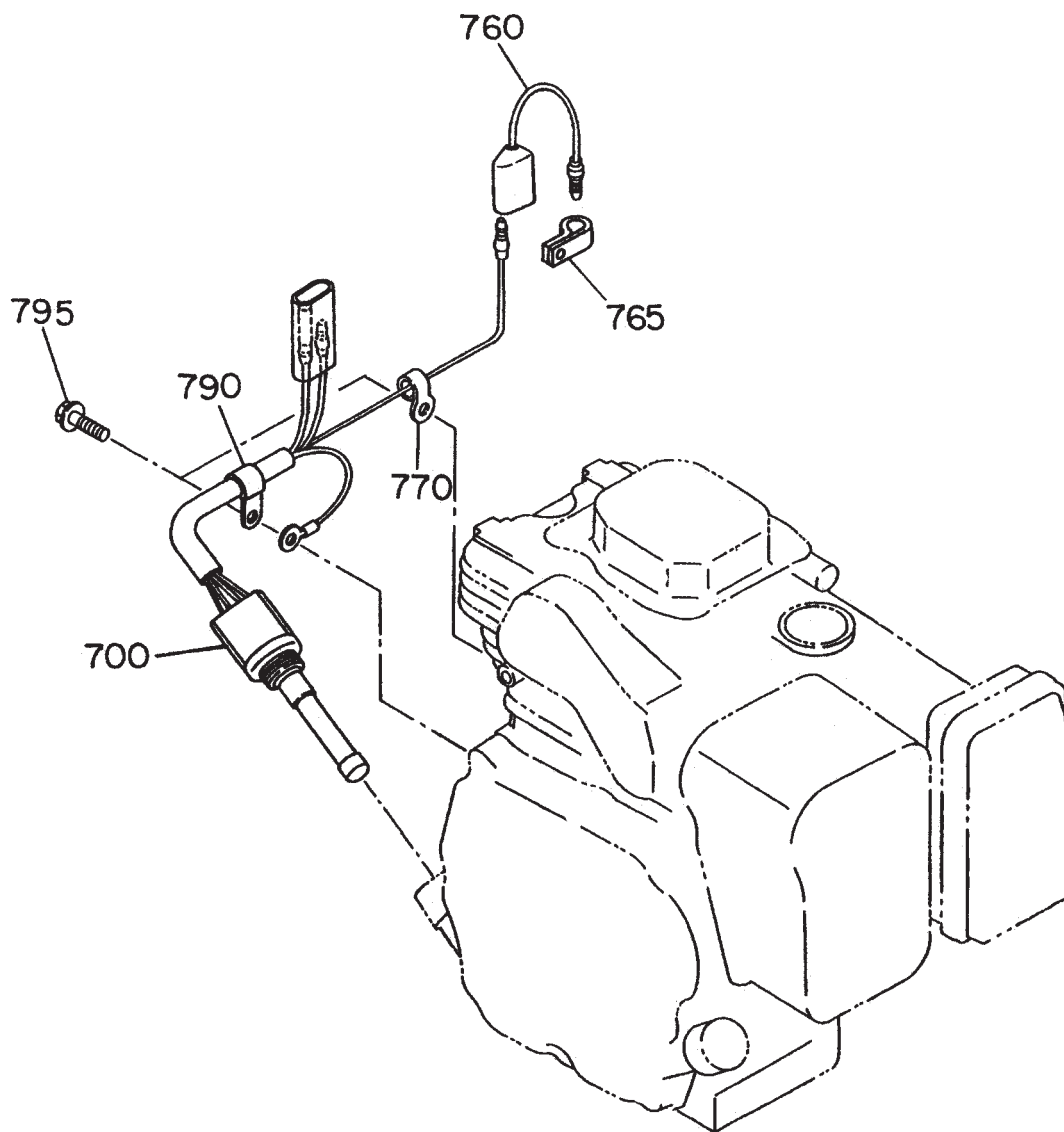
ROBIN EH172YD4230 ENGINE — ELECTRIC DEVICE GROUP ASSY. (RECOIL START)

ELECTRIC DEVICE GROUP ASSY. (RECOIL START)

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
10	2697933001	FLYWHEEL CP	1	
11	2697943001	IGNITION COIL CP	1	
30	0011406250	BOLT AND WASHER ASSY.	2	
60	0660000361	SWITCH ASSY.	1	
70	0150040090	TAPPING SCREW	2	
90	0566120050	CLAMP	1	W/OIL SENSOR ONLY
95	0659000010	PLUG TERMINAL	1	
100	0650149670	SPARK PLUG	1	
110	0655000051	SPARK PLUG CAP	1	

ROBIN EH172YD4230 ENGINE — OIL SENSOR ASSY.

OIL SENSOR ASSY.



ROBIN EH172YD4230 ENGINE — OIL SENSOR ASSY.

OIL SENSOR ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
700	KS31102211	OIL SENSOR CP 13	1	
760	2147312201	WIRE 22 CP	1	
765	2067550101	CLAMP CP	1	
770	2077500101	CLAMP CP	1	
790	2147900301	CLAMP CP	1	
795	0011008160	BOLT AND WASHER ASSY.	3	