

OPERATION AND PARTS MANUAL



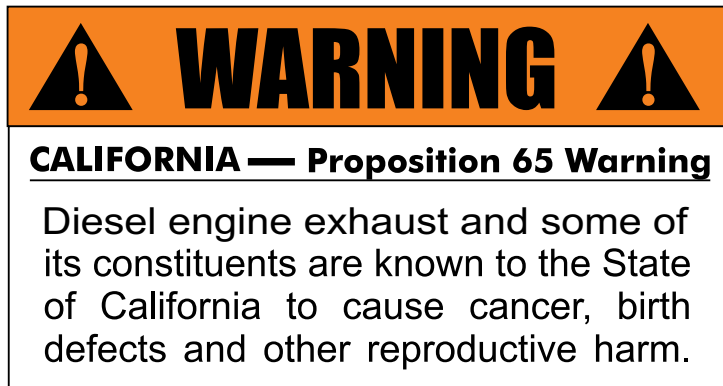
***Mikasa* SERIES**
MODEL MRH601DS
VIBRATORY ROLLER
(Kubota EA330-E3-NB3-HGMS-1 DIESEL ENGINE)

Revision #0 (11/07/14)

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THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.



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NOTICE

Specifications and part numbers are subject to change without notice.

PARTS ORDERING PROCEDURES

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Effective:
January 1st, 2006



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

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.

The following table shows the potential hazards associated with the operation of this equipment.

Symbol	Safety Hazard
	Lethal exhaust gas hazards
	Explosive fuel hazards
	Burn hazards
	Respiratory hazards
	Rotating parts hazards
	Pressurized fluid hazards
	Electric shock hazards
	Runover 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.



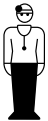
- **NEVER** operate this equipment under the influence of drugs or alcohol.



- **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.
- **ALWAYS** clear the work area of any debris, tools, etc. that would constitute a hazard while the equipment is in operation.

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.



SAFETY INFORMATION

ROLLER 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.

CAUTION

- **NEVER** lubricate components or attempt service on a running machine.
- Never leave the roller unattended with the engine running. Turn off engine.
- Use chock blocks when parking roller on a grade.
- Use extreme care when operating near obstructions, on slippery surfaces, grades, and slide slopes.
- When reversing, particularly on the edges and banks of ditches, as well as in front of obstacles, the operator must stay in a standing position at a safe distance from the machine.
- When operating near any house/building or pipelines, always check the effect of machine vibration. Stop work if necessary.
- **DO NOT** operate the roller with the covers open.
- **ALWAYS** keep the machine away from other personnel and obstacles. Always keep immediate area free of bystanders.

NOTICE

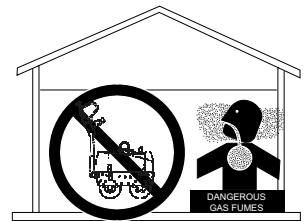
- **ALWAYS** keep the machine in proper running condition.
- Fix damage to machine and replace any broken parts immediately.

- **DO NOT** use worn-out hoses or couplings. Inspect daily.
- **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.

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.
- Keep fingers, hands hair and clothing away from all moving parts to prevent injury.
- **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 roller.



CAUTION

- **NEVER** touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing equipment.
- **ALWAYS** turn the engine off before performing maintenance.



SAFETY INFORMATION

NOTICE

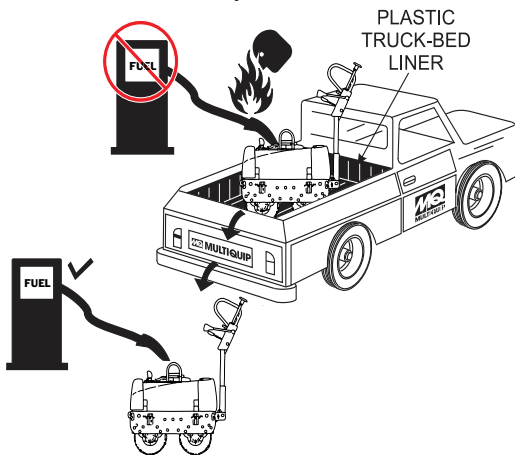
- **NEVER** run engine without an air filter or with a dirty air filter. Severe engine damage may occur. Service air filter frequently to prevent engine malfunction.
- **NEVER** tamper with the factory settings of the engine or engine governor. Damage to the engine or equipment can result if operating in speed ranges above the maximum allowable.
- **NEVER** tip the engine to extreme angles during lifting as it may cause oil to gravitate into the cylinder head, making the engine start difficult.



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. Diesel 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.

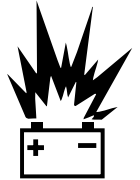
- **DO NOT** smoke around or near the equipment. Fire or explosion could result from fuel vapors or if fuel is spilled on a hot engine.



BATTERY SAFETY (ELECTRIC START ONLY)

DANGER

- **DO NOT** drop the battery. There is a possibility that the battery will explode.
- **DO NOT** expose the battery to open flames, sparks, cigarettes, etc. The battery contains combustible gases and liquids. If these gases and liquids come into contact with a flame or spark, an explosion could occur.



WARNING

- **ALWAYS** wear safety glasses when handling the battery to avoid eye irritation. The battery contains acids that can cause injury to the eyes and skin.
- Use well-insulated gloves when picking up the battery.
- **ALWAYS** keep the battery charged. If the battery is not charged, combustible gas will build up.
- **DO NOT** charge battery if frozen. Battery can explode. When frozen, warm the battery to at least 61°F (16°C).
- **ALWAYS** recharge the battery in a well-ventilated environment to avoid the risk of a dangerous concentration of combustible gases.
- If the battery liquid (dilute sulfuric acid) comes into contact with **clothing or skin**, rinse skin or clothing immediately with plenty of water.
- If the battery liquid (dilute sulfuric acid) comes into contact with **eyes**, rinse eyes immediately with plenty of water and contact the nearest doctor or hospital to seek medical attention.



SAFETY INFORMATION

CAUTION

- **ALWAYS** disconnect the **NEGATIVE** battery terminal before performing service on the equipment.
- **ALWAYS** keep battery cables in good working condition. Repair or replace all worn cables.

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 are not damaged and screws are not loose or missing.
- Use lifting equipment capable of lifting the weight of the roller.
- **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 with sufficient bearing capacity to prevent machine from tilting or slipping.
- **DO NOT** lift machine to unnecessary heights.
- **ALWAYS** make sure that roller is secured correctly when transporting on a trailer. Make sure all supports attaching the roller to the trailer are tight.

ENVIRONMENTAL SAFETY/DECOMMISSIONING

NOTICE

Decommissioning is a controlled process used to safely retire a piece of equipment that is no longer serviceable. If the equipment poses an unacceptable and unrepairable safety risk due to wear or damage or is no longer cost effective to maintain (beyond life-cycle reliability) and is to be decommissioned (demolition and dismantlement), be sure to follow rules below:

DO NOT pour waste or oil directly onto the ground, down a drain or into any water source.

Contact your country's Department of Public Works or recycling agency in your area and arrange for proper disposal of any electrical components, waste or oil associated with this equipment.



When the life cycle of this equipment is over, remove battery and bring to appropriate facility for lead reclamation. Use safety precautions when handling batteries that contain sulfuric acid.

When the life cycle of this equipment is over, it is recommended that the trowel frame and all other metal parts be sent to a recycling center.

Metal recycling involves the collection of metal from discarded products and its transformation into raw materials to use in manufacturing a new product.

Recyclers and manufacturers alike promote the process of recycling metal. Using a metal recycling center promotes energy cost savings.

EMISSIONS INFORMATION

NOTICE

The diesel engine used in this equipment has been designed to reduce harmful levels of carbon monoxide (CO), hydrocarbons (HC) and nitrogen oxides (NOx) contained in diesel exhaust emissions.

This engine has been certified to meet US EPA Evaporative emissions requirements in the installed configuration.

Attempting to modify or make adjustments to the engine emission system by unauthorized personnel without proper training could damage the equipment or create an unsafe condition.

Additionally, modifying the fuel system may adversely affect evaporative emissions, resulting in fines or other penalties.

Emission Control Label

The emission control label is an integral part of the emission system and is strictly controlled by regulations.

The label must remain with the engine for its entire life.

If a replacement emission label is needed, please contact your authorized Kubota Engine Distributor.

Table 1. Specifications (Vibratory Roller)

Dimensions (L x H x W)	89.14 x 47.05 x 27.24 in (2265 x 1195 x 692 mm)
Drum Diameter	13.98 in. (355 mm)
Drum Width	25.59 in. (650 mm)
Distance between Axes	20.47 in. (520 mm)
Weight	1214.75 lbs. (551 kg)
Vibration Frequency	3,300 vpm (55 Hz)
Centrifugal Force	2,428 lbf (10.8 kN)
Gradeability	35 % (20°)
Working Speed	0 - 1.86 mph (0 - 3 kph)
Lubricating Oil	5.8 gallons (22 liters)
Water Tank Capacity	7.92 gallons (30 liters)

Table 2. Specifications (Engine)	
Engine Model	Kubota EA330-E3-NB3-HGMS-1
Engine Type	Diesel
Maximum Output	6.2 HP (4.6 kW)
Fuel Tank Capacity	5.6 quarts (5.4 liters)
Starting System	Electric
Max. Set Speed of Rotation	2,650

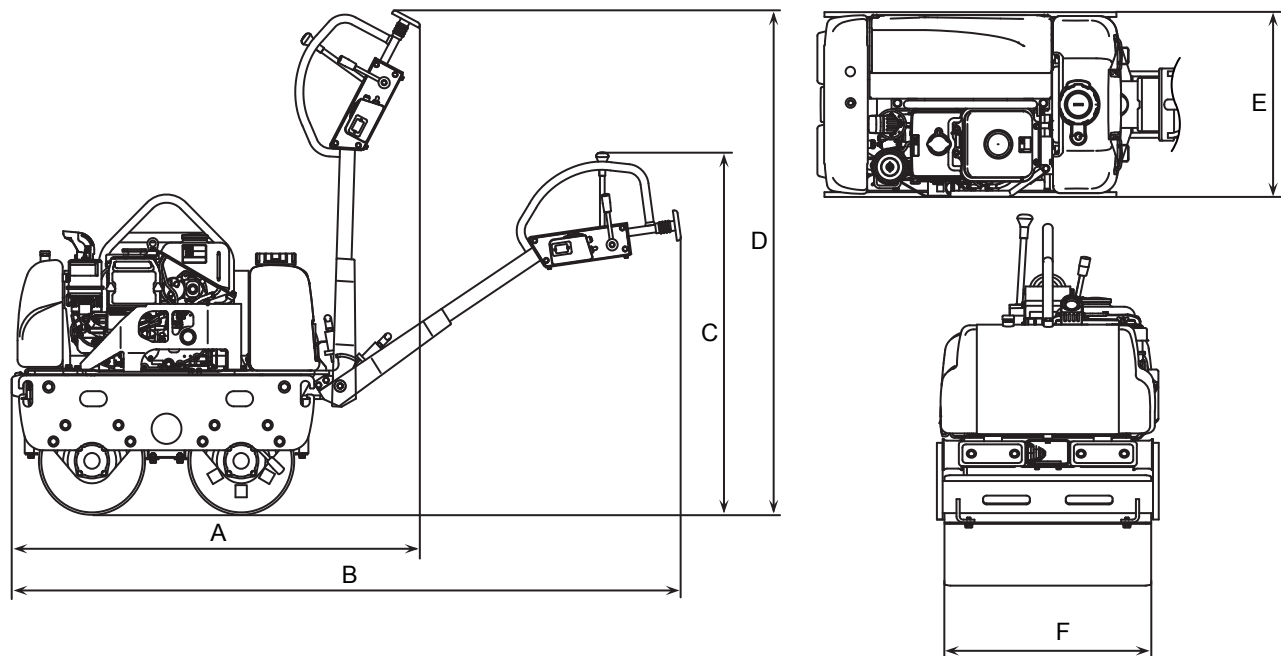


Figure 1. MRH601DS Dimensions

Table 3. MRH601DS Dimensions		
A	52.4 in.	1330 mm.
B	89.2 in.	2265 mm.
C	47.0 in.	1195 mm.
D	67.1 in.	1705 mm.
E	27.2 in.	692 mm.
F	25.6 in.	650 mm.

The Mikasa Model MRH601DS is a powerful compacting tool capable of applying tremendous force in consecutive impacts to a soil surface. Its applications include soil compacting for backfilling for gas pipelines, water pipelines and cable installation work.

The impact force of the MRH601DS levels and uniformly compacts voids between soil particles to increase dry density.

Features include:

- Hydraulic transmission to allow speed change without gear shifting.
- Deadman device which when pressed or hit will cause the travel lever to return to neutral position bringing the machine to a stop.
- A horn to warn of machine's approach.
- An hourmeter/tachometer to measure runtime and rpm.
- Non-corrosive water tank for the sprinkler system with a capacity of 7.9 gallons (30 liters).
- Lifting hook to transport machine.
- Front bumper and working light.
- Narrow profile with less than one inch wall clearance. Narrower width allows access to tighter areas. No exposed hydraulic hoses.
- Oil bath lubricated bearings and external vibration for less servicing and more dependability.
- Front and rear drum scrapers.
- Drum sprinkler system controls located near the operator.
- Easy access to hydraulic components and hydraulic filter.

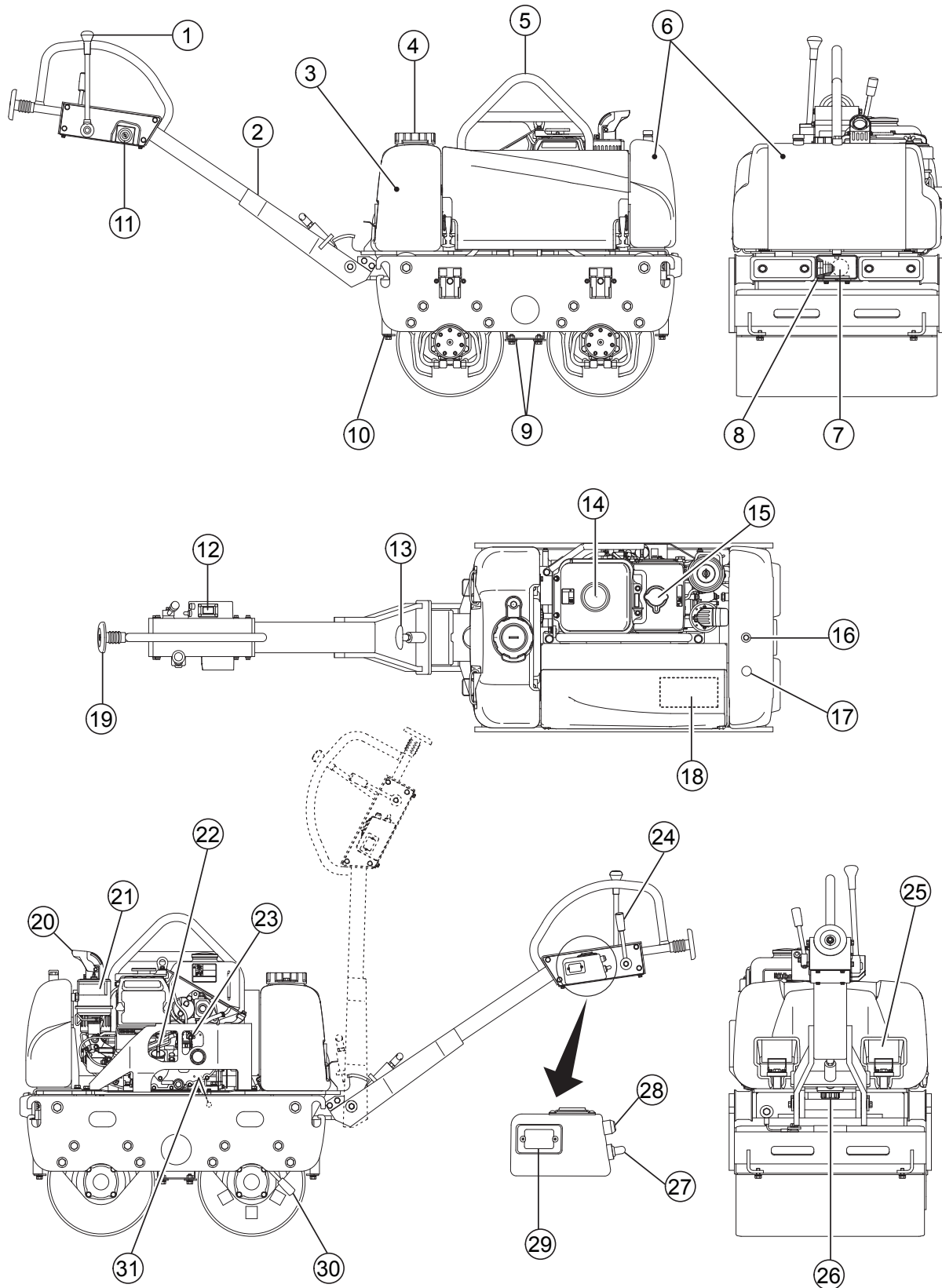


Figure 2. MRH601DS Components

COMPONENTS

Figure 2 illustrates the location of the major components for the MRH601DS Vibration Roller. The function of each component is described below:

1. **Traveling Lever** — Push the lever forward, the roller will move in a forward direction, pull the lever backwards, the roller will move in backwards direction. Placing the lever in the middle (midway) will cause the roller not to move (neutral).
2. **Handle Bar** — When operating the roller, this handle is to be in the downward position. When the roller is to be stored, move the handle bar to the upright position.
3. **Water Tank** — Holds 7.9 gallons (30 liters) of water for the sprinkler system.
4. **Water Tank Cap** — Open to fill water tank.
5. **Lifting Hook** — Used to lift unit with crane or other lifting device when transporting.
6. **Oil Tank** — Fill with proper grade of hydraulic oil.
7. **Horn** — Gives a warning sound of the machine approaching, for jobsite safety.
8. **Front Headlights** — Activate using switch on control handle. Used to illuminate ground during nighttime or low-light operating conditions.
9. **Scraper (In)** — Prevents buildup of material between the drums.
10. **Scraper (Out)** — Prevents buildup of material between the drum and the frame.
11. **Engine Starting Switch** — **ON** position permits engine starting, **OFF** position stops engine operation.
12. **Vibration ON/OFF Switch** — Turns vibration on and off.
13. **Handlebar Stopper Pin** — Locks handlebar in place.
14. **Fuel Tank/Cap** — Fill with diesel fuel. Fuel tank holds approximately 2 gallons (7.5 liters). **DO NOT** top off fuel. Wipe up any spilled fuel immediately.
15. **Coolant Radiator Cap** — Open to fill radiator with coolant.
16. **Breather Cap** — Allow pressure to escape to the air in the form of a gas from heat.
17. **Hydraulic Oil Filler Port** — Used to fill hydraulic oil tank.
18. **Battery** — Provides +12VDC to the electrical system. Replace only with recommended type battery.
19. **Dead-Man Device** — When pressed or hit while traveling in reverse, causes the travel lever to return to neutral position to stop the machine.
20. **Muffler** — Used to reduce noise and emissions.
21. **Air Cleaner** — Prevents dirt and other debris from entering the fuel system.
22. **Engine Oil Filler Port** — Used to fill engine oil.
23. **Fuel Cock** — Controls the flow of diesel fuel to the engine. Must be in the **ON** position when starting and running the engine.
24. **Throttle Lever** — Placed in operation position at start up.
25. **Stopper** — Holds handlebar.
26. **Drain Outlet** — Drains out the water from the water tank.
27. **Headlight ON/OFF Switch** — Turns the headlight on and off.
28. **Horn Button** — Press this button to sound horn.
29. **Hour/Tacho Meter** — Measures the run time of the unit. During operation it displays the rpm reading.
30. **Parking Brake** — Makes sure machine will not accidentally move when parked or not in use. Move lever to the left to place parking brake in the locked position.
31. **Sprinkler Cock** — Turns on the sprinklers (front and rear drums).

BEFORE STARTING

Before starting the roller:

1. Read safety information at the beginning of manual.
2. Understand the geographical features and regulations of the job site.
3. Check the items listed in Table 4:

Table 4. Inspection Points	
Item	Check
Parking Brake	Movement
Wheel Stopper	Broken
Body (Frame)	Cracks, Skewness
Lifting Hook	Broken, Cracks, Loose, Bolts and Nuts falling off
Fuel Tank	Leak, Quantity of Fuel, Dirt
Fuel System	Leak
Fuel Filter	Dirt
Engine Oil	Leak, Quantity of Oil, Dirt
Coolant	Leak, Quantity of Water
Oil Tank	Leak, Quantity of Oil, Dirt
Vibrator V-belt	Cracks, Tension
Engine Fan Belt	Cracks, Tension
Oil Pressure Pipe-Line System	Leak, Looseness, Crack, Abrasion
Water Pipe Line System	Leak, Looseness, Crack, Abrasion
Horn	Operation (if working)
Headlight	Operation (if working)
Traveling Lever	Broken, Cracks, Loose, Bolts and Nuts falling off
Deadman Device	Operation (if working)
Scraper	Curve, Damage, Adjustment
Bolt, Nuts	Looseness, Falling off

ENGINE OIL CHECK

1. To check the engine oil level, place the machine on secure level ground with the engine stopped.
2. Remove the filler dipstick from the engine oil filler hole (Figure 3) and wipe clean.

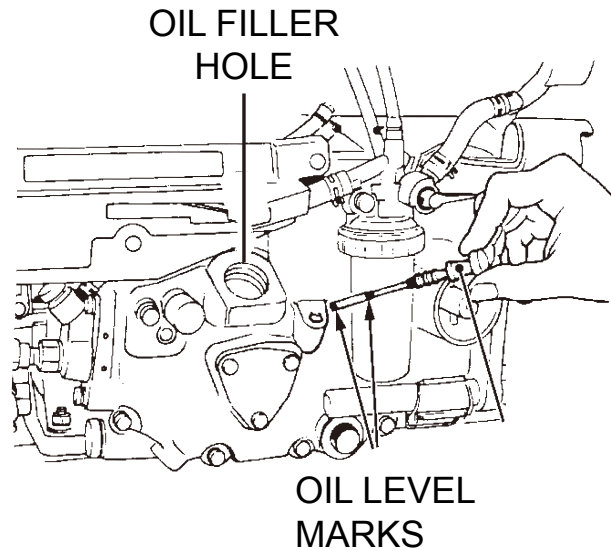


Figure 3. Engine Oil Level

3. Insert and then remove the dipstick again. Check that the oil level is between the two oil level marks on the dipstick (Figure 3).
4. If the oil level is low, fill to the edge of the oil filler hole with the recommended oil type (Table 5). Maximum oil capacity is 1.37 quarts (1.3 liters).

Table 5. 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

CHECKING THE HYDRAULIC SYSTEM

1. Check the oil level gauge (Figure 4). Oil level should be at the reference point or higher. Fill as required.

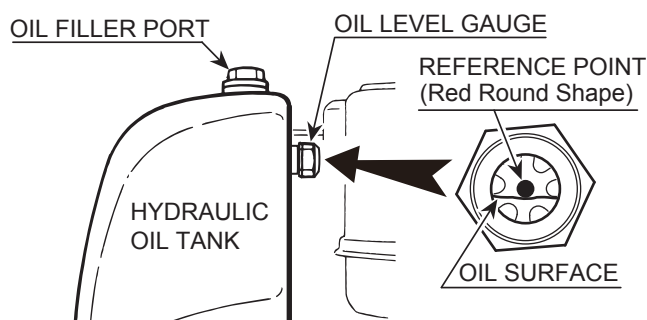


Figure 4. Hydraulic System Oil Level Gauge

2. Check the hydraulic pump and hydraulic motor for damage.
3. Check for loosening of hose and pipes, and check for oil leaking part.
4. Check to see if the hydraulic oil looks whitish and cloudy.

CHECKING THE V-BELT

DANGER



ALWAYS keep hands and fingers away from pinch points. **DO NOT** allow anyone to reach in on dangerous sections of the machine to avoid any accidents.

1. Check the looseness of V-belt. When the tension is low, the vibration become weak or V-belt tends to get damaged (Figure 5).

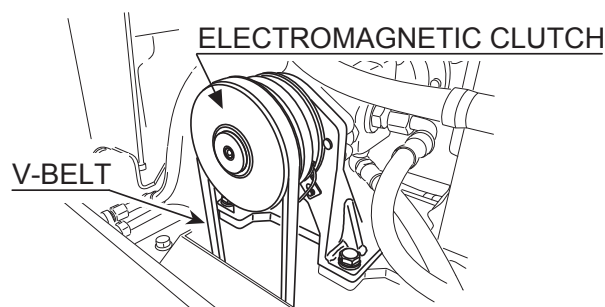


Figure 5. Checking V-Belt Tension

ELECTROMAGNETIC CLUTCH INSPECTION

1. The clutch friction surface gets worn out gradually over the course of machine use, which results in increase in the gap. When this gap exceeds more than 0.5 mm (gap limit), the clutch operation failure occurs or the engagement function of the clutch fails. This indicates that the electromagnetic clutch needs to be replaced.

Table 6. Electromagnetic Clutch Specifications (For Vibration)

Item	Check
Static friction torque	25 Nm (2.5 kg m)
Rated voltage	DC12V
Capacity	20W
Coil resistance	6.6Ωf
Gap limit	0.5 mm

2. The temperature of the surface of the electromagnetic clutch might rise to about 194° to 212° (90° to 100°C) due to built-in coil. Make sure that the peripheral temperature does not become higher than 176°F (80°C).

CAUTION

Before inspection of electromagnetic clutch, always stop the engine to prevent possibility of your hand or clothes getting caught in rotating parts. Be careful not to burn your hand when checking the temperature.

FUEL CHECK

DANGER



Motor fuel is highly flammable and can be dangerous if mishandled. **DO NOT** smoke while refueling. **DO NOT** attempt to refuel the pump if the engine is **hot or running**.

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

CHECKING WATER TANK

1. Check the water tank to see if filled. Add water if necessary. The water tank has a capacity of approximately 10 gallons (40 liters). See Figure 6.

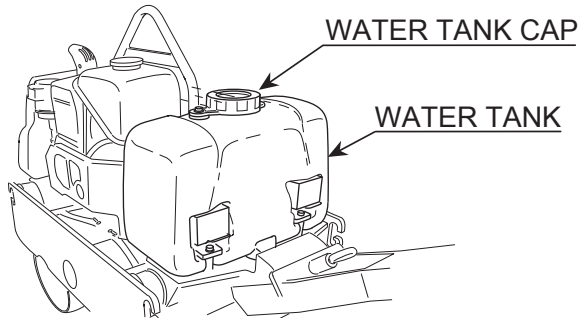


Figure 6. Checking Water Tank

CAUTION

Be careful not to confuse the water tank with the oil tank.

CHECKING SPRINKLER

1. Move the sprinkler cocks for both the rear and front drums to the open position and confirm that the water flows normally.

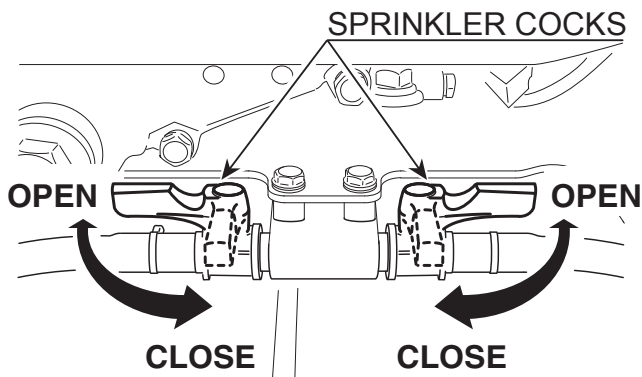


Figure 7. Sprinkler Check

CHECKING LEVERS AND HORN

1. Check travel and throttle levers to make sure they are functioning properly (Figure 8).
2. Turn on the light switch and confirm that the headlight comes on (Figure 8).
3. Press the horn and verify that it sounds normally (Figure 8).

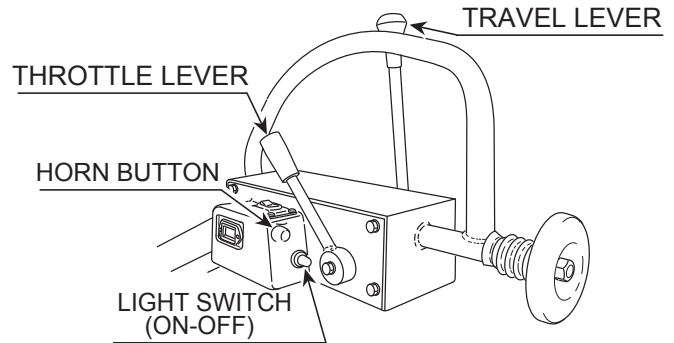


Figure 8. Levers, Horn, and Light Check

4. With travel lever placed in reverse, push the deadman device and verify that the travel lever returns to neutral position. The travel lever stays in neutral position once the deadman device is released (Figure 9).

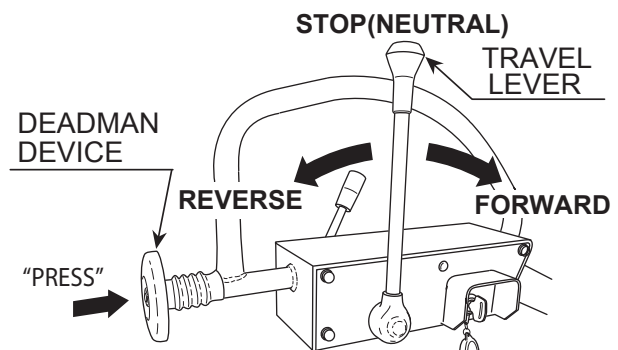


Figure 9. Deadman Device Check

CHECKING SCRAPERS

1. Check scrapers and make sure that they are not clogged with mud, bent or damaged (Figure 10).

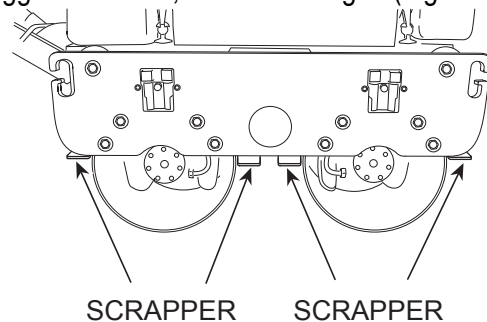


Figure 10. Checking Scrapers

2. Adjust clearance between drums and scrapers as necessary.

CHECKING BOLTS, NUTS AND SCREWS

1. Check bolts, nuts, and screws on various parts of the machine, including the engine, for proper tightness.

CAUTION



DO NOT attempt to operate the roller until the Safety Information, General Information, and Inspection sections of this manual have been **read and thoroughly understood**.

STARTING

CAUTION

When the engine is running, never turn the starter key to the **START** position

1. Move the throttle lever to the operation position (Figure 11).

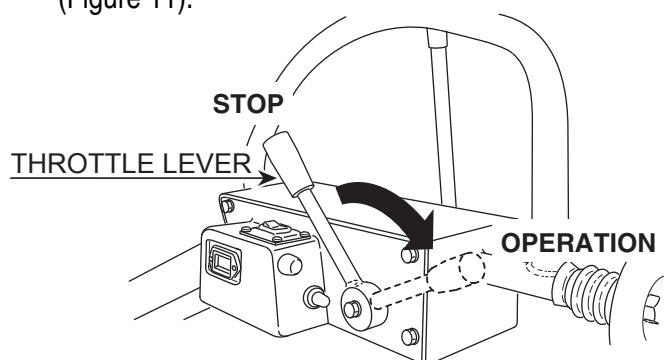


Figure 11. Throttle Lever (Operation Position)

2. Move the travel lever to the stop (neutral) position (Figure 12).
3. Move the vibration on/off switch to the off position (Figure 12).
4. Move the light switch to the off position (Figure 12).

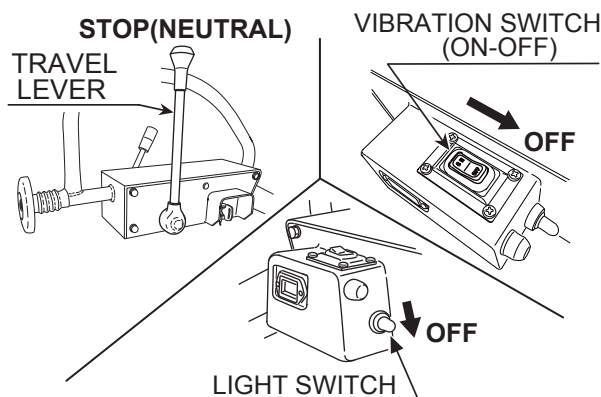


Figure 12. Travel Lever, Vibration Switch and Light Switch

5. Open the fuel cock.
6. Insert the key into the key switch and turn it to the **operation** position (Figure 13). The buzzer should sound at this time.

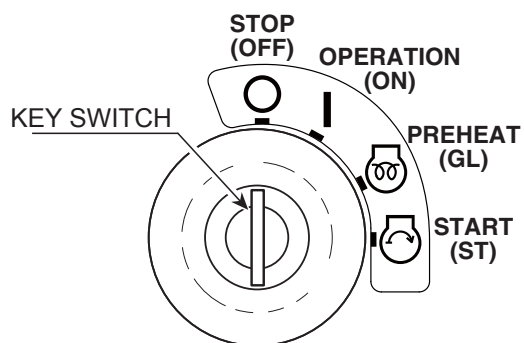
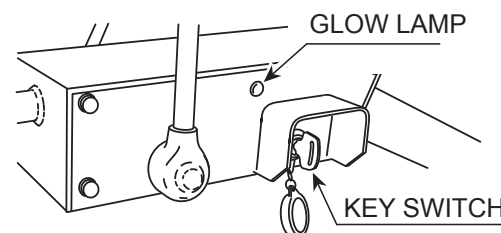


Figure 13. Starter Key (Operation Position)

7. Turn the key to preheat position and wait until the glow lamp lights (about 5 seconds). The glow lamp goes out automatically after 5 seconds.
8. After preheat is complete, turn the key to the start position. After the engine is started, take your hand off the key. Buzzer stops when the engine speed increases.
9. Turn the starter key further to the right to the start position (Figure 13) to start the engine. Buzzer stops sounding when the engine speed increases.

NOTICE

Machine will not start if the travel lever is not at the stop position.

10. If the engine fails to start, do not continue to rotate the starter key for more than 5 seconds. Return the key to the operation position and wait 20 to 30 seconds before starting again.
11. After starting the engine, continue to warm up the engine for about 3 to 10 seconds especially in cold weather.

12. If the buzzer does not stop sounding after the engine has started, shutdown engine immediately and check engine oil level. The buzzer also functions as engine oil level warning.

TRAVELING

1. Before starting to travel, make sure to release parking brake (Figure 14).

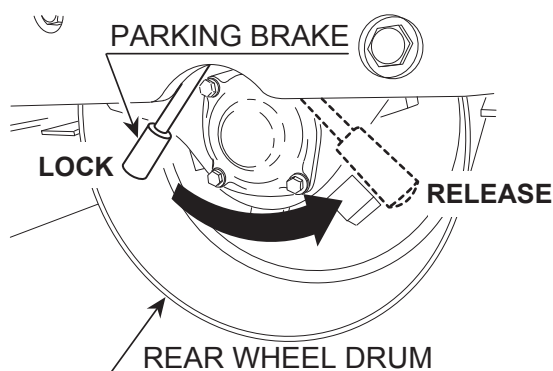


Figure 14. Parking Brake

2. Push the travel lever forward slightly. This will cause the roller to travel forward at slow speed.

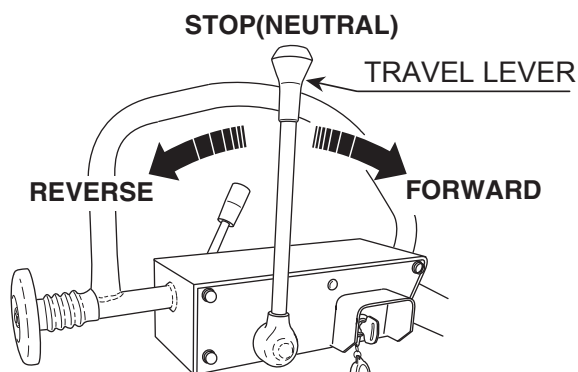


Figure 15. Travel Lever

3. To increase the travel speed, push the travel lever further.
4. Push the travel lever backward to go in the reverse direction.

CAUTION

Do not reduce speed during work. When shifting travel lever from forward to reverse, be sure to stop the lever at the neutral position first before moving the lever to the opposite direction. Do not shift the lever from forward to reverse (or reverse to forward) in one motion.

CAUTION

After test travel, shut down engine and check for any problems including oil leakage. If any trouble is found, correct the problem before attempting to operate the roller again.

VIBRATING

1. Shift the vibration switch from off to on position. The roller will start vibrating (Figure 16).

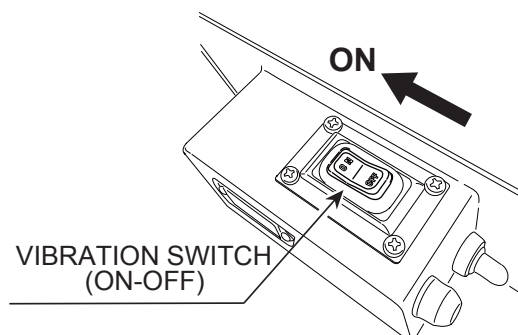


Figure 16. Vibration Switch

2. If vibration does not occur (electromagnetic clutch does not operate) while other functions are working properly, the fuse might be blown. Check the fuse (10A) in the handle box (Figure 17) and if it is blown, replace with a new one.

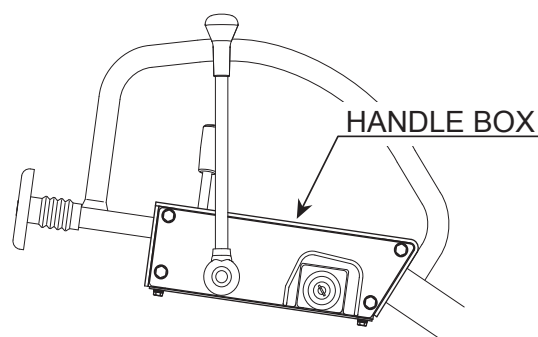


Figure 17. Location of Fuse (Handle Box)

CAUTION

Vibration should not be used over completely compacted area, paved road surface, or with stationary roller.

SPRINKLING

3. Open the water cocks for the front and rear drums, to start sprinkling. (Figure 18).

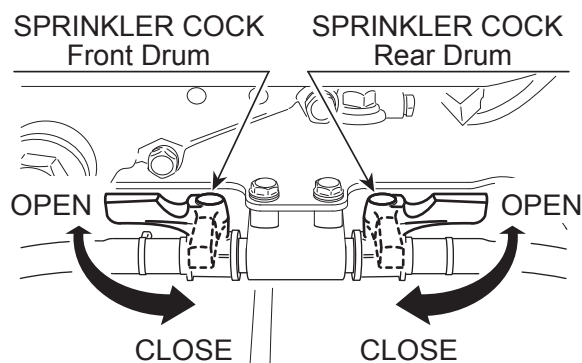


Figure 18. Water Cocks

DEADMAN DEVICE

The deadman device prevents accidental traveling in reverse. It automatically returns the travel lever to the neutral position by stopping the machine when the deadman device is pressed forward (Figure 19).

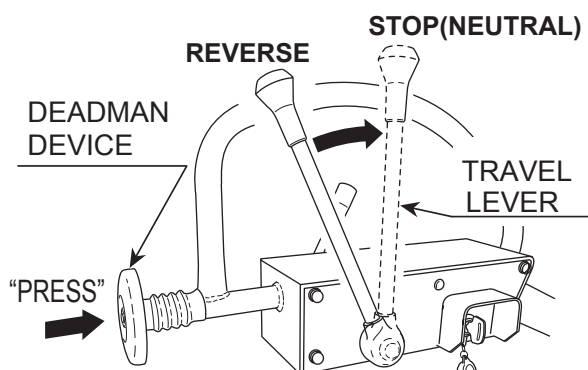


Figure 19. Deadman Device

CAUTION

Except for switching operation between forward, reverse and neutral, keep your hands off the travel lever. Deadman device might not work properly if your hand is on the travel lever and you are caught between the machine and some other object.

STOPPING

1. With vibration switch in the off position, return the travel lever to the stop (neutral) position. Move the throttle lever to the stop position after making sure vibration has stopped.
2. Return the key switch to the stop position as soon as the engine stops.

CAUTION

Neglecting to return the key switch to the stop position will cause the battery to discharge.

3. After the engine stops, close the fuel cock.
4. Lock the parking brake (Figure 20).

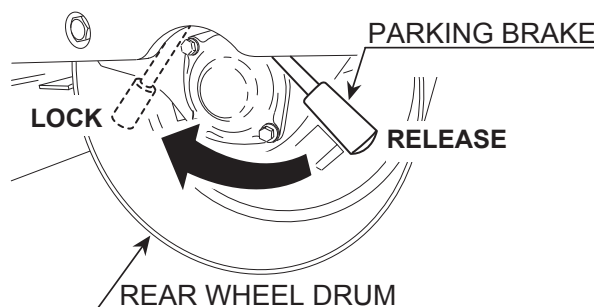


Figure 20. Parking Brake (Lock)

NOTICE

When leaving the machine, use the wheel stopper and remove the key. Never park or stop on a slope.

NOTICE

Parking brake system should always be kept clean to avoid mud deposits.

CAUTION

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

NOTICE

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

INSPECTION AND MAINTENANCE TABLE

To make sure your roller is always in good working condition, perform the maintenance inspection procedures before using.

Table 8. Inspection

ITEM	CHECK	FREQUENCY
Parking brake	Movement Check	Daily
Stopper	With or Without Breakage	Daily
Sprinkler	Leaks, Looseness, Cracks, Abrasion	Daily
Body	Cracks, Skewness	Daily
Fuel tank	Leak, Quantity of Fuel, Dirt	Daily
Hook	Falling Off, Breakage, Cracks, Loose Bolts and Nuts	Daily
Fuel system	Leak	Daily
Fuel filter	Dirt	Daily
Engine oil	Leak, Quantity of Oil, Dirt	Daily
Cooling water	Leak, Quantity of Coolant	Daily
Oil tank	Leak, Quantity of Oil, Dirt	Daily
V-Belt for Vibrator	Cracks, Tension	Daily
Fan Belt (Engine)	Cracks, Tension	Daily
Oil Pressure Pipe Line System	Leak, Looseness, Cracks, Abrasion	Daily
Horn	Operation Check	Daily
Headlight	Light Check	Daily
Travel Lever	Falling Off, Breakage, Cracks, Loose Bolts and Nuts	Daily
Deadman Device	Operation Check	Daily
Scraper	Curve, Signs of Damage, Adjust	Daily
Other Bolts and Nuts	Loose, Falling Off	Daily
Fan Belt (Engine)	Check, Adjust	Every 10 hours
Engine Oil	Change Oil	After first 50 hours
Engine Oil Filter	Clean	After first 50 hours
Air-Cleaner Element	Clean	After first 50 hours
Hydraulic Oil Filter	Change	After first 50 hours
Fan Belt (Engine)	Change	After first 50 hours
Wiring	Check	After first 50 hours

Table 10. Inspection (continued)

ITEM	CHECK	FREQUENCY
Traveling Lever Corollary Part	Grease	Every 50 hours
Hydraulic Pump Lever	Grease	Every 50 hours
Deadman Device	Grease	Every 50 hours
Handle Stopper	Grease	Every 50 hours
Parking Brake	Grease	Every 50 hours
Engine Oil	Change	Every 100 hours
Battery Terminal	Clean	Every 100 hours
Air Cleaner Element	Clean	Every 100 hours
Fan Belt (Engine)	Check	Every 100 hours
Engine Oil Filter	Cleaning	Every 200 hours
Hydraulic Oil Filter	Change	Every 300 hours
Fuel Filter	Change	Every 450 hours
Fuel Tank Sediment	Remove	Every 450 hours
Inside of Radiator (Engine)	Clean	Every 450 hours
Fan Belt (Engine)	Change	Every 500 hours
Valve Clearance (Engine)	Adjust	Every 800 hours
Hydraulic Oil	Change	After 1000 hours
Injection Nozzle (Engine)	Check, Clean	After 1500 hours
Injection Pump (Engine)	Check	After 2000 hours
Air Cleaner Element	Change	After 1 year
Fuel Return Pipe And Band	Change	After 2 years
Coolant	Change	After 2 years
Battery	Change	After 2 years
Hydraulic Hose	Change	As Needed
Electromagnetic Clutch	Change (Gap Limit - 0.5 mm)	As Needed

DAILY SERVICE

1. Check for leakage of fuel or oil.
2. Check for loose screws including tightness. See Table 7 below (tightening torque), for retightening:

Table 7. 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	300~ 350	650 ~ 700					

3. Remove soil and clean the bottom of roller.
4. Check hydraulic pump, piping and hose for any leakage.
5. Check hydraulic hose connections with wrench applied for tightness. A loosened hydraulic hose can be a cause for leakage.
6. Check engine oil.

ENGINE OIL REPLACEMENT

1. To drain engine oil, remove the oil strainer at the bottom of the engine (Figure 21). Oil may be drained more easily when it is warm after operation. (For more details, refer to Engine Owner's Manual).



Figure 21. Engine Oil Draining

2. Clean the strainer before putting it back.
3. To replace engine oil, refer to the Inspection section.

AIR CLEANER

1. Remove air cleaner element from the air cleaner (Figure 22).



Figure 22. Engine Air Cleaner

2. If dust and dirt are on the element, blow them off by sending compressed air from inside in vertical direction (Figure 23).



Figure 23. Cleaning Air Cleaner Element

NOTICE

When cleaning the element with compressed air, the air pressure should not exceed 0.69MPa (7.0kgf/cm²).

3. If the element is dirty with carbon and oil, wash carefully with mild detergent.

FAN BELT ADJUSTMENT

1. Push the fan belt (middle of the fan drive pulley and tension pulley) at 98N (about 10 kgf) to check the deflection (Figure 24).
2. If the level of deflection is not of the standard value, adjust it with tension bolt.
3. Check the belt visually to see if there is any breakage, crack or discoloration on the surface skin. If any defect is found, replace it with a new one. Also, replace if the belt is worn and it touches the bottom of the pulley.

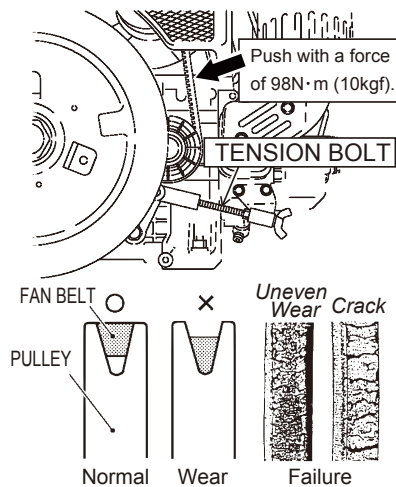
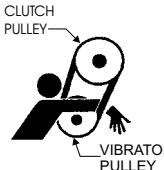


Figure 24. Fan Belt Adjustment

CAUTION

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



CLUTCH PULLEY

VIBRATOR PULLEY

FUEL FILTER

1. Close the fuel filter cock.
2. Remove the retainer ring above the cup to remove the filter cup and the element (Figure 25).

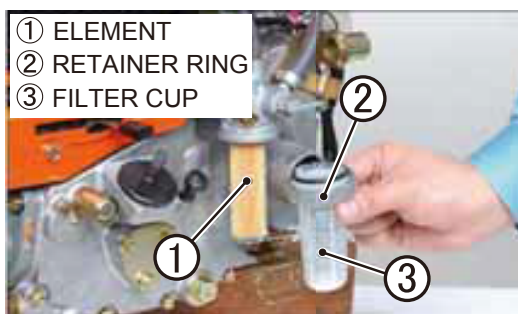


Figure 25. Fuel Filter Replacement

3. Rinse inside the cup with light oil, and install a new filter element.
4. Tighten the retainer ring to prevent dust and dirt entry and fuel leakage, then open the filter cock.

ADDING COOLANT

1. Remove the radiator cap to see if the coolant is filled to the cap opening.
2. If the coolant has decreased due to evaporation, add distilled water.
3. In case of leakage, mix antifreeze liquid with the distilled water before adding.
4. If coolant needs to be replaced, place the drain cock in the open position and drain the existing coolant to a suitable container (Figure 26).

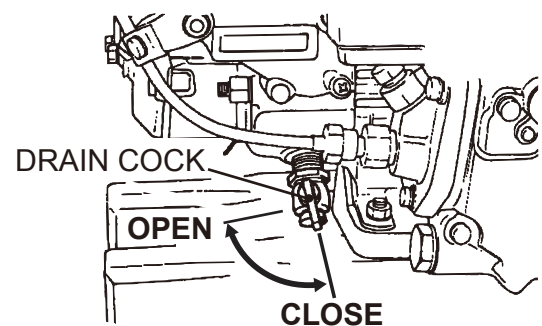


Figure 26. Coolant Drain Cock

5. Replace with 1.27 quarts (1.2 liters) coolant.

NOTICE

For handling of antifreeze, refer to the operation manual provided by the manufacturer.

HYDRAULIC SYSTEM INSPECTION AND SERVICE

1. Check motor and pump for any damage.
2. Check hoses and pipes for proper tightness and make sure there are no leaks.
3. Check oil tank for proper oil level. Make sure hydraulic oil has not whitened or emulsified. Whitish color means aeration in pump. Retighten pipe and correct level of oil. Emulsification means water in the hydraulic oil. If emulsification happens, replace the oil. See Inspection section for oil replacement procedure.

NEUTRAL POSITION ADJUSTMENT

1. If neutral position for forward and reverse travel has been displaced, conduct the neutral adjustment.
2. The travelling lever gets lightly locked at the neutral position. Adjust the turnbuckle part of the running cable at the hydraulic pump side to correct the position.

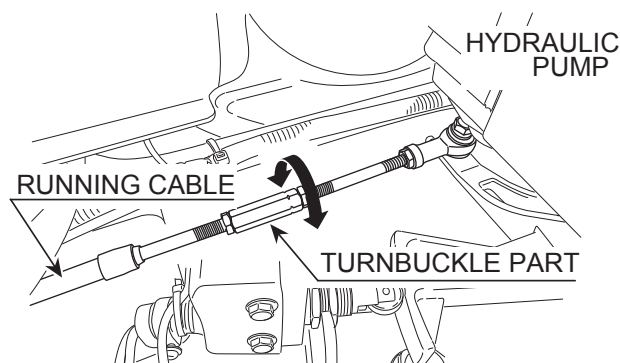


Figure 27. Adjustment of Neutral Position

NOTICE

This machine has a micro-switch that allows the engine to start only at the stop (neutral) position to prevent uncontrolled running when the engine is started.

3. Check and make sure that the roller at the end of the micro-switch is at the dent of the camshaft of the lever (hydraulic pump). Adjust if necessary (Figure 28).

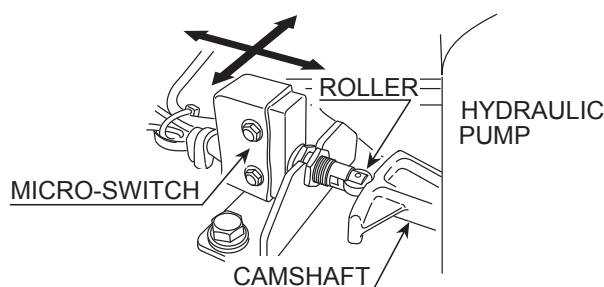


Figure 28. Micro-Switch Adjustment

4. After adjustment, lightly apply grease to the roller bearing of the micro-switch.

BATTERY MAINTENANCE

NOTICE

Read and understand the battery safety information in the front of this manual before performing maintenance on the battery.

5. Check the battery terminals periodically to ensure that they are in good condition.
6. Looseness and corrosion of the terminal will lead to contact trouble. If white powder is found on the terminal, clean with lukewarm water then apply grease on it. If the corrosion is serious, replace the battery with a new one.
7. Check battery for cracks or any other damage. If white pattern appears inside the battery or paste has accumulated at the bottom, replace the battery.
8. If the machine will not be in operation for a long period of time, charge the battery sufficiently, tighten all caps correctly, store in cool dry place and check the battery charge level every month to maintain the performance of the battery.

BATTERY CABLE CONNECTION

1. When removing cable, disconnect the negative terminal first (Figure 29) then the positive terminal. When connecting the battery, connect the positive terminal first.

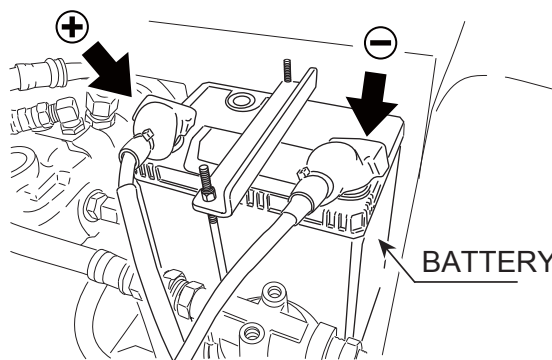


Figure 29. Battery Connection

MACHINE MAINTENANCE

1. At the end of each day's operation, wash dust and dirt off the machine. Clean area around drums and scrapers making sure all mud is removed.

NOTICE

When using a high pressure water sprayer, be careful not to let water enter the engine from the engine muffler and air cleaner.

If water enters the engine cylinder, water hammer effect might occur. See Water Hammer Effect Information section for explanation.

An air breather is equipped with the oil tank (Figure 30). A cover is provided to prevent entry of water into the oil tank. Be careful not to let the cover fall off when cleaning with a high pressure water sprayer.

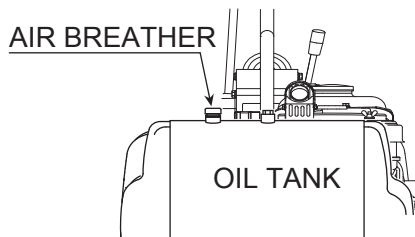


Figure 30. Air Breather Location

2. Drain water tank completely. Wash and clean inside the tank if it is dirty.
3. Cover the machine to prevent dust and store in a dry place away from sun exposure and high humidity.

LONG TERM STORAGE

1. Conduct thorough lubrication and oil change.
2. Disconnect battery terminals and dismount battery from machine. Store battery.
3. If there is a possibility that ambient temperature will drop below freezing point, add antifreeze agent to coolant.
4. Cover the inlet and outlet of air cleaner and muffler securely.
5. Store machine indoors. Do not leave outdoors.

WATER HAMMER EFFECT INFORMATION

When water enters inside the diesel engine cylinder, and because water cannot be compressed like air, shock and high water pressure occur inside the cylinder. This causes damage to the parts inside the engine. This phenomenon is called water hammer effect.

TROUBLESHOOTING

Troubleshooting - Roller		
SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Unit does not travel.	Parking brake still engaged?	Release parking brake lever.
Unit does not travel or travel is not smooth.	Defective centrifugal clutch?	Repair or replace clutch.
	Damaged rubber coupling and flange?	Replace rubber coupling and flange.
	Defective travel cable and link?	Repair or replace travel cable and link.
	Damaged scraper or too much mud in scraper?	Replace or repair scraper.
	Damaged or clogged oil filter?	Replace filter.
	Damaged or leaking hydraulic pipe?	Repair or replace parts.
	Low oil level or contaminated oil?	Replenish or replace oil.
	Damaged or leaking hydraulic pump?	Repair or replace hydraulic pump.
	Damaged or leaking hydraulic motor?	Repair or replace hydraulic motor.
	Damaged drum gear and bearing?	Repair parts.
	Bad drum rotation?	Repair or replace drum.
Unit does not vibrate or has weak vibration.	Defective centrifugal clutch?	Repair or replace clutch.
	Damaged or slipping V-belt?	Replace V-belt or adjust tension.
	Damaged vibration cable and linkage?	Replace or repair vibration cable and linkage.
	Damaged vibration clutch?	Adjust or replace clutch.
	Defective clutch vibrator pulley V-belt?	Replace V-belt.
	Vibrator does not turn smoothly with hand?	Check and repair vibrator. Check if oil level is not excessively high.

TROUBLESHOOTING

Troubleshooting (Engine)		
Symptom	Possible Problem	Solution
Engine will not start or start is delayed, although engine can be turned over.	No Fuel reaching injection pump?	Add fuel. Check entire fuel system.
	Defective fuel pump?	Replace fuel pump.
	Fuel filter clogged?	Replace fuel filter and clean tank.
	Faulty fuel supply line?	Replace or repair fuel line.
	Compression too low?	Check piston, cylinder and valves. Adjust or repair per engine repair manual.
	Fuel pump not working correctly?	Repair or replace fuel pump.
	Oil pressure too low?	Check engine oil pressure.
	Low starting temperature limit exceeded?	Comply with cold starting instructions and proper oil viscosity.
	Defective battery?	Charge or replace battery.
	Air or water mixed in fuel system?	Check carefully for loosened fuel line coupling, loose cap nut, etc.
At low temperatures engine will not start.	Engine oil too thick?	Refill engine crankcase with correct type of oil for winter environment.
	Defective battery?	Replace battery.
Engine fires but stops soon as starter is switched off.	Fuel filter blocked?	Replace fuel filter.
	Fuel supply blocked?	Check the entire fuel system.
	Defective fuel pump?	Replace fuel pump.
Engine stops by itself during normal operation.	Fuel tank empty?	Add fuel.
	Fuel filter blocked?	Replace fuel filter.
	Defective fuel pump?	Replace fuel pump.
	Mechanical oil pressure shutdown sensor stops the engine due to low oil?	Add oil. Replace low oil shutdown sensor if necessary.
Low engine power, output and speed.	Fuel tank empty?	Replace fuel filter.
	Fuel filter clogged?	Replace fuel filter.
	Fuel tank venting is inadequate?	Ensure that tank is adequately vented.
	Leaks at pipe unions?	Check threaded pipe unions tape and tighten unions as required.
	Speed control lever does not remain in selected position?	See engine manual for corrective action.
	Engine oil level too full?	Correct engine oil level.
	Injection pump wear?	Use No. 2-D diesel fuel only. Check the fuel injection pump element and delivery valve assembly and replace as necessary.

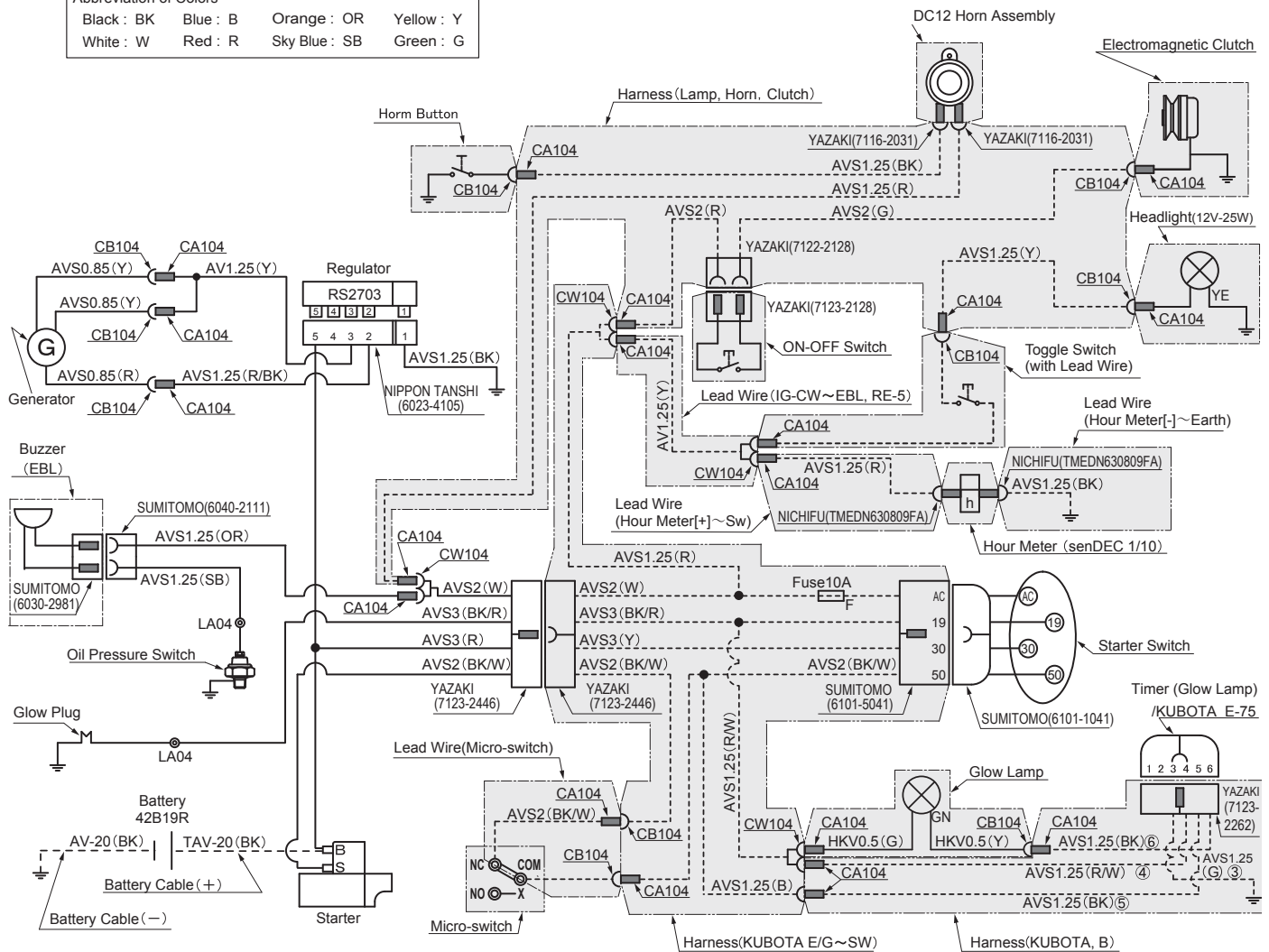
TROUBLESHOOTING

Troubleshooting (Engine) - continued		
Symptom	Possible Problem	Solution
Low engine power output and low speed, black exhaust smoke.	Air filter blocked?	Clean or replace air filter.
	Incorrect valve clearances?	Adjust valves per engine specification.
	Malfunction at injector?	See engine manual.
Engine overheats.	Too much oil in engine crankcase?	Drain off engine oil down to uppermark on dipstick.
	Entire cooling air system contaminated/ blocked?	Clean cooling air system and cooling fin areas.
	Fan belt broken or elongated?	Change belt or adjust belt tension.
	Coolant insufficient?	Replenish coolant.
	Radiator net or radiator fin clogged with dust?	Clean net or fin carefully.
	Fan, radiator, or radiator cap defective?	Replace defective part.
	Thermostat defective?	Check thermostat and replace if necessary.
	Head gasket defective or water leakage?	Replace parts.

WIRING DIAGRAM

Abbreviation of Colors

Black : BK	Blue : B	Orange : OR	Yellow : Y
White : W	Red : R	Sky Blue : SB	Green : G



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

MIKASA MRH601DS VIBRATORY ROLLER 1 TO 3 UNITS

Qty.	P/N	Description
2.....	954001380.....	ELEMENT, HYDRAULIC OIL
1.....	070100361.....	V-BELT, A-36 (VIBRATOR)
1.....	954408580.....	STRAINER, WATER TANK
2.....	518910020.....	SPRINKLING PIPE ASSY.
1.....	956100034.....	THROTTLE WIRE
1.....	517342410.....	CABLE, PUSH-PULL
4.....	939010350.....	SHOCK ABSORBER

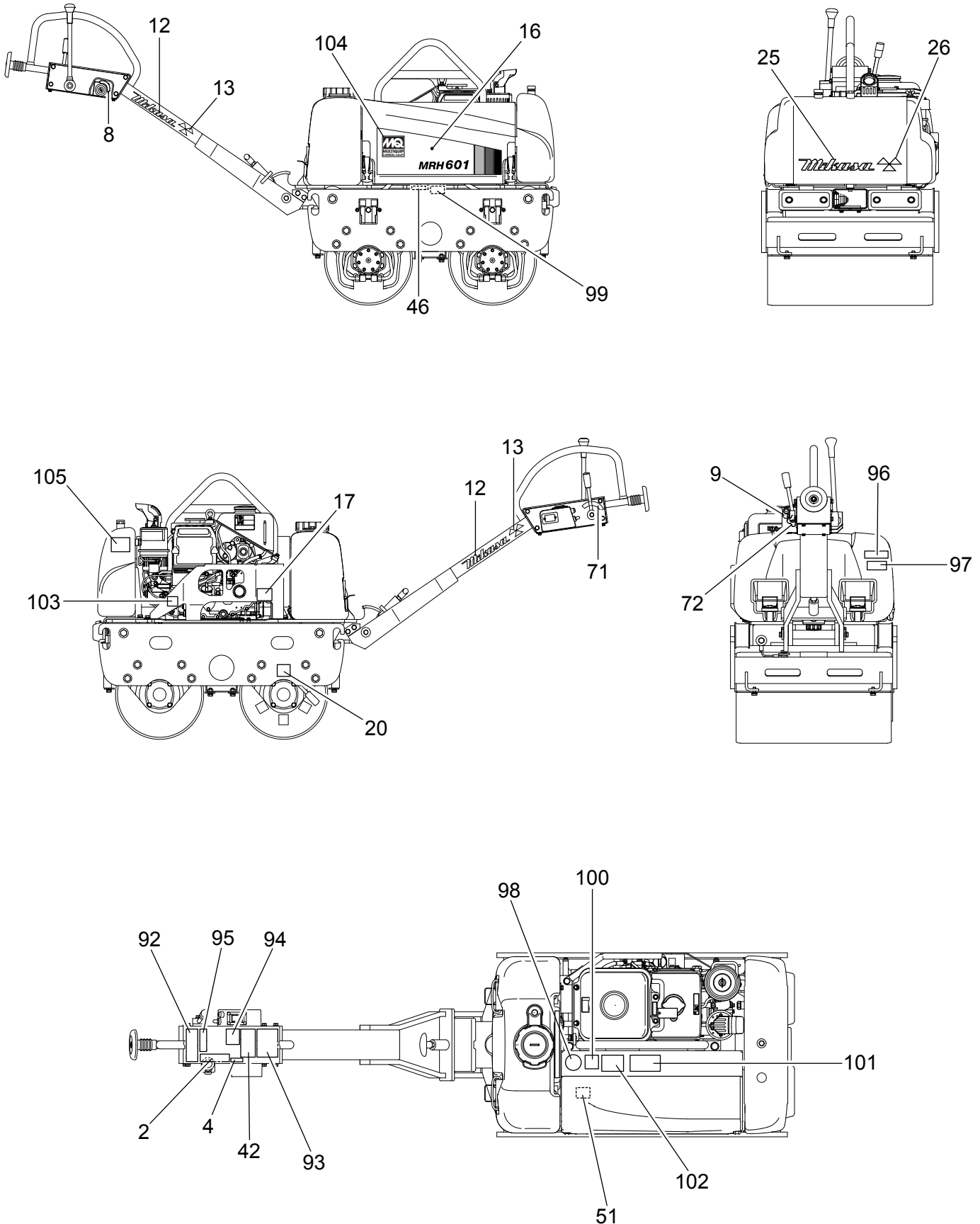
KUBOTA EA330-E3-NB3-HGMS DIESEL ENGINE 1 TO 3 UNITS

Qty.	P/N	Description
3.....	1497111180.....	ELEMENT, AIR CLEANER
3.....	1T02143560	ELEMENT, FUEL FILTER
3.....	1491132110.....	FILTER, OIL
3.....	0481140140.....	O-RING, OIL FILTER
1.....	1685165512.....	GLOW PLUG
1.....	1G82097010.....	V-BELT
1.....	1252141030.....	CAP, FUEL TANK
1.....	1254541350.....	FILTER, FUEL TANK
1.....	6C04055412	SWITCH, STARTER
2.....	1524863700.....	KEY, STARTER SWITCH
1.....	1152139013.....	SWITCH, OIL

NOTICE

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

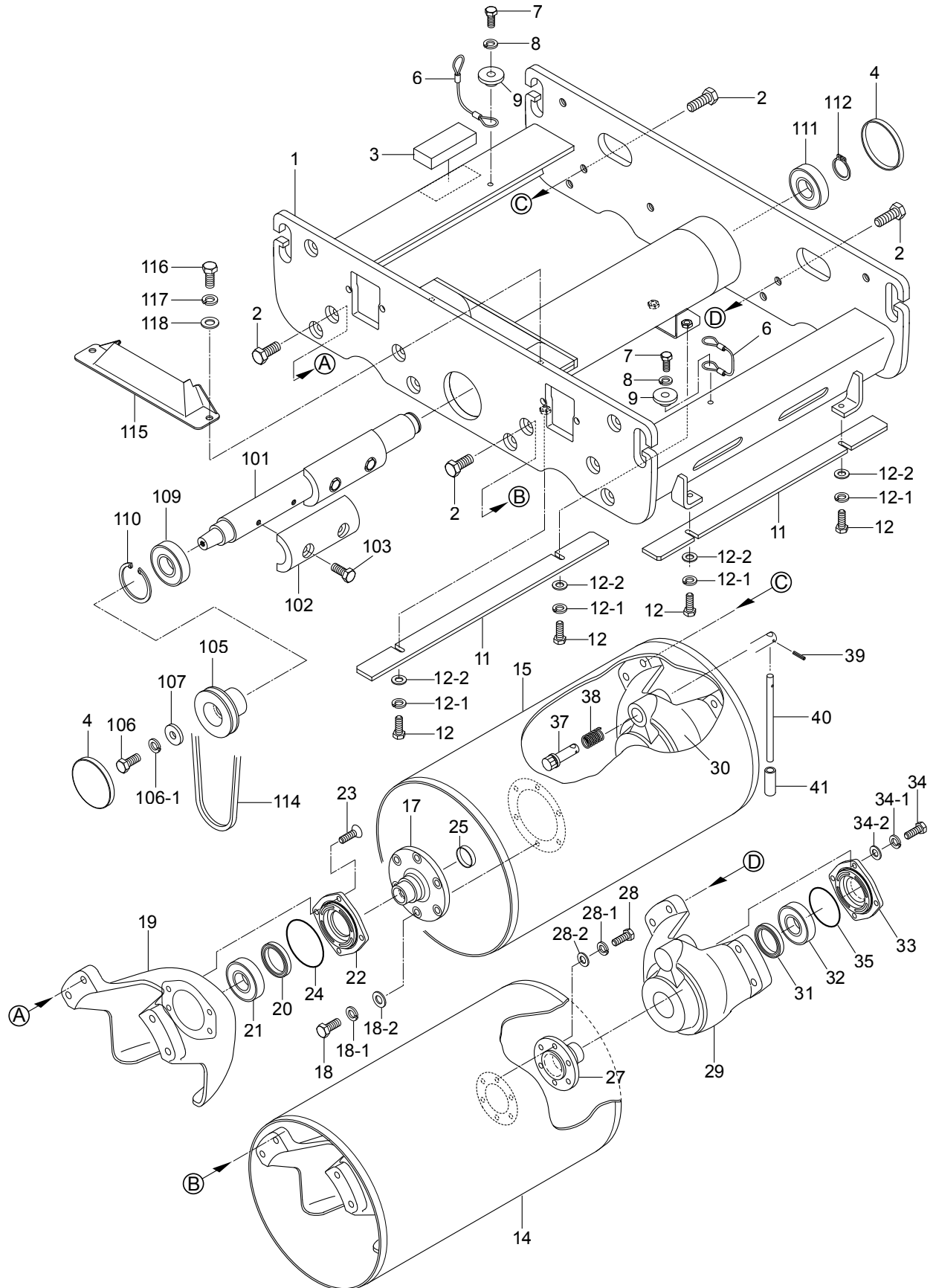
NAMEPLATES AND DECALS



NAMEPLATES AND DECALS

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
2	920108070	DECAL: FORWARD AND REVERSE	1	
4	920217900	DECAL: GLOW LAMP	1	
8	920215140	LABEL: MAIN SWITCH	1	
9	920217140	DECAL: HORN (ICON)	1	
12	920217130	DECAL: MIKASA MARK (W) 200L	2	
13	920217110	DECAL: MIKASA MARK 35X70	2	
16	920217340	DECAL: MODEL (OR)	1	
17	920217860	DECAL: SPRINKLER	1	
20	920217660	DECAL: CAUTION (BRAKE)	1	
25	920217120	DECAL: MIKASA MARK (W) 250L	1	
26	920217100	DECAL: MIKASA MARK 40X80	1	
42	920202910	DECAL: BUZZER (HYDRAULIC)	1	
46	920112570	DECAL: V-BELT, A-36	1	
51	920217490	DECAL: MODEL	1	
71	920206080	DECAL: E/G THROTTLE DIAL/E	1	
72	920217150	DECAL: HEAD LAMP ICON	1	
92	920202920	DECAL: CAUTION (BRAKE)	1	
93	920205640	DECAL: WARNING (PARKING)	1	
94	920212600	DECAL: CAUTION (VIB. ON-OFF)	1	
95	920214100	DECAL: E/G FIRE WARNING	1	
96	920200320	DECAL: WATER TANK/EXP	1	
97	920104280	DECAL: CAUTION/DRAINAGE	1	
98	920203330	EAR PROTECTION LABEL	1	
99	920206280	DECAL: DANGER	1	
100	920206290	DECAL: CAUTION (MANUAL/EXP)	1	
101	920217830	DECAL: OPERATION	1	
102	920217840	DECAL: WARNING (SLOPE)	1	
103	920217850	DECAL: E/G SET R.P.M.	1	
104	920201910	DECAL: MQ MARK 110X100	1	
105	920213000	DECAL, OIL TANK/EXP	1	

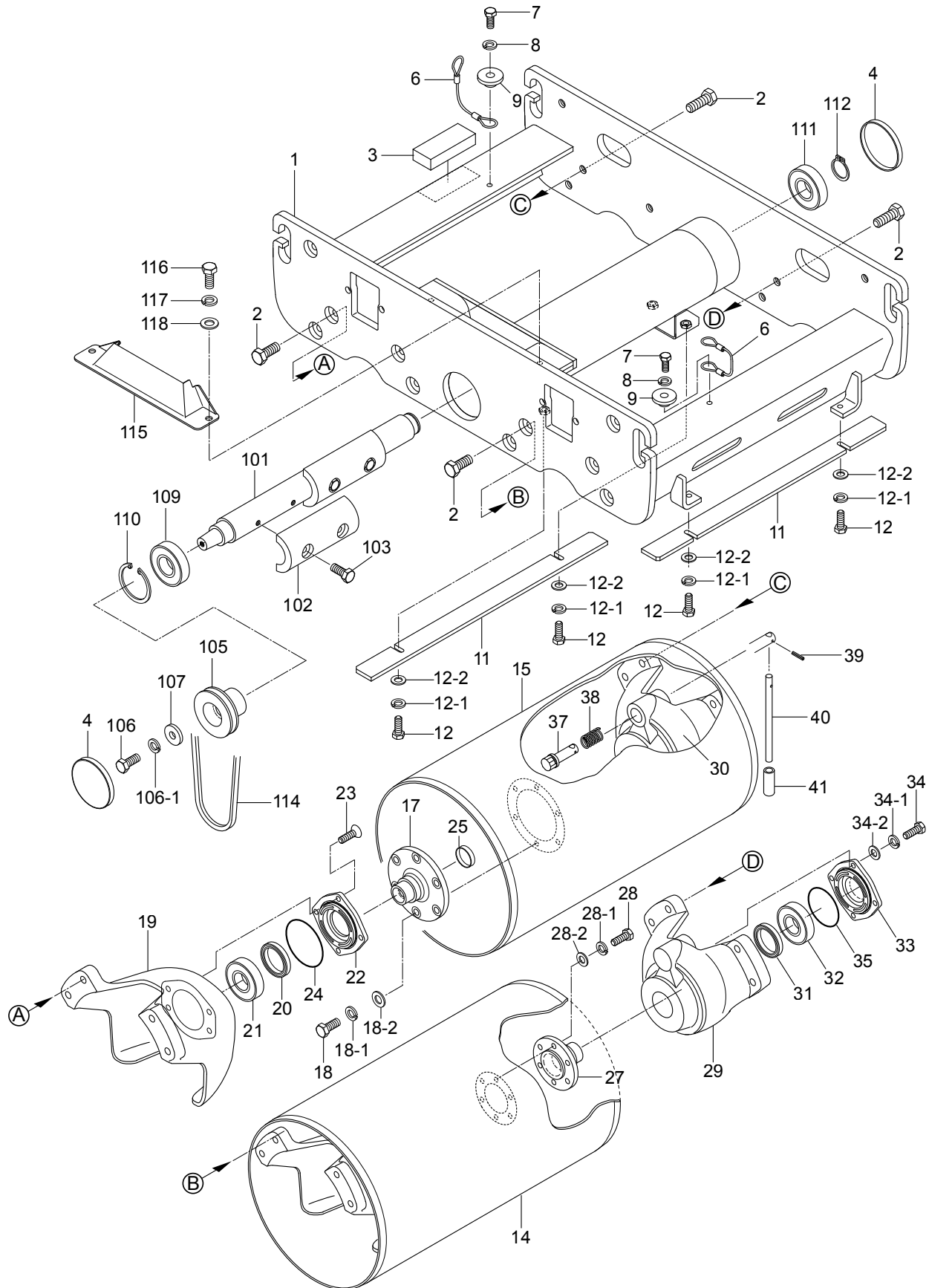
AXLE AND VIBRATOR ASSY.



AXLE AND VIBRATOR ASSY.

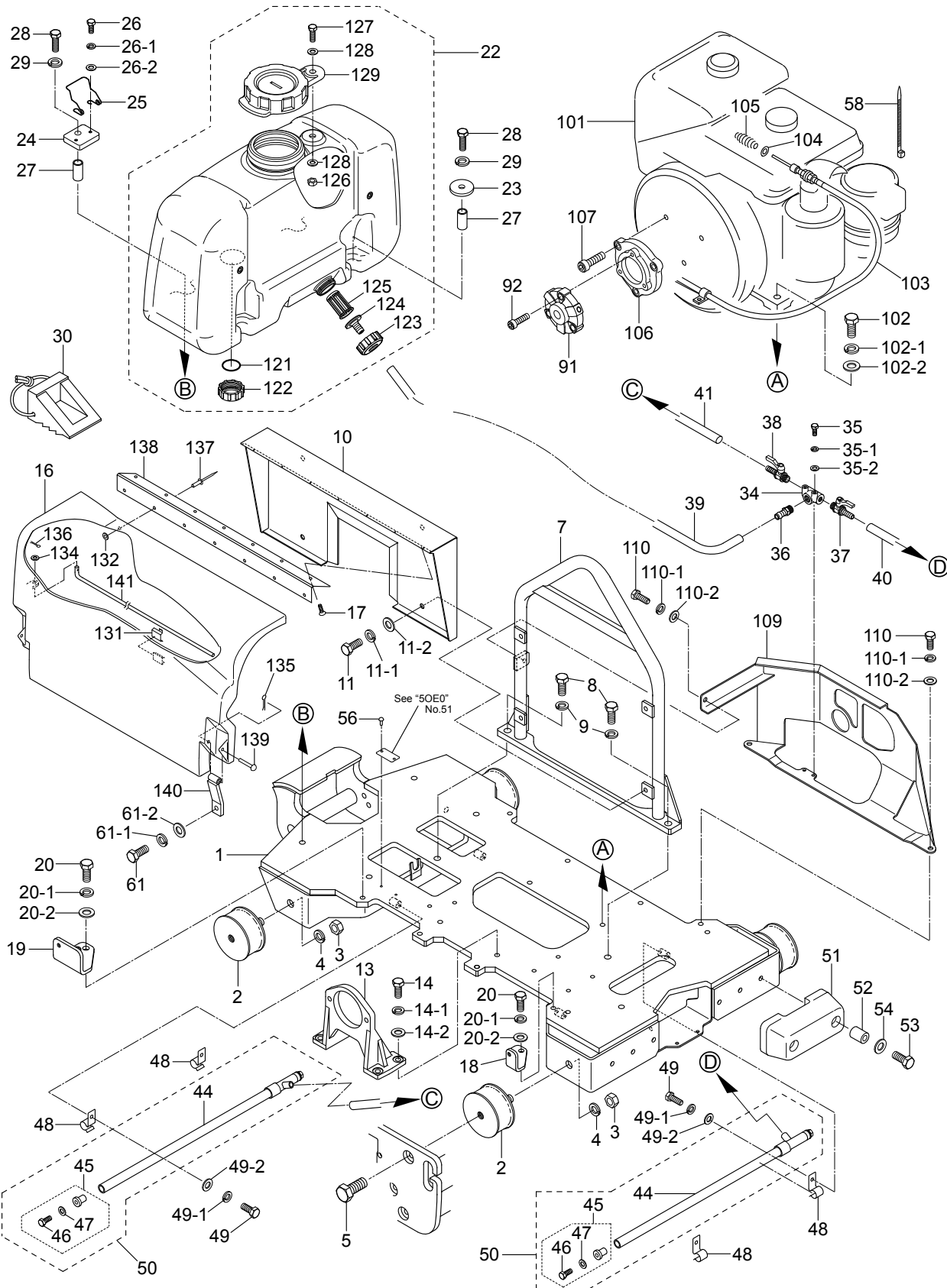
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	518120790	FRAME	1	
2	001221435	BOLT 14X35	16	
3	518466220	RUBBER PLATE	1	
4	953408650	SEAL CAP 100X10	2	
6	518466210	WIRE ROPE	2	
7	012212035	BOLT 12X35	4	REPLACES P/N 001221235
8	030212300	WASHER, LOCK M12	4	
9	518466180	SPACER 13X19X40XL15	4	
11	518351420	SCRAPER	4	
12	0105091025	BOLT 10X25	8	REPLACES P/N 001221025
12-1	030210250	WASHER, LOCK M10	8	
12-2	031110160	WASHER, FLAT M10	8	
14	518120730	DRUM (F)	1	
15	518120740	DRUM (R)	1	
17	518351430	FLANGE	2	
18	012010030	BOLT 10X30	12	REPLACES P/N 001221030
18-1	030210250	WASHER, LOCK M10	12	
18-2	031110160	WASHER, FLAT M10	12	
19	518120620	BRACKET, REAR DRUM/R	2	
20	060405010	OIL SEAL	2	
21	046006308	BEARING	2	
22	518351190	BEARING COVER (R)	2	
23	009120412	SUNK HEAD BOLT 8X25	8	
24	050300950	O-RING	2	
25	953408640	SEAL CAP 32X7	2	
27	518351440	DRUM SHAFT (L)	2	
28	012010030	BOLT 10X30	12	REPLACES P/N 001221030
28-1	030210250	WASHER, LOCK M10	12	
28-2	031110160	WASHER, FLAT M10	12	
29	518120630	BRACKET, REAR DRUM/LF	1	
30	518120640	BRACKET, REAR DRUM/LR	1	
31	060405010	OIL SEAL	2	
32	046006308	BEARING	2	
33	518351200	BEARING COVER (L)	2	
34	011208025	BOLT 8X25	8	REPLACES P/N 001220825
34-1	030208200	WASHER, LOCK M8	8	
34-2	0401450080	WASHER, FLAT M8	8	REPLACES P/N 031108160
35	050300950	O-RING	2	
37	518466110	LOCK PIN, BRAKE	1	
38	518466160	SPRING, BRAKE	1	
39	025405025	SPRING PIN 5X25	1	
40	518466120	LOCK HANDLE	1	
41	953408890	CAP, BRAKE	1	
101	518351380	ROTARY SHAFT	1	
102	518465960	ECCENTRIC ROTATOR	2	
103	012210035	BOLT 10X35	4	REPLACES P/N 001221035
105	518465910	PULLEY	1	

AXLE AND VIBRATOR ASSY. CONTINUED



AXLE AND VIBRATOR ASSY. CONTINUED

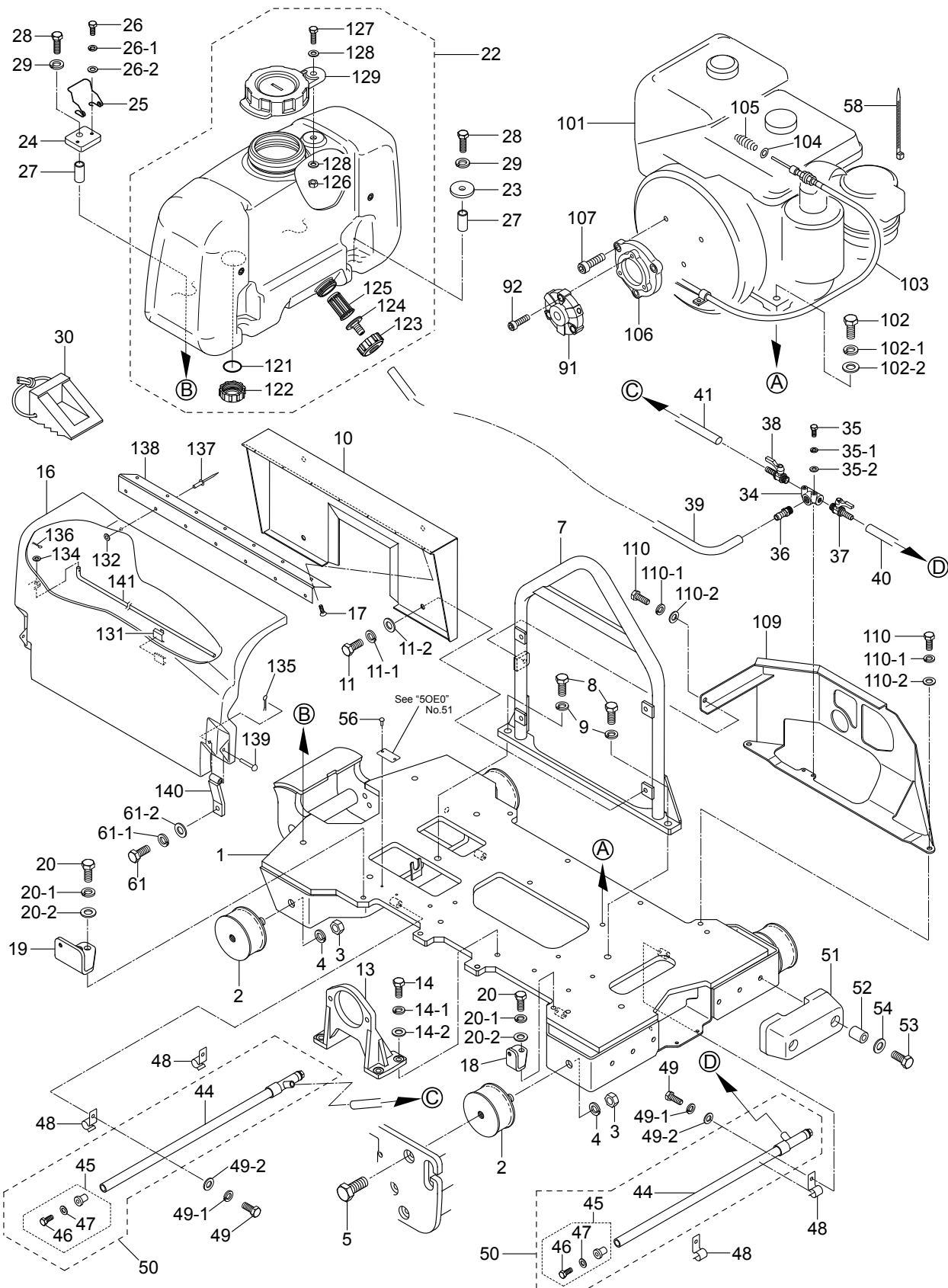
<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
106	012210035	BOLT 10X35	1	REPLACES P/N 001221035
106-1	030210250	WASHER, LOCK M10	1	
107	952402330	WASHER	1	
109	046006308	BEARING	1	
110	080100900	STOP RING	1	
111	046006208	BEARING	1	
112	080200400	STOP RING	1	
114	070100361	V-BELT A-36	1	
115	518351390	GUARD, V-BELT	1	
116	012210020	BOLT 10X20	2	REPLACES P/N 001221020
117	030210250	WASHER, LOCK M10	2	
118	031110160	WASHER, FLAT M10	2	



BODY ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	518120820	BASE	1	
2	939010350	SHOCK ABSORBER	4	
3	020316130	NUT M16	4	
4	030216400	WASHER, LOCK M16	4	
5	001221625	BOLT 16X25	4	
7	518218650	HOOK	1	
8	001221435	BOLT 14X35	2	
9	030214350	WASHER, LOCK M14	2	
10	518218660	COVER, ENGINE	1	
11	012210020	BOLT 10X20	4	REPLACES P/N 001221020
11-1	030210250	WASHER, LOCK M10	4	
11-2	031110160	WASHER, FLAT M10	4	
13	518218620	PUMP BRACKET	1	
14	012010030	BOLT 10X30	4	REPLACES P/N 001221030
14-1	030210250	WASHER, LOCK M10	4	
14-2	031110160	WASHER, FLAT M10	4	
16	518920020	BONNET COVER	1	
17	092004008	SCREW 4X8	7	
18	518467210	STAY, COVER (R)	1	
19	518467220	STAY, COVER (L)	1	
20	0105091025	BOLT 10X25	2	REPLACES P/N 001221025
20-1	030210250	WASHER, LOCK M10	2	
20-2	031110160	WASHER, FLAT M10	2	
22	518930020	WATER TANK, ORANGE	1	
23	952405950	WASHER	2	
24	518466050	PLATE, WATER TANK	2	
25	515449870	HOLDER, STOPPER	2	
26	011006010	BOLT 6X10	4	REPLACES P/N 001220610
26-1	030206150	WASHER, LOCK M6	4	
26-2	952404470	WASHER, FLAT M6	4	REPLACES P/N 031106100
27	506434690	SPACER, WATER TANK	4	
28	001221253	BOLT 12X65	4	
29	030212300	WASHER, LOCK M12	4	
30	517338540	STOPPER	2	
34	518466200	SEPARATE PIPE	1	
35	011206020	BOLT 6X20	2	REPLACES P/N 001220620
35-1	030206150	WASHER, LOCK M6	2	
35-2	952404470	WASHER, FLAT M6	2	REPLACES P/N 031106100
36	954406210	CONNECTOR 3/8X12	1	
37	954404221	COCK PT1/4, (AL)/L	1	
38	954403241	COCK PT1/4, (AL)/R	1	
39	959028721	HOSE	1	
40	515450440	WATER HOSE (R)	1	
41	518466320	WATER HOSE (R)	1	
44#	518351530	SPRINKLING PIPE	2	
45#	515910050	CAP ASSY, W/BOLT, WASHER.....	4	INCLUDES ITEMS W/ @
46@	011206020	BOLT 6X20	4	REPLACES P/N 001220620
47@	952404470	WASHER, FLAT M6	4	REPLACES P/N 031106100
48	515449900	CLAMP	4	

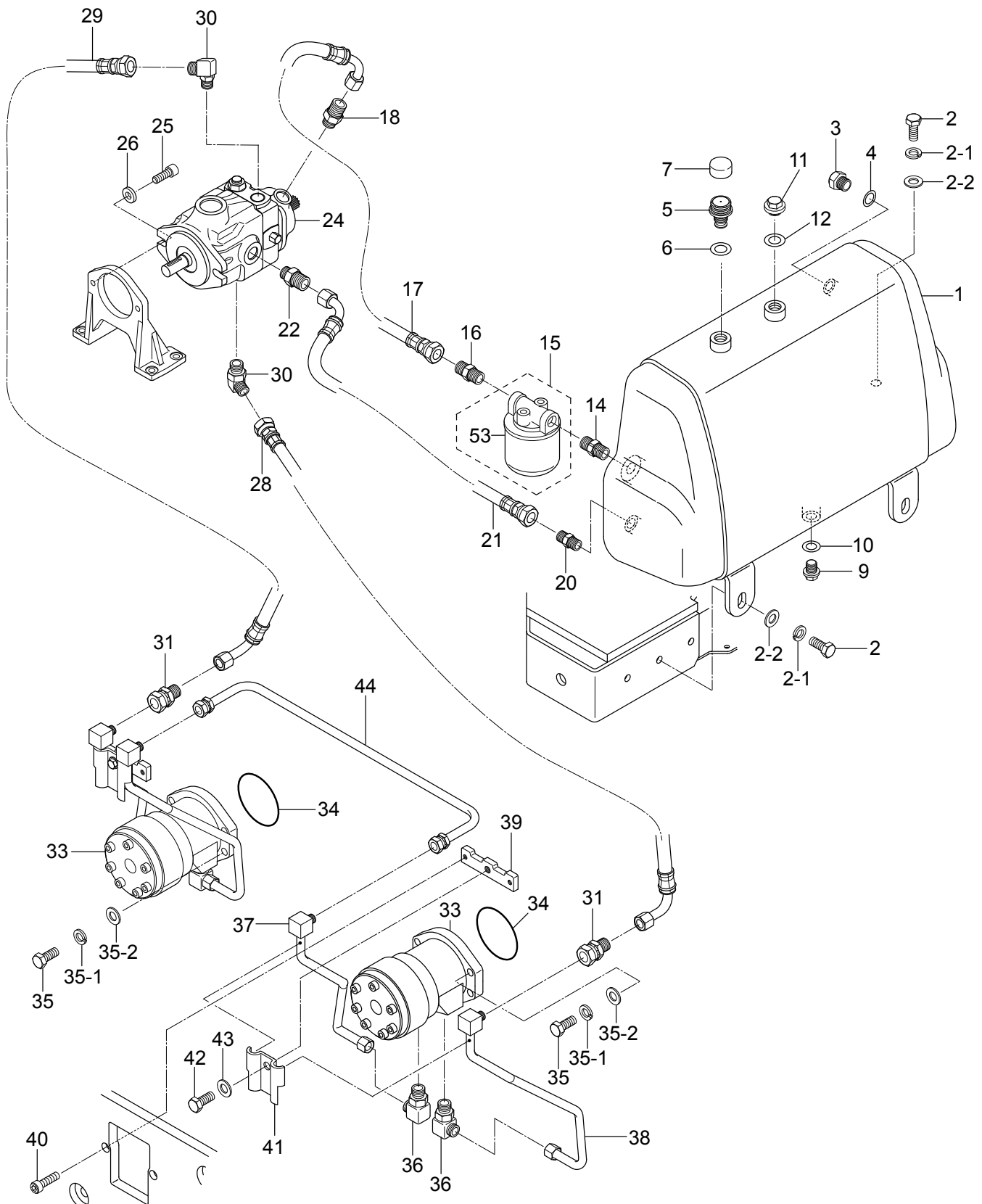
BODY ASSY. CONTINUED



BODY ASSY. CONTINUED

NO.	PART NO.	PART NAME	QTY.	REMARKS
49	001220610	BOLT 6X10 T	4	
49-1	030206150	WASHER, LOCK M6	4	
49-2	031106100	WASHER, FLAT M6	4	
50	518910020	SPRINKLING PIPE ASSY	2	INCLUDES ITEMS W/ #
51	515336210	BUMPER	2	
52	515449720	SPACER, BUMPER	4	
53	012210040	BOLT 10X40	4	REPLACES P/N 001221040
54	031110160	WASHER, FLAT M10	4	
56	233010020	RIVET	2	
58	507010110	CLAMP	1	
61	014208020	BOLT 8X20	2	REPLACES P/N 001220820
61-1	030208200	WASHER, LOCK M8	2	
61-2	0401450080	WASHER, FLAT M8	2	REPLACES P/N 031108160
91	518351500	CENTER FLEX	1	
92	009110038	SOCKET HEAD BOLT 8X30 ZN	3	
101	915533002	ENGINE, KUBOTA EA330-E3-NB3-HGMS	1	
102	012210035	BOLT 10X35	4	REPLACES P/N 001221035
102-1	030210250	WASHER, LOCK M10	4	
102-2	031110160	WASHER, FLAT M10	4	
103	956100034	THROTTLE WIRE	1	
104	58042	WASHER, FLAT M4	1	REPLACES P/N 031104080
105	402010110	COIL SPRING	1	REPLACES P/N 0830000010
106	518351240	COUPLING FLANGE	1	
107	009110070	SOCKET HEAD BOLT 10X25	3	
109	518218680	ENGINE GUARD	1	
110	012210020	BOLT 10X20	3	REPLACES P/N 001221020
110-1	030210250	WASHER, LOCK M10	4	
110-2	031110160	WASHER, FLAT M10	4	
121	050710120	O-RING	1	
122	953408610	CAP, DRAIN	1	
123	954408620	ADAPTER, HOSE NIPPLE	1	
124	954408730	HOSE, NIPPLE	1	
125	954408580	STRAINER	1	
126	022910280	NYLON NUT M10	1	
127	001241030	BOLT 10X30	1	
128	033910160	WASHER, FLAT M10	2	
129	954300342	CAP, WATER TANK	1	
131	518351590	HOLDER, ROD	1	
132	952408750	WASHER	7	
133	033910260	WASHER, FLAT M5	2	
134	033910270	WASHER, FLAT M6	1	
135	025911030	SNAP PIN	2	
136	025911020	SNAP PIN	1	
137	518010040	BLIND RIVET	7	
138	518218710	RUBBER HINGE	1	
139	518466260	BUTTON HEAD PIN, COVER	2	
140	518466290	BONNET STRAP	2	
141	518466250	ROD, COVER	1	

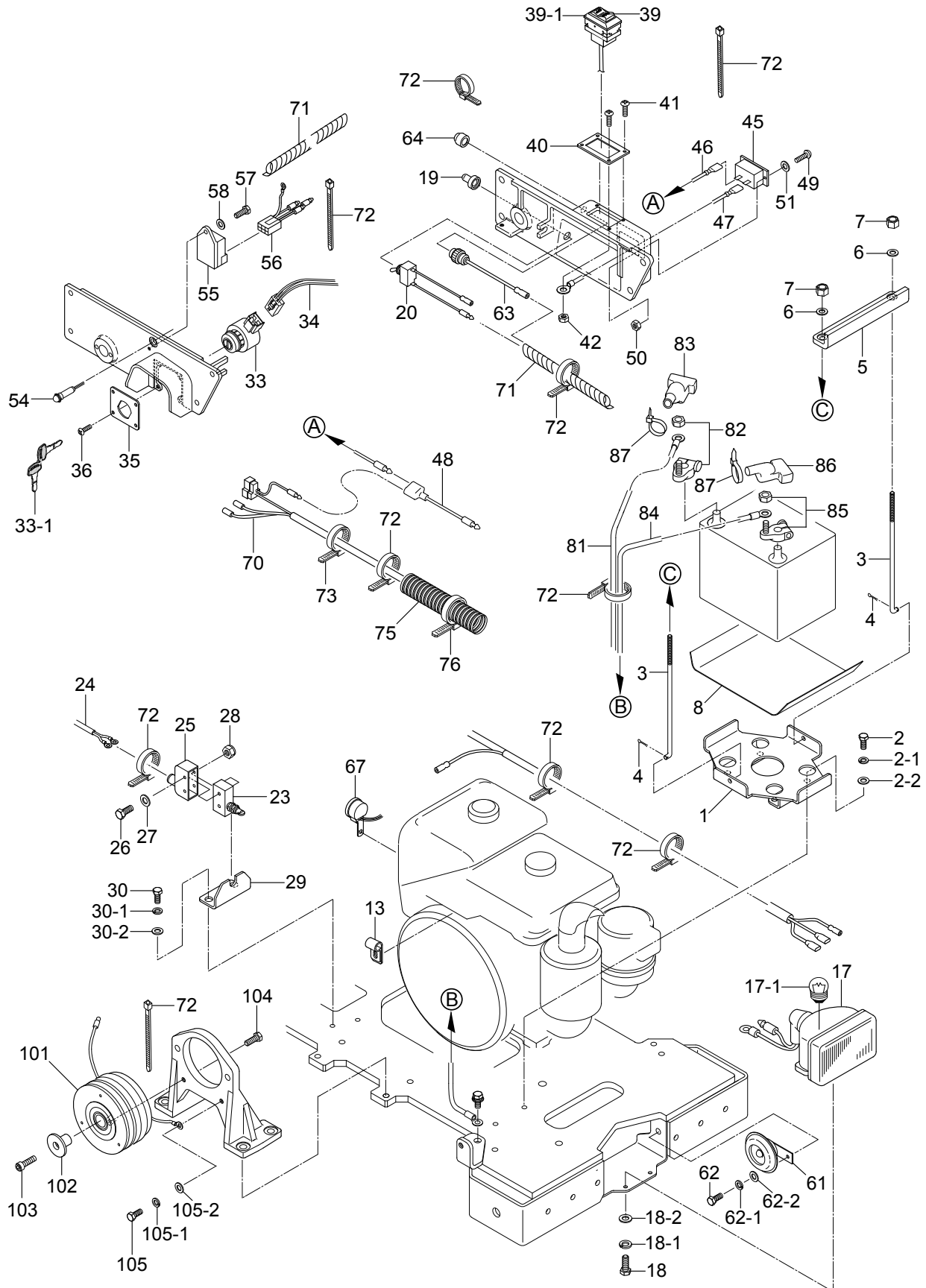
HYDRAULIC SYSTEM ASSY.



HYDRAULIC SYSTEM ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	518120830	OIL TANK	1	
2	0105091025	BOLT 10X25	4	REPLACES P/N 001221025
2-1	030210250	WASHER, LOCK M10	4	
2-2	031110160	WASHER, FLAT M10	4	
3	366460300	OIL GAUGE ASSY.	1	
4	953404670	COPPER PACKING	1	
5	518466240	BREATHER, OIL TANK	1	
6	953402930	COPPER PACKING	1	
7	458451630	BREATHER CAP	1	
9	953405270	PLUG	1	
10	953405260	PACKING	1	
11	953405840	DRAIN PLUG	1	
12	953402930	COPPER PACKING	1	
14	954003000	NIPPLE	1	
15	954003080	OIL FILTER ASSY.	1	
16	954003030	MALE CONNECTOR	1	
17	954002970	OIL HOSE	1	
18	954003020	MALE CONNECTOR, O-RING 1/2	1	
20	954003070	MALE CONNECTOR	1	
21	954003050	OIL HOSE 3/8"	1	
22	954003060	MALE CONNECTOR, O-RING 3/8	1	
24	518120880	VARIABLE PUMP	1	
25	009110019	SOCKET HEAD BOLT 10X30	2	
26	952404110	COLLAR 10.5X22X5	2	
28	954002960	OIL HOSE 3/8 90-1005 320L	1	
29	954002950	OIL HOSE 3/8 90-1005 470L	1	
30	954002990	ELBOW 90°, PF3/8"	2	
31	954002980	CONNECTOR, SWIVEL PF3/8"	2	
33	518351480	OIL MOTOR	2	
34	050710060	O-RING	2	
35	012210035	BOLT 10X35	8	REPLACES P/N 001221035
35-1	030210250	WASHER, LOCK M10	8	
35-2	031110160	WASHER, FLAT M10	8	
36	954003040	CONNECTOR, ELBOW PF1/2"	4	
37	518466330	OIL PIPE (L)	2	
38	518466340	OIL PIPE (R)	2	
39	518466080	HOLDER, PIPE	2	
40	014208020	SOCKET HEAD BOLT 8X20	4	REPLACES P/N 001520820
41	518465970	GUARD, PIPE	2	
42	012210020	BOLT 10X20	2	REPLACES P/N 001221020
43	031110160	WASHER, FLAT M10	2	
44	518466360	OIL PIPE (A-B)	1	
53	954001380	OIL ELEMENT	1	

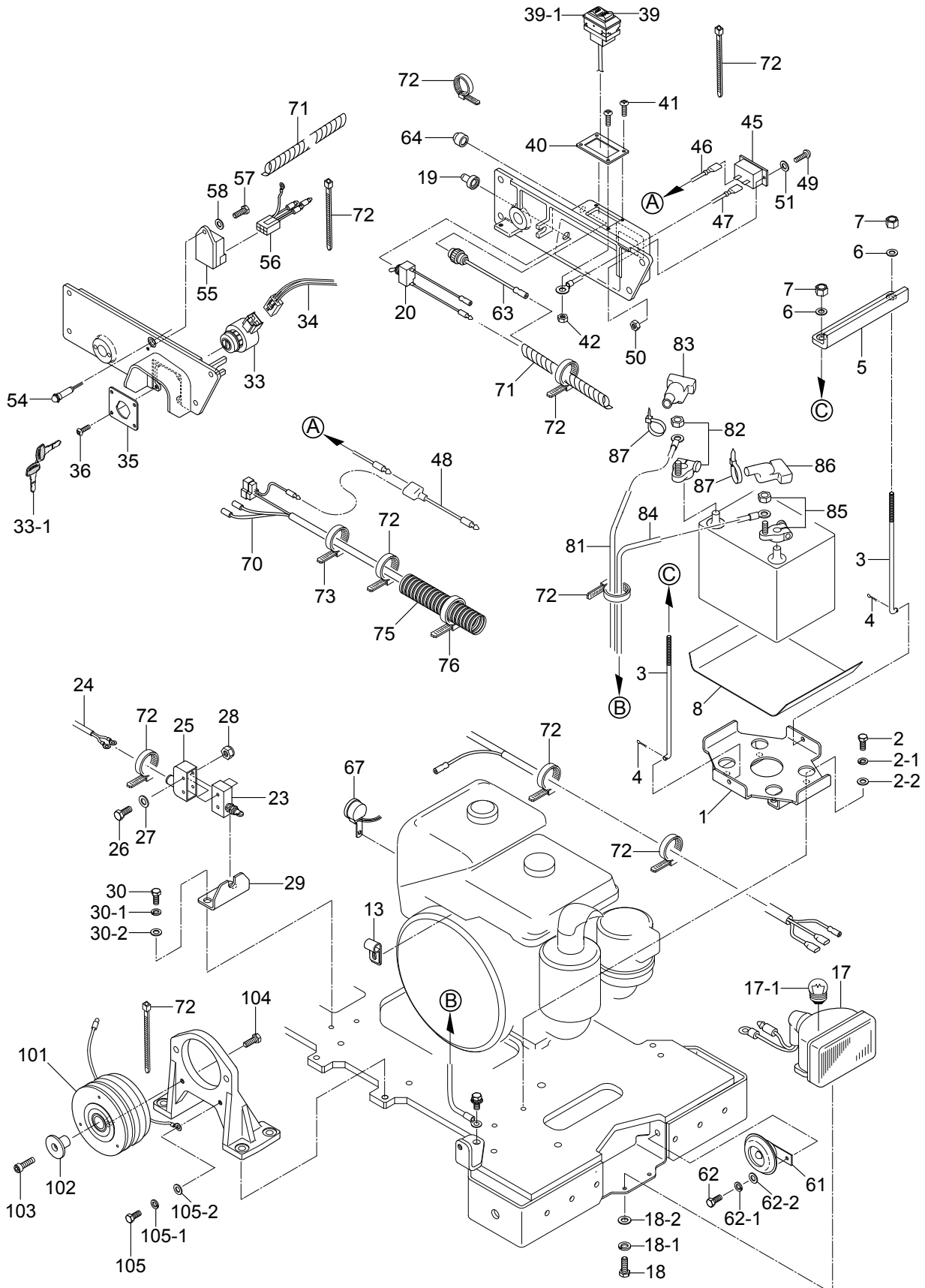
ELECTRIC DEVICE ASSY.



ELECTRIC DEVICE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	518218670	BASE, BATTERY	1	
2	014208020	BOLT 8X20	4	REPLACES P/N 001220820
2-1	030208200	WASHER, LOCK	4	
2-2	0401450080	WASHER, FLAT	4	REPLACES P/N 031108160
3	515448210	ROD, BATTERY	2	
4	025910060	SNAP PIN	2	
5	518465980	BATTERY HOLDER	1	
6	952404470	WASHER, FLAT M6	2	REPLACES P/N 031106100
7	022710607	NYLON NUT M6	2	
8	601303150	RUBBER PLATE	1	
13	954406400	CLAMP	1	
17	955200030	HEAD LAMP ASSY 12V-25W	1	INCLUDES ITEMS W/@
17-1@	955200060	PILOT LAMP, 12V	1	
18	011206020	BOLT 6X20	2	REPLACES P/N 001220620
18-1	030206150	WASHER, LOCK M6	2	
18-2	952404470	WASHER, FLAT M6	2	REPLACES P/N 031106100
19	304402600	CAP	1	
20	515449910	SWITCH, W/CORD	1	
23	955405910	MICRO-SWITCH	1	
24	515453230	READ CORD, MICRO-SWITCH	1	
25	955405450	COVER, MICRO-SWITCH	1	
26	001200430	BOLT 4X30	2	
27	58042	WASHER, FLAT M4	2	REPLACES P/N 031104080
28	022710405	NYLON NUT M4	2	
29	518466060	STAY, SWITCH	1	
30	014208020	BOLT 8X20	2	REPLACES P/N 001220820
30-1	030208200	WASHER, LOCK M8	2	
30-2	0401450080	WASHER, FLAT M8	2	REPLACES P/N 031108160
33	1G34763590	STARTER SWITCH ASSY.....	1	INCLUDES ITEMS W/ \$
33-1\$	1524863700	KEY, IGNITION SWITCH	1	
34	518351570	WIRE HARNESS ASSY.	1	
35	518466070	BRACKET, KEY SWITCH	1	
36	091005012	SCREW 5X12	4	
39	516217920	SEESAW SWITCH/MAG, CLUTCH	1	INCLUDES ITEMS W/ %
39-1%	516010140	SWITCH COVER	1	
40	516458960	SWITCH PLATE	1	
41	091505015	SCREW 5X15 SW	4	
42	020305040	NUT M5	1	
45	955010312	HOUR METER/SENDEC	1	
46	518466490	LEAD CORD, H-METER (+) SW	1	
47	518466500	LEAD CORD, H-METER (-) GROUND	1	
48	515450380	WIRE HARNESS	1	
49	091003015	SCREW 3X15	2	
50	020303020	NUT M3	2	

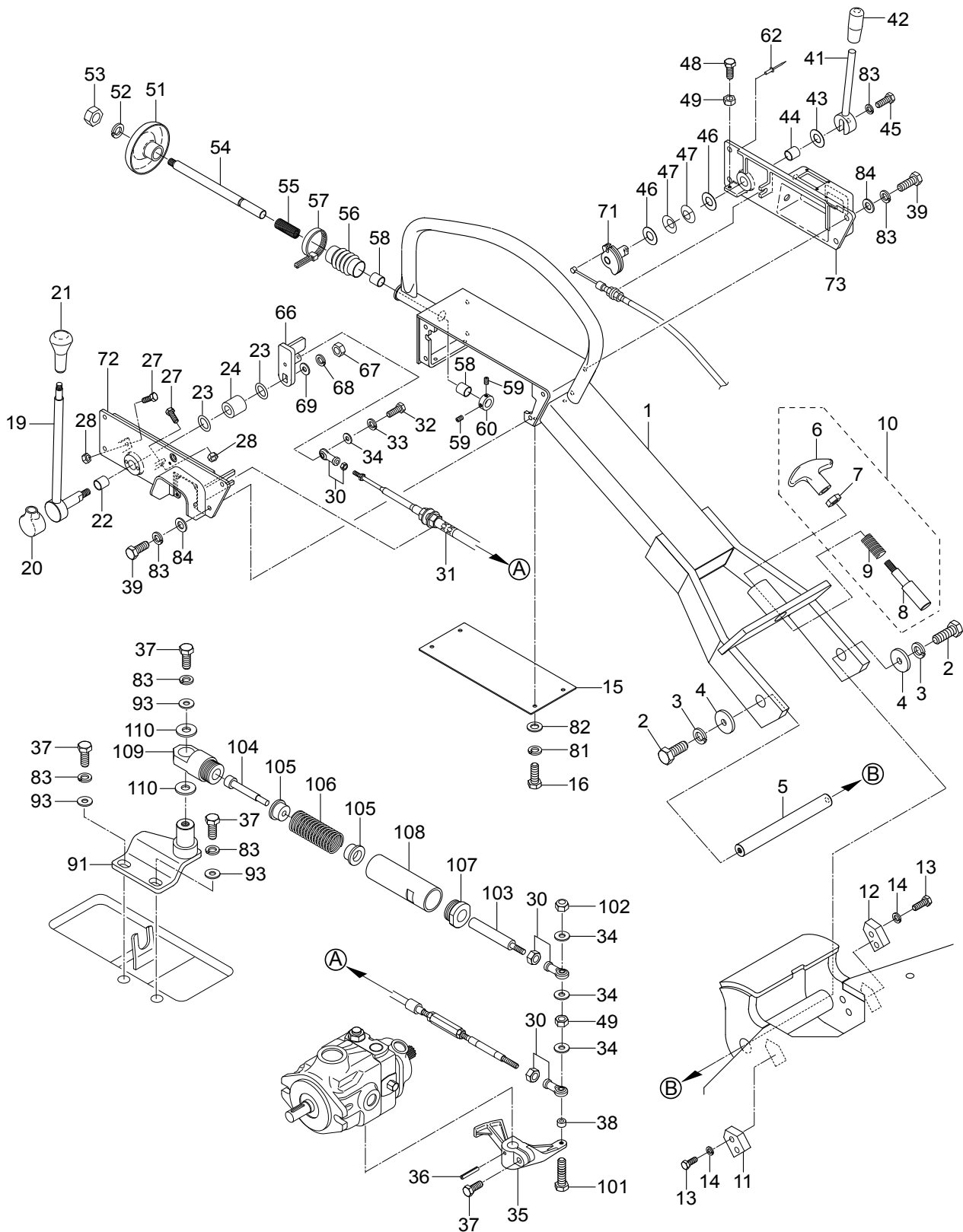
ELECTRIC DEVICE ASSY. CONTINUED



ELECTRIC DEVICE ASSY. CONTINUED

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
51	031103050	WASHER, FLAT M3	2	
54	955408260	GLOW LAMP	1	
55	1569465990	LAMP TIMER	1	
56	516349450	WIRE HARNESS	1	
57	0105050616	BOLT 6X15	1	REPLACES P/N 001220615
58	952404470	WASHER, FLAT M6	1	REPLACES P/N 031106100
61	955300420	HORN ASSY., DC12V	1	
62	011006010	BOLT 6X10	1	REPLACES P/N 001220610
62-1	030206150	WASHER, LOCK M6	1	
62-2	952404470	WASHER, FLAT M6	1	REPLACES P/N 031106100
63	955400800	HORN BUTTON ASSY.	1	
64	955405980	COVER, HORN BUTTON	1	
67	955300400	BUZZER	1	
70	518351580	WIRE HARNESS ASSY (L-H-C)	1	
71	959021826	SPIRAL TUBE	2	
72	507010110	CLAMP	12	
73	511010040	CLAMP	1	
75	959021911	TUBE	1	
76	507010110	CLAMP	7	
81	515448530	BATTERY CORD (+)	1	
82	955300480	BATTERY TERMINAL (+)	1	
83	955300460	TERMINAL COVER (+)	1	REPLACES P/N 955300500
84	515447360	BATTERY CORD (-)	1	
85	955300490	BATTERY TERMINAL (-)	1	
86	955300470	TERMINAL COVER (-)	1	REPLACES P/N 955300510
87	506010070	CLAMP	2	
101	518351510	MAGNETIC CLUTCH	1	
102	518466170	WASHER, STEPPED	1	
103	009110080	SOCKET HEAD BOLT 6X30 ZN	1	
104	011206020	BOLT 6X20	1	REPLACES P/N 001220620
105	011006010	BOLT 6X10	1	REPLACES P/N 001220610
105-1	030206150	WASHER, LOCK M6	1	
105-2	952404470	WASHER, FLAT M6	1	REPLACES P/N 031106100

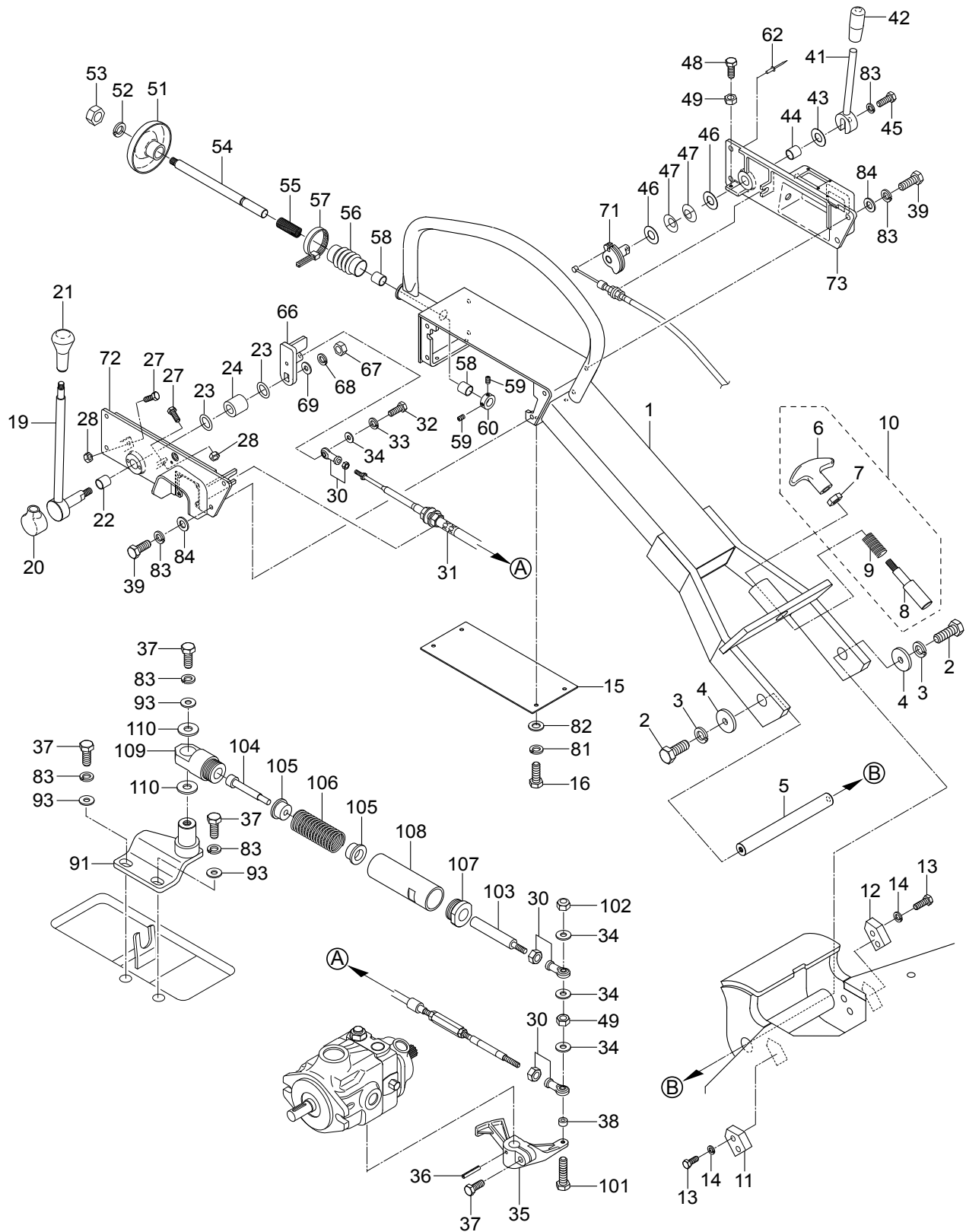
DEADMAN SYSTEM CONTROL ASSY.



DEADMAN SYSTEM CONTROL ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	518120800	HANDLE	1	
2	012210035	BOLT 10X35	2	REPLACES P/N 001221035
3	030210250	WASHER, LOCK M10	2	
4	952408680	WASHER	2	
5	518466130	SHAFT, HANDLE	1	
6#	959007140	T-KNOB, M12	1	
7#	0039312000	NUT M12	1	REPLACES P/N 020312100
8#	517459710	STOPPER, HANDLE	1	
9#	517459700	SPRING, HANDLE	1	
10	515910090	HANDLE/STOPPER ASSY	1	INCLUDES ITEMS W/ #
11	518466090	STOPPER, HANDLE/IN-OP	1	
12	518466100	STOPPER, HANDLE/IN-HO	1	
13	012210035	BOLT 10X35	4	REPLACES P/N 001221035
14	030210250	WASHER, LOCK M10	4	
15	518351400	HANDLE COVER	1	
16	011206020	BOLT 6X20	4	REPLACES P/N 001220620
19	518352810	TRAVELLING, LEVER	1	
20	518467530	LEVER COVER	1	
21	959300870	KNOB	1	
22	464010010	DRY BUSHING	1	
23	458450660	WASHER	2	
24	952408970	COLLAR	1	
27	011208025	BOLT 8X25	2	REPLACES P/N 001220825
28	020108060	NUT M8	2	REPLACES P/N 020308060
30	501011162	ROD END	3	
31	517342410	PUSH-PULL CABLE	1	
32	011606025	BOLT 6X25	1	REPLACES P/N 001220625
33	030206150	WASHER, LOCK M6	1	
34	952404470	WASHER	4	
35	518351470	PV LEVER	1	
36	025405032	SPRING PIN 5X32	1	
37	014208020	BOLT 8X20	4	REPLACES P/N 001220820
38	952408770	COLLAR	1	
39	014208020	BOLT 8X20	8	REPLACES P/N 001220820
41	518466140	THROTTLE LEVER	1	
42	959403840	BAR GRIP	1	
43	952408560	WASHER, BRASS	1	
44	464010010	DRY BUSHING	1	
45	011208025	BOLT 8X25	1	REPLACES P/N 001220825
46	458450660	WASHER	2	
47	033910080	CONICAL WASHER, LOCK	2	
48	0105050616	BOLT 6X15	1	REPLACES P/N 001220615
49	020106050	NUT M6	2	REPLACES P/N 020306050

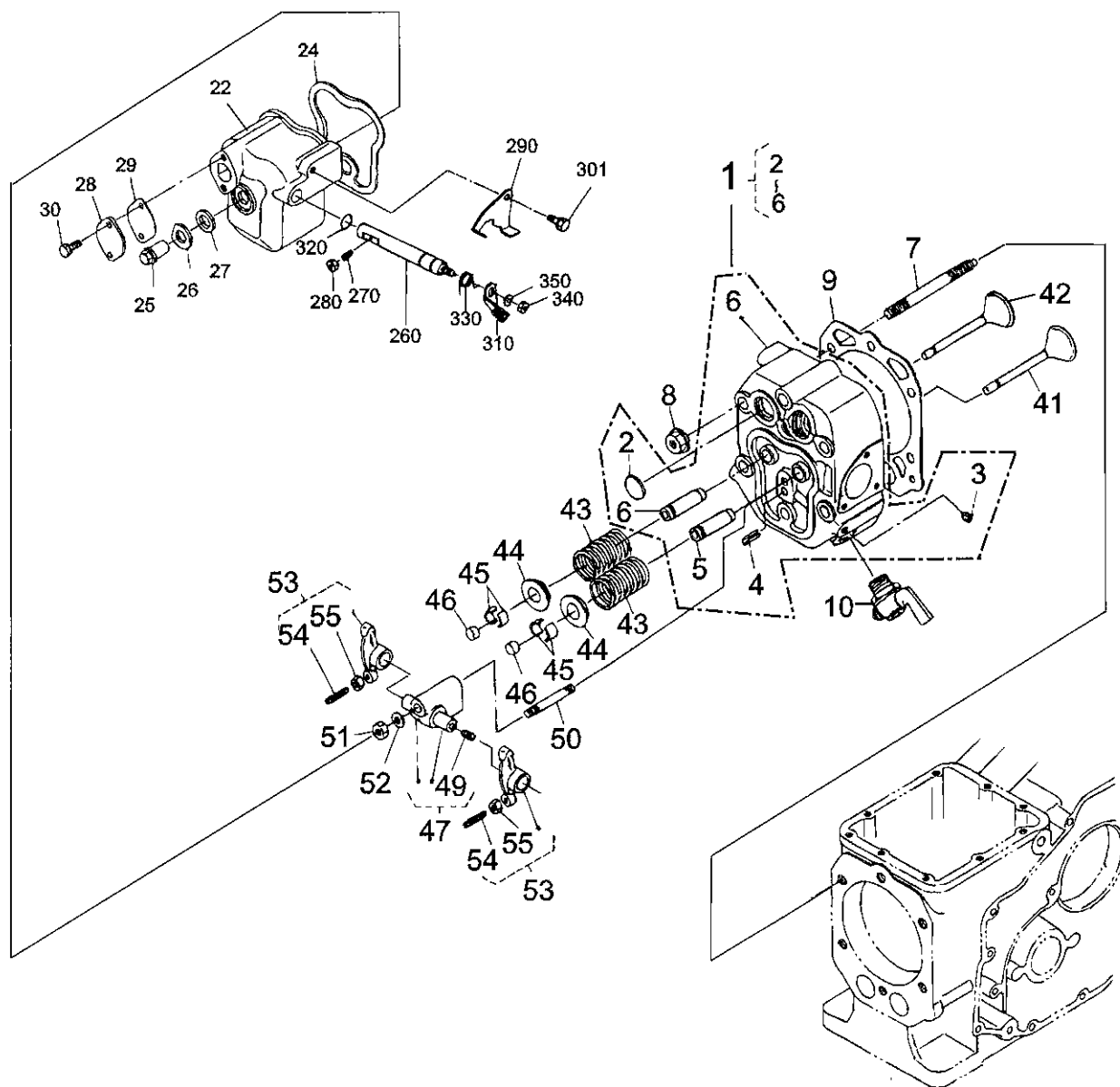
DEADMAN SYSTEM CONTROL ASSY. CONTINUED



DEADMAN SYSTEM CONTROL ASSY. CONTINUED

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
51	515447720	DISC PLATE, DEADMAN	1	
52	030212300	WASHER, LOCK M12	1	
53	0039312000	NUT M12	1	REPLACES P/N 020312100
54	518351460	ROD, DEADMAN	1	
55	509436980	SPRING, DEADMAN	1	
56	509436990	PROTECTOR, DEADMAN	1	
57	507010110	CLAMP	1	
58	464010010	DRY BUSHING	2	
59	01420601	SOCKET HEAD SCREW 6X6.....	2	REPLACES P/N 099206006
60	509436960	ROD STOPPER, DEADMAN	1	
62	515010080	DECAL, WINDOW SHADE RIVET	2	
66	518352800	LEVER, JOINT, TRAVELLING	1	
67	020310080	NUT M10	1	
68	030210250	WASHER, LOCK M10	1	
69	031110160	WASHER, FLAT M10	1	
71	518351450	SHAFT, THROTTLE	1	
72	518120680	TRAVELLING LEVER BRACKET	1	
73	518120690	THROTTLE LEVER BRACKET	1	
81	030206150	WASHER, LOCK M6	4	
82	952404470	WASHER, FLAT M6	4	REPLACES P/N 031106100
83	030208200	WASHER, LOCK M8	12	
84	0401450080	WASHER, FLAT M8	8	REPLACES P/N 031108160
91	518352580	CYLINDER, STAY	1	
93	952401560	WASHER	3	
101	001820650	BOLT 6X50	1	
102	022710607	NYLON NUT M6	1	
103	515461610	OUTER SHAFT	1	
104	515461600	INNER SHAFT	1	
105	518467400	CYLINDER, PISTON	2	
106	518467390	SPRING, CYLINDER	1	
107	506442930	CAP	1	
108	515461590	CYLINDER	1	
109	515461580	LINK CAP	1	
110	506442940	COLLAR	2	

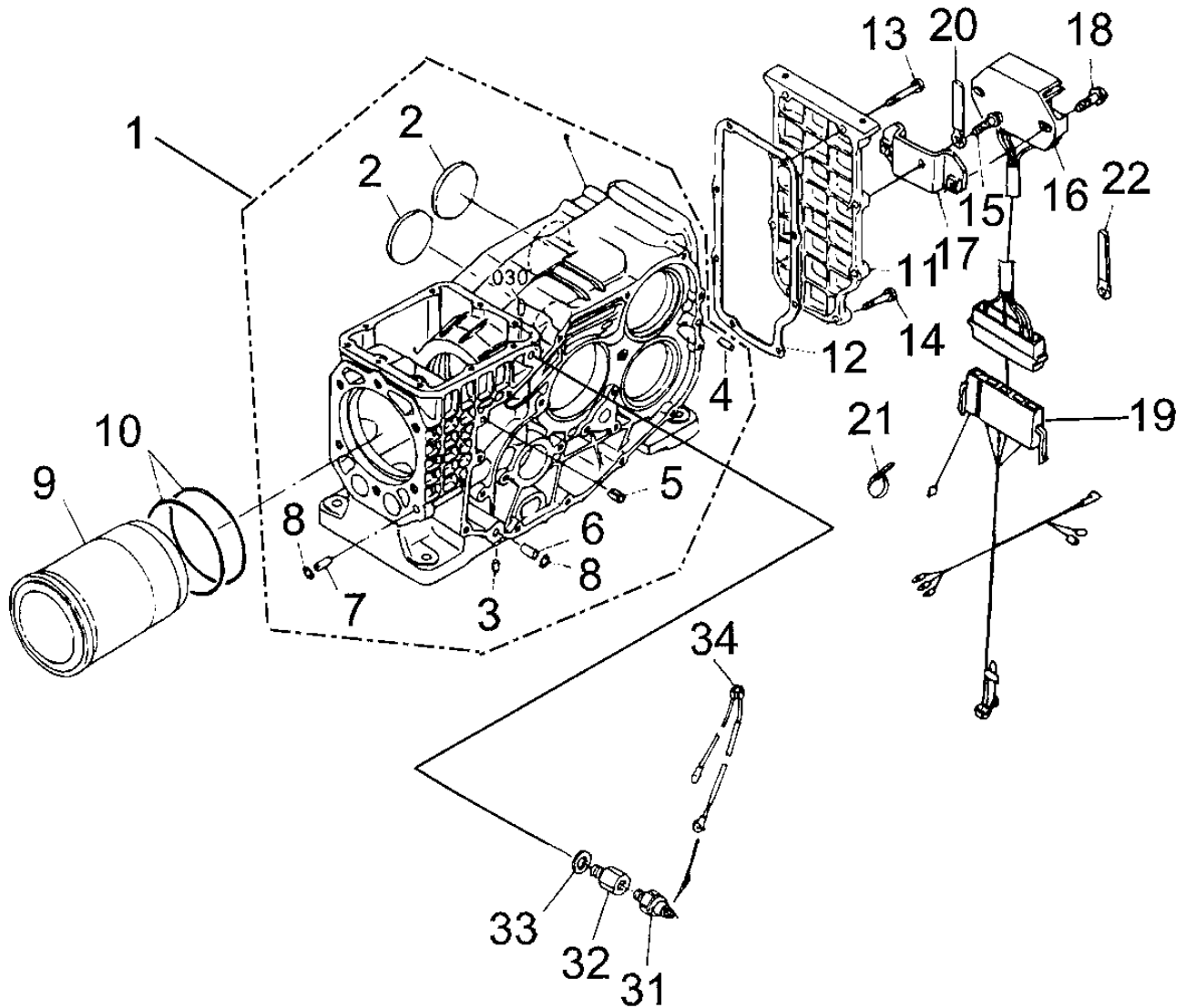
KUBOTA EA330 — CYLINDER HEAD ASSY.



KUBOTA EA330 — CYLINDER HEAD ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	1619403042	COMP., CYLINDER HEAD	1	INCLUDES ITEMS W/ @
2@	0631175022	PLUG, EXPANSION	1	
3@	1526196010	PLUG	1	
4@	0541100612	SPRING PIN	1	
5@	1626113540	GUIDE, INLET VALVE	1	
6@	1626113560	EXHAUST VALVE GUIDE	1	
7	1497103412	STUD, CYLINDER HEAD	6	
8	1921503512	HEAD NUT	6	
9	1459503310	GASKET, CYL. HEAD	1	
10	1T25173110	DRAIN COCK	1	
22	1497114512	HEAD COVER	1	
24	1497114520	PACKING, HEAD COVER	1	
25	1526114620	NUT, HEAD COVER	1	
26	1526114640	WASHER, HEAD COVER	1	
27	1526114630	PACKING, HEAD COVER NUT	1	
28	1526166630	COVER, DECOMP HOLE	1	
29	1526366640	PACKING	1	
30	0102350614	BOLT	2	
41	1497213110	VALVE, INLET	1	
42	1497213120	VALVE, EXHAUST	1	
43	1526113240	SPRING, VALVE	2	
44	162613330	RETAINER, SPRING	2	
45	1526113980	COLLET, VALVE SPRING	2	
46	1624113280	CAP, VALVE	2	
47	1497114050	BRACKET CP, ROCKER ARM.....	1	INCLUDES ITEMS W/ #
49#	0341050606	SCREW	1	
50	1526114410	STUD	1	
51	1526192010	NUT	1	
52	1526194010	WASHER, FLAT	1	
53	1527114030	ROCKER ARM ASSY.	2	INCLUDES ITEMS W/ \$
54\$	1526114232	SCREW, ADJUSTING	2	
55\$	1526114240	NUT	2	
260	1497166322	SHAFT, DECOMPRESS	1	
270	1526166350	BOLT, DECOMPRESS	1	
280	0205650050	NUT	1	
290	1497166552	STOPPER, DECOMPRESS	1	
301	0102350612	BOLT	1	
310	1430166310	LEVER CP, DECOMPRESS	1	
320	1970196850	O-RING	1	
330	1497166210	SPRING, DECOMPRESS	1	
340	0201450060	NUT	1	
350	0451260060	WASHER, LOCK	1	

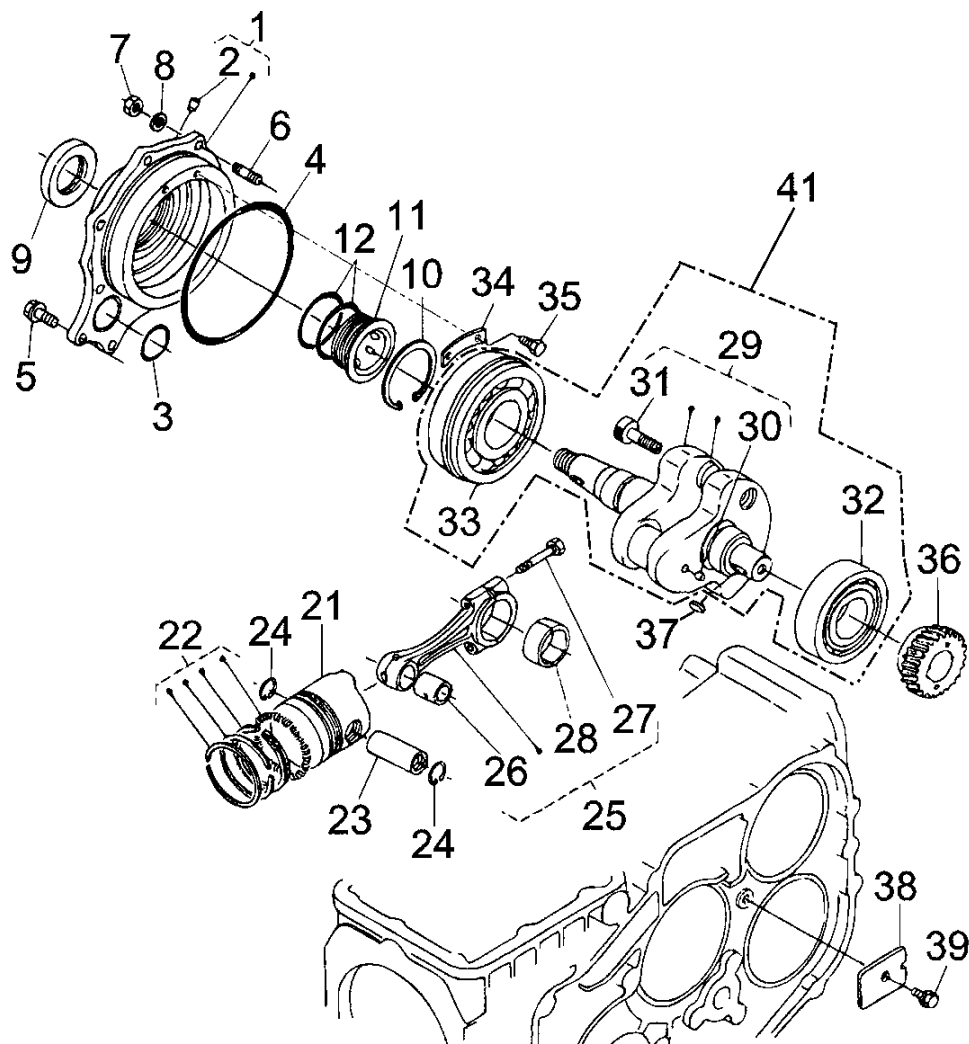
KUBOTA EA330 — CRANKCASE ASSY.



KUBOTA EA330 — CRANKCASE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	1441801010	CRANKCASE, CP	1	INCLUDES ITEMS W/ #
2#	1497126710	PLUG, SEAL	2	
3#	1430133630	PLUG, PIN	2	
4#	0501200612	PIN, STRAIGHT	1	
5#	0541100412	SPRING PIN	1	
6#	1491194930	PIPE PIN	1	
7#	1430133950	PIPE PIN	1	
8#	0481600080	O-RING	2	
9	1428602310	CYLINDER LINER	1	
10	1497102350	O-RING	2	
11	1497104710	COVER, CRANKCASE	1	
12	1G10304720	GASKET, CASE COVER	1	
13	0102350635	BOLT	2	
14	0102350625	BOLT	5	
15	0175450625	FLANGE BOLT	1	
16	1442864602	REGULATOR ASSY.	1	
17	1142064610	STAY, REGULATOR	1	
18	0175450620	FLANGE BOLT	2	
19	1441665050	HARNESS WIRE	1	
20	1524167580	CORD CLAMP	1	
21	3435029380	CORD BAND	1	
22	1527267570	CLAMP, CORD	1	
31	1152139013	OIL SWITCH	1	
32	1497136112	HOLDER, OIL SIGNAL	1	
33	0472400100	PACKING	1	
34	1441665060	HARNESS WIRE	1	

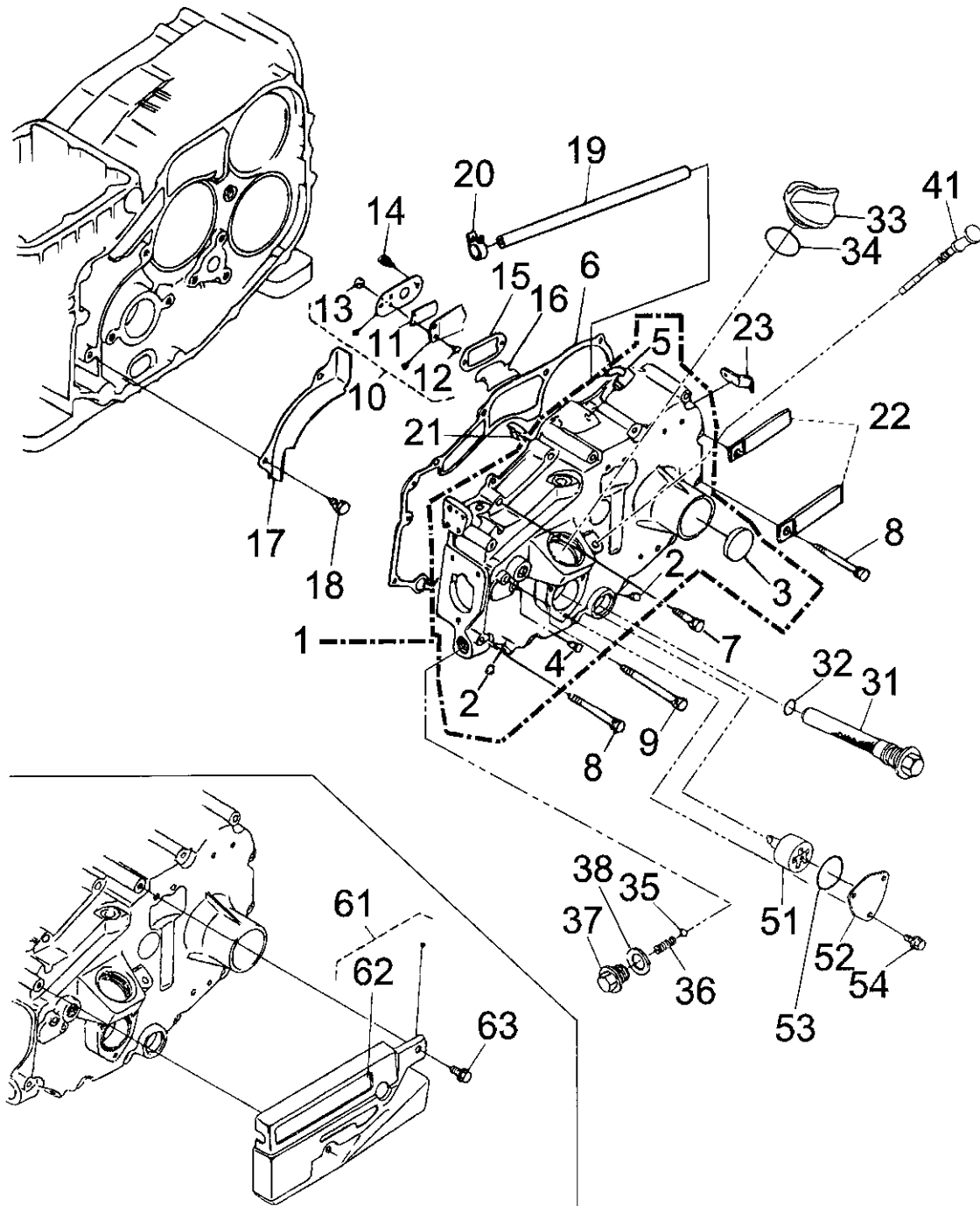
KUBOTA EA330 — PISTON AND MAIN BEARING CASE ASSY.



KUBOTA EA330 — PISTON AND MAIN BEARING CASE ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	1498104042	CASE COMP., MAIN BEARING	1	INCLUDES ITEMS W/ #
2#	1454196850	PLUG	1	
3	1491135450	O-RING	1	
4	0481111050	O-RING	1	
5	0175450620	FLANGE BOLT	7	
6	0151850620	STUD	2	
7	0205650060	NUT	2	
8	0451260060	WASHER, LOCK	2	
9	1487123550	OIL SEAL	1	
10	0461100500	CIR-CLIP, INTERNAL	1	
11	1497135750	RING, OIL FILLER	1	
12	1497135770	O-RING	2	
21	1428621112	PISTON	1	
22	1428621050	PISTON RING ASSY.	1	
23	1526121310	PISTON PIN	1	
24	1526121330	CIR-CLIP, INTERNAL	2	
25	1569422010	CONNECTING ROD ASSY.	1	INCLUDES ITEMS W/ @
26@	1526121980	BUSH, PISTON PIN 03	1	
27@	1538122140	BOLT, CONNECTING ROD	2	
28@	1569422310	METAL, CRANK PIN, STD/SET	1	
28	1569422970	METAL, CRANK PIN 0.2	1	
28	1569422980	METAL, CRANK PIN 0.4	1	
29	1498123014	COMP. CRANK SHAFT	1	INCLUDES ITEMS W/ %
30%	1494123240	PLUG	1	
31%	1498191430	BOLT, COUNTER WEIGHT	4	
32	1497123450	BEARING, MAIN 1	1	
33	1498123460	BEARING, MAIN 2	1	
34	1497123590	STOPPER, BEARING	1	
35	0105350512	BOLT	2	
36	1497124110	GEAR, CRANKSHAFT	1	
37	0571200515	FEATHER KEY	1	
38	1497126810	RETAINER, BEARING	1	
39	0175450614	FLANGE BOLT	1	
41	1498123905	CRANKSHAFT ASSY.	1	

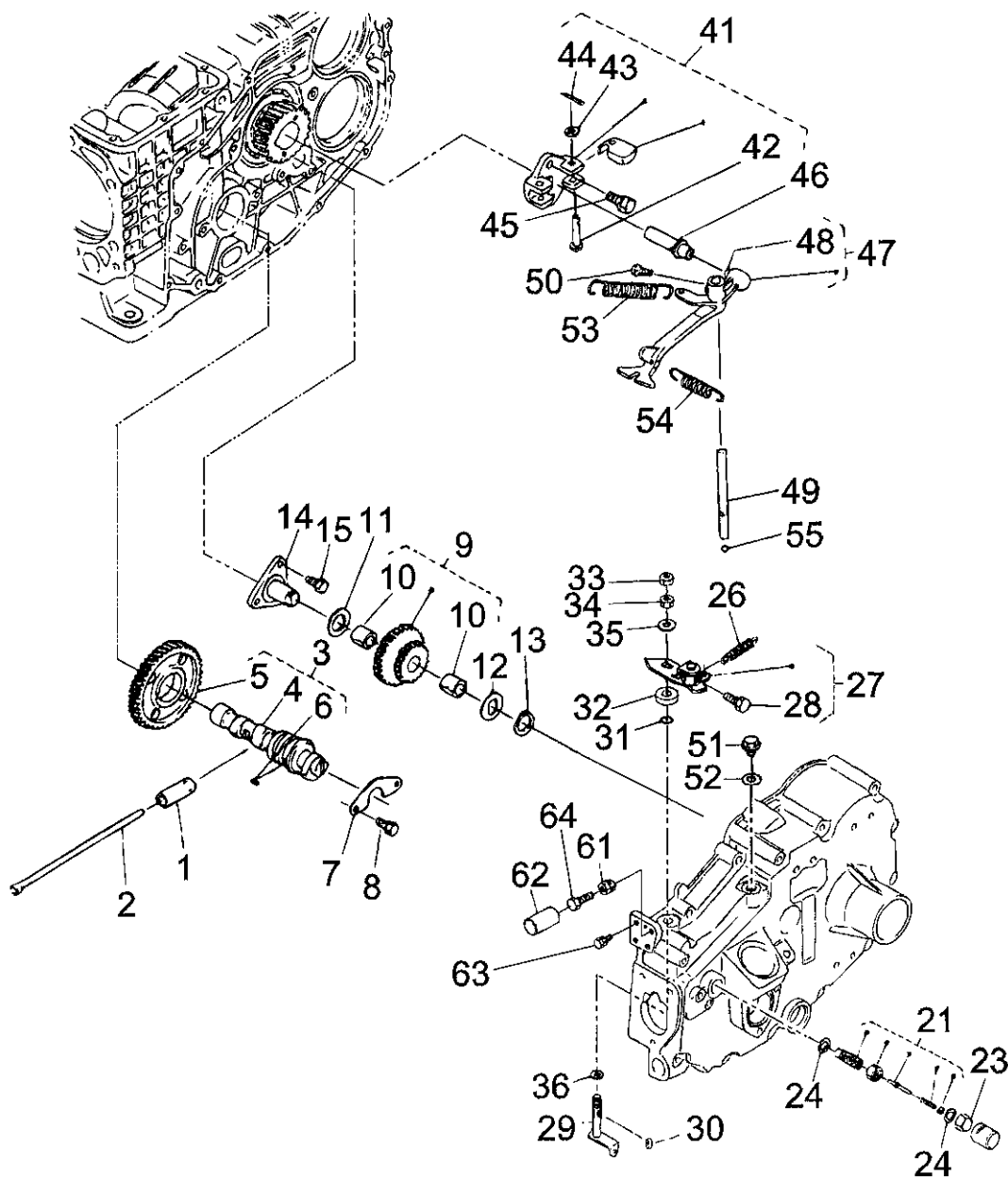
KUBOTA EA330 — GEAR CASE ASSY.



KUBOTA EA330 — GEAR CASE ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	1610204020	COMP. CASE GEAR	1	INCLUDES ITEMS W/ @
2@	1430133630	PLUG, PIN	2	
3@	3673024630	PLUG	1	
4@	1497166290	PIN	1	
5@	1G10105550	JOINT, BREATHER	1	
6	1459504130	PACKING GEAR CASE	1	
7	0102350635	BOLT	2	
8	0102350665	BOLT	9	
9	0102350680	BOLT	1	
10	1142005012	BREATHER ASSY.	1	INCLUDES ITEMS W/ \$
11\$	1497105210	VALVE, BREATHER	1	
12\$	0302450408	SCREW, W/WASHER	2	
13\$	0205450040	NUT	2	
14	0302450510	SCREW, W/WASHER	2	
15	1459505430	PACKING, BREATHER	1	
16	1497105470	INNER PLATE, BREATHER	1	
17	1497105370	OIL GUARD, BREATHER	1	
18	0102350612	BOLT	2	
19	0966450300	TUBE, FUEL	1	
20	0931888085	BAND, HOSE	1	
21	1497105380	OIL GUARD, BREATHER 2	1	
22	1527267570	CLAMP, CORD	2	
23	1527267570	CLAMP, CORD	1	
31	1491132110	OIL FILTER	1	
32	0481140140	O-RING	1	
33	E915133140	PLUG, OIL FILLER	1	
34	0481750300	O-RING	1	
35	0771501607	BALL	1	
36	1491136950	SPRING	1	
37	1142036910	PLUG	1	
38	0472400160	PACKING	1	
41	1497136410	GAUGE, OIL	1	
51	1491135400	ROTOR ASSY., OIL PUMP	1	
52	1142035432	COVER, OIL PUMP	1	
53	1491135450	O-RING	1	
54	0175450612	BOLT, FLANGE	3	
61	1G39404800	COMP., APRON SIDE	1	INCLUDES ITEMS W/ #
62#	1G39488550	COVER, COMP.	1	
63	0175450612	BOLT, FLANGE	2	

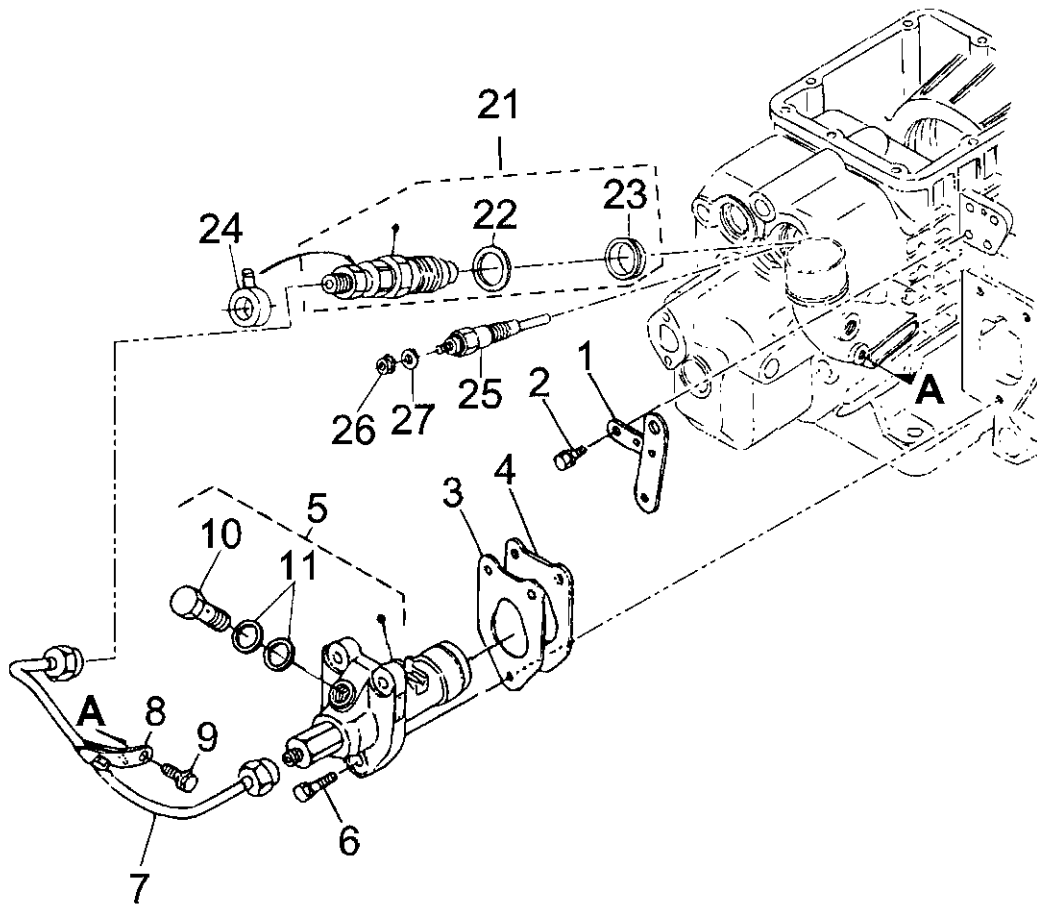
KUBOTA EA330 — GOVERNOR ASSY.



KUBOTA EA330 — GOVERNOR ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	1G67315550	TAPPET	2	
2	1497115110	ROD, PUSH	2	
3	1497116010	CAMSHAFT ASSY.	1	INCLUDES ITEMS W/ @
4@	1497116150	CAMSHAFT	1	
5@	1497116510	GEAR, CAMSHAFT	1	
6@	1527116240	KEY, FEATHER	1	
7	1497116270	STOPPER, CAMSHAFT	1	
8	0102350616	BOLT	2	
9	1497124010	GEAR CP, IDLE	1	INCLUDES ITEMS W/ #
10#	1526124980	BUSH, IDLE GEAR	2	
11	1526124360	COLLAR, IDLE GEAR 1	1	
12	1526124370	COLLAR, IDLE GEAR 2	1	
13	1526124320	CIR-CLIP, IDLE GEAR	1	
14	1497124250	SHAFT, IDLE GEAR	1	
15	0102350616	BOLT	3	
21	1G19654020	APPARATUS, FUEL LIMIT	1	
23	1526154220	CAP NUT	1	
24	1533196650	PACKING	2	REPLACES P/N 1510933660
26	1465856543	SPRING	1	
27	1199257040	LEVER ASSY, SPEED CONTROL	1	INCLUDES ITEMS W/ \$
28\$	0122250608	BOLT	1	
29	1497157230	SHAFT CP, SPEED CONTROL	1	
30	1526195010	KEY, FEATHER	1	
31	0481600070	O-RING	1	
32	1526357380	FRICTION PLATE	1	
33	0201260060	NUT	1	
34	0205650060	NUT	1	
35	0401360060	WASHER, FLAT	1	
36	0401250080	WASHER, FLAT	1	
41	1497155052	GOVERNOR WEIGHT ASSY.	1	INCLUDES ITEMS W/ %
42%	1491155280	PIN, GOVERNOR WEIGHT	2	
43%	0401250060	WASHER, FLAT	2	
44%	1909015390	SPLIT COTTER PIN	2	
45	0102350614	BOLT	2	
46	1491155310	SHAFT, GOVERNOR	1	
47	1497156040	LEVER CP, GOVERNOR	1	INCLUDES ITEMS W/ &
48&	0771500201	BALL	1	
49	1497156040	SHAFT, GOVERNOR LEVER	1	
50	0302450514	SCREW, W/WASHER	1	
51	0633135010	PLUG	1	
52	0472400100	PACKING	1	
53	1498156410	SPRING, GOVERNOR	1	
54	1491156480	SPRING, IDLING	1	
55	0771503205	BALL	1	
61	1115157890	NUT, LOCK	1	
62	1622154420	CAP	1	
63	0102350618	BOLT	1	
64	0105550630	BOLT	1	

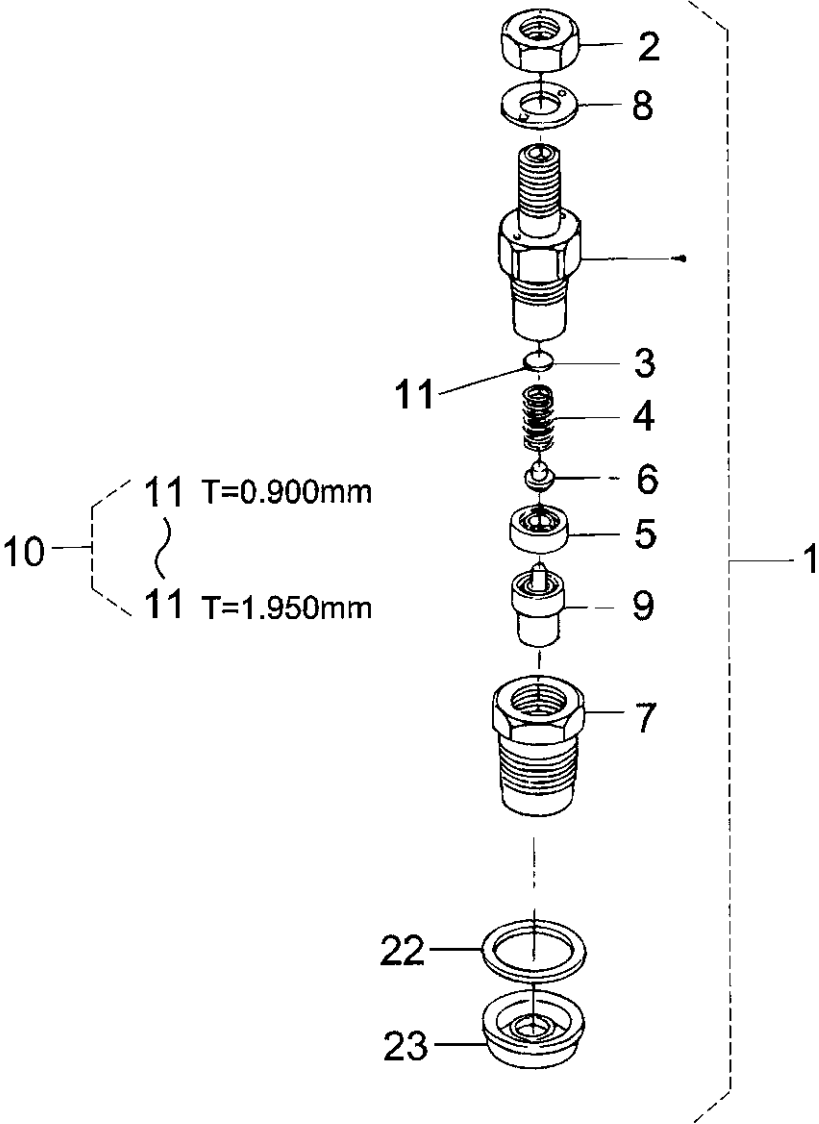
KUBOTA EA330 — INJECTION PUMP ASSY.



KUBOTA EA330 — INJECTION PUMP ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	1497142922	HOLDER, JET START	1	
2	0102350616	BOLT	2	
3	1G11152110	SHIM, 0.10MM	2	
3	1497152110	SHIM, 0.15MM, PUMP ADJUSTING	4	
4	1G19452110	SHIM, 0.225MM	1	
4	1497152120	SHIM, 0.50MM, PUMP ADJUSTING	1	
5	1G11151012	ASSY. PUMP, INJECTION.....	1	INCLUDES ITEMS W/ @
6	0102350622	BOLT	3	
7	1G10153710	PIPE, INJECTION	1	
8	1497153852	PIPE CLAMP	1	
9	0175450614	FLANGE BOLT	1	
10@	1491151320	SCREW	1	
11@	1410751340	PACKING	2	
21	1G10153900	KIT HOLDER, NOZZLE.....	1	INCLUDES ITEMS W/ #
22#	1584153622	GASKET	1	
23#	1907753650	SEAL, HEAT	1	
24	1J13095680	JOINT, NOZZLE HOLDER	1	
25	1685165512	GLOW PLUG	1	
26	0276150040	FLANGE NUT	1	
27	0401360040	WASHER, FLAT	1	

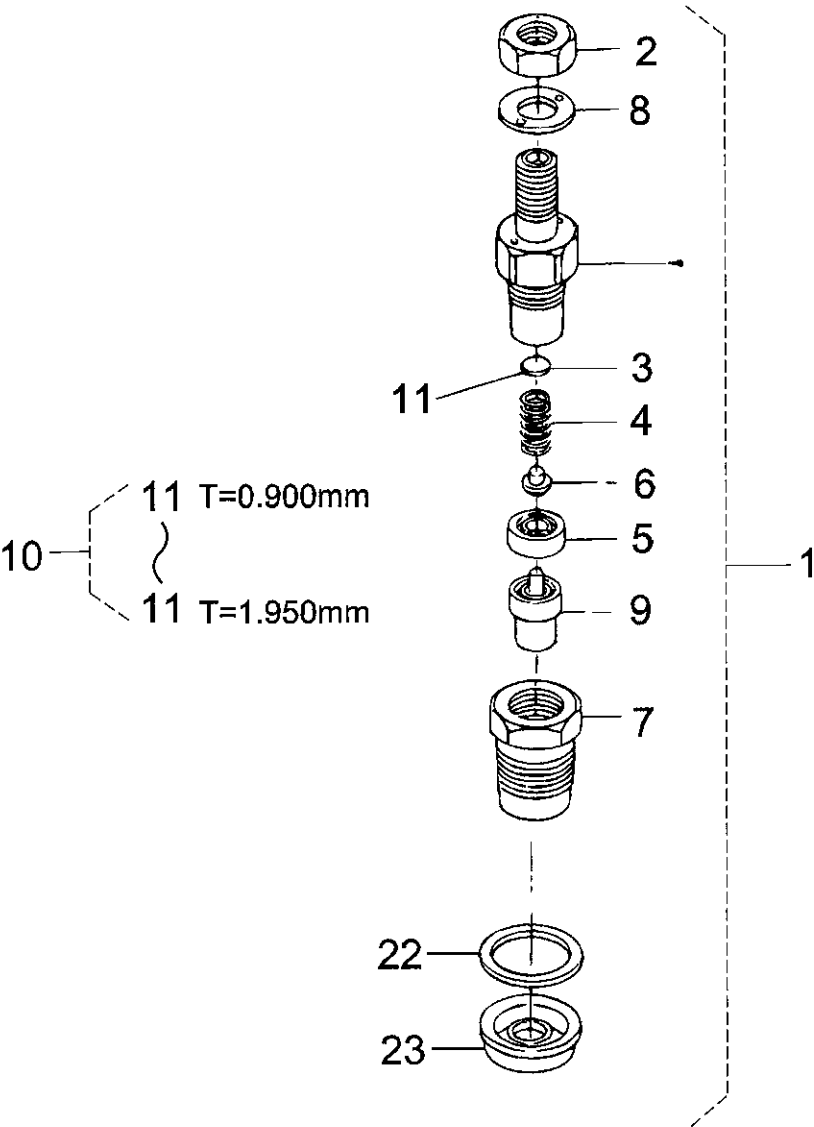
KUBOTA EA330 — NOZZLE HOLDER ASSY.



KUBOTA EA330 — NOZZLE HOLDER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	1610153900	KIT HOLDER, NOZZLE.....	1	INCLUDES ITEMS W/ #
2#	1584192030	NUT	1	
3#	1584153230	WASHER, ADJUSTING, 0.900MM	1	
4#	1584153170	SPRING, NOZZLE	1	
5#	1584153350	PIECE, DISTANCE	1	
6#	1584153160	ROD, BUSH	1	
7#	1647553280	NUT, NOZZLE	1	
8#	1584194040	WASHER	1	
9#	1610153610	PIECE, NOZZLE	1	
10	1584198100	WASHER ASSY., ADJUSTING	1	INCLUDES ITEMS W/ \$
11#\$	1584153230	WASHER, ADJUSTING, 0.900MM	1	
11\$	1584198510	WASHER, ADJUSTING, 0.925MM	1	
11\$	1584198520	WASHER, ADJUSTING, 0.950MM	1	
11\$	1584198530	WASHER, ADJUSTING, 0.975MM	1	
11\$	1584198540	WASHER, ADJUSTING, 1.000MM	1	
11\$	1584198550	WASHER, ADJUSTING, 1.025MM	1	
11\$	1584198560	WASHER, ADJUSTING, 1.050MM	1	
11\$	1584198570	WASHER, ADJUSTING, 1.075MM	1	
11\$	1584198580	WASHER, ADJUSTING, 1.100MM	1	
11\$	1584198590	WASHER, ADJUSTING, 1.125MM	1	
11\$	1584198600	WASHER, ADJUSTING, 1.150MM	1	
11\$	1584198610	WASHER, ADJUSTING, 1.175MM	1	
11\$	1584198620	WASHER, ADJUSTING, 1.200MM	1	
11\$	1584198630	WASHER, ADJUSTING, 1.225MM	1	
11\$	1584198640	WASHER, ADJUSTING, 1.250MM	1	
11\$	1684198650	WASHER, ADJUSTING, 1.275MM	1	
11\$	1584198660	WASHER, ADJUSTING, 1.300MM	1	
11\$	1584198670	WASHER, ADJUSTING, 1.325MM	1	
11\$	1584198680	WASHER, ADJUSTING, 1.350MM	1	
11\$	1584198690	WASHER, ADJUSTING, 1.375MM	1	
11\$	1584198700	WASHER, ADJUSTING, 1.400MM	1	

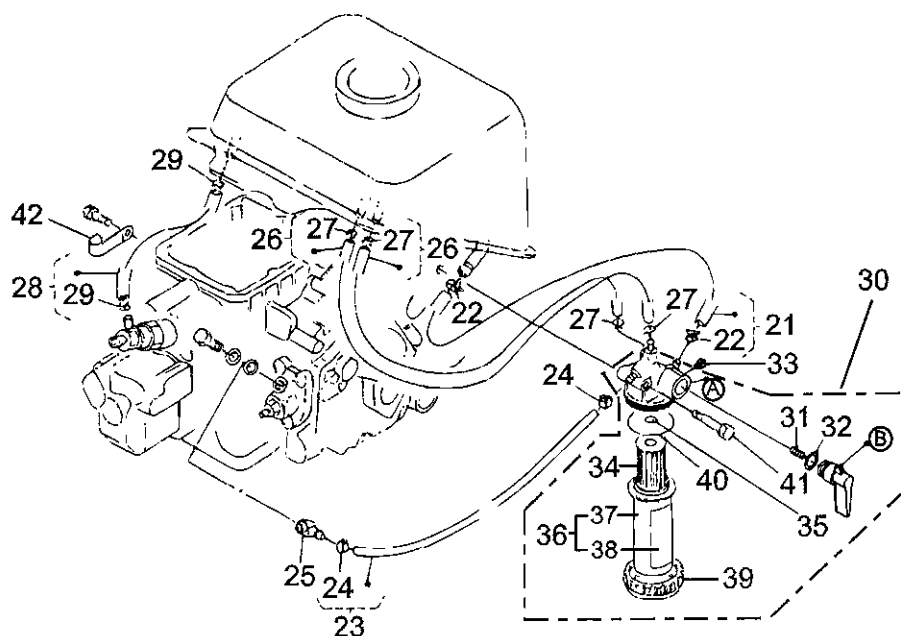
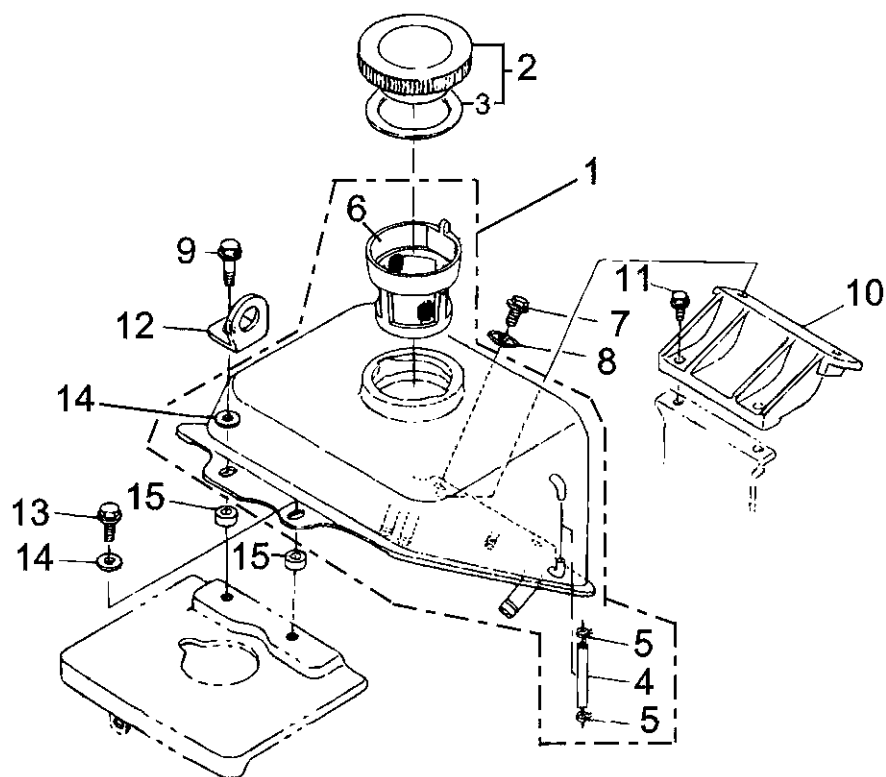
KUBOTA EA330 — NOZZLE HOLDER ASSY.(CONTINUED)



KUBOTA EA330 — NOZZLE HOLDER ASSY.(CONTINUED)

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
11\$	1584198710	WASHER, ADJUSTING, 1.425MM	1	
11\$	1584198720	WASHER, ADJUSTING, 1.450MM	1	
11\$	1584198730	WASHER, ADJUSTING, 1.475MM	1	
11\$	1584198740	WASHER, ADJUSTING, 1.500MM	1	
11\$	1584198750	WASHER, ADJUSTING, 1.525MM	1	
11\$	1584198760	WASHER, ADJUSTING, 1.550MM	1	
11\$	1584198770	WASHER, ADJUSTING, 1.575MM	1	
11\$	1584198780	WASHER, ADJUSTING, 1.600MM	1	
11\$	1584198790	WASHER, ADJUSTING, 1.625MM	1	
11\$	1584198800	WASHER, ADJUSTING, 1.650MM	1	
11\$	1584198810	WASHER, ADJUSTING, 1.675MM	1	
11\$	1584198820	WASHER, ADJUSTING, 1.700MM	1	
11\$	1584198830	WASHER, ADJUSTING, 1.725MM	1	
11\$	1584198840	WASHER, ADJUSTING, 1.750MM	1	
11\$	1584198850	WASHER, ADJUSTING, 1.775MM	1	
11\$	1584198860	WASHER, ADJUSTING, 1.800MM	1	
11\$	1584198870	WASHER, ADJUSTING, 1.825MM	1	
11\$	1584198880	WASHER, ADJUSTING, 1.850MM	1	
11\$	1584198890	WASHER, ADJUSTING, 1.875MM	1	
11\$	1584198900	WASHER, ADJUSTING, 1.900MM	1	
11\$	1584198910	WASHER, ADJUSTING, 1.925MM	1	
11\$	1584198920	WASHER, ADJUSTING, 1.950MM	1	
22#	1584153622	GASKET	1	
23#	1907753650	SEAL, HEAT	1	

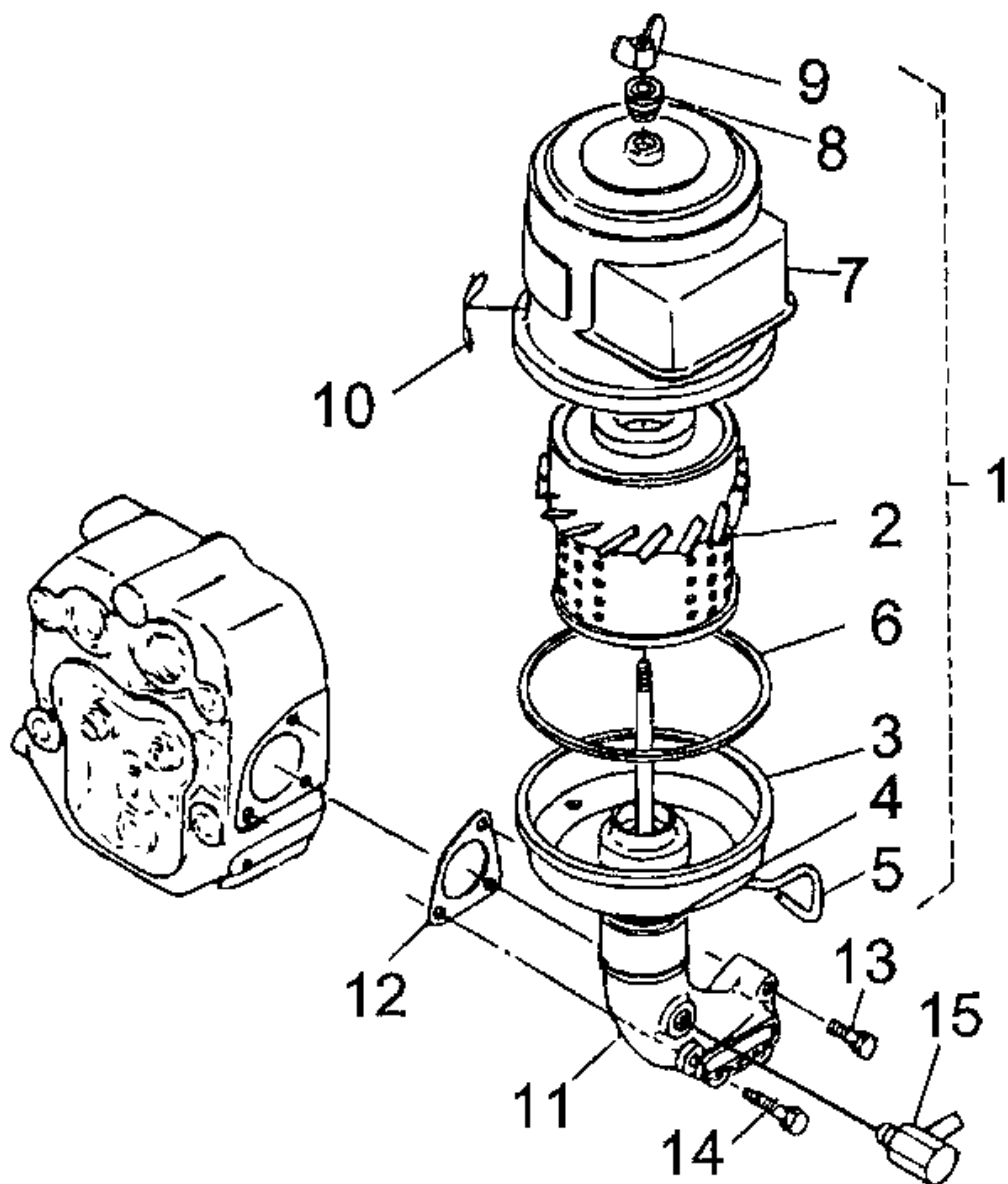
KUBOTA EA330 — FUEL TANK ASSY.



KUBOTA EA330 — FUEL TANK ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	1G19641020	ASSY TANK, FUEL SUB	1	INCLUDES ITEMS W/ @
2	1252141030	CAP ASSY, FUEL TANK	1	INCLUDES ITEMS W/ #
3 #	1252141340	PACKING, TANK CAP	1	
4 @	1387141710	GAUGE, FUEL	1	
5 @	1387141770	CLIP	2	
6 @	1254541350	FILTER (FUEL TANK)	1	
7	0175450820	FLANGE BOLT	2	
8	1428941370	WASHER (FUEL TANK)	2	
9	0175450855	FLANGE BOLT	1	
10	1428941130	SUPPORT, FUEL TANK	1	
11	0175450630	FLANGE BOLT	2	
12	1G12201750	HOOK, ENGINE	1	
13	0175450830	FLANGE BOLT	1	
14	1115177380	WASHER, FLAT	2	
15	6819193722	COLLAR	2	
21	1427942010	PIPE ASSY, FUEL 1	1	INCLUDES ITEM W/ &
22 &	1491142750	PIPE CLIP	2	
23	1497142020	PIPE ASSY, FUEL 2	1	INCLUDES ITEM W/ +
24 +	1491142750	PIPE CLIP	2	
25	1411142410	JOINT EYE	1	
26	1427942200	PIPE ASSY, AIR VENT 2	2	INCLUDES ITEM W/ *
27 *	1024442320	PIPE CLIP	4	REPLACES P/N 1497142750
28	1427942500	PIPE ASSY, OVER FLOW	1	INCLUDES ITEM W/ ^
29 ^	1024442320	PIPE CLIP	2	REPLACES P/N 1497142750
30	1497143010	FUEL FILTER ASSY	1	INCLUDES ITEMS W/ \$
31 \$	1T02143820	SPRING, VALVE	1	
32 \$	0481606100	O-RING	1	
33	1T02143830	SCREW, LEVER	1	
34 \$	1T02143560	ELEMENT ASSY/FO	1	
35 \$	0481600100	O-RING FILTER	1	
36 \$	1T25143100	CUP ASSY, FILTER	1	INCLUDES ITEMS W/ %
37 \$ %	1T02143580	FILTER CUP	1	
38 \$ %	1A00188430	LABEL, FUEL	1	
39 \$	1T02143590	RING RETANING	1	
40 \$	0481600390	O-RING, FILTER CUP	1	
41	0112350845	BOLT	1	
42	1527267570	CLAMP, CORD	1	

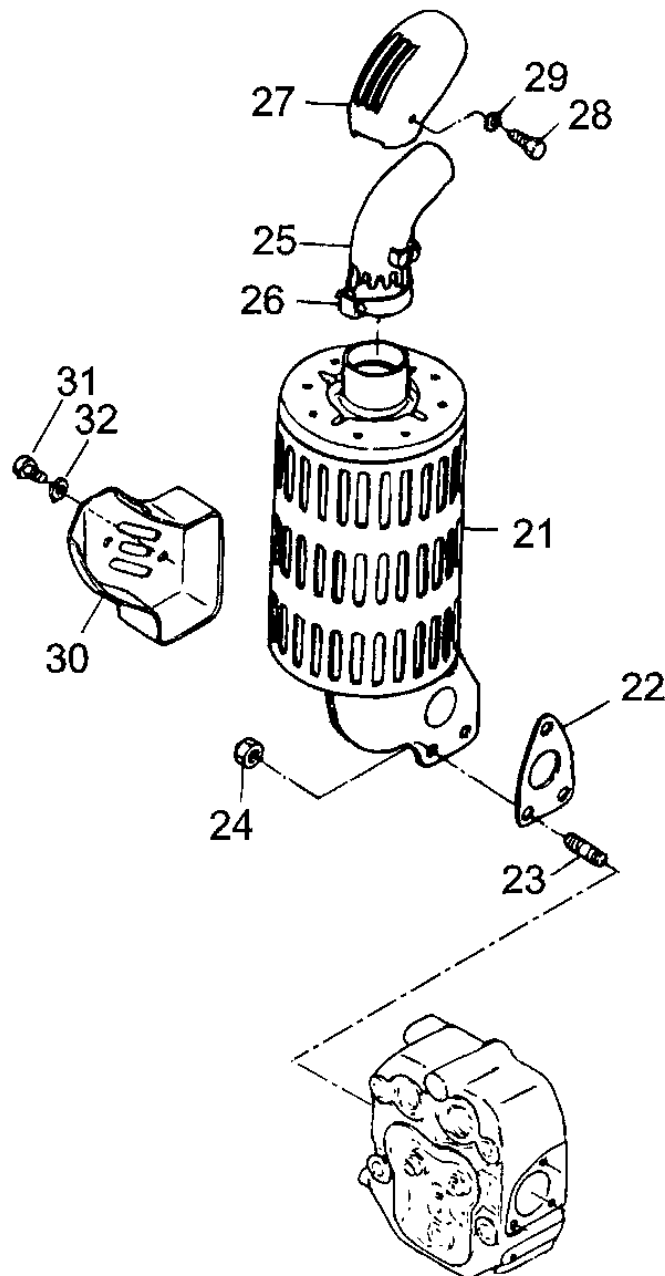
KUBOTA EA330 — AIR CLEANER ASSY.



KUBOTA EA330 — AIR CLEANER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	1497111012	CLEANER ASSY., AIR	1	INCLUDES ITEMS W/ @
2@	1497111180	ELEMENT, AIR CLEANER	1	
3@	1497111050	BODY CP	1	
4@	1497111520	O-RING	1	
5@	1491111460	BOLT, SETTING	1	
6@	1497111170	GASKET	1	
7@	1497111100	CASE CP	1	
8@	1491111920	GROMMET	1	
9@	1491111530	WING NUT	1	
10	1497188450	LABEL	1	
11	1497111614	FLANGE, AIR CLEANER	1	
12	1497111650	PACKING, FLANGE	1	
13	0102350622	BOLT	1	
14	0102350632	BOLT	2	
15	1G10105560	JOINT, BREATHER	1	

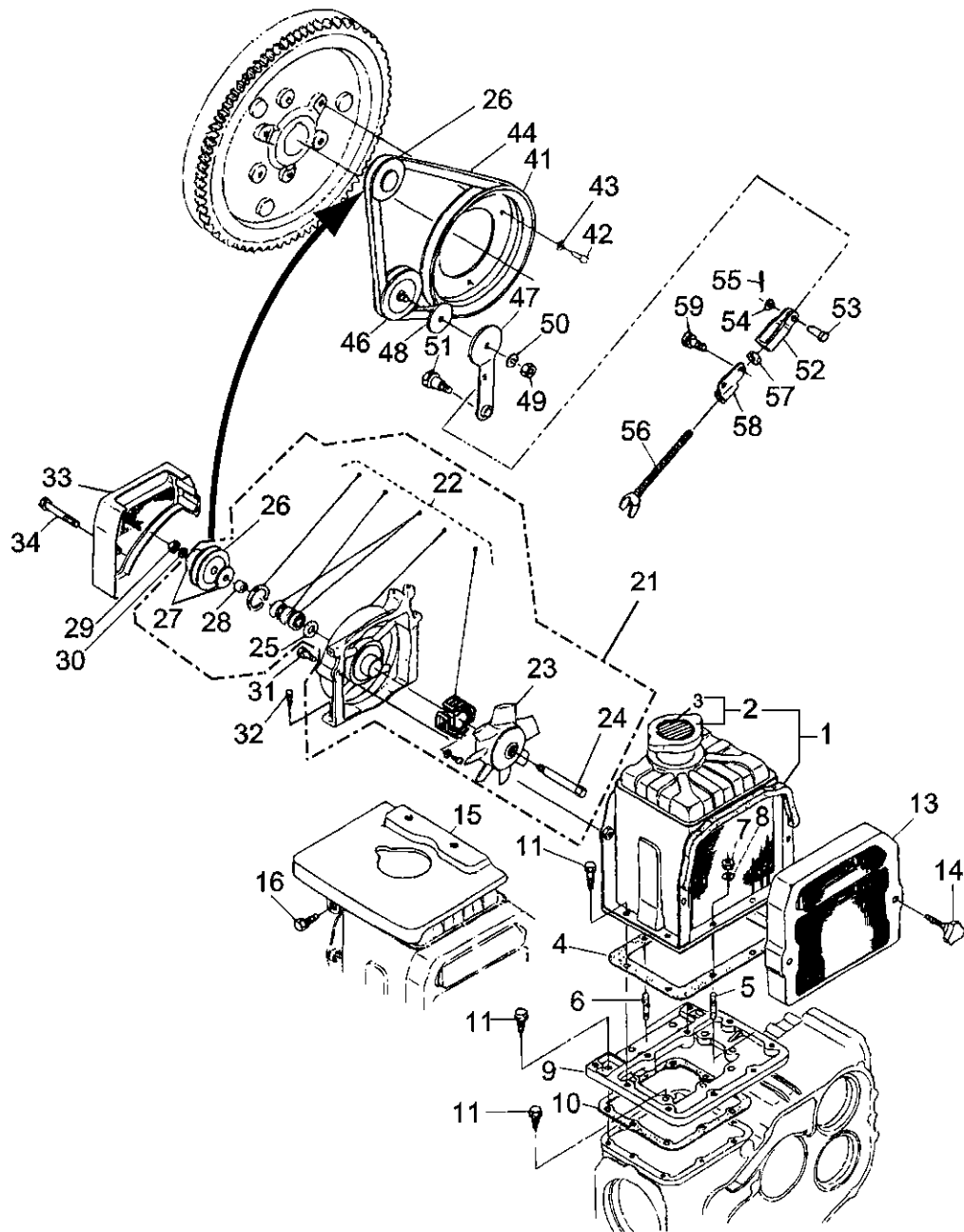
KUBOTA EA330 — MUFFLER ASSY.



KUBOTA EA330 — MUFFLER ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
21	1497112112	MUFFLER	1	
22	1459512230	GASKET, MUFFLER	1	
23	0151350816	STUD BOLT	3	
24	0211450080	NUT	3	
25	1491112412	PIPE, MUFFLER	1	
26	1443112430	BAND, PIPE	1	
27	1192412470	COVER, MUFFLER PIPE	1	
28	0105350608	BOLT	2	
29	0451260060	WASHER, LOCK	2	
30	1497112720	COVER MUFFLER FLANGE 1	1	
31	0105350608	BOLT	2	
32	0451260060	WASHER, LOCK	2	

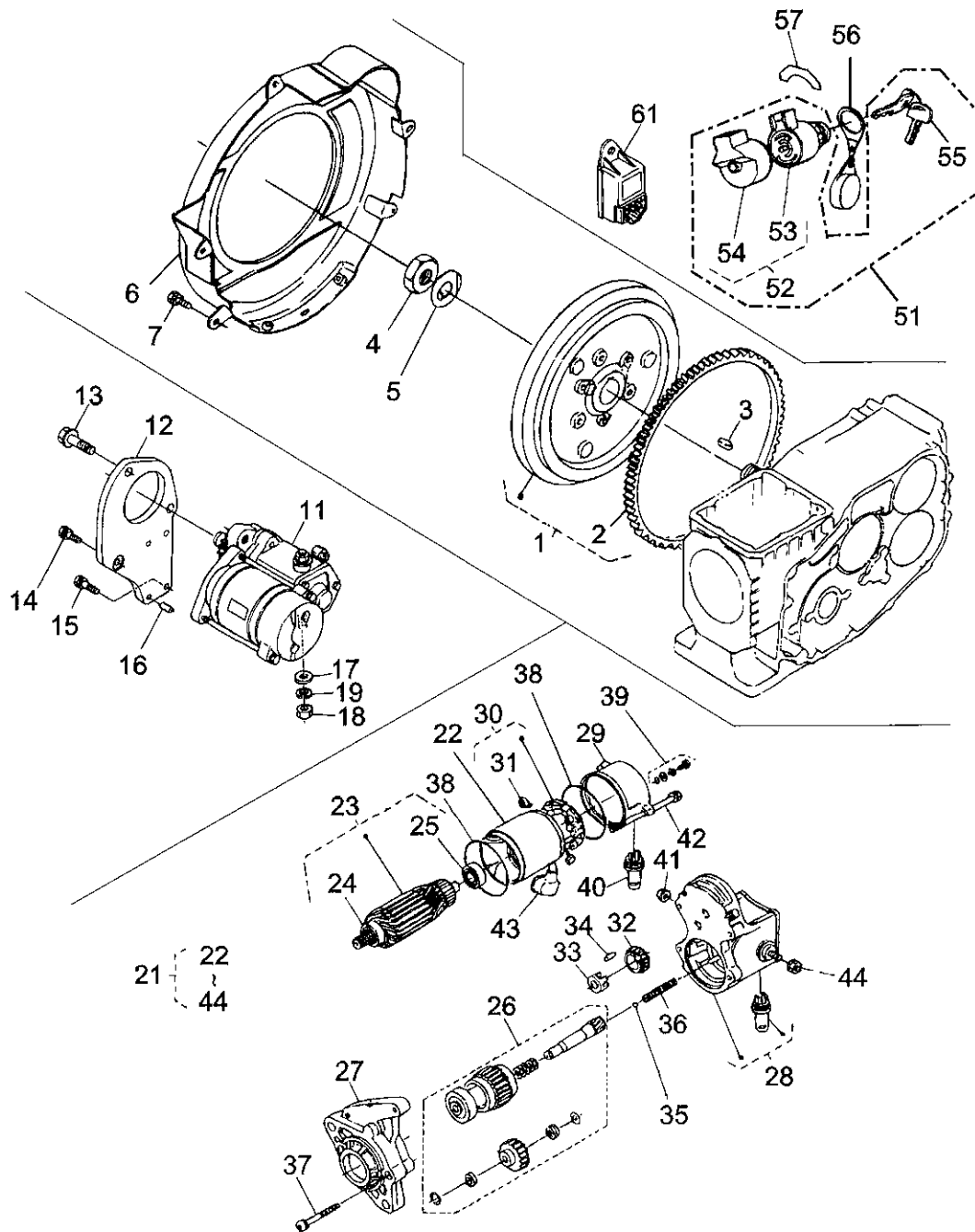
KUBOTA EA330 — RADIATOR AND FAN ASSY.



KUBOTA EA330 — RADIATOR AND FAN ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	1497172062	RADIATOR ASSY	1	INCLUDES ITEMS W/ @
2@	1113172030	CAP, RADIATOR	1	INCLUDES ITEMS W/ \$
3@\$	1113187240	LABEL, CAUTION	1	
4	1497172120	PACKING, RADIATOR	1	
5	0151850616	STUD BOLT	2	
6	1522188210	STUD	2	
7	0201450060	NUT	4	
8	0451260060	WASHER, LOCK	4	
9	1497172140	BASE, RADIATOR	1	
10	1459572450	GASKET	1	
11	0175450618	FLANGE BOLT	9	
13	1497172250	NET, RADIATOR	1	
14	0182050635	BOLT, KNOB	2	
15	1441672210	RADIATOR COVER	1	
16	0102350616	BOLT	1	
21	1G19674010	ASSY FAN, COOLING	1	INCLUDES ITEMS W/ %
22%	1G19674100	COMP. BRACKET, FAN	1	
23%	1G19674110	FAN	1	
24%	1497274140	SHAFT, FAN	1	
25%	1497274170	WASHER, FAN 1	1	
26%	1498274250	PULLEY, FAN	1	
27%	1497274240	WASHER, FAN 2	2	
28%	1497274250	PULLEY, FAN	1	
29	0211250120	NUT	1	
30	0451260120	WASHER, LOCK	1	
31	0102350616	BOLT	2	
32	0102350620	BOLT	2	
33	1497174120	COVER, FAN	1	
34	0102350660	BOLT	2	
41	1497174280	PULLEY, FAN DRIVE	1	
42	0105350614	BOLT	3	
43	0451260060	WASHER, LOCK	3	
44	1G82097010	V-BELT	1	
45	1497174302	ASSY PULLEY TENSION	1	
46	1454174322	PULLEY, TENSION	1	
47	1497174410	SUPPORT, TENSION PULLEY	1	
48	1491174770	CAP	1	
49	0205250080	NUT	1	
50	0451250080	WASHER, LOCK	1	REPLACES P/N 0451260080
51	1497191310	BOLT, REAMER	1	
52	1497174362	ARM, TENSION PULLEY	1	
53	0512250816	JOINT PIN	1	
54	0401250080	WASHER, FLAT	1	
55	0551150215	SPLIT COTTER PIN	1	
56	1970174940	TENSION BOLT	1	
57	0201450060	NUT	1	
58	1497174952	GUIDE, TENSION BOLT	1	
59	0102350612	BOLT	2	

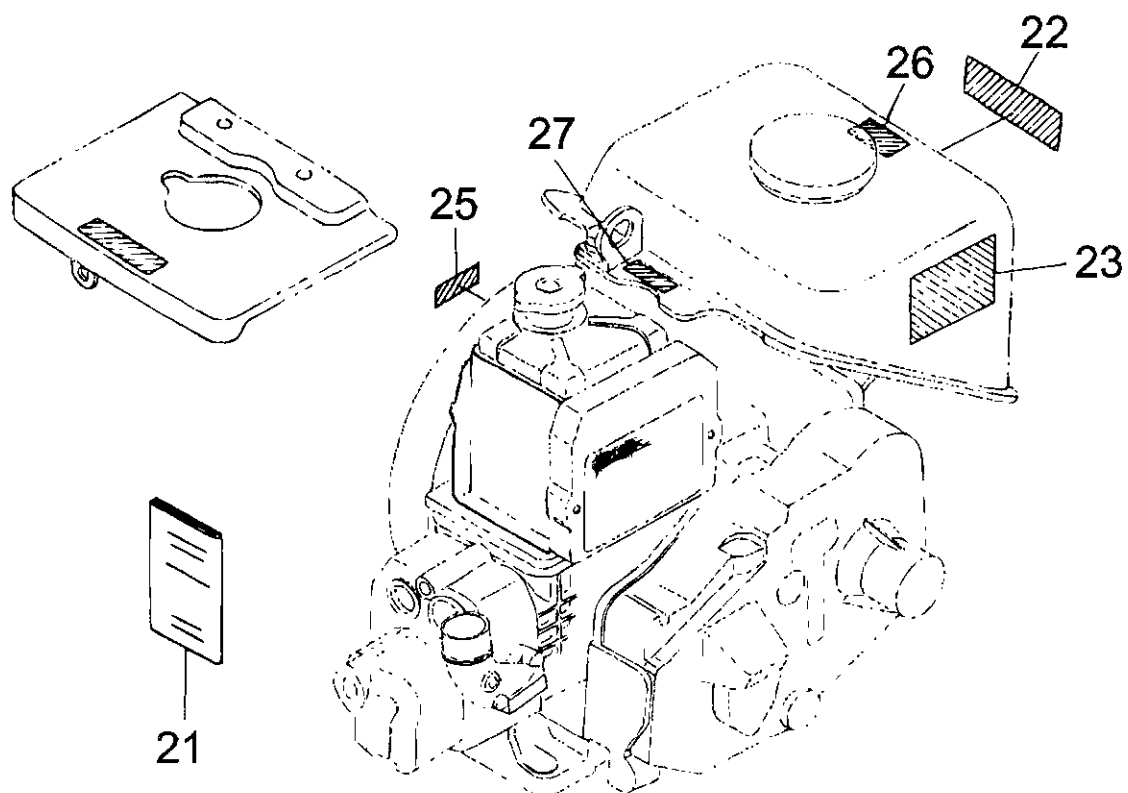
KUBOTA EA330 — FLYWHEEL AND STARTER ASSY.



KUBOTA EA330 — FLYWHEEL AND STARTER ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	1173725010	FLYWHEEL COMP.	1	INCLUDES ITEMS W/ @
2@	1948463820	RING GEAR	1	
3	1498195010	KEY, FEATHER	1	
4	1454123350	NUT, FLYWHEEL	1	
5	1428923370	WASHER FLYWHEEL	1	
6	1173725330	COVER, FLYWHEEL	1	
7	0102350614	BOLT	4	
11	1428963010	STARTING MOTOR ASSY.	1	
12	1428963890	SUPPORT, STARTER	1	
13	0177451030	FLANGE BOLT	2	
14	0102350620	BOLT	1	
15	0102350622	BOLT	2	
16	0501200614	PIN, STRAIGHT	2	
17	0401250080	WASHER, FLAT	1	
18	0211450080	NUT	1	
19	0451250080	WASHER, LOCK	1	REPLACES P/N 0451260080
21	1428963010	STARTING MOTOR ASSY.	1	INCLUDES ITEMS W/ %
22%	1119763080	YOKE ASSY	1	
23%	1119763070	ARMATURE ASSY.	1	INCLUDES ITEMS W/#
24%#	1146063500	BEARING	1	
25%#	1146063530	BEARING	1	
26%	1623563040	STARTER KIT	1	
27%	1428963030	HOUSING ASSY.	1	
28%	1428963020	SWITCH ASSY, MAGNETIC	1	
29%	1666163200	FRAME (END)	1	
30%	1738163380	HOLDER ASSY, BRUSH	1	INCLUDES ITEMS W/ \$
31%\$	1540163390	BRUSH SPRING	4	
32%	1146063270	GEAR (2)	1	
33%	1146063110	RETAINER	1	
34%	1921263100	ROLLER	5	
35%	1921297130	BALL	1	
36%	1146063120	SPRING	1	
37%	1146093310	BOLT	2	
38%	1551196660	O-RING	2	
39%	1551163760	BOLT ASSY.	2	
40%	1628563570	PIPE, DRAIN	1	
41%	1396392010	NUT	1	
42%	1119763320	BOLT	2	
43%	1117363130	COVER, TERMINAL	1	
44%	1628592010	NUT	1	
51	1G34763590	SWITCH ASSY., STARTER W/KEYS	1	INCLUDES ITEMS W/ @
52@	3272155400	SWITCH ASSY., STARTER	1	INCLUDES ITEMS W/ +
53@+	6C04055412	SWITCH, STARTER	1	
54@+	3272155430	COVER, STARTER SWITCH	1	
55@	1524863700	KEY, STARTER SWITCH	1	
56	5461141120	CAP, STARTER SWITCH	1	
57	1142087520	LABEL, STARTER SWITCH	1	
61	1569465990	LAMP TIMER	1	

KUBOTA EA330 — NAMEPLATE AND DECALS ASSY.



KUBOTA EA330 — NAMEPLATE AND DECALS ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
21	1G19489153	OPERATOR'S MANUAL/EXP	1	
22	1G19488110	LABEL: EMBLEM-E3	1	
23	1G19488210	LABEL: ENGINE, CAUTION	1	
25	1479988220	LABEL: CAUTION	1	
26	1G19488410	LABEL: CAUTION, FUEL	1	
27	1918788360	LABEL: ENGINE HOOK	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

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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

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

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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