

# SERVICE MANUAL



*Mikasa* SERIES  
MODEL  
**MVH128/MVH158 SERIES**  
**REVERSIBLE PLATE COMPACTORS**

SERVICE MANUAL NO. 410-01702

Revision #0 (10/20/25)

To find the latest revision of this publication or  
associated parts manual, visit our website at:  
[www.multiquip.com](http://www.multiquip.com)



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## 1. INTRODUCTION

- For correct operation, maintenance and service of Reversible Compactor, please read the separate operation manual before your work for your safe work.
- For the handling of engine, please read the separate engine operation manual and maintenance/service manual.
- This service manual explains the maintenance standard and how to disassemble and assemble for Reversible Compactor. Please read this service manual for a better understanding of the maintenance standard, the structure and function of each part.
- To improve the performance and quality of this machine, the change might be made in this machine without notice. If you have any questions, please contact with our distributor. For parts list, Mikasa WEB parts list is available at our homepage (<http://www.mikasas.com/>).

## 2. WARNING SIGNS

The triangle shaped  marks used in this manual and on the decals stuck on the main body indicate common hazards. Be sure to read and observe the cautions described.

|  <b>Warning labels indicating hazards to humans and to equipment.</b> |                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <b>DANGER</b>                                                        | Denotes an extreme hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, is likely to result in serious injury or death.                |
|  <b>WARNING</b>                                                       | Denotes a hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in serious injury or death.                                |
|  <b>CAUTION</b>                                                     | Denotes a hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in injury to people and may damage or destroy the product. |
| <b>CAUTION</b><br>(without at  )                                    | Failure to follow the instructions may result in damage to property.                                                                                                                                           |

## 3. CAUTIONS FOR MAINTENANCE TO SECURE SAFETY

### 3.1 Work Site

#### **DANGER**

- Do not work indoor or inside a tunnel where ventilation is poor. The emission from the engine contains toxic gas such as carbon monoxide, and it is very dangerous if this toxic gas and dust are inhaled. Also, to improve ventilation, please keep a proper distance between this machine and a building when operating the machine.



#### **CAUTION**

- Maintenance should be done in a place with a flat and hard surface to keep the machine stable. Also, do maintenance at sufficient work space.
- Before maintenance work, clean the floor. Oil on the floor, in particular, becomes the cause of falling accident.
- For maintenance work, have sufficient lighting in the work site. A portable lamp used to illuminate the work area has to be protected by wire. In case if the lamp is broken, fuel and oil might ignite.
- To prepare for an accident, please have emergency medical supplies and fire extinguisher ready at an easily accessible area.



### 3.2 Clothes And Protective

#### CAUTION

- To work safely, wear work clothes of appropriate size, and use suitable protective gear such as helmet and safety shoes. The work clothes that do not fit the body size might result in unpredicted injury because the clothes easily get caught by rotating part of the machine.



### 3.3 Cautions During Refueling clothes And Protective

#### CAUTION

- When adding fuel
  - Always refuel in the well ventilated area.
  - Always refuel after the engine stopped and cooled sufficiently.
  - Select a flat surface location away from flammable material and Do not overfill the tank. If spilled fuel, wipe it off well.
  - Never put fire near the refueling area. (Never refuel while smoking.)
- If fuel is filled to the top, it might overflow, and is dangerous.
- After refueling, securely tighten the tank cap.



### 3.4 Prevention Of Burn And The Accident Of Getting Caught

#### WARNING

- Start your work after the machine temperature drops. Especially, the muffler gets very hot, and it will pose a danger of burn accident. Also, engine and engine oil as well as vibrator become hot. Be careful not to get a burn.
- If maintenance work is started with the engine running, injury might occur because you might get caught by the rotating part such as pulley and V-belt. Always stop the engine before maintenance.
- Before maintenance work, remove the starter key of the engine.
- Before starting maintenance, always remove the minus (-) terminal of the battery.



### 3.5 Tools And Equipment

#### WARNING

- When lifting the machine body and the engine, always use a crane. When lifting the machine and the engine, follow the cautions listed below. If the machine or the engine is dropped, a serious accident might occur.
- To operate a crane, a crane handling qualification is required. Have someone qualified to handle and operate a crane do this work.
- Before lifting, check the parts (especially, hook and anti-vibration rubber) of this machine for damage and loosening/lack of bolts to secure safety.
- Before lifting, stop the engine and shut the fuel cock.
- Use sufficiently strong wire rope.
- For lifting, use only the lifting hook. Do not use other part for lifting.
- Never allow anyone or any animal come under the lifted machine.
- For safety, do not lift to the height more than necessary.
- Use an appropriate tool. If the tool that is not suitable for the part is used, not only the damage on the part, but also unpredicted accident might occur.



### 3.6 Handling Of Battery

#### WARNING

- Before starting maintenance, always remove the minus terminal of the battery. If short circuit occurs, ignition might occur.
- The battery gas might become a cause of explosion. Do not put fire nearby.
- Especially, during charging, flammable gas is released. Do not put fire nearby.
- The battery fluid is very toxic. Be careful when handling. If the battery fluid gets on your skin, eye or on your clothes, wash it off with plenty of water, then see a doctor.



### 3.7 Use Of Genuine Parts And Appropriate Oil And V-belt

#### **CAUTION**

- Always use genuine parts.  
If inappropriate parts are used, not only it will shorten the machine life, but it might lead to unpredicted accident.

### 3.8 Tightening Torque Of Bolts And Nuts

#### **WARNING**

- Tighten bolts and nuts with the tightening torque specified in this maintenance manual.  
Over tightening torque and lack of tightening torque not only affect the machine life, but also might occur unexpected accident.

### 3.9 Disposal Of Waste Material

#### **CAUTION**

- Unnecessary engine oil, hydraulic oil and fuel should be kept in a container. Never dump it on the ground or pour into the sewage system such as side ditch.
- For disposal of unnecessary engine oil, hydraulic oil and fuel, follow the law and other regulations.

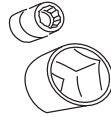
## 4. TOOLS

### TOOLS

- Wrench
- Ratchet Wrench
- Socket
- Hexagonal Wrench
- Torque Wrench
- External snap ring plier / Internal snap ring plier
- Pulley puller
- Plastic hammers



Wrench  
(10mm,13mm,  
13mm, 19mm,  
17mm,30mm)



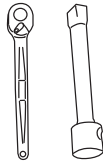
Socket  
(10mm,12mm  
13mm, 19mm,  
17mm,30mm)



Hexagonal  
Wrench  
(6mm, 8mm)



Plastic hammers



Ratchet Wrench



Torque Wrench



External snap ring plier  
/Internal snap ring plier



Pulley puller

### Adhesive & Grease

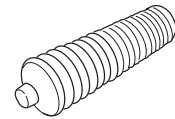
- Screw lock agent  
(Locktite 243, 263)
- Liquid gasket  
(Threebond #1211)
- Molybdenum grease



Screw lock agent  
(Locktite 243, 263)



Liquid gasket  
(Threebond #1211)



Molybdenum  
grease

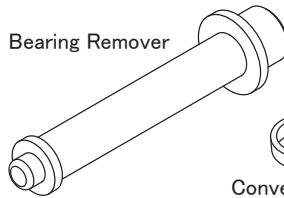
### Special Tools

- Bearing Remover Set
  - Bearing Remover
  - Conversion Ring
  - Bearing Guide(A)
  - Bearing Guide(B)
- Bearing Insertion Tool Set
  - Bearing Insertion Tool
  - Bearing Holder
  - conversion ring
  - Bearing Insertion Cup
- Gear Special Tool Set
  - Gear Guide (A)
  - Gear Guide (B)

9849-30020

Bearing Remover Set /128 158

Bearing Remover



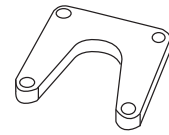
Conversion Ring  
(For MVH-158)



Socket Head Bolt  
M10x15 P1.25



Bearing Guide(A)



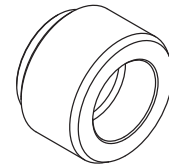
Bearing Guide(B)

9849-30010

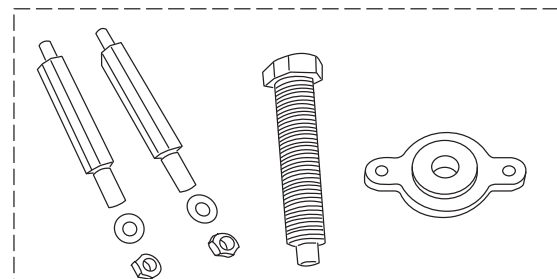
Bearing Insertion Tool Set  
/ 128 158



Bearing Holder



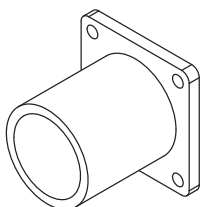
Bearing Insertion Cup



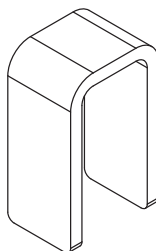
Bearing Insertion Tool

9849-30030

Gear Special Tool Set /128 158



Gear Guide (A)



Gear Guide (B)

## 5. INSPECTION PROCEDURE

### 5.1 Appearance Check

- (1) Assembly condition of each component (bolt loosening, defective parts, etc.)
- (2) Damage on machine body
- (3) Oil check (oil level, dirtiness)
  - a. Engine oil (when shipped, SAE10W30) (For oil level, please see the table below.)
  - b. Vibrator oil
  - c. Hydraulic oil (forward/backward travel)
- (4) V-belt check (tension, scratch, crack, deterioration, etc.)
- (5) Anti-vibration rubber check (scratch, crack, setting, deterioration, etc.)

### 5.2 Operation Check

- (1) Engine
- (2) Engine speed check (Operating speed, idling speed)
  - Travel
    - a. Forward/backward travel switch check
    - b. Forward/backward travel speed check
- (3) Check for abnormal noise during operation

#### Standard torque table

| Screw diameter |        | The collar screws materials        |               |
|----------------|--------|------------------------------------|---------------|
|                |        | Aluminum<br>Aluminum type+Helisert | SS,FCD        |
| M6             | N·m    | 11.8 - 14.7                        | 14.7 - 17.7   |
|                | Kgf·cm | 120 - 150                          | 150 - 180     |
|                | ft·lbf | 8.7 - 10.8                         | 10.8 - 13.0   |
| M8             | N·m    | 24.5 - 29.4                        | 32.4 - 35.3   |
|                | Kgf·cm | 250 - 300                          | 330 - 360     |
|                | ft·lbf | 18.1 - 21.7                        | 23.9 - 26.0   |
| M10            | N·m    | 58.8 - 68.6                        | 73.5 - 78.5   |
|                | Kgf·cm | 600 - 700                          | 750 - 800     |
|                | ft·lbf | 43.4 - 50.6                        | 54.2 - 57.9   |
| M12            | N·m    | 98.1 - 107.9                       | 112.8 - 122.6 |
|                | Kgf·cm | 1000 - 1100                        | 1150 - 1250   |
|                | ft·lbf | 72.3 - 79.6                        | 83.2 - 90.4   |
| M14            | N·m    | 117.7 - 127.5                      | 166.7 - 176.5 |
|                | Kgf·cm | 1200 - 1300                        | 1700 - 1800   |
|                | ft·lbf | 86.8 - 94.4                        | 123.0 - 130.2 |

## 6. SPECIFICATION

| MODEL                   |                  | MVH-128GH                           | MVH-158GH                           |
|-------------------------|------------------|-------------------------------------|-------------------------------------|
| <b>Main Dimensions</b>  |                  |                                     |                                     |
| Overall Length          | mm               | 1030                                | 1140                                |
| Overall Height (Handle) | mm               | 965                                 | 980                                 |
| Overall Width           | mm               | 400                                 | 430                                 |
| <b>Compacting Board</b> |                  |                                     |                                     |
| Width                   | mm               | 400                                 | 430                                 |
| Length                  | mm               | 590                                 | 700                                 |
| <b>Weight</b>           |                  |                                     |                                     |
| Operating Weight        | kg               | 122                                 | 148                                 |
| <b>V-belt</b>           |                  |                                     |                                     |
| Parts Number            |                  | 0701-00332                          | 0701-00362                          |
| Size                    |                  | RPF-3330                            | RPF-3360                            |
| <b>Vibration Case</b>   |                  |                                     |                                     |
| Lubricant               |                  | SAE 10W-30                          | SAE 10W-30                          |
| Oil Capacity            | cc               | 350                                 | 350                                 |
| <b>Hand pump</b>        |                  |                                     |                                     |
| Hydraulic Oil           |                  | Shell Terrace Oil #32 or equivalent | Shell Terrace Oil #32 or equivalent |
| Oil Capacity            | cc               | 300                                 | 300                                 |
| <b>Engine</b>           |                  |                                     |                                     |
| Manufacturer, Type      |                  | HONDA, GX160                        | HONDA, GX200                        |
| Type Of Engine          |                  | Air-cooled 4-cycle petrol engine    | Air-cooled 4-cycle petrol engine    |
| Maximum Power           | kw/rpm<br>PS/rpm | 3.6/3600<br>4.9/3600                | 4.3/3600<br>5.8/3600                |
| Operating Engine Speed  | rpm              | 3600                                | 3600                                |
| <b>Parformance</b>      |                  |                                     |                                     |
| Vibrating Frequency     | Hz/VPM           | 90/5400                             | 90/5400                             |
| Centrifugal Force       | kN               | 23.5                                | 27                                  |
| Max. Traveling Speed    | m/min            | 0~27                                | 0~27                                |
| Lubricant               |                  | API SE or later<br>SAE 10W-30       | API SE or later<br>SAE 10W-30       |
| Oil Capacity            | cc               | 580                                 | 600                                 |

**Notice :** Specifications are subject to change without notice.



| MODEL                   |                  | MVH-158DZ                           | MVH-158DY                           |
|-------------------------|------------------|-------------------------------------|-------------------------------------|
| <b>Main Dimensions</b>  |                  |                                     |                                     |
| Overall Length          | mm               | 1140                                | 1140                                |
| Overall Height (Handle) | mm               | 980                                 | 980                                 |
| Overall Width           | mm               | 430                                 | 430                                 |
| <b>Compacting Board</b> |                  |                                     |                                     |
| Width                   | mm               | 430                                 | 430                                 |
| Length                  | mm               | 700                                 | 700                                 |
| <b>Weight</b>           |                  |                                     |                                     |
| Operating Weight        | kg               | 165                                 | 162                                 |
| <b>V-belt</b>           |                  |                                     |                                     |
| Parts Number            |                  | 0701-00352                          | 0701-00352                          |
| Size                    |                  | RPF-3350                            | RPF-3350                            |
| <b>Vibration Case</b>   |                  |                                     |                                     |
| Lubricant               |                  | SAE 10W-30                          | SAE 10W-30                          |
| Capacity                | cc               | 350                                 | 350                                 |
| <b>Hand pump</b>        |                  |                                     |                                     |
| Hydraulic Oil           |                  | Shell Terrace Oil #32 or equivalent | Shell Terrace Oil #32 or equivalent |
| Capacity                | cc               | 300                                 | 300                                 |
| <b>Engine</b>           |                  |                                     |                                     |
| Manufacturer, Type      |                  | HATZ, 1B20                          | YANMAR, L48N                        |
| Type Of Engine          |                  | Air-cooled 4-cycle diesel engine    | Air-cooled 4-cycle diesel engine    |
| Maximum Power           | kw/rpm<br>PS/rpm | 3.1/3000<br>4.2/3000                | 3.5/3600<br>4.7/3600                |
| Operating Engine Speed  | rpm              | 3100                                | 3100                                |
| <b>Parformance</b>      |                  |                                     |                                     |
| Vibrating Frequency     | Hz/VPM           | 90/5400                             | 90/5400                             |
| Centrifugal Force       | kN               | 27                                  | 25                                  |
| Max. Traveling Speed    | m/min            | 0~27                                | 0~26                                |
| Lubricant               |                  | API CF or later<br>SAE 10W-30       | API CD or later<br>SAE 10W-30       |
| Capacity                | cc               | 900                                 | 800                                 |

**Notice :** Specifications are subject to change without notice.

## 7. CAUTIONS BEFORE MAINTENANCE WORK

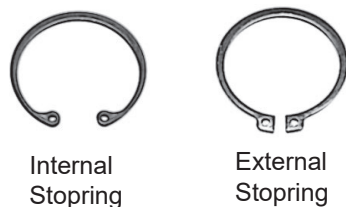
1. Disassembly and assembly of this machine, with inspection and change of vibrator oil included, should be done on a horizontal surface area without dirt and dust. Before disassembly and assembly, understand well the normal assembly condition so that you will not make assembly error.
2. During disassembly and assembly, be careful not to damage each parts.
3. If oil seal, gasket, packing, O-ring or lock washer is disassembled, replace it with a new one each time.
4. Insert the bearing after applying grease.
5. The contact surface between vibrator case and vibrator top cover should be sealed with O-ring. (Clean the contact surface and be careful about O-ring position when assembling.)
6. When tightening bolts and nuts, tighten them according to the specified standard torque and applying the screw lock agent (Loctite, etc.). For bolts and nuts with no specification, refer to the "Tightening torque list". (When applying screw lock agent, degrease and clean the screw part with the brake cleaner, etc.)  
(Note) The bolts used on this machine are all of the right hand thread.

**Tightening torque list** (unit: kgf-cm, 1kgf-cm=9.80665N-cm)

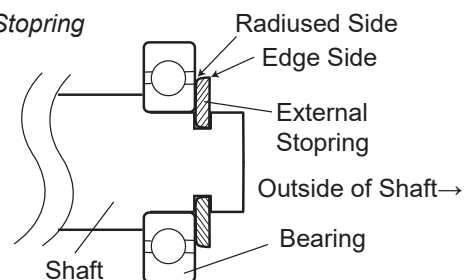
|          |                                       | Thread diameter |         |         |                                                        |       |       |       |       |
|----------|---------------------------------------|-----------------|---------|---------|--------------------------------------------------------|-------|-------|-------|-------|
|          |                                       | 6mm             | 8mm     | 10mm    | 12mm                                                   | 14mm  | 16mm  | 18mm  | 20mm  |
| Material | 4T(SS41)                              | 70              | 150     | 300     | 500                                                    | 750   | 1,100 | 1,400 | 2,000 |
|          | 6-8T(S45C)                            | 100             | 250     | 500     | 800                                                    | 1,300 | 2,000 | 2,700 | 3,800 |
|          | 11T(SCM3)                             | 150             | 400     | 800     | 1,200                                                  | 2,000 | 2,900 | 4,200 | 5,600 |
|          | When the mating material is aluminum. | 100             | 300-350 | 650-700 | (Bolts used on the machine are all right-hand thread.) |       |       |       |       |

**To change the unit to kgf-cm, convert with  $1 \text{ N} \cdot \text{m} = 10.197 \text{ kgf} \cdot \text{cm}$ .**

7. When the bolts applied the screw lock agent (Loctite, etc.) are difficult to loosen, they loosen easily by heating them with a torch burner. Then, replace the heated bolt with a new one. It should be a specified high tension bolt (genuine parts).
8. Use correct tools correctly.
9. First of all, the machine with battery remove the minus terminal before starting disassembly. After assembly is done completely, install the minus terminal.
10. Assemble the stop ring by facing the edge side to outside



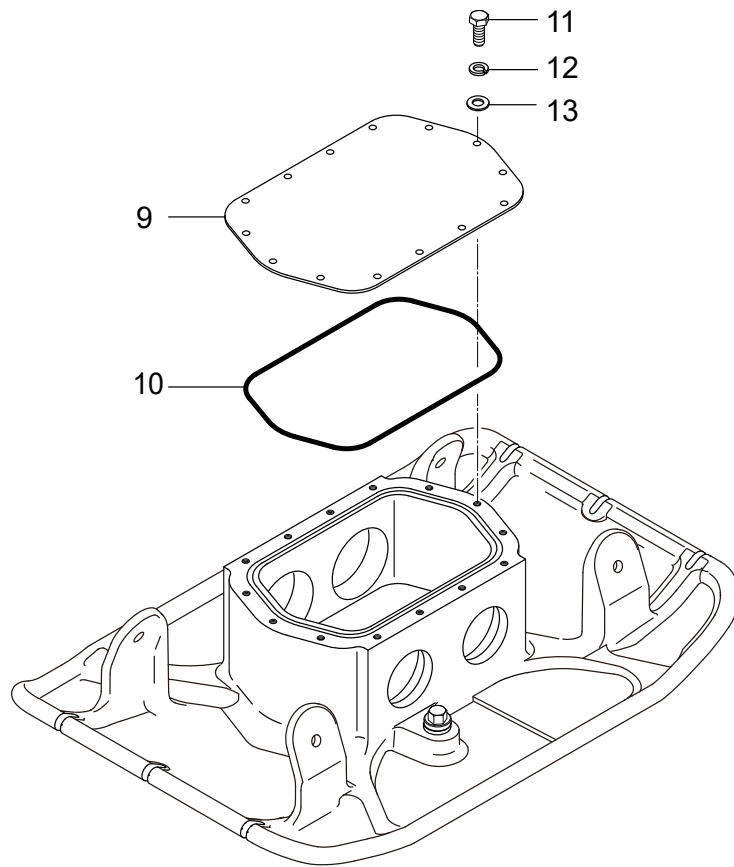
Ex. External Stopping



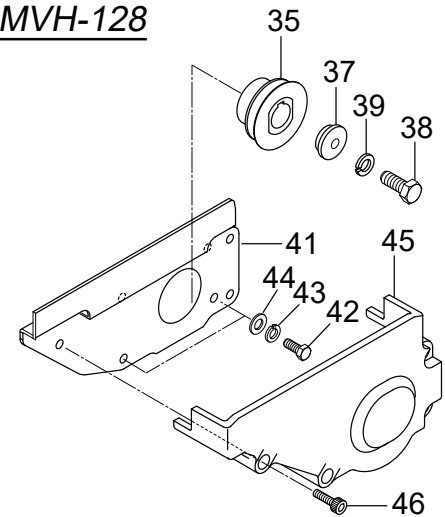
## 8. DISASSEMBLY AND ASSEMBLY

### MVH-128/158

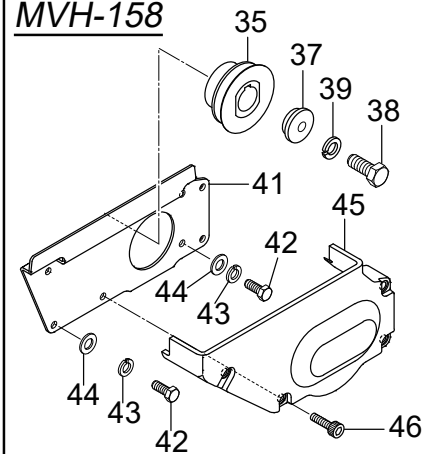
#### VIBRATION CASE



#### MVH-128



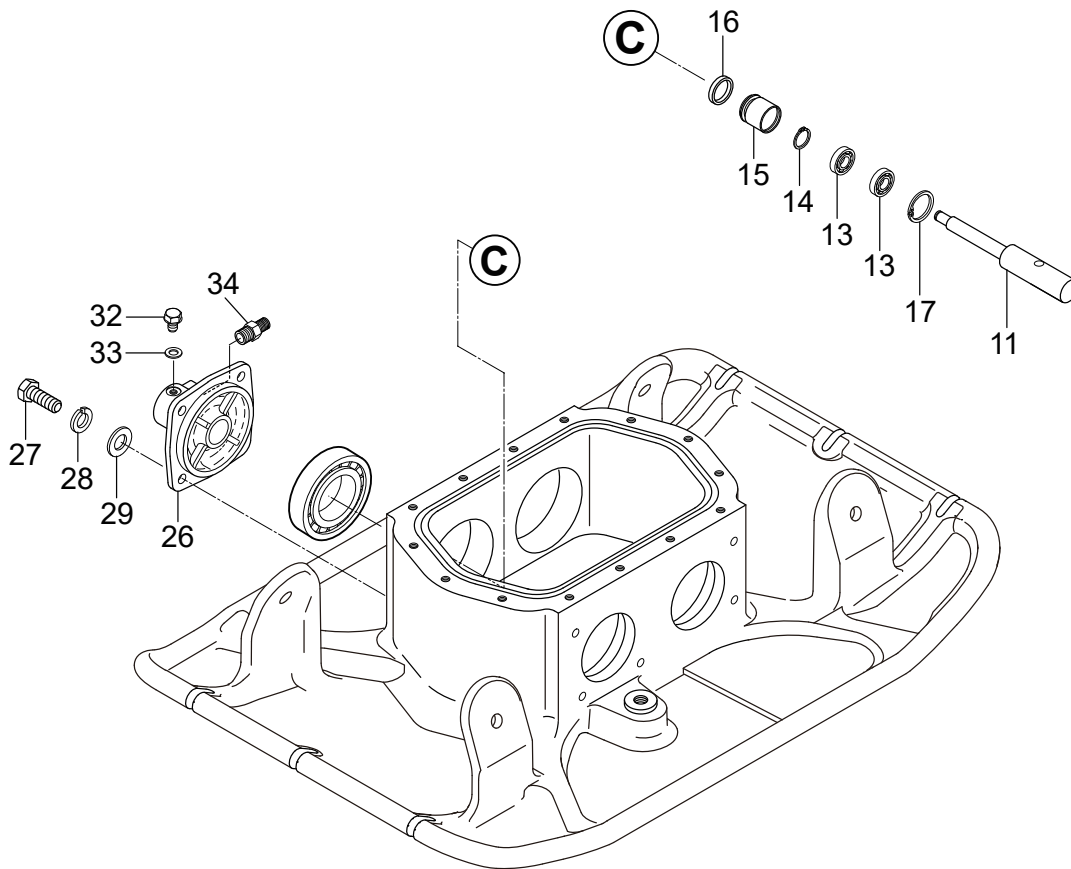
#### MVH-158



| No | PartsNo    | Parts Name                | Q'TY | Remarks      |
|----|------------|---------------------------|------|--------------|
| 9  | 4713-54550 | COVER, VIBRATOR /MVH-158  | 1    |              |
| 10 | 0507-10080 | O-RING AS568-267          | 1    |              |
| 11 | 0012-20820 | BOLT 8X20 T               | 14   |              |
| 12 | 0302-08200 | SW M8                     | 14   |              |
| 13 | 0311-08160 | PW M8                     | 14   |              |
| 35 | 4723-55210 | PULLEY / MVH-128          | 1    | MVH-128      |
|    | 4713-54620 | PULLEY 87D /GX200/MVH-158 | 1    | MVH-158GH    |
|    | 4713-54630 | PULLEY 77D W/FAN /MVH-150 | 1    | MVH-158DZ,DY |
| 37 | 4714-70140 | WASHER, PULLEY/MVH-158    | 1    |              |
| 38 | 0012-20830 | BOLT 8X30 T               | 1    |              |
| 39 | 0302-08200 | SW M8                     | 1    |              |
| 41 | 4723-55220 | GUIDE, BELT COVER/MVH-128 | 1    | MVH-128      |
|    | 4713-54610 | GUIDE, BELT COVER/MVH158  | 1    | MVH-158      |
| 42 | 0012-20820 | BOLT 8X20 T               | 3    |              |
| 43 | 0302-08200 | SW M8                     | 3    |              |
| 44 | 0311-08160 | PW M8                     | 3    |              |
| 45 | 4722-19870 | BELT COVER, LOWER/MVH-128 | 1    | MVH-128      |
|    | 4712-19680 | BELT COVER, LOWER/MVH-158 | 1    | MVH-158      |
| 46 | 0015-20851 | SOCKET HEAD BOLT 8X55 T   | 4    | MVH-128      |
|    | 0015-20852 | SOCKET HEAD BOLT 8X60 T   | 4    | MVH-158      |

# MVH-128/158

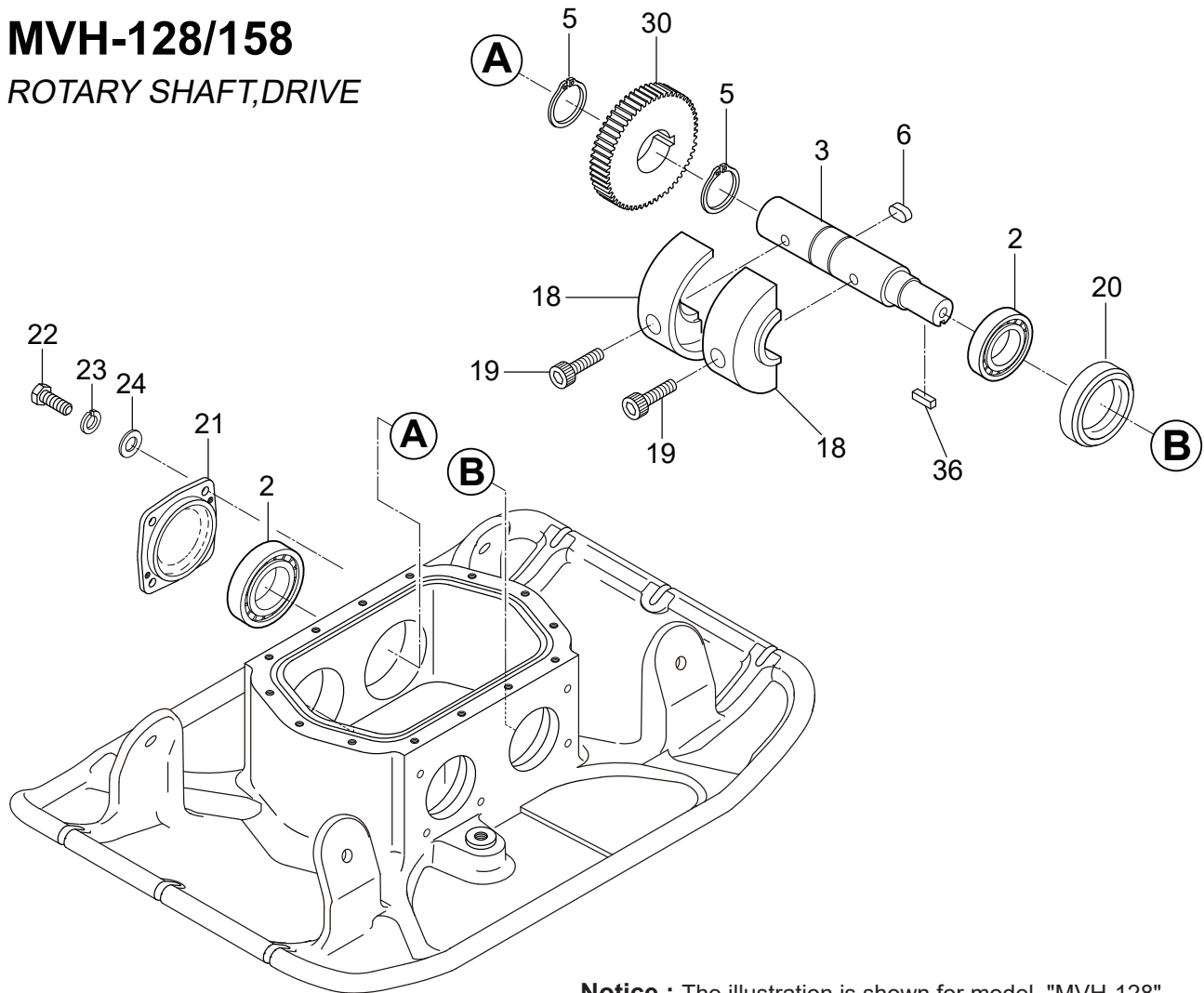
## PISTON & CYLINDER



| No | PartsNo    | Parts Name                | Q'TY | Remarks |
|----|------------|---------------------------|------|---------|
| 12 | 0255-08050 | PIN 8X50                  | 1    |         |
| 13 | 0425-06000 | BEARING 6000ZZSG          | 2    |         |
| 14 | 0802-00100 | STOP RING S-10            | 1    |         |
| 15 | 4554-35051 | PISTON, 22.4D /MVH-200    | 1    |         |
| 16 | 4550-10070 | PACKING USH-22.4X30X5     | 1    |         |
| 17 | 0801-00260 | STOP RING R-26            | 1    |         |
| 26 | 4712-19700 | CYLINDER /MVH-158         | 1    |         |
| 27 | 0012-20825 | BOLT 8X25 T               | 4    |         |
| 28 | 0302-08200 | SW M8                     | 4    |         |
| 29 | 0311-08160 | PW M8                     | 4    |         |
| 32 | 0012-20812 | BOLT 8X12 T               | 1    |         |
| 33 | 9534-04600 | COPPER PACKING 8.2X16X1.6 | 1    |         |
| 34 | 9540-10020 | CONNECTOR PT,PF1/4        | 1    |         |

# MVH-128/158

## ROTARY SHAFT,DRIVE

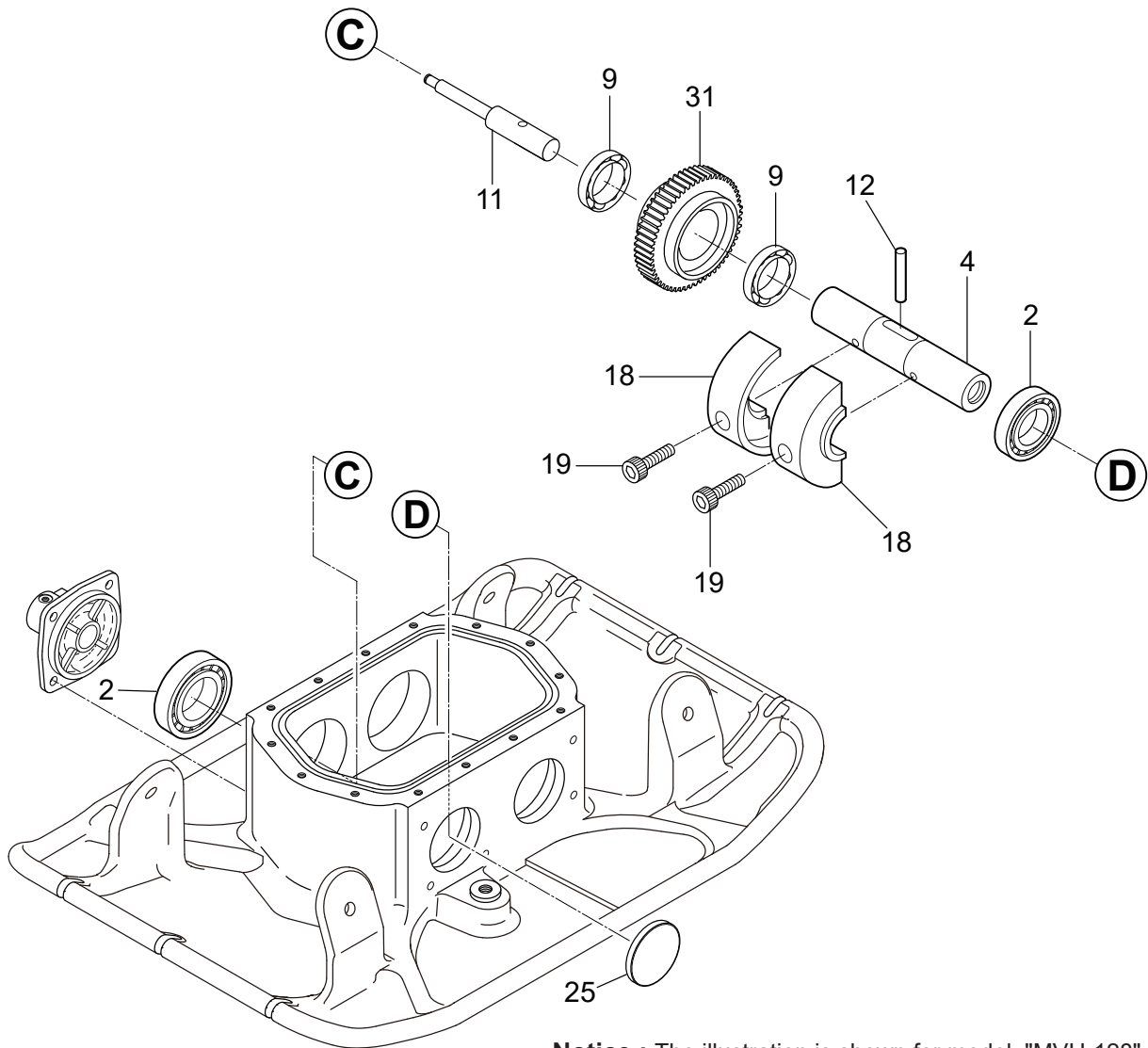


**Notice :** The illustration is shown for model, "MVH-128".

| No | PartsNo    | Parts Name                | Q'TY | Remarks      |
|----|------------|---------------------------|------|--------------|
| 2  | 0404-06307 | BEARING 6307C4            | 2    | MVH-128      |
|    | 0479-20090 | ROLLER BEARING NJ307MC4   | 2    | MVH-158      |
| 3  | 4723-55260 | ROTARY SHAFT,DRIVE/MVH128 | 1    | MVH-128      |
|    | 4713-54820 | ROTARY SHAFT,DRIVE/158    | 1    | MVH-158      |
| 5  | 0802-00350 | STOP RING S-35            | 2    |              |
| 6  | 9514-05460 | KEY 10X8X19 RR            | 1    |              |
| 18 | 4724-71020 | ECCENTRIC ROTATOR/MVH-128 | 2    | MVH-128      |
|    | 4714-70150 | ECCENTRIC ROTATOR/MVH-158 | 2    | MVH-158GH,DZ |
|    | 4714-70390 | ECCENTRIC ROTATOR/L48/158 | 2    | MVH-158DY    |
| 19 | 0091-20306 | SOCKET HEAD BOLT 10X30T   | 2    |              |
| 20 | 0602-02060 | OIL SEAL SC-28508         | 1    |              |
| 21 | 4713-54540 | BEARING COVER /MVH-158    | 1    |              |
| 22 | 0012-20825 | BOLT 8X25 T               | 4    |              |
| 23 | 0302-08200 | SW M8                     | 4    |              |
| 24 | 0311-08160 | PW M8                     | 4    |              |
| 30 | 4713-54810 | GEAR(DRIVE)/MVH-158       | 1    |              |
| 36 | 9514-00990 | KEY 7X7X20                | 1    | MVH-128      |
|    | 9514-01920 | KEY 7X7X30                | 1    | MVH-158      |

# MVH-128/158

## ROTARY SHAFT,DRIVEN



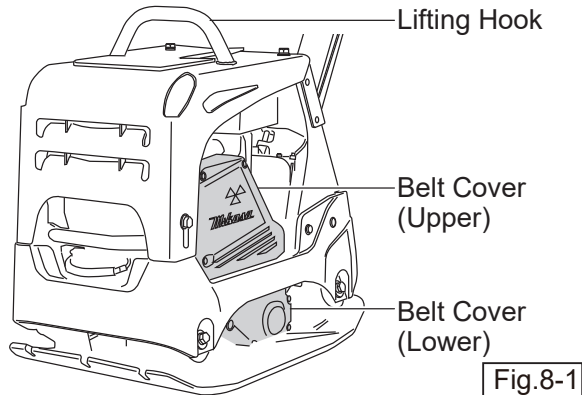
**Notice :** The illustration is shown for model, "MVH-128".

| No | PartsNo    | Parts Name                | Q'TY | Remarks      |
|----|------------|---------------------------|------|--------------|
| 2  | 0404-06307 | BEARING 6307C4            | 2    | MVH-128      |
|    | 0479-20090 | ROLLER BEARING NJ307MC4   | 2    | MVH-158      |
| 4  | 4723-55270 | ROTARY SHAFT,DRIVEN/128   | 1    | MVH-128      |
|    | 4713-54830 | ROTARY SHAFT,DRIVEN/158   | 1    | MVH-158      |
| 9  | 0403-06907 | BEARING 6907C3            | 2    |              |
| 11 | 4593-46230 | PISTON ROD /MVH-150       | 1    |              |
| 12 | 0255-08050 | PIN 8X50                  | 1    |              |
| 18 | 4724-71020 | ECCENTRIC ROTATOR/MVH-128 | 2    | MVH-128      |
|    | 4714-70150 | ECCENTRIC ROTATOR/MVH-158 | 2    | MVH-158GH,DZ |
|    | 4714-70390 | ECCENTRIC ROTATOR/L48/158 | 2    | MVH-158DY    |
| 19 | 0091-20306 | SOCKET HEAD BOLT 10X30T   | 2    |              |
| 25 | 9530-10060 | SEAL CAP SC50-8           | 1    |              |
| 31 | 4583-42590 | GEAR(DRIVEN) /MVH-120,150 | 1    |              |

## 8.1 Disassembly and Assembly of the Engine base and Vibrating plate

### (1) Disassembly

- a. Remove the upper and lower (45) of belt cover.(Fig. 8-1)

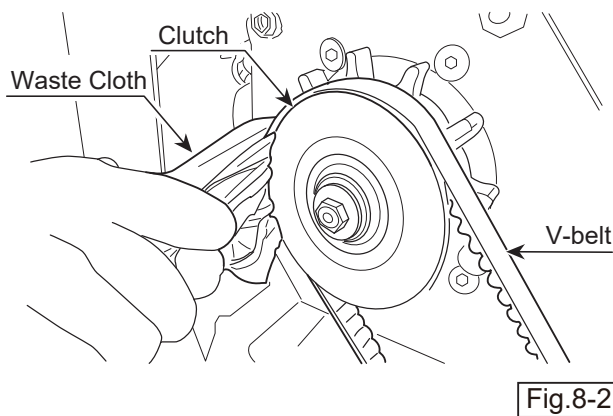


- b. Remove the V-belt (22).(Fig. 8-2)

#### **WARNING**

When removing V-belt, after hanging the waste cloth on the V-belt, then remove the V-belt by rotating while pulling the waste cloth. Be very careful not to have your finger get caught.

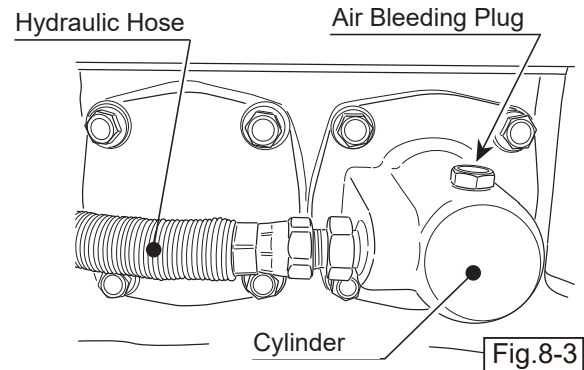
In case of the V-belt have damage, it might be broken by the pulling force. Your body might damage due to this broken, so be very careful about level of pulling force.



- c. Remove the hydraulic hose from the cylinder of vibrator.(Fig. 8-3)

#### **CAUTION**

Before removing the hydraulic hose, clean up dirt and soil on its connection part.



- d. Remove 4 bolts fixing the engine base.

- e. Separate the engine base from the vibrating plate by lifting with the hook of main body.

### (2) Assembly

Assemble with the reversed procedure of disassembly.

#### ● **How to install the V-belt**

Install the V-belt to the pulley of vibrator. Press the V-belt to the left side of groove of clutch pulley.

Install the V-belt to the clutch pulley by rotating clockwise of the pulley of vibrator with wench.



## 8.2 Disassembly and assembly of Vibrating plate

### ⚠ CAUTION

During disassembly and assembly of vibrator, be very careful not to have your fingers get caught by gear, eccentric rotator, and vibrator case.

### (1) Disassembly

- a. Remove the bolt (38), then remove the pulley (35) with the pulley puller. (Fig. 8-4)

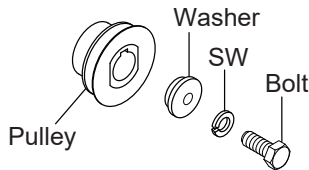
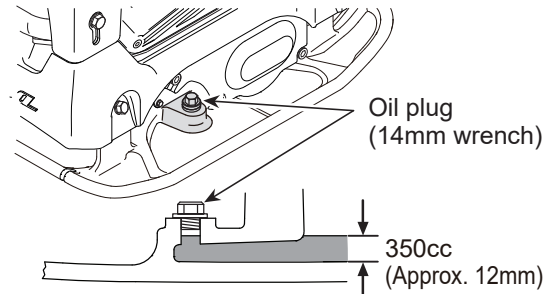


Fig.8-4

- b. Remove the bolts (11) fixing the vibrator top cover (9), then remove the cover and O-ring (10).
- c. Check the condition of inside of vibrator case. If there is abnormality, make the proper repair.
  1. Rotating trouble of the bearings of drive and driven shaft.
    - Check the bearing and sliding parts.
  2. Abnormal condition of the vibrator oil.
    - Capacity: Check the oil leaks from oil seal, packing and etc. Change the vibrator oil.
    - Dirty: Clean the inside of vibrating case and inner parts. Change the vibrator oil.
  3. Repair of the inner parts of vibrator.
    - Please refer to the chapter 8.3 to 8.7.

### (2) Assembly

- a. Assemble with the reversed procedure of disassembly.
- b. Add the new vibrator oil (SAE 10W-30) of the specified amount (350cc) to vibrator case.



### ⚠ CAUTION

- Measure the vibrator oil quantity correctly.
- If it is more than the specified value, it might cause over-load. If it is less than the specified value, noise and shortening of bearing life might occur.

- c. Degrease the contact surface between the vibrator case and vibrator top cover, then after assembling O-ring to the vibrator case, assemble them by tightening bolts. (Fig.8-5)

- Apply Loctite #243 to the bolts.
- Tightening torque (35 N·m)
- Tighten the bolts in a crisscross pattern.

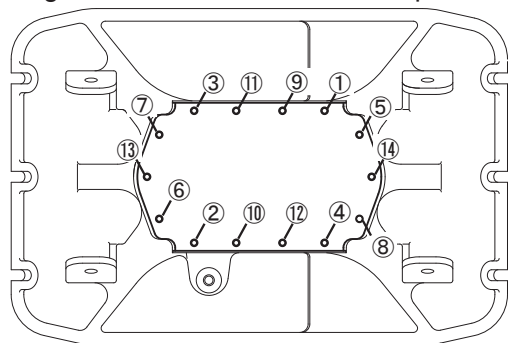


Fig.8-5

### ⚠ CAUTION

- When assembling the vibrator top cover, install the O-ring to the groove correctly.
- In case of pinching the O-ring between the vibrator top cover and vibrator case, it might be occur oil leak.



## 8.3 Disassembly and assembly of Cylinder and Piston

### (1) Disassembly

- a. Remove 4 bolts (27), then remove the cylinder (26). (Fig.8-6)

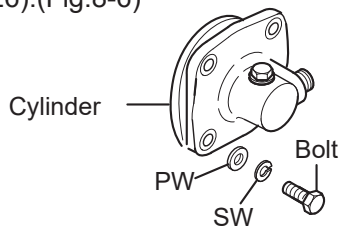


Fig.8-6

- b. Come out the piston AY (15) from vibrator case by rotating the driven gear (31). (Fig.8-7)

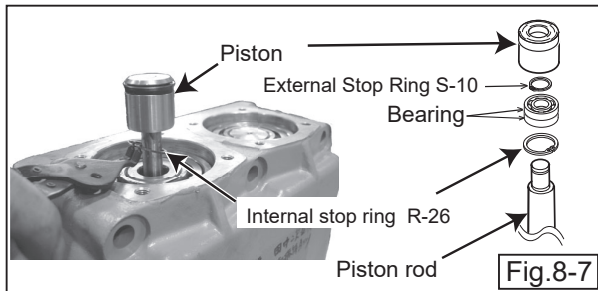


Fig.8-7

- c. Remove the internal stop ring R-26 (17) from the inside of piston. (Use internal snap ring plier with bent nose.)  
d. Pull out the piston.  
e. Remove the external stop ring S-10 (14), then remove 2 bearings (13) and the internal stop ring R-26 (17) that was already removed.  
f. Check the condition of piston (11), UHS packing (16) and bearings (13) and replace them if necessary.

### (2) Assembly

- a. First, insert the internal stop ring R-26 (17) to the piston rod (11). (Fig.8-8)

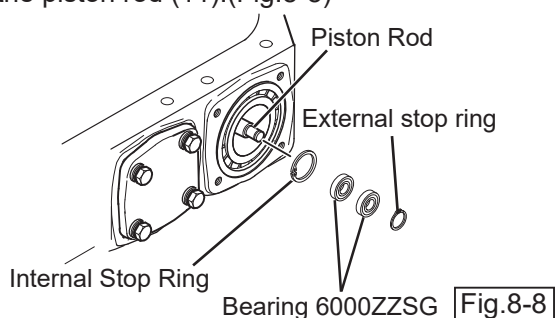


Fig.8-8

- b. Insert 2 bearings (13) to piston rod, then fix them with the external stop ring S-10 (11).

#### CAUTION

- Be careful of the mounting direction of stop ring.
- Apply the grease to the bearing insertion part of piston rod.
- Use the genuine parts for bearing (13).

- c. Assemble the UHS packing (16) to piston (15). (After applying hydraulic oil to UHS packing, assemble it with your finger.) (Fig.8-9)

#### CAUTION

- Make sure that there is no scratch and no damage on the piston.
- Make sure that there is no damage on the UHS packing.
- Be careful of the mounting direction of the UHS packing.

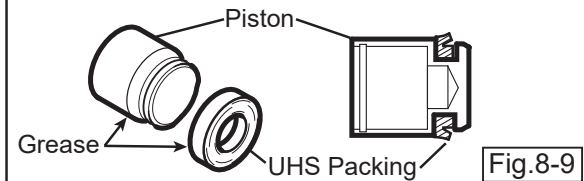


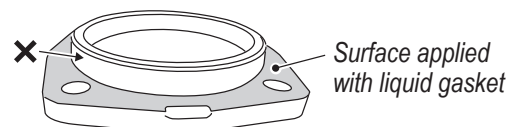
Fig.8-9

- d. Assemble the piston (15) to bearings (13), then fix it by installing the internal stop ring (17) that was already inserted.

#### CAUTION

- When assembling the piston, push it with your hand or hit it with a plastic hammer lightly.
- When installing the internal stop ring, use internal snap ring plier with bent nose. Make sure that it installs into the groove certainly.
- After assembled the piston, make sure that it rotates smoothly.

- e. After applying the liquid gasket (Threebond #1211) to the surface of cylinder that contacts the vibrator case, assemble it to the vibrator case. After assembled the cylinder, check the thrust gap of driven shaft. (Standard value: 0.5~1.0mm)



#### CAUTION

- Apply Loctite #243 to the bolts (34) for assembling cylinder.
- Tightening torque 35N·m
- When inserting the piston to the cylinder, be careful not to damage UHS packing.

- f. Assemble the connector (34), air release bolt (32), and packing (33) to the cylinder.

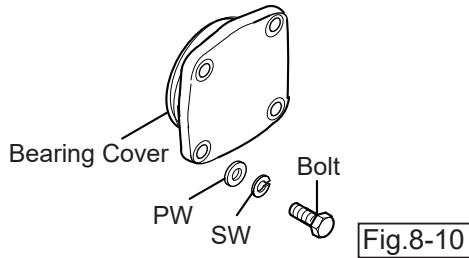
#### CAUTION

Apply the seal tape around the connector (29).

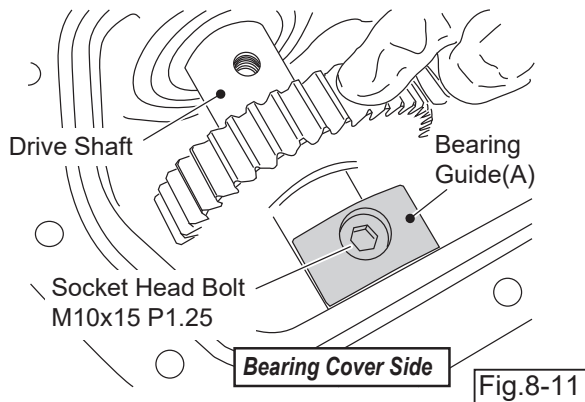
- g. After disassembling and assembling of the chapter 8.4 to 8.7, make sure that vibrator rotate smoothly by rotating drive shaft with your hand. If it does not rotate smoothly, adjust it by hitting the side of gear with a plastic hammer lightly.

## 8.4 Disassembly Drive shaft

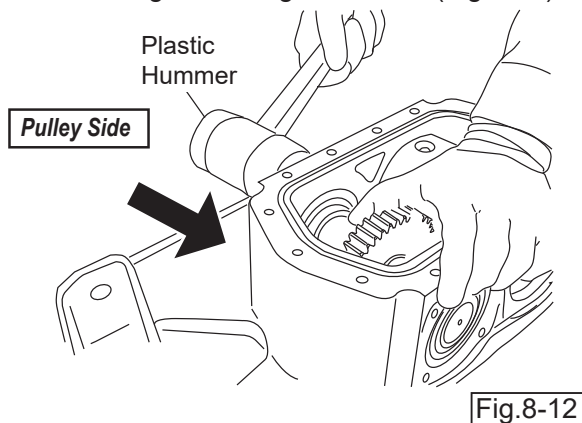
- a. Remove 4 bolts (22), then remove the bearing cover (21).(Fig.8-10)



- b. Remove bolts (19), then remove the eccentric rotors (18) of drive shaft.
- c. Assemble the bearing guide (A) to the mounting hole that removes eccentric rotors of drive shaft for bearing cover side with the supplied socket head bolt M10x15 P1.25. (Fig.8-11)

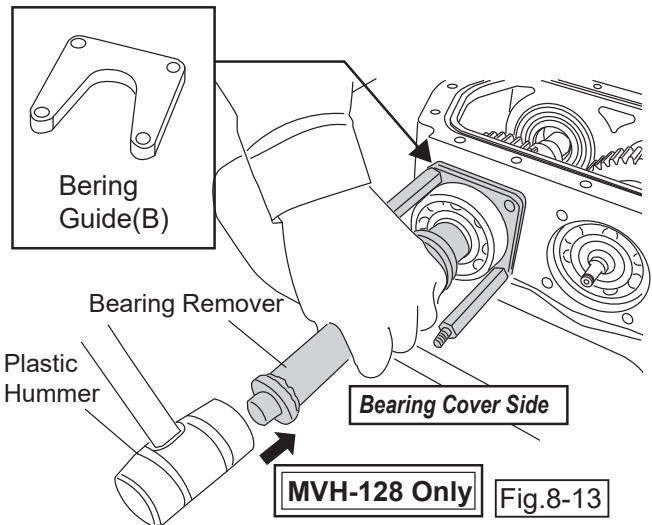


- d. Come out the drive shaft (3) to the bearing cover side by hitting the pulley side of drive shaft with the plastic hammer, then remove the bearing of bearing cover side.(Fig.8-12)

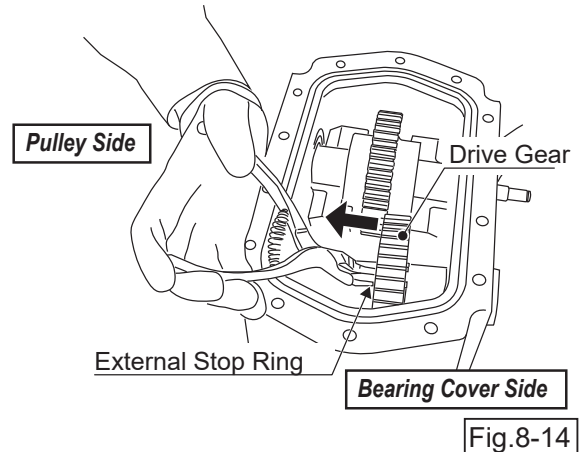


- e. *In case of MVH-128*

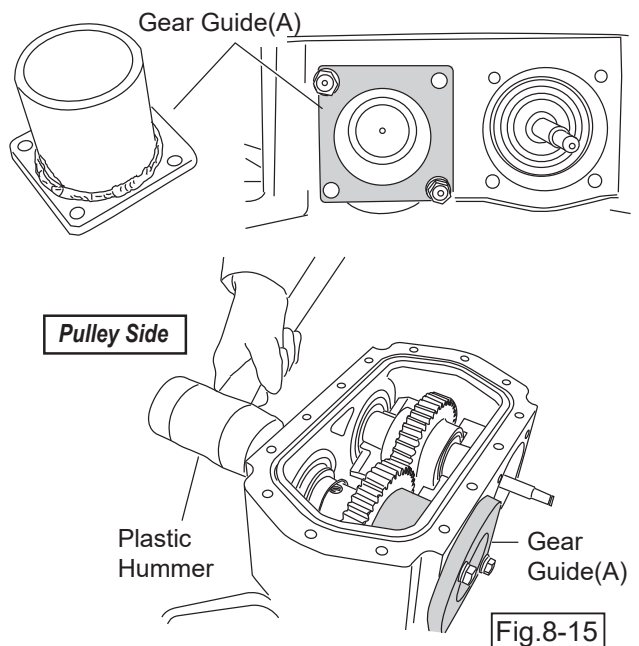
- Assemble the bearing guide (B) between the bearing that come out and vibrator case. (Fig.8-13)
- Fit the bearing remover to the drive shaft that come out, then remove the bearing of bearing cover side by hitting the bearing remover with the plastic hammer.



- f. Slide the external stop ring S-35 (5) of pulley side.(Fig.8-14)



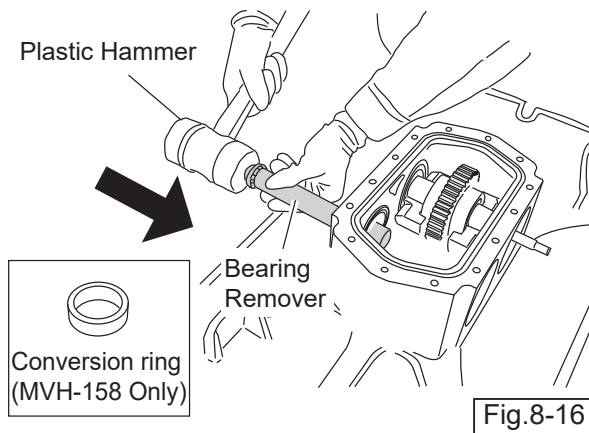
- g. Assemble the gear guide(A) to the mounting part of bearing cover. Slide the gear until removing from the key (6) by hitting the pulley side of drive shaft with the plastic hammer. (Fig.8-15)



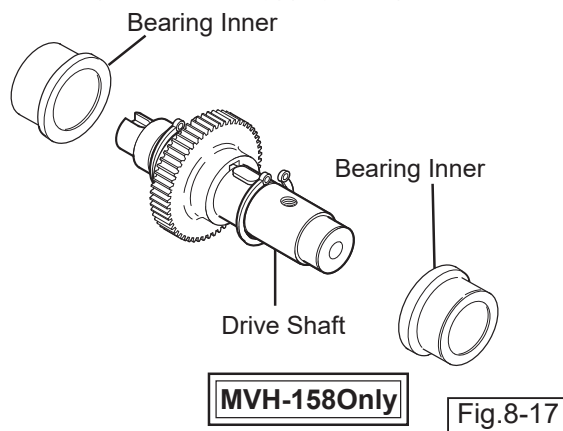
- h. Remove the gear guide(A), then remove the drive shaft (3) AY from vibrator case.
- i. Remove the oil seal (20).
- j. Fit the bearing remover to the bearing of pulley side of vibrator case, then remove the bearing by hitting the bearing remover with the plastic hammer.(Fig.8-16)

**NOTICE :**

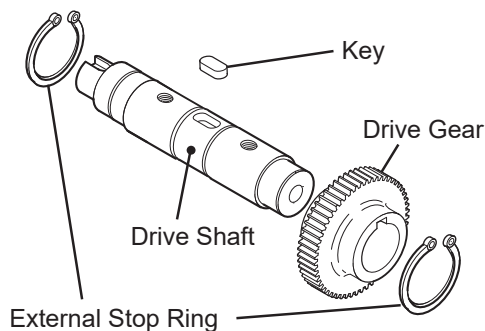
In case of MVH-158, insert the conversion ring to the bearing remover.



- k. Remove the bearing inner of drive shaft with puller. (MVH-158 only)(Fig.8-17)



- l. Remove the external stop ring (5), then remove the drive gear (30) and key (6). (Fig.8-18)



## 8.5 Disassembly Driven shaft

### NOTICE :

Before disassembling and assembling the driven shaft, make sure that the drive shaft is removed from the vibrator case.

- Remove the cylinder according to [8.3 Disassembly and Assembly of Cylinder and Piston].

- Remove the seal cap (17).

### NOTICE :

The seal cap can remove easily by hitting its bottom side.

- Remove a bolt (19) that assemble the eccentric rotor of cylinder side of driven shaft, then remove the eccentric rotor (18) .

- Assemble the bearing guide (A) to the mounting hole of driven shaft that removed the eccentric rotor.(Fig.8-19)

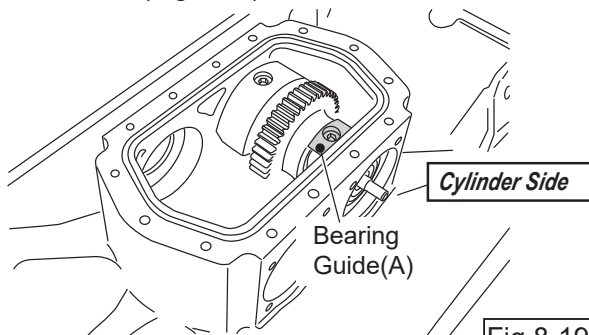


Fig.8-19

- Fit the bearing remover to the driven shaft of seal cap side, then remove the bearing of cylinder side by hitting the bearing remover with the plastic hammer.(Fig.8-20)

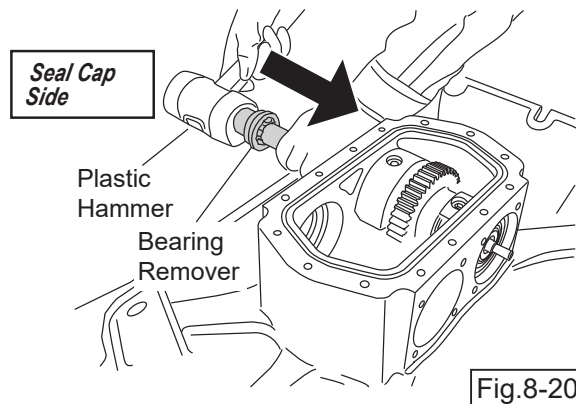
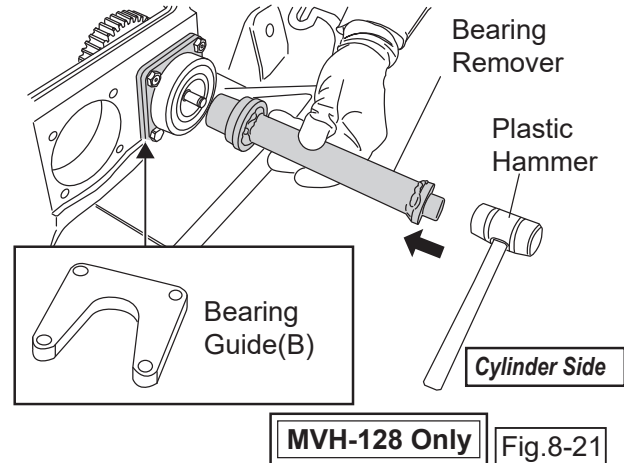


Fig.8-20

- In case of MVH-128

- Assemble the bearing guide (B) between the bearing that come out and vibrator case. (Fig.8-21)

- Fit the bearing remover to the driven shaft that come out, then remove the bearing of cylinder side by hitting the bearing remover with the plastic hammer.



MVH-128 Only Fig.8-21

- Remove the driven shaft (4) AY from vibrator case. (Fig.8-22)

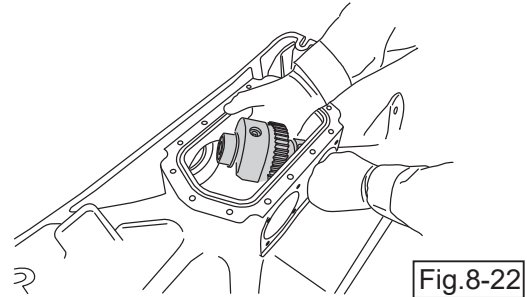


Fig.8-22

- Fit the bearing remover to the bearing of seal cap side of vibrator case, then remove the bearing by hitting the bearing remover with the plastic hammer.(Fig.8-23)

### NOTICE :

In case of MVH-158, insert the conversion ring to the bearing remover.

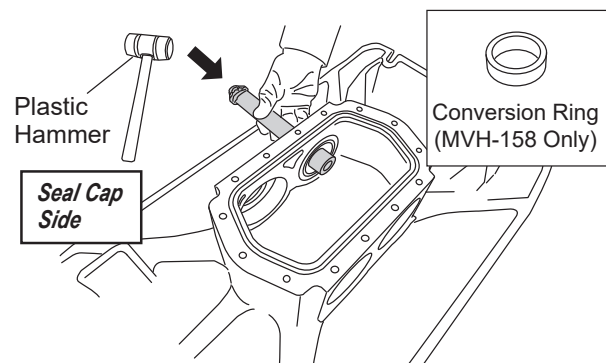


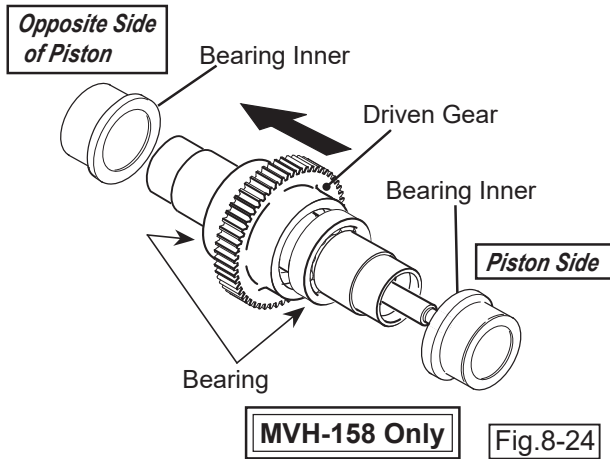
Fig.8-23

- Remove the eccentric rotors (18) of driven shaft (4).



Do not hit the piston rod.

- j. Remove the bearing inner of driven shaft (4) with puller. (MVH-158 only)(Fig.8-24)

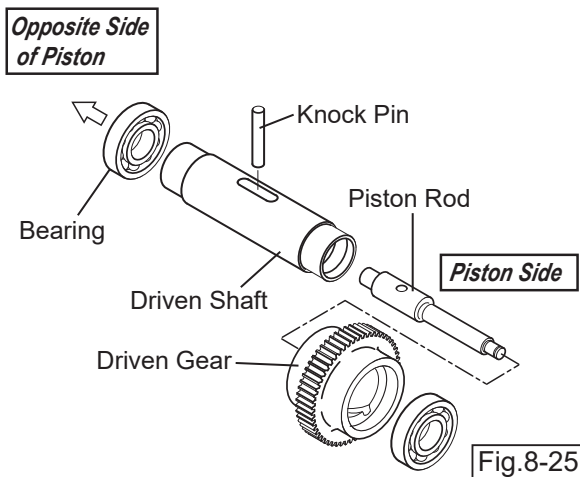


- k. Push out the driven gear (31) to opposite side of piston, then remove the bearing (9) of driven gear that installed to opposite side of piston.

**NOTICE :**

If the driven gear hard to remove, remove it with press machine not by hitting with hammer.

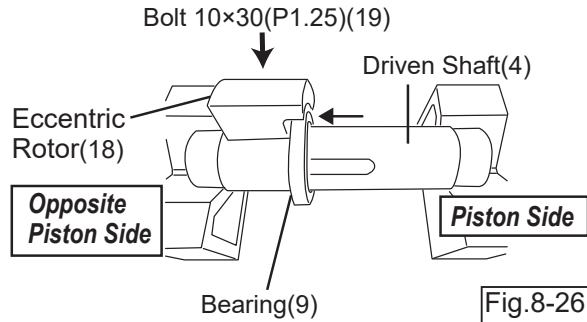
- l. Remove the knock pin (12), then remove the piston rod (11).(Fig.8-25)



- m. Remove the bearing (9) that installed to piston side.

## 8.6 Assembly Driven shaft

- a. Assemble the eccentric rotor (18) to one mounting hole of the driven shaft (4) by tightening the bolt (19). (Fig.8-26)

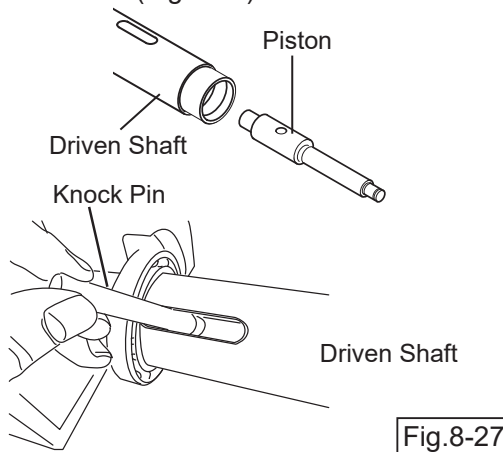


- b. Press fit the bearing (9) to the driven shaft (4) and insert it until touching to the eccentric rotor (18).

### CAUTION

The side without eccentric rotor on driven shaft is piston side.

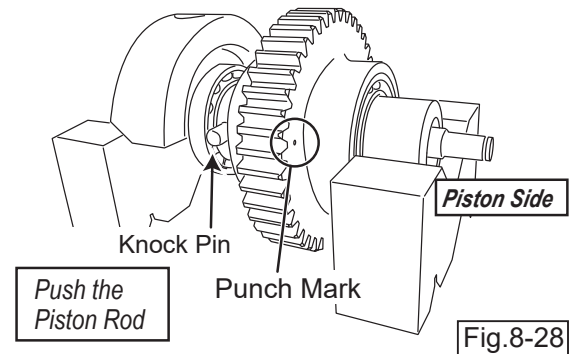
- c. Insert the piston rod (11) from the piston side of driven shaft, then insert the knock pin (11) into the hole of piston rod through the groove of driven shaft. (Fig.8-27)



- d. Put the eccentric rotator of driven shaft to the upper side, then push the piston rod into the driven shaft.
- e. Insert the driven gear (31). Face the punch mark of driven gear to the piston side, then insert it to the driven shaft. At this time, set the driven gear to face the punch mark to the left when seeing from the piston side. (Fig.8-28)

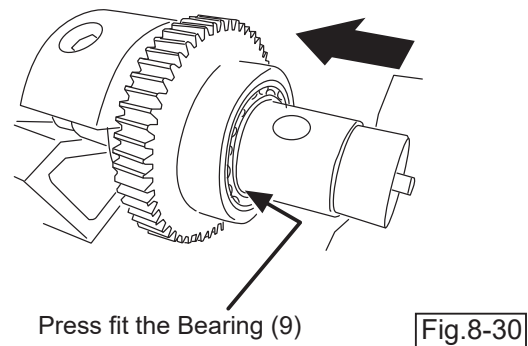
### CAUTION

Be careful of the direction of the punch mark of driven gear when assembling it.

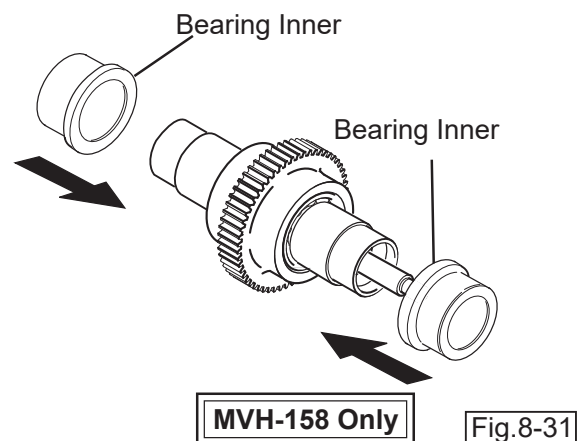


- f. Insert the knock pin (12) to the spiral groove of driven gear (31) while rotating the driven gear clockwise seen from the opposite side of piston.

- g. Press fit the bearing (9) to the driven shaft (4), then fix the driven gear (31). (Fig.8-30)



- h. Face the flange of bearing inner to the driven gear, then press fit the bearing inner to the driven shaft (4). (MVH-158 only)(Fig.8-31)





- i. Press fit the bearing of the pulley side of driven shaft of vibrator case from inside of vibrator case with the bearing insertion tool according to fig. 8-32.(Fig.8-32)

**NOTICE**

In case of MVH-158, insert the conversion ring to the bearing holder.

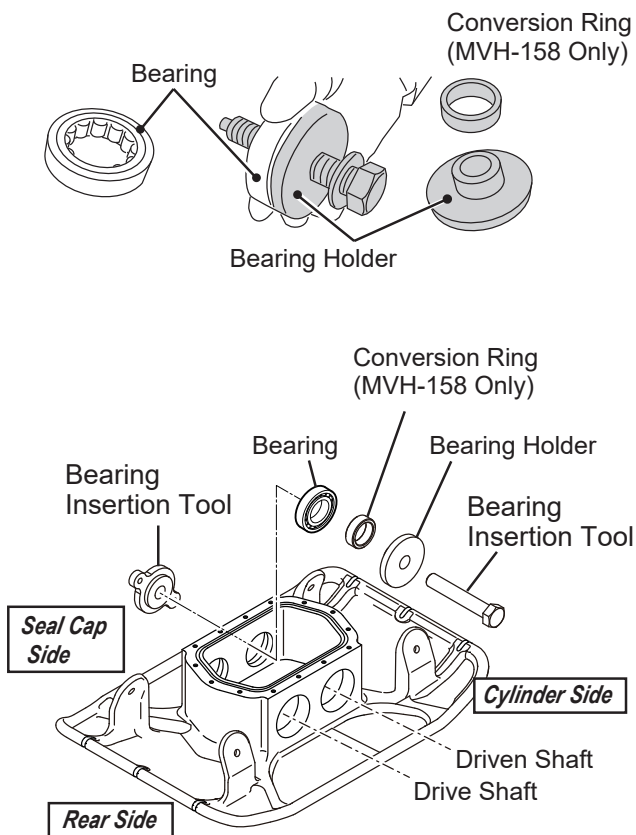


Fig.8-32

- j. Insert the driven shaft into the vibrator case. (Fig.8-33)

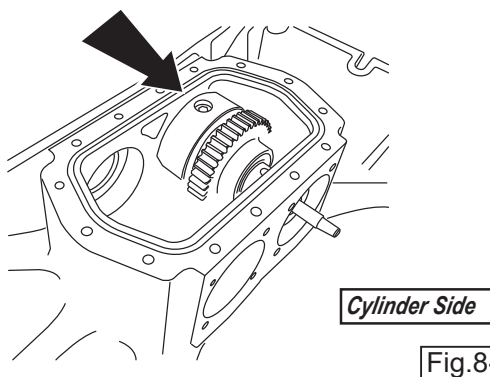


Fig.8-33

- k. Press fit the bearing to the cylinder side of vibrator case with bearing insertion tool and cup according to fig.8-32. At this time, press fit the bearing 2 to 3 mm deep from the surface of vibrator case.(Fig.8-34,35)

**CAUTION**

When press fitting the bearing of cylinder side, make to push the piston rod to the end of groove of knock pin.

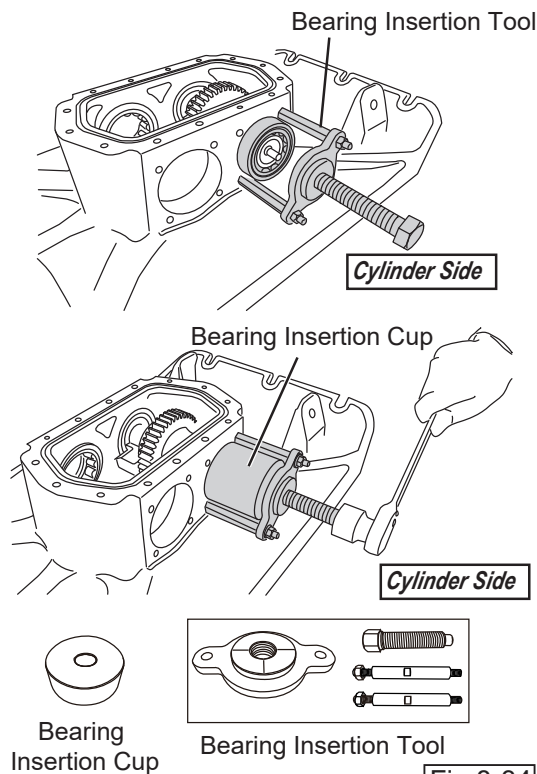


Fig.8-34

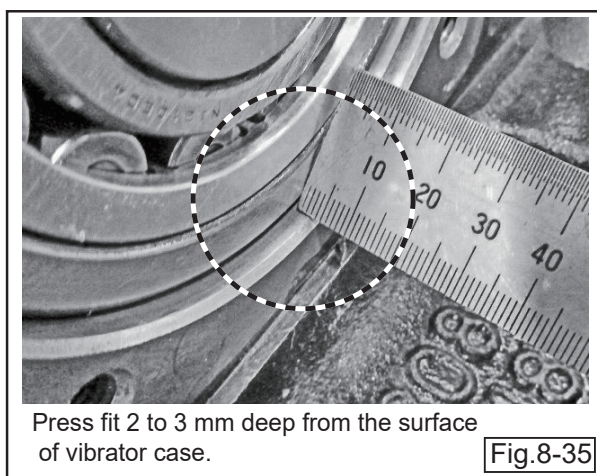


Fig.8-35

- l. Assemble the piston and cylinder according to [8.3 Disassembly and Assembly of Cylinder and Piston]. After assembling them, check the thrust gap of driven shaft. (Standard value: 0.5 to 1.0 mm)

m. Assemble the seal cap. (Fig.8-36)

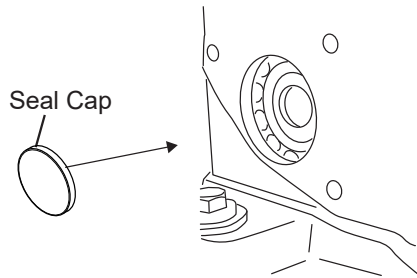


Fig.8-36

n. Assemble the eccentric rotor (18) to the driven shaft by tightening the bolt (19). (Fig.8-37)

**⚠ WARNING**

Be very careful not to have your fingers get caught by gear, eccentric rotator, and vibrator case.

**⚠ CAUTION**

- Check the bolts size.
  - Apply Loctite #263 to the each bolts.
  - Do not turn the drive shaft and driven shaft, when tightening the bolts of eccentric rotor with torque wrench.
- Tightening torque: 78.5N·m

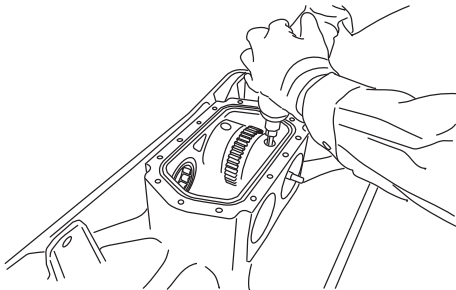


Fig.8-37



## 8.7 Assembly Drive shaft

- a. Assemble the key (6) to the drive shaft (6), then assemble the external stop ring 1(5) to the groove of opposite side of pulley. (Fig.8-38)

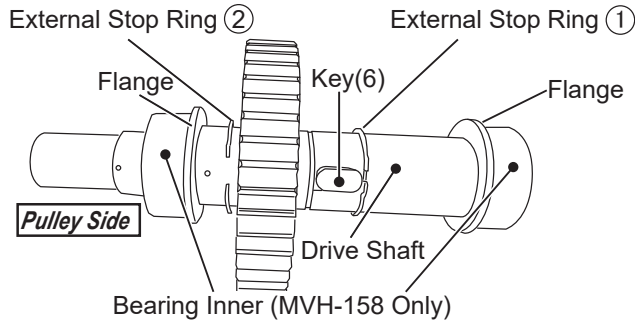


Fig.8-38

- b. Temporarily assemble the drive gear (30) to the drive shaft until reaching the groove of external stop ring from pulley side, then temporarily assemble the external stop ring 2 (5). (Fig.8-39)

### CAUTION

Be careful of the direction of the punch mark of drive gear when assembling it.

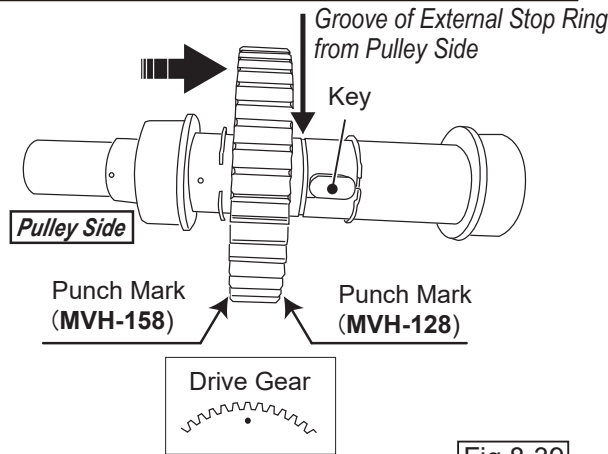


Fig.8-39

### NOTICE :

- In case of MVH-128  
Face the punch mark of drive gear to the opposite side of pulley side.
- In case of MVH-158  
Face the punch mark of drive gear to the pulley side.

- c. Face the flange of bearing inner to the drive gear, then press fit the bearing inner to the drive shaft (3). (MVH-158 only)

- d. Press fit the bearing of the pulley side of drive shaft of vibrator case from inside of vibrator case with the bearing insertion tool according to Fig.8-40. (Fig.8-40)

### NOTICE :

In case of MVH-158, insert the conversion ring to the bearing holder.

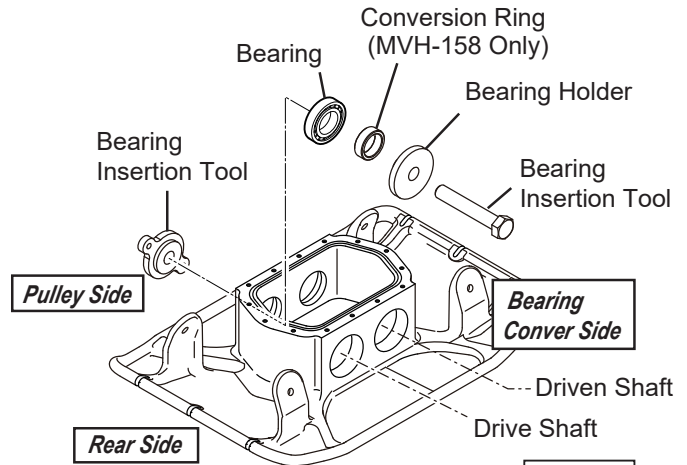
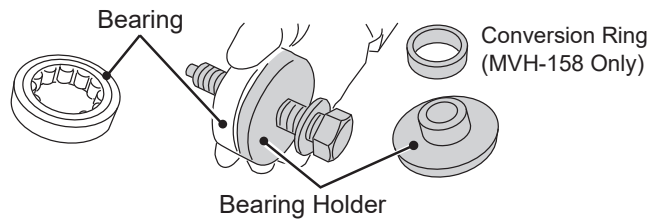


Fig.8-40

- e. Insert the drive shaft that temporarily assembled into the vibrator case.

- f. Insert the gear guide (B) between the pulley side of drive gear and vibrator case.(Fig.8-41)

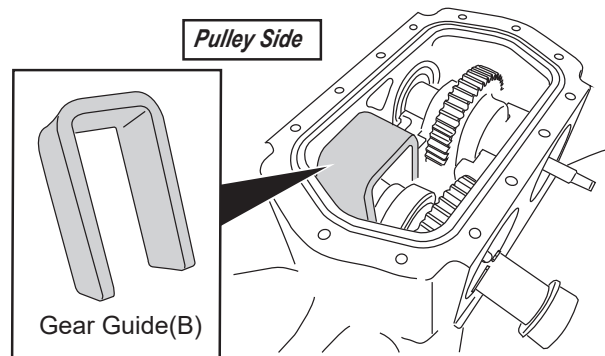


Fig.8-41

- g. Align the punch mark of the drive gear and driven one.(Fig.8-42)

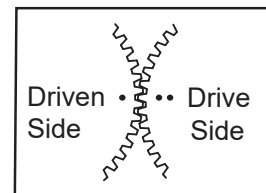


Fig.8-42

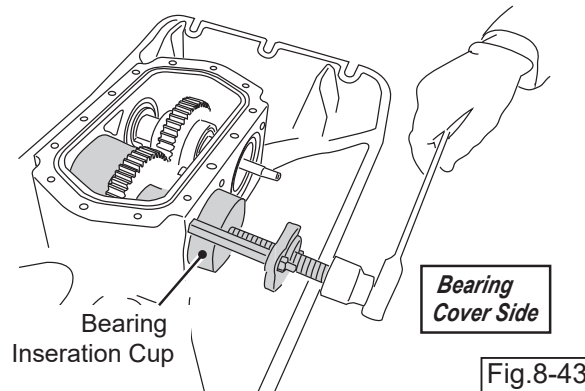
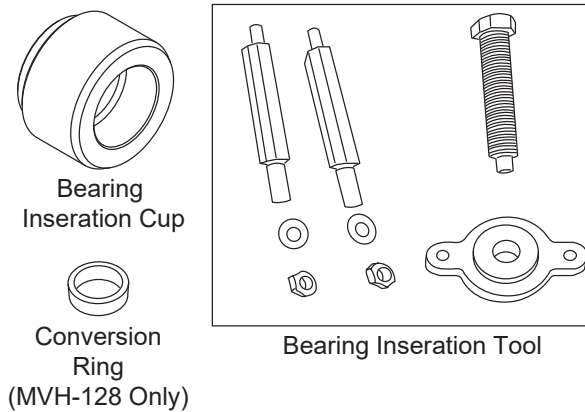
- h. Press fit the drive gear (30) until reaching to the external stop ring 1 with the bearing insert tool and cup according to fig.8-43. (Fig.8-43)

**NOTICE :**

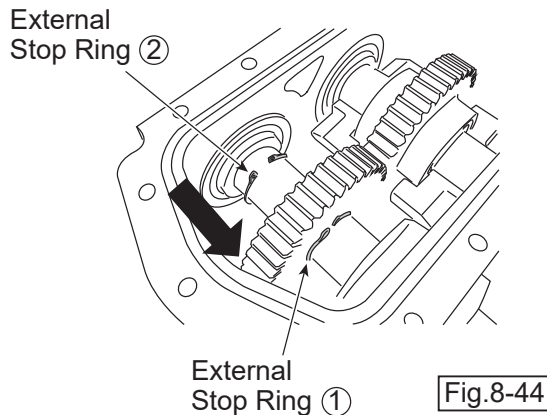
In case of MVH-128, insert the conversion ring to the bearing insertion cup.

**CAUTION**

- Align the key and keyway of drive gear when press fitting the drive gear.
- When using the bearing insert tool and cup, apply grease to the surface of bearing housing of vibrator case, so that there is no damage of bearing housing.



- i. Fix the drive gear by assembling the external stop ring 2. (Fig.8-44)



- j. Press fit the bearing to the bearing cover side of vibrator case with bearing insertion tool and cup according to fig.8-45. At this time, press fit the bearing 2 to 3 mm deep from the surface of vibrator case. (Fig.8-45,46)

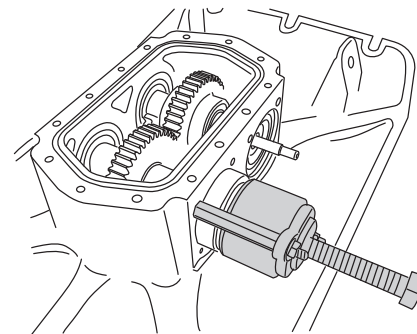
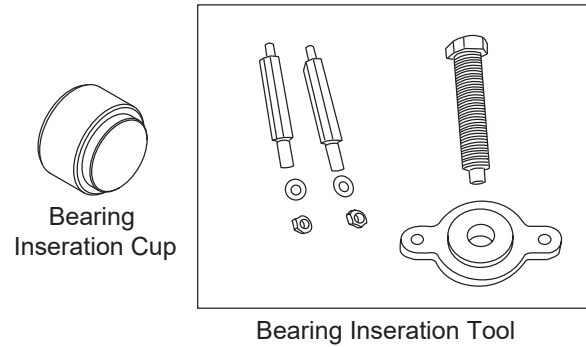
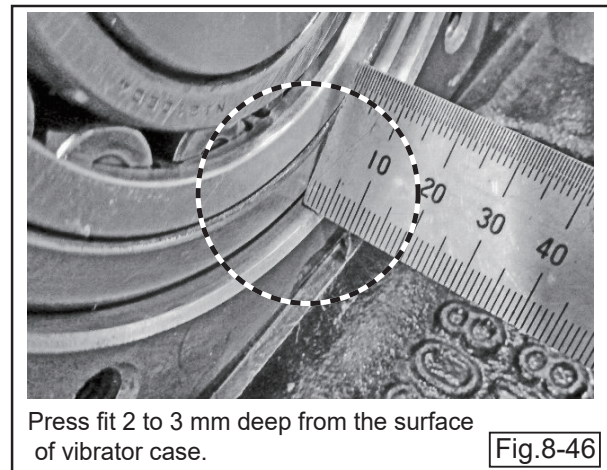


Fig.8-45



- k. After applying the liquid gasket (Threebond #1211) to the surface of bearing cover that contacts the vibrator case, assemble it to the vibrator case. After assembled the bearing cover, check the thrust gap of driven shaft. (Fig.8-47) (Standard value: 0.5 – 1.0mm)

**CAUTION**

Apply Loctite #243 to the bolts for assembling the bearing cover.

Tightening torque 35 N·m

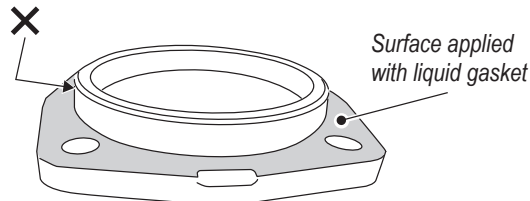


Fig.8-47

- l. Insert the oil seal (20) to the pulley side of vibrator case. (Fig.8-48)

**CAUTION**

- When installing the oil seal, make sure that there is no bend of the oil seal and no damage of the lip of one.
- Apply grease the surface of oil seal that contact to the drive shaft.

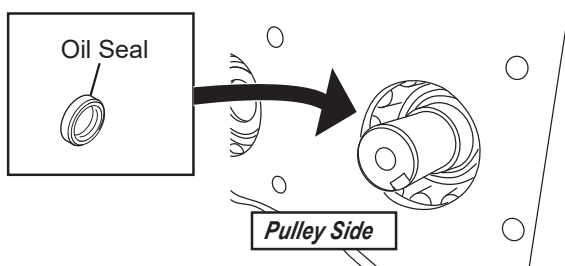


Fig.8-48

- m. Assemble the eccentric rotor (18) to the drive shaft by tightening the bolt (19).

**WARNING**

Be very careful not to have your fingers get caught by gear, eccentric rotator, and vibrator case.

**CAUTION**

- Check the bolts size.  
Apply Loctite #263 to the each bolts.
  - Do not turn the drive shaft and driven shaft, when tightening the bolts of eccentric rotor with torque wrench.
- Tightening torque: 78.5N·m

## 9. REGULAR CHECK AND ADJUSTMENT

### 9.1 Inspection And Maintenance Schedule Table

| Check frequency            | Check parts                                | Check items                                                  | Oils                |
|----------------------------|--------------------------------------------|--------------------------------------------------------------|---------------------|
| Daily<br>(before starting) | Appearance                                 | Flaw, deformation                                            |                     |
|                            | Fuel tank                                  | Leakage, oil level, dirt                                     | Light oil, gasoline |
|                            | Fuel system                                | Leakage, oil level, dirt                                     |                     |
|                            | Engine oil                                 | Leakage, oil level, dirt                                     | Engine oil          |
|                            | Shock absorber                             | Crack, damage, wear                                          |                     |
|                            | Hand pump                                  | Leakage                                                      | Hydraulic oil       |
|                            | Vibrator oil                               | Leakage                                                      | Engine oil          |
|                            | Hydraulic pipe system                      | Leakage, looseness, flaw, wear                               | Hydraulic oil       |
|                            | Air cleaner                                | Dust on sponge                                               |                     |
|                            | Guard frame                                | Breakage, flaw, loosened or missing bolts and nuts           |                     |
|                            | Back and forth motion lever, linking parts | Missing, breakage, flaw, looseness or missing bolts and nuts |                     |
|                            | Back and forth motion lever operation      | Operation check, play                                        |                     |
|                            | Bolts and nuts                             | Looseness, missing                                           |                     |
|                            | Duct hose                                  | Crack, damage                                                |                     |
| Every 20 hours             | Engine oil                                 | Replace only after the first 20 hours                        |                     |
|                            | Engine oil filter                          | Replace only after the first 20 hours                        |                     |
| Every 100 hours            | Engine oil                                 | Change                                                       | Engine oil          |
|                            | Engine oil filter                          | Washing                                                      |                     |
|                            | Vibrator oil                               | Leakage, oil level, dirt                                     | Engine oil          |
|                            | Hydraulic oil                              | Leakage, oil level, dirt                                     | Hydraulic oil       |
|                            | Battery terminal                           | Cleaning                                                     |                     |
| Every 200 hours            | V-belt for vibrator                        | Flaw, tension                                                |                     |
|                            | Clutch                                     | Dirt, flaw, wear                                             |                     |
| Every 300 hours            | Vibrator oil                               | Change                                                       | Engine oil          |
|                            | Hydraulic oil                              | Change                                                       | Hydraulic oil       |
|                            | Fuel filter                                | Change                                                       |                     |
|                            | Engine oil filter                          | Change                                                       |                     |
| Every 2 years              | Fuel pipes                                 | Change                                                       |                     |
| Irregular                  | Air cleaner element                        | Change                                                       |                     |
|                            | Hydraulic hose                             | Change                                                       |                     |
|                            | Cyclone cleaner                            | Cleaning                                                     |                     |

For details about the check and maintenance of the engine, please refer to the attached engine operation manual.

Caution: The above table shows the check frequency for standard condition.

The check frequency may vary depending on the condition in which the machine is used.

For check of bolt and nut looseness and tightening, please see the following tightening torque list.

## 9.2 Opening The Front Cover

For a comfortable maintenance work.

### CAUTION

- Do maintenance work in a place with a flat and hard surface to keep the machine stable.
- Start your work after the machine and engine cool down completely.
- Be careful to catch the finger when opening and closing the front cover.
- Do not touch the hot part because the engine and muffler become very hot.

- 1 Remove the bolts on the front cover. Loosen the bolts on the side of front cover. (Do not remove.) (Fig.9-1)

| Model       | Bolt Size |
|-------------|-----------|
| MVH-128,158 | M12X35    |

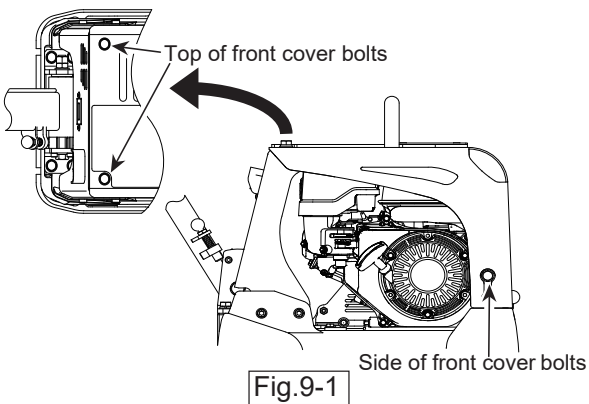


Fig.9-1

- 2 Hold the hook and the front side of front cover, and pull up to open position.(Fig.9-2)

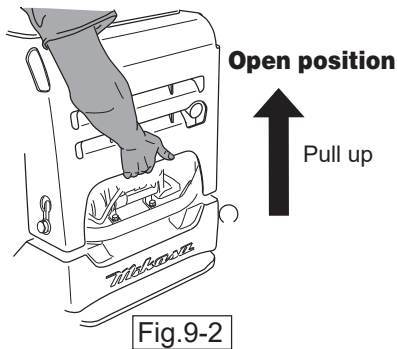


Fig.9-2

- 3 Open the front cover slowly.(Fig.9-3)

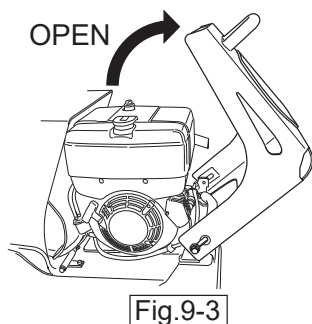


Fig.9-3

- 4 Return the front cover to original position slowly.Tighten the bolts in the specified torque. (Fig.9-1)

| Size        | Tightening torque        | Remarks            |
|-------------|--------------------------|--------------------|
| Bolt M12X35 | 117.6N•m<br>(86.8lbf•ft) | Apply Loctite #243 |

### CAUTION

- Do not return the front cover in its open position.
- Do not start the engine when opening the front cover.
- Tighten the bolts firmly.

## 9.3 Changing The Engine Oil

- Perform the first engine oil change after 20 hours of operation, then change at every 100 hours.(Fig.9-4)

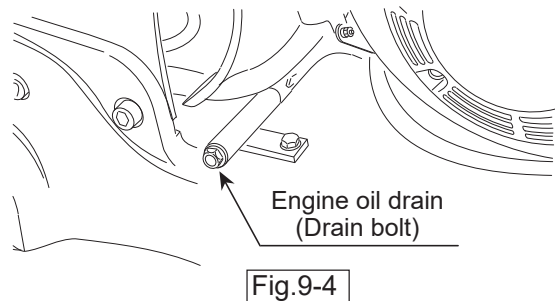


Fig.9-4

## 9.4 Cleaning The Air Cleaner

### The Engine Air Cleaner

When the air cleaner element becomes dirty, the engine does not start smoothly, and sufficient output cannot be obtained. Machine operation will be affected and the engine life will be shortened greatly. Do not forget to clean the element. (For details, please see the separate engine operation manual.) If the element cannot be cleaned, replace it with a new one.(Fig.9-5)

### HONDA (GX160,GX200)

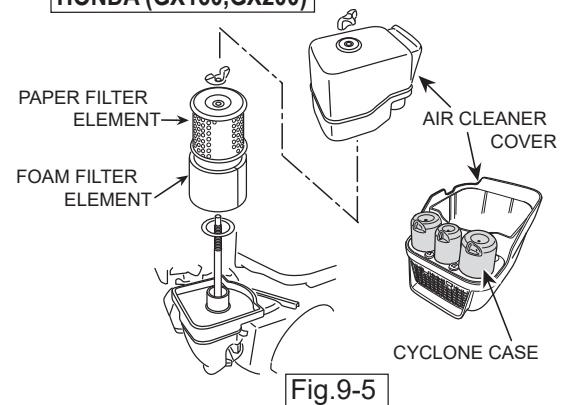
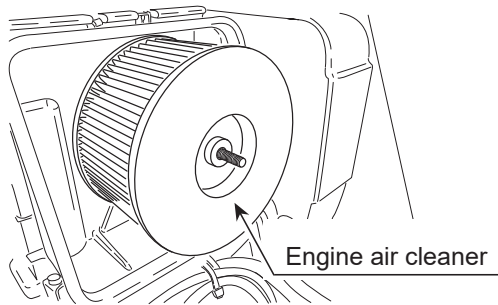


Fig.9-5

### HATZ (1B20)



### YANMAR(L48N)

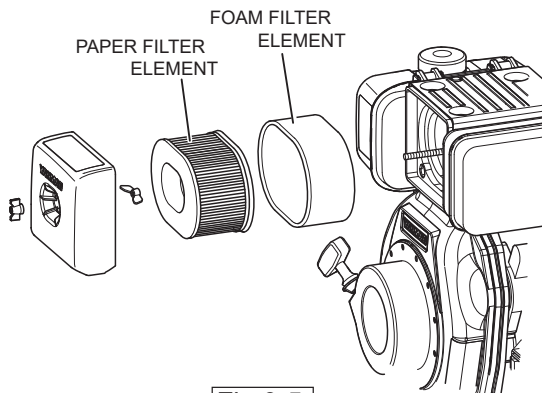


Fig.9-5

- iii) Latch up securely to return Dust Pot to Air Cleaner.(Fig. 9-7)

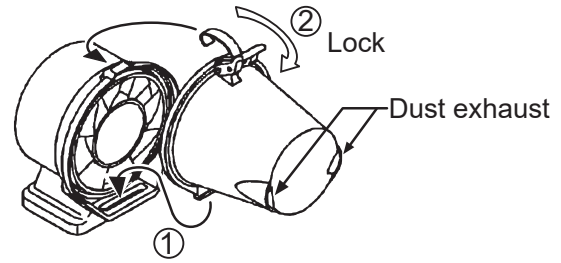


Fig.9-7

### ● Cyclone Cleaner

Always clean Dust Pot. Clogged Dust Pot leads to reduce cyclone effect with easy wear of Cleaner Element.

#### **How to clean Dust Pot**

- i) Latch off to remove Dust Pot. (Fig.9-6)

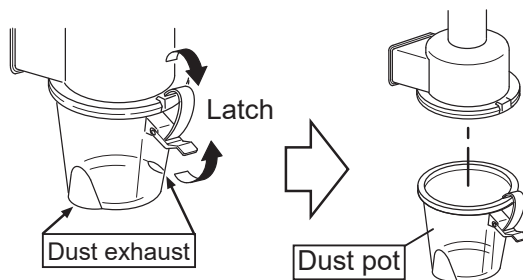


Fig.9-6

### ⚠ CAUTION

Be careful to avoid pinched fingers.

- ii) Clean Dust Pot inside with water and neutral detergent.

### ⚠ CAUTION

Do not use organic solvent like paint thinner, which may cause damage or deformation of Dust Pot.



## 9.5 Checking/Changing The vibrator Oil

At every 100 hours of operation, set the machine on a level surface and remove the oil gauge of the vibrator. Check the oil level to see if it is within the allowable range. (Fig.9-8)

Change the vibrator oil at every 300 hour operation. Drain the oil from the oil plug. For draining, put a beam under the compacting board at the other side of the oil plug to tilt the machine.

**Use the engine oil SAE 10W-30 as vibrator oil. The vibrator oil quantity is 350cc (0.35L). The vibrator oil level height is approx. 12mm.**

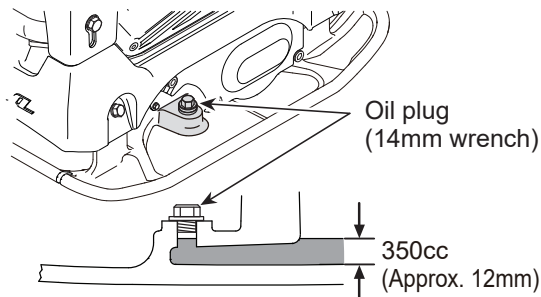


Fig.9-8

### CAUTION

- Appropriate maintenance is required to ensure safe and efficient operation of the machine. Pay special attention to the parts used for lifting, if they are not maintained properly, it might result in a serious accident.
- When checking the vibrator oil, clean the oil port beforehand to prevent dust and other foreign materials from falling into the oil. Whenever there is an oil leakage from the vibrator, check the oil level.
- In case that oil is drained from Drain Plug, some oil still remains in Oil Pan. So be sure to check oil level correctly by Oil Gauge after filling oil.
- Do not fill oil with excessive volume (350cc). It may cause the terrible fuel consumption and lower machine performance as the result of engine overload.

## 9.6 Checking/Changing The Hydraulic Oil

### ● Check the hydraulic oil

Check the hydraulic oil at every 100 hours' operation. By making the handle bar vertical (done at the time of storage), remove the breather plug at the top of the hydraulic hand pump to see if the hydraulic oil is at the specified level (OIL LEVEL). (Fig. 9-9)

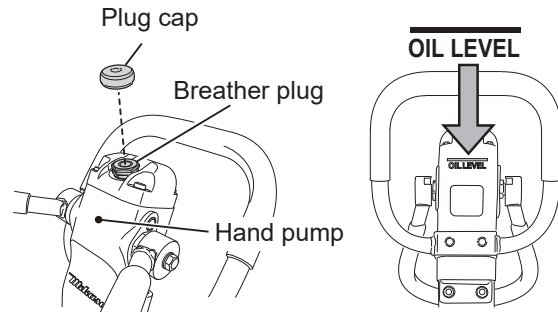


Fig.9-9

### ● Changing the hydraulic oil

- 1 Remove the plug cap of the hand pump. Then remove the breather plug (with 24mm wrench) before removing the hydraulic hose connected to the cylinder on the vibrator side. Set the control lever to forward, then drain the hydraulic oil from the pump. (Fig.9-9, 10)

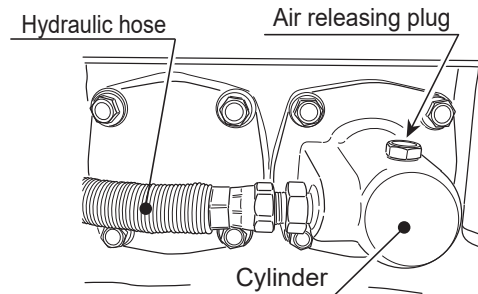


Fig.9-10

- 2 After the oil is drained, attach the hydraulic hose again to the cylinder on the vibrator side. (Fig.9-10)
- 3 Pour hydraulic oil (300cc) from the hand pump breather plug attachment hole. (Fig.9-9)

### CAUTION

- The level of the hydraulic oil in the hand pump should always be at OIL LEVEL. If the level is higher, the oil bursts out from the breather plug.
- Be careful not to let dirt enter the hand pump during inspection or replacement. It may become malfunctioning when dust is mixed in.

- 4 Remove the air vent plug of the cylinder of the vibrator side. After a while oil will come out, so plug bubbles will be installed when bubbles run out. Please firmly tighten. (Fig.9-10)
- 5 Attach the hand pump breather plug, put on the plug cap. After making sure the hydraulic oil in the pump is at OIL LEVEL, attach the breather plug.

**Hydraulic oil:**  
**Shell Terrace Oil #32 or equivalent**



## 9.7 Battery (MVH-158 with electric starter)

The standard battery is a maintenance-free type, so that do no need to refill the battery fluid.

If the battery does not recharge due to the battery life, replace new one.

### ● How to remove the battery(Fig.9-11)

1. Remove 2 pcs nylon nuts, then remove the battery holder with rubber plate.

#### NOTICE :

Do not disassemble of the battery holder and rubber plate.

2. First of all, remove the minus (-) terminal of black, then remove the plus terminal (+) of red.
3. Remove the battery from main body.
4. Assemble with the reversed procedure of disassembly. Fix the battery firmly to prevent loosening due to vibration.

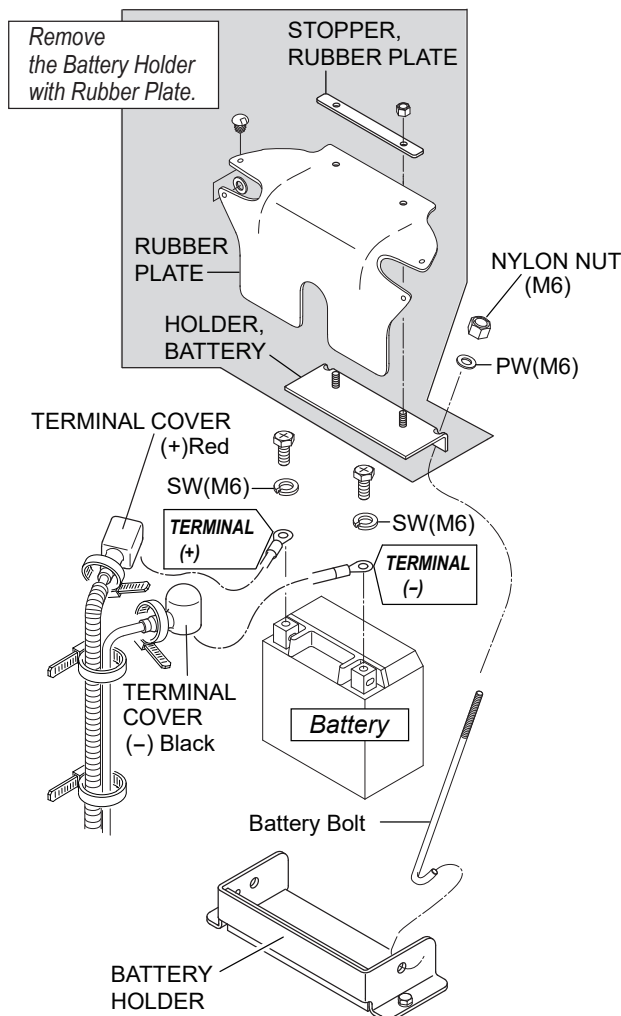


Fig.9-11

### ● Inspection and cleaning of the battery

1. Inspect the damage and deterioration of battery.
2. Inspect the battery terminals for corrosion. If there is corrosion to the terminal, polish it with sand paper or wire brush, then apply grease to it.
3. Clean the outside of battery.
4. Inspect and clean of the battery housing on main body. Replace the rubber cushion in necessary.
5. After inspecting of the battery, fix it firmly.

#### ⚠ DANGER

- Do not contact between the battery terminal and main body.
- Do not operate with battery holder removed.

#### ⚠ CAUTION

Do not continue to use of deteriorating battery and do not operate with battery removed. The engine regulator may be damaged.

## NOTES

# SERVICE MANUAL

## HERE'S HOW TO GET HELP

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

### UNITED STATES

#### ***Multiquip Inc.***

(310) 537- 3700  
6141 Katella Avenue Suite 200  
Cypress, CA 90630  
E-MAIL: [mq@multiquip.com](mailto:mq@multiquip.com)  
WEBSITE: [www.multiquip.com](http://www.multiquip.com)

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### CANADA

#### ***Multiquip***

(450) 625-2244  
4110 Industriel Boul.  
Laval, Quebec, Canada H7L 6V3  
E-MAIL: [infocanada@multiquip.com](mailto:infocanada@multiquip.com)

### UNITED KINGDOM

#### ***Multiquip (UK) Limited Head Office***

0161 339 2223  
Unit 2, Northpoint Industrial Estate, Globe Lane,  
Dukinfield, Cheshire SK16 4UJ  
E-MAIL: [sales@multiquip.co.uk](mailto:sales@multiquip.co.uk)

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