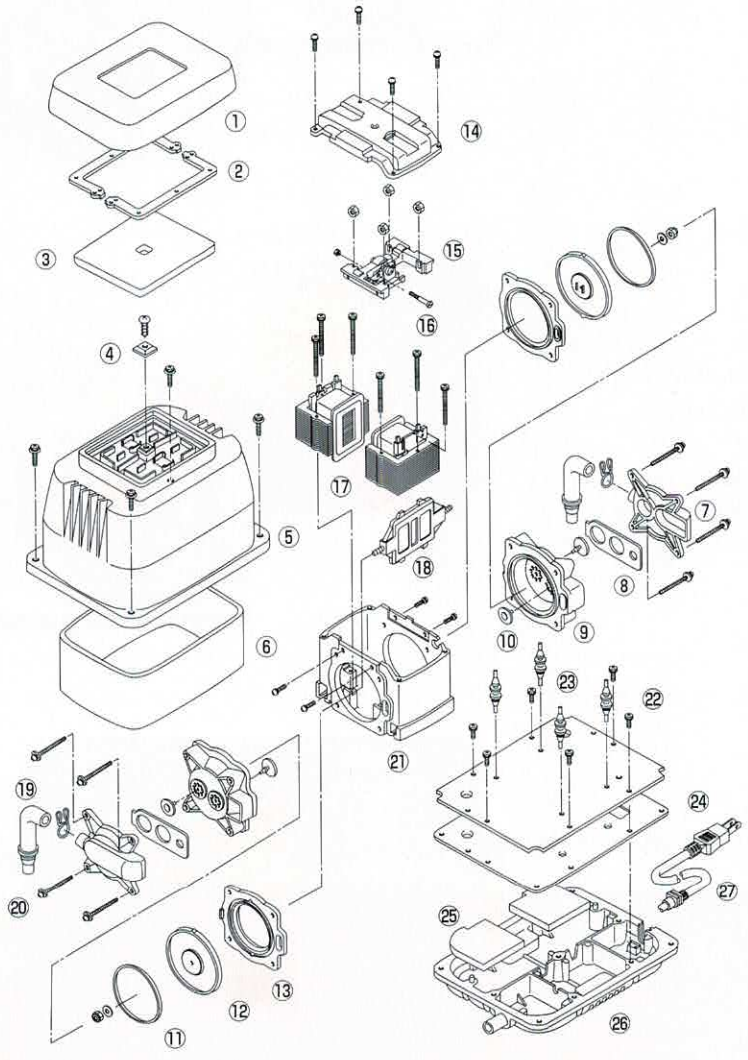
Air pump	Start of production	Discontinuance of production
HP-100	1997/10	—
HP-120	1997/10	—

HP Series

STRUCTURE AND PART NAMES



HP-100/120

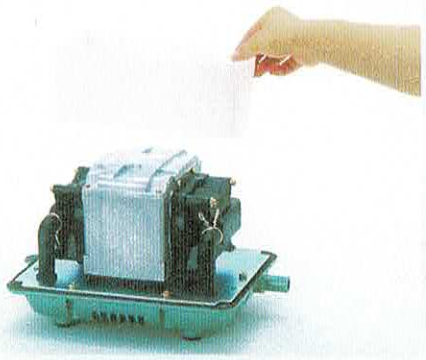
① Filter Cover
② Semi Cover Packing
③ Filter
④ Fitting Boss
⑤ Upper Housing
⑥ Sound Absorber (Lap)
⑦ Casing Block A
⑧ Valve Chamber Packing
⑨ Casing Block B
⑩ Valve
⑪ Diaphragm Ring
⑫ Diaphragm
⑬ Diaphragm Base
⑭ Frame Cover
⑮ SP Switch
⑯ Safety Screw
⑰ Electromagnet
⑱ Actuating Rod
⑲ L-Tube
⑳ Hose Band
㉑ Frame
㉒ Vibration Control Rubber
㉓ Center Plate
㉔ Gasket
㉕ Sound Absorber (Filter)
㉖ Lower Housing
㉗ Power Cord

⚠ CAUTION

- **Be sure to unplug the pump unit.**
- **Replace the diaphragms and the valves with new ones at least once a year or one and a half years in order to maintain their initial performance.**
- **For chamber block replacement, be sure to change both chamber blocks at the same time.**
- **The rod employs powerful permanent magnets. Therefore, be sure to remove your watch and precision machine before starting the work as it may fail due to their strong magnetic force.**
- **Do not put the actuating rod close to a magnetic card, a magnetic disk or any other magnetic media as their data may be lost.**

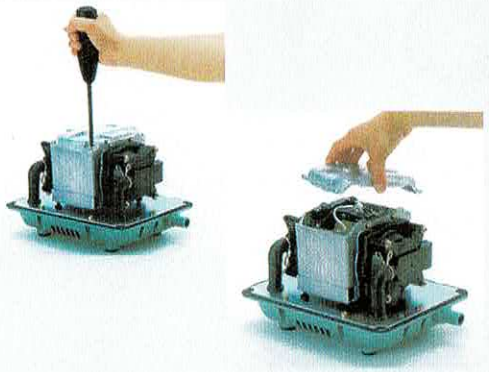
STEP 1 REMOVAL OF THE CHAMBER BLOCKS

Remove the upper housing.
(See page18 "REMOVING UPPER HOUSING")
Remove the sound absorber.



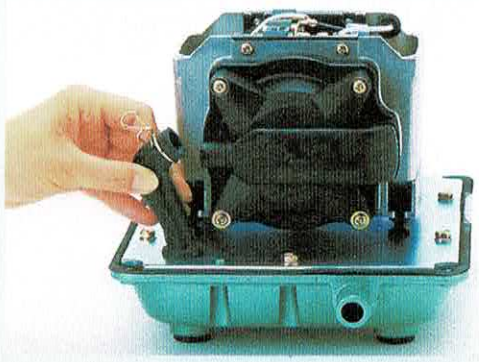
STEP 2

Undo the frame screws and remove the frame cover.



STEP 3

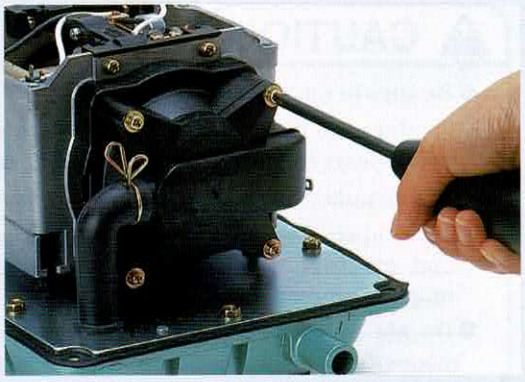
Pull out the L-tube from the casing nozzle.



STEP 4

Remove the four screws hold the chamber block and the casing block on both side.
(4screws on each side)

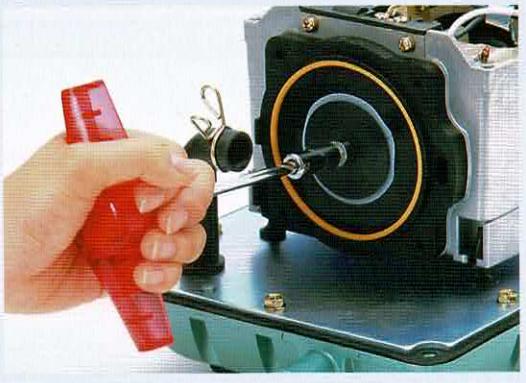
- *Casing block is separated into Casing A (Exhaust part side) and Casing B (Air valve side).*



STEP 5

Remove one of the U-lock nuts hold the diaphragm mounting block to the rod.

- *Use the box driver to loosen (or tighten) the U-lock nut.*



STEP 6

Remove one of the diaphragm mounting blocks from the actuating rod and pull out the other diaphragm mounting block with the rod and finally, separate the diaphragm mounting block and the rod.

- *When pulling out the rod, take care not to catch the rod projection on the lever of the SP switch.*
- *If the pump stops automatically, the safety screw must be broken to prevent any further damage to the pump. Be sure all debris is removed from unit. (See Step 15)*

STEP 7

REPLACING THE DIAPHRAGM

In case of replacing the diaphragm mounting block, skip some steps, and move straight from step 12.
Remove the diaphragm ring from the diaphragm, and then, the diaphragm from the diaphragm base.

STEP 8

Install a new diaphragm and a diaphragm ring in the diaphragm base.

- *Take care not to create any clearance between them.*

STEP 9

REPLACING THE VALVE

In case of replacing the diaphragm mounting block, skip some steps, and move straight from step 12.

Remove the valves from the casing B.

- *If it is difficult to separate them, insert the tip of a flatblade screwdriver into the clearance.*
- *Pull out the valves as they can be removed with facility.*

STEP 10

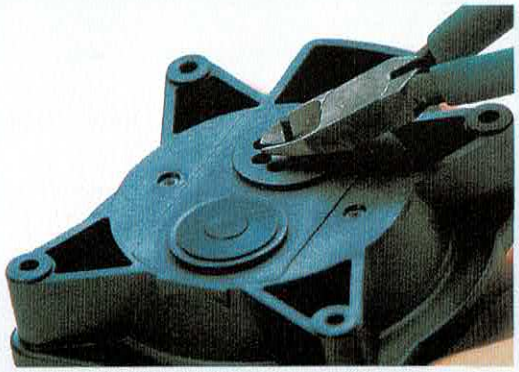
Insert each new valve into the center hole of valve seat, and secure them by pulling with the radio pliers.

- *When reinstalling the valves, make sure they are correctly fitted the exhaust and intake side.*

STEP 11

Cut away the respective pulling ends with scissors or nippers.

- *Leave each of the thick parts.*



STEP 12 FITTING CHAMBER BLOCKS

Set the actuating rod in line with groove and tighten U-lock nut with the box driver.

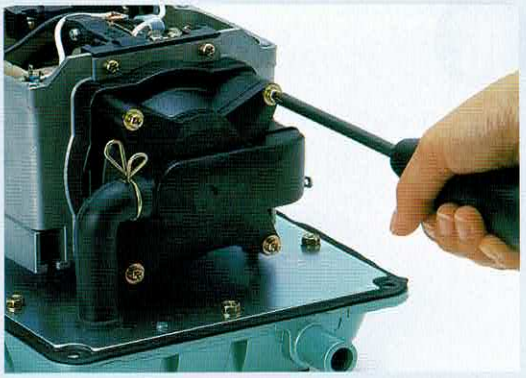
- *Use new U-lock nut and washer only that come as replacement parts to prevent loosening and causing failure of the pump.*

STEP 13

Insert the actuating rod in accordance with the gap of the frame.
Secure the diaphragm mounting block on the other side and tighten with washer and U-lock nut with the box driver.
Make sure the gaps between the actuating rod and the electromagnet are even.

STEP 14

Connect L-tube to the casing block and secure the casing with the screws.
(4screws on each side)
Install the other casing block at the same way.

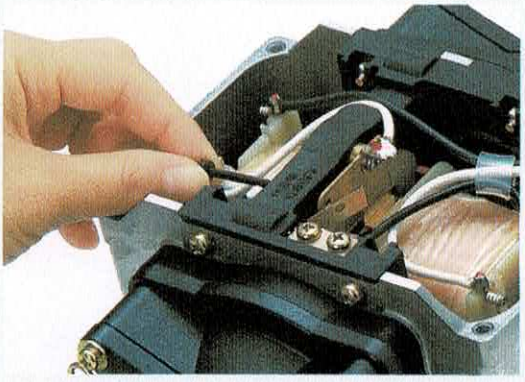


STEP 15 REPLACEMENT OF SAFETY SCREW

Dispose of broken screw. Be sure all debris is removed from unit as it can result in damage to the permanent magnets and or even in a failure of the pump.

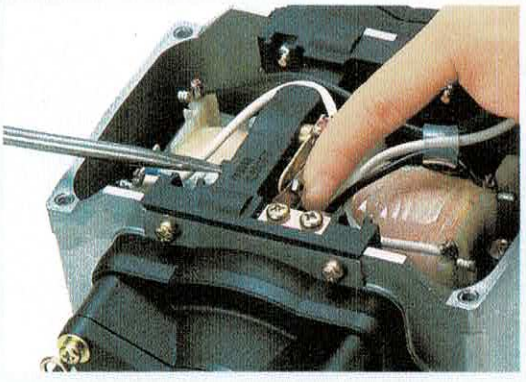
STEP 16

Draw the new safety screw through a hole in the different direction of the terminal.
(Threading order : The L-shaped lever-the spring electrode)



STEP 17

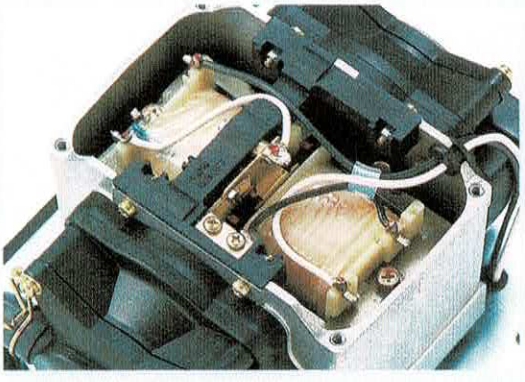
Fasten screw with a nut.
The screw is designed so that the nut will turn freely when it is properly fastened, stop tightening when this happens.



STEP 18

This completes the replacement of the safety screw procedure.
Make sure the gaps between L-shaped lever and lug of the actuating rod are even.

- *When checking the movement of the switch while the power is connected, touching the terminal will result in an electric shock.*
- *Unplug the pump immediately after the check.*

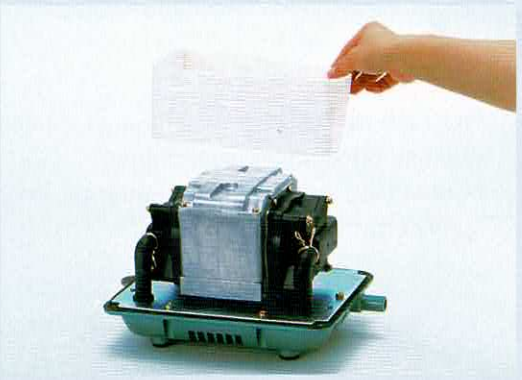


STEP 19

Secure the frame cover with the screws.

STEP 20

Install the sound absorber.



STEP 21

Place the upper housing back on body.

- *Be extremely careful not to pinch the sound absorber in the upper housing.*

Secure it with the bolts.

Then, place the filter and filter cover on the upper housing. (See page17 **"FILTER CLEANING AND REPLACEMENT"**)

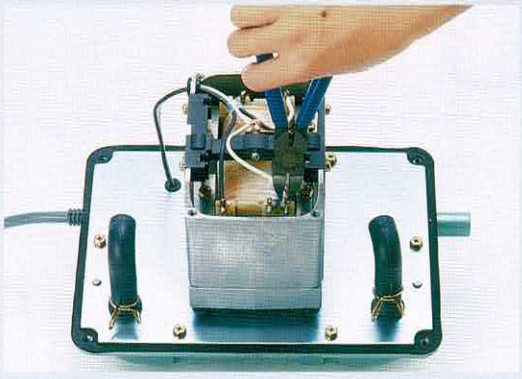
⚠ CAUTION

- **Be sure to unplug the pump unit.**
- **When performing replacement work, the pump body may be still hot and you may get burnt. Therefore, wait until the pump has been allowed to cool.**
- **Be sure to remove the chamber block and the actuating rod before replacing the electromagnet.**
- **It is better to let an experienced technician handle the soldering process. Take precautions against being burnt.**

STEP 1 REMOVAL OF ELECTROMAGNET

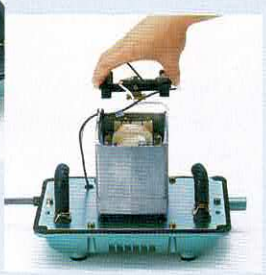
Cut the wire from the terminals on electromagnets with nippers.

• It is recommended that you make a note of the wiring.



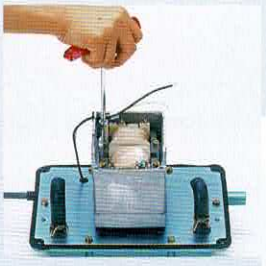
STEP 2

Undo the frame screws and remove the SP switch.



STEP 3

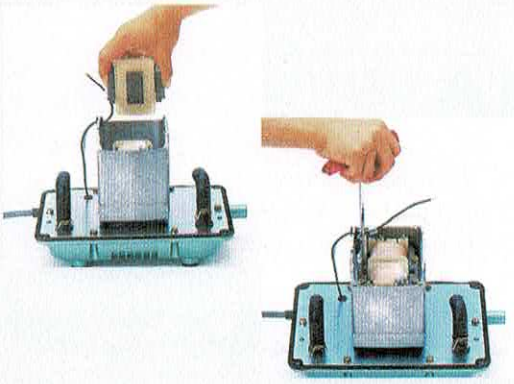
Remove the nuts with the box driver. (8mm wrench)
Pull out the electromagnets from the pump body.



STEP 4

FITTING THE ELECTROMAGNET

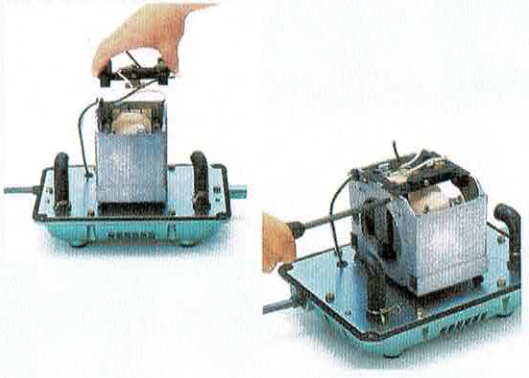
Secure the electromagnets to the body by the nuts.
Use the box driver. (wrench)



STEP 5

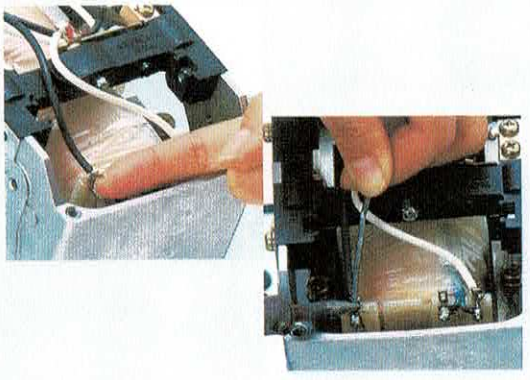
Secure the SP switch to the frame by the screws.

• *Be careful of the direction.*



STEP 6

Tie the wire in a bundle with a silicon tube.
Strip off the coating each of the wire.
(7mm from the end)
Connect the wire to the terminals.
Solder the wires to the terminals.
The wire requires a soldered connection.



STEP 7

This completes the electromagnet replacement procedure.