



HIGH FREQUENCY 48V SERIES AUTOMATIC OPERATION VIBRATOR OPERATION MANUAL



**ADV40VA
ADV50VA**

EXEN CORPORATION

☆ SAFETY PRECAUTIONS

- ☆ This product is a vibrator for compacting concrete. Do not use the vibrator for any other purpose.
- ☆ Be sure to read and understand this operation manual carefully before using the product so that it can be operated safely and efficiently. Improper machine use may result in injury or machine failure. Keep this manual for further reference.
Also, read the operation manual of ADS (automatic operation distribution box) and power supply equipment carefully.
- ☆ The following symbols are DANGER, WARNING, and CAUTION instruction for the use of this product so that the product will not cause harm or damage to users or others.



DANGER

【DANGER】 indicates an imminent dangerous situation which may lead to death or serious injury.



WARNING

【WARNING】 refers to a hazard that may cause death or serious injury.



CAUTION

【CAUTION】 refers to a hazard that may cause minor or moderate injury.



(To prevent death)

- ⚠ Never use this product with a commercial power supply.
Using commercial power supply could burn the motor, break the insulation and thus causing electric shock.
- ⚠ This product should be always used with a power supply (inverter and generator) with ground fault circuit interrupter for preventing electric shock.



(To prevent injury or damages)

- ⚠ The business operator making use of this concrete vibrator has to manage working hours and must make efforts to prevent worker's health impairment comes from vibration.
Refer to the "Vibration total value" (page 18) section for the details about the vibration strength of the vibrator.
Observe the relevant legal requirements and guidelines of the country where the vibrator is used.
- ⚠ Do not operate the head assembly in the air.
When operating it in the air, the vibrator reaches 100°C or higher in a few minutes, and you may get burned upon touching it.
- ⚠ The head assembly becomes hot during operation. After use, be careful not to touch it.
There is a risk of being burned.
- ⚠ When using the vibrator near feet or in places that are not very deep, concrete may be splattered around. Use face protection (safety glasses and mask) to protect your eyes and mouth. Please wear hearing protector when working in noisy places.



Wear face protector



Wear hearing protection

- ⚠ Do not swing the head assembly by holding the hose or cable. There is a possibility that this could cause injury or damages to objects nearby.

○ INTRODUCTION

Thank you for purchasing this product, automatic operation vibrator ADV type.

Be sure to read this operation manual before use.

Be sure to read and understand this operation manual carefully before using the product until it can be operated safely and efficiently. Handle and maintain it appropriately for safety operation.

Keep this manual for further reference.

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○ SAFETY



(For personal protection during operation)

- Put on a safety helmet, anti-vibration gloves, safety boots, hearing protection, face protection (safety glasses and mask), and safety harness before using the vibrator.



Safety helmet



Anti-vibration gloves



Safety boots



Hearing protection



Face protector



Safety harness

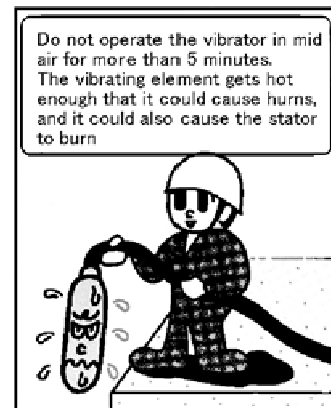
- Since this product has a long hose, there is a risk of injury by stumbling or making a false step if the hose gets caught on rebar during work or moving, or movement is limited by putting something on the hose. Also, if the product is left in an area where people pass by when work is suspended, it may catch someone's foot and cause someone to fall or be injured. Be careful when handling hoses and cables.
- Ensure a footboard is placed when work on bad footing area such as on a rebar.
- If the product stops suddenly, turn the power switch "OFF" and remove the plug from the power supply equipment.
If not, the cable could burn causing damage to the power supply equipment.



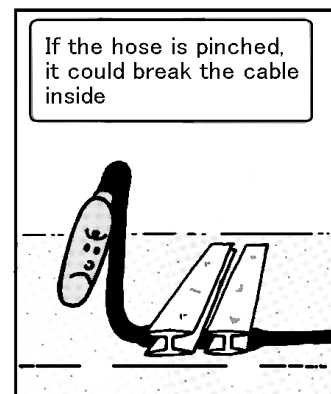
CAUTION

(For longer service life)

- The head assembly of this product is cooled by insertion into ready-mixed concrete. Thus, do not use it outside the ready-mixed concrete (i.e. in the air). There is a possibility that the motor could burn out.



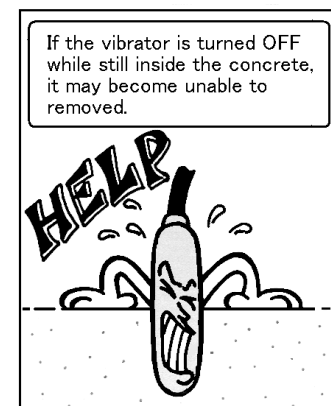
- Do not place or drop any heavy objects on the cable or hose. It may damage the cable and cause a malfunction.



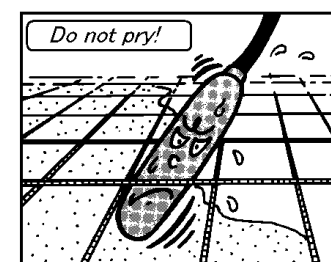
- The power switch should be turned "ON/OFF" only when the head assembly is not inserted in the ready-mixed concrete.

If the power is turned "OFF" while the vibrator is in the ready-mixed concrete, you may not be able to remove the head assembly.

Forcibly pulling it out may cause injury.

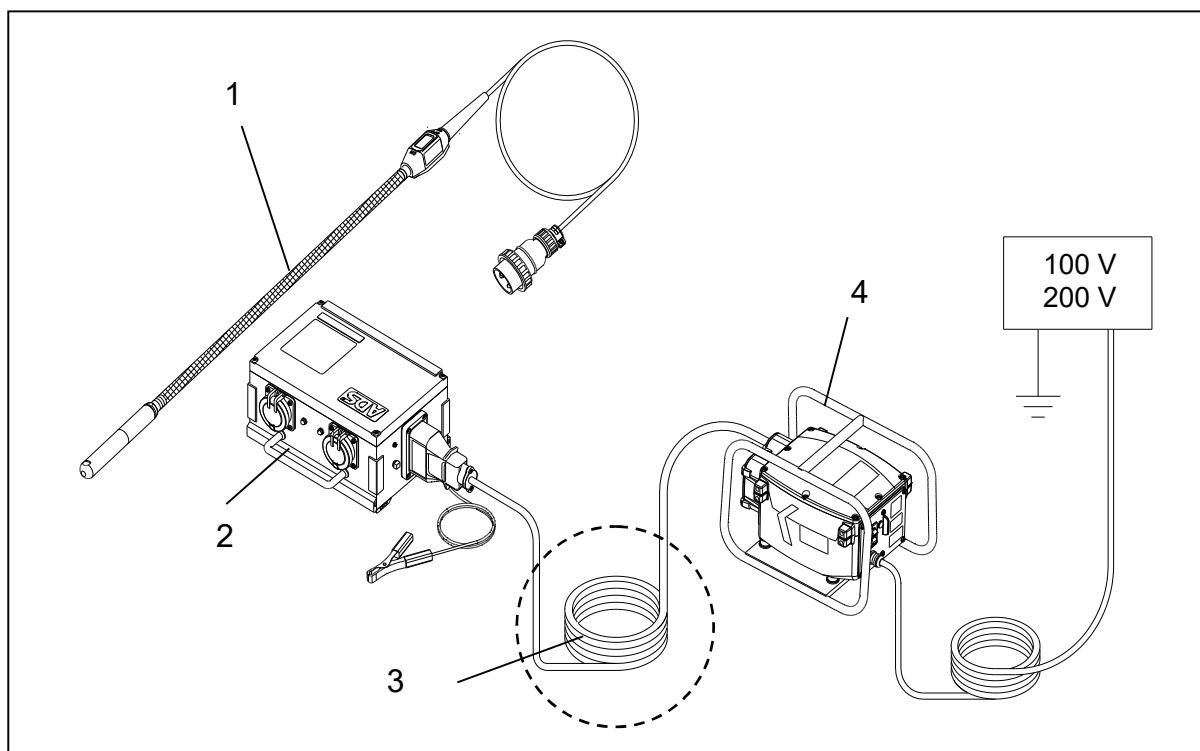


- Do not pry or twist the vibrator among the rebar or the formwork with the head assembly. Otherwise the head assembly may become abraded and burns the motor.



- The head assembly of this product should not be operated on hard surfaces such as hardened concrete or steel plate. There is a possibility that the bearings could burn, and the rotor could break.
- Do not pull or suspend the cable from anything when placing concrete or moving. Otherwise, the plug may come off or the cable may be damaged, causing malfunction.
- When using the vibrator head and the vibrator is in rust, be sure to remove it with a cup-brush attached to a grinder before use.
Rusted vibrator may narrow the detective range of automatic operation.
- When concrete is attached to the vibrator after use, be sure to remove concrete and cement mortars on the vibrator.
Dirty vibrator may narrow the detective range of automatic operation.
- In order that the plug terminals always make good contact, remove any dirt or rust from them before inserting the plug into the outlet.
Poor plug contact is one of the main causes of the motor burning.
- If the vibrator is to be used at a location separated from the power supply equipment, an extension cable between ADS and power supply equipment should be used.
Refer to Table-1 (page 7) for details about the size of the extension cable and the operable length. Be sure to use optional items specified by our company for the extension cable.
- The number of usable units varies with the capacity of the power supply equipment (inverter and generator.) Refer to "NUMBER OF VIBRATOR UNITS THAT CAN USE" (page 8) to avoid overloading.

○ SELECTING AN EXTENSION CABLE



- ▶ 1. ADV Inner vibrator 2. ADS (Automatic operation distribution box) 3. Extension cable
4. Power supply equipment

Table-1

Name	Model	Item code	Cable size
Cord reel	ER8030	000514000	8.0mm ² 30m
Intermediate cable	C5520M	000879000	5.5mm ² 20m
Intermediate cable	C8020M	000881000	8.0mm ² 20m

○ NUMBER OF VIBRATOR UNITS THAT CAN USE

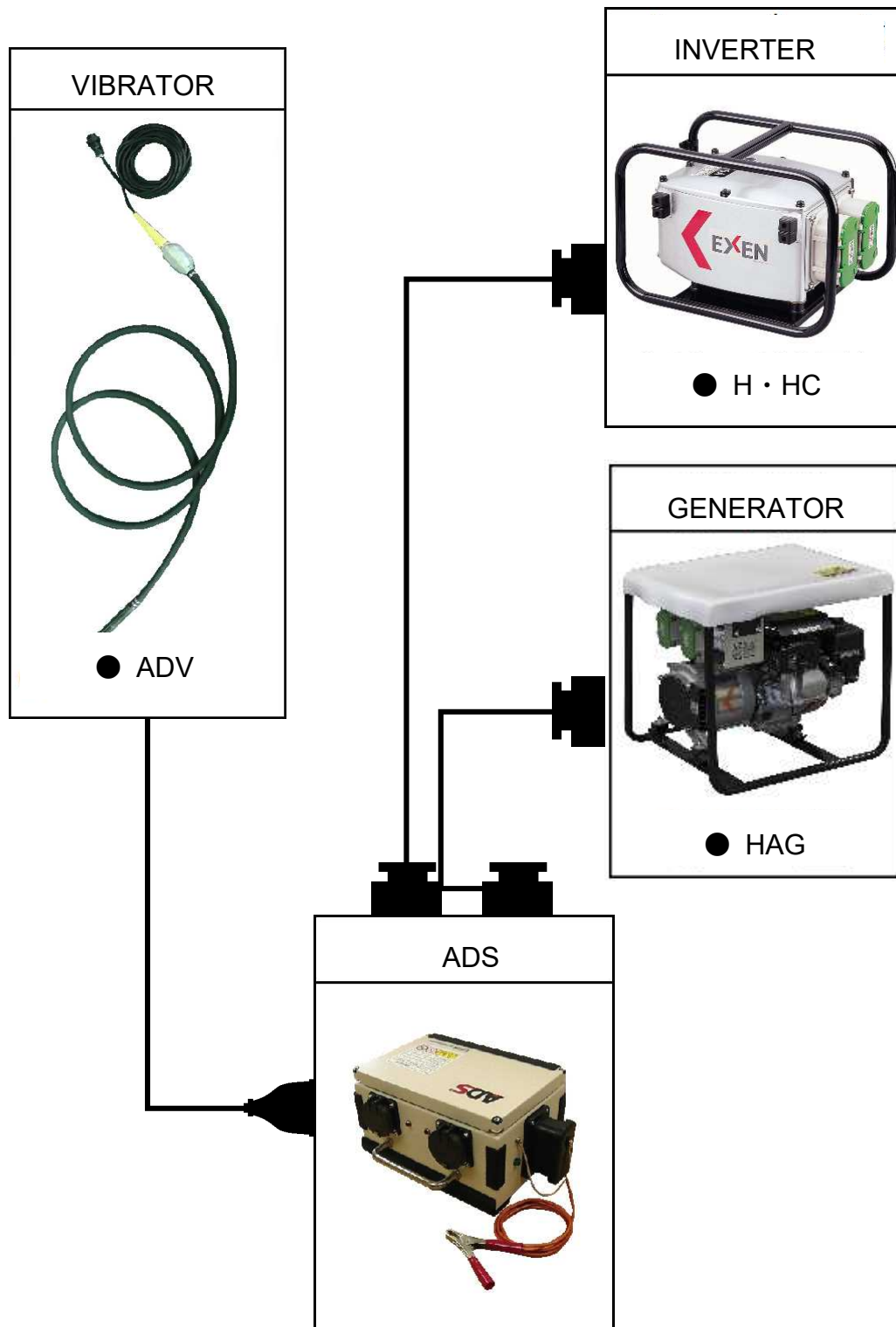
Table-2

Inverter	High frequency vibrator	
	ADV40	ADV50
HC111B/RC	1	1
HC113B	1	1
HC116B	2	1
HC230A/B	4	2

Note : When this product is connected to an ADS, the ADS itself uses part of the output of the inverter or generator as a power supply, so the number of usable vibrators will be less than the number of vibrators in the inverter or generator.

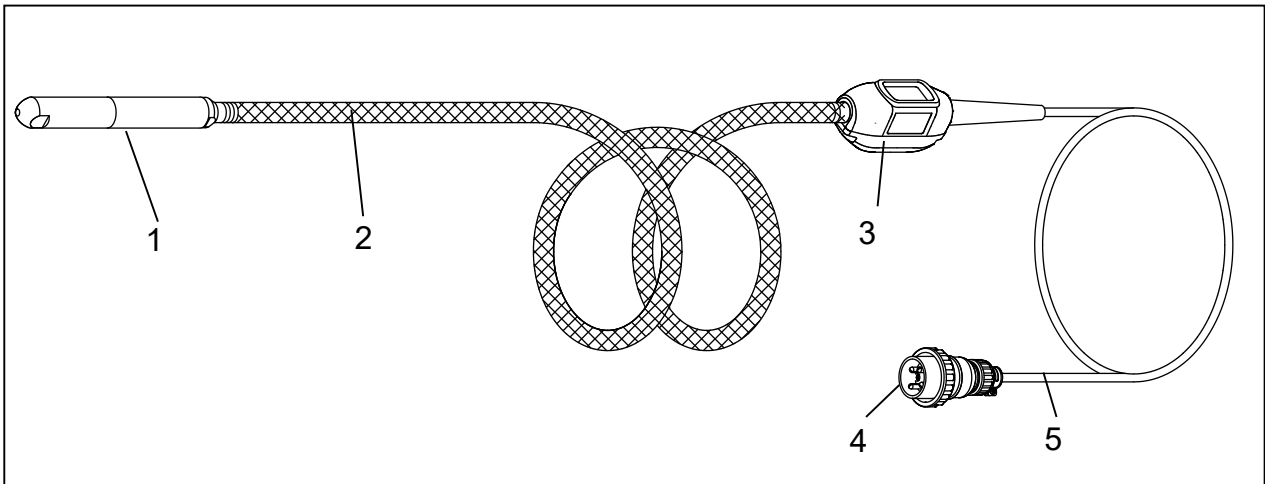
Note : When a power supply is not listed in the table above, subtract 1 from the usable number of power supply as a guide.

○ SYSTEM CONFIGURATION



- To connect ADV vibrator with ADS, a dedicated round plug is used.
When connecting ADV vibrator with an inverter or generator, Converter cable is required. In this case, no automatic operation cannot be used.

○ NAMES OF PARTS



1	Head assembly	4	Plug
2	Hose	5	Cable
3	Switch	—	—

○ OPERATIONS



Make sure that the input power of the power supply equipment is "OFF" when connecting this product. Connecting the power supply equipment during operation may cause electric shock.

1. Connect the Intermediate cable to the power outlets and the input connector of the ADS (automatic operation distribution box.)
2. Insert the plug of the ADV vibrator to the output outlet of the ADS (automatic operation distribution box.)
3. Connect the sensor clip to a conductor of reinforcement connecting to the concrete to be casted.
4. Start the power supply equipment and ADS (automatic operation distribution box.)
5. After start, check that the power lamp (green) next to the input outlet of the ADS (automatic operation distribution box) is lit.
6. Hold the vibrator hose so that the head assembly is suspended.
7. When you are ready, turn the operation switch to "ON" to start the ADV type vibrator.
8. Touch the conductor that the sensor clip is attached with the vibrator, and make sure that the vibrator can be operated.
9. This is the end of preparation.

While the vibrator is touching with the conductor, the vibrator will operate automatically when inserting it into the ready mixed concrete. Or the vibrator will stop operation when pulling out it from the ready mixed concrete.

Note : The output lamp (red) next to the output outlet lights up during operation.

Note : Depending on the concrete condition and the installation condition of the product, the auto operation detectable distance is approximately 20 m or less, centering on the sensor clips installation position.

10. Insert the vibrator perpendicularly into the concrete with a pitch of effective compacting range.

Note : The effective compacting range for the vibrator is an area having a diameter approximately 10 times the diameter of the vibrating part.
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11. Guideline of replacing vibrator position is when the concrete stops setting and the mortar floats evenly on the surface and gets shiny.

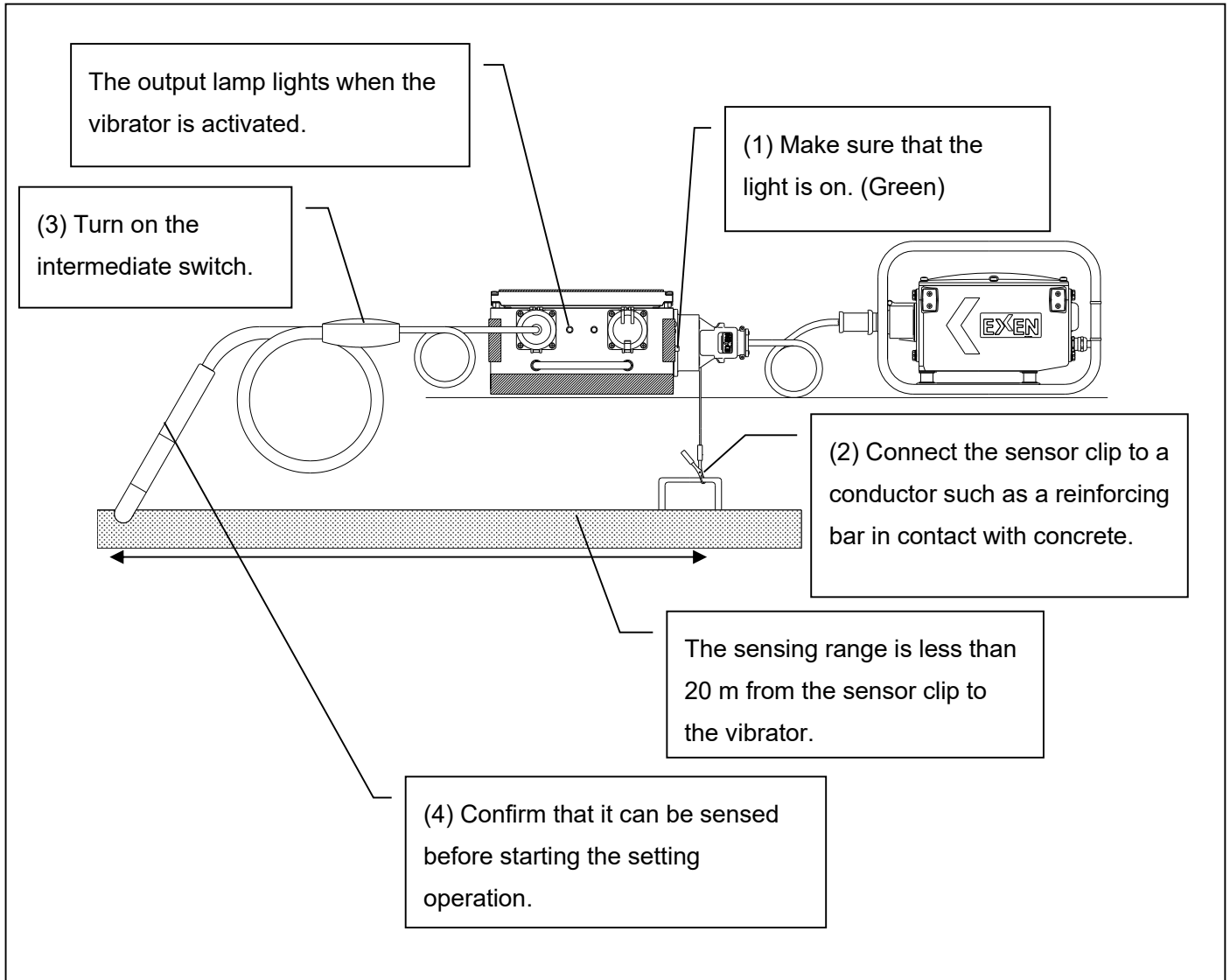
Note : Placing the vibrator at one point for a long time may cause aggregate separation.
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Note : Fill coarse aggregate uniformly. If coarse aggregate separation occurs during concrete placement, refill coarse aggregate uniformly and apply vibration again.

Note : When applying vibration to slope, move vibrator lower to upper to avoid coarse aggregate or mortar separation.

12. When pulling up the vibrator, pull it up slowly so that no holes remain.
13. After concrete placing is completed, turn off the vibrator and remove the plug from the output outlet of the ADS (automatic operation distribution box).
14. Turn "OFF" the power supply equipment.

○ OPERATION CHECK OF AUTOMATIC OPERATION



Note : Since the detective range greatly changes depending on the concrete state and the rebar layout, be sure to confirm the operation after installation.

○ CLEANING AFTER USE

- After use, the vibrator should be cleaned well and then neatly bundled.
 - 1. Remove concrete from the head assembly, hose, switch case, and cables before it hardens.
 - 2. Remove any dust or concrete from the outlet on the power supply equipment and from the vibrator plug.
 - 3. Wind up the hose and cable so that the loop diameter is about 50 cm, and then tie it in two or three places. This makes it easier to carry.
When carrying the hose and cable, place an arm through wound up loop and the hose and cable on the shoulder. So that both hands are free. It becomes easy to carry.

○ INSPECTION

- Before carrying the vibrator to the worksite and also after use, be sure to check the following. It will greatly help prevent problems during operation.
 - 1. Is there any wear, cracks, or loose components on the head assembly?
 - 2. Is there any wear, damage, or scratches on the hose?
 - 3. Is the switch case deformed or are any of the rubber parts broken?
 - 4. Are there any wear or cracks on the cable?
 - 5. Is there any dirt or rust on the plug terminals?
 - 6. Can the switch be turn "ON" and "OFF" properly?
Or can automatic operation be worked normally?
 - 7. Is the insulation resistance value correct?
(DC500V, 20MΩ or more)
 - 8. Is the vibrator operation sound normal during operation?
(It is normal if there is regular and continuous sound.)

○ REPLACEMENT PERIOD FOR CONSUMABLES

○ Consumables should be replaced periodically according to the below table.

Consumables	Replacement period. (visual and auditory check)	Replacement frequency (in hours)
Head assembly	Determined wear status (visual)	200 - 300
Vibrator cap		
Bearing	Determined by the noise during operation (auditory)	300 - 400
Hose	Determined by wear or scratches (visual)	Upon found

Note : The above replacement time of consumable parts is a rough guide. Because it depends on usage, we recommend replacing consumables at earlier than the above.

○ TROUBLESHOOTING

Phenomenon	Sign	Cause	Solution
Vibrator operates	Noise (metallic or other noise)	Bearing abnormality (Rough, Worn)	Replace the bearings
	Vibration is weak	Stator abnormality	Replace the stator
Vibrator does not start	Humming noise	Open phase	Repair it
		Stator abnormality	Replace the stator
		Bearing abnormality (Locking/Broken)	Replace the bearings
	No sound	Burned stator	Replace the stator
		Broken cable	Repair or replace the cable
		Disconnection of sensor wire	Repair or replace the sensor wire

○ SPECIFICATIONS

■ Specification

Model	Output (W)	Voltage (V)	Current (A)	Cycle (Hz)	Frequency (Hz)	Total length (mm)	Head length Diameter x Length (mm)	Length of external hose Diameter x Length (mm)	Mass (kg)
ADV40VA	250	48	5.5	200	200	6,499	43×345	33×6,000	12.7
ADV50VA	400		9.0	/ 240	/ 240	6,539	52×385	36×6,000	15.6

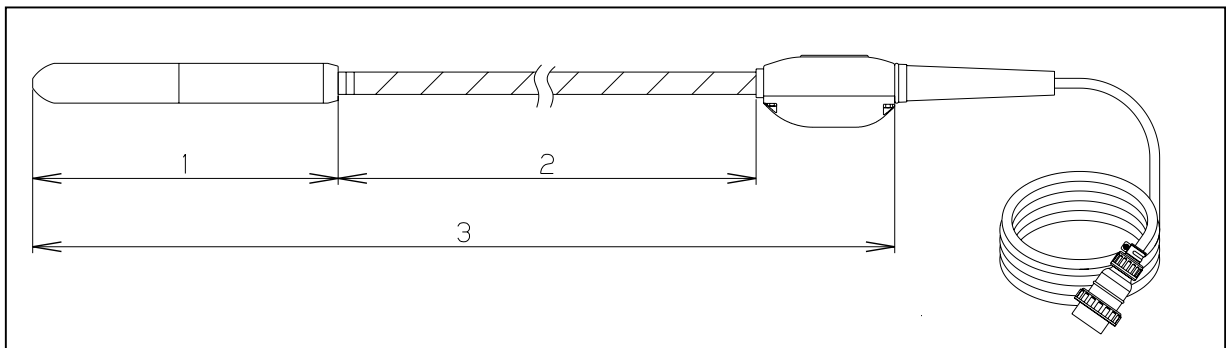
Note : External cable (15 m) is also included in the mass.

■ Vibration total value

Model	Vibration total value (m/s ²)
ADV40VA	2.7
ADV50VA	4.6

Note : Vibration total value is a value that uses the measuring instrument based on ISO 5349-1, and it was measured by the method found in ISO 5349-2.

■ Dimension drawing



▶ 1. Head Length 2. Hose length 3.Total length

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