



HIGH FREQUENCY 48V SERIES HIGH FREQUENCY FORMWORK MOUNTING VIBRATOR OPERATION MANUAL



HKM50PSK

EXEN CORPORATION

☆ SAFETY PRECAUTIONS

- ☆ This product is a high frequency vibration motor to be installed between the formwork panel and the retaining material, for placing concrete secondary products and finishing the surface. Do not use 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 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.

 WARNING

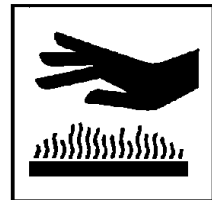
(To prevent death)

-  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.
-  Do not use the power supply equipment (inverter) of this product that does not have an earth leakage circuit breaker for preventing electric shock. Otherwise, there is a risk of electric shock.
-  When you install it in high places, provide an anti-drop measure. Falling object may cause injury or damage.
-  In the unlikely event that the product falls, be sure to replace it with new one even if there is no abnormality in the appearance of the fall prevention wire.

 CAUTION

(To prevent injury or damages)

-  This product becomes high temperature during operation. Never touch the hot surface accidentally after driving. There is a risk of being burned.



-  This product vibrates. When installing this product, select a position that does not resonate and install it securely.
-  Change the plate position according to the retaining material used in the construction field.
-  Wear hearing protection at the noisy place during operation.



Hearing protection

■ **Retaining material applicable size**

Single round pipe: 50 mm (ϕ 48.6), Square pipe: 50 mm, Square pipe: 60 mm.

○ INTRODUCTION

Thank you for purchasing a high frequency vibrator for attaching a concrete panel.

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.

○ CONTENTS

☆ SAFETY PRECAUTIONS	1
○ INTRODUCTION.....	3
○ SAFETY	4
○ NUMBER OF VIBRATION MOTOR UNITS THAT CAN USE.....	6
○ SYSTEM CONFIGURATION	7
○ NAMES OF PARTS	8
○ PROCEDURE FOR CHANGING A PLATE AND THE MOUNTING POSITION.....	9
○ INSTALLATION/OPERATION	10
○ TEST OPERATION.....	12
○ CLEANING AFTER USE	12
○ INSPECTION	13
○ TROUBLESHOOTING.....	13
○ SPECIFICATIONS	14

○ SAFETY



(For personal protection during operation)

- Wear a safety helmet, safety gloves, safety boots, hearing protection, face protector (protective glasses and mask) and safety harness during the installation work.



Safety helmet



Safety gloves



Safety boots



Hearing protection



Face protector



Safety harness

- Make sure you have enough space when working.
- Work in a safe posture.
- Be sure to gain footholds in a safe environment when installing this product.
- When checking this product, be sure to disconnect the plug from the power supply. If not, electric shock may occur.
- Be sure to wear a safety harness when installing and inspecting this product at a high place.
- Handle this product with care not to fall. Always use the safety hook attached with the product to prevent falling the main body.



(For longer service life)

- When installing this product, insert it securely between the formwork and the retaining material so as not to drop due to vibration. Be sure to use a safety hook for preventing falling.
- When the gap between the formwork and the retaining material is wider than the inserted wedge width, the retaining material may make contact with the motor. Be sure to insert it into the place where retaining material and motor do not contact.
- Grab a handle when transporting this product. Never hang or pull a cable. Otherwise, it may lead to cable disconnection and unusable operation.
- Clean off any dirt or rust from the plug before inserting it securely into the branch cord. Poor plug contact is one of the main causes of motor.
- It is recommended to use an over-current protective device in order to automatically protect vibration motor from over-current (larger than the rated current).

Note : Set the current setting of the overcurrent protective device to the rated current value.

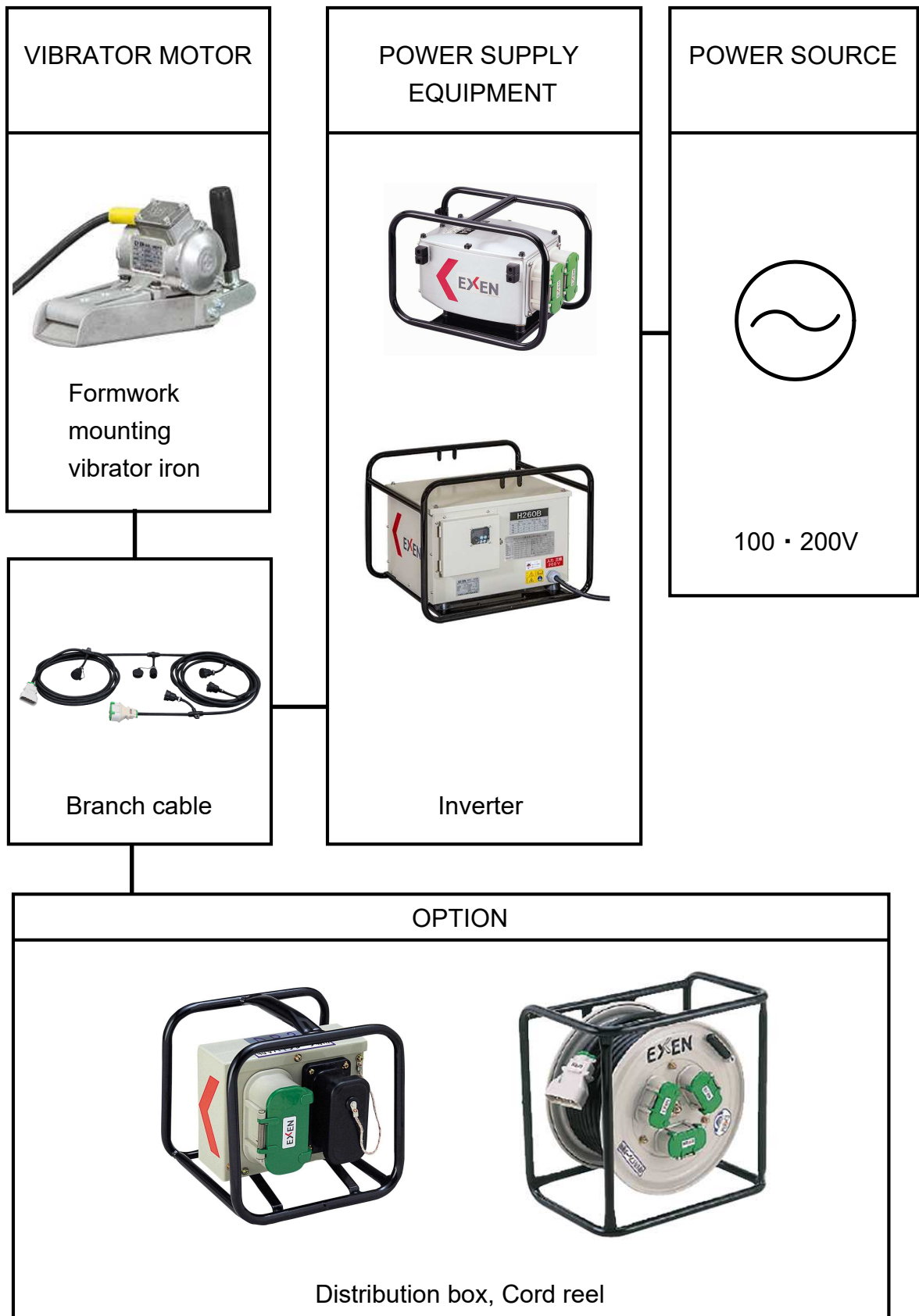
- The number of usable units varies with the capacity of the power supply equipment (inverter.) Refer to "NUMBER OF VIBRATION MOTOR UNITS THAT CAN USE" to avoid overloading.
- Do not use motors, branch cords, and power supply equipment in locations exposed to rain or water. Failure to do so may result in malfunction or electric shock.

○ NUMBER OF VIBRATION MOTOR UNITS THAT CAN USE

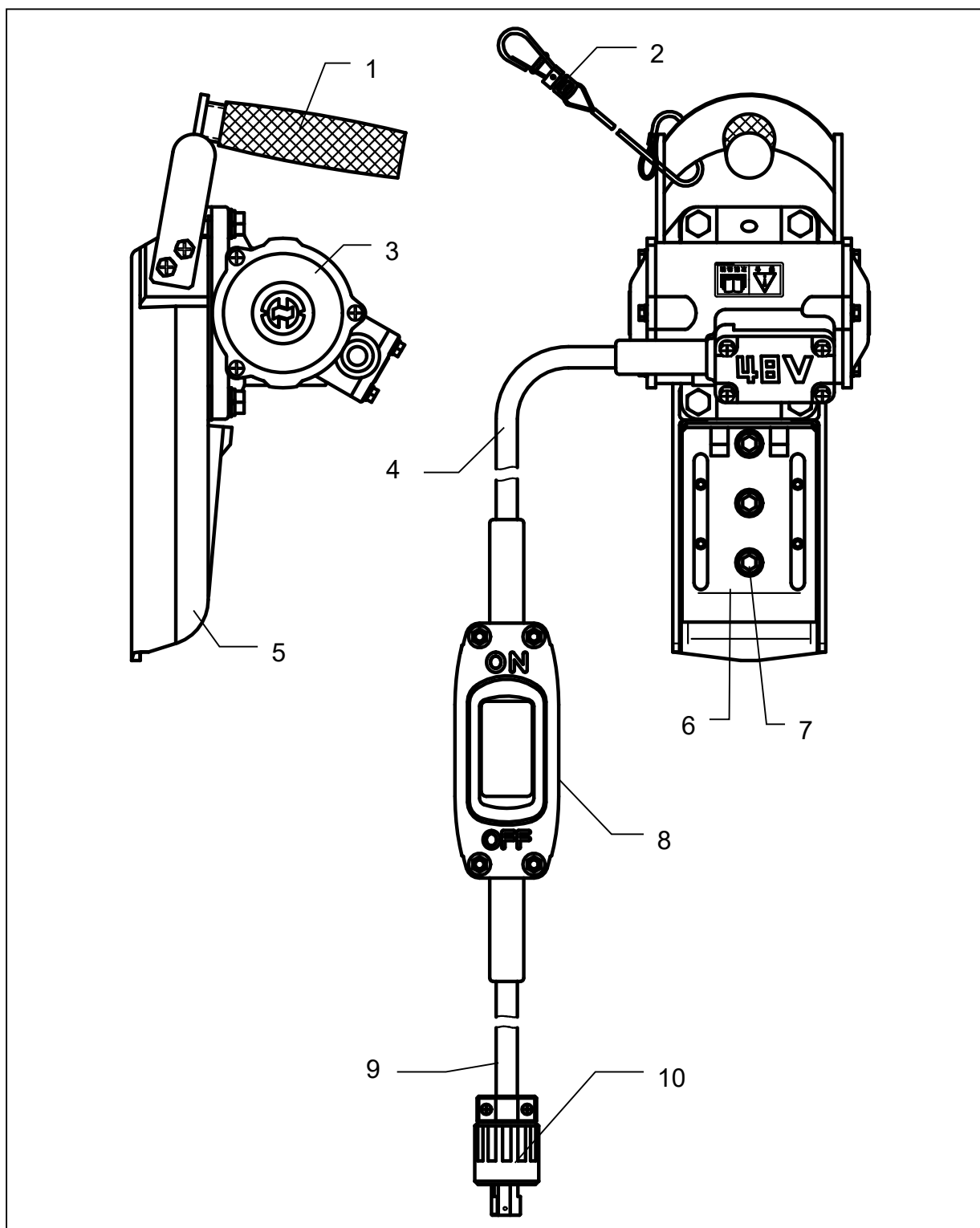
Power supply equipment model		High frequency vibration motor
		HKM50PSK
Inverter	HC111B(RC)	4
	HC113B	5
	HC116B	8
	HC230A/B	18 (14)
	H260B	36 (30)

Note : The values in the parentheses () in the table are estimates of the number of external vibration motor that can be used when the vibration motors are simultaneously and continuously used under overload conditions.

○ SYSTEM CONFIGURATION



○ NAMES OF PARTS

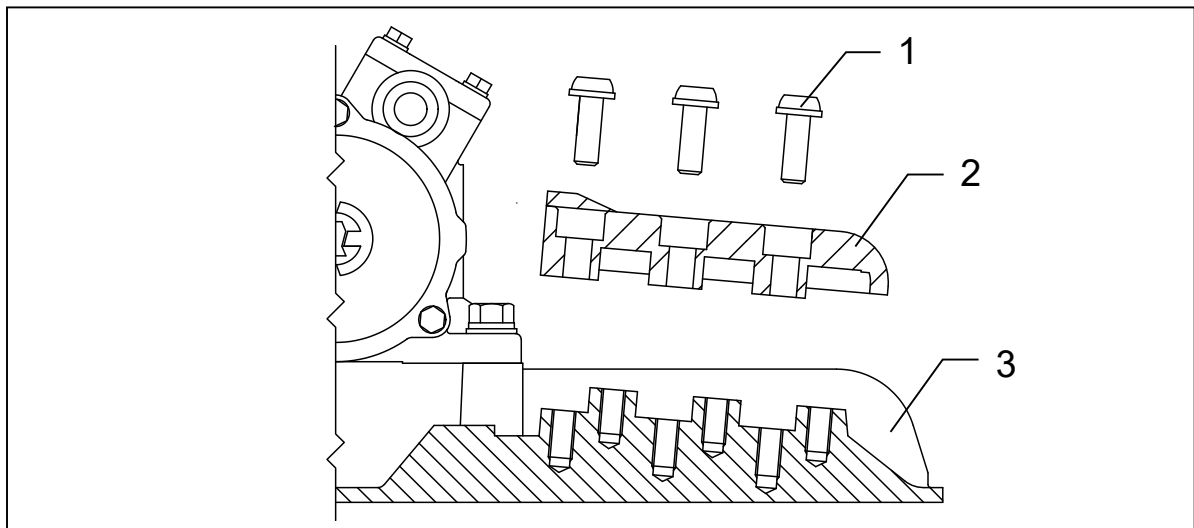


1	Handle	6	Plate (detachable)
2	Safety hook (accessory)	7	Hex socket button bolt M8
3	Vibration motor	8	Intermediate switch
4	Cable 2m	9	Cable 3m
5	Wedge	10	Plug 3112N

○ PROCEDURE FOR CHANGING A PLATE AND THE MOUNTING POSITION

⚠ Always turn off the switch and unplug the power plug from the outlet before working. When replacing the plate or changing the mounting position, do so on a workbench or table. Otherwise, there is a danger of injury or electricity.

1. Loosen the hexagon socket button bolts and remove the plate from the wedge (Hexagon wrench 5 mm).
2. Adjust the plate mounting position according to the size of the retaining material to be installed.
Single round pipe 50 mm ($\phi 48.6$), Square pipe 50 mm, and Square pipe 60 mm.
3. Fix the plate with three sets of hexagon socket button bolts and spring washers.
(Tightening torque: 11 N · m)

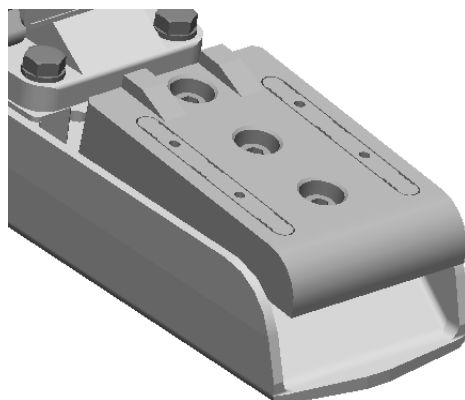


▶ 1. Hexagon socket button bolt M8, Spring washer M8 2. Plate (detachable) 3. Wedge

When using single round pipe 50 ($\phi 48.6$)



When using single square pipe 60



○ INSTALLATION/OPERATION



Be sure to turn off the switch and disconnect the plug from the power supply socket before installing this product in a formwork. Sudden movement may lead to injury

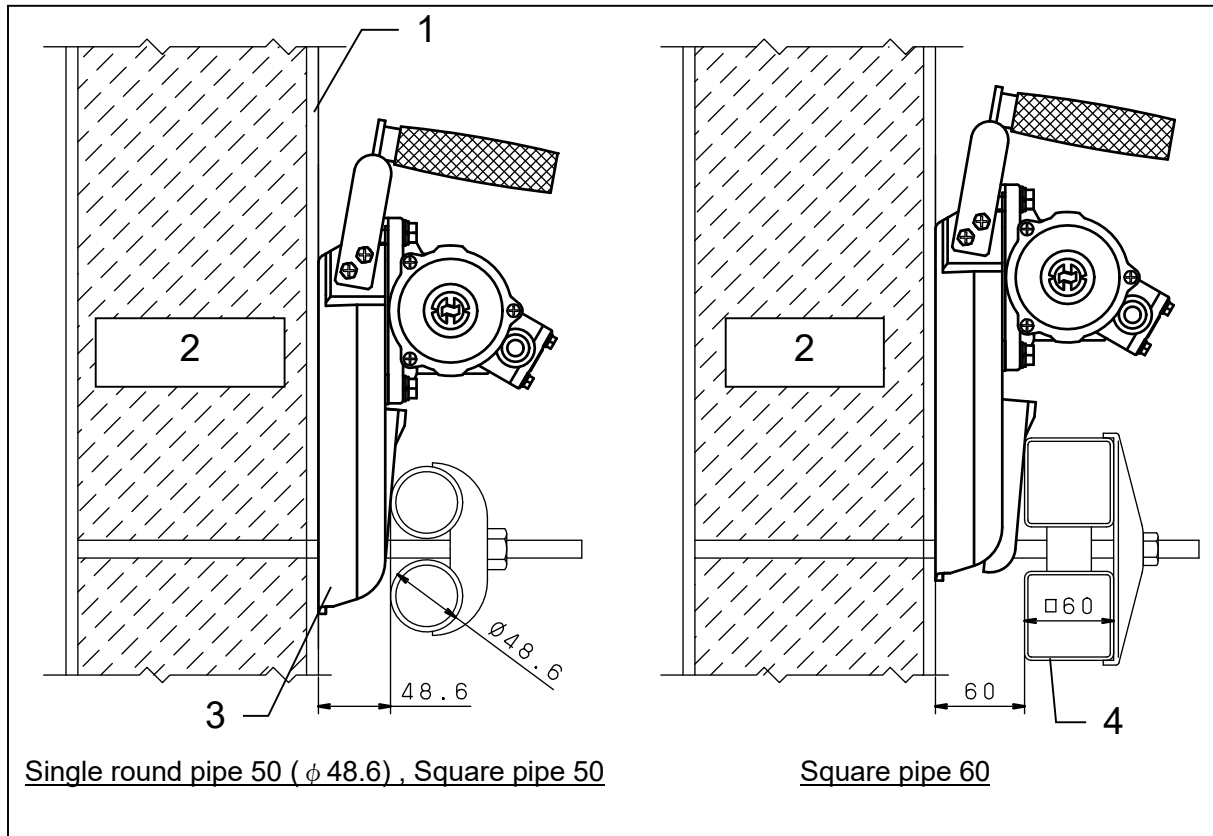
Note : In order to prevent the resonance of this machine and formwork, consider the formwork reinforcement of and the installation position carefully.

1. Check the size of the retaining material.
2. Check the clearance between the formwork and the retaining material.
○When using 50 pipe: 48.6mm • When using □50 pipe: 50mm.
When using □60 pipe: 60 mm.
If the gap is larger than the dimension, the retaining material and the motor will contact.
3. Check the concrete levee crown in the formwork, and insert the wedge into the retaining material of the place where you want to vibrate.
4. Insert the power plug and turn on the switch.
5. After operating the vibration motor for a while, move the motor to the next place.

Note : If the wedge come off during operation, reverse the motor rotation direction by reversing the input cord of the branch cable so that the wedge do not come out.

Note : Do not insert the wedge forcibly by hitting the this product with a hammer.

■ Installation example



- ▶ 1. Formwork (Concrete panel) 2. Concrete 3. Wedge 4. Retaining material

○ TEST OPERATION

- Be sure to confirm that it is not resonating.
 - 1. Is the wedge surely inserted between the formwork and the retaining material?
 - 2. Are there irregular vibration sounds, or abnormal sounds occurring?
 - 3. Do you see the motor doubly?
- Resonance measures.
 - 1. Reinforce the formwork and adjust the mounting position, if necessary.
 - 2. Reverse the input plug of the branch cable in order to rotate the direction of motor rotation backwards.
 - 3. Insert the wedge firmly between the formwork and the retaining material.

○ CLEANING AFTER USE

- After use, be sure to clean it well.
 - 1. Remove the concrete attached to the motor, the wedge and the cable before it gets hard.
 - 2. Clean the dirt and dust attached to the motor, wedge and cable.
 - 3. Remove the concrete adhering to bolt heads and screw holes before it gets hard.

○ INSPECTION

- This product is operated under harsh conditions for the motor. Be sure to perform the following inspection in order to minimize troubles during operation.

 **After starting operation, you need to check tightening bolts and nuts and retighten them once a week. If any loose is not found then, subsequent retightening may be needed monthly.**

Inspection cycle	Inspection point/item	Inspection procedure and evaluation criteria
Daily	Current for load	Rated current is not exceeded
	Bearing sound / Operation sound	There is no metallic clank nor abnormal noncontiguous sound
	Plate Wear	The plate should be replaced when it cannot be inserted between the formwork and the retaining material due to wear
Monthly	Installed condition	Looseness of bolts and nuts (Tighten them with specified torque)
	Cable damage	Visual inspection of abrasion and breaking
Annual	Insulated resistance	Measure with a megger. DC500V/10MΩ at minimum

○ TROUBLESHOOTING

Operation	Cause	Solution
Motor does not Start	Single phase operation	Replacement of stator or cable
	Disconnection	Disconnection of connecting part
Protective device is activated	Wrong setting in protective device	Set to the rated current
	Poor installation	Stop the resonance
	Overload	Reduce load or adjusting centrifugal force
	Bearing failure	Bearing replacement
	Improper fitting	Bearing or side cover replacement
Abnormal heat of main unit	Damage or lack of lubrication	Bearing replacement

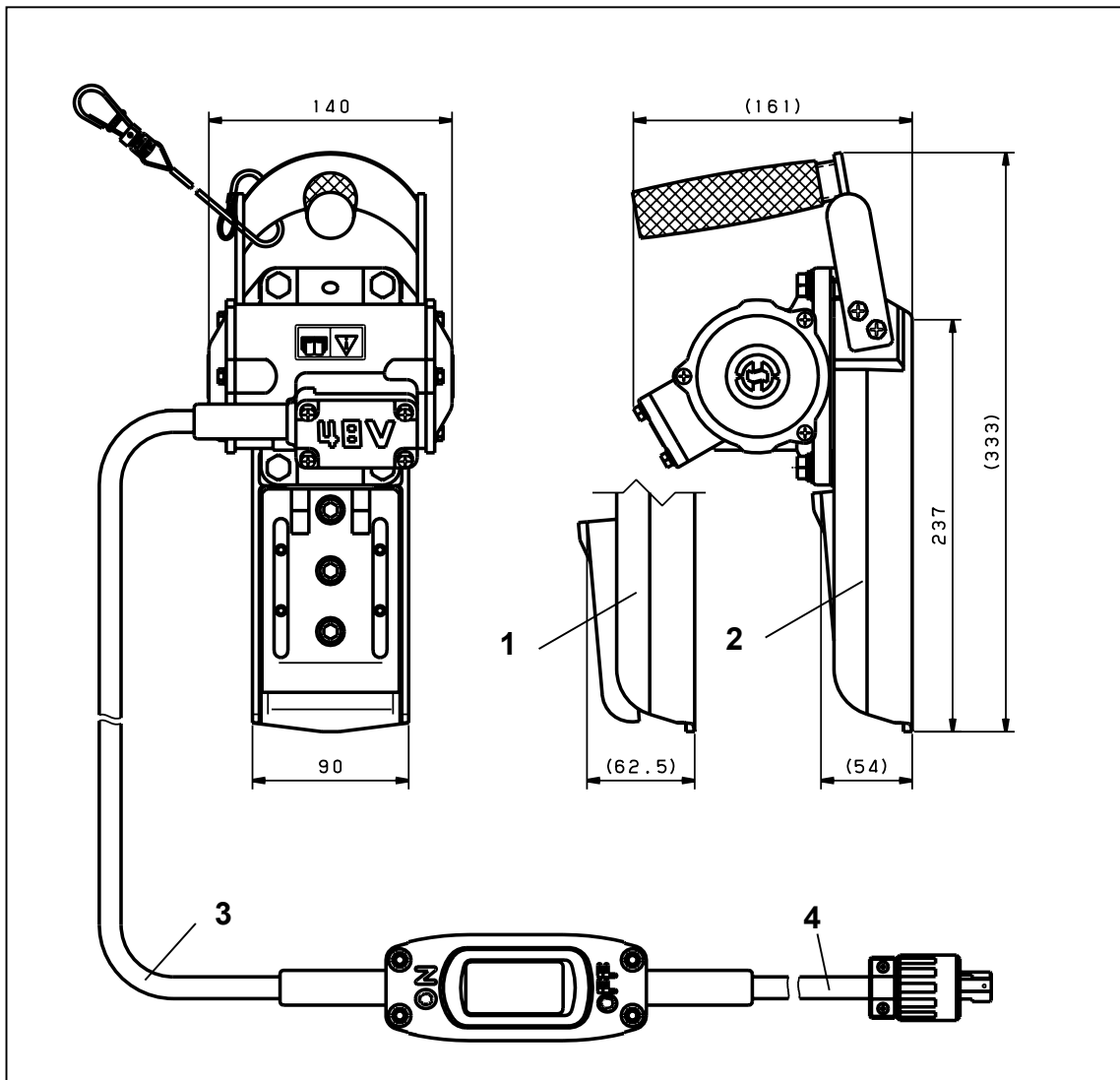
○ SPECIFICATIONS

■ SPECIFICATIONS

Model	Output (W)	Voltage (V)	Current (A)	Cycle (Hz)	Frequency (Hz)	Centrifugal Force (kN)	Mass (kg)
						100Hz-240Hz	
HKM50PSK	50	48	2.0	100-240	50-120	0.25~1.41	6.5

■ DIMENSION DRAWING

Unit: mm



1. Square pipe 60 2. Single round pipe 50 (ϕ 48.6) , Square pipe 50 3. Cable 2m
4. Cable 3m

EXEN CORPORATION

1 - 17 - 13 Hamamatsucho, Minato - ku, Tokyo 105 - 0013, Japan

TEL 81 - 3 - 3 4 3 4 - 8 4 5 2 FAX 81 - 3 - 3 4 3 4 - 8 3 6 8

<http://www.exen.co.jp/English/>