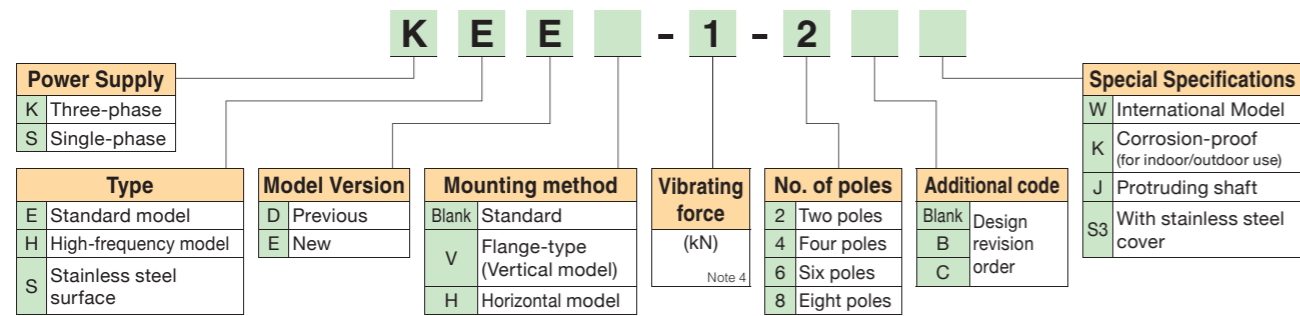


Model Designation



- Notes:
- This table shows how to read the model numbers of standard Uras Vibrators.
 - Note that it is not possible to manufacture vibrators in every possible combination.
 - If a non-standard Uras Vibrator is required, contact the Overseas Sales Department of Uras Techno or one of our distributors.
 - For details on the vibrating force, refer to the pages concerned.
 - Models prior to D (that is, models A, B, and C) are also previous models.
 - 10, 12-pole vibrators are also available. Contact the Overseas Sales Department of Uras Techno or one of our distributors.
 - Provide some means to ensure protection against surges for 400 V-class inverters.
Means of protection: (1) Enhance the insulation of the Uras Vibrator (class F insulation).
(2) Use an inverter equipped with a surge protection function (such as the G7 series / V1000 made by Yaskawa Electric Corporation).

Ambient Environment

Provide us with details if any of the following items applies to the ambient environment in which the Uras Vibrator will be used.

- Locations subject to temperatures below -15°C or above 40°C.
- When the temperature of the mounting base of the Uras Vibrator is below -15°C or above 40°C.
- Locations subject to corrosive gases or liquid.
- Locations subject to significant vibration.

Precautions for Exportation

If the Uras Vibrator is to be exported and the end user of the Uras Vibrator is related to the armed forces, or if the Uras Vibrator is to be involved in the manufacture of weapons or other such items, the Uras Vibrator may be subject to the export controls stipulated in the Foreign Exchange and Foreign Trade Act, in which case a thorough screening and the necessary export formalities must be undertaken.

Safety Precautions

In the photos provided in this catalog showing examples of how the Uras Vibrators may be used, the vibrators are shown without the safety fences and other safety-related devices or equipment, which are required by the laws and regulations, in order to facilitate comprehension. Similarly, the illustrations and other drawings are graphical representations only. Before using a Uras Vibrator, read the through its instruction manual carefully—rather than depend on photos and illustrations alone—and then proceed to use it.

[General Precautions]

- Observe the safety regulations that are applicable to the location where the Uras Vibrator will be installed and to the equipment that will be used with the Uras Vibrator. (These regulations include the occupational, health and safety regulations, the technical standards for electrical equipment, the interior wiring regulations, the explosion protection guidelines for factories, and the Building Standards Law.)
- Before using the Uras Vibrator, read the instruction manual carefully to ensure correct usage. If you do not have a copy of the instruction manual, contact the Overseas Sales Department of Uras Techno or one of our distributors to provide you with a copy.

[Selection Precautions]

- Select the Uras Vibrator that is suited to the intended application and usage environment.
- In food processing equipment or other equipment that must be protected from oil, install oil pans or other forms of protection against oil leakage resulting from equipment failure or problems caused by the equipment nearing the end of its service life.

Distributor



Overseas Sales Department

Senbo Bldg. 2F, 16-9, Uchikanda 2-Chome, Chiyoda-ku, Tokyo 101-0047, JAPAN
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<http://www.uras-techno.co.jp/en>
E-mail : utc-overseas@uras-techno.co.jp

Manufacturer



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Phone : +81-93-601-1037 Fax : +81-93-601-1041
<http://www.murakami-seiki.co.jp>

Inquiries:

Note: The contents of this catalog are current as of March 2013. The specifications, appearance, and other aspects are subject to change without notice due to product improvements or other reasons.

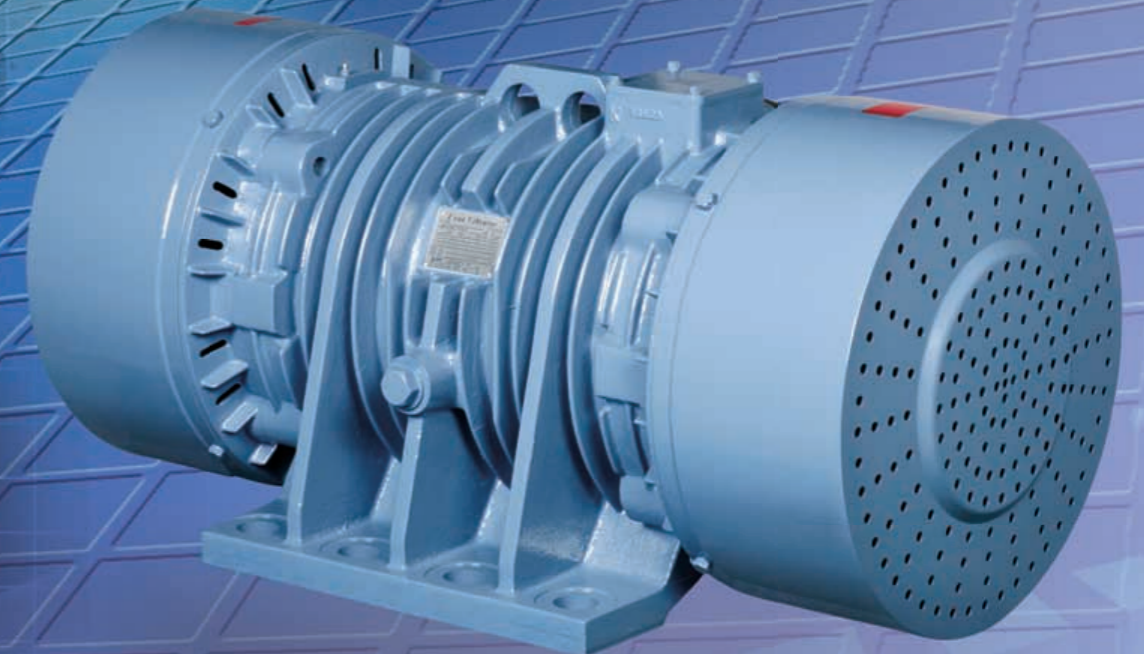
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High-Performance Vibrators

Uras® Vibrator

The Global Standard for Vibrators

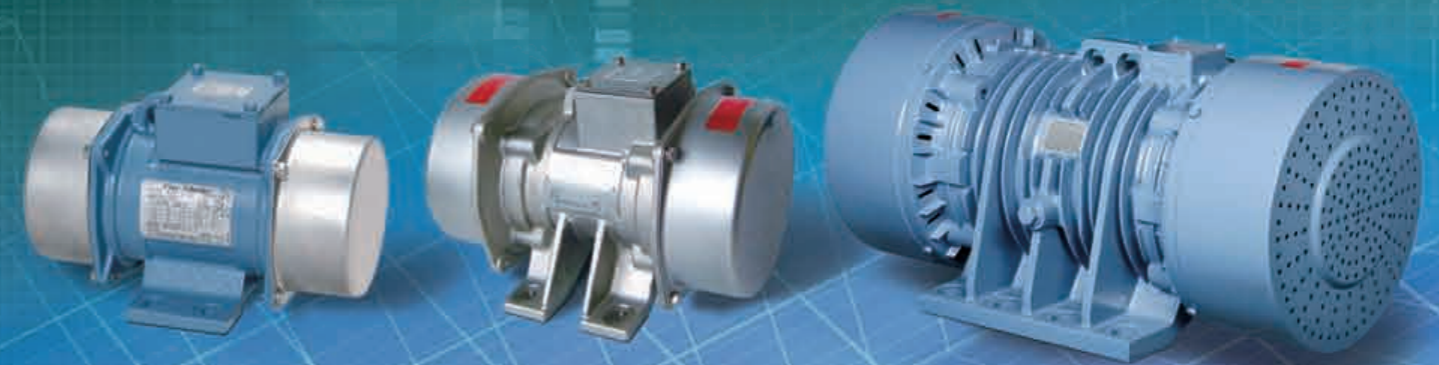


Certified under ISO 9001,
the international standard for quality systems.

The Global Standard for Vibrators

URAS

All series redesigned as all-weather types with the standard specifications!
You can use our vibrators under a wide variety of weather conditions.



Examples of main Uras Vibrator applications

| Application | No. of poles P | Vibrating Strength G | Amplitude α |
|-----------------------|----------------|----------------------|-----------------|
| Feeding and Conveying | 4, 6, or 8 | 2 to 5 | Medium |
| Screening | 4, 6, or 8 | 3 to 7 | Large |
| Bridging prevention | 2 | Low | Small |
| Filling | 2 or 4 | 2 to 10 | Small to medium |

You can select the model in our extensive line-up that is ideally suited to the intended applications. (Refer to page 5 for details and list of available models.)

Uras Vibrators are motor-driven high-performance vibration generators. Ever since they were initially launched on the market back in 1959, they have undergone a continuous evolution, and the total number of units delivered to date has surpassed 830,000.

Uras Vibrators are making an active contribution in various industries throughout the world, but principally in the materials industry.

Our multi-model lineup meets the varied needs of our customers. Our Uras Vibrators feature a long service life, easy maintenance, and high reliability.

Their performance, endorsed by a decades-long performance track record and high critical praise, is the true global standard.

Delivered to your door is the Uras quality that brings to life the feeling of how machines are changing.

Uras Vibrators: Making a big difference all over the world

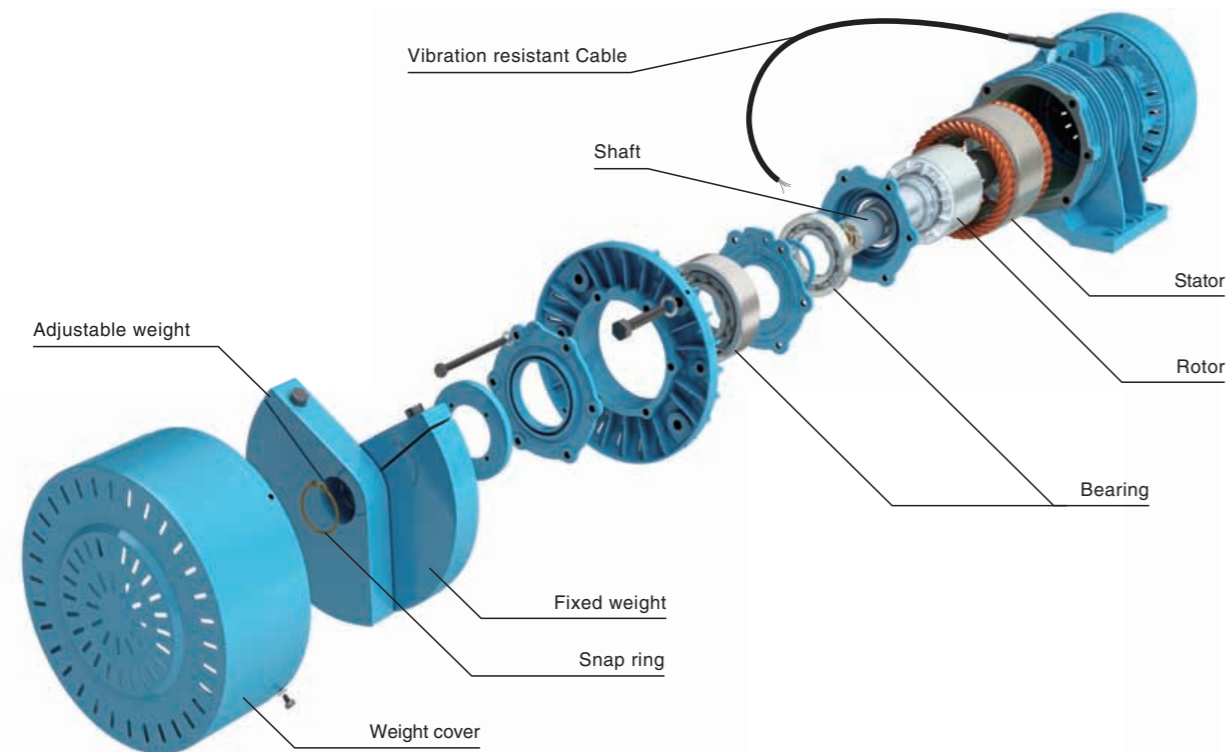


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The KEE Uras Vibrator is certified under the CSA standards and CE marking. (optional)

Construction

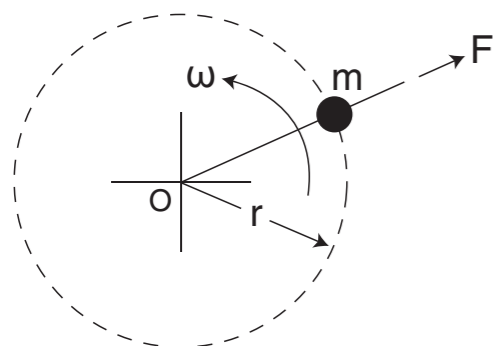


Uras Vibrators feature an extremely simple mechanism whereby vibrating force is created by rotating unbalanced weights attached to both ends of the induction motor shaft. Drawing on research and a proven track record that spans a half-century since our vibrators were originally developed, we have perfected vibrators with tough vib structures and an extremely high level of reliability.

These vibrators, usable under all weather conditions, for instance, have been designed to prevent the unbalanced weights from dropping down during adjustment so that they can be handled with complete safety. At the same time they have been designed to extend the service life of their bearings.

How our vibrators work

How many of us remember when we were children swinging a bucket around but not totally succeeding in the experiment and getting ourselves wet in the process? If we managed not to get wet, it was thanks to the centrifugal force that was exerted when we swung the bucket. Uras Vibrators work in the same way. Unbalanced weights are attached to both ends of the shaft of an induction motor (which is a regular motor) and rotated in our vibrators. This generates a great deal of centrifugal force, which is used as the vibrating force.



$$F = mr\omega^2$$

F : Centrifugal force = vibrating force (N)

m : Mass of weights (kg)

O : The center of rotation (the center of the shaft)

r : Distance from the weight's center of gravity to the center of the shaft (m)

ω : Angular velocity = $2\pi f$ (rad/s)

f : Frequency of revolutions (Hz) or (1/s)

Uras Vibrator Models and Manufacturing Range

| Model | No. of Poles | No. of Models | Vibrating Force (kN) | Voltage Class (V) | Synchronous Revolutions (r/min) | Output (kW) | |
|----------------------|--------------|---------------|----------------------|-------------------|---------------------------------|-------------|---------------|
| Standard model | KEE | 2 | 10 | 0.5 to 40 | 200 to 690 | 3000/3600 | 0.04 to 3 |
| | | 4 | 12 | 1.5 to 110 | | 1500/1800 | 0.065 to 7.5 |
| | | 6 | 14 | 3 to 185 | | 1000/1200 | 0.2 to 13 |
| | | 8 | 9 | 5 to 170 | | 750/900 | 0.4 to 11 |
| Flange-type model | KEEV | 4 | 3 | 7.1 to 20.5 | 200 to 690 | 1500/1800 | 0.4 to 1.2 |
| | | 6 | 3 | 8.1 to 22.4 | | 1000/1200 | 0.35 to 1.2 |
| Single-phase model | SEE | 2 | 5 | 0.1 to 3.5 | 100 to 240 | 3000/3600 | 0.015 to 0.22 |
| High-frequency model | KHE | 2 | 7 | 1 to 22 | 200 to 690 | 6000/7200 | 0.075 to 2.2 |
| | | 2 | 5 | 1 to 12 | | 9000/10800 | 0.075 to 1.2 |

We can also manufacture vibrators for voltages other than the standard voltage specifications given above. Contact the Overseas Sales Department of Uras Techno for information on how to find the best product for your needs. Custom orders are also available.

Standard Specifications of KEE and SEE Series

| Specification | Three-phase | | | | Single-phase | |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------|-------------|--------------------------------------------|---------------------------------------------------------|
| | 2 poles | 4 poles | 6 poles | 8 poles | 2 poles (capacitor start) | |
| Power Supply | 230/460V 60Hz, 380V 50Hz, 415V 50Hz, 525V 50Hz, 575V 60Hz | | | | 230/240V 50Hz 100V 50/60Hz 110V 60Hz | |
| Time Rating | Continuous rating | | | | | |
| Thermal Class | Class E insulation | | | | | |
| External Cover Structure (Vibrating Force kN) | Totally Enclosed | 0.5 to 6 | 1.5 to 34 | 3 to 60 | 5 to 54 | Totally enclosed |
| | Totally enclosed, Fan-cooled | 10 to 40 | 52 to 110 | 80 to 185 | 85 to 170 | |
| Protection Structure | Totally Enclosed | IP66 (JIS C 0920) | | | | Totally enclosed IP66 (JIS C 0920) (IP42 for SEE-0.1-2) |
| | Totally Enclosed, Fan-cooled | IP55 (JIS C 4034-5) | | | | |
| Output (kW) | 0.040 to 3 | 0.065 to 7.5 | 0.2 to 13 | 0.4 to 11 | 0.015 to 0.22 | |
| Synchronous Revolutions | Power Supply Frequency (Hz) | 50/60 | | | | |
| | (r/min) | 3000/3600 | 1500/1800 | 1000/1200 | 750/900 | 3000/3600 |
| Vibrating Force (kN) | 0.5 to 40 | 1.5 to 110 | 3 to 185 | 5 to 170 | 0.1 to 3.5 | |
| Bearing (Vibrating Force kN) | Sealed ZZ Bearings | 0.5 to 10kN | 1.5 to 12kN | 3 to 18kN | 5 to 20kN | Sealed ZZ bearings 0.1 to 3.5 kN |
| | NJ roller Bearings | 16 to 40kN | 17 to 110kN | 24 to 185kN | 32 to 170kN | |
| Enclosed Cable | 2PNCT (4-core) x 2 m cable, Wire sizes: 0.75 mm ² , 1.25 mm ² , 2 mm ² , 5.5 mm ² , 8 mm ² , 14 mm ² Note: The KEE-0.5-2CW has a 1 m cable, and the SEE-0.5-2CW has a 2-core 1 m cable. | | | | | |
| Installation Method | Frame leg installation (at any installation angle). For vertical or inclined installation, however, the vibrator must be installed so that the terminal box is on the top. | | | | | |
| Coating Color | Munsell 2.5PB5/2 | | | | | |
| Installation and Operating Environment | Can be used indoors and outdoors. Ambient (including installation base) temperature: -15°C to +40°C Altitude: 1,000 m max. Relative humidity: 85% max. with no condensation | | | | | |

Tropical proofing is provided as a standard feature. The KEE Uras Vibrator is certified under the CSA standards or CE marking (optional).

SEE Standard Single-phase Uras Vibrators

Specifications

Single-phase, Two Poles

| Model | Vibrating Force (kN) | Unbalance (kg·cm) | | Output (W) | Full-load Current (A) | | | | | | | |
|-------------|----------------------|-------------------|------|------------|-----------------------|-----------|-----------|-----------|-----------|-----------|-----|------|
| | | 50Hz | 60Hz | | 110V 60Hz | 200V 50Hz | 200V 60Hz | 220V 60Hz | 220V 50Hz | 240V 50Hz | | |
| | | | | | | | | | | | *1 | |
| SEE-0.1-2 | 0.1/0.15 | 0.17 | — | 15 | 0.39 | | | | | | 0.2 | 0.22 |
| SEE-0.5-2CW | 0.5 | 0.57 | 0.4 | 30 | 0.53 | 0.32 | 0.27 | 0.26 | 0.28 | 0.29 | | |
| SEE-1-2BW | 1 | 1.05 | 0.73 | 65 | 1.2 | 0.61 | 0.62 | 0.6 | 0.51 | 0.54 | | |
| SEE-2-2BW | 2 | 2.13 | 1.31 | 120 | 1.9 | 1.11 | 0.98 | 0.97 | 0.94 | 0.94 | | |
| SEE-3.5-2BW | 3.5 | 3.76 | 2.32 | 220 | 2.9 | 1.7 | 1.6 | 1.6 | 1.4 | 1.4 | | |

Vibrator Speed
 Power supply frequency of 50 Hz ...50 Hz (3000 r/min)
 Power supply frequency of 60 Hz ...60 Hz (3600 r/min)

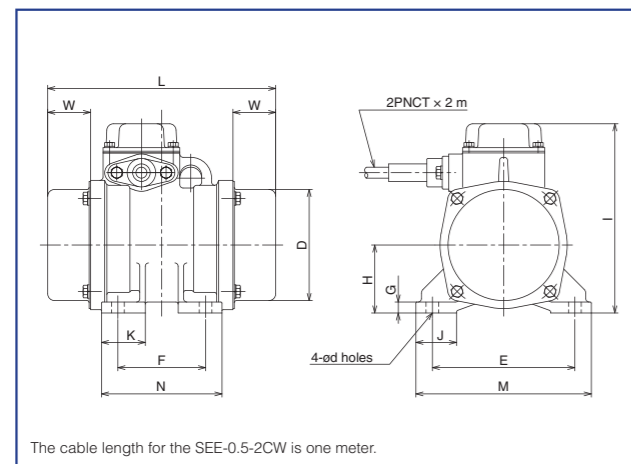
| Model | Dimensions(mm) | | | | | | | | | | Mass (kg) | Protection Structure | Min. Allowable Cable Bending Radius (mm) | Stainless Steel Cover ² (Optional) | | | | |
|-------------|----------------|-----|-----|-----|----|-----|----|----|-----|-----|-----------|----------------------|------------------------------------------|-----------------------------------------------|-----|------|-------------|-----------|
| | D | E | F | G | H | I | J | K | L | M | | | | | N | W | ød | Bolt Dia. |
| SEE-0.1-2 | 85 | 90 | 44 | 2.3 | 45 | 90 | 18 | 75 | 135 | 107 | 60 | 45 | 8.5 | 6 | 2.5 | IP42 | R90 or more | — |
| SEE-0.5-2CW | 110 | 120 | 40 | 10 | 63 | 170 | 33 | — | 205 | 145 | 70 | 40 | 10 | 8 | 7 | IP66 | R90 or more | √ |
| SEE-1-2BW | 105 | 130 | 80 | 10 | 62 | 175 | 37 | 40 | 210 | 160 | 110 | 40 | 12 | 10 | 9.5 | IP66 | R90 or more | — |
| SEE-2-2BW | 110 | 150 | 90 | 12 | 71 | 175 | 40 | 45 | 230 | 180 | 120 | 40 | 14 | 12 | 13 | IP66 | R90 or more | √ |
| SEE-3.5-2BW | 125 | 190 | 110 | 13 | 84 | 195 | 50 | 55 | 300 | 230 | 150 | 60 | 18 | 16 | 21 | IP66 | R90 or more | √ |

*1: Contact the Overseas Sales Department of Uras Techno or one of our distributors.
 *2: √: Available. —: Not Available.
 The five SEE models use Greased and Sealed bearings.
 The vibrating force of the SEE-0.1-2 is fixed. This model is only for indoor use.
 Use the SEE-0.1-2, -0.5-2CW, and -1-2BW at an ambient temperature between -15°C to +35°C.



SEE-1-2BW

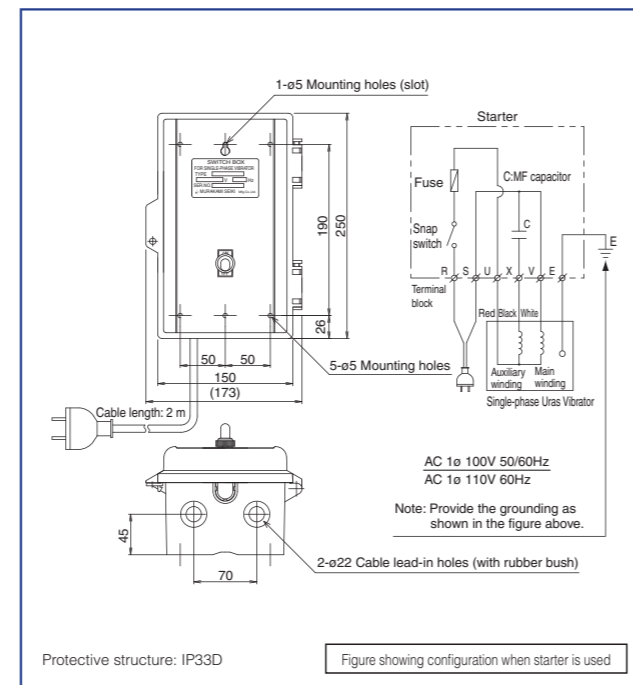
Outline Drawings



SEE-0.1-2 (The smallest Uras Vibrator)

Starter

The SEE-0.1-2, SEE-0.5-2CW, and SEE-1-2BW models use a capacitor. The starter (accessory) shown here is used in model SEE-2-2BW and higher.



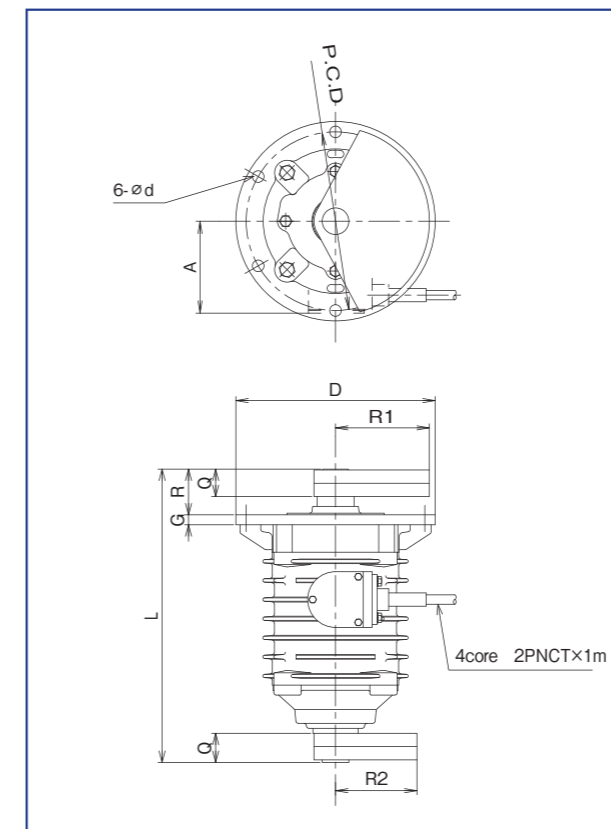
KEEV Flange-type Uras Vibrators

Specifications

| Model | Output (kW) | Full-load Current (A) | Vibrating Force 50/60Hz | | | | | | | |
|-----------|-------------|-----------------------|-------------------------|-------------------|------|----------------------|-----------------------|-------------------|--------|----------------------|
| | | | Flange Side | | | | Counter-flange Side | | | |
| | | | 200V 50/60Hz | Unbalance (kg·cm) | | Vibrating Force (kN) | Weight Radius R1 (mm) | Unbalance (kg·cm) | | Vibrating Force (kN) |
| KEEV-7-4 | 0.4 | 2.3/2.2 | | 18 | 12.5 | | | 4.4 | 104/92 | |
| KEEV-15-4 | 0.85 | 3.8/3.7 | 42 | 29 | 10.4 | 130/116 | 21 | 15 | 4.9 | 104/92 |
| KEEV-20-4 | 1.2 | 4.9/4.8 | 57 | 40 | 14.1 | 137/122 | 27.4 | 19 | 6.4 | 108/96 |
| KEEV-8-6 | 0.35 | 2.5/2.2 | 46 | 32 | 5.0 | 142/126 | 30 | 21 | 3.1 | 123/110 |
| KEEV-16-6 | 0.85 | 4.8/4.6 | 100 | 69 | 11.0 | 174/154 | 51 | 35.4 | 5.3 | 139/123 |
| KEEV-22-6 | 1.2 | 6.3/5.8 | 140 | 97 | 15.4 | 185/164 | 68 | 47 | 7.0 | 146/129 |

| Model | Dimensions (mm) | | | | | | | | | Mass (kg) | Bearing Lubrication Type |
|-----------|-----------------|-----|----|----|----|-----|-------|----|-----------|-----------|--------------------------|
| | L | D | G | R | Q | A | P.C.D | ød | Bolt Dia. | | |
| KEEV-7-4 | 355 | 240 | 12 | 55 | 33 | 115 | 215 | 14 | M12 | 30/28 | Greased and Sealed |
| KEEV-15-4 | 395 | 275 | 13 | 66 | 39 | 130 | 245 | 18 | M16 | 52/50 | Periodic Greasing |
| KEEV-20-4 | 406 | 275 | 13 | 74 | 45 | 130 | 245 | 18 | M16 | 63/60 | Periodic Greasing |
| KEEV-8-6 | 355 | 240 | 12 | 55 | 33 | 115 | 215 | 14 | M12 | 36/33 | Greased and Sealed |
| KEEV-16-6 | 395 | 275 | 13 | 66 | 39 | 130 | 245 | 18 | M16 | 67/63 | Periodic Greasing |
| KEEV-22-6 | 406 | 275 | 13 | 74 | 45 | 130 | 245 | 18 | M16 | 78/72 | Periodic Greasing |

Outline Drawings



KEEV-20-4



Vibrating Screen



3D vibration is generated.
 → Direction of materials
 ↺ Direction of vibration
 ↻ Rotation direction of vibrators

KHE High-frequency Uras Vibrators

Easy compaction with high-frequency Uras Vibrators

In the vibration range from 20 to 30 Hz, powder acts like a fluid with a vibration acceleration of approximately twice gravity. In contrast, at a vibration of 50 Hz or higher, strong compaction will occur instead of fluidization, even with a vibration acceleration that is several times gravity. The high-frequency Uras Vibrators generate high-frequency vibration to effectively utilize this characteristic.

Specifications

Three-phase, Two Poles

Vibrator Speed

Power supply frequency of 100 Hz (6000 r/min) Power supply frequency of 120 Hz (7200 r/min)

| Model | Vibrating Force (kN) | Unbalance (kg·cm) | | Output (kW) | Dimensions (mm) | | | | | | | | | | | | | | Mass (kg) | Protection Structure | Min. Allowable Cable Bending Radius (mm) | |
|--------------------|----------------------|-------------------|-------|-------------|-----------------|-----|-----|-----|----|-----|-----|----|----|-----|-----|-----|----|-----------|-----------|----------------------|------------------------------------------|--------------|
| | | 100Hz | 120Hz | | D | E | F | G | H | I | J | K | L | M | N | W | ød | Bolt Dia. | | | | |
| Greased and Sealed | KHE-1-2 | 1 | 0.27 | 0.18 | 75W | 90 | 120 | 40 | 9 | 56 | 145 | 35 | — | 190 | 145 | 65 | 40 | 10 | M8 | 7 | IP66 | R90 or more |
| | KHE-2-2 | 2 | 0.55 | 0.38 | 0.15 | 105 | 130 | 80 | 10 | 62 | 160 | 37 | 40 | 210 | 160 | 110 | 40 | 12 | M10 | 9 | IP66 | R90 or more |
| | KHE-4-2 | 4 | 1.04 | 0.72 | 0.4 | 115 | 150 | 90 | 12 | 71 | 175 | 40 | 45 | 290 | 180 | 120 | 40 | 14 | M12 | 17 | IP66 | R90 or more |
| Periodic Greasing | KHE-7.5-2 | 7.5 | 1.99 | 1.38 | 0.75 | 125 | 190 | 110 | 13 | 84 | 195 | 50 | 55 | 310 | 230 | 150 | 40 | 18 | M16 | 24 | IP66 | R100 or more |
| | KHE-12-2 | 12 | 3.15 | 2.19 | 1.2 | 135 | 220 | 120 | 16 | 92 | 210 | 60 | 65 | 365 | 270 | 170 | 51 | 22 | M20 | 34 | IP55 | R100 or more |
| | KHE-16-2 | 16 | 4.26 | 2.96 | 1.6 | 170 | 240 | 140 | 20 | 130 | 260 | 70 | 75 | 425 | 300 | 200 | 62 | 26 | M24 | 49 | IP55 | R100 or more |
| | KHE-22-2 | 22 | 5.83 | 4.05 | 2.2 | 190 | 260 | 150 | 22 | 142 | 280 | 70 | 80 | 445 | 320 | 210 | 61 | 26 | M24 | 62 | IP55 | R100 or more |

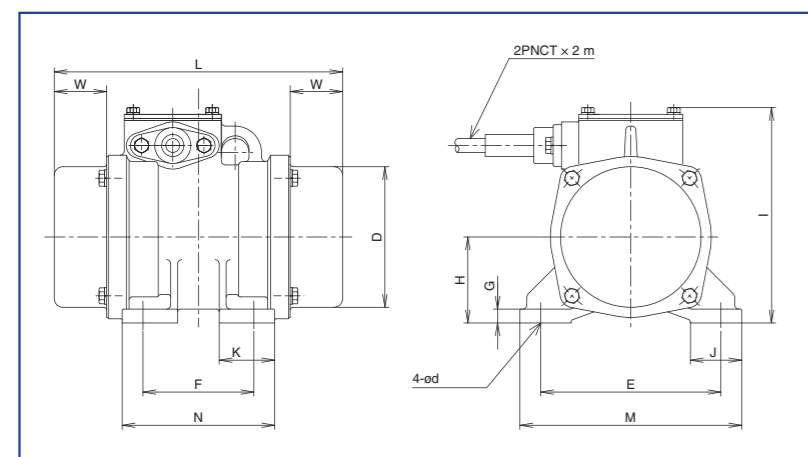
Three-phase, Two Poles

Vibrator Speed

Power supply frequency of 150 Hz (9000 r/min) Power supply frequency of 180 Hz (10800 r/min)

| Model | Vibrating Force (kN) | Unbalance (kg·cm) | | Output (kW) | Dimensions (mm) | | | | | | | | | | | | | | Mass (kg) | Protection Structure | Min. Allowable Cable Bending Radius (mm) | |
|--------------------|----------------------|-------------------|-------|-------------|-----------------|-----|-----|-----|----|----|-----|----|----|-----|-----|-----|----|-----------|-----------|----------------------|------------------------------------------|--------------|
| | | 150Hz | 180Hz | | D | E | F | G | H | I | J | K | L | M | N | W | ød | Bolt Dia. | | | | |
| Greased and Sealed | KHE-1-2T | 1 | 0.12 | 0.08 | 75W | 90 | 120 | 40 | 9 | 56 | 145 | 35 | — | 190 | 145 | 65 | 40 | 10 | M8 | 7 | IP66 | R90 or more |
| | KHE-2-2T | 2 | 0.24 | 0.17 | 0.15 | 105 | 130 | 80 | 10 | 62 | 160 | 37 | 40 | 210 | 160 | 110 | 40 | 12 | M10 | 9 | IP66 | R90 or more |
| | KHE-4-2T | 4 | 0.47 | 0.33 | 0.4 | 115 | 150 | 90 | 12 | 71 | 175 | 40 | 45 | 290 | 180 | 120 | 40 | 14 | M12 | 17 | IP66 | R90 or more |
| Periodic Greasing | KHE-7.5-2T | 7.5 | 0.91 | 0.63 | 0.75 | 125 | 190 | 110 | 13 | 84 | 195 | 50 | 55 | 310 | 230 | 150 | 40 | 18 | M16 | 24 | IP66 | R100 or more |
| | KHE-12-2T | 12 | 1.43 | 0.99 | 1.2 | 135 | 220 | 120 | 16 | 92 | 210 | 60 | 65 | 365 | 270 | 170 | 51 | 22 | M20 | 34 | IP55 | R100 or more |

Outline Drawings



KHE-4-2T

Features

Motorized vibrator generates vibrations ranging from 100 to 180 Hz. Inverter operation is required to generate high-frequency vibration.

Table showing the applicable inverters capable of driving high-frequency Uras Vibrators (using the example of the V1000 inverter (heavy load rating) made by Yaskawa Electric Corporation)

| Model | Vibrating Force (kN) | Unbalance (kg·cm) | | Output (kW) | Full-load Current (A) | | Inverter Model: CIMR-□(kW) | |
|-----------|----------------------|-------------------|-------|-------------|-----------------------|------------|----------------------------------------------------------------------------------|-----------------------|
| | | 100Hz | 120Hz | | 415V/100Hz | 415V/120Hz | With 1 Uras Vibrator | With 2 Uras Vibrators |
| KHE-1-2 | 1 | 0.27 | 0.18 | 75W | 0.35 | 0.3 | VA4A0001 (0.1) | VA4A0002 (0.2) |
| KHE-2-2 | 2 | 0.55 | 0.38 | 0.15 | Custom | | VA4A0002 (0.2) | VA4A0004 (0.4) |
| KHE-4-2 | 4 | 1.04 | 0.72 | 0.4 | 0.98 | 0.95 | VA4A0004 (0.4) | VA4A0006 (0.75) |
| KHE-7.5-2 | 7.5 | 1.99 | 1.38 | 0.75 | Custom | | VA4A0006 (0.75) | VA4A0010 (1.5) |
| KHE-12-2 | 12 | 3.15 | 2.19 | 1.2 | 2.2 | 2.2 | VA4A0010 (1.5) | VA4A0010 (3.0) |
| KHE-16-2 | 16 | 4.26 | 2.96 | 1.6 | 2.9 | 3.0 | VA4A0010 (1.5) | VA4A0020 (3.7) |
| KHE-22-2 | 22 | 5.83 | 4.05 | 2.2 | Custom | | Contact the Overseas Sales Department of Uras Techno or one of our distributors. | |

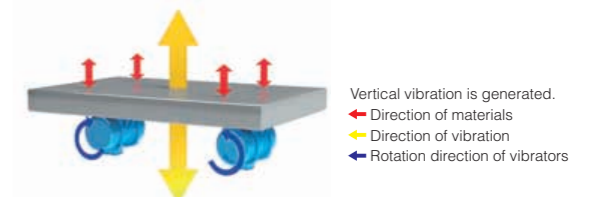
| Model | Vibrating Force (kN) | Unbalance (kg·cm) | | Output (kW) | Full-load Current (A) | | Inverter Model: CIMR-□(kW) | |
|------------|----------------------|-------------------|-------|-------------|-----------------------|------------|----------------------------|-----------------------|
| | | 150Hz | 180Hz | | 200V/150Hz | 200V/180Hz | With 1 Uras Vibrator | With 2 Uras Vibrators |
| KHE-1-2T | 1 | 0.12 | 0.08 | 75W | 0.61 | 0.55 | VA2A0001 (0.1) | VA2A0002 (0.2) |
| KHE-2-2T | 2 | 0.24 | 0.17 | 0.15 | 0.9 | 0.91 | VA2A0002 (0.2) | VA2A0004 (0.4) |
| KHE-4-2T | 4 | 0.47 | 0.33 | 0.4 | 2.2 | 2.2 | VA2A0004 (0.4) | VA2A0008 (0.75) |
| KHE-7.5-2T | 7.5 | 0.91 | 0.63 | 0.75 | 3.6 | 3.5 | VA2A0006 (0.75) | VA2A0010 (1.5) |
| KHE-12-2T | 12 | 1.43 | 0.99 | 1.2 | 4.7 | 4.8 | VA2A0010 (1.5) | VA2A0018 (2.2) |



Vibro Packer



V1000 inverter by Yaskawa Electric Corporation



Options

A wide range of options are available to ensure that Uras Vibrators meet the needs of our customers. Do not hesitate to contact the Overseas Sales Department of Uras Techno or one of our distributors for further details.

- CSA standards or CE marking support. (See next page 15)
- One or two protruding shaft ends
- Special voltages
- Insulation classes (class F, class B)
- Extension of cable
- Divided weight covers
- Support for IP66 by models equipped with vents (excluding the KEE-10-2BW, 16-2W and 23-2W)
- Coating: Non-standard colors available as custom orders
- Drop-prevention wire
- Service for setting the vibrating force (Custom orders are adjusted to the vibrating force specified by the customer)
- Mounting base interchangeable with old models (example: KEB-5-4 → KEE-6-4BW)



Coupled operation of Uras Vibrator with shaft (optional)

Recommended Wire Size for Two Poles

| Uras Vibrator Model | Wire Diameter (mm) |
|---------------------|--------------------|
| KEE-0.5-2CW | ø6 |
| KEE-1-2CW | ø6 |
| KEE-2-2CW | ø6 |
| KEE3.5-2BW | ø6 |
| KEE-6-2BW | ø6 |
| KEE-10-2BW | ø6 |
| KEE-16-2W | ø6 |
| KEE-23-2W | ø6 |
| KEE-30-2W | ø8 |
| KEE-40-2W | ø8 |



Drop-prevention wire

- An example of two protruding shaft type vibrator (KEE-34-6J) coupled using a tire shaped coupling for reinforcement and equalization of the vibrating force.



Product Range of CSA standard or CE Marking Supported Models

√: Available
--: Not available

Two Pole Uras Vibrator

| Supply Power | CSA standards up to 575V | Supply Power | CE Marking | | | | | | | | |
|--------------|--------------------------|--------------|--------------|----------|----------|----------|------|------|------|----------|----------|
| | | | 200/200/220V | 220/220V | 230/230V | 240/240V | 380V | 400V | 415V | 240/415V | 220/380V |
| Model | 60Hz | Model | 50/60/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50Hz | 50Hz | 50Hz | 50Hz | 50Hz |
| KEE-0.5-2CW | √ | KEE-0.5-2C | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| KEE-1-2CW | √ | KEE-1-2C | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| KEE-2-2CW | √ | KEE-2-2C | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| KEE-3.5-2BW | √ | KEE-3.5-2B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-6-2BW | √ | KEE-6-2B | √ | √ | √ | √ | √ | √ | -- | -- | √ |
| KEE-10-2BW | √ | KEE-10-2B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-16-2W | √ | KEE-16-2 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-23-2W | √ | KEE-23-2 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-30-2W | √ | KEE-30-2 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-40-2W | √ | KEE-40-2 | √ | √ | √ | √ | √ | √ | √ | √ | √ |

Four Pole Uras Vibrator

| Supply Power | CSA standards up to 575V | Supply Power | CE Marking | | | | | | | | |
|--------------|--------------------------|--------------|--------------|----------|----------|----------|------|------|------|----------|----------|
| | | | 200/200/220V | 220/220V | 230/230V | 240/240V | 380V | 400V | 415V | 240/415V | 220/380V |
| Model | 60Hz | Model | 50/60/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50Hz | 50Hz | 50Hz | 50Hz | |
| KEE-1.5-4BW | √ | KEE-1.5-4B | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| KEE-3-4BW | √ | KEE-3-4B | √ | √ | √ | √ | -- | √ | -- | -- | -- |
| KEE-6-4BW | √ | KEE-6-4B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-9-4BW | √ | KEE-9-4B | √ | √ | √ | √ | -- | √ | -- | -- | -- |
| KEE-12-4BW | √ | KEE-12-4B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-17-4W | √ | KEE-17-4 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-24-4W | √ | KEE-24-4 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-34-4W | √ | KEE-34-4 | √ | √ | √ | √ | √ | √ | -- | -- | -- |
| KEE-52-4BW | √ | KEE-52-4B | √ | √ | √ | √ | √ | √ | √ | √ | -- |
| KEE-75-4BW | √ | KEE-75-4B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-84-4CW | √ | KEE-84-4C | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| KEE-110-4W | √ | KEE-110-4 | √ | √ | √ | √ | √ | √ | √ | √ | √ |

Six Pole Uras Vibrator

| Supply Power | CSA standards up to 575V | Supply Power | CE Marking | | | | | | | | |
|--------------|--------------------------|--------------|--------------|----------|----------|----------|------|------|------|----------|----------|
| | | | 200/200/220V | 220/220V | 230/230V | 240/240V | 380V | 400V | 415V | 240/415V | 220/380V |
| Model | 60Hz | Model | 50/60/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50Hz | 50Hz | 50Hz | 50Hz | |
| KEE-3-6W | √ | KEE-3-6 | √ | √ | √ | √ | √ | √ | -- | -- | √ |
| KEE-5-6W | √ | KEE-5-6 | √ | √ | √ | -- | √ | √ | √ | √ | √ |
| KEE-9-6BW | √ | KEE-9-6B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-13-6BW | √ | KEE-13-6B | √ | √ | √ | √ | √ | √ | √ | √ | -- |
| KEE-18-6BW | √ | KEE-18-6B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-24-6CW | √ | KEE-24-6B* | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-34-6BW | √ | KEE-34-6B | √ | √ | √ | √ | √ | √ | √ | √ | -- |
| KEE-45-6BW | √ | KEE-45-6B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-60-6CW | √ | KEE-60-6C | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-80-6W | √ | KEE-80-6 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-110-6W | √ | KEE-110-6 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| KEE-140-6W | √ | KEE-140-6 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-165-6W | √ | KEE-165-6 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-185-6W | √ | KEE-185-6 | √ | √ | √ | -- | √ | √ | -- | -- | √ |

Eight Pole Uras Vibrator

| Supply Power | CSA standards up to 575V | Supply Power | CE Marking | | | | | | | | |
|--------------|--------------------------|--------------|--------------|----------|----------|----------|------|------|------|----------|----------|
| | | | 200/200/220V | 220/220V | 230/230V | 240/240V | 380V | 400V | 415V | 240/415V | 220/380V |
| Model | 60Hz | Model | 50/60/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50Hz | 50Hz | 50Hz | 50Hz | |
| KEE-5-8W | √ | KEE-5-8 | √ | √ | √ | √ | -- | √ | √ | √ | -- |
| KEE-10-8BW | √ | KEE-10-8B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-20-8BW | √ | KEE-20-8B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-32-8W | √ | KEE-32-8 | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-54-8BW | √ | KEE-54-8B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-85-8W | √ | KEE-85-8 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| KEE-110-8BW | √ | KEE-110-8B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-135-8BW | √ | KEE-135-8B | √ | √ | √ | √ | √ | √ | √ | √ | √ |
| KEE-170-8BW | √ | KEE-170-8B | √ | √ | √ | √ | √ | √ | √ | √ | √ |

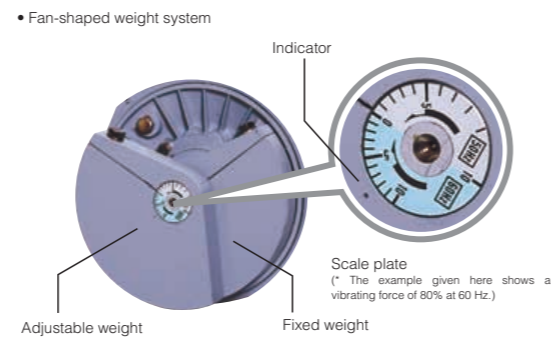
NOTE : A unit cannot be marked with both CSA standard and CE Marking.
*: CE marking supported model is not KEE-24-6CW but KEE-24-6B (greased and sealed).

How to Adjust the Vibrating Force

Fan-shaped weight adjustment

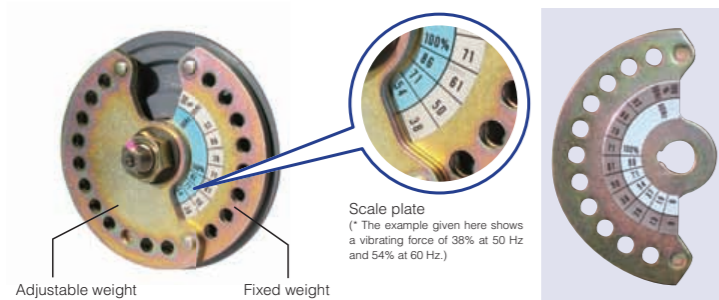
Unbalanced weights are attached at both ends of the shaft. As shown in the photo on the right, one fixed weight and one adjustable weight whose angle can be varied are attached to each end of the shaft. To adjust the vibrating force of the Uras Vibrator, the combined eccentric moment of the fixed and adjustable weights is changed by changing the angle of the center of gravity of the fixed and adjustable weights.

The required vibrating force can be set by loosening the locking bolt used to secure the adjustable weight and aligning the indicator with the required scale marking on the scale plate. The photo shows an example of an adjustment to 80% of the maximum vibrating force at 60 Hz.



Press weight adjustment (for the SEE-0.5-2CW/KEE-0.5-2CW, 1-2CW and 2-2CW)

• Press weight system



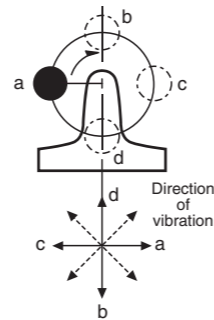
Loosen the locking bolts securing the weights at both ends of the rotor shaft. Move the adjustable weight slightly toward the end of the shaft until the weight can move freely. Place the bump on the adjustable weight into the recess on the fixed weight and then tighten the locking bolts. The value (unit: %) displayed on the fixed weight along the edge of the adjustable weight is the selected vibrating force.

The vibrating force for this type can be set in 10 levels from a minimum of 13% up to 100% with 50 Hz operation, and in 6 levels from a minimum of 19% up to 100% with 60 Hz operation. When shipped, it is set to 38% of the maximum vibrating force at 50 Hz and to 54% of the maximum vibrating force at 60 Hz.

Circular Vibration and Linear Vibration

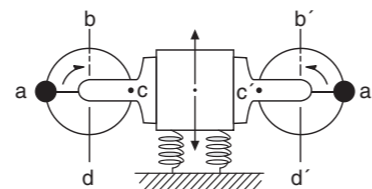
a) When generating vibration using one Uras Vibrator

When one Uras Vibrator is installed and used to generate vibration, revolution occurs while the position of the unbalanced weight changes in the sequence of a, b, c, and d. This means that the vibration direction also changes in the same way, generating circular vibration. Examples of the uses of circular vibration include the prevention of blockages in hoppers as well as applications in vibration milling machines and barrel finishing machines.



b) When generating linear vibration using two Uras Vibrators

Two identical Uras Vibrators set to the same vibrating force are supported by soft springs as shown in the figure on the right and their vibrator shafts are installed in parallel. These vibrators are run concurrently in mutually opposing directions. In this configuration, a synchronous torque is produced and, even without transmission through gears or other mechanisms, the two vibrators start a synchronous operation in which the forces in the horizontal direction cancel each other out while only vertical vibration is generated. This principle is used for forced packers, vibrating feeders, conveyors, screens, and many other kinds of machines that apply vibration.



Vibration Amplitude α and Vibration Strength G Calculations

As examples for a simple vibration system (forced vibration with a single degree of freedom), these calculations are shown using the "Vibropot" which is a milling machine for test purposes.

1. Amplitude is calculated by using

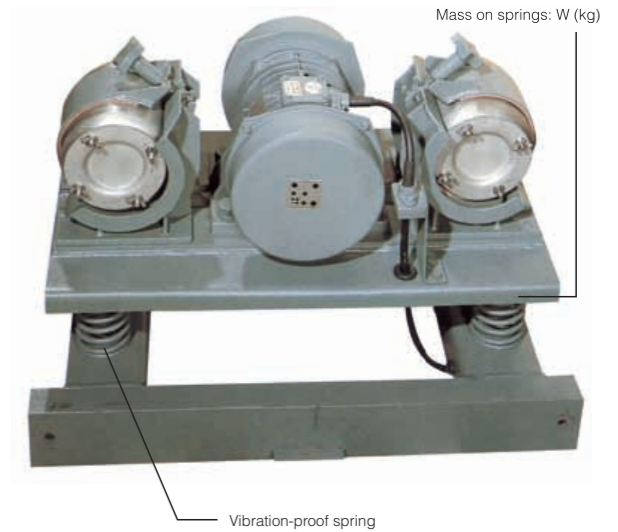
$$\text{Amplitude } \alpha = \frac{mr \times Cs}{W} \text{ [cm or inch].}$$

- mr = Unbalance [kg·cm or lbf·in]
- Cs = Vibration acceleration Settings [%]
- W = Vibrating body mass [kg or lbs]

2. Vibration strength is calculated by using

$$\text{Vibration strength } G = \frac{\alpha \times \omega^2}{g} (-).$$

- ω = Angular velocity = $2\pi f$ (1/s)
- f No. Revolutions = $\frac{N[\text{rpm}]}{60[\text{s}]}$
- g = Gravity acceleration [cm/sec² or inch/sec²]
= 980 cm/sec² or 386 inch/sec²



Formula for calculating vibration strength (G) from amplitude α (mm)

| No. of Uras Vibrator Poles | Power Supply Frequency (Hz) | Formula for Calculating G |
|----------------------------|-----------------------------|-------------------------------------|
| 2 | 50 | $G = \alpha(\text{mm}) \times 9.5$ |
| | 60 | $G = \alpha(\text{mm}) \times 13.6$ |
| 4 | 50 | $G = \alpha(\text{mm}) \times 2.4$ |
| | 60 | $G = \alpha(\text{mm}) \times 3.4$ |
| 6 | 50 | $G = \alpha(\text{mm}) \times 1.1$ |
| | 60 | $G = \alpha(\text{mm}) \times 1.5$ |
| 8 | 50 | $G = \alpha(\text{mm}) \times 0.59$ |
| | 60 | $G = \alpha(\text{mm}) \times 0.86$ |



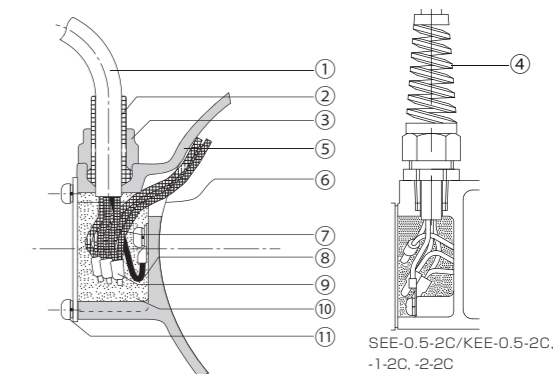
KEE-18-6BW
*A 2m vibration resistant cable is attached to an Uras Vibrator as standard.

Terminal Box and Cable

Uras Vibrator terminal boxes are filled with a special Uras Compound. This non-hardening, high-adhesion compound was developed to provide superior vibration-, humidity-, and dust-resistance. The lead cable is an anti-vibration butyl rubber insulated chloroprene cab-tire that ensures long life.

| No. | Part Name | No. | Part Name |
|-----|--------------------------------------------------------------------------|-----|--------------------------------|
| 1 | 2PNCT (anti-vibration butyl rubber insulated chloroprene cab-tire cable) | 7 | Single-core, lead-in wire |
| | | 8 | Ground wire |
| | | 9 | Insulated closed-end connector |
| 2 | Rubber bush | 4 | Spiral ground made of resin |
| 3 | Bellmouth | | |
| 5 | Frame | 11 | Terminal Box Cover |
| 6 | Epoxy resin adhesive | | |

The red, white, black, and green wires on the cable are wired to phase U, phase V, phase W, and the ground line (E), respectively. If U, V, W, and E are respectively wired to R, S, T, and E, the motor will be rotated in the direction of the cable inlet. Wire U to phase S and V to phase R to reverse the rotation direction.



SEE-0.5-2C/KEE-0.5-2C, -1-2C, -2-2C

Application to Hoppers

Preventing Bridge Formation in Hoppers

Mount the Uras Vibrators on the hopper wall and apply circular vibration to prevent bridge formation. The success depends largely on the Vibrator models, number of Vibrators, mounting positions, operating method, and particle characteristics.

Standard Data and Dimensions of Uras Vibrators for Conical and Angular Hoppers without Reinforced Ribs

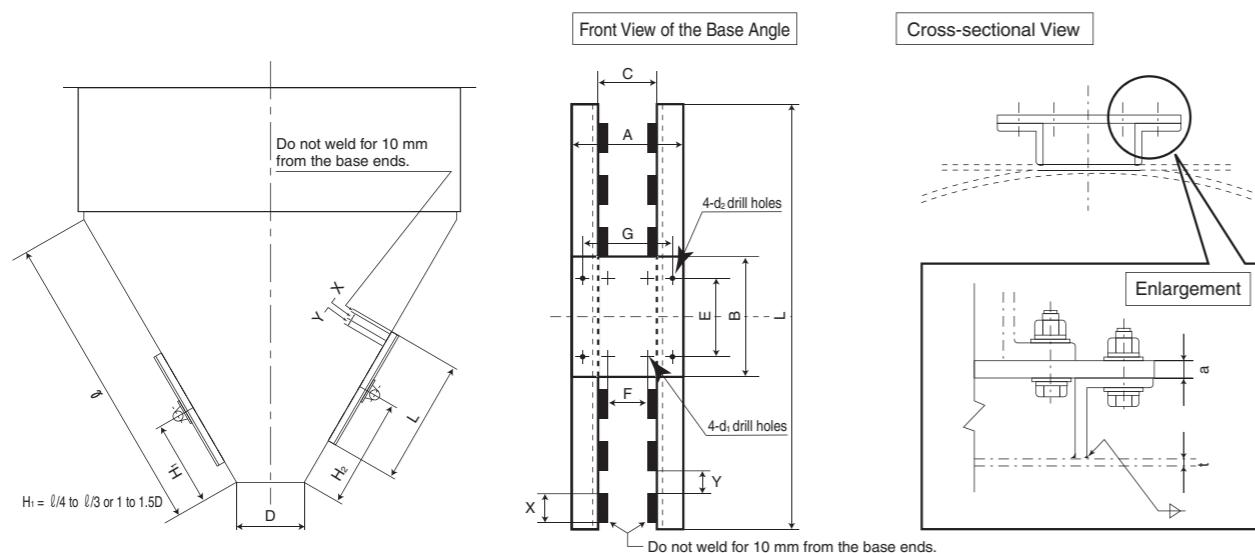
Select an appropriate Uras Vibrator based on plate thickness (t) from the following table. These thicknesses are designed to minimize the amount of welding required. The double amplitude generally ranges from 0.3 to 0.5 mm at the center of the mounted Uras Vibrator. Refer to the following table and adjust plate thickness (t) until the amplitude falls within this range.

Unit: mm (m for L)

| Model | Angle Dimension | Hopper Plate Thickness (t) | E | F | G | A | B | C | L (m) | a | d ₁ | d ₂ | X | Y | Bolt Dimension for d ₁ | Bolt Dimension for d ₂ |
|-------------|-----------------|----------------------------|-----|-----|-----|-----|-----|-----|------------|----|----------------|----------------|-----|-----|-----------------------------------|-----------------------------------|
| KEE-0.5-2CW | 30x30x3 | 1.6 to 2.3 | 120 | 40 | 90 | 120 | 150 | 60 | 0.5 to 0.7 | 6 | 10 | 10 | 75 | 50 | 8x30 | 8x30 |
| KEE-1-2CW | 30x30x5 | 2.3 to 3.2 | 120 | 40 | 90 | 120 | 150 | 60 | 0.6 to 0.8 | 6 | 10 | 10 | 75 | 50 | 8x30 | 8x30 |
| KEE-2-2CW | 40x40x5 | 3.2 to 4.5 | 120 | 40 | 100 | 140 | 150 | 60 | 0.7 to 1.0 | 9 | 10 | 10 | 75 | 50 | 8x35 | 8x35 |
| KEE-3.5-2BW | 50x50x6 | 4.5 to 6 | 150 | 90 | 170 | 220 | 190 | 120 | 0.8 to 1.2 | 12 | 14 | 14 | 75 | 50 | 10x40 | 10x40 |
| KEE-6-2BW | 65x65x6 | 6 to 9 | 190 | 110 | 210 | 275 | 240 | 145 | 0.9 to 1.3 | 12 | 18 | 18 | 75 | 50 | 16x55 | 16x55 |
| KEE-10-2BW | 75x75x9 | 9 to 12 | 220 | 120 | 240 | 315 | 280 | 165 | 1.1 to 1.5 | 16 | 22 | 22 | 100 | 80 | 20x60 | 20x60 |
| KEE-16-2W | 90x90x10 | 12 | 240 | 140 | 280 | 370 | 310 | 190 | 1.2 to 1.6 | 16 | 26 | 26 | 100 | 80 | 24x80 | 24x70 |
| KEE-23-2W | 100x100x13 | 16 | 260 | 150 | 300 | 400 | 330 | 200 | 1.4 to 1.8 | 19 | 26 | 26 | 100 | 80 | 24x80 | 24x70 |
| KEE-30-2W | 130x130x15 | 16 to 19 | 310 | 170 | 370 | 500 | 390 | 240 | 1.4 to 1.8 | 22 | 33 | 33 | 150 | 100 | 30x100 | 30x90 |
| KEE-40-2W | 150x150x15 | 19 to 22 | 350 | 220 | 450 | 600 | 440 | 300 | 1.5 to 2.0 | 25 | 39 | 39 | 150 | 100 | 36x120 | 36x100 |

- Notes: 1. When two or more Vibrators are mounted on one hopper, separate the Vibrators by at least 100 mm. (|H₁-H₂| > 100 mm) Otherwise, blockages may occur.
- 2. When welding the base angle to the hopper, temporarily tighten the base plate to keep it flat.
- 3. Use bolts, Spring washers, flat washers, and nuts to secure the Vibrator.
- 4. Use 8T (SCM) mounting bolts for the KEE-2-2CW.

Reference Drawing for Base Angle Manufacture and Mounting

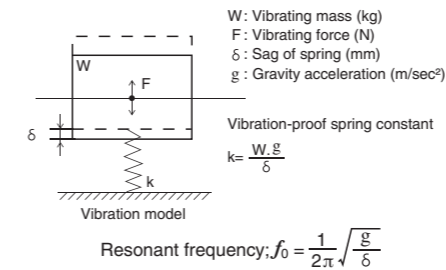


Vibration Prevention

Transmission of vibrations to the floor

The transmission of vibrations differs depending on the vibration frequency and spring constant of the vibration-proof springs. The transmission of vibrations from vibrating machinery to the floor must be minimized. The table on the right gives the general selection guidelines.

- (1) A vibrating machine must be operated at a vibration frequency at least two times higher than the resonance point. In fact, a vibration frequency that is 5 to 10 times higher is used as indicated in the table on the right.
- (2) The vibrating force transmitted to the floor is expressed as the product of the single amplitude and spring constant. Therefore, the total load applied to the floor is the sum (±) of what is exerted by the weight of the machine itself plus that exerted by the vibration.
- (3) Because the vibration of a vibrating machine is temporarily increased when the machine passes through the resonance point when it is stopped, it will be greater than the values given in the table on the right. Safe values for the total load are 1.5 times the machine weight for a 2-pole or 4-pole vibrator, and 2.0 times the machine weight for a 6-pole or 8-pole vibrator.
- (4) Note that when the resonance point of the floor and building is close to the vibration frequency of operation (especially when the vibration frequency is changed by the vibration feeder), strong vibrations may be generated in locations other than the installation location due to resonance, possibly causing trouble.



| No. of Poles | Frequency (Hz) | Vibration Frequency f (Hz) | Sag of Spring upon Mounting delta (mm) | Spring Constant k (N/mm) *1 | Resonant Frequency of system f ₀ (Hz) | Double Amplitude 2a (mm) *2 |
|--------------|----------------|----------------------------|----------------------------------------|-----------------------------|--------------------------------------------------|-----------------------------|
| 2P | 60 | 58.3 | 10 | 980 | 5.0 | 0.74 |
| | 50 | 48.3 | 12 | 810 | 4.6 | 1.06 |
| 4P | 60 | 29.1 | 20 | 490 | 3.5 | 2.95 |
| | 50 | 24.3 | 24 | 410 | 3.2 | 4.25 |
| 6P | 60 | 19.3 | 30 | 320 | 2.9 | 6.7 |
| | 50 | 16.1 | 36 | 270 | 2.6 | 9.6 |
| 8P | 60 | 14.5 | 40 | 250 | 2.5 | 11.7 |
| | 50 | 12.1 | 48 | 210 | 2.3 | 17.0 |

*1: These values are per 1,000 kg of machine mass. The values for other masses are calculated proportionately.
 *2: The values given apply for a vibration acceleration of 5G. The values for other accelerations are calculated proportionately.
 Note: The spring stress is approximately 250 N/mm².

Method Used to Mount Uras Vibrators on Small Hoppers

Application to Small Hoppers and Chutes

Use of a base angle in a size given in the table on the previous page is also recommended when mounting a Uras Vibrator on a small hopper or chute. But when the space available is limited, use one of the bases listed below.

Unit: mm

| Model | Hopper Plate Thickness (t) | External Dimensions of Base Plate | Base Plate Thickness | E | F | A | B | D | R | d Tapped Holes |
|------------|----------------------------|-----------------------------------|----------------------|-----|-----|-----|-----|-----|----|----------------|
| KEE-0.5-2C | 1.2 to 2.3 | 75x300 | 12 | 120 | 40 | 75 | 300 | 40 | 30 | 8 |
| KEE-1-2C | 2.3 to 3.2 | 90x400 | 12 | 120 | 40 | 90 | 400 | 40 | 30 | 8 |
| KEE-2-2C | 3.2 to 4.5 | 200x500 | 16 | 120 | 40 | 200 | 500 | 80 | 40 | 8 |
| KEE-3.5-2B | 4.5 to 6 | 220x500 | 16 | 150 | 90 | 220 | 500 | 120 | 50 | 12 |
| KEE-6-2B | 6 to 9 | 250x550 | 22 | 190 | 110 | 250 | 550 | 140 | 60 | 16 |
| KEE-10-2B | 9 to 12 | 300x600 | 25 | 220 | 120 | 300 | 600 | 150 | 60 | 20 |

