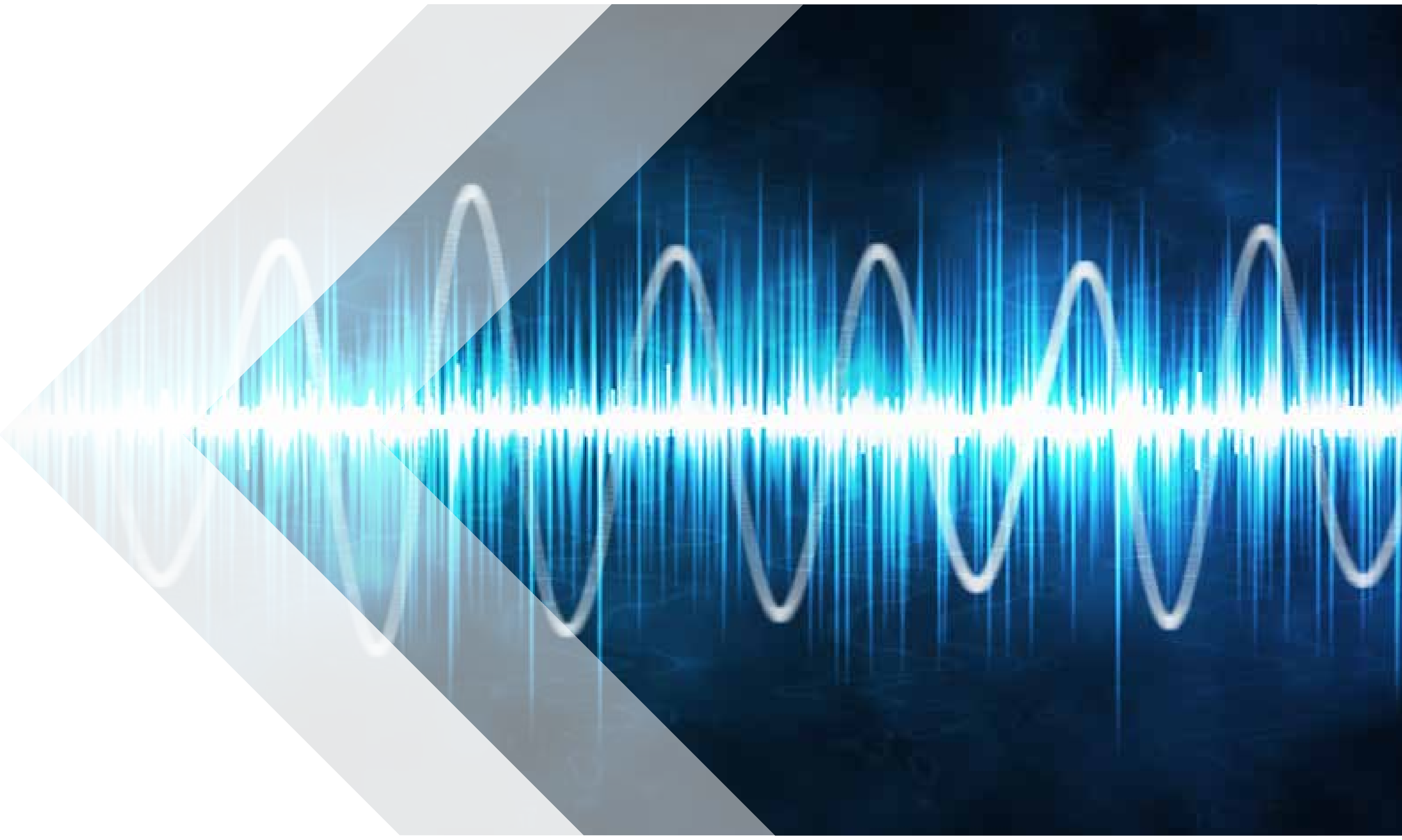
OLI®

OSCILLATING MOUNTS

ELASTIC SUSPENSIONS FOR VIBRATING DEVICES



WHEN YOU NEED IT, WHERE YOU NEED IT.

OWC OSCILLATING MOUNTS

OWC is the division of **OLI** that develops and manufactures **oscillating mounts** for vibrating devices like vibrating screens, feeders, dryers, compaction tables and vibrating machines in general.

Long-term **expertise** of our engineers and **full technical support** of our worldwide distribution network make OWC always ready to satisfy customers' expectations day after day.

OWC OWC

ABOUT OLI

OLI is **the worldwide leader in vibration technology**, with a complete range of electric and pneumatic vibrators for wide-ranging applications.

Strong believer in innovation, constantly striving to be ahead of the opposition, OLI combines **performance** and **reliability** by adapting to the ever-changing market.

As a global player in industrial vibration technology, the key focus of OLI's business strategy is **rapid stock delivery**, **any time**, **anywhere** in the world.

Excellent **customer service** is of pivotal importance: the company guarantees **quick order processing** and customers worldwide can enjoy access to the same high quality product and services.

OLI has access to credible expertise when it comes to finding suitable solutions to customers' requests. A team of engineers specialised in designing **efficient**, **reliable**, and **safe** solutions backed by globally certified management.

OLI provides their customers with state-of-the-art equipment and the blueprint for the next generation of products is already in progress.

PRODUCT RANGE

OWC's **OWSNE** (standard range) and **OWSHD** (heavy-duty range) oscillating mounts are designed for:

- vibrating screens
- vibrating feeders
- vibrating driers
- vibrating compaction tables
- other vibrating machines

This catalogue illustrates the **operating principle** of OWC oscillating mounts providing the basic tools for selection of the correct type and size for a machine, simplifying the common concepts of **any type of vibrating machine**.

OWSNE

OWSNE side view

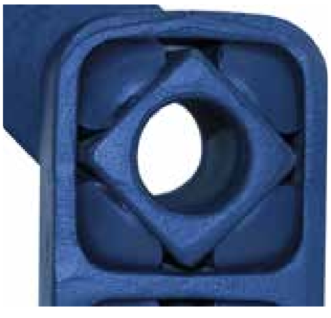
OWSHD

The **four torsional elements** are combined in a different manner to allow the implementation of two types of suspensions: OWSNE and OWSHD. The two similar models differ from one another in regards to length and opening angle of the arms. This difference entails a different kinematic mechanism ensuring a higher level of stiffness to the OWSHD models. Having the same overall dimensions they allow for a **greater vertical maximum load** by slightly decreasing the elasticity.

Both types guarantee **very low natural frequency** values of close to 2 Hz, thus succeeding to achieve **insulation** levels from the supporting structure of the vibrating machine **higher than 98%**, even at minimum excitation frequencies.

Furthermore, they achieve a particularly **low noise level**. If needed, they can be operated as close as possible in resonance state with the vibrating machine.

OWC oscillating mounts withstand pulse feed. They are **maintenance-free** and can work in any type of ambient temperature between -40 °C and 80 °C.



CENTRAL TORSIONAL ELASTIC INSERT

The special kinematic mechanism and the features of the rubber insert allow to achieve a **cross stiffness equal to about 10 times the longitudinal stiffness** (feeding direction of the conveyed product). This results in an improved **efficiency** of the process, greater **safety** and the possibility to avoid side guides or additional devices to control the movement of the machine during turn-off transient state.

OWC oscillating mounts do not require regular cleaning. Nevertheless, if there are particular plant requirements, the user must **choose suitable products to clean** the vibrating machine that do not damage the oscillating mounts (e.g. chemical products that are not compatible with rubber inserts).

OSCILLATING MOUNTS SIZING

For selection of the type and correct assembly position of the suspensions, it is recommended to follow the procedure mentioned below.

This procedure is applicable for any type of machine intended for transportation or screening of any type of material. It also applies to compaction tables.

REQUIRED DATA:

Mass of the vibrating feeder → $M_{machine}$

Mass of the material passing through the feeder instantly → $M_{material}$
(assuming machine shut-down: quantity of material lying in the tank)

Type of motovibrators used (RPM, mass, operation cycle)

Position of the centre of gravity of the machine without material:
% weight loaded on the material feed end → G_{load}
% weight loaded on the material unload end → G_{unload}

Type of load (from belt conveyor, grab, ...)

Any tilt of vibrating feeder

Firstly, it is necessary to calculate the total mass to which the suspensions are subject:

$$M_{tot} = M_{machine} + M_{motor} \cdot n_{motors} + M_{material}$$

Then, considering the position of the centre of gravity, it is necessary to calculate the mass share, loaded on the feed end and on the unload end of the processed material.

$$G_{load} = a\%$$

$$G_{unload} = b\% = 100\% - a\%$$

$$M_{load} = M_{tot} \cdot a\%$$

$$M_{unload} = M_{tot} \cdot b\%$$

Considering the minimum setup requirements, that is one suspension for each support point, it is necessary to select the smallest suspension size possible, which meets the minimum requirements as to acceptably load both the load and unload side.
It is not possible to combine different sizes of suspensions inside the same machine.
It is important that the load percentage of the individual suspensions is consistent, except in case of tolerance.

If the position of the centre of gravity is considerably displaced towards one of the two ends (material load side or unload side), for example Gload = 70% Gunload = 30%, one must take into account
2 suspension blocks per supporting point corresponding to the greater load end.
Additionally, it is advisable to take into account a minimum safety factor for the maximum allowable load (see above).

The greater the uncertainty of the amount of conveyed material, the higher this factor. Normally, the value ranges from 15% to 20%.
However, if the dynamics of the vibrating machine is very important, for example, for a peak-to-peak oscillation (stroke) that is higher than 8mm, it is advisable to take into account a higher safety margin.

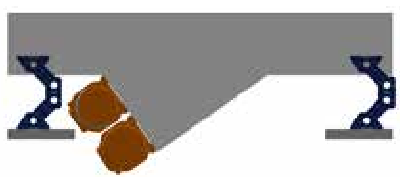
Here below are some typical cases, as an example of a correct selection of oscillating mounts:

G_{load} = 50% G_{unload} = 50%

4 OSCILLATING MOUNTS

G_{load} = 60% G_{unload} = 40%

4 OR 6 OSCILLATING MOUNTS (4 + 2)



G_{load} = 70% G_{unload} = 30%

4 OR 6 OSCILLATING MOUNTS (4 + 2)

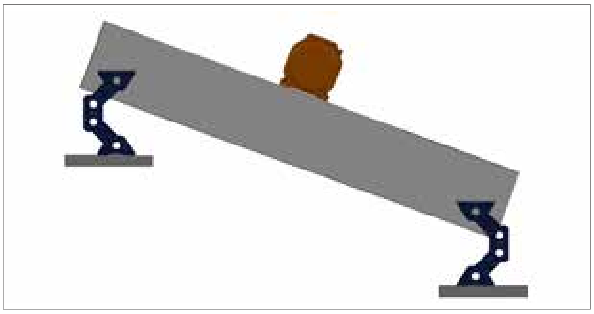
Once the size and the number of oscillating mounts required has been selected, the following must be considered:

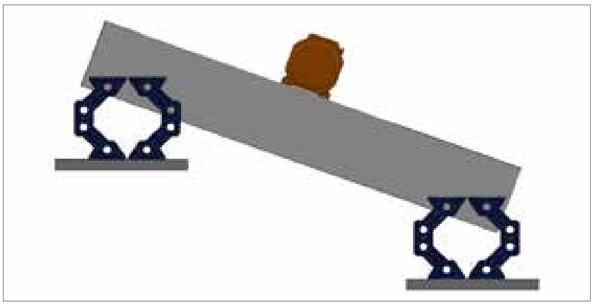
- Type of material feeding onto the vibrating machine;
- Possible angle of the vibrating machine.

Should the load of the material occur gradually, for instance by means of a belt conveyor or of another vibrating feeder, the aforementioned notes shall apply.

Should the load be of the impulse-type and, therefore, generate an impact (e.g. by means of a grab), it is necessary to consider as a compulsory option the use of 4 oscillating mounts instead of 2 on the load side of the product.

If the vibrating machine is inclined at an angle steeper than 10°, in order to maintain the functionality of the oscillating mounts in time, it is recommended to install them in a pantograph configuration as in the pictures below.





The same configuration is mandatory for the design of a compaction table.

Once the static measuring of the suspensions has been completed, it is necessary to perform a dynamic check so as to avoid any damage of any type during an extended use of the vibrating machine. These values are useful in order to achieve a rather realistic estimate of the machine operation performance.

Consequently, it is necessary to calculate the peak/peak oscillation width (stroke) and the total acceleration (α max.) of the vibrating machine (considering also the weight of the material, which instantly weighs down on the suspensions).

$$stroke = \frac{Wm[cm] \cdot 10 \cdot n_{motors}}{M_{tot}} \; [mm]$$

$$a_{max} = \frac{\left(\frac{2\pi}{60} \cdot RPM_{motor}\right)^2 \cdot stroke[mm]}{2 \cdot g \cdot 1000}$$

If the two calculated values are lower than the limit values shown in the chart (see pct. 8 and 9) and referred to the suspension size selected, the sizing has been verified.

If one or both values are higher, it is necessary to review the size of the suspension selected previously.

ASSEMBLY OF THE VIBRATING MACHINE

During installation, it is essential to comply with the correct assembly position (direction).

For most vibrating machines, for correct operation, **all the suspensions must be assembled with the "knee" turned towards the material feed direction.**

Installation of oscillating mounts with arms pointing towards the outer side or towards the inner side of the vibrating machine does not involve any difference in terms of their operation.

Nonetheless, it is recommended to install oscillating mounts with their arms pointing towards the outer side of the vibrating machine, in order to facilitate mounting and possible replacement operations.

Should the oscillating mounts be assembled **in a "hanging" configuration** (hanging screen, vibrating hanging feeder,...), **the oscillating mounts must be assembled with the "knee" turned backwards compared to the material feeding direction**.

If the vibrating machine is tilted, with an angle steeper than 10°, it is necessary to select the "**pantograph**" type assembly, where the "knee" of the oscillating mounts on both axes is turned towards the external part of the machine. Specularity shall be achieved compared to the centreline of the machine. This setup aims at preserving the duration of the suspensions.

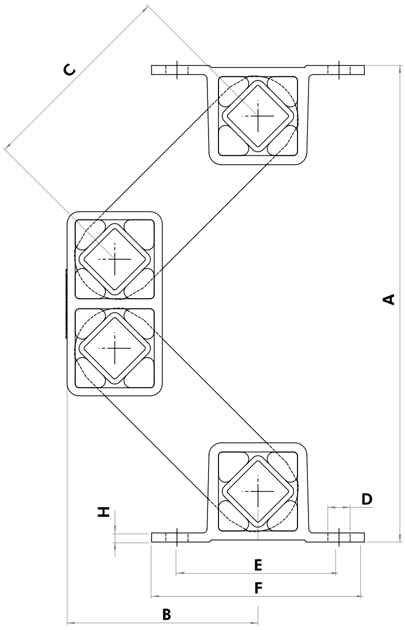
The same assembly configuration ("pantograph" type) is also adopted for machines where vibration is merely vertical such as, for example, for compaction tables.

OWS NE - Oscillating Mountings Standard Range

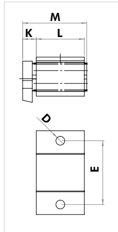
From NE 1500
to NE 3800

NE 4500

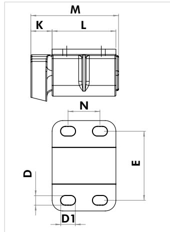
From NE 5000
to NE 5020



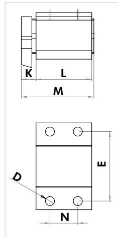
From NE 1500
to NE 2700



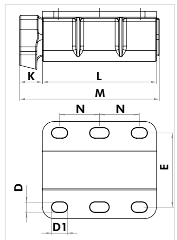
From NE 4500
to NE 5000



NE 3800



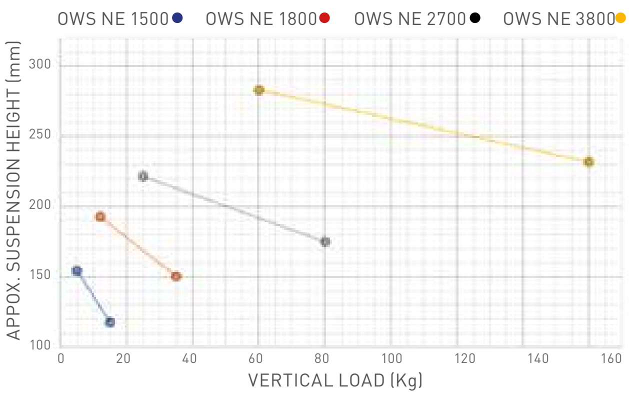
NE 5020



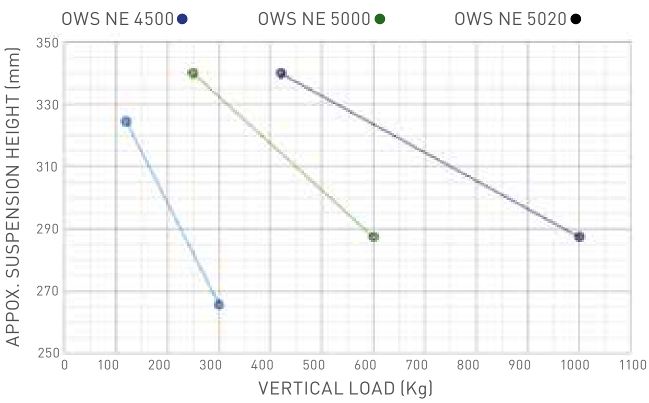
MODEL	LOAD CAPACITY (KG)		A (MM)		B (MM)		DYNAMIC LIMITS						NATURAL FREQUENCY (HZ)	
							8 POLES		6 POLES		4 POLES			
	unloaded	max load	unloaded	max load	unloaded	max load	stroke max (mm)	a max (g)	stroke max (mm)	a max (g)	stroke max (mm)	a max (g)	unloaded	max load
OWS NE 1500	5	15	168	117	70	87	14	4.1	12	6.2	8	9.3	4.0	2.8
OWS NE 1800	12	35	208	150	88	108	17	4.9	15	7.7	8	9.3	3.7	2.6
OWS NE 2700	25	80	235	175	94	113	17	4.9	14	7.2	8	9.3	3.7	2.7
OWS NE 3800	60	160	305	232	120	146	20	5.8	17	8.8	8	9.3	3.0	2.4
OWS NE 4500	120	300	354	266	139	168	21	6.1	18	9.3	8	9.3	2.8	2.3
OWS NE 5000	250	600	382	287	150	181	22	6.4	18	9.3	8	9.3	2.4	2.1
OWS NE 5020	420	1000	382	287	150	181	22	6.4	18	9.3	8	9.3	2.4	2.1

MODEL	C	D / D1	E	F	H	K	L	M	N	WEIGHT	MATERIAL		COLOUR
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(Kg)	Arms	Outer Squares	
OWS NE 1500	80	7	50	65	3	10	40	52	-	0.5	Steel Welded Construction	Aluminium Profile	Blue Painted
OWS NE 1800	100	9	60	80	3.5	14	50	67	-	1.1	Steel Welded Construction	Aluminium Profile	
OWS NE 2700	100	11	80	105	4.5	17	60	80	-	2.3	Steel Welded Construction	Aluminium Profile	
OWS NE 3800	125	13	100	125	6	21	80	104	40	5.1	Steel Welded Construction	Aluminium Profile	
OWS NE 4500	140	13x26	115	145	8	28	100	132	58	13.5	Steel Welded Construction	Nodular Cast Iron	
OWS NE 5000	150	17x27	130	170	12	40	120	165	60	22.5	Nodular Cast Iron	Nodular Cast Iron	
OWS NE 5020	150	17x27	130	170	12	40	200	245	70	33.2	Nodular Cast Iron	Nodular Cast Iron	

OWS NE LOAD VS DEFLECTION



OWS NE LOAD VS DEFLECTION



» Conformity with European Directive

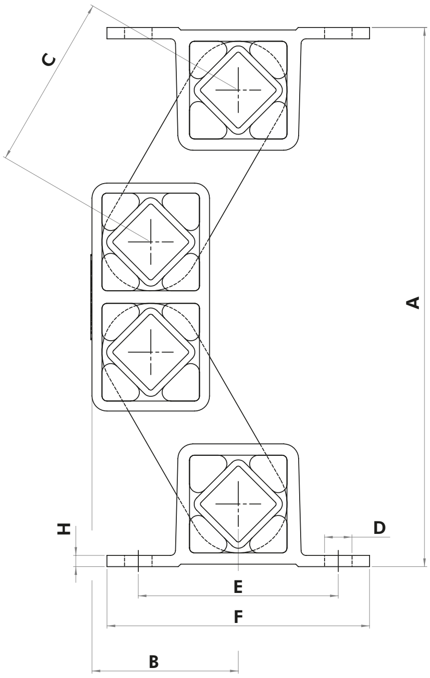
NOTE: Dimensions with coarse degree of accuracy related to UNI 22768/1

OWS HD - Oscillating Mountings Heavy Duty Range

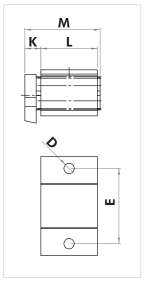
From HD 2700 to HD 3800

HD 4500

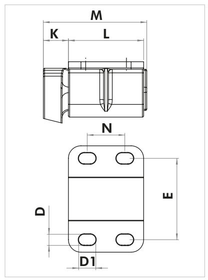
From HD 5000 to HD 5020



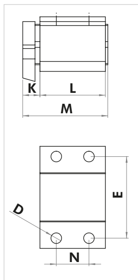
HD 2700



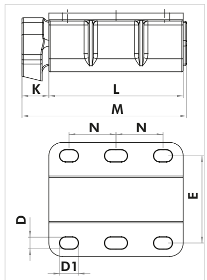
From HD 4500 to HD 5016



HD 3800



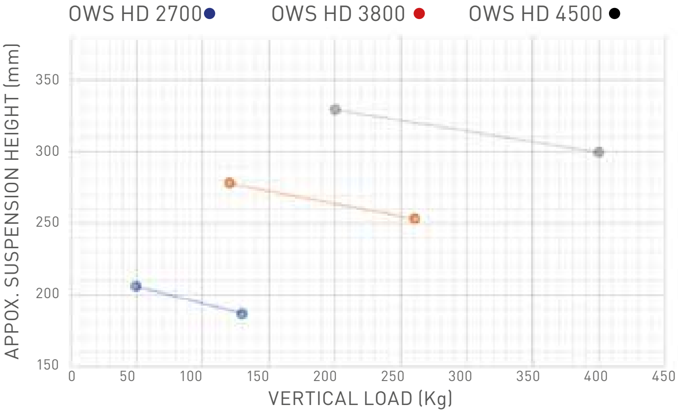
HD 5020



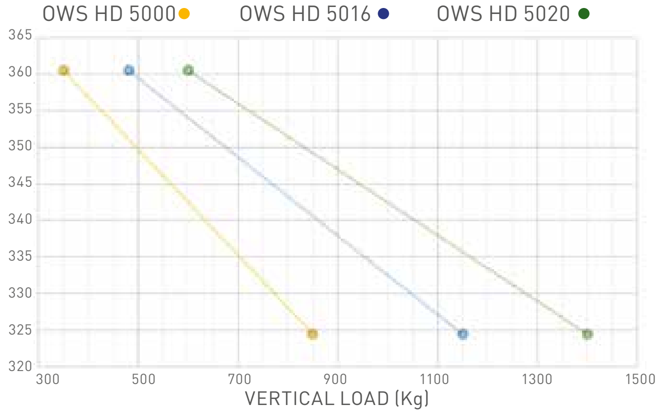
MODEL	LOAD CAPACITY (KG)		A (MM)		B (MM)		DYNAMIC LIMITS						NATURAL FREQUENCY (HZ)	
							8 POLES		6 POLES		4 POLES			
	unloaded	max load	unloaded	max load	unloaded	max load	stroke max (mm)	a max (g)	stroke max (mm)	a max (g)	stroke max (mm)	a max (g)	unloaded	max load
OWS HD 2700	50	130	215	187	59	74	12	3.5	10	5.2	8	9.3	4.8	3.1
OWS HD 3800	120	260	293	253	79	105	15	4.3	13	6.7	8	9.3	3.6	2.7
OWS HD 4500	200	400	347	300	96	125	17	4.9	14	7.2	8	9.3	3.3	2.5
OWS HD 5000	350	850	378	324	105	138	18	5.2	15	7.7	8	9.3	3.2	2.4
OWS HD 5016	480	1150	378	324	105	138	18	5.2	15	7.7	8	9.3	3.2	2.4
OWS HD 5020	600	1400	378	324	105	138	18	5.2	15	7.7	8	9.3	3.2	2.4

MODEL	C	D / D1	E	F	H	K	L	M	N	WEIGHT	MATERIAL		COLOUR
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(Kg)	Arms	Outer Squares	
OWS HD 2700	70	11	80	105	4.5	17	60	80	-	2.1	Steel Welded Construction	Aluminium Profile	Blue Painted
OWS HD 3800	95	13	100	125	6	21	80	104	40	4.8	Steel Welded Construction	Aluminium Profile	
OWS HD 4500	110	13x26	115	145	8	28	100	132	58	13.4	Steel Welded Construction	Nodular Cast Iron	
OWS HD 5000	120	17x27	130	170	12	40	120	165	60	21.9	Nodular Cast Iron	Nodular Cast Iron	
OWS HD 5016	120	17x27	130	170	12	40	160	208	70	27.3	Nodular Cast Iron	Nodular Cast Iron	
OWS HD 5020	120	17x27	130	170	12	45	200	250	70	33.4	Nodular Cast Iron	Nodular Cast Iron	

OWS HD LOAD VS DEFLECTION



OWS HD LOAD VS DEFLECTION



CE » Conformity with European Directive

NOTE: Dimensions with coarse degree of accuracy related to UNI 22768/1

WHEN YOU NEED IT, WHERE YOU NEED IT.

THE WORLDWIDE LEADER IN VIBRATION TECHNOLOGY

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