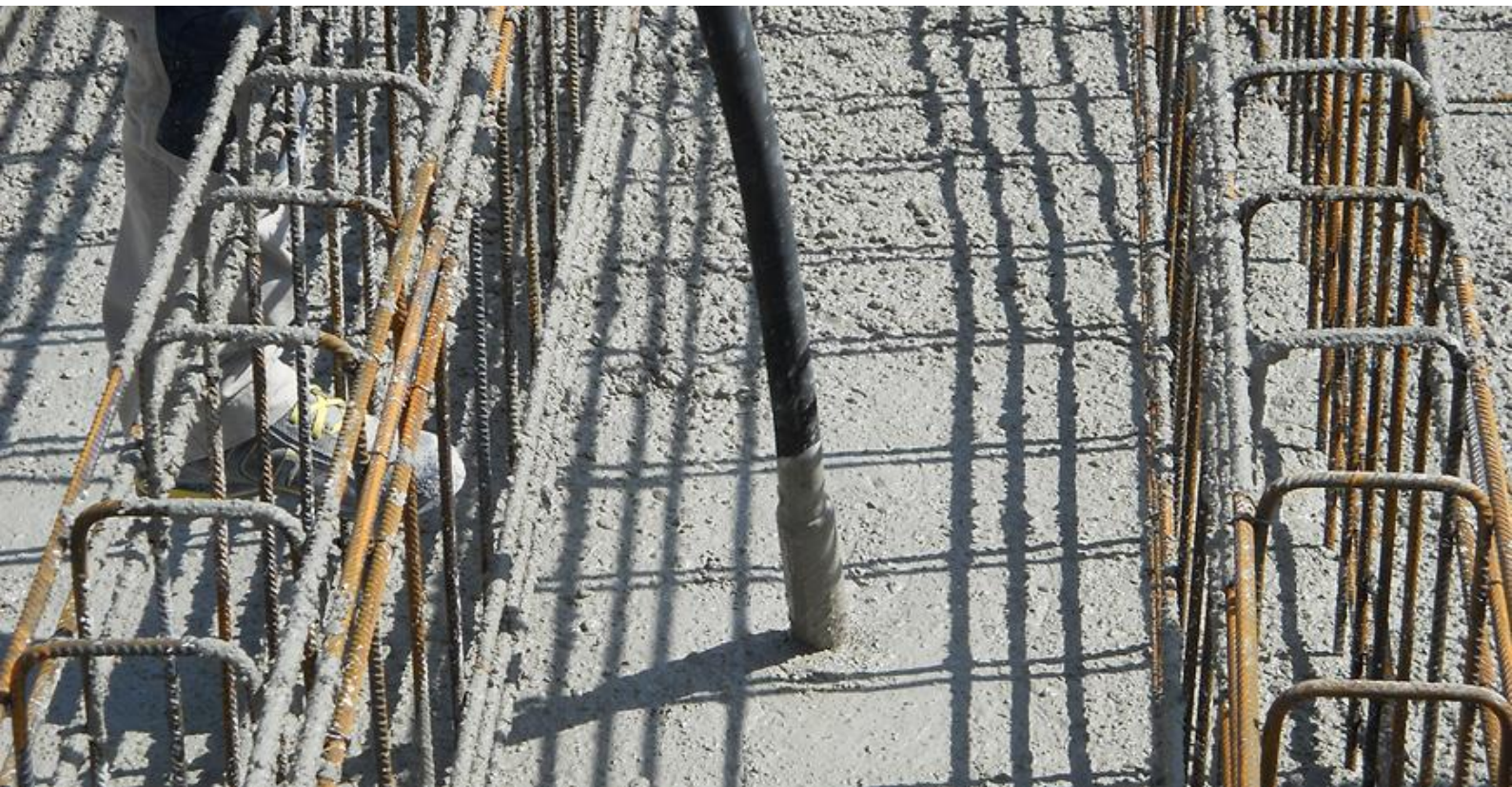


CONCRETE VIBRATION



VIBRATION TECHNOLOGY



Internal Vibrators & Convertors
For concrete consolidation





Concrete Vibration

The freshly mixed concrete does not compact on its own because the poor fluidity is not able to overcome the internal friction; only vibration can overcome such forces.

VIBRATION FAVOURS:

- The **surfacing of the air** trapped in the concrete.
- The **displacement of aggregates**, aligning them to one another, with consequent reduction of cavities, conferring them high density and perfect homogeneity.
- The **adhesion** of the concrete to the bars of the reinforcement armatures or to any internal structural inserts, as well as to the basic anchorages.

BENEFITS:

- High **mechanical resistance**.
- Low porosity and thus **low permeability** to water and to aggressive substances contained therein.
- **Absence of cracks** within the concrete, in the proximity of the reinforcement armatures' bars.
- **Complete filling** of the formwork.
- **Increase in the life cycle** of the concrete.
- High **aesthetic result**

TYPES OF VIBRATION	➡	EQUIPMENT TO USE
Direct The vibration is transmitted directly from within the concrete	➡	Electric immersion vibrators
Indirect The vibration is transmitted from the outside of the concrete	➡	External electric and pneumatic vibrators

NO VOIDS

REDUCED WORKING TIME

MAXIMUM DENSITY

MAXIMUM CONCRETE STRENGTH
WITH OUR VIBRATORS



Electric High Frequency Internal Vibrators

When constructing industrial floors, walls, columns, slabs, etc., **flexible and easy-to-use vibrating systems** are required.

In such cases high-frequency immersion vibrators are generally used, known as “poker” or “spud” or simply “vibrating needles”, which come into **direct contact with the concrete**; for this reason, we speak of internal direct vibration.

HOW THE VH VIBRATORS WORK:

An eccentric mass is housed inside the vibrating head (or needle) which is fixed to a shaft rotated by a three-phase asynchronous AC motor.

During rotation, the eccentricity of the mass generates rotational movements to the vibrating head (vibrations).

The **robustness** and the **constant rotation speed** are essential factors in the compaction of the concrete: drops in the centrifugal force heavily reduce the quality of the manufactured article.

The VH is a **robust and reliable product**, which is **suitable for compacting the concrete** and it is **appropriate for continuous operation**.

Important:

The VH has to be operated by electric and electronic converters that convert the 50/60 Hz mains frequency to 200 Hz, which is necessary in order for the vibrating head to reach a vibration speed of 12,000 vpm, as it is ideal for the proper compaction.

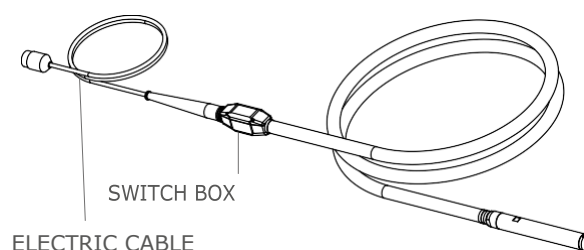
Benefits

- No overheating
- Easy maintenance
- Long life of the vibration head
- 100% Water Proof



MAXIMUM DURABILITY
HIGH PERFORMANCE

VH - Electric High frequency internal vibrator



ELECTRIC CABLE

OPERATING HOSE

VIBRATING HEAD



MODEL	HEAD DIAMETER	HEAD LENGTH	HEAD WEIGHT	TOTAL WEIGHT	CF	RATED CURRENT *	RATED POWER (42V)	ACTION DIAMETER *	AMPLITUDE	NOISE LEVEL	COMPACTION POWER*
	mm	mm	kg	kg	N	A	kW	cm	mm	dB A	m ³ /h
VHN 38	38	404	2.4	10.6	1,700	8	0.5	45	1.8	70	20
VHN 50	50	403	4.4	14.8	3,080	11	0.6	60	2.0	76	25
VHN 59	59	420	6.8	17.4	4,560	12	0.9	80	2.3	76	35
VHP 50	50	468	5.4	16.4	3,760	15	0.9	70	2.1	76	40
VHP 59	59	498	8.2	19.6	5,640	17	1.1	90	2.4	79	45
VHP 65	65	484	9.4	22.4	7,330	24	1.3	110	2.6	79	50
VHP-R59**	59	430	6.0	16.5	4,800	12	1.0	90	2.3	78	45
VHP-R65**	65	440	8.0	19.5	6,500	14	1.1	100	2.4	78	50

* Measurements vary according to the quality and thickness of the concrete

** Equipped with roller bearings

VH - ELECTRIC HIGH FREQUENCY INTERNAL VIBRATORS

APPLICATION Concrete compaction

DESCRIPTION High frequency internal electric vibrators for concrete consolidation characterized by high performance, consistent speeds, and remarkable resistance to abrasion

FEATURES

DUTY CYCLE Continuous S1

INPUT 42V - 3ph - 200Hz

NOMINAL FREQUENCY 12,000 vpm

INSULATION CLASS F (T° max = 155 °C)

THERMAL SWITCHES Inside the stator. Max T °C = 150 °C

WORKING TEMPERATURE From -20 °C to +40 °C

HEAD Ball bearing: n°2 VHN 50 / VHN 59 - n°4 VHN 38 and complete VHP range

Roller bearing: VHP-R 59 / VHP-R65

Protection class IP68

Hardening treatment for VHN / VHP-R and chrome plating for VHP

SWITCH BOX Polyamide (nylon + 30% fiber glass) with gasket, cable protection, yellow color

IP66 protection

Designed for continuous use and resistant to wear and tear

OPERATING HOSE 5 m SBR rubber hose with inner textile reinforcement

SUPPLY CABLE 10 m neoprene electric cable HO7RN-F with 3 pin plug (42V - 3 phase, IP44)

FINISHING VIBRATING HEAD: painted yellow Ral 1007 (VHN / VHP-R), chromed (VHP)
SWITCH BOX: color yellow Ral 1007

CERTIFICATIONS Community Directives and subsequent modifications:
2006/42/EC - 2006/95/EC

Conformity verified according to the standard documents:
IEC 60745-1, IEC 60745-2-12, IEC 60034-1

OPTIONS Cast aluminum switch box

Rubber cap



Frequency and voltage converters

The internal vibrating needles need to be powered via a three-phase electric line at low voltage, therefore it is necessary to use a voltage and frequency converter.

The electromechanical rotary converters consist of a motor and a generator, which are coupled together. The motor converts the electrical energy into mechanical energy; the generator converts the mechanical energy into electrical energy, thus generating the required voltage and frequency (42 Volt - 200 Hz).

The converters of the CM range are designed to supply simultaneously and in a continuous cycle, one or more high-frequency internal vibrators; they are reliable, durable and do not require maintenance.

The minimal design and the materials used **facilitate the external cleaning**, while the special internal air ducting system **avoids overheating**. The range offers several models, which are **capable of supplying from 1 to 4 immersion vibrators**.

Benefits

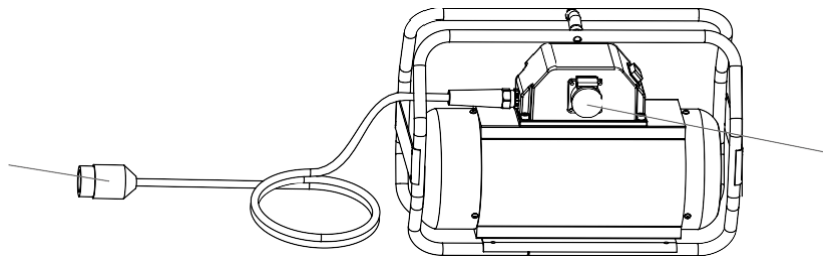
- No overheating
- No maintenance
- Optimal cooling
- Easy cleaning



LONG LIFE
OPTIMUM COOLING

CM - Frequency and voltage converters

BLUE: single-phase
RED: three-phase



Sockets



CMM 11



CMM 15



CMM 25, CMT 25



CMT 35



CMT 55, CMT 85

MODEL	FRAME	OUTLETS	SUPPLY ELECTRIC CABLE	WEIGHT	INPUT			OUTPUT		
					VOLTAGE	CURRENT	POWER	VOLTAGE	CURRENT	POWER
	Type	N°	m	kg	V	A	kW	Frequency	A	kVA
CMM 11	Handle	1	3.5	17	230V, 1ph, 50Hz	2.5	0.5	42V ± 10% 3ph 200Hz	11	0.8
CMM 15	Handle	1	3.5	25		6	1.1		14	1.0
CMM 25	Frame	2	3.5	34		10	1.8		25	1.8
CMT 25	Frame	2	3.5	33		5	2.8		25	1.8
CMT 35	Wheeled	3	5.0	41	400V 3ph 50Hz	6	3.3		36	2.6
CMT 55	Wheeled	3	5.0	50		9	5.0		55	4.0
CMT 85	Wheeled	4	5.0	56		12	6.6		85	6.2

COMPATIBILITY TABLE (maximum number of vibrators that can be connected)

CMM 11	1x VHN 38	1x VHN 50	-	-	-	-
CMM 15	1x VHN 38	1x VHN 50	1x VHN 59	-	-	-
CMM 25	2x VHN 38	2x VHN 50	2x VHN 59	1x VHP 50	1x VHP 59	1x VHP 65
CMT 25	2x VHN 38	2x VHN 50	2x VHN 59	1x VHP 50	1x VHP 59	1x VHP 65
CMT 35	3x VHN 38	3x VHN 50	3x VHN 59	2x VHP 50	2x VHP 59	1x VHP 65
CMT 55	3x VHN 38	3x VHN 50	3x VHN 59	3x VHP 50	3x VHP 59	2x VHP 65
CMT 85	4x VHN 38	4x VHN 50	4x VHN 59	4x VHP 50	4x VHP 59	3x VHP 65

CM - FREQUENCY AND VOLTAGE CONVERTERS

APPLICATION Concrete compaction

DESCRIPTION Frequency and voltage converters equipped with permanent magnets, specifically designed to power high frequency concrete vibrators continuously

FEATURES

DUTY CYCLE Continuous S1

INSULATION CLASS F (T° Max = 155 °C)

PROTECTION Overload protection

WORKING TEMPERATURE From -20 °C to +40 °C

CONNECTION BOX Polyamide (nylon + 30% fiber glass), complete with switch and sockets (42V three phase, IP44 protection)

SUPPLY CABLE Neoprene electric cable HO7RN-F with plug

FINISHING Powder coating (body yellow Ral 1007; fan covers, wheels and frame black Ral 9007)

CERTIFICATIONS Community Directives and subsequent modifications: 2006/42/EC - 2006/95/EC

Conformity verified according to the standard documents IEC 60034-1, IEC 60745-1, UNI EN ISO 12100

MORE Smooth and robust cast aluminum body

Forced ventilation



High frequency internal vibrators with built-in converter

On construction sites, during the consolidation of the concrete, a light, flexible and easy-to-use tool is often required, which **can be connected directly to the common, single-phase power lines** (230 or 110 Volt, 50/60 Hz).

In order to solve this necessity, the **EWO** range has been developed: **high-frequency immersion vibrators equipped with an integrated electronic frequency converter** capable of transforming the single-phase input voltage (230V or 110V, 50/60 Hz) into the three-phase voltage (230V, 200 Hz) necessary to obtain 12,000 vpm.

Compared to the common vibrating needles powered by electromechanical converters, the EWO has several advantages:

- they are **light and flexible**;
- the constant output frequency maintains the maximum centrifugal force and thus a **high and consistent performance**;
- there is **protection** against short circuits, excessive temperature, voltage and current above or below the nominal values.

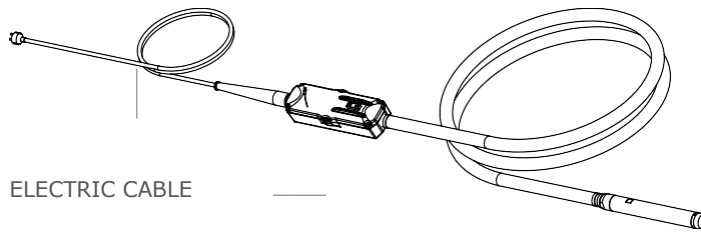
Benefits

- Reliable
- Safe & easy to handle
- No overheating
- Easy maintenance



COMPACT SOLUTION

EWO – High Frequency Internal Vibrators with built-in converter



ELECTRIC CABLE

ELECTRONIC CONVERTER
with control switch

OPERATING HOSE

VIBRATING HEAD

EWO 50C
EWO 59C
EWO 65C

EWO 38C

MODEL	HEAD DIAMETER	HEAD LENGTH	HEAD WEIGHT	TOTAL WEIGHT*	CF	RATED CURRENT **	RATED POWER (230V)	ACTION DIAMETER ***	AMPLITUDE	NOISE LEVEL ****	COMPACTION POWER ***
	mm	mm	kg	kg	N	A	kW	cm	mm	DB A	m3/h
EWO 38C	38	404	2.4	14.5	1,700	1.5	0.5	45	1.8	70	20
EWO 50C	50	468	5.2	20.0	3,760	2.7	0.9	70	2.1	76	40
EWO 59C	59	499	8.2	22.8	5,640	3.0	1.1	90	2.4	79	45
EWO 65C	65	484	9.4	24.8	7,330	4.5	1.3	110	2.6	79	50

* Packaging included

** Refer to centrifugal force for amperage assessment

*** Measurements vary according to concrete quality and thickness

**** Measured at 1 mt distance

	Input Voltage	Input Frequency	Input Amperage
Converter	230V +10% -15% 1ph	50/60Hz ± 5%	5.5 A
Converter	115V +10% -15% 1ph	50/60Hz ± 5%	11.0 A

EWO - HIGH FREQUENCY INTERNAL VIBRATORS WITH BUILT-IN CONVERTER

APPLICATION Concrete compaction

DESCRIPTION Equipped with compact electronic frequency converters integrated into the supply cable, characterised by high centrifugal forces, constant speeds and high wear resistance

FEATURES

DUTY CYCLE Continuous S1

INPUT 230V + 10% - 15% 50/60 Hz -1 ph

NOMINAL FREQUENCY 12.000 vpm

INSULATION CLASS F (T° max = 155 °C)

PROTECTION CLASS Head protection IP68

Converter protection IP66

The inverter is protected against overload, overvoltage, excess temperature and short circuit.

A LED light shows the presence of a fault

WORKING TEMPERATURE From -20 °C to +40 °C

HEAD Equipped with 4 ball bearings greased for life

Hardening treatment (EWO 38C), chrome plating (EWO 50C, EWO 59C, EWO 65C)

SWITCH BUILT-IN Complete with reinforced gasket

PROTECTION HOSE 5 m SBR rubber hose with textile reinforcement

SUPPLY CABLE 10 m neoprene electric cable HO7RN-F with SCHUKO 220V 2P+1T 16A plug

CONVERTER Sturdy cast aluminium box

Ergonomic and lightweight (3 Kg)

INVERTER Tropicalised and protected against vibration, moisture and shocks with a special resin

FINISHING Painted yellow RAL 1007 (EWO 38C) and chrome plating (EWO 50C - EWO 59C - EWO 65C)

CERTIFICATIONS Community Directives and subsequent modifications: 2006/42/EC, 2014/30/EU, 2006/95/EC

Conformity verified according to the standard documents IEC 60745-1, IEC 60745-2-12, UNI EN ISO 12100

OPTIONS Rubber cap

Tips and recommendations for use

TIPS FOR CHOOSING THE INTERNAL VIBRATOR

Selection of the vibrating head length

It must never exceed the thickness of the concrete layer.

Selection of the needle diameter

Factors to be taken into consideration:

- composition of the concrete
- quantity of reinforcements (percentage of reinforcement inside the concrete element)
- size of the spaces between the various reinforcements (mesh sizes)
- thickness of the concrete layer

The diameter to be used must allow the maneuver of the vibrator inside the reinforcement, without getting stuck in the mesh.

Definition of the operating tube length

It must be longer than the depth of the manufactured article in order to allow the vibration of the deeper layers.

MAIN RECOMMENDATIONS FOR USE

Repeated vibration

It means vibrating the already compacted concrete again. This technique is used to mix successive layers of concrete in order to improve the surface finish quality of columns and walls and to increase their strength and wear resistance.

Vibration inside the formwork

Make sure that the vibrating head does not touch the interior walls because, besides damaging them, it could generate depressions in the manufactured article, thus deteriorating the quality of the surfaces. Vibrators with rubber tips may be used to reduce this problem.

Insufficient vibration

It is the most common problem. Insufficient vibration can alter the structural properties, causing problems such as: lower resistance, higher abrasion, higher permeability, and consequently shorter duration and poor surface quality.

Excessive vibration

The use of oversized equipment generates the segregation of the aggregates, in addition to the damage incurred to the formwork and moulds.



ELECTRIC HIGH FREQUENCY VIBRATOR & CONVERTOR



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