

MAIT

STONE COLUMNS BOTTOM FEED



Vibroflotation is a geotechnical process for strengthening weak soils, to allow the use of superficial conventional building foundation (instead of deep foundation) or improving the soil loading capacity under road embankments, etc.

A vibratory device, normally called VIBROFLOT, penetrates the soil by gravity and sometimes with the aid of flushing water, displacing a/o compacting the natural soil.

A particular application of this system is the STONE COLUMNS METHOD, which consists of filling the columnar space created by the Vibroflot with coarse gravel/pebble stones.

At the required depth the fill material is discharged and compacted by surging movements of the Vibroflot. By addition of a controlled quantity of stone a compact stone column is obtained, which is connected with the surrounding soils (which are also being compacted, depending on type of soil).

In the most modern applications the stone is introduced from the bottom of the hole itself (Bottom Feed System), through a rigid rod line and feeding system from the top of the same.

Another important improvement of the technology, in the case of MAIT equipment, is the possibility to insert the Vibroflot into the soil WITHOUT THE USE OF WATER (Dry System), avoiding disturbance to the surrounding soil and overflow of flushed material.

This is achieved by means of Pulldown System and special loading technique, which allows placing of controlled quantities of fill material (additional water injection may be used only if required by specific projects).

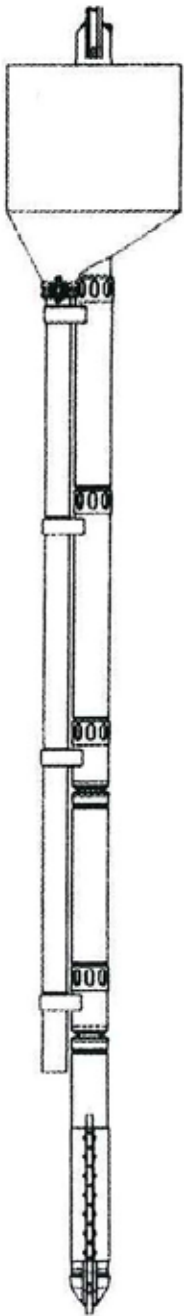
The stone columns can also improve draining of the soil, depending on geologic conditions.

The economy of this process, in terms of costs and time saving in respect of traditional deep foundation solutions has made this technology very attractive for various civil works applications, like industrial plants, embankments, etc.

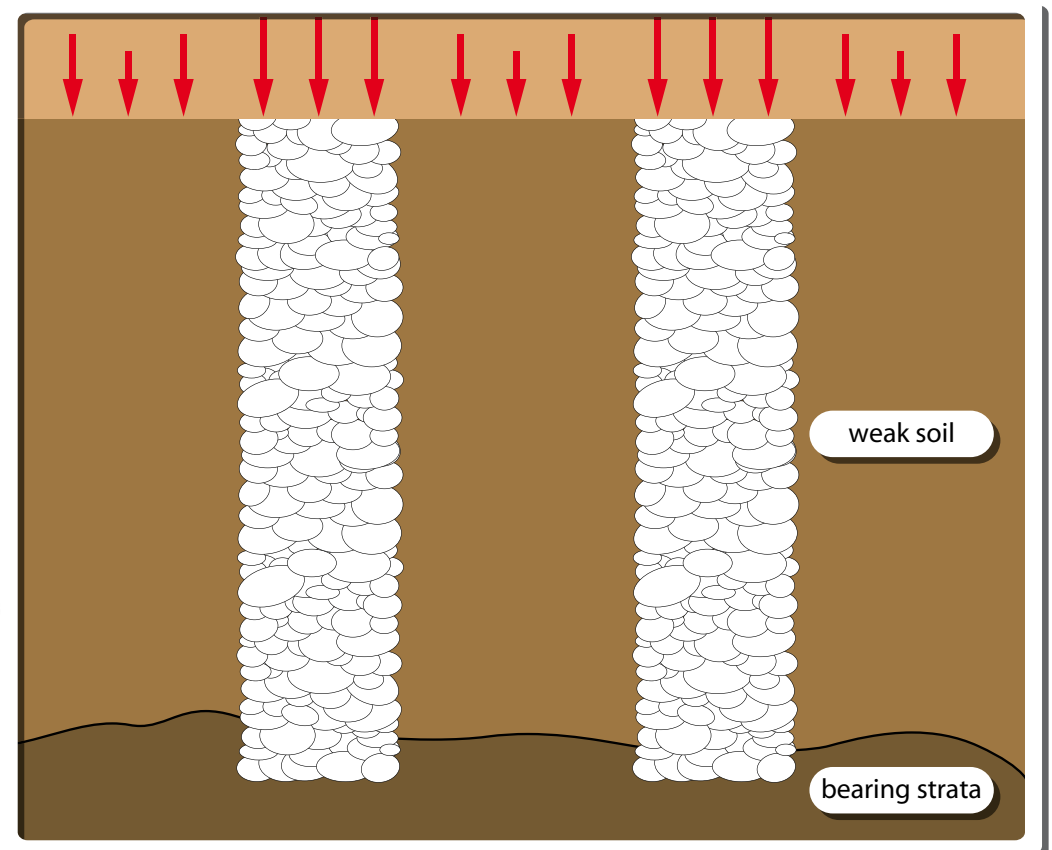
Uniform loading distribution and reduction of settlements are welcome characteristics of this system.



Vibroflot equipment - Bottom feed type

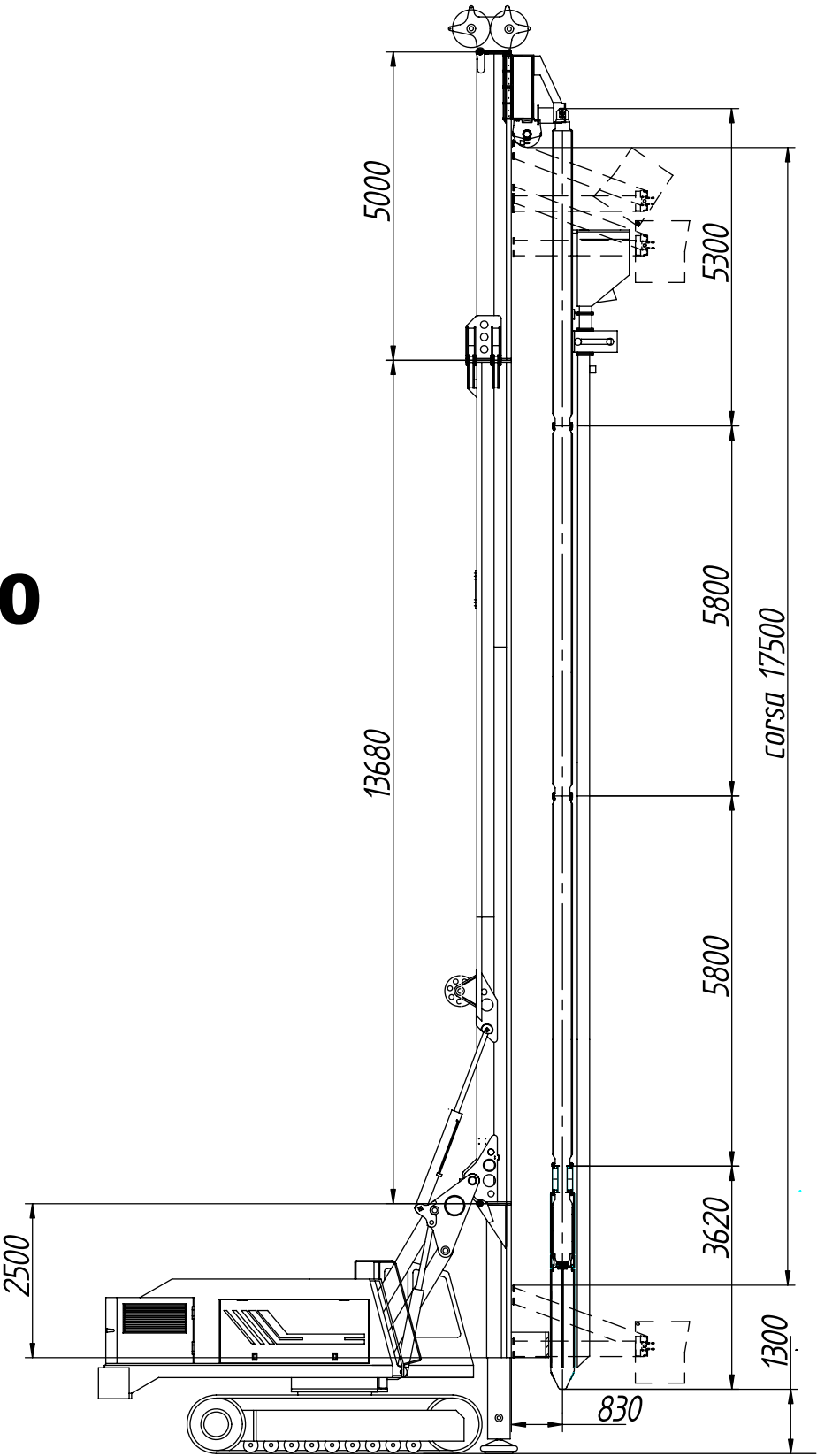


UNIFORM LOADING



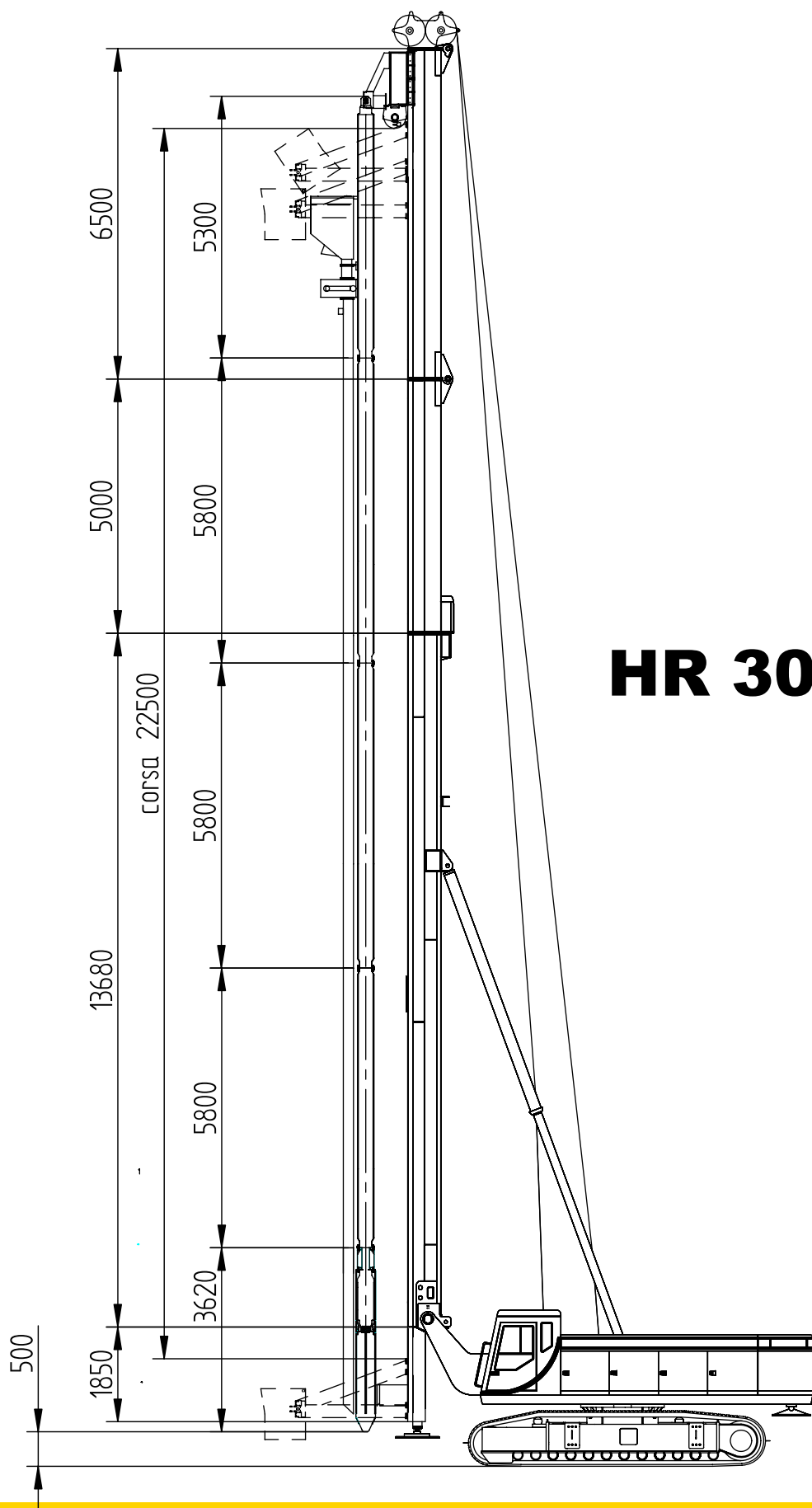
HR 180

with vibroflot application



The vibropile is commenced by starting the vibroflot and inserting it into the ground to the required depth.

The Vibroflot penetrates by its weight, vibrating action, and if necessary pull down force applied by the rig. On reaching the required depth, the loading shovel loads stone into the travelling hopper. The travelling hopper then moves up the mast until it

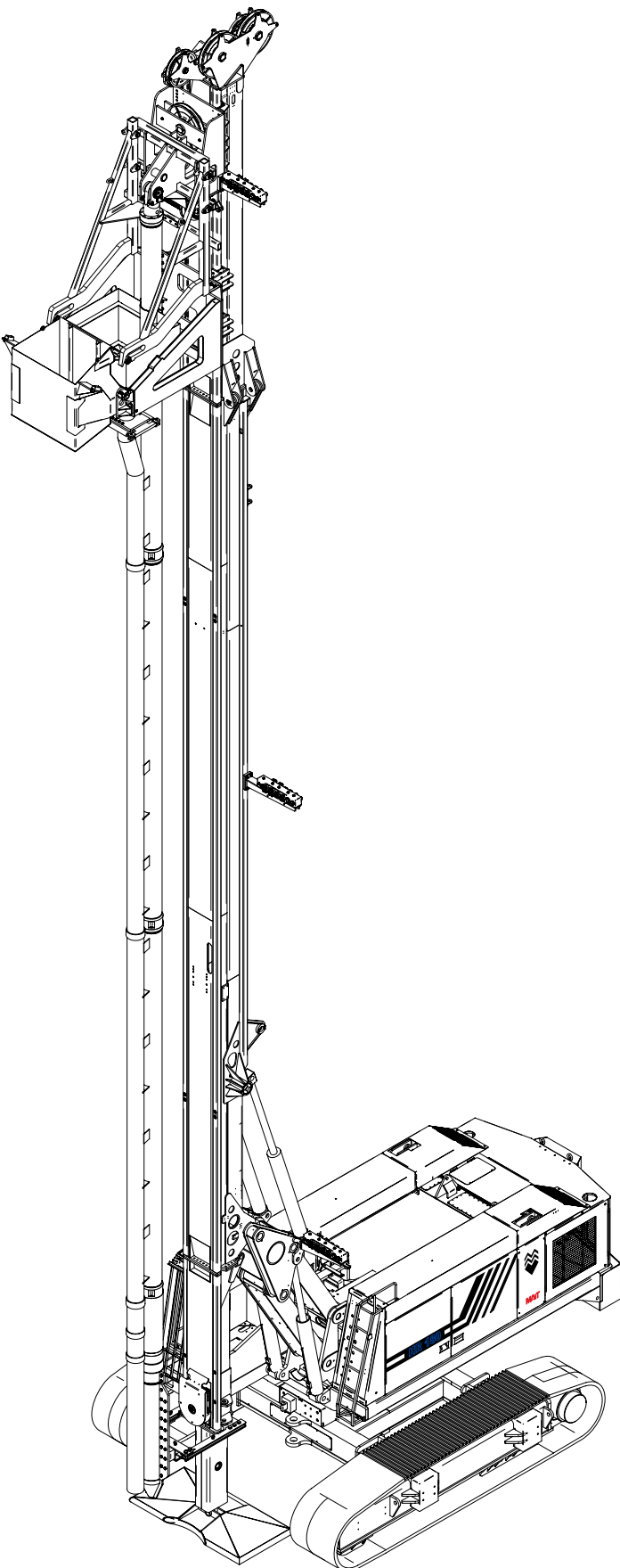


HR 300-570

with vibroflot application

reaches the fixed hopper at the top of the vibroflot. The travelling hopper automatically empties into the fixed hopper. Once in the fixed hopper the stone, controlled by the operator via a hydraulic gate, flows down the stone tube to the base of the hole. Here it is compacted by the vibratory action and repenetration of the flot. The operator moves the flot up the hole, recompacting the stone, until the flot reaches the surface.





As the flot is withdrawn the fixed hopper can be refilled at any time using the travelling hopper.

The hydraulic vibrating units have a diameter of 310 mm (VF800) or 430 mm (VF1000), and the max column size practically obtainable is 600 ÷ 800 mm for the VF800, and 800 ÷ 1000 mm for the VF1000.

MACHINES TECHNICAL DATA

	HR 180	HR 300-570
Total height	23.500 mm	28.700 mm
Overall crawler lenght	4.900 mm	5.900 mm
Stroke of sledge	17.500 mm	22.500 mm
Depth	16.000 mm	22.000 mm

Winches

Main winch (pulling vibrator)	18.000 x 2 daNm	20.000 x 2 daNm
Auxiliary winch	8.000 daNm	8.000 daNm
Pulldown winch (pushing vibrator)	7.500 x 2 daNm	10.000 x 2 daNm

VIBROFLOTS TECHNICAL DATA

	VF800	VF1000
Centrifugal force	230 kN	230 kN
Rotation speed	3.000 rpm	1.800 rpm
Frequency	50 Hz	30 Hz
Power of vibrolance	154 KW	154 Kw
Amplitude	12 mm	26 mm
Total weight (10 m application)	3.600 kg	3.800 kg



No separate hydraulic power pack is required as the MAIT rig have suitable hydraulic system to operate the vibroflot.

For example the MAIT HR 180 rig is suitable for installing stone columns of 16 m length, and MAIT HR 300-570 rig is suitable for installing stone columns of 22 m length.





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- Hydraulic drilling rigs of every size:
 - for piling, diaphragm walls, continuous flight augers;
 - for water wells;
 - for soil investigation, consolidation, civil engineering;
 - jet-grouting;
- Casing oscillator;
- Power pack;
- Casing tubes;
- Augers and buckets;
- Hydraulic grabs for diaphragm walls;
- Continuous flight auger;
- Tremie pipes;
- Drilling tools and accessories;

MAIT produit également:

- Des équipements de forage pour:
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 - recherche de nappes d'eau;
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- Power pack;
- Tubes de chemisage;
- Tarières et buckets;
- Bennes pour parois moulées;
- Tarières continues;
- Tubes jet;
- Dents et piquets pour outils;



MAIT S.p.A. DRILLING RIGS

Via Flaminia Seconda n° 149/153

P.O. Box 1040 □ 60027 OSIMO (AN) ITALY

Tel.: +39 071 7822186 □ Fax: +39 071 780535

Web: <http://www.mait.it> □ e-mail: info@mait.it