Engineered Vibroflotation Equipment
Ground Improvement Solutions

Process Control
Manual / Auto Operational Modes
Remote Data Acquisition

“Variable Eccentric” Technology

VC - Ports & Harbour
VC - Land Reclamation
VR - Stone Columns

www.vibro-equipmentfareast.com
With a vision to fill a niche in the Ground Improvement Industry, offering 2nd to none equipment, **Vibro Equipment & Parts Far East Co.** was born. An internationally focused company supporting the ground improvement industry.

We are operating from Subic Bay Industrial Freeport Zone, Philippines. Our senior management have been in the industry for over 25 years and with the vast knowledge and experience gained over those years, specializing in all aspects related to foundation / ground improvement equipment, we have the focus and in house technology to provide the industry with an alternative avenue for solutions to existing and new scenarios.

Specializing in two key areas, Vibroflotation and Vibro Replacement, be it onshore or offshore, we have the equipment to deal with it!

Photos to the right showing:
**Large Scale Compaction** – Deira Palm, UAE
**Offshore Stone Columns** – Doha Port, Qatar

[www.vibro-equipmentfar east.com](http://www.vibro-equipmentfar east.com)
To supply unparalled equipment and solutions.
Our entire range of Vibroflots and all of the associated attachments are 100% designed and engineered in-house using the latest CAD (Computer Aided Design) software coupled with the experience and knowledge of over 25 years in the Foundation and Ground Improvement Industries.

Our initial approach brought about a truly 1st to the industry, a unique and versatile design model that we are proud to share with clients. The concept was to introduce a complete range of Electric and Hydraulic Interchangeable Vibroflots and all the associated attachments designed, engineered and constructed in a modular format.
Depending on the mode of usage, our range can be mounted on to the mast or leader of any suitable piling rig and when incorporating an existing pull down / crowd winch, a complete and effective bottom feed system is obtained with minimum outlay. Alternatively, our range of Vibroflots can be simply suspended from a crane or even mounted onto a suitable excavator. When in compaction mode they can be used as a single unit or in a tandem arrangement to increase productivity.

Our **Electric range** of Vibroflots can be connected to standard generators that are readily available for hire or purchase worldwide, whereas our **Hydraulic range** of Vibroflots are designed to simply couple up to our supporting range of Hydraulic Power Packs or even direct to the hydraulic system of any suitable base crane or piling rig.
Electric or Hydraulic?

**Electric Plus Points**
1. Simplistic construction leads being more cost effective.
2. The Vibroflot is supplied by only one electric cable against a bundle of cumbersome hydraulic hoses.
3. Cost effective as Diesel Generators used to supply the Vibroflot are available on the open market for sale or rent.
4. No hydraulic oil environmental risks / hazards.
5. Absolute Power - Outperforms hydraulic due to the Synchronous Electric Motor being able to provide short peaks at over double the rated value. Absolutely vital when penetration of hard layers of soil is required!
6. Dynamic Force - The electric motor rpm stays the same when penetrating hard layers or during the peak of the compaction phase. Thus the eccentric force is constant to the square of the rpm.
7. Fuel Consumption - Diesel Generators are energy efficient.
8. Very low maintenance compared to hydraulic driven Vibroflot's.
9. Overload / Burnout - Our electric motors are protected by temperature sensors and phase leakage.
10. Diesel Generators are much more versatile so can be used for endless uses across the jobsite.

**Hydraulic Plus Points**
1. Possible to run directly from a suitable hydraulic crane or excavator.

**Hydraulic Negative Points**
1. Expensive due to the need of more components.
2. Handling of cumbersome banks of hydraulic hoses.
3. Hydraulic Power Pack - Can only be used with the Vibroflot or a similar attachment.
4. Power - Vibroflot's powered by hydraulic motors rapidly loose strength when the machine is heavily constrained in the soil, leading to the machine getting possibly stuck, thus maybe the need of pre-drilling may / will be required at times.
5. Hydraulic versions are banned from many projects due to the environmental risk of leakage of hydraulic oil into the ground!

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From our engineered CAD drawings, all components are manufactured to a high degree of accuracy using both conventional and CNC machines ensuring that all sub-assemblies are interchangeable, thus creating simple to adapt modular main assemblies.
Our **DV150** series operates with a driven power output of 150 kW. It is mainly used for stone and concrete column construction but can also be used for compaction job sites. It can be attached to suitable piling rigs or free hanging from a crane.

The **DV230** series operates with a driven power output of 230 kW. It is designed to operate for large deep compaction projects. It can be suspended from a crane and used as a single unit or in a tandem arrangement.
# Vibroflot Specifications

## Electric

### Premium Line – Variable Eccentric Technology (ST/HD)

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<th>Application</th>
<th>Model</th>
<th>Electric Motor</th>
<th>Centrifugal Force</th>
<th>Eccentric Moment</th>
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A – Vibro Compaction (VC)
B – Top Wet Feed – Stone Columns (VR)
C – Dry Bottom Feed – Stone Columns (VR)
D – Concrete Columns (VR)
### Vibroflot Specifications

#### Hydraulic

**Premium Line – Variable Eccentric Technology (ST/HD)**

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A – Vibro Compaction (VC)
B – Top Wet Feed – Stone Columns (VR)
C – Dry Bottom Feed – Stone Columns (VR)
D – Concrete Columns (VR)
“Vibroflotation” is a technique of ground improvement.
• For densifying granular soils with less than 10 – 15% silt present.
• The process is done ‘in situ’, using an electric or hydraulic driven vibratory unit known as a Vibroflot.
• Under the influence of simultaneous vibration and saturation, loose sand and or gravel particles are repacked into a denser state and hence the lateral confining pressure within the soil mass is increased.
• As an option, additional extension tubes can be added to allow the Vibroflot to do its work to depths in excess of 30 meters below surface level.
Liquefaction is a phenomenon in which the strength and stiffness of a soil is reduced by earthquakes shaking and/or other rapid loadings. Liquefaction and related phenomena have been responsible for tremendous amounts of damage in historical earthquakes around the world.

Liquefaction occurs in saturated soils. That is, soils in which the space between individual particles is completely filled with water. This water exerts a pressure on the soil particles that influences how tightly the particles themselves are pressed together. Prior to an earthquake, the water pressure is relatively low. However, earthquake shaking can cause the water pressure to increase to the point where the soil particles can readily move with respect to each other.
**Penetration Phase**
With the aid of air and/or water pressure at the nose cone, to assist with penetration, the Vibroflot is lowered steadily into the ground to a predetermined design depth. At the same time, the side jets are also working with an air/water mixture to agitate the sand, remove any fines and assist to form an annular gap around the Vibroflot. Upon reaching the correct design depth, the air/water at the nose cone, is either reduced or switched off.

**Compaction Phase**
Due to induced horizontal forces, the soil particles surrounding the tip of the Vibroflot are rearranged to a denser state of compaction. The Vibroflot is raised incrementally as compaction is achieved. During this compaction phase, either in situ (1) or imported (2) material is pushed into the void around the Vibroflot. In case only the in situ material is used, the surface or the area being compacted will be lowered.

Once the compaction process has been completed, the ground is leveled and then a surface compactor is required to densify the top layer of around 2mtr in depth.
What do you know about “Vibro Replacement”?

“Vibro Replacement” is a product of the Vibroflotation process

- This technique is used in soils that do not respond well to vibration alone. (to stiff, more than 15% silt)
- The improvement is achieved by creating columns of either crushed stone or concrete (of which can be reinforced).
- The process enables increased load bearing, reduces settlement and even improves the shear resistance of the ground being treated.
- The process is technically proven worldwide and very cost effective.
- There are two primary construction methods of Vibro Replacement.
  a. Wet Top Feed
  b. Dry Bottom Feed
This is the **most commonly used and most cost-efficient** of the deep vibratory replacement methods. Stone is fed **directly from the surface** with the aid of a wheeled loader or similar into the void that has been created by the Vibroflot.
Penetration
Assisted by air and/or water jetting at the nose cone, the Vibroflot penetrates to the required depth under its own weight. Once the Vibroflot has reached the design depth, the air and/or water at the nose cone is reduced or switched off.

Replacement
Crushed stone backfill is fed from the ground surface into the created void. The horizontal forces of the Vibroflot, laterally compacts the stone against the surrounding soil.

Completion
This process is repeated up to the designed cut-off level, forming a well compacted, tightly-interlocked stone column surrounded by compacted soil of enhanced density.
“Dry Bottom Feed” refers to the process of placing the stone using a skip or other medium into the receiving hopper which is located at the uppermost part of the Vibroflot assembly. From there the stone is fed down through a series of stone feed pipes, which are mounted onto the side of the Vibroflot / follower tubes and ejected beneath the specially adapted nose cone into the base of the column. With this system, no water is used for penetration. It offers a cleaner and more reliable solution in comparison with the simpler wet top feed method. Hence, it is preferred where the environment plays a critical role in project execution.
Penetration
When suspended from a standard crawler crane, the Vibroflot penetrates to the required depth under its own weight. When mounted on a leader of a suitable base machine the Vibroflot penetrates to the designed depth with the assistance of a pull down / crowd winch, thus increasing the efficiency and speeding up the penetration time. When as an attachment to an excavator the Vibroflot penetrates to the required depth with the assistance of the boom.

Replacement
Crushed stone is introduced (with the aid of a skip or other medium) into the hopper and is fed down the stone supply tubes to the specially adapted nose cone. The Vibroflot is then lifted a set value and the stone is discharged to the underside of the nose cone. The Vibroflot slightly re-penetrates and the horizontal forces of the Vibroflot laterally compacts the stone against the surrounding soil. This process is repeated up to the designed cut-off level, forming a well compacted tightly interlocked stone column surrounded by compacted soil of enhanced density.
To compliment our Bottom Feed Series we are unique in the fact that we can offer several different stone delivery systems to cater for differential job site conditions / requirements. From manual to semi-automated and even fully automated, it’s available.

MANUAL - Skip Delivery

SEMI or FULLY AUTOMATED Batching / Pumping Plant

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This conventional method of using a skip to deliver stone to the receiving hopper of the Vibroflot is controlled manually by the operator throughout the whole process of creating a stone column.

**Method:**
The skip is lowered to the ground using the 2nd / auxiliary winch of either a crane or appropriate drilling rig and with the aid of, for example a wheeled loader, it is filled with stone. The quantity of stone is governed by the size of the skip being used. Once filled to the correct level, the operator hoists the skip to the uppermost point of the Vibroflot where it automatically aligns with the receiving hopper of the Vibroflot where at this point it tips the load into the hopper. Once the stone has discharged, the skip is lowered to the ground and then the cycle is repeated continuously throughout the construction of the stone column.
This configuration brings together the speed and agility of manoeuvring an Excavator around a busy and congested job site with the technology of our range of Vibroflots.

A standard Excavator can carry Vibroflots for all systems, catering for compaction, top feed or bottom feed.

Mobilization is quick and by far less expensive than using the conventional crane mounted versions.
With patents granted, we have developed a stone delivery system that works ideally for off-shore stone columns, but also can be easily adapted for dry land when high volumes at a fast rate is a premium.

The system was specifically designed and engineered to overcome the extreme difficulties of stone delivery from the working platform, i.e. a barge or embankment to a working Vibroflot in the sea or at a remote location on land.

The basic system comprises of our unique “AQUABLASTERSTONEFEED” batching plant that can service multiple Vibroflots at the same time and a receiving separation unit (one per Vibroflot) that filters the stone into the Vibroflots stone holding tank. Automated feed control ensures quality and quantity of each batch being pumped from the “AQUABLASTERSTONEFEED” station to the head of the Vibroflot assembly. Outperforms any skip assisted delivery system available on the market.

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As it our policy to make our clients interaction with us as smooth as possible, we have brought to the industry another new concept – the “VIBRO CONFIGURATOR”. Selecting the model and configuration that best suits the job is now as simple as 1,2,3……. Just log on to our website www.vibro-equipmentfareast.com and sign up. This allows the user to enter the back office and to use openly the additional features.
You will now be brought to a series of drop down menu’s from which you are able to select step by the configuration that suits your requirements. Once finished with the menu stages as illustrated below, you will be presented with a summary page of which will be e mailed directly to us. This whole process is done with ease and allows us to process your enquiry efficiently.

From each drop down menu “CLICK” to select

Once the selection stages have been completed a unique assembly # and a summary is brought into view. This final stage allows you to add a message and e mail it directly to us.

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To compliment our range of Vibroflotation equipment we have developed in house our own Process Control, Monitor and Data Acquisition system which runs in conjunction with our main electric panel and/or hydraulic power pack.

**Control**
From a state of the art touch screen display, all aspects of each operation can be controlled by simply selecting the correct graphical symbol or command. This unit is mounted inside the cabin of the base machine.

Manual and Auto Modes of operation are now possible increasing production and performance beyond any system available.

**Monitor**
The monitor displays in real time all the necessary information to ensure that the operator is in full control of each process at all times. Safety features that continuously monitor all the variables are standard practice.
Data Acquisition

The data can be transferred to a remote computer using a USB memory stick, radio link or GPRS. The recorded data will include but not limited to; Date, point of reference’s, start, finish & overall time, depth of penetration, depths of obstructions (if any), etc.

- Many different reports can be complied by the site engineer.
- Customization is also a reality to suit clients needs.
All safety and technical parameters are stored automatically. This enables a technician to download the data at any point in time to support service and maintenance intervals.

In addition, on special request, we have a GPS system as an add-on to offer the complete solution to productivity.
Additional Equipment Requirements

Depending on which application the Vibroflot/s is/are being used for, auxiliary equipment may/will be required. Generally, with the option to purchase, these can be hired in the local market as and when needed. The items of equipment mentioned here are to be used as a guide line as what could be required. But for further details please contact our office and we are ready to advise. All of which can be supplied by us as per the clients request.

- **Water pump**
  6-10 Bar / 300 m³

- **Generator**
  200 – 450 KVA

- **Wheeled loader**
  CAT 930 – 966 or similar

- **Compressor**
  350 – 750 cfm

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AFTER SALES and SUPPORT SERVICES

• ON SITE DIAGNOSTICS
• MAJOR OVERHAULS
• 3rd PARTY PERIODIC INSPECTIONS
• COMMISSIONING
• JOB SITE INSTALLATIONS

After Sales and Product Support is also very important, so this area is treated by us as just as important to the initial sale itself.

**ON SITE DIAGNOSTICS and TROUBLE SHOOTING**
We are just a phone call away from being on the way to almost any location worldwide.
Short term and quick response gives our clients the confidence to run a technically difficult job site knowing that reliable help is at hand if required.
For this to run efficiently, visa’s if required, should be in place well beforehand – normally 1yr multi entry is the best solution.

**GENERAL and SCHEDULED MAINTENANCE PROGRAMS**
Every now and then all equipment and plant needs detailed attention to bring it back into a truly serviceable and operational condition.
This can and should be pre-planned and scheduled so to not disrupt normal operations– works hand in hand with our periodic inspection service. Our 3rd Party Inspection Service is available periodically as per requirement.
VIBRO Equipment & Parts Far East Co.
“Innovation & Technology within reach”

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