

VIBROCORER

All vibrocore operators (those supervising coring operations) must be signed into the H&S Register and are responsible for informing all assistants of the procedures required in the safe operation and handling of the equipment.

Identified hazards

- Vibration hazard from vibrating head and tube
- Noise from vibrating head and tube
- Heavy lifting of equipment and full core barrel
- Electrocutation due to mishandling of core barrel around powerlines, electric fences, electrical storms, penetration of underground services
- Falling core barrel or tripod
- Sharp metal edges
- Winch failure
- Poor ventilation from drive unit exhaust gases or fuel
- Open drive unit coupling
- Hot drive unit exhaust
- Saw used in core splitting operation
- Core pipe storage rack

A minimum of three fit people are required for vibrocoring, or four if using the Uwitec, especially at the core retrieval stage. The equipment is heavy to transport on foot so share the burden as much as possible and exercise care with heavy lifting. Make sure to read the Worksafe documentation on manual lifting before undertaking any work <http://www.business.govt.nz/worksafe/information-guidance/all-guidance-items/manual-handling-code-of-practice-for/manual-handling-cop.pdf>.

Handling of the vibrating head while in operation should be kept to a minimum. Over exposure to the intense vibration in the head and core barrel may result in chronic injury or disorder. According to the literature, the highest risk frequency band for high intensity vibrational equipment is 4 to 8 Hz while the vibrocorer operates at 212Hz primary frequency, however, numerous subfrequencies can be emitted. The rubber cable may be handled quite safely if required but, again, not for extended periods of time.

Once the core barrel has penetrated about one metre, the head and core barrel can stand unsupported. Applying body weight directly onto the vibrating head may be hazardous and is not recommended.

Wear the correct attire

- Hard hat (essential) - to protect against falling core barrel or tripod, 3 are provided;
- Leather gloves (highly recommended) - to protect hands from sharp metal edges of the core barrel, the winch cable, and to provide slight relief when handling the vibrating head, several pairs are provided;
- Hearing protection (highly recommended) - to protect ears from the loud vibration of the vibrating head and tube, 3 pairs are provided;
- Boots or similar sturdy footwear (highly recommended), not provided;
- Overalls (recommended) - not provided.

Ensure adequate ventilation - do not run drive unit in poorly ventilated or confined areas where exhaust gases may affect operators. Also, endeavour to transport drive unit and fuel separate from drivers and passengers of vehicles (e.g. in a trailer or utility compartment).

Thoroughly assess site before coring - at all costs avoid establishing a core site close to powerlines, underground services and, to a lesser degree, electric fences. Be wary of weather and tides where necessary and do not operate during electrical storms!

Take care when retrieving core with winch - wear gloves, keep your face away from the cable under tension, use reverse winching to release initial tension when slackening winch. Work at a smooth, steady pace.

Be careful of the drive unit - do not put fingers near the drive unit coupling point when operating the drive unit without the cable attached, be careful not to touch or allow fuel to spill onto hot exhaust manifold.

Transporting core barrels - the core barrels are 7.5 metres long and cumbersome and must be transported securely. According to the LTSA, an overhanging load can legally extend 3 metres forward of the front edge of the driver's seat and 4 metres rear of the rear axle. Any overhang greater than 1 metre must be flagged with a white, yellow, orange or red marker or rag. A two-point roof rack is generally suitable for transporting 7.5 metre length core barrels so long as the barrels are secured properly and don't flex or bounce in transit.

Student use - students must be accompanied by a technical staff member or an appropriate staff member whenever using the vibrocorer, at least until they have acquired an acceptable level of proficiency to supervise accompanying assistants.

Splitting the core barrels – the splitting of full core barrels uses a handheld tile cutter and wooden jig dedicated to splitting cores.

- Core splitting must be conducted under the supervision of a technician or other competent staff member at least until proficiency is proven.
- It is recommended that another staff member is present on Level 3 in case of emergency.
- Eye and ear protection must be worn, the door must be open and it is recommended that the extractor fans be turned on.
- Clean the equipment and workshop floor after use.
- When slicing the sediment core with the guitar wire take care with sharp metal edges and the wire itself use leather protective gloves if necessary.

Storing the core barrels – cores are stored on a rack in the workshop above the machinery and are transported outside via the workshop window.

- At least two people are needed to transfer core pipe (one outside, one inside).
- Be very careful of the pedestrians in the alleyway. Redirect them while moving the pipe.
- Exercise care while climbing on/off and standing on the bench.
- Do not overload the rack – storage rack is for 12 lengths only.

As a matter of courtesy, all people in the immediate vicinity of the proposed field site should be consulted before the vibrocoring commences since the noise can be very disruptive and may disturb livestock or social events, etc.

Maintenance

- Annual service of drive unit by Wacker Machinery Ltd.
- Periodic check of all equipment for damage.

See Wacker HD 3.7 operator's manual/parts book – Wacker Construction Equipment (see Technical Staff)