



CONCRETE VIBRATOR PENDLUM TYPE

VP38 - VP44 - VP57

OPERATING INSTRUCTIONS



WARNING

To reduce the risk of injury, all operators and maintenance personnel must read and understand these instructions before operating, changing accessories, or performing maintenance on this power equipment. All possible situations cannot be covered in these instructions. However care must be exercised by everyone using, maintaining or working near this equipment.

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INTRODUCTION

Thank you for your selection of Parchem equipment. Parchem have specialised in the design and manufacture of quality products since 1951.

We have taken care in the design, manufacture and testing of this product. Should service or spare parts be required, prompt and efficient service is available from our branches.

General Safety Instructions for the Operation of Power Equipment

The goal of Parchem is to produce power equipment that helps the operator work safely and efficiently. The most important safety device for this or any tool is the operator. Care and good judgement are the best protection against injury.

All possible hazards cannot be covered here however we have tried to highlight some of the important items. Individuals should look for and obey Caution, Warning and Danger signs placed on equipment, and displayed in the workplace. Operators MUST read and follow safety instructions packed with each product and complete their own work method statement and JSEA

Learn how each machine works. Even if you have previously used similar machines, carefully check out each machine before you use it. Get the "feel" of it and know its capabilities, limitations, potential hazards, how it operates, and how it stops.

FUNCTIONS AND CONTROLS

This vibrator is designed for the compaction of concrete by immersion of the vibrator head. Compaction improves the strength and finish of concrete by driving out entrapped air.

High frequency vibration allows the efficient compaction of low slump concrete mixes.

The vibrator head is driven by a rotating flexible drive shaft that transmits the drive from a coupling, engaged with a separate portable drive unit.

The vibrator head uses a unique principle to produce vibration.

A single self-aligning ball bearing supports a rotor at one end.

The other end of the rotor is hardened and free to roll inside the hardened barrel (38, 44 mm) or nose cap (57 mm). When driven, the difference in diameters of the rotor and its mating surface, coupled by friction and centrifugal force, causes the rotor to describe an epicyclic motion and roll around inside the barrel or nose cap. Each time the rotor rotates once on its own axis it rolls almost four times around the axis of the vibrator head. As a result, the low flexible shaft speed of 3,000 r/min produces a high

frequency vibration of 11,000 vibration/min.

The rotor motion is like a conical pendulum with the greatest vibration produced at the nose of the vibrator head.

Vibrator models are available with a range of vibrator head diameters and flexible shaft lengths. For effective vibration select the largest diameter vibrator head that the job will accommodate. The flexible shaft should be selected with the shortest standard length (3, 6 or 9 m) that best suits the most common applications. Non standard flexible shaft lengths are available to order.

The vibrator is fitted with a quick action 60 mm (2.36 in) diameter flexible shaft coupling for operation from a drive unit fitted with a 45 mm (1.75 in) diameter 3-tooth dog drive.

A petrol or diesel drive unit with a minimum of 3.7 kW (5 hp) or an electric drive unit with a minimum rating of 2.2 kW (3 hp) is required.

ACCESSORIES

Nose caps with resilient polyurethane tips are available to extend the life of form boards and improve off-the-form finish.

Drive units are available with petrol, diesel, air and electric motor drives.

Extension flexshafts (3 & 6 m) extend the length of an existing vibrator flexshaft and are available to enable vibrating within formwork to a depth of 12 m.

HAZARDS AND RISKS

NEVER allow any person to operate equipment without adequate instruction.

ENSURE all operators read, understand and follow the operating instructions.

SERIOUS INJURY may result from improper or careless use of this machine

! MECHANICAL HAZARDS

DO NOT operate the machine unless all protective guards are in place.

DO NOT leave the equipment in operation while it is unattended.

ENSURE that the equipment will remain stable and will not move or fall while in operation.

EXERCISE CARE when handling vibrators. Exposure to vibration or repetitive work actions may be harmful to hands and arms.

DO NOT hold the vibrator head in your hands while it is running.

Hold the vibrator by the flexible shaft to isolate your hands from the vibration.

NEVER stand on the vibrating head while it is operating.

DO NOT place your foot on the vibrator head while it is running unless it is done momentarily and the vibrator head is resting on a resilient support such as a car tyre.

ENSURE that repairs to machinery are carried out by COMPETENT personnel.

! ELECTRICAL HAZARDS

THE RISK OF SERIOUS OR LETHAL INJURY from electrical shock may arise from the combination of electricity and moisture.

! FIRE & EXPLOSION HAZARDS

PETROL is extremely flammable and explosive under certain conditions.

! CHEMICAL HAZARDS

CARBON MONOXIDE exhaust gases from internal combustion motor driven units can cause death in confined spaces.

! NOISE HAZARDS

EXCESSIVE NOISE can lead to temporary or permanent loss of hearing.

WEAR an approved hearing protection device to limit noise exposure, as required by Occupational Health and Safety regulations.

Noise levels in excess of 85dB(A) may be produced by engines and vibrators.

PROTECTIVE CLOTHING

ALWAYS wear protective clothing and footwear to prevent the skin coming into contact with wet concrete.

PROTECTIVE FOOTWEAR should be worn to reduce injuries from penetration through the sole, contact with cutting objects, slipping, contact with wet concrete and electrical hazards.

GOGGLES for eye protection may also be necessary.

USE waterproof protection for hands and knees (if kneeling) when concreting. If your clothing becomes wet from concrete contact make sure you change the clothing. Do not walk about waiting for it to dry.

USE GLOVES when handling and inspecting the flexible shaft outer casing. Excessive wear of the rubber cover can expose the wire braided reinforcement, allowing it to project and cause injury.

! ADDITIONAL HAZARDS

Slip/Trip/Fall is a major cause of serious injury or death.

Beware of the flexible shaft and water left on the walking or work surface.

Exercise caution and ensure that the perimeter of elevated formwork or platforms is protected.

Exercise care when working in the vicinity of unprotected holes or excavations

ADDITIONAL INFORMATION

Refer to the drive unit operation instructions for additional safety and operation information on the appropriate drive unit.

These are supplied free of charge by mail or fax.

OPERATION

Information regarding compaction of concrete using immersion vibrators is available in a FLEXTOOL FACT SHEET.

Check that a petrol or diesel engine is running at 3,000 r/min.

If it is not, the frequency of the vibrator head will be incorrect.

If the speed is low, compaction will not be as quick or as efficient as it should. If the speed is excessive, wear of the motor, flexshaft and vibrator will be greater. Continued operation at higher speed may result in failure of the vibrator and flexshaft components.

Do not engage the drive coupling in a motor that is already running.

For information on correct starting procedures refer to the engine manufacturers operation manual. Before engaging the flexshaft with a petrol drive unit start the motor using the recoil starter, increase the speed to full throttle and allow it to warm up for a few minutes.

If using an electric motor, switch on and check the motor rotation is in an anti-clockwise direction when viewing its drive dog front on.

STOP THE MOTOR.

Turn the bell housing trigger 180 degrees. Insert the flexshaft coupling fully into the housing of the drive unit and release the trigger. Push the coupling into the housing and twist the flexible

shaft until the drive dogs are fully engaged and the trigger returns to the horizontal position.

The motor may now be started.

It is not uncommon for a pendulum-type vibrator head to fail to vibrate when the motor is switched on or started. If the vibrating head does not commence vibrating immediately, tap the tip of the vibrator head sharply against a solid surface or try rattling the vibrator head.

Do not operate the flexshaft in a coiled condition. Avoid sharp bends in the flexshaft, particularly when it is in use.

Do not use a pendulum-type immersion vibrator head as an external vibrator by applying it to the outside of formwork.

Do not operate the vibrating head out of concrete for extended periods. Do not leave it running while you wait for fresh supplies of concrete to be placed. Vibrator heads are designed to be cooled by the concrete in which they are immersed.

CARE AND PREVENTIVE MAINTENANCE

Vibrators must be handled with care, and be properly maintained in order to avoid unnecessary breakdowns. Check regularly for signs of wear and rectify any faults immediately.

Hire operators should examine and test run the vibrator on return from hiring.

The exterior of the flexshaft and the vibrator head are subject to abrasion and wear. If the vibrator is operated unchecked, concrete will eventually enter the vibrator head or the flexshaft.

Naturally, the cost of repairing, a vibrator which has been allowed to deteriorate in this way will be greater.

Regular inspection of the vibrator and the flexible shaft will avoid these problems.

Check the 3-tooth dog on the drive coupling to ensure that it is fully meshed and not worn.

Check the flexible shaft for kinks and external damage by laying it out straight on a workbench or the floor. Although it still operates a badly kinked flexible shaft may result in a broken inner core.

Check the outer casing rubber cover for damage where it enters the ferrule at the vibrator head. Damage is caused by operators using a crane to retrieve a vibrator trapped in concrete reinforcing bars.

CLEANING AND STORAGE

It is advisable to wash the vibrator head and flexshaft with clean water after use each day and before storing. This will ensure that concrete does not accumulate on the exterior.

SERVICE

Vibrating heads are fitted with left hand screw threads on the nose cap, barrel and flexible shaft casing.

Dismantle the vibrating head and the flexible shaft every 500 working hours. Inspect for wear before re-assembling. Apply a thin coating of grease to the core assembly inserting it into the casing assembly from the drive coupling end.

The most critical part of the vibrator is the seal which excludes the flexible shaft and bearing grease from the vibrator head.

The ingress of grease into the vibrator head will prevent its operation. The mating surfaces of the rotor and barrel (38, 44 mm) or nose cap (57 mm) must be clean and dry.

Replace the seal and all o-rings at each overhaul.

Pendulum-type 38, 44 & 57 mm epicyclic action vibrators have a rotor supported by a single ball bearing. The bearing and the adjacent seal should be lightly greased only. All other components (barrel, rotor and nose cap) should be internally clean and free from finger prints and grease.

Polish the mating surface of the rotor and barrel (38, 44 mm) or nose cap (57 mm) with fine emery cloth and wipe with a cloth moistened with methylated spirits to ensure optimum cleanliness.

It is recommended that only genuine FLEXTOOL replacement bearings are used. These are specially manufactured to meet the arduous operating conditions.

SPECIFICATIONS

Frequency

11,000 vib/min

Amplitude in Air	VP38	VP44	VP57
	1.7 mm	1.8 mm	2.1 mm

Flexshaft Dia

Std 13 x 32 mm

HD 13 x 35 mm

Weight	VP38	VP44	VP57
3 m Flexshaft	13 Kg	14 Kg	16 Kg
6 m Flexshaft	21 Kg	22 Kg	24 Kg
9 m Flexshaft	29 Kg	30 Kg	32 Kg

TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSES AND CORRECTION
Vibrator will not vibrate	<p>Flexible shaft is rotating</p> <ul style="list-style-type: none"> ■ Tap the tip of the vibrator head sharply against a solid surface or try rattling the vibrator head. ■ Check electric motor direction of rotation using arrow on bell housing. ■ Three phase motors can run in reverse due to incorrect phase rotation. ■ Single phase motors can run in reverse due to incorrect internal connection after rewinding. ■ If rotation is incorrect check that the core ends have not unscrewed. ■ If the vibrator head has just been serviced the mating surfaces of the rotor and the barrel (38, 44 mm or nose cap 57 mm) may not be clean. ■ Check the vibrator barrel for wear or fine cracks that allow the ingress of moisture. ■ Grease has leaked into the vibrator head. Check for over greasing of the core or over speed of the petrol motor. Replace seal, remove core and wipe excess grease from the core with a clean cloth.
Rotor is broken	<p>Flexible shaft is not rotating</p> <ul style="list-style-type: none"> ■ Check that the vibrator coupling is fully engaged in the drive unit bell housing
Rotor / Core / Barrel is broken	<ul style="list-style-type: none"> ■ Petrol drive unit motor is running in excess of 3,000 r/min. ■ Outer casing or inner reinforcing spring is kinked or collapsed.
Grease in vibrator barrel	<ul style="list-style-type: none"> ■ Core has been over greased. ■ Replace seal, remove core and wipe excess grease from the core with a clean cloth



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