

Safety and operating instructions

Electric poker vibrators



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Introduction

Thank you for choosing a product from Atlas Copco. Since 1873, we have been committed to finding new and better ways of fulfilling our customers' needs. Through the years, we have developed innovative and ergonomic product designs that have helped customers improve and rationalize their daily work.

Atlas Copco has a strong global sales and service network, consisting of customer centers and distributors worldwide. Our experts are highly trained professionals with extensive product knowledge and application experience. In all corners of the world, we can offer product support and expertise to ensure that our customers can work at maximum efficiency at all times.

For more information please visit: www.atlascopco.com

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About the Safety and operating instructions

The aim of the instructions is to provide you with knowledge of how to use the machine in an efficient, safe way. The instructions also give you advice and tell you how to perform regular maintenance on the machine.

Before using the machine for the first time you must read these instructions carefully and understand all of them.

Safety instructions

To reduce the risk of serious injury or death to yourself or others, read and understand the Safety and operating instruction before installing, operating, repairing, maintaining, or changing accessories on the machine.

Post this Safety and operating instruction at work locations, provide copies to employees, and make sure that everyone reads the Safety and operating instruction before operating or servicing the machine.

In addition, the operator or the operator's employer must assess the specific risks that may be present as a result of each use of the machine.

Save all warnings and instructions for future reference.

Safety signal words

The safety signal words Danger, Warning and Caution have the following meanings:

DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

Working area

▲ DANGER Explosion hazard

If a warm machine comes into contact with explosives, an explosion could occur. During operating with certain materials, sparks and ignition can occur. Explosions will lead to severe injuries or death.

- ▶ Never operate the machine in any explosive environment.
- ▶ Never use the machine near flammable materials, fumes or dust.
- ▶ Make sure that there are no undetected sources of gas or explosives.

▲ WARNING Secure the working area

Cluttered benches and insufficient lighting can cause personal accidents and result in serious injuries.

- ▶ Keep the working area clean.
- ▶ Maintain adequate lighting in the working area.

Only qualified and trained persons may operate or maintain the machine. They must be physically able to handle the bulk, weight, and power of the machine. Always use your common sense and good judgement.

Keep bystanders, children, and visitors away while operating the machine. Distractions may cause loss of control.

Electrical safety

▲ DANGER Electrical hazard

There is a risk of electrical shocks from electrically powered machines which can lead to serious injuries or death.

- ▶ Avoid body contact with earthed (grounded) surfaces.
- ▶ Make sure that there are no concealed wires or other sources of electricity in the working area.
- ▶ Always check that the mains voltage corresponds with that stated on the data plate on the machine.

▲ WARNING Electrical safety

There is a risk of electrical shock if the electrical cable is not treated correctly, if the machine is damaged or modified. This can lead to serious injuries or death.

- ▶ The electrical plug on the machine must match the socket.
- ▶ Never modify the electrical plug to match the socket.
- ▶ Do not use adapter plugs with earthed (grounded) machines. Unmodified plugs and matching sockets will reduce the risk of electrical shock.
- ▶ Never move the machine by dragging the electrical cable.
- ▶ Disconnect the cable only by pulling the plug, never pull the electrical cable.
- ▶ Make sure the electrical cable is not pinched in doors, fences or similar.
- ▶ Check that the electrical cable and cable plug are intact and in good condition.
- ▶ Never connect a damaged electrical cable to the machine.
- ▶ Never touch the electrical cable if it becomes damaged during the work. Disconnect the electrical cable plug from the socket.
- ▶ Always make sure that the electrical cable is kept away from water, oil and sharp edges.

- ▶ Do not expose the power tool to rain or wet conditions.
If water enters the machine, there is an increased risk of electrical shock.
- ▶ Use a residual current device (RCD) protected supply, if the machine must be operated in a damp location.
The use of an RCD reduces the risk of electrical shock.

Personal safety

Personal protective equipment

Always use approved protective equipment. Operators and all other persons in the working area must wear protective equipment, including at a minimum:

- Protective helmet
- Hearing protection
- Impact resistant eye protection with side protection
- Respiratory protection when appropriate
- Protective gloves
- Proper protective boots
- Appropriate work overall or similar clothing (not loose-fitting) that covers your arms and legs.

Drugs, alcohol or medication

▲ WARNING Drugs, alcohol or medication

Drugs, alcohol or medication may impair your judgment and powers of concentration. Poor reactions and incorrect assessments can lead to severe accidents or death.

- ▶ Never use the machine when you are tired or under the influence of drugs, alcohol or medication.
- ▶ No person who is under the influence of drugs, alcohol or medication may operate the machine.

▲ WARNING Involuntary start

Involuntary start of the machine may cause injury.

- ▶ Keep your hands away from the start and stop device until you are ready to start the machine.
- ▶ Learn how the machine is switched off in the event of an emergency.

▲ WARNING Slipping, tripping and falling hazards

There is a risk of slipping or tripping or falling, for example tripping on the hoses or on other objects. Slipping or tripping or falling can cause injury. To reduce this risk:

- ▶ Always make sure that no hose or other object is in your way or in any other person's way.
- ▶ Always make sure you are in a stable position with your feet as far apart as your shoulders width and keeping a balanced body weight.

▲ WARNING Dust and fume hazard

Dusts and/or fumes generated or dispersed when using the machine may cause serious and permanent respiratory disease, illness, or other bodily injury (for example, silicosis or other irreversible lung disease that can be fatal, cancer, birth defects, and/or skin inflammation).

Some dusts and fumes created by compaction work contain substances known to the State of California and other authorities to cause respiratory disease, cancer, birth defects, or other reproductive harm.

Some examples of such substances are:

- Crystalline silica, cement, and other masonry products.
- Arsenic and chromium from chemically-treated rubber.
- Lead from lead-based paints.

Dust and fumes in the air can be invisible to the naked eye, so do not rely on eye sight to determine if there is dust or fumes in the air.

To reduce the risk of exposure to dust and fumes, do all of the following:

- ▶ Perform site-specific risk assessment. The risk assessment must include dust and fumes created by the use of the machine and the potential for disturbing existing dust.
- ▶ Use proper engineering controls to minimize the amount of dust and fumes in the air and to minimize build-up on equipment, surfaces, clothing, and body parts. Examples of controls include: exhaust ventilation and dust collection systems, water sprays, and wet drilling. Control dusts and fumes at the source where possible. Make sure that controls are properly installed, maintained and correctly used.
- ▶ Wear, maintain and correctly use respiratory protection as instructed by your employer and as required by occupational health and safety regulations. The respiratory protection must be effective for the type of substance at issue (and if applicable, approved by relevant governmental authority).

- ▶ Work in a well ventilated area.
- ▶ If the machine has an exhaust, direct the exhaust so as to reduce disturbance of dust in a dust filled environment.
- ▶ Operate and maintain the machine as recommended in the operating and safety instructions
- ▶ Wear washable or disposable protective clothes at the worksite, and shower and change into clean clothes before leaving the worksite to reduce exposure of dust and fumes to yourself, other persons, cars, homes, and other areas.
- ▶ Avoid eating, drinking, and using tobacco products in areas where there is dust or fumes.
- ▶ Wash your hands and face thoroughly as soon as possible upon leaving the exposure area, and always before eating, drinking, using tobacco products, or making contact with other persons.
- ▶ Comply with all applicable laws and regulations, including occupational health and safety regulations.
- ▶ Participate in air monitoring, medical examination programs, and health and safety training programs provided by your employer or trade organizations and in accordance with occupational health and safety regulations and recommendations. Consult with physicians experienced in relevant occupational medicine.
- ▶ Work with your employer and trade organization to reduce dust and fume exposure at the worksite and to reduce the risks. Effective health and safety programs, policies and procedures for protecting workers and others against harmful exposure to dust and fumes must be established and implemented based on advice from health and safety experts. Consult with experts.

▲ **WARNING Broken power switch**

The power switch does not control the machine. A broken power switch is dangerous and must be repaired.

- ▶ Do not use the machine if the power switch is broken and cannot be controlled.
- ▶ Maintain the power switch.

▲ **WARNING Projectiles**

Failure of the work piece, of accessories, or even of the machine itself may generate high velocity projectiles. During operating, splinters or other particles from the compacted material may become projectiles and cause personal injury by striking the operator or other persons. To reduce these risk:

- ▶ Use approved personal protective equipment and safety helmet, including impact resistant eye protection with side protection.
- ▶ Make sure that no unauthorised persons trespass into the working zone.
- ▶ Keep the workplace free from foreign objects.

▲ **WARNING Unexpected movements**

The machine is exposed to heavy strains during operation. If the machine breaks or gets stuck, there may be sudden and unexpected movement that can cause injuries.

- ▶ Always inspect the machine prior to use. Never use the machine if you suspect that it is damaged.
- ▶ Make sure that the handle is clean and free of grease and oil.
- ▶ Keep your feet away from the machine.
- ▶ Never sit on the machine.
- ▶ Never strike or abuse the machine.
- ▶ Pay attention and look at what you are doing.

Operating, precautions

▲ **WARNING Incorrect usage**

An incorrect use of the machine, accessories, and insertion tools can result in serious injuries or a hazardous situation.

- ▶ Use the machine, accessories and tools in accordance with the safety instructions.
- ▶ Use the machine for what it is designed for, and in the way it is intended.
- ▶ Use the correct machine for the work that is going to be performed.
- ▶ Do not force the machine while operating.
- ▶ Take the working conditions into account.

▲ WARNING Vibration hazards

Normal and proper use of the machine exposes the operator to vibration. Regular and frequent exposure to vibration may cause, contribute to, or aggravate injury or disorders to the operator's fingers, hands, wrists, arms, shoulders and/or nerves and blood supply or other body parts, including debilitating and/or permanent injuries or disorders that may develop gradually over periods of weeks, months, or years. Such injuries or disorders may include damage to the blood circulatory system, damage to the nervous system, damage to joints, and possibly damage to other body structures.

If numbness, persistent recurring discomfort, burning sensation, stiffness, throbbing, tingling, pain, clumsiness, weakened grip, whitening of the skin, or other symptoms occur at any time, when operating the machine or when not operating the machine, stop operating the machine, tell your employer and seek medical attention. Continued use of the machine after the occurrence of any such symptom may increase the risk of symptoms becoming more severe and/or permanent.

Operate and maintain the machine as recommended in these instructions, to prevent an unnecessary increase in vibration.

The following may help to reduce exposure to vibration for the operator:

- ▶ If the machine has vibration absorbing handles, keep them in a central position, avoid pressing the handles into the end stops.
- ▶ Make sure that the machine is well-maintained and not worn out.
- ▶ Immediately stop working if the machine suddenly starts to vibrate strongly. Before resuming the work, find and remove the cause of the increased vibrations.
- ▶ Participate in health surveillance or monitoring, medical exams and training programs offered by your employer and when required by law.
- ▶ When working in cold conditions wear warm clothing and keep hands warm and dry.

See the "Noise and vibration declaration statement" for the machine, including the declared vibration values. This information can be found at the end of these Safety and operating instructions.

▲ WARNING Noise hazard

High noise levels can cause permanent and disabling hearing loss and other problems such as tinnitus (ringing, buzzing, whistling, or humming in the ears). To reduce risks and prevent an unnecessary increase in noise levels:

- ▶ Risk assessment of these hazards and implementation of appropriate controls is essential.
- ▶ Operate and maintain the machine as recommended in these instructions.
- ▶ If the machine has a silencer, check that it is in place and in good working condition.
- ▶ Always use hearing protection.

▲ WARNING Accessory hazards

Accidental engagement of accessories during maintenance or installation can cause serious injuries, when the power source is connected.

- ▶ Never inspect, clean, install, or remove accessories while the power source is connected.

Maintenance, precautions

▲ WARNING Machine modification

Any machine modification may result in bodily injuries to yourself or others.

- ▶ Never modify the machine. Modified machines are not covered by warranty or product liability.
- ▶ Always use original parts and accessories approved by Atlas Copco.
- ▶ Change damaged parts immediately.
- ▶ Replace worn components in good time.

▲ WARNING Damaged machine parts

Lack of maintenance will result in damaged or worn parts that can cause accidents.

- ▶ Check the moving parts for misalignment or binding.
- ▶ Check the machine for broken or, in other ways, damaged parts.

Damaged or worn parts can effect the operation of the machine.

Storage

- ◆ Keep the machine in a safe place, out of the reach of children and locked up.

Overview

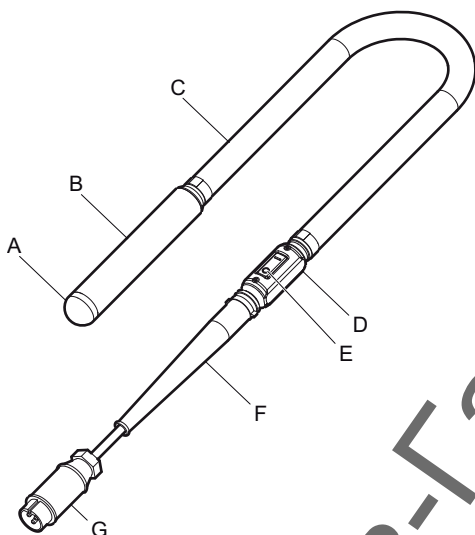
To reduce the risk of serious injury or death to yourself or others, read the Safety instructions section found on the previous pages of this manual before operating the machine.

Design and function

Vibrastar electrical poker vibrators are designed to vibrate concrete with a comfortable working condition. The electrical poker is equipped with a high efficiency motor with a significantly lower absorbed current.

The lower absorbed current allows a lighter and smaller converter to be used.

Main parts

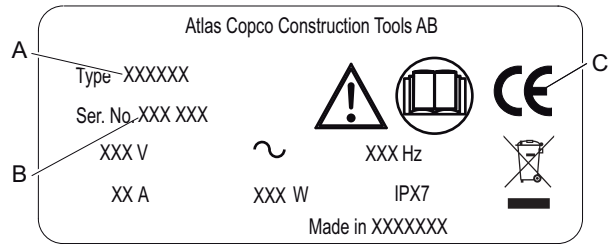


- A. End cap
- B. Vibrator
- C. Hose
- D. Switch box
- E. Power switch
- F. Rubber sleeve
- G. Electric cable with power socket

Labels

The machine is fitted with labels containing important information about personal safety and machine maintenance. The labels must be in such condition that they are easy to read. New labels can be ordered from the spare parts list.

Data plate



- A. Machine type
- B. Product identification number
- C. The CE symbol means that the machine is EC-approved. See the EC Declaration of Conformity which is delivered with the machine for more information.

Safety label



Instruction manual. The operator must read the Safety and operating instructions before operating the machine.

Use protective gloves.

Use ear protectors.

Operation

Preparations before vibrating

Connect the poker vibrator to a frequency converter or a high frequency generator.

Do not overload the converter or generator by connecting too many poker vibrators.

The total current of the poker vibrators can not exceed the secondary current of the converter or generator.

Start the converter or generator first, before switching on the vibrator.

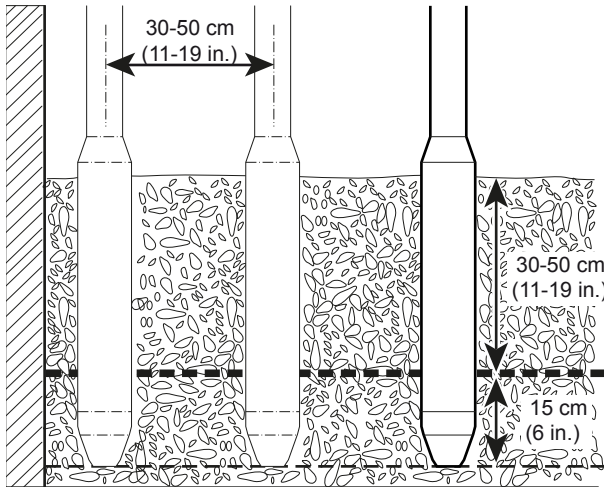
NOTICE Do not start the converter or generator with the poker vibrator switched on.

To stop the vibration, switch off the poker vibrator and then the converter or generator.

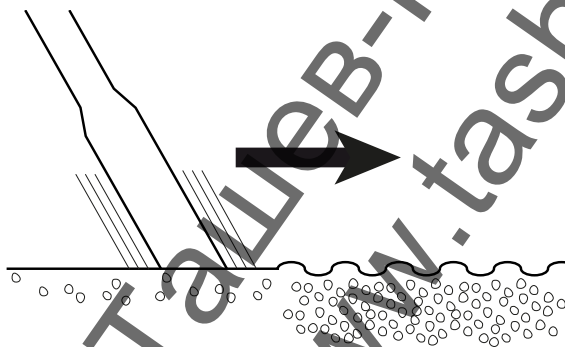
Vibrating

NOTICE Never use the poker vibrator to move the concrete sideways.

1. Allow the vibrator to penetrate about 15 cm (6 in.) down into the nearest lower layer to ensure that the various layers merge well with each other.
2. Fill the concrete evenly in the form work in 30 - 50 cm (12 - 19 in.) layers.



3. Insert the poker vibrator vertically at a distance of 8-10 times the tube diameter between insertions.
4. Vibrate systematically.
5. Slowly withdraw the vibrator to allow the concrete to refill the cavity left by the vibrator.
6. The concrete is thoroughly vibrated when the area around the vibrator turns shiny and no air bubbles rise to the surface. This will normally take about 10-20 seconds.



When taking a break

- ◆ During all breaks you must place the machine in such a way that there is no risk for it to be unintentionally started. Make sure to place the machine on the ground, so that it can not fall.
- ◆ Switch off the power supply in the event of a longer break or when leaving the workplace.

Maintenance

Regular maintenance is a basic requirement for the continued safe and efficient use of the machine. Follow the maintenance instructions carefully.

- ◆ Before starting maintenance on the machine, clean it in order to avoid exposure to hazardous substances. See “Dust and fume hazards”
- ◆ Use only authorised parts. Any damage or malfunction caused by the use of unauthorised parts is not covered by warranty or product liability.
- ◆ When cleaning mechanical parts with solvent, comply with appropriate health and safety regulations and ensure there is satisfactory ventilation.
- ◆ For major service of the machine, contact the nearest authorised workshop.
- ◆ After each service, check that the machine's vibration level is normal. If not, contact the nearest authorised workshop.

The Vibrastar is maintenance free, except for cleaning. The converter case must be clean to get the best cooling effect.

NOTICE The unit contains components which have dangerously high voltages. Wait 2 minutes before any dismantling is performed.

NOTICE Never use high-pressure water to clean the drive unit.

Tripping of residual current device (RCD):

1. Inspect cable and plug, replace any damaged or defective parts.
2. If the problem remains, replace the converter.

Problem with the converter:

1. Press the switch to stop the converter.
2. Wait 30 seconds.
3. Press the switch to start the converter. If the converter started again, it was overloaded due to a defective mechanical part or the poker got stuck in the steel reinforcement.

If any problem (overheating, shock, etc.), check the amp consumption of the poker using a TRMS multimeter. The consumption of the poker should be less than the value stated in the table.

Vibrating element	Max consuption, A		
	Vibrastar40	Vibrastar50	Vibrastar60
Stator tube	3.7*	7.3*	8.5*

* When the poker is raised out of the concrete.

Vibrator wear

The end cap and stator tube must be changed if the diameter is below the values stated in the table.

Vibrator	External Ø mm (in.)	
	End cap wear	Stator tube wear
Vibrastar40	37 (1.45)	37.5 (1.47)
Vibrastar50	45 (1.77)	45.5 (1.79)
Vibrastar60	55 (2.16)	55.5 (2.18)

Disassemble the vibrating head

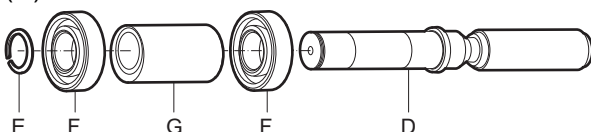
1. Put the vibrating element in a tube vice and clamp it.
2. Cut the clamp off the operating hose.
3. Pull the hose to remove it from the nipple.
4. Slide the rubber hose protection from the terminals.
5. Cut the thermal insulation and disconnect the terminals.

Disassemble the vibrating element

1. Unscrew the end cap (A) from the stator tube (C)(right hand tread). The stator is glued inside the tube. We recommend that the stator tube is replaced.



2. Use rotor extractors to remove the complete rotor (B) from the stator tube.
3. When the complete rotor (B) have been extracted it is easy to remove the retaining rings (E), the bearings (F) and the eccentrics (G) from the rotor (D).



NOTICE Do not grease the inner shafts too extensively. Greasing too much can cause overload of the electric drive unit and trip the circuit breaker. Run the unit for two minutes continuously to distribute the grease in the flexible shaft before immersion in the concrete.

Storage

- ◆ Clean the machine properly before storage, in order to avoid hazardous substances. See section "Dust and fume hazard".
- ◆ Always store the machine in a dry place.
- ◆ Keep the machine in a safe place, out of the reach of children and locked up.

Disposal

A used machine must be treated and disposed in such way that the greatest possible portion of the material can be recycled and any negative influence on the environment is kept as low as possible, and in accordance with local restrictions.

Always send used filters and drained oil remnants to environmentally correct disposal.



The electronic and electrical devices may contain potentially hazardous substances. Do not dispose of them in the nature. Dispose them according to local laws and regulations for the country of use. According to the European directives 2002/95/CE and 2002/96/CE.

Troubleshooting

Problem	Cause	Inspection	Solution
The internal vibrator does not start.	The converter or generator is not started.	-	Start the generator or the converter.
	No power in the outlet.	Check the voltage of each phase in the outlet.	Replace or repair the outlet.
	The wires inside the hose are damaged.	Check the resistance of the complete vibrator.	Replace the damaged wires.
	The wires inside the vibrating head are damaged.	Check the resistance in the vibrating head.	leave the vibrating head at an authorized Atlas Copco workshop for repair.
	The converter stops when turning on the poker. The converter is overloaded.	Check that the information on the data plate on the poker corresponds with the converter.	Make sure that there is enough power to both the converter and poker.
	The converter stops when turning on the poker. The vibrating head motor is defect.	Check the earth insulation of the vibrating head.	Change the stator tube if necessary.
	The control switch is broken.	Check the resistance of the complete vibrator when turned on and off.	Replace the switch.
The internal vibrator stops after a while.	Overheated vibrator head. Vibration time outside the concrete too long.	-	Let the vibrator head cool down outside the concrete. The vibrating head should not be operated outside the concrete for a long time.
	Overheated vibrator head. The vibrating head has been overloaded inside the concrete framework.	-	Let the vibrator head cool down outside the concrete. Overloading is prevented by using an internal vibrator diameter adapted to the space between the steel frames.
	Too high power consumption (ampere). Too low input voltage.	Check the input voltage of the converter.	Use an adapted extension cord. Change the converter type.
	Too high power consumption (ampere). The vibrating head motor is defect.	Check the earth insulation of the vibrating head.	Change the stator tube if necessary.
	Too high power consumption (ampere). The vibrating head motor is defect.	Check that the information on the data plate on the poker corresponds with the converter.	Make sure that there is enough power to both the converter and poker.
	Too high power consumption (ampere). The bearings in the vibrator are worn.	Measure the power consumption in amperes when using the poker outside of the concrete.	Dismantle the vibrating head and replace the bearings.
Too low speed of the internal vibrator.	The generator or converter is overloaded.	Check that the information on the data plate on the poker corresponds with the converter or generator.	Make sure that there is enough power to both the converter and poker.
	The poker runs on two phases instead of three. One of the wires is broken in the hose or switchbox.	Check the resistance of the complete vibrator.	Control and replace.
	The poker runs on two phases instead of three. One of the pins in the socket or plug is burned due to sparks.	Check visually for damages.	Replace the socket or the plug.
	Use of a 60 Hz converter in a 50 Hz network.	Check the data plate on the converter.	Use an adapted converter.

Technical data

Machine data Vibrastar40-60

	Vibrastar40	Vibrastar50	Vibrastar60
Voltage, (V)	42	42	42
Phases	3	3	3
Frequency, (Hz)	200	200	200
Power, (W)	200	440	640
Amperage, (A) 42V	4.0	8.0	11.0
Speed, r.p.m.	12,000	12,000	12,000
Centrifugal force (no load)	1,200	2,100	3,200
Double amplitude, mm (in.)	0.84 0.0330	0.86 0.0338	0.78 0.0307
Acceleration, gram (oz)	67 2.36	69 2.43	64 2.25
Weighted effective acceleration uncertainty (K) m/s ²	1.80*	3.28**	3.23**
Uncertainty (K)	0.36	0.38	0.52

* Weighted effective acceleration measured in water powered with one CF11M, according to EN ISO 5349 and EN ISO 20643.

** Weighted effective acceleration measured in water powered with one CF67T, at the handle (m/s²), according to EN ISO 5349 and EN ISO 20643.

Weights and dimensions Vibrastar40-60

	Vibrastar40	Vibrastar50	Vibrastar60
Diameter, mm (in.)	40 (1.57)	50 (1.96)	60 (2.36)
Length, mm (in.)	255 (10.03)	284 (11.18)	330 (12.99)
Weight of vibrator head, kg (Lb)	1.84 (4.05)	3.06 (6.74)	5.10 (11.24)
Total weight, kg (Lb)	8.4 (18.51)	13.0 (28.66)	15 (33.06)
Length of protective hose, m (ft)	5 (16.4)	5 (16.4)	5 (16.4)
Cable length, m (ft)	10 (32.8)	10 (32.8)	10 (32.8)

Noise and vibration declaration statement

Guaranteed sound power level **L_{wa}** according to EN ISO 3744 in accordance with directive 2000/14/EC.

Sound pressure level **L_{pa}** according to EN ISO 11203.

Vibration value determined according to EN ISO 20643, EN ISO 5349-2. See table "Noise and vibration data" for the values etc.

These declared values were obtained by laboratory type testing in accordance with the stated directive or standards and are suitable for comparison with the declared values of other machines tested in accordance with the same directive or standards. These declared values are not suitable for use in risk assessments and values measured in individual work places may be higher. The actual exposure values and risk of harm experienced by an individual user are unique and depend upon the way the user works, in what material the machine is used, as well as upon the exposure time and the physical condition of the user, and the condition of the machine.

We, Atlas Copco Construction Tools AB, cannot be held liable for the consequences of using the declared values, instead of values reflecting the actual exposure, in an individual risk assessment in a work place situation over which we have no control.

This machine may cause hand-arm vibration syndrome if its use is not adequately managed. An EU guide to managing hand-arm vibration can be found at <http://www.humanvibration.com/humanvibration/EU/VIBGUIDE.html>

We recommend a programme of health surveillance to detect early symptoms which may relate to vibration exposure, so that management procedures can be modified to help prevent future impairment.

Noise data

		Noise	
		Declared values	
		Sound pressure	
		EN ISO 3744*	
Type	LpA	LWA	
Vibrastar40	75	-	
Vibrastar50	76	-	
Vibrastar60	84	95	

*Noise level measured in air powered with one CF25M, at 1 meter from the poker dB(A), according to EN ISO 3744. Uncertainty: ± 3 dB.

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EC Declaration of Conformity

EC Declaration of Conformity

We, Atlas Copco Construction Tools AB, hereby declare that the machines listed below conform to the provisions of EC Directive 2006/42/EC (Machinery Directive), 2006/95/EC (Low voltage), 2004/108/EC (EMC) and the harmonised standards mentioned below.

Type	Power (W)	Speed at full load (min-1)	Weight(kg)
Vibrastar40	200	12,000	8.4
Vibrastar50	440	12,000	13.0
Vibrastar60	660	12,000	15.0

Following harmonised standards were applied:

- ◆ EN 607451-1
- ◆ EN 60745-2-12
- ◆ EN 12649

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