

OPERATION MANUAL



Mikasa

MODEL UM SERIES HANDHELD VIBRATOR

Revision #0 (06/29/20)

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THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

PROPOSITION 65 WARNING



SILICOSIS/RESPIRATORY WARNINGS

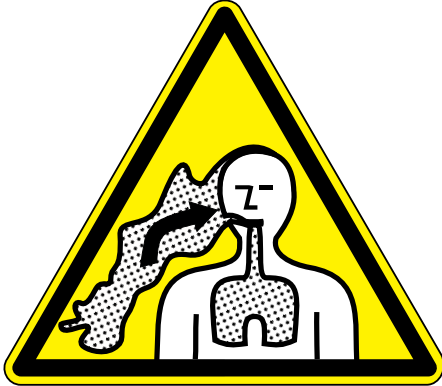
⚠ WARNING



SILICOSIS WARNING

Grinding/cutting/drilling of masonry, concrete, metal and other materials with silica in their composition may give off dust or mists containing crystalline silica. Silica is a basic component of sand, quartz, brick clay, granite and numerous other minerals and rocks. Repeated and/or substantial inhalation of airborne crystalline silica can cause serious or fatal respiratory diseases, including silicosis. In addition, California and some other authorities have listed respirable crystalline silica as a substance known to cause cancer. When cutting such materials, always follow the respiratory precautions mentioned above.

⚠ WARNING



RESPIRATORY HAZARDS

Grinding/cutting/drilling of masonry, concrete, metal and other materials can generate dust, mists and fumes containing chemicals known to cause serious or fatal injury or illness, such as respiratory disease, cancer, birth defects or other reproductive harm. If you are unfamiliar with the risks associated with the particular process and/or material being cut or the composition of the tool being used, review the material safety data sheet and/or consult your employer, the material manufacturer/supplier, governmental agencies such as OSHA and NIOSH and other sources on hazardous materials. California and some other authorities, for instance, have published lists of substances known to cause cancer, reproductive toxicity, or other harmful effects.

Control dust, mist and fumes at the source where possible. In this regard use good work practices and follow the recommendations of the manufacturers or suppliers, OSHA/NIOSH, and occupational and trade associations. Water should be used for dust suppression when wet cutting is feasible. When the hazards from inhalation of dust, mists and fumes cannot be eliminated, the operator and any bystanders should always wear a respirator approved by NIOSH/MSHA for the materials being used.

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NOTICE

Specifications and part numbers are subject to change without notice.

SAFETY INFORMATION

DO NOT operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.



SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER, WARNING, CAUTION** or **NOTICE**.

SAFETY SYMBOLS

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**.

NOTICE

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Burn hazards
	Electric shock hazards

PERSONAL SAFETY

CAUTION

- Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.



- Use personal protective equipment. Always wear eye protection. Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries..



- Prevent unintentional starting. Ensure the switch is in the off position before connecting to power source, picking up or carrying the tool. Carrying power tools with your finger on the switch or energizing power tools that have the switch on can cause accidents.
- Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- DO NOT** overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
- Dress properly. Do not wear loose clothing or jewelry. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.
- If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of dust collection can reduce dust-related hazards.

SAFETY INFORMATION

GENERAL POWER TOOL SAFETY WARNINGS

WARNING

- Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.
- Save all warnings and instructions for future reference.



NOTICE

- The term "power tool" in the warnings refers to your mains-operated (corded) power tool.

WORK AREA SAFETY

NOTICE

- Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- **DO NOT** operate power tools in **explosive atmospheres**, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes.
- Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.
- **ALWAYS** clear the work area of any debris, tools, etc. that would constitute a hazard while the equipment is in operation.
- No one other than the operator is to be in the working area when the equipment is in operation.
- **DO NOT** use the equipment for any purpose other than its intended purpose or application.
- This equipment should only be operated by trained and qualified personnel, 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.

- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest **fire extinguisher**.
- **ALWAYS** know the location of the nearest **first aid kit**.
- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor and fire department**. This information will be invaluable in the case of an emergency.



MOTOR AND FLEXSHAFT SAFETY

DANGER

- **ALWAYS** wear rubber insulated gloves and boots when holding the flexshaft during operation. The possibility of electrocution exists causing equipment damage and severe bodily harm even death!

DANGER

- If applicable, periodically check insulation resistance. The possibility of electrocution exists causing equipment damage and severe bodily harm even death!

WARNING

- **NEVER** attempt to run the core outside the casing assembly for any reason.

CAUTION

- **DO NOT** carry plugged-in motor with finger on the switch.
- **NEVER** carry the motor by the cord. Use the carrying handle.
- **ALWAYS** check the vibrator motor for loosened hardware such as nuts and bolts before starting.
- Keep the cord from heat, oil, and sharp objects.
- **DO NOT** overload the motor. It will do a better and safer job at the rate for which it was designed.

SAFETY INFORMATION

- **DO NOT** expose vibrator motor to rain.
- **DO NOT** use vibrator motor in damp or wet locations without proper electrical circuits.
- **DO NOT** immerse the motor part in concrete.
- **ALWAYS** keep clear of rotating or moving parts while operating the vibrator motor.
- **NEVER** leave the machine unattended while running.
- **ALWAYS** disconnect the motor from the power source when not in use, before servicing, and when changing flexible shafting and vibrator heads.
- Allow the vibrator motor to cool before servicing. Contact with hot components can cause serious burns.
- Before each use, **ALWAYS** check the motor to make certain that there are no damaged parts and that all parts function properly (such as switch, cord housing). If any damage or malfunctioning parts are found, have them repaired or replaced by an authorized service facility.



NOTICE

- Secure forms. Make sure the form work is well made and braced to withstand the stresses made by vibration.
- Keep vibrator motor clean for better and safer operation.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.
- Use only factory-authorized replacement parts.
- Store idle vibrator motor. When not in use, motor should be stored in a dry, safe storage area.

ELECTRICAL SAFETY

⚠ CAUTION

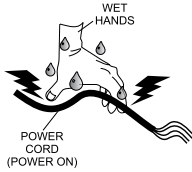
- Power tools must match the outlet. **NEVER** modify the plug in any way. **DO NOT** use any adapter plugs with earthed (grounded) power tools. Unmodified plugs and matching outlets will reduce risk of electric shock.
- Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.
- **DO NOT** expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
- **DO NOT** abuse power cord. **NEVER** use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.
- When operating a power tool outdoors, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.
- This unit is double-insulated. The double-insulation between the electric-conducting part and the outside frame makes grounding unnecessary. However, if parts are replaced with wrong parts or assembled incorrectly, the vibrator may become unsafe to operate. Use only Multiquip recommended replacement parts.
- When applicable, use a protection wiring device, such as a Ground Fault Circuit Interrupter, for the protection of personnel.
- Operate electric motor only at the specified voltage indicated on the nameplate.
- **DO NOT** spray water onto electric motor.
- **DO NOT** yank the cord to disconnect it from the receptacle. Grasp the plug itself to disconnect it.
- **ALWAYS** make sure the ON/OFF switch on the electric motor is in the OFF position when not in use and before inserting the power plug into an AC receptacle.
- Before plugging the motor into a power source, **ALWAYS** remove any wrenches or other tools from the motor, shaft, and head that were used for assembly.

SAFETY INFORMATION

Power Cord/Cable Safety

DANGER

- **ALWAYS** use a grounded 3-wire extension cord that has a 3-prong grounding plug, and a 3-pole receptacle that accepts the plug on the concrete vibrator motor. **DO NOT REMOVE THE GROUNDING PIN FROM THE PLUG!**
- **NEVER** let power cords or cables **lay in water**.
- **NEVER** use **damaged** or **worn** cables or cords when connecting equipment to generator. Inspect for cuts in the insulation.
- **NEVER** grab or touch a live power cord or cable with wet hands. The possibility exists of **electrical shock, electrocution or death**.
- Make sure power cables are securely connected. Incorrect connections may cause electrical shock and damage to the vibrator motor.



CAUTION

- Ensure that cables and cords will not be tripped over.

NOTICE

- **ALWAYS** make certain that proper power or extension cord has been selected for the job.
- Use only extension cords that are intended for outdoor use and so marked.
- Use only the gauge wire and length of cord recommended for the motor size. If in doubt, go to the next heavier gauge. (The smaller the gauge number, the heavier the cord.)

POWER TOOL USE AND CARE

- **DO NOT** force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed.
- **DO NOT** use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.

- Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.

SERVICE

- Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.

ENVIRONMENTAL SAFETY/DECOMMISSIONING

NOTICE

- **DO NOT** pour waste or oil directly onto the ground, down a drain or into any water source.
- Contact your country's Department of Public Works or recycling agency in your area and arrange for proper disposal of any electrical components, waste or oil associated with this equipment.
- When the life-cycle of this equipment is over it is recommended that the head casing and all other metal parts be sent to a recycling center.



SPECIFICATIONS

Table 1. Vibrator Specifications

MODEL	AMPS	WATTS	AMPLITUDE IN (MM)	FREQ VPM (Hz)	MOTOR WEIGHT LBS (KG)	SHAFT/HEAD WEIGHT LBS (KG)	SET WEIGHT LBS (KG)
UM12325	3.8	280	0.015 (0.373)	12,000-15,500 (200-258)	6.6 (3)	7.7 (3.5)	14.3 (6.5)
UM12810	3.8	280	0.022 (0.563)	12,000-15,500 (200-258)	6.6 (3)	4.82 (2.2)	11.4 (5.2)
UM12815	3.8	280	0.022 (0.563)	12,000-15,500 (200-258)	6.6 (3)	6.4 (2.9)	13 (5.9)
UM12825	3.8	280	0.022 (0.563)	12,000-15,500 (200-258)	6.6 (3)	9.46 (4.3)	16.06 (7.3)
UM13225	3.8	280	0.027 (0.688)	12,000-15,500 (200-258)	6.6 (3)	9.9 (4.5)	16.5 (7.5)
UM13810	3.8	280	0.030 (0.770)	12,000-15,500 (200-258)	6.6 (3)	5.94 (2.7)	12.54 (5.7)
UM13815	3.8	280	0.030 (0.770)	12,000-15,500 (200-258)	6.6 (3)	7.5 (3.4)	14.11 (6.4)
UM13825	3.8	280	0.030 (0.770)	12,000-15,500 (200-258)	6.6 (3)	10.56 (4.8)	17.16 (7.8)

DIMENSIONS

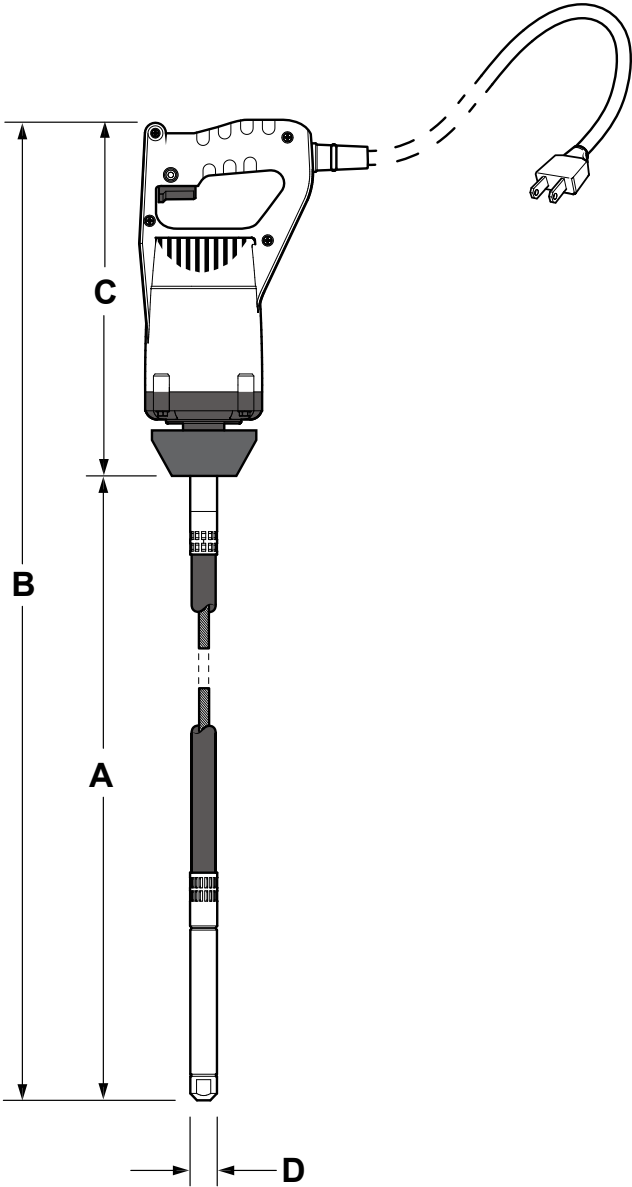


Table 2. Vibrator Dimensions				
MODEL	A SHAFT LENGTH FT (M)	B OVERALL LENGTH FT (M)	C MOTOR LENGTH FT (M)	D HEAD DIAMETER IN (MM)
UM12325	8.2 (2.5)	9.6 (2.9)	1.4 (0.4)	0.9 (23)
UM12810	3.2 (1.0)	4.6 (1.4)	1.4 (0.4)	1.1 (28)
UM12815	4.9 (1.5)	6.3 (1.9)	1.4 (0.4)	1.1 (28)
UM12825	8.2 (2.5)	9.6 (2.9)	1.4 (0.4)	1.1 (28)
UM13225	8.2 (2.5)	9.6 (2.9)	1.4 (0.4)	1.25 (32)
UM13810	3.2 (1.0)	4.6 (1.4)	1.4 (0.4)	1.5 (38)
UM13815	4.9 (1.5)	6.3 (1.9)	1.4 (0.4)	1.5 (38)
UM13825	8.2 (2.5)	9.6 (2.9)	1.4 (0.4)	1.5 (38)

Figure 1. Vibrator Dimensions

GENERAL INFORMATION

The UM series handheld vibrators are ideal for short pours, walls, footings, and provide exceptional power in a lightweight, user friendly package.

Multiquip offers a selection of complete motor/head/shaft combinations to meet all your requirements. Choose from 0.9 (23 mm) to 1.5 inch (38 mm) steel vibrator heads and shaft options of 3.2 feet (1 meter), 4.9 feet (1.5 meters) or 8.2 feet (2.5 meters) long.

Vibration-dampening handle grip reduces operator fatigue.

Original cord protector gives flexibility to input cord for longer cord life.

A vibrating steel head is attached to one end of the flexshaft. This head generates vibration via an eccentric rotator that consolidates the concrete by removing air pockets. The round head design allows for the transmission of vibration in all directions.

Tips

- Keep the bending radius of the flexible hose to a minimum during use.
- Avoid starting the unit with the vibrator head immersed in the concrete mix. Turn on the power before immersing the vibrator head into concrete mix.
- Excessive wear to the vibrating head can result from misuse. **DO NOT** allow the head to vibrate against already hardened concrete or steel used for reinforcement.
- **NEVER** drop or knock the vibrator head against any hard objects. This can damage the eccentric end bell assembly or bearings contained within the head.
- **ALWAYS** rinse or wipe off any wet concrete before it dries or hardens on any part of the unit.

WARNING

Before operating this vibrator, the operator must **read** and **understand** the contents of the operation manual. Failure to read this manual may result in severe bodily harm and damage to the equipment.



Vibrator Theory

The purpose of this vibrator is to **consolidate** concrete by removing air pockets and voids.

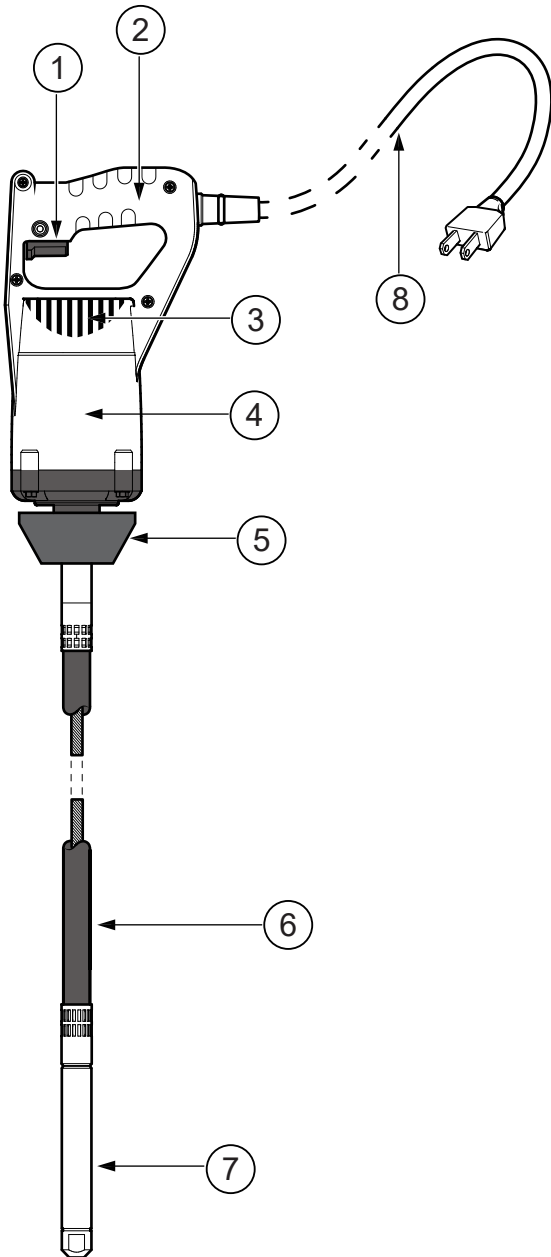
The vibrator is designed to set the particles in fresh concrete in motion, thereby reducing friction and giving the mixture a mobile quality so that gravity and the displacement of entrapped air cause the concrete to settle easily into place.

By consolidating the concrete quickly, the vibrator allows stiffer mixes to be poured than would otherwise be possible.

Vibration also makes concrete more watertight, increases resistance to weathering, and creates a better bond between concrete and reinforcement.

Because vibration causes much of the entrapped air in concrete to rise to the surface, honeycombing is prevented. Vibration also eliminates most air pockets between the concrete and vertical forms.

COMPONENTS



1. **ON/OFF Switch** — Turns power on when pressed and off when released.
2. **Handle** — Grip the handle when moving the vibrator.
3. **Air Intake** — Air comes in and suctioned by the fan to cool the motor, then discharged at the rear of the motor.
4. **Motor** — Uses a 120V motor.
5. **Lock Nut** — Secures flexible shaft to the motor.
6. **Flexible Shaft** — Transmits rotary motion from the motor to the head.
7. **Vibrator Head** — Generates vibration via an eccentric rotator that consolidates the concrete by removing air pockets.
8. **Power Cord** — Connects to the power source (120V). Make sure to connect to the appropriate power source.

Figure 2. Vibrator Components

OPERATION

1. Connect the vibrator to the proper power source.
2. If an extension cord is necessary, refer to Table 3 for the correct type of extension cord to use.

Table 3. Extension Cord Types

Current in Amperes	Load in Watts		Maximum Allowable Cable Length			
	At 100 Volts	At 200 Volts	#10 Wire	#12 Wire	#14 Wire	#16 Wire
2.5	300	600	1000 ft.	600 ft.	375 ft.	250 ft.
5	600	1200	500 ft.	300 ft.	200 ft.	125 ft.
7.5	900	1800	350 ft.	200 ft.	125 ft.	100 ft.
10	1200	2400	250 ft.	150 ft.	100 ft.	
15	1800	3600	150 ft.	100 ft.	65 ft.	
20	2400	4800	125 ft.	75 ft.	50 ft.	

3. Hold vibrator head above concrete pour when starting drive motor. This will prevent the vibrator head from bouncing on hard surfaces which could damage the bearings.
4. Push the ON/OFF switch to the ON position then immerse into the surface. Do not run the motor outside of the surface for long periods.

NOTICE

When the ambient temperature is low, warm up the motor for 2 to 3 minutes before use..

NOTICE

The rated time of the motor is 30 minutes. The rated time is the time that can be used at the rated output. Use within the rated time, and be sure to rest for the same amount of time (or longer) as the usage time.

5. Keep flexshaft (Figure 3) straight as possible when operating. Sharp bends increase the load on the core and drive motor, which will result in early core failure and possible damage to the drive motor.

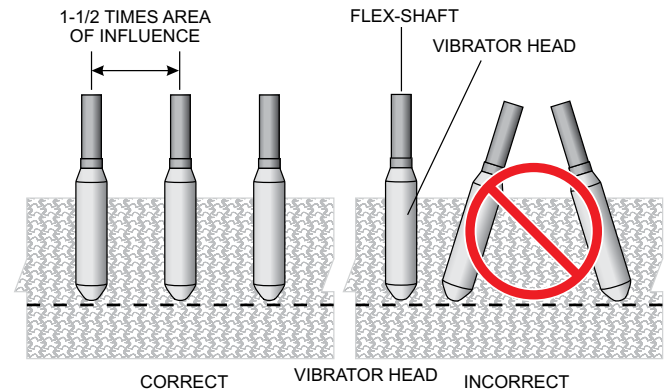


Figure 3. Vibrator Head Insertion

6. Completely immerse the vibrator head quickly into the concrete mix at a vertical rate of about one foot per second (0.3 meters/second). Vibrate concrete for about 5 to 15 seconds for wet mixes. For stiff mixes vibrate 2-3 minutes.
7. Stop vibration of concrete mix when concrete has a level, glossy surface and there are no breaking air bubbles.
8. Slowly lift the head out of the mix using an up and down movement. This slight up and down movement will close the hole formed by the vibrator.
9. When lifting the head out of the concrete, withdraw slowly at a rate of about 3 sec./ft. Using this technique will avoid the re-trapping of air.
10. When near the top of the mix, withdraw the vibrator quickly.
11. Reinsert vibrator into mix according to the "area of influence" See Figure 3. Establish a symmetrical overlapping pattern for inserting and removing the vibrator head.
12. If concrete is poured in layers, allow vibrator to pass within 3 to 6 inches (76 to 152 mm.) into next layer to ensure the knitting of the two layers. The complete bonding of layers will prevent "lift lines" when forms are removed.

NOTICE

DO NOT use vibrator to move concrete laterally. This will cause segregation of the concrete. Use a shovel or similar device to spread the concrete.

INSPECTION

NOTICE

Always turn off the switch and unplug from the power outlet before starting check or maintenance work.

1. Visually inspect the motor daily before use for defective or missing parts, and have repairs made before use.
2. Regularly check for loose bolts. If loose bolts are found, tighten securely.
3. Remove the mortar that has adhered at the air vent (cap). If the air vent is clogged, overheating occurs, which might result in burnout.

FLEXIBLE SHAFT AND BEARING GREASE CHECK

1. After each operation of about 100 hours, cleanly wipe off the grease on the flexible shaft and bearing, then apply new grease evenly on the entire surface of the shaft.
2. Pull out the rotor from the vibrating case, then wash the inside of the case and the bearing of the rotor, thoroughly.
3. When a new bearing is used, fill it sufficiently with grease. Do not put grease inside the case.
4. Use heat-resistant grease that will not deteriorate by change in temperature. For vibrator repair, please contact your distributor.

NOTICE

This product complies with the applicable safety requirements. Do not try to make alterations.

CAUTION

If repair is done by someone without proper knowledge and skill, it might result in the machine performance being compromised, and may cause a risk of accident or injury.

CARBON BRUSH CHECK

1. If you notice a drop in motor revolution or decrease of the force, remove the back cover of the motor to check the wear of carbon brush.
2. The carbon brush should be replaced with a new one when its remaining length is less than 5 mm (length of new brush is 12 mm). See Figure 4.

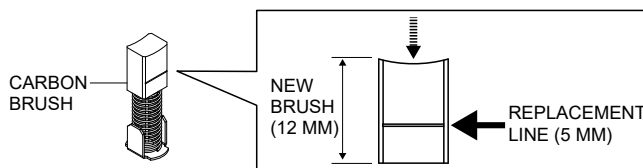


Figure 4. Checking Carbon Brush

3. Contact your distributor if you need to replace a carbon brush.

TROUBLESHOOTING

Table 4. Troubleshooting (Drive Motor)

Symptom	Possible Problem	Solution
Motor Does Not Start	No power to motor?	Verify unit is plugged to proper outlet. Verify extension cords are properly plugged in and are not cut or pinched. Verify power is available at outlet. Check main switch or breaker.
	Defective ON/OFF switch?	Replace switch.
Rattling Noise From Rear Of Housing Area	Rear bearing failure?	Replace bearing.
Rattling Noise From Shaft End	Worn coupler?	Disconnect coupler and turn motor on. If noise goes away, replace coupler. If noise remains, check forward bearing.
	Forward bearing failure?	Replace bearing.

Table 5. Troubleshooting (Vibrator)

Symptom	Possible Problem	Solution
Shaft Binding	Shaft kinked?	Straighten out shaft.
	Defective shaft?	Replace shaft/head.
Leaking Vibrator Head	Too much oil in head casing?	Fill head casing to recommended level.
	Head bearings/seals defective?	Replace shaft/head.

OPERATION MANUAL

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL
NUMBER ON-HAND WHEN CALLING

UNITED STATES

Multiquip Inc.

(310) 537- 3700
6141 Katella Avenue Suite 200
Cypress, CA 90630
E-MAIL: mq@multiquip.com
WEBSITE: www.multiquip.com

CANADA

Multiquip

(450) 625-2244
4110 Industriel Boul.
Laval, Quebec, Canada H7L 6V3
E-MAIL: infocanada@multiquip.com

UNITED KINGDOM

Multiquip (UK) Limited Head Office

0161 339 2223
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Dukinfield, Cheshire SK16 4UJ
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