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1 INTRODUCTION

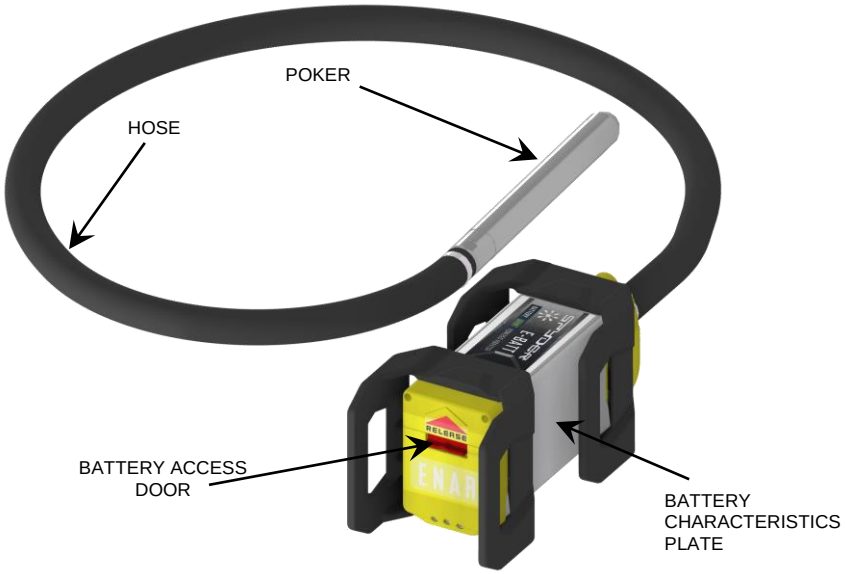
Thank you for trusting the **ENAR** brand.
For the maximum performance of the equipment, we recommend to read carefully the safety recommendations, maintenance, and usage listed in this manual.
Defective parts must be replaced immediately to avoid major problems.
The effective longevity of the equipment will increase if the manual instructions are followed.
We will be glad to help you with any comments or suggestions in reference to our equipment.

2 CHARACTERISTICS

- TYPE OF DEVICE:
  It is a high-frecuency electronic converter powered by a Li-Ion battery.
- FUNCTION
  Compacting of concrete.
- TYPE OF BATTERY
  Detachable 7Ah 57,6V Li-ion type.
- HOUSING
  Aluminium and polyamide housing that protects the electronic board and the battery from external agents. Handles with rubber reinforcement to absorb impacts.

2.1 CHARACTERISTICS OF THE FREQUENCY CONVERTER

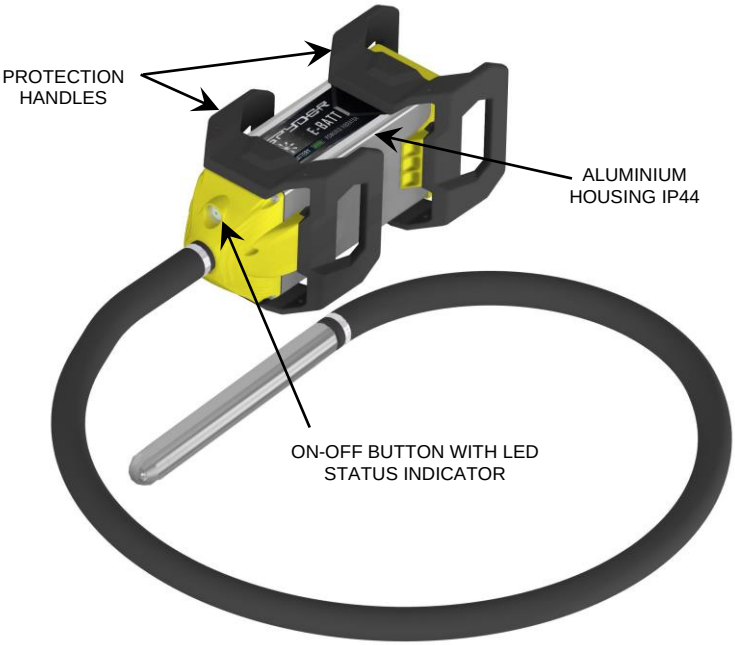
MODEL: SPYDER E-BATT



MODEL	DIMENSIONS [mm]			Weight Kg	Battery life using pokers ENAR*		
	Length	Width	Height		M38	M5	M6
SPYDER E-BATT	439	177	187	7,5	58 min	47 min	26 min

* The battery life is indicative, it may vary depending on the type of concrete, temperature and work cycle.

BATTERY CHARACTERISTICS					
MODEL	Capacity (Ah)	Nominal Voltage V	Wh	Weight (Kg)	Charging time (h)
B450	7	57,6	391	2,5	1,5



MODELO MODEL **MODELE** MODELL **MODELO**	**Intensidad (Potencia)** Consump. (Power) **Intensité (Puissance)** Stromstärke (Leistung) **Intensidade (potência)**	**v.p.m**	**Fuerza centrífuga** Force output **Force centrifuge** Fliehkraft **Força centrífuga**	**Capacidad de vibrado** Compacting capacity **Capacité de vibration** Vibrationsleistung **Capacidade vibratória**	**Aceleración** Acceleration **Accélération** Beschleunigung **Aceleração** (m/s^2) *
SPYDER E-BATT M38	8 (580W)	12.000	175	$20m^3/h$	1,73
SPYDER E-BATT M5	10,5 (850W)	12.000	375	$30m^3/h$	2,34
SPYDER E-BATT M6	15 (1000W)	12.000	575	$35m^3/h$	1,99

*According to ISO5349, hanging the hose at 2m. of the poker and working unloaded the poker. Uncertainty K=0,5 m/s^2 .

**Test done without load at 1,5 m from the poker acc. to EN-ISO ñ3744. K=2 B

*** For an effective compaction, use the converter with enough power for the power of the poker.

MODELO MODEL **MODELE** MODELL **MODELO**	**Peso** Weight **Poids** Gewicht **Peso** (Kg)	**Diametro** Diameter **Diametre** Durchmesser **Diâmetro** (mm)	**Longitud** Length **Longueur** Länge **Comprimento** (mm)	**Tensión-Frecuencia** Voltage-Frecuency **Tension-Frequence** Spannnug-Frequenz **Tensão-Frequência**	**Presión acústica** Sound pressure **Acoust. Pressure** Schalldruckpegel **Pressão acústica** (dB A) **	**Potencia Acust.** Sound Power **Acoust. Puissance** Schallmachtpegel **Potência acústica** (dB A) **
SPYDER E-BATT M38	13,8	38	370	200Hz- 42v 3~	74,5	81
SPYDER E-BATT M5	17,9	50	365	200Hz- 42v 3~	77	83,5
SPYDER E-BATT M6	19,9	58	403	200Hz- 42v 3~	78,5	85

All the pokers include thermal protection motor.
All the tubes and caps are hardened to protect from hits.

2.2 BATTERY DESCRIPTION

The rechargeable Li-Ion battery is removable, ENAR code 81100. It is mounted inside the casing which protects it against shocks and humidity.

To remove the battery from the converter, press the red pusher upwards. This opens the door, then pull out the handle on the battery.

2.3 CHARGER DESCRIPTION

The SPYDER E-BATT charger has a connector for the battery and a cable with a plug that connects the charger to the mains.

It includes a LED indicator by which the user can check the state ot the charge, red when charging and green when the battery is fully charged.

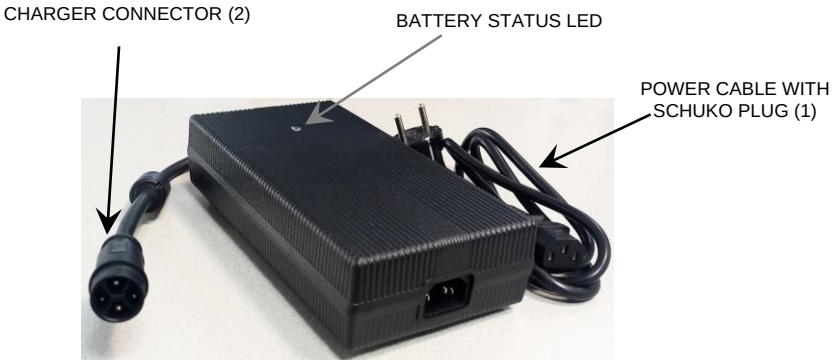
The charger can be used from 100V to 240V. Use the appropriate plug for the available socket of the mains.

Insert the charger connector completely into the battery.

The battery charge is 67,2V and 4Ah. If the battery is fully discharged, it takes 1 hour and 30 minutes to fully charge.

Use only indoors, do not expose the charger to humidity.

ATTENTION! Use only the charger 104519.



WARNING! If the converter is not going to be used, charge the battery every 3 months.

3 USAGE CONDITIONS

WARNING! Read all safety warnings, instructions, illustrations, and specifications supplied with this power tool. *Failure to observe all of the instructions listed below can result in electric shock, fire, and / or serious injury.*

Save all warnings and instructions for future reference.

3.1 WORK AREA SAFETY

a) Keep work area clean and well lit. Cluttered and dark areas invite accidents.

b) Do not operate power tools in environments with explosive materials such as flammable liquids and gases. Power tools create sparks which may ignite the liquid or fumes.

c) Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.

3.2 ELECTRICAL SAFETY

a) Power tool plugs 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.

b) Avoid body contact with earthed or grounded surfaces such as pipes, radiators, oven ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.

c) Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.

d) Do not abuse the 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.

e) 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.

f) If operating a power tools in a damp location is unavoidable, use a residual current device (RCD) protected supply. Use of an RCD reduces the risk of electric shock.

3.3 PERSONAL SAFETY

a) 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 lapse in concentration while operating power tools may result in serious personal injury.

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

c) Avoid accidental starting. Ensure the switch is in the off position before plugging in. Carrying power tools with your finger on the switch or plugging in power tools that have the switch on invites accidents.

d) 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.

e) Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.

f) **Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts**. Loose clothes, jewellery or long hair can be caught in moving parts.

g) **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used**. Use of these devices can reduce dust related hazards.

h) **Do not let the confidence gained from the frequent use of tools make you ignore general safety principles.** Careless action can cause a serious injury in a fraction of a second.

3.4 USE OF POWER TOOL

a) **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.

b) **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

c) **Disconnect the plug from the power source before making any adjustments, changing accessories, or storing power tools**. Such preventive safety measures reduce the risk of starting the power tool accidentally.

d) **Store power tools out of the reach of children and do not allow people unfamiliar with the power tool or these instructions to operate the power tool**. Power tools are dangerous in the hands of untrained users.

e) **Look after your power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tools operation. If damaged, have the power tool repaired before use**. Many accidents are caused by poorly maintained power tools.

f) **Keep cutting tools sharp and clean**. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.

g) **Use the power tool, accessories and tool bits etc., in accordance with these instructions and in the manner intended for the particular type of power tool, taking into account the working conditions and the work to be performed**. Use of the power tool for operations different from intended could result in a hazardous situation.

h) **Keep the handles and surfaces free dry, clean and grip of oil and grease.** Slippery handles and gripping surfaces do not allow secure grip and control of the tool in unforeseen situations.

3.5 BATTERY TOOL USE AND CARE

a) **Recharge only with the charger specified by the manufacturer.** A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.

b) **Use power tools only with specifically designated battery packs**. Use of any other battery packs may create a risk of injury and fire.

c) **When battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects, that can make a connection from one terminal to another.** Shorting the battery terminals together may cause burns or a fire.

d) **Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help.** Liquid ejected from the battery may cause irritation or burns.

e) **Do not use a battery pack or tool that is damaged or modified.** Damaged or modified batteries may exhibit unpredictable behaviour resulting in fire, explosion or risk of injury.

f) **Do not expose a battery pack or tool to fire or excessive temperature.** Exposure to fire or temperature above 130° C (265 °F) may cause explosion.

g) Follow all charging instructions and do not charge the battery pack or tool outside the temperature range specified in the instructions. Charging improperly or at temperatures outside the specified range may damage the battery and increase the risk of fire.

3.6 SERVICE

a) 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.

b) Never service damaged battery packs. Service of battery packs should only be performed by the manufacturer or authorized service providers.

3.7 ELECTRICAL SAFETY (BATTERY 81100)

Charge the battery only with the charger 104519 supplied by ENAR.

Make a **full charge** of the battery before using it.

Do not overcharge the battery. Once the LED indicator on the charger changes its status to GREEN, unplug the connector from the charger and then, disconnect the charger from the mains.

Never subject the equipment to **impacts**.

Never open the battery, neither manipulate the connections.

Do not expose batteries to sources of heat or fire.

Operation **temperature** of the battery is between -10ºC and 45ºC.

Do not expose the battery to rain or wet conditions. Keep it clean and dry.

Clean carefully the contacts of the battery with a clean and dry cloth in case they get dirty.

Never short-circuit the battery.

If the battery is to be **stored** for long periods of time, a full recharge should be performed every 3 months.

Batteries must be **stored i**n a dry place and away from the direct sunlight.

Never store batteries in hazardous locations where they can short-circuit to each other or through other conductive materials.

Keep the battery away from children.

Keep the battery away from small metal objects that can cause a bridge connection between contacts. It may cause a short circuit and a battery fire.

3.8 ELECTRICAL SAFETY OF THE CHARGER

Use only the battery charger 104519 of ENARCO to charge the battery.

Before using the charger check the **cable** and the **plug** are in good condition.

The plug must fit the socket of the power source.

Do not abuse the cable. Never use the cord to carry, lift, or unplug the charger.

Disconnect the charger when is not in use.

Never use a damaged charger. It can cause battery failure and / or user injury from electric shock.

Never open the charger, neither manipulate the connections nor the plug.

If you detect any electrical damage to the charger, contact the technical service of **ENARCO** or an authorized dealer.

Charge only the battery of the BOXEL E-BATT by ENAR.

Do not overload the charger of the battery. Once the LED indicator on the charger changes its status to GREEN, remove the battery connector and disconnect the charger from the mains.

Do not subject the charger of the battery to **impacts**.

Do not expose battery charger to sources of heat or fire.

Charging **temperature** of the battery is between 0ºC and 45ºC.

Do not expose the battery charger to rain or wet conditions. Keep it clean and dry.

Clean carefully the contacts of the charger with a clean and dry cloth in case they get dirty.

The charger must be **stored** in a dry place and away from the direct sunlight.

Never use the charger over flammable materials or in explosive environments.

Never use the charger down the direct sunlight neither at temperatures below 0ºC.

Never force the plug of the charger, it must fit smoothly in the power point.

Never modify the charger plug or use mains adapters.

Keep the charger away from children.

Keep the power cable and the charging cable clean and avoid them to contact with oils or corrosive substances.

Keep the power cable and the charging cable away from cutting edges.

Never use the cable neither the plug to carry the charger.

3.9 SPECIFIC SAFETY RULES

For the proper use of this device, **make sure** that the operator has been correctly informed of the content of this manual before using it.

This converter **must be used only** under the applications for which it has been designed and according to these safety instructions.

Before connecting the converter to the vibrator, **make sure** that the voltage and frequency of the vibrator coincide with the ones stated in the characteristics plate of the converter.

Ensure that all converter screws are tight before starting work.

Be sure that the parts of the poker are tight before starting work (welding points).

Keep the converter clean and dry

The device does not make noise by itself. Proper protective equipment must be used when connecting a vibrating poker.

The device does not generate vibration. It must be checked the vibration level of the connected poker in the user's manual of each vibrating poker.

When finishing the job or when taking a break, the operator must switch the vibrator off and place it in a such way that should not fall or tip.

FURTHERMORE, THE OPERATOR IS COMPELLED TO RESPECT ADDITIONAL REGULATIONS ENFORCED

4 OPERATION AND MAINTENANCE

4.1 GETTING STARTED

1.- Before starting work, the correct operation of all handling and safety devices must be checked.
2.- Check that all the screws are well tightened.
3.- Check the battery charge status.
4.- Operate converter switch and carry out the work
5.- After the work is finished, clean the converter and the remains of fresh concrete adhering to it. Do not use pressurized water to clean the converter.
6.- Connect the vibrator to the converter.
7.- When a defect or a malfunction has been detected, endangering the use of this machine or not, stop the work and make the correspondent maintenance to avoid any danger or bigger damage.

4.2 CONNECTION OF THE CHARGER TO THE MAINS (CHARGER)

The charger of the converter must be connected for charging to single phase current form 100 to 240V 1Ph 50-60Hz. The plug must fit the socket of the power source.

4.3 CONNECTION CHARGER TO BATERY

First plug the charger's mains plug (1) into the mains, then plug the charger's connector (2) into the battery.

To disconnect, follow the steps in reverse order..

4.4 BATTERY CHARGE STATUS

The colour and status of the LED will change depending on the charge in the battery:

- 100 to 50% green LED ON.
- From 50 to 25% blue LED ON.
- Less than 25% flashing green-blue, green LED on 2sec. and then blue LED on 2sec.

When the battery is low, the alarm is activated, 2 blue LED flashes.

4.5 MAINTENANCE

1.- Only an expert shall work on the electrical parts.
2.- Make sure that the device is disconnected from the charger and the charger is disconnected from the mains when making a repair.
3.- Only original parts must be used in all maintenance operations.

4.- Check the plug connections every 100 hours of work.
5.- Clean periodically the housing of the converter to prevent an overheating.
6.- The safety fittings must be checked after every maintenance.
7.- Check the bolts, screws and nuts are properly tighten every 100 hours of work.
8.- **Every 12 months** or more frequently the screed must be sent to an authorized workshop for service according to the intensity of the usage.

4.6 STORAGE

1.- Always store the converter clean, in dry and protected areas, when it is not used for a long time.
2.- To prevent corrosion from occurring, store the converter in a place with relative humidity less than 80%.
3.- Store the device at a distance greater than 2.5m from other dangerous substances.
4.- Store the device separated from metal products.
5.- Store the device at a temperature between -10 and 20ºC.
6.- If the device is stored for a long time, it must be in a dry place at the specified temperature and must be fully charged every 3 months.

4.7 TRANSPORTATION

1.- During transportation, the device must be ensured against slipping, overturning and bumps.

2.- Batteries are governed by a specific standard for packaging and transport, with restrictions in some cases, especially in cases of air transport. Respect these rules depending on the means of transport used.
3.- To pack and transport the charger, do not fold the cables, roll them up without forcing them.

4.8 WASTE DISPOSAL

1.- This equipment is governed by the European directive on waste electrical and electronic equipment (WEEE) and the corresponding national laws. Disposal of the battery must be done through your dealer, the manufacturer or at the battery waste management points designated

for this purpose. The seller and the manufacturer are obliged to collect the battery and to arrange its proper recycling or disposal.

2.- The device has the crossed-out container symbol, this means that you should not use domestic containers to dispose of it. NEVER dispose of the battery as if it were household waste, it may cause serious damage to the environment

3.- Proceed to recycle the rest of the electrical and mechanical components according to the current regulations for each type of waste in your country.

4.9 MAINTENANCE OF THE VIBRATING POKERS

Check the manual for the vibrating pokers.

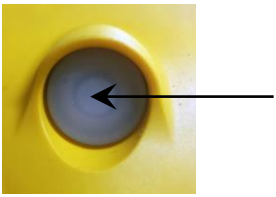
5 LOCATING MALFUNCTIONS

The device has a LED on the push button to inform about alarms.

	LED STATUS		DESCRIPTION	ACTION TO TAKE
Color LED	**TIME ON**	**TIME OFF**		
Off	0		Normal functioning. Status: Waiting	None
Green	Fixed		Normal functioning. Status: Working	None
Blue	30 ms 2 flashes	600 ms	Status: Low battery	Charge the battery
Red	200 ms	200 ms	Output overload	Excess load connected to the converter or problem with the connected vibrator.
Red	15 ms 4 flashes	600 ms	Overheating warning	Clean casing (housing). If the warning remains contact the official service.
Red	15ms 6 flashes	600 ms	Battery overvoltage	Send the device to the official service or a dealer for checking.
Red	15ms 3 flashes	600 ms	Short circuit	Defective poker. Defective converter.
Red	15ms 5 flashes	600 ms	Incorrect battery voltage	Contact technical service
WITH OPEN DOOR				
Red	600ms 3 flashes	60 sg	Status: Standby or working with the door open.	Close the door
LED status: depends on battery charge. See point 4.4, page 10			Status: running with the door open and discharged battery.	Charge battery and close door

- 1000ms = 1 second

When a failure warning occurs, press ON/OFF button to reset the alarm.



6 INSTRUCTIONS TO ORDER SPARE PARTS

6.1 INSTRUCTIONS TO ORDER SPARE PARTS

1.- Every spare parts order must include PART CODE NUMBER AS STATED IN THE PARTS LIST. We recommend including the MACHINE SERIAL NUMBER.

2.- The identification plate with serial and model number is located as shown in the point 2 of this manual.

3.- Let us to know the right shipping instructions, including the wished route, the address and the full name of the consignee.

4.- Do not return the parts without authorisation, the return is done with freight prepaid.

6.2 INSTRUCTIONS TO REQUEST WARRANTIES

1.- The warranty is valid for 1 year after the purchasing of the machine, the warranty will cover parts with manufacturing defects. The warranty will not cover any malfunction due to an improper usage of the equipment.

2.- In all warranty requests THE MACHINE MUST BE SENT TO ENARCO, S.A. or to an AUTHORIZED DEALER, always including the complete address and name of the consignee.

3.- The Technical Assistance Service will immediately notify to the customer if the warranty is accepted and, if requested, it will send a technical report.

4.- The warranty will be void if any equipment has been previously handled by personnel outside of ENARCO, S.A. or not authorized by it.

NB: ENARCO, S.A., reserves the right to modify any part of this manual without prior notice.

7 USAGE RECOMMENDATIONS

1.- Select the appropriate type of vibrator according to the dimensions of the formwork, the free space between the reinforcements and the consistency of the concrete. Consult the point how to select the vibrator. It is always recommended to have an additional vibrator in reserve.

2.- Before starting, check that the vibrator is in good condition and works properly. Use the recommended protection and security systems.

3.- Pour the concrete into the structure, preventing the concrete from falling from a great height. It should be poured into the mold or formwork more or less leveled. The thickness of each layer will be less than 50 cm, it is recommended between 30 and 50 cm.

4.- Introduce the vibrator vertically into the concrete without moving it horizontally. Do not use the vibrator to drag the concrete horizontally. The vibrator is inserted vertically at regular intervals, separated from each other by a distance of 8 to 10 times the diameter of the vibrator (check the radius of action). Look at the concrete when vibrating to determine the vibrator's field of action. The field of action of each point of vibration must overlap to avoid areas without vibrating. The poker should penetrate about 10 cm into the previous layer to ensure good adhesion between the different layers. There should not be a long time between each coat to avoid cold joints. Do not force or push the vibrator into the concrete, it could get caught in the reinforcement.

5.- The vibrating time at each point will depend on the type of concrete, the size of the vibrator and other factors. This vibrating time can range from 5 to 15 seconds. The time is shorter for fluid consistencies, in these mixtures excessive vibrating can cause segregation. An excess of vibrating could lead to disintegration. Concrete will be considered well vibrated when the surface becomes compact and shiny and air bubbles stop coming out, a change in the noise produced by the vibrator is also noticed. Many defects in structures are due to a hasty and disorderly execution of the vibrating operation.

6.- The vibrator should not be pressed against reinforcement or formwork. Keep a distance of at least 7 cm from the walls.

7.- The poker will be pulled out of the concrete slowly and in an up and down motion to allow time for the concrete to fill the hole left by the tube. The extraction speed of the vibrator should be approximately 8 cm per second. When it is practically out, remove it quickly to avoid agitation of the surface.

8.- To vibrate slabs, tilt the poker so that the surface contact with the concrete is greater.

9.- Do not keep the vibrator out of the concrete for long periods. If it doesn't continue vibrating, stop it. Do not use the vibrator to drag the concrete horizontally.

10.- Follow the maintenance instructions for the vibrator.

11.- To achieve a good concrete structure we must start from the appropriate components and perform a vibration of the concrete mass throughout the structure.