



ENARCO, S.A.

CONVERTIDORES DE FRECUENCIA Y AGUJAS

FREQUENCY CONVERTER AND POKERS

CONVERTISSEURS DE FREQUENCE ET AIGUILLES

FREQUENZUMFORMER UND RÜTTENLLANZEN

i-SPYDER



**Manual de instrucciones
Instruction manual
Manuel d'instructions
Gebrauchsanweisungen**



INDEX

1	INTRODUCTION	2
2	CHARACTERICS	3
3	USAGE CONDITIONS	7
4	OPERATION AND MAINTENANCE	9
	4.1 GETTING STARTED	9
	4.2 CONVERTER CONNECTION TO THE SYSTEM	9
	4.3 DISCONNECTING THE EQUIPMENT.	9
	4.4 EARTH CONNECTION	9
	4.5 EXTENSION CABLES	9
	4.6 INSPECTION	10
	4.7 PERIODIC MAINTENANCE	10
	4.8 STORAGE	11
	4.9 TRANSPORTATION	11
5	LOCATING MALFUNCTIONS	11
6	INSTRUCTIONS TO ORDER SPARE PARTS & REQUEST WARRANTIES	12
	6.1 INSTRUCTIONS TO ORDER SPARE PARTS	12
	6.2 INSTRUCTIONS TO REQUEST WARRANTIES	12
7	RECOMENDATIONS OF USE	13



1 INTRODUCTION

Thank you for trusting our brand ENAR.

For the maximum performance of the equipment, we recommend to read carefully the safety recommendations, maintenance, and usage listed in this manual.

Defective parts should be replaced immediately to avoid mayor problems.

The effective longevity of the equipment will increase if the manual instructions are followed.

We will glad to help you with any comments or suggestions in reference to our equipment.

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2 CHARACTERISTICS

MODEL	i-SPYDER
TYPE	Electronic frequency converter Transform the input frequency 50/60Hz to three phase frequency of 200Hz to feed the motor-in –head pokers type MB3, MB5, MB6, MB7. Class I
APPLICATION	Compacting of concrete
CONNECTION CABLE TO CONVERTER	Standard: 15 m length type H07 3x1,5mm2 shucko type (230 V) For 115 V available plug IEC and NEMA.
PROTECTION HOSE	Standard: 5m length of rubber hose. 1m (MP)
IP PROTECTION	IP 67

Model	Box Weight	Voltage / Frequency input	Voltage / Frequency output	Power
i-SPYDER 2V	3 Kg	230 V 1~ 50/60 Hz	220 V 3~ 200 Hz	1,5 kW
i-SPYDER 1V	3 Kg	115 V 1~ 50/60 Hz	110 V 3~ 200 Hz	1,5 KW

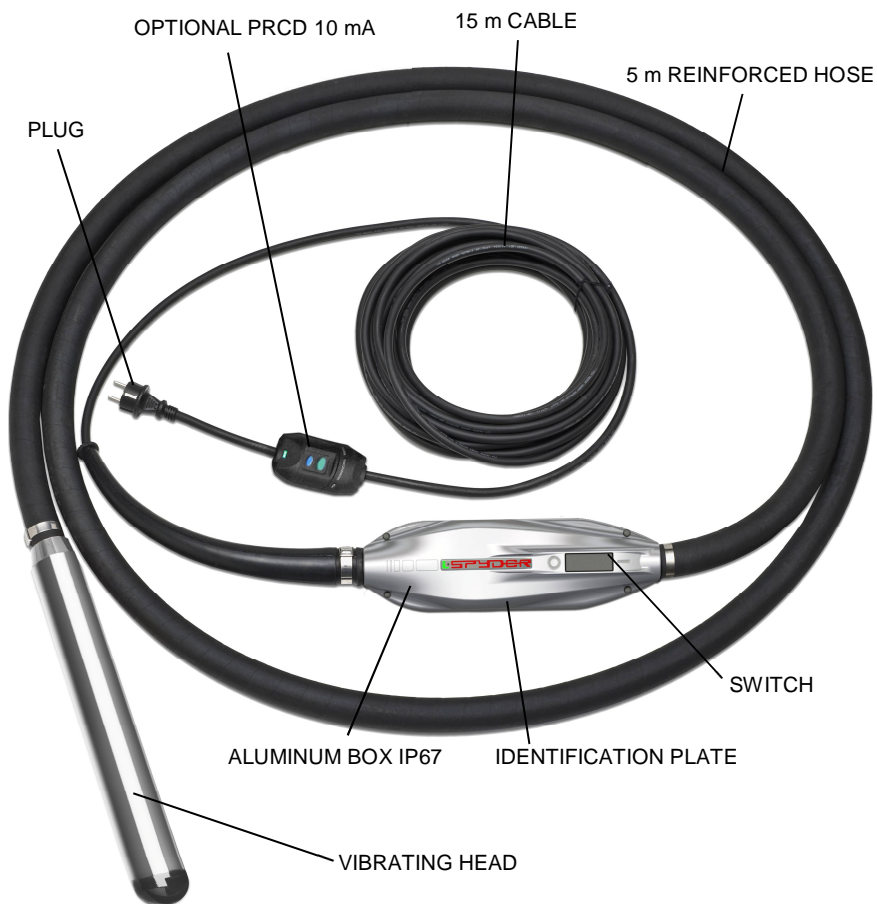
MODELO MODEL MODÈLE MODELL	Ø	Longitud Length Longueur Länge	Voltaje Voltage Tension Spannung	Potencia Power Puissance Leistung	Frecuencia de vibración Vibrations per minute Vibrations par minute Vibrieren minute	Fuerza centrífuga Centrifugal force Force centrifuge Fliehkraft	Presión acústica Acoustic pressure Pression acoustique Schalldruck
	(mm)	(mm)	V	A (W)	(vpm)	(Kp)	(dB A) **
i-SPYDER 2V 38	38	370	230 V	1,9 A (580 W)	12.000	175	74,5
i-SPYDER 2V 50	50	365	230 V	2,8 A (850 W)	12.000	375	77
i-SPYDER 2V 60	58	420	230 V	3,8 A (1000 W)	12.000	575	78,5
i-SPYDER 2V 70	65	400	230 V	4,8 A (1500 W)	12.000	720	80
i-SPYDER 1V 38	38	370	110 V	3,8 A (580 W)	12.000	175	74,5
i-SPYDER 1V 50	50	365	110 V	5,6 A (850 W)	12.000	375	77
i-SPYDER 1V 60	58	420	110 V	7,6 A (1000 W)	12.000	575	78,5

MODELO MODEL MODÈLE MODELL	Peso/Weight/Poids/Gewicht			Aceleración/Acceleration/Accélération/Beschleunigung		
	(Kg)			(m/s²) *		
	standard	Pistol	Pistol Anti vibration	standard	Pistol	Pistol Anti vibration
i-SPYDER 38	14	11	12	1,73	1,18	0,34
i-SPYDER 50	18	13	14	2,34	2,02	0,46
i-SPYDER 60	20	15	16	1,99	1,95	0,39
i-SPYDER 70	21	16	17	2,50	2,44	0,49
K				0,5	0,2	0,2
method for acceleration measure				on the hose at 2 m, vibrator on the air	on handle vibrator on the air	on handle vibrator on the air

*According to ISO5349

**Test done without load at 1,5 m from the poker acc. to EN-ISO 3744. K=2 dB

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

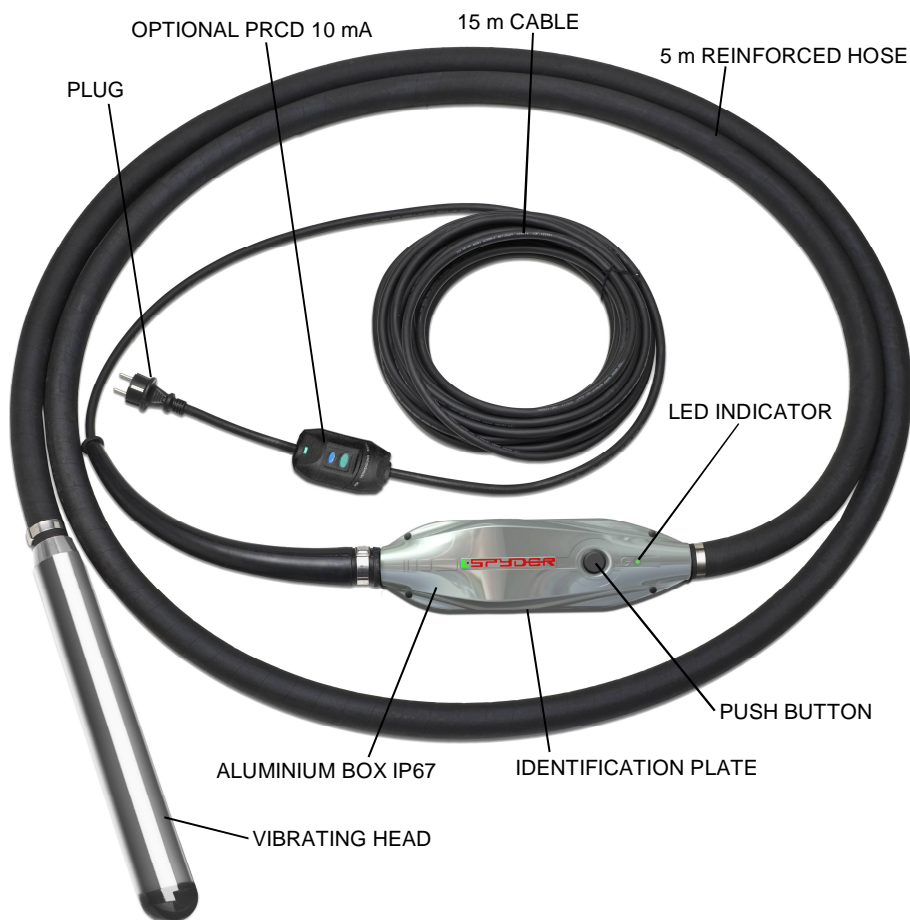


All the pokers include thermal protection motor.
All the tubes and caps are hardened to protect from hits.
Other lengths of hose and cable under enquiry

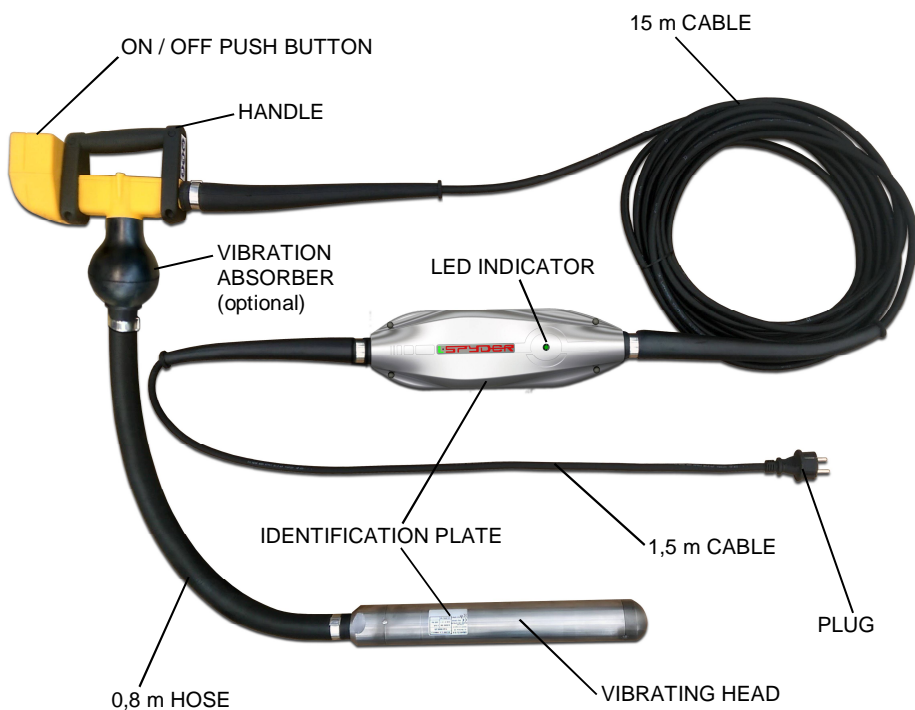
FRECUENCY CONVERTER AND POKERS

i-SPYDER

2V 38, 2V 50, 2V 60, 2V 70, 1V 38, 1V 50, 1V 60



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FRECUENCY CONVERTER AND POKERS


i-SPYDER

2V 38, 2V 50, 2V 60, 2V 70, 1V 38, 1V 50, 1V 60



3 USAGE CONDITIONS



WARNING!  Read and understand all instructions.

3.1 WORK AREA



KEEP your work area clean and well lit. Cluttered benches and dark areas invite accidents.

DO NOT OPERATE power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.

KEEP bystanders, children, and visitors away while operating a power tool. Distractions can cause you to lose control.

3.2 ELECTRICAL SAFETY

GROUNDING TOOLS MUST BE PLUGGED INTO an outlet properly installed and grounded in accordance with all codes and ordinances.

NEVER REMOVE the grounding connection or modify the plug in any way.

DO NOT USE any adapter plugs.

CHECK with a qualified electrician if you are in doubt as to whether the outlet is properly grounded.

AVOID body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators

DO NOT ABUSE the cord. NEVER USE the cord to carry the tool.

KEEP cord away from heat, oil, sharp edges or moving parts.

REPLACE damaged cords immediately. Damaged cords increase the risk of electric shock.

WHEN OPERATING a power tool outside, use an outdoor extension cord marked "W-A", "W" or "H07RN-F".

3.3 PERSONAL SAFETY



STAY ALERT, watch what you are doing and use common sense when operating a power tool.

DO NOT USE TOOL while tired or under the influence of drugs, alcohol, or medication.

DRESS PROPERLY.

DO NOT WEAR loose clothing or jewellery.

CONTAIN long hair.

KEEP your hair, clothing, and gloves away from moving parts. Loose clothes, jewellery or long hair can be caught in moving parts.

AVOID accidental starting.

BE SURE switch is off before plugging in. Carry tools with your finger on the switch or plugging in tools that have the switch on invites accidents.

REMOVE adjusting keys or switches before turning the tool on.

DO NOT overreach.

KEEP proper footing and balance at all times.

USE safety equipment.



Always WEAR eye protection. Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.



3.4 TOOL USE AND CARE

USE clamps or other practical way to secure and support the work piece to a stable platform.

DO NOT FORCE tool.

USE the correct tool for your application. The correct tool will do the job better and safer at the rate for which it is designed.

DO NOT USE tool if switch does not turn it on or off.



DISCONNECT the plug from the power source before making any adjustments, changing accessories, or storing the tool.

STORE idle tools out of reach of children and other untrained persons.

MAINTAIN tool with care.

CHECK for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tools operation. If damaged, have the tool serviced before using.

USE only accessories that are recommended by the manufacturer for your model.

3.5 SERVICE

Tool service **MUST BE PERFORMED** only by qualified repair personnel.



When servicing a tool, **USE** only identical replacement parts.

FOLLOW instructions in the Maintenance section of this manual.

3.6 SPECIFIC SAFETY RULES



For the proper operation of the converter, **MAKE SURE** that operators have been instructed in the proper management of this machine.

The converter **SHOULD ONLY BE USED** in the specific jobs for with it the help of this manual.



Before connecting the converter to the electrical system, **MAKE SURE** that the voltage and frequency coincide with the ones stated in the characteristics equipment name plate, located on the side of the machine.

ENSURE that all box screws are tight before starting work.

The motor plug should not be used to start or stop the equipment.

The electrical feeding cable should not be used to remove the plug from the socket.

AVOID the flattening of the cable by heavy machinery which could cause breakage.

Be sure that the parts of the poker are tight before starting work.

Keep the converter clean and dry.



Make sure that the electrical cable extension is with the proper section and functioning properly.

Before doing any work of maintenance, disconnect the motor from the electrical system.

When connecting to a generator, make sure that the out tension and frequency is stable , right and has the proper power.

(the converter feeding voltage should not vary than +/- 5% as stated on the converter plate.



The level of acoustic pressure is less than 80 dB (see table point 2). Proper protective equipment should be used.



The vibration that transmits to the operator does not exceed 2,5m/s² of acceleration. See table in point 2.

The vibrating pokers should not be working out of concrete more than 5 minutes.

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

When finishing the job or when taking a break, the operator should switch off, disconnect it from the electrical system, place it in such a way that should not fall or tip.

IN ADDITION, LOCAL COUNTRY STABLISHED ORDINANCES SHOULD BE RESPECTED.

FREQUENCY CONVERTER AND POKERS

i-SPYDER

2V 38, 2V 50, 2V 60, 2V 70, 1V 38, 1V 50, 1V 60



4 OPERATION AND MAINTENANCE



4.1 GETTING STARTED

Read item 3 USAGE CONDITIONS

4.2 CONVERTER CONNECTION TO THE SYSTEM

The model I-SPYDER 2V is connected to the main 230V $\pm 5\%$ / 50-60Hz (single phase) and the model I-SPYDER1V is connected to the main 115V / 50-60Hz (single phase).



Use a residual current device ("rcd") with a rated tripping current of 30mA for each converter. Rcd should be installed either at the distribution board which feeds the mains supply sockets or at the fixed main supply socket. Do not plug others electric tools to the rcd where is plugged the converter.

Versión pistola

Accionar el interruptor del convertidor. Pulsar una vez el pulsador para encender la aguja, volver a pulsar para apagarla. Desde que se pulsa para apagar hay que esperar 5 segundos antes de volver a pulsar para encender la aguja.

4.3 DISCONNECTING THE EQUIPMENT.

Stop the converter by disconnecting the proper switch, and finally remove the plug from the main.

4.4 EARTH CONNECTION

To protect the user from an electrical shock, the converter should be correctly connected to earth.



The converters are equipped with three cables and their respective plugs. The adequate earth socket should be used to connect the converters. If the socket with earth is not available, an earth adapter should be used before connecting the plugs.

4.5 EXTENSION CABLES



Always use extension cables with earth wire and its respective plug with earth in the female and male plug. Do not use damaged or worn out cables.

Avoid heavy loads on cables.

To determine the transversal section, follow the following procedure:



PROCEDURE TO DETERMINE THE NECESSARY TRANSVERSAL SECTION IN CABLE EXTENSION

Do the following verifications and take the highest section of cable:

1. The ohmic resistance and inductive resistance of the cable with the permitted loss of voltage of 5%, $\cos\phi=0.8$ through the frequency and voltage curve

I.e. Voltage nominal:..... 380 V / 50 Hz
 Nominal current:..... 10 A
 Cable length:..... 150 m

Entering the curve with the product: $=10 \times 150 = 1500 \text{ Am}$ We obtain a 2.5 mm² section

2. The permitted heating of the cable according to VDE standard (minimum transversal section table required).



I. e. For 10 A, according to table for 15 A or less, the section is of 1 mm².

Therefore, the section chosen is equal to 2.5 mm², Always choose the highest transversal section of the two verifications.

Section mm²

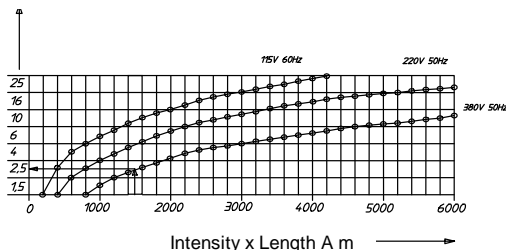


Table 1: Minimum section according VDE rules

Line mm2	Maximum A	Max Fuse A
1	15	10
1,5	18	10 / 3 – 16 / 1 –
2,5	26	20
4	34	25
6	44	35
10	61	50
16	82	63
25	108	80

4.6 INSPECTION

1. Before starting the job, check the correct working of all handling and safety devices.
2. Inspect regularly the good conditions of the feeding cables.
3. Inspect regularly the connection voltage.
4. The converter should only be used in conjunction with all safety elements.
5. If defects are found in the safety devices or other defects which could reduce the safe handling of the equipment, notify immediately the proper responsible person.

4.7 PERIODIC MAINTENANCE



1. Only an expert shall work on the electrical parts.
2. Make sure that the current is off during repairs.
3. In all maintenance operations, original parts will be used.
4. **For changing the cord**, look at the spare parts, the earth wire (green-yellow) should be longer to avoid being the first one in cutting in case of breaking wires. If the earth wire is broken, there is electrical After maintenance, control the earth cable. Put in new cable gland. Tighten its nut.
5. **For changing the switch**, look the spare parts, put the seals and finally, tighten the bolts.
6. Every 24 months or 500 hours of working a lubrication of the bearings of the vibrating pokers is recommended. An expert should dismantle the vibrating poker. Clean with solvent the bearings and when this is dry fill in with the oil recommended (107512 spare part). If you note an excessive play in the bearings proceed to change it. When you reassemble place the sealant in all the threads (PTFE tape). It is important all the parts are tighten (200 to 400 Nm of torque) to avoid the water does not penetrate in the head. Finally, apply two weld spots to secure the parts do not loose. Test working 10 minutes on the air and check no leak of oil (no touch after the test it is very hot).
7. After maintenance jobs all the parts must be assembled correctly.
8. Every 12 month or more frequently, depending on the use, it is recommended an inspection be done by an authorised dealer.
9. Check the wear of the poker controlling the outside diameter and length of the poker. Replace the housing or cap when the diameter or length in the least point is less than the specified in the table according to the model:

FREQUENCY CONVERTER AND POKERS

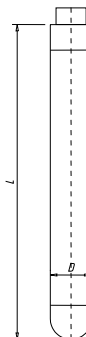
I-SPYDER

2V 38, 2V 50, 2V 60, 2V 70, 1V 38, 1V 50, 1V 60



Model	Diameter(mm)	Length (mm)
M38	36,5 (38)	365 (370)
M5	48 (50)	360 (365)
M6	56 (58)	415 (420)
M7	63 (65)	395 (400)
M8	75 (73)	395 (400)

- The minimum dimensions are bold printed
- The dimensions into brackets are the original dimensions
- Replace the housing when reach the minimum diameter
- Replace the cap when reach the minimum length



4.8 STORAGE

When the converter has not been used for long periods of time, it should be stored in clean, dry and protected areas.

4.9 TRANSPORTATION

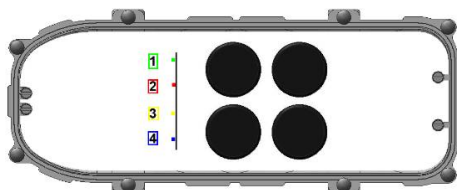
When transporting by vehicles, ensure the equipment is safe against slipping, overturning and blow.

5 LOCATING MALFUNCTIONS

With the open lid, check the light is on. Follow the table to identify the problem. During this operation follow of the safety recommendations.

Make sure that the current is off during repairs.

PROBLEM	Internal LED	External LED push button / pistol	CAUSE
Not working	LED OFF	LED OFF	See if it has power.
			Check cord
			Check plug
			Converter burnt out
Overcurrent	Red LED ON + Yellow LED ON	Red LED ON	Stator poker burnt out
			Converter burnt out
Leakage current	Yellow LED ON + Green LED ON	Yellow LED ON	Earth leakage current (check poker, connections)
			Water inside converter or poker
Fail of phase	Blue LED ON + Green LED ON	Red LED flashing	Lack of phase in poker (3 phase motor). Check connections and cables.
The poker is noisy	Green LED ON	Green LED ON	Bearings are not in good conditions.
The vibrating poker works correctly but it overheats	Green LED ON	Green LED ON	Check the poker is not working out of concrete.
	Green LED ON	Green LED ON	Verify the input voltage of the converter.
			Bearings in bad conditions or without lubrication.



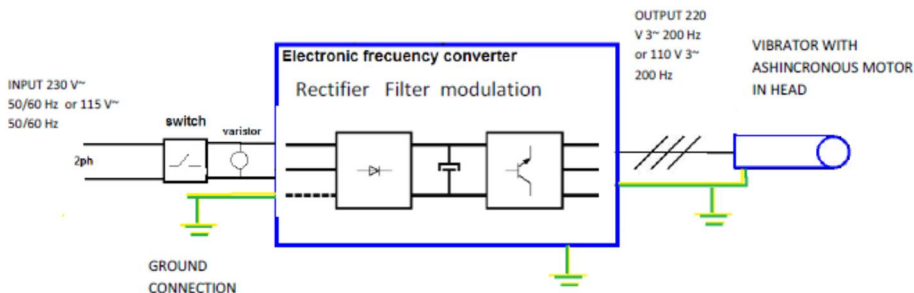
FREQUENCY CONVERTER AND POKERS

I-SPYDER

2V 38, 2V 50, 2V60, 2V70, 1V 38, 1V 50, 1V 60



- ELECTRIC DIAGRAM



6 INSTRUCTIONS TO ORDER SPARE PARTS AND TO REQUEST WARRANTIES

6.1 INSTRUCTIONS TO ORDER SPARE PARTS

1. All spare parts request must include PART CODE NUMBER AS STATED IN THE PART LIST. We recommend to include ITEM'S MANUFACTURE NUMBER.
2. The identification plate with serial number and model number is located on the side of the housing. If it is not visible, inside the house it is possible to find.
3. Let us to know the correct shipping instructions, including the wished route and the address and consignee's complete name.
4. Do not return the parts without authorisation..

6.2 INSTRUCTIONS TO REQUEST WARRANTIES

1. The warranty is valid 1 year after the purchasing of the machine, The warranty will cover parts with manufacturing defects. In no case the warranty will cover a malfunction due to improper usage of the equipment.
2. In all warranty requests THE MACHINE MUST BE SENT TO an AUTHORIZED SHOP, always including the complete address and name of the consignee.
3. The Technical Assistance Service will immediately notify you if it accepts the warranty 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 an authorized shop..



7 RECOMENDATIONS OF USE

1. choose the type of vibrator adequate to the dimensions of the structure to vibrate, the distance among the reinforcement and the slump cone. It is recommendable to have an additional concrete vibrator.
2. Before starting check that the concrete vibrator is in good use and it works correctly. Use the means of safety and protection.
3. Pour the concrete in the structure avoiding high heights. Try to pour levelled the concrete. The thickness of every layer should be less than 50 cm, it is recommendable between 30 and 50 cm.
4. Introduce the vibrator vertically in the concrete mass without moving it horizontally. Do not use the vibrator to push the concrete horizontally. The concrete vibrator should be introduced into the mass at regular intervals. The interval should be from 8 to 10 times the diameter of the poker. See the concrete in the process of vibrating to determine the field of action of the vibrator. This field should be overlapped to avoid areas without vibrating. To obtain an optimum compacting of the concrete, plunge it 10 cm into the precedent layer to assure a good adherence. The time in vibrating the different layers should not be big to avoid cold joints. Do not push or force the vibrator into the mass, it could be stuck in the reinforcements.
5. The time of vibration in each point depends on the type of the concrete, the size of the vibrator and other factors. This time can be from 5 to 15 seconds after the immersion in each point. The time is shorter for a fluid mass, a vibration in excess can produce segregation. It is considered the concrete to be well vibrated when the surface around the poker is shiny and compact and there is no more air bubbles, as well a change in the noise of the vibrator is produced. So much defects in structures are produced due to perform the vibration in an unmethodical way and in a hurry.
6. Do not push or force the vibrator against the reinforcement. Keep a distance of 7 cm minimum from the walls.
7. Always remove the poker vertically with movements upwards and downwards so the concrete fills the empty space again. Do not switch off until you stop the vibration completely. The speed of removing is approximately 8 cm per second. When the vibrator is nearly out extract quickly to avoid shaking the surface.
8. In order to vibrate slabs, the poker has to be kept oblique so that the contact superficies with mass is bigger and the compacting effect is better.
9. Do not keep the concrete vibrator out of the concrete during long periods. If you do not continue vibrating stop it.
10. Follow the maintenance instructions.
The concrete has to be carefully prepared to get the best effects of the vibration in terms of consistency and resistance.



PARA REALIZAR CUALQUIER CONSULTA SOBRE LOS DESPIECES Y LISTAS DE PIEZAS DE NUESTRAS MÁQUINAS CONSULTE NUESTRA PÁGINA WEB.

FOR ANY REQUIREMENT ABOUT THE PART LIST OF OUR MACHINES CONSULT OUR WEB PAGE.

POUR CONSULTER TOUS LES RENSEIGNEMENTS DES PIECES DETACHEES OU LA LISTE DE NOS MACHINES VOIR NOTRE SITE.

UM DIE VERSCHIEDENE EXPLOSIONSZEICHNUNGEN SO WIE DIE ERSATZTEILLISTEN EINZUSEHEN, BESUCHEN SIE BITTE UNSERE INTERNET-SEITE.



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DECLARACIÓN DE CONFORMIDAD

CONFORMITY CERTIFICATE ~ CERTIFICAT DE CONFORMITÉ
INSTEMMING VERKLARING ~ KONFORMITÄTS BESCHEINIGUNG
KONFORMITETS BEVIS ~ CERTIFICATO DE CONFORMIDADE ~ CERTIFICATO DI CONFORMITA'
ATITIKTIES DEKLARACIJA ~ CERTYFIKAT ZGODNOŚCI ~ СЕРТИФИКАТ СООТВЕТСТВИЯ
CERTIFICAT DE CONFORMITATE ~ СЕРТИФИКАТ ЗА СЪОТВЕТСТВИЕ

ENARCO, S.A.

certifica que la máquina especificada

hereby certify that the equipment specified below ~ atteste que le equipment
verklaart hierbij dat onderstaand gespecificeerde ~ bescheinigt, daß das Baugerät
bekræfter, at følgende maskine ~ certifica que o equipamento especificação
certifica che la macchina specificata ~ šiuo sertifikatu patvirtina, kad žemiau nurodytas prietaisas, t.y.
Zaświadcza, że wyszczególniona maszyna ~ Подтверждает, что нижеописанная машина
Certifica si declara ca echipamentul mentionat mai jos ~ Потвърждаваме, че оборудването, описано по-долу

TIPO DE MAQUINA..... CONVERTIDORES DE FRECUENCIA Y AGUJAS

TYPE-TYPE-TYPE-TYP-TYPE-TIPO-TIPO-TIPAS-TYP-ТИП-ТИП-ТИП FREQUENCY CONVERTER AND POKERS

CONVERTISSEURS DE FREQUENCE ET AIGUILLES

FREQUENZUMFORMER UND RÜTTENLLANZEN

MODELO.....

MODEL-MOÐELE-MODEL-MODEL-MODEL-MODELO

MODELLO MODELIS-MODEL-MODEЛЬ-MODEL-MODEЛ

i-SPYDER 220V/i-SPYDER 115V

i-SPYDER 2V

i-SPYDER 1V

CODIGO.....

CODE-CODE-CODE-CODE-CODE-CODIGO-CODICE-KODAS-KOD

KOD- COD ~ КОД

2880xx/2881xx/2882xx

ha sido fabricada de acuerdo con las siguientes normas

has been manufactured according to the following standards ~ est produit conforme aux dispositions des directives ci-apres
in overeenstemming met de volgende voorschriften gefabriceerd is ~ in übereinstimmung mit folgenden richtlinien hergestellt worden ist
er blevet fremstillet i overensstemmelse med følgende retningslinier ~ é fabricado conforme as seguintes normas
é stata fabbricata secondo le norme vigenti ~ buvo pagamintas laikantis toliau išvardintų standartų
została wyprodukowana zgodnie z następującymi normami ~ Произведена в соответствии со следующими нормами
este fabricat cu respectarea urmatoarelor standarde ~ е произведено в съответствие със следните стандарти

2006/42/CE, 2000/14/CE, EN12649

2014/30/EC, 2014/35/EC, 2002/95/EC, 2002/96/EC

RESPONSABLE DOCUMENTACIÓN TÉCNICA..... Jesus Tabuenca (ENARCO, S.A. Burtina, 16, 50197 Zaragoza)

Technical documentation responsible ~ Responsable of the Documentation Technique ~ zuständigen technischen Dokumentation

Zaragoza, 04.11.2016

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