

OPERATING AND SAFETY **INSTRUCTION MANUAL**

BT VIPER HIGH FREQUENCY INVERTOR TYPE CONCRETE VIBRATOR BTHFE38V, BTHFE50V AND BTHFE60V



TABLE OF CONTENTS

1.	INTRODUCTION	3
2.	GENERAL POWER TOOL SAFETY WARNINGS.....	4
3.	APPLICATION AND FEATURE.....	9
4.	VIBRATORS CHARACTERISTICS	9
5.	OPERATION AND MAINTENANCE	11
6	LOCATING FAILURES.....	16
7	RECOMMENDATIONS FOR USE OF CONCRETE VIBRATOR	17
8	SPARE PARTS.....	19
9	DECLARATION OF CONFORMITY	25

1. INTRODUCTION

Thank you for selecting our concrete vibrators. We would like to take this opportunity to thank you for choosing our products.

In this manual, you will find specific information, regarding the installation, operation and maintenance of this equipment, as well as safety precautions. For the maximum performance of the equipment, we recommend to read carefully the safety recommends, maintenance, and usage listed in this manual. Defective parts should be replaced immediately to avoid major problems.

The effective longevity of the equipment will increase if the manual instructions are followed. Failure to do so could compromise the service life of the vibrator and/or your safety. Keep the manual in a safe and dry place for future reference.

If you need clarification or further information about any of the topics in this manual, please feel free to contact us for assistance.

Thank you !

2. GENERAL POWER TOOL SAFETY WARNINGS

WARNING all safety warnings in instructions, illustrations and specifications provided with this power tool. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference.

The term “power tool” in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

1) Work area safety

- a) **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
- b) **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.
- c) **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

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, 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 tool in damp location is unavoidable, use a residual current device (RCD) protected supply.** Use of an RCD reduces the risk of electric shock.

NOTE The term “residual current device (RCD)” may be replaced by the term “ground fault circuit interrupter (GFCL)” or “earth leakage current breaker (ELCB)”.

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 moment of inattention while operating power tools may result in serious personal injury.
- b) **Use personal protective equipment. Always wear eye protection.** Protective equipment such as a dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- c) **Prevent unintended starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carry in the tool.** Carrying power tools with your finger on the switch or energizing 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 jewelry. Keep your hair and clothing from moving parts.** Loose clothes, jewelry 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 dust collection can reduce dust-related hazards.
- 4) **Power tool use and care**
 - a) **Do not force the power tool. Use the correct power tool for you 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 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.
 - d) **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.
 - e) **Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other 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 those intended could result in a hazardous situation.

5) 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.

3. APPLICATION AND FEATURE

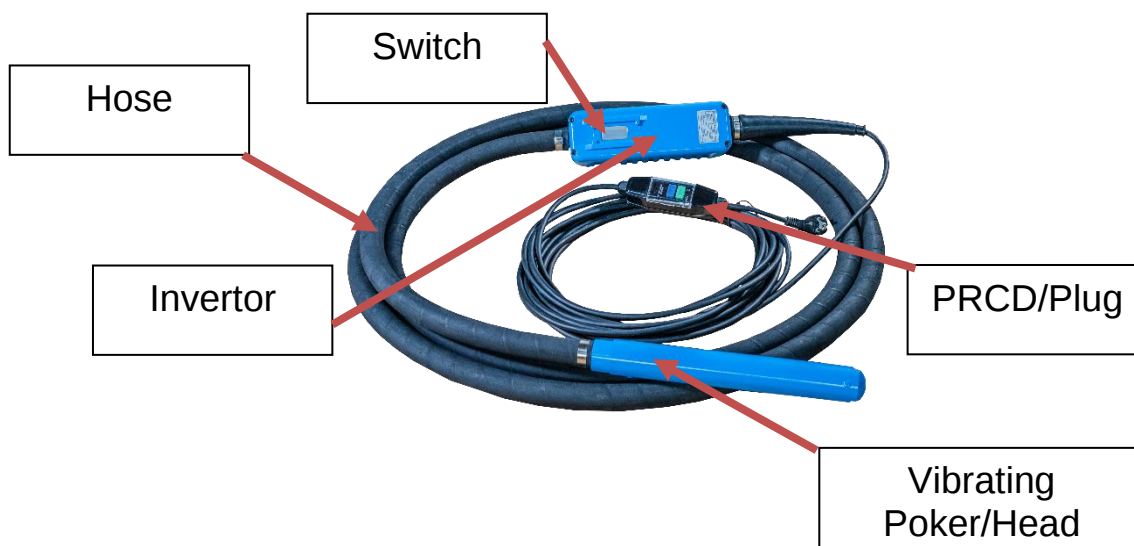
BT viper high frequency inverter type concrete vibrator are suitable for connection to a single phase main power socket $\sim 220V$. This product is characterized by lower noise, more safety, high efficiency, easy handling and long lifetime, and widely uses to carry out concrete pouring project, especially the works in the city. The Vibrator, which is designed by ergonomic ideal, is equipped with protection against overload, over or under voltage, excess temperature, lack of phase and short circuits.

4. VIBRATORS CHARACTERISTICS

Model		BTHFE38V	BTHFE50V	BTHFE60V
Diameter	(mm)	38 mm	50 mm	60 mm
Length	(mm)	352	390	436
Weight	(kg)	10	13	16
Vibrating Frequency	(rpm)	12000	12000	12000
Vibrating Amplitude	(mm)	0.9	1.0	1.1
Centrifugal Force	(kN)	1.0	3.50	4.50
Power Source		230 V $\sim$ 50/60Hz		
Current	(A)	6		
Hose Length	(m)	5 (Variable Length Can Be Available.)		
Cable Length	(m)	5、10、15 (10M、The Standard Length is		

- Notes:
- a) *All of motor-in-head internal concrete vibrator with built-in electronic inverter in this manual, which type of operation is normal (S1).*
 - b) *If the supply cord of Motor-in-head internal concrete vibrator with built-in electronic inverter is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard*

5. OPERATION AND MAINTENANCE



5.1 Getting started

Read 1. General Power Tool Safety Warnings

5.2 Motor-in-head Internal Concrete Vibrator with Built-in Electronic Inverter Connection to The Power Source

The motor-in-head internal concrete vibrator with built-in electronic inverter has plugs to connect the electrical supply. Firstly, connect motor-in-head internal concrete vibrator with built-in electronic inverter to the electrical supply, be sure that the correct (specification and condition of cable according to standards of security). Then switch on the electrical supply, at this time PRCD light on, press

TEST button, light off, and press **RESET** button, light on again, after these, the vibrator can be available to switch on. Otherwise, change the PRCD.



To disconnect, firstly switch off the vibrator and then disconnect the electrical supply with their switch and finally remove the plug of the electrical supply.

5.3 Extension Cables

Use Single phase cables with the appropriate plugs.

Do not use damage or worn out cables.

Avoid extension cables on the motor-in-head internal concrete vibrator with built-in electronic inverter.

5.4 Inspection

- 1) Before starting the job, check the correct working of all the handling and safety devices.
- 2) Inspect regularly the good conditions of the cables and the rubber housing. When a defect is detected, proceed to change to avoid bigger problems.
- 3) If defects are found in the safety devices or other defects which could reduce the safe handling of the equipment, stop working and notify to the proper responsible person.

5.5 Periodic Maintenance

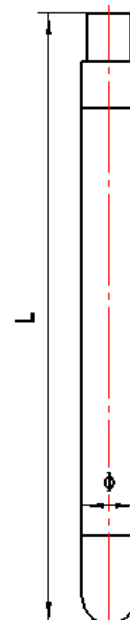
- 1) Only an expert shall work on the electrical parts.
- 2) Disconnect motor-in-head internal concrete vibrator with built-in electronic inverter before doing any maintenance
- 3) In all maintenance operations, original parts will be used.

- 4) Every 12 months 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 with the specified grease the 30% to 40% of the clear space of the bearing. If you note an excessive play in the bearings proceed to change it. When you remount place sealant in all the threads. Tighten and clean the excess of sealant. It is important all the parts are tighten to avoid the water does not penetrate in the head. Finally, apply two weld spots to secure the parts do not loose.

The recommend grease is ISOFLEX LDS 18 SPECIAL A of the trademark KLUBER LUBRICATION or other similar grease.

- 5) Always you change the switch be sure the bolts of the switch box are tighten and the box is watertight.
- 6) After maintenance jobs all the parts must be assembled correctly.
- 7) Every 12 months or more frequently, depending on the use, it is recommended an inspection be done by an authorized dealer.
- 8) 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:

MODEL	DIAMETER (mm)	LENGTH (mm)
BTHFE38V	36 (38)	345 (352)
BTHFE50V	48 (50)	382 (390)
BTHFE60V	56 (58)	426 (436)



- 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.

5.6 Storage

Store the vibrating pokers in clean, dry and protected areas when it is not used for long periods.

5.7 Transportation

When transporting by vehicles, be sure the equipment is safe against slipping, overturning and blows.

6 LOCATING FAILURES

PROBLEM	CAUSE/SOLUTION
The vibrator does not work	1. Verify if there is current.
	2. Plug in bad conditions.
	3. Defective switch.
	4. Connections in bad conditions.
	5. PRCD in bad conditions.
	6. Verify the higher or lower voltage of the power source.
The motor is noisier	1. Bearings are not in good conditions.

7 RECOMMENDATIONS FOR USE OF CONCRETE VIBRATOR

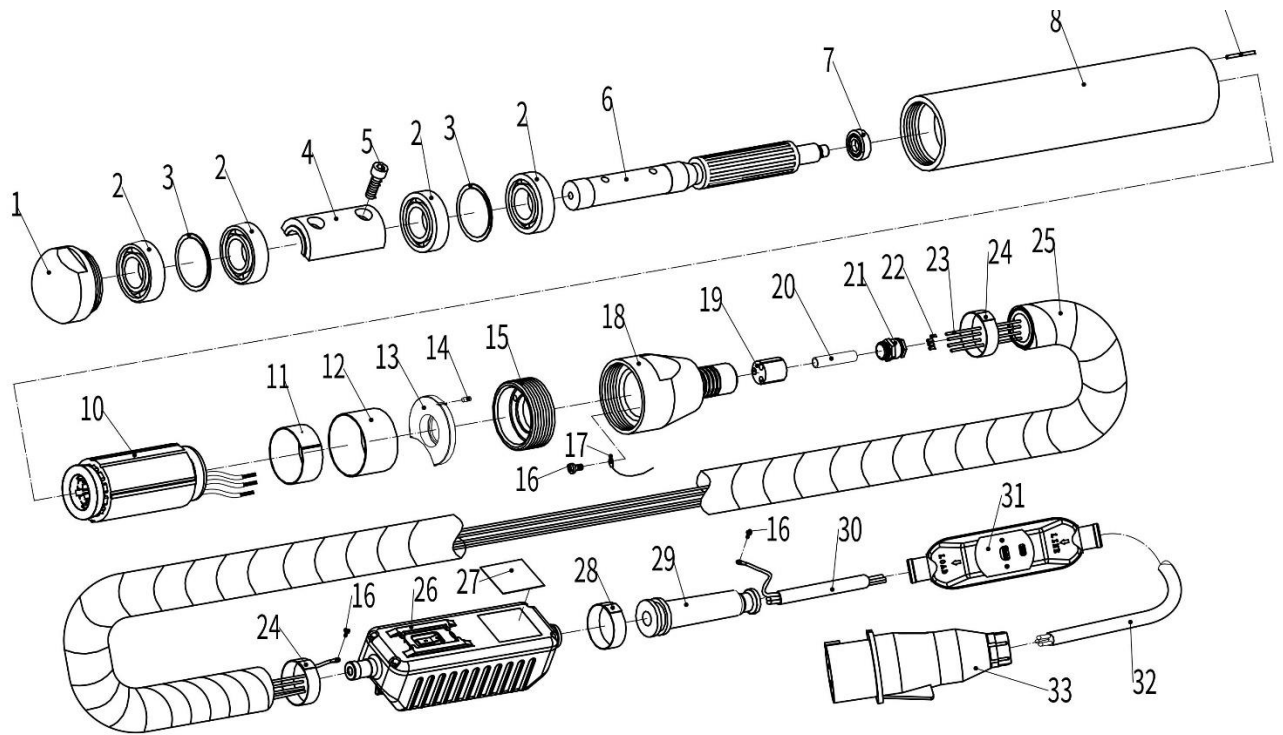
- 1) Choose the type of vibrator adequate to the dimensions of the structure to vibrate, the distance among the reinforcement and the slump cone. It is recommendable to have an additional concrete vibrator.
- 2) Before starting check that the concrete vibrator is in good use and it works correctly. Use the means of safety and protection.
- 3) Pour the concrete in the structure avoiding high heights. Try to pour leveled the concrete. The thickness of every layer should be less than 50cm; it is recommendable between 30 and 50cm.
- 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 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 unmethodically way and in a hurry.

- 6) Do not push or force the vibrator against the reinforcement. Keep a distance of 7cm 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. So speed of removing is approximately 8cm 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 surface 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.

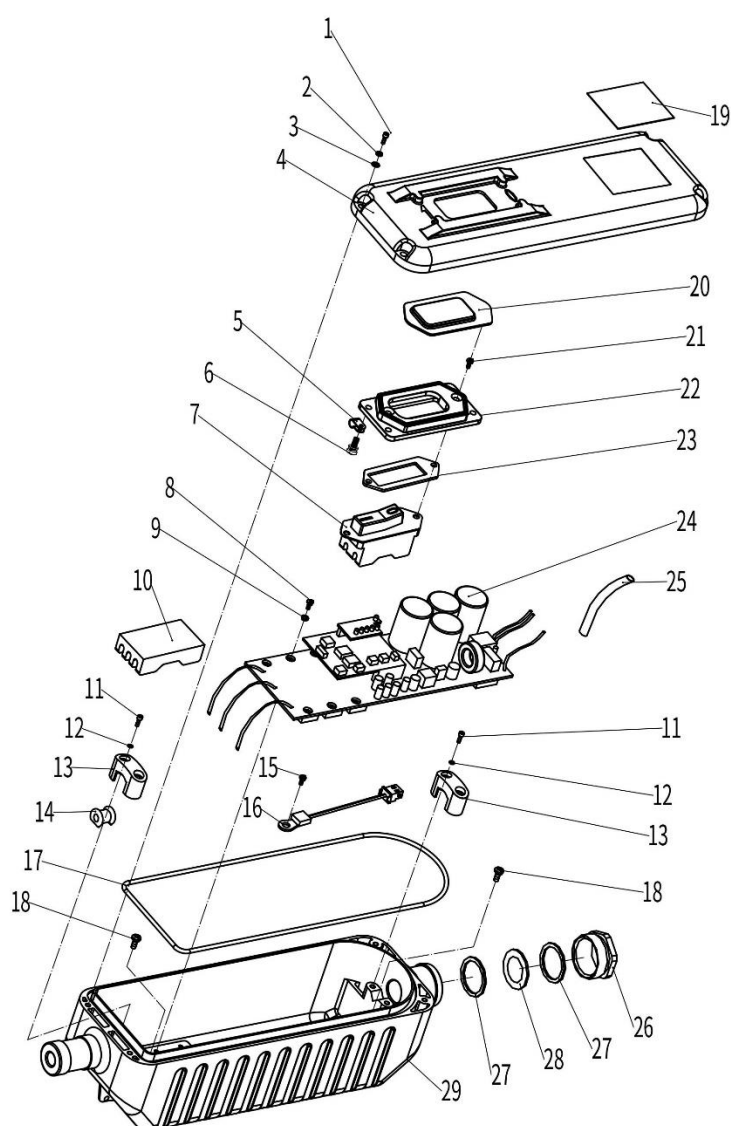
8 SPARE PARTS



NO.	DESCRIPTION	QTY.	ZDNE38 #250800B		ZDNE50 #252800B		ZDNE60 #253800B	
			P/N	kg	P/N	kg	P/N	kg
1	STEEL NOSE	1	250001	0.25	252001	0.42	253001	0.72
2	BEARING 6201/6203/6204	2 (4)	550521	0.04	550102	0.07	550501	0.10
3	WASHER	2	---	---	---	---	253011	0.01
4	ECCENTRIC BLOCK	1	250002	0.22	252002	0.21	253002	0.32
5	BOLT M5×16/ M6×20/M8×20/	2	630402	0.01	630418	0.01	630422	0.02
6	ROTATOR	1	250100	0.32	252100	0.56	253100	0.76
7	BEARING 608/6000/6000 (C3)	1	550508	0.01	550506	0.02	550506	0.02
8	CASING TUBE	1	250003	0.76	252003	1.66	253003	2.40
9	POSITION PIN	1	714002	0.01	714002	0.01	714002	0.01
10	STATOR	1	250210	0.42	252210	0.84	253210	0.92
11	INSULATION PAPER	1	255016	0.01	255016	0.01	255016	0.01
12	SPACER	1	250005	0.01	252005	0.02	253005	0.04
13	BEARING HOLDER	1	250006	0.05	252006	0.06	253006	0.09
14	PIN	1	255010	0.01	255010	0.01	255010	0.01
15	THREAD JOINT	1	250008	0.06	252008	0.10	253008	0.15
16	SCREW SET M4×8/M5×8	3	590436	0.01	590445	0.01	590445	0.01
17	GROUND WIRE	1	250017	0.01	255017	0.01	255017	0.01
18	REAR END	1	250019	0.19	252009	0.53	253009	0.68
19	RUBBER-ISOLATE	1	252010	0.01	252010	0.01	252010	0.01
20	INSULATING TUBE φ6/φ7	1	430214	0.01	430214	0.01	430209	0.01
21	CABLE GLAND MG16×1.5	1	570231	0.02	570231	0.02	570231	0.02
22	TERNINAL	4	712102	0.01	712102	0.01	712102	0.01
23	CONDUCTING WIRE 1.5mm2	3	430812	0.15	430812	0.15	430812	0.15

NO.	DESCRIPTION	QTY.	ZDNE38 #250800B		ZDNE50 #252800B		ZDNE60 #253800B	
			P/N	kg	P/N	kg	P/N	kg
22+23	WIRE WITH TERMINAL	1	430808F	0.49	430808F	0.49	430808F	0.49
24	BIG COLLAR	2	712201	0.02	712201	0.02	712201	0.02
25	RUBBER HOSE-5m	1	830302	4.20	830301	5.50	830301	5.50
26	E-SWITCH COMPONENT	1	756120B	2.53	756320B	2.53	756320B	2.53
27	NAME PLATE	1	711175	0.01	756140	0.01	756141	0.01
28	SMALL COLLAR	1	712202	0.02	712202	0.02	712202	0.02
29	CABLE SLEEVE	1	750125	0.11	750125	0.11	750125	0.11
30	CABLE WITH TERMINAL YCW2× 1.5mm2+1× 1.5mm2 (15m)	1	252020	2.34	252020	2.34	252020	2.34
31	PRCD PD22B	1	570855	0.20	570855	0.20	570855	0.20
32	CABLE (21CM)	1	252029	0.05	252029	0.05	252029	0.05
33	PLUG (BLUE)	1	570344	0.13	570344	0.13	570344	0.13
32+33	PLUG (BLUE) WITH CABLE	1	252029B	0.18	252029B	0.18	252029B	0.18
*	HEAD COMP. (INCL. :#1-21)	1	250120H	2.44	252120H	4.64	253120H	6.86
**	SK FOR HEAD (INCL. : : #2- 3, 7, 11- 12, 14, 16-17, 19-21)	1	250120HS K	0.51	252120H SK	0.75	253120HS K	1.36
***	SK FOR CONDUCTING WIRE (INCL. :#16-17, 22-23)	1	430812SK	0.59	430812S K	0.59	430812SK	0.59

EXPLOSION DRAWING FOR E-SWITCH COMPONENT
(230V/1Ph/60Hz)



NO.	DESCRIPTION	QTY.	P/N	kg
1	SCREW M5X16	4	630402	0.01
2	ELASTIC WASHER 5	4	650501	0.01
3	FLAT WASHER 5	8	650102	0.01
4	E-SWITCH COVER	1	756131	0.67
5	WIRE CLIP	1	756227	0.01
6	SCREW SET M4X12	4	590433	0.01
7	SWITCH	1	756134	0.05
8	SCREW M3X10	6	630723	0.01
9	FLAT WASHER 3	6	650106	0.01
10	WIRE ADAPTO R0.08-4mm ² (32A 250V)	1	570391	0.01
11	SCREW M4X12	4	630426	0.01
12	FLAT WASHER 4	4	650101	0.01
13	CABLE CLAMP	2	756115	0.01
14	WIRE PROTECTOR	1	750103	0.01
15	SCREW M3X5	1	630737	0.01
16	TEMP. SENSOR	1	570385	0.01
17	O-RING $\phi 195 \times 3$	1	510430	0.01
18	SCREW SET M4X8	2	590436	0.01
19	NAME PLATE FOR ZDNE38	1	711175B	0.01
	NAME PLATE FOR ZDNE50	1	756140B	0.01
	NAME PLATE FOR ZDNE60	1	756141B	0.01
20	WATER-PROOF SHEET	1	756126	0.01
21	SCREW M4X12	2	633519	0.01
22	SWITCH SUPPORT	1	756135	0.03
23	SWITCH RUBBER SHEET	1	756136	0.01

NO.	DESCRIPTION	QTY.	P/N	kg
24	IC BOARD	1	756145	0.15
25	INSULATING TUBE	1	430214	0.01
26	CABLE HOLDER	1	756105	0.01
27	WASHER 10	2	650304	0.01
28	RUBBER SLEEVE	1	756103	0.01
29	E-SWITCH BOX A ONLY FOR ZDNE38	1	756143	1.66
	E-SWITCH BOX B FOR ZDNE50/60	1	756138	1.66
*	SERVICE KIT FOR E-SWITCH BOX SK1 (INCL. #7-23)	1	756134SK	0.11
**	SERVICE KIT FOR E-SWITCH BOX SK2 (INCL. #1-3-6
-14-18-28)	1	756222SK	0.39

9 DECLARATION OF CONFORMITY

Declaration of Conformity / Certificat de conforme / Gelijkvormigheidscertificaat / Declaracion de Conformidad / Declaracao de Concormidade / Dichiarazione Di Conformita

Model : BTHFE

We Beton Trowel NV

Declare under our sole responsibility that the product to which this declaration relates is in conformity with the following standard(s) or other normative documents.

Déclarons sous notre responsabilité que le produit cette déclaration est conforme aux normes suivantes ou d'autres documents habituels.

Verklaren onder onze verantwoordelijkheid dat het product naar welke de verklaring verwijst conform de volgende standaards of anders gebruikelijke documenten is.

Declaramos bajo nuestra única responsabilidad que el producto en lo que esta declaración concierne, es conforme con la siguiente normativa u otros documentos.

Declara sob sua responsabilidade que o produto a quem esta declaração interessar, está em conformidade com os seguintes documentos legais ou normas directivas.

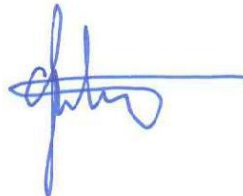
Dichiariamo sotto la ns. unica responsabilita che il prodotto al quale questa dichiarazione si riferisce, è fabbricato in conformità ai seguenti standard e documenti di normative.

EN 349:1993	Safety of Machinery - Minimum gaps to avoid crushing of parts of the human body.
EN 418:1993	Safety of Machinery - Emergency stop equipment, functional aspects - Principles for design
EN 12100-1:2003	Safety of Machinery - Basic Concepts, general principles for design - Part 1: Basic Terminology, methodology
EN 12100-2:2003	Safety of Machinery - Basic Concepts, general principles for design - Part 2: Technical Principles
EN ISO 4872:1978	Acoustics - Measurement of Airborne noise emitted by construction equipment Intended for outdoor use - Method for determining compliance with noise limits.
EN ISO 5349-1:2001	Mechanical vibration. Measurement and evaluation of human exposure to hand-transmitted vibration. General requirements
EN ISO 5349-2:2001	Mechanical vibration. Measurement and assessment of human exposure to hand-transmitted vibration. Practical guidance for measurement at the workplace.

Following the provisions of Directives / Suivant les directives determines / Volgens de vastgestelde richtlijnen:
Siguiendo las directivas / No sequimento das clausulas da Directivas / Seguendo quanto indicato dalla Direttivas:

98/37/EC Machinery Directive
2000/14/EC Noise Directive
2001/95/EC General Product Safety Directive
2002/95/EC Reduction of Hazardous Waste Directive

Responsible Technical File : Chris Livingston for



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