Technical Construction File (TCF)

File No. **HQ-150703**

According to
Machinery Directive (2006/42/EC)
Low Voltage Directive (2006/95/EC)

Related to the

Vacuum Machine

Model: DZ-260/PD, DZ-300/PD, DZ-400/ZT, DZ-400/2E, DZ-500/2E, DZ-600/2E, DZ-400/2SB, DZ-500/2SB, DZ-600/2SB, DZ-400/2SA, DZ-500/2SA, DZ-600/2SA, DZ-650/4SB, DZ-700/2SB

Presented by

Wenzhou Huaqiao Packing Machine Factory
No. 439, Binhai Fourth Road, Economic & Technological Development Zone,
Wenzhou, Zhejiang, China

Technical File No:	Issue Date:	Prepared by:	Approved by:
HQ-150703	14 Jul. 2015	Elis	

Sign certificate acknowledgement
签发证书最终确认表

Name and address of the Manufacturer 工厂的名称和地址	Wenzhou Huaqiao Packing Machine Factory 温州市华侨包装机械厂
	No. 439, Binhai Fourth Road, Economic & Technological Development Zone, Wenzhou, Zhejiang, China 中国浙江省温州经济技术开发区滨海 4 路 439 号
Name and address of the Applicant (If it is necessary) 申请商的名称和地址（如果需要的话）	Wenzhou Huaqiao Packing Machine Factory 温州市华侨包装机械厂
	No. 439, Binhai Fourth Road, Economic & Technological Development Zone, Wenzhou, Zhejiang, China 中国浙江省温州经济技术开发区滨海 4 路 439 号
Product Name 产品名称	Vacuum Machine 真空包装机
Trademark (If necessary) 商标（如果需要）	N/A
Models (put it as annex if necessary) 型号（ 如果必要可以做个附件）	DZ-260/PD, DZ-300/PD, DZ-400/ZT, DZ-400/2E, DZ-500/2E, DZ-600/2E, DZ-400/2SB, DZ-500/2SB, DZ-600/2SB, DZ-400/2SA, DZ-500/2SA, DZ-600/2SA, DZ-650/4SB, DZ-700/2SB
Directive and standard 申请的指令和标准	MD: EN 415-3, ISO 12100, EN 953, EN 614-1, EN 1037, ISO 3864-1, EN ISO 13849-1, EN ISO 13849-2 LVD: EN 60204-1
REMARK 其他需要说明信息	NO

NOTE: We will issue the certificate refering the above information, please pay attention the necessary information must be correct and accruate.
注意： 我们将参考以上的基本信息签发证书， 请注意以上的信息必须是正确和准确的。

签字：_____ 盖章：_____

Contents

General information

General Information

Applicant	Wenzhou Huaqiao Packing Machine Factory No. 439, Binhai Fourth Road, Economic & Technological Development Zone, Wenzhou, Zhejiang, China
Manufacturer	Wenzhou Huaqiao Packing Machine Factory No. 439, Binhai Fourth Road, Economic & Technological Development Zone, Wenzhou, Zhejiang, China
Trademark	N/A
Product	Vacuum Machine
Model No.	DZ-260/PD, DZ-300/PD, DZ-400/ZT, DZ-400/2E, DZ-500/2E, DZ-600/2E, DZ-400/2SB, DZ-500/2SB, DZ-600/2SB, DZ-400/2SA, DZ-500/2SA, DZ-600/2SA, DZ-650/4SB, DZ-700/2SB
Rated Voltage	AC110V/220V
Rated Frequency	50HZ/60HZ
Specifications	See the Specification tables listed in Annex A.2
Equipment Mobility	Stationary
Duty Cycle	Continuous
File No.	HQ-150703
Issued Date	Jul. 15, 2015

Part Ⅰ: General

1.1 General description

1.2 The certificate of relevant components

1.3 Applicable standard

1.1 General description

General Description

Model DZ400/500 series vacuum machine works in a brand-new way that it makes the inside of the bag vacuum and then seals it at once, and just because of the high vacuum, extremely less air is left in the bag, resulting in restraining the propagation of bacterium etc. microbe, avoiding the goods being mildew and rotten by oxidation and, at the same time, some spongy goods can be made reduced in the volume after being vacuum packed and thus become easy to transport and store.

1.2 The certificate of relevant components

CHINT DECLARATION OF CONFORMITY

We CHINT Group Corporation

(supplier's name)

CHINT Building,Liushi Industrial Zone,Wenzhou 325604 P.R.China

(address)

declare under our sole responsibility that the product

Miniature Circuit Breakers (MCB) DZ47-60

(name, type of model, lot, batch or serial number, possibly sources and numbers of items)

to which this declaration relates is in conformity with the following standard(s) or other normative document(s)

EN60898/1991+A1:1991+A11:1994+A12:1995+A13:1995+A15+1A16

(title and/or number and date of issue of the standard(s) or other normative document(s))

(If applicable)

following the provisions of Council Directive

89/336+93/68+73/23/EEC (+93/68/EEC) and its amended version

Wenzhou 325604 P.R.China

December.10, 2001

(Place and date of issue)

Jin Xin

(Name and signature of equivalent marking of authorised person)

CHNT DECLARATION OF CONFORMITY

We CHINT Group Corporation

(supplier's name)

CHINT Building,Liushi Industrial Zone,Wenzhou 325604 P.R.China

(address)

declare under our sole responsibility that the product

Ac contactor ,Model: CJX2 series, rated current 9A up to 95A

(name, type of model, lot, batch or serial number, possibly sources and numbers of items)

to which this declaration relates is in conformity with the following standard(s) or other normative document(s)

IEC 60947-4-1, GB14048.4-1993

(title and/or number and date of issue of the standard(s) or other normative document(s))

(If applicable)
following the provisions of Council Directive

89/336+93/68+ 73/23/EEC (+93/68/EEC) and its amended version

Wenzhou 325604 P.R.China

August.7, 2001

(Place and date of issue)

Jin Xin

(Name and signature of equivalent marking of authorized person)

MANUFACTURER'S DECLARATION OF CONFORMITY

PRODUCT & TECHNOLOGY
Automation & Safety
Machine Control Department

We : SCHNEIDER ELECTRIC INDUSTRIES SAS
89,Boulevard Franklin Roosevelt
92500 Rueil Malmaison
FRANCE

declare under our own responsibility that the product(s):

TRADEMARK : TELEMECANIQUE

NAME, TYPE : *Limit switches*
MODELS : XCK-A/B/D/J/L/M/N/P/S/T, XCL, XCE, XCF, XCM, XCB, XCR, XC1, XC2

NAME, TYPE : *Pressure and Vacuum switches*
MODELS : XML-A/B/C/D/E/F/G/K/T, XMA, XMX

NAME, TYPE : *Pendant control stations*
MODELS : XAC-A

NAME, TYPE : *Industrial joystick controllers*
MODELS : XKB, XKD

to which this declaration refers conform to :

STANDARDS OR NORMATIVE DOCUMENTS :

Low-voltage switchgear and controlgear, General rules	*IEC/EN60947-1*
Electromechanical control circuit devices	*IEC/EN60947-5-1*

Subject to installation, maintenance and use conforming to its (their) intended purpose, to the applicable regulations and standards, to the supplier's instructions and to standard practice,

the products conform to the requirements of the applicable European Directives :

Low-voltage Directive	*N° 73/23/EEC*
EMC Directive	*N° 89/336/EEC*

The CE marking on the products and/or their packaging signifies that Schneider Electric holds the reference technical file available to the European Union authorities.

Issued at L'Isle d'Espagnac - FRANCE : October 21, 2004

Authorised Signatory

Name : Andre Borouchaki
Title : Department Vice President
Signature :

Merlin Gerin
Square D
Telemecanique

ETS

ELECTRONIC TECHNOLOGY SYSTEMS
DR. GENZ GMBH

COMPETENT BODY / ACCREDITED TEST HOUSE

EC DECLARATION OF CONFORMITY

This certifies that the following designated product

TRANSFORMER

MODEL NO. : BK-25 SHELL TYPE IRON-CORE TRANSFORMER

(Product identification)

complies with the essential protection requirements of Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.
This declaration applies to all specimens manufactured in accordance with the attached manufacturing drawings which form part of this declaration.
Assessment of compliance of the product with the requirements relating to electromagnetic compatibility was based on the following standards:

EN 50081-1 /1992: EN 55014, EN 61000-3-2/-3,
EN 50082-1 /1997: EN 55014-2

(Identification of regulations / standards)

This declaration is the responsibility of the manufacturer / importer

WENZHOU OUHAI YULONG TRANSFORMER FACTORY
A4-5, JIANGJUN XINCUN, ,
WENZHOU CITY, ZHEJIANG, CHINA

(Name / Address)

CE ETS EMC tested

THIS DOC IS ONLY VALID IN CONNECTION WITH TEST REPORT NUMBER : G2M20009-0509-E-16

MANUFACTURER / IMPORTER

(Date)

(Surname, forename)
(Company stamp)

TEST LABORATORY

This is the result of test, that was carried out from the submitted type-samples of a product in conformity with the specification of the respect-ive standards.
The certificate holder has the right to fix the CE-mark for EMC on the product complying with the inspection sample.

October 09, 2000
(Date)

Dr. Genz
Dr. Genz
(Company stamp)

Electronic Technology Systems Dr. Genz GmbH · Technology Systems · Dr. Genz GmbH · ETS

2005.04.27 03:55AM P. 1

MITSUBISHI ELECTRIC CORPORATION
NAGOYA WORKS

MITSUBISHI ELECTRIC CORPORATION
NAGOYA WORKS
ADDRESS: 1-14, YADA-MINAMI 5-CHOME
HIGASHI-KU, NAGOYA, 461-8670 JAPAN
TELEPHONE:052-721-2111

DECLARATION OF CONFORMITY

According to Low Voltage Directive 73/23/EEC
as last amended by EEC Directive 93/68/EEC

We hereby state the following AC Servo Motors are in conformity with Low Voltage Directive 73/23/EEC and 93/68/EEC.

This is supported by product tests of the following standards.

Component Description: AC Servo Motor

Type :

HC-MFS series	(50W~750W)
HC-KFS series	(50W~750W)
HC-SFS series	(0.5kW~7kW)
HC-RFS series	(1kW~5kW)
HC-UFS series	(0.1kW~5kW)

Manufactured by: Mitsubishi Electric Corporation, Nagoya Works

Address: 1-14 Yada-Minami 5-Chome, Higashi-ku
Nagoya 461-8670, Japan

Standard(s): EN60034-1: 1998+A1+A2

Year of CE marking: 1999

Mitsubishi Electric Corporation

Mahito Unno

Mahito Unno
Manager
Servo Drive Systems Department

Issued by:
Nagoya, 08/DEC/2000

Schneider Electric

MANUFACTURER'S DECLARATION OF CONFORMITY

INDUSTRIAL CONTROL BUSINESS UNIT
Machine Equipment Activity Management

WE : SCHNEIDER ELECTRIC INDUSTRIES SA
89 Boulevard Franklin Roosevelt
92500 Rueil Malmaison
FRANCE

declare under our own responsibility that the product(s):

TRADEMARK : TELEMECANIQUE

NAME, TYPE : *Control and signalling units*
MODELS : XB4-B..., ZB4-B...,XB5-A...,ZB5-A...,XD4-P...,XD5-P...

NAME, TYPE : *Illuminated beacons and indicating banks*
MODELS : XVB...,XVD...,XVD-LS...

NAME, TYPE : *Control stations*
MODELS : XAL-D...,XAL-K...

NAME, TYPE : *Electrical blocks.*
MODELS : ZBE...,ZBP...,ZBV...,ZEN-L...,ZAL-V...

to which this declaration refers conform to :

STANDARDS OR NORMATIVE DOCUMENTS :

Low-voltage switchgear and controlgear,	
General rules	*IEC 947-1 (EN60947-1)*
Electromechanical control circuit devices	*IEC/EN60947-5-1*

Subject to installation, maintenance and use conforming to its (their) intended purpose, to the applicable regulations and standards, to the supplier's instructions and to standard practice,

the products conform to the requirements of the applicable European Directives :

Low-voltage Directive	*N° 73/23/EEC*
EMC Directive	*N° 89/336/EEC*

The CE marking on the products and/or their packaging signifies that Schneider Electric holds the reference technical file available to the European Union authorities.

Issued at Angoulême - FRANCE : February 22 , 2001

Authorised Signatory

Name : J.P.Mura
Title : Activity Director
Signature :

Merlin Gerin
Modicon

1.3 Applicable standard

List of applicable regulations and standards

Regulations

Machinery Directive (2006/42/EC)

Low Voltage Directive (2006/95/EC)

Standards

- EN 415-3:1999+A1:2009 Safety of packaging machines - Part 3: Form, fill and seal machines.
- ISO 12100:2010 safety of machinery — general principles for design — risk assessment and risk reduction.
- EN 60204-1:2006+A1:2009 Safety of Machinery – Electrical equipment of machines – Part 1: General requirements.
- EN 953:1997+A1:2009 Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards.
- EN 614-1:2006+A1:2009 Safety of machinery - Ergonomic design principles - Part 1: Terminology and general principles.
- EN 1037:1995+A1:2008 Safety of machinery - Prevention of unexpected start-up.
- ISO 3864-1:2011 Graphical symbols -- Safety colours and safety signs -- Part 1: Design principles for safety signs and safety markings.
- EN ISO 13849-1:2008 Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design.
- EN ISO 13849-2:2008 Safety of machinery - Safety-related parts of control systems - Part 2: Validation.

Part Ⅱ: Assessment of conformity

2.1 Essential health and safety requirements

2.2 ISO 12100 test report

2.1 Essential health and safety requirements

Clause	Requirement – test	Result	Verdict
1	Essential health and safety requirements	-	-
1.1	General remarks	-	-
1.1.1	Definitions	-	-
1.1.2	Principles of safety integration	-	-
a)	Machinery must be designed and constructed so that it is fitted for its function, and can be operated, adjusted and maintained without putting persons at risk when these operations are carried out under the conditions foreseen but also taking into account any reasonably foreseeable misuse thereof.	These specified requirements have been complied with.	**Pass**
	The aim of measures taken must be to eliminate any risk throughout the foreseeable lifetime of the machinery including the phases of transport, assembly, dismantling, disabling and scrapping.	Appropriate measures have been taken to eliminate or reduce those existed risks.	**Pass**
b)	In selecting the most appropriate methods, the manufacturer must apply the following principles, in the order given;	-	-
	-Eliminate or reduce risks as far as possible;	The measures have been taken to eliminate or reduce risks as far as possible.	**Pass**
	- Take the necessary protective measures in relation to risks that can’t be eliminated;	Appropriate guards and warning signs are used.	**Pass**
	- Inform users of the residual risks due to any shortcomings of the protection measures adopted, indicate whether any particular training is required and specify any need to provide personal protection equipment.	The related safety information for the users to operate the machine has been included in the instruction manual.	**Pass**
c)	When designing and constructing machinery and when drafting the instructions, the manufacturer or his authorized representative must envisage not only the intended use of the machinery but also any reasonably foreseeable misuse thereof.	All safety principles have been taken into account as far as possible during the design of these machines.	**Pass**
	The machinery must be designed and constructed in such a way as to prevent abnormal use if such use would engender a risk. Where appropriate, the instructions must draw the user's attention to ways which experience has shown might occur - in which the machinery should not be used.	These requirements have been complied with, and the related information also has been provided within the instruction manual.	**Pass**
d)	Machinery must be designed and constructed to take account of the constraints to which the operator is subject as a result of the necessary or	These requirements have been taken into account during the design of this machine.	**Pass**

Clause	Requirement – test	Result	Verdict
	foreseeable use of personal protective equipment.		
e)	When designing and constructing machinery, the manufacturer must taken account of the constraints to which the operator is subject as a result of the necessary or foreseeable use of personal protection equipment.	Suitable instructions for the use personal protection equipment are indicated in the instruction manual.	**Pass**
f)	Machinery must be supplied with all the essential special equipment and accessories to enable it to be adjusted, maintained and used without risk.	These related accessories have been supplied.	**Pass**
1.1.3	Materials and products	-	**-**
	The materials used to construct machinery or products used and created during its use must not endanger exposed persons' safety or health	Materials and products cannot endanger exposed person's safety or health.	**Pass**
	In particular, where fluids are used, machinery must be designed and constructed for use without risks due to filling, use, recovery or draining.	No any fluids has been used.	**N/A**
1.1.4	Lighting	-	**-**
	The manufacturer must supply integral lighting suitable for the operations concerned where its lack is likely to cause a risk despite ambient lighting of normal intensity.	No any integral lighting has been used.	**N/A**
	Machinery must be designed and constructed so that there is no area of shadow likely to cause nuisance, that there is no irritating dazzle and that there are no dangerous stroboscopic effects on moving parts due to the lighting.	No this situation	**N/A**
	Internal parts requiring frequent inspection, and adjustment and maintenance areas, must be provided with appropriate lighting.	No this situation	**N/A**
1.1.5	Design of machinery to facilitate its handling	-	**-**
	Machinery or each component part thereof must:	-	**-**
	- be capable of being handled and transported safely,	All of them are capable of being handled safely.	**Pass**
	- be packaged or designed so that it can be stored safely and without damage	The machinery can be stored safely and without damage.	**Pass**
	During the transportation of the machinery and/or its component parts, there must be no possibility of sudden movements or of hazards due to instability as long as the machinery and/or its component parts are handled in accordance with the instructions.	There are no possibility of sudden movements or of hazards due to insability as long as the machinery and/or its component parts are handled.	**Pass**
	Where the weight, size or shape of machinery or	-	**-**

Clause	Requirement – test	Result	Verdict
	its various component parts prevents them from being moved by hand, the machinery or each components part must:		
	- Either be fitted with attachments for lifting gear, or	Not applicable.	**N/A**
	- Be designed so that it can be fitted with such attachments, or	It has been complied with.	**Pass**
	- Be shaped in such a way that standard lifting gear can easily be attached	Not applicable.	**N/A**
	Where machinery or one of its component parts is to be moved by hand, it must:	-	**-**
	- Either be easily movable, or	Not applicable.	**N/A**
	- Be equipped for picking up and moving in complete safety	Not applicable.	**N/A**
	Special arrangement must be made for the handling of tools and/or machinery parts, even if lightweight, which could be dangerous.	No this kind of situation.	**N/A**
1.1.6	Ergonomics	-	**-**
	Under the intended conditions of use, the discomfort, fatigue and physical and psychological stress faced by the operator must be reduced to the minimum possible, taking into account ergonomic principles such as:	Ergonomic principles have been considered when design.	**Pass**
	- allowing for the variability of the operator's physical dimensions, strength and stamina,	The requirement has been complied with.	**Pass**
	- providing enough space for movements of the parts of the operator's body,	The requirement has been complied with.	**Pass**
	- avoiding a machine-determined work rate,	The requirement has been complied with.	**Pass**
	- avoiding monitoring that requires lengthy concentration,	The requirement has been complied with.	**Pass**
	- adapting the man/machinery interface to the foreseeable characteristics of the operators.	The requirement has been complied with.	**Pass**
1.1.7	Operating positions	-	**-**
	The operating position must be designed and constructed in such a way as to avoid any risk due to exhaust gases and/or lack of oxygen.	The requirment has been complied with.	**Pass**
	If the machinery is intended to be used in a hazardous environment presenting risks to the health and safety of the operator or if the machinery itself gives rise to a hazardous environment, adequate means must be provided to ensure that the operator has good working	No this kind of situation.	**N/A**

Clause	Requirement – test	Result	Verdict
	conditions and is protected against any foreseeable hazards.		
	Where appropriate, the operating position must be fitted with an adequate cabin designed, constructed and/or equipped to fulfill the above requirements. The exit must allow rapid evacuation. Moreover, when applicable, an emergency exit must be provided in a direction which is different from the usual exit.	No this kind of situation.	**N/A**
1.1.8	Seating	-	-
	Where appropriate and where the working conditions so permit, work stations constituting an integral part of the machinery must be designed for the installation of seats.	No this kind of situation.	**N/A**
	If the operator is intended to sit during operation and the operating position is an integral part of the machinery, the seat must be provided with the machinery.	No this kind of situation.	**N/A**
	The operator's seat must enable him to maintain a stable position. Furthermore, the seat and its distance from the control devices must be capable of being adapted to the operator.	No this kind of situation.	**N/A**
	If the machinery is subject to vibrations, the seat must be designed and constructed in such a way as to reduce the vibrations transmitted to the operator to the lowest level that is reasonably possible. The seat mountings must withstand all stresses to which they can be subjected. Where there is no floor beneath the feet of the operator, footrests covered with a slip-resistant material must be provided.	No this kind of situation.	**N/A**
1.2	Control systems	-	-
1.2.1	Safety and reliability of control systems	-	-
	Control systems must be designed and constructed so that they are safe and reliable, in a way that will prevent a dangerous situation arising.	All related safe and reliable technologies have been used adequately for these machines.	**Pass**
	Above all they must be designed and constructed:	-	-
	- They can withstand the rigors of normal use and external influences	The whole control system can withstand the rigors of normal use and external factors.	**Pass**

Clause	Requirement – test	Result	Verdict
	- a fault in the hardware or the software of the control system does not lead to hazardous situations,	No this situation	**N/A**
	- Errors in control system logic don't lead to dangerous situations	Errors in logic don't lead to dangerous situations.	**Pass**
	- reasonably foreseeable human error during operation does not lead to hazardous situations.	Reasonably foreseeable human error does not lead to hazardous situations	**Pass**
	Particular attention must be given to the following points:	-	-
	- the machinery must not start unexpectedly,	The machinery cannot start unexpectedly.	**Pass**
	- the parameters of the machinery must not change in an uncontrolled way, where such change may lead to hazardous situations,	The parameters of the machinery can not change in an uncontrolled way	**Pass**
	- the machinery must not be prevented from stopping if the stop command has already been given,	The machinery cannot be prevented from stopping when the stop command has already been given.	**Pass**
	- no moving part of the machinery or piece held by the machinery must fall or be ejected,	no moving part of the machinery or piece held by the machinery must fall or be ejected,	**Pass**
	- automatic or manual stopping of the moving parts, whatever they may be, must be unimpeded,	Any stopping can not be unimpeded.	**Pass**
	- the protective devices must remain fully effective or give a stop command,	The protective devices is remain fully effective.	**Pass**
	- the safety-related parts of the control system must apply in a coherent way to the whole of an assembly of machinery and/or partly completed machinery.	The safety-related parts of the control system has been apply in a coherent way	**Pass**
	For cable-less control, an automatic stop must be activated when correct control signals are not received, including loss of communication.	The automatic stop has been activated.	**Pass**
1.2.2	Control devices	-	-
	Control devices must be:	-	-
	- clearly visible and identifiable, using pictograms where appropriate,	It has been complied with.	**Pass**
	- positioned in such a way as to be safely operated without hesitation or loss of time and without ambiguity,	Suitable position for each control device has been taken.	**Pass**
	- Designed so that the movement of the control is consistent with its effect	The movement of the control is consistent with its effect.	**Pass**
	- located outside the danger zones, except where necessary for certain control devices such as an emergency stop or a teach pendant,	They are located outside the danger zones.	**Pass**

Clause	Requirement – test	Result	Verdict
	- Positioned so that their operation can't cause additional risk	Suitable position for each control device has been taken.	**Pass**
	- designed or protected in such a way that the desired effect, where a hazard is involved, can only be achieved by a deliberate action,	Designed and protected can only be achieved by a deliberate action.	**Pass**
	- made in such a way as to withstand foreseeable forces; particular attention must be paid to emergency stop devices liable to be subjected to considerable forces.	All of them can withstand foreseeable strain.	**Pass**
	Where a control is designed and constructed to perform several different actions, namely where there is no one-to-one correspondence, the action to be performed must be clearly displayed and subject to confirmation where necessary.	No this situation,	**N/A**
	Controls devices must be so arranged that their layout, travel and resistance to operation are compatible with the action to be performed, taking account of ergonomic principles	All control devices have been arranged adequately and taking account of ergonomic principles.	**Pass**
	Constraints due to the necessary foreseeable use of personal protection equipment must be taken into account	This kind of situation doesn't exist.	**Pass**
	Machinery must be fitted with indicators as required for safe operation	This requirement has been complied with.	**Pass**
	The operator must be able to read them from the control position	They can be read from the control position.	**Pass**
	From each control position, the operator must be able to ensure that no-one is in the danger zones, or the control system must be designed and constructed in such a way that starting is prevented while someone is in the danger zone.	The operator can be able to ensure the no-oe is in the danger zones from the control position.	**Pass**
	If neither of these possibilities is applicable, before the machinery starts, an acoustic and/or visual warning signal must be given. The exposed persons must have time to leave the danger zone or prevent the machinery starting up.	An acoustic and visual warning signal device has been used.	**Pass**
	If necessary, means must be provided to ensure that the machinery can be controlled only from control positions located in one or more predetermined zones or locations.	Emergency stop switch can be used to prevent the machine starting up.	**Pass**
	Where there is more than one control position, the control system must be designed in such a way that the use of one of them precludes the use	No this situation	**N/A**

Clause	Requirement – test	Result	Verdict
	of the others, except for stop controls and emergency stops.		
	When machinery has two or more operating positions, each position must be provided with all the required control devices without the operators hindering or putting each other into a hazardous situation.	No this situation.	**N/A**
1.2.3	Starting	-	-
	It must be possible to start machinery only by voluntary actuation of a control provided for the purpose	These machines shall be started only by voluntary actuation of a control.	**Pass**
	The same requirement applies:	-	-
	- When restarting the machinery after stoppage, whatever the cause	The same requirement is applied.	**Pass**
	- When effecting a significant change in the operating conditions	The same requirement is applied.	**Pass**
	However, the restarting of the machinery or a change in operating conditions may be effected by voluntary actuation of a device other than the control device provided for the purpose, on condition that this does not lead to a hazardous situation.	Not applicable.	**N/A**
	For machinery functioning in automatic mode, the starting of the machinery, restarting after a stoppage, or a change in operating conditions may be possible without intervention, provided this does not lead to a hazardous situation.	Not applicable.	**N/A**
	Where machinery has several starting control devices and the operators can therefore put each other in danger, additional devices must be fitted to rule out such risks. If safety requires that starting and/or stopping must be performed in a specific sequence, there must be devices which ensure that these operations are performed in the correct order.	Not applicable.	**N/A**
1.2.4	Stopping	-	-
1.2.4.1	Normal stopping	-	-
	Each machine must be fitted with a control whereby the machine can be brought safely to a complete stop	The normal stopping devices have been used for these machines.	**Pass**
	Each workstation must be fitted with a control to stop some or all of the moving parts of the	Workstation has fitted with a normal stopping device.	**Pass**

Clause	Requirement – test	Result	Verdict
	machinery, depending on the type of hazard, so that the machinery is rendered safe		
	The machinery's stop control must have priority over the start controls	They have priority over the start controls.	**Pass**
	Once the machinery or its dangerous parts have stopped, the energy supply to the actuators concerned must be cut off	The energy supply has been cut off after the machine is stopped.	**Pass**
1.2.4.2	Operational stop	-	-
	Where, for operational reasons, a stop control that does not cut off the energy supply to the actuators is required, the stop condition must be monitored and maintained.	No this situation.	**N/A**
1.2.4.3	Emergency stop	-	-
	machinery must be fitted with one or more emergency stop devices to enable actual or impending danger to be averted	Not applicable.	**N/A**
	The following exceptions apply:	-	-
	- Machines in which an emergency stop device would not lessen the risk, either because it would not reduce the stopping time or because it would not enable the special measures required to deal with the risk to be taken	Not applicable.	**N/A**
	- Hand-held portable machines and hand-guided machines	Not applicable.	**N/A**
	The emergency stop device must:	-	-
	- Have clearly identifiable, clearly visible and quickly accessible controls	Not applicable.	**N/A**
	- Stop the dangerous process as quickly as possible, without creating additional hazards	Not applicable.	**N/A**
	- Where necessary, trigger or permit the triggering of certain safeguard movements	Not applicable.	**N/A**
	Once active operation of the emergency stop control has ceased following a stop command, that command must be sustained by engagement of the emergency stop device until that engagement is specifically overridden	Not applicable.	**N/A**
	It must be possible to disengage the device only by an appropriate operation, and disengaging the device must not restart the machinery but only permit restarting	Not applicable.	**N/A**
	The emergency stop function must be available and operational at all times, regardless of the	Not applicable.	**N/A**

Clause	Requirement – test	Result	Verdict
	operating mode.		
	Emergency stop devices must be a back-up to other safeguarding measures and not a substitute for them.	Not applicable.	**N/A**
1.2.4.4	Complex installations	-	-
	In the case of machinery or parts of machinery designed to work together, must so design and construct the machinery that the stop controls, including the emergency stop, can stop not only the machinery itself but also all equipment upstream and/or downstream if its continued operation can be dangerous	Not applicable.	**N/A**
1.2.5	Mode selection	-	-
	The control mode selected must override all other control systems with the exception of the emergency stop	The control mode of selection can override all other control systems with the exception of the emergency stop.	**Pass**
	If machinery has been designed and built to allow for its use in several control or operating modes presenting different safety levels, it must be fitted with a mode selector which can be locked in each position	Not applicable.	**N/A**
	Each position of the selector must correspond to a single operating or control mode	Each of them is corresponding to a single operating or control mode.	**Pass**
	The selector may be replaced by another selection method which restricts the use of certain functions of the machinery to certain categories of operator	No this kind of application.	**N/A**
	If, for certain operations, the machinery must be able to operate with its protection devices neutralized, the mode selector must simultaneously:	No this kind of application.	**N/A**
	- disable all other control or operating modes,	Not applicable.	**N/A**
	- Permit movements only by controls requiring sustained action	Not applicable.	**N/A**
	- Permit the operation of dangerous moving parts only in enhanced safety conditions while preventing hazards from linked sequences	Not applicable.	**N/A**
	- Prevent any movement liable to pose a danger by acting voluntarily or involuntarily on the machine’s internal sensors	Not applicable.	**N/A**
	If these four conditions cannot be fulfilled simultaneously, the control or operating mode	This requirement has been complied with.	**Pass**

Clause	Requirement – test	Result	Verdict
	selector must activate other protective measures designed and constructed to ensure a safe intervention zone.		
	In addition, the operator must be able to control operation of the parts he is working on at the adjustment point.	Not applicable.	**N/A**
1.2.6	Failure of the power supply	-	-
	The interruption, re-establishment after an interruption or fluctuation in whatever manner of the power supply to the machinery must not lead to a dangerous situation	No risk is generated from these accidental situations.	**Pass**
	In particular:	-	-
	- The machinery must not start unexpectedly	It doesn't start unexpectedly.	**Pass**
	- the parameters of the machinery must not change in an uncontrolled way when such change can lead to hazardous situations,	the parameters of the machinery will not change in an uncontrolled way	**Pass**
	- The machinery must not be prevented from stopping if the command has already been given	This requirement has been complied with.	**Pass**
	- No moving part of the machinery or piece held by the machinery must fall or be ejected	This clause has been met.	**Pass**
	- Automatic or manual stopping of the moving parts whatever they must be unimpeded	This requirement has been complied with.	**Pass**
	- The protection devices must remain fully effective	All protection devices can remain effective fully.	**Pass**
1.2.7	Failure of the control circuit	-	-
	A fault in the control circuit, or failure of or damage to the control circuit must not lead to dangerous situations	The failure of the control circuit will not lead to dangerous situations.	**Pass**
	In particular:	-	-
	- The machinery must not start unexpectedly	It doesn't start unexpectedly.	**Pass**
	- The machinery must not be prevented from stopping if the command has already been given	This requirement has been complied with.	**Pass**
	- No moving part of the machinery or piece held by the machinery must fall or be ejected	No part will fall or be ejected.	**Pass**
	- Automatic or manual stopping of the moving parts whatever they may be must be unimpeded	This requirement has been complied with.	**Pass**
	- The protection device must remain fully effective	All of protection devices can remain effective fully.	**Pass**
1.2.8	Software	-	-
	Interactive software between the operator and the command or control system of a machine must be user-friendly	Not applicable.	**N/A**

Clause	Requirement – test	Result	Verdict
1.3	Protection against mechanical hazards	-	-
1.3.1	Risk of loss of stability	-	-
	Machinery, components and fittings thereof must be so designed and constructed that they are stable enough, under the foreseen operating conditions for use without risk of overturning, falling or unexpected movement	The stability of machines, components and fittings has been taken into consideration.	**Pass**
	If the shape of the machinery itself or its intended installation doesn't offer sufficient stability, appropriate means of anchorage must be incorporated and indicated in the instructions	Not applicable.	**N/A**
1.3.2	Risk of break-up during operation	-	-
	The various parts of machinery and their linkages must be able to withstand the stress to which they are subject when used as foreseen by the manufacturer	All parts used can withstand sufficient stress for working.	**Pass**
	The durability of the materials used must be adequate for the nature of the workplace foreseen by the manufacturer, in particular as regards the phenomena of fatigue, aging, corrosion and abrasion	All materials used have adequate durability.	**Pass**
	The manufacturer must indicate in the instructions the type and frequency of inspection and maintenance required for safety reasons, where appropriate, indicate the parts subject to wear and the criteria for replacement	This information in relation to inspection and maintenance etc. are indicated in the instruction manual.	**Pass**
	Where a risk of rupture or disintegration remains despite the measures taken the moving parts must be mounted and positioned in such a way that in case of rupture their fragments will be contained	No this kind of situation.	**N/A**
	Both rigid and flexible pipes carrying fluids, particularly those under high pressure, must be able to withstand the foreseen internal and external stresses and must be firmly attached and/or protected against all manner of external stresses and strains; precaution must be taken to ensure that no risk is posed by a rupture	No this kind of situation.	**N/A**
	Where the material to be processed is fed to the tool automatically, the following conditions must be fulfilled to avoid risks to the persons exposed:	-	-
	- When the work piece comes into contact with the tool the later must have attained its normal	This requirement has been complied with.	**Pass**

Clause	Requirement – test	Result	Verdict
	working conditions		
	- When the tool starts and/or stops the feed movement and the tool movement must be coordinated	This requirement has been complied with.	**Pass**
1.3.3	Risks due to falling or ejected objects	-	-
	Precautions must be taken to prevent risks from falling or ejected objects	No this kind of risk.	**N/A**
1.3.4	Risks due to surfaces, edges or angles	-	-
	In so far as their purpose allows, accessible parts of the machinery must have no sharp edges, no sharp angles, and no rough surfaces likely to cause injury	All parts have been processed carefully so that they have no sharp edges, no sharp angles, and no rough surfaces likely to cause injury.	**Pass**
1.3.5	Risks related to combined machinery	-	-
	Where the machinery is intended to carry out several different operations with the manual removal of the piece between each operation, it must be designed and constructed in such a way as to enable each element to be used separately without the other elements constituting a danger or risk for the exposed person	No risk is generated from that situation for the exposed person.	**Pass**
	For this purpose, it must be possible to start and stop separately and elements that are not protected	Not applicable.	**N/A**
1.3.6	Risks relating to variations in operating conditions	-	-
	Where the machinery persforms operations under different conditions of use, it must be designed and constructed in such a way that selection and adjustment of these conditions can be carried out safely and reliably	The machinery can be operated safely and reliably under different conditions of use.	**Pass**
1.3.7	Prevention of risks related to moving parts	-	-
	The moving parts of machinery must be designed, built and laid out to avoid hazards or, where hazards persist, fixed with guards or protective devices in such a way as to prevent all risk of contact which could lead to accidents	Appropriate protective guards have been fitted to avoid hazards.	**Pass**
	All necessary steps must be taken to prevent accidental blockage of moving parts involved in the work	Appropriate protective guards have been taken to avoid hazards.	**Pass**
	In cases where, despite the precautions taken, a blockage is likely to occur, specific protection devices or tools, the instruction handbook and	No this kind of risk situation.	**N/A**

Clause	Requirement – test	Result	Verdict
	possibly a sign on the machinery should be provided by the manufacturer to enable the equipment to be safely unblocked		
	The instructions and, where possible, a sign on the machinery shall identify these specific protective devices and how they are to be used.	No this contained.	**N/A**
1.3.8	Choice of protection against risks arising from moving parts	-	**-**
	Guards or protection devices used to protect against the risks related to moving parts must be selected on the basis of the type of risk	Guards or protection devices have been used appropriately.	**Pass**
	The following guidelines must be used to help make the choice	-	**-**
1.3.8.1	Moving transmission parts	-	**-**
	Guards designed to protect exposed persons against the risks associated with moving transmission parts must be:	-	**-**
	- Either fixed, complying with requirements 1.4.1 and 1.4.2.1 or	The fixed guards are used.	**Pass**
	- Interlocking movable guards as referred to in section 1.4.2.2.	No this situation.	**N/A**
	Interlocking movable guards should be used where frequent access is envisaged.	No this situation.	**N/A**
1.3.8.2	Moving parts involved in the process	-	**-**
	guards or protection devices designed to protect exposed persons against the risks associated with moving parts contributing to the work must be:	-	**-**
	- either fixed guards complying with requirements 1.4.1 and 1.4.2.1	fixed guards complying with requirements 1.4.1 and 1.4.2.1	**Pass**
	- interlocking movable guards as referred to in section 1.4.2.2, or	No this situation.	**N/A**
	- protective devices as referred to in section 1.4.3, or	No this situation.	**N/A**
	- a combination of the above.	No this situation.	**N/A**
	However, when certain moving parts directly involved in the process can’t be made completely or partially inaccessible during operation owing to operations requiring near-by operator intervention, where technically possible such parts must be fitted with:	-	**-**
	- fixed guards or interlocking movable guards preventing access to those sections of the parts	Not applicable.	**N/A**

Clause	Requirement – test	Result	Verdict
	that are not used in the work, and		
	- adjustable guards as referred to in section 1.4.2.3 restricting access to those sections of the moving parts where access is necessary.	Not applicable.	**N/A**
1.3.9	Risks of uncontrolled movements	-	-
	When a part of the machinery has been stopped, any drift away from the stopping position, for whatever reason other than action on the control devices, must be prevented or must be such that it does not present a hazard.	The requirement has been complied with.	**Pass**
1.4	Required characteristics of guards and protection devices	-	-
1.4.1	General requirement	-	-
	Guards and protection devices must:	-	-
	- Be of robust construction	They are of robust construction.	**Pass**
	- be securely held in place,	be securely held in place,	**Pass**
	- Not give rise to any additional risk	No additional risk is generated.	**Pass**
	- Not be easy to bypass or render non-operational	They cannot be easy to bypass or render non-operational.	**Pass**
	- Be located at an adequate distance from the danger zone	Appropriate safety distances according to EN ISO13857 has been complied with.	**Pass**
	- Cause minimum obstruction to the view of the production process	This requirement has been complied with.	**Pass**
	- Enable essential work to be carried out on the installation and/or replacement of tools and for maintenance purposes by restricting access exclusively to the area where the work has to be done, if possible without the guard having to be removed or the protective device having to be disabled.	These requirements have been taken into account during the design of the protection devices.	**Pass**
	In addition, guards must, where possible, protect against the ejection or falling of materials or objects and against emissions generated by the machinery.	No this situation.	**N/A**
1.4.2	Special requirements for guards	-	-
1.4.2.1	Fixed guards	-	-
	Fixed guards must be fixed by systems that can be opened or removed only with tools.	They are held securely in place.	**Pass**
	Their fixing systems must remain attached to the guards or to the machinery when the guards are removed.	They can be opened only with tools.	**Pass**
	Where possible, guards must be unable to remain	Guards are unable to remain in place	**Pass**

Clause	Requirement – test	Result	Verdict
	in place without their fixings	without their fixings	
1.4.2.2	Interlocking movable guards	-	-
	Interlocking movable guards must:	-	-
	- As far as possible remain fixed to the machinery when open	Not applicable.	**N/A**
	- be designed and constructed in such a way that they can be adjusted only by means of an intentional action.	Not applicable.	**N/A**
	Interlocking movable guards must be associated with an interlocking device that:	-	-
	- prevents the start of hazardous machinery functions until they are closed and	This kind of situation doesn't exist.	**N/A**
	- gives a stop command whenever they are no longer closed.	This kind of situation doesn't exist.	**N/A**
	Where it is possible for an operator to reach the danger zone before the risk due to the hazardous machinery functions has ceased, movable guards must be associated with a guard locking device in addition to an interlocking device that:	This kind of situation doesn't exist.	**N/A**
	- prevents the start of hazardous machinery functions until the guard is closed and locked, and	This kind of situation doesn't exist.	**N/A**
	- keeps the guard closed and locked until the risk of injury from the hazardous machinery functions has ceased.	This kind of situation doesn't exist.	**N/A**
	Interlocking movable guards must be designed in such a way that the absence or failure of one of their components prevents starting or stops the hazardous machinery functions.	This kind of situation doesn't exist.	**N/A**
1.4.2.3	Adjustable guards restricting access	-	-
	Adjustable guards restricting access to those areas of the moving parts strictly necessary for the work must:	No adjustable guard has been used.	**N/A**
	- Be adjustable manually or automatically according to the type of work involved	Not applicable.	**N/A**
	- Be readily adjustable without the use of tools	Not applicable.	**N/A**
1.4.3	Special requirements for protection devices	-	-
	Protection devices must be designed and incorporated into the control system so that:	-	-
	- Moving parts can't start up while they are within the operator's reach	Not applicable.	**N/A**
	- persons cannot reach moving parts while the	Not applicable.	**N/A**

Clause	Requirement – test	Result	Verdict
	parts are moving, and		
	- The absence or failure of one of their components prevents starting or stops the moving parts	Not applicable.	**N/A**
	Protective devices must be adjustable only by means of an intentional action.	Not applicable.	**N/A**
1.5	Protection against other hazards	-	**-**
1.5.1	Electricity supply	-	**-**
	Where machinery has an electricity supply it must be designed, constructed and equipped so that all hazards of an electrical nature are or can be prevented	Appropriate protections have been taken.	**Pass**
	The safety objectives set out in Directive 2006/95/EC shall apply to machinery. However, the obligations concerning conformity assessment and the placing on the market and/or putting into service of machinery with regard to electrical hazards are governed solely by this Directive.	This requirement has been complied with.	**Pass**
1.5.2	Static electricity	-	**-**
	Machinery must be so designed and constructed as to prevent or limit the build-up of potentially dangerous electrostatic charges and/or be fitted with a discharging system	Adequate safety design for this requirement has been taken.	**Pass**
1.5.3	Energy supply other than electricity	-	**-**
	Where machinery is powered by an energy other than electricity, it must be so designed, constructed and equipped as to avoid all potential hazards associated with these types of energy	This situation doesn’t exist.	**N/A**
1.5.4	Errors of fitting	-	**-**
	Errors likely to be made when fitting or refitting certain parts which could be a source of risk must be made impossible by the design of such parts or, failing this, by information on moving parts and/or their housings where the direction of movement must be known to avoid a risk	Appropriate design has been taken during design and attention has been paid during fitting.	**Pass**
	Where necessary, the instructions must give further information on these risks.	Adequate instructions are given in the instruction manual.	**Pass**
	Where a faulty connection can be the source of risk, incorrect connections must be made impossible by design or, failing this, by information given on the elements to be	The relative safety technologies have been taken and sufficient information has been given.	**Pass**

Clause	Requirement – test	Result	Verdict
	connected and, where appropriate, on the means of connection.		
1.5.5	Extreme temperatures	-	-
	Step must be taken to eliminate any risk of injury caused by contact with or proximity to machinery parts or materials at high or very low temperatures	Appropriate measure has been taken.	**Pass**
	The necessary steps must also be taken to avoid or protect against the risk of hot or very cold material being ejected.	Appropriate measure has been taken.	**Pass**
1.5.6	Fire	-	-
	Machinery must be designed and constructed to avoid all risk of fire or overheating posed by the machinery itself or by gases, liquids, dusts, vapors or the other substances produced or used by the machinery	This kind of situation doesn't exist.	**N/A**
1.5.7	Explosion	-	-
	Machinery must be designed and constructed to avoid any risk of explosion posed by the machinery itself or by gases, liquids, dusts, vapors or other substances produced or used by the machinery	No explosion risk is generated.	**N/A**
	Machinery must comply, as far as the risk of explosion due to its use in a potentially explosive atmosphere is concerned, with the provisions of the specific Community Directives.	No explosion risk is generated.	**N/A**
1.5.8	Noise	-	-
	Machinery must be so designed and constructed that risks resulting from the emission of airborne noise are reduced to the lowest level taking accounting of technical progress and the availability of means of reducing noise, in particular at source	Appropriate measure has been taken.	**Pass**
	The level of noise emission may be assessed with reference to comparative emission data for similar machinery.	No this necessary.	**N/A**
1.5.9	Vibration	-	-
	Machinery must be so designed and constructed that risks resulting from vibrations produced by the machinery are reduced to the lowest level, taking account of technical progress and the availability of means of reducing vibration, in	Not applicable.	**N/A**

Clause	Requirement – test	Result	Verdict
	particular at source		
	The level of vibration emission may be assessed with reference to comparative emission data for similar machinery.	No this necessary.	**N/A**
1.5.10	Radiation	-	-
	Undesirable radiation emissions from the machinery must be eliminated or be reduced to levels that do not have adverse effects on persons.	No harmful emission of radiation has been found.	**N/A**
	Any functional ionising radiation emissions must be limited to the lowest level which is sufficient for the proper functioning of the machinery during setting, operation and cleaning. Where a risk exists, the necessary protective measures must be taken.	No harmful emission of radiation has been found.	**N/A**
	Any functional non-ionising radiation emissions during setting, operation and cleaning must be limited to levels that do not have adverse effects on persons.	No harmful emission of radiation has been found.	**N/A**
1.5.11	External radiation	-	-
	Machinery must be so designed and constructed that external radiation doesn't interfere with its operation	Appropriate EMC protection measure has been taken.	**Pass**
1.5.12	Laser equipment	-	-
	Where laser equipment is used, the following provisions should be taken into account;	No laser equipment is used.	**N/A**
	- Laser equipment on machinery must be designed and constructed so as to prevent any accidental radiation	No laser equipment is used.	**N/A**
	- Laser equipment on machinery must be protected so that effective radiation, radiation produced by reflection or diffusion and secondary radiation don't damage health	No laser equipment is used.	**N/A**
	- Optical equipment for the observation or adjustment of laser equipment on machinery must be such that no health risk is created by the laser rays	No laser equipment is used.	**N/A**
1.5.13	Emissions of hazardous materials and substances	-	-
	Machinery must be so designed, constructed and/or equipped that risks due to gases, liquids, dust, vapors and other waste materials which it produces can be avoided	It has been complied with.	**Pass**

Clause	Requirement – test	Result	Verdict
	Where a hazard cannot be eliminated, the machinery must be so equipped that hazardous materials and substances can be contained, evacuated, precipitated by water spraying, filtered or treated by another equally effective method.	No this kind of hazard exists.	**N/A**
	Where the process is not totally enclosed during normal operation of the machinery, the devices for containment and/or evacuation must be situated in such a way as to have the maximum effect.	Not applicable.	**N/A**
1.5.14	Risk of being trapped in a machine	-	**-**
	Machinery must be so designed, constructed or fitted with a means of preventing a exposed person from being enclosed within it or, if that is impossible, with a means of summoning help	It has been complied with the requirement.	**Pass**
1.5.15	Risk of slipping, tripping or falling	-	**-**
	Parts of the machinery where persons are liable to move about or stand must be designed and constructed to prevent persons slipping, tripping or falling on or off these parts	No slipping, tripping or falling risk has been found.	**N/A**
	Where appropriate, these parts must be fitted with handholds that are fixed relative to the user and that enable them to maintain their stability.	No this situation.	**N/A**
1.5.16	Lightning	-	**-**
	Machinery in need of protection against the effects of lightning while being used must be fitted with a system for conducting the resultant electrical charge to earth.	Not applicable.	**N/A**
1.6	Maintenance	-	**-**
1.6.1	Machinery maintenance	-	**-**
	Adjustment and maintenance points must be located outside danger zones.	They are located outside danger zones.	**Pass**
	It must be possible to carry out adjustment, maintenance, repair, cleaning and servicing operations while machinery is at a standstill	These jobs can be carried out while the machine is at a standstill.	**Pass**
	If one or more of the above conditions can’t be satisfied for technical reasons, these operations must be possible without risk	Not applicable.	**N/A**
	In the case of automated machinery and, where necessary, other machinery, the manufacturer must take provision for a connecting device for	The requirement has been complied with.	**Pass**

Clause	Requirement – test	Result	Verdict
	mounting diagnostic fault-finding equipment		
	Automated machine components which have to be changed frequently, in particular for a change in manufacture or where they are liable to wear or likely to deteriorate following an accident, must be capable of being removed and replaced easily and in safety	The relative components can be removed and replaced easily and in safety.	**Pass**
	Access to the components must enable these tasks to be carried out with the necessary technical means in accordance with an operating method specified by the manufacturer	Appropriate means have been given in the instruction manual.	**Pass**
1.6.2	Access to operating position and servicing points	-	**-**
	Machinery must be designed and constructed in such a way as to allow access in safety to all areas where intervention is necessary during operation, adjustment and maintenance of the machinery.	Appropriate protection measures have been taken so that all areas can be accessed safely.	**Pass**
1.6.3	Isolation of energy sources	-	**-**
	All machinery must be fitted with means to isolate it from all energy sources	Circuit breaker has been taken into used.	**Pass**
	Such isolators must be clearly identified	They are identified clearly.	**Pass**
	They must be capable of being locked if reconnection could endanger exposed persons	Not applicable.	**N/A**
	The isolator must be capable of being locked also where an operator is unable, from any of the points to which he has access, to check that the energy is still cut off	The clause has been met.	**Pass**
	In the case of machinery supplied with electricity through a plug capable of being plugged into a circuit, separation of the plug is sufficient	Not applicable.	**N/A**
	After the energy is cut off, it must be possible to dissipate normally any energy remaining or stored in the circuits of the machinery without risk to exposed persons	This requirement has been complied with.	**Pass**
	As an exception to the above requirements, certain circuits may remain connected to their energy source in order, for example, to hold parts, protect information, light interiors, etc. In this case, special steps must be taken to ensure operator safety	This kind of situation doesn’t exist.	**N/A**
1.6.4	Operator intervention	-	**-**
	Machinery must be so designed, constructed and	The operator intervention has been	**Pass**

Clause	Requirement – test	Result	Verdict
	equipped that the need for operator intervention is limited	limited.	
	If operator intervention can't be avoided, it must be possible to carry it out easily and in safety	No this kind of situation.	**N/A**
1.6.5	Cleaning of internal parts	-	-
	The machinery must be designed and constructed in such a way that it is possible to clean internal parts which have contained dangerous substances or preparations without entering them; any necessary unblocking must also be possible from the outside	The clause has been met.	**Pass**
	If it is absolutely impossible to avoid entering the machinery, the manufacturer must take steps during its construction to allow cleaning to take place safely.	It is not need to enter the machinery.	**N/A**
1.7	Information	-	-
1.7.1	Information and warnings on the machinery	-	-
	Information and warnings on the machinery should preferably be provided in the form of readily understandable symbols or pictograms.	Information and warnings are readily understandable pictograms.	**Pass**
	Any written or verbal information and warnings must be expressed in an official Community language or languages, which may be determined in accordance with the Treaty by the Member State in which the machinery is placed on the market and/or put into service and may be accompanied, on request, by versions in any other official Community language or languages understood by the operators.	It is in English.	**Pass**
1.7.1.1	Information and information devices	-	-
	The information needed to control machinery must be provided in a form that is unambiguous and easily understood.	Be unambiguous and easily understood.	**Pass**
	It must not be excessive to the extent of overloading the operator.	No this situation is found.	**Pass**
	Visual display units or any other interactive means of communication between the operator and the machine must be easily understood and easy to use.	It can be easily understood and easy to use.	**Pass**
1.7.1.2	Warning devices	-	-
	Where the health and safety of persons may be endangered by a fault in the operation of	It has been complied with.	**Pass**

Clause	Requirement – test	Result	Verdict
	unsupervised machinery, the machinery must be equipped in such a way as to give an appropriate acoustic or light signal as a warning.		
	Where machinery is equipped with warning devices these must be unambiguous and easily perceived. The operator must have facilities to check the operation of such warning devices at all times.	Be unambiguous and easily understood.	**Pass**
	The requirements of the specific Community Directives concerning colors and safety signals must be complied with	It has been complied with.	**Pass**
1.7.2	Warning of residual risks	-	**-**
	Where risks remain despite the inherent safe design measures, safeguarding and complementary protective measures adopted, the necessary warnings, including warning devices, must be provided.	Appropriate warning has been taken.	**Pass**
	Such warnings should preferably use readily understandable pictograms and/or be drawn up in one of the languages of the country in which the machinery is to be used, accompanied, on request, by the languages understood by the operators	They can be understood readily.	**Pass**
1.7.3	Marking	-	**-**
	All machinery must be marked legibly and indelibly with the following minimum particular:	-	**-**
	- the business name and full address of the manufacturer and, where applicable, his authorised representative,	It has been marked.	**Pass**
	- designation of the machinery,	It has been marked.	**Pass**
	- the CE Marking (see Annex III),	It has been marked.	**Pass**
	- designation of series or type,	It has been marked.	**Pass**
	- serial number, if any,	It has been marked.	**Pass**
	- the year of construction, that is the year in which the manufacturing process is completed.	It has been marked.	**Pass**
	It is prohibited to pre-date or post-date the machinery when affixing the CE marking.	The CE marking is affixed in a proper-date.	**Pass**
	Furthermore, machinery designed and constructed for use in a potentially explosive atmosphere must be marked accordingly.	No this situation.	**N/A**
	Machinery must also bear full information relevant to its type and essential for safe use.	This information has been provided.	**Pass**

Clause	Requirement – test	Result	Verdict
	Such information is subject to the requirements set out in section 1.7.1.		
	Where a machine part must be handled during use with lifting equipment, its mass must be indicated legibly, indelibly and unambiguously.	No this situation.	**N/A**
	The interchangeable equipment referred to in article 1 (2), third subparagraph, must bear the same information	No this situation.	**N/A**
	Machinery must also bear full information relevant to its type and essential for safe use. Such information is subject to the requirements set out in section 1.7.1.	This information has been provided.	**Pass**
1.7.4	Instructions	-	**-**
	All machinery must be accompanied by instructions in the official Community language or languages of the member State in which it is placed on the market and/or put into service.	In English.	**Pass**
	The instructions accompanying the machinery must be either ‘Original instructions’ or a ‘Translation of the original instructions’, in which case the translation must be accompanied by the original instructions.	A ‘Translation of the original instructions has been provided.	**Pass**
	By way of exception, the maintenance instructions intended for use by specialized personnel mandated by the manufacturer or his authorized representative may be supplied in only one Community language which the specialized personnel understand.	A maintenance instructions has been provided..	**N/A**
	The instructions must be drafted in accordance with the principles set out below.	It has been complied with.	**Pass**
1.7.4.1	General principles for the drafting of instructions	-	**-**
	a) The instructions must be drafted in one or more official Community languages. The words ‘Original instructions’ must appear on the language version(s) verified by the manufacturer or his authorized representative.	The ‘Original instructions’ don’t appear on the language version.	**N/A**
	(b) Where no ‘Original instructions’ exist in the official language(s) of the country where the machinery is to be used, a translation into that/those language(s) must be provided by the manufacturer or his authorized representative or by the person bringing the machinery into the	The translation has been taken.	**Pass**

Clause	Requirement – test	Result	Verdict
	language area in question. The translations must bear the words 'Translation of the original instructions'.		
	(c) The contents of the instructions must cover not only the intended use of the machinery but also take into account any reasonably foreseeable misuse thereof.	It is included in the instructions.	**Pass**
	(d) In the case of machinery intended for use by non-professional operators, the wording and layout of the instructions for use must take into account the level of general education and acumen that can reasonably be expected from such operators.	The requirement has been complied with.	**Pass**
1.7.4.2	Contents of the instructions	-	**-**
	Each instruction manual must contain, where applicable, at least the following information:	-	**-**
	a) the business name and full address of the manufacturer and of his authorized representative;	This information has been provided.	**Pass**
	b) the designation of the machinery as marked on the machinery itself, except for the serial number (see section 1.7.3);	This information has been provided.	**Pass**
	(c) the EC declaration of conformity, or a document setting out the contents of the EC declaration of conformity, showing the particulars of the machinery, not necessarily including the serial number and the signature;	The EC declaration of conformity has been provided.	**Pass**
	(d) a general description of the machinery;	This information has been provided.	**Pass**
	(e) the drawings, diagrams, descriptions and explanations necessary for the use, maintenance and repair of the machinery and for checking its correct functioning;	This information has been provided.	**Pass**
	(f) a description of the workstation(s) likely to be occupied by operators;	No this contained.	**N/A**
	(g) a description of the intended use of the machinery;	This information has been provided.	**Pass**
	(h) warnings concerning ways in which the machinery must not be used that experience has shown might occur;	This information has been provided.	**Pass**
	(i) assembly, installation and connection instructions, including drawings, diagrams and the means of attachment and the designation of	This information has been provided.	**Pass**

Clause	Requirement – test	Result	Verdict
	the chassis or installation on which the machinery is to be mounted;		
	(j) instructions relating to installation and assembly for reducing noise or vibration;	No this contained.	**N/A**
	(k) instructions for the putting into service and use of the machinery and, if necessary, instructions for the training of operators;	No this contained.	**N/A**
	(l) information about the residual risks that remain despite the inherent safe design measures, safeguarding and complementary protective measures adopted;	No this contained.	**N/A**
	(m) instructions on the protective measures to be taken by the user, including, where appropriate, the personal protective equipment to be provided;	No this contained.	**N/A**
	(n) the essential characteristics of tools which may be fitted to the machinery;	No this contained.	**N/A**
	(o) the conditions in which the machinery meets the requirement of stability during use, transportation, assembly, dismantling when out of service, testing or foreseeable breakdowns;	No this contained.	**N/A**
	(p) instructions with a view to ensuring that transport, handling and storage operations can be made safely, giving the mass of the machinery and of its various parts where these are regularly to be transported separately;	No this contained.	**N/A**
	(q) the operating method to be followed in the event of accident or breakdown; if a blockage is likely to occur, the operating method to be followed so as to enable the equipment to be safely unblocked;	No this contained.	**N/A**
	(r) the description of the adjustment and maintenance operations that should be carried out by the user and the preventive maintenance measures that should be observed;	It has been included in the instructions.	**Pass**
	(s) instructions designed to enable adjustment and maintenance to be carried out safely, including the protective measures that should be taken during these operations;	Use the language of the country in which the machinery is to be used	**Pass**
	(t) the specifications of the spare parts to be used, when these affect the health and safety of operators;	It has been included in the instructions.	**Pass**
	(u) the following information on airborne noise	-	-

Clause	Requirement – test	Result	Verdict
	emissions:		
	- Equivalent continuous A-weighted pressure level at workstations, where this exceeds 70 dB (A); where this level doesn't exceed 70 dB (A), this fact must be indicated	A noise test report has been taken in the TCF.	**Pass**
	- Peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa (130 dB in relation to 20 uPa)	Not applicable.	**N/A**
	- Sound power level emitted by the machinery where the equivalent continuous A-weight sound pressure level at workstations exceeds 80 dB (A)	It has met the requirement.	**Pass**
	These values must be either those actually measured for the machinery in question or those established on the basis of measurements taken for technically comparable machinery which is representative of the machinery to be produced.	It has met the requirement.	**Pass**
	In the case of very large machinery, instead of the A-weighted sound power level, the A-weighted emission sound pressure levels at specified positions around the machinery may be indicated.	Not applicable.	**N/A**
	Where the harmonized standards are not applied, sound levels must be measured using the most appropriate method for the machinery	The harmonized standards are applied.	**Pass**
	Whenever sound emission values are indicated the uncertainties surrounding these values must be specified. The operating conditions of the machinery during measurement and the measuring methods used must be described.	See the instruction manual in detail.	**Pass**
	Where the workstation(s) are undefined or cannot be defined, A-weighted sound pressure levels must be measured at a distance of 1 metre from the surface of the machinery and at a height of 1,6 metres from the floor or access platform.	No this contained.	**N/A**
	The position and value of the maximum sound pressure must be indicated	No this contained.	**N/A**
	Where specific Community Directives lay down other requirements for the measurement of sound pressure levels or sound power levels, those Directives must be applied and the corresponding provisions of this section shall not apply;	Not applicable.	**N/A**
	(v) where machinery is likely to emit non-	The machine will not be used in a	**N/A**

Clause	Requirement – test	Result	Verdict
	ionising radiation which may cause harm to persons, in particular persons with active or non-active implantable medical devices, information concerning the radiation emitted for the operator and exposed persons.	potentially explosive atmosphere.	
1.7.4.3	Sales literature	-	-
	Sales literature describing the machinery must not contradict the instructions as regards health and safety aspects. Sales literature describing the performance characteristics of machinery must contain the same information on emissions as is contained in the instructions.	The requirement has been complied with.	**Pass**
2	Essential health and safety requirements for certain categories of machinery	-	-
	Foodstuffs machinery, machinery for cosmetics or pharmaceutical products, hand-held and/or hand-guided machinery, portable fixing and other impact machinery, machinery for working wood and material with similar physical characteristics must meet all the essential health and safety requirements described in this chapter (see General Principles, point 4).	The requirement has been complied with.	**Pass**
2.1	Foodstuffs machinery and machinery for cosmetics or pharmaceutical products	-	-
2.1.1	General	-	-
	Machinery intended for use with foodstuffs or with cosmetics or pharmaceutical products must be designed and constructed in such a way as to avoid any risk of infection, sickness or contagion.	The requirement has been complied with.	**Pass**
	The following requirements must be observed:	-	-
	(a) materials in contact with, or intended to come into contact with, foodstuffs or cosmetics or pharmaceutical products must satisfy the conditions set down in the relevant Directives.	Not applicable.	**N/A**
	The machinery must be so designed and constructed that these materials can be clean before each use where this is not possible disposable parts must be used;	The machinery has been so designed and constructed that these materials can be clean before each use.	**Pass**
	(b) all surfaces in contact with foodstuffs or cosmetics or pharmaceutical products, other than surfaces of disposable parts, must:	No any surfaces in contact with foodstuffs or cosmetics or pharmaceutical products	**N/A**

Clause	Requirement – test	Result	Verdict
	- be smooth and have neither ridges nor crevices which could harbor organic materials. The same applies to their joining,	Not applicable.	**N/A**
	- be designed and constructed in such a way as to reduce the projections, edges and recesses of assemblies to a minimum,	Not applicable.	**N/A**
	- be easily cleaned and disinfected, where necessary after removing easily dismantled parts; the inside surfaces must have curves with a radius sufficient to allow thorough cleaning;	Not applicable.	**N/A**
	(c) it must be possible for liquids, gases and aerosols deriving from foodstuffs, cosmetics or pharmaceutical products as well as from cleaning, disinfecting and rinsing fluids to be completely discharged from the machinery (if possible, in a 'cleaning' position);	Not applicable.	**N/A**
	(d) machinery must be designed and constructed in such a way as to prevent any substances or living creatures, in particular insects, from entering, or any organic matter from accumulating in, areas that cannot be cleaned;	The requirement has been complied with.	**Pass**
	(e) machinery must be designed and constructed in such a way that no ancillary substances hazardous to health, including the lubricants used, can come into contact with foodstuffs, cosmetics or pharmaceutical products. Where necessary, machinery must be designed and constructed in such a way that continuing compliance with this requirement can be checked.	The requirement has been complied with.	**Pass**
2.1.2	Instructions	-	**-**
	The instructions for foodstuffs machinery and machinery for use with cosmetics or pharmaceutical products must indicate recommended products and methods for cleaning, disinfecting and rinsing, not only for easily accessible areas but also for areas to which access is impossible or inadvisable.	The requirement has been complied with.	**Pass**
3	Essential health and safety requirements to offset the particular hazards due to the mobility machinery	-	**-**
4	Essential health and safety requirements to offset the particular hazards due to a lifting operation	-	**-**

Clause	Requirement – test	Result	Verdict
5	Essential health and safety requirements for machinery intended for underground work	-	-
6	Supplementary essential health and safety requirements for machinery presenting particular hazards due to the lifting of persons	-	-

2.2 ISO 12100 test report

1. Introduction.

In general this risk assessment report for the **Vacuum Machine**, model **DZ-400/2SB** and its variants made by **Wenzhou Huaqiao Packing Machine Factory** was carried out in accordance with the requirements of Machinery Directive and the standards of EN ISO 12100-2010.

After the first assessment, some measures to eliminate the risks are given for the modification of machine or of relative documents with taking into account the explicit C-type EN standard or related B-type standard.

While taking appropriate provisions for the existing risks, the procedures and principles to eliminate the risk according to the most general B-type standard for any kind of machine, EN ISO 12100-2010, are followed, i.e.:

- First step: consider the possibility of eliminating risk at design stage.
- Second step: if impossible, protect the dangerous zone with appropriate design of safety guard or safety device.
- Third step: If above impossible, give warning signs to draw attention of operators bout the residual risks.

In addition, some check list drawn from the explicit C-type EN standards, which are found suitable for or near the characteristic of this machine, are used to help developing the provisions for the elimination of the risks.

Finally the risk assessment was carried out again to ensure this machine and its relative documents are totally compliance with the Machinery Directive.

2. Risk assessment and risk reduction

Risk assessment and risk reduction					
Machine		Vacuum Machine		**Analyst**	Elis
Sources		Specifications, preliminary design		**Extent**	Use phase: setting and operation
Method		Checklists: EN ISO 12100: 2010 Annex B		**Date**	Jul. -2015
No.	**Type of group**	**Hazards**			**Risk reduction Protective measures**
		origin	**Potential consequnces**		
1	Mechanical hazards	Crushing of fingers or hands			Use warning sign
2	Themal hazards	Scalding of fingers or hands			Use fixed guards and warning sign
3	Electrical hazards	Burns do to contact electrical Parts which have become live under fault			Electrical equipment in accordance with IEC 60204-1

Part Ⅲ: Test report

3.1 EN 415-3 test report

3.2 EN 60204-1 test report

3.3 Airborne noise test report

3.1 EN 415-3 test report

Test Report Content

This test report consists of:

* Main repot

General information:

The test results presented in this report relate only to the object tested and information given from applicant or manufacturer.

Test case verdicts:

Pass= Pass, Fail = Fail, N/A = Not applicable. Placed in the column marked “Verdict”.

This is a Computer generated Test Report.

× Information written in “Italic” or “Italic and bold” font style is written by project Engineer during testing.

All other information in “Regular” or “Regular and bold” font style is a part of this “Test Report Form”.

Clause	Requirement - test	Result	Verdict
0	Introduction	-	-
1	Scope	-	-
2	Normative references	-	-
3	Definitions	-	-
4	Hazards on form, fill and seal machines	-	-
5.	Safety requirements for form, fill and seal machines	-	-
5.1	General requirements for all form, fill and seal machines	-	-
	The following general requirements apply to all form, fill and seal machines where the equivalent hazard exists. In addition Annex A indicates in tabular from those sections in this clause which apply to each of the machines described in clause 3.	-	-
5.1.1	Drive mechanisms	-	-
	Drive mechanisms of all types shall be safeguarded with fixed or interlocked guards complying with 5.1.12.	Fixed guards have been taken.	**Pass**
5.1.2	Handwheels	-	-
	Where a handle or spoked handwheel is provided to operate a machine manually, the hazards which arise if the handwheel moves under power when the machine is in operation shall be eliminated in one of the following ways:	-	-
a)	Fitting an interlocking device which prevents the machine from operating under power until the handwheel has been disengaged;	No this situation.	**Pass**
b)	Making the handwheel solid with no protrusions;	No this situation.	**Pass**
c)	Recessing the handwheel so that it is flush with the casing of the machine and does not present an entanglement hazard.	No this situation.	**Pass**
	If detachable handle or handwheel is used, an interlocking device shall be fitted which prevents the machine being operated under power until the handle or handwneel is removed from the machine.	No this situation.	**Pass**
5.1.3	Size changing	-	-
	Typically form, fill and seal machines are constructed to handle a range of product and	Change from size to size is manual.	**Pass**

	pack sizes. Change from size to size may be manual or automatic.		
5.1.3.1	Manual size changing	-	**-**
	The design of the guards shall ensure that hazards on the machine are safeguarded for all the product and pack sizes for which the machine has been specified. Where, during manual size changing, manual adjustments have to be made to adjustable guards to prevent danger and/or change part guards are used, a warning label shall be fitted in a prominent position on the machine body and appropriate safety instructions included in the machine's instructions. Adjustable guards shall be capable of being adjusted to prevent danger for all purposes for which the machine has been specified and all change part guards necessary to prevent danger for all the purposes for which the machine has been specified shall be supplied with the machine.	It is complied with.	**Pass**
	Where change parts are to be used, their weight and location shall be carefully considered with reference to EN 614. If necessary, provision shall be made for change parts to be lifted and positioned with mechanical handling equipment.	No this situation.	**Pass**
5.1.3.2	Automatic size changing	-	**-**
	In addition to the requirements for manual size changing, where size change powered movements are contained within the machine guards, automatic size changing shall only be possible with the guards closed.	It is complied with.	**Pass**
	Where size change powered movements are outside the normal extent of the machine guards, hazards may be avoided in one of the following ways:	-	**-**
a)	By eliminating crushing and shearing points using EN 349;	It is complied with.	**Pass**
b)	Reducing the force of movements to less than 150N;	No this situation.	**N/A**
c)	Allowing movement only through a hold to run control.	No this situation.	**N/A**
5.1.4	Pneumatic and hydraulic equipment	-	**-**

	All pneumatic components and pipework shall conform to the requirements of EN 983.	No this situation.	**Pass**
5.1.5	Electrical equipment	-	**-**
	Electrical equipment shall comply with EN 60204-1 option 1. Machines shall fitted with a category 0 stopping device (9.2.2 of EN 60204-1) unless stated otherwise in this standard or unless the immediate removal of power would delay stopping or create an additional hazard, in which case a category 1 or 2 stop shall be used.	It is complied with. Please see report of EN 60204-1.	**Pass**
	All electrical enclosures shall have a minimum protection level of IP 54 (EN 60529) except in those situations indicated in 13.3 of EN 60204-1 where a lower standard of protection is acceptable. When the machine is cleaned with water jets a protection level of IPX5 is required.	It is complied with.	**Pass**
	Safety related control circuits shall be designed in accordance with EN 13849-1 category 1 unless indicated otherwise in this standard.	Safety related control circuits have been so designed.	**Pass**
	The machine shall be provided with an emergency stop button located on the control panel. If the distance from the control panel to the extremities of the machine is greater than 4 metres, additional emergency stop buttons shall be fitted at 4 metre intervals. The emergency stop function shall comply with category 0 in 4.1.5 of EN EN 13850 unless the immediate removal of power slows down stopping or creates an additional risk, in which case a category 1 function shall be used.	No emergency stop has been taken.	**N/A**
	After a stop the machine shall start only an intentional start command. It must not start unexpectedly, e.g. by a start command which is the result of a failure in the control system, by a start command generated by a sensor, by restoration of the power supply after an interruption. The control circuit shall comply to EN 1037.	The machine is started only an intentional start command	**Pass**
	A visual and/or audible signal shall be provided to warn of an impending hazardous event. Warning devices shall comply with to EN 457 and be positioned in accordance with EN 842.	A visual audible signal has been provided to warn of an impending hazardous event.	**Pass**
5.1.6	Agri-foodstuffs and pharmaceuticals	-	**-**

	Machines may be designed to pack agri-foodstuffs and pharmaceuticals which can be contaminated by neglecting hygienic design principles. Because of the wide range of such products, it is not possible to give any precise requirements in this standard. Where a machine is designed or specified to pack agri-foodstuffs or pharmaceuticals there is a need to:	-	-
a)	Identify the level of hygienic design appropriate to the product;	It is complied with.	**Pass**
b)	Carry out a risk assessment of the product while being packed on the machine;	See the report EN ISO 14121-1.	**Pass**
c)	Design a safe system for packing the product;	It is complied with.	**Pass**
d)	Determine appropriate contact materials;	It is complied with.	**Pass**
e)	Fit appropriate filters to prevent contamination by compressed air exhausts;	It is complied with.	**Pass**
f)	Draft appropriate cleaning and disinfecting procedures for the instructions for use.	It is complied with.	**Pass**
	In many situations it will be the machine user rather than the manufacturer that will have the necessary expertise to carry out a), b), c) and e) and the form, fill and seal machine manufacturer may only be responsible for part of c), d), e) and f). Nevertheless the form, fill and seal machine manufacturer shall ensure that the above requirements are carried out by competent persons.	Please see the usage instruction manual.	**Pass**
	Refer to EN 1672-2 for details of hygienic design requirements of a general nature for food products and ISO 14159 for other products.	It is complied with.	**Pass**
	On machines using compressed air, the design shall ensure that compressed air does not contaminate the product being packed.	It is complied with.	**Pass**
5.1.7	Packaging materials and products	-	-
	Machines may be designed to pack products which are hazardous to health. Because of the wide range of such materials it is not possible to give any precise requirements in this standard.	-	-
	Where a machine is designed or specified to pack products which are hazardous to health there is a need to:	-	-
a)	Identify the nature of the hazard;	It is complied with.	**Pass**
b)	Carry out a risk assessment of the product while	It is complied with.	**Pass**

	being packed on the machine;		
c)	Design a safe system for packing the product;	It is complied with.	**Pass**
d)	Supply the necessary ancillary equipment e.g. explosion proof electrical equipment, dust or fume extraction or monitoring devices;	No any ancillary equipment has been taken.	**N/A**
e)	Draft relevant sections for the instructions for use;	It is complied with.	**Pass**
f)	Install the ancillary equipment and check that it is operating safely before the hazardous product is handled.	No any ancillary equipment has been taken.	**N/A**
	In most situations it will be the machine user rather than the manufacturer that will have the necessary expertise to carry out a), b), c) and e) and the form, fill and seal machine manufacturer may only be responsible for part of d) and e). Nevertheless the form, fill and seal machine manufacturer shall ensure that the above requirements [a] to [f] are carried out by competent persons.	Please see the usage instruction manual.	**Pass**
	Heater controls	-	**-**
	Where the packaging machine incorporates a facility for heating packaging materials e.g. for sealing, or has a hot melt adhesive installation, thermostatic controls shall be installed which minimize the risk of the packaging materials or adhesive catching fire. The user shall be advised in the Instructions for Use, of the risk of fire or of potentially harmful fumes, if controls are set at an incorrect temperature and advised of the need to install such machines in a well ventilated room.	It is complied with.	**Pass**
5.1.8	Controlled atmosphere packaging	-	**-**
	All vessels, pipework and fittings of controlled atmosphere installations shall be designed to safety contain the pressure. The gas supply shall be fitted with a lockable valve so that cleaning and maintenance operations can be carried out in safety.	It is complied with.	**Pass**
	The design of the gas control system shall ensure that dangerous levels of gas do not build up around the machine. This may be achieved by	It is complied with.	**Pass**
a)	Fitting a solenoid valve to shut off the supply of	It is complied with.	**Pass**

	gas when the machine stops;		
b)	Providing ventilation equipment;	It is complied with.	**Pass**
c)	Other measures recommended by EN 626.	It is complied with.	**Pass**
	The safety requirements for machines which use oxygen are not covered by this standard.	-	**-**
5.1.9	Sterilization of packaging materials	-	**-**
	The machine's instructions shall advise operators of machines which use hydrogen peroxide, of dangers of contact with the skin and the need to ensure, by regular monitoring and effective ventilation, that the levels of the gas in the vicinity of the machine do not rise to levels which are hazardous to health.	Not applicable.	**N/A**
	Machines which use ultraviolet light shall be so designed that the lamps do not present a hazard to operators with the machine guards open or closed. The light source shall be fitted with interlocked guards which prevent hazardous radiation when they are lit (see EN 953).	Not applicable.	**N/A**
5.1.10	Ergonomic design principles	-	**-**
	Bad posture/excessive effort-When designing or specifying a form, fill and seal machine the position of hand feeding stations, magazines for blanks and reel unwind mechanisms shall be carefully designed to avoid bad posture or excessive efforts which can cause injury. Refer to EN 614.	Ergonomic design principles have been taken to considered during design.	**Pass**
	Where platforms to assist access are provided with the machine, these platforms shall not reduce the standard of safety provided by the guards.	No this situation.	**N/A**
	Controls-Controls and control panels shall be positioned according to the requirements of EN 614.	Controls-Controls and control panels have been so positioned.	**Pass**
	Hand and arm anatomy limitations-When a machine is to be fed by hand, the design hands and arms. Refer to EN 614-2.	Not applicable.	**N/A**
5.1.11	Slip, trip and fall	-	**-**
	The design of the machine should avoid assemblies at low level which are likely to cause a trip accident. Where access is required above floor level, to operate, clean or maintain the machine, the manufacturer shall provided the	No this hazard existed.	**N/A**

	user with the necessary information regarding platforms or steps required for these activities to be carried out safely. Refer to EN 614.		
5.1.12	Guards and guard interlocking	-	-
	Unless otherwise specified in this standard, fixed and interlocking guards shall be dimensioned using ISO 13857. interlocking guards shall be designed in accordance with EN 953 and shall be interlocked with devices complying with EN 1088, in a control circuit complying with EN 13849-1 category 1 as a minimum.	Fixed and interlocking guards have been taken and met the requirement.	**Pass**
	Unless otherwise specified in this standard, the machine controls shall ensure that hazardous movements stop within 1,0 s of an interlocked guard being opened. If the hazardous movement cannot be stopped with 1,0 s the guards shall be fitted with guard locking devices which prevent access to the danger zone until the hazardous movement has stopped.	The machine controls can stop within 1.0s of an interlocked guard being opened.	**Pass**
	On machines which automatically reverse to safe position after they have stopped, the reversing movement may continue after the 1,0 s stopping time, provided the reversing mechanisms do not present a hazard e.g. by crushing or shearing between the moving mechanisms and fixed parts of the machine.	It is complied with.	**Pass**
5.1.13	Noise reduction	-	-
	Noise can be prevented or the emission minimized by the following measures:	-	-
a)	Drive mechanisms-fitting acoustic attenuation material to the fixed guards;	It is complied with.	**Pass**
b)	Mechanisms should be designed so that they do not over-stroke;	It is complied with.	**Pass**
c)	Air solenoids-fit silencers;	No applicable.	**N/A**
d)	Blow-off devices-fit low noise nozzle.	No applicable.	**N/A**
	For further details refer to EN ISO 11688-1.	It is complied with.	**Pass**
5.2	Safety requirements for a flowrapping machine	-	-
	The hazards described in 4.2 shall be reduced the following means.	-	-
5.2.1	Product feed	-	-
	Machines fitted with automatic product feeding devices shall be guarded in accordance with	Not applicable.	**N/A**

	5.2.1.4. On machines which are to be fed by hand, the feeding area shall be designed to eliminate shearing, crushing and entanglement hazards, but at the same time give access to the product pushing devices, using the methods described in 5.2.1.1, 5.2.1.2 and 5.2.1.3.		
5.2.1.1	Chains and drives	-	**-**
	The return chain run, drive and tail sprockets of the infeed conveyor can be safeguarded with fixed guards, with apertures sized in accordance with Table 4 of ISO 13857. The tail sprocket guard shall be designed to avoid a shearing hazard as shown in Figure 41. The design of the guards shall take into account the need for cleaning to prevent the accumulation of product. This can be achieved by guarding the base of the product feed conveyor with mesh sized in accordance with Table 4 of ISO 13857 or where cleaning will be frequent, by fitting interlocking guards complying with 5.1.12.	Not applicable.	**N/A**
	Where machines are equipped with product side guides which are adjustable without the need for tools, movement of these guides shall not expose any hazard.	Not applicable.	**N/A**
5.2.1.2	Product pushing devices	-	**-**
	These shall be designed so that they do not present shearing hazards in the hand loading area and where they enter the folding box. Four alternative strategies can be used.	-	**-**
a)	Design the pushing devices so that they come away from the chain in the event of a lateral force greater than 150 N being applied to them.	Not applicable.	**N/A**
b)	Design the pushing devices so that they can bend when a lateral force greater than 150 N is applied to them.	Not applicable.	**N/A**
c)	Design the linkage so that the pushing devices are free to bend backwards as they enter the folding box.	Not applicable.	**N/A**
d)	Fit the infeed conveyor drive with a torque limiter which removes power from the infeed chain when a lateral force greater than 150 N is applied to it.	Not applicable.	**N/A**
5.2.1.3	Belt infeed conveyors	-	**-**

	These shall be designed to eliminate the drawing-in and friction hazards presented by in-running nips either by following the design principles shown in Figure 42 or by the addition of fixed guards complying with EN 953, with apertures sized in accordance with Table 4 of ISO 13857.	Not applicable.	**N/A**
5.2.1.4	Automatic product feeding mechanisms	-	**-**
	The variety of feeding devices fitted to form, fill and seal machines is such that no specific requirements can be given. However where removing or altering any product feed mechanism provided with the machine body and suitable safety instructions included in the machine's instructions (see 7.1).	Not applicable.	**N/A**
5.2.2	Reel unwind mechanism	-	**-**
	The reel unwind mechanism shall be positioned so that injuries to operators due to bad posture or excessive effort are minimized. Advice on good ergonomic design is contained in EN 614.	Not applicable.	**N/A**
	When the mass of the reel is greater than 25 kg or the height of the mechanism is greater than 1.6 m, or the reach distance is greater than 500mm, the design of the machine shall allow either:	-	**-**
a)	Two people to lift the reel;	Not applicable.	**N/A**
b)	The addition of an access platform;	Not applicable.	**N/A**
c)	The use of mechanical reel handling devices, the design of which should be specified by the machine manufacturer.	Not applicable.	**N/A**
5.2.2.1	Tension roller assembly	-	**-**
	The shearing hazard between the tension roller assembly and the machine frame shall be eliminated either by ensuring that the assembly is at least 25 mm from the frame or by incorporating one of the devices shown in Figure 43.	Not applicable.	**N/A**
5.2.2.2	Coders	-	**-**
	The coder manufacturer's instructions for safe mounting the coder so that the gap between the coding mechanism and the pressure plate is less than 4 mm. A warning label or symbol shall be fitted to coders where these is a residual burning hazard.	Not applicable.	**N/A**

5.2.2.3	Power unwind mechanism	-	-
	Drive mechanisms of power unwind devices shall be fitted with fixed guards complying with EN 953 and sized in accordance with Table 4 ISO 13857. The in running nips of the film driving rollers shall be safeguarded by one of the methods shown in Figure 44.	Not applicable.	**N/A**
5.2.2.4	Automatic splicing mechanism	-	-
	Where the forces exerted by these mechanisms are greater than 150 N, they shall be guarded with interlocking guards complying with 5.1.12 which prevent access to the dangerous movements. The interlocking guards shall be interlocked so that the splicer cannot operate when the guards are open, but allow the main machine to continue in operation.	Not applicable.	**N/A**
	The design of the guards shall ensure that hazards on the main machine cannot be reached when the splicer's guards are open. This can usually be achieved with fixed guards sized in accordance with Table 4 of ISO 13857.	Not applicable.	**N/A**
5.2.2.5	Electrostatic phenomena	-	-
	If packaging materials are not to be used which give rise to a static electricity hazard, a static elimination device shall be fitted or fittings provided so that the electrostatic charge can be safely discharged to earth before a hazard results.	Not applicable.	**N/A**
5.2.3	Longitudinal sealing mechanism	-	-
	Frequent access is required to this area for reel changing and cleaning. An interlocking guard shall be fitted complying with 5.1.12. the external guard temperature shall not exceed 65℃.	Not applicable.	**N/A**
5.2.4	Transverse sealing and cutting mechanisms	-	-
	These mechanisms shall be safeguarded with interlocked guards complying with 5.1.12. mechanisms which are pneumatically operated shall incorporate control systems to ensure that these mechanisms do not present a crushing or cutting hazard when the guards are open and the compressed air supply disconnected.	Not applicable.	**N/A**
	The external guard temperature shall not exceed	-	-

	65℃.		
	Product discharge aperture-Where the width or height of the product discharge aperture in the guards is less than 120 mm, the distance away from the nearest danger zone shall comply with Table 4 of ISO 13857. Where the aperture width or height is greater than 120 mm, the minimum distance away from the nearest danger zone shall be 850 mm and a label shall be fixed near the aperture, indicating that it is dangerous to reach into the aperture while the machine is in motion.	Not applicable.	**N/A**
5.2.5	Discharge mechanism	-	-
	Belt conveyors shall be designed to eliminate the drawing-in and friction hazards presented by in-running nips. See 5.2.1.3.	-	-
	Discharge mechanisms which are not safe by design shall be protected by guards complying with 5.1.12.	Not applicable.	**N/A**
5.2.6	Noise reduction	-	-
	In addition to those items in 5.1.13, noise can be prevented or the emission minimized by the following measures:	-	-
a)	Folding box-design box to minimize stress to packaging film;	Not applicable.	**N/A**
b)	Transverse sealing mechanism-design drive to minimize over-stroking.	Not applicable.	**N/A**
5.2.7	General form, fill and seal machine requirements	-	-
	In addition to the above requirements, the requirements in 5.1 shall apply where the equivalent hazard exists.	Not applicable.	**N/A**
5.3	Safety requirements for a vertical form, fill and seal machine	-	-
	The hazards described in 4.3 shall be safeguarded by the following methods.	Not applicable.	**N/A**
5.3.1	Product feeding devices	-	-
	The safety requirements for typical feeding devices are described in 5.8, 5.9, 5.10 and 5.11.	Not applicable.	**N/A**
5.3.2	Reel unwind mechanism-See 5.2.2.	-	-
5.3.3	Longitudinal sealing mechanism	-	-
	The longitudinal sealing mechanism shall be designed so that it can be moved away from the	Not applicable.	**N/A**

	forming tube to allow the film to be changed without the risk of burning. The mechanism shall be guarded with interlocking guards in accordance with 5.1.12. It is customary for the same guards to safeguard both the film transport and transverse sealing mechanisms.		
	The external guard temperature shall not exceed 65℃.	Not applicable.	**N/A**
5.3.4	Film transport mechanism	-	
	The film transport mechanism shall be guarded with interlocking guards according to 5.1.12.	Not applicable.	**N/A**
	The external guard temperature shall not exceed 65℃.	Not applicable.	**N/A**
5.3.5	Transverse sealing and associated mechanisms	-	**-**
	These mechanisms shall be guarded with interlocked guards in accordance with 5.1.12.	Not applicable.	**N/A**
	The design of the sealing mechanisms shall allow film to be threaded through the jaws while they are hot without a risk of burning. This can be achieved by ensuring that there is a clearance of at least 150 mm between the heated cross seal jaws. The machine's instructions shall identify those surfaces in the machine which will be heated to more than 65℃. Where appropriate, labels or pictograms shall be fitted to warn of a burning hazard.	Not applicable.	**N/A**
	The external guard temperature shall not exceed 65℃.	Not applicable.	**N/A**
5.3.5.1	Reciprocating transverse sealing mechanisms	-	**-**
	On machines which transport film using a transverse sealing mechanism which reciprocates up and down, the interlocking system shall ensure that when the guards are open, the mechanism cannot fall and cause injury.	Not applicable.	**N/A**
	The guards shall prevent access to the transverse sealing mechanism throughout the length of travel within which it presents a hazard. Access to the transverse sealing mechanism for cleaning or film threading shall be through interlocking guards in accordance with 5.1.12.	Not applicable.	**N/A**
5.3.5.2	Product discharge aperture	-	**-**

	Where the width or height of the product discharge aperture in the guards is less than 120 mm, the distance away from the nearest danger zone shall be 850mm and a notice or pictogram shall be fixed near the aperture, indicating that it is dangerous to reach into the aperture while the machine is in motion.	Not applicable.	**N/A**
5.3.5.3	Discharge into bins	-	**-**
	The machine guards shall extend downwards round the bin far enough to prevent access to the transverse seal mechanism whether the bin is in place or not. Provision for exchanging the bins shall be via interlocking guards.	Not applicable.	**N/A**
	Alternatively, a non-mechanically actuated interlocking device, conforming to annex J of EN 1088 can be fitted so that the machine can only operate when a bin is in position. In this case, the presence of the bin shall effectively prevent access to the danger zones.	Not applicable.	**N/A**
5.3.5.4	Conveyor discharge	-	**-**
	Where a conveyor discharge is fitted, the guards shall effectively prevent access to the danger zones by following the requirements of 5.3.5.2.	Not applicable.	**N/A**
	Where a flighted belt is fitted, the conveyor drive motor shall be interlocked so that the conveyor cannot run when the machine's guards are open.	Not applicable.	**N/A**
	Where the conveyor forms part of the guarding, it shall either be fixed in relationship to the machine, or interlocked so that the machine cannot operate unless the conveyor is in place.	Not applicable.	**N/A**
5.3.6	Noise reduction	-	**-**
	In addition to those measures in 5.1.13, noise can be prevented or the emission minimized by the following measures:	-	**-**
a)	Filling machine-see appropriate clause;	Not applicable.	**N/A**
b)	Transverse sealing mechanism-design drive to minimize over-stroking;	Not applicable.	**N/A**
c)	Cooling devices-fit low noise nozzles.	Not applicable.	**N/A**
5.3.7	General form, fill and seal machine requirements	-	**-**
	In addition to the above requirements, the requirements, the requirements in 5.1 shall	Not applicable.	**N/A**

	apply where the equivalent hazard exists.		
5.4	Safety requirements for a pre-made bag, erect, fill and close machine	-	-
	The hazards described in 4.4 shall be safeguarded by the following methods.	-	-
5.4.1	Bag magazine	-	-
	The bag compressing mechanism, which may be powered or use gravity, shall be designed to eliminate crushing and shearing hazards by ensuring adequate clearances on moving parts (refer to EN 349) and limiting the force of powered movements to less than 150 N.	Not applicable.	**N/A**
	Magazines are usually adjustable for different sizes. On adjustable magazines, adjustable or change part guards (3.22.3 of EN ISO 12100-1) shall be provided to prevent access to the bag opening mechanism when the magazine is adjusted to a smaller bag size.	Not applicable.	**N/A**
	The magazine shall be fitted with an interlocking device, e.g. an electro-sensitive protection device complying with EN 61496-2 type 2 or switch complying with EN 1088, which stops the machine before the past few bags are removed from the magazine, exposing the bag opening mechanism.	Not applicable.	**N/A**
5.4.2	Bag erecting mechanism	-	-
	Frequent access is required to this area. This mechanism shall be guarded with interlocking guards in accordance with 5.1.12.	Not applicable.	**N/A**
5.4.3	Transport mechanism-Requirements as 5.4.2.	Not applicable.	**N/A**
5.4.4	Product feed	-	-
	The safety requirements for typical feeding mechanisms are indicated in 5.8, 5.9, 5.10 and 5.11.	Not applicable.	**N/A**
5.4.5	Vibration settling devices		
	Vibration devices shall be designed and installed to minimize the propagation of vibration through the machine. This may involve the use of anti-vibration mountings.	Not applicable.	**N/A**
5.4.6	Bag closing mechanism	-	-
	Frequent access is required to this area. This mechanism shall be guarded with interlocking guards in accordance with 5.1.12.	Not applicable.	**N/A**

	Where a spray gluing system, is fitted the guards shall be capable of containing any foreseeable glue over spray.	Not applicable.	**N/A**
	Where the closing medium is heat or hot melt adhesive, the external guard temperature shall not exceed 65℃.	Not applicable.	**N/A**
	Where sewing machines are fitted these shall comply with EN 60204-3-1.	Not applicable.	**N/A**
	Product discharge aperture	-	**-**
	Where the width or height of the product discharge aperture in the guards is less than 120 mm, the distance away from the nearest danger zone shall comply with Table 4 of ISO 13857. Where the aperture width or height is greater than 120 mm, the minimum distance away from the nearest danger zone shall be 850 mm and a notice or pictogram shall be fixed near the aperture, indicating that it is dangerous to reach into the aperture while the machine is in motion.	Not applicable.	**N/A**
5.4.7	Compression conveyor	-	**-**
	Drive mechanisms for the compression conveyor shall be guarded with fixed guards. By careful design of the conveyor body, the in-running nips associated with rollers can be eliminated. See Figure 42.	Not applicable.	**N/A**
5.4.8	Coders-See 5.2.2.2.	-	**-**
5.4.9	Noise reduction	-	**-**
	In addition to 5.1.13, noise can be prevented or the emission minimized by the following measures:	-	**-**
a)	Bag erecting mechanism-fit noise attenuating guards;	Not applicable.	**N/A**
b)	Sealing mechanism-design drive to minimize over –stroking;	Not applicable.	**N/A**
c)	Vibrator-ensure vibration is not transmitted into the machine frame and guards.	Not applicable.	**N/A**
5.4.10	General form, fill and seal machine requirements	-	**-**
	In addition to the above requirements, the requirements, the requirements in 5.1 shall apply where the equivalent hazard exists.	Not applicable.	**N/A**
5.5	Safety requirements for a mandrel flexible package form, fill and seal machine	-	**-**

	The hazards described in 4.5 shall be safeguarded by the following methods.	-	-
5.5.1	Reel unwind mechanism-See 5.2.2.	-	-
5.5.2	Cutting mechanism	-	-
	Access is required to this mechanism when threading a new reel of paper or when cleaning. The blade of this device shall be designed to withdraw into a recess or be fitted with a guard to prevent injury when the machine's interlocked guards are open.	Not applicable.	**N/A**
	The cutting mechanism shall be guarded with interlocking guards in accordance with 5.1.12.	Not applicable.	**N/A**
5.5.3	Mandrel former	-	-
	Mandrel formers typically index or rotate at high speed. The mandrel former shall be guarded with interlocking guards in accordance with 5.1.12.	Not applicable.	**N/A**
	The guards shall be of sufficient strength to contain any packs or machine parts which may come loose from the mechanism.	Not applicable.	**N/A**
5.5.4	Transport mechanism	-	-
	The transport mechanism shall be guarded with interlocking guards in accordance with 5.1.12.	Not applicable.	**N/A**
5.5.5	Product feed	-	-
	The safety requirements for typical feeding devices are described in 5.8, 5.9, 5.10 and 5.11.	-	-
5.5.6	Vibration settling-See 5.4.5.	-	-
5.5.7	Bag closing mechanism-See 5.4.6.	-	-
	Product discharge aperture-Where the width or height of the product discharge aperture in the guards is less than 120 mm, the distance away from the nearest danger zone shall comply with Table 4 of ISO 13857. Where the aperture width or height is greater than 120 mm, the minimum distance away from the nearest danger zone shall be 850 mm and a notice or pictogram shall be fixed near the aperture, indicating that it is dangerous to reach into the aperture while the machine is in motion.	Not applicable.	**N/A**
5.5.8	Compression conveyor-See 5.4.7.	-	-
5.5.9	Coders-See 5.2.2.2.	-	-
5.5.10	Noise reduction	-	-
	In addition to 5.1.13, noise can be prevented or	-	-

	the emission minimized by the following measures:		
a)	Mandrel forming mechanism-fit noise attenuating guards;	Not applicable.	**N/A**
b)	Sealing mechanisms-design drive to minimize over-stroking;	Not applicable.	**N/A**
c)	Vibrators-ensure vibration is not transmitted into the machine frame and guards.	Not applicable.	**N/A**
5.5.11	General form, fill and seal machine requirements	-	**-**
	In addition to the above requirements, the requirements, the requirements in 5.1 shall apply where the equivalent hazard exists.	Not applicable.	**N/A**
5.6	Safety requirements for a horizontal end load cartoner	-	**-**
	The hazards described in 4.6 shall be safeguarded by the following methods.	Not applicable.	**N/A**
5.6.1	Carton magazine	-	**-**
	Magazines are usually adjustable for different carton sizes. Adjustable magazines shall be fitted with adjustable or change part guards (3.22.3 of EN ISO 12100-1) to prevent access to the carton opening mechanism when the magazine is adjusted to small carton sizes.	Not applicable.	**N/A**
	The magazine shall be fitted with an interlocking device, e.g. an electro-sensitive protection device complying with EN 61496-2 type 2, which stops the machine before the last few cartons are removed from the magazine, exposing the carton opening mechanism or other dangerous parts.	Not applicable.	**N/A**
5.6.2	Infeed conveyor	-	**-**
	On machines where products are loaded manually onto the infeed conveyor, the conveyor shall be designed to eliminate shearing hazards. Belt infeed conveyors can be considered as 5.2.1.3 and flighted or bucket conveyors as 5.2.1.1. The drawing-in hazard which may exist where the infeed conveyor enters the main machine guards shall be safeguarded by fitting a trip device (3.23.5 of EN ISO 12100-1) e.g. a hinged flap connected to an interlocking switch, which stops the conveyor if disturbed or by some other method	Not applicable.	**N/A**

	which gives an equivalent level of protection.		
5.6.3	Transport mechanism	-	-
	Mechanisms 5.6.3 to 5.6.6 shall be safeguarded with interlocking guards in accordance with 5.1.12.	Not applicable.	**N/A**
	On machines using jetting gluing systems, the guards shall be capable of containing any foreseeable glue overspray.	Not applicable.	**N/A**
5.6.4	Carton erecting mechanism-See 5.6.3.	-	-
5.6.5	Product loading mechanism-See 5.6.3.	-	-
5.6.6	Flap tucking mechanism-see 5.6.3	-	-
5.6.7	Carton closing devices	-	-
	The carton closing devices will usually be contained within the main guards of the machine and be safeguarded as indicated above. Where the closing means is heat, the risk off fire shall be avoided by designing the control system so that the heating devices are switched off in the event of a carton remaining in the heating area.	Not applicable.	**N/A**
	Product discharge aperture- Where the width or height of the product discharge aperture in the guards is less than 120 mm, the distance away from the nearest danger zone shall comply with Table 4 of ISO 13857. Where the aperture width or height is greater than 120 mm, the minimum distance away from the nearest danger zone shall be 850 mm and a notice or pictogram shall be fixed near the aperture, indicating that it is dangerous to reach into the aperture while the machine is in motion.	Not applicable.	**N/A**
5.6.8	Carton compression	-	-
	The carton compression mechanism may be contained within the main guards or protrude from them. Driven belt devices which protrude from the guards can be made safe by design as described in 5.2.1.3.	Not applicable.	**N/A**
5.6.9	Coders-See 5.2.2.2.	-	-
5.6.10	Noise reduction	-	-
	In addition to 5.1.13, noise can be prevented or the emission minimized by the following measures:	-	-
a)	Carton erecting mechanism-fit noise attenuating	Not applicable.	**N/A**

	guards;		
b)	Product loading mechanism-fit noise attenuating guards.	Not applicable.	**N/A**
5.6.11	General form, fill and seal machine requirements	-	**-**
	In addition to the above requirements, the requirements, the requirements in 5.1 shall apply where the equivalent hazard exists.	Not applicable.	**N/A**
5.7	Safety requirements for a thermoform, fill and seal machine	-	**-**
	The hazards described in 4.7 shall be safeguarded by the following methods.	-	**-**
5.7.1	Lower web reel unwind mechanism	-	**-**
	See 5.2.2. on machines with chain and clamp or clamp transport mechanisms, the access to these mechanisms from the reel unwind mechanism, shall be safeguarded with fixed guards which incorporate a slot for the lower film web no wider than 4 mm. Where this cannot be achieved the relationship between the slot width and distance from the hazard shall comply with Table ISO 13857.	No this situation.	**N/A**
5.7.2	Transport mechanism	-	**-**
	Transport mechanisms shall be safeguarded as follows.	No this situation.	**N/A**
5.7.2.1	Counter rotating rollers	-	**-**
	The transport mechanisms of machines of this type shall be guarded with interlocking guards complying with 5.1.12.	No this situation.	**N/A**
5.7.2.2	Chains and clamps	-	**-**
	Machines with chain and clamp transport mechanisms where products are manually fed, shall be safeguarded with fixed guards which incorporate a slot for the lower film web no wider than 4 mm. Where this cannot be achieved the relationship between the slot width and the distance from the hazard shall comply with Table 4 of ISO 13857. Where the machine is automatically fed, the mechanisms shall be guarded as in 5.1.12.	No this situation.	**N/A**
5.7.2.3	Clamps	-	**-**
	Machines with clamp transport mechanisms where the products are manually fed, shall be	No this situation.	**N/A**

	safeguarded with fixed guards which incorporate a slot for the lower film web. The dimensions and position of the fixed guards shall comply with EN 294 Table 4. Where the machine is automatically fed, the mechanisms shall be guarded as in 5.1.12.		
5.7.3	Heating chamber	-	**-**
	The machine shall be designed in such a way that when the machine stops there is no risk of the film catching fire.	It has been so designed.	**Pass**
	The heating chamber and forming die shall be safeguarded with interlocking guards in accordance with 5.1.12 and if appropriate 5.7.5.3, 5.7.5.4, 5.7.5.5, 5.7.5.6, 5.7.5.7 and 5.7.5.8. In addition the control system shall ensure that the heating chamber and forming die cannot move under gravity when the power source is disconnected. This may involve fitting a mechanical or pneumatic device which prevents the die from moving when power is removed.	Appropriate interlocking guards have been taken. The heating chamber and forming die cannot move under gravity when the power source is disconnected.	**Pass**
	The reach distance through apertures in these guards shall wherever possible be in accordance with dimension B in Table 1.	It is complied with.	**Pass**
	A label or pictogram shall be fitted to the heating chamber to warn of a residual burning hazard if this exists.	A warning label has been taken.	**Pass**
	The external guard temperature shall not exceed 65℃.	The external guard temperature is not exceed 65℃	**Pass**
5.7.4	Forming die-See 5.7.3.	-	**-**
5.7.5	Product loading area	-	**-**
	The product loading area shall be safeguarded as follow.	Suitable safeguarded has been taken.	**Pass**
5.7.5.1	Automatic product feeding devices	-	**-**
	Automatic product feeding devices shall be safeguarded with interlocking guards in accordance with 5.1.12 and if appropriate 5.7.5.3, 5.7.5.4, 5.7.5.5, 5.7.5.6, 5.7.5.7 and 5.7.5.8.	Not applicable.	**N/A**
	The reach distance through apertures in these guards shall wherever possible be in accordance with dimension B in Table 1.	Not applicable.	**N/A**
5.7.5.2	Manual product feeding	-	**-**

	Where a machine is to be manually fed, the transport mechanism shall be guarded as indicated in 5.7.2 and the access to the forming and sealing dies limited by the fitting of a false base in the product loading area. The reach distance through apertures in the guards preventing to the forming and sealing dies shall wherever possible be in accordance with dimension B in Table 1. In situations where this is not practicable, the alternative guarding strategies described in 5.7.5.3, 5.7.5.4, 5.7.5.5, 5.7.5.6, 5.7.5.7 and 5.7.5.8 may be used.	It is complied with.	**Pass**
5.7.5.3	Trip guard	-	**-**
	This comprises an interlocked guard complying with 5.1.12. The interlocking device shall be interlocked in such a way that if it is disturbed, the hazardous movements will stop and/or reverse to a safe position. For this type of device, safety distance C, in Table 1 can be used. See Figure 45, however, the machine's instructions shall warn the user that such a device can become ineffective if a heavy object is placed on the guard.	It is complied with.	**Pass**
5.7.5.4	Trip guard with deterring device	-	**-**
	When supplemented with a deterring device (3.24 of EN 12100-1) e.g. falling fingers, the safety distance D, in Table 1 can be used. See figure 46.	No this situation.	**N/A**
5.7.5.5	Trip guard with photo-electric device	-	**-**
	When supplemented with a electro-sensitive safety device complying with EN 61496-1 type 2 incorporated in a category 2 (EN 13849-1) control system, the safety distance E, in Table 1, can be used. See Figure 47.	No this situation.	**N/A**
5.7.5.6	Light sensitive trip device	-	**-**
	This comprises one or a number of electro-sensitive safety devices complying with EN 61496-1 type 2 incorporated in a category 2 (see EN 13849-1) control system, which monitor the whole aperture. The control system shall ensure that the machine stops hazardous movements if an object is detected in the danger area. In this case safety distance F, in Table 1, can be used, provided the hazardous movements	No this situation.	**N/A**

	can be stopped by the control system in less than 0,5 s.		
5.7.5.7	Linked automatic guard	-	-
	This comprises a guard which is attached to the forming or sealing die mechanism, and moves into place when the hazardous movements of the forming or sealing dies begin. The guard shall be interlocked with the machine to stop hazardous movements if the guard does not close in less than 0,5 s. The guard shall be fitted with a pressure sensitive device (see EN 1760-2) incorporated into a category 2 circuit (see EN 13849-1) or move with a force less than 150 N, so that the guard does not, of itself present a hazard. In this case, safety distance G, in Table 1, may be used.	It is complied with.	**Pass**
5.7.5.8	Automatic guard	-	-
	This guard is powered independently of other movements on the machine. It moves into place after the transport cycle, and before the forming and sealing cycles. It shall be interlocked with the machine, to ensure that hazardous movements cannot start until the guard is in position. The guard shall be fitted with a pressure sensitive device (EN 1760-2) incorporated into a category 1 circuit (EN 13849-1) or move with a force less than 150 N, so that the guard does not, of itself present a hazard. In this case safety distance H, in Table 1, may be used.	No this situation.	**N/A**
5.7.6	Upper film reel unwind mechanism-See 5.2.2.	-	-
5.7.7	Sealing die	-	-
	Mechanisms 5.7.7 to 5.7.9 shall be safeguarded with fixed guards or interlocking guards in accordance with 5.1.12 and if appropriate 5.7.5.3, 5.7.5.4, 5.7.5.5, 5.7.5.6, 5.7.5.7 and 5.7.5.8. In addition the control system shall ensure that these mechanisms cannot move under gravity when power or compressed air is disconnected.	Fixed guard has been taken. These mechanisms cannot move under gravity when power or compressed air is disconnected.	**Pass**
5.7.8	Reciprocating cutting devices-see 5.7.7.	-	-
5.7.9	Rotary cutting devices-See 5.7.7.	-	-
5.7.10	Scrap reels	-	-

	The drawing-in hazard shall be reduced either by fitting a fixed guard around the reel with a slot for the scrap no wider than 4 mm or by limiting the pulling force of the reel drive, so it is less than 150 N.	No this situation.	**N/A**
5.7.11	Ancillary equipment	-	**-**
	Pad or leaflet inserters shall be considered as bag magazines (5.4.1)and bag erecting mechanisms (5.4.2).	No this situation.	**N/A**
5.7.12	Coders-See 5.2.2.2.	-	**-**
5.7.13	Noise reduction	-	**-**
	In addition to 5.1.13, noise can be prevented or the emission minimized by the following measures:	-	**-**
a)	Forming die-fit noise attenuating guards;	No this situation.	**N/A**
b)	Filling machine-see appropriate clause;	No this situation.	**N/A**
c)	Sealing die- fit noise attenuating guards;	It is complied with.	**Pass**
d)	Cutting die- fit noise attenuating guards.	No this situation.	**N/A**
5.7.14	General form, fill and seal machine requirements	-	**-**
	In addition to the above requirements, the requirements, the requirements in 5.1 shall apply where the equivalent hazard exists.	Suitable safeguards have been taken.	**Pass**
5.8	Safety requirements for an auger filler	-	**-**
	The hazards described in 4.8 shall be safeguarded by the following methods. These requirements apply when an auger filler is fitted to a form, fill and seal machine.	Not applicable.	**N/A**
5.8.1	Auger	-	**-**
	In most designs, the hopper and top cover of the machine, cover the hazards presented by the auger and stirrers. When operated alone the discharge of the auger is a potential hazard; however, when attached to a form, fill and seal machine this area is safeguarded by the guards of the form, fill and seal machine.	Not applicable.	**N/A**
	When cleaning an auger filler, it is common practice to lower the hopper away from the top cover, exposing the auger and stirrers. To avoid an accident during cleaning, the auger shall either be equipped with an isolator, accessible from the cleaning area or the hopper shall be interlocked in accordance with 5.1.12, to	Not applicable.	**N/A**

	prevent the machine operating when the hopper is removed.		
5.8.2	Stirrers-See 5.8.1.	-	-
5.8.3	Drive mechanisms-See 5.8.1.	-	-
5.8.4	Ergonomic design requirements	-	-
	The design of the hopper, auger, auger funnel and other components which must regularly be removed for cleaning, shall avoid the risk of injury due to excessive effort. Where the mass of such components is greater than 25 kg, the manufacturer shall design the parts so that two operators can lift them or so that lifting equipment can be used to lift them into and out of position.	Not applicable.	**N/A**
5.8.5	Slip, trip and fall	-	-
	When the filler is mounted in such a position that it cannot be reached for cleaning or maintenance from the floor, means shall be provided for safe access to the filler. These could include	-	-
a)	Stepping points on the form, fill and seal machine so that the filler can be reached without the risk of slipping or falling;	Not applicable.	**N/A**
b)	A flat area around the filler which can be stood on while cleaning or maintaining the filler without the risk of slipping or falling;	Not applicable.	**N/A**
c)	Access steps, platforms or catwalks mounted independently of the form, fill and seal machine so that filler can be cleaned or maintained without the risk of slipping or falling.	Not applicable.	**N/A**
5.8.6	Noise reduction-See 5.1.13.	-	-
5.8.7	General form, fill and seal machine requirements	-	-
	In addition to the above requirements, the requirements, the requirements in 5.1 shall apply where the equivalent hazard exists.	Not applicable.	**N/A**
5.9	Safety requirements for volumetric cup filler	-	-
	The hazards described in 4.9 shall be safeguarded by the following methods. These requirements apply when a volumetric filler is fitted to a form, fill and seal machine.	Not applicable.	**N/A**
5.9.1	Cup plates	-	-
	On fixed base plate designs, access to the	Not applicable.	**N/A**

	shearing hazard presented by the discharge hole and the moving cups shall be prevented by fixed guards sized in accordance with Table 4 of ISO 13857.		
	On machines of this type it is usually unnecessary to guard the area between the top and bottom cup plates.	Not applicable.	**N/A**
	To avoid an accident during cleaning, the cup filler shall either be equipped with an isolator, accessible from the cleaning area or the discharge hopper and other guards giving access to the shearing hazard, shall be interlocked in accordance with 5.1.12 to prevent the machine operating when the hopper or guards are removed.	Not applicable.	**N/A**
5.9.2	Hinged cup bases	-	**-**
	Hinged cup base designs shall be guarded in accordance with 5.9.1, but in addition the space between the top and bottom cup plates shall be guarded using fixed guards sized in accordance with Table 4 of ISO 13857.	Not applicable.	**N/A**
5.9.3	Rotary brush	-	**-**
	Provided that the bristles of the brush are sufficiently flexible and the force exerted by the rotating brush is less than 150 N, guarding of the brush is unnecessary. Drive mechanisms for rotary brushes shall be guarded with fixed guards sized in accordance with Table 4 of ISO 13857.	Not applicable.	**N/A**
5.9.4	Drive mechanisms-See 5.1.1.	-	**-**
5.9.5	Size changing	-	**-**
	The drive mechanisms of automatic cup volume adjustment mechanisms shall be guarded with fixed guards sized in accordance with Table 4 ISO 13857. The isolator described in 5.9.1 shall remove power from the adjustment mechanism.	Not applicable.	**N/A**
5.9.6	Ergonomic design requirements	-	**-**
	The design of the hopper, cups, cup plates and any other components which must requlary be removed for cleaning, shall avoid the risk of injury due to excessive effort. Where the mass of such components is greater than 25 kg, the manufacturer shall design the parts so that two operators can lift them or so that lifting	Not applicable.	**N/A**

	equipment can be used to lift them into and out of position.		
5.9.7	Slip, trip and fall-See 5.8.5.	-	-
5.9.8	Noise reduction	-	-
	In addition to 5.1.13, noise can be prevented or the emission minimized by the following measures.	Not applicable.	**N/A**
	Products-fit noise attenuating guards.	Not applicable.	**N/A**
5.9.9	General form, fill and seal machine requirements	-	-
	In addition to the above requirements, the requirements, the requirements in 5.1 shall apply where the equivalent hazard exists.	Not applicable.	**N/A**
5.10	Safety requirements for a volumetric piston filler	-	-
	The hazards described in 4.10 shall be safeguarded by the following methods. These requirements apply when a volumetric piston filler is fitted to a form, fill and seal machine.	Not applicable.	**N/A**
5.10.1	Piston	-	-
	The hazards presented by the piston, rotary valve and their drive mechanisms shall be guarded with guards complying with 5.1.12.	Not applicable.	**N/A**
	To avoid an accident during cleaning, the piston filler shall be equipped with isolators, accessible from the cleaning area which disconnects all power supplies (electricity, air etc.) to the piston filler to prevent it operating during cleaning.	Not applicable.	**N/A**
5.10.2	Rotary valve-See 5.10.1	-	-
5.10.3	Drive mechanism-See 5.10.1.	-	-
5.10.4	Temperature	-	-
	Piston fillers which have a operating surface temperature greater than 65 ℃ shall be fitted with a warning sign or pictogram indicating that there is a risk of burning if hot parts are touched.	Not applicable.	**N/A**
5.10.5	Ergonomic design requirements	-	-
	The design of the hopper, piston, valve and any other components which must regularly be removed for cleaning, shall avoid the risk of injury due to excessive effort. Where the mass	Not applicable.	**N/A**

	of such components is greater than 25 kg, the manufacturer shall design the parts so that two operators can lift them or so that lifting equipment can be used to lift them into and out of position.		
5.10.6	Slip, trip and fall-See 5.8.5.	-	-
5.10.7	Noise reduction-See 5.1.13.	-	-
5.10.8	General form, fill and seal machine requirements	-	-
	In addition to the above requirements, the requirements, the requirements in 5.1 shall apply where the equivalent hazard exists.	Not applicable.	**N/A**
5.11	Safety requirements for a volumetric filler	-	-
	The hazards described in 4.11 shall be safeguarded by the following methods. These requirements apply when a gravimetric filler is fitted to a form, fill and seal machine.	Not applicable.	**N/A**
5.11.1	Feed trays	-	-
	The vibration tray linkages shall be designed in accordance with EN 394 to Ensure that they do not present crushing hazards. The vibration drive mechanisms shall be guarded with fixed guards in accordance with Table 4 of ISO 13857.	Not applicable.	**N/A**
	Mechanisms with forces less than 150 N do not require guards. All other mechanisms shall be guarded with guards complying to 5.1.12.	Not applicable.	**N/A**
5.11.2	Control flaps-See 5.11.1.	-	-
5.11.3	Weigh pan –See 5.11.1.	-	-
5.11.4	Ergonomic design requirements	-	-
	The design of the weigh pan and any other components which are requlary removed for cleaning, shall avoid the risk of injury due to excessive effort. Where the mass of such components is greater than 25 kg, the manufacturer shall design the parts so that two operators can lift them or so that lifting equipment can be used to lift them into and out of position.	Not applicable.	**N/A**
5.11.5	Slip, trip and fall-See 5.8.5.	-	-
5.11.6	Noise reduction	-	-
	In addition to 5.1.13, noise can be prevented or the emission minimized by one of the following	-	-

	measures for products:		
a)	Fit cushioning material to feed trays and weigh pan;	Not applicable.	**N/A**
b)	Fit noise attenuating guards.	Not applicable.	**N/A**
5.11.7	General form, fill and seal machine requirements	-	**-**
	In addition to the above requirements, the requirements, the requirements in 5.1 shall apply where the equivalent hazard exists.	-	**-**
6.	Verification of safety requirements	-	**-**
	A manufacturer or supplier who wishes to claim conformity to this standard, shall first verify that the machine fulfils the safety requirements.	The machine has been fulfilled the safety requirements.	**Pass**
	The following verification procedures shall be followed.	See the following verification procedures.	**Pass**
6.1	Visual inspections with machine stopped	-	**-**
6.1.1	Mechanical parts	-	**-**
	Check all mechanical components are securely fixed and all sharp edges have been removed.	All mechanical components are securely fixed and all sharp edges have been removed.	**Pass**
6.1.2	Pneumatic systems	-	**-**
	Check all pneumatic components and pipework conform to safety requirements (see EN 983) and are correctly installed.	All pneumatic components and pipework conform to safety requirements (see EN 983) and are correctly installed.	**Pass**
6.1.3	Hydraulic systems	-	**-**
	Check all hydraulic components and pipework conform to safety requirements (see EN 983) and are correctly installed.	Not applicable.	**N/A**
6.1.4	Electrical systems	-	**-**
	Check that the electrical equipment and installation is in compliance with the technical documentation described in clause 18 of EN 60204-1.	It is complied with. See the report of EN 60204-1.	**Pass**
6.1.5	Guards	-	**-**
	Check all guards are in place and securely fixed. Check that all interlocking devices are fitted and working correctly.	All guards and interlocking devices are checked.	**Pass**
6.1.6	Design requirements	-	**-**
	Check that the design features stipulated in the safety requirements have been incorporated.	It has been met the requirement.	**Pass**
6.2	Measurements with machine stopped	-	**-**
6.2.1	Guards	-	**-**
	Check the relationship between the size of any apertures in the guards and their distance from	It has been met the requirement.	**Pass**

	the nearest danger zones conform to the requirements of Table 4 in ISO 13857, EN 349 or this standard.		
6.2.2	Electrical testing	-	-
	Perform the tests described in clause 20 of EN 60204-1.	It is complied with.	**Pass**
6.3	Visual inspections with machine running	-	-
6.3.1	Guards	-	-
	Check with machine running that the guards conform to the safety requirements.	It is complied with.	**Pass**
6.3.2	Interlocks	-	-
	Check the operation of all emergency stop and interlocking devices. Check that following the operation of an emergency stop or interlocking device, no hazards remain in the machine when the guards are opened.	It has met requirement.	**Pass**
6.4	Measurements with machine running	-	-
6.4.1	Noise	-	-
	Sound pressure level measurements shall be made either at the operating position of the machine, 1,6 m off the floor, or at four points around the machine 1, 0 m away from the surface of the machine and 1, 6 m off the floor.	It is complied with. See the noise of report.	**Pass**
	Measurements shall be taken with the machine dry running and if possible when running with the product for which the machine has been specified. In situations where this is not possible e.g. because the product is frozen, the machine shall be tested with a representative product which is likely to produce similar noise emissions to the specified product.	It is complied with. See the noise of report.	**Pass**
	Where the sound pressure levels exceed 70 dB(A) continuous A-weighted or 130 dB peak C-weighted, the measurements shall be recorded in the instructions for use.	No this contained.	**N/A**
6.4.2	Temperature	-	-
	With the machine fully warmed up, check that the external guard temperatures are less than 65℃.	The external guard temperatures are less than 65℃.	**Pass**
6.5	Hazardous product and packaging material related requirements	-	-
6.5.1	Visual inspections before delivery	-	-
	Check that design requirements for handling the	The design requirements have checked.	**Pass**

	products or packaging materials in question have been followed.	It has met the requirement.	
6.6	Verification procedures	-	-
	Verification procedures for each safety requirement detailed in 5.1 to 5.7 are shown in Table 2.	It is complied with.	**Pass**
	Verification procedures for each safety requirement detailed in 5.8 to 5.11 are shown in Table 3.	It is complied with.	**Pass**
7.	Information for use	-	-
7.1	Requirements for all form, fill and seal machines	-	-
7.1.1	Marking	-	-
	Machines shall be marked with the following information:	-	-
a)	Name and address of the manufacturer or his authorized representative established in the European Economic Area;	It has been contained.	**Pass**
b)	Designation of series or type;	It has been contained.	**Pass**
c)	Year of construction;	It has been contained.	**Pass**
d)	Serial number (if any);	It has been contained.	**Pass**
e)	The CE mark (if applicable);	It has been contained.	**Pass**
f)	Electrical markings as indicated in 18.4 of EN 60204-1;	It has been contained.	**Pass**
g)	Warning labels or pictograms where specifically required in clause 5 of this standard;	It has been contained.	**Pass**
h)	the business name and full address of the authorised representative (where applicable);	No this contained.	**N/A**
i)	the designation of the machinery.	It has been contained.	**Pass**
7.1.2	Instructions for use	-	-
	All machines shall be accompanied by instructions which include at least the following:	-	-
a)	A repeat of the information marked on the machine;	It has been contained.	**Pass**
b)	A record of the signs and pictograms fixed to the machine together with an explanation of their significance;	It has been contained.	**Pass**
c)	A description of the foreseen use of the machine which should include details of the product, packaging materials, pack sizes and speed of operation. On machines for use with controlled atmospheres or sterilizing agents the nature of	It has been contained.	**Pass**

	these materials shall be stated;		
d)	A drawing indicating the work stations likely to be occupied by operators;	It has been contained.	**Pass**
e)	Instructions for safe handling of the machine during installation;	It has been contained.	**Pass**
f)	Instructions for installation including services requirements, appropriate levels of local lighting and ventilation, if bolting down is required with the machine;	No this contained.	**N/A**
g)	Instructions for safe commissioning;	No this contained.	**N/A**
h)	Instructions for safe use, cleaning and size changing including details of the mass of machine parts which must regularly be removed for size changing or cleaning;	It has been contained.	**Pass**
i)	Instructions for safe maintenance and adjustment;	It has been contained.	**Pass**
j)	Training requirements for machine operators and maintenance staff;	No this contained.	**N/A**
k)	A record of the sound pressure level when the machine is in use and instructions on how the machine should be installed to minimize noise;	No this contained.	**N/A**
l)	A statement indicating whether the machine is or is not suitable for use in a potentially explosive atmosphere;	No this situation.	**N/A**
m)	On machines for use with agri-foodstuffs or pharmaceuticals, instructions for cleaning and disinfection of the machine, together with details of appropriate and inappropriate cleaning and disinfecting materials.	It has been contained.	**Pass**
n)	Any other instructions specifically required in clause 5 of this standard.	It is complied with.	**Pass**
7.2	Flowrapping machine	-	**-**
	In addition to the requirements of 7.1, the instructions for a flowrapping machine shall include the following information:	-	**-**
a)	Where removable feeding devices are fitted, information on how the machine can be operated safely when the devices have been removed;	Not applicable.	**N/A**
b)	The way to lift reels of film onto the reel unwind mechanism to avoid strain injuries;	Not applicable.	**N/A**
c)	The method of earthing the reel unwind mechanisms to avoid static build up;	Not applicable.	**N/A**

d)	The correct temperature for the sealing jaws to avoid the risk of fire;	Not applicable.	**N/A**
e)	The ventilation requirements to remove packaging materials fumes;	Not applicable.	**N/A**
f)	The correct method of operating controlled atmosphere packing systems;	Not applicable.	**N/A**
g)	The correct method of operating materials sterilizing systems.	Not applicable.	**N/A**
7.3	Vertical form, fill and seal machine	-	**-**
	In addition to the requirements of 7.1, the instructions for a vertical form, fill and seal machine shall include the following information:	-	**-**
a)	The method of installing feeding devices;	Not applicable.	**N/A**
b)	The way to lift reels of film onto the reel unwind mechanism to avoid strain injuries;	Not applicable.	**N/A**
c)	The method of earthing the reel unwind mechanisms to avoid static build-up;	Not applicable.	**N/A**
d)	The correct temperature for the sealing jaws to avoid the risk of fire;	Not applicable.	**N/A**
e)	The ventilation requirements to remove packaging materials fumes;	Not applicable.	**N/A**
f)	The correct method of operating controlled atmosphere packing systems;	Not applicable.	**N/A**
g)	The correct method of operating materials sterilizing systems.	Not applicable.	**N/A**
7.4	Pre-made bag erect fill and close machine	-	**-**
	In addition to the requirements of 7.1, the instructions for a pre-made bag erect fill and close machine shall include the following information:	-	**-**
a)	The method of installing feeding devices;	Not applicable.	**N/A**
b)	The way to load reels of film onto the reel unwind mechanism to avoid strain injuries;	Not applicable.	**N/A**
c)	The method of earthing the machine to avoid static build up;	Not applicable.	**N/A**
d)	The correct temperature for the sealing jaws to avoid the risk of fire;	Not applicable.	**N/A**
e)	The ventilation requirements to remove packaging materials fumes.	Not applicable.	**N/A**
7.5	Mandrel flexible package form, fill and seal machine	-	**-**
	In addition to the requirements of 7.1, the	-	**-**

	instructions for a mandrel flexible package form, fill and seal machine shall include the following information:		
	a) the method of installing feeding devices;	Not applicable.	**N/A**
	b) the way to load reels of film onto the reel unwind mechanism to avoid strain injuries;	Not applicable.	**N/A**
	c) the method of earthing the reel unwind mechanisms to avoid static build up;	Not applicable.	**N/A**
	d) the correct temperature for the sealing jaws and adhesive heating devices to avoid the risk of fire;	Not applicable.	**N/A**
	e) the ventilation requirements to remove packaging materials or adhesive fumes.	Not applicable.	**N/A**
7.6	Horizontal end load cartoner	-	**-**
	In addition to the requirements of 7.1, the instructions for a horizontal end load cartoner shall include the following information:	-	**-**
a)	The method of installing feeding devices;	Not applicable.	**N/A**
b)	The way to load the carton magazine to avoid strain injuries;	Not applicable.	**N/A**
c)	The correct temperature for adhesive heating and hot air sealing devices to avoid the risk of fire;	Not applicable.	**N/A**
d)	The ventilation requirements to remove adhesive or packaging materials fumes.	Not applicable.	**N/A**
7.7	Thermoform, fill and seal machine	-	**-**
	In addition to the requirements of 7.1, the instructions for a thermoform, fill and seal machine shall include the following information:	-	**-**
a)	The method of installing feeding devices;	It has been contained.	**Pass**
b)	The way to load reels of film onto the reel unwind mechanisms to avoid strain injuries;	No this contained.	**N/A**
c)	The method of earthing the machine to avoid static build up;	No this contained.	**N/A**
d)	The correct temperature for the heating chamber and sealing dies to avoid the risk of fire;	It has been contained.	**Pass**
e)	The ventilation requirements to remove packaging materials fumes.	No this contained.	**N/A**
7.8	Auger filler	-	**-**
	In addition to the requirements of 7.1, the instructions for an auger filler shall include the following information:	-	**-**

a)	The method of installing the filler onto a form, fill and seal machine;	Not applicable.	**N/A**
b)	The way to clean the filler to avoid strain injuries and the risk of falls;	Not applicable.	**N/A**
c)	The ventilation requirements to avoid dangerous dust atmospheres developing.	Not applicable.	**N/A**
7.9	Volumetric cup filler	-	**-**
	In addition to the requirements of 7.1, the instructions for a volumetric cup filler shall include the following information:	-	**-**
a)	The method of installing the filler onto a form, fill and seal machine;	Not applicable.	**N/A**
b)	The way to clean the filler to avoid strain injuries and the risk of falls;	Not applicable.	**N/A**
c)	The ventilation requirements to avoid dangerous dust atmospheres developing.	Not applicable.	**N/A**
7.10	Volumetric piston filler	-	**-**
	In addition to the requirements of 7.1, the instructions for a volumetric piston filler shall include the following information:	-	**-**
a)	The method of installing the filler onto a form, fill and seal machine;	Not applicable.	**N/A**
b)	The way to clean the filler to avoid strain injuries and the risk of falls.	Not applicable.	**N/A**
7.11	Gravimetric filler	-	**-**
	In addition to the requirements of 7.1, the instructions for a gravimetric filler shall include the following information:	-	**-**
a)	The method of installing the filler onto a form, fill and seal machine;	Not applicable.	**N/A**
b)	The way to clean the filler to avoid strain injuries and the risk of falls;	Not applicable.	**N/A**
c)	The ventilation requirements to avoid dangerous dust atmospheres developing.	Not applicable.	**N/A**

3.2 EN 60204-1 test report

Test Report Content

This test report consists of:

*Main report

*Annex A

- Continuity of the protective bonding circuit
- Insulation resistance test
- Withstanding voltage test

General information:

The test results presented in this report relate only to the object tested and information given from applicant or manufacturer.

Test case verdicts:

Pass=Pass, Fail=Fail, N/A=Not applicable. Placed in the column marked“Verdict”.

This is a Computer generated Test Report.

×Information written in “Italic” or “Regular and bold” font style is a part of this “Test Report Form”.

CONTENT FOR ADDITIONAL INFORMATION

Clause	Requirement - test	Result	Verdict
1	Scope	-	-
2	Normative references	-	-
3	Terms and definitions	-	-
4	General requirements	-	-
4.1	General	-	-
	This part of IEC 60204 is intended to apply to electrical equipment used with a wide variety of machines and with a group of machines working together in a co-ordinated manner.	electrical equipment used in machines	**Pass**
	The risks associated with the hazards relevant to the electrical equipment shall be assessed as part of the overall requirements for risk assessment of the machine. This will determine the adequate risk reduction, and the necessary protective measures for persons who can be exposed to those hazards, while still maintaining an acceptable level of performance of the machine and its equipment.	See EN 14121-1 test report	**Pass**
4.2	Selection of equipment	-	-
4.2.1	General	-	-
	Electrical components and devices shall:	-	-
	- be suitable for their intended use; and	-	-
	- conform to relevant IEC standards where such exist; and	conform to relevant IEC standards	**Pass**
	- be applied in accordance with the supplier’s instructions.	It has been applied in accordance with the supplier’s instructions.	**Pass**
4.2.2	Electrical equipment in compliance with the EN 60439 series	-	-
	The electrical equipment of the machine shall satisfy the safety requirements identified by the risk assessment of the machine. Depending upon the machine, its intended use and its electrical equipment, the designer may select parts of the electrical equipment of the machine that are in compliance with EN 60439-1 and, as necessary, other relevant parts of the EN 60439 series.	It has been compliance with relevant parts of the EN 60439 series.	**Pass**
4.3	Electrical supply	-	-
4.3.1	General	-	-
	The electrical equipment shall be designed to operate correctly with the conditions of the	-	-

Clause	Requirement - test	Result	Verdict
	supply:		
	- as specified in 4.3.2 or 4.3.3, or	See 4.3.2 or 4.3.3 for details	**Pass**
	- as otherwise specified by the user, or	Not applicable.	**N/A**
	- as specified by the supplier in the case of a special source of supply such as an on-board generator.	Not applicable.	**N/A**
4.3.2	AC supplies	-	-
	Steady state voltage: 0,9 to 1,1 of nominal voltage.	0,9 to 1,1 of nominal voltage.	**Pass**
	0,99 to 1,01 of nominal frequency continuously; 0,98 to 1,02 short time.	0,99 to 1,01 of nominal frequency continuously; 0,98 to 1,02 short time.	**Pass**
	Harmonic distortion not exceeding 10 % of the total r.m.s. voltage between live conductors for the sum of the 2nd through to the 5th harmonic. An additional 2 % of the total r.m.s. voltage between live conductors for the sum of the 6th through to the 30th harmonic is permissible.	It met the requirements	**Pass**
	Neither the voltage of the negative sequence component nor the voltage of the zero sequence component in three-phase supplies exceeding 2 % of the positive sequence component.	It met the requirements	**Pass**
	Supply interrupted or at zero voltage for not more than 3 ms at any random time in the supply cycle with more than 1 s between successive interruptions.	It met the requirements	**Pass**
	Voltage dips not exceeding 20 % of the peak voltage of the supply for more than one cycle with more than 1 s between successive dips.	It met the requirements	**Pass**
4.3.3	DC supplies	-	-
	From batteries	Not applicable.	**N/A**
	0.85 to 1.15 of nominal voltage; 0.7 to 1.2 of nominal voltage in the case of battery-operated vehicles.	Not applicable.	**N/A**
	Voltage interruption not exceeding 5 ms.	Not applicable.	**N/A**
	From converting equipment	Not applicable.	**N/A**
	0.9 to 1.1 of nominal voltage.	Not applicable.	**N/A**
	Voltage interruption not exceeding 20 ms with more than 1 s between successive interruptions.	Not applicable.	**N/A**
	Ripple (peak-to-peak) Not exceeding 0.15 of nominal voltage.	Not applicable.	**N/A**

Clause	Requirement - test	Result	Verdict
4.3.4	Special supply systems	-	-
	For special supply systems such as on-board generators, the limits given in 4.3.2 and 4.3.3 may be exceeded provided that the equipment is designed to operate correctly with those conditions.	Not applicable	**N/A**
4.4	Physical environment and operating conditions	-	-
4.4.1	General	-	-
	The electrical equipment shall be suitable for the physical environment and operating conditions of its intended use.	It met the requirements	**Pass**
	The requirements of 4.4.2 to 4.4.8 cover the physical environment and operating conditions of the majority of machines covered by this part of EN 60204. When special conditions apply or the limits specified are exceeded, an agreement between user and supplier (see 4.1) is recommended.	See the follow clauch for details	**Pass**
4.4.2	Electromagnetic compatibility (EMC)	-	-
	The equipment shall not generate electromagnetic disturbances above levels that are appropriate for its intended operating environment. In addition, the equipment shall have a level of immunity to electromagnetic disturbances so that it can function in its intended environment.	It met the requirements	**Pass**
	Measures to limit the generation of electromagnetic disturbances, i.e. conducted and radiated emissions include: - power supply filtering; - cable shielding; - enclosures designed to minimize RF radiation; - RF suppression techniques.	Take the requirements to limit the generatation.	**Pass**
	Measures to enhance the immunity of the equipment against conducted and radiated RF disturbance include: - design of functional bonding system taking into account the following; - connection of sensitive electrical circuits to the chassis. Such terminations should be marked or labelled with the symbol IEC 60417-5020 (DB:2002-10):	The supplier has taken the requirement to limit the generation.	**Pass**

Clause	Requirement - test	Result	Verdict
	- connection of the chassis to earth (PE) using a conductor with low RF impedance and as short as practicable; - connection of sensitive electrical equipment or circuits directly to the PE circuit or to a functional earthing conductor (PE), to minimize common mode disturbance. This latter terminal should be marked or labelled by the symbol IEC 60417-5018(DB:2002-10). - separation of sensitive circuits from disturbance sources; - enclosures designed to minimize RF transmission;		
	EMC wiring practices:	-	-
	- using twisted conductors to reduce the effect of differential mode disturbances,	The supplier has taken the requirement to limit the generation.	**Pass**
	- keeping sufficient distance between conductors emitting disturbances and conductors of sensitive circuits,	Enough distance between the conductor emitting disturbances and conductors of sensitive circuits,	**Pass**
	- using cable orientation as close to 90° as possible when cables cross,	90°	**Pass**
	- running the conductors as close as possible to the ground plane,	as possible to the ground plane,	**Pass**
	- using electrostatic screens and/or electromagnetic shields with a low RF impedance termination.	using electrostatic screens	**Pass**
4.4.3	Ambient air temperature	-	-
	The minimum requirement for all electrical equipment is correct operation between air temperatures of +5 °C and +40 °C. For very hot environments (for example hot climates, steel mills, paper mills) and for cold environments, additional measures are recommended.	It met the requirement	**Pass**
4.4.4	Humidity	-	-
	The electrical equipment shall be capable of operating correctly when the relative humidity does not exceed 50% at a maximum temperature of +40℃. Higher relative humidities are permitted at lower temperature (for example 90% at 20℃).	It has been complied with.	**Pass**
	Harmful effects of occasional condensation shall	It has been considered when designed.	**Pass**

Clause	Requirement - test	Result	Verdict
	be avoided by design of the equipment or, where necessary, by additional measures (for example built-in heaters, air conditioners, drain holes).		
4.4.5	altitude	-	-
	Electrical equipment shall be capable of operating correctlly at altitudes up to 1000m above mean sea level.	It has been complied with.	**Pass**
4.4.6	Contaminants	-	-
	Electrical equipment shall be adequately protected against the ingress of solids and liquids (see 11.3).	It has been complied with.	**Pass**
	The electrical equipment shall be adequately protected against contaminants (for example dust, acids, corrosive gases, salts) that can be present in the physical environment in which the electrical equipment is to be installed.	It has been complied with.	**Pass**
4.4.7	Ionizing and non-ionizing radiation	-	-
	When equipment is subject to radiation (for example microwave, ultraviolet, lasers, X-rays), additional measures shall be taken to avoid malfunctioning of the equipment and accelerated deterioration of the insulation. A special agreement is recommended between the supplier and the user.	Not applicable.	**N/A**
4.4.8	Vibration, shock, and bump	-	-
	Undesirable effects of vibration, shock and bump (including those generated by the machine and its associated equipment and those created by the physical environment) shall be avoided by the selection of suitable equipment, by mounting it away from the machien, or by provision of anti-vibration mountings. A special agreement is recommended between the supplier and the user.	No this situation.	**N/A**
4.5	Transportation and storage	-	-
	Electrical equipment shall be designed to withstand, or suitable precautions shall be taken to protect against, the effects of transportation and storage temperatures within a range of –25 °C to +55 °C and for short periods not exceeding 24 h at up to +70 °C. Suitable means shall be provided to prevent damage from humidity,	The relevant environment condition has been described in the instruction manual.	**Pass**

Clause	Requirement - test	Result	Verdict
	vibration, and shock. A special agreement can be necessary between the supplier and the user.		
4.6	Provisions for handling	-	-
	Heavy and bulky electrical equipment that has to be removed from the machine for transport, or that is independent of the machine, shall be provided with suitable means for handling by cranes or similar equipment.	It is moved by forklift.	**Pass**
4.7	Installation and operation	-	-
	Electrical equipment shall be installed in accordance with the electrical equipment supplier's instructions.	The installation of each electrical component has been made according to the supplier’s instruction.	**Pass**
5	Incoming supply conductor terminations and devices for disconnecting and switching off	-	-
5.1	Incoming supply conductor terminations	-	-
	It is recommended that, where practicable, the electrical equipment of a machine is connected to a single incoming supply. Where another supply is necessary for certain parts of the equipment (for example, electronic equipment that operates at a different voltage), that supply should be derived, as far as is practicable, from devices (for example, transformers, converters) forming part of the electrical equipment of the machine. For large complex machinery comprising a number of widely-spaced machines working together in a co-ordinated manner, there can be a need for more than one incoming supply depending upon the site supply arrangements (see 5.3.1).	a single incoming supply	**Pass**
	Unless a plug is provided with the machine for the connection to the supply (see 5.3.2 e), it is recommended that the supply conductors are terminated at the supply disconnecting device.	the supply conductors are terminated at the supply disconnecting device.	**Pass**
	Where a neutral conductor is used it shall be clearly indicated in the technical documentation of the machine, such as in the installation diagram and in the circuit diagram, and a separate insulated terminal, labelled N in accordance with 16.1, shall be provided for the neutral conductor.	a neutral conductor is clearly indicated in the technical documentation of the machine and a separate insulated terminal, labelled N in accordance.	**Pass**
	There shall be no connection between the neutral conductor and the protective bonding circuit	no connection between the neutral conductor and the protective bonding	**Pass**

Clause	Requirement - test	Result	Verdict
	inside the electrical equipment nor shall a combined PEN terminal be provided.	circuit inside the electrical equipment	
	Exception: a connection may be made between the neutral terminal and the PE terminal at the point of the connection of the power supply to the machine for TN-C systems.	Not applicable	**N/A**
	All terminals for the incoming supply connection shall be clearly identified in accordance with IEC 60445 and 16.1. For the identification of the external protective conductor terminal, see 5.2.	clearly identified	**Pass**
	See 17.8 for the provision of instructions for maintenance.	It met the requirements	**Pass**
5.2	Terminal for connection to the external protective earthing system	-	-
	For each incoming supply, a terminal shall be provided in the vicinity of the associated phase conductor terminals for connection of the machine to the external protective earthing system or to the external protective conductor, depending upon the supply distribution system.	It met the requirements	**Pass**
	The terminal shall be of such a size as to enable the connection of an external protective copper conductor with a cross-sectional area in accordance with Table 1.	It met the requirements	**Pass**
	Where an external protective conductor of a material other than copper is used, the terminal size shall be selected accordingly (see also 8.2.2).	Copper is used.	**N/A**
	At each incoming supply point, the terminal for connection of the external protective earthing system or the external protective conductor shall be marked or labelled with the letters PE (see IEC 60445).	labelled with the letters PE.	**Pass**
5.3	Supply disconnecting (isolating) device	-	-
5.3.1	General	-	-
	A supply disconnecting device shall be provided:	-	-
	- for each incoming source of supply to a machine(s);	be provided:	**Pass**
	- for each on-board power supply.	Not applicable	**N/A**
	The supply disconnecting device shall disconnect (isolate) the electrical equipment of the machine from the supply when required (for example for	It met the requirement	**Pass**

Clause	Requirement - test	Result	Verdict
	work on the machine, including the electrical equipment).		
	When two or more supply disconnecting devices are provided, protective interlocks for their correct operation shall also be provided in order to prevent a hazardous situation, including damage to the machine or to the work in progress.	Not applicable	**N/A**
5.3.2	Type	-	-
	The supply disconnecting device shall be one of the following types:	-	-
	a) switch-disconnector, with or without fuses, in accordance with IEC 60947-3, utilization category AC-23B or DC-23B;	A switch-disconnector	**Pass**
	b) disconnector, with or without fuses, in accordance with IEC 60947-3, that has an auxiliary contact that in all cases causes switching devices to break the load circuit before the opening of the main contacts of the disconnector;	Not applicable	**N/A**
	c) a circuit-breaker suitable for isolation in accordance with IEC 60947-2;	Not applicable	**N/A**
	d) any other switching device in accordance with an IEC product standard for that device and which meets the isolation requirements of IEC 60947-1 as well as a utilization category defined in the product standard as appropriate for on-load switching of motors or other inductive loads;	Not applicable	**N/A**
	e) a plug/socket combination for a flexible cable supply.	Not applicable	**N/A**
5.3.3	Requirements	-	-
	When the supply disconnecting device is one of the types specified in 5.3.2 a) to d) it shall fulfil all of the following requirements:	-	-
	- isolate the electrical equipment from the supply and have one OFF (isolated) and one ON position marked with "O" and "I" (symbols IEC 60417-5008 (DB:2002-10) and IEC 60417-5007 (DB:2002-10), see 10.2.2);	Not applicable	**N/A**
	- have a visible contact gap or a position indicator which cannot indicate OFF (isolated) until all	Not applicable	**N/A**

Clause	Requirement - test	Result	Verdict
	contacts are actually open and the requirements for the isolating function have been satisfied;		
	- have an external operating means (for example handle), (exception: power-operated switchgear need not be operable from outside the enclosure where there are other means to open it). Where the external operating means is not intended for emergency operations, it is recommended that it be coloured BLACK or GREY (see 10.7.4 and 10.8.4);	have an external operating means	**Pass**
	- be provided with a means permitting it to be locked in the OFF (isolated) position (for example by padlocks). When so locked, remote as well as local closing shall be prevented;	Not applicable	**N/A**
	- disconnect all live conductors of its power supply circuit. However, for TN supply systems, the neutral conductor may or may not be disconnected except in countries where disconnection of the neutral conductor (when used) is compulsory;	No TN supply system.	**Pass**
	- have a breaking capacity sufficient to interrupt the current of the largest motor when stalled together with the sum of the normal running currents of all other motors and/or loads. The calculated breaking capacity may be reduced by the use of a proven diversity factor.	A breaking capacity is supplied.	**Pass**
	When the supply disconnecting device is a plug/socket combination, it shall fulfil the following requirements:	-	-
	- have the switching capability, or be interlocked with a switching device that has a breaking capacity, sufficient to interrupt the current of the largest motor when stalled together with the sum of the normal running currents of all other motors and/or loads. The calculated breaking capacity may be reduced by the use of a proven diversity factor. When the interlocked switching device is electrically operated (for example a contactor) it shall have an appropriate utilisation category.	A switching device with a breaking capacity is supplied.	**Pass**
	- a) to f) of 13.4.5.	-	-
	Where the supply disconnecting device is a	A switching device with an appropriate	**Pass**

Clause	Requirement - test	Result	Verdict
	plug/socket combination, a switching device with an appropriate utilisation category shall be provided for switching the machine on and off. This can be achieved by the use of the interlocked switching device described above.	utilisation category is provided for switching the machine on and off.	
5.3.4	Operating means		**Pass**
	The operating means (for example, a handle) of the supply disconnecting device shall be easily accessible and located between 0,6 m and 1,9 m above the servicing level. An upper limit of 1,7 m is recommended.	It met the requirement	**Pass**
5.3.5	Excepted circuits		**Pass**
	The following circuits need not be disconnected by the supply disconnecting device:	-	**-**
	- lighting circuits for lighting needed during maintenance or repair;	No this situation.	**N/A**
	- plug and socket outlets for the exclusive connection of repair or maintenance tools and equipment (for example hand drills, test equipment);	No this situation.	**N/A**
	- undervoltage protection circuits that are only provided for automatic tripping in the event of supply failure;	It met the requirement	**Pass**
	- circuits supplying equipment that should normally remain energized for correct operation (for example temperature controlled measuring devices, product (work in progress) heaters, program storage devices);	It met the requirement	**Pass**
	- control circuits for interlocking.	It met the requirement	**Pass**
	It is recommended, however, that such circuits be provided with their own disconnecting device.	No this situation.	**N/A**
	Where such a circuit is not disconnected by the supply disconnecting device:	-	**-**
	- permanent warning label(s) in accordance with 16.1 shall be appropriately placed in proximity to the supply disconnecting device;	It met the requirement	**Pass**
	- a corresponding statement shall be included in the maintenance manual, and one or more of the following shall apply;	It met the requirement	**Pass**
	- a permanent warning label in accordance with 16.1 is affixed in proximity to each excepted	It met the requirement	**Pass**

Clause	Requirement - test	Result	Verdict
	circuit, or		
	- the excepted circuit is separated from other circuits, or	No this situation.	**N/A**
	- the conductors are identified by colour taking into account the recommendation of 13.2.4.	No this situation.	**N/A**
5.4	Devices for switching off for prevention of unexpected start-up	-	**-**
	Devices for switching off for the prevention of unexpected start-up shall be provided (for example where, during maintenance, a start-up of the machine or part of the machine can create a hazard).	It met the requirement	**Pass**
	Such devices shall be appropriate and convenient for the intended use, shall be suitably placed, and readily identifiable as to their function and purpose (for example by a durable marking in accordance with 16.1 where necessary).	It met the requirement	**Pass**
	Means shall be provided to prevent inadvertent and/or mistaken closure of these devices either at the controller or from other locations (see also 5.6).	It met the requirement	**Pass**
	The following devices that fulfil the isolation function may be provided for this purpose:	-	**-**
	- devices described in 5.3.2,	It met the requirement	**Pass**
	- disconnectors, withdrawable fuse links and withdrawable links only if located in an enclosed electrical operating area (see 3.19).	No any fuse is used.	**N/A**
	Devices that do not fulfil the isolation function (for example a contactor switched off by a control circuit) may only be provided where intended to be used for situations that include:	-	**-**
	- inspections;	No this situation.	**N/A**
	- adjustments;	No this situation.	**N/A**
	- work on the electrical equipment where: - there is no hazard arising from electric shock (see Clause 6) and burn; - the switching off means remains effective throughout the work; - the work is of a minor nature (for example replacement of plug-in devices without disturbing existing wiring).	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
5.5	Devices for disconnecting electrical equipment	-	-
	Devices shall be provided for disconnecting (isolating) electrical equipment to enable work to be carried out when it is de-energised and isolated. Such devices shall be:	-	-
	- appropriate and convenient for the intended use;	It met the requirement	**Pass**
	- suitably placed;	It met the requirement	**Pass**
	- readily identifiable as to which part(s) or circuit(s) of the equipment is served (for example by durable marking in accordance with 16.1 where necessary).	It met the requirement	**Pass**
	Means shall be provided to prevent inadvertent and/or mistaken closure of these devices either at the controller or from other locations (see also 5.6).	It met the requirement	**Pass**
	The supply disconnecting device (see 5.3) may, in some cases, fulfil that function. However, where it is necessary to work on individual parts of the electrical equipment of a machine, or on one of a number of machines fed by a common conductor bar, conductor wire or inductive power supply system, a disconnecting device shall be provided for each part, or for each machine, requiring separate isolation.	It met the requirement	**Pass**
	In addition to the supply disconnecting device, the following devices that fulfil the isolation function may be provided for this purpose:	-	-
	- devices described in 5.3.2;	It met the requirement	**Pass**
	- disconnectors, withdrawable fuse links and withdrawable links only if located in an electrical operating area (see 3.15) and relevant information is provided with the electrical equipment (see 17.2 b)9) and b)12)).	No this situation.	**N/A**
5.6	Protection against unauthorized, inadvertent and/or mistaken connection	-	-
	The devices described in 5.4 and 5.5 that are located outside an enclosed electrical operating area shall be equipped with means to secure them in the OFF position (disconnected state), (for example by provisions for padlocking, trapped key interlocking). When so secured, remote as	It met the requirement	**Pass**

Clause	Requirement - test	Result	Verdict
	well as local reconnection shall be prevented.		
	Where a non-lockable disconnecting device (for example withdrawable fuse-links, withdrawable links) other means of protection against reconnection (for example warning labels in accordance with 16.1) may be provided.	No this situation.	**N/A**
	However, when a plug/socket combination according to 5.3.2 e) is so positioned that it can be kept under the immediate supervision of the person carrying out the work, means for securing in the disconnected state need not be provided.	No this situation.	**N/A**
6	Protection against electric shock	-	-
6.1	General	-	-
	The electrical equipment shall provide protection of persons against electric shock from:	-	-
	- direct contact (see 6.2 and 6.4);	Please see the following statements.	**Pass**
	- indirect contact (see 6.3 and 6.4).	Please see the following statements.	**Pass**
	The measures for this protection given in 6.2, 6.3, and, for PELV, in 6.4, are a recommended selection from IEC 60364-4-41. Where those recommended measures are not practicable, for example due to the physical or operational conditions, other measures from IEC 60364-4-41 may be used.	It met the requirement	**Pass**
6.2	Protection against direct contact	-	-
6.2.1	General	-	-
	For each circuit or part of the electrical equipment, the measures of either 6.2.2 or 6.2.3 and, where applicable, 6.2.4 shall be applied.	Please see the following statements.	**Pass**
	Exception: where those measures are not appropriate, other measures for protection against direct contact (for example by using barriers, by placing out of reach, using obstacles, using construction or installation techniques that prevent access) as defined in IEC 60364-4-41 may be applied (see 6.2.5 and 6.2.6).	It met the requirement	**Pass**
	When the equipment is located in places open to all persons, which can include children, measures of either 6.2.2 with a minimum degree of protection against direct contact corresponding to IP4X or IPXXD (see IEC 60529), or 6.2.3 shall	It met the requirement	**Pass**

Clause	Requirement - test	Result	Verdict
	be applied.		
6.2.2	Protection by enclosures	-	-
	Live parts shall be located inside enclosures that conform to the relevant requirements of Clauses 4, 11, and 14 and that provide protection against direct contact of at least IP2X or IPXXB (see IEC 60529).	Minimum protection degree for live part while cover of control cabinet is IP2X	**Pass**
	Where the top surfaces of the enclosure are readily accessible, the minimum degree of protection against direct contact provided by the top surfaces shall be IP4X or IPXXD.	IP54 for the top surface.	**Pass**
	Opening an enclosure (i.e. opening doors, lids, covers, and the like) shall be possible only under one of the following conditions:	-	-
	a) The use of a key or tool is necessary for access. For enclosed electrical operating areas, see IEC 60364-4-41, or IEC 60439-1 as appropriate.	Tool and key have been used for the skilled person.	**Pass**
	All live parts, that are likely to be touched when resetting or adjusting devices intended for such operations while the equipment is still connected, shall be protected against direct contact to at least IP2X or IPXXB. Other live parts on the inside of doors shall be protected against direct contact to at least IP1X or IPXXA.	IP 2X has been used for the skilled person.	**Pass**
	b) The disconnection of live parts inside the enclosure before the enclosure can be opened. This may be accomplished by interlocking the door with a disconnecting device (for example, the supply disconnecting device) so that the door can only be opened when the disconnecting device is open and so that the disconnecting device can only be closed when the door is closed.	By the use of hand-operated power disconnection device the requirement of this clause could be ensured.	**Pass**
	Exception: a special device or tool as prescribed by the supplier can be used to defeat the interlock provided that:	-	-
	- it is possible at all times while the interlock is defeated to open the disconnecting device and lock the disconnecting device in the OFF (isolated) position or otherwise prevent	It met the requirement	**Pass**

Clause	Requirement - test	Result	Verdict
	unauthorised closure of the disconnecting device;		
	- upon closing the door, the interlock is automatically restored;	It met the requirement	**Pass**
	- all live parts, that are likely to be touched when resetting or adjusting devices intended for such operations while the equipment is still connected, are protected against direct contact to at least IP2X or IPXXB and other live parts on the inside of doors are protected against direct contact to at least IP1X or IPXXA;	No this situation.	**N/A**
	- relevant information is provided with the electrical equipment (see 17.2 b)9) and b)12)).	No this situation.	**N/A**
	Means shall be provided to restrict access to live parts behind doors not directly interlocked with the disconnecting means to skilled or instructed persons. (See 17.2 b)12)).	It met the requirement	**Pass**
	All parts that are still live after switching off the disconnecting device(s) (see 5.3.5) shall be protected against direct contact to at least IP2X or IPXXB (see IEC 60529). Such parts shall be marked with a warning sign in accordance with 16.2.1 (see also 13.2.4 for identification of conductors by colour).	IP 2X has been used for the protection of cable inlet connection.	**Pass**
	Excepted from this requirement for marking are:	-	-
	- parts that can be live only because of connection to interlocking circuits and that are distinguished by colour as potentially live in accordance with 13.2.4;	No this situation.	**N/A**
	- the supply terminals of the supply disconnecting device when the latter is mounted alone in a separate enclosure.	No this situation.	**N/A**
	c) Opening without the use of a key or a tool and without disconnection of live parts shall be possible only when all live parts are protected against direct contact to at least IP2X or IPXXB (see IEC 60529). Where barriers provide this protection, either they shall require a tool for their removal or all live parts protected by them shall be automatically disconnected when the barrier is removed.	No this situation.	**N/A**
6.2.3	Protection by insulation of live parts	-	-

Clause	Requirement - test	Result	Verdict
	Live parts shall be covered by insulation which can only be removed by destruction	Live part has been covered appropriately.	**Pass**
	Such insulation shall withstand the mechanical, chemical, electrical and thermal stresses under normal service conditions	Insulation could withstand the mechanical stress under normal service conditions.	**Pass**
6.2.4	Protection against residual voltages	-	**-**
	Live parts having a residual voltage greater than 60 V after the supply has been disconnection shall be discharged to 60V or less within a time period of 5 s after disconnection of the supply voltage provided that this rate of discharge does not interfere with the proper functioning of the equipment. Exempted from this requirement are components having a stored charge of 60 μC or less. Where this specified rate of discharge would interfere with the proper functioning of the equipment, a durable warning notice drawing attention to the hazard and stating the delay required before the enclosure may be opened shall be displayed at an easily visible location on or immediately adjacent to the enclosure containing the capacitances.	In any situation, the voltage could even drop to 0V within one second.	**Pass**
	In the case of plugs or similar devices, the withdrawal of which results in the exposure of conductors (for example pins), the discharge time shall not exceed 1 s, otherwise such conductors shall be protected against direct contact to at least IP2X or IPXXB. If neither a discharge time of 1 s nor a protection of at least IP2X or IPXXB can be achieved (for example in the case of removable collectors on conductor wires, conductor bars, or slip-ring assemblies, see 12.7.4), additional switching devices or an appropriate warning device (for example a warning notice in accordance with 16.1) shall be applied.	No this situation.	**N/A**
6.2.5	Protection by barriers	-	**-**
	For protection by barriers, 412.2 of IEC 60364-4-41 shall apply.	No this situation.	**N/A**
6.2.6	Protection by placing out of reach or protection by obstacles	-	**-**
	For protection by placing out of reach see 412.4	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	of IEC 60364-4-41 shall apply.		
	For protection by obstacles see 412.3 of IEC 60364-4-41 shall apply.	No this situation.	**N/A**
	For collector wire systems or collector bar systems with a degree of protection less than IP2X see 12.7.1	No this situation.	**N/A**
6.3	Protection against indirect contact	-	-
6.3.1	General	-	-
	Protection against indirect contact (3.29) is intended to prevent hazardous situations due to an insulation fault between live parts and exposed conductive parts.	It met the requirement	**Pass**
	For each circuit or part of the electrical equipment, at least one of the measures in accordance with 6.3.2 to 6.3.3 shall be applied:	-	-
	- measures to prevent the occurrence of a touch voltage (6.3.2); or	It met the requirement	**Pass**
	- automatic disconnection of the supply before the time of contact with a touch voltage can become hazardous (6.3.3).	No this situation.	**N/A**
6.3.2	Prevention of the occurrence of a touch voltage	-	-
6.3.2.1	General	-	-
	Measures to prevent the occurrence of a touch voltage include the following:	-	-
	- provision of class II equipment or by equivalent insulation;	By equivalent insulation.	**Pass**
	- electrical separation.	No this situation.	**N/A**
6.3.2.2	Protection by provision of class II equipment or by equivalent insulation	-	-
	This measure is intended to prevent the occurrence of touch voltages on the accessible parts through a fault in the basic insulation.	It met the requirement	**Pass**
	This protection is provided by one or more of the following:	-	-
	- class II electrical devices or apparatus (double insulation, equivalent insulation in accordance with IEC 61140);	By equivalent insulation.	**Pass**
	- switchgear and controlgear assemblies having total with IEC 60439-1;	No this situation.	**N/A**
	- supplementary or reinforced insulation in	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	accordance with 413.2 of IEC 60364-4-41.		
6.3.2.3	Protection by electrical separation	-	-
	Electrical separation of an individual circuit is intended to prevent a touch voltage through contact with exposed conductive parts that can be energized by a fault in the basic insulation of the live parts of that circuit.	Appropriate electrical separation has been used for this machine.	**Pass**
	For this type of protection, the requirements of 413.5 of IEC 60364-4-41 apply.	It met the requirement	**Pass**
6.3.3	Protection by automatic disconnection of supply	-	-
	This measure consists of the interruption of one or more of the line conductors by the automatic operation of a protective device in case of a fault. This interruption shall occur within a sufficiently short time to limit the duration of a touch voltage to a time within which the touch voltage is not hazardous. Interruption times are given in Annex A.	No this situation.	**N/A**
	This measure necessitates co-ordination between:	-	-
	- the type of supply and earthing system;	No this situation.	**N/A**
	- the impedance values of the different elements of the protective bonding system;	No this situation.	**N/A**
	- the characteristics of the protective devices that detect insulation fault(s).	No this situation.	**N/A**
	Automatic disconnection of the supply of any circuit affected by an insulation fault is intended to prevent a hazardous situation resulting from a touch voltage.	No this situation.	**N/A**
	This protective measure comprises both:	-	-
	- protective bonding of exposed conductive parts (see 8.2.3),	No this situation.	**N/A**
	- and either:	-	-
	a) overcurrent protective devices for the automatic disconnection of the supply on detection of an insulation fault in TN systems, or	No this situation.	**N/A**
	b) residual current protective devices to initiate the automatic disconnection of the supply on detection of an insulation fault from a live part to exposed conductive parts or to earth in TT systems, or	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	c) insulation monitoring or residual current protective devices to initiate automatic disconnection of IT systems. Except where a protective device is provided to interrupt the supply in the case of the first earth fault, an insulation monitoring device shall be provided to indicate the occurrence of a first fault from a live part to exposed conductive parts or to earth. This insulation monitoring device shall initiate an audible and/or visual signal which shall continue as long as the fault persists.	No this situation.	**N/A**
	Where automatic disconnection is provided in accordance with a), and disconnection within the time specified in Clause A.1 cannot be assured, supplementary bonding shall be provided as necessary to meet the requirements of Clause A.3.	No this situation.	**N/A**
6.4	Protection by the use of PELV	-	-
6.4.1	General requirements	-	-
	The use of PELV (Protective Extra-Low Voltage) is to protect persons against electric shock from indirect contact and limited area direct contact (see 8.2.5).	It met the requirement	**Pass**
	PELV circuits shall satisfy all of the following conditions:	-	-
	a) the nominal voltage shall not exceed:	-	-
	• 25 V a.c. r.m.s. or 60 V ripple-free d.c. when the equipment is normally used in dry locations and when large area contact of live parts with the human body is not expected; or	It met the requirement	**Pass**
	• 6 V a.c. r.m.s. or 15 V ripple-free d.c. in all other cases;	No this situation.	**N/A**
	b) one side of the circuit or one point of the source of the supply of that circuit shall be connected to the protective bonding circuit;	It met the requirement	**Pass**
	c) live parts of PELV circuits shall be electrically separated from other live circuits. Electrical separation shall be not less than that required between the primary and secondary circuits of a	It met the requirement	**Pass**

Clause	Requirement - test	Result	Verdict
	safety isolating transformer (see IEC 61558-1 and IEC 61558-2-6);		
	d) conductors of each PELV circuit shall be physically separated from those of any other circuit. When this requirement is impracticable, the insulation provisions of 13.1.3 shall apply;	It met the requirement	**Pass**
	e) plugs and socket-outlets for a PELV circuit shall conform to the following:	-	-
	1) plugs shall not be able to enter socket-outlets of other voltage systems;	No this situation.	**N/A**
	2) socket-outlets shall not admit plugs of other voltage systems.	No this situation.	**N/A**
6.4.2	Sources for PELV	-	-
	The source for PELV shall be one of the following:	-	-
	- a safety isolating transformer in accordance with IEC 61558-1 and IEC 61558-2-6;	No this situation.	**N/A**
	- a source of current providing a degree of safety equivalent to that of the safety isolating transformer (for example a motor generator with winding providing equivalent isolation);	It met the requirement	**Pass**
	- an electrochemical source (for example a battery) or another source independent of a higher voltage circuit (for example a diesel-driven generator);	No this situation.	**N/A**
	- an electronic power supply conforming to appropriate standards specifying measures to be-taken to ensure that, even in the case of an internal fault, the voltage at the outgoing terminals cannot exceed the values specified in 6.4.1.	No this situation.	**N/A**
7	Protection of equipment	-	-
7.1	General	-	-
	This Clause details the measures to be taken to protect equipment against the effects of:	-	-
	- overcurrent arising from a short circuit;	It met the requirement	**Pass**
	- overload and/or loss of cooling of motors;	It met the requirement	**Pass**
	- abnormal temperature;	It met the requirement	**Pass**
	- loss of or reduction in the supply voltage;	It met the requirement	**Pass**
	- overspeed of machines/machine elements;	It met the requirement	**Pass**

Clause	Requirement - test	Result	Verdict
	- earth fault/residual current;	It met the requirement	**Pass**
	- incorrect phase sequence;	It met the requirement	**Pass**
	- overvoltage due to lightning and switching surges.	It met the requirement	**Pass**
7.2	Overcurrent protection	-	-
7.2.1	General	-	-
	Overcurrent protection shall be provided where the current in a machine circuit can exceed either the rating of any component or the current carrying capacity of the conductors, whichever is the lesser value. The ratings or settings to be selected are detailed in 7.2.10.	It met the requirement	**Pass**
7.2.2	Supply conductors	-	-
	Unless otherwise specified by the user, the supplier of the electrical equipment is not responsible for providing the overcurrent protective device for the supply conductors to the electrical equipment (see Annex B).	The manufacturer does not provide the over-current protection for the whole machine.	**Pass**
	The supplier of the electrical equipment shall state on the installation diagram the data necessary for selecting the overcurrent protective device (see 7.2.10 and 17.4).	The data necessary for over current protective device is provided in the electrical installation diagram.	**Pass**
7.2.3	Power circuits	-	-
	Devices for detection and interruption of overcurrent, selected in accordance with 7.2.10, shall be applied to each live conductor.	Each power circuit has their overcurrent protective device.	**Pass**
	The following conductors, as applicable, shall not be disconnected without disconnecting all associated live conductors:	-	-
	- the neutral conductor of a.c. power circuits;	No this situation.	**N/A**
	- the earthed conductor of d.c. power circuits;	It met the requirement	**Pass**
	- d.c. power conductors bonded to exposed conductive parts of mobile machines.	It met the requirement	**Pass**
	Where the cross-sectional area of the neutral conductor is at least equal to or equivalent to that of the phase conductors, it is not necessary to provide overcurrent detection for the neutral conductor nor a disconnecting device for that conductor. For a neutral conductor with a cross-sectional area smaller than that of the associated phase conductors, the measures detailed in 524 of	The cross-section area of neutral conductor is $6mm^2$	**Pass**

Clause	Requirement - test	Result	Verdict
	IEC 60364-5-52 shall apply.		
	In IT systems, it is recommended that the neutral conductor is not used. However, where a neutral conductor is used, the measures detailed in 431.2.2 of IEC 60364-4-43 shall apply.	No this situation.	**N/A**
7.2.4	Control circuits	-	-
	Conductors of control circuits directly connected to the supply voltage and of circuits supplying control circuit transformers shall be protected against overcurrent in accordance with 7.2.3.	It met the requirement	**Pass**
	Conductors of control circuits supplied by a control circuit transformer or d.c. supply shall be protected against overcurrent (see also 9.4.3.1):	-	-
	- in control circuits connected to the protective bonding circuit, by inserting an overcurrent protective device into the switched conductor;	It met the requirement	**Pass**
	- in control circuits not connected to the protective bonding circuit;	It met the requirement	**Pass**
	- where the same cross sectional area conductors are used in all control circuits, by inserting an overcurrent protective device into the switched conductor, and;	It met the requirement	**Pass**
	- where different cross sectional areas conductors are used in different sub-circuits, by inserting an overcurrent protective device into both switched and common conductors of each sub-circuit.	It met the requirement	**Pass**
7.2.5	Socket outlets and their associated conductors	-	-
	Overcurrent protection shall be provided for the circuits feeding the general purpose socket outlets intended primarily for supplying power to maintenance equipment. Overcurrent protective devices shall be provided in the unearthed live conductors of each circuit feeding such socket outlets.	No socket outlet is used for this machine.	**N/A**
7.2.6	Lighting circuits	-	-
	All unearthed conductors of circuits supplying lighting shall be protected against the effects of short circuits by the provision of overcurrent devices separate from those protecting other circuits	No lighting circuit is used for this machine.	**N/A**

Clause	Requirement - test	Result	Verdict
7.2.7	Transformers	-	-
	Transformers shall be protected against overcurrent in accordance with the manufacturer's instructions. Such protection shall (see also 7.2.10):	It met the requirement	**Pass**
	- avoid nuisance tripping due to transformer magnetizing inrush currents;	It met the requirement	**Pass**
	- avoid a winding temperature rise in excess of the permitted value for the insulation class of transformer when it is subjected to the effects of a short circuit at its secondary terminals.	It met the requirement	**Pass**
	The type and setting of the overcurrent protective device should be in accordance with the recommendations of the transformer supplier.	It met the requirement	**Pass**
7.2.8	Location of overcurrent protective devices	-	-
	An overcurrent protective device shall be located at the point where a reduction in the cross-sectional area of the conductors or another change reduces the current-carrying capacity of the conductors, except where all the following conditions are satisfied:	It met the requirement	**Pass**
	- the current carrying capacity of the conductors is at least equal to that of the load;	It met the requirement	**Pass**
	- the part of the conductor between the point of reduction of current-carrying capacity and the position of the overcurrent protective device is no longer than 3 m;	It met the requirement	**Pass**
	- the conductor is installed in such a manner as to reduce the possibility of a short-circuit, for example, protected by an enclosure or duct.	It met the requirement	**Pass**
7.2.9	Overcurrent protective devices	-	-
	The rated short-circuit breaking capacity shall be at least equal to the prospective fault current at the point of installation. Where the short-circuit current to an overcurrent protective device can include additional currents other than from the supply (for example from motors, from power factor correction capacitors), those currents shall be taken into consideration.	It met the requirement	**Pass**
	A lower breaking capacity is permitted where another protective device (for example the	It met the requirement	**Pass**

Clause	Requirement - test	Result	Verdict
	overcurrent protective device for the supply conductors (see 7.2.2) having the necessary breaking capacity is installed on the supply side. In that case, the characteristics of the two devices shall be co-ordinated so that the let-through energy (I2t) of the two devices in series does not exceed that which can be withstood without damage to the overcurrent protective device on the load side and to the conductors protected by that device (see Annex A of IEC 60947-2).		
	Where fuses are provided as overcurrent protective devices, a type readily available in the country of use shall be selected, or arrangements shall be made for the supply of spare parts.	No fuse is used for this machine.	**N/A**
7.2.10	Rating and setting of overcurrent protective devices	-	-
	The rated current of fuses or the setting current of other overcurrent protective devices shall be selected as low as possible but adequate for the anticipated overcurrents (for example during starting of motors or energizing of transformers). When selecting those protective devices, consideration shall be given to the protection of switching devices against damage due to overcurrents (for example welding of the switching device contacts).	The rating and setting of overcurrent protective device is appropriate.	**Pass**
	The rated current or setting of an overcurrent protective device is determined by the current carrying capacity of the conductors to be protected in accordance with 12.4, D.2 and the maximum allowable interrupting time t in accordance with Clause D.3, taking into account the needs of co-ordination with other electrical devices in the protected circuit.	The rating and setting of overcurrent protective device is appropriate.	**Pass**
7.3	Protection of motors against overheating	-	-
7.3.1	General	-	-
	Protection of motors against overheating shall be provided for each motor rated at more than 0,5 kW.	It met the requirement	**Pass**
	Exceptions:In applications where an automatic interruption of the motor operation is	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	unacceptable (for example fire pumps), the means of detection shall give a warning signal to which the operator can respond.		
	Protection of motors against overheating can be achieved by:	-	-
	- overload protection (7.3.2),	It met the requirement	**Pass**
	- over-temperature protection (7.3.3), or	No this situation.	**N/A**
	- current-limiting protection (7.3.4).	No this situation.	**N/A**
	Automatic restarting of any motor after the operation of protection against overheating shall be prevented where this can cause a hazardous situation or damage to the machine or to the work in progress	Automatic restarting of any motor after the operation of overload protection is prevented.	**Pass**
7.3.2	Overload protection	-	-
	Where overload protection is provided, detection of overload(s) shall be provided in each live conductor except for the neutral conductor. However, where the motor overload detection is not used for cable overload protection (see also Clause D.2), the number of overload detection devices may be reduced at the request of the user (see also Annex B). For motors having single-phase or d.c. power supplies, detection in only one unearthed live conductor is permitted.	Detection of overload has been provided in each live conductor excepted for the neutral conductor.	**Pass**
	Where overload protection is achieved by switching off, the switching device shall switch off all live conductors. The switching of the neutral conductor is not necessary for overload protection.	The switching device has been switched off all live conductors.	**Pass**
	Where motors with special duty ratings are required to start or to brake frequently (for example, motors for rapid traverse, locking, rapid reversal, sensitive drilling) it can be difficult to provide overload protection with a time constant comparable with that of the winding to be protected. Appropriate protective devices designed to accommodate special duty motors or over-temperature protection (see 7.3.3) can be necessary.	No this situation.	**N/A**
	For motors that cannot be overloaded (for example torque motors, motion drives that either	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	are protected by mechanical overload protection devices or are adequately dimensioned), overload protection is not required.		
7.3.3	Over-temperature protection	-	-
	The provision of motors with over-temperature protection (see IEC 60034-11) is recommended in situations where the cooling can be impaired (for example dusty environments). Depending upon the type of motor, protection under stalled rotor or loss of phase conditions is not always ensured by over-temperature protection, and additional protection should then be provided.	No this situation.	**N/A**
	Over-temperature protection is also recommended for motors that cannot be overloaded (for example torque motors, motion drives that are either protected by mechanical overload protection devices or are adequately dimensioned), where the possibility of over-temperature exists (for example due to reduced cooling).	No this situation.	**N/A**
7.3.4	Current limiting protection	-	-
	Where protection against the effects of overheating in three phase motors is achieved by current limitation, the number of current limitation devices may be reduced from 3 to 2 (see 7.3.2). For motors having single phase a.c or d.c. power supplies, current limitation in only one unearthed live conductor is permitted.	No this situation.	**N/A**
7.4	Abnormal temperature protection	-	-
	Resistance heating or other circuits that are capable of attaining or causing abnormal temperatures (for example, due to short-time rating or loss of cooling medium) and therefore can cause a hazardous situation shall be provided with suitable detection to initiate an appropriate control response.	Abnormal temperature protection has been provided for the heating and injection is prevented.	**Pass**
7.5	Protection against supply interruption or voltage reduction and subsequent restoration	-	-
	Where a supply interruption or a voltage reduction can cause a hazardous situation, damage to the machine, or to the work in	No under-voltage protection is used for this machine.	**N/A**

Clause	Requirement - test	Result	Verdict
	progress, undervoltage protection shall be provided by, for example, switching off the machine at a predetermined voltage level.		
	Where the operation of the machine can allow for an interruption or a reduction of the voltage for a short time period, delayed undervoltage protection may be provided. The operation of the undervoltage device shall not impair the operation of any stopping control of the machine.	No under-voltage protection is used for this machine.	**N/A**
	Upon restoration of the voltage or upon switching on the incoming supply, automatic or unexpected restarting of the machine shall be prevented where such a restart can cause a hazardous situation.	Automatic or unexpected restarting of the machine has been prevented.	**Pass**
	Where only a part of the machine or of the group of machines working together in a co- ordinated manner is affected by the voltage reduction or supply interruption, the undervoltage protection shall initiate appropriate control responses to ensure co-ordination.	No under-voltage protection is used for this machine.	**N/A**
7.6	Motor overspeed protection	-	-
	Overspeed protection shall be provided where overspeeding can occur and could possibly cause a hazardous situation taking into account measures in accordance with 9.3.2. Overspeed protection shall initiate appropriate control responses and shall prevent automatic restarting.	No motor over-speed protection is used for this machine.	**N/A**
	The overspeed protection should operate in such a manner that the mechanical speed limit of the motor or its load is not exceeded.	No motor over-speed protection is used for this machine.	**N/A**
7.7	Earth fault/residual current protection	-	-
	In addition to providing overcurrent protection for automatic disconnection as described in 6.3, earth fault/residual current protection can be provided to reduce damage to equipment due to earth fault currents less than the detection level of the overcurrent protection.	No this situation.	**N/A**
	The setting of the devices shall be as low as possible consistent with correct operation of the equipment.	It met the requirement	**Pass**
7.8	Phase sequence protection	-	-

Clause	Requirement - test	Result	Verdict
	Where an incorrect phase sequence of the supply voltage can cause a hazardous situation or damage to the machine, protection shall be provided.	No this situation.	**N/A**
7.9	Protection against overvoltages due to lightning and to switching surges	-	-
	Protective devices can be provided to protect against the effects of overvoltages due to lightning or to switching surges.	No additional protection for this purpose is provided.	**N/A**
	Where provided:	-	-
	- devices for the suppression of overvoltages due to lightning shall be connected to the incoming terminals of the supply disconnecting device.	No this situation.	**N/A**
	- devices for the suppression of overvoltages due to switching surges shall be connected across the terminals of all equipment requiring such protection.	No this situation.	**N/A**
8	Equipotential bonding	-	-
8.1	General	-	-
	This Clause provides requirements for both protective bonding and functional bonding. Figure 2 illustrates those concepts.	It met the requirement	**Pass**
	Protective bonding is a basic provision for fault protection to enable protection of persons against electric shock from indirect contact (see 6.3.3 and 8.2).	It met the requirement	**Pass**
	The objective of functional bonding (see 8.3) is to minimize:	-	-
	- the consequence of an insulation failure which could affect the operation of the machine;	It met the requirement	**Pass**
	- the consequences of electrical disturbances to sensitive electrical equipment which could affect the operation of the machine.	No this situation.	**N/A**
	Normally functional bonding is achieved by connection to the protective bonding circuit, but where the level of electrical disturbances on the protective bonding circuit is not sufficiently low for proper functioning of electrical equipment, it may be necessary to connect the functional bonding circuit to a separate functional earthing conductor (see Figure 2).	It met the requirement	**Pass**

Clause	Requirement - test	Result	Verdict
8.2	Protective bonding circuit	-	-
8.2.1	General	-	-
	The protective bonding circuit consists of:	-	-
	- PE terminal(s) (see 5.2);	It met the requirement	**Pass**
	- the protective conductors in the equipment of the machine including sliding contacts where they are part of the circuit;	No this situation.	**N/A**
	- the exposed conductive parts and conductive structural parts of the electrical equipment;	No this situation.	**N/A**
	- those extraneous conductive parts which form the structure of the machine.	No this situation.	**N/A**
	All parts of the protective bonding circuit shall be so designed that they are capable of withstanding the highest thermal and mechanical stresses that can be caused by earth-fault currents that could flow in that part of the protective bonding circuit.	All parts of the protective bonding circuit are so designed that they are capable of withstanding the highest thermal and mechanical stresses.	**Pass**
	Where the conductance of structural parts of the electrical equipment or of the machine is less than that of the smallest protective conductor connected to the exposed conductive parts, a supplementary bonding conductor shall be provided. This supplementary bonding conductor shall have a cross-sectional area not less than half that of the corresponding protective conductor.	Some of structural part has been provide as part of provided as part of protective bonding circuit so as to get the better effect for protective bonding.	**Pass**
	If an IT distribution system is used, the machine structure shall be part of the protective bonding circuit and insulation monitoring shall be provided. See 6.3.3 c).	No this situation.	**N/A**
	Conductive structural parts of equipment in accordance with 6.3.2.2 need not be connected to the protective bonding circuit. Extraneous conductive parts which form the structure of the machine need not be connected to the protective bonding circuit where all the equipment provided is in accordance with 6.3.2.2.	It met the requirement	**Pass**
	Exposed conductive parts of equipment in accordance with 6.3.2.3 shall not be connected to the protective bonding circuit.	No this situation.	**N/A**
8.2.2	Protective conductors	-	-
	Protective conductors shall be identified in accordance with 13.2.2.	Appropriate identification has been made in accordance with 13.2.2	**Pass**

Clause	Requirement - test	Result	Verdict
	Copper conductors are preferred. Where a conductor material other than copper is used, its electrical resistance per unit length shall not exceed that of the allowable copper conductor and such conductors shall be not less than 16 mm2 in cross-sectional area.	Copper conductors are used.	**Pass**
	The cross-sectional area of protective conductors shall be determined in accordance with the requirements of:	-	-
	- 543 of IEC 60364-5-54; or	No this situation.	**N/A**
	- 7.4.3.1.7 of IEC 60439-1, as appropriate.	It met the requirement	**Pass**
	This requirement is met in most cases where the relationship between the cross-sectional area of the phase conductors associated with that part of the equipment and the cross-sectional area of the associated protective conductor is in accordance with Table 1 (see 5.2).	It met the requirement	**Pass**
8.2.3	Continuity of the protective bonding circuit	-	-
	All exposed conductive parts shall be connected to the protective bonding circuit in accordance with 8.2.1	No this situation.	**N/A**
	Where a part is removed for any reason (for example routine maintenance), the protective bonding circuit for the remaining parts shall not be interrupted.	No this situation.	**N/A**
	Connection and bonding points shall be so designed that their current-carrying capacity is not impaired by mechanical, chemical, or electrochemical influences. Where enclosures and conductors of aluminium or aluminium alloys are used, particular consideration should be given to the possibility of electrolytic corrosion.	No this situation.	**N/A**
	Metal ducts of flexible or rigid construction and metallic cable sheaths shall not be used as protective conductors. Nevertheless, such metal ducts and the metal sheathing of all connecting cables (for example cable armouring, lead sheath) shall be connected to the protective bonding circuit.	No this situation.	**N/A**
	Where the electrical equipment is mounted on lids, doors, or cover plates, continuity of the	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	protective bonding circuit shall be ensured and a protective conductor (see 8.2.2) is recommended. Otherwise fastenings, hinges or sliding contacts designed to have a low resistance shall be used (see 18.2.2, Test 1).		
	The continuity of the protective conductor in cables that are exposed to damage (for example flexible trailing cables) shall be ensured by appropriate measures (for example monitoring).	No this situation.	**N/A**
	For requirements for the continuity of the protective conductor using conductor wires, conductor bars and slip-ring assemblies, see 12.7.2.	No this situation.	**N/A**
8.2.4	Exclusion of switching devices from the protective bonding circuit	-	-
	The protective bonding circuit shall not incorporate a switching device or an overcurrent protective device (for example switch, fuse).	No switching device and/or over-current protective device was found to connect to the protective bonding.	**Pass**
	No means of interruption of the protective bonding conductor shall be provided.	No means of interruption of the protective bonding conductor shall be provided.	**Pass**
	Where the continuity of the protective bonding circuit can be interrupted by means of removable current collectors or plug/socket combinations, the protective bonding circuit shall be interrupted by a first make last break contact. This also applies to removable or withdrawable plug-in units (see also 13.4.5).	It is in compliance with this requirement.	**Pass**
8.2.5	Parts that need not be connected to the protective bonding circuit	-	-
	It is not necessary to connect exposed conductive parts to the protective bonding circuit where those parts are mounted so that they do not constitute a hazard because:	It is in compliance with this requirement.	**Pass**
	- they cannot be touched on large surfaces or grasped with the hand and they are small in size (less than approximately 50 mm × 50 mm); or	It is in compliance with this requirement.	**Pass**
	- they are located so that either contact with live parts, or an insulation failure, is unlikely.	It is in compliance with this requirement.	**Pass**
	This applies to small parts such as screws, rivets, and nameplates and to parts inside an enclosure,	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	irrespective of their size (for example electromagnets of contactors or relays and mechanical parts of devices) (see also 410.3.3.5 of IEC 60364-4-41).		
8.2.6	Protective conductor connecting points	-	-
	All protective conductors shall be terminated in accordance with 13.1.1. The protective conductor connecting points shall have no other function and are not intended, for example, to attach or connect appliances or parts.	It is in compliance with this requirement.	**Pass**
	Each protective conductor connecting point shall be marked or labelled as such using the symbol IEC 60417-5019 (DB:2002-10):	It is in compliance with this requirement.	**Pass**
	or with the letters PE, the graphical symbol being preferred, or by use of the bicolour combination GREEN-AND-YELLOW, or by any combination of these.	It is in compliance with this requirement.	**Pass**
8.2.7	Mobile machines	-	-
	On mobile machines with on-board power supplies, the protective conductors, the conductive structural parts of the electrical equipment, and those extraneous conductive parts which form the structure of the machine shall all be connected to a protective bonding terminal to provide protection against electric shock. Where a mobile machine is also capable of being connected to an external incoming power supply, this protective bonding terminal shall be the connection point for the external protective conductor.	No this situation.	**N/A**
8.2.8	Additional protective bonding requirements for electrical equipment having earth leakage currents higher than 10 mA a.c. or d.c.	-	-
	Where electrical equipment has an earth leakage current (for example adjustable speed electrical power drive systems and information technology equipment) that is greater than 10 mA a.c. or d.c. in any incoming supply, one or more of the following conditions for the associated protective bonding circuit shall be satisfied:	No this situation.	**N/A**
	a) the protective conductor shall have a cross-	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	sectional area of at least 10 mm2 Cu or 16 mm2 Al, through its total run;		
	b) where the protective conductor has a cross-sectional area of less than 10 mm2 Cu or 16 mm2 Al, a second protective conductor of at least the same cross-sectional area shall be provided up to a point where the protective conductor has a cross-sectional area not less than 10 mm2 Cu or 16 mm2 Al.	No this situation.	**N/A**
	c) automatic disconnection of the supply in case of loss of continuity of the protective conductor.	No this situation.	**N/A**
	To prevent difficulties associated with electromagnetic disturbances, the requirements of 4.4.2 also apply to the installation of duplicate protective conductors.	No this situation.	**N/A**
	In addition, a warning label shall be provided adjacent to the PE terminal, and where necessary on the nameplate of the electrical equipment. The information provided under 17.2 b)1) shall include information about the leakage current and the minimum cross-sectional area of the external protective conductor.	No this situation.	**N/A**
8.3	Functional bonding	-	**-**
	Protection against maloperation as a result of insulation failures can be achieved by connecting to a common conductor in accordance with 9.4.3.1.	It is in compliance with this requirement.	**Pass**
	For recommendations regarding functional bonding to avoid maloperation due to electromagnetic disturbances, see 4.4.2.	It is in compliance with this requirement.	**Pass**
8.4	Measures to limit the effects of high leakage current	-	**-**
	The effects of high leakage current can be restricted to the equipment having high leakage current by connection of that equipment to a dedicated supply transformer having separate windings. The protective bonding circuit shall be connected to exposed conductive parts of the equipment and, in addition, to the secondary winding of the transformer. The protective conductor(s) between the equipment and the	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	secondary winding of the transformer shall comply with one or more of the arrangements described in 8.2.8.		
9	Control circuits and control functions	-	-
9.1	Control circuits	-	-
9.1.1	Control circuit supply	-	-
	Where control circuits are supplied from an a.c. source, control transformers shall be used for supplying the control circuits. Such transformers shall have separate windings. Where several transformers are used, it is recommended that the windings of those transformers be connected in such a manner that the secondary voltages are in phase.	It met the requirement	**Pass**
	Where d.c. control circuits derived from an a.c. supply are connected to the protective bonding circuit (see 8.2.1), they shall be supplied from a separate winding of the a.c. control circuit transformer or by another control circuit transformer.	It met the requirement	**Pass**
	Transformers are not mandatory for machines with a single motor starter and/or a maximum of two control devices (for example interlock device, start/stop control station).	It met the requirement	**Pass**
9.1.2	Control circuit voltages	-	-
	The nominal value of the control voltage shall be consistent with the correct operation of the control circuit. The nominal voltage shall not exceed 277 V when supplied from a transformer.	It met the requirement	**Pass**
9.1.3	Protection	-	-
	Control circuits shall be provided with overcurrent protection in accordance with 7.2.4 and 7.2.10.	Appropriate overcurrent protective has been provided for the control circuit.	**Pass**
9.2	Control functions	-	-
9.2.1	Start functions	-	-
	Start functions shall operate by energizing the relevant circuit (see 9.2.5.2).	Start function are operated properly.	**Pass**
9.2.2	Stop functions	-	-
	There are three categories of stop functions as follows:	-	-
	– stop category 0: stopping by immediate	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	removal of power to the machine actuators (i.e. an uncontrolled stop – see 3.56);		
	– stop category 1: a controlled stop (see 3.11) with power available to the machine actuators to achieve the stop and then removal of power when the stop is achieved;	No this situation.	**N/A**
	– stop category 2: a controlled stop with power left available to the machine actuators.	No this situation.	**N/A**
9.2.3	Operating modes	-	-
	Each machine can have one or more operating modes determined by the type of machine and its application. When a hazardous situation can result from a mode selection, unauthorised and/or inadvertent selection shall be prevented by suitable means (for example key operated switch, access code).	The entire different operation mode has been well protected under the same safety device of this machine.	**Pass**
	Mode selection by itself shall not initiate machine operation. A separate actuation of the start control shall be required.	No any additional mode selection other than the start operation is used for this machine.	**Pass**
	For each specific operating mode, the relevant safety functions and/or protective measures shall be implemented.	The relevant safety functions and/or protective measures have been implemented.	**Pass**
	Indication of the selected operating mode shall be provided (for example the position of a mode selector, the provision of an indicating light, a visual display indication).	Indication of the selected operating mode has been provided for this machine.	**Pass**
9.2.4	Suspension of safety functions and/or protective measures	-	-
	Where it is necessary to suspend safety functions and/or protective measures (for example for setting or maintenance purposes), protection shall be ensured by:	No need to suspend safeguarding.	**N/A**
	- disabling all other operating (control) modes; and	No need to suspend safeguarding.	**N/A**
	- other relevant means (see 4.11.9 of ISO 12100-2), that can include, for example, one or more of the following:	No need to suspend safeguarding.	**N/A**
	- initiation of operation by a hold-to-run device or by a similar control device;	No need to suspend safeguarding.	**N/A**
	- a portable control station with an emergency stop device and, where appropriate, an enabling	No need to suspend safeguarding.	**N/A**

Clause	Requirement - test	Result	Verdict
	device. Where a portable control station is in use, initiation of motion shall only be possible from that control station;		
	- a cableless control station with a device to initiate stop functions in accordance with 9.2.7.3 and, where appropriate, an enabling device. Where a cableless control station is in use, initiation of motion shall only be possible from that control station;	No need to suspend safeguarding.	**N/A**
	- limitation of the speed or the power of motion;	No need to suspend safeguarding.	**N/A**
	- limitation of the range of motion.	No need to suspend safeguarding.	**N/A**
9.2.5	Operation	-	-
9.2.5.1	General	-	-
	The necessary safety functions and/or protective measures (for example interlocks (see 9.3)) shall be provided for safe operation.	It is in compliance with this requirement.	**Pass**
	Measures shall be taken to prevent movement of the machine in an unintended or unexpected manner after any stopping of the machine (for example due to locked-off condition, power supply fault, battery replacement, lost signal condition with cableless control).	No additional measure was taken due to any risk of this kind of risk.	**N/A**
	Where a machine has more than one control station, measures shall be provided to ensure that initiation of commands from different control stations do not lead to a hazardous situation.	No this situation.	**N/A**
9.2.5.2	Start	-	-
	The start of an operation shall be possible only when all of the relevant safety functions and/or protective measures are in place and are operational except for conditions as described in 9.2.4.	The start of an operation is possible only when all the safeguards are in place and function.	**Pass**
	On those machines (for example mobile machines) where safety functions and/or protective measures cannot be applied for certain operations, manual control of such operations shall be by hold-to-run controls, together with enabling devices, as appropriate.	No hold-to-run control is used for this machine.	**N/A**
	Suitable interlocks shall be provided to secure correct sequential starting.	It met the requirement	**Pass**
	In the case of machines requiring the use of more	Just one control station is supplied.	**Pass**

Clause	Requirement - test	Result	Verdict
	than one control station to initiate a start, each of these control stations shall have a separate manually actuated start control device. The conditions to initiate a start shall be:		
	- all required conditions for machine operation shall be met, and	No this situation.	**N/A**
	- all start control devices shall be in the released (off) position, then	No this situation.	**N/A**
	- all start control devices shall be actuated concurrently (see 3.6).	No this situation.	**N/A**
9.2.5.3	Stop	-	-
	Stop category 0 and/or stop category 1 and/or stop category 2 stop functions shall be provided as indicated by the risk assessment and the functional requirements of the machine (see 4.1).	Category 0 stop is provided for the machine.	**Pass**
	Stop function shall override related start functions (see 9.2.5.2).	It is in compliance with this requirement.	**Pass**
	Where required, facilities to connect protective devices and interlocks shall be provided. If such a protective device or interlock causes a stop of the machine, it may be necessary for that condition to be signalled to the logic of the control system. The reset of the stop function shall not initiate any hazardous situation.	It is in compliance with this requirement.	**Pass**
	Where more than one control station is provided, stop commands from any control station shall be effective when required by the risk assessment of the machine.	No this situation.	**N/A**
9.2.5.4	Emergency operations (emergency stop, emergency switching off)	-	-
9.2.5.4.1	General	-	-
	This part of IEC 60204 specifies the requirements for the emergency stop and the emergency switching off functions of the emergency operations listed in Annex E, both of which are, in this part of IEC 60204, initiated by a single human action.	It is in compliance with this requirement.	**Pass**
	Once active operation of an emergency stop (see 10.7) or emergency switching off (see 10.8) actuator has ceased following a command, the effect of this command shall be sustained until it	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	is reset. This reset shall be possible only by a manual action at that location where the command has been initiated. The reset of the command shall not restart the machinery but only permit restarting.		
	It shall not be possible to restart the machinery until all emergency stop commands have been reset. It shall not be possible to reenergize the machinery until all emergency switching off commands have been reset.	It is in compliance with this requirement.	**Pass**
9.2.5.4.2	Emergency stop	-	-
	Principles for the design of emergency stop equipment, including functional aspects, are given in ISO 13850.	It is in compliance with this requirement.	**Pass**
	The emergency stop shall function either as a stop category 0 or as a stop category 1 (see 9.2.2). The choice of the stop category of the emergency stop depends on the results of a risk assessment of the machine.	It is in compliance with this requirement.	**Pass**
	In addition to the requirements for stop (see 9.2.5.3), the emergency stop function has the following requirements:	-	-
	- it shall override all other functions and operations in all modes;	It is in compliance with this requirement.	**Pass**
	- power to the machine actuators that can cause a hazardous situation(s) shall be either removed immediately (stop category 0) or shall be controlled in such a way to stop the hazardous motion as quickly as possible (stop category 1) without creating other hazards;	It is in compliance with this requirement.	**Pass**
	- reset shall not initiate a restart.	It is in compliance with this requirement.	**Pass**
9.2.5.4.3	Emergency switching off	-	-
	The functional aspects of emergency switching off are given in 536.4 of IEC 60364-5-53.	It is in compliance with this requirement.	**Pass**
	Emergency switching off should be provided where:	-	-
	- protection against direct contact (for example with conductor wires, conductor bars, slip- ring assemblies, controlgear in electrical operating areas) is achieved only by placing out of reach or by obstacles (see 6.2.6); or	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	- there is the possibility of other hazards or damage caused by electricity.	It is in compliance with this requirement.	**Pass**
	Emergency switching off is accomplished by switching off the relevant incoming supply by electromechanical switching devices, effecting a stop category 0 of machine actuators connected to this incoming supply. When a machine cannot tolerate this stop category 0 stop, it may be necessary to provide other measures, for example protection against direct contact, so that emergency switching off is not necessary.	It is in compliance with this requirement.	**Pass**
9.2.5.5	Monitoring of command actions	-	-
	Movement or action of a machine or part of a machine that can result in a hazardous condition shall be monitored by providing, for example, overtravel limiters, motor overspeed detection,mechanical overload detection or anti-collision devices.	No applicable.	**N/A**
9.2.6	Other control functions	-	-
9.2.6.1	Hold-to-run controls	-	-
	Hold-to-run controls shall require continuous actuation of the control devices to achieve operation	No any Hold-to-run control is used for this machine.	**N/A**
9.2.6.2	Two-hand control	-	-
	Three types of two-hand control are defined in ISO 13851, the selection of which is determined by the risk assessment	No Two-hand control is used for this machine.	**N/A**
9.2.6.3	Enabling control	-	-
	Enabling control shall be so arranged as to minimize the possibility of defeating, for example by requiring the de-activation of the enabling control device before machine operation may be reinitiated. It should not be possible to defeat the enabling function by simple means.	It is in compliance with this requirement.	**Pass**
9.2.6.4	Combined start and stop controls	-	-
	Push-bottons and similar control devices that, when operated, alternately initiate and stop motion shall be only be provided for functions which cannot result in a hazardous situation.	No push-botton is used for this machine.	**N/A**
9.2.7	Cableless control	-	-
9.2.7.1	General	-	-

Clause	Requirement - test	Result	Verdict
	Means shall be provided to readily remove or disconnect the power supply of the operator control station (see also 9.2.7.3).	No cableless control is used for this machine.	**N/A**
	Means (for example key operated switch, access code) shall be provided, as necessary, to prevent unauthorized use of the operator control station.	No cableless control is used for this machine.	**N/A**
	Each operator control station shall carry an unambiguous indication of which machine(s) is (are) intended to be controlled by that operator control station.	No cableless control is used for this machine.	**N/A**
9.2.7.2	Control limitation	-	-
	Measures shall be taken to ensure that control commands:	No cableless control is used for this machine.	**N/A**
	– affect only the intended machine;	No cableless control is used for this machine.	**N/A**
	– affect only the intended functions.	No cableless control is used for this machine.	**N/A**
	Measures shall be taken to prevent the machine from responding to signals other than those from the intended operator control station(s).	No cableless control is used for this machine.	**N/A**
	Where necessary, means shall be provided so that the machine can only be controlled from operator control station in one or more predetermined zones or locations.	No cableless control is used for this machine.	**N/A**
9.2.7.3	Stop	-	-
	Cableless control stations shall include a separate and clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation. The actuating means to initiate this stop function shall not be marked or labelled as an emergency stop device (see 10.7).	No this situation.	**N/A**
	A machine which is equipped with cableless control shall have a means of automatically initiating the stopping of the machine and of preventing a potentially hazardous operation, in the following situations:	No this situation.	**N/A**
	– when a stop signal is received;	No this situation.	**N/A**
	– when a fault is detected in the cableless control system;	No this situation.	**N/A**
	– when a valid signal (which includes a signal	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	that communication is established and maintained) has not been detected within a specified period of time (see Annex B), except when a machine is executing a pre-programmed task taking it outside the range of the cableless control where no hazardous situation can occur.		
9.2.7.4	Use of more than one operator control station	-	-
	Where a machine has more than one operator control station, including one or more cableless control stations, measures shall be provided to ensure that only one of the control stations can be enabled at a given time. An indication of which operator control station is in control of the machine shall be provided at suitable locations as determined by the risk assessment of the machine	No this situation.	**N/A**
9.2.7.5	Battery-powered operator control stations	-	-
	A variation in the battery voltage shall not cause a hazardous condition.	No battery-powered operator control station is used for this machine.	**N/A**
	If one or more potentially hazardous motions are controlled using a battery-powered cableless operator control station, a clear warning shall be given to the operator when a variation in battery voltage exceeds specified limits.	No battery-powered operator control station is used for this machine.	**N/A**
	Under those circumstances, the operator control station shall remain functional long enough for the operator to put the machine into a non-hazardous condition.	No battery-powered operator control station is used for this machine.	**N/A**
9.3	Protective interlocks	-	-
9.3.1	Reclosing or resetting of an interlocking safeguard	-	-
	The reclosing or resetting of an interlocking safeguard shall not initiate hazardous machine operation.	It met the requirement	**Pass**
9.3.2	Exceeding operating limits	-	-
	Where an operating limit (for example speed, pressure, position) can be exceeded leading to a hazardous situation, means shall be provided to detect when a predetermined limit(s) is exceeded and initiate an appropriate control action.	No this situation.	**N/A**
9.3.3	Operation of auxiliary functions	-	-
	The correct operation of auxiliary functions shall	No auxiliary operation is used.	**N/A**

Clause	Requirement - test	Result	Verdict
	be checked by appropriate devices (for example pressure sensors).		
	Where the non-operation of a motor or device for an auxiliary function can cause a hazardous situation, or cause damage to the machine or to the work in progress, appropriate interlocking shall be provided.	No auxiliary operation is used.	**N/A**
9.3.4	Interlocks between different operations and for contrary motions	-	-
	All contactors, relays, and other control devices that control elements of the machine and that can cause a hazardous situation when actuated at the same time (for example those which initiate contrary motion), shall be interlocked against incorrect operation.	No this situation.	**N/A**
	Reversing contactors (for example those controlling the direction of rotation of a motor) shall be interlocked in such a way that in normal service no short circuit can occur when switching.	No this situation.	**N/A**
	Where, for safety or for continuous operation, certain functions on the machine are required to be interrelated, proper co-ordination shall be ensured by suitable interlocks. For a group of machines working together in a co-ordinated manner and having more than one controller, provision shall be made to co-ordinate the operations of the controllers as necessary.	No this situation.	**N/A**
	Where a failure of a mechanical brake actuator can result in the brake being applied when the associated machine actuator is energized and a hazardous situation can result, interlocks shall be provided to switch off the machine actuator.	No this situation.	**N/A**
9.3.5	Reverse current braking	-	-
	Where braking of a motor is accomplished by current reversal, measures shall be provided to prevent the motor starting in the opposite direction at the end of braking where that reversal can cause a hazardous situation or damage to the machine or to the work in progress. For this purpose, a device operating exclusively as a	No reverse current braking is used for this machine.	**N/A**

Clause	Requirement - test	Result	Verdict
	function of time is not permitted.		
	Control circuits shall be so arranged that rotation of a motor shaft, for example manually, shall not result in a hazardous situation.	No reverse current braking is used for this machine.	**N/A**
9.4	Control functions in the event of failure	-	-
9.4.1	General requirements	-	-
	Where failures or disturbances in the electrical equipment can cause a hazardous situation or damage to the machine or to the work in progress, appropriate measures shall be taken to minimize the probability of the occurrence of such failures or disturbances. The required measures and the extent to which they are implemented, either individually or in combination,depend on the level of risk associated with the respective application (see 4.1).	The appropriate provision has been provided.	**Pass**
	Where memory retention is achieved for example, by battery power, measures shall be taken to prevent hazardous situations arising from failure or removal of the battery.	It met the requirement	**Pass**
	Means shall be provided to prevent unauthorized or inadvertent memory alteration by, for example, requiring the use of a key, access code or tool.	A key has been used.	**Pass**
9.4.2	Measures to minimize risk in the event of failure	-	-
9.4.2.1	Use of proven circuit techniques and components	The proven circuit and component have been used as far as possible.	**Pass**
9.4.2.2	Provisions of partial or complete redundancy	-	-
	By providing partial or complete redundancy, it is possible to minimize the probability that one single failure in the electrical circuit can result in a hazardous situation. Redundancy can be effective in normal operation (on-line redundancy) or designed as special circuits that take over the protective function (off-line redundancy) only where the operating function fails.	The redundancy for the interlocking of movable door of mould area has been constructed.	**Pass**
	Where off-line redundancy which is not active during normal operation is provided, suitable measures shall be taken to ensure that those control circuits are available when required.	The redundancy for the interlocking of movable door of mould area has been constructed.	**Pass**

Clause	Requirement - test	Result	Verdict
9.4.2.3	Provision of diversity	-	-
	The use of control circuits having different principles of operation, or using different types of components or devices can reduce the probability of hazards resulting from faults and/or failures. Example include:	-	-
	- the combination of normally open and normally closed contacts operated by interlocking guards;	The appropriate provision has been provided.	**Pass**
	- the use of different types of control circuit components in the circuit;	Not used in this machine.	**N/A**
	- the combination of electromechanical and electronic equipment in redundant configurations.	Not used in this machine.	**N/A**
9.4.2.4	Provision for functional tests	-	-
	Functional tests may be carried out automatically by the control system, or manually by inspection or tests at start-up and at predetermined intervals, or a combination as appropriate.	The automatic functional test after this machine is initiated has been used.	**Pass**
9.4.3	Protection against maloperation due to earth faults, voltage interruptions and loss of circuit continuity	The mal-operation mentioned in this clause could be detected by the manual test system.	**Pass**
9.4.3.1	Earth faults	-	-
	Earth faults on any control circuit shall not cause unintentional starting, potentially hazardous motions, or prevent stopping of the machine.	The appropriate bonding circuit has been provided.	**Pass**
9.4.3.2	Voltage interruptions	-	-
	Where the control system uses a memory device(s), proper functioning in the event of power failure shall be ensured (for example by using a non-volatile memory) to prevent any loss of memory that can result in a hazardous situation.	The power for keeping memory is only the operation parameter. The loss of parameter will not cause any hazardous situation, because the ranger for setting appropriate parameter has been constructed in the PLC, Which is not possible to be modified in any situation.	**Pass**
9.4.3.3	Loss of circuit continuity	-	-
	Where the loss of continuity of safety-related control circuits depending upon sliding contacts can result in a hazardous condition, appropriate measures shall be taken	For this machine, no this kind of risk is found.	**N/A**
10	Operator interface and machine-mounted control devices	-	-
10.1	General	-	-

Clause	Requirement - test	Result	Verdict
10.1.1	General device requirements	-	-
	As far as is practicable, those devices shall be selected, mounted, and identified or coded in accordance with relevant parts of IEC 61310.	The relevant standard has been followed as far as possible.	**Pass**
	The possibility of inadvertent operation shall be minimized by, for example, positioning of devices, suitable design, provision of additional protective measures. Particular consideration shall be given to the selection, arrangement, programming and use of operator input devices such as touchscreens, keypads and keyboards, for the control of hazardous machine operations. See IEC 60447.	It met the requirement	**Pass**
10.1.2	Location and mounting	-	-
	As far as is practicable, machine-mounted control devices shall be: – readily accessible for service and maintenance; – mounted in such a manner as to minimize the possibility of damage from activities such as material handling.	The mounting of control device has followed the requirement of this clause.	**Pass**
	The actuators of hand-operated control devices shall be selected and installed so that: – they are not less than 0.6 m above the servicing level and are within easy reach of the normal working position of the operator; – the operator is not placed in a hazardous situation when operating them.	The mounting of control device has followed the requirement of this clause.	**Pass**
	The actuators of foot-operated control devices shall be selected and installed so that: – they are within easy reach of the normal working position of the operator; – the operator is not placed in a hazardous situation when operating them.	Not applicable.	**N/A**
10.1.3	Protection	-	-
	The degree of protection (see IEC 60529) together with other appropriate measures shall afford protection against:	-	-
	– the effects of aggressive liquids, vapours, or gases found in the physical environment or used on the machine;	The appropriate specification of component used has been provided to withstand the stress of expected use.	**Pass**
	– the ingress of contaminants (for example swarf,	The appropriate specification of	**Pass**

Clause	Requirement - test	Result	Verdict
	dust, particulate matter).	component used has been provided.	
	the operator interface control devices shall have a minimum degree of protection against direct contact of IPXXD (see IEC 60529).	The IP54 degree of protection has been found on the operator interface on control devices.	**Pass**
10.1.4	Position sensors	-	**-**
	Position sensors (for example position switches, proximity switches) shall be so arranged that they will not be damaged in the event of overtravel.	Because of the use of mechanical protection for over-travel, no damage of limit switch will occur while over-travel.	**Pass**
	Position sensors in circuits with safety-related control functions shall have direct opening action (see IEC 60947-5-1) or shall provide similar reliability (see 9.4.2).	The necessary positive opening operation for the protection device has been provided.	**Pass**
10.1.5	Portable and pendant control stations	-	**-**
	Portable and pendant control stations and their control devices shall be so selected and arranged as to minimize the possibility of inadvertent machine operations caused by shocks and vibrations (for example if the operator control station is dropped or strikes an obstruction) (see also 4.4.8).	No portable and pendant control station is used for this machine.	**N/A**
10.2	Push-buttons	-	**-**
10.2.1	Colours	-	**-**
	Push-button actuators shall be colour-coded according to table 2	No this situation.	**N/A**
	The colours for START/ON actuators should be WHITE, GREY, BLACK or GREEN with a preference for WHITE. RED shall not be used.	No this situation.	**N/A**
	The colour RED shall be used for emergency stop and emergency switching off actuators.	It is in compliance with this requirement.	**Pass**
	The colours for STOP/OFF actuators should be BLACK, GREY, or WHITE with a preference for BLACK. GREEN shall not be used. RED is permitted, but it is recommended that RED is not used near an emergency operation device.	No this situation.	**N/A**
	WHITE, GREY, or BLACK are the preferred colours for push-button actuators that alternately act as START/ON and STOP/OFF push-buttons. The colours RED, YELLOW, or GREEN shall not be used (see also 9.2.6).	No this situation.	**N/A**
	WHITE, GREY, or BLACK are the preferred colours for push-button actuators that cause	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	operation while they are actuated and cease the operation when they are released (for example hold-to-run). The colours RED, YELLOW, or GREEN shall not be used.		
	Reset push-buttons shall be BLUE, WHITE, GREY, or BLACK. Where they also act as a STOP/OFF button, the colours WHITE, GREY, or BLACK are preferred with the main preference being for BLACK. GREEN shall not be used.	No this situation.	**N/A**
	Where the same colour WHITE, GREY, or BLACK is used for various functions (for example WHITE for START/ON and for STOP/OFF actuators) a supplementary means of coding (for example shape, position, symbol) shall be used for the identification of push-button actuators.	No this situation.	**N/A**
10.2.2	Markings	-	-
	In addition to the functional identification as described in 16.3, it is recommended that pushbuttons be marked, near to or preferably directly on the actuators, with the symbols given in Table 3.	No this situation.	**N/A**
10.3	Indicator lights and displays	-	-
10.3.1	General	-	-
	Indicator lights and displays serve to give the following types of information:	-	-
	– indication: to attract the operator's attention or to indicate that a certain task should be performed. The colours RED, YELLOW, BLUE, and GREEN are normally used in this mode; for flashing indicator lights and displays, see 10.3.3.	No this situation.	**N/A**
	– confirmation: to confirm a command, or a condition, or to confirm the termination of a change or transition period. The colours BLUE and WHITE are normally used in this mode and GREEN may be used in some cases.	No this situation.	**N/A**
	Indicator lights and displays shall be selected and installed in such a manner as to be visible from the normal position of the operator (see also IEC 61310-1).	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	Indicator light circuits used for warning lights shall be fitted with facilities to check the operability of these lights.	No this situation.	**N/A**
10.3.2	Colours	-	-
	Unless otherwise agreed between the supplier and the user (see Annex B), indicator lights shall be colour-coded with respect to the condition (status) of the machine in accordance with Table 4.	No this situation.	**N/A**
	Indicating towers on machines should have the applicable colours in the following order from the top down; RED, YELLOW, BLUE, GREEN and WHITE.	No this situation.	**N/A**
10.3.3	Flashing lights and displays	-	-
	For further distinction or information and especially to give additional emphasis, flashing lights and displays can be provided for the following purposes:	No this situation.	**N/A**
	– to attract attention; – to request immediate action; – to indicate a discrepancy between the command and actual state; – to indicate a change in process (flashing during transition).	No this situation.	**N/A**
	It is recommended that higher frequency flashing lights or display be used for higher priority information (see IEC 60073 for recommended flashing rates and pulse/pause ratios).	No this situation.	**N/A**
	Where flashing lights or displays are used to provide higher priority information, audible warning devices should also be provided.	No this situation.	**N/A**
10.4	Illuminated push-buttons	-	-
	Illuminated push-button actuators shall be colour-coded in accordance with Tables 2 and 4. Where there is difficulty in assigning an appropriate colour, WHITE shall be used. The colour RED for the emergency stop actuator shall not depend on the illumination of its light.	No this situation.	**N/A**
10.5	Rotary control devices	-	-
	Devices having a rotational member, such as potentiometers and selector switches, shall have	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	means of prevention of rotation of the stationary member. Friction alone shall not be considered sufficient.		
10.6	Start devices	-	-
	Actuators used to initiate a start function or the movement of machine elements (for example slides, spindles, carriers) shall be constructed and mounted so as to minimize inadvertent operation. However, mushroom-type actuators may be used for two-hand control (see also ISO 13851).	Start device is so constructed and mounted that could minimize inadvertent operation.	**Pass**
10.7	Emergency stop devices	-	-
10.7.1	Location of emergency stop devices	-	-
	Devices for emergency stop shall be readily accessible	It is in compliance with this requirement.	**Pass**
	Emergency stop devices shall be located at each operator control station and at other locations where the initiation of an emergency stop can be required (exception: see 9.2.7.3).	It is in compliance with this requirement.	**Pass**
	There can be circumstances where confusion can occur between active and inactive emergency stop devices caused by disabling the operator control station. In such cases, means (for example, information for use) shall be provided to minimise confusion.	It is in compliance with this requirement.	**Pass**
10.7.2	Types of emergency stop device	-	-
	The types of device for emergency stop include:	-	-
	– a push-button operated switch with a palm or mushroom head type; – a pull-cord operated switch; – a pedal-operated switch without a mechanical guard.	It is in compliance with this requirement.	**Pass**
	The devices shall have direct opening operation (see IEC 60947-5-1, Annex K).	It is in compliance with this requirement.	**Pass**
10.7.3	Colour of Actuators	-	-
	Actuators of emergency stop devices shall be coloured RED. If a background exists immediately around the actuator, then this background shall be coloured YELLOW. See also ISO 13850.	No this situation.	**N/A**
10.7.4	Local operation of the supply disconnecting device to effect emergency stop	-	-

Clause	Requirement - test	Result	Verdict
	The supply disconnecting device may be locally operated to serve the function of emergency stop when : – it is readily accessible to the operator; and – it is of the type described in 5.3.2 a), b), c), or d).	No this situation.	**N/A**
	When also intended for such use, the supply disconnecting device shall meet the colour requirements of 10.7.3.	No this situation.	**N/A**
10.8	Devices for emergency switching off	-	**-**
10.8.1	Location of emergency switching off devices	-	**-**
	Emergency switching off devices shall be located as necessary for the given application. Normally, those devices will be located separate from operator control stations. Where it is necessary to provide a control station with an emergency stop device and an emergency switching off device, means shall be provided to avoid confusion between these devices.	Emergency switching off devices have been located as necessary for the given application.	**Pass**
10.8.2	Types of emergency switching off devices	-	**-**
	The type of device for emergency switching off include : – a push-button operated switch with a palm or mushroom head type of actuator; – a pull-cord operated switch.	A push-button operated switch.	**Pass**
	The devices shall have direct opening action (see IEC 60947-5-1, Annex K).	The clause has been met.	**Pass**
	The push-button operated switch may be in a break-glass enclosure.	No this situation.	**N/A**
10.8.3	Colour of Actuators	-	**-**
	Shall be coloured RED	The clause has been met.	**Pass**
	The background immediately around the device actuator should be coloured YELLOW	It has been met.	**Pass**
	Where confusion can occur between emergency stop and emergency switching off devices, means shall be provided to minimise confusion.	No this situation.	**N/A**
10.8.4	Local operation of the supply disconnecting device to effect emergency switching off	-	**-**
	Where the supply disconnecting device is to be locally operated for emergency switching off, it shall be readily accessible and should meet the	The clause has been met.	**Pass**

Clause	Requirement - test	Result	Verdict
	colour requirements of 10.8.3		
10.9	Enabling control device	-	-
	When an enabling control device is provided as a part of a system, it shall signal the enabling control to allow operation when actuated in one position only. In any other position, operation shall be stopped or prevented.	The clause has been met.	**Pass**
	Enabling control devices shall be selected and arranged so as to minimize the possibility of defeating.	The clause has been met.	**Pass**
	Enabling control devices shall be selected that have the following features:	The clause has been met.	**Pass**
	– designed in accordance with ergonomic principles; – for a two-position type: - position 1: off-function of the switch (actuator is not operated); - position 2: enabling function (actuator is operated). – for a three-position type: - position 1: off-function of the switch (actuator is not operated); - position 2: enabling function (actuator is operated in its mid position); - position 3: off-function (actuator is operated past its mid position); - when returning from position 3 to position 2, the enabling function is not activated.	The clause has been met.	**Pass**
11	Controlgear: location, mounting, and enclosures	-	-
11.1	General requirements	-	-
	All controlgear shall be located and mounted so as to facilitate:	-	-
	– its accessibility and maintenance; – its protection against the external influences or conditions under which it is intended to operate; – operation and maintenance of the machine and its associated equipment.	The clause has been met.	**Pass**
11.2	Location and mounting	-	-
11.2.1	Accessibility and maintenance	-	-
	All items of controlgear shall be placed and	The clause has been met.	**Pass**

Clause	Requirement - test	Result	Verdict
	oriented so that they can be identified without moving them or the wiring. For items that require checking for correct operation or that are liable to need replacement, those actions should be possible without dismantling other equipment or parts of the machine (except opening doors or removing covers, barriers or obstacles). Terminals not part of controlgear components or devices shall also conform to these requirements.		
	All controlgear shall be mounted so as to facilitate its operation and maintenance from the front. Where a special tool is necessary to adjust, maintain, or remove a device, such a tool shall be supplied. Where access is required for regular maintenance or adjustment, the relevant devices shall be located between 0,4 m and 2,0 m above the servicing level. It is recommended that terminals be at least 0,2 m above the servicing level and be so placed that conductors and cables can be easily connected to them.	The clause has been met.	**Pass**
	No devices except devices for operating, indicating, measuring, and cooling shall be mounted on doors or on normally removable access covers of enclosures. Where control devices are connected through plug-in arrangements, their association shall be made clear by type (shape), marking or reference designation, singly or in combination (see 13.4.5).	No this kind of device is provided for this machine.	**N/A**
	Plug-in devices that are handled during normal operation shall be provided with noninterchangeable features where the lack of such a facility can result in malfunctioning.	No plug-in device is used for this machine.	**N/A**
	Plug/socket combinations that are handled during normal operation shall be located and mounted so as to provide unobstructed access.	No plug/socket combination.	**N/A**
	Test points for connection of test equipment, where provided, shall be:	-	**-**
	– mounted so as to provide unobstructed access; – clearly identified to correspond with the documentation (see 17.3);	The clause has been met.	**Pass**

Clause	Requirement - test	Result	Verdict
	– adequately insulated; – sufficiently spaced.		
11.2.2	Physical separation or grouping	-	-
	Non-electrical parts and devices not directly associated with the electrical equipment shall not be located within enclosures containing controlgear.	No non-electrical part is found within the enclosure containing control gear.	**Pass**
	Devices such as solenoid valves should be separated from the other electrical equipment (for example in a separate compartment).	Solenoid valves have been separated from the other electrical equipment.	**Pass**
	Control devices mounted in the same location and connected to the supply voltage, or to both supply and control voltages, shall be grouped separately from those connected only to the control voltages	Appropriate separation has been made between the circuits of connected to supply voltage and the control voltage.	**Pass**
	Terminals shall be separated into groups for : - power circuits; - associated control circuits - other control circuits, fed from external sources (for example for interlocking).	Appropriate separation has been checked between the terminal of power circuit and control circuit.	**Pass**
	The groups may be mounted adjacently, provided that each group can be readily identified (for example by markings, by use of different sizes, by use of barriers or by colours).	It has been complied with.	**Pass**
	When arranging the location of devices (including interconnections), the clearances and creepage distances specified for them by the supplier shall be maintained, taking into account the external influences or conditions of the physical environment.	It has been complied with.	**Pass**
11.2.3	Heating effects	-	-
	Heat generating components (for example heat sinks, power resistors) shall be so located that the temperature of each component in the vicinity remains within the permitted limit.	It has been complied with.	**Pass**
11.3	Degrees of protection	-	-
	The protection of controlgear against ingress of solid foreign objects and of liquids shall be adequate taking into account the external influences under which the machine is intended to operate (i.e. the location and the physical environmental conditions) and shall be sufficient	It has been complied with.	**Pass**

Clause	Requirement - test	Result	Verdict
	against dust, coolants, and swarf.		
	Enclosures of controlgear shall provide a degree of protection of at least IP22 (see IEC 60529).	The degree of protection of control enclosure is found to be greater than IP22.	**Pass**
11.4	Enclosures, doors and openings	-	**-**
	Enclosures shall be constructed using materials capable of withstanding the mechanical, electrical and thermal stresses as well as the effects of humidity and other environmental factors that are likely to be encountered in normal service.	It has been complied with.	**Pass**
	Fasteners used to secure doors and covers should be of the captive type. Windows provided for viewing internally mounted indicating devices shall be of a material suitable to withstand mechanical stress and chemical attack (for example toughened glass or polycarbonate sheet of not less than 3 mm thickness).	Not applicable.	**N/A**
	It is recommended that enclosure doors be not wider than 0,9 m and have vertical hinges, with an angle of opening of at least 95°.	It has been complied with.	**Pass**
	The joints or gaskets of doors, lids, covers and enclosures shall withstand the chemical effects of the aggressive liquids, vapours, or gases used on the machine. The means provided to maintain the degree of protection of an enclosure on doors, lids and covers that require opening or removal for operation or maintenance shall:	It has been complied with.	**Pass**
	– be securely attached to either the door/cover or the enclosure; – not deteriorate due to removal or replacement of the door or the cover, and so impair the degree of protection.	It has been complied with.	**Pass**
	Where openings in enclosures are provided (for example, for cable access), including those towards the floor or foundation or to other parts of the machine, means shall be provided to ensure the degree of protection specified for the equipment. Openings for cable entries shall be easily re-opened on site. A suitable opening may be provided in the base of enclosures within the machine so that moisture due to	It has been complied with.	**Pass**

Clause	Requirement - test	Result	Verdict
	condensation can drain away.		
	There shall be no opening between enclosures containing electrical equipment and compartments containing coolant, lubricating or hydraulic fluids, or those into which oil, other liquids, or dust can penetrate. This requirement does not apply to electrical devices specifically designed to operate in oil (for example electromagnetic clutches) nor to electrical equipment in which coolants are used.	It has been complied with.	**Pass**
	Where there are holes in an enclosure for mounting purposes, means may be necessary to ensure that after mounting, the holes do not impair the required protection.	No any hole, which breaks the degree of protection, is found during inspection.	**N/A**
	Equipment that, in normal or abnormal operation, can attain a surface temperature sufficient to cause a risk of fire or harmful effect to an enclosure material shall:	No any this kind of component is found during inspection.	**N/A**
	– be located within an enclosure that will withstand, without risk of fire or harmful effect, such temperatures as can be generated; and – be mounted and located at a sufficient distance from adjacent equipment so as to allow safe dissipation of heat (see also 11.2.3); or – be otherwise screened by material that can withstand, without risk of fire or harmful effect, the heat emitted by the equipment.	Not applicable.	**N/A**
11.5	Access to controlgear	-	**-**
	Doors in gangways and for access to electrical operating areas shall:	No this kind of gangway is used for this machine.	**N/A**
	– be at least 0,7 m wide and 2,1 m high; – open outwards; – have a means (for example panic bolts) to allow opening from the inside without the use of a key or tool.	No this kind of gangway is used for this machine.	**N/A**
	Enclosures which readily allow a person to fully enter shall be provided with means to allow escape, for example panic bolts on the inside of doors. Enclosures intended for such access, for example for resetting, adjusting, maintenance, shall have a clear width of at least 0,7 m and a	No this kind of gangway is used for this machine.	**N/A**

Clause	Requirement - test	Result	Verdict
	clear height of at least 2,1 m.		
	In cases where: – equipment is likely to be live during access; and – conducting parts are exposed, the clear width shall be at least 1,0 m. In cases where such parts are present on both sides of the access way, the clear width shall be at least 1,5 m.	No this kind of gangway is used for this machine.	**N/A**
12	Conductors and cables	-	-
12.1	General requirements	-	-
	Conductors and cables shall be selected so as to be suitable for the operating conditions (for example voltage, current, protection against electric shock, grouping of cables) and external influences (for example ambient temperature, presence of water or corrosive substances, mechanical stresses (including stresses during installation), fire hazards) that can exist.	Conductors and cables are selected so as to be suitable for the operating conditions and external influences.	**Pass**
	These requirements do not apply to the integral wiring of assemblies, subassemblies, and devices that are manufactured and tested in accordance with their relevant IEC standard (for example IEC 60439-1).	The clause has been met.	**Pass**
12.2	Conductors	-	-
	In general, conductors shall be of copper. Where aluminium conductors are used, the crosssectional area shall be at least 16 mm^2.	Conductors are made of copper.	**Pass**
	To ensure adequate mechanical strength, the cross-sectional area of conductors should not be less than as shown in Table 5. However, conductors with smaller cross-sectional areas or other constructions than shown in Table 5 may be used in equipment provided adequate mechanical strength is achieved by other means and proper functioning is not impaired.	No this situation.	**N/A**
	If aluminium is used, the cross-sectional area shall be at least 16 mm^2	No this situation.	**N/A**
	All conductors that are subject to frequent movement shall have flexible stranding of class 5 or class 6 (see table C.4)	Class 6 conductor is used for the conductor of movable part.	**Pass**
12.3	Insulation	-	-
	Dielectric strength test for insulation conductors	2000Vac for a duration of 5 min is used	**Pass**

Clause	Requirement - test	Result	Verdict
	and cables : - 2000 V a.c. for a duration of 5 min. (for operating voltage higher than 50 V a.c. or 120 V d.c.) - 500 V a.c. for a duration of 5 min. (for separate PELV circuit)	for this dielectric strength test of insulation conductors.	
	The mechanical strength and thickness of the insulation shall not be damaged in operation or during laying, especially for cables pulled into ducts.	The mechanical strength and thickness of the insulation has no damage in operation or during laying.	**Pass**
12.4	Current-carrying capacity in normal service	-	-
	The current-carrying capacity depends on several factors, for example insulation material, number of conductors in a cable, design (sheath), methods of installation, grouping and ambient temperature.	The clause has been met.	**Pass**
	One typical example of the current-carrying capacities for PVC insulated wiring between enclosures and individual items of equipment under steady-state conditions is given in Table 6.	The clause has been met.	**Pass**
12.5	Conductor and cable voltage drop	-	-
	The voltage drop from the point of supply to the load shall not exceed 5 % of the nominal voltage under normal operating conditions. In order to conform to this requirement, it can be necessary to use conductors having a larger cross-sectional area than that derived from Table 6.	The voltage drop of conductors has been tested. The test result does not exceed 1％ (about 1V for 380V test voltage).	**Pass**
12.6	Flexible cables	-	-
12.6.1	General	-	-
	Flexible cables shall have class 5 or class 6 conductors	The class 6 flexible cable is provided for this equipment.	**Pass**
	Cables that are subjected to severe duties shall be of adequate construction to protect against: – abrasion due to mechanical handling and dragging across rough surfaces; – kinking due to operation without guides; – stress resulting from guide rollers and forced guiding, being wound and re-wound on cable drums.	No this situation.	**N/A**
12.6.2	Mechanical rating	-	-
	The cable handling system of the machine shall	The class 6 flexible cable is provided for	**Pass**

Clause	Requirement - test	Result	Verdict
	be so designed to keep the tensile stress of the conductors as low as is practicable during machine operations. Where copper conductors are used, the tensile stress applied to the conductors shall not exceed 15 N/mm2 of the copper cross-sectional area. Where the demands of the application exceed the tensile stress limit of 15 N/mm2, cables with special construction features should be used and the allowed maximal tensile stress should be agreed with the cable manufacturer.	this equipment.	
	The maximum stress applied to the conductors of flexible cables with material other than copper shall be within the cable manufacturer's specification.	No this situation.	**N/A**
12.6.3	Current-carry capacity of cables wound on drums	-	**-**
	Cables to be wound on drums shall be selected with conductors having a cross-sectional area such that, when fully wound on the drum and carrying the normal service load, the max. allowable conductor temperature is not exceeded	No this situation.	**N/A**
	For cables of circular cross-sectional area installed on drums, the max. current-carrying capacity in free air should be derated according to table 7 (see also Clause 44 of IEC 60621-3).	No this situation.	**N/A**
12.7	Collector wires, collector bars and slip-ring assemblies	-	**-**
12.7.1	Protection against direct contact	-	**-**
	Conductor wires, conductor bars and slip-ring assemblies shall be installed or enclosed in such a way that, during normal access to the machine, protection against direct contact is achieved by the application of one of the following protective measures:	Every wires are protected with the control enclosure of IP2X	**Pass**
	– protection by partial insulation of live parts, or where this is not practicable; – protection by enclosures or barriers of at least IP2X (see 412.2 of IEC 60364-4-41).	The degree of protection for the horizontal top surface of control enclosure is IP54.	**Pass**
	Horizontal top surfaces of barriers or enclosures that are readily accessible shall provide a degree of protection of at least IP4X (see 412.2.2 of IEC	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	60364-4-41).		
	Where the required degree of protection is not achieved, protection by placing live parts out of reach in combination with emergency switching off in accordance with 9.2.5.4.3 shall be applied.	No this situation.	**N/A**
	Conductor wires and conductor bars shall be so placed and/or protected as to: – prevent contact, especially for unprotected conductor wires and conductor bars, with conductive items such as the cords of pull-cord switches, strain-relief devices and drive chains; – prevent damage from a swinging load.	The appropriate provision for preventing contact and damage from a swinging load has been found during inspection.	**Pass**
12.7.2	Protective conductor circuit	-	**-**
	Where conductor wires, conductor bars and slip-ring assemblies are installed as part of the protective bonding circuit, they shall not carry current in normal operation. Therefore, the protective conductor (PE) and the neutral conductor (N) shall each use a separate conductor wire, conductor bar or slip-ring. The continuity of the protective conductor circuit using sliding contacts shall be ensured by taking appropriate measures	No this situation.	**N/A**
12.7.3	Protective conductor current collectors	-	**-**
	Protective conductor current collectors shall have a shape or construction so that they are not interchangeable with the other current collectors. Such current collectors shall be of the sliding contact type.	No this situation.	**N/A**
12.7.4	Removable current collectors with a disconnector function	-	**-**
	Removable current collectors having a disconnector function shall be so designed that the protective conductor circuit is interrupted only after the live conductors have been disconnected, and the continuity of the protective conductor circuit is re-established before any live conductor is reconnected	No this kind of current collector is used for this machine.	**N/A**
12.7.5	Clearance in air	-	**-**
	Clearances between the respective conductors, and between adjacent systems, of conductor	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	wires, conductor bars, slip-ring assemblies and their current collectors shall be suitable for at least a rated impulse voltage of an overvoltage category III in accordance with IEC 60664-1.		
12.7.6	Creepage distances	-	-
	Creepage distances between the respective conductors, between adjacent systems of conductor wires, conductor bars and slip-ring assemblies, and their current collectors shall be suitable for operation in the intended environment, for example open air (IEC 60664-1), inside buildings, protected by enclosures.	No this situation.	**N/A**
	In abnormally dusty, moist or corrosive environments, the following creepage distance requirements apply: – unprotected conductor wires, conductor bars, and slip-ring assemblies shall be equipped with insulators with a minimum creepage distance of 60 mm; – enclosed conductor wires, insulated multipole conductor bars and insulated individual conductor bars shall have a minimum creepage distance of 30 mm.	No this situation.	**N/A**
	The manufacturer's recommendations shall be followed regarding special measures to prevent a gradual reduction in the insulation values due to unfavourable ambient conditions (for example deposits of conductive dust, chemical attack).	No this situation.	**N/A**
12.7.7	Conductor system sectioning	-	-
	Where conductor wires or conductor bars are arranged so that they can be divided into isolated sections, suitable design measures shall be employed to prevent the energization of adjacent sections by the current collectors themselves.	No this situation.	**N/A**
12.7.8	Construction and installation of collector wire, collector bar systems and slip-ring assemblies	-	-
	Conductor wires, conductor bars and slip-ring assemblies in power circuits shall be grouped separately from those in control circuits.	No this situation.	**N/A**
	Conductor wires, conductor bars and slip-ring assemblies shall be capable of withstanding,	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	without damage, the mechanical forces and thermal effects of short-circuit currents.		
	Removable covers for conductor wire and conductor bar systems laid underground or underfloor shall be so designed that they cannot be opened by one person without the aid of a tool.	No this situation.	**N/A**
	Where conductor bars are installed in a common metal enclosure, the individual sections of the enclosure shall be bonded together and connected to a protective bonding conductor at several points depending upon their length. Metal covers of conductor bars laid underground or underfloor shall also be bonded together and connected to a protective bonding conductor.	No this situation.	**N/A**
	The protective bonding circuit shall include the covers or cover plates of metal enclosures or underfloor ducts. Where metal hinges form a part of the bonding circuit, their continuity shall be verified.	No this situation.	**N/A**
	Underground and underfloor collector bar ducts shall have drainage facilities	No this situation.	**N/A**
13	Wiring practices	-	**-**
13.1	Connections and routing	-	**-**
13.1.1	General requirements	-	**-**
	All connections shall be secured against accidental loosening	All connections are secured against accidental loosening.	**Pass**
	The means of connection shall be suitable for the cross-sectional areas and neutral of the conductors being terminated	It is in compliance with this situation.	**Pass**
	The connection of two or more conductors to one terminal is permitted (only when the terminal is designed for that purpose)	No this kind of connection.	**N/A**
	One protective bonding circuit conductor shall be connected to one terminal connecting point	One protective bonding circuit conductor is connected to one terminal connecting point.	**Pass**
	Soldered connections shall only be permitted if terminals are suitable for soldering	No soldered connection is used for provided.	**N/A**
	Terminals on terminal blocks shall be plainly identified to correspond with markings on the diagrams	Appropriate identification has been provided.	**Pass**

Clause	Requirement - test	Result	Verdict
	Where an incorrect electrical connection can be a source of risk and it is not practicable to reduce the possibility of incorrect connection by design measures, the conductors and/or terminations shall be identified in accordance with 13.2.1.	No this kind of risk.	**N/A**
	The installation of flexible conduits and cables shall be such that liquids shall drain away from the fittings	The appropriate provision of drain has been provided for the installation of flexible conduits.	**Pass**
	Means of retaining conductor strands shall be provided (Solder shall not be used for that purpose)	Appropriate retaining provisions for the conductor strands have been provided.	**Pass**
	Shielded conductors shall be so terminated as to prevent fraying of strands and to permit easy disconnection	Appropriate termination has been found for the shield conductors.	**Pass**
	Identification tags shall be legible, permanent, and appropriate for the physical environment	Appropriate identification has been found for the conductors and terminals.	**Pass**
	Terminal blocks shall be so mounted and wired, that the internal and external wiring does not cross over the terminals (see IEC 60947-7-1).	No any external and/or internal wiring was found to cross over the terminals.	**Pass**
13.1.2	Conductor and cable runs	-	**-**
	Conductors and cables shall be run from terminal to terminal without splices or joints. Connections using plug/socket combinations with suitable protection against accidental disconnection are not considered to be joints for the purpose of this Subclause.	Conductors have been found to run from terminal to terminal.	**Pass**
	Where it is necessary to connect and disconnect cables and cable assemblies, a sufficient extra length shall be provided for that purpose.	Not necessary to disconnect the cable assemblies.	**N/A**
	The terminations of cables shall be adequately supported to prevent mechanical stresses at the terminations of the conductors	Appropriate support for the terminal of cable was found.	**Pass**
	Wherever practicable, the protective conductor shall be placed close to the associated live conductors in order to decrease the impedance of the loop.	No this situation.	**Pass**
13.1.3	Conductors of different circuits	-	**-**
	Conductors of different circuits may be laid side by side, may occupy the same duct (for example conduit, cable trunking system), or may be in the	Appropriate arrangement for the connection of different circuit has been found.	**Pass**

Clause	Requirement - test	Result	Verdict
	same multiconductor cable provided that the arrangement does not impair the proper functioning of the respective circuits. Where those circuits operate at different voltages, the conductors shall be separated by suitable barriers or shall be insulated for the highest voltage to which any conductor within the same duct can be subjected, for example line to line voltage for unearthed systems and phase to earth voltage for earthed systems.		
13.1.4	Connection between pick-up and pick-up converter of an inductive power supply system	-	-
	The cable between the pick-up and the pick-up converter as specified by the manufacturer of the inductive power supply shall be:	No this situation.	**Pass**
	– as short as practicable;	No this situation.	**Pass**
	– adequately protected against echanical damage.	No this situation.	**Pass**
13.2	Identification of conductors	-	-
13.2.1	General requirements	-	-
	Each conductor shall be identifiable at each termination in accordance with the technical documentation (see Clause 17).	It is identified in accordance with the technical documentation.	**Pass**
	Conductors should be identified by number, alphanumeric, colour (either solid or with one or more stripes), or a combination of colour and numbers or alphanumeric. W hen numbers are used, they shall be Arabic; letters shall be Roman (either upper or lower case).	Colour and mumbers is used for it.	**Pass**
13.2.2	Identification of the protective conductor	-	-
	The protective conductor shall be readily distinguishable by shape, location, marking, or colour.	It is identified by marking and colour.	**Pass**
	When identification is by colour alone, the bicolour combination GREEN-AND-YELLOW shall be used throughout the length of the conductor. This colour identification is strictly reserved for the protective conductor.	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	For insulated conductors, the bicolour combination GREEN-AND-YELLOW shall be such that on any 15 mm length, one of the colours covers at least 30% and not more than 70% of the surface of the conductor, the other colour covering the remainder of the surface.	It is in compliance with this requirement.	**Pass**
	Where the protective conductor can be easily identified by its shape, position, or construction (for example a braided conductor, uninsulated stranded conductor), or where the insulated conductor is not readily accessible, colour coding throughout its length is not necessary but the ends or accessible locations shall be clearly identified by the graphical symbol IEC 60417-5019 (DB:2002-10) or by the bicolour combination GREEN-AND-YELLOW.	It is in compliance with this requirement.	**Pass**
13.2.3	Identification of the neutral conductor	--	**-**
	Where a circuit includes a neutral conductor that is identified by colour alone, the colour used for this conductor shall be BLUE. In order to avoid confusion with other colours, it is recommended that an unsaturated blue be used, called here "light blue" (see 3.2.2 of IEC 60446). Where the selected colour is the sole identification of the neutral conductor, that colour shall not be used for identifying any other conductor where confusion is possible.	The color used for neutral conductor is light blue.	**Pass**
	Where identification by colour is used, bare conductors used as neutral conductors shall be either coloured by a stripe, 15 mm to 100 mm wide in each compartment or unit and at each accessible location, or coloured throughout their length.	No this situation.	**N/A**
13.2.4	Identification by colour	-	**-**
	Where colour-coding is used for identification of conductors (other than the protective conductor (see 13.2.2) and the neutral conductor (see 13.2.3)), the following colours may be used:	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	BLACK, BROW N, RED, ORANGE, YELLOW, GREEN, BLUE (including LIGHT BLUE), VIOLET, GREY, WHITE, PINK, TURQUOISE.		
	It is recommended that, where colour is used for identification, the colour be used throughout the length of the conductor either by the colour of the insulation or by colour markers at regular intervals and at the ends or accessible location.	It is in compliance with this requirement.	**Pass**
	For safety reasons, the colour GREEN or the colour YELLOW should not be used where there is a possibility of confusion with the bicolour combination GREEN-AND-YELLOW (see 13.2.2).	It is in compliance with this requirement.	**Pass**
	Colour identification using combinations of those colours listed above may be used provided there can be no confusion and that GREEN or YELLOW is not used except in the bicolour combination GREEN-AND-YELLOW.	It is in compliance with this requirement.	**Pass**
	Where colour-coding is used for identification of conductors, it is recommended that they be colour-coded as follows: – BLACK: a.c. and d.c. power circuits; – RED: a.c. control circuits; – BLUE: d.c. control circuits; – ORANGE: excepted circuits in accordance with 5.3.5.	Not applicable.	**N/A**
	to the above are permitted where: – insulation is used that is not available in the colours recommended; or – multiconductor cable is used, but not the bicolour combination GREEN-AND-YELLOW.	It is in compliance with this requirement.	**Pass**
13.3	Wiring inside enclosures	-	**-**
	Conductors inside enclosures shall be supported where necessary to keep them in place.	It is in compliance with this requirement.	**Pass**
	Non-metallic ducts shall be permitted only when they are made with a flame-retardant insulating material (see the IEC 60332 series).	It is in compliance with this requirement.	**Pass**
	It is recommended that electrical equipment mounted inside enclosures be designed and constructed in such a way as to permit	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	modification of the wiring from the front of the enclosure (see also 11.2.1). Where that is not practicable and control devices are connected from the rear of the enclosure, access doors or swingout panels shall be provided.		
	Connections to devices mounted on doors or to other movable parts shall be made using flexible conductors in accordance with 12.2 and 12.6 to allow for the frequent movement of the part.	It is in compliance with this requirement.	**Pass**
	The conductors shall be anchored to the fixed part and to the movable part independently of the electrical connection (see also 8.2.3 and 11.2.1).	It is in compliance with this requirement.	**Pass**
	Conductors and cables that do not run in ducts shall be adequately supported.	It is in compliance with this requirement.	**Pass**
	Terminal blocks or plug/socket combinations shall be used for control wiring that extends beyond the enclosure. For plug/socket combinations, see also 13.4.5 and 13.4.6.	No this situation.	**N/A**
	Power cables and cables of measuring circuits may be directly connected to the terminals of the devices for which the connections were intended.	It is in compliance with this requirement.	**Pass**
13.4	Wiring outside enclosures	-	-
13.4.1	General requirements	-	-
	The means of introduction of cables or ducts with their individual glands, bushings, etc., into an enclosure shall ensure that the degree of protection is not reduced (see 11.3)	No this situation.	**N/A**
13.4.2	External ducts	-	-
	Conductors and their connections external to the electrical equipment enclosure(s) shall be enclosed in suitable ducts (i.e. conduit or cable trunking systems) as described in 13.5 except for suitably protected cables that may be installed without ducts and with or without the use of open cable trays or cable support means. Where devices such as position switches or proximity switches are supplied with a dedicated cable, their cable need not be enclosed in a duct when the cable is suitable for the purpose, sufficiently short, and so located or protected, that the risk of damage is	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	minimized.		
	Fittings used with ducts or multiconductor cable shall be suitable for the physical environment.	It is in compliance with this requirement.	**Pass**
	Flexible conduit or flexible multiconductor cable shall be used where it is necessary to employ flexible connections to pendant push-button stations.	It is in compliance with this requirement.	**Pass**
	The weight of the pendant stations shall be supported by means other than the flexible conduit or the flexible multiconductor cable, except where the conduit or cable is specifically designed for that purpose.	It is in compliance with this requirement.	**Pass**
13.4.3	Connection to moving elements of the machine	-	**-**
	Connection to frequently moving parts shall be made using conductors according with 12.2 and 12.6.	The appropriate conductor has been chosen according to the requirement of 12.2 and 12.6.	**Pass**
	Flexible cable and flexible conduit shall be so installed as to avoid excess flexing and straining, particularity at the fittings	Flexible cable and flexible conduit have been so installed as to avoid excess flexing and straining, particularity at the fittings.	**Pass**
	Cables subject to movement shall be supported in such a way that there is no mechanical strain on the connection points nor any sharp flexing	Appropriate support for this purpose has been found on the machine.	**Pass**
	When this is achieved by the provision of a loop, it shall have sufficient length to provide for a bending radius of the cable of at least 10 times the diameter of the cable.	No loop is used.	**N/A**
	Flexible cables of machines shall be so installed or protected to minimize the possibility of external damage due to factors that include the following cable use or potential abuse: – being run over by the machine itself; – being run over by vehicles or other machines; – coming into contact with the machine structure during movements; – running in and out of cable baskets, or on or off cable drums; – acceleration forces and wind forces on festoon systems or suspended cables; – excessive rubbing by cable collector; – exposure to excessive radiated heat.	Appropriate protection has been provided.	**Pass**

Clause	Requirement - test	Result	Verdict
	The cable sheath shall be resistant to the normal wear that can be expected from movement and to the effects of environmental contaminants (for example oil, water, coolants, dust).	The cable sheath can be resistant to the normal wear.	**Pass**
	Where cables subject to movement are close to moving parts, precautions shall be taken to maintain a space of at least 25 mm between the moving parts and the cables. Where that distance is not practicable, fixed barriers shall be provided between the cables and the moving parts.	It is in compliance with this requirement.	**Pass**
	The cable handing system shall be so designed that the lateral cable angles do not exceed 5°, avoiding torsion in the cable when: – being wound on and off cable drums; and – approaching and leaving cable guidance devices.	It is in compliance with this requirement.	**Pass**
	Measures shall be taken to ensure that at least two turns of flexible cables always remain on a drum.	It is in compliance with this requirement.	**Pass**
	Devices serving to guide and carry a flexible cable shall be so designed that the inner bending radius at all points where the cable is bent is not less than the values given in Table 8, unless otherwise agreed with the cable manufacturer, taking into account the permissible tension and the expected fatigue life.	It is in compliance with this requirement.	**Pass**
	The straight section between two bends shall be at least 20 times the diameter of the cable.	It is in compliance with this requirement.	**Pass**
	Where flexible conduit is adjacent to moving parts, the construction and supporting means shall prevent damage to the flexible conduit under all conditions of operation.	It is in compliance with this requirement.	**Pass**
	Flexible conduit shall not be used for connections subject to rapid or frequent movements except when specifically designed for that purpose.	It is in compliance with this requirement.	**Pass**
13.4.4	Interconnection of devices on the machine	-	**-**
	Where several machine-mounted switching devices (for example position sensors, push-buttons) are connected in series or in parallel, it is recommended that the connections between those devices be made through terminals forming intermediate test points..	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	Such terminals shall be conveniently placed, adequately protected, and shown on the relevant diagrams	No this situation.	**N/A**
13.4.5	Plug/socket combinations	-	-
	Where plug/socket combinations are provided, they shall fulfil one or more of the following requirements as applicable:		-
	a) When installed correctly in accordance with f), plug/socket combinations shall be of such a type as to prevent unintentional contact with live parts at any time, including during insertion or removal of the connectors. The degree of protection shall be at least IPXXB. PELV circuits are excepted from this requirement.	No plug/socket is used for this machine.	**N/A**
	b) Have a first make last break protective bonding contact (earthing contact) (see also 6.3, 8.2.4) if used in TN- or TT-systems.	No plug/socket is used for this machine.	**N/A**
	c) Plug/socket combinations intended to be connected or disconnected during load conditions shall have sufficient load-breaking capacity. Where the plug/socket combination is rated at 30 A, or greater, it shall be interlocked with a switching device so that the connection and disconnection is possible only when the switching device is in the OFF position.	No plug/socket is used for this machine.	**N/A**
	d) Plug/socket combinations that are rated at more than 16 A shall have a retaining means to prevent unintended or accidental disconnection.	No plug/socket is used for this machine.	**N/A**
	e) Where an unintended or accidental disconnection of plug/socket combinations can cause a hazardous situation, they shall have a retaining means.	No plug/socket is used for this machine.	**N/A**
	The installation of plug/socket combinations shall fulfil the following requirements asapplicable:	-	-
	f) The component which remains live after disconnection shall have a degree of protection of at least IP2X or IPXXB, taking into account the required clearance and creepage distances. PELV circuits are excepted from this requirement.	No plug/socket is used for this machine.	**N/A**
	g) Metallic housings of plug/socket combinations shall be connected to the protective bonding	No plug/socket is used for this machine.	**N/A**

Clause	Requirement - test	Result	Verdict
	circuit. PELV circuits are excepted from this requirement.		
	h) Plug/socket combinations intended to carry power loads but not to be disconnected during load conditions shall have a retaining means to prevent unintended or accidental disconnection and shall be clearly marked that they are not intended to be disconnected under load.	No plug/socket is used for this machine.	**N/A**
	i) Where more than one plug/socket combination is provided in the same electrical equipment, the associated combinations shall be clearly identifiable. It is recommended that mechanical coding be used to prevent incorrect insertion.	No plug/socket is used for this machine.	**N/A**
	j) Plug/socket combinations used in control circuits shall fulfil the applicable requirements of IEC 61984. Exception: see item k).	No plug/socket is used for this machine.	**N/A**
	k) Plug/socket combinations intended for household and similar general purposes shall not be used for control circuits. In plug/socket combinations in accordance with IEC 60309-1, only those contacts shall be used for control circuits which are intended for those purposes.	No plug/socket is used for this machine.	**N/A**
13.4.6	Dismantling for shipment	-	-
	Where it is necessary that wiring be disconnected for shipment, terminals or plug/socket combinations shall be provided at the sectional points. Such terminals shall be suitably enclosed and plug/socket combinations shall be protected from the physical environment during transportation and storage.	No this situation.	**N/A**
13.4.7	Additional conductors	-	-
	Consideration should be given to providing additional conductors for maintenance or repair. When spare conductors are provided, they shall be connected to spare terminals or isolated in such a manner as to prevent contact with live parts.	It is in compliance with this requirement.	**Pass**
13.5	Ducts, connection boxes and other boxes	-	-
13.5.1	General requirements	-	-
	Ducts shall provide a degree of protection suitable for the application (see IEC 60529).	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	All sharp edges, flash, burrs, rough surfaces, or threads with which the insulation of the conductors can come in contact shall be removed from ducts and fittings. Where necessary, additional protection consisting of a flame-retardant, oil-resistant insulating material shall be provided to protect conductor insulation.	It is in compliance with this requirement.	**Pass**
	Drain holes of 6 mm diameter are permitted in cable trunking systems, connection boxes, and other boxes used for wiring purposes that can be subject to accumulations of oil or moisture.	It is in compliance with this requirement.	**Pass**
	In order to prevent confusion of conduits with oil, air, or water piping, it is recommended that the conduits be either physically separated or suitably identified.	It is in compliance with this requirement.	**Pass**
	Ducts and cable trays shall be rigidly supported and positioned at a sufficient distance from moving parts and in such a manner so as to minimize the possibility of damage or wear. In areas where human passage is required, the ducts and cable trays shall be mounted at least 2 m above the working surface.	It is in compliance with this requirement.	**Pass**
	Ducts shall be provided only for mechanical protection (see 8.2.3 for requirements for connection to the protective bonding circuit).	It is in compliance with this requirement.	**Pass**
	Cable trays that are partially covered should not be considered to be ducts or cable trunking systems (see 13.5.6), and the cables used shall be of a type suitable for installation with or without the use of open cable trays or cable support means.	No this situation.	**N/A**
13.5.2	Percentage fill of ducts	-	**-**
	Consideration of the percentage fill of ducts should be based on the straightness and length of the duct and the flexibility of the conductors. It is recommended that the dimensions and arrangement of the ducts be such as to facilitate the insertion of the conductors and cables.	It is in compliance with this requirement.	**Pass**
13.5.3	Rigid metal conduit and fittings	-	**-**
	Rigid metal conduit and fittings shall be of galvanized steel or of a corrosion-resistant	No this situation.	**N/A**

Clause	Requirement - test	Result	Verdict
	material suitable for the conditions. The use of dissimilar metals in contact that can cause galvanic action should be avoided.		
	Conduits shall be securely held in place and supported at each end	No this situation.	**N/A**
	Fittings shall be compatible with the conduit and appropriate for the application. Fittings shall be threaded unless structural difficulties prevent assembly.	No this situation.	**N/A**
	Where threadless fittings are used, the conduit shall be securely fastened to the equipment	No this situation.	**N/A**
	Conduit bends shall be made in such a manner that the conduit shall not be damaged and the internal diameter of the conduit shall not be effectively reduced.	No this situation.	**N/A**
13.5.4	Flexible metal conduit and fittings	-	**-**
	A flexible metal conduit shall consist of a flexible metal tubing or woven wire armour. It shall be suitable for the expected physical environment.	No this situation.	**N/A**
	Fittings shall be compatible with the conduit and appropriate for the application.	No this situation.	**N/A**
13.5.5	Flexible non-metallic conduit and fittings		
	Flexible non-metallic conduit shall be resistant to kinking and shall have physical characteristics similar to those of the sheath of multiconductor cables.	It is in compliance with this requirement.	**Pass**
	The conduit shall be suitable for use in the expected physical environment.	It is in compliance with this requirement.	**Pass**
	Fittings shall be compatible with the conduit and appropriate for the application.	It is in compliance with this requirement.	**Pass**
13.5.6	Cable trunking systems	-	**-**
	Cable trunking systems external to enclosures shall be rigidly supported and clear of all moving or contaminating portions of the machine.	It is in compliance with this requirement.	**Pass**
	Covers shall be shaped to overlap the sides; gaskets shall be permitted.	Not appliable	**N/A**
	Covers shall be attached to cable trunking systems by suitable means.	Not appliable	**N/A**
	On horizontal cable trunking systems, the cover shall not be on the bottom unless specifically designed for such installation.	Not appliable	**N/A**

Clause	Requirement - test	Result	Verdict
	Where the cable trunking system is furnished in sections, the joints between sections shall fit tightly but need not be gasketed.	It is in compliance with this requirement.	**Pass**
	The only openings permitted shall be those required for wiring or for drainage.	It is in compliance with this requirement.	**Pass**
	Cable trunking systems shall not have opened but unused knockouts.	It is in compliance with this requirement.	**Pass**
13.5.7	Machine compartments and cable trunking systems	-	-
	Are isolated from coolant or oil reservoirs and are entirely enclosed	No additional coolant and/or oil reservoirs make it necessary to provide additional isolation.	**N/A**
	Conductors run in enclosed compartment and cable trunking systems shall be so secured and arranged that they are not subject to damage	Conductors run in enclosed compartment have been so secured and arranged that they be not subject to damge.	**Pass**
13.5.8	Connection boxes and other boxes	-	-
	Shall be accessible for maintenance.	It is in compliance with this requirement.	**Pass**
	Shall provide protection against the ingress of solid bodies and liquids, taking into account the external influences under which the machine is intended tooperate (see 11.3).	It is in compliance with this requirement.	**Pass**
	Shall not have opened but unused knockouts nor any other opening and shall be so constructed as to exclude materials such as dust, flyings, oil, and coolant	It is in compliance with this requirement.	**Pass**
13.5.9	Motor connection boxes	-	-
	Shall enclose only connections to the motor and motor-mounted devices	Not appliable	**N/A**
14	Electric motors and associated equipment	-	-
14.1	General requirements	-	-
	Electric motor should conform to the requirements of IEC 60034 series	Electric motors conform to the requirement of IEC60034 series.	**Pass**
	The protection requirements for motors and associated equipment are given in 7.2 for overcurrent protection, in 7.3 for overload protection, and in 7.6 for overspeed protection.	It is in compliance with this requirement.	**Pass**
	As many controllers do not switch off the supply to a motor when it is at rest, care shall be taken to ensure compliance with the requirements of 5.3, 5.4, 5.5, 7.5, 7.6 and 9.4. Motor control	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	equipment shall be located and mounted in accordance with Clause 11.		
14.2	Motor enclosures	-	-
	It is recommended that motor enclosures be chosen from those included in IEC 60034-5.	It is in compliance with this requirement.	**Pass**
	Protection degree shall be at least IP 23	Protection degree of motor enclosure is IP 23.	**Pass**
14.3	Motor dimensions	-	-
	As far as is practicable, the dimensions of the motors shall conform to those given in the IEC 60072 series.	The dimensions of the motors have been compliance with IEC 60072 series.	**Pass**
14.4	Motor mounting and compartments	-	-
	Each motor and its associated couplings, belts and pulleys, or chains, shall be so mounted that they are adequately protected and are easily for inspection maintenance, adjustment and alignment, lubrication, and replacement.	Appropriate mounting has been found that they are adequately protected and are easily for inspection.	**Pass**
	Shall be such that all motor hold-down means can be removed and all terminal boxes are accessible	Motor hold-down means can be removed and all terminal boxes are accessible.	**Pass**
	The proper cooling shall be ensured and the temperature rise remains within the limits of the insulation class	The proper cooling has been ensured and the temperature rise remains within the limits of the insulation class.	**Pass**
	Motor compartment should be clean and dry, and when required, shall be ventilated directly to the exterior of the machine	All motor compartments are clean and dry, and are ventilated directly to the exterior of the machine.	**Pass**
	The vents shall be such that ingress of swarf, dust, or water spray is at an acceptable level	The vents have been such that ingress of swarf, dust, or water spray is at an acceptable level.	**Pass**
	There shall be no opening between the motor compartment and any other compartment that does not meet the motor compartment requirements	There is no opening between the motor compartment and any other compartment that does not meet the motor compartment requirements.	**Pass**
	If a conduit or pipe is run into the motor compartment from another compartment not meet the motor compartment requirements, any clearance around the conduit or pipe shall be sealed	No any conduit or pipe run into the motor compartment from another compartment not meet the motor compartment requirements.	**Pass**
14.5	Criteria for motor selection	-	-
	Shall be selected according to the anticipated service and physical environment conditions	It is compliance with this requirement.	**Pass**
	In this respect, the points that shall be considered	-	-

Clause	Requirement - test	Result	Verdict
	include:		
	- type of motor;	It has been considered.	**Pass**
	- type of duty cycle (see IEC 60034-1);	It has been considered.	**Pass**
	- fixed speed or variable speed operation, (and the consequent variable influence of the ventilation);	It has been considered.	**Pass**
	- mechanical vibration;	It has been considered.	**Pass**
	- type of motor control;	It has been considered.	**Pass**
	- influence of the harmonic spectrum of the voltage and/or current feeding the motor (particularly when it is supplied from a static convertor) on the temperature rise;	It has been considered.	**Pass**
	- method of starting and the possible influence of the inrush current on the operation of other users of the same power supply, taking also into account possible special considerations stipulated by the supply authority;	It has been considered.	**Pass**
	- variation of counter-torque load with time and speed;	It has been considered.	**Pass**
	- influence of loads with large inertia	It has been considered.	**Pass**
	- influence of constant torque or constant power operation;	It has been considered.	**Pass**
	- possible need of inductive reactors between motor and converter.	It has been considered.	**Pass**
14.6	Protective devices for mechanical brakes	-	**-**
	Operation of the overload and overcurrent protective devices for mechanical brake actuators shall initiate the simultaneous de-energization (release) of the associated machine actuators	Appropriate motor has been used for this machine.	**Pass**
15	Accessories and lightning	-	**-**
15.1	Accessories	-	**-**
	Socket-outlets for accessory equipment shall comply :	-	**-**
	- Should conform to IEC 60309-1. Where that is not possible, they should be clearly marked with the voltage and current ratings	No socket-outlets are used for this machine.	**N/A**
	- The continuity of the protective bonding circuit to the socket-outlet shall be ensured except where protection is provided by PELV	No socket-outlets are used for this machine.	**N/A**
	- All unearthed conductors : Overcurrent or overload protection according to 7.2 and 7.3	No socket-outlets are used for this machine.	**N/A**

Clause	Requirement - test	Result	Verdict
	separately from the protection of other circuits		
	- If the power supply to the socket outlet is not disconnected by the supply disconnecting device, the clause 5.3.5 shall apply	No socket-outlets are used for this machine.	**N/A**
15.2	Local lighting of the machine and equipment	-	-
15.2.1	General	-	-
	Connections to the protective bonding circuit according to 8.2.2	Not applicable.	**N/A**
	The ON-OFF switch shall not be incorporated in the lampholder or in the flexible connecting cords	Not applicable.	**N/A**
	Stroboscopic effects from lights shall be avoided	Not applicable.	**N/A**
	Where fixed lighting is provided in an enclosure, electromagnetic compatibility should be taken into account using the principles outlined in 4.4.2.	Not applicable.	**N/A**
15.2.2	Supply	-	-
	The nominal voltage of the local lighting circuit shall not exceed 250 V between conductors. A voltage not exceeding 50 V between conductors is recommended.	Not applicable.	**N/A**
	Lighting circuits shall be supplied from one of the following sources (see also 7.2.6):	Not applicable.	**N/A**
	– a dedicated isolating transformer connected to the load side of the supply disconnecting device. Overcurrent protection shall be provided in the secondary circuit; – a dedicated isolating transformer connected to the line side of the supply disconnecting device. That source shall be permitted for maintenance lighting circuits in control enclosures only. Overcurrent protection shall be provided in the secondary circuit (see also 5.3.5 and 13.1.3); – a machine circuit with dedicated overcurrent protection; – an isolating transformer connected to the line side of the supply disconnecting device, provided with a dedicated primary disconnecting means (see 5.3.5) and secondary overcurrent protection, and mounted within the control enclosure adjacent to the supply disconnecting device (see also 13.1.3);	Not applicable.	**N/A**

Clause	Requirement - test	Result	Verdict
	– an externally supplied lighting circuit (for example factory lighting supply). This shall be permitted in control enclosures only, and for the machine work light(s) where their total power rating is not more than 3 kW.		
15.2.3	Protection	-	-
	Local lighting shall be protected according to 7.2.6.	Not applicable.	**N/A**
15.2.4	Fittings	-	-
	Adjustable lighting fittings shall be suitable for the physical environment	Not applicable.	**N/A**
	The lampholders shall be : - according to the relevant IEC publication; - constructed with an insulating material protecting the lamp cap so as to prevent unintended contact	Not applicable.	**N/A**
	Reflectors shall be supported by a bracket and not by the lampholder	Not applicable.	**N/A**
16	Marking, warning signs and reference designations	-	-
16.1	General	-	-
	Warning signs, nameplates, markings, and identification plates shall be of sufficient durability to withstand the physical environment involved.	It can be of sufficient durability to withstand the physical environment involved.	**Pass**
16.2	Warning signs	-	-
16.2.1	Electric shock hazard	-	-
	Enclosures that do not otherwise clearly show that they contain electrical equipment that can give rise to a risk of electric shock shall be marked with the graphical symbol IEC 60417-5036 (DB:2002-10) 	 has been used for every electricity part	**Pass**
	The warning sign shall be plainly visible on the enclosure door or cover	 is plainly visible on the enclosure door.	**Pass**
	The warning sign may be omitted (see also 6.2.2 b)) for:	-	-
	– an enclosure equipped with a supply disconnecting device;	Not applicable.	**N/A**

Clause	Requirement - test	Result	Verdict
	– an operator-machine interface or control station;	This clause has been met	**Pass**
	– a single device with its own enclosure (for example position sensor).	Not applicable.	**N/A**
16.2.2	Hot surfaces hazard	-	-
	Where the risk assessment shows the need to warn against the possibility of hazardous surface temperatures of the electrical equipment, the graphical symbol IEC 60417-5041 (DB:2002-10) shall be used. 	No this situation.	**N/A**
16.3	Functional identification	-	-
	Control devices, visual indicators and displays, used in man-machine interface shall be clearly and durably marked with regard to their functions either on or adjacent to the item	The function test according to the instruction manual has been carried out during inspection.	**Pass**
	Preference should be given to the use of standard symbols given in IEC 60417 and ISO 7000	The symbols referred to IEC 60417 and/or ISO-7000 have been used for the operational function of this machine.	**Pass**
	Preference should be given to the use of standard symbols given in IEC 60417 and ISO 7000	It is in compliance with this requirement.	**Pass**
16.4	Marking of equipment	-	-
	Equipment (for example controlgear assemblies) shall be legibly and durably marked in a way that is plainly visible after the equipment is installed.	It is in compliance with this requirement.	**Pass**
	A nameplate giving the following information shall be attached to the enclosure adjacent to each incoming supply:	The appropriate nameplate has been found on the machine.	**Pass**
	– name or trade mark of supplier;	This date has been contained.	**Pass**
	– certification mark, when required;	This date has been contained.	**Pass**
	– serial number, where applicable;	This date has been contained.	**Pass**
	– rated voltage, number of phases and frequency (if a.c.), and full-load current for each supply;	This date has been contained.	**Pass**
	– short-circuit rating of the equipment;	No this contained.	**N/A**
	– main document number (see IEC 62023).	No this contained.	**N/A**
	The full-load current shown on the nameplate shall be not less than the running currents for all motors and other equipment that can be in operation at the same time under normal conditions.	No this contained.	**N/A**

Clause	Requirement - test	Result	Verdict
	Where only a single motor controller is used, that information may instead be provided on the machine nameplate where it is plainly visible.	Not applicable.	**N/A**
16.5	Reference designations	-	-
	All enclosures, assemblies, control devices, and components shall be plainly identified with the same reference designations as shown in the technical documentation	Appropriate identification has been found on the nameplate of this machine.	**Pass**
17	Technical documentation	-	-
17.1	General	-	-
	The information necessary for installation, operation, and maintenance of the electrical equipment of a machine shall be supplied in the form of drawings, diagrams, charts, tables and instructions	Electrical circuit diagrams, component part lists, as well as the installation instruction have been included on the technical construction file.	**Pass**
	The information shall be in an agreed language	Basically the information is constructed in English.	**Pass**
	The information provided may vary with the complexity of the electrical equipment.	It is in compliance with this requirement.	**Pass**
	For very simple equipment, the relevant information may be contained in one document, provided that the document shows all the devices of the electrical equipment and enables the connections to the supply network to be made.	It is in compliance with this requirement.	**Pass**
17.2	Information to be provided	-	-
	The information provided with the electrical equipment shall include:	-	-
	a) A main document (parts list or list of documents);	It has been provided.	**Pass**
	b) Complementary documents including:	-	-
	1) a clear, comprehensive description of the equipment, installation and mounting, and the connection to the electrical supply(ies);	It has been provided.	**Pass**
	2) electrical supply(ies) requirements;	It has been provided.	**Pass**
	3) information on the physical environment (for example lighting, vibration, atmospheric contaminants) where appropriate;	It has been provided.	**Pass**
	4) overview (block) diagram(s) where appropriate;	It has been provided.	**Pass**
	5) circuit diagram(s);	It has been provided.	**Pass**

Clause	Requirement - test	Result	Verdict
	6) information (as applicable) on:	-	-
	• programming, as necessary for use of the equipment;	It has been provided.	**Pass**
	• sequence of operation(s);	It has been provided.	**Pass**
	• frequency of inspection;	It has been provided.	**Pass**
	• frequency and method of functional testing;		
	• guidance on the adjustment, maintenance, and repair, particularly of the protective devices and circuits;	It has been provided.	**Pass**
	• recommended spare parts list; and	It has been provided.	**Pass**
	• list of tools supplied.	No this contained.	**N/A**
	7) a description (including interconnection diagrams) of the safeguards, interlocking functions, and interlocking of guards against hazards, particularly for machines operating in a co-ordinated manner;	No this contained.	**N/A**
	8) a description of the safeguarding and of the means provided where it is necessary to suspend the safeguarding (for example for setting or maintenance), (see 9.2.4);	No this contained.	**N/A**
	9) instructions on the procedures for securing the machine for safe maintenance; (see also 17.8);	No this contained.	**N/A**
	10) information on handling, transportation and storage;	No this contained.	**N/A**
	11) information regarding load currents, peak starting currents and permitted voltage drops, as applicable;	No this contained.	**N/A**
	12) information on the residual risks due to the protection measures adopted, indication of whether any particular training is required and specification of any necessary personal protective equipment.	No this contained.	**N/A**
17.3	Requirements applicable to all documentation	-	-
	Unless otherwise agreed between manufacturer and user:	-	-
	- the documentation shall be in accordance with relevant parts of IEC 61082;	It is in compliance with this requirement.	**Pass**
	- reference designations shall be in accordance with relevant parts of IEC 61346;	It is in compliance with this requirement.	**Pass**
	- instructions/manuals shall be in accordance with	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	IEC 62079.		
	- parts lists where provided shall be in accordance with IEC 62027, class B.	It is in compliance with this requirement.	**Pass**
	For referencing of the different documents, the supplier shall select one of the following methods:	-	**-**
	- where the documentation consists of a small number of documents (for example less than 5) each of the documents shall carry as a cross-reference the document numbers of all other documents belonging to the electrical equipment; or	Not applicable.	**N/A**
	- for single level main documents only (see IEC 62023), all documents shall be listed with document numbers and titles in a drawing or document list; or	Not applicable.	**N/A**
	- all documents of a certain level (see IEC 62023) of the document structure shall be listed, with document numbers and titles, in a parts list belonging to the same level.	It is in compliance with this requirement.	**Pass**
17.4	Installation documents	-	**-**
	shall give all information necessary for the preliminary work of setting up the machine (including commissioning). In complex cases, it may be necessary to refer to the assembly drawings for details.	It is in compliance with this requirement.	**Pass**
	The recommended position, type, and cross-sectional areas of the supply cables to be installed on site shall be clearly indicated.	It is in compliance with this requirement.	**Pass**
	The data necessary for choosing the type, characteristics, rated currents, and setting of the overcurrent protective device(s) for the supply conductors to the electrical equipment of the machine shall be stated (see 7.2.2).	It is in compliance with this requirement.	**Pass**
	Where necessary, the size, purpose, and location of any ducts in the foundation that are to be provided by the user shall be detailed (see Annex B).	It is in compliance with this requirement.	**Pass**
	The size, type, and purpose of ducts, cable trays, or cable supports between the machine and the associated equipment that are to be provided by	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	the user shall be detailed (see Annex B).		
	Where necessary, the diagram shall indicate where space is required for the removal or servicing of the electrical equipment.	It is in compliance with this requirement.	**Pass**
	In addition, where it is appropriate, an interconnection diagram or table shall be provided. That diagram or table shall give full information about all external connections. Where the electrical equipment is intended to be operated from more than one source of electrical supply, the interconnection diagram or table shall indicate the modifications or interconnections required for the use of each supply.	It is in compliance with this requirement.	**Pass**
17.5	Overview diagrams and function diagrams	-	**-**
	Where it is necessary to facilitate the understanding of the principles of peration, an overview diagram shall be provided.	An overview diagram has been provided.	**Pass**
	An overview diagram symbolically represents the electrical equipment together with its functional interrelationships without necessarily showing all of the interconnections.	It is in compliance with this requirement.	**Pass**
	Function diagrams may be provided as either part of, or in addition to, the overview diagram.	It is in compliance with this requirement.	**Pass**
17.6.	Circuit diagrams	-	**-**
	A circuit diagram(s) shall be provided. This diagram(s) shall show the electrical circuits on the machine and its associated electrical equipment.	The control circuit diagram has been included on this technical construction file.	**Pass**
	Any graphical symbol not shown in IEC 60617-DB:2001 shall be separately shown and described on the diagrams or supporting documents. The symbols and identification of components and devices shall be consistent throughout all documents and on the machine.	Graphical symbol has been separately shown and described on the diagrams.	**Pass**
	Where appropriate, a diagram showing the terminals for interface connections shall be provided. That diagram may be used in conjunction with the circuit diagram(s) for simplification. The diagram should contain a reference to the detailed circuit diagram of each unit shown.	A diagram showing the terminals for interface connections have been provided.	**Pass**

Clause	Requirement - test	Result	Verdict
	Switch symbols shall be shown on the electromechanical diagrams with all supplies turned off (for example electricity, air, water, lubricant) and with the machine and its electrical equipment ready for a normal start.	Switch symbols have been shown on the electromechanical diagrams.	**Pass**
	Conductors shall be identified in accordance with 13.2.	Conductors have been identified in accordance with 13.2.	**Pass**
	Circuits shall be shown in such a way as to facilitate the understanding of their function as well as maintenance and fault location. Characteristics relating to the function of the control devices and components which are not evident from their symbolic representation shall be included on the diagrams adjacent to the symbol o referenced to a footnote.	Circuits have been shown in such a way as to facilitate the understanding of their function as well as maintenance and fault location.	**Pass**
17.7	Operating manual	-	-
	The technical documentation shall contain an operating manual detailing proper procedures for set-up and use of the electrical equipment. Particular attention should be given to the safety measures provided.	Appropriate operation manual has been provided.	**Pass**
	Where the operation of the equipment can be programmed, detailed information on methods of programming, equipment required, program verification, and additional safety procedures (where required) shall be provided.	Appropriate operation manual has been provided.	**Pass**
17.8	Maintenance manual	-	-
	The technical documentation shall contain a maintenance manual detailing proper procedures for adjustment, servicing and preventive inspection, and repair.	Necessary maintenance has been included on the instruction manual.	**Pass**
	Recommendations on maintenance/service intervals and records should be part of that manual. Where methods for the verification of proper operation are provided (for example software testing programs), the use of those methods shall be detailed.	Recommendations on maintenance/service intervals and records have been taken.	**Pass**
17.9	Parts list	-	-
	The parts list, where provided, shall comprise, as a minimum, information necessary for ordering spare or replacement parts (for example	This has been contained.	**Pass**

Clause	Requirement - test	Result	Verdict
	components, devices, software, test equipment, technical documentation) required for preventive or corrective maintenance including those that are recommended to be carried in stock by the user of the equipment.		
18	Verification	-	-
18.1	General	-	-
	The extent of verification will be given in the dedicated product standard for a particular machine.	It is in compliance with this requirement.	**Pass**
	Where there is no dedicated product standard for the machine, the verifications shall always include the items a), b) and f) and may include one or more of the items c) to e):	-	-
	a) verification that the electrical equipment complies with its technical documentation;	This has been taken..	**Pass**
	b) in case of protection against indirect contact by automatic disconnection, conditions for protection by automatic disconnection shall be verified according to 18.2;	This has been taken..	**Pass**
	c) insulation resistance test (see 18.3);	This has been taken..	**Pass**
	d) voltage test (see 18.4);	This has been taken..	**Pass**
	e) protection against residual voltage (see 18.5);	This has been taken..	**Pass**
	f) functional tests (see 18.6).	This has been taken..	**Pass**
	When these tests are performed, it is recommended that they follow the sequence listed above.	Test has been carried out as the sequence listed below.	**Pass**
	When the electrical equipment is modified, the requirements stated in 18.7 shall apply	Attention for the test of re-construction has been stated on the instruction manual.	**Pass**
	For tests in accordance with 18.2 and 18.3, measuring equipment in accordance with the IEC 61557 series is applicable.	It is in compliance with this requirement.	**Pass**
	The results of the verification shall be documented.	It is in compliance with this requirement.	**Pass**
18.2	Verification of conditions for protection by automatic disconnection of supply	-	-
18.2.1	General	-	-
	The conditions for automatic disconnection of supply (see 6.3.3) shall be verified by tests	Appropriate test condition has been set according to this requirement.	**Pass**
18.2.2	Test methods in TN-systems	-	-

Clause	Requirement - test	Result	Verdict
	Test 1 verifies the continuity of the protective bonding circuit. Test 2 verifies the conditions for protection by automatic disconnection of the supply.	Appropriate test condition has been set according to this requirement.	**Pass**
	Test 1 – Verification of the continuity of the protective bonding circuit	-	-
	The resistance of each protective bonding circuit between the PE terminal (see 5.2 and Figure 2) and relevant points that are part of eac h protectiv e bondin g circui t shall be measured with a current between at least 0,2 A and approximately 10 A derived from an electrically separated supply source (for example SELV, see 413.1 of IEC 60364-4-41) having a maximum no-load voltage of 24 V a.c. or d.c.. It is recommended not to use a PELV supply since such supplies can produce misleading results in this test. The resistance measured shall be in the expected range according to the length, the cross sectional area and the material of the related protective bonding conductor(s).	It is in compliance with this requirement.	**Pass**
	Test 2 – Fault loop impedance verification and suitability of the associated overcurrent protective device	-	-
	The connections of the power supply and of the incoming external protective conductor to the PE terminal of the machine, shall be verified by inspection.	It is in compliance with this requirement.	**Pass**
	The conditions for the protection by automatic disconnection of supply in accordance with 6.3.3 and Annex A shall be verified by both:	It is in compliance with this requirement.	**Pass**
	1) verification of the fault loop impedance by:	-	-
	– calculation, or	It is in compliance with this requirement.	**Pass**
	– measurement in accordance with A.4, and	Not applicable.	**N/A**
	2) confirmation that the setting and characteristics of the associated overcurrent protectivedevice are in accordance with the requirements of Annex A.	It is in compliance with this requirement.	**Pass**
18.2.3	Application of the test methods for TN-systems	-	-
	Test 1 of 18.2.2 shall be carried out on each protective bonding circuit of a machine.	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	When Test 2 of 18.2.2 is carried out by measurement, it shall always be preceded by Test 1	It is in compliance with this requirement.	**Pass**
	The tests that are necessary for machines of different status are specified in Table 9. Table 10 can be used to enable determination of the machine status.	It is in compliance with this requirement.	**Pass**
18.3	Insulation resistance tests	-	-
	When insulation resistance tests are performed, the insulation resistance measured at 500 V d.c. between the power circuit conductors and the protective bonding circuit shall be not less than 1 MΩ. The test may be made on individual sections of the complete electrical installation.	Test voltage=500Vd.c, and the protective bonding circuit do not less than 1 MΩ	**Pass**
	Exception: for certain parts of electrical equipment, incorporating for example busbars, conductor wire or conductor bar systems or slip-ring assemblies, a lower minimum value is permitted, but that value shall not be less than 50 kΩ.	Not applicable.	**N/A**
	If the electrical equipment of the machine contains surge protection devices which are likely to operate during the test, it is permitted to either:	-	-
	– disconnect these devices, or	Not applicable.	**N/A**
	– reduce the test voltage to a value lower than the voltage protection level of the surge protection devices, but not lower than the peak value of the upper limit of the supply (phase to neutral) voltage.	Not applicable.	**N/A**
18.4	Voltage tests	-	-
	When voltage tests are performed, test equipment in accordance with IEC 61180-2 should be used.	It is in compliance with this requirement.	**Pass**
	The test voltage shall be at a nominal frequency of 50 Hz or 60 Hz.	The test voltage is 50Hz.	**Pass**
	The maximum test voltage shall have a value of twice the rated supply voltage of the equipment or 1 000 V, whichever is the greater.	It is in compliance with this requirement.	**Pass**
	The maximum test voltage shall be applied between the power circuit conductors and the protective bonding circuit for a period of approximately 1 s.	It is in compliance with this requirement.	**Pass**

Clause	Requirement - test	Result	Verdict
	The requirements are satisfied if no disruptive discharge occurs.	It is in compliance with this requirement.	**Pass**
	Components and devices that are not rated to withstand the test voltage shall be disconnected during testing.	It is in compliance with this requirement.	**Pass**
	Components and devices that have been voltage tested in accordance with their product standards may be disconnected during testing.	It is in compliance with this requirement.	**Pass**
18.5	Protection against residual voltages	-	-
	Tests shall be performed to ensure compliance with 6.2.4	After this testing the machine is operating normally.	**Pass**
18.6	Functional tests	-	-
	The functions of electrical equipment shall be tested.	The functions of the equipment related to safety are tested, and there is no abnormal condition in this machine.	**Pass**
	The function of circuits for electrical safety (for example earth fault detection) shall be tested.	It is tested, and there is no abnormal condition in this machine.	**Pass**
18.7	Retesting	-	-
	Where a portion of the machine and its associated equipment is changed or modified, that portion shall be reverified and retested, as appropriate(see 18.1)	It is in compliance with this requirement.	**Pass**
	Particular attention should be given to the possible adverse effects that retesting can have on the equipment (for example overstressing of insulation, disconnection/reconnection of devices).	It is in compliance with this requirement.	**Pass**

Annex A

The EN 60204-1 test report

EN60204-1 Test Report

Manufacturer:	Wenzhou Huaqiao Packing Machine Factory
EUT	Vacuum Machine
Model	DZ-400/2SB
Test Equipment	Withstand Voltage Tester:ZC25-3 Insulation Resistance Tester:ZC25-4 Grounding Tester:JD-8
Test conditions	10A/50HZ
According to:	Chapter 52 and 53 of EN 60204-1
Date:	19 Jun. 2015

1. Continuity of the protective bonding circuit

Test Points	Test Result(mΩ)	Test Current(A)	Voltage Drop(V)
PE-Control Panel	52	10	0.52
PE-Electrical Box	72	10	0.72
PE-Motor	65	10	0.65
Transformer1	55	10	0.55

2. Insulation Resistance

Test Points	Test Result(MΩ)
PE-Power Inlet	220
PE-Motor	250
Transformer1	240

3. Withstanding Voltage

Test Points	Breakdown
PE-Power Inlet	No
PE-Motor	No
Transformer1	No

3.2 Airborne noise test report

Noise Test Report

Manufacturer	Wenzhou Huaqiao Packing Machine Factory		
EUT	Vacuum Machine		
Model	DZ-400/2SB	Date	19 Jun. 2015
Test Condition		Running Free	
Test Equipment	Digital Sound Level Meter Type Test 1350A Manufacturer: TES Electronic Industrial Co., LTD.		

Give as “dB (A)” unit, A-Weighted

	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Average
Position 1	50	49	50	49	50	49.6
Position 2	51	52	51	52	52	51.6
Position 3	48	47	48	49	48	48.0
Position 4	49	50	49	50	49	49.4
Average of 1 to 4						49.7

Manufacturer	Wenzhou Huaqiao Packing Machine Factory		
EUT	Vacuum Machine		
Model	DZ-400/2SB	Date	19 Jun. 2015
Test Condition		At normal working	
Test Equipment	Digital Sound Level Meter Type Test 1350A Manufacturer: TES Electronic Industrial Co., LTD.		

Give as “dB (A)” unit, A-Weighted

	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Average
Position 1	70	69	69	70	70	69.6
Position 2	69	70	69	71	71	70.0
Position 3	69	71	69	70	70	69.8
Position 4	70	71	70	71	70	70.4
Average of 1 to 4						70.0

Annex: Technical information

A.1 Declaration of conformity with signature

A.2 Specifications table

A.3 Safety pictures

A.4 Mechanical drawing

A.5 Electrical system

A.6 Instruction manual

A.1 Declaration of conformity with signature

EC - DECLARATION OF CONFORMITY

CE

APPLICANT

NAME	:	Wenzhou Huaqiao Packing Machine Factory
ADDRESS	:	No. 439, Binhai Fourth Road, Economic & Technological Development Zone, Wenzhou, Zhejiang, China
Phone / Fax :		0086-577-88998813 / 0086-577-88996613

We, Wenzhou Huaqiao Packing Machine Factory, herewith declare that;

Equipment Type / Model:

Vacuum Machine;

DZ-260/PD, DZ-300/PD, DZ-400/ZT, DZ-400/2E, DZ-500/2E, DZ-600/2E, DZ-400/2SB, DZ-500/2SB, DZ-600/2SB, DZ-400/2SA, DZ-500/2SA, DZ-600/2SA, DZ-650/4SB, DZ-700/2SB

Related Directives:

2006/42/EC, Machinery Directive
2006/95/EC, Low Voltage Directive

Harmonized Standards:

EN 415-3:1999+A1:2009 Safety of packaging machines - Part 3: Form, fill and seal machines.
ISO 12100:2010 safety of machinery — general principles for design — risk assessment and risk reduction.
EN 60204-1:2006+A1:2009 Safety of Machinery – Electrical equipment of machines – Part 1: General requirements.
EN 953:1997+A1:2009 Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards.
EN 614-1:2006+A1:2009 Safety of machinery - Ergonomic design principles - Part 1: Terminology and general principles.
EN 1037:1995+A1:2008 Safety of machinery - Prevention of unexpected start-up.
ISO 3864-1:2011 Graphical symbols -- Safety colours and safety signs -- Part 1: Design principles for safety signs and safety markings.
EN ISO 13849-1:2008 Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design.
EN ISO 13849-2:2008 Safety of machinery - Safety-related parts of control systems - Part 2: Validation.

The described product/machines meet the essential requirements of the above mentioned standards and in our delivered version; comply with the appropriate basic essential health and safety requirements of the based on Machinery Directive 2006/42/EC and Low Voltage Directive 2006/95/EC. In case of alteration of the machine, not agreed upon by Wenzhou Huaqiao Packing Machine Factory; this declaration will lose its validity.

SIGNED ON BEHALF OF THE MANUFACTURER

NAME : **Zhu Hua**
POSITION : General Manager
PLACE / DATE : CHINA, 2015
SIGNATURE :

STAMP:

A.2 Specifications table

Specification table

model	power supply	motor power	hot seal power	Extreme pressure	Vacuum pumping rate	Thermal sealing length	Thermal sealing width	Vacuum chamber depth	Dimension	Outer package size	Net weight Gross weight
DZ-260/PD	AC 220V/50HZ 110V/60HZ	0.37kw	0.15kw	0.05hPa(mbar)	14.4m^3/h	260mm	5mm	50mm	502×330×380mm	590×405×450mm	37.2Kg 46Kg
DZ-300/PD	AC 220V/50HZ 110V/60HZ	0.37kw	0.15kw	0.05hPa(mbar)	14.4m^3/h	300mm	5mm	50mm	525×400×380mm	615×475×450mm	40Kg 49Kg
DZ-400/ZT	AC 220V/50HZ 110V/60HZ	0.90kw	0.60kw	0.1hPa(mbar)	20m^3/h	390mm	10mm	65mm	540×490×500mm	640×590×630mm	62.5Kg 77.5Kg
DZ-400/2E	AC 220V/50HZ 110V/60HZ	0.90kw	0.60kw	0.1hPa(mbar)	20m^3/h	390mm	10mm	70mm	540×490×960mm	650×590×1010mm	70Kg 87Kg
DZ-500/2E	AC 220V/50HZ 110V/60HZ	0.90kw	0.80kw	0.1hPa(mbar)	20m^3/h	490mm	10mm	70mm	640×570×970mm	750×670×1080mm	97Kg 117Kg
DZ-600/2E	AC 380V/50HZ 220V/60HZ	1.50kw	1.00kw	0.1hPa(mbar)	40m^3/h	590mm	10mm	75mm	742×672×910mm	840×760×1110mm	151Kg 178Kg
DZ-400/2SB	AC 220V/50HZ 110V/60HZ	0.90kw	0.60kw	0.1hPa(mbar)	20m^3/h	390mm	10mm		990×610×950mm	1090×680×1020mm	131Kg 155Kg
DZ-500/2SB	AC 380V/50HZ 220V/60HZ	0.75kw×2	0.80kw	0.1hPa(mbar)	20m^3/h×2	490mm	10mm		1250×660×950mm	1340×740×1030mm	174Kg 224Kg

DZ-600/2SB	AC 380V/50HZ 220V/60HZ	1.50kw	1.00kw	0.1hPa(mbar)	40m^3/h	590mm	10mm		1450×660×950mm	1530×740×1020mm	220Kg 272Kg
DZ-400/2SA	AC 220V/50HZ 110V/60HZ	0.90kw	0.60kw	0.1hPa(mbar)	20m^3/h	390mm	10mm	40mm	995×615×960mm	1090×680×1020mm	129Kg 153Kg
DZ-500/2SA	AC 380V/50HZ 220V/60HZ	0.75kw×2	0.80kw	0.1hPa(mbar)	20m^3/h×2	490mm	10mm	40mm	1250×660×960mm	1340×740×1030mm	182Kg 232Kg
DZ-600/2SA	AC 380V/50HZ 220V/60HZ	1.50kw	1.00kw	0.1hPa(mbar)	40m^3/h	590mm	10mm	40mm	1450×660×960mm	1530×740×1120mm	215Kg 267Kg
DZ-650/4SB	AC 380V/50HZ 220V/60HZ	2.20kw	1.20kw×2	0.1hPa(mbar)	63m^3/h	600mm	10mm		1450×895×960mm	1540×985×1080mm	322Kg 378Kg
DZ-700/2SB	AC 380V/50HZ 220V/60HZ	1.50kw	1.20kw	0.1hPa(mbar)	40m^3/h	690mm	10mm		1650×720×960mm	1730×800×1120mm	267Kg 330Kg

A.3 Safety pictures

outside look of the machine


KUNBA


KUNBA


DZQ VACUUM MACHINE
LOW
MID
HIGH
VACUUM METER
EMS STOP
VACUUM
SEALING
UP
DOWN
SEALING TEMP


EMERGENCY
ON
OFF

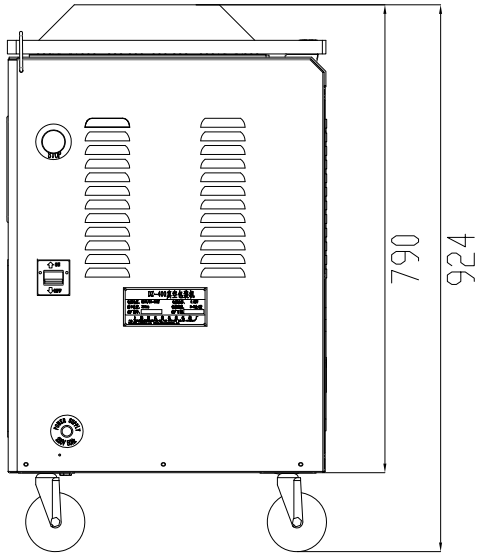

POWER SUPPLY
OFF

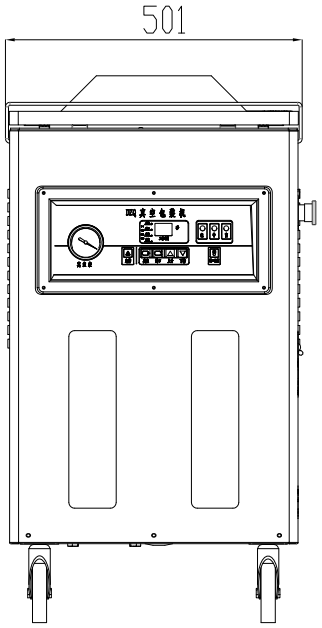

Caution!
1.Please inject the oil into the vacuum pump before start!
2.Please don't impingement the vacuum lid!

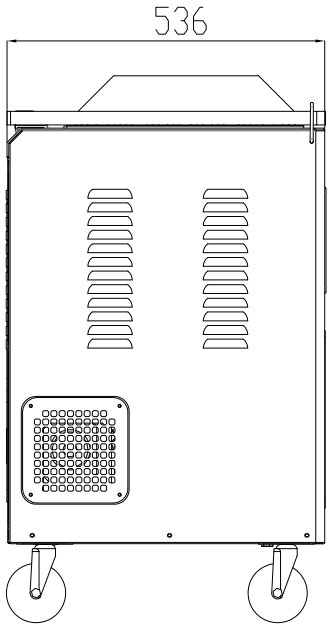

Notice
1. Strictly prohibit vacuum pump motor revesal.
2. Open the lid of the oil box,fill in the No.6 or No.10 motor oil before the operation.
3. Check the level of the oil often,the least oil level should no less than the height of the oil window 1/4.
The maximum oil measure strictly prohibit exceed the height of the oil window 3/4.
4. Change the oil in time when the oil contains water or other impurity.
5. Let the oil out When transport and transit.
6. Exhaust filter should be changed every year.
7. As it's fill with air,source of gas pressure indication should ≤0.2MP
8. Press the crash stop deflate switch can make the vacuum pump stop and release the gas automatic,raisethe up atelier.

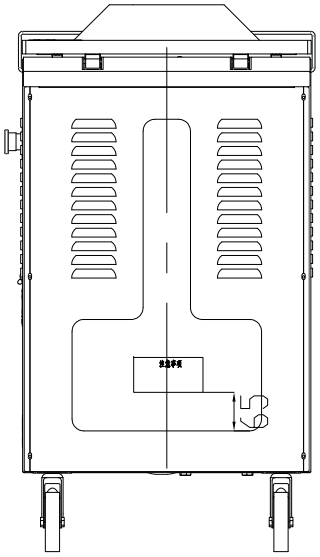

OFF
ON

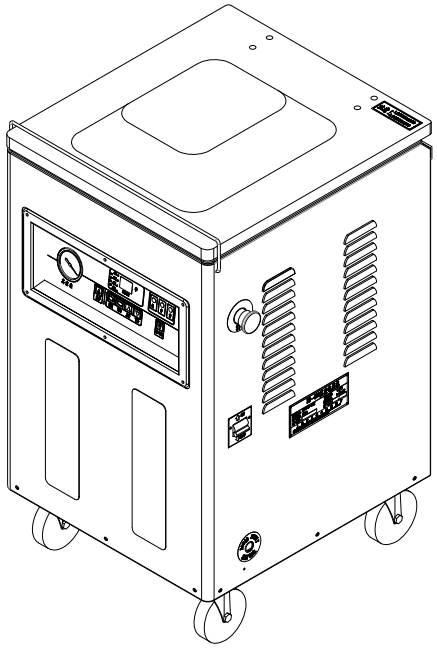
A.4 Mechanical drawing

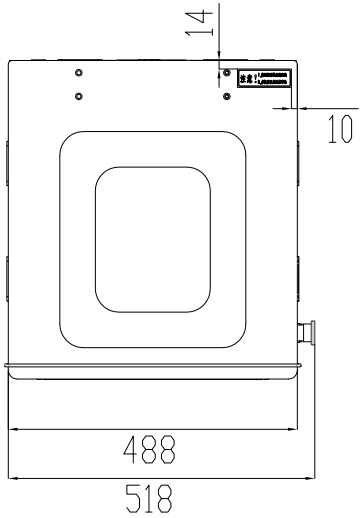












比例	1：13		
重量			
数量	1		
设计	方 斌	日期	2015年6月15日
校对		复审	
审核		标审	
工艺		批准	

Overall diagram

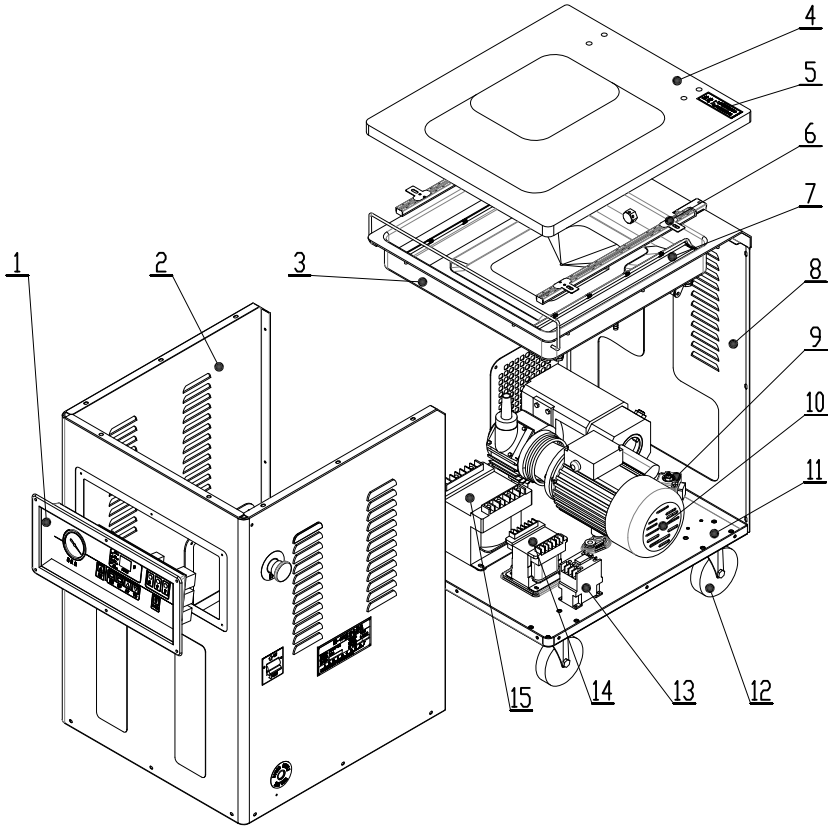
温州市华侨包装机械厂

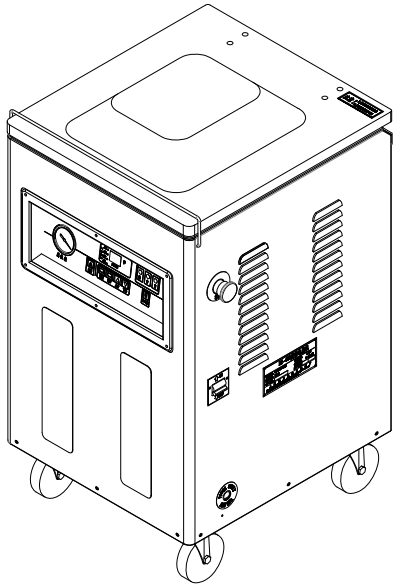
整机装配

阶段标记 第1页 共1页

40AL

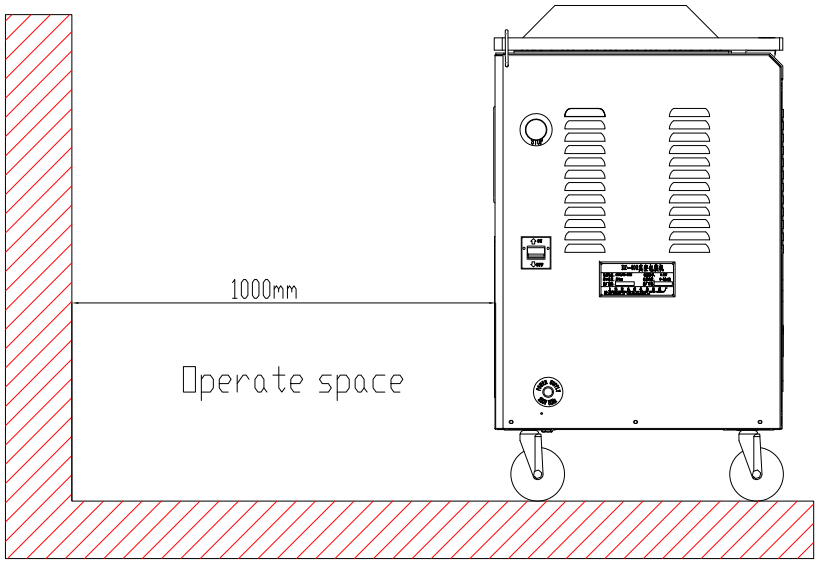
SN.	Name	Qty.	Auth.
1	Control panel	1	
2	Shell	1	
3	Vacuum chamber welding	1	
4	Vacuum cover	1	
5	Warning signs	1	
6	Silica gel	2	
7	Sealing strip	2	
8	Back cover	1	
9	Solenoid valve	1	
10	Vacuum pump	1	
11	Floor	1	
12	Casters	4	
13	AC contactor	1	
14	Small transformer	1	
15	Big transformer	1	



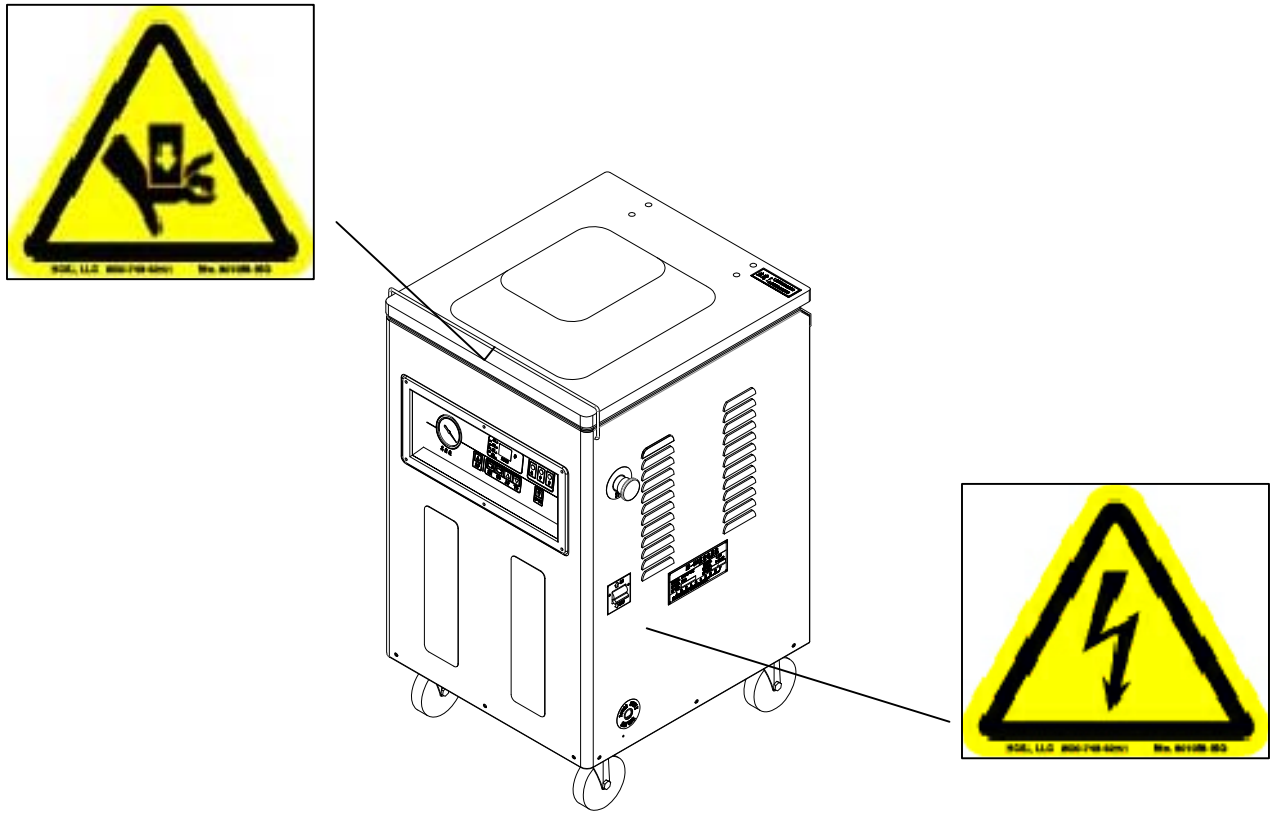


比例	1 :10			Assembly diagram	温州市华侨包装机械厂
重量					示意图
数量					
设计	方 斌	日期			
校对		复审			
审核		标审		阶段标记	第1页
工艺		批准			共1页

单室真空机

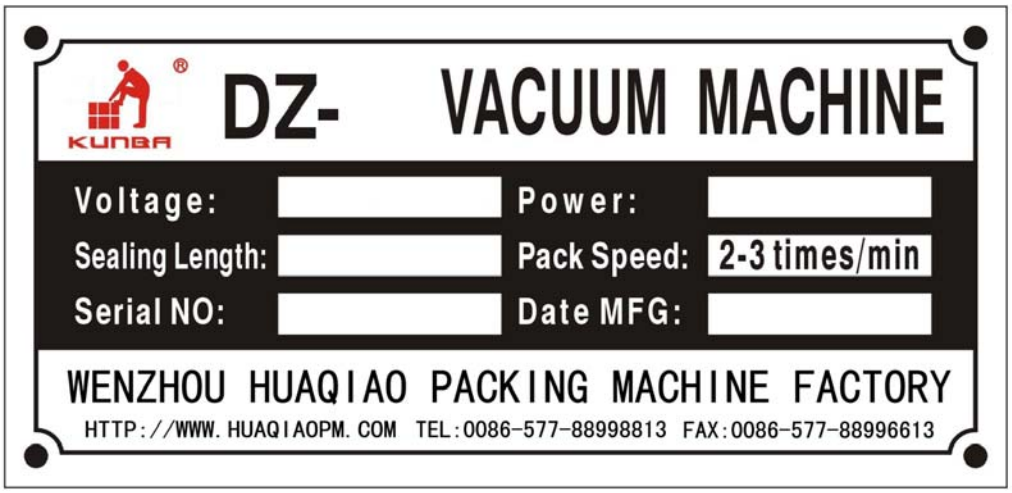


比例	1：10		Operate space diagram		温州市华侨包装机械厂
重量					
数量					
设计	方 斌	日期			示意图
校对		复审			
审核		标审	阶段标记	第1页	单室真空机
工艺		批准		共1页	



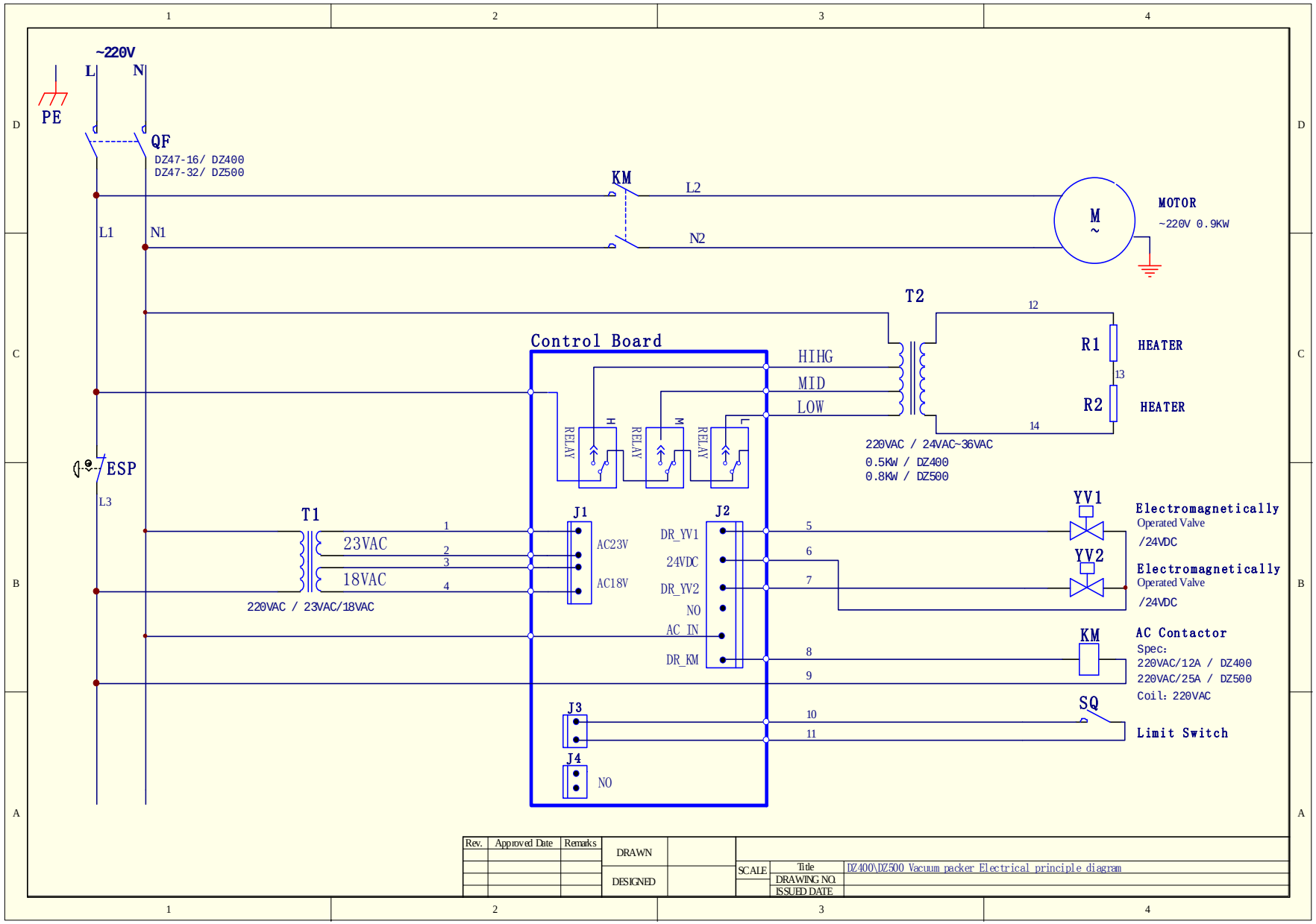
比例	1：13		warning mark position diagram	温州市华侨包装机械厂	
重量				整机装配	
数量	1				
设计	方 斌	日期	2015年6月15日		
校对		复审		阶段标记	第1页
审核		标审			共1页
工艺		批准		40AL	

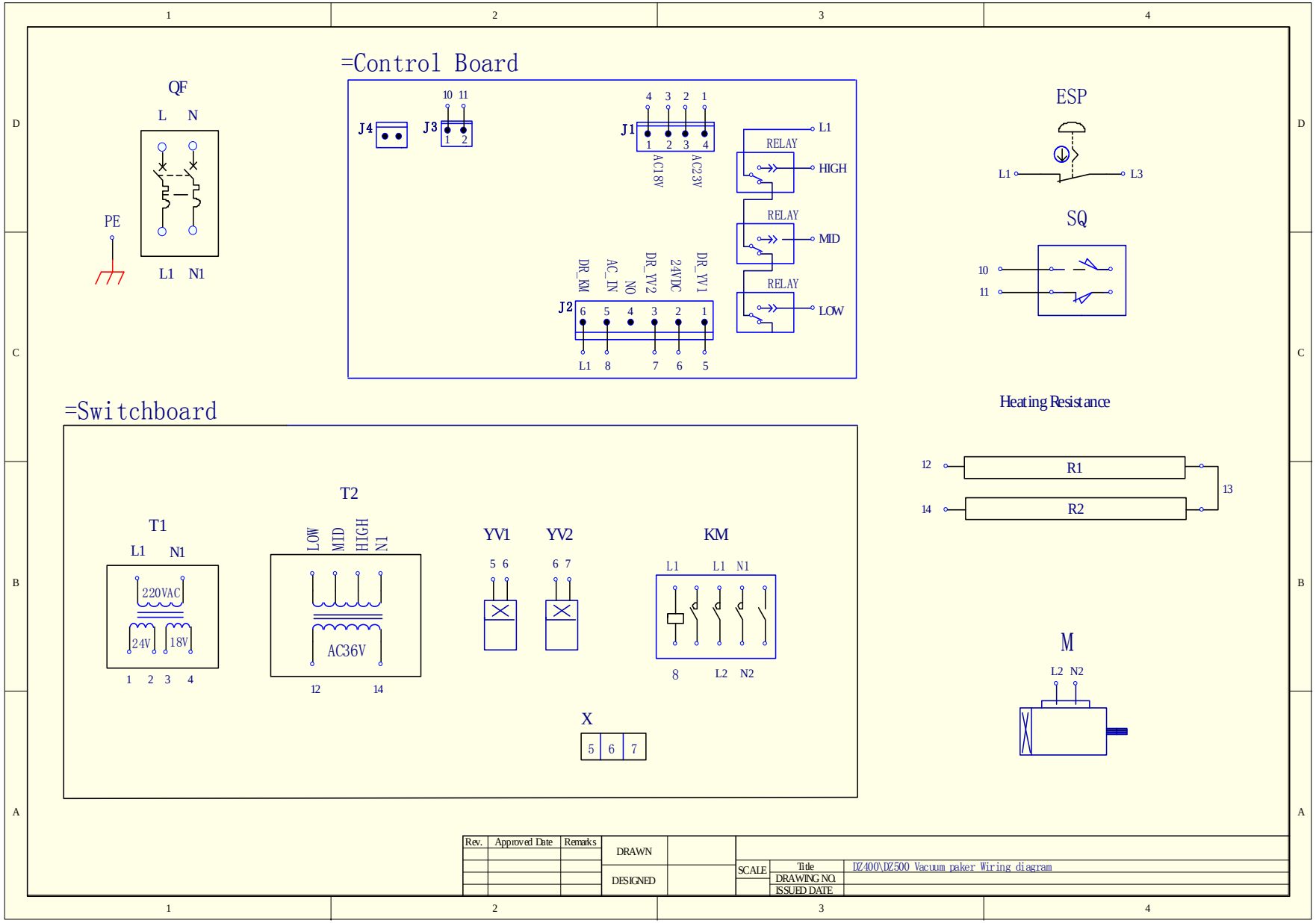
Nameplate


KUNBA
DZ- VACUUM MACHINE
Voltage:
Power:
Sealing Length:
Pack Speed:
2-3 times/min
Serial NO:
Date MFG:
WENZHOU HUAQIAO PACKING MACHINE FACTORY
HTTP://WWW.HUAQIAOPM.COM TEL:0086-577-88998813 FAX:0086-577-88996613

A.5 Electrical system

Electric diagram




=Control Board
QF
L N
PE
L1 N1
J4
J3
10 11
1 2
J1
4 3 2 1
1 2 3 4
AC18V
AC23V
L1
RELAY
HIGH
RELAY
MID
RELAY
LOW
J2
DR_KM
AC_IN
NO
DR_YV2
24VDC
DR_YV1
6 5 4 3 2 1
L1 8 7 6 5
ESP
L1 L3
SQ
10
11
=Switchboard
T1
L1 N1
220VAC
24V 18V
1 2 3 4
T2
LOW MID HIGH N1
AC36V
12 14
YV1 YV2
5 6 6 7
KM
L1 L1 N1
8 L2 N2
X
5 6 7
Heating Resistance
12
R1
13
14
R2
M
L2 N2
Rev. Approved Date Remarks
DRAWN
DESIGNED
SCALE
Title
DZ400\DZ500 Vacuum paker Wiring diagram
DRAWING NO.
ISSUED DATE

DZ400/DZ500 Electrical Components List

SN	Code	Name	Supplier	Mode	Spec	Qty	Auth
1	QF	Circuit Breaker	CHNT	DZ47-32	2P 32A	1	CE
2	KM	AC Contactor	CHNT	CJX2-2510	25A/220V	1	CE
3	SQ	Limit Switch	Schneider	XCB-K1/411		1	CE
4	T1	Transformer	Ouhai yulong	BK-25 80VA	220V/24V、18V	1	CE
5	T2	Transformer	Ouhai yulong	BK-25 800VA	220V/36V	1	CE
6	M	Motor	Mitsubishi	HC-UFS	220VAC/0.9KW		CE
7	ESP	Emergency Button	Schneider	ZB4-BE102C	3A/240V		CE

A.6 Instruction manual

Original Instruction

SZQ SERIES VACUUM PACKAGER

(MODEL:DZ400.DZQ400/2SB.DZQ500/2SB)

OPERATION INSTRUCTION

Before operation,please read this operational manual carefuly

1.Overview

Model DZQ400/500 series vacuum packager works in a brand-new way that it makes the inside of the bag vecuum and then seals it at once, and just because of the high vacuum, extremely less air is left in the bag, resulting in restraining the propagation of bacterium etc.microbe, avoiding the goods being mildew and rotten by oxidation and,at the same time, some spongy goods can be made reduced in the volume after being vacuum packed and thus become easy to transport and store.

2.Purpose

This packager uses compound film bags to do vacuum hot-sealing packing for various foods, medicines, native products, aquatic products chemical materials, hardwares and electronic components inthe state of solid, powder, paste or liquid, which can effectively prevent the packed goods from being rotten and gone bad caused bythe oxidation of grease goods or the propagation of the bacterium found of oxygen, keep the quality, freshness, taste, color for an extended storage and make it easy to transport and export the packed goods.

3.Property feature

1) for the packager with a single-chamber, the process of packing is shown in a very clear way with the organic glass cover equipped.

2) with the two vacuum chambers work in turn to have the packing and sealing well linked up with the preparations, the efficiencyis greatly enhanced. both upper and lower work chambers are made of stainless steel, reasonable in the structure, good gas tightness,beautiful, durable and in line with the requirement of food sanitation and anti-rottenness.

This packager is set with the function of combining vacuum, sealing, peinting in one process and, for different packing materials and requirements, with the adjustable deviced for the vacuum,hot-sealing temperature and time so as for the users to get optimum selection and adjustment for an optimum effect of packing. the printion device with a convenient letter-change and clear printingis available per the desire of the users, with which, users may print on the sealing at the same time for sealing the valid period,

date of ex-factory, code of ex-factory etc. to meet with the provision of the national food label law.the packager features advanced design, full function, stable and reliable performance, good sealing strength, strong packing capacity, convenient operation and service, high economic benefit etc. and is the idealer machinery for the vacuum package.

4.Major technical parameters

1) Lowest absolute pressure intensity in the vacuum chamber 1kpa.

2) Volume of vacuum chamber(LxWxH): 440×440×130mm (400single-chamber)
450×400×130mm (400double-
570×470×90mm 500 chamber)

3) Packing speed: 1-3 times/min.

4) Power supply: three-phase 380V 50HZ, single-phase 220V 50HZ

5) Motor power: 0.75KWEx2(500double-chamber)
0.75KW(400 single- and double-chamber)

6) Hot-sealing power: 0.9KW (500double-chamber)
0.8KW (400double-chamber single-chamber)

7) Evacuation rate: 11L/S(500double-chamber)
5.5L/S(400single-and double-chamber)

8) External dimension(LxWxH):

9) Weight: 120kg(400 single-chamber), 180kg (400 double-chamber)
215kg(500 double-chamber) 520×490×930mm single-and
990×720×930mm (400 double-
1300×770×960mm 500-chamber)

5.Structure and principle

This packager consists of the upper and lower vacuum chambers, body, electrics, vacuum system five parts. the upper chamber's top is set with a group of hot-pressing sealing device and the lower one is setwith the hot-pressing sealing device. the heationg element is the

Ni-cr tape and mounted on the bakelite hot-pressing stand, which is absolutely insulated from the vacuum chamber and closely fitted on the gasbag,

which, before hot-sealing, is in a low vacuum state and,during hot-sealing, is made interlinked with air through the hot-sealing electromagnetic valve yv and enlarged with its volume so as to have the heating head(ni-cr tape) pressing downward on the sealing while heating, both heating temperature and time are adjustable.

The power supply of the packager:AC 380V,50HZ, three-phase four-wire with the neutral input. motor of the vacuum pump:AC380V, 2X0.75KW , 2800r.p.m. the heating system is of voltage-regulation type, i.e.the primary of the hot-sealing transformer is 380v, the secondary has three shifts of 28V, 32V and 36V adjustable with the switch on the panel. the hot sealing temperature is changed by means of the voltage of the srcondry while the hot sealing time is adjusted by the digital display time relay on the panel.the vacuum system is consists of evacuation, hot-sealing and deflation electromagnetic valves Yv and used as the executive mechanism.

Evacuation from the vacuum chamber starts once the vacuum pump is enabled and it will stop when the intended vacuum reaches, the whole control procedure turns into next one then. this packager uses a aingle-stage rotary-sheet type vacuum pump(see the manual for the details of the technical property of the pump).see fig.1.2.3. for the structure and panel, the electric principle and the vacuum system principle, respectively.

6. Operation procedure

1) turn on the power:enable the power switch, the quick-stop indicator lights. set the evacuation &hot-sealing dial to the relative time.

2) press down the cover, the evacuation(vacuum) indicator lights, the vacuum pump starts evacuation and the cover is automatically attracted. vacuum can be adjusted by means of the vacuum time dial per the packing requirement and adjustment should be done from low to high with a small amplitude.

3) when the set time(the desired vacuum) reaches, evacuation ends and the evacuation indicator goes out. set the power switch to the vacuum position, the vacuum packing begins and the air-filling indicator goes out.

4) Along with the evacuation indicator goes out, the hot-sealing indicator lights to enter the sealing procedure. the adjustable knobs for both hot-sealing time and temperature on the panel are equipped with for the materials of different thickness. to adjust the knobs,use a small amplitude of rotation so as to prevent the hot-sealing temperature from being raised in a suden, thus burning the hot-sealing fittings.

5) When the set time for hot-sealing reaches, the hot-sealing indicator goes out and the hot-sealing ends,then air goes into the vacuum chamber via the electromagnetic valve till the cover lifed automatically, the process of vacuum, air-filling and packing endsand next such a process is ready.

7.Regulation and operaton

1) When packed, check with the list of packing if the accessorie are full, if the screws on every location are loose and if the upper vacuum chamber flexible to move left and right.

2) Properly lubricate every moving part, oil hole and oil nozzle and,in according with the manual for the vacuum pump, properly inject engine oil window, which shoule not be lower the 1/4 height of the oil window and max. oil quantity should not exceed 3/4 height of the oil window.

3) Regulation

a. regulation of the vacuum in the vacuum chamber optimize the time of evacuation per the need of the packed goods to get an appropriate vacuum, the longer the time for evacuation, the higher the vacuum to be gained.

b. Regulation of hot-sealing temperature and timeo ptimize the hot-sealing temperature(3-shift adjustable) and time (0-9.9s) per the different bag material and packed goods to get an optimum strength of sealing. to regulate, generally do it from low to high till the desired appearance and strength of sealing.

4)Process of operation

a.place the goods to be packed in the bag(plastic compound or al-foil com pound bag), and put the bag into one of the lower vacuum chambers,lift the bag-pressing rod and evenly arrange the opening of the bags under the hot-pressingstand.

b.Turn on the power switch,the power indicator lights and then cover the lower vacuum chamber with the upper one for automatic sealing, and

meanwhile, do preparations in the other lower vacuum chamber so as to enhance the efficiency of packing.

c.Set the power swithc to "off" position and cut off the main power when the whole procedure of packing ends.

8. Maintenance

1) Before operation, carefully read the manual to get familiar with the way of regulation and operation.

2) Periodically maintain and lubercate the vacuum pump according to its manual and pay much attention not to let it reversedly run in order to prevent it against being damaged and the oil from reversedly apraying inside of it till the vacuum system.

3) Often check if the earth line well contacted to make sure of safety

4) Often check if there is any foreign matter on the sealing dyeing cloth (ptefe) and if it is flat to make sure of the sealing strength.

5) Turn off the power on time in case of a failure and, if necessary, press the quick-stop button, then lift the cover after deflation and turn off the voltage to examine the cause and troubleshoot.

9.Common troubles and troubleshooting

1) No vacuum formed or low vaccum

a.Reversed running of the vacuum pumpl. check if its direction of running in line with the arrow of the pump motor and, if not, adjust the phase.

b. When newly used, the sealing ring of the upper chamber may not be well fitted with the plane of the lower one, so slight pressure is required to be qpplied on the cover to make both completely mated.

c. The position switch is not in place. adjust the position of the limiting sheet of it.

d. The deflation valve is not closed tightly and produces leakage.check its valve core(rubber) if it is worn out ,polluted or its centre displaced.

c. Check if there is leakage or looseness with every part of the pipeline.

2) Bad hot-sealing quality

a. Check if the opening of the packing bag is clean and take care not to let is polluted.

b. Check if the ni-cr tape works properly, if there is short -circuit or circuit-breaking.

3) Failure of the master board

a. The master board inside of the packager should be kept clean, dry and no metal foreign matter on its surface in order not make its interior short-circuited or the procedure confused.

b.No vacuum formed or not hot-sealing done or jump action produced. which is due to being not well plugged of the relative dial snitch' saft or the dial being damaged.

c. Back of strokes on display with the digital display board or no disp lay for action indication, which is caused by the looseness or being not well plugged of the board feet or partial damage of the board.

d. Some shift of the high, middle and low shifts for hot-sealing doesn' s phase become loose or the relay is damaged.

work. the feet of the high, middle and low 4138 relay relative to the middle

10. Packing list

Model&spec.		Unit	Qunty.	
Model dz400/500		set	1	
	Product manual	copy	1	
	Certificate	copy	1	
	Lubricant	bottle	1	
	Ni-crtape	pc	1	
				2pcs for single-chamber
7.87in	Screwdriver	pc	2	"+","-" shape each
7.87in	Monkey wrench	pc	1	none for single-chamber
	Socket head wrench	pc	1	
	Input power cable	pc	1	
	Receptacle	pc	1	
	SS holding disk	pc	2	1pc for single-chamber
Xzd-020	Vacuum pump manual	set	1	
	Etc.			
	Powerflu glue	pc	1	none for single-chamber diddo
	Oiler	pc	1	
	Printion Case	case	1	

Inspector: Packer

Year Month Day

DZQ 400/500 vacuum packager

Fig 1 construction

DZQ 400 . 1D Single-chamber

1. External and operation panel arrangement figure:

Part of the vacuum chamber:

1) Organic glass cover

2) Sealing ring

3) Press bar

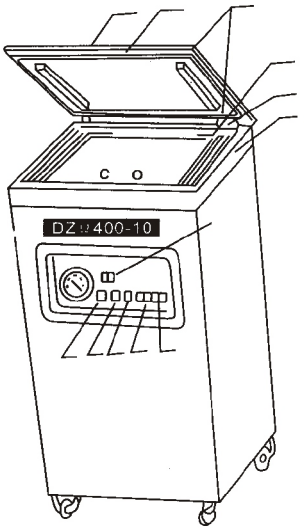
4) Starting weitch (upper, lower contacts)

5) Vacuum filling plate

6) Vacuum chamber

7) Hot-sealing device(upper press bar, lower holder)

Part of thepanel:



8) Power selection switch

9) Vacuum time selection knlb

10) Vacuum manometer

11) Time selection button

12) Sealing temperature selection button

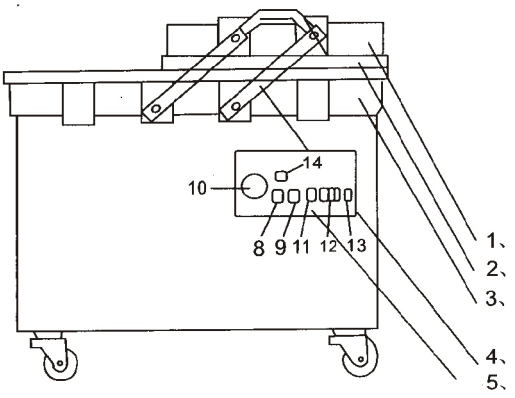
13) Quick stop button

14) Time display

DZQ 400/500 double-chamber

1 External and operation panel arrangement figure

Fig, 1 construction



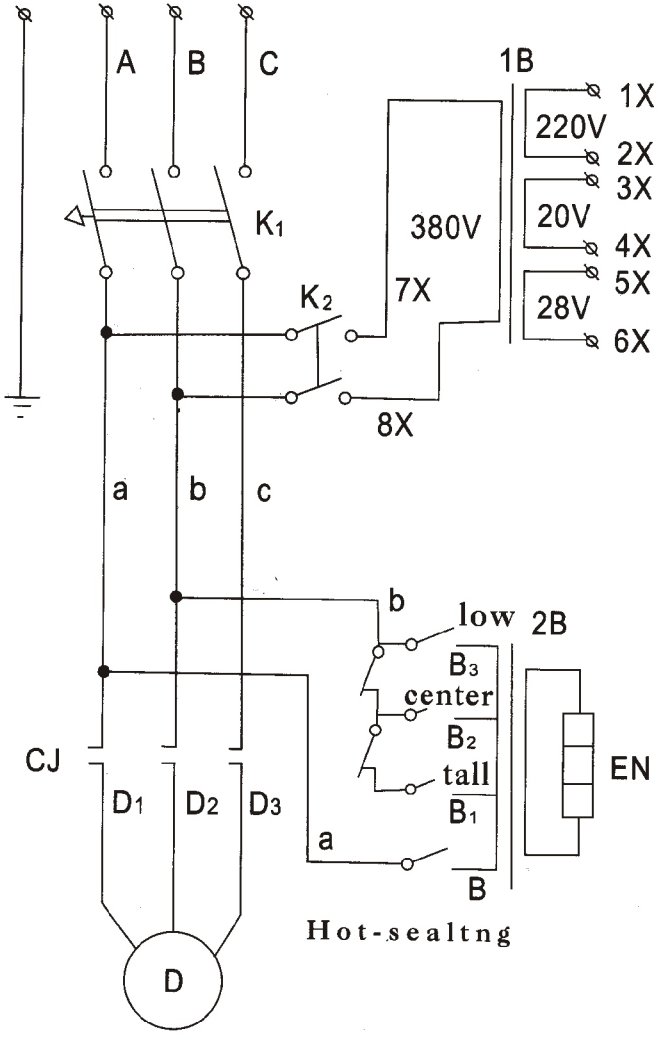
1.Upper working chamber

2.Sealing reing

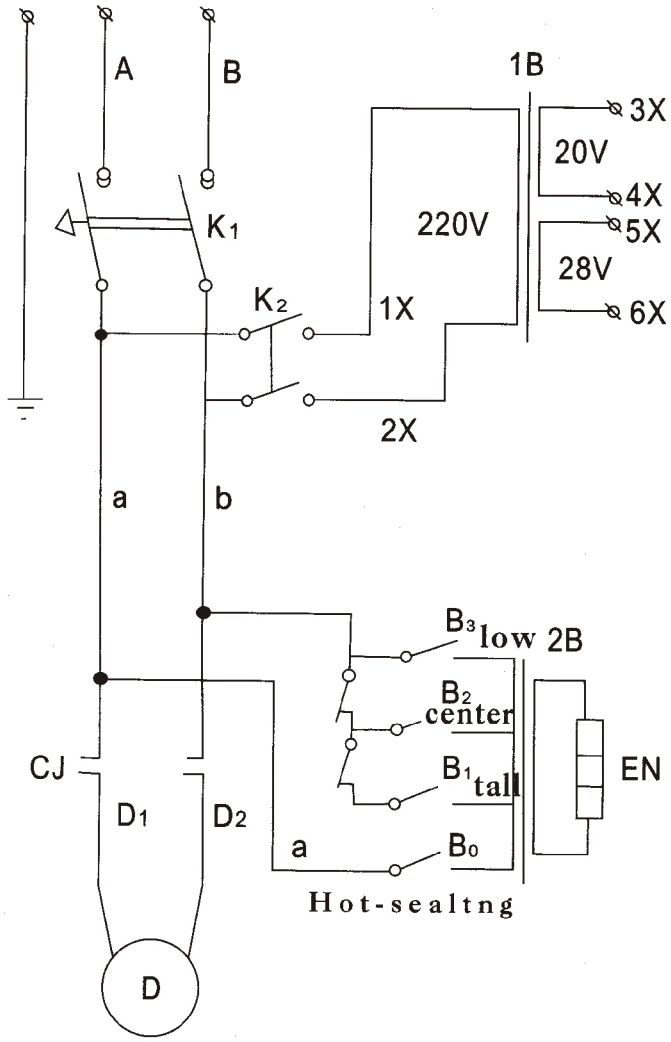
3.Lower working chamber

4.Swing rod

5.Control panel

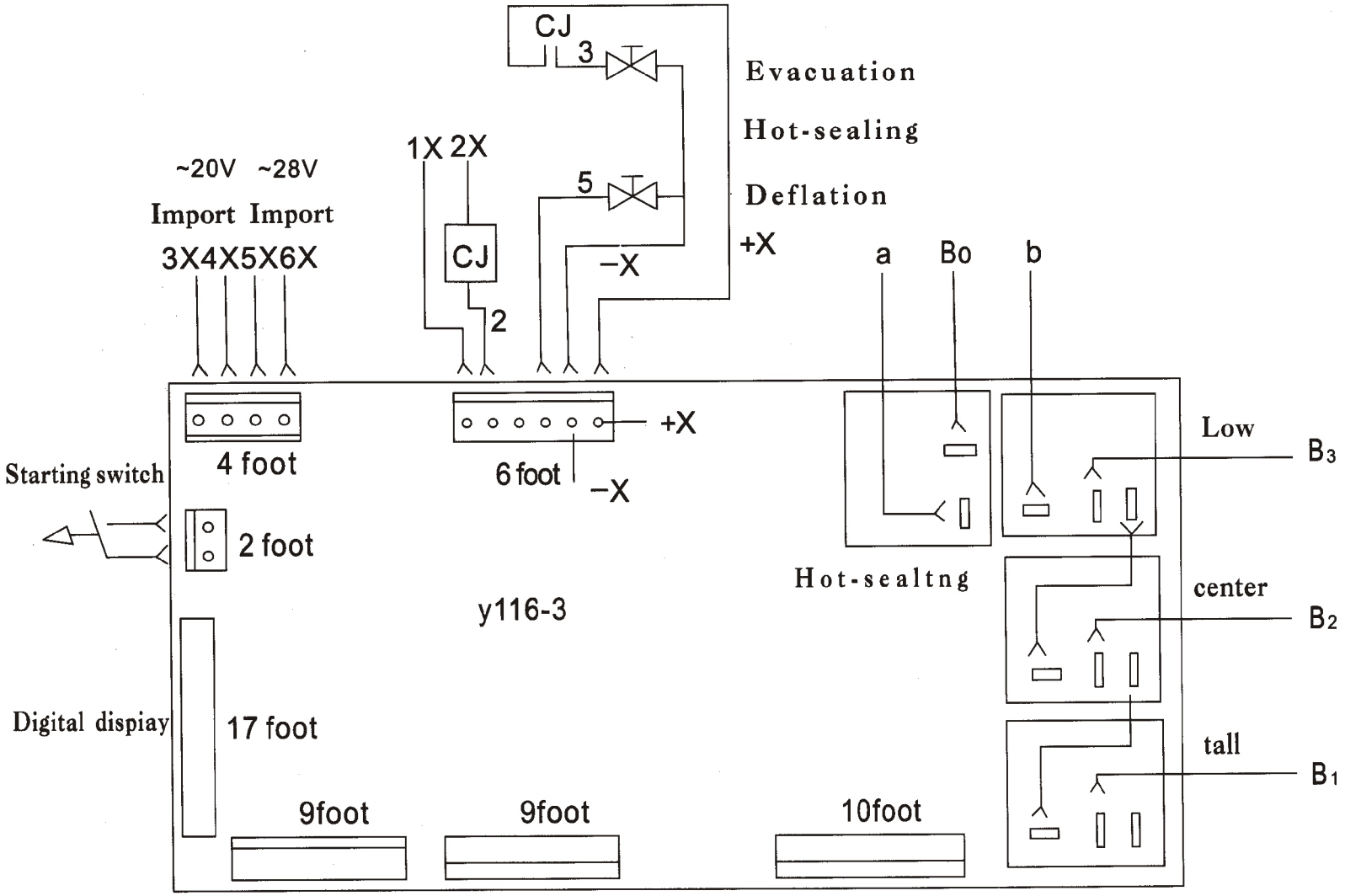


380V



220V

electric principle



Vacuum dial Hot-semperature & quick-stop control pane