



TEST REPORT

On Behalf of

Prepared For :	GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD Shop 110, No. 13, Lane 1, ChenChong West Road, Chenyong Village, Qiaonan Street, Panyu District, Guangzhou
Trade Mark :	N/A
Product Name :	Adaptive Floating Flange
Model(s) :	LMABSF250S25AB,LMABSF Series
Prepared By:	Shenzhen CDT Testing Technology Co., Ltd. Room 301, building B, Xinyi Industrial Park, Yuquan Road, Yulv community, Yutang street, Guangming New District, Shenzhen, Guangdong, China Tel:0755-23400418 Email: cdt@cdt-prc.com Web: www.cdt-prc.com
Test Date:	Dec.06,2022 -Dec.12, 2022
Date of Report:	Dec.12, 2022
Report No. :	CDT-2022120923-LVD



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TEST REPORT

EN60204-1: 2018
 Safety of machinery – Electrical equipment of machines -Part 1: General requirements

Administrative Data

Report Reference No. : CDT-2022120923-LVD
 Date of issue : Dec.12, 2022
 Contents..... : 75 Pages Total including the front pages.

Testing Laboratory..... : Shenzhen CDT Testing Technology Co., Ltd.
 Address..... : Room 301, building B, Xinyi Industrial Park, Yuquan Road, Yulv community, Yutang street, Guangming New District, Shenzhen, Guangdong, China

Applicant's name : GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD
 Address..... : Shop 110, No. 13, Lane 1, ChenChong West Road, Chenyong Village, Qiaonan Street, Panyu District, Guangzhou

Test specification:

Directive/ standard : EN 60204-1:2018
 Test procedure : CE- LVD

Test item description : Adaptive Floating Flange

Manufacturer..... : GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD
 Address : Shop 110, No. 13, Lane 1, ChenChong West Road, Chenyong Village, Qiaonan Street, Panyu District, Guangzhou

Trad N/Ark..... : N/A
 Model/Type reference : LMABSF250S25AB
 Rating..... : DC24V,2083mA,50W

Testing procedure and testing location

Laboratory name..... : Shenzhen CDT Testing Technology Co., Ltd.

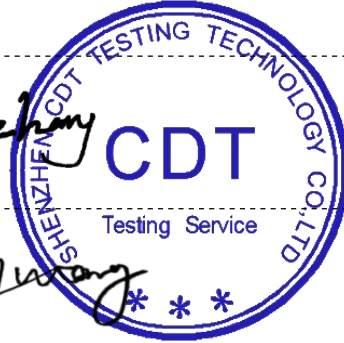
Testing location/address: : Room 301, building B, Xinyi Industrial Park, Yuquan Road, Yulv community, Yutang street, Guangming New District, Shenzhen, Guangdong, China

Testing Iprocedure : TL RMT SMT WMT TMP

Tested By (Test Engineer) : JayLiu *JayLiu*

Reviewed By (Supervisor) : NancyZhang *Nancyzhang*

Approved By (Chief Engineer) : JackeyWang *Jackeywang*



Copy of marking plate:

EUT: **Adaptive Floating Flange**

Model : LMABSF250S25AB

Input: DC24V 2083mA

Power:50W

Date for manufactured: 2022

GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD

Shop 110, No. 13, Lane 1, ChenChong West Road, Chenyong Village,
Qiaonan Street, Panyu District, Guangzhou

Made in China

**Summary of Testing:**

1. The product has been tested and found in compliance with EN60204-1 for Safety of machine- Electrical equipment of machines,Part 1: General requirements.
2. The test result complies with the requirements of the relevant standard.

Test case verdicts

Test case does not apply to the test object	N(/A)
Test item does meet the requirement	P(ass)
Test item does not meet the requirement	F(ail)

Testing

Date of receipt of test item	Dec.06,2022
Date(s) of performance of test	Dec.06,2022 -Dec.12, 2022

General r N/Arks

This report shall not be reproduced except in full without the written approval of the testing laboratory.

The test results presented in this report relate only to the item(s) tested.

"(see r N/Ark #)" refers to a r N/Ark appended to the report.

"(see Annex #)" refers to an annex appended to the report.

Throughout this report a comma is used as the decimal separator.

General product information:

- All models N.A are similar except rating power and appearance and all tests are conduct on model N.A .

General

1. General description

In order to ensure the conformity for CE marking for this machine, some main European and/or International standards have been used to make assessment of conformity .

The test reports for these applicable standards in detail have been included in the relevant sub-clauses of this technical construction file.

2. Quality control system

In order to ensure the conformity of the series production, the Factory has taken the related procedures mentioned below :

(1) Carry out the inspection for parts and components according to the TEST REPORT:

Before the assemblies of the series production, the QC engineers of factory has to check and inspect the technical specifications and intended functions of parts and components to ensure the correct use of them according to the contents of TEST REPORT and principle described in the related technical information.

(2) Carry out the inspection & testing for the products before packing: Before packing the products, the QC engineers of factory have to do the necessary inspection and testing to ensure the conformity of related requirements, in particularly, the testing and inspection of electrical characteristics and outer feature.

(3) Carry out the inspection for the packing:

After finishing the necessary inspection and testing for the products, an inspection for the packing has to be done to ensure the necessary

General

elements being included in this packing before shipment.

(4) Provision for the change of design:

Any change of the products described in this TEST REPORT must be checked in detail and written down again in the TEST REPORT by the designer of factory if the change may effects the related electrical or mechanical characteristics.

(5) Provision for the Quality Assurance:

For the provisions of internal control measures to ensure the conformity of series production of the machines, the factory has built an internal quality control system in accordance with the international standard of ISO-9001.

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	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 to constructed that it is fitted for its function, and can be adjusted and maintained without putting person at risk when these operations are carried out under the conditions foreseen by the manufacturer	These requirements have been complied with.	P
	The aim of measures taken must be to eliminate any risk of accident throughout the foreseeable lifetime of the machinery, including the phases of assembly and dismantling, even where risks of accident arise from foreseeable abnormal situations	These requirements have been complied with.	P
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	Manufacturer has provided enough safety devices to eliminate or reduce risks.	P
	- take the necessary protection measure in relation to risks that can't be eliminated	Safety guards and other devices are used.	P
	- 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	Enough warnings are provided in the appropriate spot	P
c)	When designing and constructing machinery, and when drafting the instruction, the manufacturer must envisage not the normal use of the machinery but also uses which could reasonably be expected	All the conditions are considered by the manufacturer, and the related information also has been provided within the instruction manual	P
	The machinery must be designed to prevent abnormal use if such use would engender a risk. In other cases 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.	P
d)	Under the intended conditions of use, the discomfort, fatigue and psychological stress faced by the operator must be reduced to the minimum possible taking ergonomic principles into account	These requirements have been taken into account during the design of this machine	P
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	These requirements have been taken into	P

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	equipment	account during the design of this machine	
f)	Machinery must be supplied with all the essential special equipment and accessories to enable it to be adjusted, maintained and used without risk	All the essential special equipment and related accessories have been supplied.	P
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	They cannot endanger exposed person's safety or health	P
	In particular, where fluids are used, machinery must be designed and constructed for use without risks due to rilling, use, recovery of draining		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	These requirements have been taken into account during the design of this machine.	P
	The manufacturer must ensure 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 due to the lighting provided by the manufacturer		N/A
	Internal parts requiring frequent inspection, and adjustment and maintenance areas, must be provided with appropriate lighting		N/A
1.1.5	Design of machinery to facilitate its handling		
	Machinery or each component part thereof must:		
	-be capable of being handle safely	Enough measures have been taken to ensure the safe of the handling.	P
	-be packaged or designed so that it can be stored safely and without damage	The machine can be stored in fumigation wooden case safely and without damage.	P
	Where the weight, size or shape of machinery or 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		N/A
	-be designed so that it can be fitted with such attachments, or	Provided	P
	-be shaped in such a way that standard lifting can easily be attached		N/A
	Where machinery or one of its component parts is to be		

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	moved by hand, it must:		
	-either be easily movable, or		N/A
	-be equipped for picking up and moving in complete safety		N/A
	Special arrangement must be made for the handling of tools and/or machinery parts, even if lightweight, which could be dangerous		N/A
1.2	Controls		
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	The control system for this machine is safe and reliable by appropriate designing	P
	Above all they must be designed and constructed:		
	-they can withstand the rigors of normal use and external factors	The control system can withstand related effects during normal operation.	P
	-errors in logic don't lead to dangerous situations		N/A
1.2.2	Control devices		
	Control devices must be:		
	-clearly visible and identifiable and appropriately marked where necessary	Appropriate labels and markings are provided This requirement has been complied with.	P
	-positioned for safe operation without hesitation or loss of time, and without ambiguity	Appropriate positions have been taken into account during design	P
	-designed so that the movement of the control is consistent with its effect		N/A
	-located outside the danger zones, except for certain controls where necessary, such as emergency stop, console for training of robots		N/A
	-positioned or that their operation can't cause additional risk	All operation of control devices won't cause additional risk.	P
	- designed or protected so that the desired effect, where a risk is involved, can't occur without an intentional operation	Appropriate safety devices have been used to comply with this requirement.	P
	- made so as to withstand foreseeable strain, particular attention must be paid to emergency stop devices liable to be subjected to considerable strain		N/A

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	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		N/A
	Controls 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	These requirements have been taken into account during design.	P
	Constraints due to the necessary foreseeable use of personal protection equipment must be taken into account		N/A
	Machinery must be fitted with indicators as required for safe operation	The indicators have been provided.	P
	The operator must be able to read them from the control position	The indicators are clearly visible in the control position.	P
	From the main control position the operator must be able to ensure that there are no exposed persons in the danger zones	The danger zones are visible for the operator in the main control position.	P
	If this is impossible, the control system must be designed and constructed so that an acoustic and/or visual warning signal is given whenever the machinery is about to start		N/A
	The exposed person must have the time and the means to take rapid action to prevent the machinery starting up	Emergency stop, main switch and other related devices have been provided for the exposed person.	P
1.2.3	Starting		
	It must be possible to start machinery only by voluntary actuation of a control provided for the purpose	Devices preventing unintended starting have been provided.	P
	The same requirement applied:		
	-when restarting the machinery after stoppage, whatever the cause	Reset is necessary before restarting.	P
	-when effecting a significant change in the operating conditions		N/A
	Unless such restarting or change in operating conditions is without risk to exposed persons		
	This essential requirement doesn't apply to the restarting of the machinery or to the change in operating conditions resulting from the normal sequence if an automatic cycle		N/A
	Where machinery has several starting controls and the operators can therefore put each other in danger, additional devices must be fitted to rule out such risks		N/A
	It must be possible for automated plant functioning in automatic		N/A

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	mode to be restarted easily after a stoppage once the safety conditions have been fulfilled		
1.2.4	Stopping device		
	Normal stopping		
	Each machine must be fitted with a control whereby the machine can be brought safety to a complete stop	A normal stop control has been provided.	P
	Each workstation must be fitted with a control to stop some or all of the moving parts of the machinery, depending on the type of hazard, so that the machinery is rendered safe	A normal stop control has been provided.	P
	The machinery's stop control must have priority over the start controls	It has priority over the start control.	P
	Once the machinery or its dangerous parts have stopped,the energy supply to the actuators concerned must be cut off	The stops belong to the category 0,or category 1 stops.	P
	Emergency stop		
	Each machinery must be fitted with one or more emergency stop devices to enable actual or impending danger to be averted		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		N/A
	The emergency stop device must:		
	-have clearly identifiable, clearly visible and quickly accessible controls		P
	-stop the dangerous process as quickly as possible, without creating additional hazards		P
	-where necessary, trigger or permit the triggering of certain safeguard movements		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		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		N/A
	Complex installations		
	In the case of machinery or parts of machinery designed to vwork 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		N/A
1.2.5	Mode selection		
	The control mode selected must override all other control systems with the exception of the emergency stop		N/A
	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		N/A

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	in each position		
	Each position of the selector must correspond to a single operating or control mode	No this kind of mode selection has been found.	N/A
	The selector may be replaced by another selection method which restricts the use of certain functions of the machinery or certain categories of operator	No this kind of mode selection has been found	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 mode selection has been found	N/A
	- Disable the automatic control mode		N/A
	- Permit movements only by controls requiring sustained action		N/A
	- Permit the operation of dangerous moving parts only in enhanced safety conditions while preventing hazards from linked sequences		N/A
	- Prevent any movement liable to pose a danger by acting voluntarily or involuntarily on the machine's internal sensors		N/A
	In addition, the operator must be able to control operation of the parts he is working on at the adjustment point	No this kind of mode selection has been found	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 any dangerous situation has been found	
	In particular:		
	-the machinery must not start unexpectedly	Reset is necessary before restarting the machine	
	- the machinery must not be prevented from stopping if the command has already been given		N/A
	- no moving part of the machinery or piece held by the machinery must fall or be ejected	No such part is found	
	- automatic or manual stopping of the moving parts whatever they may be must be unimpeded		N/A
	-the protection devices must remain fully effective	The protection devices main effective after the failure	
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	No dangerous situation is found.	
	In particular:		
	- the machinery must not start unexpectedly	Reset is necessary before restarting the machine	
	-the machinery must not be prevented from stopping if the		N/A

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	command has already been given		
	-no moving part of the machinery or piece held by the machinery must fall or be ejected	No such part is found	
	-automatic or manual stopping of the moving parts whatever they may be must be unimpeded		N/A
	-the protection device must remain fully effective	The protection devices remain effective after the failure of the control circuit	
1.2.8	Software		
	Interactive software between the operator and the command or control system of a machine must be user-friendly		N/A
1.3	Protection against mechanical hazards		
1.3.1	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	These requirements have been taken into account design	P
	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	The sufficient stability has been offered for this machine	P
1.3.2	Risk of break up during		
	The various parts of machinery and their linkages must be able to withstand the stress to which they are subject when used when as foreseen by the manufacturer	All parts of the machine can withstand related stress when they are used.	P
	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 for this machine are appropriate for their intended use and have adequate life	P
	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	The related information have been provided within the instruction manual.	P
	Where a risk of rupture or disintegration remains despite the measures taken the moving parts must be mounted and positioned in such away that in case of rupture their fragments will be contained	No such risk is possible.	P
	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 to external stresses and strains, precaution must be taken to ensure that no risk is posed by a rupture	This requirement has been taken into account during design.	P

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	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 the tool the later must have attained its normal working conditions		N/A
	- when the tool starts and/or stops the feed movement and the tool movement must be coordinated	Both are coordinated.	N/A
1.3.3	Risked due to falling or ejected objects		
	Precautions must be taken to prevent risks from falling or ejected object		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	No this kind injury has been found	N/A
1.3.5	Risks related to combined machinery		
	When 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 element constituting a danger or risk for the exposed person	No this kind of combined machinery.	N/A
	For this purpose, it must be possible to start and stop separately and elements that are not protected	No this kind of combined machinery	N/A
1.3.6	Risks relating to variations in the rotation speeds of tools		
	When the machine is designed to perform 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 reliably		N/A
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		N/A
	All necessary steps must be taken to prevent accidental blockage of moving parts involved in the work		N/A
	In cases where, despite the precaution taken, a blockage is likely to occur, specific protection devices or tools, the instruction handbook and possibly a sign on the machinery should be provided by the manufacturer to enable the equipment to be safely unblocked		N/A
1.3.8	Choice of protection against risk related to 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	It is accordance with the risk assessment	P
	The following guidelines must be used to help make the choice		
	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	See the related clauses.	P
	-movable, complying with requirements 1.4.1 and 1.4.2.2.A	See the related clauses.	P

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	A moving parts directly 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		
	-wherever possible fixed guards complying with requirements 1.4.1 and 1.4.2.1	See the related clauses.	P
	-otherwise, movable guards complying with requirements 1.4.1 and 1.4.2.2.B or protection devices intended automatically to prevent all part of the operator’s body from encroaching to the danger zone in accordance with requirements 1.4.1 and 1.4.3	See the related clauses.	P
	However, when certain moving parts directly involved in the process can’t be 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, complying with requirements 1.4.1 and 1.4.2.1 preventing access to those sections of the parts that are not used in the work	See the related clauses.	P
	-adjustable guards, complying with requirements 1.4.1 and 1.4.2.3 restricting access to those sections of the moving parts that are strictly for the work	See the related clauses.	P
1.4	Required characteristics of guards and protection devices		
1.4.1	General requirement		
	Guards and protection devices must:		
	-be of robust construction	All the guards have enough strength.	P
	-not give rise to any additional risk	No additional risk is found.	P
	-not be easy to be P or render non-operational	All the guards can’t be by P or rendered non-operational by design.	P
	-be located at an adequate distance from the danger zone	All the guards comply with the safety distances.	P
	-cause minimum obstruction to the view the production process	Appropriate materials are used to make guards.	P
	-enable essential work to be carried out on installation and/or replacement of tools and also for maintenance by restricting access only to the area where the work has to be done, if possible without the guard or protection device having to be dismantled		P
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 all can be opened only with tools.	P

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	Their fixing systems must remain attached to the guards or to the machinery when the guards are removed	Yes,they are attached to the guards because the screws are fixed by nutcap.	P
	Where possible,guards must be incapable of remaining in place without their fixings		P
1.4.2.2	Movable guards		
	A.Type A movable guards must:		
	-as far as possible remain fixed to the machinery when open		N/A
	-be associated with a locking device to prevent moving parts starting up as these parts can be accessed and to give a stop command whenever they are no longer closed		N/A
	B.Type B movable guards must be designed and incorporated into the control system so that		N/A
	-moving parts can't start up while they are within the operator's reach		N/A
	-the exposed person can't reach moving parts once they have started up		N/A
	-they can be adjusted only by means of an intentional action,such as the use of a tool,etc		N/A
	-the absence or failure of one of their components prevents starting or stops the moving parts		N/A
	-protection against any risk of ejection is provided by means of an appropriate barrier		N/A
1.4.2.3	Adjustable guards restricting access		
	Adjustable guards restricting access to those areas of the moving parts strictly necessaryfor the work must:		N/A
	-be adjustable manually or automatically according to the type of work involved		N/A
	-be readily adjustable without the use of tools		N/A
	-reduce as far as possible the risk of ejection		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		N/A
	-the exposed person can't reach moving parts once they have started up		N/A
	-they can be adjusted only by means of an intentional action, such as the use of a tool,etc.		N/A
	-the absence or failure of one of their components prevents starting or stops the moving parts		N/A
1.5	Protection against other hazards		-
	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	See the EN 60204-1 test report in detail.	P

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	The specific rules in force relating to electrical equipment designed for use within certain voltage limits must apply to machinery which is subject to those limits	See the EN 60204-1 test report in detail.	P
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	See the EN 60204-1 test report in detail.	
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	No any additional hazard has been found for energy supply.	N/A
1.5.4	Error 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 housing where the direction of movement must be known to avoid a risk	These requirements have been taken into account during design.	P
	Any further information that may be necessary must be given in the instructions	The related information has been provided within the instruction manual.	P
	Where a faulty connection can be the source of risk, incorrect fluid connections, including electrical conductors, must be made impossible by the design or, failing this, by information given on the pipes, cables, etc. and/or connectors blocks	All related information have been provided within the instruction manual. Necessary labels and markings have been provided.	P
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		N/A
	The risk of hot or very cold materials being ejected should be assessed. Where this risk exists, the necessary steps must be taken to prevent it or, if this is not technically possible, to render it non-dangerous	No this kind of risk exists	N/A
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	The design and construction of this machine are in conformity with these requirements.	P
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 such risk is found.	N/A

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	To that end the manufacturer must take steps to:		
	-avoid a dangerous concentration of products		N/A
	-prevent combustion of the potentially explosive atmosphere		N/A
	-minimize any explosion which may occur so that it doesn't endanger the surroundings		N/A
	The same precautions must be taken if the manufacturer foresees the use of the machinery in potentially explosive atmosphere	This machine is not intended to be used in potentially explosive atmosphere.	N/A
1.5.8	Electrical equipment forming part of the machinery must conform, as far as the risk from explosion is concerned, to the provision of the specific directive in force		P
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	The design and construction of this machine are in conformity with this requirements.	P
1.5.9	Vibration		
	Machinery must be so designed and constructed that risks resulting from the 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 particular at source	The design and construction of this machine are in conformity with this requirements. Vibrations of this machine will not create any risk.	P
1.5.10	Radiation		
	Machinery must be so designed and constructed that any emission of radiation is limited to the extent necessary for its operation and that the effects on exposed persons non-existent or reduced to non-dangerous proportions		N/A
1.5.11	External radiation		
	Machinery must be so designed and constructed that external radiation doesn't interfere with its operation		N/A
1.5.12	Laser equipment		
	Where laser equipment is used ,the following provisions should be taken into account;	No laser equipment has been used.	N/A
	-laser equipment on machinery must be designed and constructed so as to prevent any accidental radiation		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		N/A
	-optical equipment for the observation or adjustment of laser equipment on machinery must be such that on health risk is created by the laser rays		N/A
1.5.13	Emission of dust, gases, etc		
	Machinery must be so designed, constructed and/or equipment that		N/A

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	risk due to gases, liquids, dust, vapors and other waste materials which it produces can be avoided		
	Where a hazard exists, the machinery must be so equipped that the said substances can be contained and/or evacuated		N/A
	Where machinery is not enclosed during normal operation, the devices for containment and/or evacuation must be situated as close as possible to the source emission		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 held	No this kind of hazard	N/A
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		N/A
1.6	Maintenance		
1.6.1	Machinery maintenance		
	Adjustment,lubrication and maintenance points must be located outside danger zones	The design and construction of this machine are in conformity with this requirements	P
	It must be possible to carry out adjustment, maintenance, repair, cleaning and servicing operations while machinery is at a standstill	Maintenance, repair, cleaning and servicing operations can only be implemented while machinery is at a standstill	P
	If one or more of the above conditions can't be satisfied for technical reasons, operations must be possible without risk	No this kind of situation	N/A
	In the case of automated machinery and, where necessary, other machinery, the manufacturer must take provision for a connecting device for mounting diagnostic fault-finding equipment		N/A
	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		N/A
	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	All operation methods have been specified by the manufacturer	P
1.6.2	Access to operating position and servicing points		
	The manufacturer must provide means of access to all areas used for production, adjustment and maintenance operations		N/A
1.6.3	Isolation of energy sources		
	All machinery must be fitted with means to isolate it from all		P

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	energy sources		
	Such isolators must be clearly identified		P
	They must be capable of being locked if reconnection could endanger exposed persons		N/A
	In the case of machinery supplied with electricity through a plug capable of being plugged into a circuit, separation of the plug is sufficient		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 isolator can be locked in the off position	P
	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	All the parts will not be live after the energy is cut off.	P
	As an exception to the above requirement, 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	No this kind of situation	N/A
1.6.4	Operator intervention		
	Machinery must be so designed,constructed and equipped that the need for operator intervention is limited		N/A
	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 form the outside	The design of this machine is allowed to carried out this work	P
	If it is absolutely impossible to avoid entering the machinery, the manufacturer must take steps during its construction to allow cleaning to take place with the minimum of danger	No this kind of situation	N/A
1.7	Indicators		
1.7.1	Information devices		
	The information needed to control machinery must be unambiguous and easily understood	The information is identified clearly and can be easily understood	P
	It must not be excessive to the extent of overloading the operator		P
	Where the health and safety of exposed persons may be endangered by a fault in the operation of unsupervised machinery, the machinery must be equipped to give an appropriate acoustic or light signal as a warning		P
1.7.2	Warning devices		
	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		
	The requirements of the specific directives concerning colors and safety signals must be complied with		
1.7.3	Warning of residual risks		

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	Where risks remain despite all the measure adopted or in the case of potential risk which are not evident, the manufacture must provide warning	No any residual risk has been found	N/A
	Such warning 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 operator		N/A
1.7.4	Marking		
	All machinery must be marked legibly and indelibly with the following minimum particular:		
	Name and address of the manufacturer	Name and address of the manufacturer has been marked has been marked in the nameplate	P
	CE mark, which includes the year of construction		P
	Designation of series or type	Designation of series or type has been marked in the nameplate	P
	Serial number, if any	Serial number has been marked in the nameplate	P
	Further more,where the manufacturer constructs machinery intended for use in a potentially explosive atmosphere, this must be indicated on the machinery	This machine is not intended to be used in a potentially explosive atmosphere	N/A
	Machinery must also bear full information relevant to its type and essential to its safe use	Such information is provided	P
	Where a machine part must be handled during use with lifting equipment, its mass must be indicated legible, indelibly and unambiguously		N/A
	The interchangeable equipment referred to in article 1(2), third subparagraph, must bear the same information	All the related information is provided legible, indelibly and unambiguously.	P
1.7.5	Instruction		
	a)All machinery must be accompanied by instructions including at least the following :		
	a repeat of the information with which the machinery is marked, except the serial number, together with any appropriate additional information to facilitate maintenance	All related information has been provided within the instruction manual	P
	-foreseen use of the machinery within the meaning of 1.1.2(c)	All related information has	P

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
		been provided within the instruction manual	
	-workstation(s) likely to be occupied by operators	All related information has been provided within the instruction manual	P
	- instructions for safe	All related information has been provided within the instruction manual	P
	- putting into service	All related information has been provided within the instruction manual	P
	-use		-
	-handing, giving the mass of the machinery and its various parts where they are regularly to be transported separately	All related information has been provided within the instruction manual	P
	- installation	All related information has been provided within the instruction manual	P
	- assembling, dismantling		P
	- adjustment		P
	- maintenance (servicing and repair)		P
	-where necessary, training instructions		P
	Where necessary, the characteristics of tools which may be fitted to the machinery	essential	P
	Where, necessary, the instructions should draw attention to ways in which the machinery should not be used	All related information has been provided within the instruction manual	P
	b)The instructions must be drawn up in one of the community languages by the manufacturer or his authorized representative established in the community	Chinese and English versions of the instruction manual is provided	P
	On being put into service, all machinery must be accompanied by a translation of the instructions in the language or languages of the country in which the machinery is to be used and by the instructions in the original language	English versions of the instruction manual is provided.	P

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	This translation must be done either by the manufacturer or his authorized representative established in the community or by the person introducing the machinery into the language area in question	The translation is done by the manufacturer.	P
	By way of derogation from this requirement, the maintenance instructions for use by the specialized personnel employed by the manufacturer or his authorized representative established in the Community may be drawn up in only one of the Community languages understood by that personnel		P
	c)The instructions must contain the drawing and diagrams necessary for putting into service, maintenanc inspection, checking of correct operation and, where appropriate, repair of the machinery and all useful instructions in particular with regard to safety	All related information has been provided within the instruction manual	P
	d) any literature describing the machinery must not contradict the instructions as regards safety aspects	No such situation exist.	P
	The technical documentation describing the machinery must give information regarding the airborne noise emission referred to in(f) and, in the case of hand-held and/or hand-guided machinery, information regarding vibration as referred to in 2.2	All related information has been provided within the technical documentation.	P
	e) Where necessary, the instructions must give the requirement relating to installation and assembly for reducing noise or vibration		N/A
	f) The instructions must give the following information concerning airborne noise emission by the machinery, either the actual value or a value established on the basis of measurements made on identical machinery:		-
	equivalent continuous A-weighted pressure level at workstations, where this exceeds 70 dB(A); where this level doesn't exceed 70dB(A), this fact must be indicated	The noise pressure level is 65dB.	P
	peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa(130 dB in relation to 20 mPa)		N/A
	sound power level emitted by the machinery where the equivalent continuous a weight sound pressure level at workstations exceeds 85 dB(A)		N/A
	In the case of very large machinery, instead of the sound power level, the equivalent continuous sound pressure levels at specified positions around the machinery may be indicated	This machine is not a very large machinery.	N/A
	Where the harmonized standards are not applied sound levels must be measured using the most appropriate method for the machinery	Appropriate standards are applied to determine the sound level.	P
	The manufacturer must indicate the operating conditions of the machinery during measurement and what methods have been used for the measurement	All related information has been provided within the technical documentation.	P
	Where the workstation(s) are undefined or can't be defined, sound pressure levels must be measured at a distance of 1 meter from the surface of the machinery and at a height of 1.60 meters from the floor or access platform	The workstation has been defined.	P

Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	The position and value of the maximum sound pressure must be indicated	It has been indicated in the appropriate position of the machine.	P
	g) If the manufacturer foresees that the machinery will be used in a potentially explosive atmosphere, the instructions must give all the necessary information	This machine is not intended to be used in a potentially explosive atmosphere.	N/A
	h) In the case of machinery which may also be intended for use by non professional operators, the wording and layout of the instructions for use, whilst respecting the other essential requirement mentioned above, must take into account the level of general education and acumen that can reasonably be expected from such operators	All these requirements have been taken into account.	P
2	Essential health and safety requirements for certain categories of machinery		
2.1	Ag ri foodstuffs machinery		
	Where machinery is intended to prepare and process foodstuffs, it must be so designed and constructed as to avoid any risk of infection, sickness or contagion and the following hygiene rules must be observed:		N/A
	a) materials in contact, or intended to come into contact, with the foodstuffs must satisfy the conditions set down in the relevant directives		N/A
	The machinery must be so designed and constructed that these materials can be clean before each use		N/A
	b) all surfaces including their joinings must be so smooth, and must have neither ridges nor crevices which could harbor organic materials		N/A
	c) assemblies must be designed in such a way as to reduce projections, edges and recesses to a minimum		N/A
	They should preferably be made by welding or continuous bonding		N/A
	Screws, screw heads and rivets may not be used except where technically unavoidable		N/A
	d) all surfaces in contact with the foodstuffs must be easily cleaned and disinfected, where possible after removing easily dismantled parts		N/A
	The inside surfaces must have curves of a radius sufficient to allow through cleaning		N/A
	e) liquid deriving from foodstuffs as well as cleaning disinfecting and rinsing fluids should be able to be discharged from the machine without impediment		N/A
	f) machinery must be so designed and constructed as to prevent any liquids or living creatures, in particular insects, entering, or any organic matter accumulating in area that can't be cleaned		N/A
	g) machinery must be so designed and constructed that no ancillary substances can come into contact with foodstuffs		N/A
	Where necessary, machinery must be designed and constructed so that continuing compliance with this		N/A



Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	requirement can be checked		
	Instructions		N/A
	In addition to the information required in Section 1, the instructions must indicate recommended products and methods for cleaning, disinfecting and rinsing(not only for easily accessible areas but also where areas to which access is impossible or inadvisable, such as piping, have to be cleaned in it situ)		N/A
2.2	Portable hand-held and or hand-guided machinery		
	Portable hand-held and/or hand-guided machinery must conform to the following essential health and safety requirements:		
	-according to the type of machinery, it must have a supporting surface of sufficient size and have a sufficient number of handles and supports of an appropriate size and arranged to ensure the stability of the machinery under the operating conditions foreseen by the manufacturer		N/A
	-except where technically impossible or where there is an independent control, in the case of handles which can't be released in complete safety, it must be fitted with start and stop controls arranged in such a way that the operator can operate them without releasing the handles		N/A
	-it must be designed, constructed or equipped to eliminate the risks of accidental starting and/or continued operation after the operator has released the handles		N/A
	Equivalent steps must be taken if the requirement is not technically feasible		N/A
	-portable hand-held machinery must be designed an constructed to allow, where necessary, a visual check of the contact of the tool with the material being processed		N/A
	Instructions		
	The instructions must give the following information concerning vibrations transmitted by hand-held and hand-guided machinery		
	-the weight root mean square value to which the arms are subjected, if it exceed 2.5 m/s ² as determined by the appropriate test code		N/A
	Where the acceleration doesn't exceed 2.5 s/m ² , this must be mentioned		N/A
	If there is no applicable test code, the manufacturer must indicate the measurement methods and conditions under which measurement were made		N/A
2.3	Machinery for working wood and analogous materials		
	Machinery for working wood and machinery for working materials with physical and technology characteristics similar to those of wood, such as cork, bone, hardened rubber, hardened plastic material and other similar stiff material must conform the following essential health and safety requirements		
	a) the machinery must be designed, constructed or equipped so that the piece being machined can be placed and guided in safety, where the piece is hand-held on a work-bench the later must be sufficiently stable during the work and must not impede	This requirement has been taken into account during design	P



Assessment of conformity Essential health and safety requirements			
Clause	Requirement – Test	Result - Remark	Verdict
	the movement of the piece		
	b) where the machinery is likely to be used in conditions involving the risk of ejection of pieces of wood, it must be designed, constructed or equipped to eliminate this ejection, or, if this is not the case, so that the ejection doesn't engender risks for the operator and or exposed persons		N/A
	c) the machinery must be equipped with an automatic brake that stops the tool in a sufficiently short time if there is a risk of contact with the tool whilst it runs down		N/A
	d) where the tool is incorporated into a non-fully automated machine, the latter must be so designed and constructed as eliminate or reduce the risk of serious accidental injury		N/A
3	Essential health and safety requirement to offset the particular hazards due to the mobility machinery		-
4	Essential health and safety requirement to offset the particular hazards due to a lifting operation		-
5	Essential health and safety requirement for machinery intended for underground work		-
6	Essential health and safety requirement to offset the particular hazards due to the lifting or moving of persons		-

Risk assessment

Product: N/A Station Intelligent Hoister

All model/s: LMABSF250S25AB, LMABSF Series In general this risk assessment report for N/A Station Intelligent Hoister made by GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO., LTD were carried out in accordance with the requirements of Machinery Directive(2006/42/EC) and based on the standards of EN ISO 12100:2010 in which an explicit risk level is evaluated with 4 factors described in the next clause.

After fist assessment, some measures to eliminate the risk are given for the modification of machine or of relative document with taking into account the Related B-type standard.

While taking appropriate provisions for the existing risks the procedures and principles to eliminate the risk according to most general B type standard for any kind of machine, EN ISO 121000 part 1 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 sign to draw attention of operators about the residual risks.

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

This risk assessment report is based on methods mentioned in the EN ISO 12100:2010, and the 4 factors S-F-O-A have been used for evaluating the level of risks.

Severity of harm: S

1) S1 slight injury (usually reversible), for example, scratches, laceration , bruising, light wound requiring first aid).

2) S2 serious injury(usually irreversible, including fatality) for example, broken or torn-out or crushed limbs, fractures ,serious injuries requiring stitches, major musculoskeletal troubles(MST), fatalities.

Frequency and/or duration of exposure to hazard: F

1) F1 twice or less per work shift of less than 15 min cumulated exposure per work shift

2) F2 more than twice per work shift or more than 15 min cumulated exposure per work shift.

Probability of occurrence of the hazardous event: O

1) O1 mature technology, proven and recognized in safety application; robustness

2) O2 technical failure observed in the two last years

Inappropriate human action by a well-trained person aware of the risks and having more than six months experience on the work station.

3) O3 technical failure regularly observed (every six months or less)

Inappropriate human action by an untrained person having less than six months experience on the work station;

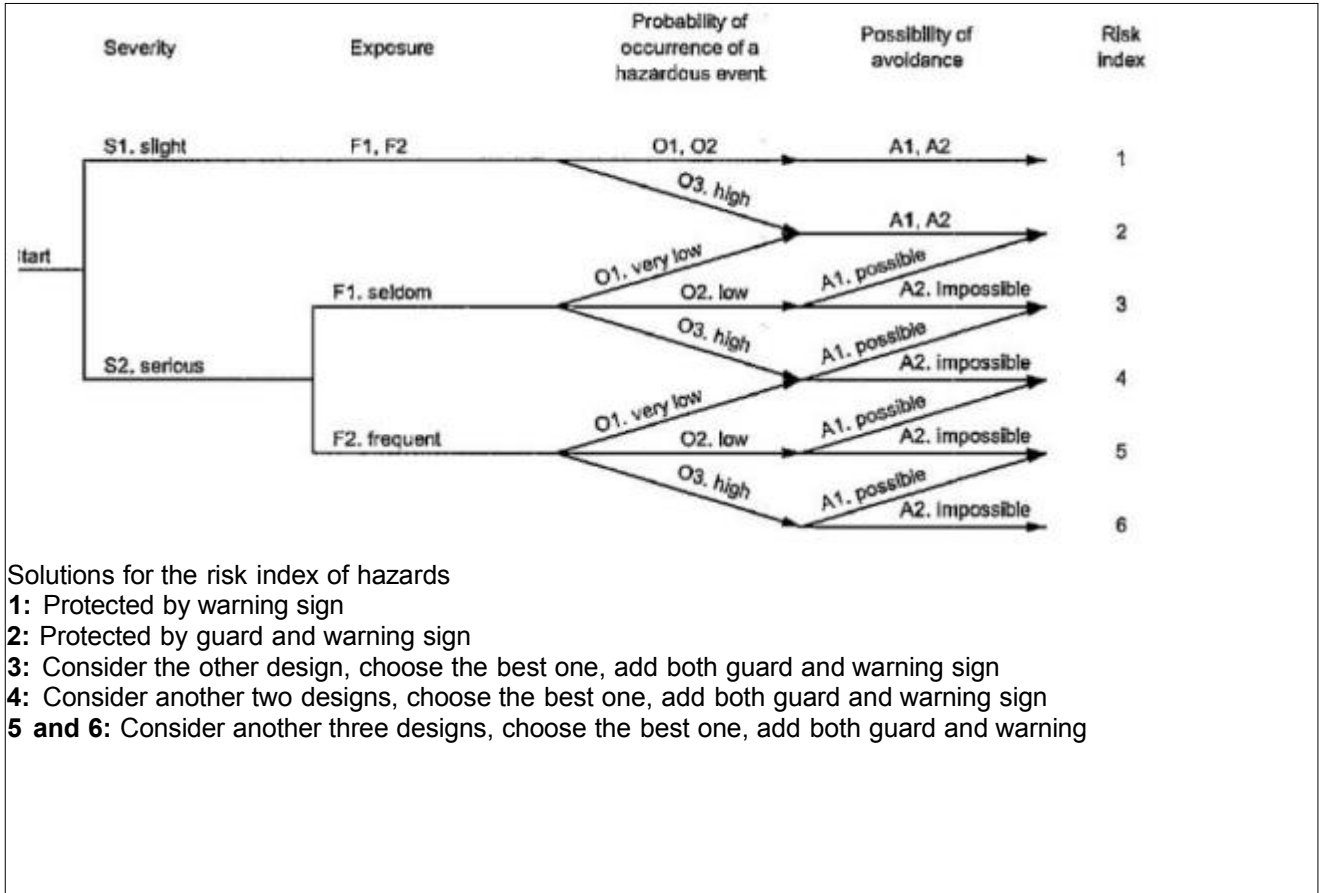
Similar accident observed in the plant in the preceding ten years

Possibility of avoidance or reduction of harm: A

1) A1 Possible under some conditions and the exposed worker is familiar with the risks and with the indications of a hazardous situation or impending hazardous event; depending on particular conditions (temperature, noise, ergonomics, ect);

2) A2 impossible.

Risk assessment



No.	Hazards source		S	F		O	Risk Index
Mechanical hazards							
1.1	Crushing	N					
1.2	Shearing	N					
1.3	Cutting or severing	N					
1.4	Entanglement		1	1	1	1	0
1.5	Drawing-in or trapping		1	1	1	1	0
1.6	Impact	N					
1.7	Stabbing or puncture	N					
1.8	Friction or abrasion	N					
1.9	High pressure fluid injection or ejection	N					
1.10	The mechanical hazards are generated by:	N					
	shape	N					
	relative location	N					
	Stability against overturning	N					
	Mass and stability	N					
	mass and velocity	N					
	acceleration/deceleration	N					
	Inadequate mechanical	N					
	Potential energy of elastic elements (springs), or of liquids or gases under pressure or vacuum	N					
	working environment	N					
Electrical hazards							
2.1	Contact with live parts		1	1	1	1	1
2.2	Contact with parts which have become live under faulty conditions		1	1	1	1	1
2.3	Approach to live part under high voltage	N					
2.4	insulation not suitable	N					
2.5	Electrostatic phenomena		1	1	1	1	1
2.6	Thermal radiation or other phenomena such as projection of molten particles and chemical effects from short circuits, overloads etc.	N					
2.7	phenomena such as projection of molten particles or chemical effects from short-circuits or overloads	N					
Thermal hazards							
3.1	Burns, scalds and other injuries by a possible contact of persons with objects or materials with an extreme high or low temperature, by flames or explosions and also by the radiation of heat sources	N					
3.2	Damage to health by hot or cold working environment	N					
Hazards generated by noise							
4.1	Hearing loss	N					
4.2	tinnitus	N					
4.3	tiredness, stress	N					
4.4	other effects such	N					
4.5	Interference with speech communication,	N					

No.	Hazards source		S	F		O	Risk Index
	acoustic signals, etc.						
Hazards generated by vibration							
5.1	Use of hand held machines resulting in a variety of neurological and vascular disorder	N					
5.2	Whole body vibration, particular when combined with poor postures	N					
Hazards generated by radiation							
6.1	Low frequency, radio frequency radiation, microwaves	N					
6.2	Infrared, visible and ultraviolet light	N					
6.3	Lasers	N					
6.4	X and gamma rays	N					
6.5	Alpha, beta rays, electron or ion beams, neutrons	N					
Hazards generated by materials and substances							
7.1	Hazards from contact with or inhalation of harmful fluids, gases, mists, fumes and dusts	N					
7.3	Biological and microbiological (viral or bacterial) Hazards	N					
Hazards generated by neglecting ergonomic principles in machine design							
8.1	physiological effects (e.g. musculo -skeletal disorders) resulting, e.g. from unhealthy postures, excessive or repetitive efforts;	N					
8.2	psycho-physiological effects generated by, e.g. mental overload or under load, or stress, arising from the operation, supervision or maintenance of a machine within the limits of its intended use;	N					
8.3	Human error	N					
Slipping, tripping and falling hazards							
9	Neglecting the surface of the floorings and access means may result in injuries from slips, trips or falls.	N					
Hazard combinations							
10	Some individual hazards which seem to be minor can, when combined with each other, be equivalent to a significant hazard.	N					
Hazards associated with the environment in which the machine is used							
11	Where a machine is designed to operate under environmental conditions which can result in hazards (e.g. temperature, wind, snow, lightning) these hazards shall be taken into account.	N					

EN 60204-1				
Clause	Requirement – Test	Result	Remark	Verdict
1	Scope			
	This part of EN 60204-1 applies to the application of electrical, electronic and programmable electronic equipment and systems to machines not portable by hand working, including a group of machines working together in a co-ordinated manner.			P
	This part of EN 60204-1 is applicable to the electrical equipment or parts of the electrical equipment that operate with nominal supply voltages not exceeding 1000v for alternating current (AC) and not exceeding 1500V for direct current (DC), and with nominal supply frequencies not exceeding 200Hz.			P
2	Normative references			
3	Terms and definitions			
4	General requirements			-
4.1	General			
	This part of EN 60204-1 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.			
	The risks associated with the hazards relevant to the electrical equipment shall be assessed as part of the overall requirements for risk 120 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.		Please see the risk assessment report in detail.	
4.2	Selection of equipment			
4.2.1	General			
	Electrical components and devices shall:			
	-be suitable for their intended use; and		This requirement has been considered during design.	
	-conform to relevant IEC standards where such exist; and		This requirement has been considered during design.	
	-be applied in accordance with the supplier 's instructions.		This requirement has been considered during design.	
4.2.2	Electrical equipment in compliance with the IEC 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 (see also Annex F) .			
4.3	Electrical supply			

EN 60204-1				
Clause	Requirement – Test	Result	Remark	Verdict
	The electrical equipment shall be designed to operate correctly with the relevant conditions of supply		They can be operated correctly with the relevant conditions of supply.	-
4.4	Physical environment and operating conditions			-
	Shall be suitable for use as specified: -Electromagnetic compatibility -Ambient air temperature -Humidity -Altitude -Contaminants -Ionizing and non-ionizing radiation -Vibration, shock and bump		This machine is suitable for use as specified in this clause.	P
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, vibration, and shock. A special agreement can be necessary between the supplier and the user(see Annex B).		These requirements have been met.	P
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.			N/A
4.7	Installation			-
	Electrical equipment shall be installed in accordance with the electrical equipment supplier's instructions.			P
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 coordinated manner, there can be a need for more than one incoming supply depending upon the site supply arrangements (see5.3.1).		Single power supply.	P
	Unless a plug is provided with the machine for the connection to the supply (see 5.3.2e), it is recommended that the supply conductors are terminated at the supply disconnecting device.		The supply conductors are terminated at the supply disconnecting	P

EN 60204-1				
Clause	Requirement – Test	Result	Remark	Verdict
			device.	
	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, labeled N in accordance with 16.1, shall be provided for the neutral conductor(see also Annex B).		Neutral conductor has been used and satisfied this requirement.	P
	There shall be no connection between the neutral conductor and the protective bonding circuit inside the electrical equipment nor shall a combined PEN terminal be provided.		These requirements have been met.	P
	All terminals for the incoming supply connection shall be clearly identified in accordance with IEC60445 and 16.1. For the identification of the external protective conductor terminal,see5.2.		All of them have been identified clearly.	P
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.		A terminal has been provided for each incoming supply.	P
	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.		This requirement has been met.	P
	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).		This requirement has been met.	P
	At each incoming supply point, the terminal for connection of the external protective earthing system or the external protective conductor shall be marked or labeled with the letters PE(see IEC60445).		This requirement has been met.	P
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); -for each on-board power supply.		A supply disconnecting device is provided.	P
	The supply disconnecting device shall disconnect (isolate) the electrical equipment of the machine from the supply when required(for example for work on the machine, including the electrical equipment).		This device can disconnect the electrical equipment of the machine from supply.	P
	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.			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-			P

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	<p>23B or DC-23B;</p> <p>b) disconnecter, with or without fuses, in accordance with IEC60947-3, 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 disconnecter;</p> <p>c) a circuit-breaker suitable for isolation in accordance with IEC 60947-2;</p> <p>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;</p> <p>e) a plug/socket combination for a flexible cable supply.</p>			
5.3.3	Requirements			
	When the supply disconnecting device is one of the types specified in 5.3.2a) to d) it shall fulfill 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 IEC60417-5008 and IEC60417-5007,see10.2.2);			P
	-have a visible contact gap or a position indicator which cannot indicate OFF(isolated)until all contacts are actually open and the requirements for the isolating function have been satisfied;			P
	-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 10.7.4and 10.8.4);			P
	-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;	Padlock has been provided.		P
	-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;			P
	-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.	It has sufficient breaking sufficient to interrupt the current.		P
	When the supply disconnecting device is a plug/socket combination, it shall fulfill the following requirements:			N/A
	-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			N/A

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	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) to f) of 13.4.5			N/A
	Where the supply disconnecting device is a plug/socket combination, a switching device with an appropriate utilisation category shall be provided for switching the machine on and off.			N/A
	This can be achieved by the use of the interlocked switching device described above.			N/A
5.3.4	Operating means			
	The operating means (for example, a handle) of the supply disconnecting device shall be easily accessible and located between 0,6m and 1,9m above the servicing level. An upper limit of 1,7m is recommended.			P
5.3.5	Excepted circuits			
	The following circuits need not be disconnected by the supply disconnecting device:			
	-lighting circuits for lighting needed during maintenance or repair;			N/A
	-plug and socket outlets for the exclusive connection of repair or maintenance tools and equipment (for example hand drills, test equipment);			N/A
	-undervoltage protection circuits that are only provided for automatic tripping in the event of supply failure;			N/A
	-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);			N/A
	-control circuits for interlocking.			
	It is recommended, however, that such circuits be provided with their own disconnecting device.			N/A
	Where such a circuit is not disconnected by the supply disconnecting device:			N/A
	- permanent warning label(s) in accordance with 16.1 shall be appropriately placed in proximity to the supply disconnecting device;			
	- a corresponding statement shall be included in the maintenance manual, and one or more of the following shall apply;			
	- a permanent warning label in accordance with 16.1 is affixed in proximity to each excepted circuit, or			
	-the excepted circuit is separated from other circuits, or			
	- the conductors are identified by colour taking into account the recommendation of 13.2.4			
5.4	Devices for switching off for prevention of			

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	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).	There is such function to prevent unexpected start-up.		P
	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).	These requirements have been met.		P
	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).	A switch with key has been used.		P
	The following devices that fulfill the isolation function may be provided for this purpose:			
	- devices described in 5.3.2, -disconnectors, withdrawable fuse links and withdrawable links only if located in an enclosed electrical operating area (see 3.19).			P
5.5	Devices for disconnections 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:	Devices have been provided for disconnecting electrical equipment.		P
	- appropriate and convenient for the intended use;			P
	- suitably placed;			P
	-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) .			P
	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).			P
	The supply disconnecting device (see 5 .3) may, in some cases, fulfill 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.			P
	In addition to the supply disconnecting device, the following devices that fulfill the isolation function may be provided for this purpose:			P
	- devices described in 5.3.2;			P
	-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)).			P
5.6	Protection against unauthorized, inadvertent and/or mistaken connection			
	The devices described in 5.4 and 5.5 that are located outside an	No need.		N/A

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	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 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.			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.			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 relative report.		P
	- indirect contact (see 6.3 and 6.4).	Please see the relative report.		P
	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.	Please see the relative report.		P
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 relative report.		P
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).			P
	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.			N/A
	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 is necessary for access to enclosed electrical operating areas.		P
	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			P

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Clause	Requirement – Test	Result	Remark	Verdict
	protected against direct contact to at least IP1X or IPXXA.			
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.			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.			N/A
6.2.3	Protection by insulation of live parts			
	Live parts protected by insulation shall be completely covered with insulation that can only be removed by destruction.			P
	Such insulation shall be capable of withstanding the mechanical, chemical, electrical, and thermal stresses to which it can be subjected under normal operating conditions.			P
6.2.4	Protection against residual voltages			
	Live parts having a residual voltage greater than 60 V after the supply has been disconnected shall be discharged to 60 V 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.			N/A
	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.			N/A
	If the withdrawal of plugs or similar devices would make the exposure of the conductors (e.g. pins), the discharge time shall not exceed 1 second such conductor shall have the protection degree at least IP2X or IPXXB			N/A
6.2.5	Protection by barriers			
	For protection by barriers, 4.12.2 of IEC 60364-4-41 shall apply.			N/A
6.2.6	Protection by placing out of reach or protection by obstacles			
	For protection by placing out of reach, 4.12.4 of IEC 60364-4-41 shall apply.			N/A
	For protection by obstacles, 4.12.3 of IEC 60364-4-41 shall apply.			N/A
	For conductor wire systems or conductor bar systems with a degree of			N/A

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Clause	Requirement – Test	Result	Remark	Verdict
	protection less than IP2X, see 12.7.1			
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.			
	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	See the relative clause.		P
	-automatic disconnection of the supply before the time of contact with a touch voltage can become hazardous (6.3.3).	See the relative clause.		P
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; -electrical separation.	See the relative clause.		P
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.			
	This protection is provided by one or more of the followings:			
	-class II electrical devices or apparatus (double insulation, reinforced insulation or by equivalent insulation in accordance with IEC 61140); -switchgear and control gear assemblies having total insulation in accordance with IEC 60439- 1; - supplementary or reinforced insulation in accordance with 4.13.2 of IEC 60364-4-41	Appropriate insulations have been provided.		P
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.			
	For this type of protection, the requirements of 4.13.5 of IEC 60364-4-41 apply.	Appropriate measures have been taken.		P
6.3.3	Protection by automatic disconnection of supply			
	This measure necessitates co-ordination between:			-
	- the type of supply and earthing system;			
	- the impedance values of the different elements of the protective bonding system;			
	-the characteristics of the protective devices that detect insulation fault(s).			
	Automatic disconnection of the supply of any circuit affected by an insulation fault is intended to prevent a hazardous			

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Clause	Requirement – Test	Result	Remark	Verdict
	situation resulting from a touch voltage.			
	This protective measure comprises both:			
	-protective bonding of exposed conductive parts (see 8.2.3),	This measure has been taken.		P
	- and either:			
	a) over current protective devices for the automatic disconnection of the supply on detection of an insulation fault in TN systems, or	This measure has been taken.		P
	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 IT systems, or			N/A
	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.			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.			N/A
6.4	Protection by the use of PELV			
6.4.1	General requirements			
	PELV (protective extra-low voltage) circuits shall satisfy all of the conditions specified in this clause	No PELV circuit has been used.		N/A
6.4.2	Sources for PELV			
	The sources for PELV shall be one of the conditions specified in this clause	No PELV circuit has been used.		N/A
7	Protection of equipment			-
7.1	General			
7.2	Over current protection			
7.2.1	General			
7.2.2	Supply conductors			
	The supplier is not responsible for providing the over current device for the supply conductors.			
	Installation diagram with data necessary for selection of the over current protective device	Relative information has been provided.		
7.2.3	Power circuits			
	All conductors shall be protected against over current (except earthed neutral conductor)	All conductors have been protected against overcurrent.		
	Cross-section area of neutral conductor	Cross-section area of neutral conductor is equal to the phase		

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			conductors.	
	For neutral conductors smaller than phase conductors then IEC 364-4-473 shall apply			N/A
	In IT-systems, it is recommended that the neutral conductor is not used			N/A
7.2.4	Control circuits			
	Conductors of control circuits connected to the supply voltage and of circuits feeding control circuit transformers shall be protected against over current in accordance with 7.2.3			N/A
	Conductors of control circuits supplied by a control circuit transformer or DC supply shall be protected against over current (see also 9.4.3.1)			N/A
7.2.5	Socket outlets and their associated conductors			
	Over current protection devices shall be provided in the unearthed live conductors			N/A
7.2.6	Lighting circuits			
	All unearthed conductors of circuits supplying lighting shall be protected against the effects of hort circuits by the provision of over current devices separate from those protecting other circuits			N/A
7.2.7	Transformers			
	Transformers shall be protected against over current in accordance with IEC 60076-5 and IEC 60743 as appropriate			N/A
	The type and setting of the over current protective device should be in accordance with the recommendations of the transformer supplier			N/A
7.2.8	Location of over current protective device			
	Over current protective device shall be located at the point where the conductors to be protected are connected to their supply		This requirement has been considered during design.	
7.2.9	Over current protective devices			
	Sufficient breaking capacity		The over current protective devices have sufficient breaking capacity.	
	Where fuses are used, a type readily available in the country of use shall be selected, or arrangement shall be made with the use for the supply of spare parts		This requirement has been considered during design.	
7.2.10	Rating and setting of over current protective devices			
	The rated current of fuses or the setting current of other over current protective devices shall be selected as low as possible but adequate for the anticipated over currents		This requirement has been met.	
	The rated current or setting of an over current protective device is determined by the current carrying capacity of the conductors to be protected by that device in accordance with 13.4		This requirement has been considered during design.	

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Clause	Requirement – Test	Result	Remark	Verdict
7.3	Protection of motors against overheating			
7.3.1	General			
	Overload protection of motors shall be provided for each motor rated at more than 0.5kW		The overload protection is provided	
	Protection of motors against overheating can be achieved by: - overload protection-over -temperature protection -current-limiting protection		Appropriate protection has been taken.	
7.3.2	Overload protection			
	Detection of overload shall be provided in each live conductor excepted for the neutral conductor			
	For motors having single-phase or d.c power supplies. Detection in only one unearthed live conductor is permitted			N/A
	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.			N/A
	Where motors with special duty ratings are required to start or to brake frequently 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.			N/A
	For motors that cannot be overloaded (for example torque motors, motion drives that either are protected by mechanical overload protection devices or are adequately dimensioned), overload protection is not required			N/A
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).		Over-temperature protection devices have been provided.	
	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.			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).			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 AC or DC power supplies, current limitation in only one unearthed live conductor is permitted.			N/A
7.4	Abnormal temperature protection			
	Use of abnormal temperature protection	No need.		N/A
7.5	Protection against supply interruption or voltage			

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Clause	Requirement – Test	Result	Remark	Verdict
	reduction and subsequent restoration			
	Where a voltage drop or a supply interruption can cause a hazardous condition, damage to the machine, or to the work in progress, under voltage protection shall be provided	No this kind of hazard has been found.		N/A
	The operation of the under voltage device shall not impair the operation of any stopping control of the machine	No under voltage device is used.		N/A
	Upon restoration of the voltage or upon switching on the incoming supply, automatic or unexpected restarting of the machine shall be prevented	Automatic of unexpected restarting of the machine can be prevented.		
	Where only a part of the machine or of the group of machines working together in a coordinated manner is affected by the voltage reduction or supply interruption, the under voltage protection shall initiate appropriate control responses to ensure co-ordination			N/A
7.6	Motor over speed protection			
	Use of the motor over speed protection			N/A
7.7	Earth fault/residual current protection			
	Use of earth fault/residual current protection for automatic disconnection			N/A
7.8	Phase sequence protection			
	Where an incorrect sequence of the supply voltage can cause a hazardous condition or damage to the machine, protection shall be provided			N/A
7.9	Protection against over voltage due to lighting and to switching surges			
	Protection devices can be provided to protect against the effects of over voltages due to lighting or to switching surges			N/A
8	Equipotential bonding			
8.1	General			
8.2	Protective bonding circuit			
8.2.1	General			
	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 these circuits have been designed that are capable of withstanding the highest thermal and mechanical stresses		
	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.			N/A
	If an IT distribution system is used, the machine structure shall be part of the protective bonding			N/A

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	circuit and insulation monitoring shall be provided. See 6.3.3 c).			
	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.			
	Exposed conductive parts of equipment in accordance with 6.3.2.3 shall not be connected to the protective bonding circuit.			
8.2.2	Protective conductors			
	Protective conductors shall be identified in accordance with 13.2.2.			
	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 mm ² in cross-sectional area.	Only copper conductors are used.		N/A
	The cross-sectional area of protective conductors shall be determined in accordance with the requirements of: - 543 of IEC 60364-5-54; or - 7 4.3.1.7 of IEC 60439-1, as appropriate.	They have been used according to these requirements.		
	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).			
	See also 8.2.8.			-
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.	All these parts have been connected.		
	Where a part is removed for any reason (for example routine maintenance), the protective bonding circuit for the remaining parts shall not be interrupted	This requirement has been met.		
	Connection and bonding points shall be so designed that their current-carrying capacity is not impaired by mechanical, chemical, or electrochemical influences.	Their current-carrying capacity is stable enough		
	Metal ducts of flexible or rigid construction and metallic cable sheaths shall not be used as protective conductors.	No this kind of construction has been used as protective bonding conductor.		
	Nevertheless, such metal ducts and the metal sheathing of all connecting cables (for example cable armoring, lead sheath) shall be connected to the protective bonding circuit.	No metal duct or metal sheathing has been used.		N/A
	Where the electrical equipment is mounted on lids, doors, or cover plates, continuity of the protective bonding circuit shall be ensured and a protective conductor (see 8.2.2) is recommended.	No electrical equipment is mounted on lids,		N/A

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	Otherwise fastenings, hinges or sliding contacts designed to have a low resistance shall be used (see 18.2.2, Test 1).	doors, or cover plates.	
	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).	Appropriate protection has been provided.	-
	For requirements for the continuity of the protective conductor using conductor wires, conductor bars and slip-ring assemblies, see 12.7.2.	No this kind of device is used.	N/A
8.2.4	Exclusion of switching devices from the protective bonding circuit		-
	Shall not incorporate a switching device, an over current protective device nor a means for current detection for such devices		-
	The only means permitted for interruption shall be carried out by instructed or skilled persons by using a tool		-
	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 with drawable plug-in units (see also 13.4.5).		N/A
8.2.5	Parts that need not be connected to the bonding circuit		-
	Screws, rivets, and nameplates and to parts inside an enclosure, are not necessary to connect to the protective bonding circuit		-
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.	These connecting points have complied with the requirements	-
	Each protective conductor connecting point shall be marked or labeled as such using the symbol IEC 60417-5019 (DB:2002- 10) : 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.	All these points have been marked appropriately.	-
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 electric shock.	Not a mobile machine with on-board power supply.	N/A
	-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.		N/A
8.2.8	Additional protective bonding requirements for electrical equipment having earth leakage currents higher than 10 mA AC or DC		-
	Where electrical equipment has an earth leakage current (for example adjustable speed electrical power drive systems and information		N/A

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	technology equipment) that is greater than 10 mA AC or DC in any incoming supply, one or more of the following conditions for the associated protective bonding circuit shall be satisfied:			
a)	the protective conductor shall have a cross-sectional area of at least 10 mm ² Cu or 16 mm ² A1, through its total run;			N/A
b)	where the protective conductor has a cross-sectional area of less than 10 mm ² Cu or 16 mm ² A1, 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 mm ² Cu or 16 mm ² A1;			N/A
c)	automatic disconnection of the supply in case of loss of continuity of the protective conductor.			
	To prevent difficulties associated with electromagnetic disturbances, the requirements of 4.4.2 also apply to the installation of duplicate protective conductors.			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.			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	The measure described in this clause has been used.		
	For recommendations regarding functional bonding to avoid maloperation due to electromagnetic disturbances, see 4.4.2.	See the relative clause.		
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 econdary winding of the transformer shall comply with one or more of the arrangements described in 8.2.8.	The measure described in this clause has been used.		
9	Control circuits and control functions			
9.1	Control circuits			
9.1.1	Control circuit supply			
	Where control circuits are supplied from an source, control transformers shall be used for supplying the control circuits. Such transformers shall have separate windings.			N/A
	Where several transformers are used, it is recommended that the windings of those transformers be connected in such a manner that the			N/A

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Clause	Requirement – Test	Result	Remark	Verdict
	secondary voltages are in phase.			
	Where DC control circuits derived from an AC supply are connected to the protective bonding circuit (see 8.2.1), they shall be supplied from a separate winding of the AC control circuit transformer or by another control circuit transformer.			N/A
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.			N/A
9.1.3	Protection			
	Control circuits shall be provided with overcurrent protection in accordance with 7.2.4 and 7.2.10.			N/A
9.2	Control functions			
9.2.1	Start functions			
	Start functions shall operate by energizing the relevant circuit (see 9.2.5.2).			N/A
9.2.2	Stop functions			
	Each machine shall be equipped with appropriate stop functions.			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, unauthorized and/or inadvertent selection shall be prevented by suitable means (for example key operated switch, access code).	Only one operation mode		N/A
	Mode selection by itself shall not initiate machine operation. A separate actuation of the start control shall be required.			N/A
	For each specific operating mode, the relevant safety functions and/or protective measures shall be implemented.			N/A
	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).			N/A
9.2.4	Suspension of safety functions and/or protective measures			
	Where it is necessary to suspend safeguarding, a secure provision shall be provided to prevent automatic operation			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.			N/A
	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) .			N/A
	Where a machine has more than one control station, measures shall			N/A

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Clause	Requirement – Test	Result	Remark	Verdict
	be provided to ensure that initiation of commands from different control stations do not lead to a hazardous situation.			
9.2.5.2	Start			
	The start of an operation shall be possible only when all the safeguards are in place and functional(except described in 9.2.4)			P
	Hold-to-run control shall be used for the others machines, as appropriate			N/A
	Suitable interlocks shall be provided to secure correct sequential starting			P
	The use of more than one control station to initiate a start .			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			N/A
	Stop functions shall override related start functions (see 9.2.5.2).			N/A
	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 signaled to the logic of the control system. The reset of the stop function shall not initiate any hazardous situation.			N/A
	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.			N/A
9.2.5.4	Emergency operations (emergency stop, switching off)			
9.2.5.4.1	General			
9.2.5.4.2	Emergency stop			
	Shall function either as a category 0 stop or as a category 1 stop	Category 1 stop.		
	The choice of the emergency stop shall be determined by the risk assessment of the machine	According to the result of risk assessment of the machine.		
	Where a category 0 stop is used for emergency top function, it shall have only hard-wired electromechanical components	No category 0 stop is used for emergency stop function.		N/A
	The operation of emergency stop shall not depend on electronic logic or on the transmission of commands over a communications network or link	No this kind of situation.		
	Where a category 1 stop is used for the emergency stop function, final removal of power to the machine actuators shall be ensured and carried out by means of electromechanical components	The final removal of power to the machine actuators is ensured by the controller and carried out by means of		

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Clause	Requirement – Test	Result Remark	Verdict
		electromechanical components.	
9.2.5.4.3	Emergency switching off		
	Use of emergency switching off		N/A
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 situation shall be monitored by providing, for example, overtravel limiters, motor overspeed detection, mechanical overload detection or anti-collision devices.	Not this kind of hazardous situation.	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 device(s) to achieve operation.	No hold-to-run control has been used.	N/A
9.2.6.2	Two hand control		
	Three types of two-hand control are available, the selection of which is determined by the assessment	No two-hand control has been used.	N/A
9.2.6.3	Enabling control		
	It shall be designed to allow motion when actuated in one position only (In any other position motion shall be stopped)	These machines have been designed to allow motion when actuated in position only	
9.2.6.4	Combined start and stop controls		-
	Push buttons and similar control devices that, when operated, alternately initiate and stop motion shall only be provided for functions which cannot result in a hazardous situation.	No this kind of device has been used.	N/A
9.2.7	Cableless control		
9.2.7.1	General		
	Means shall be provided to readily remove or disconnect the power supply of the operator control station (see also 9.2.7.3).	No this kind of device has been used.	N/A
	Means (for example key operated switch, access code) shall be provided, as necessary, to prevent unauthorized use of the control station.		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		N/A
9.2.7.2	Control limitation		
	Measures shall be taken to prevent the machine from responding to signals other than those from the intended operator control station(s)		N/A
	Where necessary, means shall be provided so that the machine can only be controlled from operator control stations in one or more predetermined zones or locations.		N/A
9.2.7.3	Stop		

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Clause	Requirement – Test	Result	Remark	Verdict
	Operator control stations shall include a separate and clearly identifiable means to initiate the stop function of the machine or of all the motions that can cause a hazardous condition			N/A
	The actuating means to initiate this stop function shall not be marked or labeled as an emergency stop device			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			N/A
9.2.7.4	Use of more than one 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.			N/A
	Exception: a stop command from any one of the control stations shall be effective when required by the risk assessment of the machine.			N/A
9.2.7.5	Battery powered operator control stations			
	A variation in the battery voltage shall not cause a hazardous situation. 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. Under those circumstances, the cableless operator control station shall remain functional long enough for the operator to put the machine into a nonhazardous situation.			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.	No safeguard can initiate machine motion or operation		N/A
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.			N/A
9.3.3	Operation of auxiliary functions			
	The correct operation of auxiliary functions shall be checked by appropriate devices (for example pressure sensors).			N/A
9.3.4	Interlocks between different operations and for contrary motions			
	Interlocking shall be provided against incorrect operation			N/A
9.3.5	Reverse current braking			
	Use of reverse current braking			N/A

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Clause	Requirement – Test	Result	Remark	Verdict
9.4	Control functions in the event of failure			
9.4.1	General requirements			
	Provision of control functions in case of failure according to the level of risk assessment.	According to the risk assessment.		P
9.4.2	Measures to minimize risk in the event of failure			-
9.4.2.1	Use of proven circuit techniques and components			
	Use of proven circuit techniques and components	Appropriate components have been taken.		P
9.4.2.2	Provisions for redundancy			
9.4.2.3	Use of diversity			
9.4.2.4	Functional tests			-
	Carried out automatically by the control system or manually by inspection	By inspection manually.		
9.4.3	Protection against maloperation due to earth faults, voltage interruptions and loss of circuit continuity			
9.4.3.1	Earth faults			
	Bonding to the protective bonding circuit may be provided according to 8.2 and the devices may be connected as described in 9.1.4	Make reference to the relevant clause.		
9.4.3.2	Voltage interruptions			
	Where a memory device is used, proper functioning in the event of power failure shall be ensured to prevent any loss of memory that can result in a hazardous condition	No memory device has been used.		N/A
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 hazardous condition, appropriate measures shall be taken	No such function has been found.		N/A
10	Operator interface and machine mounted control devices			
10.1	General			
10.1.1	General device requirements			
	As far as is practicable, those devices shall be selected, mounted, and identified or coded according to IEC 60073 and IEC 60447			P
10.1.2	Location and mounting			-
	Appropriate location mounting for machine-mounted and hand-operated control devices	This requirement has been complied with.		P
10.1.3	Protection			
	Operator and machine mounted control devices shall with stand the stress of expected use.	They can withstand the stress of expected use.		P
	The operator interface control devices shall have a min degree of protection: IPXXD			P
10.1.4	Position sensors			
	Position sensors shall not be damaged in the event of over travel	No position sensor has		N/A

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Clause	Requirement – Test	Result	Remark	Verdict
		been used.		
	Position sensors used in circuits with safety-related functions either shall have positive opening operation or shall provide similar reliability			N/A
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			N/A
10.2	Push buttons			
10.2.1	Colors			
	Push button actuators shall be color –coded according to table 2	Their colors are according to table 2.		P
10.2.2	Markings			
	Use of adequate markings for push-buttons	Adequate markings are used.		P
10.3	Indicator lights and displays			
10.3.1	Modes of use			
	Indication and /or confirmation			P
10.3.2	Colors			
	Color coded according to table 3 (Unless otherwise agree between the supplier and the user)	Their colors are according to table 3.		P
10.3.3	Flashing lights			
	Use of flashing lights			N/A
10.4	Illuminated push-buttons			
	Color			N/A
10.5	Rotary control devices			
	Devices having a rotational member shall be mounted to prevent rotation of the stationary member (Friction alone shall not be sufficient)	Inadvertent operation can be prevented.		P
10.6	Start devices			
	Shall be constructed and mounted to minimize inadvertent operation			P
10.7	Devices for emergency stop			
10.7.1	Location			
	Devices for emergency stop shall be readily accessible	It is readily accessible		P
	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	All of them are located at each operator control station.		P
10.7.2	Types			
	Use of type - a push-button operated switch - a pull-cord operated switch - a pedal-operated switch without a mechanical guard	A push-button operated switch.		P
	Shall be of the self-latching type and shall have positive opening operation	Self-latching type and positive		P

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Clause	Requirement – Test	Result	Remark	Verdict
			opening operation.	
10.7.3	Restoration of normal function after emergency stop It shall not be possible to restore an emergency stop circuit until all emergency stop devices have been manually reset.		This requirement has been complied with.	P
10.7.4	Local operation of the supply disconnecting device to effect 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 colour requirements of 10.7.3			N/A
10.8	Emergency switching off devices			-
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.			N/A
10.8.2	Types of emergency switching off device The types 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. The devices shall have direct opening action (see IEC 60947-5-1, Annex K). The push-button operated switch may be in a break-glass enclosure.			N/A
10.8.3	Colour of actuators Actuators of emergency switching off devices shall be coloured RED. If a background exists immediately around the actuator, then this background shall be coloured YELLOW. Where confusion can occur between emergency stop and emergency switching off devices, means shall be provided to minimize confusion.			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 colour requirements of 10.8.3.			N/A
10.9	Enabling control device Enabling control devices shall be selected that have the following features in this clause.			N/A
11	Control gear: location, mounting, and enclosures			
11.1	General requirements			
11.2	Location and mounting			
11.2.1	Accessibility and maintenance All control gears can be identified without moving or the wiring		All of them can be	P

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Clause	Requirement – Test	Result	Remark	Verdict
		identified without moving or the wiring.		
	Replacement without dismantling other equipment or parts of the machine	They can be replaced without dismantling other equipment or parts of the machine.		P
	Terminals not associated with control gear shall also comply with the requirements mentioned above	Those relative requirements have been complied with.		P
	Facilitate operation and maintenance from the front.	It can easily operation and maintenance from the front.		P
	Use of special tools (if necessary)			P
	If access is required for regular maintenance or adjustment, the devices shall be located between 0.4 m and 2.0 m above the severing level	Those relative requirements have been complied with.		P
	It is recommended that terminals be at least 0.2m above the servicing level and so placed that connectors and cables can be easily connected to them	Above 0.2m and can be connected easily.		P
	Except those for operating, indicating, measuring and cooling, no devices shall be mounted on doors, and normally removable access covers, of enclosures	No electrical devices mounted on doors.		P
	If control devices are connected through plug-in arrangements, their association shall be made clear by type (shape), marking or designation, singly or in combination.	No control device is connected through plug-in arrangement.		N/A
	Plug in devices shall be provided with non-interchangeable features			N/A
	Use of plug/socket combinations shall be unobstructed access			N/A
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 control gear	No this kind of parts or devices are located within enclosures containing control gear.		P
	Devices such as solenoid valves should be separated from the other electrical equipment.	All solenoid valves have been separated from the other electrical equipment.		P
	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 taken.		P

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Clause	Requirement – Test	Result Remark	Verdict
	Terminals shall be separated into groups for : <ul style="list-style-type: none"> - power circuits; - associated control circuits - other control circuits, fed from external sources 	They have been Separated appropriately.	P
	The clearances and creep distances specified for the devices shall be maintained	Appropriately clearances and creep distances have been provided.	P
11.2.3	Heating effects		
	Heat generating components shall be located so that the temperature of each component in the vicinity remains within the permitted limit	Wind cooling equipment has been provided.	P
11.3	Degrees of protection		
	Enclosures of control gear: at least IP 22		P
11.4	Enclosures, doors and openings		
	Enclosure shall be constructed using materials capable of withstanding the mechanical, electrical and thermal stresses	The material (metal plate with painting used for enclosure can withstand the mechanical, electrical and thermal stresses	P
	Fasteners used to secure doors and covers should be of the captive type	Captive type.	P
	Windows provided for viewing internally mounted indicating devices shall be of a material suitable to withstand mechanical stress and chemical attach.		N/A
	It is recommended that enclosures doors shall have: <ul style="list-style-type: none"> - Not wider than 0.9 m - Vertical hinges - Lift-off type - Angle of opening at least 95° 	These requirements have been taken.	P
	If enclosures which readily allow a person fully to enter, the relevant requirements specified in this clause shall be complied	Not this kind of situation.	N/A
	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	They can withstand the chemical effects of the aggressive liquids, vapours, or gases used on the machine.	P
	The means used to maintain the degree of protection of an enclosure on doors, lids and covers that require opening or removal for operation or shall be secured	They can be secured firmly.	P

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Clause	Requirement – Test	Result	Remark	Verdict
	The degree of protection for all openings in the enclosures shall be secured		The degree of protection can be secured.	P
	Openings for cable shall be easily re-opened on site		They can be re-opened easily.	P
	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		Not this kind of opening has been found.	N/A
	The requirement mentioned above does not apply to electrical devices specially designed to operate in oil nor to electrical equipment in which coolants are used			N/A
	Where there are holes in an enclosure for mounting purpose, the degree of protection for the enclosure shall be secured		Appropriate protection degree can be secured.	P
	Equipment that, can attain a surface temperature sufficient to cause a risk of fire or harmful effect to an enclosure material, the relevant requirements shall be complied		Not this kind of equipment.	N/A
11.5	Access to control gear			
	The min dimensions of gangways in front of and between control gear shall be according to 481.2.4 of IEC 60364-4-481		Not this kind of gangway has been found.	N/A
	Doors in gangways and for access to electrical operating areas shall: <ul style="list-style-type: none"> - be at least 0.7 m wide and 2.0 m high; - open outward; - have a menace to allow opening from the inside without the use of a key or tool 		Not this kind of gangway has been found.	N/A
12	Conductors and cables			
	General requirements			
	Conductors and cables shall be selected so as to be suitable for the operating conditions (for example voltage, current, protection against electric hock, 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.		All of conductors and cables used on these machines are suitable for the operating conditions and external influences.	P
12.2	Conductors			
	In general, conductors shall be of copper.			P
	Where aluminum conductors are used, the cross sectional area shall be at least 16 mm ²		This requirement has been met.	P
	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.		All these requirements have been complied with.	P


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Clause	Requirement – Test	Result	Remark	Verdict
	All conductors that are subject to frequent movement (for example one movement per hour of machine operation) shall have flexible stranding of class 5 or class 6.		This requirement has been met.	P
12.3	Insulation			
	The insulation of cables and conductors used, shall be suitable for a test voltage: <ul style="list-style-type: none"> - not less than 2000 V AC for a duration of 5 min for operation at voltages higher than 50 V AC or 120 V DC, or - not less than 500 V AC for a duration of 5 min for PELV circuits (see IEC 60364-4-41, class III equipment). 		This test has been carried out for the cables, and there is no breakdown is occurred.	P
	The mechanical strength and thickness of the insulation shall be such that the insulation cannot be damaged in operation or during laying, especially for cables pulled into ducts.		Appropriate insulation with sufficient mechanical strength and thickness is provided.	P
12.4	Current			
	Max allowable temperature of conductors shall not exceed the values given in table 6.		See table6	
12.5	Conductor and cable voltage drop			
	The voltage drop for conductors and cables shall not exceed 5% of the nominal voltage		Not exceed 5%.	
12.6	Flexible cables			
12.6.1	General			
	Flexible cables shall have Class 5 or Class 6 conductors.		This requirement has been met.	
	Cables that are subjected to severe duties shall be of adequate construction		Cables that are subjected to severe duties have adequate construction	
12.6.2	Mechanical rating			
	The tensile stress for copper conductors shall not exceed 15 N/mm ² of the copper cross-sectional area		Not exceed 15 N/mm ²	N/A
	If the demands of the application exceed the tensile stress, it of 15 N/mm ² , cables with special construction feature should be used and the allowed max. tensile stress strength should be agree with the cable manufacturer		Not this kind of situation.	N/A
12.6.3	Current			
	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 maximum allowable conductor temperature is not exceeded.		No cable is wound on drums.	N/A
	For cables of circular cross-sectional area installed on drums, the maximum current-carrying capacity in free air should be declared in accordance with Table 7 (see also Clause 44 of IEC 60621-3).		No cable is wound on drums.	N/A

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Clause	Requirement – Test	Result	Remark	Verdict
12.7	Conductor wires, conductor 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: <ul style="list-style-type: none"> - 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). 			N/A
	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 60364-4-41).			N/A
	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.			N/A
	Conductor wires and conductor bars shall be so placed and/or protected as to:			N/A
	-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.			N/A
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 (for example, duplication of the current collector, continuity monitoring).			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.			N/A
12.7.4	Removable current collectors with a disconnecter			
	Removable current collectors having a disconnecter 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 (see also 8.2.4).			N/A
12.7.5	Clearances in air			
	Clearances between the respective conductors, and between adjacent systems, of conductor wires, conductor bars, slip-ring assemblies and			N/A



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	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.			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 such condition exist.		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).			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.			N/A
12.7.8	Construction and installation of conductor wire, conductor bar systems and slip-ring assemblies			N/A
	Conductor wires, conductor bars and slip-ring assemblies in power circuits shall be grouped separately from those in control circuits.			N/A
	Conductor wires, conductor bars and slip-ring assemblies shall be capable of withstanding, without damage, the mechanical forces and thermal effects of short-circuit currents.			N/A
	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.	Not such condition exist.		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.	Not such condition exist.		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 (see Clause 18).			N/A
	Underground and underfloor conductor bar ducts shall	Not such condition		N/A

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Clause	Requirement – Test	Result	Remark	Verdict
	have drainage facilities.	exist.		
13	Wiring practices			
13.1	Connections and routing			
13.1.1	General requirements			
	All connections, especially those of the protective bonding circuit, shall be secured against accidental loosening.	All connections can be secured against accidental loosening		
	The means of connection shall be suitable for the cross-sectional areas and nature of the conductors being terminated.	The means of connection is suitable.		
	The connection of two or more conductors to one terminal is permitted only in those cases where the terminal is designed for that purpose. However, only one protective conductor shall be connected to one terminal connecting point.	No terminal has been connected with three or more conductors.		
	Soldered connections shall only be permitted here terminals are provided that are suitable for soldering.	No soldered connection has been taken.		N/A
	Terminals on terminal blocks shall be plainly marked or labelled to correspond with markings on the diagrams.	All of them have been marked corresponding to markings on the diagrams.		P
	Where an incorrect electrical connection (for example, arising from replacement of devices) 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			P
	The installation of flexible conduits and cables shall be such that liquids shall drain away from the fittings.	Liquids can drain away from the fittings.		P
	Means of retaining conductor strands shall be provided when terminating conductors at devices or terminals that are not equipped with this facility. Solder shall not be used for that purpose.	By appropriate terminals.		P
	Shielded conductors shall be so terminated as to prevent fraying of strands and to permit easy disconnection.	Appropriate termination is taken.		P
	Identification tags shall be legible, permanent, and appropriate for the physical environment.	They are legible, permanent, and appropriate for the physical environment.		P
	Terminal blocks shall be mounted and wired so that the internal and external wiring does not cross over the terminals(see IEC 60947-7-1).	No conductor crosses over the terminals.		P
13.1.2	Conductor and cable runs			
	Conductor and cable 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 Sub	All of them are run from terminal to terminal without splices or joints.		

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Clause	Requirement – Test	Result	Remark	Verdict
	clause.			
	Where it is necessary to connect and disconnect cables and cable assemblies, a sufficient extra length shall be provided for that purpose.			
	The terminations of cables shall be adequately supported to prevent mechanical stresses at the terminations of the conductors.	Adequate support measure has been taken.		
	Wherever practicable, the protective conductor shall be placed close to the associated live conductors in order to decrease the impedance of the loop.			
13.1.3	Conductors of different circuits			
	Suitable arrangement for conductors of different circuits	Suitable arrangement is provided.		
13.1.4	Connection between pick-up and pick-up converter of an inductive power supply system			
	The cable between the pick-up and pick-up converter as specified by the manufacturer of the inductive power supply shall be: -as short as practicable; -adequately protected against mechanical damage.	These requirements have been complied with.		
13.2	Identification of conductors			
13.2.1	General requirements			
	Conductors shall be identifiable at each termination according to the technical documentation (see clause 17)	Make reference to clause 18.		
	Use of color-coding for identification of conductors			-
	It is recommended (for example to facilitate maintenance) that conductors be identified by number, alphanumeric, colour(either solid or with one or more strips),or a combination of colour and numbers or alphanumeric. When numbers are used, they shall be Arabic; letters shall be Roman (either upper or lower case).	Appropriate measures have been taken to identify conductors.		P
13.2.2	Identification of the protective conductor shall be really distinguishable by shape, location, marking or color	By marking and color.		P
	When identification is by color alone, the bicolor combination GREEN-AND YELLOW shall be used	By GREEN-AND-YELLOW		P
	For the bicolor combination GREEN-AND YELLOW: one of the color covers at least 30% and not more than 70% of the surface of the conductor, the other color covering the remainder of the surface			P
	Use of graphical symbol 	The earthing symbol has been used.		
13.2.3	Identification of the neutral conductor			
	The color shall be Light Blue	No neutral conductor has been used.		N/A
	Requirements for bare conductors used as neutral conductors			N/A
13.2.4	Identification by colour			
	Where colour			

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Clause	Requirement – Test	Result	Remark	Verdict
	than the protective conductor (see 13.2.2) and the neutral conductor (see 13.2.3)), the following colours may be used:			
	BLACK, BROWN, RED, ORANGE, YELLOW, GREEN, BLUE (including LIGHT BLUE), VIOLET, GREY, WHITE, PINK, TURQUOISE.	Some colors have been used.		P
	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.	This requirement has been complied with.		P
	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).	Neither color GREEN nor the color YELLOW has been used.		P
	Where colour-coding is used for identification of conductors, it is recommended that they be colour-coded as follows: <ul style="list-style-type: none"> - BLACK: AC and DC power circuits; - RED: AC control circuits; - BLUE: DC control circuits; - ORANGE: excepted circuits in accordance with 5.3.5. 	These requirements have complied with.		P
13.3	Wiring inside enclosures			
	Panel conductors shall be supported where necessary to keep them in place	Appropriate support is provided.		P
	Non-Metallic ducts shall be permitted only when they are made with a flame-retardant insulating material	Some non-metallic ducts are used with a flame-retardant insulating material.		P
	Connections to devices mounted on doors or to other movable parts shall be made using flexible conductors according to 12.2 and 12.6.	Connections according to 12.2 and 12.6..		P
	The conductors shall be anchored to the fixed and to the movable part independently of the electrical connection	Adequate anchored measures have been taken.		P
	Conductors and cables that do not run in ducts shall be adequately supported	All of them have been supported adequately.		P
	Terminal blocks or plug-socket combinations shall be used for control wiring that extends beyond the enclosure	This application has been taken.		P
	Power cables and cables of measuring circuits may be directly connected to the terminals of the devices for which the connections were intended.	This application has been taken.		P
13.4	Wiring outside enclosures			
13.4.1	General requirements-			
	The protection degree shall be ensured when cables or ducts are introduced into the enclosure	The protection degree can be		P

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Clause	Requirement – Test	Result	Remark	Verdict
		secured		
13.4.2	External ducts			
	Shall be enclosed in suitable ducts as described in 13.5 except for suitably protected cables			N/A
	Fittings used with ducts or multi-conductor cable shall be suitable for the physical environment			N/A
	Flexible conduit or flexible multi-conductor cable shall be used where it is necessary to employ flexible connections to pendant push-button stations			N/A
	The weight of the pendant stations shall be supported by means other than the flexible conduit or the flexible multi-conductor cable			N/A
	Flexible conduit or flexible multi-conductor cables shall be used for connections involving small or infrequent movements			N/A
13.4.3	Connection to moving elements of the machine			
	Connection to frequently moving parts shall be made using conductors according to 13.2	No device is connected to moving elements of the machine.		N/A
	Flexible cable and flexible conduit shall be so installed as to avoid excess flexing and straining, particularly the fittings			N/A
	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			N/A
	If the requirement mentioned above is achieved by using 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			N/A
	Flexible cables of machines shall be protected to minimize the possibility of external damage			N/A
	The cable sheath shall be resistant to the normal that wear that can be expected from movement and to the effects of atmospheric contaminants			N/A
	If cables subject to movement are close to moving parts, it shall have a space of at least 25 mm between the moving parts and the cables			N/A
	Where the distance mentioned above is not practicable, fixed barriers shall be provided between the cables and the moving parts			N/A
	The cable handling system shall be so designed that the lateral cable angles do not exceed 5 degree, avoiding torsion in the cable			N/A
	Measures shall be taken to ensure that at least two turns of flexible cables always remain on a drum			N/A
	Min. permitted bending radii for the forced guiding of flexible cables shall not less than the values given in table 8			N/A
	The strength section between two bends in an S-shaped length or a bend into another plane shall be at least 20			N/A

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Clause	Requirement – Test	Result	Remark	Verdict
	times the diameter of the cable			
	Where flexible conduit is adjacent to moving parts, the construction and supporting means shall prevent damage to the flexile conduit .under all conditions of operation			N/A
	Flexible metallic conduit shall not be used for rapid of frequent movements			N/A
13.4.4	Interconnection of devices on the machine			
	The connections shall be conveniently placed, adequately protected, and shown on the relevant diagrams			N/A
	Such terminals shall be conveniently placed, adequately protected, and shown on the relevant diagrams			N/A
13.4.5	Plus/socket combinations			
	Shall be of adequate size and shall have sufficient contact pressure and a wiping action to ensure electrical continuity			N/A
	Clearances between contacts shall be adequate for the voltages used and shall be maintained during insertion and removal of the connectors			N/A
	Prevent unintentional contact with live parts at any time			N/A
	Protective bonding circuit connection shall be made before any live connections are made, and shall not disconnected until all live connections in the plug are disconnected			N/A
	Rated at more than 16 A or that remain connected during normal service shall be of a remaining type to prevent unintended disconnection			N/A
	Rated at 63 A or above shall be of an interlocked type with a switch, so that connection and disconnection is possible only when the switch is in the OFF position			N/A
	If more than one plug-socket combination is used in the same electrical equipment, they shall be clearly identifiable			N/A
	It is recommended that mechanical coding be use to prevent incorrect insertion			N/A
	According to IEC 60309-1 or of a type used for domestic application shall not be used for control circuits			N/A
13.4.6	Dismantling for shipment			
	Terminals shall be suitably enclosed and plug/socket combinations shall be protected from the physical environment during transportation and storage	All of them are enclosed suitably.		P
13.4.7	Additional conductors			-
	Spare conductors shall be connected to spare terminals or isolated to prevent contact with live parts	All spare conductors are connected to spare terminals or isolated to prevent contact with live parts		P

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Clause	Requirement – Test	Result	Remark	Verdict
13.5	Ducts, connection boxes and other boxes			
13.5.1	General requirements			
	Min. protection degree for ducts: IP 33			
	Appropriate protection for conductors insulation	Suitable protection is taken.		
	Drain holes of 6 mm diameter are permitted			
	Ducts and cables trays shall be rigidly supported and positioned at a sufficient distance from moving parts	Suitable protection is taken. Suitable support and sufficient distance has been taken.		
	In areas where human Page is required, the ducts and cable trays shall be mounted at least 2m above the working surface			N/A
	Ducts shall be provided only for mechanical protection	Adequate mechanical protection is provided.		P
	Cable trays that are partially covered should not be considered to be ducts or cable trunking system, and the cables used shall be suitable for installation on cable trays	No cable tray is used.		N/A
13.5.2	Percentage fill of ducts			
	The dimensions and arrangement of the ducts be such as to facilitate the insertion of the conductors and cables	This requirement has been complied with.		
13.5.3	Rigid metal conduit and fittings			
	Shall be of galvanized steel or of a corrosion resistant material	No rigid metal conduit is used.		N/A
	Conduits shall be securely held in place and supported at each end			N/A
	Fitting shall be threaded			N/A
	Where threadless fittings are used, the conduit shall be securely fastened to the equipment			N/A
	The conduit shall not be damage and the internal diameter of the conduit shall not effectively reduced when it is bent			N/A
13.5.4	Flexible metal conduit and fittings			
	Flexible metal tubing and suitable for the expected physical environment	No flexible conduit used.		N/A
13.5.5	Flexible non-metal conduit and fittings			
	Shall be resistant to kinking and suitable for the expected physical environment	No flexible non-metal conduit and fittings		N/A
13.5.6	Cable trunking systems			
	Shall be rigidly supported and clear of all moving or contaminating portions of the machine	No cable trunking system is used.		N/A
	Covers shall be shaped to overlap the sides; gasket shall be permitted			N/A

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Clause	Requirement – Test	Result	Remark	Verdict
	Covers shall be attached to cable trunking systems by hinges or chain and held closed by means of captive screws or other suitable fasteners			N/A
	On horizontal cable trunking systems, the cover shall not be on the bottom			N/A
	Where the cable trunking system is furnished in sections, the joints between sections shall fit tightly but need not be gasketed			N/A
	The only openings permitted shall be those required for wiring or for drainage			N/A
	Cable trunking systems shall not have opened but unused knockouts			N/A
13.5.7	Machines compartments and cable trunking systems			
	Are isolated from coolant or oil reservoirs and are entirely enclosed			N/A
	Conductors run in enclosed compartment and cable trunking systems shall be so secured and arranged that they are not subject to damage			N/A
13.5.8	Connection boxes and other boxes			
	Shall be readily accessible for maintenance		They are readily accessible for maintenance.	P
	Shall provide protection against the ingress of solid bodies and liquids		Adequate protection is provided.	P
	Shall not have opened but unused knockouts nor any other opening and shall be so constructed as to exclude materials such as dust, flying, oil, and coolant		These requirements have been complied with.	P
13.5.9	Motor connection boxes			
	Shall enclose only connections to the motor and motor-mounted devices		They enclose only connections to the motor and motor-mounted devices.	
14	Electric motors and associated equipment			-
14.1	General requirements			
	Electric motor should conform to the requirements of IEC 60034-1		The electric motor is in conformity with the requirements of IEC 60034 series.	
14.2	Motor enclosures			
	Protection degree shall be at least IP 23			
14.3	Motor dimensions			
	As far as is practicable, the dimensions of the motors shall comply with IEC 60072 series.		It is in compliance with IEC 60072 Series.	
14.4	Motor mounting and compartments			
	Each motor and its associated couplings, belts and pulleys, or chains,		They have	

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Clause	Requirement – Test	Result	Remark	Verdict
	shall be so mounted that they are adequately protected and are easily for inspection		adequate protection and are easily for inspection.	
	Shall be such that all motor hold-down means can be removed and all terminal boxes are accessible		This requirement has been complied with.	
	The proper cooling shall be ensured and the temperature rise remains within the limits of the insulation class.		This requirement has been complied with.	
	Motor compartment should be clean and dry, and shall be ventilated directly to the exterior of the machine		No motor compartment is found.	N/A
	The vents shall be such that ingress of swarf, dust, or water spray is at an acceptable level		Adequate vents are provided.	
	There shall be no opening between the motor compartment and any other compartment that does not meet the motor compartment requirements		Not this kind of opening.	
	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		Not this kind of situation.	N/A
14.5	Criteria for motor selection			
	Shall be selected according to the anticipated service and physical environment conditions		They are selected according to the anticipated service and physical environment conditions.	
14.6	Protective devices for mechanical brakes			
	Operation of the overload and over current protective devices for mechanical brake actuators shall initiate the simultaneous de-energization (release) of the associated machine actuators		No this kind of device .	N/A
15	Accessories and lighting			
15.1	Accessories			
	Where the machine or its associated equipment is provided with socket-outlets that are intended to be used for accessory equipment (for example hand-held power tools, test equipment), the following apply:			
	- the socket-outlets should conform to IEC 60309-1 'Where that is not practicable, they should be clearly marked with the voltage and current ratings			N/A
	- the continuity of the protective bonding circuit to the socket-outlet shall be ensured except where protection is provided by PELV'			N/A
	- all unearthed conductors connected to the socket-outlet shall be protected against overcurrent and, when required, against overload in accordance with 7.2 and 7.3 separately from the protection of other circuits;			N/A
	-where the power supply to the socket-outlet is not disconnected by			N/A

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Clause	Requirement – Test	Result	Remark	Verdict
	the supply disconnecting device for the machine or the section of the machine, the requirements of 5.3 .5 apply.			
15.2	Local lighting of the machine and equipment			
15.2.1	General			
	Connections to the protective bonding circuit shall be in accordance with 8.2.2.	It is in accordance with 8.2.2.		
	The ON/OFF switch shall not be incorporated in the lampholder or in the flexible connecting cords.	A switch has provided in the front of the machine.		
	Stroboscopic effects from lights shall be avoided by the selection of appropriate luminaires.			
	Where fixed lighting is provided in an enclosure, electromagnetic compatibility should be taken into account using the principles outlined in 4.4.2.	This requirement has been considered		
15.2.2	Supply			
	The nominal voltage of the local lighting circuit shall not exceed 250V between conductors. A voltage not exceeding 50V between conductors is recommended.	The voltage of the lighting circuit is 230V		
	Lighting circuits shall be supplied from one of the following sources (see also 7.2.6) in this clause.			
15.2.3	Protection			
	Local lighting circuits shall be protected in accordance with 7.2.6.	Please see the relative clause.		
15.2.4	Fittings			
	Adjustable lighting fittings shall be suitable for the physical environment			
	The lampholders shall be : -in accordance with the relevant IEC standard; -constructed with an insulating material protecting the lamp cap so as to prevent unintentional contact	These requirements have been met.		
	Reflectors shall be supported by a bracket and not by the lampholder.			
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.	They can withstand the physical environment involved.		
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	This warning sign has been used		
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	See the risk assessment report.		

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Clause	Requirement – Test	Result	Remark	Verdict
16.3	graphical symbol IEC 60417 5041 shall be used Functional identification			
	Control devices, visual indicators, and displays (particularly those related to safety) shall be clearly and durably marked with regard to their functions either on or adjacent to the item. Such markings may be as agreed between the user and the supplier of the equipment (see Annex B).		Appropriate markings have been provided for these devices.	
	Preference should be given to the use of standard symbols given in IEC 60417 and ISO 7000		Preference should be given to the use of standard symbols given in IEC 60417 and ISO 7000.	
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 adjacent to each incoming supply:		They have been marked legibly and durably.	
	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.		This requirement has been met.	
	Where only a single motor controller is used, that information may instead be provided on the machine nameplate where it is plainly visible.			
16.5	Reference designations			
	All enclosures, assemblies, control devices, and components shall be plainly identified with the same reference designation as shown in the technical documentation.		These information has been provided within the instruction manual.	
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 appropriate forms, for example, drawings, diagrams, charts, tables, instructions.		All the information has been provided by many forms.	
	The information shall be in an agreed language (see also Annex B).		In English	
	The information provided may vary with the complexity of the electrical equipment. 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.			
17.2	Information to be provided			
	The information provided with the electrical equipment shall include the requirements specified in this clause.		All of these information has been vided.	
17.3	Requirements applicable to all documentation			
	Unless otherwise agreed between manufacturer and user:			

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Clause	Requirement – Test	Result	Remark	Verdict
	- the documentation shall be in accordance with relevant parts of IEC 61082;	This requirement has been met.		
	- reference designations shall be in accordance with relevant parts of IEC 61346;	This requirement has been met.		
	- instructions/manuals shall be in accordance with IEC 62079.	This requirement has been met.		
	- parts lists where provided shall be in accordance with IEC 62027, class B.	This requirement has been met.		
	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	No this condition exist.		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			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.			N/A
17.4	Installation documents			
	Use and requirements for installation diagram	Installation diagrams are provided.		
17.5	Overview diagrams and function diagrams			
	Use and requirements for Overview diagrams and function (block) diagram	Overview diagrams are provided.		
17.6	Circuit diagrams			
	Use and requirements for circuit diagrams	Circuit diagrams are provided.		
17.7	Operating manual			-
	The technical documentation shall contain an operating manual detailing proper procedures for set-up and use of the electrical equipment	Operating manual is provided.		
	Particular attention should be given to the safety measures provided			
	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			N/A
17.8	Maintenance manual			
	The technical documentation shall contain a maintenance manual detailing proper procedures for adjustment, servicing and preventive inspection, and repair. Recommendations on maintenance/service intervals and records should be part of that manual. 'Where methods for the verification of	Maintenance manual is provided		

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Clause	Requirement – Test	Result	Remark	Verdict
	proper operation are provided (for example software testing programs), the use of those methods shall be detailed.			
17.9	Parts list			
	The parts list, where provided, shall comprise, as a minimum, information necessary for ordering spare or replacement parts (for example 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	Parts list is provided.		
18	Verification			
18.1	General			
	This part of EN 60204-1 gives general requirements for the electrical equipment of machines.			
	The extent of verification will be given in the dedicated product standard for a particular machine. 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) in this clause.	Relative tests have been carried out according to this clause.		
	When the electrical equipment is modified, the requirements stated in 18.7 shall apply.			
	For tests in accordance with 18.2 and 18.3, measuring equipment in accordance with the EN 61557 series is applicable.	Measuring equipment in accordance with the EN 61557 series is applicable.		
	The results of the verification shall be documented.	The result has been documented		
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.	Please see the following clause		
	The technical documentation shall contain a maintenance manual detailing proper procedures for adjustment, servicing and preventive inspection, and repair. 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.	Maintenance manual is provided		
	For TN-systems, those test methods are described in 18.2.2; their applications for different conditions of supply are specified in 18.2.3.	Please see the relative clauses.		
	For TT and IT systems, see IEC 60364 6 61			N/A
18.2.2	Test methods in T _N			
	Test 1 verifies the continuity of the protective bonding circuit. Test 2 verifies the conditions for protection by automatic disconnection of the supply			
	Test 1- Verification of the continuity of the protective bonding			

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Clause	Requirement – Test	Result	Remark	Verdict
	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 each protective bonding circuit shall be measured with a current between at least 0.2A and approximately 10A 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 24V AC or DC.		Please see the test report	
	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		They have been verified by inspection	
	The conditions for the protection by automatic disconnection of supply in accordance with 6.3.3 and Annex A shall be verified by both:			
1)	verification of the fault loop impedance by: <ul style="list-style-type: none"> - calculation, or - measurement in accordance with A.4, and 		Please see the test report.	
2)	confirmation that the setting and character risk is of the associated over current protective device are in accordance with the requirements of Annex A.			
18.2.3	Application of the test methods for T			
	Test 1 of 18.2.2 shall be carried out on each protective bonding circuit of a machine.			
	When Test 2 of 18.2.2 is carried out by measurement, it shall always be preceded by Test 1			
18.3	Insulation resistance tests			
	Test conditions: 500 V d.c.			
	The measured values shall not less than 1M Ohm			
18.4	Voltage tests			-
	Test conditions ' <ul style="list-style-type: none"> - at least 1 second - test voltage is twice the raged supply voltage of the equipment or 1000 V, whichever is greater - frequency of 50/60 Hz - supplied from a transformer with a min. rating of 500 VA 			
	Shall not breakdown		Please see the report in detail.	
18.5	Protection against residual voltages			
	Where appropriate, tests shall be performed to ensure compliance with 6.2.4.			N/A
18.6	Functional tests			
	The functions of electrical equipment shall be tested.		The functions of electrical equipment equipped with this machine have been tested.	

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Clause	Requirement – Test	Result	Remark	Verdict
	The function of circuits for electrical safety (for example earth fault detection) shall be tested.		The functions of electrical safety equipped with this machine have been tested	-
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).			N/A

ATTACHMENTS: REAL PHOTOS DOCUMENTATION OF EUT

Figure-1



Figure-2



Figure-3



Figure-4



**** THE END ****