

Page 1 of 106

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EN ISO 12100 Safety of machinery - General principles for design - Risk assessment and risk reduction EN 809 pumps and pump units for liquids-common safety requirements. EN 60204-1 Safety of machinery - Electrical equipment of machines Part 1: General requirements

Report Number	OViSCE2104-032M
Date of Issue	Apr. 23, 2021
Number of pages	
Testing Laboratory	Zhejiang European African Testing&Certification Co., Ltd.
Address	4th Floor, Building 4, No. 888 Donghuan Road,Development Zone, Taizhou City, Zhejiang P.R.China
Testing location/procedure	The same as above
Applicant's Name	Tianjin Streampumps Industry Co., Ltd.
Address	No.17, Xeda Jimei Ind. Park Xiqing Economic Development Area, Tianjin, China
Test specification:	
Standard	EN ISO 12100:2010, EN 809:1998+A1:2009+AC:2010, EN 60204-1:2018
Test procedure	CE-MD Directive
Non-standard test method	N/A in the international of th
Test item description	Water Pumps(Submersible Pump)
Trade Mark	SCEN ISCEN ISCEN ISCEN ISCEN ISCEN
Manufacturer	Tianjin Streampumps Industry Co., Ltd.
Address	No.17, Xeda Jimei Ind. Park Xiqing Economic Development Area, Tianjin, China
Model/Type reference	SVQ2200(F) (Cover models see Appendix I)
Ratings	See copy of marking plate

This Test Report is issued by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your exclusive use. Attention is drawn to the limitations of liability indemnification and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the results there of based upon the information that you provided. You have 30 days from date of fissuance of this test report to notify us of any error or omission caused by our negligence. Provided however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your ungualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



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200	ting procedure and testing locat	ion:
	Testing Laboratory:	Zhejiang European African Testing&Certification Co., Ltd.
Tes	ting Location/address	4th Floor, Building 4, No. 888 Donghuan Road, Development Zone, Taizhou City, Zhejiang P.R.China
	Associated Laboratory:	N/A ^S OVIS OVIS OVIS OVIS
Tes	ting Location/address	
	Tested by(name+signature):	Juliet Hong Juliet Harris
	Approved by(+signature):	Tyler Luo
X	Testing procedure:TMP	N/A
	Tested by(name+signature):	N/A ^S N ^{IS} N ^{IS} N ^{IS} N ^{IS} *
À	Approved by(+signature):	S N/A A A A A A A A A A A A A A A A A A A
Tes	ting Location/address	N/A ONE ONE ONE ONE
Ŷ	Testing procedure:WMT	N/A Start Start Start Start
	Tested by(name+signature):	N/A
	Witnessed by(+signature):	N/A
Ŕ	Approved by(+signature):	N/A A A A A A A A A A A A A A A A A A A
Tes	ting Location/address	N/A ^{SS} OVISS OVISS OVISS OVISS OVISS
Ê	Testing procedure:SMT	N/A chi chi chi chi chi
	Tested by(name+signature):	N/A ON ON ON ON ON
	Approved by(+signature):	N/A, China State
X	Supervised by(+signature).:	N/A
Tes	ting Location/address	N/A ⁵ N ¹⁵ N ¹⁵ N ¹⁵ N ¹⁵ N ¹⁵
À	Testing procedure:RMT	S N/A day and a set of the set
	Tested by(name+signature):	N/A ONE ONE ONE ONE ONE
A.	Approved by(+signature):	N/A CHI CHI CHI CHI
	Supervised by(+signature).:	N/A





List of Attachments (including a total number of pages in each attachment):

The Europe union

Appendix I – Model number – attachment 2 pages.

Appendix II – Photo documentation – attachment 2 pages.

Summary of testing:

Tests performed (name of test and test clause): Full tests on model SVQ2200(F)

Testing location:

Zhejiang European African Testing&Certification Co., Ltd. 4th Floor, Building 4, No. 888 Donghuan Road, Development Zone, Taizhou City, Zhejiang P.R.China

Summary of compliance with National Differences: List of countries addressed:The Europe union

The product fulfils the requirements of EN ISO 12100:2010, EN 809:1998+A1:2009+AC:2010,EN 60204-1:2018 (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)

Copy of marking plate: The artwork below may be only a draft.

Sign of Quality			IL ADSCHRIN	CE
(S) SVQ2200(F)	URWE	RSIBLE PU	50/60Hz	JY1S
Input Power 3080W	Ŕ	~	wer 2200W	A
H.max 17 m	S.	Q.max 7	00 L/min	115
Max. liquid temperature 4	0°C	I.C.L.F	IP X8	 5m

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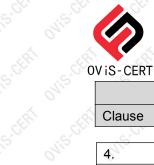
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	- Age Age Age Age A
Possible test case verdicts:	WISCO WISCO WISCO WISCO WISCO
- test case does not apply to the test object	
test object does meet the requirementtest object does not meet the requirement	
- test object does not meet the requirement	
Testing:	A SERIE SERIE SERIE SERIE
Date of receipt of test item Apr	. 09, 2021
Date(s) of performance of test Apr	: 10, 2021 to Apr. 22, 2021
Sample appearance and function are in normal condition, yes or no	A CHIL CHIL CHIL CHIL CHIL CHIL
Ambient temperature 20-	25℃ S ^{CL} N ^{SCL} N ^{SCL} N ^{SCL} N ^{SCL} N ^{SCL} N
Ambient humidity 50-	65%
This report shall not be reproduced, except in full, v laboratory. "(See Enclosure #)" refers to additional information "(See appended table)" refers to a table appended Throughout this report a comma / point is The samples under test are in good condition. The test items comply with the requirements of the	appended to the report. to the report. used as the decimal separator.
Name and address of factory (ies)	: Same as manufacturer
General product information:	
The test results presented in this report relate only	to the object tested.
- ONES ONES ONES ONES	oute oute outer outer outer
	appearance and most critical components, the used
same working principle	with very similar manufacturing process and shared the

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Page 5 of 106

IS-CERT EN ISO 12100			
Clause	Requirement + Test	Result-Remark	Verdict
4.	Strategy for risk assessment and risk reduction	ONLY ONLY	OP
IS-OFRI	To implement risk assessment and risk reduction the designer shall take the following actions, in the order given (see Figure 1):	SERIE IS GERIE IS GER	PH
ON. CERT	a) determine the limits of the machinery, which include the intended use and any reasonably foreseeable misuse thereof;		O P
OVISIO	b) identify the hazards and associated hazardous situations;	OVIS OVIS	OVIEP
CERT	c) estimate the risk for each identified hazard and hazardous situation;	SHALL SHALL SHALL	P.F
OVIS	d) evaluate the risk and take decisions about the need for risk reduction;	ONIS ONIS	OVIP
WiS-CERT	e) Eliminate the hazard or reduce the risk associated with the hazard by means of protective measures.	SER NE-CHA NE-CHA	PLA
A RI	Actions a) to d) are related to risk assessment and e) to risk reduction.		P
Wis-CL	Risk assessment is a series of logical steps to enable, in a systematic way, the analysis and evaluation of the risks associated with machinery.	or outs or outs or	OVISE
	Risk assessment is followed, whenever necessary, by risk reduction. Iteration of this process can be necessary to eliminate hazards as far as practicable and to adequately reduce risks by the	SERI OVISCERI OVISCERI	OVIS-OFF
OVIS-OFRI	implementation of protective measures.It is assumed that, when present on machinery, a hazard will sooner or later lead to harm if no protective measure or measures have been implemented. Examples of hazards are given in Annex B.	SERIE OUSCOLLEN OUSCOLLEN	OVICE OFFIC
	Protective measures are the combination of the measures implemented by the designer and the user in accordance with Figure 2. Measures which can be incorporated at the design stage are preferable to those implemented by the user and usually prove more effective.	SERT OVIS-GERT OVIS-GERT	OVIE OVIE
JVIS-CERT	The objective to be met is the greatest practicable risk reduction, taking into account the four below factors. The strategy defined in this clause is represented by the flowchart in Figure 1. The process itself is iterative and several successive	SERIE ONIS SERIE ONIS SERIE	PCER OVISS
	applications can be necessary to reduce the risk, making the best use of available technology. In carrying out this process, it is necessary to take into account these four factors, in the following order of	St. ONSCI. ONSCI.	OVIS-CL
OVISION	 preference: the safety of the machine during all the phases of its life cycle; 	ONISS ONISS	O ^N P
CLA	- the ability of the machine to perform its function;	A. A. A.	R
1.15	- the usability of the machine;	Will Will	P
or JAI	- the manufacturing, operational and dismantling costs of the machine.	A A A	P
OVISION	NOTE 1 The ideal application of these principles requires knowledge of the use of the machine, the accident history and health records,	ONIS OF ONIS OF	OVICE OF





CERT Page 6 of 106

Report No.: OViSCE2104-032M

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
OVISION	available risk reduction techniques, and the legal framework in which the machine is to be used.	and a start	ONISIO
	NOTE 2 A machine design which is acceptable at a particular time could be no longer justifiable when technological development allows the design of an equivalent machine with lower risk.	SER. OVISCER. OVISCER	OVIS-CER
5 🖑	Risk assessment		P
5.1	General	VIS VIS	N ⁱ P
0.	Risk assessment comprises (see Figure 1)	0, 0,	P
ONIS-CERT	 risk analysis, comprising 1. determination of the limits of the machinery (see 5.3), 2. hazard identification (5.4 and Annex B), and 3. risk estimation (see 5.5), and 	SERT OVISCERT OVISCER OVISCERT OVISCER	OVIS-ER
15	- risk evaluation (see 5.6).	115 115	N°P
ON'S CERT	Risk analysis provides information required for the risk evaluation, which in turn allows judgments to be made about whether or not risk reduction is required.	SEAT OF CHAINS CHA	P
WiS-CHRI	These judgments shall be supported by a qualitative or, where appropriate, quantitative estimate of the risk associated with the hazards present on the machinery.	SERI OVIS-OFFIC OVIS-OFF	P
	NOTE A quantitative approach can be appropriate when useful data is available. However, a quantitative approach is restricted by the useful data that are available and/or the limited resources of those conducting the risk assessment. Therefore, in many applications only qualitative risk estimation will be possible.	ERT OUTS CERT OUTS CER	OVIS-CER
Olis	The risk assessment shall be documented according to Clause 7.	ONE ONE	ON P
5.2	Information for risk assessment	S. B. B.	P.S.
OVISION	The information for risk assessment should include the following.	OVISION OVISION	WiP
OVIS-CERT	 a) Related to machinery description: user specifications; anticipated machinery specifications, Including a description of the various phases of the whole life cycle of the machinery, design drawings or other means of establishing the nature of the machinery, and required energy sources and how they 	SERT OUTS CERT OUTS CER	OVIS-CERT
OVIS-CERT	are supplied; 3) documentation on previous designs of similar machinery, if relevant; 4) information for use of the ma chinery, as available.	SEAL ONES CHAIN ONES CHA	OVIS-OFR
OVIS-CERT	 b) Related to regulations, standards and other applicable documents: 1) applicable regulations; 2) relevant standards; 3) relevant technical specifications; 	SERIE OVIS-OF OVIS-OF	OVICE OFF
07.	4) relevant safety data sheets.c) Related to experience of use:	0, 0,	P





Page 7 of 106

Report No.: OViSCE2104-032M

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
OVIS-CERT	 any accident, incident or malfunction history of the actual or similar machinery; the history of damage to health resulting, for example, from emissions (noise, vibration, dust, fumes, etc.), chemicals used or materials processed by the machinery; 	CERT OVIS-CERT OVIS-CE	A OVISCERI
	 3) the experience of users of similar machines and, whenever practicable, an exchange of information with the potential users. NOTE An incident that has occurred and resulted in harm can be referred to as an "accident", whereas 	CERT OVIS-CERT OVIS-CE	A OWSCERI
OVIS-CHI	an incident that has occurred and that did not result in harm can be referred to as a "near miss" or "dangerous occurrence".	ovis-oti ovis-oti	owies citi
	d) Relevant ergonomic principles. The information shall be updated as the design develops or when modifications to the machine are required.	of out of outstand	OVISION
	Comparisons between similar hazardous situations associated with different types of machinery are often possible, provided that sufficient information about hazards and accident circumstances in those situations is available.	SET OVIS-SET OVIS-SET	OVIS-CER
	NOTE The absence of an accident history, a small number of accidents or low severity of accidents ought not to be taken as a presumption of a low risk.	CE OVISICE OVISICE	ouis-oti
OVIS-CERT	For quantitative analysis, data from databases, handbooks, laboratories or manufacturers' specifications may be used, provided that there is confidence in the suitability of the data. Uncertainty associated with these data shall be indicated in the documentation (see Clause 7).	GERT OVIS GERT OVIS GE	NISCHI
5.3	Determination of limits of machinery		e P _e e
5.3.1	General		P
OVIS-CERT	Risk assessment begins with the determination of the limits of the machinery, taking into account all the phases of the machinery life. This means that the characteristics and performances of the machine or a series of machines in an integrated process, and the related people, environment and products, should be identified in terms of the limits of machinery as given in 5.3.2 to 5.3.5.	SERI OVISCERI OVISCE SERI OVISCERI OVISCE	A ONE P
5.3.2	Use limits	0, 0,	P
OVIS-CERT	Use limits include the intended use and the reasonably foreseeable misuse. Aspects to be taken into account include the following:	CERT ON'S CERT ON'S CE	N PER
OVIS-CERT	a) the different machine operating modes and different intervention procedures for the users, including interventions required by malfunctions of the machine;	SERI OVISCERI OVISCE	AT P
OVIS-CERT	b) the use of the machinery (for example, industrial, non-industrial and domestic) by persons identified by sex, age, dominant hand usage, or limiting physical abilities (visual or hearing impairment, size, strength, etc.);	CERT OVISCERT OVISCE	ONIS-CERT





Page 8 of 106

Report No.: OViSCE2104-032M

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
15			16
0,1	c) the anticipated levels of training, experience or ability of users including	0, 0,	OP
R	1) operators,	A A A	R
.5	2) maintenance personnel or technicians,		
011	3) trainees and apprentices, and4) the general public;	0, 0,	0%
- A	d) exposure of other persons to the hazards		P
.S.C.Y	associated with the machinery where it can be		SCH
	reasonably foreseen:	011 011	011
	1) persons likely to have a good awareness of the specific hazards, such as operators of	à à à	A.
	adjacent machinery;	Sti _Sti _Sti	C.Ctr
04/12	2) persons with little awareness of the specific	ONIS ONIS	OVIS
à	hazards but likely to have a good awareness of	5 5 5	1
Str	site safety procedures, authorized routes, etc.,	ser ser ser	SET
113	such as administration staff; 3) persons likely to have very little awareness	Win Win	113
	of the machine hazards or the site safety		×
	procedures, such as visitors or members of the		C.S.
55	general public, including children.	1	is'
	If specific information is not available in relation to b), above, the manufacturer should take into	0, 0,	O P
	account general information on the intended user	A A A	E.
	population (for example, appropriate		.5
0%.	anthropometric data).	0, 0,	ON.
5.3.3	Space limits	a a a	P
	Aspects of space limits to be taken into account		P
	a) the range of movement,	ON ON	Olin
	b) space requirements for persons interacting		A.
	with the machine, such as during operation and	St cot cot	C.C.C.
	c) human interaction such as the operator–	ONIS ONIS	ONIS
	machine interface, and	5 5 5	4
	d) the machine–power supply interface.	Ser Ser Ser	Stin
5.3.4	Time limits	Wis Wis	N'P
~	Aspects of time limits to be taken into account		PA
	include	SER. SER. SER	CER.
Nis	a)the life limit of the machinery and/or of some of its components (tooling, parts that can wear,	Will Will	Nis
~	electromechanical components, etc.), taking into		~
	account its intended use and reasonably	and and and	C.F.
VISIO	foreseeable misuse, and	ist wist	115
0	b) recommended service intervals.	0" 0"	0"
5.3.5	Other limits	A A A	P
1.S.C.	Examples of other limits include a) properties of the material(s) to be processed,		P
01.	b) housekeeping — the level of cleanliness	0, 0,	01.
1 AN	required, and		A.
C.CE.	c) environmental — the recommended	St alt alt	C.Ch
ONIS	minimum and maximum temperatures, whether the machine can be operated indoors or	ONIS ONIS	OVIS
4	outdoors, in dry or wet weather, in direct sunlight,	\$ \$ \$	1
SEL	tolerance to dust and wet, etc.	Ser our our	offic
5.4	Hazard identification	1.15 J.15	N ⁱ P

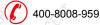


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Page 9 of 106

EN ISO 12100				
Clause	Requirement + Test	Result-Remark	Verdict	
- 5'0"			-5'0	
ONIT	After determination of the limits of the machinery,	On One	OP	0
10.	the essential step in any risk assessment of the machinery is the systematic identification of	à à á	5 . 5	
SEL	reasonably foreseeable hazards (permanent	Str. Str. St	Str	
Nis	hazards and those which can appear	NIS NIS	N'12	1
~	unexpectedly), hazardous situations and/or			
CER	hazardous events during all phases of the machine	4 ¹ 4 ¹ 4 ¹	i de la companya de l	
J.S.	life cycle, i.e.: - transport, assembly and installation;		- Si	1
	- commissioning;	0, 0,	O P	0
	- use;	A B A	N AN	
S	- dismantling, disabling and scrapping.		S	
	Only when hazards have been identified can	0, 0,	0 [°] P	0
(A)	steps be taken to eliminate them or to reduce risks. To accomplish this hazard identification, it	à là là	S A	
	is necessary to identify the operations to be		C.C.C.	
	performed by the machinery and the tasks to be	onis onis	0113	0
	performed by persons who interact with it, taking			
	into account the different parts, mechanisms or	all all all	Str.	
	functions of the machine, the materials to be	5 115 115	1:5	1
	processed, if any, and the environment in which the machine can be used.	0, 0,	0.	0
-A	The designer shall identify hazards taking into	A A A	R	
.5	account the following.		.5	
01.	a) Human interaction during the whole life cycle	0, 0,	O P	0
	of the machine	à à à	S A	
	Task identification should consider all tasks associated with every phase of the machine life	Str. Str. Str.	C.C.	
	cycle as given above. Task identification should	NIP WIP	all's	6
<u> </u>	also take into account, but not be limited to, the			
SEL	following task categories:	str str	CHY I	
	s - setting;	o vis vis	Visi	1
	 testing; teaching/programming; 	0. 0.	0	0
- A	- process/tool changeover;	A A A	in the last	
	- start-up;		S	
	- all modes of operation;	01, 01,	02.	0
, én	- feeding the machine;	à là là	in a	
C.Ct.	- removal of product from machine;	St alt alt	C.C.C.	
ONIS	 stopping the machine; stopping the machine in case of emergency; 	ONIS ONIS	04/12	10
Å	- recovery of operation from jam or blockage;		× ×	
CERT	- restart after unscheduled stop;	fer off of	SER.	
VIS	- fault-finding/trouble-shooting (operator	o vis visi	VIS	1
0	intervention);	V. 0.	0	0
R	 cleaning and housekeeping; preventive maintenance; 	at at a	- LAI	
1.S.	- corrective maintenance.	5	.S.	
0,	All reasonably foreseeable hazards, hazardous	0, 0,	P	0
à	situations or hazardous events associated with	à là là	S a	
C.CH	the various tasks shall then be identified.	St St St	C.C.L	
OVIS	Annex B gives examples of hazards, hazardous situations and hazardous events to assist in this	ONIS ONIS	0412	6
~	process.Several methods are available for the		× ×	
	systematic identification of hazards. See also	Str Str St	CHR.	
NIS'	ISO/TR 14121-2.	o vis visi	N'S'	1
0.	In addition, reasonably foreseeable hazards,	0, 0,	P	0

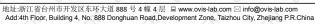




Page 10 of 106

Report No.: OViSCE2104-032M

	EN ISO 12100			
Clause	Requirement + Test	Result-Remark	Verdict	
OVIS-OFAT	hazardous situations or hazardous events not directly related to tasks shall be identified. EXAMPLE Seismic events, lightning, excessive snow loads, noise, break-up of machinery, bydraulie bose burst	SCHART MISCHART MISCHART	OVIS-CERT	
OVIS-CERT	 hydraulic hose burst. b) Possible states of the machine These are as follows: 1) the machine performs the intended function (the machine operates normally); 2) the machine does not perform the intended 	SCHAT OVIS-CHAT OVIS-CHA	P P P	
	function (i.e. it malfunctions) due to a variety of reasons, including - variation of a property or of a dimension of the processed material or of the workpiece, - failure of one or more of its component parts or services,	SER OUTS OF OUTS OF	ovis-offic	
	 external disturbances (for example, shocks, vibration, electromagnetic interference), design error or deficiency (for example, software errors), disturbance of its power supply, and surrounding conditions (for example, 	SERT ON'S CERT ON'S CER	OVI-SCERI	
OVISIONERI	damaged floor surfaces).c) Unintended behaviour of the operator orreasonably foreseeable misuse of the machineExamples include	SERI OVISCERI OVISCER	NIP OVIP	
	 loss of control of the machine by the operator(especially for hand-held or mobile machines), reflex behaviour of a person in case of malfunction, incident or failure during the use 	State outs offer outs offer	OVIS-CERI	
	of the machine, - behaviour resulting from lack of concentration o carelessness, - behaviour resulting from taking the "line of	FOT ONS CT ONS CT	OVIS-CL	
	 least resistance" in carrying out a task, behaviour resulting from pressures to keep the machine running in all circumstances, and behaviour of certain persons (for example, children, disabled persons). 	SERIE CERT CONSCI	OVISIO HA	
	NOTE Examination of the available design documentation can be a useful means of identifying hazards related to the machinery, particularly those associated with moving elements such as motors or hydraulic cylinders.	SERT WISCERT WISCER	OVIS-GERI	
5.5	Risk estimation		P	
5.5.1	General		P	
OVIS-CERT	After hazard identification, risk estimation shall be carried out for each hazardous situation by determining the elements of risk given in 5.5.2. When determining these elements, it is necessary to take into account the aspects given in 5.5.3. If standardized (or other suitable) measurement methods exist for an emission, they should be used, in conjunction with existing machinery or prototypes, to determine emission values and comparative emission data. This makes it	SCHAT ONIS CHAT ONIS CHAT	OVP	





Page 11 of 106

Report No.: OViSCE2104-032M

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
NIS. C.	possible for the designer to	Wis Wis !!	NIS-U.
OVIS-CERT	 estimate the risk associated with the emissions, evaluate the effectiveness of the protective measures implemented at the design stage, provide potential buyers with quantitative information on emissions in the technical documentation, and 	SERT ONS-CERT ONS-CERT	P OVIS-CERI
OVISION O	- provide users with quantitative information on emissions in the information for use.	ovisit ovisit	OVISION
	Hazards other than emissions that are described by measurable parameters can be dealt with in a similar manner.	SEAT WESCHART WISCHART	PERI
5.5.2	Elements of risk		P
5.5.2.1	General	fer der der	R
ONIS (The risk associated with a particular hazardous situation depends on the following elements:	ONIS ONIS	N ⁱ P
OVIS-CERT	 a) the severity of harm; b) the probability of occurrence of that harm, which is a function of 1) the exposure of person(s) to the hazard, 2) the occurrence of a hazardous event, and 	ERI OVISCERI OVISCERI ERI OVISCERI OVISCERI	P.A
OVIES C	 3) the technical and human possibilities to avoid or limit the harm. The elements of risk are shown in Figure 3. Additional details are given in 5.5.2.2, 5.5.2.3 and 	OVIS OVIS SEA SEA SEA	PER
OVIS-CERT	RISK related to the considered hazard sis a function of that can result from the considered hazard sis a function of sis a function of that can result from the considered hazard sis a function of that can result from the considered hazard sis a function of that can result from the considered hazard sis a function of that can the considered hazard sis a function the considered hazard sis a function function the considered hazard sis a function functi	ITY OF OCCURRENCE of that harm osure of person(s) to the hazard e occurrence of hazardous event possibility to avoid r limit the harm	Performance
5.5.2.2	Severity of harm	a a a	P
OVIS-CERT	The severity can be estimated by taking into account the following: a) the severity of injuries or damage to health, for example, - slight, - serious, - death.	SERIE OVIS-CERT OVIS-CERT	P P OVISCERI
WiS-CERI	 b) the extent of harm, for example, to - one person, - several persons. 	EFFI NIS CEFFI NIS CEFFI	PERI
~	When carrying out a risk assessment, the risk		P 🔬



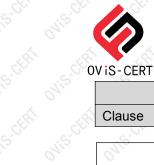


Page 12 of 106

Report No.: OViSCE2104-032M

	EN ISO 12100			
Clause	Requirement + Test	Result-Remark	Verdict	
OVIS-CERT	from the most likely severity of the harm that is likely to occur from each identified hazard shall be considered, but the highest foreseeable severity shall also be taken into account, even if the probability of such an occurrence is not high.	CERT ONIS-CERT ONIS-CERT	OWS-CER	
5.5.2.3	Probability of occurrence of harm		Р	
5.5.2.3.1	Exposure of persons to the hazard	St St St	. P	
OVIS-CERT	The exposure of a person to the hazard influences the probability of the occurrence of harm. Factors to be taken into account when estimating the exposure are, among others, a) the need for access to the hazard zone (for	CERT ONE CERT ONE CERT	ON P	
SCHRI	normal operation, correction of malfunction, maintenance or repair, etc.),b) the nature of access (for example, manual	ERA SERA	CHR.	
011	feeding of materials),	041. 041.	ON'P	
CLIFT	c) the time spent in the hazard zone,	di di di	P	
Nis	d) the number of persons requiring access, and	Wis Wis	N.SP	
at less	e) the frequency of access.		P	
5.5.2.3.2	Occurrence of a hazardous event	St St St	P	
ON.	The occurrence of a hazardous event influences the probability of occurrence of harm. Factors to be taken into account when estimating the occurrence of a hazardous event are, among others	CERT US CERT US CERT	O" P	
07	a) reliability and other statistical data,	0, 0,	° Р	
CERT	b) accident history,	AD AD A	P	
04:15	c) history of damage to health, and	OVIS OVIS	ovi P	
115-CERT	d) comparison of risks (see 5.6.3). NOTE The occurrence of a hazardous event can be of a technical or human origin.	EFA IS SEA	P	
5.5.2.3.3	Possibility of avoiding or limiting harm		P	
OVIS-CERT	The possibility of avoiding or limiting harm influences the probability of occurrence of harm. Factors to be taken into account when estimating the possibility of avoiding or limiting harm are, among others, the following:		OVIS-CER	
	 a) different persons who can be exposed to the hazard(s), for example, skilled, unskilled; 	NIST OVIST	N ^{ISP}	
OVIS-CERT	 b) how quickly the hazardous situation could lead to harm, for example, - suddenly, - quickly, - slowly; 	CERT SCEPT SCEPT	OVICE P	
OVIS-CERT	 c) any awareness of risk, for example, by general information, in particular, information for use, by direct observation, through warning signs and indicating devices, in particular, on the machinery; 	CERT ONE CHRI ONE CHRI	OVP OVIS-CER	





Page 13 of 106

Report No.: OViSCE2104-032M

EN ISO 12100			
Clause	Requirement + Test	Result-Remark	Verdict
OVISION	d) the human ability to avoid or limit harm (for example, reflex, agility, possibility of escape);	ONE ONE ONE	OVP
ONISCEPT	 e) practical experience and knowledge, for example of the machinery, of similar machinery, no experience. 	SERT OVIS-CERT OVIS-CERT	PCFR OVISION
5.5.3	Aspects to be considered during risk estimation		Pill
5.5.3.1	Persons exposed	ONE ONE	ON'P
JIS-CERT	Risk estimation shall take into account all persons (operators and others) for whom exposure to the hazard is reasonably foreseeable.	SEAT MESCERIA MESCERIA	PLA
5.5.3.2	Type, frequency and duration of exposure		P
OVIS-CERT	The estimation of the exposure to the hazard under consideration (including long-term damage to health) requires analysis of, and shall account for, all modes of operation of the machinery and methods of working. In particular, the analysis shall	SER ONE-CERTONIE-CERTONIE-CERTONIE-CERTONIE-CERTONIE-CERTONIE-CERTONIE-CERTONIE-CERTONIE-CERTONIE-CERTONIE-CERT	P.E.M.
OVISION	account for the needs for access during loading/ unloading, setting, teaching, process changeover or correction, cleaning, fault-finding and maintenance.	ONIS-CL ONIS-CL	0415-01
OVIS-CET	The risk estimation shall also take into account tasks, for which it is necessary to suspend protective measures.	SET OVISCET OVISCET	PSEN OVIS
5.5.3.3	Relationship between exposure and effects	A A A	P
OVIS-CERT OVIS-CERT OVIS-CERT OVIS-CERT	The relationship between an exposure to a hazard and its effects shall be taken into account for each hazardous situation considered. The effects of accumulated exposure and combinations of hazards shall also be considered. When considering these effects, risk estimation shall, as far as practicable, be based on appropriate recognized data. NOTE 1 Accident data can assist in establishing the probability and severity of injury associated with the use of a particular type of machinery with a particular type of protective measure. NOTE 2 Zero accident data is, however, no guarantee of the low probability and severity of an injury.	CERT OVIS-CERT OVIS-CERT OVIS-CERT OVIS-CERT OVIS-CERT OVIS-CERT OVIS-CERT OVIS-CERT OVIS-CERT OVIS-CERT	O ^{VIS} CERI OVISSOERI OVISSOERI OVISSOERI
5.5.3.4	Human factors		
OVI-	 Human factors can affect risk and shall be taken into account in the risk estimation, including, for example, a) the interaction of person(s) with the machinery, 	HO WO GH	P N/A
01,	b) interaction between persons,	01, 01,	P
CERT	c) stress-related aspects,	(tag. (tag. (tag.	P
04:5	The She She She She She	NIS NIS	O ^N P
WIS-CERT	 d) ergonomic aspects, e) the capacity of persons to be aware of risks in a given situation depending on their training, experience and ability, 	SERT MIS-CERT MIS-CERT	P



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Page 14 of 106

Report No.: OViSCE2104-032M

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Clause	Requirement + Test	Result-Remark	Verdict
. S. S.			S
0112	f) fatigue aspects, and	ONLO ONLO	ONP
CERT	g) aspects of limited abilities (due to disability, age, etc.).		P
OVIS-CERT	Training, experience and ability can affect risk; nevertheless, none of these factors shall be used as a substitute for hazard elimination, risk reduction by inherently safe design measure or safeguarding, wherever these protective measures can be practicably implemented.	CERT OVIS-CERT OVIS-CERT	OVIP
5.5.3.5	Suitability of protective measures	di di di	P
OVISSO	Risk estimation shall take into account the suitability of protective measures and shalla) identify the circumstances which can result in	NIST OUS	P
OVIS-CE	 harm, b) whenever appropriate, be carried out using quantitative methods to compare alternative protective measures (see ISO/TR 14121-2), and c) provide information that can assist with the 	ST ST ST ST	P
OVIS-CERT	 selection of appropriate protective measures. When estimating risk, those components and systems identified as immediately increasing the risk in case of failure need special attention. When protective measures include work organization, correct behavior, attention, application of personal protective equipment (PPE), skill or training, the relatively low reliability of such measures compared with proven technical protective measures shall be taken into account in the risk estimation 	CHAT ON'S CHAT ON'S CHAT	P
5.5.3.6	the risk estimation. Possibility of defeating or circumventing protective measures	Sth State March	P
OVIS-OFFIC	For the continued safe operation of a machine, it is important that the protective measures allow its easy use and do not hinder its intended use. Otherwise, there is a possibility that protective measures might be bypassed in order for maximum utility of the machine to be achieved.	CERT ONIS-CERT ONIS-CERT	P OVIS-CERT
OVIS-CERT	Risk estimation shall take account of the possibility of defeating or circumventing protective measures. It shall also take account of the incentive to defeat or circumvent protective measures when, for example,	SERIE INSCRET	N/A
	a) the protective measure slows down production or interferes with another activity or preference of the user,		N/A
115	b) the protective measure is difficult to use,	115 115 D	N/A
07	c) persons other than the operator are involved, or	0, 0,	N/A
OVIS-CERI	 d) the protective measure is not recognized by the user or not accepted as being suitable for its function. 	SERIE ONIS CERT	N/A
OVIS-CERT	Whether or not a protective measure can be defeated depends on both the type of protective measure, such as an adjustable guard or programmable trip device, and its design details.	CERT ONIS-CERT ONIS-CERT	N/A

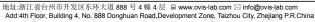




Page 15 of 106

Report No.: OViSCE2104-032M

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
15			res or
	Protective measures that use programmable electronic systems introduce additional possibilities of defeat or circumvention if access to safety- related software is not appropriately restricted by design and monitoring methods. Risk estimation shall identify where safety-related functions are not separated from other machine functions and shall determine the extent to which	SERI OVISSERI OVISSER	ON/A
OVICERI	access is possible. This is particularly important when remote access for diagnostic or process correction purposes is required.	CHI CHI CHI	N ONTO FRI
5.5.3.7	Ability to maintain protective measures		P
OVIS-CERT	Risk estimation shall consider whether the protective measures can be maintained in the condition necessary to provide the required level of protection. NOTE If the protective measure cannot easily be maintained in correct working order, this can encourage the defeat or circumvention of the protective measure in order to allow continued use of the machinery.	SERI OVIS-SERI OVIS-SER	OVIS-CERT
5.5.3.8	Information for use	A A A	P
5.6	Risk estimation shall take into account the information for use, as available. See also 6.4. Risk evaluation	O ^{VISO} O ^{VISO}	P
5.6.1			P
OVIS-OFFI	GeneralAfter risk estimation has been completed, risk evaluation shall be carried out to determine if risk reduction is required. If risk reduction is required, then appropriate protective measures shall be selected and applied (see Clause 6).As shown in Figure 1, the adequacy of the risk reduction shall be determined after applying each of the three steps of risk reduction described in Clause 6. As part of this iterative process, the designer shall also check whether additional hazards are introduced or other risks increased when new protective measures are applied. If additional hazards do occur, they shall be added to the list of identified hazards and appropriate protective measures will be required to address them.Achieving the objectives of risk reduction and a	CERT ON'S CERT OVIS-CERT	OMS-CERT
.S. CERT	favorable outcome of risk comparison applied when practicable gives confidence that risk has been adequately reduced.	SHAT IS SHAT IS SHA	S CERT
5.6.2	Adequate risk reduction	0, 0,	0 [°] P
Wis-CERT	Application of the three-step method described in 6.1 is essential in achieving adequate risk reduction.	SEAL MESSERIE MESSERIE	PLH
- USOCHT	 Following the application of the three-step method, adequate risk reduction is achieved when - all operating conditions and all intervention procedures have been considered, 	ART ART AREA	P





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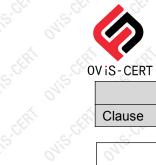


Page 16 of 106

Report No.: OViSCE2104-032M

	EN ISO 12100			
Clause	Requirement + Test	Result-Rema	ark	Verdict
OVISIO	- the hazards have been eliminated or risks reduced to the lowest practicable level,	OME	OVISIO	o P
SCERT	- any new hazards introduced by the protective measures have been properly addressed,	Stri Stri	, S. CHR	PcF
ONIT	- users are sufficiently informed and warned about the residual risks (see 6.1, step 3),	ONIT ON	ONIC	ONP
.S.CER.	- protective measures are compatible with one another,	Sthi Sch	. S. CER	Pith
	- sufficient consideration has been given to the consequences that can arise from the use in a nonprofessional / non-industrial context of a machine designed for professional/industrial use, and	SERI ONS CER		OV'P
C.CERT	- the protective measures do not adversely affect the operator's working conditions or the usability of the machine.	SERI S. OFRI	S. OFR	P
5.6.3.	Comparison of risks	0412	0412	O P
OVIS-CERT	As part of the process of risk evaluation, the risks associated with the machinery or parts of machinery can be compared with those of similar machinery or parts of machinery, provided the following criteria apply:	SEAL ONES CEAL	OVIS-CER	Polifi
Vis OF	- the similar machinery is in accordance with relevant type-C standard(s);	Sti Misson	WiS-CE!	N/A
C.CERT	 the intended use, reasonably foreseeable misuse and the way both machines are designed and constructed are comparable; 	SERIE CERT	C.CER	P
ON'T	- the hazards and the elements of risk are comparable;	0 ³¹	OVIE	бР
CER	- the technical specifications are comparable;	Str. Str	CER	R
0413	- the conditions for use are comparable.	ONIS	0412	OVIP
OVIS-CERT	The use of this comparison method does not eliminate the need to follow the risk assessment process as described in this International Standard for the specific conditions of use. For example, when a band saw used for cutting meat is compared with a band saw used for cutting wood, the risks associated with the different material shall be assessed.	SERI OVIS-GERI	OVIS-CERT	P.H.
6	Risk reduction	A A	. dh	P
6.1	General	N'IS	Wiss	N'iP
OVIS-CERT	The objective of risk reduction can be achieved by the elimination of hazards, or by separately or simultaneously reducing each of the two elements that determine the associated risk:	CERT OVISCER	WiS CHRI	P
SERI	- severity of harm from the hazard under consideration;	SERI SERI	GERI	P
ONIS CERT	 probability of occurrence of that harm. All protective measures intended for reaching this objective shall be applied in the following sequence, referred to as the three-step method (see also Figures 1 and 2). 	SERT WS-CERT	WIS CERT	P
× 0	Step 1: Inherently safe design measures		<u>к</u>	P





CERT Page 17 of 106

Report No.: OViSCE2104-032M

Clause Requirement + Test Result-Remark Verdict Inherently safe design measures eliminate hazards or reduce the associated risks by a suitable choice of design features of the machine liseif and/or interaction between the exposed persons and the machine. See 6.2. NOTE 1 This stage is the only one at which hazards can be eliminated, thus avoiding the need for additional protective measures such as safeguarding or complementary protective measures. P Step 2: Safeguarding and/or complementary protective measures can be used to reduce risk when it is not practicable to eliminate a hazard, or reduce its associated risk sufficiently, using inherently safe design measures. See 6.3. P Step 3: Information for use The information for use shall include, but not be limited to, the following: - operating procedures for the use of the machinery consistent with the expected ability of personnel who use the machinery or other persons who can be exposed to the hazards associated with the machinery; - the recommended safe working practices for the use of the machinery or obsistent with the expected ability of personnel who use the machinery or other persons be exposed to the hazards associated with the machinery; - the description of any recommended personal protective equipment, including warning of residual risks for the different phases of the life of the orrect application of inherently safe design measures, safeguarding or complementary protective ensaures information for uses and lincluding warning of residual risks for the different phases of the life of the machinery; - the descriptication of any recommended personal protective ensaures information for use as dustified retently safe design measures, safeguarding or complementary protective ensaures. N/A NOT		EN ISO 12100			04
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	R	Inherently safe design measures are the first and	à à à	PA	
		most important step in the risk reduction process.	St Ch Ch	Chi	
This is because protective measures inherent to the characteristics of the machine are likely to remain		This is because protective measures inherent to the	Wir Wir	all's	6

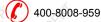




Page 18 of 106

Report No.: OViSCE2104-032M

	EN ISO 12100			
Clause	Requirement + Test	Result-Remark	Verdict	
OVISIO C	effective, whereas experience has shown that even well-designed safeguarding can fail or be violated and information for use may not be followed.	ONE ONE ONE	OVIS-D	
OVIS-CERT	Inherently safe design measures are achieved by avoiding hazards or reducing risks by a suitable choice of design features for the machine itself and/or interaction between the exposed persons and the machine.	SERI SCHIT	OVICP	
WIS-CERT	NOTE See 6.3 for safeguarding and complementary measures that can be used to achieve the risk reduction objectives in the case where inherently safe design measures are not sufficient (see 6.1 for the three-step method).	OVICE OVICE	ON P	
6.2.2	Consideration of geometrical factors and physical aspects	the star star	P	
6.2.2.1	Geometrical factors	Wis Wis of	N.SP	
<u>,</u>	Such factors include the following.		P	
	 a) The form of machinery is designed to maximize direct visibility of the working areas and hazard zones from the control position - reducing blind spots, for example - and choosing and locating means of indirect vision where necessary (mirrors, etc.) so as to take into account the characteristics of human vision, particularly when safe operation requires permanent direct control by the operator, for example: the travelling and working area of mobile 	CERT OUTS CERT OUTS CERT OUTS CERT OUTS CERT OUTS CERT OUTS CERT	OVISOCHI	
	 machines; the zone of movement of lifted loads or of the carrier of machinery for lifting persons; the area of contact of the tool of a hand-held or hand-guided machine with the material being worked. The design of the machine shall be such that, from the main control position, the operator is able to ensure that there are no exposed persons in the danger zones. 	CERT OUTS CERT OUTS CERT	OVIS-CERT	
OVIS-CERT	b) The form and the relative location of the mechanical components parts: for instance, crushing and shearing hazards are avoided by increasing the minimum gap between the moving parts, such that the part of the body under consideration can enter the gap safely, or by reducing the gap so that no part of the body can enter it (see ISO 13854 and ISO 13857).	CEN OVIS-CEN OVIS-CEN CENT OVIS-CENT OVIS-CENT	OVIS ^{CERI}	
ONIS-CERT	c) Avoiding sharp edges and corners, protruding parts: in so far as their purpose allows, accessible parts of the machinery shall have no sharp edges, no sharp angles, no rough surfaces, no protruding parts likely to cause injury, and no openings which can "trap" parts of the body or clothing. In particular, sheet metal edges shall be deburred, flanged or trimmed, and open ends of tubes which can cause a " trap" shall be capped.	CERT OUS-CLE OUS-CLE CERT OUS-CLET OUS-CLET OUS-CLET	OVIS-OFFI	
ONIS (d) The form of the machine is designed so as to achieve a suitable working position and provide	ONIS ONIS	0 ¹ P	





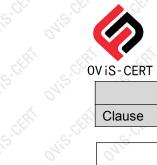
Page 19 of 106

Report No.: OViSCE2104-032M

EN ISO 12100			
Clause	Requirement + Test	Result-Remark	Verdict
50		or and a con	5
011	accessible manual controls (actuators).	ONLY ONLY	0112
6.2.2.2	Physical aspects	à à A	P
	Such aspects include the following:	<u>, 5 , 5 , 5 , 5 , 5 , 5 , 5 , 5 , 5 , 5</u>	P C
ONI	a) limiting the actuating force to a sufficiently low value so that the actuated part does not generate a		P
15	mechanical hazard;	Nº IS IS	S
	b) limiting the mass and/or velocity of the movable elements, and hence their kinetic energy;	0, 0,	S [™] N/A
A.	c) limiting the emissions by acting on the		N/A
	characteristics of the source using measures for reducing	OVISION OVISION	OVISIO
	1) noise emission at source (see ISO/TR	th (h) (h)	C.C.C.
	11688-1),2) the emission of vibration at source, such as redistribution or addition of mass and changes of	ONIST ONIST	OVISIO
	process parameters [for example, frequency and/or amplitude of movements (for hand-held	CERT WIS-CERT WIS-CERT	NIS-SERI
	and hand-guided machinery, see CR 1030-1)], 3) the emission of hazardous substances, including the use of less hazardous substances		O" CERT
	or dust-reducing processes (granules instead of powders, milling instead of grinding), and 4) radiation emissions, including, for example,	OVISIO OVISIO	OVISIO
	avoiding the use of hazardous radiation sources, limiting the power of radiation to the lowest level sufficient for the proper functioning of	CERT WIS-CERT WIS-CER	WIS-CER!
	the machine, designing the source so that the beam is concentrated on the target, increasing the	SERIE SERIE SERIE	SERI
	distance between the source and the operator or providing for remote operation of the machinery [measures for reducing emission of non-ionizing	out of ot	OVID
	radiation are given in 6.3.4.5 (see also EN 12198-1 and EN12198-3)].	Stranger Stranger	Soft
6.2.3	Taking into account general technical knowledge of	0/10 0/10	ON P
VIS-CERT	machine designThis general technical knowledge can be derived from technical specifications for design	SEAL ALSO SEAL ALSO SEA	REF
ON LEAT	 (standards, design codes, calculation rules, etc.), which should be used to cover a) mechanical stresses such as 		0,,
	- stress limitation by implementation of correct calculation, construction and fastening methods	OVISION OVISION	OVISION
	as regards, for example, bolted assemblies and welded assemblies, - stress limitation by overload prevention	SERVI NIS-SERVI NIS-SERVI	Wis-OFRI
	(bursting disk, pressure-limiting valves, breakage points, torque-limiting devices,etc.), - avoiding fatigue in elements under variable	EFA CHAT SHA	CERT
ovis	 stresses (notably cyclic stresses), and static and dynamic balancing of rotating elements, 	ovis ovis	ovis
WIS-CER	b) materials and their properties such as - resistance to corrosion, ageing, abrasion and wear,	CE OVIS-CE OVIS-CE	Pitt



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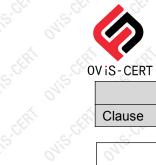


CERT Page 20 of 106

Report No.: OViSCE2104-032M

Clause	Requirement + Test	Result-Remark	Vardiat
16			Verdict
O' CERT	 hardness, ductility, brittleness, homogeneity, toxicity, and flammability, and 	CERT ONE CERT	ONIS CERT
OW STEER	 c) emission values for noise, vibration, hazardous substances, and radiation. 	CERT ON OW	ON'P
OVIS-CERT	When the reliability of particular components or assemblies is critical for safety (for example, ropes, chains, lifting accessories for lifting loads or persons), stress limits shall be multiplied by appropriate working coefficients.	SERIE OVISSCERIE OVISSCERIE	P HI
6.2.4	Choice of appropriate technology	Setting Setting	P
OVIS CERT	One or more hazards can be eliminated or risks reduced by the choice of the technology to be used in certain applications such as the following: a) on machines intended for use in explosive atmospheres, using - appropriately selected pneumatic or hydraulic control system and machine actuators,	OVICE OVICE	P N/A
OVIS-CEIN	 - intrinsically safe electrical equipment (see IEC 60079-11); b) for particular products to be processed (for 	SET OVISICET OVISICET	OVIS-CEN
OVIS-CERT	example, by a solvent), by using equipment that ensures the temperature will remain far below the flash point;	SERIE ONIS-CERT ONIS-CERT	OVIS-CERT
OVIS-CERT	 c) the use of alternative equipment to avoid high noise levels, such as electrical instead of pneumatic equipment, in certain conditions, water-cutting instead of mechanical equipment. 	SERT ONIS-CERT ONIS-CERT	N/A
6.2.5	Applying principle of positive mechanical action	Sthi Sthi Sthi	P
OVIS-CERT	Positive mechanical action is achieved when a moving mechanical component inevitably moves another component along with it, either by direct contact or via rigid elements. An example of this is positive opening operation of switching devices in an electrical circuit (see IEC 60947-5-1 and ISO 14119). NOTE Where a mechanical component moves and thus allows a second component to move freely (for example, by gravity or spring force), there is no positive mechanical action of the first component on the second.	CERT ONESCERT ONESCERT	OVIE-CERT
6.2.6	Provisions for stability	OM. OM.	ONP
OVIS-CERT	Machines shall be designed so that they have sufficient stability to allow them to be used safely in their specified conditions of use. Factors to be taken into account include - the geometry of the base, - the weight distribution, including loading,	SERIE ONIS-CERT ONIS-CERT	P.H

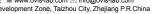




Page 21 of 106

Report No.: OViSCE2104-032M

	EN ISO 12100		_
Clause	Requirement + Test	Result-Remark	Verdict
112 UT	hold by the machine which any requilt in an	NIP IIP	115
	held by the machine which can result in an overturning moment,	0, 0,	01
	- vibration,	A A A	A.
	- oscillations of the centre of gravity,	NIS NIS	1.5
	- characteristics of the supporting surface in case of travelling or installation on different sites	0, 0,	0
	(ground conditions, slope, etc.), and	an an an	AL.
	- external forces, such as wind pressure and	115 115	1.5
0	manual forces.	0, 0,	0
	Stability shall be considered in all phases of the life cycle of the machine, including handling,	an an an	P
	travelling, installation, use, dismantling, disabling		1.5
0	and scrapping.	0 0	0
	Other protective measures for stability relevant to safeguarding are given in 6.3.2.6.	an an an	P
6.2.7	Provisions for maintainability	1.5 1.5	N'P
0.2.1	When designing a machine, the following	0, 0,	P
	maintainability factors shall be taken into account to	A A A	(AL)
115	enable maintenance of the machine: - accessibility, taking into account the environment	16 16 1 16 1	A P
	and the human body measurements, including the	0, 0,	0" P
	dimensions of the working clothes and tools used;	and and and	(A)
	- ease of handling, taking into account human	15	1:5
	capabilities; - limitation of the number of special tools and	0, 0,	01
Ŕ	equipment.	A A A	A.
6.2.8	Observing ergonomic principles	1151 1151	T?P
0*	Ergonomic principles shall be taken into account in		P
	designing machinery so as to reduce the mental or physical stress of, and strain on, the operator.	(P) (P) (P)	CHR.
	These principles shall be considered when	NIS NIS	Visi
	allocating functions to operator and machine		0 ×
	(degree of automation) in the basic design. NOTE Also improved are the performance and		CHR.
	reliability of operation and hence the reduction in	NIS NIST	J.S.
	the probability of errors at all stages of machine		0.
CER!	use. Account shall be taken of body sizes likely to be	(Az (Az (Az	Þ
	found in the intended user population, strengths	Wis Wiss	Nis
	and postures, movement amplitudes, frequency		×
CER'	of cyclic actions (see ISO 10075 and ISO10075-2). All elements of the operator- machine interface,	1935 - 1935 - 1935 1935 - 1935 - 1935	E E
	such as controls, signalling or data display	Wis Wis	NIS-
	elements, shall be designed to be easily		×
	understood so that clear and unambiguous interaction between the operator and the machine	ER CR CR	CER.
	is possible. See EN 614-1, EN 13861 and	Wis Wis	NIS.
N X	IEC 61310-1.		×
	The designer's attention is particularly drawn to following ergonomic aspects of machine design.	APT APT APT	Per
VIS	a) Avoid the necessity for stressful postures and	Wis Wis	N/A
	movements during the use of the machine (for		×
	example, providing facilities to adjust the machine	fer off off	CER.
	to suit the various operators).		.5



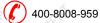


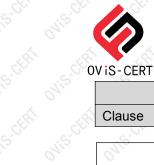


Page 22 of 106

Report No.: OViSCE2104-032M

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
OVIS-CERT	b) Design machines, especially hand-held and mobile machines, so as to enable them to be operated easily, taking into account human effort, actuation of controls and hand, arm and leg anatomy.	SEAT WESCHARD WESCH	ONP S ONS-CER
	c) Limit as far as possible noise, vibration and		P.A
SU	thermal effects such as extreme temperatures.d) Avoid linking the operator's working rhythm to		- Sila
	an automatic succession of cycles.	ONLY ONLY	N/A
	e) Provide local lighting on or in the machine for the illumination of the working area and of adjusting, setting-up and frequent maintenance zones when the design features of the machine and/or its guards render the ambient lighting inadequate. Flicker, dazzling, shadows and stroboscopic effects shall be avoided if they can cause a risk. If the position or the lighting source	SERI OVISCERI OVISCER	N/A
Wis-GERT	has to be adjusted, its location shall be such that it does not cause any risk to persons making the adjustment.f) Select, locate and identify manual controls	SERIE ONISCERIE ONISCER	P
	 (actuators) so that they are clearly visible and identifiable, and appropriately marked where necessary (see 6.4.4), they can be safely operated without hesitation 	SERIE ONIS CERT OVIS CER	OVIS-CER
	or loss of time and without ambiguity (for example, a standard layout of controls reduces the possibility of error when an operator changes from a machine to another one of similar type having the same pattern of operation), - their location (for push-buttons) and their movement (for levers and hand wheels) are consistent with their effect (see IEC 61310-3),	SERIE OVISCENT OVISCEN	OUTS-CLER
	and - their operation cannot cause additional risk. See also ISO 9355-3. Where a control is designed and constructed to perform several different actions — namely, where there is no one-to-one correspondence (for	SERI OVISCERI OVISCERI	OVIS-CERI
	example, keyboards) — the action to be performed shall be clearly displayed and subject to confirmation where necessary. Controls shall be so arranged that their layout, travel and resistance to operation are compatible with the action to be performed, taking account of	CERT ONIS CERT OVIS OF	OVIS-CERT
OVIS-CEL	with the action to be performed, taking account of ergonomic principles. Constraints due to the necessary or foreseeable use of personal protective equipment (such as footwear, gloves) shall be taken into account.	State State State	NIS-CET
	 g) Select, design and locate indicators, dials and visual display units so that they fit within the parameters and characteristics of human perception, information displayed can be detected, identified and interpreted conveniently, i.e. long-lasting, distinct, unambiguous and 	SERT OVISCERT OVISCER	N/A

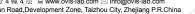




Page 23 of 106

Report No.: OViSCE2104-032M

	EN ISO 12100				
Clause	Requirement + Test	Result-Remark	Verdict		
OVIS-CERT	understandable with respect to the operator's requirements and the intended use, and - the operator is able to perceive them from the control position.	St ONE OF ONE ST	OWS-OFF		
6.2.9	Electrical hazards	ONLY ONLY	N/A		
OVIS-CERT	For the design of the electrical equipment of machines, IEC 60204-1 gives general provisions about disconnection and switching of electrical circuits and for protection against electric shock. For requirements related to specific machines, see corresponding IEC standards (for example, IEC 61029, IEC 60745 or IEC 60335).	SEAT OUTS CEAT OUTS CEAT	N/A		
6.2.10	Pneumatic and hydraulic hazards	0, 0,	N/A		
CLA	Pneumatic and hydraulic equipment of machinery shall be designed so that	SER SER SER	N/A		
ONTO CRI	- the maximum rated pressure cannot be exceeded in the circuits (using, for example, pressure-limiting devices),	AND AND AND	N/A		
NIS OF	 - no hazard results from pressure fluctuations or increases, or from loss of pressure or vacuum, 	of all sold and sold	N/A		
C. CERT	 - no hazardous fluid jet or sudden hazardous movement of the hose (whiplash) results from leakage or component failures, 	SEAL SCHALLSCHALL	N/A		
OVIC CHAI	- air receivers, air reservoirs or similar vessels (such as in gas-loaded accumulators) comply with the applicable design standard codes or regulations for these elements,	SERI SSCHI SCHI	N/A		
ON CEFT	 all elements of the equipment, especially pipes and hoses, are protected against harmful external effects, 		N/A		
	- as far as possible, reservoirs and similar vessels (for example, gas-loaded accumulators) are automatically depressurized when isolating the machine from its power supply (see 6.3.5.4) and, if not possible, means are provided for their isolation, local depressurizing and pressure indication (see also ISO 14118:2000, Clause 5), and	OVISCE OVISCER	OVIS-CER		
	- all elements which remain under pressure after isolation of the machine from its power supply are provided with clearly identified exhaust devices, and there is a warning label drawing attention to the necessity of depressurizing those elements before any setting or maintenance activity on the machine.	GEN ONE-OFT ONE-OFT	N/A		
0412	NOTE See also ISO 4413 and ISO 4414.	041 0412	N/A		
6.2.11	Applying inherently safe design measures to	A. A. A.	P		
6.2.11.1	control systems	NIS NIS	S.S.		
OVIS-CERT	General The design measures of the control system shall be chosen so that their safety-related performance provides a sufficient amount of risk reduction (see ISO 13849-1 or IEC 62061).	SERIE OVIS-CERIE OVIS-CERIE	O" P P		
WIS-CERT	The correct design of machine control systems can avoid unforeseen and potentially hazardous machine behaviour.	SEA MESCHAIN WESCHA	PIR		
~	Typical causes of hazardous machine behaviour		N/A		







Page 24 of 106

Report No.:OViSCE2104-032M

	<u> </u>	~		- C1	- C.
	EN ISO 12100	_			
Clause	Requirement + Test	Re	sult-Rem	ark	Verdio
		, Cr	SUT	SUT	SU
ONIC	are				011
x	- an unsuitable design or modification (accidental or	~			
8 8	deliberate) of the control system logic,	S.			4
	- a temporary or permanent defect or failure of				.50
0415	one or several components of the control system,				0115
4	- a variation or a failure in the power supply of the	4			
8 8	control system, and	de la companya de la			1 des
.5	- inappropriate selection, design and location of	5			.5
011	the control devices.		011	011	01'
A	Typical examples of hazardous machine	~			Р
8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 -	behaviour are	dir.			es est
.5	- unexpected start-up (see ISO 14118),	5			15
01.	- uncontrolled speed change,				0
á á	- failure to stop moving parts,	á			
St St	- dropping or ejection of part of the machine or of a	Ser			, S
1.S	workpiece clamped by the machine, and				115
0,	 machine action resulting from inhibition(defeating 		0.		0,
á á	or failure) of protective devices.	.0		, á	
St St	In order to prevent hazardous machine behaviour	SV)			N/A
119	and to achieve safety functions, the design of	2			119
0.	control systems shall comply with the principles and				0.
à à	methods presented in this subclause (6.2.11) and in	1 and			1
5°	6.2.12. These principles and methods shall be	S.			, CY
VIS	applied singly or in combination as appropriate	2			112
0	to the circumstances (see ISO 13849-1,	5			0
ê A	IEC 60204-1 and IEC 62061).	R	- A	és.	
5 ^M	Control systems shall be designed to enable the	S.			N/A
alle	operator to interact with the machine safely and	e			dis
~ /	easily. This requires one or several of the	~			
8 8	following solutions: - systematic analysis of start and stop conditions;	R			4
5	- provision for specific operating modes (for	ju'			.50
ONIT	example, start-up after normal stop, restart after				0115
4	cycle interruption or after emergency stop,	~			
8 - 8	removal of the workpieces contained in the	de la			1 de la
.5	machine, operation of a part of the machine in case	j.			.5
011	of a failure of a machine element);				0%
á	- clear display of the faults;	~			
50 - C41	- measures to prevent accidental generation of	S.			d'
15	unexpected start commands (for example, shrouded	5			15
0,	start device) likely to cause dangerous machine				0,
á á	behaviour (see ISO 14118:2000, Figure 1);	á			
54 S44	- maintained stop commands (for example,	Ser			S.
115	interlock) to prevent restarting that could result in	5			VIS
0,0	dangerous machine behaviour (see ISO				0,
à à	14118:2000, Figure 1).	, én	, á	, é	
34. 254	An assembly of machines may be divided into	Sec.	, Cro	, Cr	P
Nis	several zones for emergency stopping, for	2			113
0	stopping as a result of protective devices and/or				0
à à	for isolation and energy dissipation. The different	à			1
24 Str	zones shall be clearly defined and it shall be	Sec.			, CY
NIS.	obvious which parts of the machine belong to which	2			112
0	zone. Likewise, it shall be obvious which control				0
À À	devices (for example, emergency stop devices,	S.			2
SY St.	supply disconnecting devices) and/or protective	S			C.CX
NIS.	devices belong to which zone. The interfaces	2			Jus
	between zones shall be designed such that no				0

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Page 25 of 106

Report No.: OViSCE2104-032M

EN ISO 12100				
Clause	Requirement + Test	Result-Remark	Verdict	
VIS OF	function in one zone creates hazards in another	No No No	115-Ut	
	zone which has been stopped for an intervention.	0, 0,	07	
CER	Control systems shall be designed to limit the	To, To, To,	N/A	
	movements of parts of the machinery, the machine itself, or workpieces and/or loads held by the	Nisio Nisio	NIS'	
	machinery, to the safe design parameters (for			
	example, range, speed, acceleration, deceleration, load capacity). Allowance shall be made for	self self self	CER	
ONIS	dynamic effects (swinging of loads, etc.).	ON'S ON'S	0412	
	For example: - the travelling speed of mobile pedestrian		N/A	
	controlled machinery other than remote-		.S.C.C.	
	controlled shall be compatible with walking speed;	ONLY ONLY	ONIT	
	- the range, speed, acceleration and deceleration of movements of the person-carrier and carrying	and and and	A.	
	vehicle for lifting persons shall be limited to	or wish wish	1.5	
	non-hazardous values, taking into account the total reaction time of the operator and the machine;	01 01	01	
	- the range of movements of parts of machinery	di di di	(FR)	
	for lifting loads shall be kept within specified limits.	NIST NIST	N'S'	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	When the machinery contains various elements		N/A	
	that can be operated independently, the control system shall be designed to prevent risks arising	self self self	Stin	
	out of a lack of coordination (for example, collision	ONIS ONIS	0412	
0.0.44.0	prevention system).			
6.2.11.2	Starting of an internal power source/switching on an external power supply	st soft soft	R	
04	The starting of an internal power source or	0,1, 0,1,	P	
	switching-on of an external power supply shall not result in a hazardous situation.	de de de	R	
Vision	For example:	Wiss Wiss	J'P	
	- starting the internal combustion engine shall not lead to movement of a mobile machine;		0.	
	- connection to mains electricity supply shall not	EFT SFT SFT	(FL)	
0115	result in the starting of working parts of a machine. See IEC 60204-1:2005, 7.5 (see also Annexes A	NIS NIS	S NI/A	
. A.	and B).		N/A	
6.2.11.3	Starting/stopping of a mechanism	or sor sor	N/A	
Olin	The primary action for starting or accelerating the	0, 0,	N/A	
	movement of a mechanism should be performed by the application or an increase of voltage or fluid	and and and	- A	
	pressure, or - if binary logic elements are	NIS NIS	VIS-UT	
	considered - by passage from state 0 to state 1 (where state 1 represents the highest energy state).		0"	
CERI	The primary action for stopping or slowing down	EFT SET SET	N/A	
	should be performed by removal or reduction of voltage or fluid pressure, or $-$ if binary logic	Wis Wis	Nis	
	elements are considered — by passage from		×	
	state 1 to state 0 (where state 1 represents the	SET SET SET	CER	
01/12	highest energy state). In certain applications, such as high-voltage	ONIS ONIS		
	switchgear, this principle cannot be followed, in	à à A	N/A	
	which case other measures should be applied to achieve the same level of confidence for the		.S.St.	
	stopping or slowing down.	On On	011	



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# Page 26 of 106

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
OVIS-CERT O	When, in order for the operator to maintain permanent control of deceleration, this principle is not observed (for example, a hydraulic braking device of a self-propelled mobile machine), the machine shall be equipped with a means of slowing and stopping in case of failure of the main braking system.	CERT ONSCENT ONSCEN	N/A
6.2.11.4	Restart after power interruption	1.12 1.12	N/A
OVIS-CERT	If a hazard could be generated, the spontaneous restart of a machine when it is re-energized after power interruption shall be prevented (for example, by use of a self-maintained relay, contactor or valve).	CERT OVISCERT OVISCER	N/A
6.2.11.5	Interruption of power supply	(h) (h) (h)	Per
OVIS-CERT O	Machinery shall be designed to prevent hazardous situations resulting from interruption or excessive fluctuation of the power supply. At least the following requirements shall be met: - the stopping function of the machinery shall remain;	OVISCERT OVISCER	ONIP ONIS-CERT
	<ul> <li>all devices whose permanent operation is required for safety shall operate in an effective way to maintain safety (for example, locking, clamping devices, cooling or heating devices, power-assisted steering of self-propelled mobile machinery);</li> <li>parts of machinery or workpieces and/or loads held by machinery which are liable to move as a result of potential energy shall be retained for the</li> </ul>	CERT OUTS CERT OUTS CERT	OVIS-CERT
62116	time necessary to allow them to be safely lowered.	NIP NIP	N/A
6.2.11.6	Use of automatic monitoring Automatic monitoring is intended to ensure that a safety function or functions implemented by a protective measure do not fail to be performed if the ability of a component or an element to perform its function is diminished, or if the process conditions are changed such that hazards are generated.	OV OV	N/A N/A
ONIS-CERT	Automatic monitoring either detects a fault immediately or carries out periodic checks so that a fault is detected before the next demand upon the safety function. In either case, the protective measure can be initiated immediately or delayed until a specific event occurs (for example, the beginning of the machine cycle).	ON ON ON	N/A
OVIS-CERT	The protective measure may be, for example, - the stopping of the hazardous process, - preventing the restart of this process after the first stop following the failure, or - the triggering of an alarm.	OVIS OVIS	N/A
6.2.11.7	Safety functions implemented by programmable	<u> </u>	N/A
6.2.11.7.1	electronic control systems General	office and the second	N/A
0.2.311.7.1	h of of of of of	ONIT ONITS	N/A
s Test Report is issued	A control system that includes programmable by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your	bur exclusive use Attention is drawn to the limit.	





# Page 27 of 106

electronic equipment (for example, programmable controllers) can, where appropriate, be used to implement safety functions at machinery. Where a programmable electronic control system is used, it is necessary to consider its performance requirements in relation to the requirements for the safety functions. The design of the programmable electronic control system shall be such that the probability of random hardware failures and the likelihood of systematic failures that can adversely affect the performance of the safety-related control function(s) is sufficiently low. Where a programmable electronic control system performs a monitoring function, the system behaviour on detection of a fault shall be considered (see also the IEC 61508 series for further guidance).         N/A           NOTE Both ISO 13849-1 and IEC 62061, specific to machinery safety, provide guidance applicable to programmable electronic control system should be installed and validated to ensure that the specified performance of the example, safety function has been achieved. Validation comprises testing and analysis (for example, safety function and that unintended functions do not occur.         N/A           it.2.11.7.2         Hardware aspects         N/A         N/A           it.2.11.7.2         Hardware aspects         N/A         N/A           it.2.11.7.3         Software, or system solution of the system, its ability to tolerate faults, its behaviour on detection of a fault, etc.), - selection, and ord edisign, of equipment and devices with an appropriate probability of dangerous random hardware faulters.         N/A           it.2.11.7.3         Software (ar system solution of the system, its ability to tolerate faults, eefinament bacelification for the safety functions (see also IEC 61508		EN ISO 12100		
controllers) can, where a ppropriate, be used to implement safety functions at machinery. Where a programmable electronic control system is used, it is necessary to consider its performance requirements in relation to the requirements for the safety functions. The design of the programmable electronic control system shall be such that the probability of random hardware failures and the likelihood of systematic failures that can adversely affect the performance of the safety-related control function(s) is sufficients that can adversely affect the performance of the safety-related control function(s) is sufficiently low. Where a programmable electronic control system performs a monitoring function, the system behaviour on detection of a fault shall be considered (see also the IEC 61508 series for further guidance).       N/A         NDTE Both ISO 13849-1 and IEC 62061, specific to machinery safety, provide guidance applicable to programmable electronic control system should be installed and validated to ensure that the specified performance (for example, safety integrity level (SIL) in IEC 61508] for each safety function has been achieved Validation comprises testing and analysis (for example, static, dynamic or failure analysis) to show that all parts interact correctly to perform the safety function and that unintended functions do not occur.       N/A         i2.11.7.2       Hardware aspects       N/A         The hardware (including, for example, sensors, actuators and logic solvers) shall be selected, and/or design, of equipment and devices with an appropriate probability of dangerous random hardware said techniques within the hardware so as to avoid systematic failures and control systematic faults.       N/A         i.2.11.7.3       Software (an system software) and application software (or system software) and applicatio	Clause	Requirement + Test	Result-Remark	Verdict
controllers) can, where a ppropriate, be used to implement safety functions at machinery. Where a programmable electronic control system is used, it is necessary to consider its performance requirements in relation to the requirements for the safety functions. The design of the programmable electronic control system shall be such that the probability of random hardware failures and the likelihood of systematic failures that can adversely affect the performance of the safety-related control function(s) is sufficients that can adversely affect the performance of the safety-related control function(s) is sufficiently low. Where a programmable electronic control system performs a monitoring function, the system behaviour on detection of a fault shall be considered (see also the IEC 61508 series for further guidance).       N/A         NDTE Both ISO 13849-1 and IEC 62061, specific to machinery safety, provide guidance applicable to programmable electronic control system should be installed and validated to ensure that the specified performance (for example, safety integrity level (SIL) in IEC 61508] for each safety function has been achieved Validation comprises testing and analysis (for example, static, dynamic or failure analysis) to show that all parts interact correctly to perform the safety function and that unintended functions do not occur.       N/A         i2.11.7.2       Hardware aspects       N/A         The hardware (including, for example, sensors, actuators and logic solvers) shall be selected, and/or design, of equipment and devices with an appropriate probability of dangerous random hardware said techniques within the hardware so as to avoid systematic failures and control systematic faults.       N/A         i.2.11.7.3       Software (an system software) and application software (or system software) and applicatio	115			119
implement safety functions at machinery. Where a programmable electronic control system is used, it is necessary to consider its performance frequirements in relation to the requirements for the safety functions. The design of the programmable electronic control system shall be such that the probability of random hardware failures and the likelihood of systematic failures that can adversely affect the performance of the safety-related control function(s) is sufficiently low. Where a programmable electronic control system behaviour on detection of a fault shall be considered (see also the IEC 61508 series for further guidance).       N/A         NOTE Both ISO 13849-1 and IEC 62061, specific to machinery safety, provide guidance applicable to programmable electronic control system shall be considered (see also the IEC 61508 series for further guidance).       N/A         ************************************			0, 0,	0
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the system, its ability to tolerate faults, its behaviour on detection of a fault, etc.), - selection, and/or design, of equipment and devices with an appropriate probability of dangerous random hardware failure, and - the incorporation of measures and techniques within the hardware so as to avoid systematic failures and control systematic faults.N/A5.2.11.7.3Software aspectsN/AThe software, including internal operating software (or system software) and application software, shall be designed so as to satisfy the performance specification for the safety functions (see also IEC 61508-3).N/AApplication software should not be reprogrammable by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,N/A			1.5	115
behaviour on detection of a fault, etc.),       - selection, and/or design, of equipment and         devices with an appropriate probability of       dangerous random hardware failure, and         - the incorporation of measures and techniques       within the hardware so as to avoid systematic         failures and control systematic faults.       N/A         5.2.11.7.3       Software aspects       N/A         The software, including internal operating software (or system software) and application software, shall be designed so as to satisfy the performance specification for the safety functions (see also IEC 61508-3).       N/A         Application software should not be reprogrammable by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,       N/A			0, 0,	01
- selection, and/or design, of equipment and devices with an appropriate probability of dangerous random hardware failure, and       - the incorporation of measures and techniques within the hardware so as to avoid systematic failures and control systematic faults.         5.2.11.7.3       Software aspects       N/A         The software, including internal operating software (or system software) and application software, shall be designed so as to satisfy the performance specification for the safety functions (see also IEC 61508-3).       N/A         Application software should not be reprogrammable by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,       N/A			A A A	R
dangerous random hardware failure, and - the incorporation of measures and techniques within the hardware so as to avoid systematic failures and control systematic faults.       N/A         5.2.11.7.3       Software aspects       N/A         The software, including internal operating software (or system software) and application software, shall be designed so as to satisfy the performance specification for the safety functions (see also IEC 61508-3).       N/A         Application software should not be reprogrammable by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,       N/A		- selection, and/or design, of equipment and		
- the incorporation of measures and techniques within the hardware so as to avoid systematic failures and control systematic faults.       N/A         5.2.11.7.3       Software aspects       N/A         The software, including internal operating software (or system software) and application software, shall be designed so as to satisfy the performance specification for the safety functions (see also IEC 61508-3).       N/A         Application software should not be reprogrammable by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,       N/A			0, 0,	011
within the hardware so as to avoid systematic failures and control systematic faults.       N/A         5.2.11.7.3       Software aspects       N/A         The software, including internal operating software (or system software) and application software, shall be designed so as to satisfy the performance specification for the safety functions (see also IEC 61508-3).       N/A         Application software should not be reprogrammable by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,       N/A				i di
failures and control systematic faults.         5.2.11.7.3       Software aspects       N/A         The software, including internal operating software (or system software) and application software, shall be designed so as to satisfy the performance specification for the safety functions (see also IEC 61508-3).       N/A         Application software should not be reprogrammable by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,       N/A			or all all	S.C.C.
The software, including internal operating software (or system software) and application software, shall be designed so as to satisfy the performance specification for the safety functions (see also IEC 61508-3).       N/A         Application software should not be reprogrammable by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,       N/A	ON12		on on	0112
software (or system software) and application software, shall be designed so as to satisfy the performance specification for the safety functions (see also IEC 61508-3).       N/A         Application software should not be reprogrammable by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,       N/A	6.2.11.7.3	Software aspects		N/A
software, shall be designed so as to satisfy the performance specification for the safety functions (see also IEC 61508-3).       N/A         Application software should not be reprogrammable by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,       N/A	C.CC		CT	N/A
performance specification for the safety functions (see also IEC 61508-3).       N/A         Application software should not be reprogrammable by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,       N/A			ONIS ONIS	ONIS
(see also IEC 61508-3).         Application software should not be reprogrammable         by the user. This may be achieved by use of         embedded software in a non-reprogrammable         memory [for example, micro-controller,				1
Application software should not be reprogrammable by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,			fer the fr	CER.
by the user. This may be achieved by use of embedded software in a non-reprogrammable memory [for example, micro-controller,	Vis		Wi ^S Wi ^S	N/A
memory [for example, micro-controller,		by the user. This may be achieved by use of	0.0.	
			de de de	(A)
		memory [for example, micro-controller, application-specific integrated circuit (ASIC)].	1.5 .5	SU





# Page 28 of 106

#### Report No.: OViSCE2104-032M

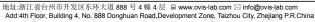
	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
S. Cr			S
	When the application requires reprogramming by the user, the access to the software dealing with safety functions should be restricted (for example, by locks or passwords for the authorized persons).	SHEET SHEET SHEET	N/A
6.2.11.8	Principles relating to manual control	0412 0412	ONP
-LPN	These are as follows.	A. A. A.	P
OVISION	a) Manual control devices shall be designed and located according to the relevant ergonomic principles given in 6.2.8, item f).	O ^{VISC} O ^{VISC}	ONITP ONITP
OVIS-CER	b) A stop control device shall be placed near each start control device. Where the start/stop function is performed by means of a hold-to-run control, a separate stop control device shall be	official and a set of the set of	P.E.
ON'S OFF	provided when a risk can result from the hold-to- run control device failing to deliver a stop command when released.	SET OVISION OVISION	ONIS-CEIT
	c) Manual controls shall be located out of reach of the danger zones (see IEC 61310-3), except for certain controls where, of necessity, they are located within a danger zone, such as emergency stop or teach pendant.	SERIE ONIS-CERIE ONIS-CERIE	OVIS-CERI
OVIS-CERT	<ul> <li>d) Whenever possible, control devices and control positions shall be located so that the operator is able to observe the working area or hazard zone.</li> </ul>	Stati ovisotali ovisota	N/A
	<ol> <li>The driver of a ride-on mobile machine shall be able to actuate all control devices required to operate the machine from the driving position, except for functions which can be controlled more safely from other positions.</li> </ol>	SEAL ONE CHAIN ONE CHA	OVIS-CERT
	2) On machinery intended for lifting persons, controls for lifting and lowering and, if appropriate, for moving the carrier shall generally be located in the carrier. If safe operation requires controls to be situated	CERT NISCERT NISCERT	OVIS-CERT
WIS-CERT	<ul> <li>outside the carrier, the operator in the carrier shall be provided with the means of preventing hazardous movements.</li> <li>e) If it is possible to start the same hazardous</li> </ul>	EFFT SEFT SEFT	N/A
	element by means of several controls, the control circuit shall be so arranged that only one control is effective at a given time. This applies especially to machines which can be manually controlled by means of, among others, a portable control unit	CERT OVIS-CERT OVIS-CERT	OVISCERI
US-CERT	(such as a teach pendant), with which the operator can enter danger zones.	ERI ISIGHI ISIGHI	
ON.	f) Control actuators shall be designed or guarded so that their effect, where a risk is involved, cannot occur without intentional operation (see ISO 9355-1, ISO 9355-3 and ISO 447).	Stati Stati	N/A
OVIS-CERT	g) For machine functions whose safe operation depends on permanent, direct control by the operator, measures shall be implemented to ensure the presence of the operator at the control position (for example, by the design and location of control devices).	OFFIT OVIS-CERT OVIS-CERT	N/A

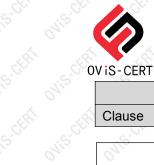




# Page 29 of 106

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
OVIS-U	h) For cableless control, an automatic stop shall be performed when correct control signals are not received, including loss of communication (see	NEW OWEN	N/A
6.2.11.9	IEC 60204-1). Control mode for setting, teaching, process	0 ¹¹⁵ 0 ¹¹⁵ 0 ¹¹⁵ 0 ¹	N/A
.S.CERT	changeover, fault-finding, cleaning or maintenance Where, for setting, teaching, process changeover, fault-finding, cleaning or maintenance of machinery,	SEAL SCHART SCH	N/A
	a guard has to be displaced or removed and/or a protective device has to be disabled, and where it is necessary for the purpose of these operations for the machinery or part of the machinery to be put into operation, the safety of the operator shall be	CERT OVISCERT OVISCERT	OVIS-CERT
SER	achieved using a specific control mode which simultaneously	the the st	SER.
	<ul> <li>a) disables all other control modes,</li> <li>b) permits operation of the hazardous elements only by continuous actuation of an enabling device, a two-hand control device or a hold-to-run</li> </ul>	OVIS OVIS	N/A
	control device, c) permits operation of the hazardous elements only in reduced risk conditions (for example, reduced speed, reduced power/force, step-by- step, for example, with a limited movement control device), and	CERT OVISCERT OVISCERT	OVIS-CERT
	<ul> <li>d) prevents any operation of hazardous functions</li> <li>by voluntary or involuntary action on the machine's sensors.</li> <li>NOTE For some special machinery other protective measures can be appropriate.</li> </ul>	CERT OVIS-CERT OVIS-CERT	OVIS-OFRI
OVIS-CERI	This control mode shall be associated with one or more of the following measures: - restriction of access to the danger zone as far	CERN OVIS-CERN OVIS-CER	N/A
	as possible; - emergency stop control within immediate reach of the operator; - portable control unit (teach pendant) and/or local controls (allowing sight of the controlled elements). See IEC 60204-1.	SERI OUS-OFFI OUS-OFFI	OWS-CERT
6.2.11.10	Selection of control and operating modes	0410 0412	N/A
OVIS-GERI	If machinery has been designed and built to allow for its use in several control or operating modes requiring different protective measures and/or work procedures (for example, to allow for adjustment,	SEAT ONES CEAT ONES CEAT	N/A
OVIS-CERT	setting, maintenance, inspection), it shall be fitted with a mode selector which can be locked in each position. Each position of the selector shall be clearly identifiable and shall exclusively allow one control or operating mode.	CC OVISICE OVISICE	ONIS CEL
OVIS-CERT	The selector may be replaced by another selection means which restricts the use of certain functions of the machinery to certain categories of operators (for example, access codes for certain numerically controlled functions).	CERT CLERT CLERT	N/A
6.2.11.11	Applying measures to achieve electromagnetic compatibility (EMC)	Vip Vip	O ^N P





### SERI Page 30 of 106

### Report No.: OViSCE2104-032M

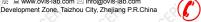
iS-CERT	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
		or all all all	
ONIS	For guidance on electromagnetic compatibility, see IEC 60204-1 and IEC 61000-6.	ONLO ONLO	ONP
6.2.11.12	Provision of diagnostic systems to aid fault- finding	AT AT AT	N/A
OVIS-CERT	Diagnostic systems to aid fault-finding should be included in the control system so that there is no need to disable any protective measure. NOTE Such systems not only improve availability and maintainability of machinery, they also reduce the exposure of maintenance staff to hazards	SERT OVISCHER OVISCHER	N/A
6.2.12	Minimizing probability of failure of safety functions	AD (D) (D)	P
6.2.12.1	General	Wish Wish	N ⁱ P
S.CERT	Safety of machinery is not only dependent on the reliability of the control systems but also on the reliability of all parts of the machine.	SERT SSOFFT SSOFFT	Pri
OV CERT	The continued operation of the safety functions is essential for the safe use of the machine. This can be achieved by the measures given in 6.2.12.2 to 6.2.12.4.	SHEET SHEET SHEET	ON P
6.2.12.2	Use of reliable components	0, 0,	ON P
OVIS-CERT	"Reliable components" means components which are capable of withstanding all disturbances and stresses associated with the usage of the equipment in the conditions of intended use (including the environmental conditions), for the period of time or the number of operations fixed for the use, with a low probability of failures generating a hazardous malfunctioning of the machine.	SERI OVIS-CERI OVIS-CERI	Polen ovis-oten
WIS-CERI	Components shall be selected taking into account all factors mentioned above (see also 6.2.13). NOTE 1 "Reliable components" is not a synonym	SERV SCERV STS-CER	N/A
OVIS-CERT	for "well-tried components" (see ISO 13849-1:2006, 6.2.4). NOTE 2 Environmental conditions for consideration include impact, vibration, cold, heat, moisture, dust, corrosive and/or abrasive substances, static electricity and magnetic and electric fields. Disturbances which can be generated by those conditions include insulation failures and temporary or permanent failures in the function of control system components.	CERT OUIS-CERT OUIS-CERT	OVISSORIA
6.2.12.3	Use of "oriented failure mode" components	NIS NIS	N/A
OVIS-CERT	"Oriented failure mode" components or systems are those in which the predominant failure mode is known in advance and which can be used so that the effect of such a failure on the machine function can be predicted.	SERT OUIS-CERT OUIS-CERT	N/A
WIS CERT	NOTE In some cases, it will be necessary to take additional measures to limit the negative effects of such a failure.	SERI NISCERI NISCER	N/A
S.CERT	The use of such components should always be considered, particularly in cases where redundancy (see 6.2.12.4) is not employed.	SERIE - SCHRIT - SCHRIT	N/A
6.2.12.4	Duplication (or redundancy) of components or subsystems	On One	N/A

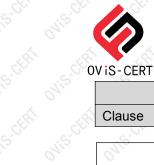




# Page 31 of 106

	EN ISO 12100	T	
Clause	Requirement + Test	Result-Remark	Verdie
OWS-CERT	In the design of safety-related parts of the machine, duplication (or redundancy) of components may be used so that, if one component fails, another component or components continue to perform the	SUNTER OFFICE	N/A
OVIC	respective function(s), thereby ensuring that the safety function remains available.	ONTO ONTO	ONIS
OVIS-CERT	In order to allow the proper action to be initiated, component failure shall be detected by automatic monitoring (see 6.2.11.6) or in some circumstances by regular inspection, provided that the inspection interval is shorter than the expected lifetime of the	SER OUS OFFICE OUS OF	N/A
11S	components	or sister sister	15
	Diversity of design and/or technology can be used to avoid common cause failures (for example, from electromagnetic disturbance) or common mode failures.	Staff Stoff Stoff	N/A
6.2.13	Limiting exposure to hazards through reliability of equipment	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	N/A
OVIS-CERT	Increased reliability of all component parts of machinery reduces the frequency of incidents requiring intervention, thereby reducing exposure to hazards.	SER OVISION OVISION	N/A
OVIS-CERT	This applies to power systems (operative part, see Annex A) as well as to control systems, and to safety functions as well as to other functions of machinery.	SER OVIS-CER OVIS-CE	N/A
SOFF	Safety-related components (for example, certain sensors) of known reliability shall be used.	SET SET SET	N/A
04100	The elements of guards and of protective devices shall be especially reliable, as their failure can	0410 0410	N/A
1.S. CEIN	expose persons to hazards, and also because poor reliability would encourage attempts to defeat them.	Sthe is other is of	in sister
6.2.14	Limiting exposure to hazards through mechanization or automation of loading (feeding)/unloading (removal) operations	5191 5191 519 0° 0°	N/A
OVISSAI	Mechanization and automation of machine loading/ unloading operations and, more generally, of handling operations — of workpieces, materials or	OVIS OVIS	N/A
OVIS-CE.	substances — limits the risk generated by these operations by reducing the exposure of persons to hazards at the operating points.	ovision ovision	OVIS-CY
OVIS-CERT	Automation can be achieved by, for example, robots, handling devices, transfer mechanisms and air-blast equipment. Mechanization can be achieved by, for example, feeding slides, push-	SERI OVIS-CERI OVIS-CE	N/A
ONIS-CHI	rods and hand-operated indexing tables.         While automatic feeding and removal devices have much to offer in preventing accidents to	SERI OVISOERI OVISOE	N/A
115-SERT	machine operators, they can create danger when any faults are being corrected. Care shall be taken to ensure that the use of these devices does not introduce further hazards, such as trapping or	SEAT INS OFFTT INS OF	A
O"	crushing, between the devices and parts of the machine or workpieces/materials being processed. Suitable safeguards (see 6.3) shall be provided if	SEAL SCEAL SCEAL	A SUC
CN	this cannot be ensured. Automatic feeding and removal devices with their	OMI OMI	N/A





# Page 32 of 106

### Report No.:OViSCE2104-032M

EN ISO 12100				
Clause	Requirement + Test	Result-Remark	Verdict	
OVIS-CERT	own control systems and the control system of the associated machine shall be interconnected after thorough study of how all safety functions are performed in all the control and operation modes of the entire equipment.	SERT NESCERT NESCERT	ONIS-CER	
6.2.15	Limiting exposure to hazards through location of setting and maintenance points outside danger zones	SERI SCERI	N/A	
ONTERI	The need for access to danger zones shall be minimized by locating maintenance, lubrication and setting points outside these zones.	an an	N/A	
6.3	Safeguarding and complementary protective measures	OVISIO OVISIO	o ^{VI} P	
6.3.1	General	A A A	P	
OVIS-CERT	Guards and protective devices shall be used to protect persons whenever an inherently safe design measure does not reasonably make it possible either to remove hazards or to sufficiently reduce risks. Complementary protective measures involving additional equipment (for example, emergency stop equipment) may have to be	OFFIC OVISION OVISION	OVIS-OFF	
OVIS-CER.	<ul> <li>implemented.</li> <li>NOTE The different kinds of guards and protective devices are defined in 3.27 and 3.28.</li> <li>Certain safeguards may be used to avoid exposure to more than one hazard.</li> </ul>	CERT ONE CERT ONE CERT	P	
6.3.2	<ul> <li>EXAMPLE A fixed guard preventing access to a zone where a mechanical hazard is present used to reduce noise levels and collect toxic emissions.</li> <li>Selection and implementation of guards and protective devices</li> </ul>	CERT CERT OUTS CT	Piñ	
6.3.2.1	General	ONE ONE	ON P	
OUTS-OFFIT	This subclause gives guidelines for the selection and the implementation of guards and protective devices the primary purpose of which is to protect persons against hazards generated by moving parts, according to the nature of those parts (see Figure 4) and to the need for access to the danger zone(s).	SERI OVIS-CERI OVIS-CERI	PLAT OVIS-CERT	
o.	The exact choice of a safeguard for a particular machine shall be made on the basis of the risk assessment for that machine.	SEAL SEAL SEAL	P	
	In selecting an appropriate safeguard for a particular type of machinery or hazard zone, it shall be borne in mind that a fixed guard is simple and shall be used where the access of an operator into a danger zone is not required during the normal operation (operation without malfunction) of the machinery.	CERT OVISCERT OVISCERT	OVIP	
OVIS-CERT	As the need for frequency of access increases, this inevitably leads to the fixed guard not being replaced. This requires the use of an alternative protective measure (movable interlocking guard, sensitive protective equipment).	SEAL SCHALL SCHALL	OVIS ^D CER	
0413	A combination of safeguards can sometimes be required. For example, where, in conjunction with a	ONIS ONIS	o ^{N P}	



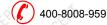


### SERI Page 33 of 106

### Report No.:OViSCE2104-032M

	EN ISO 12100					
Clause Requirement + Test	Result-Remark	Verdict				
fixed guard, a mechanical loading (feeding) device	alle alle	all'S'U				
is used to feed a workpiece into a machine, thereby		0.				
removing the need for access to the primary hazard	(P) (P) (P)	CHR'				
zone, a trip device can be required to protect against the secondary drawing-in or shearing	VIST VIST	1.5				
hazard between the mechanical loading (feeding)	0, 0,	0,				
device, when reachable, and the fixed guard.	A A A	R				
Consideration shall be given to the enclosure of	15 15	P				
control positions or intervention zones to provide combined protection against several hazards	0, 0,	0,				
including	A A A	R				
a) hazards from falling or ejected objects, using,		N/A				
for example, protection in the form of a falling object protection structure (FOPS),	0, 0,	01.				
b) emission hazards (protection against noise,	to to to	P				
vibration, radiation, substances hazardous to	1.15 1.15 N	1.5				
health, etc.)         c) hazards due to the environment (protection)	0, 0,	07				
against heat, cold, foul weather, etc.)	AL AL AL	P				
d) hazards due to tipping over or rolling over of	1.5	N/A				
machinery, using, for example, protection in the form of roll-over or tip-over protection structures	0, 0,	0,				
(ROPS and TOPS).	A. A. A.	- A				
The design of enclosed work stations, such as	115 115	N.P				
cabs and cabins, shall take into account ergonomic	01 01	01				
principles concerning visibility, lighting, atmospheric conditions, access, posture.	A. A. A.	- R				
6.3.2.2 Where access to the hazard zone is not required duri	ing normal operation	N ^S P				
Where access to the hazard zone is not required		PA				
during normal operation of the machinery,	an an an	CHR.				
safeguards should be selected from the following:	1.5° 1.5°	1.5				
a) fixed guards (see also ISO 14120);	0. 0.	°° P				
b) interlocking guards with or without guard locking (see also 6.3.3.2.3, ISO 14119 and ISO 14120);	(P) (P) (P)	N/A				
c) self-closing guards (see ISO 14120:2002,3.3.2);	Wi ^S Wi ^S	N/A				
d) sensitive protective equipment, such as		N/A				
electrosensitive protective equipment (see IEC	ser ser ser	Str				
61496) or pressure-sensitive protective devices (see ISO 13856).	OVIE OVIE	OVIS				

OVIS-CERT OVIS-CERT OVIS-CE Softer Outs offer Outs offer OVISCERT This Test Report is issued by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your exclusive use. Attention is drawn to the limitations of liability indemnification and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the results there of based upon the information that you provided. You have 30 days from date of issuance of this test report to notify us of any error or omission caused by our negligence. Provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.





# Page 34 of 106

Clause       Requirement + Test       Result-Remark       Verdict         Hazard generated by moving transmission parts       Hazard generated by moving parts contributing to the work (directly involved in the process — for example, tools) <ul> <li>Gene 6.3.3.2.2)</li> <li>or</li> <li>interlocking movable guards with or without guard locking with automatic monitoring (see 6.3.3.2.3)</li> <li>interlocking movable guards with or without guard locking with automatic monitoring (see 6.3.3.2.3)</li> </ul> <ul> <li>fixed guards (see 6.3.3.2.3)</li> <li>protective devices (see 6.3.3.2.3)</li> <li>protective devices (see 6.3.3.2.3)</li> <li>selected as a function of the need for access to the danger zone and of the characteristics of the hazard (see 6.3.2.2.3)</li> </ul> <ul> <li>adjustable guards (see 6.3.3.2.4) restricting access to the moving parts within those zones where access to the moving parts within those zones where access to the moving parts</li> </ul> <ul> <li>adjustable guards (see 6.3.3.2.4) restricting access to the moving parts within those zones where access to the moving parts</li> </ul> <ul> <li>adjustable guards (see 6.3.3.2.4) restricting access to the moving parts</li> <li>within those zones where access to the moving parts</li> </ul>		EN ISO 12100		
<ul> <li>(directly involved in the process — for example, tools)</li> <li>(directly involved in the process — for example, tools)</li> <li>(directly involved in the process — for example, tools)</li> <li>(and the process and the proces and the procees and the proces and the procees and the procees</li></ul>	Clause Requirement + Test		Result-Remark	Verdict
<ul> <li>(directly involved in the process — for example, tools)</li> <li>(directly involved in the process — for example, tools)</li> <li>(directly involved in the process — for example, tools)</li> <li>(and the process and the proces and the procees and the proces and the procees and the procees</li></ul>				
<ul> <li>fixed guards (see 6.3.3.2.2)</li> <li>interlocking movable guards with or without guard locking with automatic monitoring (see 6.3.3.2.3)</li> <li>interlocking movable guards with or without guard locking with automatic monitoring (see 6.3.3.2.3)</li> <li>protective devices (see 6.3.3.2.4) restricting access to the moving parts within those zones where access is necessary for the process</li> </ul>				ork
	<ul> <li>(see 6.3.3.2.2)</li> <li>or</li> <li>interlocking movable guards with or without guard locking with automatic monitoring</li> </ul>	<ul> <li>fixed guards (see 6.3.3.2.2)</li> <li>or         <ul> <li>interlocking movable guards with or without guard locking with automatic monitoring (see 6.3.3.2.3)</li> <li>or             <ul> <li>protective devices (see 6.3.3.3)</li> <li>selected as a function of the need for access to the danger zone and of the characteristics of the hazard</li> <li>interlocking movable guards</li> <li>interlocking movable guards</li></ul></li></ul></li></ul>	<ul> <li>- fixed guards (see 6. or movable guards (see 6.3.3.2.3) preventing access to moving parts within th where they are not us work</li> <li>and</li> <li>- adjustable guards (see 6.3.3.2.4) restrict access to the moving within those zones with</li></ul>	the ne zones sed in the ting parts here

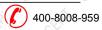
ours-officient ours-officient Softer Outs offer Outs offer This Test Report is issued by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your exclusive use. Attention is drawn to the limitations of liability indemnification and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the results there of based upon the information that you provided. You have 30 days from date of issuance of this test report to notify us of any error or omission caused by our negligence. Provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.





# Page 35 of 106

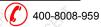
EN ISO 12100					
Clause	Requirement + Test	Result-Remark	Verdic		
6.3.2.3	Where access to the hazard zone is required during normal operation	ONE ONE	N/A		
WiS-CERI	Where access to the hazard zone is required during normal operation of the machinery, safeguards should be selected from the following:	CERT MIS-CERT MIS-CER	N/A		
S-OFFI	a) interlocking guards with or without guard locking (see also ISO 14119, ISO 14120 and 6.3.3.2.3 of this document);	SEAL LIGHT LIGHT	N/A		
ON CRI	b) sensitive protective equipment, such as electrosensitive protective equipment (see IEC 61496);		N/A		
115	c) adjustable guards;	N ^{iSi} N ^{iSi}	N/A		
in the second	d) self-closing guards (see ISO 14120:2002, 3.3.2);		N/A		
.5.5	e) two-hand control devices (see ISO 13851);	50	N/A		
011	f) interlocking guards with a start function (control guard) (see 6.3.3.2.5).	0, 0,	N/A		
6.3.2.4	Where access to the hazard zone is required for machine setting, teaching, process changeover, fault-finding, cleaning or maintenance	SER OVISION OVISION	N/A		
Wischhl	As far as possible, machines shall be designed so that the safeguards provided for the protection of the production operator also ensure the protection	SERI MIS-CERI MIS-CER	N/A		
ONIS OFFI	of personnel carrying out setting, teaching, process changeover, fault-finding, cleaning or maintenance, without hindering them in the performance of their task. Such tasks shall be identified and considered in the risk assessment as parts of the use of the	SERI OVIS-GERT OVIS-GER	NIS-CF		
OVIS-CERT	machine (see 5.2). NOTE Isolation and energy dissipation for machine shut-down (see 6.3.5.4, and also ISO 14118:2000, 4.1 and Clause 5) ensure the highest	OFFIC OVIS-CERT OVIS-CER	ONIS-CF		
ONIS-CERT	level of safety when carrying out tasks (especially maintenance and repair tasks) that do not require the machine to remain connected to its power supply.	CERT ON SCERT ON SCH	NIS-CF		
6.3.2.5	Selection and implementation of sensitive protective equipment	dati dati dati	N/A		
6.3.2.5.1	Selection	ONIS ONIS	N/A		
-LEAT	Due to the great diversity of the technologies on which their detection function is based, all types	and and all	N/A		
OVISIO	of sensitive protective equipment are far from being equally suitable for safety applications. The following provisions are intended to provide the	ONISCO. ONISCO.	OVISIO		
"S" CERI	designer with criteria for selecting, for each application, the most suitable device(s).	SERI SCERI SCER	N		
03, 1	Types of sensitive protective equipment include		N/A		
OVIS-CER!	<ul> <li>scanning devices, for example, laser scanners</li> <li>pressure-sensitive mats, and</li> <li>trip bars, trip wires.</li> </ul>	SERT OVISCERT OVISCER	OVIS-CF		
OVISCERT	Sensitive protective equipment can be used - for tripping purposes, - for presence sensing, - for both tripping and presence sensing, or - to re-initiate machine operation — a practice	SERT OVIS-GERT OVIS-GER	N/A		

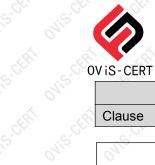




# CERT Page 36 of 106

EN ISO 12100			
Clause	Requirement + Test	Result-Remark	Verdic
OVISIO	subject to stringent conditions.	OVIEN OVIEN	OVISIO
	NOTE Some types of sensitive protective equipment can be unsuitable either for presence sensing or for tripping purposes.	CERT WIS-CERT WIS-CERT	N/A
OVIS-CERT	The following characteristics of the machinery, among others, can preclude the sole use of sensitive protective equipment: - tendency for the machinery to eject materials or component parts;	CERT OVIS-CERT OVIS-CERT	N/A
	<ul> <li>necessity to guard against emissions (noise, radiation, dust, etc.);</li> <li>erratic or excessive machine stopping time;</li> <li>inability of a machine to stop part-way through a cycle.</li> </ul>	CEAL OUTS CEAL OUTS CEA	ONIS-CE
6.3.2.5.2	Implementation		N/A
0,,,	Consideration should be given to	0, 0,	N/A
OVIS-CERT	a) the size, characteristics and positioning of the detection zone (see ISO 13855, which deals with the positioning of some types of sensitive protective equipment),	SER OVISCER OVISCER	N/A
OVIS-CER.	b) the reaction of the device to fault conditions (see IEC 61496 for electrosensitive protective equipment),	SER. ONIS SER. OVIS SER	N/A
- RI	c) the possibility of circumvention, and	A A A	N/A
OVIS-CERT	d) detection capability and its variation over the course of time (as a result, for example, of its susceptibility to different environmental conditions such as the presence of reflecting surfaces, other artificial light sources and sunlight or impurities in the air).	CERT OVIS-CERT OVIS-CERT	N/A
	NOTE 1 IEC 61496 defines the detection capability of electrosensitive protective equipment.		N/A
OVISIOL	Sensitive protective equipment shall be integrated in the operative part and associated with the control system of the machine so that	Wisch Olision	N/A
CERT	<ul> <li>- a command is given as soon as a person or part of a person is detected,</li> </ul>	Star Star	N/A
OVIS-CERT	<ul> <li>the withdrawal of the person or part of a person detected does not, by itself, restart the hazardous machine function(s), and therefore the command given by the sensitive protective equipment is maintained by the control system until a new command is given,</li> </ul>	OVIE OVIE OVIE OVIE OVIE OVIE	N/A
OVIS-CERT	- restarting the hazardous machine function(s) results from the voluntary actuation by the operator of a control device placed outside the hazard zone, where this zone can be observed by the operator,	CERT ONIS CERT ONIS CERT	N/A
OVISCERT	- the machine cannot operate during interruption of the detection function of the sensitive protective equipment, except during muting phases, and	CERT SERIES	N/A
OVISION	- the position and the shape of the detection field prevents, possibly together with fixed guards, a person or part of a person from entering or being ed by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for yr	OVISSION OVISSU	N/A





### CERT Page 37 of 106

#### Report No.: OViSCE2104-032M

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
0415-0	present in the hazard zone without being detected.	ONEST ONEST	OVISIO
	NOTE 2 Muting is the temporary automatic suspension of a safety function(s) by safety- related parts of the control system (see ISO 13849-1)	CERT OUTS CERT OUTS CER	N/A
WiS-CERT	For detailed consideration of the fault behaviour of, for example, active optoelectronic protective devices, IEC 61496 should be taken into account.	SEAL WE CHAINES CH	N/A
6.3.2.5.3	Additional requirements for sensitive protective equipment when used for cycle initiation		N/A
OVIS-CERT	In this exceptional application, the starting of the machine cycle is initiated by the withdrawal of a person or of the detected part of a person from the sensing field of the sensitive protective equipment, without any additional start command, hence deviating from the general requirement given	SEAT ONIS CERT ONIS CE	N/A
	in the second point of the dashed list in 6.3.2.5.2, above. After switching on the power supply, or when the machine has been stopped by the tripping function of the sensitive protective equipment, the machine cycle shall be initiated only by voluntary actuation of a start control.	SERT OVIS-GERT OVIS-GER	OVIS-CER
WiS Oth	Cycle initiation by sensitive protective equipment shall be subject to the following conditions:	NIS CEL MIS	N/A
CERT	a) only active optoelectronic protective devices (AOPDs) complying with IEC 61496 series shall be used;	SERIE SERIE SER	N/A
OVIS-CERT	b) the requirements for an AOPD used as a tripping and presence-sensing device (see IEC 61496) are satisfied — in particular, location, minimum distance (see ISO 13855), detection capability, reliability and monitoring of control and braking systems;	OVIS OVIS OVIS OVIS	N/A
OVIS-CERT	c) the cycle time of the machine is short and the facility to re-initiate the machine upon clearing of the sensing field is limited to a period commensurate with a single normal cycle;	SERIE OVISION OVISION	N/A
Wi5-CERI	d) entering the sensing field of the AOPD(s) or opening interlocking guards is the only way to enter the hazard zone;	SERT MIS-CERT MIS-CER	N/A
C.CERT	<ul> <li>e) if there is more than one AOPD safeguarding the machine, only one of the AOPDs is capable of cycle re-initiation;</li> </ul>	SEAL SEAL SEAL	N/A
OVIS-CERT	<ul> <li>f) with regard to the higher risk resulting from automatic cycle initiation, the AOPD and the associated control system comply with a higher safety-related performance than under normal conditions.</li> </ul>	SEAT ONESCHART ONESCHA	N/A
OVIS-CERT	NOTE 1 The hazard zone as referred to in d) is any zone where the hazardous function (including ancillary equipment and transmission elements) is initiated by clearing of the sensing field. NOTE 2 See also IEC/TS 62046.	SERT OVIS-OFFICE OVIS-OFF	N/A
6.3.2.6	Protective measures for stability	Still Schill Schill	P
ONIN	If stability cannot be achieved by inherently safe design measures such as weight distribution (see	Office Office	O P





# Page 38 of 106

#### Report No.: OViSCE2104-032M

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
OVISION	6.2.6), it shall be maintained by the use of protective measures such as	ONE ONE	OVISIO
	- anchorage bolts,	SER' SER' SER	PS
OVIS	- locking devices,	ON'S ON'S	N'P
(A)	- movement limiters or mechanical stops,		P
115-05	- acceleration or deceleration limiters,		N/A
03.	- load limiters, and		N/A
NIS-GERI	- alarms warning of the approach to stability or tipping limits.	CERT NESSERT NESSER	N/A
6.3.2.7	Other protective devices		^{⊙°} N/A
OVIS-OFF	When a machine requires continuous control by the operator (for example, mobile machines, cranes) and an error of the operator can generate a hazardous situation, this machine shall be equipped with the necessary devices to enable the operation	SEAL ONE-CEAL ONE-CEA	N/A
N'S'	to remain within specified limits, in particular - when the operator has insufficient visibility of the	NIE NE	N/A
WIS-CERT	<ul> <li>hazard zone,</li> <li>when the operator lacks knowledge of the actual value of a safety-related parameter (distance,</li> </ul>	SERT ONIS CERT ONIS CERT	N/A
-ER	<ul> <li>speed, mass, angle, etc.), and</li> <li>when hazards can result from operations other than those controlled by the operator.</li> </ul>	de de de	N/A
J'IS'	The necessary devices include	Wiss Wiss	N/A
o.	a) devices for limiting parameters of movement (distance, angle, velocity, acceleration),		N/A
1:15	b) overloading and moment limiting devices,	15. 11.5°	N/A
0°	c) devices to prevent collisions or interference with other machines,	ن، ر، نې نې کې	N/A
WiS-Ct	d) devices for preventing hazards to pedestrian operators of mobile machinery or other pedestrians,	St St St St	N/A
	e) torque limiting devices, and breakage points to prevent excessive stress of components and assemblies,		N/A
Nis	f) devices for limiting pressure or temperature,	Wis Wis	N/A
-	g) devices for monitoring emissions,	<u>á</u> <u>á</u> á	N/A
WiS-CEL	h) devices to prevent operation in the absence of the operator at the control position,	Str. Wisch. Wisch	N/A
- A	i) devices to prevent lifting operations unless stabilizers are in place,		N/A
WiS CE	j) devices to limit inclination of the machine on a slope, and	Cr North Nicola	N/A
à	k) devices to ensure that components are in a safe position before travelling.		N/A
OVIS-CERT	Automatic protective measures triggered by such devices that take operation of the machinery out of the control of the operator (for example, automatic stop of hazardous movement) should be preceded or accompanied by a warning signal to enable the	SEAL ONE-CERT ONE-CERT	N/A
Ni ^b	operator to take appropriate action (see 6.4.3).	ONIS ONIS	01/12
5.3.3	Requirements for design of guards and protective		P

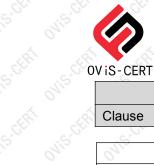




## Page 39 of 106

. 64	EN ISO 12100		- 64
Clause	Requirement + Test	Result-Remark	Verdict
Olis	devices	One One	Ollo
6.3.3.1	General requirements	à à à	P 🔬
OVIS-CERT	Guards and protective devices shall be designed to be suitable for the intended use, taking into account mechanical and other hazards involved. Guards and protective devices shall be compatible with the working environment of the	CET ONESCER ONESCER	ONISPIT
	machine and designed so that they cannot be easily defeated. They shall provide the minimum possible interference with activities during operation and other phases of machine life, in order to reduce any incentive to defeat them.	OHISCE OHISCERI	ONIS CERT
S.CERT	NOTE For additional information, see ISO 14120, ISO 13849-1, ISO 13851, ISO 14119, ISO 13856, IEC 61496 and IEC 62061.	SEAL STEAL STEAL	N/A
04.	Guards and protective devices shall	01, 01,	ONP
A.	a) be of robust construction,	in in in	P
SCH	b) not give rise to any additional hazard,	or sor sor	P
011	c) not be easy to bypass or render non- operational,	On On	OP
CERT	d) be located at an adequate distance from the danger zone (see ISO 13855 and ISO 13857),	SEA SEA SEA	Perf
OVID	e) cause minimum obstruction to the view of the production process, and	ON'S ON'S	N/A
	f) enable essential work to be carried out for the installation and/or replacement of tools and for maintenance by allowing access only to the area where the work has to be carried out — if possible, without the guard having to be removed or protective device having to be disabled.	SERI OVISCERI OVISCERI	OVIS-CERT
ONIS	For openings in the guards, see ISO 13857.	Wis Wis	N'P
6.3.3.2	Requirements for guards		PK
6.3.3.2.1	Functions of guards	Strain Strain	P
OVID	The functions that guards can achieve are - prevention of access to the space enclosed by the guard, and/or	CALO CHI CHI	ON'P
OVISCERT	- containment/capture of materials, workpieces, chips, liquids which can be ejected or dropped by the machine, and reduction of emissions (noise, radiation, hazardous substances such as dust, fumes, gases) that can be generated by the machine.	OVIS OVIS	OVISCERI
OVIS-CERT	Additionally, they could need to have particular properties relating to electricity, temperature, fire, explosion, vibration, visibility (see ISO 14120) and operator position ergonomics (for example, usability, operator's movements, postures, repetitive movements).	CERT OVIS-CERT OVIS-CERT	OVIS-CERT
6.3.3.2.2	Requirements for fixed guards		P
011	Fixed guards shall be securely held in place either - permanently (for example by welding), or	140 400	P
OVISICE	- by means of fasteners (screws, nuts) making removal/opening impossible without using tools; they should not remain closed without their	OVISION OVISION	OVIE





### CERT Page 40 of 106

#### Report No.: OViSCE2104-032M

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
Wisi'	fasteners (see ISO 14120).	Wish Wish	When you
- ER	NOTE A fixed guard can be hinged to assist in its opening.		P
6.3.3.2.3	Requirements for movable guards	1.5°	N/A
OVIS-CERT	Movable guards which provide protection against hazards generated by moving transmission parts shall a) as far as possible when open remain fixed to the machinery or other structure (generally by means of hinges or guides), and	CERT OUIS-CERT OUIS-CERT	N/A
OVISCOL	<ul> <li>b) be interlocking (with guard locking when necessary) (see ISO 14119).</li> <li>See Figure 4.</li> <li>Movable guards against hazards generated by</li> </ul>	or outs or outs or	ONIS-CH
	non-transmission moving parts shall be designed and associated with the machine control system so that	outs outs outs off	N/A
	- moving parts cannot start up while they are within the operator's reach and the operator cannot reach moving parts once they have started up, with this able to be achieved by interlocking guards, with guard locking when necessary,	CER OUTS CER OUTS CER	OVIS-CERI
	<ul> <li>they can be adjusted only by an intentional action, such as the use of a tool or a key, and</li> <li>the absence or failure of one of their components either prevents starting of the moving parts or stops</li> </ul>	of at at a	OVIS-OFT
OVIS-CEI	them, with this able to be achieved by automatic monitoring (see 6.2.11.6). See Figure 4 and ISO 14119.	outer outer outer of	OVIS-OFI
6.3.3.2.4	Requirements for adjustable guards		N/A
	Adjustable guards may only be used where the hazard zone cannot for operational reasons be completely enclosed.	OVIS OVIS	N/A
OVIS-CELL	Manually adjustable guards shall be - designed so that the adjustment remains fixed during a given operation, and - readily adjustable without the use of tools.	SET ONE OF ONE OF	N/A
6.3.3.2.5	Requirements for interlocking guards with a start function (control guards)		N/A
67	An interlocking guard with a start function may only be used provided that		N/A
Wis Ct	a) all requirements for interlocking guards are satisfied (see ISO 14119),	and a stranger	N/A
× 0	b) the cycle time of the machine is short,		N/A
OVIS-CERT	c) the maximum opening time of the guard is preset to a low value (for example, equal to the cycle time) and, when this time is exceeded, the hazardous function(s) cannot be initiated by the closing of the interlocking guard with a start function and resetting is necessary before	SERIE OVIS-CERIE OVIS-CERIE	N/A
OVID CERT	<ul> <li>d) the dimensions or shape of the machine do not allow a person, or part of a person, to stay in the hazard zone or between the hazard zone and the guard while the guard is closed (see ISO 14120),</li> </ul>	OVIS OVISCERI OVISCERI OVISCERI	N/A

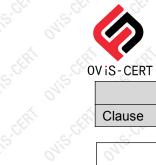




# Page 41 of 106

EN ISO 12100           Clause         Requirement + Test         Result-Remark         Verdict                e) all other guards, whether fixed (removable by e) or movable, are interioxing guards. f) the interloxing device associated with the interloxing duard with a start function is designed such that - for example, by duplication of position detectors and use of automatic monitoring (see 6.2.11.6) - its failure cannot lead to an unintended/unexpected start-up, and unintended/unexpected start-up, and unitende/unexpected start-up, and unitende/unexpected start-up, and unitende/unexpected start-up, and unitende/unexpected start-up, and unexpected start-up, and unexpected start-up, and unexpected start-up, and unexpected/unexpected start-up, and unitende/unexpec		iS-CERT			- Ci
e) all other guards, whether fixed (removable type) or movable, are interlocking guards,         N/A           f) the interlocking device associated with the interlocking guard with a start function is designed such that - for example, by duplication of position detectors and use of automatic monitoring (see 6.2.11.6) - its failure cannot lead to an unintended/unexpected start-up, and         N/A           g) the guard is securely held open (for example, by a spring or counterweight) such that it cannot initiate a start while failing by its own weight         N/A           6.3.3.2.6         Hazards from guards         P           Care shall be taken to prevent hazards which could be generated by - the guard construction (sharp edges or comers, material, noise emission, etc.).         P           6.3.3.3         Technical characteristics of protective devices         N/A           guards and by heavy guards which are liable to fall).         N/A           Protective devices shall be selected on the basis of their having met the appropriate product standard (for example, IEC 61496 for active optoelectronic protective devices shall be elsected on the basis of their having met the appropriate product standard (for example, IEC 61496 for active optoelectronic protective devices shall be installed and connected to the control system so that they cannot be easily defeated.         N/A           6.3.3.4         Provisions for alternative types of safeguards         N/A           Provisions for alternative types of safeguards         N/A           Provisions for alternative types of safeguards         N/A <th>~</th> <th></th> <th>EN ISO 12100</th> <th></th> <th></th>	~		EN ISO 12100		
type) or movable, are interlocking guards.         Min           f) the interlocking device associated with the interlocking guard with a start function is designed such that - for example, by duplication of position detectors and use of automatic monitoring (see 6.2.11.6) - Its failure cannot lead to an unintended/unexpected start-up, and         N/A           g) the guard is securely held open (for example, by a spring or counterweight) such that it cannot initiate a start while failing by its own weight.         N/A           6.3.3.2.6         Hazards from guards         P           Care shall be taken to prevent hazards which could be generated by - the guard construction (sharp edges or corners, material, noise emission, etc.), - the movements of the guards (shearing or crushing zones generated by power-operated guards and by heavy guards which are liable to fail).         N/A           6.3.3.3         Technical characteristics of protective devices         N/A           Protective devices shall be selected or designed and connected to the control system such that correct implementation of their safety function(s) is ensured.         N/A           Protective devices shall be selected on connected to the control system so that they cannot be easily defeated.         N/A           6.3.3.4         Provisions for alternative types of safeguards or several of the principles formulated in ISO 13849-1 or IEC 64396 for active optoelectronic protective devices shall be installed and connected to the control system so that they cannot be easily defeated.         N/A           6.3.3.4         Provisions for alternative types of safeguards where it is		Clause	Requirement + lest	Result-Remark	Verdict
interlocking guard with a start function is designed such that - for example, by duplication of position detectors and use of automatic monitoring (see 6.2.11.6) - its failure cannot lead to an unintended/unexpected start-up, and         N/A           g) the guard is securely held open (for example, by a spring or counterweight) such that it cannot initiate a start while failing by its own weight.         P           6.3.3.2.6         Hazards from guards         P           Care shall be taken to prevent hazards which could be generated by - the guard construction (sharp edges or corners, material, noise emission, etc.), - the movements of the guards (shearing or crushing zones generated by power-operated guards and by heavy guards which are liable to fall).         N/A           6.3.3.3         Technical characteristics of protective devices         N/A           9         Protective devices shall be selected or designed and connected to the control system such that correct implementation of their safety function(s) is ensured.         N/A           9         Protective devices shall be selected on the basis of their having met the appropriate product standard (for example, IEC 61496 for active optoelectronic protective devices) and lib de designed according to one or several of the principles formulated in ISO 13849-1 or IEC 62061.         N/A           6.3.3.4         Provisions for alternative types of safeguards         N/A         N/A           6.3.4.2         Provisions for alternative types of safeguards on machinery where it is known that it will be necessary to change the safeguards on machinery where it is known that it will be necessary to	~	OVIS		ONE ONE	N/A
g) the guard is securely held open (for example, by a spring or counterweight) such that it cannot initiate a start while falling by its own weight.       N/A         6.3.3.2.6       Hazards from guards       P         Care shall be taken to prevent hazards which could be generated by - the guard construction (sharp edges or corners, material, noise emission, etc.), - the movements of the guards (shearing or crushing zones generated by power-operated guards and by heavy guards which are liable to fall).       N/A         6.3.3.3       Technical characteristics of protective devices       N/A         Protective devices shall be selected or designed and connected to the control system such that correct implementation of their safety function(s) is ensured.       N/A         Protective devices shall be selected on the basis of their having met the appropriate product standard (for example, IEC 61406 for active optoleetcronic protective devices shall be edsigned according to one or several of the principles formulated in ISO 13849-1 or IEC 62061.       N/A         6.3.3.4       Provisions for alternative types of safeguards       N/A         6.3.3.4       Provisions for alternative types of safeguards       N/A         6.3.3.4       Provisions for alternative types of safeguards       N/A         6.3.4.       Safeguarding to reduce emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provide with additional protective measures (see 6.3.4.2 to 6.3.4.5).       P         6.3.4.1       General       P         6.3.4.2	3	OVIS-CERT	f) the interlocking device associated with the interlocking guard with a start function is designed such that - for example, by duplication of position detectors and use of automatic monitoring (see 6.2.11.6) - its failure cannot lead to an	SERI ONE OFFICIER ONE OFFICE	N/A
Care shall be taken to prevent hazards which could be generated by       P         - the guard construction (sharp edges or corners, material, noise emission, etc.),       P         - the movements of the guards (shearing or crushing zones generated by power-operated guards and by heavy guards which are liable to fall),       N/A         6.3.3.3       Technical characteristics of protective devices       N/A         Protective devices shall be selected or designed and connected to the control system such that correct implementation of their safety function(s) is ensured.       N/A         Protective devices shall be selected on the basis of their having met the appropriate product standard (for example, IEC 61496 for active optoelectronic protective devices) or shall be designed according to one or several of the principles formulated in ISO 13849-1 or IEC 62061.       N/A         6.3.3.4       Provisions for alternative types of safeguards       N/A         for alternative types of safeguards       N/A         ecare shall be reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures for the reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures (see 6.3.4.2 to 6.3.4.5).       P         6.3.4.2       Noise       P         Additional protective measures against noise include       P         additional protective measures against noise include       P         Additional protective meas		OVIE C	g) the guard is securely held open (for example, by a spring or counterweight) such that it cannot	orie orie	N/A
Care shall be taken to prevent hazards which could be generated by - the guard construction (sharp edges or corners, material, noise emission, etc.), - the movements of the guards (shearing or crushing zones generated by power-operated guards and by heavy guards which are liable to fall).       N/A         6.3.3.3       Technical characteristics of protective devices       N/A         Protective devices shall be selected or designed and connected to the control system such that correct implementation of their safety function(s) is ensured.       N/A         Protective devices shall be selected on the basis of their having met the appropriate product standard (for example, IEC 61496 for active optoelectronic protective devices shall be designed according to one or several of the principles formulated in ISO 13849-1 or IEC 62061.       N/A         6.3.3.4       Provisions for alternative types of safeguards       N/A         6.3.3.4       Provisions for alternative types of safeguards       N/A         6.3.4       Provisions for alternative types of safeguards       N/A         6.3.4       Safeguarding to reduce emissions       P         6.3.4.1       General       P         If the measures for the reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures (see 1SO 15667), - screens fitted to the machine, and - silencers (see ISO 15667), - screens fitted to 16.3.4.2       P		6.3.3.2.6		.5	P
crushing zones generated by power-operated guards and by heavy guards which are liable to fall).          6.3.3.3       Technical characteristics of protective devices       N/A         Protective devices shall be selected or designed and connected to the control system such that correct implementation of their safety function(s) is ensured.       N/A         Protective devices shall be selected on the basis of their having met the appropriate product standard (for example, IEC 61496 for active optoelectronic protective devices) or shall be designed according to one or several of the principles formulated in ISO 13849-1 or IEC 62061.       N/A         6.3.3.4       Provisions for alternative types of safeguards       N/A         f alternative types of safeguards       N/A         of alternative types of safeguards       N/A         effected.       Provisions for alternative types of safeguards       N/A         6.3.3.4       Provisions for alternative types of safeguards       N/A         f alternative types of safeguards on machinery where it is known that it will be necessary to change the safeguards because of the range of work to be carried out.       P         6.3.4.1       General       P         If the measures for the reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures (see 6.3.4.2 to 6.3.4.5).       P         6.3.4.2       Noise       P       Additional protective measures against noise include encl	1.	OVIS-CERT	Care shall be taken to prevent hazards which could be generated by - the guard construction (sharp edges or corners, material, noise emission, etc.),	SERT ON'S OFFICE ON'S OFFICE	O ^{VI} P
Protective devices shall be selected or designed and connected to the control system such that correct implementation of their safety function(s) is ensured.         N/A           Protective devices shall be selected on the basis of their having met the appropriate product standard (for example, IEC 61496 for active optoelectronic protective devices) or shall be designed according to one or several of the principles formulated in ISO 13849-1 or IEC 62061.         N/A           Protective devices shall be installed and connected to the control system so that they cannot be easily defeated.         N/A           6.3.3.4         Provisions for alternative types of safeguards         N/A           Provisions for alternative types of safeguards         N/A           6.3.4.         Safeguarding to reduce emissions change the safeguards because of the range of work to be carried out.         N/A           6.3.4.         Safeguarding to reduce emissions         P           6.3.4.         General         P           If the measures for the reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures (see 6.3.4.2 to 6.3.4.5).         P           6.3.4.2         Noise         P           Additional protective measures against noise include - enclosures (see ISO 15667), - screens fitted to the machine, and - silencers (see ISO 14163).         P		NIS-CERT	crushing zones generated by power-operated guards and by heavy guards which are liable to fall).	SERT ONIS CERT ONIS CERT	ON'S CHR
and connected to the control system such that correct implementation of their safety function(s) is ensured.       N/A         Protective devices shall be selected on the basis of their having met the appropriate product standard (for example, IEC 61496 for active optoelectronic protective devices) or shall be designed according to one or several of the principles formulated in ISO 13849-1 or IEC 62061.       N/A         Protective devices shall be installed and connected to the control system so that they cannot be easily defeated.       N/A         6.3.3.4       Provisions for alternative types of safeguards       N/A         Provisions should be made to facilitate the fitting of alternative types of safeguards on machinery where it is known that it will be necessary to change the safeguards because of the range of work to be carried out.       N/A         6.3.4       Safeguarding to reduce emissions       P         6.3.4.1       General       P         If the measures for the reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures (see 6.3.4.2 to 6.3.4.5).       P         6.3.4.2       Noise       P         Additional protective measures against noise include - enclosures (see ISO 15667), - screens fitted to the machine, and - silencers (see ISO 14163).       P	<	6.3.3.3			6
Protective devices shall be selected on the basis of their having met the appropriate product standard (for example, IEC 61496 for active optoelectronic protective devices) or shall be designed according to one or several of the principles formulated in ISO 13849-1 or IEC 62061.       N/A         Protective devices shall be installed and connected to the control system so that they cannot be easily defeated.       N/A         6.3.3.4       Provisions for alternative types of safeguards       N/A         Provisions for alternative types of safeguards       N/A         6.3.4.1       Safeguardis because of the range of work to be carried out.       P         6.3.4.1       General       P         If the measures for the reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures (see 6.3.4.2 to 6.3.4.5).       P         6.3.4.2       Noise       P         Additional protective measures against noise include       P         additional protective measures against noise include       P         enclosures (see ISO 15667), - screens fitted to the machine, and - silencers (see ISO 14163).       P			and connected to the control system such that correct implementation of their safety function(s)	OFFIC OVIS-OFFIC OVIS-OFFIC	N/A
to the control system so that they cannot be easily defeated.       N/A         6.3.3.4       Provisions for alternative types of safeguards       N/A         Provisions should be made to facilitate the fitting of alternative types of safeguards on machinery where it is known that it will be necessary to change the safeguards because of the range of work to be carried out.       N/A         6.3.4       Safeguarding to reduce emissions       P         6.3.4.1       General       P         If the measures for the reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures (see 6.3.4.2 to 6.3.4.5).       P         6.3.4.2       Noise       P         Additional protective measures against noise include       P         .       .       .         .       .       .         .       .       .         .       .       .         .       .       .         .       .       .         .       .       .         .       .       .         .       .       .         .       .       .         .       .       .         .       .       .         .       .       . <t< td=""><td></td><td>NIS-CHRI</td><td>Protective devices shall be selected on the basis of their having met the appropriate product standard (for example, IEC 61496 for active optoelectronic protective devices) or shall be designed according to one or several of the principles formulated in ISO</td><td>SER ONE OF OUR ONE OF A</td><td>N/A</td></t<>		NIS-CHRI	Protective devices shall be selected on the basis of their having met the appropriate product standard (for example, IEC 61496 for active optoelectronic protective devices) or shall be designed according to one or several of the principles formulated in ISO	SER ONE OF OUR ONE OF A	N/A
Provisions should be made to facilitate the fitting of alternative types of safeguards on machinery where it is known that it will be necessary to change the safeguards because of the range of work to be carried out.       N/A         6.3.4       Safeguarding to reduce emissions       P         6.3.4.1       General       P         If the measures for the reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures (see 6.3.4.2 to 6.3.4.5).       P         6.3.4.2       Noise       P         Additional protective measures against noise include - enclosures (see ISO 15667), - screens fitted to the machine, and - silencers (see ISO 14163).       P		ON. CERT	to the control system so that they cannot be easily	eft eft eft	°`N/A
of alternative types of safeguards on machinery where it is known that it will be necessary to change the safeguards because of the range of work to be carried out.       P         6.3.4       Safeguarding to reduce emissions       P         6.3.4.1       General       P         If the measures for the reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures (see 6.3.4.2 to 6.3.4.5).       P         6.3.4.2       Noise       P         Additional protective measures against noise include - enclosures (see ISO 15667), - screens fitted to the machine, and - silencers (see ISO 14163).       P		6.3.3.4	Provisions for alternative types of safeguards	1.5	N/A
6.3.4       Safeguarding to reduce emissions       P         6.3.4.1       General       P         If the measures for the reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures (see 6.3.4.2 to 6.3.4.5).       P         6.3.4.2       Noise       P         Additional protective measures against noise include       P         - enclosures (see ISO 15667), - screens fitted to the machine, and - silencers (see ISO 14163).       P		ovis-CERT	of alternative types of safeguards on machinery where it is known that it will be necessary to change the safeguards because of the range of	CERT OVISCERT OVISCERT	N/A
If the measures for the reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures (see 6.3.4.2 to 6.3.4.5).P6.3.4.2NoisePAdditional protective measures against noise include - enclosures (see ISO 15667), - screens fitted to the machine, and - silencers (see ISO 14163).P		6.3.4	Safeguarding to reduce emissions	A A A	P
If the measures for the reduction of emissions at source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional protective measures (see 6.3.4.2 to 6.3.4.5).P6.3.4.2NoisePAdditional protective measures against noise include - enclosures (see ISO 15667), - screens fitted to the machine, and - silencers (see ISO 14163).P		6.3.4.1	General		P
6.3.4.2     Noise     P       Additional protective measures against noise include     P       - enclosures (see ISO 15667),     - screens fitted to the machine, and       - silencers (see ISO 14163).	11.	our chai	source specified in 6.2.2.2 are not adequate, the machine shall be provided with additional	GERT MESCERT MESCERT	P
Additional protective measures against noise include - enclosures (see ISO 15667), - screens fitted to the machine, and - silencers (see ISO 14163).		6.3.4.2		0, 0,	Р
		OWIS-CERT	Additional protective measures against noise include - enclosures (see ISO 15667), - screens fitted to the machine, and	SEAL ONS CEAL ONS CEAL	PCF OVISSION
AV		6.3.4.3			N/A

This Test Report is issued by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your exclusive use. Attention is drawn to the limitations of liability, indemnification and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the results there of based upon the information that you provided. You have 30 days from date of issuance of this test report to notify us of any error or omission caused by our negligence. Provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

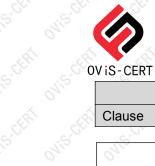


### CERT Page 42 of 106

#### Report No.: OViSCE2104-032M

ause         Requirement + Test         Result-Remark         Verdict           include         - vibration isolators, such as damping devices placed between the source and the exposed person, - resilient mounting, and - suspended seats. For measures for vibration isolation of stationary industrial machinery see EN 1299.         N/A           3.4.4         Hazardous substances         N/A           Additional protective measures against hazardous substances include - encapsulation of the machine (enclosure with negative pressure), - local exhaust ventilation with filtration, - wetting with liquids, and - special ventilation in the area of the machine (air curtains, cabins for operators). See ISO 14123-1.         N/A           3.4.5         Radiation         N/A           Additional protective measures against radiation include - use of attenuating screens or guards.         N/A           3.5.1         Complementary protective measures estimating screens or guards.         N/A           3.5.1         Generial (implemented as required by the intended use and the reasonably foreseeable mixils of the machine. Such measures include, but are not limited to, those dealt with in 6.3.5.2         P           3.5.2         Components and elements to achieve emergency stop function         P           if, following a risk assessment, a machine needs to be fitted with components and elements to be averted, the following requirements apply: - the actuators shall be clearly identifiable, clearly visible and readily accessible; - the hazardous process shall be stopped as quickly as possible winthout creating additional hazar		EN ISO 12100		
include         - vibration isolators, such as damping devices placed between the source and the exposed person,         - resilient mounting, and           - resilient mounting, and         - suspended seats.         For measures for vibration isolation of stationary industrial machinery see EN 1299.         N/A           Additional protective measures against hazardous substances include         N/A         N/A           Additional protective measures against negative pressure), - local exhaust ventilation with filtration, - wetting with liquids, and - special ventilation in the area of the machine (air curtains, cabins for operators). See ISO 14123-1.         N/A           3.4.5         Radiation         N/A           Additional protective measures against radiation include         N/A           - use of filtering and absorption, and - use of attenuating screens or guards.         N/A           3.5.1         General         N/A           3.5.1         General         N/A           3.5.1         General         N/A           diftering and absorption, and - use of filtering static as and/or protective devices), nor information for use, could have to be implemented as required by the intended use and the reasonably foreseeable mixibus of the machine. Such measures include, but are not limited to, those dealt with in 6.3.5.2         P           3.5.2         Components and elements to achieve emergency stop function         P           if, following a risk assessment, a machine needs to be fitted w	Clause		Result-Remark	Verdict
- vibration isolators, such as damping devices placed between the source and the exposed person, <ul> <li>- resilient mounting, and</li> <li>suspended seats.</li> <li>For measures for vibration isolation of stationary industrial machinery see EN 1299.</li> </ul> <li>3.4.4 Hazardous substances include         <ul> <li>- encapsulation of the machine (enclosure with negative pressure),</li> <li>- local exhaust ventilation with filtration,</li> <li>- wetting with liquids, and</li> <li>- special ventilation in the area of the machine (air curtains, cabins for operators).</li> <li>See ISO 14123-1.</li> </ul> </li> <li>3.4.5 Radiation</li> <li>N/A</li> <li>Additional protective measures against radiation include         <ul> <li>- use of filtering and absorption, and</li> <li>- use of attenuating screens or guards.</li> </ul> </li> <li>3.5.1 General</li> <li>N/A</li> <li>Protective measures which are neither inherently safe design measures, nor safeguarding (implementation of guards and/or protective devices), nor information for use, could have to be implemented as required by the intended use and the reasonably foreseeable misuse of the machine. Such measures include, but are not limited to, those dealt with in 6.3.5.2 to 6.3.5.6.</li> <li>3.5.2 Components and elements to achieve emergency stop function</li> <li>If, following a risk assessment, a machine needs to be fitted with components and elements to achieve an emergency stop function for enabling actual or impending emergency situations to be averted, the following requirements apply:             <ul> <li>- the actuators shall be clearly identifiable, clearly visible and readily accessible;</li> <li>- the hazardous process shall be stopped as quickly as possible without creating ad</li></ul></li>	Clause			Verdier
placed between the source and the exposed person.       - resilient mounting, and - suspended seats.         For measures for vibration isolation of stationary industrial machinery see EN 1299.       N/A         Additional protective measures against hazardous substances include - encapsulation of the machine (enclosure with negative pressure), - local exhaust ventilation with filtration, - wetting with liquids, and - special ventilation in the area of the machine (air curtains, cabins for operators). See ISO 14123-1.       N/A         3.4.5       Radiation       N/A         Additional protective measures against radiation include - use of attenuating screens or guards.       N/A         3.5.1       General       N/A         3.5.1       General       N/A         Protective measures which are neither inherently safe design measures, nor safeguarding (implementation of guards and/or protective devices), nor information for use, could have to be implemented as required by the intended use and the reasonably foreseeable misuse of the machine. Such measures include, but are not limited to, those deal with in 6.3.5.2 to 6.3.5.6.       P         3.5.2       Components and elements to achieve emergency stop function       P         if. following a risk assessment, a machine needs involve an emergency stop function for enabling achieve an emergency stop function for heating achieve an emergency stop function for heating achieve an emergency stop function for heaters and auckly as possible without creatin	ONIS	linclude	ONIS ONIS	0113
person, - resilient mounting, and - suspended seats.       N/A         For measures for vibration isolation of stationary industrial machinery see EN 1299.       N/A         Additional protective measures against hazardous substances include - encapsulation of the machine (enclosure with negative pressure), - local exhaust ventilation with filtration, - wetting with liquids, and - special ventilation in the area of the machine (air curtains, cabins for operators). See ISO 14123-1.       N/A         3.4.5       Radiation       N/A         Additional protective measures against radiation include - use of filtering and absorption, and - use of attenuating screens or guards.       N/A         3.5.1       General       N/A         S.5.1       General       N/A         S.5.1       General       N/A         S.5.1       General       N/A         S.5.2       Complementation of guards and/or protective devices), nor information for use, could have to be implemented as required by the intended use and the reasonably foreseeable misuse of the machine. Such measures include, but are not limited to, those dealt with in 6.3.5.2 to 6.3.5.6.       P         3.5.2       Components and elements to achieve emergency stop function       P         If. following a risk assessment, a machine needs to be fitted with components and elements to achieve an emergency stop function for enabling actual or impending emergency situations to be averted, the following requirements apply: - the actuators shall be clearly identifiable, clearly wisible and readily accessible; -				
- resilient mounting, and     - suspended seats.     For measures for vibration isolation of stationary     industrial machinery see EN 1299. 3.4.4 Hazardous substances include     Additional protective measures against     hazardous substances include     - encapsulation of the machine (enclosure with     negative pressure),     - local exhaust ventilation with filtration,     - wetting with liquids, and     - special ventilation in the area of the machine (air     curtains, cabins for operators).     See ISO 14123-1. 3.4.5 Radiation     N/A     Additional protective measures against radiation     include     - use of filtering and absorption, and     - use of filtering and absorption, and     - use of attenuating screenes or guards. 3.5 Complementary protective measures     N/A     Soft General     Order Soft Soft General     Soft General     Soft General     N/A     Soft General     N/A     Soft General     N/A     Soft General     Soft General			13, 13, 13, 13,	CER.
- suspended seats.       For measures for vibration isolation of stationary industrial machinery see EN 1299.         3.4.4       Hazardous substances include       N/A         Additional protective measures against hazardous substances include       N/A         - encapsulation of the machine (enclosure with negative pressure),       - local exhaust ventilation with filtration,         - local exhaust ventilation in the area of the machine (air curtains, cabins for operators).       See ISO 14123-1.         3.4.5       Radiation       N/A         Additional protective measures against radiation include       N/A         - use of filtering and absorption, and       - use of filtering and absorption, and       N/A         3.5       Complementary protective measures       N/A         Staff design measures, nor safeguarding (implementation of guards and/or protective devices), nor information for use, could have to be implemented as required by the intended use and the reasonably foreseeable misuse of the machine.       N/A         3.5.2       Components and elements to achieve emergency stop function of enabling actual or impending emergency stup function and elements to achieve an emergency stop function or enabling actual or impending emergency stup isolation sto be averted, the following requirements apply:       P         - the actuators shall be clearly identifiable, clearly visible and readily accessible;       P         - the actuators shall be clearly identifiable, clearly visible and readily accessible;			NIS NIS	N'S'
For measures for vibration isolation of stationary industrial machinery see EN 1299.       N/A         3.4.4       Hazardous substances       N/A         Additional protective measures against hazardous substances include - encapsulation of the machine (enclosure with negative pressure). - local exhaust ventilation, - wetting with liquids, and - special ventilation in the area of the machine (air curtains, cabins for operators). See ISO 14123-1.       N/A         3.4.5       Radiation       N/A         Additional protective measures against radiation include - use of filtering and absorption, and - use of attenuating screens or guards.       N/A         3.5.1       General       N/A         3.5.1       General       N/A         Protective measures which are neither inherently safe design measures, nor safeguarding (implementation of guards and/or protective devices), nor information for use, could have to be implemented as required by the intended use and the reasonably foreseeable misuse of the machine. Such measures include, but are not limited to, those dealt with in 6.3.5.2 to 6.3.5.6       P         3.5.2       Components and elements to achieve an emergency stop function for enabling actual or impending emergency situations to be averted, the following requirements apply: - the hazardous process shall be clearly identifiable, clearly visible and readily accessible; - the hazardous process shall be clearly visible and readily accessible; - the hazardous process shall be clearly wise and readily accessible; - the hazardous process shall be clearly visible and readily accessible; - the hazardous process shall be clearly visible and readily accessible; - the h				0.
3.4.4       Hazardous substances       N/A         Additional protective measures against hazardous substances include - encapsulation of the machine (enclosure with negative pressure), - local exhaust ventilation with filtration, - wetting with liquids, and - special ventilation in the area of the machine (air curtains, cabins for operators). See ISO 14123-1.       N/A         3.4.5       Radiation       N/A         Additional protective measures against radiation include - use of filtering and absorption, and - use of attenuating screens or guards.       N/A         3.5.1       General       N/A         S.5.1       General       N/A         S.5.1       General       N/A         stafe design measures, nor safeguarding (implementation of guards and/or protective devices), nor information for use, could have to be implemented as required by the intended use and the reasonably foreseeable misuse of the machine. Such measures include, but are not limited to, those dealt with in 6.3.5.2 to 6.3.5.6.       P         3.5.2       Components and elements to achieve an emergency stop function for enabling actual or impending emergency situations to be averted, the following requirements apply:       P         • the actuators shall be clearly identifiable, clearly visible and readily accessible; • the hazardos process shall be stopped as quickly as possible without creating additional hazards, but if this is not possible or the risk cannot be reduced, it should be questioned whether implementation of an emergency stop function is the best solution; • the emergency stop control shall trigger or permit the triggering of certain saf		For measures for vibration isolation of stationary	A A A	ER.
Additional protective measures against hazardous substances include       N/A         - encapsulation of the machine (enclosure with negative pressure),       - local exhaust ventilation with filtration,         - weting with liquids, and       - special ventilation in the area of the machine (air curtains, cabins for operators).         See ISO 14123-1.       N/A         3.4.5       Radiation       N/A         Additional protective measures against radiation include       N/A         - use of filtering and absorption, and       - use of filtering and absorption, and       N/A         3.5.1       General       N/A         Safe design measures, nor safeguarding (implementation of guards and/or protective devices), nor information for use, could have to be implemented as required by the intended use and the reasonably foreseeable misuse of the machine. Such measures include, but are not limited to, those dealt with in 6.3.5.2 to 6.3.5.6.       P         3.5.2       Components and elements to achieve emergency stop function       P         if, following a risk assessment, a machine needs to be fitted with components and elements to achieve an emergency stop function for enabiling actual or impending requirements apply:       P         . the actuators shall be clearly identifiable, clearly visible and readily accessible;       P         . the hazardous process shall be estoped as quickly as possible without creating additional hazards, but if this is not possible or the risk cannot be reduced, it should be questioned whether implementati				. S
hazardous substances include	6.3.4.4		0 0	S [™] N/A
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Once active operation of the emergency stop P device has ceased following an emergency stop			0, 0,	0,1
device has ceased following an emergency stop	- AL		the the the	P
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sustained until it is reset. This reset shall be		command, the effect of this command shall be	On On	ONIT





### CERT Page 43 of 106

#### Report No.: OViSCE2104-032M

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
S.C.			S
	possible only at the location where the emergency stop command has been initiated. The reset of the device shall not restart the machinery, but shall only permit restarting.	CERT CERT CERT	ONIT CERT
OVID CERT	More details for the design and selection of electrical components and elements to achieve the emergency stop function are provided in IEC 60204.	CERT CERT CERT	N/A
6.3.5.3	Measures for the escape and rescue of trapped persons	ONE ONE	N/A
OVISOFA	Measures for the escape and rescue of trapped persons may consist, among others, of - escape routes and shelters in installations generating operator-trapping hazards,	CERT ONIS-CERT ONIS-CERT	N/A
	<ul> <li>arrangements for moving some elements by hand, after an emergency stop,</li> <li>arrangements for reversing the movement of some elements,</li> </ul>	SERI OUIS CERI OUIS CERI	OVIS-CERI
OVIS-CERI	<ul> <li>anchorage points for descender devices,</li> <li>means of communication to enable trapped operators to call for help.</li> </ul>	CERI OVISCERI OVISCERI	ON'S CERT
6.3.5.4	Measures for isolation and energy dissipation	in in in	N/A
OVISCEN	Machines shall be equipped with the technical means to achieve isolation from power supply(ies) and dissipation of stored energy by means of the following actions:		N/A
OVIS-CE	a) isolating (disconnecting, separating) the machine (or defined parts of the machine) from all power supplies;	OV OVISION OVISION	N/A
CHRI	b) locking (or otherwise securing) all the isolating units in the isolating position;	SERVICE SERVICES	N/A
	c) dissipating or, if this is not possible or practicable, restraining (containing) any stored energy which can give rise to a hazard;		N/A
OVISION	d) verifying, by means of safe working procedures, that the actions taken according to a), b) and c) above have produced the desired effect.	OT OWNER OF OWNER	N/A
SCHRI	See ISO 14118:2000, Clause 5, and IEC 60204-1: 2005, 5.5 and 5.6.	SER SER SCH	N/A
6.3.5.5	Provisions for easy and safe handling of machines and their heavy component parts	0,1,2,0,1,2	ONP
	Machines and their component parts which cannot be moved or transported by hand shall be provided or be capable of being provided with suitable attachment devices for transport by	SETT ON SOUTH ON SOUTH	OVIS-CER
CLR.	means of lifting gear.		Str.
	These attachments may be, among others, - standardized lifting appliances with slings, hooks, eyebolts, or tapped holes for appliance fixing, - appliances for automatic grabbing with a lifting hook when attachment is not possible from the	CERT MISCERT MISCERT	ONI ^{SN}
	ground, - fork locating devices for machines to be transported by a lift truck, - lifting and stowing gear and appliances integrated into the machine.	EFT OVISCENT OVISCENT	ON SOFAI



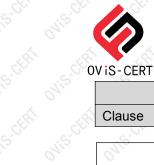


# Page 44 of 106

#### Report No.: OViSCE2104-032M

'iS-CERT	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
6. ⁰		, CT CT CT	6. C*
OWINGERT	Parts of machinery which can be removed manually in operation shall be provided with means for their safe removal and replacement.	and	N/A
.5	See also 6.4.4 c), item 3).	, or	N/A
6.3.5.6	Measures for safe access to machinery	01 01	O P
OVIS-CERT	Machinery shall be so designed as to enable operation and all routine tasks relating to setting and/or maintenance to be carried out as far as possible by a person remaining at ground level.	CERT ONESCERT ONESCERT	PERI
OVIS-CERT	Where this is not possible, machines shall have built-in platforms, stairs or other facilities to provide safe access for those tasks; however, care should be taken to ensure that such platforms or stairs do	CERT ONTS-CERT ONTS-CERT	N/A
OVIS-CET	not give access to danger zones of machinery.The walking areas shall be made from materials which remain as slip resistant as practicable under working conditions and, depending on the height from the ground, shall be provided with	en ours our ours our	N/A
OVIS-CL	suitable guard-rails (see ISO 14122-3). In large automated installations, particular attention shall be given to safe means of access, such as	or of other	N/A
OVIS-DELL	<ul> <li>walkways, conveyor bridges or crossover points.</li> <li>Means of access to parts of machinery located at height shall be provided with collective means of protection against falls (for example, guard-rails for stairways, stepladders and platforms and/or safety</li> </ul>	etti ovisiotti ovisiotti etti ovisiotti	N/A
OVIS-CERT	cages for ladders). As necessary, anchorage points for personal protective equipment against falls from height shall also be provided (for example, in carriers of machinery for lifting persons or with elevating control stations).	CERT	OVIS-CERT
ON SERI	Openings shall, whenever possible, open towards a safe position. They shall be designed to prevent hazards due to unintended opening.	CN' CN'	N/A
	The necessary aids for access shall be provided (steps, handholds, etc.). Control devices shall be designed and located to prevent their being used as aids for access.	ONTO ONTO	N/A
OVIS-CERT	When machinery for lifting goods and/or persons includes landings at fixed levels, these shall be equipped with interlocking guards for preventing falls when the platform is not present at a level.	SERIE SCHIT	N/A
	Movement of the lifting platform shall be prevented while the guards are open.	ONIS ONIS	0415
í.	For detailed provisions see ISO 14122.		N/A
6.4	Information for use		P
6.4.1		N'is N'is	0 ^N P
	General requirements		
6.4.1.1	Drafting information for use is an integral part of the design of a machine (see Figure 2). Information for use consists of communication links, such as texts, words, signs, signals, symbols or diagrams, used separately or in combination to convey information to the user. Information for use is intended for professional and/or non-professional users.	CERT ONIS-CERT OUIS-CERT	OVIS-CERI



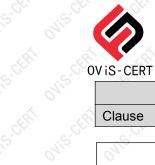


### CERT Page 45 of 106

#### Report No.: OViSCE2104-032M

Clause         Requirement + Test         Result-Remark         Verdic           NOTE See also IEC 62079 for structuring and presentation of information for use.         64.1.2         Information shall be provided to the user about the intended use of the machine, taking into account, notably, all its operating modes.         P           The information shall contain all directions required to ensure safe and correct use of the machine. With this in view, it shall inform and warn the user about residual risk.         P           The information shall contain all directions required to ensure safe and correct use of the machine with this in view, it shall indicate, as appropriate, - the need for training, - the need for training, - the need for training, - the need for training, - the need for additional guards or protective devices (see Figure 2, Footnote d).         P           It shall not exclude uses of the machine that can reasonably be expected from its designation and description and shall also warn about the risk which would result from using the machine in other ways than the ones described in the information, especially considering its reasonably foreseeable misuse.         P           6.4.1.3         Information for use shall cover, separately or in combination, transport, assembly and installation, commissioning, use of the machine (setting, teaching/programming or process changeover, operation, cleaning, fault-finding and maintenance) and, if necessary, dismantling, disabling and scrapping.         P           6.4.2         Location and nature of information for use         P           Depending on the risk, the time when the information is needed by the user and the machine design
presentation of information for use.         P           6.4.1.2         Information shall be provided to the user about the intended use of the machine, taking into account, notably, all its operating modes.         P           The information shall correct use of the machine. With this in view, it shall inform and warn the user about residual risk.         P           The information shall indicate, as appropriate, - the need for personal protective equipment, and - the possible need for additional guards or protective devices (see Figure 2, Footnote d).         P           It shall not exclude uses of the machine that can reasonably be expected from its designation and description and shall also warn about the risk which would result from using the machine in other ways than the ones described in the information, especially considering its reasonably doreseeable misuse.         P           6.4.1.3         Information, transport, assembly and installation, commissioning, use of the machine (setting, teaching/programming or process changeover, operation, cleaning, fault-finding and maintenance) and, if necessary, dismantling, disabling and scrapping.         P           6.4.2         Location and nature of information for use         P           Depending on the risk, the time when the information is needed by the user and the information hardbook, see 6.4.5),         P           0 to on the packaging,         P         P         P <tr< th=""></tr<>
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The information shall contain all directions required to ensure safe and correct use of the machine. With this in view, it shall inform and warn the user about residual risk.PThe information shall indicate, as appropriate, - the need for personal protective equipment, and - the possible need for additional guards or protective devices (see Figure 2, Footnote d).PIt shall not exclude uses of the machine that can 
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outside the machine       P         Standardized phrases shall be considered where important messages such as warnings are given (see also IEC 62079).       P         6.4.3       Signals and warning devices       P         Visual signals, such as flashing lights and audible signals such as sirens may be used to warn of an       P
(see also IEC 62079).       P         6.4.3       Signals and warning devices       P         Visual signals, such as flashing lights and audible signals such as sirens may be used to warn of an       P
Visual signals, such as flashing lights and audible     P       signals such as sirens may be used to warn of an     P
start-up or overspeed. Such signals may also be used to warn the operator before the triggering of automatic protective measures (see 6.3.2.7).
It is essential that these signals     P
a) be emitted before the occurrence of the hazardous event, b) be unambiguous, P
c) be clearly perceived and differentiated from all





## Page 46 of 106

#### Report No.: OViSCE2104-032M

iS-CERT	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
5			S
	d) be clearly recognized by the operator and other persons.	01. 01.	°∕" P
OVISCHAI	The warning devices shall be designed and located such that checking is easy. The information for use shall prescribe regular checking of warning devices.	SERIE OVIS-CERIE OVIS-CERIE	Polen
OVIS-CERT	The attention of designers is drawn to the possibility of "sensorial saturation", which can result from too many visual and/or acoustic signals and which can also lead to defeating the warning devices. NOTE Consultation of the user on this subject is often necessary.	SERT ON'S CERT ON'S CERT	Riffi OVIS-OFFI
6.4.4	Markings, signs (pictograms) and written warnings	A A A	PA
.S.CH	Machinery shall bear all markings which are		P
OVIS-CERT	<ul> <li>necessary</li> <li>a) for its unambiguous identification, including at least</li> <li>1) the name and address of the manufacturer,</li> <li>2) the designation of series or type, and</li> <li>3) the serial number, if any,</li> </ul>	SERT ONIS CERT OVIS CERT	OVIS-CERT
OVIS-CERT	<ul> <li>b) in order to indicate its compliance with mandatory requirements, comprising</li> <li>1) marking, and</li> <li>2) written indications, such as the authorized representative of the manufacturer, designation of the machinery, year of construction, and intended use in potentially explosive atmospheres),</li> </ul>	SERIE OUIS-CERIE OUIS-CERIE	OVIS-CERI
OVIS-CERT	<ul> <li>c) for its safe use, for example,</li> <li>1) maximum speed of rotating parts,</li> <li>2) maximum diameter of tools,</li> <li>3) mass (in kilograms) of the machine itself and/or of removable parts,</li> <li>4) maximum working load,</li> <li>5) necessity of wearing personal protective equipment,</li> <li>6) guard adjustment data, and</li> <li>7) frequency of inspection.</li> </ul>	SERIE OVIS-GERIE OVIS-GERIE	Riffi OVIS-OFFI
ONIS-CERT	Information printed directly on the machine should be permanent and remain legible throughout the expected life of the machine. Signs or written warnings indicating only "Danger"	Stati Stati Stati	P
OVIS-CERT	shall not be used. Markings, signs and written warnings shall be readily understandable and unambiguous, especially as regards the part of the function(s) of the machine to which they are related. Readily understandable signs (pictograms) should be used in preference to written warnings.	SERIE OUTS-CERT OUTS-CERT	Port CERT
UIS-CERT	Signs and pictograms should only be used if they are understood in the culture in which the machinery is to be used.	CHAT IS CHAT IS CHAT	P
0,	Written warnings shall be drawn up in the	0, 0,	P





# Page 47 of 106

#### Report No.: OViSCE2104-032M

/iS-CERT	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
. S. O		or all all	. S. O.
0110	language(s) of the country in which the machine	ONLY ONLY	Ollis
	will be used for the first time and, on request, in		× 5
	the language(s) understood by operators.	the the str	Stin
	NOTE In some countries the use of specific	is wis	J'S'
0. 0	language(s) is covered by legal requirements.		0.
	Markings shall comply with recognized standards (for example, ISO 2972 or ISO 7000, for	at at at	P
	pictograms, symbols and colours in particular).		15
0, 0	See IEC 60204-1 as regards marking of electrical	0, 0,	N/A
	equipment.	A AN AN	IN/A
. 5.04	See ISO 4413 and ISO 4414 for hydraulic and		N/A
	pneumatic equipment.	ONIN ONIN	ONING
6.4.5	Accompanying documents (in particular -		P.A
GET	instruction handbook)	Str. Str. Str.	CEN
6.4.5.1	Contents	Will Will	N'P
~ ~	The instruction handbook or other written		P ×
	instructions (for example, on the packaging) shall	AT AT AT	CHR.
1.5	contain, among others, the following:	j	.5
0, 0	a) information relating to transport, handling and	0, 0,	P
	storage of the machine, such as	A A A	N. A
	1) storage conditions for the machine,		S.S.
	2) dimensions, mass value(s), position of the	ONIS ONIS	0412
	centre(s) of gravity, and	5 5 5	1
	3) indications for handling (for example,	fer fer fr	Str
	drawings indicating application points for lifting equipment);	N'IS N'IS	VIS
	b) information relating to installation and		
	commissioning of the machine, such as		
	1) fixing/anchoring and dampening of noise	j	1.5
	and vibration requirements,	0, 0,	0,
	2) assembly and mounting conditions,	A A A	in the second
	3) space needed for use and maintenance,	Strand Strand	.S.CV
	4) permissible environmental conditions (for	ONIN ONIN	0112
	example, temperature, moisture, vibration,	à à à	1
	electromagnetic radiation),	Ser Ser Ser	Str
	5) instructions for connecting the machine to	Wis Wis	all's
	power supply (particularly on protection against electrical overloading),		~
	6) advice on waste removal/disposal, and	and and an	- A
	7) if necessary, recommendations related to	j	115
	protective measures which have to be	0, 0,	0,
	implemented by the user — for example,	A. A. A.	in the
	additional safeguards (see Figure 2, Footnote	Sor Sor Sor	.5.01
0412	d), safety distances, safety signs and signals;	ONIN ONIN	0112
4	c) information relating to the machine itself, such as	à à à	PÁ
	1) detailed description of the machine, its	Ser Ser Ser	CEN
	fittings, guards and/or protective devices,	Wis Wis	VIS
	2) the comprehensive range of applications for		0
	which the machine is intended, including	ath ath ath	L. L.
	prohibited usages, if any, taking into account	5 .5 .5	Sil
	variations of the original machine if appropriate, 3) diagrams (especially schematic representation	01, 01,	0%.





## Page 48 of 106

#### Report No.:OViSCE2104-032M

	EN ISO 12100			
Clause	Requirement + Test	Result-Remark	Verd	ict
			.5 .5	Ň
	of safety functions),	On C	Mrs One	
	4) data on noise and vibration generated by the		~	
	machine, and on radiation, gases, vapours and	St St	- 19 d	
	dust emitted by it, with reference to the	.5	.5 .5	
	measuring methods (including measurement	0, 0	2. 0.	
	uncertainties) used,	ia ia	, and	
	5) technical documentation of electrical	Str Str	Str. S	
	equipment (see IEC 60204), and	N'12	112 112	
	6) documents attesting that the machine			
	complies with mandatory requirements;	A A	AR a	
.50	d) information relating to the use of the machine,		S P	)
	such as that related to or describing	01100	J. 011	
	1) intended use,	6 6	á	
	2) manual controls (actuators),	Ser Ser	SET C	
	3) setting and adjustment,	NIS.	VIS VIS	
	4) modes and means for stopping (especially	0. 0	0.	
	emergency stop),	AL AL	1PS	
	5) risks which could not be eliminated by the	St St	.SS.	
	protective measures implemented by the	ONIS C	Mrs OMrs	
	designer,	A A	~	
	6) particular risks which can be generated by	Chr. Chr.	den d	
	certain applications, by the use of certain	15	1.5	
	fittings, and about specific safeguards	0, 0	2 01	
	necessary for such applications,	A A	A.	
	7) reasonably foreseeable misuse and	St Ct	C.C.	
	prohibited applications,	all's c	Mrs One	
	8) fault identification and location, for repair	A A	~	
	and for restarting after an intervention, and	Chr. Chr.	din d	
	9) personal protective equipment needed to be	1:15	115 115	
0,	used and the training that is required;	0, 0	57 07	
	e) information for maintenance, such as	A A	P P	
	1) the nature and frequency of inspections for	St. Ct.	CV CV	
	safety functions,	Nº15 C	113 113	
	2) specification of the spare parts to be used			
	when these can affect the health and safety of	ALL ALL	de la companya de la comp	
	operators,	1.5	1.5	
	3) instructions relating to maintenance	0, 0	2 0,	
	operations which require a definite technical	A A	and	
	knowledge or particular skills and hence need	Str. Chr.	CV CV	
	to be carried out exclusively by skilled persons	N'12 C	NIS NIS	
	(for example, maintenance staff, specialists),			
	4) instructions relating to maintenance actions	St St	de la companya de la comp	
	(replacement of parts, etc.) which do not require	1.5	15	
	specific skills and hence may be carried out by	0, 0	2 02	
	users (for example, operators), and	à à	à	
	5) drawings and diagrams enabling	Str. Str.	Chi Chi	
	maintenance personnel to carry out their task rationally (especially fault-finding tasks);	Nº2	NIS NIS	
N K	f) information relating to dismantling, disabling			
	and scrapping;	S S	P P	

This Test Report is issued by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your exclusive use. Attention is drawn to the limitations of liability, indemnification and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the results there of based upon the information that you provided. You have 30 days from date of issuance of this test report to notify us of any error or omission caused by our negligence. Provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.





### Page 49 of 106

#### Report No.:OViSCE2104-032M

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
			- S. OT
	event of accident or breakdown,	One One	Ollis
	2) the type of fire-fighting equipment to be		
	used, and 3) a warning of possible emission or leakage of	Ser Ser Ser	SEL
	hazardous substance(s) and, if possible, an	NIS NIS	ON'S
	indication of means for fighting their effects;		
Ctrite	h) maintenance instructions provided for skilled	10 (N) (N)	P
	persons [item e) 3) above] and maintenance	N'S N'S	1.5
	instructions provided for unskilled persons [item		О 
	e) 4) above], that need to appear clearly	and an an	(A)
.5	separated from each other.		15
6.4.5.2	Production of instruction handbook	0" 0"	O P
	The following applies to the production and	A A A	P
.S.	presentation of the instruction handbook.		
	a) The type fount and size of print shall ensure	01, 01,	ON P
	the best possible legibility. Safety warnings and/or cautions should be emphasized by the use		a la
	of colours, symbols and/or large print.	St Lich Lich	C.C.C.
0415	b) The information for use shall be given in the	0412 0412	O P
	language(s) of the country in which the machine	A A A	4
	will be used for the first time and in the original	Ser Ser Ser	CEIN
	version. If more than one language is to be used,	Will Will	113
	each should be readily distinguished from		~
	another, and efforts should be made to keep the		CHR.
	translated text and relevant illustration together.	1.5	1.5
	NOTE In some countries the use of specific language(s) is covered by legal requirements.	0, 0,	0,
- A	c) Whenever helpful to the understanding, text		- D
	should be supported by illustrations. These	.5	.S
	illustrations should be supplemented with written	0, 0,	0%
	details enabling, for example, manual controls		A.
	(actuators) to be located and identified. They should	St. Cor Cor	C.C.C.
	not be separated from the accompanying text and	ONTO ONTO	ONIS
	should follow sequential operations.		
	d) Consideration should be given to presenting	Ser Ser Ser	R
	information in tabular form where this will aid understanding. Tables should be adjacent to the	With With	N'13
	relevant text.		~
Ctrain a	e) The use of colours should be considered,	the the the	P
	particularly in relation to components requiring	Wis wis	NIS
X	quick identification.		N
C.P.	f) When information for use is lengthy, a table of		P.C.
S	contents and/or an index should be provided.	i si si	.S
	g) Safety-relevant instructions which involve	0, 0,	° ₽
	immediate action should be provided in a form	A. A. A.	R
GAED	readily available to the operator.		P
6.4.5.3	Drafting and editing information for use	ON ON	0"
	The following applies to the drafting and editing of		P
C.S.Y.	<ul><li>information for use.</li><li>a) Relationship to model: the information shall</li></ul>		- C
	clearly relate to the specific model of machine	Will Will	N.SP





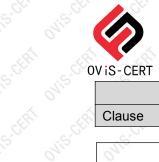
# Page 50 of 106

#### Report No.: OViSCE2104-032M

	EN ISO 12100			0
Clause	Requirement + Test	Result-Remark	Verdict	
S			S	
ONIT	and, if necessary, other appropriate identification (for example, by serial number)		ONIT	10
	b) Communication principles: when information for use is being prepared, the communication process "see – think – use" should be followed in	CERT ONIS CERT ONIS CERT	ONIS ONIS	01.
	order to achieve the maximum effect and should follow sequential operations. The questions, "How?" and "Why?" should be anticipated and the answers	CERT MIS-CERT MIS-CERT	WiS-CERT	11
0	provided.		0	
	c) Information for use shall be as simple and as brief as possible, and should be expressed in consistent terms and units with a clear explanation of unusual technical terms.	CERT ONIS-CERT ONIS-CERT	PER'	0.
OVIS-CER	d) When it is foreseen that a machine will be put to non-professional use, the instructions should be written in a form that is readily understood by	CET ONIS-CET ONIS-CET	OVIS	0,
	the non-professional user. If personal protective equipment is required for the safe use of the machine, clear advice should be given, for	SERI ONS-CERI ONS-CERI	ONIS-CERT	0.
WIS-CERT	example, on the packaging as well as on the machine, so that this information is prominently displayed at the point of sale.	SERT WIS-SERT WIS-SERT	Wis-CERT	
	e) Durability and availability of the documents: documents giving instructions for use should be produced in durable form (i.e. they should be able	EFA SCHA	P	C
	to survive frequent handling by the user). It can be useful to mark them "keep for future reference". Where information for use is kept in electronic form	CHAT CHAT CHAT	OVI-	0.
	(CD, DVD, tape, hard disk, etc.), information on safety-related issues that need immediate action shall always be backed up with a hard copy that is readily available.	ONIS ONIS	OVID	0
81:5	Documentation of risk assessment and risk reduction	OVISIO OVISIO	oli P	0
OVIS-CERT	The documentation shall demonstrate the procedure that has been followed and the results that have been achieved. This includes, when relevant, documentation of	SERI ONIS-CERI ONIS-CERI	PERI	0
ONIS-CEPT	a) the machinery for which the risk assessment has been made (for example, specifications,	SERIE WIS-SERIE WIS-SERIE	PSP	0
.c. cthi	limits, intended use);b) any relevant assumptions that have been made (loads, strengths, safety factors, etc.);	ERI CLERIC CLERI	P	
ONT	c) the hazards and hazardous situations identified and the hazardous events considered in the risk assessment;		o ^{NI} P	0
OVISION	<ul> <li>d) the information on which risk assessment was based (see 5.2):</li> <li>1) the data used and the sources (accident</li> </ul>	OVISIO OVISIO	OVICP	0.
	histories, experience gained from risk reduction applied to similar machinery, etc.); 2) the uncertainty associated with the data	CERT ONIS CERT ONIS CERT	OVIS-CERI	0.



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## Page 51 of 106

#### Report No.: OViSCE2104-032M

	EN ISO 12100		
Clause	Requirement + Test	Result-Remark	Verdict
OVIS	used and its impact on the risk assessmer	nt; NIN NIN NIN	OVIS
- CERT	e) the risk reduction objectives to be achieve protective measures;	ed by	r Pri
OVIS	<ul> <li>f) the protective measures implemented to eliminate identified hazards or to reduce risk</li> </ul>	. OVIS OVISION	ON P
- R	g) residual risks associated with the machine	k k k	× P.A
	h) the result of the risk assessment (see Figure		P P
0,	i) any forms completed during the risk asses		P
	Standards or other specifications used to sel protective measures referred to in f) above s be referenced. NOTE No requirement is given in thismInterr Standard to deliver the risk assessment documentation together with the machine. See ISO/TR 14121-2 for information	hould national	ET OVISCEN
WiS-CERT	documentation.	RI CERI MISCERI	<u>ift)</u> M ¹⁵⁷





### CERT Page 52 of 106

# OVIS-CE 6VIS-CERT Report No.: OViSCE2104-032M

	EN 809		
Clause	Requirement + Test	Result-Remark	Verdict
		· · · · · · · · · · · · · · · · · · ·	, CM
5	Safety requirements and/or measures	01, 01,	ON P
5.1 JA	General requirements	See EN ISO12100 report	P
OVIS CERT	The operating conditions and features required of every pump and/or pump unit falling within the scope of this standard shall be defined in a specification.	Non-corrosive liquid	OVICP
WID SPEER	This may be in the form of a manufacturer's description, or as a published national or international standard or in a data sheet within a contract.	CERTS.CERTS.CERT	ON P
WIS-CERT	In the event of essential data not being provided by the purchaser, the manufacturer shall advise the purchaser of the data being adopted for the design and being incorporated into the specification.	SEAT MIS-CEAT MIS-CEAT	ON P
WIS-OFFI	The supplier shall assess the risks arising from the machine together with its operating conditions and the equipment shall be designed to reduce them to an acceptable level giving full regard to the requirements set out in this standard.	CERT ONIS CERT ONIS CERT	OVIES-CERT
WiS-CERT	A risk assessment according to EN ISO 14121-1 shall be carried out by the manufacturer. This has to be done for machinery as well as for partly completed machinery to the extent necessary to	The Risk Assessment had done by manufacturer	P
	assess the conformity with the essential health and safety requirements. When assessing the risks arising from the machinery or partly completed machinery,the manufacturer shall take into account any reasonable foreseeable misuse and the lifetime of the machinery including the phases of transport, assembly, dismantling,disabling and disposal. (EN 809/A1:2009)	SERIE OVIS-CERIE OVIS-CERIE OVIS-CERIE OVIS-CERIE OVIS-CERIE OVIS-CERIE	OVIS-CERI
WIS-OFFI	NOTE The technical specifications will vary with the application, and some technical specifications are already stated in EN or ISO Standards, such as: — EN 25199; — prEN ISO 14847; — ISO 9905; — ISO 9908.	OVISION OVISION	ON P
OVIS-CERT	Further safety information from the manufacturer/supplier for: — planning; — installation; — operation; — maintenance; shall be contained in the information/instruction for use,including personnel protection equipment required and warning notices.	Found in manual	OVI P
5.1.1	Environmental and working conditions	(T) (T) (T)	- P(R)
OVISCERI OVISCERI	In constructing the specification for the pump or pump unit particular attention shall be given to any special environmental and/or working conditions. Examples of such special conditions are, amongst others:	ERI OVISCO OVISCO	P P



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	EN 809		
Clause	Requirement + Test	Result-Remark	Verdict
OVISION	environmental conditions at the place of installation, such as:	ONESCO ONESCO	ONP
CERT	— abnormal temperature;	A. A. A.	PS
Vis	— high humidity;	N'IS N'IS	J:P
~ ~	— corrosive atmospheres;		N/A
CER	— explosive and/or fire danger zones;	Self Ceff Ceff	N/A
OVIS	— dust, sandstorms;	ONIS ONIS	N/A
SER	— earthquakes and other external imposed such conditions;	en en en	N/A
J.S	— vibrations;	N'ES N'ES	N/A
~	— altitude;	Max. 1000m	P
- SEX	<ul> <li>— flooding;</li> <li>type of liquid to be pumped, such as:</li> </ul>	and the set	N/A
O'I'	— pumped liquid (denomination);	0412 0413	O ^N P
	— mixture (analysis);	a a a	N/A
S.CO.	- solid containing (solid matter content);		N/A
04	— gaseous (content);	041 041	N/A
195	property of the liquid when being pumped, such as:	A A A	N/A
.5	— flammable;		N/A
0,00	— toxic;	0, 0,	S N/A
- CRI	— corrosive;	A A A	N/A
1.5	— abrasive;	NIS NIS	N/A
0, 1	— crystallizing;	0, 0,	N/A
CER.	— polymerizing;	The The The	N/A
Nis	— viscosity;	Wis Wis	N/A
~	operating fluctuation in the system, such as:		Р
SER	— temperature;	String String String	Per
OVIS	— pressure;	Win Win	NI P
	— flow rate;		P
S. Chi	— dry running of the pump.		R
5.2	Special requirements	ONIN ONIN	ONP
5.2.1	Requirements to avoid mechanical hazards	in in in	P
5.2.1.1	Crushing, cutting and entanglement		P
07. 21	Exposed moving parts may create a hazard and means shall be incorporated to reduce the risk.	10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	O ^N P
SCH.	Such means shall include as appropriate:	St. Str. Str.	P
ONIC	— barriers conforming to EN 294 preventing contact with moving parts;	ONIC ONIC	N/A
SCEN	- gaps at the end-of-travel conforming to EN 349;	for som som	P
OVID	— guards conforming to EN 953.	OVID OVID	N/A
	Rotating shafts with exposed keys, keyways or other projections liable to cut or catch shall be protected or guarded.	ERT WISCERT WISCERT	P
0	Guards or permanent enclosures shall be used for		P





	EN 809		
Clause	Requirement + Test	Result-Remark	Verdict
S.S.Y		JYY	S.C.Y
OVID	rotating or reciprocating transmission couplings or crossarms.	ONIS ONIS	OVID
OVIS-CER'	Guards for the reduction of risks from contact with parts of a pump or pump unit shall be removable only with the use of a tool.	ERI OVIS-CERI OVIS-CERI	OVIS-CER
	Movable or removable guards giving access for adjustment or setting of controls or sensors whilst the pump is in operation shall not be required to be interlocked and shall be secured against unintended disturbance.	ERT OVIS-CERT OVIS-CERT	N/A
ONISCELL	Movable guards which remain attached to the pump shall be secured also when in the opened position.	Cl. Olis Cell. Olis Cell.	N/A
CERT	Removable guards shall be completely disengaged from the pump.	ER SER SER	N/A
	Unhindered access to the shaft seal where required for checking of its function and/or for its adjustment shall be permitted.	at at at	N/A
WiS-OER	Machined or cut parts which are exposed or likely to be exposed at any stage during the installation, operation, or servicing of the pump or pump unit shall be treated to remove burrs, rags and sharp	CENT OUS CENT OUS CENT	OVICEP T
	edges by radiusing or chamfering.	115 A.15	O ¹ P
5.2.1.2	High pressure fluid ejection		4
5.2.1.2.1	Shaft, piston rod or plunger sealing system		P.R
	The pump shall be equipped with a shaft-, piston rod-or plunger sealing system compatible with the pumped fluid and appropriate to the hazard likely to result from a leakage of that fluid.	OVIS OVIS	OVI ^{SP}
JUIS OFFIC	In assessing the compatibility attention shall be given concerning the nature of the liquid, the pressure, and temperature. Because of the range of characteristics of pumped liquids it is not possible to give any precise requirements to reduce the risks.	OVIS OVIS OVIS OFFI	O ^{N P}
5.2.1.2.2	Pressure containing elements		P
OVID LERI	Pressure containing parts and components of a pump are to be designed to be suitable for the maximum allowable working pressure.		OVIP
ONISION	Movement resulting from the loss of pressure shall not create a hazard.	ovision ovision	OVICE
	For reciprocating displacement pumps the maximum allowable working pressure is the highest value for the mean pressure in the outlet section of the pump.	SHA OVIS CERT OVIS CERT	N/A
OVIS-CERT	In the case where the pump potentially can generate pressure in any part greater than the maximum allowable working pressure of that part, the supplier shall either provide a pressure relief	ERI OVIS-CERI OVIS-CERI	N/A
	valve or other device to prevent the pressure in the part exceeding 90 % of the hydrostatic test pressure (see 6.2.4), or shall advise the user of the need to	SERI OVIS-CERI OVIS-CERI	ON'IS-CERT





	EN 809		
Clause	Requirement + Test	Result-Remark	Verdi
15			0,5
50400	make such a provision.	0, 0,	P
5.2.1.2.3	Permitted forces and moments on pipe connections		
	The permitted forces and moments on pump inlet and outlet branches are to be stated by the manufacturer/supplier.	OVISION OVISION	OVIS
WiS-CERT	For rotodynamic pumps typical values for permissible forces and moments can be taken from EN 25199, ISO 9905, ISO 9908.	SEAL MESCERIC MISCERI	P
"S"CERT	For rotary positive displacement pumps typical values for permissible forces and moments can be taken from pr EN ISO 14847.	SEAL SCEAL SCEAL	N/A
ON CERT	Other connections shall be capable of withstanding the forces and moments which may arise from normal operation and from foreseeable misuse.	SEA CEA SEA	N/A
5.2.1.3	Ejection of transmission parts	Wis Wist	JIP.
S.CERT	The upper and lower limits for torque, speed, and loads, for coupling, gears, links, etc. shall not be exceeded.	ERI	P
5.2.1.4	Loss of stability	01. 01.	O P
OVIS-CERT	The pump or pump unit shall remain stable in all phases of transport, assembly, dismantling in the conditions foreseen when tilted to an angle of 100 in any direction from its normal position.	SERIE ONIS-CERIE ONIS-CERIE	OVISION
	If the pump or pump unit does not meet this requirement the manufacturer/supplier shall define the supporting devices needed to achieve stability, or include specific reference to their need in the information for use/instruction for use.	SHI OUTS CHIL OUTS CHI	N/A
OVIS CERT	The supporting devices shall be treated as special tools (see 5.2.8.4), and details of their use shall be provided in the information for use/instruction for use.	CHI SCERI SCERI	N/A
ON SERI	When the pump is installed it shall be made stable by the use of holding-down bolts or by the use of other anchoring methods.		o ^N P
	Holding-down bolts or other anchoring methods shall be strong enough to prevent unintended bodily movement of the equipment.		ONIP
5.2.1.5	Lifting of pumps and units	ST	P
	Lifting machinery for pumps and pump units, lifting accessories and their components shall be capable of withstanding the stress to which they are subjected. Lifting machinery for pumps and pump	ERT SCERT SCERT	on P
	units and lifting accessories shall be designed and constructed in such a way as to withstand the overload in static tests without permanent	CERT CERT OWNER	ON CH
	deformation. Strength calculations shall take into account the value of the static test coefficient of 1.5 to guarantee an adequate level of safety. (EN 809/A1:2009)	SERI CLERI CLERI	ON'S
5.2.2	Requirements to avoid electrical hazards	all	O ^V P





## Page 56 of 106

# OVIS-CE Wis-OERT Report No.: OViSCE2104-032M

	EN 809	<u> </u>	
Clause	Requirement + Test	Result-Remark	Verdict
CV SV		57 <u>,</u> 57 <u>,</u> 57	CV SV
ONIS	The electrical equipment of a pump unit shall satisfy the general requirements set out in EN 60204-1.	ONIC ONIC	ON P
1:S-CERV	Particular features shall conform to the particular clauses of EN 60204-1 as indicated in this standard.	SERIE SERIES	P.C.P.
OVIS-CERT	Electrical equipment shall be selected for safe operation in the intended application when used in the specified environment and working conditions, and on the declared characteristics and tolerances of the electrical supply taking into account predictable malfunctions (EN 60204-1, clauses 4, 7,	CERT OWS CERT OWS CERT	OV P
N'S CEI	8, 13, and 18). The electrical supply on the pump unit shall be	String String String	S.CHI
WIS-OFFIC	provided with means for its isolation from energy supply, or recommendations shall be included in the information for use/instruction for use.	ERT WIS-CERT WIS-CERT	WIS-CERT
OVIS-CERT	Such means shall allow for switching-off during normal operation and/or in an emergency (EN 60204-1, clauses 5, 18, and 5.2.8.3 of this Standard).	CERT OVISCERT OVISCERT	O'P
	Access to connections shall be restricted by devices e.g. shrouds or enclosure, which shall be adequate to prevent the entry of predictable fluids or solids and will require tools for removal (EN 60204-1, clauses 4, 13, and 16).	ERI OVIS-CERI OVIS-CERI	N/A
Wis CER	The pump unit shall be protected by an earth terminal against the build-up of positive charge.	St. Mis. Ct. Mis. Ct.	RE
- CERT	The earth terminal shall be connected directly to an earth conductor.	de de de	P
OVISION	Unbonded pipe connections shall not be considered as providing a continuous earth path.	OVISION OVISION	ONISP .
OVIS-CERT	Conductors shall be adequately sized for the maximum power load and insulated against the supply voltage and its tolerances, and be unambiguously identifiable by means of colour or other indicators (EN 60204-1, clauses 6, 7, 8, 14, 15 and 18).	ERI OVIS-CERI OVIS-CERI	P ovis-CERT
OVIS-CERI	Systems provided for the operational control of the pump unit shall be constructed from components and conductors meeting the requirements of this clause, and take into account the appropriate requirements and considerations set out in EN 60204-1, clauses 9, 10, 12, 18, and 19.	CERT OVIS-CERT OVIS-CERT	OVP
5.2.2.1	Electrical contact		P
OVIE LERI	Enclosures of electrical motors and control systems on the pump unit shall as a minimum give protection in accordance with EN 60529 IP 22.	eff eff eff	O ^{VII} P
5.2.2.2	Electrostatic phenomena	15 15	P
NIS-CERT	In order to prevent the build-up of electrostatic charge, an electrical potential balance for the related equipment is to be provided, if necessary by the use of an earthing route.	SEAT ON'S CEAT ON'S CEAT	P





	EN 809		
Clause	Requirement + Test	Result-Remark	Verdict
S.S.Y		57 <u>5</u> 57 557	S.CY
	Care shall be taken to ensure that the electrical potential balance of the pump is not changed by	ONIS ONIS	0 ^N P
all'	lining, coating or similar treatment	and an an	- A
5.2.2.3	External effects on electrical equipment	1.51 1.51	P
NYS-CERT	Electrical enclosures and other protection arrangements together with their means of fitting shall be so constructed that no operating conditions occur which can lead to danger to personnel.	SERI MISCERI MISCERI	PER
5.2.2.4		0, 0,	N/A <
5.2.2.4	Electromagnetic compatibility	and and and	IN/A
	The equipment shall conform to the requirements set out in EN 50081 parts 1 or 2, and to EN 50082 parts 1 or 2 and relevant parts of EN 61000 with regard to electromagnetic compatibility.	ONISCUL ONISCUL	N/A
5.2.3	Requirements to avoid thermal hazards	St and a st	P
0410	The pump or pump unit shall have reduced hazards	041 0412	O P
	to personnel arising from temperatures which result from the operation of the pump.	ER SER SER	SER
OVIS	This standard does not deal with means to reduce hazards from surface temperatures which derive	OVIS OVIS	N/A
S. CERI	from the temperature at which the pumped fluid is delivered to the pump inlet.	ERI SSERIESSERI	
	Steps shall be taken to minimize contact with or to warn operator/users of any surface which in normal operation will achieve a temperature exceeding	ERT SERT SERT	N/A
N'S	those set out in Table 2.	Win Win	NIS.
- AR	The safety instructions required shall be set out in the information for use/instruction for use.		N/A
5.2.4	Requirements to avoid the danger of noise and vibrations	ONIST ONIST	OVISE
5.2.4.1	Requirements to avoid the danger of noise	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	P
OVIS-CET	This standard does not deal with the reduction of risks of hearing loss arising from prolonged exposure to noise from pumps and pump units.	ovision ovision	N/A
OVIS-CERT	The pump manufacturer shall not take into account the effects of the installation in assessing the noise level.	SERI OVISCERI OVISCERI	P.F.R
5.2.4.2	Requirements to avoid the danger of vibrations	à à à	N/A
ONIS-CEL	This standard does not deal with the reduction of risks arising from the prolonged exposure to vibrations generated by the pump or pump unit.	OVISION OVISION	N/A
5.2.5	Requirements to avoid hazards from materials	à à à	P.S
	The wide and varied nature of pump applications	1.5° .5°	.SP
	makes it not possible to specify precise combinations and grades of materials in a standard of common requirements.	ERI SERI SERI	ON.
OVIS-CERT	Materials shall be selected taking into account the chemical and mechanical characteristics of the liquid to be pumped and of the operating environment, its ability to safely withstand operating loads, its working life and the effect of fatigue,	SERI OVIS CERT OVIS CERT	ON'P





iS-CERT	EN 809		<u> </u>
Clause	Requirement + Test	Result-Remark	Verdict
C.S.Y			C.S.Y
OVIS	ageing, abrasion, thermal, electrostatic and any other factor which it is expected may arise from the	ONLO ONLO	ONIS
	application and impact upon the materials.	(A) (A) (A)	R
	Full attention shall be given to local regulations regarding materials suitable for particular purposes such as use with potable water, with foodstuffs, designated for fire protection reasons, etc.	OVISIO OVISIO	N/A
OVISIO	Materials used shall not endanger the health and safety of personnel.	ONIS OVISIO	ON'P
OWIS-CERT	Materials used shall be appropriate with the liquid being pumped and identified in the specification, and with any lubricants, cooling/heating means, barrier or other fluids that may be introduced.	SERT OVIS-CERT OVIS-CERT	P.F.R.
5.2.5.1	Disposal of liquid	Ser Ser Ser	N/A
ONTO CERT	A pump or pump unit operating on a flammable, toxic, corrosive or otherwise hazardous liquid, or on a liquid at a temperature of more than 60°C shall be provided with a means such as a pipe connection,	SERI CORRECTION	N/A
JVID CERT	for use by the user, to collect for safe disposal any drained liquid or leakage from the shaft seal or discharge from a pressure relief valve.	CERT OWIS OWIS	OVID CERT
JVI'S	Due to the varied nature of the liquid it is not possible to specify more precise means of disposal.	ONIS ONIS	N/A
5.2.5.2	Disposal of gases	(P) (P) (P)	N/A
OVIS OF	Pump units driven by an IC engine shall be provided with a means to collect exhaust gases for safe disposal.	at at at	N/A
OVIS OF	Advice on safe disposal of exhaust gases, and the provision of combustion air into the room of installation, shall be included in the information for use/instruction for use.	NISCH MISCH	N/A
5.2.3	Fire and explosion hazards		.eP
OVIS-CERT	Pumps and pump units shall be designed and constructed in such a way as to avoid any risk of ignition of gases, liquids, dust, vapours or other substances within their intended use. (EN 809/A1:2009)	CERT OVISCERT OVISCERT	OV P
OVIS-CER.	The requirements regarding potentially explosive atmospheres shall be applied as far as a risk of explosion occurs due to the use of the pump in a potentially explosive atmosphere.	SER. ONIS-CER. ONIS-CER.	N/A
VIS GER	(EN 809/A1:2009) Requirements to avoid hazards from neglecting		N/A
5.2.6	ergonomic principles of machine design Pump units incorporating signal displays and/or		N/A
	control actuators shall be designed in accordance with the principles set down in EN 894.	ovision ovision	OVISOL
SERI	Signals shall be arranged to be easy to read and unambiguous in meaning.	ERI SERI SER	N/A
OVIS	Manual controls and other operating devices shall be easy to reach and operable without	OVIS OVIS	N/A



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	EN 809				
Clause	Requirement + Test	Result-Remark	Verdi		
		10, 10, 10, 10	0.5		
0113	unreasonable effort.	and and	all's		
CLIPA1	In particular, starting and stopping devices shall be clearly identified.		N/A		
OVIS	Steps shall be taken, including marking if necessary, to avoid errors arising from confusion.	OVISIO OVISIO	N/A		
5.2.7	Requirements to avoid hazards caused by failure of energy supply, breakdowns of machinery components and other malfunctions	SEAT MIS-CERT MIS-CERT	P		
5.2.7.1	Errors of fitting		P		
ONIS-CERT	<ul> <li>Hazards arising from misassembly of parts shall be eliminated by design.</li> <li>If fasteners with special requirements are used,</li> </ul>	SER OUSCIER OUS	P N/A		
	then interchangeable parts from other fasteners shall have the same quality.	ERI SERI SER	N St		
5.2.7.2	Non-return device	Nis Nis	N/A		
OVIS-CERT	If after switching off the pump unit, risks of hazards can occur through reverse flow in the pump, the manufacturer/supplier shall advise the necessity of a non-return device.	SERT ONES CHERT ONES CHER	N/A		
5.2.7.3	Direction of rotation of the pump	à à là	N/A		
OVISIOC	The direction of rotation of the pump shall be indicated in a distinctive place with a suitable arrow in a permanent form.	A ONE ONE ONE	N/A		
5.2.7.4	Auxiliary piping	to (to (to	N/A		
OVIE	Auxiliary piping necessary for the operation of the pump is to be set out in the information/instruction for use and/or arrangement drawing.	eft reft ref	N/A		
OVISION	Where functions of connections may be confused, leading to an unacceptable risk of hazard, connections shall be marked permanently on the pump.	EFT SEFT SEF	N/A		
5.2.7.5	Unexpected start-up	115 115	N/A		
	When the hazard exists the requirements of prEN 1037 shall be fulfilled.		N/A		
5.2.8	Requirements to avoid hazards through breakdown wrong installation of protection devices	OVISION OVISION	N/A		
5.2.8.1	All types of guards	S. B. B.	N/A		
OVISION	Removeable or openable guards shall be designed so that the reduction in risk will not be diminished by incorrect replacement.	OVISION OVISION	N/A		
5.2.8.2	Measuring instruments and measuring instrument connections	SEAL WISCER WISCER	N/A		
Wischfil	If for reasons of operating security of the pump or pump unit monitor and/or alarm devices are necessary, the necessary connections for them shall be made available.	SEAT NISCEAT NISCEA	N/A		
5.2.8.3	Emergency stop		N/A		
OVIS-CER.	If a dangerous situation arises which has to be stopped through manual intervention, then an emergency stop facility shall be provided	Str. OVIS-CHA. OVIS-CHA	N/A		



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EN 809						
Clause	Requirement + Test	Result-Remark	Verdic			
OVISION	conforming with the requirements of EN 418, or instructions shall be provided for its provision.	0415-0415-04	0415-01			
OVISCER	If it can be shown that a normal cut-off device functions as an emergency stop with the same efficiency this is admissible and it shall be marked as such.	SER OVIS-CER OVIS-CER	N/A			
5.2.8.4	Special tools	(d) (d) (d)	N/A			
OVISCERT	If special tools are required to install, set up, or start the pump, or during its maintenance, they shall be fully specified and offered for supply by anufacturer/supplier.	OVISCE OVISCE	N/A			
5.2.8.5	Safety devices (by-pass, control valve, pressure relief valve)	ON ON	N/A			
OVISCEN	Safety devices which are adjustable shall be adjustable only by the use of tools or shall be contained in enclosures which can only be opened by the use of tools.	at at at	N/A			
WiS-OFT	The manufacturer shall include warnings of the risks arising from adjusting such devices incorrectly.	NIS CEL NIS CEL	N/A			
6	Verification of the safety requirements and/or measures		P			
6.1	General reference	1.5 1.5	. P			
O' CHAI	Compliance with the safety requirements set out in clause 5 shall be verified by the use of one or more of the methods set out in 6.2.	SEA CEAN CEAN	S" P			
ONID	The appropriate method for a particular safety requirement can be found in clause 4, Table 1 in the column headed "Verification".	ALS ALS ALS	on P			
OVIS	Verification shall be carried out with the equipment assembled for normal use as intended.	OVISIO OVISIO	OVICP			
WiS-CERI	Accessories and covers may or may not be fitted as long as the effect is not to obscure the validity of the test.	SEAT MISSERIE MISSERIE	P			
OUIS-CERT	When dimensions, mass, or other factors make particular tests on complete equipment impractical, tests on sub-assemblies or components are permitted provided that it is verified that the result can be considered representative of the fully assembled equipment.	ERI OUTS-CERI OUTS-CERI	OVISCHE			
04:55	The verification in accordance with the safety requirements may be carried out in any sequence.	OVIST OVIST	OVIEP			
6.2	Specific methods of verification	A. A. A.	P			
6.2.1	Inspection		.cP			
ON.	Verification shall be by appropriate physical examination and measurements of the pump or pump unit, of the specification defining it, and of the labelling and documentation describing it.	ERI US-CERI US-CERI	0" P			
6.2.2	Review of documentation	0, 0,	O P			
OVIS-CERT	The stated performance and features of the pump or pump unit shall be compared with those specified in the data sheet, standard, suppliers' data, or any	ERT NIS-CERT NIS-CERT	PER			



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### CERT Page 61 of 106

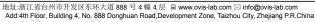
# OVIS-CE 6415-OFAT Report No.: OViSCE2104-032M

	IS-CERT EN 809					
Clause	Requirement + Test	Result-Remark	Verdict			
, CV		5 . S . S .	S.			
Nis	other appropriate ource to demonstrate compliance.	With With	112			
6.2.3	Calculations		P			
OVISCERI	Calculations used to establish compliance with a requirement shall be recorded by the manufacturer, be checked, and be retained for subsequent examination.	SERVICE CERVICER	PSPR OVIS			
6.2.4	Hydrostatic pressure test for pressure containing parts	NIS OF NIS OF	N ^{is} P ^{it}			
CERT	All pressure containing parts shall be hydrostatically pressure tested in accordance with prEN 12162.		P			
OWISSERI	The test pressure shall be related by a factor to the maximum allowed working pressure set out in the specification.	OVIST OVIST	OVIC <b>P</b>			
. C.V	In no case shall the factor be less than 1,3.	or all all	P			
6.2.5	Noise measurement	ONTO ONTO	O P			
SER	The noise emission of the equipment shall be assessed by reference to measured values.	eft ceft ceft	P			
OVISCERT	These may be measured on the equipment concerned or from similar equipment operating under similar conditions.	OVIST OVIST	ON P			
OVISION	Noise emissions shall refer to the unit fully assembled with all auxiliary equipment,guards,and any noise control elements.	ONISCO ONISCO	OVICE			
WIS CER	The noise measurements shall be made in accordance with prEN 12639.	SCH WISSER	P.C.			
6.2.6	Guarding		Р			
OVIS-CERT	Guards provided to prevent contact with surfaces or with moving parts shall be considered adequate if contact is not made when tested with the test fingers defined in EN 60529 with respect to penetration, rigidity, and impact.	SERIE OVIS-CERIE OVIS-CERIE	PER			
6.2.7	Stability	Wis Wis	JI P			
NIS-OFAT	The conformity can be demonstrated by test, or by calculation for equipment other than for portable units.	EAT US CEAT US CEAT	P			
OVIS-CERT	If a test is to be undertaken, the fully assembled pump shall be mounted on its usual base or feet and with all ancillary equipment fitted. If the unit is wheel-mounted, the wheels shall be positioned in the worst orientation for the test.	ONIS CERT ONIS CERT	N/A			
1.S.CER	The base shall be tilted to up to 10° and no loss of stability shall be acceptable.	ER ISSER	N/A			
ON CERT	Care should be taken during the test to ensure that in the event of instability no damage can occur to people or to property.	ERT SERT SERT	N/A			
OVID CERT	If calculations are to be the basis of conformity checking,they shall be based upon the centres of gravity method and shall not show any likely	CERT CERT CERT	ONTP OFF			
6.2.8	instability up to displacements of 12,5°. Surface temperatures	15 15	N/A			





	EN 809		
Clause	Requirement + Test	Result-Remark	Verdi
C.C.Y		<u> </u>	.C.
OVID	Temperatures of touchable external surfaces are to be measured in accordance with the method	of of of	N/A
7	defined in EN 563:1994. Information for use		· · · · · P
7.1	General	1.2 A.S	P
AI CAR	The information for use shall correspond to the rules set out in EN 292-2, clause 5.		P
7.2	Instruction for use — instruction handbook	1.5	N'P
7.2.1	General	0 0	P
C.CERT	The instruction for use/instruction handbook shall correspond to the rules set out in EN 292-2, 5.5.	SEAL SEAL SCHA	P
July Carl	The customer/purchaser shall receive the instruction handbook not later than when the pump	at at a	O ^T P
WIS-CEI	or the pump unit is delivered by the manufacturer. An instruction handbook shall be included with the	NIS NISCH	NI P
7.2.2	delivery. Contents	t t	P
	The instruction handbook shall include safety information on the following subjects as far as they are relevant for the pump or pumping unit and any	OVISION OVISION	ON:CP'
WiS-OFRY	auxiliary equipment supplied and if they are necessary for reducing the risks during use:	SER. WIS-SER. WIS-SER	1
0	— general;	0 0	P
R	- transport and intermediate storage;	A A A	P
	- description of the pump or pump unit;		, P
011	— installatioNssembly;	01 01	OP
á	— commissioning startup, operation, shutdown;	à à á	P
Ch'	— maintenance and servicing;	sti sti	R
Vis	- faults; cause and remedies;	Win Win	ViP
0	- relevant documentation.	0 0	P
R	Additional information may be provided.	E E E	P
7.2.2.1	General — Fields and limits of application or use, intended	015.01 015.01	P [*]
, á	or permissible use, including any site conditions;		
ONIS-CE.	— details of the pump/pump unit:     a) details which relate the operating manual to     notional product:	St. Ct. OVIS.	P P
1	b) manufacturer, importer or supplier;		P
- CEN	c) designation, type, size;		P
0419	<ul> <li>d) version no. and/or date of issue of instruction handbook;</li> </ul>	OVIE OVIE	O ^N P
- A	e) noise emission.		P
.5	The sound pressure level of the pump or pump unit		N/A
	shall be shown as either 70 dBA, if this value is not exceeded or its actual value.		
OVISION	The peak C-weighted instantaneous sound pressure level shall be quoted where it exceeds 63 Pa (130 dB in relation to 20 µPa).	NIS CHI NIS CH	N/A
OVIS-CERT	Where the continuous A-weighted sound pressure level exceeds 85 dBA it shall be shown also as the sound power level.	Str. Wiscell Wiscell	OVIS



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400-8008-959



IS-CERT EN 809					
Clause	Requirement + Test	Result-Remark	Verdict		
, CM		an 10, 10, 10	S.		
Nis	NOTE Should the situation arise, then noise	With With	NP .		
	reducing measures should be agreed between				
	purchaser and manufacturer/supplier.	A A A	- A		
.5	f) utility requirements e.g. electrical supplies, water		.eP		
	supplies;	01, 01,	01		
, al	— warnings against foreseeable misuse.	in in in	P		
Chi	The following signs are to be adopted into the	Star Star	R		
	instruction handbook.	Wis Wis	J'is		
×	Safety instructions given in this manual		Р		
	non-compliance with which would affect safety are	A A A	R		
	identified by the following symbol:	or south south	S		
01.	where electrical safety is involved, with:	ON ON	O ^N P		
à	Safety instructions which shall be considered for	à à à	Pá		
	reasons of safe operation of the pump or pump unit	ofth ofth ofth	SEN		
	and/or protection of the pump or pump unit itself are	NIS NIS	VIS.		
	marked by the sign: ATTENTION	0, 0,	0.		
7.2.2.2	Transport and intermediate storage	A A A	P		
C.Ot	- Preservative measures:	de l'an l'an	cP ³		
112	a) durability of protection;	die die	P		
~ ~	b) any subsequent preservation;		PA		
C C C	c) removal of protection;		P		
	- protection against environmental influences.		P		
7.2.2.3	Description of the pump or pump unit	0, 0,	P		
	— General description;	à à á	P.S		
- Stri	— design and function;		P		
112	— design, function and use of safety protection	in the	P		
	devices;		×		
- A	— additional descriptions for accessories;		P		
.5	<ul> <li>– additional descriptions for accessiones,</li> <li>– dimensions, mass, centres of gravity, capacities.</li> </ul>	v	P		
7.2.2.4	Installationssembly	- 0 ³ , 0 ³ ,	P		
1.2.2.4	— Special assembly tools;	á á á	P.S		
CEN.	— initial installation;		P		
Sil.	— data on installation site:	15 15	P		
U (	a) space requirement for operation and	0 0	PX		
	maintenance;	As As As	ER I		
	b) inspection before start of installation;		- Cir P		
011	c) details of base, foundation;	ON. ON	P		
á	d) installation of pump assembly;		P P		
- der		the the the	P		
	e) alignment requirements including flexible	VIS VIS	119		
0.	couplings;	0" 0"	0		
-A-	- assembly of driver and accessories;	(A) (A) (A)	P		
	- correct installation of safety devices and control	Gr Gr Gr	R		
all's	systems;	all's all's	- Jus		
~ ~	— electrical connection, connecting cables;	× × ×	P		
(P)	— grouting and other completion work;		P		
.5	— pipework:	· · · · · · · · · · · · · · · · · · ·	P		
01.	a) general;	01. 01.	OP		
	b) allowable forces and moments on inlet and outlet	a a a	P		
SEL	branches;	Ser. Ser. Ser.	Str		
VIS	— tightening torques for screw threads.	115 JUS	JIP .		
7.2.2.5	Commissioning startup, operation, shutdown	0. 0.	P		





115

	EN 809		
Clause	Requirement + Test	Result-Remark	Verdio
10° 10°	— Documentation:	119 119 119	P
0."	a) measuring point and piping diagrams (e.g.	0, 0,	P
Ś Ś	PI-diagram);	A A A	2
.5	b) list of lubricants;	· · · · · · · · · · · · · · · · · · ·	P
03	— making the product ready for operation:	0, 0,	0°P
à á	a) bearings;	a a a	P
S.S.Y	b) shaft seal;	S ^V	P
0/15	c) filling up/venting;	ONIS ONIS	ONP
5	d) electric connections;		P
	e) check of direction of rotation;		P P
01/2	<ul> <li>— control and monitoring devices:</li> <li>a) functional testing;</li> </ul>	China China	O P
	b) setting values;		P
	c) additional facilities (cooling, circulating, heating		N/A
Vis	etc.);	Wis Wis	NIS
	d) motor protection (setting);		Р
8	e) emergency switch;	The The The	N/A
.5	— safety devices:	1.5	
0,	a) mechanical (e.g. guards for coupling or belts);	0, 0,	N/A
à sé	b) sound insulation (e.g. protective hood);	A A A	N/A
S.S.	c) splash protection (e.g. hood);	5 ¹ .5 ¹ .5 ¹ .5 ¹	P
0%	d) relevant electrical regulations;	01, 01,	ON P
N. R	e) special devices;	AN AN AN	N/A
	— commissioning:		P
0,112	a) initial commissioning;	Office Office	O P
. A	b) start after interruptions to the operation;		P
			P
0/12	c) pump-related requirements to the plant;	all's all's	all'a
	d) activation/switching frequency		P
- A	e) operation and start-up with close valve;		Per
Nis	f) special information (e.g. stand-by mode, faults);	Wis Wis	N/A
	— shutdown:		P
Sec.	a) switching off;	(T3) (T3) (T3)	P
VIS	b) draining;	Wist Wist	N'P
0,	c) preservation;	0. 0.	P
A A		the the the	R
15	d) storage;		N/A
0,	— other measures.	0, 0,	0
7.2.2.6	Maintenance and servicing	A A A	P
·S OF	— Maintenance and inspection:		P
01.	a) consumable items including spare parts;	01, 01,	ON P
	b) monitoring during operation;	in in in	P,<
	c) any preventive action to be taken (e.g. regarding		P
all's	parts subject to wear, lubrication, sealing medium);	Wis Wis	all's
	— disassembly and re-assembly:		P
Strain Strain	a) tools;		R
19	b) re-assembly procedure;	1.5 1.5	N ^P P
0.	b) le-assembly procedure,	0. 0.	0.





### Page 65 of 106

# OVISICE OVIS-OFFIT Report No.: OViSCE2104-032M

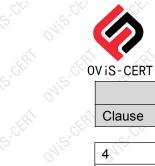
	EN 809		6-1
Clause	Requirement + Test	Result-Remark	Verdict
S.		10, 10, 10, 10	C.V
0113	— tightening torques for screw threads.	ONIS ONIS	ON P
7.2.2.7	Faults; cause and remedies	à à à	Р
Chin			R
ONIS	a) hydrodynamic;	ONUS ONUS	OVP
	b) mechanical;	in in in	P
, CE	c) electrical;		R
OVIS	— remedying of causes using product-related check list.	ONIS ONIS	ON P
7.2.2.8	Relevant documentation	A. A. A.	PS
OVISIO	As agreed between manufacturer/supplier and customer/purchaser.	ONIS' ONIS'	OVICP
1 AL		in in in	Ŕ
8 5	Marking		P
0415	The pump or pump unit shall carry the following minimum marking:	0110 0110 0110 0110	O P
OVIS-CERV	— name and address of the manufacturer/supplier;	Tianjin Streampumps Industry Co., Ltd.	REP.
X			<b>–</b> ×

ONIS	<ul> <li>remedying of causes using product-related check list.</li> </ul>	ONIS ONIS	ON P
7.2.2.8	Relevant documentation	B. B. B.	P
ovisio	As agreed between manufacturer/supplier and customer/purchaser.	ONIS ONIS	OVICP
13. 13		A A A	-A
8.5	Marking		P
0410	The pump or pump unit shall carry the following minimum marking:	on on on	° P
OVIS-CEIL	- name and address of the manufacturer/supplier;	Tianjin Streampumps Industry Co., Ltd.	PER
AL AN	— type, designation;	SVQ2200(F)	P
	— year of manufacture, serial number (if any);		P.
a a	— for pump units with electric motor, information about the electrical data, e.g.:		Р
	a) voltage;	220-240V	P
Office	b) frequency;	50/60 Hz	O P
AL A	c) power rating.	3080W	P
OVIS	Additional details may be provided for the pump as, e.	OVIST OVIST	N ^{i P}
192 3	— flow;	700 L/min	P
1.5	+ head;	17 m S	. P
0	— speed of rotation.	0, 0,	P

Softer Outs offer Outs offer This Test Report is issued by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your exclusive use. Attention is drawn to the limitations of liability indemnification and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the results there of based upon the information that you provided. You have 30 days from date of issuance of this test report includes all of our or omission caused by our negligence. Provided however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report



400-8008-959



### CERT Page 66 of 106

/iS-CERT	EN 60204-1		<u> </u>
Clause	Requirement + Test	Result-Remark	Verdict
S.C.Y			S.C.Y
4	GENERAL REQUIREMENTS	ONIS ONIS	ONP
4.1	General	à à là	P
OVISIOE.	Hazards relevant to the electrical equipment are assessed as part of the overall risk assessment of the machine.	SE OVISION OVISION	OVISPIC
4.2	Selection of equipment	A A A	P
4.2.2	Electrical components/devices suitable for their intended use and applied in accordance with Supplier's instructions. Where possible electrical equipment in compliance	UNE UNE	P
Sil.	with the IEC 60439 series.		.5
4.3	Electrical supply		° P
4.3.1	Electrical equipment to be designed for correct operation within the conditions of mains power supply - as stated below (cl. 4.3.2 or 4.3.3)	SEA. ONIS-CEAN ONIS-CEAN	OVISION
C.C.R.	or as stated by the user (record specs in this TR)	13, 13, 13, 13;	- PSR
W19	or as stated by the supplier ¹	Wis Wis	N ⁱ P
4.3.2	AC supplies		Pá
OVIS OFFI	Supply Voltage: Steady state voltage: 0,9 1,1 of nominal voltage	Set outs outs outs	ON'SP
N'S CERT	Frequency: 0,99 1,01 of nominal frequency continuously; 0,98 1,02 short time.	in wis the wis the	P
0	Harmonics: not exceeding 10 % of the total r.m.s. etc.		° ₽
CER	Voltage unbalance: not exceeding 2% deviation.	¹ 3, ¹ 1, ¹ 3,	R
OVIS-CERT	Voltage interruption: interrupted or at zero voltage for not more than 3 ms at any random time in the supply cycle with more than 1 s between successive interruptions.	CERT SCERT SCERT	O ^{VI®} P
ONIT	Voltage dips not exceeding 20 % of the peak voltage of the supply for more than one cycle with more than 1 s between successive dips.	efi efi	ON P
4.3.3	DC supplies		N/A
Wis-SERT	Supply Voltage: - other:0,85 to 1,15 of nominal voltage; - battery-operated vehicles: 0,7 to 1,2 of nom. volt. - from converting equipment: 0,9 to 1,1 of nom.volt.	ERI OF CERI	N/A
S. SERI	Voltage interruption: - other: not exceeding 5 ms - converting equipment: not exceeding 20 ms	eff ceff ceff	N/A
	Ripple (peak-to-peak): not exceed. 0,15 of nom. volt.	ONIN ONIN	o [∞] N/A
4.3.4	Special supply systems; e.g. on board generators limits acc. 4.3.2 /.3 exceeded, but equipment designed acc. exceeded limits.	SEA NIS-CERT NIS-CER	N/A
4.4	Physical environment and operating conditions	A A A	Р
4.4.1	Electrical equipment suitable for the physical environment and operating conditions of its intended use.	CRY NISCERY NISCER	PIPI NISPIPI



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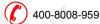


### Page 67 of 106

#### Report No.: OViSCE2104-032M

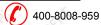
	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdic
			-5. ⁶
4,4.2	Electromagnetic compatibility (EMC): Equipment shall not generate electromagnetic disturbances above levels that are appropriate for its intended operating environment and shall have a level of immunity to electromagnetic disturbances so that it can function in its intended environment (IEC 61000-6-1 or IEC 61000-6-2 and CISPR 61000-6-3 or IEC 61000-6-4 give general EMC emission and immunity limits.)	OU. OU.	OW P
OVIS-CERT	Are there sufficient measures to limit the generation of electromagnetic disturbances, i.e. conducted and radiated provided? (E.g. power supply filtering; cable shielding; enclosures designed to minimize RF radiation; RF suppression techniques; design of functional bonding system, using conductors with low RF impedance and as short as practicable.	SERT OUTS CERT OUTS CERT	OVIS-OFF
4.4.3	Electrical equipment shall be capable of operating correctly in the intended ambient air temperature. (Minimum requirement: air temperatures of +5 °C and +40 °C)	EFT OF OF	P
4.4.4	Electrical equipment shall be capable of operating correctly when the relative humidity is up to 50 % at a maximum temperature of +40 $^{\circ}$ C	SEAT _ CEAT _ CEA	P
4.4.5	Electrical equipment shall be capable of operating correctly at altitudes up to 1 000 m above mean sea level.	AT AT A	O ^N P
4.4.6	Electrical equipment shall be adequately protected against the ingress of solids and liquids (see 11.3)	0415-0, 0415-0	OVISP
4.4.7	Electrical equipment shall withstand ionizing and non- ionizing radiation.	in the fit	N/A
4.4.8	Electrical equipment shall withstand vibration, shock and bump.	Will's William	N/A
4.5	Electrical equipment designed to withstand the effects of transportation and storage within a temperature range of - 25 to + 55 $^{\circ}$ C.	EA US CHA US CHA	P
4.6	Heavy or bulky electrical equipment of the machine provided with suitable means for handling.		P
4.7	Electrical equipment is installed and operated in accordance with the supplier's instruction.	Ser ser ser	P

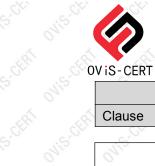
5 5 GH	INCOMING SUPPLY CONDUCTOR TERMINATIONS DISCONNECTING AND SWITCHING OFF	AND DEVICES FOR	S. SHR
5.1	Incoming supply conductor terminal	ONIS ONIS	OTP
EN 5.1	Electrical equipment of a machine connected to one single power supply (For large complex machinery comprising a number of widely-spaced machines working together in a coordinated manner, there can be a need for more than one incoming supply depending upon the site supply arrangements)	A ONSOLATIONSOLATI	P.F.R.
ERI CERT	Power supply conductors terminated to main disconnecting device of electrical equipment (unless a plug is provided for disconnection)	A CEAT CEAT	P
0412	Neutral conductor clearly indicated in technical documentation with "N" (see cl. 16.1)	One One	N/A
liability,indemnification a days from date of issuar	ed by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the results nee of this test report to notify us of any error or omission caused by our negligence, Provided, however, that such r raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of th	there of based upon the information that you otice shall be in writing and shall specifically is report, the tests conducted and the correctr	provided. You have address the issue y





No connection between neutral conductor and protective bonding circuit nor combined PEN- terminals.         N/           Exception: a connection may be made between the neutral terminal and the PE terminal at the point of the connection of the power supply to the machine for TN-C systems.         N/           All terminals of incoming supply clearly marked in ac. with cl. 16.1 (symbols acc. to EN 60445)         N/           5.2         Terminal for connection to external protective earthing system         F           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.         F           Cross section of incoming PE conductor acc. to cl. 5.2, table 1.         F           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).         F           Protective earth identified either by graphic symbol, Letters "PE", or bicolour combination GREEN / YELLOW         F           5.3         Supply disconnecting device         F           5.3.1         A supply disconnecting device         F           6.3.2         Type of power supply disconnecting device: a) Switch-disconnector, acc. to EN 60947-3 for appliance category AC-23 B or DC-23 B         F           b) Disconnector with or without fuses, with aux. contat (acc. to EN 60947-2)         F			EN 60204-1		
protective bonding circuit nor combined PEN- terminals.         image: second comparison of the power supply to the machine for TN-C systems.           All terminals of incoming supply clearly marked in ac. with cl. 16.1 (symbols acc. to EN 60445)         Ni           5.2         Terminal for connection to external protective earthing system         F           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 earthing system or to the external protective earthing system or to the external protective conductor, depending upon the supply distribution system.         F           Cross section of incoming EC conductor acc. to cl. 5.2, table 1.         (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).         F           For each incoming supply disconnecting device         F           5.3.1         A supply disconnecting device shall be provided: - for each incoming source of supply to a machine - for each on-board power supply.         F           5.3.2         Type of power supply disconnecting device:         -           a) Switch-disconnector, acc. to EN 60947-3 for appliance category AC-23 B or DC-23 B         F           b) Disconnector with or without fuses, with aux. contact (acc. to EN 60947-3)         F           c.3.2         Disconnector with or that device and which meets the isolation requirements of IEC 60947-1as wetl as a utiliza	CI	ause	Requirement + Test	Result-Remark	Verdic
for TN-C systems.         All terminals of incoming supply clearly marked in a. with cl. 16.1 (symbols acc. to EN 60445)           5.2         Terminal for connection to external protective earthing system         F           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 conductor, depending upon the supply distribution system.         F           Cross section of incoming PE conductor acc. to cl. 5.2, table 1.         F           (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).         F           Protective earth ing evice         F           5.3         Supply disconnecting device         F           5.3.1         A supply disconnecting device         F           - for each incoming source of supply to a machine - for each on-board power supply.         F           5.3.2         Type of power supply disconnecting device:         F           a) Switch-disconnector, acc. to EN 60947-3 for appliance category AC-23 B on DC-23 B b) Disconnector with or without fuses, with aux. contact (ac. to EN 60947-2)         N           c) Power circuit breaker suitable for isolation (acc. to EN 60947-2)         F           d) any other switching device in accordance with an IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as well as a utilization category         F	01 01	is-GERT	protective bonding circuit nor combined PEN- terminals. Exception: a connection may be made between the neutral terminal and the PE terminal at the point of	ERI OVIS-CERI OVIS-CERI	N/A
5.2       Terminal for connection to external protective earthing system       F         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 conductor, depending upon the supply distribution system.       F         Cross section of incoming PE conductor acc. to cl. 5.2, table 1.       (Where an external protective conductor acc. to cl. 5.2, table 1.       F         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).       F         Froe ach incoming PE conductor acc. to cl. 5.3.       Supply disconnecting device also 8.2.2).       F         5.3       Supply disconnecting device       F         5.3.1       A supply disconnecting device shall be provided: - for each incoming source of supply to a machine - for each on-board power supply.       F         5.3.2       Type of power supply disconnecting device:       F         a) Switch-disconnector, acc. to EN 60947-3 for appliance category AC-23 B or DC-23 B       B       b) Disconnector with or without fuses, with aux. contact (acc. to EN 60947-3)       N         c) Power circuit breaker suitable for isolation (requirements see cl. 5.3.3)       F       -       -         6.3.3       Disconnection device in accordance with an IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as well as a utilization category       F		SCERT	for TN-C systems.All terminals of incoming supply clearly marked in	ent south south	N/A
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 conductor, depending upon the supply distribution system.       F         Cross section of incoming PE conductor acc. to cl. 5.2, table 1.       F         (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).       F         Protective earth identified either by graphic symbol, Letters "PE", or bicolour combination GREEN / YELLOW       F         5.3       Supply disconnecting device shall be provided: - for each on-board power supply.       F         5.3.1       A supply disconnecting device:       F         a) Switch-disconnector, dc. to EN 60947-3 for appliance category AC-23 B or DC-23 B       F         b) Disconnector with or without fuses, with aux. contact (acc. to EN 60947-3)       F         c) Prower circuit breaker suitable for isolation (acc. to EN 60947-1 for appliance category AC-23 B or DC-23 B       N/         c) Power circuit breaker suitable for isolation (acc. to EN 60947-2)       F         c) a) switch-disconnector, acc. to EN 60947-1as well as a utilization category       F         c) Power circuit breaker suitable for isolation (acc. to EN 60947-2)       F         c) appliance category AC-23 B or DC-23 B       N/         c) Disconnector ador are any or the subply and have only one OF (isolated) and only one ON position marked with "O" an	0	0		ONLY ONLY	0110
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 earthing system or to the external protective earthing system or to the external protective earthing system or to the supply distribution system.         F           Cross section of incoming PE conductor acc. to cl. 5.2, table 1. (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).         F           Protective earth identified either by graphic symbol, Letters "PE", or bicolour combination GREEN/ YELLOW         F           5.3         Supply disconnecting device         F           5.3.1         A supply disconnecting device shall be provided: - for each incoming source of supply to a machine - for each on-board power supply.         F           5.3.2         Type of power supply disconnecting device:         F           a) Switch-disconnector, acc. to EN 60947-3 for appliance category AC-23 B or DC-23 B         N/           b) Disconnector with or without fuses, with aux. contact (acc. to EN 60947-3)         N/           c) Power circuit breaker suitable for isolation (acc. to EN 60947-2)         P           d) any other switching device in accordance with an IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as well as a utilization category         F           - isolate the electrical equipment from the supply and have only one OFF (isolated) and only one ON position marked with "O" and "I"         F<	Э. <u>/</u>	2		j system	P A
5.2, table 1.       (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).       Protective earth identified either by graphic symbol, Letters "PE", or bicolour combination GREEN / YELLOW         5.3       Supply disconnecting device       F         5.3.1       A supply disconnecting device shall be provided: - for each incoming source of supply to a machine - for each on-board power supply.       F         5.3.2       Type of power supply disconnecting device:       a) Switch-disconnector, acc. to EN 60947-3 for appliance category AC-23 B or DC-23 B       F         b) Disconnector with or without fuses, with aux. contact (acc. to EN 60947-3)       N/       K         contact (acc. to EN 60947-3)       F       K         d) any other switching device in accordance with an IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as well as a utilization category       K         e) Plug/socket combination for electrical load (requirements see cl. 5.3.3)       F       S.3.3         b) Disconnection device has to fulfil all of the following requirements       -         e) Plug/socket combination for electrical load (requirements ee cl. 5.3.3)       F         - isolate the electrical equipment from the supply and have only one OFF (isolated) and only one ON position marked with "O" and "I"       F         - visible contact gap or a position indicator which cannot indicate OFF (isolated) until all contacts are act	18, 01	is-CERT	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.	ERT OUIS-CERT OUIS-CERT	OVIS-CEP
Letters "PE", or bicolour combination GREEN / YELLOW       F         5.3       Supply disconnecting device       F         5.3.1       A supply disconnecting device shall be provided: - for each incoming source of supply to a machine - for each on-board power supply.       F         5.3.2       Type of power supply disconnecting device: a) Switch-disconnector, acc. to EN 60947-3 for appliance category AC-23 B or DC-23 B       F         b) Disconnector with or without fuses, with aux. contact (acc. to EN 60947-2)       N/         c) Power circuit breaker suitable for isolation (acc. to EN 60947-2)       F         d) any other switching device in accordance with an IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as well as a utilization category       N/         e) Plug/socket combination for electrical load (requirements see cl. 5.3.3)       F         5.3.3       Disconnection device has to fulfil all of the following requirements       -         solate the electrical equipment from the supply and have only one OFF (isolated) and only one ON position marked with "O" and "I"       F         - 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       F         - have an external operating means e.g.a handle (except power operated CB's)       F         - coloured black or grey recommended (If used as       F	2 10	is-CERT	<ul><li>5.2, table 1.</li><li>(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).</li></ul>	ERT OUTS-CERT OUTS-CERT	P
5.3.1       A supply disconnecting device shall be provided: - for each incoming source of supply to a machine - for each on-board power supply.       F         5.3.2       Type of power supply disconnecting device: a) Switch-disconnector, acc. to EN 60947-3 for appliance category AC-23 B or DC-23 B b) Disconnector with or without fuses, with aux. contact (acc. to EN 60947-3) c) Power circuit breaker suitable for isolation (acc. to EN 60947-2) d) any other switching device in accordance with an IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as well as a utilization category e) Plug/socket combination for electrical load (requirements see cl. 5.3.3) 5.3.3       F         5.3.3       Disconnection device has to fulfil all of the following requirements - isolate the electrical equipment from the supply and have only one OFF (isolated) and only one ON position marked with "O" and "I" - 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 - have an external operating means e.g.a handle (except power operated CB's) - coloured black or grey recommended (If used as        F	1	is oth	Letters "PE", or bicolour combination GREEN /	SR. Wiscoll, Wiscoll.	PCP
- for each incoming source of supply to a machine - for each on-board power supply.       -         5.3.2       Type of power supply disconnecting device:       -         a) Switch-disconnector, acc. to EN 60947-3 for appliance category AC-23 B or DC-23 B       F         b) Disconnector with or without fuses, with aux. contact (acc. to EN 60947-3)       N/         c) Power circuit breaker suitable for isolation (acc. to EN 60947-2)       F         d) any other switching device in accordance with an IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as well as a utilization category       N/         e) Plug/socket combination for electrical load (requirements see cl. 5.3.3)       F         5.3.3       Disconnection device has to fulfil all of the following requirements       -         - 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       F         - have an external operating means e.g.a handle (except power operated CB's)       F         - coloured black or grey recommended (If used as       F	5.3	3	Supply disconnecting device	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	P
5.3.2       Type of power supply disconnecting device:       -         a) Switch-disconnector, acc. to EN 60947-3 for appliance category AC-23 B or DC-23 B       F         b) Disconnector with or without fuses, with aux. contact (acc. to EN 60947-3)       N/         c) Power circuit breaker suitable for isolation (acc. to EN 60947-2)       F         d) any other switching device in accordance with an IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as well as a utilization category       N/         e) Plug/socket combination for electrical load (requirements see cl. 5.3.3)       F         5.3.3       Disconnection device has to fulfil all of the following requirements       -         e) visible contact gap or a position indicator which cannot indicate OFF (isolated) and only one ON position marked with "O" and "I"       -         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       F         - have an external operating means e.g.a handle (except power operated CB's)       -       F         - coloured black or grey recommended (If used as       F	5.3	3.1	- for each incoming source of supply to a machine	outs outs outs	OVISPIC
appliance category AC-23 B or DC-23 B       N/         b) Disconnector with or without fuses, with aux. contact (acc. to EN 60947-3)       N/         c) Power circuit breaker suitable for isolation (acc. to EN 60947-2)       Power circuit breaker suitable for isolation (acc. to EN 60947-2)         d) any other switching device in accordance with an IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as well as a utilization category       N/         e) Plug/socket combination for electrical load (requirements see cl. 5.3.3)       F         5.3.3       Disconnection device has to fulfil all of the following requirements         - isolate the electrical equipment from the supply and have only one OFF (isolated) and only one ON position marked with "O" and "I"         - 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       F         - have an external operating means e.g.a handle (except power operated CB's)       F         - coloured black or grey recommended (If used as       F	5.:	3.2	Type of power supply disconnecting device:	the the the	_
c) Power circuit breaker suitable for isolation (acc. to EN 60947-2)       F         d) any other switching device in accordance with an IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as well as a utilization category       N/         e) Plug/socket combination for electrical load (requirements see cl. 5.3.3)       F         5.3.3       Disconnection device has to fulfil all of the following requirements       F         - isolate the electrical equipment from the supply and have only one OFF (isolated) and only one ON position marked with "O" and "I"       F         - 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       F         - have an external operating means e.g.a handle (except power operated CB's)       F         - coloured black or grey recommended (If used as       F	10	in the	appliance category AC-23 B or DC-23 Bb) Disconnector with or without fuses, with aux.		P N/A
(acc. to EN 60947-2)       N/         d) any other switching device in accordance with an IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as well as a utilization category       N/         e) Plug/socket combination for electrical load (requirements see cl. 5.3.3)       F         5.3.3       Disconnection device has to fulfil all of the following requirements         - isolate the electrical equipment from the supply and have only one OFF (isolated) and only one ON position marked with "O" and "I"         - 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         - have an external operating means e.g.a handle (except power operated CB's)         - coloured black or grey recommended (If used as		.5		N	ST P
IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as well as a utilization category       F         e) Plug/socket combination for electrical load (requirements see cl. 5.3.3)       F         5.3.3       Disconnection device has to fulfil all of the following requirements       F         - isolate the electrical equipment from the supply and have only one OFF (isolated) and only one ON position marked with "O" and "I"       F         - 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       F         - have an external operating means e.g.a handle (except power operated CB's)       F	0	~	(acc. to EN 60947-2)	0, 0,	0
e) Plug/socket combination for electrical load (requirements see cl. 5.3.3)       F         5.3.3       Disconnection device has to fulfil all of the following requirements       -         - isolate the electrical equipment from the supply and have only one OFF (isolated) and only one ON position marked with "O" and "I"       F         - 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       F         - have an external operating means e.g.a handle (except power operated CB's)       F	01		IEC product standard for that device and which meets the isolation requirements of IEC 60947-1as	ERI OVIS-CERI OVIS-CERI	N/A?
- isolate the electrical equipment from the supply and have only one OFF (isolated) and only one ON position marked with "O" and "I"     - 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     - have an external operating means e.g.a handle (except power operated CB's)     - coloured black or grey recommended (If used as		CERT	e) Plug/socket combination for electrical load	this cliffic cliffi	P
and have only one OFF (isolated) and only one ON         position marked with "O" and "I"         - 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         - have an external operating means e.g.a handle         (except power operated CB's)         - coloured black or grey recommended (If used as	5.	3.3	Disconnection device has to fulfil all of the following re	equirements	-
cannot indicate OFF (isolated) until all contacts are actually open and the requirements for the isolating function have been satisfied       function have been satisfied         - have an external operating means e.g.a handle (except power operated CB's)       F         - coloured black or grey recommended (If used as       F	1	is clift	and have only one OFF (isolated) and only one ON position marked with "O" and "I"	ERI MISCHIN MISCHIN	P
(except power operated CB's) - coloured black or grey recommended (If used as		15 CERT	cannot indicate OFF (isolated) until all contacts are actually open and the requirements for the isolating function have been satisfied	ERT MISSERT MISSERT	P
	2 2 2	is stal	<ul><li>(except power operated CB's)</li><li>- coloured black or grey recommended (If used as</li></ul>	CAT INSTANT	P
	0			0, 0,	Р





IS-CERT EN 60204-1				
Clause	Requirement + Test	Result-Remark	Verdict	
S. S.	in the OFF pecities (reduction) When as leaked		S.C.Y	
	in the OFF position (padlocks). When so locked, remote as well as local closing shall be prevented	07. 07.	0,,,	
- A	- disconnect all live conductors of its power supply	A. A. A.	N/A	
	For TN supply systems, the neutral conductor may	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	115	
	or may not be disconnected except in countries	0, 0,	07	
	where disconnection of the neutral conductor (when	Pos (Pos (Pos	CHP)	
118	used) is compulsory.) Requirements for plug/socket combination as a	NIS NIST	P	
	disconnection device:			
	- Breaking capacity of the plug/socket combination: sufficient to interrupt the current of the largest motor	Self CEPT CEP	CER	
	when stalled together with the sum of the normal	Wis Wis	N'12	
	running currents of all other motors and/or loads.		i di	
5.3.4	<ul> <li>further see. cl. 13.4.5 a) to f)</li> <li>The operating means are easily accessible and</li> </ul>		P	
	located between 0,6 m and 1,9 m above the	ONIS ONIS	ONIN	
5.3.5	<ul><li>servicing level.</li><li>Only the following circuits need not be disconnected</li></ul>	à à à		
0.3.5	by the supply disconnecting device:		N/A	
	- lighting circuits for lighting needed during	ON ON	011	
	maintenance or repair; - plug and socket outlets for the exclusive	A AN A	- CA	
	connection of repair or maintenance tools and			
	equipment; - under voltage protection circuits that are only	07 07	01	
	provided for automatic tripping in the event of	A CH CH	R	
	supply failure;	Wiss Wiss	1.5	
	- circuits supplying equipment that should normally remain energized for correct operation		0" ~	
	- control circuits for interlocking	an sen sen	CHR.	
	Such circuits are provided with their own disconnecting device.	Wis Wis	N'S	
<u> </u>	Circuits not disconnected by the supply		N/A	
	Disconnecting device have:	ser ser ser	Stin	
	- permanent warning labels in accordance with cl.16.1	ONIS ONIS	OVIS	
-AS	- a statement is included in the maintenance manual	À À À	N/A	
150	- additionally one or more of the following is applied;		N/A	
	- a permanent warning label in accordance with 16.1 is affixed in proximity to each excepted	0, 0,	01.	
	circuit, or	AL AL AL	ALS I	
	- the circuit is separated from other circuits, or - the conductors are identified by colour taking	Wish wish	J.S.	
S	into account the recommendation of Cl.13.2.4.	0 0 V	0.	
5.4	Disconnecting devices to prevent of unexpected start	t-up:	_	
N'is	- Devices for the prevention of unexpected start-up	ONIS ONIS	o ^{N°} P	
	are provided These devices are appropriate and convenient for			
	the intended use, are suitably placed, and readily	Ser Ser Ser	C. Sth	
	identifiable as to their function and purpose (for	ONIS ONIS	0412	
	example by a durable marking in accordance with cl. 16.1).		e de	
	- Means are provided to prevent inadvertent and/or		.cP	
	mistaken closure of these devices either at the controller or from other locations	ONLY ONLY	0112	





### Page 70 of 106

# 6VIS-CERT Report No.: OViSCE2104-032M

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
0415-04	- Devices that do not fulfil the isolation function (e.g. a contactor switched off by a control circuit) are	ONE ONE ONE	N/A
	only used for situations that include: - inspections; - adjustments;	ER. OVIS-CER. OVIS-CER.	OVIS-CER.
NIS-CERT	<ul> <li>no hazardous work on the electrical equipment (for example replacement of plug-in devices without disturbing existing wiring)</li> </ul>	ERI US-CERI US-CERI	115-CERT
5.5	Devices for disconnecting electrical equipment		07 _
ONIS-CERT	<ul> <li>Requirements to devices for disconnecting electrical equipment to enable work to be carried out when it is de-energised and isolated:         <ul> <li>appropriate and convenient for the intended use;</li> <li>suitably placed;</li> </ul> </li> </ul>	ERI OVISCERI OVISCERI OVISCERI OVISCERI	PERM
	- readily identifiable as to which part or circuit of the equipment is served (for example by durable marking in accordance with 16.1 where necessary).	of of other	ovision
OVIS-CETT	- Additional means are provided to prevent of inadvertent and/or mistaken closure of these devices either at the controller or from other locations	at at at	ONIS-CELL
	- 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 is provided for each	ET OWS CE OWS CER	N/A
	part, or for each machine, requiring separate isolation. In addition to the mentioned supply disconnecting	OVIS OVIS	OVIS CERT
	device, the following devices that fulfil the isolation function may be provided for this purpose: - devices described in 5.3.2;	OVIS OVIS	OVIS
	- 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)	CRT ONS CUT ON SCUT	OVIS-CL
5.6	and b)12)). Protection against unauthorized, inadvertent and/or m	nistaken connection	NIS-
OVIS-CERT	For devices acc. to cl. 5.4(disconnecting electrical equipment) and 5.5 (prevention of unexpected start- up) locking means in OFF position are provided and no remote reconnection is possible.	ERT OWS-CERT OWS-CERT	PHI
OVISCHAT	Where a non-lockable disconnecting device is provided (for example withdrawable fuse-links, withdrawable links), other means of protection against unintended energising are used.	ERT OVIS-CERT OVIS-CERT	N/A
OVIS-CERT	Where plug/socket combinations according to 5.3.2 e) are used for the purpose of prevention of unexpected start-up the are so positioned that they can be kept under the immediate supervision of the	ERI OVISCERI OVISCERI	Prati
and the second s	person carrying out the work.		a fai
6115-61	PROTECTION AGAINST ELECTRIC SHOCK	5° 50° 50°	15.01

- 6
- PROTECTION AGAINST ELECTRIC SHOCK





# Page 71 of 106

# OVIS-CE VIS-OFFI Report No.: OViSCE2104-032M

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
6.2.2	Protection against direct contact	Wisch Wisch	
~	Live parts that are located inside enclosures have to		<u>к</u> Р.А
	bee conform to the relevant requirements of	Ser is ser	e cin
	Clauses 4, 11, and 14 and have to have a protection against direct contact of at least IP2X or IPXXB.	N'IS N'IS	NIS.
с х	Where the top surfaces of the enclosure are readily		X DX
	accessible, the minimum degree of protection	B (B) (B)	er and a second se
	against direct contact provided by the top surfaces shall be IP4X or IPXXD.	Wis Wis	Visi
6.2.2.a	Opening an enclosure (i.e. opening doors, lids,		S PA
SEL	covers, and the like) is possible only when:	Ser setting of	CEIN
	a) Either the use of a key or tool is necessary for	Wis Wis	ON'S
	a) Either the use of a key of tool is necessary for access and:		
	- all live parts, that are likely to be touched when	Ser Ser Se	S SER
	resetting or adjusting devices intended for such	Wi ^S Wi ^S	N'IS
	operations while the equipment is still connected are protected against direct contact to at least IP2X or		
	IPXXB	175 (FL) (FL)	er offen
	- live parts on the inside of doors are protected	Wis Wiss	Nisi
6.2.2 b	against direct contact to at least IP1X or IPXXA. b) Or the opening of an enclosure (i.e. opening		S P.S
J.Z.Z U	doors, lids, covers, and the like) is possible only	Ser der de	Str.
	if disconnection is provided for all live parts inside	Wis Wis	N'S
	the enclosure before it can be opened.		
	Exception: If a special device or tool ( intended for	SP SP SP	t' CER
	use only by skilled or instructed persons) as	Wis Wis	Visi
5	prescribed by the supplier is provided that can be	× ×	× ×
	used to defeat the interlock and that intends that: —it is possible at all times while the interlock is		145 14
	defeated to open the disconnecting device	Wist Wist	J.S.
	and lock the disconnecting device in the OFF	0. 0.	× 0 *
	position or otherwise prevent unauthorised	and all all a	E A
	closure of the disconnecting device; —upon closing the door, the interlock is	1.50 1.50	1:50
	automatically restored	0, 0,	0"
	-all live parts, that are likely to be touched when	A AL A	192 1
	resetting or adjusting devices intended for such	15 15	1.S.U.
	operations while the equipment is still connected are protected against direct contact to at least	0, 0,	01
	IP2X or IPXXB	AL LA S	45 3
	-live parts on the inside of doors shall be protected	10	.5
	against direct contact to at least IP1X or IPXXA	01, 01,	0%
	<ul> <li>relevant information is provided with the electrical equipment like instructions on the procedures for</li> </ul>	A AL A	AL A
	securing the machine for safe maintenance and	ST	.S.
	information on the residual risks.	ONI ONI	ON
	-means are provided to restrict access to live parts	A B A	\$ . A
	behind doors not directly interlocked with the	an and are	C.CET
	disconnecting means to skilled or instructed persons.	ONIN ONIN	ONIS
	-parts still alive after switching off are protected at		5. 5
	least IP 2X or IP XXB and marked with a warning	Ser week and	SEI
	N° N° N° N° A°	ONIS ONIS	OVIS
	sign in accordance with 16.2.1		
st Report is issu	ed by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for yc and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the resi	our exclusive use. Attention is drawn to the lin	nitations of





### CERT Page 72 of 106

# OVIS-CE 6415-CERT Report No.: OViSCE2104-032M

iS-CERT EN 60204-1				
Clause	Requirement + Test	Result-Remark	Verdict	
C.C.		37 <u>,</u> 57 <u>,</u> 57	e SY	
	Excepted from this marking are: —parts that can be live only because of connection to interlocking circuits and that are distinguished by colour as potentially live in accordance with 13.2.4 —the supply terminals of the supply disconnecting	ERT OUTS CERT OUTS CER	OVIS-CERT	
	device when the latter is mounted alone in a separate enclosure.	CAN SOLAN SOLA	. S. CERT	
6.2.2 c	c) Or the 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. 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.	ERI OVISCHRI OVISCHR	O ^{VIE} O ^{VIE} O	
6.2.3	Protection by insulation of live parts:	0410 0410		
OVIS-OFFI	Live parts are completely covered with insulation that can only be removed by destruction and that is capable of withstanding the mechanical, chemical, electrical, and thermal stresses to which it can be	ERI OVIS-CERI OVIS-CER	P	
JIS GRI	subjected under normal operating conditions. Paint, varnish lacquer etc. not used as the unique insulation layer.	AN CRIMENTS	N CRI	
6.2.4	Protection against residual voltages	0" 0"		
OVIS-CERT	Live parts with residual voltage greater than 60 V after a time period of 5 s after disconnection of the supply shall be discharged until this interferes with the proper functioning of the equipment. Except are components with charges of $\leq$ 60 µC ( $\rightarrow$ equivalent to capacitor with less then 1µF @ 60V).	ERI OUIS-CERI OUIS-CERI	OVIS-CERT	
OVIS-CERT	<ul> <li>Where pins of plugs or similar devices after withdrawal are exposed, discharge time is ≤ 1s.</li> <li>Otherwise such conductors are protected against direct contact to at least IP2X or IPXXB.</li> <li>If above requirements cannot be achieved,</li> </ul>	ERI OVIS-CHRI OVIS-CHR	P	
	additional disconnecting devices or appropriate warning devices shall be applied (e.g. warning acc. cl. 16.1).	Str ovis-CEIT ovis-CEIT	OVIS-OFF	
6.2.5	For protection by barriers, 412.2 of IEC 60364-4-41 is applied	en sen sen	N/A	
6.2.6	For protection by placing out of reach, 412.4 of IEC 60364-4-41 shall apply. For protection by obstacles, 412.3 of IEC 60364-4-41 is applied.	ovis ovis	N/A	
6.3	Protection against indirect contact	St alt alt	SC CC	
6.3.2	Prevention of the occurrence of a touch voltage	On One	—	
6.3.2.2	Protection by provision of: - class II electrical devices or apparatus (double insulation, reinforced insulation or by equivalent insulation in accordance with IEC 61140) or - switchgear and control gear assemblies having total insulation in accordance with IEC 60439-1or - supplementary or reinforced insulation in accordance with 413.2 of IEC 60364-4-41.	ERT OUTS-CERT OUTS-CERT	OVIS-CERT	



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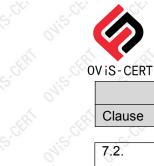
#### CERT Page 73 of 106

# 6415-CERT Report No.: OViSCE2104-032M

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
0000	Protection by electrical separation.		155
6.3.2.3	For this type of protection, the requirements of 413.5	0, 0,	o [™] N/A
	of IEC 60364-4-41 apply.	A A A	N IN
6.3.3	Protection by automatic disconnection of supply.	St St St	C.C.
6.3.3 a)	Use of overcurrent protective device for automatic	0412 0412	N/A
á	cut-off in the event of an insulation failure in a TN-	á á á	
	System.	172 T22 T2	CEN
	Where disconnection within the time specified in	Wis Wis	N'S
	Clause A.1 cannot be assured, supplementary bonding is provided as necessary to meet the		N
	requirements of Clause A.3.	B B B	
6.3.3 b)	Use of residual current protective devices (RCD) for	N'S N'S	N/A
	automatic cut-off in the event of an insulation failure	0, 0,	0,
6.0.0	in a TN - or TT -System.	A A A	
6.3.3 c)	Use of earth fault detection device to initiate automatic disconnection in a IT-System.	.5 .5	N/A
6.4	Protection by the use of PELV	0/1- 0/1-	Р
6.4.1 a)	PELV circuits shall satisfy all of the following	á á á	
0.4.1 a)	conditions:	A Str. Str.	CHI
	-the nominal voltage does not exceed:	Wis Wis	Nis
	• 25 V a.c. r.m.s. or 60 V ripple-free d.c. when the		
	equipment is normally used in dry locations and	B B B	
	when large area contact of live parts with the human	1.5	1.5
	<ul> <li>body is not expected; or</li> <li>6 V a.c. r.m.s. or 15 V ripple-free d.c. in all other</li> </ul>	0, 0,	0,
	cases;	A A A	A.
6.4.1 b)	one side of the circuit or one point of the source of	S	P
	the supply of that circuit is connected to the	ONL ONL	Oliv
6410	protective bonding circuit;		
6.4.1 c)	live parts of PELV circuits is electrically separated from other live circuits	st est est	P
6.4.1 d)	Conductors of each PELV circuit are physically	ON'S ON'S	OVP
~	separated from those of any other circuit.		
	If this requirement is impracticable, the insulation	shi dhi dh	CEN.
6110)	provisions of 13.1.3 are fulfilled;	1 ^{:5}	.S
6.4.1 e)	plugs and socket-outlets for a PELV circuit are conform to the following:		° P
	1) plugs do not to enter socket-outlets of other	B B B	No.
	voltage systems;	1.5	15
	2) socket-outlets do not admit plugs of other voltage	0, 0,	0,
642	systems.	A A A	~
6.4.2	Sources for PELV		
	The source for PELV shall be one of the following: - safety isolating transformer in accordance with IEC	ON ON	ONE
	61558-1 and IEC 61558-2-6 or	à à à	i di
	- a source of current with a degree of safety equi-	a crow crow	C.C.C.
	valent to that of the safety isolating transformer or	ONIS ONIS	ONIS
	- an source independent of circuit with higher		
	voltage - electronic power supply conforming to appropriate	143 (A) (A)	CER
	standards	Wis wis	N'S
6.1	Other measures from IEC 60364-4-41 are used.	0. 0.	N/A
- A	(Description!)	B. B. B.	N AN
.5			.5
7.	PROTECTION OF EQUIPMENT	01. 01.	ON P



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#### CERT Page 74 of 106

# OVIS-CE 6415-CERT Report No.: OViSCE2104-032M

VIS-CERT EN 60204-1			
Clause	Requirement + Test	Result-Remark	Verdict
S.C.Y			SCY
7.2.	Overcurrent protection Unless otherwise specified by the user, the supplier of equipment is not responsible for providing the overcu for the supply conductors to the electrical equipment On the installation diagram data necessary for selecting the overcurrent protective device are stated for each incoming feeder. (see 7.2.10 and 17.4)	rrent protective device	ON P
7.2.3	Power circuits:	ONLO ONLO	_
OVIS-CERT	<ul> <li>Devices for detection and interruption of overcurrent, selected in accordance with 7.2.10, are applied to each live conductor.</li> <li>And, none of the following conductors, as applicable, is disconnected without disconnecting all associated live conductors:</li> <li>the neutral conductor of a.c. power circuits;</li> <li>the earthed conductor of d.c. power circuits;</li> <li>d.c. power conductors bonded to exposed conductive parts of mabile machines.</li> </ul>	CERT ON'S CERT ON'S CERT	PCERT OVISOCERT OVISOCERT
OVIS CLAI	conductive parts of mobile machines. Cross section area of neutral conductor is at least equal to the phase conductor. No overcurrent protective/ disconnecting device is required.	EFT CEFT CEFT	OV ^T P
OVIS-O	(For a neutral conductor with a cross sectional area smaller than that of the associated phase conductors, the measures detailed in 524 of IEC 60364-5-52 shall apply.)	eff cff cff	OVISIO
OVISIO	IT-Systems:, no neutral conductor is used. Or, when it is used, the measures detailed in 431.2.2 of IEC 60364-4-43 are applied.	WISCO WISCO	N/A
7.2.4	Control circuits		—
OVIS OFFIC	Conductors of control circuits directly connected to the supply voltage and of circuits supplying control circuit transformers are protected against overcurrent in accordance with 7.2.3.	CHI CERT CERT	ON'P
0113	Conductors of control circuits supplied by a control circuits supply: see 9.4.3.1	rcuit transformer or d.c.	-
7.2.5	Socket outlets and their associated conductors	the the the	—
OVISIO	Overcurrent protection is provided for the circuits feeding the general purpose socket.	OVISIO OVISIO	OVIC <b>P</b>
7.2.6	Lighting circuits	in in in	-
	Lighting circuits are protected separate from other circuits.	ST ST ST	N/A
7.2.7	Transformers	0, 0,	_
OVIS-CERT	Transformers are protected in accordance with the manufacturer's instructions and includes: - avoiding tripping due to transformer magnetizing inrush currents - avoiding a winding temperature rise in excess of	ERT OVISCERT OVISCERT	NER O ^{UIS-} ER
OVIS-UT	the permitted value for the insulation class when there is a short circuit at the secondary terminals. - type and setting of the overcurrent protective device in accordance with the recommendations of the transformer supplier.	SERI US CERT US CERT	OVIS-OFRI
.2.8	Location of overcurrent protective devices:	01, 01,	_





#### CERT Page 75 of 106

# OVIS-CE 6415-CERT Report No.: OViSCE2104-032M

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdic
OVIS-CERT	- located at the point where a reduction in the cross sectional area of the conductors or another change reduces the current-carrying capacity of the conductors.	Star ONESCE ONESCE	N/A
	Exceptions: - current carrying capacity of the conductors is at least equal to that of the load and - conductors between the point of reduction of current-carrying capacity and the position of the overcurrent protective device is ≤ 3 m and - the conductor is protected e.g. by an enclosure or duct.	CERT OVIS CERT OVIS CE	N/A
7.2.9	Selection of overcurrent protective devices	On One	_
OVIS-CERT	The rated short-circuit breaking capacity Icn is at least equal to the prospective fault current at the point of installation. Additional currents other than from the supply (e.g. from motors, from power factor correction capacitors) shall be taken into consideration.	ERT OUTS CERT OUTS OF	N/A
OVIS-CERT	Reduced breaking capacity is permitted, where another protective device is installed at supply side with the necessary breaking capacity. (In that case, the characteristics of the two devices shall be co-ordinated so that the let-through energy (I 2 t) of the two devices in series does not exceed	CHI OVISCERT OVISCE	N/A
OVIS-CERT	that which can be withstood without damage to the overcurrent protective device on the load side and to the conductors protected by that device. See Annex A of IEC 60947-2).	ERI OVIS-CERI OVIS-CE	AT OVISOLD
OVIS-CERI	Where fuses are provided as overcurrent protective devices, a type readily available in the country of use shall be selected, or arrangements shall be made for the supply of spare parts.	CERT ONIS CERT ONIS OF	N/A
7.2.10	<ul><li>Rating and setting of overcurrent protective devices:</li><li>Rated current of fuses or overcurrent setting of other</li></ul>	ART ART A	— 
	protective devices selected as low as possible, but adequate for anticipated overcurrents.	ONIS ONIS	ON INC
ONIS-CERT	The rated current of overcurrent protective device is determined by the current carrying capacity of the conductors to be protected in accordance with Cl. 12.4, D.2 and the maximum allowable interrupting time t in accordance with Clause D.3, taking into account the needs of coordination with	SEAL ONE CEAL ONES CE	N/A
0412	other electrical devices in the protected circuit.	OVID OVID	OVID
7.3	Protection of motors against overheating	A A A	× P
7.3.1	Overload protection for all motors provided for ratings of > 0.5 kW in continuous operation.	an anisi anisi	P.Y
and and	Protective device may be omitted for motors, which cannot be overloaded.		P
	Exceptions: In applications where an automatic interruption of the motor operation is unacceptable (for example fire pumps), the means of detection shall give a warning signal to which the operator can respond.	ERI CERI	N/A
7.3.2	Protection achieved by overload protection device: — detection in each live conductor	ONIS ONIS	OVEP

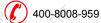




#### CERT Page 76 of 106

### OVIS-CE Report No.: OViSCE2104-032M

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
OVISION	<ul> <li>switching off of all live conductors (not necessary to switch of neutral conductor)</li> </ul>	OVISION OVISION	0415-01
CERT	For special duty motors, appropriate protective devices are recommended	SEAL SEAL SEAL	N/A
7.3.3	Protection achieved by over-temperature protection	04,204,2	OVP
	device: Is recommended in situations where the cooling can be impaired (for example dusty environments)	ERT SOUTH SOUTH	SOFR
7.3.4	Protection achieved by current limiting protection: Where protection against the effects of overheating in three phase motors is achieved by current		N/A
OVISICE	limitation, the number of current limitation devices may be reduced from 3 to 2.	ovis.ct. ovis.ct.	ONISCOL
7.4	Abnormal temperature protection:	A A A	P
	Resistance heating or other circuits that are capable of attaining or causing abnormal temperatures and can cause a hazardous situation are provided with	OVISION OVISION	OVISION
	suitable detection to initiate an appropriate control response.	ERI SERI	CER
7.5	Protection against supply interruption or voltage reduction and subsequent restoration:	ONIS ONIS	N/A
	Where a supply interruption or a voltage reduction can cause a hazardous situation, damage to the machine, or to the work in progress, undervoltage	Eh. Wisceth Wisceth	WiS-OFT
	protection is provided.		A A
	Upon restoration of supply voltage, automatic or unexpected restarting of machine prevented.		N/A
ON CERT	Undervoltage protection does initiate appropriate control responses to ensure necessary coordination of groups of machines working together		N/A
7.6	Motor overspeed protection: Overspeed protection is provided where overspeeding can occur and could possibly cause a hazardous situation.	CHAT STRAT STR	N/A
7.8	Phase sequence protection: Where an incorrect phase sequence of the supply voltage can cause a hazardous situation or damage	OVER OVER	N/A
7.9	to the machine, protection shall be provided. Protection against overvoltage due to lightning and to switching surges:	OVIS-OU	N/A
CERT	- Devices are connected to the incoming terminals of the supply disconnecting device.	en sen sen	SER
OVIS	othe othe othe othe othe	ONIS ONIS	OVIS
8	EQUIPOTENTIAL BONDING	à à là	P
8.2	Protective bonding circuit	ST SCT SCT	P
8.2.1	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 is provided.	EFT UTS CEFT UTS CEFT	ONTP WiS-OFF
O" CERT	In IT distribution systems, the machine structure is part of the protective bonding circuit and insulation monitoring is provided.	eft south south	P
ON OT	Exposed conductive parts of equipment in accordance with 6.3.2.3 (Protection by electrical ued by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for yo	ON ON	P





### Page 77 of 106

### OVIS-CE Report No.: OViSCE2104-032M

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
ONIS-CERT	separation) are not connected to the protective bonding circuit. (For this type of protection, the requirements of 413.5 of IEC 60364-4-41 apply.)	EFT CERT CUR	ONTE-CU
8.2.2	Protective conductors	ONIS ONIS	—
A.	Protective conductors shall be identified in accordance	e with 13.2.2.	Pá
S.S.	Copper conductors are preferred.		P
OWN CERT	Where other material 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.	Copper conductors	ON P
ON SCHRI	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. This requirement is met in most cases if it is in accordance with Table 1 of this standard (see 5.2).	ERI OUS-CERI OUS-CERI	N/A N/S
8.2.3	Continuity of the protective bonding circuit	N'IS N'IS	1.5
C' CERT	All exposed conductive parts are connected to the protective bonding circuit in accordance with 8.2.1.		P
OVIS-CERT	<ul> <li>Parts that are mounted so that they do not constitute a hazard because cannot be touched on large surfaces or grasped with the hand and they are small in size (less than approximately 50 mm × 50 mm) or they are located so that either contact with live parts, or an insulation failure is unlikely need not be connected to the protective bonding circuit</li> <li>Where a part is removed the protective bonding</li> </ul>	CHI OVIS OVIS OVIS CHI OVIS CHII OVIS CHI	OVIS OFFI
OV ^{IS}	circuit for the remaining parts isn't interrupted. Current-carrying capacity of connection and bonding points cannot impaired by mechanical, chemical, or	WIS WIS	P
OVIS-CEN.	electrochemical influences (e.g. electrolytic corrosion on aluminium parts) Metal ducts of flexible or rigid construction and	an outs of the outs of the	ONIS-CEH
Wis-CERT	metallic cable sheaths are not used as protective conductors. Nevertheless they are connected to the protective bonding circuit.	ERI MISCERI MISCERI	WiS-CER
ONISCERT	Where the electrical equipment is mounted on lids, doors, or cover plates, continuity of the protective bonding circuit shall be ensured. The use of a protective conductor (see 8.2.2) is recommended.	ERI OVISCERI OVISCERI	OVIS-CERT
OVISCERI	For cables that are exposed to damage (for example flexible trailing cables) the continuity of the protective conductors are ensured by appropriate measures (for example monitoring).	ER' ONTS CERT ONTS CERT	OVISCER
8.2.4	No means of interruption of the protective bonding conductor are provided.	CRI JISCERI JISCERI	BR
O"	Exception: links for test or measurement purposes that cannot be opened without the use of a tool and that are located in an enclosed electrical operating area.	O" O"	O"
0	As well the protective bonding circuit does not	0. 0.	P



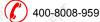


#### CERT Page 78 of 106

### OVIS-CE Report No.: OViSCE2104-032M

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdio
S.		3×	
ONIS	incorporate a switching device or an over current protective device (for example switch, fuse).	ONLO ONLO	ONIS
OVIS-CERT	Removable current collectors, plug/socket combinations or withdrawable plug-in units: The protective bonding circuit is interrupted by a first make last break contact. (see also 13.4.5)	ERI OVIS-CERI OVIS-CER	N/A
8.2.6	Protective conductor connecting points: have no other function and are not intended to attach or connect appliances or parts.	ER OVIS CER OVIS CER	N ¹⁵
OVISOERI	Each protective conductor connecting point is marked or labelled as such using the symbol IEC 60417-5019 or the letters PE or by use of bicolour GREEN / YELLOW	ERT OUTS CERT OUTS CERT	OVIS-CEP
8.2.7	Mobile machines with on-board power supplies: The protective bonding system is connected to a single protective bonding terminal. This protective bonding terminal is the connection point for a possible additional external incoming power supply.	ERI ONSCERE ONSCERE	N/A
8.2.8	Electrical equipment having earth leakage currents higher than 10 mA a.c. or d.c.:	OVISION OVISION	N/A
	<ul> <li>Additional protective bonding requirements:</li> <li>Cross section of protective conductor ≥ 10 mm² CU or 16 mm 2 AL</li> <li>OR Second protective conductor of at least the same cross sectional area if above cross section is impracticable</li> <li>OR monitoring of continuity of protective conductor with automatic disconnection function.</li> </ul>	ERI OUIS CERI OUIS CERI	OVIS-CEP
CLEA	Additionally a warning label is provided adjacent to the PE terminal.	de de de	N/A

CER OVIS-CER	<ul> <li>OR Second protective conductor of at least the same cross sectional area if above cross section is impracticable</li> <li>OR monitoring of continuity of protective conductor with automatic disconnection function.</li> </ul>	OVIS-CERT OVIS-CERT	OVI-OUTS-CERT
SER SCH	Additionally a warning label is provided adjacent to the PE terminal.	I CIERI CIERI	N/A
ONIS	ONLY ONLY ONLY ONLY ONLY ONLY	ONLY ONLY	ONIS
9	CONTROL CIRCUITS AND CONTROL FUNCTIONS		
9.1.	Control circuit	Ctri Ctri	P
9.1.1	Control circuit supply: Control transformers mandatory only when more then one motor starter or two control devices are used.	OVID OVID	N/A
01	Control transformers with separate windings are used for supplying the control circuits.	01, 01,	° [™] N/A
Sth SSth	Where several transformers are used, the secondary voltages are in phase.	SCHINE SCHINE	N/A
0 ³¹	Separate windings on transformer for DC supplies connected to PE.	01. 01.	° N/A
Ser Ser	Switch-mode units fitted with transformers in accordance with IEC 61558-2-17	Softh usofth	N/A
9.1.2	The nominal voltage of control supply does not exceed 277 V when supplied from a transformer.		[™] N/A
9.1.3	Control circuits are provided with overcurrent protection in accordance with 7.2.4 and 7.2.10.		R
9.2	Control functions		[™] N/A
SER SER	Safety related control functions in accordance with ISO ISO 13849-2 (2003) and /or IEC 62061 (see 9.4.1)	13849-1 (2006),	-
9.2.1	Start functions operating by energizing the relevant circuit (see 9.2.5.2).	ONIS ONIS	ONIS
liability,indemnification days from date of issue	sued by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your exc and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the results the uance of this test report to notify us of any error or omission caused by our negligence, Provided, however, that such not to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this	ere of based upon the information that you ce shall be in writing and shall specifically a	provided. You have 30 address the issue you
浙江欧非检测认证有 Zhejiang European A	『限公司(OVIS) 地址:浙江省台州市开发区东环大道 888 号 4 幢 4 层 ⊒ www.ovis-lab frican Testing&Certification Co., Ltd.(OVIS) Add:4th Floor, Building 4, No. 888 Donghuan Road,Development Zone,		400-8008



WiS-CERT



### Page 79 of 106

# OVIS-CE 6VIS-CERT Report No.: OViSCE2104-032M

9.2.3       Operating modes       -         9.2.3       Operating modes       -         9.2.3       Operating modes       -         9.2.4       Mode selection by liself does not initiate machine operation. A separate actuation of the start control has to be stated by the operator.       P         Indication of the selected operating mode is provided (e.g. the position of a mode select), the provision of an diselective measures (for example for setting or maintenance purposes), protection is ensured.       N/A         9.2.4       Where it is necessary to suspend safety functions and/or protective measures (for example for setting or maintenance purposes), protection is ensured.       N/A         9.2.5       Operation       -         9.2.6       Operation of movement of the machine in an unintended or unexpected manner is taken after any stopping of the machine. (e.g. due to locked-off condition, power supply fault, battery replacement, lost signal condition with cableless control)       N/A         9.2.5.2       Start of an operation is possible only when all of the relevant safety functions and/or protective measures are in place and are operation noticet situation of commods from different control stations do not lead to a hazardous situation.       N/A         9.2.5.2       Start of an operation is possible only when all of the relevant safety functions and/or protective measures are in place and are operation portions.       N/A         9.2.5.2       Start of an operation set by hold-to-run controls. together with enabling devices, as appropriate	EN 60204-1			
Suitable means are prevented for unauthorized or inadvertent mode selection if hazardous situations can result.         P           Mode selection by itself does not initiate machine operation. A separate actuation of the start control has to be stated by the operator.         P           Indication of the selected operating mode is provided (e.g. the position of a mode selector, the provision of an indicating light, a visual display indication).         P           9.2.4         Where it is necessary to suspend safety functions and/or protective measures (for example for setting or maintenance purposes), protection is ensured.         N/A           9.2.5         Operation         -           Prevention of movement of the machine in an unintended or unexpected manner is taken after any stopping of the machine. (e.g. due to locked-off condition, power supply fault, battery replacement, lost signal condition with cableless control)         N/A           9.2.5.2         Start of an operation is possible only when all of the relevant safety functions and/or protective measures are in place and are operational.         N/A           9.2.5.2         Start of an operation allower protective measures cannot be applied for certain operation, snual control of stations shall have a separate manually actuated start control devices, as appropriate.         N/A           9.2.5.3         To the case of machines requiring the use of more than one control station to initiate a start are: - all required meas to protective measures cannot be applied for certain operation are met and all start control devices have to be actuated concurrently (see 3.6).         P	Clause	Requirement + Test	Result-Remark	Verdict
Suitable means are prevented for unauthorized or inadvertent mode selection if hazardous situations can result.         P           Mode selection by itself does not initiate machine operation. A separate actuation of the start control has to be stated by the operator.         P           Indication of the selected operating mode is provided (e.g. the position of a mode selector, the provision of an indicating light, a visual display indication).         P           9.2.4         Where it is necessary to suspend safety functions and/or protective measures (for example for setting or maintenance purposes), protection is ensured.         N/A           9.2.5         Operation         -           Prevention of movement of the machine in an unintended or unexpected manner is taken after any stopping of the machine. (e.g. due to locked-off condition, power supply fault, battery replacement, lost signal condition with cableless control)         N/A           9.2.5.2         Start of an operation is possible only when all of the relevant safety functions and/or protective measures are in place and are operational.         N/A           9.2.5.2         Start of an operation allow situation control of subines requiring the use of more than one control stations and/or protective measures cannot be applied for certain operation are met         N/A           In the case of machines requiring the use of more than one control stations situation to initiate a start each of these control stations shall have a separate manually actuated start control devices are in the released (off) position         P           9.2.5.3         Stop category 0 and/or st	9.2.3	Operating modes	Wis Wis Cr	
can result.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Pá
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category 2 stop functions are provided as indicated by the risk assessment and the functional requirements of the machine (see 4.1).       P         Stop functions override related start functions       P         Facilities to connect protective devices and interlocks are provided, where required. If such a protective device or interlock causes a stop of the machine, it may be necessary for that condition to be signalled to the logic of the control system. The reset of the stop function does not initiate any hazardous situation.       P	0.25.2	concurrently (see 3.6).		- Still
by the risk assessment and the functional requirements of the machine (see 4.1).       P         Stop functions override related start functions       P         Facilities to connect protective devices and interlocks are provided, where required. If such a protective device or interlock causes a stop of the machine, it may be necessary for that condition to be signalled to the logic of the control system. The reset of the stop function does not initiate any hazardous situation.       P	9.2.9.3	category 2 stop functions are provided as indicated	OVID OVID	Olish
Stop functions override related start functions       P         Facilities to connect protective devices and interlocks are provided, where required. If such a protective device or interlock causes a stop of the machine, it may be necessary for that condition to be signalled to the logic of the control system. The reset of the stop function does not initiate any hazardous situation.       P			A. A. A.	R
Facilities to connect protective devices and interlocks are provided, where required. If such a protective device or interlock causes a stop of the machine, it may be necessary for that condition to be signalled to the logic of the control system. The reset of the stop function does not initiate any hazardous situation.       P	VIS CM		115 .115	SISP.
protective device or interlock causes a stop of the machine, it may be necessary for that condition to be signalled to the logic of the control system. The reset of the stop function does not initiate any hazardous situation.	07	Facilities to connect protective devices and	× × ×	P
machine, it may be necessary for that condition to be signalled to the logic of the control system. The reset of the stop function does not initiate any hazardous situation.			art cart car	CER
The reset of the stop function does not initiate any hazardous situation.		machine, it may be necessary for that condition to be	Wis Wis	N'IS'
hazardous situation.			a a a	, di
Where more than one control station is provided	SCH	hazardous situation.	St String String	Soft
stop commands from any control station is effective		Where more than one control station is provided, stop commands from any control station is effective	ONLY ONLY	N/A





#### CERT Page 80 of 106

# 6VIS-CERT Report No.: OViSCE2104-032M

VIS-CERT EN 60204-1				
Clause	Requirement + Test	Result-Remark	Verdict	
OVISION	when required by the risk assessment of the machine.	ONE ONE ONE	ONIS-CT	
9.2.5.4	Emergency operations (emergency stop, emergency	switching off)	- 1	
	Emergency stop or emergency switching off commands are sustained until it is reset.	ONIST ONIST	NISP	
- CRA	This reset is possible only by a manual action at that location where the command has been initiated.		P	
Visi	The reset of the command does not restart the	Wis Wisch	NI ^S P	
- A	machinery but only permit restarting.It is not be possible to restart the machinery until all		P	
UIS CH.	emergency stop commands are reset. It is not be possible to reenergize the machinery until	St. Ct. Ct.	N/A	
9.2.5.4.2	all emergency switching off commands are reset. The emergency stop does function either as a stop	0° 0°	0.	
9.2.5.4.2	category 0 or as a stop category 1.	set and a set	P	
	- it overrides all other functions and operations in all modes;	ONIS ONIS	ON P	
9.2.5.4.3	Emergency switching off is provided where: -Protection against direct contact is achieved only by placing out of reach or by obstacles (see 6.2.6) - or there is the possibility of other hazards or damage caused by electricity.	ERI OVIS-CERI OVIS-CER	N PER	
OVIS-CERT	Emergency switching off is accomplished by electromechanical switching devices, effecting a stop category 0 of machine actuators connected to this incoming supply.	OUSCO OUSCO	NISP C	
9.2.5.5	Movement or action that can result in a hazardous situation are monitored by providing, for example, overtravel limiters, motor overspeed detection, mechanical overload detection or anti-collision devices.	ERI CURLOU	A CER	
9.2.6	Other control functions	ONIN ONIN	-	
9.2.6.2	No type 1 two-hand control device is used for the initiation of hazardous operation. It need type 2 or type 3 two-hand control devices for such operations.	ERT SCHRT SCH	N/A	
9.2.6.3	Enabling control: Enabling control are arranged in the way to minimize the possibility of defeating, e. g. by requiring the de- activation of the enabling control device before machine operation may be reinitiated. It is not possible to defeat the enabling function by simple means.	ERI OUIS-CERI OUIS-CER	N/A	
9.2.6.4	Combined start and stop controls: Push-buttons etc. that alternately initiate and stop motion are provided only for functions, which cannot result in a hazardous situation.	OVIS OVIS	N/A	
9.2.7	Cableless control station	Wis Wis	N'iN	
9.2.7.1	Means shall be provided to readily remove or disconnect the power supply of the operator control		N/A	
OVISIU	<ul> <li>station (see also 9.2.7.3).</li> <li>Means (for example key operated switch, access code) are provided, as necessary, to prevent unauthorized use of the operator control station.</li> </ul>	ONSTONE ONST	N/A	
OVIS-OF	Each operator control station carries an unambiguous indication of which machine(s) is (are) intended to be controlled by that operator control	ovision ovision	N/A	





Clause       Requirement + Test       Result-Remark       N         station.       station.       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -	Verdict N/A N/A N/A N/A
9.2.7.2       Measures shall be taken to ensure that control commands: <ul> <li>affect only the intended machine;</li> <li>affect only the intended functions.</li> </ul> Measures are taken to prevent the machine from responding to signals other than those from the intended operator control station(s).         Where necessary, means are provided so that the machine can only be controlled from operator control stations in one or more predetermined zones or locations.         9.2.7.3       Operator control stations include a separate and clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation.         The actuating means to initiate this stop function are not marked or labelled as an emergency stop device, even though the stop function.         Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	N/A N/A
9.2.7.2       Measures shall be taken to ensure that control commands: <ul> <li>affect only the intended machine;</li> <li>affect only the intended functions.</li> </ul> Measures are taken to prevent the machine from responding to signals other than those from the intended operator control station(s).         Where necessary, means are provided so that the machine can only be controlled from operator control stations in one or more predetermined zones or locations.         9.2.7.3       Operator control stations include a separate and clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation.         The actuating means to initiate this stop function are not marked or labelled as an emergency stop device, even though the stop function.         Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	N/A N/A
<ul> <li>- affect only the intended machine;         <ul> <li>- affect only the intended functions.</li> </ul> </li> <li>Measures are taken to prevent the machine from responding to signals other than those from the intended operator control station(s).</li> <li>Where necessary, means are provided so that the machine can only be controlled from operator control stations in one or more predetermined zones or locations.</li> <li>9.2.7.3 Operator control stations include a separate and clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation. The actuating means to initiate this stop function are not marked or labelled as an emergency stop device, even though the stop function.</li> <li>Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:</li> </ul>	N/A
- affect only the intended functions.         Measures are taken to prevent the machine from responding to signals other than those from the intended operator control station(s).         Where necessary, means are provided so that the machine can only be controlled from operator control stations in one or more predetermined zones or locations.         9.2.7.3       Operator control stations include a separate and clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation.         The actuating means to initiate this stop function are not marked or labelled as an emergency stop device, even though the stop function.         Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	N/A
Measures are taken to prevent the machine from responding to signals other than those from the intended operator control station(s).         Where necessary, means are provided so that the machine can only be controlled from operator control stations in one or more predetermined zones or locations.         9.2.7.3       Operator control stations include a separate and clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation. The actuating means to initiate this stop function are not marked or labelled as an emergency stop device, even though the stop function initiated on the machine can fulfil an emergency stop function.         Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	N/A
intended operator control station(s).         Where necessary, means are provided so that the machine can only be controlled from operator control stations in one or more predetermined zones or locations.         9.2.7.3       Operator control stations include a separate and clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation.         The actuating means to initiate this stop function are not marked or labelled as an emergency stop device, even though the stop function.         Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	N/A
Where necessary, means are provided so that the machine can only be controlled from operator control stations in one or more predetermined zones or locations.       9.2.7.3         9.2.7.3       Operator control stations include a separate and clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation. The actuating means to initiate this stop function are not marked or labelled as an emergency stop device, even though the stop function initiated on the machine can fulfil an emergency stop function.         Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	.S.CERT
machine can only be controlled from operator control stations in one or more predetermined zones or locations.       9.2.7.3         9.2.7.3       Operator control stations include a separate and clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation.       The actuating means to initiate this stop function are not marked or labelled as an emergency stop device, even though the stop function.         Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	.S.CERT
locations.         9.2.7.3       Operator control stations include a separate and clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation.         The actuating means to initiate this stop function are not marked or labelled as an emergency stop device, even though the stop function initiated on the machine can fulfil an emergency stop function.         Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	N/A
9.2.7.3       Operator control stations include a separate and clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation.         The actuating means to initiate this stop function are not marked or labelled as an emergency stop device, even though the stop function initiated on the machine can fulfil an emergency stop function.         Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	N/A
clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation. The actuating means to initiate this stop function are not marked or labelled as an emergency stop device, even though the stop function initiated on the machine can fulfil an emergency stop function. Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	- A
cause a hazardous situation.         The actuating means to initiate this stop function are         not marked or labelled as an emergency stop         device, even though the stop function initiated on the         machine can fulfil an emergency stop function.         Stopping of the machine and preventing a potentially         hazardous operation is automatically initiated in the         following situations:	
The actuating means to initiate this stop function are not marked or labelled as an emergency stop device, even though the stop function initiated on the machine can fulfil an emergency stop function.       Image: Comparison of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	
not marked or labelled as an emergency stop         device, even though the stop function initiated on the         machine can fulfil an emergency stop function.         Stopping of the machine and preventing a potentially         hazardous operation is automatically initiated in the         following situations:	
machine can fulfil an emergency stop function.         Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	
Stopping of the machine and preventing a potentially hazardous operation is automatically initiated in the following situations:	
following situations:	N/A
- when a fault is detected in the cableless control	
system; – when a valid signal (which includes a signal that	
communication is established and maintained) has	
not been detected within a specified period of time	
(see Annex B), except when a machine is executing a pre-programmed task taking it outside the range of	
the cableless control where no hazardous situation	
Can occur.	~
9.2.7.4 Machines having more than one operator control station, including one or more cableless control	P
stations, have measures 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	P
control of the machine is provided at suitable	1.5
locations as determined by the risk assessment of the machine.	
Exception: a stop command from any one of the	
control stations are effective when required by the risk assessment of the machine.	
9.2.7.5 Battery-powered cableless operator control stations:	N/A
A variation in the battery voltage does not cause a	CER
hazardous situation.     A clear warning is given to the operator when a	NI/A
variation in battery voltage exceeds specified limits.	N/A
Under those circumstances, the cableless operator	N/A
control station remains functional long enough for the operator to put the machine into a non-	
hazardous situation.	à
9.3 Protective interlocks	N/A
9.3.1 The reclosing or resetting of an interlocking safeguard does not initiate hazardous machine	N/A







#### CERT Page 82 of 106

EN 60204-1				
Clause	Requirement + Test	Result-Remark	Verdict	
OVISION	operation.	OVIE OVIE	OVISION	
9.3.2 0 ^{115-CERT}	Where overtraveling an operating limit (for example speed, pressure, position) can lead to a hazardous situation, means are provided to detect when a predetermined limit(s) is exceeded and initiate an appropriate control action.	ERI OVIS-CERI OVIS-CE	N/A	
9.3.3 045 045 00 15 00 15	The correct operation of auxiliary functions is checked by appropriate devices. Appropriate interlocking is provided, when non- operation of an auxiliary function (for example lubrication, supply of coolant, swarf removal) can cause a hazardous situation, or cause damage to the machine or to the work in progress.	ERI OVIS-CERI OVIS-CE	N/A N/A	
9.3.4	Interlocks between different operations and for contrary motions are provided if this operations lead to hazardous situations.	ERI WE CERI WE OF	N/A	
9.3.5	Reverse current braking: Where braking of a motor is accomplished by current reversal, measures prevent the motor starting in the opposite direction at the end of braking where that reversal can cause a hazardous situation or damage to the machine or to the work in progress.	ERT OVIS-CERT OVIS-CE	N/A	
WiS-CER.	For this purpose, a device operating exclusively as a function of time is not permitted.	the wiscothe wiscot	N/A	
CERT	Control circuits are arranged that rotation of a motor shaft, for example manually, does not result in a hazardous situation.	ERT CERT CO	N/A	
9.4	Control functions in the event of failure	With With	ON P	
9.4.1	The safety related electrical control circuits have an appropriate level of safety performance that has been determined from the risk assessment at the machine. The requirements of IEC 62061 and/or ISO 13849-1, ISO 13849-2 are met.	ERI OVIS-CERT OVIS-CE	AT PH	
ONIS-CERT	Where memory retention is achieved for example, by battery power, measures are taken to prevent hazardous situations arising from failure or removal of the battery.	an outs off outs of	N ^{IS}	
OVIS-CEL	Means are provided to prevent unauthorized or inadvertent memory alteration by, e.g. requiring the use of a key, access code or tool.	Sel OVIS-CEL OVIS-CE	OVIS OVIS	
9.4.2	Measures are taken to minimize risk in the event of failure:			
9.4.2.1	- Use of proven circuit techniques and components	115	"SP"	
9.4.2.2	- Provisions of partial or complete redundancy	0, 0,	° ₽	
9.4.2.3	- Provision of diversity		N/A	
9.4.2.4	- Provision for functional tests	Wis Wis	NISP.	
9.4.3	<ul> <li>Protection against mal-operation due to earth faults, wand loss of circuit continuity</li> <li>Earth faults on any control circuit don't cause unintent potentially hazardous motions, or prevent stopping of Methods to meet these requirements include but are potential.</li> </ul>	tional starting, the machine.	<u>_</u>	
OVIS-CERT	following:a) 1) Control circuits, fed by control transformers and connected to the protective bonding circuit at the point of supply. (PELV) (see Figure 3 of this	and and a set and a set and a set a	NICP	





# Page 83 of 106

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
S.C.Y			S.CV
	standard)	ON ON	ON
OVISCERT	a) 2) Control circuits, fed by control transformers without connection to the protective bonding circuit at the point of supply in the arrangement according to figure 3 and having a device that interrupts the circuit automatically in the event of an earth fault	ERT OVISCERT OVISCER	A P.H.
OVIS-CERT	b) Control circuits fed by a control transformer with a centre-tapped winding, this centre tap connected to the protective bonding circuit, arranged as shown in Figure 4 of this standard with the overcurrent protective device having switching elements in all control circuit supply conductors.	SET OUTS OF OUTS OF	N/A
owis-offici	<ul> <li>c) Where the control circuit is not fed from a control transformer and is either: <ol> <li>directly connected between the phase conductors of an earthed supply, or;</li> <li>directly connected between the phase conductors or between a phase conductor and a neutral conductor of a supply that is not earthed or is earthed through a high impedance, multpole switch that switch all live conductors are used for those functions that can cause hazardous situations or damage to the machine.</li> </ol> </li> <li>Or in case of c) 2), a device is provided that</li> </ul>	EHT OUS-OFHT OUS-OF OUS-OFHT OUS-OF EHT OUS-OFHT OUS-OF OUS-OFHT OUS-OF	N/A
0.4.3.2	interrupts the circuit automatically in the event of an earth fault. For control systems using a memory device(s),	Carl Carl	N/A
UNIS CHRI	proper functioning in the event of power failure is ensured (e.g. by using a non-volatile memory) to prevent any loss of memory that can result in a hazardous situation.	CHA CHA CH	AT CERT
0.4.3.3	Upon sliding contacts the loss of continuity of safety-related control circuits depending on, can result in a hazardous situation. Appropriate measures are taken (for example by duplication of the sliding contacts).	ERT SCHALLSCH	AT LISCHA

possibility of damage from activities such as material handling.         N/           The actuators of hand-operated control devices are selected and installed so that:         N/           - they are not less than 0,6 m above the servicing level and         N/           - are within easy reach of the normal working position of the operator;         N/           - the operator is not placed in a hazardous situation when operating them.         N/	S.H.O.O	safety-related control circuits depending on, can result in a hazardous situation. Appropriate measures are taken (for example by duplication of the sliding contacts).	ERI ON ON ON ON ON	ON P
mounted, and identified or coded in accordance with relevant parts of IEC 61310.         P           10.1.2         As far as is practicable, machine-mounted control devices are:	10 cFf		D CONTROL	PE
devices are:         - readily accessible for service and maintenance;         ////////////////////////////////////	10.1.1	mounted, and identified or coded in accordance with	ent e other e other	P
possibility of damage from activities such as material handling.         Image: material handling.           The actuators of hand-operated control devices are selected and installed so that:         Image: material handling.           - they are not less than 0,6 m above the servicing level and         Image: material handling.           - are within easy reach of the normal working position of the operator;         N/           - the operator is not placed in a hazardous situation when operating them.         N/	10.1.2	devices are:	AL AL AL	ON P
selected and installed so that:       - they are not less than 0,6 m above the servicing level and         - are within easy reach of the normal working position of the operator;       N//         - the operator is not placed in a hazardous situation when operating them.       N//         This Test Report is issued by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your exclusive use Attention is drawn to the limitations of liability.indemnification and jurisdictional policies defined therein. This test reports printed overleaf and is intended for your exclusive use Attention is drawn to the limitations of issuance of the sets requested by you and the results there of based upon the information that you provided You days from date of issuance of this test report to notify us of any error or mission caused by our negligence.Provided.Anowever, that such notices all be in writing and shall specifically adortices the is wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report.         Mittingehmütz (add).       //// the test (add).         Mittingehmütz (add).       /// the test (a	OVISIO	possibility of damage from activities such as material	OVISIO OVISIO	N/A
position of the operator;	OVIS-CER.	selected and installed so that: – they are not less than 0,6 m above the servicing	An ouis other ouis other	N/A
when operating them. This Test Report is issued by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your exclusive use. Attention is drawn to the limitations of liability indemnification and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the results there of based upon the information that you provided. You days from date of issuance of this test report to notify us of any error or omission caused by our negligence. Provided, however, that such notice shall be in writing and shall specifically address the is wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report.	.S.CER			N/A
liability.indemnification and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the results there of based upon the information that you provided. You days from date of issuance of this test report to notify us of any error or omission caused by our negligence. Provided, however, that such notice shall be in writing and shall specifically address the is wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the reportent.	07			° N/A
	liability,indemnification days from date of issua wish to raise. A failure t	and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the resu ance of this test report to notify us of any error or omission caused by our negligence, Provided, however, that suc	Its there of based upon the information that you p h notice shall be in writing and shall specifically a	provided. You have address the issue y
				400-800

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	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
			CV S
	The actuators of foot-operated control devices are selected and installed so that:	0, 0,	o [∾] N/A
	- they are within easy reach of the normal working	the the the	
JIS'	<ul> <li>position of the operator;</li> <li>– the operator is not placed in a hazardous situation</li> </ul>	WIST WIST	N/A
10.1.00	when operating them.		
10.1.3	The degree of protection (see IEC 60529) together with other appropriate measures does afford	str str st	N/A
OVIS	protection against:	ONIS ONIS	0112
	- the effects of aggressive liquids, vapours, or gases found in the physical environment or used on the		N/A
S	machine;	SY	S.S.
	<ul> <li>the ingress of contaminants (for example swarf, dust, particulate matter).</li> </ul>	0, 0,	S N/A
SER	The operator interface control devices has a	an shi sh	N/A
	minimum degree of protection against direct contact of IPXXD (see IEC 60529).	Wis Wis	ON'S
0.1.4	Position sensors (for example position switches,		N/A
	proximity switches) are so arranged that they will not be damaged in the event of overtravel.	ser a ser a ser	C. CHI
2412	Position sensors in circuits with safety-related	ONE ONE	N/A
	control functions shall have direct opening action (see IEC 60947-5-1) or shall provide similar	AT AR A	A LA
1.S.UT	reliability (see 9.4.2).	and the second second	15
10.1.5	Portable and pendant operator control stations and their control devices are so selected and arranged	× × ×	[™] N/A
	as to minimize the possibility of inadvertent machine	ER' CER' CE	N CHR
0.2	operations caused by shocks and vibrations	Will Will	01:55
10.2	Push-buttons           Mandatory: The colour RED is used only for		<u>г Р</u>
S. S. Star	emergency stop and emergency switching off	St. State State	Et
24	actuators. The recommend colours of push-buttons are as	01, 01,	P
- A	shown in table 2 of this standard.	an an a	
0.2.2	The recommend markings on push-buttons are as shown in table 3 of this standard.	Wish Wish	,SP
10.3	Indicator lights and displays		< N/A
10.3.1	Indicator lights and displays are selected and		N/A
	installed in such a manner as to be visible from the normal position of the operator (see also IEC	OVIS OVIS	OVIS
(a)	61310-1).		i a
	Indicator light circuits used for warning lights are fitted with facilities to check the operability of these	5	N/A
24.	lights.	01, 01,	011
CERT	The recommend colours on Indicator light are as shown in table 4 of this standard.	all del de	N/A
11:5	Indicating towers on machines have the applicable	Wilson Wilson	N/A
	colours in the following order from the top down; RED, YELLOW, BLUE, GREEN and WHITE.		
C. Sth	Where flashing lights or displays are used to provide	in citing of	N/A
	higher priority information, audible warning devices should also be provided.	ONIS ONIS	OVIS
10.4	illuminated push-button actuators are colour-coded	a the the	N/A
	in accordance with Tables 2 and 4. Where there is	1. 15 ⁻⁰¹ 1.5 ⁻⁰¹	1:5
	difficulty in assigning an appropriate colour, WHITE is used.	0, 0,	01.





	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
OVISION	The colour RED for the emergency stop actuator shall not depend on the illumination of its light.	ONE ONE	N/A
10.5 (FR)	Devices having a rotational member, such as potentiometers and selector switches, have means of prevention of rotation of the stationary member. Friction alone isn't considered sufficient.	CERT ONIS CERT OVIS OF	N/A
10.6	Actuators used to initiate a start function or the movement of machine elements (for example slides, spindles, carriers) are constructed and mounted so as to minimize inadvertent operation.	CRI OVIS-CERI OVIS-CE	N/A
.S.CER	However, mushroom-type actuators are used for two-hand control only. (see also ISO 13851).		N/A
10.7	Emergency stop devices	On On	o [™] N/A
10.7.1	Devices for emergency stop are readily accessible.	A AL	N/A
OVISION	They are located at each operator control station and at other locations where the initiation of an emergency stop can be required (exception: see 9.2.7.3).	CHI CHI CHI CH	N/A
	In circumstances where confusion can occur between active and inactive emergency stop devices caused by disabling the operator control station, means (for example, information for use) are provided to minimise confusion.	ERT CERT CU	N/A
10.7.2	Allowed types of device for emergency stop: – a push-button operated switch with a palm or mushroom head type; – a pull-cord operated switch;	EFT OVER OVER OVER	N/A
0. - (fr)	<ul> <li>– a pedal-operated switch without mechanical guard.</li> <li>The devices are direct opening operation (see IEC 60947-5-1, Annex K).</li> </ul>		N/A
10.7.3	Actuators are coloured RED. If a background exists immediately around the actuator, then this background is coloured YELLOW. See also ISO 13850.	ONSTONOUS	N/A
10.7.4	The supply disconnecting device may be locally operated to serve the function of emergency stop when:	OVISION OVISION	N/A
OVIS-OFF	<ul> <li>it is readily accessible to the operator; and</li> <li>it is of the type described in 5.3.2 a), b), c), or d).</li> <li>When also intended for this use, the supply disconnecting device meets the colours</li> <li>RED/YELLOW.</li> </ul>	EFT OUS-CET OUS-CE	AT OWIS-OLI
10.8	Emergency switing off device		NIP
10.8.1	Means are provided, where necessary, to avoid confusion between these devices.	A .A .	í P
10.8.2	<ul> <li>The types of device for emergency switching off include:</li> <li>– a push-button operated switch with a palm or mushroom head type of actuator;</li> <li>– a pull-cord operated switch.</li> </ul>	ERI CERI C	AT CIT
OVID OVID	The devices are direct opening action (see IEC 60947-5-1, Annex K). The push-button operated switch may be in a break-glass enclosure.	ERI SCERI SC	AT S-CERT
10.8.3	Actuators are coloured RED. If a background exists immediately around the actuator, then this	ON ONE	O P

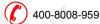


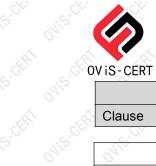


#### CERT Page 86 of 106

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
C.C.Y		, CY _ CY _ CY	C.C.Y
ONIS	background is coloured YELLOW. See also ISO 13850.	One One	0112
0.8.4	Where the supply disconnecting device is to be locally operated for emergency switching off, it is be readily accessible and meets the colours RED/YELLOW.	SEAL ONIS CHAIL ONIS CHAIL	PCFR1
0.9	Enabling control device		N/A
UNIS CERT	An enabling control device as a part of a system, does allow operation when actuated in one position only. In any other position, operation is stopped or prevented.	CERT CERT CERT	N/A
WIS CERT	Functions of two-position types: position 1: off-function of the switch (actuator is not operated); position 2: enabling function (actuator is operated)	OFFT SEFT SEFT	N/A
NISCERI NISCERI	Functions of three-position types: position 1: off-function of the switch (actuator is not operated); position 2: enabling function (actuator is operated in its mid position); position 3: off-function (actuator is operated past its mid position); when returning from position 3 to position 2, the enabling function is not activated.	CERT OUTS CERT OUTS CERT	N/A

.5 11	2.1	CONTROL GEAR: LOCATION, MOUNTING AND ENC All items of control gear (inclusively terminals that		
	.2.1	are not part of controlgear components or devices)		Olish
CER	CERN	are placed and oriented so that they can be identified without moving them or the wiring.	A CHAN CHAN	Ś
UID OU		For items that require checking for correct operation or that are liable to need replacement, those actions should be possible without dismantling other equipment or parts of the machine (except opening		ovi ⁿ P
is a	is.	doors or removing covers, barriers or obstacles).	1.5	J'S
0 A	(R)	All control gear are mounted so as to facilitate its operation and maintenance from the front.		F
St.	15.01	Necessary tools to adjust, maintain, or remove a device are supplied.	Wiscot Wiscot	NIS ^F
SER	S. SERT	Where access is required for regular maintenance or adjustment, the relevant devices shall be located between 0,4 m and 2,0 m above the servicing level.	A CONTRACTOR	P
No No	In the	Terminals are least 0,2 m above the servicing level and so placed that conductors and cables can be easily connected to them.	FT THE THE	o [™] P
0	is of	Only operating, indicating, measuring, and cooling devices are mounted on doors or on normally removable access covers of enclosures.	OVISICE OVISICE	OVISP
8		Plug-in arrangements of control devices and plug-in-de	vices:	_
0	1 ¹⁵⁷ .01	The connection is clearly identified by shape, marking or reference designation, singly or in combination.	at at at	OVISP
Stri		When they have to bee handled during normal		P
0	112 (	operation means are provided with non- interchangeable features where the lack of such a	ONIS ONIS	0413
liability days fr	indemnification a rom date of issuar raise.A failure to	ed by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the results nee of this test report to notify us of any error or omission caused by our negligence. Provided however, that such n raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of th	there of based upon the information that you p notice shall be in writing and shall specifically a	rovided.You ddress the is
	、非检测认证有限 ng European Afric	見公司(OVis) 加址:浙江省台州市开发区东环大道 888 号 4 幢 4 层 旦 www.ovis-1 an Testing&Certification Co., Ltd.(OViS) Add:4th Floor, Building 4, No. 888 Donghuan Road,Development Zon		400
Znejiai	.g zuropean Allio	an reange control building of the second of the		400





#### CERT Page 87 of 106

ViS-CERT EN 60204-1					
Clause	Requirement + Test	Result-Remark	Verdict		
		5 <u>, </u>	e.CY		
0113	facility can result in malfunctioning.	ONIS ONIS	Olis		
CER!	Plug/socket combinations that are handled during normal operation are unobstructedly accessible.		N/A		
N'IS'	Test points for connection of test equipment are: – unobstructedly accessible;	Wiss Wiss	N/A		
	<ul> <li>– unoustituctedly accessible,</li> <li>– clearly identified to correspond with the documentation;</li> </ul>	A A A	S LEAT		
	- adequately insulated;	WISTON WISTON	WiS-CL		
11.2.2	<ul> <li>– sufficiently spaced.</li> <li>Non-electrical parts and devices, not directly</li> </ul>		PÁ		
C.SERV	associated with the electrical equipment, are not	an san sa	Ser Ser		
04/13	located within enclosures containing control gear. Devices such as solenoid valves are separated from	04/12 04/12	01/12		
	the other electrical equipment (for example in a separate compartment).		P		
VIS	Control devices mounted in the same location and	Nist Nist	N ⁱ P		
	connected to the supply voltage, or to both supply and control voltages, are grouped separately from				
Stri	those connected only to the control voltages.		Sti		
	Terminals shall be separated into groups for: – power circuits;	ONIS ONIS	OVICP		
	– associated control circuits;	A A A	S IR		
	<ul> <li>– other control circuits, fed from external sources (for example for interlocking).</li> </ul>	NIST NIST	VIS-OL		
S	The clearances and creepage distances specified by		P		
	the supplier are maintained, taking into account the external influences or conditions of the physical	8) (B) (B)	N CERN		
Visi	environment.	Nis Nis	Visi		
11.2.3	Heat generating components (for example heat		N/A		
	sinks, power resistors) are located so, that the temperature of each component in the vicinity	string string strings	Sth		
Nis	remains within the permitted limit.	Win Win	N'IS		
	Control gears are sufficiently protected against:		N/A		
	<ul> <li>ingress of solid foreign objects</li> <li>liquids</li> </ul>	Ser ser ser	CEN		
	- dust, coolants, and swarf,	ON'S ON'S	OVIS		
	taking into account the external influences under which the machine is intended to operate (i.e. the	à à à	5		
C. CEN	location and the physical environmental conditions).	Star Carl	C.CET		
Olis	Enclosures of controlgear provide a degree of	Office Office	o [™] N/A		
	protection of at least IP22 (see IEC 60529). Exceptions:	A A A	N CA		
	a) specific electrical operating area		.5		
	b) When with removable collectors on conductor wire or conductor bar systems do not achieve IP22	0, 0,	04		
-Bri	measures of 6.2.5 are applied.	A A A	S A		
1.4	Enclosures, doors and openings		P		
2,	Enclosures (inclusively screens of windows	0, 0,	P		
	(windows: toughened glass or polycarbonate sheet of not less than 3 mm thickness), joints, gaskets of	AT AT A	N B		
	doors and lids) do withstand the foreseeable	NIS NIS	N'S		
	mechanical, electrical and thermal stresses and	0, 0,	0,		
	other environmental factors and of the aggressive liquids, vapours, or gases used on the machine.	and the and	N CAR		
112	Fasteners used to secure doors and covers are of	NIP NIP	P		
5	the captive type.	0, 0,	0,		





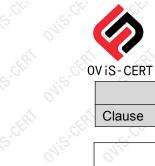
### Page 88 of 106

# OVISICE 6VIS-CERT Report No.: OViSCE2104-032M

Ais-CERT EN 60204-1					
Clause	Requirement + Test	Result-Remark	Verdict		
			S		
ONL	Enclosure doors are not wider than 0,9 m and have vertical hinges, with an angle of opening > 95°.	0,1,2,0,1,2	O ^N P		
	Openings in enclosures (for example, for cable access), including those towards the floor or foundation or to other parts of the machine are equipped with means to ensure the degree of protection specified for the equipment.	SER' OUS-CER' OUS-CER	OVISCERI		
	A suitable opening may be provided in the base of enclosures within the machine so that moisture due to condensation can drain away	of ourself ourself	WiS-OC		
115 CER	Openings for cable entries shall be easily re-opened on site.	Ser install	PEN		
UNS-SERT	No openings between enclosures containing electrical equipment and compartments containing coolant, lubricating or hydraulic fluids, or those into which oil, other liquids, or dust can penetrate.	ERT USCERT USCER	P		
on.	Holes in an enclosure for mounting do not impair the required protection.		P		
OVIS OF	Equipment that, in normal or abnormal operation, can attain a surface temperature sufficient to cause a risk of fire or harmful effect to an enclosure material is:	SET OVIS-CET OVIS-CET	P		
	<ul> <li>– located within an enclosure that will withstand, such temperatures; and</li> <li>– is located at a sufficient distance from adjacent equipment allowing safe dissipation of heat (see</li> </ul>	CRI CRI CRI	UNIS CHI		
OVIS-CE.	also 11.2.3); or – is otherwise screened by material that can withstand to the harmful effect.	outs outs	OVIS-CL.		
11.5	Access to control gear	the the st	N/A		
	Doors in gangways for access to electrical operating areas: – are at least 0,7 m wide and 2,1 m high; – do open outwards; – have a means (for example panic bolts) to allow opening from the inside without the use of a key or tool.	OVIS OVIS	ONIS CERT		
OVIS-CEPT	Enclosures which readily allow a person to fully enter are be provided with means to allow escape, e.g. panic bolts on the inside of doors.	SET OVISCET OVISCE	N/A		
	Enclosures intended for such access, for example for resetting, adjusting, maintenance, shall have a clear width of at least 0,7 m and a clear height of at least 2,1 m	ERT OVISCERT OVISCER	N/A		
CERT	When equipment is likely to be live during access with > 1,0m and when on both side with > 1.5m.	ath soft soft	I CERT		
OVIS	and	ONIS ONIS	OVIS		
12	CONDUCTORS AND CABLES		Р		
OVISCEN	IMPORTANT: The following requirements do not appl of assemblies, subassemblies, and devices that are r tested in accordance with their relevant IEC standard 60439-1).	nanufactured and	-		
12.2	In general, conductors are of copper. Where aluminium conductors are used, the cross- sectional area is at least 16 mm ² .	SET. ONIS-CET. ONIS-CET	Rift		



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#### CERT Page 89 of 106

# 6415-OFAT Report No.: OViSCE2104-032M

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
ONIS.D.	The cross-sectional areas of conductors are according to Table 5 and its notes.	ONE ONE ONE	OVIP
	All conductors that are often in movement ( > one movement per hour of machine operation) have flexible stranding of class 5 or class 6.	ERI WIS-CERI WIS-CER	PER
OVIS-CERT	Where the insulation of conductors and cables (for example PVC) can constitute hazards due to the propagation of a fire or the emission of toxic or corrosive fumes adequate means are provided.	SEAT ONIS CERT ONIS CER	P OVIS-CEPT
CEPA	Special attention is given to the integrity of a circuit having a safety-related function	an san san	CER
	Minimum insulation test voltages for used cables are: $- \ge 2\ 000\ V$ a.c. for a duration of 5 min for operation	ONIS ONIS	ov P
	at voltages higher than 50 V a.c. or 120 V d.c., or $- \ge 500$ V a.c. for a duration of 5 min for PELV	SERI OVIS-CERI OVIS-CER	OVIS-OFF
ON'S CERT	circuits (see IEC 60364-4-41, class III equipment). Insulation strong enough to withstand damage due to operation or during laying, especially for cables pulled into ducts.	CALL ONES CHAIL ONES CHAI	PJE
12.4	Current-carrying capacity in normal service in accordance with table 6.	AN STORY STORY	P
12.6	Or in accordance with suppliers recommendation. Flexible cables	ONIC ONIC	N/A
12.6.1	All flexible cables have Class 5 or Class 6 conductors.	ATT IS OTHER IS OF	N/A
OVIS-CERT	Cables under severe duties are adequately protected against: - abrasion due to mechanical handling and dragging across rough surfaces; - kinking due to operation without guides; - stress resulting from guide rollers and forced	ERI OVISCERI OVISCERI	N/A
12.6.2	guiding, being wound and re-wound on cable drums. The tensile stress applied to copper conductors does not exceed 15 N/mm ² of cross-sectional area.	SE OVISION OVISION	N/A
	Or special measures are taken to withstand the applied stress.	ERI US OFRI US OFFI	.S.CER
12.6.3	<ul> <li>For material other than copper the applied stress is within the cable manufacturer's specification.</li> <li>For cables installed on drums, the maximum current-carrying capacity in free air is derated in accordance with Table 7.</li> </ul>	CN ON ON	N/A
12.7	Conductor wires, conductor bars and slip-ring assem	blies	N/A
12.7.1	During normal access to the machine, protection against direct contact to conductor wires, conductor bars and slip-ring assemblies is achieved by the application of one of the following protective measures:	OVISCO OVISCO	N/A
O"	<ul> <li>protection by partial insulation of live parts, or where this is not practicable;</li> <li>protection by enclosures or barriers of at least IP2X.</li> </ul>	O" O"	O"
0	Horizontal top surfaces of barriers or enclosures that	0, 0,	N/A

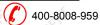




#### CERT Page 90 of 106

### OVIS-CE 115 CERT Report No.: OViSCE2104-032M

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
OVISION	are readily accessible provide a degree of protection of at least IP4X.	ONE ONE	OVISION
OVIS-CERT	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 is applied.	ERI OVIS-CERI OVIS-CE	N/A
OVIS-CERT	Conductor wires and conductor bars are so placed / protected as to: – prevent contact with conductive items such as the cords of pull-cord switches, strain-relief devices and drive chains;	ER OVIS-CER OVIS-CE	N/A
12.7.2	<ul> <li>prevent damage from a swinging load.</li> <li>Protective conductor circuit (PE) and the neutral conductor (N) each use a separate conductor wire, conductor bar or slip-ring.</li> </ul>	en and and an	N/A
OVISION	The continuity of the protective conductor circuit using sliding contacts is ensured by taking appropriate measures (for example, duplication of the current collector, continuity monitoring)	en over over over	N/A
12.7.3	Protective conductor current collectors 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.	CHI CHI CHI	N/A
12.7.4	Removable current collectors (e.g. swivelingable) with disconnector function: The protective conductor circuit interrupts after and reconnects before any live conductor.	OVISION OVISION	N/A
12.7.5	Clearances in air between conductors and adjacent systems are suitable at least a rated impulse voltage of an overvoltage category III in accordance with IEC 60664-1 (For example 4 kV for 230/400 V systems →	SEAL OVISICE OVISICE	N/A
12.7.6	clearances 3mm)Creepage distances between conductors and adjacent systems are suitable suitable for operation in the intended environment, e.g. open air (IEC 60664-1), inside buildings, protected by enclosures.	SERIE OVIS-CERT OVIS-CE	N/A
	In abnormally dusty, moist or corrosive environments, the following creepage distance requirements apply: – unprotected conductor etc.: minimum creepage dist. of 60 mm	ERT OUS-CERT OUS-CE	N OWSCHRI
12.7.7	<ul> <li>– enclosed conductor etc.: minimum creepage distance of 30 mm</li> <li>Conductor system divided into isolated</li> </ul>	OVISIO OVISIO	N/A
	sections: suitable design measures are employed to prevent the energization of adjacent sections by the current collectors themselves.	ER OVISICERI OVISICE	OVIS-CER
12.7.8	Construction of conductor wires etc.: - power circuits are grouped separately from those in control circuits. - do withstand the foreseeable mechanical forces	ERI OVIS-CERI OVIS-CE	N/A N/S
	<ul> <li>and thermal effects of short-circuit current.</li> <li>covers can not be opened without the use of a tool</li> <li>all conductive parts of accompanying enclosures</li> <li>are connected to the protective bonding circuit</li> <li>underground and underfloor conductor bar ducts</li> </ul>	ERI OVIS-CERI OVIS-CE	N OVIS-CERT





### Page 91 of 106

### OVISICE Report No.: OViSCE2104-032M

	IS-CERT EN 60204-1					
Clause	Requirement + Test	Result-Remark	Verdict			
			×			
02.	have drainage facilities	0, 0,	0%.			
- A		an an	s s			
13	WIRING PRACTICES		P			
13.1	Connections and routing	01 01	O P			
13.1.1	All connections are secured against accidental loosening.	Still Start St	R RA			
	The means of connection are suitable for the cross- sectional areas and nature of the conductors being	ONIC ONIC	o ^N P			
Crew Contraction	terminated. No connection of two or more conductors to one		P			
N13	terminal, unless the terminal is designed for it.	Wiss Wiss	N'IS			
	No soldered connections to terminals unless they are suitable for it.		á Pá			
S. Chil	Terminals on terminal blocks are plainly marked or	St. 65	P.			
JUIS	labelled corresponding with the diagrams.	ONIN ONIN	ONIN			
	Installations of flexible conduits and cables are such that liquids drain away from the fittings.		R P			
S	Retaining means for conductor strand and shields		P			
21/2	provided (no soldering for that purpose)	OMIL ONIC	Ollis			
	Indentification tags legible, permanent, and appropriate for the physical environment.	A and a	st Pri			
	Terminal blocks mounted and wired so that the	15 15	P			
	internal and external wiring does not cross over the terminals (see IEC 60947-7-1).	0, 0,	01			
3.1.2	Conductors and cables run from terminal to terminal	8 B. B.	R P			
	without splices or joints.	Wiss Wiss	J.S.			
	Connections using plug/socket combinations with	A A	A			
	suitable protection against accidental disconnection are not considered to be joints for the purpose of this	String Sthings	it's str			
Nis	subclause.	Win win	all's			
	Terminations of cables are adequately supported to prevent mechanical stresses at the terminations of the conductors.	SPAT CEPT OF	A P			
NiSi	Protective conductor placed close to the associated	Wi ^S Wi ^S	N ^{II} P			
	live conductors in order to decrease the impedance of the loop.		á á			
3.1.3	Conductors for circuits that operate at different		P			
	voltages are separated by suitable barriers, or are insulated for the highest voltage that occurs within the same dust	ONIT ONIT	ot other			
13.2	the same duct. Connections and routing	8	PP			
13.2.1	Each conductor is identifiable at each termination in	0412 0412	O ^V P			
á.	accordance with the technical documentation.		in in			
3.2.2	The protective conductor has the bicolour combination GREEN-AND-YELLOW		× R			
	Where the protective conductor can be easily	0, 0,,	01			
	identified colour coding throughout its length is not	A AL A	A A			
	necessary, but the ends or accessible locations are clearly identified by the graphical symbol or by the	NIS NIS	VIS			
	bicolour combination GREEN-AND-YELLOW.	0, 0,	03			
3.2.3	Neutral conductors are identified by the colour LIGHT	5 B. B.	S RY			
	BLUE. That colour is not used for identifying any other conductor where confusion is possible.	115 115 T	1.5			



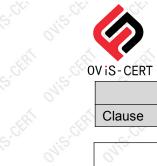


### Page 92 of 106

/iS-CERT EN 60204-1					
Clause	Requirement + Test	Result-Remark	Verdict		
S.S.Y			S.Ov		
OVIC OFFI	Bare conductors used as neutral conductors have at minimum a stripe in LIGHT BLUE 15 mm to 100 mm wide in each compartment or unit and at each accessible location.	Stati Schall Schall	ON P		
	Identification by colour for other conductors: Colours GREEN or YELLOW are not used. (Details to colour coding see this norm Cl. 13.2.3)		ON P		
13.3	Wiring inside enclosures	34 <u>, 64</u> , 64	. P		
Contraction of the second	Conductors inside enclosures are supported where necessary. Conductors and cables that do not run in ducts are adequately supported. Non-metallic supports are made with a flame-	5.61 0412 0412 0412	ON P P		
	retardant insulating material (see IEC 60332 series)		Р		
OVIS-CEN.	Connections to devices mounted on doors or to other movable parts are using flexible conductors in accordance with 12.2 and 12.6.	OVIS-CERT OVIS-CER	OVISPERI		
13.4 🔬	Wiring outside enclosures	à à à	P		
13.4.2	Conductors and their connections external to the electrical equipment are placed in suitable ducts (see cl.13.5).	at at at	OVISP		
OVIS-CET	<ul> <li>Exceptions:</li> <li>Cables with special suitable protection.</li> <li>Position switches or proximity switches supplied with a dedicated cable which is sufficiently short.</li> </ul>	Ser ouis-cer ouis-cer	OVIS-CEL		
OVIS-CE.	Connections to moving elements of the machine are made of flexible cable in accordance with 12.2 and 12.6.	ovision ovision	OVIS		
SCHRI	Bending radius of the cable are of at least 10 times the diameter of the cable	SEN SERVICE	P		
ONT	Cables close to moving parts, maintain a space of at least 25 mm between the moving parts and the cables or barriers are provided.	ET ET	ON P		
OVIS-CLAT	Cable handling systems: Lateral cable angles do not exceeding 5°, at being wound on and off cable drums or approaching and leaving cable guidance devices. The bending radius is in accordance with table 8.	SEAT CLEAT ONIS CL	ONISP'		
	<ul> <li>Flexible conduit:</li> <li>- is not used for connections to rapidly or frequently moving parts, except when specifically designed for that purpose.</li> <li>- is supported when adjacent to moving parts</li> </ul>	SEAT ONIS CERT ONIS CERT	OVIP NIS-CERT		
13.4.4	Interconnection of devices on the machine is made through adequate terminals.		P		
13.4.5	Requirements to plug/socket combinations outside of enclosures: Exceptions: components connected to a bus system by a plug/socket combination	NISCU NISCU	OVISP		
	<ul> <li>a) Prevention for unintentional contact with live parts at any time.</li> <li>At least IPXXB. (PELV circuits are excepted from this</li> </ul>	NISCH NISCH	ONIS-CL		
	<ul><li>b) First make last break protective bonding contact if used in TN- or TT-systems.</li></ul>	OVIS-CT OVIS-CT	OVISIOL		



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#### Page 93 of 106

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
OVIS-U-	<ul> <li>c) Sufficient load-breaking capacity, when intended to be disconnected under running conditions.</li> <li>When rated at ≥ 30 A interlocked with a switching device</li> </ul>	RT CHRI CHRI	OVIS-U-
	<ul> <li>d) When rated at ≥ 16 A having a retaining means to prevent unintended or accidental disconnection.</li> <li>e) when unintended or accidental disconnection +can cause a hazardous situation, having a retaining</li> </ul>	ERT US CERT US CE	OVISCERT
	means. f) Component remaining live after disconnection having at least IP2X or IPXXB, taking into account the required clearance and creepage distances.(PELV circuits are excepted from this	AT ATS-CERT ATS-CER	NIS-CERT
	requirement.) g) Metallic housings of plug/socket combinations being connected to the protective bonding circuit. (PELV circuits are excepted from this requirement.)	ERT OVISCERT OVISCE	OVIS-CERT
	<ul> <li>h) Having retaining means to prevent unintended or accidental disconnection and being marked that they are not intended to be disconnected under load.</li> <li>i) Clearly identifiable if more then one plug / socket per device. It is recommended that mechanical</li> </ul>	RT ONS-CERT ONS-CER	ovis-offici
	<ul> <li>coding being used.</li> <li>j) When used in control circuits fulfilling the applicable requirements of IEC 61984. Exception: see item k).</li> <li>k) No plug/socket combinations intended for household and similar general purposes used for</li> </ul>	RT CER ONESCER	OVIS-OFFI
	control circuits. In plug/socket combinations in accordance with IEC 60309-1, only those contacts shall be used for control circuits which are intended for those purposes.	AT CHAT CHAT CH	OVIS-OL
OVISION	Exception: The requirements of item k) do not apply to control functions using high frequency signals on the power supply.	ovis ovis	ovis at
13.4.6	Protection of Plug / socket from the physical environment during transportation and storage.	NIS-OF	P
13.5	Ducts, connection boxes and other boxes Provided with a degree of protection suitable for the application.	an an	P
ONIN CERT	No sharp edges, flash, burrs, rough surfaces, or threads with which the insulation of the conductors can come into contact.	AL SHE SHE	O ^{VIP} P
OVISIO	Where human passage is required, least 2 m above the working surface.	OVIST OVIST	ONSP ONSP
- CA	Not used as connection for protective bonding circuit.		P
VIS.CL	Where cable trays are a.s.o. are only partially covered, the cables used are of a suitable type.	Wiscot wiscot	P
13.5.2	Filling the percentage of ducts adapted to the straightness and length of the duct and the flexibility of the conductors.		P
13.5.3.	Rigid metal conduit and fittings shall galvanized steel or of a corrosion-resistant material         Fittings compatible with the conduit.	With With	P
C.C.C.	Conduit bends properly made		P
12 5 4	Flexible metal tubing or woven wire armour suitable	ONIS ONIS	al'
bility,indemnification ays from date of issu	FIEXIDIE METAI TUDING OF WOVEN WIFE ARMOUT SUITADIE ued by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for you and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the result ance of this test report to notify us of any error or omission caused by our negligence. Provided, however, that such to raise such issue within the prescribed time shall constitute your ungualified acceptance of the completeness of	ts there of based upon the information that you notice shall be in writing and shall specifica	ou provided. You have 3



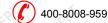


#### Page 94 of 106

#### Report No.: OViSCE2104-032M

Clause       Requirement + Test       Res         for the expected physical environment.       13.5.5         13.5.6       Flexible non-metallic conduit resistant to kinking and suitable for the expected physical environment.         13.5.6       Requirements to cable trunking systems: - Rigidly supported and clear of all moving or contaminating portions of the machine	ult-Remark	Verdi P
13.5.5Flexible non-metallic conduit resistant to kinking and suitable for the expected physical environment.13.5.6Requirements to cable trunking systems: - Rigidly supported and clear of all moving or	Superior Contraction of the cont	P
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- Rigidly supported and clear of all moving or	C.C.	1
- Covers overlapping the sides and attached.	ONTO ONTO O	,cP
3.5.7 The compartments of machine used as cable trunking systems are isolated from coolant or oil reservoirs and are entirely enclosed, and the conductors are secured.	ONESCE ONESCE O	GP'
<ul> <li>13.5.8 Connection boxes and other boxes used for wiring:</li> <li>Are accessible for maintenance.</li> <li>Provide protection against the ingress of solid bodies and liquids, taking into account the external influences under which the machine is intended to operate (see 11.3).</li> <li>Do not have unused knockouts etc.</li> </ul>	UNSCHAT OUSCENT	is ctil
13.5.9 Motor connection boxes: Encloses only connections to the motor and motor- mounted devices (e.g brakes, temperature sensors)	OVIS-CERT OVIS-CERT O	Pil

07.	operate (see 11.3). - Do not have unused knockouts etc.	01. 01.	01.
13.5.9	Motor connection boxes: Encloses only connections to the motor and motor- mounted devices (e.g brakes, temperature sensors)	N OVISCER OVISCER	Pr
i di			
14	ELECTRIC MOTORS AND ASSOCIATED EQUIPMEN	VT LOU LOU	_P [×]
14.1	Electric motors are conform to the relevant parts of IEC 60034 series.	for the electric start	ONP
OVIS-CER.	There protection is conform to the requirements given in 7.2 for overcurrent protection, in 7.3 for overload protection, and in 7.6 for overspeed protection.	R. OVIS-CER. OVIS-CER.	OVIS
.S. Ofter	Motor control equipment is located and mounted in accordance with Clause 11.		P
14.2	Minimal IP23 protection for all motors. More stringent requirements depending on the application and the physical environment.	for the electric start	° P
14.4	Motors incorporated as an integral part of the machine are adequately protected from mechanical damage.	ovision ovision	OVISP
ON'S CEN	motors and its associated parts (inclusively motor connection box) are easily accessible for inspection and maintenance etc	an outs off outs off.	OVIS
UIS-OFFIT	Cooling is ensured and the temperature rise remains within the limits of the insulation class (see IEC 60034-1)	AT US-OFAT US-OFAT	P
O" CERI	No opening between the motor compartment and any other compartment that does not meet the motor compartment requirements.	AT SEAT SEAT	° P
14.5	The characteristics of motors and associated equipment are selected in accordance with the anticipated service and physical environmental conditions (see 4.4). Detailed criteria see 14.5 of this norm.	AT UTS CERT	o ^{nis} P
14.6	Overload and overcurrent protective devices for mechanical brake actuators initiate simultaneously the deenergization (release) of the associated motors.	RI UISCERI UISCERI	P



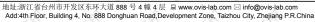
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### Page 95 of 106

### OVIS-CE Report No.: OViSCE2104-032M

ACCESSORIES AND LIGHTING         N/A           Requirements for socket-outlets for accessory equipment: - conform to IEC 60309-1 (Where that is not practicable, they are clearly marked with voltage and current ratings); continuity of the protective bonding circuit to the socket-outlet is ensured, except where protected by PELV; - unearthed conductors connected to the socket-outlet are overcurrent- and if required overload-protected - protection is separately from other circuits; - power supply to the socket-outlet is not disconnected by the supply disconnecting device for the machine or the section of the machine, the requirements for local lighting of the machine and equipment: - protective bonding circuit in accordance with 8.2.2. - ON/OFF witch incorporated in the lamp-holder or in the flexible connecting cords. - Stroboscopic effects avoided. - Where fixed lighting electromagnetic compatibility is taken into account.         N/A           12.2         Requirements to the power supply for local lighting: - Nominal voltage not exceeding 250 V between conductors - isolating transformer connected to the load side of the supply disconnecting device with overcurrent protection in the secondary circuit. That source is permitted for maintenance lighting circuits in control enclosures only; or - from an achine circuit with dedicated overcurrent protection; or - from a machine circuit with dedicated overcurrent protection in the secondary circuit. That source is permitted for maintenance lighting circuits in control enclosures only; or - from an externally supplied lighting circuit (for example factory lighting supply). This shall be permitted in control enclosures only; and for the machine work lighting suputy). This		EN 60204-1		
1       Requirements for socket-outlets for accessory equipment:	Clause	Requirement + Test	Result-Remark	Verdict
1       Requirements for socket-outlets for accessory equipment:	15	ACCESSORIES AND LIGHTING	Wish Wish	N/A
equipment:       - conform to IEC 60309-1 (Where that is not practicable, they are clearly marked with voltage and current ratings);	15.1			~
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-continuity of the protective bonding circuit to the socket-outlet is ensured, except where protected by PELV;       - unearthed conductors connected to the socket-outlet are overcurrent- and if required overload- protected       - protection is separately from other circuits;       - power supply to the socket-outlet is not disconnected by the supply disconnecting device for the machine or the section of the machine, the requirements of 5.3.5 apply.       N/A         2.2.1       Requirements for local lighting of the machine and equipment:       - protective bonding circuit in accordance with 8.2.2.       N/A         - ON/OFF switch incorporated in the lamp-holder or in the flexible connecting cords.       - Stroboscopic effects avoided.       N/A         - Where fixed lighting electromagnetic compatibility is taken into account.       - Noher fixed lighting electromagnetic compatibility is taken into account.       N/A         12.2.2       Requirements to the power supply for local lighting:       - NiA       N/A         - Nominal voltage not exceeding 250 V between conductors       - isolating transformer connected to the load side of the supply with overcurrent protection in the secondary circuit. That source is permitted for maintenance lighting circuits in control enclosures only; or       - from a machine circuit with dedicated overcurrent protection; or       - from a machine circuit with dedicated overcurrent protection; or         - from a machine circuit with dedicated overcurrent protecting evice; or       - from an externally supplied lighting circuit (for example factory lighting supply). This shall be permitted in contol enclosures only; and for the mach				
PELV; - unearthed conductors connected to the socket-outlet are overcurrent- and if required overload-protected       N/A         - protection is separately from other circuits; - power supply to the socket-outlet is not disconnected by the supply disconnecting device for the machine or the section of the machine, the requirements of 5.3.5 apply.       N/A         :2.1       Requirements for local lighting of the machine and equipment: - protective bonding circuit in accordance with 8.2.2. - ON/OFF switch incorporated in the lamp-holder or in the flexible connecting cords. - Stroboscopic effects avoided. - Where fixed lighting electromagnetic compatibility is taken into account.       N/A         :2.2       Requirements to the power supply for local lighting: - Nominal voltage not exceeding 250 V between conductors       N/A         :2.2       Requirements to the power supply for local lighting: - lisolating transformer connected to the load side of the supply with overcurrent protection in the secondary circuit; or - lisolating transformer connected to the line side of the supply disconnecting device with overcurrent protection; or - from an machine circuit with dedicated overcurrent protection; or - from an isolating transformer connected to the line side of the supply disconnecting device, provided with a dedicated primary disconnecting means and secondary overcurrent protection, and mounted within the control enclosure adjacent to the supply disconnecting device; or - from an externally supplied lighting circuit (for example factory lighting supply). This shall be permitted in contol enclosures only, and for the machine work light(s) where their total power rating is not more than 3 kW.       N/A         :2.3       All unearthed conductors of circuits supplying lighting		-continuity of the protective bonding circuit to the	String String	SEX
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overload- protected         - protection is separately from other circuits;         - power supply to the socket-outlet is not disconnected by the supply disconnecting device for the machine or the section of the machine, the requirements of 5.3.5 apply.           2.2.1         Requirements for local lighting of the machine and equipment:         - protective bonding circuit in accordance with 8.2.2.         - ON/OFF switch incorporated in the lamp-holder or in the flexible connecting cords.         - Stroboscopic effects avoided.         - Where fixed lighting electromagnetic compatibility is taken into account.           2.2.2         Requirements to the power supply for local lighting:         - N/A           - Nominal voltage not exceeding 250 V between conductors         - isolating transformer connected to the load side of the supply with overcurrent protection in the secondary circuit; or         - isolating transformer connected to the line side of the supply disconnecting device with overcurrent protection; or           - from a machine circuit with dedicated overcurrent protection; or         - from an isolating transformer connected to the line side of the supply disconnecting device, provided within the contcol enclosure adjacent to the supply disconnecting device, provided within the contcol enclosure adjacent to the supply disconnecting device, provided within the contcol enclosure adjacent to the supply disconnecting device, or           - from an externally supplied lighting circuit (for example factory lighting supply). This shall be permitted in control enclosures only, and for the machine work light(s) where their total power rating is not more than 3 kW.           Exception: Where fixed lighting is out of reac				
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equipment:       - protective bonding circuit in accordance with 8.2.2.         - ON/OFF switch incorporated in the lamp-holder or in the flexible connecting cords.         - Where fixed lighting electromagnetic compatibility is taken into account.         - Where fixed lighting electromagnetic compatibility is taken into account.         :2.2         Requirements to the power supply for local lighting:         - Nominal voltage not exceeding 250 V between conductors         - isolating transformer connected to the load side of the supply with overcurrent protection in the secondary circuit; or         - isolating transformer connected to the line side of the supply disconnecting device with overcurrent protection; or         - from a machine circuit with dedicated overcurrent protection; or         - from a nisolating transformer connected to the line side of the supply disconnecting device, provided with a dedicated primary disconnecting means and secondary overcurrent protection, and mounted within the control enclosure adjacent to the supply disconnecting device; or         - from an externally supplied lighting circuit (for example factory lighting supply). This shall be permitted in control enclosures only, and for the machine work light(s) where their total power rating is not more than 3 kW.         Exception: Where fixed lighting is out of reach of operators during normal operations, the provisions of this subclause do not apply.         start a device dowd cords of circuits supplying lighting have their own overcurrent protecting devices.	15.2.1			N/A
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conductors       - isolating transformer connected to the load side of the supply with overcurrent protection in the secondary circuit; or       - isolating transformer connected to the line side of the supply disconnecting device with overcurrent protection in the secondary circuit. That source is permitted for maintenance lighting circuits in control enclosures only; or         - from a machine circuit with dedicated overcurrent protection; or       - from an achine circuit with dedicated overcurrent protection; or         - from an isolating transformer connected to the line side of the supply disconnecting device, provided with a dedicated primary disconnecting means and secondary overcurrent protection, and mounted within the control enclosure adjacent to the supply disconnecting device; or         - from an externally supplied lighting circuit (for example factory lighting supply). This shall be permitted in control enclosures only, and for the machine work light(s) where their total power rating is not more than 3 kW.         Exception: Where fixed lighting is out of reach of operators during normal operations, the provisions of this subclause do not apply.       N/A         .2.3       All unearthed conductors of circuits supplying lighting have their own overcurrent protecting devices.       N/A	15.2.2	Requirements to the power supply for local lighting:		N/A
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this subclause do not apply.       N/A         5.2.3       All unearthed conductors of circuits supplying lighting have their own overcurrent protecting devices.       N/A         5.2.4       Requirements to the fittings for local lighting: – Adjustable lighting fittings are suitable for the       N/A			Ph. (Ph. (Ph.	Carlo Carlo
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have their own overcurrent protecting devices.         b.2.4       Requirements to the fittings for local lighting: – Adjustable lighting fittings are suitable for the	5.2.3			N/A
– Adjustable lighting fittings are suitable for the	SER	have their own overcurrent protecting devices.	Sti sti sti	
	15.2.4		Wis Wis	N/A







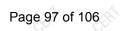
#### Page 96 of 106

### ViS-OFFI Report No.: OViSCE2104-032M

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
	– lamp holders are in accordance with the relevant	ONLY ONLY	ONIS
	IEC standard; – lamp holders are constructed with an insulating	á á .	5 á
	material protecting the lamp cap	ST SET S	
	- Reflectors are supported by a bracket and not by	Wis Wis	Nis
	the lamp holder.		
	Exception: where fixed lighting is out of reach of	ST SET S	r str
	operators during normal operation, the provisions of this subclause do not apply.	Wis Wis	al's
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
6	MARKING, WARNING SIGNS AND REFERENCE D	ESIGNATIONS	P
16.1	Warning signs, nameplates, markings, and		O P
10.1	identification plates are of sufficient durability to	à à .	స్న
- Str	withstand the physical environment.	5 50 5	
16.2.1	Enclosures that do not clearly show that they contain electrical equipment that has a risk of electric shock	ONIS ONIS	NI P
		á á .	A A
	are marked with the graphical symbol \swarrow	ST OTH O	N Str
	plainly visible on the enclosure door or cover.	Wis Wis	al'is
		á á .	5 5
	Exception: – enclosure equipped with a supply disconnecting	ST SET S	N Str
	device;	Win Win	CN'S
	- operator-machine interface or control station;	á á .	5 5
	– a single device with its own enclosure (for example position sensor).	S. 199 . 18	2 CEL
16.2.2	Hazardous hot surfaces of the electrical equipment,	ONIE ONIE	N/A
	are equipped with the graphical warning symbol		
		31 2.01 2.01	i cichi
0412		ONLO ONLO	0112
16.2.3	Control devices, visual indicators, and displays are clearly and durably marked to their functions.	A B B	× P
16.2.4	Equipment (e.g. controlgear assemblies) is legibly		P
	and durably marked. A nameplate is attached to the enclosure adjacent to	ON. ON	ON
	each incoming supply with:	A LA LA	AL A
	- name or trade mark of supplier;		.S.CV
	 – certification mark, when required; – serial number, where applicable; 	01. 01.	011
	 – senai number, where applicable, – rated voltage, number of phases and frequency 	i the the	A A
	(if a.c.),		
	 – full-load current for each supply; – short-circuit rating of the equipment; 	01. 01.	011
	– main document number (see IEC 62023).	A LAN	AL A
16.2.5	All enclosures, assemblies, control devices, and		P
	components are plainly identified with the same	01. 01.	01.
	reference designation as shown in the technical documentation.	a la la	á. á

Left Left	ON CERT	components are plainly identified with the same reference designation as shown in the technical documentation.	AL AR	ON LEA	ON LEFT	on th	
S. 1. S.	115		1.5	11ST	115	VIS	
	17	TECHNICAL DOCUMENTATION	01	0"	P	07	
	17.1	Documentation in agreed language provided.	(A) (A)	all'	PS	CER.	
	17.2	Information provided with the electrical equipment include:	OVISIO	OVISIO	NI P	ONIS	
	liability,indemnificatio days from date of issue	Let us the company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for your and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the result uance of this test report to notify us of any error or omission caused by our negligence. Provided however, that such to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of	s there of based upon the i notice shall be in writing a	nformation that you nd shall specifically	provided. You have 30 address the issue you		
	浙江欧非检测员证表	期小·浙江省台州市开发区在环土道 888 号 4 幡 4 层 口 wavay ovid	s lab.com ⊠ info@ovis lab	com (





OVISICE Report No.: OViSCE2104-032M

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdio
OVIS	a) A main document (parts list or list of documents);	ONIS OVISI	0415
á á	b) Complementary documents including:	a a a	
St. Str.	1) a clear, comprehensive description of the	Ser Ser Ser	Se Se
N'IS	equipment, installation and mounting, and the	Vis Vis	112
0	connection to the electrical supply(ies);	0. 0.	0
R	2) electrical supply(ies) requirements;	B. B. B.	1 5
SC	3) information on the physical environment (for	ST	.50
ONIS	example lighting, vibration, noise levels,	ONLY ONLY	Olis
A A	atmospheric		
1955 - 13	contaminants) where appropriate;	8° 8° 8°	
.5	4) overview (block) diagram(s) where appropriate;		.5
011	5) circuit diagram(s);	0, 0,	01
10 1	6) information (as applicable) on:	à à à	
Ser Ser	programming, as necessary for use of the	fer sfer sfer	S S
1.15	equipment;	115	115
0.	• sequence of operation(s);	0. 0.	0.
	 frequency of inspection; 	à à à	1
Sec.	 frequency and method of functional testing; 		, C
Nis	guidance on the adjustment,	N'is N'is	112
	maintenance,		0
19. I	and repair, particularly of the protective	S. S. S.	
.50	devices and circuits;	.55.	.50
0115	 recommended spare parts list; 	ONE ONE	0115
A A	 list of tools supplied. 		
	7) a description (including interconnection diagrams)	th (th) (th	i di
1.5	of the safeguards, interlocking functions, and		55
0	interlocking of guards against hazards, particularly	0, 0,	0
A A	for machines operating in a co-ordinated manner; 8) a description of the safeguarding and of the	à à à	
Str.	means provided where it is necessary to suspend		, CY
NIS	the safeguarding (for example for setting or	N'12 N'12	NIS
	maintenance), (see 9.2.4);		
A B	9) instructions on the procedures for securing the	E E E	1
S	machine for safe maintenance; (see also 17.8);		.50
011	10) information on handling, transportation and	ONLY ONLY	Olin
A A	storage;	1 1 1 A	
2 Chr.	11) information regarding load currents, peak	er en en	8
VIS	starting currents and permitted voltage drops, as	119 JIS	Vis
0,	applicable;	0, 0,	0,
in a	12) information on the residual risks due to the protection measures adopted, indication of whether	à à à	N
C.C.	any particular training is required and specification	st citt citt	S
N'12	of any necessary personal protective equipment.	Wis Wis	all's
17.3	Unless otherwise agreed between manufacturer and		Р
125	user:	8° 8° 8°	e de la compañía de la
.5	- the documentation is in accordance with relevant		.5
0%	parts of IEC 61082;	0, 0,	01.
A 4	- reference designations are in accordance with	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
S Str	relevant parts of IEC 61346;		S S
NIS.	– instructions / manuals are in accordance with IEC 62079.	Wis wis	115
0.,		0, 0,	0.
A. 3	– parts lists where provided are in accordance with IEC 62027, class B.	À À À	1 3
17.4	Installation documents giving all information	× <u> </u>	
17.4	necessary for the preliminary work of setting up the	all's all's	0110
× ×	machine (including commissioning) are provided.		
This Test Report is issu	ed by the Company subject to its Conditions of issuance of Test Reports printed overleaf and is intended for you	ur exclusive use. Attention is drawn to the limit	ations of
days from date of issua	and jurisdictional policies defined therein. This test report includes all of the tests requested by you and the resul ance of this test report to notify us of any error or omission caused by our negligence. Provided, however, that suc o raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness o	h notice shall be in writing and shall specifical	y address the iss
wish to raise. A failure t contents.	o raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness o	i ins report, the tests conducted and the corre	curess or the repo





CERT Page 98 of 106

OVIS-CE VIS-CERT Report No.: OViSCE2104-032M

	EN 60204-1		
Clause	Requirement + Test	Result-Remark	Verdict
OVISION	(In complex cases, it may be necessary to refer to the assembly drawings for details.)	ONESCO ONESCO	OVISION
OVIS-CERT	The recommended position, type, and cross-sectional areas of the supply cables to be installed on are clearly indicated.	Chi OVIS-CERI OVIS-CERI	P.F.
OVIS-CERT	Data necessary for choosing the type, characteristics, rated currents, and setting of the overcurrent protective device for the supply conductors to the electrical equipment of the machine is stated (see 7.2.2).	ERI OVIS-CERI OVIS-CERI	OVIS-CER
ON'S OF M	The size, purpose, and location of any ducts in the foundation that are to be provided by the user are detailed (see Annex B).	NIS CHI OVIS CHI	OVISPER
OVIS-CERT	The size, type, and purpose of ducts, cable trays, or cable supports between the machine and the associated equipment that are to be provided by the user are detailed (see Annex B).	SERI ONIS-CERI OVIS-CERI	OVIS CER
	A diagram indicates where space is required for the removal or servicing of the electrical equipment.	and south south	P
	An interconnection diagram or table is provided, where it is appropriate. They give full information about all external connections.	AT AT AT	ON P
ONIS-OL	Where the electrical equipment is intended to be operated from more than one source of electrical supply, the interconnection diagram or table does indicate the modifications or interconnections	EAL SEAL SEA	OVICE CERT
17.5	 required for the use of each supply. Where it is necessary to facilitate the understanding of the principles of operation, an overview diagram is provided. 	at at at	ON P
17.6	The circuit diagram shows the electrical circuits on the machine and its associated electrical equipment. Any graphical symbol not shown in IEC 60617-DB:2001 are separately described on the diagrams or supporting documents.	EFT SEFT SEF	P
OVIS ERI	The symbols and identification of components and devices are consistent throughout all documents and on the machine.	CAL CALL	O ^N P
owis of hi	Switch symbols on the electromechanical diagrams are shown with all supplies turned off (for example electricity, air, water, lubricant) and with the machine and its electrical equipment ready for a normal start.	CHI CERI CERI	ovi ^s P
OVIS CERT	Conductors are identified in accordance with 13.2. Characteristics relating to the function of the control devices and components which are not evident from their symbolic representation are included on the diagrams adjacent to the symbol or referenced to a footnote.	SERT ONIS CERT OVIS CERT	OVIS ^O P
17.7	An operating manual detailing proper procedures for set-up and use of the electrical equipment is provided.	ERT MISCERT MISCERT	PLA
OVIS-CERT	Particular attention is given to the safety measures. Where the operation of the equipment can be programmed, detailed information on methods of programming, equipment required, program verification, and additional safety procedures (where	SEAT OUTS OFFICE OUTS OFFICE	P



SERI Page 99 of 106 _.......

OVIS-CE 6415-CERT Report No.: OViSCE2104-032M



'iS-CERT	EN 60204-1	<u> </u>	64
Clause	Requirement + Test	Result-Remark	Verdict
S.			S.
NIS.	required) is given.	NIS NIS	The
17.8	A maintenance manual detailing proper procedures for adjustment, servicing and preventive inspection, and repair is provided.	SEATS.CEATS.CEAT	P
	Recommendations on maintenance/service intervals and records are part of that manual.		ON'
ON'S OF	Where methods for the verification of proper operation are provided (for example software testing programs), the use of those methods is detailed	ovision ovision	OVISIOL
17.9	The parts list, where provided, comprises, as a minimum, information necessary for ordering spare or replacement parts (for example components, devices, software, test equipment, technical	CERT OVISCERT OVISCERT	PERI

a) verification documentat b) in case of p conditions f according to c) insulation re d) voltage test e) protection a f) functional te 18.2 Verification of 18.2.2 Test 1: Verifica The resistance between the F part of each p with a current	verification will be hine. Where then verifications shall ne or more of the that the electrical ion; rotection against or protection by a 0.18.2; esistance test (se (see 18.4); against residual ve sts (see 18.6). conditions for pro- ation of the contin e of each protection the terminal and re- rotective bonding	re is no dedica a laways include a items c) to e l equipment c t indirect conta automatic disc ee 18.3); roltage (see 1 otection by au nuity of the pro- ive bonding ci elevant points	ated produ de the item e): complies w act by auto connection 8.5); utomatic di otective bo ircuit	ict standard ns a), b) and tith its techn omatic disco shall be ve	for the d f) and ical onnection, rified		OVISCO
a) verification documentat b) in case of p conditions f according to c) insulation re d) voltage test e) protection a f) functional te 18.2 Verification of 18.2.2 Test 1: Verifica The resistance between the F part of each p with a current	hine. Where then verifications shall ne or more of the that the electrical ion; rotection against or protection by a b 18.2; esistance test (se (see 18.4); igainst residual ve sts (see 18.6). <u>conditions for pro- ation of the contin</u> e of each protection the terminal and re- rotective bonding	re is no dedica a laways include a items c) to e l equipment c t indirect conta automatic disc ee 18.3); roltage (see 1 otection by au nuity of the pro- ive bonding ci elevant points	ated produ de the item e): complies w act by auto connection 8.5); utomatic di otective bo ircuit	ict standard ns a), b) and tith its techn omatic disco shall be ve	for the d f) and ical onnection, rified		04120 04120 04120 04120 04120 04120
documentat b) in case of p conditions f according to c) insulation re d) voltage test e) protection a f) functional te 18.2 Verification of 18.2.2 Test 1: Verifica The resistance between the F part of each p with a current	ion; rotection against or protection by a o 18.2; esistance test (se (see 18.4); against residual ve sts (see 18.6). conditions for pro- ation of the contin e of each protection te terminal and re- rotective bonding	t indirect conta automatic disc ee 18.3); roltage (see 1 otection by au nuity of the pro- ive bonding ci elevant points	act by auto connection 8.5); utomatic di otective bo ircuit	omatic disco shall be ve	onnection, rified		OVISC OVISC
d) voltage test e) protection a f) functional te 18.2 Verification of 18.2.2 Test 1: Verifica The resistance between the F part of each p with a current	(see 18.4); Igainst residual version sts (see 18.6). conditions for pro- ation of the contin e of each protection E terminal and re- rotective bonding	roltage (see 1 otection by au nuity of the pro ive bonding ci elevant points	utomatic di otective bo ircuit	.5		P —	ovis.
18.2.2 Test 1: Verification of the resistance between the F part of each p with a current	ation of the contin e of each protecti E terminal and re rotective bonding	nuity of the pro ive bonding ci elevant points	otective bo	.5		P –	V15-
The resistance between the F part of each p with a current	e of each protectine E terminal and reprotective bonding	ive bonding ci elevant points	ircuit	onding circu	it Ni	_	112
between the F part of each p with a current	E terminal and re rotective bonding	elevant points		~			
range accordi	between at least ance measured is ng to the length, t naterial of the rela	: 0,2 A. s in the expec the cross sec	asured cted :tional		N OWIS OFFIC	Portsoffic	OVIS
Test 2: Fault lo	oop impedance ve otective device.	erification and	d suitability	y of the ass	ociated	P	
incoming exte	ns of the power s rnal protective co machine are ver	onductor to the	e PE	67 69 69	107 CERT	° P	0
disconnection and Annex A a 1) A verificatio - calculation, o		ordance with 6 : o impedance l	6.3.3			N/A	01415 1415
- measuremer	nt in accordance v	with A.4, and	0,	0"	0"	0.	0,,





CERT Page 100 of 106

OVISICE OVIS-CERT Report No.: OViSCE2104-032M

01	EN 60204-1	Descritt Descende	Manaliat
Clause	Requirement + Test	Result-Remark	Verdict
OVIS CERT	2) A confirmation that the setting and characteristics of the associated overcurrent protective device are in accordance with the requirements of Annex A or table 10	ONTO ONTO	N/A
18.3 18.4	Insulation resistance tests (facultative) The insulation resistance measured at 500 V d.c. between the power circuit conductors and the protective bonding circuit are not less than 1 M Ω . Voltage test (facultative) Testing voltage; twice the rated supply voltage of the	OVIS OVIS OVIS	ON P
OVIS-OFFI	equipment or 1 000 V whichever is the greater With test voltage applied between the power circuit conductors and the protective bonding circuit for a period of approximately 1 s. there is no disruptive discharge occurred.	SET ONIS CETT ONIS CETT	ONIS-CER
18.5	Protection against residual voltages (facultative) Compliance with 6.2.4. is ensured	0412 0412	ONP
18.6	Functional tests The function of circuits for electrical safety (for example earth fault detection) is insured.	SERI SCERI SCERI	PLA
	OVIST OVIST OVIST OVIST OVIST OVIST		





	EN 60204_1A - ATTACHME	ENT	
Clause	Requirement + Test	Result-Remark	Verdict
OVIS-OFFI	ATTACHMENT TO TEST REPORT EUROPEAN GROUP DIFFERENCES AND NA SAFETY OF MACHINERY - ELECTRICAL EQUI PART 1: GENERAL REQUIREN	TIONAL DIFFERENCE PMENT OF MACHINES	S ONIS-OFF
Differenc	es according to EN 60204-1:2018	a An An	A. A
Attachme Master At Copyrigh	ent Form No EU_GD_IEC60204_1A ent Originator Electrosuisse stachment 2011-12 t © 2009 IEC System for Conformity Testing and C nt (IECEE), Geneva, Switzerland. All rights reserve	Certification of Electrica	A OVISOL
Str.			N' SER
OVIS	CENELEC COMMON MODIFICATIONS (EN)	Vis Mis Mis	Nis
1. ovis-CERT	Scope - are sewing machines, units, and systems; NOTE 7 For sewing machines, see EN 60204-31. - are hoisting machines. NOTE 8 For hoisting machines, see EN 60204-32		
3	Terms and definitions		P
3.56	Uncontrolled stop NOTE This definition does not imply any particula state of other (for example, non- electrical) stoppin devices, for example mechanical or hydraulic brakes that are outside the scope of this standard	ng	OVIS-CER
4.2 🔬	Section of equipment		S P d
4.2.2 ⁰⁰	The electrical equipment of the machine shall satisfy the safety requirements identified by the ris 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).		OVISOLA
4.4	Physical environment and operating conditions	ALS WIS WIS	ON P
4.4.1 ovisochti	The electrical equipment shall be suitable for the physical environment and operating conditions of its intended use. The requirements of 4.4.2 to 4.4. cover the physical environment and operating conditions of the majority of machines covered by this part of EN 60204. When special conditions apply or the limits specified are exceeded, an agreement between user and supplier (see 4.1) is recommended (see Annex B).	AS CONSCEPTIONS ON SOL	A P A OVISCER
4.4.3 CERT	Electrical equipment shall be capable of operating correctly in the intended ambient air temperature. The minimum requirement for all electrical equipment is correct operation between air temperatures of +5 °C and +40 °C. For very hot environments (for example hot climates, steel mills, paper mills) and for cold environments, additional measures are recommended (see Anne	NISCO OVISCO OVISCO	N REP





Page 102 of 106

	EN 60204_1A - ATTACHMEN	Г	
Clause	Requirement + Test	Result-Remark	Verdict
.5	en en en en en en en		.5
01.	6 B). 6 6 6 6	0, 0,	0
4.4.7	When equipment is subject to radiation (for example microwave, ultraviolet, lasers, X-rays), additional measures shall be taken to avoid malfunctioning of the equipment and accelerated deterioration of the insulation. A special agreement is recommended	SERIE OVIS-CERT OVIS-CERT	N/A
CV.	between the supplier and the user (see Annex B).		SV.
4.4.8	Undesirable effects of vibration, shock and bump (including those generated by the machine and its associated equipment and those created by the physical environment) shall be avoided by the selection of suitable equipment, by mounting it away from the machine, or by provision of anti- vibration	OHIS OHIS OHIS	N/A
	mountings. A special agreement is recommended between the supplier and the user (see Annex B).	A A A	A.
5415	Incoming supply conductor terminations and devices switching off	for disconnecting and	NIP
5.1 JUSCOUNT	Add: See 17.8 for the provision of instructions for maintenance.	SEAL IS-CEAL IS-CEAL	—
5.4	NOTE 2 Further information on the location and actuation of devices such as those used for the prevention of unexpected start-up is provided in EN 60447.	SERI OVISCERI OVISCERI	-
OVIS-OFFI	After the fifth paragraph, replace note 2 with: NOTE 3 The selection of a device should take into account, for example, information derived from the risk assessment, intended use and foreseeable misuse of the device. For example, the use of disconnectors, withdrawable fuse links	CERT ONIS CERT ONIS CERT	
9	Control circuits and control functions	Wis wis	-113
9.2.6.3	Enabling control (see also 10.9) is a manually activat interlock that:	ed control function	-
OVID	a) when activated allows a machine operation to be initiated by a separate start control	ONUS ONUS	N/A
	 b) when de-activated – initiates a stop function in accordance with 9.2.5.3, and – prevents initiation of machine operation. 	SERI OVIS-CERI OVIS-CERI	N/A
	Enabling control shall be so arranged as to minimize the possibility of defeating, for example by requiring the de-activation of the enabling control device before machine operation may be reinitiated. It should not be possible to defeat the enabling	CERT ONIS-CERT ONIS-CERT	N/A
	function by simple means.	or sor sor	
9.2.7.3	Stop:	ONIN ONIN	
OVIS-CERT	Cableless control stations shall include a separate and clearly identifiable means to initiate the stop function of the machine or of all the operations that can cause a hazardous situation. The actuating means to initiate this stop function shall not be marked or labelled as an emergency stop device (see10.7).	SERIE ONIS-CERT ONIS-CERT	OVIS-OFFI
10	Operator interface and machine-mounted control dev	vices	011





Page 103 of 106

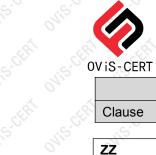
		EN 60	204_1A - ATTACHMEN	Т				
Clause	Requirement	+ Test	Result-Remark	Verdio				
.5	.5 .5	.5		.5				
	Replace table 2 with Table 2 – Colour coding for push-button actuators and their meanings							
	Colour	Meaning	Explanation	Examples of application	011			
	RED	Emergency	Actuate in the event of a hazardous situation or emergency	Emergency stop Initiation of emergency function (see also 10.2.1)	S S			
	YELLOW	Abnormal	Actuate in the event of an abnormal condition	Intervention to suppress abnormal condition Intervention to restart an interrupted automatic cycle	S OWIS			
	BLUE	Mandatory	Actuate for a condition requiring mandatory action	Reset function	.5			
	GREEN	Normal	Actuate to initiate normal conditions	(See 10.2.1)	011			
	WHITE	A A	AN AN	START/ON (preferred) STOP/OFF	8			
	GREY	No specific meaning assigned	For general initiation of functions except for emergency stop	START/ON STOP/OFF	1.5			
	BLACK			START/ON STOP/OFF (preferred)				
CH.	dir d	17. (T)		To To To	- 3			
12	Conductors a	nd cables			J'P			
12.7.8	Construction slip-ring asse		n of conductor wire, cond	luctor bar systems and				
OVIS-CERT	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)							
17.	Technical doc		0, 0, 0,	0, 0,	01.			
17.2 OVISCERI	Information to be provided 3) information on the physical environment (forexample lighting, vibration, atmospheric contaminants) where appropriate;							
18	Verification	in in	A A	à à à	N/A			
18.1	measuring ec 61557 series NOTE For oth standard mea	ccordance wit juipment in ac is applicable. her tests as re asuring equipm	h 18.2 and 18.3, cordance with the EN quired by this nent in accordance ean Standards	SERIE NISSERIE NISSER	2			

ZA	ANNEX ZA, Normative references to IEC standards (normative)	P
OVIS-CERI	 Normative references to international publications with their corresponding European publications The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies. 	-
OVISION	NISCO NISCO NISCO NISCO NISCO NISCO NISCO	04:5:01

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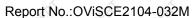


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EN 60204_1A - ATTACHMENT									
Clause	Requirement +	Test		Result-	Remark	Verdict			
15	15	15 15	115	1.5 19	i si	15	il.		
ZZ O ^{VIS-CERT}	Coverage of E This European CENELEC by the Association and	sential requirement ssential Requirement Standard has been the European Common within its scope the ements out of those	ents of EC Di prepared und ission and the e standard cov	rectives er a mandate European F vers only the	given to ree Trade following	• P —	00.0		
A ONSCHA	- 1.6.4 (for ac - 1.7.0 - 1.7.1 - 1.7.2 (for re - 1.7.4(c) Compliance wit	olation of electrical ccess to electrical e esidual risks of an el h this standard prov	quipment) ectrical nature ides one mea	e) ns of conform	nity with the		0 ^{1,} 0 ^{1,}		
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Page 1 of 2

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Appendix I

Model number SPK530,SPK530A(F),SPK450,SPK450A(F),SPK450B(F),SPT500(F),SPT750B(F),SPT1100A(F), KBZ21.5,KBZ31.5,KBZ22.2,KBZ32.2,KBZ23.7,KBZ33.7,KBZ35.5,KBZ43.7,KBZ45.5,KBZ47.5,KBZ411, KBZ415,KBZ67.5,KBZ611,KBZ615,SPSN250(F),SPSN750(F),SPSN1100(F),SV25-10-1.5(F), SV9-10-0.9F,SVX15-7-0.75(F),SVX10-12-1.1(F),SQD1.5-12-0.25L(F),SQD1.5-17-0.37L(F), SQD1.5-25-0.55L(F),SQD3-18-0.55L(F),SQD10-12-0.55L(F),SQD15-7-0.55L(F),SQD1.5-32-0.75L(F), SQD3-24-0.75L(F),SQD15-10-0.75L(F),SQD8-18-0.75L(F),SQD10-16-0.75L(F),SQD15-10-0.75L(F), SQD15-7-0.55L(F),SQD25-6-0.75L(F),SQD30-6-0.75L(F),SQD3-30-1.1L(F),SQD14-16-1.1L(F), SQD15-14-1.1L(F), SQD15-32-0.75L(F), SQD25-6-0.75L(F), SQD40-6-1.1L(F), SQX8-18-0.75L, SQX10-16-0.75L,SQX30-6-0.75L,SQX3-30-1.1L,SQX14-16-1.1L,SQX15-14-1.1L,SQX40-6-1.1L SQX25-12-1.5L,SQX40-9-1.5L,SPC180(F),SPC250(F),SPC370(F),SPC400(F),SPC550(F),SPC750(F), SPC1100(F), SPC-Y1, SPC-Y1.5, SPC-Y2.2, SPC-1.5-Y1F, SPC2-Y1.5F, SPC-3-Y2.2F, SPC2-60/6-1.1(F), SPC3-18-0.55(F), SPC3-24-0.75(F), SPC5-10-0.25(F), SPC6-32-1.5(F), SPC6-7-0.18(F), SPC7-8-0.25(F), SPC8-20-1.5, SPC9-6-0.45F, SPC10-15-0.9F, SPC10-10-0.55(F), SPC10-18-1.1S, SPC10-18-1.1F,SPC10-16-0.75(F),SPC15-15-1.1(F),SPC25-12/1.5,SPC30-6-0.75(F), SPC37-4-0.75(F),SPC40-7-1.1(F),SPC40-9-1.5(F),SPC60-18-5.5,SPC6-18-0.75(F),SPC6-28/2-1.1(F), SPC6-28/2-1.1A(F), SPC2-40/4-0.75F, SPC2-50/5-0.9(F), SPC2-60/6-1.1(F), SPC5-30/3-1.1(F), SPC5-40/4-1.5(F), SPC5-50/5-2.2(F), SPC3-65/6-2.2(F), SPC6-28/2-1.1A(F), SPC6-39/3-1.5A(F), SPC4-60/4-2.2A(F),SVQ180(F),SVQ250(F),SVQ370F,SVQ450AF,SVQ450(F),SVQ750(F), SVQ1100(F), SVQ1500(F), SVQ1500A, SVQ2200(F), SVQ2200A, SVD750F, SVD1100(F), SVD1300(F), SVD1800(F), SVD2200(F), SWVSD55(F), SWVSD75(F), SWVSD110(F), SWVSD55A, SWVSD75A, SWVS75(F),SWVS110(F),SWVS75A,SVSC25-10-2.2,SVSC35-10-3,SWQ10-10-0.75G, SWQ12-10-1.1G ,SWQ15-15-1.5G,SWQ25-10-1.5G,SWQ9-22-2.2G,SWQ25-15-2.2G,SWQ45-9-2.2G, SWQ20-22-3G,SWQ35-15-3G,SWQ43-13-3G,SWQ25-22-4G,SWQ45-17-4G,SWQ45-20-5.5G, SWQ65-15-5.5G,SWQ20-40-7.5G,SWQ45-22-7.5(F),SWQ45-25-7.5G,SWQ100-15-7.5G, SWQ10-10-0.75T,SWQ12-10-1.1T,SWQ15-15-1.5T ,SWQ25-15-2.2G,SWQ35-15-3T,SWQ45-17-4T, SWQD6-12-0.55(F), SWQD6-16-0.75(F), SWQD10-10-0.75(F), SWQD15-9-1.1(F), SWQD7-15-1.1(F) SWQ6-16-0.75,SWQ10-10-0.75,SWQ7-15-1.1,SWQ18-15-1.5,SWQ25-7-1.5,SWQ9-22-2.2, SWQ25-15-2.2,SWQ42-9-2.2,SWQ15-30-3,SWQ25-20-3,SWQ43-13-3,SWQ50-10-3,SWQ40-15-4, SWQ60-10-4.SWQ15-40-5.5,SWQ30-30-5.5,SWQ65-15-5.5,SWQ65-20-7.5,SWQ80-15-7.5, SWQ100-10-7.5,SWQ100-25-11,SWQ130-15-11,SWQ150-13-11,SWQ180-11-11,SWQ300-7-11, SWQ360-6-11,SWQ100-30-15,SWQ150-17-15,SWQ180-15-15,SWQ250-11-15,SWQ400-7-15, SWQ100-35-18.5.SWQ180-20-18.5.SWQ250-15-18.5.SWQ350-10-18.5.SWQ100-40-22. SWQ130-30-22,SWQ180-25-22,SWQ250-18-22,SWQ400-10-22,SWQ18-15-1.5(F),SVP180(F), SVP250(F),SVP370(F),SPP2.5-26/3-0.55F,SPP2-5.5-0.18F,SPP2-4.5-0.1,SPP100(F),SPP120, SPP250(F),SPP370B,SPP250A(F),SPP370A(F),SPP370(F),PVX10,PVX10T,PVX10-1(F),

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PVX10-1T(F), PVX12-1(F), PVX12-1T(F), PCMD-12S(F), PCMD-12T(F), PCMD-14S(F), PCMD-14T(F), PCMD-17S,PCMD-17T(F),PCMD-20S(F),PCMD-20T(F),PCMD-14S,PCMD-14T,75TMP-2.15, 75TMP-2.25,100TMP-2.4,50TPS(F)-2.12,50TPS(F)-2.15,50TPS(F)-2.4,SVS700F,SVSP1100, S95C-1500(T),SNQ200,SNQ250,SPA200,SPA250,SPA350,SPA400,SPA500,SPA550,SPA750, SPA900 ,SPB250,SPB400,SPB500,SPB550,SPB650,SPB750,SPB900,SPB1100,SGP250,SGP400, SGP500,SGPS500,SGP550,SGP750,SGP900,SGW400,SGW550,SGW750,SGW900,SGW1100, SGW400N-1,SGW550N-1,SGW750N-1,SGW900N-1,SGW1100N-1,SGW400N-2,SGW550N-2, SGW750N-2,SGW900N-2,SGW1100N-2,SGW400-P,SGW550-P,SGW750-P,SGW900-P,SGW1100-P, SPA200N, SPA250N, SPA350N, SPA400N, SPA500N, SPA550N, SPA750N, SPA900N, SPA1100N, SPB400N,SPB550N,SPB750N,SPB900N,SPB1100N,SGW400N,SGW550N,SGW750N,SGW900N, SGW1100N ,SPW400N ,SPW550N,SPW750N,SPW900N,SPW1100N ,SPW400,SPW550,SPW750, SPW900,SPW1100,SPWS400,SPWS550,SPWS650,SPWS750,SPWS810,SPWS900,SPWS1100, SPU400.SPU550.SPU750.SPU900.SPU1100.SPM250.SPM400.SPM500.SPM750.SPM900. SPM1100.SSM400.SSM550.SSM750.SSM900 .SSM1100.SQ250AN.SQ400AN.SQ550AN.SQ750AN. SQ900AN,SQ1100AN,SQ2501A,SQ4001A,SQ5001A,SQ5501A,SQ7501A,SQ4001B,SQ5501B, SQ7501B.SQ9001B.SQ45013.SQ250.SQ400.SQ2501A.SQ9001A.SQ11001A.SQ11001B.SKQ30HM. SKQ35HM,SKQ90015,SNR350-1,SNR350-2,SPA250S,SPA400S,SPA550S,SPA750S,SPA900S, SPB400S,SPB550S,SPB750S,SPB900S,SPB1100S,SPA250SD,SPA400SD,SQ110035HM,SQ30HM, SQ35HM,SHS1000-IN,SHS1200 -IN,SHP1000-IN,SHP1200-IN,SHP1000,SHP1200,SHO1000, SHO1200,2SP,2.5SP,3SQ3,3SP(T)2,3SP(T)3,3SP(T)4,3SP2-15B,3SP2-21B,3SP2-27B,3SP2-38B, 3SP2.5-11B.3SP2.5-16B.3SP2.5-21B.3SP2.5-26B .3SP2.5-37B.3SPC2-15.3SPC2-21.3SPC2-33. 3SPC2-21B, 3SPC2-33B,3.5SP(T)2,3.5SP(T)3,3.5SP(T)4 ,3.5SP(T)6,4SPC4-10,4SPC4-13,4SP(T)2, 4SP(T)3,4SP(T)4,4SP(T)6,4SP(T)8,4SP(T)10,4SP(T)12,5SP(T)10,5SP(T)15,5SP(T)22,5SP(T)30, 6SP(T)15,6SP(T)25,6SP(T)35,6SP(T)45,4SG(T)2,4SG(T)3,4SG(T)5,4SG(T)8,4SG(T)14,6CS(S)17, 6CS(S)30,6CS(S)46,6CS(S)60,8CS77,8CS95,6SR(T)18,6SR(T)30,6SR(T)45,6SR(T)60,SCM3, SCM5,SCM6,SCM8,SCM7A,SCM8A,SCM4,5SM208,3SKM75,3SKM100,4SKM100,4SKM150, 4SKM200,3SNK(M),4SNK(M),SQGDA,3SQGD,4SQGD,SVPM180,SVPM280,SVPM350, SVPM350-2,WL,WL600A

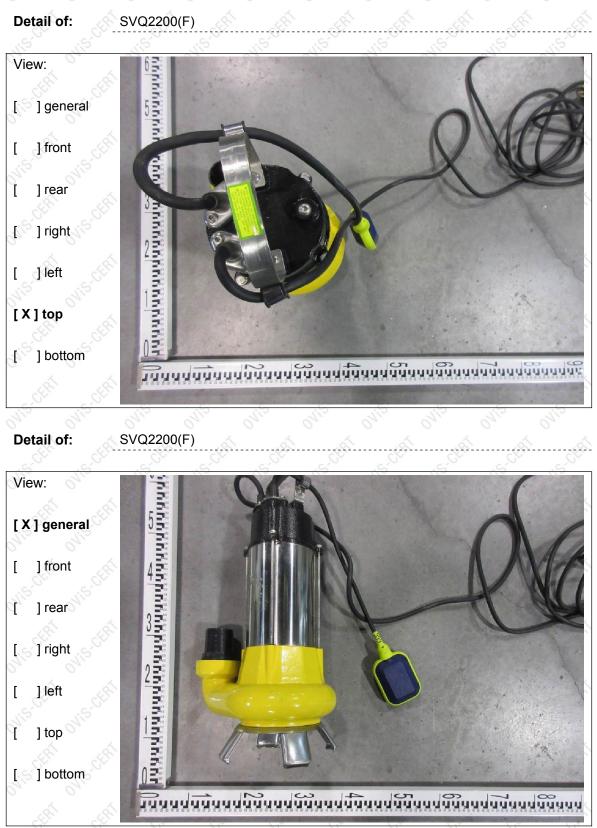
...End of Models...

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Page 1 of 2

Appendix I Photo documentation Water Pumps(Submersible Pump) SVQ2200(F)



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OVIS-CERT Page 2 of 2

Appendix I Photo documentation Water Pumps(Submersible Pump) SVQ2200(F)



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REMARKS

1. This report is invalid without the seal of special stamp for OViS test report and invalid if altered.

2. The copy of this report is invalid without a new seal of special stamp for OViS test report and invalid if altered.

3. This report is invalid without seals or signatures of Tester, Checker and Approval.

4. If there is no special announcement in this report, the informat ion of producer and samples is not identified by OViS, the customer is responsible for truth of the samples.

5. Objections to the test report must be submitted to OViS within 15 days.

6. The test results shown in this report is only applicable for the samples supplied directly by the customer and accepted by the test organization, the customer shall not propagandize improperly without permission by OViS.

7. "P" means "pass", "F" means "fail", "N/A" or "—" means "not applicable" and " / "means "not test".

Address: 4th Floor, Building 4, No. 888 Donghuan Road,Development Zone, Taizhou City, Zhejiang P.R.China Tel: 400-8008-959 Post Code: 318000 E-mail:info@ovis-lab.com http://www.ovis-lab.com

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