Technical Construction File

File No：XJ2018062502MD

According to

2006/42/EC Machinery Directive

related to the

Suction Cup Lifter
MODEL : ANB010/012

presented by

GUANGDONG JINLAI METAL PRODUCTS CO.,LTD
Jinxin Rd, Jinlong Avenue, Jinsheng Industrial Park, Jinli Town, Gaoyao Zhaoqing City, Guangdong Province, China

Content

1. General description

This machine is a kind of suction cup lifter to lifting things.

Basically, this kind of machine belongs to general machine and with low risk when using it. All possible risks have been analysis in the risk assessment report and been prevent by suitable ways.

The main risk of this kind of machine could be:
- The risk of access to the moving parts.
- The risk of access to the power transmission elements.

In order to prevent the main risks mentioned above, the protection guarding system are provided, and all the detail safety provision are constructed in accordance with the requirement of EN ISO 12100:2010.

In order to ensure the conformity for CE marking for these machines, some main European and/or International standards have been used to made assessment of conformity, they are：
－EN ISO 12100 for checking of mechanical structures and carrying out risk assessment;

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

2. Variations of the series products

Regarding the whole family of the series, they can be divided into various different groups according to their main feature.

All models are with the same machine structure but with some small differences as described as the following:

1. The weight is different.
2. The dimension is different.

To present the conformity of this series machine with Machinery Directive, we discuss the conformity systematically with the relative Directive and standards for ANB010 as a basic evaluation in clause.

3. List of applicable regulations and standards

Regulations
Ÿ Machinery Directive: 2006/42/EC
Standards
Ÿ EN ISO 12100: 2010
Safety of machinery — General principles for design — Risk assessment and risk reduction.

4. Quality control system

In order to ensure the conformity of the series production, the GUANGDONG JINLAI METAL PRODUCTS CO.,LTD has taken the related procedures mentioned below：

（1）Apply for the consultant form the qualified body in Turkey.

The JINLAI has applied for the consultant from Technical Inspection Certification.
The complete technical construction file（TCF）have been established before applying for the CE marking certificate.

（2）Carry out the inspection for parts and components according to the TCF

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

（3）Carry out the inspection ＆ testing for the products before packing

Before packing the products, the QC engineers of JINLAI have to do the necessary inspection and testing to ensure the conformity of related requirements. In particular, they should do the testing and inspection of electrical characteristics and outer feature.

（4）Carry out the inspection for the package.

After finishing the necessary inspection and testing for the products, an inspection for the packing has to be done to ensure the necessary elements being included in this packing before shipment.

（5）Provision for the change of design

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

（6）Provision for the Quality Assurance

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

5. Declaration of conformity

EC Declaration of conformity

Council Directive 2006/42/EC on Machinery Directive

GUANGDONG JINLAI METAL PRODUCTS CO.,LTD
Jinxin Rd, Jinlong Avenue, Jinsheng Industrial Park, Jinli Town, Gaoyao Zhaoqing City, Guangdong Province, China

Certify that the product described is in conformity with the Directive 2006/42/EC&MD

Suction Cup Lifter
Models No: ANB010/012

The product has been assessed by the application of the following standards:

EN ISO 12100:2010

Issue place and date: Guangdong

Company stamp and Signature of authorized personnel: LI

6. Essential health and safety requirements checklist

Clause	Requirement-Test	Verdict and Result-Remark
1	Essential health and safety requirements	-
1.1	General remarks	-
1.1.1	Definitions	-
1.1.2	Principles of safety integration	-
a)	Machinery must be designed and constructed so that it is fitted for its function, and can be operated, adjusted and maintained without putting persons at risk when these operations are carried out under the conditions foreseen but also taking into account any reasonably foreseeable misuse thereof.	Pass. These requirements have been complied with.
	The aim of measures taken must be to eliminate any risk throughout the foreseeable lifetime of the machinery including the phases of transport, assembly, dismantling, disabling and scrapping.	Pass. These requirements have been complied with.
b)	In selecting the most appropriate methods, the manufacturer or his authorized representative must apply the following principles, in the order given:	-
	- eliminate or reduce risks as far as possible (inherently safe machinery design and construction),	Pass. Effective means have been carried out for this purpose.
	- take the necessary protective measures in relation to risks that cannot be eliminated	Pass. It meets the requirements after checking.
	- inform users of the residual risks due to any shortcomings of the protective measures adopted, indicate whether any particular training is required and specify any need to provide personal protective equipment.	Pass. It meets the requirements after checking.
c)	When designing and constructing machinery and when drafting the instructions, the manufacturer or his authorized representative must envisage not only the intended use of the machinery but also any reasonably foreseeable misuse thereof	Pass. It meets the requirements after checking.
	The machinery must be designed and constructed in such a way as to prevent abnormal use if such use would engender a risk. Where appropriate, the instructions must draw the user's attention to ways – which experience has shown might occur – in which the machinery should not be used.	Pass. These requirements have been complied with, and the related information also has been provided within the instruction manual.
d)	Machinery must be designed and constructed to take account of the constraints to which the operator is subject as a result of the necessary or foreseeable use of personal protective equipment.	Pass. These requirements have been taken into account during the design of this machine.
e)	Machinery must be supplied with all the special equipment and accessories essential to enable it to be adjusted, maintained and used safely.	Pass. These requirements have been complied with.
1.1.3	Materials and products	-
	The materials used to construct machinery or	Pass.

Clause	Requirement-Test	Verdict and Result-Remark
	products used or created during its use must not endanger persons' safety or health. In particular, where fluids are used, machinery must be designed and constructed to prevent risks due to filling, use, recovery or draining	They cannot endanger exposed person's safety or health.
1.1.4	Lighting	-
	Machinery must be supplied with integral lighting suitable for the operations concerned where the absence thereof is likely to cause a risk despite ambient lighting of normal intensity	Not applicable.
	Machinery must be designed and constructed so that there is no area of shadow likely to cause nuisance, that there is no irritating dazzle and that there are no dangerous stroboscopic effects on moving parts due to the lighting	Pass. It meets the requirements after checking.
	Internal parts requiring frequent inspection and adjustment, and maintenance areas must be provided with appropriate lighting.	Not applicable.
1.1.5	Design of machinery to facilitate its handling	-
	Machinery or each component part thereof must:	-
	- be capable of being handled and transported safely	Pass. It meets the requirements after checking.
	- be packaged or designed so that it can be stored safely and without damage	Pass. It meets the requirements after checking.
	During the transportation of the machinery and/or its component parts, there must be no possibility of sudden movements or of hazards due to instability as long as the machinery and/or its component parts are handled in accordance with the instructions	-
	- either be fitted with attachments for lifting gear, or	Not applicable.
	be designed so that it can be fitted with such attachments, or	Not applicable.
	be shaped in such a way that standard lifting gear can easily be attached	Not applicable.
	Where machinery or one of its component parts is to be moved by hand, it must:	-
	- either be easily movable, or	Pass.
	- be equipped for picking up and moving safely.	Pass.
	Special arrangements must be made for the handling of tools and/or machinery parts which, even if lightweight, could be hazardous.	Pass.
1.1.6	Ergonomics	-
	Under the intended conditions of use, the discomfort, fatigue and physical and psychological stress faced by the operator must be reduced to the minimum possible, taking into account ergonomic principles such as:	-

Clause	Requirement-Test	Verdict and Result-Remark
	allowing for the variability of the operator's physical dimensions, strength and stamina	Pass
	providing enough space for movements of the parts of the operator's body,	Pass
	avoiding a machine-determined work rate,	Pass
	avoiding monitoring that requires lengthy oncentration,	Pass
	adapting the man/machinery interface to the foreseeable characteristics of the operators.	Pass
1.1.7	Operating positions	
	The operating position must be designed and constructed in such a way as to avoid any risk due to exhaust gases and/or lack of oxygen.	Pass The designed and constructed is complied with
	If the machinery is intended to be used in a hazardous environment presenting risks to the health and safety of the operator or if the machinery itself gives rise to a hazardous environment, adequate means must be provided to ensure that the operator has good working conditions and is protected against any foreseeable hazards.	Not applicable the machinery is not intended to be used in a hazardous environment
	Where appropriate, the operating position must be fitted with an adequate cabin designed, constructed and/or equipped to fulfil the above requirements	Pass
	The exit must allow rapid evacuation.Moreover, when applicable, an emergency exit must be provided in a direction which is different from the usual exit.	Pass
1.1.8	Seating	
	Where appropriate and where the working conditions so permit, work stations constituting an integral part of the machinery must be designed for the installation of seats	Not applicable
	If the operator is intended to sit during operation and the operating position is an integral part of the machinery, the seat must be provided with the machinery.	Not applicable
	The operator's seat must enable him to maintain a stable position. Furthermore, the seat and its distance from the control devices must be capable of being adapted to the operator.	Not applicable
	If the machinery is subject to vibrations, the seat must be designed and constructed in such a way as to reduce the vibrations transmitted to the operator to the lowest level that is reasonably possible. The seat mountings must withstand all stresses to which they can be subjected. Where there is no floor beneath the feet of the operator, footrests covered with a slip-resistant material must be provided.	Not applicable

Clause	Requirement-Test	Verdict and Result-Remark
1.2	Controls	-
1.2.1	Safety and reliability of control systems	-
	in such a way as to prevent hazardous situations from arising. Above all, they must be designed and constructed in such a way that:	Pass. The control system for this machine is safe and reliable.
	they can withstand the intended operating stresses and external influences	Pass.
	- a fault in the hardware or the software of the control system does not lead to hazardous situations,	Pass.
	errors in the control system logic do not lead to hazardous situations,	Pass
	reasonably foreseeable human error during operation does not lead to hazardous situations.	Pass
	the machinery must not start unexpectedly,	Pass
	the parameters of the machinery must not change in an uncontrolled way, where such change may lead to hazardous situations	Pass
	the machinery must not be prevented from stopping if the stop command has already been given,	Pass
	no moving part of the machinery or piece held by the machinery must fall or be ejected,	Pass
	automatic or manual stopping of the moving parts, whatever they may be, must be unimpeded,	Pass
	the protective devices must remain fully effective or give a stop command	Pass
	the safety-related parts of the control system must apply in a coherent way to the whole of an assembly of machinery and/or partly completed machinery	Pass
	For cable-less control, an automatic stop must be activated when correct control signals are not received, including loss of communication.	Not applicable It is not a cable-less control
1.2.2	Control devices	-
	Control devices must be:	-
	- clearly visible and identifiable, using pictograms where appropriate,	Pass. These requirements have been complied with.
	-positioned in such a way as to be safely operated without hesitation or loss of time and without ambiguity,	Pass. Appropriate positions have been taken into account during design.
	- designed in such a way that the movement of the control device is consistent with its effect,	Pass.
	-located outside the danger zones, except where necessary for certain control devices such as an emergency stop or a teach pendant,	Pass. All control devices have been located outside the danger zones.
	-positioned in such a way that their operation cannot cause additional risk,	Pass. All operation of control devices

Clause	Requirement-Test	Verdict and Result-Remark
		can’t cause additional risk.
	- designed or protected in such a way that the desired effect, where a hazard is involved, can only be achieved by a deliberate action,	Pass. This requirement has been complied with.
	-made in such a way as to withstand foreseeable forces; particular attention must be paid to emergency stop devices liable to be subjected to considerable forces.	Pass. This requirement has been complied with.
	Where a control device is designed and constructed to perform several different actions, namely where there is no one-to one correspondence, the action to be performed must be clearly displayed and subject to confirmation, where necessary.	Not applicable
	Control devices must be so arranged that their layout, travel and resistance to operation are compatible with the action to be performed, taking account of ergonomic principles.	Pass
	Machinery must be fitted with indicators as required for safe operation. The operator must be able to read them from the control position.	Not applicable
	From each control position, the operator must be able to ensure that no-one is in the danger zones, or the control system must be designed and constructed in such a way that starting is prevented while someone is in the danger zone.	Not applicable
	If neither of these possibilities is applicable, before the machinery starts, an acoustic and/or visual warning signal must be given. The exposed persons must have time to leave the danger zone or prevent the machinery starting up.	Pass.
	If necessary, means must be provided to ensure that the machinery can be controlled only from control positions located in one or more predetermined zones or locations.	Not applicable
	Where there is more than one control position, the control system must be designed in such a way that the use of one of them precludes the use of the others, except for stop controls and emergency stops.	Not applicable.
	When machinery has two or more operating positions, each position must be provided with all the required control devices without the operators hindering or putting each other into a hazardous situation.	Not applicable
1.2.3	Starting	-
	It must be possible to start machinery only by voluntary actuation of a control provided for the purpose	Pass.
	The same requirement applies:	-
	- when restarting the machinery after stoppage,	Pass.

Clause	Requirement-Test	Verdict and Result-Remark
	whatever the cause	
	- when effecting a significant change in the operating conditions	Pass.
	However, the restarting of the machinery or a change in operating conditions may be effected by voluntary actuation of a device other than the control device provided for the purpose, on condition that this does not lead to a hazardous situation.	-
	For machinery functioning in automatic mode, the starting of the machinery, restarting after a stoppage, or a change in operating conditions may be possible without intervention, provided this does not lead to a hazardous situation.	Pass.
	Where machinery has several starting control devices and the operators can therefore put each other in danger, additional devices	Not applicable
	must be fitted to rule out such risks. If safety requires that starting and/or stopping must be performed in a specific sequence, there must be devices which ensure that these operations are performed in the correct order.	Pass.
1.2.4	Stopping device	-
	Normal stopping	-
	Each machine must be fitted with a control whereby the machine can be brought safety to a complete stop	Pass. A normal stop control has been provided.
	Each workstation must be fitted with a control device to stop some or all of the functions of the machinery, depending on the existing hazards, so that the machinery is rendered safe.	Pass. A normal stop control has been provided.
	The machinery's stop control must have priority over the start controls.	Pass. It has priority over the start control.
	Once the machinery or its hazardous functions have stopped, the energy supply to the actuators concerned must be cut off.	Pass.
	Operational stop	
	Where, for operational reasons, a stop control that does not cut off the energy supply to the actuators is required, the stop condition must be monitored and maintained.	Not applicable
	Emergency stop	-
	Machinery must be fitted with one or more emergency stop devices to enable actual or impending danger to be averted.	Pass.
	The following exceptions apply:	-
	- machinery in which an emergency stop device would not lessen the risk, either because it would not reduce the stopping time or because it would	Not applicable

Clause	Requirement-Test	Verdict and Result-Remark
	not enable the special measures required to deal with the risk to be taken,	
	portable hand-held and/or handguided machinery.	
	The device must:	-
	- have clearly identifiable, clearly visible and quickly accessible control devices,	Not applicable
	- stop the hazardous process as quickly as possible, without creating additional risks,	Not applicable
	- where necessary, trigger or permit the triggering of certain safeguard movements.	Not applicable
	Once active operation of the emergency stop device has ceased following a stop command, that command must be sustained by engagement of the emergency stop device until that engagement is specifically overridden; it must not be possible to engage the device without triggering a stop command; it must be possible to disengage the device only by an appropriate operation, and disengaging the device must not restart the machinery but only permit restarting.	Not applicable
	The emergency stop function must be available and operational at all times, regardless of the operating mode.	Not applicable
	Emergency stop devices must be a back-up to other safeguarding measures and not a substitute for them.	Not applicable
1.2.4.4	Assembly of machinery	
	In the case of machinery or parts of machinery designed to work together, the machinery must be designed and constructed in such a way that the stop controls, including the emergency stop devices, can stop not only the machinery itself but also all related equipment, fits continued operation may be dangerous.	Pass
1.2.5	Selection of control or operating modes	-
	The control or operating mode selected must override all other control or operating modes, with the exception of the emergency stop.	Not applicable
	If machinery has been designed and constructed to allow its use in several control or operating modes requiring different protective measures and/or work procedures,	Not applicable. No this kind of mode selection has been found.
	it must be fitted with a mode selector which can be locked in each position. Each position of the selector must be clearly identifiable and must correspond to a single operating or control mode.	Not applicable
	The selector may be replaced by another selection method which restricts the use of certain functions of the machinery or certain categories of operator	Not applicable. No this kind of mode selection has been found.
	If, for certain operations, the machinery must be	Not applicable.

Clause	Requirement-Test	Verdict and Result-Remark
	able to operate with its protection devices neutralized, the control or operating mode selector ust simultaneously	No this kind of mode selection has been found.
	- disable all other control or operating modes,	Not applicable.
	- permit operation of hazardous functions only by control devices requiring sustained action,	Not applicable.
	- permit the operation of hazardous functions only in reduced risk conditions	Not applicable.
	- permit the operation of hazardous functions only in reduced risk conditions while preventing hazards from linked sequences,	Not applicable.
	prevent any operation of hazardous functions by voluntary or involuntary action on the machine's sensors.	Not applicable. No this kind of mode selection has been found.
	If these four conditions cannot be fulfilled simultaneously, the control or operating mode selector must activate other protective measures designed and constructed to ensure a safe intervention zone.	Not applicable
	In addition, the operator must be able to control operation of the parts he is working on from the adjustment point.	Not applicable
1.2.6	Failure of the power supply	-
	The interruption, re-establishment after an interruption or fluctuation in whatever manner of the power supply to the machinery must not lead to a dangerous situation	Pass. No any dangerous situation has been found.
	Particular attention must be given to the following points:	-
	- the machinery must not start unexpectedly	Pass.
	- the parameters of the machinery must not change in an uncontrolled way when such change can lead to hazardous situations,	Pass.
	- the machinery must not be prevented from stopping if the command has already been given,	Pass.
	no moving part of the machinery or piece held by the machinery must fall or be ejected,	Pass
	- automatic or manual stopping of the moving parts whatever they may be must be unimpeded	Pass.
	- the protective devices must remain fully effective or give a stop command.	Pass.
1.3.1.	Risk of loss of stability	-
	Machinery and its components and fittings must be stable enough to avoid overturning, falling or uncontrolled movements during transportation, assembly, dismantling ,and any other action involving the machinery.	Pass
	If the shape of the machinery itself or its intended installation doesn't offer sufficient stability,	Pass

Clause	Requirement-Test	Verdict and Result-Remark
	appropriate means of anchorage must be incorporated and indicated in the instructions	
1.3.2	Risk of break-up during operation	-
	The various parts of machinery and their linkages must be able to withstand the stress to which they are subject when used when as foreseen by the manufacturer	Pass. All parts of the machine can withstand related stress when they are used.
	The durability of the materials used must be adequate for the nature of the working environment foreseen by the manufacturer or his authorized representative , in particular as regards the phenomena of fatigue, ageing, corrosion and abrasion	Pass. All materials used for this machine are appropriate for their intended use.
	The instructions must indicate the type and frequency of inspections and maintenance required for safety reasons. They must, where appropriate, indicate the parts subject to wear and the criteria for replacement.	Pass. The related information have been provided within the instruction manual.
	Where a risk of rupture or disintegration remains despite the measures taken, the parts concerned must be mounted, positioned and/or guarded in such a way that any fragments will be contained, preventing hazardous situations.	Pass.
	Both rigid and flexible pipes carrying fluids, particularly those under high pressure, must be able to withstand the foreseen internal and external stresses and must be firmly attached and/or protected to ensure that no risk is posed by a rupture.	Pass. All these requirements have been complied with.
	Where the material to be processed is fed to the tool automatically, the following conditions must be fulfilled to avoid risks to the persons exposed：	-
	- when the work piece comes into contact with the tool the later must have attained its normal working conditions	Not applicable.
	- when the tool starts and/or stops the feed movement and the tool movement must be coordinated	Not applicable.
1.3.3	Risked due to falling or ejected objects	-
	Precautions must be taken to prevent risks from falling or ejected object	Pass
1.3.4	Risks due to surfaces, edges or angles	-
	In so far as their purpose allows, accessible parts of the machinery must have no sharp edges, no sharp angles, and no rough surfaces likely to cause injury	Pass. This requirement has been complied with.
1.3.5	Risks related to combined machinery	-
	Where the machinery is intended to carry out several different operations with the manual removal of the piece between each operation, it	Not applicable. This machinery does not carry out with the manual removal of the

Clause	Requirement-Test	Verdict and Result-Remark
	must be designed and constructed in such a way as to enable each element to be used separately without the other element constituting a danger or risk for the exposed person	piece.
	For this purpose, it must be possible to start and stop separately and elements that are not protected	Not applicable.
1.3.6	Risks related to variations in operating conditions	-
	When the machine is designed to perform operations under different conditions of use, it must be designed and constructed in such a way that selection and adjustment of these conditions can be carried out safely and reliably	Pass
1.3.7	Prevention of risks related to moving parts	-
	The moving parts of machinery must be designed, built and laid out to avoid hazards or, where hazards persist, fixed with guards or protective devices in such a way as to prevent all risk of contact which could lead to accidents	Pass. This kind of contacts have been prevented by appropriate guards.
	All necessary steps must be taken to prevent accidental blockage of moving parts involved in the work. In cases where, despite the precautions taken, a blockage is likely to occur, the necessary specific protective devices and tools must, when appropriate, be provided to enable the equipment to be safely unblocked.	Pass. All necessary steps have been taken.
	The instructions and, where possible, a sign on the machinery shall identify these specific protective devices and how they are to be used.	Not applicable. No this kind of need.
1.3.8	Choice of protection against risk related to moving parts	-
	Guards or protection devices used to protect against the risks related to moving parts must be selected on the basis of the type of risk	Pass. It is in accordance with the risk assessment.
	The following guidelines must be used to help make the choice	-
	A. Moving transmission parts Guards designed to protect exposed persons against the risks associated with moving transmission parts must be：	-
	- either fixed, complying with requirements 1.4.1 and 1.4.2.1 or	See the related clauses.
	- interlocking movable guards as referred to in section 1.4.2.2.	See the related clauses.
1.3.8.2	Moving parts involved in the process	
	Guards or protective devices designed to protect persons against the hazards generated by moving parts involved in the process must be:	-
	- either fixed guards as referred to in section 1.4.2.1, or	See the related clauses.

Clause	Requirement-Test	Verdict and Result-Remark
	- interlocking movable guards as referred to in section 1.4.2.2, or	See the related clauses.
	protective devices as referred to in section 1.4.3, or	
	a combination of the above.	
	However, when certain moving parts directly involved in the process can't be completely or partially inaccessible during operation owing to operations requiring near-by operator intervention, where technically possible such parts must be fitted with：	-
	-fixed guards or interlocking movable guards preventing access to those sections of the parts that are not used in the work,	Pass
	- adjustable guards as referred to in section 1.4.2.3 restricting access to those sections of the moving parts where access is necessary.	See the related clauses.
1.3.9	Risks of uncontrolled movements	
	When a part of the machinery has been stopped, any drift away from the stopping position, for whatever reason other than action on the control devices, must be prevented or must be such that it does not present a hazard	Not applicable
1.4	Required characteristics of guards and protection devices	-
1.4.1	General requirement	-
	Guards and protection devices must:	-
	- be of robust construction	Pass.
	- be securely held in place,	Pass.
	- not be easy to bypass or render non-operational	Pass.
	- be located at an adequate distance from the danger zone	Pass.
	- cause minimum obstruction to the view id the production process	Pass.
	- In addition, guards must, where possible, protect against the ejection or falling of materials or objects and against emissions generated by the machinery.	Pass.
1.4.2	Special requirements for guards	-
1.4.2.1	Fixed guards	-
	Fixed guards must be fixed by systems that can be opened or removed only with tools.	Pass. They all be securely held in place.
	They must be fixed by system that can be opened only with tools	Pass. They all can be opened only with tools.
	Their fixing systems must remain attached to the guards or to the machinery when the guards are removed.	Pass

Clause	Requirement-Test	Verdict and Result-Remark
	Where possible, guards must be unable to remain in place without their fixings	Not applicable.
1.4.4.2	Interlocking movable guards must:	-
	as far as possible remain attached to the machinery when open,	-
	be designed and constructed in such a way that they can be adjusted only by means of an intentional action. [See 3rd hyphen of old 1.4.2.2 B]	Not applicable
	Interlocking movable guards must be associated with an interlocking device that	-
	prevents the start of hazardous machinery functions until they are closed, and	-
	gives a stop command whenever they are no longer closed.	-
	Where it is possible for an operator to reach the danger zone before the risk due to the hazardous machinery functions has ceased, movable guards must be associated with a guard locking device in addition to an interlocking device that	-
	prevents the start of hazardous machinery functions until the guard is closed and locked, and	Not applicable
	keeps the guard closed and locked until the risk of injury from the hazardous machinery functions has ceased.	Not applicable
	Interlocking movable guards must be designed in such a way that the absence or failure of one of their components prevents starting or stops the hazardous machinery functions	Not applicable
1.4.2.3	Adjustable guards restricting access	-
	Adjustable guards restricting access to those areas of the moving parts strictly necessary for the work must:	-
	- be adjustable manually or automatically according to the type of work involved	Not applicable
	- be readily adjustable without the use of tools	Not applicable
	- reduce as far as possible the risk of ejection	Not applicable
1.4.3	Special requirements for protection devices	-
	Protection devices must be designed and incorporated into the control system so that:	-
	- moving parts can’t start up while they are within the operator’s reach	Not applicable
	- the exposed person can’t reach moving parts once they have started up	Not applicable
	- they can be adjusted only by means of an intentional action, such as the use of a tool, etc.	Not applicable
	-the absence or failure of one of their components prevents starting or stops the moving parts	Not applicable
1.5	Protection against other hazards	-
	Electricity supply	-

Clause	Requirement-Test	Verdict and Result-Remark
	Where machinery has an electricity supply it must be designed, constructed and equipped so that all hazards of an electrical nature are or can be prevented	Pass
	The safety objectives set out in Directive 73/23/EEC shall apply to machinery. However, the obligations concerning conformity assessment and the placing on the market and/or putting into service of machinery with regard to electrical hazards are governed solely by this Directive.	Pass
1.5.2	Static electricity	-
	Machinery must be so designed and constructed as to prevent or limit the build-up of potentially dangerous electrostatic changes and/or be fitted with a discharging system	Pass .
1.5.3	Energy supply other than electricity	-
	Where machinery is powered by an energy other than electricity, it must be so designed, constructed and equipped as to avoid all potential hazards associated with these types of energy	Pass. No any additional hazard has been found for energy supply.
1.5.4	Error of fitting	-
	Errors likely to be made when fitting or refitting certain parts which could be a source of risk must be made impossible by the design and construction of such parts or, failing this, by information given on the parts themselves and/or their housings. The same information must be given on moving parts and/or their housings where the direction of movement needs to be known in order to avoid a risk.	Pass.
	Where necessary, the instructions must give further information on these risks.	Pass.
	Where a faulty connection can be the source of risk, incorrect connections must be made impossible by design or, failing this, by information given on the elements to be connected and, where appropriate, on the means of connection	Pass. All related information have been provided within the instruction manual.
1.5.5	Extreme temperatures	-
	Step must be taken to eliminate any risk of injury caused by contact with or proximity to machinery parts or materials at high or very low temperatures	Pass. Sufficient safety protection for extreme temperatures has been provided.
	The necessary steps must also be taken to avoid or protect against the risk of hot or very cold material being ejected.	Pass
1.5.6	Fire	-
	Machinery must be designed and constructed to avoid all risk of fire or overheating posed by the machinery itself or by gases, liquids, dusts, vapors or the other substances produced or used by the	Pass. The design and construction of this machine are in conformity with these requirements.

Clause	Requirement-Test	Verdict and Result-Remark
	machinery	
1.5.7	Explosion	-
	Machinery must be designed and constructed to avoid any risk of explosion posed by the machinery itself or by gases, liquids, dusts, vapors or other substances produced or used by the machinery	Pass. The design and construction of this machine are in conformity with these requirements.
	Machinery must comply, as far as the risk of explosion due to its use in a potentially explosive atmosphere is concerned, with the provisions of the specific Community Directives.	
1.5.8	Noise	-
	Machinery must be designed and constructed in such a way that risks resulting from the emission of airborne noise are reduced to the lowest level, taking account of technical progress and the availability of means of reducing noise, in particular at source.	Pass. The design and construction of this machine are in conformity with this requirements.
	The level of noise emission may be assessed with reference to comparative emission data for similar machinery.	Pass
1.5.9	Vibration	-
	Machinery must be so designed and constructed that risks resulting from the vibrations produced by the machinery are reduced to the lowest level, taking account of technical progress and the availability of means of reducing vibration, in particular at source	Pass
	The level of vibration emission may be assessed with reference to comparative emission data for similar machinery.	Pass
1.5.10	Radiation	-
	Undesirable radiation emissions from the machinery must be eliminated or be reduced to levels that do not have adverse effects on persons	Not applicable
	Any functional ionising radiation emissions must be limited to the lowest level which is sufficient for the proper functioning of the machinery during setting, operation and cleaning. Where a risk exists, the necessary protective measures must be taken.	Not applicable
	Any functional non-ionising radiation emissions during setting, operation and cleaning must be limited to levels that do not have adverse effects on persons.	Not applicable
1.5.11	External radiation	-
	Machinery must be so designed and constructed that external radiation doesn’t interfere with its operation	Not applicable
1.5.12	Laser equipment	-
	Where laser equipment is used, the following	Not applicable

Clause	Requirement-Test	Verdict and Result-Remark
	provisions should be taken into account;	
	- laser equipment on machinery must be designed and constructed so as to prevent any accidental radiation	Not applicable.
	- laser equipment on machinery must be protected so that effective radiation, radiation produced by reflection or diffusion and secondary radiation don't damage health	Not applicable.
	-optical equipment for the observation or adjustment of laser equipment on machinery must be such that no health risk is created by the laser rays	Not applicable.
1.5.13	Emissions of hazardous materials and substances	-
	Machinery must be designed and constructed in such a way that risks of inhalation, ingestion, contact with the skin, eyes and mucous membranes and penetration through the skin of hazardous materials and substances which it produces can be avoided.	Not applicable.
	Where a hazard can not be eliminated, the machinery must be so equipped that hazardous materials and substances can be contained, evacuated, precipitated by water spraying, filtered or treated by another equally effective method.	Not applicable
	Where the process is not totally enclosed during normal operation of the machinery, the devices for containment and/or evacuation must be situated in such a way as to have the maximum effect.	Not applicable.
1.5.14	Risk of being trapped in a machine	-
	Machinery must be so designed, constructed or fitted with a means of preventing a exposed person from being enclosed within it or, if that is impossible, with a means of summoning held	Not applicable
1.5.15	Risk of slipping, tripping or falling	-
	Parts of the machinery where persons are liable to move about or stand must be designed and constructed to prevent persons slipping, tripping or falling on or off these parts	Not applicable
	Where appropriate, these parts must be fitted with handholds that are fixed relative to the user and that enable them to maintain their stability.	Not applicable
1.5.16	Lightning	
	Machinery in need of protection against the effects of lightning while being used must be fitted with a system for conducting the resultant electrical charge to earth.	Not applicable
1.6	Maintenance	-
1.6.1	Machinery maintenance	-
	Adjustment, lubrication And maintenance points	Pass.

Clause	Requirement-Test	Verdict and Result-Remark
	must be located outside danger zones	
	It must be possible to carry out adjustment, Maintenance, repair, cleaning and servicing Operations while machinery is at a stand still	Pass.
	If one or more of the above conditions can not be satisfied for technical reasons, measures must be taken to ensure that these operations can be carried out safely (see section 1.2.5).	Not applicable. No this kind of situation.
	In the case of automated machinery and, where necessary, other machinery, a connecting device for mounting diagnostic fault-finding equipment must be provided.	Not applicable
	Automated machinery components which have to be changed frequently	Pass.
	must be capable of being removed and replaced easily and safely. Access to the components must enable these tasks to be carried out with the necessary technical means in accordance with a specified operating method	Pass. All operation methods have been specified by the manufacturer.
1.6.2	Access to operating position and servicing points	-
	Machinery must be designed and constructed in such a way as to allow access in safety to all areas where intervention is necessary during operation, adjustment and maintenance of the machinery.	Pass. Appropriate guards and safety control devices have been used.
1.6.3	Isolation of energy sources	-
	All machinery must be fitted with means to isolate it from all energy sources	Pass. The power switch has been used.
	Such isolators must be clearly identified	Pass. It has been identified clearly.
	They must be capable of being locked if reconnection could endanger exposed persons	Pass
	In the case of machinery supplied with electricity through a plug capable of being plugged into a circuit, separation of the plug is sufficient	Not applicable
	The isolator must be capable of being locked also where an operator is unable, from any of the points to which he has access, to check that the energy is still cut off	Pass.
	In the case of machinery capable of being plugged into an electricity supply, removal of the plug is sufficient, provided that the operator can check from any of the points to which he has access that the plug remains removed.	Pass.
	After the energy is cut off, it must be possible to dissipate normally any energy remaining or stored in the circuits of the machinery without risk to persons.	Not applicable. No this kind of situation.
	As an exception to the requirement laid down in the previous paragraphs, certain circuits may remain connected to their energy sources in order, for	Not applicable

Clause	Requirement-Test	Verdict and Result-Remark
	example, to hold parts, to protect information, to light interiors, etc. In this case, special steps must be taken to ensure operator safety.	
1.6.4	Operator intervention	-
	Machinery must be so designed, constructed and equipped that the need for operator intervention is limited	Pass.
	If operator intervention can't be avoided, it must be possible to carry it out easily and in safety	Not applicable
1.6.5	Cleaning of internal parts	-
	The machinery must be designed and constructed in such a way that it is possible to clean internal parts which have contained dangerous substances or preparations without entering them; any necessary unblocking must also be possible from the outside. If it is impossible to avoid entering the machinery, it must be designed and constructed in such a way as to allow cleaning to take place safely.	Pass. The design of this machine is allowed to carried out this work.
1.7	Indicators	-
	Information and warnings on the machinery should preferably be provided in the form of readily understandable symbols or pictograms. Any written or verbal information and warnings must be expressed in an official Community language or languages, which may be determined in accordance with the Treaty by the Member State in which the machinery is placed on the market and/or put into service and may be accompanied, on request, by versions in any other official Community language or languages understood by the operators. [Compare with 1.7.2 of the old directive]	Not applicable
1.7.1	Information and information devices	
	The information needed to control machinery must be provided in a form that is unambiguous and easily understood. It must not be excessive to the extent of overloading the operator.	Pass.
	Visual display units or any other interactive means of communication between the operator and the machine must be easily understood and easy to use.	Pass.
1.7.2	Warning devices	-
	Where risks remain despite the inherent safe design measures, safeguarding and complementary protective measures adopted, the necessary warnings, including warning devices, must be provided	Pass
1.7.3	Marking of machinery	-
	All machinery must be marked visibly, legibly and indelibly with the following minimum particulars:	-

Clause	Requirement-Test	Verdict and Result-Remark
	- the business name and full address of the manufacturer and, where applicable, his authorized representative,	Pass.
	- designation of the machinery,	Pass.
	- the CE Marking (see Annex III),	Pass.
	- designation of series or type,	Pass.
	serial number, if any,	Pass
	the year of construction, that is the year in which the manufacturing process is completed.	Pass
	It is prohibited to pre-date or post-date the machinery when affixing the CE marking.	Pass
	Furthermore, machinery designed and Constructed for use in a potentially explosive atmosphere must be marked accordingly.	Pass
	Machinery must also bear full information relevant to its type and essential for safe use. Such information is subject to the requirements set out in section 1.7.1.	Pass.
	Where a machine part must be handled during use with lifting equipment, its mass must be indicated legible, indelibly and unambiguously	Not applicable
	The interchangeable equipment referred to in Article 1（2）, third subparagraph, must bear the same information	Pass.
1.7.4	Instruction	-
	All machinery must be accompanied by instructions in the official Community language or languages of the Member State in which it is placed on the market and/or put into service.	Pass
	- The instructions accompanying the machinery must be either ‘Original instructions’ or a ‘Translation of the original instructions’, in which case the translation must be accompanied by the original instructions.	Pass.
	-By way of exception, the maintenance instructions intended for use by specialized personnel mandated by the manufacturer or his authorized representative may be supplied in only one Community language which the specialized personnel understand.[Compare with old 1.7.4 b]	Pass.
	- The instructions must be drafted in accordance with the principles set out below.	Pass.
1.7.4.1	General principles for the drafting of instructions	
	- (a) The instructions must be drafted in one or more official Community languages. The words ‘Original instructions’ must appear on the language version(s) verified by the manufacturer or his authorized representative.	Pass.

Clause	Requirement-Test	Verdict and Result-Remark
	- (b) Where no 'Original instructions' exist in the official language(s) of the country where the machinery is to be used, a translation into that/those language(s) must be provided by the manufacturer or his authorized representative or by the person bringing the machinery into the language area in question. The translations must bear the words 'Translation of the original instructions'.	Pass.
	- (b) Where no 'Original instructions' exist in the official language(s) of the country where the machinery is to be used, a translation into that/those language(s) must be provided by the manufacturer or his authorized representative or by the person bringing the machinery into the language area in question. The translations must bear the words 'Translation of the original instructions'.	Not applicable
	(c) The contents of the instructions must cover not only the intended use of the machinery but also take into account any reasonably foreseeable misuse thereof.	Pass
	(d) In the case of machinery intended for use by non-professional operators, the wording and layout of the instructions for use must take into account the level of general education and acumen that can reasonably be expected from such operators.	Pass
1.7.4.2	Contents of the instructions	
	Each instruction manual must contain, where applicable, at least the following information:	
	(a) the business name and full address of the manufacturer and of his authorized representative;	Pass
	(b) the designation of the machinery as marked on the machinery itself, except for the serial number (see section 1.7.3);	Pass
	(c) the EC declaration of conformity, or a document setting out the contents of the EC declaration of conformity, showing the particulars of the machinery, not necessarily including the serial number and the signature;	Pass
	(d) a general description of the machinery;	Pass
	(e) the drawings, diagrams, descriptions and explanations necessary for the use, maintenance and repair of the machinery and for checking its correct functioning;	Pass
	(f) a description of the workstation(s) likely to be occupied by operators;	Pass
	g) a description of the intended use of the machinery;	Pass

Clause	Requirement-Test	Verdict and Result-Remark
	(h) warnings concerning ways in which the machinery must not be used that experience has shown might occur;	Pass
	(i) assembly, installation and connection instructions, including drawings, diagrams and the means of attachment and the designation of the chassis or installation on which the machinery is to be mounted;	Pass
	(j) instructions relating to installation and assembly for reducing noise or vibration;	Pass
	(k) instructions for the putting into service and use of the machinery and, if necessary, instruct	Pass
	(l) information about the residual risks that remain despite the inherent safe design measures, safeguarding and complementary protective measures adopted;	Pass
	(m) instructions on the protective measures to be taken by the user, including, where appropriate, the personal protective equipment to be provided	Pass
	(n) the essential characteristics of tools which may be fitted to the machinery;	Pass
	o) the conditions in which the machinery meets the requirement of stability during use, transportation, assembly, dismantling when out of service, testing or foreseeable breakdowns;	Pass
	(p) instructions with a view to ensuring that transport, handling and storage operations can be made safely, giving the mass of the machinery and of its various parts where these are regularly to be transported separately; [Compare with the 10th hyphen of old 1.7.4. (a)]	Pass
	(q) the operating method to be followed in the event of accident or breakdown; if a blockage is likely to occur, the operating method to be followed so as to enable the equipment to be safely unblocked;	Pass
	(r) the description of the adjustment and maintenance operations that should be carried out by the user and the preventive maintenance measures that should be observed;	Pass
	(s) instructions designed to enable adjustment and maintenance to be carried out safely, including the protective measures that should be taken during these operations;	Pass
	(t) the specifications of the spare parts to be used, when these affect the health and safety of operators;	Pass
	(u) the following information on airborne noise emissions:	
	the A-weighted emission sound pressure level at	Pass

Clause	Requirement-Test	Verdict and Result-Remark
	workstations, where this exceeds 70 dB(A); where this level does not exceed 70 dB(A), this fact must be indicated,	The emission sound pressure level at workstations does not exceed 70 dB(A)
	the peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa (130 dB in relation to 20 μPa),	Pass
	the A-weighted sound power level emitted by the machinery, where the A-weighted emission sound pressure level at workstations exceeds 80 dB(A).	the A-weighted sound power level emitted does not exceed 80 dB(A).
	These values must be either those actually measured for the machinery in question or those established on the basis of measurements taken for technically comparable machinery which is representative of the machinery to be produced.	Pass
	In the case of very large machinery, instead of the A-weighted sound power level, the A-weighted emission sound pressure levels at specified positions around the machinery may be indicated.	Pass
	Where the harmonised standards are not applied, sound levels must be measured using the most appropriate method for the machinery. Whenever sound emission values are indicated the uncertainties surrounding these values must be specified.	Pass
	The operating conditions of the machinery during measurement and the measuring methods used must be described.	Pass
	Where the workstation(s) are undefined or cannot be defined, A-weighted sound pressure levels must be measured at a distance of 1 metre from the surface of the machinery and at a height of 1,6 metre from the floor or access platform. The position and value of the maximum sound pressure must be indicated.	Not applicable the workstation is defined
	Where specific Community Directives lay down other requirements for the measurement of sound pressure levels or sound power levels, those Directives must be applied and the corresponding provisions of this section shall not apply;	Not applicable
	where machinery is likely to emit nonionising radiation which may cause harm to persons, in particular persons with active or non-active implantable medical devices, information concerning the radiation emitted for the operator and exposed persons.	Not applicable
1.7.4.3	Sales literature	
	Sales literature describing the machinery must not contradict the instructions as regards health and safety aspects. Sales literature describing the performance characteristics of machinery must	Pass

Clause	Requirement-Test	Verdict and Result-Remark
	contain the same information on emissions as is contained in the instructions.	
2	Supplementary essential health And safety requirements for certain categories of machinery	Not applicable
2.1.	Foodstuffs machinery and machinery for cosmetics or pharmaceutical products	Not applicable
2.2	Portable hand-held and/or Hand-guided machinery	Not applicable
2.3	Machinery for working Wood and material with similar Physical characteristics	Not applicable
3	Essential health and safety requirement to offset the particular hazards due to the mobility machinery	Not applicable
4	Essential health and safety requirement to offset the particular hazards due to a lifting operation	Not applicable
5	Essential health and safety requirement for machinery intended for underground work	Not applicable
6	Essential health and safety requirement to offset the particular hazards due to the lifting or moving of persons	Not applicable

Confirmed By： Date：2018-06-25

7.MD test report and Risk assessment

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

S：Severity of possible harm

- S1：Slight（normally reversible）
- S2：Serious（normally irreversible）
- S3：Cause a few men die
- S4：Calamity or cause many men die

A：Frequency any duration of exposure

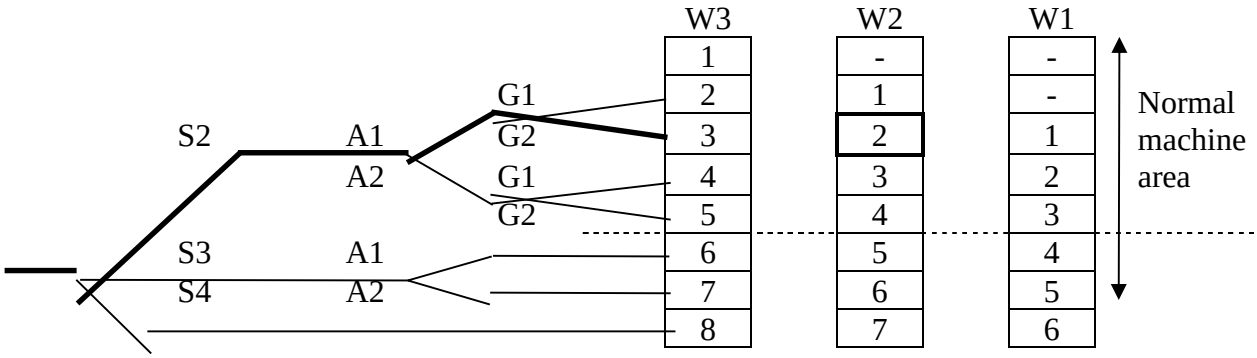
- A1：Seldom to very often
- A2：Frequent to continuous

G：Possibilities of avoidance

- G1：Possible
- G2：Impossible

W：Probability of occurrence of harm

- W1：Low
- W2：Medium
- W3：High



Solutions for the level of hazards

1：Protected by warning sign

2：Protected by guard and warning sign

3：Consider the other design, choose the best one, add both guard and warning sign

4：Consider another two design, choose the best one, add both guard and warning sign

5：Consider another three design, choose the best one, add both guard and warning sign

NO.	Hazards source	S	A	G	W	Level
Mechanical hazards						
1.0-1	Mechanical hazards due to machine parts or work pieces					
1.0-2	Mechanical hazards due to accumulation of energy inside the machinery					
1.1	Crushing					
1.2	Shearing					
1.3	Cutting or severing					
1.4	Entanglement					
1.5	Drawing-in or trapping	***2***	***1***	***1***	***2***	***1***
1.6	Impact	***2***	***1***	***1***	***2***	***1***

1.7	Stabbing or puncture					
1.8	Friction or abrasion					
1.9	High pressure fluid injection or ejection					
Electrical hazards						
2.1	Contact with live parts					
2.2	Contact with parts which have become live under faulty conditions					
2.3	Approach to live part under high voltage					
2.4	Electrostatic phenomena					
2.5	Thermal radiation or other phenomena such as projection of molten particles and chemical effects form short-circuits, overloads etc.					
Thermal hazards						
3.1	Burns, scalds and other injuries by a possible contact of persons with objects or materials with an extreme high or low temperature, by flames or explosions and also by the radiation of heat sources	***1***	***1***	***1***	***1***	**-**
3.2	Damage to health by hot or cold working environment					
Hazards generated by noise						
4.1	Hearing loss (deafness), other physiological disorders	***1***	***1***	***1***	***1***	**-**
4.2	Interference with speech communication, acoustic signals, etc.					
Hazards generated by vibration						
5.1	Use of hand-help machines resulting in a variety of neurological and vascular disorder					
5.2	Whole body vibration, particular when combined with poor postures					
Hazards generated by radiation						
6.1	Low frequency, radio frequency radiation, microwaves					
6.2	Infrared, visible and ultraviolet light					
6.3	X and gamma rays					
6.4	Alpha, beta rays, electron or ion beams, neutrons					
6.5	Lasers					
Hazards generated by materials and substances processed or used by the machinery						
7.1	Hazards from contact with or inhalation of harmful fluids, gases, mists, fumes and dusts	***1***	***1***	***1***	***1***	**-**
7.2	Fire and explosion hazard	***1***	***1***	***1***	***1***	**-**
7.3	Biological and micro-biological (viral or bacterial) hazards					
Hazards generated by neglecting ergonomic principles in machine design						
8.1	Unhealthy postures or excessive effort	***1***	***1***	***1***	***1***	**-**
8.2	Inadequate consideration of hand-arm or foot-leg anatomy					
8.3	Neglected use of personal protection equipment	***1***	***1***	***1***	***1***	**-**
8.4	Inadequate local lighting					
8.5	Mental overload or underload, stress					
8.6	Human error, human behavior	***1***	***1***	***1***	***1***	**-**
8.7	Inadequate design, location or identification of manual controls	***1***	***1***	***1***	***1***	**-**
8.8	Inadequate design, location or identification of manual controls					
Combination of hazards						
9	Combination of hazards					

Unexpected start-up, unexpected overrun/over-speed						
10.1	Failure/disorder of the control system					
10.2	Restoration of energy on supply after an interruption					
10.3	External influences on electrical equipment					
10.4	Other external influences (gravity, wind, etc.)					
10.5	Errors in the software					
10.6	Error made by the operator (due to mismatch of machinery with human characteristics and abilities, see 8.6)					
Impossibility of stopping the machine in the best possible conditions						
11	Impossibility of stopping the machine in the best possible conditions					
Variations in the rotational speed of tools						
12	Variations in the rotational speed of tools					
Failure of the power supply						
13	Failure of the power supply					
Failure of the control circuit						
14	Failure of the control circuit	***1***	***1***	***1***	***1***	**-**
Errors of fitting						
15	Errors of fitting	***1***	***1***	***1***	***1***	**-**
Break-up during operation						
16	Break-up during operation	***1***	***1***	***1***	***1***	**-**
Falling or ejected objects or fluids						
17	Falling or ejected objects or fluids	***1***	***1***	***1***	***1***	**-**
Loss of stability / overturning of machinery						
18	Loss of stability / overturning of machinery	***1***	***1***	***1***	***1***	**-**
Slip, trip and fall of persons (related to machinery)						
19	Slip, trip and fall of persons(related to machinery)	***1***	***1***	***1***	***1***	**-**
Additional hazards, hazardous situations and hazardous events due to mobility						
20	Relating to the traveling function					
20.1	Movement when starting the engine					
20.2	Movement without a driver at the driving position					
20.3	Movement without all parts in a safe position					
20.4	Excessive speed of pedestrian controlled machinery					
20.5	Excessive oscillations when moving					
20.6	Insufficient ability of machinery to be slowed down, stopped and immobilisated					
Linked to the work position (including driving station) on the machine						
21.1	Fall of persons during access to (or at/from) the work position					
21.2	Exhaust gases/lack of oxygen at the work position					
21.3	Fire（flammability of the cab, lack of extinguishing means）					
21.4	Mechanical hazards at the work position： contact with the wheels； rollover； fall of objects, penetration by objects； break-up of parts rotation at high speed； contact of persons with machine parts or tools（pedestrian controlled machines）					
21.5	Insufficient visibility form the work positions					
21.6	Inadequate lighting					

21.7	Inadequate seating					
21.8	Noise at the work position					
21.9	Vibration at the work position					
21.10	Insufficient means for evacuation/emergency exit					
Due to the control system						
22.1	Inadequate location of manual controls					
22.2	Inadequate design of manual controls and their mode of operation					
Form handling the machine（lack of stability）						
23	Form handling the machine（lack of stability）					
Due to the power source and to the transmission of power						
24.1	Hazards form the engine and the batteries	***1***	***1***	***1***	***1***	**-**
24.2	Hazards form the transmission of power between machines					
24.3	Hazards form coupling and towing					
Form/to third persons						
25.1	Unauthorized start-up/use	***1***	***1***	***1***	***2***	**-**
25.2	Drift of a part away from its stopping position					
25.3	Lack or inadequacy of visual or acoustic warning means					
Insufficient instructions for the driver/operator						
26	Insufficient instructions for the driver/operator	***1***	***1***	***1***	***1***	**-**
Additional hazards, hazardous situations and hazardous events due to lifting						
27	Mechanical hazards and hazardous events					
27.1	Form load falls, collisions, machine tipping caused by：					
27.1.1	Lack of stability					
27.1.2	Uncontrolled loading-overloading-overturning moments exceeded					
27.1.3	Uncontrolled amplitude of movements					
27.1.4	Unexpected/unintended movement of loads					
27.1.5	Inadequate holding devices/accessories					
27.1.6	Collision of more then one machine					
27.2	Form access of persons to load support					
27.3	Form derailment					
27.4	Form insufficient mechanical strength of parts					
27.5	Form inadequate selection of chains, ropes, lifting and accessories and their inadequate integration into the machine					
27.6	Form inadequate selection of chains, ropes, lifting and accessories and their inadequate integration into the machine					
27.7	Form lowering of the load under the control of friction brake					
27.8	Form abnormal conditions of assembly/testing/use/maintenance					
27.9	Form the effect of load on persons（impact by load or counterweight）					
Electrical hazards						
28.1	Form lightning					
Hazards generated by neglecting ergonomic principles						
29.1	Insufficient visibility from the driving position					
Additional hazards, hazardous and situations and hazardous events due to underground work						
30	Mechanical hazards and hazardous events due to:					
30.1	Lack of stability of powered roof supports					

30.2	Failing accelerator or brake control of machinery running on rails					
30.3	Failing or lack of dead man's control of machinery running on rails					
31	Restricted movement of persons					
32	Fire and explosion					
33	Emission of dust, gases etc.					
Additional hazards, hazardous situations and hazardous events due to the lifting or moving of persons						
34	Mechanical hazards and hazardous events due to:					
34.1	Inadequate mechanical strength-inadequate working coefficients					
34.2	Failing of loading control					
34.3	Failing of controls in person carrier (function, priority)					
34.4	Over speed of person carrier					
35	Falling of person from person carrier					
36	Falling or overturning of person carrier					
37	Human error, human behavior					

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
1.3	Cutting or severing	***2***	***1***	***1***	***2***	***1***
Where	*moving parts*					
When	*Feeding material into themachine.Clearing processed material from discharge chute*					
Improvement result						
Method		**S**	**A**	**G**	**W**	**Level**
1. Affixing suitable warning signs. *2. Only operation by training/authorized persons.* *3. Operation of the machine shall conform to the instructions of the instruction manual.* *4. Check and inspection according to the specified durations of the instruction manual.* *5.All moving parts shall be enclosed within the permanent compressor casing or compressor unit cover,*		***1***	***1***	***1***	***1***	**-**

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
1.5	Drawing-in or trapping	***2***	***1***	***1***	***2***	***1***
Where	*moving part*					
When	*Thrown objects*					
Improvement result						
Method		**S**	**A**	**G**	**W**	**Level**
1. Affixing suitable warning signs. *2. Only operation by training/authorized persons.* *3. Operation of the machine shall conform to the instructions of the instruction manual.* *4. Check and inspection according to the specified durations of the instruction manual.*		***1***	***1***	***1***	***1***	**-**
NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
3.1	Burns, scalds and other injuries by a possible contact of persons with objects or materials with an extreme high or low temperature, by flames or explosions and also by the radiation of heat sources	***1***	***1***	***1***	***1***	**-**

Where	hot parts
When	*Contact with hot parts*

Improvement result					
Method	**S**	**A**	**G**	**W**	**Level**
1. Affixing suitable warning signs. *2. Only operation by training/authorized persons.* *3. Operation of the machine shall conform to the instructions of the instruction manual.* *4. Check and inspection according to the specified durations of the instruction manual.*	***1***	***1***	***1***	***1***	**-**

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
4.1	Hearing loss (deafness), other physiological disorders	***1***	***1***	***1***	***1***	**-**
Where	*Whole machine*					
When	*Hearing damage due to machine and/or processing of material*					

Improvement result					
Method	**S**	**A**	**G**	**W**	**Level**
1. Only authorized person can use the machine. *2. Training before using this machine.* 3. *Make reference to the instruction manual before using this machine.*	***1***	***1***	***1***	***1***	**-**

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
7.1	Hazards from contact with or inhalation of harmful fluids, gases, mists, fumes and dusts	***1***	***1***	***1***	***1***	**-**
Where	*Whole machine*					
When	*Breathing of engine exhaust fumes*					

Improvement result					
Method	**S**	**A**	**G**	**W**	**Level**
1.Only authorized person can use the machine. *2.Training before using this machine.* *3.Make reference to the instruction manual before using this machine.*	***1***	***1***	***1***	***1***	**-**

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
7.2	Fire and explosion hazard	***1***	***1***	***1***	***1***	**-**
Where	*Whole machine*					
When	*Refuelling*					

Improvement result					
Method	**S**	**A**	**G**	**W**	**Level**
1.Only authorized person can use the machine. *2.Training before using this machine.* *3.Make reference to the instruction manual before using this machine.*	***1***	***1***	***1***	***1***	**-**

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
8.1	Unhealthy postures or excessive effort	***1***	***1***	***1***	***1***	**-**

Where	*Whole machine*
When	*Handling during moving machine*

Improvement result					
Method	**S**	**A**	**G**	**W**	**Level**
1.Only authorized person can use the machine. *2.Training before using this machine.* *3.Make reference to the instruction manual before using this machine.*	***1***	***1***	***1***	***1***	**-**

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
8.3	Neglected use of personal protection equipment	***1***	***1***	***1***	***1***	**-**
Where	*Whole machine*					
When	*Protect against noise andthrown objects,*					

Improvement result					
Method	**S**	**A**	**G**	**W**	**Level**
1.Only authorized person can use the machine. *2.Training before using this machine.* *3.Make reference to the instruction manual before using this machine.*	***1***	***1***	***1***	***1***	**-**

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
8.6	Human error, human behavior	***2***	***1***	***1***	***1***	***1***
Where	*Whole machine*					
When	*Incorrect use etc.Keep bystanders away*					

Improvement result					
Method	**S**	**A**	**G**	**W**	**Level**
1.Only authorized person can use the machine. *2.Training before using this machine.* *3.Make reference to the instruction manual before using this machine.*	***1***	***1***	***1***	***1***	**-**

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
8.7	Inadequate design, location or identification of manual controls	***1***	***1***	***1***	***1***	**-**
Where	*Whole machine*					
When	*Location of stop/start contol(s)*					

Improvement result					
Method	**S**	**A**	**G**	**W**	**Level**
1.Only authorized person can use the machine. *2.Training before using this machine.* *3.Make reference to the instruction manual before using this machine.*	***1***	***1***	***1***	***1***	**-**

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
10.1	Failure/disorder of the control system	***1***	***1***	***1***	***1***	**-**

Where	*Control circuit/control components*					
When	*Unexpected starting of cutting means after power failure*					
Improvement result						
Method		**S**	**A**	**G**	**W**	**Level**
1. Only authorized person can use the machine. *2. Make reference to the instruction manual before using this machine.* *3. Check before operation.* 4. *Periodic maintenance.*		***1***	***1***	***1***	***1***	**-**
NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
10.6	Error made by the operator (due to mismatch of machinery with human characteristics and abilities, see 8.6)	***1***	***1***	***1***	***1***	**-**
Where	*All electrical equipments equipped on the machine*					
When	*Feeding non-vegetable material*					
Improvement result						
Method		**S**	**A**	**G**	**W**	**Level**
（*1*） *Connection of protective earthing indeed.* （2） *Excellent electrical shielded housing.*		***1***	***1***	***1***	***1***	**-**

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
14	Failure of the control circuit	***1***	***1***	***1***	***1***	**-**
Where	*Control circuit/control components*					
When	*During operation of the machine*					
Improvement result						
Method		**S**	**A**	**G**	**W**	**Level**
1.Checking before operation. *2.Make reference to the instruction manual before operate this machine.* *3.Daily/periodic inspection and maintenance.*		***1***	***1***	***1***	***1***	**-**

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
15	Errors of fitting	***1***	***1***	***1***	***1***	**-**
Where	*Control circuit/control components*					
When	*Using the machine without guards or with guards fitted incorrectly*					
Improvement result						
Method		**S**	**A**	**G**	**W**	**Level**
1.Checking before operation. *2.Make reference to the instruction manual before operate this machine.* *3.Daily/periodic inspection and maintenance.*		***1***	***1***	***1***	***1***	**-**

NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
16	Break-up during operation	***1***	***1***	***1***	***1***	**-**
Where	*Control circuit/control components*					
When	*Cutters breaking in use*					
Improvement result						
Method		**S**	**A**	**G**	**W**	**Level**
1.Checking before operation. *2.Make reference to the instruction manual before operate this machine.* *3.Daily/periodic inspection and maintenance.*		***1***	***1***	***1***	***1***	**-**

NO.	Hazards source	S	A	G	W	Level
17	Falling or ejected objects or fluids	*1*	*1*	*1*	*1*	-
Where	*Control circuit/control components*					
When	*Thrown objects from feed intake*					
Improvement result						
Method		**S**	**A**	**G**	**W**	**Level**
1.Checking before operation. *2.Make reference to the instruction manual before operate this machine.* *3.Daily/periodic inspection and maintenance.*		*1*	*1*	*1*	*1*	-
NO.	**Hazards source**	**S**	**A**	**G**	**W**	**Level**
18	Loss of stability / overturning of machinery	*1*	*1*	*1*	*1*	-
19	Slip, trip and fall of persons(related to machinery)	*1*	*1*	*1*	*1*	-
Where	*During change the pressure*					
When	*Static stability,Operating position,*					
Improvement result						
Method		**S**	**A**	**G**	**W**	**Level**
1. Checking before operation. *2. Make reference to the instruction manual before operate this machine.*		*1*	*1*	*1*	*1*	-

NO.	Hazards source	S	A	G	W	Level
24.1	Hazards form the engine and the batteries	*1*	*1*	*1*	*1*	-
Where	*Control system*					
When	*Harm from battery vapours Spillage of battery and fluidcontainers*					
Improvement result						
Method		**S**	**A**	**G**	**W**	**Level**
1. Always starting the machine by training/authorized persons. *2. During adjustment or maintenance, put a warning nameplate near the working area.* 3. *Lock the power switch of the machine.*		*1*	*1*	*1*	*1*	-

NO.	Hazards source	S	A	G	W	Level
25.1	Unauthorized start-up/use	*1*	*1*	*1*	*2*	-
Where	*Whole machine*					
When	*Unauthorised start up of batterystart machines*					
Improvement result						
Method		**S**	**A**	**G**	**W**	**Level**
1. Edit the instruction manual in conformity with those requirement of Machinery Directive and EN ISO 12100：2010 standard. 2. *Each machine accompanied with a complete instruction manual.*		*1*	*1*	*1*	*1*	-

NO.	Hazards source	S	A	G	W	Level
26	Insufficient instructions for the driver/operator	*1*	*1*	*1*	*1*	-

Where	*Whole machine*
When	*Unfamiliar or dangerous usage*

Improvement result					
Method	**S**	**A**	**G**	**W**	**Level**
1.Edit the instruction manual in conformity with those requirement of Machinery Directive and EN ISO 12100：2010 standard. *2.Each machine accompanied with a complete instruction manual.*	***1***	***1***	***1***	***1***	**-**

8. Machine photos

P1

P2

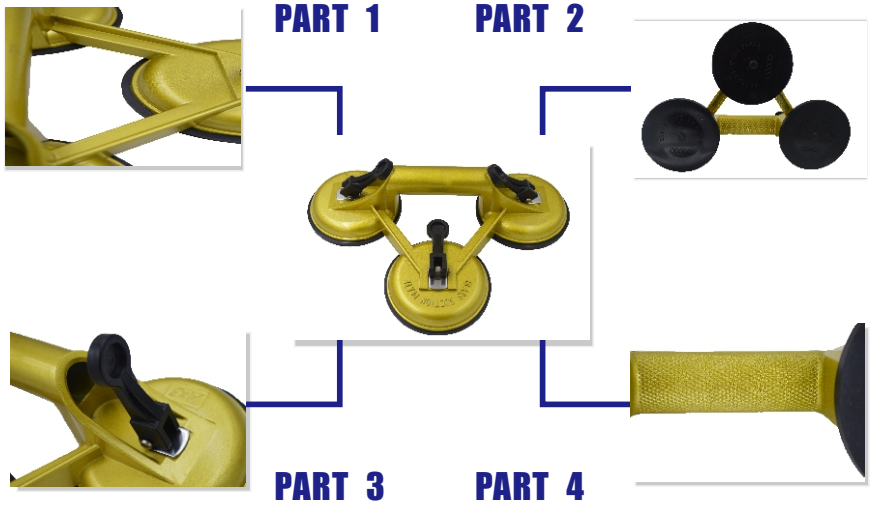
9. Manual

See the following pages:

High quality golden aluminum alloy 3 claw suction cup

Product model:ANB-012

Product overview



Product Description

- 3 Suction Pads individually operated strongly
- Light weight aluminum for easy carrying.
- The ergonomic designed handle remains comfortable even through long use.
- The durable metal construction and hard coating make it tough enough for everyday use and years of reliable service.
- Made with durable, odorless, extra strength rubber for a strong and ergonomic grip, making pulling easier and more successful
- Built tough to hold over 308 pounds of material per suction cup, making it easy to pull off even the heaviest and toughest jobs
- Suction cup is built to tightly seal and lift multiple materials, including marble, metal, glass, tile,aluminum sheet,LCD screen, solar panel

Product Information（Technical Details）

Item NO	ANB-012
Product Weight/case	12kg/case
Product Dimensions	46*34*48cm
Main Material	Premium Aluminum
Rubber Material	Premium NBR rubber
Color	Powder Yellow/Champagne (or custom-made)
Level capacity	140kg(308Lbs)
Vertical capacity	120kg(264Lbs)
Origin	China(Mainland),Guangdong
Pad Diameter	4.5inch(118mm)
Warranty Description	1 Year Warranty
Packing	1*10pcs/case

Suction Cup Application

Why It Sucks

The rubber used to create this suction cup is non-recycled, odorless, premium rubber, which is less toxic and pulls more weight than other basic rubber and nylon suction cups on the market.

Side Note:Suction is much more successful if you add a little bit of water onto the surface being mounted.

Product Package

- Brief design
- Environmental-friendly
- Safe & Reliable

1-Year Warranty

Make your purchase with confidence

Proven to Work in Practical Applications

PULL DENTS OUT

CARRY SOLAR PANEL

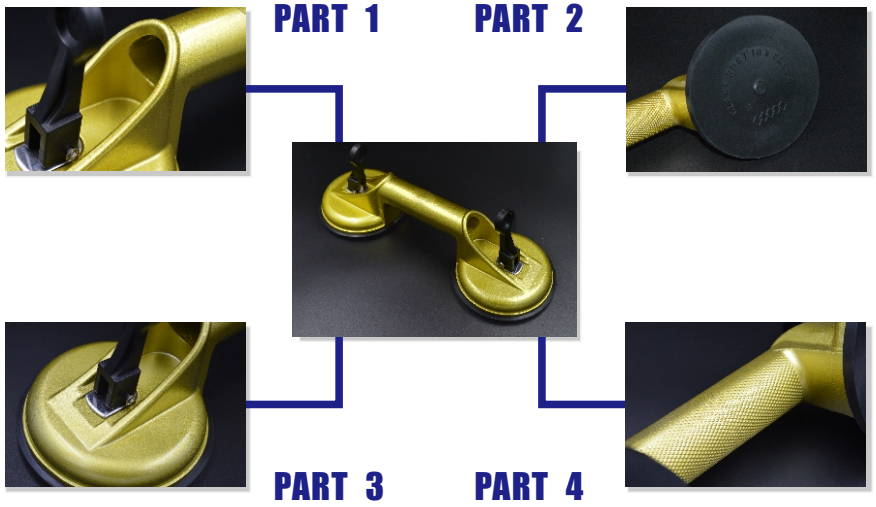
HOLD GLASSES

LIFT MARBLE

High quality Golden aluminum alloy 2 claw suction cup

Product model:ANB-010

Product overview



Product Description

- 2 Suction Pads individually operated strongly
- Light weight aluminum for easy carrying.
- The ergonomic designed handle remains comfortable even through long use.
- The durable metal construction and hard coating make it tough enough for everyday use and years of reliable service.
- Made with durable, odorless, extra strength rubber for a strong and ergonomic grip, making pulling easier and more successful
- Built tough to hold over 190 pounds of material per suction cup, making it easy to pull off even the heaviest and toughest jobs
- Suction cup is built to tightly seal and lift multiple materials, including marble, metal, glass, tile,aluminum sheet,LCD screen, solar panel

Product Information（Technical Details）

Item NO	ANB-010
Product Weight	18.0kg
Product Dimensions	55*34.5*46cm
Main Material	Premium Aluminum
Rubber Material	Premium NBR rubber
Color	Golden (or custom-made)
Level capacity	110kg(240Lbs)
Vertical capacity	90kg(190Lbs)
Origin	China(Mainland),Guangdong
Pad Diameter	4.5inch(118mm)
Warranty Description	1 Year Warranty
Packing	1*20pcs/case

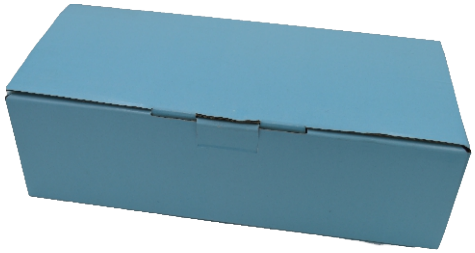
Suction Cup Application

Why It Sucks

The rubber used to create this suction cup is non-recycled, odorless, premium rubber, which is less toxic and pulls more weight than other basic rubber and nylon suction cups on the market.

Side Note:Suction is much more successful if you add a little bit of water onto the surface being mounted.

Product Package



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