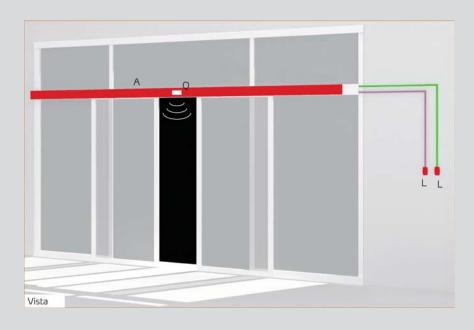


RISK ASSESSMENT FOR PEDESTRIAN AUTOMATIC SLIDING DOORS

In conformity with the provision of the Machinery Directive 2006/42/CE and the applicable parts of the Rules EN 16005





GUIDE FOR INSTALLATION OF MOTORIZED SLIDING PEDESTRIAN DOORS IN CONFORMITY WITH THE MACHINERY DIRECTIVE 2006/42/EC AND THE STANDARD EN16005

This document is designed to inform and facilitate the installer in applying the requirements of the Directives and European Standards concerning the safety of use of motorized doors.

Please note that the entity that markets the motorized door is the manufacturer of a machine and must draft and file a technical file, as referred to in annex VII of the Machinery Directive (2006/42/EC). The technical file shall contain the following documents:

- General description of the motorized door;
- Overall design of the motorized door (usually included in the installation manual).
- Wiring and control circuit diagram (usually included in the installation manual).
- Risk analysis including (as indicated in the following pages):
 - the list of essential requirements laid down in annex I of the Machinery Directive;
 - the list of risks posed by the door and the description of the protective measures implemented;
 - the list of possible residual risks.
- Copies of manuals for installation and maintenance of the door and components.
- The operating instructions and the general safety instructions (completing where applicable the information in the installation manual of the door). A copy must be handed to the final user.
- Possible copy of the EC declaration of conformity of other products incorporated in the automation;
- Maintenance log completed. A copy must be handed to the final user (see facsimile in annex 1).
- EC declaration of conformity (see facsimile in annex 3). A copy must be handed to the final user.
- Label or plate complete with CE marking to be applied on the motorized door.

N.B. The technical file must be filed and made available to the applicable national authorities for at least ten years from the date of manufacture of the motorized door/gate.

N.B. The Guide does not cover motorized sliding pedestrian doors intended for use in environments with explosion hazard. For these types of environments, the doors must comply with Directive 94/9/EC ATEX.

RISK AREAS OF THE SLIDING DOOR

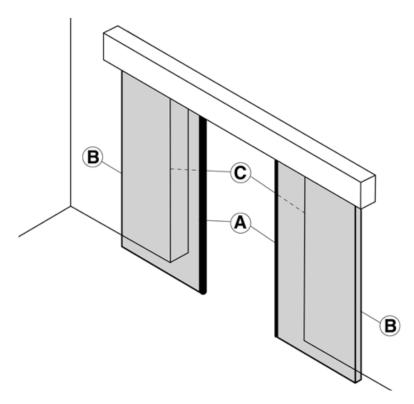
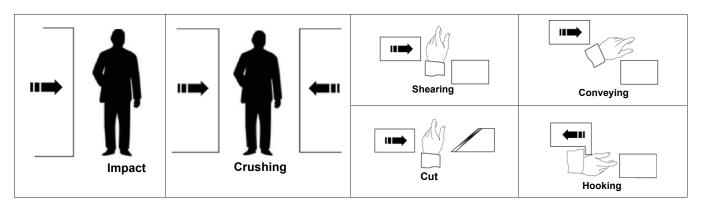


Figure 1 - Risk Areas

According to the Machinery Directive:

- "Dangerous area" is any zone within and/or close to a machine in which the presence of an exposed person is a risk in terms of the health and safety of such person.
- "Exposed person" is any person wholly or partially in a dangerous area.



RISK ANALYSIS AND CHOICE OF SOLUTIONS IN CONFORMITY WITH THE MACHINERY DIRECTIVE 2006/42/EC AND THE STANDARDS EN16005

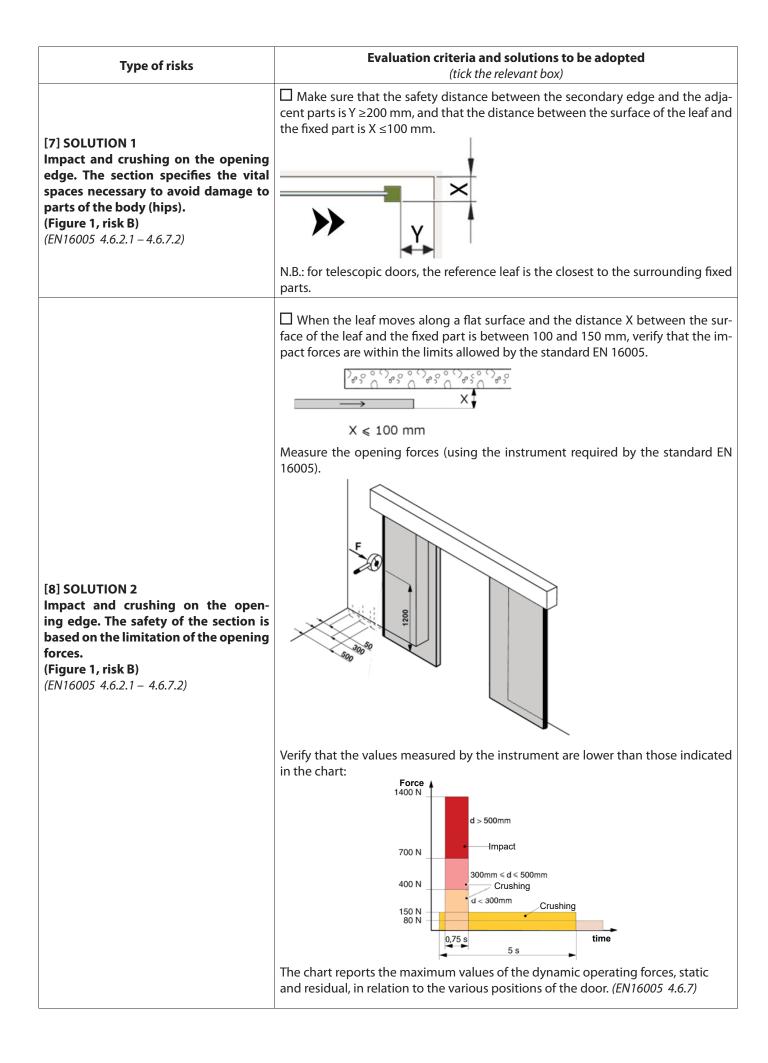
The risks listed below are those usually found in motorized pedestrian doors; it is therefore necessary to take into account, depending on the different situations, any additional risks and exclude those that do not apply. The solutions to be adopted shall be those set out by the above standards. Concerning non covered risks, it is necessary to apply the safety integration principles required by the Machinery Directive (annex I – 1.1.2).

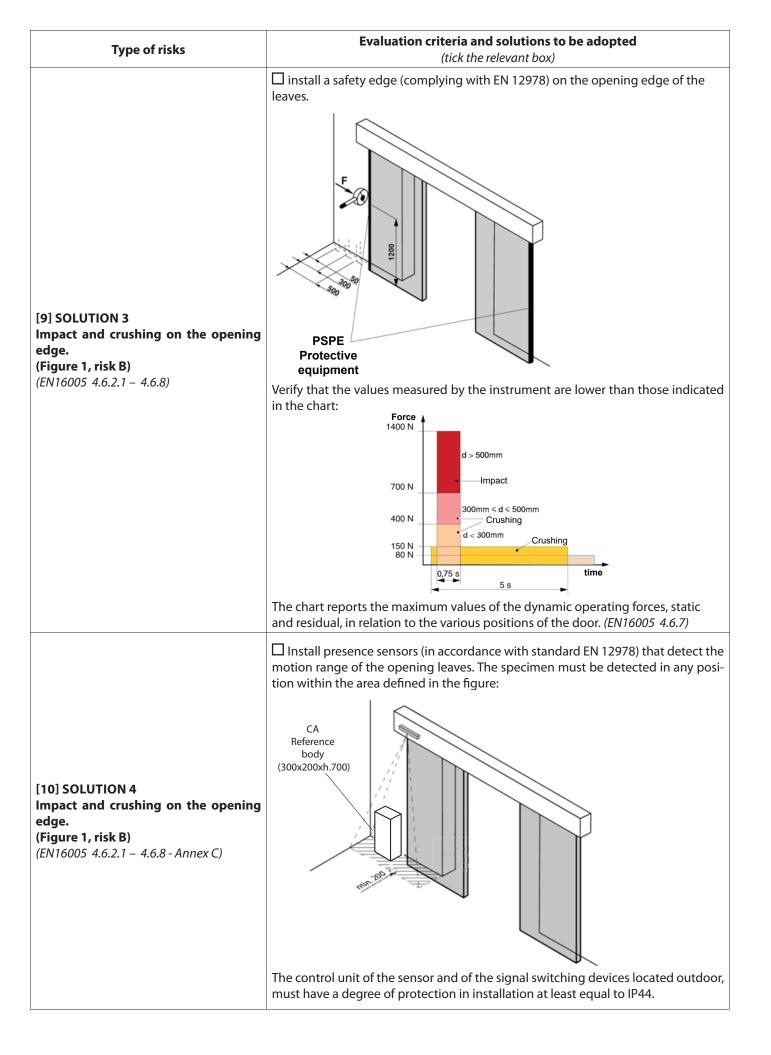
Machinery Directive Annex 1	Type of risks	Evaluation criteria and solutions to be adopted <i>(tick the relevant box)</i>			
1.3.1 1.3.2	Structural and mechanical wear risks				
1.1.2	[1] Preliminary checks. (EN16005 4.1)	Before you begin to install or start an automatic door, an onsite inspection must be carried out by qualified personnel. The purpose of this inspection is to assess the risks and select and apply the most appropriate solutions according to the type of pedestrian traffic (intense, limited, uni-directional, bi-directional, etc.), the type of users (elderly, disabled, children, etc.), in the presence of potential dangers or specific local situations. The result of this inspection is recorded by completing this risk analysis.			
	 [2] Risk of loss of stabil- ity. [2.1] Risk of breakage during operation (EN16005 4.4.2-4.4.4) 	 Check the solidity of the current structure (lintels, columns, walls, doors, hinges and doors) in relation to the weight of the leaves and the forces developed by the drive unit. Fasten the drive unit securely using appropriate materials and following the instructions in the installation manual. Verify that the leaves cannot, under any circumstances, get out from their sliding guides and fall. (for example after lifting). 			
1.5.15	[3] Risk of slipping, trip- ping or falling. (EN16005 4.7.2.2)	Any thresholds in the floor of the passageway must remain within the limits specified for breakout doors.			
1.1.3 1.3.4	[4] Materials. (EN16005 4.4.2 – 4.4.3)	 For the construction of sliding and fixed doors, use materials whose possible breakage does not result in risk of injury to persons. Use glass with adequate safety features (e.g.: laminated or tempered). Totally or partially transparent doors must be recognizable. Use coloured materials or markings and labels that make them notable. Note: the wire glass is not a safety glass. There must be no sharp edges that can cause wounds or abrasions. Any protruding parts must not result in additional risks. N.B.: Avoid contact between the glass and other stiff materials 			

Machinery Directive Annex 1	Type of risks	Evaluation criteria and solutions to be adopted <i>(tick the relevant box)</i>
1.3.7 1.3.8 1.4	Selection of a protection ag	ts (leaf motion, see Figure 1- Risk Zones). ainst risks related to moving parts. guards and protective devices
edge (Figur (EN16005 4.0) Note: the to	l crushing on the closing	Install presence sensors (in accordance with standard EN 12978) that detect the motion range of closing leaves. The specimen must be detected at any position and with every orientation within the area defined in the figure: The control unit of the sensor and of the signal switching devices located outdoor must have a degree of protection in installation at least equal to IP44.
edge (Figur (EN16005 4.d	l crushing on the closing	 Door operation is of low-energy type during the closing manoeuvre. Low-energy doors generally are not protected by safety devices because the kinetic energy levels are not considered to be hazardous. However, the use of low energy doors must be considered only when the risk analysis has assessed the use of the system by elderly, sick, disabled users, children, considering the risk as low. Therefore, the operating parameters must be set so that: The kinetic energy never exceeds 1.69 Joules (see mass/closing time table); The force required to hold the leaf does not exceed 67 N anywhere in the closing motion range (applied to the main closing edge in the direction of travel); You can release the leaf with a force of less than 67 N and open the leaf with a force not exceeding 90 N (applied to the main closing edge in the direction of travel) in case of power failure or motor fault.

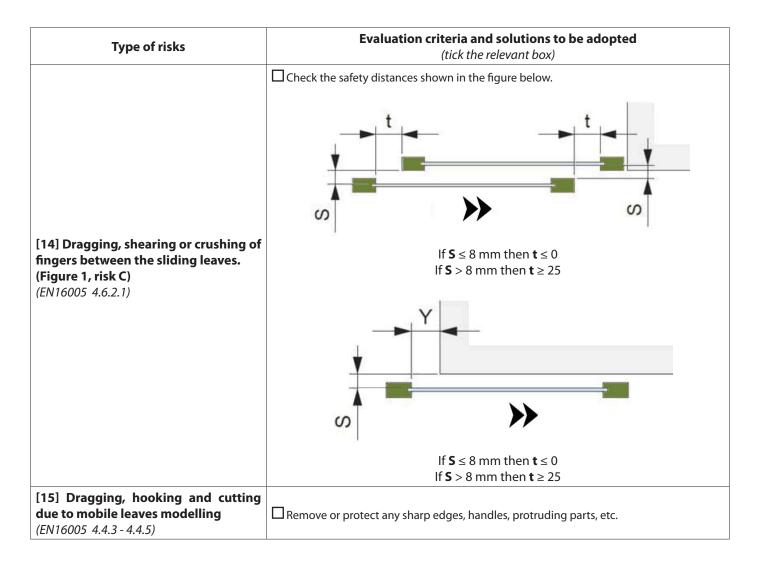
Table 1 - minimum closing/opening time depending on the mass and size of the leaf.

																For values that are not present in the table,
90%		Mass of doorset leaf [kg]												•		
travelling	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10	use the following formulas:
distance per leaf						Ма	ximum	travelli	ng spe	ed v [n	n/s]					
D	0,15	0,16	0,16	0,17	0,18	0,18	0.19	0,21	0,22	0,24	0,26	0,29	0,34	0,41	0,58	
																$V = \sqrt{\frac{2E_c}{2E_c}}$ where: V is the speed in m/s, E_c the kinetic energy in J (always
[m]				<u> </u>	Minim	um tra	velling	time t	[5]							$V = \sqrt{\frac{2L_c}{c}}$ the kinetic energy in J (always
0,7	4.7	4.6	4.4	4,2	4,0	3,9	3.7	3,5	3,2	3,0	2,7	2,5	2,1	1,8	1,3	\sqrt{m} equal to 1.69 J), <i>m</i> the mass of the
0,8	5,4	5,2	5,0	4,8	4,6	4,4	4,2	3,9	3,7	3,4	3,1	2,8	2,4	2,0	1,4	M equal to 1.69 J), <i>m</i> the mass of the
0,9	6,0	5,8	5,6	5,4	5,2	4,9	4,7	4,4	4,1	3,8	3,5	3,1	2,7	2,2	1,6	leaf.
1,0	6.7	6,5	6,3	6,0	5,8	5,5	5,2	4.9	4,6	4,3	3,9	3,5	3,0	2,5	1,8	
1,1	7,4	7,1	6,9	6,6	6,3	6,0	5,7	5,4	5,1	4,7	4,3	3,8	3,3	2,7	1,9	
1,2	8,0	7,8	7,5	7,2	6,9	6,6	6,2	5,9	5,5	5,1	4,7	4,2	3,6	3,0	2,1	D where: t is the opening/closing
1,3	8,7	8,4	8,1	7,8	7,5	7,1	6,8	6,4	6.0	5,5	5,0	4,5	3,9	3,2	2,3	$t = \frac{1}{100}$ time in s., D is 90% of the leaf trave
1,4	9,4	9,1	8,7	8,4	8,0	7,7	7,3	6,9	6,4	5,9	5,4	4,9	4,2	3,5	2,5	v in m, V the speed in m/s.
1,5	10,0	9,7	9,4	9,0	8,6	8,2	7,8	7,3	6,9	6,4	5,8	5,2	4,5	3.7	2,6	in m, v the speed in m/s.
<u> </u>		-		-												





Type of risks	Evaluation criteria and solutions to be adopted (tick the relevant box)
[11] SOLUTION 5 Impact and crushing on the opening edge. (Figure 1, risk B) (EN16005 4.6.2.1 - 4.6.9)	 Protect the leaf opening motion area during opening by means of segregation guards, positioned at less than 8 mm or more than 25 mm from the moving parts of the door. Guards Guards The guards. must be fixed, not removable, unless tools are used; must protect the entire height of the leaves (no protection is necessary beyond 2.5 m);
[12] SOLUTION 6 Impact and crushing on the opening edge. (Figure 1, risk B) (EN16005 4.6.2.1 - 4.6.10)	 must not cause hazards such as dragging and/or shearing between the fixed and moving parts. Protect the leaf opening motion area by means of fixed barriers, non removable unless tools are used, located at a distance of less than 8 mm or more than 25 mm from the moving parts of the door, at least 900 mm high to guide the pedestrian traffic and to prevent pedestrians from accessing dangerous areas. Barriers Barriers
[13] SOLUTION 7 Impact and crushing on the opening edge. (Figure 1, risk B) (EN16005 4.6.2.1 – 4.6.4 - Annex F)	 Door operation is of low-energy type during the closing manoeuvre. Low-energy doors generally are not protected by safety devices because the kinetic energy levels are not considered to be hazardous. However, the use of low energy doors must be considered only when the risk analysis has assessed the use of the system by elderly, sick, disabled users, children, considering the risk as low. Adjust the operating parameters to meet all of the following conditions: The kinetic energy never exceeds 1.69 Joules (see mass/closing time table in section [6] SOLUTION 2, the same considerations and formulas apply); The force required to hold the leaf does not exceed 67 N anywhere in the opening motion range (applied to the main opening edge in the direction of travel); In the case of power failure or motor failure, the leaf can be released with a force of less than 67 N and can be opened with a force of no more than 90 N (applied to the main opening edge in the direction of travel).



Machinery Directive Annex 1	Type of risks	Evaluation criteria and solutions to be adopted (tick the relevant box)			
	Electrical hazards and electromagnetic compatibility				
1.5.1 1.5.2	[16] Direct and indirect contacts. Leakage of elec- tricity, static electricity. (EN16005 4.3.1)	 Use CE marked parts and materials according to the Low Voltage Directive (2006/95/CE). OR Use parts and materials with Declaration of incorporation or conformity according to the Machinery Directive (2006/42/EC). Perform the connection to the mains, the connections to the ground (if necessary) and the relevant checks, in accordance with current regulations, as stated in the installation manual of the drive unit. Assess the need for appropriate systems and connections, to avoid/reduce electrostatic charges. 			
1.5.10 1.5.11	[17] Electromagnetic compatibility risks (EN16005 1.1)	Use CE marked parts according to the EMC Directive (2004/108/CE). Install as shown in the installation manual of the components			

Machinery Directive Annex 1	Type of risks	Evaluation criteria and solutions to be adopted (tick the relevant box)					
	Safety and reliability of the drive unit and of the control and safety devices						
1.2	[18] Safety conditions in the event of malfunction- ing and power failure (EN16005 4.3.2 - 4.6.8)	Use drive units in accordance with the standard EN 60335-2-103, and safety devices in accordance with the standard EN 12978.					
1.5.3	[19] Energy supply other than electricity (EN16005 4.3.4 - 4.3.5)	☐ If you are using hydraulic drive units, they must conform to the standard EN ISO 4413. OR ☐ If you are using pneumatic drive units, they must conform to the standard EN ISO 4414.					
1.2.3 1.2.4	[20] Turning on/off the drive unit (EN16005 4.3.2)	☐ Verify that after a failure or a power failure, the drive unit operates safely without creating dangerous situations.					
	[21] Power supply switch off (EN16005 4.3.3)	□ Install a power switch off device that switches off all phases of input power, or a socket- plug system that can be used for switching off purposes, in accordance with the regulations. This switch must be positioned and protected against accidental or unauthorized actuation.					
1.5.14	[22] Risk of entrapment (EN16005 4.4.5)	□ Install a device to release the drive unit allowing manual opening and closing of the leaf with a maximum force of 220 N. Provide the user with the tools and instructions to perform release operations; verify that the operation of the release device is simple to use and does not create additional risks.					
1.2.5	[23] Opening controls (EN16005 4.4.5)	 If motion detection sensors are used, they must be installed so that the leading edge of the detection area is at a distance of at least 1000 mm from the front surface of the leaves, except for situations where the system requires a close activation area. For installations in escape routes, with devices without breakout function, the detection area must be at a distance of at least 1500 mm, for the sensor installed in the escape direction. This sensor should operate across the entire width of the passageway. If footboards are used, they should be installed so as to cover the entire width of the passageway (less max. 75 mm per side) and so as to cover a distance of 1000 mm from the front surface of the leaves. They must be secured to the floor, so as not to generate a danger of tripping. If two footboards are positioned side by side, the inactive distance must not exceed 60 mm. If two footboards are located one in front of the other, the inactive distance must not exceed 75 mm. If manual controls are used (such as buttons, magnetic cards, etc.), they must be properly positioned and highlighted in such a way as to prevent risks or unintended actuations. They must be accessible by the user, should not be in the operation area of the leaf, and a clear and complete view of the moving door must be ensured. If the manual controls are intended for use by disabled or infirm persons, add the following pictogram and ensure unimpeded access also for these users. 					

Machinery Directive Annex 1	Type of risks	Evaluation criteria and solutions to be adopted (tick the relevant box) The mode of operation must be clearly identified on the function switch (if any) and the possible selection of "block in closure" of the door (corresponding to the actual disabling of the emergency opening system) must be protected so that it can be selected only by authorized personnel. Sliding doors with leaves breakout.				
	Environmental risks					
	[24] Doors used in escape routes and emergency exits (EN16005 4.7.2)	possible selection of "block in closure" of the door (corresponding to the actual disabling of the emergency opening system) must be protected so that it can be selected only by authorized personnel.				
	Principles of safety inte- gration and information					
1.7.1 1.7.2	[25] Signage (EN16005 4.4.2)	 In the case of leaves in transparent glass, apply a clearly visible marking. Any manual release devices and emergency buttons must be properly marked. Highlight using specific signs the use of one-way passage doors (entry only/exit only). Also apply all those signals or warnings needed to highlight possible non protected residual risks or to report any foreseeable improper use. 				
1.7.3	[26] Marking	Apply on the door the nameplate complete with CE marking.				
1.7.4	[27] Instructions (EN16005 4.2)	Provide the user with Operating Instructions, safety warnings, maintenance log and E declaration of conformity (see annexed facsimile).				
1.6.1	[28] Maintenance (EN16005 4.2 - Annex I)	 Prepare and implement a maintenance plan, specifying in particular the minimum interval of maintenance (annual for the safety devices). Record the maintenance actions performed in the Maintenance Log (see annexed far simile). 				
1.1.2	[29] Non protected re- sidual risks (EN16005 4.1)	□ Inform the user in writing about the presence of residual risks and, if possible, identif them on the door.				

NOT	ES
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FACSIMILE - MAINTENANCE LOG

This maintenance log contains the technical references and the records of installation, maintenance, repair and modification tasks carried out, and must be made available for inspection by authorized bodies.

TECHNICAL DATA OF THE MOTORIZED DOOR AND OF THE INSTALLATION				
Customer: (Name, address, contact)				
Order number: (Number and date of the order)				
Model and description: (Door type)				
Dimensions and weight: (Dimensions of the passageway, leaf size and weight)				
Serial Number: (Unique door identification number)				
Location: (Installation address)				

LIST OF INSTALLED COMPONENTS The technical specifications and the performance of the following components, are documented in the relevant installation manuals and/or in the label on the component itself.			
Motor / drive unit: (Model, type, serial number)			
Electric panel: (Model, type, serial number)			
Photocells: (Model, type, serial number)			
Safety devices: (Model, type, serial number)			
Control devices: (Model, type, serial number)			
Radio devices: (Model, type, serial number)			
Other: (Model, type, serial number)			

INDICATION OF THE RESIDUAL RISKS AND OF FORESEEABLE IMPROPER USE

Inform by means of signage applied on the risk points of the product and/or by means of written directions to be delivered and explained to the user of the door or to the person in charge of the door, about the existing risks and foreseeable misuse.

TASKS

Description (Tick the box corresponding to the task performed) Describe any residual risks and/or the foreseeable misuse)				
□ Startup				
Adjustment				
□Maintenance				
Repair				
Change				
Date	Signature of the Technician	Signature of the Customer		

Description (Tick the box corresponding to the task performed) Describe any residual risks and/or the foreseeable misuse)			
□ Installation			
□ Startup			
Adjustment			
☐ Maintenance			
Repair			
□ Change			
Date	Signature of the Technician	Signature of the Customer	

Description (Tick the box corresponding to the task performed) Describe any residual risks and/or the foreseeable misuse)				
□ Installation				
□ Startup				
Adjustment				
Repair				
□ Change				
Date	Signature of the Technician	Signature of the Customer		

FACSIMILE - DECLARATION OF CONFORMITY

DECLARATION OF CONFORMITY (Machinery Directive 2006/42/CE, Annex II, part A)				
ADDRESS				
PERSON AUTHORISED TO COMPILE THE TECHNICAL FILE (Name - Address)				
STATES THAT (Description, model, identification number)				
LOCATION (Full Address)				
complies with the provisions of the Machine	ery Directive 2006/42/EC			
□ complies with the terms of the following oth	er EC Directives (mention is necessary)			
-				
And also states that the following harmonize	ed standards have been applied (mention if necessary)			
PLACE, DATE				
SIGNATURE (Name, position and signature of the Legal Representative of the manufacturer or of the person authorized to draw up the Declaration on behalf of the manufacturer)				

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