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European Organisation for  
Technical Assessment  
Organisation Européenne  
pour l'évaluation technique

## European Technical Assessment – ETA 13/0373 of 29/06/2018

(English language translation; the original version is in Italian)

### GENERAL PART

Trade name of the construction product

PIXIMA CUBE, PIXIMA CUBE LINE, PIXIMA RING,  
PIXIMA RING LINE, ARKÈ KLAN, ARKÈ KLOÈ,  
ARKÈ PHOENIX, MAGIA 70, MAGIA 70.XTRA,  
REFLEX LUX T TONDA, REFLEX TITAN T TONDA,  
REFLEX LUX Q QUADRA, REFLEX TITAN Q  
QUADRA, GENIUS 010 T TONDA, GENIUS 020 T  
TONDA, GENIUS 030 T TONDA, GENIUS 050 T  
TONDA, GENIUS 060 T TONDA, GENIUS 010 Q  
QUADRA, GENIUS 020 Q QUADRA, GENIUS 030 Q  
QUADRA, GENIUS 050 Q QUADRA, GENIUS 060 Q  
QUADRA, OAK 70, GUS 010, GUS 020, REX, NICE  
1, AGO, NICE LINE

Product family to which the construction  
product belongs

**PAC 34: BUILDING KITS, UNITS, AND  
PREFABRICATED ELEMENTS.**  
Prefabricated stair kits.

Manufacturer

**Albini & Fontanot S.p.A.**  
Via P. Paolo Pasolini, 6  
I - 47853 Cerasolo Ausa (RN) – Italy

Manufacturing plant

**Via Tenuta Amalia, 129**  
I - 47826 Villa Verucchio (RN) - Italy

This European Technical Assessment  
contains:

**23 pages, including 15 Annexes which form  
an integral part of this Assessment**

This European Technical Assessment is  
issued in accordance with Regulation  
(EU) n° 305/2011, on the basis of

**European Assessment Document (EAD)  
340006-00-0506**

This European Technical Assessment is  
the conversion of

**European Technical Approval 13/0373  
issued on 24.05.2013**

*The European Technical Assessment is issued by ITC-CNR in Italian language. Translations into other languages shall fully correspond to the original issued document and should be identified as such.*

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## SPECIFIC PARTS

### 1. TECHNICAL DESCRIPTION OF THE PRODUCT

The system is composed by a set of prefabricated components (steps, spacers, etc.) assembled together so as to form a spiral staircase. The load bearing structure is made up of a steel post, 60 mm in external diameter and 4 mm in thickness. All around the post, which is fixed at its ends and under tensile stress, are arranged the steps and the spacers which are, therefore, under compression.

In all kits, the staircase is reinforced by means of a fastening device connecting the railing to a side wall and a landing which can be adjusted during installation and can have three different shapes: trapezoidal, triangular and circular to be fixed to the floor with two brackets and secured to the central load bearing structure of the stair. The direction of rotation, clockwise or anticlockwise, is decided during installation (all versions).

“Pixima Ring” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing while the rods  $\varnothing$  44 mm round handrail is in wood-effect PVC with aluminium core. The railing is made of  $\square$  20x2 mm vertical balusters in painted steel. This round spiral staircase is available in the diameters 118, 128, 138, 148 and 158 cm. Maximum reachable height is 380 cm with 16 risers.

“Pixima Ring Line” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing while the  $\varnothing$  44 mm round handrail is in wood-effect PVC with aluminium core. The railing is made of  $\square$  27x2 mm vertical balusters in painted steel connected by 7 crossable stainless steel safety cables. This round spiral staircase is available in the diameters 118, 128, 138, 148 and 158 cm. Maximum reachable height is 380 cm with 16 risers.

“Pixima Cube” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing while the  $\varnothing$  44 mm round handrail is in wood-effect PVC with aluminium core. The railing is made of  $\square$  20x2 mm vertical balusters in painted steel. This square spiral staircase is available in the dimensions 118x118 cm, 138x138 cm. Maximum reachable height is 380 cm with 16 risers.

“Pixima Cube Line” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing while the  $\varnothing$  44 mm round handrail is in wood-effect PVC with aluminium core. The railing is made of  $\square$  27x2 mm vertical balusters in painted steel connected by 7 crossable stainless steel safety cables. This square spiral staircase is available in the dimensions 118x118 cm, 138x138 cm. Maximum reachable height is 380 cm with 16 risers.

“Arkè Klan” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing while the  $\varnothing$  44 mm round handrail is in wood-effect PVC with aluminium core. The railing is made of  $\square$  20x2 mm vertical balusters in painted steel. This round spiral staircase is available in the diameters 120, 140, 160 cm. Maximum reachable height is 377 cm with 16 risers.

“Arkè Phoenix” (marketed in the U.S.A.) is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing while the  $\varnothing$  44 mm round handrail is in wood-effect PVC with aluminium core. The railing is made of  $\square$  20x2 mm vertical balusters in painted steel. This round spiral staircase is available in the diameters 120, 140, 160 cm. Maximum reachable height is 377 cm with 16 risers.

“Arkè Kloè” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing while the Ø 44 mm round handrail is in wood-effect PVC with aluminium core. The railing is made of □ 27x2 mm vertical balusters in painted steel connected by 5 stainless steel safety cables. This round spiral staircase is available in the diameters 120, 140, 160 cm. Maximum reachable height is 377 cm with 16 risers.

“Magia70” is made up of 44 mm Plywood (birch) steps. The fixings match the colour of the railing while the Ø 44 mm round handrail is in wood-effect PVC with aluminium core. The railing is made of □ 20x2 mm vertical balusters in painted steel. This round spiral staircase is available in the diameters 110, 130, 150 cm. Maximum reachable height is 359 cm with 15 risers.

“Magia 70.Xtra” is made up of 44 mm Plywood (birch) steps. The fixings match the colour of the railing while the Ø 44 mm round handrail is in wood-effect PVC with aluminium core. The railing is made of □ 20x2 mm vertical balusters in painted steel connected by 5 safety PVC tubes. This round spiral staircase is available in the diameters 110, 130, 150 cm. Maximum reachable height is 359 cm with 15 risers.

“Genius 010 T tonda” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the Ø 48 mm round handrail is in Solid Wood (beechwood). The railing is made of □ 27x2 mm vertical balusters in painted steel which are joined to one another by 5 stainless steel safety cables. This round spiral staircase is available in the diameters 110, 120, 130, 140, 150, 160 cm. Maximum reachable height is 381 cm with 16 risers.

“Genius 020 T tonda” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the Ø 48 mm round handrail is in Solid Wood (beechwood). The railing is made of square section painted steel vertical balusters 20x20x2 mm. This round spiral staircase is available in the diameters 110, 120, 130, 140, 150, 160 cm. Maximum reachable height is 381 cm with 16 risers.

“Genius 030 T tonda” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the Ø 48 mm round handrail is in Solid Wood (beechwood). The railing is made of □ 20x2 mm vertical balusters in painted steel. This round spiral staircase is available in the diameters 110, 120, 130, 140, 150, 160 cm. Maximum reachable height is 381 cm with 16 risers.

“Genius 050 T tonda” and “Genius 060 T tonda” are both made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the Ø 48 mm round handrail is in Solid Wood (beechwood). The railing is made of □ 27x2 mm vertical balusters in painted steel; balusters are in stainless steel in the *Genius 050 T tonda* version and steel with satin finish in the *Genius 060 T tonda* version, respectively, and they are connected by 5 safety stainless steel rods Ø 5 mm. This round spiral staircase is available in the diameters 110, 120, 130, 140, 150, 160 cm. Maximum reachable height is 381 cm with 16 risers.

“Genius 010 Q Quadra” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the Ø 48 mm round handrail is in Solid Wood (beechwood). The railing is made of □ 27x2 mm vertical balusters in painted steel connected by 5 stainless steel safety cables. This square spiral staircase is available in the dimensions 110x110 cm, 120x120 cm, 130x130 cm, 140x140 cm. Maximum reachable height is 381 cm with 16 risers.

“Genius 020 Q Quadra” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the Ø 48 mm round handrail is in Solid Wood (beechwood). The railing is made of square section painted steel vertical balusters. This square spiral staircase is available in the dimensions 110x110 cm, 120x120 cm, 130x130 cm, 140x140 cm. Maximum reachable height is 381 cm with 16 risers.

“Genius 030 Q Quadra” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the Ø 48 mm round handrail is in Solid Wood (beechwood). The railing is made of □ 20x2 mm vertical balusters in painted steel. This square spiral staircase is available in the dimensions 110x110 cm, 120x120 cm, 130x130 cm, 140x140 cm. Maximum reachable height is 381 cm with 16 risers.

“Genius 050 Q Quadra” and “Genius 060 Q Quadra” are both made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the Ø 48 mm round handrail is in Solid Wood (beechwood). The railing is made of □ 27x2 mm vertical balusters in painted steel; balusters are in stainless steel in the Genius 050 Q Quadra version and steel with satin finish in the Genius 060 Q Quadra version, respectively, and they are connected by 5 safety stainless steel rods (Ø 5 mm). This square spiral staircase is available in the dimensions 110x110 cm, 120x120 cm, 130x130 cm, 140x140 cm. Maximum reachable height is 381 cm with 16 risers.

“Gus 010” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the Ø 48 mm round handrail is in Solid Wood (beechwood). The railing is made of □ 27x2 mm vertical balusters in painted steel connected by 5 stainless steel safety cables. This round spiral staircase is available in the diameters 110, 120, 130, 140, 150, 160 cm. Maximum reachable height is 333 cm with 14 risers.

“Gus 020” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the Ø 48 mm round handrail is in Solid Wood (beechwood). The railing is made of square section 20x20x2 mm painted steel vertical balusters. This round spiral staircase is available in the diameters 110, 120, 130, 140, 150, 160 cm. Maximum reachable height is 333 cm with 14 risers.

“Oak” is made up of 44 mm Solid Wood Panel (oak) steps. The fixings match the colour of the railing while the Ø 44 mm round handrail is in wood-effect PVC with aluminium core. The railing is made of □ 20x2 mm vertical balusters in painted steel. This round spiral staircase is available in the diameters 110, 130, 150 cm. Maximum reachable height is 359 cm with 15 risers.

“Rex” is made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the Ø 48 mm round handrail is in Solid Wood (beechwood). The railing is made of □ 27x2 mm vertical balusters in painted steel connected by 7 stainless steel rods (Ø 5 mm). This round spiral staircase is available in the diameters 110, 120, 130, 140, 150, 160 cm. Maximum reachable height is 333 cm with 14 risers.

“Reflex Lux T Tonda” and “Reflex Titan T Tonda” are made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the Ø 48 mm round handrail is in Solid Wood (beechwood). The railing is made of □ 27x2 mm vertical balusters in painted steel; balusters are in stainless steel in the Reflex Lux T Tonda version and steel with satin finish in the Reflex Titan T Tonda version, respectively, and they are connected by 7 safety stainless steel rods (Ø 5 mm). This round spiral staircase is available in the diameters 110, 120, 130, 140, 150, 160 cm. Maximum reachable height is 381 cm with 16 risers.

“Reflex Lux Q Quadra” and “Reflex Titan Q Quadra” are made up of 42 mm Solid Wood Panel (beechwood) steps. The fixings match the colour of the railing, the rods  $\varnothing$  48 mm round handrail is in Solid Wood (beechwood). The railing is made of  $\square$  27x2 mm vertical balusters in painted steel; balusters are in stainless steel in the *Reflex Lux Q Quadra* version, steel with satin finish in the *Reflex Titan Q Quadra* version, and they are connected by 7 safety stainless steel rods ( $\varnothing$  5 mm). This square spiral staircase is available in the dimensions 110x110 cm, 120x120 cm, 130x130 cm, 140x140 cm. Maximum reachable height is 381 cm with 16 risers.

“Nice 1” is made up of 34 mm Plywood Panel (birch) steps. The fixings match the colour of the railing, while the handrail is in extruded through-body coloured PVC with approximate dimensions 50x36x4 mm. The railing is made of  $\square$  20x1,5 mm vertical balusters in painted steel. This round spiral staircase is available in the diameter 130 cm. Maximum reachable height is 330 cm with 14 risers.

“Ago” is made up of 34 mm Plywood Panel (birch) steps. The fixings match the colour of the railing, while the handrail is in extruded through-body coloured PVC with approximate dimensions 50x36x4 mm. The railing is made of  $\square$  20x1,5 mm vertical balusters in painted steel. This round spiral staircase is available in the diameter 110 cm. Maximum reachable height is 330 cm with 14 risers.

“Nice Line” is made up of 34 mm Plywood Panel (birch) steps. The fixings match the colour of the railing, while the handrail is in extruded through-body coloured PVC with approximate dimensions 50x36x4 mm. The railing is made of  $\square$  20x2 mm vertical balusters in painted steel connected by 5 stainless steel safety cables. This round spiral staircase is available in the diameter 130 cm. Maximum reachable height is 330 cm with 14 risers.

Geometry, dimensions and construction details are illustrated in Annexes 1 to 14 to this ETA.

## **2. SPECIFICATION OF THE INTENDED USE IN ACCORDANCE WITH EUROPEAN ASSESSMENT DOCUMENT N° EAD 340006-00-0506**

“Pixima Ring”, “Pixima Ring Line”, “Pixima Cube”, “Pixima Cube Line”, “Arkè Klan”, “Arkè Kloè”, “Arkè Phoenix”, “Magia 70”, “Magia 70.Xtra”, “Reflex Lux T Tonda”, “Reflex Titan T Tonda”, “Reflex Lux Q Quadra”, “Reflex Titan Q Quadra”, “Genius 010 T tonda”, “Genius 020 T tonda”, “Genius 030 T tonda”, “Genius 050 T tonda”, “Genius 060 T tonda”, “Genius 010 Q Quadra”, “Genius 020 Q Quadra”, “Genius 030 Q Quadra”, “Genius 050 Q Quadra”, “Genius 060 Q Quadra”, “Oak 70”, “Gus 010, Gus 020”, “Rex”, “Nice 1”, “Ago”, “Nice Line” stairs are intended to be used as indoor stairs in buildings of category “A” according to EN 1990 with air temperature between +5°C and +30°C and relative humidity between 30% and 70%.

The provisions made in this European Technical Assessment are based on an assumed working life of the stairs of at least 50 years, provided that the conditions laid down in clause 2.1 for installation, packaging, transport and storage as well as for appropriate use, maintenance and repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the Manufacturer, but are to be regarded only as a means for choosing the appropriate products in relation to the expected economically reasonable working life of the works.

### **2.1 Aspects related to the performance of the product**

This ETA is issued for stair kit “Pixima Ring”, “Pixima Ring Line”, “Pixima Cube”, “Pixima Cube Line”, “Arkè Klan”, “Arkè Kloè”, “Arkè Phoenix”, “Magia 70”, “Magia 70.Xtra”, “Reflex Lux T Tonda”, “Reflex Titan T Tonda”, “Reflex Lux Q Quadra”, “Reflex Titan Q Quadra”, “Genius 010 T tonda”, “Genius 020 T tonda”, “Genius 030 T tonda”, “Genius 050 T tonda”, “Genius 060 T tonda”, “Genius 010 Q Quadra”, “Genius 020 Q Quadra”, “Genius 030 Q Quadra”, “Genius 050



Q Quadra", "Genius 060 Q Quadra", "Oak 70", "Gus 010, Gus 020", "Rex", "Nice 1", "Ago", "Nice Line" on the basis of admitted information/data, deposited with ITC-CNR, which identify the kit that was assessed.

The characteristics of the components and of the system not mentioned in this ETA nor in the Annexes shall correspond to the respective values laid down in the Technical Documentation of this ETA, checked by ITC-CNR.

Manufacturing process scheme is deposited with ITC-CNR. Packaging, transport and storage of the components has to be such that they are protected from moisture during transport and storage. The components have to be protected against damage and well identified as part of the kit. The stair kits are placed into wood packaging boxes on which specific identification labels are affixed.

The information about installation and recommendations about installers' qualification and maintenance are provided with the technical documentation from the Manufacturer (Installation Manual), and it is his responsibility to assure that the information about design and installation of the system "Pixima Ring", "Pixima Ring Line", "Pixima Cube", "Pixima Cube Line", "Arkè Klan", "Arkè Kloè", "Arkè Phoenix", "Magia 70", "Magia 70.Xtra", "Reflex Lux T Tonda", "Reflex Titan T Tonda", "Reflex Lux Q Quadra", "Reflex Titan Q Quadra", "Genius 010 T tonda", "Genius 020 T tonda", "Genius 030 T tonda", "Genius 050 T tonda", "Genius 060 T tonda", "Genius 010 Q Quadra", "Genius 020 Q Quadra", "Genius 030 Q Quadra", "Genius 050 Q Quadra", "Genius 060 Q Quadra", "Oak 70", "Gus 010, Gus 020", "Rex", "Nice 1", "Ago", "Nice Line" is effectively communicated to the concerned people. The information can be given using reproductions of the respective parts of this European Technical Assessment; furthermore, all the data concerning the execution shall be indicated clearly on the packaging and/or on the enclosed instruction sheets using one or several illustrations.

In any case, it is appropriate to comply with national regulations, and particularly concerning fire.

For the maintenance operations of the "Pixima Ring", "Pixima Ring Line", "Pixima Cube", "Pixima Cube Line", "Arkè Klan", "Arkè Kloè", "Arkè Phoenix", "Magia 70", "Magia 70.Xtra", "Reflex Lux T Tonda", "Reflex Titan T Tonda", "Reflex Lux Q Quadra", "Reflex Titan Q Quadra", "Genius 010 T tonda", "Genius 020 T tonda", "Genius 030 T tonda", "Genius 050 T tonda", "Genius 060 T tonda", "Genius 010 Q Quadra", "Genius 020 Q Quadra", "Genius 030 Q Quadra", "Genius 050 Q Quadra", "Genius 060 Q Quadra", "Oak 70", "Gus 010, Gus 020", "Rex", "Nice 1", "Ago", "Nice Line" stairs the Manufacturer recommends to follow the following instructions.

The first maintenance service is carried out after twelve months and consists in evaluating the fastening state of all the connecting screws of the different components. The stairs can be cleaned with a water-moist cloth or, if required, with a non-aggressive detergent. All cleaning tools that may cause wear on the surface of the components of the stair and all products containing abrasive agents and chemical solvents of any kind whatsoever, shall be avoided in any case.

Any localised damage due to accidental actions shall be timely repaired.

### 3. PERFORMANCES OF THE PRODUCT AND REFERENCE TO THE METHODS USED FOR ITS ASSESSMENT

The tests for performance assessment of "Pixima Ring", "Pixima Ring Line", "Pixima Cube", "Pixima Cube Line", "Arkè Klan", "Arkè Kloè", "Arkè Phoenix", "Magia 70", "Magia 70.Xtra", "Reflex Lux T Tonda", "Reflex Titan T Tonda", "Reflex Lux Q Quadra", "Reflex Titan Q Quadra", "Genius 010 T tonda", "Genius 020 T tonda", "Genius 030 T tonda", "Genius 050 T tonda", "Genius 060 T tonda", "Genius 010 Q Quadra", "Genius 020 Q Quadra", "Genius 030 Q Quadra", "Genius 050 Q Quadra", "Genius 060 Q Quadra", "Oak 70", "Gus 010, Gus 020", "Rex", "Nice 1", "Ago", "Nice Line" were carried out in compliance with EAD 340006-00-0506 according to the test methods reported herein; performances are valid as long as the components of the kit fully correspond to those described in § 1.

Essential characteristic	Performance																							
<b>BWR 1: Mechanical resistance and stability</b>																								
Load-bearing capacity of the stair	See Annex 15																							
Load-Displacement behaviour	See Annex 15																							
Vibration behaviour of the stair	See Annex 15																							
Prevention of progressive collapse	Failure of individual components of the stair does not lead to a progressive collapse of the complete stair																							
Residual load-bearing capacity	Local material failure does not lead to an abrupt total loss of the load-bearing capacity of the steps																							
Long-term behaviour	Load-bearing capacity is ensured under an appropriate use and maintenance over the indicated working life																							
Resistance to earthquake	No Performance Determined																							
Durability against physical, chemical, biological agents of the components of the stair	Acceptable for the intended use under appropriate use and maintenance																							
<b>BWR 2: Safety in case of fire</b>																								
Reaction to fire: classification of the components of the kit																								
Assessment without the need for testing according to EC Decisions	Class																							
Steel components according to Decisions 96/603/EC and 2000/605/EC	A1																							
Glued laminated timber components according to Decision 2005/610/EC	D – s2, d0																							
Polyamide, PC and ABS components	No Performance Determined																							
Resistance to fire	No Performance Determined																							
<b>BWR 3: Hygiene, health and the environment</b>																								
Release of formaldehyde	No Performance Determined																							
Release of pentachlorophenol	No Performance Determined																							
Radioactive emissions	Not relevant																							
<b>BWR 4: Safety and accessibility in use</b>																								
Geometry	See Annexes 1 to 14																							
Slipperiness	No Performance Determined																							
Safety equipment	No Performance Determined																							
Safe breakage	No brittle failure of individual components																							
Impact resistance	System has been verified under the following conditions:																							
	<table border="1"> <thead> <tr> <th>Test</th> <th>Impact body</th> <th>Weight of the impact body (kg)</th> <th>Max drop height (mm)</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Pendulum (barrier)</td> <td rowspan="2">Hard body</td> <td>1</td> <td>1200</td> </tr> <tr> <td>3,5</td> <td>1200</td> </tr> <tr> <td rowspan="2">Soft body</td> <td>30</td> <td>1200</td> </tr> <tr> <td>50</td> <td>1200</td> </tr> <tr> <td>Drop (solid wood step)</td> <td>Hard body</td> <td>4,5</td> <td>2200</td> </tr> <tr> <td>Drop (plywood step)</td> <td>Hard body</td> <td>4,5</td> <td>3000</td> </tr> </tbody> </table>	Test	Impact body	Weight of the impact body (kg)	Max drop height (mm)	Pendulum (barrier)	Hard body	1	1200	3,5	1200	Soft body	30	1200	50	1200	Drop (solid wood step)	Hard body	4,5	2200	Drop (plywood step)	Hard body	4,5	3000
Test	Impact body	Weight of the impact body (kg)	Max drop height (mm)																					
Pendulum (barrier)	Hard body	1	1200																					
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	Soft body	30	1200																					
		50	1200																					
Drop (solid wood step)	Hard body	4,5	2200																					
Drop (plywood step)	Hard body	4,5	3000																					

**4. ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE**

**4.1 System of assessment and verification of constancy of performance**

According to the Decision n. 1999/89/EC of the European Commission, the system of assessment and verification of constancy of performance (AVCP) applied to this product (see Annex V to Regulation (EU) 305/2011) is System 2+.

In addition, with regard to reaction to fire, the AVCP system applied according to Decision n. 2001/596/EC is System 4.

**4.2 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document**

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ITC-CNR.

**Issued in San Giuliano Milanese, Italy on 29/06/2018  
by ITC – CNR**

**Prof. Antonio Occhiuzzi  
Director of ITC-CNR**

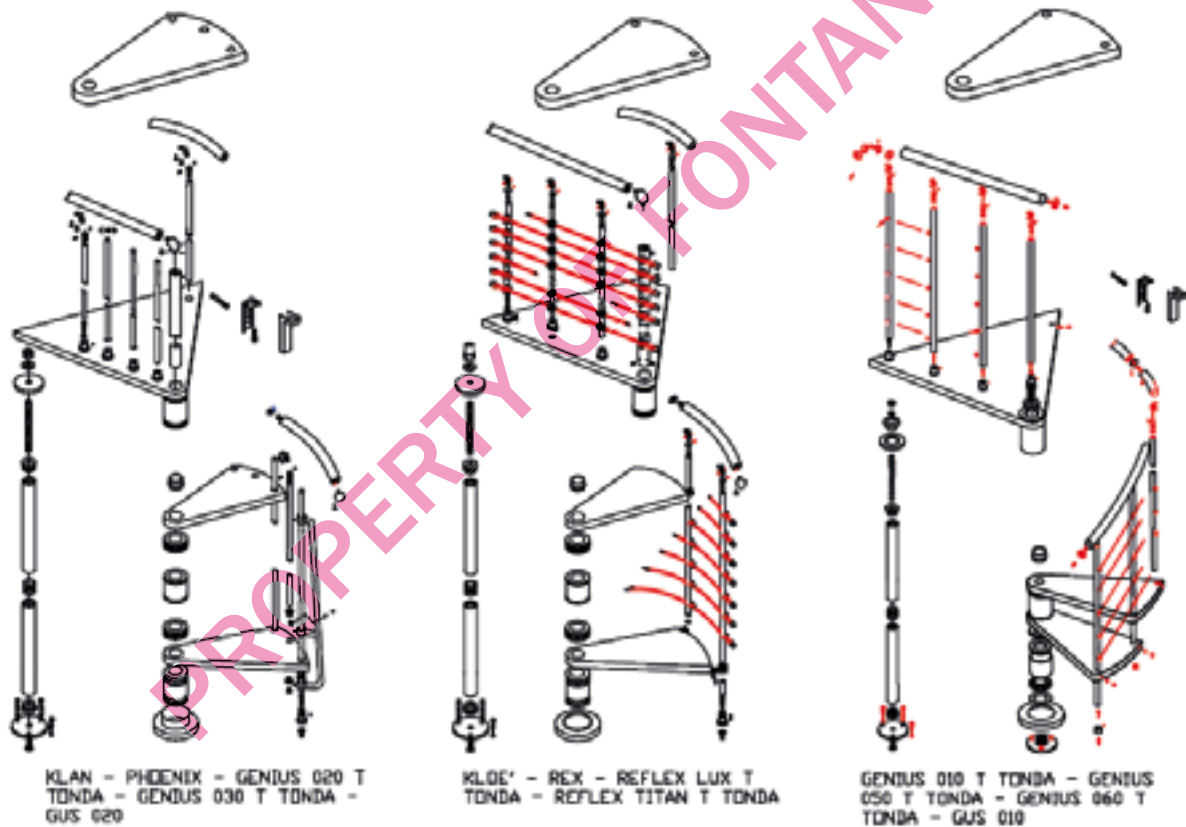
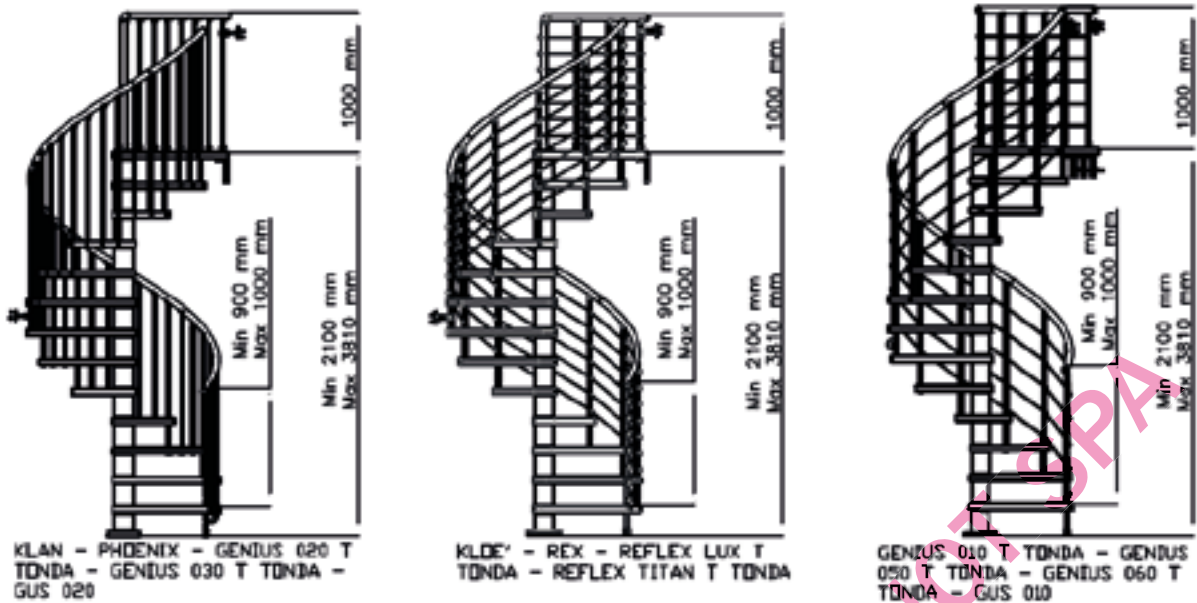
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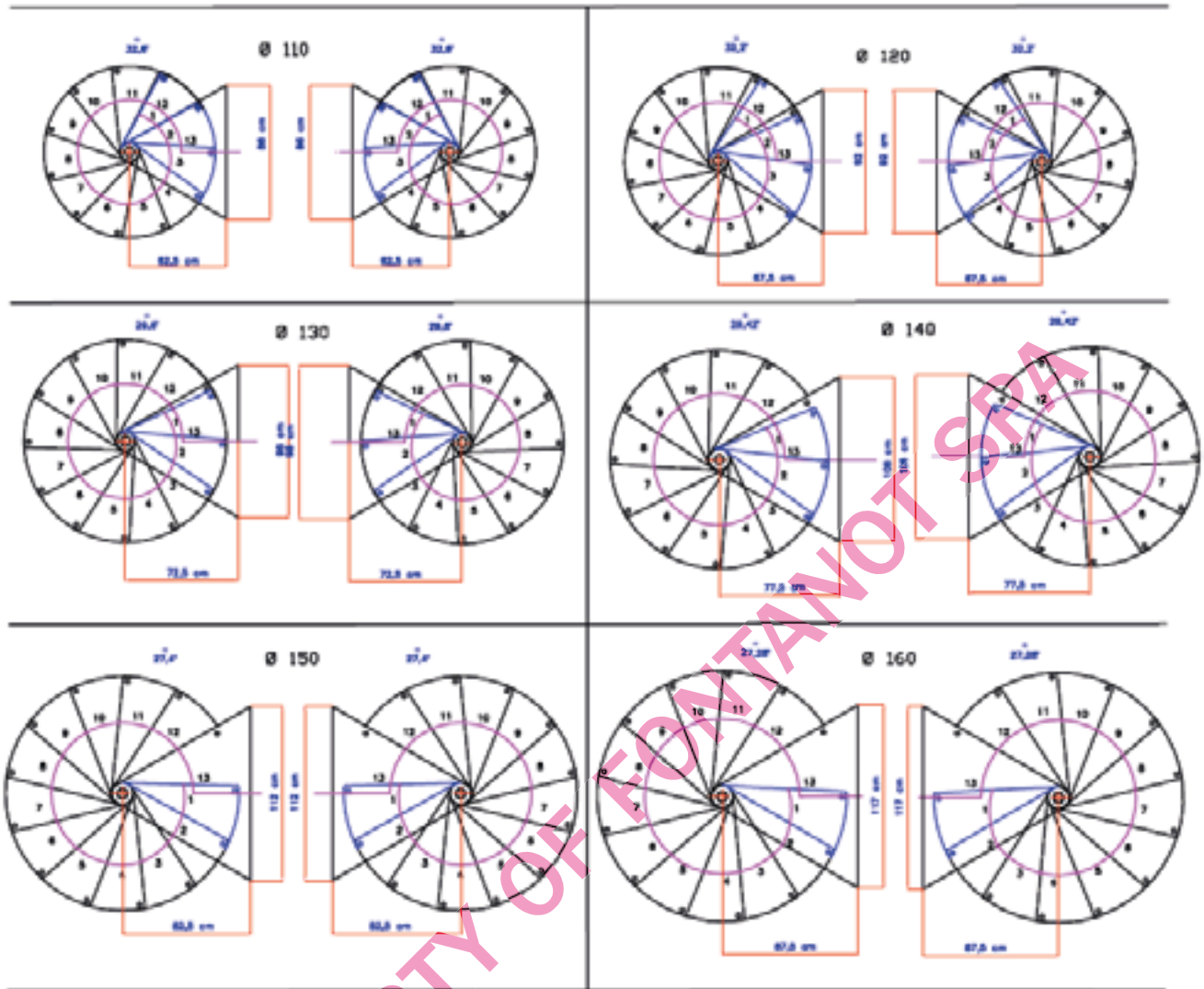


Annex 2 of ETA 13/0373: Prefabricated spiral stair kit with wood steps



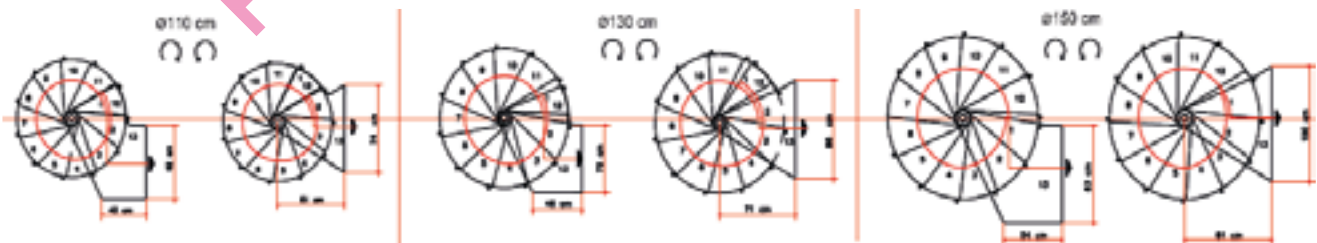
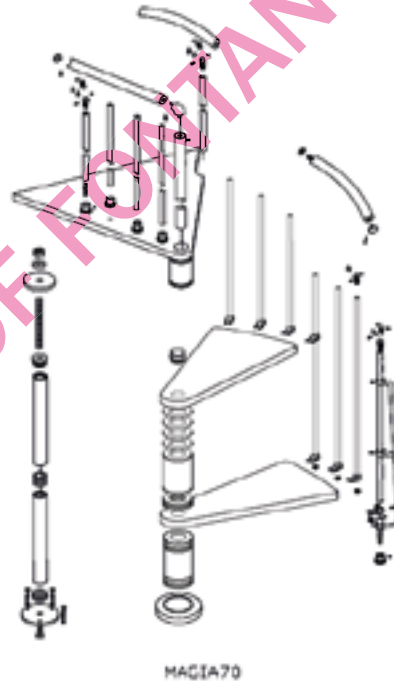
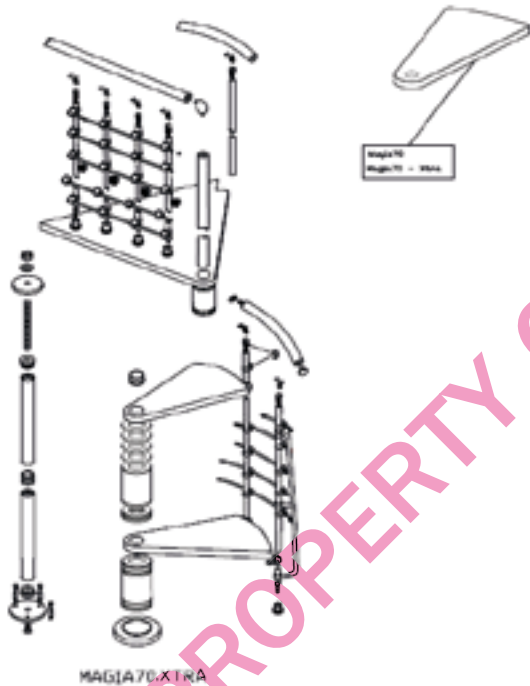
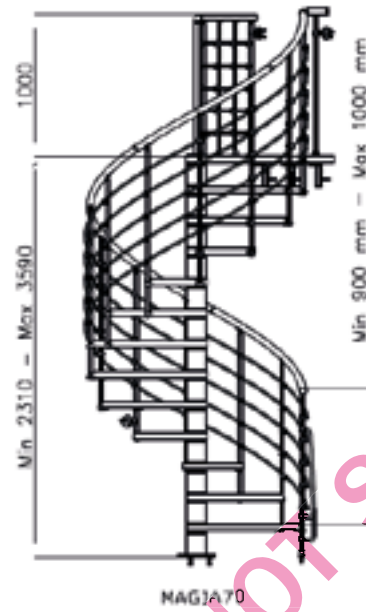
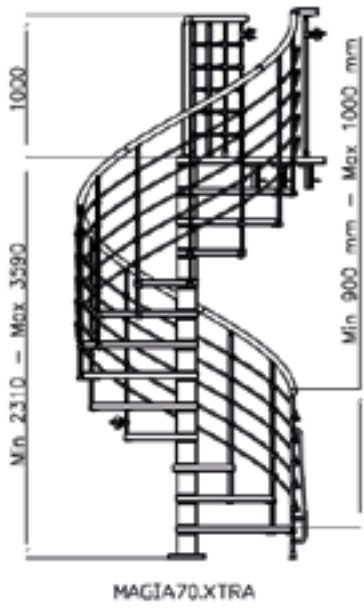
<p>“Arkè Klan”, “Arkè Kloè”, “Arkè Phoenix”, “Reflex Lux T Tonda”, “Reflex Titan T Tonda”, “Genius 010 T tonda”, “Genius 020 T tonda”, “Genius 030 T tonda”, “Genius 050 T tonda”, “Genius 060 T tonda”, “Gus 010”, “Gus 020”, “Rex”</p> <p>Type and geometry of the stairs</p>	<p><b>Annex 2 of European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</b></p>
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Annex 3 of ETA 13/0373: Prefabricated spiral stair kit with wood steps



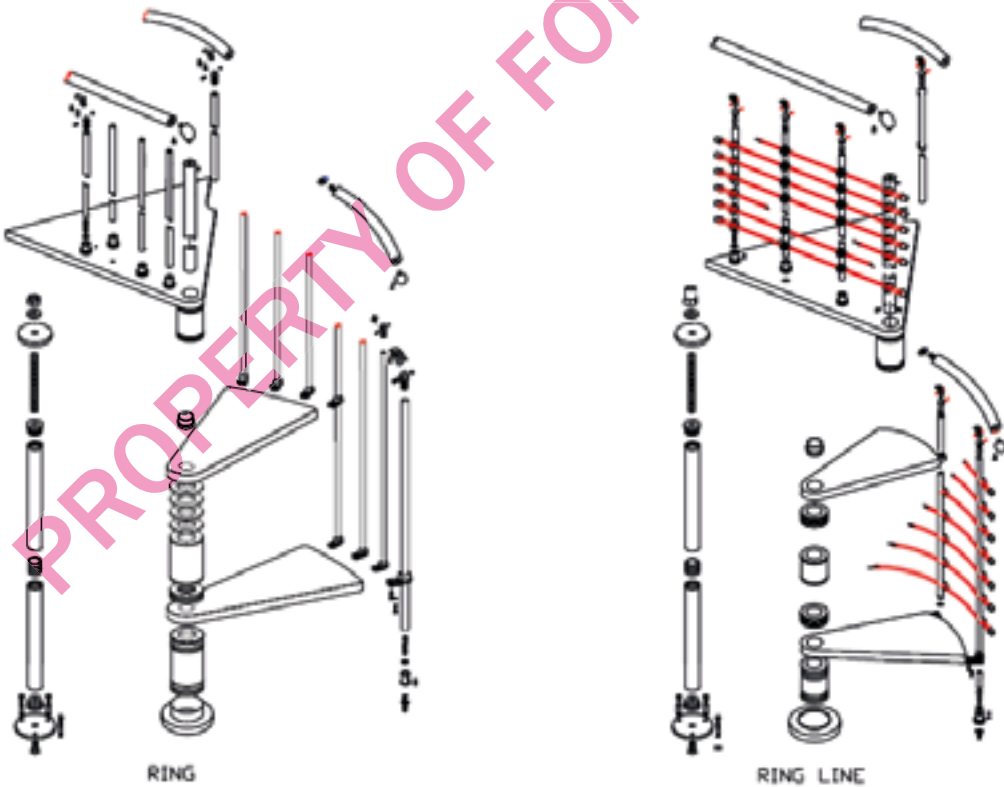
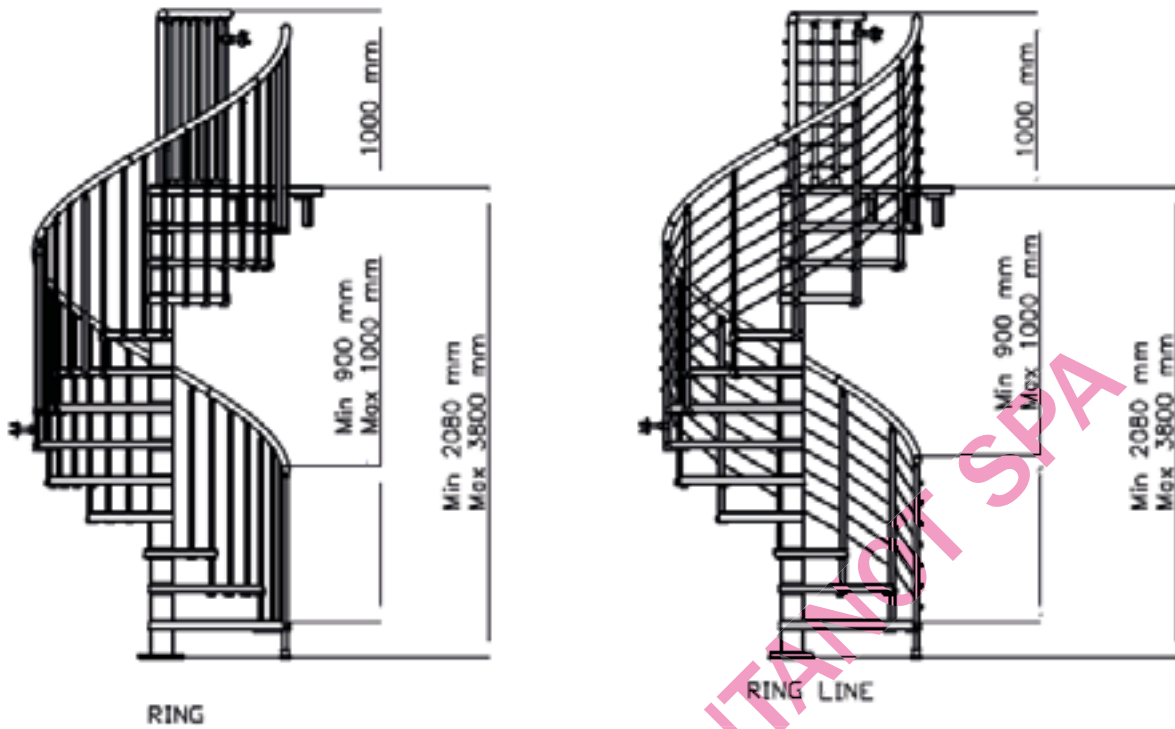
<p>“Arkè Klan”, “Arkè Kloè”, “Arkè Phoenix”, “Reflex Lux T Tonda”, “Reflex Titan T Tonda”, “Genius 010 T tonda”, “Genius 020 T tonda”, “Genius 030 T tonda”, “Genius 050 T tonda”, “Genius 060 T tonda”, “Gus 010”, “Gus 020”, “Rex”</p>	<p><b>Annex 3 of European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</b></p>
<p>Stairs plan</p>	

Annex 4 of ETA 13/0373: Prefabricated spiral stair kit with wood steps



<p>“Magia 70”, “Magia 70.Xtra”, “Oak 70”</p>	<p><b>Annex 4 of</b></p>
<p>Type and geometry of the stairs and stairs plan</p>	<p><b>European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</b></p>

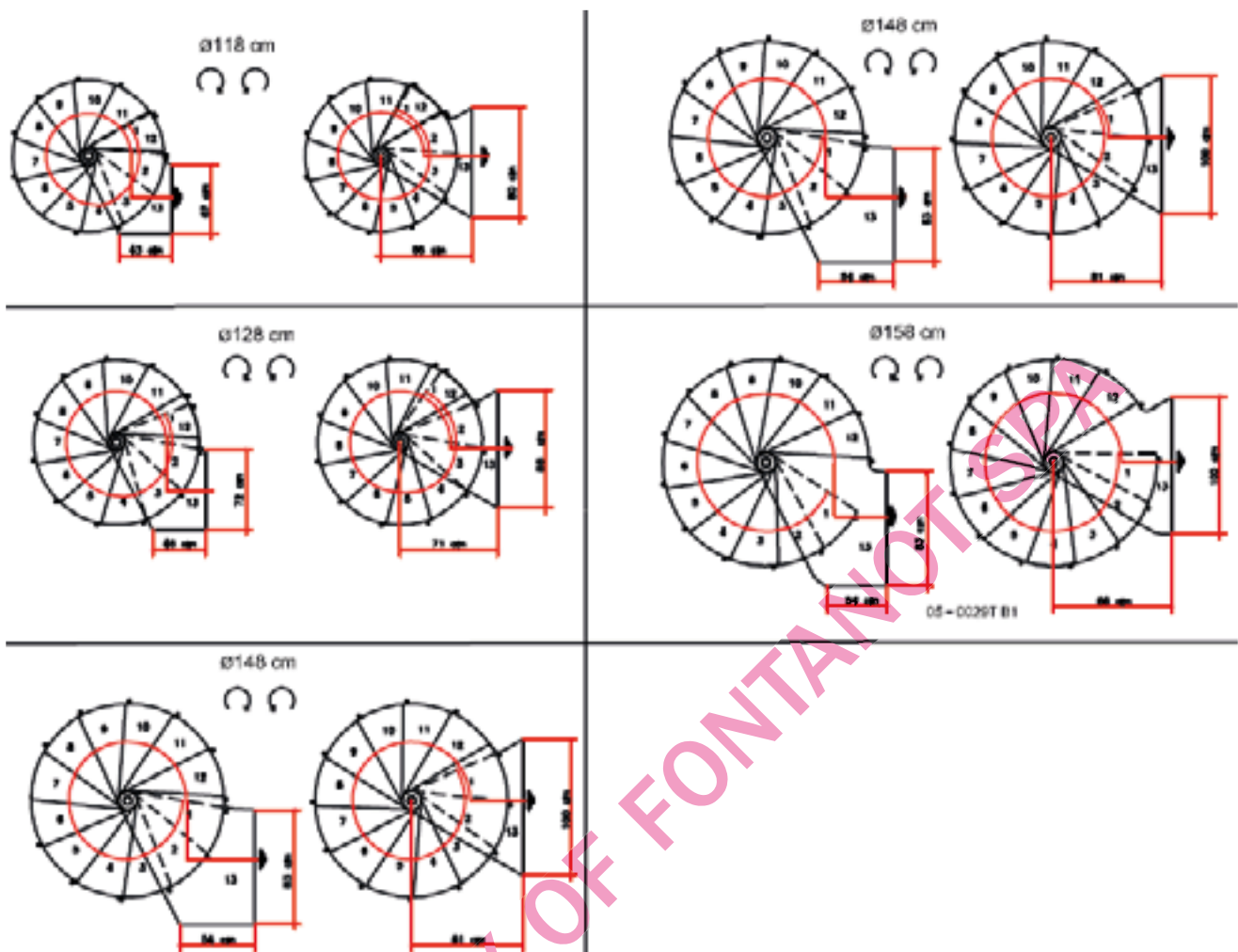
Annex 5 of ETA 13/0373: Prefabricated spiral stair kit with wood steps



<p>“Pixima Ring”, “Pixima Ring Line”</p>	<p><b>Annex 5 of</b></p>
<p>Type and geometry of the stairs</p>	<p><b>European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</b></p>



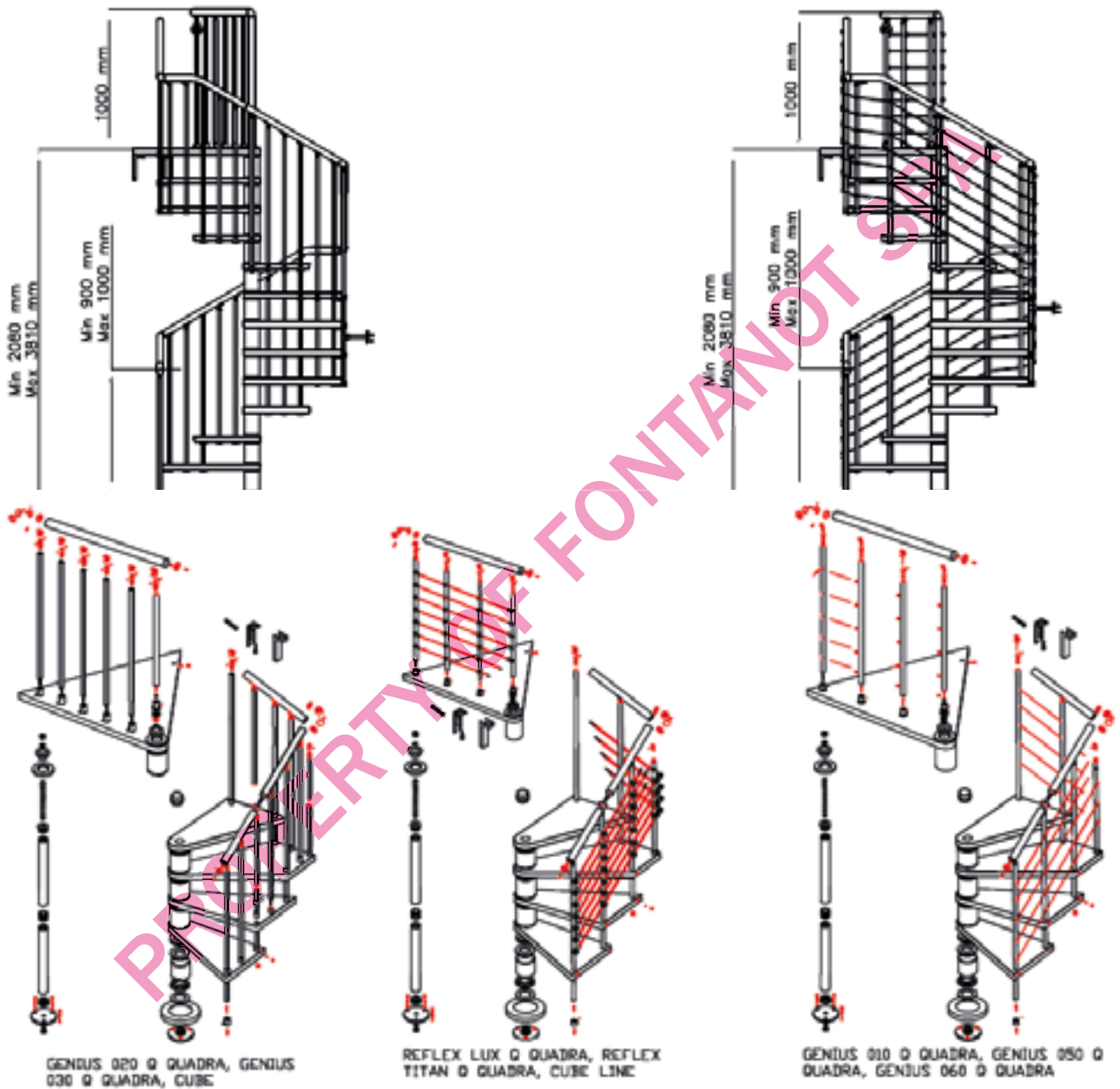
Annex 6 of ETA 13/0373: Prefabricated spiral stair kit with wood steps



"Pixima Ring", "Pixima Ring Line"	<b>Annex 6 of European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</b>
Stairs plan	



Annex 7 of ETA 13/0373: Prefabricated spiral stair kit with wood steps

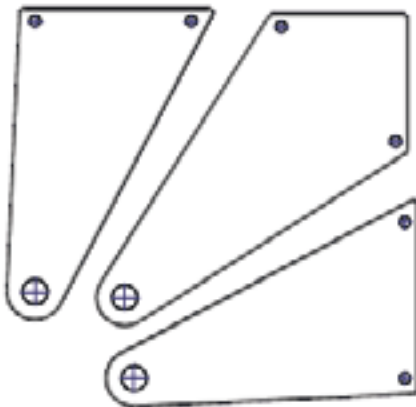


“Pixima Cube”, “Pixima Cube Line”, “Reflex Lux Q Quadra”, “Reflex Titan Q Quadra”, “Genius 010 Q Quadra”, “Genius 020 Q Quadra”, “Genius 030 Q Quadra”, “Genius 050 Q Quadra”, “Genius 060 Q Quadra”,  
 Type and geometry of the stairs

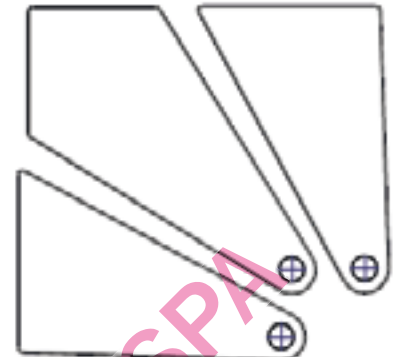
**Annex 7 of  
 European Technical Assessment 13/0373:  
 Prefabricated spiral stair kit with wood  
 steps**

**Annex 8 of ETA 13/0373: Prefabricated spiral stair kit with wood steps**

STEP TYPES

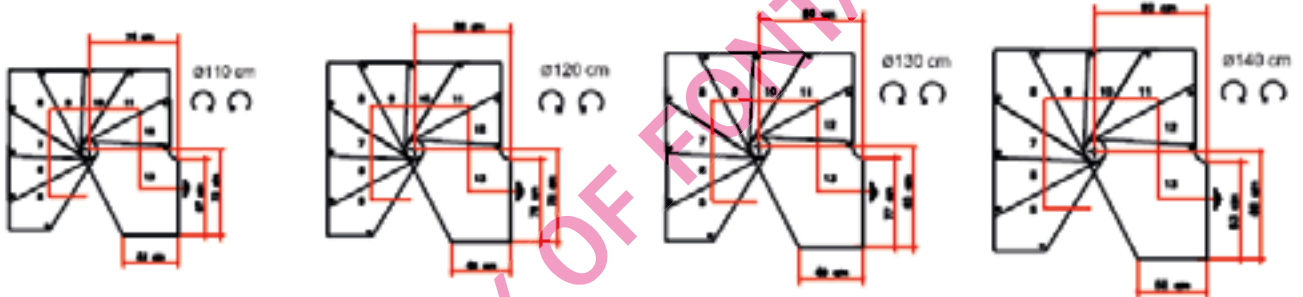


STEP TYPES

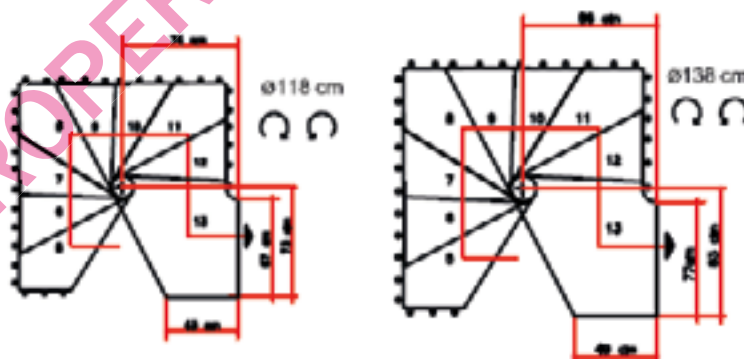


GENIUS 010 Q QUADRA, GENIUS 020 Q QUADRA, GENIUS 030 Q QUADRA, GENIUS 050 Q QUADRA, GENIUS 060 Q QUADRA, REFLEX LUX Q QUADRA, REFLEX TITAN Q QUADRA

CUBE, CUBE LINE



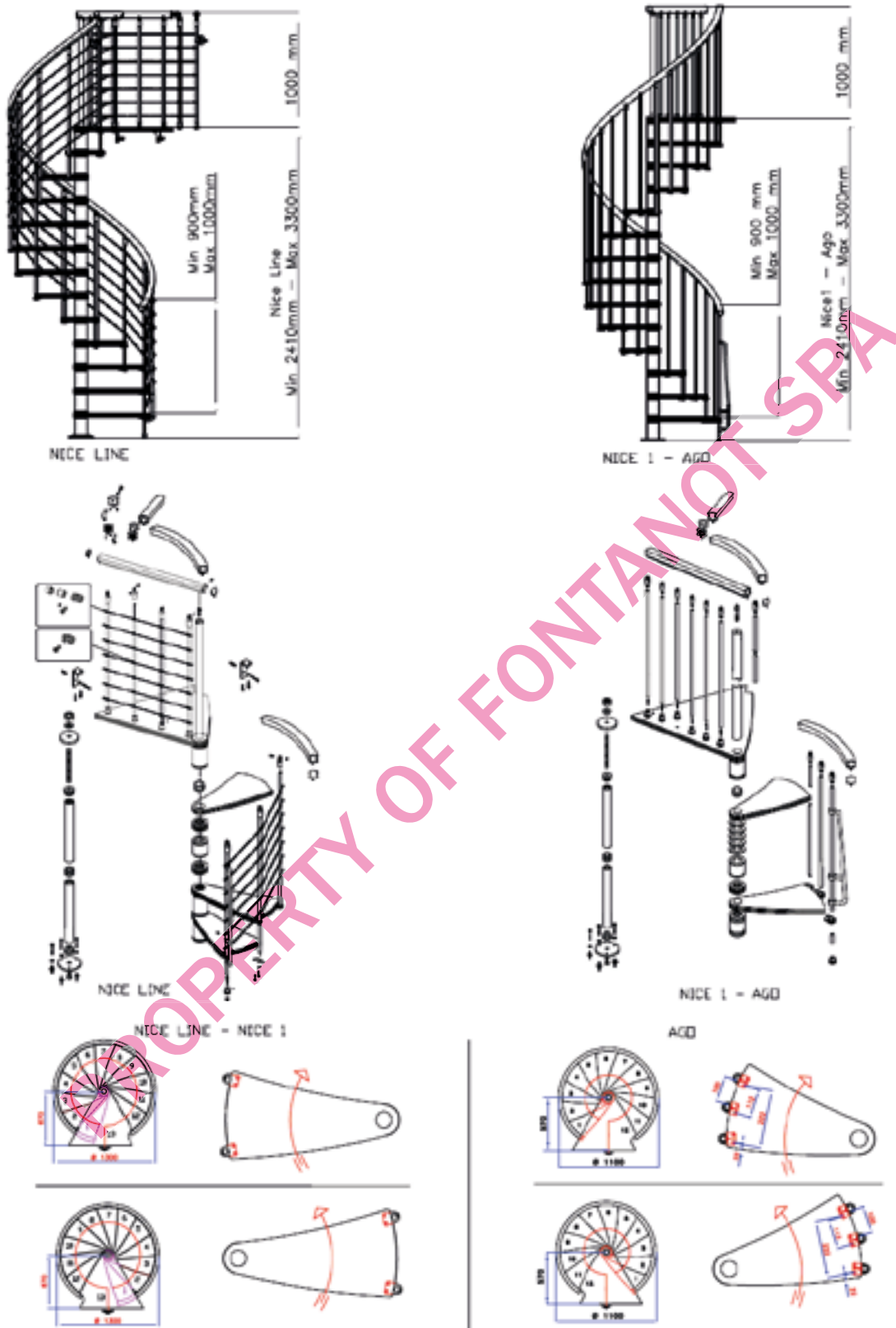
GENIUS 010 Q QUADRA, GENIUS 020 Q QUADRA, GENIUS 030 Q QUADRA, GENIUS 050 Q QUADRA, GENIUS 060 Q QUADRA, REFLEX LUX Q QUADRA, REFLEX TITAN Q QUADRA



CUBE, CUBE LINE

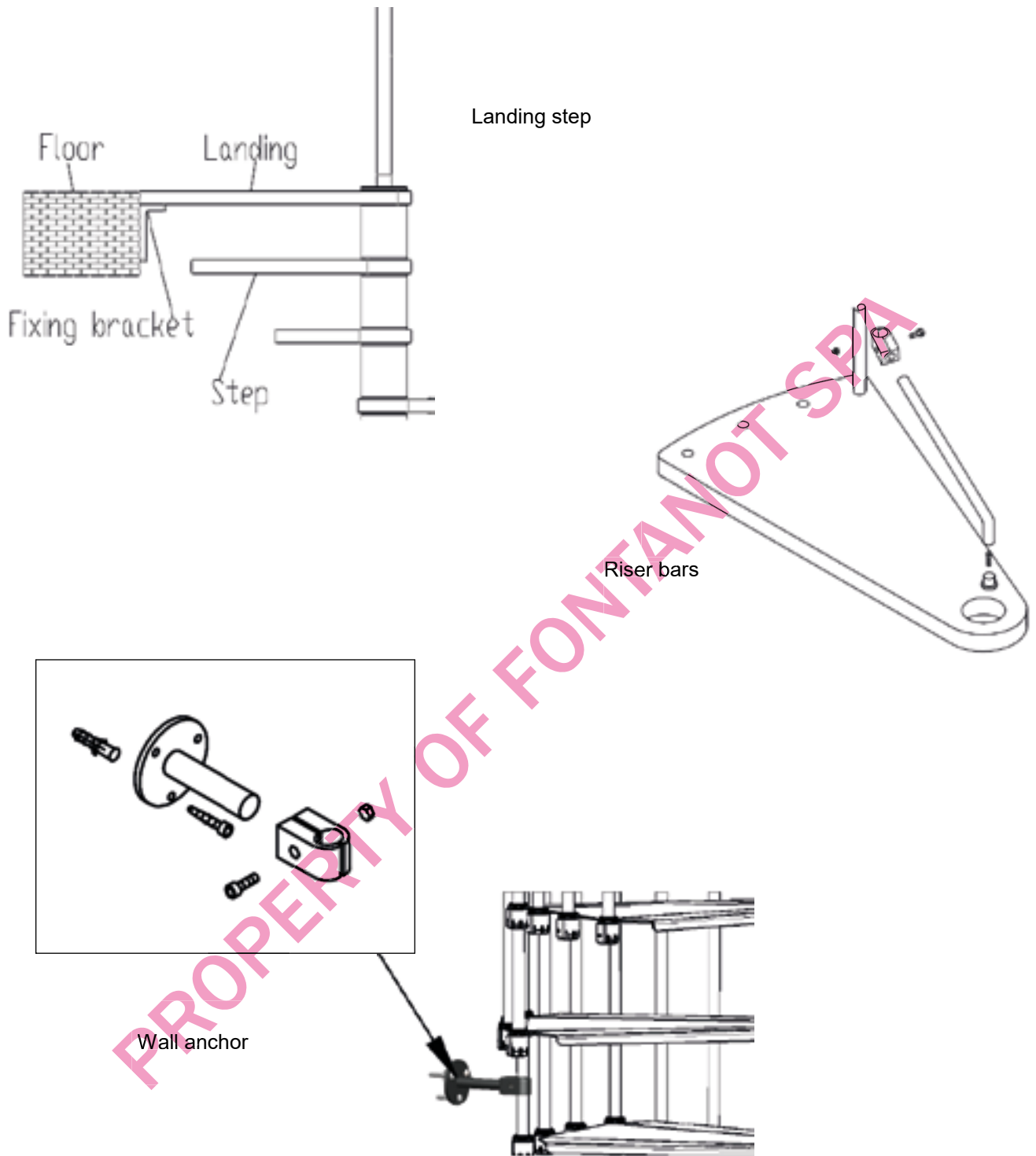
<p>"Pixima Cube", "Pixima Cube Line", "Reflex Lux Q Quadra", "Reflex Titan Q Quadra", "Genius 010 Q Quadra", "Genius 020 Q Quadra", "Genius 030 Q Quadra", "Genius 050 Q Quadra", "Genius 060 Q Quadra"</p>	<p><b>Annex 8 of European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</b></p>
<p>Type of step and plans</p>	

Annex 9 of ETA 13/0373: Prefabricated spiral stair kit with wood steps



<p>“Nice Line”, “Nice 1”, “Ago”</p>	<p>Annex 9 of</p>
<p>Type and geometry of the stairs and stairs plan</p>	<p>European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</p>

**Annex 10 of ETA 13/0373: Prefabricated spiral stair kit with wood steps**



Wood spiral stairs	<b>Annex 10 of European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</b>
Stairs accessories (details)	

Annex 11 of ETA 13/0373: Prefabricated spiral stair kit with wood steps

TIPO	Flywood (Betulla) spessore 44mm	Flywood (Betulla) spessore 34mm	SVP (Faggio) spessore 42 mm per scala a pianta rotonda - con fori per paletti	SVP (Faggio) spessore 42 mm per scala a pianta rotonda - senza fori per paletti	SVP (Faggio) spessore 42 mm per scala a pianta quadrata - 1 gradino triangolare e 1 gradino trapezoidale d'angolo	SVP (Robere) spessore 44 mm per scala a pianta rotonda - - senza fori per paletti
FIGURA						
MATERIALE	Flywood (Betulla)	Flywood (Betulla)	SVP (Faggio)	SVP (Faggio)	SVP (Faggio)	SVP (Robere)
DIMENSIONI	Spessore 44mm	Spessore 34mm	Spessore 42mm	Spessore 42mm	Spessore 42mm	Spessore 44mm
SCALE DOVE VIENE INSTALLATA	Magia 70	NICE 1 AGO NICE LINE	Klan Phoenix Kloè Genius 010 T Tonda Genius 020 T Tonda Genius 030 T Tonda Genius 050 T Tonda Genius 060 T Tonda Gus 010 Gus 020 Rex Reflex Lux T Tonda Reflex Titan T Tonda	Ring Line Ring	Qube Line Qube Genius 010 Q Quadra Genius 020 Q Quadra Genius 030 Q Quadra Genius 050 Q Quadra Genius 060 Q Quadra Reflex Lux Q Quadra Reflex Titan Q Quadra	Oak 70

TIPO	DISTANZIALE IN PA66	DISTANZIALE IN PC	DISTANZIALE IN ABS
FIGURA			
SCALE DOVE VIENE INSTALLATA	Ring Line Ring Qube Line Qube Magia 70.Xtra Magia 70 Oak 70 NICE 1 AGO NICE LINE	Genius 010 T Tonda Genius 020 T Tonda Genius 030 T Tonda Genius 050 T Tonda Genius 060 T Tonda Genius 010 Q Quadra Genius 020 Q Quadra Genius 030 Q Quadra Genius 050 Q Quadra Genius 060 Q Quadra Gus 010 Gus 020 Rex Reflex Lux T Tonda Reflex Titan T Tonda Reflex Lux Q Quadra Reflex Titan Q Quadra	Klan Phoenix Kloè

Wood spiral stairs	<b>Annex 11 of European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</b>
Types of step and spacers depending on the stair	




**Annex 12 of ETA 13/0373: Prefabricated spiral stair kit with wood steps**

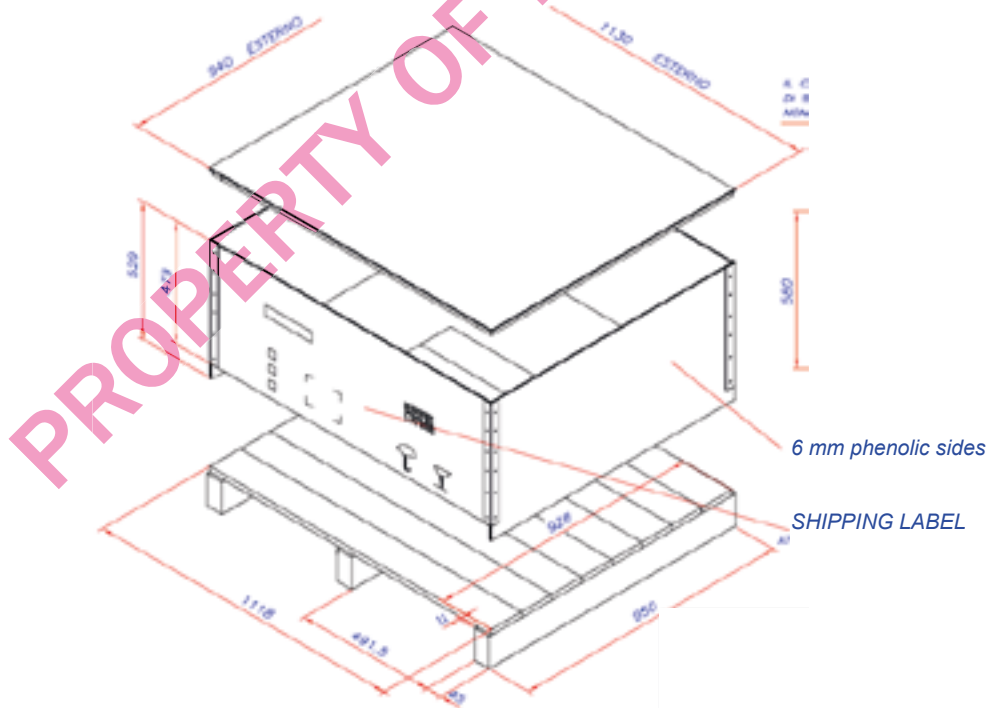
TPD	Solo paletti	Solo paletti	Solo paletti	Paletti 7 cavi	Paletti 7 tondini	Paletti 5 cavi	Paletti 5 tubi PVC
FIGURA							
MATERIALI E DIMENSIONI	A) Paletti in acciaio 20x2mm verniciati a polvere	A) Paletti in acciaio 20x1,5mm verniciati a polvere	A) Paletti in acciaio 20x20x2mm verniciati a polvere	A) Paletti in acciaio 27x2,5mm verniciati a polvere B) 7 cavi in acciaio inox	A) Paletti in acciaio 27x2,5mm verniciati a polvere B) 7 tondini in acciaio inox	A) Paletti in acciaio 27x2,5 mm verniciati a polvere B) 5 cavi in acciaio inox	A) Paletti in acciaio 20x2mm verniciati a polvere B) 5 tubi in PVC
SCALE DOVE VIENE INSTALLATA	Ring Cube Klan Phoenix Magia 70 Genius 030 T Tonda Genius 030 Q Quadra AGO	Oak 70 NICE 1	Gus 020 Genius 020 T Tonda Genius 020 Q Quadra	Ring Line Cube Line Rex	Reflex Lux T Tonda Reflex Titan T Tonda Reflex Lux Q Quadra Reflex Titan Q Quadra	Kloè Genius 010 T Tonda Genius 050 T Tonda Genius 060 T Tonda Genius 010 Q Quadra Genius 050 Q Quadra Genius 060 Q Quadra Gus 010 NICE LINE	Magia 70.Xtra

Wood spiral stairs	<b>Annex 12 of European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</b>
Types of step and spacers depending on the stair	



**Annex 13 of ETA 13/0373: Prefabricated spiral stair kit with wood steps**

TIPO	CORRIMANO PVC	CORRIMANO IN LEGNO	CORRIMANO IN PVC CON ANIMA IN ALLUMINIO
FIGURA			
MATERIALE	PVC Estruso	Solid wood (faggio)	PVC con anima di alluminio
DIMENSIONI	50x36x4 mm	48 mm	44 mm
SCALE DOVE VENE INSTALLATA	NICE 1 AGO NICE LINE	Genius 010 T Tonda Genius 020 T Tonda Genius 030 T Tonda Genius 050 T Tonda Genius 060 T Tonda Genius 010 Q Quadra Genius 020 Q Quadra Genius 030 Q Quadra Genius 050 Q Quadra Genius 060 Q Quadra Gus 010 Gus 020 Rex Reflex Lux T Tonda Reflex Titan T Tonda	Ring Line Ring Cube Line Cube Klan Phoenix Kloè Magia 70.Xtra Magia 70 Oak 70



Wood spiral stairs	<b>Annex 13 of European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</b>
Types of handrail and shipping package	

## Annex 14 of ETA 13/0373: Prefabricated spiral stair kit with wood steps

Dimension	Unit of measurement	Value
Diameter of the stair	[mm]	From 1100 to 1600 (See Annex 1)
Height between floors	[mm]	Up to 3760
Number of risers	[n]	Up to 16
Riser	[mm]	Up to 235
Length of the step	[mm]	From 490 to 740
Tread width	[mm]	Up to 350
Thickness of the wood step	[mm]	See Annex 1
Diameter of central tie-rod	[mm]	60
Thickness of central tie-rod	[mm]	4
Height of the handrail	[mm]	900 ÷ 1050
Outer diameter of the balusters	[mm]	Ø 20, Ø 27, □ 20x20 (See Annex 1)
Outer diameter of the handrail	[mm]	□ = 50 x 36 x 4, Ø = 44 (See Annex 1)

Components	Materials	Type	Mechanical characteristics
Structure: central tie-rod and balusters	Steel	S235 JR EN 10025	$f_{tk} = 360 \text{ N/mm}^2$
Steps	Wood	Beech glued laminated timber Multi-layer birch wood	$f_{tk} = 30 \text{ N/mm}^2$ $f_{tk} = 30 \text{ N/mm}^2$
Nuts and bolts	Steel	Class 8.8	$f_{t,k} = 800 \text{ N/mm}^2$ $f_{v,k} = 640 \text{ N/mm}^2$ $f_{d,N} = 560 \text{ N/mm}^2$ $f_{d,v} = 396 \text{ N/mm}^2$
Spacers	Polyamide	PA 66	$f_{yk} \geq 50 \text{ N/mm}^2$
	Polycarbonate	PC	$f_{yk} \geq 55 \text{ N/mm}^2$
	Acrylonitrile Butadiene Styrene	ABS	$f_{yk} \geq 45 \text{ N/mm}^2$

Wood spiral stairs	<b>Annex 14 of European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</b>
Geometry and materials of the stairs	

## Annex 15 of ETA 13/0373: Prefabricated spiral stair kit with wood steps

### Load-bearing capacity of the stair at ultimate limit state - Characteristic values of resistance

Assessment according to the limit state design method as proposed in EN 1990, by testing and calculation

Type of loading	Level kN	Level kN/m <sup>2</sup>	Level kN/m	$\gamma_M^1$
Vertical variable point load acting on a step in the most unfavourable position – SWP - $Q_{RK}$	> 4,55			$\gamma_s = 1,1$
Vertical variable point load acting on a step in the most unfavourable position - plywood - $Q_{RK}$	3,94			$\gamma_w = 1,5$
Vertical variable uniformly distributed load $q_{RK}$		> 4,78		$\gamma_p = 2,0$
Horizontal variable uniformly distributed load acting on the barrier at the level of the handrail $h_{RK}$			NPD	$\gamma_Q = 1,5$

1)  $\gamma_s$  = partial safety factor of steel

$\gamma_w$  = partial safety factor of wood

$\gamma_p$  = partial safety factor of polymers

$\gamma_Q$  = partial safety factor taking account of the model's uncertainties and dimensional variations (Appendix A of standard CEN/TS 15680)

### Load-displacement behaviour at serviceability limit state – Deflections under loading

Assessment by testing and calculation – worst cases considered

		Level
Deflection of the step under service load $F_s$ (point load $Q = 2,00$ kN) $w_Q$ (width= clear width of the stair)	$l = \text{width}$	$\leq l/100$
Deflection of the stair under service load $F_s$ (uniformly distributed load $q = 2,00$ kN/m <sup>2</sup> ) related to the middle line of the stair $w_q$	$l = \text{length}$	$\leq l/200$

Proof of serviceability limit state is only given if the design value of the loads ( $F_k$ ) does not exceed the values ( $F_s$ ):  $F_k \leq F_s$

### Load-bearing capacity – Admissible loads

Minimum values from proof of ultimate limit state and serviceability limit state			
Vertical variable uniformly distributed load	$q =$	2,00	[kN/m <sup>2</sup> ]
Vertical variable point load	$Q =$	2,00	[kN]
Horizontal variable uniformly distributed load	$h_s =$	NPD	

### Vibration behaviour of the stair under single point load

Assessment by testing

Deflection and proper oscillation frequency		
Single point load of $F = 1$ kN acting on the most unfavourable point		
$f_1$ = proper oscillation frequency $w$ = deflection of the stair	$f_1$	$w$
Type of stair	Level Hz	Level mm
Spiral "Arkè Klan", 16 beech laminated timber steps	5,9	3,32
"Pixima Ring", "Pixima Ring Line", "Pixima Cube", "Pixima Cube Line", "Arkè Kloè", "Arkè Phoenix", "Magia 70", "Magia 70.Xtra", "Reflex Lux T Tonda", "Reflex Titan T Tonda", "Reflex Lux Q Quadra", "Reflex Titan Q Quadra", "Genius 010 T tonda", "Genius 020 T tonda", "Genius 030 T tonda", "Genius 050 T tonda", "Genius 060 T tonda", "Genius 010 Q Quadra", "Genius 020 Q Quadra", "Genius 030 Q Quadra", "Genius 050 Q Quadra", "Genius 060 Q Quadra", "Oak 70", "Gus 010, Gus 020", "Rex", "Nice 1", "Ago", "Nice Line", "Klio quadra Zink", "AF26", "Nice 3"	$\geq 5,9$	$\leq 3,32$

Wood spiral stairs	<b>Annex 15 of European Technical Assessment 13/0373: Prefabricated spiral stair kit with wood steps</b>
Load-bearing capacity	