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CZŁONEK EOTA i UEAtc

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NATIONAL TECHNICAL ASSESSMENT ITB-KOT-2022/2174 edition 1

This National Technical Assessment has been issued in accordance with the regulation of the Minister of Infrastructure and Construction of 17th November 2016 on national technical assessments (Dz. U. z 2016 r., poz. 1968) by the Instytut Techniki Budowlanej in Warsaw, on the request of:

DECK-DRY POLSKA Sp. z o.o.
ul. Abrahama 48, 80-307 Gdańsk

National Technical Assessment ITB-KOT-2022/2174 edition 1 is a positive assessment of performance of the following construction products for the intended use:

DD PEDESTALS kit for supporting structure of deckings

Validity date of the National Technical Assessment:
29th June 2027

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Warsaw, 29th June 2022

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1. TECHNICAL DESCRIPTION OF THE PRODUCT

This National Technical Assessment covers DD PEDESTALS kit for supporting structure of deckings, manufactured by DECK-DRY POLSKA Sp. z o.o., ul. Abrahama 48, 80-307 Gdańsk, in the manufacturing plant in Poland.

National Technical Assessment covers types of the products specified by the manufacturer and resulting from the performance given in point 3, as well as the combination of used elements.

DD PEDESTALS kit includes the following products:

- SPIRAL series adjustable pedestals (Fig. A1 - A3), characterised by adjustable height, in the range of: 10 - 17 mm (in case of SPIRAL 010-017 pedestal), 17 - 30 mm (in case of SPIRAL 017-030 pedestal) or 30 - 50 mm (in case of SPIRAL 030-050 pedestal); SPIRAL series also includes self-leveling head LE SPIRAL (Fig. A4). Self-leveling head consists of bottom and top part, with a structure that allows the top part to adjust automatically to the floor level within the range of inclination of 0 - 6%,
- STANDARD series adjustable pedestals (Fig. A5 - A10), characterised by adjustable height, in the range of: 30 - 45 mm (in case of STANDARD 030-045 pedestal), 45 - 70 mm (in case of STANDARD 045-070 pedestal), 70 - 120 mm (in case of STANDARD 070-120 pedestal), 120 - 220 mm (in case of STANDARD 120-220 pedestal), 220 - 320 mm (in case of STANDARD 120-220 pedestal used with one distance coupler STANDARD DS 100 according to Fig. A11, which increase the regulation height by 100 mm) or 320 - 420 mm (in case of STANDARD 120-220 pedestal used with two distance couplers STANDARD DS 100 according to Fig. A11); STANDARD series also includes self-leveling head LE STANDARD (Fig. A12) - self-leveling head consists of bottom and top part, with a structure that allows the top part to adjust automatically to the floor level within the range of inclination of 0 - 7% - and wedge shaped slope corrector SC STANDARD (Fig. A13), which allows to align the pedestal axis in the range of inclination of 0 - 8%,
- MAX series adjustable pedestals (Fig. A14 - A19), characterised by adjustable height in the range of: 45 - 75 mm (in case of MAX 045-075 pedestal), 75 - 150 mm (in case of MAX 075-150 pedestal), 150 - 350 mm (in case of MAX 150-350 pedestal), 350 - 550 mm (in case of MAX 150-350 pedestal used with one distance coupler MAX DS200 according to Fig. A20, which increase the regulation height by 200 mm, 550 - 750 mm (in case MAX 150-350 pedestal used with two distance couplers MAX DS200 according to Fig. A20) or 750 - 950 mm (in case of MAX 150-350 pedestal used with three distance couplers MAX DS200 according to Fig. A20); MAX series also includes self-leveling head LE MAX (Fig. A21) - self-leveling head consists of bottom and top part, with a structure that allows the top part to adjust automatically to the floor level within the range of inclination of 0 - 6% - and wedge shaped slope corrector SC MAX (Fig. A22), which allows to align the pedestal axis in the range of inclination of 0 - 8%,
- fixed height support pads, symbol DDP 002, DDP 008, DDP 010, DDP 015 and DDP 016 (Fig. A23 - A27), of the height correspondingly 2, 8, 10, 15 and 16 mm, used with adjustable pedestals.

The elements of the kit are used to make support, which include pedestals or pedestals with the additional elements such as self-leveling heads, distance couplers or slope correctors.

The products which are included in the DD PEDESTALS kit are made of polypropylene (PP) – non-virgin material with an admixture of calcium carbonate ($CaCO_3$).

Shape and dimensions of the products included in the kit are given in Annex A. Dimensional deviations of joint elements surface correspond to grade of tolerance *m* according to PN-EN 22768-1:1999, whereas the rest of linear dimensions correspond to grade of tolerance *v* according to PN-EN 22768-1:1999.

Technical description of materials of which the products covered by this National Technical Assessment are manufactured, as well as the appearance and colour, are given in Annex B.

2. INTENDED USE OF THE PRODUCT

DD PEDESTALS kit is intended to be used for supporting structure of deckings, and also to level and regulate the height of the external decking floors.

Supporting structure made of DD PEDESTALS kit should be used on the even and stable substrate, which allows drainage of rainwater.

DD PEDESTALS kit is classified as E fire reaction class according to the PN-EN 13501-1:2019 and as self-extinguishing in accordance with the Minister of Infrastructure of 12th April 2002 regulation, on technical conditions to be met by buildings and their location (Dz. U. z 2022 r., poz. 1225).

When designing and during constructing supporting structure of deckings it is necessary to take into account the performance given in clause 3 of this National Technical Assessment, including impact of external conditions on the load bearing capacity of pedestals. DD PEDESTALS kit should be used with floor slabs, which are placed on the market in accordance with current regulations and intended use, with mechanical characteristics in accordance with technical design. Floor slabs should be put on the pedestals (supports) as shown in Fig. 1 (axially or eccentrically).

The way of pedestals fixing to the substrate is not covered by this National Technical Assessment.

Kit of products covered by this National Technical Assessment shall be used in accordance with:

- technical design, developed for a specific facility, taking into account Polish standards and building regulations, in particular the regulation of the Minister of Infrastructure of 12th April 2002, on technical conditions to be met by buildings and their location (Dz. U. z 2022 r., poz. 1225),
- requirements of this National Technical Assessment,
- instructions, prepared by the manufacturer and delivered to recipients.

3. PERFORMANCE OF THE PRODUCT AND METHODS USED FOR ITS ASSESSMENT

3.1. Performance of the product

Performance of the products included in the DD PEDESTALS kit are given in table 1.

Table 1

Pos.	Essential characteristics	Performance				Assessment methods
		SPIRAL	STANDARD	MAX	Support pads	
1	*2*	*3*	*4*	*5*	*6*	*7*
1	Characteristic pedestal vertical load bearing capacity, F_{ck}, kN Load scheme: - A - B - C	 24,9 14,0 8,3	 11,3 8,5 5,6	 17,4 12,2 6,8	 37,8 17,3 9,6	PN-EN 12825:2001 load scheme A, B and C according to p. 3.2.1 test temp. (20 ± 2)°C
2	Decrease of pedestal load bearing capacity [4] induced by laboratory light source exposure, C_{UV}, %	≤ 31				PN-EN 12825:2001 load scheme A according to p. 3.2.1 sample conditioning according to [1]
3	Decrease of pedestal load bearing capacity [4] induced by thermal shock, C_{ts}, %	≤ 5				PN-EN 12825:2001 load scheme according to p. 3.2.1 sample conditioning according to [2]
4	Decrease of pedestal load bearing capacity [4] induced by salt water impact, C_{sw}, %	≤ 5				PN-EN 12825:2001 load scheme according to p. 3.2.1 sample conditioning according to [3]
5	Decrease of pedestal load bearing capacity [4] induced by temperature decrease to -20°C (24 h), C_{tl}, %	≤ 5				PN-EN 12825:2001 load scheme A and B according to p. 3.2.1
6	Decrease of pedestal load bearing capacity [4] induced by temperature increase to 65°C (24 h), C_{th}, %	≤ 55				PN-EN 12825:2001 load scheme A, B and C according to p. 3.2.1
7	Characteristic value of deformation increase per unit of force, induced by creep during 1000 h with initial load $0{,}3 \cdot F_{cm}$, $\Delta\varepsilon_{vk,1000h}$, %/kN	≤ 2,0	≤ 3,2	≤ 2,3	-	PN-EN 12825:2001 p. 3.2.2 test temp. (20 ÷ 25)°C
8	Reaction to fire classification, class	E				PN-EN 13501-1:2019

[1] exposure to UV according to PN-EN ISO 4892-2:2013; exposure: 1000 cycles of 120 min (102 min drying + 18 min soaking in water)
[2] samples exposed to 10 cycles: soaking in water during (72 ± 1) h, freezing in temp. (-30 ± 2)°C during (24 ± 2) h, drying in temp. (90 ± 2)°C during (72 ± 2) h; last cycle without drying
[3] samples exposed to 10% NaCl environment during (112 ± 1) days, in temp. (23 ± 2)°C
[4] with reference to average value of pedestal vertical load bearing capacity F_{cm} in temp. (20 ± 2)°C

3.2. Performance assessment methods

Performance assessment methods are given in table 1 as well as in clause 3.2.1 and 3.2.2.

3.2.1. Vertical load bearing capacity. Vertical load bearing capacity verification (F_c) is performed on the basis of tests in accordance with PN-EN 12825:2001. Characteristic value of pedestal vertical load bearing capacity F_{ck} is determined according to PN-EN 1990:2004/A1:2008, Annex. D.

Testing schemes for vertical load bearing capacity are given on Fig. 1:

- resistance to axial load – scheme A,
- resistance to eccentric load on ½ pedestal surface – scheme B,
- resistance to eccentric load on ¼ pedestal surface – scheme C.

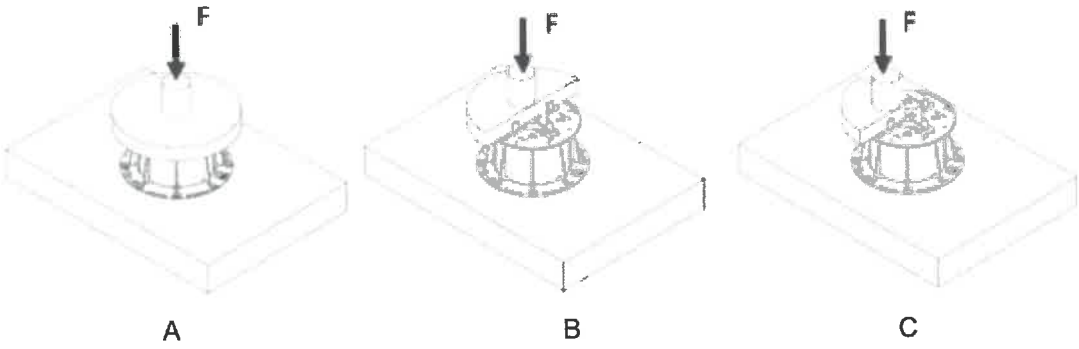

Fig. 1. Testing schemes for vertical load bearing capacity

3.2.2. Deformation increase due to a creep. Verification of deformation increase due to a creep is performed with initial force $F_0 = 0{,}3 \cdot F_{cm}$ (scheme A), where F_{cm} is average value of pedestal vertical load bearing capacity. The load is applied with no sudden changes and vibrations, in the way to reach inicial force value F_0 in less than 5 minutes. The load is applied and maintained during the test with a minimum accuracy of 2,5%. At the time of applying the initial force to the sample, initial reading is done $u_{v,0}$ (t = 0 min). Subsequently the displacement readings are being done $u_{v,t}$ at least for t = 1 min, 2 min, 5 min, 10 min, 15 min, 30 min, 1 h, 2 h, 4 h, 24 h, 48 h and 96 h from the moment of initial force F_0 application, and consecutively not less than once a week. Extrapolation of the results is possible in not less than 240 h. The results are extrapolated using the equation:

$$\log(\Delta u_{v,t}) = A \cdot \log(t) + B$$

where:

$\Delta u_{v,t}$ – displacement increase, $\Delta u_{v,t} = u_{v,t} - u_{v,0}$

The result of the test is relative deformation increase $\Delta\varepsilon_{v,1000h}$ per unit force, induced by creep during 1000 h, determined according to the correlation:

$$\Delta\varepsilon_{v,1000h} = \Delta u_{v,1000h} / (F_0 \cdot h_0) \cdot 100\%$$

where:

h_0 – sample height,

F_0 – load applied to the sample,

$\Delta u_{v,1000h}$ – displacement increase after t = 1000 h.

4. PACKAGING, TRANSPORT, STORAGE AND THE METHOD OF PRODUCT MARKING

The products included in the kit covered by this National Technical Assessment shall be delivered in the original packaging of the manufacturer, stored and transported according to the manufacturer's instruction.

The way of marking products with the construction mark shall be made in accordance with the regulation of the Minister of Infrastructure and Construction of 17th November 2016 on the method of drawing up a declaration of performance for construction products and applying a construction mark thereon (Dz. U. z 2016 r., poz. 1966, as amended).

The marking of a product with the construction mark shall be accompanied by the following information:

- the last two digits of the year in which the construction mark was placed for the first time on a construction product,
- the name and address of the manufacturer's registered office or identification mark allowing to clearly identify the name and address of the registered office of the manufacturer,
- the name and product-type of the construction product,
- the number and year of issuing the national technical assessment, according to which the performance has been declared (ITB-KOT-2022/2174 edition 1),
- the number of the national declaration of performance,
- the level or class of declared performance,
- the manufacturer's website address, if the national declaration of performance is made available on it.

Along with national declaration of performance, a safety data sheet and/or information on hazardous substances contained in the construction product shall be provided or made available where appropriate, referred to in Article 31 or 33 of regulation (EC) No. 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) and establishing the European Chemicals Agency.

In addition, the marking of a construction product that is a hazardous mixture according to the REACH regulation shall comply with the requirements of regulation (EC) No. 1272/2008 of the European Parliament and of the Council on classification, labelling, and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC and amending regulation (EC) No. 1907/2006.

5. ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

5.1. National system of assessment and verification of constancy of performance

In accordance with the regulation of the Minister of Infrastructure and Construction of 17th November 2016 on the manner of declaring the performance of construction products and marking them with the construction mark (Dz. U. z 2016 r., poz. 1966, as amended), the system 4 of assessment and verification of constancy of performance applies.

5.2. Type test

The performance, assessed in clause 3, constitutes a type test of the product until there are no changes in raw materials, components, production line or manufacturing plant.

5.3. Factory production control

The manufacturer shall have implemented a system of factory production control in the manufacturing plant. All elements of this system, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of principles and procedures, including records from the conducted tests. The factory production control shall be adapted to the production technology and ensure in the serial production declared performance of the product is maintained.

The factory production control includes the specification and checking of raw materials and components, inspection and testing in the production process and control tests (according to p. 5.4),

conducted by the manufacturer in accordance with the established test plan and according to the rules and procedures set out in the factory production control documentation.

The results of production control shall be systematically recorded. The records shall confirm that the products meet the criteria for assessment and verification of constancy of performance. Individual products or batch of products and related production details must be fully identifiable and reproducible.

5.4. Control test

5.4.1. Test program. The test program includes:

a) ongoing tests,
b) periodic tests.

5.4.2. Ongoing tests. The ongoing tests include the verification of:

a) material (plastic):
   - density,
   - bending strength,
b) pedestals:
   - appearance,
   - shape and dimensions,
   - characteristic vertical load bearing capacity, in temp. (20 ± 2)°C, load scheme A, according to Fig. 1.

5.4.3. Periodic tests. The periodic tests include the verification of:

a) material (plastic):
   - melt flow index MFR,
   - Vicat softening temperature,
   - Charpy impact resistance,
b) characteristic pedestal vertical load bearing capacity in temp. (20 ± 2)°C, load scheme B and C, according to Fig. 1,
c) reaction to fire.

5.5. Frequency of testing

Ongoing tests shall be conducted in accordance with the established test plan, but not less frequently than for each batch of products. The size of the product batch shall be specified in the documentation of the factory production control.

Periodic tests shall be carried out at least once every 3 years.

6. PROVISIONS

6.1. National Technical Assessment ITB-KOT-2022/2174 edition 1 is a positive assessment of the performance of these essential characteristics of the DD PEDESTALS kit, which according to the intended use resulting from the provisions of the Assessment, affect the fulfillment of basic requirements by construction works, in which the product will be used.

6.2. National Technical Assessment ITB-KOT-2022/2174 edition 1 does not authorize a manufacturer to mark a construction product with the construction mark.

In accordance with the Act of 16th April 2004 on construction products (Dz. U. z 2021 r., poz. 1213) the kit of products, covered by this National Technical Assessment may be placed on the market or made available on the domestic market, if the manufacturer has performed the assessment and verification of constancy of performance, drawn up a national declaration of performance in accordance with the National Technical Assessment ITB-KOT-2022/2174 edition 1 and marked the products with the construction mark in accordance with applicable regulations.

6.3. National Technical Assessment ITB-KOT-2022/2174 edition 1 does not violate the applicant's rights resulting from the industrial property protection regulations, and particularly from the Act of 30th June 2000 – The industrial property right (Dz. U. z 2021 r., poz. 324). The assurance of these rights is the responsibility of users of this National Technical Assessment.

6.4. By issuing the National Technical Assessment, ITB takes no responsibility for possible infringements of any exclusive or acquired rights.

6.5. National Technical Assessment does not relieve the manufacturer of the products from the responsibility for the proper quality, and the contractors of construction works from the responsibility for their proper application.

6.6. Validity of the National Technical Assessment may be extended for subsequent periods, not longer than 5 years.

7. LIST OF DOCUMENTS USED IN THE PROCEDURE

7.1. Reports, test reports, assessments, classification

1. 00861/22/Z00NZK. Praca badawcza. Opinia techniczna dotycząca wsporników tarasowych DD PEDESTALS, Zakład Konstrukcji Budowlanych, Geotechniki i Betonu ITB, 2022 r.
2. LZK00-01375/20/Z00NZK. Raport z badania wsporników tarasowych DD PEDESTALS, Zakład Konstrukcji Budowlanych, Geotechniki i Betonu ITB, 2020 r.
3. LZK00-03558/19/Z00NZK. Raport z badania wsporników tarasowych DD PEDESTALS, Zakład Konstrukcji Budowlanych, Geotechniki i Betonu ITB, 2020 r.
4. LZM00-03558/19/Z00NZK/C. Raport z badania wsporników tarasowych DD PEDESTALS, Zakład Inżynierii Materiałów Budowlanych ITB, 2022 r.
5. LZM00-00934/20/Z00NZM. Raport z badania wsporników tarasowych DD PEDESTALS, Zakład Inżynierii Materiałów Budowlanych ITB, 2020 r.
6. 01115/22/Z00NZP. Klasyfikacja w zakresie reakcji na ogień wg PN-EN 13501-1:2019, Zakład Badań Ogniowych ITB, 2022 r.

7.2. Standards and reference documents

PN-EN ISO 179-1:2010	*Plastics. Determination of Charpy impact properties. Part 1: Non-instrumented impact test*
PN-EN ISO 306:2014	*Plastics. Thermoplastic materials. Determination of Vicat softening temperature (VST)*
PN-EN ISO 1183-1:2013	*Plastics. Methods for determining the density of non-cellular plastics. Part 1: Immersion method, liquid pyknometer method and titration method*
PN-EN ISO 4892-2:2013	*Plastics. Methods of exposure to laboratory light sources. Part 2: Xenon-arc lamps*
PN-EN ISO 178:2011+A1:2013	*Plastics. Determination of flexural properties*
PN-EN 12825:2001	*Raised access floors*
PN-EN 22768-1:1999	*General tolerances. Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*
PN-EN 13501-1:2019	*Fire classification of construction products and building elements. Part 1: Classification using data from reaction to fire tests*
PN-EN 1990:2004/A1:2008	*Eurocode. Basis of structural design*

ANNEXES

Annex A.

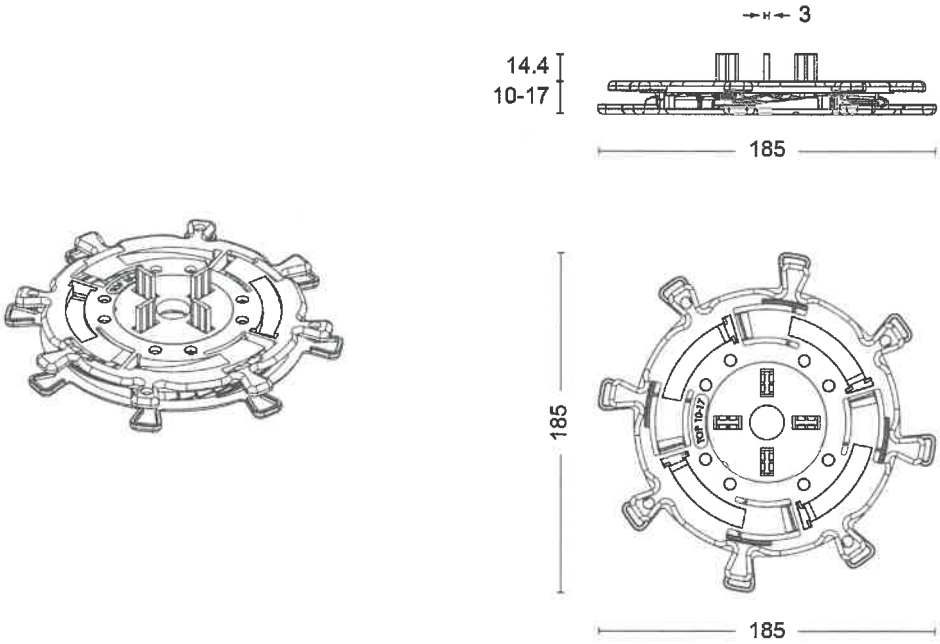

Fig. A1. Adjustable pedestal SPIRAL 010-017
(dimensions in mm)

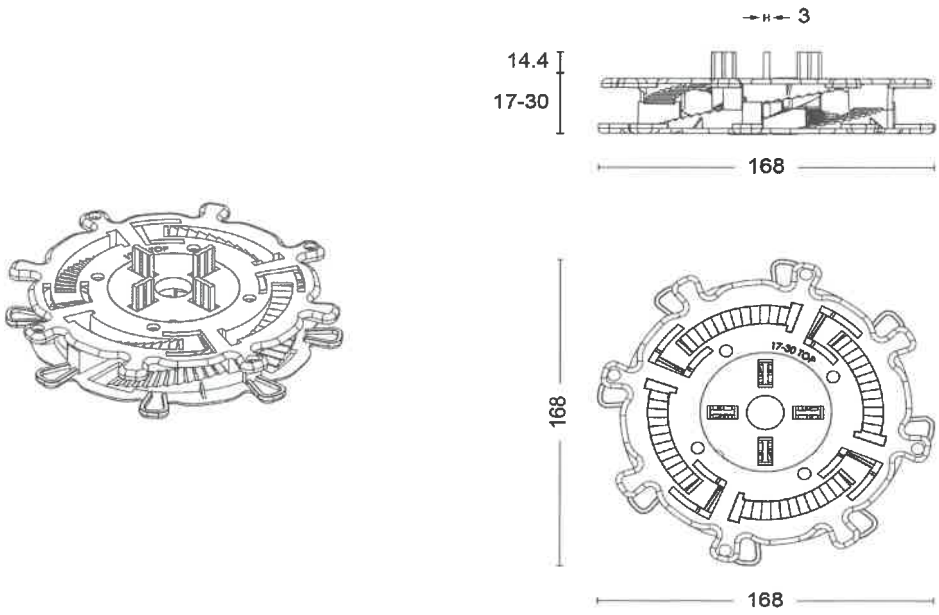

Fig. A2. Adjustable pedestal SPIRAL 017-030
(dimensions in mm)

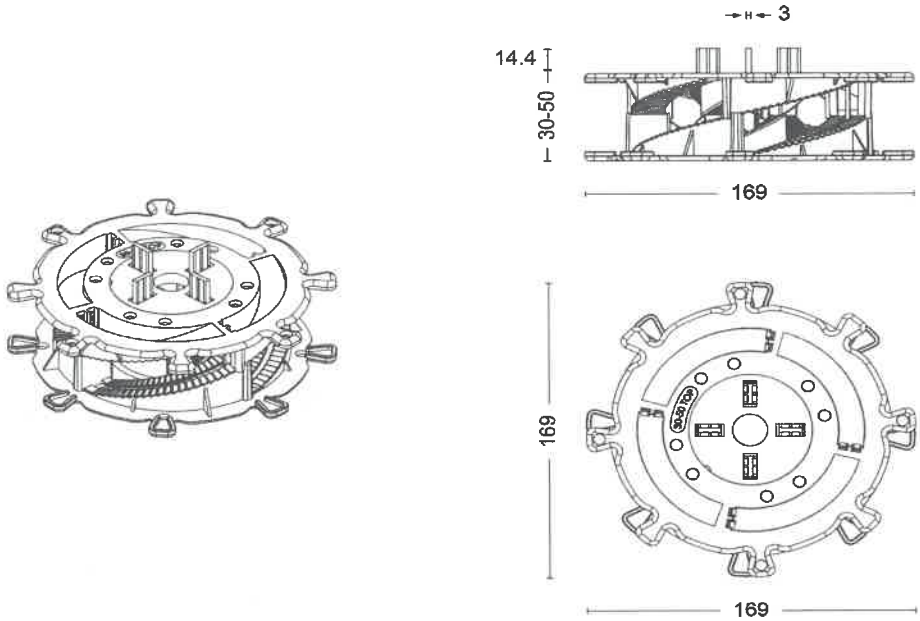

Fig. A3. Adjustable pedestal SPIRAL 030-050
(dimensions in mm)

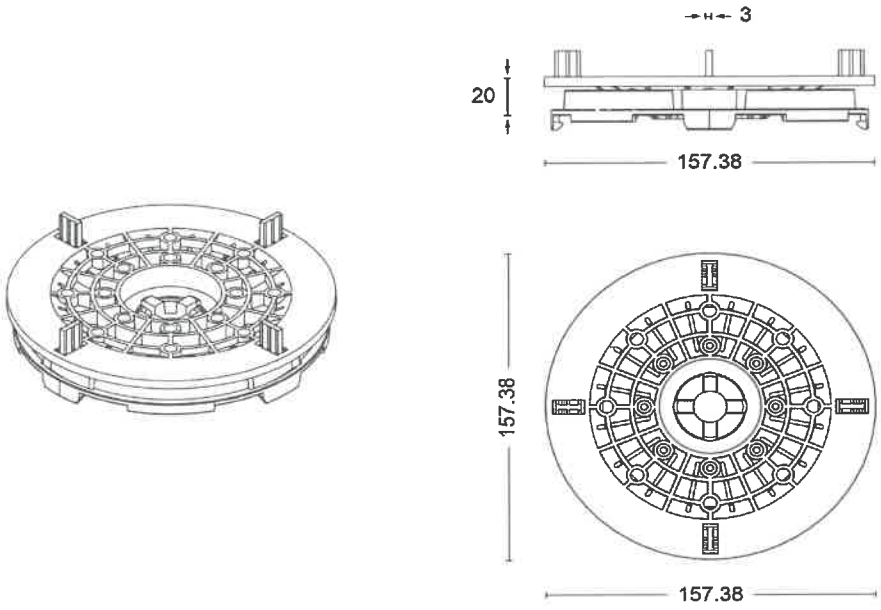

Fig. A4. Self-leveling head LE SPIRAL
(dimensions in mm)

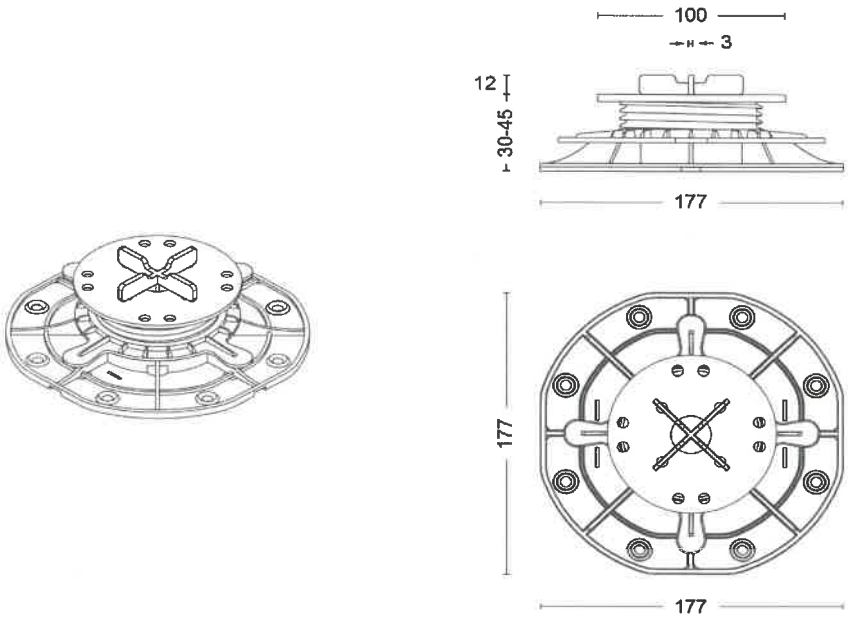

Fig. A5. Adjustable pedestal STANDARD 030-045
(dimensions in mm)

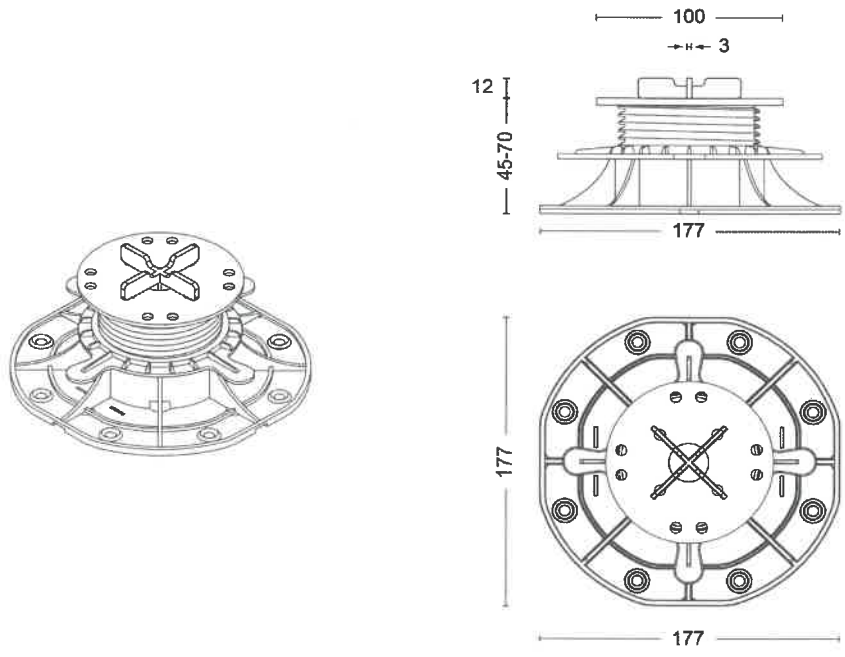

Fig. A6. Adjustable pedestal STANDARD 045-070
(dimensions in mm)

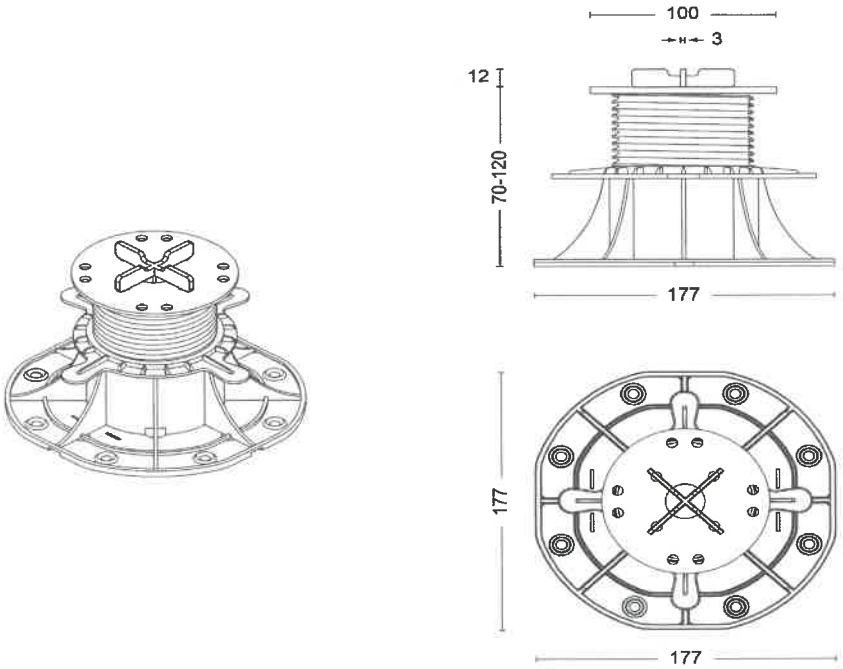

Fig. A7. Adjustable pedestal STANDARD 070-120
(dimensions in mm)

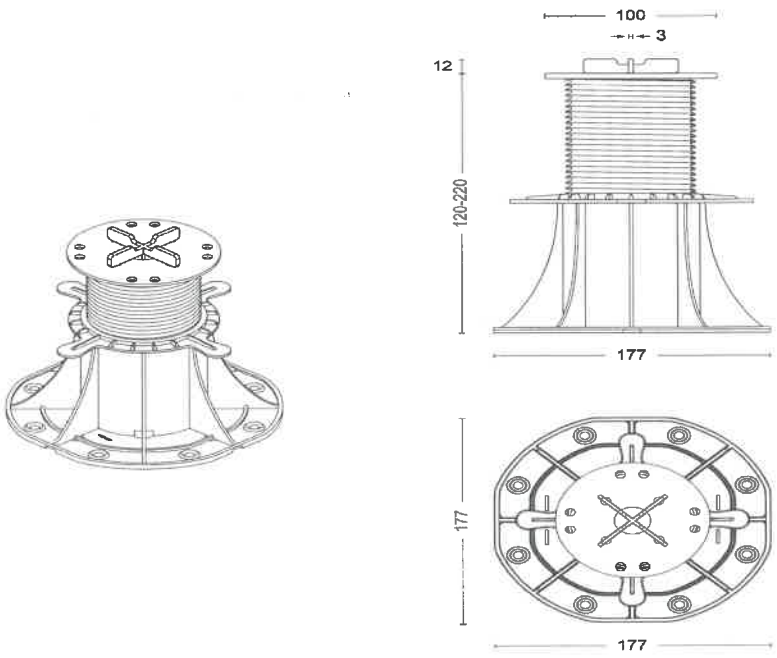

Fig. A8. Adjustable pedestal STANDARD 120-220
(dimensions in mm)

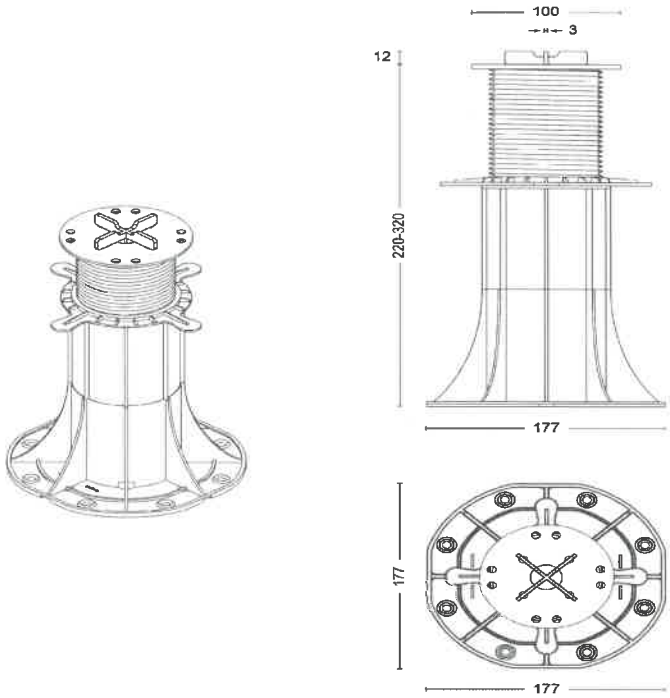

Fig. A9. Adjustable pedestal STANDARD 220-320
(dimensions in mm)

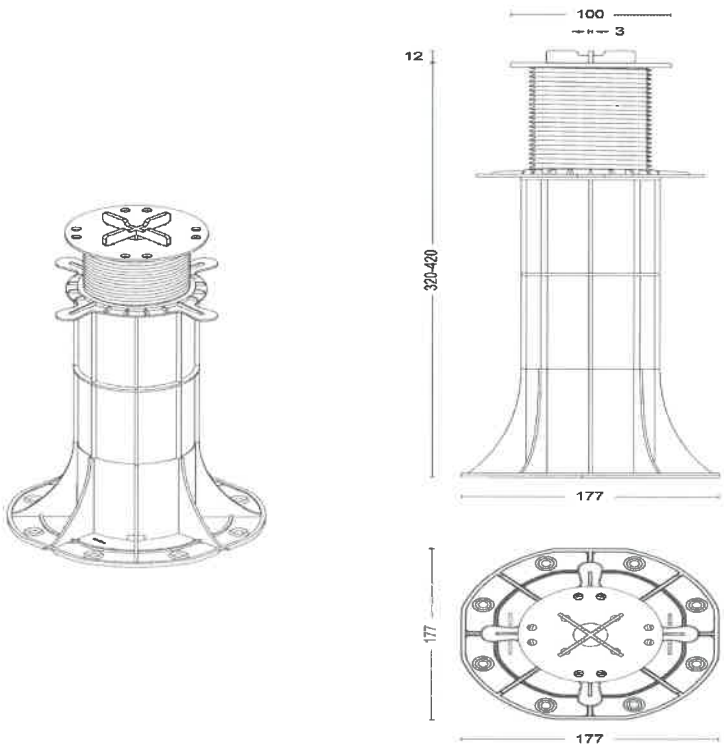

Fig. A10. Adjustable pedestal STANDARD 320-420
(dimensions in mm)

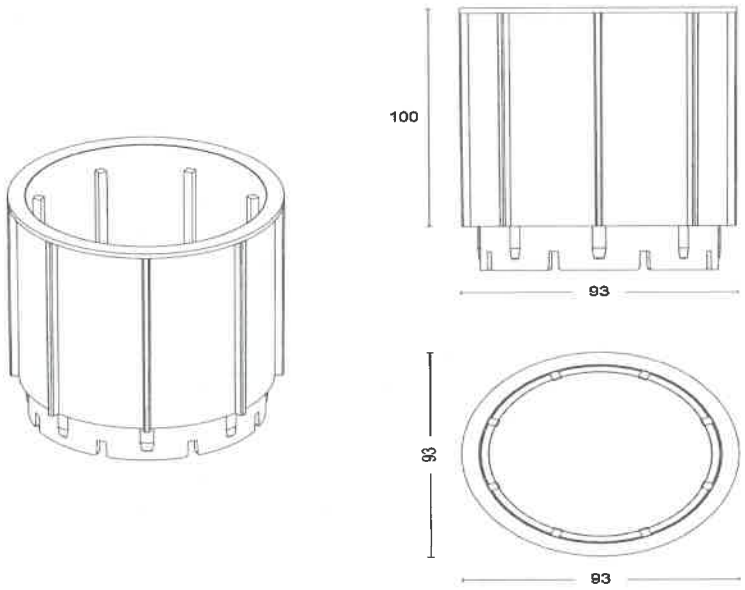

Fig. A11. Distance sleeve STANDARD DS 100
(dimensions in mm)

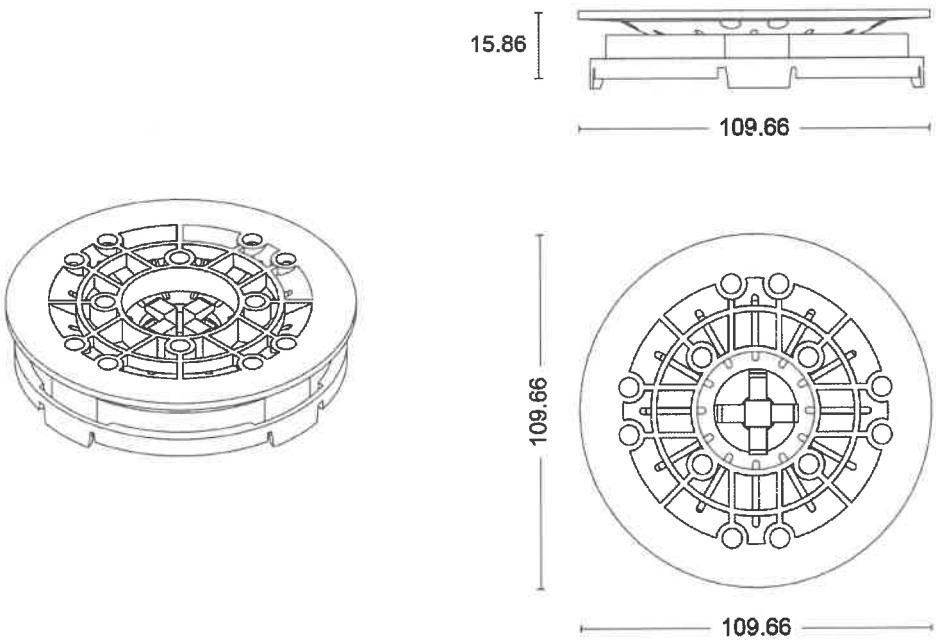

Fig. A12. Self-leveling head LE STANDARD
(dimensions in mm)

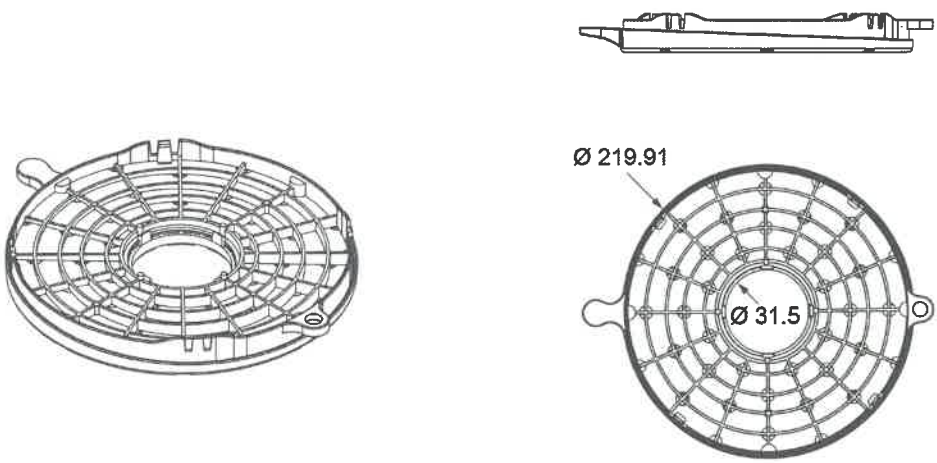

Fig. A13. Slope corrector SC STANDARD
(dimensions in mm)

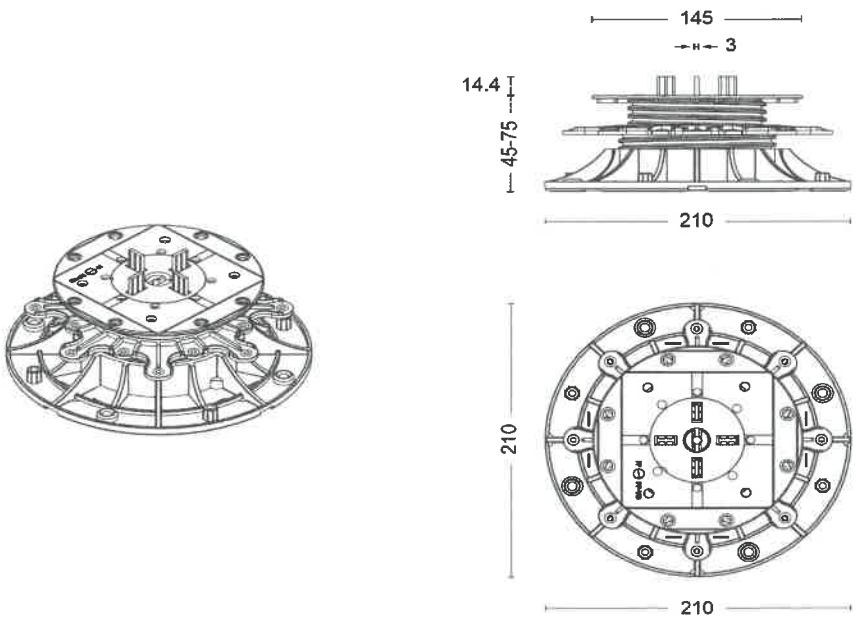

Fig. A14. Adjustable pedestal MAX 045-075
(dimensions in mm)

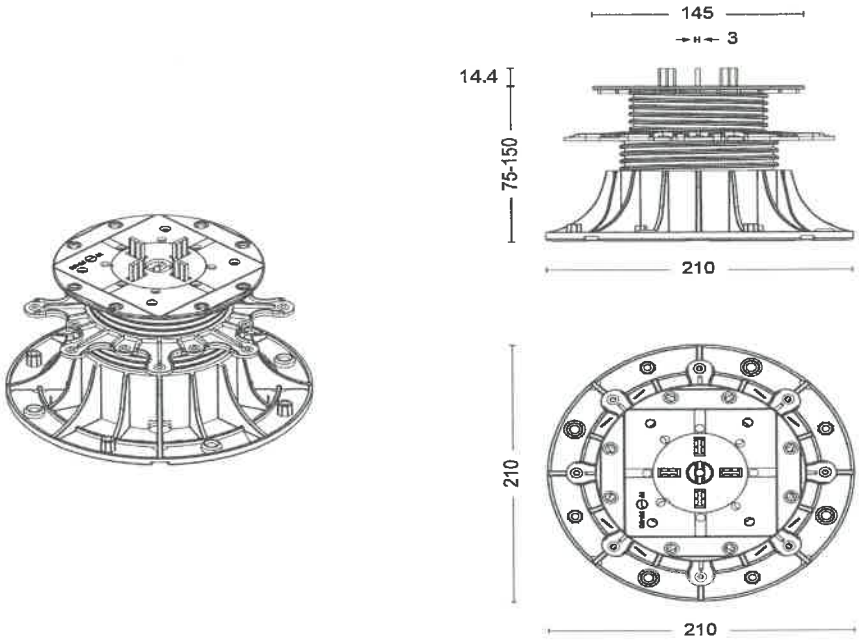

Fig. A15. Adjustable pedestal MAX 075-150
(dimensions in mm)

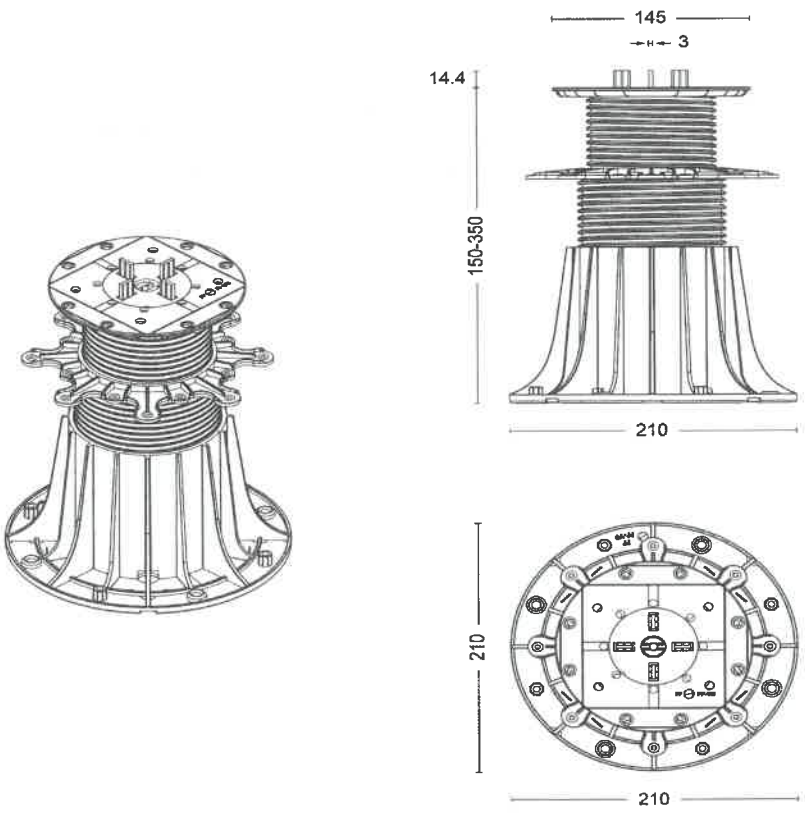

Fig. A16. Adjustable pedestal MAX 150-350
(dimensions in mm)

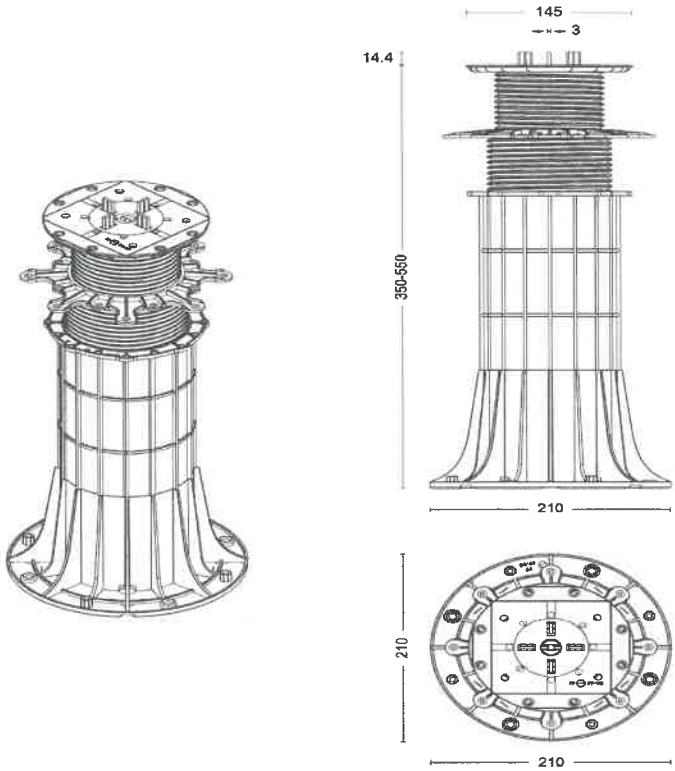

Fig. A17. Adjustable pedestal MAX 350-550
(dimensions in mm)

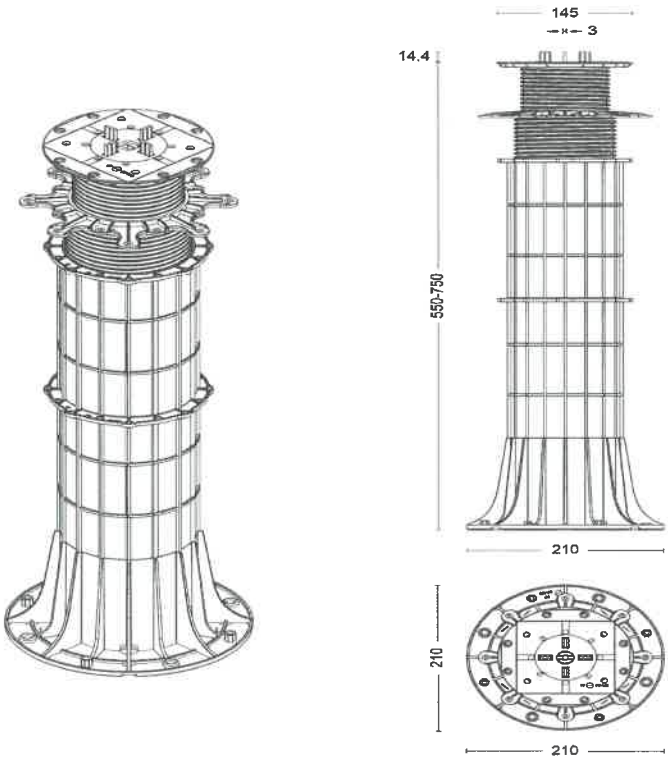

Fig. A18. Adjustable pedestal MAX 550-750
(dimensions in mm)

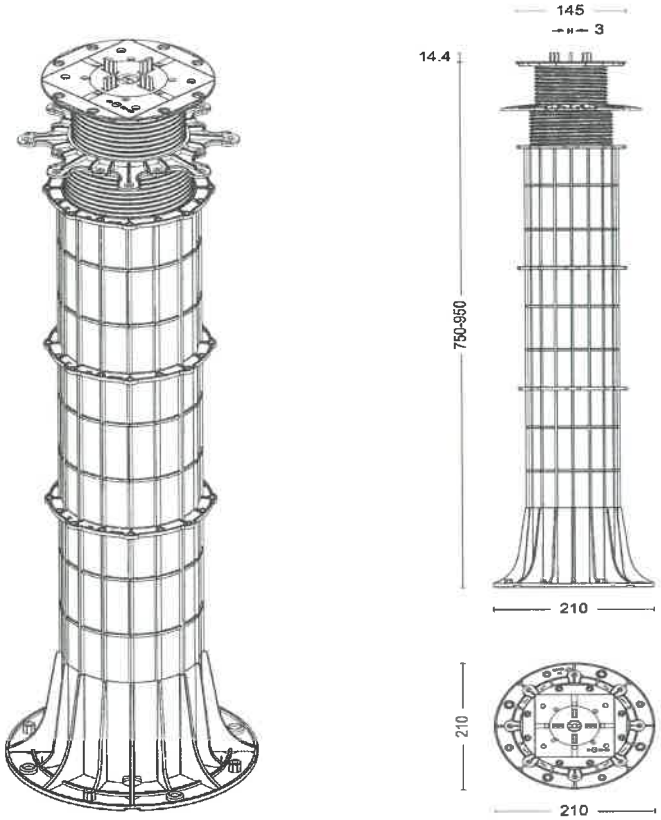

Fig. A19. Adjustable pedestal MAX 750-950
(dimensions in mm)

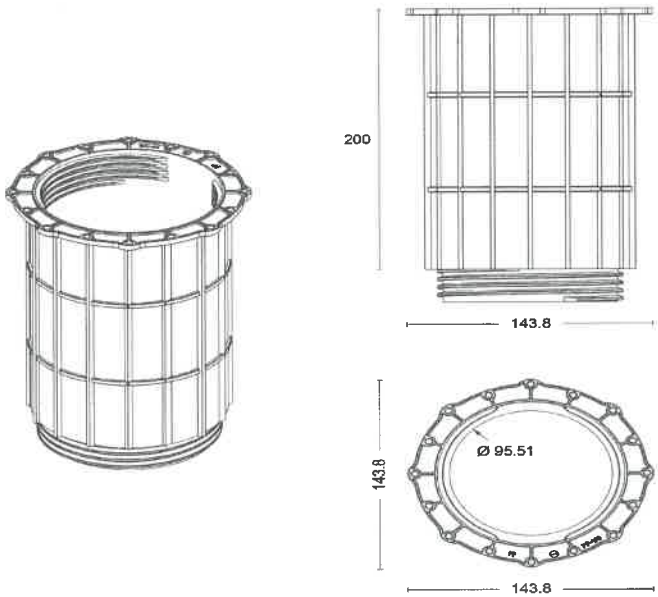

Fig. A20. Distance coupler MAX DS200
(dimensions in mm)

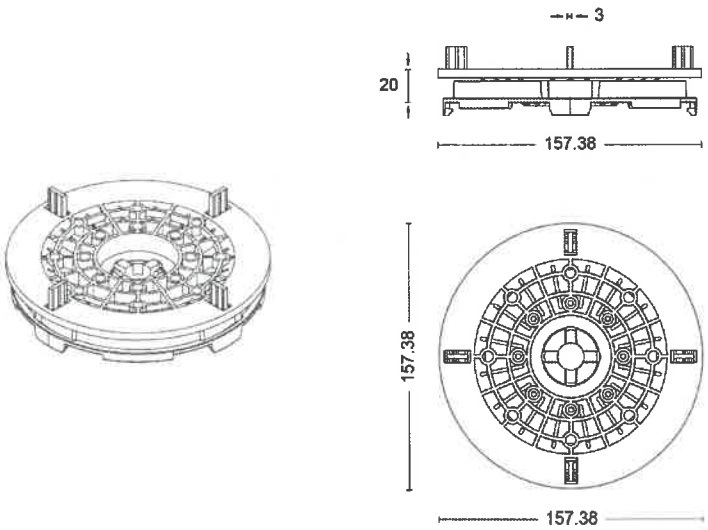

Fig. A21. Self-leveling head LE MAX
(dimensions in mm)

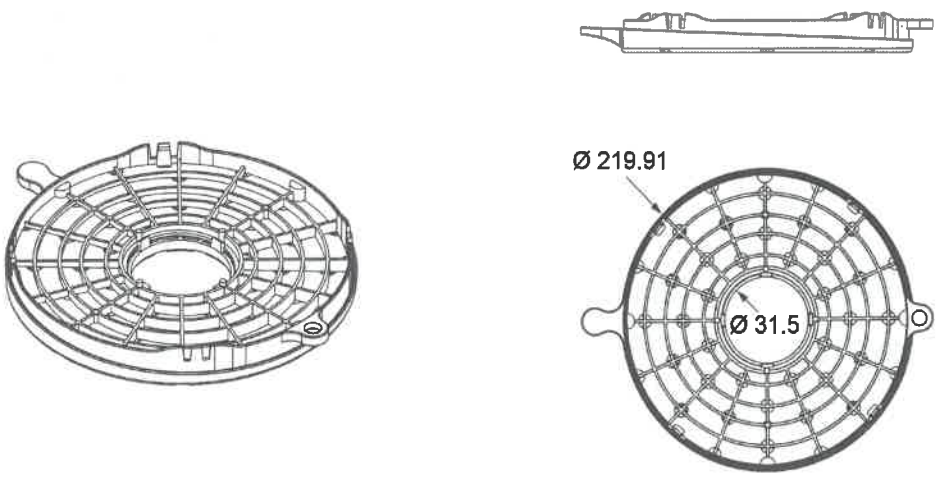

Fig. A22. Slope corrector SC MAX
(dimensions in mm)

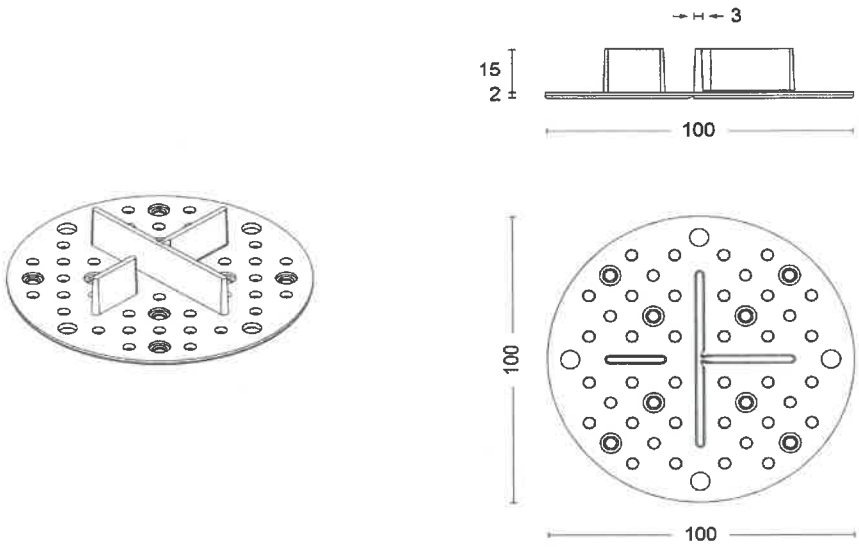

Fig. A23. Fixed height support pad DDP 002
(dimensions in mm)

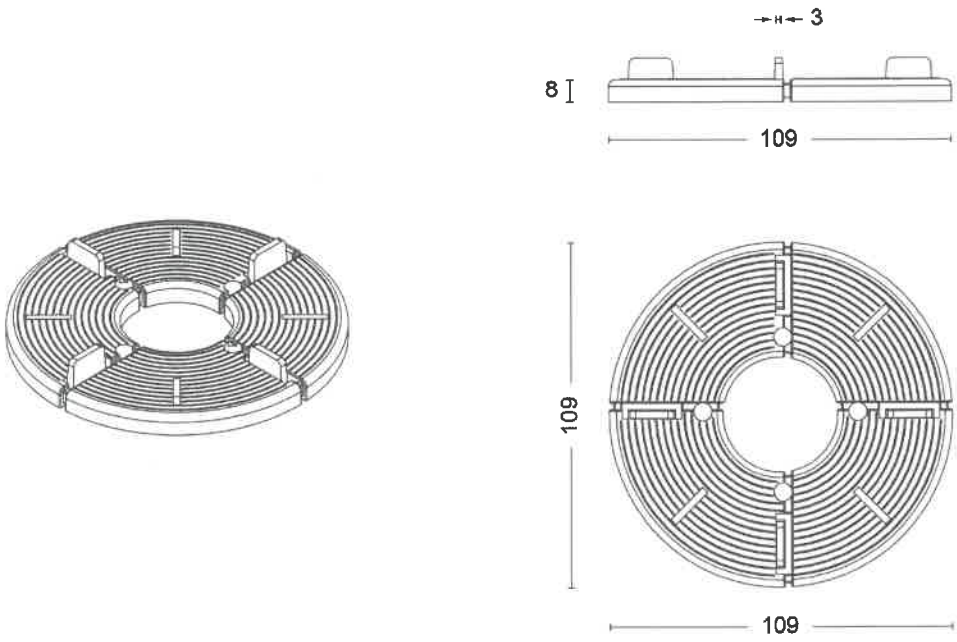

Fig. A24. Fixed height support pad DDP 008
(dimensions in mm)

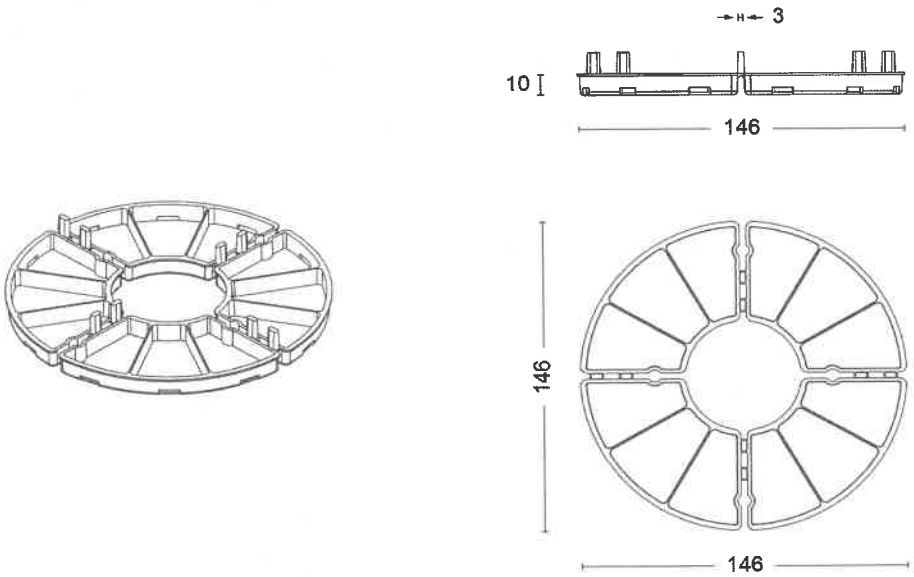

Fig. A25. Fixed height support pad DDP 010
(dimensions in mm)

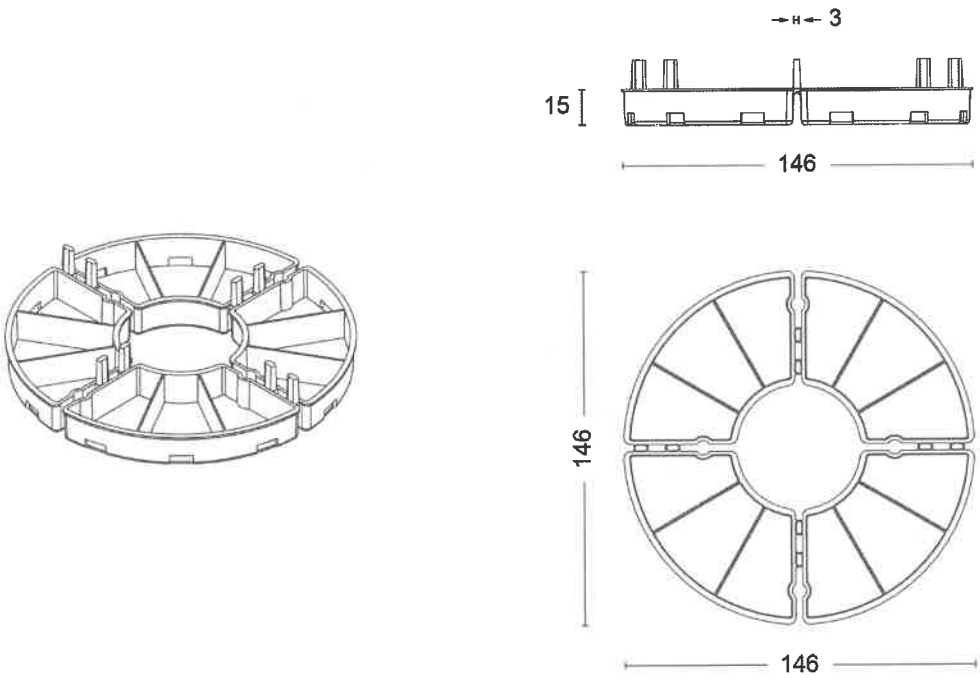

Fig. A26. Fixed height support pad DDP 015
(dimensions in mm)

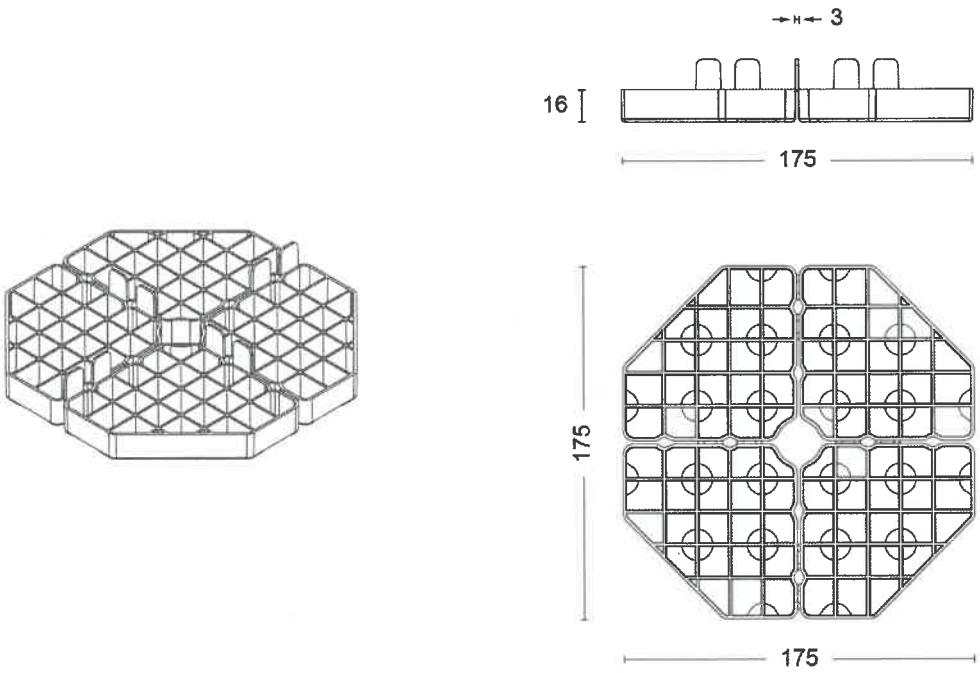

Fig. A27. Fixed height support pad DDP 016
(dimensions in mm)

Annex B.

The products which are included in the DD PEDESTALS kit should be made of polypropylene (PP) – non-virgin material with an admixture of calcium carbonate ($CaCO_3$). Performance of the material are given in the table B1.

The surfaces of the products should be smooth, even and without defects. The colour of the product should be black and the shape should be in accordance with Fig. A1 - A27.

Table B1

Pos.	Characteristics	Requirements	Test methods
1	*2*	*3*	*4*
1	Melt flow index MFR, (250°C / 2,26 kg), g/10 min	4 - 9	PN-EN ISO 1133-1:2011
2	Material density, g/cm^3	1,20 ± 5%	PN-EN ISO 1183-1:2013
3	Vicat softening temperature, °C	≥ 72	PN-EN ISO 306:2014 method B50
4	Charpy impact resistance, kJ/m^2	≥ 7,0	PN-EN ISO 179-1:2010 samples 1FA with double notch
5	Bending strength, MPa	≥ 32,0	PN-EN ISO 178:2011+A1:2013