Pursuant to the Regulation of the Minister of Infrastructure of 8 November 2004 on technical approvals and entities authorized to issue them (Journal of Laws No. 249, item 2497), following the approval procedure performed at the Building Research Institute in Warsaw upon request of the following company:

MEDOS Marian Buławka, Ewa Buławka Spółka Jawna
ul. Magazynowa 3, 86-200 CHEŁMNO

it is hereby certified that the following products are suitable for use in the construction industry:

PLUTON I and PLUTON II one-grip spindle handles with shields for tilt-and-turn, side-hung, and tilt hardware

within the scope and conditions specified in the Attachment which constitutes an integral part of the present ITB Technical Approval.

Expiration date:
22 February 2013

DIRECTOR
p.p. Deputy Director
for Cooperation with the Economy

Jan Bobrowicz, EngD

Appendix:
General and technical provisions

Warsaw, 22 February 2008
## GENERAL AND TECHNICAL PROVISIONS

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1. SUBJECT OF THE TECHNICAL APPROVAL

The subject of the ITB Technical Approval are PLUTON I and PLUTON II one-grip spindle handles with shields, designed for tilt-and-turn, side-hung, and tilt windows and balcony doors, manufactured by the MEDOS M. Buławka, E. Buławka Sp. Jawna company – Chelmno, ul. Magazynowa 3.

The handles referred to in the ITB Technical Approval consist of a grip, shield assembly and spindle.

The shield assembly consists of the body, cover plate, rosette and spring. Individual handle elements are manufactured from aluminium or magnesium alloys (grip), polyformaldehyde (body, cover plate, compression spring), zinc alloy (rosette), steel strip (mounting spring) and square steel bar (spindle). The spindle is moulded into the grip and zinc-coated for corrosion protection.

The approval covers the following handles:

- PLUTON I type – grip made of aluminium alloy
- PLUTON II type – grip made of magnesium alloy

The handles and individual components are depicted in figure 1.

PLUTON I and PLUTON II one-grip spindle handles transmit the rotary and angular movement to the mechanisms of the windows or balcony doors or serve to transmit operating forces during the opening and closing of the windows or balcony doors.

PLUTON I and PLUTON II handles are equipped with a position retainer every 90°, 45° or 90° and 45°.

2. INTENDED USE, SCOPE AND CONDITIONS OF USE

PLUTON I and PLUTON II one-grip spindle handles are designed to operate the mechanisms of tilt-and-turn, side-hung, and tilt windows or balcony doors, installed in wooden, aluminium and plastic windows and balcony doors, which provide basic security in terms of burglary resistance.

The handles shall be used only in tilt-and-turn, side-hung, and tilt windows and balcony doors in which the spacing of the threaded sockets in the box of the operating mechanism is 43 mm.

The handles specified in the present Technical Approval shall not be used:
– for casement bolts and casement fasteners in which the spacing of the threaded sockets or mounting ports in the box of the operating mechanism is 44 mm in accordance with PN-74/B-94211 and PN-B-94025-3:1997.
– for okna skrzynkowe, półskrzynkowe and ościeżnicowe [Poland specific types of windows ≈ wooden dual frame or casement windows], due to the limited height between the double leafs, ranging up to 48 mm.

The handles shall be mounted through the frame of the hardware to the box of the mechanism of the side-hinged, tilt or tilt-and-turn hardware, in accordance with the installation instructions issued by the manufacturer. The spindle of the handle is adapted to the hole of the operating mechanism in accordance with PN-B-94422:1996 standard.

It is recommended that the handles are mounted with the screws supplied by the manufacturer.

3. TECHNICAL PROPERTIES, REQUIREMENTS

3.1. Materials

The main components of the PLUTON I and PLUTON II one-grip spindle handles shall be manufactured from:

- grip:
  - PLUTON I handle – aluminium alloy designated as EN AB AISi 12 according to PN-EN 1676:2002 (AK11 according to PN-76/H-88027);
  - PLUTON II handle – magnesium alloy designated as EN-MCMgAl9Zn1 according to PN-EN 1753:2001 standard (AZ91 according to DIN standards);
- rosette:
  - ZL0410 (ZL5) zinc alloy casting in accordance with PN-EN 1774:2001, PN-EN 1559-1:2001 and PN-EN 1559-5:2001 standards or
  - polybutylene terephthalate (PBT), e.g. the PBT designated as B1V15;
- body, cover plate and compression spring – polyformaldehyde (polyoxymethylene);
- mounting spring – steel strip of the DC01 grade according to PN-EN 10152:2005 standard or of other grades with equivalent mechanical properties;
• spindle – square steel bar of the S 355 JR grade according to PN-EN 10025-1:2005 standard or of other grades with equivalent technical and functional properties.

Fasteners shall conform at least to property class 4.8 according to PN-EN ISO 898-1:2001 standard.

3.2. Quality of Manufacture

The edges of all protruding parts of the handles referred to in the present Technical Approval shall be blunted or rounded. There shall be no possibility of the fingers being caught between the grip and the shield or the frame of the hardware.

External surfaces of the handles shall be devoid of scratches, stains, cracks or shrinkage cavities, and the surface adjoining the frame of the door or window shall be devoid of deformations, depressions and bends exceeding 0.3 mm and projections exceeding 0.5 mm.

Permanent fasteners shall be durable and rigid and shall not restrain the movement of rotating parts. The square spindle shall be mounted in a manner that enables the slackening of the spindle.

The countersinks for countersunk head screws shall be conform to PN-EN ISO 15065:2007 standard.

3.3. Technical properties

3.3.1. Shape and dimensions. The main dimensions and shape of the handles shall comply with figure 2, and the spindles shall fulfil the dimensional requirements of PN-B-94422:1996 standard. Deviations of handle dimensions shall conform to the requirements of PN-EN 22768-1:1999 standard for the medium tolerance class M.

3.3.2. Correct operation. The handles shall be able to rotate 180° around their axis in both directions without jamming or seizing, with a noticeable position shift of the retainer every 45° or 90°. The torque necessary to displace the handle mechanism with no load on the spindle shall not exceed 1.5 Nm. The maximum torque necessary to disengage the latch shall not exceed 3.5 Nm.

3.3.3. Durability. The PLUTON one-grip spindle handles with shields installed in side-hinged, tilt or tilt-and-turn windows shall be able to withstand 10,000 test cycles (grade 2 according to PN-EN 12400:2004 standard).
3.3.4. Strength of the connection of the handle with the shield. The connection of the grip of the handle with the body of the shield shall be able to withstand at least 1200 N of force applied for 60 s along the axis of the handle and the spindle. After the test, the handle shall continue to function correctly in accordance with the requirements of item 3.3.2.

3.3.5. Handle grip bending strength. The grip of the handle shall be able to withstand at least 800 N of force applied for 60 s at \( \frac{2}{3} \) of the length of the grip from the axis of the spindle. After the test, the handle shall continue to function correctly in accordance with the requirements of item 3.3.2.

3.3.6. Torsional strength. The grip of the handle shall not be damaged or permanently deformed after 30 Nm of torque is applied to it for 60 s with the spindle locked in position. After the test, the handle shall continue to function correctly in accordance with the requirements of item 3.3.2.

3.3.7. Dynamic strength. The handle struck at 10 mm from the end of the grip with the energy of 5 J shall not be damaged and shall continue to function correctly after the test, in accordance with the requirements of item 3.3.2.

3.3.8. Corrosion resistance. Steel components of the handle shall be coated with protective zinc coating, at least 5 µm thick. External handle elements manufactured from aluminium or magnesium alloys shall be coated with oxide film or powder coating, at least 20 µm. The handles shall be resistant to salt mist in the 48 h test according to PN-EN 1670:2007 standard.

4. PACKAGING, STORAGE, TRANSPORT

4.1. Packaging

PLUTON I and PLUTON II one-grip handles shall be packaged in accordance with manufacturer guidelines or in accordance with the arrangements between the manufacturer and the buyer.

The packaging shall be labelled with at least the following information:

− name and address of the manufacturer,
− product name,
− AT-15-7561/2008 Technical Approval number,
− number and issue date of the declaration of conformity,
− construction mark.

The method of marking the product with the construction mark shall conform to the Regulation of the Minister of Infrastructure of 11 August 2004 on methods of declaring the conformity of construction products and methods of marking them with a construction mark (Journal of Laws No. 198/2004, item 2041).

4.2. Storage

The handles shall be stored in accordance with manufacturer guidelines, in areas protected from atmospheric precipitation and far from corrosive agents, etc.

4.3. Transport

The handles shall be transported in a manner which protects them from damage or destruction, in accordance with the manufacturer guidelines which take into account the regulations applicable to road and rail transport of products of the above type.

5. CONFORMITY ASSESSMENT

5.1. General provisions

Pursuant to art. 4, art. 5 par. 1 item 3 and art. 8 par. 1 of the Act of 16 April 2004 on construction products (Journal of Laws No. 92/2004, item 881) the product referred to in the present Technical Approval can be marketed and used in construction works, in the scope corresponding to its functional properties and intended use, if the manufacturer performed the conformity assessment, issued a national declaration of conformity with the AT-15-7561/2008 ITB Technical Approval and marked the product with a construction mark, in accordance with applicable regulations.

In accordance with the Regulation of the Minister of Infrastructure of 11 August 2004 on methods of declaring the conformity of construction products and methods of marking them with a construction mark (Journal of Laws No. 198/2004, item 2041) the conformity assessment of the product referred to in the AT-15-7561/2008 ITB Technical Approval is performed by the manufacturer according to system 3.
In accordance with system 3, the manufacturer may issue the national declaration of conformity with the AT-15-7561/2008 Technical Approval on the basis of:
1. initial type test performed by an accredited laboratory,
2. factory production control.

5.2. Initial type test

The initial type test is a test performed before the marketing of the product in order to verify the required technical and functional properties.

The initial type test of PLUTON I and PLUTON II handles includes:
- quality of manufacture,
- permissible dimensional deviations,
- correct operation,
- durability,
- strength of the connection of the handle with the shield,
- handle grip bending strength,
- torsional strength,
- dynamic strength,
- corrosion resistance.

The tests which constituted the basis for the determination of technical and functional properties of the product during the approval procedure constitute the initial type tests during conformity assessment.

5.3. Factory production control

The factory production control includes:
1. the specification and verification of materials and components,
2. inspection and testing during the manufacturing process and testing of final products (item 5.4.), performed by the manufacturer in accordance with the established testing plan and in accordance with the rules and procedures specified in the factory production control documentation and adapted to the manufacturing technology in order to ensure that the final product meets the required properties.

Production control shall ensure that the product conforms to the AT-15-7561/2008 ITB Technical Approval. Production control results shall be systematically recorded. The records shall confirm that the product complies with the criteria of conformity assessment. Each product batch shall be uniquely identified in the test records and trade documents.
5.4. Final product testing

5.4.1. Testing programme. The testing programme shall include:
   a) standard testing,
   b) periodic testing.

5.4.2. Standard testing. Standard testing shall include the verification of:
   a) materials,
   b) quality of manufacture,
   c) dimensions.

5.4.3. Periodic testing. Periodic testing shall include the verification of:
   – correct operation,
   – durability,
   – strength of the connection of the handle with the shield,
   – torsional strength,
   – corrosion resistance.

5.5. Test frequency

Standard tests shall be performed in accordance with the established testing plan and
at least once per product batch. The size of the product batch shall be specified in the factory
production control documentation.

Periodic tests shall be performed at least once every 3 years.

5.6. Test methods

5.6.1. Test device and test cycle PLUTON I and PLUTON II handles shall be tested
at a testing station corresponding in terms of function and shape to windows or doors of the
following dimensions: $S_w \times H_w = 1300 \times 1200$ mm (in accordance with PN-EN 13126-1:2006
standard). The glass in the test element shall be replaced with a 19 mm thick particle board.
In order to achieve the control weight, corresponding to the specified load capacity of the
windows or doors, the test element shall be loaded with steel plates attached symmetrically
to the outer and inner side.

The test cycle of the handle shall be divided into two stages:
• 1st stage – moving the handle from the “closed” position into the “tilted” position, tilting the leaf, closing it and moving the handle from the “tilted” position into the “closed” position.

• 2nd stage – moving the handle from the “closed” position into the “open” position, opening the leaf by approx. 100 mm, placing the leaf in a position 3 ± 1 mm from the position of complete closure and moving the handle from the “open” position into the “closed” position.

5.6.2. Verification of materials. According to item 3.1., verification of materials is not included in the present ITB Technical Approval and shall be specified in the quality assurance system of the manufacturer.

5.6.3. Verification of the quality of manufacture. The verification of the quality of manufacture shall be performed in accordance with PN-EN 13018:2004 standard and shall consist in the visual and manual inspection of the handle in relation to the requirements specified in item 3.2.

The possibility of the fingers being caught under the handle shall be tested after the handle is mounted at the testing station.

5.6.4. Verification of dimensions. The main dimensions of the handle shall be verified with universal measuring instruments. Test results shall be compared with the requirements specified in item 3.3.1.

5.6.5. Verification of correct operation. The verification of correct operation in accordance with the requirements of item 3.3.2 shall be performed at the testing station and shall consist in the attempt to manually detach the window leaf or balcony door from the frame at different positions of the handle.

The maximum torque required to move the grip of the handle from the “closed” position into the “open” or “tilted” position and back shall be measured with a torque wrench or dynamometer applied at ⅔ of the distance from the rotation axis of the grip of the handle.

5.6.6. Verification of durability. The verification shall be performed at the testing station (item 5.6.1.) with the use of a device which cyclically performs the 1st and 2nd test stage. The movement speed of the test leaf during tilting shall be approx. 0.5 m/s and the pneumatic cylinder shall remain unloaded until the leaf is in the maximally tilted position. After approx. 3 s from the opening or tilting, the cylinder shall initiate the closing movement.

The operation of the device during the performance of each stage shall ensure the execution of 250 cycles ±10% within an hour.
After the durability test, the end of the grip of the handle shall not travel (have slack) in the vertical direction more than ±2 mm, measured from the level at which the handle was mounted, at \(\frac{3}{4}\) of the distance from the rotation axis. Furthermore, after the test, the handle shall fulfil the requirements specified in item 3.3.3.

5.6.7. Verification of the strength of the connection of the handle with the shield. The verification shall be performed at the mounted station conforming to PN-84/B-94019 standard. The load shall be applied continuously until the required weight is achieved, in the direction opposite to the fitting direction. The test results shall be compared with the requirements specified in item 3.3.4.

5.6.8. Verification of handle grip bending strength. The handle shall be mounted at the testing station in accordance with PN-84/B-94019 standard. 8 mm of the spindle shall be inserted into the socket at the distance of 20 mm from the sleeve of the retainer and the load shall be increased continuously until the required force is achieved. The test shall be performed at longitudinal and transverse position of the grip of the handle in relation to the shield. After the test, the handle shall continue to function correctly in accordance with the requirements specified in item 3.3.5.

5.6.9. Verification of torsional strength. The test shall be performed at the testing station. After mounting the handle in the manner specified in item 5.6.7., 0.05 kN of initial load shall be applied (to eliminate slack) and increased continuously until the required force is achieved. After the test, the handle shall continue to function correctly in accordance with the requirements specified in item 3.3.6.

5.6.10. Verification of shear strength. The testing shall be performed at a testing station conforming to PN-84/B-94019 standard and shall consist in striking the handle grip with a drop hammer, in the longitudinal and transverse position of the grip in relation to the shield. After the test, the handle shall continue to function correctly in accordance with the requirements specified in item 3.3.7.

5.7. Sampling

Test samples shall be selected in accordance with PN-83/N-03010 standard.

5.8. Assessment of test results

The product shall be regarded as conforming to the requirements of the present ITB Technical Approval, if the test results are positive.

6. FORMAL AND LEGAL CONDITIONS

6.1. The AT-15-7561/2008 ITB Technical Approval is a document certifying the suitability of PLUTON I and PLUTON II one-grip spindle handles with shields for tilt-and-turn, side-hung, and tilt windows and doors for use in the construction industry within the scope specified by the provisions of the Approval.

Pursuant to art. 4, art. 5 par. 1 item 3 and art. 8 par. 1 of the Act of 16 April 2004 on construction products (Journal of Laws No. 92/2004, item 881) the products referred to in the present Technical Approval can be marketed and used in construction works, in the scope corresponding to its functional properties and intended use, if the manufacturer performed the conformity assessment, issued a national declaration of conformity with the AT-15-7561/2008 ITB Technical Approval and marked the product with a construction mark, in accordance with applicable regulations.

6.2. The ITB Technical Approval does not prejudice the rights arising pursuant to industrial property protection regulations, particularly the announcement of the Speaker of the Sejm of the Republic of Poland of 13 June 2003 on the publication of the consolidated text of the Act of 30 June 2000. Industrial property law. (Journal of Laws No. 119, item 1117, as amended – Journal of Laws No. 33/2004, item 286). The obligation to ensure the above rights is a responsibility of the users of the present ITB Technical Approval.

6.3. By issuing the Technical Approval, the ITB does not assume the responsibility for possible breaches of exclusive and acquired rights.

6.4. The ITB Technical Approval does not exempt the manufacturer of the products from the responsibility for the quality of the products and the designers of the structures or contractors of construction works from the responsibility for their proper use.
6.5. The issued catalogues or advertisements and all other documents related to the marketing and use in construction industry of the PLUTON I and PLUTON II one-grip spindle handles shall include the information of the granting of the AT-15-7561/2008 ITB Technical Approval.

7. EXPIRATION DATE


The validity of the ITB Technical Approval can be prolonged for successive periods, if the Applicant thereof or his formal successor files an appropriate application to the Building Research Institute no later than 3 months before the expiration date of the present document.

END

ADDITIONAL INFORMATION

Standards and related documents

<table>
<thead>
<tr>
<th>Standard Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PN-EN 22768-1:1999</td>
<td>General tolerances. Tolerances for linear and angular dimensions without individual tolerance indications.</td>
</tr>
<tr>
<td>PN-EN ISO 10289:2002</td>
<td>Methods of corrosion testing of metallic and other inorganic coatings on metallic substrates. Rating of test specimens and manufactured articles subjected to corrosion tests.</td>
</tr>
<tr>
<td>PN-EN ISO 15065:2007</td>
<td>Countersinks and countersunk head screws with head configuration in accordance with ISO 7721.</td>
</tr>
<tr>
<td>PN-84/B-94019</td>
<td>Building hardware. Handles with shields.</td>
</tr>
<tr>
<td>PN-74/B-94211</td>
<td>Building hardware. Frontal surface sliding-fastening casement bolts.</td>
</tr>
</tbody>
</table>
PN-76/H-04603  Metal corrosion. Accelerated laboratory tests in inert salt mist.
PN-76/H-88027  Cast aluminium alloys. Classification.
PN-83/N-03010  Statistical quality control. Random sampling.

Test reports and assessments

- OWN-)T-025/2007 expert opinion concerning the PLUTON handles, ITB Department of Building Hardware and Metalwork, Wielkopolska Branch – Poznań, ul. Taczaka 12.
- LOW/045.1/2007 report from tests of the VENUS one-grip spindle handles, ITB Laboratory of Building Hardware and Metalwork, Wielkopolska Branch – Poznań, ul. Taczaka 12.
- LOW-226.1/2007 report from tests of the PLUTON I and PLUTON II one-grip spindle handles, ITB Laboratory of Building Hardware and Metalwork, Wielkopolska Branch – Poznań, ul. Taczaka 12.

FIGURES

Pg.

Fig. 1. Main components of PLUTON I and II one-grip spindle handles............................. 16
Fig. 2. Shape and dimensions of PLUTON I and II one-grip spindle handles ...................... 16
Fig. 1. Main components of PLUTON I and II one-grip spindle handles

1 Grip
2 Compression spring
3 Cover plate
4 Body
5 Rosette
6 Mounting spring
7 Spindle

Fig. 2. Shape and dimensions of PLUTON I and II one-grip spindle handles