




CONSTRUCTION PRODUCT TECHNICAL CARD

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|---|--|---|
| <i>Product feature:</i> Flowmeter included | <i>Energeo Product:</i> NOMO – R – Distributor cabinets with multi-sectional manifolds |  <i>Sgn:EN.OZE.20-13.NM</i> |
| <i>Manufacturer:</i> ASPOL-FV Łódź, ul. Helska 39/45 www.aspol.com.pl | | |
| ENERGEO – GEOTHERMAL TECHNOLOGY FOR GROUND SOURCE HEAT PUMPS – RENEWABLE ENERGY SOURCES | | |

Legally protected brand according to the decision of the Polish Republic Patent Office

EN.OZE.20-13.NM

Uniform text dated 10. June 2013

1. List of standards / legislation and other documents related to the product:

- PN-EN 10226-1:2006;
- PN-EN ISO 228-1:2005 PN-EN ISO 228-2:2005
- PN-EN 12201-1:2012, PN-EN 12201-2:2012, PN-EN 12201-3:2012, PN-EN 12201-4:2013;
- PN-EN 805:2002; PN-EN 805:2002/Ap1:2006;
- PN-EN ISO 1167-1:2007, PN-EN ISO 1167-2:2007, PN-EN ISO 1167-3:2008, PN-EN ISO 1167-4:2008;
- PN-EN 1074-5:2002;
- PN-EN 1267:2012;
- PN-ISO 9624:2001;
- PN-ISO 9623:2001;
- PN-B-02481:1998;
- PN-C-88012:1999;
- PN-C-88013-3:1999;
- VDI 4640;
- DIN 8075:1999;
- EN.OZE-WW:20-12.1; Ground source for heat pumps assembly guidelines.

1. NOMO-R cabinets – a component of the Energeo* system

The NOMO-R distributor cabinets is an element of ground source system for heat pumps. It consists of a *manifold* (collector) in-built into a plastic chamber (*cabinets*).

2.1 Manifold – an element of the hydraulic system consisting of two cylindrical collector bars with

collector (SK) flow sections. Material: HDPE-100/HDPE-100RC.

Manifold flow line – flowmeter with flow guard is mounted on each antifreeze circuit in order to provide proper hydraulic balance and adjustment. Every circuit is controlled, with the option of cutting-off (closing).

Manifold return line – cut-off ball valve for each antifreeze circuit.

The manifold main functions are as follows:

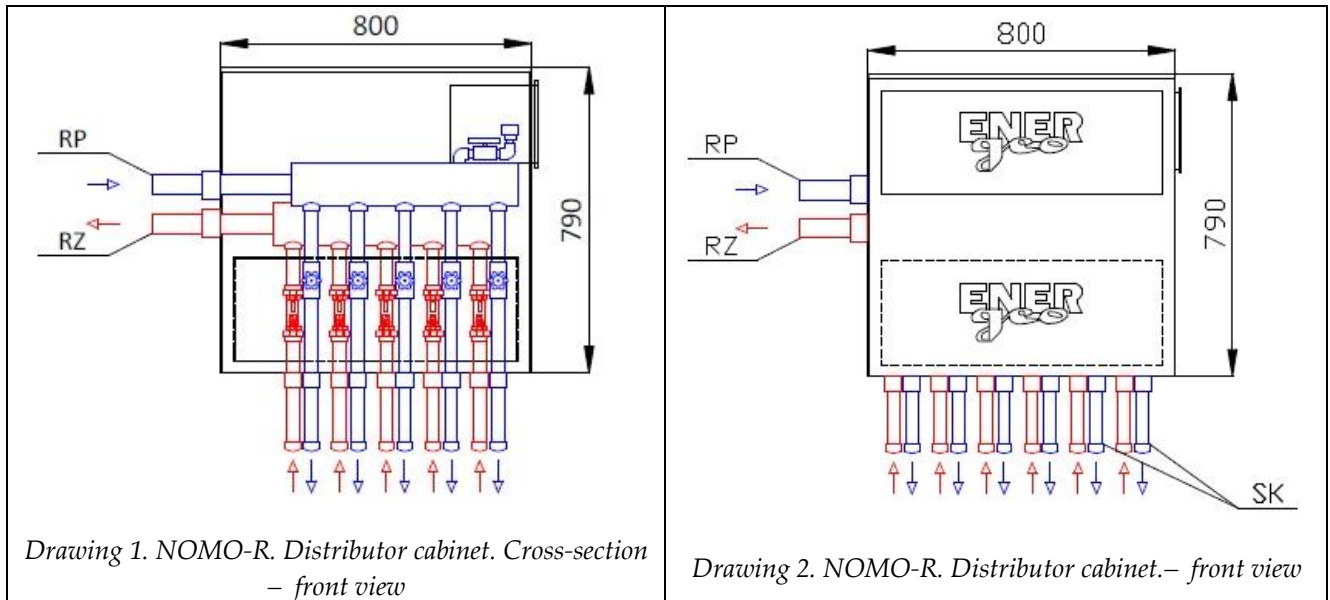
- Divide antifreeze liquid flowing from the heat pump through the manifold return line to the underground heat exchanger and transfer it back through the manifold flow line to the heat pump;
- Ensure hydraulic control and cutting-off system

Collector pipes (SK) and connection pipes (RD) are intended for both: electro-fusion and socket-welding techniques.

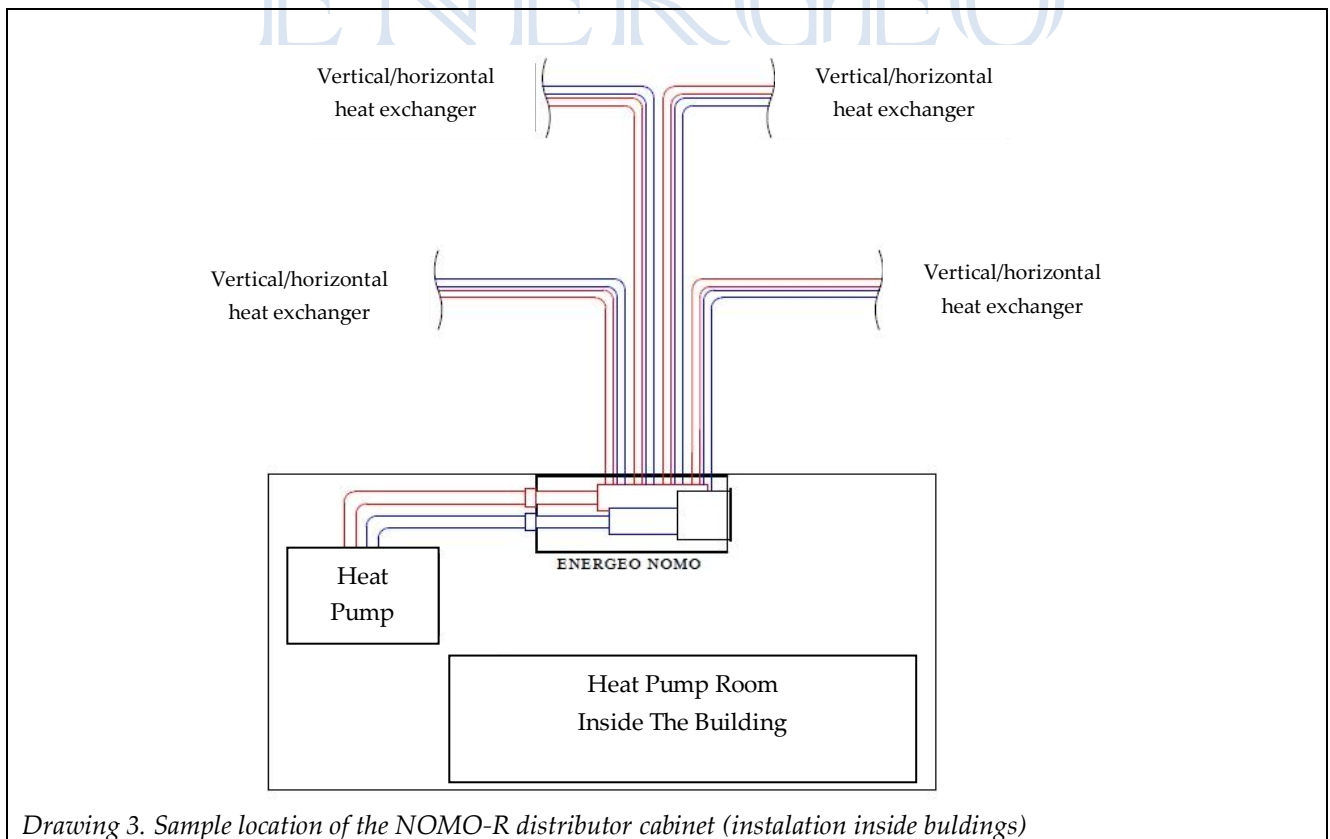
*ENERGEO is a balanced hydraulic system developed to transfer geothermal energy from the ground, watercourses and water areas to the heat pump which provides energy for heating, cooling and hot water for dwellings, residential buildings and commercial facilities.

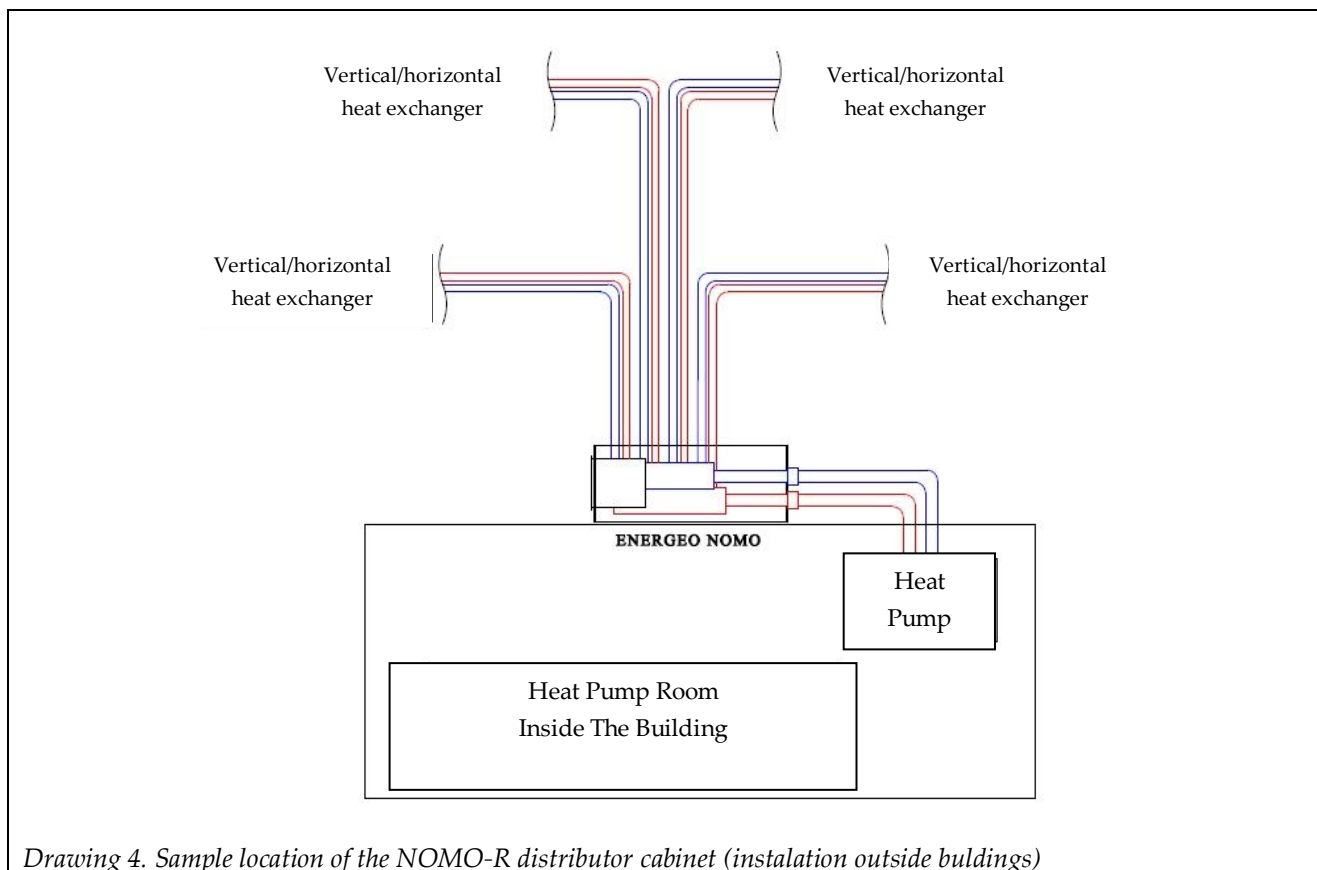
2.2 Cabinet – Plastic distributor housing, thermally insulated guaranteeing protection against condensation.

Installation – Inside or outside buildings.
 Connection Tube approach in cabinets NOMO is on the left (standard), right or back of the cabinet.



SK – Collector Pipes, RZ – Supply Connection Tube, RP – Return Connection Tube,





2. Technical parameters of the NOMO-R distribution cabinet:

| PARAMETER | NOMO – R |
|--|------------------------------|
| Number of sections (SK) | 2-6 [pairs] |
| Material of chamber/manifold | EPOXY RESINS/HDPE |
| Manifold pressure class | PN16 |
| Standard collector pipe diameter (SK) | 25, 32, 40 [mm] |
| Standard connection tube diameter (RD) | 40, 50 [mm] |
| Output connection tube (RD) | Right/left/back |
| Diameter of manifold main supply/return bars | 110 [mm] |
| A flowmeters range | 2÷12 [dm ³ /min] |
| B flowmeters range | 8÷38 [dm ³ /min] |
| C flowmeters range | 20÷70 [dm ³ /min] |
| Angle flowmeters range | 5÷50 [dm ³ /min] |
| Dimensions: height / depth / width | 790/320/800 [mm] |



2.1 . The NOMO weight, pressure losses and capacity:

| Sections | NOMO Weight | Capacity | Antifreeze liquid | | | |
|----------|-------------|--------------------|--|---|--|---|
| | | | Manifold pressure drop for a flow of 0.5 m ³ /h per section | | Manifold pressure drop for a flow of 1.5 m ³ /h per section | |
| | | | Ethylene glycol water solution 20E15 (-15°C) | Propylene glycol water solution 20P15 (-15°C) | Ethylene glycol water solution 20E15 (-15°C) | Propylene glycol water solution 20P15 (-15°C) |
| - | [kg] | [dm ³] | [kPa] | [kPa] | [kPa] | [kPa] |
| 2 | 23 | 4,8 | 1,50 | 1,60 | 13,32 | 13,73 |
| 3 | 25 | 6,5 | 1,52 | 1,61 | 13,44 | 13,87 |
| 4 | 26 | 8,3 | 1,54 | 1,62 | 13,68 | 14,05 |
| 5 | 27 | 10,0 | 1,57 | 1,67 | 13,87 | 14,27 |
| 6 | 28 | 11,7 | 1,60 | 1,71 | 14,10 | 14,52 |

Approximate values. Calculation condition: Operating temperature :0°C, Linear Flowmeter, RD- diameter: 50 mm , length 30 cm, SK- diameter:32 mm, length 30 cm

3. Closing, thermal insulation, installation

Each cabinet distributor is equipped with lockable plastic access door.

The chamber in which the distributor is thermally insulated (including doors).

Each cabinet is equipped with a bracket for wall mounting.

To cover the collector pipes approaching to the cabinet NOMO system should be used collector pipes front cover.

4. Equivalent products – see technical card

- ALTRA - R distributor well - full range in accordance with EN.OZE.20-13;AL;
- REGA - R distributor cabinet - full range in accordance with EN.OZE.20-13;RG;
- Wall distributor GEO RS - R - full range in accordance with EN.OZE.20-13;RS

5. Information Technology

- The NOMO -R is available in the "ENERGEO SOFT" computer program (design/selection of ground sources for heat pumps).
- The NOMO-R is designed to be compatible with Electronic Diagnostic System for GSHP (EDS) to facilitate electronic diagnostics and archiving of working parameters of ground source in accordance with EN.EDS.20-13;01

6. Supplementary components

- Connection pipes (in accordance with EN.OZE.20-13;RD);
- Distribution pipes (in accordance with EN.OZE.20-13;RR);
- Vertical/horizontal exchangers (in accordance with EN.OZE.20-13;WG);
- Pipeway through wall barriers (in accordance with EN.OZE.20-13;PB);
- Heat pump engine room equipment;
- Antifreeze liquids: glycols and glycol water solutions (in accordance with EN.OZE.20-13;GH);
- Marking accessories;

7. Classification, training, qualifications and certification

Qualifications to install the system of ground source heat pumps, including the NOMO-R cabinet, should be gained through participation in training courses organized by the producer or by training institutions authorised by them.

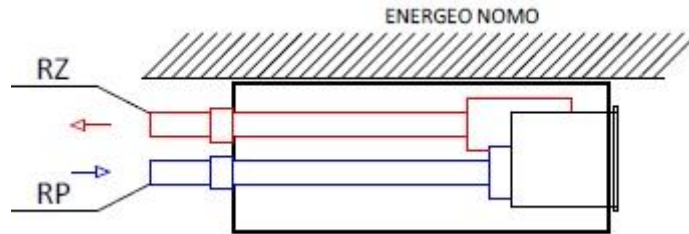


8. The product is characterised by the following features:

- Material uniformity for all plastic hydraulic elements: HDPE-100/HDPE-100RC;
- Thermally and acoustically insulated;
- Housing resistant to UV radiation and changing weather conditions;
- All plastic connections base on polyfusion welding method;
- Collector sections (inflow and return) are grouped in pairs (don't cross);
- Allows connect conenction tube from right, left side and back;
- Functions of the electronic version of the analysis and archiving parameters of the ground source heat pump;
- A regular system of training courses available to ensure professional installation;
- IT design tools available to enable correct selection and product configuration for any system of ground sources;
- Certified technical service is provided.

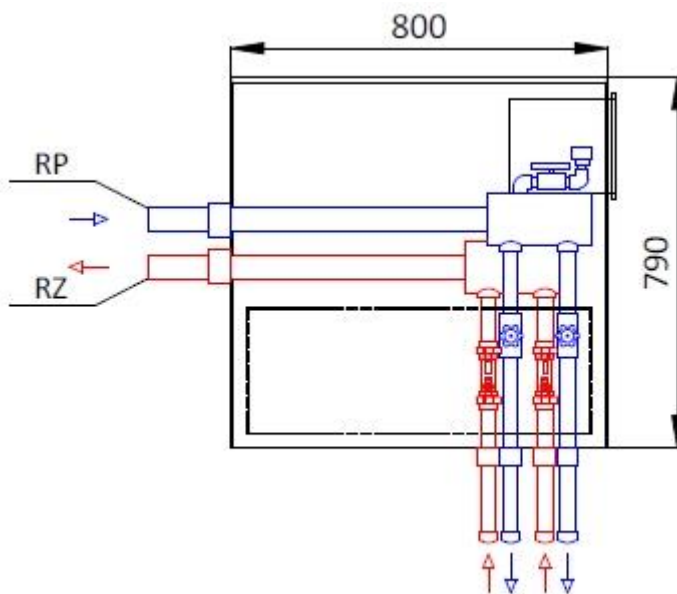
ENERGEO

10. 2-section distribution cabinet: NOMO-R flowmeters included– technical drawings*

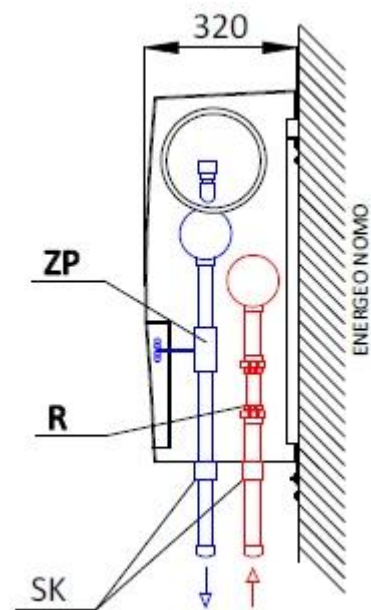


Drawing 5. NOMO-R. 2-section distribution cabinet. Cross-section- top view.

SK – Collector Pipes, RZ – Supply Connection Tube, RP – Return Connection Tube,
ZP – Straight valve, R – Flowmeter



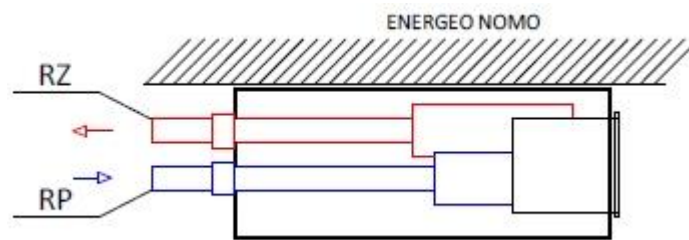
Drawing 6. NOMO-R. 2-section distribution cabinet. Cross-section- front view.



Drawing 7. NOMO-R. 2-section distribution cabinet. Cross-section- side view.

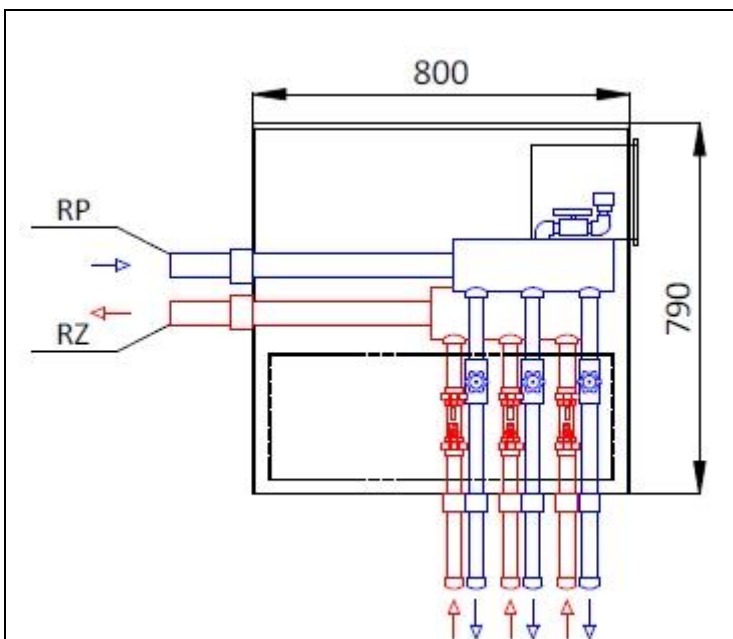
* Changes in technical solutions may cause differences between the drawings and the product

11. 3-section distribution cabinet: NOMO-R flowmeters included– technical drawings*

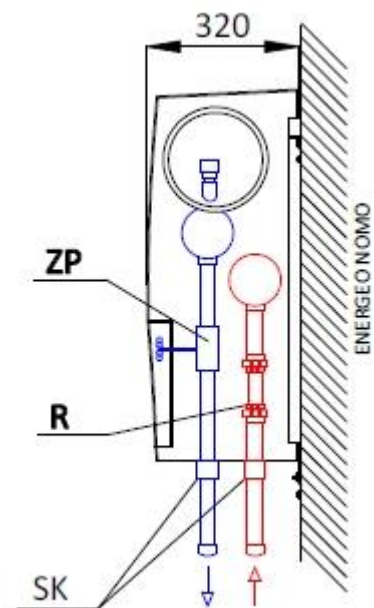


Drawing 8. NOMO-R. 3-section distribution cabinet. Cross-section- top view.

SK – Collector Pipes, RZ – Supply Connection Tube, RP – Return Connection Tube,
ZP – Straight valve, R – Flowmeter



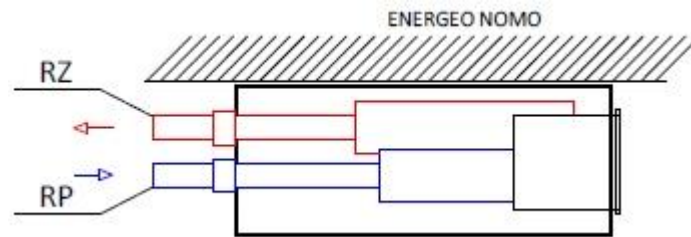
Drawing 9. NOMO-R. 3-section distribution cabinet. Cross-section-front view.



Drawing 10. NOMO-R. 3-section distribution cabinet. Cross-section-side view.

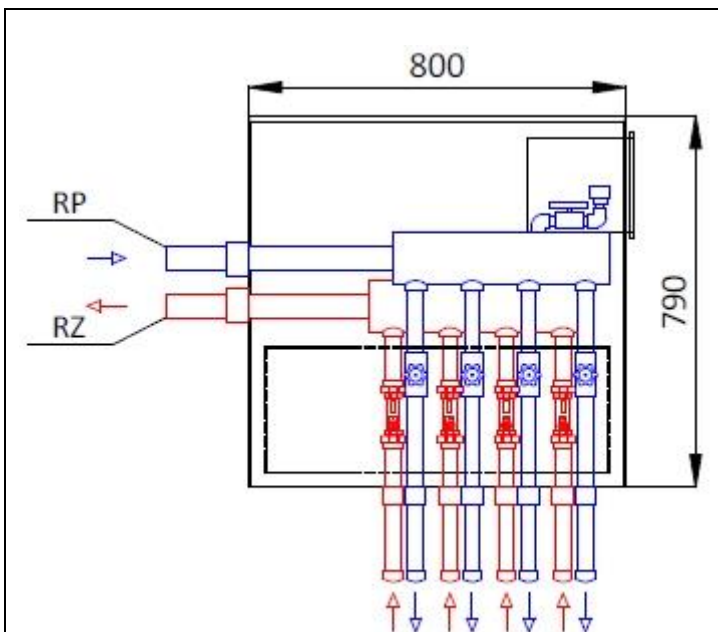
* Changes in technical solutions may cause differences between the drawings and the product

12. 4-section distribution cabinet: NOMO-R flowmeters included– technical drawings*.

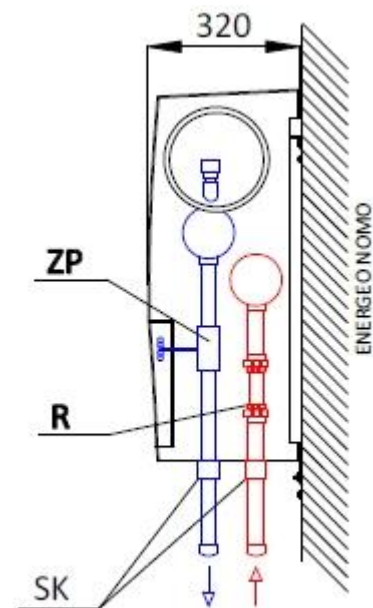


Drawing 11. NOMO-R. 4-section distribution cabinet. Cross-section- top view.

SK – Collector Pipes, **RZ** – Supply Connection Tube, **RP** – Return Connection Tube,
ZP – Straight valve, **R** – Flowmeter



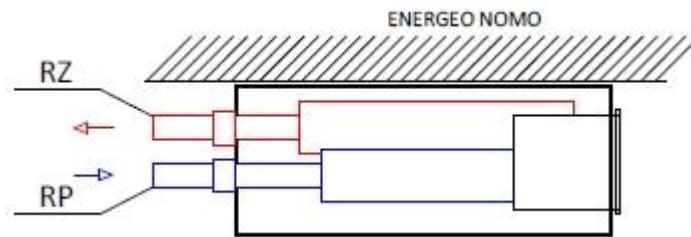
Drawing 12. NOMO-R. 4-section distribution cabinet. Cross-section- front view.



Drawing 13. NOMO-R. 4-section distribution cabinet. Cross-section- side view.

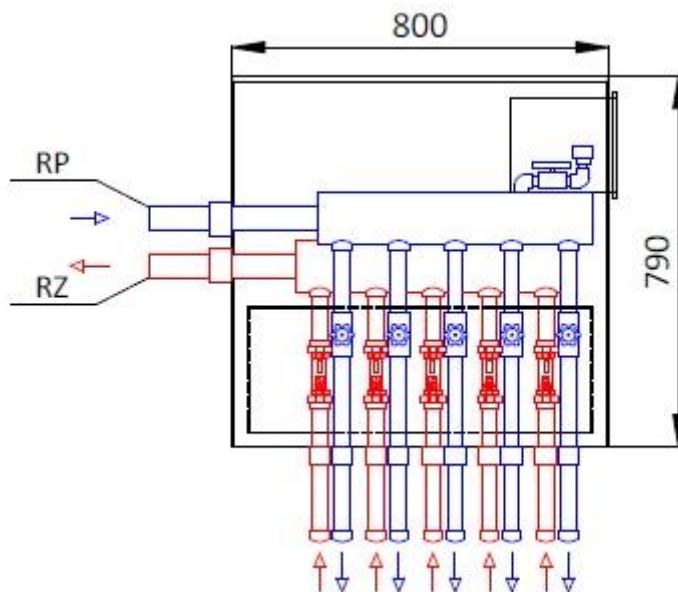
* Changes in technical solutions may cause differences between the drawings and the product

13. 5-section distribution cabinet: NOMO-R flowmeters included– technical drawings*

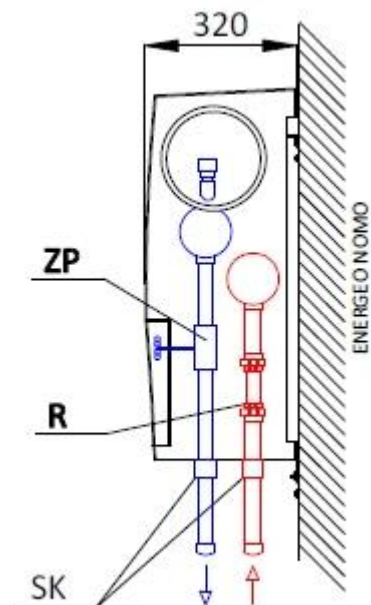


Drawing 14. NOMO-R. 5-section distribution cabinet. Cross-section- top view.

SK – Collector Pipes, RZ – Supply Connection Tube, RP – Return Connection Tube,
ZP – Straight valve, R – Flowmeter

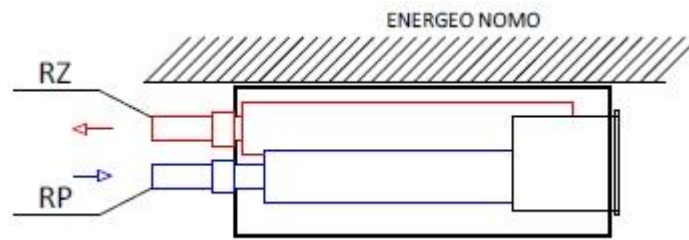


Drawing 15. NOMO-R. 5-section distribution cabinet. Cross-section- front view.



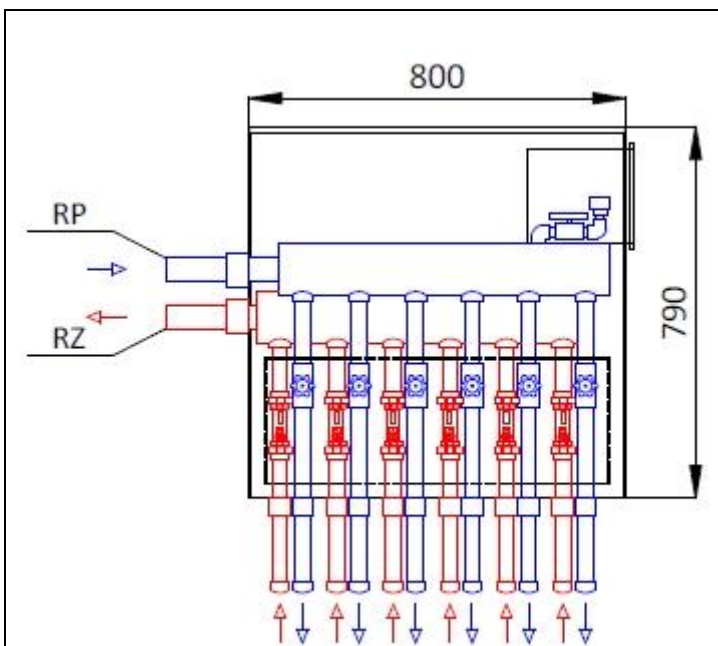
Drawing 16. NOMO-R. 5-section distribution cabinet. Cross-section- side view.

* Changes in technical solutions may cause differences between the drawings and the product

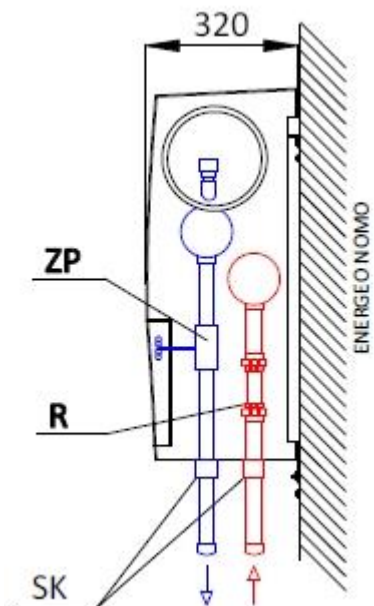
14. 6-section distribution cabinet: NOMO-R flowmeters included– technical drawings*.

Drawing 17. NOMO-R. 6-section distribution cabinet. Cross-section- top view.

SK – Collector Pipes, **RZ** – Supply Connection Tube, **RP** – Return Connection Tube,
ZP – Straight valve, **R** – Flowmeter



Drawing 18. NOMO-R. 6-section distribution cabinet. Cross-section- front view.



Drawing 19. NOMO-R. 6-section distribution cabinet. Cross-section- side view.

* Changes in technical solutions may cause differences between the drawings and the product