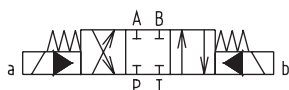


Explosion Proof, 4/2 and 4/3 Directional Control Valve, Pilot Operated

RNE2XH5-16

Size 16 (D07) • Q_{max} 300 l/min (80 GPM) • p_{max} 350 bar (5100 PSI) / 420 bar (6100 PSI)



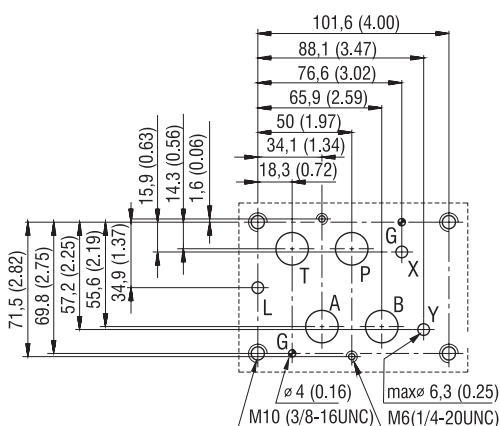
Technical Features

- Hydraulic, pilot-operated, spool-type directional control valve with cast iron body with connection pattern according to ISO 4401-07-07-0-05 (Size 16)
- Maximum operating pressure 320 bar / 420 bar (high pressure version)
- Internal or external power supply of the pilot valve RPE2X3-06 controlled by solenoids
- Solenoid coil certification ATEX (Directive 2014/34/EU) and IECEx, valid for mines and environments with potentially explosive atmospheres consisting of gases or dust
- "FM APPROVED" coil certification valid for the USA and Canada
- Coil protection by flameproof enclosure "d" / "t" (for dust)
- Robust design resistant to mechanical damage
- Protection against static discharge by grounding the valve surface
- Valves applicable for temperature classes T4 (135 °C), T5 (100 °C) and T6 (85 °C) depending on the coil input and maximum ambient temperature
- Easily interchangeable direction of power cable entry (axial/radial) into the coil
- Optional spool type, optional coil supply voltage and manual override of the pilot valve
- Optional spool speed control to prevent pressure surges in the circuit and adjustable stops for flow restriction
- The valve is zinc coated for 520 h corrosion protection in NSS acc. to ISO 9227 and as protection against ignition spark in the event of mechanical impact

Product Description

Hydraulic, pilot operated, spool-type directional control valve with pilot valve RPE2X3-06. The main valve spool is hydraulically controlled by a solenoid operated pilot valve. The design of the valve allows the control of a large volumetric flow. The valve is designed to control the direction of movement of the appliance outlet component or to stop it. The valve is certified for use in potentially explosive atmospheres of gases, vapors, dusts and flammable particles with high protection level EPL = b.

ISO 4401-07-07-0-05



Ports P, A, B, T max. Ø 17,5 mm (0.69 in)

Use of the valve in potentially explosive atmospheres



12 V / 24 V / 48 V / 110 V DC 110 V / 230 V AC 50 / 60 Hz	Zones	Type of protection – flameproof enclosure
Ex I M2 Ex db I Mb	Category Mb	"d" (EN /IEC 60079-1)
Ex II 2G Ex db IIB+H2 T6, T5, T4 Gb	Zones 1, 2	"d" (EN /IEC 60079-1)
Ex II 2D Ex tb IIIC T85°C, T100°C, T135°C Db	Zones 21, 22	"t" (EN/IEC 60079-31)



NEC 500 (USA), Annex J (Canada)
Class I Division 1 Group B, C, D T6 ... T4 Class II / III Division 1 Group E, F, G T6 ... T4

NEC 505, 506 (USA)
CL I Zone 1, AEx db IIB+H2, T6 ... T4 Gb Zone 21, AEx tb IIIC T85°C ... T135°C Db

CEC Section 18 (Canada)
Ex db IIB+H2 T6 ... T4 Gb Ex tb IIIC T85°C ... T135°C Db

Technical Data

Valve type		RNE2XH5-16	RNE2XH5H-16
Valve size		16 (D07)	
Max. flow	l/min (GPM)	300 (80)	
Max. operating pressure at ports P, A, B		350 (5080)	420 (6090)
- at port T (external drain)	bar (PSI)	210 (3050)	350 (5080)
- at port T (internal drain)		210 (3050)	
Minimum pilot pressure	bar (PSI)	12 (174)	
Maximum pilot pressure	bar (PSI)	210 (3050)*	350 (5080)*
Fluid temperature range (NBR)	°C (°F)	-30 ... +70 (-22 ... +158)	
Ambient temperature range			
Temperature class / Nominal input power	T4-10 W/18 W	-30 ... +70/60 (-22 ... +158/140)	
	T5-10 W	-30 ... +55 (-22 ... +131)	
	T6-10 W	-30 ... +40 (-22 ... +104)	
Technical Data - Explosion proof Solenoid			
Voltage type		AC 50 / 60 Hz	DC
Available nominal voltages U _N	V	110, 230	12, 24, 48, 110
Available nominal input power	W	10, 18	
Supply voltage fluctuations		U _N ± 10 %	
Max. switching frequency	1/h	10 000	
Enclosure type acc.to EN 60529		IP66 / IP68***	
Switching time at v=32 mm ² /s (156 SUS)	ON	AC: 60 ... 80**	DC: 50 ... 70**
	OFF	AC: 60 ... 80**	DC: 60 ... 80**
Weight	RNE2XH5-162	9.14 (20.15)	
	RNE2XH5-163	10.69 (23.57)	
		Datasheet	Type
General information	GI_0060	products and operating conditions	
Operating instructions	15318		
Mounting surface	SMT_0019	Size 16	
Spare parts	SP_8010		

*For higher system pressure use option "Z"

**The values indicated refer to a solenoid valve working with a pilot pressure of 100 bar (mineral oil, temperature = 50 °C, viscosity = 36 mm²/s, P - A and B - T connected).

***Test procedure IP68: Pressure 1 m under water, test duration 24 h. The indicated IP protection level is only achieved if the cable is properly mounted.

Spool Symbols

Three positions with centering spring		Two positions with return spring	
Z11		X11	
H11		X21	
Y11		R11	
C11		R21	
Z41		Two positions with mechanical detent on pilot valve	
Z22		J15	
		J19	

Manual Override of the pilot valve RPE2X3-06 measured in millimeters (in)

No designation - standard	N7 - detent assembly	N9 - without manual override

In case of solenoid malfunction or power failure, the valve spool can be shifted by manual override under the condition that the pressure in the back line does not exceed 25 bar (363 PSI).

Ordering Code

RNE2XH -16 / / - B

Explosion proof
4/2 and 4/3 directional
control valve, internally and
externally pilot operated

Design series
standard 350 bar **5**
high pressure 420 bar **5H**
(not available for C11 spools)

Valve size
ISO 4401-07-07-0-05 (CETOP 07)

Number of valve positions
two positions **2**
three positions **3**

Spool symbols
see the table "Spool Symbols"

Control options
without additional features **No designation**
main spool stroke limiter **C**
main spool shifting speed control **D**
shifting speed control, with orifice (0.8 mm) **PF**
in port P of solenoid pilot valve

Piloting
internal (from P-channel of the controlled valve) **No designation**
internal with installed pressure reducing
valve, fixed 30 bar setting **Z**
external **E**

Drain
external **No designation**
internal **I**

Check valve incorporated in P-line
none **No designation**
with back pressure check valve **C3**

Certifications of valve
No designation ATEX, IECEx,
UKCA, FM APPROVED

Surface treatment
520 h salt spray test (ISO 9227)

Seals
No designation NBR

Manual override on pilot valve
No designation standard
N7 detent assembly
N9 without manual override

**Temperature class - solenoid
nominal input power**
A6 Class T4, T5, T6 - 10 W
B4 Class T4 - 18 W*

*Coil B4 (18 W) available only in combination with spools J15 and J19

Threaded adapter with thread
M M20x1.5
NPT ½ NPT ANSI

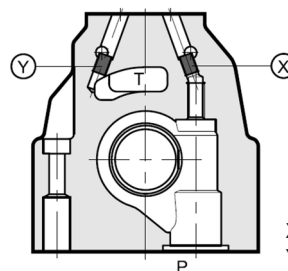
Rated supply voltage of solenoids
DC voltage (I_N of coil 10 W)
01200 12 V DC / 0.75 A
02400 24 V DC / 0.39 A
04800 48 V DC / 0.19 A
11000 110 V DC / 0.086 A

AC voltage 50/60 Hz (I_N of coil 10 W)
11050 110 V AC / 0.084 A
23050 230 V AC / 0.046 A

Pilot and Drain RPE2X3-06

The internal supply of the pilot valve is ensured by connection to the P channel of the main valve, the internal drain is ensured by connection to the T channel. In case of external supply (X channel) and drain (Y channel) of the pilot valve, the connection is closed by a glued threaded plug.

Type of valve		Plug assembly	
		X	Y
RNE2XH5-16**/*	internal pilot and external drain	NO	YES
RNE2XH5-16**/*I	internal pilot and internal drain	NO	NO
RNE2XH5-16**/*E	external pilot and external drain	YES	YES
RNE2XH5-16**/*EI	external pilot and internal drain	YES	NO



X: plug M6x8 for external pilot
Y: plug M6x8 for external pilot

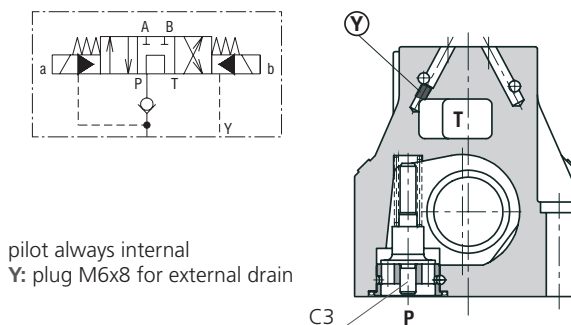
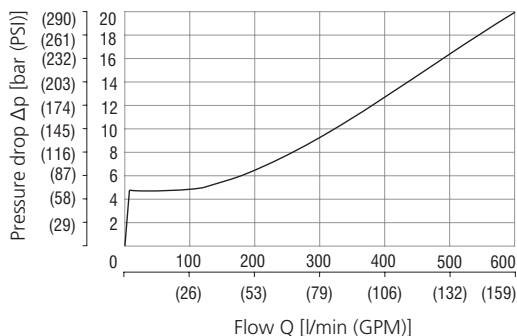
Actuation RNE2XH5-16

For detail information on the pilot valve RPE2X3-06 refer to datasheet No. 5310.

The minimum control pressure to operate the spool of the main valve is 5 to 12 bar depending on the volume flow rate. If the inlet pressure of the main valve is higher than 350 bar, an external supply to the pilot directional control valve must be used. Another option is to install a pressure reducing valve in the size 06 modular plate between the main and pilot valves (version "Z"). The reduced pressure is set to 30 bar.

When using the spool of the main valve with a P-T connection in the middle or intermediate position (H11, C11, X21, R21, J19), the minimum pressure required to control the pilot valve with an external supply must be ensured.

The second option is to build the valve into the inlet of the P channel of the main valve (C3 version), whose opening pressure is set to 5 bar at a volume flow rate of 15 l/min. The preloading check valve provides the minimum pressure for the control valve RPE2X3-06.



Pressure drop of the preloading check valve (should be added to the pressure drop of the RNE2XH5-16 valve)

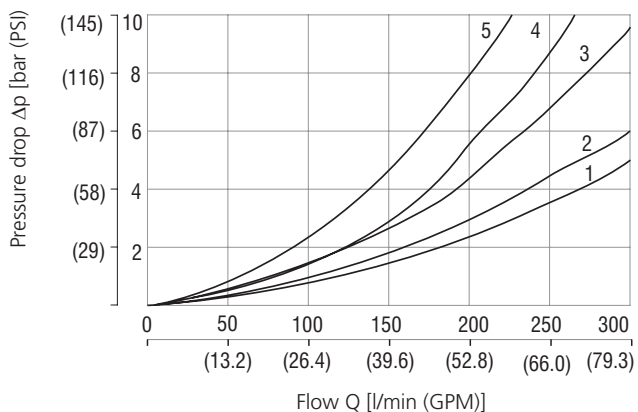
Note:

Preloading check valve can be ordered separately - see spare parts catalogue HA 8010.

When the solenoids are switched off, the position of the spool with detent assembly (J15, J19) is not defined.

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Pressure drop related to flow rate

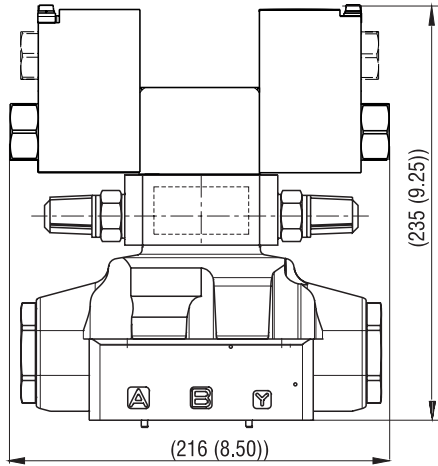


	Spool position	P-A	P-B	A-T	B-T	P-T
Z11	Energized	1	1	3	4	
H11	Energized	1	1	4	4	
	De-energized					2
Y11	Energized	1	1	4	4	
	De-energized			4	4	
C11	Energized	2	2	4	5	
	De-energized					4
R11, R21		1	1	3	4	
X11, X21		1	1	4	4	
J15, J19		1	1	3	4	

Control Options - Special Features

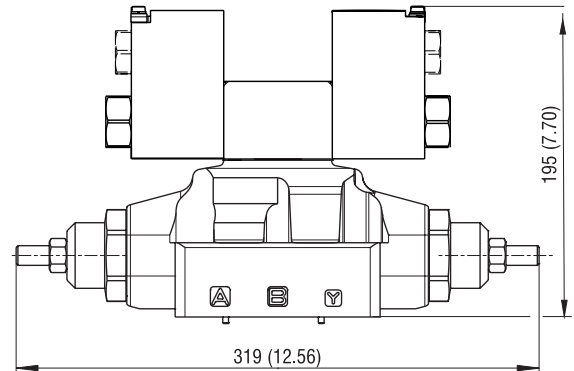
Control of the main spool shifting speed

By installing a double throttle valve in the size O6 modular plate between the main and pilot valve (version "D"), the spool speed of the main valve can be adjusted independently in both directions. This can reduce pressure peaks in the circuit. With a nozzle of $D = 0.8$ mm in the inlet channel of the pilot valve (version "PF"), the speed of the adjustment is the same in both directions and is determined by the nozzle diameter.



Volume flow limit setting

When using side flanges of the main valve with adjustable stops (version "C"), the end position of the valve spool can be adjusted and thus the maximum volume flow rate at a given pressure gradient independently in both directions.

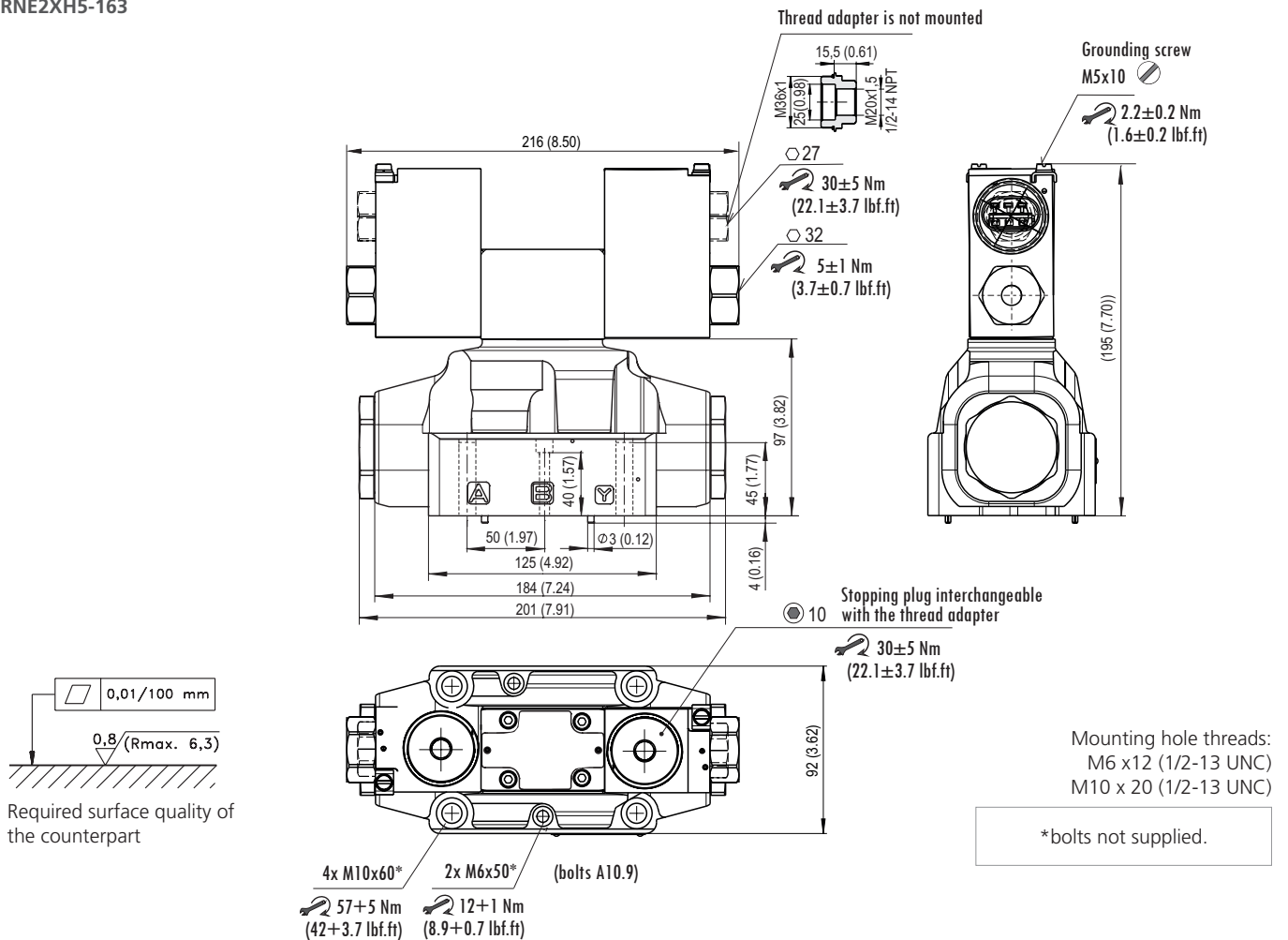


Using the H11 spool in the pilot valve

This configuration allows the main spool control channels to be relieved by connecting to the T-channel when the pilot valve spool is in the base position. An external power supply to the pilot valve must be used.

Dimensions in millimeters (in)

RNE2XH5-163



Mounting hole threads:
M6 x12 (1/2-13 UNC)
M10 x 20 (1/2-13 UNC)

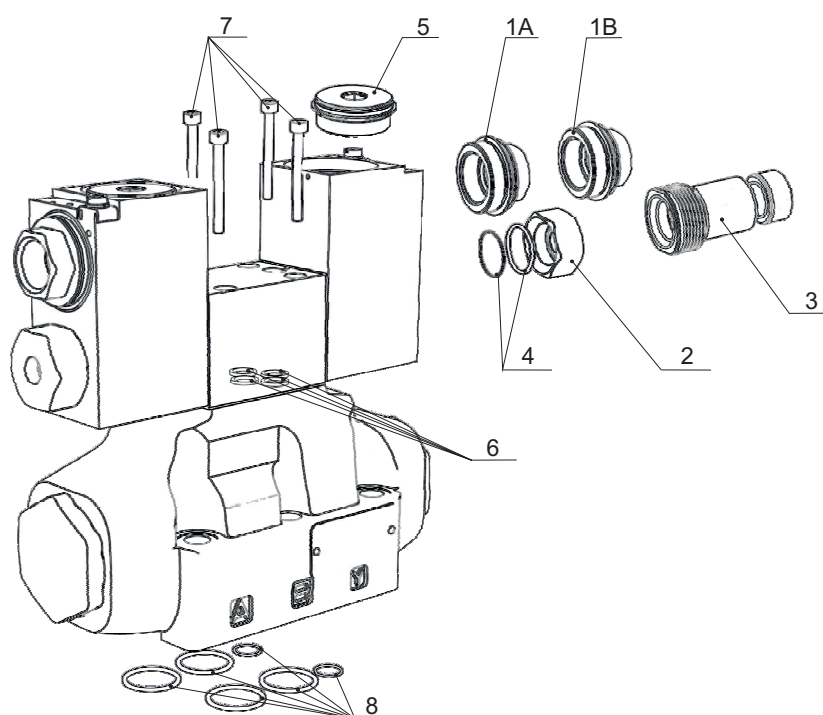
*bolts not supplied.

Ordering

The access to the terminal is covered by a steel plug with a seal, mounted on the upper surface of the coil casing. A second hole in the casing is provided for a thread adapter with an optional M20x1.5 (M key) or 1/2 NPT ANSI (NPT key) thread. The thread adapter with a seal is included because the design of the coil casing allows the axial input of the power cable to be easily changed to vertical by interchanging the plug and thread adapter.

SPARE PARTS

Position	Component name	Description	Ordering number
Spare parts for pilot valve RPE2X3-06			
1A	Thread adapter with the thread M20x1.5	Set with the sealing ring 36x2 VQM (silicone)	44915100
1B	Thread adapter with the tapered thread ½ NPT ANSI	Set with the sealing ring 36x2 VQM (silicone)	44915000
2	Coil nut	Nut	
4	Set	Sealing ring actuating system-coil	O-ring 22x1.5 VMQ 50 (silicone)
		Nut sealing	O-ring 21.89x2.62 VMQ 70 (silicone)
3	Coil nut with manual override N7	Nut	
4	Set	Sealing ring actuating system-coil	O-ring 22x1.5 VMQ 50 (silicone)
		Nut sealing	O-ring 21.89x2.62 VMQ 70 (silicone)
5	Stopping plug	Set with the sealing ring 36x2 VQM (silicone)	44923800
6	Set of seals	4x Square ring 9.25x1.68 NBR	15845200
7	Set	Valve mounting screws	4x M5x45 DIN 912 10.9
Spare parts for main valve			
8	Set	Set of seals 4x O-ring 22.22x2.62 NBR 2x O-ring 10.82x1.78 NBR	40076000
		Check valve C3 (in channel P)	DSP7-*/10-C 31950200



Information for customers

- › Before installing the product, please read the Product Instructions for Use, which is available in full on the manufacturer's website (www.argo-hytos.com) near the data sheet. Please also pay attention to the chapter describing the target user group, their professional qualifications and medical fitness to install, use and repair the product.
- › The product may only be used in the zones indicated, otherwise there is a risk of initiating an explosion

Area of application

Equipment - group I – MINES	Equipment - group II (IIG) - GAS	Equipment - group III (IID) - DUST
Category M1 – NO	Zone 0 - NO	Zone 20 - NO
Category M2 (the device remains switched off)	Zone 1	Zone 21
	Zone 2	Zone 22
	IIA (propane) IIB (ethylene) + H2	IIIA (combustible particles) IIIB (non-conductive dust) IIIC (conductive dust)

Note: The valve may be used in potentially explosive hydrogen atmospheres belonging to Group IIC. However, it cannot be used for other Group IIC gases, e.g. acetylene

- › For use in the temperature class, the maximum ambient temperature (see technical data table) must be observed for the coil input (10/18 W), the maximum working fluid temperature of 70 °C and the nominal coil supply voltage. The 18 W coil valve may only be used in temperature class T4 (135 °C).
- › The user must ensure free heat dissipation from the valve surface. The surface must not be covered, exposed to a heat source or direct sunlight. When mounting the valves in groups, observe the minimum distances specified in the Instructions for Use.
- › Use a certified cable and a cable gland with protection "d" to prevent the penetration of hot gases into the surrounding environment when an explosion is initiated in the interior of the flameproof enclosure. The insulation must match the temperature class.
- › It is forbidden to install, dismantle or repair the product in an explosive atmosphere. Repairs to the product shall be carried out by the manufacturer, except for repairs permitted by the user under the conditions specified in the Instructions for Use.
- › Attention! The surface of the coil and the valve gets hot during operation. There is a risk of skin burns if touched.