

NW



INTENDED USE

Frame heaters are used for air heating in ventilation and air-conditioning installations.

UNIT DESCRIPTION

Series of types of the heaters includes 8 sizes with intake surface from 0,063m² to 1,6m², offered as two- or three- row heaters.

The construction of the heaters allows for joining them in four-, five- or more rows sets.

The heater consists of:

- internal frame with collars fitted for connection with ventilation channels
- heating elements made of bimetallic highly-ribbed pipes, i.e. steel pipes with aluminium ribbing rolled in a spiral way
- collectors with connectors

As a standard, the heating elements are made of pipes with inner diameter $d=12,4\text{mm}$, outer diameter of ribs $D=38\text{mm}$ and ribs spacing $s=2,8\text{ mm}$. Connectors, in the standard version, are fitted for connection with heating installation through screwing.

There may also be offered heaters with connectors fitted for welding or with collars.

WORKING CONDITIONS

The heaters may be fed with water of max. 150/70°C temperature and operation pressure max. 1,6Mpa. The heater works best when pipes are positioned horizontally. This condition is connected with the necessity of correct venting and dehydrating of the heater.

The heaters may operate in vertical position or may get out of plumb app. Max 60°C.

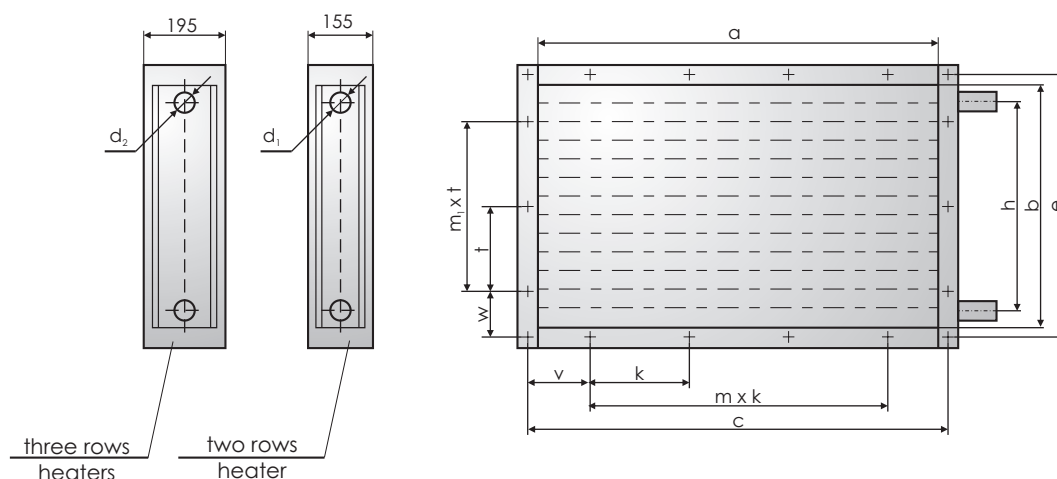
DESIGNATIONS

Frame water heater	NW - 4 - II - 130/70 - 1,6
Size	1 ÷ 8
Number of rows	II or III, II+II=IV, II+III=V
Heating factor temperature [°C]	
Heating factor pressure [Mpa]	

NW FRAME WATER HEATERS

TECHNICAL DATA

Basic dimensions



Size	a [mm]	b [mm]	c [mm]	e [mm]	v [mm]	k [mm]	m	w [mm]	t [mm]	m ₁	d ₁	d ₂	h [mm]		Heating surface [m ²]		Weight [kg]	
													II	III	II	III	II	III
1	315	200	345	230	122,5	100	1	115	-	-	¾"	¾"	155	153	1,7	2,5	10,2	12,8
2	400	250	430	280	115	100	2	90	100	1	¾"	1"	205	196	2,7	4,0	13,5	17,3
3	500	315	530	345	115	100	3	122,5	100	1	1"	1¼"	263	252	4,3	6,7	18,5	24,1
4	630	400	660	430	130	100	4	115	100	2	1"	1¼"	350	334	7,2	11,0	27,0	37,0
5	800	500	830	530	115	100	6	115	100	3	1½"	1½"	348	432	11,9	17,8	39,6	48,9
6	1000	630	1034	664	79,5	125	7	132	100	4	1½"	2"	564	549	18,9	28,4	55,0	75,0
7	1250	800	1284	834	79,5	125	9	117	100	6	1½"	2"	730	718	27,5	45,7	79,5	103,9
8	1600	1000	1634	1034	128,5	125	11	79,5	125	7	2"	2½"	920	900	48,8	73,8	116,5	166,0

Thermal power of heaters

Size	Dimensions [mm x mm]	Speed of inflow air [m/s]	Air flow at temp. 0°C [m ³ /h]	Thermal power [kW] at inflow air temperature 0°C							
				Water temperature [90/70°C]				Water temperature [110/70°C]			
				Number of rows				Number of rows			
				II	III	IV	V	II	III	IV	V
1	315X200	3,0	680	5,3	6,9	9,3	10,8	5,8	7,6	10,5	12,4
		4,0	907	6,0	8,2	10,5	12,3	6,6	9,0	11,9	14,1
		5,0	1134	7,0	9,4	12,3	14,3	7,7	10,3	13,9	16,5
2	400X250	3,0	1080	7,6	11,0	13,4	15,6	8,4	12,1	15,2	18,0
		4,0	1440	9,3	12,7	16,4	19,1	10,2	14,0	18,4	21,8
		5,0	1800	10,7	14,6	18,8	21,9	11,8	16,1	21,3	25,3
3	500X315	3,0	1695	12,7	18,0	22,4	26,0	14,0	19,9	25,2	29,9
		4,0	2260	15,1	21,6	26,6	31,0	16,6	23,8	29,9	35,5
		5,0	2826	17,0	24,5	29,9	34,8	18,7	27,0	33,7	40,0
4	630X400	3,0	2721	21,7	29,6	38,2	44,5	23,9	32,6	43,1	50,8
		4,0	3600	24,9	34,6	43,7	50,7	27,6	38,3	50,4	59,1
		5,0	4536	28,4	39,5	50,0	58,1	31,2	43,4	56,3	66,8
5	800X500	3,0	4320	34,7	48,0	61,2	71,0	38,2	52,8	69,9	81,8
		4,0	5760	40,6	56,9	71,5	83,1	44,7	62,6	80,6	95,7
		5,0	7200	46,2	66,0	81,4	94,8	50,8	72,6	91,6	108,6
6	1000X630	3,0	6804	56,8	76,6	99,8	116,2	62,5	84,2	112,8	133,5
		4,0	9072	65,7	89,5	115,8	134,5	72,3	98,4	130,4	154,5
		5,0	11340	73,0	104,0	128,7	149,6	80,3	114,4	144,4	171,7
7	1250X800	3,0	10800	83,0	124,4	146,4	170,0	91,3	136,8	164,6	195,3
		4,0	14400	96,4	145,0	169,8	197,7	106,0	159,5	191,0	227,0
		5,0	18000	108,7	172,0	191,6	223,1	119,6	189,2	215,7	250,0
8	1600X1000	3,0	17280	144,0	197,6	253,8	295,2	158,1	217,4	285,7	339,0
		4,0	23040	168,6	232,0	297,1	345,9	185,5	255,2	334,8	397,0
		5,0	28800	186,0	267,4	327,5	381,4	214,0	290,0	386,2	458,0

Thermal power of heaters

Size	Dimensions [mm x mm]	Speed of inflow air [m/s]	Air flow at temp. 0°C [m³/h]	Thermal power [kW] at inflow air temperature 0°C							
				Water temperature [130/70°]				Water temperature [150/70°]			
				Number of rows				Number of rows			
				II	III	IV	V	II	III	IV	V
1	315X200	3,0	680	6,3	8,9	11,4	13,7	7,0	10,1	12,9	15,5
		4,0	907	7,1	10,1	12,8	15,5	7,8	11,3	14,4	17,3
		5,0	1134	8,3	11,8	15,0	18,1	9,1	13,1	16,8	20,2
2	400X250	3,0	1080	9,0	12,8	16,3	19,6	9,9	14,3	18,1	22,0
		4,0	1440	11,0	15,6	19,9	24,0	12,1	17,5	22,4	25,9
		5,0	1800	12,6	17,9	22,8	27,5	13,9	20,1	25,7	30,9
3	500X315	3,0	1695	15,0	21,3	27,2	33,1	16,5	23,9	30,5	36,7
		4,0	2260	17,8	25,2	32,2	38,8	19,6	28,3	36,3	43,6
		5,0	2826	20,1	28,5	36,4	43,5	22,1	31,9	40,9	49,2
4	630X400	3,0	2721	25,6	36,7	46,5	55,9	28,2	40,8	52,2	62,8
		4,0	3600	29,3	41,6	53,2	64,0	32,2	46,6	59,6	71,6
		5,0	4536	33,5	47,6	60,8	73,1	36,9	53,4	68,3	82,1
5	800X500	3,0	4320	40,9	58,1	74,2	89,2	45,1	65,2	83,5	100,3
		4,0	5760	47,9	68,0	86,9	104,6	52,8	76,5	97,8	117,5
		5,0	7200	54,5	77,2	98,9	119,0	60,1	87,0	111,3	133,8
6	1000X630	3,0	6804	67,0	95,0	121,6	146,1	73,1	105,1	135,4	162,8
		4,0	9072	77,5	101,1	140,7	168,9	85,4	123,6	158,2	190,1
		5,0	11340	86,1	122,3	156,2	188,0	94,9	137,3	175,8	211,2
7	1250X800	3,0	10800	97,9	139,0	177,0	213,7	107,9	156,1	199,9	240,2
		4,0	14400	113,7	161,5	206,3	248,2	125,3	181,3	232,1	273,9
		5,0	18000	128,3	182,5	232,8	280,1	141,3	204,5	262,9	314,5
8	1600X1000	3,0	17280	169,9	241,4	308,4	371,0	187,2	270,9	346,7	416,7
		4,0	23040	198,9	282,6	360,8	434,5	219,2	317,2	406,0	487,9
		5,0	28800	219,5	311,8	398,5	479,3	241,8	349,9	447,9	538,3

Remark: Parameters of thermal powers of four- and five row heaters are given for parallel connections.

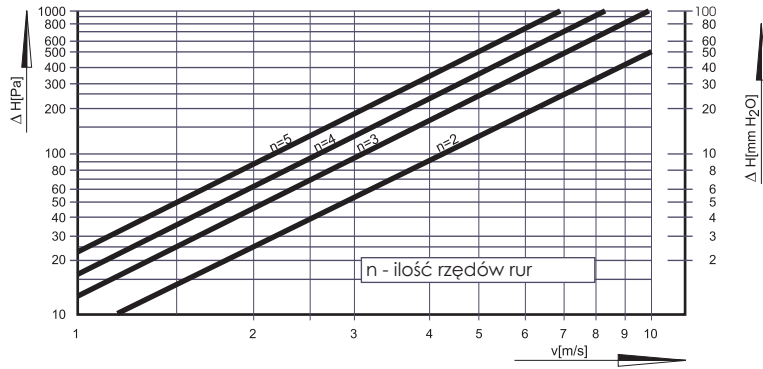
Q/Q_0 co-efficient for water heaters depending on temperature of air inflowing upon the heaters and parameters of heating factor.

Inflow air temperature [°C]	Heating factor parameters [°C]			
	90/70	110/70	130/70	150/70
-20	1,296	1,266	1,240	1,227
-15	1,214	1,195	1,179	1,169
-10	1,142	1,129	1,120	1,113
-5	1,072	1,055	1,050	1,057
0	1,000	1,000	1,000	1,000
+5	0,931	0,938	0,945	0,945
+10	0,861	0,874	0,883	0,890
+15	0,790	0,808	0,823	0,835

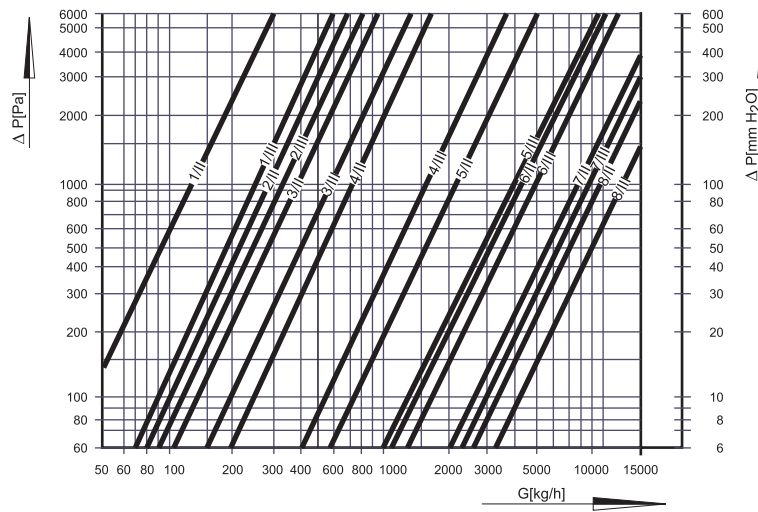
Q thermal power of the heater at designed temperature of inflow air

Q_0 thermal power of the heater at temperature of air inflow 0°C.

Resistance of air flow through heaters in the function of air inflow



Resistance of water flow through heaters



ADDITIONAL DATA

Upon prior agreement with a manufacturer special type of heaters meeting the need of a customer is possible, regarding dimensions, surfaces of heat exchange, fitting for operation in conditions of increased air contamination etc.

The heaters may be made of pipes with inner diameter $d=21,4\text{mm}$ and rib diameter $D=58\text{mm}$ and ribs spacing 5mm or $2,8\text{mm}$.