

Series NK



Duct electric heater

Series NK...U



Duct electric heater with a control unit

■ Applications

Duct electric heaters are designed for heating of intake air in rectangular ventilating system. The heaters are applied for air heating in ventilation and air conditioning systems in various premises.

■ Design

The casing and the terminal box are made of galvanized steel and the heating elements are of stainless steel. The models with the size from 400*200 to 600*350 the electric heating elements are extra ribbed to increase heat exchange surface. NK duct heaters are equipped with two overheating protection thermostats:

- ▶ basic protection with automatic restart (operating temperature +50 °C). After cooling the thermostat closes the control circuit of the heater automatically.
- ▶ emergency protection with manual restart (operating temperature above +90 °C). In case of response the power supply to the heater is allowed after the manual emergency reset only.
- ▶ the thermostat contacts are located in the terminal box for external connection.

Each standard size has several electric power capacity options. Higher capacity can be attained by means of installation of the heaters in series. In the heaters with heating capacity above 27 kW the tubular heating elements are grouped per 9 kW each. Each group consists of three Δ connected tubular elements.

■ Duct electric heater NK...U with heating capacity from 4.5 kW up to 54.0 kW and an integrated control unit

NK...U modification with an integrated control unit is offered for the whole NK model range for automatic maintaining of air temperature in the air duct.

The NK...U model with a control unit is equipped with a three phase triac power control unit.

Power control is effected by means of switching on/off the maximum load commutated by the semiconductor device that is free of any mechanical wear parts. The load commutation starts at zero current and load to disable

any magnetic field interferences. The load commutation starts at zero current and load to disable any magnetic field interferences.

- ▶ The NK...U heaters include two overheating protection thermostats:

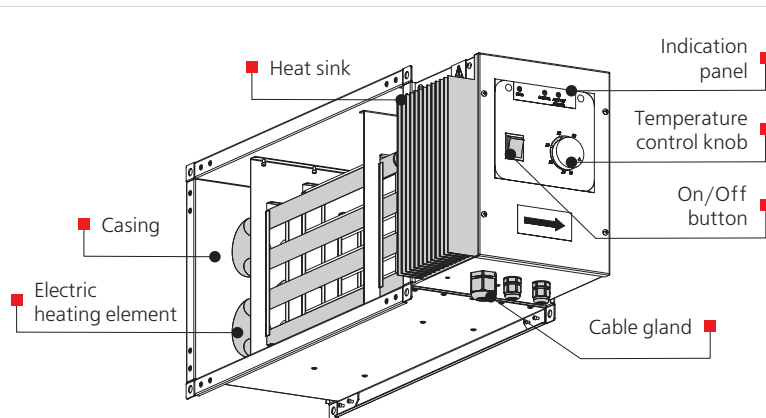
- ✓ the basic self-resetting overheating protection thermostat actuated at the temperature +50 °C. After cooling the thermostat closes the heater control circuit.
- ✓ the emergency overheating protection thermostat with manual reset actuated at the temperature +90 °C. In case of the thermostat tripping power supply is resumed after manual alarm reset.

- ▶ Operation logic options for the NK...U heater with a control unit:

- ✓ operation logic based on external temperature sensor readings to maintain set air temperature in the air duct.
- ✓ proportional electric heat control from 0 up to 100 % with a 0-10 V control signal from the external controller.

The temperature is set with the integrated temperature controller. Optionally, an external 0-10 V control signal from another control unit may be connected to the control unit, which corresponds to the air duct temperature -30 up to +30 °C.

- ▶ If operation mode is based on readings of external temperature sensor, the duct temperature sensors may



Designation key

Series	Flange dimensions (WxH) [mm]	-	Heater power [kW]	-	Phase	Options
NK	400*200; 500*250; 500*300; 600*300; 600*350; 700*400; 800*500; 900*500; 1000*500	-	4,5; 6; 7,5; 9; 10,5; 12; 18; 21; 24; 27; 36; 45; 54	-	3: three phase	U: integrated temperature control

be optionally installed (not included in the delivery set):

- ✓ KDT2-M1 duct temperature sensor enclosed in a protecting sleeve with a sensing tip, 100 up to 400 mm long
- ✓ KDT2-M duct temperature sensor enclosed in a protecting sleeve with a mounting flange, 100 up to 400 mm long
- ✓ KDT2-MK duct temperature sensor enclosed in a protecting sleeve with a mounting flange, 100 up to 400 mm long

■ Mounting

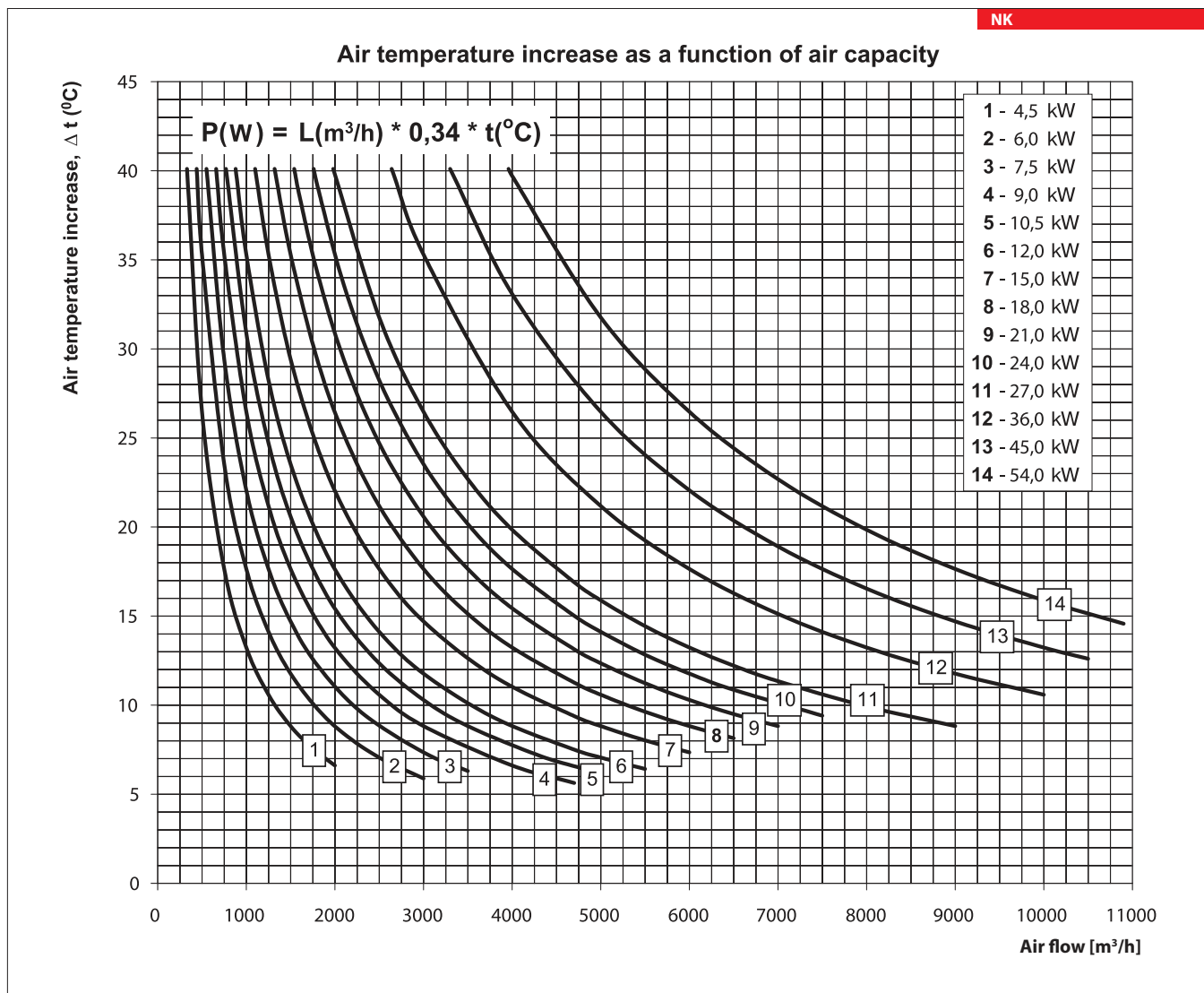
▶ The heater design ensures its mounting by means of flange connection. The air flow direction shall match the pointer on the filter. The duct heaters can be installed in any position except for with the electric control unit below to prevent condensate

penetration and wiring short circuit.

- ▶ The mounting shall be performed in such a way as to enable the uniform air stream distribution along the entire cross section.
- ▶ The air filter shall be installed at the heater inlet to protect the heating elements against pollution.
- ▶ We recommend to keep some distance between the heater and other system elements which is no less than the heater diagonal, i.e. the distance from one angle to another in its air passage part.
- ▶ The duct heaters are designed for the minimum air flow 1.5 m/s and the operating air temperature +40°C for NK heaters and maximum air temperature +30°C for NK...U heaters. In case of speed control option ensure the minimum air flow through the heater.
- ▶ Power supply to the heater shall be disabled if the fan is not running.

▶ To ensure the correct and safe heater operation the automation system can be applied to ensure the complex control and protection:

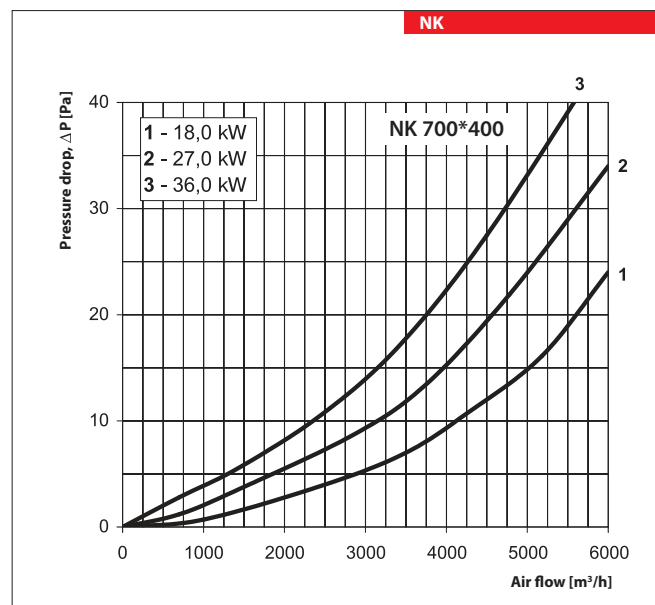
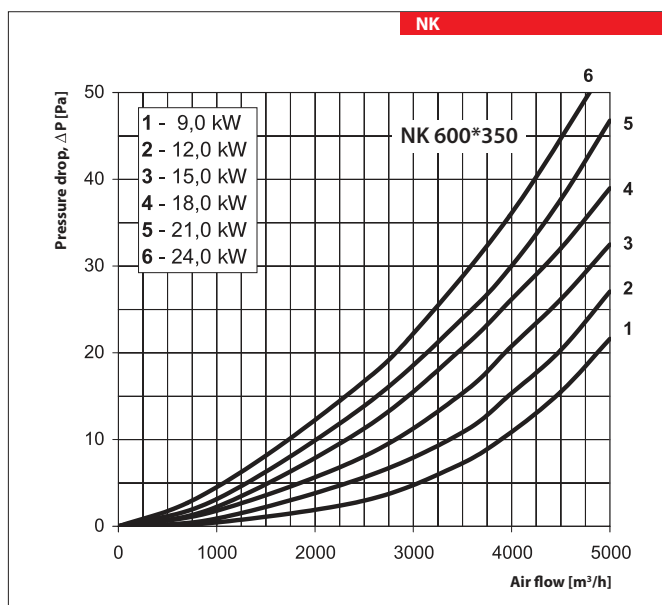
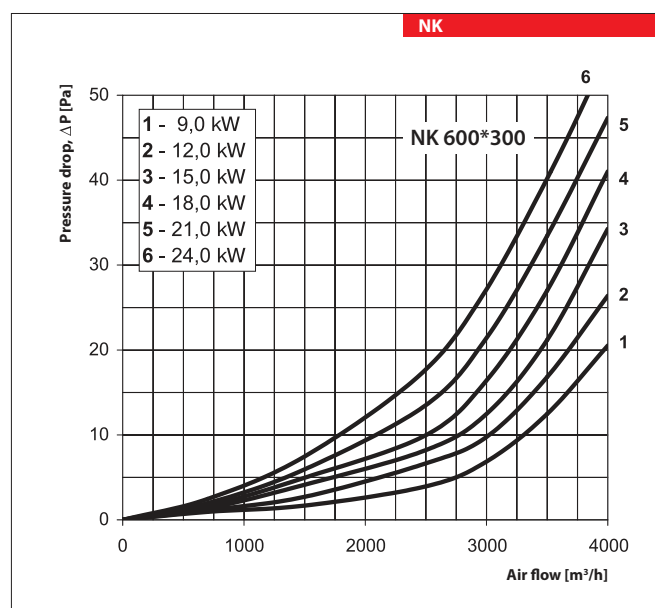
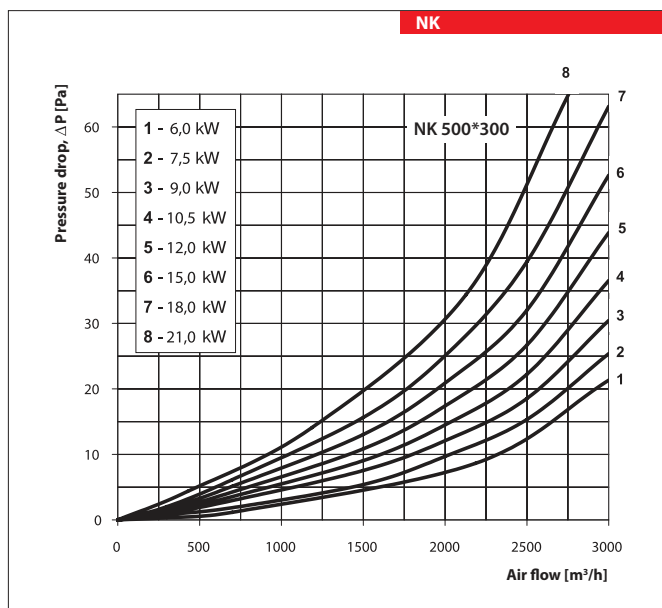
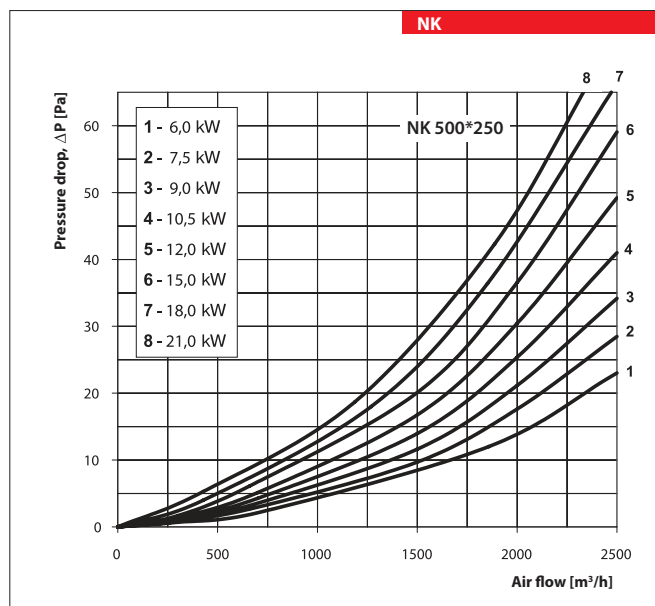
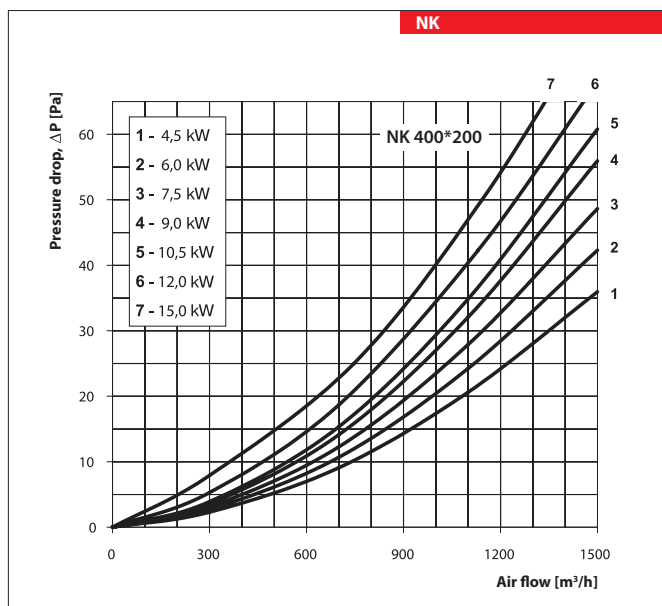
- ✓ automatic control of heating elements capacity and air heating temperature;
- ✓ checking filter condition by means of differential pressure sensor;
- ✓ power supply disabling in case of the supply fan shutdown or airflow speed decrease as well as in case of the built-in overheating thermostats operation;
- ✓ shutoff of ventilating system after cooling of electric heating element.

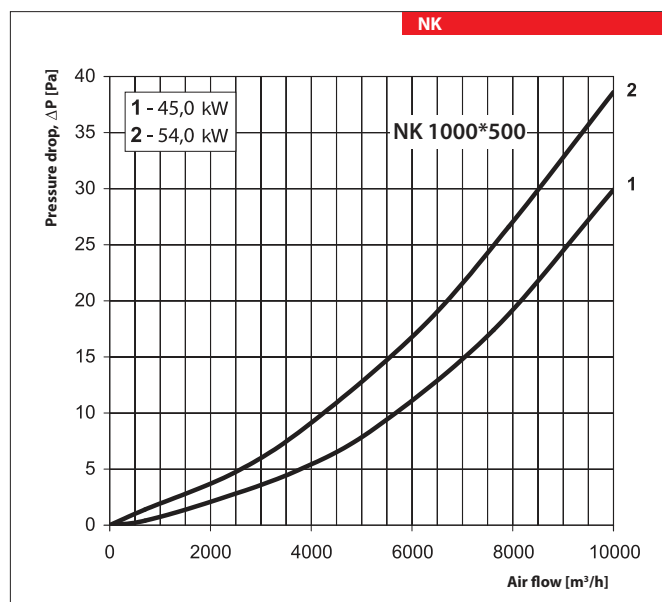
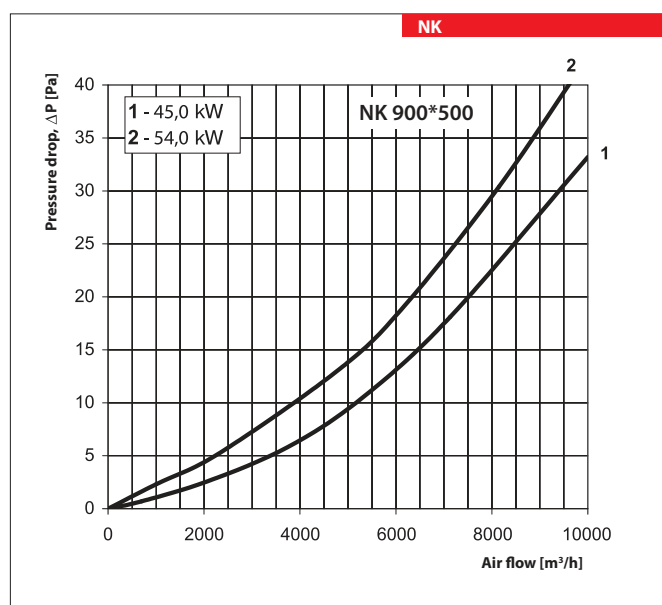
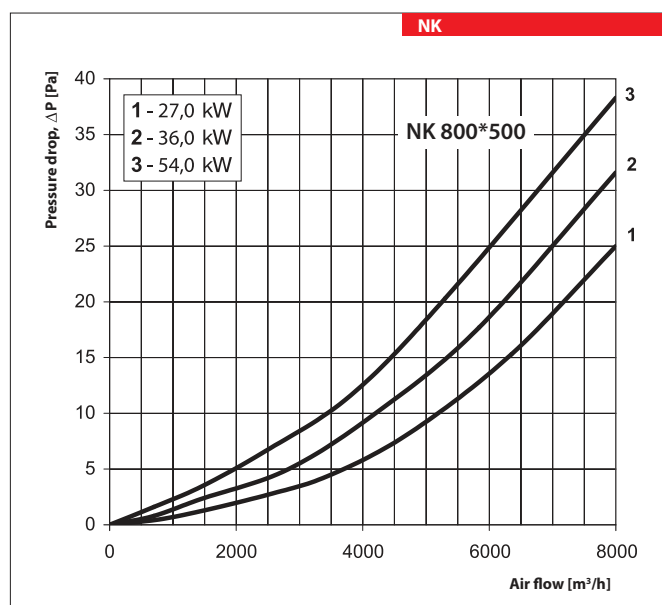


HEATERS

Technical data

Type	Minimum air capacity [m³/h]	Current [A]	Voltage [V]	Power [kW]	Number of heating coils x capacity [kW]	Connection diagram for tubular heating elements
NK 400*200-4.5-3/NK 400*200-4.5-3 U	330	6.5	400	4.5	3x1.5	Y
NK 400*200-6.0-3/NK 400*200-6.0-3 U	440	8.7	400	6.0	3x2.0	Y
NK 400*200-7.5-3/NK 400*200-7.5-3 U	550	10.9	400	7.5	3x2.5	Y
NK 400*200-9.0-3/NK 400*200-9.0-3 U	660	13.0	400	9.0	3x3.0	Y
NK 400*200-10.5-3/NK 400*200-10.5-3 U	770	15.2	400	10.5	3x3.5	Y
NK 400*200-12.0-3/NK 400*200-12.0-3 U	880	17.4	400	12.0	3x4.0	Y
NK 400*200-15.0-3/NK 400*200-15.0-3 U	1100	21.7	400	15.0	3x5.0	Y
NK 500*250-6.0-3/NK 500*250-6.0-3 U	440	8.7	400	6.0	3x2.0	Y
NK 500*250-7.5-3/NK 500*250-7.5-3 U	550	10.9	400	7.5	3x2.5	Y
NK 500*250-9.0-3/NK 500*250-9.0-3 U	660	13.0	400	9.0	3x3.0	Y
NK 500*250-10.5-3/NK 500*250-10.5-3 U	770	15.2	400	10.5	3x3.5	Y
NK 500*250-12.0-3/NK 500*250-12.0-3 U	880	17.4	400	12.0	3x4.0	Y
NK 500*250-15.0-3/NK 500*250-15.0-3 U	1100	21.7	400	15.0	3x5.0	Y
NK 500*250-18.0-3/NK 500*250-18.0-3 U	1320	26.0	400	18.0	3x6.0	Y
NK 500*250-21.0-3/NK 500*250-21.0-3 U	1540	30.0	400	21.0	3x7.0	Y
NK 500*300-6.0-3/NK 500*300-6.0-3 U	440	8.7	400	6.0	3x2.0	Y
NK 500*300-7.5-3/NK 500*300-7.5-3 U	550	10.9	400	7.5	3x2.5	Y
NK 500*300-9.0-3/NK 500*300-9.0-3 U	660	13.0	400	9.0	3x3.0	Y
NK 500*300-10.5-3/NK 500*300-10.5-3 U	770	15.2	400	10.5	3x3.5	Y
NK 500*300-12.0-3/NK 500*300-12.0-3 U	880	17.4	400	12.0	3x4.0	Y
NK 500*300-15.0-3/NK 500*300-15.0-3 U	1100	21.7	400	15.0	3x5.0	Y
NK 500*300-18.0-3/NK 500*300-18.0-3 U	1320	26.0	400	18.0	3x6.0	Δ
NK 500*300-21.0-3/NK 500*300-21.0-3 U	1540	30.0	400	21.0	3x7.0	Δ
NK 600*300-9.0-3/NK 600*300-9.0-3 U	660	13.0	400	9.0	3x3.0	Y
NK 600*300-12.0-3/NK 600*300-12.0-3 U	880	17.4	400	12.0	3x4.0	Y
NK 600*300-15.0-3/NK 600*300-15.0-3 U	1100	21.7	400	15.0	3x5.0	Y
NK 600*300-18.0-3/NK 600*300-18.0-3 U	1320	26.0	400	18.0	3x6.0	Δ
NK 600*300-21.0-3/NK 600*300-21.0-3 U	1540	30.0	400	21.0	3x7.0	Δ
NK 600*300-24.0-3/NK 600*300-24.0-3 U	1760	34.7	400	24.0	3x8.0	Δ
NK 600*350-9.0-3/NK 600*350-9.0-3 U	660	13.0	400	9.0	3x3.0	Y
NK 600*350-12.0-3/NK 600*350-12.0-3 U	880	17.4	400	12.0	3x4.0	Y
NK 600*350-15.0-3/NK 600*350-15.0-3 U	1100	21.7	400	15.0	3x5.0	Y
NK 600*350-18.0-3/NK 600*350-18.0-3 U	1320	26.0	400	18.0	3x6.0	Δ
NK 600*350-21.0-3/NK 600*350-21.0-3 U	1540	30.0	400	21.0	3x7.0	Δ
NK 600*350-24.0-3/NK 600*350-24.0-3 U	1760	34.7	400	24.0	3x8.0	Δ
NK 700*400-18.0-3/NK 700*400-18.0-3 U	1320	26.0	400	18.0	6x3.0	Δ
NK 700*400-27.0-3/NK 700*400-27.0-3 U	1980	39.0	400	27.0	9x3.0	Δ X 3 groups
NK 700*400-36.0-3/NK 700*400-36.0-3 U	2640	52.0	400	36.0	12x3.0	Δ X 4 groups
NK 800*500-27.0-3/NK 800*500-27.0-3 U	1980	39.0	400	27.0	9x3.0	Δ X 3 groups
NK 800*500-36.0-3/NK 800*500-36.0-3 U	2640	52.0	400	36.0	12x3.0	Δ X 4 groups
NK 800*500-54.0-3/NK 800*500-54.0-3 U	3960	78.0	400	54.0	18x3.0	Δ X 6 groups
NK 900*500-45.0-3/NK 900*500-45.0-3 U	3300	65.0	400	45.0	15x3.0	Δ X 5 groups
NK 900*500-54.0-3/NK 900*500-54.0-3 U	3960	78.0	400	54.0	18x3.0	Δ X 6 groups
NK 1000*500-45.0-3/NK 1000*500-45.0-3 U	3300	65.0	400	45.0	15x3.0	Δ X 5 groups
NK 1000*500-54.0-3/NK 1000*500-54.0-3 U	3960	78.0	400	54.0	18x3.0	Δ X 6 groups



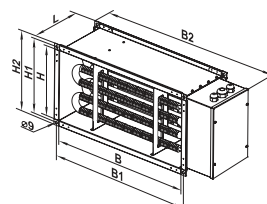


Overall dimensions

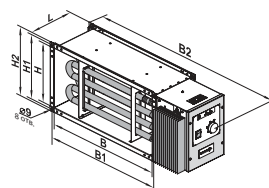
Type	Dimensions [mm]							Mass [kg]
	B	B1	B2	H	H1	H2	L	
NK 400*200-4.5-3	400	420	540	200	220	240	200	6.5
NK 400*200-6.0-3	400	420	540	200	220	240	200	6.5
NK 400*200-7.5-3	400	420	540	200	220	240	200	6.5
NK 400*200-9.0-3	400	420	540	200	220	240	200	6.5
NK 400*200-10.5-3	400	420	540	200	220	240	200	6.5
NK 400*200-12.0-3	400	420	540	200	220	240	200	6.5
NK 400*200-15.0-3	400	420	540	200	220	240	200	6.5
NK 500*250-6.0-3	500	520	640	250	270	290	200	7.65
NK 500*250-7.5-3	500	520	640	250	270	290	200	7.65
NK 500*250-9.0-3	500	520	640	250	270	290	200	7.65
NK 500*250-10.5-3	500	520	640	250	270	290	200	7.65
NK 500*250-12.0-3	500	520	640	250	270	290	200	7.65
NK 500*250-15.0-3	500	520	640	250	270	290	200	7.65
NK 500*250-18.0-3	500	520	640	250	270	290	200	7.65
NK 500*250-21.0-3	500	520	640	250	270	290	200	7.65
NK 500*300-6.0-3	500	520	640	300	320	340	200	8.2
NK 500*300-7.5-3	500	520	640	300	320	340	200	8.2
NK 500*300-9.0-3	500	520	640	300	320	340	200	8.2
NK 500*300-10.5-3	500	520	640	300	320	340	200	8.2
NK 500*300-12.0-3	500	520	640	300	320	340	200	8.2
NK 500*300-15.0-3	500	520	640	300	320	340	200	8.2
NK 500*300-18.0-3	500	520	640	300	320	340	200	8.2
NK 500*300-21.0-3	500	520	640	300	320	340	200	8.2
NK 600*300-9.0-3	600	620	740	300	320	340	200	9.4
NK 600*300-12.0-3	600	620	740	300	320	340	200	9.4
NK 600*300-15.0-3	600	620	740	300	320	340	200	9.4
NK 600*300-18.0-3	600	620	740	300	320	340	200	9.4
NK 600*300-21.0-3	600	620	740	300	320	340	200	9.4
NK 600*300-24.0-3	600	620	740	300	320	340	200	9.4
NK 600*350-9.0-3	600	620	740	350	370	390	200	9.75
NK 600*350-12.0-3	600	620	740	350	370	390	200	9.75
NK 600*350-15.0-3	600	620	740	350	370	390	200	9.75
NK 600*350-18.0-3	600	620	740	350	370	390	200	9.75
NK 600*350-21.0-3	600	620	740	350	370	390	200	9.75
NK 600*350-24.0-3	600	620	740	350	370	390	200	9.75
NK 700*400-18.0-3	700	720	840	400	420	440	390	14
NK 700*400-27.0-3	700	720	840	400	420	440	510	18.5
NK 700*400-36.0-3	700	720	840	400	420	440	750	25
NK 800*500-27.0-3	800	820	940	500	520	540	390	19
NK 800*500-36.0-3	800	820	940	500	520	540	510	23.5
NK 800*500-54.0-3	800	820	940	500	520	540	750	30
NK 900*500-45.0-3	900	920	1040	500	520	540	750	31
NK 900*500-54.0-3	900	920	1040	500	520	540	750	33.5
NK 1000*500-45.0-3	1000	1020	1140	500	520	540	750	33
NK 1000*500-54.0-3	1000	1020	1140	500	520	540	750	36

Overall dimensions

Type	Dimensions [mm]							Mass [kg]
	B	B1	B2	H	H1	H2	L	
NK 400*200-4.5-3 U	400	420	611	200	220	240	228	18.24
NK 400*200-6.0-3 U	400	420	611	200	220	240	228	18.24
NK 400*200-7.5-3 U	400	420	611	200	220	240	228	18.24
NK 400*200-9.0-3 U	400	420	665	200	220	240	228	18.52
NK 400*200-10.5-3 U	400	420	665	200	220	240	228	18.52
NK 400*200-12.0-3 U	400	420	665	200	220	240	228	18.52
NK 400*200-15.0-3 U	400	420	665	200	220	240	228	18.52
NK 500*250-6.0-3 U	500	520	702	250	270	290	228	22.4
NK 500*250-7.5-3 U	500	520	702	250	270	290	228	22.4
NK 500*250-9.0-3 U	500	520	702	250	270	290	228	23.0
NK 500*250-10.5-3 U	500	520	702	250	270	290	228	23.0
NK 500*250-12.0-3 U	500	520	702	250	270	290	228	23.0
NK 500*250-15.0-3 U	500	520	702	250	270	290	228	23.1
NK 500*250-18.0-3 U	500	520	702	250	270	290	228	23.1
NK 500*250-21.0-3 U	500	520	702	250	270	290	228	23.1
NK 500*300-6.0-3 U	500	520	702	300	320	340	228	22.9
NK 500*300-7.5-3 U	500	520	702	300	320	340	228	22.9
NK 500*300-9.0-3 U	500	520	702	300	320	340	228	23.5
NK 500*300-10.5-3 U	500	520	702	300	320	340	228	23.5
NK 500*300-12.0-3 U	500	520	702	300	320	340	228	23.5
NK 500*300-15.0-3 U	500	520	702	300	320	340	228	24.0
NK 500*300-18.0-3 U	500	520	702	300	320	340	228	24.0
NK 500*300-21.0-3 U	500	520	702	300	320	340	228	24.0
NK 600*300-9.0-3 U	600	620	802	300	320	340	228	27.0
NK 600*300-12.0-3 U	600	620	802	300	320	340	228	27.0
NK 600*300-15.0-3 U	600	620	802	300	320	340	228	27.5
NK 600*300-18.0-3 U	600	620	802	300	320	340	228	27.5
NK 600*300-21.0-3 U	600	620	802	300	320	340	228	27.5
NK 600*300-24.0-3 U	600	620	802	300	320	340	228	27.5
NK 600*350-9.0-3 U	600	620	802	350	370	390	228	28.2
NK 600*350-12.0-3 U	600	620	802	350	370	390	228	28.2
NK 600*350-15.0-3 U	600	620	802	350	370	390	228	28.5
NK 600*350-18.0-3 U	600	620	802	350	370	390	228	28.5
NK 600*350-21.0-3 U	600	620	802	350	370	390	228	28.5
NK 600*350-24.0-3 U	600	620	802	350	370	390	228	28.5
NK 700*400-18.0-3 U	700	720	924	400	420	440	410	16.8
NK 700*400-27.0-3 U	700	720	924	400	420	440	530	21.0
NK 700*400-36.0-3 U	700	720	924	400	420	440	750	28.0
NK 800*500-27.0-3 U	800	820	1024	500	520	540	410	20.6
NK 800*500-36.0-3 U	800	820	1024	500	520	540	530	25.9
NK 800*500-54.0-3 U	800	820	1024	500	520	540	750	36.1
NK 900*500-45.0-3 U	900	920	1130	500	520	540	750	33.4
NK 900*500-54.0-3 U	900	920	1130	500	520	540	750	38.0
NK 1000*500-45.0-3 U	1000	1020	1230	500	520	540	750	35.5
NK 1000*500-54.0-3 U	1000	1020	1230	500	520	540	750	41.2



NK heater series



NK...U heater series

Model			
	RNS-16 (page ...)	RNS-25 (page ...)	KDT2-MK (page ...)

NK
from 4,5 up to
16 kW

+

+

+

NK
from 16 up to
25 kW

-

-

+

NK ...U from 4.5
up to 54.0 kW
with an integrat-
ed control unit

-

-

+

Model		
	KDT2-M (page ...)	KDT2-M1 (page ...)

NK
from 4,5 up to
16 kW

+

+

NK
from 16 up to
25 kW

+

+

NK ...U from 4.5
up to 54.0 kW
with an inte-
grated control
unit

+

+