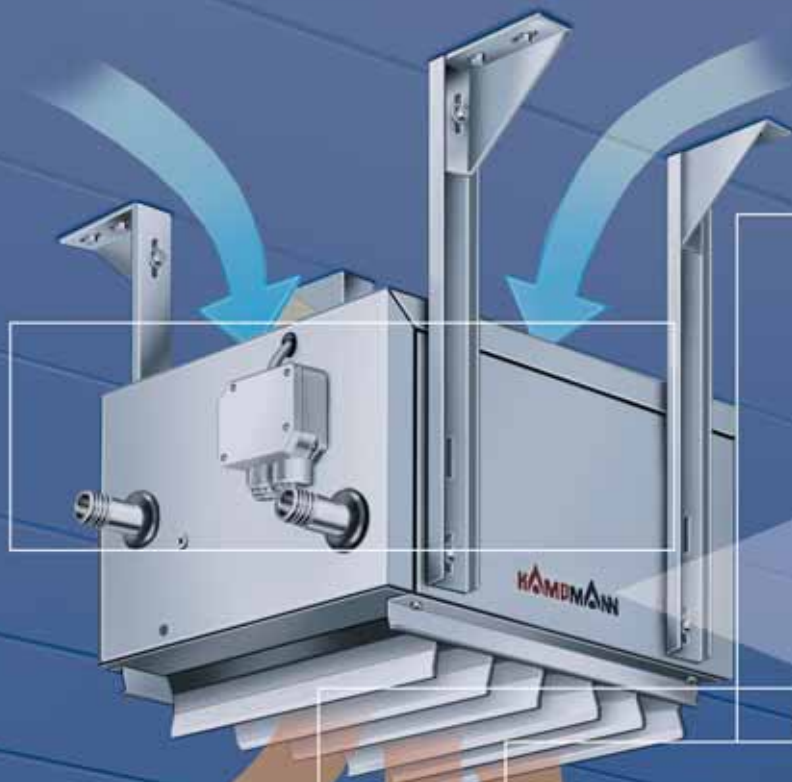




05/2006
GB



Unit Heaters **TIP**



Quality is our benchmark

Kampmann – the name today is synonymous with innovative and intelligent systems in the fields of heating, cooling and ventilation and, over the last 33 years, the Company has grown into an internationally-renowned group of companies.

Performance and quality are the benchmark for the continued success of Kampmann. Kampmann products are defined by their high performance capability, with guaranteed EN-tested heat outputs, materials fully rated to requirements, first-class workmanship, design-orientated form and shaping and fast delivery times. The quality management system has been documented for many years and is certified by DIN 9001:2000.

Kampmann systems for heating, cooling, ventilating:

- high-output convectors
- underfloor heating and cooling systems
- air handling systems
- door air curtains
- façade heating systems
- air conditioning systems
- radiant ceiling panels
- floor and façade ventilation systems
- fresh air climate with **OXYCELL TECHNOLOGY**

Versatility

The wide product range comprises a mix of standard, non-standard and products tailor-made for specific projects. Kampmann systems are currently proving their reliability and efficiency in industrial, commercial and private buildings around the globe.

Sales

Kampmann places great emphasis on technical discussions and collaboration with architects, project engineers, heating contractors and builders, as well as with wholesalers. In Germany some 50 sales engineers, operating out of six regional offices, and a further 70 sales engineers working in 14 subsidiary offices throughout Europe provide on-the-spot technical assistance.

HQ and production

In addition to the Kampmann headquarters building in Lingen (Ems), there is a second production plant in Gräfenhainichen (Sachsen-Anhalt). The high-quality products are developed, manufactured and sold by a total workforce of over 550 employees in a production area of more than 55,000 m².

Contents

TIP Unit heaters Wall- and ceiling-mounted units The simplest solution

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TIP unit heaters

The simplest solution for the optimum, centrally-controllable heating and ventilation of

- production plants, workshops and assembly plants,
- industrial and commercial work places,
- warehouses,
- sport and leisure facilities,
- greenhouses

TIP more than meets the demand for economical and controllable air handling. They can be wall- and ceiling-mounted and are supplied complete with

- copper/aluminium heat exchanger,
- Whisper-quiet, 3-phase or single phase, Ziehl-Abegg sickle-blade fan,
- self-supporting, galvanized steel housing.

1.57 TIP Unit heaters

Description

Construction

Fan

TIP unit heaters come complete with whisper-quiet, 3-phase or single phase, sickle-blade fan; the axial fan combines the 5-blade impeller and drive in an extremely slim-line unit, ideal for use with this unit. The aerodynamic design of the aluminium die-cast rotor housing and aluminium impellers guarantees exceptional cooling and a high degree of efficiency.

- the inlet nozzle is designed to maximise the air stream of the fan
- the characteristic curve of the fan which is aligned to the construction of the unit, enables the fan speed to be regulated by means of voltage reduction
- there are two levels of balance; balance rating according to G 6.3 DIN ISO 1940 part 1
- the outer rotor motor is incorporated in the hub of the fan
- thorough final inspection of fans before they leave the factory
- electrical design complies with DIN VDE 0530 part 1 in heating class F
- motor protection class: IP 54 in accordance with DIN VDE 0470 part 1 (EN 60 529)



Ceiling-mounted unit with universal 4-point brackets and 4-way diffuser

Heat exchanger

TIP unit heaters are fitted with copper/aluminium heat exchangers which are lightweight and yet produce high heat outputs from a relatively small unit. They are suitable for use with LPHW and LPWW but cannot be used with steam and thermal oil.

- aluminium fins expansion-jointed to copper pipes for lasting heat transfer
- steel distributor and collecting vessel
- suitable for use with LPHW up to a flow temperature of 120 °C and 16 bar continuous operating pressure

Copper/aluminium heat exchangers cannot be used in areas with high levels of dust or oil in the air or in areas requiring heavy-duty cleaning.

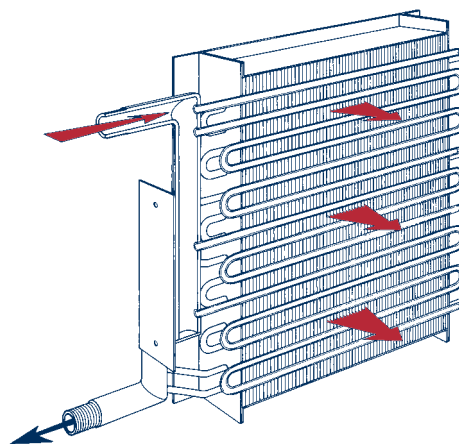


Whisper-quiet, sickle-blade fan

Housing

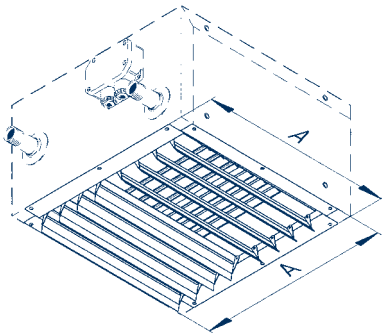
A self-supporting, galvanized steel housing:

- a two-piece housing with universal brackets for wall- or ceiling-mounting supplied as standard
- neutral in colour
- damage-resistant
- can be painted (at a small surcharge) to match the surroundings
- slim-line design, facilitating the simple fitting of discharge accessories, such as two-row louvres or 4-way air diffusers
- single-row DeWaTIP louver (wall/ceiling unit) and motor guard are supplied as standard



Copper/aluminium heat exchanger

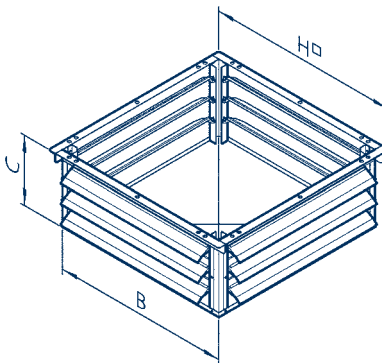
Louvre · Diffuser · Brackets



Louvre, 2-row, type 3*002

for wall- and ceiling-mounted units; produces substantial throw with directional control of the air stream in three of four directions

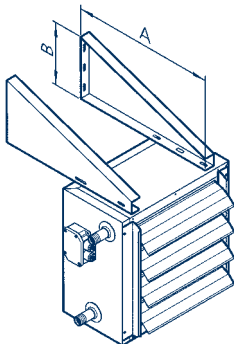
to fit unit heater type	type	A
54 _ 036/31	34002	495
55 _ 036/31	35002	595
56 _ 036/32	36002	695
57 _ 036/32	37002	795



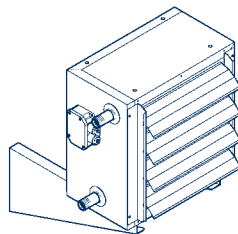
4-way diffuser, type 3*004

preferably used with ceiling heights of less than 4 m; refer to pages 10 to 13 for exact mounting heights; directional control of the air stream in four directions

to fit unit heater type	type	B	C	H
54 _ 036/31	34004	462	200	500
55 _ 036/31	35004	562	200	600
56 _ 036/32	36004	662	200	700
57 _ 036/32	37004	762	200	800



TIP unit heater, wall-mounted, suspended from wall brackets, type 3*044

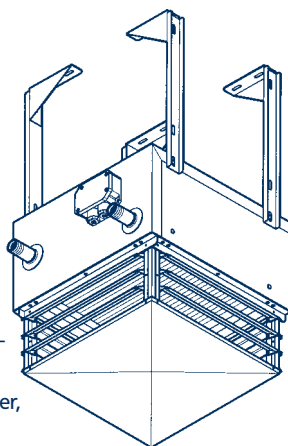


TIP unit heaters, wall-mounted, standing on wall brackets type 3*044

Wall brackets, type 3*044

sendzimir galvanized steel for the wall-mounting of recirculating air units; TIP unit heaters can be suspended from or stand on these brackets.

to fit unit heater type	type	A	B
54 _ 036/31	34044	585	253
55 _ 036/31	35044	585	253
56 _ 036/32	36044	635	270
57 _ 036/32	37044	685	287



TIP units heater, ceiling-mounted on universal 4-point brackets, type 30042 c/w 4-way diffuser, type 3*004

Universal 4-point brackets, type 30042

sendzimir galvanized steel, 4-point fixing for ceiling-mounted units, comprising:
4 U-profiles with slots to adjust mounting height, length 500mm;
4 triangular supports with screws and nuts

all dimensions are given in mm
*Insert unit size

Article no. for DataNorm/EDV entry: 157 000 (insert type no.)
Unit heater accessories: 198 0000 (insert type no.)

1.57 TIP Unit heaters

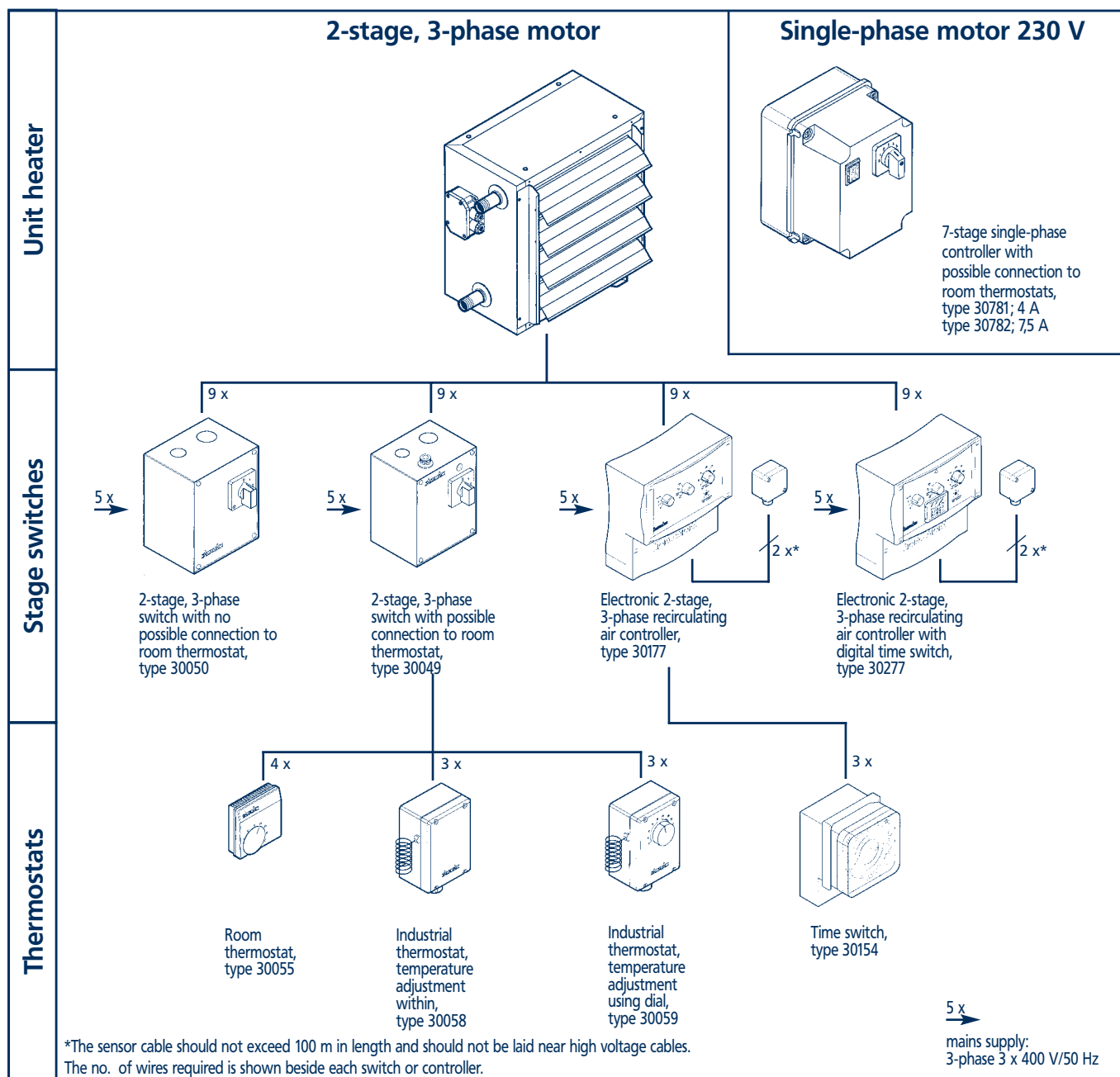
Controls

Switches and controllers

Maximum no. of unit heaters connectable to a switch

Unit heater type no.	Switches				
	2-stage, 3-phase switch with no connection possible to room thermostat, type 30050	2-stage, 3-phase switch with connection possible to room thermostat, type 30049	Unit heater type no.	7-stage single-phase controller with possible connection to room thermostats, type 30781	7-stage single-phase controller with possible connection to room thermostats, type 30782
54 * 036	30	30	54 * 031	3	6
55 * 036	14	14	55 * 031	2	3
56 * 036	10	10	56 * 032	1	3
57 * 036	7	7	57 * 032	1	2

*Wärmetauscher-Kennziffer einsetzen



Article no. for DataNorm/EDV entry: 157 000 (insert type no.)
Switches and controllers: 196 000 (insert type no.)

Switches and controllers

2-stage, 3-phase switch with possible connection to room thermostats, type 30049

Design and function:

- terminals for room thermostats, thermal cut-outs, motor output terminals
- control fuse is accessible from outside switch
- standby indicator
- fan is restarted after breakdown by switching stage switch to zero; there is no automatic restart after power failure.

Housing	polystyrene, wall-mounted
Cable entry	from below
Protection class	IP 43
Dimensions W x H x D:	127 x 160 x 100 mm
Max. amperage	10 A
Max. no. of connectable unit heaters	see table on p. 6

Connection to frost protection thermostats or frost protection switches or flap adjustment controllers is not possible.

2-stage, 3-phase switch without possible connection to room thermostats, type 30050

as type 30049, but without standby indicator and room thermostat.

Industrial thermostat, type 30058

To prevent any unauthorized adjustment, the set temperature can only be adjusted after unscrewing and removing front cover; for use in areas with high humidity and high levels of dust pollution.

Housing	impact-resistant plastic
Temperature range	0 - 40 °C
Switching differential	approx. 0.75 K
Protection class	IP 54

Industrial thermostat, type 30059

The temperature is adjusted using a dial on the front panel; otherwise as type 30058

Room thermostat, type 30055

with thermal setback, adjustable temperature setting

Housing	white plastic, surface-mounted
Temperature range	5 - 30 °C
Switching differential	approx. 0.6 K
Protection class	IP 30

Time switch, type 30154

wall-mounted with day/night/week programme; only for use with electronic 2-stage, 3-phase recirculating air controller, type 30177

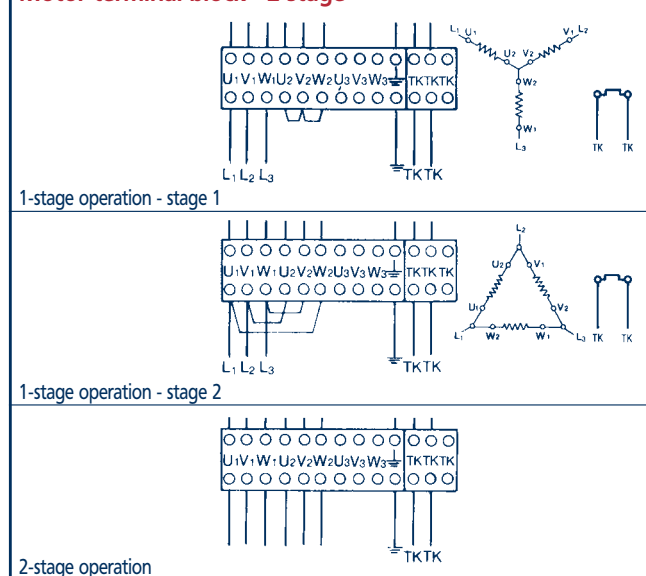
7-stage, single-phase controller with possible connection to room thermostat, type 30781, 4 A

same as type 30782, but 4 A.

7-stage, single-phase controller with possible connection to room thermostat, type 30782, 7.5 A

7-stage, single-phase controller with on/off switch, standby indicator, stage switch (1-2-3-4-5-6-7) via transformer and terminal strips for motor thermal cut-outs. For the control of Kampmann recirculating air unit heaters with 230V power input for connection to room temperature controllers, room or clock thermostats.

Housing	plastic
Dimensions H x W x D:	150 x 200 x 170 mm
Protection class	IP 40
Max. amperage	7.5 A

Motor terminal block - 2 stage**Motor protection**

TIP unit heaters are fitted with 3-phase or single-phase sickle-blade fans and outer rotor motors. Thermal cut-outs (temperature monitors) are embedded in the windings of the motor and these open when the maximum winding temperature exceeds 155 °C. If controlling multiple unit heaters in a group:

- thermal cut-outs are switched in series. In this way any number of motors can be protected by the same device.
- the total capacity of the connected unit heaters should not be greater than the maximum switching capacity.

In the event of the fan becoming disabled (i.e. 2-phase operation, mechanical blockage, damage to bearings), it should be ensured that the fan does not automatically restart. All Kampmann stage switches are fitted with a restart lock.

- The fan is restarted by turning the stage switch to zero.
- The fan automatically restarts with stage switches when connected to room thermostats.

Thermal cut-outs comply with the requirements of VDE 0730 (Protection against overloading of units with electromechanical drive). Conventional circuit breakers or bimetal trips cannot be used with multi-stage motors.

1.57 TIP Unit heaters

Design

Conversion to other water temperatures · Water pressure

If the proposed water temperatures are not given in the performance data, they can be calculated as follows:

Formulae

$$Q_{act} = Q_B \cdot f_{Q1} \quad (1) \quad t_{wm} = \frac{t_{w1} + t_{w2}}{2} \quad (2)$$

$$\Delta t_w = t_{w1} - t_{w2} \quad (3) \quad \Delta t = t_{wm} - t_{L1} \quad (4)$$

$$t_{L2} = t_{L1} + \frac{Q_{eff} \cdot 1000}{V_{Leff} \cdot C} \quad (6)$$

$$m = \frac{Q_{eff}}{\Delta t_w} \cdot 0,86 \quad (7)$$

Formulae

Q_{act} [kW] = actual heat output from unit heater

Q_B [kW] = basic heat output from unit heater (Technical data)

LPHW : $t_{w1} = 75^\circ\text{C}$, $t_{w2} = 65^\circ\text{C}$, $t_{L1} = 20^\circ\text{C}$

f_{Q1} [/] = heat output correction factor - water temp.

t_{wm} [°C] = mean water temperature

t_{w1} [°C] = flow temperature

t_{w2} [°C] = return temperature

Δt_w [K] = water temperature difference

Δt [K] = mean excess temperature

t_{L1} [°C] = entering air temperature

t_{L2} [°C] = outlet air temperature

V_{Leff} [m³/h] = actual air volume of unit heater

V_L [m³/h] = nominal air volume from unit heater (Technical data)

C [Wh/m³K] = multiplier to calculate leaving air temperature

t_{L1}	C
+ 20 °C	0.34 Wh/m³K
+ 10 °C	0.35 Wh/m³K
± 0 °C	0.36 Wh/m³K
- 10 °C	0,7 Wh/m³K

m [m³/h] = water flow rate

ΔP_w [kPa] = water pressure

Calculation

given:

Unit heater type 563036

flow temperature 65°C

return temperature 55°C

entering air temperature $+18^\circ\text{C}$

required:

heat output Q_{act} at

fan stage 1

leaving air temperature t_{L2}

water pressure ΔP_w

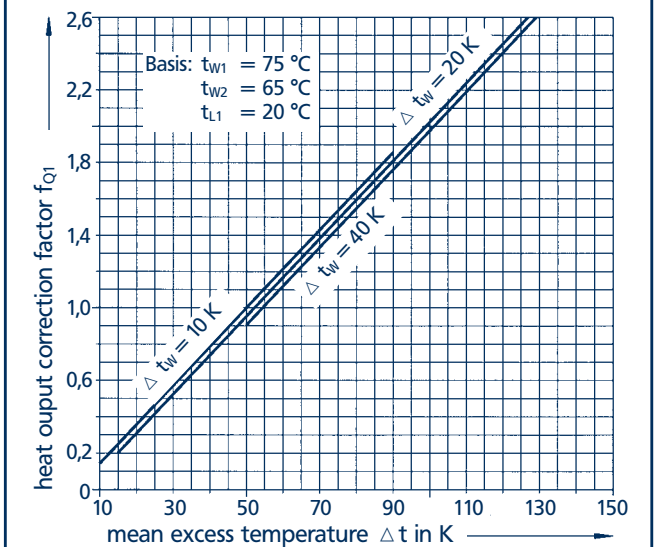
Calculation:

$$(2) t_{wm} = \frac{t_{w1} + t_{w2}}{2} = \frac{65 + 55}{2} = 60^\circ\text{C}$$

$$(3) \Delta t_w = t_{w1} - t_{w2} = 65 - 55 = 10\text{ K}$$

Heat output correction factor

Diagram 1



$$(4) \Delta t = t_{wm} - t_{L1} = 60 - 18 = 42\text{ K}$$

from diagram 1: $f_{Q1} = 0.82$

from technical data on page 12, type 563036, stage 1:

Q_B (LPHW $75/65^\circ\text{C}$, $t_{L1} = 20^\circ\text{C}$) = 36.2 kW

$V_L = V_{Lact} = 4120\text{ m}^3/\text{h}$

$$(1) Q_{act} = Q_B \cdot f_{Q1} = 36.2 \cdot 0.82 = 29.7\text{ kW}$$

$$(6) t_{L2} = t_{L1} + \frac{Q_{eff} \cdot 1000}{V_{eff} \cdot C} = 18 + \frac{29,7 \cdot 1000}{4120 \cdot 0,34} = 39.2^\circ\text{C}$$

$$(7) m = \frac{Q_{eff}}{\Delta t_w} \cdot 0,86 = \frac{29,7}{10} \cdot 0,86 = 2.6\text{ m}^3/\text{h}$$

from water pressure diagram 2 on page 9:

$$\Delta P_w = 10\text{ kPa}$$

Result

Heat output $Q_{act} = 29.7\text{ kW}$

Leaving air temperature $t_{L2} = 39.2^\circ\text{C}$

Water pressure $\Delta P_w = 10\text{ kPa}$

Water pressure

The water pressure can be calculated using diagram 2 on page 9). This is formed from:

- the heat output Q_{act}
- the water temperature difference $\Delta t_w = t_{w1} - t_{w2}$
- the water flow rate $m = \frac{Q_{eff}}{\Delta t_w} \cdot 0.86$

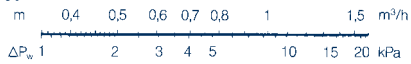
These figures are based on a mean water temperature of 70°C , but can also be used for other water temperatures owing to the minimal effect of the water temperature on the outcome.

Water pressure diagrams · Dimensions · Sound levels

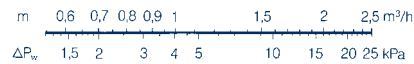
Copper/aluminium heat exchanger - water pressure

Diagram 2

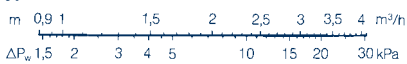
Type 5420..



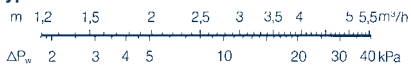
Type 5520..



Type 5620..



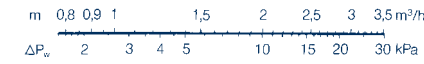
Type 5720..



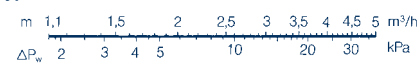
Type 5430..



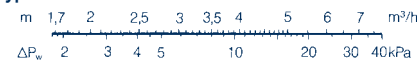
Type 5530..



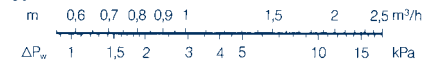
Type 5630..



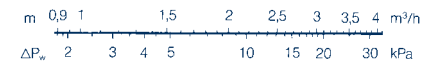
Type 5730..



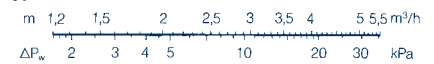
Type 5440..



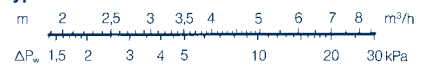
Type 5540..



Type 5640..



Type 5740..



1 kPa = 10 mbar

Sound levels

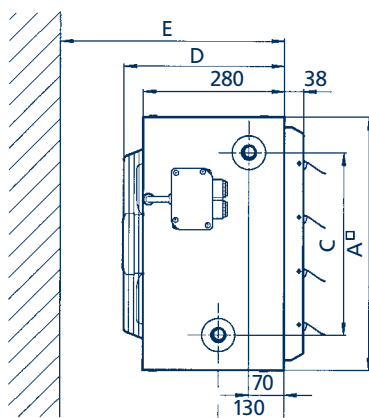
Sound pressure level

The actual sound pressure level (see technical data on pages 10-13) may deviate from the measured levels depending on the geometry of the room, its absorption capacity and the fixtures and fittings within. If only minimal sound levels are permissible, it is recommended that the units are operated at low to medium fan speed.

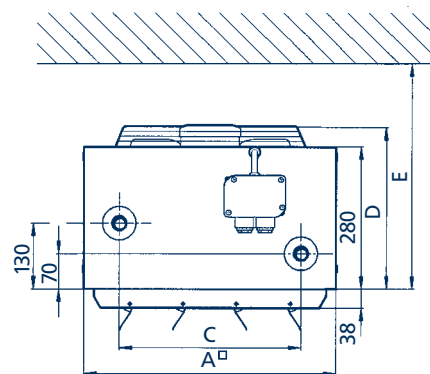
Sound power level

The sound power level (see pages 10-13) is a measure to calculate airborne sound (according to VDI 2081) transferred through a ductwork system, independent of the type of space or distance from the unit. The sound power level is measured using the enveloping surface method (comparative method) in accordance with DIN 45635.

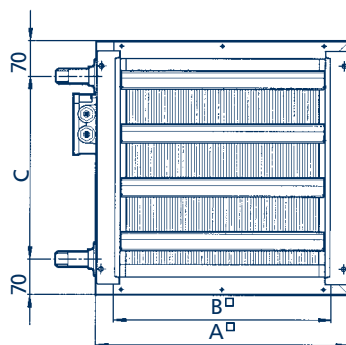
Dimensions



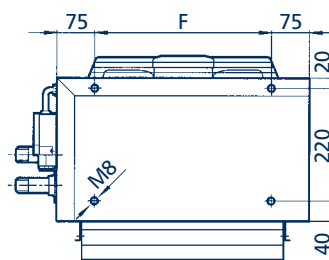
wall-mounted



ceiling-mounted



front view



fixing positions

	Type			
	5420.. 5430.. 5440..	5520.. 5530.. 5540..	5620.. 5630.. 5640..	5720.. 5730.. 5740..
A	500	600	700	800
B	430	530	630	730
C	360	460	560	660
D	330	342	347	342
E _{min.}	480	500	550	620
E _{nom.}	585	585	635	685
F	350	450	550	650
pipe conn.	1" male	1" male	1 1/4" male	1 1/2" male

all dimensions are given in mm

Article no. for DataNorm/EDV entry: 157 000 (insert type no.)

1.57 TIP Unit heaters

Technical data

Heat outputs - series 54

Type		542036/31*				543036/31*				544036/31*			
Fan stage		2		1		2		1		2		1	
Nominal fan speed	1/min	1350		1050		1350		1050		1350		1050	
Air volume	m³/h	2360		1870		2140		1670		1890		1480	
Power uptake	W	100	*220	90		100	*220	90		100	*220	90	
Amperage	A	0,21	*1,0	0,12		0,21	*1,0	0,12		0,21	*1,0	0,12	
Wall-mounted throw	m	18		13		17		13		16		12	
Max. ceiling-mounted height with louvre	m	5,5		4,7		5,2		4,5		4,8		4,1	
with diffuser	m	3,5		3,0		3,3		2,9		3,1		2,7	
Weight	kg	34		34		37		37		40		40	
Water content	l	1,6		1,6		2,1		2,1		2,6		2,6	
Connection	inch	1"		1"		1"		1"		1"		1"	
Sound pressure level L _{PA} **	dB(A)	55		49		55		49		55		49	
Sound power level L _{WA}	dB(A)	71		65		71		65		71		65	
Heat outputs													
Water temp.	t _{L1}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}
	°C	kW	°C	kW	°C	kW	°C	kW	°C	kW	°C	kW	°C
LPHW 70/55 °C	-15	19,4	6,9	17,2	9,6	24,7	15,8	21,4	19,2	28,0	24,5	23,9	28,1
	-10	18,1	10,7	16,1	13,2	23,0	19,0	20,0	22,3	26,0	27,2	22,3	30,7
	-5	16,7	14,4	14,9	16,8	21,3	22,3	18,5	25,3	24,1	29,9	20,6	33,2
	0	15,4	18,1	13,7	20,3	19,6	25,4	17,0	28,3	22,2	32,6	19,0	35,6
	5	14,1	21,8	12,5	23,8	17,9	28,5	15,5	31,2	20,2	35,2	17,3	38,0
	10	12,7	25,4	11,3	27,3	16,2	31,6	14,0	34,0	18,3	37,7	15,7	40,3
	15	11,4	29,0	10,1	30,7	14,5	34,6	12,6	36,8	16,4	40,1	14,0	42,5
	18	10,6	31,1	9,4	32,7	13,5	36,4	11,7	38,5	15,2	41,6	13,0	43,8
	20	10,0	32,5	8,9	34,0	12,8	37,6	11,1	39,5	14,5	42,5	12,4	44,6
LPHW 70/60 °C	-15	20,5	8,2	18,2	11,0	26,1	17,6	22,7	21,2	29,6	26,7	25,3	30,6
	-10	19,2	12,0	17,0	14,6	24,4	20,8	21,2	24,3	27,6	29,5	23,7	33,2
	-5	17,9	15,7	15,9	18,2	22,7	24,1	19,7	27,3	25,7	32,3	22,0	35,7
	0	16,5	19,4	14,7	21,8	21,0	27,3	18,2	30,3	23,8	35,0	20,4	38,2
	5	15,2	23,1	13,5	25,3	19,3	30,4	16,8	33,3	21,9	37,6	18,7	40,6
	10	13,8	26,8	12,3	28,8	17,6	33,5	15,3	36,1	19,9	40,1	17,1	42,9
	15	12,5	30,4	11,1	32,2	15,9	36,5	13,8	39,0	18,0	42,6	15,4	45,2
	18	11,7	32,5	10,4	34,2	14,9	38,3	12,9	40,6	16,8	44,1	14,4	46,5
	20	11,2	33,9	9,9	35,6	14,2	39,5	12,3	41,7	16,1	45,0	13,7	47,3
LPHW 75/65 °C	-15	21,9	9,7	19,4	12,7	27,8	19,7	24,2	23,6	31,5	29,4	27,0	33,6
	-10	20,5	13,5	18,2	16,4	26,1	23,0	22,7	26,7	29,6	32,3	25,3	36,2
	-5	19,2	17,3	17,0	20,0	24,4	26,3	21,2	29,8	27,6	35,1	23,7	38,8
	0	17,9	21,0	15,9	23,6	22,7	29,5	19,7	32,8	25,7	37,8	22,0	41,3
	5	16,5	24,7	14,7	27,1	21,0	32,7	18,2	35,8	23,8	40,5	20,4	43,7
	10	15,2	28,4	13,5	30,6	19,3	35,8	16,8	38,7	21,9	43,0	18,7	46,1
	15	13,8	32,0	12,3	34,0	17,6	38,8	15,3	41,5	19,9	45,6	17,1	48,4
	18	13,0	34,2	11,6	36,1	16,6	40,7	14,4	43,2	18,8	47,0	16,1	49,7
	20	12,5	35,6	11,1	37,5	15,9	41,9	13,8	44,3	18,0	48,0	15,4	50,6
LPHW 82/71 °C	-15	23,6	11,7	21,0	14,9	30,0	22,4	26,1	26,6	34,0	33,0	29,1	37,4
	-10	22,6	15,5	19,8	18,6	28,3	25,8	24,6	29,8	32,1	35,9	27,4	40,1
	-5	20,9	19,3	18,6	22,2	26,6	29,1	23,1	32,9	30,2	38,7	25,8	42,8
	0	19,6	23,1	17,4	25,6	24,9	32,4	21,6	36,0	28,2	41,5	24,1	45,3
	5	18,3	26,8	16,2	29,4	23,2	35,6	20,2	39,0	26,3	44,2	22,5	47,8
	10	16,9	30,5	15,0	33,0	21,5	38,7	18,7	42,0	24,4	46,8	20,8	50,2
	15	15,6	34,1	13,8	36,4	19,8	41,8	17,2	44,9	22,4	49,4	19,2	52,6
	18	14,8	36,3	13,1	38,5	18,8	43,7	16,3	46,6	21,3	50,9	18,2	54,0
	20	14,2	37,7	12,6	39,9	18,1	44,9	15,7	47,7	20,5	51,9	17,5	54,9
LPHW 90/70 °C	20	14,6	38,2	13,0	40,4	18,6	45,5	16,1	48,4	21,0	52,7	18,0	55,7

**measured in an open space at a distance of 5 m from the unit

Article no. for DataNorm/EDV entry: 157 000 (insert type no.)

Heat outputs - series 55

Type		552036/31*				553036/31*				554036/31*			
Fan stage		2		1		2		1		2		1	
Nominal fan speed	1/min	1350		1050		1350		1050		1350		1050	
Air volume	m³/h	4140		3330		3810		3060		3430		2700	
Power uptake	W	260	*450	190		260	*450	190		260	*450	190	
Amperage	A	0,53	*1,9	0,30		0,53	*1,9	0,30		0,53	*1,9	0,30	
Wall-mounted throw	m	23		17		21		16		19		13	
Max. ceiling-mounted height with louvre	m	6,5		5,7		6,2		5,4		5,8		5,0	
with diffuser	m	4,1		3,6		3,9		3,4		3,7		3,2	
Weight	kg	43		43		46		46		54		54	
Water content	l	2,2		2,2		3,0		3,0		3,8		3,8	
Connection	inch	1"		1"		1"		1"		1"		1"	
Sound pressure level L _{pA} **	dB(A)	59		51		59		51		59		51	
Sound power level L _{WA}	dB(A)	75		67		75		67		75		67	
Heat outputs													
Water temp.	t ₁	Q	t ₂	Q	t ₂	Q	t ₂	Q	t ₂	Q	t ₂	Q	t ₂
	°C	kW	°C	kW	°C	kW	°C	kW	°C	kW	°C	kW	°C
LPHW 70/55 °C	-15	30,8	4,8	27,5	7,0	42,6	14,8	37,6	17,8	48,0	22,3	41,3	25,8
	-10	28,6	8,7	25,6	10,8	39,6	18,1	35,0	20,9	44,7	25,2	38,5	28,5
	-5	26,5	12,5	23,7	14,5	36,7	21,4	32,4	24,0	41,4	28,1	35,6	31,1
	0	24,4	16,4	21,8	18,2	33,8	24,6	29,8	27,1	38,1	30,8	32,8	33,7
	5	22,3	20,2	19,9	21,8	30,8	27,8	27,2	30,1	34,8	33,5	29,9	36,2
	10	20,2	23,9	18,0	25,5	27,9	30,9	24,6	33,0	31,5	36,2	27,1	38,6
	15	18,0	27,6	16,1	29,0	25,0	34,0	22,0	35,9	28,1	38,8	24,2	41,0
	18	16,8	29,8	15,0	31,2	23,2	35,8	20,5	37,6	26,2	40,3	22,5	42,4
	20	15,9	31,3	14,2	32,6	22,0	37,0	19,4	38,7	24,8	41,3	21,4	43,3
LPHW 70/60 °C	-15	32,5	6,0	29,1	8,3	45,0	16,5	39,8	19,6	50,8	24,5	43,7	28,2
	-10	30,4	9,9	27,2	12,1	42,1	19,9	37,2	22,8	47,5	27,4	40,9	30,9
	-5	28,3	13,7	25,3	15,8	39,1	23,1	34,6	26,0	44,1	30,3	38,0	33,6
	0	26,2	17,6	23,4	19,5	36,2	26,4	32,0	29,0	40,8	33,1	35,2	36,2
	5	24,0	21,4	21,5	23,2	33,3	29,6	29,4	32,1	37,5	35,8	32,3	38,7
	10	21,9	25,1	19,6	26,8	30,3	32,7	26,8	35,0	34,2	38,5	29,5	41,2
	15	19,8	28,9	17,7	30,4	27,4	35,8	24,2	37,9	30,9	41,1	26,6	43,6
	18	18,5	31,1	16,6	32,5	25,6	37,7	22,6	39,6	28,9	42,6	24,9	45,0
	20	17,7	32,6	15,8	34,0	24,5	38,9	21,6	40,8	27,6	43,7	23,7	45,9
LPHW 75/65 °C	-15	34,7	7,3	31,0	9,8	48,0	18,6	42,4	21,9	54,1	27,0	46,6	31,0
	-10	32,5	11,2	29,1	13,6	45,0	21,9	39,8	25,1	50,8	30,0	43,7	33,7
	-5	30,4	15,1	27,2	17,4	42,1	25,3	37,2	28,3	47,5	32,9	40,9	36,5
	0	28,3	19,0	25,3	21,1	39,1	28,5	34,6	31,4	44,1	35,7	38,0	39,1
	5	26,2	22,8	23,4	24,8	36,2	31,8	32,0	34,4	40,8	38,5	35,2	41,7
	10	24,0	26,6	21,5	28,4	33,3	35,0	29,4	37,4	37,5	41,3	32,3	44,2
	15	21,9	30,3	19,6	32,1	30,3	38,1	26,8	40,4	34,2	43,9	29,5	46,6
	18	20,6	32,6	18,5	34,2	28,6	39,9	25,2	42,1	32,2	45,5	27,7	48,0
	20	19,8	34,1	17,7	35,6	27,4	41,2	24,2	43,3	30,9	46,5	26,6	49,0
LPHW 82/71 °C	-15	37,4	9,1	33,4	11,8	51,8	21,2	45,7	24,8	58,4	30,4	50,3	34,6
	-10	35,3	13,0	31,5	15,6	48,8	24,6	43,1	28,1	55,1	33,4	47,4	37,5
	-5	33,2	16,9	29,6	19,4	45,9	28,0	40,5	31,3	51,8	36,3	44,6	40,2
	0	31,0	20,8	27,8	23,1	43,0	31,3	37,9	34,4	48,4	39,2	41,7	42,9
	5	28,9	24,7	25,9	26,9	40,0	34,6	35,4	37,5	45,1	42,1	38,9	45,5
	10	26,8	28,5	24,0	30,6	37,1	37,8	32,8	40,6	41,8	44,8	36,0	48,1
	15	24,7	32,3	22,1	34,2	34,2	41,0	30,2	43,6	38,5	47,5	33,2	50,6
	18	23,4	34,5	20,9	36,4	32,4	42,9	28,6	45,3	36,5	49,1	31,4	52,1
	20	22,6	36,0	20,2	37,8	31,2	44,1	27,6	46,5	35,2	50,2	30,3	53,0
LPHW 90/70 °C	20	23,1	36,4	20,7	38,2	32,0	44,7	28,2	47,1	36,1	50,9	31,0	53,8

**measured in an open space at a distance of 5 m from the unit

Article no. for DataNorm/EDV entry: 157 000 (insert type no.)

1.57 TIP Unit heaters

Technical data

Heat outputs - series 56

Type		562036/32*				563036/32*				564036/32*			
Fan stage		2		1		2		1		2		1	
Nominal fan speed	1/min	900		700		900		700		900		700	
Air volume	m³/h	5680		4490		5260		4120		4750		3720	
Power uptake	W	360	*450	220		360	*450	220		360	*450	220	
Amperage	A	0,83	*2,1	0,46		0,83	*2,1	0,46		0,83	*2,1	0,46	
Wall-mounted throw	m	28		20		25		19		2,3		17	
Max. ceiling-mounted height with louvre	m	7,2		6,2		6,8		5,9		6,4		5,1	
with diffuser	m	4,1		3,6		3,9		3,4		3,7		3,0	
Weight	kg	54		54		61		61		68		68	
Water content	l	3,4		3,4		4,5		4,5		5,6		5,6	
Connection	inch	1 1/4"		1 1/4"		1 1/4"		1 1/4"		1 1/4"		1 1/4"	
Sound pressure level L _{PA} **	dB(A)	58		51		58		51		58		51	
Sound power level L _{WA}	dB(A)	74		67		74		67		74		67	
Heat outputs													
Water temp.	t _{L1}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}
	°C	kW	°C	kW	°C	kW	°C	kW	°C	kW	°C	kW	°C
LPHW 70/55 °C	-15	48,0	7,5	42,4	10,2	65,1	18,0	56,2	21,4	74,4	26,8	63,4	30,4
	-10	44,7	11,3	39,5	13,8	60,6	21,1	52,4	24,3	69,3	29,4	59,0	32,9
	-5	41,4	15,0	36,6	17,3	56,1	24,2	48,5	27,2	64,2	32,0	54,6	35,2
	0	38,1	18,6	33,6	20,8	51,6	27,3	44,6	30,1	59,0	34,5	50,3	37,5
	5	34,8	22,2	30,7	24,3	47,1	30,2	40,7	32,8	53,9	37,0	45,9	39,8
	10	31,5	25,8	27,8	27,7	42,6	33,2	36,8	35,6	48,8	39,3	41,5	41,9
	15	28,1	29,4	24,9	31,0	38,2	36,0	33,0	38,2	43,6	41,6	37,2	44,0
	18	26,2	31,5	23,1	33,0	35,5	37,7	30,6	39,7	40,5	43,0	34,5	45,1
	20	24,8	32,9	21,9	34,4	33,7	38,8	29,1	40,8	38,5	43,8	32,8	45,9
LPHW 70/60 °C	-15	50,8	8,8	44,9	11,6	68,8	19,9	59,5	23,5	78,7	29,2	67,0	33,1
	-10	47,5	12,6	41,9	15,2	64,3	23,1	55,6	26,5	73,6	31,9	62,7	35,5
	-5	44,1	16,3	39,0	18,8	59,9	26,2	51,7	29,4	68,4	34,5	58,3	37,9
	0	40,8	20,0	36,1	22,3	55,4	29,2	47,8	32,3	63,3	37,0	53,9	40,3
	5	37,5	23,6	33,2	25,8	50,9	32,2	44,0	35,1	58,2	39,5	49,5	42,5
	10	34,2	27,2	30,2	29,2	46,4	35,2	40,1	37,8	53,0	41,9	45,2	44,7
	15	30,9	30,8	27,3	32,6	41,9	38,1	36,2	40,5	47,9	44,2	40,8	46,8
	18	28,9	32,9	25,5	34,6	39,2	39,8	33,9	42,0	44,8	45,6	38,2	48,0
	20	27,6	34,3	24,4	36,0	37,4	40,9	32,3	43,1	42,8	46,5	36,4	48,8
LPHW 75/65 °C	-15	54,1	10,4	47,8	13,4	73,3	22,2	63,4	26,0	83,8	32,1	71,4	36,2
	-10	50,8	14,2	44,9	17,0	68,8	25,4	59,5	29,0	78,7	34,8	67,0	38,7
	-5	47,5	17,9	41,9	20,6	64,3	28,5	55,6	32,0	73,6	37,4	62,7	41,1
	0	44,1	21,6	39,0	24,1	59,9	31,6	51,7	34,9	68,4	40,0	58,3	43,5
	5	40,8	25,3	36,1	27,6	55,4	34,7	47,8	37,7	63,3	42,5	53,9	45,8
	10	37,5	28,9	33,2	31,1	50,9	37,6	44,0	40,5	58,2	45,0	49,5	48,1
	15	34,2	32,5	30,2	34,5	46,4	40,6	40,1	43,2	53,0	47,4	45,2	50,2
	18	32,2	34,6	28,5	36,5	43,7	42,3	37,8	44,8	50,0	48,7	42,5	51,4
	20	30,9	36,0	27,3	37,9	41,9	43,4	36,2	45,8	47,9	49,7	40,8	52,3
LPHW 82/71 °C	-15	58,4	12,4	51,6	15,6	79,2	25,1	68,4	29,3	90,5	35,8	77,1	40,3
	-10	55,1	16,2	48,7	19,3	74,7	28,4	64,5	32,3	85,4	38,6	72,7	42,8
	-5	51,8	20,0	45,7	22,9	70,2	31,6	60,6	35,3	80,2	41,3	68,3	45,3
	0	48,4	23,7	42,8	26,5	65,7	34,7	56,8	38,3	75,1	43,9	64,0	47,8
	5	45,1	27,4	39,9	30,0	61,2	37,8	52,9	41,2	70,0	46,5	59,6	50,1
	10	41,8	31,0	37,0	33,5	56,7	40,8	49,0	44,0	64,8	49,0	55,2	52,4
	15	38,5	34,7	34,0	37,0	52,2	43,8	45,1	46,7	59,7	51,4	50,9	54,6
	18	36,5	36,8	32,3	39,0	49,5	45,5	42,8	48,4	56,6	52,9	48,2	55,9
	20	35,2	38,2	31,1	40,4	47,7	46,7	41,2	49,4	54,6	53,8	46,5	56,8
LPHW 90/70 °C	20	36,1	38,7	31,9	40,9	48,9	47,3	42,2	50,1	55,9	54,6	47,6	57,6

**measured in an open space at a distance of 5 m from the unit

Article no. for DataNorm/EDV entry: 157 000 (insert type no.)

Heat outputs - series 57

Type		572036/32*				573036/32*				574036/32*			
Fan stage		2		1		2		1		2		1	
Nominal fan speed	1/min	900		700		900		700		900		700	
Air volume	m³/h	8770		7320		8500		6730		7960		6150	
Power uptake	W	530	*720	360		530	*720	360		530	*720	360	
Amperage	A	1,0	*3,2	0,62		1,0	*3,2	0,62		1,0	*3,2	0,62	
Wall-mounted throw	m	38		28		36		26		32		22	
Max. ceiling-mounted height with louvre	m	8,0		7,2		7,9		6,9		7,6		6,5	
with diffuser	m	4,3		3,9		4,2		3,8		4,1		3,6	
Weight	kg	67		67		76		76		85		85	
Water content	l	4,8		4,8		6,2		6,2		7,6		7,6	
Connection	inch	1 1/2"		1 1/2"		1 1/2"		1 1/2"		1 1/2"		1 1/2"	
Sound pressure level L _{pA} **	dB(A)	61		57		61		57		61		57	
Sound power level L _{WA}	dB(A)	77		73		77		73		77		73	
Heat outputs													
Water temp.	t _{L1}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}	Q	t _{L2}
	°C	kW	°C	kW	°C	kW	°C	kW	°C	kW	°C	kW	°C
LPHW 70/55 °C	-15	74,1	7,5	67,4	9,6	100,2	16,4	87,6	19,7	119,9	25,2	101,8	29,1
	-10	69,0	11,3	62,8	13,2	93,3	19,7	81,6	22,8	111,7	27,9	94,7	31,6
	-5	63,9	15,0	58,1	16,8	86,4	22,8	75,5	25,7	103,4	30,6	87,7	34,1
	0	58,8	18,6	53,5	20,3	79,5	26,0	69,5	28,7	95,1	33,2	80,7	36,5
	5	53,7	22,2	48,8	23,8	72,6	29,0	63,4	31,6	86,8	35,7	73,7	38,8
	10	48,6	25,8	44,2	27,2	65,6	32,1	57,4	34,4	78,6	38,2	66,7	41,0
	15	43,4	29,4	39,5	30,7	58,7	35,0	51,4	37,1	70,3	40,6	59,6	43,1
	18	40,4	31,5	36,7	32,7	54,6	36,8	47,7	38,7	65,3	42,0	55,4	44,4
	20	38,3	32,9	34,9	34,0	51,8	37,9	45,3	39,8	62,0	42,9	52,6	45,2
LPHW 70/60 °C	-15	78,4	8,8	71,3	11,0	106,0	18,2	92,7	21,7	126,8	27,5	107,6	31,7
	-10	73,3	12,6	66,7	14,6	99,1	21,5	86,6	24,8	118,6	30,3	100,6	34,2
	-5	68,1	16,3	62,0	18,2	92,1	24,7	80,6	27,8	110,3	33,0	93,6	36,7
	0	63,0	20,0	57,4	21,8	85,2	27,9	74,5	30,8	102,0	35,6	86,6	39,1
	5	57,9	23,6	52,7	25,3	78,3	31,0	68,5	33,7	93,7	38,2	79,5	41,4
	10	52,8	27,2	48,1	28,8	71,4	34,0	62,4	36,5	85,5	40,7	72,5	43,7
	15	47,7	30,8	43,4	32,2	64,5	37,0	56,4	39,3	77,2	43,1	65,5	45,9
	18	44,6	32,9	40,6	34,2	60,4	38,8	52,8	40,9	72,2	44,5	61,3	47,1
	20	42,6	34,3	38,7	35,6	57,6	39,9	50,4	42,0	68,9	45,5	58,5	48,0
LPHW 75/65 °C	-15	83,5	10,4	76,0	12,7	112,9	20,4	98,7	24,1	135,1	30,3	114,6	34,7
	-10	78,4	14,2	71,3	16,3	106,0	23,7	92,7	27,2	126,8	33,1	107,6	37,3
	-5	73,3	17,9	66,7	19,9	99,1	26,9	86,6	30,3	118,6	35,8	100,6	39,8
	0	68,1	21,6	62,0	23,5	92,1	30,1	80,6	33,3	110,3	38,5	93,6	42,3
	5	63,0	25,2	57,4	27,1	85,2	33,2	74,5	36,2	102,0	41,1	86,6	44,6
	10	57,9	28,9	52,7	30,6	78,3	36,3	68,5	39,1	93,7	43,6	79,5	47,0
	15	52,8	32,5	48,1	34,0	71,4	39,4	62,4	41,9	85,5	46,1	72,5	49,2
	18	49,7	34,6	45,3	36,1	67,3	41,1	58,8	43,6	80,5	47,6	68,3	50,5
	20	47,7	36,0	43,4	37,4	64,5	42,3	56,4	44,6	77,2	48,5	65,5	51,3
LPHW 82/71 °C	-15	90,1	12,4	82,0	14,9	121,9	23,2	106,6	27,2	145,9	33,9	123,8	38,7
	-10	85,0	16,2	77,3	18,6	115,0	26,6	100,5	30,4	137,6	36,7	116,7	41,3
	-5	79,9	20,0	72,7	22,2	108,0	29,8	94,5	33,5	129,3	39,5	109,7	43,9
	0	74,8	23,7	68,0	25,8	101,1	33,0	88,4	36,5	121,0	42,2	102,7	46,4
	5	69,7	27,4	63,4	29,4	94,2	36,2	82,4	39,5	112,8	44,9	95,7	48,8
	10	64,6	31,0	58,7	32,9	87,3	39,3	76,3	42,4	104,5	47,5	88,7	51,2
	15	59,5	34,7	54,1	36,4	80,4	42,4	70,3	45,3	96,2	50,0	81,6	53,5
	18	56,4	36,8	51,3	38,5	76,2	44,2	66,7	47,0	91,3	51,5	77,4	54,8
	20	54,3	38,2	49,4	39,9	73,5	45,4	64,3	48,1	88,0	52,5	74,6	55,7
LPHW 90/70 °C	20	55,7	38,7	50,6	40,3	75,3	46,0	65,8	48,8	90,1	53,3	76,4	56,5

**measured in an open space at a distance of 5 m from the unit

Article no. for DataNorm/EDV entry: 157 000 (insert type no.)

1.57 TIP Unit heaters

Wall- or ceiling-mounted units · Accessories

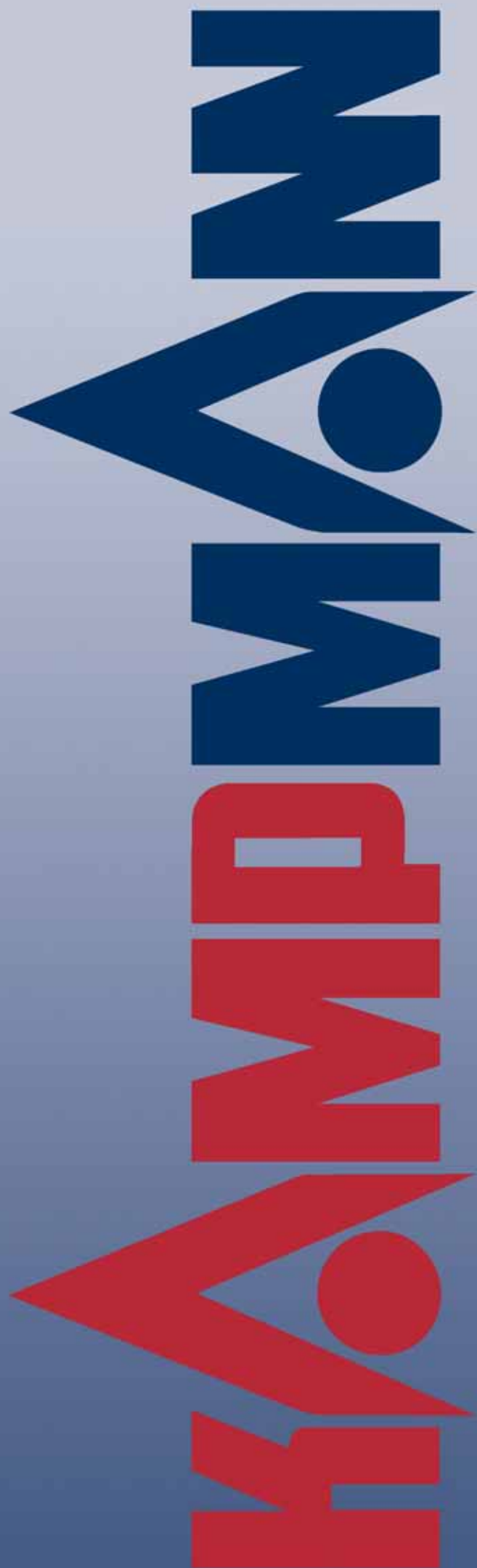
Specifications

Qty.	Article no.	Description	Price/each	Total price																																												
pc.	157 000 5 4 20 36	TIP Unit heaters suitable for wall- or ceiling-mounting, supplied as standard with fixing brackets, two-piece, galvanized steel housing, complete with motor grate in accordance with DIN EN 294; with DeWaTIP single-row louvre which can be fitted on site 36 Quietly-operating, 2-stage, 3-phase, sickle blade fan 400 V, 50 Hz, protection class IP 54; electrical design in accordance with VDE (German Electrical Standards), heating class F; motor protection via integral thermal cut-outs with junction box outside of casing 31 Whisper-quiet, 1-stage, single-phase, sickle-blade fan with maintenance-free Ziehl-Abegg outer rotor motor, 230 V, 50 Hz, protection class IP 54, with operating capacitor. Electrical design complies with VDE (German Electrical Standards), heating class F. Motor protection via integral thermal cut-outs, with separate terminal box. 32 20 Heat exchanger manufactured from copper pipes and aluminium fins steel collecting vessel and distributor, suitable for use with LPHW/LPWW up to 120 deg. and 16 bar continuous operating pressure 30 40 4 Housing dimensions Height/Width/Depth: 500 x 500 x 280 mm 5 Height/Width/Depth: 600 x 600 x 280 mm 6 Height/Width/Depth: 700 x 700 x 280 mm 7 Height/Width/Depth: 800 x 800 x 280 mm Technical data <table><tr><td>Fan stage</td><td>2</td><td>1</td><td></td></tr><tr><td>Fan speed</td><td></td><td></td><td>1/min</td></tr><tr><td>Air volume</td><td></td><td></td><td>m³/h</td></tr><tr><td>Heat output</td><td></td><td></td><td>kW</td></tr><tr><td>Leaving air temperature</td><td></td><td></td><td>°C</td></tr><tr><td>Power uptake</td><td></td><td></td><td>W</td></tr><tr><td>Sound pressure level</td><td></td><td></td><td>dB(A)</td></tr><tr><td>Water temp. LPHW</td><td></td><td>/</td><td>°C</td></tr><tr><td>Entering air temperature</td><td></td><td></td><td>°C</td></tr><tr><td>Weight</td><td></td><td></td><td>kg</td></tr><tr><td>Connection</td><td></td><td></td><td>"</td></tr></table> Type Kampmann, article no. 157000 , type	Fan stage	2	1		Fan speed			1/min	Air volume			m³/h	Heat output			kW	Leaving air temperature			°C	Power uptake			W	Sound pressure level			dB(A)	Water temp. LPHW		/	°C	Entering air temperature			°C	Weight			kg	Connection			"		
Fan stage	2	1																																														
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Entering air temperature			°C																																													
Weight			kg																																													
Connection			"																																													
pc.	198 000 3 * 0 0 2	Louvre 2-row with self-locking fins for vertical or horizontal air diffusion in three or four directions Type Kampmann, article no. 19800003*002, type 3*002																																														
pc.	198 000 3 * 0 0 4	Air diffuser for ceiling-mounted units, with self-locking fins for air diffusion in three or four directions Type Kampmann, article no. 19800003*004, type 3*004																																														
pc.	198 000 3 * 0 4 4	Wall brackets sendzimir galvanized steel, to suspend or support wall-mounted units, complete, comprising 2 flanged supports, c/w all necessary screws Type Kampmann, article no. 19800003*044, type 3*044 4 Housing dimensions = clear discharge/induction opening: 400 x 400 series 54 5 = clear discharge/induction opening: 500 x 500 series 55 6 = clear discharge/induction opening: 600 x 600 series 56 7 = clear discharge/induction opening: 700 x 700 series 57																																														
	198 000 3 0 0 4 2	Universal 4-point brackets a four-point suspension to ceiling-mount wall or ceiling units, comprising 4 no. U-brackets with slots, 4 triangular supports and all necessary screws Type Kampmann, article no. 198000030042, type 30042																																														
		required to complete DataNorm/EDV article no.																																														

insert article no. for DataNorm/EDV entry

Qty.	Article no.	Description	Price/each	Total price
pc.	196 0000 3 0 0 5 0	2-stage, 3-phase switch stage switch (0-1-2) without possible connection to room thermostats, for the manual control of recirculating air units ; with motor protection relays to monitor thermal cut-outs, re-start lock; polystyrene casing Protection class IP 43 Dimensions W x H x D: 127 x 160 x 100 mm Type Kampmann, article no. 196000030050, type 30050		
pc.	196 0000 3 0 0 4 9	2-stage, 3-phase switch stage switch (0-1-2) with possible connection to room thermostats; with motor protection relays to monitor thermal cut-outs; re-start lock, control relay and standby indicator; automatic re-start after power failure; polystyrene casing protection class IP 43 dimensions W x H x D: 127 x 160 x 100 mm Type Kampmann, article no. 196000030049, type 30049		
pc.	196 0000 3 0 7 8 1	7-stage, single-phase controller with on/off switch, standby indicator, stage switch (1-2-3-4-5-6-7) via transformer and terminal block for motor thermal cut-outs. For the control of Kampmann recirculating air unit heaters, with 230 V power input for connection to room temperature controllers, room or clock thermostats. Plastic wall-mounted housing. Protection class IP 40, max. amperage 4 A Dimensions W x H x D: 150 x 200 x 170mm Type Kampmann, article no. 196000030781, type 30781		
pc.	196 0000 3 0 7 8 2	7-stage, single-phase controller with on/off switch, standby indicator, stage switch (1-2-3-4-5-6-7) via transformer and terminal block for motor thermal cut-outs. For the control of Kampmann recirculating air unit heaters, with 230 V power input for connection to room temperature controllers, room or clock thermostats. Plastic wall-mounted housing. Protection class IP 40, max. amperage 7,5 A Dimensions W x H x D: 150 x 200 x 170mm Type Kampmann, article no. 196000030782, type 30782		
pc.	196 0000 3 0 0 5 5	Room thermostat in a white, slim-line casing, with thermal setback; temperature range: 5-30 °C temperature range limitation is possible protection class IP 30 Type Kampmann, article no. 196000030055, type 30055		
pc.	196 0000 3 0 0 5 8	Industrial thermostat in an impact-proof, plastic housing; the temperature can be set by unscrewing and removing cover; protection class IP 54 temperature range 0-40 °C Type Kampmann, article no. 196000030058, type 30058		
pc.	196 0000 3 0 0 5 9	Industrial thermostat in an impact-proof, plastic housing, the temperature is set by means of a dial; protection class IP 54, temperature range 0-40 °C Type Kampmann, article no. 196000030059, type 30059		
pc.	196 0000 3 0 1 5 4	Time switch with day/night/week programme, with clearly laid-out programming screen, pins set time every hour; 150 hours power reserve; wall-mounted plastic housing with transparent front cover; separate terminal box; time switch 230 V/50 Hz; switching contact is a single-ended changeover contact; protection class IP 40, dimensions H x W x D, 104 x 72 x 69 mm Type Kampmann, article no. 196000030154, type 30154		
	required to complete DataNorm/EDV article no.			

Insert article no. for DataNorm/EDV entry



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