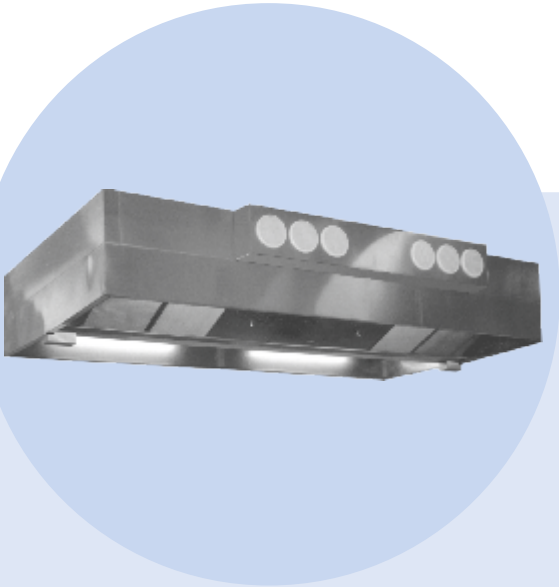
DiNER-T

compact hood
with heat recovery, reheating
and integrated air supply



DiNER-T

The kitchen hoods with heat recovery having **efficiency up to 68** % provide effective exhaust and filtration of effluent air and at the same time, comfort supply of fresh air with reheating for kitchens of all the dimensions and units, with the automatic operation. As compared with the standard product line, they furthermore include **built-in hot-water reheaters** for supply air. The DiNER-T kitchen hoods are delivered as units or their parts (for on-site installation). They are made of ČSN 17240 (AISI 304) stainless steel sheet. The combined fat filters with efficiency of aerosols catchment up to 94 % and dimensions of 500 x 500 mm consist of an Al expanded metal and fire-resistant lamellas. As standard, the hoods are fitted with 18 up to 58 W / 230 V fluorescent lighting, having ingress protection IP 65, thermal resistance up to 60 °C, and outlets of condensate and fat. The number of fluorescent tubes is dimensioned to an illumination value of 500 lx on a working surface.

The special asymmetric, easy-to-remove, recuperative hPS-D type heat exchangers are mounted in an upper part of the hood. The two-row hot-water registers for fresh air reheating to a required temperature (up to 25 °C) are mounted from the hood face. Heating water distributions are led along an upper side of the hood, taken down to two central receivers. The central connection is taken from the receivers to the heating system. An R-TP03 three-way control node must be installed in the main line from the source and the return pipe. The control node must be mounted within 5 m from the hood.

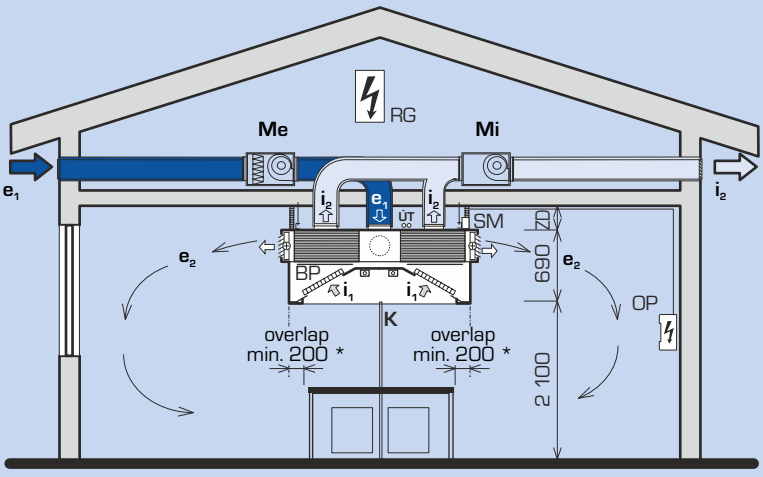
Furthermore, the hoods are equipped with a bypass damper as standard (summer bypass) **with a Belimo servodrive**. The damper is controlled from the central control panel. In the hood face, there are circular turning exhaust louvres 200 mm in diameter for uniform fresh air supply. Both exhaust and supply branches of circular or rectangular shape are exclusively located on the top (with the exception of DiNER-TN having length up to L = 2,250 mm). We recommend the connected pipeline to be provided with thermal and noise insulations, with respect to the possibility of cleaning and maintenance through cleaning openings.

Supply and exhaust fans with filtration are installed outside the kitchen space (above all for reasons of noise). The DiNER hoods are delivered with standard height of 690 mm, ground-plan dimensions according to the customer's requirements in the determined range, custom built also with atypical dimensions.

Automatic Operation Control

The Diner-T hoods are exclusively supplied with the complete operation automatic control system. It consists of a microprocessor control module with differential temperature sensors, built-in the terminal block SM above the hood. An OP control panel is delivered independently for the remote setup of the hood operation, as well as for the RG switchgear controlling the supply and exhaust fans. The automatic control of DiNER hoods provides economical operation of ventilation depending on momentary heat production in the kitchen. Only in case of higher air temperature difference between the air below the hood and in the kitchen area, reduced speed of exhaustion and supply fans is automatically started. When the temperature difference continues to increase, maximum speed of the both fans is started. After the adjustable difference is reduced, the fans are automatically slowed down, or completely stopped, as applicable. Furthermore, the control ensures freeze protection of the recuperative heat exchanger by changing speed of fans. The system is in detail described in a separate technical catalogue.

FUNCTIONAL DIAGRAM



Legend:

- e_1 ... supply of fresh outdoor filtered air
- e_2 ... outlet of fresh preheated air to kitchen
- i_1 ... air exhausted from hood
- i_2 ... exhaust of effluent air from hood
- **K** ... outlet of condensate from hood
- ▣ ... fluorescent lighting (as standard)
- **BP** ... bypass damper (adjustment of summer and winter operations)
- **ZD** ... hood cover (e.g. plasterboard)
- **SM** ... control module
- **RG** ... automatic control switchboard
- **OP** ... control panel
- **Mi** ... exhaust fan (e.g. SVF)
- **Me** ... supply fan with filter (e.g. SVF)
- ⊕ ... hot water heater of central heating
- **UT** ... heating water distribution
- * ... overlap min. 200 mm of the hood's lower edge towards dimensions of consumers

SELECTION SOFTWARE

A special selection software can also be used for designing the hoods, created in compliance with VDI 2052 directive (Germany).

You can find this program on our website www.atrea.eu.

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KITCHEN VENTILATION

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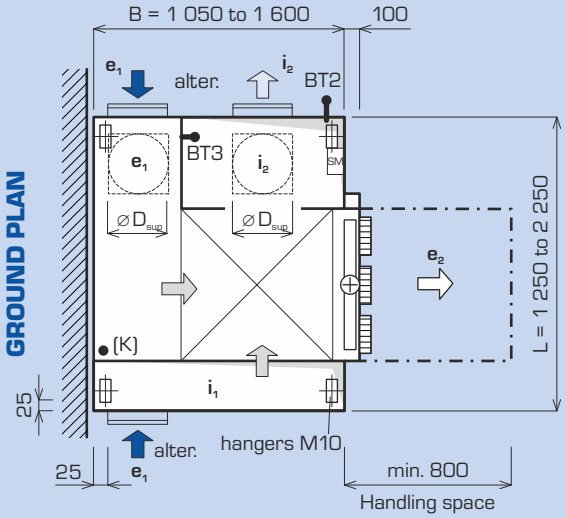
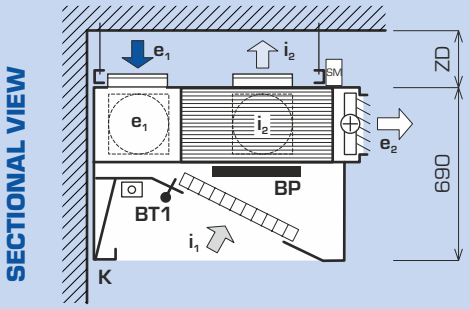
DiNER -TN – 1 modular

DINER-TN-(WALL-MOUNTED)

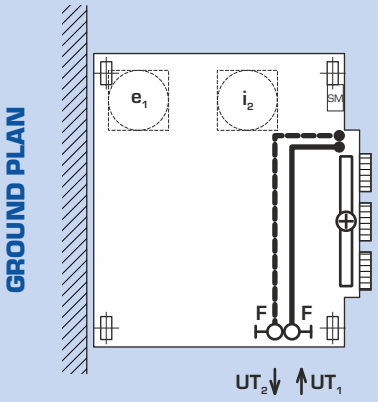
1 – MODULAR ... L = 1 250 to 2 250 mm





Figures show the DiNER-TN hood delivered in the right-hand design as standard. When requested, the mirror (left-hand) design can be delivered, including heating water distribution.

HEATING WATER DISTRIBUTION AND CONNECTION



Standard locations of the central heating (UT) are shown, different location is possible upon request

WEIGHT

G_{hood} ≅ L x B x (70 to 90 kg / m^2 of ground plan)
G_{filter} ≅ 1,6 kg / pc

HANGERS

Number of hangers ⌀ 10 mm:
1- modular ..... **4 pcs**

BASIC DIMENSIONS

dimensions			maximum air flow
length L (mm)	**width B** (mm)	**height** (mm)	(m^3/h)
1 250	1050, 1250, 1500, 1600	690	1 400
1 500	1050, 1250, 1500, 1600	690	1 600
1 750	1050, 1250, 1500, 1600	690	1 950
2 000	1050, 1250, 1500, 1600	690	1 950
2 250	1050, 1250, 1500, 1600	690	1 950

If ordered, the hoods can be delivered with atypical dimensions as follows: L = 1 250 to 2 250 mm
B = 1 050 to 1 600 mm

FLOWS AND DIMENSIONING

$V_{exh} = V_{sup}$ (m^3/h)	air exhaust			air supply	
	⌀ D_{exh} (mm)	filters 500 x 500 mm (pcs)	Δ p_{exh} (Pa)	⌀ D_{sup} (mm)	Δ p_{sup} (Pa)
700	1x 250	1	117	1x 250	48
1 400	1x 280	2	192	1x 280	183
1 950	1x 315	3	270	1x 315	350

LEGEND

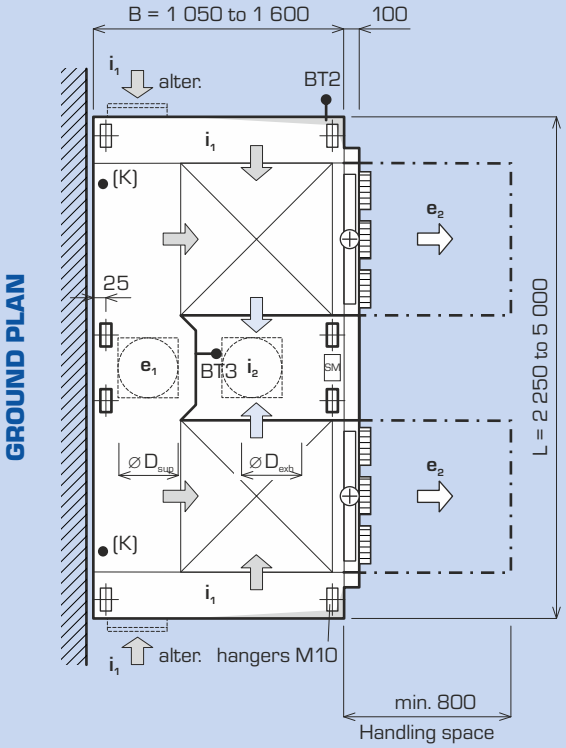
- L ... hood length
- B ... hood width
- e_1 ... supply of fresh outdoor filtered air
- e_2 ... outlet of fresh preheated air to kitchen
- i_1 ... air exhausted from hood
- $i_{1,ext}$ ... side inlet (optional)
  - – suction grid or
  - – connection of secondary hood, optional with damper (specify branch cross-section)
- i_2 ... exhaust of effluent air from hood
- K ... outlet of condensate from hood (alternative)
- ⊡ ... fluorescent lighting (standard)
- BP ... bypass damper (adjustment of summer and winter operations)
- ZD ... hood cover (e.g. plasterboard)
- SM control module
- BT1 ... operating temperature sensor of automatic control (internal) for L > 3000 mm is installed 4x at 1/4 of length
- BT2 ... operating temperature sensor of automatic control (spatial) can be relocated
- BT3 ... freeze protection sensor for recuperative heat exchanger
- F ... closing 1" ball valve
- UT_1 ... heating water – supply
- UT_2 ... heating water – return
- ZP ... return pipe
- ⊕ ... hot-water heater

IMPORTANT WARNINGS

- maximum temperature of exhausted air is 60 °C
- the B class gas appliances must be led to the stack and must not be led to the hood under any circumstances, nor be passed through the hood
- take care of sufficient overlapping of the hood over the outline of loads

DINER-TN-(WALL-MOUNTED)

2 – MODULAR ... L = 2 250 to 5 000 mm



BASIC DIMENSIONS

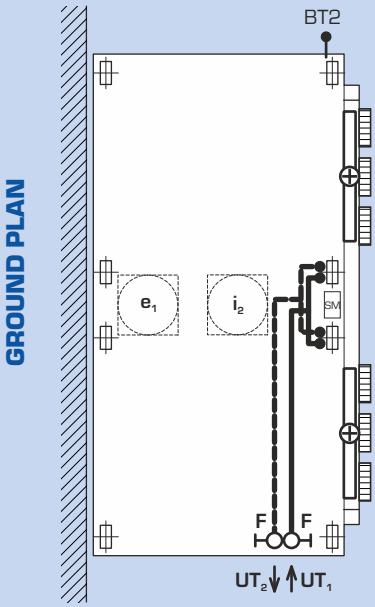
dimensions			maximum air flow
length L (mm)	width B (mm)	height (mm)	(m^3/h)
2 250	1050, 1250, 1500, 1600	690	2 900
2 500	1050, 1250, 1500, 1600	690	3 200
2 750	1050, 1250, 1500, 1600	690	3 600
3 000	1050, 1250, 1500, 1600	690	3 900
3 250	1050, 1250, 1500, 1600	690	3 900
3 500	1050, 1250, 1500, 1600	690	3 900
3 750	1050, 1250, 1500, 1600	690	3 900
4 000	1050, 1250, 1500, 1600	690	3 900
4 250	1050, 1250, 1500, 1600	690	3 900
4 500	1050, 1250, 1500, 1600	690	3 900
4 750	1050, 1250, 1500, 1600	690	3 900
5 000	1050, 1250, 1500, 1600	690	3 900

If ordered, the hoods can be delivered with atypical dimensions as follows: L = 2 250 to 5 000 mm
B = 1 050 to 1 600 mm

FLOWS AND DIMENSIONING

$V_{exh} = V_{sup}$ (m^3/h)	air exhaust			air supply	
	⌀ D_{exh} (mm)	filters 500 x 500 mm (pcs)	Δp_{exh} (Pa)	⌀ D_{sup} (mm)	Δp_{sup} (Pa)
1 400	1x 280	2	117	1x 280	48
1 950	1x 315	3	127	1x 315	91
2 500	1x 355	4	152	1x 355	147
2 900	1x 400	4	206	1x 400	196
3 200	1x 400	5	205	1x 400	237
3 600	1x 450	5	262	1x 450	299
3 900	1x 450	6	270	1x 450	350

HEATING WATER DISTRIBUTION AND CONNECTION



Standard locations of the central heating (UT) are shown, different location is possible upon request

LEGEND

- L ... hood length
- B ... hood width
- e_1 ... supply of fresh outdoor filtered air
- e_2 ... outlet of fresh preheated air to kitchen
- i_1 ... air exhausted from hood
- $i_{1,ext}$ ... side inlet (optional)
  - – suction grid or
  - – connection of secondary hood, optional with damper (specify branch cross-section)
- i_2 ... exhaust of effluent air from hood
- K ... outlet of condensate from hood (alternative)
- ⧈ ... fluorescent lighting (standard)
- BP ... bypass damper (adjustment of summer and winter operations)
- ZD ... hood cover (e.g. plasterboard)
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- BT1 ... operating temperature sensor of automatic control (internal) for L > 3000 mm is installed 4x at 1/4 of length
- BT2 ... operating temperature sensor of automatic control (spatial) can be relocated
- BT3 ... freeze protection sensor for recuperative heat exchanger
- F ... closing 1" ball valve
- UT_1 ... heating water – supply
- UT_2 ... heating water – return
- ZP ... return pipe
- ⊕ ... hot-water heater

WEIGHT

G_{hood} ≅ L x B x (70 to 90 kg / m^2 of ground plan)
G_{filter} ≅ 1,6 kg / pc

HANGERS

Number of hangers ⌀ 10 mm:
2- modular ..... **8 pcs**

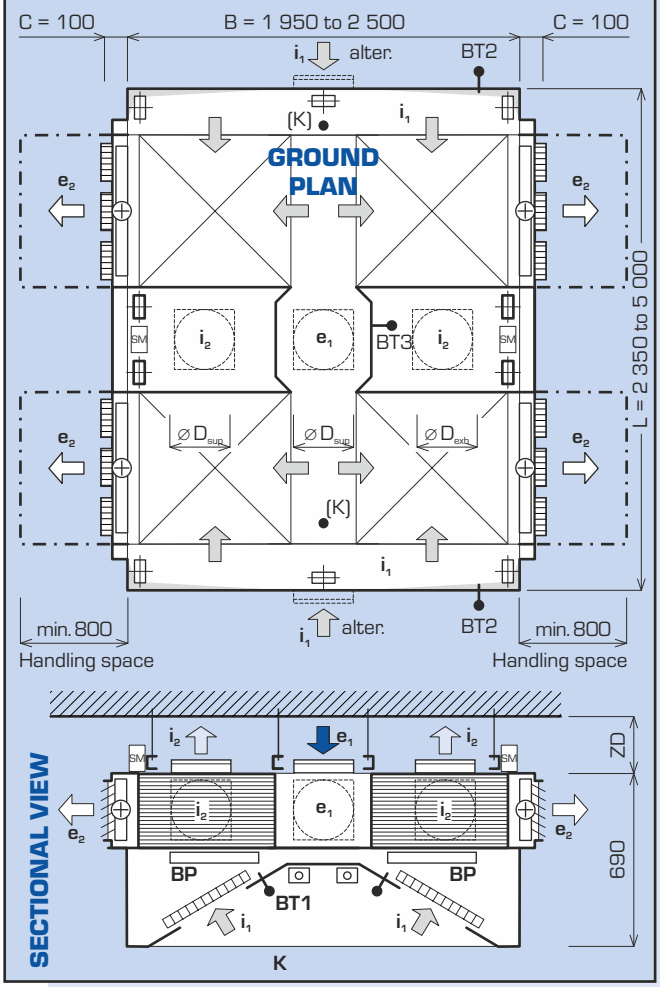
IMPORTANT WARNINGS

- maximum temperature of exhausted air is 60 °C
- the B class gas appliances must be led to the stack and must not be led to the hood under any circumstances, nor be passed through the hood
- we recommend to deliver L > 3,500 mm or B > 2,000 mm hoods as disassembled with respect to their difficult transport and handling
- take care of sufficient overlapping of the hood over the outline of loads

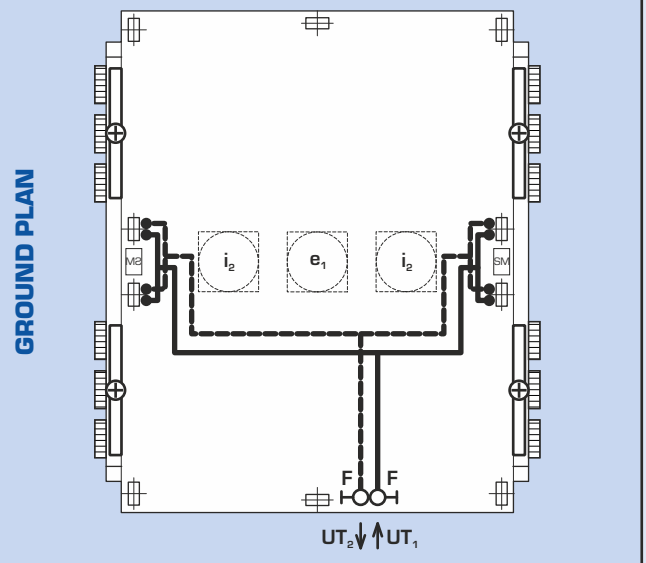
DiNER -TN – 4 modular

DINER-TS (CENTRAL)

4 – MODULAR ... L = 2 350 to 5 000 mm



HEATING WATER DISTRIBUTION AND CONNECTION



Standard locations of the central heating (UT) are shown, different location is possible upon request

WEIGHT

G_{hood} ≅ L x B x (70 to 90 kg / m^2 of ground plan)

G_{filter} ≅ 1,6 kg / pc

HANGERS

Number of hangers ⌀ 10 mm:

4- modular ..... **10 pcs**

BASIC DIMENSIONS

dimensions			maximum air flow
length L (mm)	**width B** (mm)	**height** (mm)	(m^3/h)
2 350	1 950, 2 250, 2 500	690	5 800
2 500	1 950, 2 250, 2 500	690	7 200
2 750	1 950, 2 250, 2 500	690	7 200
3 000	1 950, 2 250, 2 500	690	7 600
3 250	1 950, 2 250, 2 500	690	7 600
3 500	1 950, 2 250, 2 500	690	7 800
3 750	1 950, 2 250, 2 500	690	7 800
4 000	1 950, 2 250, 2 500	690	7 800
4 250	1 950, 2 250, 2 500	690	7 800
4 500	1 950, 2 250, 2 500	690	7 800
4 750	1 950, 2 250, 2 500	690	7 800
5 000	1 950, 2 250, 2 500	690	7 800

If ordered, the hoods can be delivered with atypical dimensions as follows: L = 2 250 to 5 000 mm
B = 1 950 to 2 500 mm

FLOWS AND DIMENSIONING

$V_{exh} = V_{sup}$ (m^3/h)	air exhaust			air supply	
	⌀ D_{exh} (mm)	filters 500 x 500 mm (pcs)	Δ p_{exh} (Pa)	⌀ D_{sup} (mm)	Δ p_{sup} (Pa)
2 900	2x 280	4	127	1x 400	51
3 600	2x 315	6	107	1x 450	78
4 300	2x 355	6	156	1x 500	110
5 000	2x 355	8	152	1x 500	147
5 800	2x 400	8	206	1x 560	196
6 500	2x 400	10	212	1x 560	245
7 200	2x 450	10	262	1x 630	299
7 800	2x 450	12	270	1x 630	350

LEGEND

- L ... hood length
- B ... hood width
- e_1 ... supply of fresh outdoor filtered air
- e_2 ... outlet of fresh preheated air to kitchen
- i_1 ... air exhausted from hood
- $i_{1,ext}$ ... side inlet (optional)
  - – suction grid or
  - – connection of secondary hood, optional with damper (specify branch cross-section)
- i_2 ... exhaust of effluent air from hood
- K ... outlet of condensate from hood (alternative)
- ... fluorescent lighting (standard)
- BP ... bypass damper (adjustment of summer and winter operations)
- ZD ... hood cover (e.g. plasterboard)
- SM control module
- BT1 ... operating temperature sensor of automatic control (internal) for L > 3000 mm is installed 4x at 1/4 of length
- BT2 ... operating temperature sensor of automatic control (spatial) can be relocated
- BT3 ... freeze protection sensor for recuperative heat exchanger
- F ... closing 1" ball valve
- UT_1 ... heating water – supply
- UT_2 ... heating water – return
- ZP ... return pipe
- ⊕ ... hot-water heater

IMPORTANT WARNINGS

- maximum temperature of exhausted air is 60 °C
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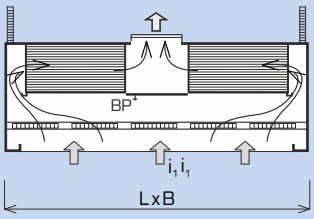
- we recommend to deliver L > 3,500 mm or B > 2,000 mm hoods as disassembled with respect to their difficult transport and handling
- take care of sufficient overlapping of the hood over the outline of loads

DiNER-T

BY-PASS

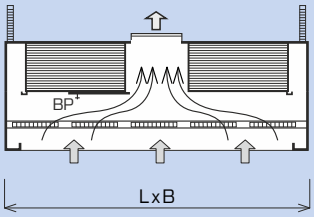
The DiNER-T hoods are equipped with a bypass damper as standard that enables the summer operation without waste heat recovery. The damper is controlled by a BELIMO servodrive.

WINTER MODE



Winter time
The bypass damper is closed, effluent air i1 is carried off via the recuperative heat exchanger where it transfers its heat. Supply air e1 is preheated in the heat exchanger.

SUMMER MODE

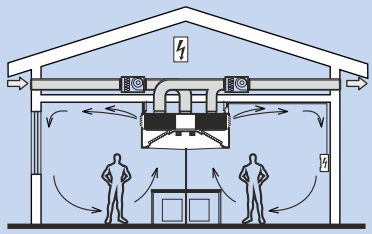


Summer time
The bypass damper is opened, effluent air i1 is directly carried off, i.e., outside the recuperative heat exchanger. Supply air e1 is not preheated.

SUPPLY BRANCHES

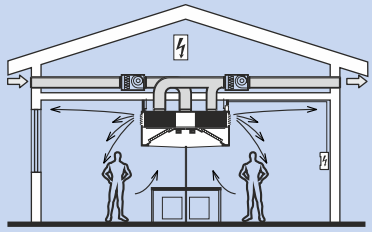
The DiNER-T hood air supply is provided by circular supply branches. Each supply branch can be independently adjusted by manual turning.

WINTER MODE



Winter time
The turning supply branches are adjusted upwards. The outdoor supply air (preheated in the exchanger) is blown off up under the kitchen ceiling and has no immediate impact on a hood operator.

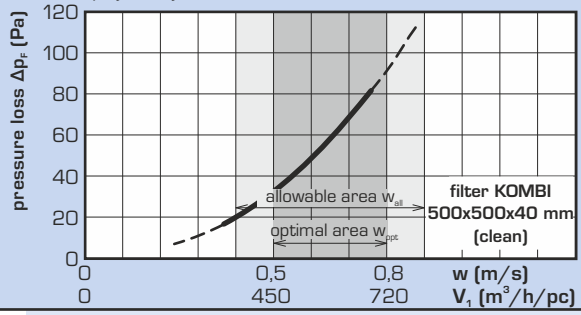
SUMMER MODE



Summer time
The turning louvres are adjusted downwards. The outdoor supply air (not preheated) is blown off askew downwards and creates a colder air curtain.

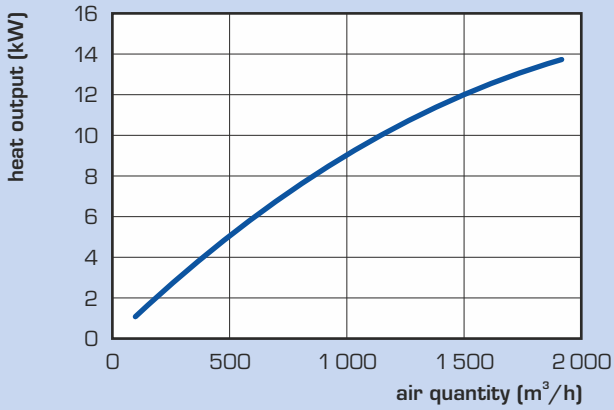
FAT FILTERS

As standard, the hoods are equipped with KOMBI type fat filters, with dimensions of 500 x 500 mm. They consist of stainless fire-resistant lamellas and a 7-layer expanded metal, built in a stainless steel frame. The number of filters is always determined based on the maximum anticipated flow rate in hoods according to the chart so that the flow rate in a single filter is always within its optimum area. Finally, a check must be performed to see whether the calculated number of filters fits in the hood physically.



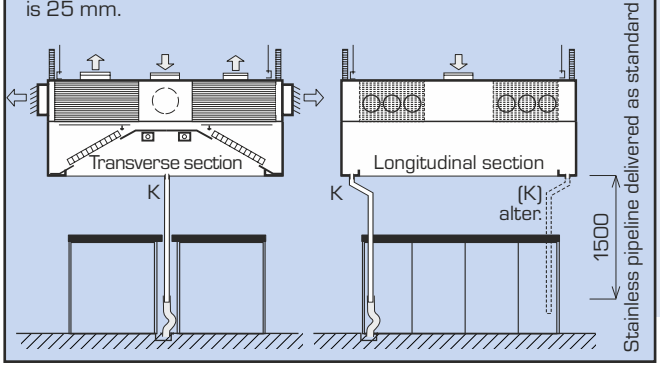
HEAT OUTPUT

Maximum heat output is specified for heating water with temperature gradient of 80/60 °C; inlet air (after recovery) +10 °C, rh 30 %. The chart is valid for each individual exchanger of the hood.



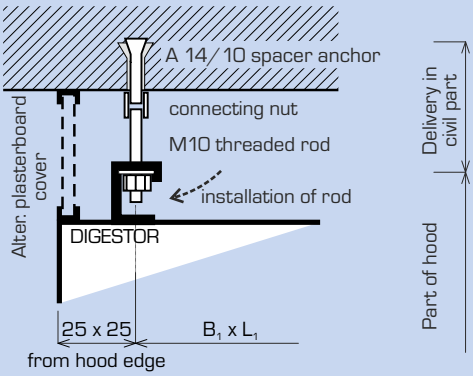
CONDENSATE OUTLET

Condensation takes place in the built-in recuperative heat exchanger when wet exhaust air is being cooled. The hood is equipped with a peripheral collecting trough where this condensate is being trapped.
When the hood is installed, it is necessary to ensure outlet of condensate to the drainage system. As standard, holes at a lower collecting trough are prepared for alternative installation of a stainless pipe for condensate outlet. Standard length of the stainless pipe with an offset is 1500 mm, outer diameter is 25 mm.

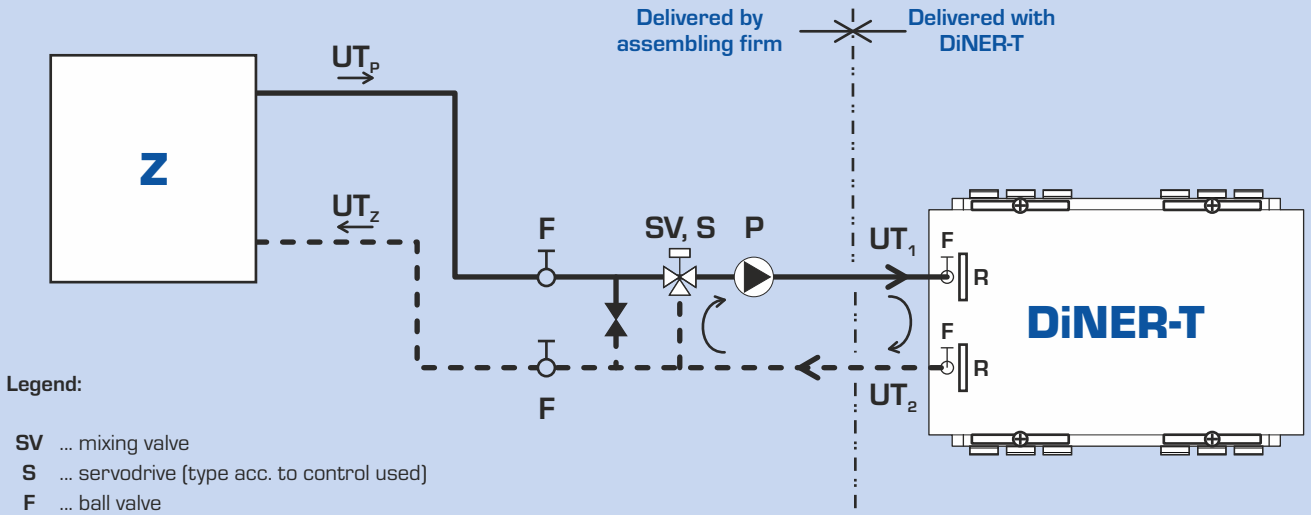


ANCHORING TO THE CEILING

The hoods are equipped with special fixtures to be hanged on M10 threaded rods anchored to the ceiling using ø14/10 mm spacer anchors (not in the scope of delivery). During the installation, the fixtures with notches allow for easy side sliding of the suspension rods with nuts and simple locking of the hood height position. The number and types of hanger – see charts.



SAMPLE DIAGRAM OF HEATING WATER CONNECTION

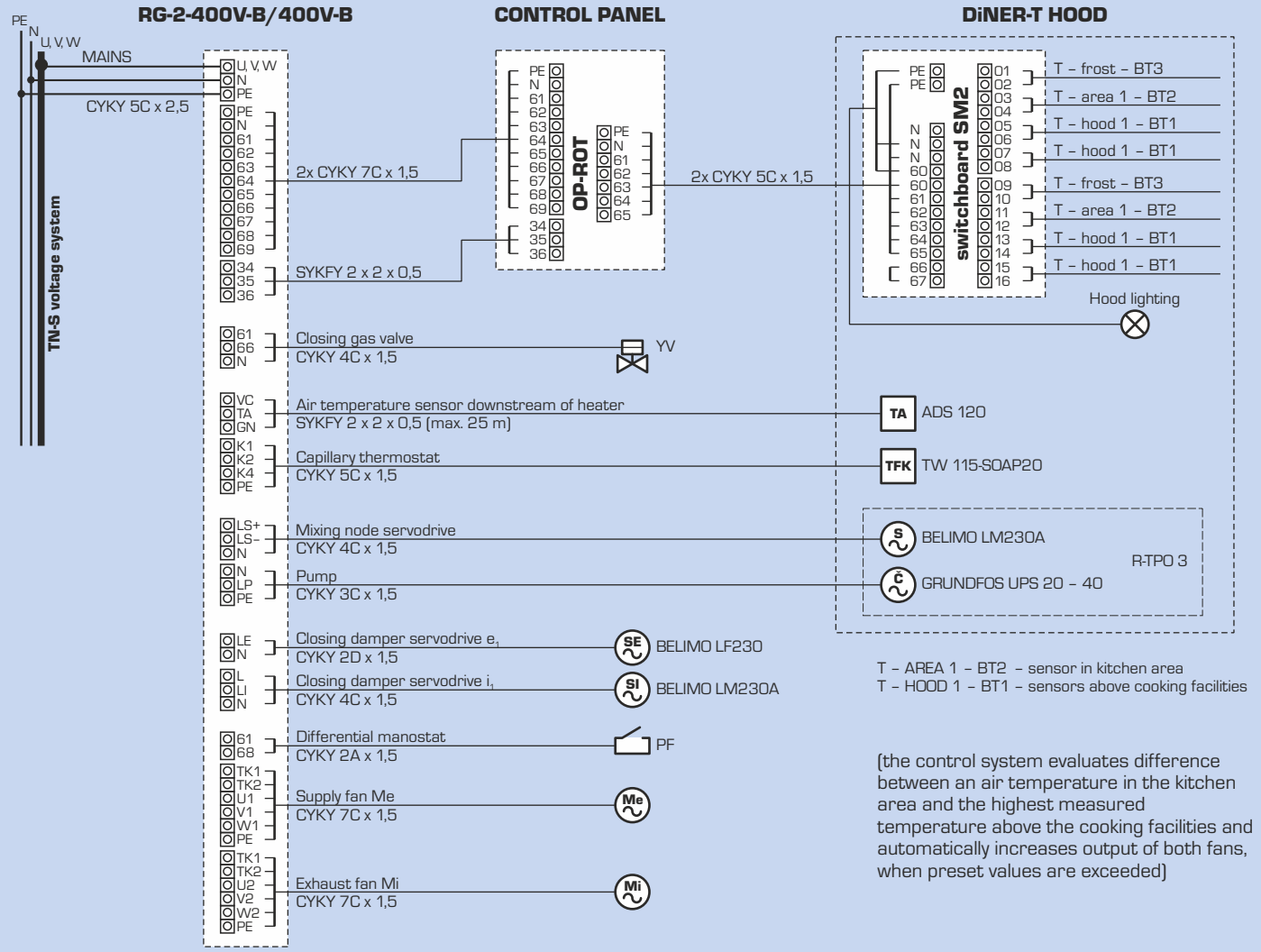


Legend:

SV ... mixing valve
S ... servodrive (type acc. to control used)
F ... ball valve
P ... pump
UT_P ... heating water – supply from source
UT_Z ... heating water - return pipe
Z ... heating water source (distributor, boiler)

UT_1 ... heating water – supply from source
UT_2 ... heating water – return pipe
F ... 1" ball valves

SAMPLE WIRING DIAGRAM



ORDERING DATA

The hood with recovery DiNER-TN – L x B (mm) – V_{exh} / V_{sup} (m^3/h) – Ø D_{exh} / Ø D_{sup}, the number of filters, part delivery (YES / NO), left-hand / right-hand design (only for DiNER-TN) – automatic control YES / NO – SM, OP, switchboard RG – type, input power, and supply and exhaust fan type