

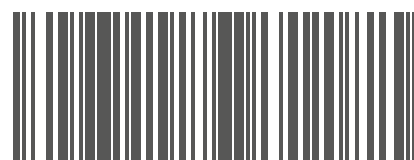


Technical Manual - Installation

- HORIZONTAL OR VERTICAL CONFIGURATION
- VERSION WITH 4-6 WATER ROW COIL
- VERSION WITH R410A 4 ROWS DIRECT EXPANSION COIL
- VERSION WITH EXTRACTOR

TA

EN



Dear customer,

Thank you for choosing an AERMEC product. It is the fruit of many years of experience and special design studies and has been made of the highest grade materials and with cutting edge technology.

The quality level is being constantly monitored, so AERMEC products are synonymous with Safety, Quality and Reliability.

The data may undergo modifications considered necessary for the improvement of the product, at any time and without the obligation for any notice thereof.

Thank you once again.

AERMEC S.p.A

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Modello / Model / Modèle / Model / Modelo	
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LVD 2014/35/UE	Direttiva Bassa Tensione / Low Voltage Directive / Directive Basse Tension / Niederspannungsrichtlinie / Directiva de Baja de Tensión
EMCD 2014/30/UE	Direttiva Compatibilità Elettromagnetica / Electromagnetic Compatibility Directive / Directive compatibilité électromagnétique / Richtlinie zur elektromagnetischen Verträglichkeit / Directiva Compatibilidad Electromagnética
RoHS 2011/65/UE	Restrizione dell'uso di sostanze pericolose nelle AEE / Restriction of the use of hazardous substances in EEE / Limitation de l'utilisation de substances dangereuses dans les EEE / Beschränkung der Verwendung gefährlicher Stoffe in EEG / Restricciones a la utilización de sustancias peligrosas en AEE

MODELLO CON ACCESSORI: E' fatto divieto di mettere in servizio il prodotto dotato di accessori non di fornitura Aermec.
MODEL WITH ACCESSORIES: It is not allowed to use the unit equipped with accessories not supplied by Aermec.
MODÈLE PLUS ACCESSOIRES: Il est interdit de faire fonctionner l'appareil avec des accessoires qui ne sont pas fournis de Aermec.
MODELL + ZUBEHÖR: Falls das Gerät mit Zubehöerteilen ausgerüstet wird, die nicht von Aermec geliefert werden, ist dessen Inbetriebnahme solange untersagt.
MODELO CON ACCESORIOS: Está prohibido poner en marcha el producto con accesorios no suministrados por Aermec.

Firmato a nome e per conto di:	AERMEC S.p.A.
Signed for and on behalf of:	
Signé par et au nom de:	I-37040 Bevilacqua (VR) Italia - Via Roma, 996
Unterzeichnet für und im Namen von:	
Firmado en nombre de:	

Direttore Commerciale – Sales Director
Luigi Zucchi

GENERAL STANDARDS



The present manual is an integral part of the documentation enclosed with the machine. It must be conserved for future reference and must accompany the machine throughout its working life. The manual defines the purpose for which the machine was built and establishes the correct installation and use limits.

- All use, installation and maintenance instructions of the unit are described in this manual as well as the main accident prevention standards.
- Read carefully and fully all information contained in this manual before the installation, start-up, use, maintenance and cleaning of the unit. Pay particular attention to the use regulations accompanied by the words "DANGER" or "WARNING": failure to observe them could cause damage to the machine and/or persons and property.
- For irregularities not contemplated by this manual, consult the local After Sales Service.
- AERMEC S.p.A. decline any responsibility for any damage due to the improper use of the machine, and to a partial or superficial reading of the information contained in this manual.
- Installation and maintenance must be carried out by trained and qualified personnel, having the requirements laid down by law 46/90 and/or DPR 380/2001 for electric/electronic and air conditioning installations, with consequent registration at the local CHAMBER of COMMERCE. Otherwise AERMEC S.p.A. decline all responsibility regarding the safety of the product.

THE MANUFACTURER DECLINES ANY RESPONSIBILITY FOR DAMAGE TO PROPERTY, PERSONS OR ANIMALS CAUSED BY THE NON-OBSERVANCE OF THE INDICATIONS AND REGULATIONS CONTAINED IN THIS MANUAL.

Even though a suitable risk analysis was carried out during the design of the TA unit, pay ATTENTION to the pictograms on the machine; these make it easier to read the manual, quickly drawing the reader's attention to risks that cannot be avoided or sufficiently limited with the adoption of protection means and measures.



GENERAL DANGER SIGNS

Carefully observe all indications at the side of the pictogram. The non observance of the indications could cause hazardous conditions with possible injury to the operator and to the user in general.



VOLTAGE DANGER SIGN

Carefully observe all indications at the side of the pictogram. The signs indicate components on the unit or, in the present manual, identify areas that could generate risks of an electrical nature.



GENERAL WARNING SIGNS

Carefully observe all indications to the side of the pictogram that limit some actions in order to ensure greater safety for the operator.

MAIN GUARANTEE CONDITIONS

- The guarantee does not include payment for damages due to incorrect installation by the installer.
- The guarantee does not include payment for damages due to the improper use of the unit by the user.
- The manufacture is not responsible for injuries to the installer or user, caused by incorrect installation or improper use of the unit;
- The equipment must be installed in such a manner so as to permit maintenance and/or repair operations;
- The guarantee does not cover in any case costs due to turntable ladders, scaffolding or other similar elevating systems that are necessary to carry out operations under guarantee.

The guarantee is not valid if:

- the services and repairs have been carried out by unauthorised personnel or companies;
- the unit has been previously repaired or modified with non-original parts;
- the unit has not been suitably maintained;
- the instructions given in this manual have not been observed;
- unauthorised modifications have been made.

NB:

the manufacturer reserves the right to carry out modifications at any time deemed necessary to improve its product, and is not obliged to apply the said modifications to previously manufactured machines that have already been delivered or are being constructed.

The general conditions are in any case subject to the general sale conditions foreseen on the stipulation of the contract.

PRODUCT DESCRIPTION

The TA is a compact thermoventilation unit designed to guarantee high static pressures in small or medium sized rooms. Suitable for both vertical and horizontal installations, it is available in two versions: the first features a hot or cooled water 4 or 6 rows copper-aluminium coil, the second features a direct expansion copper-aluminium coil with R410A. The machine is equipped with high static pressure centrifugal fans, double intake, forward blades and electric motor coupled directly to multiple speeds three of which are selectable. In addition, the unit, both in vertical and horizontal configuration, is equipped with an inner and aluminium alloy isolated condensate drain tray. Wide range of remote controls and accessories to meet different needs such as 1 and 2 rows post-heating coil, G4 air filter, flow and intake grid, mixing chamber, flow flanges with circular vents.

This unit is designed for a maximum amount of outdoor air of 10% of the total declared airflow

MAIN COMPONENTS DESCRIPTION

Structure

Made in galvanised steel sandwich panels with 15 mm thick polyurethane insulation (45 kg/m³ density). The intake and flow panels are equipped with flanges to couple to any air canals or to the accessories provided. Specific brackets supplied with the unit make it easier to secure it to the wall. The galvanised steel condensation drip tray is provided with a drain fitting threaded on both sides and is suitable both for horizontal and vertical installation of the unit.

Electric fan unit

This consists in high performance double intake centrifugal fans with blades facing forwards. The electric motor is coupled directly to the fans.

Heat exchange coil

Made of copper piping and aluminium louvers locked by the mechanical expansion of the pipes. The threaded sleeves for the hydraulic connections and the air bleeding valve are supplied. The water heat exchanger coil is also available in direct expansion operating with R410A refrigerant fluid. It is made with the same materials of the water coil.

Air filter

Air is filtered by class G4 efficiency 50 mm thick synthetic filters (according to the EN 779 standard) positioned on the intake. The filters are easily accessible for servicing and cleaning. For the VFR accessory, filtering is carried out through F6 degree of filtration soft bag filters. For higher degrees of filtration, please contact our Sales Technical Department.

CONFIGURATOR

Field	Description
1,2	TA
3,4	Size
	09-11-15-19-24-33-40-50
5	Configuration
	H Horizontal
	V Vertical
	X Extractor
6	Version
	4 Coil with 4 rows
	6 Coil with 6 rows
	E 4 Left ROWS direct expansion R410A coil (1)

(1) For information on this version, contact establishment

ACCESSORIES

M2S Mixing chamber 2 dampers

Section made of galvanised steel sheet with two air calibration dampers and louvers made of galvanised sheet steel. 50 mm louver pitch; 8 mm motorised regulation pin made of galvanised steel.

M3S Mixing chamber 3 dampers

Section made of galvanised steel sheet with three air calibration dampers and louvers made of galvanised sheet steel. 50 mm louver pitch; 8 mm motorised regulation pins made of galvanised steel. **It must be coupled with the VRF accessory**

FTF Soft bag filter section

Section made of galvanised steel sheet with F6 degree of filtration soft bag filters. For different filtering degrees, please contact the Aermec Sales Technical Dept.

B1R 1-row water coil

For 4-pipe systems, positioned internally, downstream of the main coil. The threaded sleeves for the hydraulic connections and the air vent valve are supplied.

B2R 2 row water coil

For 4-pipe systems, positioned internally, downstream of the main coil. The threaded sleeves for the hydraulic connections and the air vent valve are supplied.

VCT Two or three-way valve (actuator excluded)

They are 2 and 3-way globe bronze valves with female/female connections that can be servo-activated by servo controls. **The VCT valves do not have fittings and pipes for hydraulic connections, which must be provided by the installer. They can be controlled from the control panels (accessories), enabled at the valves control function. Before selection, consult the features of the control panels.**

VCTA Two or three-way valve actuator

the VCT series valves can be combined with one of the two actuators, VCTA230 on/off 230V or 24V modulating VCTA24M. **The actuator must be selected according to the type of system/adjustment provided.**

PBE Section with post-heating coil

The electric coil consists of armoured resistances fitted with a twin safety thermostat.

SSL Module with silencer baffles

Section made of galvanised steel sheet with mineral wool silencer baffles covered in a polyethylene film in order to prevent flaking.

S2Z 2-area damper (70-30%)

Damper made of galvanised steel sheet with opposite louvers for the external air flow to blend with the recirculating air flow. 50 mm louver pitch; 8 mm motorised regulation pin made of galvanised steel.

VRF Return ventilating section with a G4 filter

Ventilation unit equipped with an electronic rev shifter, contained in a galvanised steel sheet section with flat filters having a G4 efficiency (EN779).

PMM Plenum with multiple circular flow attachments

Plenum with 15 mm thick galvanised steel sandwich panel with polyurethane insulation. The plenum has multi-diameter circular plastic fittings (200 mm, 180 mm and 150 mm) for circular pipes to be connected.

PMC Closed flow plenum

Closed plenum with 15 mm thick galvanised steel sandwich panel with polyurethane insulation. The plenum allows the flow to turn by 90°. The installer must make the flow aperture.

SAS Intake damper

Air calibration damper with louvers made of galvanised sheet steel. 50 mm louver pitch; 8 mm motorised regulation pin made of galvanised steel.

GMD Flow grid with adjustable louvers

Grid with double row adjustable louvers for air to be introduced in the relative room. It can be installed directly on the appliance by removing the flanges or on the wall.

GAP Intake grid

With louvers tilted at 45°; it can be installed directly on the appliance by removing the flanges or on the wall.

FPI G4 filter flange for lower intake

PX Control panel with only the switch-over

WMT 05 Electro-mechanical thermostat

For fan coils installed in 2-pipe systems. The panel must be installed on the wall and protected electrically with an internal fuse. It has the following functions:

- on / off switch;
- cursor to select the heating / cooling modes (manual season change);
- cursor to select the fan speed (high, medium and low);
- temperature selector (+5°C÷30°C)

WMT10 Control panel

For fan coils installed on the wall. Controls the fan coil operation according to the set mode. The panel must be wall mounted; it is to be used in 4-pipe and 2-pipe systems and 2-pipe systems with resistance, with the possibility of connecting two ON - OFF type valves to cut off the coil supply water. The panel is protected electrically by an internal fuse. The control has the following functions:

- cursor to select cooling or heating functioning mode;
- manual season change;
- manual selection of the fan speed;
- selection of the desired room temperature (+10°C÷30°C);
- 2-pipe system management;
- 4-pipe system management;
- 2-pipe system management (cooling) + electrical resistance (heating);
- thermostated ventilation;
- continuous ventilation;
- continuous ventilation in cooling mode and thermostatic in heating mode.

ACCESSORY COMPATIBILITY

Accessory compatibility								
	TA 09	TA 11	TA 15	TA 19	TA 24	TA 33	TA 40	TA 50
M2S	M2S1	M2S1	M2S2	M2S3	M2S4	M2S4	M2S5	M2S5
M3S	M3S1	M3S1	M3S2	M3S3	M3S4	M3S4	M3S5	M3S5
FTF	FTF1	FTF1	FTF2	FTF3	FTF4	FTF4	FTF5	FTF5
B1R	B1R1	B1R1	B1R2	B1R3	B1R4	B1R4	B1R5	B1R5
B2R	B2R1	B2R1	B2R2	B2R3	B2R4	B2R4	B2R5	B2R5
VCT (2 way)	VCT 102	VCT 102	VCT 202	VCT 202	VCT 202 o 402	VCT 402 o 402P	VCT 402P	VCT 402P
VCT (3 way)	VCT 103	VCT 103	VCT 202	VCT 403 o 403P	VCT 403 o 403P	-	-	-
VCTA230	•	•	•	•	•	•	•	•
VCTA24M	•	•	•	•	•	•	•	•
PBE	PBE1	PBE2	PBE3	PBE4	PBE5	PBE6	PBE7	PBE8
SSL	SSL1	SSL1	SSL2	SSL3	SSL4	SSL4	SSL5	SSL5
S2Z	S2Z1	S2Z1	S2Z2	S2Z3	S2Z4	S2Z4	S2Z5	S2Z5
VRF	VRF1	VRF2	VRF3	VRF4	VRF5	VRF6	VRF7	VRF8
PMM	PMM1	PMM1	PMM2	PMM3	PMM4	PMM4	PMM5	PMM5
PMC	PMC1	PMC1	PMC2	PMC3	PMC4	PMC4	PMC5	PMC5
SAS	SAS1	SAS1	SAS2	SAS3	SAS4	SAS4	SAS5	SAS5
GMD	GMD1	GMD1	GMD2	GMD3	GMD4	GMD4	GMD5	GMD5
GAP	GAP1	GAP1	GAP2	GAP3	GAP4	GAP4	GAP5	GAP5
FPI	FPI1	FPI1	FPI2	FPI3	FPI4	FPI4	FPI5	FPI5
PX	•	•	•	•	•	•(2)	•(2)	•(2)
WMT 05	•	•(1)	•(1)	•(2)	•(2)	•(2)	•(2)	•(2)
WMT 06	•	•(1)	•(1)	•(2)	•(2)	•(2)	•(2)	•(2)
WMT 10	•	•(1)	•(1)	•(2)	•(2)	•(2)	•(2)	•(2)

(1) SIT3 is to be used and the 2A fuse is to be replaced with a 4A fuse

(2) Provide time delay relays, one for each speed

- Not available

ACCESSORY WEIGHTS

Below are the weights relating to the TA unit accessories.

For more information, please contact the AERMEC S.p.a. Sales Technical Dept.

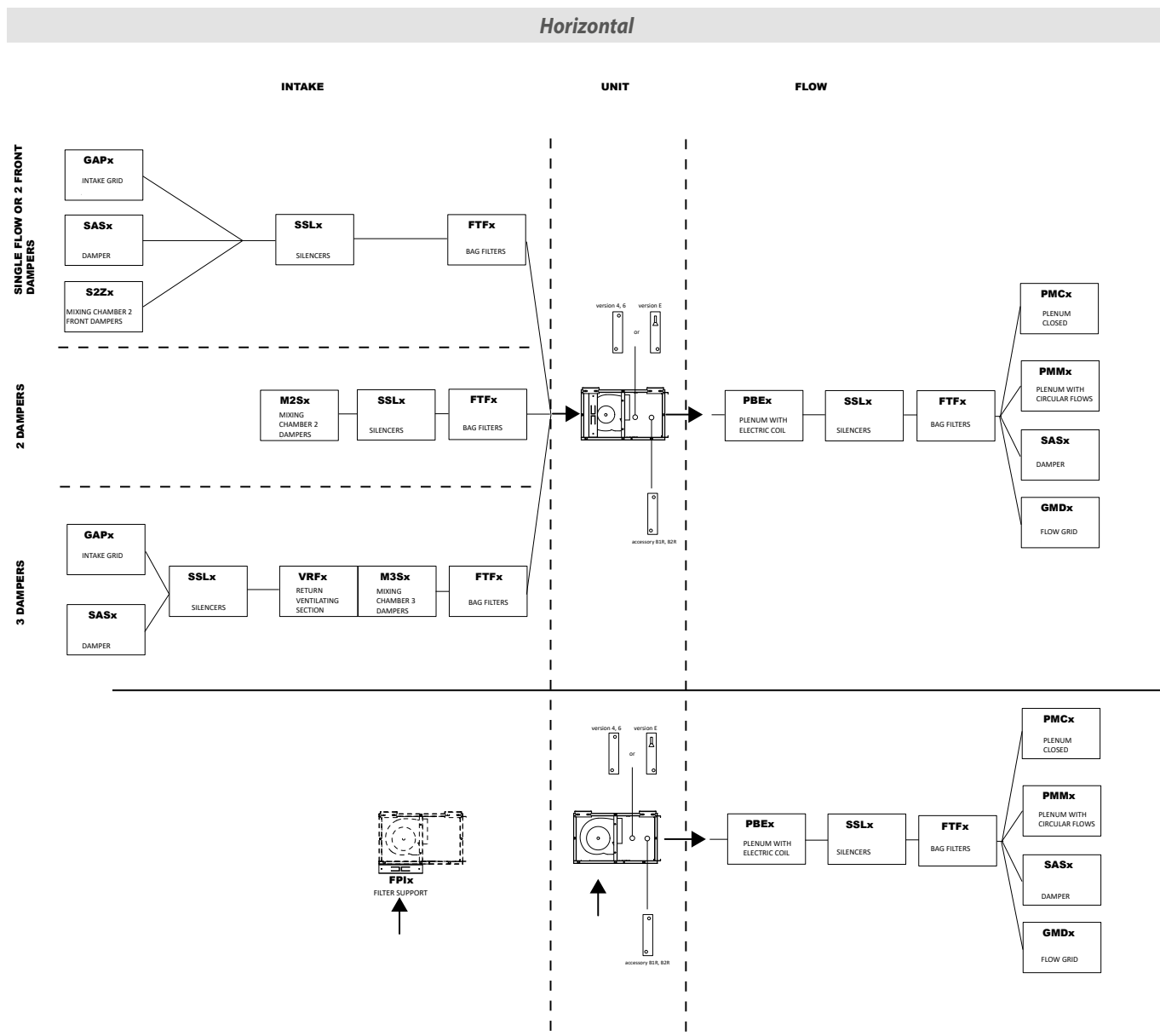
		Taglie							
DESCRIPTION		9	11	15	19	24	33	40	50
intake grid	GAPx	2	2	2	3	3	3	4	4
Flow grid with double adjustable louvers	GMDx	3	3	4	4	4	4	6	6
Intake damper	SASx	5	5	7	9	13	13	18	18
2-opposite area damper 70-30	S2Zx	5	5	8	10	14	14	19	19
Mixing chamber 2 dampers	M2Sx	23	23	35	37	43	43	69	69
Mixing chamber 3 dampers	M3Sx	27	27	31	40	50	50	99	99
Soft bag filters section	FTFx	20	20	27	29	39	39	70	70
All closed flow plenum	PMcx	15	15	20	22	28	28	54	54
Return ventilating section with filter	VRFx	19	22	27	36	43	55	61	62
Plenum with multiple circular flows	PMMx	16	16	21	23	29	29	56	56
Silencers section	SSLx	25	25	33	37	47	47	80	80
2-Stage electric post-heating coil plenum	PBEx	16	16	21	23	29	30	57	58
1 R Water post-heating coil	B1Rx	12	12	15	16	21	21	27	27
2 R Water post-heating coil	B2Rx	13	13	17	19	25	25	33	33
Flat filter section with lower intake	FPIx	3	3	5	5	6	6	7	7

The weight of the accessories is expressed in Kg.

ACCESSORY COMPATIBILITY

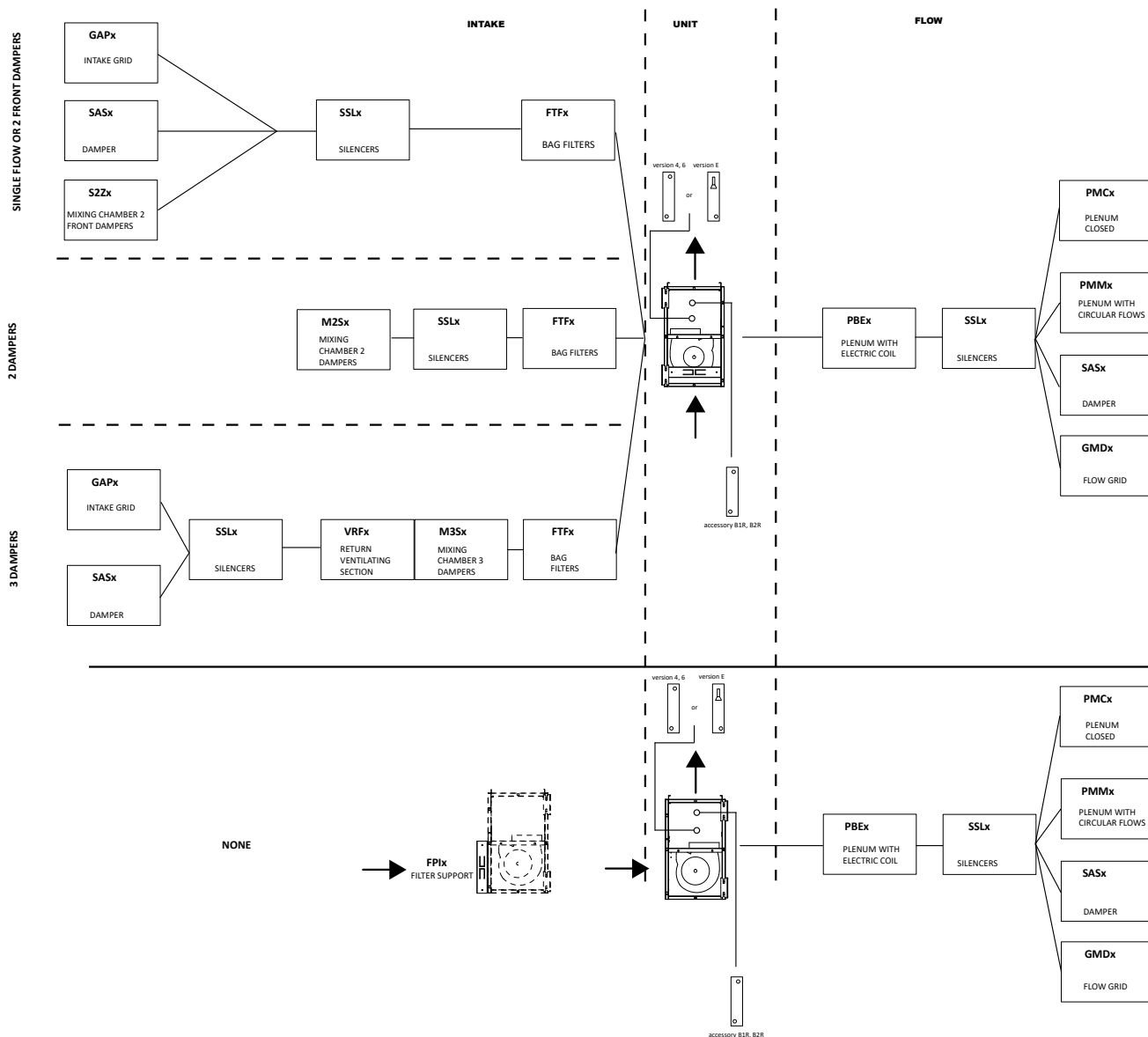
Below are the diagrams representing the different ways of coupling the accessories to the base units. The selection of a intake/flow accessory module precludes the choice of other accessories in the vertical direction but not in the horizontal. For example: if the "SAS" accessory is provided in intake, that accessory will not be compatible with the accessory "S2Z" but it can be combined with the "SSL" and "FTP" accessory. The diagrams respectively represent a horizontal and vertical configuration of the unit.

The diagrams may not be exhaustive of available combinations: however, we recommend to follow the rules set-out and possibly contact the AERMEC Sales Technical Dept.



Notes:

- Attention: for safety reasons, it is recommended not to position the FTF "Pocket Filter" module near the PBE module
- Attention: in the presence of accessory PBE, the unit flow rate must not drop below 60% of the normal flow rate provided
- The M3S accessory must be coupled with the VRF accessory
- The VRF accessory can be selected even if not coupled with the M3S accessory



Notes:

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- Attention: in the presence of accessory PBE, the unit flow rate must not drop below 60% of the normal flow rate provided
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- The VRF accessory can be selected even if not coupled with the M3S accessory

PERFORMANCE SPECIFICATIONS

Model		ver.	TA09		TA11		TA15		TA19		TA24		TA33		TA40		TA50			
Main coil rows				4	6	4	6	4	6	4	6	4	6	4	6	4	6			
Nominal air flow rate (1)		H/V	m³/h	800	800	1100	1100	1500	1500	1900	1900	2400	2400	3300	3300	4000	4000	5000	5000	
		H/V	l/s	222	222	306	306	417	417	528	528	667	667	917	917	1111	1111	1389	1389	
Useful static pressure		H/V	Pa	145	131	290	265	176	158	240	224	211	199	245	224	248	234	153	131	
Number of electric fans		H/V	n	1		2		2		1		1		2		2		2		
Input power		H/V	W	249		310		380		610		835		815		980		1280		
2-Pipe system yields																				
Cooling capacity (2)	total	H/V	kW	4,2	5,1	5,7	6,7	8,7	11,7	12,4	15,5	17,3	20,6	21,7	26,3	27,2	33,5	31,8	39,6	
	sensitive	H/V	kW	3,5	3,4	4,2	4,7	6,2	7,5	8,3	9,8	11,2	12,8	14,3	16,6	18,0	20,9	21,3	25,0	
Water flow rate		H/V	l/h	722	868	980	1152	1496	2012	2132	2666	2975	3543	3732	4523	4678	5761	5469	6810	
Pressure drops		H/V	kPa	6	4	6	6	7	15	12	28,5	16	27	23	41	11	31	15	42	
Heating capacity	70°/60° C	H/V	kW	10,4	11,4	13,3	14,8	19,1	21,4	24,7	27,4	34,1	35,6	41,9	46,6	52,8	58,3	62,8	72,8	
Water flow rate	70°/60° C	H/V	l/h	894	976	1139	1273	1642	1838	2124	2356	2932	3058	3603	4005	4538	5013	5400	6260	
Pressure drops	70°/60° C	H/V	kPa	5	4	8	7	7	16	10	23	13	21	19	34	10	22	13	30	
1 Row water coil 4-pipe system yields																				
Heating capacity	70°/60° C	H/V	kW	4,4		5,1		8,2		10,6		14,2		16,3		22,4		24,7		
Water flow rate	70°/60° C	H/V	l/h	378		435		705		907		1221		1403		1926		2124		
Pressure drops	70°/60° C	H/V	kPa	9		7		21		13		14		17		21		25		
2 Rows water coil 4-pipe system yields																				
Heating capacity	70°/60° C	H/V	kW	3,9		8,5		12,7		16,0		21,7		26,7		34,8		40,0		
Water flow rate	70°/60° C	H/V	l/h	333		731		1092		1371		1866		2291		2988		3439		
Pressure drops	70°/60° C	H/V	kPa	8		11		13		14		18		26		18		23		
Electric coil																				
Electric coil capacity		H/V	kW	4		6		8		10		12		16		20		24		
Electric coil stages		H/V	n°	2		2		W		2		2		2		2		2		
Electric power supply		H/V	V/Ph/Hz	400 V -3 - 50 Hz																
Filters available		H/V		G4		G4		G4		G4		G4		G4		G4		G4		
		H/V		F6		F6		F6		F6		F6		F6		F6		F6		
Sound power level			H/V	dB(A)	62		66		67		72		74		75		76		79	

This unit is designed for a maximum amount of outdoor air of 10% of the total declared airflow

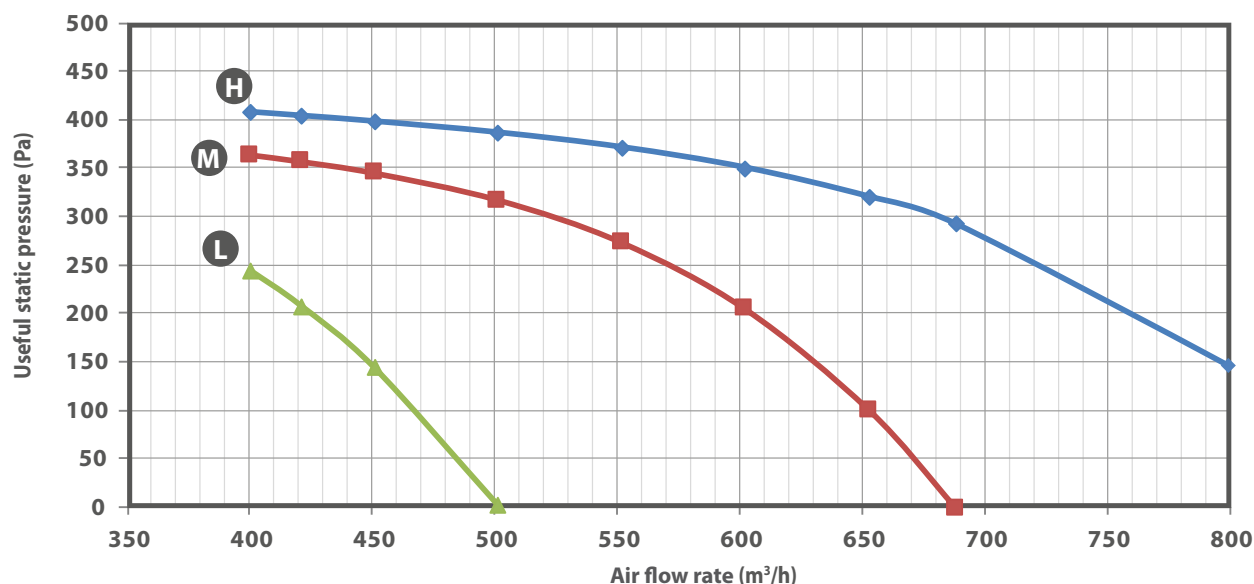
- 1 At maximum fan speed
- 2 Air temperature (in) 27°C d.b. 47% R.H.; Water temperature (in/out) 7°C / 12°C

VENTILATION CURVES

The following diagrams show the flow rate-useful static pressure curves (at vent) of the units, **with 4-row coil and with a 0% clogging degree of the G4 filter.**

For units with different configurations or accessories, reduce the useful static pressure with the pressure drop values of the added components. The values of these pressure drops can be found on the tables below the charts.

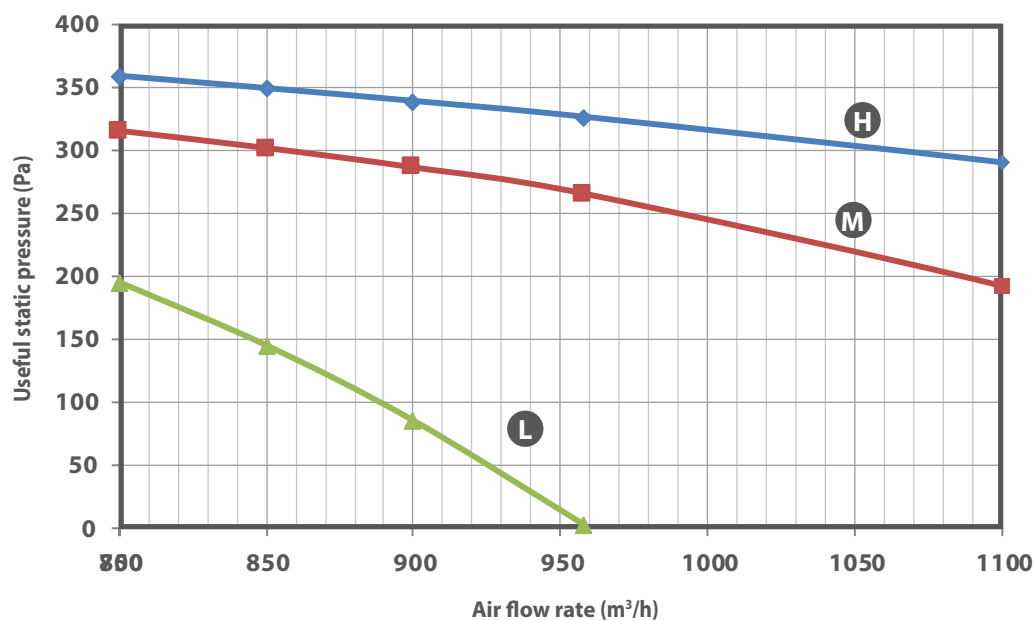
TA 09 4R



H Maximum speed; **M** Average speed; **L** Minimum speed

Description	Notes	Accessory	Air flow rate					
			m³/h	400	500	600	700	800
Intake grid		GAP	Pa	-4	-7	-9	-12	-15
Anti-freeze damper		SAP	Pa	0	0	-1	-1	-1
Intake silencers		SSL	Pa	-6	-10	-13	-18	-22
Return fan		VRF	Pa	435	414	404	364	253
Mixing chamber with 3 dampers		M3S	Pa	-1	-1	-2	-3	-3
Mixing chamber with 2 dampers		M2S	Pa	0	0	-1	-1	-1
Mixing chamber with 2 front dampers		S2Z	Pa	-1	-1	-2	-2	-3
Δ pressure drops between the 4R and 6R coil			Pa	-3	-5	-7	-8	-11
2R Water post-heating coil		2RPR	Pa	-11	-16	-23	-30	-38
1R Water post-heating coil		1RPR	Pa	-3	-5	-7	-9	-11
Electric Post -Heating Coil		PBE	Pa	-2	-3	-4	-5	-6
Silencers		SSL	Pa	-6	-10	-13	-18	-22
•Soft bag filters,		FTF	Pa	-6	-9	-12	-16	-21
Closed flow plenum		PMC	Pa	0	0	0	0	0
Flow plenum with circular vents		PMM	Pa	0	0	0	-1	-1
Flow damper		SAP	Pa	0	0	-1	-1	-1
Flow grid		GMD	Pa	-1	-2	-3	-4	-5
X Version (without coil)			Pa	10	15	21	29	37

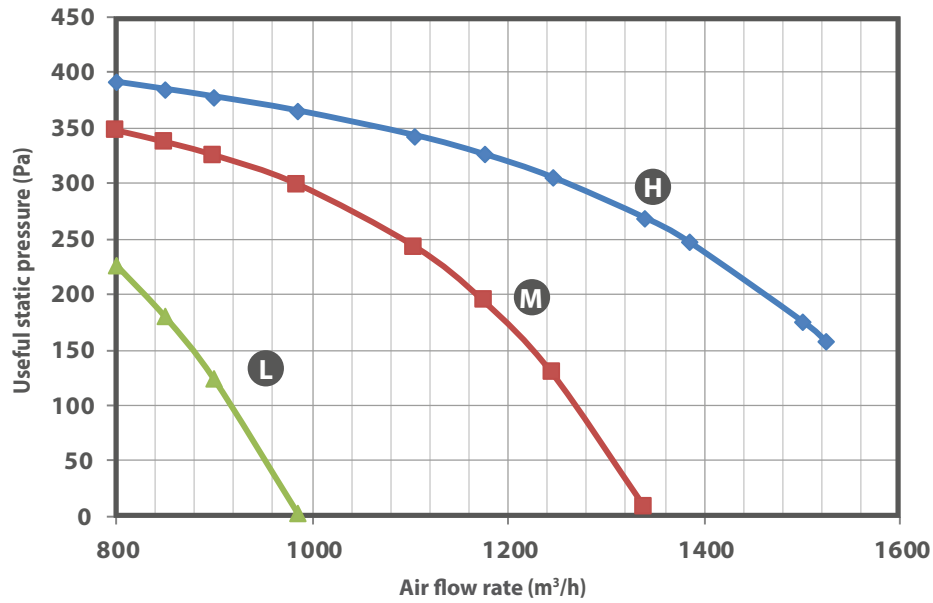
TA 11 4R



H Maximum speed; **M** Average speed; **L** Minimum speed

Description	Notes	Accessory	Air flow rate				
			m³/h	800	900	1000	1100
Intake grid		GAP	Pa	-15	-19	-23	-27
Anti-freeze damper		SAP	Pa	-5	-6	-7	-9
Intake silencers		SSL	Pa	-23	-29	-35	-41
Return fan		VRF	Pa	435	421	414	410
Mixing chamber with 3 dampers		M3S	Pa	-3	-4	-5	-6
Mixing chamber with 2 dampers		M2S	Pa	-5	-6	-7	-9
Mixing chamber with 2 front dampers		S2Z	Pa	-14	-17	-21	-25
Δ pressure drops between the 4R and 6R coil			Pa	-11	-14	-17	-20
2R Water post-heating coil		2RPR	Pa	-38	-47	-57	-67
1R Water post-heating coil		1RPR	Pa	-11	-14	-17	-20
Electric Post-Heating Coil		PBE	Pa	-6	-8	-9	-11
Silencers		SSL	Pa	-23	-29	-35	-41
•Soft bag filters,		FTF	Pa	-21	-25	-31	-37
Closed flow plenum		PMC	Pa	0	0	0	0
Flow plenum with circular vents		PMM	Pa	-1	-1	-1	-1
Flow damper		SAP	Pa	-5	-6	-7	-9
Flow grid		GMD	Pa	-5	-6	-7	-9
X Version (without coil)			Pa	37	45	55	66

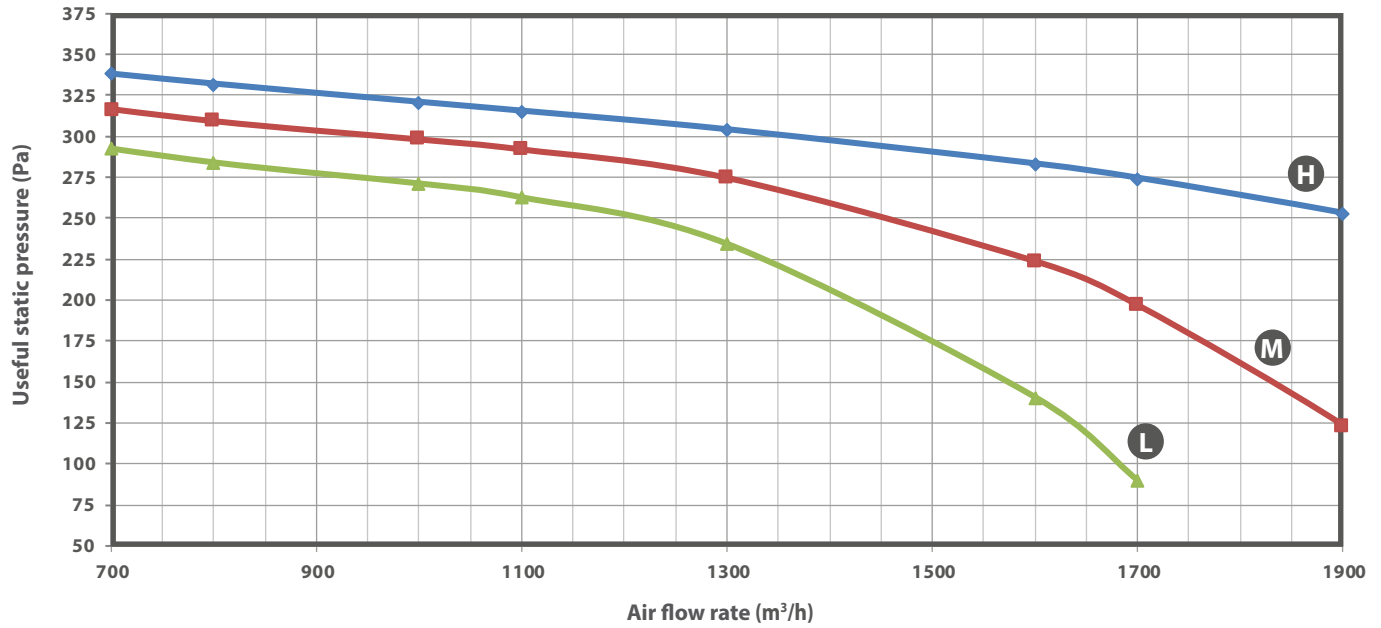
TA 15 4R



H Maximum speed; **M** Average speed; **L** Minimum speed

Description	Notes	Accessory	Air flow rate				
			m³/h	900	1100	1300	1500
Intake grid		GAP	Pa	-13	-19	-26	-33
Anti-freeze damper		SAP	Pa	-3	-4	-5	-7
Intake silencers		SSL	Pa	-10	-14	-19	-25
Return fan		VRF	Pa	421	410	391	320
Mixing chamber with 3 dampers		M3S	Pa	-4	-6	-8	-10
Mixing chamber with 2 dampers		M2S	Pa	-3	-4	-5	-7
Mixing chamber with 2 front dampers		S2Z	Pa	-8	-11	-15	-19
Δ pressure drops between the 4R and 6R coil			Pa	-5	-7	-10	-14
2R Water post-heating coil		2RPR	Pa	-19	27	-36	-46
1R Water post-heating coil		1RPR	Pa	-9	-13	-17	-22
Electric Post -Heating Coil		PBE	Pa	-3	-4	-6	-8
Silencers		SSL	Pa	-10	-14	-19	-25
•Soft bag filters,		FTF	Pa	-25	-37	-49	-64
Closed flow plenum		PMC	Pa	0	0	0	0
Flow plenum with circular vents		PMM	Pa	-1	-1	-1	-2
Flow damper		SAP	Pa	-3	-4	-5	-7
Flow grid		GMD	Pa	-3	-4	-5	-7
X Version (without coil)			Pa	18	25	35	48

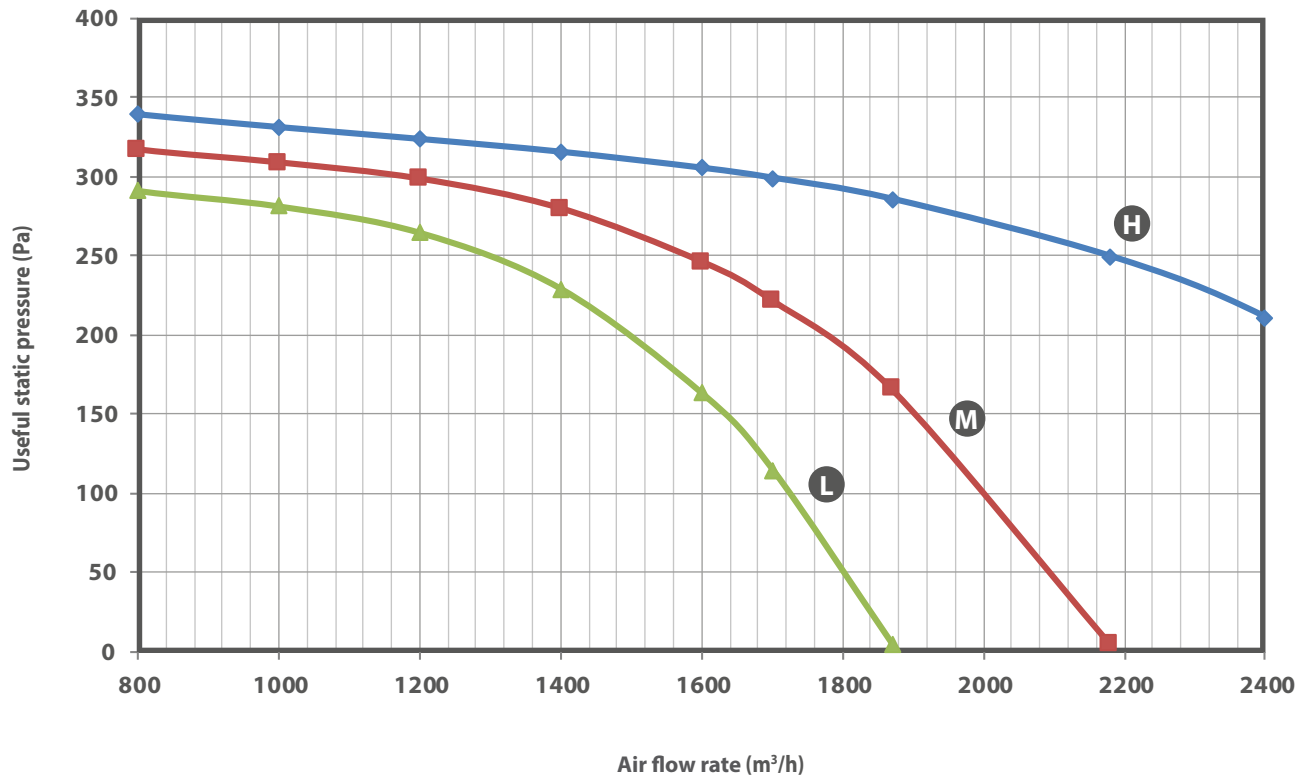
TA 19 4R



H Maximum speed; **M** Average speed; **L** Minimum speed

Description	Notes	Accessory	Air flow rate					
			m³/h	700	1000	1300	1600	1900
Intake grid		GAP	Pa	-5	-9	-15	-22	-30
Anti-freeze damper		SAP	Pa	-1	-2	-3	-4	-6
Intake silencers		SSL	Pa	-4	-7	-11	-16	-22
Return fan		VRF	Pa	316	340	351	347	329
Mixing chamber with 3 dampers		M3S	Pa	-1	-2	-3	-4	-5
Mixing chamber with 2 dampers		M2S	Pa	-1	-2	-3	-4	-6
Mixing chamber with 2 front dampers		S2Z	Pa	-3	-5	-8	-11	-15
Δ pressure drops between the 4R and 6R coil			Pa	-2	-3	-6	-9	-12
2R Water post-heating coil		2RPR	Pa	-8	-15	-24	-35	-48
1R Water post-heating coil		1RPR	Pa	-4	-7	-11	-17	-23
Electric Post-Heating Coil		PBE	Pa	-1	-2	-4	-5	-7
Silencers		SSL	Pa	-4	-7	-11	-16	-22
•Soft bag filters,		FTF	Pa	-16	-31	-49	-72	-98
Closed flow plenum		PMC	Pa	0	0	0	0	0
Flow plenum with circular vents		PMM	Pa	-1	-1	-2	-2	-3
Flow damper		SAP	Pa	-1	-2	-3	-4	-6
Flow grid		GMD	Pa	-1	-2	-3	-5	-6
X Version (without coil)			Pa	6	13	20	30	41

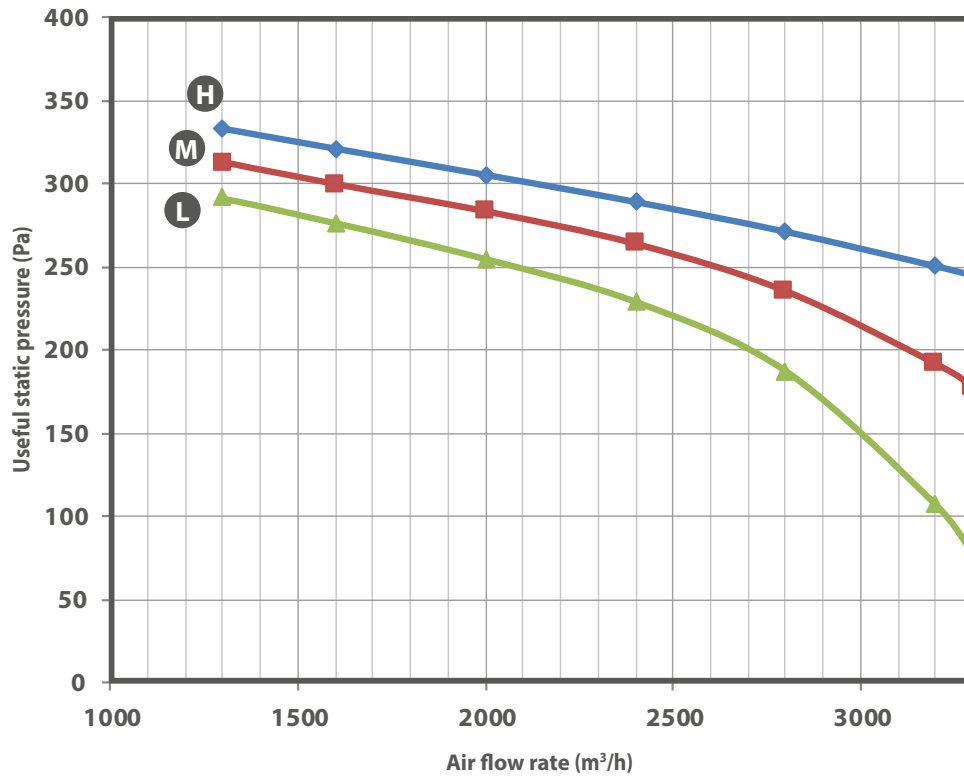
TA 24 4R



H Maximum speed; **M** Average speed; **L** Minimum speed

Description	Notes	Accessory	Air flow rate					
			m³/h	800	1200	1600	2000	2400
Intake grid		GAP	Pa	-3	-7	-11	-17	-24
Anti-freeze damper		SAP	Pa	-1	-1	-2	-4	-5
Intake silencers		SSL	Pa	-3	-6	-10	-16	-22
Return fan		VRF	Pa	326	349	347	320	268
Mixing chamber with 3 dampers		M3S	Pa	-1	-2	-4	-6	-8
Mixing chamber with 2 dampers		M2S	Pa	-1	-1	-2	-4	-5
Mixing chamber with 2 front dampers		S2Z	Pa	-2	-3	-6	-9	-12
Δ pressure drops between the 4R and 6R coil			Pa	-1	-3	-5	-6	-9
2R Water post-heating coil		2RPR	Pa	-5	-10	-17	-25	-35
1R Water post-heating coil		1RPR	Pa	-2	-5	-8	-12	-17
Electric Post-Heating Coil		PBE	Pa	-1	-2	-3	-4	-5
Silencers		SSL	Pa	-3	-6	-10	-16	-22
•Soft bag filters,		FTF	Pa	-6	-12	-21	-31	-43
Closed flow plenum		PMC	Pa	0	0	0	0	0
Flow plenum with circular vents		PMM	Pa	0	-1	-2	-2	-3
Flow damper		SAP	Pa	-1	-1	-2	-4	-5
Flow grid		GMD	Pa	-1	-1	-2	-4	-5
X Version (without coil)			Pa	4	8	14	22	30

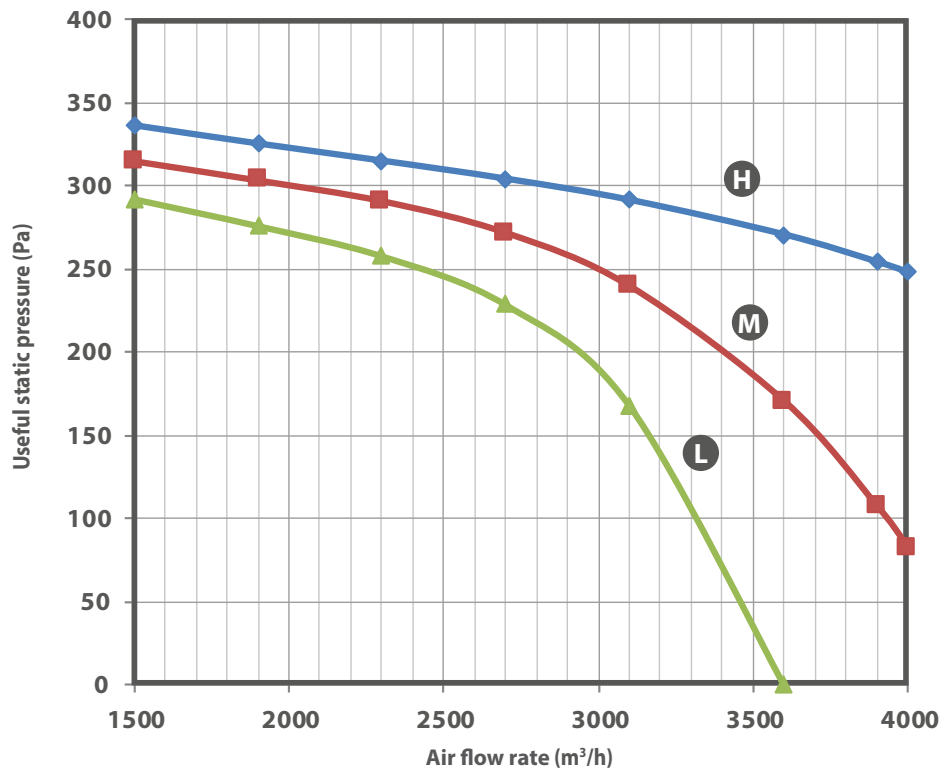
TA 33 4R



H Maximum speed; **M** Average speed; **L** Minimum speed

Description	Notes	Accessory	Air flow rate						
			m³/h	1300	1700	2100	2500	2900	3300
Intake grid		GAP	Pa	-8	-13	-19	-26	-33	-42
Anti-freeze damper		SAP	Pa	0	-1	-1	-1	-1	-2
Intake silencers		SSL	Pa	-8	-12	-18	-25	-32	-41
Return fan		VRF	Pa	311	330	343	350	351	345
Mixing chamber with 3 dampers		M3S	Pa	-3	-4	-6	-8	-11	-14
Mixing chamber with 2 dampers		M2S	Pa	0	-1	-1	-1	-1	-2
Mixing chamber with 2 front dampers		S2Z	Pa	-4	-7	-10	-13	-17	-21
Δ pressure drops between the 4R and 6R coil			Pa	-3	-5	-7	-10	-13	-16
2R Water post-heating coil		2RPR	Pa	-12	-19	-28	-38	-50	-63
1R Water post-heating coil		1RPR	Pa	-6	-9	-13	-18	-24	-30
Electric Post -Heating Coil		PBE	Pa	-2	-3	-4	-6	-7	-9
Silencers		SSL	Pa	-8	-12	-18	-25	-32	-41
•Soft bag filters,		FTF	Pa	-14	-23	-34	-46	-60	-76
Closed flow plenum		PMC	Pa	0	0	0	0	0	0
Flow plenum with circular vents		PMM	Pa	-1	-2	-3	-4	-5	-6
Flow damper		SAP	Pa	0	-1	-1	-1	-1	-2
Flow grid		GMD	Pa	-2	-3	-4	-5	-7	-9
X Version (without coil)			Pa	10	16	24	33	43	55

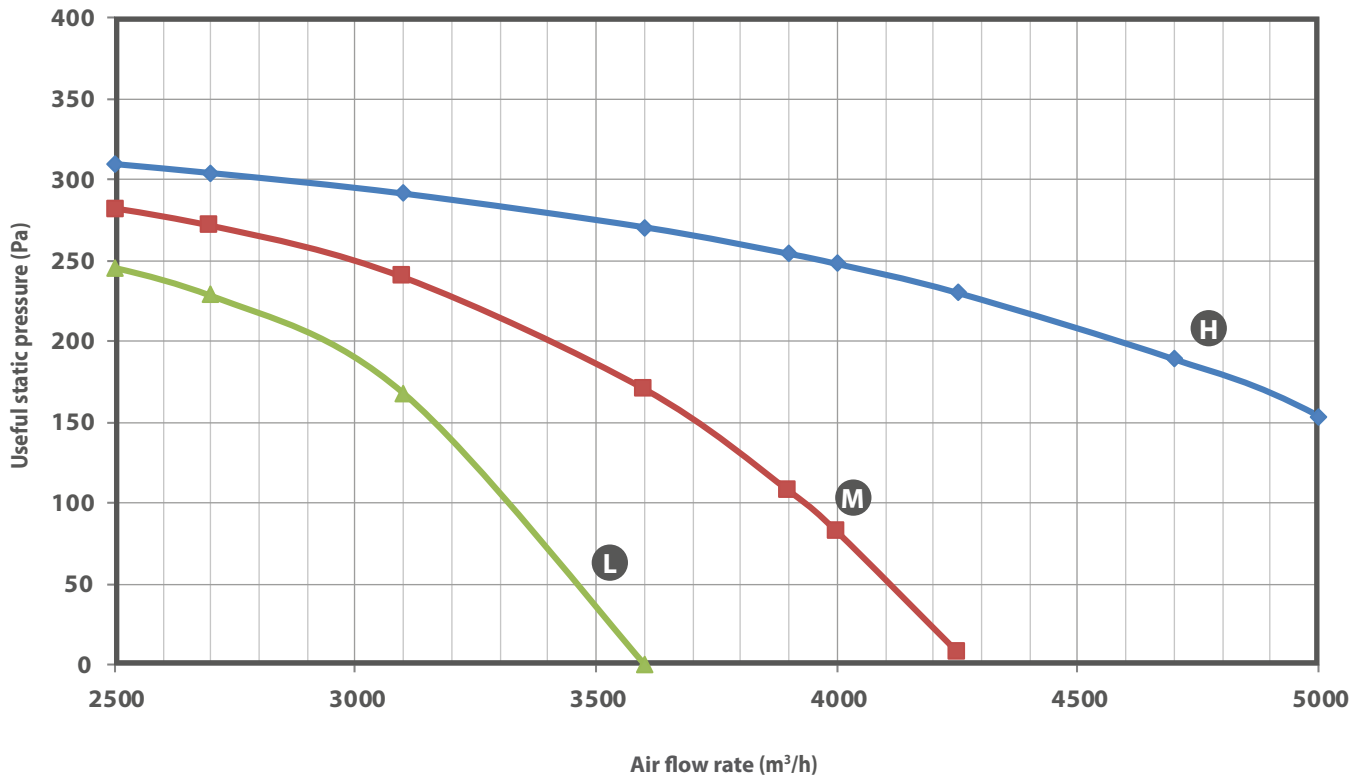
TA 40 4R



H Maximum speed; **M** Average speed; **L** Minimum speed

Description	Notes	Accessory	Air flow rate						
			m³/h	1500	2000	2500	3000	3500	4000
Intake grid		GAP	Pa	-5	-9	-13	-18	-24	-31
Anti-freeze damper		SAP	Pa	0	0	-1	-1	-1	-1
Intake silencers		SSL	Pa	-5	-8	-12	-17	-22	-28
Return fan		VRF	Pa	321	340	350	350	340	320
Mixing chamber with 3 dampers		M3S	Pa	-2	-3	-4	-5	-7	-9
Mixing chamber with 2 dampers		M2S	Pa	0	0	-1	-1	-1	-1
Mixing chamber with 2 front dampers		S2Z	Pa	-3	-4	-6	-9	-12	-15
Δ pressure drops between the 4R and 6R coil			Pa	-2	-4	-5	-7	-9	-11
2R Water post-heating coil		2RPR	Pa	-7	-13	-19	-26	-34	-44
1R Water post-heating coil		1RPR	Pa	-4	-6	-9	-12	-16	-21
Electric Post-Heating Coil		PBE	Pa	-1	-2	-3	-4	-5	-7
Silencers		SSL	Pa	-5	-8	-12	-17	-22	-28
•Soft bag filters,		FTF	Pa	-9	-15	-22	-31	-41	-52
Closed flow plenum		PMC	Pa	0	0	0	0	0	0
Flow plenum with circular vents		PMM	Pa	-2	-3	-4	-6	-8	-10
Flow damper		SAP	Pa	0	0	-1	-1	-1	-2
Flow grid		GMD	Pa	-1	-2	-3	-4	-5	-7
X Version (without coil)			Pa	6	10	16	22	29	38

TA 50 4R



H Maximum speed; **M** Average speed; **L** Minimum speed

Description	Notes	Accessory	Air flow rate						
			m³/h	2500	3000	3500	4000	4500	5000
Intake grid		GAP	Pa	-13	-18	-24	-31	-38	-46
Anti-freeze damper		SAP	Pa	-1	-1	-1	-1	-2	-2
Intake silencers		SSL	Pa	-13	-17	-23	-29	-36	-44
Return fan		VRF	Pa	350	350	340	320	291	252
Mixing chamber with 3 dampers		M3S	Pa	-4	-5	-7	-9	-11	-13
Mixing chamber with 2 dampers		M2S	Pa	-1	-1	-1	-1	-2	-2
Mixing chamber with 2 front dampers		S2Z	Pa	-6	-9	-12	-15	-18	-22
Δ pressure drops between the 4R and 6R coil			Pa	-5	-7	-9	-11	-14	-17
2R Water post-heating coil		2RPR	Pa	-19	-26	-34	-44	-54	-65
1R Water post-heating coil		1RPR	Pa	-9	-12	-16	-21	-26	-31
Electric Post-Heating Coil		PBE	Pa	-3	-4	-5	-7	-8	-10
Silencers		SSL	Pa	-13	-17	-23	-29	-36	-44
•Soft bag filters,		FTF	Pa	-22	-31	-41	-52	-64	-77
Closed flow plenum		PMC	Pa	0	0	0	0	0	0
Flow plenum with circular vents		PMM	Pa	-4	-6	-8	-10	-13	-15
Flow damper		SAP	Pa	-1	-1	-1	-1	-2	-2
Flow grid		GMD	Pa	-3	-4	-5	-7	-8	-10
X Version (without coil)			Pa	16	22	29	38	47	57

FILTERS PRESSURE DROPS

The following charts determine the pressure drops of the filters with different levels of fouling. From the chart on the left, bearing the air flow rate (m^3/h) in the axis of abscissae, move up from the concerned flow rate until you intersect the straight line corresponding to the unit size. At this point, tracing a straight line parallel to the axis of abscissae intersect one of the three curves shown on the right chart each representing the clogging degree of the filter as follows:

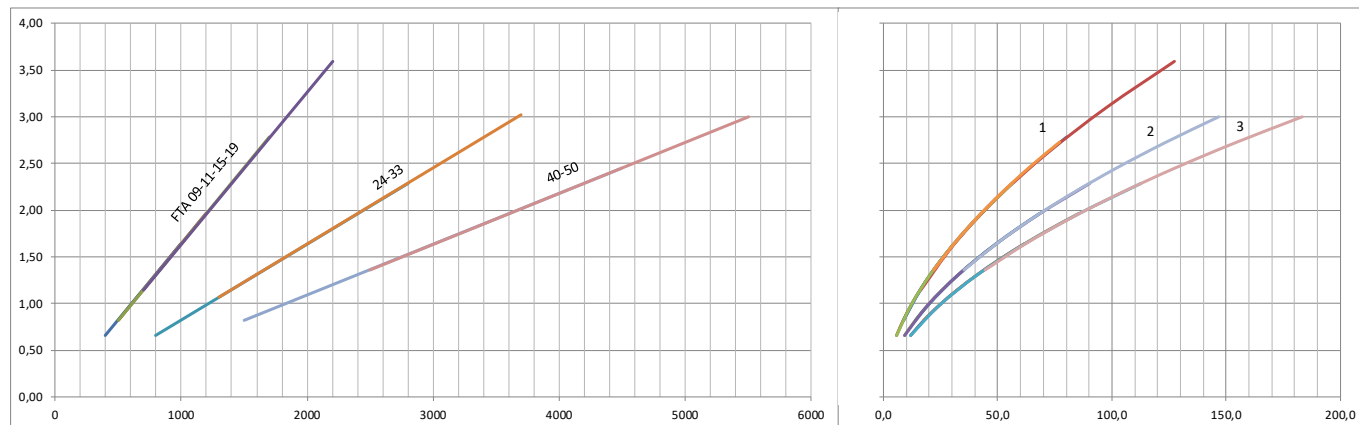
curve 1: filter clean

curve 2: filter clogged at 25%

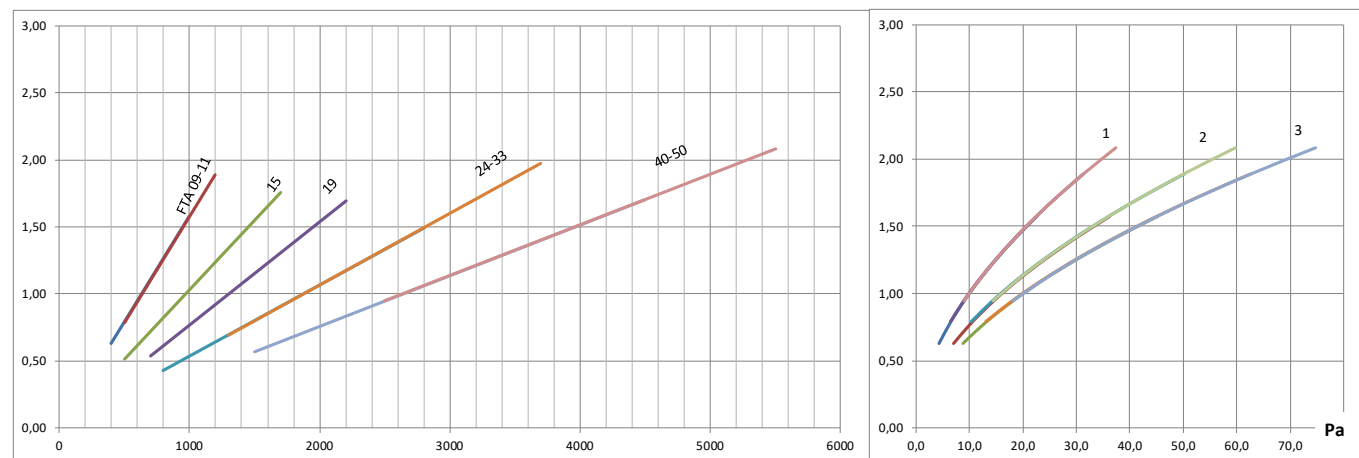
curve 3: filter clogged at 50%

To determine the value corresponding to the filter pressure drop, trace a straight line until the axis of abscissae.

PRESSURE DROP OF FLAT FILTERS DUE TO FOULING:



PRESSURE DROP OF BAG FILTERS DUE TO FOULING:



OPERATING ENVIRONMENT

The units are designed for installation in closed environments in 'urban', non-marine atmosphere conditions that are not corrosive or dusty. The following concentrations of the air polluting factors where the unit must operate must not be exceeded under any circumstances:

SO ₂	<0,02 ppm
H ₂ S	<0,02 ppm
NO,NO ₂	<1 ppm
NH ₃	<6 ppm
N ₂ O	<0,25 ppm

The unit must not be installed in areas characterised by the presence of flammable gases or acidic or alkaline substances. Otherwise the coils and the internal components of the equipment might undergo serious and permanent damage in terms of corrosion.

WARNINGS FOR THE QUALITY OF WATER CIRCULATING IN THE COILS

We recommend performing an analysis of the water circulating in the coil focused on searching for any bacteria (detection of iron bacteria and micro-organisms that can produce H₂S or chemically reduce sulphates) and the chemical composition of the water itself to prevent corrosion and encrustations inside the pipes.

The water circuit must be fed and topped-up with treated water that does not exceed the threshold levels shown below.

Total hardness in mmol/l	I < mmol/l < 1.5
Chlorides [CL ⁻]	< 10 mg/litre
Sulphates [SO ₄ ²⁻]	< 30 mg/litre
Nitrates [NO ₃ ⁻]	= 0 mg/litre
Dissolved iron	< 0.5 mg/litre
Dissolved oxygen	4 < [O ₂] < 9 mg/litre
Carbon dioxide [CO ₂]	< 30 mg/litre
Resistivity	20 Ohm-m < Resistivity < 50 Ohm-m
pH	6.9 < pH < 8

The unit must not be installed in areas characterised by the presence of flammable gases or acidic or alkaline substances.

Otherwise the coils and the internal components of the equipment might undergo serious and permanent damage in terms of corrosion.

COOLING POWER YIELDED

The sensitive and total cooling capacities at maximum speed, based on the temperature of the water entering, on its heat drop and temperature of the air with dry bulb and wet bulb respectively for sensitive yield and total yield for standard coil versions are stated in the table.

NB: The yield values marked in bold indicate the nominal value.

Key:

Tw(in) = Inlet water temperature

Tbu = Inlet water temperature with wet bulb

Tbs = Inlet water temperature with dry bulb

Pc [W] = Total cooling capacity

Ps [W] = Sensitive cooling capacity

dt[°C] = water temperature difference between coil inlet and outlet

COOLING (4 ROWS COIL)

TA 09			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	3308	2597	2643	2244	1910	2602	1424	1424	1107	1107
		23	3288	2927	2627	2574	2039	2039	1729	1729	1418	1418
		25	3274	3253	2619	2902	2336	2336	2029	2029	1721	1721
		27	3226	3226	2931	3277	2627	2627	2324	2324	2021	2021
		29	3519	3519	3218	3599	2916	2916	2615	2615	2314	2314
		31	3800	3800	3501	3915	3202	3202	2902	2902	2603	2603
	17	21	4164	2599	3509	2251	2800	1898	2013	1537	1051	1051
		23	4186	2927	3537	2583	2832	2233	2051	1873	1418	1418
		25	4156	3253	3509	2909	2810	2563	2033	2033	1721	1721
		27	4142	3576	3501	3235	2804	2804	2324	2324	2021	2021
		29	4090	3893	3453	3554	2916	2916	2615	2615	2314	2314
		31	4067	4067	3501	3915	3202	3202	2902	2902	2603	2603
	19	21	5176	2586	4529	2244	3830	1898	3071	1539	2228	1179
		23	5148	2925	4503	2583	3810	2240	3055	1894	2215	1525
		25	5124	3251	4483	2911	3794	2570	3043	2224	2209	1867
		27	5096	3574	4457	3235	3772	2896	3025	2547	2195	2195
		29	5110	3918	4431	3556	3750	3219	3009	2875	2314	2314
		31	5088	4230	4415	3873	3738	3536	3001	3001	2603	2603
	21	21	6156	2563	5512	2222	4821	1880	4071	1537	3254	1188
		23	6231	2936	5544	2572	4857	2233	4114	1882	3302	1537
		25	6197	3271	5516	2909	4831	2572	4092	2231	3286	1878
		27	6156	3592	5477	3233	4799	2898	4063	2559	3262	2217
		29	6185	3911	5512	3554	4837	3219	4108	2884	3312	2543
		31	6068	4225	5399	3871	4728	3538	4001	3203	3210	2864
	23	23	7287	2909	6604	2550	5919	2213	5182	1873	4383	1534
		25	7317	3253	6638	2896	5958	2561	5226	2215	4433	1876
		27	6948	3587	6273	3230	5596	2896	4867	2561	4075	2222
		29	7225	3879	6598	3549	5927	3217	5202	2884	4419	2550
		31	7123	4194	6500	3866	5831	3536	5112	3206	4333	2871
		21	3019	2440	2266	2053	1625	1625	1300	1300	956	956
5	15	23	3003	2772	2254	2386	1938	1938	1621	1621	1296	1296
		25	2993	2993	2553	2855	2244	2244	1932	1932	1617	1617
		27	3154	3154	2848	3185	2543	2543	2236	2236	1924	1924
		29	3441	3441	3139	3511	2836	2836	2533	2533	2226	2226
		31	3726	3726	3425	3830	3125	3125	2824	2824	2521	2521
		21	3911	2460	3202	2096	2392	1707	1326	1240	956	956
	17	23	3937	2792	3234	2431	2434	2046	1621	1621	1296	1296
		25	3909	3120	3210	2759	2414	2377	1932	1932	1617	1617
		27	3899	3444	3204	3084	2543	2543	2236	2236	1924	1924
		29	3848	3763	3158	3403	2836	2836	2533	2533	2226	2226
		31	3828	3828	3425	3830	3125	3125	2824	2824	2521	2521
		21	4949	2462	4262	2109	3507	1736	2643	1355	1537	903
	19	23	4923	2803	4240	2451	3489	2089	2633	1709	1531	1251
		25	4901	3131	4224	2781	3477	2422	2625	2042	1531	1531
		27	4875	3453	4200	3100	3457	2738	2611	2350	1924	1924
		29	4849	3774	4178	3428	3439	3071	2597	2597	2226	2226
		31	4829	4091	4164	3745	3431	3392	2824	2824	2521	2521
		21	5945	2449	5271	2100	4535	1748	3722	1386	2776	986
	21	23	5976	2799	5307	2453	4578	2094	3772	1732	2850	1352
		25	5945	3134	5281	2790	4556	2442	3754	2076	2838	1696
		27	5907	3457	5246	3116	4525	2770	3728	2413	2818	2037
		29	5941	3778	5285	3437	4570	3093	3780	2741	2878	2368
		31	5827	4095	5172	3756	4461	3412	3674	3060	2772	2687
		23	7046	2779	6383	2437	5666	2094	4883	1743	4015	1375
	23	25	7080	3125	6422	2786	5708	2435	4933	2087	4073	1730
		27	6711	3457	6054	3120	5343	2777	4566	2428	3700	2062
		29	7038	3778	6387	3441	5684	3102	4917	2761	4069	2406
		31	6936	4093	6289	3760	5590	3423	4827	3080	3981	2729
		21	2577	2208	1541	1707	1472	1472	1075	1075	454	454
		23	2563	2541	2133	2368	1808	1808	1472	1472	1087	1087
7	15	25	2758	2758	2444	2734	2127	2127	1804	1804	1468	1468
		27	3057	3057	2748	3073	2436	2436	2121	2121	1800	1800
		29	3350	3350	3045	3406	2738	2738	2428	2428	2115	2115
		31	3640	3640	3336	3731	3033	3033	2728	2728	2420	2420
		21	3555	2273	2726	1864	1599	1357	1075	1075	454	454
		23	3587	2608	2768	2204	1665	1665	1472	1472	1087	1087
	17	25	3563	2938	2746	2532	2127	2127	1804	1804	1468	1468
		27	3555	3262	2746	2860	2436	2436	2121	2121	1800	1800
		29	3507	3507	3045	3406	2738	2738	2428	2428	2115	2115
		31	3489	3489	3336	3731	3033	3033	2728	2728	2420	2420
		21	4646	2305	3889	1925	3005	1510	1816	1013	454	454
		23	4624	2646	3871	2269	2993	1864	1810	1361	1087	1087
	19	25	4606	2974	3855	2599	2985	2197	1810	1705	1468	1468
		27	4582	3291	3834	2911	2969	2493	2121	2121	1800	1800
		29	4558	3621	3816	3248	2955	2851	2428	2428	2115	2115
		31	4543	3938	3806	3569	2951	2951	2728	2728	2420	2420
		21	5672	2305	4947	1941	4132	1563	3178	1148	1862	638
		23	5710	2657	4989	2296	4182	1912	3240	1510	1966	1006
	21	25	5682	2994	4965	2637	4162	2262	3228	1853	1960	1361
		27	5646	3320	4935	2963	4136	2592	3206	2192	1942	1701
		29	5686	3644	4979	3286	4188	2920	3268	2525	2041	2041
		31	5572	3958	4867	3605	4077	3237	3156	2842	2420	2420
		23	6801	2651	6098	2298	5325	1939	4457	1563	3439	1150
		25	6839	2999	6142	2648	5375	2282	4515	1909	3509	1503
	23	27	6468	3329	5769	2979	4999	2619	4130	2244	3083	1822
		29	6803	3653	6114	3307	5359	2954	4509	2588	3519	2192
		31	6703	3972	6018	3626	5265	3273	4419	2907	3429	2514

TA 11			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	4490	3518	3587	3040	2592	3525	1933	1933	1502	1502
		23	4462	3966	3566	3488	2767	2767	2347	2347	1925	1925
		25	4443	4407	3555	3932	3170	3170	2753	2753	2336	2336
		27	4378	4378	3977	4440	3566	3566	3154	3154	2742	2742
		29	4776	4776	4367	4876	3958	3958	3549	3549	3140	3140
		31	5158	5158	4751	5305	4345	4345	3939	3939	3533	3533
	17	21	5651	3521	4762	3050	3800	2572	2731	2082	1426	1426
		23	5681	3966	4800	3500	3844	3025	2783	2538	1925	1925
		25	5640	4407	4762	3941	3814	3473	2759	2759	2336	2336
		27	5621	4845	4751	4383	3805	3805	3154	3154	2742	2742
		29	5550	5274	4686	4815	3958	3958	3549	3549	3140	3140
		31	5520	5520	4751	5305	4345	4345	3939	3939	3533	3533
	19	21	7025	3503	6147	3040	5198	2572	4168	2085	3023	1598
		23	6987	3963	6112	3500	5171	3034	4146	2566	3007	2067
		25	6954	4404	6084	3944	5149	3482	4130	3013	2999	2529
		27	6916	4842	6049	4383	5119	3923	4105	3451	2979	2979
		29	6935	5308	6013	4818	5089	4361	4084	3896	3140	3140
		31	6905	5731	5992	5247	5073	4790	4073	4073	3533	3533
	21	21	8355	3473	7480	3010	6542	2547	5526	2082	4416	1610
		23	8456	3978	7524	3485	6591	3025	5583	2550	4481	2082
		25	8410	4431	7486	3941	6556	3485	5553	3022	4460	2544
		27	8355	4867	7434	4380	6512	3926	5515	3467	4427	3004
		29	8393	5299	7480	4815	6564	4361	5575	3908	4495	3445
		31	8235	5725	7327	5244	6417	4793	5430	4340	4356	3880
	23	23	9890	3941	8963	3454	8033	2998	7033	2538	5948	2079
		25	9931	4407	9009	3923	8085	3470	7093	3001	6016	2541
		27	9429	4860	8513	4377	7595	3923	6605	3470	5531	3010
		29	9805	5256	8955	4809	8044	4358	7060	3908	5997	3454
		31	9666	5682	8821	5238	7913	4790	6938	4343	5880	3890
		21	4097	3305	3075	2782	2205	2205	1764	1764	1298	1298
5	15	23	4075	3756	3059	3232	2631	2631	2200	2200	1758	1758
		25	4062	4062	3465	3868	3045	3045	2622	2622	2194	2194
		27	4280	4280	3865	4316	3451	3451	3034	3034	2611	2611
		29	4670	4670	4261	4757	3849	3849	3437	3437	3020	3020
		31	5057	5057	4648	5189	4242	4242	3833	3833	3421	3421
		21	5307	3333	4345	2840	3247	2313	1799	1680	1298	1298
	17	23	5343	3783	4389	3293	3304	2773	2200	2200	1758	1758
		25	5305	4227	4356	3737	3277	3220	2622	2622	2194	2194
		27	5291	4666	4348	4179	3451	3451	3034	3034	2611	2611
		29	5223	5098	4285	4611	3849	3849	3437	3437	3020	3020
		31	5196	5196	4648	5189	4242	4242	3833	3833	3421	3421
		21	6717	3336	5785	2858	4760	2353	3587	1835	2085	1223
	19	23	6681	3798	5755	3320	4735	2830	3574	2316	2077	1695
		25	6651	4243	5733	3768	4719	3281	3563	2767	2077	2077
		27	6616	4678	5700	4200	4691	3710	3544	3183	2611	2611
		29	6580	5113	5670	4644	4667	4160	3525	3525	3020	3020
		31	6553	5542	5651	5073	4656	4596	3833	3833	3421	3421
		21	8069	3317	7153	2846	6155	2368	5051	1878	3767	1336
	21	23	8110	3792	7202	3323	6212	2837	5119	2347	3868	1832
		25	8069	4246	7167	3780	6182	3308	5095	2812	3852	2298
		27	8017	4684	7120	4221	6142	3753	5059	3269	3825	2760
		29	8063	5119	7172	4657	6202	4191	5130	3713	3906	3208
		31	7908	5548	7019	5089	6054	4623	4986	4145	3762	3640
		23	9563	3765	8663	3302	7690	2837	6627	2362	5449	1863
	23	25	9609	4233	8715	3774	7747	3299	6695	2827	5528	2343
		27	9107	4684	8216	4227	7251	3762	6196	3290	5021	2794
		29	9552	5119	8669	4663	7714	4203	6673	3740	5523	3260
		31	9413	5545	8535	5095	7586	4638	6551	4173	5403	3698
		21	3497	2992	2091	2313	1998	1998	1458	1458	616	616
		23	3478	3442	2895	3208	2453	2453	1998	1998	1475	1475
7	15	25	3743	3743	3318	3704	2887	2887	2448	2448	1993	1993
		27	4149	4149	3729	4163	3307	3307	2879	2879	2442	2442
		29	4547	4547	4133	4614	3715	3715	3296	3296	2870	2870
		31	4939	4939	4528	5055	4116	4116	3702	3702	3285	3285
		21	4825	3080	3699	2526	2170	1838	1458	1458	616	616
		23	4869	3533	3756	2986	2260	2260	1998	1998	1475	1475
	17	25	4836	3981	3726	3430	2887	2887	2448	2448	1993	1993
		27	4825	4419	3726	3874	3307	3307	2879	2879	2442	2442
		29	4760	4760	4133	4614	3715	3715	3296	3296	2870	2870
		31	4735	4735	4528	5055	4116	4116	3702	3702	3285	3285
		21	6305	3123	5277	2608	4078	2045	2464	1373	616	616
		23	6275	3585	5253	3074	4062	2526	2456	1844	1475	1475
	19	25	6251	4030	5231	3521	4051	2977	2456	2310	1993	1993
		27	6218	4459	5204	3944	4029	3378	2879	2879	2442	2442
		29	6185	4906	5179	4401	4010	3862	3296	3296	2870	2870
		31	6166	5335	5166	4836	4004	4004	3702	3702	3285	3285
		21	7698	3123	6714	2630	5607	2118	4312	1555	2527	864
		23	7750	3600	6771	3110	5675	2590	4397	2045	2669	1363
	21	25	7712	4057	6739	3573	5648	3065	4381	2511	2661	1844
		27	7663	4498	6698	4014	5613	3512	4351	2970	2636	2304
		29	7717	4937	6758	4453	5684	3957	4435	3421	2770	2770
		31	7562	5363	6605	4885	5534	4386	4282	3850	3285	3285
		23	9230	3591	8276	3113	7227	2627	6049	2118	4667	1558
		25	9282	4063	8336	3588	7295	3092	6128	2587	4762	2036
	23	27	8778	4510	7829	4036	6785	3549	5605	3040	4184	2468
		29	9233	4949	8298	4480	7273	4002	6120	3506	4776	2970
		31	9097	5381	8167	4912	7145	4434	5997	3938	4653	3406

TA 15			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	6853	5194	5475	4488	3957	5204	2950	2950	2293	2293
		23	6811	5854	5442	5149	4223	4223	3582	3582	2937	2937
		25	6782	6506	5426	5805	4839	4839	4202	4202	3566	3566
		27	6682	6682	6070	6555	5442	5442	4814	4814	4186	4186
		29	7290	7290	6665	7197	6041	6041	5417	5417	4793	4793
		31	7872	7872	7252	7831	6632	6632	6012	6012	5392	5392
	17	21	8625	5198	7269	4502	5800	3796	4169	3073	2176	2176
		23	8671	5854	7327	5167	5867	4466	4248	3747	2937	2937
		25	8608	6506	7269	5818	5821	5126	4211	4211	3566	3566
		27	8579	7152	7252	6470	5808	5778	4814	4814	4186	4186
		29	8471	7786	7152	7108	6041	6041	5417	5417	4793	4793
		31	8425	8415	7252	7831	6632	6632	6012	6012	5392	5392
	19	21	10722	5171	9382	4488	7934	3796	6362	3078	4614	2359
		23	10664	5850	9328	5167	7893	4479	6328	3787	4589	3051
		25	10614	6501	9287	5823	7860	5140	6303	4448	4577	3733
		27	10556	7148	9233	6470	7814	5791	6266	5095	4548	4520
		29	10585	7835	9178	7112	7768	6438	6233	5751	4793	4793
		31	10539	8460	9145	7746	7743	7072	6216	6216	5392	5392
	21	21	12753	5126	11417	4443	9986	3760	8434	3073	6740	2377
		23	12906	5872	11484	5144	10061	4466	8521	3765	6840	3073
		25	12836	6541	11425	5818	10006	5144	8475	4461	6807	3756
		27	12753	7184	11346	6465	9940	5796	8417	5117	6757	4434
		29	12811	7822	11417	7108	10019	6438	8509	5769	6861	5086
		31	12569	8451	11184	7741	9794	7076	8288	6407	6649	5728
	23	23	15095	5818	13680	5099	12262	4425	10735	3747	9079	3069
		25	15157	6506	13751	5791	12341	5122	10826	4430	9183	3751
		27	14392	7175	12994	6461	11592	5791	10081	5122	8442	4443
		29	14966	7759	13668	7099	12278	6434	10776	5769	9154	5099
		31	14754	8388	13464	7732	12078	7072	10589	6411	8975	5742
		21	6254	4879	4693	4106	3366	3366	2692	2692	1980	1980
5	15	23	6220	5544	4668	4771	4015	4015	3358	3358	2684	2684
		25	6199	6196	5288	5710	4647	4647	4003	4003	3349	3349
		27	6532	6532	5900	6371	5267	5267	4631	4631	3986	3986
		29	7127	7127	6503	7022	5875	5875	5247	5247	4610	4610
		31	7718	7718	7094	7660	6474	6474	5850	5850	5222	5222
		21	8101	4920	6632	4192	4955	3414	2746	2480	1980	1980
	17	23	8155	5584	6699	4861	5043	4093	3358	3358	2684	2684
		25	8097	6240	6649	5517	5001	4753	4003	4003	3349	3349
		27	8076	6887	6636	6169	5267	5267	4631	4631	3986	3986
		29	7972	7525	6541	6807	5875	5875	5247	5247	4610	4610
		31	7930	7930	7094	7660	6474	6474	5850	5850	5222	5222
		21	10252	4924	8829	4219	7265	3473	5475	2709	3183	1806
	19	23	10198	5607	8783	4902	7227	4178	5455	3419	3170	2502
		25	10152	6263	8750	5562	7202	4843	5438	4084	3170	3170
		27	10098	6905	8700	6200	7161	5477	5409	4699	3986	3986
		29	10044	7548	8654	6856	7123	6142	5380	5380	4610	4610
		31	10002	8181	8625	7489	7106	6784	5850	5850	5222	5222
		21	12316	4897	10918	4201	9395	3495	7710	2772	5750	1972
	21	23	12378	5598	10993	4906	9482	4187	7814	3464	5904	2705
		25	12316	6267	10938	5580	9436	4884	7776	4151	5879	3392
		27	12237	6914	10868	6231	9374	5540	7722	4825	5837	4075
		29	12307	7557	10947	6874	9466	6187	7830	5481	5962	4735
		31	12070	8190	10714	7512	9241	6824	7610	6119	5742	5373
		23	14596	5558	13223	4875	11737	4187	10115	3486	8317	2750
	23	25	14666	6249	13302	5571	11825	4870	10219	4174	8438	3459
		27	13901	6914	12540	6240	11067	5553	9457	4857	7664	4124
		29	14579	7557	13231	6883	11775	6204	10185	5522	8430	4812
		31	14367	8186	13027	7521	11579	6847	9998	6160	8246	5459
		21	5338	4416	3191	3414	3050	3050	2226	2226	940	940
		23	5309	5081	4419	4735	3745	3745	3050	3050	2251	2251
7	15	25	5713	5713	5064	5468	4406	4406	3736	3736	3041	3041
		27	6333	6333	5692	6146	5047	5047	4394	4394	3728	3728
		29	6940	6940	6308	6811	5671	5671	5030	5030	4381	4381
		31	7539	7539	6911	7462	6283	6283	5650	5650	5014	5014
		21	7364	4547	5646	3729	3312	2714	2226	2226	940	940
		23	7431	5216	5733	4407	3449	3410	3050	3050	2251	2251
	17	25	7381	5877	5688	5063	4406	4406	3736	3736	3041	3041
		27	7364	6523	5688	5719	5047	5047	4394	4394	3728	3728
		29	7265	7166	6308	6811	5671	5671	5030	5030	4381	4381
		31	7227	7227	6911	7462	6283	6283	5650	5650	5014	5014
		21	9624	4610	8055	3850	6224	3019	3761	2026	940	940
		23	9578	5292	8018	4538	6199	3729	3749	2723	2251	2179
	19	25	9540	5948	7984	5198	6183	4394	3749	3410	3041	3041
		27	9491	6582	7943	5823	6149	4987	4394	4394	3728	3728
		29	9441	7242	7905	6497	6120	5701	5030	5030	4381	4381
		31	9411	7876	7885	7139	6112	6112	5650	5650	5014	5014
		21	11750	4610	10248	3882	8559	3127	6582	2296	3857	1276
		23	11829	5315	10335	4592	8663	3823	6711	3019	4073	2013
	21	25	11771	5989	10285	5274	8621	4524	6686	3707	4061	2723
		27	11696	6640	10223	5926	8567	5185	6640	4385	4023	3401
		29	11779	7287	10314	6573	8675	5841	6769	5050	4227	4093
		31	11542	7916	10081	7211	8446	6474	6536	5683	5014	5014
		23	14088	5301	12632	4596	11030	3877	9233	3127	7123	2300
		25	14167	5998	12723	5297	11134	4565	9353	3819	7269	3006
	23	27	13397	6658	11949	5957	10356	5239	8554	4488	6387	3644
		29	14092	7305	12665	6613	11101	5908	9341	5176	7290	4385
		31	13884	7943	12465	7251	10905	6546	9154	5814	7102	5027

TA 19			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	9767	6953	7804	6008	5640	6966	4204	4204	3268	3268
		23	9708	7837	7757	6893	6019	6019	5106	5106	4187	4187
		25	9666	8709	7733	7771	6897	6897	5989	5989	5082	5082
		27	9524	9524	8652	8775	7757	7757	6861	6861	5966	5966
		29	10390	10390	9500	9635	8611	8611	7721	7721	6832	6832
		31	11220	11220	10336	10483	9453	9453	8569	8569	7686	7686
	17	21	12293	6959	10360	6027	8267	5082	5942	4114	3101	2995
		23	12358	7837	10443	6917	8362	5978	6055	5016	4187	4187
		25	12270	8709	10360	7789	8296	6863	6001	5900	5082	5082
		27	12228	9575	10336	8661	8279	7735	6861	6861	5966	5966
		29	12074	10423	10194	9515	8611	8611	7721	7721	6832	6832
		31	12009	11265	10336	10483	9453	9453	8569	8569	7686	7686
	19	21	15282	6923	13373	6008	11309	5082	9067	4120	6577	3158
		23	15199	7831	13295	6917	11250	5996	9020	5070	6541	4084
		25	15128	8703	13236	7795	11202	6881	8984	5954	6523	4998
		27	15045	9569	13159	8661	11137	7753	8931	6820	6482	6051
		29	15086	10489	13082	9521	11072	8619	8883	7699	6832	6832
		31	15021	11325	13035	10369	11036	9467	8860	8559	7686	7686
	21	21	18176	6863	16272	5948	14232	5034	12020	4114	9607	3182
		23	18395	7861	16367	6887	14339	5978	12145	5040	9749	4114
		25	18295	8757	16284	7789	14262	6887	12080	5972	9702	5028
		27	18176	9617	16172	8655	14167	7759	11997	6851	9631	5936
		29	18259	10471	16272	9515	14280	8619	12127	7723	9779	6808
		31	17915	11313	15940	10363	13960	9473	11813	8577	9476	7668
	23	23	21515	7789	19498	6826	17476	5924	15300	5016	12940	4108
		25	21604	8709	19599	7753	17589	6857	15430	5930	13088	5022
		27	20512	9605	18520	8649	16521	7753	14369	6857	12032	5948
		29	21331	10387	19481	9503	17500	8613	15359	7723	13046	6826
		31	21028	11229	19190	10351	17215	9467	15092	8583	12791	7687
		21	8913	6532	6689	5497	4798	4751	3837	3837	2823	2823
5	15	23	8866	7422	6654	6387	5723	5723	4786	4786	3825	3825
		25	8836	8294	7537	7644	6624	6624	5705	5705	4774	4774
		27	9310	9310	8409	8529	7508	7508	6600	6600	5681	5681
		29	10158	10158	9269	9401	8373	8373	7478	7478	6571	6571
		31	11000	11000	10111	10255	9227	9227	8338	8338	7442	7442
		21	11546	6586	9453	5612	7063	4571	3914	3320	2823	2823
	17	23	11623	7476	9548	6508	7187	5479	4786	4565	3825	3825
		25	11540	8354	9476	7386	7128	6363	5705	5705	4774	4774
		27	11510	9220	9459	8258	7508	7508	6600	6600	5681	5681
		29	11362	10074	9322	9112	8373	8373	7478	7478	6571	6571
		31	11303	10916	10111	10255	9227	9227	8338	8338	7442	7442
		21	14612	6592	12584	5648	10354	4649	7804	3627	4537	2418
	19	23	14535	7506	12519	6562	10301	5593	7774	4577	4519	3350
		25	14470	8384	12471	7446	10265	6484	7751	5467	4519	4270
		27	14393	9244	12400	8300	10206	7332	7709	6291	5681	5681
		29	14315	10104	12335	9178	10152	8222	7668	7217	6571	6571
		31	14256	10952	12293	10026	10129	9082	8338	8338	7442	7442
		21	17553	6556	15561	5624	13390	4679	10989	3711	8196	2640
	21	23	17642	7494	15668	6568	13515	5606	11137	4637	8415	3621
		25	17553	8390	15590	7470	13450	6538	11084	5557	8379	4541
		27	17441	9256	15490	8342	13361	7416	11006	6460	8320	5455
		29	17541	10116	15602	9202	13491	8282	11161	7338	8498	6339
		31	17203	10964	15270	10056	13171	9136	10846	8192	8184	7193
		23	20803	7440	18846	6526	16729	5606	14416	4667	11854	3681
	23	25	20904	8366	18959	7458	16854	6520	14565	5587	12026	4631
		27	19813	9256	17874	8354	15774	7434	13479	6502	10923	5521
		29	20779	10116	18858	9214	16782	8306	14517	7392	12015	6442
		31	20477	10958	18567	10068	16504	9166	14250	8246	11754	7308
		21	7608	5912	4548	4571	4347	4347	3173	3173	1340	1340
		23	7567	6802	6298	6339	5337	5337	4347	4347	3208	3208
7	15	25	8142	8114	7217	7320	6280	6280	5325	5325	4335	4335
		27	9026	9026	8112	8228	7193	7193	6262	6262	5313	5313
		29	9892	9892	8990	9118	8083	8083	7170	7170	6244	6244
		31	10745	10745	9850	9990	8955	8955	8053	8053	7146	7146
		21	10496	6087	8047	4992	4720	3633	3173	3049	1340	1340
		23	10591	6983	8172	5900	4916	4565	4347	4347	3208	3208
	17	25	10520	7867	8107	6778	6280	6111	5325	5325	4335	4335
		27	10496	8733	8107	7656	7193	7193	6262	6262	5313	5313
		29	10354	9593	8990	9118	8083	8083	7170	7170	6244	6244
		31	10301	10301	9850	9990	8955	8955	8053	8053	7146	7146
		21	13716	6171	11481	5154	8872	4042	5361	2713	1340	1335
		23	13651	7085	11427	6075	8836	4992	5343	3645	3208	2917
	19	25	13598	7963	11380	6959	8812	5882	5343	4565	4335	4258
		27	13527	8811	11321	7795	8765	6676	6262	6231	5313	5313
		29	13456	9695	11267	8697	8723	7632	7170	7157	6244	6244
		31	13414	10543	11238	9557	8711	8498	8053	8053	7146	7146
		21	16747	6171	14606	5197	12198	4186	9382	3073	5497	1708
		23	16859	7115	14731	6147	12347	5118	9565	4042	5806	2694
	21	25	16776	8017	14659	7061	12287	6057	9530	4962	5788	3645
		27	16670	8889	14570	7933	12210	6941	9465	5870	5734	4553
		29	16788	9756	14701	8799	12364	7819	9648	6760	6025	5479
		31	16450	10598	14369	9653	12038	8667	9316	7608	7146	6947
		23	20080	7097	18004	6153	15721	5191	13159	4186	10152	3079
		25	20192	8029	18134	7091	15869	6111	13331	5112	10360	4024
	23	27	19095	8913	17031	7975	14760	7013	12192	6008	9103	4878
		29	20086	9780	18051	8853	15822	7909	13313	6929	10390	5870
		31	19789	10634	17767	9707	15543	8763	13046	7783	10123	6730

TA 24			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	13627	9382	10888	8108	7868	9400	5866	5754	4559	4472
		23	13544	10575	10822	9301	8398	8238	7124	6988	5841	5470
		25	13486	11752	10789	10486	9622	9439	8356	8197	7090	6955
		27	13287	12912	12071	11841	10822	10616	9573	9390	8323	8165
		29	14495	14219	13254	13002	12013	11784	10772	10567	9531	9350
		31	15654	15355	14421	14146	13188	12937	11955	11728	10723	10518
	17	21	17151	9390	14454	8132	11533	6858	8290	5551	4327	4042
		23	17242	10575	14570	9333	11666	8067	8447	6769	5841	5730
		25	17118	11752	14454	10510	11575	9260	8373	7962	7090	6955
		27	17060	12921	14421	11687	11550	10437	9573	9390	8323	8165
		29	16845	14065	14222	12839	12013	11784	10772	10567	9531	9350
		31	16754	15201	14421	14146	13188	12937	11955	11728	10723	10518
	19	21	21321	9341	18657	8108	15778	6858	12650	5559	9175	4261
		23	21205	10567	18549	9333	15695	8092	12584	6842	9126	5511
		25	21106	11744	18467	10518	15629	9285	12534	8035	9101	6744
		27	20990	12912	18359	11687	15538	10461	12460	9203	9043	8165
		29	21048	14154	18251	12848	15447	11630	12394	10388	9531	9350
		31	20957	15282	18185	13992	15397	12774	12361	11549	10723	10518
	21	21	25358	9260	22703	8027	19857	6793	16770	5551	13403	4293
		23	25665	10608	22835	9293	20005	8067	16944	6801	13602	5551
		25	25524	11817	22719	10510	19898	9293	16853	8059	13536	6785
		27	25358	12977	22562	11679	19766	10470	16737	9244	13436	8010
		29	25474	14130	22703	12839	19923	11630	16919	10421	13643	9187
		31	24994	15266	22239	13984	19476	12783	16481	11573	13221	10348
	23	23	30016	10510	27203	9212	24382	7994	21346	6769	18053	5543
		25	30141	11752	27344	10461	24539	9252	21528	8002	18260	6777
		27	28618	12961	25838	11671	23050	10461	20047	9252	16787	8027
		29	29760	14016	27179	12823	24415	11622	21429	10421	18202	9212
		31	29338	15152	26773	13968	24018	12774	21056	11581	17846	10372
		21	12435	8814	9333	7418	6693	6412	5353	5251	3938	3863
5	15	23	12369	10015	9283	8619	7984	7832	6677	6550	5336	5235
		25	12328	11192	10516	10315	9242	9066	7959	7808	6660	6533
		27	12989	12742	11732	11508	10474	10275	9208	9033	7926	7775
		29	14173	13903	12932	12685	11682	11460	10433	10234	9167	8992
		31	15347	15055	14106	13838	12874	12628	11633	11411	10383	10186
		21	16109	8887	13188	7572	9854	6168	5461	4480	3938	3863
	17	23	16216	10088	13320	8781	10028	7394	6677	6160	5336	5235
		25	16100	11273	13221	9966	9945	8587	7959	7808	6660	6533
		27	16059	12442	13196	11143	10474	10177	9208	9033	7926	7775
		29	15852	13594	13006	12296	11682	11460	10433	10234	9167	8992
		31	15769	14730	14106	13838	12874	12628	11633	11411	10383	10186
		21	20386	8895	17556	7621	14446	6274	10888	4894	6329	3263
	19	23	20278	10129	17465	8854	14371	7548	10847	6176	6304	4521
		25	20187	11314	17399	10048	14322	8749	10814	7377	6304	5762
		27	20080	12474	17300	11200	14239	9893	10756	8489	7926	7775
		29	19972	13635	17209	12385	14164	11094	10698	9739	9167	8992
		31	19890	14779	17151	13529	14131	12255	11633	11411	10383	10186
		21	24490	8846	21710	7588	18682	6314	15331	5008	11434	3563
	21	23	24614	10112	21859	8863	18855	7564	15538	6257	11740	4886
		25	24490	11322	21751	10080	18764	8822	15463	7499	11691	6128
		27	24333	12490	21611	11257	18640	10007	15356	8717	11608	7361
		29	24473	13651	21768	12417	18822	11176	15571	9901	11856	8554
		31	24002	14795	21304	13570	18376	12328	15132	11054	11418	9707
		23	29024	10039	26293	8806	23340	7564	20113	6298	16539	4967
	23	25	29164	11289	26451	10064	23513	8798	20320	7540	16779	6249
		27	27642	12490	24936	11273	22008	10031	18806	8773	15240	7450
		29	28991	13651	26310	12434	23414	11208	20254	9974	16762	8692
		31	28569	14787	25904	13586	23025	12369	19881	11127	16398	9861
		21	10615	7978	6346	6168	6065	5949	4426	4342	1870	1834
		23	10557	9179	7446	8554	7446	7304	6065	5949	4476	4391
7	15	25	11360	10948	10069	9877	8762	8595	7430	7288	6048	5933
		27	12592	12352	11318	11103	10036	9845	8737	8570	7413	7272
		29	13800	13537	12543	12304	11277	11062	10003	9812	8712	8546
		31	14992	14706	13742	13481	12493	12255	11235	11021	9970	9780
		21	14644	8213	11227	6736	6586	4902	4426	4115	1870	1834
		23	14777	9423	11401	7962	6859	6160	6065	5949	4476	4391
	17	25	14677	10616	11310	9147	8762	8246	7430	7288	6048	5933
		27	14644	11784	11310	10332	10036	9845	8737	8570	7413	7272
		29	14446	12945	12543	12304	11277	11062	10003	9812	8712	8546
		31	14371	14097	13742	13481	12493	12255	11235	11021	9970	9780
		21	19137	8327	16018	6955	12377	5454	7479	3660	1870	1802
		23	19046	9561	15943	8197	12328	6736	7454	4918	4476	3936
	19	25	18971	10746	15877	9390	12295	7937	7454	6160	6048	5746
		27	18872	11890	15794	10518	12228	9009	8737	8408	7413	7272
		29	18773	13083	15720	11736	12170	10299	10003	9658	8712	8546
		31	18715	14227	15678	12896	12154	11468	11235	11021	9970	9780
		21	23365	8327	20378	7012	17019	5649	13089	4147	7670	2305
		23	23522	9601	20552	8294	17226	6907	13345	5454	8100	3636
	21	25	23406	10819	20452	9528	17143	8173	13296	6696	8075	4918
		27	23257	11995	20328	10705	17035	9366	13205	7921	8001	6144
		29	23422	13164	20510	11874	17250	10551	13461	9122	8406	7394
		31	22951	14300	20047	13026	16795	11695	12998	10267	9970	9374
		23	28014	9577	25119	8303	21933	7004	18359	5649	14164	4155
		25	28171	10835	25301	9569	22140	8246	18599	6899	14454	5430
	23	27	26641	12028	23762	10762	20593	9463	17010	8108	12700	6582
		29	28023	13197	25185	11947	22074	10672	18574	9350	14495	7921
		31	27609	14349	24788	13099	21685	11825	18202	10502	14123	9082

TA 33			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	17092	11979	13657	10352	9869	12002	7358	7347	5718	5710
		23	16988	13502	13574	11875	10533	10518	8935	8922	7327	7316
		25	16916	15005	13533	13388	12069	12051	10482	10466	8894	8881
		27	16667	16486	15141	15119	13574	13554	12007	11989	10440	10424
		29	18182	18155	16625	16600	15069	15046	13512	13492	11955	11937
		31	19635	19606	18089	18062	16542	16518	14996	14974	13450	13430
	17	21	21513	11989	18130	10383	14467	8756	10399	7088	5428	5160
		23	21627	13502	18275	11917	14633	10300	10596	8642	7327	7316
		25	21472	15005	18130	13419	14519	11823	10502	10165	8894	8881
		27	21399	16497	18089	14922	14487	13326	12007	11989	10440	10424
		29	21129	17958	17839	16393	15069	15046	13512	13492	11955	11937
		31	21015	19409	18089	18062	16542	16518	14996	14974	13450	13430
	19	21	26744	11927	23402	10352	19790	8756	15868	7098	11509	5440
		23	26598	13492	23267	11917	19687	10331	15785	8735	11447	7036
		25	26474	14994	23163	13430	19604	11854	15722	10259	11416	8611
		27	26329	16486	23028	14922	19490	13357	15629	11751	11343	10424
		29	26401	18072	22893	16404	19375	14849	15546	13264	11955	11937
		31	26287	19512	22810	17865	19313	16310	15504	14746	13450	13430
	21	21	31808	11823	28477	10248	24907	8673	21036	7088	16812	5482
		23	32192	13544	28643	11865	25094	10300	21254	8684	17061	7088
		25	32016	15088	28497	13419	24959	11865	21140	10290	16978	8663
		27	31808	16569	28300	14911	24793	13367	20994	11803	16854	10228
		29	31953	18041	28477	16393	24990	14849	21223	13305	17113	11730
		31	31351	19492	27896	17854	24429	16321	20673	14777	16584	13212
	23	21	37651	13419	34122	11761	30583	10207	26775	8642	22644	7077
		23	37806	15005	34299	13357	30781	11813	27003	10217	22904	8653
		25	35897	16549	32410	14901	28913	13357	25145	11813	21057	10248
		27	37329	17896	34091	16372	30625	14839	26879	13305	22831	11761
		29	36800	19346	33583	17834	30127	16310	26412	14787	22385	13243
		31	35598	11253	31706	9471	8396	8186	6714	6704	4940	4932
5	15	23	15515	12787	11644	11005	10015	10000	8375	8362	6694	6684
		25	15463	14290	13190	13171	11592	11575	9983	9969	8354	8342
		27	16293	16269	14716	14694	13138	13119	11551	11533	9942	9927
		29	17777	17751	16221	16196	14653	14632	13086	13067	11499	11481
		31	19251	19222	17694	17668	16148	16124	14591	14569	13024	13005
		21	20206	11347	16542	9668	12360	7875	6849	5720	4940	4932
	17	23	20341	12880	16708	11212	12578	9440	8375	7865	6694	6684
		25	20195	14393	16584	12725	12474	10963	9983	9969	8354	8342
		27	20143	15885	16553	14227	13138	12994	11551	11533	9942	9927
		29	19884	17357	16314	15699	14653	14632	13086	13067	11499	11481
		31	19780	18808	17694	17668	16148	16124	14591	14569	13024	13005
		21	25571	11357	22022	9730	18120	8010	13657	6248	7939	4166
	19	23	25436	12932	21908	11305	18026	9637	13605	7886	7908	5772
		25	25322	14445	21825	12829	17964	11171	13564	9419	7908	7357
		27	25187	15927	21700	14300	17860	12632	13491	10839	9942	9927
		29	25052	17409	21586	15813	17767	14165	13419	12435	11499	11481
		31	24948	18870	21513	17274	17725	15647	14591	14569	13024	13005
		21	30718	11295	27231	9689	23433	8062	19230	6394	14342	4549
	21	23	30874	12911	27418	11316	23651	9658	19490	7989	14726	6238
		25	30718	14455	27283	12870	23537	11264	19396	9575	14664	7824
		27	30521	15948	27107	14373	23381	12777	19261	11129	14560	9399
		29	30698	17429	27304	15854	23610	14269	19531	12642	14871	10922
		31	30106	18891	26723	17326	23049	15740	18981	14113	14321	12393
		23	36405	12818	32981	11243	29276	9658	25228	8041	20745	6342
	23	25	36582	14414	33178	12849	29494	11233	25488	9627	21046	7979
		27	34672	15948	31279	14393	27605	12808	23589	11202	19116	9513
		29	36364	17429	33001	15875	29369	14310	25405	12735	21025	11098
		31	35835	18880	32493	17347	28881	15792	24938	14207	20569	12590
		21	13315	10186	7960	7875	7607	7596	5552	5544	2345	2342
		23	13242	11720	11021	10922	9340	9326	7607	7596	5614	5606
7	15	25	14249	13979	12630	12611	10990	10974	9319	9305	7586	7575
		27	15795	15771	14197	14176	12588	12569	10959	10943	9299	9285
		29	17310	17284	15733	15709	14145	14124	12547	12528	10928	10912
		31	18805	18777	17238	17212	15670	15647	14093	14072	12505	12487
		21	18369	10487	14083	8601	8261	6259	5552	5254	2345	2342
		23	18535	12031	14301	10165	8603	7865	7607	7596	5614	5606
	17	25	18410	13554	14186	11678	10990	10528	9319	9305	7586	7575
		27	18369	15046	14186	13191	12588	12569	10959	10943	9299	9285
		29	18120	16528	15733	15709	14145	14124	12547	12528	10928	10912
		31	18026	17999	17238	17212	15670	15647	14093	14072	12505	12487
		21	24004	10632	20091	8881	15525	6963	9382	4673	2345	2300
		23	23890	12207	19998	10466	15463	8601	9350	6280	5614	5026
	19	25	23796	13720	19915	11989	15421	10134	9350	7865	7586	7337
		27	23672	15181	19811	13430	15338	11502	10959	10735	9299	9285
		29	23547	16704	19718	14984	15266	13150	12547	12331	10928	10912
		31	23475	18165	19666	16466	15245	14642	14093	14072	12505	12487
		21	29307	10632	25561	8953	21347	7212	16418	5295	9620	2943
		23	29504	12259	25778	10590	21607	8818	16739	6963	10160	4642
	21	25	29359	13813	25654	12165	21503	10435	16677	8549	10129	6280
		27	29172	15316	25498	13668	21368	11958	16563	10114	10035	7844
		29	29380	16808	25727	15160	21638	13471	16885	11647	10544	9440
		31	28788	18258	25145	16632	21067	14932	16304	13108	12505	11968
		23	35139	12228	31507	10601	27512	8943	23028	7212	17767	5306
		25	35336	13834	31735	12217	27771	10528	23329	8808	18130	6932
	23	27	33417	15357	29805	13740	25830	12082	21337	10352	15930	8404
		29	35150	16849	31590	15253	27688	13626	23298	11937	18182	10114
		31	34631	18321	31092	16725	27200	15098	22831	13409	17715	11595

TA 40			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	21424	15078	17119	13030	12371	15108	9223	9223	7167	7167
		23	21294	16996	17015	14948	13203	13203	11200	11200	9184	9184
		25	21203	18887	16963	16852	15128	15128	13138	13138	11148	11148
		27	20891	20752	18979	19030	17015	17015	15050	15050	13086	13086
		29	22790	22790	20839	20896	18888	18888	16937	16937	14985	14985
		31	24611	24611	22673	22735	20735	20735	18797	18797	16859	16859
	17	21	26966	15091	22725	13070	18133	11022	13034	8922	6803	6496
		23	27109	16996	22907	15000	18341	12965	13281	10878	9184	9184
		25	26914	18887	22725	16891	18198	14883	13164	12796	11148	11148
		27	26823	20765	22673	18783	18159	16774	15050	15050	13086	13086
		29	26485	22604	22361	20635	18888	18888	16937	16937	14985	14985
		31	26341	24430	22673	22735	20735	20735	18797	18797	16859	16859
	19	21	33522	15013	29333	13030	24807	11022	19889	8935	14426	6848
		23	33340	16983	29164	15000	24676	13004	19785	10996	14348	8857
		25	33184	18874	29034	16904	24572	14922	19707	12913	14309	10839
		27	33002	20752	28865	18783	24429	16813	19590	14791	14218	13122
		29	33093	22748	28696	20648	24286	18691	19486	16696	14985	14985
		31	32950	24561	28592	22487	24208	20530	19434	18561	16859	16859
	21	21	39870	14883	35694	12900	31220	10917	26367	8922	21073	6900
		23	40351	17048	35902	14935	31454	12965	26641	10930	21385	8922
		25	40130	18991	35720	16891	31285	14935	26498	12952	21281	10904
		27	39870	20857	35473	18770	31076	16826	26315	14857	21125	12874
		29	40052	22709	35694	20635	31324	18691	26602	16748	21450	14765
		31	39298	24535	34966	22474	30621	20543	25912	18600	20787	16630
	23	23	47193	16891	42771	14804	38335	12848	33561	10878	28384	8909
		25	47389	18887	42992	16813	38582	14870	33847	12861	28709	10891
		27	44995	20830	40624	18757	36241	16813	31519	14870	26393	12900
		29	46790	22526	42732	20609	38387	18678	33691	16748	28618	14804
		31	46127	24352	42094	22448	37763	20530	33106	18613	28059	16670
		21	19551	14165	14673	11922	10524	10304	8416	8416	6192	6192
5	15	23	19447	16096	14595	13852	12553	12553	10498	10498	8390	8390
		25	19382	17987	16533	16578	14530	14530	12514	12514	10472	10472
		27	20423	20423	18446	18496	16468	16468	14478	14478	12462	12462
		29	22283	22283	20332	20387	18367	18367	16403	16403	14413	14413
		31	24130	24130	22179	22239	20241	20241	18289	18289	16325	16325
		21	25327	14283	20735	12170	15493	9913	8585	7200	6192	6192
	17	23	25496	16213	20943	14113	15766	11883	10498	9900	8390	8390
		25	25314	18117	20787	16017	15636	13800	12514	12514	10472	10472
		27	25249	19996	20748	17909	16468	16357	14478	14478	12462	12462
		29	24924	21848	20449	19761	18367	18367	16403	16403	14413	14413
		31	24793	23674	22179	22239	20241	20241	18289	18289	16325	16325
		21	32052	14296	27603	12248	22712	10083	17119	7865	9951	5243
	19	23	31883	16278	27460	14230	22595	12130	17054	9926	9912	7265
		25	31740	18183	27356	16148	22517	14061	17002	11857	9912	9261
		27	31571	20048	27200	18000	22387	15900	16911	13643	12462	12462
		29	31402	21913	27057	19904	22270	17830	16820	15652	14413	14413
		31	31272	23752	26966	21743	22218	19696	18289	18289	16325	16325
		21	38504	14217	34133	12196	29372	10148	24104	8048	17977	5726
	21	23	38699	16252	34367	14243	29646	12157	24429	10057	18459	7852
		25	38504	18196	34198	16200	29502	14178	24312	12052	18380	9848
		27	38257	20074	33977	18091	29307	16083	24143	14009	18250	11830
		29	38478	21939	34224	19957	29593	17961	24481	15913	18641	13748
		31	37737	23778	33496	21809	28891	19813	23792	17765	17951	15600
		23	45633	16135	41340	14152	36696	12157	31623	10122	26003	7983
	23	25	45854	18143	41587	16174	36969	14139	31948	12117	26380	10043
		27	43460	20074	39207	18117	34602	16122	29567	14100	23961	11974
		29	45580	21939	41366	19983	36813	18013	31844	16030	26354	13970
		31	44917	23765	40728	21835	36202	19878	31259	17883	25782	15848
		21	16689	12822	9977	9913	9535	9535	6959	6959	2940	2940
		23	16598	14752	13815	13748	11707	11707	9535	9535	7037	7037
7	15	25	17860	17596	15831	15874	13776	13776	11681	11681	9509	9509
		27	19798	19798	17795	17843	15779	15779	13737	13737	11655	11655
		29	21698	21698	19720	19774	17730	17730	15727	15727	13698	13698
		31	23571	23571	21607	21665	19642	19642	17665	17665	15675	15675
		21	23024	13200	17652	10826	10354	7878	6959	6613	2940	2940
		23	23233	15143	17925	12796	10784	9900	9535	9535	7037	7037
	17	25	23076	17061	17782	14700	13776	13252	11681	11681	9509	9509
		27	23024	18939	17782	16604	15779	15779	13737	13737	11655	11655
		29	22712	20804	19720	19774	17730	17730	15727	15727	13698	13698
		31	22595	22595	21607	21665	19642	19642	17665	17665	15675	15675
		21	30088	13383	25184	11178	19460	8765	11759	5883	2940	2896
		23	29945	15365	25067	13174	19382	10826	11720	7904	7037	6326
	19	25	29828	17270	24963	15091	19330	12757	11720	9900	9509	9235
		27	29672	19109	24833	16904	19226	14478	13737	13513	11655	11655
		29	29515	21026	24715	18861	19135	16552	15727	15522	13698	13698
		31	29424	22865	24650	20726	19109	18430	17665	17665	15675	15675
		21	36735	13383	32039	11270	26758	9078	20579	6665	12059	3704
		23	36982	15430	32312	13330	27083	11100	20982	8765	12735	5843
	21	25	36800	17387	32156	15313	26953	13135	20904	10761	12696	7904
		27	36566	19278	31961	17204	26784	15052	20761	12730	12579	9874
		29	36826	21157	32247	19083	27122	16957	21164	14661	13216	11883
		31	36085	22983	31519	20935	26407	18796	20436	16500	15675	15065
		23	44046	15391	39493	13343	34485	11257	28865	9078	22270	6678
		25	44293	17413	39779	15378	34810	13252	29242	11087	22725	8726
	23	27	41886	19330	37359	17296	32377	15209	26745	13030	19967	10578
		29	44059	21209	39597	19200	34706	17152	29203	15026	22790	12730
		31	43408	23061	38972	21052	34094	19004	28618	16878	22205	14596

TA 50			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	25048	17843	20014	15419	14463	17877	10782	10782	8380	8380
		23	24896	20112	19892	17688	15436	15436	13094	13094	10737	10737
		25	24789	22350	19831	19942	17687	17687	15360	15360	13033	13033
		27	24424	24424	22189	22519	19892	19892	17596	17596	15299	15299
		29	26644	26644	24363	24727	22082	22082	19801	19801	17520	17520
		31	28774	28774	26508	26903	24242	24242	21976	21976	19710	19710
	17	21	31526	17858	26568	15466	21200	13042	15238	10557	7954	7687
		23	31694	20112	26781	17750	21443	15342	15527	12873	10737	10737
		25	31465	22350	26568	19988	21276	17611	15391	15142	13033	13033
		27	31359	24572	26508	22226	21230	19849	17596	17596	15299	15299
		29	30964	26748	26143	24418	22082	22082	19801	19801	17520	17520
		31	30796	28909	26508	26903	24242	24242	21976	21976	19710	19710
	19	21	39191	17765	34294	15419	29002	13042	23253	10573	16866	8103
		23	38978	20096	34096	17750	28850	15388	23131	13012	16774	10480
		25	38796	22334	33944	20003	28728	17657	23040	15280	16729	12826
		27	38583	24557	33747	22226	28561	19895	22903	17503	16622	15527
		29	38689	26918	33549	24433	28393	22118	22782	19757	17520	17520
		31	38522	29064	33427	26610	28302	24294	22721	21964	19710	19710
	21	21	46613	17611	41731	15265	36499	12919	30827	10557	24637	8165
		23	47175	20173	41974	17673	36773	15342	31146	12934	25002	10557
		25	46917	22473	41761	19988	36575	17673	30979	15327	24880	12903
		27	46613	24680	41472	22211	36332	19911	30766	17580	24698	15234
		29	46826	26872	41731	24418	36621	22118	31100	19818	25078	17472
		31	45943	29033	40879	26594	35800	24310	30294	22010	24302	19679
	23	23	55175	19988	50004	17518	44818	15203	39237	12873	33184	10542
		25	55403	22350	50263	19895	45107	17596	39571	15219	33564	12888
		27	52605	24649	47495	22195	42370	19895	36849	17596	30857	15265
		29	54703	26656	49958	24387	44879	22103	39389	19818	33458	17518
		31	53928	28817	49213	26563	44149	24294	38704	22025	32804	19726
		21	22858	16762	17155	14107	12303	12193	9840	9840	7239	7239
5	15	23	22736	19047	17063	16392	14676	14676	12273	12273	9809	9809
		25	22660	21285	19329	19618	16987	16987	14630	14630	12242	12242
		27	23877	23877	21565	21887	19253	19253	16927	16927	14569	14569
		29	26051	26051	23770	24125	21474	21474	19177	19177	16851	16851
		31	28211	28211	25930	26316	23664	23664	21382	21382	19086	19086
		21	29610	16901	24242	14401	18113	11730	10037	8520	7239	7239
	17	23	29808	19185	24485	16700	18432	14061	12273	11715	9809	9809
		25	29595	21439	24302	18954	18280	16330	14630	14630	12242	12242
		27	29519	23662	24257	21192	19253	19253	16927	16927	14569	14569
		29	29139	25853	23907	23384	21474	21474	19177	19177	16851	16851
		31	28987	28014	25930	26316	23664	23664	21382	21382	19086	19086
		21	37473	16917	32271	14493	26553	11931	20014	9307	11634	6205
	19	23	37275	19263	32104	16839	26416	14354	19938	11746	11589	8597
		25	37108	21516	31982	19108	26325	16639	19877	14030	11589	10959
		27	36910	23723	31800	21300	26173	18815	19770	16145	14569	14569
		29	36712	25930	31633	23553	26036	21099	19664	18522	16851	16851
		31	36560	28107	31526	25730	25975	23307	21382	21382	19086	19086
		21	45016	16824	39906	14432	34340	12008	28180	9523	21018	6776
	21	23	45244	19232	40180	16855	34659	14385	28561	11900	21580	9292
		25	45016	21532	39982	19170	34492	16778	28424	14262	21489	11653
		27	44727	23754	39723	21408	34264	19031	28226	16577	21337	13999
		29	44985	25961	40012	23615	34598	21254	28622	18830	21793	16268
		31	44119	28138	39161	25807	33777	23445	27815	21022	20987	18460
		23	53350	19093	48331	16747	42902	14385	36971	11977	30401	9446
	23	25	53608	21470	48620	19139	43221	16731	37351	14339	30842	11885
		27	50810	23754	45837	21439	40453	19077	34568	16685	28013	14169
		29	53289	25961	48362	23646	43039	21315	37229	18969	30811	16531
		31	52513	28122	47616	25838	42324	23523	36545	21161	30142	18753
		21	19512	15172	11665	11730	11147	11147	8136	8136	3437	3437
		23	19405	17457	16151	16268	13687	13687	11147	11147	8228	8228
7	15	25	20881	20822	18508	18784	16105	16105	13657	13657	11117	11117
		27	23147	23147	20805	21115	18447	18447	16060	16060	13626	13626
		29	25367	25367	23055	23399	20729	20729	18387	18387	16014	16014
		31	27557	27557	25261	25637	22964	22964	20653	20653	18326	18326
		21	26918	15620	20637	12811	12106	9323	8136	7825	3437	3437
		23	27162	17920	20957	15142	12607	11715	11147	11147	8228	8228
	17	25	26979	20189	20789	17395	16105	15682	13657	13657	11117	11117
		27	26918	22411	20789	19648	18447	18447	16060	16060	13626	13626
		29	26553	24618	23055	23399	20729	20729	18387	18387	16014	16014
		31	26416	26416	25261	25637	22964	22964	20653	20653	18326	18326
		21	35176	15836	29443	13228	22751	10372	13748	6961	3437	3427
		23	35009	18182	29306	15589	22660	12811	13702	9353	8228	7486
	19	25	34872	20436	29184	17858	22599	15095	13702	11715	11117	10928
		27	34690	22612	29032	20003	22477	17133	16060	15990	13626	13626
		29	34507	24881	28895	22319	22371	19587	18387	18367	16014	16014
		31	34401	27057	28819	24526	22341	21809	20653	20653	18326	18326
		21	42947	15836	37457	13336	31283	10743	24059	7887	14098	4383
		23	43236	18259	37777	15774	31663	13135	24531	10372	14889	6915
	21	25	43024	20575	37594	18120	31511	15543	24439	12734	14843	9353
		27	42750	22813	37366	20358	31313	17812	24272	15064	14706	11684
		29	43054	25035	37701	22581	31709	20065	24743	17349	15451	14061
		31	42187	27196	36849	24773	30872	22242	23892	19525	18326	17827
		23	51494	18213	46172	15790	40316	13320	33747	10743	26036	7903
		25	51783	20605	46506	18198	40697	15682	34188	13120	26568	10326
	23	27	48970	22874	43677	20467	37853	17997	31268	15419	23344	12518
		29	51510	25097	46293	22720	40575	20297	34142	17781	26644	15064
		31	50749	27289	45563	24912	39860	22488	33458	19973	25960	17272

COOLING (6 ROWS COIL)

TA 09			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	4017	2932	3210	2534	2320	2938	1729	1729	1344	1344
		23	3993	3305	3190	2907	2476	2476	2100	2100	1722	1722
		25	3976	3672	3180	3277	2837	2837	2463	2463	2090	2090
		27	3917	3917	3559	3700	3190	3190	2822	2822	2454	2454
		29	4273	4273	3907	4063	3541	3541	3176	3176	2810	2810
		31	4615	4615	4251	4421	3888	3888	3524	3524	3161	3161
	17	21	5056	2934	4261	2541	3400	2143	2444	1735	1276	1263
		23	5083	3305	4295	2917	3439	2521	2490	2115	1722	1722
		25	5046	3672	4261	3284	3412	2894	2468	2468	2090	2090
		27	5029	4038	4251	3652	3405	3262	2822	2822	2454	2454
		29	4966	4395	4193	4012	3541	3541	3176	3176	2810	2810
		31	4939	4750	4251	4421	3888	3888	3524	3524	3161	3161
	19	21	6285	2919	5500	2534	4651	2143	3729	1737	2705	1332
		23	6251	3302	5468	2917	4627	2529	3710	2138	2690	1722
		25	6222	3670	5444	3287	4607	2901	3695	2511	2683	2108
		27	6188	4035	5412	3652	4580	3269	3673	2876	2666	2551
		29	6205	4423	5380	4015	4554	3634	3654	3246	2810	2810
		31	6178	4776	5361	4372	4539	3992	3644	3609	3161	3161
	21	21	7476	2894	6693	2508	5854	2123	4944	1735	3951	1342
		23	7566	3315	6732	2904	5898	2521	4995	2125	4010	1735
		25	7524	3693	6698	3284	5866	2904	4968	2518	3990	2120
		27	7476	4055	6651	3650	5827	3272	4934	2889	3961	2503
		29	7510	4416	6693	4012	5873	3634	4988	3257	4022	2871
		31	7368	4771	6556	4370	5741	3995	4859	3617	3898	3234
	23	23	8849	3284	8020	2879	7188	2498	6293	2115	5322	1732
		25	8885	3672	8061	3269	7234	2891	6346	2501	5383	2118
		27	8437	4050	7617	3647	6795	3269	5910	2891	4949	2508
		29	8773	4380	8012	4007	7198	3632	6317	3257	5366	2879
		31	8649	4735	7893	4365	7080	3992	6207	3619	5261	3241
		21	3666	2754	2751	2318	1973	1973	1578	1578	1161	1161
5	15	23	3646	3130	2737	2693	2354	2354	1968	1968	1573	1573
		25	3634	3497	3100	3224	2724	2724	2346	2346	1963	1963
		27	3829	3829	3459	3596	3088	3088	2715	2715	2337	2337
		29	4178	4178	3812	3964	3444	3444	3076	3076	2702	2702
		31	4524	4524	4159	4324	3795	3795	3429	3429	3061	3061
		21	4749	2777	3888	2366	2905	1928	1610	1400	1161	1161
	17	23	4780	3153	3927	2744	2956	2311	1968	1925	1573	1573
		25	4746	3523	3898	3114	2932	2683	2346	2346	1963	1963
		27	4734	3888	3890	3482	3088	3088	2715	2715	2337	2337
		29	4673	4248	3834	3842	3444	3444	3076	3076	2702	2702
		31	4649	4603	4159	4324	3795	3795	3429	3429	3061	3061
		21	6010	2780	5176	2382	4259	1961	3210	1529	1866	1020
	19	23	5978	3165	5149	2767	4237	2359	3198	1930	1859	1413
		25	5951	3536	5129	3140	4222	2734	3188	2305	1859	1801
		27	5920	3898	5100	3500	4198	3092	3171	2653	2337	2337
		29	5888	4261	5073	3870	4176	3467	3154	3043	2702	2702
		31	5863	4618	5056	4228	4166	3830	3429	3429	3061	3061
		21	7220	2764	6400	2371	5507	1973	4520	1565	3371	1113
	21	23	7256	3160	6444	2770	5559	2364	4580	1955	3461	1527
		25	7220	3538	6412	3150	5532	2757	4559	2343	3446	1915
		27	7173	3903	6371	3518	5495	3127	4527	2724	3422	2300
		29	7215	4266	6417	3880	5549	3492	4590	3094	3495	2673
		31	7076	4624	6280	4241	5417	3853	4461	3454	3366	3033
		23	8556	3137	7751	2752	6880	2364	5929	1968	4876	1552
	23	25	8598	3528	7798	3145	6932	2749	5990	2356	4946	1953
		27	8149	3903	7351	3523	6488	3135	5544	2742	4493	2328
		29	8546	4266	7756	3886	6902	3503	5971	3117	4941	2716
		31	8422	4621	7637	4246	6788	3865	5861	3477	4834	3082
		21	3129	2493	1871	1928	1788	1788	1305	1305	551	551
		23	3112	2868	2590	2673	2195	2195	1788	1788	1320	1320
7	15	25	3349	3349	2968	3087	2583	2583	2190	2190	1783	1783
		27	3712	3712	3337	3470	2959	2959	2576	2576	2185	2185
		29	4068	4068	3698	3845	3324	3324	2949	2949	2568	2568
		31	4420	4420	4051	4213	3683	3683	3312	3312	2939	2939
		21	4317	2567	3310	2105	1941	1532	1305	1286	551	551
		23	4356	2945	3361	2488	2022	1925	1788	1788	1320	1320
	17	25	4327	3317	3334	2858	2583	2577	2190	2190	1783	1783
		27	4317	3683	3334	3229	2959	2959	2576	2576	2185	2185
		29	4259	4045	3698	3845	3324	3324	2949	2949	2568	2568
		31	4237	4237	4051	4213	3683	3683	3312	3312	2939	2939
		21	5641	2602	4722	2174	3649	1704	2205	1144	551	551
		23	5615	2988	4700	2562	3634	2105	2198	1537	1320	1230
	19	25	5593	3358	4680	2934	3624	2480	2198	1925	1783	1783
		27	5563	3716	4656	3287	3605	2815	2576	2576	2185	2185
		29	5534	4088	4634	3667	3588	3218	2949	2949	2568	2568
		31	5517	4446	4622	4030	3583	3583	3312	3312	2939	2939
		21	6888	2602	6007	2191	5017	1765	3859	1296	2261	720
		23	6934	3000	6059	2592	5078	2158	3934	1704	2388	1136
	21	25	6900	3381	6029	2978	5054	2554	3920	2092	2380	1537
		27	6856	3749	5993	3345	5022	2927	3893	2475	2359	1920
		29	6905	4114	6046	3711	5085	3297	3968	2851	2478	2311
		31	6766	4469	5910	4071	4951	3655	3832	3208	2939	2929
		23	8259	2993	7405	2595	6466	2189	5412	1765	4176	1299
		25	8305	3386	7459	2990	6527	2577	5483	2156	4261	1697
	23	27	7854	3759	7005	3363	6071	2957	5015	2534	3744	2057
		29	8261	4124	7424	3733	6507	3335	5476	2922	4273	2475
		31	8139	4484	7307	4093	6393	3695	5366	3282	4163	2838

TA 11			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	5277	3937	4217	3402	3047	3945	2272	2272	1766	1766
		23	5245	4438	4191	3903	3252	3252	2759	2759	2262	2262
		25	5223	4932	4178	4400	3726	3726	3236	3236	2746	2746
		27	5146	5146	4675	4969	4191	4191	3707	3707	3223	3223
		29	5614	5614	5133	5456	4653	4653	4172	4172	3691	3691
		31	6062	6062	5585	5936	5108	5108	4630	4630	4153	4153
	17	21	6642	3941	5598	3413	4467	2878	3211	2330	1676	1676
		23	6678	4438	5643	3917	4518	3385	3271	2840	2262	2262
		25	6630	4932	5598	4411	4483	3886	3243	3243	2746	2746
		27	6607	5422	5585	4904	4473	4380	3707	3707	3223	3223
		29	6524	5902	5508	5388	4653	4653	4172	4172	3691	3691
		31	6489	6379	5585	5936	5108	5108	4630	4630	4153	4153
	19	21	8257	3920	7225	3402	6110	2878	4899	2333	3553	1788
		23	8212	4434	7184	3917	6078	3396	4874	2871	3534	2313
		25	8174	4928	7152	4414	6053	3896	4854	3372	3525	2830
		27	8129	5419	7110	4904	6018	4390	4826	3862	3502	3426
		29	8152	5940	7068	5391	5982	4881	4800	4359	3691	3691
		31	8116	6413	7043	5872	5963	5361	4787	4787	4153	4153
	21	21	9821	3886	8792	3368	7690	2851	6495	2330	5191	1802
		23	9939	4451	8844	3900	7748	3385	6562	2854	5268	2330
		25	9885	4959	8799	4411	7706	3900	6527	3382	5242	2847
		27	9821	5446	8738	4901	7655	4393	6482	3879	5204	3362
		29	9866	5929	8792	5388	7716	4881	6553	4373	5284	3855
		31	9680	6406	8613	5868	7543	5364	6383	4857	5120	4342
	23	23	11625	4411	10535	3866	9443	3355	8267	2840	6992	2326
		25	11673	4932	10590	4390	9504	3883	8337	3358	7072	2844
		27	11083	5439	10007	4898	8927	4390	7764	3883	6501	3368
		29	11526	5882	10526	5381	9456	4877	8299	4373	7049	3866
		31	11362	6359	10369	5861	9302	5361	8155	4860	6911	4353
		21	4816	3699	3614	3113	2592	2592	2073	2073	1525	1525
5	15	23	4790	4203	3595	3617	3092	3092	2586	2586	2067	2067
		25	4774	4697	4073	4329	3579	3579	3082	3082	2579	2579
		27	5031	5031	4544	4829	4057	4057	3566	3566	3070	3070
		29	5489	5489	5008	5323	4524	4524	4041	4041	3550	3550
		31	5944	5944	5463	5807	4986	4986	4505	4505	4021	4021
		21	6239	3729	5108	3178	3816	2588	2115	1880	1525	1525
	17	23	6280	4233	5159	3685	3884	3103	2586	2585	2067	2067
		25	6235	4731	5120	4182	3851	3603	3082	3082	2579	2579
		27	6219	5221	5111	4676	4057	4057	3566	3566	3070	3070
		29	6139	5705	5037	5160	4524	4524	4041	4041	3550	3550
		31	6107	6107	5463	5807	4986	4986	4505	4505	4021	4021
		21	7895	3733	6799	3198	5595	2633	4217	2054	2451	1369
	19	23	7854	4250	6764	3716	5566	3167	4201	2592	2442	1897
		25	7818	4748	6738	4216	5546	3671	4188	3096	2442	2418
		27	7777	5235	6700	4700	5514	4152	4165	3562	3070	3070
		29	7735	5722	6665	5197	5486	4656	4143	4087	3550	3550
		31	7703	6202	6642	5677	5473	5143	4505	4505	4021	4021
		21	9484	3712	8408	3184	7235	2650	5937	2101	4428	1495
	21	23	9533	4244	8466	3719	7302	3174	6018	2626	4547	2050
		25	9484	4751	8424	4230	7267	3702	5989	3147	4528	2571
		27	9424	5242	8369	4724	7219	4199	5947	3658	4496	3089
		29	9478	5729	8430	5211	7290	4690	6030	4155	4592	3590
		31	9295	6209	8251	5694	7117	5173	5860	4639	4422	4073
		23	11240	4213	10183	3695	9039	3174	7789	2643	6405	2084
	23	25	11295	4737	10244	4223	9106	3692	7870	3164	6498	2622
		27	10705	5242	9657	4731	8523	4210	7283	3682	5902	3127
		29	11228	5729	10189	5218	9068	4703	7844	4186	6492	3648
		31	11064	6205	10032	5701	8917	5190	7700	4669	6351	4138
		21	4111	3348	2458	2588	2349	2349	1714	1714	724	724
		23	4089	3852	3403	3590	2884	2884	2349	2349	1733	1733
7	15	25	4399	4399	3900	4145	3393	3393	2877	2877	2342	2342
		27	4877	4877	4383	4659	3887	3887	3384	3384	2871	2871
		29	5345	5345	4858	5163	4367	4367	3874	3874	3374	3374
		31	5806	5806	5322	5657	4838	4838	4351	4351	3861	3861
		21	5671	3447	4348	2827	2551	2057	1714	1714	724	724
		23	5723	3954	4415	3341	2656	2585	2349	2349	1733	1733
	17	25	5684	4455	4380	3838	3393	3393	2877	2877	2342	2342
		27	5671	4945	4380	4336	3887	3887	3384	3384	2871	2871
		29	5595	5432	4858	5163	4367	4367	3874	3874	3374	3374
		31	5566	5566	5322	5657	4838	4838	4351	4351	3861	3861
		21	7411	3494	6203	2919	4793	2289	2897	1536	724	724
		23	7376	4012	6175	3440	4774	2827	2887	2064	1733	1652
	19	25	7347	4509	6149	3941	4761	3331	2887	2585	2342	2342
		27	7309	4989	6117	4414	4736	3780	3384	3384	2871	2871
		29	7270	5490	6088	4925	4713	4322	3874	3874	3374	3374
		31	7248	5970	6072	5412	4707	4707	4351	4351	3861	3861
		21	9049	3494	7892	2943	6591	2370	5069	1740	2970	967
		23	9110	4029	7959	3481	6671	2898	5168	2289	3137	1526
	21	25	9065	4540	7921	3998	6639	3430	5149	2810	3127	2064
		27	9007	5034	7873	4492	6597	3930	5114	3324	3098	2578
		29	9071	5524	7943	4983	6681	4428	5213	3828	3255	3103
		31	8888	6001	7764	5466	6505	4908	5034	4308	3861	3861
		23	10849	4019	9728	3484	8494	2939	7110	2370	5486	1744
		25	10910	4547	9798	4015	8574	3460	7203	2895	5598	2278
	23	27	10318	5047	9202	4516	7975	3971	6588	3402	4918	2762
		29	10853	5538	9754	5013	8549	4479	7193	3923	5614	3324
		31	10692	6021	9600	5497	8398	4962	7049	4407	5470	3811

TA 15			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	9216	6283	7364	5429	5321	6295	3967	3853	3083	2995
		23	9160	7082	7319	6228	5679	5516	4818	4679	3950	3837
		25	9121	7870	7296	7022	6507	6321	5651	5489	4795	4658
		27	8986	8647	8164	7929	7319	7109	6474	6288	5629	5467
		29	9803	9522	8964	8707	8125	7891	7285	7076	6446	6261
		31	10587	10283	9753	9473	8919	8663	8085	7853	7252	7043
	17	21	11599	6288	9775	5446	7800	4592	5607	3717	2926	2707
		23	11661	7082	9854	6250	7890	5402	5713	4533	3950	3837
		25	11577	7870	9775	7038	7828	6201	5663	5332	4795	4658
		27	11538	8652	9753	7826	7811	6989	6474	6288	5629	5467
		29	11392	9418	9619	8598	8125	7891	7285	7076	6446	6261
		31	11331	10179	9753	9473	8919	8663	8085	7853	7252	7043
	19	21	14419	6255	12618	5429	10670	4592	8555	3723	6205	2853
		23	14341	7076	12545	6250	10614	5418	8511	4582	6172	3690
		25	14274	7864	12489	7043	10570	6217	8477	5380	6155	4516
		27	14196	8647	12416	7826	10508	7005	8427	6163	6116	5467
		29	14235	9478	12343	8603	10447	7788	8382	6957	6446	6261
		31	14173	10234	12299	9370	10413	8554	8360	7734	7252	7043
	21	21	17150	6201	15354	5375	13429	4549	11342	3717	9065	2875
		23	17357	7103	15443	6223	13530	5402	11459	4554	9199	3717
		25	17262	7913	15365	7038	13457	6223	11398	5397	9154	4543
		27	17150	8690	15259	7821	13367	7011	11320	6190	9087	5364
		29	17228	9462	15354	8598	13474	7788	11443	6978	9227	6152
		31	16904	10223	15040	9364	13172	8560	11146	7750	8941	6929
	23	23	20300	7038	18398	6168	16490	5353	14436	4533	12209	3712
		25	20384	7870	18493	7005	16596	6196	14559	5359	12349	4538
		27	19355	8679	17474	7815	15589	7005	13558	6196	11353	5375
		29	20127	9386	18381	8587	16512	7783	14492	6978	12310	6168
		31	19841	10147	18107	9353	16243	8554	14240	7755	12069	6946
		21	8410	5902	6312	4967	4527	4293	3620	3516	2663	2587
5	15	23	8365	6707	6278	5772	5400	5245	4515	4386	3609	3505
		25	8337	7495	7112	6908	6250	6071	5383	5228	4504	4375
		27	8785	8533	7934	7707	7084	6880	6228	6049	5360	5207
		29	9585	9310	8746	8495	7901	7674	7056	6853	6200	6022
		31	10379	10082	9540	9266	8706	8457	7867	7641	7022	6821
		21	10894	5951	8919	5071	6664	4130	3693	3000	2663	2587
	17	23	10967	6755	9009	5880	6782	4951	4515	4125	3609	3505
		25	10889	7549	8941	6674	6726	5750	5383	5228	4504	4375
		27	10861	8332	8925	7462	7084	6815	6228	6049	5360	5207
		29	10721	9103	8796	8234	7901	7674	7056	6853	6200	6022
		31	10665	9864	9540	9266	8706	8457	7867	7641	7022	6821
		21	13787	5957	11873	5103	9770	4201	7364	3277	4280	2185
	19	23	13714	6783	11812	5929	9719	5054	7336	4136	4264	3027
		25	13653	7576	11767	6728	9686	5859	7313	4940	4264	3859
		27	13580	8353	11700	7500	9630	6625	7274	5685	5360	5207
		29	13507	9130	11638	8293	9579	7429	7235	6522	6200	6022
		31	13451	9897	11599	9060	9557	8207	7867	7641	7022	6821
		21	16562	5924	14682	5082	12634	4228	10368	3353	7733	2386
	21	23	16646	6772	14783	5935	12752	5065	10508	4190	7940	3272
		25	16562	7582	14710	6750	12690	5908	10458	5022	7906	4103
		27	16456	8364	14615	7538	12606	6701	10385	5837	7850	4929
		29	16551	9141	14722	8315	12730	7484	10531	6630	8018	5728
		31	16232	9908	14408	9087	12427	8255	10234	7402	7722	6500
		23	19629	6723	17782	5897	15785	5065	13602	4217	11185	3326
	23	25	19724	7560	17889	6739	15902	5891	13742	5049	11347	4185
		27	18694	8364	16865	7549	14884	6717	12718	5875	10307	4989
		29	19606	9141	17793	8326	15835	7505	13698	6679	11336	5821
		31	19321	9902	17519	9098	15572	8283	13446	7451	11090	6603
		21	7179	5342	4292	4130	4101	3984	2994	2908	1265	1228
		23	7140	6147	5942	5728	5036	4891	4101	3984	3027	2940
7	15	25	7682	7332	6810	6614	5926	5755	5025	4880	4090	3973
		27	8516	8272	7655	7435	6787	6592	5909	5739	5013	4870
		29	9333	9065	8483	8239	7627	7408	6765	6571	5892	5723
		31	10139	9848	9294	9027	8449	8207	7599	7380	6742	6549
		21	9904	5500	7593	4511	4454	3283	2994	2755	1265	1228
		23	9993	6310	7710	5332	4639	4125	4101	3984	3027	2940
	17	25	9926	7109	7649	6125	5926	5522	5025	4880	4090	3973
		27	9904	7891	7649	6918	6787	6592	5909	5739	5013	4870
		29	9770	8668	8483	8239	7627	7408	6765	6571	5892	5723
		31	9719	9440	9294	9027	8449	8207	7599	7380	6742	6549
		21	12942	5576	10833	4658	8371	3652	5058	2451	1265	1207
		23	12881	6402	10782	5489	8337	4511	5041	3293	3027	2636
	19	25	12830	7196	10738	6288	8315	5315	5041	4125	4090	3848
		27	12763	7962	10682	7043	8270	6033	5909	5630	5013	4870
		29	12696	8761	10631	7859	8231	6897	6765	6467	5892	5723
		31	12657	9527	10603	8636	8220	7679	7599	7380	6742	6549
		21	15801	5576	13781	4696	11510	3783	8852	2777	5187	1543
		23	15908	6429	13899	5554	11650	4625	9025	3652	5478	2435
	21	25	15829	7245	13832	6380	11594	5473	8992	4484	5461	3293
		27	15729	8033	13748	7168	11521	6272	8930	5304	5411	4114
		29	15841	8815	13871	7951	11666	7065	9104	6109	5685	4951
		31	15522	9576	13558	8723	11359	7832	8790	6875	6742	6277
		23	18946	6413	16988	5560	14833	4690	12416	3783	9579	2783
		25	19052	7255	17111	6408	14973	5522	12578	4620	9775	3636
	23	27	18017	8054	16070	7207	13927	6337	11504	5429	8589	4408
		29	18952	8837	17032	8000	14929	7147	12562	6261	9803	5304
		31	18672	9609	16764	8772	14666	7918	12310	7033	9551	6082

TA 19			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	12209	8209	9755	7094	7049	8225	5256	5035	4084	3913
		23	12135	9253	9696	8138	7524	7208	6382	6114	5233	5014
		25	12083	10283	9666	9175	8621	8259	7487	7172	6353	6086
		27	11905	11298	10815	10361	9696	9289	8577	8216	7457	7144
		29	12987	12442	11875	11377	10763	10311	9651	9246	8539	8181
		31	14025	13436	12920	12378	11816	11320	10711	10262	9607	9203
	17	21	15367	8216	12950	7116	10333	6001	7428	4857	3877	3537
		23	15448	9253	13054	8167	10452	7059	7568	5923	5233	5014
		25	15337	10283	12950	9196	10370	8103	7502	6967	6353	6086
		27	15285	11306	12920	10226	10348	9132	8577	8216	7457	7144
		29	15092	12307	12742	11234	10763	10311	9651	9246	8539	8181
		31	15011	13301	12920	12378	11816	11320	10711	10262	9607	9203
	19	21	19103	8174	16716	7094	14136	6001	11334	4864	8221	3728
		23	18999	9246	16619	8167	14062	7080	11275	5987	8176	4822
		25	18910	10276	16545	9203	14003	8124	11230	7030	8154	5901
		27	18806	11298	16449	10226	13921	9154	11164	8053	8102	7144
		29	18858	12385	16352	11242	13840	10176	11104	9090	8539	8181
		31	18776	13372	16293	12243	13795	11178	11075	10105	9607	9203
	21	21	22720	8103	20341	7023	17791	5944	15026	4857	12009	3757
		23	22994	9282	20459	8131	17924	7059	15181	5951	12187	4857
		25	22868	10340	20355	9196	17828	8131	15100	7052	12127	5937
		27	22720	11355	20214	10219	17709	9161	14996	8089	12038	7009
		29	22824	12364	20341	11234	17850	10176	15159	9118	12224	8039
		31	22394	13358	19925	12236	17450	11185	14766	10127	11846	9054
	23	23	26893	9196	24373	8060	21845	6995	19125	5923	16175	4850
		25	27005	10283	24499	9154	21986	8096	19288	7002	16360	5930
		27	25641	11341	23150	10212	20652	9154	17961	8096	15040	7023
		29	26664	12264	24351	11220	21875	10169	19199	9118	16308	8060
		31	26286	13258	23988	12222	21519	11178	18865	10134	15989	9076
		21	11141	7712	8362	6491	5997	5610	4796	4595	3528	3380
5	15	23	11082	8763	8317	7542	7153	6853	5982	5731	4781	4580
		25	11045	9793	9422	9026	8280	7932	7131	6832	5967	5717
		27	11638	11149	10511	10070	9385	8990	8250	7904	7101	6803
		29	12698	12165	11586	11100	10467	10027	9347	8955	8213	7868
		31	13751	13173	12639	12108	11534	11050	10422	9985	9303	8912
		21	14433	7776	11816	6626	8829	5397	4892	3920	3528	3380
	17	23	14529	8827	11934	7684	8984	6469	5982	5390	4781	4580
		25	14425	9864	11846	8721	8910	7513	7131	6832	5967	5717
		27	14388	10887	11823	9750	9385	8905	8250	7904	7101	6803
		29	14203	11895	11653	10759	10467	10027	9347	8955	8213	7868
		31	14129	12889	12639	12108	11534	11050	10422	9985	9303	8912
		21	18265	7783	15730	6668	12943	5489	9755	4282	5671	2855
	19	23	18169	8863	15648	7748	12876	6604	9718	5404	5648	3956
		25	18087	9899	15589	8792	12831	7655	9688	6455	5648	5042
		27	17991	10915	15500	9800	12757	8657	9637	7428	7101	6803
		29	17894	11930	15418	10837	12691	9708	9585	8522	8213	7868
		31	17820	12932	15367	11838	12661	10723	10422	9985	9303	8912
		21	21942	7741	19451	6640	16738	5525	13736	4382	10244	3118
	21	23	22053	8848	19584	7755	16894	6619	13921	5475	10519	4275
		25	21942	9907	19488	8820	16812	7719	13854	6562	10474	5362
		27	21801	10929	19362	9850	16701	8756	13758	7627	10400	6441
		29	21927	11945	19503	10865	16864	9779	13951	8664	10622	7485
		31	21504	12946	19088	11874	16464	10787	13558	9672	10230	8493
		23	26004	8784	23558	7705	20911	6619	18020	5511	14818	4346
	23	25	26130	9878	23698	8806	21067	7698	18206	6597	15033	5468
		27	24766	10929	22342	9864	19718	8777	16849	7677	13654	6519
		29	25974	11945	23572	10879	20978	9807	18146	8728	15018	7606
		31	25596	12939	23209	11888	20630	10823	17813	9736	14692	8628
		21	9511	6981	5686	5397	5434	5205	3966	3799	1675	1605
		23	9459	8032	7872	7485	6671	6391	5434	5205	4010	3842
7	15	25	10178	9580	9021	8642	7850	7520	6657	6377	5419	5191
		27	11282	10808	10141	9715	8992	8614	7828	7499	6642	6363
		29	12364	11845	11238	10766	10104	9679	8962	8586	7806	7478
		31	13432	12868	12313	11796	11193	10723	10066	9644	8932	8557
		21	13121	7187	10059	5894	5901	4289	3966	3600	1675	1605
		23	13239	8245	10215	6967	6145	5390	5434	5205	4010	3842
	17	25	13150	9289	10133	8003	7850	7215	6657	6377	5419	5191
		27	13121	10311	10133	9040	8992	8614	7828	7499	6642	6363
		29	12943	11327	11238	10766	10104	9679	8962	8586	7806	7478
		31	12876	12335	12313	11796	11193	10723	10066	9644	8932	8557
		21	17146	7286	14351	6086	11089	4772	6701	3203	1675	1577
		23	17064	8366	14284	7172	11045	5894	6679	4303	4010	3444
	19	25	16997	9402	14225	8216	11015	6945	6679	5390	5419	5028
		27	16908	10404	14151	9203	10956	7883	7828	7357	6642	6363
		29	16819	11448	14084	10269	10904	9012	8962	8451	7806	7478
		31	16768	12449	14047	11284	10889	10034	10066	9644	8932	8557
		21	20934	7286	18258	6136	15248	4943	11727	3629	6872	2017
		23	21074	8401	18413	7258	15433	6043	11957	4772	7257	3181
	21	25	20971	9466	18324	8337	15359	7151	11912	5859	7235	4303
		27	20837	10496	18213	9367	15263	8195	11831	6931	7168	5376
		29	20985	11519	18376	10389	15456	9232	12060	7982	7531	6469
		31	20563	12513	17961	11398	15048	10233	11645	8983	8932	8202
		23	25099	8380	22505	7265	19651	6129	16449	4943	12691	3636
		25	25240	9480	22668	8373	19836	7215	16664	6036	12950	4751
	23	27	23869	10524	21289	9417	18450	8280	15241	7094	11379	5759
		29	25107	11547	22564	10453	19777	9338	16642	8181	12987	6931
		31	24736	12555	22209	11462	19429	10347	16308	9189	12654	7947

TA 24			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	16226	10722	12965	9266	9369	10743	6985	6576	5428	5111
		23	16127	12086	12886	10630	10000	9414	8482	7986	6955	6548
		25	16058	13431	12847	11984	11458	10787	9950	9368	8443	7949
		27	15822	14757	14374	13533	12886	12132	11398	10732	9911	9331
		29	17260	16250	15782	14859	14305	13468	12827	12077	11349	10685
		31	18640	17549	17172	16167	15704	14785	14236	13403	12768	12021
	17	21	20423	10732	17211	9294	13733	7838	9871	6344	5152	4619
		23	20531	12086	17349	10667	13891	9220	10059	7736	6955	6548
		25	20383	13431	17211	12012	13783	10583	9970	9099	8443	7949
		27	20314	14766	17172	13357	13753	11928	11398	10732	9911	9331
		29	20058	16074	16935	14674	14305	13468	12827	12077	11349	10685
		31	19950	17373	17172	16167	15704	14785	14236	13403	12768	12021
	19	21	25388	10676	22216	9266	18787	7838	15063	6354	10926	4870
		23	25250	12077	22088	10667	18689	9248	14985	7819	10866	6298
		25	25132	13421	21989	12021	18610	10611	14925	9183	10837	7708
		27	24994	14757	21861	13357	18502	11956	14837	10518	10768	9331
		29	25063	16176	21733	14683	18393	13292	14758	11872	11349	10685
		31	24954	17466	21654	15991	18334	14599	14719	13199	12768	12021
	21	21	30196	10583	27033	9173	23644	7763	19969	6344	15960	4907
		23	30560	12123	27191	10620	23822	9220	20176	7773	16196	6344
		25	30393	13505	27053	12012	23693	10620	20068	9210	16117	7754
		27	30196	14831	26866	13347	23536	11965	19930	10565	15999	9155
		29	30334	16148	27033	14674	23723	13292	20147	11910	16246	10500
		31	29762	17447	26481	15981	23191	14609	19625	13227	15743	11826
	23	23	35742	12012	32393	10528	29033	9136	25418	7736	21497	6335
		25	35890	13431	32560	11956	29220	10574	25634	9146	21743	7745
		27	34077	14813	30767	13338	27447	11956	23871	10574	19989	9173
		29	35437	16019	32363	14655	29073	13282	25516	11910	21674	10528
		31	34934	17317	31880	15963	28600	14599	25073	13236	21250	11854
		21	14807	10073	11113	8478	7970	7328	6374	6001	4689	4415
5	15	23	14728	11446	11054	9850	9507	8951	7950	7485	6354	5983
		25	14679	12791	12522	11789	11004	10361	9477	8923	7931	7467
		27	15467	14562	13970	13152	12472	11743	10965	10323	9438	8886
		29	16876	15889	15398	14497	13911	13097	12423	11696	10916	10277
		31	18275	17206	16797	15814	15329	14432	13852	13041	12364	11641
		21	19181	10157	15704	8654	11733	7049	6502	5120	4689	4415
	17	23	19309	11529	15861	10036	11940	8450	7950	7040	6354	5983
		25	19171	12883	15743	11390	11842	9813	9477	8923	7931	7467
		27	19122	14219	15714	12735	12472	11631	10965	10323	9438	8886
		29	18876	15536	15487	14052	13911	13097	12423	11696	10916	10277
		31	18777	16835	16797	15814	15329	14432	13852	13041	12364	11641
		21	24275	10166	20905	8710	17201	7170	12965	5593	7537	3729
	19	23	24147	11576	20797	10119	17112	8626	12916	7059	7507	5166
		25	24038	12930	20718	11483	17053	9999	12876	8431	7507	6586
		27	23910	14256	20600	12800	16955	11307	12807	9702	9438	8886
		29	23782	15583	20492	14154	16866	12679	12738	11130	10916	10277
		31	23684	16890	20423	15462	16827	14006	13852	13041	12364	11641
		21	29161	10110	25851	8672	22245	5723	18255	5723	13615	4072
	21	23	29309	11557	26028	10129	22452	8645	18502	7151	13980	5584
		25	29161	12939	25900	11520	22344	10082	18413	8570	13921	7003
		27	28974	14275	25733	12865	22196	11437	18285	9962	13822	8413
		29	29141	15601	25920	14191	22413	12772	18541	11316	14118	9776
		31	28580	16909	25368	15508	21881	14089	18019	12633	13595	11093
		23	34560	11474	31309	10064	27792	8645	23950	7198	19694	5677
	23	25	34727	12902	31496	11501	27999	10054	24196	8617	19979	7142
		27	32915	14275	29693	12883	26206	11464	22393	10027	18147	8515
		29	34521	15601	31329	14210	27880	12809	24117	11399	19960	9934
		31	34018	16900	30846	15527	27417	14136	23674	12717	19526	11270
		21	12640	9118	7556	7049	7221	6799	5271	4962	2226	2096
		23	12571	10490	10463	9776	8867	8348	7221	6799	5330	5018
7	15	25	13526	12512	11990	11288	10433	9823	8847	8329	7202	6780
		27	14994	14117	13477	12689	11950	11251	10403	9795	8827	8311
		29	16433	15471	14935	14061	13428	12642	11911	11214	10374	9767
		31	17851	16807	16364	15406	14876	14006	13379	12596	11871	11177
		21	17438	9387	13369	7699	7842	5602	5271	4703	2226	2096
		23	17595	10769	13576	9099	8167	7040	7221	6799	5330	5018
	17	25	17477	12132	13467	10453	10433	9424	8847	8329	7202	6780
		27	17438	13468	13467	11808	11950	11251	10403	9795	8827	8311
		29	17201	14794	14935	14061	13428	12642	11911	11214	10374	9767
		31	17112	16111	16364	15406	14876	14006	13379	12596	11871	11177
		21	22787	9517	19073	7949	14738	6233	8906	4183	2226	2059
		23	22679	10926	18984	9368	14679	7699	8876	5621	5330	4499
	19	25	22590	12281	18905	10732	14640	9071	8876	7040	7202	6567
		27	22472	13588	18807	12021	14561	10296	10403	9609	8827	8311
		29	22354	14952	18718	13412	14492	11770	11911	11038	10374	9767
		31	22285	16260	18669	14739	14472	13106	13379	12596	11871	11177
		21	27821	9517	24265	8014	20265	6456	15585	4740	9133	2634
		23	28009	10973	24472	9479	20511	7893	15891	6233	9645	4155
	21	25	27871	12364	24354	10889	20413	9340	15832	7652	9615	5621
		27	27693	13709	24206	12234	20285	10704	15723	9053	9527	7021
		29	27890	15045	24422	13570	20541	12058	16029	10426	10009	8450
		31	27329	16343	23871	14887	19999	13366	15477	11733	11871	10713
		23	33358	10945	29910	9489	26117	8005	21861	6456	16866	4749
		25	33545	12383	30127	10936	26363	9424	22147	7884	17211	6205
	23	27	31723	13746	28294	12299	24521	10815	20255	9266	15122	7522
		29	33368	15082	29989	13653	26284	12197	22117	10685	17260	9053
		31	32875	16399	29516	14970	25821	13514	21674	12002	16817	10379

TA 33			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
3	15	21	20715	13906	16552	12017	11961	13933	8918	8529	6930	6628
		23	20590	15674	16452	13785	12766	12209	10829	10357	8880	8492
		25	20502	17418	16401	15541	14628	13990	12703	12149	10779	10309
		27	20200	19138	18351	17550	16452	15734	14552	13918	12653	12101
		29	22036	21075	20149	19270	18263	17466	16376	15662	14490	13857
		31	23797	22759	21923	20967	20049	19174	18175	17382	16301	15590
	17	21	26074	13918	21973	12053	17533	10164	12603	8228	6578	5990
		23	26212	15674	22149	13833	17735	11957	12842	10032	8880	8492
		25	26023	17418	21973	15578	17596	13725	12729	11800	10779	10309
		27	25935	19150	21923	17322	17558	15469	14552	13918	12653	12101
		29	25608	20846	21621	19030	18263	17466	16376	15662	14490	13857
		31	25470	22530	21923	20967	20049	19174	18175	17382	16301	15590
	19	21	32413	13845	28363	12017	23986	10164	19231	8240	13949	6315
		23	32237	15662	28199	13833	23860	11993	19131	10140	13873	8168
		25	32086	17406	28073	15590	23759	13761	19055	11909	13835	9996
		27	31910	19138	27910	17322	23621	15505	18942	13641	13747	12101
		29	31998	20979	27746	19042	23483	17238	18841	15397	14490	13857
		31	31859	22651	27646	20738	23407	18934	18791	17117	16301	15590
	21	21	38551	13725	34513	11897	30187	10068	25495	8228	20376	6363
		23	39016	15722	34714	13773	30413	11957	25759	10080	20678	8228
		25	38802	17514	34538	15578	30249	13773	25621	11945	20577	10056
		27	38551	19234	34299	17310	30048	15517	25445	13701	20426	11873
		29	38727	20942	34513	19030	30287	17238	25721	15445	20741	13617
		31	37997	22627	33809	20726	29608	18946	25055	17153	20099	15337
	23	23	45632	15578	41356	13653	37067	11849	32451	10032	27445	8216
		25	45821	17418	41569	15505	37305	13713	32727	11861	27759	10044
		27	43506	19210	39280	17298	35042	15505	30476	13713	25520	11897
		29	45242	20774	41318	19006	37117	17226	32576	15445	27671	13653
		31	44601	22458	40701	20702	36513	18934	32010	17165	27130	15373
		21	18904	13063	14188	10994	10175	9503	8138	7783	5987	5726
5	15	23	18804	14844	14112	12775	12137	11608	10150	9707	8113	7759
		25	18741	16588	15986	15289	14049	13436	12100	11572	10125	9683
		27	19747	18886	17835	17057	15923	15229	13999	13388	12049	11524
		29	21546	20606	19659	18801	17760	16985	15860	15169	13936	13328
		31	23332	22314	21445	20509	19571	18717	17684	16913	15785	15096
		21	24489	13172	20049	11223	14980	9142	8301	6640	5987	5726
	17	23	24652	14952	20250	13015	15244	10958	10150	9130	8113	7759
		25	24476	16708	20099	14772	15118	12727	12100	11572	10125	9683
		27	24413	18440	20061	16516	15923	15084	13999	13388	12049	11524
		29	24099	20149	19772	18224	17760	16985	15860	15169	13936	13328
		31	23973	21833	21445	20509	19571	18717	17684	16913	15785	15096
		21	30991	13184	26690	11295	21961	9298	16552	7253	9622	4836
	19	23	30828	15012	26552	13124	21847	11187	16489	9154	9584	6700
		25	30690	16768	26451	14892	21772	12967	16439	10934	9584	8541
		27	30526	18489	26300	16600	21646	14663	16351	12582	12049	11524
		29	30363	20209	26162	18356	21533	16444	16263	14435	13936	13328
		31	30237	21905	26074	20052	21483	18164	17684	16913	15785	15096
		21	37230	13112	33004	11247	28400	9359	23307	7422	17382	5281
	21	23	37419	14988	33230	13136	28665	11211	23621	9274	17848	7241
		25	37230	16780	33067	14940	28526	13076	23508	11115	17772	9082
		27	36991	18513	32853	16684	28338	14832	23344	12919	17647	10910
		29	37205	20233	33092	18404	28614	16564	23671	14675	18024	12679
		31	36488	21929	32388	20112	27935	18272	23005	16383	17357	14387
		23	44123	14880	39972	13051	35482	11211	30576	9334	25143	7362
	23	25	44336	16732	40211	14916	35746	13039	30891	11175	25508	9262
		27	42022	18513	37909	16708	33457	14868	28589	13003	23168	11043
		29	44072	20233	39997	18428	35595	16612	30790	14784	25482	12883
		31	43431	21917	39381	20137	35004	18332	30224	16492	24929	14615
		21	16137	11824	9647	9142	9219	8817	6729	6436	2843	2719
		23	16049	13605	13358	12679	11320	10826	9219	8817	6805	6508
7	15	25	17269	16227	15307	14639	13320	12739	11295	10802	9194	8793
		27	19143	18308	17206	16456	15257	14591	13282	12703	11270	10778
		29	20980	20064	19068	18236	17143	16396	15206	14543	13244	12667
		31	22791	21797	20892	19980	18992	18164	17081	16335	15156	14495
		21	22263	12173	17068	9984	10012	7266	6729	6099	2843	2719
		23	22464	13966	17332	11800	10427	9130	9219	8817	6805	6508
	17	25	22313	15734	17194	13557	13320	12221	11295	10802	9194	8793
		27	22263	17466	17194	15313	15257	14591	13282	12703	11270	10778
		29	21961	19186	19068	18236	17143	16396	15206	14543	13244	12667
		31	21847	20894	20892	19980	18992	18164	17081	16335	15156	14495
		21	29092	12342	24350	10309	18816	8083	11370	5425	2843	2670
		23	28954	14170	24237	12149	18741	9984	11333	7290	6805	5834
	19	25	28841	15926	24137	13918	18690	11764	11333	9130	9194	8517
		27	28690	17622	24011	15590	18590	13352	13282	12462	11270	10778
		29	28539	19391	23898	17394	18502	15265	15206	14314	13244	12667
		31	28451	21087	23835	19114	18477	16997	17081	16335	15156	14495
		21	35519	12342	30979	10393	25872	8372	19898	6147	11660	3416
		23	35758	14230	31243	12294	26187	10237	20288	8083	12314	5389
	21	25	35582	16035	31092	14122	26061	12113	20212	9924	12276	7290
		27	35356	17779	30903	15866	25898	13881	20074	11740	12163	9106
		29	35608	19511	31180	17598	26225	15638	20464	13521	12779	10958
		31	34891	21195	30476	19307	25533	17334	19760	15217	15156	13893
		23	42588	14194	38186	12306	33344	10381	27910	8372	21533	6159
		25	42827	16059	38463	14182	33658	12221	28275	10225	21973	8047
	23	27	40500	17827	36123	15950	31306	14026	25860	12017	19307	9756
		29	42601	19559	38287	17707	33557	15818	28237	13857	22036	11740
		31	41972	21267	37683	19415	32966	17526	27671	15566	21470	13460

TA 40			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
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		23	26226	19734	20956	17356	16261	15372	13794	13040	11311	10692
		25	26114	21930	20891	19567	18632	17614	16181	15296	13730	12979
		27	25730	24096	23375	22096	20956	19810	18536	17523	16117	15236
		29	28069	26534	25666	24262	23263	21990	20859	19719	18456	17447
		31	30312	28654	27925	26398	25538	24141	23150	21884	20763	19628
	17	21	33212	17523	27989	15175	22333	12797	16053	10359	8379	7542
		23	33388	19734	28213	17417	22590	15054	16357	12631	11311	10692
		25	33148	21930	27989	19613	22413	17280	16213	14857	13730	12979
		27	33035	24111	27925	21809	22365	19476	18536	17523	16117	15236
		29	32619	26246	27540	23959	23263	21990	20859	19719	18456	17447
		31	32443	28366	27925	26398	25538	24141	23150	21884	20763	19628
	19	21	41286	17432	36127	15130	30552	12797	24496	10374	17767	7951
		23	41062	19719	35919	17417	30392	15099	24368	12767	17671	10283
		25	40870	21915	35759	19628	30264	17326	24272	14993	17623	12585
		27	40645	24096	35551	21809	30088	19522	24128	17174	17511	15236
		29	40758	26413	35342	23974	29911	21703	24000	19386	18456	17447
		31	40581	28518	35214	26110	29815	23838	23935	21551	20763	19628
	21	21	49104	17280	43962	14978	38451	12676	32475	10359	25954	8012
		23	49697	19794	44218	17341	38739	15054	32811	12691	26339	10359
		25	49425	22051	43994	19613	38531	17341	32635	15039	26210	12661
		27	49104	24217	43689	21794	38274	19537	32411	17250	26018	14948
		29	49329	26367	43962	23959	38579	21703	32763	19446	26419	17144
		31	48400	28488	43065	26095	37714	23853	31914	21597	25602	19310
	23	23	58124	19613	52677	17189	47214	14918	41334	12631	34958	10344
		25	58365	21930	52950	19522	47518	17265	41687	14933	35358	12646
		27	55417	24186	50034	21778	44635	19522	38819	17265	32507	14978
		29	57628	26155	52629	23929	47278	21688	41495	19446	35246	17189
		31	56811	28276	51844	26064	46509	23838	40774	21612	34557	19355
		21	24080	16447	18072	13842	12961	11964	10366	9799	7626	7209
5	15	23	23951	18689	17976	16084	15460	14615	12929	12222	10334	9768
		25	23871	20885	20363	19249	17896	16917	15412	14569	12897	12192
		27	25153	23778	22718	21476	20283	19173	17831	16856	15348	14509
		29	27444	25943	25041	23672	22622	21385	20203	19098	17751	16781
		31	29719	28094	27316	25822	24929	23566	22526	21294	20106	19007
		21	31193	16584	25538	14130	19081	11510	10574	8360	7626	7209
	17	23	31401	18825	25794	16387	19418	13797	12929	11495	10334	9768
		25	31177	21036	25602	18598	19257	16023	15412	14569	12897	12192
		27	31097	23217	25554	20794	20283	18992	17831	16856	15348	14509
		29	30696	25368	25185	22945	22622	21385	20203	19098	17751	16781
		31	30536	27488	27316	25822	24929	23566	22526	21294	20106	19007
		21	39476	16599	33997	14221	27973	11707	21084	9132	12256	6088
	19	23	39268	18901	33820	16523	27829	14085	21004	11525	12208	8436
		25	39091	21112	33692	18749	27732	16326	20940	13767	12208	10753
		27	38883	23278	33500	20900	27572	18462	20827	15842	15348	14509
		29	38675	25443	33324	23111	27428	20703	20715	18174	17751	16781
		31	38515	27579	33212	25247	27364	22869	22526	21294	20106	19007
		21	47422	16508	42039	14161	36176	11783	29687	9344	22141	6649
	21	23	47663	18871	42328	16538	36512	14115	30088	11677	22734	9117
		25	47422	21127	42119	18810	36336	16463	29943	13994	22638	11434
		27	47118	23308	41847	21006	36095	18674	29735	16266	22478	13736
		29	47390	25474	42151	23172	36448	20855	30152	18477	22958	15963
		31	46477	27609	41254	25322	35583	23005	29302	20627	22109	18113
		23	56202	18734	50915	16432	45195	14115	38947	11752	32026	9269
	23	25	56474	21067	51219	18780	45532	16417	39348	14070	32491	11662
		27	53526	23308	48287	21036	42616	18719	36416	16372	29511	13903
		29	56138	25474	50947	23202	45340	20915	39220	18613	32459	16220
		31	55321	27594	50162	25353	44587	23081	38499	20764	31754	18401
		21	20555	14887	12288	11510	11743	11101	8571	8103	3621	3423
		23	20443	17129	17014	15963	14419	13630	11743	11101	8667	8193
7	15	25	21997	20431	19498	18431	16966	16038	14387	13600	11711	11071
		27	24384	23051	21917	20718	19434	18371	16918	15993	14355	13570
		29	26723	25262	24288	22960	21837	20643	19369	18310	16870	15948
		31	29030	27443	26611	25156	24192	22869	21757	20567	19305	18250
		21	28357	15327	21741	12570	12753	9148	8571	7678	3621	3423
		23	28614	17583	22077	14857	13281	11495	11743	11101	8667	8193
	17	25	28421	19810	21901	17068	16966	15387	14387	13600	11711	11071
		27	28357	21990	21901	19279	19434	18371	16918	15993	14355	13570
		29	27973	24156	24288	22960	21837	20643	19369	18310	16870	15948
		31	27829	26307	26611	25156	24192	22869	21757	20567	19305	18250
		21	37057	15539	31017	12979	23967	10177	14483	6830	3621	3362
		23	36880	17841	30873	15296	23871	12570	14435	9178	8667	7345
	19	25	36736	20052	30744	17523	23807	14812	14435	11495	11711	10723
		27	36544	22187	30584	19628	23679	16811	16918	15690	14355	13570
		29	36352	24414	30440	21900	23567	19219	19369	18022	16870	15948
		31	36240	26549	30360	24065	23535	21400	21757	20567	19305	18250
		21	45243	15539	39460	13085	32955	10541	25345	7739	14852	4301
		23	45548	17916	39796	15478	33356	12888	25842	10177	15685	6785
	21	25	45324	20188	39604	17780	33196	15251	25746	12495	15637	9178
		27	45035	22384	39364	19976	32987	17477	25570	14781	15492	11465
		29	45356	24565	39716	22157	33404	19688	26066	17023	16277	13797
		31	44442	26685	38819	24308	32523	21824	25169	19158	19305	17492
		23	54247	17871	48640	15493	42472	13070	35551	10541	27428	7754
		25	54552	20218	48992	17856	42872	15387	36015	12873	27989	10132
	23	27	51588	22445	46012	20082	39876	17659	32939	15130	24592	12283
		29	54263	24626	48768	22293	42744	19916	35967	17447	28069	14781
		31	53462	26776	47999	24444	41991	22066	35246	19598	27348	16947

TA 50			Tw(in) = 5°C		Tw(in) = 7°C		Tw(in) = 9°C		Tw(in) = 11°C		Tw(in) = 13°C	
Dt	Tbu	Tbs	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps	Pc	Ps
°C	°C	°C	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]	[W]
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		23	31002	23605	24771	20761	19222	18388	16306	15598	13370	12790
		25	30869	26232	24696	23406	22025	21069	19128	18297	16230	15525
		27	30415	28822	27631	26431	24771	23696	21912	20960	19052	18225
		29	33180	31739	30339	29022	27498	26304	24658	23587	21817	20870
		31	35831	34275	33009	31576	30188	28877	27366	26178	24544	23478
	17	21	39259	20960	33085	18152	26400	15308	18976	12391	9905	9022
		23	39467	23605	33350	20833	26703	18007	19336	15109	13370	12790
		25	39183	26232	33085	23460	26495	20670	19166	17772	16230	15525
		27	39051	28841	33009	26087	26438	23297	21912	20960	19052	18225
		29	38558	31395	32555	28659	27498	26304	24658	23587	21817	20870
		31	38350	33931	33009	31576	30188	28877	27366	26178	24544	23478
	19	21	48804	20851	42706	18098	36115	15308	28957	12409	21003	9511
		23	48539	23587	42460	20833	35926	18062	28805	15272	20889	12301
		25	48312	26214	42270	23478	35774	20725	28692	17935	20832	15054
		27	48046	28822	42024	26087	35566	23351	28521	20543	20700	18225
		29	48179	31594	41778	28678	35358	25960	28370	23188	21817	20870
		31	47971	34112	41626	31232	35244	28514	28294	25779	24544	23478
	21	21	58046	20670	51967	17917	45452	15163	38388	12391	30680	9583
		23	58747	23678	52270	20743	45793	18007	38786	15181	31135	12391
		25	58425	26377	52005	23460	45547	20743	38577	17989	30983	15145
		27	58046	28967	51645	26069	45244	23370	38312	20634	30756	17880
		29	58311	31540	51967	28659	45603	25960	38729	23261	31229	20507
		31	57213	34076	50906	31214	44581	28533	37725	25833	30263	23098
	23	23	68708	23460	62269	20562	55811	17844	48861	15109	41323	12373
		25	68992	26232	62591	23351	56171	20652	49277	17862	41797	15127
		27	65508	28931	59144	26051	52762	23351	45888	20652	38426	17917
		29	68121	31286	62212	28623	55887	25942	49050	23261	41664	20562
		31	67155	33822	61284	31178	54978	28514	48198	25851	40850	23152
		21	28464	19674	21362	16558	15321	14312	12253	11721	9015	8623
5	15	23	28313	22355	21249	19239	18275	17482	15283	14620	12215	11685
		25	28218	24982	24071	23025	21154	20236	18219	17428	15245	14583
		27	29733	28442	26855	25688	23976	22935	21078	20163	18143	17355
		29	32441	31033	29601	28315	26741	25580	23881	22844	20984	20072
		31	35131	33605	32290	30888	29468	28188	26627	25471	23768	22736
		21	36873	19837	30188	16902	22556	13768	12499	10000	9015	8623
	17	23	37119	22518	30491	19601	22953	16504	15283	13750	12215	11685
		25	36854	25163	30263	22246	22764	19167	18219	17428	15245	14583
		27	36759	27772	30207	24873	23976	22717	21078	20163	18143	17355
		29	36286	30344	29771	27446	26741	25580	23881	22844	20984	20072
		31	36096	32880	32290	30888	29468	28188	26627	25471	23768	22736
		21	46664	19855	40187	17011	33066	14004	24923	10924	14488	7283
	19	23	46418	22609	39979	19764	32896	16848	24828	13786	14431	10091
		25	46209	25254	39827	22428	32782	19529	24752	16467	14431	12862
		27	45963	27844	39600	25000	32593	22083	24620	18949	18143	17355
		29	45717	30435	39392	27645	32422	24764	24487	21739	20984	20072
		31	45528	32989	39259	30199	32347	27355	26627	25471	23768	22736
		21	56057	19746	49694	16938	42763	14094	35093	11178	26173	7953
	21	23	56341	22572	50035	19783	43160	16884	35566	13967	26873	10906
		25	56057	25272	49789	22500	42952	19692	35396	16739	26760	13678
		27	55698	27880	49467	25127	42668	22337	35149	19457	26570	16431
		29	56020	30471	49827	27717	43085	24946	35642	22101	27139	19094
		31	54940	33025	48766	30290	42062	27518	34638	24674	26135	21667
		23	66436	22409	60186	19656	53425	16884	46039	14058	37858	11087
	23	25	66758	25199	60546	22464	53823	19638	46512	16830	38407	13949
		27	63273	27880	57080	25163	50376	22391	43047	19583	34884	16630
		29	66360	30471	60224	27754	53595	25018	46361	22264	38369	19402
		31	65394	33007	59296	30326	52705	27609	45509	24837	37536	22011
		21	24298	17808	14526	13768	13882	13279	10132	9692	4280	4094
		23	24165	20489	20112	19094	17044	16304	13882	13279	10246	9801
7	15	25	26002	24438	23048	22047	20056	19185	17007	16268	13844	13243
		27	28824	27572	25908	24783	22972	21975	19999	19130	16969	16232
		29	31589	30217	28710	27464	25813	24692	22896	21902	19942	19076
		31	34316	32826	31457	30091	28597	27355	25718	24601	22821	21830
		21	33521	18333	25699	15036	15075	10942	10132	9185	4280	4094
		23	33824	21033	26097	17772	15700	13750	13882	13279	10246	9801
	17	25	33597	23696	25889	20417	20056	18406	17007	16268	13844	13243
		27	33521	26304	25889	23062	22972	21975	19999	19130	16969	16232
		29	33066	28895	28710	27464	25813	24692	22896	21902	19942	19076
		31	32896	31467	31457	30091	28597	27355	25718	24601	22821	21830
		21	43804	18587	36665	15525	28332	12174	17120	8170	4280	4022
		23	43596	21341	36494	18297	28218	15036	17063	10978	10246	8786
	19	25	43426	23986	36343	20960	28142	17717	17063	13750	13844	12826
		27	43198	26540	36153	23478	27991	20109	19999	18768	16969	16232
		29	42971	29203	35983	26196	27858	22989	22896	21558	19942	19076
		31	42838	31757	35888	28786	27820	25598	25718	24601	22821	21830
		21	53482	18587	46645	15652	38956	12609	29960	9257	17556	5145
		23	53842	21431	47043	18514	39430	15417	30547	12174	18541	8116
	21	25	53576	24149	46815	21268	39240	18243	30434	14946	18484	10978
		27	53236	26775	46531	23895	38994	20906	30226	17681	18313	13714
		29	53614	29384	46948	26504	39486	23551	30813	20362	19241	16504
		31	52535	31920	45888	29076	38445	26105	29752	22917	22821	20924
		23	64125	21377	57497	18533	50205	15634	42024	12609	32422	9275
		25	64485	24185	57913	21359	50679	18406	42573	15399	33085	12120
	23	27	60981	26848	54391	24022	47137	21123	38937	18098	29070	14692
		29	64144	29457	57648	26667	50527	23822	42516	20870	33180	17681
		31	63197	32029	56739	29239	49637	26395	41664	23442	32328	20272

HEATING POWER

The heating power yielded by the coils (standard or larger) are stated in table format and are referred to the maximum speed, based on the water flow and on the difference of temperature between water entering and air entering.

NB: The yield values marked in bold indicate the nominal value.

Key:

Tw(in) = Inlet water temperature

Ta D.B. [°C] = Inlet water temperature with dry bulb

Ph [W] = Heating power yielded

HEATING (4 ROWS COIL)

TA 09		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	11662	11157	10660	10170	9687
	10	11395	13206	10400	9910	9420
	15	11083	10578	10081	9583	9101
65	5	10556	10059	9569	9079	8604
	10	10274	9784	9294	8804	8321
	15	9940	9442	8945	8455	7973
60	5	9791	9294	8789	8299	7809
	10	9153	8663	8180	7698	7223
	15	8789	8299	7809	7319	6837
50	5	7230	6748	6273	5805	5345
	10	6896	6414	5931	5456	4981
	15	6458	5961	5464	4966	4469
45	5	6117	5642	5174	4706	4246
	10	5746	5271	4788	4313	3830
	15	5248	4743	4231	3704	3170
40	5	4996	4528	4068	3600	3147
	10	4588	4098	3615	3125	2620
	15	3979	3437	2784	1811	1039

TA 11		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	14802	14161	13530	12908	12296
	10	14463	16761	13200	12578	11956
	15	14067	13426	12795	12164	11551
65	5	13398	12767	12145	11523	10920
	10	13040	12418	11796	11174	10562
	15	12616	11985	11353	10731	10119
60	5	12427	11796	11155	10534	9912
	10	11617	10995	10383	9770	9167
	15	11155	10534	9912	9290	8678
50	5	9177	8564	7961	7368	6784
	10	8753	8140	7528	6925	6322
	15	8197	7566	6934	6303	5672
45	5	7764	7161	6567	5973	5389
	10	7293	6690	6077	5474	4862
	15	6661	6021	5370	4701	4023
40	5	6341	5747	5163	4570	3995
	10	5823	5201	4588	3967	3326
	15	5050	4362	3533	2299	1319

TA 15		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	21418	20491	19577	18677	17791
	10	20927	24253	19100	18200	17300
	15	20354	19427	18514	17600	16714
65	5	19386	18473	17573	16673	15801
	10	18868	17968	17069	16169	15283
	15	18255	17341	16428	15528	14642
60	5	17982	17069	16142	15242	14342
	10	16810	15910	15024	14138	13265
	15	16142	15242	14342	13442	12556
50	5	13279	12393	11520	10661	9816
	10	12665	11779	10893	10020	9148
	15	11861	10947	10034	9121	8207
45	5	11234	10361	9502	8643	7798
	10	10552	9680	8793	7921	7035
	15	9639	8712	7771	6803	5821
40	5	9175	8316	7471	6612	5780
	10	8425	7525	6639	5740	4812
	15	7307	6312	5112	3326	1909

TA 19		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	27697	26498	25317	24153	23007
	10	27062	31364	24700	23536	22373
	15	26322	25123	23942	22761	21615
65	5	25070	23889	22725	21562	20433
	10	24400	23237	22073	20909	19764
	15	23607	22426	21244	20081	18935
60	5	23254	22073	20874	19711	18547
	10	21738	20575	19429	18283	17154
	15	20874	19711	18547	17383	16237
50	5	17172	16026	14898	13787	12694
	10	16379	15233	14087	12958	11830
	15	15338	14157	12976	11795	10613
45	5	14527	13399	12288	11178	10085
	10	13646	12517	11372	10243	9097
	15	12465	11266	10049	8798	7528
40	5	11865	10754	9661	8551	7475
	10	10896	9732	8586	7422	6223
	15	9450	8163	6611	4302	2468

TA 24		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	36556	34973	33414	31879	30366
	10	35718	41396	32600	31064	29528
	15	34741	33158	31599	30040	28528
65	5	33089	31530	29994	28458	26969
	10	32204	30669	29133	27597	26085
	15	31157	29598	28039	26503	24991
60	5	30692	29133	27551	26015	24479
	10	28691	27155	25643	24130	22641
	15	27551	26015	24479	22943	21431
50	5	22664	21152	19662	18196	16754
	10	21617	20104	18592	17103	15614
	15	20244	18685	17126	15567	14008
45	5	19174	17685	16219	14753	13310
	10	18010	16521	15009	13519	12007
	15	16451	14869	13263	11611	9936
40	5	15660	14194	12751	11286	9866
	10	14380	12845	11332	9796	8214
	15	12472	10774	8726	5678	3258

TA 33		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	46984	44951	42947	40973	39029
	10	45908	53205	41900	39926	37952
	15	44651	42618	40614	38610	36666
65	5	42528	40524	38550	36577	34662
	10	41392	39418	37444	35470	33526
	15	40046	38042	36038	34064	32120
60	5	39448	37444	35410	33436	31462
	10	36876	34902	32958	31014	29100
	15	35410	33436	31462	29489	27545
50	5	29130	27186	25272	23387	21533
	10	27784	25840	23896	21982	20068
	15	26019	24015	22012	20008	18004
45	5	24644	22729	20845	18961	17107
	10	23148	21234	19290	17376	15432
	15	21144	19111	17047	14924	12770
40	5	20128	18243	16389	14505	12681
	10	18483	16509	14565	12591	10557
	15	16030	13847	11215	7297	4187

TA 40		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	59207	56644	54119	51632	49182
	10	57850	67046	52800	50313	47825
	15	56267	53704	51179	48654	46205
65	5	53591	51066	48579	46092	43680
	10	52159	49672	47185	44697	42248
	15	50463	47938	45413	42926	40476
60	5	49710	47185	44622	42134	39647
	10	46469	43981	41531	39082	36670
	15	44622	42134	39647	37160	34710
50	5	36707	34258	31846	29472	27135
	10	35012	32562	30112	27700	25288
	15	32788	30263	27738	25213	22688
45	5	31054	28642	26268	23894	21557
	10	29170	26758	24308	21896	19447
	15	26645	24082	21482	18806	16093
40	5	25364	22989	20653	18278	15979
	10	23291	20803	18354	15866	13304
	15	20200	17449	14133	9196	5276

TA 50		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	70420	67372	64369	61410	58497
	10	68807	79744	62800	59842	56883
	15	66924	63876	60873	57869	54956
65	5	63741	60738	57780	54821	51952
	10	62038	59080	56121	53163	50249
	15	60021	57018	54014	51056	48142
60	5	59124	56121	53073	50114	47156
	10	55269	52311	49397	46484	43615
	15	53073	50114	47156	44198	41284
50	5	43660	40746	37877	35053	32274
	10	41643	38729	35815	32946	30078
	15	38998	35995	32991	29988	26985
45	5	36936	34067	31243	28419	25640
	10	34695	31826	28912	26043	23130
	15	31691	28643	25550	22368	19140
40	5	30167	27343	24564	21740	19006
	10	27702	24743	21830	18871	15823
	15	24026	20754	16809	10937	6276

HEATING (6 ROWS COIL)

TA 09		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	12783	12230	11685	11148	10619
	10	12490	14476	11400	10863	10326
	15	12149	11595	11050	10505	9976
65	5	11571	11026	10489	9952	9431
	10	11262	10725	10188	9651	9122
	15	10896	10350	9805	9268	8739
60	5	10733	10188	9634	9097	8560
	10	10033	9496	8967	8438	7917
	15	9634	9097	8560	8023	7494
50	5	7925	7397	6876	6363	5859
	10	7559	7030	6501	5981	5460
	15	7079	6534	5989	5444	4899
45	5	6705	6184	5672	5159	4654
	10	6298	5777	5248	4728	4199
	15	5753	5200	4638	4060	3475
40	5	5476	4964	4459	3946	3450
	10	5029	4492	3963	3426	2872
	15	4361	3767	3051	1985	1139

TA 11		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	16596	15878	15170	14473	13786
	10	16216	18793	14800	14103	13406
	15	15772	15054	14346	13638	12951
65	5	15022	14314	13617	12920	12244
	10	14620	13923	13226	12529	11842
	15	14145	13437	12729	12032	11346
60	5	13934	13226	12508	11810	11113
	10	13025	12328	11641	10955	10279
	15	12508	11810	11113	10416	9729
50	5	10289	9603	8926	8261	7606
	10	9814	9127	8441	7764	7088
	15	9191	8483	7775	7067	6359
45	5	8705	8029	7363	6698	6043
	10	8176	7500	6814	6138	5451
	15	7469	6750	6021	5271	4511
40	5	7109	6444	5789	5123	4479
	10	6528	5831	5145	4447	3729
	15	5662	4891	3961	2578	1479

TA 15		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	23997	22958	21935	20926	19934
	10	23447	27174	21400	20392	19384
	15	22805	21767	20743	19720	18727
65	5	21721	20697	19689	18681	17703
	10	21140	20132	19124	18116	17123
	15	20453	19430	18406	17398	16405
60	5	20147	19124	18085	17077	16069
	10	18834	17826	16833	15840	14862
	15	18085	17077	16069	15061	14068
50	5	14878	13885	12907	11945	10998
	10	14190	13197	12205	11227	10249
	15	13289	12266	11242	10219	9195
45	5	12586	11609	10647	9684	8737
	10	11823	10845	9852	8875	7882
	15	10799	9761	8707	7622	6522
40	5	10280	9318	8371	7408	6477
	10	9440	8432	7439	6431	5392
	15	8187	7072	5728	3727	2138

TA 19		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	30725	29395	28085	26794	25522
	10	30021	34793	27400	26109	24818
	15	29199	27869	26559	25249	23977
65	5	27811	26500	25210	23919	22667
	10	27068	25777	24486	23195	21924
	15	26187	24877	23567	22276	21005
60	5	25796	24486	23156	21865	20574
	10	24114	22824	21552	20281	19029
	15	23156	21865	20574	19284	18012
50	5	19049	17778	16526	15294	14081
	10	18169	16898	15626	14375	13123
	15	17015	15705	14394	13084	11774
45	5	16115	14864	13632	12399	11187
	10	15137	13886	12615	11363	10092
	15	13827	12497	11148	9759	8351
40	5	13162	11930	10717	9485	8292
	10	12087	10796	9524	8234	6904
	15	10483	9055	7334	4772	2738

TA 24		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	39920	38192	36489	34812	33161
	10	39005	45205	35600	33923	32246
	15	37938	36210	34507	32805	31153
65	5	36134	34431	32754	31077	29451
	10	35168	33491	31814	30137	28485
	15	34025	32322	30620	28942	27291
60	5	33516	31814	30086	28409	26732
	10	31331	29654	28002	26351	24724
	15	30086	28409	26732	25055	23403
50	5	24750	23098	21472	19871	18296
	10	23606	21955	20303	18677	17050
	15	22107	20405	18702	17000	15297
45	5	20938	19312	17711	16110	14535
	10	19668	18041	16390	14763	13112
	15	17965	16237	14484	12680	10850
40	5	17101	15500	13925	12324	10774
	10	15704	14027	12375	10698	8970
	15	13620	11765	9529	6200	3557

TA 33		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	52255	49993	47764	45569	43407
	10	51057	59173	46600	44405	42209
	15	49660	47398	45170	42941	40779
65	5	47299	45070	42875	40679	38551
	10	46035	43839	41644	39449	37287
	15	44538	42309	40081	37885	35723
60	5	43873	41644	39382	37187	34992
	10	41012	38817	36655	34493	32364
	15	39382	37187	34992	32796	30634
50	5	32397	30235	28106	26011	23949
	10	30900	28738	26576	24448	22319
	15	28938	26709	24481	22252	20024
45	5	27408	25279	23184	21088	19026
	10	25745	23616	21454	19325	17163
	15	23516	21254	18959	16598	14203
40	5	22385	20290	18228	16132	14103
	10	20556	18361	16199	14003	11741
	15	17828	15400	12473	8116	4657

TA 40		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	65374	62545	59756	57010	54305
	10	63876	74030	58300	55554	52807
	15	62128	59299	56511	53723	51018
65	5	59174	56386	53639	50893	48230
	10	57593	54846	52100	49353	46648
	15	55720	52932	50144	47397	44693
60	5	54888	52100	49270	46523	43777
	10	51309	48563	45858	43153	40490
	15	49270	46523	43777	41031	38326
50	5	40531	37826	35163	32541	29961
	10	38659	35954	33249	30586	27922
	15	36203	33415	30627	27839	25051
45	5	34289	31626	29004	26383	23803
	10	32209	29545	26840	24177	21472
	15	29420	26591	23719	20765	17769
40	5	28006	25384	22804	20182	17644
	10	25717	22970	20266	17519	14689
	15	22305	19267	15605	10154	5826

TA 50		Ta B.S. [°C]				
		16	18	20	22	24
Tw(in)		Ph	Ph	Ph	Ph	Ph
in	dt	[W]	[W]	[W]	[W]	[W]
70	5	80064	76598	73184	69820	66507
	10	78229	90664	71400	68036	64673
	15	76089	72623	69209	65794	62481
65	5	72470	69056	65692	62328	59067
	10	70534	67170	63806	60443	57130
	15	68240	64826	61411	58048	54735
60	5	67221	63806	60341	56977	53614
	10	62838	59475	56162	52849	49588
	15	60341	56977	53614	50250	46937
50	5	49639	46326	43064	39854	36694
	10	47345	44033	40720	37458	34197
	15	44338	40924	37509	34095	30680
45	5	41994	38732	35522	32311	29151
	10	39446	36184	32872	29610	26297
	15	36031	32566	29049	25431	21761
40	5	34299	31088	27928	24717	21609
	10	31496	28132	24819	21456	17990
	15	27316	23596	19111	12435	7135

GENERAL SAFETY PRESCRIPTIONS



ATTENTION!

The TA series units are intended for the civil and tertiary sector: any other use (in highly corrosive environments, in the presence of potentially explosive atmospheres, etc.) is not permitted.

Installation and maintenance

Make sure the unit has not been damaged during transport before installation. Using a damaged machine could be dangerous.

Installation and special maintenance must be carried out by personnel with the necessary requisites in accordance with current regulations. Do not use the unit as storage for equipment or spare parts. Any use other than that indicated in this manual is prohibited as it can generate dangerous situations.

Before performing maintenance or cleaning, make sure that the unit is not live and that it cannot be powered without the operator knowing it.

During maintenance and cleaning, pay attention to scalding deriving from any heating coils.

Before starting the unit, make sure that the electrical components have been connected to the building's earth plant.

Use suitable Personal Protective Equipment (PPE) and tools during the installation, maintenance and cleaning stages.



Unit access

Only operators and qualified technicians may access the unit once it is installed. By operator we mean a person authorised by the owner of the machine to perform operations on it (in compliance with that provided in this manual). By technician we mean a person authorised by AERMEC or under the full responsibility of an AERMEC distributor to perform operations on the machine. By machine owner we mean the legal representative of the company, body or physical person who owns the system on which the AERMEC unit is installed. He is responsible to make sure that all safety standards indicated in this manual and standards in force are complied with. Since this unit is generally installed on a suspended ceiling, the lower panelling must be accessible in order to inspect the filters and fans.

Residual risks

Installation, start-up, shutdown and maintenance of the unit must be carried out in compliance with that provided in the product's technical documentation and anyhow in such a way as not to create any situation of risk. The unit has been designed to reduce risks for the safety of the persons interacting with it to a minimum. During designing, it was not technically possible to fully eliminate the causes of risks. Therefore it is absolutely necessary to refer to the following prescriptions.

CONCERNED PART	RESIDUAL RISK	MODE	PRECAUTIONS
Inside unit: heat exchange finned coil	small cuts	contact	avoid contact, use protective gloves
Electric heating coil	burns, injuries	contact	avoid contact
Inside unit: metal parts and electric cables	intoxication, electrocution, serious burns	faulty insulation of power cables upstream electric control board of unit; live metal parts	adequate electric protection of power line; utmost care when earthing metal parts
Outside of unit: zone around unit	serious burns	fire caused by short-circuit or overheating of power line upstream electric control board of unit	cross-section of cables and protective system of electric power line in compliance with standards in force

MINIMUM OPERATIONAL SPACES

All the required operational spaces must be checked before starting installation:

- renewal and expulsion air ducting position;
- passage of cables for power supply;
- proper maintenance and cleaning operations;

In particular:

- a space of at least 200 mm must be available at the condensation drain to implement the siphon (more detailed instructions are found on the label).
- there must be a space of at least 400 mm near the water coil collectors to install the valve.
- There must be a space of at least 1000 mm for routine maintenance (eye checks, replacing and cleaning filters).

HANDLING

PACKAGING

The TA series air conditioning units are generally supplied on pallets and packed in cardboard boxes.

STORAGE ON SITE

The TA series units must be stored indoors.

TRANSPORT

Transport must be performed taking the following precautions:

- suitable blocking onto the lorry deck;
- load protection with adequate protection;

VERIFICATIONS UPON RECEPTION

On receipt of the unit, a visual control must be carried out to check that no damage has occurred during transport. If damage has occurred it must be highlighted on the accompanying transport document.

INSTALLATION OF THE UNIT

Follow the indications below to install the equipment correctly.

The completion of all operations, according to specific requirements, is left to the experience of the installer.

The unit is supplied with support brackets to mount it on the wall or ceiling.

The brackets can be mounted with the bends facing inwards or outwards.

For different types of assemblies, the following instructions must be modified depending on specific worksite requirements.

It is always advised to fix the brackets to the ceiling first of all (with expansion plugs or threaded tie rods) and then to fix the units to the brackets.

When performing vertical installation, the screws fastening the brackets will rest on the shorter part of the slots.

To fasten the unit to the wall, proceed as follows:

- mark the four holes for the expansion plugs;
- prepare the fixing system (expansion plugs or tie rods);
- fix the brackets to the wall or to the ceiling using nuts, washers and back nuts;
- screw on the 4 side screws to the unit to the brackets;
- for horizontal installation, before tightening the screws, nuts and back nuts make sure that condensation drains properly;

It is advised to provide a slight slope towards the drain to favour runoff.

CONNECTION INSTALLATION

AEREAULIC CONNECTIONS

ATTENTION!

It is prohibited to start the machine if the fan vents are not ducted or protected using an accident-prevention net.

To install the ducts, it is recommended to:

- prepare adequate bracketing to support the ducts so that the recovery unit does not bear their weight;
- connect the flow and return vents to the ducts placing anti-vibration joints in between (duck). The anti-vibration joint must be screwed to the panel with self-threading screws avoiding that the duck joints are taut during operation;
- provide an earth cable as a bridge on the anti-vibration joint to guarantee equipotentiality between the ducts and the recovery unit;
- prepare (before curves, branches, etc.) the flow duct with a straight tract measuring at least 2.5 times the smallest side of the duct, A, to prevent the ducting from having inclinations in the branching tracts that exceed 7° so that the fan does not lose efficiency.

Hydraulic connections: condensate draining

The condensate drip tray is equipped with a 1/2" -G UNI 338 threaded outlet.

A drain system must envision a suitable siphon to:

- allow free draining of the condensate;
- prevent the undesired entry of air into the depression systems;
- prevent the infiltration of smells or insects.

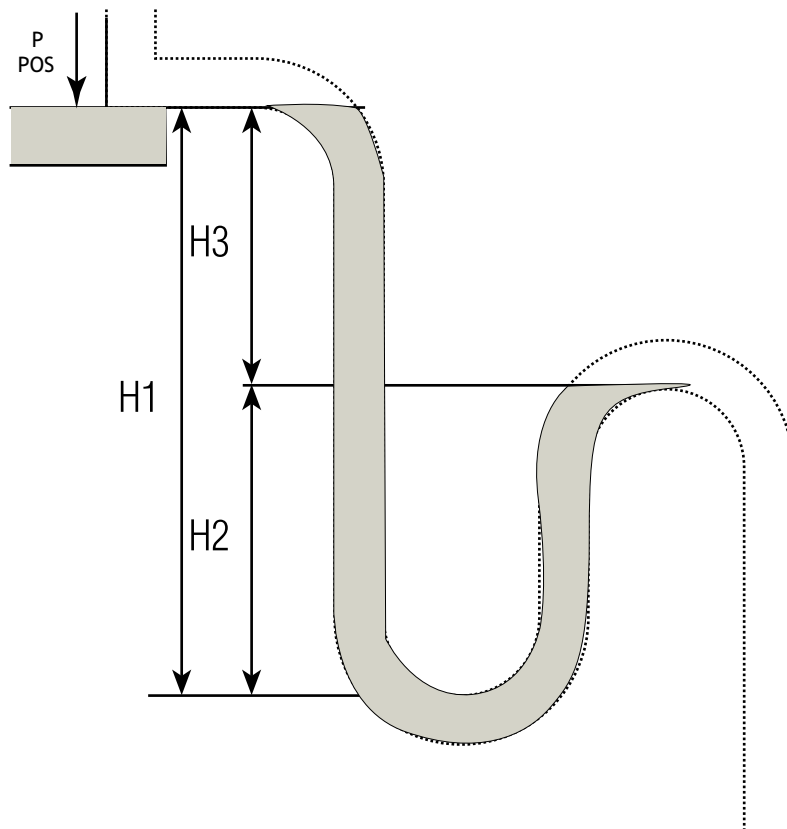
The siphon must have a bleed plug on the bottom or must however allow quick disassembly for cleaning.

The following rules must be followed to dimension and execute the siphon (see figure 21):

$$H1 = 2P$$

$$H2 = H1 / 2$$

where P is the pressure expressed in mm of a column of water (1 mm c.w. = 9.81 Pa).



Siphon dimensioning layout

WATER COIL CONNECTION

All the water coil collectors are provided with male threaded connections for water inlet and outlet.

For correct installation, abide by the following simple indications:

- in the event of bad weather conditions, it is recommended to provide anti-freeze devices;
- the pipe path must be studied in order not to create obstacles when the coil is extracted and to not make inspection and maintenance of the unit and other accessories impossible;
- while screwing the collectors and hydraulic circuit, do not generate strains which could damage the coil collectors;
- provide shut-off valves to isolate the coil from the rest of the circuit should it need to be disconnected from the hydraulic circuit;
- clamp the pipes adequately to the outside of the unit to prevent the weight being unloaded onto the coil;
- to connect the water supply pipes, respect the indications on the plates reading "WATER INLET" and "WATER OUTLET" on the outside panelling;
- mount an air bleed valve at the highest part of the circuit and a water drain valve at the lowest part;
- when connection has been made, place the external rubber gasket flush with the panel to prevent seepage of air.



ATTENTION!

In case of heating functioning, in order to prevent burns the pipes must be isolated effectively with suitable material flush with the panelling.

DIRECT EXPANSION COILS CONNECTION

The coils are supplied with hermetically sealed connections and pressurised with inert gas.

For correct installation, abide by the following simple indications:

- the pipe path must be studied in order not to create obstacles when the coil is extracted and to not make inspection and maintenance of the unit and other accessories impossible;
- provide adequate clamping units to support the pipes so that their weight is not supported by the recovery unit;
- when connection has been made, place the external rubber gasket flush with the panel to prevent seepage of air;
- the coil performance stated in this manual may be subject to variations if its connection piping to a motocondensing causes excessive refrigerant pressure drops.



ATTENTION!

In order to prevent burns the pipes must be isolated effectively with suitable material flush with the panelling.

ELECTRICAL CONNECTIONS: EARTH



ATTENTION!

The electrical connections and wiring must be carried out by personnel with the necessary requisites in accordance with current regulations.



ATTENTION!

Every electrical utility must be connected to the system earth plant. Use the connectors marked with the earth symbol to perform the earth connection of the unit and of other accessories to the building.

CONNECTION TO THE ELECTRIC NETWORK



ATTENTION!

Make sure that the network features are compatible with the electrical features indicated on the machine plate.

Electrical connections: electric coils



ATTENTION!

Make sure that the network features are compatible with the electrical features indicated on the component plates.

Follow the indications given below for correct electric battery connection:

- provide adequate protection upstream the unit with residual circuit breaker switches;
- always connect the safety thermostats to ensure power shut-off of the electric battery in case of overtemperature;
- the safety thermostats must be in series with the control thermostat (not supplied);
- the battery power supply must be interlocked with the fans;
- always connect the earth cable of the electric battery to the proper terminal in the electric box.

The connection wiring diagrams are supplied with the machine.

ELECTRICAL CONNECTIONS: ELECTRIC MOTORS

The electric motors are connected on the terminal boards mounted inside the unit for TA 09-11-15 and on the screw feeder of one of the fans for TA 19-24-33-40-50 units.

For units equipped with two motors, the power and earth cables are provided on a terminal board for each fan.

REPOSITIONING OF INTERNAL COMPONENTS

All TA units have been designed to facilitate the configuration and customisation requested by the customer as much as possible. In particular, it is possible to invert the position of the water coil connections.

Water heating or cooling coil

If the water coil connections are not at the desired position, proceed as follows:

- remove the upper panel and the air flow panel (coil side);
- re-mount the closing strap;
- pull the coil out;
- turn the coil 180°;
- put the coil back in and fasten it;
- re-mount the closing strap;
- put the panels back on;

As for the hydraulic connections, proceed as follows:

- connect the drain pipe to the threaded stub pipe of the tray and plug the opposite unused stub pipe;
- cut the two plastic plugs;
- screw the threaded sleeves onto the coil collectors;
- tighten the air vent on the sleeve; this must be in the highest position with respect to the other while the vent must be positioned facing up.

Perform the connections on the system, isolate all the piping and make sure that condensation drains correctly.

If water is used as the heat carrying fluid, the danger of freezing must be absolutely avoided.

COMMISSIONING



ATTENTION!

Make sure to have followed all instructions in this manual before performing the first start-up checks.

Before starting the unit, check:

- that the voltage on the terminals is $230\text{ V} \pm 5\%$ controllable with a tester: if the voltage is subject to frequent variations, contact the Technical Dept. to select appropriate protections;
- that the unit is properly anchored;
- the unit connection to the building's earthing;

- connection with the ducts;
- condensate draining connection with the siphon;
- insulation of coil supply pipes;
- absence of air inside the direct expansion and water coils;
- closure of panels that can be inspected;
- voltage available;

BASE UNIT CONNECTION TO ACCESSORIES

All base units have been designed to facilitate the configuration and customisation through modular accessories that fully meet the customer needs.

To ensure this, standard union modes have been implemented to simplify the coupling between base unit and accessories, or even between multiple accessories and the same unit. We supply, with all accessories, an assembly kit

consisting of screws and self-adhesive flat gasket to be applied on the contact walls in order to prevent air leaks between one or more modules.

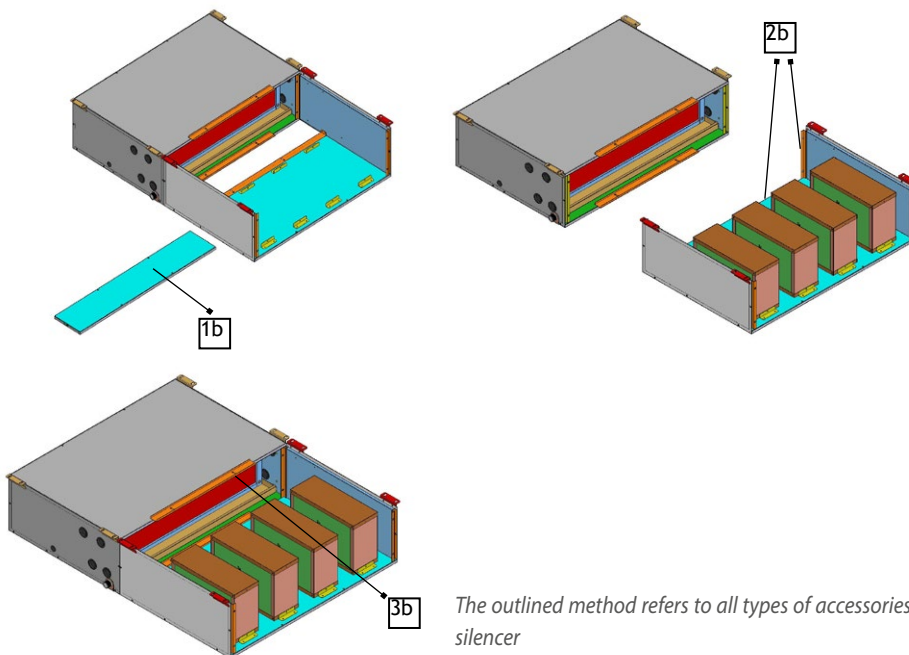
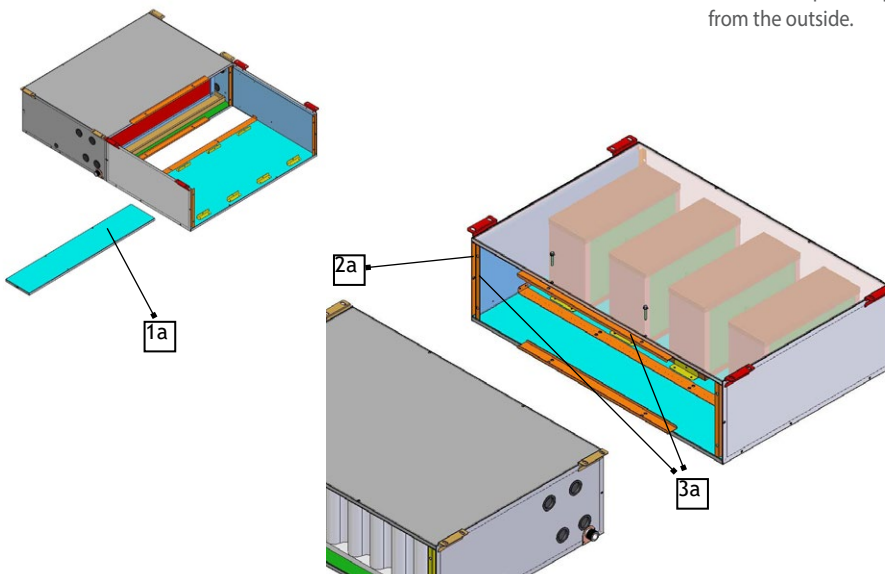
The accessories can be assembled both with machine earthed (in case of new installation) and with machine already installed.

Below is an examination of the earth unit union:

- 1a) remove the inspection panel on the bottom of the accessory to allow access inside the accessory set - base unit or accessory - accessory.
- 2a) apply the provided self-adhesive gasket on the edges of the accessory that will be connected to prevent air leaking during functioning.
- 3a) near the two modules and tighten the brackets (upper, lower and side) of the two modules using the provided metric screw.
- 4a) close the inspection panel of the accessory.

If the base unit is already installed and an accessory needs to be installed at a later stage, you can proceed as follows:

- 1b) remove the inspection panel on the bottom of the accessory to allow access inside the accessory set - base unit or accessory - accessory.
- 2b) apply the provided self-adhesive gasket on the edges of the accessory that will be connected to prevent air leaking during functioning.
- 3b) remove the bracket located inside the upper long side of the accessory and re-assemble it from the outside of the same side: fastening by fixing the screws from the inside. Near the two modules and tighten the upper and side brackets of the two modules using the provided metric screw.
- 4b) close the inspection panel of the accessory and secure the lower bracket from the outside.



The outlined method refers to all types of accessories, even if the diagram shows the assembly of an SSL silencer

UNIT MAINTENANCE

ATTENTION!

Wear proper personal protective equipment (PPE) to perform maintenance.



ATTENTION!

Before accessing the unit for maintenance and/or cleaning, make sure that it is not live, that it cannot be powered without the operator knowing it and that the heat exchange coils are not on.



ATTENTION!

Pay particular attention when working near the finned coils as the louvers are particularly sharp.



ATTENTION!

When maintenance is finished, always close the unit with its panels, fixing them with screws.

The TA series units have been designed to require little maintenance and to make every operation convenient. The following is simple advice for correct maintenance of the unit.

In any event the maintenance program must be carried out by a specialised technician.

ROUTINE MAINTENANCE

Routine maintenance consists in simple operations which should be performed monthly as follows:

- check that the screws fixing the fans to the panels are tight;
- check that the unit's electric power cable has no alterations which would jeopardise its insulation;
- check that the screws fixing the conductors to the electric opponents on the electric control board are tightened properly in order to guarantee correct electric connection; the same must be done for the earth connections.

FILTER MAINTENANCE (IF ANY)

Cleaning the filters is fundamental to keep the air quality in the room at a high standard. The synthetic filters mounted on TA units can be regenerated with a compressed air jet or washed with cold water. To remove the filters, do as follows (see figure below):

- remove the inspection panels provided with knobs;
- pull the filters off;
- clean the filters;
- put all the components back on in inverse order.

MAINTENANCE OF FANS

It is essential to control and clean the fans to keep noise low in the room where the unit is installed. Check yearly:

- check rotor cleanliness;
- check bearings noise;

MAINTENANCE OF COILS

Checking and cleaning the coils is fundamental to keep the air quality and renewal in the room at a high standard.

Check yearly:

- check the finned pack cleanliness;

Dimensional table of filters used in the TA units

TA	FLAT FILTER 665 x 265	FLAT FILTER 1015 x 265	FLAT FILTER 1440 x 355	FLAT FILTER 2065 x 355
09	1			
11	1			
15		1		
19			1	
24			1	
33			1	
40				1
50				1

TA	BAG FILTER 287 x 592
09	1
11	1
15	1
19	1
24	2
33	2
40	3
50	3

DISPOSAL OF UNIT

The components of the TA series have been designed to run continuously. The duration of some of the main components depends on the maintenance they have received.

At the end of their life, the TA series units must be disposed of in compliance with that foreseen by standards in force.

The unit must be dismantled by specialised personnel.

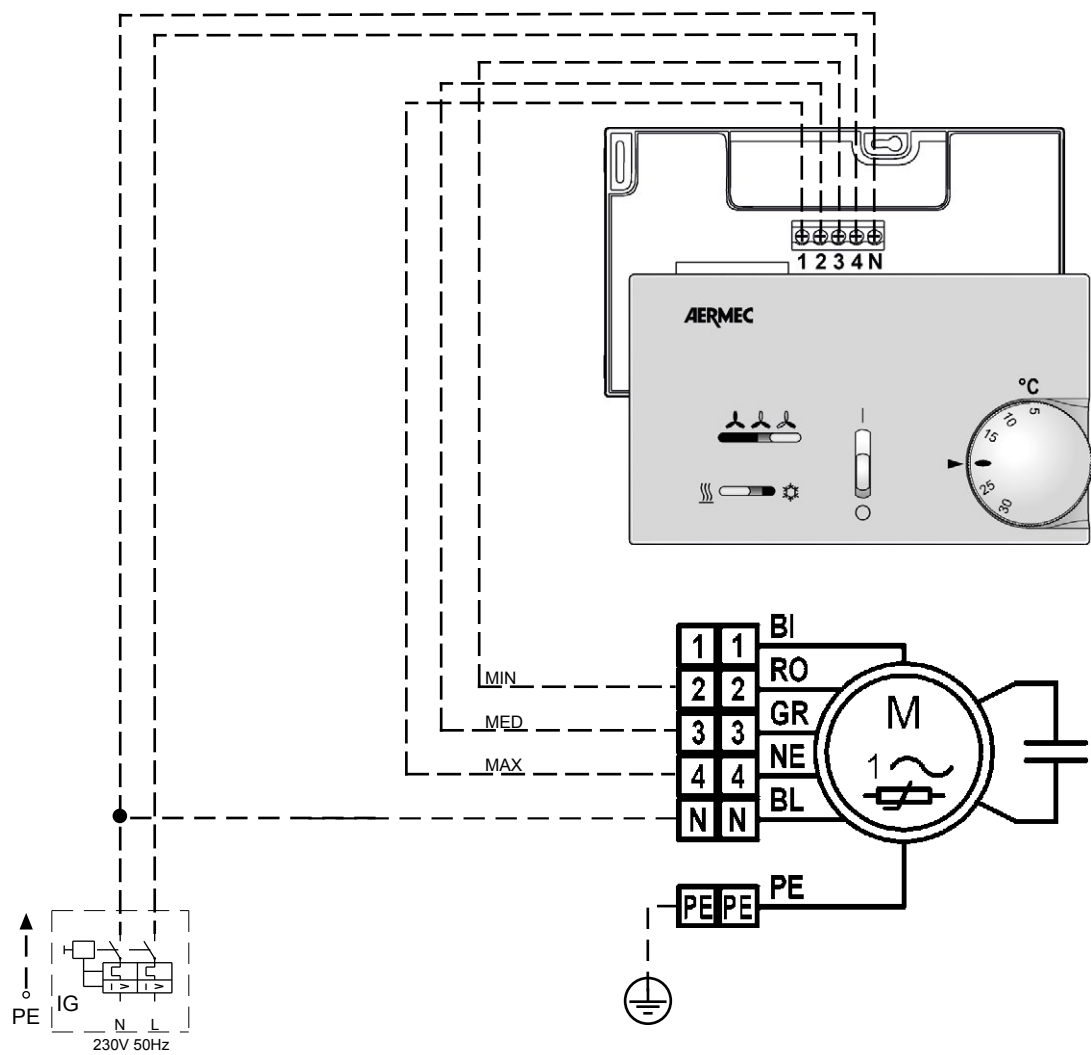
The main materials making up the units of the TA series are:

- galvanised steel sheets (panels, fans, condensation drip tray);
- aluminium or aluminium alloy sheets (coil louvers, grids, electric motor casing);
- copper (coil pipes, electric motor windings);
- expanded polyurethane (insulation of sandwich panels).

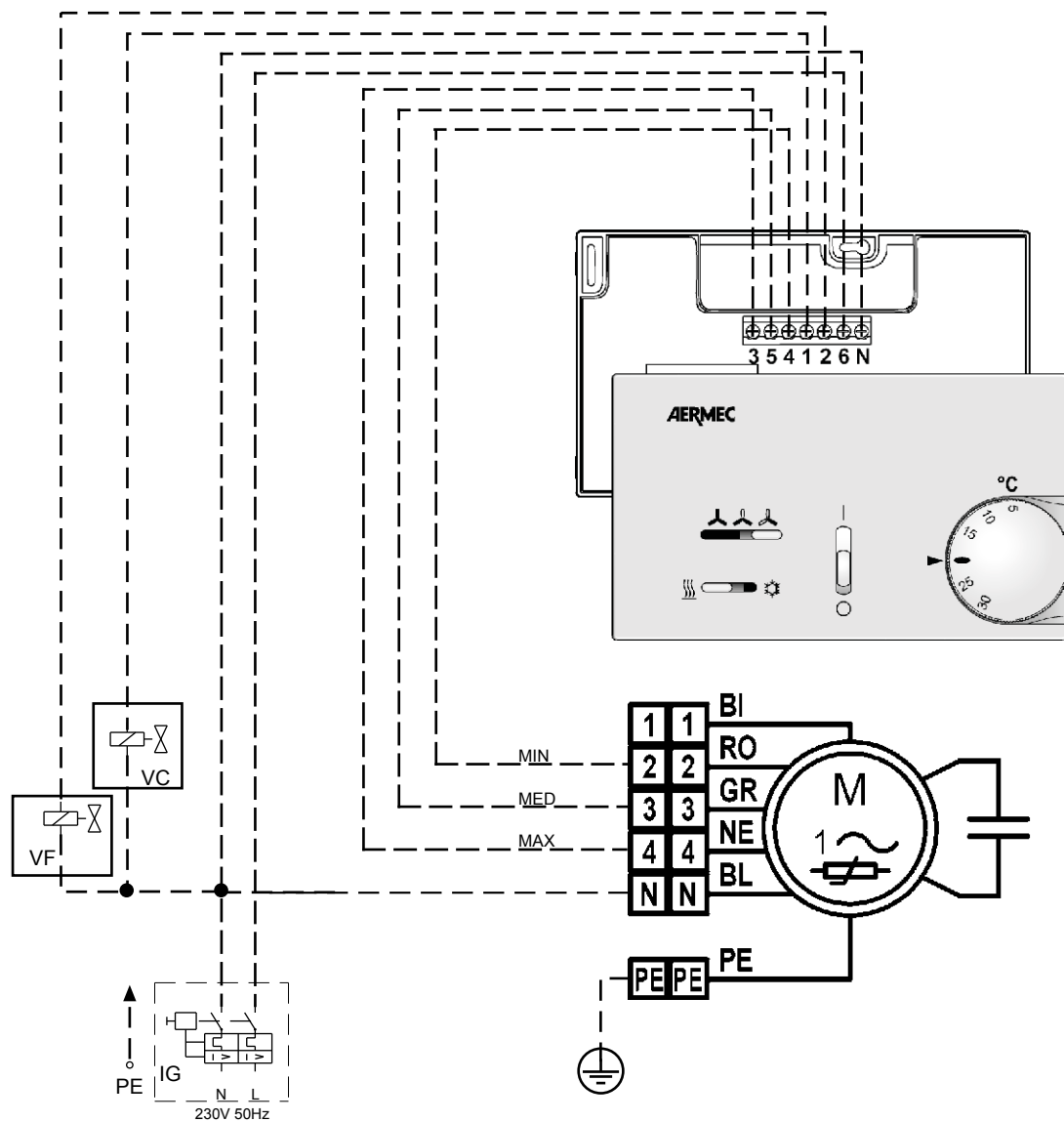
TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
1. AIR FLOW RATE INSUFFICIENT	1. Filters clogged	- Clean the filters
	2. Coils clogged	- Clean the coils
3. NO AIR FLOW	1. Power disconnected	- Check the presence of voltage
	2. Electric motor burnt	- Replace the electric motor
4. UNUSUAL NOISE	1. Excessive flow rate	- Reduce flow rate
	2. Fan bearings worn or faulty	- Replace the bearings
	3. Extraneous bodies on fan rotor	- Clean the rotor
4. WATER CARRY OVER	1. Siphon clogged	- Clean the siphon
	2. No siphon or not installed properly	- Provide a properly installed siphon as indicated in this manual
5. THE UNIT DOES NOT REACH THE DESIRED TEMPERATURES	1. Temperature of air entering coil outside of foreseen limits	- Check water temperature
	2. Air in water coils	- Bleed the coils
	3. Insufficient water flow rate in water coils	- Increase water flow rate
	4. Insufficient coil inlet water temperature	- Check water temperature
	5. Surface of coil pack dirty	- Clean pack surface

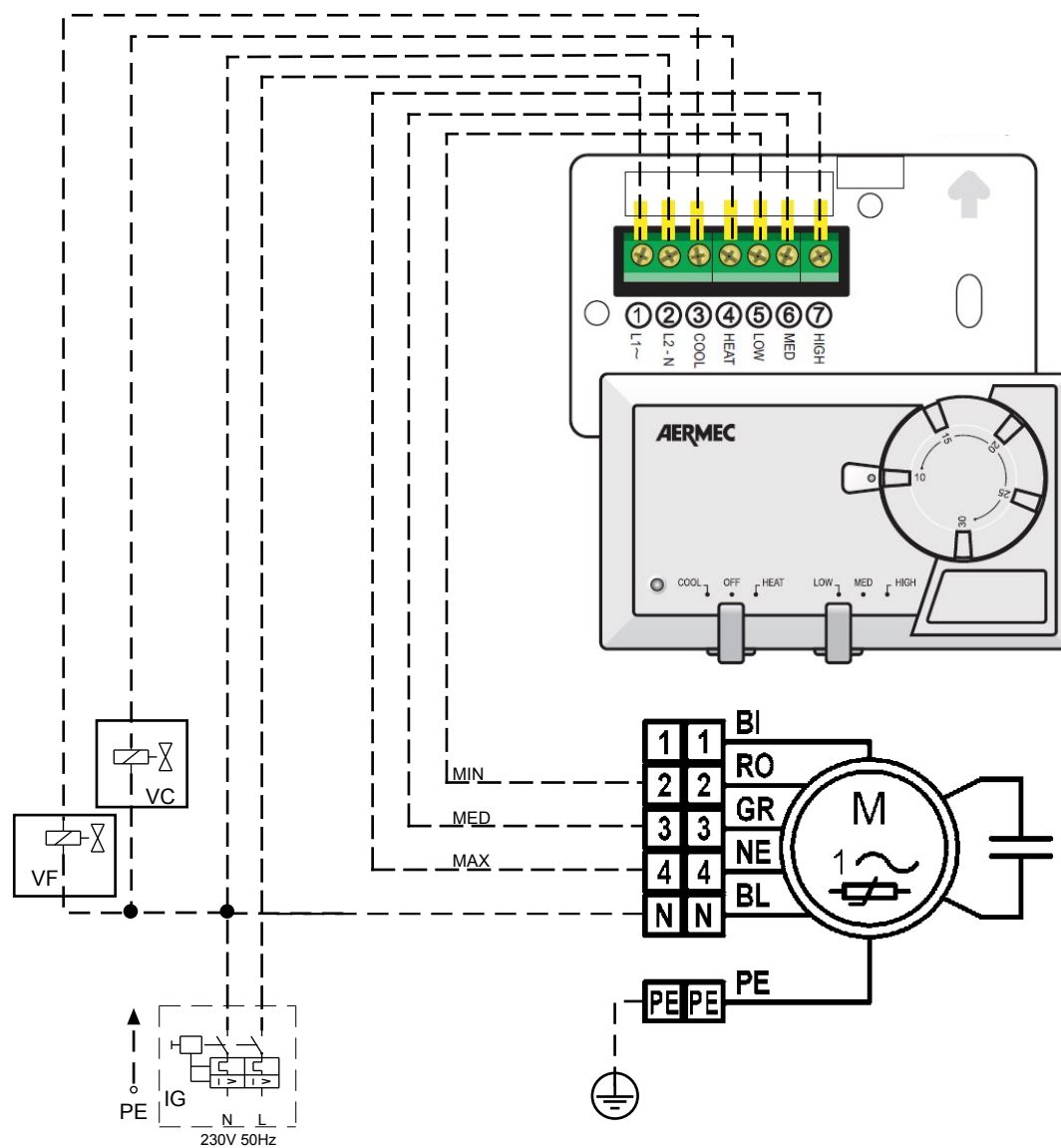
TA09 E WMT05



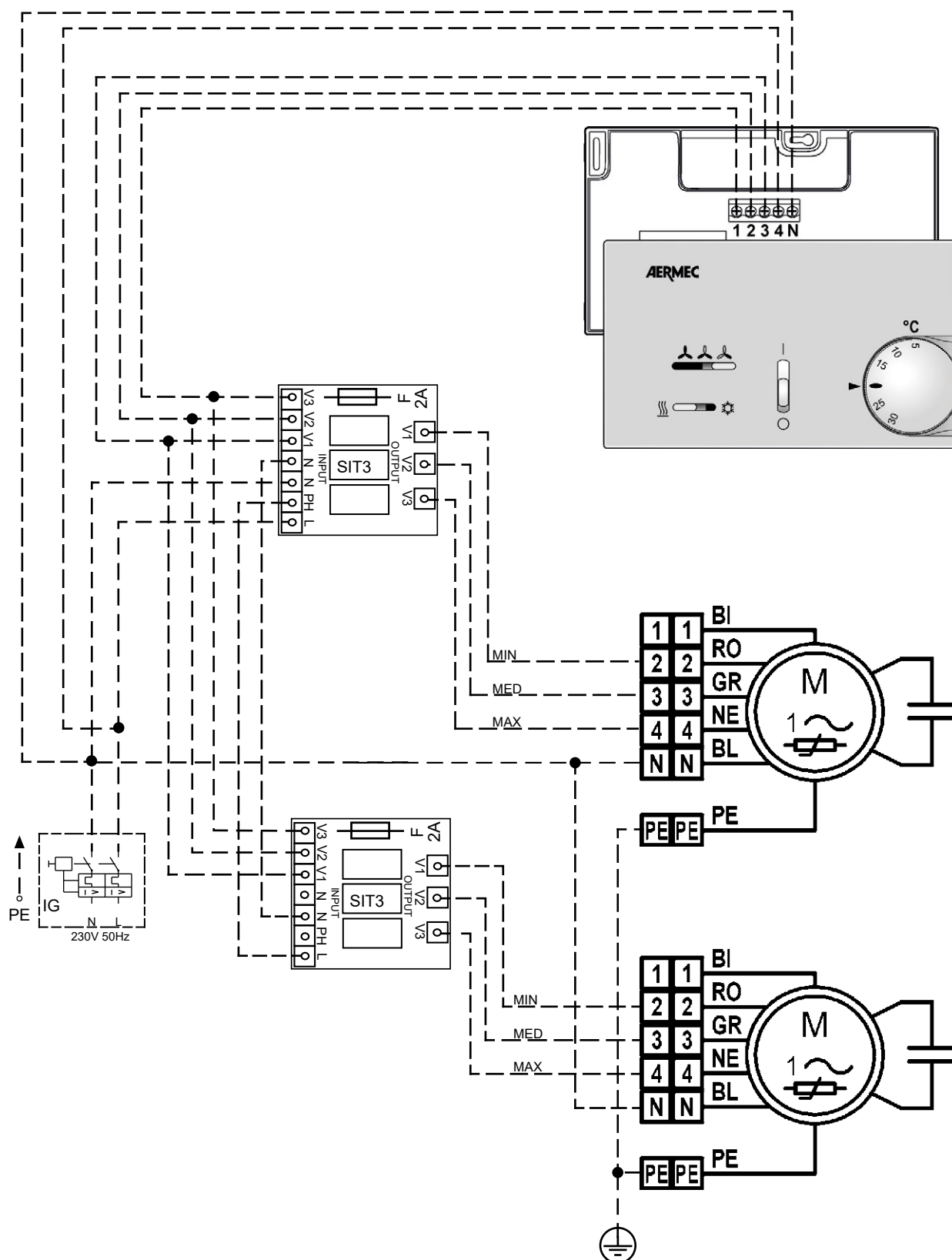
TA09 E WMT06



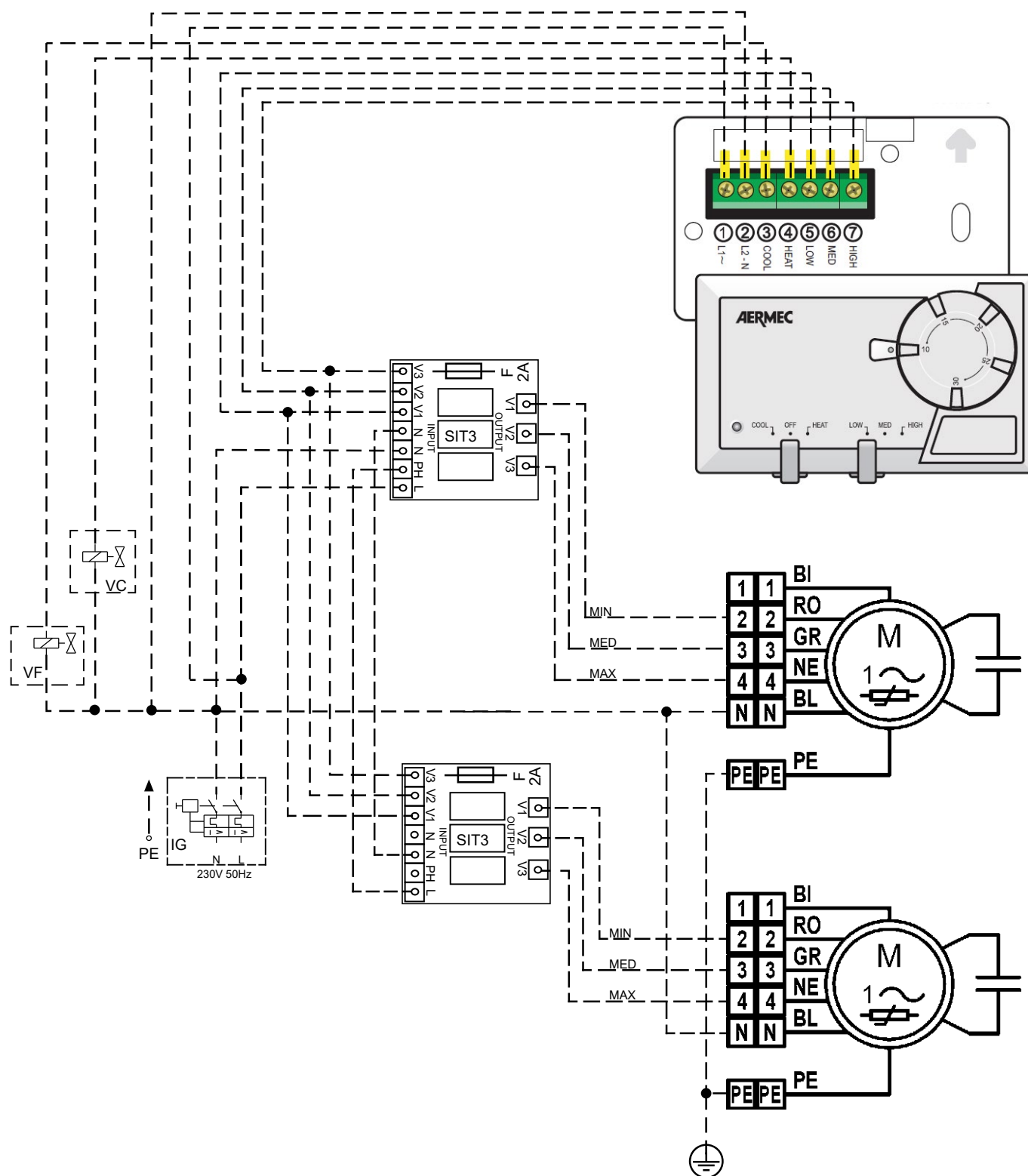
TA09 E WMT10



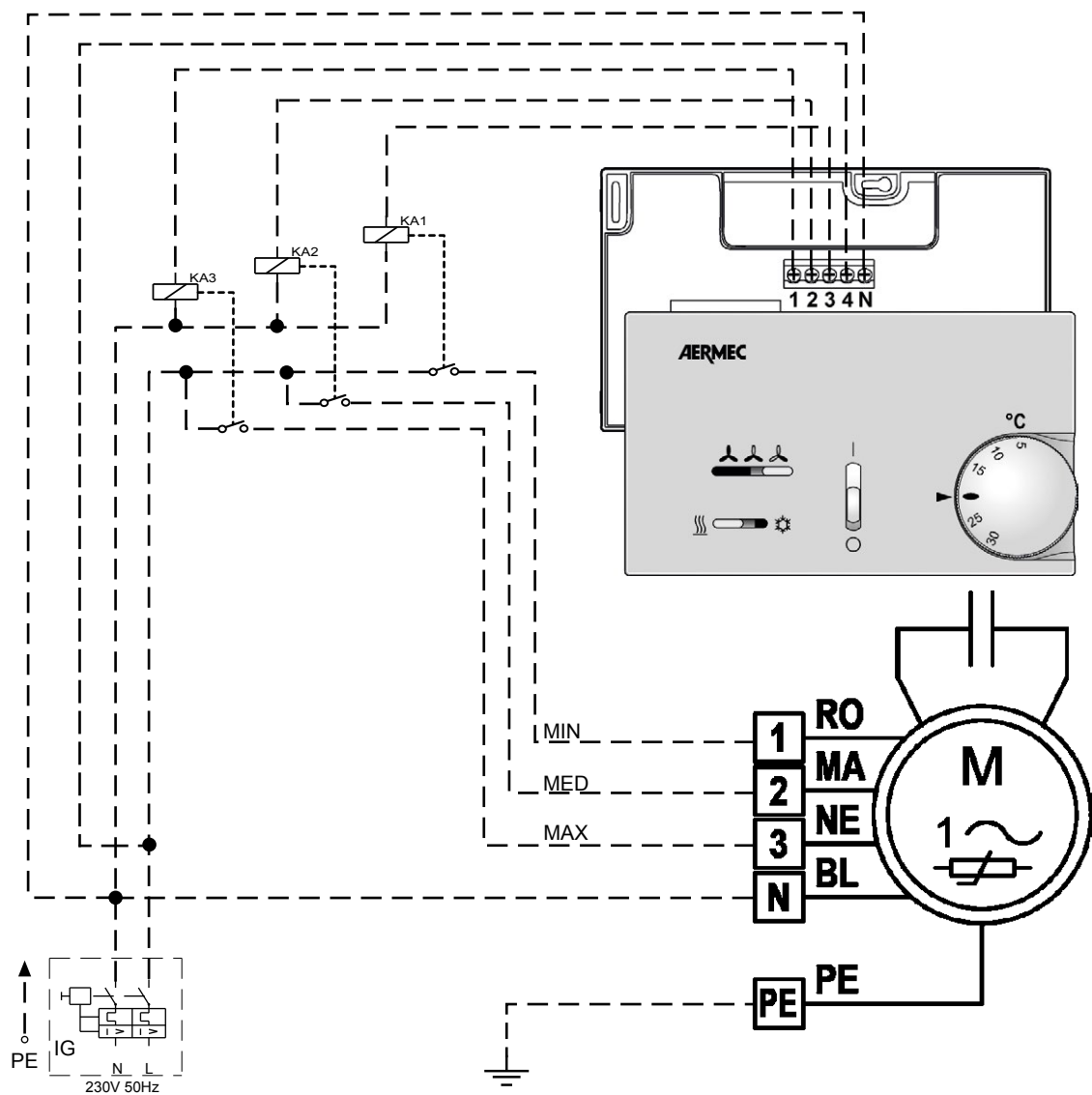
TA 11 - 15 E TDA15 - 21 E WMT05



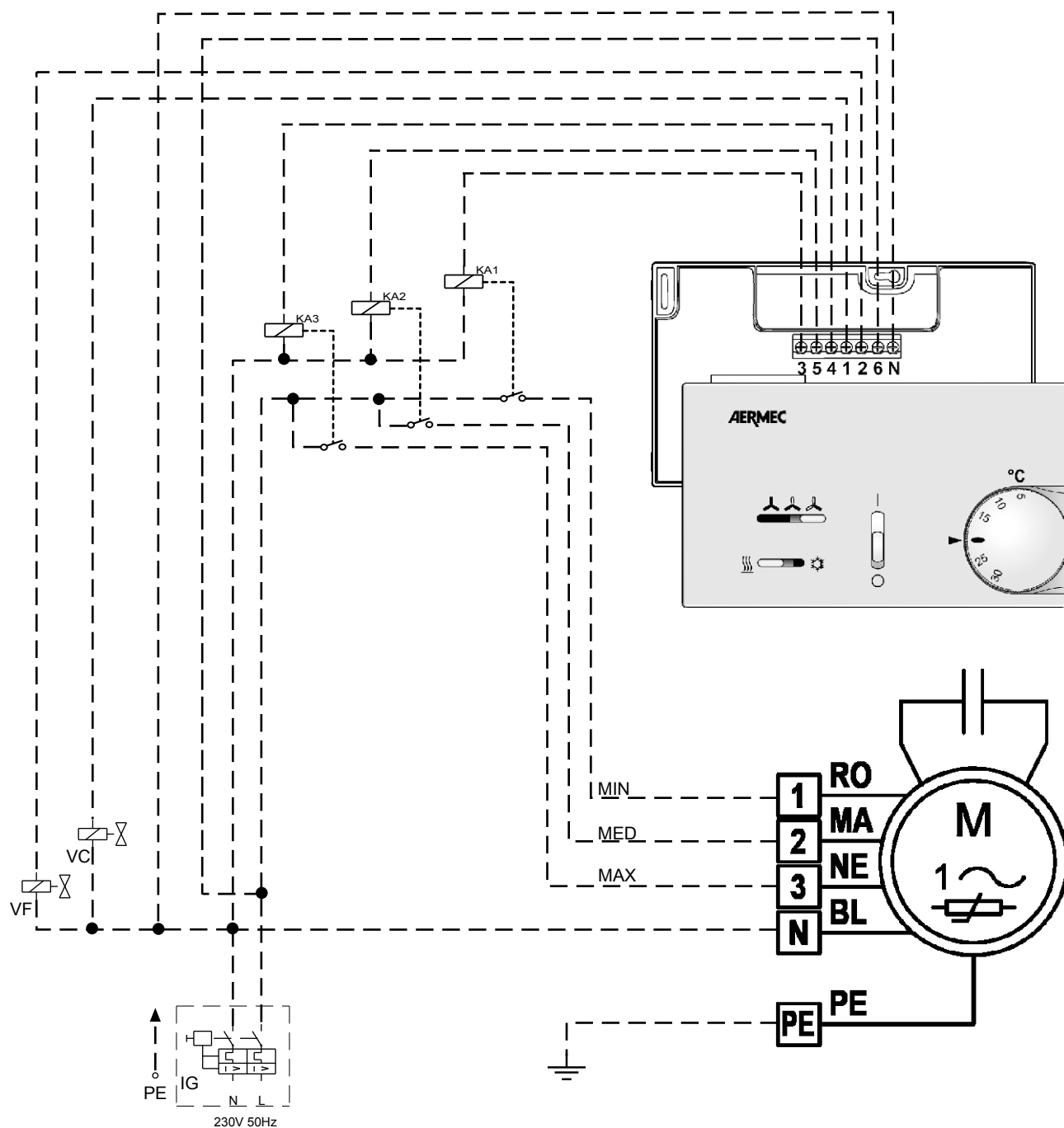
TA 11 - 15 E TDA15 - 21 E WMT10



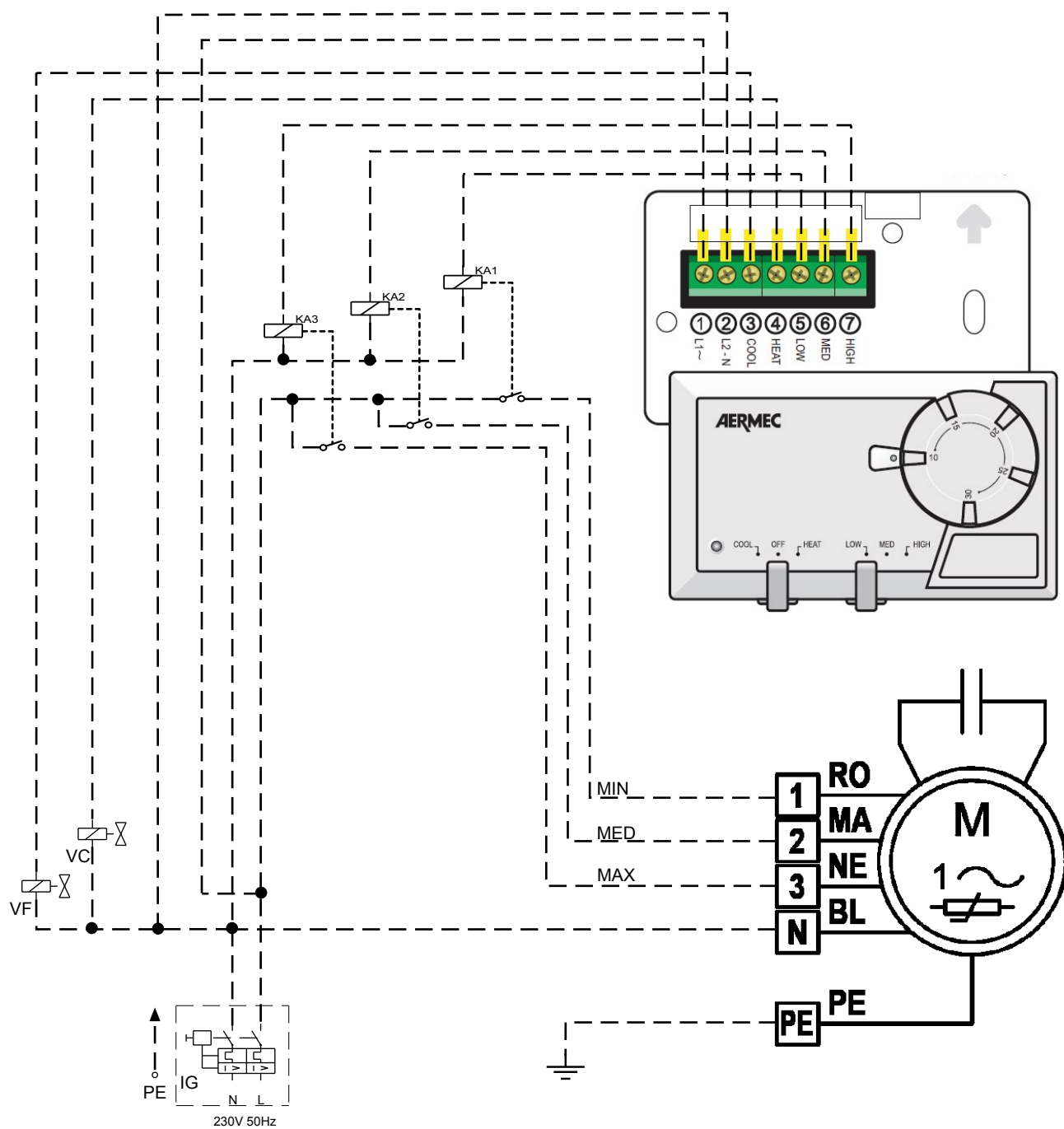
TA19 - 24 CON WMT05 E MOTORE CMC



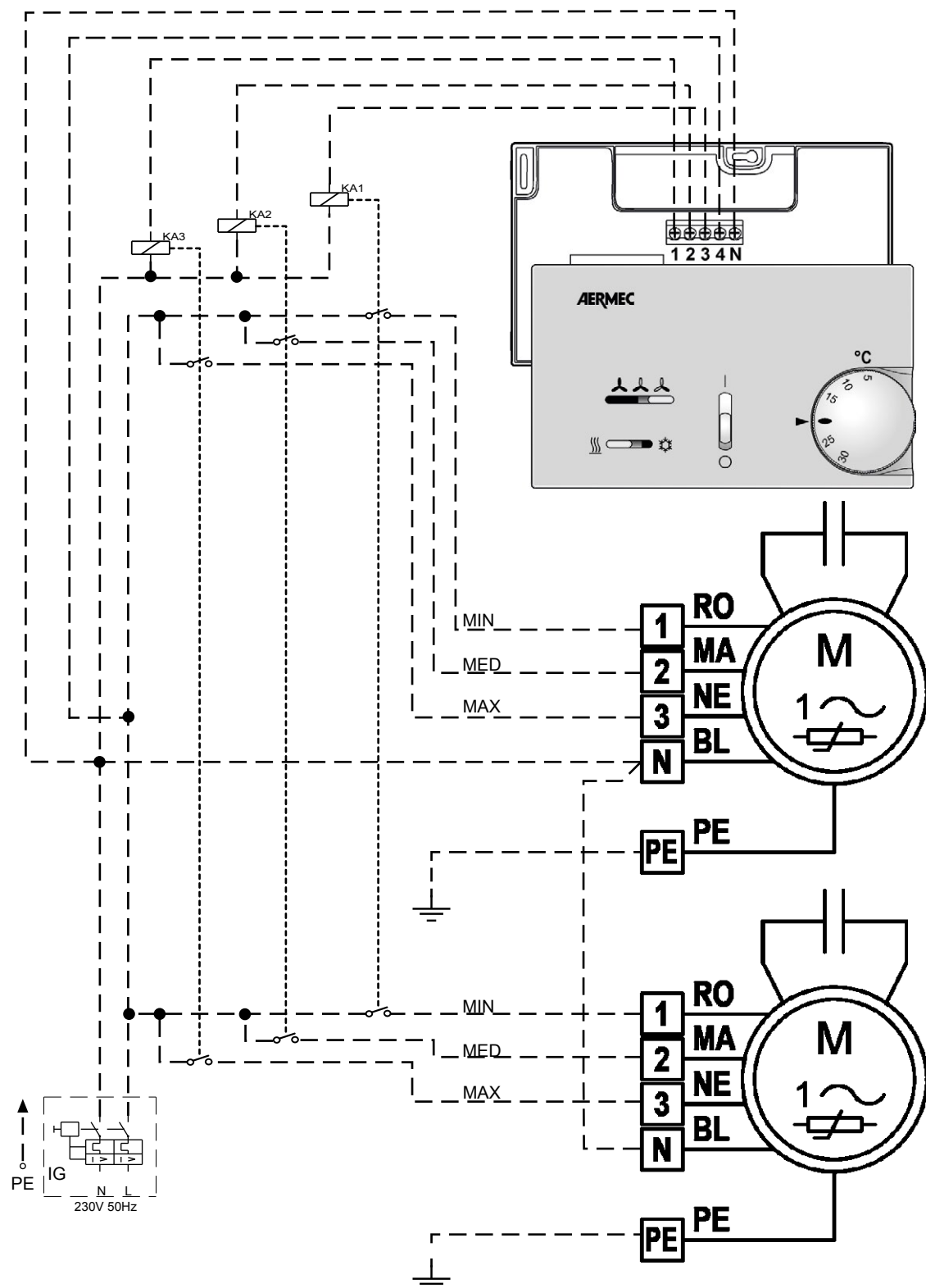
TA19 - 24 CON WMT06 E MOTORE CMC



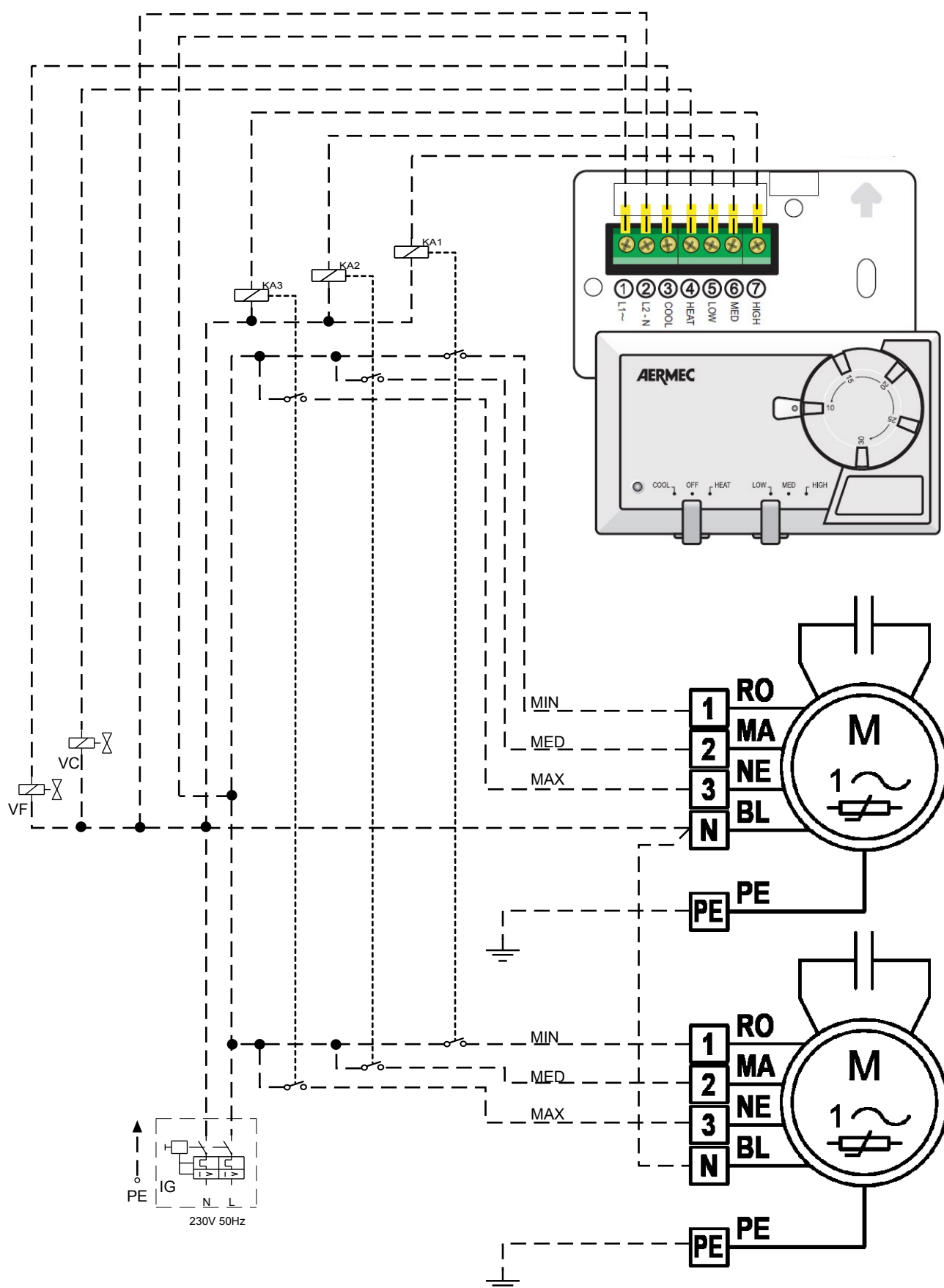
TA19 - 24 CON WMT10 E MOTORE CMC



TA33 - 50 CON WMT05 E MOTORE CMC

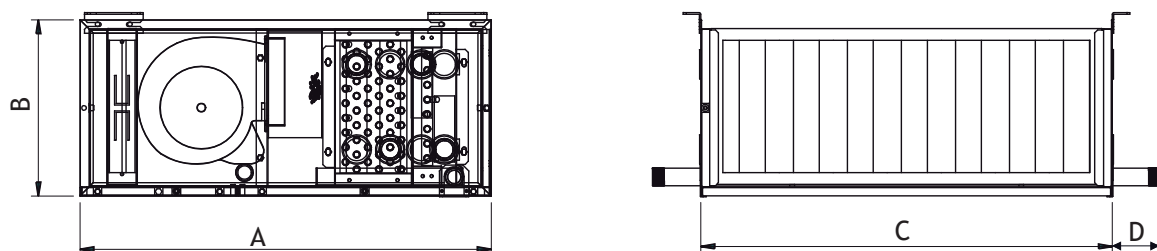


TA33 - 50 CON WMT10 E MOTORE CMC



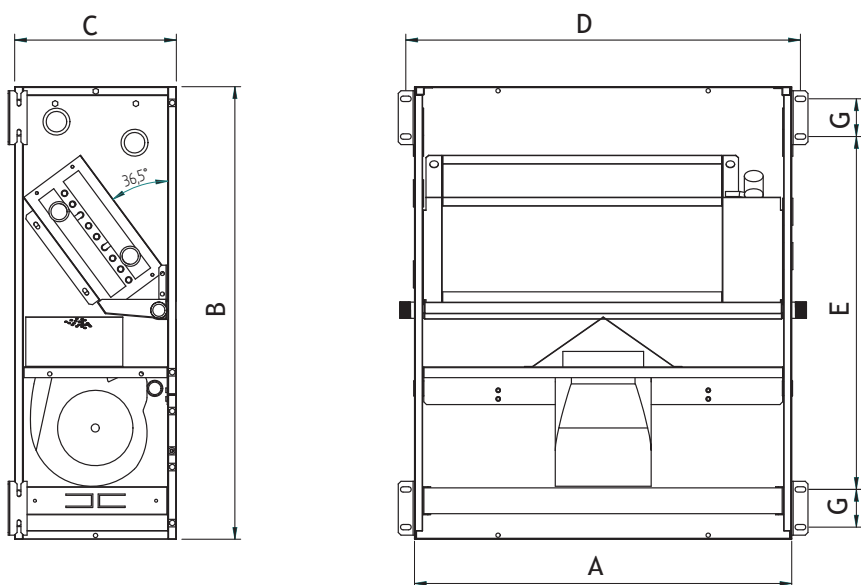
DIMENSIONAL DATA

Unit dimensions (mm)



Horizontal version

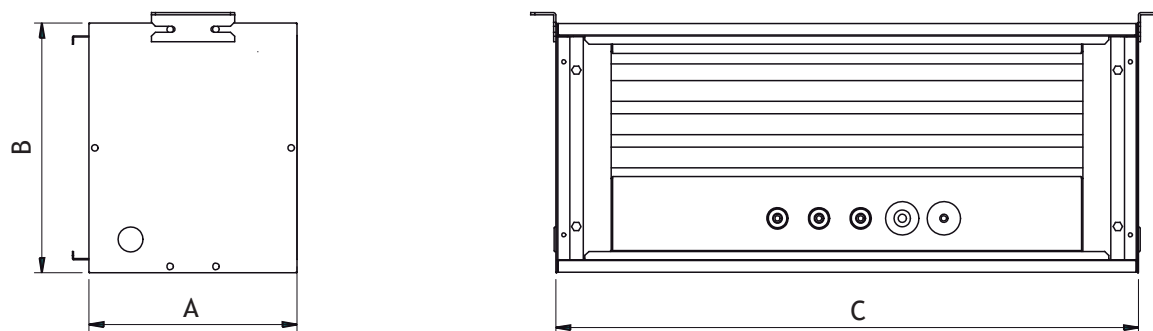
Mod.	A	B	C	D
TA 09 - TA 11	700	300	700	82
TA 15	700	300	1050	82
TA 19	850	390	1050	82
TA 24 - TA 33	850	390	1475	82
TA 40 - FTB 50	1000	390	2100	82



Vertical version

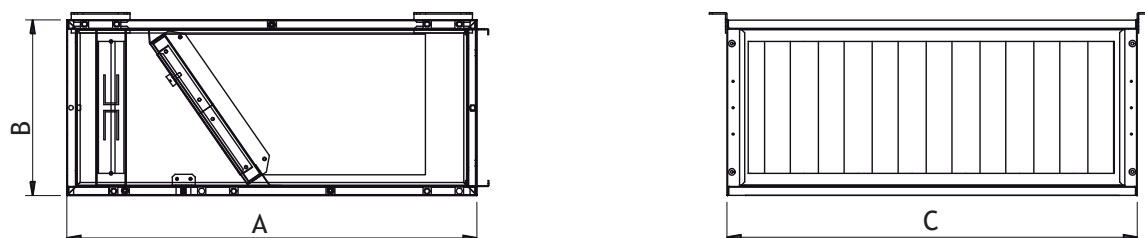
Mod.	A	B	C	D	E	G	No.Fans
TA 09	700	840	300	732	655	70	1
TA 11	700	840	300	732	655	70	2
TA 15	1050	840	300	732	655	70	2
TA 19	1050	1090	390	1082	905	70	1
TA 24	1475	1090	390	1507	905	70	1
TA 33	1475	1090	390	1507	905	70	2
TA 40	2099	1090	390	2131	905	70	2
TA 50	2099	1090	390	2131	905	70	2

Plenum with two-stage post-heating electric coil «PBE»



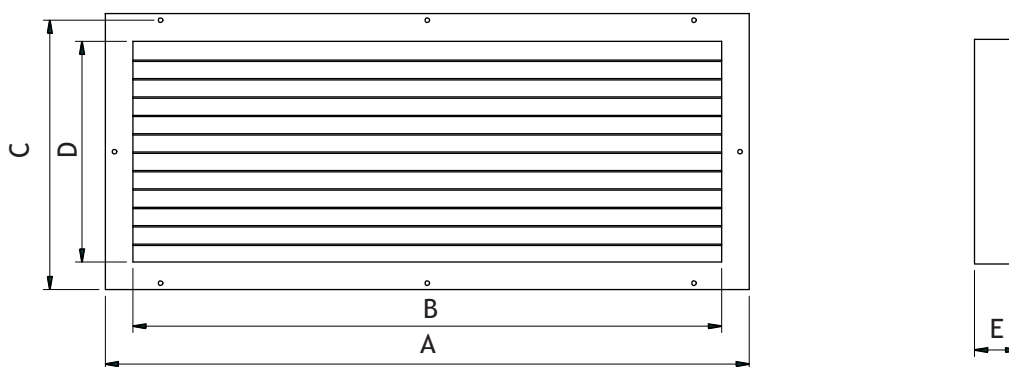
Mod.	A	B	C
PBE1 x TA 09	250	300	700
PBE2 x TA 11	250	300	700
PBE3 x TA 15	250	300	1050
PBE4 x TA 19	250	390	1050
PBE5 x TA 24	250	390	1475
PBE6 x TA 33	250	390	1475
PBE7 x TA 40	250	390	2100
PBE8 x TA 50	250	390	2100

Soft bag filter section «FTF»



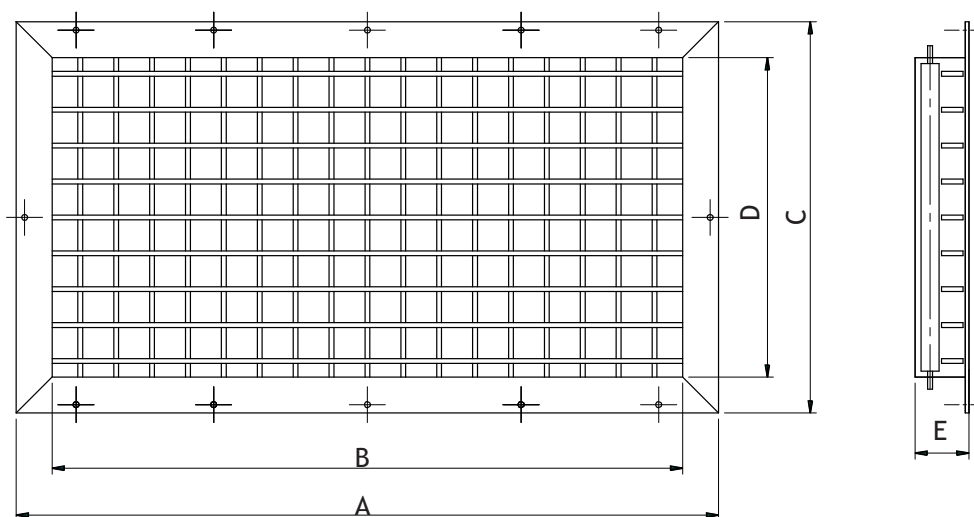
Mod.	A	B	C
FTF1 x TA 09 - TA 11	700	300	700
FTF2 x TA 15	700	300	1050
FTF3 x TA 19	700	390	1050
FTF4 x TA 24 - TA 33	700	390	1475
FTF5 x TA 40 - TA 50	700	390	2100

Recovery grid «GAP»



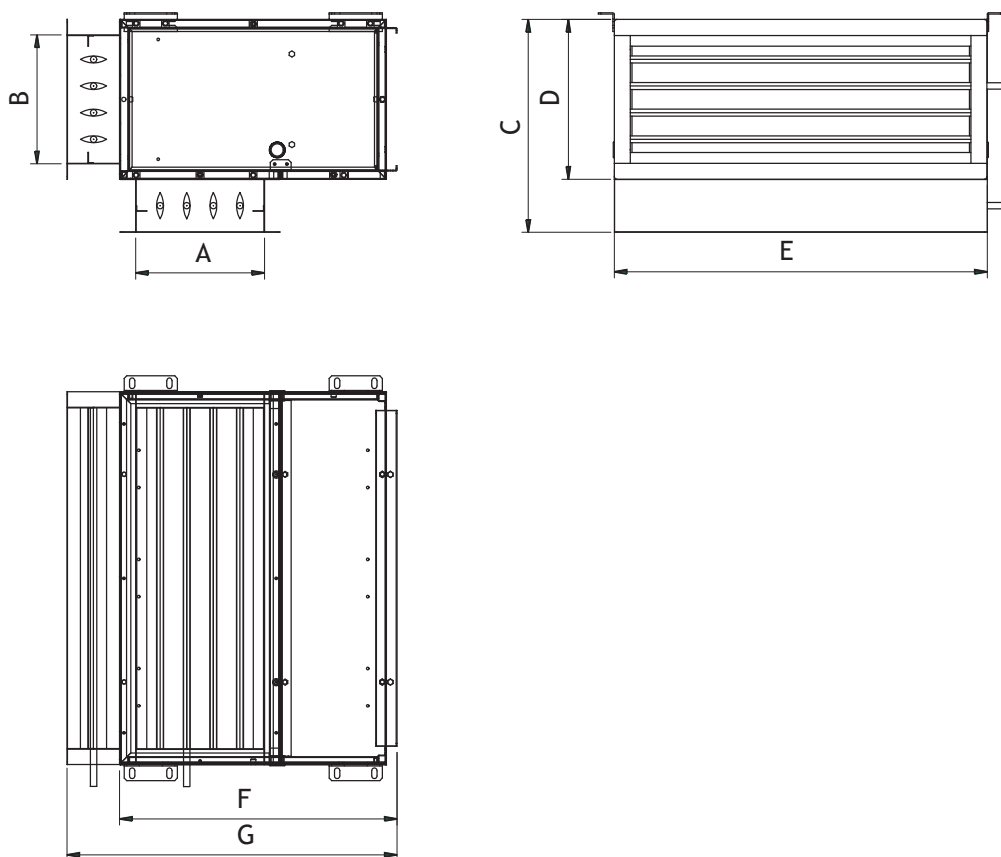
Mod.	A	B	C	D	E
GAP1 x TA 09 - TA 11	700	640	293	240	48
GAP2 x TA 15	1050	990	300	240	45
GAP3 x TA 19	1050	990	390	330	45
GAP4 x TA 24 - TA 33	1475	1415	390	330	45
GAP5 x TA 40 - TA 50	2100	2040	390	330	45

Flow grid «GMD»



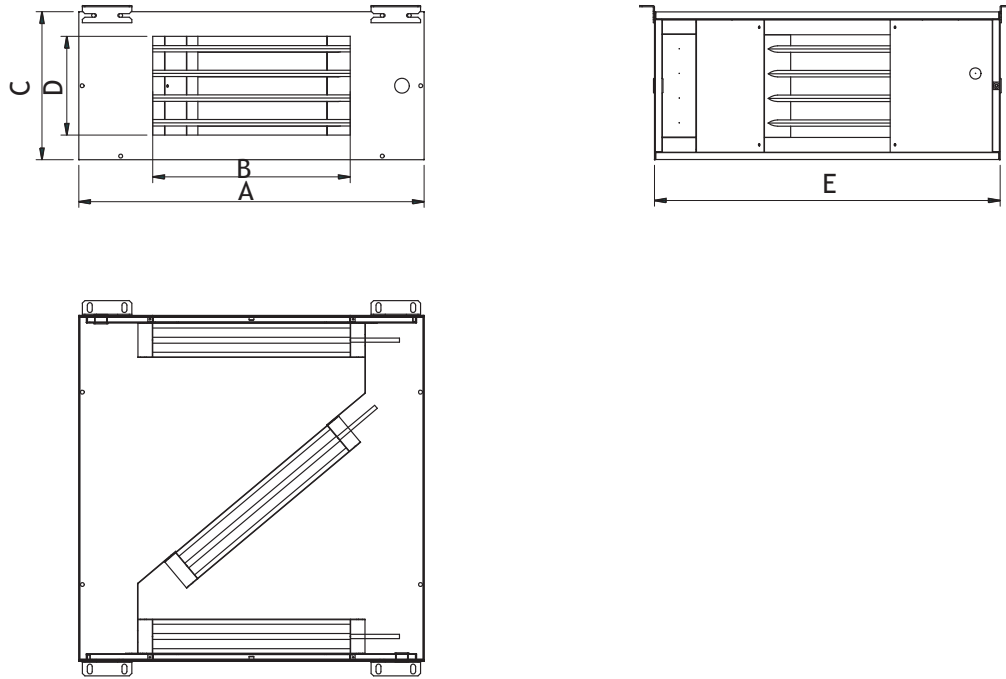
Mod.	A	B	C	D	E
GMD1 x TA 09 - TA 11	700	640	300	240	45
GMD2 x TA 15	1050	990	300	240	45
GMD3 x TA 19	1050	990	390	330	45
GMD4 x TA 24 - TA 33	1475	1415	390	330	45
GMD5 x TA 40 - TA 50	2100	2040	390	330	45

Mixing chamber 2 dampers «M2S»



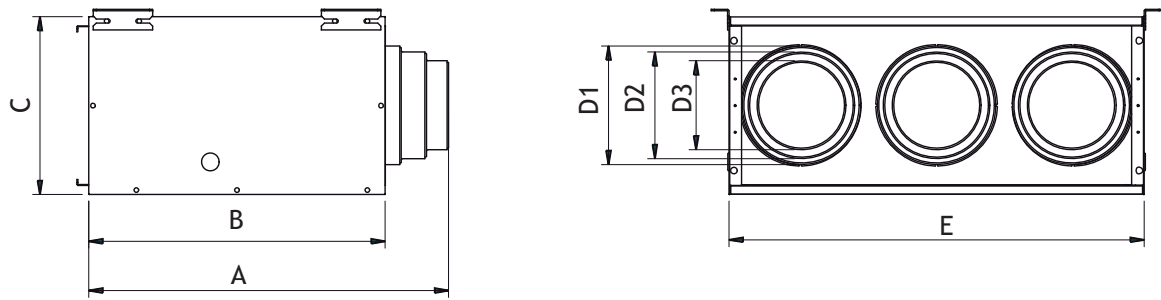
Mod.	A	B	C	D	E	F	G
M2S1 x TA 09 - TA 11	242	242	400	300	700	521	620
M2S2 x TA 15	242	242	400	300	1050	501	600
M2S3 x TA 19	332	332	490	390	1050	591	690
M2S4 x TA 24 - TA 33	332	332	490	390	1475	591	690
M2S5 x TA 40 - TA 50	332	332	490	390	2100	591	690

Mixing chamber 3 dampers «M3S»



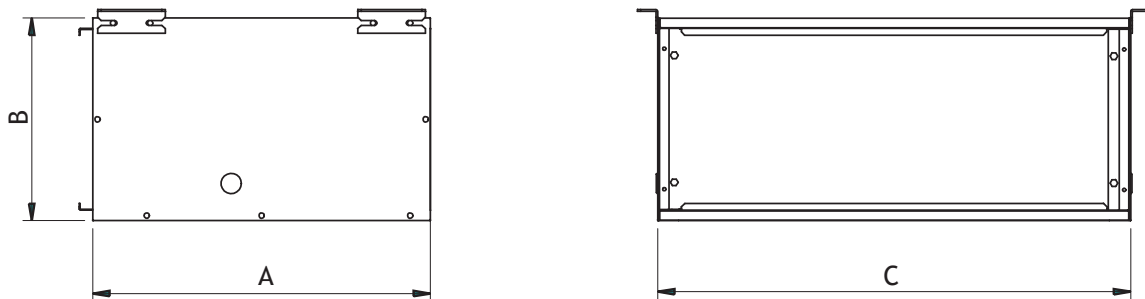
Mod.	A	B	C	D	E
M3S1 x TA 09 - TA 11	700	400	300	200	700
M3S2 x TA 15	700	400	300	200	1050
M3S3 x TA 19	850	500	390	300	1050
M3S4 x TA 24 - TA 33	1142	770	390	300	2100
M3S5 x TA 40 - TA 50	1142	770	390	300	2100

Plenum with «PMM» multiple circular flow attachments



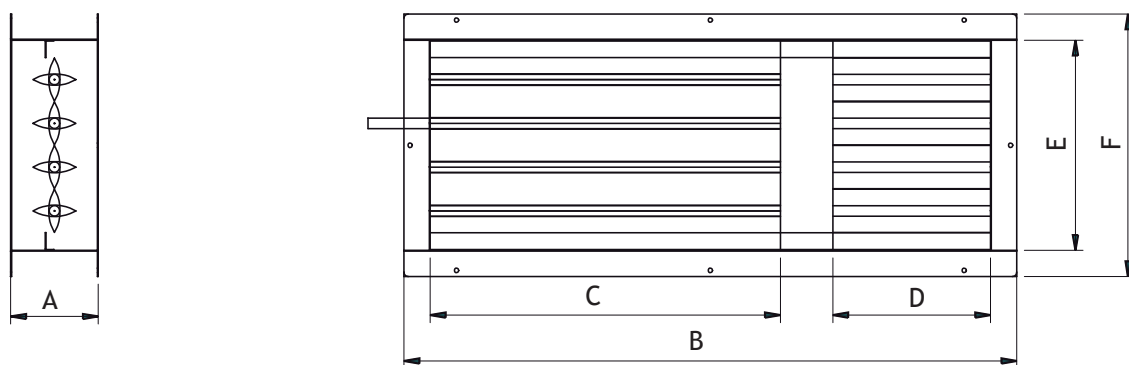
Mod.	A	B	C	E	D1	D2	D3	No.Flanges
PMM1 x TA 09 - TA 11	607	500	300	700	200	180	150	3
PMM2 x TA 15	607	500	300	1050	200	180	150	4
PMM3 x TA 19	697,5	590	390	1050	200	180	150	4
PMM4 x TA 24 - TA 33	697,5	590	390	1475	200	180	150	5
PMM5 x TA 40 - TA 50	697,5	590	390	2100	200	180	150	5

Closed flow plenum «PMC»



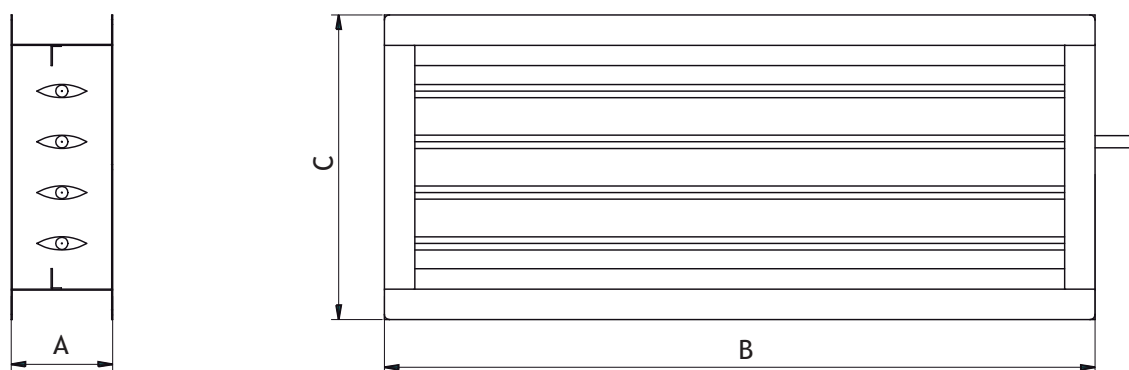
Mod.	A	B	C
PMC1 x TA 09 - TA 11	500	300	700
PMC2 x TA 15	500	300	1050
PMC3 x TA 19	590	390	1050
PMC4 x TA 24 - TA 33	590	390	1475
PMC5 x TA 40 - TA 50	590	390	2100

2-area damper «S2Z»



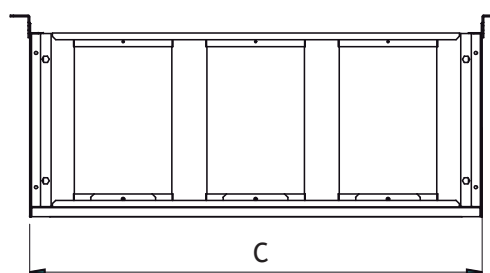
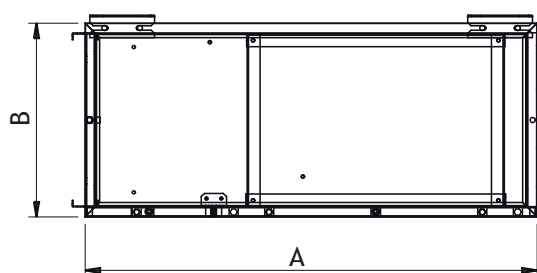
Mod.	A	B	C	D	E	F
S2Z1 x TA 09 - TA 11	100	700	400	180	240	300
S2Z2 x TA 15	100	1050	650	280	240	300
S2Z3 x TA 19	100	1050	650	280	300	390
S2Z4 x TA 24 - TA 33	100	1475	950	405	300	390
S2Z5 x TA 40 - TA 50	100	2100	1380	600	330	390

«SAS» Intake damper



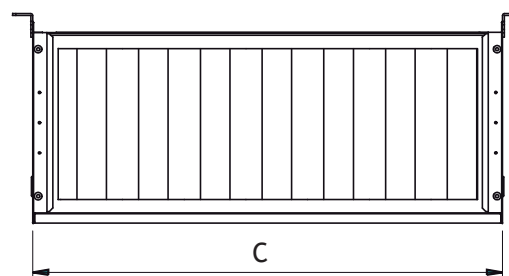
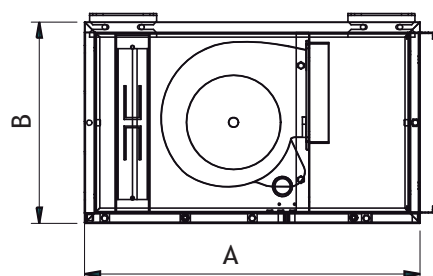
Mod.	A	B	C
SAS1 x TA 09 - TA 11	100	700	300
SAS2 x TA 15	100	1050	300
SAS3 x TA 19	100	1050	390
SAS4 x TA 24 - TA 33	100	1475	390
SAS5 x TA 40 - TA 50	100	2100	390

«SSL» Silencers

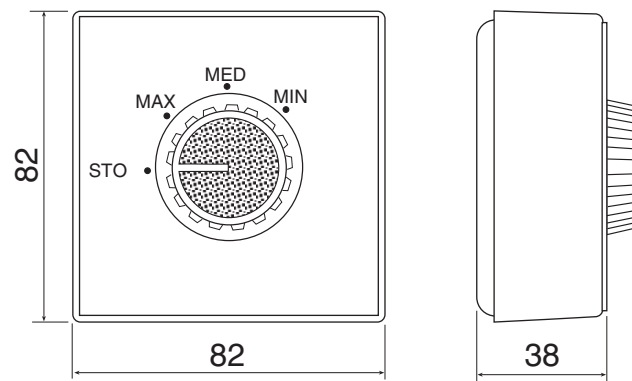


Mod.	A	B	C	No.Silencers
SSL1 x TA 09 - TA 11	700	300	700	3
SSL2 x TA 15	700	300	1050	4
SSL3 x TA 19	700	390	1050	4
SSL4 x TA 24 - TA 33	700	390	1475	5
SSL5 x TA 40 - TA 50	700	390	2100	7

«VRF» Recovery ventilation section



Mod.	A	B	C	No. of Fans
VRF1 x TA 09	500	300	700	1
VRF2 x TA 11	500	300	700	2
VRF3 x TA 15	500	300	1050	2
VRF4 x TA 19	590	390	1050	1
VRF5 x TA 24	590	390	1475	1
VRF6 x TA 33	590	390	1475	2
VRF7 x TA 40	720	390	2100	2
VRF8 x TA 50	720	390	2100	2





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carta riciclata
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