GB	**Installation Manual**	GR	**ΟΔΗΓΙΕΣ ΕΓΚΑΤΑΣΤΑΣΗΣ**
I	**Manuale di installazione**	P	**Manual de instalação**
F	**Manuel d'installation**	S	**Installationsmanual**
D	**Installationsanweisung**	FIN	**Asennusohje**
E	**Manual de instalación**	L	**Instrukcja instalacji**
NL	**Montage - Instructies**	RU	**РУКОВОДСТВО ПО МОНТАЖУ**

Hydronic Ceiling Cassette TKW 20-70

ENGLISH | ITALIANO | FRANÇAIS | DEUTSCH | ESPAÑOL | ΕΛΛΗΝΙΚΑ
SVENSKA | NEDERLANDS | PORTUGUÊS | SUOMI | POLSKI | РУССКИЙ

GB	"Hydronic Ceiling Cassette" Fan Coil Unit
I	Ventilconvettori "Hydronic Ceiling Cassette"
F	Ventiloconvecteurs "Hydronic Ceiling Cassette"
D	Hydronik-Kassettengeräte
E	Unidades Fan Coil tipo "Hydronic Ceiling Cassette"
NL	Ventilatieconvector "Hydronic Ceiling Cassette"
GR	Τοπικές κλιματιστικές μονάδες "Hydronic Ceiling Cassette"
P	Ventilconvectores "Hydronic Ceiling Cassette"
S	"Hydronic Ceiling Cassette" Fläktluftkylare
FIN	Puhallinpatteriyksiköt "Hydronic Ceiling Cassette"
PL	Klimakonwektor kasetowy "Hydronic Ceiling Cassette"
RU	Вентиляторные доводчики кассетного типа «Hydronic Ceiling Cassette»

1.3 kW ↓ 9.6 kW | **1.1 kW ↓ 14.0 kW** | **360 ↓ 1598**

CE

GB **ENGLISH**
"Hydronic Ceiling Cassette" Fan Coil Unit

I **ITALIANO**
Ventilconvettori "Hydronic Ceiling Cassette"

F **FRANÇAIS**
Ventiloconvecteurs "Hydronic Ceiling Cassette"

D **DEUTSCH**
Hydronik-Kassettengeräte

E **ESPAÑOL**
Unidades Fan Coil tipo"Hydronic Ceiling Cassette"

NL **NEDERLANDS**
Ventilatieconvector "Hydronic Ceiling Cassette"

GR **ΕΛΛΗΝΙΚΑ**
Τοπικές κλιματιστικές μονάδες "Hydronic Ceiling Cassette"

P **PORTUGUÊS**
Ventilconvectores "Hydronic Ceiling Cassette"

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"Hydronic Ceiling Cassette" Fläktluftkylare

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Klimakonwektor kasetowy "Hydronic Ceiling Cassette"

RU **РУССКИЙ**
Вентиляторные доводчики кассетного типа «Hydronic Ceiling Cassette»

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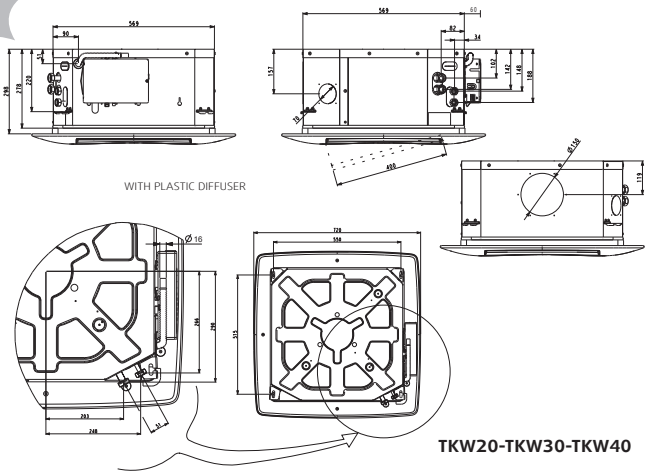

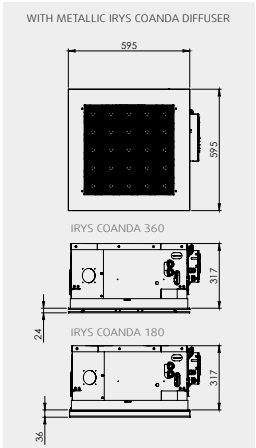

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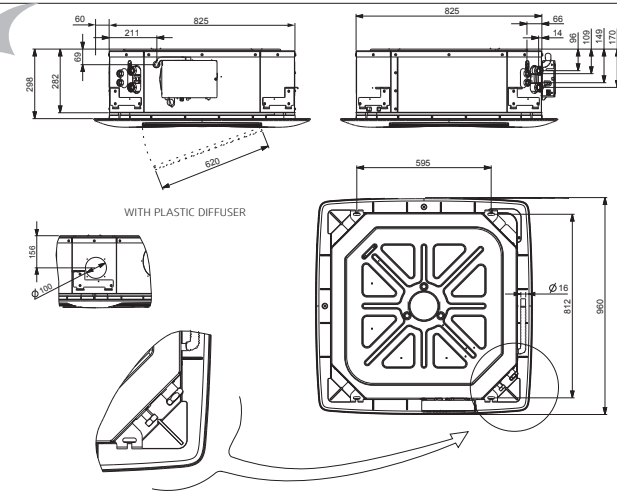
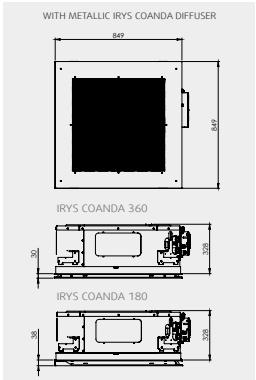
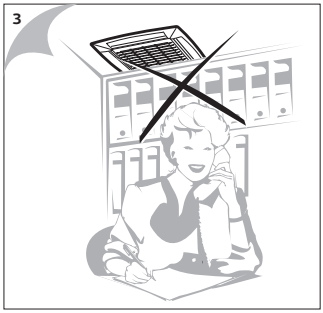




TKW		TKW20	TKW30	TKW40	TKW50	TKW60	TKW70
A *	kg	14,8	16,5	16,5	37,1	37,1	39,6
B		3	3	3	5	5	5

* Weights refer to base units without valve.
I pesi si riferiscono ad unità base senza valvola.
Les poids se réfèrent à l'unité de base sans vanne.
Die Gewichtsangaben beziehen sich auf das Grundgerät ohne Ventil.
Los pesos se refieren a la unidad de base sin válvula.
De gewichten hebben betrekking op een standaard eenheid zonder kleppen.
Τα βάρη αναφέρονται στις βασικές μονάδες χωρίς βαλβίδα.
Os pesos referem-se a unidades base sem válvula.
Vikterna hänvisar till en basenhet utan ventil.
Painot viittaavat perusyksikköön ilman venttiiliä.
Waga odnosi się do urządzenia podstawowego bez zaworu.
Даны веса базовой комплекации агрегатов без клапанов.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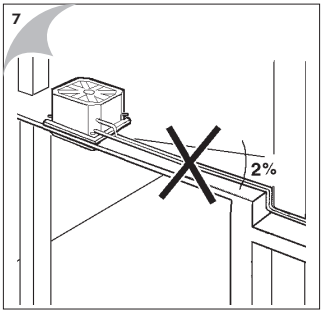
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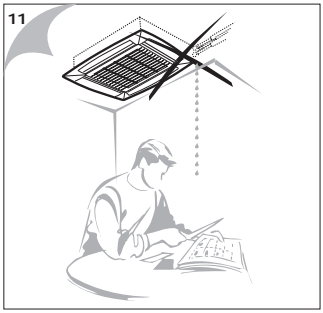
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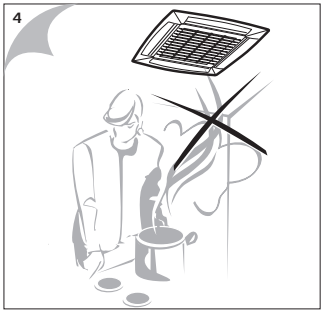
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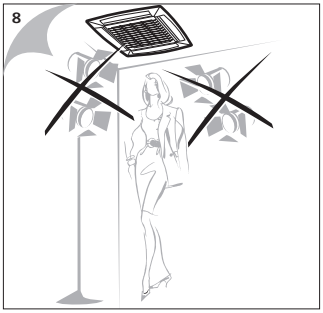
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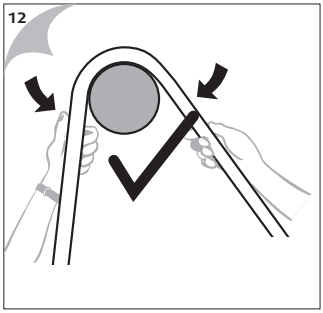
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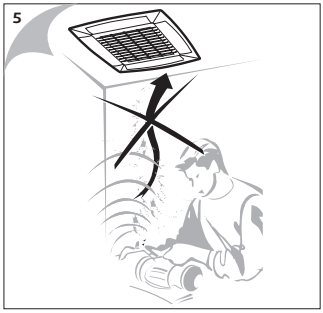
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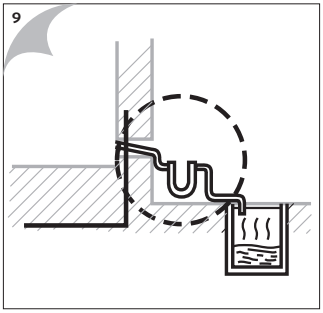
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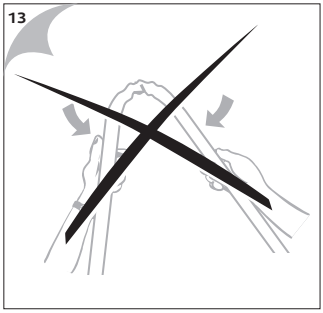
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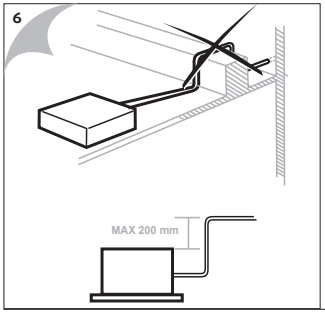
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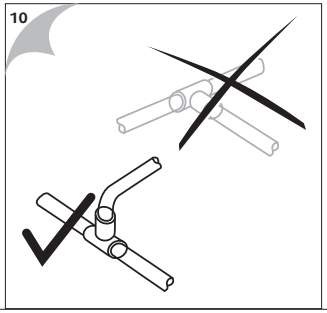
MAX 200 mm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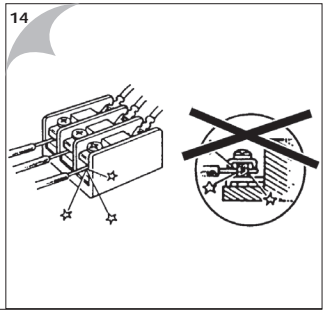
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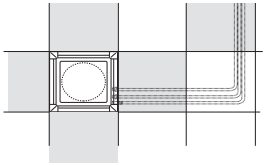
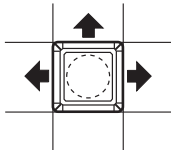
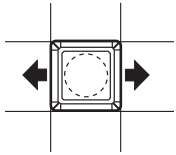
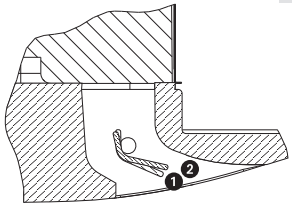
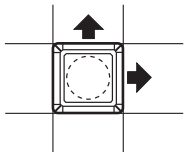


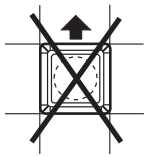






Max 2 chiusure
Max. 2 louvres closed
Max 2 fermetures
Max. 2 Luftauslässe geschlossen
Máximo dos rejillas cerradas
Max. 2 schoepen gesloten
Μέγιστο 2 περσίδες
Máximo duas grelhas fechadas
Max 2 luftspridare stängda
Enintään kaksi tuuletusaukkoa
Maks. 2 zamknięcia
макс. 2 жалюзи закрыты





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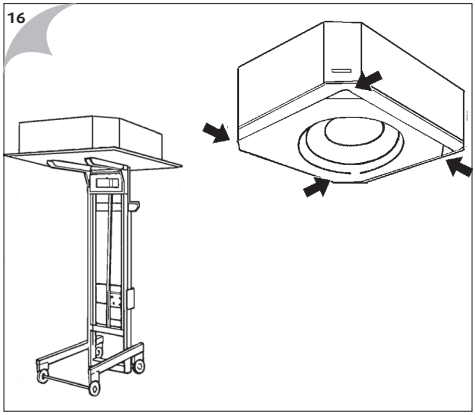

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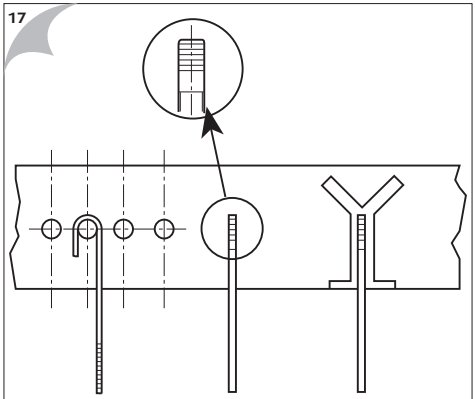

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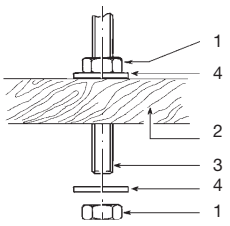

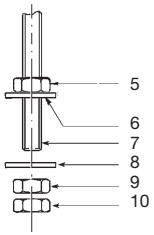

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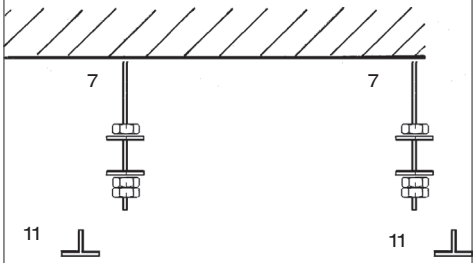

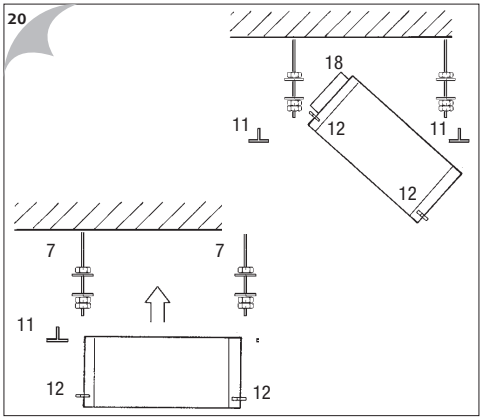

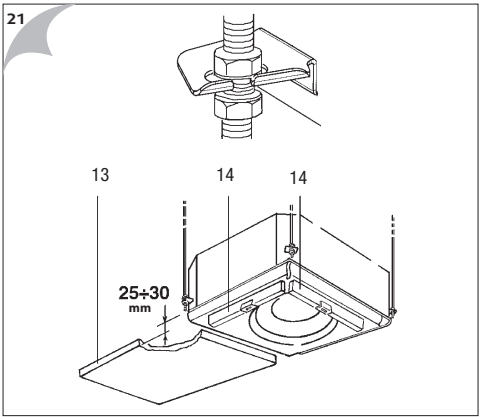

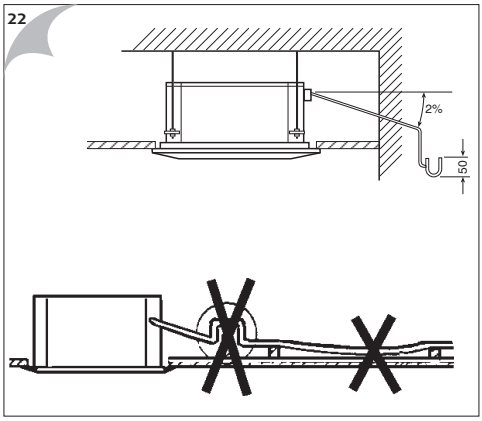

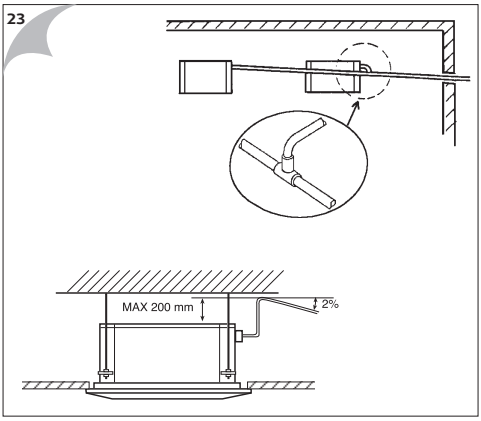

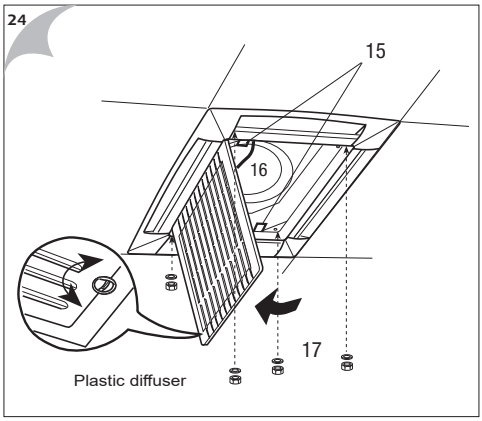

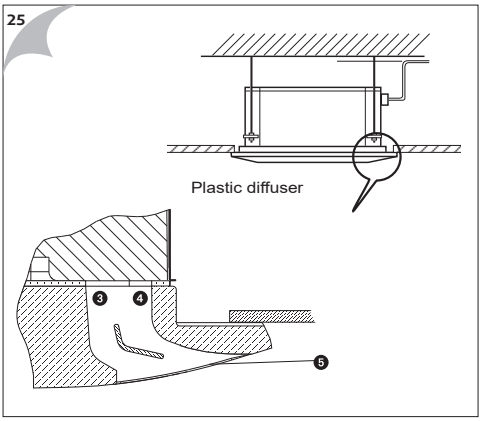

Please refer to the document "AM TKW" for installation instructions of the metallic IRYS COANDA diffuser.

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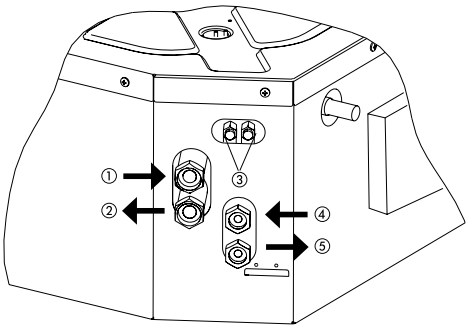
TKW20-TKW30-TKW40



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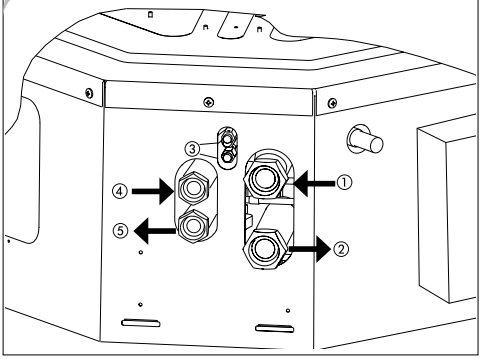
TKW50-TKW60-TKW70



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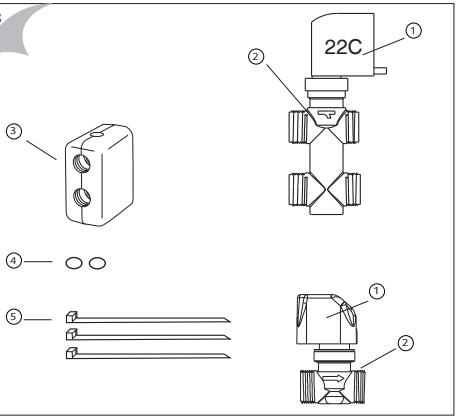

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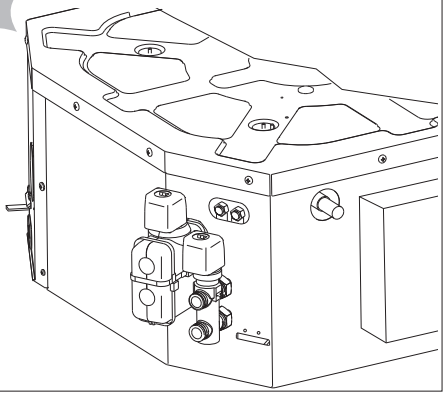

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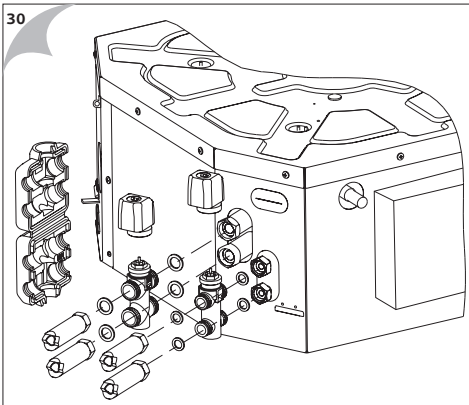

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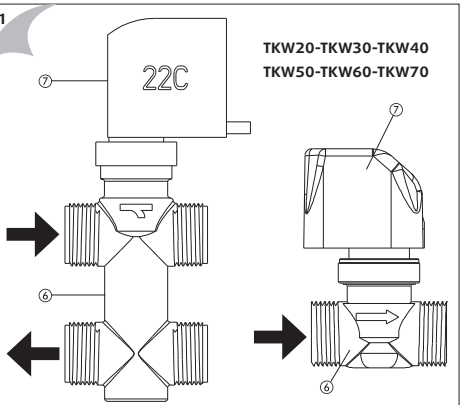
TKW20-TKW30-TKW40
TKW50-TKW60-TKW70



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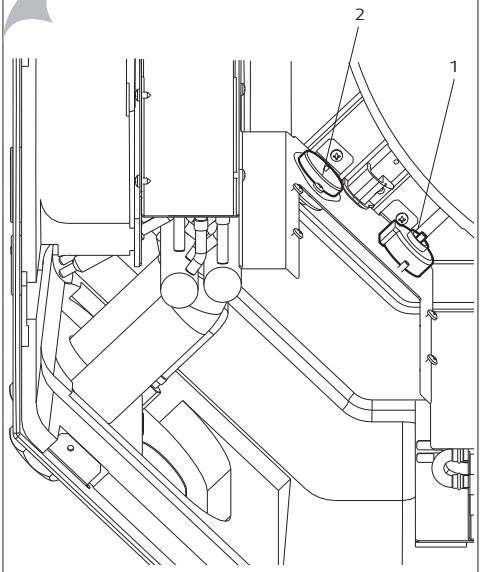

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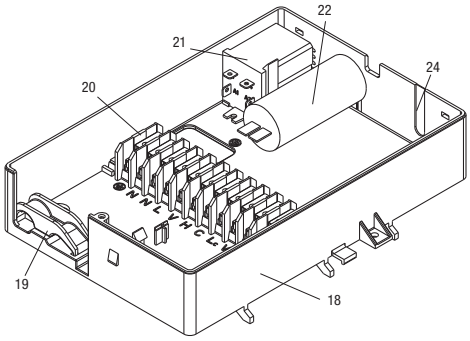

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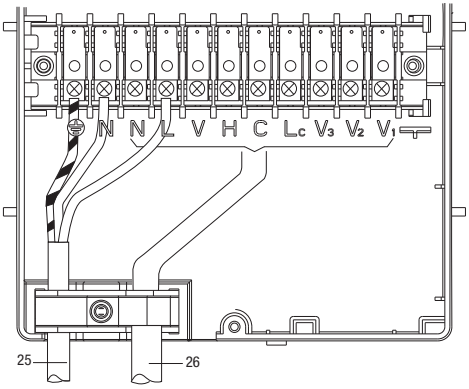

N : Neutral
L : Phase
Lc : Condensate Pump phase
H : Heating

C : Default contact condensate pump
V : Cooling valve
V3, V2, V1 : Motor speed

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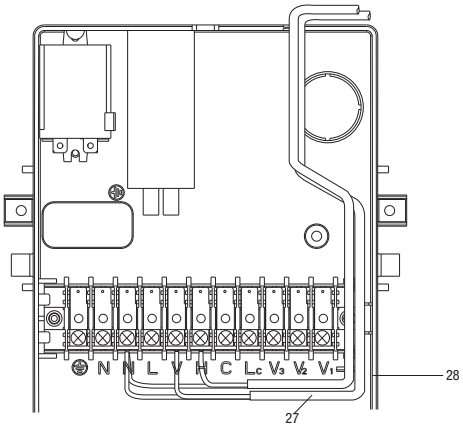

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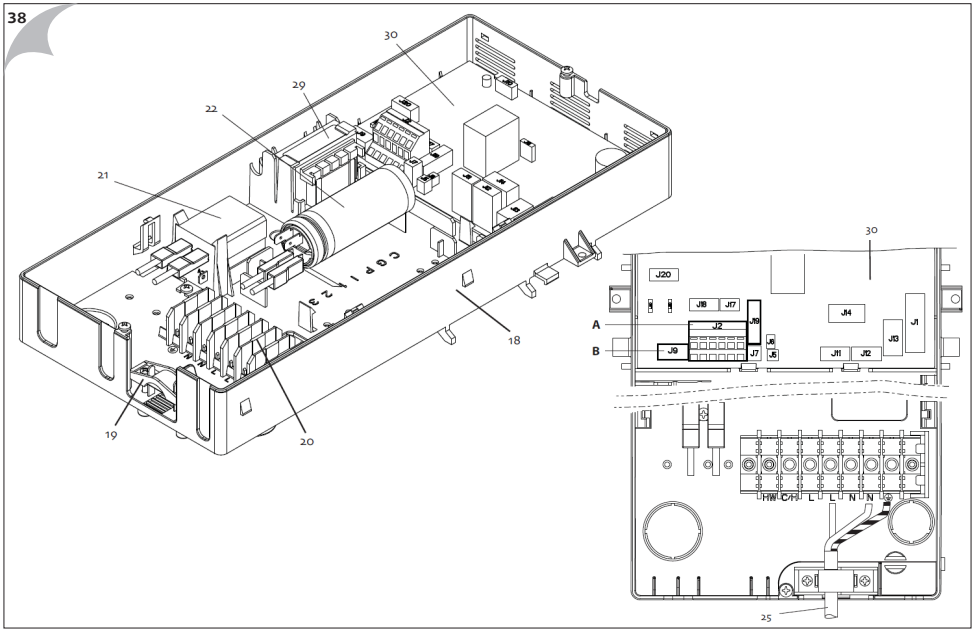
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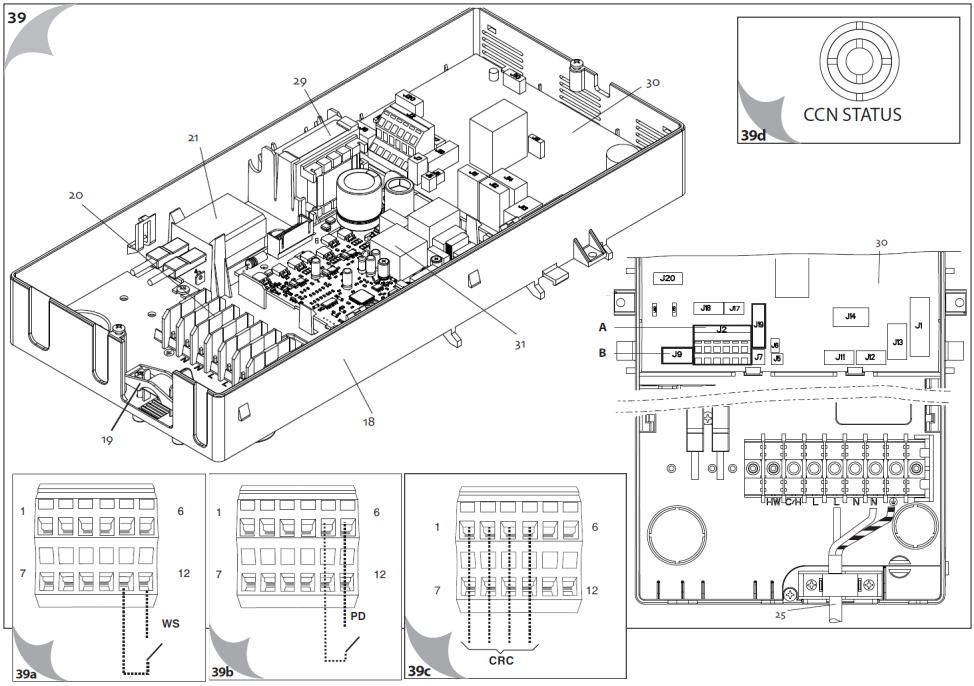
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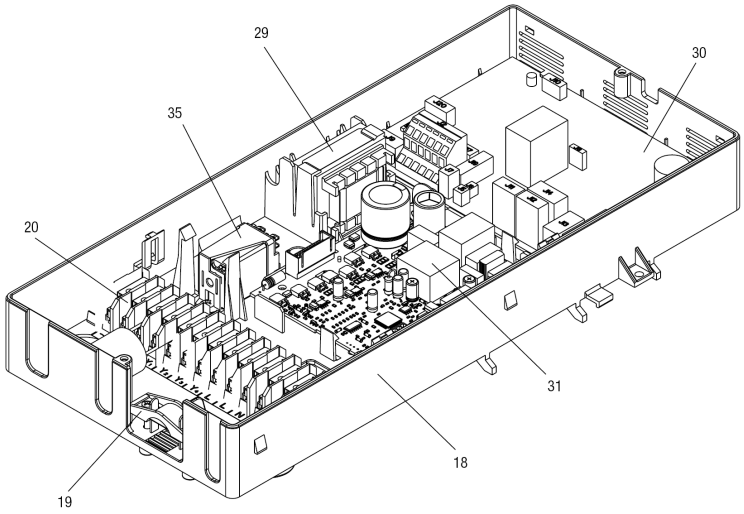

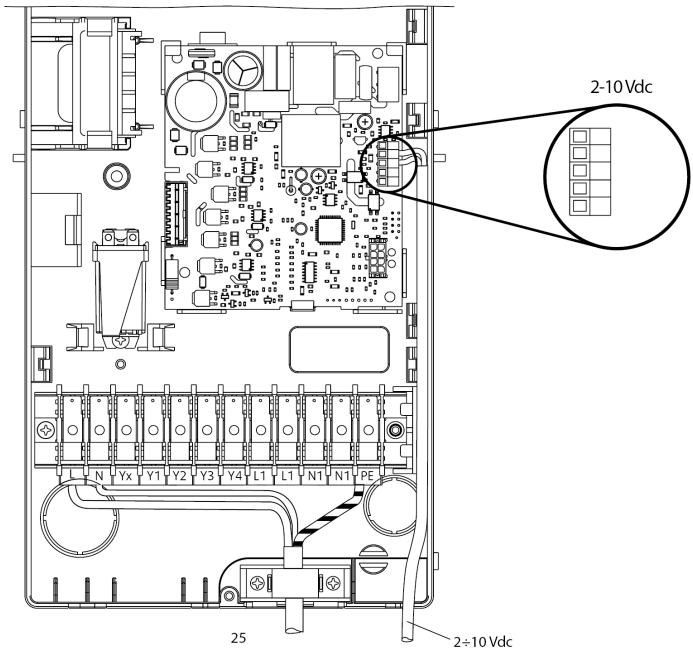

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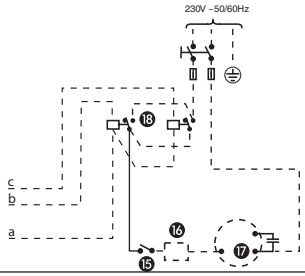

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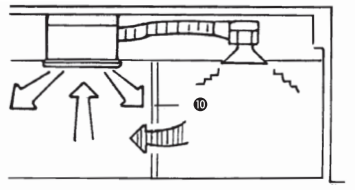
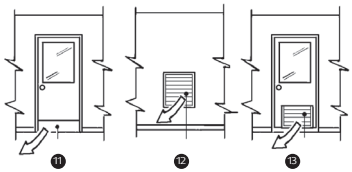
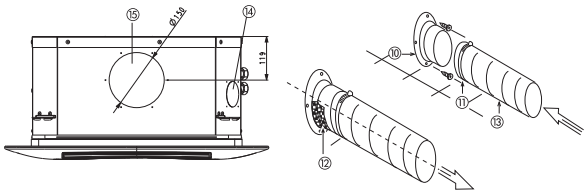
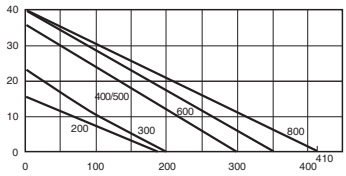


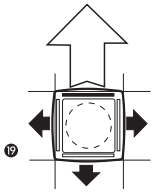


45

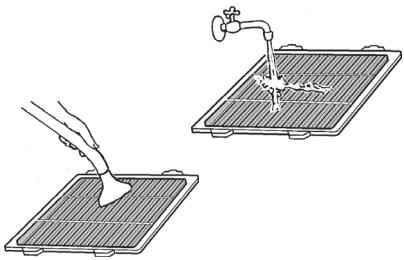


47





48



T.- I - II

Table / Tabella / Tableau / Tabelle / Tabla / Tabel / Πίνακας II / Tabela / Tabell / Taulukko / Tabela I / Таблица : I

B	A				
	F	C		D	
	Amp	Watt	Amp	Watt	Amp
TKW20	1	70	0,33	61	0,28
TKW30	1	66	0,29	57	0,25
TKW40	1	106	0,46	97	0,42
TKW50	1	66	0,32	57	0,27
TKW60	1	97	0,52	88	0,48
TKW70	1	135	0,69	126	0,64
230V ~ 50/60Hz					

TKW204	1	70	0,33	61	0,28
TKW304	1	66	0,29	57	0,25
TKW404	1	106	0,46	97	0,42
TKW604	1	97	0,52	88	0,48
TKW704	1	135	0,69	126	0,64
230V ~ 50/60Hz					

E	A				
	F	C		D	
	Amp	Watt	Amp	Watt	Amp
TKW20	8	70	0,33	1441	6,28
TKW30	12	66	0,29	2357	10,25
TKW40	12	106	0,46	2397	10,42
TKW50	16	66	0,32	2817	12,27
TKW60	16	97	0,52	2848	12,48
TKW70	16	135	0,69	2886	12,64
230V ~ 50/60Hz					

GB

LEGEND / TABLE I
Nominal data
A = Power input
B = Models
C = Cooling
D = Heating
E = Modes with electric heater
F = Fuse (tipo gF)

I

LEGENDA / TABELLA I
Dati nominali
A = Assorbimenti elettrici
B = Modelli
C = Raffrescamento
D = Riscaldamento
E = Modelli con resistenze elettriche
F = Fusibile (tipo gF)

F

LEGENDE / TABLEAU I
Caractéristiques nominales
A = Puissance absorbee
B = Modèles
C = Refroidissement
D = Chauffage
E = Modèles avec résistance électrique
F = Fusible (type gF)

D

LEGENDE / TABELLE I
Nenndaten
A = Leistungsaufnahme
B = Modelle
C = Kühlung
D = Heizung
E = Modelle mit elektrischem Widers
F = Sicherung (Type gF)

E

LEYENDA / TABLA I
Características nominales
A = Potencia absorbida
B = Modelos
C = Refrigeración
D = Calefacción
E = Unidades con resistencia eléctrica
F = Fusible (tipo gF)

NL

VERKLARING / TABEL I Nominale gegevens
A = Opgenomen vermogen
B = Typen
C = Koelen
D = Verwarmen
E = Modellen met verwarmingsweerstand
F = Zekering (type gF)

GR

ΛΕΖΑΝΤ Α / Πίνακας 1
Ονομαστικά δεδομένα
A = Απορροφούμενη ισχύς
B = Μοντέλα
C = Ψύξη
D = Θέρμανση
E = Μοντέλα με ηλεκτρική αντίσταση
F = Ασφάλεια (Τύπου gF)

P

LEGENDA / TABELA I
Características nominais
A = Potencia absorbida
B = Modelos
C = Refrigeración
D = Calefacción
E = Unidades con resistencia eléctrica
F = Fusible (tipo gF)

S

FÖRKLARING / TABELL I Nominella data
A = Motoreffekt
B = Modell
C = Kyla
D = Värme
E = Modell med elektrisk värme
F = Säkring (typ gF)

FIN

MERKKIEN SELITYKSET / TAULUKKO I
Nimellistehot
A = Syöttöteho
B = Mallit
C = Jäähdytys
D = Lämmitys
E = Mallit ja sähkövastus
F = Sulake (Tyyppi gF)

PL

LEGENDA/TABELA I
Wartości znamionowe
A = Pobór mocy
B = Modele
C = Chłodzenie
D = Ogrzewanie
E = Modele z grzałką elektryczną
F = Bezpiecznik (typu gF)

RU

Условные бозначения / Таблица I
Номинальные данные
A = входная мощность
B = модели
C = охлаждение
D = нагревание
E = модели с электронагревателем
F = плавкий предохранитель (тип gF)

Table / Tabella / Tableau / Tabelle / Tabla / Tabel / Πίνακας II / Tabela / Tabell / Taulukko / Tabela I / Таблица : II

A

L	N	⏚
1,5	1,5	1,5
H05W - F		

B

L	N	⏚
2,5	2,5	2,5
H05W - F		

GB

The unit power cable muast be type H05 VV-F.
A Unit power supply cable section
B Unit power supply cable section with electric heater

I

Il cavo elettrico di alimentazione dell'unità deve essere di tipo H05 VV-F.
A Sezione cavo alimentazione unità
B Sezione cavo alimentazione unità con resistenze elettriche

F

Le fil éléctrique d'alimentation de l'unité doit être du type H05 VV-F.
A Section fil d'alimentation de l'unité
B Section fil d'alimentation de l'unité avec résistance électrique

D

Das Elektrokabel zur Versorgung des Geräts muß von Typ H05 VV-F sein.
A Abschnitt Stromkabel der Baugruppe
B Abschnitt Stromkabel der Baugruppe mit elektrischem Widerstand

E

El cable eléctrico de alimentación de la unidad tiene que ser del tipo H05 VV-F.
A Sección cable de alimentación de la unidad
B Sección cable de alimentación de la unidad con resistencias eléctricas

NL

De voedingskabel van de unit moet van het type H05 VV-F zijn.
A A Doorsnede voedingskabel eenheid
B Doorsnede voedingskabel eenheid met verwarmingsweerstand

GR

Το ηλεκτρικό καλώδιο τροφοδότησης της μονάδας πρέπει να είναι του τύπου H05 VV-F.
A Διατομή καλωδίου τροφοδοσίας μονάδας
B Διατομή καλωδίου τροφοδοσίας μονάδας με ηλεκτρική αντίσταση

P

O cabo eléctrico de alimentação da unidade deve ser de tipo H05 VV-F.
A Seção cabo de alimentação da unidade
B Seção cabo alimentaçãoo unidade com resistência elétrica

S

Aggregatets kraftmatningskabel skall vara av typ H05 VV-F.
A Sektion för enhetens nätkabel
B B Sektion för enhetens nätkabel med elektriskt motstånd

FIN

Yksikön syöttökaapelin on oltava H05 VV-F tyyppiä.
A Yksikön syöttökaapelin halkaisija
B B Yksikön syöttökaapelin halkaisija sähkövastuksella

PL

Należny użyć przewodu zasilania elektrycznego typu H05 VV - F.
A Przekrój przewodu zasilania urządzenia
B Przekrój przewodu zasilania urządzenia z grzałką elektryczną

RU

В качестве силового кабеля использовать кабель типа H05 VV-F
A Сечение силового кабеля агрегата
B Сечение слового кабеля агрегата с электронагревателем

T.- III

Table / Tabella / Tableau / Tabelle / Tabla / Tabel / Πίνακας II / Tabela / Tabell / Taulukko / Tabela I / Таблица : III

A		TKW20	TKW30	TKW40	TKW50	TKW60	TKW70
B	Watt	1500	2500	2500	3000	3000	3000
C	Volt	230	230	230	230	230	230
D	Amp	7	11	11	13	13	13
E		F/G					

GB LEGEND / TABLE III
Technical data of electric heaters (if installed)
A = Models
B = Electric heater capacity
C = Supply voltage (ph)
D = Max. power input
E = Safety thermostat
F = N° 1 Thermostat with automatic reset ST1 60°C
G = N° 1 Thermostat with manual reset ST2 100°C
IMPORTANT: The electric heater is factory installed.
The use of other eletric heaters is absolutely prohibited. Failure to follow this safety requirement causes unit damage and voids the warranty.

F LÉGENDE / TABLEAU III
Caractéristiques électriques des dispositifs de chauffage (le cas échéant)
A = Mod.
B = Puissance du chauffage électrique
C = Alimentation électrique (ph)
D = Intensité à pleine charge max.
E = Thermostat de sécurité
F = N° 1 Thermostat avec réarmement automatique ST1 60°C
G = N°1 Thermostat avec réarm. automat. ST1 100°C
IMPORTANT: La batterie électrique est installé uniquement d'usine. L'utilisation d'autres types de résistances électriques est absolument proscrite. La non-observation de cette mise en garde peut provoquer l'endommagement de l'unité et l'invalidation de la garantie.

E LEYENDA/TABLA III
Datos técnicos de las baterías eléctricas (si se montan)
A = Mod.
B = Capacidad batería eléctrica calor
C = Tensión de alimentación (fases)
D = Máxima corriente absorbida
E = Termostato de seguridad
F = N°1 Termostato de rearme automático ST1 60°C
G = N°1 Termostato de rearme manual ST1 100°C
IMPORTANTE: El elemento calentador eléctrico viene instalado exclusivamente de fábrica. No se admite en absoluto el uso de otras baterías eléctricas de calor. La inobservancia de estas normas de seguridad ocasiona daños a la unidad y anula la garantía.

GR ΛΕΖΑΝΤ Α / Πίνακας ΙΙΙ
Τεχνικά στοιχεία ηλεκτρικών αντιστάσεων (εάν υπάρχουν)
A = Μοντέλα
B = Θερμαντική ικανότητα ηλεκτρικών αντιστάσεων
C = Τάση λειτουργίας (ph)
D = Ρεύμα λειτουργίας (μέγιστο)
E = Θερμοστάτης ασφαλείας
F = No1 Αυτόματος θερμοστάτης ασφαλείας ST1 60°C
G = No1 Χειροκίνητος θερμοστάτης ST1 100°C
ΣΗΜΑΝΤΙ Ο: Η εγκατάσταση του ηλεκτρικού θερμαντήρα γίνεται αποκλειστικά στο εργοστάσιο. Απαγορεύεται αυστηρά η συμπληρωματική χρήση άλλων αντιστάσεων που μοντάρονται επιτόπου.
Η μη τήρηση αυτού του προτύπου προκαλεί τη βλάβη της μονάδας και προϋποθέτει την άμεση ακύρωση (της εγγύησης).

S FÖRKLARING / TABELL III
Tekniska data, elektrisk värme (om installerad)
A = Mod.
B = Elektrisk värme, effekt
C = Tillförd spänning (fas)
D = Maximal strömförbrukning
E = Säkerhetstermostat
F = No1 Termostat med automatisk återställning ST1 60°C
G = No1 Termostat med manuell återställning ST1 100°C
VIKTIGT: Värmeelementet installeras endast på fabriken.
Användning av andra typer av elektrisk värmare är ej tillåten.
Försummelse av denna säkerhetsåtgärd leder till skada på aggregatet samt att Fricos garanti förklaras ogiltig.

I LEGENDA / TABELLA III
Dati tecnici riscaldatori elettrici (se montati)
A = Modelli
B = Potenza riscaldatori elettrici
C = Tensione di alimentazione (ph)
D = Corrente assorbita max.
E = Termostato di sicurezza
F = N°1 Termostato a riarmo automatico ST1 60°C
G = N°1 Termostato a riarmo manuale ST2 100°C
IMPORTANTE: Il riscaldatore elettrico è Installato esclusivamente in fabbrica. E' assolutamente vietato l'uso supplementare di altri riscaldatori montati in loco. L'inosservanza di questa norma causa il danneggiamento dell'unità e comporta l'immediato annullamento della garanzia.

D LEGENDE /TABELLE III
Technische Daten der Elektroheizungen (falls vorgesehen)
A = Mod.
B = Elektroheizleistung
C = Stromversorgung (Ph)
D = Max. Vollaststrom
E = Sicherheitsthermostat
F = N°1 Thermostat mit automatischer Rückstellung ST1 60°C
G = N°1 Thermostat mit manueller Rückstellung ST2 100°C
WICHTIG: Das elektrische Heizgerät wird ausschließlich im Werk installiert. Die Verwendung anderer Elektroheizungen ist trengstens untersagt. Bei Nichtbefolgung dieser Sicherheitsvorschrift entfällt der Garantieschutz.

NL VERKLARING/ TABEL III
Technische gegevens elektrische verwarmingselementen (indien toegepas)
A = Type
B = Cap. elektrisch verwarmingselem.
C = Elektrische voeding (ph)
D = Max. opgenomen vermogen
E = Beveiligingsthermostaat
F = N°1 Automatische reset thermostaat ST1 60°C
G = N°1 Hand reset thermostaat ST2 100°C
BELANGRIJK: De elektrische verwarmer wordt uitsluitend in de fabriek geïnstalleerd. Het is absoluut NIET toegestaan andere elektrische verwarmingselementen toe te passen. Als deze aanwijzing niet wordt opgevolgd ontstaat schade aan de unit en vervalt de garantie.

P LEGENDA /TABELA III
Dados técnicos das resistências eléctricas (caso se pretendam montar)
A = Mod.
B = Capacidade da resistência eléctrica
C = Tensão de alimentação (ph)
D = Máxima corrente absorvida
E = Termostato de segurança
F = N°1 Termostato de rearme automáticoST1 60°C
G = N°1 Termostato de rearme manual ST2 100°C
IMPORTANTE: O aquecedor eléctrico é instalado exclusivamente na fábrica. É proibido o uso suplementar de outros aquecedores montados no local. O não cumprimento desta norma pode causar danos ao aparelho e comporta a anulação imediata da garantia.

FIN MERKKIEN SELITYKSET / TAULUKKO III
Sähkölämmittimen tekniset tiedot (jos asennettu)
A = Malli
B = Sähkölämmittimen teho
C = Syöttöjännite (vaiheet)
D = Maksimi syöttövirta
E = Varotermostaatti
F = N°1 Automaattisesti palautuva termostaatti ST1 60°C
G = N°1 Käsin kuitattava termostaatti ST2 100°C
TÄRKEÄTÄ: Sähkölämmitin asennetaan ainoastaan tehtaalla.
On ehdottomasti kiellettyä käyttää muita paikan päällä asennettuja lisälämmittimiä. Tämän säännön laiminlyöminen aiheuttaa yksikön vahingoittumisen ja takuun välittömän lakkaamisen.


T.-III-IV

Table / Tabella / Tableau / Tabelle / Tabla / Tabel / Πίνακας II / Tabela / Tabell / Taulukko / Tabela I / Таблица : III

PL LEGENDA/TABELA III
Parametry elektryczne nagrzewnicy elektrycznej (jeśli jest zainstalowana)
A = Modele urządzeń
B = Moc grzałki elektrycznej
C = Napięcie zasilania (ph)
D = Maksymalna moc wejściowa
E = Termostat bezpieczeństwa
F = No1 termostat z automatycznym resetem ST1 60ºC
G = No1 Termostat z ręcznym resetem ST1 100ºC
WAŻNE: Nagrzewnica elektryczna instalowana jest wyłącznie w fabryce. Użycie innych typów grzałek elektrycznych jest absolutnie zabronione. Niezastosowanie się do tego wymogu bezpieczeństwa może spowodować uszkodzenie urządzenia i utratę gwarancji.

RU Условные обозначен_ия / Таблица 111
Технические данные электронагреватепеи (если предусмотрены)
A = модели
B = мощность электронагревателя
C = напряжение питания (ф)
D = макс. входная мощность
E = предохранительный термостат
F = N°1 Термостат с автоматической регулировкой ST1 60°C
G = N°1 Термостат с ручной регулировкой ST2 100°C
Kw= кВт
ВАЖНО: Электронагреватели устанавливаются на заводе-изготовителе. Использование других электронагревателей категорически запрещено. Несоблюдение данного требования безопасности приведет к повреждению оборудования и пиwает гарантию юридической силы.

GB
Table IV:
Material supplied

Description	Q.ty	Use
Installation instructions	1	Unit installation
Valve insulating shell (only units with factory-installed valves)	1	Insulating Valves
Gaskets (only units with factory-installed valves)	4	
Clips (only units with factory-installed valves)	3	

I
Tabella IV:
Materiale a corredo

Descrizione	Q.tà	Impiego
Istruzioni di installazione	1	Installazione unità
Guscio isolante Yalvole (solo unita con valvole montate in fabbrica)	1	Isolamento Valvole
Guarnizioni (solo unita con valvole montate in fabbrica)	4	
Fascette (solo unita con valvole montate in fabbrica)	3	

F
Tableau IV:
Materiel fourni

Description	Q.té	Utilisation
Instructions d'installation	1	Installation du système
Enveloppe isolante vannes (uniquement pour unité avec vannes montées à l'usine)	1	Isolation vannes
Joints (uniquement pour unité avec vannes montées à l'usine)	4	
Clips (uniquement pour unité avec vannes montées à l'usine)	3	

D
Tabelle IV:
Mitgeliefertes Material

Beschreibung	Menge	Verwendungszweck
Installationsanweisungen	1	Installation Gerät
Ventil-Isolierhülse (nur bei Geräten mit werkseitig montierten Ventilen)	1	Ventil-Isolierung
Dichtungen (nur bei Geräten mit werkseitig montierten Ventilen)	4	
Schellen (nur bei Geräten mit werkseitig montierten Ventilen)	3	

E
Tabla IV:
Material suministrado

Descripción	C.dad	Uso
Instrucciones de instalación	1	Instalación del sistema
Casco aislante válvulas (solo para unidad con válvulas montadas en fábrica)	1	Aislamiento válvulas
Juntas (solo para unidad con válvulas montadas en fábrica)	4	
Abrazaderas Schellen (solo para unidad con válvulas montadas en fábrica)	3	

NL
Tabel IV:
Meegeleverd materiaal

Omschrijving	Aantal	Voor
Montage-instructies	1	Montage unit
Isolatiehuls kleppen (alleen voor eenheden met kleppen in de fabriek gemonteerd)	1	Isolatie kleppen
Pakkingen (alleen voor eenheden met kleooen in de fabriek gemonteerd)	4	
Klemmen (alleen voor eenheden met kleppen in de fabriek gemonteerd)	3	

GR
Πίνακας IV:
Διαθέσιμο υλικό

ΠΕΡΙΓΡΑΦΗ	ΠΟΣΟΤΗΤΑ	ΧΡΗΣΗ
Εγχειρίδιο εγκατάστασης μονάδας	1	Εγκατάσταση μονάδα
Μονωτική θήκη βαλβίδων (μονάχα στις μονάδες που φέρουν βαλβίδες συναρμολογημένες στο εργοστάσιο)	1	Μόνωση βαλβίδων
Παρεμβύσματα (μονάχα στις μονάδες που φέρουν βαλβίδες συναρμολογημένες στο εργοστάσιο)	4	
Κολιέδες (μονάχα στις μονάδες που φέρουν βαλβίδες συναρμολογημένες στο εργοστάσιο)	3	

P
Tabela IV:
Material fornecido com a Unidade

Descrição	Qtd.	Utilização
Manual de Instalação	1	Instalação do sistema
Revestimento isolante das válvulas (somente unidades com válvulas montadas na fábrica)	1	Isolamento Válvulas
Guarnições {somente unidades com válvulas montadas na fábrica)	4	
Braçadeiras (somente unidades com válvulas montadas na fábrica)	3	

T. IV V

S

Tabell IV:
Bifogat material

Beskrivning	Antal	Impiego
Installationsinstruktioner	1	Enhet installation
Isolerande ventilhölje (endast på ventiler som fabriksmonterats)	1	Ventilisolering
Tätningar (endast på ventiler som fabriksmonterats)	4	
Brickor (endast på ventiler som fabriksmonterats)	3	

FIN

Taulukko IV:
Toimitukseen kuuluvat tarvikkeet

Kuvaus	Määrä	Käyttö
Asennusohjeet	1	Sisäyksiköm asennus
Venttiilien erityskuori {vain yksiköt, joissa on tehtaalla asennetut venttiilit)	1	Venttiilien eritys
Tiivisteet (vain yksiköt, joissa on tehtaalla asennetut venttiilit)	4	
Kiinnikkeet (vain yksiköt, joissa on tehtaalla asennetut venttiilit)	3	

PL

Tabela IV:
Elementy wchodzące w skład dostawy

Opis	Ilość	Użycie
Instrukcja instalacji	1	Instalacja systemu
Osłona izolująca zawory (wyłącznie w przypadku urządzeń z zaworami mantowanvmi fabrycznie)	1	Izolacja zaworów
Uszczelki (wyłącznie w przypadku urządzeń z zaworami montowanymi fabrycznie)	4	
Pierścienie (wyłącznie w przypadku urządzeń z zaworami montowanymi fabrycznie)	3	

RU

Таблица IV:
Поставляемые материалы

Наименование	Кол-во	Назначение
Указания по установке	1	Установка агрегата
Изолирующий кожух для клапана (только для агрегатов с клапанами заводской установки)	1	Изоляция клапанов
Прокладки (только для агрегатов с клапанами заводской установки)	4	
Зажимы (только для агрегатов с клапанами заводской установки)	3	

GB Table V: Operating limits

Water circuit	Water- side maximum pressure 1400 kPa (142 m w.c.)	Minimum entering water temperature:+ 5°C
		Maximum entering water temperature:+ 80°C
Room air	Installation for humidity level is validated according to specification prEN 1397:2011	Minimum temperature: 5°C (1)
		Maximum temperature 32°C
Power supply	Nominal single phase voltage Operating voltage limits	230V ~ 50/60Hz
		min. 207V- max. 253V min. 216V max. 244V (unit with electric heaters)

Notes: (1) If the room temperature can go down to 0°C, it is advisable to empty the water circuit to avoid damage caused by ice (see paragraph on water connections).

I Tabella V: Limiti di funzionamento

Circuito acqua	Pressione massima lato acqua 1400 kPa (142 me.a.)	Temperatura minima acqua entrante:+ 5°C
		Temperatura massima acqua entrante:+ 80°C
Aria ambiente	L'installazione per il livello di umidità è convalidata secondo le direttive prEN 1397:2011	Temperatura minima: 5°C (1)
		Temperatura massima 32°C
Alimentazione elettrica	Tensione nominale monofase Tensioni limite di funzionamento	230V ~ 50/60Hz
		min. 207V – max. 253V min. 216V – max. 244V (unità con resistenze elettriche)

Nota: (1) Se si prevede che la temperatura ambiente possa scendere sotto 0°C, si raccomanda di svuotare l'impianto acqua onde evitare possibili rotture da gelo (vedere paragrafo "Collegamenti Idraulici").

F Tableau V: Limites de fonctionnement

Circuit d'eau	Pression maxi côté eau: 1400 kPa (142 m w.c.)	Température mini de l'eau à l'entrée: + 5°C
		Température maxi de l'eau à l'entrée: + 80°C
Air ambiant	L'installation adaptée au niveau d'humidité est validée selon la spécification prEN 1397:2011	Température mini: 5°C (1)
		Température maxi 32°C
Alimentation électrique	Tension nominale monophasée Limites de la tension de fonctionnement	230V ~ 50/60Hz
		min. 207V – max. 253V min. 216V – max. 244V (unité avec résistance électrique)

Remarques: (1) Si on prévois une température ambiante intérieure en-dessous de 0°C, il est recommandé de vidanger le circuit d'eau pour éviter une possible rupture par le gel (voir le paragraphe sur les raccordements d'eau).

T.-V

D Tabelle V: Betriebs - Grenzwerte

Wasserkreislauf	Maximaler wasserseitiger Druck 1400 kPa (142 m w.c.)	Mindest-Wassereintrittstemperatur: + 5°C
		Maximal-Wassereintrittstemperatur: + 80°C
Raumluft	Installation für Feuchtigkeitsniveau muss gemäß EN 1397:2011 erfolgen	Mindesttemperatur: 5°C (1)
		Maximaltemperatur 32°C
Stromversorgung	Nennspannung, einphasig Spannungsbereich	230V ~ 50/60Hz
		min. 207V – max. 253V min. 216V – max. 244V (Geräten mit elektrischem Widerstand)

Anmerkungen: (1) Kann die Raumtemperatur auf 0°C abfallen, wird empfohlen, den Wasserkreislauf zu entleeren, um Eisbildung zu verhindern (siehe Abschnitt "Wasseranschlüsse").

E Tabla V: Limites de funcionamiento

Circuito de agua	Presión máxima lado agua 1400 kPa (142 m w.c.)	Temperatura mínima de entrada del agua: + 5°C
		Temperatura máxima de entrada del agua: + 80°C
Temperatura ambiente	La instalación para el nivel de humedad se valida de acuerdo con la especificación prEN 1397:2011	Temperatura mínima: 5°C (1)
		Temperatura máxima: 32°C
Power supply	Tensión nominal monofásica Limites de tensión de funcionamiento	230V ~ 50/60Hz
		mín. 207V – máx. 253V mín. 216V – máx. 244V (unidad con resistencias eléctricas)

Nota: (1) Se si prevede che la temperatura ambiente possa scendere sotto 0°C, si raccomanda di svuotare l'impianto acqua onde evitare possibili rotture da gelo (vedere paragrafo "Collegamenti Idraulici").

NL Tabel V: Bedrijfslimieten

Watercircuit	Maximale druk waterzijdig: 1400 kPa (142 m.w.k.)	Minimum waterintrede temperatuur: + 5°C
		Maximum waterintrede temperatuur: + 80°C
Ruimteluchttemperatuur	Installatie voor vochtigheidsniveau wordt gevalideerd volgens de prEN 1397:2011 specificatie	Minimum temperatuur: 5°C (1)
		Maximum temperatuur: 32°C
Elektrische voeding	Nominale 1-fase voeding Bedrijfsspannings-limieten	230V ~ 50/60Hz
		min. 207V – max. 253V min. 216V – max. 244V (unit met verwarmingsweerstand)

Opmerking: (1) Als de kans bestaat dat de ruimtetemperatuur beneden 0°C kan dalen, wordt aanbevolen om het watercircuit af te tappen om bevriezing te voorkomen (zie ook onder 'Wateraansluitingen').

GR Πίνακας V: Όρια λειτουργίας

Κύκλωμα νερού	Μέγιστη πίεση νερού: 1400 kPa (142 m c.a.)	Ελάχιστη θερμοκρασία του νερού που μπαίνει:+5°C
		Μέγιστη θερμοκρασία του νερού που μπαίνει:+ 80°C
Αέρας περιβάλλοντος	Η εγκατάσταση πιστοποιείται ως προς το επίπεδο υγρασίας σύμφωνα με την προδιαγραφή prEN 1397:2011	Ελάχιστη θερμοκρασία: 5°C (1)
		Μέγιστη θερμοκρασία: 32°C
Δίκτυο παροχής ισχύος	Ονομαστική μονοφασική τάση Όρια τάσης λειτουργίας	230V ~ 50/60Hz
		Εάχιστο 207V - Μέγιστη 253V Εάνιστο 216V- Μένιστη 244V (μονάδαr με ηλεκτηική αντίσταση)

Σημειωσεις: (1) Εαν προβλεπεται οτι η θερμοκρασια περιβαλλοντος μπορει να κατεβει κατω απο 0 ° C , συνιστσται να αδειασετε την εγκατασταση νερου ωστε να αποφευχθουν πιθανες θραυσεις από πάγο (βλέπε παράγραφο Υδραυλικές συνδέσεις).

P Tabela V: Limites de funcionamento

Circuito da água	Pressão máxima lado água: 1400 kPa (142 m c.a.)	Temperatura mínima água entrante: + 5°C
		Temperatura máxima água entrante: + 80°C
Ar ambiente	A instalação para o nível de humidade encontra-se validada de acordo com a especificação EN 1397:2011	Temperatura mínima: 5° C (1)
		Temperatura máxima: 32° C
Corrente eléctrica	Corrente monofásica Limites de funcionamento	230V ~ 50/60Hz
		mín. 207V – máx. 253V mín. 216V – máx. 244V (unidades com resistências elétricas)

Notas: (1) Se se prevê que a temperatura ambiente possa descer abaixo de 0°C, é aconselhável esvaziar o circuito de água para evitar possíveis rupturas provocadas pelo gelos (ver parágrafo "Ligações hidráulicas").

T.-V

S Tabell V: Driftsgränser

Vattenkrets	Max. tryck på vattensida: 1400 kPa (142 m c.a.)	Min. ingående vattentemperatur: + 5°C
		Max. ingående vattentemperatur: + 80°C
Rumsluft	Installationen för fuktnivån valideras enligt specifikationen prEN 1397:2011	Min. temperatur: 5°C (1)
		Max. temperatur: 32°C
Huvudkraftmatning	Nominell enfas-spänning Gränser, driftsspänning	230V ~ 50/60Hz
		min. 207V – max. 253V min. 216V – max. 244V (enheter med elektriska motstånd)

Anmärkningar: (1) Om rumstemperaturen förväntas understiga 0°C bör vattensystemet tömmas för att undvika skador på grund av isbildning (se stycke "köldbäraranslutningar")..

FIN Taulukko V: Toimintarajat

Vesipiiri	Vesipuolen maksimi paine 1400 kPa (142 m c.a.)	Minimi tulevan veden lämpötila: + 5°C
		Maksimi tulevan veden lämpötila: + 80°C
Huonelämpötila	Kosteustason asennus on validoitu erittelyn prEN 1397:2011 mukaan	Minimi lämpötila: 5°C (1)
		Maksimi lämpötila: 32°C
Päävirran syöttö	Nimellinen 1-vaihe jänniteraja Toimintajännitteen rajat	230V ~ 50/60Hz
		min. 207V – maks. 253V min. 216V – maks. 244V (Yksiköt, joissa sähkövastus)

Huomautukset: (1) Jos ympäristön lämpötilan oletetaan voivan laskea alle 0°C, suosittelemme hydraulisen järjestelmän tyhjentämistä, jotta vältyttäisiin mahdollisista jään aiheuttamista vaurioista (ks. luku "Hydrauliset liitännät").

PL Tabel V: Bedrijfslimieten

Obieg wody	Maksymalne ciśnienie wody: 1400 kPa (142 m w.c.)	Minimalna temperatura wody wpływającej: + 5°C
		Maksymalna temperatura wody wpływającej: + 80°C
Temperatura pomieszczenia	Instalacja w zależności od poziomu wilgotności jest dozwolona odpowiednio do wymogów normy prEN 1397:2011	Temperatura minimalna: 5°C (1)
		Temperatura maksymalna: 32°C
Zasilanie elektryczne	Napięcie znamionowe jednofazowe Zakres napięcia roboczego	230V ~ 50/60Hz
		min. 207V – maks. 253V min. 216V – maks. 244V (urządzenie z grzałką elektryczną)

Uwagi: (1) Jeśli istnieje możliwość, że temperatura w pomieszczeniu może spaść poniżej 0°C, zaleca się spuszczenie wody w celu uniknięcia usterek spowodowanych na skutek działania mrozu (patrz paragraf dotyczący przyłączy wody).

RU Таблица V: Эксплуатационные ограничения

Водяной контур	Максимальное давление со стороны воды 1 кПа (142 м вод. ст.)	Минимальная температура входящей воды: + 4°C
		Максимальная температура входящей воды:+ 80°C
Воздух в помещении	Монтаж аппарата с учетом уровня влажности осуществляется согласно спецификации EN 1397:2011	Минимальная температура: 5 °C (1)
		Максимальная температура: 32 °C
Электропитание	Номинальное однофазное напряжение Пределы рабочего напряжения	220В, 50/60Гц
		Мин. 207 В – макс. 253 В мин. 216 В Макс. 244В (агрегат с электронагревателем)

Примечание(1) : Если комнатная температура может опускаться до 0 °C, рекомендуется полностью сливать воду из водяного контура, чтобы не допустить повреждения контура в результате замерзания воды (см. параграф по подключениям системы водоснабжения).

T.-VI

Table / Tabella / Tableau / Tabelle / Tabla / Tabel / Πίνακας II / Tabela / Tabell / Taulukko / Tabela I / Таблица : VI

Performances according to EU Regulation 2016/2281

Fan speed setting	Low						Medium						High					
Units	Ps	Pl	Pc	Ph	Pe	Lw	Ps	Pl	Pc	Ph	Pe	Lw	Ps	Pl	Pc	Ph	Pe	Lw
	kW	kW	kW	kW	W	dB(A)	kW	kW	kW	kW	W	dB(A)	kW	kW	kW	kW	W	dB(A)
TKW202EC	1,30	0,25	1,55	1,92	9	36	1,49	0,28	1,77	2,17	13	40	2,00	0,38	2,38	2,74	29	49
TKW302EC	1,42	0,46	1,88	1,94	7	35	2,18	0,70	2,88	3,15	14	44	3,05	0,95	4,00	3,68	33	53
TKW402EC	2,09	0,70	2,79	3,16	13	42	2,69	0,82	3,51	3,92	23	48	3,64	1,07	4,71	5,28	57	57
TKW502EC	2,53	0,83	3,36	3,80	7	35	3,36	1,08	4,44	5,08	12	40	4,49	1,60	6,09	6,84	25	49
TKW602EC	2,69	1,02	3,71	3,85	9	38	4,08	1,40	5,48	6,26	23	46	5,44	1,76	7,20	8,51	45	54
TKW702EC	2,98	1,07	4,05	4,38	11	40	4,88	1,63	6,51	7,95	40	52	7,21	2,40	9,61	11,03	115	61
TKW204EC	1,19	0,11	1,30	1,09	9	36	1,39	0,10	1,49	1,27	13	40	1,86	0,13	1,99	1,67	29	49
TKW304EC	1,50	0,50	2,00	3,10	7	35	2,08	0,61	2,69	4,40	14	44	2,66	0,72	3,38	5,46	32	53
TKW404EC	2,04	0,52	2,56	4,32	13	42	2,60	0,63	3,23	5,00	22	48	3,32	0,70	4,02	5,80	57	57
TKW604EC	2,25	0,74	2,99	5,28	9	38	3,79	1,19	4,98	7,79	23	46	5,08	1,57	6,65	10,04	46	54
TKW704EC	2,39	0,79	3,18	6,43	11	40	4,71	1,33	6,04	10,07	40	52	6,34	1,63	7,97	13,99	115	61

Fan speed setting	Low						Medium						High					
Units	Ps	Pl	Pc	Ph	Pe	Lw	Ps	Pl	Pc	Ph	Pe	Lw	Ps	Pl	Pc	Ph	Pe	Lw
	kW	kW	kW	kW	W	dB(A)	kW	kW	kW	kW	W	dB(A)	kW	kW	kW	kW	W	dB(A)
TKW202AC	1,29	0,25	1,54	1,92	25	38	1,48	0,28	1,76	2,17	35	42	1,98	0,38	2,36	2,74	58	49
TKW302AC	1,41	0,46	1,87	1,94	17	35	2,17	0,70	2,87	3,15	34	47	3,04	0,95	3,99	3,68	58	53
TKW402AC	2,08	0,70	2,78	3,16	38	42	2,67	0,82	3,49	3,92	58	48	3,62	1,07	4,69	5,28	99	57
TKW502AC	2,52	0,83	3,35	3,80	28	35	3,35	1,08	4,43	5,08	41	40	4,47	1,60	6,07	6,84	66	49
TKW602AC	2,67	1,02	3,69	3,85	34	38	4,06	1,40	5,46	6,26	61	46	5,42	1,76	7,18	8,51	88	54
TKW702AC	2,97	1,07	4,04	4,38	44	40	4,85	1,63	6,48	7,95	92	52	6,34	2,27	8,61	10,28	125	59
TKW204AC	1,18	0,11	1,29	1,09	25	37	1,38	0,10	1,48	1,27	35	41	1,84	0,13	1,97	1,67	58	49
TKW404AC	2,03	0,52	2,55	4,32	38	42	2,58	0,63	3,21	5,00	58	48	3,30	0,70	4,00	5,80	99	57
TKW704AC	2,38	0,79	3,17	6,43	44	40	4,68	1,33	6,01	10,07	92	52	5,95	1,60	7,55	12,77	125	59

T. VII

Table / Tabella / Tableau / Tabelle / Tabla / Tabel / Πίνακας II / Tabela / Tabell / Taulukko / Tabela I / Таблица : VII

B	A		
	C	D	EH
TKW20	☒	☒	☒
TKW30	☒	☒	☒
TKW40	☒	☒	☒
TKW50	☒		☒
TKW60	☒	☒	☒
TKW70	☒	☒	☒
	230V ~ 50/60Hz		

GB

LEGEND / TABLE VII

A = Models
B = Sizes
C = 2 pipes
D = 4 pipes
EH = electric heaters

I

LEGENDA / TABELLA VII

A = Modelli
B = Grandezze
C = 2 tubi
D = 4 tubi
EH = Resistenze elettriche

F

LÉGENDE / TABLEAU VII

A = Modèles
B = Tailles
C = 2 tubes
D = 4 tubes
EH = Résistances électriques

D

LEGENDE / TABELLE VII

A = Modelle
B = Größe
C = 2 Rohre
D = 4 Rohre
EH = elektrischem Widerstand

E

LEYENDA / TABLA VII

A = Modelos
B = Tamaños
C = 2 tubos
D = 4 tubos
EH = resistencias eléctricas

NL

VERKLARING / TABEL VII

A = Modellen
B = Typen
C = 2 leidingen
D = 4 leidingen
EH = Verwarmingsweerstanden

GR

ΥΠΟΜΝΗΜΑ / Πίνακας VII

A = Μοντέλα
B = Μέγεθος
C = 2 -σωλήνιο
D = 4 -σωλήνιο
EH = ηλεκτρική αντίσταση

P

LEGENDA / TABELA VII

A = Modelos
B = Tamanhos
C = 2 tubos
D = 4 tubos
EH = Resistências elétricas

S

FÖRKLARING / TABELL VII

A = Modeller
B = Storlekar
C = 2-rörs
D = 4-rörs
EH = Elektriska motstånd

FIN

MERKKIEN SELITYKSET / TAULUKKO VII

A = Mallit
B = Tyypit
C = 2-putki
D = 4-putki
EH = Sähkövastukset

PL

LEGENDA / TABELA VII

A = Modele urządzeń
B = Rozmiary
C = 2 rury
D = 4 rury
EH = Grzałka elektryczna

RU

Условные обозначения / Таблица VII

A = модели
B = размеры
C = 2-трубный
D = 4-трубный
EH = электронагреватели
(1) = 230В ~ 50Гц

“Hydronic Ceiling Cassette” Fan Coil Units

Legend

Fig.1.
A - Unit
B - Frame/Grille assembly

Fig.15.
1 - Heating: louvre position for correct air flow
2 - Cooling: louvre position for correct air flow
Warning
To close one or two air outlets use the special kit

Fig.18.
1 - Nut
2 - Wooden frame
3 - Threaded hangers
4 - Washers
5 - Nut
6 - Washers
7 - Threaded hangers
8 - Washers
9 - Nut
10 - Nut

Fig.19.
7 - Threaded hangers
11 - "T" bar (to be removed)

Fig.20.
7 - Threaded hangers
11 - "T" bar (to be removed)
12 - Suspension brackets
18 - Electrical box

Fig.21.
13 - False ceiling
14 - Spirit level

Fig.24.
15 - Frame pre-hooking support
16 - Safety belt
17 - Frame supporting nuts and spacers

Fig.25.
3 - Gasket "A"
4 - Gasket "B"
5 - Air discharge

Fig.26-27.
1 - Cold circuit water inlet
2 - Cold circuit water outlet
3 - Air purge valve
4 - Hot circuit water inlet
5 - Hot circuit water outlet

Fig.28.
See section “Motorized valve”

Fig.31.
Automatic operation position
6 - Valve body
7 - Thermo-electric valve head

Fig.32.
Electric heater protections
1 - Manual reset thermostat
2 - Automatic reset thermostat

Fig.35.-36. Standard.
18 - Electrical box
19 - Cable holder
20 - Terminal block
21 - Electric heater relay
22 - Capacitor
24 - Valve cable inlet
25 - Power supply cable
26 - Control cable

Fig.37. Standard with valves
27 - Cold valve cables
28 - Hot valve cables (4 pipes only)

Fig. 38. "IR Control"
18 - Electrical box
19 - Cable holder
20 - Terminal block
21 - Electric heater relay
22 - Capacitor
29 - Transformer
30 - "IR Control" board

Fig. 39. "IR Control" and brushless motor
18 - Electrical box
19 - Cable holder
20 - Terminal block
21 - Electric heater relay
22 - Capacitor
25 - Power supply cable
29 - Transformer
30 - "IR Control" board
31 - EC motor board

Fig.39e. Brush less motor with heaters

Fig.40e.
Winter operation diagram with fresh air intake
15 - Antifreeze thermostat
16 - Speed controller
17 - Fresh air fan motor
18 - Relay 230V
a= neutral
b= cooling signal 230V
c= heating signal 230V

Fig.44.
Air intake grille
10 - Wall
11 - Undercut door
12 - Wall-fitted grille
13 - Door-fitted grille

Fig.45.
10 - Duct connection flange
11 - Clip
12 - 6 mm neoprene gasket
13 - Insulated flexible duct
14 - Fresh air intake
15 - Conditioned air supply to an adjacent room

Fig.47.
Diagram of conditioned air supply to an adjacent room: one louvre closed
19 - Supply air duct to adjacent room

In case of two louvres closed, the fresh air flow towards the adjacent room is 50% higher compared with only one louvre closed (with equal static external pressure)

Fig.48.
Filter cleaning

General Information

Unit installation

Read this instruction manual thoroughly before starting installation.

- **This unit complies with the Machinery (2006/42/EC) and Electromagnetic Compatibility (2014/30/EC) directives.**

If Frico controls are NOT used by the installer it is his own responsibility to check compliance with the following directives:
- **Low-voltage (2006/95/EC)**
- **Electromagnetic compatibility (2014/30/EC)**

- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance.
- The installation must be carried out by a qualified installer.
- The unit should be installed according to the national standards on plants.
- Check that the voltage and frequency of the mains power supply are as required for the unit to be installed; the available power source must be adequate to operate all other appliances connected to the same line.
- Also ensure that national safety code requirements have been followed for the main supply circuit.
- Where necessary, use 16 mm I.D. PVC pipe of appropriate length (not supplied) and with the correct thermal insulation for the condensate drain extension.
- After installation thoroughly test system operation and explain all system functions to the owner.
- Use this unit only for factory approved applications: **the unit cannot be used in laundry or steam pressing premises.**

WARNING: Disconnect the mains power supply switch before servicing the system or handling any internal parts of the unit.

- The manufacturer declines any liability for damage resulting from modifications or errors in the electrical or water connections.
- Failure to observe the installation instructions, or use of the unit under conditions other than those indicated in Table "Operating limits" of the unit installation manual, will immediately invalidate the unit warranty.
- Failure to observe electric safety codes may cause a fire hazard in the event of short circuits.
- Inspect equipment for damage during transport. In case of damage file an immediate claim with the shipping company.
- Do not install or use damaged units.
- In case of malfunction turn the unit off, disconnect the mains power supply and contact a qualified service engineer.
- Maintenance must only be carried out by qualified personnel.
- **All of the manufacturing and packaging materials used for this appliance are biodegradable and recyclable.**
- Dispose of the packaging material in accordance with local requiremements.

Choosing the installation site

Positions to avoid:
- Exposure to direct sunlight.
- Areas close to heat sources.
- On damp walls or in positions that may be exposed to water hazard.
- Where curtains or furniture may obstruct free air circulation.

Recommendations:
- Choose an area free from obstructions which may cause uneven air distribution and/or return.
- Consider using an area where installation is easy.
- Choose a position that allows for the clearances required.
- Look for a position in the room which ensures the best possible air distribution.
- Install unit in a position where condensate can easily be piped to an appropriate drain.

Warnings: avoid

... any obstruction of the unit air intake or supply grilles (See fig. **3**).
... exposure to oil vapours (See fig. **4**).
... installation in areas with high frequency waves (See fig. **5**).
... ascending sections of condensate drain piping.
These may only be used near the unit with a maximum height difference of 200 mm from the top of the unit (See fig. **6**).
... horizontal sections or curves of condensate drain piping with less than 2% slope (See fig. **7**).
... exposure to direct sunshine, when the unit is operating in the cooling mode; always use shutters or shades.
... positions too close to heating sources which may damage the unit (See fig. **8**).
... connecting condensate piping to sewage system drain without appropriate trap.
Trap height must be calculated according to the unit discharge head in order to allow sufficient and continuous water evacuation (See fig. **9-10**).
... only partial insulation of the piping.
Non-level installation which will cause condensate dripping (See fig. **11**).
... flattening pipes or condensate pipes (See fig. **12-13**).
... slack on electrical connections (See fig. **14**).

Installation

See fig. **15.**

- Such device is not accessible to the public. It must be installed at least 2.5 m above ground level, unless it is installed inside engine rooms or in similar environments.
- Install the unit as centrally as possible in the room, the air flow direction can be controlled by manually regulating the louvres position, according to the operating mode (cooling or heating): this will ensure optimum distribution of the air in the room.
- During cooling mode operation the best position for the deflecting louvres is one which allows air diffusion close to the ceiling (Coanda effect). In heating mode, the louvres should be positioned so that the air is directed towards the floor, in order to prevent layers of hot air forming in the upper part of the room.
- In order to allow easy and rapid installation and maintenance, make sure that in the selected position it is possible to remove the ceiling panels or, if the ceiling is constructed of masonry, that access to the unit is guaranteed.

ATTENTION:

Only restrict the air outlets as indicated in the drawing fig.15 For units equipped with electric heaters the use of the"AIR SUPPLY OBSTRUCTION" kit is NOT allowed.

Prior to installation

It is advisable to place the unit as close as possible to the installation site before removing it from the packaging. The grille panel and the control are separately packed for maximum protection (See fig. **16**).

IMPORTANT:
Do not lift the unit by the condensate drain discharge pipe; hold it by its four corners only.

Unit installation will be facilitated using a stacker (See fig. **16**).

Plastic diffuser only : If plaster board ceiling panels are installed the maximum dimensions of the unit housing must not exceed 660 x 660 mm (mod. TKW20-TKW30-TKW40) and 900 x 900 mm (mod. TKW50-TKW60-TKW70).

In rooms with high humidity, brackets should be insulated by self adhesive insulation supplied.

Installation

Mark the position of the hangers, connection lines and condensate drain pipe, power supply cables and remote control cable (see dimensions); the cardboard template (supplied with the kit) may be of assistance for this operation. Depending on the type of ceiling the hangers can be fixed as shown in the drawing **17**.

Once the threaded hangers have been positioned, **do not tighten** the nuts, and insert the washers as shown in the drawing **18**.

First position the connection lines, as described in the chapter "Water connections". Remove the "T" bar in order to facilitate installation operations (See fig. **19**).

Carefully lift the unit (without the frame) using the four suspension brackets (or the four corners), inserting it into the false ceiling.

If the "T" bar cannot be removed the unit may need to be tilted (this operation may only be carried out with false ceilings with a minimum height of 300 mm) (See fig. **20**).

Align and level the unit by adjusting the nuts and locknuts on the threaded hangers, maintaining a distance of 25 -30 mm between the sheet metal body and the underside of the false ceiling.

Reposition the "T" bar and align the unit in relation to the bar by tightening the nuts and locknuts. After the condensate drain pipe and the water ducts have been connected check, check to make sure that the unit is level (See fig. **21**).

Condensate drain pipe

See fig. **22 - 23.**

- To ensure correct condensate water flow, the drain pipe should have a gradient of 2% without obstructions. Furthermore an odour trap of at least 50 mm depth should be made to prevent unpleasant odours from reaching the room.
- Condensate may be discharged at a maximum height of 200 mm above the unit, as long as the ascending tube is vertical and aligned with the drainage flange.
- If it is necessary to discharge the condensate from a level above 200 mm, install an auxiliary water discharge pump and float valve. A float valve is recommended to stop the flow switch if there is a fault at the auxiliary pump.
- The condensate pipe must be insulated with a condensation-proof material such as polyurethane, propylene or neoprene of 5 to 10 mm thickness.
- If more than one unit is installed in the room, the drain system can be made as shown in the drawing fig.23.

Water connections

To make water connections to the heat exchanger or the valves use threaded joints and suitable materials that can ensure perfect tightness.
The unit is provided with inlet and outlet female connections for both 2 and 4 pipe models. An air bleed valve is also provided (See fig. **26**), which can be adjusted using an 8 mm wrench.

Models	Connections dimension (Ø)	Models	Connections dimension (Ø)
TKW20	3/4"	TKW50	1"
TKW30	3/4"	TKW60	1"
TKW40	3/4"	TKW70	1"
TKW20*	1/2"	TKW60*	3/4"
TKW30*	1/2"	TKW70*	3/4"
TKW40*	1/2"		

*Hot water circuits, four-pipe version

To drain the unit completely, refer to "SYSTEM DRAINAGE" in the Maintenance section.

Checking

On the unit startup, check if water flows correctly from the pump or check the pipe slope and make sure the pipes are not obstructed.

Electrical connections

IMPORTANT:
- The unit must be installed in compliance with the national standards on plant installation.
- All cables for connection to the unit, as well as its accessories, must be H05 VV-F with PCV insulation in compliance with EN60335-2-40.
- Disconnect all circuits from power supply before acting on energized components.
- Make earthing before any other electric connections.

In compliance with the installation instructions, the contact opening of all disconnecting devices (4 mm) must allow full disconnection under the conditions of overvoltage class III.

Connect power supply L (line), N (neutral) and ⏚ (earthing) according to the wiring diagram and respect the polarities shown on the bottom of the electrical boxes, see fig. 36-38-39-39e.

All unit must be installed with a **fuse for machine protection**. Refer to table I for fuse installation and replacement.

Control box panels: The control box panel is positioned on the external side of the unit (fig. 1-2). Remove the fixing screws and the cover of the control box panel. The control box panels contain the terminal blocks for connections as shown in the wiring diagrams and fig. 36-38-39-39e.

Table X				
Kind of unit	fig. 36	fig. 38	fig. 39	fig. 39e
TKW__AC	x			
TKW__IR		x		
TKW__EC IR			x	
TKW__EC				x

IMPORTANT:
- **To power the unit, use cables with minimum section as according to table II.**
- **After all connections are made, fasten the cable using the special tear protections (ref. 19).**
- **Close the control box panel with the protecting cover and tighten the screw(s) which were previously removed.**

Units with electric heaters

The unit is equipped with two safety thermostats: one automatic reset thermostat and one manual reset thermostat which can be re-activated, fig. 32 (ref. A) to protect the unit against overtemperature caused by dirty filters or clogged air flow.
The manual thermostat must be reset by skilled personnel only after the cause for which the intervention was required has been removed.

Control

For the configuration of dip-switches, please refer to the installation manual of the control.

IR Control

Power supply connection (fig. 38-39)

IMPORTANT: Make earth connection prior to any other electrical connections.

- Before proceeding with the unit connection to the mains supply locate live L and neutral N, then make connections as shown in the figures 38-39.

Communication bus connection

- Use connector "J9" (ref. B) on the card to connect the communication "bus" and make sure to respect the polarities indicated on the card. We suggest that a BELDEN 9842 cable is used.

IMPORTANT: The unit can be equipped with a "CRC" wire control or I.R. control which are supplied as accessories. If the "CRC" control is used, connect it to the "J2" ref. "A" terminal block and configure the system.

- With a small flat blade screwdriver prize one of the points shown in the figure. Insert the cable into the open contact. Remove the screwdriver and check the connection solidity.

Window contact (Normally open) (fig. 39a)

Depending on the contact you need to open, use a small flat blade screwdriver to prize a spring as shown in the figure.
Route the cable through the underlying space.

If the window contact is open for longer than one minute, the unit is switched to the "frost protect" mode.
The unit will return to normal operation, when the window contact closes. Connect pin 11 and 12 of connector J2 as shown in the figure.
Configuration of the digital input can be made by software, by setting it to normally open (default) or normally close modes by means of the "Service tool" programme.

Presence detecting contact (PD) (fig. 39b)

The unit is equipped with a "Presence detecting" contact.
If this input is disabled, the unit follows the pre-set time configuration, but when this input indicates a presence state for at least 5 seconds, the unit is forced to operate in the "Occupancy" operating mode.
Connection to be made on pin 5 and 6 of connector J2 as shown in the figure.
Configuration of the digital input can be made by software, by setting it to normally open (preferably) or normally close modes.

Other connections (fig. 39c)

1. COM IN
2. COM OUT/Occupancy LED
3. GND
4. +12 V d.c.

} "CRC"

5. Discrete Input
6. GND
7. Fan Speed In
8. Setpoint In
9. GND
10. AMB Air
11. Discrete Input 2
12. GND

Operation of STATUS and CCN leds Fig. 39d

Make all connections and position the covers of the switchboard.

After the unit has been connected to the mains, the red led "Status" blinks and this can be seen through the window of cover 1.

If the unit is transmitting or receiving data from the remote controls, the CCN green led flashes.

Warning:
Prior to any other operation on the electric components of the electric panel, make sure power supply is disconnected. Check through the special window (shown at the side) that the STATUS RED led is always off.

The Status red led can flash in two different ways:

- Normal operation: regular flashing, one second on, one second off.
- Abnormal operation: the led emits a certain number of pulses depending on the irregularity detected on the unit. The led remains on for 60 sec. and off for other 60 sec. with 5 seconds between the two flashings.

The detectable failures are the following:

Low Energy Consumption Fan Motor

Low Energy Consumption Fan Motor version

TKW...units can ensure a 0% - 100% constant air flow modulation (and therefore the thermal and refrigerating capacity) thanks to the Inverter technology combined with the last generation of high energy-efficient electric motors (EC brushless). This enables a constant control on the power supplied according to the room that needs to be conditioned.

The result is 50% electric energy saving compared to traditional 3-speed asynchronous motors and a considerable reduction of acoustic emissions. The table below shows the electrical characteristics of the four types of motors.

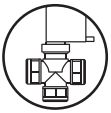
NOTE:

- **The values showed in the table are reported only at the Low Energy Consumption Fan Motor. It is necessary to add the control input power which corresponds to about 5W ("IR Control"), 9W for the pump and 3W or 6W for the valves (4 pipes).**

No further electrical connections are necessary (beside power supply and communication bus) for this unit (fig.39).

All connections between electric components and motor are factory made.

		TKW20 EC	TKW30 EC	TKW40 EC	TKW50 EC	TKW60 EC	TKW70 EC
LO	W	7	7	13	7	9	11
	A	0.08	0.08	0.12	0.08	0.1	0.12
Hi	W	23	33	57	25	46	115
	A	0.19	0.27	0.46	0.23	0.4	0.86



Motorized valve and control

- The unit control circuit only allows opening of the motorized valve when the fan motor is working.
- When a lower temperature is required by the thermostats, the outlet V and H (terminal blocks ref.20) is powered at 230V and the corresponding chilled water or hot water valve is energized

WARNING: The pump control circuit stops water supply to the cold valve if an irregular increase of the condensate water level is detected into the drain pan

- If an irregular increase of the condensate water level is detected into the drain pan (for example: possible defective drain, pump malfunction, fan motor not working) the contact of the "safety level 2" float switch opens to close the regulation valve, stopping the cold water flow towards the coil and avoiding further condensation.

Control

The water flow has to be controlled:

- by installing the motorized thermo-electric valves supplied an accessory

or

- by installing motorized field supplied valves.

Motorized thermo-electric valve assembly and components (See fig. 28).

Mod.TKW		TKW20 TKW30 TKW40	TKW50 TKW60 TKW70	TKW20 TKW30 TKW40	TKW60 TKW70
		2-pipe		4-pipe	
Ref.	Description	q.ty	q.ty	q.ty	q.ty
1	Actuator	1	1	2	2
2	Valve 1"gas		1		1
	Valve 3/4"gas	1		1	1
	Valve 1/2"gas			1	
3	Shell	1	1	1	1
4	Clips	3	3	3	3
5	Gasket	2	2	4	4

Instructions for mounting of motorized thermoelectric valve assembly (see "Components" table)

- The thermo-electric valve must be mounted on the unit after the unit installation. For this operation follow figures, depending on model.

Assembly (Fig. 30)

With 4–pipes models, first install the valve assembly for the cold circuit followed by the valve assembly for the hot circuit.
Connect the valve assemble to the coil and **fix it by a 30Nm torque. Insulate the valve assembly.**

Gasket type	Nm
Rubber	10/12
Fibre	25/30

Fit the actuator on the valve body, route the valve cable through the box and connect it to the terminal block as shown in fig. 37.

- To connect the steel pipes to the system, ensure they are aligned and supported to avoid excess strain on the unit. If the system is filled with water, check all fitting seals.
- After ending the hydraulic connections, make sure there are no leaks Insulate the valve using the shell, fix it by means of the clips and make sure that all cold parts are insulated (fig. 29 – 30).
- For 4-pipe hot water, repeat all the operations with gas adaptors, as per the table.

NOTE:
The seal efficiency of the valve assembly is factory tested. Any system losses are therefore due to an incorrect installation.

Operation of the thermo-electric valve (See fig. 31)

- This 2- 3-way valve is of the OPEN/CLOSE type with very slow travel. It is not a modulating valve so it has no PTC.This valve is driven, as a sensible element, by the ambient thermostat of the "cassette" unit.
- The 2-way valve is normally closed to the coil with no powered actuator side. The 3-way valve is normally closed to the coil with no powered actuator side while is open to the bypass way side. When the room temperature does not satisfy the thermostat, the valve opens after about 3 minutes about to allow water to circulate in the coil.
- If the room temperature satisfies the thermostat or if the electric power has been switched off, the valve is closed after about 3 minutes towards the coil and is opened towards the bypass.
- If an emergency occurs, the valve may be manually opened, removing the electric head, unscrewing the ring nut. **When the emergency ends, remember to reset the valve to automatic operation, repositioning the electric head; failure to do this can result in condensate formation due the water pipes, even if the unit is switched off.**
- **On "IR Control" unit position the water sensor on the inlet pipe plumbing side.**

Instructions for field supplied valves

Water connection

- Install valves following manufacturer's instructions; refer to the relevant figures for connection to the unit.
- Carefully insulate pipes, valve assemblies and coil connections (cold water side) to avoid condensation forming on the pipes and dripping on the false ceiling.

Electrical wiring

- Connect the room control following instructions for the control used.

ATTENTION: Route the cables through the electrical box as shown in fig. 37.

- Connect the valves according to the instructions and the wiring diagrams attached to the machine documents.
- **Valves, closing the unit water inlet when there is no power supply, must be used.**

ON-OFF valves (230V)

- The chilled water valve must be operated by the 230V on-off signal from terminal V and the hot water valve from terminal H.
- **If these connections are not made as described the drain pan condensate may overflow.**
- Valves should open only when the fan is working, that is, when one of terminals V1, V2, V3 is energized by L mains supply.

⚠

- **When the system is filled with water, verify all couplings for tightness.**
- **The manufacturer does not accept responsibility for the tightness of the field - installed valve assembly and this is not tested in the factory.**
- **He declines any responsibility for non functioning of these assemblies and for damage due to dripping.**

Fresh air renewal and conditioned air supply to an adjacent room

See fig. **44 - 45**.
- Side knockouts allow connection of fresh air inlet ducts and ducts to deliver conditioned air to an adjacent room.
- Remove the external prepunched anti-condensate insulation and take away the knockout panels using a punch.

See fig. **47**.
- The duct lengths and the increase in noise levels caused by these ducts can be calculated in accordance with the “air supply to an adjacent room diagrams ” (also taking into account the flow resistance through air diffusers and fresh air filters).

Air distribution to adjacent room (See fig. 44-45)

- Remove the precut sheet metal (ref. 15) using a punch.
- With a pencil, trace a line on the polystyrene around the inside edges of the panel that was previously removed. Cut away the polystyrene with a knife, taking care not to damage the heat exchange coil.

Fresh air renewal (See fig. 45)

- Remove the precut sheet metal (ref. 14) and install the air control device by fixing it to the unit frame.
- Use locally purchased material, suitable for operating temperatures of 60 °C (continuous). Conduits can be of flexible polyester (with spiral core) or corrugated aluminium, externally covered with anticondensate material (fibre glass of 12 +/- 25 mm thickness).
- To complete the installation, all non-insulated ducts must be covered with anti-condensate insulation (ex. expanded neoprene, 6 mm thickness).

If these instructions are not observed, condensate may drip. The manufacturer will not be held responsible for any damage caused.

Fresh air renewal (See fig. 40e)

- The optional supplementary fan for fresh air intake (field supplied) has to be connected to terminal block as per diagrams enclosed. Fan motor operation is parallel to the thermo-electric control valve, and the motor stops when the valve shuts off.
- For winter operation with fresh air intake, an anti-freeze thermostat set at 2°C is recommended, with the bulb placed on the water outlet pipe, before the supplementary fan.
- The fresh air flow must be less than 10% of the total air flow, to avoid operating problems or eccessive noise. For higher air flow a "primary air kit" is available which uses the prepunched hole for air ducting to an adjacent room and a baffle so that the fresh air is introduced into the room through a diffuser.
- Install an air inlet grille with filter inspection port to prevent dust and dirt from entering and fouling the unit heat exchanger. Filter installation also makes the installation of a duct closing damper during shut-down periods unnecessary.

Conditioned air supply to an adjacent room (See fig. 44-45)

- **Air supply to an adjacent room requires that the outlet corresponding with the duct is closed, using the air supply outlet obstruction kit supplied. The kit cannot be used in units equipped with electric heater.** An air inlet grille must be fitted (if possible near the floor) between the air conditioned room (where the unit is situated) and the adjacent room or, alternatively, the door must be undercut, as shown in the drawing.
- The duct lengths can be calculated in accordance with the “air distribution to an adjacent room” diagram, also taking into account the pressure drop through air diffusers and fresh air filters.
- **DO NOT use active carbon or electrostatic filter kits for ducts towards adjacent rooms.**

Installation of grille/frame assembly

See fig. **24 - 25**.
Carefully unpack the assembly and check for damage sustained in transit.
Attach the assembly to the unit, fastening it onto its two fixing supports (ref. 15), then locking the four fixing nuts with their spacers (ref. 17).

⚠ **To fix the frame use only the screws supplied with it.**

For units with I.R. control and/or motorized louvers the electric cables must be connected between the unit and the frame.

Ensure that the frame is not distorted by excessive tightening, that it is aligned with the false ceiling and above all that there is a seal between the air inlet and outlet.
In the drawing gasket "3" prevents return air from mixing with the supply air and gasket "4" prevents the supply air from leaking into the ceiling void.
On completion, the gap between the unit frame and the false ceiling must not be more than 5 mm.

Maintenance and owner's guide

Maintenance

Cleaning and maintenance operations must be carried out by specially trained personnel.

Before performing any service or maintenance operations, turn OFF the main power switch.

Note to the installer:
To open the unit grille: turn the two screws through 90° (1/4 turn).

Filter cleaning by the installer

Clean filters in accordance with the actual operating conditions (approximately every 6 months).

- The acrylic air filter is washable in water.

Extract the filter.
First vacuum clean the filter, then wash under tap water and finally dry.
Replace the filter in the correct position.

Prolonged shutdown:

- Before starting the air conditioner:
  - clean or replace the unit air filters.
  - check and clean the drain pan and the condensate discharge of the unit.
  - check tightness of electric connections.

Additional maintenance

- The electric panel is easily accessible
  The inspection or replacement of internal components such as: fan motor, coil, condensate discharge pump, float switch, electric heater (if fitted), involve the removal of the condensate drain pan.

Condensate drain pan removal

- During the removal operation of the condensate drain pan protect the floor with a plastic sheet under the uni
- Remove the frame-grille assembly by loosening the screws.
- Remove the four fixing brackets on the side of the drain pan and carefully remove the condensate drain pan.

System drainage : If the system needs to be emptied, remember that a water head always remains into the coil and it may freeze in case temperature goes below 0° thus causing the heat exchanger failure. The heat exchanger can be totally emptied by opening the valves and blowing in air in each valve for 90 seconds at a minimum pressure of 6 bar.

Guide for the owner

When installation and tests are completed instruct the Owner on the main operating modes of the air conditioner, such as:
- Turning the unit ON and OFF.
- Changing the operation modes.
- Temperature selection.

Leave the installation manual with the owner for future use during maintenance operations or for any other needs.

Electrical connections addendum

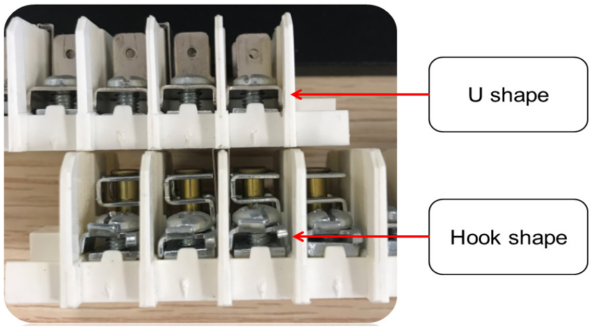
REMEMBER: This document is a complement of the manual and it is designed to be used with.

1) Over-current protection
WARNING: each unit must be provided with individual dedicated upstream over-current protection (not supplied by Manufacturer).

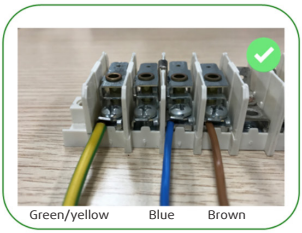
TKW

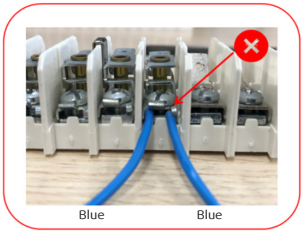
Upstream over-current protection for units without heaters			
UNIT SIZE	FUSE PROTECTION TYPE	FUSE SIZE FOR UNITS WITHOUT HEATERS [AMPS]	FUSE SIZE FOR UNITS WITH HEATERS [AMPS]
TKW20 EC	gG	1	8
TKW30 EC		1	16
TKW40 EC		1	12
TKW50 EC		1	16
TKW60 EC		1	16
TKW70 EC		1	16

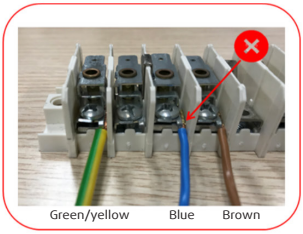
2) Terminal block connectors
Screw clamp terminal connector types:



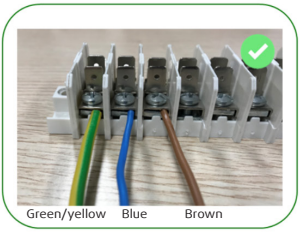
WARNING: When connecting power supply it is forbidden to put more than
• one wire end per screw clamp terminal with «hook» shape connector
Right hook side use is forbidden

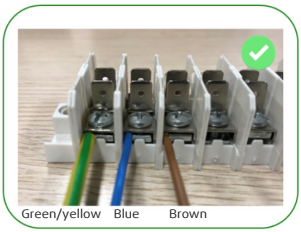


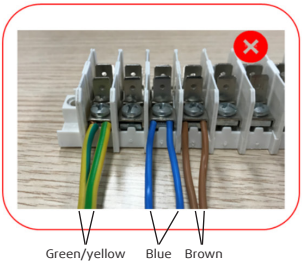




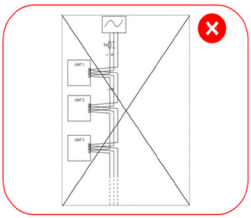
• one wire end per screw clamp terminal with “U” shape connector (cf. Daisy chain section).

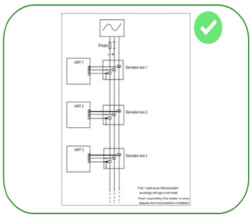






3. Daisy chain
WARNING: it is forbidden to supply other units from the terminal block





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