

Operating InstructionsPage 8

TZK 400 / TZK 2000

Recycled Water Cooling Unit



TZK 400



TZK 2000

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1. Safety Precautions

- ☞ Read and follow all the instructions in this manual.
- ☞ Inform yourself regarding:
 - Hazards which can be caused by the unit;
 - Hazards which can arise in your system;
- ☞ Observe all safety and accident prevention regulations.
- ☞ Check regularly that all safety requirements are being complied with.
- ☞ Do not carry out any unauthorised conversions or modifications on the unit.
- ☞ When returning the unit to us please note the shipping instructions in Section 7.

Modifications reserved.

Pictogram definitions



Danger of damage to the unit or system.



Danger of personal injury.

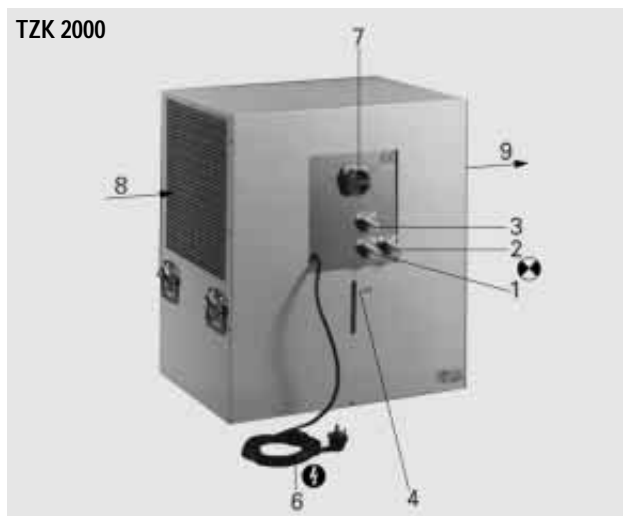
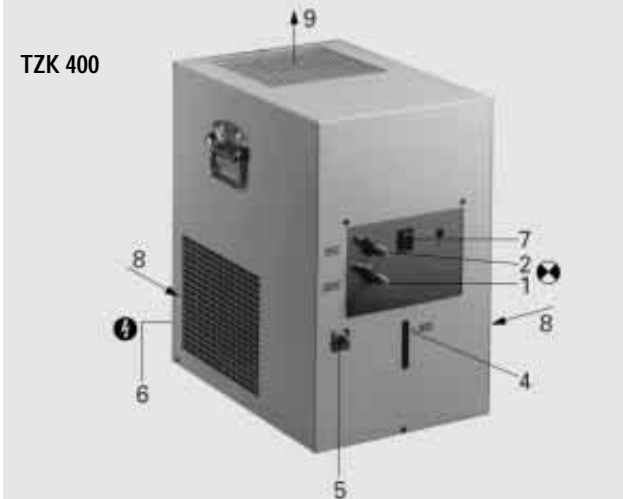


Danger of an electric shock.

2. Understanding The Recycled Water Cooling Unit

2.1. Main Features

- 1 Water outlet
- 2 Cooling water inlet
- 3 Water filler port
- 4 Water level display
- 5 Overflow
- 6 Electrical connection
- 7 ON/OFF switch
- 8 Air inlet
- 9 Air outlet



The air cooled recycled water cooling unit can be operated where ambient temperatures do not exceed 32 °C. Cooling performance is dependent on:

- The ambient temperature (the lower the temperature the greater the cooling performance).
- The temperature of the water at the outlet (with unchanged ambient temperature and reducing temperature of the water at the outlet, cooling performance decreases).

Proper use

- The recycled water cooling unit may only be used to cool PFEIFFER turbomolecular pumps.
- Using accessories not named in this manual is not permitted without authorisation from PFEIFFER.

Improper use

Improper use includes, inter alia:

- Operating the recycled water cooling unit in mobile systems.
- Recycled water cooling at water temperatures > 25 °C and < 6 °C.
- Cooling objects with a surface temperature of > 80 °C.
- Any other use not described in "Proper Use" above.

Improper use will cause any rights regarding liability and guarantees to be forfeited.

2.2. Differences Between The TZK 400 And TZK 2000

Feature	TZK 400	TZK 2000
Dimensions (mm)	430 x 470 x 300	430 x 700 x 600
Weight, empty of water (kg)	30	71,5
Cooling performance at incoming water temperature of 20 °C and ambient temperature 24 °C (W)	540	1800



2.3. For Your Orientation

Instruction in the text

- ➔ Working instruction: Here, you have to do something.

Symbols used

The following symbols are used throughout in the illustrations:

-  Cooling water connection
-  Electrical connection

Position numbers

Identical unit and accessory parts have the same position numbers in all illustrations.

3. Installation

3.1. Preparations For Installation



Do not carry out any unauthorised conversions or modifications to the recycled water cooling unit.

- Any dirt trap in the cooling water connection of the turbomolecular pump (if fitted) should be removed.
- Where transportable systems are involved, the recycled water cooling unit must be anchored to the base.
- Owing to the heat which is generated, the recycled water cooling unit should not be positioned in the vicinity of working places.
- Air ducts to conduct away hot air must not be blocked.
- The recycled water cooling unit must not be positioned in the vicinity of a heat source (radiator).

Important

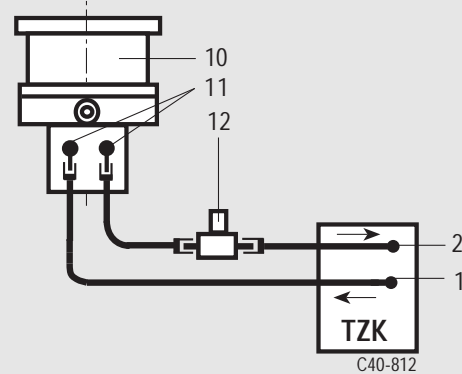
Do not block air inlets and outlets.
Keep clearance of at least 300 mm.

3.2. Fitting The Recycled Water Cooling Unit

The unit is supplied with a 3 meter long PVC hose. Where greater distances between recycled water cooling unit and turbomolecular pump are involved, insulated pipes should be fitted.

Establishing The Cooling Water Circuit

- 1 Water outlet
- 2 Cooling water inlet
- 10 Turbomolecular pump
- 11 Cooling water connection
- 12 Cooling Water Monitor TCW (in return line)



Either cooling water connection port on the turbomolecular pump can be used for the cooling water inlet and outlet.

- ➔ Fitting the PVC hose;
Hose clamps are unnecessary.

3.3. Electrical Connections



Electrical connections must be carried out in compliance with local regulations.

The recycled water cooling unit is supplied with a 2.5 meter long cable with mains plug.

- ➔ Plug into AC mains 230V/50Hz.
- ➔ Where a TZK is connected to a PFEIFFER turbomolecular pump the wiring diagram of the turbomolecular pump is applicable.

4. Operations

4.1. Filling Up With Cooling Water

TZK 400

- ➔ Remove the hose line "water return line" from the turbo pump.
- ➔ Fill up the liquid container in the TZK with cooling water via the hose nozzle "water inlet" up to the triangle on the water level display.
- ➔ Re-connect hose line "water return line" to the turbo pump.

TZK 2000

- ➔ Fill up the liquid container in the TZK via the water filler port.
- ➔ Fill to the level indicated by the arrow on the water level display.

4.2. Setting The Cooling Temperature

Important

On delivery, the recycled water cooling unit has been set at the optimum temperature for operations with a PFEIFFER turbomolecular pump; this setting should not be changed.

4.3. Switching ON

- ➔ The recycled water cooling unit is switched on via the ON/OFF switch.
- Where the recycled water cooling unit is being operated with a PFEIFFER turbomolecular pump, the pumping station control unit will switch on the cooling unit if its switch is in the "ON" position.

5. What To Do In Case Of Breakdowns?



It is not allowed to work on the recycled water cooling unit cooling circuit or electrics; such repairs may only be carried out by PFEIFFER Service.

Problem	Possible cause	Remedy
Winding protection in the cooling compressor trips	<ul style="list-style-type: none"> • Impermissible overpressure in coolant circuit from: <ul style="list-style-type: none"> – too high ambient temperature – defective fan – Insufficient air circulation owing to dirty condenser 	<ul style="list-style-type: none"> • Check air supply, reduce ambient temperature • Arrange repair with PFEIFFER Service • Clean condenser blades with compressed air or brush (or the like)
Winding protection in fan motor trips	<ul style="list-style-type: none"> • Bearing damage • Blocked rotor 	<ul style="list-style-type: none"> • Arrange repair with PFEIFFER Service • Arrange repair with PFEIFFER Service

6. Maintenance

Recycled water cooling unit maintenance is concerned with the following:

- ➔ Checking the cooling water level and cleanliness.
- ➔ Keeping the condenser blades clean.

7. Service

Do Make Use Of Our Service Facilities

In the event that repairs are necessary a number of options are available to you to ensure any system down time is kept to a minimum:

- Have the unit repaired on the spot by PFEIFFER Service;
- Return the unit to the manufacturer for repairs;

Local PFEIFFER representatives can provide full details.

Please Note:

Repair orders are carried out according to our general conditions of sale and supply. If repairs are necessary, please send the unit to your nearest PFEIFFER Service Center.

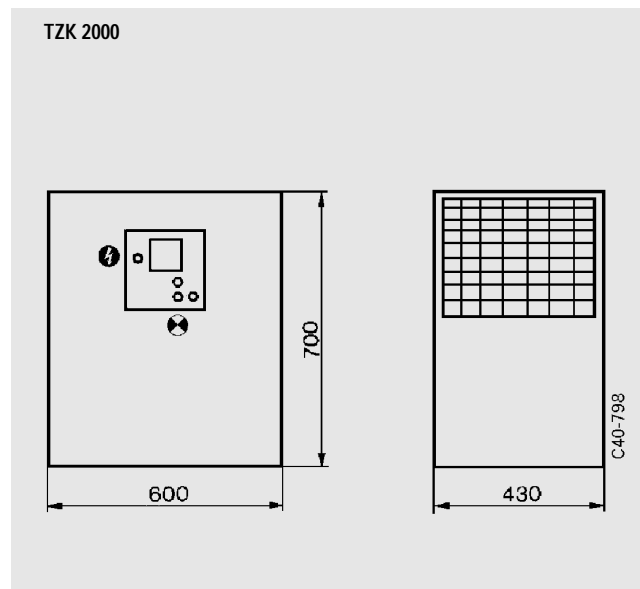
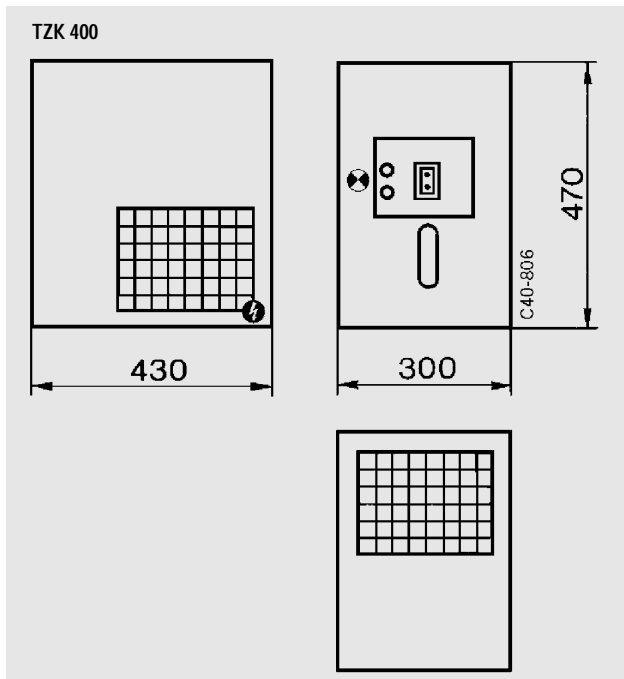
Contact Addresses And Telephone Hotline

Contact addresses and telephone numbers can be found on the back cover of these operating instructions.

8. Technical Data

Feature	Unit	TZK 400	TZK 2000
Cooling performance at 20 °C water outlet temperature and 24 °C ambient temperature	W	540	1800
Works setting			
In	°C	11,5	11,5
Out	°C	16,5	16,5
Max. ambient temperature	°C	32	32
Cooling water filling	l	3,8	50
Cooling water flow rate at 2m pressure height	m ³ /h	0,45	0,3
Max. power take-up	W	370	960
Connection voltage	V/Hz	230/50	230/50
Weight without water	kg	30	71,5
Coolant		R 134 a, FCKW-frei	
Noise level	dB(A)	57	66

8.1. Dimensions



9. Accessories

Description	Size	Number	Comments/ operating instructions	Order Quantity
Cooling Water Monitor TCW 002	110 V; 50/60 Hz 230 V; 50/60 Hz 240 V; 50/60 Hz	PM C00 131 PM C00 130 PM C00 132	PM 800 133 BN	
Connection set for TCW 002		PM 006 802-T		
PVC hose	10/16	N 2358 258 JS	State order quantity in meters	

When ordering accessories please be sure to state the full part number. Please use this list as an order form (by taking a copy).

⇒ **DE, AT**

Konformitätserklärung im Sinne folgender EU-Richtlinien:

- Maschinen 89/392/EWG
- Elektromagnetische Verträglichkeit 89/336/EWG
- Niederspannung 73/23/EWG

Hiermit erklären wir, daß das unten aufgeführte Produkt den Bestimmungen der EU-Maschinenrichtlinie 89/392/EWG - Anhang IIA, der EU-Richtlinie über elektromagnetische Verträglichkeit 89/336/EWG und der EU-Niederspannungsrichtlinie 73/23/EWG entspricht.

Die angewandten Richtlinien, harmonisierten Normen, nationalen Normen und Spezifikationen sind unten aufgeführt.

⇒ **GB, IE**

Declaration of conformity pursuant to the following EU directives:

- Machinery Directive 89/392/EEC
- Electromagnetic Compatibility Directive 89/336/EEC
- Low Voltage Directive 73/23/EEC

We hereby certify that the product specified below is in accordance with the provision of EU Machinery Directive 89/392/EEC - Annex II A, EU Electromagnetic Compatibility Directive 89/336/EEC and EU Low Voltage Directive 73/23/EEC.

The guidelines, harmonised standards, national standards and specifications which have been applied are listed below.

⇒ **BE, FR**

Déclaration de conformité conformément aux directives CE suivantes:

- directive machine CE 89/392/CEE
- directive CE 89/336/CEE concernant la compatibilité électromagnétique
- directive CE 73/23/CEE concernant la basse tension

Nous déclarons par la présente que le produit mentionné ci-dessous répond bien aux dispositions de la directive machine CE 89/392/CEE - appendice II A, la directive CE 89/336/CEE concernant la compatibilité électromagnétique et la directive CE 73/23/CEE concernant la basse tension. Les directives appliquées, normes harmonisées et les normes et spécifications nationales appliquées figurent ci-dessous.

⇒ **IT**

Dichiarazione di conformità ai sensi delle seguenti direttive UE:

- Macchinari 89/392/CEE
- Compatibilità elettromagnetica 89/336/CEE
- Bassa tensione 73/23/CEE

Si dichiara che il prodotto qui menzionato rispetta le disposizioni della direttiva UE sui macchinari 89/392/CEE - Appendice II A - della direttiva UE sulla compatibilità elettromagnetica 89/336/CEE e della direttiva UE sulla bassa tensione 73/23/CEE. Sono riportate in basso le direttive applicate, le norme standardizzate nonché le norme e le specifiche nazionali utilizzate.

⇒ **ES**

Declaración de conformidad al tenor de las siguientes Directivas de la UE:

- Maquinarias 89/392/MCE
- Compatibilidad Electromagnética 89/336/MCE
- Baja Tensión 73/23/MCE

Por la presente declaramos que el producto mencionado más abajo concuerda con las disposiciones resultantes de la Directiva 89/392/MCE de la UE sobre Maquinarias - Apéndice IIA, la Directiva 89/336/MCE de la UE sobre Compatibilidad Electromagnética y la Directiva 73/23/MCE de la UE sobre Baja Tensión. Las directivas aplicadas, normas armonizadas y las normas y especificaciones nacionales aplicadas se mencionan abajo.

⇒ **NL**

Verklaring inzake de conformiteit in de zin van de volgende EU-richtlijnen:

- machinerichtlijn 89/392/EEG
- richtlijn over elektromagnetische compatibiliteit 89/336/EEG
- richtlijn over laagspanning 73/23/EEG

Hiermee verklaren wij dat het hieronder genoemde produkt voldoet aan de bepalingen van de EU-machinerichtlijn 89/392/EEG - appendix II A, de EU-richtlijn over elektromagnetische compatibiliteit 89/336/EEG en de EU-richtlijn over laagspanning 73/23/EEG.

De toegepaste richtlijnen, geharmoniseerde normen en de toegepaste nationale normen en specificaties zijn hierna aangegeven.

⇒ **DK**

EF-konformitetserklæring i henhold til følgende EU-direktiver:

- Maskiner 89/392/EWG
- Elektromagnetisk kompatibilitet 89/336/EWG
- Lavspænding 73/23/EWG

Hermed erklærer vi, at det nedenstående produkt er i overensstemmelse med bestemmelserne i EU-maskindirektiv 89/392/EWG - tillæg II A, Eu-direktiv vedrørende elektromagnetisk kompatibilitet 89/336/EWG og EU-lavspændingsdirektiv 73/23/EWG.

De anvendte direktiver, harmoniserede standarder og de anvendte nationale standarder og specifikationer er angivet nedenfor.

⇒ **SE**

Konformitetsförklaring enligt följande EG-direktiv:

- Maskindirektiv 89/392/EEC
- Elektromagnetisk tolerans 89/336/EEC
- Lågspänning 73/23/EEC

Härmed förklarar vi, att den nedan nämnda produkten stämmer överens med EG's maskindirektiv 89/392/EEC - annex II A, EG's direktiv om elektromagnetisk tolerans 89/336/EEC och EG's lågspänningsdirektiv 73/23/EEC.

De riktlinjer, anpassade standarder, nationella standarder och specifikationer som har blivit accepterade, anges här nedan.



Vaativusten mukaisuus vakuutus seuraavien EU-direktiivien mukaisesti:

- konedirektiivi 89/392/ETY
- sähkömagneettinen siedettävyyden 89/336/ETY
- pienjännite 73/23/ETY

Vahvistamme, täten, että allamainittu tuote vastaa EU-konedirektiivin 89/392/ETY - liite IIA, EU-direktiivin sähkömagneettinen siedettävyyden 89/336/ETY ja EU-pienjännitedirektiivin 73/23/ETY vaatimuksia.

Soveltamamme suuntaviivat, harmonisoidut standardit, kansalliset standardit ja rakennemääräykset on lueteltu alempana.



Declaração de conformidade, de acordo com as seguintes Directivas CE:

- Máquinas, na redacção 89/392/CEE
- Compatibilidade electromagnética, na redacção 89/336/CEE
- Baixa tensão, na redacção 73/23/CEE

Com a presente, declaramos que o produto abaixo indicado está em conformidade com as disposições pertinentes na Directiva CE para máquinas, na redacção 89/392/CEE - Apêndice II A, na Directiva CE sobre compatibilidade electromagnética, na redacção 89/336/CEE, e na Directiva CE sobre baixa tensão, na redacção 73/23/CEE. Abaixo, dá-se indicação das directivas aplicadas, das normas harmonizadas e das normas e especificações aplicadas no respectivo país.



Δήλωση συμμόρφωσης κατά το νόημα των ετήσιων οδηγιών της Ε.Ε.:

- περί μηχανών 89/392/Ε.Ο.Κ.
- περί ηλεκτρομαγνητικής συμβατότητας 89/336/Ε.Ο.Κ.
- περί χαμηλής τάσης 73/23/Ε.Ο.Κ.

Με την παρούσα δήλωση βεβαιώνουμε ότι το κατωτέρω αναφερόμενο προϊόν ανταποκρίνεται στην οδηγία περί μηχανών της Ε.Ε. 89/392/Ε.Ο.Κ.- παράρτημα Ι Α, στην οδηγία περί ηλεκτρομαγνητικής συμβατότητας της Ε.Ε. 89/336/Ε.Ο.Κ. και στην οδηγία περί χαμηλής τάσης της Ε.Ε. 73/23/Ε.Ο.Κ.

Οι εφαρμοσθέντες κανονισμοί, οι εναρμονισμένες προδιαγραφές και οι εφαρμοσθείσες εθνικές προδιαγραφές αναφέρονται κατωτέρω:

Produkt/Product/Produit/Prodotto/Producto/Produkt/Produkt/Produto/ Προϊόν:

TZK 400
TZK 2000

Angewendete Richtlinien, harmonisierte Normen und angewendete, nationale Normen in Sprachen und Spezifikationen:

Guidelines, harmonised standards, national standards in languages and specifications which have been applied:

Les directives appliquées, normes harmonisées et les normes nationales appliquées en langues et spécifications:

Directive applicate, norme standardizzate e norme nazionali utilizzate in lingue e specifiche:

Directivas aplicadas, normas armonizadas y normas nacionales aplicadas en idiomas y especificaciones:

Toegepaste richtlijnen, geharmoniseerde normen en toegepaste nationale normen met betrekking tot talen en specificaties:

Anvendte direktiver, harmoniserede standarder og de anvendte nationale standarder med sprog og specifikationer:

Directivas aplicadas, normas harmonizadas e normas aplicadas na linguagem e nas especificações do respectivo país:

Εφαρμοσθέντες κανονισμοί, εναρμονισμένες προδιαγραφές και εφαρμοσθείσες εθνικές προδιαγραφές σε γλώσσες και τεχνικές προδιαγραφές:

EN 292-1

EN 292-2

EN 60204 Teil 1

EN 60335-2-24

VBG 20 UVV

ISO 5149-1993

Unterschriften/Signatures/Signature/Firme/Firmas/Handtekeningen/Underskrifter/Assinaturas/ Υπογραφές:

Geschäftsführer (W. Dondorf)

Managing Director

Gérant d'affaires

Gerente

Directeur

Administrerende Direktor

Verkställande Direktör

Gerente

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Telefax 06441/802-202

Hotline 06441/802-333

Internet:

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telefax 0054 / 1 331 3572**Australia**Balzers Australia Pty. Ltd., Level 1,
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telephone 0043 / 1 8941 704, telefax 0043 / 1 8941 707
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Assistencia Técnica e Representação S/C Ltda.
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telefax 0044 / 1 908 377 776**Greece**Analytical Instruments S.A., 1 Mantzarou St.,
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telefax 0048 / 61 8677 111**Portugal**Unilaser Lda, Taguspark
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Switzerland
telephon 0041 / 81 710 03 80
telefax 0041 81 710 03 81**Scope of represented countries**Armenia, Azerbaijan, Bangladesh, Belarus, Bulgaria,
Cambodia, Estonia, Georgia, Hong Kong, Kazakhstan,
Kingdom of Nepal, Kirghizia, Latvia, Lithuania,
Maldavia, Philippines, P.R. China, Rumania, Russia,
Tajikistan, Turkmenistan, Ukraine, Uzbekistan, Vietnam**A.E.M.S.**Advanced Equipment Materials and Systems
P.O. Box 25
Föhrenweg 18
FL-9496 Balzers
telephon 0041 / 75 380 0550
telefax 0041 / 75 380 0551**Scope of represented countries**Bahrain, Egypt, Iraq, Iran, Jordan, Kuwait, Lebanon,
Lybia, Oman, Pakistan, Saudi-Arabia, Sudan, Syria,
Turkey, United Arab Emirates, Yemen